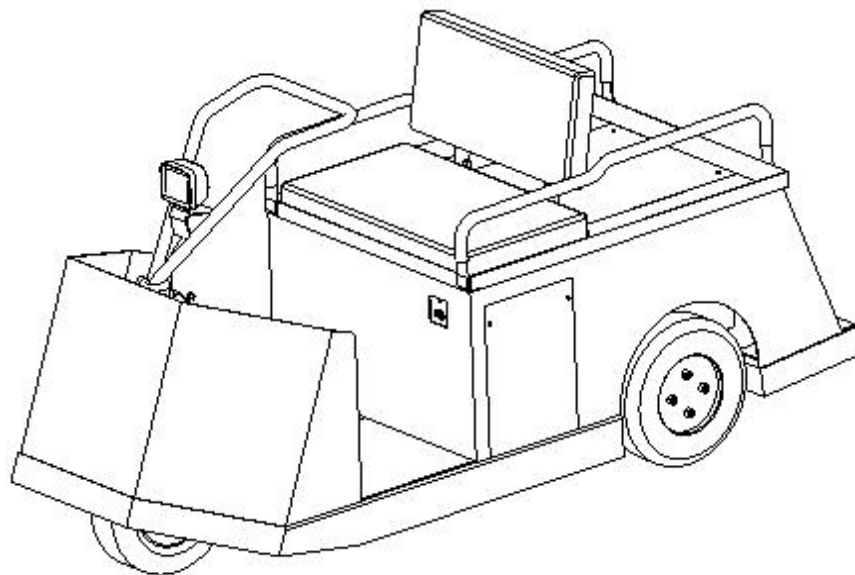


BD05 Electric Platform pallet truck

- Operation Manual
- Parts Catalogue



Welcome to choose "BD05" electric pallet truck!
We hope our electric trucks will bring great convenience
to your work !

Warning



- **Operators must strictly conform to ISO3691 "Safety Specifications of Motor Industrial Vehicles". Untrained personnel are not allowed to operate the truck.**

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

The instruction manual shall be accompanied with in case of truck leasing or transfer.

- Please come into contact with our sales department in case of any problem.

Description of symbol: Regulations of the following symbols are of great importance to your safety and others as well

	Danger	Indicates an impending danger. Deaths or severe injuries would be resulted without any precaution or avoidance. You must observe those requirements.
	Warning	Indicates a potential danger. Deaths or severe injuries would be resulted without any precaution or avoidance. You must observe those requirements.
	Caution	Indicates a potential danger. Moderate injuries would be resulted without any precaution or avoidance. You must observe those requirements.
	Notice	You shall pay attention to statements that are in direct or indirect relation with personal security and truck maintenance.

Content

I . specified use	1
II . Pallet truck introduction	1
1. specified use	1
2. Allowed environment for using	1
3. technical parameters	2
III. Operation	5
1. Safety Norms	5
2. drive and operation	7
IV. Usage, maintenance and charge of storage battery	9
1. Initial charge	10
2. Use and maintenance	11
3.Keep and storage	11
4.Operation of electrolyte	11
V. Maintenance and repair truck	12
1. Maintenance	12
2. Common faults and trouble shooting:	15
VI. The store, transportation and loading of truck	19
1. Loading and unloading of truck:	19
2. Transportation of truck:	19
3. The store of truck:	19
Appendix I	20
Appendix II	21
Appendix III	22

I. specified use

the truck is introduced for a ground conveying equipment, suitable for carrying goods and persons also used as tractor.

Must be in strict accordance with the provisions of the operating instructions in use, operation and maintenance of forklift. it is used for any other purpose, which are not in conformity with the provisions operation behavior, can lead to injuries and fork lift truck or other property damage. The most important thing is to prevent the load is overweight or swaying caused by overload. Must abide by the the biggest load limit in equipment nameplate or Load graphic Drawing . can not use the fork lift truck in a fire and explosion hazard area, cannot use in easy to cause corrosion rust and dust area.

obligations and responsibilities of equipment user: "equipment user" Refers to natural person or legal person who is direct use or appointed entrust others use the forklift in this operation manual. In the rental, lease and other special circumstances, "equipment user" represent the contract terms between equipment owner and user. Equipment user must ensure that the forklift only is used to specified use, and promptly eliminate all may endanger the risk of life and health to user himself or a third party . In addition, the equipment use party must strictly abide by the accident prevention regulations, other safety technical regulations, and equipment operation, maintenance and maintenance philosophy . Equipment user must ensure that all operations staff carefully read and fully understand the content of the operating instructions.



If you don't follow the operating instructions, the company's quality assurance to be automatic failure. if the customer and/or the third party to make the equipment non-standard without any allowable from our customer service department., we will not undertake any responsibility if there has any lost.

Installation accessories: If impact the function of the forklift truck or have added and need to install additional device, must obtain the written consent of the company. According to the actual situation, may also must obtain the consent of the competent department of local. examine and verify relists of department in charge do not represent the company opinion.

II. Pallet truck introduction

1. specified use

pallet truck is powered by storage battery, and driven by motor. This kind of truck travels by means of gear transmission, The truck is steered by means of machinery steering .

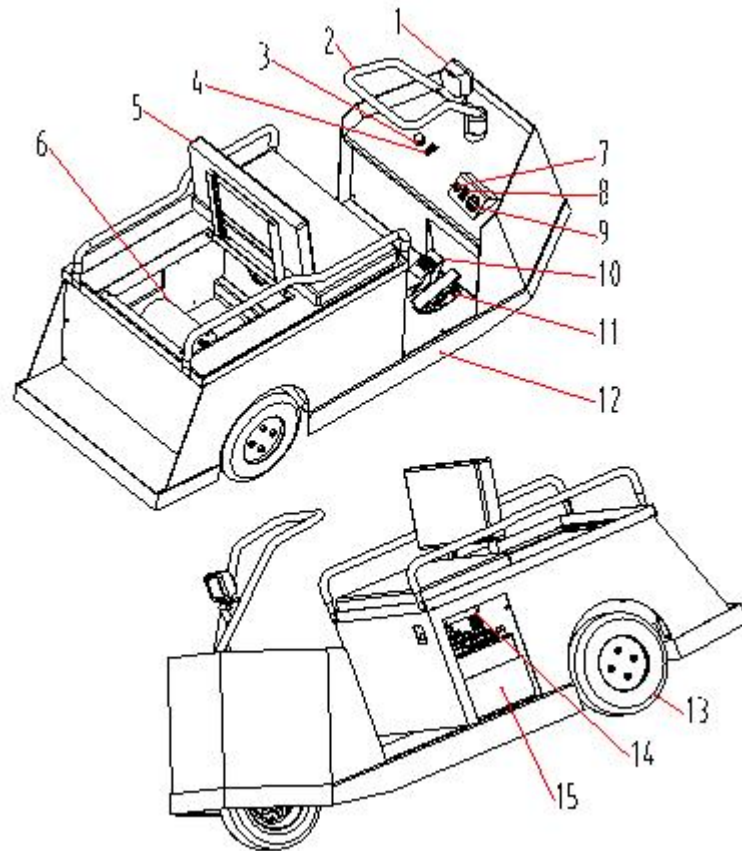
Rated load details on the forklift nameplate.

2. Allowed environment for using

- a. Height above sea level shall not be over 1000m;
- b. Ambient temperature shall not be higher than +40°C and no lower than -25°C;
- c. When the ambient temperature reaches +40°C, the relative humidity should not exceed 50%; at a lower temperature, higher relative humidity is allowed;
- d. Hard and flat ground.
- e. It is prohibited to use the truck in a flammable, explosive or corrosive environment with acid and alkali.
- f. Because the vehicle itself without lighting equipment, so the truck should use in light brightly.

3. technical parameters

3.1 Structure description



(1) head light

It is used for lightening the road in front of you.

(2) steering system

It is mainly composed of operation tiller, reverse support, bearing and reverse wheels and it is used for controlling the direction of the vehicle.

(3) Battery main switch

NO.	Name	NO.	Name
1	headlight	9	instrument
2	steering system	10	brake pedal
3	battery main switch	11	accelerator pedal
4	Headlight switch	12	frame
5	seat	13	drive axle
6	Drive motor	14	Built-in charger
7	key switch	15	storage battery
8	direction switch		

It is used for controlling the emergency powering off of the vehicle. Pressing the button is powering off and pulling up the button is powering on. Please press the button when your vehicle is out of control.

(4) Head light switch

Please press the switches when you need turn on/turn off the light.

(5) seat

It is the unique position to operate the vehicle correctly.

(6) drive motor

It is used for complete the target successfully.

(7) key switch

It is used for controlling the power of the vehicle. The key switch should be kept by the driver or the manager. Before you leave the vehicle, make sure it powers off and take off the switch.

(8) direction switch

It is regarded as the optioned switch, the front for forward, the rear for backward.

(9) instrument:

This instrument is a combination of battery capacity indicator and LCD hour meter, with the battery indicator of ten segments of colorful LED display (5 red segments, 3 yellow segments and 2 red LED). When battery discharges by 70% capacity, one red flicker lamp shows "energy storage" alarm. When the battery discharges by 80%, two red flicker lamps show "energy exhaust". After the external power supply is cut off, the internal battery can generally keep storage memory of 10 years. The life service time for monitoring of this instrument is 99999.9 hours recorded on LCD displays. Hour meter resets automatically and continue to time and display. Only if it is connected to battery, LCD hour meter will start working. This instrument possesses high reliability under extremely bad environment.

(10) Dead man paddle

When the vehicle is to be stopped, you can use this paddle. As the vehicle has the function of accelerator paddle releasing brake, it doesn't need using this paddle to stop or slow down the vehicle.

(11) Accelerator paddle

It is used for controlling the vehicle's speed, the deeper the faster.

(12) Frame

It is the supporting part of the vehicle and all of the attached parts are in the frame.

(13) Drive axle

The drive system is through slowing the speed and increasing the distance and transmitting to the wheels.

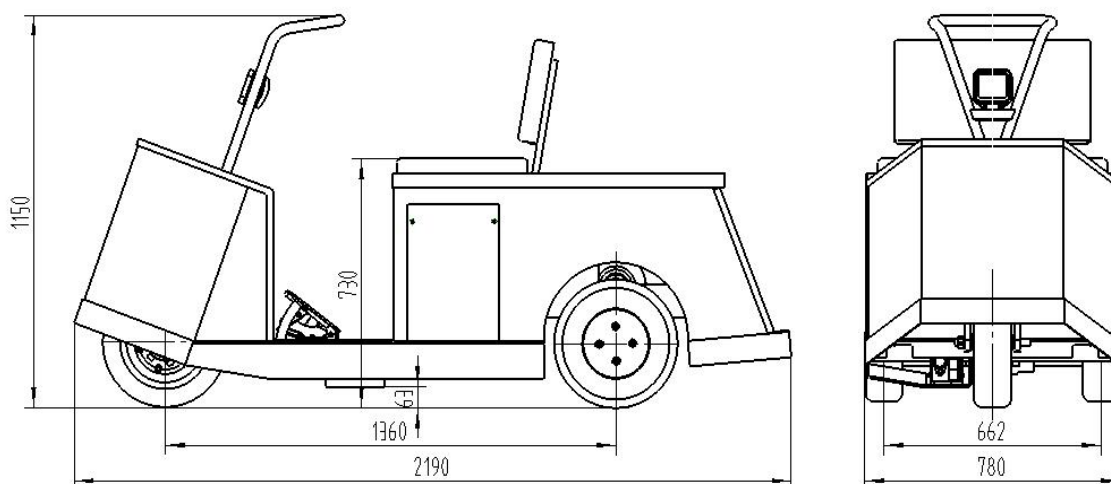
(14) inside charger

You can charger the battery through connecting the socket and the external power supply.

(15) battery

It provides the driving power for the vehicle.

3.2 Main technical parameters (BD05 pallet truck)



Characteristics	Manufacturer(abbreviated)		
	Model		BD05
	Driving model		motor-driven
	Driving model		Motoring
	Rated load	Q(kg)	300
	Rated traction weight	kg	1000
	Running speed (no-load/full load)	Km/h	14/8
	onward journey of no-load	Km	32
Weight	Service weight(with battery)	kg	470
	Axle load, front/rear, unladen	kg	160/310
appearance	wheel base	mm	1360
	Wheel		Elastic solid tyres
	Wheel type		15x4 ¹ / ₂ -8
	Wheel number, front/rear (x = driving wheel)		1/2x
	Tread, rear	W ₁ (mm)	662
	Min. /Max. height of operation handle	h ₂ (mm)	1150
	overall height	h ₃ (mm)	1150
	Seat's height	h(mm)	730
	Draw hook height	h ₁ (mm)	
	Overall length	L(mm)	2190
	Overall width of truck body	W(mm)	780
	minimum ground clearance	X(mm)	63
	radius of turning circle	W _a (mm)	1850
others	Driving motor power	kW	3.2
	Battery voltage/rated capacity	V/Ah	24/217
	Battery weight	Kg	96
	Battery dimension (LXWXH)	mm	730×270×280
	Noise level at operator's ear, according to DIN12053	dB(A)	70

III. Operation



Warning

1. Safety Norms

Please pay attention to the following items first before operation of the truck:

1. This truck is only limited to utilization indoor with a hard flat floor. Operation in inflammable, explosive environment or corrosive environment such as acid or alkaline condition shall be strictly forbidden.
2. Only drivers who have received formal training or are authorized can be allowed to drive the truck.
3. Read this instruction carefully before operation so as to master the performance of the truck; check the truck whether it is in its normal condition before each operation. It is forbidden to use faulty truck; repair by untrained persons is forbidden as well.
4. Overloading operation is forbidden.
5. this truck is used on flatness ground, and it is forbidden to park on slope.
6. Overloading operation and too much gradient driving are forbidden
7. It is strictly to use the truck under stipulated voltage of 20.4V.
8. It is strictly forbidden to conduct charge by connecting the plug to AC power directly.

1.1 Safety operation norms

(1) Training of driver:



Notice

Even though each electric pallet truck may have the same technical parameters, there may be differences on features of braking and acceleration as well. Never drive the truck until you get familiar with all those operations.

(2) Wear of the driver during truck driving:



Notice

Please put on safety shoes and protective clothes. Do not wear clothes that are too loose for sake of being caught, which would result in danger.

(3) Rules that must be observed:



Notice

Never drive the truck when you are tired or un-concentrated, with an injection of drug, or after a liquor drinking.

Safety rules and regulations shall be observed during operation or maintenance of the truck.

(4) Safety of working place:



Notice

This kind of electric truck is only limited to utilization indoor with a hard flat floor. Operation in inflammable, explosive environment or corrosive environment such as acid or alkaline condition shall be strictly forbidden.

A A Good roadway condition shall be kept and the traffic should be smooth.

B Sufficient light ray shall be ensured on working place.

C Fire extinguishing appliances shall be equipped in the places where truck and charging is operated.

The extinguishing appliances shall comply with the requirements of extinguishing fire of solid combustible matter and electric apparatus.

D The value of truck noise mentioned in instruction is measured under the condition of new truck running on flat, smooth and hard ground. If the traffic surface is bad or the tyre of truck is damaged, the noise may be amplified.。

(5) Integrity of the truck shall be realized



Warning

Do not make modifications on the truck

A Please observe safety rules and regulations of your working place during operation, inspection, and maintenance of the truck.

B No modification or addition shall be made to the truck without written permission by our company. A modification of the truck may have a negative effect on its safe operation.

(6) Prepare safety operation procedure:

Safety operation procedure shall be formulated with consideration of practical situations before operation of the truck. Safety shall be taken into full consideration in preparation of the safety operation procedure.。

(7) Operation of truck under unsafe condition is strictly forbidden:

A Operation under unsafe condition is forbidden, such as under conditions with uneven floor, or impeded road. Goods lifting on slope is strictly forbidden.

B Faulty truck is forbidden to use.

C Make sure a daily inspection of the truck would be taken. Please immediately repair or replace in case of any abnormal conditions.。

(8) Overloading operation of truck is forbidden



Warning

Overloading operation of truck is forbidden. Overloading operation would cause damage to the truck or bring harm to operator.

(9) Use suitable trailer

Use suitable trailer, neither too wide nor too large. (rivers should pay more attention for carrying extra-wide cargo, steering slowly, Pay attention to the safety of all around meanwhile.)

(10) Electrical System Check

Before checking the electrical system, turn off the key switches and the emergency isolation

switches.

1.2 Safety Operation Specification

(1) Check the safety condition around the truck



- A Before starting up the truck, please ensure that there is no person around it.
- B Ensure no people around the truck when driving backwards.
- C Driving through the narrow access shall be guided by working personnel.
- D At crossroad or other places impeditive for view, the driver shall not drive until there is no person at both sides.
- E Keep concentration when operating truck.

(2) Strictly forbid harsh driving



- A Never start up, brake or turn abruptly. (Abrupt turning during traveling may cause the tilting of truck and result in serious accident.)
- B Observe all items of safety rules on working place. Decelerate and sound horn when travel by other truck or vehicles. Avoid driving in places with bad view.
- C Ensure to provide certain clearance between truck and entrance.

(3) Never drive too close to roadside



Ensure to provide enough distance between the truck and roadside or platform edge (When running on narrow road or platform, keep a certain safety distance with the edge against falling of the truck).



Warning

Avoid turning or loading and unloading operation on slope; otherwise the truck can go tilting.



Warning

Once the truck is overturning, the driver should stay far away from the truck rapidly.



Warning

(4) unbalance loading is forbidden

(5) Manned on truck is forbidden.

(6) steering wheel operation suddenly is forbidden

2. drive and operation

2.1 Inspection before operation

For the sake of safety operation and good situation of the electric truck, it is compulsory to check the truck completely before operation. Contact the sales department of our company when founding problems.

designation	No.	Check point	Check content
braking system	1	brake performance	Check the braking is in effect or not
	2	bracing wire of braking	Check the set screws on both ends of bracing wire is looseness or not
steering system	3	Operation handle	Steering flexibility
wheel	4	tyre's screw	All set screws if loosen and drop or not
Battery	5	Charge	Confirm the display state of the battery capacity.
	6	Connecting line	The connecting line and socket shall be firm。
Instrument	13	Function	Turn on the switch of electric lock to check whether the instrument displays normally.
其它	8	Truck frame, etc	Damaged or not. If there is any crack.
	9	Function	Check that forward & backward is normal, and if there is any abnormal noise



Warning

Never use the faulty truck

2.2 drive

(1) truck start-up

Sat down in the driving seat, pull the power switch , turn the switch of electric lock to ON position , loosen the brake pedal and select the direction switch, step the Accelerator pedal slowly, the truck will operate slowly.the speed。 Accelerator pedal on the larger, the faster speed of the truck



Warning

It is forbidden to turn and suddenly stop when handling the goods.

(2) speed cut

The operation of the drive motor speed has always been under the control of the controller speed, So when you slow release of the accelerator, the speed of the truck will slow down。

(3) turning

When the car forward, operation the tiller in counterclockwise rotation , the truck will turn counterclockwise direction, operating the rudder in clockwise rotation the truck will turn along the clockwise direction, When the truck back up, clockwise rotation operation the tiller, the turck will turn counterclockwise direction, when operating the rudder in counterclockwise rotation , the truck will turn along the clockwise direction 。

(4) braking

Release the accelerator pedal to meet deceleration; For a more rapid braking, can step on the brake pedal 。

2.3 Important notice after operation

(1) Parking: Park the truck at appointed place. Never park the truck on slope.

Ensure the following points to be achieved before leaving away the truck:

- a. Turn the steering wheel to the middle position;
- b. Turn off the key switch

(2) Clean up the truck



When cleaning up the electrical system, use compressed air but not water.

(3) Charge



Warning

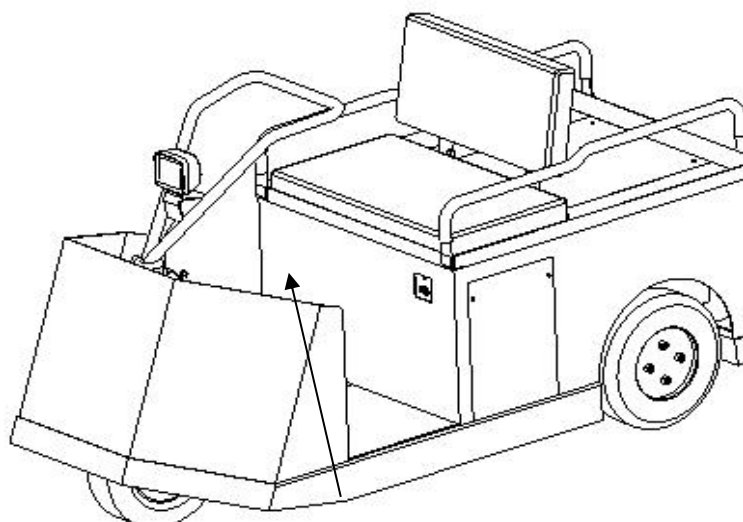
Open flame is forbidden to appear at the charge places, otherwise, explosion or fire disaster can be caused). Make a record of charge. As for the charge method, refer to the part about storage battery operation

(4) After operation, the smudge on truck shall be wiped out. Besides, the following check shall be carried out:

- a. Keep visibility of all graphics context marks such as warning signs, nameplate and notice board. These marks are able to instruct, caution and warn the operator to some degree.
- b. The situation about deformation, distortion, damage or breakage.
- c. Add lubricating oil and grease if necessary.
- d. Replace faulty components.

IV. Usage, maintenance and charge of storage battery

The truck's charger is built-in type,the ways of charging as follow :



Built-in charging

Built-in charging ways: open the cell box cover if the truck has car charger.and then put one head of charger lead into charging socket hole.put the other head into two-phase AC power supply.



Warning

Hydrogen is aggregated in the battery box when charging. For this reason, the charging condition shall be good ventilated. In avoidance of explosion and fire disaster, open flame is forbidden.

1. Initial charge

- (1) Initial charge shall be made for new battery, i.e. the first time charge. Clean up the surface of the battery before the initial charge, and then check for damage to ensure reliable connection.
- (2) Open gas cap.
- (3) When the charging equipment is able to operate normally, pour the sulfuric acid electrolyte with a density of 1.260 ± 0.005 (25°C) and a temperature of lower than 30°C into the batteries. The electrolyte level should be 15-25mm higher than the protective board. In order to reduce the temperature rise caused by chemical reaction of the electrolyte and let the electrolyte fully penetrates into the pores of the polar plates and the baffles, the batteries should be placed still for 3-4 hours, not exceeding 8 hours. The initial charging can only be conducted when the electrolyte temperature reduces to below 35°C . (When necessary, the batteries can be put into cold water for temperature reduction). After the still placement, if the electrolyte level reduces, electrolyte should be added.
- (4) The sulfuric acid electrolyte is prepared with battery sulfuric acid complying with the state standard GB4554-84 and distilled water. Never use industrial sulfuric acid and running water. The standard temperature (25°C) and density of the electrolytic solution can be converted as follows.

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

Where: D_{25} : the density of the electrolytic solution at 25°C

D_t : the actual density of the electrolytic solution at $t^{\circ}\text{C}$.

t : temperature of the electrolytic solution when testing the density.

- (5) Dry up the electrolyte spilled on the surface of battery. Connect the positive and negative poles of batteries with those of D.C. source (charger) respectively and then turn on the power. Charge with the current of 30A (the current of the first stage). After the charge voltage achieves 28.8V ($12 \times 2.4\text{V} = 28.8\text{V}$), switch to the 15A current of the second stage for continuative charge. When charging, the temperature of electrolyte shall never exceed 45°C . When the temperature raising up nearly to 45°C , reduce the current by half or stop charging temporarily. After the electrolyte temperature reduce below 35°C , continue charging. However the charge time need to be extended appropriately.
- (6) Fully charged basis: When the voltage during the second stage charging reaches 31.2V ($12 \times 2.6\text{V} = 31.2\text{V}$), the variation of the voltage is no greater than 0.005 (V). The density of the electrolytic solution reaches 1.280 ± 0.005 (25°C), no apparent changes in 2 hours and there are fine air bubbles appear violently, it can be deemed that the batteries are fully charged. The charged power capacity is 4-5 times of the rated capacity and the charging time is about 70 hours.
- (7) In order to accurately control the sulfuric acid content of the electrolytic solution, the electrolytic solution density of the batteries should be examined during the last period of charging. If there is inconsistency, adjust with distilled water or sulfuric acid with a density of 1.40. The electrolytic solution density and the liquid surface should be adjusted to the stipulated value

within two hours in the charging state.。

- (8) After the initial charging is completed, the surface of the batteries should be cleaned. Close the cover of the open cover type liquid hole plug and then the batteries can be used.。

2. Use and maintenance

- (1) In order to guarantee the service life of the batteries, the batteries in use should be fully charged. Insufficiently charged batteries must not be used. During the process of use, close attention should be paid to the discharge extent. Over discharge is prohibited---the voltage reduces to 1.7V per battery (when the total voltage reduces to $1.7V \times 12 = 20.4V$). When the density of the electrolytic solution reduces to 1.17, discharging should be stopped and charging should be conducted at once. The batteries should not be placed idle for a long period of time. The supplementary charging frequently conducted during the process of use is called common charge.。
- (2) Common charge: The first stage current of common charge is 30A and that of the second stage is 15A. The charging method is the same as that of initial charge. The charged volume is 130-140 % of the discharged volume and the charging time is about 12 hours.。
- (3) The batteries in normal use should avoid over-charge, but over-charge must be properly conducted for the batteries in following situation, i.e. balance charge。
 - a. a. The "lag-behind" batteries--- batteries with a voltage lower than that of the other batteries in the discharging process and the batteries having been repaired for failure. (When balance charge is conducted, the positive and negative poles of the "lag-behind" battery should be respectively connected with the positive and negative ends of the charger, the DC power supply, and the charge should be conducted independently.)
 - b. Balance charge should be conducted for the batteries in normal use every 2-3 months.。
 - c. Balance charge should be conducted for the batteries that have not been used for a long period of time before use.。
- (4) Equalizing charge:
 - a. Charge with a 4A current.。
 - b. When the charge voltage reaches 31.2V ($12 \times 2.6V = 31.2V$) and air bubbles occur in the electrolyte, the current should be reduced by 50% (2A) and continue to charge.。
 - c. When the batteries are fully charged, stop charging for 0.5 hour and charge again with a 1A current for one more hour.。
 - d. Stop charging for another 0.5 hour and charge with a 1A current for another one hour.。
 - e. Repeat according to item d till air bubbles occur violently in the batteries once the charger is switched on.。

3.Keep and storage

The storage battery shall be kept in clean, dry and ventilated warehouse within the temperature range of 5 to 40°C. The valid storage period is 2 years. Safekeeping shall be made within storage period according to the following requirements:

- a. Avoid direct sunlight. The distance from heat source shall not less than 2m.。
- b. Avoid contact with any harmful substance. No metal impurity shall fall inside the battery.。
- c. No inversion, no mechanical collision or heavy weight is permitted.。
- d. Storage with electrolyte is forbidden. Under special cases that the storage with electrolyte is necessary, the density and solution level of electrolyte shall be adjusted to the specified value. Whenever one month of storage period expires, a complementary charge shall be made with the common charge method.。

4.Operation of electrolyte

1. Density check

The suction type densimeter shall be used to check density. During operation, avoid spilling out the electrolyte, and do wear protection appliance.

2. Operation besides check
Consult professional personnel, especially when complementing electrolyte (dilute sulfuric acid).
3. Electrolyte leakage
As for the electrolyte leakage resulting from storage battery tilting and damage, emergency treatment shall be made at once (See emergency treatment item).

5. Operation of storage batteries during the final stage of their lifetime

- (1) Operation of storage batteries during the final stage of their lifetime
When the lifetime of storage battery is about to terminate, the electrolyte in single battery reduces very fast. For this reason, distilled water shall be complemented everyday.
- (2) Treatment of waste battery
As for the waste battery, draw out the electrolyte and decompose the battery. It can be discussed that whether the waste battery shall be recycled by the battery manufacturer. The waste electrolyte can be disposed according to relevant local rules and regulations

6. Emergency treatment

- (1) The electrolyte spills on skin: wash with large amount of water
- (2) The electrolyte spills into eyes: wash with large amount of water, and then seek help from specialized doctor.
- (3) The electrolyte spills on clothes: take off clothes right away, wash with water, and then flush with weak basic soap solution.
- (4) The electrolyte leakage: in case of electrolyte leakage outside, neutralize it with lime, strong carbonic acid soda or carbonic acid soda, and then flush with large amount of water

7. Replacement of storage battery

the replacement procedure of storage battery is as follows::

1. Open the side door of storage battery and take it down;
2. Pull down the socket connector of storage battery from the truck.;
3. Turn up the handle of battery locking mechanism to loosen the battery.
4. Pull out the storage battery from the side way and take the storage battery away with special car or using hoisting method.



Note

Handle the storage battery gently during hoisting and transportation of the battery. Otherwise it will cause damage to the battery or bring danger to human body

V. Maintenance and repair truck

1. Maintenance

Comprehensive check for truck can avoid malfunction and ensure the service life. The hours listed in maintenance procedures is based on the cases that the truck works for 8 hours per day and 200 hours per month. For the sake of safety, maintenance shall be carried out according to maintenance procedure



Notice

All the repair work shall be carried out by professional personnel
Please contact the sales department of our company if you need to adjust or replace the components.

1.1 Precautions during maintenance:



Notice

The components for replacement shall be produced completely by our company. When replacing components of the truck, the components with the same safety requirement with the original design shall be used. The lubricating oil and hydraulic oil in use shall be recommended by our company.

(1) Places for maintenance:



Notice

The places for maintenance shall be appointed and can provide other services such as hoisting and safety protection facility etc.

The places shall have level ground and good ventilation.

The places shall be equipped with fire-extinguishing devices.

(2) Precautions before repair and maintenance:



Notice

No smoking.

Arrange the self-protection work.

Wipeout the effusive oil in time.

Before adding lubricating oil, clean up the dirty oil or dust on the joint with brush or cloth.

Except certain situation, turn off the key switch and pull off the power socket.

Lower down the fork arms to the lowest point when carrying out maintenance.

Ensure no goods on the truck when demounting the high pressure oil pipe. Besides, the fork arms shall be descended to the lowest position, by this way, the pressure of hydraulic system can be released.

For the reason that there are capacitors storing a little amount of electric energy in circuit, so before contacting the binding post of the main circuit, discharge at first.

Clean the electric section with compressed air, never flush with water.

When the truck requires high-position maintenance, the altitude safety protection must be carried out for the repairing and maintenance personnel.

1.2 Inspection and maintenance before the new truck put into operation

In order to follow the industry related regulations and ensure the absolute security to the truck in the transportation, for new ex-factory truck, it is possible that there is no electrolyte inside storage battery before the first use (except the inland sale).

The electrolyte of storage battery is prepared well before the truck leave the factory, and it is filled into the storage battery by the professional personnel before the first use. First, place the truck to the site with good ventilation, open the lid of storage battery box, and open all the top plastic lids of storage battery. The plastic pot with storage battery electrolyte inside is raised using plastic funnel, and the electrolyte is poured into the storage battery in a slow way until the liquid level can be seen. After all the storage battery is filled, conduct initial charge to the storage battery timely according to the operation requirements of initial charge 4.1.

1.3 Check the capacity of storage battery: refer to the use and maintenance of storage battery.

1.4 The inspection according to the need

Clean the truck

Inspect and screw down each fastener

Inspect the damage state of wheels

1.5 check-out and maintenance in different time period

The inspection and maintenance after 50 hours ((Weekly))

Braking system	1	Foot on brake pedal to check travel is suitable or not .
Capability of electrolyte	2	Inspect the liquid level of electrolyte, pure water can be used for supplement if the liquid level is too low.
density of electrolyte	3	The specific gravity should be 1.28g/ml after charged.
Clean the storage battery	4	Cover the lid, and flush with tap water.
Inspect the contactor	5	Burnish the coarse surface of contacts using sand paper.

The inspection and maintenance after 200 hours (Monthly)

Besides the weekly maintenance, the following maintenance should be carried out, and when the parts must be adjusted and replaced, please contact with maintenance personnel of our company. (keep monthly maintenance record)

	No.	Check point	Check content
Whole truck	1	Whole status	Abnormal or not.
	2	frame	whether has transformation or fissure
Steering system, braking system	3	Operation handle	Pull the steering handle to check the flexibility and the attachment strength
	4	Brake clearance	Check the brake travel have abnormal or not .
	5	bracing wire of braking	Check the screw of bracing wire and the integrity of steel wire and wrap
	6	fastener	Function , and check cracks, lubrication and tightness of fasteners.
Storage battery, charge and electric system	7	Electrolyte	Liquid level, specific gravity and cleanness
	8	Plug	Function, whether it is damaged or not
	9	Key switch	Function
	10	Contactors	Contact performance and function
	11	direction switch、light	function
	12	Controller	Function
	13	Driving motor	Wearing status of carbon brush and selenium rectifier.
	14	Fuse	Whether it is perfect or not
	15	Wiring harness and connection terminals	Whether flexible and whether damaged or not.

Maintenance for 1200 hours (every six months)

During the maintenance for a half year, the maintenance process for three months shall be

repeated. When the parts must be adjusted and replaced, please contact with maintenance personnel of our company.

Contactor	Burnish the coarse surface of contacts using sand paper.
	Replace according to the status when the function is not well.
Motor	Wearing status of carbon brush and selenium rectifier.。
Decelerate box	Replace the gear oil
Brake	Open the drive axle , Clean the dirt and dust on friction plates of the brake, meanwhile check the wearing status of the friction plates
tyre、 bearing	Check the wearing condition, and replace them if necessary

1.6 Recommended working medium:

(1) Gear oil:

Hyperbola gear oil 85W-90 (GL-5)

(2) Lubricating grease:

Lithium grease of type 3



All kinds of depleted hydraulic oil, gear oil and grease will pollute the environment. For this reason, recycle the replaced working medium or treat according to local pertinent regulations.

1.7 Maintenance period of consumables and partial parts

item	Maintenance of content	maintenance period	remark
Weel bearing	replace	2400 hours	
Wheel	replace	2400 hours	
sealing element	replace	2400 hours	Change at any time if damaged
speed changing box	change lubricating oil	1200 hours	
drive motor	Check the carbon brush and bearing	1200 hours	

2. Common faults and trouble shooting:

(1). mechanical breakdown

Faults	Possible cause	Trouble shooting
The truck cannot start	Storage battery is used up.	Inspect, charge, or replace the storage battery
	The wire terminal is loosened.	Screw down the terminal screw
	he fuse is burn out.	Replace the fuse
	The accelerator is damaged.	Replace accelerator
The direction is ineffective and heavy	The steering device is blocked by the abnormal matter.	Clean up the foreign matter or add grease
	The bearings of steering device are worn.	Replace the bearings
Brake cannot work	The friction plates of the electromagnetic brake are damaged	Replace

LED code	1311 display	Fault explanation	Fault cause
1.1	CURRENT SHUNT FAULT (Current sensor fault).	<ol style="list-style-type: none"> 1. Vehicle operation fault makes high current spike. 2. The current sensor is out of range. 3. Controller fault. 	Reunlock the key. If the problem is still here, please change the controller.
1.2	HW FAILSAFE (Hardware security fault).	<ol style="list-style-type: none"> 1. Environmental interference is too high. 2. Self inspection or the watch dog has some problems. 3. Controller fault. 	Reunlock the key. If the problem is still here, please change the controller.
1.3	M- SHORTED Short circuit from M- to B-.	<ol style="list-style-type: none"> 1. There is inside or outside circuit between M- to B-. 2. There are some mistakes in motor wiring. 3. Controller fault. 	Check the wirings: reunlock the key. If the problem is still here, please change the controller.
1.4	SRO Operation sequence fault when starting the vehicle (SRO)	<ol style="list-style-type: none"> 1. Operation sequence fault in interlock switch, direction and key switch. 2. There is circuit broken in interlock switch or direction. 3. The delayed time of operation sequence set before is too short. 4. Operation sequence is fault or the choice of accelerator is fault when starting the vehicle. 5. Accelerator adjustment fault. 	Check the operation sequence: check the accelerator adjustment and the code parameter.
2.1	THROTTLE WIPER HI The input of the accelerator slide side is too high.	<ol style="list-style-type: none"> 1. The circuit is broken or short circuit when the accelerator input B+. 2. Accelerator fault. 3. There are some mistakes when choosing the accelerator type. 	Calibrate the input of the slide end of the accelerator and make it from high input to normal input.
2.2	EMR REV WIRING Emergency reverse lines or the inspection lines are broken circuit	Emergency reverse lines or the inspection lines are broken circuit.	Recheck the emergency reverse lines or re unlock the interlock switch.
2.3	HPD The signal is more than 20% when the vehicle is started and the controller output forbidding protection function is fault.	<ol style="list-style-type: none"> 1. Operation sequence fault in interlock switch, direction and key switch. 2. Accelerator fault. 3. The delayed time of operation sequence set before is too short. 4. There are some mistakes when choosing the accelerator type. 	Check the operation sequence, the accelerator adjustment and the code parameter.

	SRVC TOTAL	It is the time of the total maintenance timer.	Reset the usage programmer.
	SRVC TRAC	It is the time of towing maintenance timer.	Reset the usage programmer.
	TOTAL DISABLED	It is the time of total forbidding timer.	Reset the usage programmer.
	TRAC DISABLED	It is the time of towing forbidding timer.	Reset the usage programmer.
2.4	THROTTLE WIPER LO The slide side of the accelerator is too low.	<ol style="list-style-type: none"> 1. There is broken circuit or short circuit between accelerator and B-. 2. Accelerator fault. 3. Accelerator type choosing fault. 	Calibrate the input of the slide end of the accelerator and make it from high input to normal input.
3.1	FIELD SHORT The coil of the main contactor is short circuit.	<ol style="list-style-type: none"> 1. The coil of the main contactor is short circuit. 2. The field coil is short circuit between B+ to B-. 3. The field coil resistance is too low. 	Check the connector coil and field coil and re unlock the key switch.
3.2	MAIN CONT WELDED The main connector contactadhesion.	<ol style="list-style-type: none"> 1. The main connector contactadhesion. 2. The coil driving of the main contactor is short circuit. 	Check the connector and the wiring and re unlock the key switch.
3.3	FIELD OPEN The connecting of the field winding is open circuit.	<ol style="list-style-type: none"> 1. The connecting of the field winding is open circuit. 2. The field winding is open circuit. 	Check the connector and re unlock the key switch.
3.4	MISSING CONTACTOR The main contactor has not been installed.	<ol style="list-style-type: none"> 1. The main contactor coil is open circuit. 2. The main contactor has not been installed. 3. The wire connecting with the main contractor has been open circuit. 	Check the wire and re unlock the key switch.
4.1	LOW BATTERY VOLTAGE The battery voltage is low.	<ol style="list-style-type: none"> 1. The battery voltage is lower than the controller's minimal work voltage. 2. The battery terminal has been corroded. 3. The wire terminal of the battery or the controller has been loosening. 4. The controller is broken. 	Make the battery voltage higher than the minimal work voltage.
4.2	OVERVOLTAGE The battery voltage is too high.	<ol style="list-style-type: none"> 1. The battery voltage is higher than the minimal work voltage of the controller. 2. The battery is still joined when the 	Make the battery voltage lower than the cut-off work voltage of the controller.

		vehicle is working.	
4.3	THERMAL CUTBACK Thermal temperature is cut back.	1. The temperature is more than 85°C or less than -25°C. 2. The vehicle is overloaded. 3. The controller installation is fault.	Renew the temperature to normal.
4.4	ANTI-TIEDOWN The optioned switch 1 is closed when started.	1. Mode optioned switch is short circuit with B+. 2. The mode optioned switch is limited in mode 4 or mode 2.	Reset up mode 1.
	MOTOR HOT The motor is overheated.	Excitation resistance is higher than the set resistance when the motor is overheated.	Make the excitation resistance is lower than the set resistance when the motor is overheated.
	MOTOR WARM The motor is over hot.	Excitation resistance is higher than the set resistance when the motor is overheated.	Make the excitation resistance is lower than the set resistance when the motor is overheated.

LED display code example, (2,4): means that LED flickers twice firstly and stops for a while and flickers another four times.

VI. The store, transportation and loading of truck

1. Loading and unloading of truck:

Before loading the truck, check out the nameplate for the total weight of truck to choose appropriate hoisting handling equipment. The hoisting of truck shall be kept level, and landing shall be kept slow and stable. The personnel around shall watch for safety. One of the personnel is responsible for conducting.

2. Transportation of truck:

If the truck needs to be transported for a long distance, support the side near to driver of truck with square timber to lift the driving wheels of truck from the ground. The two front wheels of truck shall be fixed stably by sphenoid wood block. Fasten the truck to transport vehicle with ropes.

3. The store of truck:

If the electric pallet truck is not used for over two months, it should be placed in the room which is in good ventilation, no frost, clean and dry; also the following measures should be taken:

Clean the truck thoroughly.

Lift the forks completely for several times, check it is normal or not.

Lower the forks to the lowest position.

Support the side near to driver of truck with square timber to lift the driving wheels of truck from the ground.

Apply a layer of flimsy oil or grease on all the bared surface of mechanical parts.

Lubricate the truck.

Check the status of storage battery and electrolyte, and imbrue the non-acid lubricating grease to the binding post of storage battery.

All the electrical contacts should be sprayed using appropriate contacts spray.

Appendix I

1. packing list of BD05 Electric Platform pallet truck

Consignee:

manufacturing number:

contract number:

date of production:

Serial number	Cargo name	Number of units	Net (kg)
1	BD05 tractor	1	Complete machine
2	Accessory bag	1	Technical documents, accessories and spare parts

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

- | | | |
|---|----------------------------|----------|
| ① | BD05 operating instruction | 1 volume |
| ② | BD05 Packing list | 1 copy |
| ② | Packing list | 1 copy |
| ③ | certificate of quality | 1 copy |

2. Accessory and spare parts

NO.	Designation	Use part	Quantity	Remark	Designation
1	Electriclock key	Open electric lock		2	
2	Charging cable	charger		1	
3	Fuse	Electrical equipment	10A	1	
4	Fuse	Electrical equipment	100A	1	
5	Fuse	Electrical equipment	180A	1	

forwarding unit:

