

KINLIFT ELECTRIC PALLET STACKER
KLA10I/15I/20I/25I/30I/35I/38I/40I
Operation and Maintenance Manual



Jiangsu King-lift Equipment Co., LTD

2024ver.1

Foreword

- This manual aims to let you know more about your forklift.
- This manual includes Correct operation, simple maintenance and daily inspection.
- Read this manual carefully before operation to ensure safe and effective work through proper driving and maintenance.
- Due to product improvements, the contents of this manual may differ from the actual situation.
- This manual should accompany the forklift. When renting or transferring your forklift, please keep this manual together with the vehicle.
- Do not use three party parts, because only the original parts can guarantee the quality of the forklift.
- If you have any questions, please contact with our after-sales department.







and



signs are very important to your safety and the safety of others, please follow

these instructions.

 <p>Danger</p>	<p>Indicates an imminent hazardous situation which, if not avoided, will result in death or serious injury and you must follow the instructions.</p>
 <p>Warning</p>	<p>Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury and you must follow the instructions.</p>
 <p>Notice</p>	<p>Indicates a potentially hazardous situation, which may result in minor or moderate injury if not avoided, and you must follow the instructions.</p>
 <p>Note</p>	<p>Instructions related directly or indirectly to personnel safety and forklift maintenance.</p>

This vehicle is limited to use in factory plants, scenic areas, playgrounds.

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I.About safety

Safety is your business and responsibility.This chapter mainly introduces the basic safety regulations and warnings of standard forklifts in normal use,but it is also applicable to forklifts with mast and accessories of special specifications.

1.The main purpose of the forklift

1.1 The main purpose of the forklift

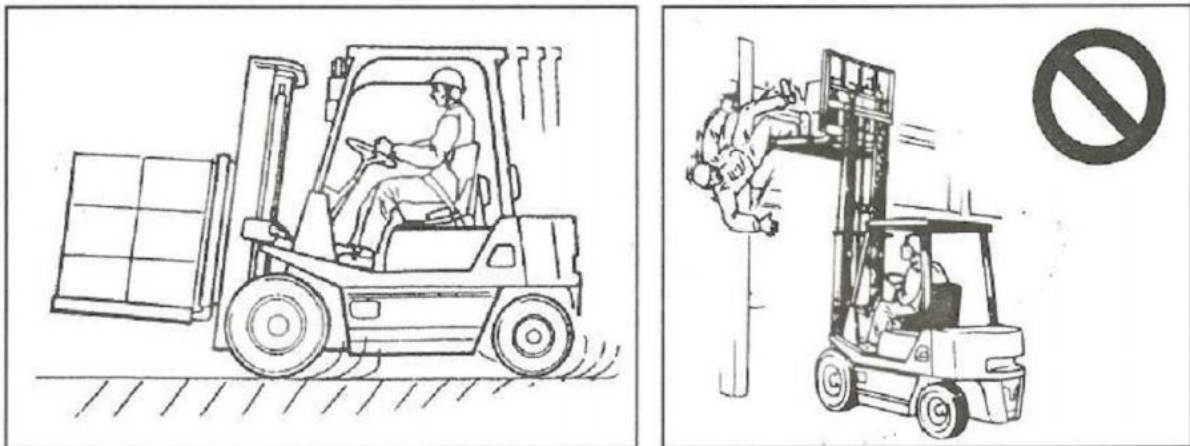
The main purpose of a forklift is to move cargo placed on pallets and stack them to a certain height. In addition,after equipping the forklift with suitable accessories,it can also be used to carry and stack cargo that are not placed on the pallet.

1.2 Prohibition of use outside of purpose

Use outside of purpose refers to driving after carrying people,lifting people very high,or towing other vehicles,etc.The use methods prohibited in this manual are not allowed to be used.

Examples of use outside of purpose

- *Person standing on the forks or pallet,raised.
- *Person stands on the pallet to hold down the cargo.
- *Directly hang the wire rope on the fork to lift the cargo.
- *Towing other vehicles.
- *Use forks to push cargo or other vehicles.
- *Use the fork to open and close the doors of other trucks,etc.



1.3 Customers are not allowed to modify the forklift without the consent of the manufacturer;After the modification of the forklift,the corresponding nameplate and other information should also be changed, recorded and saved.

2.The use place and working environment of the forklift

2.1 Ground conditions

The place where the forklift is used should be a flat and solid road or ground,with good ventilation.

The performance of the forklift depends on the ground conditions,the operating speed should be adjusted appropriately,and special attention should be paid when driving on ramps or rough roads.



Warning

*For vehicles running on muddy roads,ensure that they can stop in time.

*Avoid rocks and trees and slow down when unavoidable.Be careful not to damage the vehicle chassis. When running on icy and snowy roads,use anti-skid chains to avoid rapid acceleration,sudden stop, and sharp turns,and the driving speed should be controlled by the accelerator pedal.



Warning

*After installing anti-skid chains,the driving force of the forklift can be increased,but the sideslip performance is reduced,so special attention should be paid.

2.2 Climatic conditions



Warning

*In the case of strong wind,try to avoid the high lifting action of the mast to avoid the cargo falling and causing accidental injury to the driver.

2.3 Measures to deal with cold and heat.

2.3.1 Oil

Use oil suitable for the ambient temperature.

3.Safety issues before use

3.1 Qualification for operation



Warning

*Only trained and approved operators are allowed to operate the forklift.

*Even if the parameters are the same,the characteristics of the braking,acceleration and hydraulic operating handles may be different for each forklift.Read this manual and the labels on the vehicle carefully and drive the forklift after familiarizing yourself with various operations.

3.2 What to wear when driving a forklift



Warning

*Please wear workwear,safety shoes and a safety helmet when driving a forklift.

*For safety,please do not wear loose clothes,so as not to be caught and cause unexpected danger.

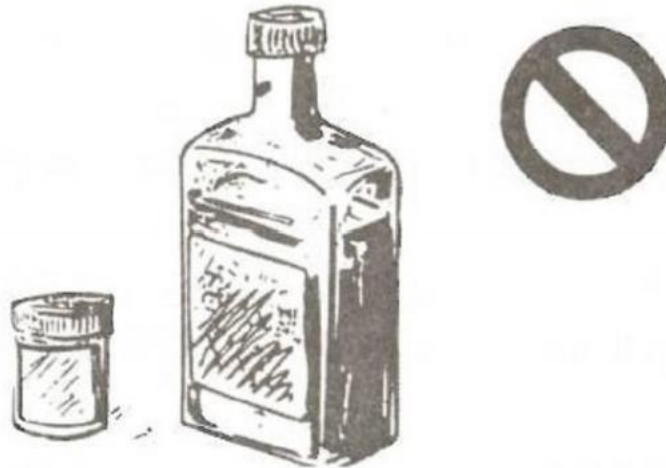


3.3 Drinking and driving is strictly prohibited



Warning

*Do not drive a forklift when you are tired,distracted,under narcotics or after drinking alcohol.



3.4 Safety in the workplace



Warning

- Keep the road in good condition,the road should be smooth.
- Due to safety requirements,the workplace must have sufficient light sources.
- When operating on the platform or dock springboard,there is a danger of the forklift tipping over.Please use pads or other protective measures to prevent tipping.

3.5 Keep the cab clean



Warning

- The cab should always be kept clean
- Do not operate the forklift when hands are wet or oily.
- Do not place tools or other metal objects in the cab,which will interfere with the operation of the joystick or pedals.

3.6 Integrity of the forklift



Warning

- When the forklift leaves the factory, it should be equipped with a top protection frame and a shelf



Notice

- The top protection frame is used to protect falling objects. It should be noted that the top protection frame is used to protect forklift from the impact of falling small objects, boxes, etc., but it cannot block the impact of falling with a rated load. Take precautionary measures against falling objects.



Warning

- Without the written approval of our company, it is not allowed to modify or add any working device to the forklift, otherwise it may affect the rated load or safe operation.
- Do not install any parts that block the driver's view.

3.7 Regular maintenance



Warning

- Perform daily inspections and periodic inspections.



Warning

- When the forklift is found to be damaged or faulty, stop operating the forklift and notify the maintenance personnel of the condition of the forklift in time. Do not operate the forklift until it has been thoroughly overhauled.

3.8 Avoid fire



Warning

- In order to prevent fire accidents or other unpredictable situations, fire extinguishers should be configured and operated in accordance with the requirements for the use of fire extinguishers.

3.9 Prohibition of overloading



Warning

- Do not overload. Observe the rated load and load curve of the forklift and keep the center of gravity of the cargo at the center of the load.



Notice

- The rated load refers to the maximum load placed at the load center of the fork



3.10 Use proper pallets



Warning

- Use pallets of appropriate size and strength to carry the load.
- Make sure the cargo is secured on the pallet and have the proper shape.
- It is forbidden to move cargo without pallets.

3.11 Before driving a forklift, the driver needs to confirm the following

- *Whether the oil level in the fuel tank is appropriate.
- *Whether the battery fixing structure is correct.
- *Whether the fork, mast, frame, chain and top protection frame are in a safe state.
- *Whether there is oil leakage in the hydraulic system.
- *Whether the tires and rims are abnormal.
- *Whether the seat belt is buckled correctly.
- *Confirm that the seat is fixed and secure.



4. Safety issues in use and operation

4.1 Precautions when starting up



Warning

- Adjust the seat position to facilitate manipulation by hands
- Make sure that no one is on, off, in front of, or behind the forklift.
- Apply the handbrake.
- Depress the brake pedal.



4.2 Safety conditions around forklifts



Warning

- When carrying bulky cargo and the view is not good, please drive in reverse or be guided by others
- When driving in reverse, turn your face to the rear and drive after checking the rear directly. The mirrors and the reverse buzzer are auxiliary devices
- When driving a forklift in a narrow passage, there should be personnel to guide it.
- The driver should stop at the intersection or other places where the sight is obstructed, and drive when it is sure that there is no one around the forklift.
- Make sure that the forklift has a sufficient safety distance from the side of the road or the edge of the platform to prevent the forklift from falling.
- Forklifts are different from cars. Forklifts are rear-wheel steering, and the driving speed should be reduced when approaching the steering.



4.3 Prohibition of reckless driving



Warning

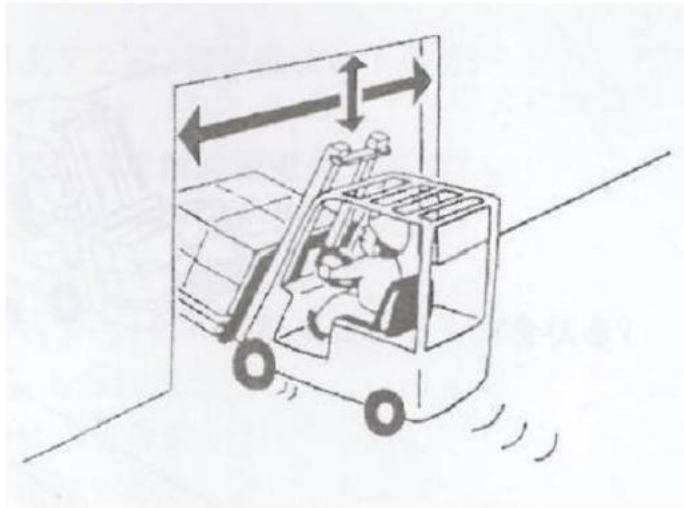
- Do not turn on the key switch with the accelerator pedal depressed.
- Do not start, brake or turn suddenly. Sudden starting or braking will cause the cargo to fall, and sudden turning will cause the forklift to tip over and cause serious accidents.
- Whether fully loaded or unloaded, operate the hydraulic control handle slowly. When the fork is at a high position, if the handle is operated suddenly, it will cause the danger of the cargo falling or the forklift truck tipping over.



Notice

- Do not run over barriers or obstacles scattered on the road.
- When driving past other forklifts, reduce speed and honk.
- Do not drive on soft ground
- Reduce vehicle speed when driving on slippery, uneven or sloped surfaces.
- Make sure there is some clearance between the mast and the roof and the doorway.





4.4 It is forbidden to drive with the fork raised



Warning

- Do not drive the forklift when the forks are raised, as this may create an unstable condition and possibly cause the forklift to overturn.



4.5 Do not work with fork tips



Warning

- Do not push or lift the cargo with the fork tips. When lifting the cargo with the fork tips, it may cause the forklift or the cargo to shake.

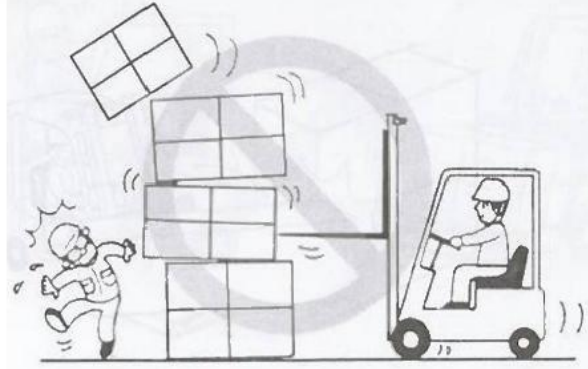


4.6 Prohibition of push-pull operation



Warning

Do not use the fork to push or pull the cargo, otherwise the cargo may be damaged or fall.



4.7 Driving on ramps



Warning

- When driving a forklift on a ramp, observe the following rules:
Loaded: drive forward when going uphill and drive backward when going downhill.
No load: drive backward when going uphill and drive forward when going downhill.
- When the forklift goes downhill, drive with the brakes and drive carefully to ensure that the forks do not collide with the ground.
- Do not perform steering or loading and unloading operations on ramps, otherwise the forklift may tip over.

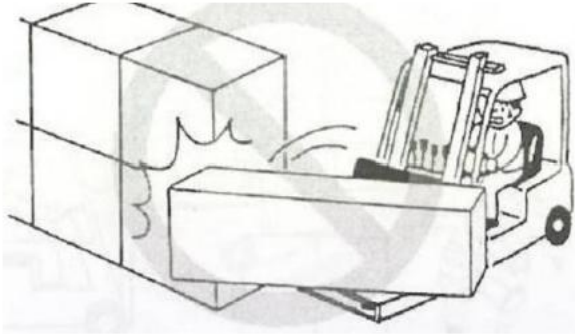


4.8 Prohibition of unbalanced load stacking



Warning

- When the forklift is stacked, it is necessary to ensure the safety and stability of the cargo. The fork must be inserted into the pallet accurately, and the center of gravity of the cargo must be consistent with the center of the forklift.
- When carrying unbalanced cargo, it is easy to cause the cargo to fall and the forklift to tip over.



4.9 Prohibition of Forklift Truck Passengers



Warning

- It is strictly forbidden to carry people on forks or pallets.
- People other than the driver are not allowed to ride in the car
- It is forbidden to use human beings as substitutes for counterweights.
- It is forbidden to stand on the cargo and



pass under the forks.



4.10 Prohibition of access to the mast



Warning

- Do not allow any part of the body to enter the mast or between the mast and the body.



Warning

- Please place your body under the top protection frame and do not allow any part of your body to stick out of the vehicle body.



4.11 When the mast is tilted forward, the fork is prohibited from rising.



Warning

- When the mast is tilted forward, it is not allowed to lift the cargo and start the forklift. Before lifting the cargo or starting the forklift, the mast should be tilted backward to stabilize the cargo. When driving (with or without load), the distance between the fork and the ground should be kept at 150-200mm.
- When with load, the mast cannot be tilted forward.
- When lifting cargo, stop first.
- Do not load or unload cargo when the forklift is tilted.

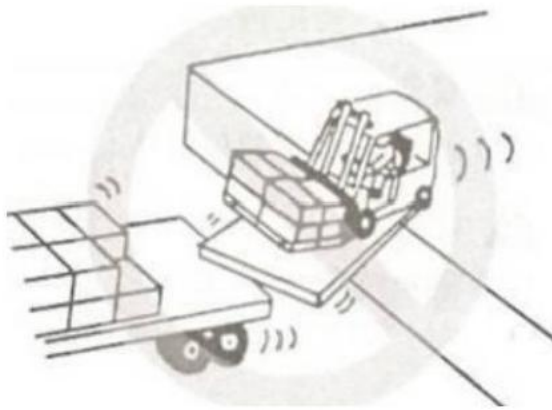


4.12 Packing operation



Warning

- Forklifts can only be loaded and unloaded when the handling vehicle is already secured between it and the platform
- Fix the bridge board and check its strength before starting work.
- Slow down when getting in and out of the carriage and pay attention to the safety of the bridge board



4.13 Getting on and off the forklift



Warning

- Jumping on and off the forklift is prohibited.
- When getting on and off the forklift, hold the handle with your left hand and step on the pedal with your foot
- Do not hold the steering wheel or joysticks getting on and off the forklift.
- Do not get on or off the truck from the side with the joystick.



with
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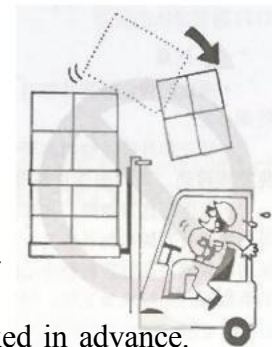
4.14 Prohibition of Over height Cargo



Warning

• The cargo should lean against the shelf, and the height of the cargo is not allowed to exceed the shelf rack, otherwise, the cargo may slip towards the operator, and the driver may be injured by the cargo.

- In order to prevent collapse of stacked cargo, they should be fixed in advance.



4.15 Chain slack



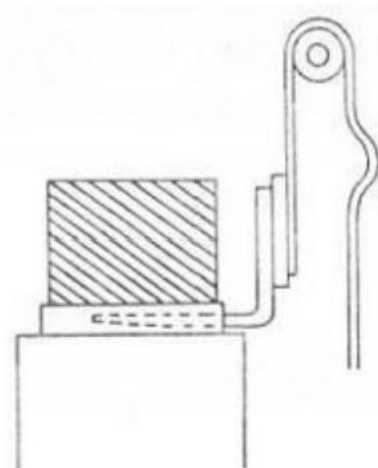
Warning

- When the chain is slack, do not pull out the fork from the pallet, otherwise it may cause the cargo to fall or the forklift to tip over



Notice

- When the chain is slack, pull the lifting handle up a little to raise the fork to correct the slack in the chain, then the fork can be pulled out from the pallet.
- If the chain wears out during use and the change in chain pitch exceeds 2% of the standard value, the



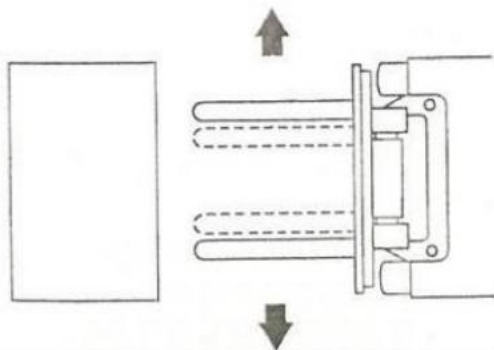
chain must be replaced to ensure load safety.

4.16 Fork adjustment



Warning

- According to the size of the cargo pallet, adjust the spacing of the forks to the most suitable position, and be careful not to press the hand when adjusting.
- After the distance between the forks is adjusted, fix the forks with the fork fixing pins. If it is not fixed, the fork is easy to move during driving, and the cargo may fall or be crushed.



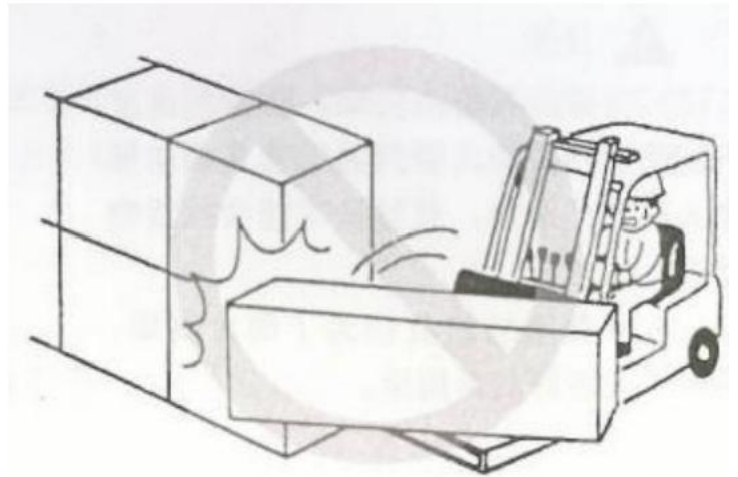
4.17 Handling of extra-wide cargo



Warning

When handling extra-long and extra-wide cargo, the driver must be particularly careful.

- Slow down when turning and lifting the cargo to avoid moving the cargo and pay attention to the surrounding safety.
- When handling extra-wide cargo, the forklift should be equipped with appropriate widened fork racks and extended forks. The carrying capacity of the widened forklift is within the specified load, and its carrying capacity is the same as that of the standard forklift, but the center of the cargo should coincide with the center of gravity of the forklift as much as possible, and the offset from the center of the forklift should be controlled within 100mm. The carrying capacity of the extended fork should be strictly in accordance with the requirements of the load curve. Within the specified load center, its carrying capacity is the same as that of the standard fork. Once the load center



moves forward,the load must be lowered.

4.18 Unloading with bare hands is prohibited



Warning

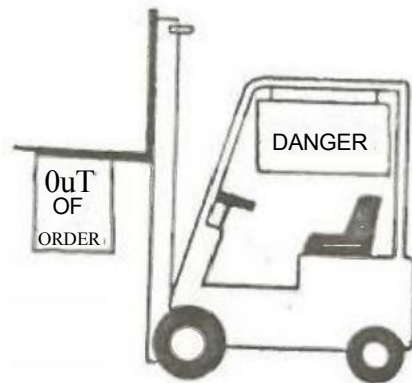
- Do not unload the cargo with bare hands,there is a danger of the cargo falling.

4.19 Parking of breakdown vehicles



Notice

- If the forklift is parked on the side of the road,a warning or "failure"mark should be made on the vehicle and the key should be pulled out.
- When the fork cannot be lowered due to failure,an obvious mark should be made to prevent collision with other vehicles and pedestrians.

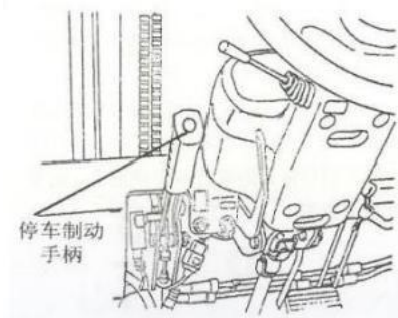


4.20 Precautions before leaving the forklift after work:



Notice

- The mast should be tilted slightly forward,and the forks should be lowered naturally,otherwise there is a danger of tripping or hurting the body.
- Shift handle should be in neutral position.
- Pull on the parking brake handle.
- Turn off the key switch and remove the key.

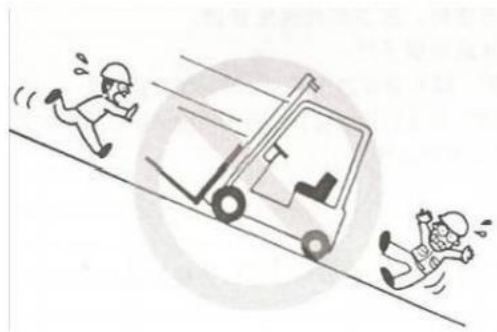


4.21 Parking



Warning

- Please stop at the designated place.
- The parking place must have sufficient strength and not hinder traffic safety.
- It is forbidden to park in or near flammable and explosive places.
- Parking on ramps is prohibited due to the unpredictable movement of the forklift. If it is necessary to stop on a slope as a last resort, in addition to performing the usual parking order, brake blocks should be added to the tires to prevent the forklift from moving.



4.22 Noise

The maximum noise value outside the forklift truck is not greater than 75db(A), and the measurement method is in accordance with the JB/T3300 standard. Measured with a sound pressure meter at the driver's position and with sound power at the surroundings.



Warning

- Rough or uneven working roads and large tire deformation will increase the noise value.

5. Safety issues in maintenance

5.1 Maintenance place



Warning

- It should be a designated place and can provide sufficient equipment and safety protection facilities for service agencies.
- The place should be level ground.
- The place should be well ventilated.
- The place should have fire extinguishing equipment.

5.2 Precautions before maintenance



Warning

- No smoking
- Wear all kinds of protective equipment (hat, glasses, gloves and safety shoes) and suitable clothing.
- Clean up the outflow of oil, liquid, etc. in time.
- When adding lubricating oil, the original dirty oil or dust on the joint should be cleaned with a brush or cloth first, and then add lubricant.
- Except in some cases, the key switch should be turned off and the battery plug should be pulled out.
- When performing maintenance on the forklift, the forks should be lowered to the ground.
- Clean electrical components with compressed air

5.3 Precautions for maintenance



Warning

- Care should be taken not to put your feet on the forks and do not trip over
- When the fork is raised, pads or other items should be placed under the inner mast to prevent the fork and mast from falling suddenly.
- Open and close the foot pedals and hood cover carefully to avoid pinching fingers.
- When the work cannot be completed, it should be marked so that the work can continue later.
- Use proper tools, not makeshift tools.
- Because the hydraulic circuit has a high pressure, do not carry out related maintenance work before reducing the internal pressure of the oil circuit.
- When you are burned by high-voltage electricity, you should seek medical treatment immediately.
- Don't use the mast as a ladder.
- It is strictly forbidden to put your hands, feet and body between the frame and mast.
- When maintaining the hot engine, please note that the temperature of the transmission or hydraulic system may be high, so the vehicle should be cooled down before maintenance to prevent accidental burns.

5.4 Checking and replacing tires



Warning

- The work of dismantling and installing tires should be carried out by the service organization designated by our company.
- The tires should be flushed and deflated by a professional.
- Wear goggles when using compressed air.
- When removing a pneumatic tire, do not loosen the bolts and nuts at the junction of the rim, because there is high pressure gas inside the tire, and loosening of the bolts, nuts and rim can create a very dangerous situation.

5.5 Using jacks (when changing tires)



Warning

- When jacking up the forklift, do not get your body under the forklift.



Warning

- Before jacking up the forklift, make sure that the forklift is clear of people and loads.
- When the wheel of the forklift is off the ground, it should stop continuing to rise, and pad the pad under the forklift to prevent the forklift from falling.
- Before lifting the forklift with a jack, measures should be taken to prevent the forklift from sliding.

5.6 Discharge Requirements



Warning

- The waste liquid on the forklift should be recycled according to the regulations of the local government and should not be discharged at will.

6. Safety issues when using batteries

Our company's battery counterbalance forklift uses lithium iron phosphate battery. To prevent accidents such as leakage, heat generation, fire, performance degradation or lifespan degradation, and explosion of the battery cell, please take precautions against the following:



Warning

6.1 Charger charging

- Please use the charger configured by our company to charge the battery. There is a communication protocol between the charger and the battery, and the battery cannot be charged with other chargers.



Warning

6.2 Excessive discharge

- When the battery power of the vehicle is 20%, it is necessary to charge the battery in time. Excessive discharge will lead to the loss of battery performance and battery function, and the battery life will be reduced.

6.3 Protection against electric shock



Warning

- The battery has high voltage. When installing and maintaining it, do not touch the battery conductors, which can cause severe burns.

6.4 Correct connection



Warning

- When the battery is being charged, the positive and negative poles cannot be reversed, otherwise it will cause high temperature, burning, smoke or explosion.

6.5 It is forbidden to put metal objects on the battery



Warning

- Do not short circuit due to positive and negative contact caused by bolts or tools, this will cause injury and explosion.

6.6 Prohibition of excessive discharge



Warning

- Do not use the forklift until it cannot move, otherwise the life of the battery will be shortened. When the battery capacity warning indicator flashes continuously (the battery capacity shows 20 %), the battery is about to be charged.

6.7 Keep it clean



Warning

- Keep the battery surface clean.

6.8 Cleaning



Warning

- Do not wash the forklift and battery, otherwise it will cause circuit failure and battery damage.

6.9 sea water



Warning

- The battery should not be wetted by rain or sea water, as this will damage the battery or cause a fire.

6.10 No disassembly



Warning

- Do not disassemble the battery.
- Do not repair the battery.

6.11 Storage



Warning

- When the battery is not used for a long time, it can be stored in a clean, dry and ventilated room with an ambient temperature of -5°C - 35°C and a relative humidity of no more than 75%. Avoid contact with corrosive substances and keep away from fire and heat sources. The battery remains at 50% to 70% of its nominal capacity. It is recommended to charge the stored battery every 6 months.

6.12 Disposal of waste batteries



Warning

- When disposing of discarded batteries, please contact our after-sales department.

7. Signage

The label attached to the vehicle is used to explain the use method and precautions of the vehicle. It's as much about you as it is about the vehicle. After the label comes off, reattach it immediately.

7.1 Safety signs



Warning



7.2 Code of Use Signage



Warning




warning

- Personnel without formal training shall not operate the forklift
 - Carefully read the operation guide and all signs, and get familiar with the forklift. The operation guide is provided with the forklift
 - The forklift must be inspected regularly before and after each use, and it is not allowed to operate the forklift with fault or damage
 - Only properly trained repair personnel can repair the forklift
 - Be sure to install roof protection frame and shelf to prevent heavy objects from falling
 - Before the forklift works, ensure that the battery is fully charged, and all switches, connectors, operating handles, pedals, tire pressures and fasteners are in trouble-free state
 - The forklift startup process is as follows: Release the hand brake, Open the switch, Set the direction switch handle to the forward or backward gear, Just step on the accelerator
 - When working in a narrow place or on a harsh road surface, Attention should be paid to spacing to avoid collision
 - When carrying goods, the weight and size of the goods shall comply with the load curve, Keep the center of gravity of the goods at the center of the mast, and do not overload or offset
 - When driving with goods, the fork is about 300 mm from the ground, the mast leans back to the maximum position, and the goods are close to the front end of the fork arm. It is prohibited to brake and turn sharply when driving with goods
- After the work is completed, stop the forklift, set the direction switch to "N", drop the fork to the ground, tighten the hand brake and disconnect the power switch
- When the battery power is insufficient, it should be charged in time according to the instructions to avoid overcharging and overdischarge
 - During the use of the forklift, if the controller is out of control, snap the emergency stop switch immediately to disconnect the main power supply
 - When lifting the battery box, the four holes on both sides of the box shall be lifted with hooks at the same time. It is strictly prohibited to lift it with only two hooks to avoid damage to the box, deformation and battery damage

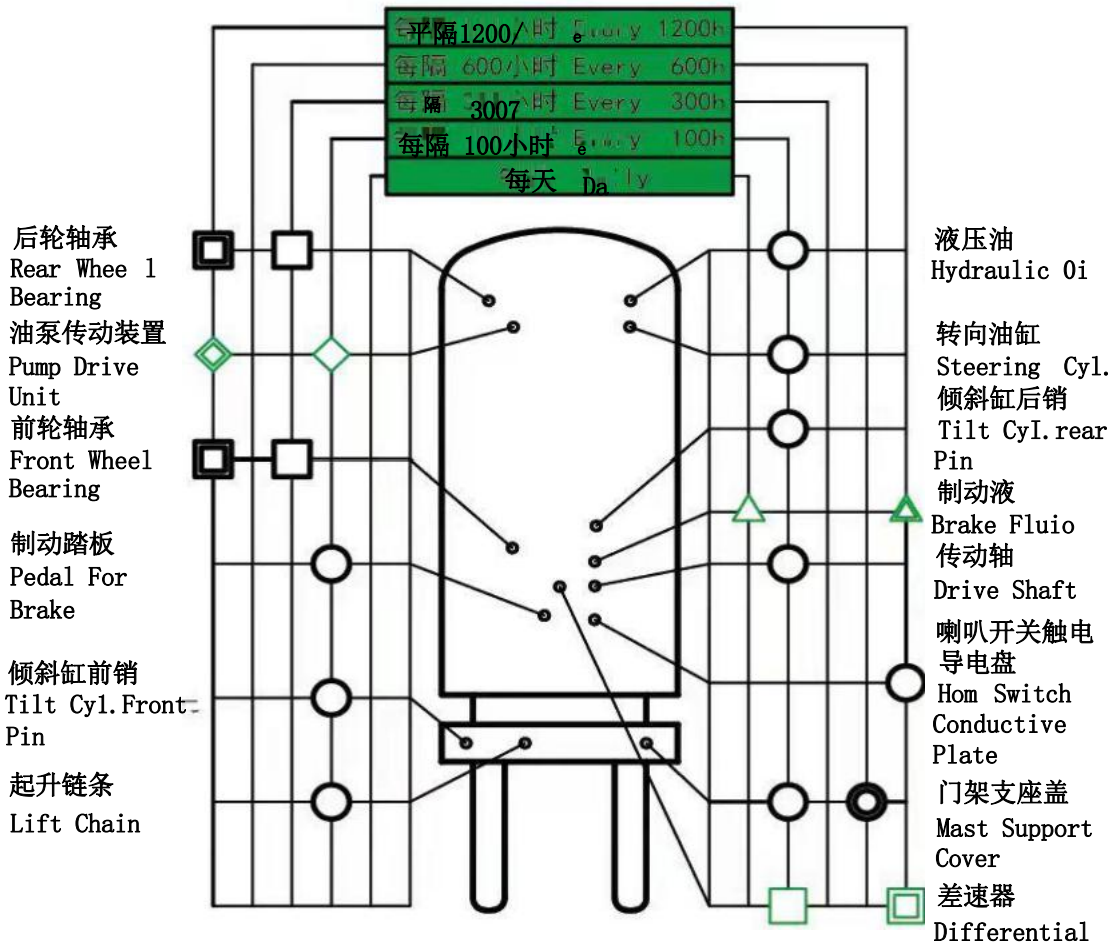
7.3 Forklift nameplate



KINLIFT		ELECTRIC PALLET STACKER	
Model	<input type="text"/>	Configuration No.	<input type="text"/>
Rated capacity	<input type="text"/>	Total Weight	<input type="text"/>
Rated Voltage/ Capacity(5h)	<input type="text"/>	Total Weight (without battery)	<input type="text"/>
Rated Power	<input type="text"/>	Battery Weight (Max)	<input type="text"/>
Serial No.	<input type="text"/>	Battery weight (Min)	<input type="text"/>
		The Year of Construction	<input type="text"/>

 **JIANGSU KING-LIFT EQUIPMENT.,LTD.**
ADD: Jiexi Industrial park, Jiepai Town, Danyang City,
Jiangsu Province, 212323, China

7.4 Lubrication system label

润滑系统提示

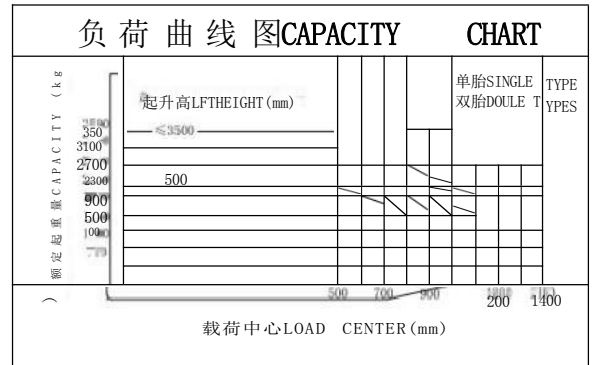
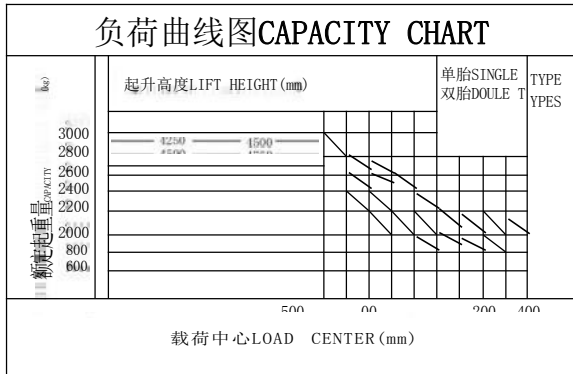


	C	润滑脂 Grease		齿轮油 Gear Oil		△	制动液 Brake Fluid
		车辆轴承润滑脂 Wheel Bearing Grease		液压油 Hydraulic Oil		○	
△		补充 Supply				▲	更换 Replace

7.5 Load curve diagram plate



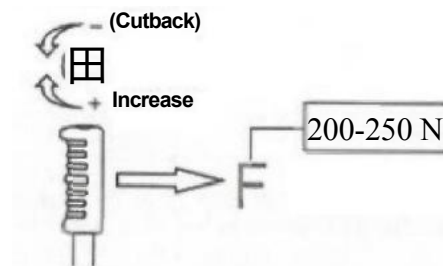
Warning



7.6 Parking brake adjustment sign



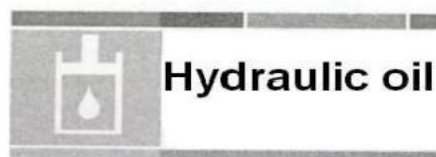
Warning



7.7 Add hydraulic oil label



Notice



7.8 Lifting signs



Warning

Lifting position



7.9 Prohibition to enter the space behind the mast sign



Warning



7.10 Watch out for hand injured sign



Warning



7.11 Battery label(example)

Battery

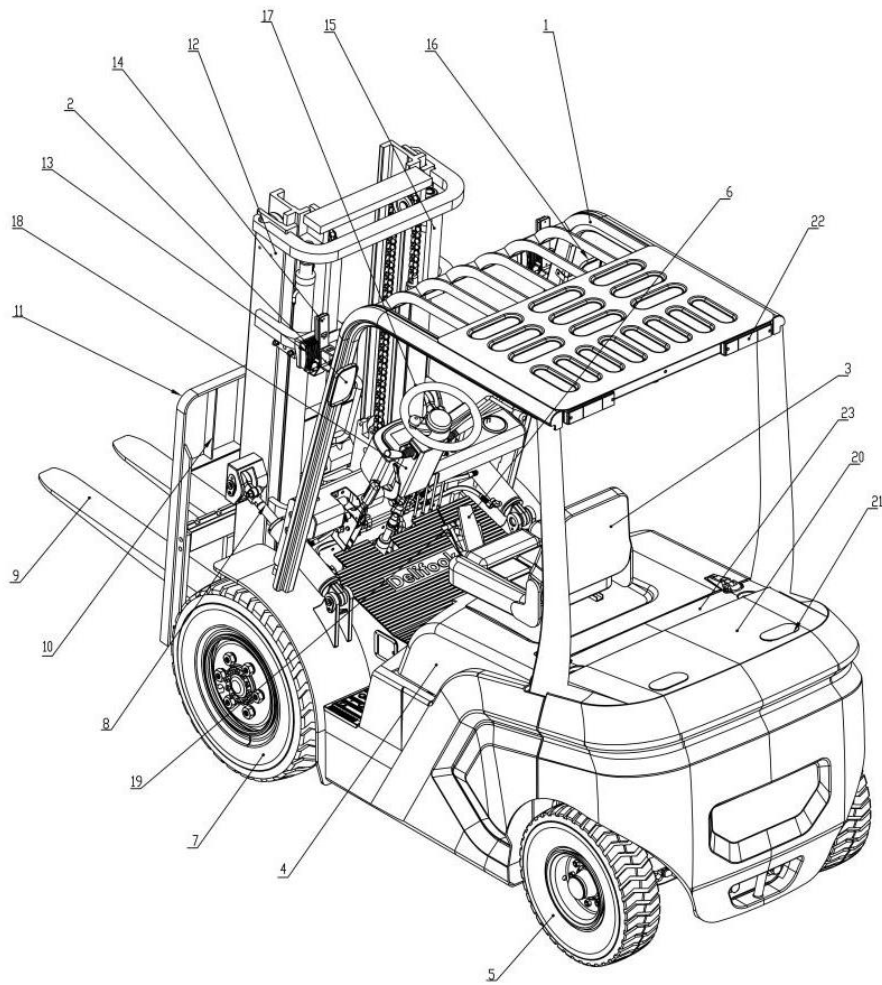
Type:80V220Ah

Weight:160Kg

Rated voltage:80V

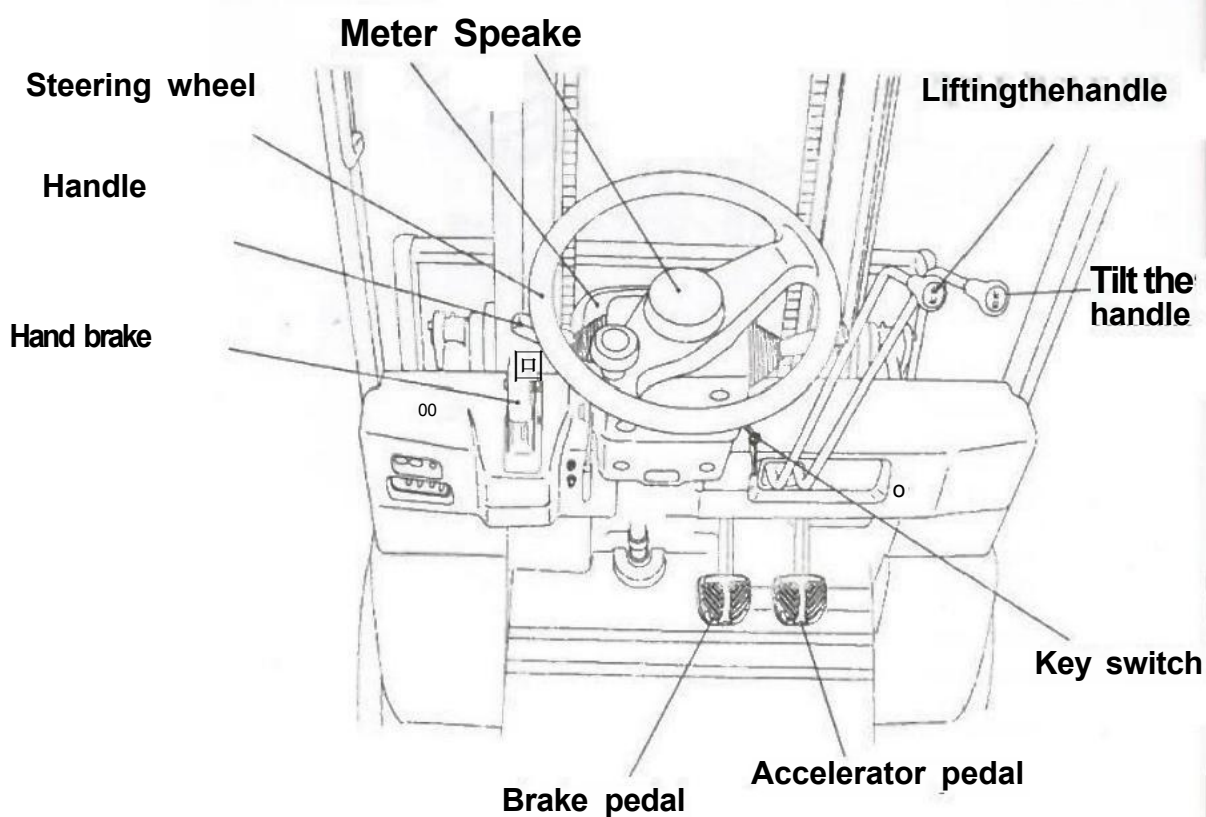
Rated Capacity:220Ah

I. Operating device and method of use



- 1.Top protection frame
- 2.Mirrors (left)
- 3.Seat
- 4.Battery cover plate
- 5.Rear wheel
- 6.Pedal
- 7.Front wheel
- 8.Tilt cylinders
- 9.Fork
- 10.Goods fork bracket
- 11.Backrest
- 23.Kingpins

- 12.Mast
- 13.Headlight
- 14.Front combination lamp
- 15.Chain
- 16.Rearview mirror
- 17.Steering wheel
- 18.Dashboard
- 19.Pedal
- 20.Counterweight
- 21.Rear Cover
- 22.Rear combination lamps



1.Switch part

1.1 Key switch

OFF:In this position the switch is off,and the key can be inserted and withdrawn.

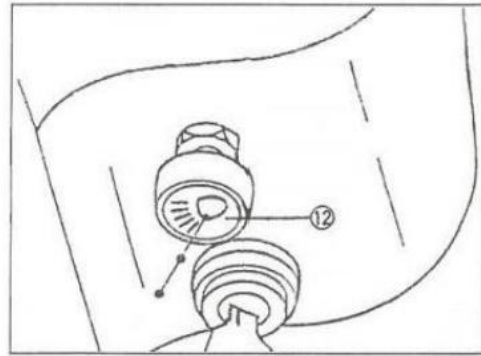
ON:Rotate to the right from the off position,the switch turns on,and the forklift starts.



Warning

- Do not depress the accelerator pedal while the key switch is on.

- The keys must be removed when leaving the forklift.
- When parking the forklift or charging the forklift,remove the key.



1.2 Lighting control handle

Rotate or push and pull the handle back and forth to control different lights.

1.3 Emergency stop switch

It is installed on the left side of the instrument,which is easy for the driver to reach.In case of emergency,the emergency stop switch can be pressed to cut off the power supply.

1.4 Seat switch:installed under the seat,the driver sits on the seat and the switch is turned on,so that the forklift can operate normally.

2.Control part

2.1 Steering wheel (2)and steering wheel handle ball (1)

The steering wheel is operated in the usual way,which is to say,when the steering wheel is turned to the right,the forklift turns to the right;when the steering wheel is turned to the left,the forklift turns to the left.The steering wheels are mounted on the rear of the forklift,which allows the rear of the forklift to swing outward when turning.

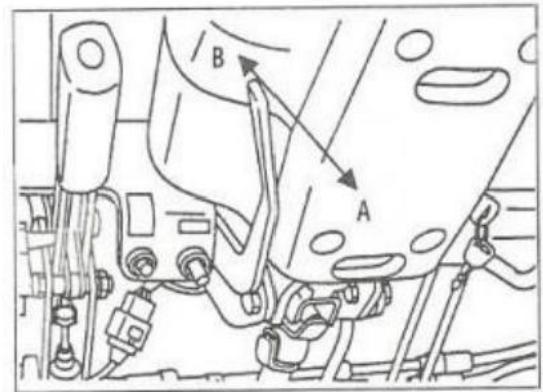
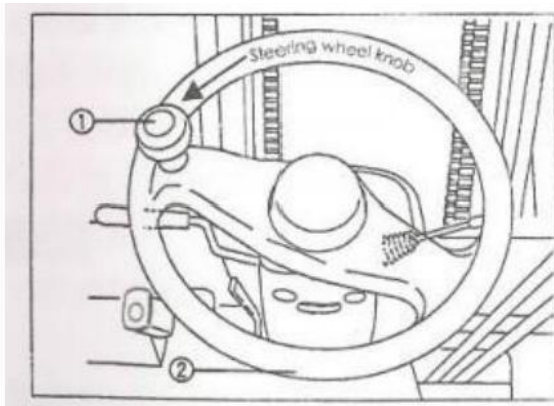
When turning,hold the steering wheel handle ball with your lefthand,while your right hand can be placed on the multi-way valve control handle or on the steering wheel.

Fully hydraulic steering and steering wheel tilt are standard equipment on the forklift.



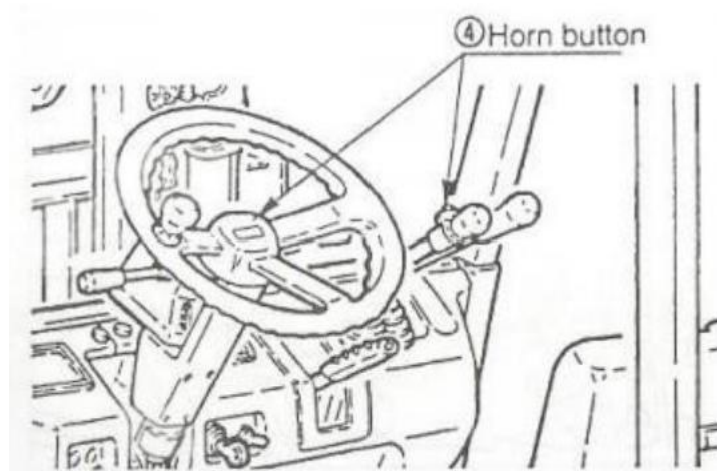
Notice

- Adjust the steering wheel to the best angle according to the driver's position.
- After adjusting the tilt angle of the steering wheel,lock the steering column with the tilt handle.

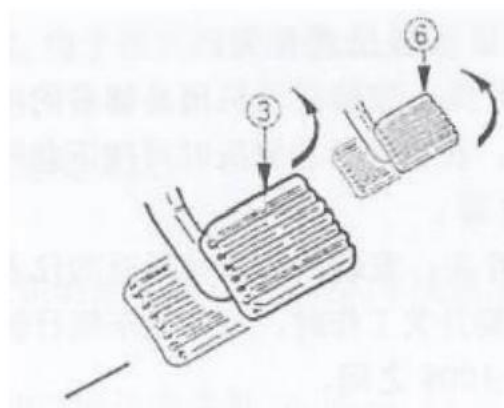
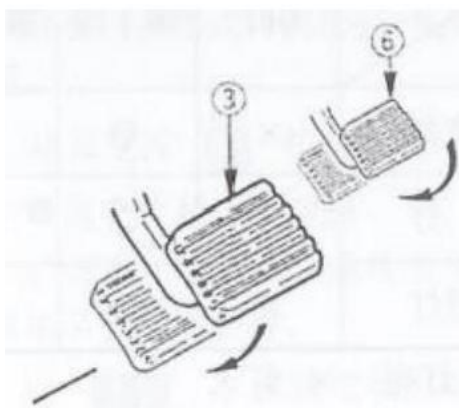


2.2 Horn button

Press the rubber cover in the center of the steering wheel, even when the key switch is off, the horn can also sound.



2.3 Brake pedal and accelerator pedal



From left to right, brake pedal and accelerator pedal.

Brake pedal: Depress the brake pedal, the vehicle is braked, and the brake light is on at the same time.

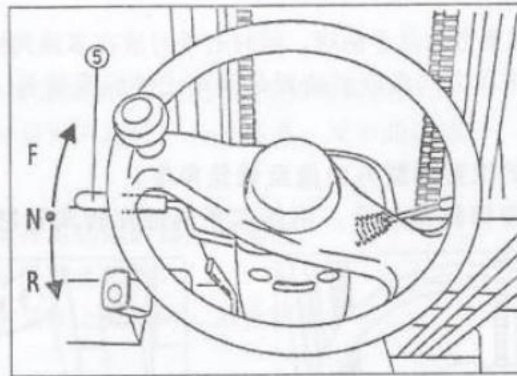
Acceleration pedal: Depress the accelerator pedal slowly, and the speed of the forklift is controlled by the angle at which the accelerator pedal is depressed.



Notice

Do not depress the brake pedal and accelerator pedal at the same time.

2.4 Direction switch handle



Indicate the direction of travel

Moving forward (F): Push the handle forward and depress the accelerator pedal.

Moving in reverse (R): Pull the handle backward and depress the accelerator pedal.

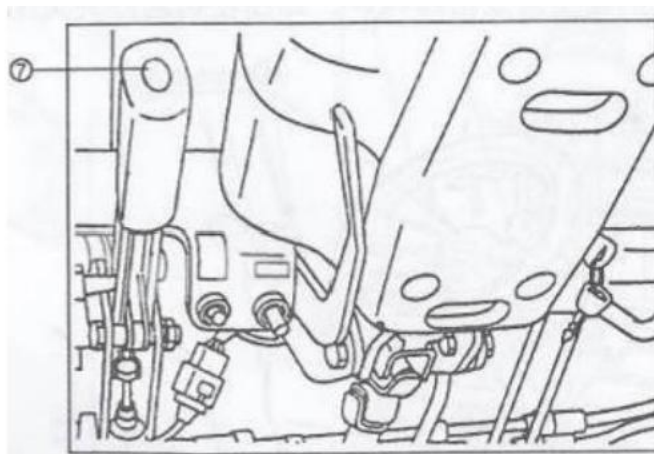
When parking the forklift, the direction switch handle should be placed in the neutral position (N).



Warning

- Do not slam on the accelerator pedal to avoid sudden start or acceleration of the forklift.

2.5 Parking brake handle(7)



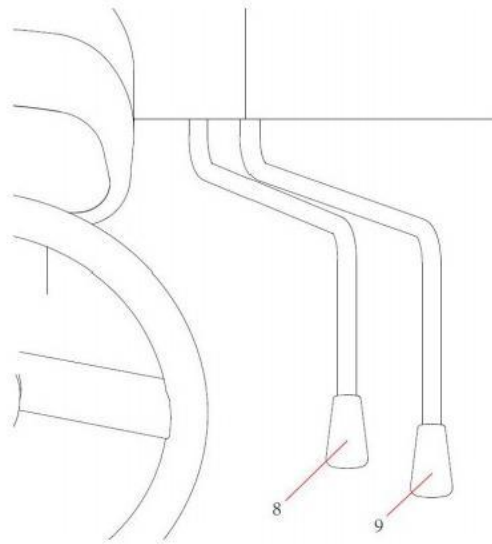
To prevent the forklift from moving, fully apply the parking brake handle when parking the forklift. When ready to drive, push the parking brake handle all the way forward.



Warning

- While operating the parking brake handle, depress the brake pedal.

2.6 Lifting handle(8)



Pull the lifting handle downward to raise the fork and push the lifting handle forward to lower the fork. The lifting and lowering speed can be controlled by the inclination angle of the handle, the larger the angle, the faster the speed.



Notice

- When the key switch is turned on and the handle is operated at the same time, the lifting action cannot be performed.
- Do not lower the forks suddenly and stop suddenly when lowering the forks.

2.7 Tilt handle(9)

Pull down the tilt handle to tilt the mast backwards, push the tilt handle forward to tilt the mast forward. The speed of forward tilt and backward tilt can be controlled by the tilt angle of the handle, the larger the angle, the faster the speed.



Notice

- When the tilt handle is pulled or pushed while the key switch is turned on, the tilt action cannot be performed.

3. Body parts

3.1 Seats(10)

The position of the seat can be adjusted to fit the operator's body through the handle, and the vibration and impact of the vehicle can be absorbed, making the ride comfortable.

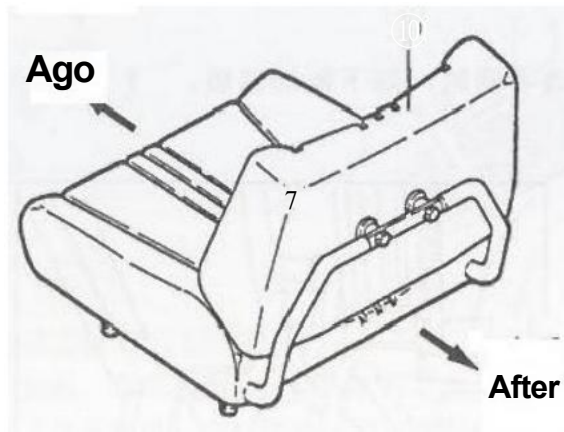
Pull the handle upwards to release the fixation. After adjustment, the seat can be moved back and forth slightly. After adjustment, confirm whether it is securely locked.

The adjustment range of the seat: Adjustable front and rear range is 120mm



Warning

- If you have a seat with a seatbelt, be sure to wear it. In case of overturning, the driver should hold the steering wheel with both hands, tilt the body to the other side, and jumping is not allowed.



3.2 Top protection frame



Warning

- The top protection frame is an important part to prevent the falling object and protect the safety of the operator. Unauthorized modification is strictly prohibited.

3.3 Shelves



Warning

- The shelf is an important safety component to prevent the cargo loaded on the fork from slipping down towards the operator. Loose installation, use after disassembly, and use after modification are all dangerous.

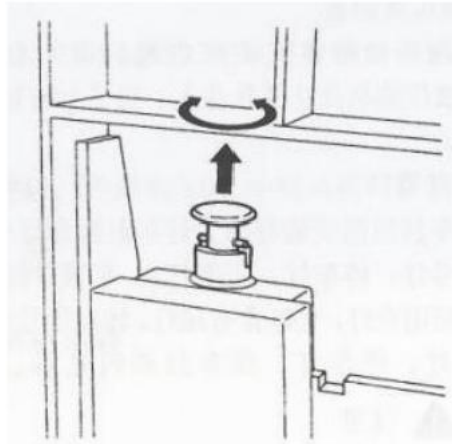
3.4 Fork positioning pin

The fork positioning pin locks the fork in a certain position. When adjusting the distance between the forks, pull up the positioning pin of the fork, turn 1/4 circle, and adjust the fork to the required position. The adjustment of the fork spacing should be based on the cargo to be loaded and unloaded.



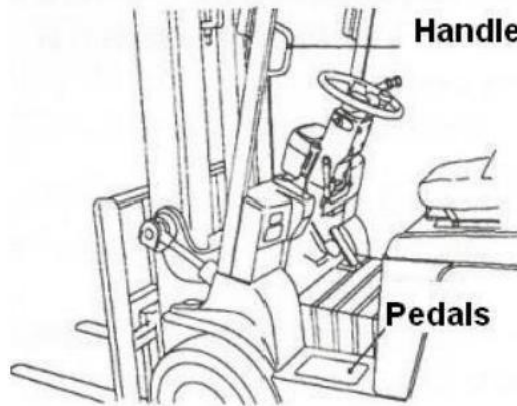
Warning

- According to the principle that the center of gravity of the cargo should be consistent with the center of gravity of the vehicle, the distance between the forks should be adjusted at equal distances from left to right. After adjustment, securely fix the fork with the positioning pin of the fork so that it cannot move.
- When adjusting the distance between the forks, lean your body against the shelf, and after standing firmly, push the forks with your feet, and never adjust them with your hands.



3.6 Footrests and handles

Footrests are provided on both sides of the vehicle, and the handle is located on the left front strut of the top protection frame. Use the footrests and handles when getting in and out of the vehicle to ensure safety. Getting on and off the vehicle from the right step is not permitted.

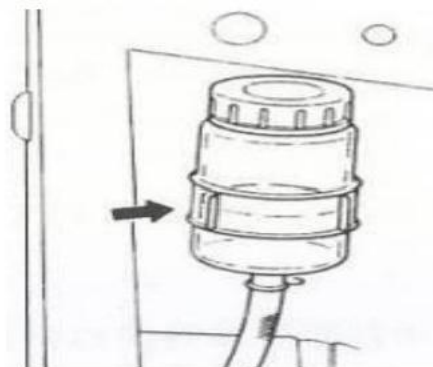


3.7 Fuse box

The fuse box is installed above the left box body.

3.8 Brake fluid tank

The brake fluid tank is installed on the inner left side of the instrument frame, and the translucent tube allows us to check the brake fluid level from the outside.



3.9 Hydraulic tank cap

The hydraulic oil tank is located on the right side of the vehicle, the cover of the hydraulic oil tank can be seen by opening the battery box cover, and a scale is installed on the cover.

3.10 Lamps

The front side of the vehicle is equipped with headlights and front combination lamps (turn signal lights,width indicator lights).The rear side of the vehicle is equipped with rear combination lights, which include taillights,turn signal lights,brake lights and reversing lights.



Warning

- Confirm that all lighting fixtures are in good condition and replace or repair immediately if the bulb is burnt out,or the lampshade is damaged or dirty.
- If you need to install the rear lights,please contact our sales department.

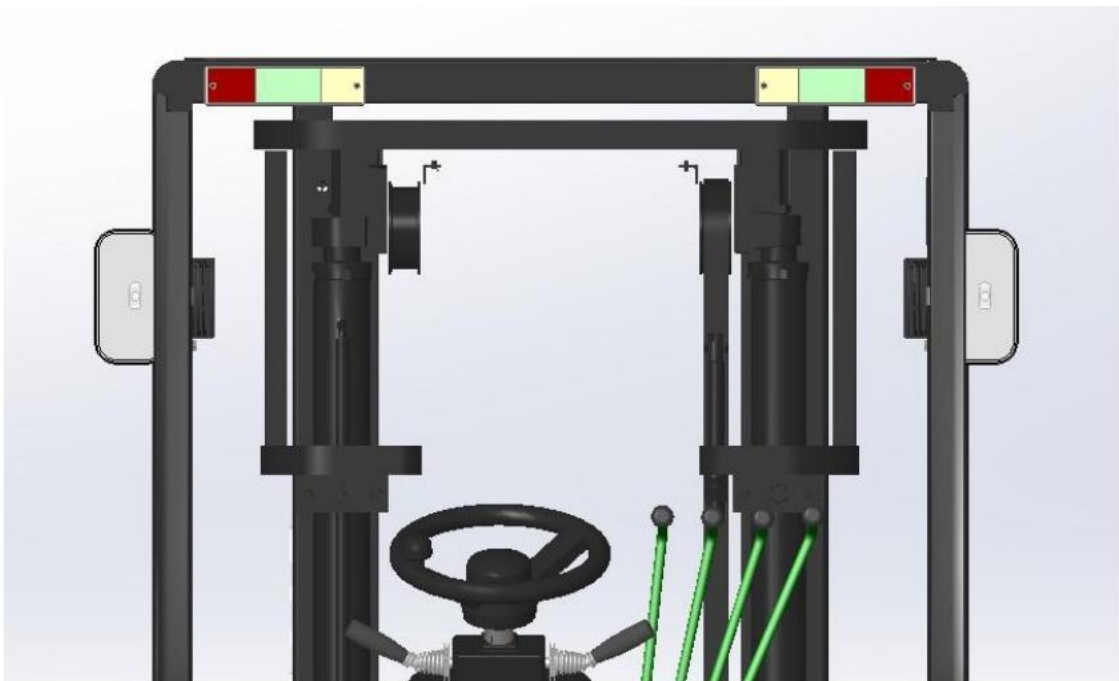
3.11 Rear-view mirror

The rear-view mirror is installed on the front leg of the top protection frame.



Warning

- Mirrors should be kept clean.
- Adjust the rear-view mirror to a position where you can see the rear well.



3.12 Battery plug

The battery plug is used to connect or disconnect the battery and the electrical components of the vehicle and is usually used for connection.



Warning

- When touching the internal electrical components with hands,the battery plug must be unplugged.
- Even if the key switch is in the "OFF"position,the main circuit still has voltage.
- When the vehicle is running,it willnot be possible to turn after the battery plug is unplugged. Unless it is absolutely necessary,the battery plug must not be unplugged.

III Driving and Handling

In order to keep your forklift in good performance,use it safely and operate economically,here are some notes on proper driving practices.

1.When using a new vehicle

The service life of your vehicle depends on how it was used when it was new.Please note the following during the first 200 hours of operation.



Warning

- Regardless of the season,the engine must be warmed up before operation.
- Pay attention to the care and maintenance.
- Do not operate roughly.
- Add or replace lubricating oil,grease,etc.in time.

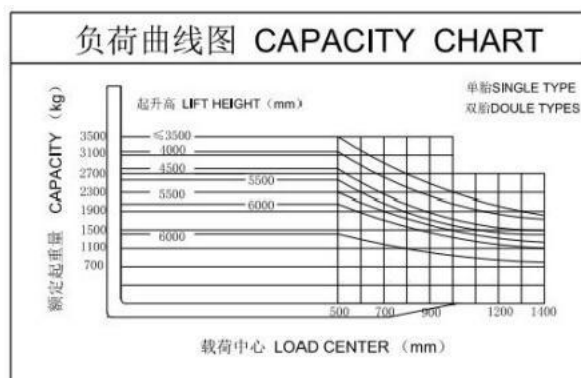
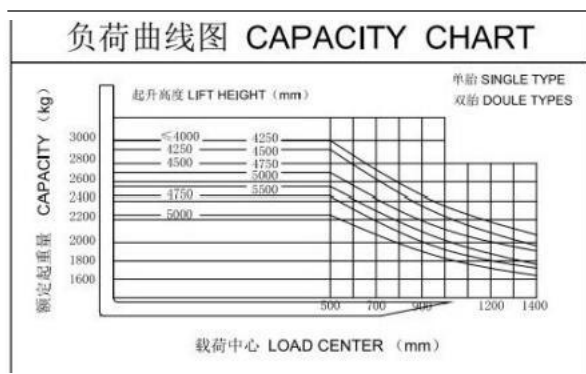
2.The relationship between load and forklift stability

In the load curve,the center of the front wheel of the forklift is used as the fulcrum to keep the load on the vehicle body and the fork balanced and pay attention to the load and the load center to maintain the stability of the vehicle.



Warning

- When exceeds the load curve,the rear wheels are in danger of being lifted and in a bad condition, the forklift may tip over,resulting in a serious accident.As shown,moving the cargo closer to the tips has the same effect as adding weight to the cargo.In this case,the load capacity should be reduced accordingly.



3.Load center and load curve

The load center is the distance from the front of the fork to the center of gravity of the cargo.The above load

curve legend shows the relationship between the load center of the 3T forklift and the allowable load (allowable load). The load curve label is pasted on the vehicle. If the label is damaged or lost, please replace it with a new one.



Warning

- If a vehicle is equipped with cargo-handling accessories, such as side shifters, buckets or swivel forks, the allowable load is reduced compared to a corresponding standard vehicle (without any accessories) for the following reasons:
 - 1) Reduced loads equal to the weight of the accessories.
 - 2) As the length of the accessories causes the load center to move forward, the allowable load is reduced by the same principle.

The installation of accessories causes the load center to move forward, which is called "load center loss".

Do not exceed the allowable load on the load curves attached to the vehicle or accessories.

4. The stability of the forklift

The stability standards of forklifts are specified in ISO or other standards. However, the stability described in these standards is not applicable to all operating conditions, and the stability of forklifts varies with different operating conditions.

Maximum stability is ensured in the following operating states:

- 1) The ground is horizontal and solid.
- 2) Operates under standard no-load or load conditions.

Standard no-load state: the fork or other load-bearing accessories are 30cm above the ground, and the mast is tilted backward without load.

Standard load state: the fork or other load-bearing accessories are 30cm above the ground, the allowable load is loaded at the standard load center, and the mast is tilted backward in place.



Warning

- When loading and unloading cargo, try to lean forward and backward to the smallest extent possible. And never lean forward unless the load is fixed firmly or a rigid shelf is used, or the lifting height is low.

5. Forklift transportation and loading and unloading

5.1 Transportation of forklift

- When transporting with a truck, the wheels should be stopped, and the forklift should be completely fixed with ropes to prevent the forklift from moving in the compartment.
- When loading and unloading and transporting on the road, pay attention to the length, width and height limits, and comply with the relevant regulations.

5.2 Loading and unloading of forklift.



Warning

- Please use a board with sufficient length,width and strength.
- Effectively apply the truck's parking brake to stop the wheels.
- The board must be firmly fixed in the center of the compartment,and there must be no grease attached to the board.
- The left and right heights of the boards should be the same,so that the vehicle can run smoothly when loading and unloading.
- To avoid hazards,do not veer or move sideways on the board.
- When loading the forklift onto the truck,to board the left and right tires on the board at the same time,run in reverse slowly.

5.3 Lifting the forklift



Warning

- There should be trained personnel to lift the forklift.
- The rope should be hooked to the designated lifting position on the forklift.
- The rope used should have sufficient bearing capacity.
- Detachable parts on the forklift also have designated lifting positions.

6.Preparation before driving

6.1 Check whether the emergency stopswitch works,please turn on the emergency stop switch first.

6.2 Check the position of the direction switch handle and turn the direction switch handle to the neutral position (N)

6.3 Switching on the key switch

Grasp the steering wheel handle ball,and then turn on the key switch,so that the key switch is in the "ON"position.



Warning

- Even if the key switch is turned to the "ON"position,it takes about 1 second from the start ofthe control circuit to the start of the vehicle.
- Before the key switch is turned to ON,if the shift lever is set to F or R position,you cannot start. You should return the selector lever to the neutral position "N"first.
- If the accelerator pedal is depressed rapidly,the vehicle may accelerate rapidly,so please be careful

6.4 Back tilt ofmast

Pull down the lift handle to raise the fork 150-200mm from the ground,pull down the tilt handle to make the mast tilt backward.

6.5 Operation of direction switch handle

The direction switch handle determines the direction of travel(forward-backward).

Forward F:Push the direction switch handle forward.

Backward R:Pull the direction switch handle backward.

6.6 Release the parking brake handle

Depress the brake pedal.

7.Driving

7.1 Start

Take your foot off the brake pedal and gradually depress the accelerator pedal and the forklift starts moving.

The change in acceleration is related to how hard the accelerator pedal is depressed.



Warning

- Do not start or brake suddenly,otherwise the cargo may fall.

7.2 Deceleration

Slowly release the accelerator pedal and depress the brake pedal if necessary.

If it is not an emergency stop,release the accelerator pedal and slow down until the vehicle stops.However, even a quick release ofthe accelerator pedal cannot produce emergency braking.

In an emergency,depress the brake pedal to complete emergency braking.



Warning

- Slowdown in the following situations
 - a)When turning at an intersection.
 - b)When approaching cargo or pallets.
 - c)When approaching the stockpile.
 - d)In narrow passages
- When the ground/road surface is in bad condition
- When driving in reverse,you must look at the rear with your eyes to directly confirm safety.
Reversing with only the rearview mirror is dangerous.

7.3 Turn

Forklifts are different from cars,because forklifts are rear-wheel steering,you should slow down when turning and pay attention to the swing of the rear of the forklift when turning the steering wheel



Warning

- In the case of turning,the faster the driving speed and the smaller the turning radius,the easier it is for the vehicle to overturn.Please pay attention.

7.4 Operation during driving and lifting(micro-operation)

- a)First,drive until the front end of the fork is close to the cargo for 3-5 meters.
- b)Depress the brake pedal fully (travel stop).
- c)Depress the accelerator pedal to get a proper working speed.
- d)Operate the lifting handle to let the fork carry out the lifting operation.



Warning

- Simultaneous operation of driving and lifting(micro-operation)is an operation that requires a high level of proficiency.It is necessary to correctly understand the shape,center of gravity and other characteristics of the cargo,confirm the stability of the vehicle,and lift the fork at a low speed. Operation at the same time must be very careful.
- Inclined work with high lifts is very dangerous.Please do not perform operations on the cargo on the cargo platform other than the fork in and out operations.
- In order to reduce the danger of driving during high lifting,the lifting operation should be carried out when it is very close to the cargo platform.

7.5 Temporary parking



Warning

Safe parking

- The parking lot should be as wide and flat as possible.
When an unloaded vehicle must stop on a slope,the mast side of the vehicle should be turned downwards to stop the wheels so that they cannot move.
- Park in a safe place or a designated place other than the job site.
Use caution signs and signal lights when necessary.
- Stop on a hard surface and pay attention to prevent sliding and sinking.
- When the fork of the vehicle cannot be dropped due to failure or other reasons,a warning cloth strip should be hung on the fork tip of the fork.The direction faces the side where people and vehicles cannot pass.
- Watch out for slippery road surfaces and subsidence.
- Lower the forks after the vehicle has come to a complete stop.Lowering the forks while the vehicle is in motion is very dangerous.
- Don't jump out of the car.
- When getting out of the vehicle,you must face the vehicle and use the foot pedals to get out.

Perform deceleration operation,step on the brake pedal,stop the vehicle,and switch the shift lever to the middle position "N".When parking,stop at a place that does not hinder other vehicles.Please do the following:

- a)Pull the parking brake handle back into place to allow the parking brake to operate.
- b)Let the forks drop to the ground.
- c)Turn the key switch to OFF
- d)Remove the key for safekeeping.
- e)Be very careful when getting in and out of the car.

7.6 Parking the forklift



Notice

- When leaving the forklift, fully pull the parking brake handle and tilt the mast slightly forward and lower the forks to the ground. When parking a forklift on a ramp, place blocks under the wheels.
- When leaving the forklift, remove the key.



7.7 Emergency repair of faulty forklift



Warning

- If the forklift breaks down suddenly during use, it should be towed away and dealt with in time so as not to hinder the work of other vehicles or personnel.

8. How to use the battery

8.1 Charging the battery

Our company's battery counterbalanced forklift uses lithium iron phosphate battery. Configure a suitable charger according to the characteristics of the lithium iron phosphate battery pack, and the charger communicates with the battery BMS for charging. Please operate in accordance with the requirements of the "Operation and Maintenance Manual" of the charger.

The table below shows the charging current selection range of the charger corresponding to the battery capacity of our company:

Battery Capacity V/Ah	Charger Current Specification Range (A)
80V/200Ah	60A/80A/100A/150A/200A
80V/300Ah	60A/80A/100A/150A/200A
80V/400Ah	60A/80A/100A/150A/200A

The best charging current for the lithium iron phosphate battery pack is 0.3C-0.5C; the charging current specification of the charger can be selected according to the requirements. If you need fast charging, you can choose a 1C current charger. If you need a 1C or other specification current charger, you should be stated in the order for our company to select and provide. It is not recommended to use a charging current above 1C. Long-term excessive charging current will lead to a significant reduction in battery performance and service life.

The charging temperature of the lithium battery is carried out within the ambient temperature

range of 0°C ~ 50°C

8.2 Charge and discharge of battery

Using a forklift is the discharge process of the battery. Using a forklift with an overload will cause the discharge current to exceed the specified maximum discharge current, which will lead to a drastic reduction in battery capacity and overheating, which will affect the normal use of the battery; therefore, it is strictly forbidden to use a forklift with an overload.

Ordinary forklifts are normally used in the ambient temperature range of -25 °C ~ 50 °C. Forklifts used in cold storage need to use special forklifts for cold storage.

8.3 Precautions



Warning

- a) Overcharging is strictly prohibited.
- b) The charging place should be well ventilated.



Warning

- The charging process of the battery should be carried out in a well-ventilated place and should be protected from moisture.
- c) Check the terminals, cables, and connectors.



Warning

- Before charging, check the connectors and cables to ensure they are in good condition.
- Do not charge in the following cases
 - The connector electrodes are damaged.
 - The terminals and cables are corroded.
 - These conditions can lead to accidents such as sparks, burnt items and fires and explosions.
- d) Charge after turning off the key switch.
- e) When plugging and unplugging the power connector, hold the plug or handle instead of the cable.



Warning

- When the cables and power connectors are damaged, please contact the after-sales department of our company to replace the damaged cables and power connectors.

f) Disconnect the charging process



Warning

- The steps of disconnecting the charging process must be operated in strict accordance with the requirements of the "Operation and Maintenance Manual" of the charger used.
- Do not pull out the plug of the charger when charging, otherwise electric sparks will be generated and cause danger.



Warning

- Picking and placing hoisting batteries should be operated by professionals.



Warning

- When lifting the battery, be careful not to damage the vehicle body due to the swing of the battery box.

8.4 Battery maintenance

- a) In order to ensure the life of the battery, the battery should be fully charged before being put into use, and the battery that is insufficiently charged cannot be used.
- b) Avoid overcharging and over discharging of the battery. Overcharge and over discharge will seriously affect the performance and life of the battery.
- c) Keep good ventilation when charging, and smoking is strictly prohibited.
- e) Regularly clean the dust on the battery case.
- f) It is strictly forbidden to wash the battery.

8.4 The waste disposal of batteries must comply with local policies and regulations or contact our after-sales department.

9. Stacking



Warning

- Before starting to operate the forklift, check the following items:
 - a) Ensure that no cargo can fall in the loading area.
 - b) Make sure that there are no items or stacks that would impede safety.
- When stacking, the following procedures should be followed:
- (1) Slow down when approaching a stacking area.
 - (2) Park in front of the stacking area
 - (3) Check for safety around the stacking area.
 - (4) Adjust the position of the fork so that the forklift is in front of the position where the cargo is placed in the stacking area.
 - (5) The mast is vertical to the ground and the forks are lifted beyond the stacking height.
 - (6) Check the stack position and drive forward, stopping at a suitable location.
 - (7) Make sure that the cargo is above the stacking position, slowly lower the forks to ensure that the cargo is put away.

IV. Regular inspection and maintenance

1. Check before operation



Warning

- Maintenance work can only be carried out after systematic study.
 - When maintaining the electrical system of the forklift, if the metal touches the electrified electronic components, it may cause short circuit or burn. So please take off your watch, earrings, or other jewelry.
- a) Keep the maintenance site clean.
 - b) Do not carry loose items or valuables with you during maintenance.
 - c) Before repairing the forklift, unplug the power socket and disconnect the power supply.
 - d) Before opening the left and right box covers or the electrical system, the key switch of the forklift should be turned off.
 - e) Before checking the hydraulic system, the fork should be lowered to release the system pressure.
 - f) When checking the oil leakage of the vehicle body, please wipe it with paper or cardboard, and do not touch it directly with your hands to avoid burns.
 - g) Please note that the oil temperature in the transmission device or hydraulic system may be high. Cool the forklift first, and then replace the gear oil or hydraulic oil to prevent burning due to high oil temperature.

Notice!

If the hydraulic oil is not clean, it will affect the precision hydraulic components and reduce the capacity of the entire hydraulic system.

If different brands of hydraulic oil are used, it will damage the hydraulic components and affect the system capacity. Therefore, when adding or replacing hydraulic oil, pay attention to using a unified brand.

- h) Please abide by relevant laws and regulations, protect the environment, store, and discharge oil according to regulations, and do not discharge it into the sewer.
- i) When welding the vehicle body, disconnect the battery power supply. Because the welding current may enter the battery during welding, to avoid this kind of situation, please cut off the battery.
- j) When working under the forklift, the forklift should be supported by brackets.

Warning!

Improper support may cause the forklift to overturn and injure people. If the forklift is not protected by lifting equipment or support, it is forbidden to work under the forklift.

2. Daily maintenance and safety inspection

2.1 Maintenance work that users can complete.

- a) Daily maintenance and inspection of the forklift is the operator's responsibility.
- b) If the forklift is not daily maintained, it will affect the safety and reliability of the forklift, which may easily lead to serious accidents.
- c) If a problem is detected or a fault is found, repair it immediately and stop using it.

2.2
the

No.	Checking Point	Check Content
1	Operation Control	Check its functionality
2	Accident-proof Safety Switch	Check its functionality
3	Trumpet	Check its functionality
4	Turn to	Check its functionality
5	Hydraulic Device	Check its functionality
6	Electricity Meter	Check its functionality
7	Hydraulic System	Check the oil level and whether there is oil leakage
8	Drive Unit	Check for abnormal noise and oil leakage
9	Brake	Check if it works
10	Transmission	Check its functionality
11	Wheel	Check tires for damage or air pressure
12	Frame	Check for damage, remove oil
13	Fork	Check for deformation or cracks
14	Lifting Device	Check for damage, remove oil
15	Hydraulic Cylinder	Check for damage and oil leaks

Complete

maintenance work indicated in the maintenance table within 1 day, 1 week and 1 month.
(See Section 4 Maintenance Form)

2.3 Other maintenance parts given in the maintenance table. It can only be done by our company's maintenance personnel or the company's approved maintenance organization.

3. Clean the forklift

Routine cleaning on a weekly basis is important to ensure its reliability. Please unplug the power socket before cleaning to avoid damage to the electrical system caused by a short circuit.

3.1 External cleaning

- a) The accessories on the wheels should be removed every day to keep them turning flexibly.
- b) After cleaning, add lubricating oil to the parts of the forklift that need to be lubricated according to the

lubricating parts table.

3.2 Clean electrical components

Blow off motor dust with compressed air.

Notice!

Electrical components cannot be washed with a high-pressure washing device.

Do not damage the electrical components on the circuit board. Maintain the position of electrical components and avoid short circuit.

4. Maintenance table

No.	Run Interval	1 Day	1 Week	1 Month	3 Months	6 Months	12 Months	24 Months
1	Body System							
1.1	Inspection cover (left, right)			★				
1.2	View battery box fixtures				★			
1.3	Check frame for cracks					★		
1.4	Check whether the body is installed firmly					★		
2	Motor							
2.1	Check for loose connections					★		
2.2	Clean motor			★				
2.3	Check whether the mounting bolts are tight					★		
2.4	Check for abnormal bearing noise			★				
2.5	Check insulation resistance				★			
3	Drive System							
3.1	Check for leaks	★						
3.2	Check oil level				★			
3.3	Check noise	★						
3.4	Oil change							★
4	Wheel Part							
4.1	Remove debris from wheels	★						

4.2	Check for loose rim bolts	★						
4.3	Check tires for damage	★						

5	Braking Part							
5.1	Clean the brakes				★			
5.2	Check the wear of the brake pads				★			
5.3	Check pedal status	★						
5.4	Check braking performance	★						
5.5	Whether there is leakage in the brake pipe	★						
5.6	Check that the brake fluid is sufficient			★				
5.7	Check and replace brake master cylinder and slave cylinder						★	
5.8	Brake fluid change							★
5.9	Hand brake performance check	★						
No.	Run Interval	1 Day	1 Week	1 Month	3 Months	6 Months	12 Months	24 Months
6	Storage Battery							
6.1	Check whether the connection between the forklift and the charger is tight		★					
6.2	Check the battery and its insulating sheath		★					
6.3	Clean battery	★						
7	Hydraulic System							
7.1	Check pipes and fittings for leaks	★						
7.2	Check for pipe wear					★		
7.3	Check the fuel tank for oil leaks	★						
7.4	Check oil level				★			
7.5	Change hydraulic oil							★
7.6	Cylinder oil leakage inspection	★						

8	Mast	
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8.1	Check for damage and cracks					★		
8.2	Check wheel movement					★		
8.3	Whether the lifting chain and pin are damaged and whether the sprocket is worn	★						
8.4	Check oil pipes and joints for leaks					★		
8.5	Check the forks for cracks or deformation	★						
9	Control System							
9.1	Check the tightness of the installation					★		
9.2	Check brake switch				★			
9.3	Check if the fastening screws are loose					★		
9.4	Check the function of the safety switch					★		
9.5	Check whether the return of the handle is normal	★						
10	Electrical System							
10.1	Check lights and speakers are normal	★						
10.2	Check wiring harness for wear and damage	★						
10.3	Check that the controller is functioning properly	★						

5. Lubricating parts list

No.	Lubricating Parts	Interval Time (h)			Lubricating Oil and Grease Category
		500	1000	3000	
1	Steering Axle Spindle		L		A
2	Hydraulic System	H		O	B
3	Drive Gearbox	H		O	C
4	Lifting Chain	L			D

5	Lifting System Bearings	L			A
---	-------------------------	---	--	--	---

L=Lubricate H=Check O=Change Oil

6. Lubricating oil and grease

Grease Category		Specification		Applicable Parts
		>-15° C	<-15° C	
A	Grease	3# Lithium-based grease drop point 170		Bearings and Bushings
B	Hydraulic Oil	YB-32 (ISO-L-HM46)	YC-32 (ISO-VG46)	Hydraulic System
C	Transmission Oil	85W/90 (SAE80W/90)	70W/75 (SAE75W)	Gearbox
D.	Lubricating Oil	CC30 (Normal temperature SAE20W)	CC15W (Low temperature SAE10W)	Chain and Pipeline

V. Troubleshooting

1. Mechanical Failure

No.	Symptoms	Possible Causes	Troubleshooting Method
1	Loud noise when working	1、 Gear wear or too much clearance 2、 Insufficient oil 3、 Damaged motor bearings	Replace or adjust gears Replenish Replace
2	Difficulty steering	1、 Insufficient oil supply 2、 Insufficient fuel in tank 3、 Oil viscosity is too high 4、 Oil pump damage 5、 Steering gear damaged 6、 Steering cylinder damaged 7、 Steering column deformed	Adjust the control valve Replenish Replace Repair or replace Repair or replace Repair or replace Repair or replace
3	Steering wheel idling, steering unsteady	1、 Steering column pin falls off 2、 Steering spindle clearance is too large	Adjust Adjust or replace bearings

4	Insufficient braking force	<ul style="list-style-type: none"> 1、 There is a leak in the brake pipe 2、 Air in brake line 3、 Brake pads worn unevenly 4、 Tubing blockage 	<ul style="list-style-type: none"> Repair and replenish oil Deflation Repair or replace Clean
5	Oil pump no output	<ul style="list-style-type: none"> 1、 Insufficient oil in tank 2、 Pipeline or filter clogged 	<ul style="list-style-type: none"> Replenish oil Clean or change oil
6	Insufficient work pressure	<ul style="list-style-type: none"> 1、 Oil pump damage 2、 Relief valve adjustment error 3、 Hydraulic oil has foam 4、 Pipeline oil leakage 	<ul style="list-style-type: none"> Repair or replace Adjust the relief valve Solve the cause of foam Replace or repair
7	Automatic tilting of forks or masts	<ul style="list-style-type: none"> 1、 Tilt cylinder seal damaged 2、 Control valve failure 	<ul style="list-style-type: none"> Replace the seal Replace control valve
8	Abnormal lifting action	<ul style="list-style-type: none"> 1、 Cylinder damaged or deformed 2、 Poor lubrication 3、 Deformation of the fork or mast 4、 Debris between the door frames 	<ul style="list-style-type: none"> Repair or replace Lubricating Repair or replace Clean up
9	The lifting of the fork is not synchronized	<ul style="list-style-type: none"> 1. The length of the chain is inconsistent 	<ul style="list-style-type: none"> Adjust chain length
10	Abnormal sound when the mast is lifted	<ul style="list-style-type: none"> 1、 Poor lubrication 2、 Damaged or worn rollers 	<ul style="list-style-type: none"> Lubricating Replace
11	Vehicles cannot walk	<ul style="list-style-type: none"> 1、 All switches turned on 2、 Driver's operating position correct 3、 Battery Sufficient 	<ul style="list-style-type: none"> Turn on Correct operating posture Charge

2. Electrical Failure

2.1 Fault code table

When a fault occurs, if it is confirmed that it is not a wiring error or a mechanical failure of the vehicle, you can try to restart it through the vehicle key switch. If the fault still exists, please turn off the key switch, check whether the 35-pin connector is connected correctly or if it is dirty, repair and clean it, reconnect it, and try again.

By looking at the fault codes on the instrument and combining with the fault code table, you can judge the components where the electrical fault occurs and troubleshoot and solve the fault.

Appendix

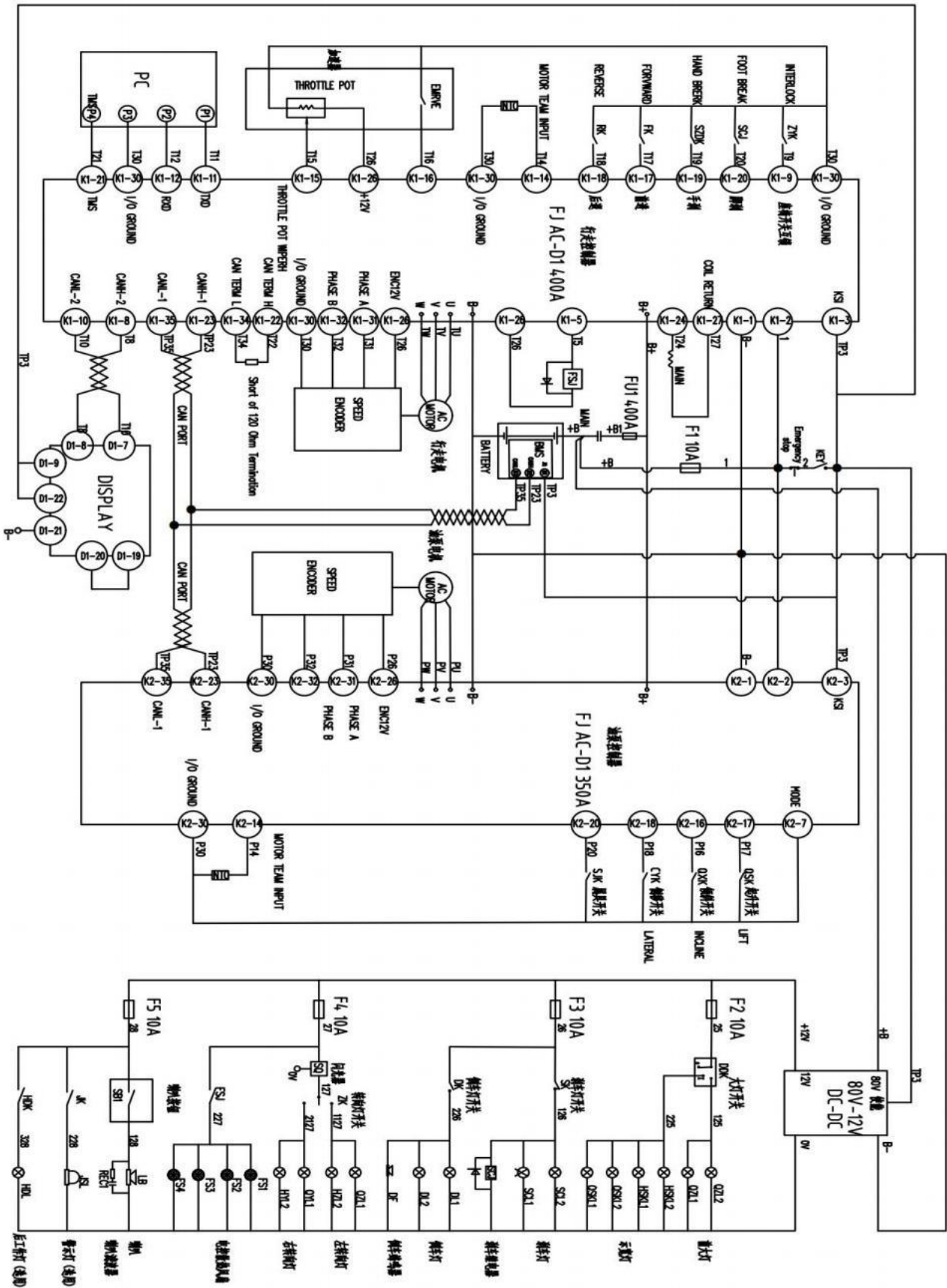
1. Electric control fault code list

Fault Code

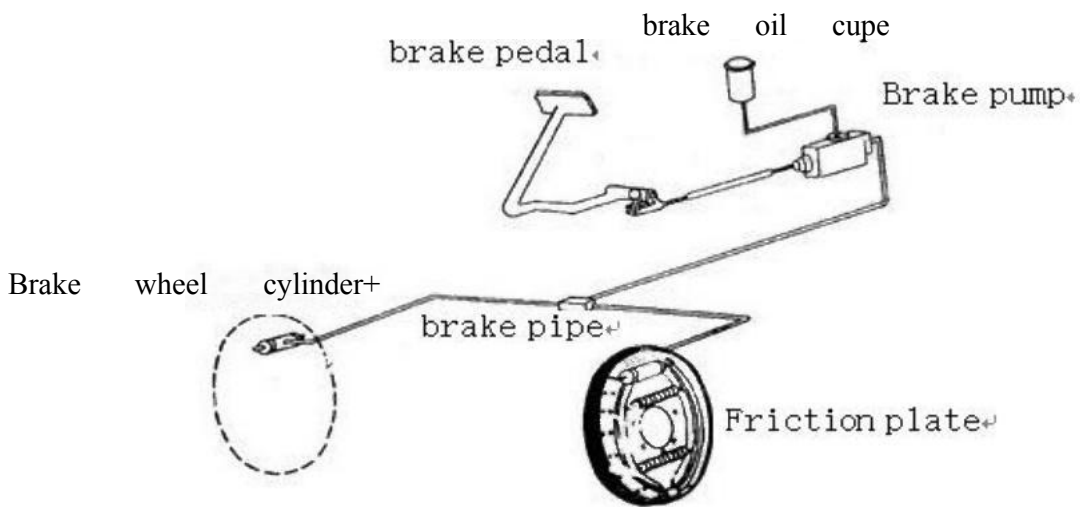
Code	Level	Name	Remarks
1	1	Overvoltage of battery pack	The battery pack voltage of 80V system is higher than 113V.
2	1	Under voltage of battery pack	The battery pack voltage of 80V system is lower than 46V
3	1	Accelerator pedal activated before start-up	In the process of system self-test, it is detected that the accelerator pedal has been pressed in advance, and the main circuit breaker does not close.
5	1	Flash memory failure	Flash memory does not work properly, or some data is out of the allowed range
6	1	Controller bus low voltage alarm	The bus voltage detected by the software is less than 10% of the battery voltage detected by the software
8	1	Controller unsaturated or over current	The actual current of driving power module exceeds the limit value
12	3	Low voltage alarm for battery pack	When the BDI management strategy is selected as voltage management and the battery voltage is less than the undervoltage protection value of the battery pack, the alarm will be triggered. When the BDI management strategy is selected as time management and the battery residual power storage is less than the single battery under voltage alarm point, the alarm will be triggered.
13	3	High temperature warning of driving motor	The temperature measurement value of the driving motor exceeds the "over-temperature protection point" set by the user.
15	1	Current loss of driving motor	The phase current of the drive motor is not zero when the system starts.
17	1	Main circuit breaker coil over current alarm	Excessive coil current of main circuit breaker
20	5	Controller overtemperature warning	The temperature of the controller exceeds 85°C but does not exceed 90°C . Warning.
28	1	Software over current protection	When the drive motor current exceeds the "software over-current protection threshold", it will give an alarm
37	1	Failure of 5V output power supply	The voltage of controller interface K1-25 connector (5V output) is below 4.3V. Alarm.
38	1	Failure of 12V output power supply	The voltage of controller interface K1-126 connector (12V output) is below 10.5V. Alarm
61	2	Driving motor overheating shutdown	The temperature measurement of the drive motor exceeds the maximum temperature allowed by the user (the over temperature cut point of the drive motor)

63	1	Seat switch not closed when starting	When the system is powered on, the seat switch is not closed; or after the main circuit breaker is closed, the seat switch is opened for more than the time set by the parameter "seat switch delay"
64	1	Startup condition error	The forward/ backward switch is activated when the machine is started
66	1	Controller overheating shutdown	The temperature of the controller exceeds 90 °C .
71	5	Controller temperature sensor fault	The feedback value of the temperature sensor of the drive motor power module is out of the measurement range. 999 °C is short circuit, and - 999 °C is open circuit
74	2	Drive motor encoder failure	The encoder (A or B) channel signal is lost during the operation of the motor.
83	1	CRC error	EEPROM error or software matching error
85	20	Error in starting sequence	The direction switch is not turned before the accelerator pedal is pressed when driving
92	2	Accelerator pedal failure	The voltage feedback of the accelerator exceeds 1/2 of the calibrated measurement range, and the accelerator pedal enable switch does not act, giving an alarm
95	5	Drive motor temperature sensor short circuit fault ⁵⁰	The feedback resistance value of the temperature sensor of the driving motor exceeds the normal range and approaches to 0. Using temperature sensor kty84-130 / 150 or PT1000, the motor temperature shows - 999 °C The temperature sensor NTC is used, and the motor temperature shows 999 °C
97	5	Drive motor temperature sensor open circuit fault	The feedback resistance value of the temperature sensor of the driving motor exceeds the normal range and approaches infinity. Using temperature sensor kty84-130 / 150 or PT1000, the motor temperature shows 999 °C The temperature sensor NTC is used, and the motor temperature shows - 999 °C .
98	1	Capacitor pre-charging too slow	In the process of power on self-test, if the voltage of pre charging capacitor increases too slowly, and the bus voltage does not reach more than 4 / 5 of the battery voltage within 5S, the alarm will be given.

2. Electrical schematic diagram

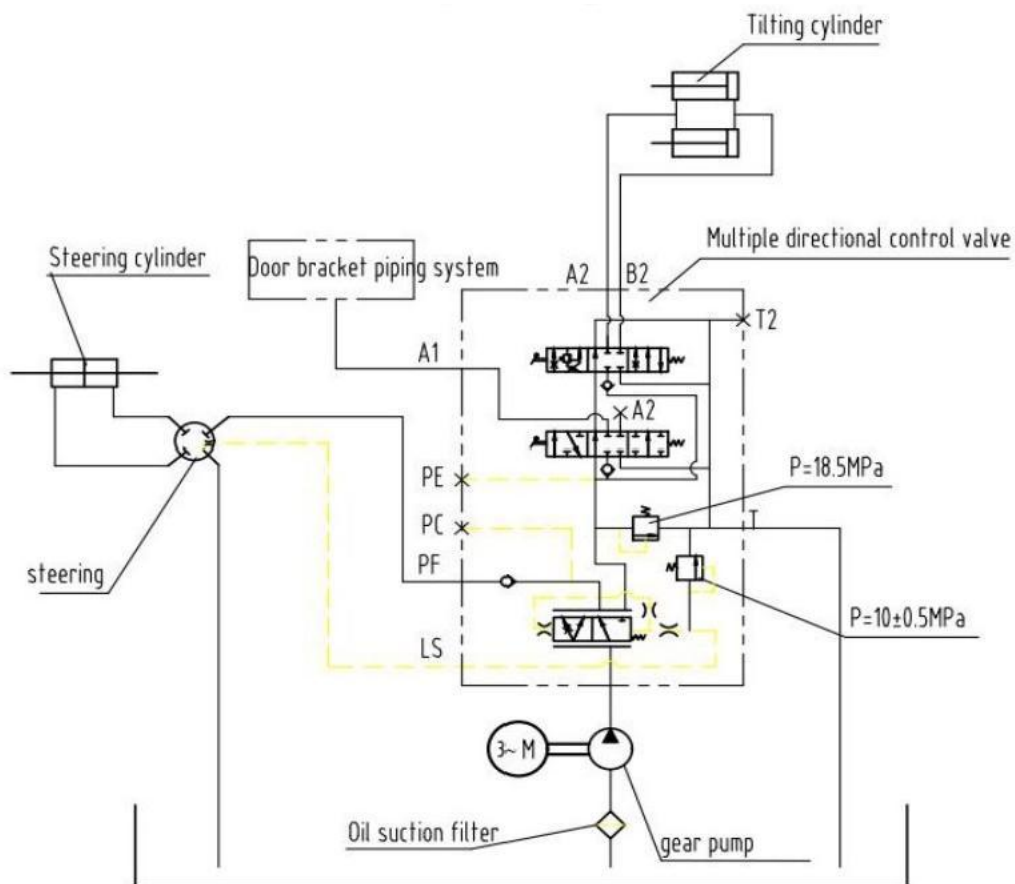


3.Braking principle diagram



4、 Hydraulic schematic

Schematic of hydraulic system



5、 Forklift lithium battery fault table (displayed by the instrument)

No.	Fault Description	Error Code	Failure Level	Remark
1	Severe overheating alarm	126	1	
2	Total voltage too high	132	1	
3	Total voltage too low	125	1	
4	Severe overcurrent discharge	133	1	
5	Monomer is too high	131	1	
6	Monomer is too low	124	1	
7	Insulation resistance too low	173	1	
8	High temperature alarm	115	11	
9	Low temperature alarm	116	11	
10	High monomer voltage	157	14	
11	Low monomer voltage	159	14	
12	Current overcurrent	167	14	
13	BMS internal communication failure	187	11	
14	SOC < 10%	114	11	
15	Battery pressure difference large	113	11	
16	Battery temperature difference large	117	11	
17	SOC lower < 15%	170	20	
18	Large battery voltage difference	103	20	
19	Large battery temperature difference	109	20	
2 0	Charger hardware failure	141	20	
2 1	Charger temperature failure	142	20	

2.2	Charger voltage limiting power rate failure	143	20	
23	Charger input voltage failure	144	20	
24	Charger input overcurrent	145	20	
25	Charger startup failure	146	20	
26	Charger communication failure	147	20	
27	Charger and battery connection failure	148	20	

Notice:

Alarm level 1:The contactor is disconnected;the drive and oil pump controller have no output.

Alarm level 11:limit speed of traction and oil pump.

Restrict according to the red box in the figure below.

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主页	校准	调试	示波器	告警	对比	其它					
蓄电池组	锂电池组	牵引电机	油泵电机	能量模式(标准)	车辆信息	系统参数	通讯	转矩限制			
参数								最小值	最大值	当前值	设定值
剩余容量(%)										99	
系统读取BMS报文								OFF	ON	ON	ON
BMS协议类型								保留0	戴尔乐叉车	戴尔乐叉车	戴尔乐叉
CAN总线通讯故障处理								限速	停车	限速	限速
BMS故障时驱动电机允许的最高转速(rpm)								0	6000	800	800
BMS故障时油泵电机允许的最高转速(rpm)								0	4500	800	800

Alarm level 14:

Towing speed limited,and the oil pump motor is prohibited except for the power steering and tilting functions.

Towing speed limited,according to the limit in the red box above.

Warning level 20:Warning has no effect.

6.Forklift parameter table

KLA30I/35I Main Technical Parameter Table

No.	Object	Unit	KLA30I	KLA35I
	Rated lifting capacity	kg	3000	3500
2	Load center distance	mm	500	500
3	Maximum lifting height		3000	3000
4	Free lifting height		140	140
5	Mast inclination	Front	6°	6
		Rear	12°	12°

6	Maximum lifting speed	No load	mm/s	450	450
		Full load		330	310
7	Maximum driving speed	No load	Km/h	14	13
		Full load		12.5	12
8	Maximum traction (Full load)		KN	12.8	12.8
9	Maximum gradeability (Full load)		%	15	15
10	Minimum turning radius		mm	2450	2530
11	Weight (Including battery)		kg	4050	4450
12	Wheelbase		mm	1760	1760
13	Overhang distance	Front overhang distance		493	493
		Rear overhang distance		405	405
14	Length	Without fork		2639	2639
		With fork		3709	3709
	Width	Outside of front wheel		1200	1200
		Outside of mast		1220	1220
Height	Mast not lifted height	2070		2070	
	Top protection frame height	2125		2125	
	Overall height at maximum lift	4255		4255	
15	The height of the upper surface of the driver's seat from the inner side of the protective frame		mm	1060	1060
16	Battery	Rated voltage	V	80	80
		Capacity	Ah	220	330
17	Travel motor	Rated power	Kw	12	12
18	Auxiliary motor	Rated power	Kw	14	14
19	Fork (length×width×thickness)		mm	1070×125×45	1070×125×45
20	Hydraulic system working pressure		MPa	17.5	17.5

KLA20I/25I Main Technical Parameter Table

No.	Object	Unit	KLA20I	KLA25I
1	Rated lifting capacity	kg	2000	2500
2	Load center distance	mm	500	500
3	Maximum lifting height		3000	3000
4	Free lifting height		140	140
5	Mast inclination	Front	6°	6°
		Rear	12°	12°

6	Maximum lifting speed	No load	mm/s	400	400
		Full load		300	300
7	Maximum driving speed	No load	Km/h	14	14
		Full load		12.5	12.5
8	Maximum traction (Full load)		KN	17	17
9	Maximum gradeability (Full load)		%	20	20
10	Minimum turning radius		mm	2365	2365
11	Weight (Including battery)		kg	3300	3650
12	Wheelbase		mm	1650	1650
13	Overhang distance	Front overhang distance		445	445
		Rear overhang distance		393	393
14	Length	Without fork		2443	2443
		With fork		3560	3560
	Width	Outside of front wheel		1165	1165
		Outside of mast		1210	1210
Height	Mast not lifted height	1995		1995	
	Top protection frame height	2125		2125	
	Overall height at maximum lift	4125		4125	
15	The height of the upper surface of the driver's seat from the inner side of the protective frame		mm	1060	1060
16	Battery	Rated voltage	V	80	80
		Capacity	Ah	160	160
17	Travel motor	Rated power	Kw	10	10
18	Auxiliary motor	Rated power	Kw	12	12
19	Fork (length×width×thickness)		mm	1070×120×40	1070×122×45
20	Hydraulic system working pressure		MPa	17.5	17.5

KLA10I/15I Main Technical Parameter Table

No.	Object	Unit	KLA10I	KLA15I
1	Rated lifting capacity	kg	1000	1500
2	Load center distance	mm	500	500
3	Maximum lifting height		3000	3000
4	Free lifting height		140	140
5	Mast inclination	Front	6°	6°
		Rear	12°	12°

6	Maximum lifting speed	No load	mm/s	320	320
		Full load		250	245
7	Maximum driving speed	No load	Km/h	14	13.5
		Full load		12.5	12.5
8	Maximum traction (Full load)		KN	5	5
9	Maximum gradeability (Full load)		%	15	15
10	Minimum turning radius		mm	2080	2080
11	Weight (Including battery)		kg	2650	2870
12	Wheelbase		mm	1390	1390
13	Overhang distance	Front overhang distance		405	405
		Rear overhang distance		310	310
14	Length	Without fork		2105	2105
		With fork		3060	3060
	Width	Outside of front wheel		1070	1070
		Outside of mast		1070	1070
Height	Mast not lifted height	1995		1995	
	Top protection frame height	2080		2080	
	Overall height at maximum lift	3975		3975	
15	The height of the upper surface of the driver's seat from the inner side of the protective frame		mm	1020	1020
16	Battery	Rated voltage	V	80	80
		Capacity	Ah	120	120
17	Travel motor	Rated power	Kw	7	7
18	Auxiliary motor	Rated power	Kw	8	8
19	Fork (length×width×thickness)		mm	920×100×30	920×100×35
20	Hydraulic system working pressure		MPa	14.5	14.5

KLA38I/40I Main Technical Parameter Table

No.	Object	Unit	KLA38I	KLA40I
1	Rated lifting capacity	kg	3800	4000
2	Load center distance	mm	500	500
3	Maximum lifting height		3000	3000
4	Free lifting height		150	150
5	Mast inclination	Front	6°	6
		Rear	12°	12°

6	Maximum lifting speed	No load	mm/s	420	420
		Full load		250	250
7	Maximum driving speed	No load	Km/h	13	13
		Full load		12	12
8	Maximum traction (Full load)		KN	15.5	15.5
9	Maximum gradeability (Full load)		%	15	15
10	Minimum turning radius		mm	2530	2530
11	Weight (Including battery)		kg	4500	4670
12	Wheelbase		mm	1760	1760
13	Overhang distance	Front overhang distance		470	470
		Rear overhang distance		405	405
14	Length	Without fork		2639	2639
		With fork		3709	3709
	Width	Outside of front wheel		1230	1220
		Outside of mast		1220	1220
	Height	Mast not lifted height		2070	2070
		Top protection frame height		2125	2125
		Overall height at maximum lift		4255	4255
15	The height of the upper surface of the driver's seat from the inner side of the protective frame		mm	1060	1060
16	Battery	Rated voltage	V	80	80
		Capacity	Ah	220	220
17	Travel motor	Rated power	Kw	10	12
18	Auxiliary motor	Rated power	Kw	12	14
19	Fork (length×width×thickness)		mm	1070×122×50	1070×122×50
20	Hydraulic system working pressure		MPa	18	18