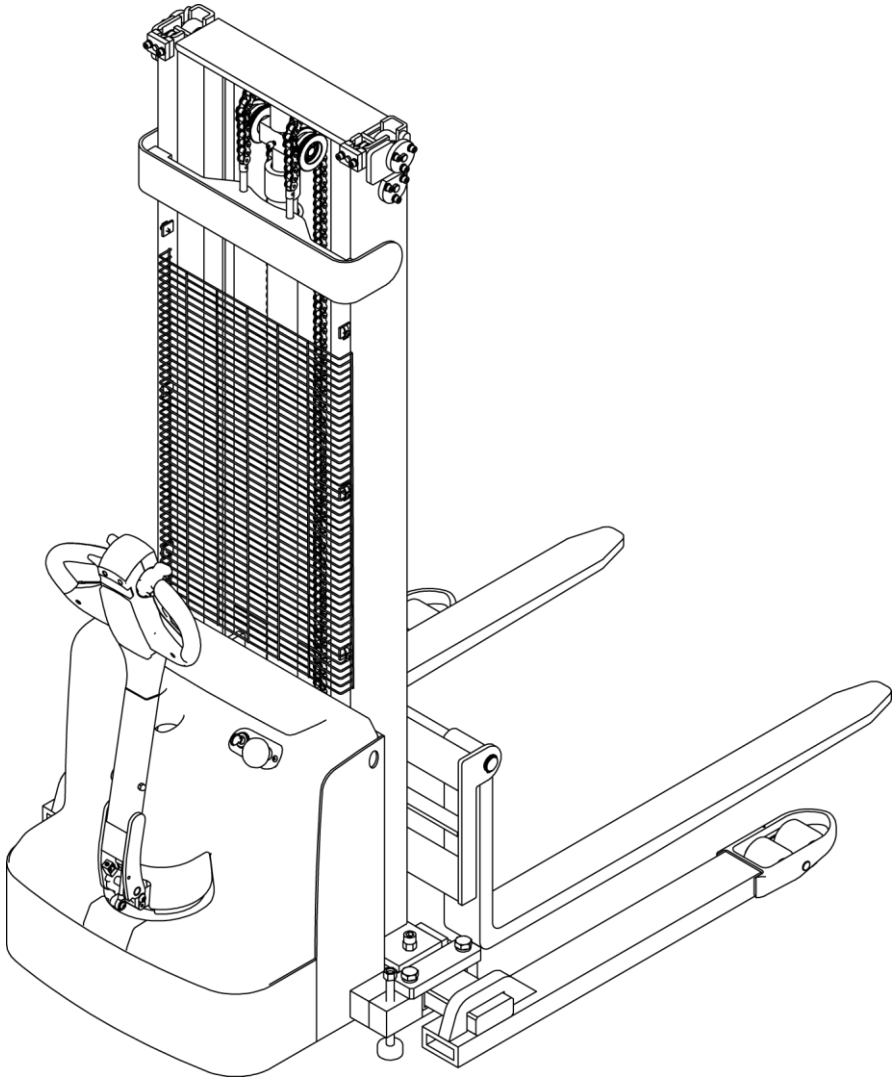
EKKO®
MATERIAL HANDLING EQUIPMENT
MOVING AHEAD

SPECIFICATION

Walkie Electric Stacker

EB13E/EB13E-138



Introduction

In order to meet the needs of the national environmental protection request, To reduce industrial pollution and improve productivity, we develop new series of CL Series full electric stacker on the basis of absorption of the advantages of domestic & overseas battery Pallet truck, they are especially suitable for cargo loading and unloading, handling, stacking, etc for food, bank, light textile, station, port, logistics and other enterprises.

This manual describes the technical parameters of the Pallet truck, working principle and operation, maintenance, and other aspects. It can help operators use the Pallet truck more reasonable, make its maximum effect.

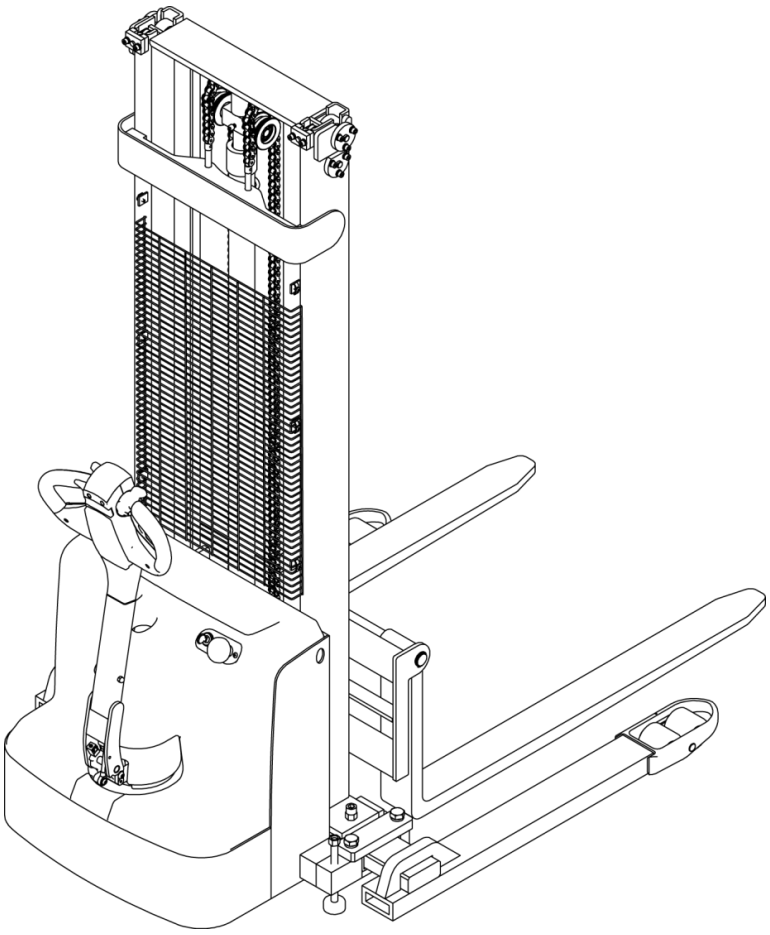
It is hoped that Operator strictly abide the regulations and the precautions in this manual when using the Pallet truck. Carefully use them so that your Pallet truck can be in the best working condition for long period of time to maximize it's effectiveness. And create better economic benefits.

The Statement

Our company production model EB13E & EB13E-138 type 2800lbs Electric stacker is a special motor vehicle used in factory ,tourist attractions ,amusement places which is specified by “special equipment safety supervision regulations” .

Content

1.The General Introduction



EB13E &EB13E-138 Electric stacker ,the stacker adopts advanced structure such as wide-field lifting system and new DC controller, and is equipped with high-quality motor, traction battery and high-power pumping station motor. Then it has the characteristics of superior performance, convenient operation, wide field of view, flexible steering, reliable braking, good power, low noise, no pollution, and beautiful appearance.

The device is suitable for Stacking & Handling cargo on firm ,flat floors

The service environment：

a. Altitude does not exceed 1200m.

b. Indoor room temperature at +5℃to +40℃.

c. When environment temperature at +40℃,the relative humidity can’t over 50%,at low temperature ,allow bigger relative humidity

d. Firm, Flat ground 。

e. It's forbidden to use this car in corrosive environment such as flammable and explosive or acid base

2. Proper use

Please using the electric Stacker according to this specification.

This is a walkie type electric stacker with autonomous control , lifting and lowering is controlled by the handle button.

Improper use can cause personal injury or machine damage. Operators or operating companies need to ensure proper using,

The Truck needs to be used on a firm ,flat ,intact surface and suitable surface; the truck is designed for indoor use at room temperature from+5°C to +40°C

Use under light load without using permanent barriers or pits ,it is forbidden to operate on the slops .During Operation ,The goods must be placed approximately at the center of the truck's load center

Lifting or Carrying people is strictly prohibited ,if carried goods .The goods must fall on the lifting point 。

It is prohibited to use this truck on lifting or loading ramps.

The rated capacity is marked on the capacity label or nameplate. And the operator must pay attention to the warming signs and safety instructions.

Operating lighting must be at lest 50LUX

Modification

Any modification that may affect the truck rated capacity, stability, or safety operations must be approved in advance by the Truck's original manufacturer or Its authorized Manufacturer or its successor. This includes the effects of changes such as Braking ,steering ,Visibility, and the addition of removable accessories.

After the manufacturer or its successor approves the modification or change ,The capacity name plate ,Label, identification marks, operation and maintenance manual must be changed accordingly

Truck damage caused by not following Instruction will lose its warranty.

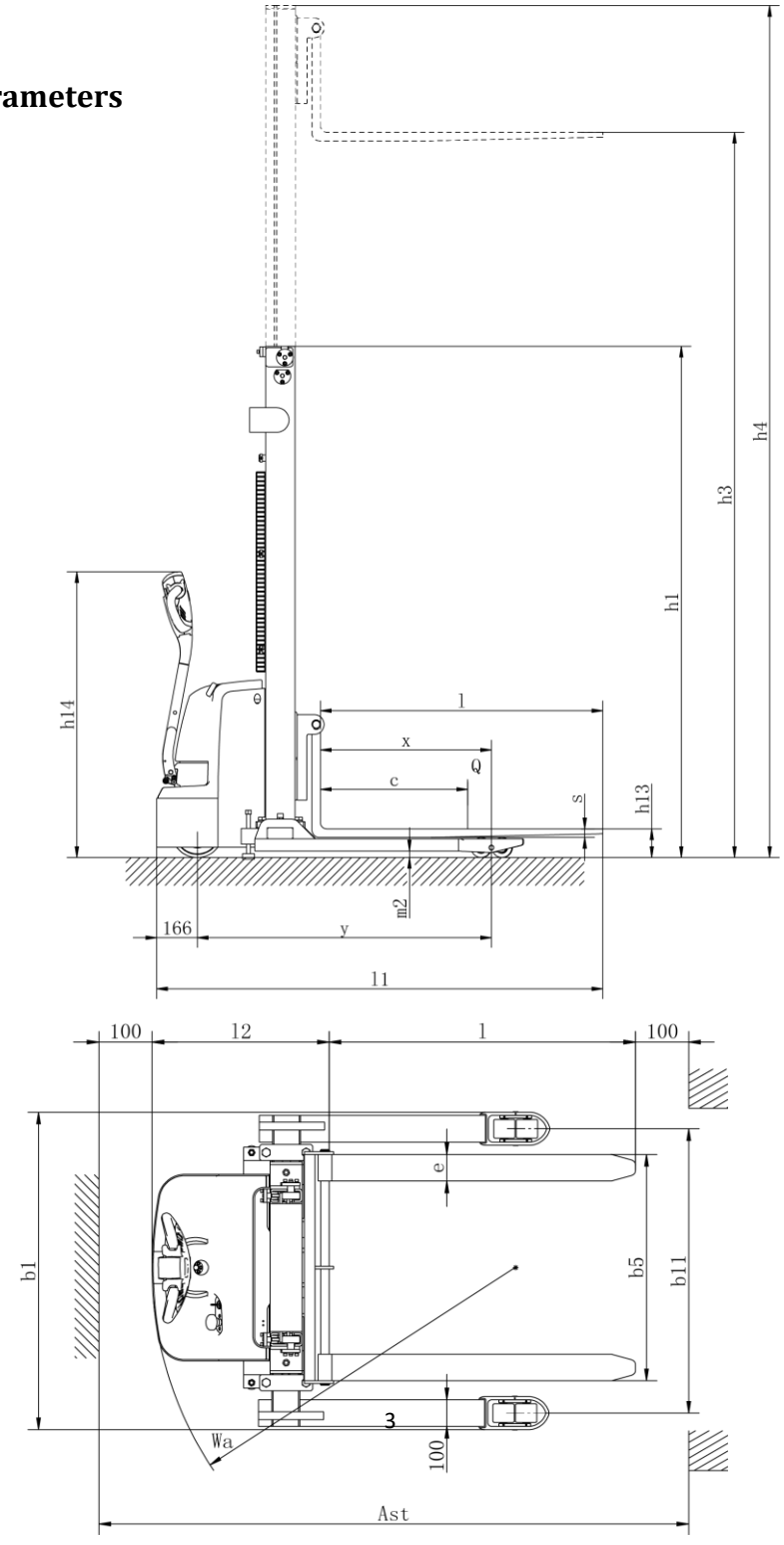
3.Introduce of the product

3.1Product overview .

This specification is for EB13E & EB13E-138 Walkie Electric stacker（follow as truck).

The type is“EB13E &EB13E-138　load capacity is 2800lbs” meet the requirement of JB/T8452-1996《Battery forklift model establishment method》,

3.2Model parameters

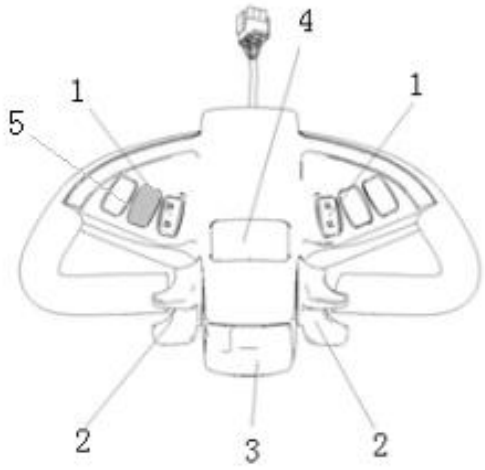


Mode		EB13E	EB138-138
Drive type		Electric	Electric
Type of operation		Walkie type	Walkie type
Load Capacity	Q (lbs)	2800	2800
Load Centre	c (Inch)	23.6	23.6
Distance between fork backrest and front	x (Inch)	27.48	27.48
Wheelbase	y (Inch)	47.32	47.32
Service Weight（with battery）	Lbs	1430	1470
Tire material		PU	PU
Driving wheel size	Φ×w(Inch)	Φ8.27×2.76	Φ8.27×2.76
Bearing wheel size	Φ×w(Inch)	Φ3.15×2.76	Φ3.15×2.76
No of Driving wheel,/Bearing wheel(X=Driving wheel		1x+1/04	1x+1/04
Rear wheelbase	b_{11} (Inch)	40.32-56.06	40.32-56.06
Lowered mast height	h1 (Inch)	81.89	91.73
Free lift height	h2 (Inch)	0	0
Lift height	h3 (Inch)	118.11	137.8
Extended mast height	h4 (Inch)	139.72	159.41
The height of handle in the operation	h_{14} (Inch)	26.77/45.87	26.77/45.87
Lowered fork height	h_{13} (Inch)	2.56	2.56
Overall Length	l_1 (Inch)	71.58	71.58
Body Length	l2 (Inch)	26.3	26.3
Overall Width	b_1/ b_2 (Inch)	45.2-60.95	45.2-60.95
Fork Size	s/e/l (Inch)	1.39/3.94/45.3	1.39/3.94/45.3
Fork Width	b5 (Inch)	8.27-33.47	8.27-33.47
Ground clearance under mast	m_2 (Inch)	1.02	1.02
Aisle width for pallets 1000*1200	Ast (Inch)	88.19	88.19
Aisle width for pallets 1000*1200	Ast (Inch)	87.01	87.01
Turing Radius	Wa (Inch)	53.94	53.94
Driving Speed，load/unload	(km/h)	4.0/4.2	4.0/4.2
Lifting Speed load/unload	(mm/s)	92/136	92/136
Lowered Speed load/unload	(mm/s)	112/98	112/98
Maximum gradeability load/unload	(%)	6./8	6./8
Brake Type		Electromagnetic	Electromagnetic
Drive Motor	(kW)	0.75	0.75
Lift Motor	(kW)	2.2	2.2
Battery，according to DIN 43531/35/36		no	no
Battery voltage/rate capacity	(V/Ah)	2×12/100	2×12/100
Battery Weight（±5%）	(Lbs)	2×59.4	2×59.4
Type of drive control		DC	DC
Noise level	(dB(A))	69	69
Steering type		Mechanical	Mechanical

4.Operating principle

The Truck with battery as power producer and controlled by electrical and hydraulic, trucks can do some actions like walking, turning, pallet forklift, etc.

Operating mechanism diagram:



1.Up/Down Button 2.Driving Knob 3.Emergency stop switch
4.Horn Button 5.Electricity meter

5. Operating principle

5.1Running system

Stacker use battery as the power source through controlling DC motor on the driving wheel to fulfill the function of walking, DC motor convert the high-speed low torque to low speed high torque through gearbox, being implemented by driving wheel. The speed of walking is controlled by accelerator .

In general, every 1000 hours change the lubricating oil in the gearbox.

During usage, if any noise coming from gearbox, please stop the stacker and check, to judge whether bearing or gear have some problem.

5.2 Steering system

The steering of the stacker is driven by the operating handle through the handlebar to drive the motor for steering.

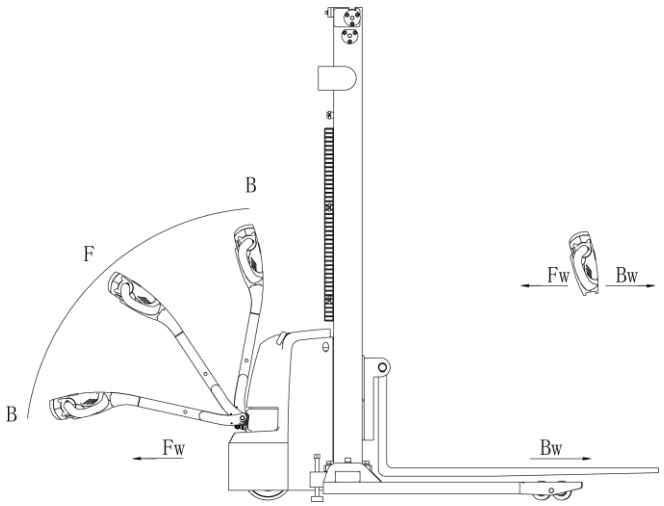
5.3 Brake structure and brake schematic diagram.

Braking performance depends on road conditions and vehicle load conditions.

5.3.1The brake function can be activated by the following ways：

- Turn the travel switch (2) to "0" position or release the switch to make truck brake until it stops.
- With the driving switch (2) moving directly from one driving direction to the opposite direction, the vehicle regenerates the brake until it begins to move in the opposite direction.
- The handle moves up and down to the braking area (' B ') and the truck brakes. If the handle is released, the handle automatically moves to the upper braking area (' B ') and the truck stops until it stops.

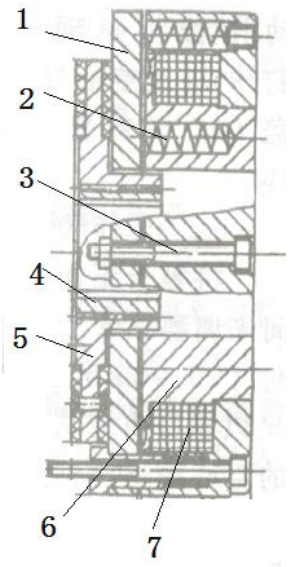
Emergency Reverse button (3) can prevent the operator will be squeezed, when trucks are driven towards (' Fw) encounters an obstacle, body touch belly to slow down or start to switch truck (' Bw) driven a short distance, then stop. If the handle is in the operating area and the truck is not moving, please consider that this is still working.



5.3.2Braking operation principle：

As follow picture：The brake constitute by magnetic yoke 6 ,magnet exciting coil,7 , the spring 2, the brake disc 5,the armature 1, the gear sleeve 4, the mounting screw 3,And so on .The brake is mounted on the end cap of the motor and the mounting screw is adjusted to the specified air gap value.

When magnet exciting coil 7 for brake on power，The coil generates a magnetic field to to attract the armature 1 to the yoke assembly 6, and the armature 1 is disengaged (released) from the brake disc 5.At this time, the motor drive shaft is normally started and operated with the brake disc 5.When the magnet exciting coil 7 is de-energized, the magnetic flux disappears, the armature 1 is released, and the spring 2 is pressed against the armature 1, and the friction plate on the brake disc is pressed to generate frictional force for braking purposes.



Brake schematic

5.4 Operating System

The main working body of a moving truck is a cargo fork, which relies on a fork to carry the pallet or cargo for transport and short distance transportation. The expansion of the cylinder is realized by the control of the operating handle, and the pressure oil is provided by the pumping station.

A descending valve is installed in the circuit of the lifting cylinder to slow down the speed at which the fork falls, and the safety drop effect is achieved

5.5 Electric System

The electrical system includes walking and operation control. The truck use DC electric control assembly.

The meter has a battery indicator. When the battery power is too low, the electric meter will cut off the starting control line of the oil pump motor. The moving truck can only walk without lifting the fork, and the stacker should be charged immediately.

The motor of oil pump is the DC motor for 5 minutes, so the pump motor is not suitable for long running. That is, the lifting movement should have time interval, can not continuously carry on, otherwise would make the motor heating, even burn.

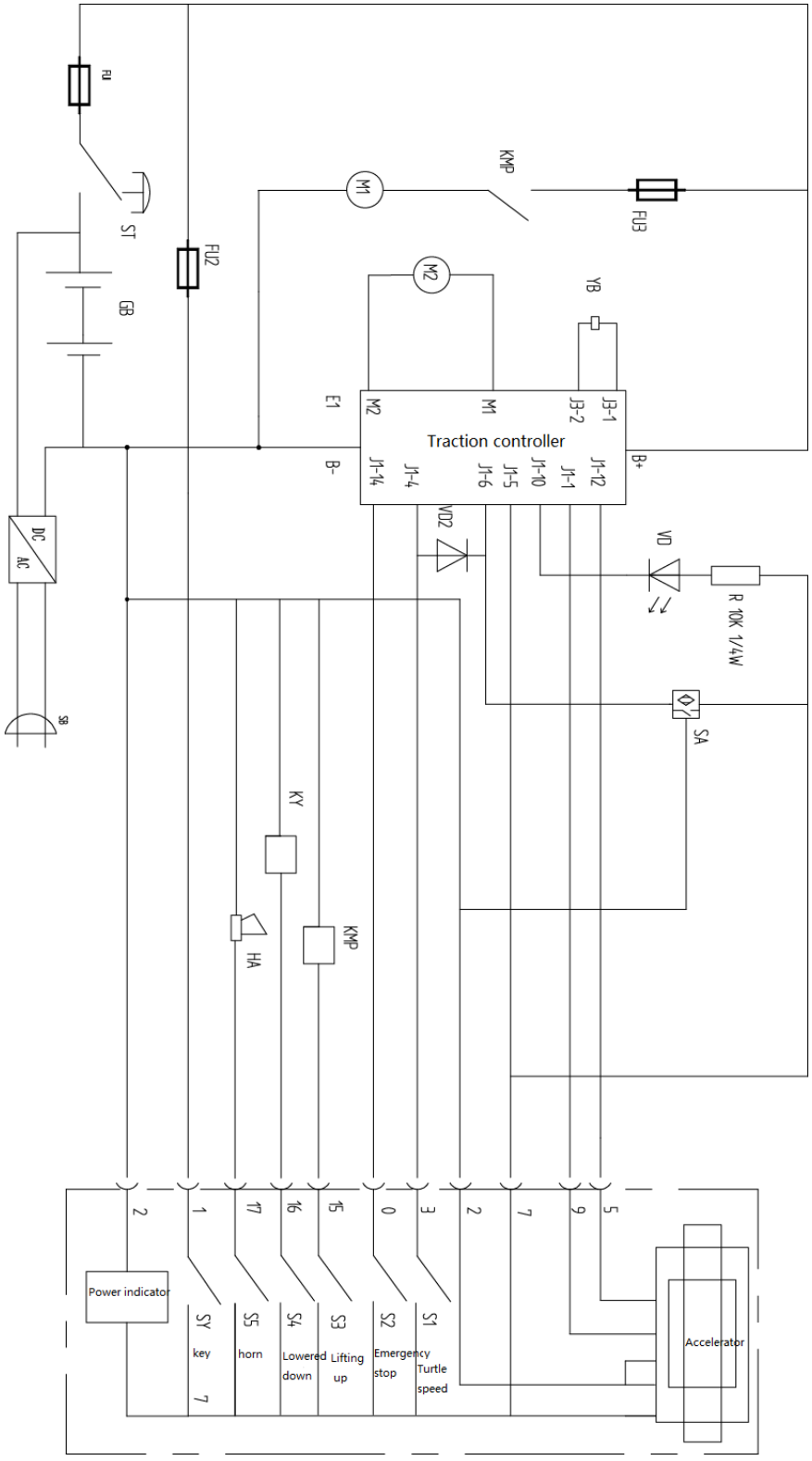
Special note: when the truck is used for a long time, the starter of the oil pump motor may fail, and it can't be broken after being sucked or closed. The latter is not throw control handle, the oil pump motor is kept in the rotation, should immediately stop at this moment, to cut off the power supply (unplug battery plug-in), make the oil pump motor stop running, and promptly replace the starter.

5.6 Hydraulic principle

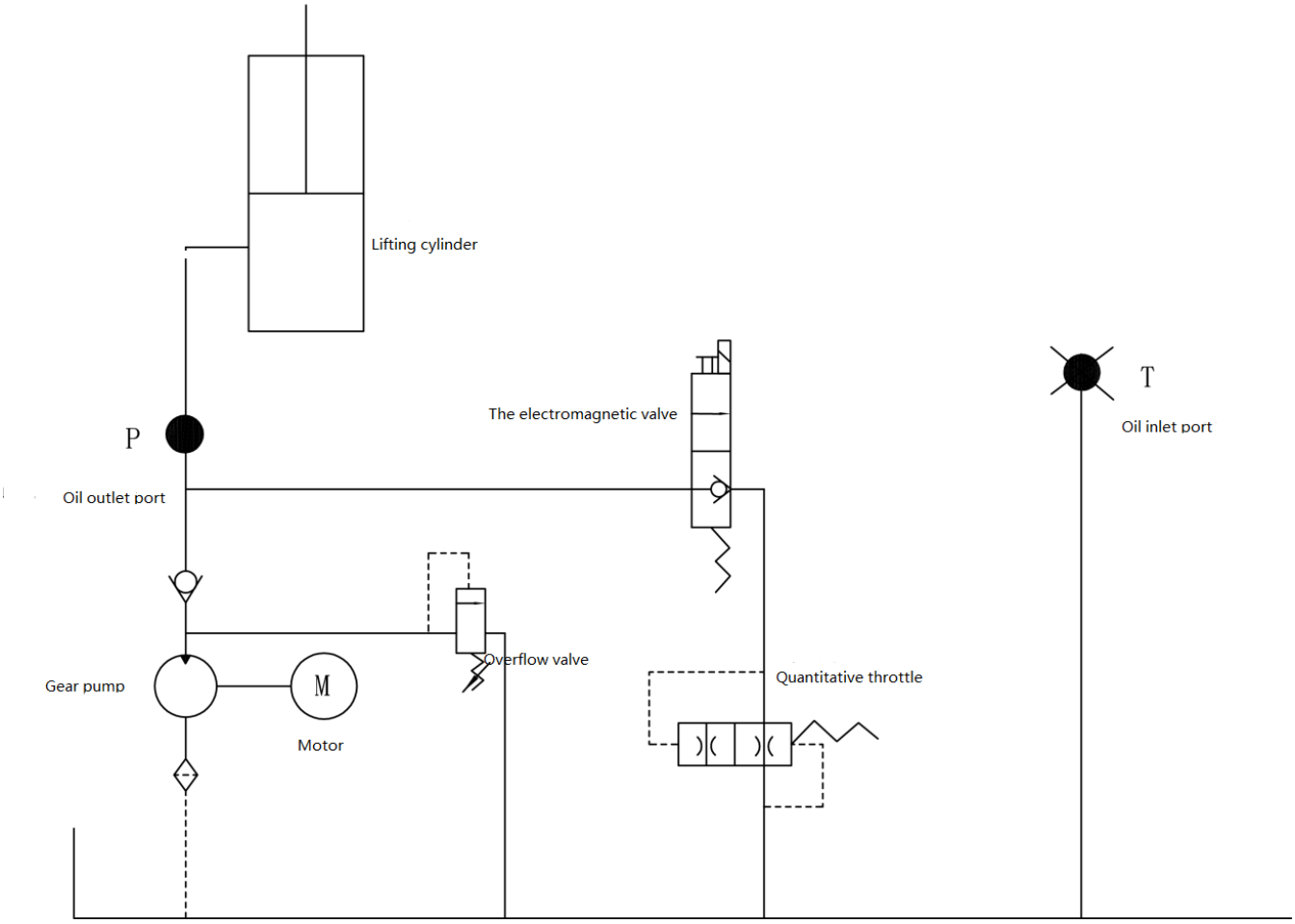
The oil pump motor drives the gear pump to provide hydraulic power, lifting oil cylinder is responsible of fork’s lifting and lowering, The control of the lift oil road is controlled by the buttons on the operating handle, The lifting action is controlled by a single action oil circuit on the valve block. This model of the hydraulic system pressure can only be adjusted on the valve block, has been debugging good, before they go out after they leave the our company after-sales

personnel or professional maintenance personnel are strictly forbidden to adjust themselves, so as to avoid safety accident.

6. Electrical schematic diagram



7. Hydraulic Scheme



8.Operating Instruction

Before operation, please familiarize yourself with the functions of the switches and buttons on the dashboard.

8.1 Start, run and parking:

① Insert the key into the key switch, turn to the right, the emergency power safety switch clockwise reset, gently open the control circuit.

② The fork rises from the ground about 10 cm.

③ Slowly turn on the travel switch until the required speed.

④ In the process of operation, forklift exception occurs fault, need to quickly cut off power supply, please press the red emergency power switch.

⑤ When the forklift is turning, you should reduce the speed and, if possible, try not to make sharp turns.

⑥ Forklift truck carrying gradeability is 10%, so the uphill slope need to understand the situation, when climbing the forklift must accelerator pedal pressed down as far as possible, the maximum climbing force can be achieved.

⑦ When the stacker stops , Lowered the fork to the lowest position, press the safety switch, and pull out the key.

8.2The using of emergency power safety switch

If the forklift is out of control during driving, or if it is smoked or burnt during use, please press the emergency switch on the forklift seat cover and the power will be cut off. Find out the cause and clear the fault before you can open it. The method of opening is as follows: the emergency power-off safety switch is rotated in the direction indicated by the arrow above the button, and the opening is completed.

The button of the emergency power off switch is a plastic piece. When pressing down or rotating up, do not use excessive force to avoid damage to the switch.

8.3 The use of Horn and reversing Horn

For the safety of driving, vehicle equipped with Horn .To remind others when driving, press the horn button in the middle of operating handle and the horn will ring to warn pedestrians.

8.4 Battery capacity indicator

The battery capacity of the forklift truck on the dashboard has capacity display function.

8.5Operation

（1）How to carry goods

Will truck slowly drive to the front of the need to carry items, insert the pallet fork and move forward slowly, when the goods completely inserted into the goods after parking, control handle upgrade button, the heavy lifting to a certain height, back slowly, don't touch the adjacent goods, when the weight zone is put out the goods, and then walk handling.

（2）How to place the goods

When moving the goods close to the area of the goods, it will slow down. When the moving truck is in a straight line with the goods, then the moving truck will slowly move forward to the loading area to stop. Slowly press the down button, and once the load is held, the fork will be lowered to the hollow position. When the fork is pulled out of the weight, the back position will be confirmed without any obstacle. Wait for the fork to leave the weight completely before carrying on a round of handling.

9.Maintenance and care instructions

The spare parts of the truck are not allowed to change without permission. All parts supplied by the original manufacturer are subject to strict quality inspection. To ensure the safety and reliability of the vehicle, please use the original parts. Replacement parts, including all oils, must be collected and processed in accordance with local environmental and health laws and regulations.

9.1 Repair and Maintenance

Maintenance technician: The maintenance and service should only be performed by special personnel trained by the manufacturer. After the technician sent by after-sales department of the manufacturer completed maintenance and servicing work, they should sign on the service log.

Cleaning Operation: Flammable liquid can not be used for cleaning the stacker. Before cleaning, take safety precautions to prevent electric sparks (e.g. sparks caused by short circuit). When operating the accumulator, connectors on it must be disconnected. Use soft air suction or compressed air, non-conductive and anti-static brushes to clean electric and electronic components.

Operation of Electric System: Operation on the electric system should only be performed by specially trained personnel. Before performing any operation on the electric system, precautions must be made to prevent electric shock. When operating the accumulator, connectors on it must be disconnected.

Installation: When repairing or replacing hydraulic components, electric and electronic components, make sure to install them back to their original positions.

Wheels: Quality of the wheels has significant effect on stability and driving performance of the truck. Modification on wheels can be performed only with the approval from the manufacturer. When replacing wheels, ensure that the truck is levelled as delivery state(wheels must be replaced in pairs, i.e. replace right wheel together with left one).

Lifting chain and rollers: Chain and rollers will be worn quickly without good lubrication. Perform periodic lubrication according to following maintenance table. Shorten the lubrication period under adverse operation conditions (such as in dusty and hot environment).

Lifting the chain and rollers: If there is no good lubrication, the chains and rollers will wear out quickly. It must be periodically lubricated according to the requirements of the following maintenance table. In harsh working conditions (such as dust, high temperature), the lubrication cycle should be shortened.

Hydraulic oil pipe: The oil pipe must be changed every 6 years. When change the hydraulic assembled parts, the oil pipe should be also changed.

9.2 Routine Maintenance

9.2.1 check the condition of each pole, cable and protective cover of the accumulator.

9.2.2 check whether the battery box is secure.

9.2.3 check whether the vehicle is oiled.

9.2.4 check the situation of fork, oil pipe and horn.

9.2.5 check the braking condition.

9.2.6 check the wear condition of driving wheel, load wheel and so on.

9.3 Professional Maintenance Manual

It is very important for safe operation of the truck to perform overall professional maintenance. Failure in performing maintenance according to specified interval may cause malfunction of the truck, and potential risk to human and equipment.

Maintenance periods listed in this manual apply to single shift a day under normal operation conditions. If using in dusty environment, the ambient temperature varies remarkably or in multi-shift situation, the maintenance period has to be shortened.

Maintain the truck according to following maintenance list. Maintenance periods are as follows:

W1 = Every 50 work hours, but at least once a week.

M3 = Every 250 work hours, but at least once every three months

M6 = Every 500 work hours, but at least once every six months

M12 = Every 2000 work hours, but at least once every 12 months

Additional operations should be performed in trial run period:

(In initial 50 – 100 working hours or after two months)

— Check the nuts on the wheels and tighten them if necessary.

— Check the hydraulic components for leakage and tighten them if necessary.

—Replace the hydraulic filter.

Maintain list			Time interval(Month)●			
			W	A	B	C
Brake	1.1	Check the air gap of the electromagnetic brake			●	
Electrical system	2.1	Check the operation switch to show the function of the	●			
	2.2	Check alarm system and safety device		●		
	2.3	Check the cable for damage and the terminal is secure			●	
	2.4	Check the function of the micro switch setting	●			
	2.5	Check controller and EPS controller			●	
	2.6	Cable and motor fixing			●	
Power supply	3.1	By observing the battery		●		
	3.2	Visual inspection of battery charging plug			●	
	3.3	Check if the connection of the battery cable is tight, and if necessary, apply the electrode with grease.			●	
Driving system	4.1	Check the gearbox for abnormal noise			●	
	4.2	Check the running mechanism and grease, check the reset function of the operating handle		●		
	4.3	Check the drive wheel and bearing wheels for wear and damage			●	
	4.4	Check wheel bearings and fixing conditions			●	
Whole frame	5.1	Check if the frame is damaged			●	
	5.2	Check if the sign is complete			●	
	5.3	Check the fixing of the mast			●	
Hydraulic movement	6.1	Check the function of the hydraulic system		●		
	6.2	Check hoses, pipes and connections for tightness, sealing and damage		●		
	6.3	Check the cylinder and piston for damage, sealing and fixing			●	
	6.4	Check the load chain settings and re-tension if necessary			●	
	6.5	Visually inspect the mast rollers and check the wear on the roller faces			●	
	6.6	Check the forks and load handlers for wear and loss			●	
	6.7	Check the tank for oil level			●	
	6.8	Update hydraulic oil				●

9.4 battery maintenance, charging and maintenance.

Any operation of the battery must be guaranteed to stop the vehicle and put it in a safe position.

9.4.1 maintenance personnel.

Battery charging, maintenance and replacement must be operated by qualified professionals. You must carefully read the manual, supply preparation and charging requirements before preparing for the operation.

9.4.2 Fire protection measures.

Smoking and open fire are strictly prohibited when operating the battery. Storage battery and charge must be kept away from combustible materials, at least 2 meters above the distance, the place of storage battery must be well ventilated and equipped with fire-fighting facilities.

9.4.3Maintenance of the Accumulator

1) Keep the nuts on every battery cell dry and clean. Tighten every terminal and cable end and brush them with grease to prevent corrosion. Naked cable ends and terminal posts should be covered with a skid-proof insulating cover.

2) Every two cells should be well-connected. Check the nuts on each pole, if loose, tighten the nuts.

3) Keep the surfaces of accumulator clean and dry. After the completion of recharging, clean spilled acid with cotton yarns or brush. And clean with wet towel if necessary.

4) Over recharging and over discharging should be avoided, and fast charging and insufficient recharging are also not allowed. Otherwise life span of the accumulator may be affected.

5) Do not put conductive objects including metal tools on the accumulator, or short circuit or even explosion may be caused.

6) Never spill any hazardous liquid or solid material on surfaces of the accumulator. When using a densimeter or a thermometer, make sure the surface is clean and clear.

7) Recharge the discharged accumulator in time. Delayed recharging may damage the accumulator. Do not delay recharging more than 24 hours. Recharging of the accumulator may not work outdoors in cold weather. In this case, move it indoors to perform recharging.

8) If the accumulator will not be in use for a long time, it should be recharged and discharged once every month and it should be fully recharged every time.

9) During recharging or using, the liquid level of electrolyte lowers because of water evaporation, so pure water should be added. It is not allowed to add electrolyte with a specific weight of 1.280.

10) If individual cell fails, identify the cause and repair the cell immediately. Replace the cell when it cannot be repaired.

11) The site for recharging should be well ventilated. It is prohibited to smoke or use open fire, avoiding the risk of hydrogen explosion.

12) The electrolyte in accumulator is toxic and corrosive. For this reason, always wear working suit and protection glasses to protect your body from contacting the electrolyte in accumulator.

13) If your clothes, skin or eyes are spilled with acid liquid in accumulator, flush with large amount of clean water. For skin and eyes, flush with large amount of clean water and seek doctor's treatment immediately. Acid spillage must be neutralized and treated immediately.

14) The weight and dimensions of the accumulator have remarkable effect on stability of the stacker. Therefore, do not modify the type of accumulator without approval from the manufacturer.

15) Never discharge in large current, for example, performs travelling and lifting simultaneously.

9.4.4 Disposal of used batteries.

Scrap battery must be carried out in accordance with the relevant laws and regulations in region recycling, storage provisions stipulated by the environmental protection area or waste treatment area, and the work must be conducted by qualified professional company.

9.4.5 Specification of the accumulator

Battery		Charger	
Rated Voltage:：24V	Rated Capacity：100Ah	Input：195/265VAC 50/60Hz	Output：DC24V15A

Uninsulated terminal poles on the accumulator should be protected with an insulated cover. When connecting the accumulator and socket, make sure to stop

the device and put the switch at position “0”.When replace or install the accumulator, make sure the accumulator is fixed securely in battery box.

9.4.6 Storage, transportation and installation of the accumulator

The device must be parked on the level ground steadily. To prevent short circuit, naked cable ends and the terminal posts should be covered with insulated covers. When pulling out the accumulator, properly arrange removed accumulator's connectors and cables without blocking access of the accumulator.

9.4.7 Battery power indicator

Battery power display table: ten article showing represent 100% of the battery.

With the consumption of battery capacity, the glowing article shows will be from top to down.

The color of LED show the different states:

Name	LED Color	Parameter value
The standard battery remaining power	Green	70-100%
	Orange	30-60%
	Red blinking	0-20%

Battery discharge on 70%,red lamp will be blinking “Energy storage”.

Battery discharge on 80%,two lamps will blinking “run out of battery”, Need to charge the accumulator.

9.4.8 Charging

Read the instruction manual carefully before recharging.

When charging, make sure that no metal objects are placed on the battery. Before starting the charging operation, check all cable and plug connections for obvious defects. All safety instructions such as battery replenishment regulations and battery charging preparation must be strictly observed

During the charging process, the battery and battery charging room should be well ventilated to ensure safe charging.

Before connecting or disconnecting the charger, make sure the charger is not in the circuit state.

To ensure safe operation, the vehicle must be fitted with a protective cover before use.

Personnel should be as far away as possible from the battery to avoid danger

10.Safety Caution

10.1 General rule

10.1.1 The operator must have a forklift operation qualification which proved by the relevant departments of the training before driving truck.。

10.1.2 The operator must read the instructions before use all of the content, after fully understand operation method can drive Truck.

10.1.3 truck must not carry passengers.。

10.1.4 Operators should pay special attention to when homework operating environment, including other people nearby and fixed object.

10.1.5 Without the manufacturer's approval, shall not modify, add or remove tractor parts, lest affect performance of tractor.

10.2 Storage and transportation

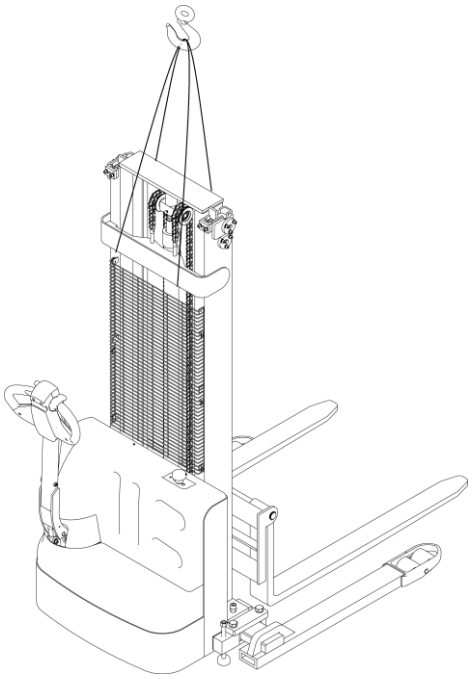
10.2.1 Use container or car to transport the truck should pay attention to at the time of shipment:

① Front and rear wheels with wedge, begin to pull up the parking system, prevent sliding in the process of transportation.

② Using the lasso, not placed in the weak structure of the truck.

③ When transporting in a stacker, take care to keep the center of gravity of the stacker in the middle of the forks.

④During Transportation, Remove the Trailer and fix the tractor with a dedicated strap for lifting according to the figure below。



10.2.2 When Truck doesn't work, should be parked in a dry ventilated cleaning warehouse, prevent weathered.

And please note:

① Turn off the Electrical lock and make the safety switch off, unplug the power plug

② Begin to pull up the parking system, front and rear wheels with block mat;

③ Such as discontinued for a long time, battery should be added once every 15-day electricity.

10.3 Check before using

10.3.1 New car if there is any damage in transportation, please don't be put into use, and promptly get in touch with the supplier, do proper processing.

10.3.2 New cars in the factory run parts has been filling lubricating oil.

10.3.3 Truck equipped with battery. The battery is charged before leaving factory. If leaving the factory for a long time, may the battery be low. Before use should pay attention to electricity meter shows that when the electricity meter display to the last two warning, must charge at once. Every day before using, or before charging, should open the battery blocks, check the liquid level height, such as liquid level is too low to add distilled water in charge. Detail as (Battery charging and maintenance

10.4Safety operation regulation

10.4.1Requirement for operator: The Truck must be operated by a trained operator, He can perform and operation demonstration on the user to move and manipulate the cargo and can clearly guide the user how to operate the forklift.

10.4.2 Operator's rights, obligations and responsibilities： Has been trained by the operation of the vehicle, the driver must be clear of his rights and obligations; and he is familiar with the contents of the relevant operating

instructions. If the vehicle is pedestrian type, the driver must also wear safety boots.

10.4.3 Prohibit unauthorized person to operate： The operator is responsible for the vehicle, he need to prohibit unauthorized person to operate. Transport or lift person is also forbidden.

10.4.4 Malfunctions and defects： If the vehicle has any malfunctions or defects, need to inform administrator, If the vehicle cannot be safely operated (e.g.: wheel wear or brake failure), then it must stop using until it is fully repaired.

10.4.5 Safe operation and environmental protection： inspection and maintenance must be performed in accordance with the time intervals on the maintenance list.

Parts of the vehicle cannot be changed without any permission, especially safety devices. The operating speed of the truck is not allowed to change.

All original spare parts have been verified by quality assurance department. To ensure the safety and reliability of the operation of the truck must use only the manufacturer's spare parts. The old parts, such as oils and fuels must be handled in accordance with the relevant environmental protection rules.

10.4.6 Hazardous area: Hazardous area usually refers to the following range: vehicle or its load lifting devices (e.g. fork or accessories) is dangerous for personnel when running or lifting movements, or the ongoing regional transport loads. Typically, this range extends to the load or truck accessories landing area.

Unauthorized personnel must be asked to leave the dangerous zone. As long as the situation might cause some kind of damage, the driver must give a warning, if the driver asked the person to leave but did not leave the hazardous zone, the driver must immediately stop the vehicle.

10.4.7 High-risk environment： Working in high-risk environment, operator must have a special design to be protected.

The vehicle was not specially designed for the high-risk environment.

10.4.8 Safety devices and warning signs: Safety devices, warning signs and warning notes described in the previous operating instructions must be taken seriously enough.

10.4.9Driving in public places: the vehicle is forbidden to drive in public places expect in specified special areas.

10.4.10Distance between truck: keep an appropriate distance, avoid the front vehicle suddenly stop.

10.4.11headroom: When the headroom is below the cargo or mast, it is forbidden to use the vehicle.

10.4.12Using in the elevator and loading platform maneuvering: if there is sufficient loading capacity, won't affect the operation of the vehicle, and being agreed by the operator of the vehicle, then the elevator and loading platform can be used for vehicle transport. Before entering the elevator or loading station, operator must personally identify. The goods must be placed in front and occupy an appropriate place, to avoid touching the wall of the elevate when the vehicle enters the elevator. When personnel and vehicles take the elevator together, person can enter only after the vehicle has safely entered, and person must leave before the vehicle.

10.4.13 Driving aisle and working area: The vehicle must be operated on the specified aisle, all non-related person must leave the work area, and cargo should be stacked in designated places.

10.4.14 Operation Management： Driving speed must be adapted to local conditions. When through the corners, narrow passage, swing doors and closed place, speed must be slowed down. Drivers must be able to visually an adequate

braking distance between vehicle and the front vehicle, and he must remain in control of his vehicle. Sudden stop (unless urgent needs), rapid U-turn, chased each other in the Aisle is not allowed. Do not pry out of the body to operate the vehicle.

10.4.15 Visibility: The driver must look attentively at the direction of driving, to ensure the front situation is clearly visible. When the vehicle is backing off, if the carriage of goods blocks the line of sight, a second person walk in front of the vehicle to give appropriate guidance and warnings is necessary.

10.4.16 Pass through the ramp: Only a known ramp which should be clean, non-slip, and with the vehicle technical availability could go through. The goods on the forks must face uphill. It is forbidden to turn back, move diagonally or park on the ramp. The operator must slow down when going through the ramp and prepare to brake at any time.

10.4.17 Load capability on ground: when the vehicle is in operation, make sure the load pressure of the body weight or wheels on the ground does not exceed the load capacity of the ground .

10.4.18 Vehicle Change: Any possible changes or modifications for rated load, stability or safe operation of the vehicle, must obtain prior written approval from origin manufacturers or its successor. After vehicle manufacturer check and approve the changes, nameplates, labels and markings of Operation and Maintenance Manual must be modified as well.

11.Service Manual

11.1 Troubleshooting

Fault	Cause	Treatment
The truck can't move	The battery connector is not connected	Check the battery connector，connected if necessary
	Electric lock switch on “OFF” position	Electric lock switch turn to “0”position
	Emergency Stop Switch not open	Open the Emergency stop switch
	Battery power runs out	Check the battery charge，If it is necessary to recharge
	The vehicle being charge	Interrupt charging process
	The fuse is damaged	Check the fuse
Goods can’t be lifted up	The vehicle is not operating	Handle according to the treatment method listed in Vehicles cannot move”
	Low hydraulic oil level	Check hydraulic oil
	The fuse is damaged	Check the fuse
	Overloading	Pay attention to the rated capacity
	The Up switch is in bad contact or damaged	Check up switch and replace if necessary
Goods can’t be lowered down	Dirty oil blocks control valve	Check hydraulic oil and clean control valve, replace the oil if necessary
	The solenoid valve for lowering is not opened or is damaged	Check or replace the valve for lowering
Can’t stop when lifting	Lifting micro switch is damaged	Cu off the power and replace lifting micro switch

Moving in one direction	The sensitive switch and the connecting cable are not well-contacted.	Check the sensitive switch in control lever and the connecting cable.
The vehicle travels very slow	The related cable is not well-connected	Check the battery indicator light and related cable
The car suddenly started	Controller is damaged.	Change the controller
	The handle which control the forward or back is no reset.	Repair or change

If above steps still can not solve problems, please contact after-sales service department of the manufacturer and have the problems solved by specially trained technicians.

11.2 Preparation before repair

To prevent possible accidents during maintenance and repair work, following preparations must be done:

— Park the device safely.

— Press the emergency stop switch and disconnect the connectors on accumulator.

11.3Check the amount of hydraulic oil

— A vehicle ready for repair or maintenance。

— Open the electrical box cover。

— Check the amount of hydraulic oil in the tank。

When checking the hydraulic oil level, the fork and mast must be lowered to the lowest position.

11.4 Complete repair,the preparation before using

Use the device only after following operations have been completed.

— Clean the vehicle

— Check the brake.

— Check the emergency stop switch.。

— Check the horn.

Several electromagnetic brake tests need perform immediately after the test

12.After Sales Service

If there is a fault that cannot be eliminated by professional service personnel, please contact our after-sales service personnel in timer ,Sales line:+(1) 8772326517

Note: the manufacturer reserves the right of interpretation.

If have change not notice additionally!