

NOBLELIFT



Operation Manual

A series 2.0–3.8t battery forklift truck

NOBLELIFT EQUIPMENT CO.,LTD

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293646020003

Foreword

A series 2-3.8t battery counterweight forklift is a product independently developed by our company. The product has the characteristics of small turning radius, beautiful appearance, compact structure, small volume, low center of gravity, good stability and superior performance.

This manual is about the correct use of A series 2-3.8t battery counterweight forklift instructions, guide you to safe operation and preventive maintenance, and help the operator to use the battery counterweight forklift rationally, so that the battery counterweight forklift to maximize the efficiency! Relevant operators and maintenance personnel, be sure to read this manual before use. This manual is also applicable to container forklifts and forklifts equipped with accessories. Only trained and qualified personnel are allowed to service forklifts.

As our products continue to be updated and improved, you may have a product that is slightly different from some of the descriptions in this manual. If there is any confusion, please contact Nori Group sales company or agents.

This manual briefly introduces the technical parameters of our company's counterweight forklift, the structure, working principle of each main component, and the requirements and contents of operation, maintenance and maintenance. Please strictly abide by the provisions and precautions in this manual, careful driving, careful operation, careful use, so that your forklift truck in the best working condition for a long time, play the maximum efficiency. When you rent or transfer the forklift, please rent or transfer this manual with the vehicle.

For emphasis, the following ICONS are used in this manual:

1.  ---- Indicates a potentially hazardous condition that, if not avoided, could result in serious injury to the person, serious damage to the vehicle, or fire.
2.  ---- Indicates a potentially hazardous condition that, if not avoided, may result in minor to minor injury to the human body or partial damage to the vehicle.
3.  ---- General precautions and instructions when using.

 Most of this product is made of recyclable steel, and the waste generated in the process of use, maintenance, cleaning and disassembly must be recycled and disposed of pollution-free in accordance with local regulations. The recycling of these wastes must be done by professionals in designated areas, such as hydraulic oil, batteries and electronic equipment waste, if not properly disposed of, can cause harm to the environment and human health. The product recall service shall be implemented in case of batch problems.

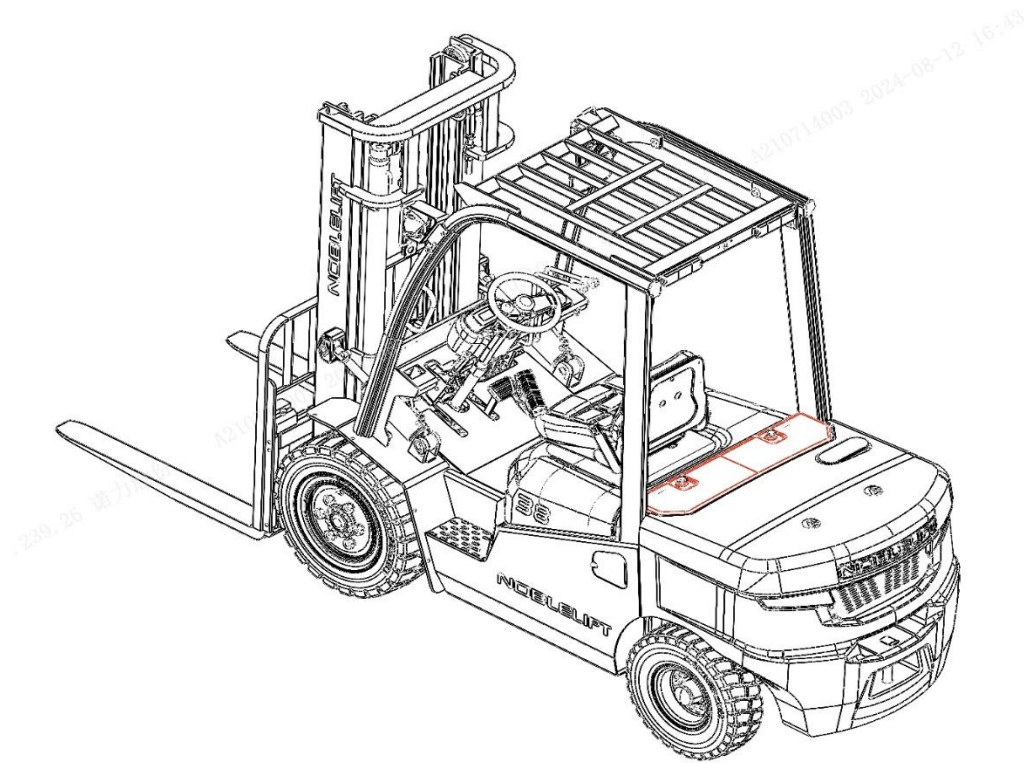
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1 Forklift introduction

1.1 summarize



Body system

- The battery sinks to the bottom of the frame.

Drive and brake systems

- Integral drive axle
- High efficiency and high power AC drive motor, provide super driving force, travel speed up to 19km/h

Control system

- Man-machine engineering, large operating space

Hydraulic system

- Using high-power oil pump motor and working oil pump, the lifting speed is greatly improved.

Electrical system

- 80V battery pack provides super power.
- Large color screen instrument, standard cloud intelligent management module.
- International advanced communication control system

Steering system

Angle sensor

The driving speed reaches about 19km/h, and the lifting speed is about 560mm/s.

1.2 Occasions and conditions of use

The forklift described in this manual is only applicable to loading, unloading and short distance transportation of goods.

The forklift must be used, operated, and maintained in accordance with the instructions in this manual. Any use of the equipment for any other purpose is a non-compliant operation that may result in injury or death, damage to forklifts or other property.

This forklift is only used in specific situations and under specific conditions:

- Use within the specified load rating.
- It is only used in specific areas such as factory areas, tourist attractions and amusement venues.
- Indoor flat, with sufficient bearing capacity of the ground use.
- Use on driving roads with good visibility and the permission of the equipment user.
- The permissible temperature range of the workplace is $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$.
- The altitude does not exceed 2000m.
- Maximum gradient of 20% when fully loaded (high performance version). Lateral or oblique driving is prohibited when going uphill. Keep the goods in front of you when loading them uphill; When loading downhill, keep people in front.

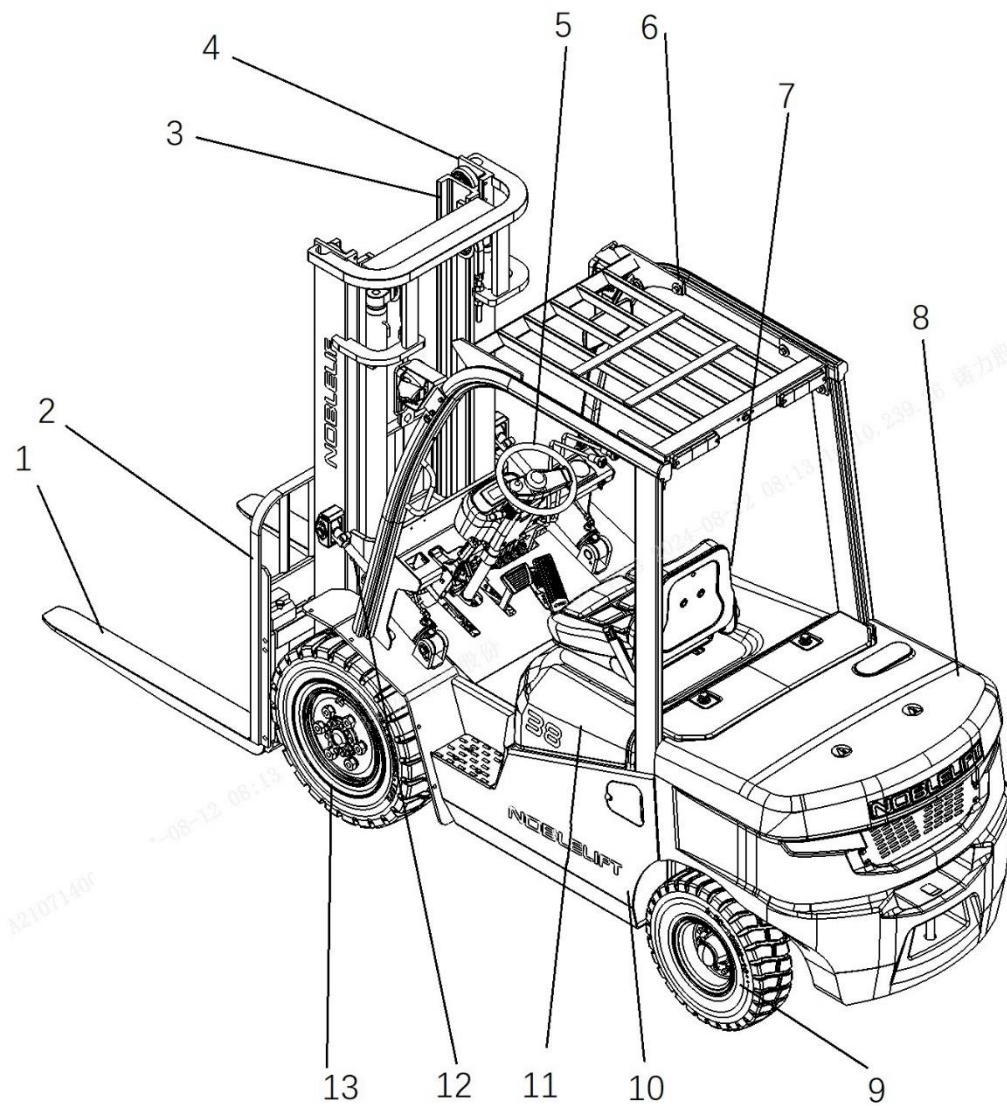
Other Please be sure to read the safety rules in the manual, it has an important impact on your personal safety and the safety of people and goods on the site.



warning

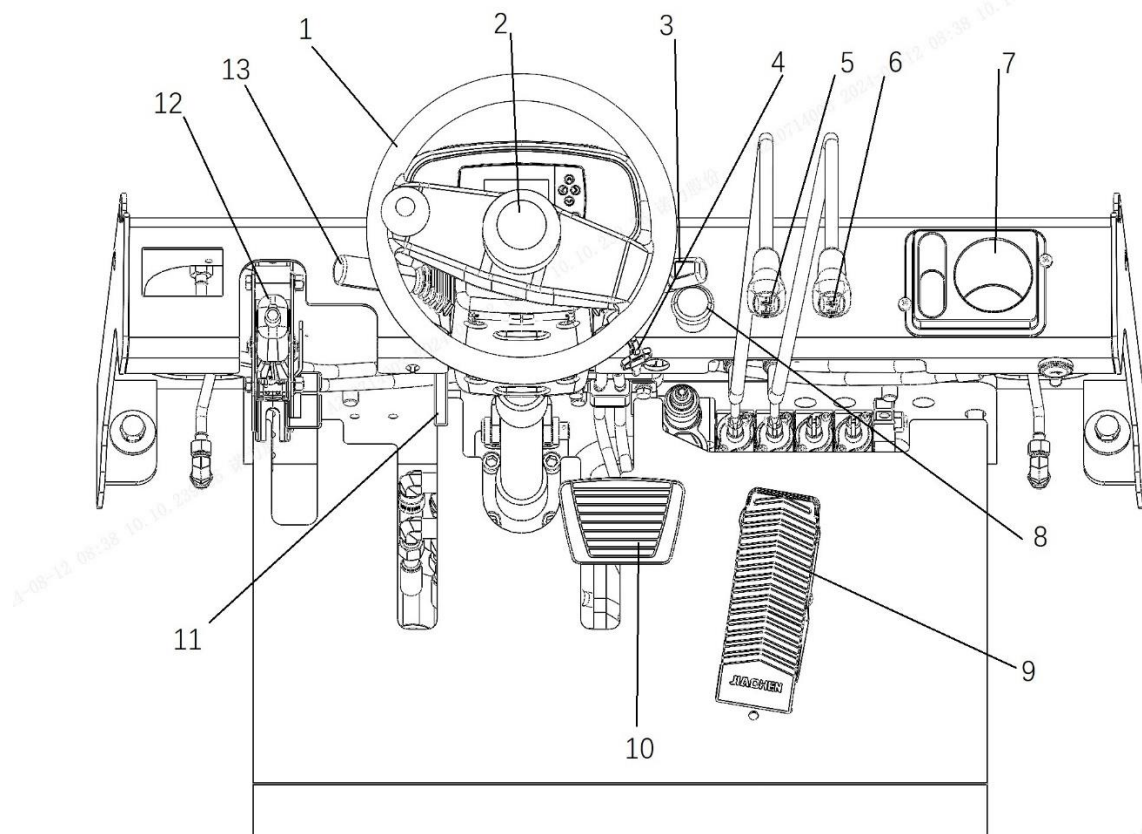
- ① **Driving outside designated areas such as highways is prohibited.**
- ② **Overloading and illegal driving are strictly prohibited.**
- ③ **It is forbidden to push and pull goods.**
- ④ **Non-explosion-proof forklifts are prohibited from being used in flammable and explosive places.**
- ⑤ **Non-cold storage type, prohibited in cold storage.**

1.3 Shape and main components



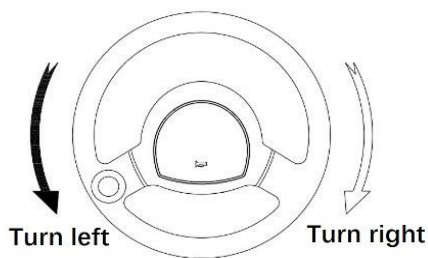
- 1、fork 2、load backrest 3、Inner door frame 4、Outer door frame
5、Steering wheel 6、Roof shield frame 7、seat 8、balancing weight
9、Rear wheel 10、frame 11、hood 12、Tilt cylinder 13、Front wheel

1.4 Instructions for displaying and operating components



- 1、Steering wheel 2、horn 3、Combination switch 4、Key switch 5、Lifting lever
6、Tilt lever 7、Cup holder 8、Scram switch 9、Accelerator pedal 10、Brake pedal
11、Steering wheel adjusting switch 12、Hand brake handle 13、Forward and backward switch

Steering wheel [1]



Control the direction of the forklift

Turn the steering wheel to the right, the forklift will turn to the right; Steering wheel to the left, forklift to the left. The back of the forklift can swing outward.

Warning

The forklift uses full hydraulic steering, so when the oil pump motor stops running, steering is difficult. To turn again, the oil pump motor must be started immediately.

Horn button [2]

Press the horn button in the center of the steering wheel, and the horn will sound.

Combination light switch [3]

The combination switch includes a turn signal switch and a light switch.

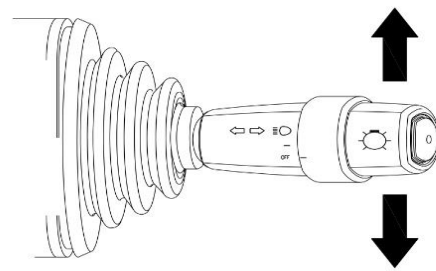
Turn signal light switch: When this switch is

Push forward	←	The left turn signal blinks
meso-position		Off
Rear shift	→	Right turn signal blinks

turned back and forth, the corresponding left and right turn signal indicator blinks.

Notice

The turn signal light switch cannot automatically return to the median position and needs to be manually reset.

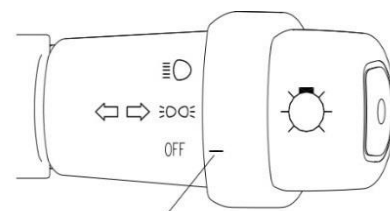


Light switch:

Rotary second gear switch. The light can be turned on and off by turning the knob on the head of the combination switch.

X: Indicate on

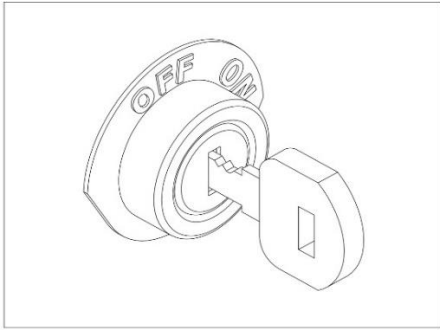
Contact symbol	Light symbol	Front sidelight	headlamp	Width lamp
—	☹		X	X
	—	X		X
	OFF			



Location labeling

To turn on the headlight, front light, width light, turn this switch and align the position line on the switch handle with the corresponding mark on the switch body.

Key switch [4]



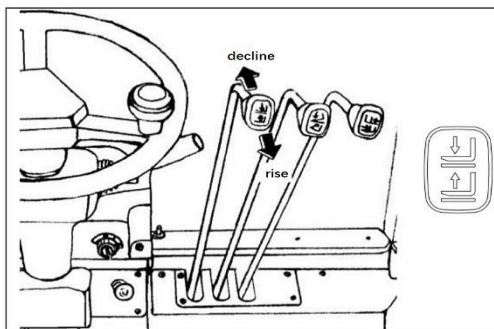
Switch on and interrupt control current. Removing the switch lock key ensures that the forklift does not start accidentally.

The key switch has two positions: ON/off, first set the reversing joystick in the middle position, relax the accelerator pedal, and then turn the key clockwise to the "ON" position.

Notice

- ① If the reversing lever is not in the center position or the accelerator pedal has depressed the key switch to the "ON" position, the forklift will not run.
- ② There may be a fault code at this time, please do not worry.
- ③ The reversing lever can be restored to the middle position and the foot can be removed from the accelerator pedal before the forklift can start running.
- ④ The fault code will also disappear.

Lift the joystick [5]



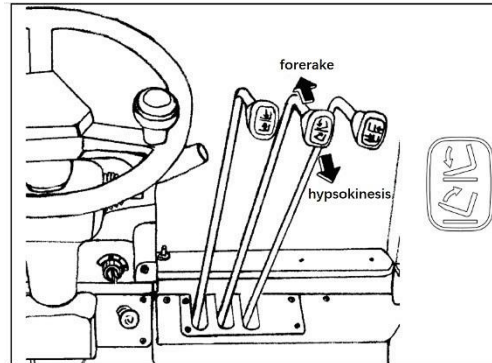
Used to raise or lower the fork.

Push forward --decline; Pull back – rise.

The multi-way valve has a forward-tilting self-locking valve, which can not tilt the door

frame forward even if the forward-tilting handle is pushed forward when the circuit is closed.

Tilt lever [6]



For forward and backward leaning of the gantry.

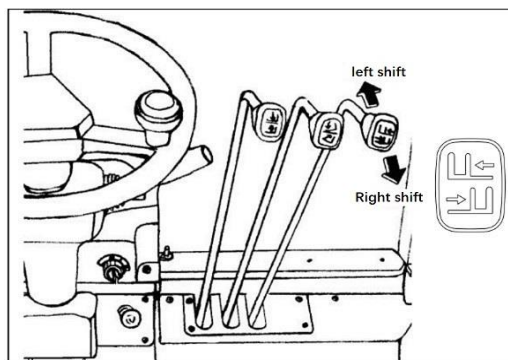
To push forward - to lean forward; Pull back -- lean back

The tilt speed depends on the tilt Angle of the handle.

Notice

The multi-way valve has a forward-tilting self-locking valve, which can not tilt the door frame forward even if the forward-tilting handle is pushed forward when the circuit is closed.

Move the joystick sideways



Push forward -- move left , pull back -- move right

For the left and right movement of the side shift frame

The lateral speed depends on the tilt Angle of the handle

attachment lever

The joystick can be moved sideways, or the joystick or other attached joystick can be rotated, depending on the circumstances.

Teacup holder [7]

On the right side of the meter stand, a teacup holder is set up for the driver to place the teacup.

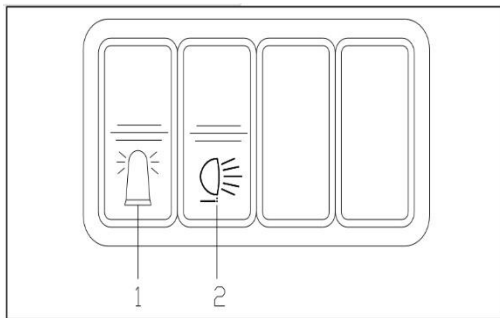
Scram switch [8]

Turn on or off the power.

Notice

Please do not use the tight stop button switch to replace the key switch.

Warping switch [optional]



The warping switch is the warning light and the rear headlight, the left side is the warning light, the right side is the rear headlight.

1. Alarm light switch: press down, the alarm light flashes; Press up. Alarm light goes off.

2. Rear headlight switch: press down, and the rear headlight will light up; Press up, rear headlight off.

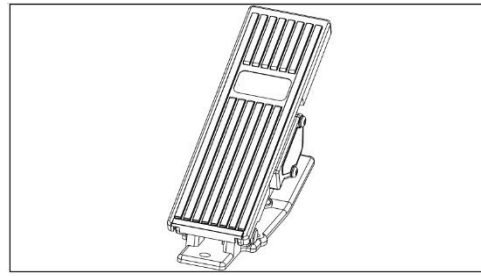
symbol	Control element
	Warning light
	Rear headlamp

Notice

Whether the light is on or not has nothing to do with the key switch position, so be careful not to forget to turn off the light.

Accelerator pedal [9]

In case of emergency, press the red mushroom button to cut off the main power supply of the vehicle. No walk, turn, lift.



The speed of forklift truck can be adjusted stepless.

Slowly press the accelerator pedal, the motor starts to run, and the forklift starts to start. According to the treadle force on the pedal, the running speed can be adjusted continuously.

Notice

Soft braking can be achieved by releasing the accelerator pedal when the vehicle is running.

Warning

Do not press the accelerator pedal before turning on the key switch, otherwise the instrument display will indicate a fault. The accelerator pedal must be released at this point.

Brake pedal [10]

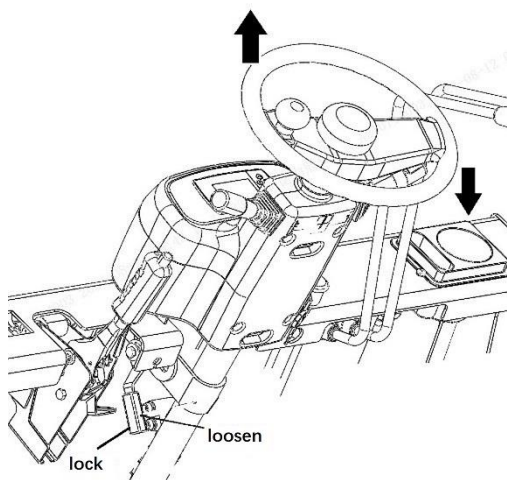


Press the brake pedal, the vehicle slows down, press to the bottom, the vehicle stops. Release the pedal and the vehicle runs.

Notice

Prevent sudden braking. Sudden braking can easily cause the vehicle to tip over or the goods to fall, resulting in safety accidents.

Steering wheel tilt adjustment lever [11]

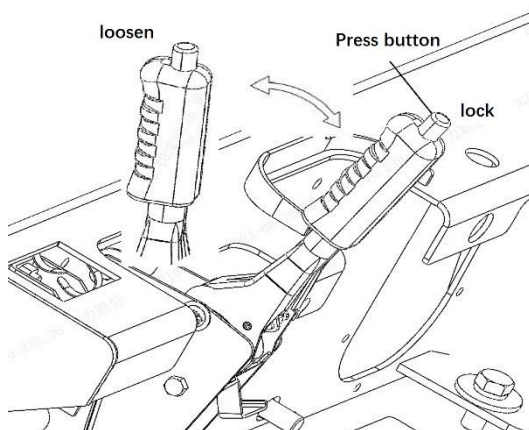


The position of the steering wheel can be adjusted. The method is to pull up the adjusting rod installed on the left side of the directional pipe column, and then move the steering wheel to the desired position, and then push down the adjusting rod to lock.

Notice

- The steering wheel Angle can be adjusted only after the forklift is stopped and the overhand brake handle is pulled.
- After adjustment, push the steering wheel up and down to ensure that it is locked.

Hand brake handle [12]



Pull the handle back, that is, pull tight; Push the handle forward to relax. The handle must be tightened before the operator leaves the forklift.

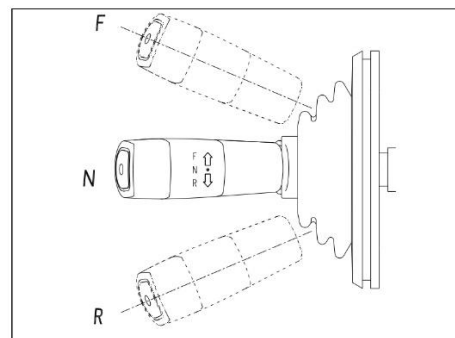
Notice

When the braking system of the vehicle fails or an emergency occurs, the handle can be tightened to achieve emergency braking of the vehicle. It is strictly prohibited to use the hand brake to achieve service braking.

Reversing lever [13]

The reversing lever is installed on the left side of the directional string.

F	Forward gear
N	Neutral gear
R	Reverse gear



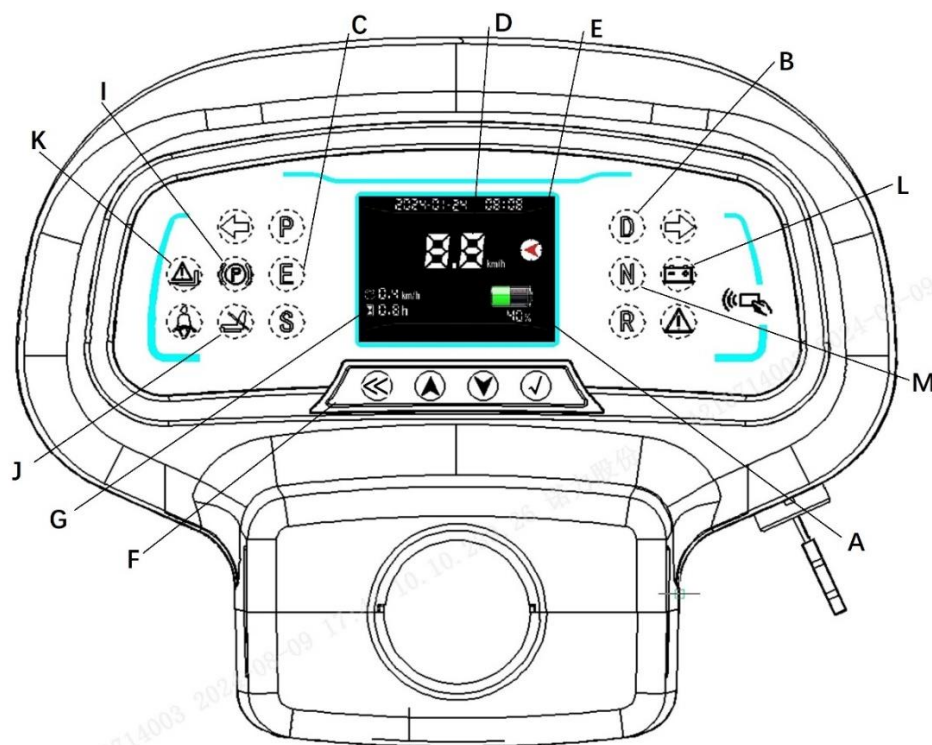
Before changing direction, press the brake pedal to bring the car to a complete stop, then push the handle forward into forward gear. If you need to back up, press the brake pedal to slow the car down and flip the joystick back into reverse.

Notice

The forklift can only be started when the joystick is in neutral.

1.5 Display instrument

1.5.1 Multifunction display



Serial number	reveal	Serial number	reveal
A	Current battery level	G	The digital display shows the cumulative working time of the current vehicle, and the 5-digit display key switch is switched on after the power supply of the vehicle starts to work, the work timer starts to time
B	Whether the vehicle is in a forward or backward state, it is not displayed in neutral	I	Handbrake light: Lights when the driver operates the handbrake
C	Current Working mode There are three working modes: S, P, and E	J	Seat light: Lights up when the driver leaves the seat
D	Current vehicle speed, in km/h or MPH	K	Lift lock light: When the power is less than or equal to 10%, lift lock light on
E	The arrows represent the direction in which the steering wheels travel	L	Battery light: Lights up when the battery level is less than or equal to 20%
F	Menu key	M	Neutral light: Lights up when the vehicle gear position is in neutral

Menu key

icon	name	Feature
	Shift up key	Move the cursor up, or add 1 to the selected number;
	Down key	Move the cursor down, or subtract 1 from the selected number;
	Cancel key	Cancel the current content or return to the upper-level menu;
	Confirm key	Confirm the current operation and enter the menu mode on the main screen.

2.1 Oil pump motor description

menu	Description	note
Tilt function maximum speed		rpm
Auxiliary Function 2 Maximum speed		rpm
Auxiliary Function 3 Maximum speed		rpm
Auxiliary Function 4 Maximum speed		rpm
The maximum allowable speed of the oil pump motor in case of failure		rpm
Oil pump motor overtemperature torque limit point		°C
Oil pump motor overtemperature cut-off point		°C
Oil pump motor fan (speed regulation) starting temperature		°C
Pump motor fan (speed regulation) maximum speed temperature		°C
Lifting control	Oil pump motor lifting related function setting	
Steering control	Oil pump motor lifting related function setting	

2. 2 Main interface parameters list and description

Home page interface parameter list and description			
menu		Description	note
1	Seat switch	Walk - Seat switch status	ON/OFF
2	Forward switch	Walk - Forward switch state	ON/OFF
3	Back switch	Walk-back switch status	ON/OFF
4	Parking switch	Walk - Handbrake switch status	ON/OFF
5	Brake pedal switch	Walk - foot brake switch status	ON/OFF
6	P mode	Walk - Mode P status	
7	S mode	Walk - Mode S status	
8	Lifting switch	Oil pump - lift switch status	ON/OFF
9	Tilt switch	Oil pump - tilt switch status	ON/OFF
10	Sideshift switch	Oil pump - Side shift switch status	ON/OFF
11	Accessory switch	Oil pump - Appliance on/off	ON/OFF
12	Turn the potentiometer	Walk - Current rear wheel steering Angle	
13	Lifting potentiometer	Oil pump - Current potentiometer output value	
14	Accelerator pedal switch	Walk - Accelerator pedal switch status	ON/OFF
15	Accelerator analog input	Walk - accelerator pedal analog sample value	
16	KSI voltage	Current key voltage	V
17	Travelling motor temperature	Current running motor temperature	°C
18	Travel drive module temperature	Current traveling drive module temperature	°C
19	Pump motor temperature	Current oil pump motor temperature	°C
20	Pump driver temperature	Current oil pump drive module temperature	°C
21	Credit card status	Whether the card is currently swiped	
22	accelerator	Current accelerator travel	
23	Traction motor speed instruction	Current set speed of traction drive module	Rpm
24	Current speed of traction motor	Current actual speed of traction motor	Rpm
25	Oil pump motor speed instruction	Current oil pump drive module set speed	Rpm
26	Current speed of oil pump motor	Current oil pump motor actual speed	Rpm
27	SOC	Current battery level	%
28	UDC Voltage value	Current bus copper bar voltage	V
29	Speed per hour	Current vehicle speed	KM/H
30	KSI total time	Current startup running time	H
31	Total mileage	Current total vehicle mileage	KM

32	Discharge current of lithium battery pack	Current battery current	A
33	Traction motor running time	Current traction motor running time	H
34	Oil pump motor running time	Current oil pump motor running time	H
35	Interlock 1	Current seat switch status	ON/OFF
36	Traction PHA	Phase A state of traction motor	
37	Traction PHB	Phase B state of traction motor	
38	Oil pump PHA	Oil pump motor phase A state	
39	Oil pump PHB	Oil pump motor phase B state	

2.3 Calibration - Battery pack list and description

Calibration - Battery pack list and description			
menu		Description	note
1	Bus/battery undervoltage cut-off point	When the bus or battery undervoltage reaches the set value, the controller automatically cuts off	V
2	Undervoltage warning point	When the battery quantity reaches the set value, the controller gives an early warning	%
3	Undervoltage alarm point	When the battery quantity reaches the set value, the controller gives an early warning	%
4	Battery pack	Lead-acid battery BDI Setting parameters	
5	Lithium battery pack	Lithium battery communication Settings	

2.4 Calibration - Traction motor interface parameters list and description

Calibration - Traction motor interface parameters list and description			
menu		Description	note
1	Traction motor first acceleration speed function activated		ON/OFF
2	First acceleration speed of traction motor		Rpm
3	Traction motor first acceleration		rpm/s
4	The accelerator part releases the deceleration		rpm/s
5	Commutation deceleration	Deceleration when switching gears forward and backward	rpm/s
6	Traction motor first brake speed function activated		ON/OFF
7	Traction motor first brake deceleration		rpm/s
8	First brake speed of traction motor		Rpm
9	Slow mode	Controller speed mode switch	ON/OFF
10	SOC limits traction	Different power, traction motor different modes	ON/OFF
11	Traction motor overtemperature torque limit point	When the traction motor reaches the set temperature value, the torque is limited	°C
12	Traction motor overtemperature cut-off point	When the traction motor reaches the set temperature value, the motor stops	°C
13	Traction motor fan (speed regulation) starting temperature	When the traction motor module temperature reaches the set value, the fan starts	°C
14	Traction motor fan (speed regulation) maximum speed temperature	When the temperature of the traction motor module reaches the set value, the fan reaches the maximum speed	°C
15	accelerator	Accelerator parameter setting	
16	controllability		
17	Brake pedal	Brake pedal parameter setting	
18	Curve speed limit	Setting of parameters related to turning process	
19	Overspeed warning		
20	Ramp control	Parameter setting on the vehicle ramp	

2.5 Calibration-gear mode interface parameter list and description

Calibration-gear mode interface parameter list and description			
menu		Description	note
1	Current gear mode	The gear mode of the current vehicle	
2	Change mode of the gear mode		
3	Speed zone	Traction motor speed zone value	
4	P gear mode		
5	S gear mode		
6	Traction motor deceleration		
7	Traction motor output current		
8	Oil pump motor output current		
9	Oil pump motor speed		

2.6 Calibration - Vehicle information interface parameter list and description

Calibration - Vehicle information interface parameter list and description			
menu		Description	note
1	Restore the system default value		
2	Total mileage		km
3	Contact pull-on delay waiting time		S
4	Reload lift activation Slow mode delay time		S
5	Tyre diameter	Vehicle current tire diameter	mm
6	Gearbox reduction ratio	Vehicle current deceleration ratio	
7	Enable setting	Vehicle parameter setting	
8	Interlock switch		
9	High limit switch		
10	Power output break detection parameter group		
11	Motor encoder parameter		

2.7 Calibration - Auxiliary functions + Communication + system parameters interface parameter list and description

Calibration - Auxiliary functions + Communication + system parameters interface parameter list and description			
menu		Description	note
1	Rental & Password features		
2	BSD alarm speed limit function		
3	telecommunication		
4	Library version	Version information	

The multi-functional display can display battery power, operating hours, operating mode, operating speed, fault information, steering Angle, etc., and can also display various warning information in the form of ICONS. You can also view the fault code by pressing the button on the right.

Battery power display [A]



Displays the remaining capacity of the battery as a percentage.

Notice

Timely charging is very important, otherwise it will affect the service life of the battery!

Number of running hours displayed [G]



When the vehicle key switch is closed, the hour meter starts to time, and the minimum resolution is 1 hour.

Run mode display [C]

As shown in the figure, from top to bottom represent the P pattern Mode E Mode S.



S mode, P mode: Power mode, suitable for long distance handling, need greater power or speed occasions.

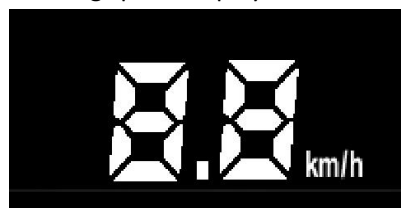
E mode: Economic mode, all parameters are optimized, power saving, suitable for a charge of a long time working occasions, it is recommended to work in this mode.

Notice

The default mode of the system is P mode. After each power failure, the system returns to P mode regardless of the mode before power failure.

Running speed or fault display [D]

Running speed display



In normal operation, the speed of the vehicle is displayed.

Fault indication



When a fault occurs, the system automatically switches to the fault code and analysis description displayed on the fault page.

Rear wheel Angle display [E]



Indicates the Angle of the rear wheel in real time, and the pointer will rotate with the change of the Angle of the rear wheel. The Angle of the rear wheel changes from +90° to -90°.

The position shown in the figure is the position of the pointer when the rear wheel is at an Angle of -90°.

Pilot lamp



Turtle speed light [N]



Neutral light [M]



Lights up when the vehicle gear is in neutral

Low battery indicator [L]



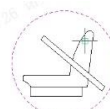
When the battery level is below 20%, the light is lit to remind the user to charge the battery as soon as possible.

Lift lock light [K]



When the power is only 10%, the light is lit, and the lifting speed of the door frame is reduced to remind the user to charge the battery as soon as possible.

Seat light [J]



When the person leaves the seat, this light will be lit, indicating that the seat is disconnected, and the vehicle cannot walk and lift. A seat with a seat switch is required for this function.

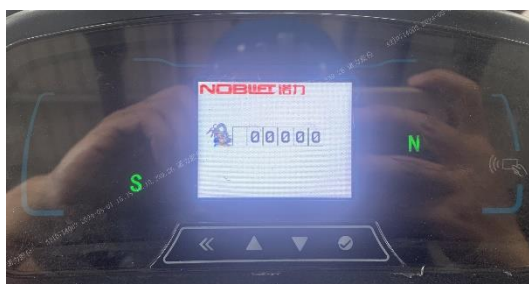
Handbrake light [K]



This light lights up when the handbrake is on.

Operation procedure

Power on to enter the instrument interface:



In the main interface, the three operating modes of S, P and E are respectively analyzed.

Operation menu

The password input screen is displayed



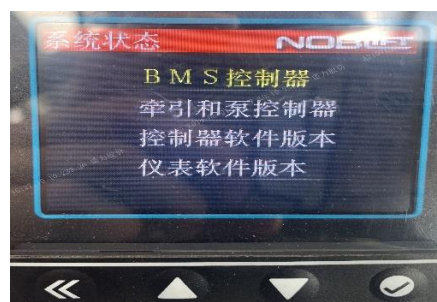
Enter the password. Press  and then



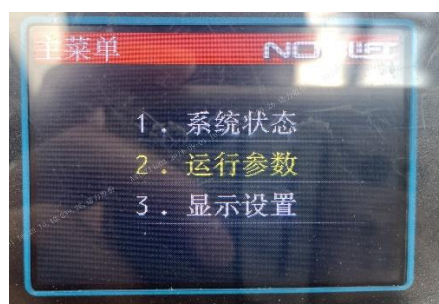
to enter the main menu



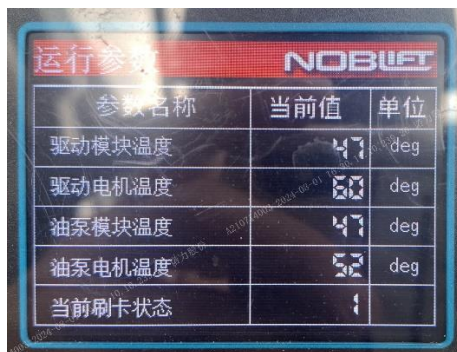
press  The system status page is displayed



press  the running parameters page is displayed



press  The running parameters page is displayed

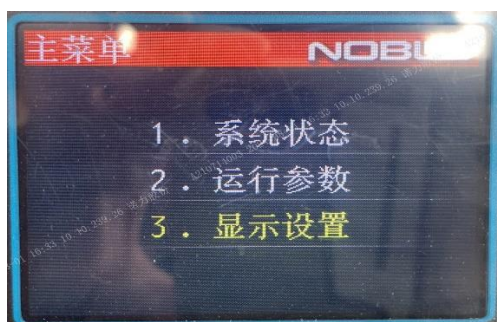


The image shows a digital display titled "运行参数" (Running Parameters) with the "NOBLET" logo. It contains a table with three columns: "参数名称" (Parameter Name), "当前值" (Current Value), and "单位" (Unit). The table lists five parameters: drive module temperature (47 deg), drive motor temperature (60 deg), oil pump module temperature (47 deg), oil pump motor temperature (52 deg), and current card status (1).

参数名称	当前值	单位
驱动模块温度	47	deg
驱动电机温度	60	deg
油泵模块温度	47	deg
油泵电机温度	52	deg
当前刷卡状态	1	

See the working condition and related temperature of the forklift as shown in the figure.

press  the running parameters page is displayed



After viewing, Press  to return to the main menu.

1.6 Lithium battery charging port structure

CPD20/25-AF1H, CPD30/35/38-AF1S, CPD30/35/38-AF2H Lithium battery charging port structure



Move the charging port to the right rear of the body, and the charging door assembly uses a magnet to close, which is convenient to open and charge.



Fastening of lithium batteries:

The lithium battery is fastened to the frame by fixing bolts at the bottom. When you tighten the bolts clockwise, install the lithium battery horizontally.

1.7 Battery replacement and installation

The battery sinks to the bottom of the body and rests on the frame by weight.

When the forklift has been used for a continuous working cycle and the battery power is completely used up, the battery on the original forklift should be replaced with another set of fully charged batteries in time, and the replaced battery should be charged.

Notice

When replacing a battery, ensure that the battery matches the forklift. If the battery is not matched with the forklift, the working time of the forklift will be shortened or the forklift will tip over.

The battery should be replaced on the platform.

Follow these steps to replace the battery:

- When using another forklift as lifting equipment to replace batteries, appropriate spreader (fittings) should be used.

- Only professional personnel can hoist batteries.

- ① Open the battery cover.

- ② Unplug the battery.

Use gas springs or other methods to lock the upper cover of the battery so that the upper cover of the battery does not fall and injure human bodies or objects.

- ③ When lifting the battery out of the forklift, be careful to avoid damaging the steering wheel or other forklift parts.

- ④ After placing a set of fully charged batteries, the battery plug should be firmly connected.

- ⑤ Cover the battery cover.

- When closing the battery cover, be careful not to press your fingers.

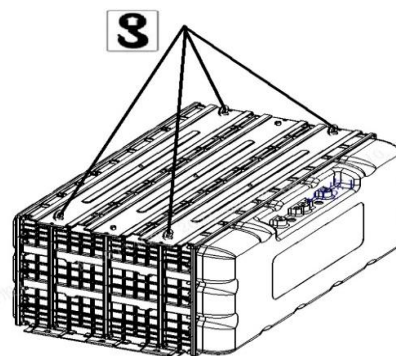
- When lifting the battery, care should be taken to prevent the battery box from swinging and damaging the car body.

Install

Installation is the opposite of disassembly.

warning

The weight of the battery is about 210kg, which is very heavy. During installation, prevent crushing the foot or clamping the hand.

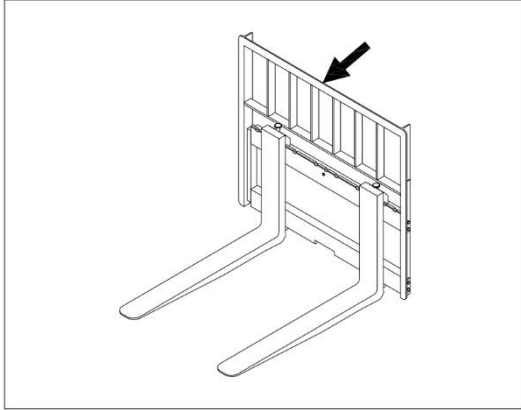


Use the lifting device to lift the battery to the ground. The fixed point is shown in the figure above.

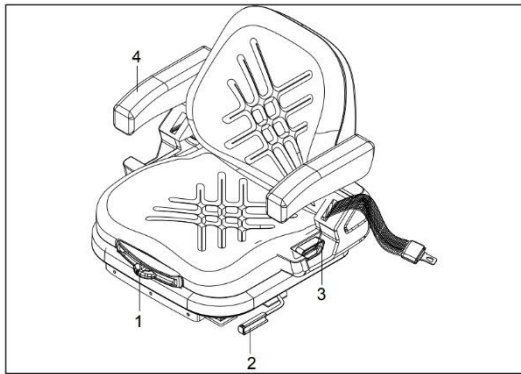
1.8 Body and other

Backstop

Shelving ensures smooth loading of goods. It is strictly prohibited to use a forklift with no stop rack. It is forbidden to disassemble and modify the baffle shelf.



Seat (optional)



1. Seat weight adjustment handle
2. Seat adjustment handles
3. Backrest Angle adjustment handle
4. Armrest adjustment knob

• Seat weight adjustment

According to the user's own weight, lift the weight adjustment handle up, and then horizontally move the weight adjustment to the corresponding weight position until it feels comfortable.

• Seat front and rear adjustment

Turn the adjusting handle inward with your hand, then push the whole seat forward and backward to reach the ideal position, and lower the handle to lock automatically.

• Backrest Angle adjustment

People sit on the seat, back against the seat backrest, and then with the left hand to open the backrest Angle adjustment handle upward, lean forward or lean back, until the backrest Angle reaches a satisfactory position when the handle is released.

• Hand guard adjustment

The tilt Angle of the handrail is adjusted by turning the adjustment knob. When turning the knob outward, the front end of the handrail will lift. When turning the knob inward, the front end of the handrail will lower.

Warning

- ① The key switch must be turned off before adjusting the seat.
- ② The position of the seat can be adjusted only when the forklift truck is stopped.
- ③ It is not allowed to adjust the seat during driving to avoid accidents.
- ④ Front and back adjustment and backrest Angle adjustment, the handle should be in place to ensure that the structure is completely separated, and then adjusted
- ⑤ After adjustment, each handle return should be in place. Before using the forklift, ensure that all parts are locked reliably.

Safety belt

• Fasten your seat belt

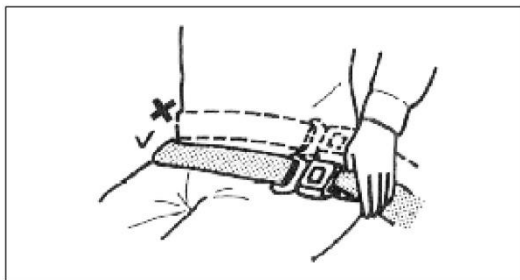
The seat belt is folded in the box, and an auxiliary action is required before pulling out the seat belt, so there may be a little trouble due to unfamiliarity.

One type of seat: You need to press the white round button (with the font press to release) with one hand to pull out the seat belt with the other hand. It is then plugged into an outlet located on the other side of the seat.

You may also come across another type of seat: seat belt box A seat that rotates, the seat belt box can be turned forward, and the

seat belt cannot be pulled out; Turn back to pull out the seat belt. When pulled out, insert the seat belt into the socket on the other side of the seat. You must turn the seat belt case further forward so that the seat belt is in its normal working position.

When getting on the car and fastening the seat belt, the back and waist of the human body should be as close to the seat as possible. Do not fasten your seat belt around your stomach.

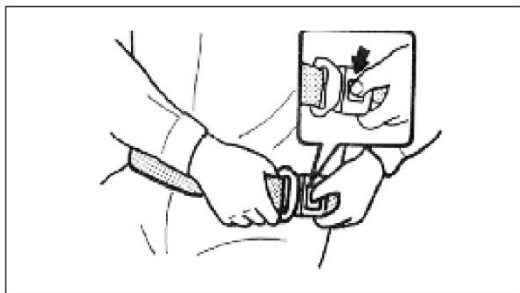


Do not let the seat back recline too much, or the belt will not extend properly.

Do not use the tape knotted or wrapped.

Wearing a seat belt ensures you can protect yourself and minimize injuries if your vehicle rolls over.

• Unseat belt



Press the red button on the socket with your left thumb

PRESS word), that is, untie.

• Check the seat belt

Always check that the bolts holding the seat belt are loose. Do not allow the belt to press against hard or fragile objects, and do not rub against sharp blades to avoid damage.

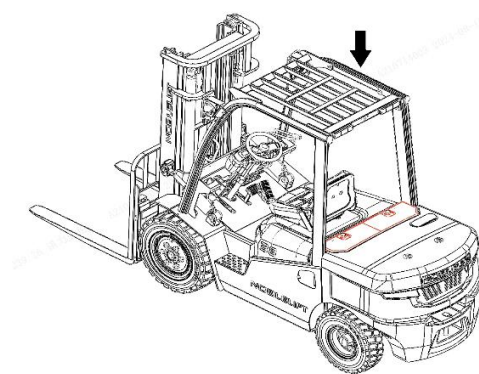
The various parts of the seat belt must not be removed arbitrarily. Frequent use of the tape, to do frequent visual inspection

- ① Cut or crack;
- ② Wear or damage of metal parts, including anchor points;
- ③ Failure of buckle or tractor;
- ④ Off-line.

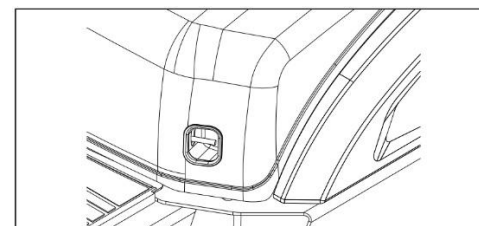
If an anomaly is found, a new belt should be replaced immediately. The use period of the belt is 3 years, and the abnormal belt should be scrapped in advance.

overhead guard

The overhead guard protects the operator from falling objects from above. It must have sufficient impact strength. Do not use a forklift without a protective frame. Always tighten the top guard.

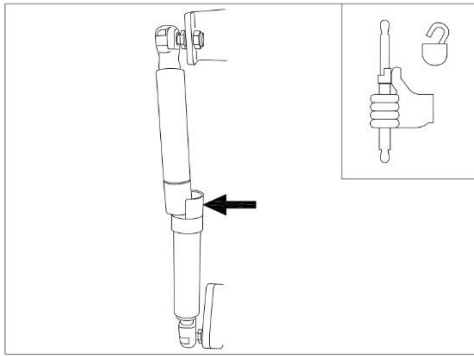


Latch assembly



In order to prevent the hood from being arbitrarily opened, the car is equipped with a latch assembly, to open the hood, you must first pull the latch assembly handle. This time the hood is loosened.

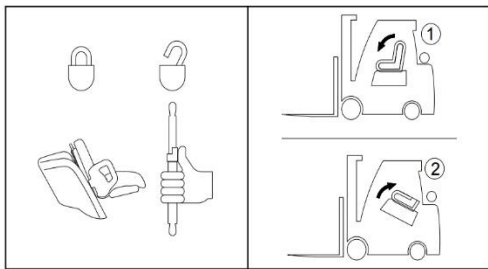
Gas spring



Used to support the cover when it is opened. When closing the cover, press the red button in the direction of the arrow as shown, and press the cover down vigorously.

Hood

Wide open hood, easy maintenance service. With the help of the gas spring force on the inside of the hood, it can be fully opened upward with a small force.



When closing, press the red button on the gas spring cylinder, at this time the lock is released, press down the head of the hood to close, and hear a sound of "click", indicating that the hood is locked.

Notice

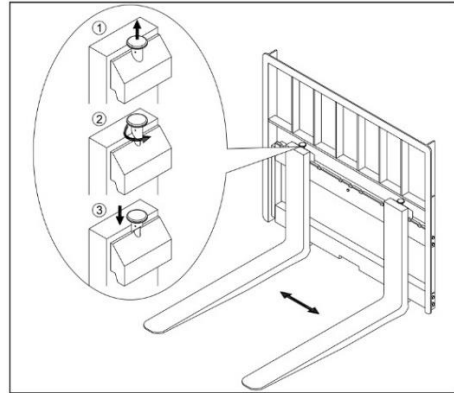
When closing the hood, prevent the falling hood card from pinching your finger.

Warning

When maintaining under the hood, be sure to turn off the key switch to prevent electric shock. However, in the case that the hands, feet, head, and body do not touch the components, in order to diagnose the fault through the hearing, it is allowed to open the key switch and open the boot cover.

Fork locating pin

Use when adjusting fork spacing. Pull up the fork positioning pin, rotate 180°, adjust the fork to the required position according to the cargo to be loaded and unloaded.

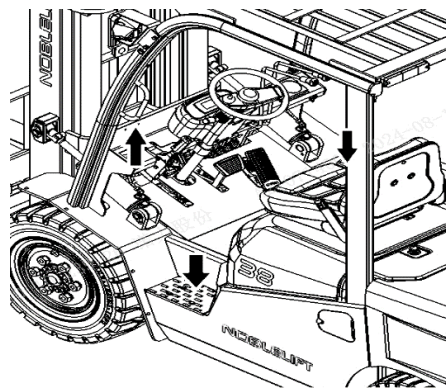


Warning

The spacing adjustment of the fork should be based on the center line of the forklift truck, symmetrical left and right, and the positioning pin of the fork must be locked after adjustment. There is an opening in the lower beam of the fork rack for loading and unloading the fork. Do not use the fork in the open position to prevent the fork from falling off the open position. Always check the bolt in the middle of the fork holder, which prevents the fork from being used in the open position.

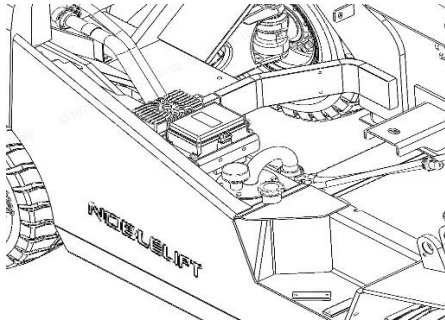
Alighting pedal and handrail

Both sides of the body are equipped with alight pedals, and the alight handrail is equipped on the left leg of the top guard frame. Always face the forklift when getting on or off. Use handrails for safety when loading and unloading forklift trucks.

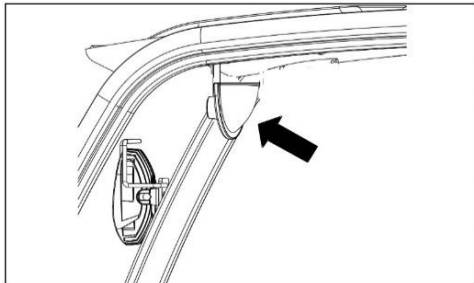


Hydraulic fuel tank cap

The hydraulic fuel tank cover is located on the left frame inside the hood, and the hood is opened when refueling. Fill with clean hydraulic oil through the refueling port and tighten the lid after refueling.



reflector

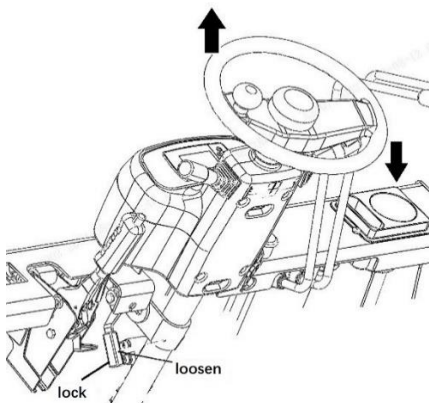


On the upper right of the top guard frame, a circular arc reflector is installed for observing the rear of the vehicle or for reversing.

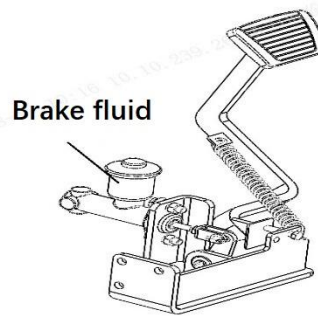
Steering column positioning device

Adjust and secure the steering column according to the desired distance.

In order to meet the needs of the operator, the tilt Angle of the steering column of the forklift is adjustable. To the upper plate hand handle, the steering column is loosened; Downwards locks.



Brake fluid tank

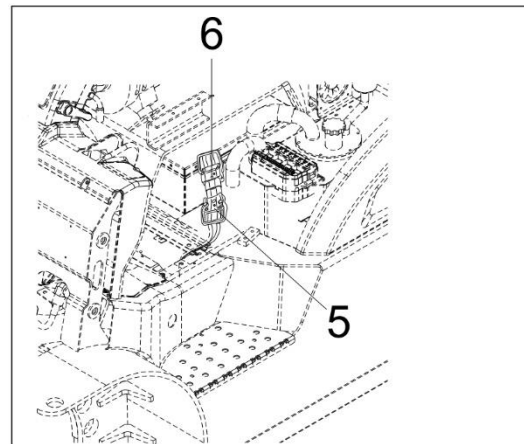


The brake oil pot is mounted in the gauge frame directly under the steering wheel. The translucent canister allows us to check the brake fluid level from the outside.

Notice

When filling brake fluid, prevent dust and debris from entering the oil cup. Brake fluid is corrosive and toxic.

Socket plug



1.9 Fork adjustment and replacement

Adjust fork spacing

In order to ensure the operation safety of the picking process, before the picking operation, it is necessary to adjust the spacing of the fork to the appropriate position according to the size of the load tray.

Operation procedure:

Pull up the positioning pin of the fork and turn it 180 degrees in any direction to release the lock of the fork.

- Adjust the position of the fork symmetrically to both ends based on the center line of the fork rack.

- After adjusting the distance between the cargo forks, pull up the positioning pins of the cargo forks and turn them back to the original position. Then, slightly move the positioning pins of the cargo forks to the slot of the purchase fork rack.

Fork spacing is adjusted.

Notice

① **The fork positioning pin must be locked (the card purchase fork frame card slot), if not locked, the fork is easy to move during the driving of the forklift, and the goods may fall.**

② **When adjusting the fork, there is a danger of clamping, be careful.**

Disassembly of fork.

Notice

① **There is an opening on the lower beam of the cargo fork frame for loading and unloading the cargo fork.**

② **The opening position of the cargo fork frame is prohibited from fixing the cargo fork to prevent the cargo fork from falling off the opening position.**

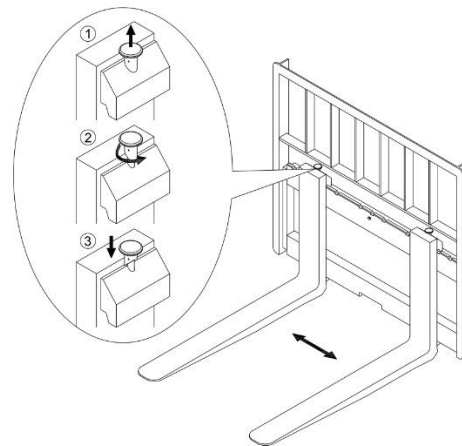
③ **A bolt is installed in the middle of the upper beam to prevent the fork from working here. If the bolt is damaged, replace it in time.**

Disassembly of fork:

When it is necessary to replace the fork, unscrew the fixing bolt in the middle of the fork rack, move the fork to the middle opening of the fork rack beam, then tilt forward and lower the fork until the fork is free from the fork rack, and back the vehicle.

Installation of fork:

The fork is placed on the ground flat against the vehicle, the fork frame drops to the lowest level, the vehicle runs slowly forward, aligns the upper and lower slots of the fork and the upper and lower beams and gaps of the fork frame, fully lifts the fork frame, adjusts the left and right positions of the fork and locks it.



1.10 OPS System (Optional)

The Operator Presence Sensing (OPS) system is a safety protection system that detects whether the driver is sitting in the seat in a correct position through the seat sensor installed in the driver's seat. If the driver is not seated in the driver's seat in the correct position, all loading and unloading operations will be stopped when the driving force is cut off. Helps prevent accidents that occur when the operator leaves the seat. When the forklift is not in the correct driving position, it cannot be driven and loaded and unloaded, thereby reducing safety accidents caused by misoperation.

Ride protection function

When the vehicle is in the driving state, the driver leaves the seat or the safety belt is released (such as the safety belt protection switch) for more than 1 second, the forklift truck

automatically stops, the seat switch indicator " " on the instrument is lit, and the buzzer emits a continuous alarm sound. Only when the overhand brake switch is pulled or the driver is correctly seated in the seat, and the direction switch is returned to neutral, the seat switch

indicator " " on the instrument is extinguished, and the driving OPS state is lifted.

In the working state of the vehicle, the driver leaves the seat or the safety belt is released (such as equipped with A safety belt protection switch) for more than 1 second, the work automatically

stops, the seat switch indicator " " on the instrument is lit, and the buzzer emits a continuous alarm sound. The automatic OPS light of the device is lit, the buzzer makes an alarm sound, and the handling operation automatically stops. When the driver is properly seated in the

seat again, the seat switch indicator " " on the instrument is extinguished, and the OPS status is removed.

Alarm function

Once the seat sensor detects that the seat switch is off, within about 1 second, the buzzer emits a continuous alarm sound and the seat switch indicator " " lights up. The seat switch indicator " " is on during the seat switch off, indicating that the vehicle's OPS is activated.

Restore the neutral function

If the direction switch does not return to neutral position and the seat switch is on. The buzzer will emit a continuous alarm sound to remind the driver that the driving OPS function is activated.

OPS is abnormal. Procedure

If the following situations occur, park the vehicle in a safe place and contact the Nori dealership for inspection. a. After the driver leaves the seat, the seat switch indicator " " cannot be lit; b. When the driver returns to the seat, the seat switch indicator " " cannot be turned off.

Notice

The forklift with seat belt protection switch is equipped with seat belt. After the driver sits back in the seat correctly, he needs to buckle the seat belt again to operate normally. If the OPS system is activated while driving uphill, the driving power supply will be interrupted and the vehicle will slide off. In order to avoid this kind of accident, it is necessary to properly sit in the seat when going uphill.

Fork lock function after power failure

This function refers to: in the case of turning off the starting switch or power failure, the fork is locked, and the fork will not drop even if the drop lever is manipulated.

1.11 Main technical parameters table

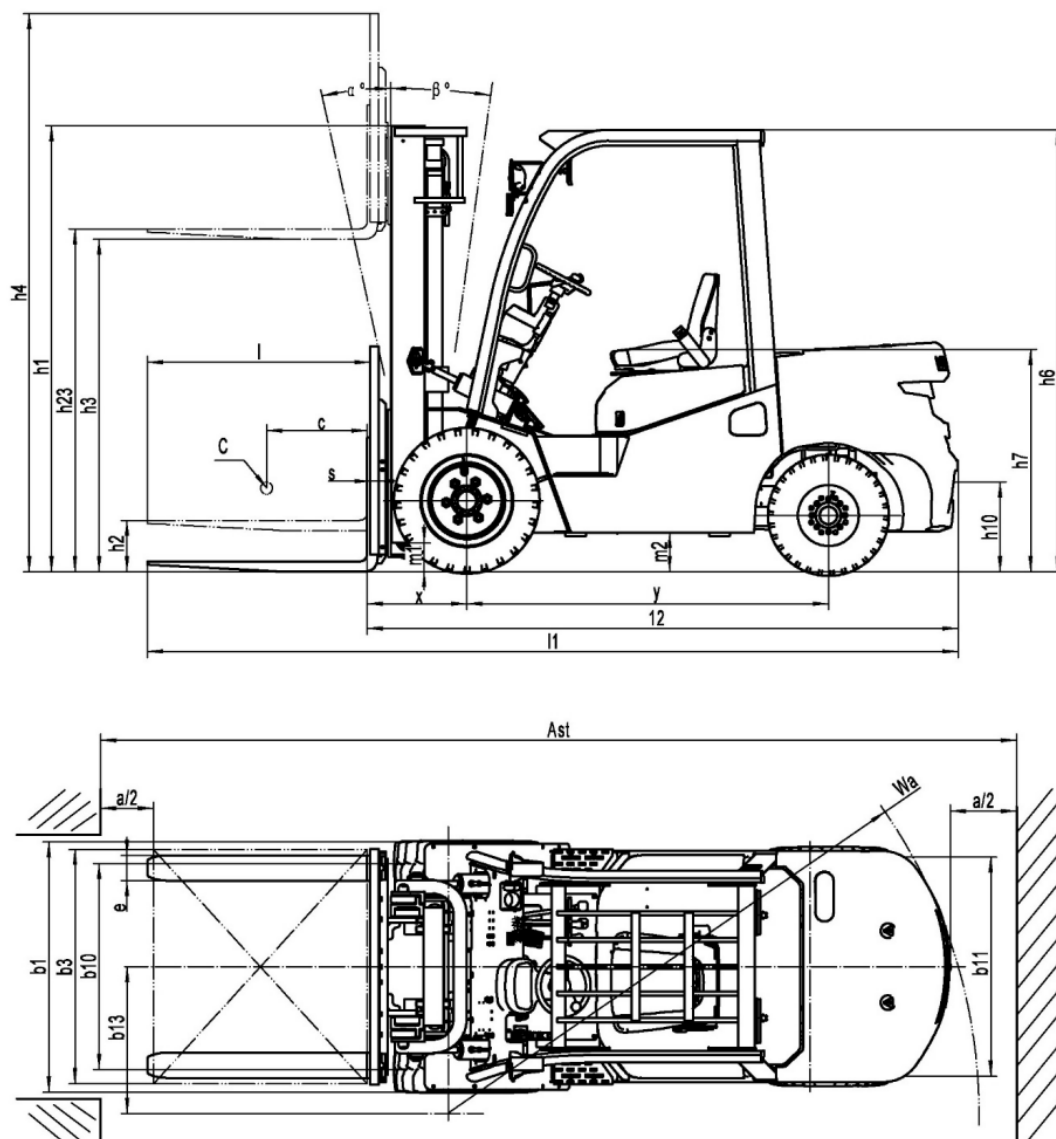
The technical data given below are standard data. The Company reserves the right to make technical changes and supplements.

CPD20/25-AF1H

		item		CPD20-AF1H	CPD25-AF1H
peculiarity	1.1	Manufacturer		NOBLELIFT A	NOBLELIFT A
	1.2	model		CPD20-AF1H	CPD25-AF1H
	1.3	Power mode: electric (battery or power supply), diesel, gasoline, gas, manual		Lithium battery	Lithium battery
	1.4	Operation mode: manual, walking, standing, riding, picking		Seat driving type	Seat driving type
	1.5	Rated load capacity	kg	2000	2500
	1.6	Load center distance	mm	500	500
	1.8	Front suspension distance	x(mm)	465	465
	1.9	wheelbase	y(mm)	1660	1660
weight	2.1	Self weight	kg	3250	3550
	2.2	Bridge load at full load, front/rear	kg	4650/600	5350/700
	2.3	Bridge load when unloaded, front/back	kg	1400/1850	1400/2150
tyre	3.1	Tires: Solid rubber, superelastomer, air tire, polyurethane tire		Inflatable tire	Inflatable tire
	3.2	Front wheel specification		7.00-12-12PR	7.00-12-12PR
	3.3	Rear wheel specification		6.00-9-10PR	6.00-9-10PR
	3.5	Number of wheels, front/rear wheels (x= drive wheels)		2X/2	2X/2
	3.6	Front wheel gauge	b10(mm)	973	973
	3.7	The rear wheel base	b11(mm)	980	980
Dimension	4.1	Gantry/fork tilt Angle, forward/back tilt	$\alpha/\beta(^{\circ})$	6/12	6/12
	4.2	Gantry retracting height	h1(mm)	1995	1995
	4.3	Free lifting height	h2(mm)	140	140
	4.4	Lifting height	h3(mm)	3000	3000

	4.4a	Lifting height (including fork thickness)	h23(mm)	3040	3040
	4.5	Gantry development height	h4(mm)	4025	4025
	4.7	Top guard height	h6(mm)	2130	2130
	4.8	Seat height	h7(mm)	1030	1030
	4.12	Traction pin height	h10(mm)	400	400
	4.19	Overall length	l1(mm)	3698	3698
	4.20	Body length (without fork)	l2(mm)	2628	2628
	4.21	Total width (frame/tires)	b1(mm)	1150/1163	1150/1163
	4.22	Fork size	s/e/l(mm)	1070/120/40	1070/120/40
	4.23	Fork mounting grade		3A	3A
	4.24	Width of fork rack	b3(mm)	1040	1040
	4.31	Ground clearance under gantry	m1(mm)	120	120
	4.32	Wheelbase center ground clearance	m2(mm)	170	170
	4.34.1	Working channel width,1000X1200 pallets (1200 cross-fork placement)	Ast(mm)	3935	3935
	4.34.2	Working channel width,800X1200 pallets (1200 placed along the fork)	Ast(mm)	4135	4135
	4.35	Turning radius	Wa(mm)	2270	2270
	4.36	Inside turning radius	b13(mm)	615	615
Performance parameter	5.1	Travel speed, full/empty	km/h	18/19	18/19
	5.2	Travel speed, full/empty	mm/s	450/550	450/550
	5.3	Descent speed, full/empty	mm/s	400/420	400/420
	5.6	Maximum traction, full/empty	kN	15/12	15/12
	5.7	Climb grade, full/empty S2	%	20/20	20/20
	5.10	Service brake		Hydraulic	Hydraulic
	5.11	Parking brake		Mechanical	Mechanical
batt	6.1	Battery voltage/capacity	V/Ah	80/175	80/175

	6.2	Battery weight	kg	110	110
Motors and controllers	7.1	Drive motor power S2-60min	kw	12	12
	7.2	Lifting motor power S3-15min	kw	18	18
	7.3	Drive motor control mode		MOSFET/AC	MOSFET/AC
	7.4	Lifting motor control mode		MOSFET/AC	MOSFET/AC
	7.5	Controller type		FJ-G2-80-02	FJ-G2-80-02
other	10.1	Work stress	Mpa	18.5	18.5
	10.2	Operating flow of the appliance	L/min	50	50
	10.4	Tank capacity	L	60	60
	10.7	Driver's ear noise level, according to EN 12053	dB	72	72
	10.8	Traction pin specification DIN 15170		30	30

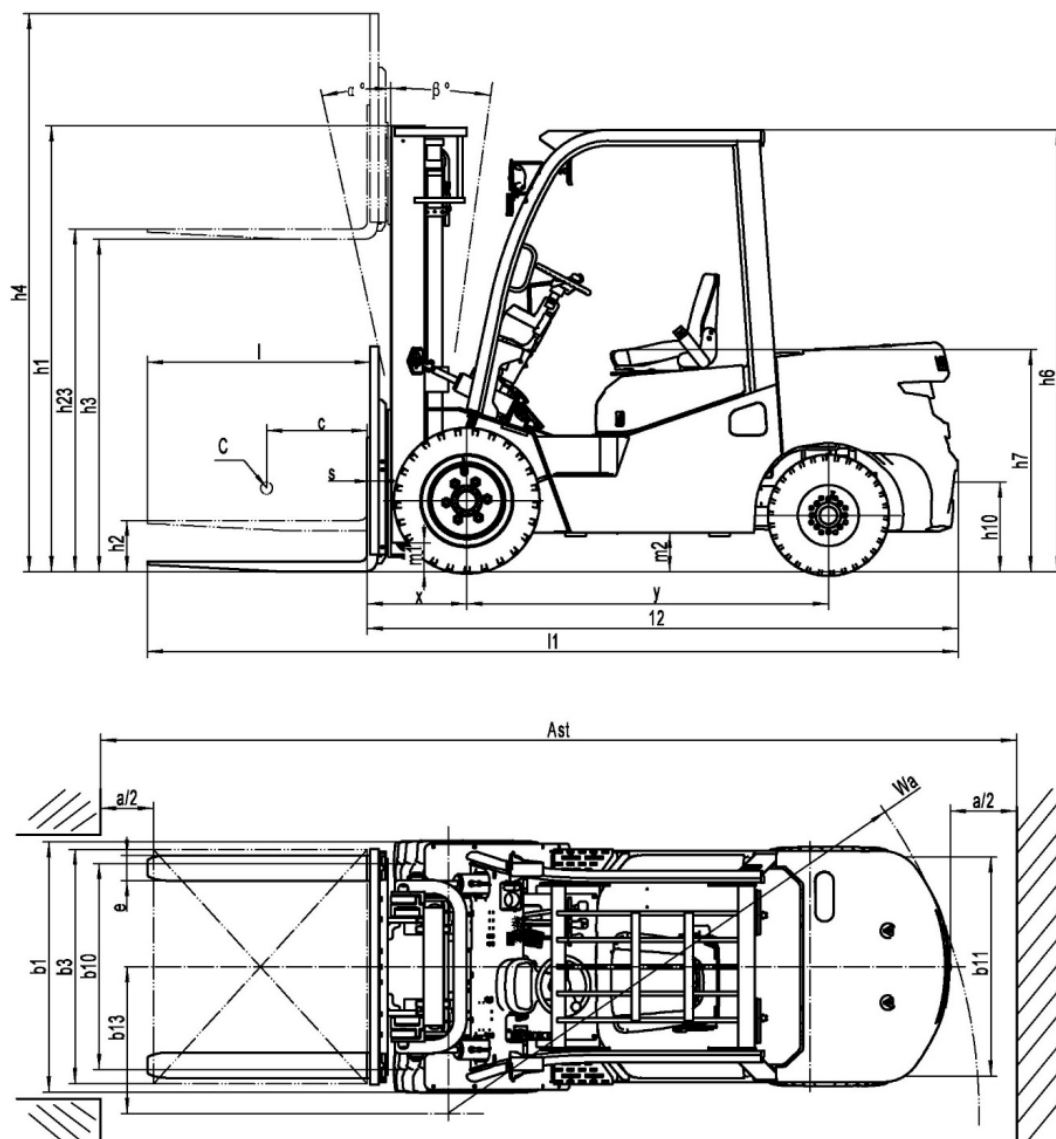


CPD/30/35/38- AF1S

		item		CPD30-AF1S	CPD35-AF1S	CPD38-AF1S
peculiarity	1.1	Manufacturer		Noblelift A	Noblelift A	Noblelift A
	1.2	model		CPD30-AF1S	CPD35-AF1S	CPD38-AF1S
	1.3	Power mode: electric (battery or power supply), diesel, gasoline, gas, manual		Lithium battery	Lithium battery	Lithium battery
	1.4	Operation mode: manual, walking, standing, riding, picking		Seat driving type	Seat driving type	Seat driving type
	1.5	Rated load capacity	kg	3000	3500	3800
	1.6	Load center distance	mm	500	500	500
	1.8	Front suspension distance	x(mm)	480	485	485
	1.9	wheelbase	y(mm)	1760	1760	1760
weight	2.1	Self weight	kg	4100	4400	4600
	2.2	Bridge load at full load, front/rear	kg	6390/710	7100/800	7500/900
	2.3	Bridge load when unloaded, front/back	kg	1650/2450	1600/2800	1600/3000
tyre	3.1	Tires: Solid rubber, superelastomer, air tire, polyurethane tire		Inflatable tire	Inflatable tire	Inflatable tire
	3.2	Front wheel specification		28x9-15-14PR	28x9-15-14PR	28x9-15-14PR
	3.3	Rear wheel specification		6.50-10-10PR	6.50-10-10PR	6.50-10-10PR
	3.5	Number of wheels, front/rear wheels (x= drive wheels)		2X/2	2X/2	2X/2
	3.6	Front wheel gauge	b10(mm)	1000	1000	1000
	3.7	The rear wheel base	b11(mm)	980	980	980
Dimension parameter	4.1	Gantry/fork tilt Angle, forward/back tilt	$\alpha/\beta(^{\circ})$	6/12	6/12	6/12
	4.2	Gantry retracting height	h1(mm)	2170	2170	2170
	4.3	Free lifting height	h2(mm)	150	150	150
	4.4	Lifting height	h3(mm)	3000	3000	3000
	4.4a	Lifting height (including fork thickness)	h23(mm)	3050	3050	3050
	4.5	Gantry development height	h4(mm)	4105	4105	4105

	4.7	Top guard height	h6(mm)	2150	2150	2150
	4.8	Seat height	h7(mm)	1050	1050	1050
	4.12	Traction pin height	h10(mm)	420	420	420
	4.19	Overall length	l1(mm)	3870	3905	3945
	4.20	Body length (without fork)	l2(mm)	2775	2835	2875
	4.21	Total width (frame/tires)	b1(mm)	1195/1228	1195/1228	1195/1228
	4.22	Fork size	s/e/l(mm)	1070/122/45	1070/122/50	1070/122/50
	4.23	Fork mounting grade		3A	3A	3A
	4.24	Width of fork rack	b3(mm)	1100	1100	1100
	4.31	Ground clearance under gantry	m1(mm)	140	140	140
	4.32	Wheelbase center ground clearance	m2(mm)	190	190	190
	4.34.1	Working channel width,1000X1200 pallets (1200 cross-fork placement)	Ast(mm)	4130	4195	4225
	4.34.2	Working channel width,800X1200 pallets (1200 placed along the fork)	Ast(mm)	4330	4395	4425
	4.35	Turning radius	Wa(mm)	2450	2510	2540
	4.36	Inside turning radius	b13(mm)	715	715	715
Performance parameter	5.1	Travel speed, full/empty	km/h	15/15	15/15	14/15
	5.2	Travel speed, full/empty	mm/s	460/480	300/420	300/420
	5.3	Descent speed, full/empty	mm/s	380/410	380/410	380/410
	5.6	Maximum traction, full/empty	kN	15/15	15/15	15/15
	5.7	Climb grade, full/empty S2	%	15/15	15/15	15/15
	5.10	Service brake		Hydraulic type	Hydraulic type	Hydraulic type
	5.11	Parking brake		mechanical	mechanical	mechanical
battery	6.1	Battery voltage/capacity	V/Ah	80/205	80/205	80/205
	6.2	Battery weight	kg	130	130	130

Motors and controllers	7.1	Drive motor power S2-60min	kw	12	12	12
	7.2	Lifting motor power S3-15min	kw	18	18	18
	7.3	Drive motor control mode		MOSFET/AC	MOSFET/AC	MOSFET/AC
	7.4	Lifting motor control mode		MOSFET/AC	MOSFET/AC	MOSFET/AC
	7.5	Controller type		FJ-G2-80-03	FJ-G2-80-03	FJ-G2-80-03
other	10.1	Work stress	Mpa	18.5	18.5	18.5
	10.2	Operating flow of the appliance	L/min	50	50	50
	10.4	Tank capacity	L	70	70	70
	10.7	Driver's ear noise level, according to EN 12053	dB	73	73	73
	10.8	Traction pin specification DIN 15170		30	30	30

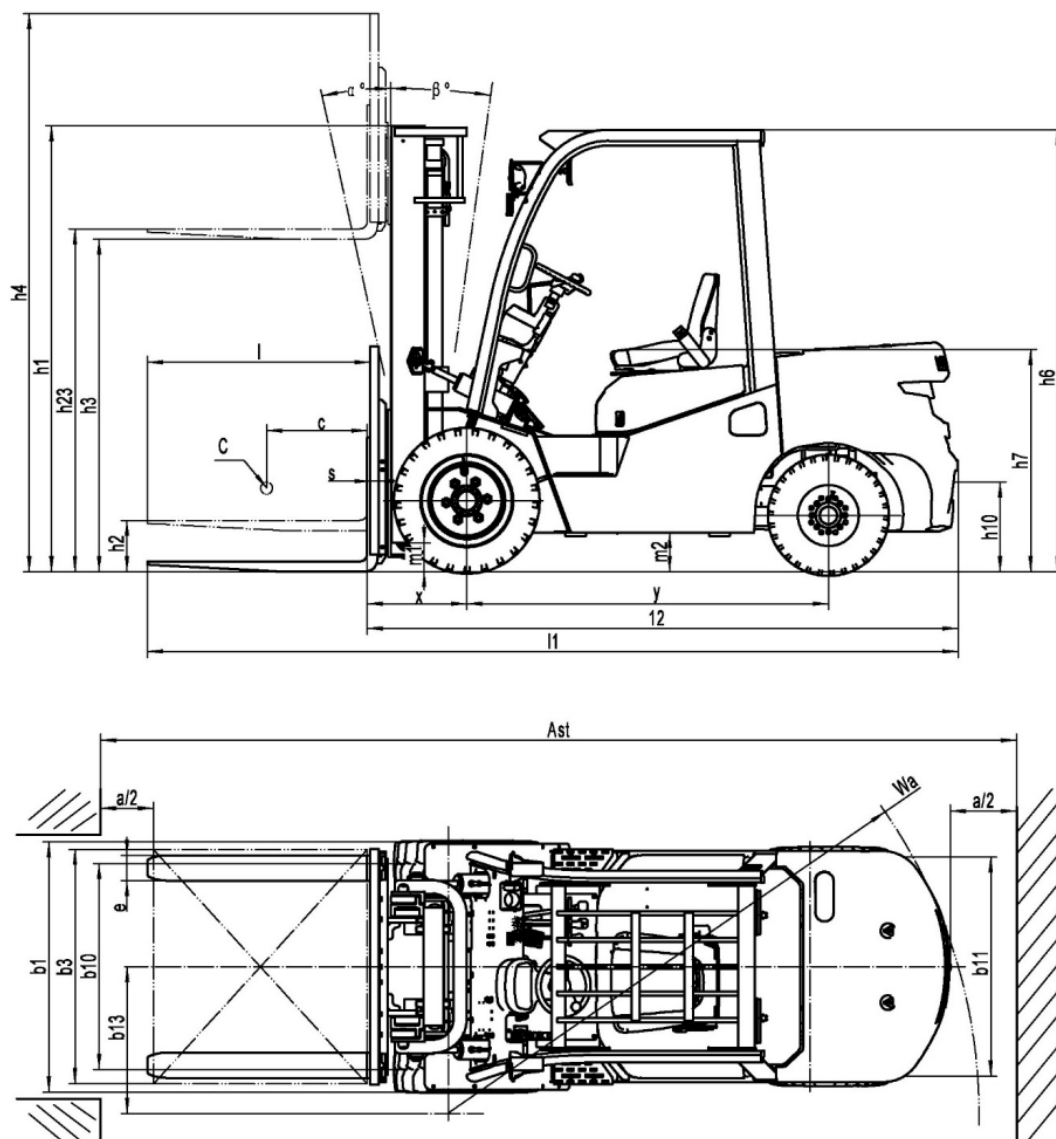


CPD/30/35/38- AF2H

		item		CPD30- AF2H	CPD35- AF2H	CPD38- AF2H
peculiarity	1.1	Manufacturer		Noblelift N1	Noblelift N1	Noblelift N1
	1.2	model		CPD30- AF2H	CPD35- AF2H	CPD38- AF2H
	1.3	Power mode: electric (battery or power supply), diesel, gasoline, gas, manual		Lithium battery	Lithium battery	Lithium battery
	1.4	Operation mode: manual, walking, standing, riding, picking		Seat driving type	Seat driving type	Seat driving type
	1.5	Rated load capacity	kg	3000	3500	3800
	1.6	Load center distance	mm	500	500	500
	1.8	Front suspension distance	x(mm)	480	485	485
	1.9	wheelbase	y(mm)	1760	1760	1760
weight	2.1	Self weight	kg	4180	4480	4680
	2.2	Bridge load at full load, front/rear	kg	6430/750	7140/840	7540/940
	2.3	Bridge load when unloaded, front/back	kg	1690/2490	1630/2850	1630/3050
tyre	3.1	Tires: Solid rubber, superelastomer, air tire, polyurethane tire		Inflatable tire	Inflatable tire	Inflatable tire
	3.2	Front wheel specification		28x9-15-14PR	28x9-15-14PR	28x9-15-14PR
	3.3	Rear wheel specification		6.50-10-10PR	6.50-10-10PR	6.50-10-10PR
	3.5	Number of wheels, front/rear wheels (x= drive wheels)		2X/2	2X/2	2X/2
	3.6	Front wheel gauge	b10(mm)	1000	1000	1000
	3.7	The rear wheel base	b11(mm)	980	980	980
Dimension parameter	4.1	Gantry/fork tilt Angle, forward/back tilt	$\alpha / \beta(^{\circ})$	6/12	6/12	6/12
	4.2	Gantry retracting height	h1(mm)	2170	2170	2170
	4.3	Free lifting height	h2(mm)	150	150	150
	4.4	Lifting height	h3(mm)	3000	3000	3000
	4.4a	Lifting height (including fork thickness)	h23(mm)	3050	3050	3050
	4.5	Gantry development height	h4(mm)	4105	4105	4105

	4.7	Top guard height	h6(mm)	2150	2150	2150
	4.8	Seat height	h7(mm)	1050	1050	1050
	4.12	Traction pin height	h10(mm)	420	420	420
	4.19	Overall length	l1(mm)	3870	3905	3945
	4.20	Body length (without fork)	l2(mm)	2775	2835	2875
	4.21	Total width (frame/tires)	b1(mm)	1195/1228	1195/1228	1195/1228
	4.22	Fork size	s/e/l(mm)	1070/122/45	1070/122/50	1070/122/50
	4.23	Fork mounting grade		3A	3A	3A
	4.24	Width of fork rack	b3(mm)	1100	1100	1100
	4.31	Ground clearance under gantry	m1(mm)	140	140	140
	4.32	Wheelbase center ground clearance	m2(mm)	190	190	190
	4.34.1	Working channel width,1000X1200 pallets (1200 cross-fork placement)	Ast(mm)	4130	4195	4225
	4.34.2	Working channel width,800X1200 pallets (1200 placed along the fork)	Ast(mm)	4330	4395	4425
	4.35	Turning radius	Wa(mm)	2450	2510	2540
	4.36	Inside turning radius	b13(mm)	715	715	715
Performance parameter	5.1	Travel speed, full/empty	km/h	19/19	19/19	18/19
	5.2	Travel speed, full/empty	mm/s	520/560	400/500	400/500
	5.3	Descent speed, full/empty	mm/s	380/410	380/410	380/410
	5.6	Maximum traction, full/empty	kN	21/15	21/15	21/15
	5.7	Climb grade, full/empty S2	%	20/20	20/20	20/20
	5.10	Service brake		Hydraulic type	Hydraulic type	Hydraulic type
	5.11	Parking brake		mechanical	mechanical	mechanical
battery	6.1	Battery voltage/capacity	V/Ah	80/300	80/300	80/300
	6.2	Battery weight	kg	210	210	210

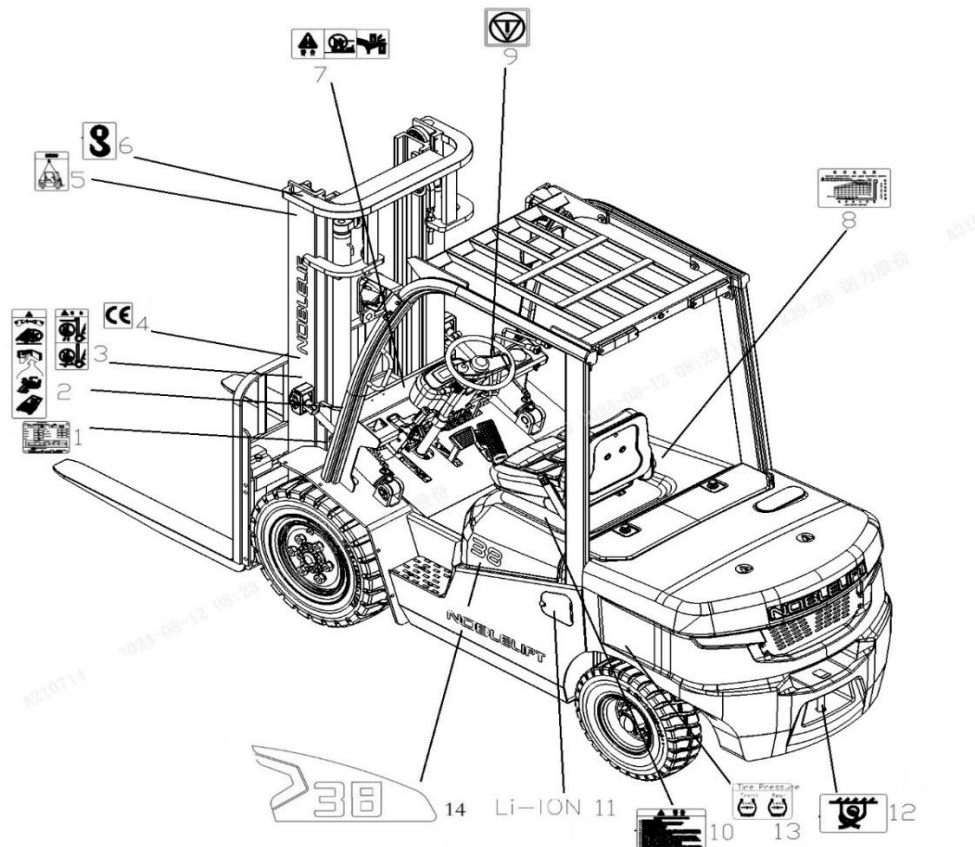
Motors and controllers	7.1	Drive motor power S2-60min	kw	17	17	17
	7.2	Lifting motor power S3-15min	kw	26	26	26
	7.3	Drive motor control mode		MOSFET/AC	MOSFET/AC	MOSFET/AC
	7.4	Lifting motor control mode		MOSFET/AC	MOSFET/AC	MOSFET/AC
	7.5	Controller type		FJ-G2-80-03	FJ-G2-80-03	FJ-G2-80-03
other	10.1	Work stress	Mpa	18.5	18.5	18.5
	10.2	Operating flow of the appliance	L/min	50	50	50
	10.4	Tank capacity	L	70	70	70
	10.7	Driver's ear noise level, according to EN 12053	dB	73	73	73
	10.8	Traction pin specification DIN 15170		30	30	30



1.12 Product labels and warning signs location

Labels and warning signs, such as product nameplates, load curve labels, warning labels, etc., must be clearly readable, and if they are not clearly identified, they must be replaced.

The figure below shows the approximate location of the various signs. Before operating a forklift, understand the meanings of the symbols.



Serial number	name
1	Product nameplate
2	Warning label: Measures to be taken when a forklift truck rolls over.
3	Danger label: Do not stand on the fork, do not stand on the fork
4	CE label (CE car only)
5	Lifting Method Label: Lifting method when loading and unloading with crane.
6	Lifting point label: fixed point of the equipment when loading and unloading by crane.
7	Hazard label: Be careful when lifting the gantry
8	Load curve label
9	Emergency deactivation switch label
10	Warning label: Measures to be taken when a forklift truck rolls over.
11	Lithium battery power label
12	Tether point tag: Tether point for drag and drop operations
13	Tire pressure label (optional, for inflatable tires)
14	Tonnage label

1.13 Forklift structure and stability

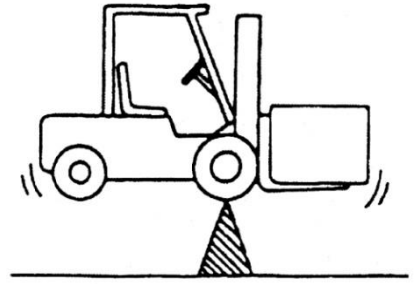
Prevent forklift from tipping over! It is important to determine the structure and stability of forklift trucks for safe operation.

Forklift construction

The basic components of the forklift are the lifting device (fork and gantry) and the rear forklift itself (with tires).

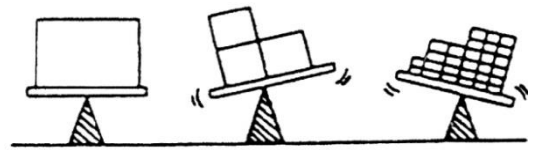
The front wheel of the forklift is used as a fulcrum to balance the center of gravity of the forklift with the center of gravity of the load.

The relationship between the center of gravity of the forklift and the center of gravity of the load is very important to maintain the operation of the forklift.



Center of gravity of load

Forklifts carry loads of different shapes, from boxes to planks and long objects, and in order to evaluate forklifts and stability, it is important to distinguish the center of gravity position of different shapes of loads.



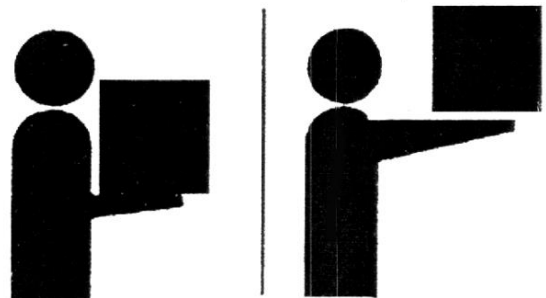
Warning

If the forklift starts to flip over, don't think about jumping out of the truck. The forklift can flip over a lot faster than you can jump. Spread your feet and then secure yourself in the cockpit by gripping the wheel with both hands.



Maximum load and load center distance

The horizontal distance between the center of gravity of the load on the fork and the shelf or front surface of the fork (the smaller one) is called the center distance of the load. Maximum load refers to the maximum load that can be borne under the standard load center distance. The relationship between the maximum load and the center distance of the load is specified on the loading capacity chart of the forklift. If the center distance of the load is shifted to the front of the fork, the overall center of gravity is shifted forward, so the load must be reduced.



Center of gravity and stability

The stability of forklift depends on the combined center of gravity composed of forklift center of gravity.

When the forklift is unloaded, the center of gravity remains unchanged; When the forklift is loaded, the center of gravity is composed of the forklift and the center of gravity of the load.

The center of gravity of the load is determined by the leaning forward or backward of the gantry, and the raising or lowering of the gantry, so the combined center of gravity also changes.

The combined center of gravity of the forklift is determined by the following factors:

- Load size, weight and shape;
- lifting height;
- gantry tilt Angle;
- tire inflation pressure;
- Acceleration, deceleration and turning radius;
- Road condition and slope;
- Type of fittings.

Stable region of the center of gravity

In order for the forklift to be stable, the combined center of gravity must be located in a triangle formed by the left and right front tire landing point and the rear axle midpoint.

If the combined center of gravity is on the front axle, the two front tires will form a fulcrum and the forklift will tip forward. If the combination center of gravity moves out of the center of gravity stability triangle, the forklift will tip in the direction of the combination center of gravity moves out of the triangle.

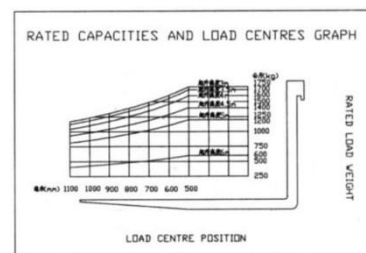
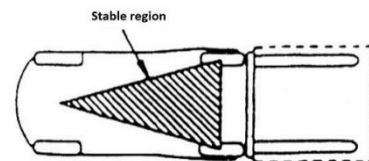
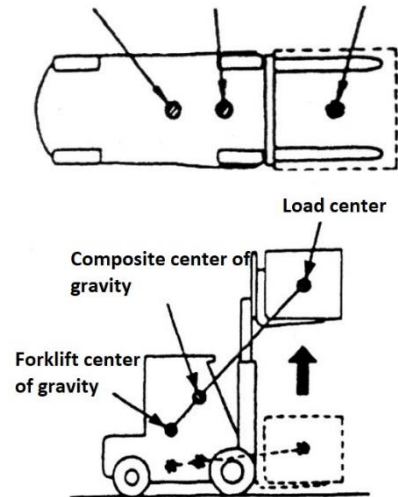
Carrying capacity chart

This diagram shows the position of the load center distance in relation to the maximum load. Before loading, check whether the load and load center distance are within the allowable range of the load capacity chart. If the shape of the load is complex, the heaviest part of the load is in the center of the fork and near the stop shelf.

Velocity and acceleration

An object at rest will remain at rest when it is not acted upon by an external force. Similarly, a moving body that is not acted upon by an external force will continue to move at the same speed, which is inertia. Because of inertia, when the forklift starts to operate, a force acts backwards, and when the forklift stops, a force acts forwards.

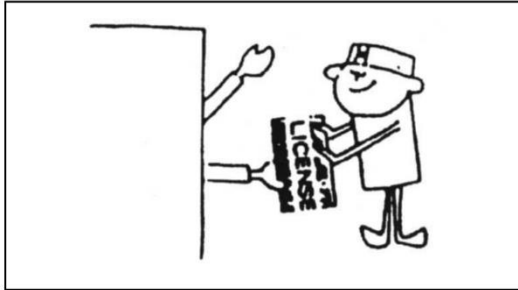
Sudden brake action is dangerous, because a large force acting forward will cause the forklift to tip over or the load to slip. When the forklift turns, a centrifugal force is applied outward from the center of the turn. This force pushes the forklift outward and causes it to tip over.



The left and right stability zones are small, so you must slow down when turning to prevent the forklift from tipping over. If the forklift is carrying a load at a high position, the overall center of gravity is higher, so the forklift is more likely to tip forward, left or right.

2 Safety code

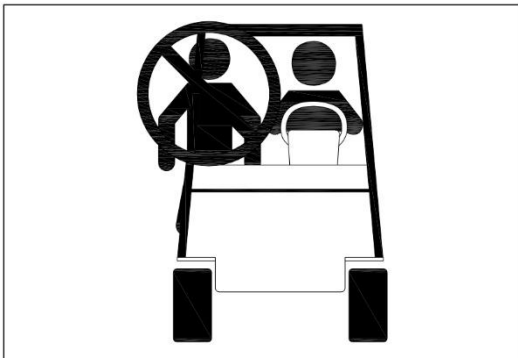
1. Only trained and approved operators are allowed to operate forklifts.



2. The operator must wear a helmet, work shoes and overalls



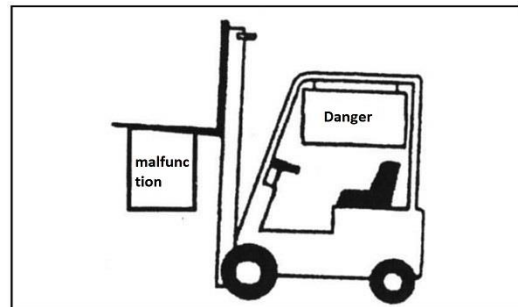
3. No hitchhiking!



4. Regular inspection of oil, liquid leakage, deformation, loosening and other conditions, ignoring the inspection will shorten the life of the vehicle, in bad circumstances will lead to accidents.

- Ensure that the "safety parts" are replaced during regular inspections.
- Wipe oil, grease or water off the bottom plate, pedals and joysticks.
- Do not smoke or any spark or smoke approach the battery when checking the battery.

- If high maintenance (such as door frame, front, rear lights, etc.) should pay attention to safety, to prevent clamping or sliding.
 - When checking the motor, controller, etc., be careful not to be burned.
5. Whenever a fault occurs, the forklift must be stopped, a "danger" or "fault" sign must be hung on the vehicle, the key must be removed, and the management must be reported. The forklift should only be used after the fault has been rectified.
- If there is a sudden failure in lifting goods, uphill and downhill, and the electrolyte, hydraulic oil and brake fluid of the storage pool leak, personnel should be immediately organized to repair it.



6. The battery will produce explosive gas inside, absolutely do not allow any flame near the battery. Do not let the tool near the battery poles, so as not to cause sparks or short circuit.

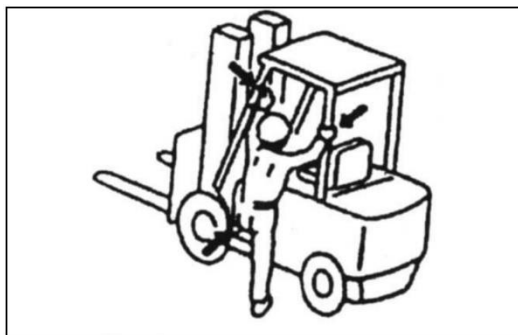


7. The road surface for forklift truck operation is a solid, flat concrete road surface or a similar road surface for vehicle operation. Check the ground condition of the work site in advance

- The climatic conditions considered in the design of forklift truck are: temperature - 20°C-50°C; Wind speed does not exceed 5m/s; The relative humidity of the air is not more than 90% (temperature 20°C).

- Forklifts are not suitable for flammable and explosive working environments.
- No more than 2,000 meters above sea level.

8. Do not lift the forklift when it is running. Use the safety pedals and handrails of the forklift when loading or unloading the forklift.

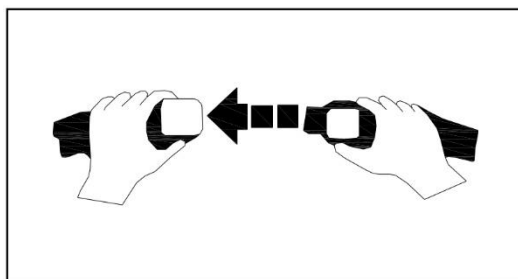


9. Sit firmly before operating.

- Before starting, adjust the seat position for hand and foot control.

10. Pre-start confirmation

- Please fasten your seat belt.



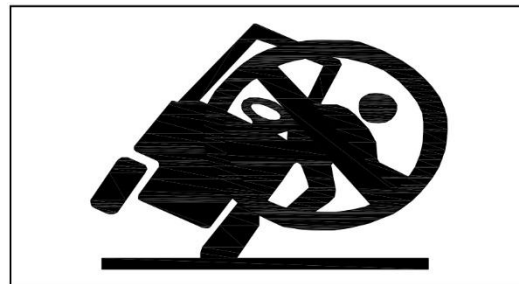
- Hand brake released.

- The reversing lever is in neutral.

- No one is on, off, front, or rear of the forklift.

- Before turning on the power, do not press the accelerator pedal or operate the lifting lever or tilting lever.

- The operation should be smooth and accurate, do not brake or turn sharply. Emergency braking may cause the vehicle to overturn. Do not jump when the vehicle is on its side.



11. Pay attention to the direction of travel and maintain a good view.

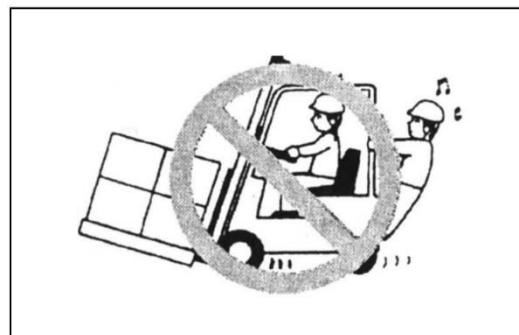
- Pay special attention to the direction of travel when reversing.

12. Select the appropriate accessories and tools according to the shape and material of the cargo.

- Do not use a rope to lift the cargo from the fork or equipment, the rope may slip, if necessary, let the person who is qualified to lift the cargo use a hook or lifting arm.

- Be careful not to let the fork touch the road, so as not to damage the fork tip and road surface.

13. Understand the load curves of forklifts and accessories. It is prohibited to overload, and it is prohibited to use any person as an additional balance weight.



14. Concentrate on your work.

15. Keep your head, hands, arms, legs and feet in the cab and do not stick out for any reason.

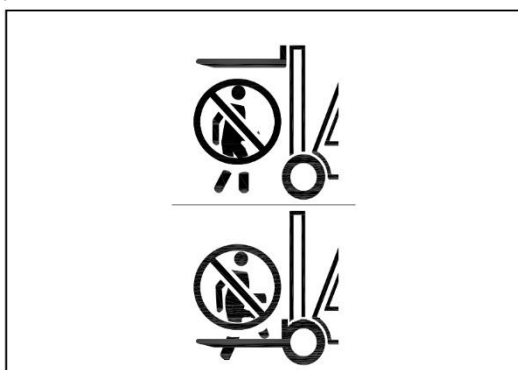


16. The pallet or cushion wood should have sufficient strength to carry the weight of the goods, and it is forbidden to use damaged or deformed pallets.

17. Nori provides users with a variety of accessories, such as rotating clips, flat clips, side shifting forks, lifting arms, etc., which can only be dedicated. Any modification of fittings must be approved by the manufacturer. Do not modify your own equipment.

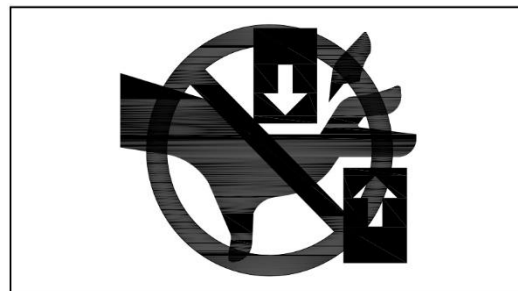
18. Top guard to prevent being hit by high cargo. Stop the shelf to ensure stable loading. Forklift trucks without top guard and rack are not allowed.

19. It is forbidden to stand or walk under the lifting fork or equipment. It is forbidden to stand on the fork or equipment. If unavoidable, choose a safe place and support the fork or equipment with wooden blocks to prevent accidents.



20. It is strictly prohibited to extend the head and body between the door frame and the top frame. If you clamp it, your life is in

danger.



21. When the goods deviate from the center of the fork, turn or pass the uneven road surface, it is easy to fall. At the same time, the likelihood of rollover increases.

22. The height of the goods should not exceed the shelf, and when it is inevitable, the goods should be fixed. Handling large volumes of cargo obstructs the sight, should be driven in reverse or guided by a guide.

When you are guided by a guide, you must really understand the meaning of the hand, flag, whistle, or other signal. Handling long goods such as wood, pipes, and oversized goods or operating vehicles with extended accessories, turning or driving in narrow channels must pay full attention to the front end and pay attention to other personnel.

23. When unloading, try to reduce the forward Angle, and the goods can be tilted forward when they are slightly higher than the stacking layer or at a low level.

- When stacking at a high height, let the door frame be vertical when it is 15cm ~ 20cm from the ground, and then lift it. Pay attention to not letting the door frame tilt when the goods are raised.

- When taking the goods at a height, the fork is inserted into the tray, slowly raised, backed up and then lowered, and the rear door frame is tilted backward, and the goods are at a high position.

24. Regardless of no-load or load, it is dangerous to raise the fork, keep the fork 15cm ~ 30cm from the ground, and tilt the door frame back. Do not move the fork of a

forklift with a side shifter when the load rises to avoid the forklift losing balance.

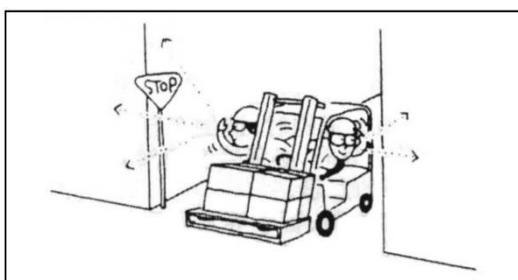


25. Do not lean forward when lifting the goods.



26. When working in crowded areas, pay attention to turnovers, ropes, entrances and exits, and hangings.

- Slow down through crosswalks or other roads with poor visibility and honk your horn.
- The turning speed should be limited to 1/3 of the maximum operating speed of the vehicle.



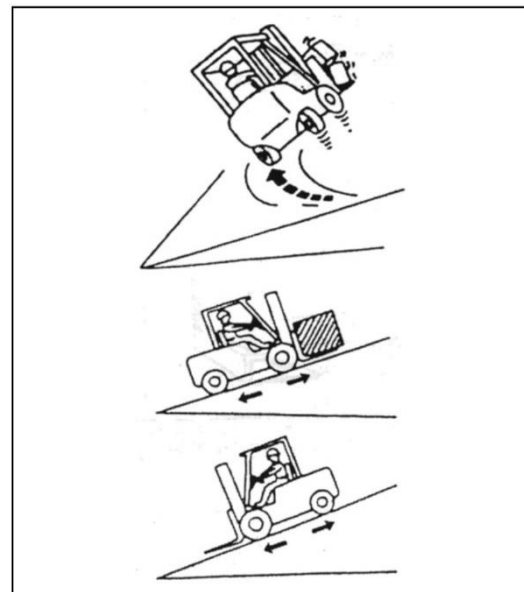
27. Make sure to keep distance from the curb or the edge of the platform.

28. When passing the ship plate or bridge plate, ensure that it is properly fixed and has sufficient strength to withstand the weight of the forklift truck.

29. Reverse downhill under load and climb forward.

- Reverse uphill and proceed downhill when unloaded.

- Do not turn on ramps to avoid tipping over.



31. Do not lift the goods when the forklift tilts the ground, and avoid loading and unloading operations on ramps.

32. Check the road to be driven, check holes, steep slopes, obstacles, bumps and other road conditions that may cause loss of control and turbulence.

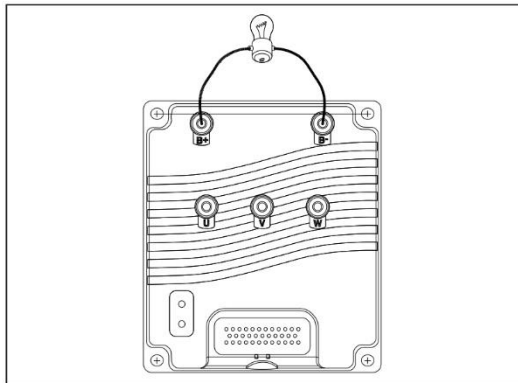
- Remove rubbish, debris and foreign objects that may puncture tyres and throw goods off balance.

- Drive slowly on slippery roads, don't drive on the edge of the road, and take extra care when unavoidable.

- Do not use forklift trucks in severe weather conditions such as wind, sand, snow, thunder, rainstorm, and typhoon. Especially when the wind speed is greater than 5m/s, the use of forklifts should be avoided.

33. The controller is equipped with an accumulator, and can not be touched by hand between B+ and B- to prevent electric injury. To check or clean the controller, first turn off the vehicle power supply, and then discharge the capacitor in the controller from the indirect load of the controller B+ and B- (such

as light bulbs, resistors, horns, etc.).



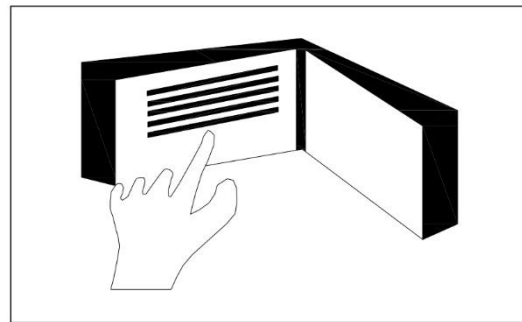
34. Stop on the level, pull the overhand brake, if you must stop on the ramp, be sure to use the wedge pad on the wheel.

- Lower the fork to the ground and lean forward slightly, turn off the key switch, and remove the key.
- Unplug the battery.
- The parking position must be away from fireworks.

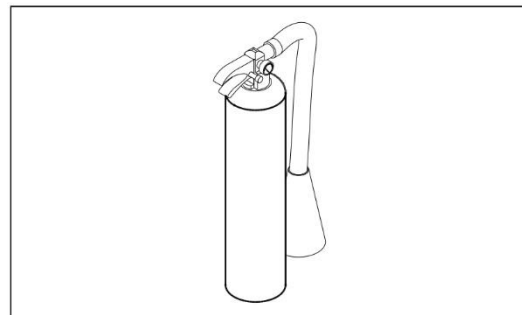
35. When the forklift can not drive, drag the traction pin to drag the forklift to a safe place. Do not pull a forklift with damaged steering and braking systems.

36. Signs and signs on the vehicle contain warnings and instructions on how to operate. Please follow this manual and the requirements of the car label and marking when operating. Inspect signs, signs, and signs, and replace damaged or lost signs,

signs, and signs.



37. The workplace should be equipped with fire extinguishers. The user can also choose to configure a fire extinguisher with the vehicle, which is generally installed on the rear leg of the safety frame for easy access. Drivers and managers should be familiar with the location and use of fire extinguishers.



38. The pallet should be used to handle small items, and it is not allowed to be placed directly on the fork.

39. Cold storage vehicles are not allowed to be parked in the cold storage.

3 Electric forklift battery operation and safety precautions.

Serial number	Operation and precautions
1	Do not open the battery cover for maintenance. If the battery is faulty, contact the manufacturer in time.
2	Do not reverse charge the battery.
3	Whether it is charging or discharging, it should be ensured that the battery management system is correctly connected and working normally to ensure normal communication of the battery management system.
4	Do not use it in places with strong static electricity and magnetic fields. Otherwise, the battery safety protection device may be damaged, resulting in potential security risks.
5	Keep the battery system or battery box away from heat sources and fire sources, and avoid direct sunlight for a long time. Can not directly bake the battery heating hot water heating, otherwise lead to explosion. Do not work in high temperature environment.
6	Do not place the battery pack in water or high humidity environment to avoid leakage or insulation failure.
7	When operating in a low temperature environment, the battery system capacity is slightly reduced, which is a normal phenomenon, and the performance will recover after the ambient temperature increases.
8	It is prohibited to modify or dissect the battery system and battery box without authorization to avoid danger. Non-professionals are not allowed to disassemble without authorization, so as to avoid foreign matter entering the battery pack, causing combustion and explosion.
9	Battery has a special charger, do not use other types of charger charging, so as not to damage the battery.
10	Do not use this series in series or parallel with other battery models or types.
11	Prevent water and corrosion of diagnostic ports, connectors, and connectors.
12	Do not mix the battery box with batteries of other types or manufacturers.
13	Do not connect the positive and negative electrodes of the battery box or battery system directly with metal or other conductors to avoid ignition or short circuit; It is also prohibited to contact and mix the battery pack with items that can cause short circuits.
14	Avoid mechanical damage to the battery box, such as extrusion, puncture, shock, and impact.
15	If there is dust, metal chips, or other debris on the battery pack cover and pole, use compressed air or dry cloth to clean it. Do not use water or water-soaked objects to clean it.
16	Working environment equipped with water based fire extinguisher.

17	If the temperature of the battery system rises sharply and the smell is abnormal, stop and turn off the power immediately. If smoke, fire, stop the car, turn off the power, in the case of ensuring the safety of personnel, use a water-based fire extinguisher.
18	Charge in a well-ventilated, dry environment.
19	Charging operating temperature: 0°C-45°C; Discharge operating temperature: -20°C-55°C; Short-term storage temperature range: -20°C-40°C Long-term storage temperature range: 0-25°C Working humidity range: 5%-80% Storage humidity: ≤70%

Battery forklift is charged daily

Serial number	Operation and precautions
1	When the forklift instrument power display 1~2 grid power (that is, the remaining 20%~30%) power in time to charge.
2	Turn off the switch power of the forklift and press the emergency stop switch.
3	Close the main input valve of the charger, ensure that the emergency stop switch is activated, the charging device is automatically turned on, the power indicator is on, and the display screen interface is automatically started.
4	When removing the charging gun, check the charging gun to ensure that there is no water or foreign matter in each port, and that the metal terminals are not damaged or affected by rust or corrosion.
5	Open the battery charging cover. Check the battery charging sockets to ensure that no water or foreign matter exists in each port and that the metal terminals are not damaged or affected by rust or corrosion.
6	The charging plug is inserted into the battery charging socket, the charger self-checks and communicates with the battery, when the whole system is fault-free, about 15S or a few hours later, the internal relay of the charger pulls in, starts charging, the charging indicator lights up, and the meter will display the charging voltage, charging current value, charging time and charging fault information.
7	When the battery is fully charged, the charger will automatically stop charging. At this time, the output voltage and output current on the meter are 0A, press the pause button at this time, and then pull out the charging plug. If the battery needs to stop charging when the battery is not fully charged, press the pause button on the screen first, and pull out the charging gun or plug when the charging current drops to 0A.
8	Plug the charging plug into the charging machine and turn off the charging machine input main valve.
9	Close the battery charging cover and the charging door on the forklift truck body. Plug it into the vehicle's power outlet and close the cover. Note: Do not plug the discharge plug of the battery into the charging socket, otherwise there is no power supply for the forklift.

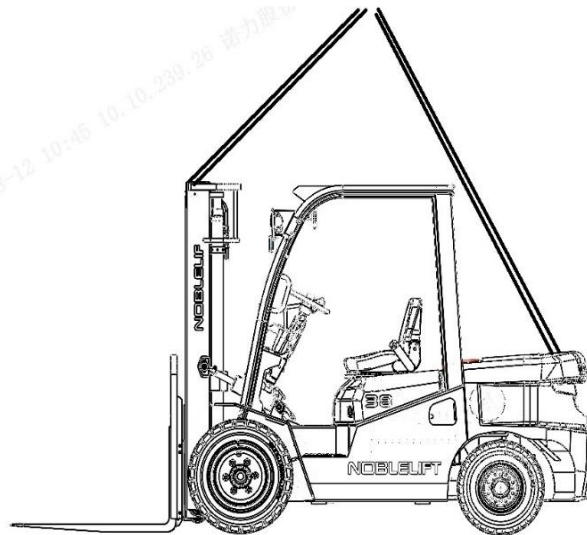
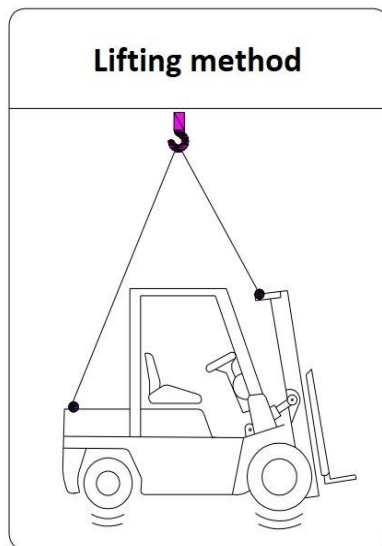
Daily maintenance of batteries

everyday	1. Check whether the appearance is deformed, whether the surface is oxidized, removed paint, whether the installation position is offset, whether the box is damaged, etc.
weekly	1. Use dry cloth or compressed air to clean the battery and charger.
Monthly	1. Check whether there is water or foreign matter in the plug and socket, check whether it is rusty or burnt.
	2. check whether the cable is damaged, the joint is loose, etc.
	3. check the battery shell for cracks, deformation, swelling and other abnormal conditions.
Storage of battery	1. The battery is stored in a clean, dry and ventilated indoor environment with an ambient temperature of $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and relative humidity of no more than 75%, and shall not be inverted to avoid mechanical impact and heavy pressure.
	2. Charge once a month.
	3. The positive and negative terminals of the battery box are wrapped with high-voltage insulation sleeves or other insulating materials to ensure that no metal part is exposed to avoid short circuit. Diagnostic mouth free of dust, and wrapped or covered.

4 Lifting and pulling of forklift trucks

4.1 hoist

Fasten the wire rope to the lifting holes and counterweight lifting holes at both ends of the outer door frame beam, and then use the lifting device to lift the forklift. The wire rope connected to one end of the counterweight shall be threaded through the gap in the top guard frame, and the top guard frame shall not be stressed.



Warning

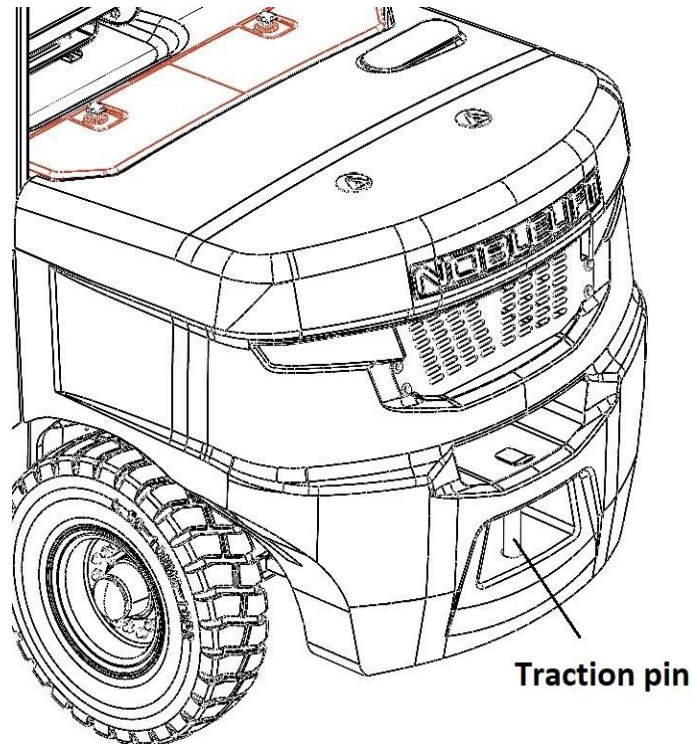
- ① Only use lifting tools with sufficient load.
- ② The door frame must be completely backward when lifting.
- ③ When installing the lifting tool, it must be noted that the lifting tool will not touch the forklift parts or the top protection frame during the lifting process.
- ④ Do not use the cab frame (roof guard frame) to lift the forklift.
- ⑤ When lifting the forklift, do not enter the bottom of the forklift.

4.2 traction

Do not use the forklift for daily pulling or being pulled operations.

The traction pin (13) under the counterweight is used only in the following situations:

- Emergency movement of the forklift when it is suddenly damaged on the working road;
- The forklift can be used when it is in trouble and cannot be driven (such as the wheel is stuck in a pit, etc.).



Operation procedure:

- Turn off the key switch and unplug the battery.
- Release the parking brake.
- The reversing handle is in neutral.
- Fasten the rope for traction.

We're ready to pull the forklift.

Warning

- ① Do not pull a forklift with abnormal steering system and damaged braking system.
- ② Do not suddenly apply a load on the wire rope.
- ③ Traction forklift will damage the controller when it is powered on.

Notice

- ① Do not pull a forklift with abnormal steering system and damaged braking system.
- ② Do not suddenly apply a load on the wire rope.
- ③ Traction forklift will damage the controller when it is powered on.

5 Storage battery

5.1 Safety notice

1.1 Do not touch the positive and negative terminals of the battery box with both hands at any time to prevent electric shock.



1.2 Maintenance personnel must hold a qualified electrician certificate issued by the Safety Administration and ENEROC maintenance authorization to carry out maintenance operations .



1.3 Wear insulated gloves when operating and maintaining the battery system. Do not wear metal accessories such as watches.



1.4 When cleaning the vehicle, do not directly flush the battery system to prevent faults caused by water in the battery system.



5.2 Installation notice

2.1 Installation instructions: Installation personnel should hold a certificate, wear

labor protection supplies, and pay attention to safety protection. Before installing the battery system, ensure that the low-voltage plug-in of the battery system is disconnected from the vehicle components. Pay attention to safety protection during power high-voltage connection to prevent electric shock during installation. When the battery system is installed, it should be mechanically lifted and slowly installed in the battery compartment of the vehicle. Make sure that the electric box and external cables are not damaged by extrusion. When the battery system is connected, avoid high voltage positive and negative electrode reverse connection, short circuit and other phenomena. If you need to remove the battery system from the vehicle, ensure that the vehicle key is closed, and the high-voltage cable, low-voltage plug-in and the vehicle are disconnected.

2.2 Post-Installation Check After the battery system is installed, check the limit pins and fixing bolts of the battery system to ensure that they meet the requirements for battery system installation. Check that the high voltage cables and low voltage connectors are properly connected. Turn the key switch of the vehicle to ON, and the relay should be able to normally draw and close without battery alarm. If there is a battery fault alarm, you need to cut off the power immediately, and notify our after-sales service department to solve.

5.3 Basic terms for lithium-ion power batteries

3.1 Battery system

Usually includes one or more battery modules, battery management systems, thermal management systems, high and low voltage wiring harnesses, connectors and structural components of the energy storage device.

3.2 SOC

It refers to the percentage of remaining battery power.

3.3 Rated voltage

A suitable approximate value used to represent the battery voltage.

3.4 Rated capacity

The manufacturer-indicated capacity of a battery in a fully charged state under specified conditions.

3.5 overdischarge

When the battery voltage is lower than the discharge cutoff voltage, it usually refers to the state that the battery enters after discharging completely.

3.6 overcharge

When the battery voltage is higher than the maximum charging voltage, the state is usually seen as the battery entering the overcharged state.

3.7 Explosion: The battery shell is broken, there are solid substances inside the battery rushed out, and sound.

3.8 Fire: An open flame appears in the battery shell.

3.9 Leakage: internal components of the battery (electrolyte or other substances) leak out of the storage pool.

3.10 CAN communication :Control Area Network, controller LAN.

5.4 Instructions for use

4. 1 Battery temperature characteristics: operating environment temperature: -28°C ~55°C, allowable charging temperature: 0°C ~55°C, allowable discharge temperature: -28°C~55°C, storage environment temperature: -28°C~55°C.

4.2 Check before use, after the vehicle key switch is closed, confirm that there is no battery system alarm information on the instrument panel. Check the remaining power before use. It is recommended that the SOC be used between 50% and 100%. SOC below 30% is not recommended to

continue to use, please charge as soon as possible.

4.3 Charging note: The SOC of the battery system is less than 20%. Please charge it in time. Please use the special charging equipment authorized by the manufacturer to charge. If a fault alarm occurs during the charging process, both the battery system and the charger will stop charging, and the charger will display fault information. The charging environment should be dry and ventilated, with no inflammable and explosive materials around. Ensure that the battery system is fully charged once a week.

4. 4 For long-term storage, ensure that the battery capacity is not less than 50% before long-term storage. Charge maintenance should be carried out every three months: charge to 100%. Storage for more than three months, please confirm that the power battery system has no fault alarm before use again, if so, please contact our after-sales service department for maintenance. Keep the storage environment dry, ventilated and away from heat sources.

Notice

When the ambient temperature is low, the battery system charging time will be extended, which is normal. The battery management system automatically adjusts the charging time with temperature changes to ensure the best performance of the battery system.

4.5 Daily maintenance

4.5.1 Appearance maintenance: Check the outer box of the battery system for foreign bodies, obvious deformation, rust and other abnormal conditions.

4.5.2 Charging port maintenance: In the state of power failure, check whether the interface is damaged, foreign matter, rust and other abnormal conditions.

4.5.3 Connector maintenance: In the state of power failure, check whether the connector is

loose, damaged and other abnormal conditions.

4.5.4 Status detection: During charging, observe the battery system voltage, temperature and other status information on the charger display to ensure that all status information is in the normal range.

4.6 Emergency plan

4.6.1 Extreme abnormal situations: Users should establish a good sense of safety precautions during use, and prohibit illegal operations to avoid battery system abuse (overcharge, overdischarge, short circuit, extrusion, puncture, environmental overheating, and large current discharge). Abnormal conditions that may occur in the power battery system during charging and use: the battery system or local temperature rises sharply; Any part of the battery system has abnormal odor or smoke.

4.6.2 Emergency Plan:

4.6.2.1 Personnel leave the vehicle quickly and call the police according to the scene situation.

4.6.2.2 To ensure personal safety, perform the following operations:

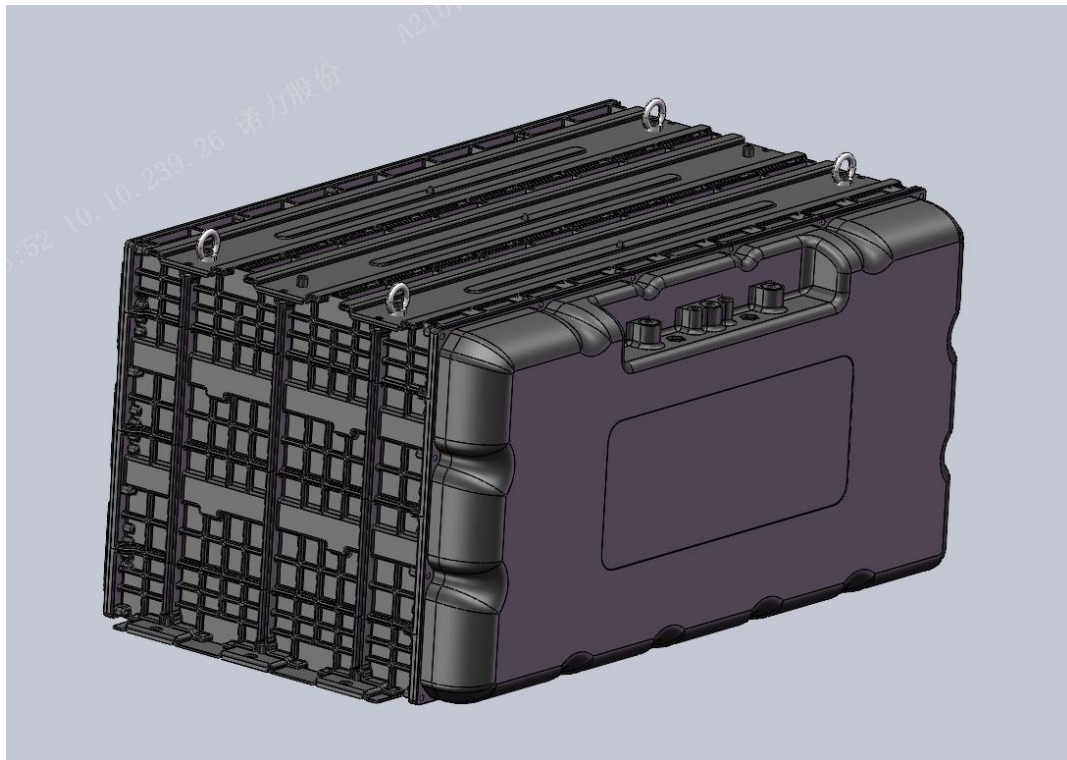
- a. If the external wiring harness is smoking and burning, use a carbon dioxide or dry powder fire extinguisher to spray.
- b. If there is smoke inside the battery, spray it with a high-pressure water gun at a distance.

c. If smoke inhalation occurs, evacuate and seek medical attention immediately.

4.6.2.3 Contact vehicle brand dealers to obtain professional handling advice.

5.5 Size/Weight

Item	CPD20/25-AF1H	CPD30/35/38-AF1S	CPD30/35/38-AF2H
l o n g (L) m m	592	660	852
w i d e (W) m m	506	495	510
h i g h (H) m m	248	280	405
Lightest allowable kg	110	130	210
Allowable weight kg	/	/	/



Warning

The weight and size of the battery have a great influence on the stability and bearing capacity of the vehicle. When installing or replacing the battery, pay attention to the fixed position of the battery on the vehicle.

5.6 Battery charging

Lithium battery forklift can be equipped with Huarui energy charger - Huarui wall charger

5.6.1 Huarui wall charger

1.Safety Precautions

Thank you for using this product, please be sure to read this manual carefully before installation and use and carefully check whether the product packaging and accessories are completed according to the packing list.

In order to ensure the safety of operators and the normal operation of the charger, please strictly follow the installation procedures, operating procedures and safety tips specified in this operating guide to ensure the normal operation of the equipment.

Note: If the product is damaged due to failure to follow the prescribed procedures, the company will not assume the responsibility for product repair and additional losses.

Please be sure to keep this operating guide properly so that the operator can use and refer to it at any time during installation, use and maintenance.

- ◆ This charger is designed for battery charging, please do not use for other purposes;
- ◆ The battery needs to match the voltage and current of the Charger before the charger can be run;

Electrical Safety

- ◆ Please use the input and output sockets of this charger. To ensure the safety, please do not replace the accessories without permission;
- ◆ If any cables, connectors or other accessories are found broken, the charger must be stopped immediately and contact the after-sales service center for repair or replacement.

Using in a safe environment

- ◆ Smoke, water, flame, corrosive gas, etc. should be prevented from entering the charger;
- ◆ If there is a small amount of liquid invasion, please immediately close the Charger, and hand it over to the designated professional technician for repair;
- ◆ The working environment of the Charger is: $-20^{\circ}\text{C} \sim 75^{\circ}\text{C}$;
- ◆ The storage temperature of the Charger is: $-25^{\circ}\text{C} \sim 85^{\circ}\text{C}$;
- ◆ Working and storage relative humidity: $0\% \sim 95\%$ (no condensation) .

2.Installation instructions

1)On any flat and firm wall that is not covered by rain in the room, use four M4 self-tapping screws (or expansion screws) to fix the hanging piece A horizontally on the wall, as shown in Figure 2.1:

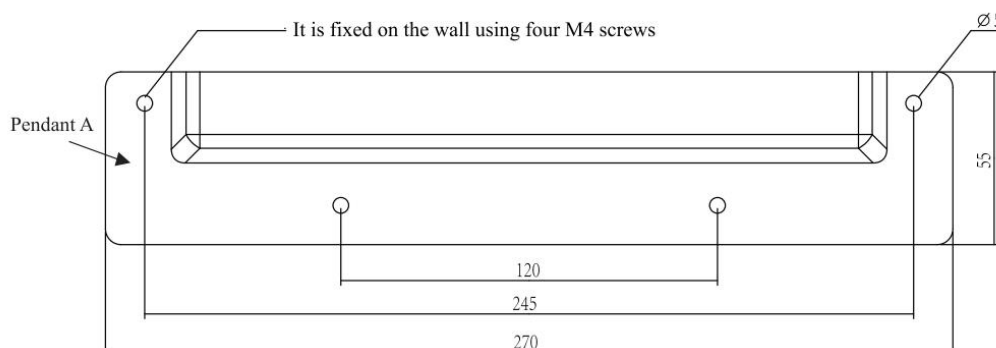


Fig. 2.1 Pendant A is fixed to the wall

2) Install pendant B and pendant C on the corresponding positions of the charging machine with M3 countersunk screws provided in the packing box, and tighten the screws, as shown in Figure 2.2:

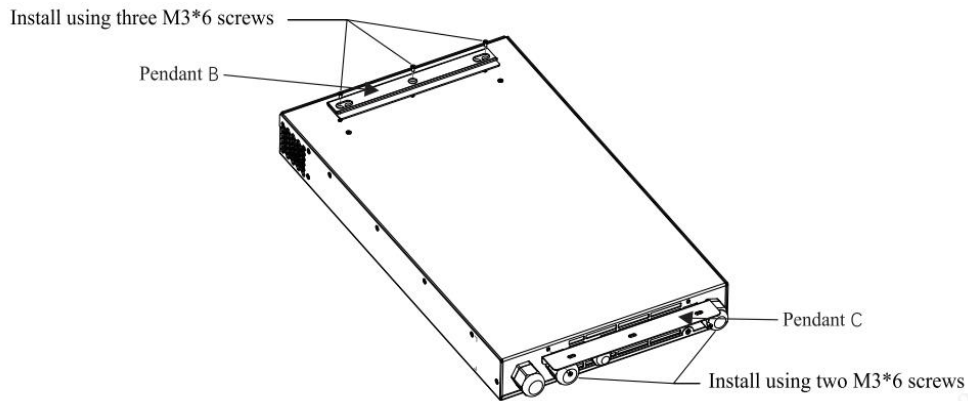


Fig. 2.2 Pendant B and Pendant C are fixed on the charger

3) The body of the charger that is installed with pendant B and pendant C is connected to the pendant A fixed on the wall through pendant B, as shown in Figure 2.3:

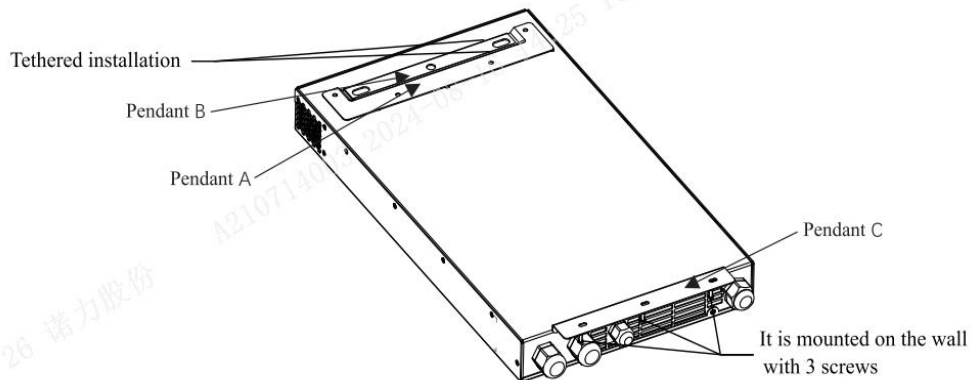


Fig. 2.3 the Charger is mounted on the wall and fixed with Pendant C

4) The bottom of Pendant C is attached to the wall and secured to the wall by three M4 tapping screws (or expansion screws), as shown in figure 2.3:

5) Hook installation: the accessory hook can be fixed on the suitable position of the wall surface with three M4 self-tapping countersunk head screws for placing the charging plug, as shown in Figure 2.4.

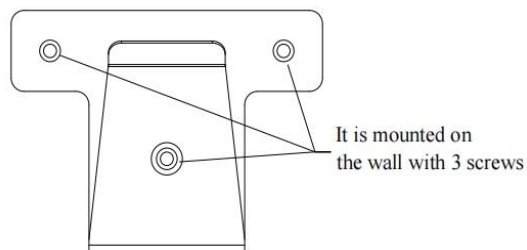


Fig. 2.4 the hook for the charging plug

6) Ensure that the Charger firmly and reliably fixed on the wall (hand shake will not appear to shake), the Charger AC input line into the AC power. The yellow-green ground wire in the AC input line of the Charger is directly connected to the ground wire of the distribution cabinet. When the charger is connected to the three-phase power supply, the three input lines of the charger are connected to the three-phase input of the circuit breaker (A, B and C), and the three fire lines do not need to distinguish the wire sequence. When the charger is connected to the single-phase power supply, any two input lines of the charger are connected to the input of the circuit breaker (L and N), and the remaining one is wrapped and suspended with electrical tape. As shown in Figure 2.5;

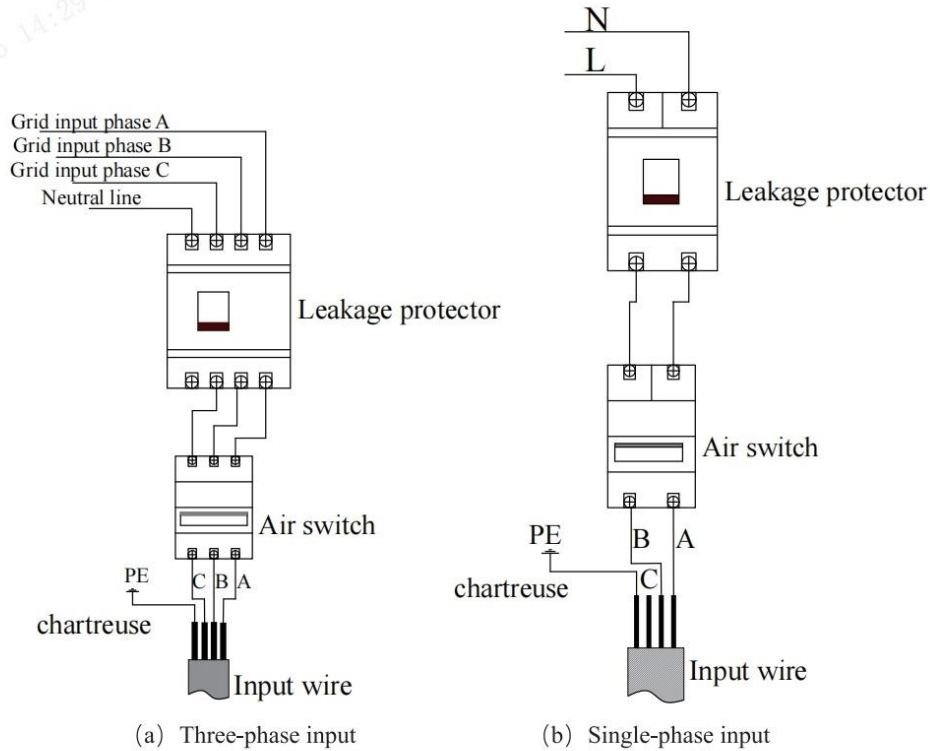


Fig. 2.5 the input wiring diagram of the Charger

Notes:

- ◆ In order to ensure that the charger is firmly hung on the wall, it is suggested to fix the charger on the wall of the brick-concrete structure with the expansion screw;
- ◆ It is recommended that professional electricians with electrical certificates perform the wiring work;
- ◆ The charger that supports single-three-phase input compatibility needs to be customized.

3. Operation Instructions for Charger Panel

As shown below, the charger's panel includes an LCD display, two function buttons, an emergency stop button and an RGB three-color LED light. The two function buttons can change the content displayed on the LCD screen and set the operation; The emergency stop button is used for emergency shutdown. The RGB three-color LED light is used to indicate the working state of the charger, among which the charger is in standby state when the LED light is blue steady on, the charger is in charging state when the LED light is green blinking, the charger is in full charge state when the LED light is green steady on, and the charger is in fault state when the LED light is red steady on.

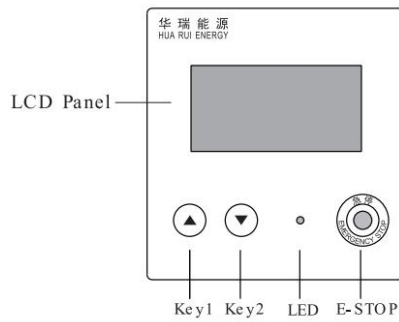


Figure 3.1 LCD panel and buttons

The key-press Operation Instructions for the Charger are as follows:

Functional Items	Operating Instructions	Notes
Pages Switch	Switch the pages by clicking ▲ or ▼	
Parameter Settings	1) Press ▲ and hold about 2.5s to enter the parameter setting interface; 2) Click ▲, The LCD screen switches between the voltage setting interface, the current setting interface, the boot delay time setting interface, and the cut-off SOC setting interface; 3) Click ▼ Activate the parameter setting function, settable bits will flicker, then select the number of digits that need to be modified by clicking ▲, click ▼ to change digital values; 4) After the completion of the setup, you need to save the settings by pressing ▲ 2.5 s, otherwise the settings are invalid.	1) After saving the settings, you need to wait for the LCD screen to return to the default page before making the next settings; 2) After the battery soc reaches the cut-off SOC value, the module will shut down, and the shutdown command must be sent to the module to exit this state.
Emergency Stop Protection	1) Click the “Emergency Stop” button and the module shuts down and enters the emergency stop mode; 2) Click ▲, and the module exits the emergency stop mode.	After exiting the emergency stop state, the module is in the shutdown state
Wake up the screen	Click ▲ or ▼	The module state does not change for more than 2 minutes, and the LCD screen will go into screen-out state

The fault display and troubleshooting of the charger are as follows:

Fault Display	Cause of Fault	Elimination
Battery voltage failure	Battery positive and negative connection, short circuit, bad section	1) Check whether the battery pack is connected correctly; 2) Check whether the regulated power supply is connected correctly; 3) Check whether the single battery in the battery pack is damaged
Output over-current fault	Excessive output current	Disconnect AC input for 1 minute and then power up again. If the fault still exists, return it to the manufacturer for repair
Over-temperature fault of Charger	High temperature protection for charger	4) If the temperature of environment or module radiator is too high, the module will be closed and put into the mode of high temperature protection. Please put the module to work in a well-ventilated environment; 5) Disconnecting power supply of the module, waiting 15-20 minutes and then reconnecting the power supply

The battery overheated	High temperature battery protection	1) When the battery temperature exceeds the preset value, the charger will turn off the output, preventing the battery from continuing to overheat; 2) When the battery temperature drops, the charger will automatically restart
Output over-voltage fault	The output voltage of the charger is too high	Disconnect AC input for 1 minute, then power up again, if the fault does not disappear back to the manufacturer for maintenance
Output under-voltage fault	The output voltage of the charger is too low	1) Watch the battery voltage by LCD screen. If the battery voltage is less than 36V, the battery is out of order 2) If the battery voltage is more than 36V, disconnect AC input for 1 minute, then power up again, if the fault does not disappear back to the manufacturer for maintenance
AC input failure	The input voltage of the module is too high or too low, the input phase is missing or the input current is too high, the input frequency is abnormal	1) Disconnect AC input and adjust input voltage to normal range 2) Power on again after 1 minute, if the fault does not disappear back to the manufacturer for maintenance
Fan Failure	Charger fan does not rotate or abnormal rotation	Disconnect AC input for 1 minute and then power up again. If the fault still exists, return it to the manufacturer for repair
Internal failure of Charger	Internal fault	Disconnect AC input for 1 minute, then power up again, if the fault does not disappear back to the manufacturer for maintenance

4.Product Specification Parameters of Wall-mounted Charger

Models		HRNYAD5K2_80	HRNYAD10K4_80	HRNYAD16K_80	HRNYAD9K6_48	HRNYAD15K_150	HRNYAD7K5_150
DC output	Rated voltage	80V	80V	80V	48V	150V	150V
	Rated current	65A	130A	200A	200A	100A	50A
	Voltage Range	36V~100V	36V~100V	36V~100V	24V~60V	50V~180V	50V~180V
	Current regulation range	0.1A~65A	0.1A~130A	0.1A~200A	0.1A~200A	0.1A~100A	0.1A~50A
	Max power	5200W	10.4KW	16KW	9600W	15KW	7500W
	Precision of voltage regulation	$\leq \pm 1\%$					
	Steady current accuracy	$\leq \pm 1\%$					
	Polarity reversal	Automatic protection					
	Short Circuit	Automatic protection					
AC input	Voltage Range	270~460V					
	Frequency	47~63Hz					
	Max Current	10.5A	21A	30A	19.5A	30A	16A
	Rated PF	≥ 0.99					
	Rated THDI	$\leq 5\%$					
dimension(mm)		460*280*55	515*300*55	520*345*65	515*300*55	520*345*65	515*300*55

5.Using Instructions for Charger

Instructions for using under BMS conditions

- 1) Close the AC input air switch of the charger;
- 2) After the LCD screen on the charger is lit, insert the output plug of the charger into the socket of the battery (make sure that the output plug of the charger is connected with the socket of the battery reliably) ;
- 3) After charging is completed or in case you want to stop charging in advance, first turn off the AC input air switch on the charging machine, and then pull out the output plug of the charging machine after the LCD screen of the charging machine is turned off.

Instructions for Using without BMS

- 1) Close the AC input air switch of the charger;
- 2) After the LCD screen of the charging machine is lit up, set the charging voltage and charging current according to the method in Chapter 3 (Please consult the battery manufacturer for setting the charging voltage and charging current; The setting of the charging voltage and charging current can be permanently saved and only needs to be set once without replacing the battery. You can skip this step for subsequent charging. If not, the charging voltage is the rated output voltage, and the charging current is half of the rated output current);
- 3) Insert the output plug of the charger into the socket of the battery (make sure that the output plug of the charger is connected to the socket of the battery reliably) , then manually start the machine according to the method in chapter 3;
- 4) After charging is completed or you want to stop charging in advance, first turn off the AC input air switch on the charging machine, and then pull out the output plug of the charging machine after the LCD screen of the charging machine is turned off;
- 5) Manual boot is a more dangerous operation, please be sure to communicate with the battery manufacturer before performing this operation.

6 Operation instruction

6.1 Run-in of a new forklift truck

In the initial stage of putting into use, forklifts should operate under low load, especially within 100h, and should meet the following requirements:

- Overdischarge of the new battery during initial use must be prevented.
- Generally, it should be charged in time when discharge is 80%.
- The prescribed preventive maintenance should be thorough.
- Avoid sharp braking, driving or turning.
- Oil change or lubrication in advance as required.
- Limit the load weight to 70% ~ 80% of the rated load.

6.2 Check and adjust before operation

For the safe operation of the forklift, the forklift must be checked and adjusted before operation.

Warning

① If it is determined during the inspection that there is damage or safety hazards on the forklift or accessories, the forklift shall not be used again until it is repaired in accordance with the regulations.

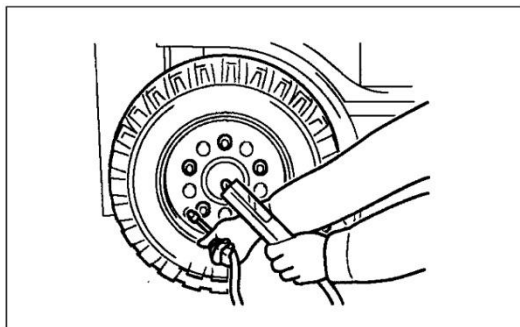
② In addition to testing the lamps and checking the operating performance, before checking the electrical system, the key switch must be turned off and the battery plug must be unplugged.

- Visually inspect the forklift, paying special attention to the wheels, wheel bolts and load parts for damage or loosening.
- Visually and by hand touch, check the drive axle, hydraulic system, brake system and lithium battery right for no leaks or damage.
- Check the tire pressure: Use the barometer to check whether the tire pressure is at the specified value (front wheel 0.9MPa/rear wheel 0.8MPa).
- Check whether the lithium battery box is locked.
- Check whether the driver seat function is normal, and adjust the seat position according to the actual situation of the driver.
- Adjust the front, rear and upper and lower positions of the armrest control device according to the driver's own situation.
- Check that the seat belt is functioning properly: the seat belt must lock when it is pulled out quickly.
- Adjust steering column inclination.
- Adjust the field of view of the rearview mirror.
- Check whether the lifting chain is evenly tensioned.
- Check the function of the operation and display elements.
- Check whether the display function of the instrument is normal.
- Check seat switch function: the driver is not sitting in the seat correctly, the seat switch indicator on the instrument is lit up, and the hydraulic function must not be operated.
- Check the function of the steering system.
- Check whether the brake pedal functions properly.

- Check the accelerator pedal: press the accelerator pedal, change with the travel, strong and strong acceleration, good return.
- Check the steering Angle display: Rotate the steering wheel in both directions to the stop position, and check whether the wheel position is displayed on the instrument.
- Check the hydraulic function of lift/fall, tilt and fittings.
- Check whether electrical components such as lights, horns, and reverse buzzers function properly.

Check tire pressure (inflatable tires only)

Unscrew the cap counterclockwise and measure the tire pressure with a barometer. If insufficient, replenish the air pressure to the specified value. After confirming that there is no air leakage, screw on the cap, check whether the ground and side of the tire are damaged, and whether the rim is deformed.



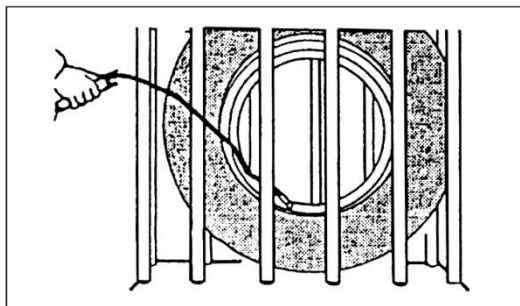
Warning

- ① Forklift tires need high pressure to carry, and small deformation of the rim or damage to the tire ground will cause accidents.
- ② When using air compressor, the pressure should first be adjusted, because the maximum output pressure of the air compressor is much higher than the specified pressure of the tire, otherwise, it will cause serious accidents.

Tire pressure (using the new standard GB/T2982-2001)

Model	Front wheel	rear-wheel
3.0t~3.8t	0.9 MPa	0.8 MPa
2.0t~2.5t	0.86 MPa	0.86 MPa

Note: The above is pneumatic tire pressure, not applicable to solid tires.

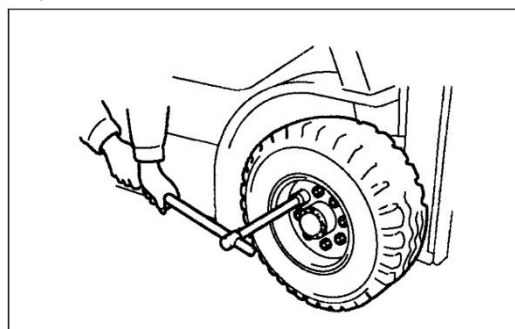


Warning

- ① After the tire and rim assembly, all bolts and nuts should be tightened to the specified torque value, the tire can be inflated, and the tire has expansion energy after inflation, and the tire pressure should not exceed the specified value.
- ② To ensure safety, place the tire in a protective frame or tie the tire with a chain when inflating.

Check the fixing of the wheel

Check whether the tightening torque of the front and rear wheel nuts meets the requirements.



Operation steps:

- Parking forklifts as required.
- Use a torque wrench to tighten the wheel fastening nuts. For details about the tightening torque, see the following table.

Model	Front wheel nut (Nm)	Rear wheel nut (Nm)
2.0t~3.8t	441-588	157-176

Brake pedal check

Operation steps:

- Press the brake pedal to check for sluggishness or blockage.
- The correct braking distance under no load is 2.5 meters.
- Adjust the pedal height: Adjust the limiting bolts so that the distance between the middle point of the upper surface of the pedal pad and the front bottom plate is 115 mm to 125mm.

- Adjust the length of the total brake pump push rod, so that the empty pedal travel is 1mm ~ 3mm.
- When the brake pedal is gradually pressed 10mm ~ 20mm, the brake light switch should be fully switched on.

Check hand brake joystick

The operating force is adjusted by the rod tip screw. Clockwise rotation, the operating force increases, vice versa decreases.

Make sure that the handbrake handle is tensioned and then released to return to position for good effect.

Notice

Depress the brake pedal to help tighten or release the hand brake lever.

Brake fluid check

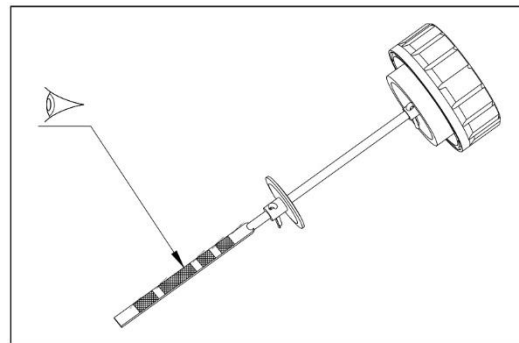
Open the lid of the brake oil cup and check whether the brake fluid is within the scale range. If the fluid is insufficient, please add it and check whether there is air mixed in the brake pipe.

Notice

- ① **Please use a pure brand of brake fluid, do not mix different brands of brake fluid.**
- ② **Do not splash brake fluid on any painted surface, otherwise it will damage the paint.**
- ③ **When adding brake fluid, prevent dust and water from mixing with the oil.**

Hydraulic oil inspection.

Open the back base plate, loosen the cover of the hydraulic oil filler port located in the right rear, pull out the dipstick, and check that the oil level is between the scales. Make up when insufficient.



The lifting height of different doors

corresponds to the liquid level of the dipstick:

"30" refers to the hydraulic height when the lifting height is $H \leq 3.0\text{m}$

"40" refers to the hydraulic height when the lifting height is $H \leq 4.0\text{m}$

"50" refers to the hydraulic height when the lifting height $H \leq 5.0\text{m}$

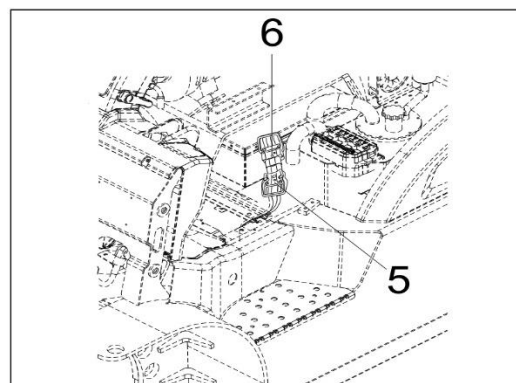
"60" refers to the hydraulic height when the lifting height is $H \leq 6.0\text{m}$

"65" refers to the hydraulic height when the lifting height is $H \leq 6.5\text{m}$

Battery inspection

Check that the battery is securely fastened. That is, whether the battery is fixed firmly and reliably.

Check whether the plug socket is loose or damaged, otherwise adjust or replace it.



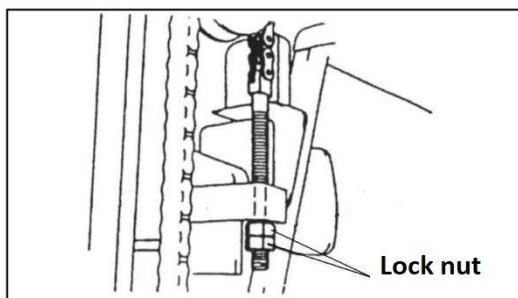
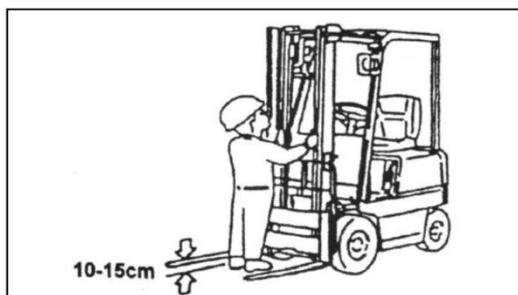
Check door frames and forks

- The fork has no cracks and bending, and the fork is firmly and correctly installed on the fork frame;
- Check whether there is oil leakage in the cylinder and tubing;
- Check the rotation of the roller;

- Check the door frame for cracks and deformation;
- Operate lifting, tilting and accessory handles to check whether the door frame works normally and whether there is abnormal noise.

Chain tension check

- The fork is raised 10cm ~ 15cm, and the door frame is vertical.
- Press the middle of the chain with your thumb to check whether the left and right chain are tensioned to the same degree.
- Tension adjustment: Loosen the locking nut, twist the adjusting nut, adjust the chain to ensure that the two chains are tensioned to the same degree, and then tighten the locking nut.



6.3 Operating forklift truck

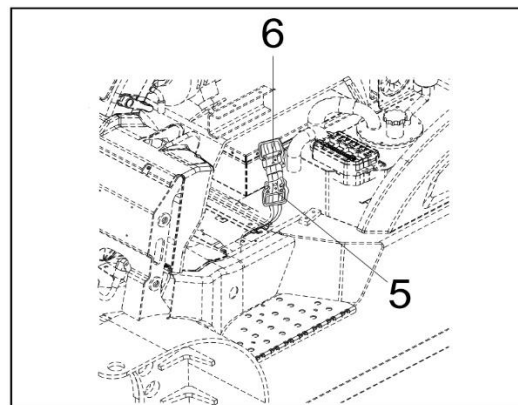
Drive and operation

Warning

If the forklift is damaged or malfunctioning, do not start the forklift until it is repaired and restored.

Actuate

- Turn on the cover, plug in the battery, and close the cover.



- Release the emergency stop switch. Turn clockwise at a certain Angle, and the emergency stop switch button automatically springs up.
- Reverse joystick to neutral position.
- Insert the key into the switch lock and turn it right to the "I" stop position.
- The forklift starts the self-test for 3 to 4 seconds. After the self-test is complete, the available battery power is displayed on the display.

Notice

The forklift will automatically enter the self-test procedure (about 3 to 4 seconds). The display screen will display the welcome screen, and all 6 indicators will light up. The forklift cannot be driven and lifted during this time. If the direction switch or accelerator pedal or lift switch is operated during this period, A fault message will appear in the display and the fault indicator

"  " will light up.

- Grip the steering wheel handle with your left hand and turn on the key switch with your right hand.
- The frame leans back
- Operate the lifting lever to lift the fork to 150 mm to 200mm above the ground. Operate the tilting lever to tilt the gantry back to the bottom.
- Operate the reversing joystick
- When the forklift is moving forward: push the reversing lever forward.

- When the forklift is backing up: push the reversing lever back.
- Release hand brake lever.
- Press the brake pedal and push the hand brake lever to the front position.
- Hold the wheel handle with your left hand and gently rest your right hand on the wheel.

Operation

Slowly press the accelerator pedal and the forklift moves forward or backward.

retard

Slowly release the accelerator pedal and the forklift will slow down.

Notice

Slow down the forklift in the following situations:

- ① **When turning**
- ② **When approaching goods or pallets**
- ③ **When approaching the loading area**
- ④ **When entering a narrow passage**
- ⑤ **When the ground or pavement is in poor condition.**

Warning

Do not press the accelerator pedal and brake pedal simultaneously.

swerve

Forklifts are different from ordinary vehicles in that they are rear-wheel steering, and the rear counterweight rotates outward when steering.

Slow down and turn the steering wheel towards the side you are turning, turning the steering wheel slightly ahead of the front wheel steering vehicle.

Notice

Drive slowly and carefully with the steering wheel, and make sure there is sufficient swing at the rear of the forklift.

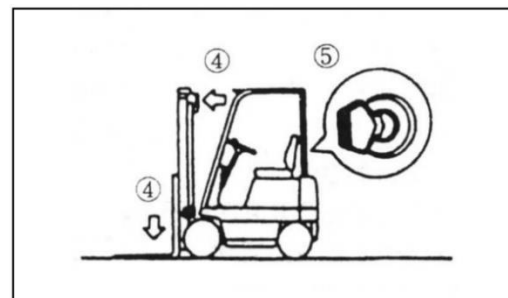
Pull up

- Slow down and press the brake pedal to stop the car.
- Shift handle in neutral.
- Pull the overhand brake.

- Fork to the ground, maximum forward tilt of the door frame.
- Key switch "OFF" position, unplug the battery plug, take off the key and keep it.

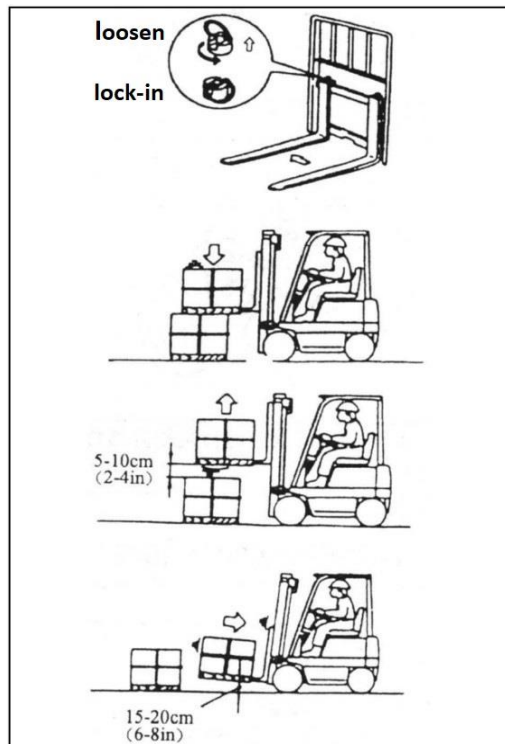
Notice

- ① **Get off carefully and don't jump.**
- ② **The vehicle cannot stop on the running route.**



stowage

- Adjust the fork spacing to balance the goods.
- The vehicle is facing the goods for loading.
- The pallet should be placed symmetrically on the two cargo forks.
- Fork as far into the tray as possible.
- Lift goods:
 - First lift the fork 5cm ~ 10cm from the ground to confirm whether the goods are firm.
 - Then tilt the door frame back into place, lift the goods 5cm ~ 10cm off the ground, and then start driving.
- Heavy cargo handling obstructs the line of sight, in addition to climbing, reverse driving.



stacking

- Slow down when approaching the cargo storage area.
- The vehicle is parked directly in front of the cargo storage area.
- Check the condition of the storage site.
- The gantry leans forward to fork level, raising the fork slightly above the unloading position.
- Proceed, place the cargo in the unloading position, and stop.
- After confirming that the goods are directly above the unloading position, the cargo fork is lowered slowly, and then confirm that the goods are safely in place.
- Carry out the necessary lifting and tilting operations, and withdraw the fork from the cargo.
- After confirming that the fork tip has left the goods, lower the fork to a position 15cm ~ 20cm above the ground.
- The door frame leans back into place.

Notice

The forklift should be slowed down in the following situations:

- ① **When turning;**

- ② **When approaching goods or pallets;**
- ③ **When approaching the loading area;**
- ④ **When entering a narrow passage;**
- ⑤ **When the ground or pavement is in poor condition.**

Warning

- ① **When the load is lifted more than 2m, do not tilt the door frame.**
- ② **When the load is high, do not get off or leave the vehicle.**

unbundling

- Slow down when the forklift truck approaches the pick-up yard.
- Stop when the forklift is 30cm away from the cargo.
- Check the condition of the goods.
- The gantry leans forward to fork level and the fork is raised to pallet or tie position.
- Make sure the fork is aligned with the pallet, move slowly, and stop after the fork is inserted into the pallet as far as possible.

Notice

If it is difficult to fully insert the fork, the forward vehicle should insert the fork 3/4 of the way. Lift the fork 5cm ~ 10cm, back 10cm ~ 20cm, and then drop the tray or tie, and then completely insert it.

- Lift the fork 5cm ~ 10cm away from the stack.
- Look around the vehicle to make sure it is barrier-free and back up slowly.
- The fork falls 15cm ~ 20cm from the ground, the door frame tilts back into place, and then it is transported to the destination.

Post-operation inspection

After use, the forklift should be cleaned and inspected as follows:

- No damage or oil leaks.
- Fill lubricating oil as required.
- Check the tire for damage or for foreign objects embedded in it.
- Check whether the hub nut is loose.
- Check the electrolyte level.

- If the fork is not raised to the maximum height during the operation on the day, the fork should be raised to the maximum height 2 to 3 times after the operation is completed.

Notice

- ① **If a fault is found, it should be repaired in time.**
- ② **Before the forklift is completely repaired, it is strictly prohibited to put into use.**

7 maintenance

Careful and comprehensive maintenance can make the forklift in good working condition. Ensure forklift safety, that is, to ensure the safety of your work and life.

7.1 Maintenance profile

- Forklifts need regular inspection and maintenance to keep them in good performance.
- Inspection and maintenance are often overlooked, find problems as early as possible and solve them in time.
- Using pure spare parts from Nori Group.
- Do not use different types of oil when changing or refueling.
- The replaced waste oil and battery waste liquid should not be dumped at will and should be disposed of according to local environmental protection laws and regulations.
- Develop comprehensive maintenance and repair plans.
- A complete record shall be made after each maintenance and repair.
- Do not repair forklifts without training.
- Only if the forklift manufacturer is no longer in business and there is no successor interested in the business, the user can arrange for modifications or modifications to the power industrial forklift, but only if the user
 - (a) To arrange for modifications or modifications designed, tested and carried out by engineering experts in industrial trucks and their safety,
 - (b) Maintain a permanent record of design, testing and implementation of modifications or changes;
 - (c) Approve and make appropriate modifications to volume plates, decals, labels and instructions;
 - (d) Attach permanent and easily visible labels to trucks indicating the manner in which the trucks were modified or altered, the dates on which the modifications or changes were made, and the name and address of the organization that performed those tasks.

Notice

- ① **No fireworks!**
- ② **Before maintenance, you should turn off the key switch and unplug the battery. (In addition to a partial obstacle clearance test).**
- ③ **Use compressed air to clean the electrical part, do not clean with water.**
- ④ **Do not put your hands, feet or any part of your body between the entry stand and the meter stand.**

counterweight:

tonnage	2.0t	2.5t	3.0t	3.5t	3.8t
counterweight	1110kg	1400kg	1700kg	2000kg	2200kg

7.2 Scheduled maintenance schedule

Electrical system

Rechargeable battery

○ — Check, correct, adjust × — switch

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
battery	Batteries are securely installed		○	○	○	○	○
	Battery charging socket clean				○	○	○
	Check whether the battery charging socket contacts are damaged or corroded		○	○	○	○	○
	Check whether there is water on the battery charging socket contact and clear it		○	○	○	○	○
	Whether the dust proof cover of the battery charging socket is in good condition				○	○	○
	Check whether the battery shell is damaged		○	○	○	○	○
	Battery capacity		○	○	○	○	○
	Stay away from fireworks		○	○	○	○	○

controller

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
controller	Check contact wear					○	○
	Check whether the mechanical motion of the contactor is good					○	○
	Check whether the pedal microswitch works properly					○	○
	Check that the connection between motor, battery and power unit is in good condition					○	○
	Check the controller fault to determine whether the system is normal						First 2 years

Electric machine

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Electric machine	Remove foreign matter from motor housing				○	○	○
	Clean or replace bearings					○	○
	Whether the wiring is correct and reliable				○	○	○

Electrical system Other

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Emergency power	Working and installation status			○	○	○	○
Seat sensing system	Working and installation status			○	○	○	○
Warping switch	Rear headlamp						
Reversing switch	Working and installation status			○	○	○	○
Combination switch (steering, light)	Left and right steering switch operation			○	○	○	○
	The lighting gear, and how it works			○	○	○	○
Megaphone	Working and installation status		○	○	○	○	○
Lamps and bulbs	Working and installation status		○	○	○	○	○
The reverse buzzer	Working and installation status		○	○	○	○	○
Appearance	Instrument operation		○	○	○	○	○
Electric wire	Wiring harness damage, fixed loosening			○	○	○	○
	Loose circuit connections				○	○	○

Body system

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Frame and side door	Whether the frame is cracked				○	○	○
	Whether the right lock latch assembly works well		○	○	○	○	○
	Does the right door open well				○	○	○
	Guard rod fastening		○	○	○	○	○
	Is the roller under the battery		○	○	○	○	○
overhead guard	Whether the installation is firm	Detecting hammer	○	○	○	○	○
	Check for deformation, cracking and damage		○	○	○	○	○

Transmission system

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Drive axle assembly	Is there any noise		☐	☐	☐	☐	☐
	Check for leakage		☐	☐	☐	☐	☐
	Axle housing oil change					First in March, after every half year	
	Check for wheel hub bearing loosening and noise			☐	☐	☐	☐
	Check the bridge for deformation, cracks, or damage				☐	☐	☐

Wheels (front and rear)

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
tyre	Charging pressure	barometer	☐	☐	☐	☐	☐
	Wear, crack or damage		☐	☐	☐	☐	☐
	Whether there are nails, stones or other foreign objects on the tires				☐	☐	☐
	Rim damage		☐	☐	☐	☐	☐
	Split wheel rim bolt loosening condition	Detecting hammer	☐	☐	☐	☐	☐

Steering system

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Steering wheel	Check gap		○	○	○	○	○
	Check for axial loosening		○	○	○	○	○
	Check for radial loosening		○	○	○	○	○
	Check operation		○	○	○	○	○
deflector	Check whether the mounting bolts are loose				○	○	○
Rear axle steering knuckles	Check whether the kingpin is loose or damaged				○	○	○
	Check for bending, deformation, cracks, or damage				○	○	○
	Check installation	Detecting hammer			○	○	○
Steering cylinder	Check operation		○	○	○	○	○
	Check for leakage		○	○	○	○	○
	Check whether it is loose during installation and hinged				○	○	○

Brake system

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Brake pedal	Idle stroke	Graduated scale	○	○	○	○	○
	Pedal travel		○	○	○	○	○
	Operation situation		○	○	○	○	○
	Check whether there is air in the brake line		○	○	○	○	○
Parking brake manoeuvre	Whether the brake is safe, reliable and has sufficient travel		○	○	○	○	○
	Handling performance		○	○	○	○	○
A pole, cable, etc	Handling performance				○	○	○
	Whether the connection is loose				○	○	○
	Wear of the connection to the reducer box					○	○
pipeline	Damage, leakage, rupture				○	○	○
	Connection, clamping position, loosening condition				○	○	○
The main brake pump is divided into two pumps	Leakage condition		○	○	○	○	○
	Check oil level and change oil		○	○	○		×
	Operation of main pump and sub-pump					○	○
	Leakage and damage of main pump and sub-pump					○	○
	Main pump, sub pump piston cup, check valve wear damage, replace						×

Hydraulic system

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Hydraulic tank	Oil level check, oil change		○	○	○	○	×
	Clean the oil filter element						○
	Removal of foreign body						○
Control valve stem	Whether the connection is loose		○	○	○	○	○
	Operation situation		○	○	○	○	○
Multiway valve	Oil leakage		○	○	○	○	○
	Safety valve and tilt self-locking valve operation				○	○	○
	Measuring safety valve pressure	Oil pressure gauge					○
Pipe joint	Leakage, loosening, rupture, deformation, damage				○	○	○
	Pipe replacement						× 1-2 years
Hydraulic pump	Hydraulic pump oil leakage or noise		○	○	○	○	○
	Hydraulic pump driving gear wear condition				○	○	○

Lifting system

Maintenance item	Maintenance content	tool	everyday (8h)	weekly (40h)	monthly (166h)	3 months (500h)	6 months (1000h)
Chain sprocket	Check the tensioning state of the chain for deformation, damage and corrosion		○	○	○	○	○
	Chain oiling				○	○	○
	Riveting pin and loosening condition				○	○	○
	Sprocket deformation, damage				○	○	○
	Sprocket bearing is loose				○	○	○
Appendage	Check whether the status is normal				○	○	○
Lifting cylinder tilt cylinder	Piston rod, piston rod thread and connection are loose, deformed and damaged	Detecting hammer	○	○	○	○	○
	Operation situation		○	○	○	○	○
	Leakage condition		○	○	○	○	○
	Wear and damage of pin and cylinder steel back bearing				○	○	○
fork	Cargo fork damage, deformation, wear				○	○	○
	Locating pin damage, wear					○	○
	The cracking and wear of the hook welding part at the root of the fork				○	○	○
Top guard	Whether the installation is firm	Detecting hammer	○	○	○	○	○

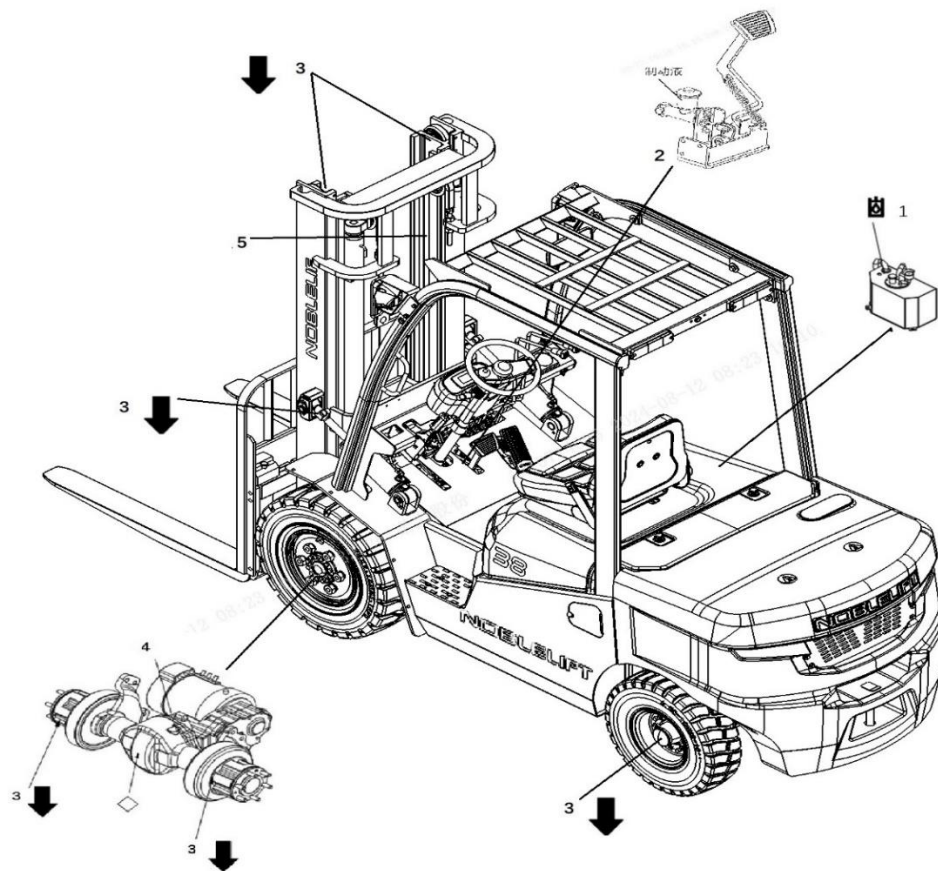
	Top guard and shelf holder		○	○	○	○	○
Door rack and fork rack	Whether the welding of the inner door frame, outer door frame and beam is cracked or damaged				○	○	○
	Whether the tilting cylinder support and door frame are welded improperly, cracked, or damaged				○	○	○
	Internal and external door frames are poorly welded, cracked, or damaged				○	○	○
	The fork rack is poorly welded, cracked, or damaged				○	○	○
	Whether the roller is loose				○	○	○
	Door frame bearing bearing wear, damage						○
	Support cover bolts are loose	Detecting hammer			○ (For the first time)		○
	The head bolt and bending plate bolt of the lifting cylinder piston rod are loose	Detecting hammer			○ (For the first time)		○
	Roller, roller shaft and welding part cracking, damage				○	○	○

7.3 Replace critical safety parts regularly

- For some parts, it is difficult to find damage or damage through regular maintenance. In order to further improve safety, users should regularly replace the parts given in the following table.
- If these parts appear abnormal before the replacement time, they should be replaced immediately.

Name of critical safety part	Service life (years)
Brake hose or hard pipe	1~2
Hydraulic hose for lifting system	1~2
Lifting chain	2~4
High pressure hose and hose for hydraulic system	2
Brake fluid oil cup	2~4
Brake master pump cylinder head and dust jacket	1
Hydraulic system internal seals, rubber parts	2
Steering axle rubber pad	4

7.4 Oil and lubrication of forklift trucks



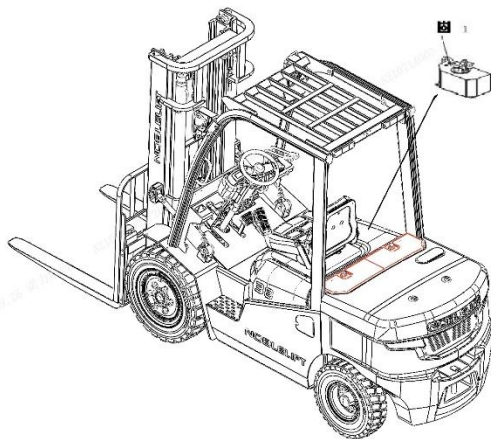
Serial number	name	specification	Fuel charge (L)	remark
1	Hydraulic oil	Common environment: L-HM32 Cold storage/cold environment: L-HV32	35~65	Hydraulic tank
2	Brake fluid	(Choice) HZY3 brake fluid (factory fill) or DOT3 brake fluid	≈1.0	Brake oil can
3	grease	Automotive general purpose lithium grease		Lubricating surface and lubricating nozzle
4	Gear oil	85W/90 (GL-5)	≈4---5	Drive axle and gearbox
5	Antirust oil	Chain spray or engine oil		Chain
	Industrial Vaseline	2#		Battery electrode column

Change hydraulic oil

Hydraulic oil is generally replaced once a year. Vehicles with a dusty environment or high frequency of use should be replaced half a year in advance.

Operation procedure:

- Park the forklift safely according to regulations.
 - The gantry leans back to the bottom and the fork is lowered to the ground.
 - Unscrew the hydraulic tank cap and dipstick assembly (52).
 - Place the oil tray in the lower part of the frame, screw down the oil plug (71) and the sealing gasket (72), and drain the old oil;
 - Take away the oil tray, dispose of the waste oil according to local environmental regulations, and do not dump it arbitrarily;
 - Screw back the oil plug (71) and sealing gasket (72), add new hydraulic oil, check whether there is leakage;
 - Start the forklift, lift the fork 3 ~ 5 times, and tilt the door frame 3 ~ 5 times;
- Refill the hydraulic oil to the specified scale.



The lifting height of different doors corresponds to the liquid level of the dipstick:

"30" refers to the hydraulic height when the lifting height is $H \leq 3.0\text{m}$

"40" refers to the hydraulic height when the lifting height is $H \leq 4.0\text{m}$

"50" refers to the hydraulic height when the lifting height $H \leq 5.0\text{m}$

"60" refers to the hydraulic height when the lifting height is $H \leq 6.0\text{m}$

"65" refers to the hydraulic height when the lifting height is $H \leq 6.5\text{m}$

Gantry lubrication

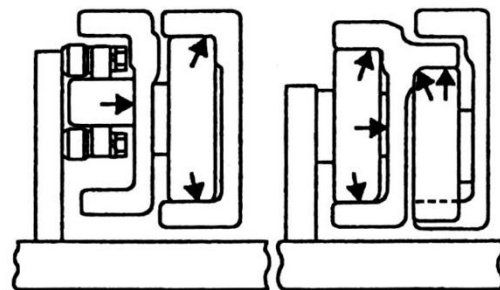
Apply grease regularly to the internal and external gantry tracks according to the requirements of regular maintenance and lubrication drawings.

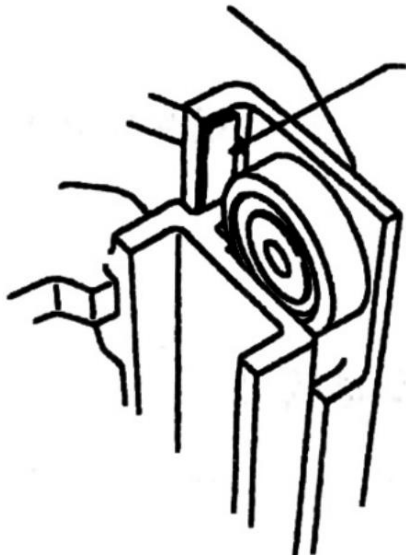
The interval period of lubrication should be changed according to the operating conditions. During busy months, the number of lubricated parts should be increased.

With the operation of the forklift, apply a layer of grease to the contact surface of the lifting guide wheel and the inner and outer door frame.

Warning

When adding grease, park the forklift on a flat road, turn off the switch and pull the overhand brake. Prevent hand and body from being caught when filling, and prevent falling when high lubrication.





Chain lubrication

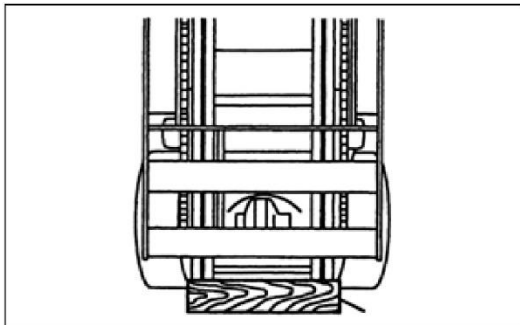
Apply the chain spray directly on the chain or take a brush and stick the engine oil on both sides of the chain.

7.5 Change the wheel

When tires are worn to the limit or damaged, they should be replaced in time, and tires can only be replaced in pairs. Replace the tire and check whether the wheel nuts are tight after 10 hours of operation.

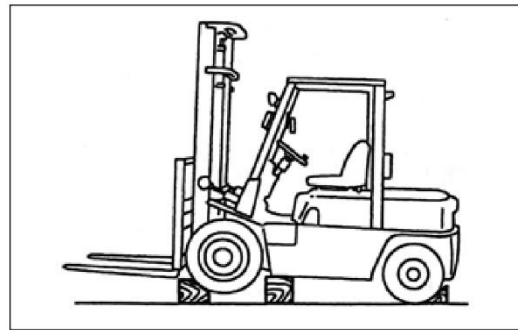
Replace front wheel

- Park the forklift on a level, solid ground, and place wooden pads behind the rear wheels to prevent the forklift from moving.
- Start the forklift and raise the door frame by about 100mm. Tilt the gantry back, with wooden cushions placed on both sides of the outer gantry, then tilt the gantry forward until the front wheels are raised to the ground.



- Place wooden blocks on each side of the front of the forklift frame to support the

forklift, and then turn off the key switch.



Warning

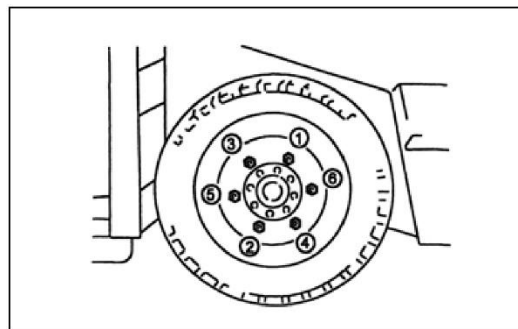
- ① Appropriate tools, such as wedges, hardwood supports and other equipment must be fixed to prevent the risk of accidental rolling or tipping.
- ② Make sure that the wooden pad used to support the forklift is one piece and strong enough.
- ③ When supporting the forklift truck only with the wooden pad, it must not go under the forklift truck.

- Loosen the hub nuts, remove the wheel and replace with a new tire.

Warning

Do not remove the hub nut before the rear wheel is lifted off the ground.

Install the new wheel on the hub and tighten the hub nuts symmetrically and cross-securely ($T=588\text{Nm} \sim 736\text{Nm}$).



- Start the forklift and remove the wooden pad from under the frame. Tilt the door frame backward so that the forklift truck slowly lowers, and then remove the wooden pad under the door frame and at the rear wheel.

Change the rear wheel

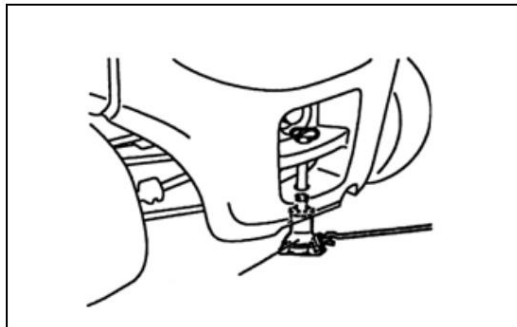
Warning

① Only the minimum rated load of 3000kg can be used.

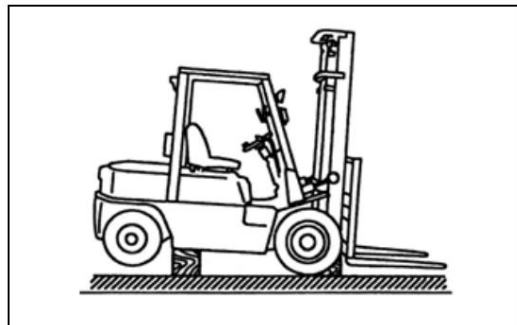
② Appropriate tools, such as wedges, hardwood supports and other equipment must be used to fix it to prevent the risk of accidental rolling or tipping.

- Park the forklift on a level and solid ground, tighten the hand brakes, and place wooden pads behind the front wheels to prevent the forklift from moving.

- Place the jack on the section of the bottom of the counterweight, and use the jack to slowly lift the forklift until the rear wheel is completely off the ground.



- Place solid wood blocks under the frame.



Warning

① Make sure that the wooden pad used to support the forklift is one piece and strong enough.

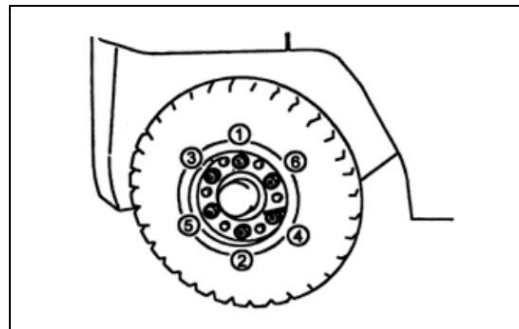
② When supporting the forklift truck only with the wooden pad, it must not enter the forklift truck.

- Loosen the hub nuts, remove the wheel and replace with a new tire.

Warning

Do not remove the hub nut before the rear wheel is lifted off the ground.

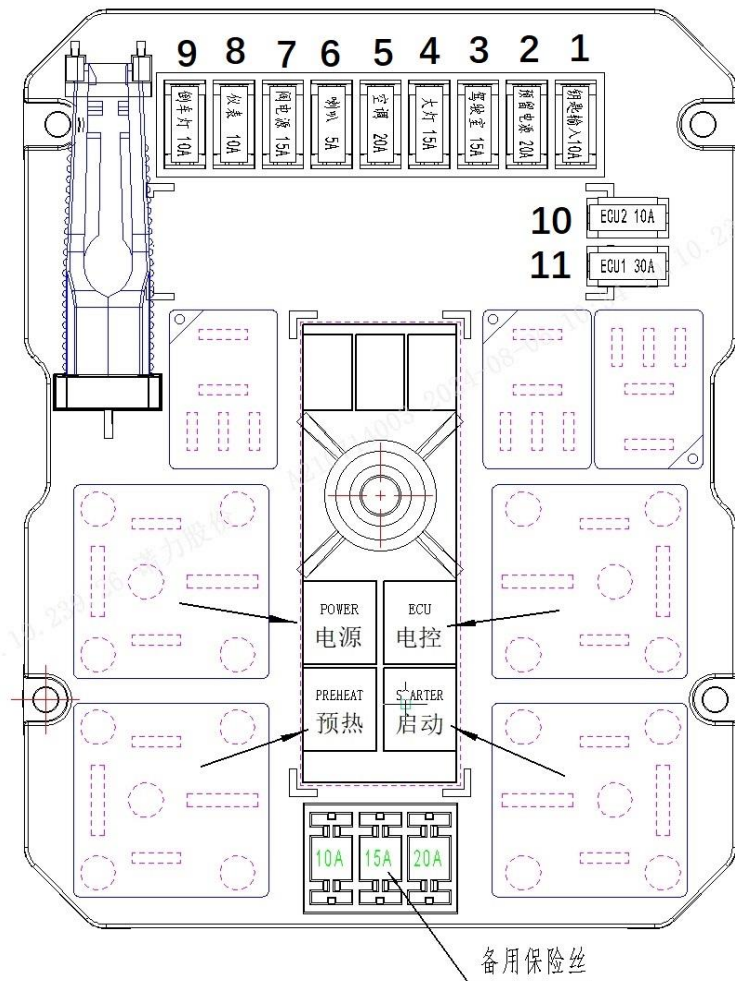
- Install the new wheel on the hub and tighten the hub nuts symmetrically and cross-securely (T=411 Nm ~ 588Nm).



- Remove the wooden pad under the frame, slowly lower the forklift to the ground, and remove the wooden pad and jack behind the front wheel.

7.6 Check and replace fuses

Fuse parameter list



Fuse position

Fuse list

position	capacity	Application unit
1	10A	Key entry
2	20A	Reserved power supply
3	15A	cab
4	15A	headlamp
5	20A	air conditioner
6	5A	megaphone
7	15A	Valve power supply
8	10A	appearance
9	10A	Backing light
10	10A	ECU2
11	30A	ECU1

Fusible wire

A molten fusible wire is easily observed and touched with a finger. If you are not sure if it is broken, you can test it with a multimeter or light bulb.

Notice

1. If the fusible line burns out, it may be because of a short circuit (too much power or current).
No matter what the reason, please check carefully and troubleshoot.
2. Fusible wire will heat, do not wrap with tape paper. Finally, do not put fusible wire near other wiring or rubber and other parts.

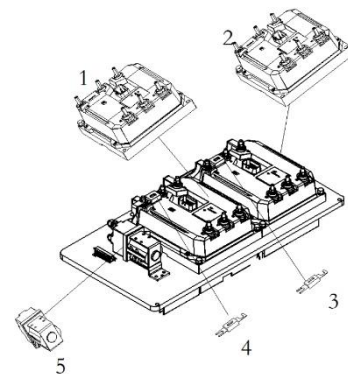
Notice

- ① Before operating the electrical system of the forklift, the battery must be unplugged.
- ② Before working on the electrical system of the forklift, the metal trim on the hand must be removed.
- ③ When replacing a fuse, please select a fuse with the same specifications as the fuse to be replaced.

7.7 Control system assembly inspection and maintenance

Operation procedure:

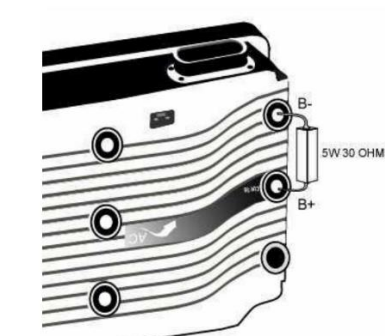
- Park the forklift safely according to regulations.
- Open the boot cover and unplug the battery.
- The components of the control system assembly are revealed and can be inspected, replaced and adjusted.



Serial number	name	Control circuit	specification
1	controller	Control drive motor	80V
2	controller	Control oil pump motor	80V
3	Fuse wire	/	/
4	fuse	/	/
5	contactor	/	/

Notice

- ① Before operating the electrical system of the forklift, the battery must be unplugged.
 - ② The controller is equipped with an accumulator, and can not be touched by hand between B+ and B- to prevent electric injury. To check or clean the controller, disconnect the vehicle power supply and then discharge the capacitor in the controller from the indirect load of the controller B+ and B- (such as resistors or bulbs, etc.).
 - ③ Before working on the electrical system of the forklift, the metal trim on the hand must be removed.
 - ④ When replacing a fuse, please select a fuse with the same specifications as the fuse to be replaced.
- When repairing the electronic control of the controller, the power supply must be cut off first, and then the resistance of 10-100 ohms is connected to the positive and negative terminals of the controller, short circuit off the residual voltage on the capacitor, otherwise there is the risk of electric shock.



- The magnetic field and magnetic radiation of the environment have a certain impact on the normal operation of the inverter, and the long-term impact may damage the controller.
Therefore, keep away from magnetic fields and magnetic radiation.

7.8 List of bolt tightening torque

unit: N·m

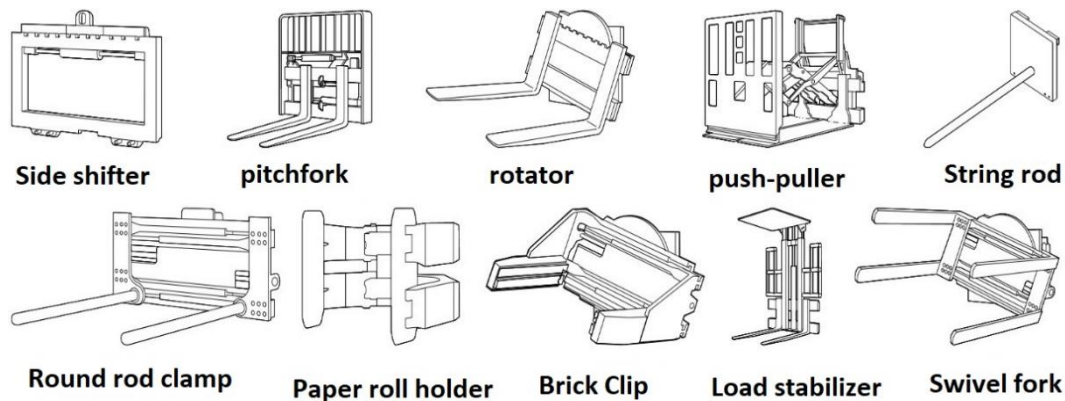
Bolt diameter	Lv.			
	4.6	5.6	6.6	8.8
6	4~5	4~5	4~5	4~5
8	5~7	5~7	5~7	5~7
10	6~8	6~8	6~8	6~8
12	9~12	9~12	9~12	9~12
14	10~12	10~12	10~12	10~12
16	12~15	12~15	12~15	12~15
18	14~18	14~18	14~18	14~18
20	22~29	22~29	22~29	22~29
22	20~25	20~25	20~25	20~25
24	25~31	25~31	25~31	25~31
27	29~39	29~39	29~39	29~39

note:

- 8.8 bolts are used for all important connections.
- The bolt class can be found on the head. If not, it is 8.8.

8 Rules for equipment use, installation and safety

According to the international standard ISO2328 "Forklift hook type cargo and fork rack installation dimensions" requirements to select accessories, such as side shifter, pitch fork, rotary, push and pull, string rod, etc.



8.1 Installation of fittings

- Any modification of forklift equipment related to safety and performance is strictly prohibited without the technical permission of the company.
- The actual rated carrying capacity shall be the lowest of the rated carrying capacity of the forklift truck, its own carrying capacity and the overall carrying capacity of the vehicle. In general, the overall carrying capacity of the vehicle is the smallest of the three. The "bearing capacity of an object" is only a calculated value of the force on the object itself.
- The installation position is reasonable, reliable, and safe to prevent the accessories from sliding along the fork rack of the forklift during use.
- After the attachment is mounted, the hooked stopper should be embedded in the gap of the upper beam so that the attachment has the center line.
- The offset from the center line of the fork is less than 50mm; otherwise, the lateral stability of the forklift will be affected.
- Welding stop blocks on both sides of the joint between the cross beam of the cargo fork and the fittings after hanging the fittings with rotating function (paper roll clamp, soft clamp, multi-purpose rigid arm clamp, bucket clamp) to prevent the left and right side slip during the operation of the fittings.
- When installing fittings with lower hook positioning, properly adjust the clearance between the lower hook and the lower cross member of the fork frame.

8.2 Use of accessories

- Familiar with the relevant contents on the nameplate of forklift equipment, carefully read the relevant operation instructions (especially the user manual and installation instructions of professional equipment companies) before use, and the operation of forklift equipment should be trained and qualified.
- The basic performance and operation methods of forklift accessories should be fully understood, especially the allowable load, lifting height, cargo size and the adaptive range of accessories.

- When operating forklift trucks with multiple functions, such as side-shift clamping or rotation, do not perform two actions at the same time. Only one action can be performed after the other is completed.
- Equipped with equipment forklift is strictly prohibited to drive in the state of high cargo position; When the cargo volume is too large, do not drive the forklift truck forward; When transporting goods, ensure that the bottom of the goods is 300mm off the ground and the door frame tilts backward.
- The weight of the cargo cannot exceed the load capacity limit of the combination of forklift truck and accessories. In the high cargo position, try not to offset the load, the equipment with the side shift function can only be operated in a short time, and the partial load is strictly controlled in the left and right 100mm (the side shift of more than 5 tons < including 5 tons > is $\pm 150\text{mm}$).
- Under the projection area of the equipment and goods, within 2 meters, except for the driver's position protected by the top frame, it is strictly prohibited to stand, to prevent accidents.
- It is strictly forbidden to brake the forklift truck with equipment in the process of traveling, and it is required to drive slowly when carrying a load.
- Prohibit the equipment from being impacted by external forces while working; It is prohibited to use the equipment for improper occasions and shall not exceed the normal working range of the equipment.
- It is forbidden to use the equipment for improper occasions and shall not exceed the normal working range of the equipment.
- When the equipment is faulty, do not use it without troubleshooting.

8.3 Inspection and maintenance of fittings

- Check the clearance between the lower cross beam of the fork rack and the lower hook of the appliance, in accordance with the appliance manual.
- Check that the upper hook is correctly embedded in the groove of the fork rack of the forklift.
- Lubricate the sliding support surfaces with automotive general purpose lithium grease every 500 hours.
- Fasteners are loose.
- Check regularly whether the joints of the hydraulic circuit are loose and whether the hose is damaged. If there is damage, do not use it before repair.
- Check regularly whether the transmission or rotation components of the equipment are worn or stuck, and replace them in time if they are damaged or defective.
- In the case of dynamic load, check whether the working element is normal, whether the working pressure of the attachment is normal, whether the attachment is working normally, if it is not normal, it is necessary to check the hydraulic circuit, find out the leaking element, and replace the seal or the entire circuit element.

9. Relevant safety directives and standards (exclusive or optional for

European vehicles)

CE certified vehicles comply with the following directives and standards: Machinery Directive 2006/42/EC (Council Directive on the harmonization of the laws of the Member States relating to machinery), Noise Directive 2000/14/EC (Directive on the harmonization of the laws of the Member States concerning noise emission from Outdoor Equipment) EN1726-1:1998 (" Safety Code for Machinery Industry Vehicles "), EN12053:2001, EN1175-1:1998, EN13059:2002
Harmonized standards

- The main safety factors are in accordance with the requirements of the 2006/42/EC Machinery Directive and EN1726-1:1998, EN1175-1:1998 standards.
- Electrical components are designed and manufactured in accordance with the Low Voltage Electrical Directive 2006/95/EC.
- Noise is measured according to EN12053:2001, in accordance with the requirements of Directive 2000/14/EC. The sound pressure level measured at the operating position is 69 dB (A) and the sound power level is 86 dB (A). The measurement uncertainty is 1.5 dB (A).
- Vibration parameters are determined according to ISO5349-2:2001, EN13059:2002 and ISO2631-1:1997 standards, in accordance with the requirements of Directive 2002/44/EC. The vibration acceleration of the seat acting on the driver is less than or equal to 0.54m/s^2 .
- Electromagnetic compatibility is determined according to EN12895:2000, in accordance with the requirements of Directive 2004/108/EC.

Maintenance record

Date	Repair and maintenance contents	Maintenance personnel

NOBLELIFT

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Zip Code: 313100 E-mail: info@nobelift.com

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