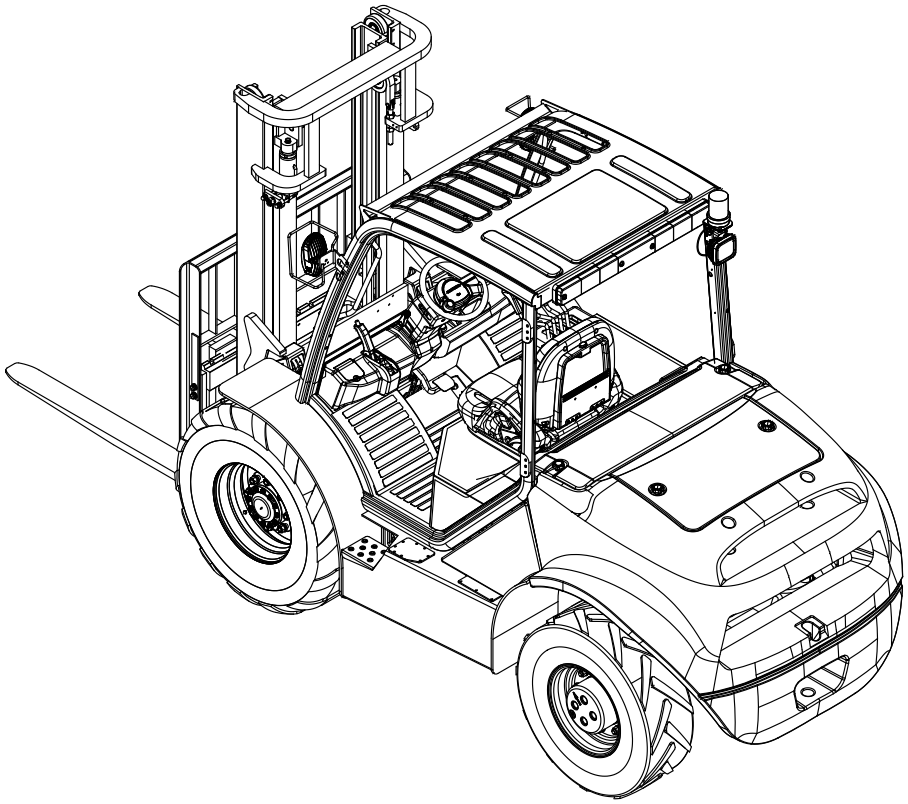
1.5t~3.5t（3300lb-7700lb）Rough Terrain Forklift Truck

OPERATION AND MAINTENANCE MANUAL



Original Instruction

HANGCHA GROUP CO., LTD.
OM25-XHRT-01(07/2025)

Standard model

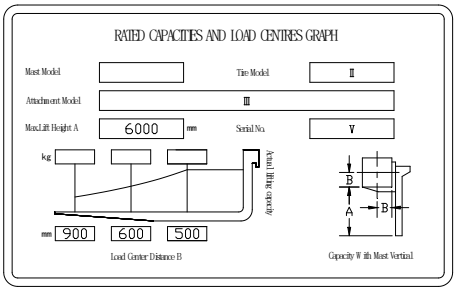
Load center mm(in)	500(24)				
Model	CPD15-	CPD18-	CPD20-	CPD25-	CPD30-
Rated capacity kg(lb)	1500(3300)	1750(3850)	2000(4400)	2500(5500)	3000(6600)
Model	CPD35-	CPD40-	CPD45-	CPD50-	CPD55-
Rated capacity kg(lb)	3500(7700)	4000(8800)	4500(10000)	5000(11000)	5500(12000)

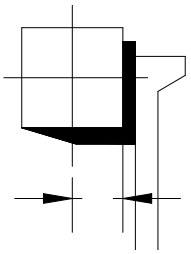
Load center mm(in)	600 (24)				
Model	CPD15-	CPD18-	CPD20-	CPD25-	CPD30-
Rated capacity kg(lb)	1360 (3000)	1590(3500)	1810(4000)	2270(5000)	2720(6000)
Model	CPD35-	CPD40-	CPD45-	CPD50-	CPD55-
Rated capacity kg(lb)	3180(7000)	3630(8000)	4080(9000)	4540(10000)	4990(11000)

CE model: Optional Overall maximum lift height 6000mm

Caution | Loading Capacity Chart

The chart shows the relationship between the location of the load center distance and the maximum load. Check whether the load and the load center distance are within the allowable range of the Bearing Capacity Chart before loading. If the load shape is complicated, the heaviest part should be placed in the center of the fork and close to the load backrest.





Load center

Note; The vehicle tonnage value shown below is based on the load center distance of 500mm.

Model	Front traction motor controller	Rear traction motor controller	Front traction motor	Rear traction motor	Rated capacity (t) / Load center (mm)
CPD25-XY2GC-RT4	MC3906	MC3902	TZ220XS30kW309VTQ	TZ180XS15kW307VT	2.5/500
CPD30-XY2GC-RT4	MC3906	MC3902	TZ220XS30kW309VTQ	TZ180XS15kW307VT	3.0/500
CPD35-XY2GC-RT4	MC3906	MC3902	TZ220XS30kW309VTQ	TZ180XS15kW307VT	3.5/500
CPD25-XY2GE-RT2	MC3906	/	TZ220XS30kW309VTQ	/	2.5/500
CPD30-XY2GE-RT2	MC3906	/	TZ220XS30kW309VTQ	/	3.0/500
CPD35-XY2GE-RT2	MC3906	/	TZ220XS30kW309VTQ	/	3.5/500
CPD18-XY2GC-RT4	MC3906	MC3902	TZ220XS30kW309VT	TZ180XS15kW307VT	1.8/500
CPD15-XY2GC-RT4	MC3906	MC3902	TZ220XS30kW309VT	TZ180XS15kW307VT	1.5/500
CPD18-XY2GE-RT2	MC3906	/	TZ220XS30kW309VT	/	1.8/500
CPD15-XY2GE-RT2	MC3906	/	TZ220XS30kW309VT	/	1.5/500

DANGER

- For any inspection, maintenance, and repair, please be sure to cut off the power supply of the high-voltage system, that is, unplug the MSD maintenance switch on the Lithium battery main box and wait for 15~20 minutes, during which no operation is allowed, otherwise it will cause personal safety accidents.
- For the following inspections, maintenance and other situations, please be sure to consult and have Hangcha professional maintenance technicians to conduct on-site service processing：
  - Involving the inspection, maintenance, and replacement of high-voltage components, components, and circuits;
  - Check and maintain non-high-voltage components and circuits, but are affected by the assembly and disassembly of high-voltage components, components, and circuits;
  - The fault may be caused by high voltage or non-high voltage crossing;
  - Unable to judge whether the fault is caused by high voltage or non high voltage;
  - Others that need to be touched or may touch high-voltage components or high-voltage lines.
- The inspection and maintenance of high-voltage parts shall be subject to special training on high-voltage electrical knowledge and obtain corresponding certificates. The internal inspection and maintenance of the lithium battery must be completed by a professional manufacturer.
- Any inspection, maintenance, and repair should strictly abide by the relevant high-voltage electric forklift safety precautions, operating specifications, safety rules, and the use of safety protection products and tools in this manual.

Foreword

Thank you very much for purchasing 1.5t~3.5t（3300lb-770lb） rough terrain forklift truck of Hangcha Group.

1.5t~3.5t（3300lb-7700lb）rough terrain forklift truck is a new product developed by our company, and features high energy efficiency and environmental protection, an attractive shape and superior performance.

This manual introduces the safety, operation, transportation, lubrication, general structure and maintenance procedures for this forklift truck. The drivers, maintenance staff and equipment management staff must read and become familiar with this manual before use.

The manual provides information on the safety, operation, transportation, lubrication, general structure, and maintenance methods of the forklift. Users are advised to keep the manual in good condition. If the manual is lost, damaged, or becomes illegible, it should be replaced promptly.

Due to continuous design updates and improvements of the product, some content in the manual may differ from the forklift you have in hand.

The illustrations and images used in this manual may not be exactly the same as the detailed structure of the forklift you have.

For any unclear points, please contact Hangcha Group Co., Ltd. Sales Company or the agent.

To ensure the safety of personnel and forklift, this manual will periodically feature three levels of warnings, namely Danger, Warning, and Caution, each with different implications for the warning messages they introduce.

a） Danger: Indicates an extremely hazardous situation where ignoring this warning could lead to personal injury or death. Example as follows:

DANGER

- Never use two forklifts to lift or move a single load simultaneously. This practice can cause the load to become unstable, leading to potential vehicle overturning or tipping, which may result in serious injury or fatalities. Always follow proper lifting procedures and safety guidelines.

b）Warning: It is used to alert operators to potential dangers to prevent property damage or personal injury. Example as follows:

WARNING

- Do not operate the forklift under adverse weather conditions such as sandstorms, snowfall, thunderstorms, heavy rain, or strong winds.

c） Caution: It is used to alert operators to potential hazards to prevent damage to the vehicle or a significant reduction in performance. Example as follows:

CAUTION

- When the LCD display is in the red zone, immediately cease operations and reduce the engine speed to cool down the engine, then shut off the engine. Check to ensure that the coolant level is sufficient and that the fan belt tension is appropriate.

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I Forklift overview

1 Forklift operating environment (conditions)

Truck in this manual is only for handling and transporting loads in short distance.

It must be used, operated and maintained according to the information in this manual. Any other uses are outside the design envelope and can lead to injury to persons or damage to equipment and property.

Only used in specified place and condition：

- Use in specified rated load.
- Used in specified area as factory, tourist attraction and recreation place.
- Used on the flat ground, that is fixed and owns enough carrying capacity.
- Used on the road with good vision and equipment use license.
- Approved working site temperature -20℃~40℃.
- Altitude should not surpass 2000m.
- It is prohibited to travel crosswise or obliquely. When go uphill with loads, keep the loads in front; when go downhill, keep people in front
- Please read other safety regulation in this manual, it matters personal safety and goods safety.



CAUTION

- Before driving, please check the road surface for holes, steep slopes, obstacles, bumps, and any other conditions that may cause loss of control or rough riding.
- Clear away garbage, debris, and any foreign objects that may puncture tires or cause cargo imbalance.
- Drive slowly on slippery surfaces and avoid driving near the edge of the road. Exercise extra caution if unavoidable.
- Uneven ground will cause vehicle vibration and noise. Overinflated tires will also cause vehicle vibration and noise.
- When carrying loads uphill, always drive forward with the forks facing uphill; do not drive sideways or diagonally. When going downhill, drive in reverse.

WARNING

- Forklifts are non-road mobile machinery equipment and are prohibited from operating on ways.
- Overloading and carrying passengers in violation of regulations are strictly prohibited.
- Pushing or pulling goods is prohibited.
- Non-explosion-proof forklifts are prohibited from use in flammable and explosive environments.
- Non-cold storage forklifts are prohibited from use in cold storage facilities.

2 Expected use of forklift

This forklift is permitted for the following uses only:

1) Loading, stacking, and unstacking goods;
2) Short-distance transportation of goods;
3) Prohibited from carrying passengers;
4) Prohibited from pushing or pulling goods;
5) Prohibited from towing other vehicles or items;
6) Forklifts equipped with attachments should be used in accordance with the purposes specified by the attachment manufacturer.

DANGER

- When stacking, unstacking, or moving goods over short distances, do not exceed the rated lifting capacity of the forklift.

WARNING

- Please thoroughly read the load capacity chart label on the forklift before engaging in stacking, unstacking, or short-distance transportation of goods.
- Unauthorized modifications to the forklift are prohibited.

3 Obligations and responsibilities of the truck user

In this manual, the User refers to any natural or legal person who directly uses or appoints another person to use the forklift. In special cases such as leasing or renting, the User refers to the party who assumes the specified operational obligations according to the terms of the contract between the forklift owner and the user.

The User must ensure that the forklift is used only for the specified purpose and that any danger that may risk the life and health of the user or a third party is eliminated in a timely manner. In addition, the User must strictly observe accident prevention regulations, other technical safety regulations, and guidelines for the operation, maintenance and repair of the forklift.

The truck can only be operated by specially trained personnel. The forklift user must ensure that all operators read and fully understand the content in this manual.

4 Attachment/accessory installation

If it is necessary to install or add additional devices that may affect or supplement the functions of the forklift, you must obtain prior written consent from our company. Depending on the actual situation, the approval and consent of the local authorities may also be required. Please note that the approval result does not represent the opinion of our company.

5 Forklift direction and wheel trajectory

When the forklift is moving forward, the direction of the forks is considered the forward direction, as shown in the figure below:

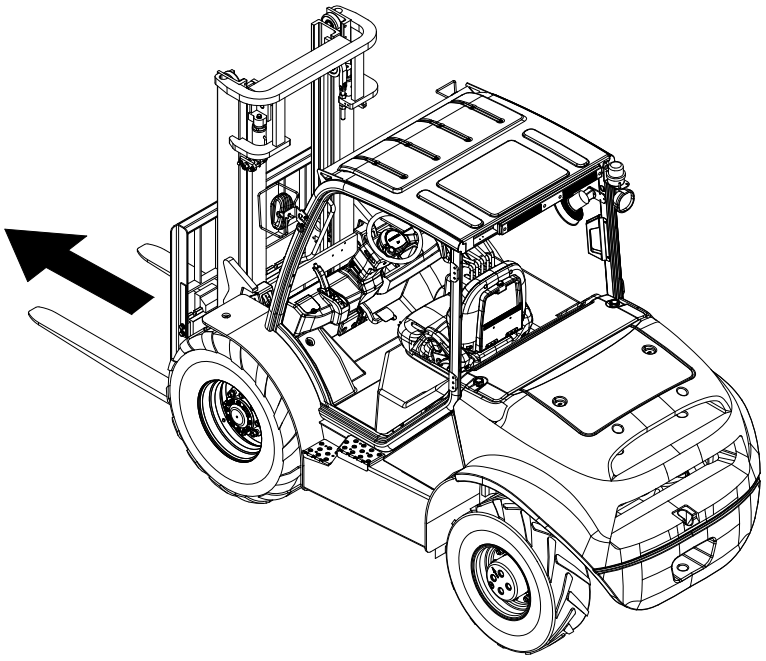


Fig.1 Forklift travel direction

Unlike conventional vehicles, forklifts are equipped with rear-wheel steering, which results in the back of the forklift swinging outward when making turns. Operators should slow down when navigating turns and be particularly vigilant about any obstructions from goods or personnel on the outer side to prevent accidents due to improper handling.

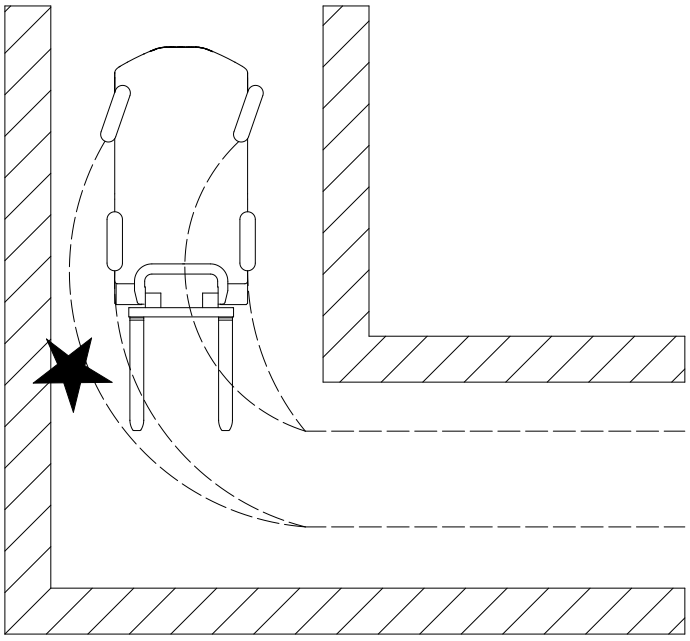


Fig.2

6 Forklift truck component names

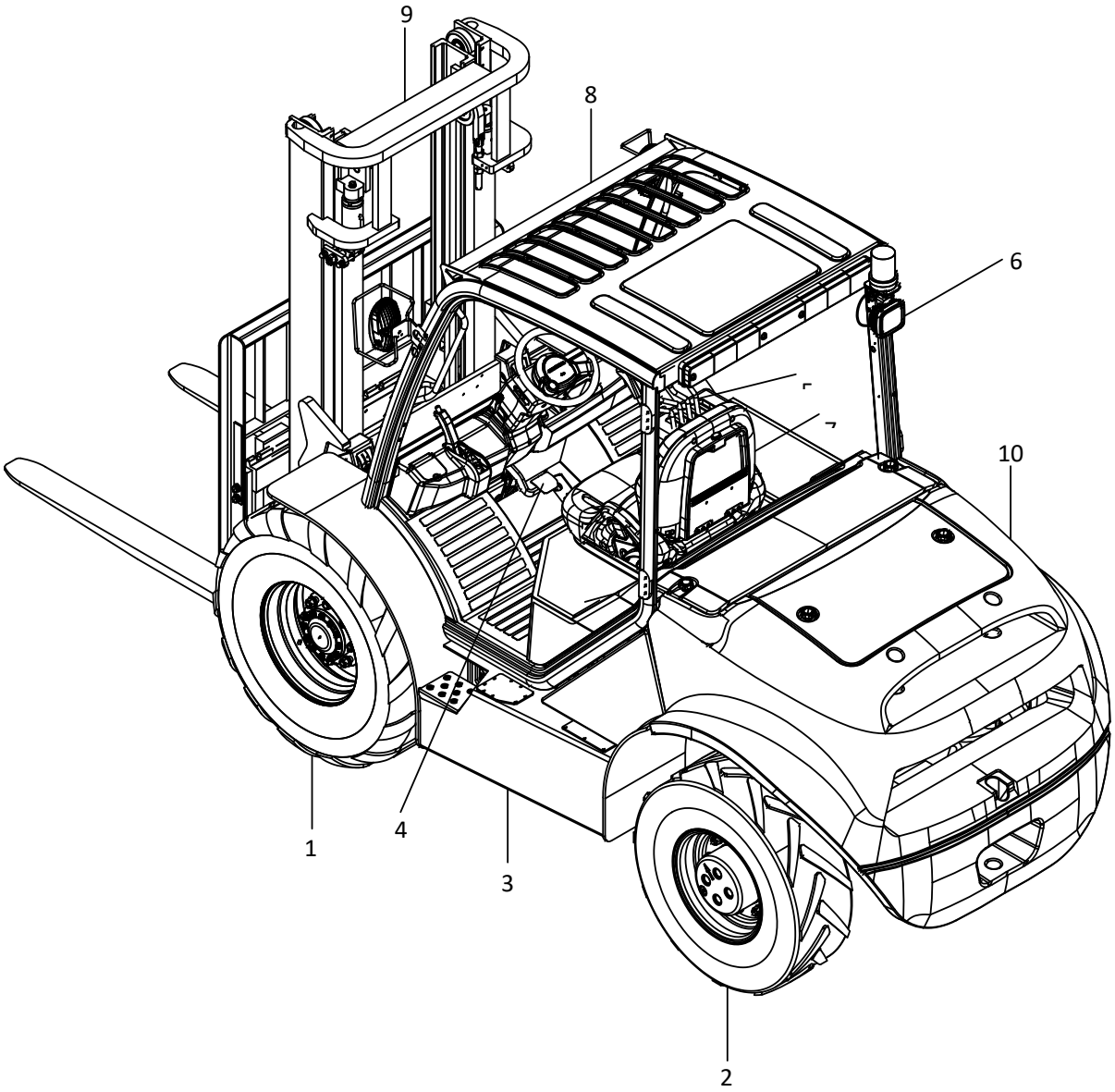


Fig.3 Forklift System Components

1.Drive system	2.Steering system	3.Truck body system	4.Control system
5.Hydraulic system	6.Electrical system	7.Seat	8.Overhead guard
9.Lifting assembly	10.Counterbalance weight		

Drive system

The drive system is mainly to overcome different resistance and drive at different speeds, with the functions of decelerating and increasing torque, providing reverse gear, providing neutral, starting smoothly and providing differential speed. It is mainly composed of drive axle, reduction gearbox, tires, etc. The vehicle adopts high efficiency and high power permanent magnet synchronous drive motor to provide super driving force, and the full load driving speed reaches 23~24km/h.

Steering system

The steering system mainly has the function of changing driving direction and maintaining straight driving condition. It is mainly composed of steering wheel, steering column, hydraulic steering gear, steering axle, angle sensor and steering wheel.

Truck body system

The truck body system is mainly composed of frame, meter rack, hood and other covering parts, battery box, etc. The main function is to provide a solid support carrier for the vehicle and protect the personal safety of the driver.

Control system

The control system, also known as the braking system, mainly includes the service brake system and the parking brake system. The service brake uses the friction of the brake to consume the kinetic energy of the vehicle, which is converted into heat and dissipated, thus reducing the driving speed of the vehicle; the parking brake system uses the friction torque of the brake to keep the vehicle from moving on its own due to the action of external forces when the vehicle stops.

Hydraulic system

The hydraulic system mainly includes hydraulic pump, hydraulic control valve, steering oil circuit, tilting oil circuit, oil return filter and hydraulic oil tank and other auxiliary hydraulic components. The hydraulic system is mainly used to realize the up and down lifting and back and forth tilting and steering function of the lifting assembly. Adopted high-power permanent magnet synchronous oil pump motor and large displacement working oil pump greatly improved the lifting speed.

Electrical system

317V high voltage lithium battery provides super power. Lithium battery adopts Ningde Era battery cell.

Large-size color screen meter, standard cloud intelligent management module.

Two-in-one motor electric controller electric drive system assembly is composed of integrated motor, high power density motor drive controller. It adopts the stator and rotor production line with high automation and good flexibility, drive assembly unit.

7 Forklift truck high voltage component description

7.1 Overview

The rough terrain forklift truck has a DC voltage of 317V, which provides relatively large electric energy during operation. The connecting wires of the high voltage part are orange, and there are warning signs on the high voltage parts.

The high-voltage components of the truck are lithium battery, two-in-one traction motor electric control, two-in-one oil-motor electric control, two-in-one power supply, national standard charging base and high-voltage cables. The location of the high-voltage components is shown in the figure below.

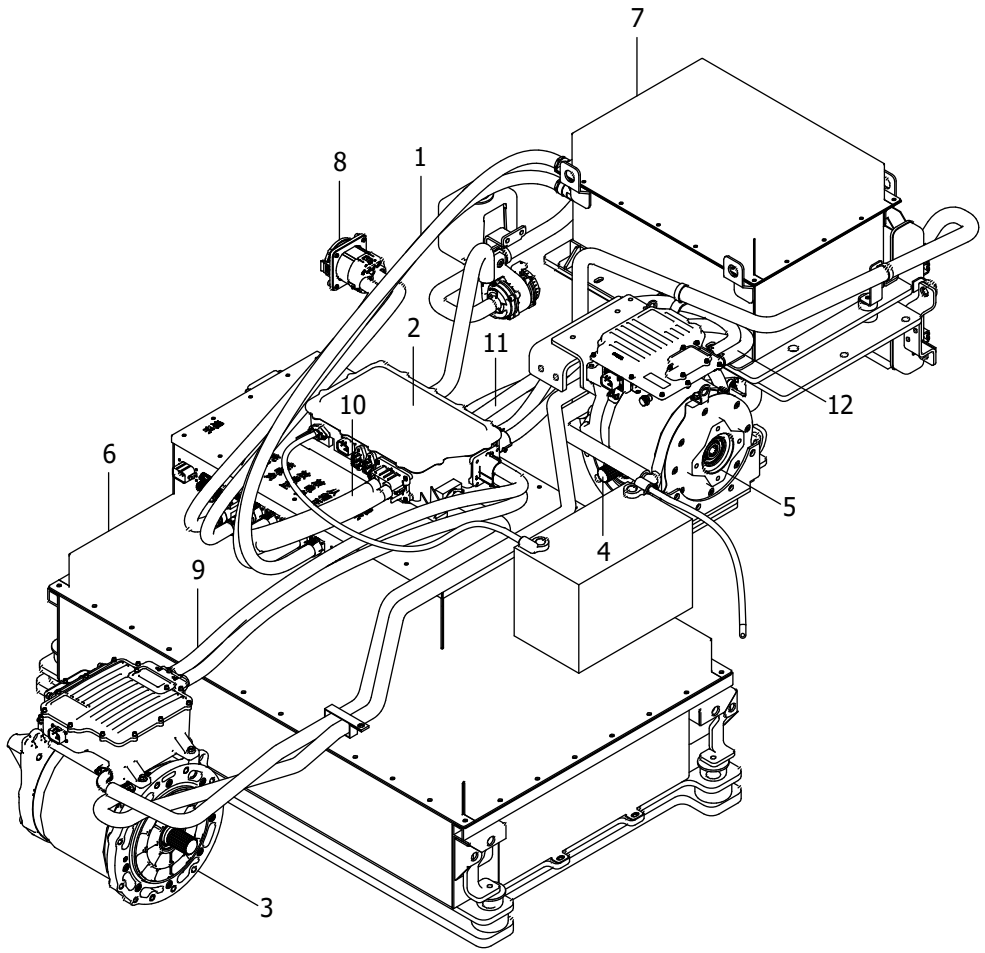


Fig.4 High voltage component layout

1.Lithium battery box connection cable	2.PDU
3.Front traction motor and control	4.Rear traction motor and control (4WD only)
5.Oil pump motor and control	6.High-voltage lithium battery main box
7.High-voltage lithium battery auxiliary box	8.Charging port
9.Front traction motor cable	10.Lithium battery discharge cable
11.Rear traction motor cable (4WD only)	12.Oil pump motor cable

The lithium battery has high voltage continuously. During operation, the lithium battery, the traction motor and the electronic control 2-in-1, the oil pump motor and the electric control 2-in-1, the power supply 2-in-1 (PDU), the compressor/PTC (optional) and high-voltage cables have high voltage; when charging, there is a high voltage in the lithium battery and the charging stand. The form of high voltage is shown in the figure below.

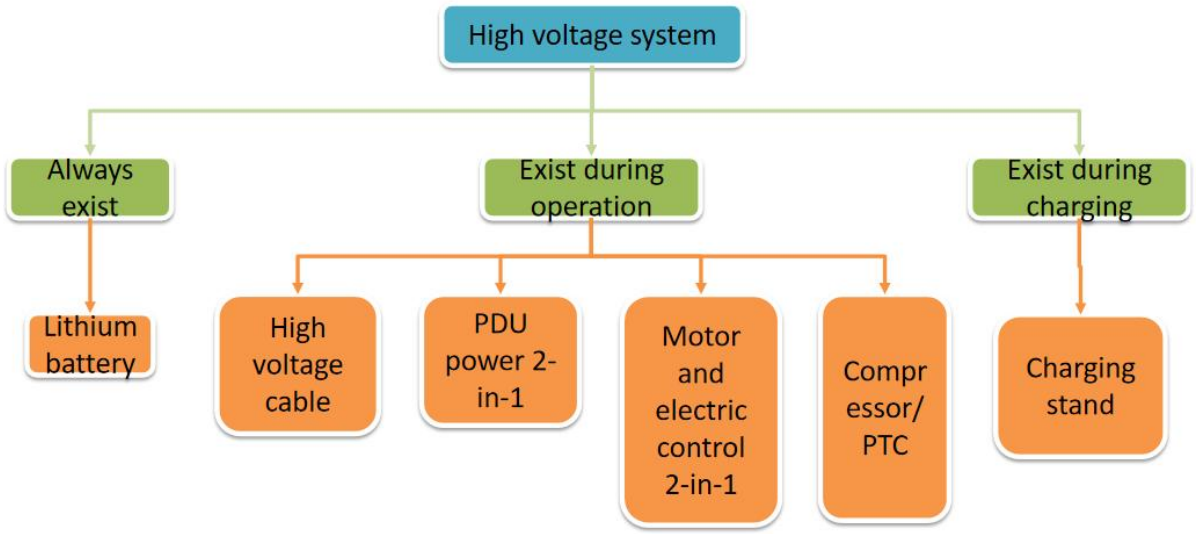


Fig.5 High voltage state

The electrical schematic diagram of high voltage is shown in the following figure.

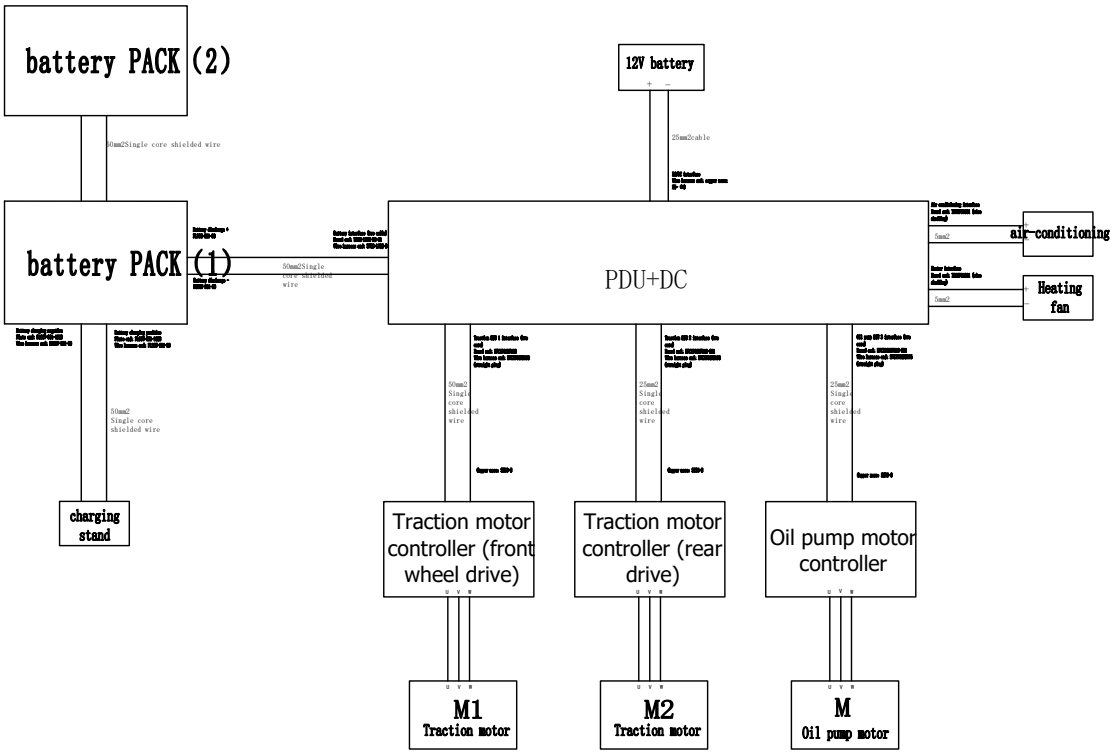


Fig.6 High-voltage electrical schematic diagram of 4WD rough terrain forklift truck

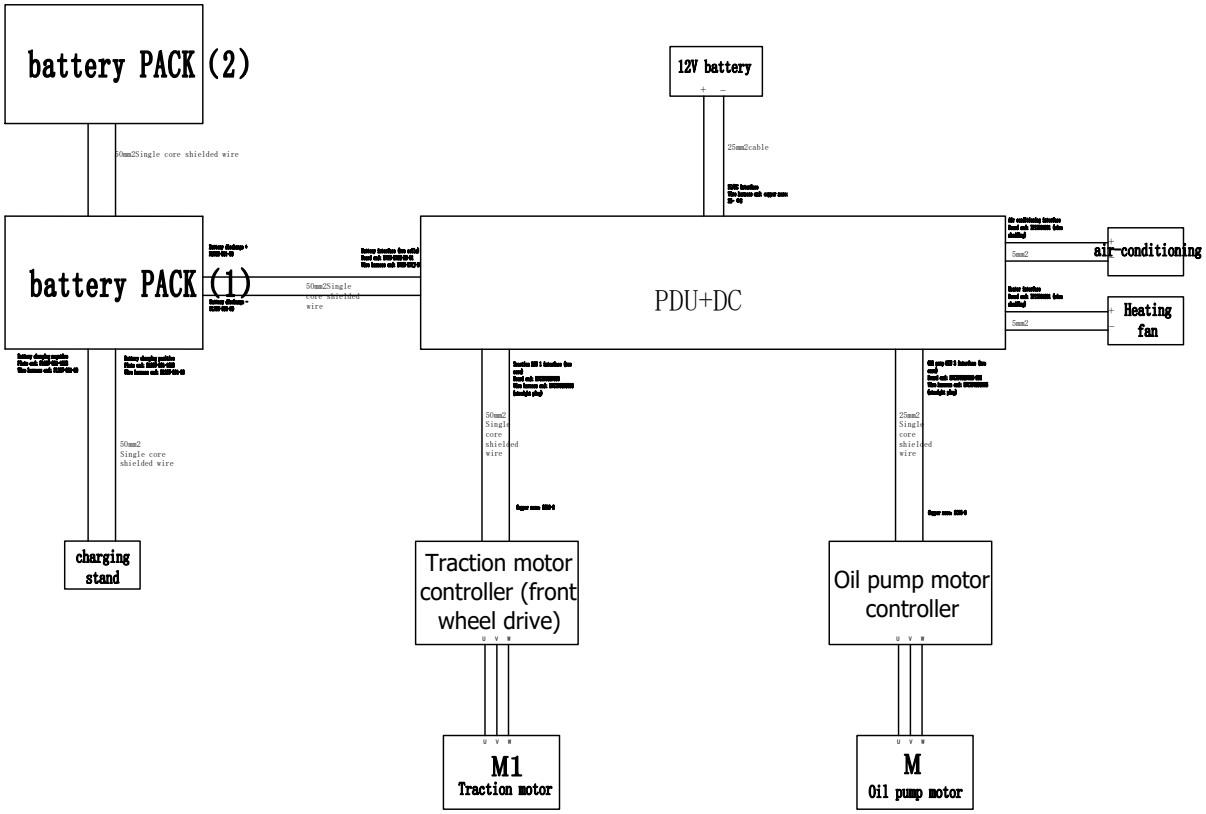


Fig.7 High-voltage electrical schematic diagram of 2WD rough terrain forklift truck

7.2 Brief introduction of high voltage components

(1) Power battery assembly

The forklift lithium battery assembly equips with 2 lithium battery boxes as standard, one master box and one slave box.

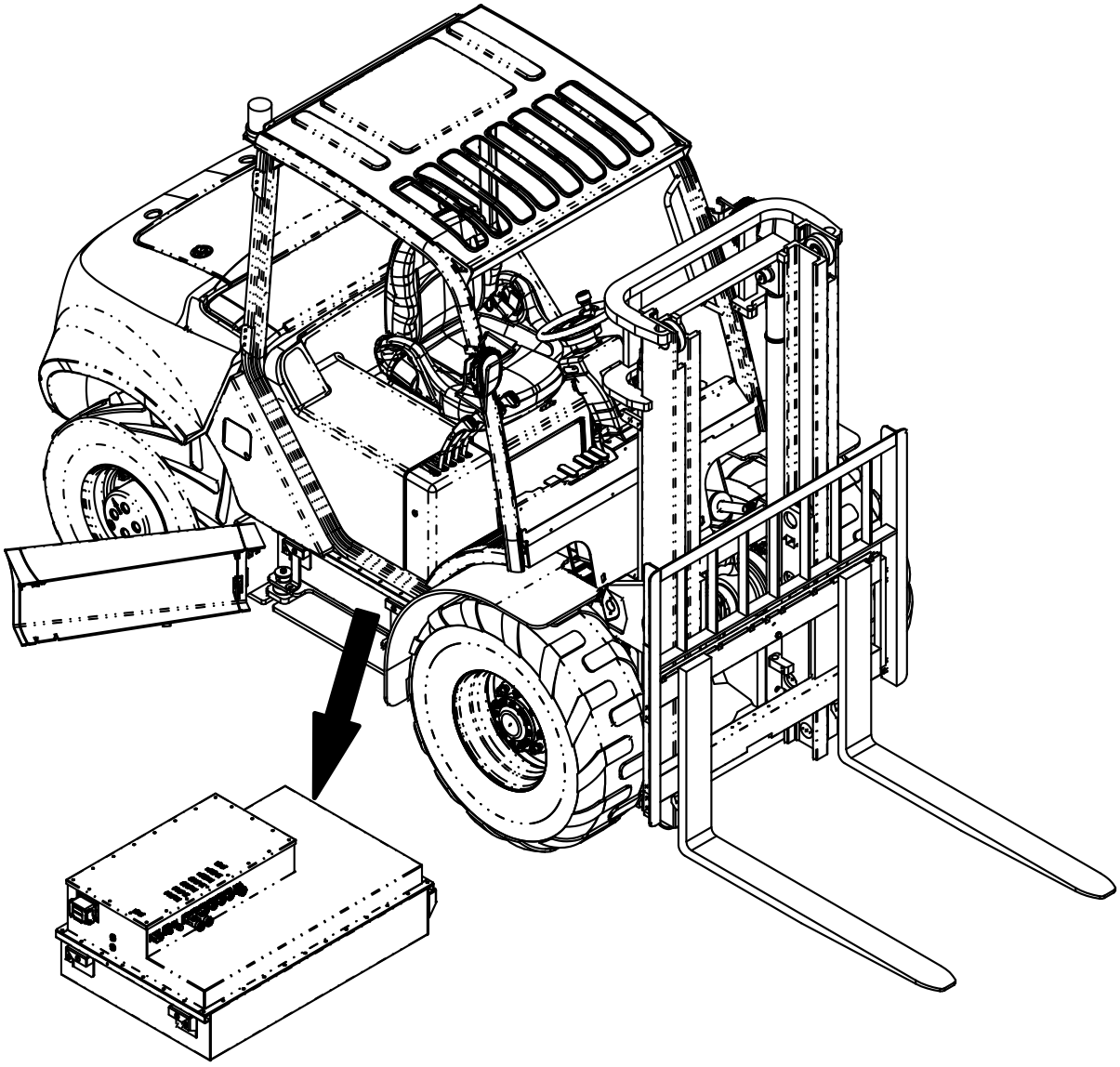


Fig.8 Forklift power battery assembly (main box)

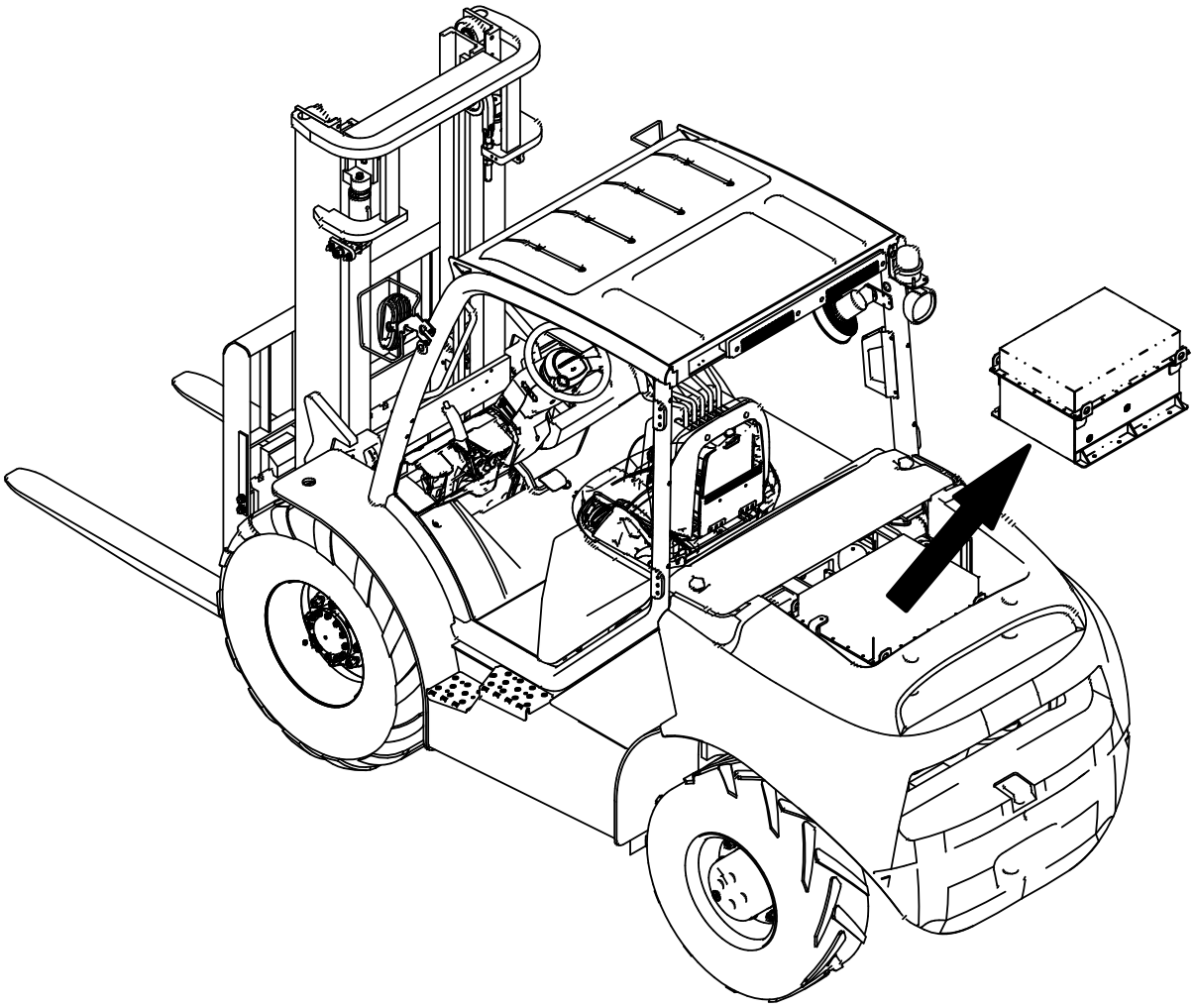


Fig.9 Forklift power battery assembly (auxiliary box)

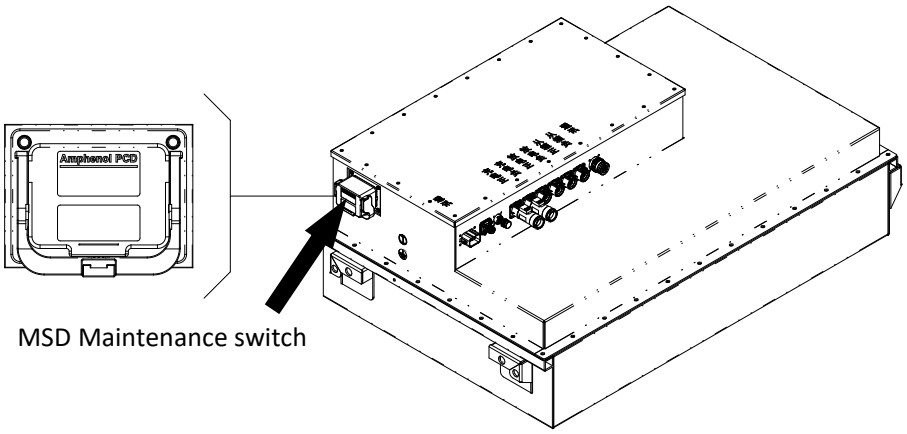


Fig.10 MSD maintenance switch on lithium battery (main box)

DANGER

- The weight and size of the lithium battery has a significant impact on the stability and load carrying capacity of the vehicle operation.
- When installing or replacing the lithium battery, pay attention to the fixed position of the lithium battery on the vehicle.
- Before performing any maintenance, cut off the power supply of the high-voltage system, unplug the MSD maintenance switch from the lithium battery main box and wait 15~20 minutes for the high voltage system to be powered off.
- The MSD maintenance switch on the lithium battery can be used when replacing the lithium battery or overhauling the lithium battery, pull out the MSD maintenance switch, wait for 15-20 minutes and then the lithium battery will be powered off. The inspection and maintenance of the lithium battery must be done by the professional personnel designated by Hangcha, and other personnel are strictly prohibited to overhaul.

(2) PDU

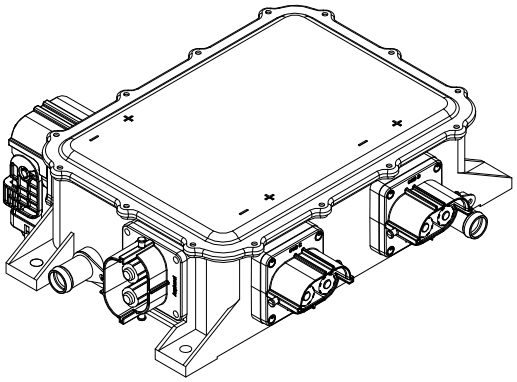
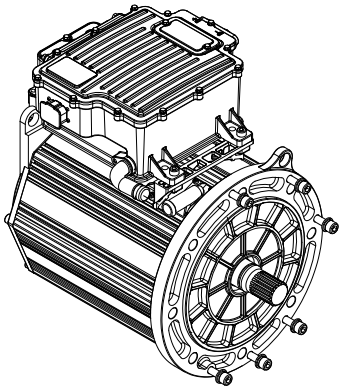


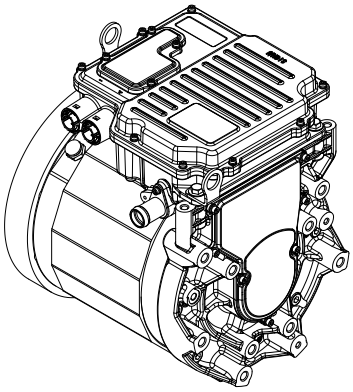


Fig.11 PDU

(3) Motor and control (traction/oil pump)



Front traction motor and control



Rear traction motor and control (4WD only)



Fig.12 Traction motor and control

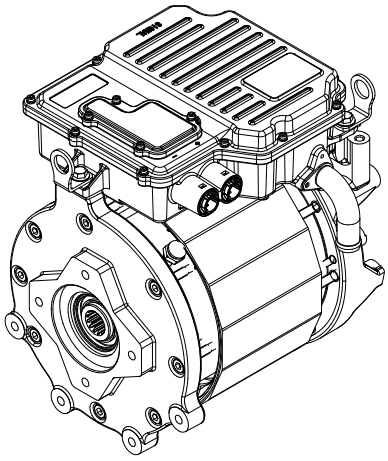
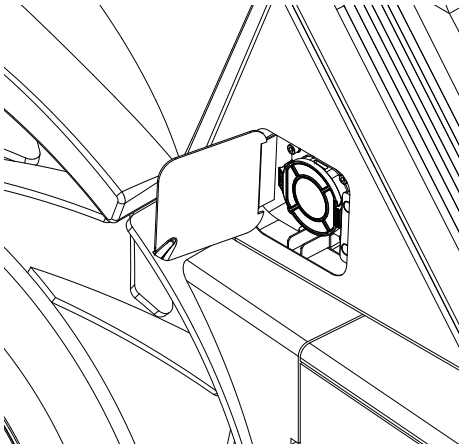




Fig.13 Oil pump motor and control

(4) Charging port



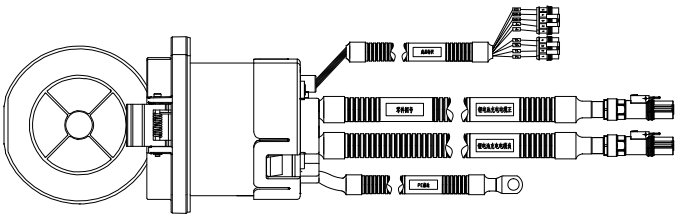




Fig.14 Charging port

(5) High voltage connection cable





Fig.15 High voltage connection cable

WARNING

- Inspection and maintenance of high-voltage components require special training in high-voltage electrical knowledge and relevant certification. Internal inspection and maintenance of lithium batteries must be performed by professional manufacturers.

7.3 Safety precautions and operating specifications for high-voltage electric forklift trucks

The following safety precautions for high-voltage electric forklift trucks, regarding your personal safety, must be strictly observed during inspection, maintenance and repair, otherwise it will cause serious injury and even life-threatening.

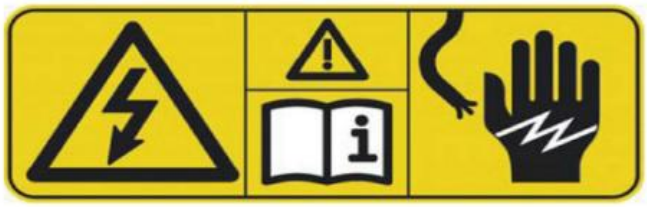


Fig.15 Warning signs for high voltage components

The connecting wires of the high voltage part are orange, and there are warning signs on the high voltage parts. When inspecting high-voltage parts, you should follow:

1.Inspection or maintenance personnel should wear insulated shoes; wear 1000V insulated gloves to check whether the gloves are damaged or aging, otherwise they must not be used. It is forbidden to directly contact the high voltage part without wearing gloves.

2.Dry insulating pads should be laid on the lower part of the truck body and the standing parts of maintenance personnel.

3.Place a warning triangle "Danger of touching during high-voltage operation".

4.Inspection and maintenance personnel are not allowed to carry or wear metal objects;

5.First confirm that there is no water (water accumulation, water droplets) in the ground and vehicle body. It is not allowed to work in a humid environment. Never perform high-voltage work when hands are wet, and do not work with wet high voltage parts. When the ground or surrounding humidity is too high, the operation should be stopped.

6.Dry powder fire extinguishers should be installed in the work area. Do not use other fire extinguishers.

7.Prepare the necessary maintenance tools, and the maintenance tools are insulated.

8.Cut off the high-voltage system power supply, first cut off the manual maintenance switch (MSD).

Safe operation specification

1.Before maintenance work, please take safety isolation measures (use the warning fence to isolate), and place high-voltage warning signs to warn relevant personnel and avoid safety accidents.

2.Before repairing high-voltage components, connect the body with the ground wire to the ground wire of the dedicated repair station for the electric forklift.

3.High-voltage components and storage batteries are carried out by Hangcha or authorized institutions and personnel with special training (different from ordinary forklift training).

4.When repairing high-voltage battery packs with electrolyte leakage, you must wear protective glasses to prevent electrolyte from splashing into your eyes.

5.Before turning on the key switch of the vehicle, pay attention to confirm whether there are people performing high-voltage maintenance operations to avoid accidents.

6.When examining and repairing the high-voltage wiring harness, any removed high-voltage wiring should be immediately wrapped and insulated with green tape.

7.Do not touch the live parts of the high-voltage wiring harness connector with your fingers to avoid electric shock. In addition, prevent small metal tools or iron bars from contacting the live parts of the connector.

8.In the event of an abnormal accident or fire, the operator should immediately cut off the high-voltage circuit, and other personnel should immediately use a fire extinguisher to fight the fire (use dry powder fire extinguishers, water-based fire extinguishers are strictly prohibited).

9.When the battery leaks electrolyte, do not touch it with your hands. The electrolyte needs to be diluted with calcium gluconate ointment, not with water.

10.Pay attention to the colors or markings used for high-voltage components and area prompts during operation.

11.It is forbidden to get hands, truck body, parts, or environment wet, otherwise no operation is allowed.

Maintenance equipment and site configuration

1) Common tools and equipment

Table 1 Basic tools and equipment for high-voltage electric forklifts

Tool equipment name	Specifications/Technical Standards
Test pencil	①Contactless. Sound and light prompt ②Testable voltage range：90~1000V AC/DC ：90~1000V AC/DC
Digital clamp meter	Voltage measurement 1000V AC/DC
Megger (insulation resistance tester)	①Output voltage：250V/500V/1000V ② Test current ： 250V(R=250KΩ)1mA ； 500V(R=500KΩ)1mA ； 1000V(R=1MΩ)1mA ③Insulation resistance：250V，0.1~20MΩ；500V，0.1~50MΩ；1000V，0.1~100MΩ ④Test voltage：AC750V
Three-phase AC phase sequence meter	①Phase sequence detection voltage range：200~480V ②Phase sequence detection frequency range：20~400Hz ③ Used for the forward, reverse and open phase inspection of the phase sequence of three-phase sinusoidal AC power supply ④LCD and buzzer indicate normal phase, reverse phase and phase loss

2) Safety protective gear and equipment

Safety protection equipment used for maintenance of high-voltage electric forklifts are shown in table 2-2. Part of the protective equipment is shown below

Table 2 personal protective equipment and safety devices for high-voltage electric forklift maintenance

Name	Unit	Quantity	Specifications and requirements
Insulating gloves	pair	2	Withstand DC voltage above 1000V
Insulating shoes	pair	2	Withstand DC voltage above 1000V
Insulating rubber pad	piece	6	Single piece 1 m2, withstand DC voltage above 1000V
protective glasses	piece	1	Acid and alkali resistance
Anti-acid and alkali gloves	pair	1	Acid and alkali resistance
Safety warning sign	piece	1	Specifications: 30cm×60cm, high-strength ABS plastic; content: "Danger! keep away " and high-voltage signs
Electrical tape	roll	2	Size: 18mm×20mm×0.18mm Voltage level: 600V; dielectric strength 1000V/mil (39.37kV/mm) Insulation resistance: >1012Ω
Dry powder fire extinguisher	piece	2	If the vehicle catches fire, the fire is small and slow, please use a dry powder fire extinguisher to extinguish the fire, and call for help immediately



Dry powder fire extinguisher



Insulating gloves



Insulating rubber shoes



Insulating rubber pad



Protective glasses

Fig.17 Protective equipment entity

3) Maintenance station configuration standard

a) Configuration standard for safe maintenance site of high voltage electric forklift.

①Set up a dedicated maintenance station（equipped with a crane above 6t）.

②Adopt safety isolation measures and set up high-voltage warning signs. The supplies are as shown in the figure below.



Fig.18 Maintenance station warning sign and isolation fence

③Safety operation specification for maintenance of high voltage electric forklift is pasted on the wall.

④ The dedicated maintenance station is equipped with a single-phase and effectively grounded standard three-hole socket with a rated voltage of 250V and a rated current of 16A in accordance with GB2099.1.

b) Specification of auxiliary materials for safety maintenance station of high-voltage electric forklift

①High-voltage warning signs (30cmx60cm, high-strength ABS plastic)

②Warning fence (total height 90cm, drawstring width 5cm, drawstring length 200cm, 300cm, 500cm, drawstring color is red);

③The insulating ground glue (insulates 1000V voltage, the waterproof level is similar to the plastic or rubber material, the size is 7mx4m), the paving effect is as shown in the figure below



Fig.19 Ground layout of maintenance station

7.4 First aid for high-voltage accident

7.4.1 First aid measures for electric shock accident

When rescuing a person injured in an electrical accident, do not touch anyone who is still in contact with electricity. If possible, power off the electrical system immediately (turn off the key switch or pull out the maintenance switch immediately). Use non-conductive objects (wood strips, bamboo poles, etc.) to separate the rescued person or the conductive body from the discharge body.

When performing first aid after an electric shock accident, if the rescued person does not respond, the following rescue measures should be taken: first confirm that the victim has signs of life, such as pulse and breathing; immediately call the emergency doctor, or immediately ask others to call; perform artificial respiration and cardiopulmonary press until the doctor arrives; if breathing stops, use a defibrillator (if available) for rescue.

If the rescued person can respond to the inquiry, the following first aid measures should be taken: cool down the burn and wrap it with a sterile lint-free cloth; even if the rescued person refuses, he should be required to receive treatment (to avoid long-term sequelae)

7.4.2 First aid measures for high-voltage battery accidents

When the high-voltage battery catches fire, please perform the following operations according to the actual situation:

①Turn off the key switch, and disconnect the 12V battery when conditions permit;

②Disconnect the maintenance switch;

③Look for fire extinguishers nearby (dry powder fire extinguishers should be used, and water-based fire extinguishers should not be used);

④If the vehicle catches fire, the fire is small and slow, please use a dry powder fire extinguisher to extinguish the fire, and call for help immediately;

⑤If the fire is large and develops rapidly, please stay away from the vehicle immediately and call the fire telephone to wait for rescue;

If the high-voltage battery leaks (there is obvious liquid outflow), please operate the vehicle according to the following methods:

①Turn off the key switch and disconnect the 12V battery when conditions permit;

②Disconnect the maintenance switch;

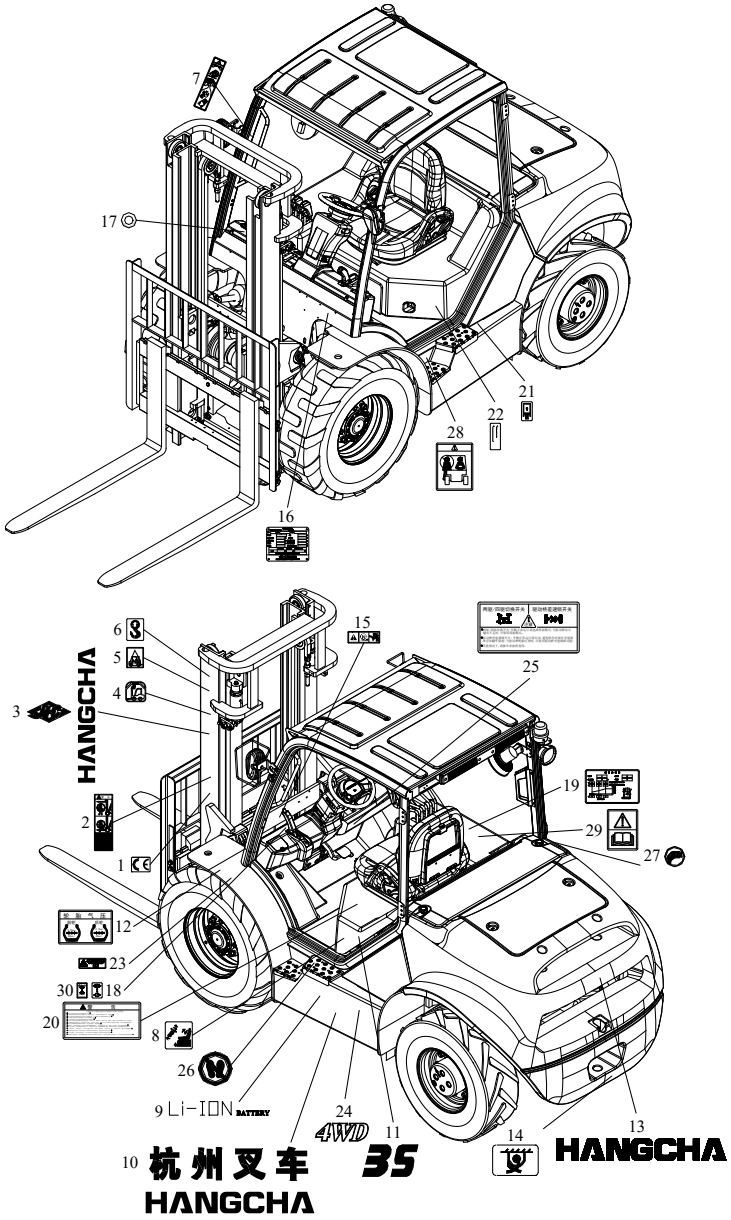
③When a small amount of leakage occurs, please stay away from fire, use absorbent cloth to absorb and place in a closed container, or dispose of by incineration. Please wear acid and alkali-proof gloves before operation;

④When a large amount of leakage occurs, please collect them and treat them in accordance with hazardous chemicals. Add calcium gluconate solution to treat the generated gas;

⑤When the human body accidentally touches the leaked liquid, rinse immediately with plenty of

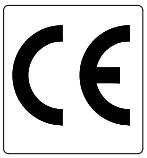
water (10-15) min. If there is pain, coat with 2.5% calcium gluconate ointment, or soak with 2%-2.5% calcium gluconate solution for pain relief, if there is no improvement or uncomfortable symptoms, please seek medical attention immediately.

8 Labels and nameplates



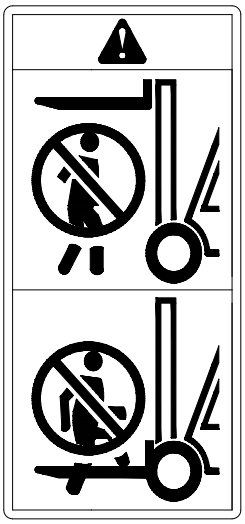
1.CE label	2.Warning label	3.HC label	4.Cloud smart label
5.Lifting label	6.Lifting label	7.Seat belt label	8.Hood opening label
9.Lithium battery label	10.Word label	11.Tonnage label	12.Tire pressure label
13.Word label	14.Tethered point label	15.Warning label	16.Product label
17.Emergency stop switch label		18.Hand brake label	19.Load curve label
20.Warning label	21.Hydraulic oil label	22.Fuse label	
23.Semi-axle dismounting warning Label		24.4WD label	
25.Operating instruction label		26.No standing label	
27.Charging label (fast charging)		28.No passengers allowed label	
29.Safety instructions label		30.Parking Brake Engaged Warning Label	

1.CE label（CE approved vehicle type）



2.Warning label

Do not step onto or beneath the load



3.HC label

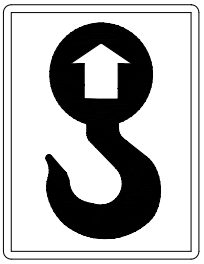


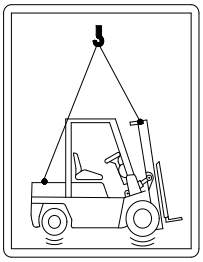
4.Cloud smart label



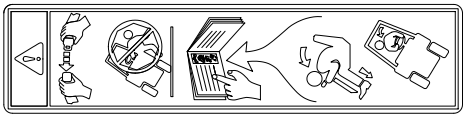
5、6.Lifting label

The lifting position and method of indicating the vehicle and balancing the weight. Prevent the rope from rubbing and damaging the lamps during lifting.





7.Seat belt label



8.Hood opening label



9.Lithium battery label

Li-ION BATTERY

10.Words label

HANGCHA

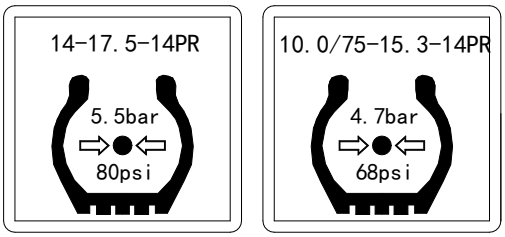
11.Tonnage label



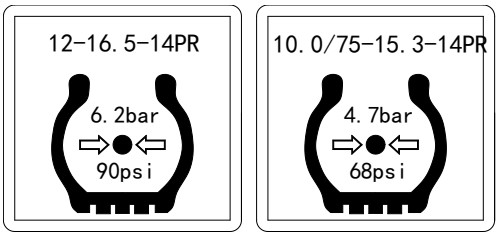
For example, "35" means the rated load capacity is 3.5 tons, but if the lifting height increases or attachments are attached, the rated load capacity will decrease.

12.Tire pressure label

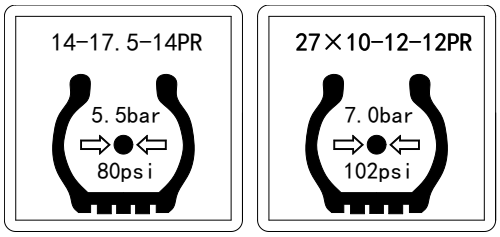
3.0t-3.5t(4WD)：



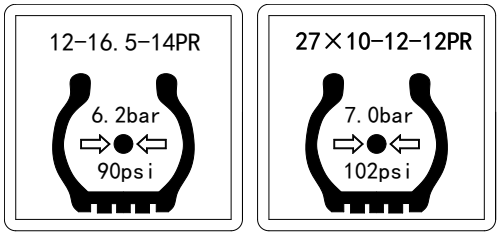
1.5t-2.5t(4WD)：



3.0t~3.5t(2WD)：



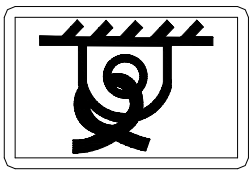
1.5t-2.5t(2WD)：



13.Word label

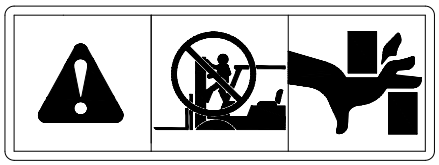
HANGCHA

14.Tethered point label

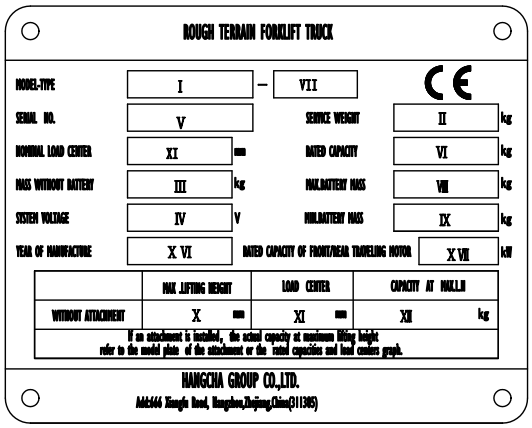


15.Warning label

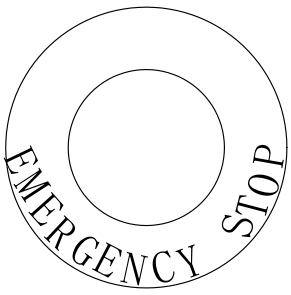
Warning: Inner and outer mast as well as fork carriage are slide parts of lift and down. It is not allowed to put hand in the mast. Once the human body is caught between the mast, the instrument stand and the overhead guard, it will be life-threatening. Please check or repair this part after power stops. There should not be person on the truck or others to operate the truck to avoid accidents by handling mast lever wrongly.



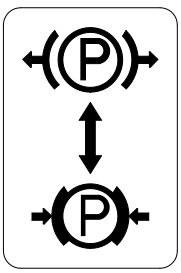
16.Product label



17.Emergency stop switch label



18.Parking brake label



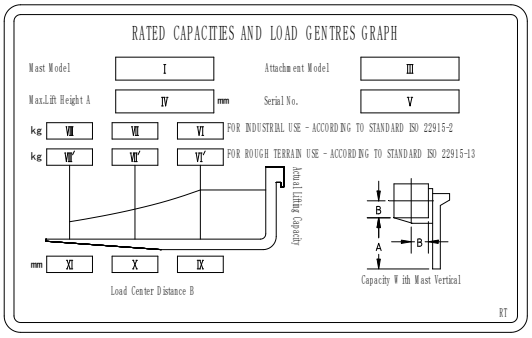
19.Load curve label

It shows the relationship between the position of the load center distance and the maximum load and the maximum lifting height.

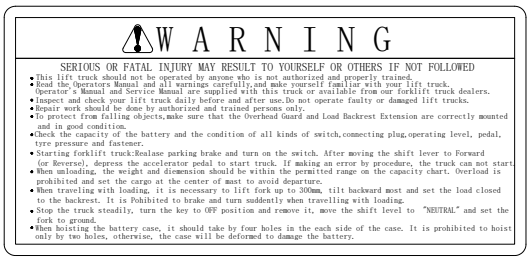
The load is reduced with sideshifter and attachment. The load is reduced with the lifting height increases.

Prior to loading, check whether the load and the load center distance are within the limits of the load capacity graph. If a load has a complex shape, the heaviest part of the load should be centered over the forks and close to the load bracket.

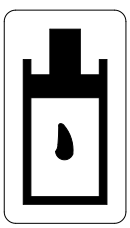
The load curve labels are different for forklifts of different tonnage and the same tonnage with different masts.



20.Warning label



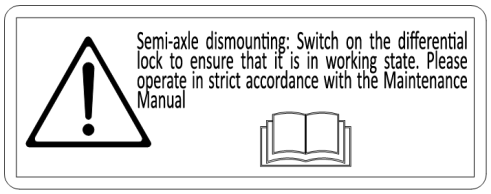
21.Hydraulic oil label



22.Fuse label



23.Semi-axle dismounting warning label

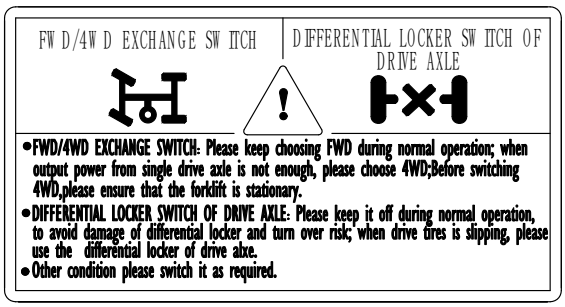


24.4WD label (only for 4WD)



25.Operating instruction label

4WD：

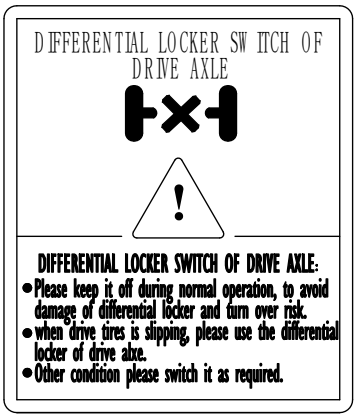


Fwd/4wd exchange switch： Please keep choosing fwd during normal operation; when output power from single drive axle is not enough, please choose 4wd;before switching 4wd,please ensure that the forklift is stationary.

Differential locker switch of drive axle：Please keep it off during normal operation, to avoid damage of differential locker and turn over risk; when drive tires is slipping, please use the differential locker of drive alxe.

Other condition please switch it as required.

2WD：



Please keep it off during normal operation, to avoid damage of differential locker and turn over risk.

when drive tires is slipping, please use the differential locker of drive alxe.

Other condition please switch it as required.

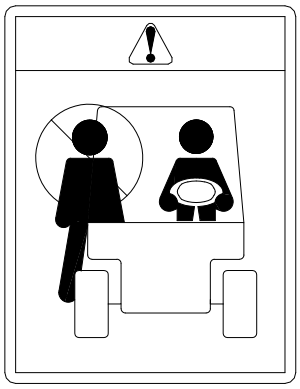
26.No standing label



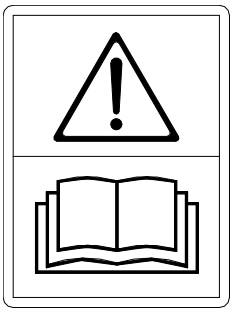
27.Charging label (located on the outside of the charging door)



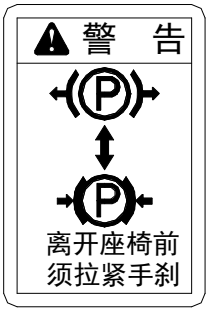
28.No passengers allowed label



29.Safety instructions label

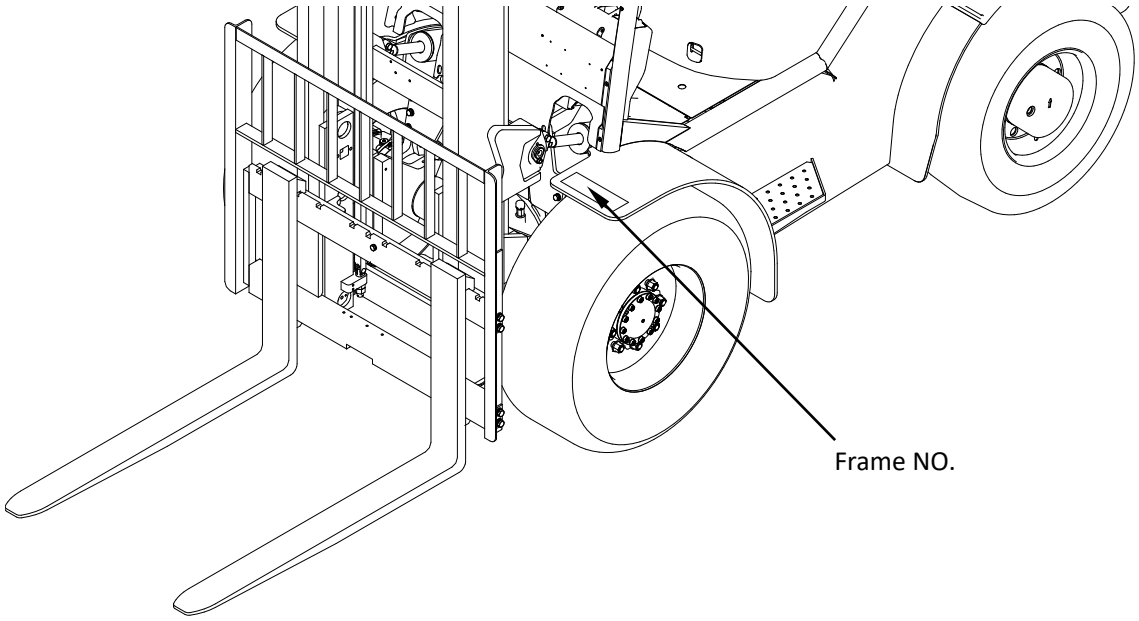


30.Parking Brake Engaged Warning Label(only Chinese)



9 Frame NO.

The frame number is located on the front side of the left fender, as shown in the figure:



10 Main technical performance parameter

The technical data provided below are standard specifications. The company reserves the right to make technical changes and additions.

Project			CPD25-XY2GC-RT4
Rated lifting capacity (kg)			2500
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			140
Maximum lifting speed (full load) (mm/s)			620
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			24/26
Maximum gradeability (full load, 3km/h) (%)			63
Minimum outside turning radius (mm)			3300
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1250/1190
Dead weight (including battery) (kg)			5000
Overall dimension (length × wide × High)(to fork face) (mm)			3125×1599×2200
Tires (front/rear)			12-16.5-14PR/2 10.0/75-15.3-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	30
	Driven Motor (back)	Rated power (kW)	15
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA1-Q050-ST0
		Voltage/capacity (V/Ah)	317/150
		Weight (kg)	590

Project			CPD30-XY2GC-RT4
Rated lifting capacity (kg)			3000
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			150
Maximum lifting speed (full load) (mm/s)			430
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			24/26
Maximum gradeability (full load, 3km/h) (%)			55
Minimum outside turning radius (mm)			3300
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1250/1190
Dead weight (including battery) (kg)			5340
Overall dimension (length × wide × High)(to fork face) (mm)			3140×1599×2200
Tires (front/rear)			14-17.5-14PR/2 10.0/75-15.3-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	30
	Driven Motor (back)	Rated power (kW)	15
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA1-Q050-ST0
		Voltage/capacity (V/Ah)	317/150
		Weight (kg)	590

Project			CPD35-XY2GC-RT4
Rated lifting capacity (kg)			3500
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			150
Maximum lifting speed (full load) (mm/s)			430
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			24/26
Maximum gradeability (full load, 3km/h) (%)			52
Minimum outside turning radius (mm)			3300
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1250/1190
Dead weight (including battery) (kg)			5600
Overall dimension (length × wide × High)(to fork face) (mm)			3140×1599×2200
Tires (front/rear)			14-17.5-14PR/2 10.0/75-15.3-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	30
	Driven Motor (back)	Rated power (kW)	15
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA1-Q050-ST0
		Voltage/capacity (V/Ah)	317/150
		Weight (kg)	590

Project			CPD25-XY2GE-RT2
Rated lifting capacity (kg)			2500
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			140
Maximum lifting speed (full load) (mm/s)			620
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			24/26
Maximum gradeability (full load, 3km/h) (%)			63
Minimum outside turning radius (mm)			2850
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1250/1205
Dead weight (including battery) (kg)			5000
Overall dimension (length × wide × High)(to fork face) (mm)			3125×1599×2200
Tires (front/rear)			12-16.5-14PR/2 27×10-12-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	30
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA1-Q050-ST0
		Voltage/capacity (V/Ah)	317/150
		Weight (kg)	590

Project			CPD30-XY2GE-RT2
Rated lifting capacity (kg)			3000
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			150
Maximum lifting speed (full load) (mm/s)			430
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			24/26
Maximum gradeability (full load, 3km/h) (%)			55
Minimum outside turning radius (mm)			2850
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1250/1205
Dead weight (including battery) (kg)			5340
Overall dimension (length × wide × High)(to fork face) (mm)			3140×1599×2200
Tires (front/rear)			14-17.5-14PR/2 27×10-12-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	30
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA1-Q050-ST0
		Voltage/capacity (V/Ah)	317/150
		Weight (kg)	590

Project			CPD35-XY2GE-RT2
Rated lifting capacity (kg)			3500
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			150
Maximum lifting speed (full load) (mm/s)			430
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			24/26
Maximum gradeability (full load, 3km/h) (%)			52
Minimum outside turning radius (mm)			2850
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1250/1205
Dead weight (including battery) (kg)			5600
Overall dimension (length × wide × High)(to fork face) (mm)			3140×1599×2200
Tires (front/rear)			14-17.5-14PR/2 27×10-12-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	30
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA1-Q050-ST0
		Voltage/capacity (V/Ah)	317/150
		Weight (kg)	590

Project			CPD18-XY2GC-RT4
Rated lifting capacity (kg)			1800
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			155
Maximum lifting speed (full load) (mm/s)			620
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			23/24
Maximum gradeability (full load, 3km/h) (%)			60
Minimum outside turning radius (mm)			3400
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1194/1186
Dead weight (including battery) (kg)			4400
Overall dimension (length × wide × High)(to fork face) (mm)			3050×1502×2200
Tires (front/rear)			12-16.5-14PR/2 10.0/75-15.3-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	20
	Driven Motor (back)	Rated power (kW)	15
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA0-Q208-ST0
		Voltage/capacity (V/Ah)	317/125
		Weight (kg)	520

Project			CPD15-XY2GC-RT4
Rated lifting capacity (kg)			1500
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			155
Maximum lifting speed (full load) (mm/s)			620
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			23/24
Maximum gradeability (full load, 3km/h) (%)			60
Minimum outside turning radius (mm)			3400
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1194/1186
Dead weight (including battery) (kg)			4250
Overall dimension (length × wide × High)(to fork face) (mm)			3050×1502×2200
Tires (front/rear)			12-16.5-14PR/2 10.0/75-15.3-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	20
	Driven Motor (back)	Rated power (kW)	15
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA0-Q208-ST0
		Voltage/capacity (V/Ah)	317/125
		Weight (kg)	520

Project			CPD18-XY2GE-RT2
Rated lifting capacity (kg)			1800
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			155
Maximum lifting speed (full load) (mm/s)			620
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			23/24
Maximum gradeability (full load, 3km/h) (%)			60
Minimum outside turning radius (mm)			2900
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1194/1186
Dead weight (including battery) (kg)			4300
Overall dimension (length × wide × High)(to fork face) (mm)			3050×1502×2200
Tires (front/rear)			12-16.5-14PR/2 27×10-12-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	20
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA0-Q208-ST0
		Voltage/capacity (V/Ah)	317/125
		Weight (kg)	520

Project			CPD15-XY2GE-RT2
Rated lifting capacity (kg)			1500
Load center distance (mm)			500
Maximum lifting height (mm)			3000
Free lift height (mm)			155
Maximum lifting speed (full load) (mm/s)			620
Mast Tilt angle (front/back)(°)			10/12
Maximum running speed full load/empty load (km/h)			23/24
Maximum gradeability (full load, 3km/h) (%)			60
Minimum outside turning radius (mm)			2900
Wheelbase (mm)			1880
Track width (front/rear) (mm)			1194/1186
Dead weight (including battery) (kg)			4150
Overall dimension (length × wide × High)(to fork face) (mm)			3050×1502×2200
Tires (front/rear)			12-16.5-14PR/2 27×10-12-12PR/2
Motor	Driven Motor (front)	Rated power (kW)	20
	Pump Motor	Rated power (kW)	24
lithium battery		Model	HC-B1HVA0-Q208-ST0
		Voltage/capacity (V/Ah)	317/125
		Weight (kg)	520

II Stability and load capacity graph

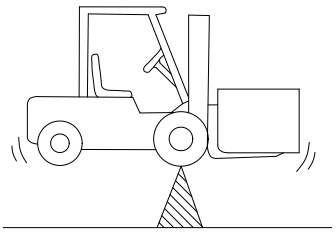
1 Center of gravity (COG) and stability

CAUTION	The structure of the truck

The basic structure of the truck is mast (include mast and forks) and body (include tire).

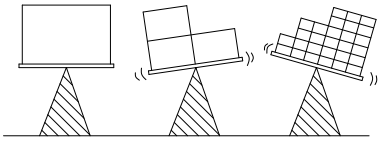
The lift truck keeps the balance of weight between the truck body and the load on the forks with the center of the front wheels as a fulcrum when the rated capacity load is placed in position.

Due care should be paid to the weight and the center of gravity of loads to maintain the stability of the truck.



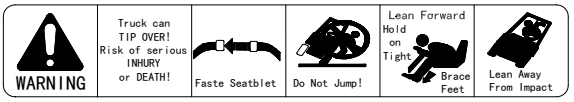
CAUTION	Load center

There is difference because of the loads' shape, gravity, such as box, board and large roller. It is very important to distinguish the difference and the gravity center of loads.



WARNING

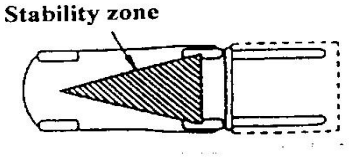
If the truck is going to turn over, do not attempt to get out of the truck, because the speed of overturn is much fast than you. You should hold the steering wheel handle, and this practice will let you in the seats.Please tie safety belt



WARNING	The stability zone of the barycenter

In order to make the truck stable, the combined center must be within the triangle which is made up of the two points where the two front wheels touch the ground and the midpoint of the back driving axle.

If the combined center is in the front driving axle, the two front wheels become two fulcrums, and the truck will overturn. If the combined center departs the triangle, the truck shall overturn in the corresponding direction.



CAUTION	Gravity and stability

Forklift stability depends on the common center of gravity of the forklift. When the forklift is unloaded, the center of gravity (CoG) remains unchanged. When the forklift is loaded, the center of gravity is formed by the combined center of gravity of the forklift and load.

The load's center of gravity depends on whether the mast is tilted forward or backward, raised or lowered, which means that the combined center of gravity also changes accordingly.

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

a） Load size, weight and shape;

b） Lifting height;

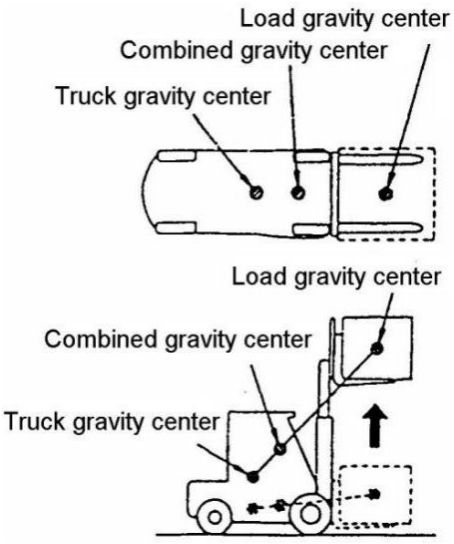
c） Mast tilt angle;

d） Tire inflation pressure

e） Acceleration, deceleration and turning radius;

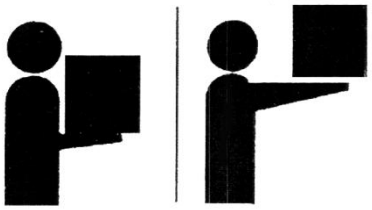
f） Driving surface conditions and inclination;

g） Attachment type.



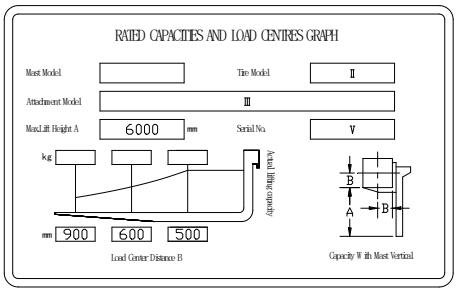
CAUTION	The max load

The distance between the load center and the front surface of forklift or load backrest (select the min) on the forklift is called load center distance. The max gravity that the truck can load is called max load on condition that the load is on the load center distance. The relationship of max load and load center distance is specified on the load capability chart. If the load center is moved near the front of forklift, the load should be reduced.



CAUTION	The load capability chart

This chart shows the relationship of max load and the location of load center distance. Check whether the load and load center distance is in the range referred by the chart. Put the most important parts near the load backrest if the shape of goods is asymmetrical.



CAUTION	Speed and acceleration

A static object keeps its static station which is not affected by outside force, one dynamic object moves with the same speed which is not affected by outside force, this is inertia.

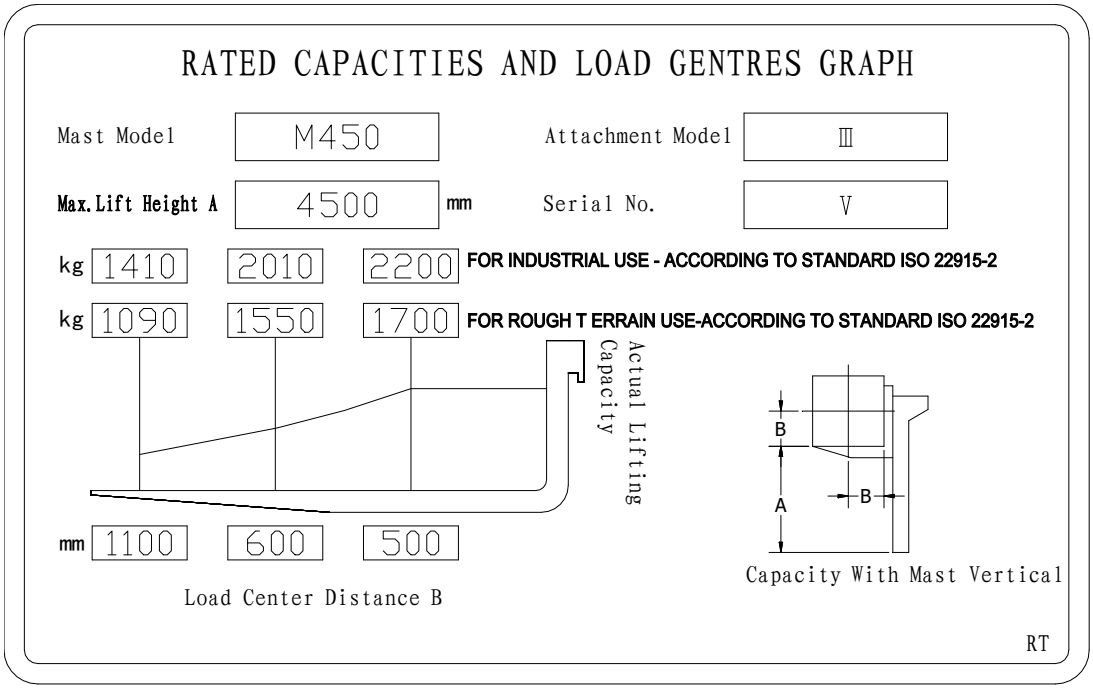
Because of inertia, one force affected backward when the truck is moving, one force affected forward when the truck is stopping.

It is very dangerous to press the brake suddenly. It may result in capsizing or sliding down of the load because of huge force to the front.

Centrifugal force is present during turning and its direction is from the turning center to the outer. If the force is strong enough, it may result in the capsizal of the truck. The right-and-left stable zones are very small, so the truck's speed must be reduced when turning to prevent capsizing. If the truck is carrying a load with the forks raised high, the possibility of capsizing is very great.

2 Load Curve Label Interpretation

Taking the load curve label of rough terrain forklift truck with a rated lifting capacity of 2.5t and a 4.5m simplex mast as an example:



Taking a 500mm load center distance as an example:

1) In industrial applications, when the load center distance is 500mm, the maximum allowable load for a forklift equipped with a 4.5m simplex mast is 2200kg.
2) In rough terrain applications, when the load center distance is 500mm, the maximum allowable load for a forklift equipped with a 4.5m simplex mast is 1700kg.

CAUTION

- The load curve label shown above is for illustration purposes only. Please refer to the actual load curve label on the vehicle for specific values.

WARNING

- If the center of gravity of the cargo exceeds the maximum load center distance listed on the load curve chart, please consult Hangcha Group Co., Ltd. to obtain the allowable lifting capacity under the corresponding load center distance to avoid overloading.

III Safety rules

1 Instructions for Use of Equipment

In order to ensure personal and equipment safety, the driver should take the following precautions:

1. Only drivers with proper training and a valid license should operate the vehicle;

2. Check each control and alarm device before driving, and any damage or defects should be repaired before operation;

3. The load should not exceed the specified value when handling; the forks should be fully inserted into the load so that it is uniformly positioned on the fork; do not use a single fork to lift cargo.

4. Start, turn, drive, brake and stop smoothly; slow down on wet or slippery roads when steering;

5. Loads should be placed as low as possible and the mast should tilt backward when driving;

6. Be careful when driving on ramps; move forward when driving up gradients greater than one in ten and move backwards when driving down ramps; do not turn when driving up or down ramps; do not carry out loading and unloading operations when the forklift is in motion;

7. Pay attention to pedestrians, barriers, and bumpy surfaces when driving and be aware of the upper clearance of the forklift truck;

8. Do not stand on the forks and do not carry passengers;

9. Do not stand or walk under the forks;

10. Do not operate the truck and its attachments from anywhere except the driver's seat;

11. Do not handle unsecured or loosely stacked cargo and be careful when handling large cargo;

12. Protect cargo on high lifting forklift trucks with a lift height of more than 3m from falling down and take preventive measures if necessary;

13. Try to tilt the mast backward when the high lifting forklift truck is in operation and tilt forward within the minimum range during loading and unloading operations;

14. When driving on wharfs or temporary decking, you should be extra careful and drive slowly;

15. Keep sources of ignition away when checking the battery or fuel tank level.

16. When a forklift truck with attachments is unloaded, it should be operated in the same manner as a loaded forklift truck;

17. Drop the forks to the ground, switch the gear lever to the neutral position, engage the parking brake device properly, and disconnect the power when leaving the truck. Engage the parking brake device properly when parking on ramps; place cushion blocks under the wheels when parking for a long time.

18. In the event of a sudden fault when lifting cargo or driving on gradients, causing leakage of storage battery electrolyte, hydraulic oil and brake fluid, or a flat tire etc., personnel should be organized for repair immediately, the truck should be kept in a safe condition, and professional maintenance personnel or the seller should be contacted.

19. Noise and vibration will be generated during installation and assembly processes; please choose proper tools and assembly methods to reduce the impact of noise pollution on the environment.

20. The forklift truck must not be used in plant areas; the working surface should be solid and flat cement pavement, asphalt pavement or concrete pavement. When there is snow, ice, water or other foreign matter on the road, the truck can only be used after it has been fully cleared away; otherwise, the truck is likely to lose control, resulting in an accident.

21. In the event of a breakdown, the truck should be first moved to a place where it does not obstruct traffic. If the breakdown is caused by the brake system or steering system, the truck should be carried away with a proper carrier loader (see the vehicle handling content); if it is caused by other reasons, the truck should be towed with an appropriate vehicle; rope should be fixed outside the truck body when towing. Obey traffic rules when towing a forklift truck on the highway.

22. Do not operate the forklift truck or carry cargo after disassembling the hood, water tank cover plate, overhead guard, mast load backrest or other protective devices.

23. There should be sufficient lighting in the forklift truck working area. Turn on the head lights when working at night, there should be sufficient lighting in the work area.

24.Do not conduct side shift operations with a loaded forklift truck with automatic adjustable distance forks to prevent the forklift truck from losing balance and damaging components.

25.Please do not tilt the mast forward or backward or lift the mast to the extreme position during idling where possible before the temperature of the hydraulic oil rises.

26.Do not revise or modify the forklift truck without the written approval of the forklift truck manufacturer; otherwise, it may affect the rated load and stability or safe operation. This includes: Assembly and disassembly of brake, steering and visibility systems, and attachments. When the forklift truck manufacturer agrees to revise or modify the truck, they should also agree to update and properly revise the bearing nameplate, label, and operation and maintenance manual.

27.If the user refits the forklift truck, it may introduce hazards or risks that the manufacturer did not consider, thus the existing forklift truck risk assessment will become invalid.

Forklift truck refitting outside Europe should conform to regional requirements (see ISO/TS 3691-8).

28.The differential lock should only be used in severe road conditions or extreme situations. Using it for extended periods during normal driving can cause serious damage to the forklift's tires, drive axle, and other components. Therefore, please press the differential lock switch upwards during normal driving.

29.The differential lock switch must only be operated when the vehicle is stationary.

30.When operating a 4WD rough terrain forklift truck, the 4WD mode should only be used in severe road conditions or extreme situations. Please use 2WD mode for normal driving.

31.When turning on roads, gravel, snow, rain, or ice surfaces, please switch to 2WD mode and reduce your speed.

32.If the operator hears any unusual noise or detects any malfunction of the forklift, they should immediately stop and inspect the vehicle.

2 Safety regulations

1.Only trained and approved operators can operate the forklift truck.

2.Oil, water and LPG leakage, deformation and looseness should be regularly checked; otherwise, the service life of the truck will be shortened; in severe cases, it may cause an accident.

Ensure that “key safety parts” are replaced in regular checks.

Wipe off oil, grease or water on the baseplate, pedal and control lever.

Shut down the engine, especially the fan when checking the engine and associated parts.

Take care to avoid scalding when checking the water tank or silencer.

3.Whenever the truck is found to be faulty, you should stop operations and report the condition to the management personnel.

During maintenance at height (such as the mast, front light and back light), take care to avoid clamping and slipping.

If the alarm indicator light turns on or in the event of any other fault, the forklift truck should be driven to a safe place for checks or troubleshooting.

Protect your hands, head and body from scratching at corners and sharp edges you may touch during maintenance and repair.

Hang the “fault” sign on the truck as a reminder.

4.Do not check the fuel level, LPG level, electrolyte or cooling water and leakage when there is a naked flame nearby.

Do not smoke to avoid explosions when checking the battery, refilling with fuel or LPG, or checking the fuel oil system.

The workplace should be provided with a fire extinguisher.

Do not refuel when the engine is running.

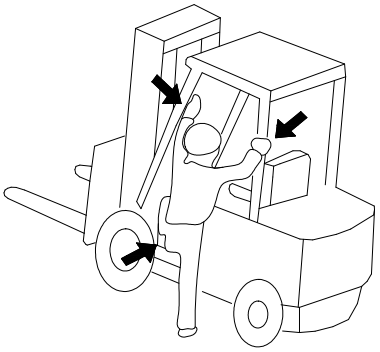
5.Warm up the forklift truck until the water temperature is 70℃ before operation.

Do not open the water tank lid when the water temperature is higher than 70℃.

6.The exhaust gas is harmful to the human body; there should be sufficient ventilation when the forklift truck is operated in an enclosed space; the ventilation should be increased if necessary.

> ⚠ CAUTION
>
> - Not allowed to used in underground.
> - It’s forbidden to use truck under a circumstance of flammability and easy to blast.

7.Do not get on or off the forklift truck when it is in use; please use the safety pedal and safety handrail when getting on or off.



8.Operate the forklift truck only when sitting properly.

Adjust the seat position for good hand and foot control before starting.

9.Before starting, confirm:

①Whether there are any people near the forklift truck.

②Whether the front and rear reverse lever is in the neutral position.

10.Pull up the hand brake when parking on a flat road; if the truck has to be stopped on a ramp, a wedge must be placed under the wheel.

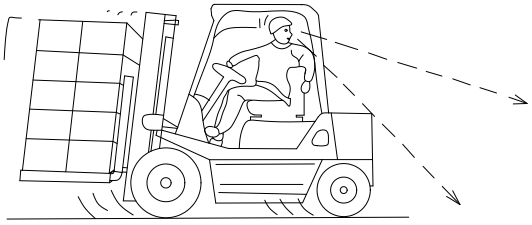
Shut down the engine and take out the key when the forks are lowered to the ground and slightly tilted forward.

11.Be stable and accurate when operating the truck. Avoid emergency stops, emergency starts or emergency steering.

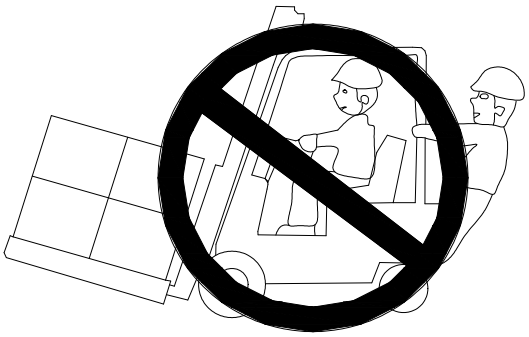
12.Control the speed and obey traffic signals.

> ⚠ CAUTION
>
> - Obey traffic rules when driving on the highway or street.

13.Pay attention to the driving direction and keep a good lookout.



14.Other people must not sit on the fork, pallet or forklift truck.

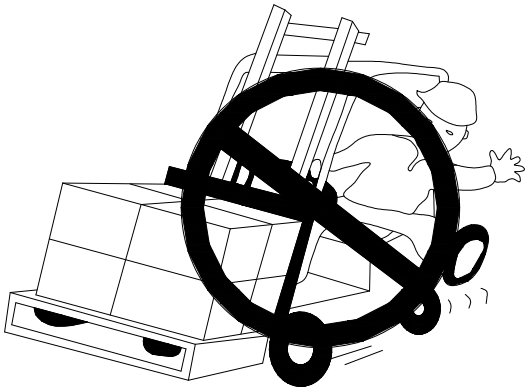


15.When crossing a ship deck or bridge, confirm that it is fixed correctly and has enough strength to bear the weight of the forklift, and check the ground conditions of the work site in advance.

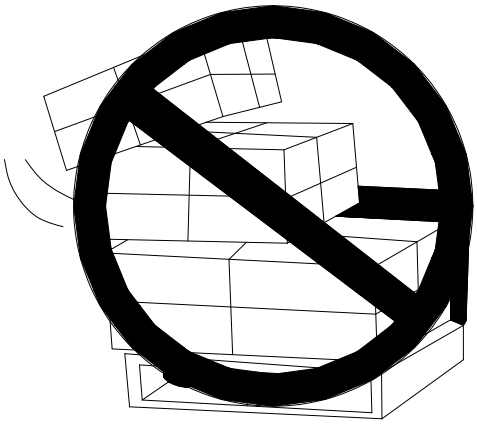


16. Keep your mind on your work.

17. Keep your head, arms, legs and feet in the cab and do not extend them out of the cab for any reason.

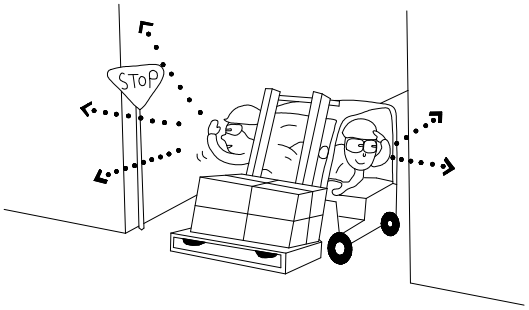


18.Cargo must not deviate from the fork center; when cargo is not aligned with the fork center, or when the truck turns or crosses uneven surfaces it may easily fall down. The possibility of rollover is also increased.



19.Please drive in reverse or under guidance when handling very large cargo that obstructs visibility.

20.Slow down and sound the horn when passing through junctions or other sections with poor visibility; limit the speed to 1/3 of the maximum driving speed of the truck.



21.The forklift truck should be driven away from LPG tanks, wood, paper and chemical substances; the exhaust gas from the silencer may cause combustion or explosions.

22.The headlights and clearance lights should be used during night operation; the driving speed must be controlled.

23.The work surface of the forklift truck should be a solid and flat cement pavement, asphalt pavement or concrete pavement.

The following normal climatic conditions should be met when the truck is in operation:

--Mean ambient temperature under continuous operation conditions: +25℃;

--Maximum short term ambient temperature (≤1h): +40℃;

--Minimum ambient temperature under normal indoor conditions: +5℃;

--Minimum ambient temperature under normal outdoor conditions: -20℃;

—— Altitude: ≤2 000m.



CAUTION

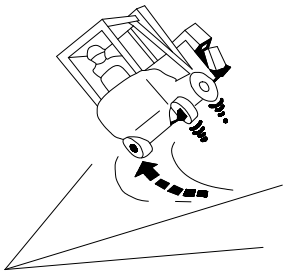
- Check the road to be driven for holes, abrupt slopes, barriers, bumps, and road conditions that may cause loss of control and vibration.
- Remove rubbish, debris and foreign matter that may puncture tires and throw cargo out of balance.
- Slow down on slippery roads, do not drive on the edge of the road, and take extra care when it cannot be avoided.
- Uneven ground will cause vehicle vibration and noise. High tire pressure will cause vehicle vibration and noise.

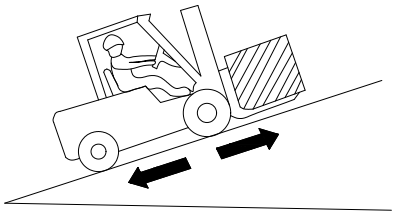
WARNING

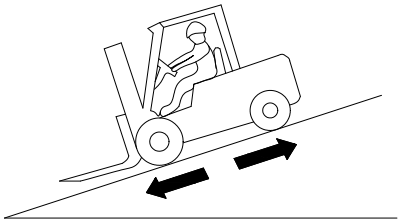
- Do not use the forklift truck in sandstorms, snow, lightning, rain, wind and other bad weather conditions.

24.Reverse downhill and climb facing forward when loaded. The opposite applies when unloaded.

Do not turn on ramps to avoid rolling over.





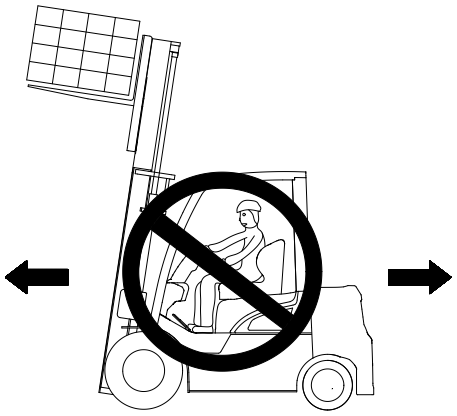


25.Keep the engine at idle and step on the brake pedal intermittently when driving downhill.

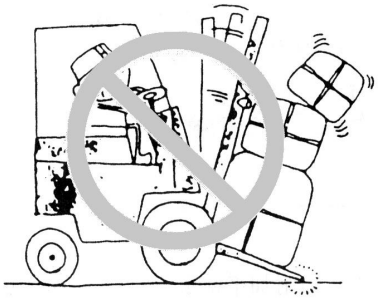
26.It is dangerous to lift the forks when driving with or without load; the standard driving condition (the distance between the forks and the ground is 15cm-30cm) should be adhered to.

Do not conduct side shift operations when the forks are raised to protect the forklift truck from losing balance.

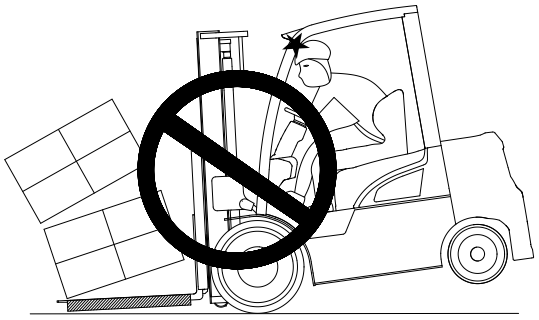
Forklifts with attachments should be considered vehicle loads.



27.The mast should tilt backward and the height of cargo should be lowered as much as possible when the truck is operated under load.



28.Avoid emergency stops or driving fast downhill to prevent cargo from falling or the truck from rolling over. Emergency brake hazards.



29.The forklift truck can only reverse after coming to a complete stop, and vice versa.

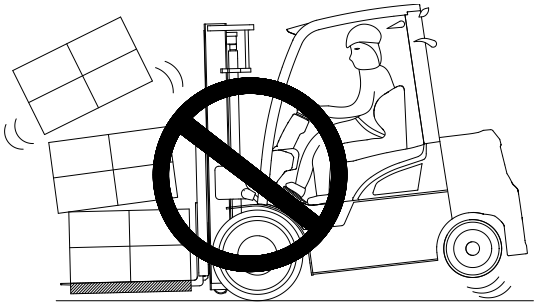
30.Select proper attachments and tools according to the shapes and materials of cargo loaded.

Do not hang ropes on the forks or attachments to lift cargo because the rope may slip; if necessary, a person with lifting operation

qualifications should lift cargo with a lifting hook or a boom.

> ⚠ CAUTION
>
> - Be careful not to let the forks touch the road surface, to avoid damaging the fork tip and road surface.

31.Know the load curves of the forklift truck and attachments, and do not overload.



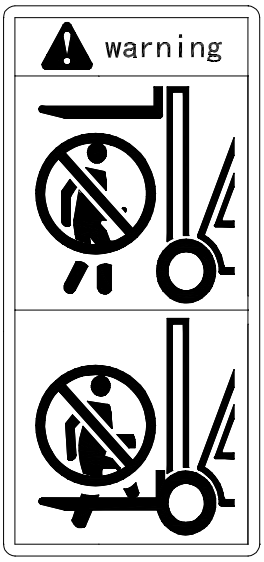
32.DO NOT use people as additional counterweights. It is quite dangerous.

33.Various attachments are provided from Manufacturer for the user, such as rotating clamps, flat holding clamps, side shift forks, and booms, which are to be used exclusively. If attachments are required to be refitted, the permission of the manufacturer must be obtained. Do not refit your attachments without permission.

34.The overhead guard can protect you from being hit by falling cargo. The load backrest ensures the stable loading of cargo. Forklifts without overhead guards and load backrests are not permitted.

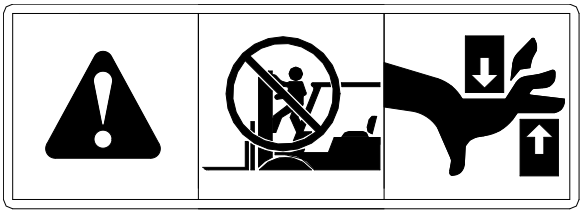
35.Do not stand or walk under the forks or attachments.

Do not stand on the fork.

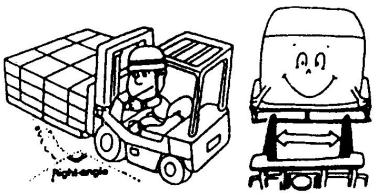


36.Do not place your head or body between the mast and the overhead guard. You may be injured if your head or body is trapped.

Do not place your hands between the inner mast and the outer mast.

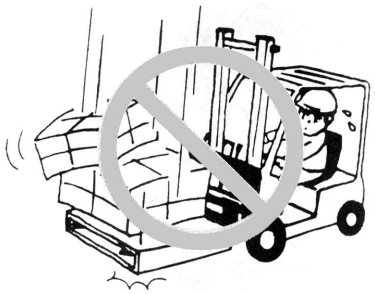


37.Enter the area from the front and carefully insert the forks into the pallet when taking cargo from the stack.



38.Do not lift cargo at high speed. cargo should be fixed reliably before lifting the fork.

Pause before lifting cargo and lift only after confirming there are no obstacles.

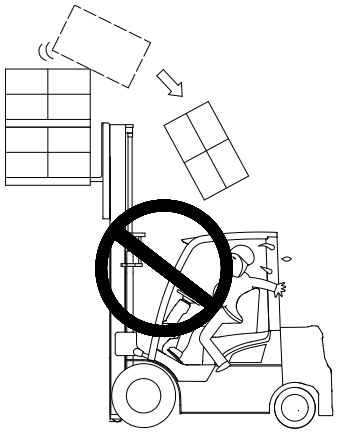


39.Ensure that cargo is tied firmly and placed flat on the two forks; do not lift cargo with a single fork.

For forklift trucks with attachments (like flat holding clamps), cargo should be tied firmly and clamped; the control valve control lever should then be pulled into place.

40. Do not lift cargo when the forklift truck is on a slope and avoid loading and unloading operations on the ramp.

41.The stacking height of cargo should not exceed that of the load backrest; if it cannot be avoided, the cargo should be fixed firmly. Please drive in reverse or under guidance when handling large cargo obstructing visibility.



42.Reduce the forward tilt angle as much as possible when stacking for unloading; when the height of cargo is slightly higher or lower than that of the stacking layer, cargo can tilt forward.

When stacking at height and the distance to the ground is 15cm-20cm, the mast should be vertical and then lifted; be careful to not tilt the mast when the cargo is lifted.

When picking up goods at height, insert the fork into the pallet, slowly lift, back up and then descend, lower the rear mast and tilt it backward. Never tilt the mast when the goods are at height.

43.Do not tow a forklift truck with a faulty engine, abnormal steering system or damaged brake system.

Obey traffic rules when towing a forklift truck on the highway.

44.Wear overalls and other personal safety protective devices, such as earplugs, safety hat, goggles, dust mask, safety shoes, anti-static clothing etc. at work as appropriate; do not wear a tie or attachments for your own safety.

45.There are warnings and operation methods on the truck labels. Please operate according to the directions of the manual and truck labels.

Check labels, signs and marks, and replace them if they are damaged or missing.

46.The workplace should be provided with a fire extinguisher. The user can choose to provide a fire extinguisher for the truck, which is generally installed on the rear leg of the safety frame for easy access.

Drivers and managers should be familiar with the position and usage method of the fire extinguishers.

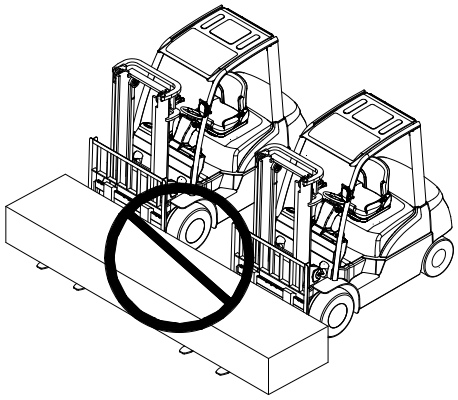
47.Use a pallet when carrying small goods instead of the forks.

48.HANGCHA provide users with various types of attachments, such as rotating clamps, flat

clamps, side shift forks, and lifting arms, which are designed for specific purposes. Any modification of attachments must be authorized by the manufacturer. Self-modification of attachments is strictly prohibited.

49.Do not look at the mobile phone, not wear radio or music headphones while operating forklift truck.

50.It is strictly prohibited to use two or more forklifts to jointly transport the same object, as this can easily lead to the forklifts overturning or tipping over, potentially causing personal injuries or fatalities.



51.The differential lock should only be used in severe road conditions or extreme situations. Using it for extended periods during normal driving can cause serious damage to the forklift's tires, drive axle, and other components. Therefore, please press the differential lock switch upwards during normal driving.

52.The differential lock switch must only be operated when the vehicle is stationary.

53.When operating a 4WD rough terrain forklift truck, the 4WD mode should only be used in severe road conditions or extreme situations. Please use 2WD mode for normal driving.

54.When turning on roads, gravel, snow, rain, or ice surfaces, please switch to 2WD mode and reduce your speed.

55.The load being transported must not exceed the length of the fork.

3 Special safety rules for high-voltage electric forklift

The safety precautions and safety operating procedures related to high voltage constitute extremely important safety rules. And you and relevant personnel read the following again:

-Safety precautions for high voltage;

-Safe operating procedures.

> **WARNING**
>
> - The inspection and maintenance of high-voltage parts shall be subject to special training on high-voltage electrical knowledge and obtain corresponding certificates. The inspection and maintenance of lithium batteries must be completed by professional manufacturers.

1.The high-voltage electric forklift has a maximum DC voltage of 317 V, which provides relatively large electric energy during operation. The connecting wires of the high voltage part are orange, and there are warning signs on the high voltage parts.

Do not touch the high-voltage components at will, otherwise there is a danger of personal injury or death due to electric shock. For high-voltage components, see the front or the electrical part of the maintenance manual.

2.Inspection or maintenance personnel should wear insulating shoes; wear 1000V insulated gloves to check whether the gloves are damaged or aging, otherwise they must not be used. It is forbidden to directly contact the high voltage part without wearing gloves.



3.Dry insulating pads should be laid on the lower part of the truck body and the standing parts of maintenance personnel.



4.Place a warning triangle "Danger of touching during high-voltage operation".

5.Inspection and maintenance personnel are not allowed to carry or wear metal objects.

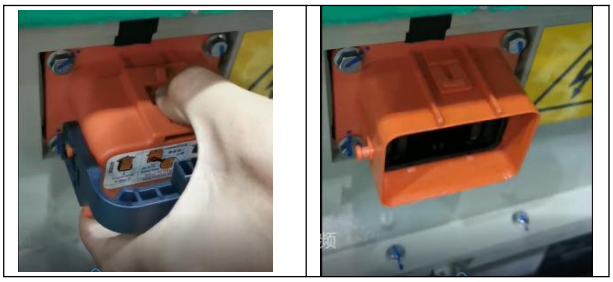
6.First confirm that there is no water (water accumulation, water droplets) in the ground and vehicle body. It is not allowed to work in a humid environment. Never perform high-voltage work when hands are wet, and do not work with wet high voltage parts. When the ground or surrounding humidity is too high, the operation should be stopped.

7.Dry powder fire extinguishers should be installed in the work area. Do not use other fire extinguishers.

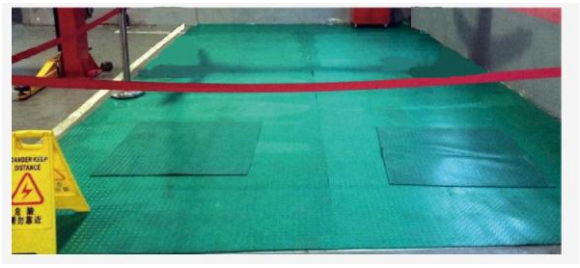
8.Prepare the necessary maintenance tools, and the maintenance tools are insulated.



9.Before performing any maintenance, cut off the power supply of the high-voltage system, unplug the MSD maintenance switch from the lithium battery main box and wait 15~20 minutes for the high voltage system to be powered off.



10.Before maintenance work, please take safety isolation measures (use the warning fence to isolate), and place high-voltage warning signs to warn relevant personnel and avoid safety accidents.



11.Before repairing high-voltage components, connect the body with the ground wire to the ground wire of the dedicated repair station for the electric forklift.

12.High-voltage components and storage batteries are carried out by Hangcha or authorized institutions and personnel with special training (different from ordinary forklift training).

13.When repairing high-voltage battery packs with electrolyte leakage, you must wear protective glasses to prevent electrolyte from splashing into your eyes.

14.Before turning on the key switch of the vehicle, pay attention to confirm whether there are people performing high-voltage maintenance operations to avoid accidents.

15.When examining and repairing the high-voltage wiring harness, any removed high-voltage wiring should be immediately wrapped and insulated with green tape.

16.Do not touch the live parts of the high-voltage wiring harness connector with your fingers to avoid electric shock. In addition, prevent small metal tools or iron bars from contacting the live parts of the connector.

17.In the event of an abnormal accident or fire, the operator should immediately cut off the high-voltage circuit, and other personnel should immediately use a fire extinguisher to fight the fire (use dry powder fire extinguishers, water-based fire extinguishers are strictly prohibited).

18.When the battery leaks electrolyte, do not touch it with your hands. The electrolyte needs to be diluted with calcium gluconate ointment, not with water.

19.Pay attention to the colors or markings used for high-voltage components and area prompts during operation.

20.It is forbidden to get hands, truck body, parts, or environment wet, otherwise no operation is allowed.

21.It is forbidden to park the vehicle in rain or damp environment.

IV Description of display and operating elements

1 Operating elements

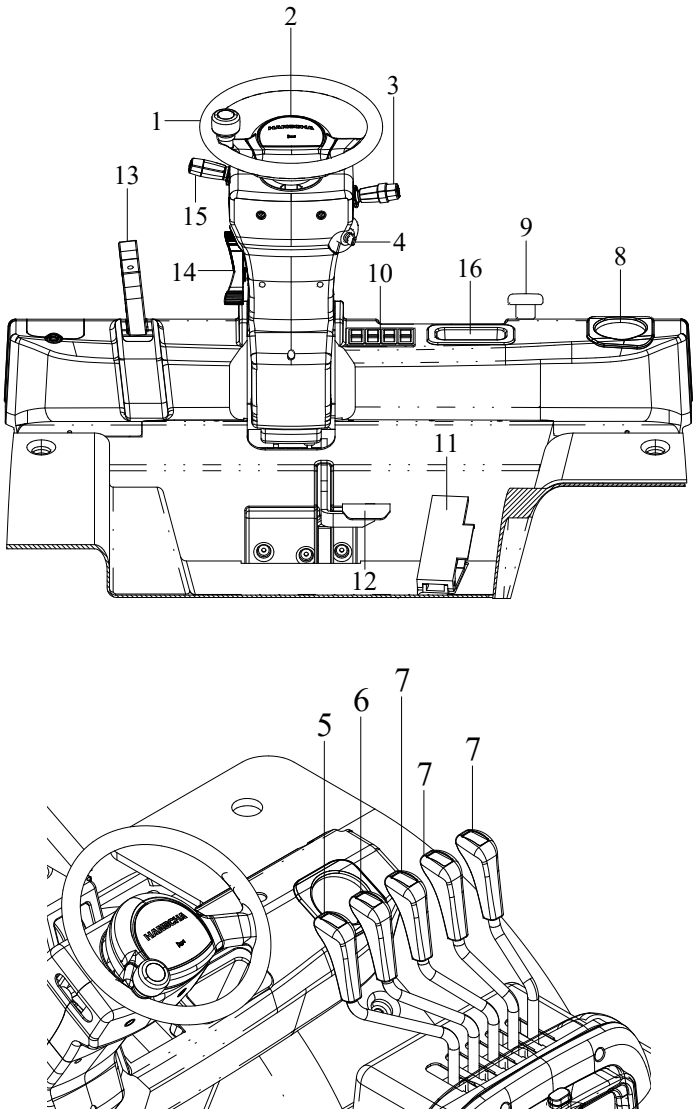
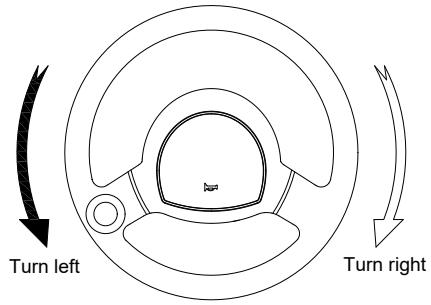


Fig.26 Instrument panel and operating elements

1.Steering wheel	2.Horn	3.Light switch	4.Key switch
5.Lift lever	6.Tilt lever	7.Attachment lever	8.Cup holder
9.Emergency stop button	10.Rocker switch	11.Accelerator pedal	12.Brake pedal
13.Parking brake handle	14.Steering wheel adjustment switch	15.Reversing switch	16.Instrument panel

Steering wheel[1]



Control truck direction.

When the steering wheel is turned right, the forklift will turn to the right; when the steering wheel is turned left, the forklift will turn to the left. The rear end of the forklift swings out when turning.

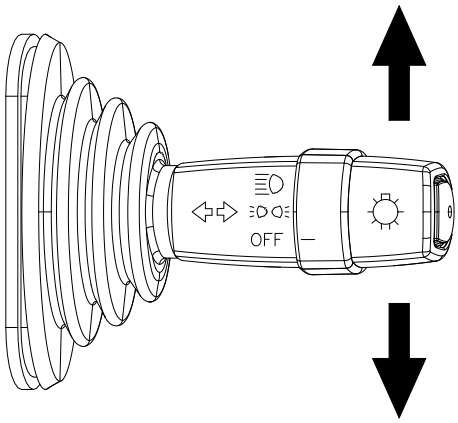
WARNING

- Forklift truck adopts a fully hydraulic steering system. Therefore, steering will be impaired when the oil pump motor stops running. Immediately restart the oil pump motor before turning again.

Horn[2]

Press the horn button on the center of the steering wheel and horn will sound

Light switch[3] （ Turn signal, light combination switch）



The combination lights include turn signal lights and light switch.

Turn signal switch： Turn signal: Push or pull this switch, the corresponding left and right turn signal light flash.

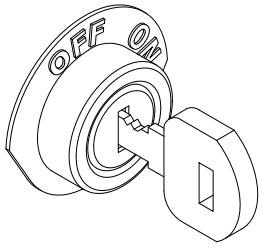
Push Forward	⇦	Left turn light flashes
Neutral		Lamp goes off
Pull back	⇨	Right turn light flashes

CAUTION

- Turn signal switch can not return to neutral position automatically, and should reset manually.

Light Combination Switch: This is a rotary switch. To turn on the headlights or front sidelights, rotate this switch and align the position line on the switch handle with the corresponding mark on the switch body.

Key switch[4]



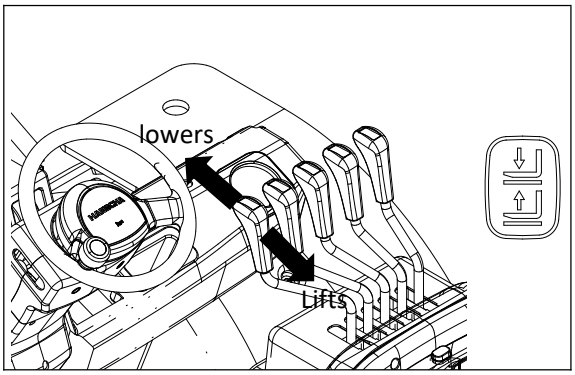
Connect and interrupt control current. Remove the key and make sure the truck does not move suddenly.

The key switch has two positions: ON and OFF. First set the direction lever to the neutral position, take your foot off the accelerator pedal, then turn the key clockwise to the"ON" position.

CAUTION

- If the direction lever is not in neutral or the accelerator pedal is depressed, the forklift will not start when the key switch is turned to ON.
- At this point a fault code will be displayed, which is perfectly normal.
- Return the direction lever to the neutral position and take your foot off the accelerator pedal before attempting to start the forklift.
- The fault code will then disappear.
- When leaving the forklift or stopping the forklift for a long time, disconnect the power supply and remove the key to prevent the forklift from losing power.

Lifting lever[5]

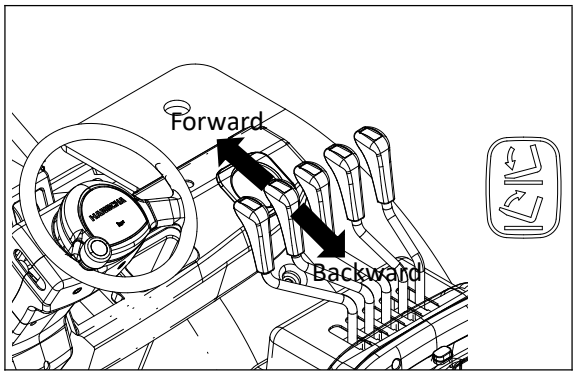


Lifts / lowers the forks.

Push forward——lower； Pull——Lifts

Lifting speed can be controlled by tilt backwards angle of lever and the lowering speed can be controlled by tilt forwards angle of the lever.

Tilting lever[6]



Tilts the forks forward / backward.

Push forward——forward; Pull——backward

The tilt speed can be controlled by tilt angle of the lever.

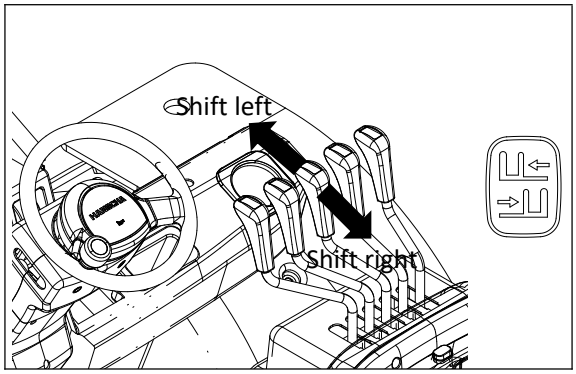
DANGER

- When the fork or attachment is raised to a high position, operating the tilt control lever will affect the longitudinal stability of the forklift and may even cause it to tip over.

CAUTION

- The tilt lock mechanism built in the hydraulic control valve does not allow the mast to tilt forwards while the electricity is being shut down even if the tilt lever is pushed forwards.

Attachment(sideshift) lever[7]



Shift left / shift right the forks

Push forward——Shift left；Pull——shift right

The side shift speed is determined by the tilt angle of the handle and the throttle control.

Attachment lever

It can be a side shift lever, or a rotary joystick or other attachment lever, depending on the situation.

> **DANGER**
>
> - When the fork or attachment is in a raised position, operating the attachment control lever can affect the lateral and longitudinal stability of the forklift, and may even cause the forklift to tip over.

Attachment lever

It can be a lateral control lever, a rotary control lever, or another type of attachment control lever, depending on the specific situation.

> **DANGER**
>
> - When the fork or attachment is in a raised position, operating the attachment control lever can affect the lateral and longitudinal stability of the forklift, and may even cause the forklift to tip over.

Cup holder [8]

It is in the right side of the meter rack for driver placing the cup.

Emergency stop button [9]

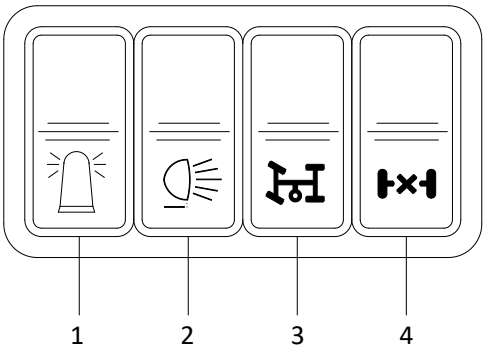
Turn the power on or off.

In case of emergency, press the red mushroom button to cut off the main power of the vehicle. No walking, turning, lifting.

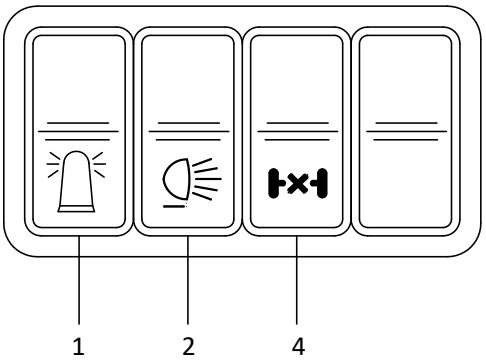
> **CAUTION**
>
> - Please don't use the emergency disconnect switch to substitute the function of key switch

Rocker switch[10]

4WD：



2WD：



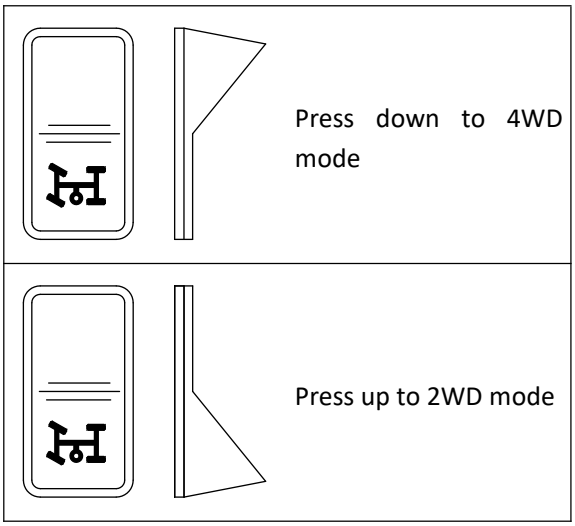
1： Alarm light switch：

Press down, the alarm light will flash; press up, the alarm light will be off.

2： Rear headlight switch：

Press down, the rear headlight will be on; press up, the rear headlight will be off.

3： 2WD/4WD exchange switch (only 4WD):



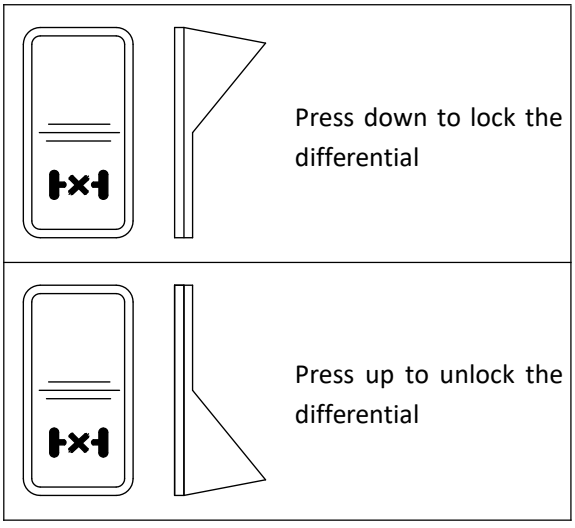
Press down to switch to 4WD; press up to switch to 2WD.

When the two wheels on the front axle of the forklift are trapped and slipping, switching to 4WD will help the forklift get out of trouble.

CAUTION

- 4WD is only used in bad road conditions or extreme conditions, please use 2WD for normal driving.
- Please use 2WD when the forklift turns on roads, gravel, rain and snow, and ice.
- Before switching the 2WD/4WD mode, please ensure that the forklift is in a stationary state

4： Differential locker switch：

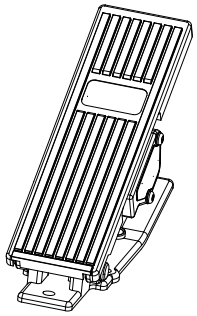


The differential locker is a locking mechanism installed on the center differential. Its function is to improve the passing capacity of the forklift in bad road conditions or extreme conditions, that is, when a wheel on the front axle of the forklift is idling, the differential lock can quickly lock the differential, so that the left and right wheels become rigidly connected. In this way, most of the torque or even all the torque can be transmitted to the non-slip wheel, and its adhesion can be fully utilized to generate enough traction, so that the forklift can get out of trouble and continue driving.

CAUTION

- The differential lock is only used in bad road conditions or extreme conditions, and it will cause serious damage to the vehicle's tires, drive axle and other components if it is used for a long time during normal driving. Therefore, please press the differential lock switch up during normal driving.
- The differential lock switch must be switched in the parking state.
- Please unlock the differential lock when turning.

Accelerator pedal[11]



Stepless regulation for the driving speed of

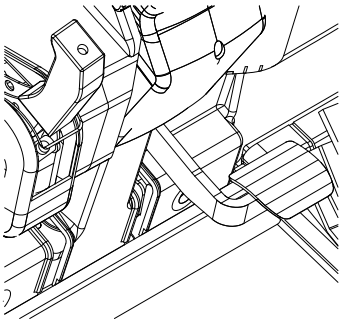
the forklift.

Slowly depress the accelerator pedal, the drive motor will start running and the forklift will move off. According to the pedaling force on the pedal, the running speed can be adjusted steplessly.

> **CAUTION**
>
> - Loosen the accelerator pedal when truck is working, truck can make soft brake.

> **WARNING**
>
> - Before open the key switch to press the accelerator pedal, the more function digital indicator shall show alarm information. Then you must release the accelerator pedal.

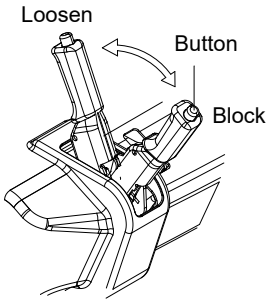
Brake pedal[12]



When the brake pedal is depressed, the vehicle decelerates, the vehicle is stepped on, and the vehicle stops. Release the pedal and the vehicle is running.

> **WARNING**
>
> - Prevent sudden braking. Rapid braking can easily lead to vehicle tipping or cargo falling, causing a safety accident.

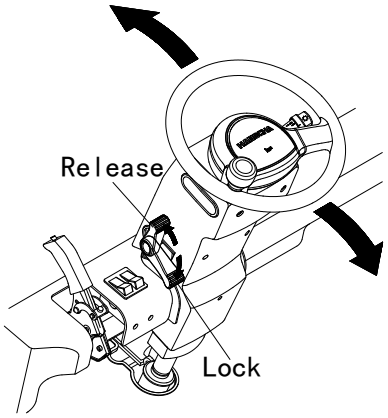
Parking brake handle[13]



Pull the handle back, that is, tighten; push the handle forward to relax. The handle must be tightened before the operator leaves the truck.

> **CAUTION**
>
> - When the vehicle's brake system fails or an emergency occurs, the vehicle can be braked by tightening the handle. It is strictly forbidden to use a hand brake to achieve the service brake.

Steering wheel tilt lever[14]



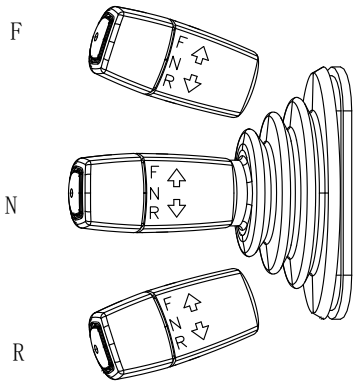
The position of the steering wheel can be adjusted. To perform adjustment, pull the adjusting lever installed on the left side of the steering hub column, move the steering wheel to the desired position, and push down the adjusting lever to lock.

> **CAUTION**
>
> - Adjust the steering wheel tilt angle only

after the forklift truck has stopped and the hand brake is engaged.

- Forcibly move the steering wheel up and down to ensure that it has been locked after adjusting.

Reversing lever[15]



F	Forward file
N	Neutral
R	Reverse gear

It is installed on the left of the steering column.

Before changing the direction of travel, press the brake pedal to stop the car completely, then push the handle forward to the forward gear. To retreat, depress the brake pedal to slow down the speed and push the joystick back to the reverse gear.

⚠ CAUTION

- The truck can only be started if the joystick is in the neutral position.

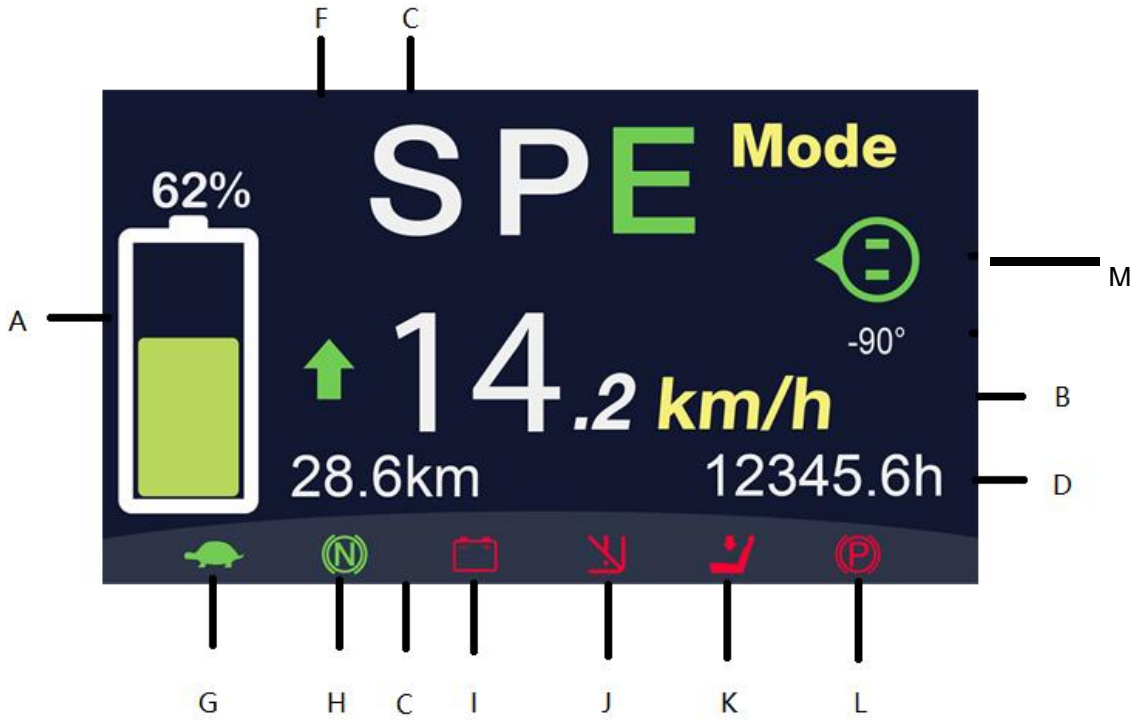
2 Multi-function display

This is a vehicle-mounted instrument based on CAN and wireless communication, with input voltage range: 9~32V, built-in anti-reverse circuit and a 4-inch TFT color screen with a resolution of 800*480, which can display vehicle speed, working time, battery power, display in Chinese and English, password protection, fault code and other information. 4 function buttons can view and set electronic control parameters. IP65 protection level can adapt to a variety of complex environments. It supports Chinese and English language switching.



Icon	Name	Function
▲ / +	Up key / + key	Page up in the monitoring menu; Select the item to prepare to set the parameter upwards in the setting menu; Increase the value of the parameter (ones place, tens place, hundreds place, thousands place, ten thousand place), and change from 0 to 9 in the parameter modification interface; No function in the main interface;
▼/SPE	Down key/mode	Page down in the monitoring menu; Select the item of setting parameter downwards in the setting menu; Move the numerical cursor in the parameter modification interface; Switch between S, P and E modes in the main interface;
OK	Enter key	Confirm the current operation; Enter the menu mode in the main interface;
⮌	Cancel key	Cancel the current content or return to the previous menu; No function in the main interface;

2.1 Main display interface



A	Battery capacity display	G	Turtle speed icon indicator
B	Travel speed display	H	Neutral indicator
C	Operating mode display	I	Battery low capacity indicator
D	Vehicle running hours display	J	Lifting low speed indicator
E	Mileage display	K	Seat indicator
F	Forward and backward indicator	L	Parking indicator
M	Steering angle		

Battery capacity display[A]



It displays the remaining battery capacity.

As shown in the figure above, when the power is less than 20%, the battery icon under the battery will be displayed in red, prompting to charge; please charge in time, otherwise the life of the battery will be greatly shortened.

> CAUTION
>
> - Charging in time is very important, otherwise it will affect the lift-span of the lithium battery!

Ravel speed display[B]



Normal work, display the truck travel speed.with an accuracy of 0.1km/h, which can be switched to MPH through the local setting of the instrument.

Operating mode display[C]



As the diagram shows

S mode is super mode, thus the truck's acceleration, deceleration rate, max climbing gradient and so on is much higher. It is applied for transporting mass of good in short time and climbing big gradient slop， but it costs more energy， so the mode will not be used in normal state except emergency.

P mode is power mode. All kinds of index are lower than that of super mode. It is applied for the case of long distance transporting and needing higher power or speed.

E mode is economical mode. All the parameters are optimized. Working in this mode can save power so it is applied for a long time work after charging, and it is suggested to work in this mode in normal work-time.

> CAUTION
>
> - The switch key still retains the mode before turning off the key.

Vehicle running hours display[D]



When the vehicle's key switch is turned on, get the controller's power-on hour meter, with a minimum resolution of 0.1 hour.

Mileage display [E]



The figure shows the current accumulated mileage of the vehicle with an accuracy of 0.1km.

Forward and backward indicator[F]



When the forward gear switch is closed, the "up arrow" is displayed; when the backward gear switch is closed, the "down arrow" is displayed.

Turtle speed indicator[G]



When the vehicle is running in the turtle speed mode, this icon lights up.

Neutral indicator[H]



When in neutral, this icon lights up

Battery low capacity indicator[I]



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

Lifting low speed indicator[L]



When there is 10% power, the indicator is on, and the mast lifting speed drops, to remind user to charge the battery as soon as possible.

Seat switch indicator[K]



When operator leaves the seat, the light will be on, and the truck will be unable to travel or lift. This function needs the seat to equip with seat switch (optional).

Parking brake applied indicator[L]



When parking brake applied, the light up.

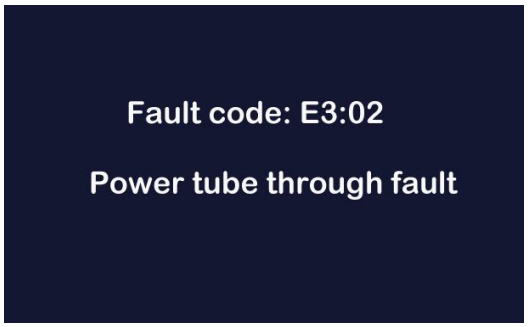
Steering angle[M]



Displays the steering angle of the rear wheels, and the arrow represents the direction in which the steering wheels are traveling.

2.2 Fault interface

When the vehicle fails, the instrument will automatically enter the failure interface. According to the current controller fault code received, the fault code and the corresponding fault name are displayed。When a fault occurs, skip to the fault interface. Any key can skip to the main interface, which can be eliminated for 6 seconds. If there is still a fault, it will return to the fault interface. The fault interface is displayed as follows:



2.3 Password interface

In the main interface, press the OK key to enter the password interface;

In the password interface, do not enter a password or enter a non-administrator password, and press the OK key to enter the operator interface; in the password interface, enter the correct administrator password, and press the OK key to enter the administrator interface; as shown in the figure below :



Non-administrator's arbitrary password, press OK to enter the operator menu interface, you can view the switch value, the operating temperature, and the operating current parameters of the vehicle, and you can also set the local language of the instrument and the unit of speed.

Enter the administrator password to enter the administrator menu content interface, in addition to the operator's function, you can also set the performance of the vehicle

When the instrument is in the monitoring interface, press the return key, and the instrument returns to the main menu interface display.

2.4 Introduction to menu structure

Menu		
No.	Menu name	Permission
1	Front drive traction monitoring	Operator, administrator
2	Rear drive traction monitoring	Operator, administrator
3	Main oil pump monitoring	Operator, administrator
4	Slave oil pump monitoring	Operator, administrator
5	Bms monitoring	Operator, administrator
6	Dc-dc monitoring	Operator, administrator
7	Vcu monitoring	Operator, administrator
8	Local settings	Operator, administrator
9	Other settings	Administrator
10	Parameter setting	Administrator

Monitor menu structure

Monitoring entries		Represent	Remarks
1、Front drive traction monitoring----------(Operator, administrator) Monitoring value, cannot be changed			
1	Travel motor command speed Abbreviation：F.T.MotorCmdSpeed		
2	Travel motor speed		
3	Travel motor temperature		
4	Travel controller temperature		
5	Travel controller DC voltage		
6	Travel controller DC current		
7	Travel motor current		
8	Travel work hour		
2、Rear drive traction monitoring ----------(Operator, administrator) Monitoring value,cannot be changed			
1	Travel motor command speed R.T.MotorCmdSpeed		
2	Travel motor speed		
3	Travel motor temperature		
4	Travel controller temperature		
5	Travel controller DC voltage		

Monitoring entries		Represent	Remarks
6	Travel controller DC current		
7	Travel motor current		
8	Travel work hour		
3、Main oil pump monitoring----------(Operator, administrator) Monitoring value, cannot be changed			
1	Main pump motor command speed		
2	Main pump motor speed		
3	Main pump motor temperature		
4	Main pump controller temperature		
5	Main pump controller DC voltage		
6	Main pump controller DC current		
7	Main pump motor current		
8	Main pump work hour		
4、Slave oil pump monitoring ----------(Operator, administrator) Monitoring value, cannot be changed			
1	Auxiliary Pump motor command speed		
2	Auxiliary Pump motor speed		
3	Auxiliary Pump motor temperature		
4	Auxiliary Pump controller temperature		
5	Auxiliary Pump controller DC voltage		
6	Auxiliary Pump controller DC current		
7	Auxiliary Pump motor current		
8	Auxiliary Pump work hour		
5、BMS monitoring----------(Operator, administrator) Monitoring value, cannot be changed			
1	Battery voltage		
2	Battery current		
3	Max discharge current		
4	Max regen current		
5	Max cell voltage		
6	Min cell voltage		
7	Cell voltage difference		
8	Max cell temperature		
9	Min cell temperature		

Monitoring entries		Represent	Remarks
10	Cell temperature difference		
11	BAT Heating	Show either 0 or 1	
12	Remaining time	Unit:Min	
6、DC-DC monitoring----------(Operator, administrator) Monitoring value, cannot be changed			
1	DCDC output current		
2	DCDC input current		
3	DCDC output voltage		
4	DCDC input voltage		
5	DCDC temperature		
7、VCU monitoring---------- -(Operator, administrator) Monitoring value, cannot be changed			
1	Key switch	Display 0: Invalid, 1: valid	
2	Charge signal	Display 0: Invalid, 1: valid	
3	Forward switch	Display 0: Invalid, 1: valid	
4	Reverse switch	Display 0: Invalid, 1: valid	
5	Pedal switch	Display 0: Invalid, 1: valid	
6	HVIL switch	Display 0: Invalid, 1: valid	
7	AC switch	Display 0: Invalid, 1: valid	
8	Handbrake switch	Display 0: Invalid, 1: valid	
9	Brake switch	Display 0: Invalid, 1: valid	
10	Tilt switch	Display 0: Invalid, 1: valid	
11	Shift switch	Display 0: Invalid, 1: valid	
12	Attachment switch	Display 0: Invalid, 1: valid	
13	Seat switch	Display 0: Invalid, 1: valid	
14	Front drive Travel MCU wake up	Display 0: Invalid, 1: valid	
15	Front drive travel MCU wake up	Display 0: Invalid, 1: valid	
16	Main MCU wake up	Display 0: Invalid, 1: valid	
17	Auxiliary Pump MCU wake up	Display 0: Invalid, 1: valid	
18	DC enable	Display 0: Invalid, 1: valid	
19	Cooling fan relay low	Display 0: Invalid, 1: valid	
20	Cooling fan relay high	Display 0: Invalid, 1: valid	
21	Cooling fan PWM speed control duty cycle	%	
22	Main Pump relay	Display 0: Invalid, 1: valid	

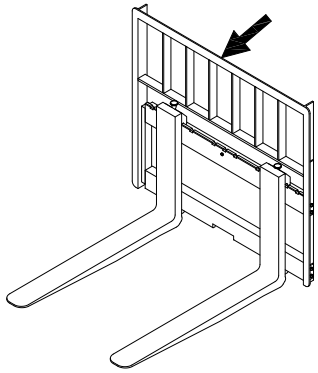
Monitoring entries		Represent	Remarks
23	Auxiliary Pump relay	Display 0: Invalid, 1: valid	
24	Travel relay	Display 0: Invalid, 1: valid	
25	Rear drive travel relay	Display 0: Invalid, 1: valid	
26	AC relay	Display 0: Invalid, 1: valid	
27	Water pump relay	Display 0: Invalid, 1: valid	
28	Lift signal	0-5V	
29	Turn signal	0-5V	
30	Accelerator opening		
31	Accelerator signal	0-5V	
32	4WD switch	Display 0: Invalid, 1: valid	
33	Pressure switch	Display 0: Invalid, 1: valid	
34	Seat belt switch	Display 0: Invalid, 1: valid	
8、Local settings----------(Operator, administrator)			
1	Language Set	language choice	
2	Speed Units	Speed units km/h and MPH switch with each other	
3	Version		
9、Other setting----------（Administrator）			
1	Set Admin Password		
2	Reset Mileage		
10、Other setting----------(Administrator)			
1	Forward max speed	rpm	
2	Reverse max speed	rpm	
3	P mode max speed	%	
4	E mode max speed	%	
5	Max turn speed	%	
6	Steerang.dead band	°	
7	P mode lift speed	%	
8	E mode lift speed	%	
9	Lift speed no-load	rpm	
10	Tilt Speed	rpm	
11	Shift speed	rpm	
12	Attachment Speed	rpm	

Monitoring entries		Represent	Remarks
13	Steer speed	rpm	
14	Lift current.THR	A	
15	Lift speed loaded	rpm	
16	Steer delay	ms	
17	Throttle pot min	mV	
18	Throttle pot max	mV	
19	Steer pot left	mV	
20	Steer pot right	mV	
21	Steer pot zero	mV	
22	Steer zero threshold	mV	
23	Lift pot min	mV	
24	Lift pot max	mV	
25	Clear VCU operating time	h	
26	Factory reset		

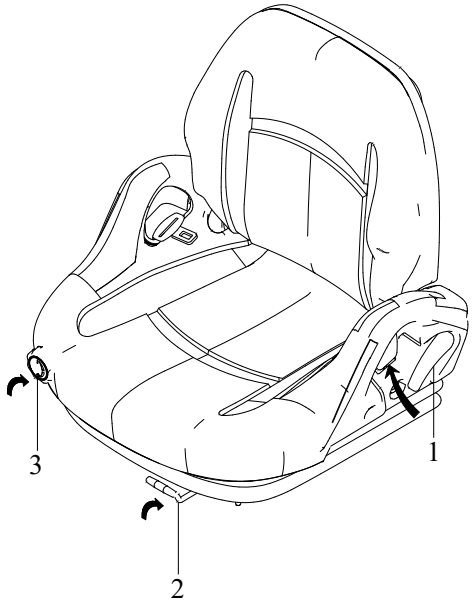
3 Seats, body and other optional accessories

3.1 Load backrest

The load backrest ensures the stable loading of cargo. The forklift truck must not be operated without a load backrest.



3.2 Driver's seat



1: Backrest angle adjustment handle

2: Seat front and rear adjustment handle

3: Seat weight adjustment knob

Seat back adjusting button

Seat back adjusting button is installed under the seat left armrest.

To adjust seat back position, press this button and press still, meanwhile go forward or backward the seat to needed place.

Then release the button and the seat back position is locked.

Before using the truck, make sure the seat back is locked.

Seat front and rear adjustment handle

The seat adjustment lever device is on the left front side of the seat.

To adjust the seat position, move the adjustment lever in the direction of the arrow and hold it still, while the seat slides forward or backward to the desired position.

The adjustment lever is then released and the seat position is locked.

Before using the forklift, make sure the seat is locked securely.

Seat weight adjustment knob

According to the user's own weight, turn the knob clockwise (weight gain) or counterclockwise (weight loss) until the operator feels comfortable.

WARNING

- The ignition key switch must be turned off before adjusting the driver's seat.
- The seat position can be adjusted only when the forklift truck has stopped.
- For safety reasons, do not adjust the driver's seat when driving.
- For front and rear adjustment and backrest angle adjustment, the handle should be

pulled into place to ensure that the structure is completely disengaged before adjustment.

- After adjustment, the levers should return to the locked position. Ensure that all the components are locked securely before using the forklift truck.

3.3 Seat belt

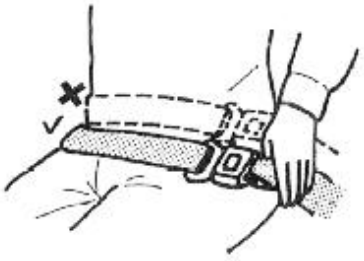
Fasten the seat belt

An auxiliary action is required before pulling out the seat belt which may require some familiarization.

One type of driver's seat: You need to press the white round button (with the text "press to release") with one hand, and then the seat belt can be pulled out with the other hand. Then, the belt can be inserted into the socket on the other side of the driver's seat.

You may also encounter another kind of driver's seat: The driver's seat with a rotating seat belt box. When the seat belt box is rotated forward, the seat belt cannot be pulled out; when the box is rotated backward, the seat belt can be pulled out and inserted into the socket on the other side of the driver's seat; the seat belt box has to be rotated forward again to return to the normal working position.

Your back and waist should be as close to the driver's seat as possible when fastening the seat belt. Do not fasten the seat belt at the abdomen.

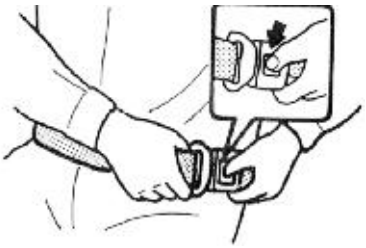


Do not tilt the backrest too much; otherwise, the seat belt will not be extended correctly.

Do not knot or twist the belt.

Keep the seat belt fastened tightly during daily operation to protect yourself and reduce injury if the forklift rolls over.

Unfasten the seat belt



Press the red button (with the text "PRESS") on the socket with your left thumb to unfasten the seat belt.

Check the seat belt

Frequently check whether the bolt to fix the seat belt is secure. Do not press the seat belt on hard or fragile objects and do not rub the seat belt with sharp objects to avoid damage.

Do not disassemble components on the seat belt without permission. Visual inspections should be routinely conducted for belts that have been used frequently.

- Cutting or fraying;
- Wear or damage of metal parts, including the locating point;
- Buckle or retractor fault;

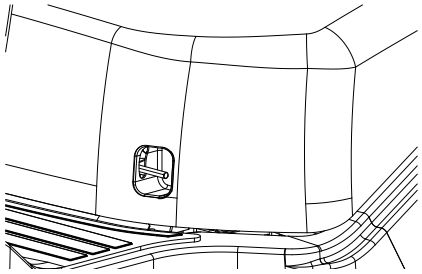
- Belt rips or tears.

If any abnormality is found, a new belt should be fitted immediately; the service life of the belt is 3 years; if any abnormality is found, the belt should be replaced in advance.

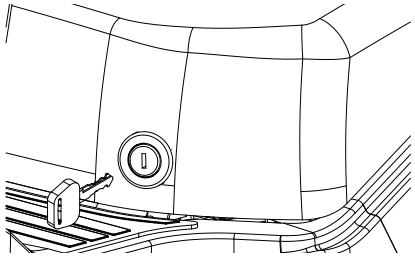
3.4 Overhead guard

The overhead guard protects the operator from falling objects. It must have sufficient impact strength. The forklift truck must not be used without an overhead guard.

3.5 Lock catch assembly

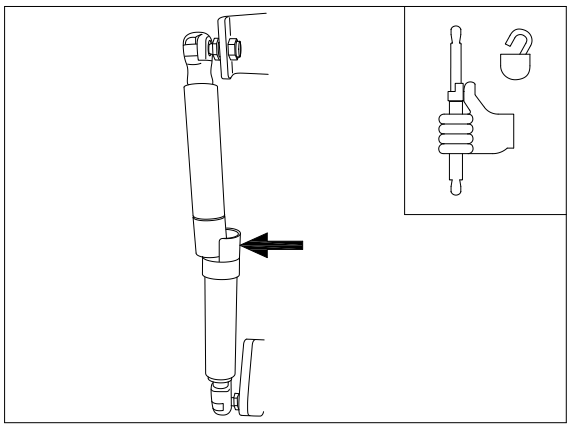


To avoid opening the hood at discretion, a snap close is set here. Open the snap close first then the hood can be open.



In order to prevent the hood from being opened without permission, the truck is provided with a lock and the hood can only be opened with a key.

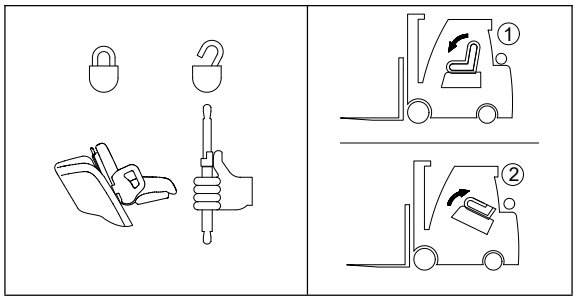
3.6 Air spring



When opening the cover, it is used to support the cover. When closing the cover, press the red button, meanwhile, press the cover hard and lock it with lock catch.。

3.7 Hood

The open hood is easy maintenance service. You can lift up the hood with little effort with help of inner hood gas spring force.



When it is closed, press the red button on the air spring pipe, then the lock will be released. Press the hood head, you can shut it down, and the hood is locked after you hear click sound.

Before opening the hood, the steering wheel is moved forward and the seat backrest is tilted forward.

After the hood is closed, the steering wheel and seat backrest return to their original positions.

WARNING

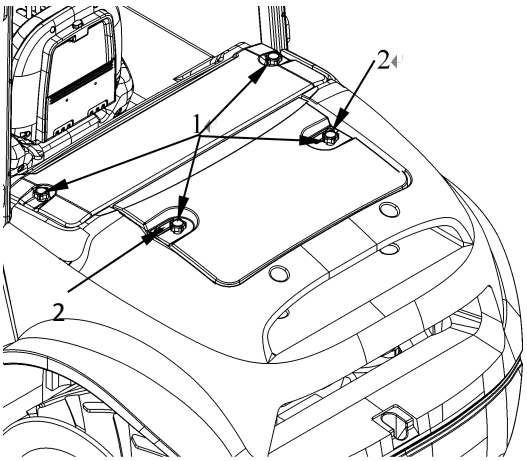
- When closing the hood, prevent the falling

hood from clamping your fingers.

- When servicing under the hood, be sure to turn off the key switch to prevent electric shock.However, in the case where the hands, feet, head, and body do not touch the components, in order to diagnose the fault by hearing, the key switch and the hood are allowed to open at this time.

3.8 Water tank cover plate

When the hood is closed, loosen the four fastening bolts indicated by the arrow 1, and then press the lever locks on the left and right ends to remove the water tank cover for checking the amount of coolant.

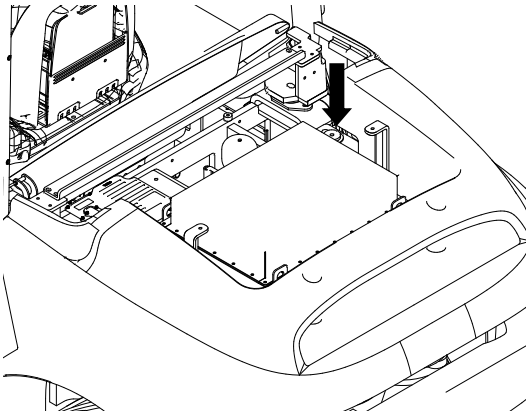


CAUTION

- Reinstall the water tank cover and tighten the bolts by hand.

3.9 Attached water tank

The attached water tank is located below the water tank cover, and it can be seen after opening the water tank cover.

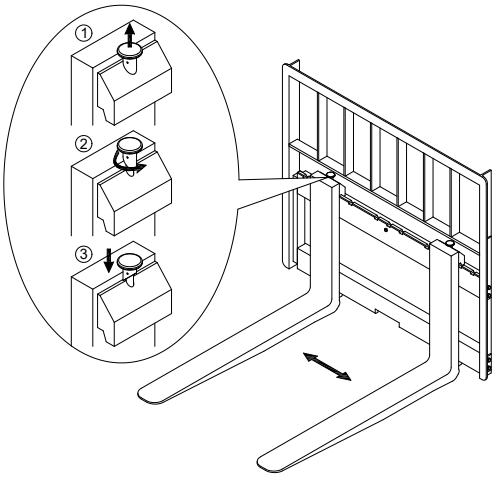


WARNING

- Before checking the attached tank, please unplug the MSD maintenance switch and wait for 15~20 minutes to let the high pressure system cut off completely.
- Do not open the tank cover when the coolant temperature is above 70°C. Press the cap slightly left to reduce the pressure in the tank.
- Do not wear gloves to open the water tank cover.
- Coolant is corrosive and toxic, once it comes into contact with skin and body, it should be rinsed off. Keep the antifreeze out reach of the children.

3.10 Fork locating pin

Fork locating pins are used for adjusting the fork space. Pull up it, turn 1800 and shift the forks to the desired position.

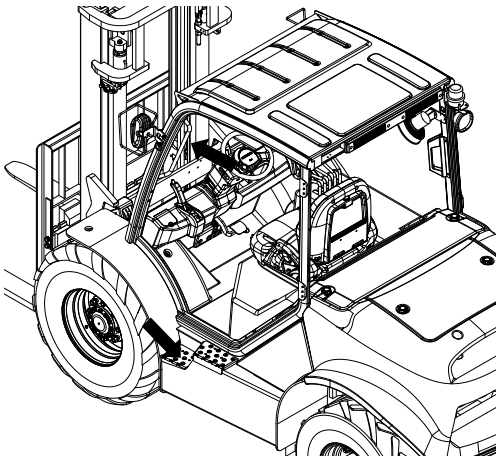


WARNING

- The forks should be set symmetrically to machine centerline and fork stoppers should always be locked.
- The lower beams of the fork carriage have an opening section to load or unload forks.
- Do not set the forks over the opening. Check the bolt at the middle of the fork carriage used to prevent fork load at the opening.

3.11 Pedal and handrail for getting on and off

There equips with pedal for getting on and off truck both side of the truck, handrails on left and right overhead guard brace. Please use handrails for safety when getting on and off truck.

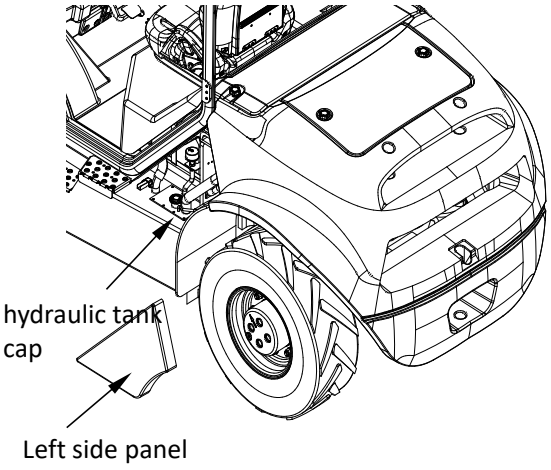


CAUTION

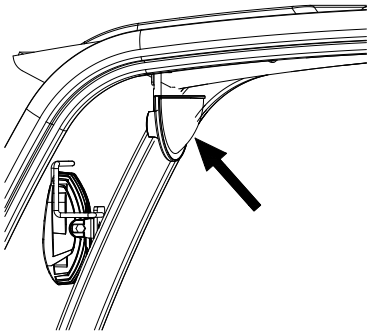
- The upper pedal is a decorative pedal, and it is forbidden to step on it when getting on and off the truck.

3.12 Hydraulic tank cap

The hydraulic tank cap is located on the left frame. When refueling, open the left panel, fill in clean hydraulic oil through the refueling port, and tighten the cover after refueling.

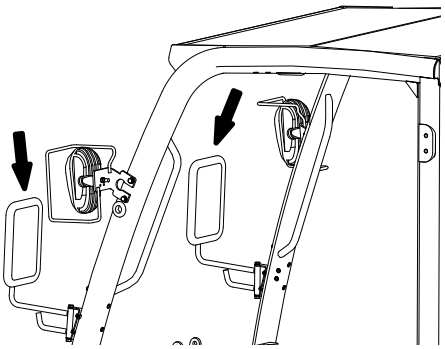


3.13 Rearview mirror



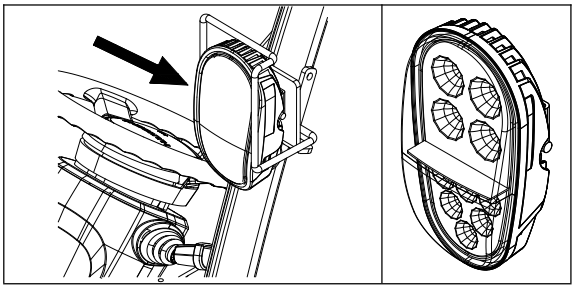
Rearview mirrors are installed on the upper right of the overhead guard, which are used to observe the rear of the vehicle or when reversing.

3.14 Left and right side mirrors [Optional]



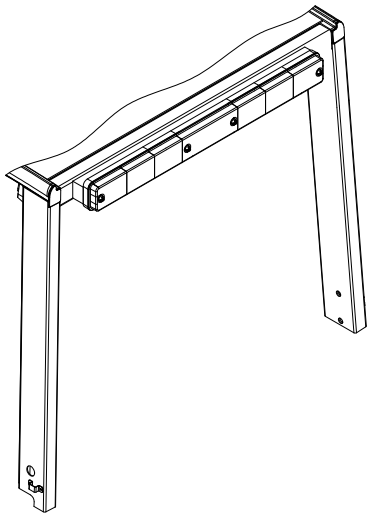
On both sides of the overhead guard frame, reflectors are installed for observing the rear of the vehicle or when reversing.

3.15 Headlamp



Two headlamps (integration of lighting lamp, turn signal lamp and width lamp) are installed on the front support of the overhead guard. Protect the lights from damage and wipe clean if dusty. Any damaged lights must be replaced.

3.16 Rear combination lights



The rear combination lights include turn signal lights, tail lights, brake lights and reversing lights. Protect the lights from damage and wipe clean if dusty. Any damaged lights must be replaced.

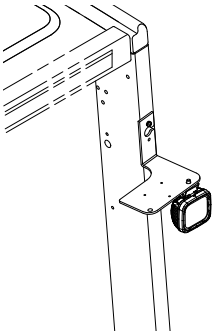
3.17 Fuse, relay

If fuse or relay is broken, replace with new one, see the figure below:

CAUTION

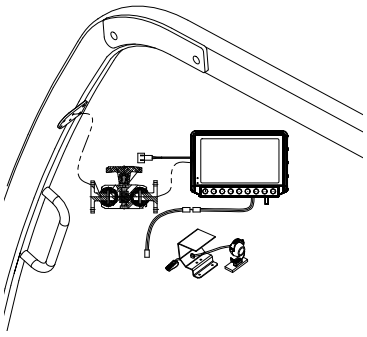
- If fuse is damaged, be sure to eliminate cause of problem before installing new fuses
- Never use fuse higher than specified rating.

3.18 Dual Rear Working Lights [Optional]



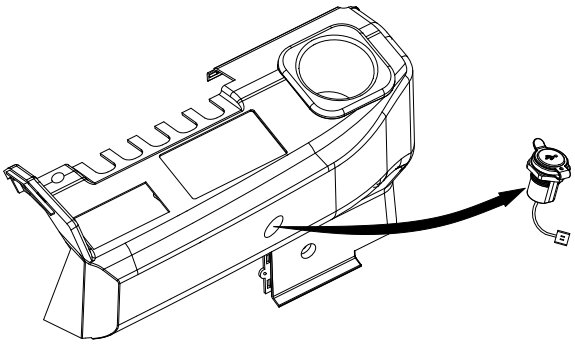
The dual rear work lights are mounted on the right rear support leg of the roof guard. They provide sufficient illumination for nighttime vehicle operation or reversing. Press the rear work light rocker switch on the instrument panel to turn on the dual rear work lights.

3.19 Rearview Camera System [Optional]



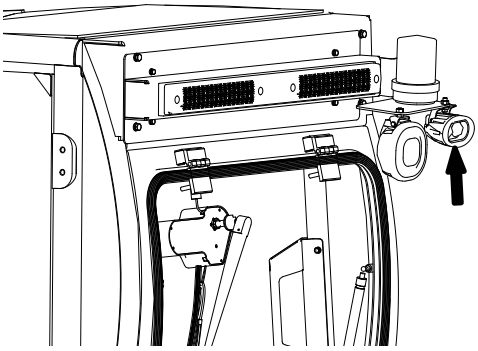
The reversing camera system consists of two main components: the camera and the display assembly. The camera is installed on the counterweight, while the display assembly is located on the right front support of the overhead guard. When the vehicle is in reverse, the camera transmits the road conditions behind the vehicle to the display. Press the (switch) button on the display to turn it on.

3.20 USB Charging Port [Optional]



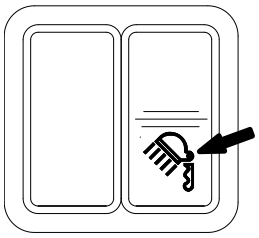
The USB charging port is installed on the right cover of the instrument panel, providing 5V/1A AC power output.

3.21 Rear blue light (optional)



The rear blue light has three configurations: one is controlled by a separate switch, one is controlled by the direction switch, and one is permanently on.

①controlled by a separate switch：



Press the toggle switch of the blue light on the right cover, and then the blue light turns on.

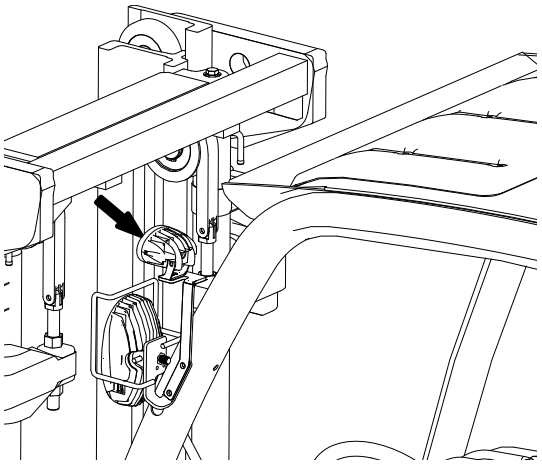
②controlled by the direction switch：

When the direction switch is in forward gear or neutral gear, the rear blue light turns off; when the direction switch is in reverse gear, the rear blue light turns on.

③permanently on：

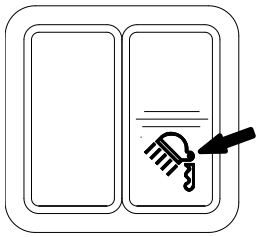
When the vehicle is powered on, the blue light automatically turns on, and when powered off, the blue light automatically turns off. There is no additional switch control.

3.22 Front blue light (optional)



The front blue light has three configurations: one is controlled by a separate switch, one is controlled by the direction switch, and one is permanently on.

①controlled by a separate switch：



Press the toggle switch of the blue light on the right cover, and then the blue light turns on.

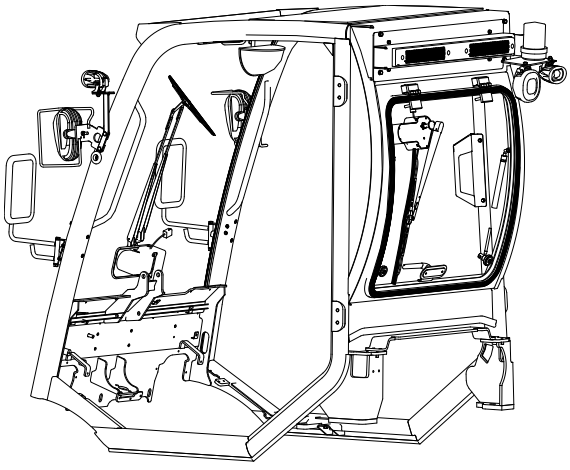
②controlled by the direction switch：

When the direction switch is in forward gear, the front blue light turns on. When the direction switch is in reverse gear or neutral gear, the front blue light turns off.

③permanently on：

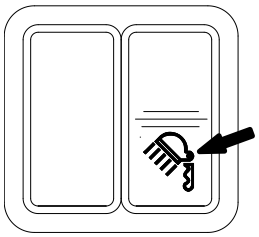
When the vehicle is powered on, the blue light automatically turns on, and when powered off, the blue light automatically turns off. There is no additional switch control.

3.23 Front and rear blue light (Optional)



The front and rear blue light has three configurations: one is controlled by a separate switch, one is controlled by the direction switch, and one is permanently on.

①controlled by a separate switch：



Press the toggle switch of the blue light on the right cover, and then the blue light turns on.

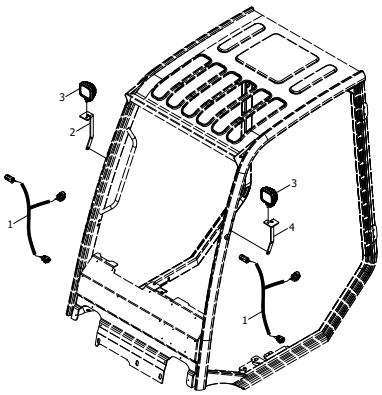
②controlled by the direction switch：

When the direction switch is in forward gear, the front blue light turns on; when the direction switch is in reverse gear, the rear blue light turns on.

③permanently on：

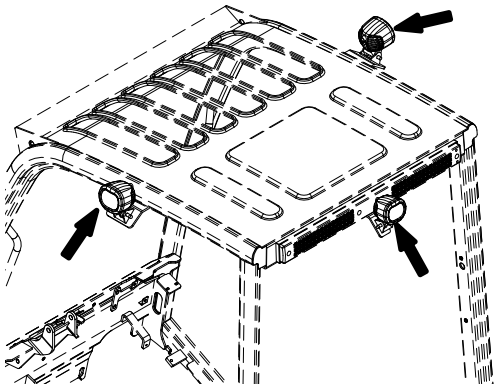
The blue lights at the front and rear automatically illuminate when the vehicle is powered on, without any additional switch control.

3.24 Dual front headlights (Optional)



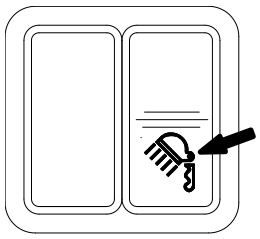
Controlled by the lighting combination switch on the right side of the steering wheel, turn the lighting switch to the headlight position, and the headlights will illuminate.

3.25 Three-directional (left, right, rear) laser line projection lamp [optional]



Three-way (left, right, back) laser line projection lamp has two configurations: one is independently controlled by a switch, and the other is always on.

①Controlled by a separate switch：



Laser projection lamps are mounted on the left, right, and rear sides of the overhead guard. Pressing the projection lamp switch on the right hood activates these lamps.

The illuminated area indicates the hazardous zone during forklift operation, serving as a warning to keep people away from the danger area. Additionally, the operator must ensure that no individuals or goods are within this hazardous zone when handling the forklift.

②Permanently on：

Laser projection lamps are mounted on the left, right, and rear sides of the overhead guard. The lamps automatically illuminate when the vehicle is powered on and deactivate upon power-off, with no additional switch control.

The illuminated area indicates the hazardous zone during forklift operation, serving as a warning to keep people away from the danger area. Additionally, the operator must ensure that no individuals or goods are within this hazardous zone when handling the forklift.

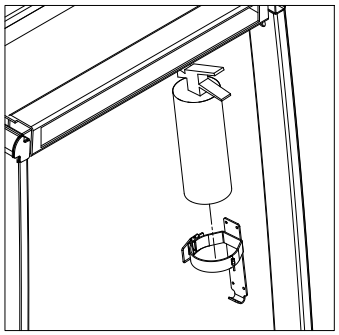
3.26 voice reversing buzzer (Optional)

The voice reversing buzzer consists of a buzzer and a connecting wire. The buzzer is installed on the rear bumper of the forklift.

When the forklift is reversing, it provides warning to people around the vehicle.

After the forklift is started, when the gear shift switch is set to reverse gear, the voice reversing buzzer emits the warning sound "Please be careful when reversing.

3.27 Fire extinguisher (Optional)



Optional fire extinguishers are available in four specifications: 1kg, 2kg, 3kg, and 4kg.

CAUTION

- Regularly check the pressure gauge on the handle side of the fire extinguisher. When the pointer is in the green zone, the extinguisher pressure is normal and it can be used normally; when the pointer is in the yellow or red zone, the extinguisher

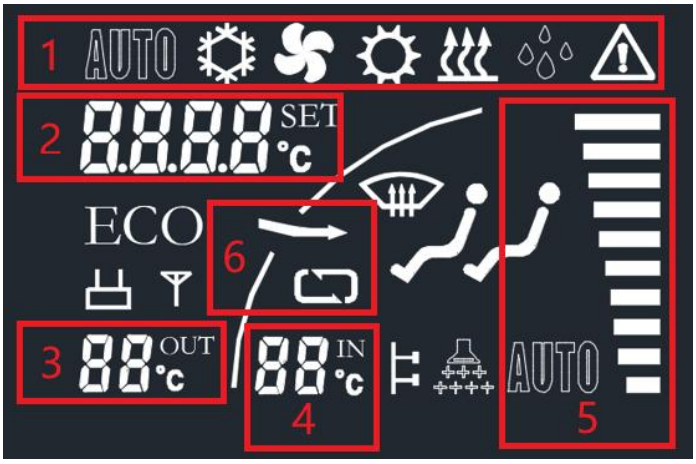
pressure is abnormal and it needs to be replaced.

3.28 Cabin air conditioning (Optional)

3.28.1 Cabin air conditioning control panel function overview



	Ac on/off button: Press to turn on/off the air conditioner. When the ac panel is powered on, this button's backlight will illuminate immediately, while other buttons' backlights will only light up after the air conditioner is turned on.
	Ventilation mode switch button: This button is used to control the air circulation mode in the vehicle cabin. When the button is illuminated, it indicates that the vehicle is currently in external air circulation mode, allowing air exchange between the interior and exterior. When the button is off, it means the vehicle is in internal air circulation mode, where the air circulates within the cabin.
	Air conditioner mode selection button: This button is used to switch between different operating modes of the air conditioner. It can be set to various modes such as auto cool, cool, ventilation, and heat, to meet different needs in various environments.
	Fan speed button: Press this button to cycle through the air conditioning's fan speed settings from level 1 to level 5. The fan speed gradually increases with each level. Users can easily select the appropriate fan speed based on their needs and comfort level.
	Temperature adjustment button (up): Adjusts the vehicle's interior temperature. Each press increases the set temperature by 1℃.
	Temperature adjustment button (down): Adjusts the in-car temperature. Each press decreases the set temperature by 1℃.



1.Status indicator light: displays the air conditioner's operating mode, defrosting status, and faults



：Auto Cooling Mode

In automatic cooling mode, the air conditioner automatically adjusts compressor speed and indoor fan speed based on the return air temperature, achieving energy-saving operation.

If you do not want the indoor fan speed to be automatically adjusted, you can manually set the fan speed using the fan speed button .

When the evaporator core temperature is too low, the compressor will stop, the cooling mode indicator light  will flash, and the dehumidifying mode indicator light  will turn on.

CAUTION

- When using the air conditioning, please wait for 5 seconds after turning off the AC before turning off the vehicle's key to allow the compressor to shut down properly;
- When using the air conditioner, remember to regularly check and clean the radiator.


：Cooling mode

In cooling mode, the air conditioner automatically adjusts compressor power based on the deviation between the user-set target temperature and the return air temperature, quickly meeting the user's temperature adjustment needs.

The lower the set temperature, the higher the compressor speed will be, in order to achieve rapid cooling.

Conversely, the closer the set temperature is to the return air temperature, the lower the compressor

speed will be, resulting in more energy efficiency. It is recommended to set an appropriate target temperature.

When the set temperature is higher than the return air temperature of the air conditioner, the compressor will stop running and the cooling mode indicator light will flash.

When the evaporator core temperature is too low, the compressor stops, the cooling mode indicator light flashes, and the dehumidifying mode indicator light stays on.

CAUTION

- When using the air conditioning, please wait for 5 seconds after turning off the AC before turning off the vehicle's key to allow the compressor to shut down properly;
- When using the air conditioner, remember to regularly check and clean the radiator.

: Heating mode

In heating mode, the air conditioner controls the PTC's operation based on the set temperature and return air temperature.

When the set temperature is 1℃ higher than the return air temperature, the PTC is activated, and the heating indicator remains constantly lit.

When the PTC is first activated, the indoor fan stops for 10 seconds to prevent excessively low outlet air temperature. After 10 seconds, the air outlet automatically resumes operation, and the PTC power can be controlled by adjusting the fan speed. The lower the fan speed, the higher the outlet temperature and the lower the heating power. Conversely, the higher the fan speed, the lower the outlet temperature and the higher the heating power.

When the set temperature is 2℃ lower than the return air temperature, the PTC is deactivated first, and the heating indicator blinks. Then, the air supply stops. The PTC heating resumes and the indoor fan restarts only when the return air temperature drops below the set temperature by more than 2℃.

The PTC is equipped with an overheat protection switch and typically does not overheat under normal operation. However, the PTC may overheat when there is poor return air flow or outlet air flow. In such cases, the PTC heating automatically shuts down.

In heating mode, if the air outlet operates normally but there is no hot air, it is necessary to check whether the PTC signal and contactor are properly closed.

If the PTC shuts down while the actual ambient temperature is too low, the manual heating function can be activated. The specific operation steps are as follows:

- In heating mode, press temperature adjustment button (up) to adjust the set temperature to the maximum, then hold for a few seconds to enter manual heating control function.
- When entering manual control mode, the temperature setting area displays 99°C; the heating symbol

remains constantly lit.

- When manually controlling the heating function, the PTC will not be temperature-controlled and will remain in the ON state.
- If the vehicle interior temperature is too high, you can press temperature adjustment button (down) to turn off the PTC; when the PTC is off, the set temperature zone displays OFF, and the heating symbol will flash.
- To prevent frequent switching of PTC, a delay protection function is provided. During the delay protection period, you can still operate the temperature adjustment button (up) and temperature adjustment button (down) to control PTC, but the panel will not respond immediately. The display area will flash, and it will switch automatically after the time is up.
- Pressing the button or turning off the device will exit the manual heating control function.

While the system is powered on, long-press the wind speed button for 3 seconds to view system parameters. The parameter code will be displayed on the external temperature screen, while the parameter value will be displayed on the set temperature screen. Press temperature adjustment button (up) or temperature adjustment button (down) to switch between parameters.

Parameter code	Parameter values
C1	System Run Time
C2	Power Supply Voltage
C3	Defrost Sensor Temperature
C4	Compressor Speed
C5	Compressor Input DC Voltage
C6	Compressor Operating Current

CAUTION

- When using the air conditioning, please wait for 5 seconds after turning off the AC before turning off the vehicle's key to allow the compressor to shut down properly;
- When using the air conditioner, remember to regularly check and clean the radiator.

2. Numeric and Code Display Area

Displays fault codes, set temperatures, and other numerical values

3. Numeric Display Area

Displays outdoor sensor temperature values, rounded to the nearest integer

4. Numeric Display Area

Displays return air sensor temperature values, rounded to the nearest integer

5. Wind Speed Display Area

Displays wind speed levels 1-5 and auto wind speed mode

6. Air Circulation Display Area

Displays fresh air intake status

3.28.2 Cabin Air Conditioning Control Panel Operation Manual

1) Air conditioning control: Press the power button  to turn on the air conditioner, press again to turn it off.
2) Set temperature
   a. After opening the panel, press the temperature adjustment button (up)  or temperature adjustment button (down)  to modify the set temperature value;
   b. The temperature setting supports continuous pressing function;
   c. The temperature setting range is 15℃ to 35℃ (15℃ to 26℃ for heating)
3) Mode switch
   a. Press the mode button  to switch modes, cycling through 'Auto Cool → Cool → Ventilation → Heat → Auto Cool'; the corresponding icon will light up for a few seconds before entering that mode;
   b. With mode memory function, the mode is stored when powered off and recalled when powered on using the last mode before shutdown.
4) Wind speed switching
   a. Press the fan speed button to cycle through wind speed settings: "1 → 2 → 3 → 4 → 5 → 1"
   b. With wind speed memory function, it stores the wind speed when turned off and retrieves the last set wind speed when turned on.
   c. When switching to auto mode by pressing the mode button , the system will operate at auto wind speed.
   d. When in automatic wind speed mode, press the wind speed key to exit automatic wind speed mode. Switch as shown in a).
5) Ventilation mode switch： press the ventilation mode switch  to cycle between external air circulation mode" and "internal air circulation mode.

V Lithium battery

1 Safety instruction

1) It is strictly forbidden to touch the battery box at any time to prevent electric shock. In case of special circumstances, you should wear insulating gloves and insulating shoes before touching the lithium battery



2) Maintenance personnel are required to hold the qualified electrician certificate and ENEROC maintenance authorization issued by the Safety Supervision Bureau in order to carry out maintenance operations。



3) When operating and maintaining the battery system, please wear insulting gloves and take off metal orraments.



4) When cleaning forklifts, high-voltage components should be avoided to avoid adverse consequences after contact with water.



2 Installation instructions

1) When installing, strictly follow the order；
2) Before connecting the positive and negative output copper bars of the battery, check repeatedly to ensure that it is correct；
3) The wiring harness connectors and bolts should be checked that they are installed in place, and the bolts should be tightened according to the specified torque and marked with tightening；
4) It is allowed to connect and power on after confirming that all high and low voltage connectors of the power battery box are connected correctly；
5) After installation and inspection, connect the diagnostic instrument (host computer) to check whether the parameter information of the battery pack is normal。

> ⚠ WARNING
>
> ● Wear protective gear and insulating tools during all disassembly and assembly

processes; before maintenance, the MSD maintenance switch on the lithium battery main box must be pulled out and waited for 15-20 minutes to power off the high-voltage system.

- It is forbidden to wear any metal jewelry during the entire battery system maintenance process to avoid accidental short circuit causing personal injury or death.
- Mark and install in sequence during disassembly and assembly
- In case of battery failure alarm, the power supply shall be cut off immediately.

3 Basic terms for lithium ion battery

1) Battery system

Electric energy storage system, usually including one or more battery modules, battery management system, thermal management, high and low voltage lines, connectors and structural components.

2) SOC

Refers to the percentage of battery remaining electricity.

3) Nominal voltage

An appropriate approximate value used to represent the voltage of a battery.

4) Rated capacity

The capacity value specified by the manufacturer when the battery is fully charged under specified conditions.

5) Overdischarge

When the battery voltage is lower than the discharge cut-off voltage, the state can usually be seen as that the battery enters the overdischarge state, generally referring to the state when the battery voltage reaches 0 V or even the voltage is negative.

6) Overcharging

When the battery voltage is higher than the maximum charging voltage, the state of the battery can usually be regarded as the state of overcharging.

7) Explosion

The battery shell is broken and solid material rushes out of the battery and makes sound.

8) Fire

Open fire appears in the battery case.

9) Leakage

The internal components of the battery (electrolyte or other substances) leak from the battery.

10) CAN

Communication: Control Area Network, Controller Area Network.

4 Instructions for Use

1) Battery Temperature Characteristics:

   Operating temperature range: -30°C to 65°C

   Charging temperature range: -30°C to 65°C

   Discharging temperature range: -30°C to 65°C

   Storage temperature range: -30°C to 55°C

2) Pre-departure inspection： After the key switch is closed, confirm that the instrument panel has no battery system alarm information. Check the remaining power before leaving the car. It is recommended to charge up to 50%~100% before leaving the car. It cannot over discharge the power battery system. over discharge will cause irreversible permanent damage to lithium-ion power battery.

3) Charging instructions: Forklift truck in operation after stopping or battery system SOC less than 20%, please charge in time. Use the special charging equipment authorized by the manufacturer to charge. If there is a fault alarm during charging, the power battery system and charger will stop charging, and the charger will show the fault. Charging environment should be dry and ventilated without flammable and explosive materials. Cars should be fully charged once a week.

4) Long-term parking storage: Before parking, it is necessary to confirm the battery power of the vehicle: 50%-70%. Maintenance is carried out every three months. The electricity is filled by full charging, and then discharged to 50%~70% before parking. The vehicle has been parked for more than three months. Please make sure that the dashboard alarms before reusing. If so, please contact the vehicle manufacturer for maintenance. Forklift parking environment should be kept as dry and ventilated as possible, away from heat sources.

⚠ CAUTION

- When the ambient temperature is low, the charging time of the battery system will be extended, which is a normal phenomenon. To ensure the best performance of the battery system, the battery management system automatically adjusts the charging time according to temperature changes.

5 Daily Maintenance and Storage

5.1 Daily maintenance

1) Appearance maintenance:

Check the battery system enclosure for any foreign objects, obvious deformation, corrosion or other abnormal conditions.

2) Charging port maintenance:

In a powered-off state, inspect the port for any damage, foreign objects, corrosion or other abnormal conditions.

3) Connector maintenance:

In a powered-off state, check the connectors for looseness, damage or other abnormal conditions.

4) Status detection:

While charging, observe the battery system voltage, temperature and other status information displayed on the charger screen, ensuring all status information is within the normal range.

5.2 Storage

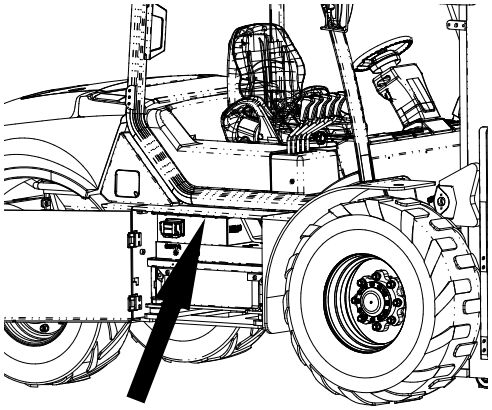
The battery should be stored in a clean, dry, and ventilated indoor environment with ambient temperature ranging from -30℃ to 55℃ and relative humidity not exceeding 75%. It must not be placed upside down and should be protected from mechanical shocks and heavy pressure.

Charge the battery once a month.

The positive and negative terminals of the battery box should be wrapped with high-voltage insulation sleeves or other insulating materials to ensure no metal parts are exposed, preventing short circuits. The diagnostic port should be kept dust-free and properly covered.

6 MSD use: On and Off

1) It is located on the right side of the lithium battery master box. After opening the lithium battery door, you can see the MSD maintenance switch.

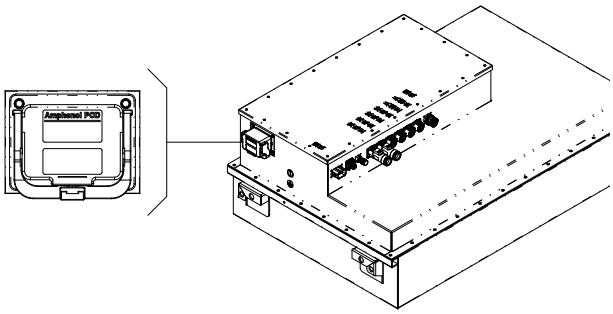


MSD maintenance switch

2) The maintenance switch (MSD) is used to cut off the high voltage circuit, that is, cut off the high voltage between the battery and the whole machine, when the vehicle is maintained, inspected, repaired, or other emergency situations (such as electric shock, rain, flood, etc.) occur, please unplug the switch and wait 15~20 minutes for the high voltage system to power off.

3) MSD cut off steps

The figure below shows the state of the MSD maintenance switch installed on the lithium battery master box:



a. Pull out the locking terminal of the MSD handle, as shown in the figure below:



b. Rotate the MSD black handle to the position shown in the figure below.



c. Press the MSD clasp.



d. Pull the MSD switch out firmly to disconnect the MSD.

e. MSD installation can be operated according to the order of steps 4/3/2/1.

7 Safe operation specification

7.1 Safety precautions before maintenance

1) This battery runs with a maximum DC voltage of about 317V and there is a large current in operation. Its high-voltage connection line is orange and the high-voltage components have warning signs. The maintenance personnel must obtain the authorization of Hangcha Group; they must have the national special occupation certificate. In addition, the maintenance personnel must strictly follow the operating requirements to carry out standardized operations.



Warning sign



High voltage lithium battery

2) Before maintenance, a safety isolation area and warning signs should be set up to warn relevant personnel and avoid safety accidents.



Safe isolation area

3) Before repairing the battery pack, you must wear insulating protective equipment as gloves, shoes, goggles, etc.

4) It is strictly forbidden to wear metal decorations such as bracelets and rings during maintenance;

5) Before repairing the battery pack, make sure that all interfaces of the vehicle have been disconnected from the external high-voltage power supply;

6) Before repairing the battery pack, turn off the key switch and remove the MSD maintenance switch (see 7.6 MSD Use for details), and be sure to disconnect the high-voltage power battery power supply to prevent short circuit;

7) The maintenance site should be equipped with fire extinguishing equipment, and the battery pack storage area should be ventilated and dry, and there should be no combustibles around.

7.2 Safety precautions during maintenance

1) Identify the maintenance personnel of the high-voltage system and prevent other irrelevant personnel from touching the battery box during maintenance;

2) If the repair cannot be completed in a short time, the “High Voltage Danger” label should be pasted on the high voltage system components when not repairing;

3) If it is severely damaged, the power battery is deformed, broken or cracked, and the power battery cannot be touched without wearing insulating protective equipment;

4) After disconnecting the high-voltage components, immediately wrap the exposed ports of the copper bars and the exposed ports of the high-voltage components with

electrical insulating cloth, and do the insulation treatment;

5) Keep the power battery box clean and dry during maintenance. Mark the disassembled parts so that the installation is accurate and correct;
6) Be sure to follow the correct steps to disassemble the power battery box, and the disassembled components must be properly kept in a dedicated area;
7) It is strictly forbidden to inspect and repair the power battery box when the high-voltage relay is closed to prevent electric shock.

> ⚠ WARNING
>
> - Wear protective gear and insulating tools during all disassembly and assembly processes; before maintenance, the MSD maintenance switch on the lithium battery main box must be pulled out and waited for 15-20 minutes to power off the high-voltage system.
> - It is forbidden to wear any metal jewelry during the entire battery system maintenance process to avoid accidental short circuit causing personal injury or death;
> - It needs to be marked when disassembling, install in order.

8 Operation and safety regulations to lithium battery forklift truck

1) In case of special circumstances, you should wear insulating gloves and insulating shoes before touching the lithium battery.
2) Contact the manufacturer immediately in case of battery malfunction. Do not open the battery cover for maintenance.
3) Do not reverse charge.
4) Whether charging or discharging, it should be ensured that the battery management system is properly connected and working properly to ensure normal communication of the battery management system.
5) Do not operate the equipment in a location where static electricity and magnetic field is strong. Or it may damage safety protection device, and lead to potential safety hazard.
6) Keep the battery system or battery box away from heat and fire sources and avoid direct sunlight for a long time. The lithium battery can not be directly baked and heated by hot water, otherwise it will cause explosion. Work in high temperature environment is not allowed.
7) Do not place the battery pack in water or in a high humidity environment to avoid leakage or insulation failure.
8) When working in a low temperature environment, the battery system capacity is slightly reduced, which is a normal phenomenon, and the performance will be recovered after the ambient temperature rises.
9) It is forbidden to modify or disassemble the battery system and battery box without authorization. Non-professionals are not allowed to disassemble to prevent foreign matter from entering the battery pack, and causing burning and explosion.
10) To recharge the battery, use the battery

charger specifically designed for the purpose, do not use other chargers to prevent battery damage.

11) Do not connect the battery with the battery of other type in series or in parallel.
12) It is forbidden to connect the battery box or the positive and negative poles of the 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 circuit.
13) Avoid mechanical damage to the battery box, such as squeezing, puncture, shock, impact, etc.
14) If there is dust, metal particles or other debris on the top cover and pole of the battery pack, use compressed air or dry cloth for cleaning. Do not use water or water-soaked objects for cleaning.
15) Water-based fire extinguishers are installed in the working environment.
16) If the temperature of the battery system rises sharply and the smell is abnormal, stop it immediately and turn off the power. If smoke or fire occurs, stop and turn off the power supply. Use Water-based fire extinguishers to extinguish fire under the condition of ensuring personnel safety.
17) Charge in a well ventilated, dry environment.
18) Charging working temperature: -30°C-65°C; Discharge working temperature: -30°C-65°C; storage temperature range: -30°C-55°C; Operating humidity range: 5%-80% Storage humidity: <=70%

9 Contingency plan

Extreme abnormal conditions: Users should establish good safety awareness during operation, strictly prohibit illegal operations, and avoid battery system abuse (overcharging, over-discharging, short-circuiting, crushing, puncturing, overheating, high-current discharge, etc.). During charging and use, the following abnormal conditions may occur in the power battery system: Rapid temperature rise of the battery system or its parts; any part of the battery system emitting abnormal odors or smoke.

Contingency plan：

1）All personnel at the site should quickly leave the forklift truck and call the fire station.

2）If possible, take the following actions while ensuring personal safety:

a. If the external wiring harness is smoking or burning, use carbon dioxide or dry powder extinguisher to spray.
b. If smoke is coming from inside the battery, spray with a high-pressure water gun from a distance.
c. If the user inadvertently inhales smoke, please leave the area and seek medical attention as soon as possible.

3）Contact the truck dealer for professional advice.

10 Emergency response

Extreme Abnormalities That May Occur During Battery Operation: Users should establish good safety awareness during use, strictly prohibit illegal operations, and avoid battery system abuse (overcharging, over-discharging, short-circuiting,

crushing, puncturing, overheating environment, high-current discharge, etc.). The following abnormalities may occur in the battery system during charging and use:

1）The battery system or local temperature rises sharply.

2）An unusual odor is detected from any part of the battery system.

3）Smoke or fire from any part of the battery system

If smoke or open flame occurs from the battery system during use, immediately follow the steps below:

1）Park the vehicle and power down

2）All personnel at the site should quickly leave the forklift truck and call the fire station.

3）Use carbon dioxide or dry powder fire extinguishers to extinguish smoking or burning areas while ensuring personal safety.

4）Please inform our company staff as soon as possible to handle this.

11 Common battery faults and solutions

11.1 Low voltage after battery is fully charged

1）The battery has been stored for a long time without use and has not been maintained according to regulations. Solution: Simply charge the battery.

2）The battery has been subjected to severe impact, characterized by external damage to the battery case or the presence of electrolyte odor from the battery pack. Solution: This situation is generally not within the repair scope. If repair is required, it needs to be determined whether the output circuit or the battery itself is faulty. First, disassemble the battery case to check if there is any damage to the P+/C+ and P-/C- wires or solder joints of the battery pack. If any damage is found, replacement is needed. Then, identify the odor by smelling. If there is a strong electrolyte odor, it indicates battery leakage. Conduct voltage testing on each string of the battery. If one string shows a significantly lower voltage compared to the others, contact the manufacturer to replace that string of batteries.

DANGER

- Please contact the manufacturer or authorized dealer for repair. Users are prohibited from attempting any repairs themselves.

3）Insufficient capacity. Solution: Perform charge and discharge cycles on the battery, usually 3 to 5 cycles.

11.2 After the battery is fully charged (as indicated by the charger), the voltage reads zero or is significantly lower.

Battery circuit break. Solution: Disassemble the battery, check if any wires are broken, examine if there are any loose solder joints, and repair any damaged areas as necessary.

11.3 Battery voltage instability

1）Cold solder joint. Solution: Use an internal resistance tester to measure the battery's internal resistance. If the value exceeds the specified limit, there may be a cold solder joint inside the battery. The battery needs to be disassembled and re-soldered.

DANGER

- Please contact the manufacturer or authorized dealer for repair. Users are prohibited from attempting any repairs themselves.

2） Poor contact at the terminal or connector.

Solution: Replace the terminal or connector.

DANGER

- Please contact the manufacturer or authorized dealer for repair. Users are prohibited from attempting any repairs themselves.

12 Daily charging of lithium battery forklift

CAUTION

- Charge in time when the forklift meter power shows 1-2 bar (that is, 20%-30% remaining).
- Turn off the forklift switch power supply and press the emergency stop switch.
- Close the charger input electric master valve to ensure that the emergency stop switch pops up, the charging device automatically turns on, the power indicator light is on, and the display interface starts automatically.
- When the charging gun is removed, the button must be pressed to remove the charging gun. Check the charging gun to ensure that there is no water or foreign objects in each port, and that the metal terminals are not damaged or affected by rust or corrosion.
- Open the truck side door and open the lithium battery charging cover. Check the lithium battery charging socket 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.
- Insert the charging gun/charging plug into the lithium battery charging socket, the charger will self-test and communicate with the lithium battery. When the entire system is fault free, about 15S or a few times later, the relay inside the charger gathers and start charging, and the charging indicator will light up. At the same time, the meter will display information such as charging voltage, charging current value, charging time and charging fault.
- When the lithium battery is fully charged, the charging device will automatically stop charging. At this time, the output voltage and output current of the meter are 0A. At this time, press the pause button, then press the charging gun lock and pull out the charging gun at the same time. If the lithium battery needs to stop charging when it is not fully charged, the pause button on the screen should be pressed first. After the charging current drops to 0 A, the charging gun lock can be pressed and pull out the charging gun or plug.
- Insert the charging gun into the charger's resting position and pull the charger input main valve down and close.
- Close the lithium battery charging cover and the charging door on the forklift truck body. Plug in the power socket of the vehicle and close the hood.
- Do not plug the discharge plug of the battery into the charging socket, otherwise the forklift line has no power.

12.1 Titan High-voltage Lithium Smart Charger

12.1.1 Intelligent charger technical parameters

Items	Parameter index	
Model number	SLC-35050	SLC-350100
Input voltage	AC380V±15%	
Frequency	50/60Hz	
Input Current	＜41A	＜80A
Power factor	≥0.9	
Current distortion	≤5%	
Output technical parameters		
Maximum voltage	DC355V	DC355V
Maximum current	50A	100A
Maximum power	18kW	36kW
Output voltage range	70~500VDC	70~500VDC
Limitation adjustable range	5A~50A	10A~100A
Work environment conditions		
Operating ambient temperature	-20~60℃ regular work， 60~75℃ derating output.	
Storage temperature	-40~75℃	
Relative humidity	0~95%	
Elevation	≤2000m	
Protect function		
Input protection	Input overvoltage protection、Input undervoltage protection	
Output protection	Output overvoltage protection、Output short circuit、Battery polarity reverse	
Over temperature protection	If the internal temperature of the module is too high, it will protect	
Abnormal protection	Power device abnormal protection shutdown	
Emergency stop protection	When uncontrollable exceptions occur, the emergency stop button can be used to forcibly shut down	
Interface		
CAN interface	1 Way	1 Way
485 interface	1 Way	1 Way
Man-machine interaction		
Display mode	7 inch touch screen	
External type and protection		
Case size	External size（Main engine, casters and lugs not included） 600（Length）×449（Wide）×631（High）	
Levels of protection	IP21	
Other		
Heat dissipation mode	forced air cooling	

12.1.2 Touch screen display and operation

12.1.2.1 Main interface



Click on the icon: , enter the help description interface.

Click on the icon: or , switch alarm sound, to turn on the alarm sound state, to turn off the alarm sound state.

The control operation requires password permission. The default password is: 123456.

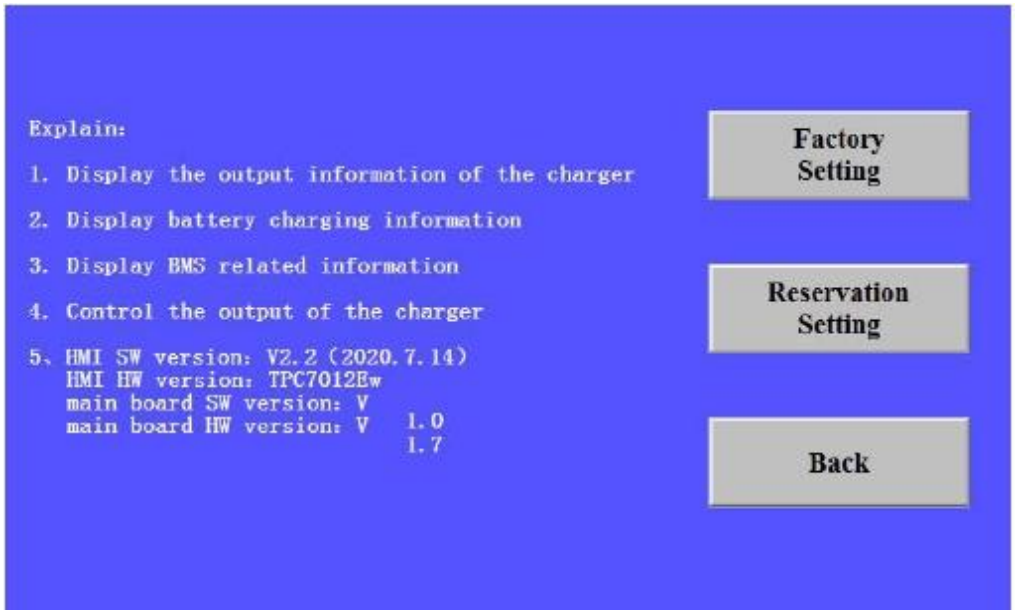
Click on the boot icon: , switch the charging control to on or off.

Click the purple part charging status information bar to enter the information display bar of the single charging module.

Click on the battery BMS battery bar to enter the detailed BMS information display.

Click mode switching to switch between the normal mode-level reservation mode.

12.1.2.2 Help description interface

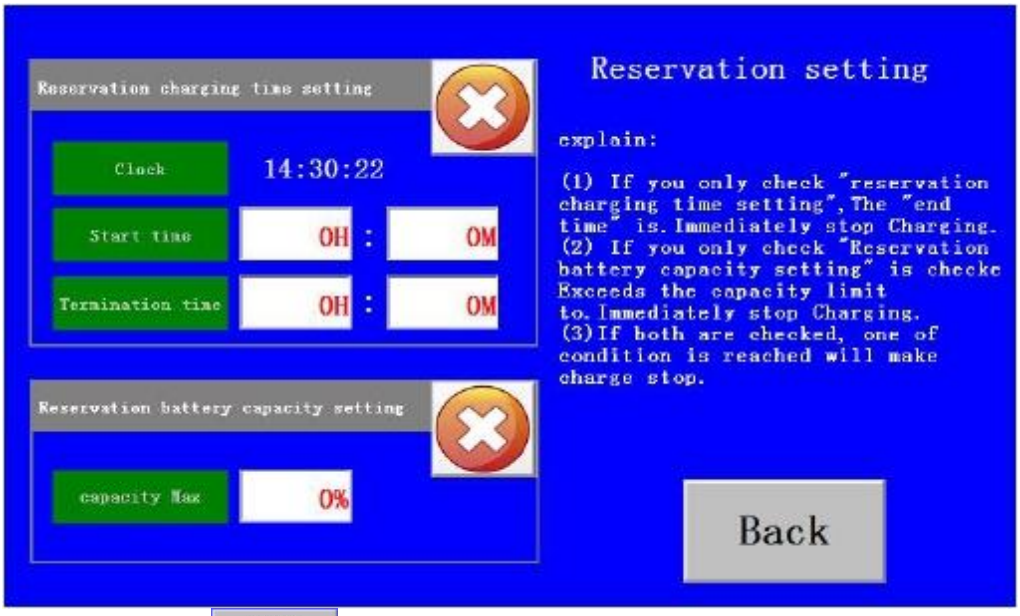


Click on the icon: 

, back to main interface.

Click the reservation icon to set the time of the reservation mode. The password is 123456.

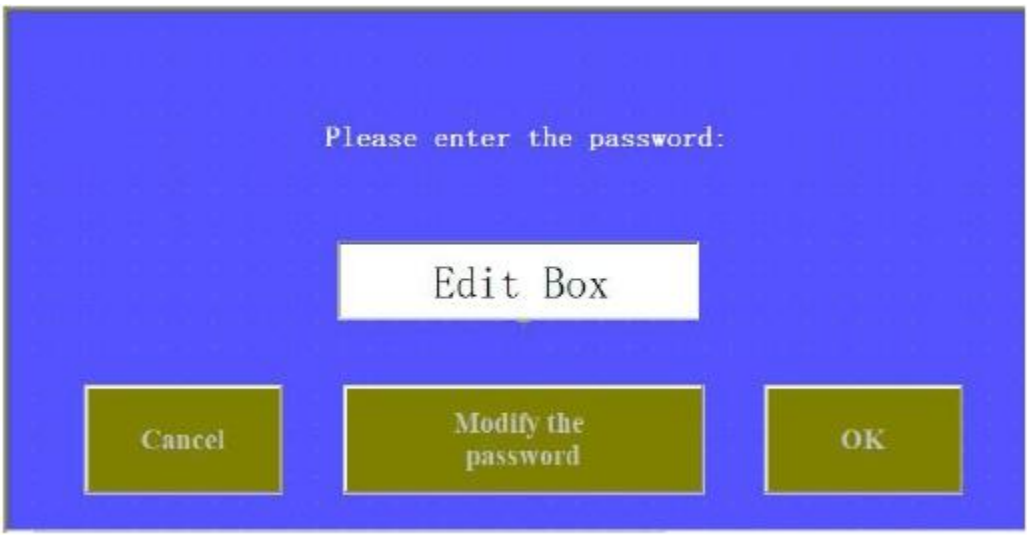
Reservation function setting instructions:



Click on the icon: 

,enter the password input interface and enter the factory parameter setting interface after the password is entered correctly.

12.1.2.3 Password input interface



Enter the correct password in the password input box. The default password is 888888.

Click on the icon: 

, return to the help description interface.

Click on the icon: 

, enter the password modification interface.

Click on the icon: 

,if the password is entered correctly, enter the parameter setting interface.Otherwise, the password input is incorrect. Please re-enter.

12.1.2.4 Password modification interface

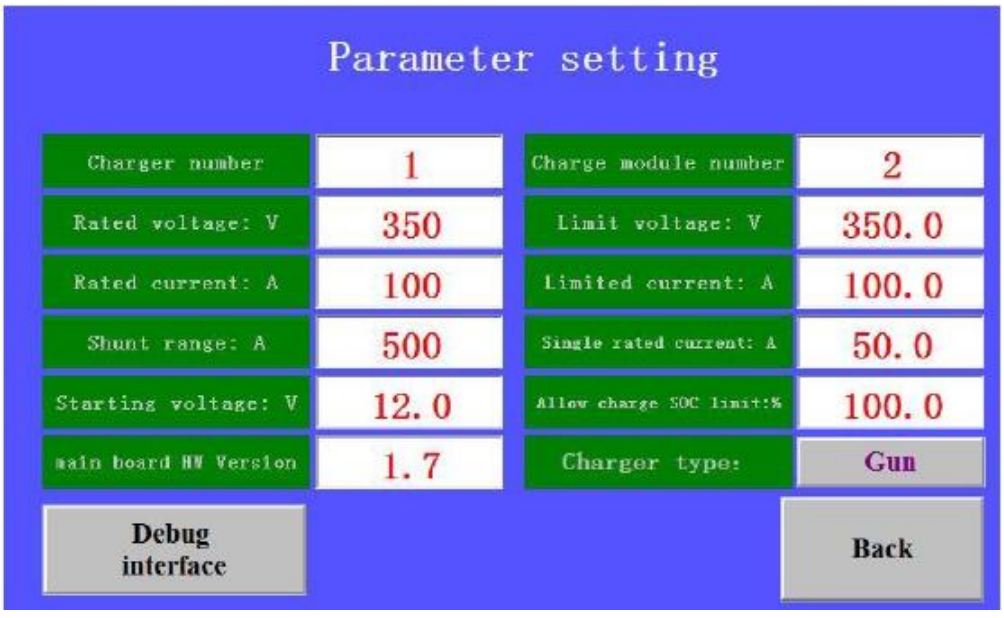


Follow the prompts to enter: the user's old password, the first time you enter the new password and the second time you enter the new password.

Click on the icon: OK ,if the user's old password is entered correctly, the first time you enter the new password and the second time you enter the new password, the modification is successful.Otherwise, the modification fails, please re-enter.

Click on the icon: Cancel , return to the password input interface.

12.1.2.5 Parameter setting interface



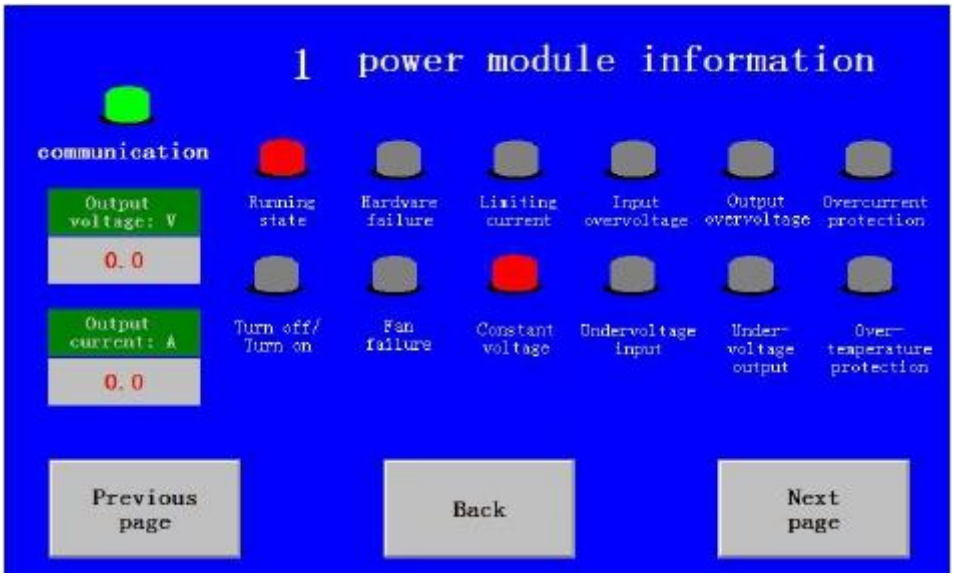
Click on the icon: Back , return to the help description interface.

Parameter setting information: The rated voltage, rated current and shunt range are related to the machine hardware and must not be modified at will after shipment.

If the above parameters need to be modified, please consult the manufacturer. The charger number is convenient for the user to distinguish, and the user can set it at will.

The debugging interface is used for debugging by the manufacturer, and the user is not allowed to operate at will.

12.1.2.6 Power module information display interface



Click on the icon:

, switch module information forward.

Click on the icon:

, back to main interface.

Click on the icon:

, switch module information backwards.

Display single-supply module output voltage, output current, various operating states.

12.1.2.7 Detailed charging process



Charging steps:

1. Select "On" charging control mode. The “CAN” and “485” indicators light green.

2. The DC charging gun is connected to the battery normally.

3. The “remaining capacity” is less than the “permissible charging SOC limit” to start charging.

4. The “Battery” indicator lights up in green (after the charger detects the battery voltage, it lights up) and the “BMS” indicator lights up in green.

5. The “work” light is green. When the “output voltage” is close to the “battery pack voltage”, the charger output relay is closed, and the charger officially starts to charge the battery. At this time, "output current" and "output voltage" will be output according to "current demand" and "voltage demand".

6. After the BMS is charged, the charging termination command is sent and the charger ends charging.

7. During the charging process, when the charger fails (the “overheating” or “abnormal” lighting of the charger information is the charger failure), the BMS is charged, or the “charge enable” is disabled, and the charging control is in the “stop” state, the charging will be terminated.

* In the reservation mode, the charger will only work when it is at the set appointment time.

12.1.3 Electrical wiring instructions

12.1.3.1 Input wiring instructions

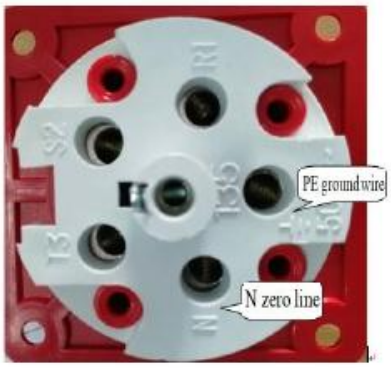
	
No plug input line	Input Yida plug

No plug input line

The input swing line is divided into three-phase 4 line and three-phase 5 line, and two specifications. The three-phase 4-line interface is A, B, C, PE. Explanation: ABC is 3 fire wire and PE is ground line.The three-phase 5-line interface is A, B, C, N, PE. The three-phase 5-line interface adds a N line (zero line) to the three-phase 4-line basis.

Input Yida plug





Wiring definition：

Yida interface is three-phase 5 lines or three-phase 4 lines. R1 S2 T3 =L1 L2 L3=A B C =U V W (four signs are national standard logo) connected to three fire wire, PE or ground wire identification grounding line, and N connected to zero line.

Method of erection：

The screw hole is on the side, plug the line into the hole, and tighten the screws from the side.

WARNING

- PE protection earth must be connected, otherwise it may threaten personal and equipment safety.
- The N wire must be connected correctly; otherwise it may damage internal components of the machine.
- The company is not responsible for the accident caused by the user misunderstanding the AC input line, thank you for your cooperation.

12.1.3.2 Output wiring instructions

Output Wall DC charging gun



Wiring definition：

According to the GB/T 20234.3-2015 design, the charging gun is defined as: DC power line: DC+, DC-, equipment ground line: PE, charging communication line: S+, S-, charging connection confirmation line: CC1, CC2, low voltage auxiliary power line: A+, A-.

12.1.4 Notes

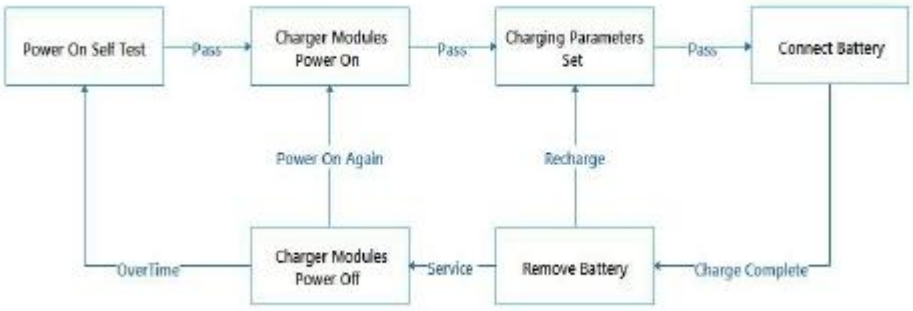
12.1.4.1 Notes

1) Before the charger is started, check whether the battery box wiring is correct, whether a short circuit or positive or negative pole connection will occur.Avoid charger overload burning components or lines.

2) The charger can be put into service only after the charger fault alarm information is started.

3) For the safe operation of the charger and equipment, it is strictly prohibited to disconnect the battery switch directly with the output current, except in emergency cases.

12.1.4.2 Operation flow chart



12.1.4.3 Specific operation

4.3.1 Power on check

Make sure that the AC input zero-fire line and DC output positive and negative wiring are correct,the input and output are not short-circuited; the input voltage and frequency are normal. It is ready to be powered on at any time.

4.3.2 Power on

Check whether the AC fan wind direction is correct after power-on.

The display screen can be turned on normally.

4.3.3 Access battery

The battery voltage and current levels meet the requirements of the charger.

4.3.4 Power off

After the charging current and voltage drop are 0, exit the battery.

Turn off the AC input air switch.

12.1.5 Maintain

1) Always keep the charger clean, and regularly remove the vents.

2) Regularly check whether the connector terminals of the charger are secure, and there should be no

looseness or poor contact.

3) Do not move the charger under normal working conditions.
4) Do not place the charger on uneven ground.
5) Do not place in corrosive and humid air.
6) The left and right sides of the charger must be reserved for sufficient heat dissipation and ventilation space.
7) Keep away from open flames or baked goods and avoid high temperatures.

WARNING

- It is strictly forbidden to open the charger casing without permission.

12.1.6 Common faults and troubleshooting methods

When the charger is working abnormally, then the charging status display area on the right side of the touch screen of the charger is found, and the status indicator above the gateway is used to judge the cause of the failure, and then the fault is eliminated.

No.	Fault phenomenon	Reasons	Solutions
1	BMS status indicator is off	1. The battery BMS in the car is damaged. 2. The charger controller is faulty. 3. The internal 12V auxiliary power supply of the charger is damaged. 4. Poor charging of the charging gun.	1. Change the trolley to charge. If it is normal, the battery BMS is damaged. If the same problem occurs, the internal controller of the charger or the 12V auxiliary power supply is faulty. 2. Check if the charging gun is firmly connected.
2	CAN status indicator lights up red	The CAN communication port between the main control board and the module is faulty.	1.Check the connection line between the main control board and the module. If it is invalid, use the second step of the solution. 2. Replace the main control board. If it is invalid, use the third step of the solution. 3. Replace the charging module.
3	485 status indicator lights up red	Communication failure Between the main control board and the touch screen.	1.Check the connection line between the main control board and the touch screen. If it is invalid, use the second step of the solution. 2.Replace the block main control board. If it is invalid, use the third step of the solution. 3. Replace the touch screen.
4	The Exception status indicator is red	1 、 The charger internal module is faulty or protected.	1、Click the blue background area of the main interface and enter the module information detailed interface.If tie“input under pressure”or“AC voltage fault”,measure whether the charger three-phase power off and open the side door of the charge, check if the charging module is normal,and replace the charging module if still abnormal.

⚠ CAUTION

- If the charger fault is not in the above list, or the problem is not solved,Please contact the after-sales service!

12.2 Charging procedures：

1) Ensure the forklift is parked securely, and turn the vehicle's key switch to the "OFF" position to disconnect power from the entire vehicle.
2) Close the main power switch for the charger input. Make sure the emergency stop button is released (popped up). The charging equipment will automatically turn on, the power indicator light will illuminate, and the display screen will activate.
3) To remove the charging gun, press and hold the locking button before pulling out the charging gun. Inspect the charging gun to ensure there is no water, foreign objects, or damage in any of the ports, and check that the metal terminals are free from rust or corrosion.

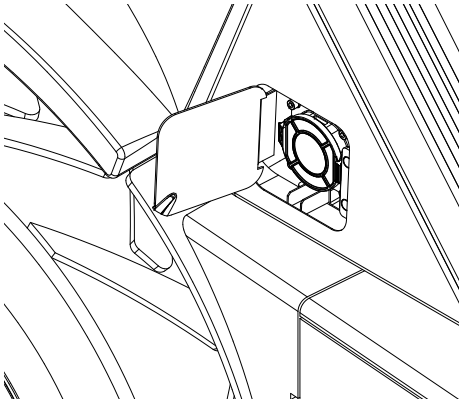
WARNING

- In order to ensure the combination of the charging gun plug and the lithium battery socket and prevent the lithium battery gun from loosening during the charging process, the lithium battery gun is provided with a lock, which cannot be pulled out even if it is pulled hard. Therefore, after charging is completed, the lock must be loosened. Only by pressing the button on the charging gun can the lock buckle be released and the charging gun can be pulled out smoothly.
- To pull out the lithium battery charging gun smoothly, you must press the button on the gun. Otherwise, the gun and socket will be damaged.





4) Open the left door， open the rechargeable lithium battery cover. Check the charging socket, make sure no water or debris on each port, or metal terminal damaged or influenced by rust or corrosion.



WARNING

- The charging socket has high-voltage power, except for the charging gun, it is forbidden to touch the charging socket with hands and other objects to prevent electric shock!

5) Insert the charging gun into the lithium

battery socket, the charger self checks and communicate with the lithium battery, when the entire system is fault-free, in about 15S, the inner relay is closed, start charging, and the charging indicator illuminates, while the instrument will display charging voltage, charging current, charging time and charging failure information.



WARNING

- The charging socket has high-voltage power, except for the charging gun, it is forbidden to touch the charging socket with hands and other objects to prevent electric shock!

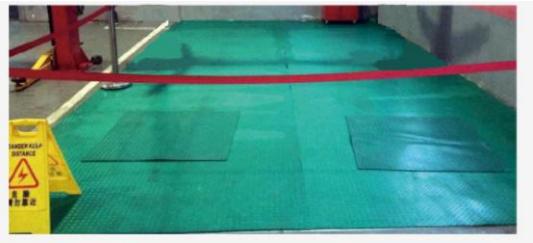
6) The charger will automatically stop charging after fully charged, output voltage and output current on the meter is 0, press the pause button, and then press charging gun lock and pull the charging gun out. If it needs stop charging without being fully charged, first press the pause button, wait until the charge current is reduced to 0A, and then press charging gun lock and pull the charging gun out.

7) Insert the charging gun into the charging station holder, then pull down the main power switch for the charger input. Close the lithium battery charging cover and the charging door on the forklift.

8) Close the rechargeable lithium battery cover and truck charging door.

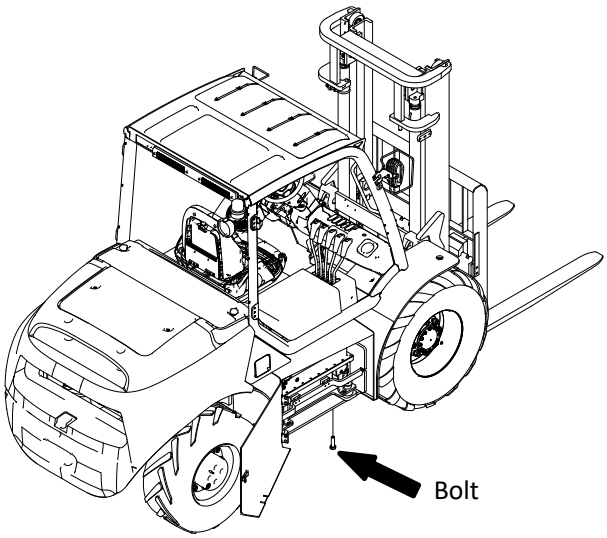
13 Lithium battery disassembly and installation

For high-voltage lithium battery forklifts, special maintenance sites should be set up, safety isolation measures should be adopted, and high-voltage warning signs should be placed. “Safety Rules for High-Voltage Electric Forklift Maintenance” are posted on the wall, and the dedicated repair site is equipped with a single-phase and effectively grounded standard three-hole socket with a rated voltage of 250V and a rated current of 16A in accordance with GB 2099.1.



13.1 Replacement and installation of lithium battery master box

The lithium battery is sunken at the bottom of the body and fixed at the bottom of the frame by 3 bolts

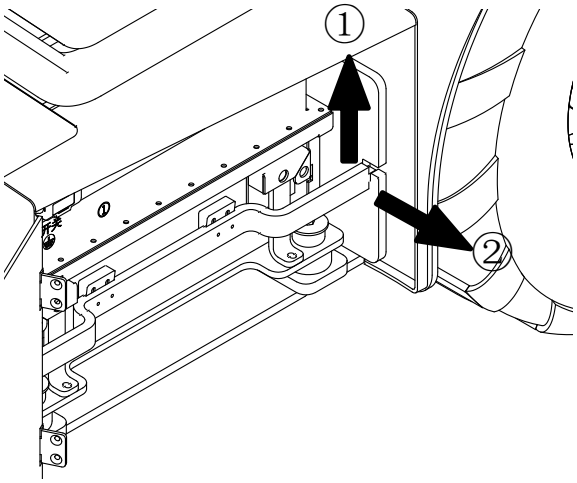


Park the vehicle at a dedicated maintenance place, put it in neutral, turn off the engine and pull the handbrake, and press the emergency power switch.

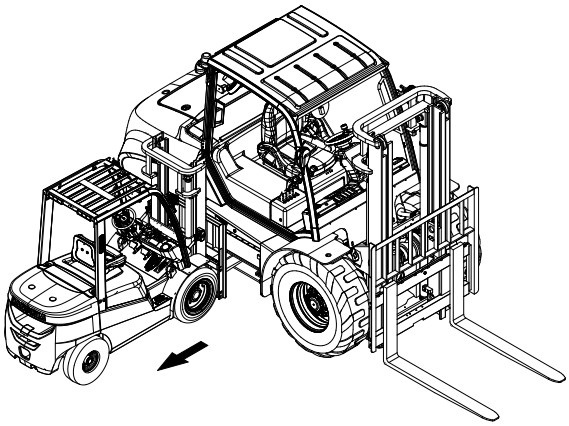
1) Pull out the MSD maintenance switch on the lithium battery master box (see section 4.6 for detailed operations)

> WARNING
>
> - Please strictly follow the procedures outlined in Section 6, Chapter V "MSD use: On and Off".

2) Put on 1000V insulated gloves, labor insulated shoes, and disconnect the lithium battery box and all external connection lines,conduit;
3) Open the side door, lift up the battery clamping device, and take out the battery clamping device from the gap.



4) Loosen 3 bolts fastening the lithium battery box;
5) Select a forklift with a rated capacity of 1t or more to adjust the fork spacing and insert the fork from the bottom of the lithium battery box.



> WARNING
>
> - Please operate carefully to avoid forks crashing into the lithium battery box.

6) Slightly lift forks and reverse backwards to remove the lithium battery box.
7) The installation process is the opposite of the disassembly process.

13.2 Replacement and installation of lithium battery slave box

1) Pull out the MSD maintenance switch on the lithium battery master box.

WARNING

- Please strictly follow the procedures outlined in Section 6, Chapter V “MSD use: On and Off”.

2) Put on 1000V insulated gloves and labor protection insulated shoes, disconnect the lithium battery box and all external connecting wires and water pipes;

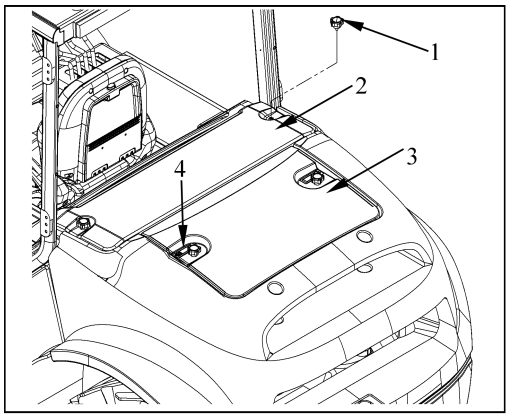
3) After unscrewing the fastening bolts, press the lever locks on the left and right ends to remove the front and rear radiator covers.

1：Fastening bolt

2：Front radiator cover

3：Rear radiator cover

4：Lever lock



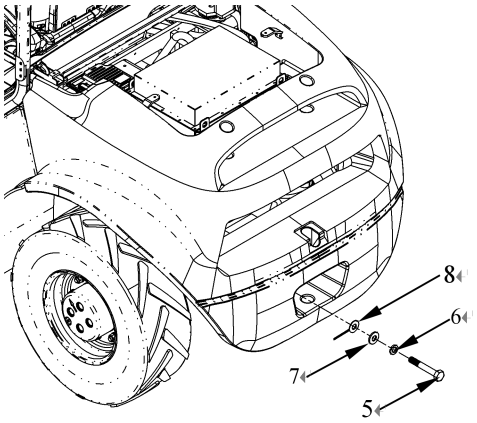
4) Remove the counterweight fixing bolts and adjusting washers.

5： Bolt M36×220， tightening torque：（550-700）N·m

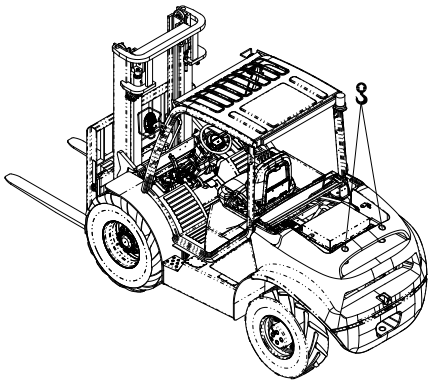
6：Heavy type spring washer 36

7：Washer

8：Adjusting shim



5) Fix the rope and use the lifting equipment to lift the counterweight and remove it.

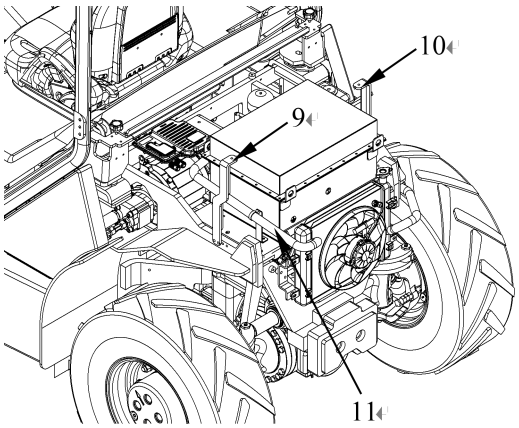


6) Remove the left and right brackets of the rear cover, and remove the water pipes (to avoid interfering with the lithium battery slave box when lifting).

9：Left bracket

10：Right bracket

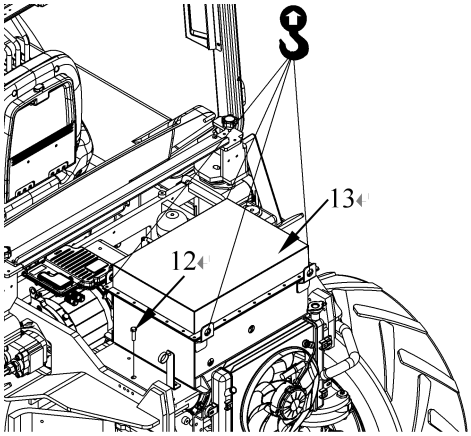
11：Water pipe



7) After removing the fixing bolts of the lithium battery slave box, hoist the lithium battery slave box from the vehicle body.

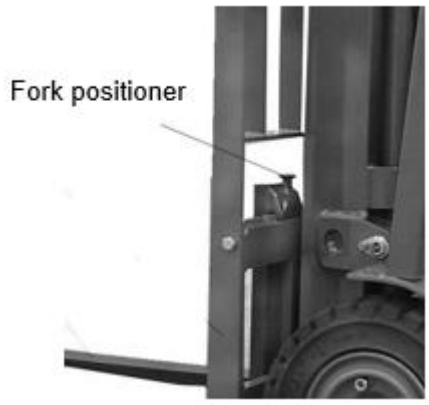
12： Bolt M12×30， tightening torque：（78-104）N·m

13：Lithium battery slave box



VI Operations

1 Checks and adjustment before operation



1) When carrying out a visual check of the forklift truck, the operator should pay special attention to whether the wheels, wheel bolts and load parts are damaged or loose.
2) Check whether the tire pressures are normal with an air pressure gauge.
3) Check the fork positioner.
4) Perform a visual inspection of the visible areas of the hydraulic system for any damage or leaks.
5) Check whether the driver's seat is properly locked.
6) Check whether the alarms (including the reverse buzzer) function properly.
7) Check whether the Load Curve Sign and warning labels are clearly visible.
8) Check the function of the operating and display parts.
9) Check whether the steering system is functioning properly.
10) Check whether the mast lifting chains are evenly tensioned.
11) Check that the seat belt is functioning properly (the seat belt must lock when pulled out quickly).
12) Check the seat switch function: if the driver is not properly seated, the hydraulic functions should be disabled.
13) Check lifting/lowering, tilting hydraulic functions and, if necessary, check the attachments.
14) Depress the pedal when the parking brake control lever is engaged.
15) Check whether the lights are working properly.
16) Check whether the accelerator pedal is normal.
17) Check the battery fastening and wiring by visual inspection.

WARNING

- If there is any damage or other defects found on the forklift truck or attachments in the subsequent check, the forklift truck should not be used again until it is repaired in accordance with the regulations. In addition, the following measures must be taken:
- Immediately report the identified defects to your superior.
- Mark and stop the truck if it is damaged.
- Restart the truck only after the fault has been identified and cleared.

2 Start the forklift

2.1 If the forklift is not equipped with a card-swiping start system

> **WARNING**
>
> - If any damage or malfunction is detected in the forklift, it must not be started until it has been repaired and restored to normal operation.

Operating steps:

1) Release the emergency stop switch. Rotate it clockwise, the emergency stop switch button will pop up automatically.
2) Place the direction lever in the neutral position.
3) Insert the key into the switch lock and rotate it right to the “I” position.
4) The forklift will automatically enter the self-test program (about 3 to 4 seconds). The display shows the welcome interface and all 6 indicator lights are on.

> **CAUTION**
>
> - The forklift cannot be driven or lift during this time. If the direction switch or accelerator pedal or lift switch, etc. is operated during this time, a malfunction message appears in the display and the fault indicator “ " lights up.

5) Hold the steering wheel with the left hand and turn the key switch on with the right hand.
6) Tilt the mast backward.
7) Operate the lift control lever to lift the forks by 150mm-200mm from the ground. Operate the tilt control lever to make the mast tilt back to its limit.
8) Operating the direction control lever
   a. To drive forward: push the direction control lever forward.
   b. To drive backward: push the direction control lever backward.
9) Release the hand brake lever.
10) Press the brake pedal and push the handbrake lever to the forward position.
11) Hold the steering wheel handle with your left hand and gently put your right hand on the steering wheel.

2.2 Swipe card to start forklift [Optional]

> **WARNING**
>
> - If any damage or malfunction is detected in the forklift, it must not be started until it has been repaired and restored to normal operation.

2.2.1 Starting the forklift with the card

1) Power on the truck (pull up the emergency stop switch and put the gearshift handle in the “N” position).

> **CAUTION**
>
> - The forklift will not start if the emergency stop switch is not pulled up or the gearshift handle is not placed in the “N” position.

2) Turn the key switch to the “ON” position (the dashboard will light up); and at this time, the card indicator or icon will flash.

Card indicator and icon:

Item / Name	Color	Icon*
Card icon	Green	

Note*: Some devices, e.g. card readers, have no icons to be displayed, and only indicators are provided.

3) Put the IC card close to the sensing area of the card reader (within 10mm), and then remove the IC card after about 1s. If the card indicator or icon turns on, it indicates that the card was read successfully, if not, the user should repeat these steps.

CAUTION

- This forklift truck is equipped with an integrated card reader and there is a sign for the card sensing area on the dashboard.
- Do not place the IC card in the sensing area of the card reader for a long time.

Front view of the IC card



Card reading icon



4) On the premise that the emergency stop switch is pulled up and the gearshift handle is placed in the “N” position, the electric forklift truck will start after the card is read successfully.

2.2.2 Binding a new IC card

1) Power on the forklift truck (pull up the emergency stop switch and put the gearshift handle in the “N” position).

2) Turn the key switch to the “ON” position (the dashboard will light up); and at this time, the card indicator or icon will flash.

Card indicator and icon:

Item / Name	Color	Icon*
Card icon	Green	
Note*: Some devices, e.g. card readers, have no icons to be displayed, and only indicators are provided.		

3) Put the new IC card close to the card sensing area 3 times within 15s, and at this time, the card indicator or icon will turn off.

4) Put the new IC card close to the card sensing area again for more than 5s, and at this time, the card indicator or icon will turn on, indicating that the new IC card was bound and read successfully.

CAUTION

- If the user doses not finish this step within 2min and then proceeds to the next step, the system will give a timeout prompt, indicating that the card was not read successfully and the truck is in a locked state.

2.2.3 Deleting the bound IC card

1) Power on the forklift truck (pull up the emergency stop switch and put the gearshift handle in the “N” position).

2) Turn the key switch to the “ON” position (the dashboard will light up); and at this time, the card indicator or icon will flash.

Card indicator and icon:

CAUTION

- If the user doses not finish this step within 2min and then proceeds to the next step, the system will give a timeout prompt, indicating that the card was not read successfully and the truck is in a locked state.

3) Put the IC card to be deleted close to the card sensing area for about 15s (do not remove the card during this period), and at this time, the card indicator or icon will turn on for 3s and then turn off for 1s in a cycle.

4) Remove the IC card and put it close to the sensing area again, and if the card indicator or icon turns off, it indicates that the IC card has been deleted successfully; if the card indicator or icon turns on for 3s and then turns off for 1s in a cycle, it indicates that it has not been deleted successfully.

5) Power on the forklift truck and then put the card close to the sensing area to start the truck.

CAUTION

- If the user doses not finish this step within 2min and then proceeds to the next step, the system will give a timeout prompt, indicating that the card was not read successfully and the truck is in a locked state.

3 Driving

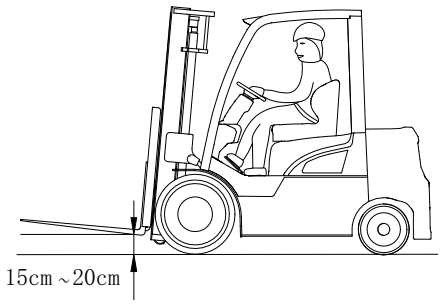
Operating steps:

1) Start the forklift truck.

2) Disengage the parking brake lever to release the parking brake (the corresponding parking brake indicator light "" is off).

3) Use the direction switch to select the driving direction.

4) Lift the forks 150mm to 200 mm above the ground.



5) Tilt the mast backward.

6) Depress the accelerator pedal slowly and adjust the driving speed according to the road conditions.

7) The truck will travel in the selected direction.

4 Steering

The forklift truck is different from ordinary vehicles, because its rear wheels are used for steering; the rear counterweight is rotated outwards when steering.

Slow down and rotate the steering wheel towards the side to turn; the steering wheel needs to be rotated a little bit earlier than front steered vehicles.

CAUTION

- If the user doses not finish this step within 2min and then proceeds to the next step, the system will give a timeout prompt, indicating that the card was not read successfully and the truck is in a locked state.

5 Reverse driving

1) Observe the surrounding environment carefully, and if necessary, get out of the vehicle to check.
2) Select your reversing target, and once you've shifted into reverse and started moving, slow down and drive carefully, paying attention to the surrounding conditions and making constant adjustments to your direction.
3) Straight-line reversing: Keep the rear wheels aligned straight, and when making corrections, make small and precise movements with the steering wheel.
4) Curved reversing: At this time, pay special attention to the characteristic of the forklift's rear wheels being the steering wheels and the characteristic of the outer end of the counterweight swinging outwards. Consider whether the inner rear wheel and the outer steering wheel might drive off the road or collide with people or objects.
5) When reversing, you can choose to focus on the rear, the side, or use the rearview mirror for guidance, or be directed by a spotter. Aim to align the longitudinal centerline of the forklift with the center of the target, or have the vehicle's side edge or wheel close to the target's edge.

DANGER

- When reversing on a slope, do not turn to avoid the risk of vehicle overturning!

CAUTION

- When reversing, pay special attention to the direction of travel.
- When carrying large-volume cargo that obstructs the view, you should reverse or be guided by a spotter. When guided by a spotter, it is essential to fully understand the meaning of their hand signals, flags, whistles, or other signals. When turning or driving in narrow passages, you must be very cautious about the front end and be mindful of other people.

6 Braking

Braking can be performed in the following three ways:

Handbrake

Reverse brake

Roll brake

Safe parking:

Parking brake

WARNING

- The braking performance of the truck mainly depends on the condition of the road surface.
- The driver must be aware of the driving surface conditions and consider the braking performance.
- Extra caution and care should be taken when braking to avoid cargo falling.
- Be aware that braking distances will be extended when towing cargo.
- In an emergency, only use the driving brake to brake the forklift.

Foot brake

Depress the brake pedal until enough braking pressure is generated to make the truck slow down or stop.

Reverse brake

Switch the travel switch to the reverse direction during driving.

The truck will be braked until it drives in the reverse direction.

Roll brake

Release the accelerator pedal,brake the truck.

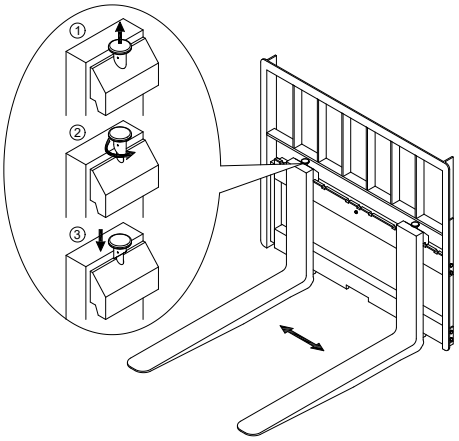
Parking brake

Pull up the parking brake lever after it has stopped.

Park it in a safe place.

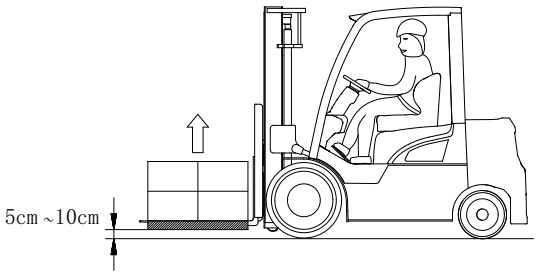
7 Pick up

1) The forks should be adjusted sidewise to maintain proper balance of load.

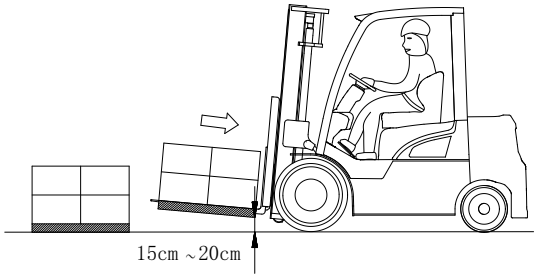


2) Place the truck in front of the load to be handled.
3) The pallet should be evenly positioned across both forks
4) Insert forks into the pallet as far as possible.
5) To raise loads from the ground：

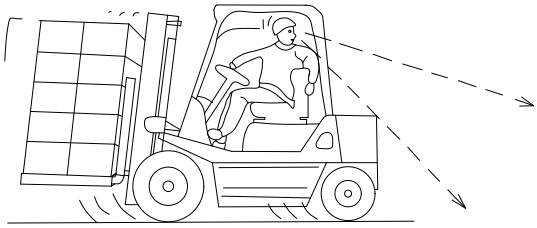
a. First lift the forks 5 cm (1.97in) to 10 cm (3.93in) off the ground or floor and make sure loads rest stable.



b. Then, tilt the mast backwards fully and lift loads up to 5 cm (1.97in) to 10 cm (3.93in) off ground then start moving.



6) When handling bulky loads which restrict your vision, operate the truck in reverse except when climbing grades.



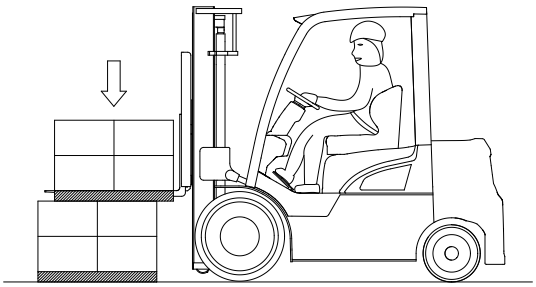
8 Stacking load

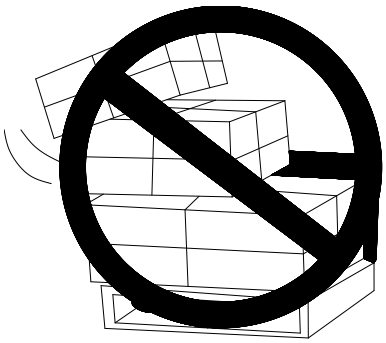
1) Slow down when approaching the load deposit area.
2) Stop the truck right in front of the area where your load is to be deposited.
3) Check the condition of the deposit area.
4) Tilt the mast forward until forks become

horizontal. Raise forks until they are a little higher than the deposit position.

5) Move forward to place the load directly over the desired area and stop the truck.

6) Make sure your load is just over the desired area. Slowly lower the load into position. Make sure the load is securely stacked.





WARNING

- The goods should be stacked in the center.

7) Disengage forks from the load by using necessary lift-tilt operation and then back away.

8) After making sure the fork tips leave the load, lower the forks to the basic position (15cm(5.91in) to 20 cm (7.87in) off the ground).

9) Tilt the mast backwards.

WARNING

- Never tilt the mast with loads upraised 2m(6.56ft) or more.
- Don't leave or dismount from the truck when the load is raised high.

9 Remove load

1) Slow down when approaching the area where the load is to be retrieved.

2) Stop the truck about 30cm(11.81in) away from the loads.

3) Check the condition of the loads.

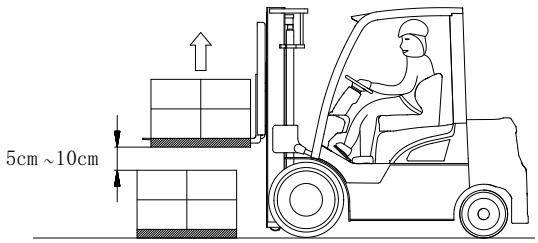
4) Tilt the mast forward until forks become horizontal. Elevate forks up to the position of the pallet or skid.

5) Make sure forks are positioned properly for the pallet. Move forward slowly to insert forks into the pallet as far as possible and then stop the truck.

CAUTION

- If the forks cannot be fully inserted, use the following procedure: move forward and insert the forks 3/4 of the way. Raise the forks 5 cm (1.97in) to 10 cm (3.93in) and move backward 10cm(3.93in) to 20 cm(7.87in) with the pallet or skid on the forks, then lower the pallet or skid on the stack. Move forward again to insert the forks fully.

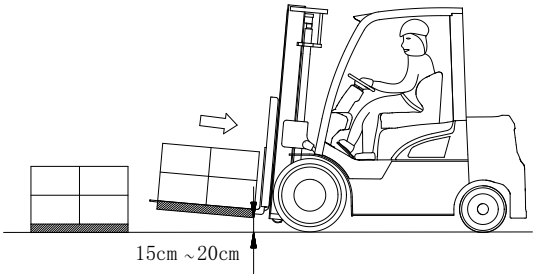
6) Raise the forks 5 cm (1.97in) to 10 cm (3.93in) off the stack.



7) Check all around the truck to insure that the path of travel is unobstructed and back away slowly.

8) Lower forks to a height of 15cm(5.91in) to 20

cm (7.87in) above the ground. Tilt the mast backward fully and move to the desired area.



10 Safe parking

Operating steps:

1) Engage the parking brake control lever.
2) Turn the key to the "0" position.
3) Remove the key from the switch lock.
4) Press the emergency power-off switch down.
5) This completes the parking steps.

WARNING

- The truck must be parked on flat ground. If the ground is not level, the truck must be secured with wedges or other objects.
- Never Park or leave the truck on a slope.
- Never Park the truck with a raised load.
- The truck must be parked in the designated safe parking area, not on travel routes.

11 Checks after operation

Clean the truck after operation and conduct the following checks:

1) Check for any damage or leakage.
2) Refill with lubricating oil as appropriate.
3) Check the tires for any damage or foreign objects.
4) Check the wheel nuts for any looseness.
5) Check the electrolyte level.
6) If the truck did not lift to the maximum height during the operation on that day, the forks should be raised to the maximum height 2 or 3 times after the operation is completed.

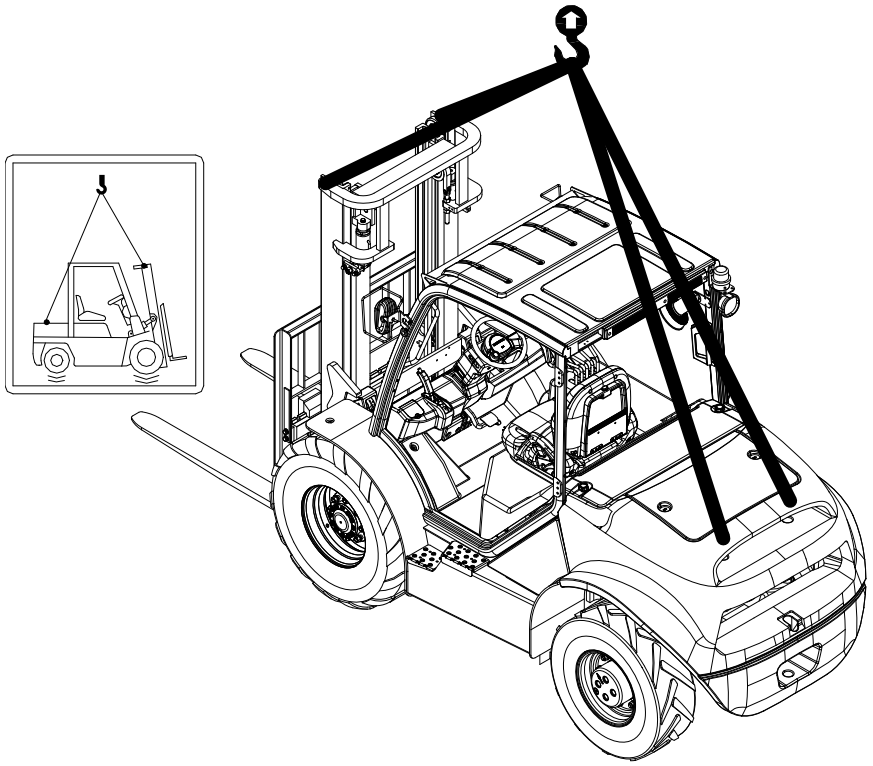
CAUTION

- In the event of any faults, prompt maintenance should be made.
- Do not use the truck before it is repaired.

VII Truck Lifting, Carrying and Towing

Lifting

Securely fasten wire ropes to the lifting holes in both ends of the outer mast crossbar and to the counterweight hook, and then hoist the forklift with a lifting device. The wire rope fastened to the counterweight end must pass through the gap in the overhead guard, without putting stress on the overhead guard.

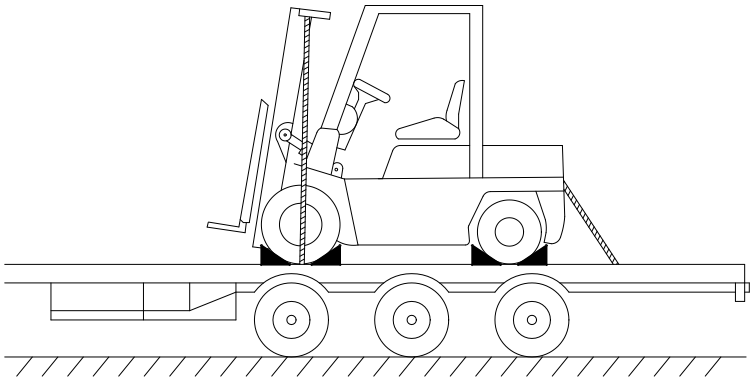


WARNING

- Only use the lifting tools with enough load.
- Fully tilt the mast backward when lifting
- When assembling lifting tool, notice that the lifting tool will not touch forklift part or overhead guard when lifting.
- Do not lift a forklift by its cab frame (overhead guard).
- Never walk under a forklift when it is being lifted.

Carrying

Forklift trucks are generally used for loading, unloading and short-distance transportation. They are not designed to be a long-distance mode of transport. A forklift that needs to be transported over a long distance should be transported in a ship, train or a truck having a load capacity over 5t.



WARNING

- When fixing forklift, take effective measures according to specific condition to guarantee the safety of transportation.
- Correctly fix the forklift when transporting by lorry or trailer.
- Chock the forklift to avoid accident movement.
- Only use tension belt with big enough nominal strength or fasten the belt to fix the truck.

Towing

Forklift is not permitted to use for daily traction or traction task.

Towing pin in the lower counterweight is only used for the following occasions:

- Forklift malfunctions on the working road and move the truck urgently.
- Use when forklift gets into trouble and cannot drive(wheels get stuck in pits etc.)

Pull out the towing pin first, then install the wire rope, and then install the towing pin again.

CAUTION

- Release the handbrake handle.

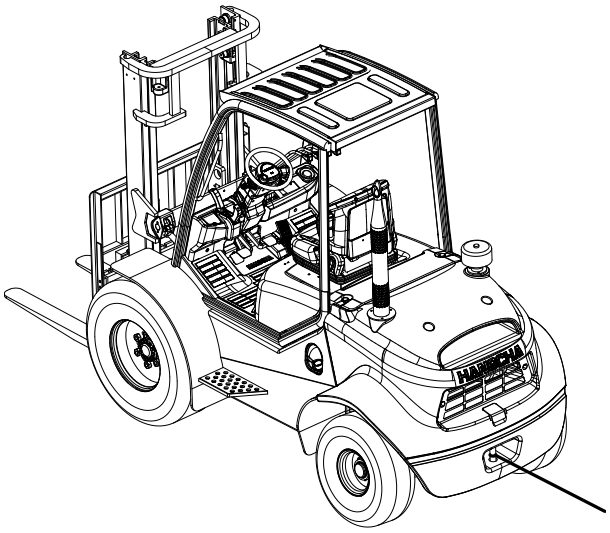
Towing methods after vehicle damage:

Release the parking brake. Place the direction switch in the neutral position. Observe traffic safety and display the "being towed" sign.

Procedures：

- Turn off the key switch and disconnect the power plug.
- Release the hand brake.
- Put the direction lever in neutral.
- Fasten the wire rope for traction.

  It can drag forklift.



WARNING

- Don’t tie the steel wire ropes on the unfixed position.
- Don’t carry a load to steel wire ropes suddenly.
- The truck would be damaged if you tow it with the electric lock working.
- Do not tie the wire rope at an unspecified position.

VIII First use of forklift

When forklifts are transported, it is common for the forks or masts to be removed to prevent damage and facilitate shipping. Before the first use of the forklift, the operator should carry out the corresponding installation procedures.

WARNING

- The installation of forks and the mast is permitted only by service personnel designated by our company.
- The hydraulic lines of the mast are to be connected to the main hydraulic lines of the forklift only after the mast has been corre
- The forklift is allowed to be used for the first time only after the hydraulic lines have been correctly connected.
- When transporting multiple forklifts, ensure that the forks, masts, and the main body of the forklifts correspond correctly when reinstalling. Do not interchange forks and masts arbitrarily.

CAUTION

- Installation of forks and mast is detailed in the service manual.

After the installation of the forks and the mast is complete, the following checks must also be conducted:

1) Inspect to ensure the equipment is complete;
2) Check that the engine oil level complies with the specifications;
3) Verify the hydraulic oil level complies with the specifications;
4) Inspect the gear oil and transmission fluid levels to ensure they meet the requirements;
5) Check that the brake fluid level is in accordance with the regulations;
6) Ensure the battery connections are securely fastened;
7) Check the electrolyte level in the battery (except for maintenance-free batteries);
8) Conduct other checks (refer to the daily maintenance items for inspection).
9) After the inspection is complete and no issues are found, the forklift may be used.

WARNING

- Only operators who have received training and possess the appropriate special vehicle operation license are permitted to operate the forklift.

IX Forklift cleaning

At the end of each workday, the forklift must be properly cleaned, which includes the following steps:

1) Rinse off all the hydraulic cylinder piston rods with water to remove any surface dirt and grime.

2) Use water to wash the mast, frame, counterweights, wheels, drive axle, and steering axle.

CAUTION

- When rinsing, avoid splashing water onto the relevant electrical components.

3) Clean the instrument panel, the instrument guard, and the electrical components on the instrument guard with a clean, damp cloth.

4) Open the engine hood and clean the engine surface with a clean, damp cloth to remove any oil stains and other corrosive liquids.

DANGER

- Please wait until the engine has completely cooled down before cleaning it!

CAUTION

- Washing electrical components with water may cause damage. It is prohibited to wash all electrical components on the forklift with water.
- The cleaning of electrical components can be carried out using a low-pressure vacuum tool or compressed air.
- The use of steam cleaning equipment is prohibited.

X Disposal of scrapped forklifts.

When a forklift reaches its end of life and is scrapped, it must be handled in accordance with the current laws and regulations where the forklift is located. This is especially true for the disposal of replaced fluids, waste liquids, and batteries, which should be recycled and treated according to local environmental protection laws and regulations. They must not be arbitrarily poured or discarded to prevent environmental pollution.

XI Inspection and maintenance

1 Inspection and maintenance of safety regulations

1) Carry out all checks and maintenance based on the schedule as stated in the maintenance checklist.

> **WARNING**
>
> - Do not modify or refit the truck, especially the safety devices. Do not change the working speed of the truck.

> **CAUTION**
>
> - Only the original spare parts comply with the quality management requirements of our company. Only the spare parts supplied by our company can guarantee that the truck can achieve reliable and stable operating performance. Worn parts and waste fluids should be disposed of according to the current environmental protection directives.

2) Carry out all checks and maintenance based on the schedule as stated in the maintenance checklist.
3) Do not modify or refit the truck, especially the safety devices. Do not change the working speed of the truck.
4) It is necessary to perform regular checks and maintenance to keep the forklift truck performance at optimum.
5) Checks and maintenance are often neglected, so it is better to find the problems early and solve them in time.
6) Use the spare parts from HANGCHA GROUP CO., LTD.
7) When changing or adding oil, do not use oil which is not the same as the original.
8) The waste battery, oil and fluid from the lithium-ion battery should be disposed of in accordance with the local environmental protection laws and regulations, rather than dumped at will.
9) Develop a comprehensive maintenance and repair plan.
10) Complete records should be made after each maintenance and repair.
11) Do not repair trucks without training.

> **CAUTION**
>
> - Smoke and fire are strictly prohibited.
> - Turn off the emergency stop switch and unplug the battery before maintenance. (Except for fault diagnosis).
> - Use compressed air to clean the electrical parts, rather than water.
> - Do not put your hands, feet or any part of your body under the mast and display frame.
> - In addition to testing the lights and checking the operational performance, the key switch must be turned off and the battery must be unplugged before checking the electrical system.
> - Do not use a forklift with any faults
> - Small faults can cause big accidents.
> - Do not put your hands, feet or any part of your body under the mast and display frame.

2 Daily maintenance (8 hours)

It also serves as a pre-operation check.

To ensure the safe operation of the forklift truck, the operator must check and adjust the forklift truck before driving it.

> WARNING
>
> - If there is damage or a safety hazard on the forklift truck or attachment found in the check, the forklift truck should not be used again until it is repaired in accordance with the regulations.
> - In addition to testing the lights and checking the operational performance, the key switch must be turned off and the battery must be unplugged before checking the electrical system.

1.Leakage check: hydraulic oil, electrolyte, brake fluid

Check whether there is any oil/fluid leakage in the hydraulic pipe connectors, battery and brake system by hand and visual inspection. Do not use naked flames.

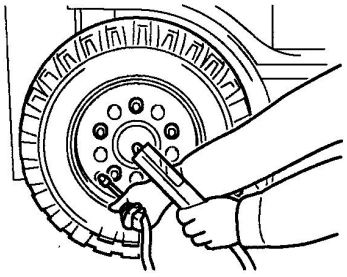
2.Visual inspection

1) When carrying out a visual check of the forklift truck, the operator should pay special attention to whether the wheels, wheel bolts and load parts are damaged or loose.
2) Check whether lights and instruments work normally.
3) Check tires, air pressure and ensure bolts are tight.
4) Check whether the tires are damaged and whether tire pressures are normal.
5) Check whether the battery case is locked tightly.
6) Adjust the front, back and up and down positions of the hand-guard control device to suit the driver.
7) Adjust the field of vision in the rearview mirror.
8) Check whether the lifting chains are evenly tensioned.

3.Tyre inspection

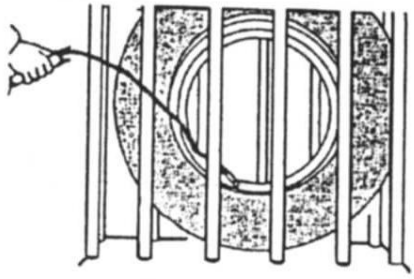
After confirming there is no air leakage, screw on the cap. Check the tire's contact surface and sides for any damage, and inspect the rim for deformation.

Unscrew the cap counterclockwise and check the tire pressure with a pressure gauge. If insufficient, add air pressure to the specified value.



> WARNING
>
> - The forklift truck tires require very high pressure to bear loads; tiny deformation of the rim or surface damage to the tire may cause an accident.
> - When using an air compressor, as the maximum output pressure of the air compressor is higher than the specified pressure of the tire, the pressure setting should be adjusted first; otherwise it may cause a serious accident.

- In order to ensure safety, the tire should be placed in a protective frame during air inflation.
- Air bleeding is required before changing any tires. (Pneumatic tire)



Tire pressure (new standard GB/T2982-2014)

4WD：

Vehicle Model	Front Wheel	Rear Wheel
1.5t~1.8t	620kPa	470kPa
2.5t	620kPa	470kPa
3t~3.5t	550kPa	470kPa

2WD：

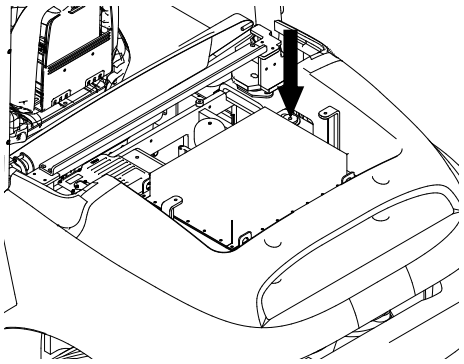
Vehicle Model	Front Wheel	Rear Wheel
1.5t~1.8t	620kPa	700kPa
2.5t	620kPa	700kPa
3t~3.5t	550kPa	700kPa

WARNING

- After assembling the tires and rims, all bolts and nuts should be tightened to the specified torque value before the tires can be inflated, the tires have high expansion energy after inflation, and the tire air pressure should not exceed the specified value.
- In order to ensure safety, the tire should be placed in a protective frame or tied down with a chain during inflation.

4.Coolant fluid inspection

When the motor is in a cool state, check the coolant level in the expansion tank. If it is below the "MIN" mark, add coolant up to the "MAX" mark. If the expansion tank is empty, check the coolant level in the main tank. If the main tank is low on coolant, add coolant to the tank cover, with a freezing point of -36.5°C, and simultaneously add coolant to the expansion tank up to the "MAX" mark. The expansion tank location is shown in the diagram.



WARNING

- The coolant may be at a high temperature. Please exercise caution when opening.
- Antifreeze contains substances harmful to the human body. If you swallow it by accident, you should induce vomiting immediately and go to hospital.
- Keep children away from the antifreeze.

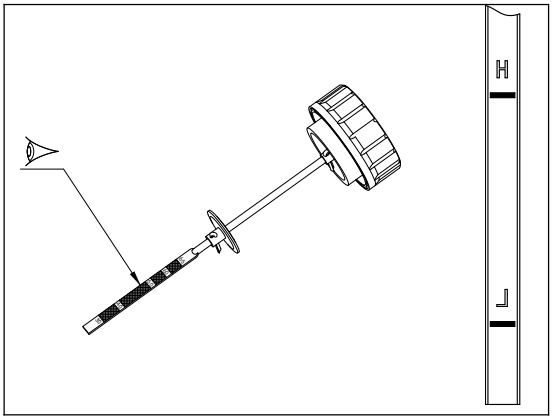
CAUTION

- Add coolant to the expansion tank. The coolant should be a 50/50 mixture of water and ethylene glycol.

- Pay special attention to the water tank and cooling system in hot seasons.
- Solid particles in the coolant should not exceed 0.45mm in diameter, and the weight of waterway contaminants should not exceed 30mg.

5.Hydraulic oil check

Open the hood, unscrew the hydraulic oil filling cover at left part, pull out the dipstick, check whether the oil level is between the scale lines. If the oil level is insufficient, add more into the tank. Then close the hood.



Operating the forklift (to fill the pipeline with hydraulic oil), when the mast is in the lowest position, the oil level should be as follows:

①The L mark indicates the lower limit of hydraulic oil.

②he H mark indicates the upper limit of hydraulic oil, but vehicles equipped with attachments are allowed to exceed this limit.

6.Brake fluid check

Open the brake fluid cup cover, check whether the brake fluid quantity is within the scale; if the liquid quantity is insufficient, please top it up and check whether there is air in the brake line.

CAUTION

- The wet brake drive axle uses SAE 10W hydraulic oil as brake fluid. Please make sure not to use the wrong fluid.
- Prevent dust and water from mixing with the brake fluid when adding it.

7.Light check

Ensure that the lights turn on when the ignition key switch is on.

8.Indicator light check

Toggle the indicator light control lever and check whether the indicator light operates normally.

9.Hand brake check

①The truck slows down.

②The truck brakes and stops when the hand brake lever is pulled up. The truck must not swerve.

10.Reversing light and reversing buzzer check

When the shift lever is in the R position, the reversing light turns on and the reversing buzzer sounds.

11.Steering

① The truck should be driven slowly.

② Turn the steering wheel three turns clockwise and anticlockwise, respectively.

Check whether the left and right steering force are the same.

12.Horn

Press the horn button and check whether the sound is normal.

13.Seat adjustment and seat belt check

Pull the seat adjusting lever back, adjust the driver's seat to a comfortable position for your hands and feet, release the seat adjusting lever, and lock it.

Check whether the seat belt works normally.

14.Shift lever

Check whether the shift lever is loose and whether it is stable when shifting gear.

15.Lift lever, tilt lever and attachment lever

Check that the lift lever, tilt lever and attachment lever are secure and they return properly.

16.Instrument

Check if the display and all functions are working properly.

17.Brake pedal and accelerator pedal inspection

Drive the vehicle at a slow speed

Press the brake pedal to check for any sluggishness or binding, and ensure the brake lights illuminate

Press the accelerator pedal and verify that acceleration varies smoothly with pedal travel, and that the pedal returns to its original position properly

18.Check whether the differential lock function is normal.

19.Check if the 4WD function is normal (4WD truck only).

20.Rearview Camera (optional) Inspection

Check if the rearview camera function is working properly

Clean any dust or dirt stains on the camera lens

21.Lithium battery inspection

Put on insulated gloves and wear insulated shoes. Check if the battery is securely fastened, i.e., whether the battery is firmly and reliably fixed; check if the plug and socket are loose or damaged, otherwise they should be adjusted or replaced; check if the lithium battery casing is damaged, otherwise immediate repair should be reported.

⚠ WARNING

- Unplug the MSD maintenance switch on the Lithium battery main box and wait for 15~20 minutes, during which no operation is allowed, otherwise it will cause personal safety accidents.
- Inspection and maintenance should only be carried out when the power is off. Safety precautions and operating procedures must comply with "Section 7.3 of Forklift Overview - Safety Precautions and Operating Procedures for High-voltage Electric Forklifts.
- Adjustment and replacement of high-voltage cables must be carried out by professional HANGCHA after-sales personnel.

22.Air conditioning system inspection

Check if the compressor is installed and secured firmly and reliably, check for any abnormal noises in the air conditioning system, verify if the compressor is engaging normally, and examine if the information displayed on the air conditioning control panel is normal.

3 Weekly maintenance (40 hours)

Add the following maintenance items in addition to daily maintenance.

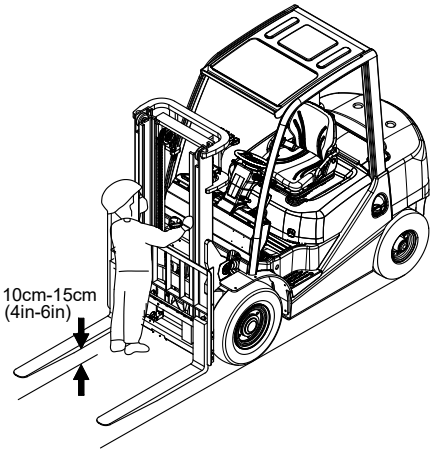
1.Mast and fork inspection

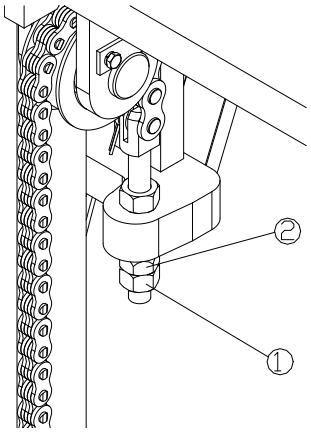
Inspect the mast and fork to ensure that:

1) The fork is not cracked or bent and is firmly and correctly mounted on the fork arm.
2) Check the oil cylinder and oil pipe for any oil leakage.
3) Check the rotation of the rollers.
4) Check whether there are cracks or deformation in the mast.
5) Manipulate the lifting, tilting, and attachment handle to check whether the mast works normally and whether there is any abnormal noise.

2.Chain tension check

1) Raise the fork by 10cm-15cm with the mast vertical.
2) Press the middle of the chain with your thumb to check whether the tension of the left and right chains is the same.
3) Tension adjustment: loosen locknut 1, screw nut 2 to adjust the chains so that the tension of the two chains is the same, and then tighten locknut 1.

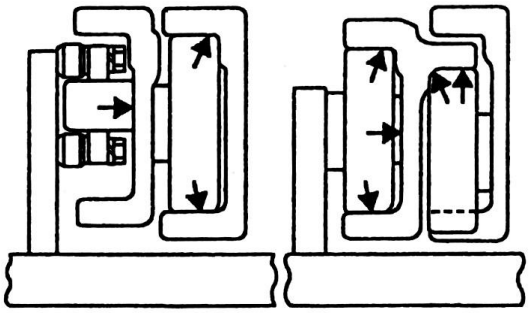




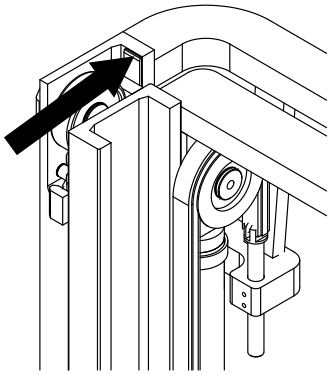
3.Lubrication of mast

According to the requirements of the regular maintenance and lubrication cycle, the following parts should be lubricated regularly.

1) The lubrication cycle should be changed according to the operating conditions. In the busy months of operation, the lubrication cycle should be shortened.
2) In oder to ease the forklift operation, apply a layer of grease to the contact surface of the lifting guide wheel and the inner & outer mast.



Apply a layer of grease on the supporting guide rails.



WARNING

- When applying grease, park the forklift on a flat road, turn off the engine and engage the handbrake. Take care to avoid your hands and body from being caught when lubricating, and take care to avoid falling when lubricating at high level.

4.Chain lubrication

Use a brush dipped in engine oil to paint the chains on the left and right sides.

5.For the lubrication of the following parts, see the Lubrication System Diagram for details.

① Lubrication of mast seat bearing;

② Lubrication of inching brake pedal;

③ Lubrication of steering axle support shaft;

④ Lubrication of steering knuckle spindle;

⑤ Lubrication of steering linkage pin;

⑥ Lubrication of steering cylinder pin.

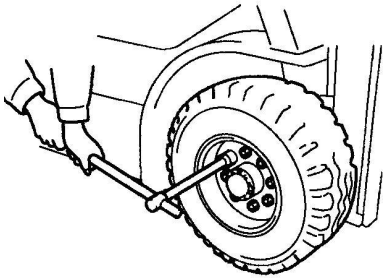
⑦Lubrication of the side-shifting attachment slider.

6.Bolt and nut tightening

See the maintenance cycle table.

7.Tire nut tightening torque check

Check whether the tightening torque of the wheel nuts meets the requirements.

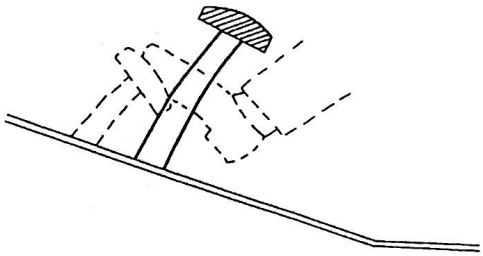


Operating procedures:

1) Park the forklift according to regulations
2) Use a torque wrench to cross-tighten the wheel fastening nuts. Refer to the table below for the tightening torque.

Model	Front wheel nut （Nm）	Rear wheel nut （Nm）
1.5t~3.5t	363~490	263-354

8.Brake pedal, inching pedal and clutch check



Operating procedures:

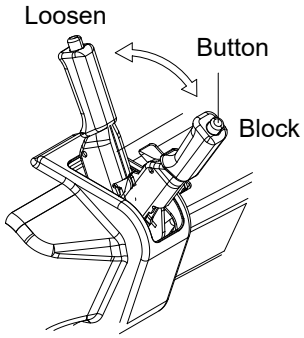
1) Depress the brake pedal to check for any sluggishness or binding.
2) Adjust the pedal height: Adjust the limit bolt to ensure the distance between the midpoint of the pedal pad surface and the front base plate is 135 mm ±5mm.
3) Adjust the push rod length of the brake master cylinder to ensure the brake pedal free travel is between 1mm and 3mm.
4) The brake light switch should fully engage when the brake pedal is gradually depressed

by 10mm to 20mm, and should disengage when the foot is released to that position.

9.Parking brake

The operating force is adjustable by the screw on top of the lever. Turning clockwise increases the operating force, while turning counterclockwise decreases it. Ensure that the handle force is between 15kg and 20kg when locking the handle.

Make sure the parking brake handle is fully tightened and releases smoothly back to its original position when released.



10.Air conditioning system maintenance

Check the normal operation of condensing fan and evaporating fan; check the cleanliness of condenser fins and clean the condenser in time.

check for any burning marks on circuit system terminals, connectors, grounding points, power contacts, etc; clean the air filter.

4 Monthly maintenance (200 hours)

Add the following maintenance items in addition to weekly maintenance.

1.Lubricating grease on the front and rear pins of the tilt cylinder

Wipe the filling point clean and then squeeze out the old grease.

2.Check the gear oil of the drive axle and add if necessary.

If the working environment has high dust levels, it is recommended to change the gear oil of the drive axle for the first time after 100 hours of operation.

3.Chain check

1) Use a caliper and measuring tape to measure chain elongation and replace it when the elongation exceeds 3% of the initial length.
2) Use a caliper to measure the height of the chain plate, replace it when its wear exceeds 3% of the initial height, and replace other chains on the same mast, do not replace them individually.
3) Clean and lubricate the chains, when they work in an environment that is severely cold or with any corrosive substances, the cleaning and lubrication cycle should be reduced to 100 hours.

4.Heater (optional)

1) Safety devices inspection:

Overheat protection: Check the overheat protection device of the heater to ensure it works properly and can automatically cut off power when the temperature is too high.

Earth leakage protection: Regularly check the earth leakage protection device to ensure its sensitivity and reliability.

2) Electrical connection inspection:

Power cable and plug inspection: Regularly check the power cable and plug of the heater to ensure there is no wear and tear or loosening.

Electrical joint inspection: Check all electrical joints to ensure they are firmly connected, avoiding poor contact or short circuits.

3) Fan and motor inspection:

Check if the fan is operating normally and if there are any unusual noises or vibrations. If there are any abnormalities, repair or replace promptly.

Motor inspection: Regularly check the working status of the motor to ensure its smooth operation and no overheating.

4) Heating element inspection:

Heating element inspection:Regularly check the heating elements to ensure they are working properly, and inspect for any damage or aging. If any issues are found, replace them promptly.

Temperature control inspection: Check if the thermostat is working properly to ensure the heater can automatically adjust according to the set temperature.

5.Air conditioning system maintenance (optional)

Clean or replace the air intake grille; Check the operation of the fan motor; Check the operation of the compressor clutch and lubricate if necessary; Inspect all electrical components.

5 Every three month maintenance (500 hours)

Add the following maintenance items in addition to those for every one month and a half.

1.Inspect the inlet and outlet pipes of the cooling system

Inspect the aging condition of inlet and outlet water pipes of the cooling system, and replace them if necessary.

WARNING

- Unplug the MSD maintenance switch on the Lithium battery main box and wait for 15~20 minutes, during which no operation is allowed, otherwise it will cause personal safety accidents.
- Inspection and maintenance should only be carried out when the power is off. Safety precautions and operating procedures must comply with "Section 7.3 of Forklift Overview - Safety Precautions and Operating Procedures for High-voltage Electric Forklifts.
- Adjustment and replacement of cooling pipes must be carried out by professional HANGCHA after-sales personnel.

2.Check the motor and electronic control integrated system

Check if the high-voltage wire harness connector is loose; visually inspect the integrity of insulation protection.

WARNING

- Unplug the MSD maintenance switch on the Lithium battery main box and wait for 15~20 minutes, during which no operation is allowed, otherwise it will cause personal safety accidents.
- Inspection and maintenance should only be carried out when the power is off. Safety precautions and operating procedures must comply with "Section 7.3 of Forklift Overview - Safety Precautions and Operating Procedures for High-voltage Electric Forklifts.

3.Check the Power Distribution Unit (PDU)

Check the connection status of high and low voltage wire harness connectors on the power supply two-in-one (PDU) to ensure they are in good condition.

WARNING

- Unplug the MSD maintenance switch on the Lithium battery main box and wait for 15~20 minutes, during which no operation is allowed, otherwise it will cause personal safety accidents.
- Inspection and maintenance should only be carried out when the power is off. Safety precautions and operating procedures must comply with "Section 7.3 of Forklift Overview - Safety Precautions and Operating Procedures for High-voltage Electric Forklifts.

4.Parking brake cable inspection

Inspect the wear condition of both ends of the parking brake cable, and replace if necessary.

5.Master brake cylinder inspection

Inspect the operation of the master brake cylinder, checking for any leaks or damage.

6 Semi-annual maintenance (1000 hours)

Add the following maintenance items in addition to those for the three-monthly maintenance.

1.Brake fluid replacement

1) Park the forklift truck on a horizontal road at the designated maintenance place, lower the forks to the ground, pull up the handbrake handle firmly, put the transmission in neutral and turn off the power.
2) Take off the rubber dust cap on the drain port, put the two ends of a prepared transparent hose in the drain port and the waste oil collection bottle respectively, and then use a wrench to loosen the drain port screw counterclockwise while the other person on the forklift repeatedly presses the brake pedal. The brake fluid will be sprayed from the drain port, pay attention to the level of the brake fluid reservoir, and add new brake fluid as the fluid level drops. Tighten the drain port screws after clear brake fluid flows out.
3) Repeatedly press the brake pedal to the bottom and hold it there while the person under the forklift loosens the drain port screws, then tightens the screws after clear brake fluid comes out and asks the person on the forklift to release the brake pedal. Repeat the above operation several times until there are no air bubbles in the released brake fluid. Pay attention to the fluid level in the brake fluid reservoir and add new brake fluid as the level drops.

> ⚠ CAUTION
>
> - When filling the brake fluid, prevent dust and water from mixing into the fluid.
> - The brake fluid used in this series of forklifts is SAE 10W hydraulic oil. Please do not use the wrong type.

2.Lubrication of the steering wheel locking device

Apply lubricating grease to the steering wheel locking device.

3.Check, clean and replace the hydraulic return oil filter, breathing apparatus and filter screen

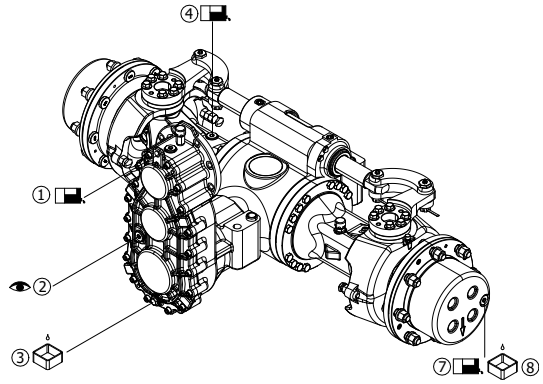
Park the forklift truck on a horizontal road, lower the forks to the ground, tilt the mast back, pull up the handbrake handle firmly, put the transmission in neutral and turn off the power.

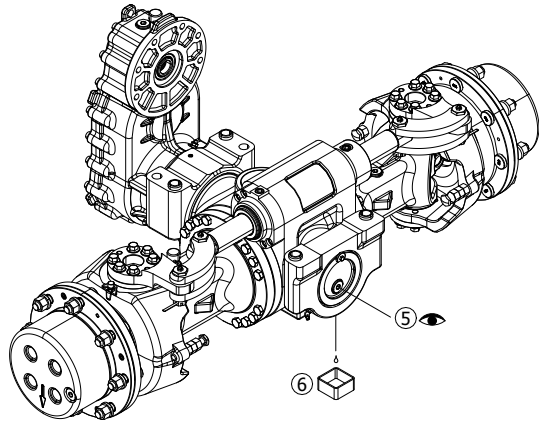
1) Loosen the bolts on the upper cover assembly of the hydraulic oil reservoir.
2) Remove the return oil filter from the upper cover.
3) Install the new return oil filter by hand.
4) Remove the filter screen from the oil reservoir.
5) Install a new filter screen by hand.
6) Install the upper cover of the oil reservoir and tighten the bolts.
7) Remove the breathing apparatus, clean and dry the separate air filter screens with a clean and non-flammable cleaning agent.
8) Install the breathing apparatus.
9) Start the engine and operate the hydraulic system so that the entire system is primed

with hydraulic oil. Check for leaks.

10) Turn off the engine to check the oil level. Retract all cylinder rods so that the oil level remains between the scales of the dipstick.

4.Change the steering axle lubricant for 4WD rough terrain forklift truck (first change required after 50 hours of new vehicle break-in)





1-gearbox oil filling port	2-gearbox oil level inspection port
3-gearbox oil drain port	4-axle oil filling port
5-axle oil level inspection port	6-axle oil drain port
7-wheel reduction gear oil filling port	8-wheel reduction gear oil drain port

CAUTION

- The wheel reducer utilizes a single port for both oil filling and draining. When the reducer's arrow points vertically downward, this port serves as the oil-fill and level-inspection point. When rotated to the lowest position, it functions as the drain port.

Park the forklift on level ground. Shift the direction switch to neutral, turn the steering wheel fully to the left, and turn off the power.

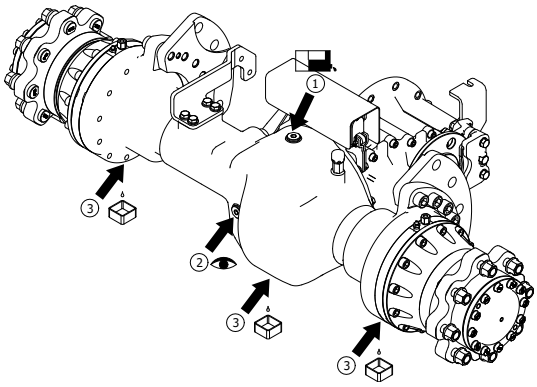
1) Remove the drain plug at the axle oil outlet, drain the oil into a container, and clean the drain plug.
2) Remove the drain plug at the gearbox oil outlet, drain the oil into a container, and clean the drain plug.
3) Rotate the wheels to position the oil port of the wheel end reducer at the lowest point. Remove the drain plug at the wheel end reducer, drain the oil into a container, and clean the drain plug.
4) Install the drain plug.
5) Remove the filler plug and oil level inspection plug on the gearbox. Add Mobil 424 hydraulic transmission fluid from the filler port until oil overflows from the oil level inspection port (approximately 1.5L). After filling, install the filler plug and oil level inspection plug.
6) Remove the filler plug and oil level inspection plug on the axle. Add GL-5 gear oil (general season: 85W/90; winter or low temperature environment: 75W/90) from the axle filler port until oil overflows from the oil level inspection port (approximately 2.8L for 1.5t~1.8t forklifts; approximately 3.5L for 2.5t~3.5t forklifts). After filling, install the filler plug and oil level inspection plug.

7) Rotate the tires to position the arrow on the wheel end reducer directly downward.

8) Remove the filler plug on the wheel end. Slowly add GL-5 gear oil (general season: 85W/90; winter or low temperature environment: 75W/90) from the wheel end filler port. Stop adding oil when it begins to overflow. Wait 10 minutes and repeat the process; wait another 10 minutes and repeat again, for a total of three times (approximately 0.5L total per wheel end). After filling, install the filler plug.

9) Start the forklift, return the steering wheel to the center position, and turn off the power.

5.Change the drive axle lubricating oil (First change required after 100 hours of new vehicle running-in)



1-Fill port

2-Oil level inspection port

3-Drain port

Park the forklift on level ground. Shift the direction switch to neutral, turn the steering wheel fully to the left, and turn off the power.

1) Remove the drain plug at the drain port, drain the oil into a container, and clean the drain plug.

2) Install the drain plug.

3) Remove the filler plug and oil level inspection plug. Add Mobil 424 hydraulic transmission fluid from the filler port into the drive axle housing until oil overflows from the oil level inspection port (approximately 7.3L).

4) Install the filler plug and oil level inspection plug.

5) Start the forklift and drive for a distance.

6) Remove the oil level inspection plug, observe if oil overflows. If not, continue adding hydraulic transmission fluid until oil overflows from the oil level inspection port.

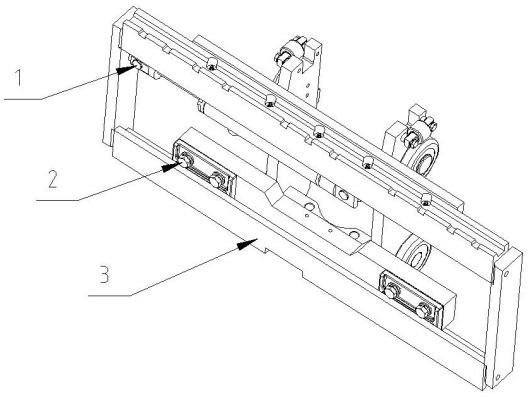
6.Check the built-in friction block in the side shifter

1) Remove the pin at the piston rod end of the side-shifting cylinder.

2) Remove the four bolts of the left, right and down friction blocks, and remove the down friction block (pay attention to the adjustment pad inside).

3) Push the beam under the side-shifting frame forward slightly and lift the side-shifting frame upwards.

4) Check the thickness of the friction block and replace the friction block with a new one when the wear relative to the initial size is greater than 2 mm.



7.Air Conditioner Filter (Optional)

If install an air conditioning filter, clean or replace it regularly to ensure smooth air circulation and prevent dust from entering the interior.

7 Annual maintenance (2,000 hours)

Add the following maintenance items in addition to the semi-annual maintenance.

1.Change hydraulic oil

Park the forklift truck on a horizontal road, lower the forks to the ground, tilt the mast back, pull up the hand brake handle firmly, put the transmission in neutral and turn off the engine.

> ⚠ DANGER
>
> - Hot hydraulic oil, ATF and associated parts may scald the human body. Do not allow them to come into contact with your skin.

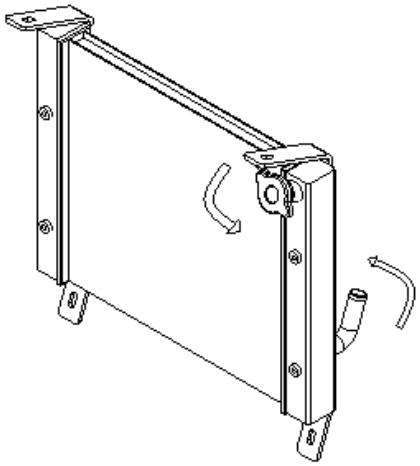
1) Place a container (with a volume over 60 liters) under the hydraulic oil reservoir, remove the hydraulic oil reservoir drain plug and drain the hydraulic oil into the container.
2) Remove the hydraulic oil dipstick and hydraulic oil reservoir cover.
3) Take out the magnet in the reservoir to clean it, and at the same time flush the drain port at the bottom of the reservoir with hydraulic oil.
4) Clean and install the oil drain plug.
5) Fill the hydraulic oil reservoir. See the Forklift Oil List. Install the hydraulic oil reservoir cover and dipstick.
6) Start the engine and operate the multi-valve lever and steering system to fill the whole system with hydraulic oil.
7) Check each hydraulic component and pipeline for oil leakage.
8) Turn off the engine, retract all the cylinder rods, and check the oil level of the hydraulic oil reservoir. Add hydraulic oil to the required scale line.

2.Change the lubricating grease for the entire forklift truck

3.Heater (optional)

It is recommended to have at least one professional inspection per year, conducted by qualified technical personnel to conduct a comprehensive inspection and maintenance of the heater.

4.Replace the coolant



1) Open the radiator cap and drain plug, drain the coolant, and flush the cooling system.
2) Tighten the drain plug.
3) Add coolant to the radiator up to the filler port level.
4) Operate the motor until it reaches normal operating temperature.
5) Stop the motor, wait for it to cool completely, then add coolant to the radiator up to the filler port level, and add coolant to the reservoir tank up to the “MAX” level.
6) Check for any leaks at the drain plug.

DANGER

- Before replacing the coolant, you must pull out the MSD maintenance switch and wait for 15 to 20 minutes to ensure the high-voltage system is completely discharged. Take precautions to avoid electric shock!

WARNING

- The coolant may be at a high temperature. Please exercise caution when opening.
- Antifreeze contains substances harmful to the human body. If you swallow it by accident, you should induce vomiting immediately and go to hospital.
- Keep children away from the antifreeze.

CAUTION

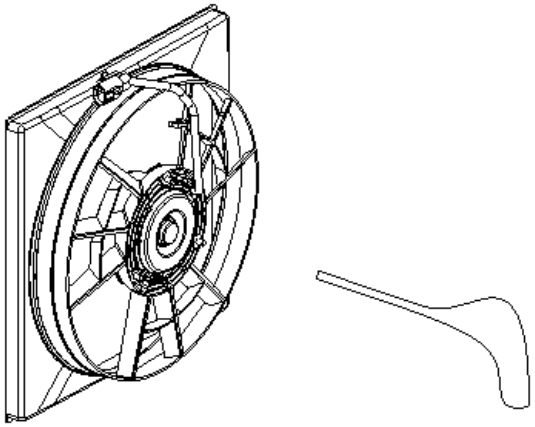
- Add coolant to the expansion tank. The coolant should be a 50/50 mixture of water and ethylene glycol.
- Pay special attention to the water tank and cooling system in hot seasons.
- Solid particles in the coolant should not exceed 0.45mm in diameter, and the weight of waterway contaminants should not exceed 30mg.

5.Radiator fin cleaning

WARNING

- Airborne dust may get into your eyes, so protective glasses or dust goggles should be used.

If the radiator fins are blocked it will cause overheating, so compressed air, steam or water should be used to blow the fins.



CAUTION

When using compressed air or steam to clean the radiator fins, place the nozzle at a right angle to the radiator.

6.Air conditioning system maintenance

Replace the dryer; clean or replace the air intake grille; check the blower motor for proper operation; inspect the compressor clutch and lubricate if necessary; check all electrical components.

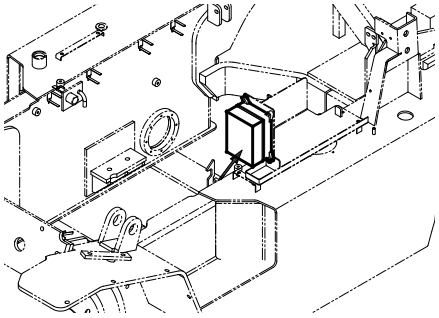
8 Others

1.Fuses and relays

Before replacing any defective fuse or relay, please find out the cause of failure.

Replace the fuse with a new one of the correct specification.

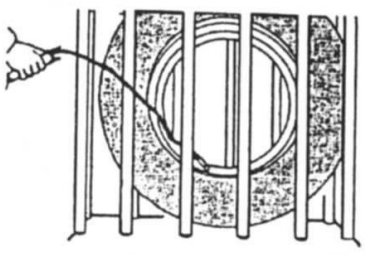
The forklift control unit is installed on the left side of the engine inside the internal combustion engine hood.



2.Tire replacement

WARNING

- When using an air compressor, as the maximum output pressure of the air compressor is higher than the specified pressure of the tire, the pressure setting should be adjusted first; otherwise, it may cause a serious accident.
- In order to ensure safety, the tire should be placed in a protective frame during inflation.



Front wheel tires

1) Park the forklift on level and solid ground.
2) Start the engine and raise the mast by approximately 100 mm.
3) Place wooden blocks behind the rear wheels to prevent the forklift from moving.
4) Loosen each wheel nut 1-2 turns counterclockwise.
5) Tilt the mast backward and place wooden blocks at the sides of the outer mast.
6) Tilt the mast forward until the front wheels are lifted off the ground.

WARNING

- Do not loosen the nuts until the front wheels have been lifted off the ground.

Place wooden blocks on each front side of the forklift frame to support the forklift and then turn off the engine.

DANGER

- When only using wooden blocks to support the forklift, never enter under the forklift.
- The wooden blocks should be solid and strong enough.

7) Remove the wheel nuts and replace the front wheels.

WARNING

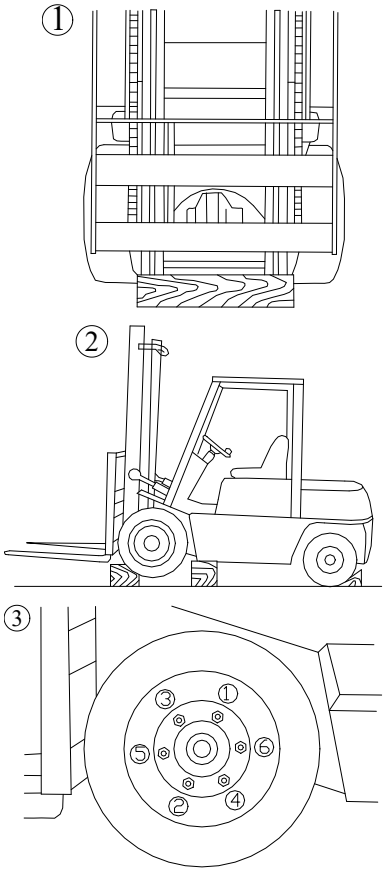
- When removing the tire from the hub, the rim bolts and nuts should not be removed until deflating.

8) Put on the nuts in sequence as shown in the diagram and lock them temporarily.
9) Start the engine and remove the wooden blocks from the forklift frame.
10) Tilt the forklift frame backward so that the forklift is slowly lowered, and then take out

the wooden blocks under the forklift frame and at the rear wheels.

11) Tighten the tire bolts symmetrically and crosswise in sequence.

12) Adjust the tire pressure to the specified value.



Rear wheel tires

1) Park the forklift on level and solid ground.

2) Engage the hand brake and place wooden blocks behind the front wheels to prevent the forklift from moving.

3) Place the jack at the bottom cut of the counterweight as shown in the diagram.

WARNING

- Make sure the minimum bearing weight of the jack is 2/3 of the total weight of the forklift truck.

4) Loosen the nuts on the wheel 1-2 turns counterclockwise.

WARNING

- Do not remove the nuts until the rear wheels are lifted off the ground.

5) Slowly lift the forklift with a jack until the rear wheels are completely off the ground. Place wooden blocks on each rear side of the forklift frame to support the forklift as shown in the diagram.

DANGER

- The wooden blocks should be solid and strong enough.
- When only using wooden blocks to support the forklift, never enter under the forklift.

6) Remove the wheel nuts and replace the rear tires.

WARNING

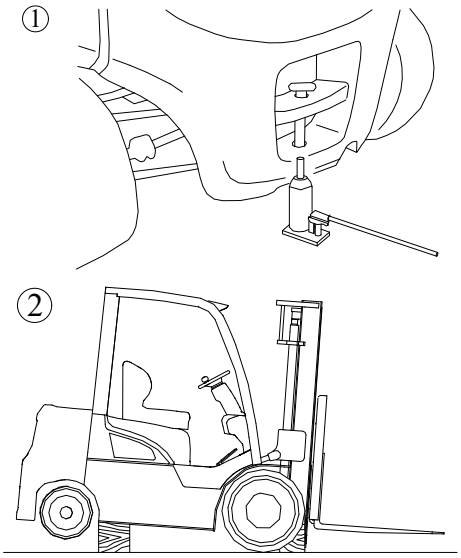
- When removing the tire from the hub, the rim bolts and nuts should not be removed until deflating.

7) Put on the nuts in sequence as shown in the diagram and lock them temporarily.

8) Remove the wooden blocks under the frame, lower the forklift slowly to the ground and remove the wooden blocks and jack behind the front wheels.

9) Tighten the nuts to the specified torque in a crosswise manner. Please refer to the Tightening Torque Table.

10) Adjust the tire pressure to meet the specified parameters.



3.Oil viscosity

Select oil with an appropriate viscosity for the ambient temperature.

4.Electrical Wire Harness Connection Endpoint Inspection

DANGER

- Before replacing the coolant, you must pull out the MSD maintenance switch and wait for 15 to 20 minutes to ensure the high-voltage system is completely discharged. Take precautions to avoid electric shock!

5.Motor Maintenance and Care

1) The area around the motor should be kept clean and dry. No foreign objects should be placed inside or outside the motor.
2) Regularly inspect the motor mounting to ensure it is secure and reliable.
3) During operation forklift, frequently check for overheating. If an abnormal odor is detected, stop the motor immediately and inspect it.
4) Overloading is strictly prohibited. Coexistence with strong magnetic objects is forbidden.
5) If during operation the motor experiences a sudden drop in speed, severe vibration, abnormal loud noise, overheating with smoke, or sparking and smoking at electrical connections, immediately cut off power and conduct an inspection after stopping.
6) During operation, constantly monitor the motor's condition. If overheating, abnormal noises, or other irregularities are observed, stop immediately, inspect, and only resume operation after addressing any issues.

CAUTION

- AC motors are free of commutators and brushes, rendering them maintenance-free. However, daily inspections and external dust cleaning must be performed.

6.Cabin Weatherstrip Maintenance

1) Regular cleaning

a. Remove Contaminants: Clean the surface of the rubber seal using a clean cloth or soft brush to eliminate dust, oil stains, and debris. Prevent contaminant buildup to avoid premature aging.

b. Cleaning Agent Selection: Use neutral detergents or soapy water for cleaning. Avoid strong acids, alkalis, or corrosive cleaners to prevent material degradation.

c. Drying Procedure: After cleaning, wipe the surface thoroughly with a dry cloth to eliminate residual moisture, preventing deformation or mold growth.

2) Check the seal strip status

a. Cracks and damages: Regularly check the rubber strips for any cracks, damages or deformations, especially in areas frequently subjected to force (such as door frame sealing strips).
b. Flexibility inspection: Press the rubber strip with your hand to check its flexibility. If the strip becomes hard or loses its elasticity, it should be replaced in time.
c. Inspection of adhesion: Check if the sealing strip is firmly attached or installed in its original position, to prevent any impact on sealing effectiveness due to loosening or detachment.

3) lubrication maintenance

a. Use specialized lubricant: Regularly apply dedicated rubber lubricant or silicone oil on the surface of the weatherstrip to maintain its flexibility and sealing performance.
b. Prevent grease contamination: Avoid using regular machine oil or grease for lubrication, as these substances may corrode rubber materials and cause the sealing strip to age prematurely.

4) Prevent aging/deterioration

a. Avoid Direct Sunlight Exposure: Prolonged exposure to sunlight will accelerate the aging of rubber strips. Therefore, try to park the forklift in a shaded area or use sun protection equipment.
b. Avoid high-temperature environments: High temperatures can cause the sealing strip to harden and crack. Try to avoid using the forklift for extended periods in high-temperature environments.
c. Avoid contact with chemicals: The adhesive tape should avoid contact with gasoline, diesel, acids, alkalis and other chemicals to prevent corrosion or deformation.

5) Replace in time

a. Replacement Cycle: Regularly check the condition of the sealing strip based on frequency of use and working environment. Typically, the lifespan of the sealing strip is 1-2 years, but if severe aging or damage is detected, it should be replaced immediately.
b. Choose high-quality weatherstripping: When replacing, select original manufacturer or high-quality weatherstripping to ensure durability and sealing performance.

6) Installation notes

a. Proper installation: When replacing the sealing strip, ensure accurate positioning and tight adhesion between the strip and contact surface to avoid gaps.
b. Use special adhesive: If the tape needs to be stuck, use dedicated rubber adhesive to ensure strong bonding.

7) Workplace management

Maintain Cleanliness: Keep the forklift working environment clean to reduce wear and

tear on the sealing strips caused by dust and debris.

8) Regular inspection record

Record maintenance status: After each maintenance, record the condition and replacement status of the sealing strip for future tracking and management.

7.Cabin fan maintenance

1) Regular cleaning

a. External cleaning:Use a clean, soft cloth to wipe the fan housing , avoid dust and dirt accumulation.Regularly clean the fan surface to maintain hygiene.

b. Internal cleaning:Disassemble the fan periodically , clean internal dust and debris, especially the blades and motor parts.Ensure thorough cleaning of all components for optimal performance.

2) Inspect the power cable and connector

a. Power cable：Check for any signs of wear, cracks, or aging on the power cable, replace damaged power cable promptly.

b. Connector： Check for any looseness or poor contact issues, ensure the connector is securely connected.

3) Lubricated bearing

a. Lubrication: Regularly apply an appropriate amount of lubricating oil to the fan bearings to reduce friction and noise, and extend bearing life.

b. Inspection: If abnormal noise or inflexible rotation is detected in the bearings, they should be replaced promptly.

4) Inspect fan blades

a. Balance： Inspect the fan blades for any deformation or damage, ensure blade balance to avoid vibrations during operation.

b. Fastening： Check if the blade fixing screws are loose, tighten if necessary.

5) Motor maintenance

a. Cleaning: regularly clean the motor’s surface and interior to prevent dust from affecting heat dissipation.

b. Inspection: check if the motor is operating normally, and if there are any unusual noises or overheating. repair or replace if necessary.

6) Inspect fastening devices

a. Stability: Ensure that the fan mounting are secure to prevent shaking or detachment during operation.

b. Adjustment: If the fan is misaligned, adjust it promptly to ensure optimal cooling performance.

7) Regular testing

a. Function test: regularly start the fan and check if it operates normally, with stable wind speed.

b. Temperature rise test: after running for a period, check if the motor temperature is within the normal range.

8) Storage environment

a. Dry and ventilated: store the forklift fan in a dry and well-ventilated environment

to avoid moisture and high temperatures.

b. Dust protection: when not in use, cover the fan with a dust cover to prevent dust and debris from entering.

9) Maintenance records

Maintenance records: after each maintenance, record the maintenance date, content, and any issues found for easy follow-up and maintenance.

10) Professional maintenance

a. Regular inspection: it is recommended to conduct at least one professional inspection annually to ensure all components are in good condition.

b. Maintenance: If any issues cannot be resolved independently, contact professional personnel for maintenance in a timely manner.

8.Air conditioning daily maintenance

1) Air conditioning system evacuation

The forklift air conditioning system must operate in an internally vacuumed, dry, and clean environment. Therefore, the vacuum condition of the system is crucial for its normal operation. Moreover, vacuum pumping can indirectly determine if the system has any leaks. As long as the system has been exposed to air, vacuum pumping must be performed on the system.

Operating Steps：

a. Connect the vacuum system: First, connect the high and low-pressure hoses of the manifold gauge to the high and low-pressure ports of the air conditioning system respectively. Connect the middle service hose to the vacuum pump outlet, tighten all connections, and close the high and low-pressure hand valves.

> ⚠ CAUTION
>
> - Check if all hose connections are correct! Check if the oil level of the vacuum pump is appropriate!

b. When selecting a vacuum pump, it is essential to ensure that the vacuum level required by the pump matches the requirements of the air conditioning system. Only in this way can we guarantee complete moisture evaporation! For example: when the operating temperature is between 21.1°C and 26.6°C, the system requires an absolute vacuum pressure of 2.52-3.5 KPa, which corresponds to a gauge vacuum pressure of 97.83-98.81 KPa (733.81-741.17 mmHg). The vacuum pump selected must also meet this vacuum level requirement.

c. Evacuation: Start the vacuum pump and open the high and low-pressure hand valves on the manifold gauge. (If there are hand valves on the connectors, open them as well.) After a few minutes, a vacuum level greater than 98 Kpa (740 mmHg) should be achieved on the vacuum gauge. If the required vacuum level is not reached, excluding tool-related issues confirms a system leak. If the required vacuum level is achieved, close the high and low hand valves on the manifold gauge. If the

pressure value on the manifold gauge significantly increases, there is a leak in the air conditioning system. Identify and repair the leak point, then repeat the above process. If the pressure value on the manifold gauge changes by less than 0.5 Mpa, it indicates that the evacuation system is leak-free.

d. Leak detection: Regardless of how satisfactory the vacuum level is, leak detection must be performed. During leak detection, first close the high and low-pressure hand valves on the manifold gauge and wait for 5-6 minutes. During this time, the pressure change should not exceed 3.4 KPa (25.4 mmHg). If it exceeds this value, it indicates a leak in the air conditioning system, and the leak point must be identified and repaired. Then repeat the above process.

e. Evacuation: Continue evacuating the system for no less than 60 minutes. After the evacuation is complete, first close the high and low-pressure hand valves on the manifold gauge, then turn off the vacuum pump. Remove the middle hose to proceed with the next step.

> ⚠ CAUTION
>
> - The steps of closing the high and low-pressure hand valves of the manifold pressure gauge and the vacuum pump must not be reversed!

2) leak check

If the air conditioning system is found to have insufficient refrigerant or poor cooling performance, it may indicate a leak in the system and should be thoroughly inspected. Common methods for leak detection include using soapy water and leak detection instruments.

a. Soap solution leak detection

Connect the manifold gauge to the air conditioning system as required, and connect the middle hose of the manifold gauge to a nitrogen cylinder. Slowly fill the system with dry nitrogen until the pressure reaches 1.0 Mpa. Apply soapy water evenly to each joint. If bubbles form at a joint, it indicates a leak at that point. Mark the leak point on the joint and proceed to check the next joint. Ensure all joints are checked without omission. If the leak is still not detected, remove the low-pressure gauge from the system and increase the nitrogen pressure from the high-pressure side until the system pressure reaches 2.5 Mpa. Then use soapy water for leak detection and repeat the process.

b. Instrument leak detection

There are many leak detection instruments available, such as electronic leak detectors and nitrogen leak detectors, with electronic leak detectors being commonly used. To use, first charge the air conditioning system with a small amount of R134a gas using a manifold gauge. Turn on the leak detector and place its probe around the area to be inspected, moving it slowly. If the detector emits a short alarm sound, it indicates a leak at that location. Mark the spot and proceed to check the next joint. Ensure a thorough inspection without omissions. If the leak is still not found, you can increase the amount of R134a charged into the system or introduce a certain

amount of nitrogen to increase the system pressure, then check again with the leak detector.

CAUTION

- Leaks are generally caused by loose joints, damaged O-rings, poor welds, or damaged refrigeration components. At the marked joints, tighten the joints, replace O-rings, perform re-welding, or replace components as needed based on the actual situation.
- If the leak detector is not used for an extended period, please remove the battery.
- The system pressure must not exceed 3 Mpa, as this can lead to sealing issues and compressor leaks. When the pressure exceeds 0.1 Mpa, be sure to remove the low-pressure gauge from the system.

c. system refrigerant and lubricant charging

If the system experiences leakage or certain refrigeration components are replaced, the air conditioning system must be recharged with refrigerant.

The following situations generally indicate the need to refill or supplement refrigerant:

◆Hose bursting, rigid pipe damage;

◆Large and rapid refrigerant leakage;

◆ Replacement of refrigeration accessories such as compressors, condensers, and evaporators.

Refrigeration oil can be added before or after system vacuuming.

Before system evacuation, measure the required amount of refrigeration oil with a graduated cylinder and inject it directly through the compressor's oil filling hole or interface. Alternatively, it can be poured directly through other refrigeration component interfaces. Another method is to use a vacuum pump and manifold gauge set to suck the oil into the system. Connect the manifold's low-pressure hose to the system's low-pressure port and the middle hose to the vacuum pump. Insert the high-pressure hose or oil filling tube into the graduated cylinder containing the measured oil, as deep as possible. Close the high-pressure hand valve, start the vacuum pump, slightly open the low-pressure hand valve, and then open the high-pressure hand valve. The refrigeration oil will be sucked into the air conditioning system under vacuum until the predetermined amount is used up.

Alternatively, connect the high and low-pressure hoses of the manifold pressure gauge to the high and low-pressure ends of the system respectively, and connect the middle hose to the vacuum pump. Evacuate the system to ensure the absolute pressure does not exceed 3KPa. Then, close the high and low-pressure manual valves, followed by turning off the vacuum pump. Remove the middle hose or oil filling hose and insert it into a graduated cylinder with pre-measured oil volume, try to insert it to the bottom. Finally, open the high and low-pressure manual valves. The refrigeration oil will be sucked into the air conditioning system under vacuum until the predetermined oil volume is completely filled.

CAUTION

- Please use the specified brand of refrigeration oil when refueling; do not mix with other oils, refer to the product technical specifications!
- Refrigeration oil has strong hygroscopicity, do not expose it to air!
- If refrigeration oil is not used up, please seal and store it in a dark place!

3) Service Instructions

When handling refrigerant R134a, the following precautions must be observed:

- Do not handle refrigerants in enclosed spaces or near open flames;
- wear safety goggles during operation;
- handle with care to avoid contact with liquid refrigerant in eyes or on skin; in case liquid refrigerant enters eyes or contacts skin, take the following measures:

  ◆Do not rub eyes or skin

  ◆Flush the affected area with plenty of clean cold water

  ◆Apply clean petroleum jelly to the skin

  ◆ Seek medical attention from a doctor or hospital immediately

  ◆Never attempt to treat yourself

When replacing air conditioning system accessories, please note:

- Before replacement, slowly discharge the refrigerant, do not allow rapid discharge from the air conditioning system, as this will cause significant loss of refrigeration oil. If possible, refrigerant must be recovered;
- Immediately cover and seal removed parts to prevent long-term exposure to air, avoiding moisture and dust entering the air conditioning system;
- When the air conditioning system is running, keep your hands away from fans, belts, and other high-speed moving parts;
- Before starting the air conditioning system for maintenance, always check all maintenance tools and equipment, never place tools or other objects near belts, pulleys, fans, or other high-speed rotating parts;
- Manifold pressure gauge hoses and other non-heat-resistant items must be in good condition and should not contact any hot surfaces;
- When working near the engine, be careful to avoid burns from high-temperature objects such as the engine block and compressor;
- Please do not modify or drill holes in the air conditioning system, as this may reduce its reliability and structural integrity.
- When working near exposed condenser and evaporator fins, be careful as they may cut your skin.
- When performing electrical maintenance, exercise extreme caution. Use tools with well-insulated handles, and avoid wearing jewelry, watches, or earrings, as these items can cause short circuits and may result in severe burns to the wearer.

9 Periodic maintenance schedule

D=Every 8 hours of operation (or every day), W=Every 40 hours of operation(or weekly)

M=Every 200 hours of operation (or every month), T= Every 500 hours of operation (or every three months)

S= Every 1000 hours of operation (or every six months), Y= Every 2000 hours of operation (or annually)

2Y= Every 4000 hours of operation (or every 2 years)

○ —check, correct, adjust ×—replace

Electrical System

lithium battery

Item	Service required	Tool	D	W	M	T	S	Y	2Y
lithium battery	Lithium battery installation and fastening		○	○	○	○	○	○	○
	Lithium battery charging socket cleaning				○	○	○	○	○
	Lithium battery charging socket contacts are damaged or rusted		○	○	○	○	○	○	○
	Lithium battery charging socket contacts have water, clear		○	○	○	○	○	○	○
	Lithium battery charging socket dust cover is intact				○	○	○	○	○
	Is the lithium battery case damaged		○	○	○	○	○	○	○
	Battery power		○	○	○	○	○	○	○
	Keep away from flames		○	○	○	○	○	○	○

⚠ CAUTION

- Inspection and maintenance should only be carried out when the power is cut off. Safety precautions and operating specifications comply with 7.3 Safety precautions and operating specifications of high-voltage electric forklifts.

Coolant system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
coolant system	Coolant volume		○	○	○	○	○	○	○
	Leakage		○	○	○	○	○	○	○
	Replace coolant							×	×
	Clean the outside of the water tank (cannot be rinsed with water)			every month in summer	○	○	○	○	○
	Water tank cover performance and installation situation			○	○	○	○	○	○
	Aging situation of inlet and outlet pipes					○	○	○	○

⚠ CAUTION

- Inspection and maintenance should only be carried out when the power is cut off. Safety precautions and operating specifications comply with 7.3 Safety precautions and operating specifications of high-voltage electric forklifts.

Motor and electronic control integration

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Motor and electronic control integration	Check whether the high-voltage harness connector is loose					○	○	○	○
	Visual inspection of insulation integrity					○	○	○	○
Controller	Check that the connection between the battery and the controller is in good condition					○	○	○	○
	Check the controller fault to judge whether the system is normal								○
Motor	Remove foreign objects on the motor casing (do not wash with water)				○	○	○	○	○

CAUTION

- Inspection and maintenance should only be carried out when the power is cut off. Safety precautions and operating specifications comply with 7.3 Safety precautions and operating specifications of high-voltage electric forklifts.

Electrical system and others

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Emergency power off button	Work and installation		○	○	○	○	○	○	○
Seat sensing system	Work and installation		○	○	○	○	○	○	○
Rocker switch	Work and installation		○	○	○	○	○	○	○
Reversing switch	Work and installation		○	○	○	○	○	○	○
Combination switch (steering, lighting)	Left and right steering switch operation		○	○	○	○	○	○	○
	Light stalls and work conditions		○	○	○	○	○	○	○
horn	Work and installation		○	○	○	○	○	○	○
Lights and light bulb	Work and installation		○	○	○	○	○	○	○
Reversing buzzer	Work and installation		○	○	○	○	○	○	○
Meter	Instrument working situation		○	○	○	○	○	○	○
Low voltage wiring harness	Harness damage, fixed looseness		○	○	○	○	○	○	○
	Loose circuit connection		○	○	○	○	○	○	○
High voltage cable	Cable damage and aging		○	○	○	○	○	○	○
	Loose cable connection		○	○	○	○	○	○	○

⚠ CAUTION

- Inspection and maintenance should only be carried out when the power is cut off. Safety precautions and operating specifications comply with 7.3 Safety precautions and operating specifications of high-voltage electric forklifts.

Body system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Frame and side door	Is the frame cracked				○	○	○	○	○
	Is the right door lock assembly working well		○	○	○	○	○	○	○
	Is the right door open				○	○	○	○	○
	Protective rod fastening		○	○	○	○	○	○	○
Roof Guard and Shelf	Is the installation firm	Testing hammer	○	○	○	○	○	○	○
	Check for deformation, cracking, damage		○	○	○	○	○	○	○
Seat	Check bolts for damage or looseness					○	○	○	○
	Check seat belt for looseness, damage or breakage		○	○	○	○	○	○	○
Counterweight	Check the looseness of the bolts at the connection with the frame				○	○	○	○	○

Transmission system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Drive axle assembly	If any noise		○	○	○	○	○	○	○
	Check for leaks		○	○	○	○	○	○	○
	Replace gear oil						First time 100h ×	×	×
	Check hub bearings for looseness and noise			○	○	○	○	○	○
	Inspect the axle for deformation, cracks or damage				○	○	○	○	○
	Check the looseness of the bolts (sector plate bolts) at the connection with the frame (441-539) N m				○	○	○	○	○

Wheels (Front, Rear Wheels)

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Tires	Inflation pressure	Barometer	○	○	○	○	○	○	○
	Wear, cracks or damage		○	○	○	○	○	○	○
	Check for nails, stones or other foreign objects in the tread				○	○	○	○	○
	Check for damaged rims		○	○	○	○	○	○	○
	Check the tightening torque of the front wheel nuts (363-490) N m		○	○	○	○	○	○	○
	Check the tightening torque of rear wheel nuts (263-354) N m	Torque wrench	○	○	○	○	○	○	○

Steering system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Steering wheel	Check play		○	○	○	○	○	○	○
	Check axial looseness		○	○	○	○	○	○	○
	Check radial looseness		○	○	○	○	○	○	○
	Check operation		○	○	○	○	○	○	○
Steering gear	Check for loose mounting bolts				○	○	○	○	○
Rear axle knuckle	Check king pin for looseness or damage				○	○	○	○	○
	Check for deflection, deformation ,cracks or damage				○	○	○	○	○
	Check for installation	Testing hammer			○	○	○	○	○
Steering cylinder	Check for operation		○	○	○	○	○	○	○
	Check for leakage		○	○	○	○	○	○	○
	Check for looseness when installing and hinging				○	○	○	○	○
Steering drive axle(4WD)	If any noise		○	○	○	○	○	○	○
	Check for leaks		○	○	○	○	○	○	○
	Replace gear oil (axle, reduction box, final drive)						50h for the first time ×	×	×
	Check hub bearings for looseness and noise			○	○	○	○	○	○
	Inspect the axle for deformation, cracks or damage				○	○	○	○	○
	Check the looseness of the bolts at the connection with the frame				○	○	○	○	○

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Steering axle(2WD)	If any noise		○	○	○	○	○	○	○
	Replace bearing grease							×	×
	Check hub bearings for looseness and noise			○	○	○	○	○	○
	Inspect the axle for deformation, cracks or damage				○	○	○	○	○
	Check the looseness of the bolts at the connection with the frame				○	○	○	○	○

Braking system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Brake pedal	Freeplay	Ruler	○	○	○	○	○	○	○
	Pedal stroke		○	○	○	○	○	○	○
	Operation		○	○	○	○	○	○	○
	Check for air in brake lines		○	○	○	○	○	○	○
Hand brake operation	Check braking is safe and reliable, stroke is sufficient		○	○	○	○	○	○	○
	Operating performance		○	○	○	○	○	○	○
Pole, cable, etc	Handling performance				○	○	○	○	○
	Whether the connection is loose				○	○	○	○	○
	Wear of connecting joint with reduction gearbox					○	○	○	○
Pipelines	Damage, leakage, rupture				○	○	○	○	○
	Connection, clamping parts, looseness				○	○	○	○	○
Brake master cylinder	Leakage		○	○	○	○	○	○	○
	Check the oil level and change the oil		○	○	○	○	×	×	×
	Operation of master cylinder and slave					○	○	○	○
	Leakage and damage of master cylinder and slave cylinder					○	○	○	○
	Wear and damage of master cylinder, slave cylinder piston cup and check valve, replacement							×	×
Wet brake	Brake performance check		○	○	○	○	○	○	○
	Damage, leak, rupture			○	○	○	○	○	○
	Friction lining and brake pad assembly inspection								×

Hydraulic system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Hydraulic tank	Oil level check, oil change		○	○	○	○	○	×	×
	Clean the oil suction filter						○	○	○
	Replace oil return filter						×	×	×
	Exclude foreign matter						○	○	○
Handle	Loose connections		○	○	○	○	○	○	○
	Operation		○	○	○	○	○	○	○
Multi-way valve	Leakage		○	○	○	○	○	○	○
	Operation of safety valve and self-locking tilt valve				○	○	○	○	○
	Measure safety valve pressure	Oil pressure gauge	○	○	○	○	○	○	○
Line connectors	Leaks, looseness, rupture, deformation, damage				○	○	○	○	○
	Replace pipes								×
Hydraulic pump	If the hydraulic pump leaks or makes noise		○	○	○	○	○	○	○

Lifting system

Item	Service required	Tool	D	W	M	T	S	Y	2Y
Chain sprocket	Check chain tension, check for deformation, damage and corrosion		○	○	○	○	○	○	○
	Lubricate chain		○	○	○	○	○	○	○
	Riveting pins and looseness		○	○	○	○	○	○	○
	Sprocket deformation and damage				○	○	○	○	○
	Looseness of sprocket bearings				○	○	○	○	○
Attachment	Check if the status is normal				○	○	○	○	○
	Check pad wear (built-in side shift)						○	○	○
Lift and tilt cylinders	Piston rod and piston rod threading, loose connections, deformation, damage	Testing hammer	○	○	○	○	○	○	○
	Operation		○	○	○	○	○	○	○
	Leakage		○	○	○	○	○	○	○
	Wear and damage of pins and cylinder steel-backed bearings		○	○	○	○	○	○	○
Forks	Fork damage, deformation, wear		○	○	○	○	○	○	○

Item	Service required	Tool	D	W	M	T	S	Y	2Y
	Damage and wear of fork stoppers		○	○	○	○	○	○	○
	Cracking and wear of welded part of fork heel coupling		○	○	○	○	○	○	○
Roof guard and shelf	Is the installation firm	Testing hammer	○	○	○	○	○	○	○
	Check for deformation, cracking, damage		○	○	○	○	○	○	○
Mast and fork carriage	Cracking and damage of welding on inner mast, outer mast and crossbars		○	○	○	○	○	○	○
	Wear, cracking and damage of welding on tilt cylinder brackets and mast		○	○	○	○	○	○	○
	Wear, cracking or damage of welding on inner and outer masts		○	○	○	○	○	○	○
	Wear, cracking and damage of welding on fork carriage		○	○	○	○	○	○	○
	Loose roller bearings		○	○	○	○	○	○	○
	Wear and damage of mast support bearing bushes		○	○	○	○	○	○	○
	Looseness of mast support cover bolts	Testing hammer	○	○	○	○	○	○	○
	Looseness of lift cylinder piston rod head bolts and plate bolts	Testing hammer	○	○	○	○	○	○	○

Item	Service required	Tool	D	W	M	T	S	Y	2Y
	Cracking and damage of welding on inner mast, outer mast and crossbars		○	○	○	○	○	○	○
Lifting components	Check the looseness of the fixing bolts at the connection with the drive axle				○	○	○	○	○

Regular maintenance schedule for cabin air conditioning system

Maintenance Items		maintenance Points	maintenance Interval					Preparation note
			weekly	monthly	annually	Every 5000 hours	Every 10000 hours	
Compressors and piping	Compressor	Abnormal noise	○	○	○	○	○	
		Oil level			○	○	○	
		Overhaul				○	○	Every time needed.10000 hour replacement
	Electromagnetic clutch	Abnormal noise	○	○	○	○	○	
		Bearing replacement and clearance adjustment			○	○	×	Every 10000 hour bearing replacement
	Suction pipe	Damage and wear	○	○	○	○	×	
	Exhaust pipe	Damage and wear	○	○	○	○	×	
	Compressor installation	Bolt fastening state	○	○	○	○	○	
Evaporator	Evaporator heat sink	Damage and blockage		○	○	○	○	
	Evaporating fan	Abnormal noise	○	○	○	○	○	Every 5000 hour bearing replacement
		Overhaul				○	○	
	Dryer	Replacement					×	
	Air filter	Blockage	○	○	○	○	○	
	Drain pipe	Blockage	○	○	○	○	○	
	Evaporator core	Bolt fastening state		○	○	○	○	
	Visual window	Refrigerant quantity	○	○	○	○	○	

Maintenance Items		maintenance Points	maintenance Interval					Preparation note
			weekly	monthly	annually	Every 5000 hours	Every 10000 hours	
Condenser	Condensing fan	Overhaul				○	○	
	Condenser fins	Damage and blockage		○	○	○	○	
	Condenser core	Bolt fastening state		○	○	○	○	
Other	Pressure switch	Operation	○	○	○	○	○	
	Pipeline condition	Gas leakage	○	○	○	○	○	
	Control panel	Operation	○	○	○	○	○	
	Electric control wiring	Damage and terminal wear	○	○	○	○	○	

10 Forklift oil specification list

Description	Specification	Fuel charge（L）	Remark
Hydraulic oil	General season: L—HM32 High and cold environment: L—HV32	30-36	Hydraulic oil tank
Hydraulic transmission oil	Mobil 424 hydraulic transmission oil	7.3	Front axle gearbox
Gear oil	General season：SAE 85W/90（GL-5） Winter： 75W/90(GL-5)	4.5	2.5t~3.5t Rear axle(4WD) Final drive 3.5L Each wheel reducer 0.5L
		3.8	1.5t~1.8t Rear axle(4WD) Final drive 3.5L Each wheel reducer 0.5L
Hydraulic transmission oil	Mobil 424 hydraulic transmission oil	1.5	Rear axle gearbox (4WD)
Coolant (water tank)	50% water mixed with 50% ethylene glycol	2	Radiator
Grease	3# Automotive general lithium grease		Each lubrication point
Industrial vaseline	2#		12V battery pole only
Brake fluid	SAE 10W	0.12	Brake oil pot

CAUTION

- The forklift truck was filled with anti-rust and antifreeze coolant at the factory. It is not necessary to drain the coolant even in winter. Fill its reservoir to the required level if necessary and change it once every 1-2 years.
- Different brands of oil products cannot be mixed.

11 Tightening torque table of common bolts

Nominal diameter (mm)	Strength grade				
	4.8	5.8	6.8	8.8	10.9
	Tightening torque（Nm[ft·lbf]）				
6	5~6 [4]	7~8 [5]	8~9 [6]	10~12 [8]	14~17 [11~12]
8	13~15 [10~11]	16~18 [12~13]	18~22 [14~16]	25~30 [19~22]	34~41 [26~30]
10	26~31 [20~22]	31~36 [23~26]	36~43 [27~31]	49~59 [37~43]	68~81 [50~59]
12	45~53 [34~39]	55~64 [41~47]	64~76 [48~56]	86~103 [64~75]	119~141 [88~104]
14	71~85 [53~62]	87~103 [65~75]	103~120 [76~88]	137~164 [102~120]	189~224 [140~165]
16	111~132 [82~97]	136~160 [101~118]	160~188 [119~138]	214~256 [158~188]	295~350 [218~258]
18	152~182 [113~134]	186~219 [138~160]	219~259 [162~190]	294~353 [217~260]	406~481 [300~354]
20	216~258 [160~190]	264~312 [195~230]	312~366 [231~269]	417~500 [308~368]	576~633 [425~466]
22	293~351 [217~258]	360~431 [266~317]	416~499 [307~367]	568~680 [419~501]	786~941 [580~694]
24	373~446 [276~328]	457~547 [338~403]	529~634 [391~467]	722~864 [533~637]	998~1195 [736~881]
27	564~653 [416~481]	669~801 [494~590]	774~801 [571~590]	1056~1264 [779~932]	1461~1749 [1078~1289]
30	741~887 [547~654]	908~1087 [670~801]	1052~1259 [776~928]	1434~1717 [1058~1266]	1984~2375 [1464~1751]
36	1295~1550 [955~1142]	1587~1900 [1171~1401]	1838~2200 [1356~1622]	2506~3000 [1848~2212]	3466~4150 [2556~3060]
42	2071~2479 [1528~1827]	2538~3039 [1872~2240]	2939~3519 [2168~2594]	4008~4798 [2956~3538]	5544~6637 [4088~4893]
48	3110~3723 [2294~2745]	3813~4564 [2812~3365]	4415~5285 [3256~3896]	6020~7207 [4439~5314]	8327~9969 [6141~7350]

CAUTION

- Important joints use bolts of grade 8.8 or above as required.
- The bolt grade can be found on the head, as shown in the figure, this is a grade 10.9 bolt.



12 Regular replacement of important safety parts

It is difficult to find any damage to some parts through regular maintenance, thus in order to ensure the safety of forklift operation, the user should regularly replace the parts given in the table below.

If the replacement time is not reached and there is any abnormality in these parts, the defective parts should be replaced immediately.

Important safety parts	Service Life (Years)
Brake hose or rigid pipe	1～2
Hydraulic rubber hose for the lifting system	1～2
Lifting chain	2～4
High-pressure rubber hose and flexible tube for the hydraulic system	2
Brake fluid reservoir	2～4
Fuel hose	1
Sealing parts and rubber parts in the hydraulic system	2

XII Parking and storage

1 Daily storage

1) Park the forklift at the designated place and use wedge blocks to support the wheels.
2) Place the gearshift lever in the neutral position.
3) Engage the handbrake lever.
4) Turn off the key switch and operate the multi-valve handle several times to release the remaining pressure in the oil cylinder and pipeline.
5) Unplug the power supply.
6) Remove the key and keep it in a safe place.
7) Forklift trucks specially designed for cold storage warehouses should not be turned off and parked inside the warehouse.

> ⚠ CAUTION
>
> - Once any malfunction of the forklift is detected, it should be reported to the management immediately for repair.

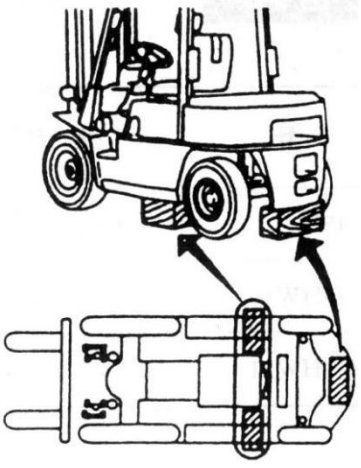
Then the following maintenance items should be carried out.

1) Remove oil and grease from the vehicle body with cloth and water.
2) Check the overall condition of the vehicle, in particular, check whether the tires are damaged or have any foreign objects such as nails.
3) Check for any leaks in hydraulic oil, gear oil, hydraulic fluid, and coolant.
4) Apply lubricating grease.
5) Check whether the mating surface of the wheel nut and cylinder piston rod is loose and whether the surface of piston rod is scratched.
6) Check whether the rollers of the mast act smoothly.
7) Raise the lifting cylinder to the top to fill the cylinder with oil.
8) In winter or cold environments, long-lasting antifreeze does not need to be drained, but if cooling water is used, the reservoir should be emptied.

2 Long-term storage

Make the following maintenance and checks in addition to maintenance as required in Daily Storage.

1) Unplug the battery to prevent discharge and store it in a dark place.
2) Apply anti-rust oil to exposed parts such as the piston rod and shafts that may rust.
3) Cover the ventilation holes and other places where water can enter.
4) Cover the whole forklift.



5) Fill all lubrication points with oil (grease).
6) Use wooden blocks for support under the vehicle body and counterweight to reduce the loading on the rear wheels.

7) Cover the truck if it is parked outside.
8) Run the forklift truck once a week. Lift the forks to maximum height several times.
9) Check the specific gravity and level of electrolyte once a month.
10) Consistent charging should be done once a month.

WARNING

- The wooden block must be solid and should be strong enough to support the weight of the forklift truck.
- Do not use blocks higher than 300 mm
- Raise the forklift just enough to place it on the supports
- Place blocks of the same size under the left and right sides of the forklift
- After supporting the forklift with the blocks, push the forklift back and forth & left and right to check whether it is stable.

3 Operation after long-term storage

1) Remove the anti-rust oil on exposed parts.
2) Drain the gear oil from the drive axle and transmission, clean the inside and add new oil.
3) Clean out foreign objects and water from the hydraulic tank.
4) Fill the coolant to the specified level.
5) Charge the battery, mount it on the truck and connect the battery leads.
6) Carefully carry out the pre-start inspection to check the starting, forward, reverse, steering, lifting, lowering, front and rear tilting functions of the forklift truck.

XIII Usage and maintenance methods for the lead-acid battery

1 Lead-acid battery and use

The battery is used as the power source to start the engine, and it is used as the power supply of the voltage regulator and overload generators. Light weight, low failure rate, easy to use and maintain. All batteries are sealed except for maintenance-free batteries which are provided with two vents (to release gas produced by the battery) on both sides. The lead-acid battery is provided with a filling hole on the upper cover of battery.

2 Battery storage and handling

2.1 Storage

When the vehicle is out of use, the battery should be stored in a clean, dry and ventilated environment, and the battery needs to be recharged once every 3 months.

2.2 Maintenance

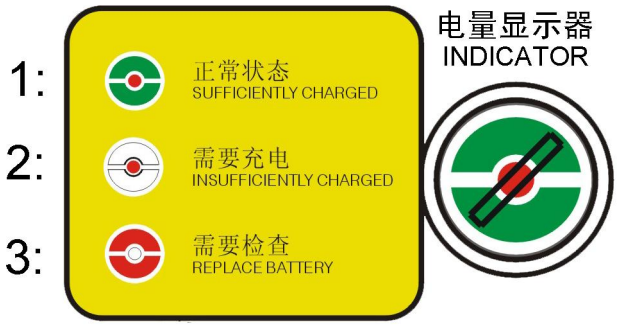
1) Make sure there is no terminal corrosion, link part looseness, outer crack and fastening looseness on the battery.

2) Check and clean the battery vent hole frequently to ensure that the battery vent hole is not blocked, and check and clean the water in the vent hole frequently in winter to prevent the vent hole from being blocked by ice and water.

2.3 Check and maintenance of battery

Check for maintenance-free battery

The indicator of the electric eye will be green when the capacity is normal, density of electrolyte reaches the standard; it will be white when capacity is not enough, density of electrolyte does not reach the standard; it will be red when the electrolyte is acute shortage, the shell should be carefully examined whether there is rupture, leakage or battery failure.



1：Green：Sufficiently charged.

2：White：Insufficiently charged.

3：Red：Replace battery.

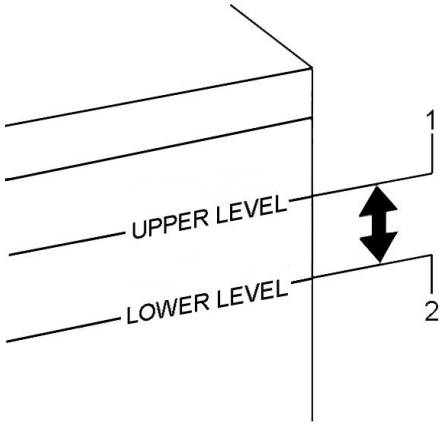
The indicator of battery sees particularly the prompt of the battery label.

Maintenance of maintenance-free battery

1) Insure the green status visual in inner indicator (electric eye);
2) Disconnect negative earth wire to avoid discharging by additional current release;
3) Keep the battery charge completely if the battery can not be removed down from truck;
4) Make a general schedule, charge every 30-45 days；
5) Check battery when the green status of indicator at battery are invisible, then charge or replace battery;

Check for low-maintenance battery

As the forklift is used in a high temperature ambient, and the battery easily consumes water, you should do pay attention to the liquid level when using the forklift. The battery top cover is left with a liquid filling port. Please add enough water up to the UPPER LEVEL when the liquid level is below the LOWER LEVEL and be sure the water is not so much that can spill out to erode your forklift.



Check and make sure the electrolyte is between "UPPER LEVEL" and "LOWER LEVEL"

1："UPPER LEVEL"

2："LOWER LEVEL"

If the electrolyte is or lower than “Lower Level”, please add distilled water

When a serious shortage of electrolyte is found, the shell should be carefully checked for rupture, leakage or battery failure.

The indicator of the electric eye will be green when the capacity is normal, density of electrolyte reaches the standard; it will be white when capacity is not enough, density of electrolyte does not reach the standard; it will be red when the electrolyte is acute shortage, the shell should be carefully examined whether there is rupture, leakage or battery failure.

The indicator of battery sees particularly the prompt of the battery label.

Maintenance of low-maintenance battery

1) Ensure that the battery electrolyte fluid level in the UPPER LEVEL.
2) Disconnecting negative earth wire to avoid discharging by additional current release;
3) Keep the battery charge completely if the battery can not be removed down from truck;
4) Make a general schedule, charge every 30-45 days;
5) When the battery electrolyte level is lower than LOWER LEVEL, please add distilled water to UPPER LEVEL, install the vent-plug to original place and fix it.

CAUTION

- Avoid overfill when adding distilled water. During battery recharging, spilled water may cause corrosion.

2.4 Before recharging

When battery is recharging, the generated hydrogen is flammable and explosive gas, so pay attention to the following item before operation:

1) If charge to the battery still installed on the truck, one must disconnect the ground cable.

2) When connecting and disconnecting the battery charger cable, make sure the charger power is off.

CAUTION

- Safe place for battery charging should be at open ground. Never charge in bad ventilated garage or closed indoor.
- Never charge the battery when the engine is working. Make sure close all enclosure.

3 Notice for battery usage

Battery can produce explosive gas, electrolyte is corrosive, and the current can burn skin from battery producing. When handling battery or working near it, comply with the following cautions

CAUTION

- When working near the battery, one must wear safety inspection.
- Never let tools contact battery terminal and cause spark.
- Never expose the battery in open fire or spark.
- When the battery is connected to the electric equipment, make sure the electric equipment is correctly connected with the battery positive and negative to avoid damage of electric equipment or battery;
- Never cover electric things on the battery to avoid battery short cut.
- Avoid electrolyte splashing on eyes, skin or clothes.
- Keep children away from the battery.

Emergency measure to electrolyte

（1）If the electrolyte spilled eyes

Please wash your eyes at least for 15 minutes and seek medical advice at once. If possible, use wet sponge or cloth clean eye on the way to hospital.

（2）If the electrolyte spilled skin

Wash this part thoroughly. If you have burn pain, please seek medical advice at once.

（3）If the electrolyte spilled clothes

It may permeate clothes and contact skin. You must take off the clothes at once and do the above measure is necessary.

XIV Main optional components

1 OPS System (optional）

OPS (Operator Presence Sensing) system is a safeguard system that installs a sensor in the driver seat to sense if the driver sits on the seat correctly. If the driver does not sit on the seat correctly, driving force is cut off, meanwhile, all loading and unloading operations will be stopped. It helps to reduce accident when the driver leaves. When the driver does not sit correctly, the driver cannot drive the truck or operate the loading and unloading, thus the accidents by maloperation will be reduced.

Driving protection function

When the vehicle is travelling, the driver leaves the seat or the safety belt is released (if equip with safety belt protection switch) over 1 second, truck stops automatically, and the instrument displayed seat indicator light  lights up, meanwhile the buzzer sends out continuous alarm signal. Only when pulling up the hand brake or the driver sits on the seat correctly and the direction switch returns to neutral, the seat indicator light goes out, travelling OPS status is released.

Working protection function

When the vehicle is under working condition, the driver leaves the seat or the safety belt is released (if equip with safety belt protection switch) over 1 second, working stops automatically, and the instrument displayed seat indicator light  lights up, meanwhile the buzzer sends out continuous alarm signal. OPS light comes on, buzzer sends out alarm signal, transportation operation stops automatically. When the driver sits down again, the seat indicator light goes out, working OPS status is released.

Alarm function

Once the seat sensor detects the seat switch is turned off, within 1 second, the buzzer sends out continuous alarm signal, and the seat indicator light  lights up. If the seat indicator light keeps on when the seat switch is off, it means the OPS in the startup state.

Neutral reset function

If the direction switch does not return to neutral and the seat switch is turned on. The buzzer will send out continuous alarm signal to remind the driver that the OPS in the startup state.

OPS function exception handling

In the event of the following conditions, the truck should be parked in a safe place and Hangcha agency should be contacted for inspection. a. After the driver leaves the seat, the seat switch indicator light “” does not turn on; b. After the driver sits back in the seat, the seat switch indicator light “” does not turn off.

CAUTION

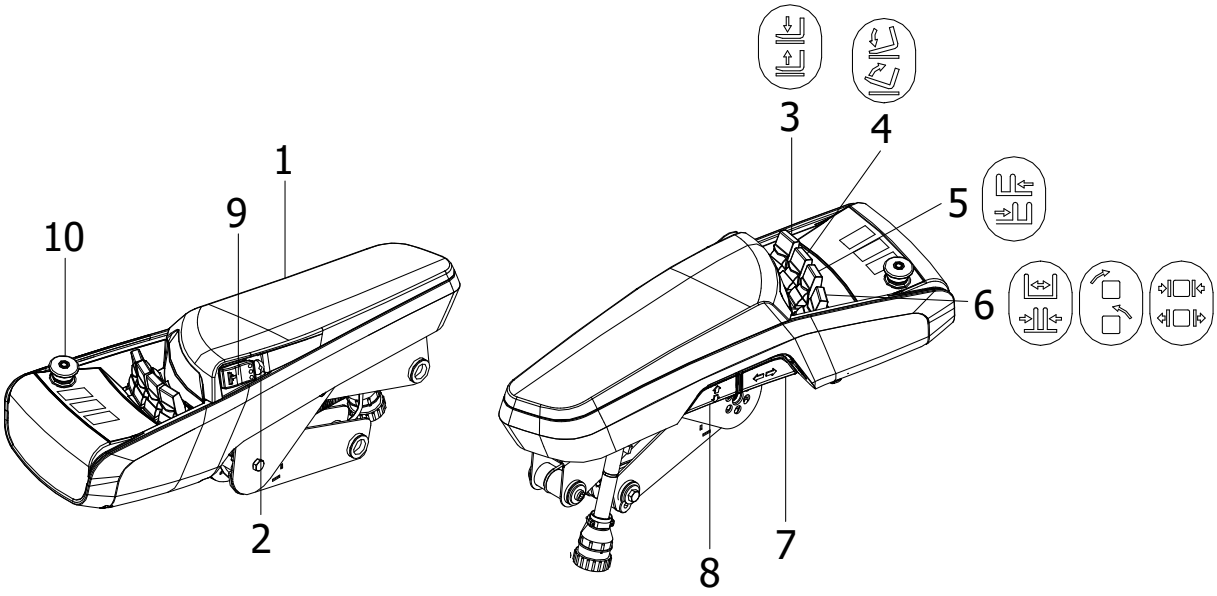
- For forklift trucks with seats provided with a safety belt protection switch, after the driver first sits back on the driver's seat properly and fastens his/her safety belt, normal operation can be conducted. If the OPS system is started by accident when driving uphill, it will disconnect the driving power, making the forklift truck roll backwards. In order to avoid accidents, the driver must sit on the driver's seat properly when driving uphill.

Fork lock function after power failure

In the event of turning off the start switch or power failure, the forks are locked and cannot be lowered even if the lowering lever is used.

2 Fingertip control on seat armrest

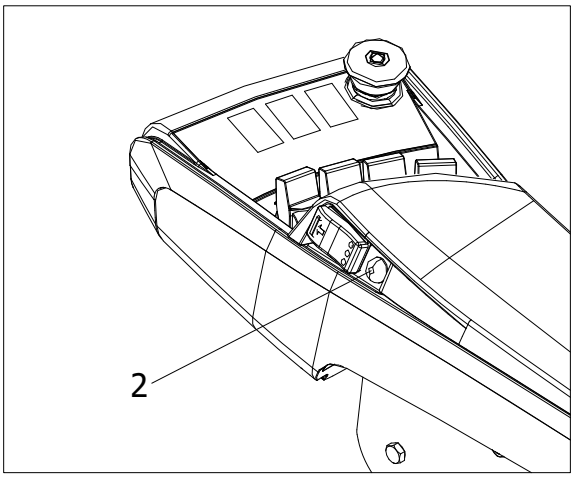
2.1 Operation and Control Components



Item	Description	Function
1	Armrest	Platform for control components and the driver`s arm.
2	Horn button	Activates an audible warning.
3	Lever for lifting and lowering	Control the load lifting and lowering.
4	Lever for tilting the mast forward / backward	Control the mast tilt forward and backward.
5	Lever for position of the sideshift	Control the sideshift move to left / right.
6	Lever for attachments (option)	Control the attachments working.
7	Armrest adjustment tab (horizontal)	Adjust armrest front/back position.
8	Armrest adjustment tab (vertical)	Adjust armrest up/down position.
9	Driving direction switch	Selects travel direction / neutral position.
10	Emergency stop button	Turn the power on or off, in case of emergency, press the red mushroom button to cut off the main power of the vehicle.

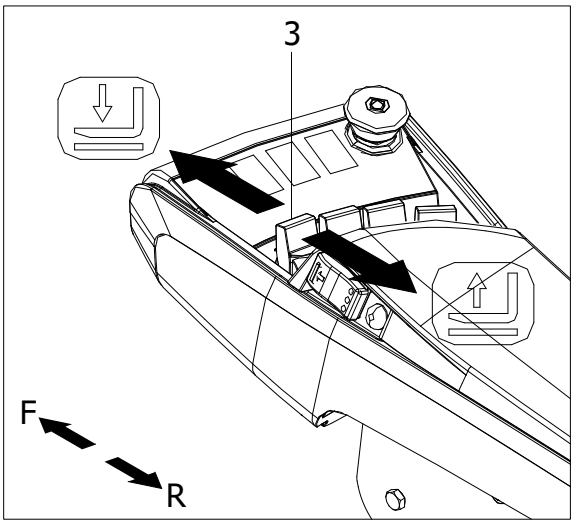
2.1.1 Control components

Horn button[2]



Press this button to send alert or warning signal.

Lever for lifting and lowering [3]



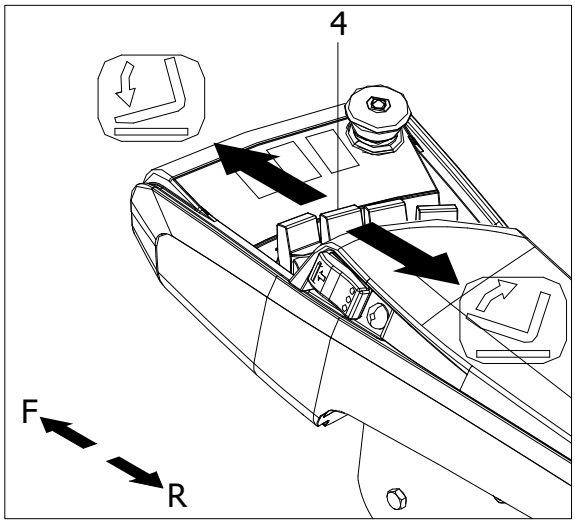
Control the load lifting and lowering.

Pull the lever (3) in direction F to lower the load.

Pull the lever (3) in direction R to raise the load.

Release the lever, the lever will revert automatically to neutral.

Lever for tilting the mast forward/backward [4]



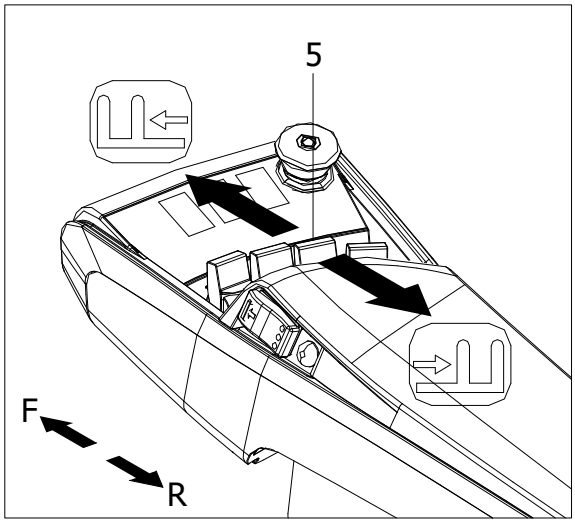
Control the mast tilt forward and backward.

Pull the lever (4) in direction F to tilt the mast forward.

Pull the lever (4) in direction R to tilt the mast backward.

Release the lever, the lever will revert automatically to neutral.

Lever for positio of the sideshift [5]



Control the sideshift move to left / right.

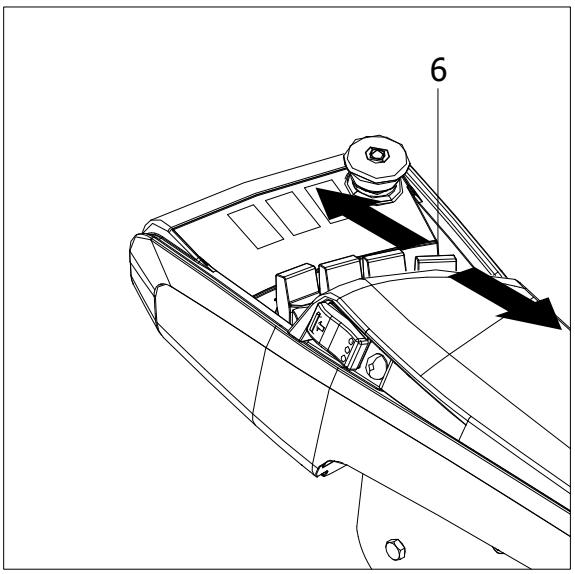
Pull the lever (5) in direction F to move the load handler to the left (from the driver`s

viewpoint).

Pull the lever (5) in direction R to move the load handler to the ringht (from the driver`s viewpoint).

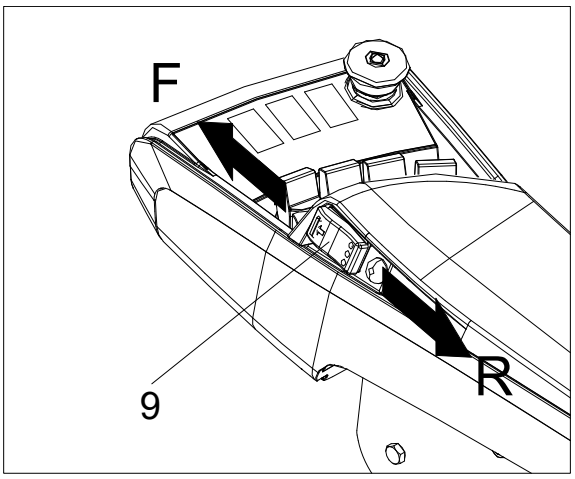
Release the lever, the lever will revert automatically to neutral.

Lever for attachments [6]



Use for optional install attachments.

Driving direction switch [9]



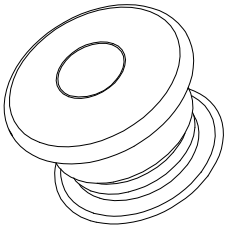
It is used to set the driving direction of the forklift truck as required.

It is used to select the truck driving direction, i.e. running forward or backward. When the direction switch is pushed forward and the accelerator pedal is depressed the forklift runs forward; and when the switch is pushed backward the forklift runs in reverse.

CAUTION

- When the forklift truck is running, the electric brake can slow down the forklift truck if the direction lever is pushed to the opposite direction. After stopping, the forklift truck will slowly run in the other direction.
- When the direction switch is not in neutral, if the key switch is turned on a fault will be displayed; when the direction switch is returned to neutral, the fault will disappear.

Emergency stop button [10]



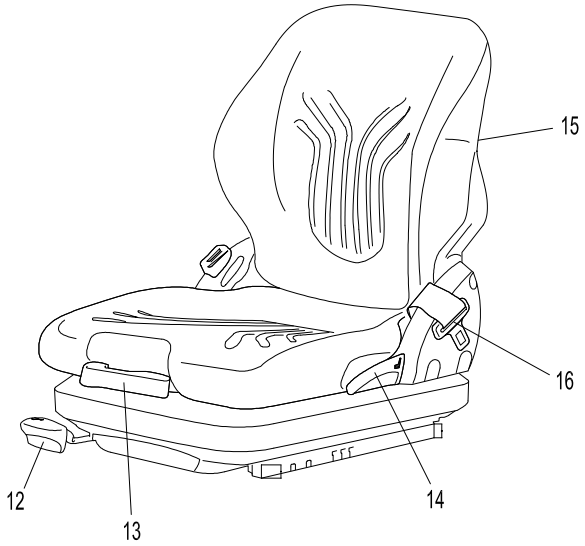
In an emergency, press this button to cut off the main power supply.

CAUTION

- Do not use the emergency stop button instead of the key switch.

2.1.2 Driver`s Seat

In order to ensure the safety of the forklift truck operation, before operat the forklift truck, the driver must be adjust driver`s seat according to oneself circumstance, and fasten the seat belt. If not properly adjust the driver's seat may lead to accidents or a health hazard.



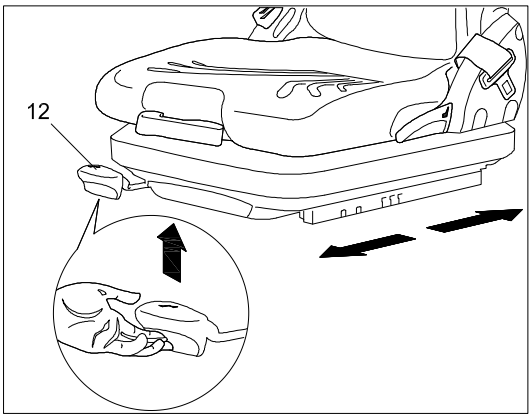
12. Driver`s seat locking lever
13. Weight adjustment lever
14. Backrest adjustment lever
15. Lumbar support adjustment hand wheel
16. Seat belt

Adjusting the driver`s seat

Adjusting the seat position

Procedure:

- Sit on the driver`s seat.
- Pull up the driver`s seat locking lever (12) in the direction of the arrow.
- Push the driver`s seat forwards or backwards to the desired position.
- Engage the driver`s seat locking lever (12) in position.



The seat position is now correctly set.

After the adjustment, the locking lever must latch into the desired position with an audible click. It should not be possible to move the driver’s seat into another position when it is locked.

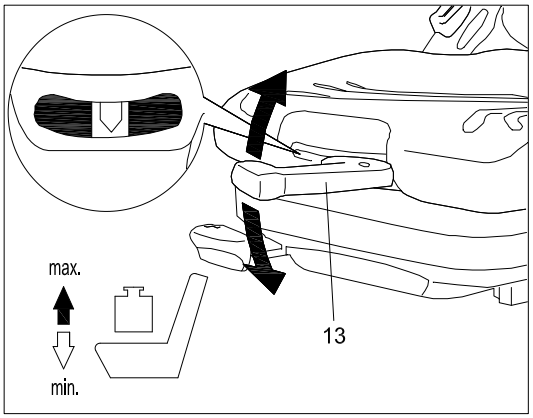
WARNING

- Risk of crushing ! Only touch the lever at the indented grip, do not reach back under the lever.
- Risk of accident ! Do not operate the locking lever while driving.

Adjusting the driver`s weight

To achieve optimal seat cushioning the driver`s seat must be set to the driver`s weight.

Procedure:



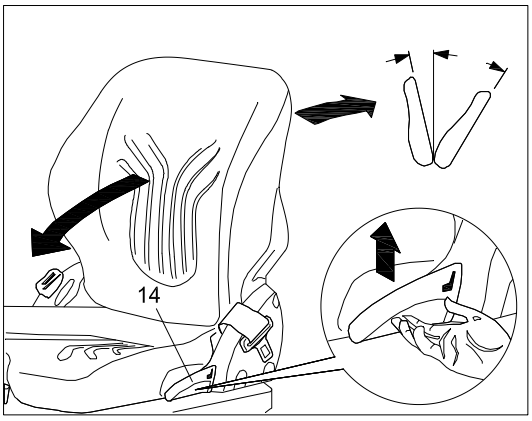
- Set the driver`s weight when the seat is occupied.
- Fold out the weight adjustment lever (13) as far as it will go in the arrow direction.
- Move the weight adjustment lever (13) up and down to set the seat to a higher weight.
- The driver`s weight is correct when the arrow is in the middle of the display window. The minimum or maximum weight setting is reached when you can feel a return stroke on the lever.
- After setting the weight, move the lever (13) back in full.

WARNING

- The driver's seat position locking pin must be securely engaged in the set position.
- The driver's seat must not be adjusted during travel.

Adjusting the backrest

Procedure:



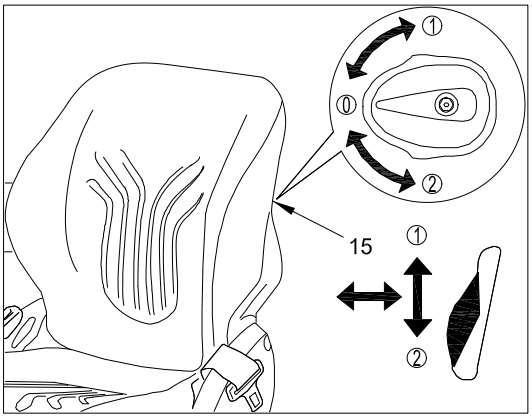
- Sit on the driver`s seat.
- Pull the lever (14) to adjust the backrest.
- Adjust the backrest tilt.
- Release the lever (14) again. The backrest is locked.

  The backrest in now set.

Adjusting the lumbar vertebrae support

Procedure:

- Trun the hand wheel (15) to the required position.
- Position 0 = no warping in lumbar vertebrae area.
- Position 1 = increasing warping in upper lumbar vertebrae area.
- Position 2 = increasing warping in lower lumbar vertebrae area.

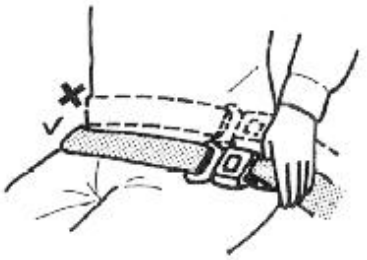


Seat Belt

Put on the seat belt(16)each time before starting the truck. The belt protects against serious injury. Protect the belt from contamination and clean it regularly.

Correct use the safe belt:

- Sit correctly on the seat.
- Check that seat belt is not twisted.
- Place the seat belt at hip level.
- Attach the seat belt and check that it locks.
- Adjust the seat belt to your body shape without squeezing your hip and without over-slack.





Regular verification of seat belt related to:

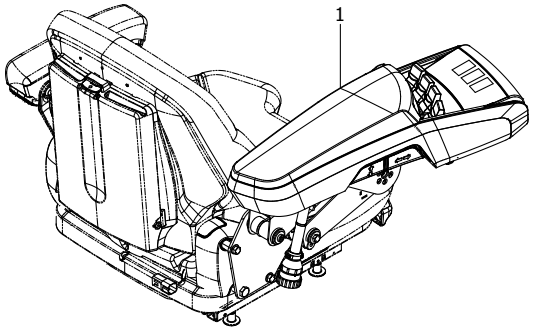
- Cut or frayed straps.
- Worn or damaged hardware, including anchor points.
- Buckle or retractor malfunction.
- Loose stitching.

WARNING

- In no event should the lift truck be used if the seat belt is defective (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.
- Do not alter the belt setting. Always replace the seat belt after an accident.

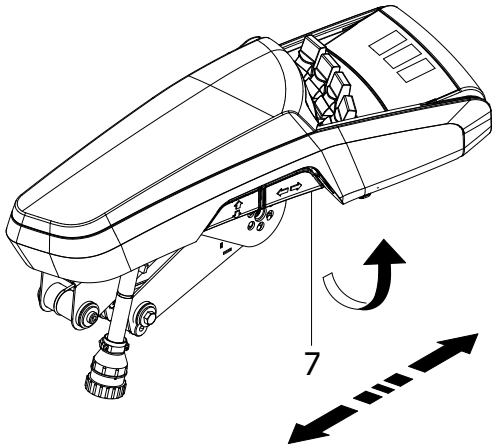
2.1.3 Adjusting the Armrest

The armrest (1) is fixed on the right of the driver's seat. When adjusting the driver's seat position, the armrest (1) together with the seat moved. So before adjust the armrest position, you should adjust the position of the deiver`s seat.



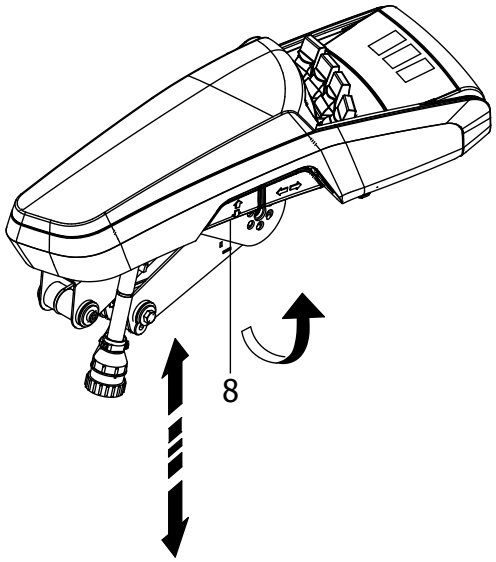
Adjusting the armrest forward / backward position

- Flip up rotate the armrest Locating plate (7), unlocked the armrest.
- Move the armrest (1) horizontally to the appropriate position.
- loosen the armrest Locating plate(7), locked the armrest.



Adjusting the armrest up / down position

- Flip up rotate the armrest Locating plate (8), unlocked the armrest.
- Move the armrest (1) vertically to the appropriate position.
- loosen the armrest Locating plate(8), locked the armrest.



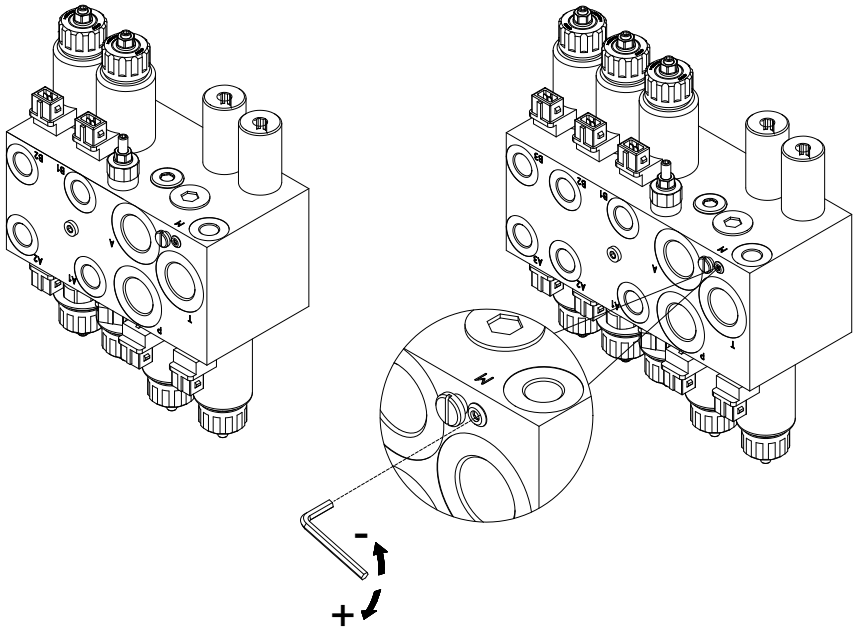
2.2 Electromagnetic proportional control vale

Mast emergency lowering

The mast can be lowered manually if a fault occurs in the hydraulic system.

Procedure:

- Turn the key switch and emergency disconnect switch off.
- Disconnect the battery.
- Remove the front/ back floor plates by undoing the floor plates mounting screws ;.
- Slowly rotate the counterclockwise (-) with a hexagon socket screw keys; the mast and load handler will lower.
- Slowly rotate the clockwise(+) with a hexagon socket screw keys as far as the stip; the lowering process stops.



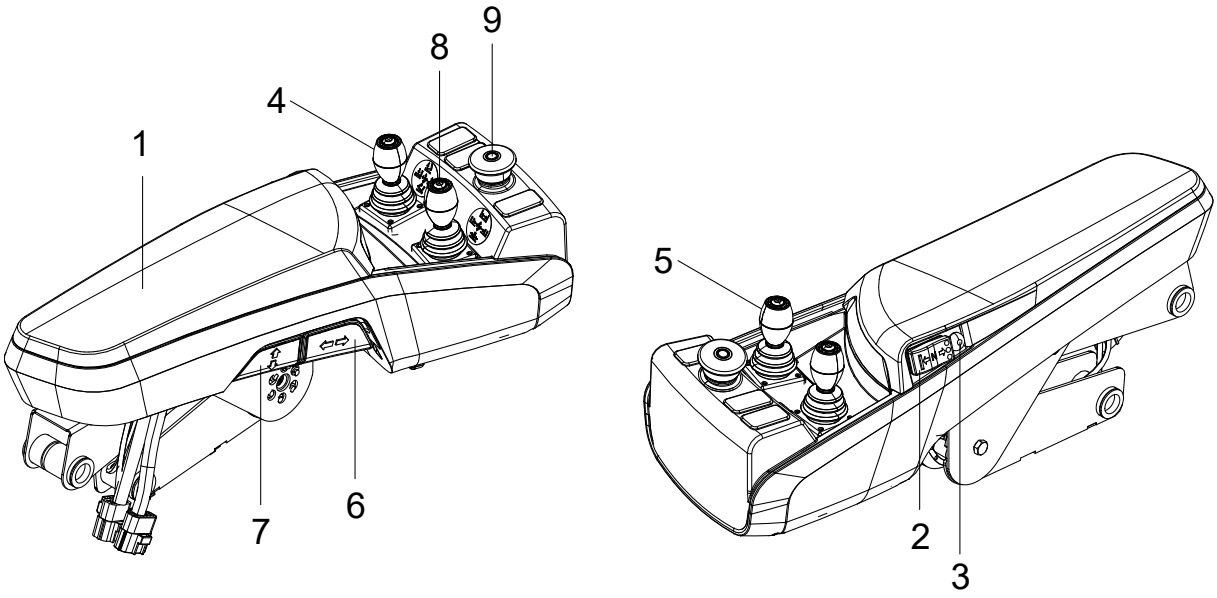
Maximum Torque= 2.5N·m/T=1.843ft·lb, Maximum opening 1.5 turns

WARNING

- Only operate the emergency lowering valve when standing next to the truck.
- Emergency lowering of the mast cannot be applied when the load handler is in the rack.
- Only return the truck to service when you have identified and rectified the fault.

3 Joystick control on seat armrest

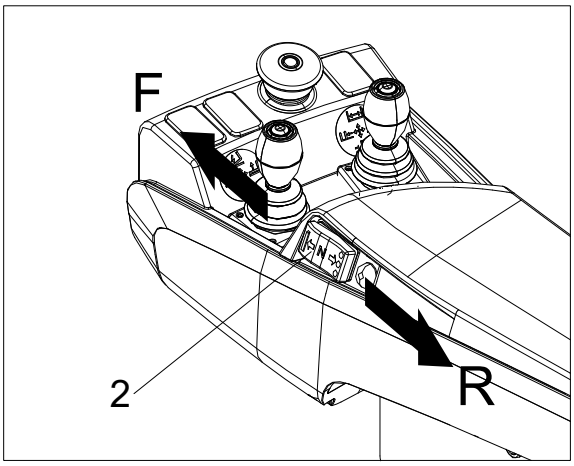
3.1 Operation and Control Components



Item	Description	Function
1	Armrest	Platform for control components and the driver`s arm.
2	Driving direction switch	Selects travel direction / neutral position.
3	Horn button	Activates an audible warning.
4	Lift and Tilt Control Joystick (360° Joystick)	Control the lifting, lowering, and tilting of the mast. Control the left and right movement of the forks.
5	Side Shift and Tilt Control Joystick (Cross Joystick)	Control the lifting, lowering, and tilting of the mast. Control the left and right movement of the forks.
6	Armrest adjustment paddles (horizontal)	Adjust the armrest front/rear position.
7	Armrest adjustment paddles (vertical)	Adjust the armrest up/down position.
8	Enable switch	For use only on forklifts with optional clamping attachments.
9	Emergency stop button	Turn the power on or off, in case of emergency, press the red mushroom button to cut off the main power of the vehicle.

3.1.1 Control components

Driving direction switch [2]



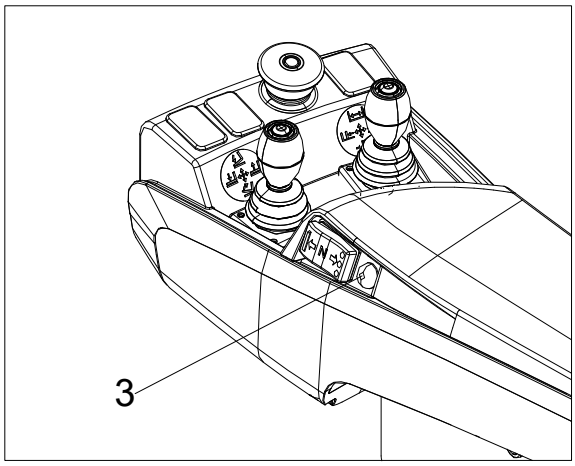
It is used to set the driving direction of the forklift truck as required.

It is used to select the truck driving direction, i.e. running forward or backward. When the direction switch is pushed forward and the accelerator pedal is depressed the forklift runs forward; and when the switch is pushed backward the forklift runs in reverse.

CAUTION

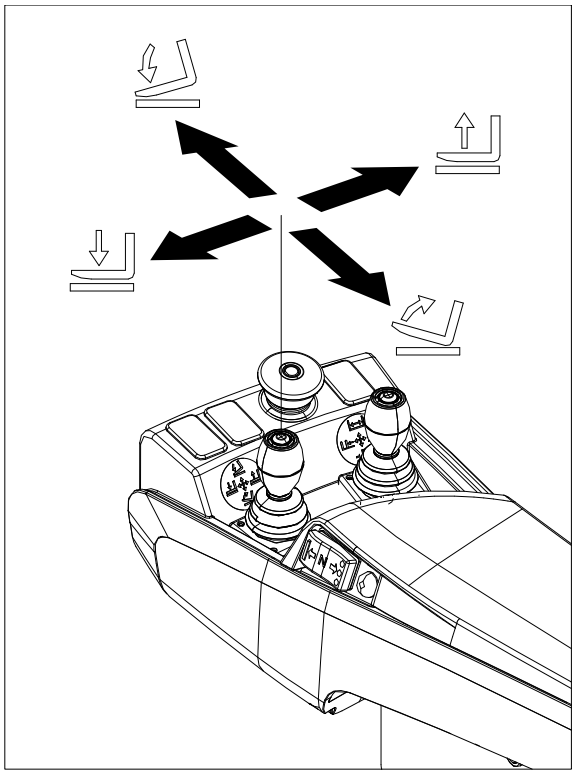
- When the forklift truck is running, the electric brake can slow down the forklift truck if the direction lever is pushed to the opposite direction. After stopping, the forklift truck will slowly run in the other direction.
- When the direction switch is not in neutral, if the key switch is turned on a fault will be displayed; when the direction switch is returned to neutral, the fault will disappear.

Horn button[3]



Press this button to send alert or warning signal.

Lift and Tilt Control Joystick [4]



Control the lifting, lowering, forward tilt, and rear tilt of the forks.

a） Push the joystick to the left to lower the forks.

b） Push the joystick to the right to lift the

forks.

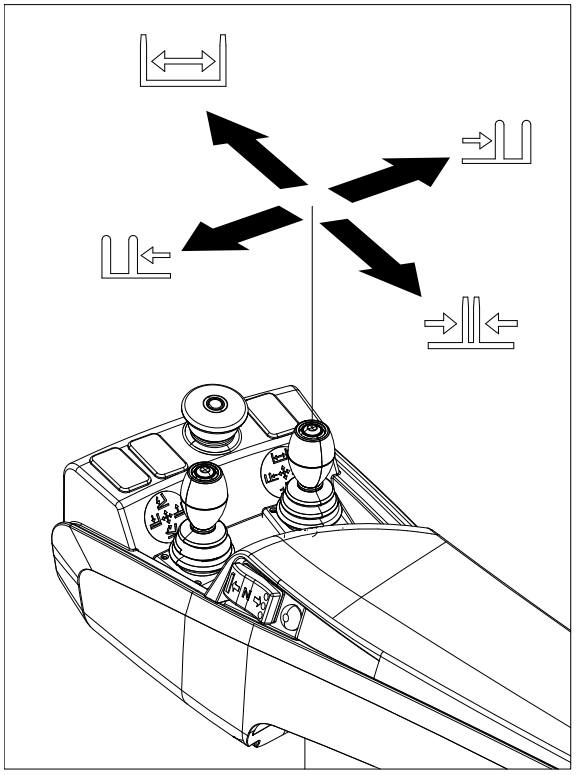
c） Push the joystick forward to tilt the forks forward.

d）Push the joystick backward to tilt the forks backward.

Release the joystick, and it will automatically return to the neutral position.

> **CAUTION**
>
> - The directions of forward, backward, left, and right mentioned above are based on the perspective of the driver when they are correctly seated in the driver's seat and facing the forks.

Side Shift and Tilt Control Joystick [5]



Control the lateral movement of the forks.

a） Push the joystick to the left to move the forks to the left (as observed from the driver's position).

b） Push the joystick to the right to move the forks to the right (as observed from the driver's position).

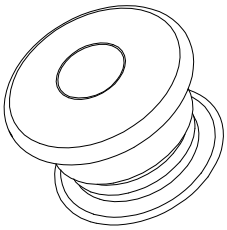
c） Push the joystick forward to spread the forks outward to both sides.

d） Push the joystick backward to close the forks towards the center.

Release the joystick, and it will automatically return to the neutral position.

> **CAUTION**
>
> - The directions of forward, backward, left, and right mentioned above are based on the perspective of the driver when they are correctly seated in the driver's seat and facing the forks.

Emergency stop button [9]

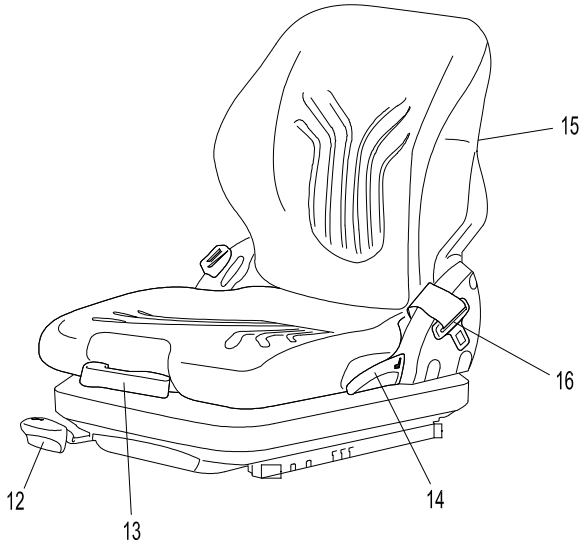


In an emergency, press this button to cut off the main power supply.

> **CAUTION**
>
> - Do not use the emergency stop button instead of the key switch.

3.1.2 Driver`s Seat

In order to ensure the safety of the forklift truck operation, before operat the forklift truck, the driver must be adjust driver`s seat according to oneself circumstance, and fasten the seat belt. If not properly adjust the driver's seat may lead to accidents or a health hazard.



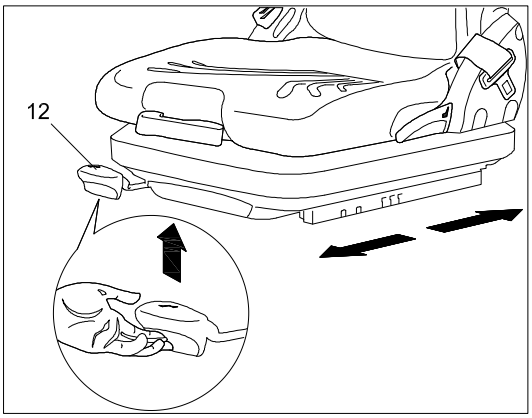
12. Driver`s seat locking lever
13. Weight adjustment lever
14. Backrest adjustment lever
15. Lumbar support adjustment hand wheel
16. Seat belt

Adjusting the driver`s seat

Adjusting the seat position

Procedure:

- Sit on the driver`s seat.
- Pull up the driver`s seat locking lever (12) in the direction of the arrow.
- Push the driver`s seat forwards or backwards to the desired position.
- Engage the driver`s seat locking lever (12) in position.



The seat position is now correctly set.

After the adjustment, the locking lever must latch into the desired position with an audible click. It should not be possible to move the driver’s seat into another position when it is locked.

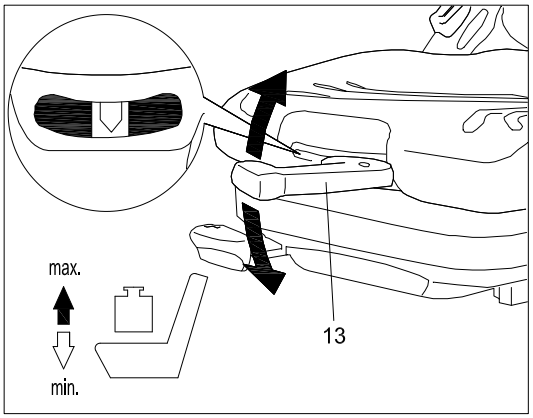
WARNING

- Risk of crushing ! Only touch the lever at the indented grip, do not reach back under the lever.
- Risk of accident ! Do not operate the locking lever while driving.

Adjusting the driver`s weight

To achieve optimal seat cushioning the driver`s seat must be set to the driver`s weight.

Procedure:

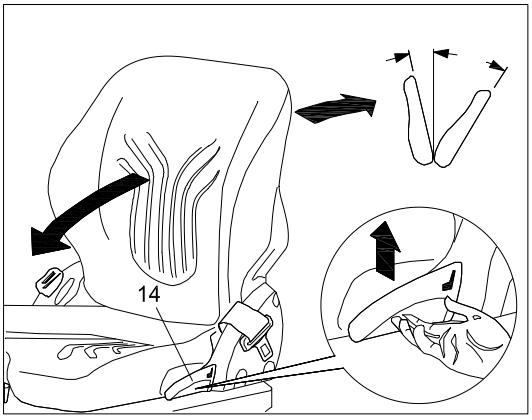


- Set the driver`s weight when the seat is occupied.
- Fold out the weight adjustment lever (13) as far as it will go in the arrow direction.
- Move the weight adjustment lever (13) up and down to set the seat to a higher weight.
- The driver`s weight is correct when the arrow is in the middle of the display window. The minimum or maximum weight setting is reached when you can feel a return stroke on the lever.
- After setting the weight, move the lever (13) back in full.

WARNING

- The driver's seat position locking pin must be securely engaged in the set position.
- The driver's seat must not be adjusted during travel.

Adjusting the backrest



Procedure:

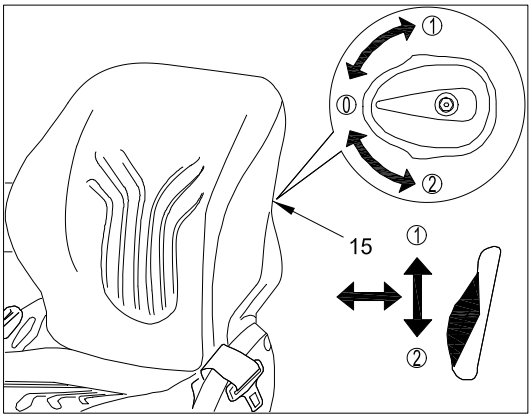
- Sit on the driver`s seat.
- Pull the lever (14) to adjust the backrest.
- Adjust the backrest tilt.
- Release the lever (14) again. The backrest is locked.

  The backrest in now set.

Adjusting the lumbar vertebrae support

Procedure:

- Trun the hand wheel (15) to the required position.
- Position 0 = no warping in lumbar vertebrae area.
- Position 1 = increasing warping in upper lumbar vertebrae area.
- Position 2 = increasing warping in lower lumbar vertebrae area.

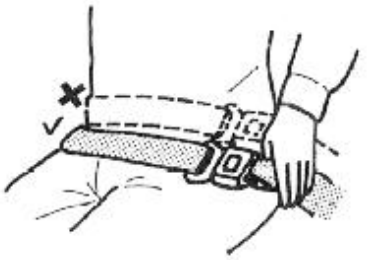


Seat Belt

Put on the seat belt(16)each time before starting the truck. The belt protects against serious injury. Protect the belt from contamination and clean it regularly.

Correct use the safe belt:

- Sit correctly on the seat.
- Check that seat belt is not twisted.
- Place the seat belt at hip level.
- Attach the seat belt and check that it locks.
- Adjust the seat belt to your body shape without squeezing your hip and without over-slack.





Regular verification of seat belt related to:

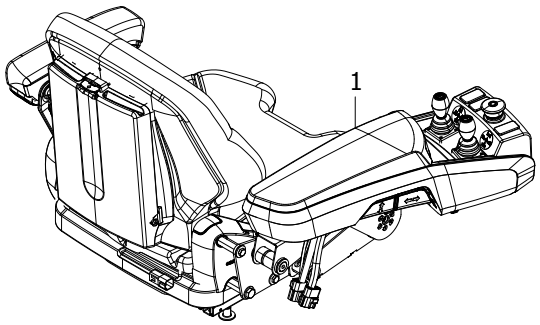
- Cut or frayed straps.
- Worn or damaged hardware, including anchor points.
- Buckle or retractor malfunction.
- Loose stitching.

WARNING

- In no event should the lift truck be used if the seat belt is defective (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.
- Do not alter the belt setting. Always replace the seat belt after an accident.

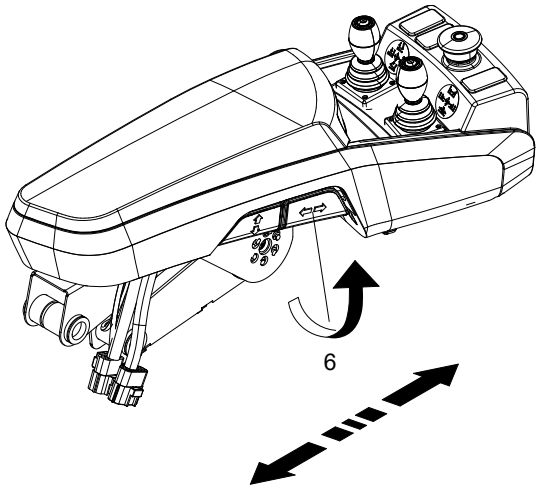
3.1.3 Adjusting the Armrest

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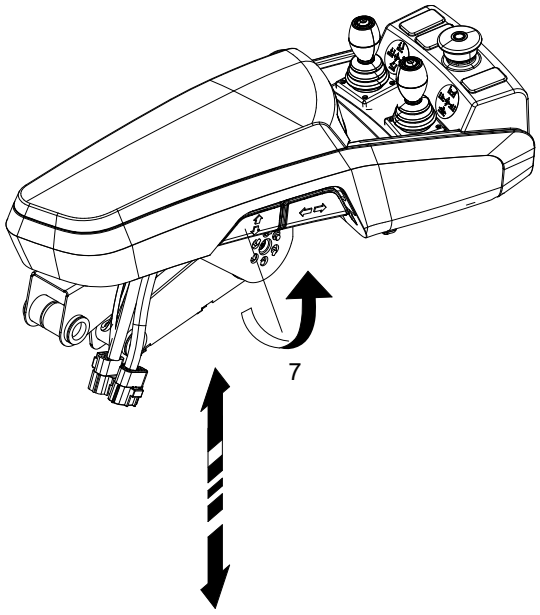
Adjusting the armrest forward / backward position

- Flip up rotate the armrest Locating plate (6), unlocked the armrest.
- Move the armrest (1) horizontally to the appropriate position.
- loosen the armrest Locating plate(6), locked the armrest.



Adjusting the armrest up / down position

- Flip up rotate the armrest Locating plate (7), unlocked the armrest.
- Move the armrest (1) vertically to the appropriate position.
- loosen the armrest Locating plate(7), locked the armrest.



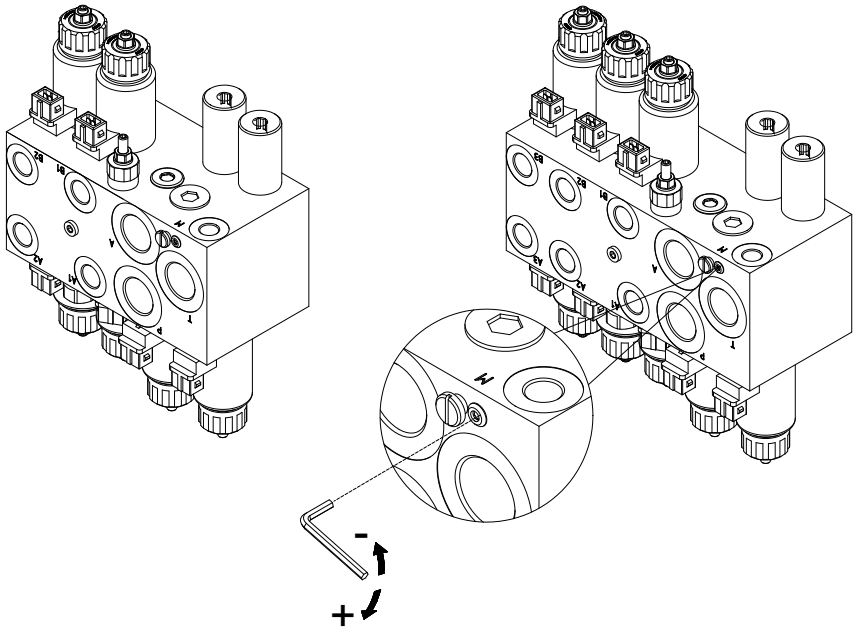
3.2 Electromagnetic proportional control vale

Mast emergency lowering

The mast can be lowered manually if a fault occurs in the hydraulic system.

Procedure:

- Turn the key switch and emergency disconnect switch off.
- Disconnect the battery.
- Remove the front/ back floor plates by undoing the floor plates mounting screws ;.
- Slowly rotate the counterclockwise (-) with a hexagon socket screw keys; the mast and load handler will lower.
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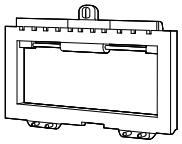
Maximum Torque= 2.5N·m/T=1.843ft·lb, Maximum opening 1.5 turns

WARNING

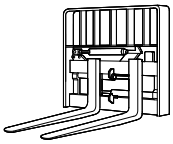
- Only operate the emergency lowering valve when standing next to the truck.
- Emergency lowering of the mast cannot be applied when the load handler is in the rack.
- Only return the truck to service when you have identified and rectified the fault.

XV Use, install and safety rules of attachment

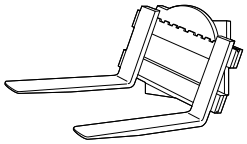
HANGCHA will choose attachment that in accordance with International standard ISO2328 *Forklift pothook fork and installation size of carriage*, such as sideshifters, fork positioner, rotator, push/pull and clamp ect.



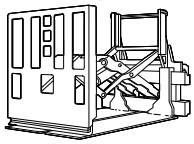
sideshifter



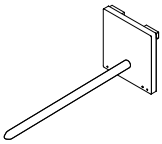
Fork positioner



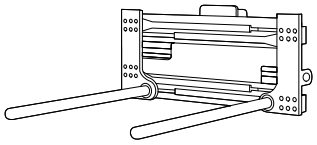
Rotator



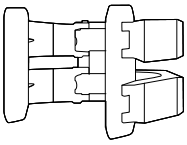
Push/pull



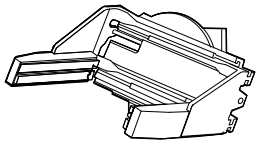
Coil boo



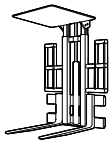
Bar arm clamp



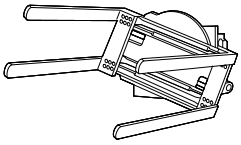
paper roll clamp



block clamps



load Stabilizer



turnaload

1 Attachment use

1) Know well the content of nameplate on attachment, read the instruction manual before usage. (Especially the manual from attachment company) Before operate the attachment, thepeople should be trained and obtain the qualification.
2) It should be understand the basic capability and operate methods of attachment. Especially the admit load, lift height, size of cargo and adapt range of attachment.
3) Operate the multi-functional attachment, such as with side-shifter, clamp or rotator, it is not allowed that two action at one time. Operate one functional then do another one.
4) Prohibit the cargo at a high position when truck moves with attachment. If the size of cargo is too big, prohibit the truck move on. Transport the cargo, make sure that the distance of bottom of cargo and ground is less than 300mm and mast incline back.
5) The weight of cargo couldn't exceed the limited value of combination carrying capacity of forklift and attachment. It is not allowed that partial load at high position. It is a short time work for attachment with side-shifter. Partial load is around 100mm (Above 5 ton (including 5 ton), the side-shifter movable within 300mm.
6) In the range of the projection forth 2m of the lower of attachment and cargo, prohibit standing to avoid the suddenness except the driver position under overhead.
7) It is not allowed that an emergency brake in moving. Run slowly with load.
8) Prohibit outside force when attachment working;
9) It couldn't be use at malfeasance situation and overstep normal work range.
10) When the attachment has trouble, prohibit using without check.

Check and maintenance

1) Check the clearance of carriage beam and below catch of attachment if meet the attachment manual.
2) Check the rise catch is right on the flute of fork carriage.
3) Use the auto general lithium-grease per 500 hours to bearing surface.
4) If the tighten firmware become flexible.
5) Check the tie-in of hydraulic pressure loop, if tube attaint. Prohibit use after repair.
6) Check the drive of attachment or if the rotating elements fray or block, change in time.
7) Check if each element and attachment working pressure is normal as well asattachment works normally under load. If not, check the hydraulic pressure loop, find out the broken part, change sealing element or whole loop element.

2 Attachment install

WARNING

- Untempered technology license of our company, any refit at safety and capability to attachment is strict prohibited.
- Actual rating load capacity should be the least of rating load capacity, the load capacity of attachment, combined load capacity of truck. Generally speaking, the combined load capacity of truck is the least. Attachment load capacity just a count value of attachment pressure.
- Installation goes to in reason, credibility, safety to avoid the attachment glide around carriage in using.
- After hang attachment, embed the rise catch block to the gap of top beam, let the offset of centre line of attachment and carriage is less than 50mm.Otherwise, it will affect the landscape orientation stability of forklift.
- To these attachment with rotating function, such as paper roll clamp, bale clamp, muti-purpose clamp, drum clamp, it needs to weld chock block in the joint of carriage beam and attachment to prevent move from side to side in the operation.
- Install the attachment of below catch orientation, it need to adjust the clearance between below catch and beam of carriage.

XVI Maintenance record

Tim	Service content	Serviceman	Remarks

Tim	Service content	Serviceman	Remarks

Tim	Service content	Serviceman	Remarks

Revision Table

Revision	Version no.	Date	Note
00	OM24-XHRT-00	03/2024	Original
01	OM24-XHRT-01	11/2024	
02	OM25-XHRT-01	07/2025	

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