

NOBLELIFT

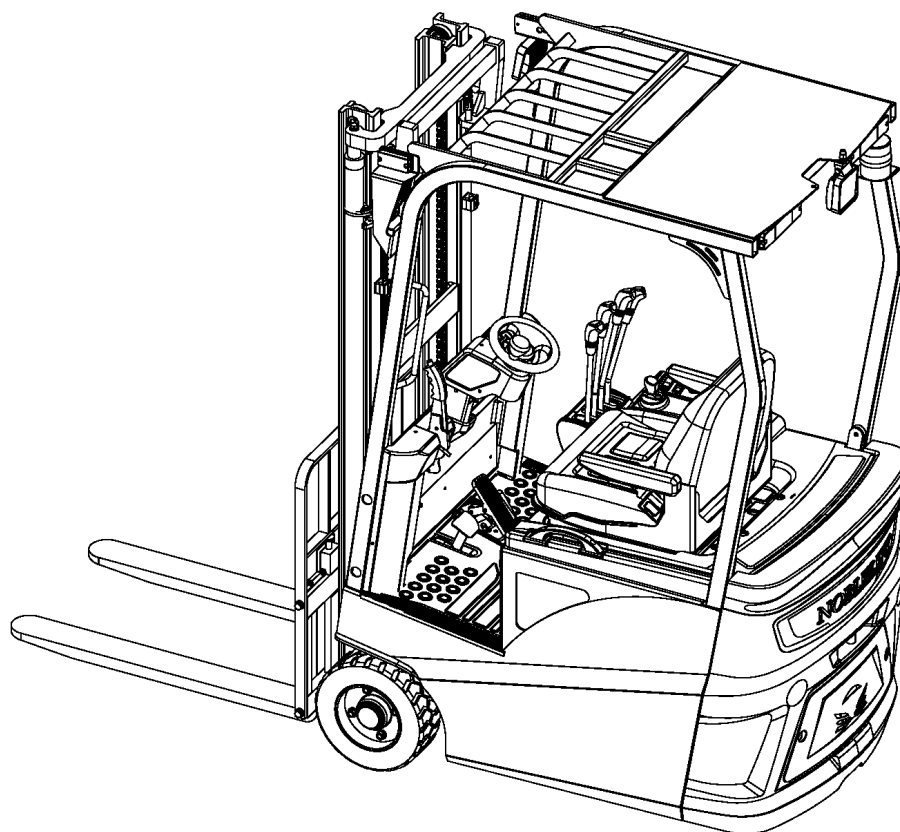


FE3R08-12N-SMS-002



Warning

Operators should read and understand this manual and all warning labels on the forklift before using the forklift!
Keep the manual for future reference!



Operation & Maintenance Manual

FE3R08-12 N SERIES

Battery Counterbalanced Forklift Truck

NOBLELIFT INTELLIGENT EQUIPMENT CO.,LTD.

Catalogue

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Introduction

This manual briefly describes the technical parameters of the counterbalanced accumulator forklift made by our company, and the structure of its main components, working principle and requirements on operation and maintenance. Please read this manual carefully before operation, so as to achieve proper driving and maintenance, and to ensure safe and effective material handling. Meanwhile, this manual aims to guide operators to use the forklift in an appropriate way and to maximize its performance! We hope that operators and equipment managers could read it carefully before use! Please strictly observe the provisions and cautions stipulated in this manual and operate the forklift with caution and care, so that the forklift can be maintained in its best status and optimal performance can be ensured. When you lease or transfer your forklift, always keep this manual with it.

For highlighting purpose, the following icons are used in this manual:

1.  ----Refers to a potential danger; if not avoided, it may cause serious human injury, vehicle damage or fire.
2.  ----Refers to a potential danger; if not avoided, it may cause minor human injury, or local damage to the vehicle.
3.  ----Refers to general cautions and instructions during use.

 Most parts of the product are made from recyclable steel. The recycling and disposal of cast-offs resulted during use, maintenance, cleaning and disassembling of the product must comply with local regulations without pollution to the environment. The recycling and disposal of the cast-offs should only be operated by specialised personnel in the designated area. The cast-offs, such as hydraulic oil, batteries and electronic units, if improperly disposed, may be hazardous to the environment and human health.

4. For truck operation, the following climatic conditions apply:

- average ambient temperature for continuous duty: + 25°C;
- maximum ambient temperature, short term (up to 1 h): +40°C;
- lowest ambient temperature for trucks intended for use in normal indoor conditions: +5°C;
- lowest ambient temperature for trucks intended for use in normal outdoor conditions: -20 °C;
- altitude: up to 2 000 m.

If the product needs to be used in a refrigerated warehouse or other special environmental conditions, specialized forklifts must be used. Please contact our technical engineers for support.

5. Vehicle safety monitoring device

The vehicle can be equipped with a driver authority information collector, through fingerprint, iris, facial features and other biological information or magnetic card and personal identity unique binding media price, verify the driver's operation authority, when the collector is invalid, removed or the driver information is incorrect, the vehicle cannot start.

 Due to continuous product improvement, Noblelift reserves the right to make changes in product designs and specifications without prior notice. For the latest product parameters, please feel free to contact us. All parameters provided herein are as of the publication date of the Instruction Manual.

Chapter one Attentions when using the forklift truck

The operator must always keep in mind the principle of safety first. Conscientiously and cautiously read the maintenance manual. Undergo safe operation and canonical operation strictly following the demand in this manual

1. Transportation for forklift

Pay attention to the following particulars when using container or automobile to convey forklift truck

- (1) Enable parking brake
- (2) Fasten mast and counterweight with steel wire in both two sides; Chock with wedge the front and rear wheels at proper site
- (3) Hoist Lift the forklift according to indication on lifting plate

2. Deposit

- (1) Lower the mast to the lowest position
- (2) Switch off power; Push all the operating rod to vacancy; Pull out power plug
- (3) Stretch hand brake rod
- (4) Chock with wedge front and rear wheels
- (5) When truck is in long-term non-use. Wheels should be overhead. And battery should be boost charged once a month

3. Preparation before use

- (1) Check up all the meters
- (2) Check up tire pressure
- (3) Check up the state of each handle and pedal
- (4) Check up if the voltage of battery is in operating range; and whether the specific density of electrolyte and the altitude of liquid surface are in order
- (5) Check up if the contact of each connector and plug of electrical system is ok
- (6) Check up if the hydraulic liquid, electrolyte or brake fluid is leaking
- (7) Check up the condition of each main fastener
- (8) Check up if the illuminators, signal lamps are in order
- (9) Loosen parking brake
- (10) Try to lift and lower the mast, tilt forward and backward the mast, turn and brake the truck
- (11) Be sure that the polluting level of hydraulic oil is less than 12grade

4. Operation of truck

- (1) Only can the person operate the truck who has been trained and got driver's license
- (2) Operator should wear safe protective shoes, cap, costume in his operation
- (3) Pay attention to the performance and working conditions of mechanics, hydraulic, electrical and MOSFET governor when operating
- (4) Switch on the power, turn on the key, select the position of direction switch, roll the steering wheel to see if the truck is in order, step down the governor pedal slowly, keeping a proper starting acceleration
- (5) Check the voltage meter when the truck is in working, if the value stated in the meter is less than 41V(72V), stop working immediately, charge the battery or change another fully charged battery
- (6) When conveying, the load should not exceed the rated capacity. The separation and position of forks should be appropriate, insert the forks absolutely downside the load, make the load uniformly distributed on the forks; to prevent load from deviation
- (7) When the distance between the load' gravity center and yoke is equal or less than 500mm. The maximum load capacity should be the rated capacity, and when the distance between the load' gravity center and yoke is more than 500mm; the maximum load capacity should be less

than the rated capacity

(8) When forks are bearing load, tilt backWards mast mostly, the yoke should always contact with load; lift forks upto 200mm high from ground before driving

(9) No standing under forks, no standing on forks when lifting

(10) The starting speed should not be too fast when starting to lift and lower the load

(11) No operation of truck and it' s additions without sitting on the driver's seat

(12) Push handle immediately to middle position when the mast has tilted forward or backWard to the extreme position

(13) No driving or turning when the mast is lifting

(14) When travelling, pay attention to passers by, obstacles, irregular road and the clearance of upper side of forklift

(15) Be careful of travelling on slope, when the angle of slope is more than10%, travel forward upslope and travel backWard downslope. no turning on slope, no loading or unloading when travelling downslope

(16) Reduce speed when turning on the damp or slick road, take special care and drive slowly when travelling on dock or on temporary board

(17) Operating high lift range truck of which the lifting height is more than 3m, pay attention to the dropping of the load, and take measures to prevent it when necessary

(18) Don't convey unfastened or loosely stacked load, be careful when conveying large-size load

(19) When travelling with load, avoid emergency brake

(20) When leaving the truck, lower the forks to ground; push lever to free position, switch off power, when parking on the slope, pull tight the brake apparatus and plug the wheels with wedge if the parking time is long

(21) The protection valves on multiway valve and on steering device are already regulated, so the users shouldn't regulate randomly when using to prevent that the excessively high oil pressure leads to the damage of the whole hydraulic system and the burnout of the electric motor

(22) Charge the tyres according to the pressure value stated in "tire pressure" indication

(23) Treat the operation of non-load truck with additional apparatus as the operation load truck

5.The Use of Lithium Battery

Use the battery pack in strict accordance with the conditions specified in the battery pack instruction manual. Otherwise, the battery pack may not be covered by the warranty.

(1) Do not operate electric vehicles equipped with lithium batteries at temperatures above 55 °C or below -25 °C

(2) Under low temperature conditions below 0°C, please charge the vehicle immediately after use, please charge the vehicle immediately after use

(3) Do not flush the battery container directly to prevent water from entering the battery container

(4) Do not touch, remove, or disassemble the battery pack, high-voltage cables, or other components with high-voltage warning labels except Professional

(5) If the vehicle is involved in a strong collision, stop the vehicle in a safe area and check the battery pack area for damage

(6) When the vehicle or battery pack is on fire, leave the vehicle quickly to a safe distance and use a dry powder fire extinguisher to deal with the fire. Using water to extinguish the fire or putting out the fire with an incorrect fire extinguisher may lead to electric shock. According to the characteristics of the battery, the battery capacity attenuation range is 0% to 25% within the three-pack period

(7) The charging temperature ranges from 0°C to 40°C. Under low temperature conditions below 0°C, charging at high rate may cause damage to the battery. Under low temperature conditions below 0°C, charge the vehicle immediately after use

(8) Discharge temperature range: -20 ~ 50°C, the discharge capacity at (-20 ~ 0°C) may be lower than that at normal temperature. The battery can be used at 40 ~ 50 °C. However, if

the battery temperature is too high, especially if the battery is in a high temperature environment for a long time, the aging of the materials inside the battery will be accelerated and the service life of the battery will be shortened

- (9) If the ambient temperature exceeds the temperature range, the battery performance may be adversely affected or damaged, and the service life of the battery may be shortened, so please avoid

6.The Use of Lead-acid Battery

- (1) When the battery pack is charged for the first time and replenishment, it must strictly comply with the provisions of the battery manual
- (2) When the voltage of the battery pack is reduced to 41V or the voltage of any single battery is lower than 1.7V, or the instrument gives an alarm, the forklift truck should stop working immediately and continue to use after charging or replacing the battery pack
- (3) When charging, check the specific gravity of the electrolyte, liquid level height and temperature at any time
- (4) After the forklift is used, the battery must be charged as soon as possible, and the placement time shall not exceed 24 hours. When charging, it is necessary to prevent insufficient and overcharging, so as not to damage the battery
- (5) In normal use, forklifts should be charged once a month in a balanced manner to adjust the proportion of each battery group.

Please refer to relevant sections of this manual for detailed charging method and operation and maintenance.

Chapter two Structure and main parameters of the forklift

1. Overall size and performance parameters of the forklift

1. Overall dimensions

See figure 1-1.

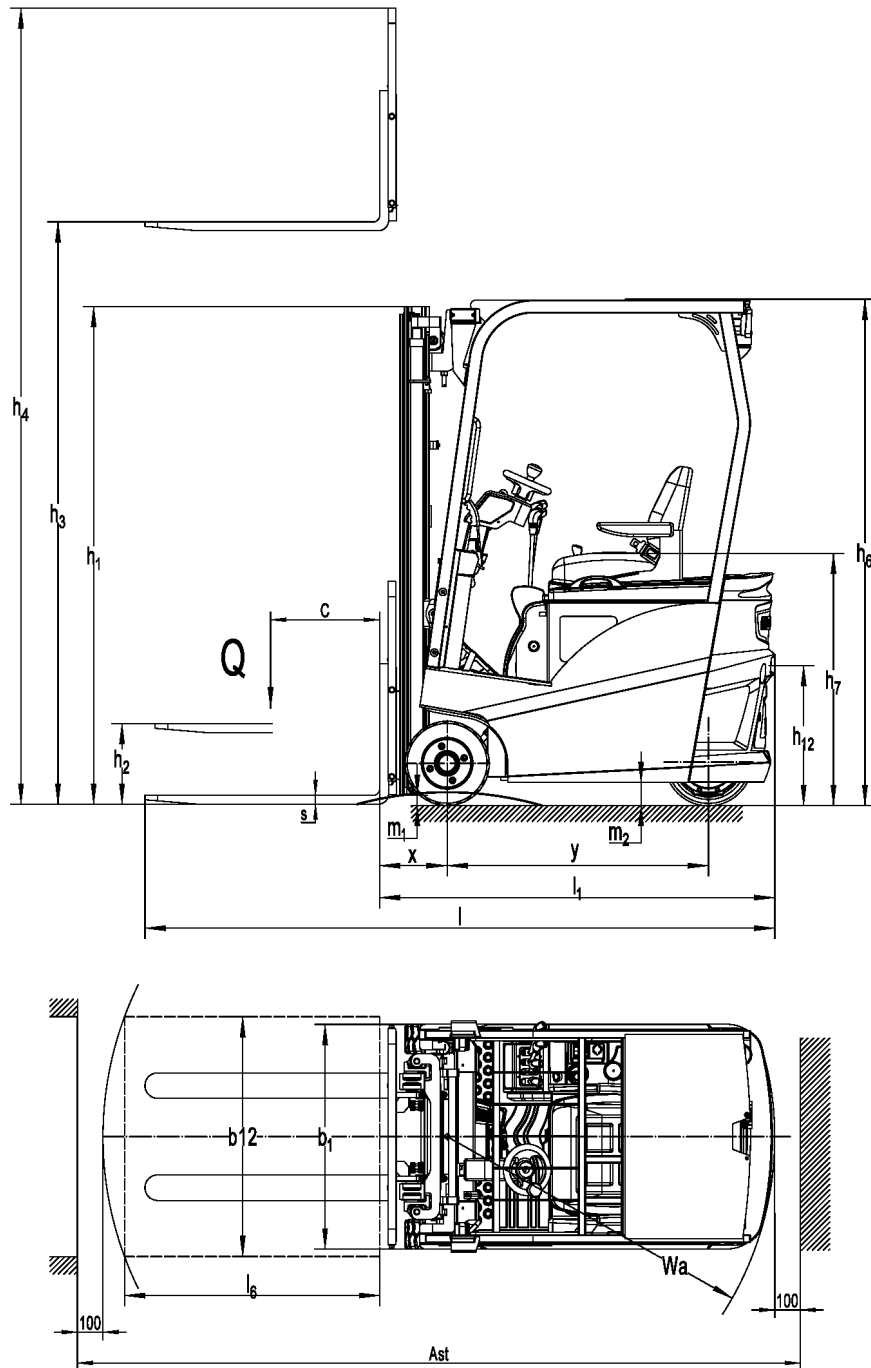


Figure 1-1 Overall dimension

2. Technical parameters (Table 1-1)

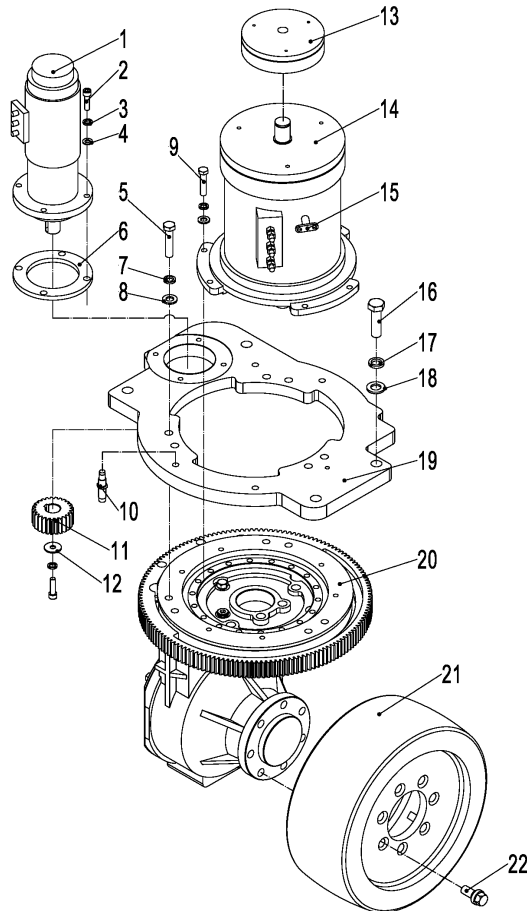
Feature	Mode		FE3R08N	FE3R10N	FE3R12N
	Drive mode:		Electric	Electric	Electric
	Operation mode: Manual, walking, stand-up driving, Sit-down driving, picking		Sit-down	Sit-down	Sit-down
	Rated loading capacity	Q(Kg)	800	1000	1200
	Load centre distance	C(mm)	500	500	500
	Front overhang distance	x(mm)	265	265	265
	Wheelbase	y(mm)	841/923	951/1033	991/1073
weight	Weight with accumulator	Kg	1800	1910	2080
	Axle load with full load, front/rear	Kg	2300/300	2600/310	2950/330
	Axle load with no load, front/rear	Kg	770/1020	850/1060	880/1220
Wheel, body	Tires: solid rubber, super-elastic, pneumatic, polyurethane tires		Solid rubber/polyurethane	Solid rubber/polyurethane	Solid rubber/polyurethane
	Specification of Front wheel		13×4½×8	13×4½×8	13×4½×8
	Specification of rear wheel	b ₁₀ (mm)	φ 250×82	φ250×82	φ343×140
	Front wheelbase	b ₁₁ (mm)	765	765	765
Basic size	Tilt angle of main frame, forward/backward α/β(°)		3°/5°	3°/5°	3°/5°
	Height of main frame when retracted	h ₁ (mm)	1965	1965	1965
	Free lifting height	h ₂ (mm)	95	95	95
	Lifting height	h ₃ (mm)	3000	3000	3000
	Height of main frame when stretched	h ₄ (mm)	3865	3865	3865
	Height of overhead guard	h ₆ (mm)	1975	1975	1975
	Seat height	h ₇ (mm)	980	980	980
	Traction pin height	h ₁₀ (mm)	540	540	540
	Total length	l ₁ (mm)	2290	2400	2460
	Length of forklift body (Fork surface)	l ₂ (mm)	1370	1480	1545
	Total width	b ₁ (mm)	880	880	880
	Fork dimension	s/e/l(mm)	35/100/920	35/100/920	35/100/920
	Distance from main frame to ground	m ₁ (mm)	80	80	80
	Wheelbase center to ground clearance	m ₂ (mm)	90	90	90
	Turning radius	Wa(mm)	1160	1320	1350
Function parameters	Driving speed, full load/no load	km/h	8/9	7.5/9	7.0/9
	Lifting speed, full load/no load	m/s	0.17/0.28	0.16/0.22	0.15/0.22
	Lowering speed full load/no load	m/s	0.23/0.22	0.16/0.20	0.17/0.20
	Maximum traction, full load/no load S ₂ 5 min	%	3320/3530	3320/3600	3420/3640
	Climbing ability, full load/no load S ₂ 5 min	%	6/10	6/10	6/10
motor	Drive motor power S ₂ 60min	kW	2.5	2.5	3
	Lifting motor power S ₃ 15%	kW	3	3	3
	Accumulator voltage/capacity K ₅	V/Ah	24/280	24/420	24/420
	Accumulator weight	kg	280	392	392
others	Drive control type		AC	AC	AC
	Working pressure of accessories	MPa	115	135	155
	Oil volume of accessories	l / min	16	16	16

II. Structure, principle and adjustment of the forklift's main components

1. Steering drive axle

1.1 Overview

The steering drive axle of forklift is composed of reduction gearbox assembly, drive motor and slewing bearing. Driving gear of decelerator is connected directly with the travel motor, so the driving speed of forklift increases with the increase of motor speed and the driving direction can be changed by changing the direction of motor rotation.



1. steering motor	2. screw	3. spring washer	4. washer
5. bolt	6. heel	7. spring washer	8. washer
9. bolt	10. proximity switch	11. Steering pinion	12. washer
13. Electromagnetic brake (optional)	14. motor	15. coder	16. bolt
17. spring washer	18. washer	19. Gearbox mounting board	20. gear-box
21. back wheel	22. boss bolt		

Figure 2-1 Steering drive axle

The drive steering axle has a characteristics of compact structure, reliable performance, smooth transmission and low noise. Axle shell is made of steel materials, which provides strong rigidity and high load capacity. See Table 2-1 for the main technical parameters.

Table 2-1 main performance parameters

Model		FE3R08-10N	FE3R12N
Motor Power	kW	2.5	3.0
Motor rated speed	r/min	2500	2500
Battery voltage	V	24	24
Gear Ratio	i	18.98	22.32
Maximum wheel load	kg	1100	1400
Wheel diameter	mm	254	343

1.2 Failure Analysis

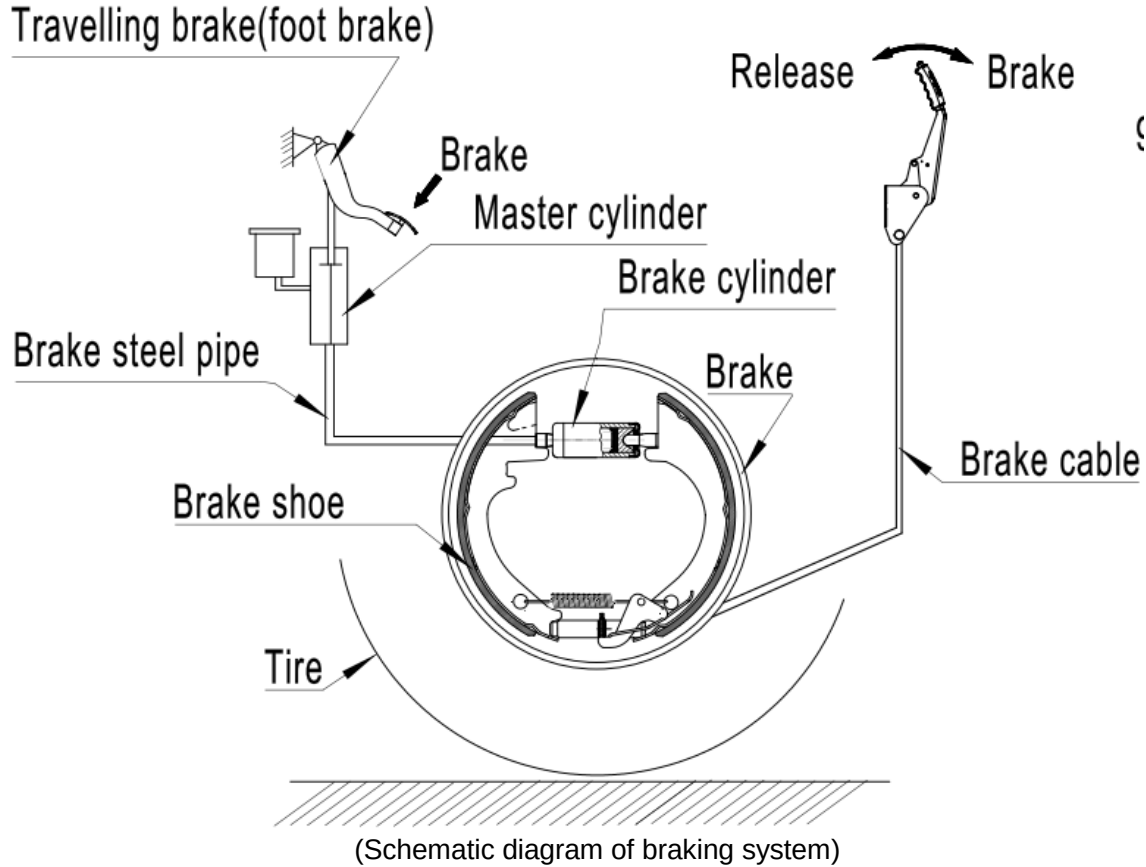
Table 2-2 Failure Diagnosis and Correction

Failures	Possible causes	Correction methods
High vibration	Looseness of fastening bolts at the installation and connection points	Tighten the bolts
Excessive oil temperature	Deterioration of gear oil	Replace
	Abnormal oil level	Add or reduce oil
	Jamming of moving parts	Adjustment
Oil leakage	Looseness of bolts at the combining surfaces	Tighten the bolts
	Damaged seals	Replace
Noise	Damaged rotary gear	Replace
	Damaged bearing	Replace

2. Braking system

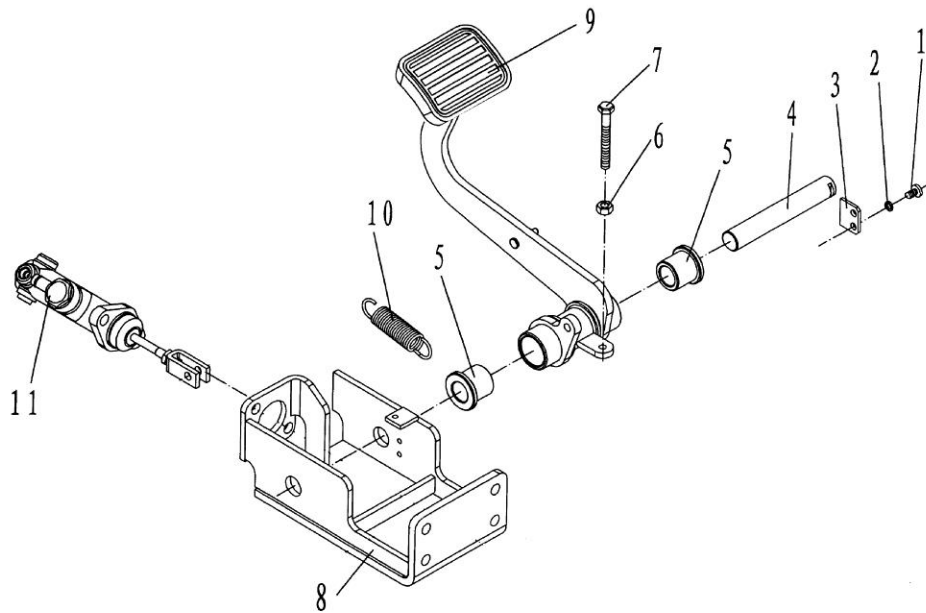
2.1 Overview

The braking system consists of the brake pedal, brake master cylinder and wheel brakes. The two wheel brakes in the front are hydraulic internal expansion brakes.



2.2 Brake pedal

The structure of brake pedal is shown in Figure 2-2. The pedal would transfer the pedal force into brake oil pressure through the push rod on the brake master cylinder.

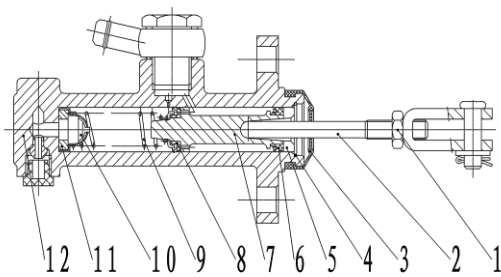


- | | | | |
|----------------|---------------------------|-------------------------|-----------------------|
| 1 Screw | 2. Spring washer | 3. Fixed plate | 4. Axle |
| 5. Bearing | 6 Socket hexagonal screw. | 7. Spacing bolt | 8. Foot brake bracket |
| 9. Brake pedal | 10. Return spring | 11. Brake pump assembly | |

Figure 2-2 Brake pedal assembly

2.3 Brake master cylinder (Figure 2-3)

The master cylinder includes a valve seat, a check valve, a return spring, the main cup, piston and auxiliary cup. Stop washer and stop steel wire are used to fix the ends of the cylinder and rubber dust cover is applied to protect its external surface. Master cylinder piston works by depressed the brake pedal to touch the push rod. When the brake pedal is depressed, the push rod will push the piston forward, and the brake fluid in the cylinder will flow back to the storage tank through the oil return hole until the main cup block the oil return hole. When the main cup block the oil return hole, the brake fluid in front cavity of the master cylinder is compressed and the check valve is opened. The fluid will flow to the wheel cylinder through the brake pipelines. Thus, each wheel cylinder piston will protrude and the friction disk of the brake shoe will contact the brake drum to achieve slowing down or braking. At this point, the back cavity of piston will be filled with brake fluid from the oil return hole and the oil inlet. When the brake pedal is released, the piston will be pressed backWards by the return spring, and at the same time the brake fluid in each brake cylinder is also compressed by the return spring of the brake shoe, so that the brake fluid will flow back to the master cylinder (front cavity of the piston) through the check valve. Then the piston will return to its normal position, while the brake fluid in the master cylinder flows back to the storage tank through the oil returning hole. The pressure of the check valve will be adjusted to be in certain proportional of the remaining pressures in the brake pipeline and the brake cylinder, so that the cylinder cup will be correctly placed to prevent oil spilling and to eliminate air resistance that may occur during emergency brake.

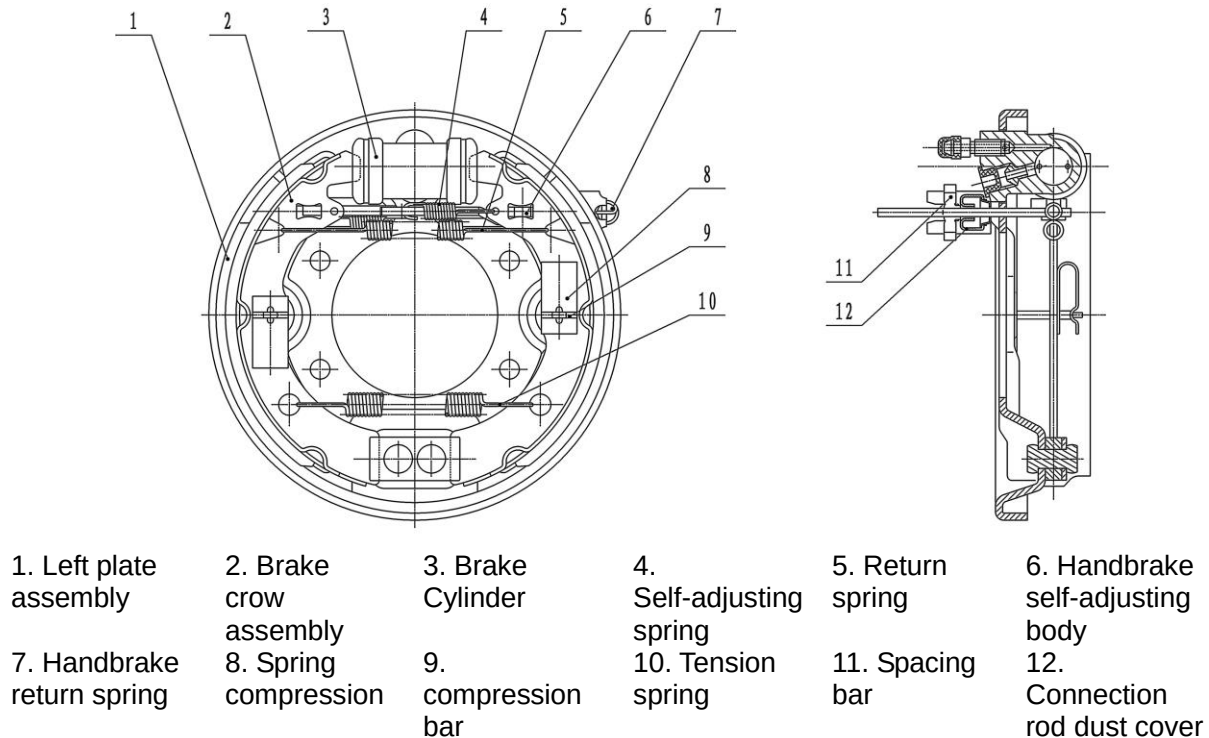


- | | |
|--------------------|-----------------|
| 1. Locking nut | 7. Piston |
| 2. Pushing rod | 8. Main cup |
| 3. Dust cover | 9. Spring |
| 4. Stop steel wire | 10. check valve |
| 5. Stop washer | 11. Valve seat |
| 6. Auxiliary cup | 12. Pump body |

Figure 2-3 Brake Master Cylinder

2.4 Brake

The brake is a dual-shoe brake installed on both sides of the drive axle. The brake consists of two groups of brake shoes, brake cylinders and regulators. One end of the brake shoe contacts the fixed pin and the other end contacts the regulating device. The return spring and the compression spring bar hold the parking brake. In addition, the parking brake mechanism and automatic regulating device are also assembled onto the brake. See figure 2-4



- | | | | | | |
|----------------------------|------------------------|--------------------|--------------------------|------------------|----------------------------------|
| 1. Left plate assembly | 2. Brake crow assembly | 3. Brake Cylinder | 4. Self-adjusting spring | 5. Return spring | 6. Handbrake self-adjusting body |
| 7. Handbrake return spring | 8. Spring compression | 9. compression bar | 10. Tension spring | 11. Spacing bar | 12. Connection rod dust cover |

Figure 2-4 Brake

2.5 Parking brake control device

The parking brake handle is CAM type and the braking force can be adjusted by a regulator located at the end of the brake handle.

Adjustment of braking force: Turn the regulator clockwise to increase the braking force; Turning the regulator counterclockwise reduces the braking force.

Tension: 196N ~ 294N

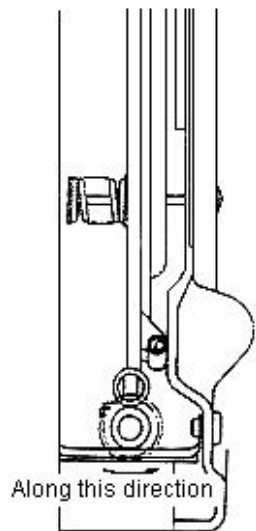


Figure 2-5 Clearance self-adjusting mechanism

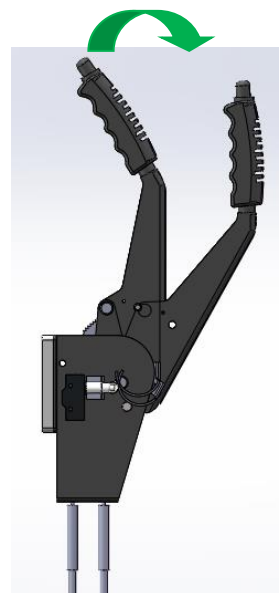


Figure 2-5 Stopping braking

2.6 Adjusting the brake pedal as shown in Figure 2-6 (a)

- (1) Shorten the push lever;
- (2) Regulate the pedal spacing bolt and adjust the pedal height as shown in Figure 2-26 (b);
- (3) Adjust the length of the push lever until its front end contacts with the piston of master cylinder. Then turn back 1-2 circles to guarantee a free travel of the pedal between the 10mm-20mm;
- (4) Lock the nuts of push lever and the pedal spacing bolt.

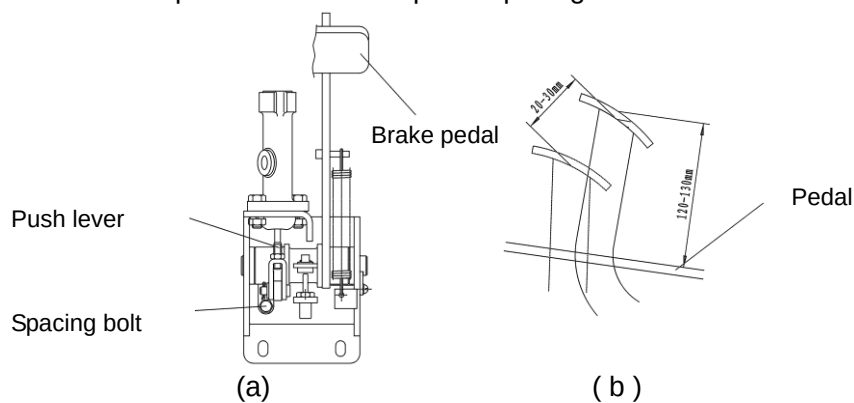


Figure 2-6

2.7 Troubleshooting and Failure Analysis (Table 2-3)

Table 2-3

Problems	Causes analysis	Solutions
Abnormal braking	1.Oil leaks in the brake system	Repair it
	2 The brake shoe clearance is not well-tuned	Adjust the regulator
	3 The brake is over-heated	Check if the brake is slipping
	4 Brake drum and friction disk are not appropriately contacted	Readjust it
	5 There are foreign matters attached to the friction disk.	Repair or replace it
	6 The brake fluid is contaminated	Check the brake fluid
	7 The brake pedal hasn't been adjusted properly	Adjustment
Noise in the brake	1 The friction surface is hardened or with foreign matters attached on it	Repair or replace it
	2 The baking plate is deformed or the bolts are loose	Repair or replace it
	3 The brake shoe is deformed or is not installed correctly	Repair or replace it
	4 Worn friction disk	Replace
	5 The wheel bearing is loosened	Repair or replace it
The braking is uneven	1 There are oil stain on the friction disk	Repair or replace it
	2 The brake shoe clearance is not well-tuned	Adjust the regulator
	3 The wheel cylinder fails	Repair or replace it
	4 The return spring of brake shoe is damaged	Replace
	5 The brake drum is deflected	Repair or replace it
The braking is not enough	1.Oil leaks in the brake system	Repair or replace it
	2.The brake shoe clearance is not well-tuned	Adjust the regulator
	3 Air is mixed within the brake system	Let out the air
	4.The brake pedal is not adjusted appropriately	Readjust it

2.8 Care and maintenance

① Before conducting running-in test of a new drive axle, users shall fill in gear oil.Fill oil into the hole at top of the axle shell until oil is spilled out of the oil level hole in central axle.

② The thickness of friction disk on brake shoe is 8mm. The minimum thickness allowed is 2mm. These two are key components of the braking system and should be checked monthly. If excessive wear is found, the components shall be timely replaced to avoid accidents.

③ Technical maintenance after each 50h:

I . Change the gear oil if a new axle has been working for 50h along with the forklift. Clean the axle before refilling new oil.

II . Check all the fasteners. If any looseness is found, tighten it immediately.

III. Check the wheel axle and wheel hub connection for any oil leakage. Re-apply sealant if any leakage is found.

④ Monthly technical maintenance:

I. Check the brake drum for any destructive wear.

II. Check the wear condition of brake shoe. If wearing is so serious that the brake shoe fails to meet requirements, the brake shoe should be replaced immediately.

III. Check if the oil level in axle shell meets standards. If the oil level reduces, users should promptly fill up.

⑤ Semi-annual technical maintenance: Change the gear oil within the axle once every six months of working.

⑥ Annual technical maintenance: Disassemble the drive axle for inspection every year.

⑦ Check and debug requirements during the installation process:

When re-installing the wheel hub of the drive axle, users should regulate the clearance adjuster of the brake, so as to set the gap between brake drum and friction disk at 0.3mm ~ 0.5mm. Fill 100ml 3# lithium base grease into the tapered roller bearing on the wheel hub.

Adjustment of the bearing clearance on wheel hub: tighten the inner locking nut until the wheel brake drum can barely turn up. Then rotate the inner locking nut in reverse for 1 / 8 circle. At this moment wheel brake drum can be freely rotated without jamming, significant axial clearance or deflection. Finally, assemble the washer pad and tighten the outside locking nut.

3. Steering system

When turning to $\pm 90^\circ$, the steering motor of 180°seamless all-electric steering will stop automatically, to eliminate any chance of overloading. When the steering angle exceeds $\pm 20^\circ$, the speed will reduce automatically to ensure the high security during driving. The steering system mainly consists of the steering wheel, steering motor and slewing bearing. Slewing bearing is installed in the upper portion of the steering drive, connected by gears and steering motor via the steering motor rotation to reverse positive and negative, so that the steering wheel can deflect to achieve steering. See Figure 2-1

4. Electric system

4.1 Overview

The electrical system of FE3R06-12 three-wheel AC electric forklift is powered by an 80V battery and traction is enabled by the AC motor. The lifting force is generated in a way as follows: the DC motor drive pump to generate oil pressure, and then hydraulic pipes work on the hydraulic cylinders on both sides of the frame to achieve lifting of the fork. The lighting system is powered by a 24V voltage. Schematic of electrical system See Figure 2-28

4.2 Characteristics of the Electric System

The forklift's AC frequency conversion traction motor, AC frequency conversion steering motor controller, dashboard display, AC drives are all products from the Curtis Company, the world's leading supplier of electric vehicle systems. The AC frequency conversion motor is efficient, durable and essentially maintenance-free. As it does not contain any commutator seen in DC motors, acceleration is faster (commutator limits acceleration and even limits braking torque during high-speed driving). The controller is one universally used in electric vehicles that communicate via CANopen protocol. With its analog and digital I / O and communication devices, the controller is ideal for managing forklift movements, I / O, for controlling operation and for displaying information. In addition, it can perform discharging and monitoring of the battery group and offers a variety of protection. Dashboard display ECO-SMART can show a variety of data, and can be set at factory or by users. Plus, other functions such as entering of user commands are also available.

4.3 Main functions and settings

By properly setting the motor parameters, control parameters and corresponding functional

value of the controller, users can achieve safe and efficient performance as well as full operational capabilities of the electric forklift.

1. The crawling speed of electric forklift can be regulated. By setting the crawling speed of the controller, users can operate the electric forklift under low-speed in a long time.

2. Acceleration rate can be regulated. Under different acceleration rate, the "hardness and softness" feel of the accelerator pedal varies. By setting of the acceleration rate, users can meet various accelerating demands in different conditions.

3. Reverse braking and regenerative braking. When the direction lever is placed reversely during moving of the forklift, a reverse braking signal will be created, and then the motor drive will order the traction motor to generate a braking torque, so as achieve the purpose of deceleration. Size of the braking force is controlled by the accelerator pedal. Regenerative braking refers to the forklift's braking force generated by the controller when the forklift's speed is relatively higher than the traction motor speed. The force can be transformed into electrical energy and returned to the battery group. In order to reduce the speed of the forklift when moving downwards, users can release the accelerator pedal to a certain extent to achieve regenerative braking, so as extend the driving distance enabled by a single battery charge.

4. Function of avoiding slipping backWards on a ramp. Electric forklift with AC traction motor could excellently avoid downwards-moving of the forklift on a ramp.

5. The maximum driving speed could be regulated. By setting a reasonable vmaximum speed of the electric forklift, users can avoid overload of traction motor due to excessive speed.

6. Static response off. If the seat switch or key switch is off, the control device will be turned off either. Re-start is enabled only when the directional control lever is placed on the neutral position. If the driver leaves the forklift and then return, he needs to place the directional control lever on the neutral position to re-start the forklift. This feature eliminates accidental occurrence of unsafe operation. A few seconds of latency have been set to the input end of seat switch, so as to realize momentary disconnection of the seat switch in case of turbulence.

7. Function of security protection. If damage occurs to the controller's power components when forklift is running, the controller will disconnect the main contactor in the shortest time; if the controller's temperature is too high, the controller will automatically limit armature current of the motor; if the battery voltage is too low, the controller will stop working to ensure safety.

8. Both the traction motor controller and pump motor controller are equipped with a self-diagnostic function. Fault code will show on the meter display and the controller will be automatically disabled to ensure the operating system's security whenever controller fault occurs during its working process.



About the parameters of the controller and functions of the settings, you should operate them under the direction of the electrical engineers. If the difference of the parameters you set and between the performance parameters of the motor is too large that may cause the electric forklift low performance, inefficient, and even does not work.

4.4 Electrical schematic diagram

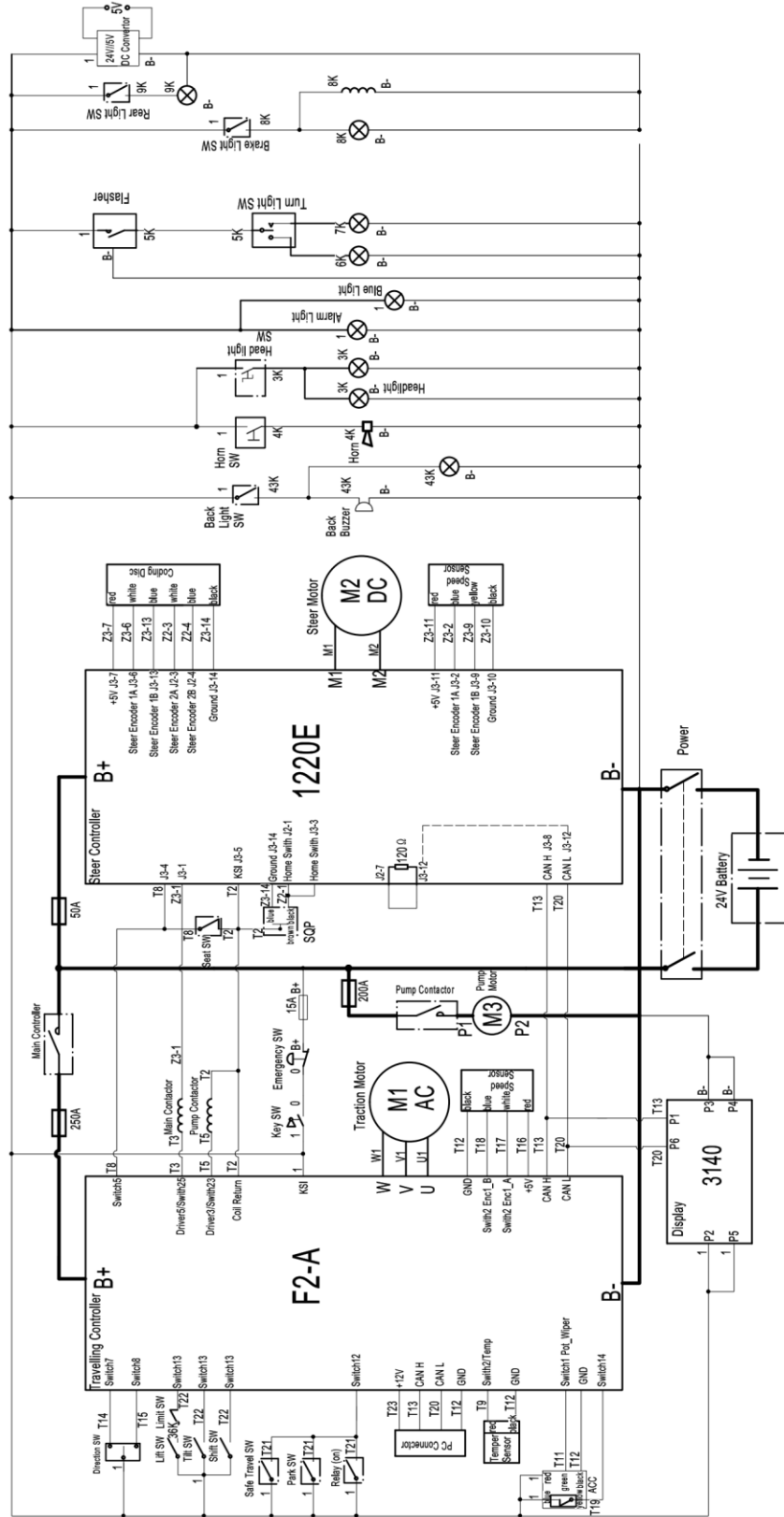
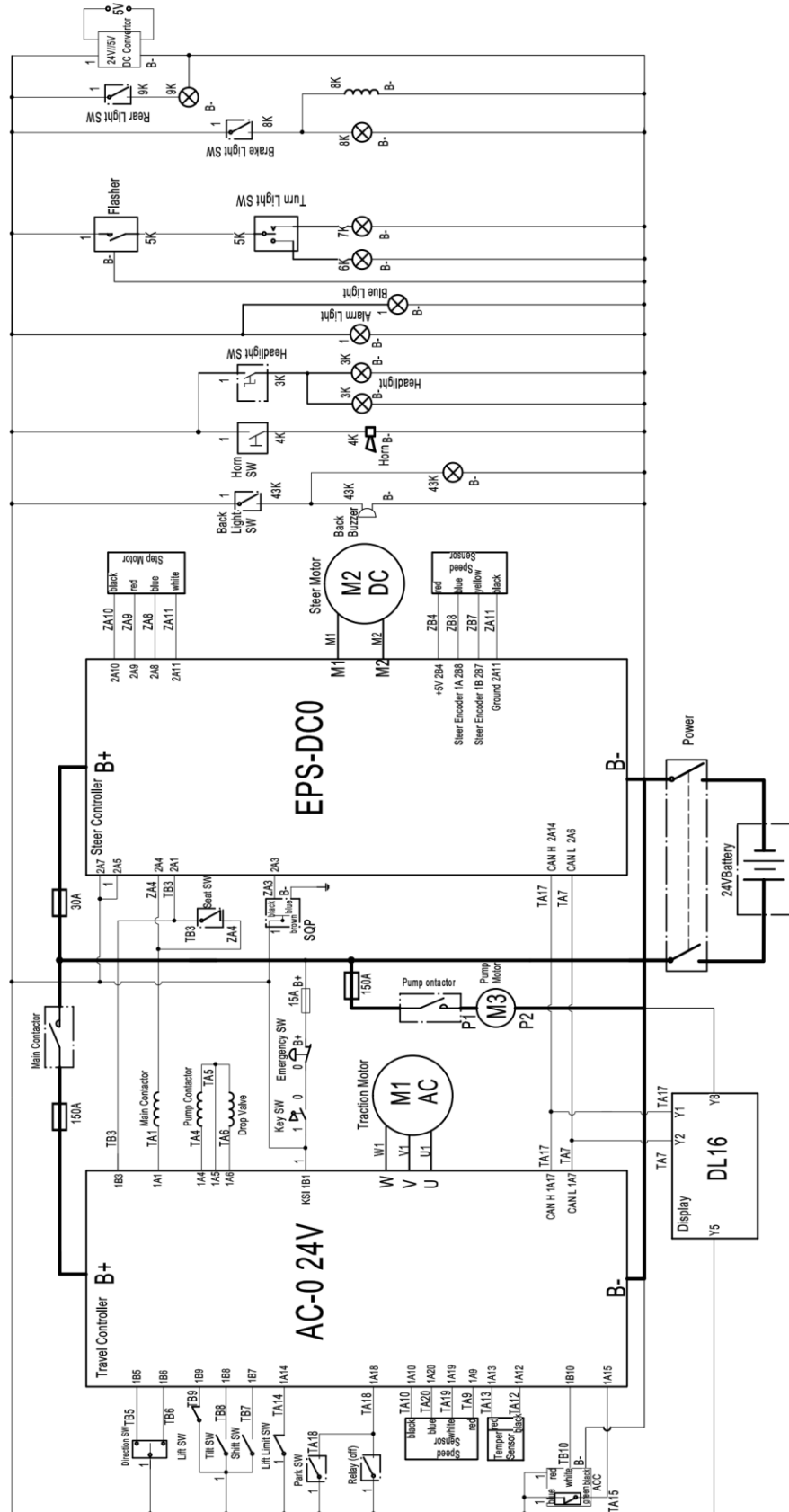


Figure 2-7 Schematic of electrical system of FE3R08-10N (Curtis System)

Figure 2-8 Schematic of electrical system of FE3R12N (Curtis System)



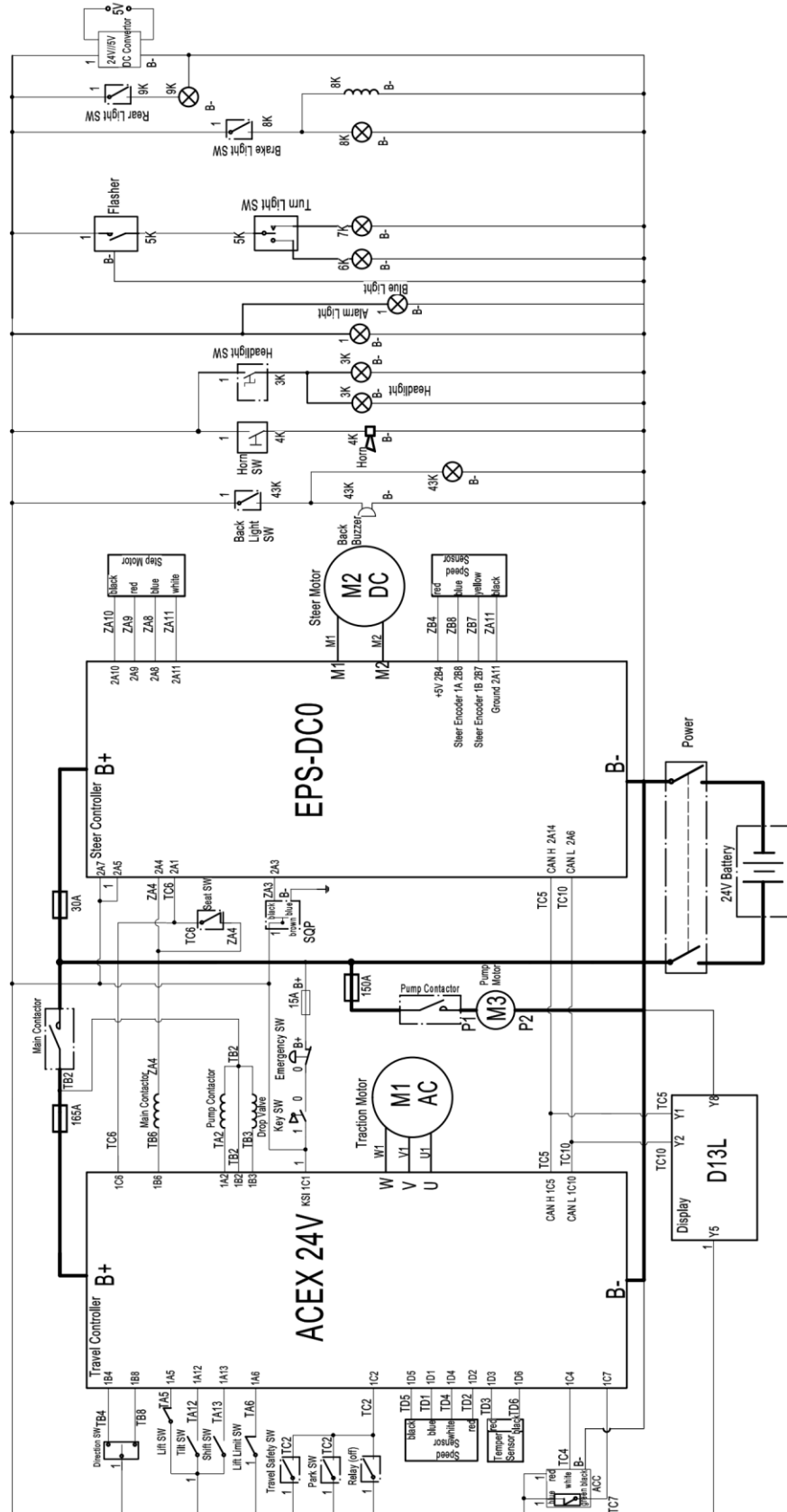


Figure 2-10 Schematic of electrical system of FE3R12N (Zapi System)

4.5 Curtis controller fault

Code display on the programmer	Code display on the instrument	Troubleshoot	Fault cause
Controller Overcurrent	1.2	Controller current overload	1.motor outside U,V or Wconnection shour current 2.motor parameter mismatching 3.controller failure
Current Sensor Fault	1.3	Current sensor failure	1.motor U.V.W truck circuit.lead to current leakage 2.controller failure
Precharge Failed	1.4	Precharge failure	1.battery can't chagge
Controller Severe Undertemp	1.5	Controller temperature too low	1.The controller working environment is too harsh
Controller Severe Overtemp	1.6	Controller temperature too high	1.The controller working environment is too harsh 2.truck overloaded 3.the controller is wrongly assembled
Severe Undervoltage	1.7	Voltage too low	1. battery parameter is wrongly setted 2. non controller system power consumption 3. The battery impedance is too large 4. battery connection is disconnected 5.the fuse is disconnected, or main contactor is not connected
Severe Overvoltage	1.8	Voltage too high	1.Battery parameter is wrongly setted 2.The battery impedance is too large 3.Regenerative braking when the battery connection is disconnected
Controller Overtemp Cutback	2.2	Controller temperature too high, as a result the performance is not good	1, The controller working environment is too harsh 2.truck overloaded 3.the controller is wrongly assembled
Undervoltage Cutback	2.3	Voltage too low, as a result the performance is not good	1. battery power is insufficient 2. Battery parameter is wrongly setted 3. non controller system power consumption 4. The battery impedance is too large 5. battery connection is disconnected 6. the fuse is disconnected, or main contactor is not connected
Overvoltage Cutback	2.4	Voltage too high, as a result the performance is not good	1.during the process of regenerative braking, regenerative braking current lead the battery voltage to rise 2. Battery parameter is wrongly setted 3. The battery impedance is too large 4. when regenerative braking
+5V Supply failure	2.5	Controller output 5V, poer supply failre	1.external load impedance is too low

Digital Out 6 Failure	2.6	Drive 6 output overcurrent	1. external load impedance is too low
Digital Out 7 Overcurrent	2.7	Drive 7 output overcurrent	1. external load impedance is too low
Motor Temp Hot Cutback	2.8	The motor is too hot, as a result the performance is not good	1. The motor temperature reach or above the setted program alert temperature, lead the current output to reduce 2. motor temperature parameter is wrongly setted 3. If the motor has not used the temperature sensor, programming parameters "Tempcompensation" and "Temp cutback" must be setted "OFF".
Motor Temp Sensor Fault2.9	2.9	Motor temperature sensor failure	1. Motor temperature sensor is wrongly connectedly 2. If the motor has not used the temperature sensor, parameter programming "Motor Temp Sensor Enable" must be setted "OFF"
Coil 1 Driver Open/Short	3.1	Drive 1 output linkng coil is open circuit or short circuit	1. connected load is open circuit or short circuit 2. connecting pin is stained 3. wrong wiring
Main Open/Short	3.1	Main contactor coil is open circuit or short circuit	1. connected load is open circuit or short circuit 2. connecting pin is stained 3. wrong wiring
Coil2 Driver Open/Short3.3	3.2	Drive 2 output linkng coil is open circuit or short circuit	1. connected load is open circuit or short circuit 2. connecting pin is stained 3. wrong wiring
EMBrake Open/Short	3.2	Electromagnetic brake coil is open circuit or short circuit	1. connected load is open circuit or short circuit 2. connecting pin is stained 3. wrong wiring
Coil3 Driver Open/Short	3.3	Drive 3 output linkng coil is open circuit or short circuit	1.connected load is open circuit or short circuit 2. connecting pin is stained 3. wrong wiring
Coil4 Driver Open/Short	3.4	Drive 4 output linkng coil is open circuit or short circuit	1.connected load is open circuit or short circuit 2. connecting pin is stained 3.wrong wiring
PD Open/Short	3.5	Proportional driving is open circuit or short circuit	1. connected load is open circuit or short circuit 2. connecting pin is stained 3. wrong wiring
Encoder Fault	3.6	Encoder failure	1.motor encoder is failure 2. wrong wiring
Motor Open	3.7	Motor is open corcuit	1. motor phase 2. wrong wiring

Main Contactor Welded	3.8	Main contactor adhesions	1. Main contactor contact welding 2. Motor U or V disconnected or default phase 3.Circuit that connecting B+ terminal will electricize the battery
Main Contactor Did Not Close	3.9	Main contactor is not closed	1. Main contactor is not closed 2.Main contactor pin is oxydic, melted, or not stable when connected 3. External device electricize the battery 4. fuse is disconnected
Throttle Wiper High	4.1	Accelerator output is high	1.accelerator and potentiometer output voltage are too high
Throttle Wiper Low	4.2	Accelerator output is low	1.accelerator and potentiometer output voltage are too low
Pot2 Wiper High	4.3	potentiometer 2 output is too high	1.potentiometer 2 output voltage is too high
Pot2 Wiper Low	4.4	potentiometer 2 output is too low	1.potentiometer 2 output voltage is too low
Pot Low Overcurrent	4.5	potentiometer current is too low	1.potentiometer impedance is too low
EEPROM Failure	4.6	EEPROM failure	1.EEPROM storage failure
HPD/Sequencing Fault	4.7	High pedal protection /operation order failure	1.The key start, interlock, direction, and the accelerator input order are wrongly set. 2. Wiring, switch key, interlock, direction, or accelerator input failure
Emer Rev HPD	4.7	Emergenvy reverse high pedal protection	1.Emergency reverse operation is over, but the forward, reverse input and interlock of the accelerator are not resetted
Parameter Change Fault	4.9	Parameter change failure/wrong	1.In order to ensure the safety of the truck, some specific parameter changes must come into force after the key switch is restarted
CAN Communications Fault	5.1	CAN communication connection failed	
BMS PDO Timeout	5.2	BMS connection connection timed out	
BMS First Level Fault	5.3	BMS First Level Fault	
BMS High temp fault	5.4	BMS report high temperature alarm failure	
Battery type mismatch	5.7	Wrong battery type	
Display Config Fault	6.3	3501 instrument interface	

		configuration is not successful	
BMS Overvoltage	6.4	BMS overvoltage failure	
BMS Undervoltage	6.5	BMS low voltage failure	
BMS Low AH	6.6	BMS low volume failure	
eBMS voltage differnc	6.7	The voltage difference of lithium cell is too large	
VCL Run Time Error	6.8	VCL running time is wrong	1.VCL code running time is overtime
External Supply Out of Range	6.9	External battery output is out range	1.external loading is between 5V and 12V battery current is too big or too small 2. in the “inspection menu (Checking Menu)”, parameter is wrong, such as “ExtSupply Max”, “Ext Supply Min”
OS General	7.1	Operation system failure	1.internal controller failure
PDO Timeout	7.2	PDO overtime	1.CAN PDO information reception time exceeds PDotime limitation
Stall Detected	7.3	Motor stalling	1. Motor stalling 2. motor encoder failure 3. wrong connection 4. input motor encoder battery failure
Motor Characterization Fault	8.7	Motor matching failure	1. In the process of motor matching, code contrast: 0=normal 1= The controller receives the encoder signal, but impulse quantity is undefined. Please manually set pulse value 2=motor temperature sensor failure 3= motor high temperature response failure 4=motor overheating response failure 5= motor low temperature sensor failure 6=low voltage response failure 7=high pressure response failure 8= Controller cannot detect the encoder signal, channel signals disappear 9= Motor parameter settings exceed the scope
Motor Type Fault	8.9	Motor type failure	1.motor type (Motor_Type) parameters exceed the scope
VLC/OS Mismatch	9.1	VCL/OS not matched	1.VCL and OS of the controller program are not matching

EM Brake Failed to Set	9.2	Electromagnetic setting failure	1. the truck still not move after the electromagnetic brake command is setted. 2. Electromagnetic brake braking force is too small
Encoder LOS (Limited Operating Strategy)	9.3	Encoder operation is limited	1. Because motor blocked or encoder failure, the limited operating state is activated 2. wrong wiring 3. truck stall
Emer Rev Timeout	9.4	Emergency reverse response time is overtime	1. because EMR Timer expires, so the emergency switch is actiated overtime 2. emergent reverse switch has been on the "on" position all the time
Illegal Model Number	9.5	Controller type is wrong	1. controller moder can recognize 2. software and hardware type are not matching 3. controller is damaged

4.6 Zapi controller fault

4.6.1 FE3R08-12N Steer controller

MDI CODE	ALARM
06A39	SERIAL ERROR #1
06A08	EEPROM KO
06A15	LOGIC FAILURE #4
06A14	LOGIC FAILURE #3
06A13	LOGIC FAILURE #2
06A12	LOGIC FAILURE #1
06A09	VMN NOT OK
06A00	MAIN CONT. OPEN
06A05	STBY I HIGH
06A10	HIGH TEMPERATURE
06A48	MOTOR TEMPERAT.
06A01	HIGH CURRENT
06A04	POWER FAILURE #3
06A03	POWER FAILURE #2
06A02	POWER FAILURE #1
06A26	BAD ENCODER SIGN
06A45	STEER SENSOR KO
06A00	STEER HAZARD
06A53	INPUT ERROR #1
06A56	SL CENTERING
06A55	SL EPS NOT ALL.
06A54	CAN BUS KO SL.
06A52	MICRO SLAVE #8
06A51	MICRO SLAVE #3
06A44	CLOCK PAL NOT OK
06A50	STEPPER MOT MISM
06A49	MOTOR LOCKED
06A40	MICRO SLAVE #4
06A47	FB POT LOCKED
06A46	JERKING FB
06A00	EMERGENCY
06A43	CURRENT GAIN

06A42	NO SYNC
06A41	SLAVE COM. ERROR
06A38	POSITION ERROR
06A31	LOOK. FOR PATH
06A32	PATH OUT
06A33	LATERAL OUT
06A34	ANGLE
06A35	LOSING PATH
06A36	LOSING STRAIGHT
06A30	WRONG ANT. RECEP
06A29	ANT. MISSING
06A90	WAITING DATA
06A93	EPS NOT ALIGNED
06A92	WAITING FOR TRAC
06A91	KEYOFF
06A25	ENCODER ERROR
06A07	Q LINE SENSOR KO
06A06	D LINE SENSOR KO
06A27	GAIN EEPROM KO
06A11	DATA ACQUISITION
06A24	MICRO SLAVE KO
06A28	CAN BUS KO
06A22	S.P OUT OF RANGE
06A23	F.B OUT OF RANGE
06A21	MICRO SLAVE
06A19	KM OPEN
06A18	KS OPEN
06A17	KM CLOSED

4.6.2 FE3R08-10N Traction controller

MDI CODE	ALARM
02A98	NONE
02A08	WATCHDOG
02A13	EEPROM KO
02A15	LOGIC FAILURE #5
02A17	LOGIC FAILURE #3
02A18	LOGIC FAILURE #2
02A19	LOGIC FAILURE #1
02A30	VMN LOW
02A31	VMN HIGH
02A37	CONTACTOR CLOSED
02A38	CONTACTOR OPEN
02A40	BRAKE CONT. OPEN
02A49	I=0 EVER
02A53	STBY I HIGH
02A60	CAPACITOR CHARGE
02A61	HIGH TEMPERATURE
02A65	MOTOR TEMPERAT.
02A66	BATTERY LOW
02A94	CURRENT SENS. KO
02A74	DRIVER SHORTED
02A75	CONTACTOR DRIVER

02A76	COIL SHORTED
02A78	VACC NOT OK
02A79	INCORRECT START
02A80	FORW + BACK
02A86	PEDAL WIRE KO
02A98	INPUT ERROR #2
02A97	INPUT ERROR #1
02A99	PROG. TOOTH
02A90	BMS LOW CAP.
02A91	BMS VOLT.DIFF
02A92	BMS MONOMER OV
02A93	BMS MONOMER UV
02A21	BMS HIGH TEMP.
02A46	LIFT+TRAC
02A59	NO CAN MSG. BMS
02A64	TILLER ERROR
02A00	ALL. WAITNODE
02A22	RESET A15 SENSOR
02A00	TILLER OPEN
02A33	MANY PUMP REQ.
02A23	TR. SPEED OPEN
02A92	CAN BUS KO TIL.
02A92	TILLER ERROR
02A00	TEACH TIL ERROR
02A22	RESET A14 SENSOR
02A00	END TEACH ERROR
02A77	END TEACH OK
02A99	PROG.ACCELERATOR
02A85	EPS RELE OPEN
02A68	CAN BUS KO EPS
02A93	WRONG SET BAT.
02A83	SLIP PROFILE
02A91	LIFT LOW. ACTIVE
02A90	LIFT + LOWER
02A01	WRONG CONFIG
02A00	MDI DRV2 SHORT
02A11	STALL ROTOR
02A00	MDI PEV NOT OK
02A00	MDI DRV2 OPEN
02A00	MDI VALVE2 SHORT
02A55	PROG LIFT LEVER
02A89	PEV NOT OK
02A67	CAN BUS KO
02A99	CHECK UP NEEDED
02A73	THERMIC SENS. KO
02A71	HANDBRAKE
02A00	WAITING FOR NODE
02A70	ENCODER ERROR
02A16	AUX OUTPUT KO

4.6.3 FE3R12N Traction cotroller

MDI CODE	ALARM
02A94	NONE
02A08	WATCHDOG
02A71	EEPROM KO
02A17	LOGIC FAILURE #3
02A55	LOGIC FAILURE #2
02A54	LOGIC FAILURE #1
02A28	PUMP VMN LOW
02A29	PUMP VMN HIGH
02A72	VMN LOW
02A31	VMN HIGH
02A75	CONTACTOR CLOSED
02A77	CONTACTOR OPEN
02A52	PUMP I=0 EVER
02A53	STBY I HIGH
02A60	CAPACITOR CHARGE
02A62	TH. PROTECTION
02A65	MOTOR TEMPERAT.
02A66	BATTERY LOW
02A74	DRIVER SHORTED
02A75	CONTACTOR DRIVER
02A78	VACC NOT OK
02A79	INCORRECT START
02A80	FORW + BACK
02A82	ENCODER ERROR
02A86	PEDAL WIRE KO
02A95	INPUT ERROR #2
02A97	INPUT ERROR #1
02A89	HANDBRAKE
02A22	RESET A14 SENSOR
02A90	BMS LOW CAP.
02A91	BMS VOLT.DIFF
02A92	BMS MONOMER OV
02A93	BMS MONOMER UV
02A21	BMS HIGH TEMP.
02A46	LIFT+TRAC
02A59	NO CAN MSG. BMS
02A23	TR. SPEED OPEN
02A77	CARD TILLER ERR.
02A00	TEACH ERROR
02A00	END TEACH OK
02A00	END TEACH ERROR
02A32	PUMP VMN NOT OK
02A63	WAIT MOT.P STILL
02A70	EPS RELAY OPEN
02A31	INIT VMN HIGH
02A72	INIT VMN LOW
02A13	EEPROM KO
02A13	PARAM RESTORE
02A71	WRONG RAM MEM.
02A11	STALL ROTOR

02A10	WRONG RAM
02A74	AUX BATT. SHORT.
02A50	EVP COIL OPEN
02A50	EVP DRIV. SHORT.
02A56	PUMP I NO ZERO
02A67	SENS MOT TEMP KO
02A98	PEV NOT OK
02A76	KEY OFF SHORTED
02A08	FLASH CHECKSUM
02A68	SMARTDRIVER KO
02A76	COIL SHOR. MC-EB
02A68	WAITING FOR NODE
02A85	VACC OUT RANGE
02A00	TILLER OPEN
02A86	POS. EB. SHORTED
02A22	RESET A7 SENSOR
02A08	WATCHDOG#2
02A75	CONT. DRV. EV
02A88	POWER MOS SHORT
02A74	DRV. SHOR. EV
02A76	COIL SHOR. EV.
02A92	CURRENT GAIN
02A96	ANALOG INPUT
02A64	TILLER ERROR
02A12	CONTROLLER MISM.
02A48	EVP DRIVER OPEN
02A49	LIFT + LOWER
02A79	PUMP INC START
02A90	PUMP VACC RANGE
02A90	PROGRAM TOOTH
02A89	PUMP VACC NOT OK
02A42	AUX DRIV.OPEN
02A00	DATA ACQUISITION
02A67	NO CAN MSG.
02A00	CHECK UP NEEDED
02A61	THERMIC SENS. KO
02A41	WRONG BATTERY
02A53	WRONG ZERO
02A99	SLIP_PROFILE
02A40	AUX DRIV.SHRT.

5. Traction power battery

5.1 Lead-acid battery

5.1.1 Lead-acid battery instructions

- Battery life is generally about 2 to 3 years, if used and maintained properly, can be used for more than 4 years. If not used and maintained properly, it will be damaged early within a few months.

- The height of the electrolyte should be checked regularly in the use of the battery, and the storage status of the battery should be checked and supplemented in time. Battery maintenance is simple, but requires patience and care. Do a good job of electrolyte supplement and density control, battery and pole pile cleaning work, can effectively extend the battery life.

- Check whether there is water in the battery box. Drain the water immediately.

- In addition, the battery should not be with electrolyte storage, if you want to short-term storage has been used and fully charged battery, in the storage period every other month to charge once, in order to compensate the battery self-discharge and prevent the battery plate vulcanization or eliminate the battery plate slight vulcanization, and often to check the status of the battery.

- Battery in use, if not full charge full discharge, every month to carry out a full discharge full charge. This preserves the battery's capacity and avoids plate acidification.

- The outside of the battery should be kept clean

- Check the fixing of the accumulator and the collet of the leading wire. There should be no loosening.

- Check the battery shell should not be cracked and damaged, pole and lead collet should not be burned.

- Wipe the dust outside the battery with a cloth. If there is electrolyte overflow on the surface, the cloth can be used to wipe away the dirt or wash with hot water, and then dry with a cloth. Clean the dirt and oxide on the pole pile head, wipe the outside of the connecting line and the lead chuck, remove the dirt. Dredge the vent hole of the liquid filling cover and clean it.

Apply a thin layer of industrial petroleum jelly to the pole and lead collet during installation.



Charge the battery according to the charger instructions.

5.1.2 Lead-acid battery recovery and disposal

- In order to avoid environmental damage, shall not handle the used machine oil, battery, filter. Dispose of such waste products in accordance with local laws or contact Noli distributor or authorized waste disposal agency.

- Oil and gas, chemicals, batteries, tires and other combustible materials must be stored in a safe place to prevent fire and damage to the environment. Illegal disposal of these materials can lead to environmental damage. Please contact Nori Sales or professional waste disposal agency to properly dispose of these materials.

- As part of routine pre-operation inspection, check the entire forklift to ensure there are no oil leaks or fluid leakage.

Leakage can contaminate the environment and may indicate mechanical failure of the forklift.

- When the battery is replaced with a new one or the whole forklift is scrapped, the battery should be processed and recycled

Consider environmental hazards. For example, some battery forklifts use lead-acid and lithium batteries.

- Batteries contain materials that are harmful to the environment and humans, so batteries should be returned or sent to manufacturing

Trade or waste disposal agency for better recycling.

5.2 Lithium battery

5.2.1 Lithium battery instructions

- Lithium phosphate lithium ion battery refers to the lithium ion battery with lithium phosphate as the cathode material. The main application direction is the power battery. Compared with lead-acid battery, this type of battery has the characteristics of small volume, light weight, long cycle life, high safety, green pollution and so on.

- The charging of lithium battery should be carried out in strict accordance with the requirements on the lithium charger. The charging temperature range is: 0 ~ 40°C. Under the low temperature environment below 0° C, high rate charging will cause damage to the battery.

- Discharge temperature range: The discharge capacity at -25 ~ 50°C (-25 ~ 0) may be lower than that at normal temperature. The battery can be used at 40 ~ 50°C. However, if the battery temperature is too high, especially if the battery is in a high temperature environment for a long time, the aging of the materials inside the battery will be accelerated and the service life of the battery will be shortened

If the ambient temperature exceeds the temperature range, the battery performance may be adversely affected or damaged, and the battery life may be shortened.



Warning: Please use the battery pack in strict accordance with the conditions specified in the battery pack instruction manual, otherwise it may not be included in the warranty scope:

Do not operate electric vehicles equipped with lithium batteries at temperatures above 55 ° C or below -25 ° C

- Low temperature environment below 0° C, please charge the vehicle immediately after use.

- Do not flush the battery container directly to prevent water from entering the battery container

- For non-professionals, do not touch, move, or disassemble the battery pack, the corresponding high-voltage cable, or other parts with high-voltage warning labels

Note:

- In order to achieve a better use effect, extend the battery life, contact the manufacturer every year, and by the manufacturer's technical personnel for a battery performance test and balanced charging

- Stop the vehicle in a safe area and check the battery pack area for damage if the vehicle is subjected to a strong collision while driving

- When the vehicle or battery pack is on fire, quickly leave the vehicle to a safe distance, use a dry powder fire extinguisher for treatment, using water or incorrect fire extinguisher may lead to electric shock

- According to the characteristics of the battery, the battery capacity attenuation range is 0% ~ 25% in the three-pack life

Do not immerse the battery pack in water or make it wet.

- Do not put the battery pack into the fire or expose it to the high temperature environment beyond the temperature conditions specified in the instructions of the lithium battery for a long time, otherwise it may lead to fire. Do not use or store battery packs near heat sources;

- Do not short-circuit the positive and negative electrodes of the battery pack;

- Connect the positive and negative terminals of the battery pack in strict accordance with the signs and instructions, do not reverse charge;

- Do not use nails or other sharp objects to Pierce the battery pack housing, do not hammer or foot the battery pack;

- It is forbidden to decompose the battery pack and battery in any way;

- Do not put the battery pack in the microwave oven or pressure vessel.

- When electrolyte leaks, avoid skin and eyes contact with electrolyte. If exposed, wash the area with plenty of water and seek medical help. No person or animal is allowed to ingest any part

of the battery or any substance contained in the battery;

- Try to protect the battery from mechanical shock, collision and pressure impact, otherwise the battery pack may short circuit, high temperature and fire;

- Do not use the battery pack in extremely hot environment, such as direct sunlight or hot days in the car. Otherwise, the battery pack will overheat, which will affect the performance and shorten the service life of the battery pack.

- The battery pack in the process of charging and discharging, if there is a peculiar smell, abnormal sound, please stop charging or discharging immediately;

- If the above phenomenon, please contact the manufacturer, do not disassemble without permission

5.2.2 Storage of lithium batteries

If the battery string is stored for a long period of time (more than six months), the lithium battery must be completely powered off. It is recommended that the battery string be stored at a capacity of at least 60% and the ambient humidity not higher than 95%RH.

A full - load store is performed within the specified time as required.

Storage Temperature	Storage relative humidity	Storage time
-10~0° C	5%~95%	≤6 months 60%SOC
0~40° C	5%~95%	≤6 months 60%SOC
40~45° C	5%~95%	≤2 months 60%SOC

5.2.3 Lithium battery recovery and disposal

- In order to avoid environmental damage, shall not handle the used machine oil, battery, filter. Dispose of such waste products in accordance with local laws or contact Noli distributor or authorized waste disposal agency.

- Oil and gas, chemicals, batteries, tires and other combustible materials must be stored in a safe place to prevent fire and damage to the environment. Illegal disposal of these materials can lead to environmental damage. Please contact Nori Sales or professional waste disposal agency to properly dispose of these materials.

- When the battery is replaced with a new one or the whole forklift is scrapped, the battery should be processed and recycled, consider environmental hazards. For example, some battery forklifts use lead-acid and lithium batteries.

- Batteries contain materials that are harmful to the environment and humans, so batteries should be returned or sent to manufacturing, trade or waste disposal agency for better recycling.



6. Hydraulic system

6.1 Overview

The hydraulic system consists of working pump, multiple unit valve, lifting cylinder, tilting cylinder, pipelines and other component parts. See figure 2-11

The hydraulic oil will be supplied by the oil pump directly connected with the motor. The multiple unit valve will assign oil to each cylinder.

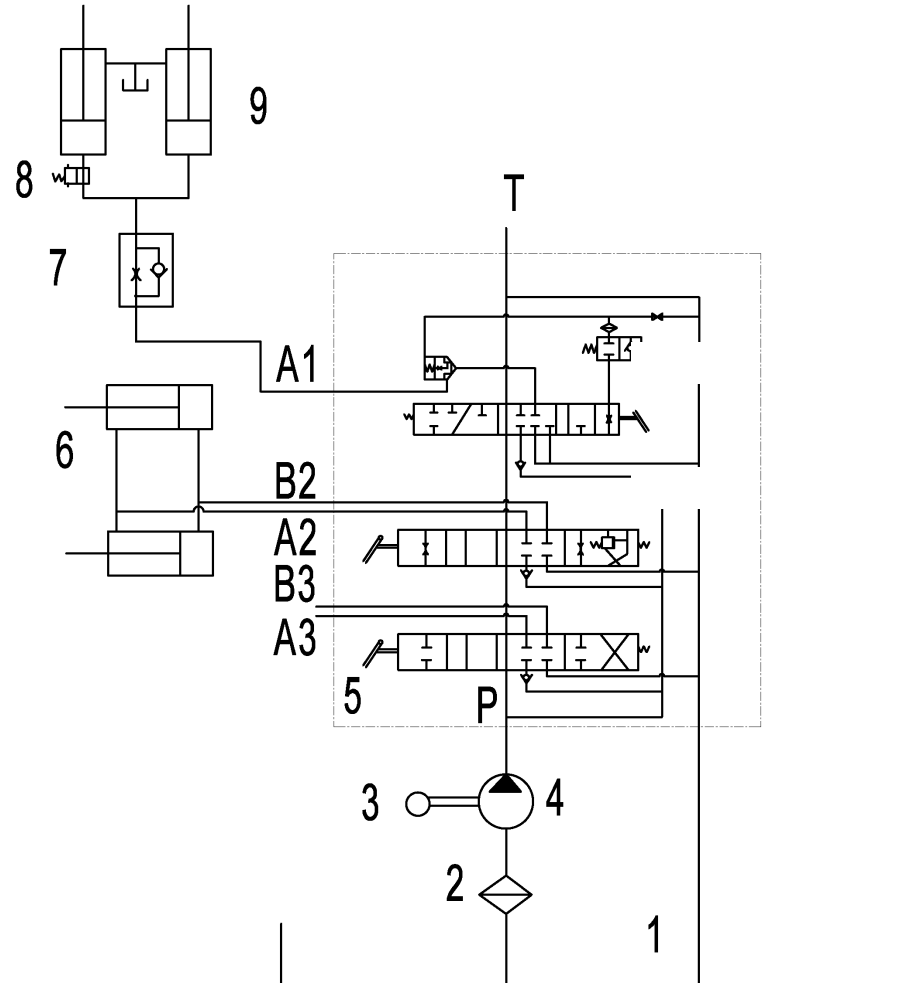


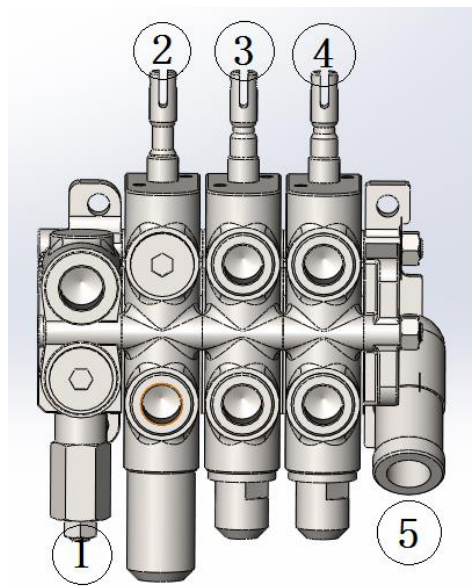
Figure 2-11 Diagram of the hydraulic system

6.2 Oil pump

The oil pump is a gear pump.

6.3 Multiway valve

Oil pump for hydraulic gear pump multi-way valve adopts two-piece four-type, hydraulic oil from the working oil pump through the multi-way valve stem control, the high pressure oil distribution to the lifting cylinder or tilt cylinder. Multi - way valve has a safety valve and self - locking valve. The safety valve is located on the upper side of the oil inlet of the multi-way valve to control the system pressure; The self-locking valve is located on the tilt valve disc, which is mainly used to prevent the tilt cylinder from misoperating the joystick under the condition of no pressure source and causing serious consequences. A one-way valve is arranged between the oil inlet and the oil inlet of the lifting valve disc and between the oil inlet of the lifting valve disc and the oil inlet of the tilt valve disc.



1. safety valve
2. link of lifting
3. link of inclination
4. link of accessory
5. return port

Figure 2-12 Multiway valve outline diagram

Multi-way valve operation Figure 2-12

Multiway valves are operated by joysticks, all of which are mounted on a connecting shaft, which is fixed to the body via a bracket, and the joystick operates the spool valve through a connecting rod.

6.4 Failure analysis

If the hydraulic system fails, please find out the causes according to the table below and conduct necessary repairs.

(1) Failure analysis of the multiple unit valve (Table 2-4)

Table 2-4

Fault	Cause	Countermeasures
Pressure of the lifting oil line can't be increased	Jamming of the slide valve	Clean it after disassembling
	Oil hole is blocked	Clean it after disassembling
Vibration Pressure rise is slow	Jamming of the slide valve	Clean it after disassembling
	Inadequate exhaust of air	Full exhaust
Steering oil pressure is greater than the specified value	Jamming of the slide valve	Clean it after disassembling
	Oil hole is blocked	Clean it after disassembling
Less than the required oil volume	Overflow valve is not well adjusted	Adjustment
With noise	Overflow valve is not well adjusted	Adjustment
	Wear of sliding surface	Replace the overflow valve
Leakage (external)	Aging or damage of the O seal ring	Replace the O seal ring
The set pressure is low	The spring is damaged	Replace the spring
	Damage of valve seat surface	Adjust or replace the overflow valve
Leakage (internal)	Damage of valve seat surface	Fix the seat surface
The set pressure is high	Jamming of the valve	Clean it after disassembling

(2) Failure Analysis of the oil pump (Table 2-5)

Table 2-5

Fault	Cause	Countermeasures
Low volume of oil discharge	The oil level in the oil tank is low	Add oil to the specified value
	The tube or filter is blocked	Clean or replace as needed
Low pressure of the pump	●Liner plate damage ●Bearing damage ●Poorly functioned seal ring, bushing seal or retaining ring	Replace
	Overflow valve is not well adjusted	Adjust the pressure of overflow valve to the specified value with a pressure gauge
	There is air within the system	●Re-tighten the side tubing of the oil inlet ●Add oil ●Replace the oil pump seal
With noise when running	The inlet tube is damaged or the filter is blocked	Check the tube or repair oil filter
	Looseness or leakage of the oil inlet	Tighten the loosened parts
	Excessive oil viscosity	Replace the oil with viscosity compatible with the pump operating temperature
	Bubbles in the oil	Find out the cause of bubbles and take measures accordingly
The pump leaks oil	The pump seal or seal ring is damaged	Replace
	Pump is damaged	Replace

7. Lifting system

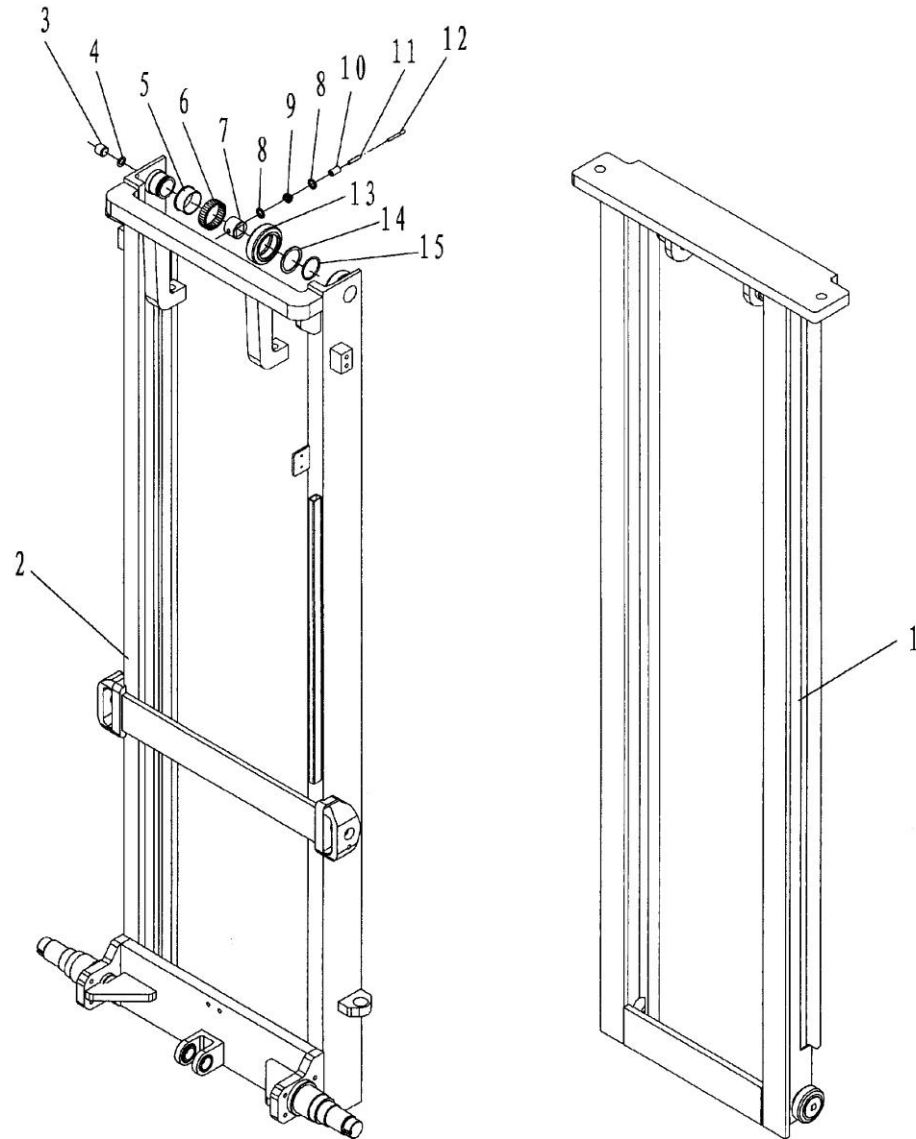
7.1 Overview

Composed by the inner and outer main frames as well as the forklift frame, the lifting system is a roller vertical elevating system with two levels.

7.2 Outer and inner main frames (Figure 2-13)

Inner and outer main frames are welded structures. The bottom of the outer main frame is installed onto the drive axle by supporting parts.

The central part of the outer main frame is connected to the frame by the tilting cylinder and can tilt forward and backWard under the action of the tilting cylinder.

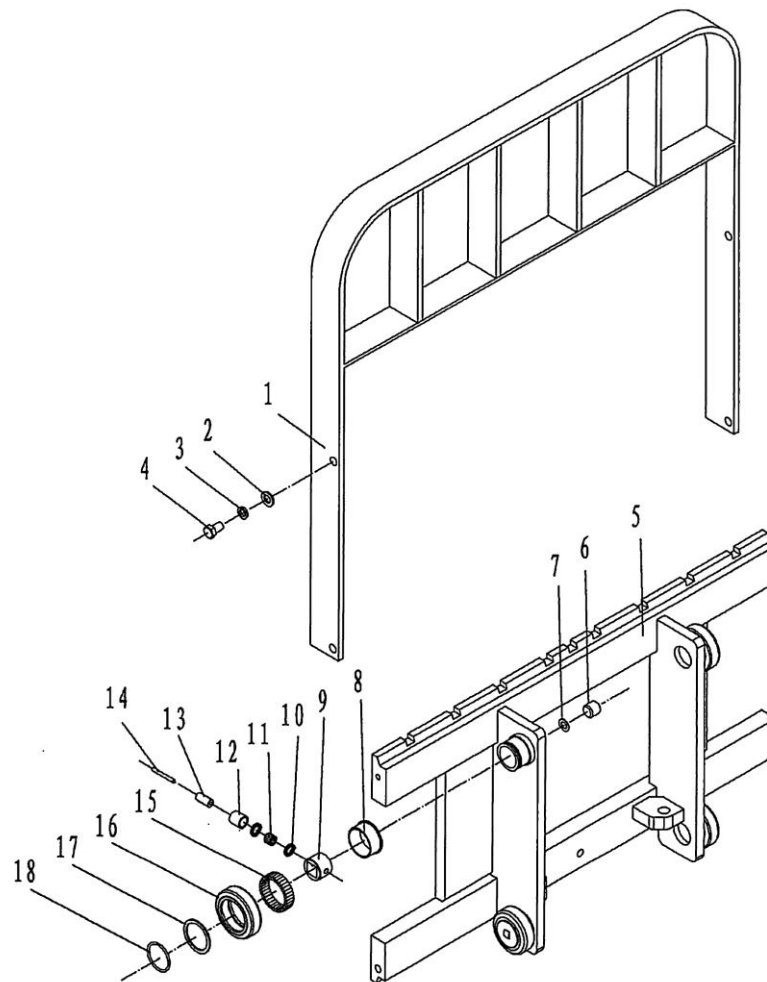


1. Outer main frame	2. Inner main frame	A. Composite roller	3. Adjustment screw
4. Lock washer	5. Inner ring roller	6. Roller	7. Side roller base
8. Dust ring	9. Roller pin	10. Side roller pipe axis	11. Outer ring roller
12. Cylindrical pin	13. Outer ring roller	14. Retaining ring	15. Steel washer for shaft

Figure 2-13 Inner and outer main frame

7.3 Forklift frame (Figure 2-14)

Forklift frame will roll within the inner main frame through the main roller, which is mounted onto the main roller shaft and fixed by elastic rings. The main roller shaft is welded onto the fork frame and the side roller is integrated into the adjustable composite roller that rolls along the wing plate of the inner main frame. Use two fixed side rollers to roll along the outside of the wing plate in the inner main frame to eliminate rolling gap. The longitudinal load will be born by the main roller. When the fork rises to its highest level, the top roller will be exposed from the main frame top. Lateral load will be born by the side roller.

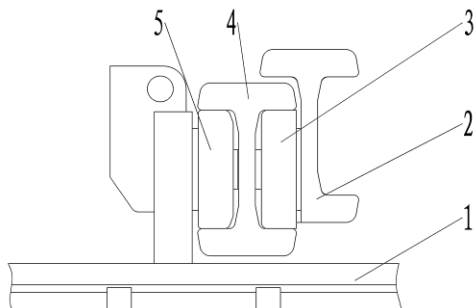


- | | | | |
|---------------------------|-----------------------|----------------------------|----------------|
| 1. Block shelves | 2. Washer | 3. Spring washer | 4. Bolt |
| 5. Carriage | A. Composite roller | 6. Adjustment screw. | 7. Lock washer |
| 8. Inner ring roller | 9. Side roller base | 10. Dust ring | 11. Roller pin |
| 12. Side roller pipe axis | 13. Outer ring roller | 14. Cylindrical | 15. Roller |
| 16. Outer ring roller | 17. Retaining ring | 18. Steel washer for shaft | |

Figure 2-14 Fork frame

7.4 Roller position (Figure 2-15)

There are two types of rollers: outer frame composite roller, composite roller of inner frame and fork frame. The two rollers are installed in the outer door frame, inner door frame and fork rack. Composite roller consists of the main roller and the side roller, with the former bearing loads from the front and rear sides and the latter bearing loads from the side to achieve free movement of the inner door frame and fork frame.



1. Fork frame 2. Outer main frame 3. Composite roller of outer frame 4. Inner main frame
5. Inner frame and composite roller of fork frame

Figure 2-15 Roller position

Note: (a) adjust the clearance of side rollers at 0.5mm;

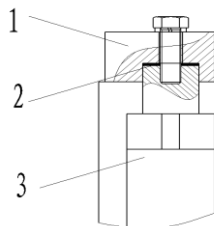
(b) Apply lubricant oil onto the main roller surface and the contact surface of main frame.

7.5 Maintenance and adjustment

7.5.1 Regulating the lifting cylinder. See Figure 2-16

After disassembling or replacing the lifting cylinder, inner main frame or outer main frame, re-adjust the lifting cylinder stroke. Adjustment method is as follows:

- (1) Mount the piston rod without adjusting pad onto the beams of inner main frame.
- (2) Slowly lift the main frame to its maximum extent of stretching and check the synchronization of two cylinders.
- (3) Add the adjustment pad between the piston rod head of the cylinder and the beam on the inner main frame. Thickness of the pad is 0.2mm or 0.5mm.
- (4) Adjust the tightness of the chain.

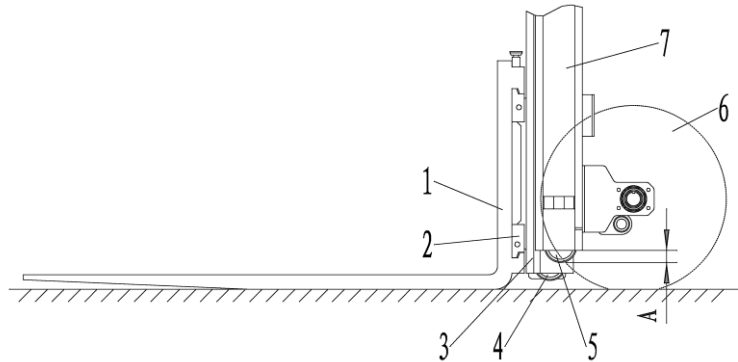


1. Upper beam on the inner main frame 2. Adjustment pad of lifting cylinder 3. Lifting cylinder

Figure 2-16 Regulation of the lifting cylinder

7.5.2 Height adjustment of the fork frame (Figure 2-16)

- (1) Park the forklift on level ground and set the main frame vertical.
- (2) Lower the fork bottom to make it reach the ground. Then adjust the adjusting nuts on the upper end joint of the chains, so that there will be a certain distance A between main roller and the lower end of the inner main frame
(A=24~29)。



- | | | | |
|---------------------|---------------|---------------------|---------------------|
| 1. Fork assembly | 2. Fork frame | 3. Inner main frame | 4. Composite roller |
| 5. Composite roller | 6. Tires | 7. Outer main frame | |

Figure 2-16

(3) Lower the fork to the ground and tilt it backWard in place. Adjust the upper end joints of the chain and then regulate the nut to set tightness of the two chains at the same degree.

7.5.3 Change or replace the roller of the fork frame

- (1) Place a tray on the forklift and park it on level ground.
- (2) Lower the fork and tray down to the ground.
- (3) Remove the upper end joint of the chain and remove the chain from the chain wheel.
- (4) Lift the inner main frame (① in Figure 2-17)
- (5) Reverse the forklift after confirming that the fork frame has been separated from the outer main frame (② in Figure 2-17).
- (6) Replace the main roller
 - (a) Remove all of spring rings and remove the main roller with drawing tools. Pay attention to the adjustment pad.
 - (b) Confirm that the new roller is the same with the newly replaced one. Mount the new rollers to the fork frame and fix it with a flexible washer.

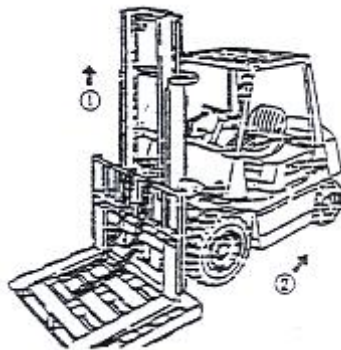


Figure 2-17

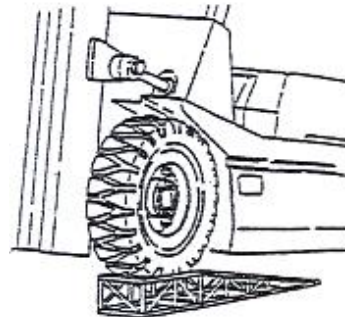


Figure 2-18

7.5.4 Replace the roller of main frame as shown in Figure 2-18

- (1) According to the method of replacing fork frame roller as described in 9.5.3, remove the fork frame from the main frame. 9.5.3
- (2) Drive the forklift to a level ground and jack up the front wheels for 250-300mm.
- (3) Apply the hand brake and put pads under the rear wheels.
- (4) Remove the lifting cylinder and the mounting bolts of inner main frame. Lift the inner main frame and be careful not to loosen the adjustment pad at head of the piston rod.
- (5) Remove the connecting bolts on the lifting cylinder and at the bottom of the outer main frame, and then remove the lifting cylinder and the tubing between the two cylinders without loosening the pipe joints.

(6) Lower the inner main frame and remove the main roller at the bottom of the inner main frame. The main roller at the upper end of the outer main frame will be exposed out of the inner main frame top.

(7) Replace the main roller.

(a) Remove the main roller at the upper end with drawing tools and keep the adjustment pads appropriately.

(b) Install the new roller and the adjustment pads removed at the (a) step.

(8) Lift the inner main frame until all the rollers enter the main frame.

(9) Mount the lifting cylinder and the fork frame in reverse procedures of removing.

7.6 Installation instruction of accessories



If you need to install accessories, please contact our sales department and never install by yourselves.

8 Removal and installation

8.1 Precautions

(1) Only qualified operator can remove or repair the forklift's parts.

(2) Before disassembling and detection operations, park the forklift on a flat ground and wedge the wheels, otherwise accidental movement of the forklift may occur. Meanwhile, set the main switch at the off position and disconnect the accumulator plug.

(3) Before disassembling and testing operations, remove all the rings, watches and other metal objects on your body to avoid accidental short circuit.

(4) Please use the right tools for the disassembling process, and use the specified tools if required.

(5) Please choose an appropriate spreader according to the size and weight of the removed parts, so as avoid danger.

(6) Be sure to mount sling steadily before lifting to prevent falling of the cargo. Please keep the sling tightened during the lifting process.

(7) When removing a heavy part from the forklift, be careful to keep balance and to avoid damage.

8.2 Lifting points of the detached parts

(1) Lifting description of the lifting system as shown in Figure 2-19

Maximum weight (excluding accessories) is not more than 1200Kg

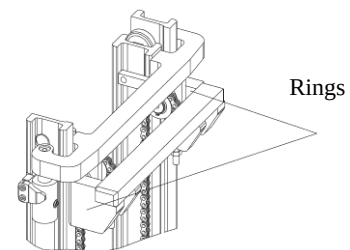


Figure 2-19

(2) Lifting description of the overhead guard as shown in figure2-20

The maximum weight is not more than 100Kg

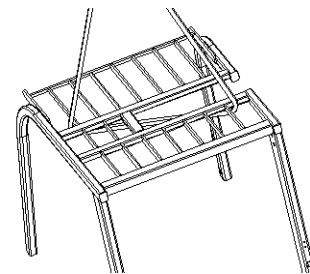


Figure 2-20

(3) Lifting description of the counterbalance as shown in Figure 2-21
The maximum weight is not more than 1000Kg.

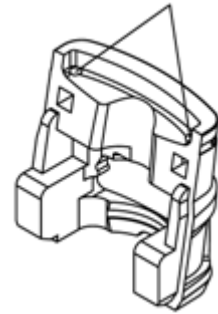


Figure2-21

⚠ The lifting ring on the counterbalance can be used to lift the balance weight only. Do not use it for lifting the whole forklift.

(4) Lifting description of the accumulator as shown in Figure 2-22
For battery weight, see battery nameplate.

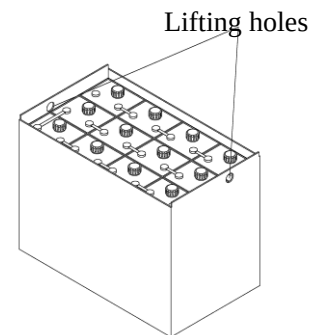


Figure 2-22

⚠ The accumulator also functions as a counterbalance, so users shall not arbitrarily change it; otherwise the overall balance and other features may be affected.

Chapter three Operation, use and safety of the forklift

I . Transportation and test turn

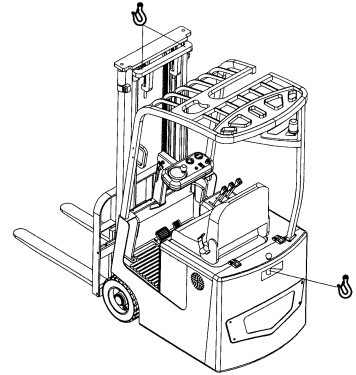
1 Lifting

 The use of lifting equipment must be large enough to have the bearing capacity (greater than the weight of the forklift; see the nameplate of the forklift).

The lifting point is especially designed for easy transportation of the forklift.

- The forklift parked in a safe location.
- The focus of lifting equipment must be tied to lifting position.
- The mast must tilt back maximum

 Will lifting equipment is tied to the lifting point, make sure that it will not slide back and forth, and not make security frame without stress, and lift again after the protection from liner.



2. Transportation

2.1 Drag the forklift without the function of moving

Move the forklift when the drive function does not work, you can move it only after releasing the electromagnetic brake.

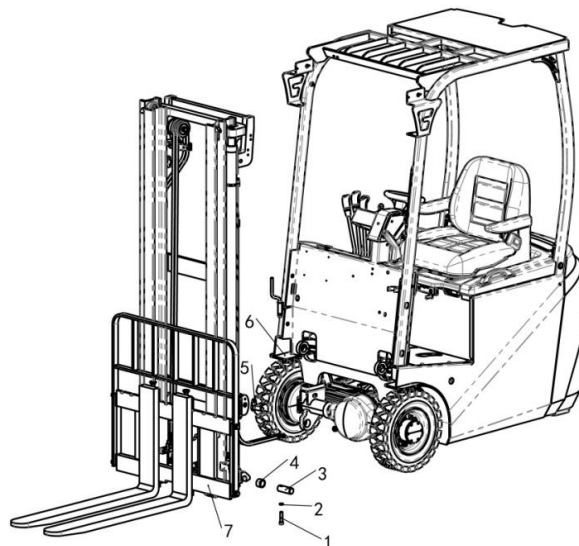
- Press the emergency stop control switch and keep the power switch key in the "OFF" position.

- Open the back cover and battery cover
- Remove the balance weight
- Loosen the three screws on drive motor by counter-clockwise, until the brake does not hinder the movement of forklift, then re-assembled balance.

Now, you can drag forklift.

2.2 Assembly

Sometimes, in order to transport easily, the main frame assembly (1) and fork body (8) is divided. At this moment, you can assemble it according to the following steps, of course, some tools are required, such as lifting equipment, retaining ring pliers, wrenches, etc.



1. Bolt

4. Shaft

7. Connecting shaft

2. Washer

5. Bushing

8. Working settings

3. Oil-holder

6. Lock washer

9. Body assembly

- a) First, use the lifting device to hang the main frame (8) and fork body assembly (9) together
- b) Second, fix them up by the shaft (7) then fit with a Snap Ring (6).
- c) then use shaft (4) again, fixed them up, then do not forget to pay attention to fix the shaft by bolt (1) and washers (2).
- d) Finally, connect tubing.

After completing the the assembly, check again to confirm whether the installation is fastness.



The fork can only use the battery as the power source, using AC power may damage the electronic components, and the length of cable connected to the battery should be less than 6 meters.

To make the fork can work properly after the delivery or transportation, users should complete the following tasks:

- Check the status of fork and equipment integrity.
- Sometimes you need to install the battery, be careful not to damage the battery cable.
- Charge the battery immediately.
- If the user wants to replace with a maintenance-free battery, then you should check the battery charge gauge whether the model matches with the battery (or the service personnel to obtain permission from the manufacturer).

3. The use of a new forklift



• **All the package materials removed from a new forklift shall be recycled according to local regulations.**

• **Test run should be carried out before using a new forklift to see if the forklift parts can work properly (see I . Check before operation on page69).**

The service life of your forklift depends on your initial operation. When using it in the first 200 hours, please pay great attention to the following issues:



- **Heat engine operation shall be conducted before use no matter what season it is.**
- **Conduct maintenance in a timely and through manner.**
- **Never operate it violently or rudely.**

4. The relationship between forklift stability and load

In the load curve, the front wheel centre of the forklift is taken as the fulcrum to keep the forklift body and load on the fork balanced. Pay attention to load quantity and load centre when driving to maintain stability of the forklift.



• **In case the load exceeds the load curve, rear wheels may be lifted and subject to extreme cases, and the forklift may roll over, causing serious accidents. If goods are stacked at a place close to the sharp tip of fork, the risks above also exist. In this case, decrease the load weight.**

5. Load centre and load curve

Load centre refers to the distance between the front surface of the fork and the cargo's centre of gravity. Load curve label indicating the relationship between the load centre and the allowed loading quantity (allowable load) is attached to the forklift. Replace the plate in case of damage or loss.



• **If the forklift is equipped with accessories for cargo handling, such as the side shifter, bucket, or rotating fork, the allowable load shall be less than standard forklift (without accessories) for the following reasons:**

- 1) **Reduce loads equal to the weight of the accessories.**
- 2) **Since adding of accessory will move the load centre forward, the allowable load will be reduced accordingly.**

The installation of accessory will cause load centre shift forward, which is known as the "loss of load centre."

Do not exceed the allowable load indicated by the load curve attached to the forklift or the accessory.

6. Forklift stability

Standard of forklift stability is specified in ISO or other standards. However, the stability described in these standards does not apply to all the running status and the stability of forklift varies with different operational status.

The maximum stability can be ensured under the following operating status:

- 1) The ground is flat and solid.
- 2) Operate under standard no-load or load.

Standard no-load status: fork or carrying accessories are 30cm away from the ground and the main frame can tilt backWards to the specified position without load.

Standard load status: fork or carrying accessories are 30cm away from the ground, allowable load capacity is carried at the standard load centre and the main frame can tilt backWards to the specified position.

 **When loading and unloading goods, try to minimize the tilting degree when tilting forwards and backWards. Never tilt forwards unless the load is close to or fixed by steel shelves or the lifting height is low.**

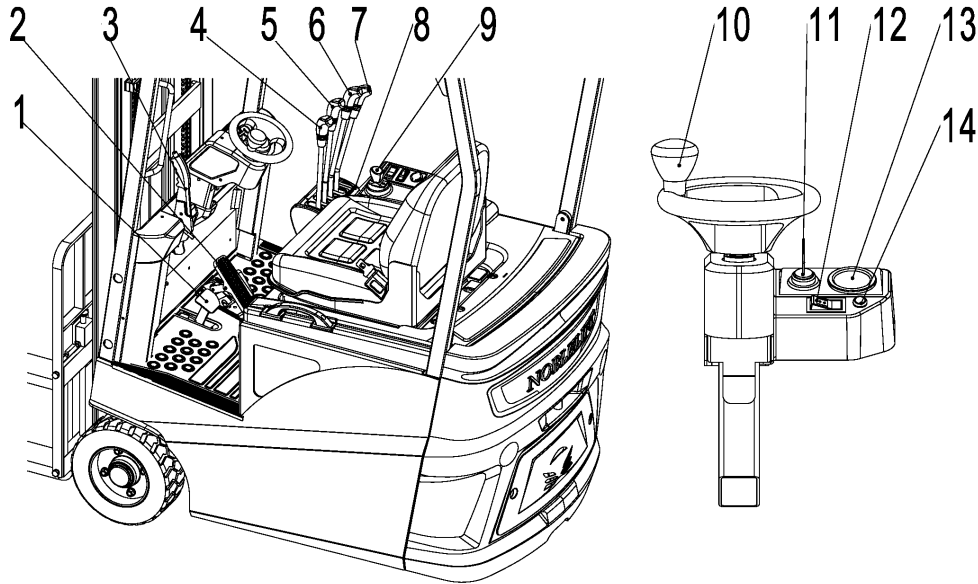
7 Adaptp a new forlift

Forklift should be put touse in low-load operation when first use, especially in less than 100h, should meet the following requirements:

- Must prevent new battery discharge in early use. General it should be timely charge when discharge 20%.
- The regularly maintenance and care should be thoroughly
- Avoid harsh brake, harsh to open or take sharp corners
- Oil change or lubrication required in advance.
- Limit the weight load at rated load of 70 to 80%.

II.driving and operation

1. A brief introduction of Console



- | | | |
|-------------------------|---------------------|-------------------------|
| 1.brake pedal | 2.accelerator pedal | 3.stopping braking |
| 4.lifting lever | 5.tilting lever | 6.attachment joystick 1 |
| 7.attachment joystick 2 | 8.gear witch | 9.emergency stop switch |
| 10.steering wheel | 11.key switch | 12.turn signal switch |
| 13.appearance | 14.horn button | |

2. Connection between load and stability

Under load curve, forklift take front wheel for pivot to keep balance of vehicle and load on fork, please pay attention to load centre and load capacity to keep vehicle stable.

⊘ If exceed load curve, rear wheel should be uplifted and be in danger, forklift should be overturned to lead severe injury. Saying as below figure, load close to fork prong is the same effect as increase weight. As in such condition, load shall be decrease.

3. Load center and load curve

Load centre means the distance between front end surface of fork and cargo cg. Said figure of load curve show you relation of 2t forklift load centre and permitted load. figure of load curve is adhibited on vehicle, if figure damaged, to renew it in time.

⊘ If forklift is equipped disposal accessories such as side-move device, scraper bucket or rotating fork, its permitted load is less than normal truck(no any accessories), the reason as follow:

- (1) Subtract load from rated load, its weight equal to weight of accessories.
- (2) Because accessories length lead load centre to move forward, rated load is also decrease.

Accessaries equipped lead load centre moving forward, this phenomenon is called "Load centre loss".

Do not load exceeding the rated load shown by figure of load curve pasted on vehicle or accessories.

4. Forklift stability

There are regulations in ISO or other standard about forklift stability, but said regulation is not applicable for all running condition, forklift stability vary on different running condition.

Maximum stability is assured under below condition:

- (1) Level and firm ground.
- (2) Running under standard load or unloaded condition.

Standard no-load state: Fork or other bearing accessories lie 30cm upto ground, tilting mast backward enough without load.

Standard load condition: Fork or other loading accessories lift up about 30cm from ground, rated load on standard load centre, mast tilting backward to max angle.

⊘ When loading, keep min.tilting angle forward or backward as can as possible, do not tilting forward unless load fixed on load backrest or rigidity loading goods frame, or low lift height.

5. Transporting and loading for forklift

- (1) Transportation of forklift



·Transporting with truck, Wedge forklift wheel or tighten forklift by rope to prevent it moving during transportation.

·Pay attention to obey regulation of full-length, full-width, full-height of forklift during transportation on traffic road.

- (2) Loading and unloading for forklift



·Please use gangplank with enough length, width and intensity.

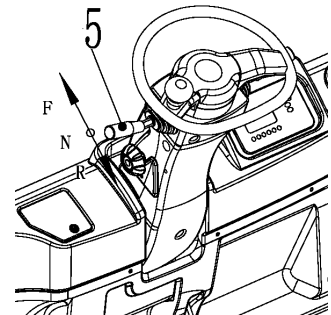
·Brake lorry firmly and wedge wheel.

·Gangplank shall be fixed on middle of carriage firmly, no greese on gangplank.

·Both height of left and right gangplank shall be same.

·Do not turn or transverse move during operating on gangplank.

·When loading on lorry, in order to let forklift board on simultaneously, please backing lorry slowly.

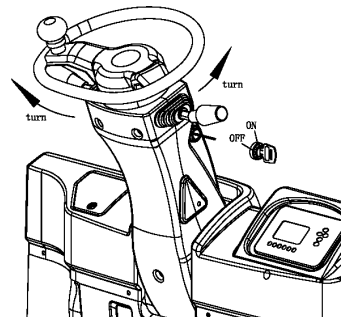


6. Preparation before driving

(1) Check position of direction switch handle⑤, and push it to neutral position(N).

- (2) Turn on ignition key

Catch hold of handle of steering wheel, then turn on ignition key and keep it at "ON" position.



·Even after ignition key is turned to "ON" position, 1 second is needed between brake circuit starting to work and starting to move.

·If gear shift lever is in forwardposition "F" or backwardposition "R", before turn ignition key to "on" position, push gear shift lever to neutral position "N"

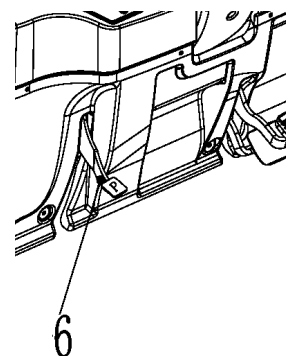
·Do notice that if step down accelerating paddle suddenly, vehicle will probably accelerate suddenly.

- (3) Tilting backward of mast

Pull backward lifting handle to lift fork

150-200mm upto ground, and pull backward tilting handle to tilt mast backward.

- (4) Operation of direction switch handle⑤



Direction switch handle decide travelling direction(forward-backward)

Forward F: push forward direction switch handle

Backward R: pull backward direction switch handle

(5) Loosen parking brake handle

Step down brake paddle. Let go parking brake handle forward entirely, catch hold of steering wheel with left hand, put right hand lightly on steering wheel too.

7. Steer

(1) Starting up

Move foot away from brake paddle and step down accelerating paddle slowly, then, the vehicle will start to move.

Acceleration rate is decided by how much accelerating paddle is stepped down.



Do not startup or brake suddenly to prevent cargo fallin.

(2) Speed slow down

Release accelerator slowly. If necessary, step brake pedal down. Except emergency brake, release accelerator to make slow down slowly until parking. If even release accelerator suddenly, emergency brake is also impossible. When emergence situation, step brake pedal down to make emergency brake.



Please slow down if situation as follow:

- (a) urning at crossing.
- (b) Closing to cargo or pallet.
- (c) Closing to goods pile.
- (d) Traviling through narrow chunnel.
- (e) Ground/Road surface is bad.

When backing forklift you have to look at rear direction to be sure condition is safe.

It is dangerous when backing forklift depending only on rearview mirrow.

(3) Turning

It is not same as car, forklift depend on rear wheel to turn. When turning you shall be slow down and be careful for tail swing of forklift when operating steering wheel.



During turning, when turning radius is small, the fast speed the forklift is, the more possibility the forklift overturn. Be careful for this situation.

(4) Traveling and lifting simultaneously (Inching operation)

- (a) Traveling first, let fork prong be close to goods about 3—5m distance.
- (b) Step brake pedal down perfectly (standstill).
- (c) Step accelerator down to be in optimum speed.
- (d) Operating lift and lowering handle to operate fork

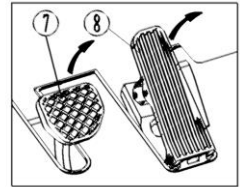
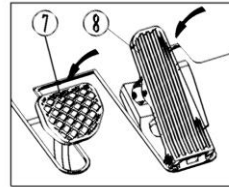
to be lifting operation.



Traveling and lifting simultaneously (Inching operation) is a professional work to ask forskilled operator. Be definite to know well the shape and cg of goods to identify the vehicle stability, make a slow lifting and lowering performance of the vehicle, and please be careful in operation.

Tilting fork to operate when fork is at a much height is very dangerous, except for fork's in and out operation, please do not operate the vehicle on the load stage.

In order to reduce the danger of tilting fork to operate when fork is at a much height, make lifting operation when the vehicle is very close to load stage.



8. Parking and temporary parking



- Parking safely
- Parking place shall be broad and level as much as possible.
- When unladed forklift need to park on ramp, please make mast face downward and block wheel by wedge.
- Parking vehicle outside workplace or qualified place.
- If necessary, to use signs or signal light.
- Parking on firm and level ground.
- If fork can not lower because of fault, hang cloth on fork prong forward dead corner.
- Pay attention for road surface slide or cave in.
- To lower fork after parking perfectly, it is very dangerous to lower fork during traveling.
- Do not jump off vehicle.
- When get off forklift, you must face vehicle and take favour of footboard.
- Slow down first and step brake pedal down and standstill and put gearshift on "N".
- Parking vehicle at place where is convenient to other vehicles and operating as follow:
 - (a) Pull backward the parking brake handle enough to its position, actuate the parking brake.
 - (b) Let fork lower to make it touch ground.
 - (c) Turn ignition key to "off" position.
 - (d) Take off key and keep it carefully.
 - (e) Be careful to get on or get off vehicle.
 - (f) Parking forklift



- When get off forklift, pull brake handle up and to tilt mast forward. Lower fork on ground. When parking on ramp, block forklift by wedge.
- When leaving forklift, take ignition key

9. Usage of battery

(1) Charging battery

To choose right charger according to instruction of operating manual.

- (a) Keep liquid on normal level.



• Keep liquid level on normal situation to prevent battery from being over-hot or being burn out.

• If electrolyte is not enough, the life-span of battery will be shorten

- (b) Infuse distill water.
- (c) Do not overcharge.
- (d) Charging place shall be ventilated enough.



• Battery charging shall be at ventilated and dry place.

- (e) Open battery cover.



• There is hydrogen to be generated when charging, so and please open battery cover.

- (f) Check terminal, cable and connector.



• Before charging, check connector and cable to ensure there is no injury

• Not charging under the situations as follow:

—Connector terminal has been injured.

—There are rust and abrasion in Terminal and cable.
 These situations will lead spark to burn and to explode.

(g) Charge after turning off ignition key.

(h) Check proportion

Before charging, check each cell for electrolyte proportion to detect for abnormal condition to prevent certain accident happen.

(i) When pulling out or insert power connector, hold connector or handle not the cable.



·Do not pull out cable.

·If cable and connector failure, please inform manufacturer to replace by new one.

(j) Break up charging procedure



·According to 《operation and maintenance manual》 of the used charger to break charging procedure.

·Do not pull out charger plug during charging, otherwise there will be spark take place to lead to danger.

(2) Replace battery

When forklift has been used continuously for a working period and the battery has entirely exchanged, replace the battery with another fully charged one and charge the battery been replaced.



·In replacing, to be sure that new battery mates with forklift well, otherwise there will be dangerous to shorten lifespan of forklift or overturn during traveling.

·Replacement of battery shall be done on level table.

According to the steps as below to replace battery:



·When using another forklift as hoisting equipment to lift battery, you shall choose a proper lifting tool (accessory).

·Only qualified person can operate battery.

(a) Pull out plug of battery.

(b) Open upper cover of battery.

Use gas spring or other methods to ensure block upper cover of battery to avoid cover fall down to injure human or bodywork.

(c) When hoisting battery out forklift, be careful for touching steering wheel or other forklift parts.

(d) After finish installation of battery, connect and fasten the battery pin.

(e) Close upper cover of battery.



·When close upper cover of battery, be careful to injure your finger.

·During hoisting battery, be careful to prevent swing of battery box to injure bodywork.

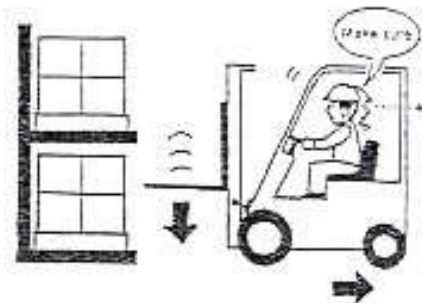
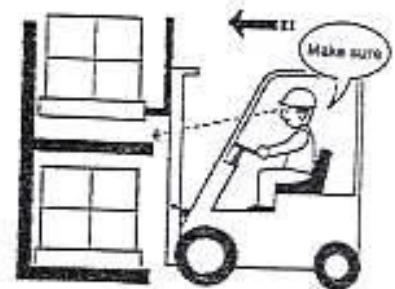
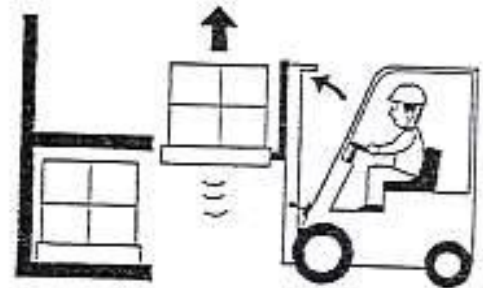
10. Stacking



·Check the following items before operation:

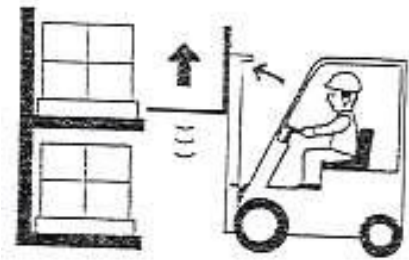
(a) Be sure that there are no falling of load and damaging of load in loading region.

(b) Be sure that there is no goods or pile possible leading to unsafety



Stack as follows:

- (1) Slow down when getting close to goods.
- (2) Parking in front of goods.
- (3) Check the safety of goods area.
- (4) Adjust the position of vehicle until it lies in front of goods
- (5) Make Mast vertically, lift fork up more than the height of goods.
- (6) Check goods' location and park the vehicle to optimum position.
- (7) Ensure that the load higher than the stacked goods and lower fork slowly and place load correctly and safely.



Before load placed on shelves or bracket:

- (a) Lower load until fork no longer carries any load.
- (b) Backing forklift for distance of $1/4$ length of fork.
- (c) Lift fork 50—100mm up and drive forklift forward for stacking to be optimum.
- (8) Look at rear space, backing forklift in order to avoid impact between fork and pallet or goods.
- (9) Ensure fork prong to be off goods or pallet, lower fork to avail driving (from ground 150—200mm).

11. Unstacking

Unstack referring to the procedure as below

- (1) Slow down when close to goods.
- (2) Park in front of goods (30cm between goods and fork prong)
- (3) Adjust the vehicle position in front of goods
- (4) Be sure that there is no overloading.
- (5) Adjust the Mast upright to ground.
- (6) Observe the vehicle position and move it forward until the fork inserts the pallet completely



When it is difficult to insert the fork completely into pallet:

(a) Inserting $3/4$ length of fork and lift pallet little more (50—100mm), then pull fork out pallet 100-200mm, then lower pallet.

(b) Insert fork into pallet completely.

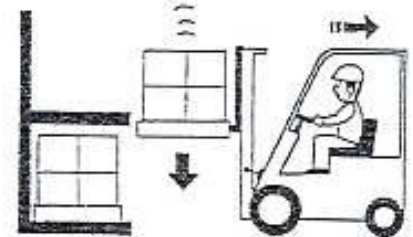
- (7) After fork insert pallet, lift pallet (50-100mm) up.
- (8) Look at ambient space to move forklift backward to lower load.
- (9) Lower load at the height of 150-200mm from ground.
- (10) Tilt backward the mast to ensure the stability of goods.
- (11) Transport the goods to destination

12 Deposit

(1) Before deposit

Before forklift deposits, clean it thoroughly, check up as following:

- (a) If necessary, clean grease and oil of bodywork by cloth and water.
- (b) When cleaning, check the vehicle entirely especially for hollow or damage of bodywork, if tires punctured, and if there is any nail or stone in tire surface groove.
- (c) Check for leakage.
- (d) If necessary, infuse grease.
- (e) Check wheel hub nut and joint face between piston rod and piston for loose, check piston rod surface for injury.
- (f) Check mast roller for rotation stability.



(g) Actuate lift cylinder to its max. height to let cylinder be full of liquid.

 **As long as there is any failure or malfunction or unsafe factor of forklift to be known, report to related person and stop using forklift until repaired.**

(2) Daily deposit

(a) Parking forklift on appointed place and block wheel by wedge.

(b) Put shift gear on neutral and actuate parking brake.

(c) Take off ignition key and keep it in safe area.

(3) Long time deposit.

Based on daily deposit, please make check and maintenance according to the follow items.

(a) Considering the raining season, park the vehicle on high and rigid ground.

(b) Unload battery from forklift. Even indoor parking, if the place is muggy, dry and shade-cool are necessary for the battery depositing. Charge the battery once a month.

(c) Rub anticonosive oil on bared surface of piston rod and shaft ect.

(d) Cover parts prevent raining and wet.

(e) Startup vehicle at least once a month, install battery, clean the grease on piston and shaft, startup engine and preheating, make vehicle move forward and backward slowly, meanwhile operating hydraulic control for several times.

(f) In summer, do not park forklift on floppy surface such as asphalt ground.

(4) Operation after long time deposit.

(a) Take off dampproof cover.

(b) Cleaning pickling oil from bared parts.

(c) Cleaning impurity and water of hydraulic tank.

(d) Install full charged battery on forklift and connect it.

(e) Check carefully before startup.

III. About safety

Ensure safety is your business and responsibility. This section describes the basic safety regulations and warnings during use of the forklift, but also applicable to forklifts with special specifications and with the main frame and accessories.

1. Site and working environment of the forklift

(1) Ground conditions

The forklift should be used on solid ground in well-ventilated environment.

Forklift performance depends on the road condition. Running speed should be adjusted to an appropriate level. Be especially careful when driving on ramps or rough roads. When driving on ramps or rough roads, the forklift will speed up, increasing tire wear and the noise.

(2) Working environment

Ambient temperature for use of the forklift should be within -20 °C ~ 40 °C and the ambient humidity shall be less than 80%.

(3) Weather conditions

In days of fog, rain, snow and strong winds, pre-assess the safety of using the forklift. It's better not to use it for outdoor operations. If it must be done, be extremely cautious during driving and operation.

2.Safety rules



Only qualified people who has been trained and has driver license can operate the forklift!



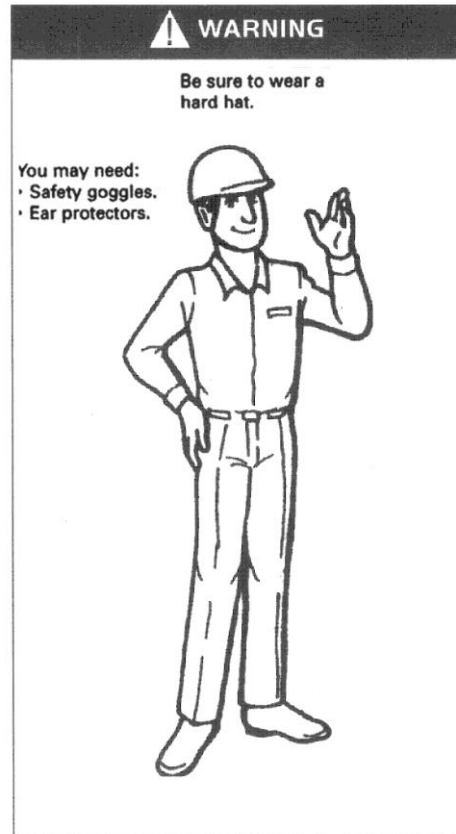
Forbid to drive on the highway!



Vigilant: injuries, the ambulance!



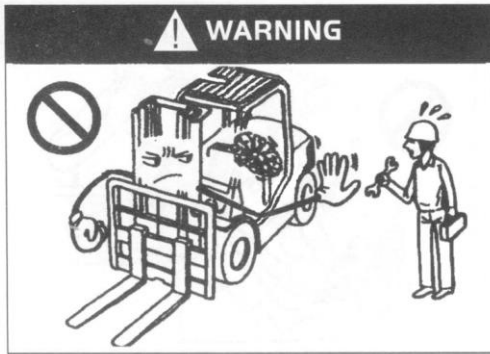
Do not change parts on forklift arbitrary without permission.



Put fatigue dress on before driving!



Read the instruction manual carefully before driving!



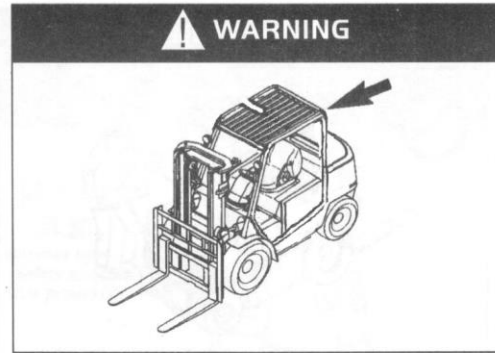
Turn off the engine before maintenance!



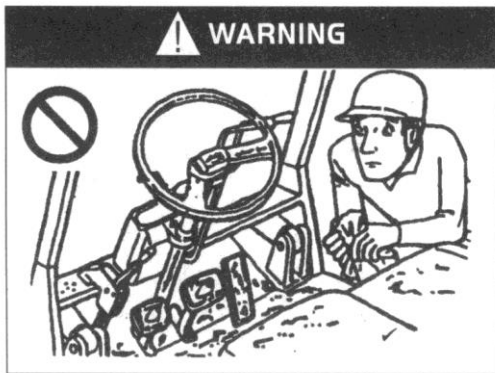
Understand traffic regulations



Before use, please check on the truck!



Do not move the overhead guard!



To keep driver's cap clean!



Do not drive an unsafe forklift!



Drivers should have a healthy body!



Be sure your truck is safe!



Work in specified area



Do not drive a damaged truck!



Hold tightly when get on the truck!



Start forklift correctly!



Adjust seat before driving!



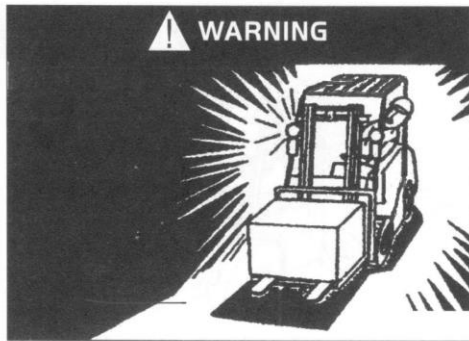
Make sure your forklift is in safe operating condition!



Appropriate fasten seat belts!



Always pay attention to the height of work place!



Turn on lights in dark area!



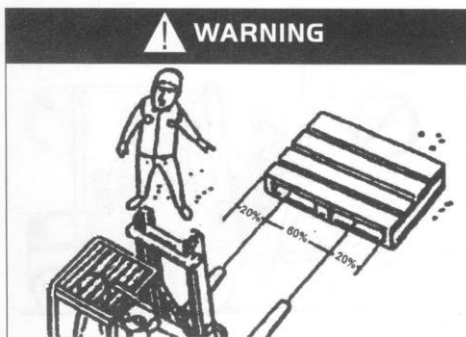
Do not put arm and body outside of the overhead guard during work!



Avoid driving on soft ground, only allowed to run on solid and flat ground.



Keep body under the guards!



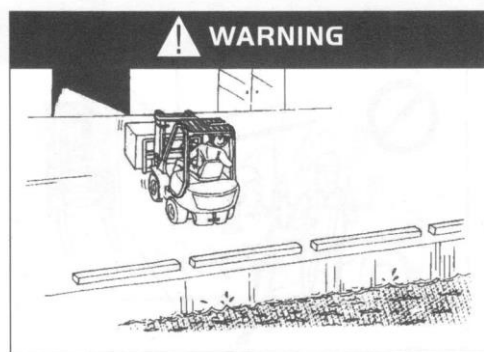
Avoid eccentric loading!



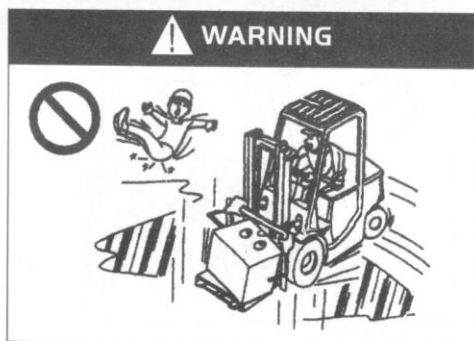
Pay attention to encounter item by front fork when loading!



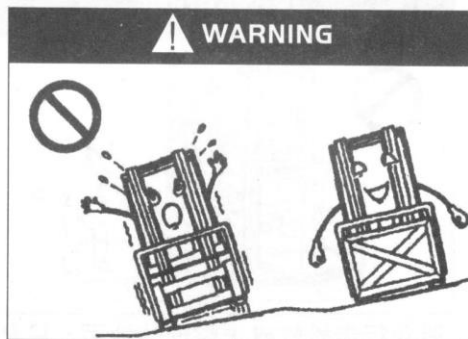
Check fork pin position!



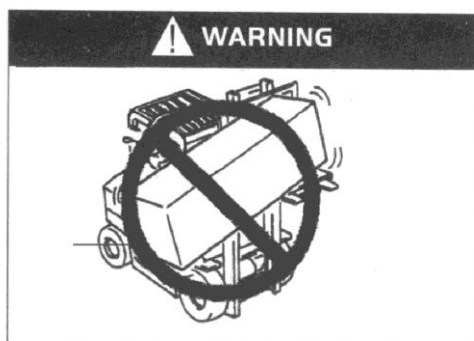
Note the security of the work region!



Do not run on smooth or slippery ground!



Note the horizontal driving stability of the truck when it is un-load!



Be especially careful when handling long or wide cargo!



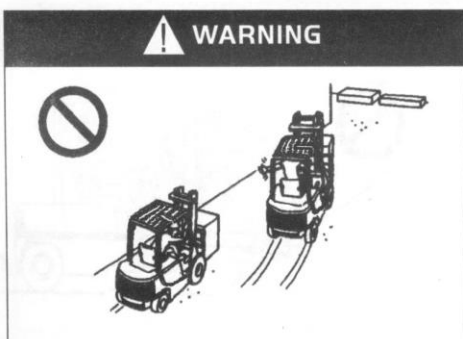
Forbid handling people!



If can not see the front when turning, please whistle and drive slowly.



Use appropriate pallets or sleeper when handling small objects!



Do not chase each other through the traffic!



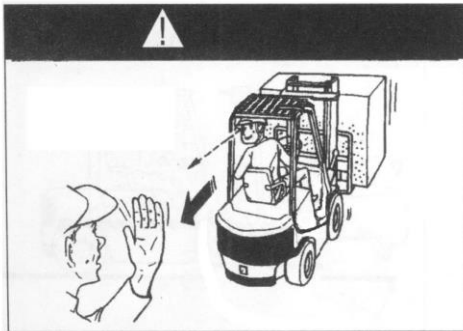
Not allowed to stand on the goods!



Not allowed to gaze around while driving!



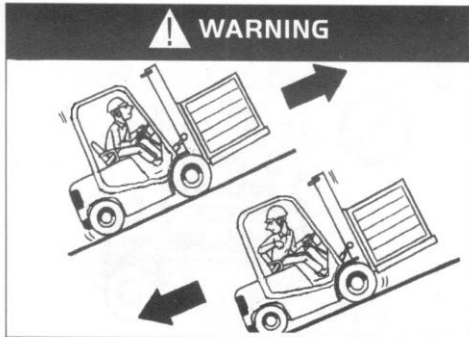
Do not use the forklift to do stunt!



when goods is so high to keep out line of sight, drive backWard or forward under direction of others



Should obey the traffic rules and all warnings and signs!



when loading, travel forward in upgrade and backWard in downgrade



Pay attention to the steep uphill slopes and goods lifting height!



When no-load, travel backWard in upgrade and travel forward in downgrade!



Note using brake when start truck on the slopes!



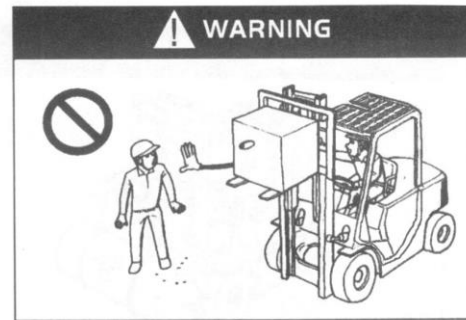
Not turn when driving on a slope!



People or things moving on road should be warned by whistle!



Be careful to crush people or goods when turning!



Operators are not allowed to close when the truck is working!



While turning a high speed can cause accident because of unstable center of gravity!



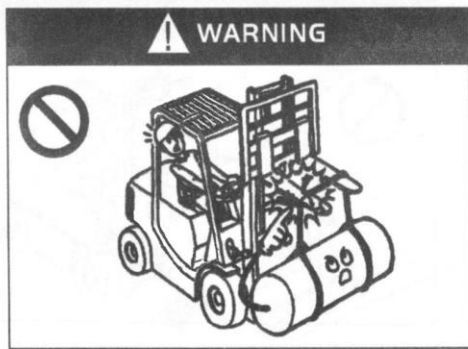
People are not allowed to start in work place!



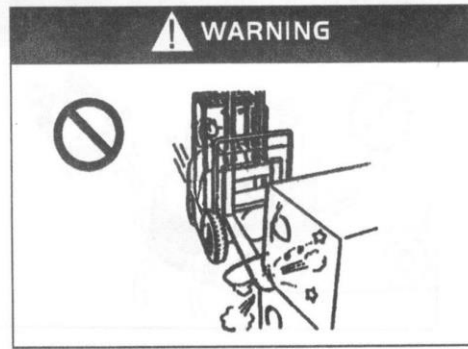
Notice the change of rated load weight before use forklift.



Pay attention to the area where forklift is driven!



Use the fork correctly when loading!



Slow down when loading!



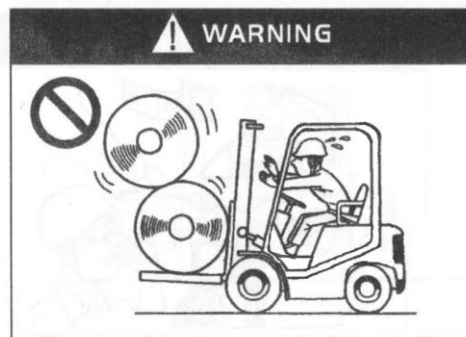
Do not move the truck when there is someone in front of the truck!



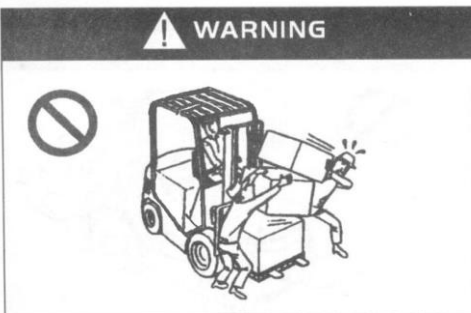
It is forbidden to stand or walk under the elevatory fork!



Do not load the goods which is higher than the goods rest.



Please bind the goods which is difficult to fix before load!



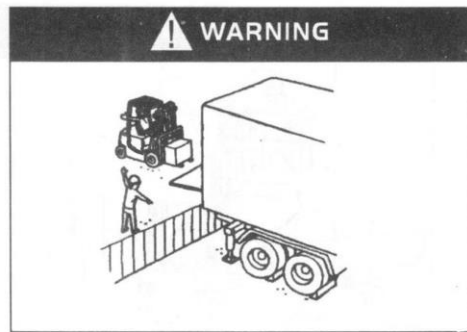
Do not carry the goods from forklift by manpower!



Do not let people to carry the goods have been damaged!



Do not misuse the fork!



Be careful when load the container!



Do not pick up people!



Do not misuse forklift!



Do not extend any part of body outside when driving!



Drive the truck smoothly to avoid sudden acceleration and deceleration!



Must use special equipment to lift people safely to work at height!



Do not overload!



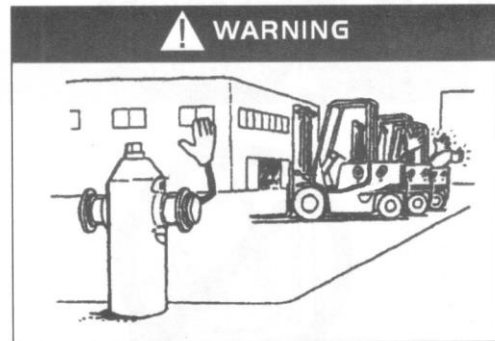
Do not lift when there is excessive wind!



Not allowed to work in explosive environments!



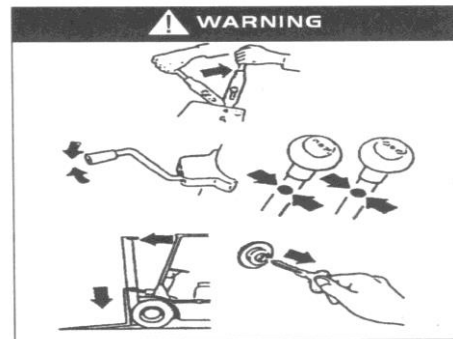
The faulty trucks should be put into the indicated area!



park the forklift to the indicated area!



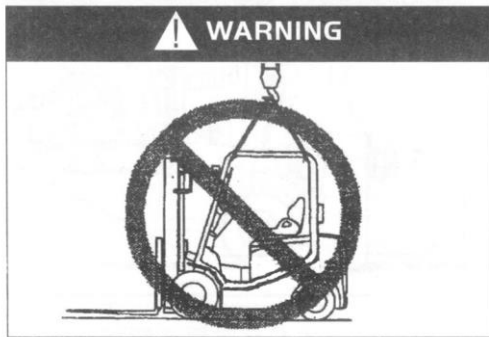
Do not park the forklift on the slope!



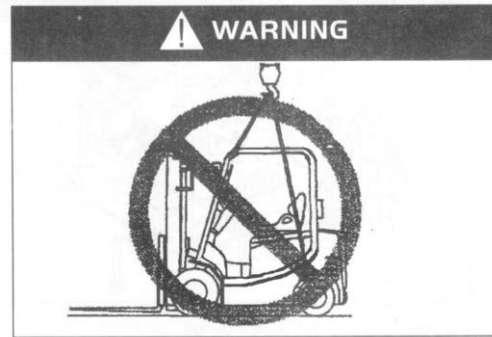
When the forklift is not in use, please do the follow.

- Brake
- Put direction pole in neutral position.
- Lower the fork to the ground
- Frame forward tilt.
- Take off the key

3 Truck' s transportation



Forbid hoisting from the top!



Forbid hoisting on the frame!



Hoisting the forklift correctly!

Hoisting the forklift

- Tie firmly steel cable on two terminal holes of outer mast beam and on counterweight hoisting hook, then, hoist forklift with hoisting device. the side of steel cable connecting to counterweight should go through notch of roofguard without exerting pressure on roofguard.



- When lifting the truck, be sure not to wire rope and overhead guard around together.
- Wire rope and lifting equipment to be very strong, enough to secure bearing fork lift, because the truck is extremely heavy.
- Do not use the cab (overhead guard) to hoist the forklift.
- Forklift upgrade, do not enter the truck underneath.

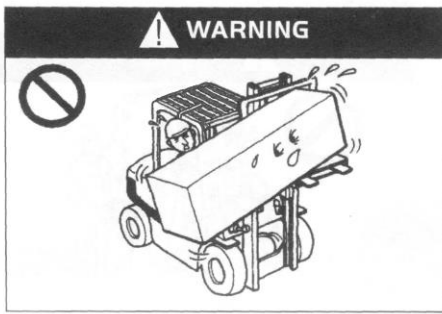
4 How to avoid overturning, how to protect yourself



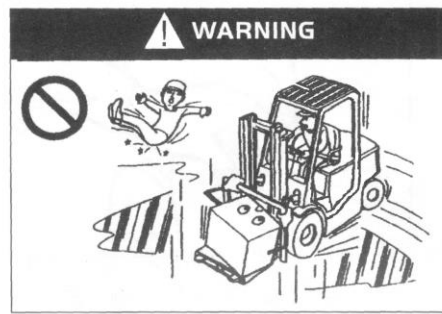
Prohibit forward tilt to enhance loading, so as avoid tipping!



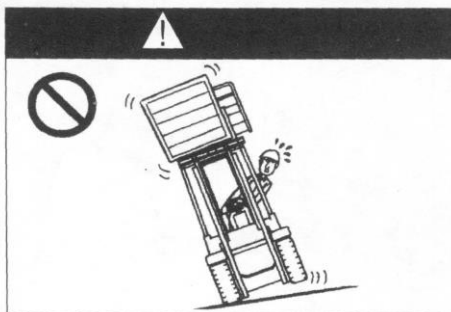
Prohibit lifting goods tipsily!



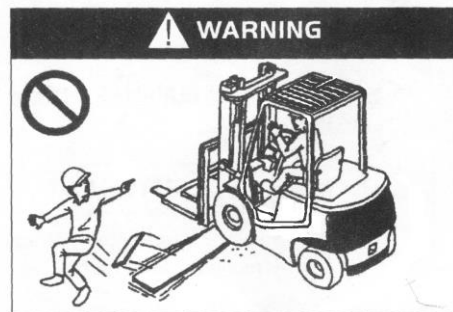
Prohibit eccentric loading of goods!



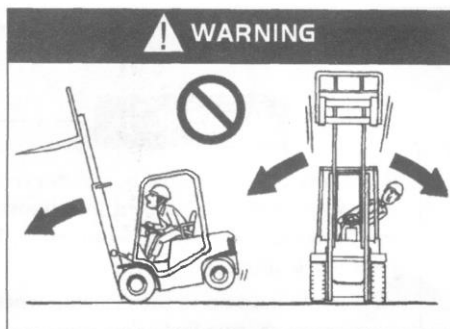
To avoid driving on slippery roads!



When the truck is not in the horizontal position, do not load or unload!



Prohibit crossing the obstacle such as a trench, mound and railway!



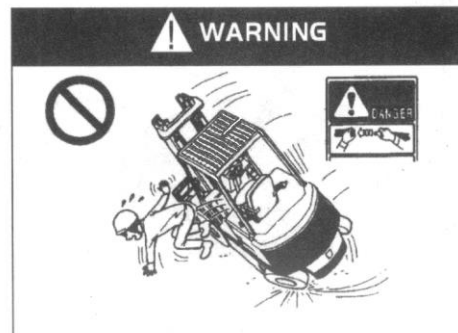
When moving, the distance between fork and ground should be less than 150mm to 200mm!



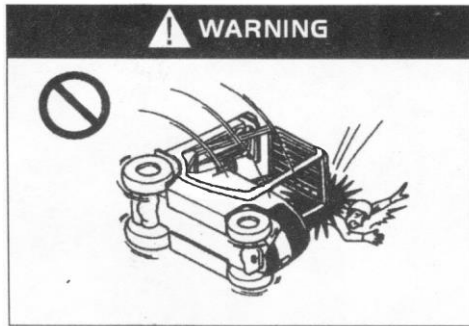
Whether load or no-load, don't turn in a high speed or in a large radius!



When no-load fork is lifted, please turn with a narrow range.



Be sure to fasten seat belts!



Do not jump in the event of forklift rollover!



Please wear helmets when driving!

! In case of tipping, it is safer when you stayed in the forklift with seat belt than jumping out of the forklift. If the forklift begins to tip:

1. Step on the brake pedal and clench the steering wheel tightly.
2. Do not jump.
3. Bend your body to the opposite direction of tipping.
4. Tilt your body forward.

5. Safety issues during maintenance and protection

(1) Maintenance location

! • The premise should be designated places that can provide enough equipment and security facilities to the service organization.

- The site should be level ground.
- The site should be well ventilated.
- The site should have fire-fighting equipment.

2) Precautions before maintenance

! • No smoking.
• Wear all kinds of protective equipments (helmets, shoes, glasses, gloves and boots) and appropriate clothing.

- Timely and wipe out overflowed oil.
- Use a brush or cloth or clean dust or dirty oil before adding lubrication oil.
- Turn off the key switch and pull out the accumulator plug except for some certain cases.

- Lower the fork to the ground before carrying out maintenance of forklift.
- Use compressed air to clean electrical components.

(3) Precautions on care and maintenance

! • Take care not to put feet below the fork and not to be tripped by the fork.
• When upgrading the fork, use pads or other things as cushion below the main frame to avoid sudden drop of the fork and main frame.
• Take care to open and close the front chassis and accumulator cover plate, so as not to pinch fingers.

• When your job can't be completed within a day, make a mark to continue work next time.

• Use right tools and never use makeshift tools.
• Because of the high pressure of hydraulic circuit, never carry out maintenance work before the internal pressure of oil circuit is reduced.

- When injured by high-voltage electricity, immediately seek medical treatment.
- Do not use the main frame assembly as a ladder.
- Do not put your hands, feet and body between the forklift frame and the main frame

assembly.

(4) Inspection and replacement of tires



- Removal and installation of tires must be operated by professionals.
- Handling of high-pressure air shall be done by professionals
- Wear a goggle when using compressed air.
- During disassembling of tires, do not loose bolts and nuts at rim connection. As there is high-pressure gas within the tires, looseness of bolts, nuts and rims could cause danger.
- Before removing bolts and nuts at the rim connection, you must first exhaust the high-pressure gas within the tires with special tools.

(5) Use of jack (replace the tires)



- When jacking up the forklift, do not keep any part of your body below the forklift.
- When jacking up the forklift, ensure that there are no one and no load in the forklift.
- When the forklift wheels are lifted off the ground, stop use the jack and place pads below the forklift to protect it from falling down.
- Take measures to prevent the forklift from sliding before jacking up the forklift.

(6) Requirements on waste discharge (electrolyte liquid, oil, etc.)



- Waste parts on the forklift (plastic parts, electrical components, etc.) and waste liquid (hydraulic oil, brake fluid, etc.) should be recycled according to the local regulations rather than discharged.

6. Safety during accumulator use

(1) No smoking



- The accumulator can produce hydrogen. Spark will generate in case of short-circuit and lit cigarette near the accumulator may cause explosion and fire.



(2) Prevent electric shock



- The accumulator has high voltage, so when you perform installation and maintenance, do not touch the accumulator conductor, which can cause serious burns.

(3) Correct connection



- When the accumulator is charging, ensure the positive and negative poles are not reversed, otherwise heat, fire, smoke or explosion may be caused.

(4) Never place metal objects on the accumulator



- Avoid reversed installing of the positive and negative bolts or tools, which may lead to short-circuit occurs, causing injury and explosion.

(5) Avoid excessive discharge



- Do not keep using the forklift until it can not move, otherwise the accumulator life will be shortened. If the accumulator capacity alarm indicator flashes continuously, it means that the accumulator needs to be recharged.

(6) Keep clean

- ⚠ • **Keep cleanness of accumulator surface**
 - Do not use a dry cloth or chemical fiber cloth to clean the accumulator surface. Do not use polyethylene film to cover the battery.
 - Static electricity can cause an explosion.
 - Clean the uncovered parts at the top of the accumulator with a damp cloth.

(7) Wear protective clothing

- ⚠ • **During maintenance of the battery, you should wear goggles, rubber gloves and rubber boots.**



(8) Accumulator electrolyte could be harmful

- ⚠ • **Accumulator electrolyte is made of dilute sulphuric acid. Be careful when handling.**
 - When the electrolyte adheres to skin and clothing or touch your eyes, it will result in vision loss or serious burning.

(9) Emergency treatment

- ⚠ **When an accident occurs, perform following emergency treatment and contact a doctor immediately.**
 - spilled on skin: rinse with water for 10-15 minutes.
 - spilled in eyes: rinse with water for 10-15 minutes.
 - contamination in large area: use soda (sodium bicarbonate) or clean with water.
 - Ingestion: Drink plenty of water or milk.
 - spilled on clothing: immediately take off the clothes.

(10) Put on the accumulator top cover

- ⚠ • **Put on accumulator top cover tightly to prevent electrolyte leakage.**
 - Do not add too much electrolyte, otherwise the electrolyte will overflow and cause current leakage.

(11) Waterproof

- ⚠ • **The accumulator can not be wet by rain or sea water, otherwise the accumulator will be damaged, causing fire.**

(12) Abnormality of accumulator

- ⚠ **When the following problems occur to the battery, please contact our sales department:**

- Accumulator stinks.
- The electrolyte gets dirty.
- The electrolyte temperature gets higher.
- The electrolyte volumes reduce quicker than normal .

(13) Prohibiting disassembling

- ⚠ • Do not drain the electrolyte from the battery
- Do not disassemble the battery.
- Do not repair the battery.

(14) Storage

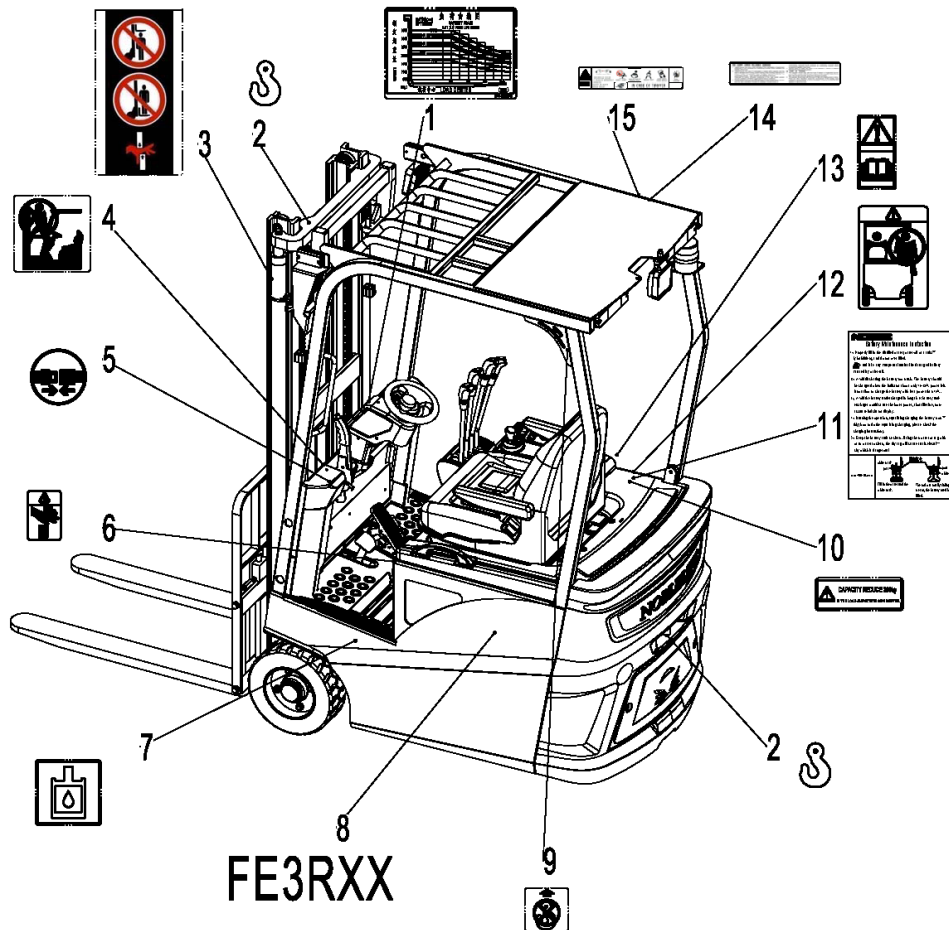
- ⚠ • When the accumulator is to be unused for a long time, it should be stored in well-ventilated places with low possibility of fire.

(15) Disposal of waste battery

- ⚠ • Contact our sales department for disposal of waste battery.

7. Label

There are many special warning signs in the forklift, about their location and details, please see the chart below. Please take times to become familiar with these signs.



1. Load curve
4. No climbing
7. Hydraulic oil marking
10. Lateral weight loss
13. Reading hint

2. Lifting point
5. Life belt
8. Model identification
11. Battery ID
14. Driving instructions

3. Warning signs
6. Squeeze marking
9. Prohibition of lifting
12. Ban on manned persons
15. Safe driving

Chapter four Maintenance and repairing of the forklift

Conduct a comprehensive inspection of forklift to avoid failure and to extend its service life. Service hours indicated in the Maintenance Procedures are based on assumption that the forklift works 8 hours a day and works 200 hours a month. In order to ensure safe operation, maintain the forklift regularly according to the maintenance procedures.

Routine maintenance and repair work shall be carried out by the forklift driver and other inspection and maintenance work shall be done by professional maintenance personnel.

I . Check before operation

In order to ensure safe operation and to keep the forklift in good condition, please undertake the statutory duty to conduct a comprehensive inspection of the forklift before operation. If any problems are found, please contact the sales department of our company.



• **A small fault will cause a major accident. Don't operate or move the forklift before the completion of repair and inspection work.**

- **Conduct checking the forklift on a platform.**
- **Before checking the electrical system of the forklift, turn the key switch off and unplug the accumulator before check.**
- **Improper handling of waste oil (such as dumping into water pipes, soil, or burning them) will cause pollution to the water, soil and air, thus are strictly prohibited.**

1. Check points and contents

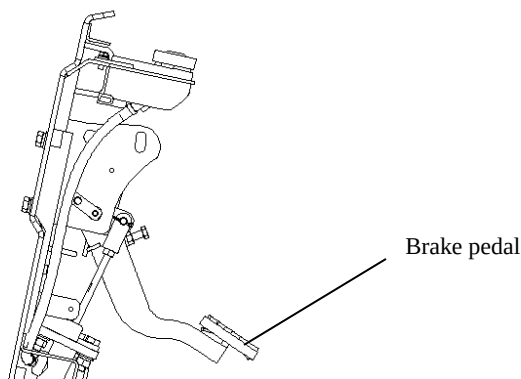
	No.	Check points	Check contents
Braking system	1	Brake pedal	Travel distance and braking force of the foot brake pedal
	2	Brake oil	Quantity and cleanliness
	3	Parking brake	Travel distance and braking force of the parking brake lever
Steering system	4	Manipulation of steering wheel	Tightness, rotation, forward and backWard movement
	5	Manipulation of hydraulic steering	The operation of all components
Hydraulic system and main frame	6	Features	Function, cracks and lubrication status
	7	Pipeline	If the oil pipeline leaks
	8	Hydraulic Oil	Appropriate oil volume
	9	Lifting chain	Tightness of the left and right chains should be the same
Wheels	10	Tires	Pressure size and if there is any damage or abnormality
	11	Rim nut	Firmly tighten it
Accumulator	12	Charging	Check the display status of accumulator capacity, the specific gravity and firm connection of the plugs
Lights, horn and switches	13	Headlights, tail lamps, reversing lamp, steering lamps, horn and emergency power off switch	Switch on and off the lamps to see if they can light up. Press the horn button to see if the horn could sound and check if the emergency power off switch is normal.

Inspection and displaying lamps	14	Features	When the key switch is turned on, it should display "normal test state"
Others	15	Overhead guard, backrest	If the bolts and nuts are tightened
	16	Nameplate and labels	Completeness
	16	Other parts	If there is abnormality

2. Checking procedure

(1) Check the brake pedal

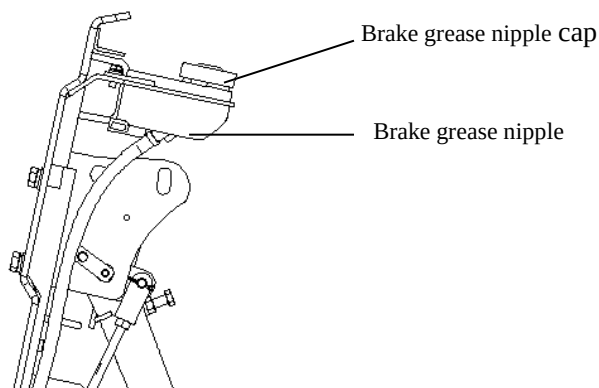
Check brake condition and to ensure a fully depresses the brake pedal when the plane from the floor counting down the brake pedal travel should be more than 50mm, no-load forklift truck braking distance about 2.5m.



(2) Check the brake oil

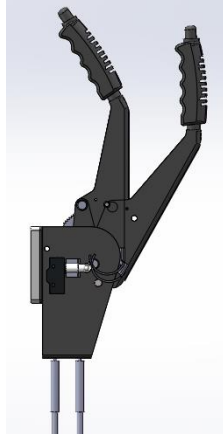


Open the lid and check the brake oil and other conditions.



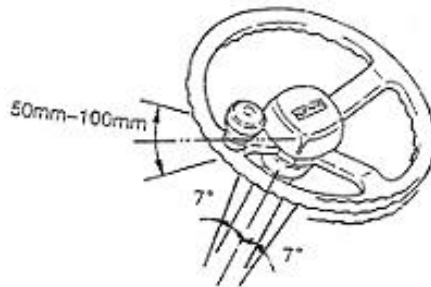
(3) Check parking brake handle

- Push forward parking brake handle and observe following status.
- If there is proper pull journey
- Brake force value
- Damaged parts or not
- Handle operating force value is suitable to operator or not
- Operator may adjust by the screw installed on the top of handle.



(4) Check the steering wheel rotation case

The steering wheel clockwise and counterclockwise rotating gently, check whether there is rebound phenomenon, a suitable spring trip to 50-100mm. Steering wheel before and after the trips of about 7°, if the above situation, turn the steering wheel shall be normal.

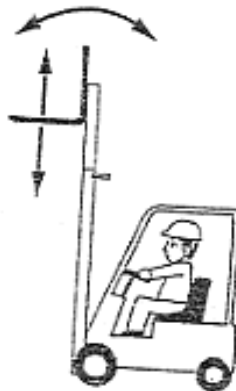


(5) Check the function of steering system

The steering wheel clockwise and counterclockwise rotation, check the power steering work.

(6) Check hydraulic system and frame function

Check the up and down and after dumping the normal operation is smooth

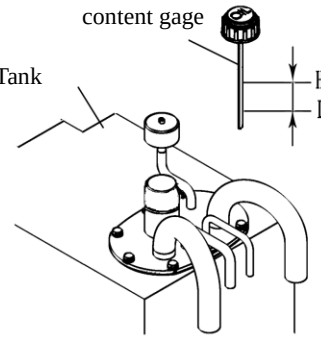


(7) Check pipeline

Check lift cylinder, tilt cylinder, and all pipeline whether oil leak.

(8) Check the hydraulic oil

Land the fork to the ground, check oil level gauge hydraulic oily bits, when the oil level in the H to the L range, the volume of hydraulic point oil suitable range.

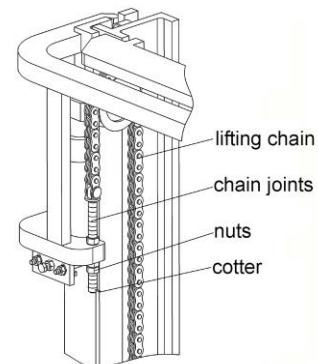


model	H	L
FE3R08-12N	14L	11L

(9) Check the lifting chain

Bring fork to the ground 200-300mm high, to ensure the tightness around the same chain. Check finger stick is in the middle, if different tightness can be adjusted through the chain joints.

! After adjustment, should be double nuts tighten.



(10) Check tires (pneumatic tires)

Unplug the nozzle cap, measuring tire pressure with a tire air pressure. After check air pressure, nozzle mouth should ensure that gas will not leak before installed the cap.

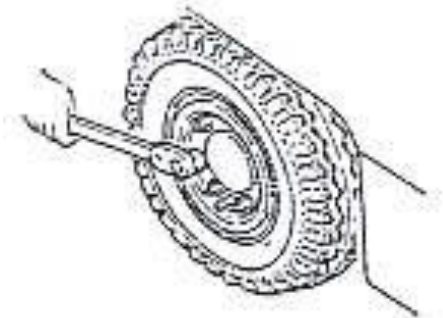
! Forklift tire pressure is higher than the car's; it should not exceed the prescribed pressure value.

Check tyre (solid tyre)

Check if there is dilapidation or leakage on tyre and its sides, and if there is deformation or damage in wheel rib and locking collar

(11) Check wheel nut

! Wheel nut loosening is very dangerous, if loose, the wheels may fall off, resulting in vehicle flip. Check the availability of loose wheel nut, it is very dangerous even one of them is loose, so be screwed to the provisions of pre-torque value.

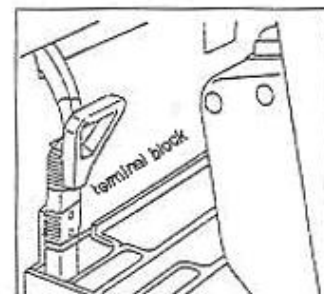


Wheel nut tightening torque

Front wheel: 4.00-8 176-206 N • m
413X127 176-206 N • m
Rear wheel: 3.50-5 121-162N • m
323X100 121-162N • m

(12) Check charge condition

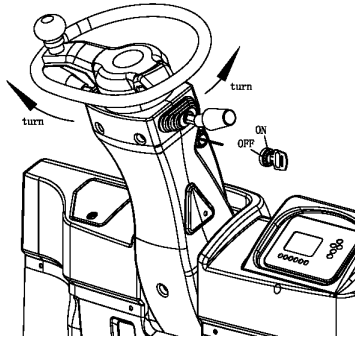
Measuring the proportion of battery, when converted to 30 °C, the battery proportion from 1.275 to 1.285, indicating the battery is fully charged, and check whether the terminal block is loose, and whether the cable is damage.



(13) Check headlights, turn signals and horn

Check whether the normal bright lights, speakers is normal (when pressing the horn button, horn ring)

Check whether the emergency stop is normal.



L	left steering light is bright
N	neutral
R	right steering light is bright

(14) Check instrument panel features
Normally, after a few seconds turn the key switch, the dashboard will be the following graph shows

 In addition to checking lights and operating conditions, the key switch must be turned off and disconnect the battery plug before check the electrical system.

II . Check after operation

After the completion of the work remove the dirt on forklift and check the forklift according to the follow items:

- (1) Check all the parts if there is damage or leakage.
- (2) If there is deformation, distortion, damage or breakage?
- (3) Add lubricating grease according to the situation.
- (4) Let fork upgrade to the max height for several times after work. (When the daily work is not up to the fork with the arrival of the maximum height of the situation, it would allow oil flow through the tanks of the entire journey, to prevent rust.)
- (5) Replace the faulty component which caused malfunction during work.

 A small mistake will cause a major accident. Do not operate or move the forklift truck before completion of repair work and inspections.

III. Truck cleaning

-  Stop the truck at the specified location.
- Pull the parking brake handle.
 - Press the emergency stop switch.
 - Turn off the key switch and remove the key.
 - Disconnect the battery plug.

1. Truck surface cleaning .

 Do not use flammable liquid to clean trucks, take safety measures to prevent short circuit.

- Use water and soluble detergent to clean the truck.
- Clean the oil filler and periphery of grease tap carefully.

 If regular cleaning truck, please lubricate timely.

2. Chains cleaning



Do not use chemical detergent, acids or other corrosive liquid to clean the chain.

- Place a tank in the bottom of the frame.
- Use gasoline or other petrochemical derivatives to clean the chain.
- Do not add any additive when use the steam nozzle cleaning.
- Dry immediately after cleaning of the chain pin and the water stain on chain surface.

3. Electric system cleaning



Do not use water to clean the pump control and a variety of connectors, so as not to cause damage to electrical systems.

Use non-metallic brush or low-power hair dryer, according to the manufacturer instructions to clean the electrical system; do not move the protective cover.

4. After cleaning

- Thoroughly dry water stains on the truck (use compressed air as a example).
- Start the forklift according to the procedures.



If moisture penetration into the motor, you must first remove the moisture, to prevent short circuits



Moisture will reduce brake performance, brake truck briefly to drying the brake.

IV. Regular maintenance

• Regular inspection and maintenance of the forklift shall be conducted to keep it in good performance status.

- Use spare parts made by Noblelift Machinery.
- Do not use different types of oil when replacing or refilling oil.
- The oil and accumulator being replaced shall be disposed according to local environmental protection laws and regulations rather than being dumped and abandoned.
- Develop comprehensive maintenance and repair program.
- Keep detailed record of each maintenance and repair.
- Forklift repairing without training is prohibited.



No smoking.

• Turn off the key switch and disconnect the accumulator plug before maintenance.
(Except for conducting some of the troubleshooting checks)

- Clean electrical parts with compressed air and do not use water for cleaning.
- Never stretch your hands, feet or any part of the body into the place between the main frame and instrument rack.
- The charged capacitor within the controller may cause electrical injury even if the key switch is off. Be careful when contacting the controller.



The maintenance period displayed in this manual means in a single class assignments and normal working condition. If use in a dusty environment, or in a temperature changable environment or more homework, that the maintenance period must be reduced.

In the test run period, people should make the following extra stages:

(In the first 50 to 100 hours of work or 2 months later:)

- check if the nut on the wheels is loose, if need, tighten it.
- Check the hydraulic parts for leakage, I if needed. screw it.
- check the joint parts: such as security frame, the balance weight, the drive wheels are strong, if needed, tighten them.

1.Regular maintenance schedule

√—Check, calibration, adjustment ×—Change

(1) Battery

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Battery	Quantity of electricity		√	√	√	√	√
	Terminals are loose		√	√	√	√	√
	The cable is loose		√	√	√	√	√
	Surface cleanness of the battery		√	√	√	√	√
	Battery surface has placed Tools		√	√	√	√	√
	Ventilation cover is tightened, vent is unimpeded			√	√	√	√
	Away from the fireworks		√	√	√	√	√

(2) Controller

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Controller	Check the wear condition of contactors					√	√
	Check if contactor mechanical movement is good					√	√
	Check micro switch operation of the pedal is normal					√	√
	Check if the motor, battery and power unit is a good connection					√	√
	Check if the malfunction analysis system is normal						At the beginning of 2 years

(3) Motor

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Motor	Remove the eyewinker from the motor shell				√	√	√
	Clean or change bearing						√
	If Carbon brushes, commutator is worn, the spring force is normal				√	√	√
	If Wiring is correct, reliable				√	√	√
	Clearing brush and commutator surface for the film end on toner					√	√

(4) Transmission system

Mainten- ance item	Maintenance item	Tools	Every day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Gearbox and Wheel Reducer	Noises		√	√	√	√	√
	Check leakage		√	√	√	√	√
	Change oil						×
	Check the working condition of brake		√	√	√	√	√
	Check the moving of gear wheel					√	√
	Check the junction with the frame bolts loose situation				√	√	√
	Check wheel bolt tightening torque	Torque wrench	√	√	√	√	√

(5) Wheel (forward, backward wheel)

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Tyre	Wear, cracks or damage		√	√	√	√	√
	If there are nails, stone or other foreign items on tire matter				√	√	√
	Wheel damage		√	√	√	√	√

(6) Steering system

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Steering wheel	Check clearance		√	√	√	√	√
	Check axis loose		√	√	√	√	√
	Check radial losse		√	√	√	√	√
	Check operation condition		√	√	√	√	√
Steering gear and valve block	Check if mounting bolts are loose				√	√	√
	Check valve block interface with steering leak case		√	√	√	√	√
	Check seal of connectors		√	√	√	√	√
Rear-axle	Check whether the rear axle mounting bolts loose				√	√	√
	Check if there is bending, deformation, cracks or damage				√	√	√
	Check or replace the lubrication of bridge bearing.					√	√
	Check or replace lubrication of bridge bearing					√	√

	Check steering cylinder operating conditions		√	√	√	√	√
	Check whether steering cylinder is leaking		√	√	√	√	√
	Check rack and pinion gear case					√	√
	wiring and working condition of sensor					√	√

(7) Brake system

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Brake pedal	Empty run	Gradu- ated scale	√	√	√	√	√
	Pedal travel		√	√	√	√	√
	Operation condition		√	√	√	√	√
	Whether there is air in the brake pipe		√	√	√	√	√
Stop, brake and control	Whether the brake is safe and has enough travel		√	√	√	√	√
	Operation condition		√	√	√	√	√
Pole and cable	Operating performance				√	√	√
	Whether the connection is loosen				√	√	√
	Wear of reduction gearbox connectors					√	√
pipe	Damage, leakage, rupture				√	√	√
	Loose situation of connection and clamping parts				√	√	√
Brake pump	Leakage situation		√	√	√	√	√
	Check oil level, oil changing.		√	√	√		×
	Pump situation					√	√
	Pump leakage, damage					√	√
	Pump piston cups, one-way valve wear damage, replace						×

(8) Hydraulic system

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Hydraulic oil tank	Check the oil, oil change		√	√	√	√	×
	Suction filter cleaning						√
	Exclude eyewinker						√
Control lever	Whether the connection is loosen		√	√	√	√	√
	Operation condition		√	√	√	√	√
Multitande m valve	Leakage		√	√	√	√	√
	Safety valve and self-locking tilt valve operation condition				√	√	√
	Measuring the pressure of the safety valve	Oil gauge					√
Pipeline joint	Leakage, loosening, fracture, deformation, damage				√	√	√
	Change the tube						× 1-2 years
Hydraulic pump	Hydraulic pump is leaking or there is noise		√	√	√	√	√
	Hydraulic pump gear wear				√	√	√

(9) Lifting system

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Chain and chain wheel	Check the chain tension state, whether deformation, corrosion damage		√	√	√	√	√
	Fuel chain				√	√	√
	Rivet pin and loose conditions				√	√	√
	Chain wheel deformation, damage				√	√	√
	If Bearings of chain wheel loosen				√	√	√
Attachment	Check whether in normal state				√	√	√
Lifting and tilt cylinder	Whether Piston rod, piston rod thread and the connection are loose, deformation, damage		√	√	√	√	√
	Operating conditions		√	√	√	√	√
	Leakage		√	√	√	√	√
	abrading and damaging status of pin and oil cylinder				√	√	√
Fork	Damage, deformation, wear of fork				√	√	√
	Damage, deformation, wear of					√	√

	allocation pin						
	cracking and abrading status in hooker welding of fork root				√	√	√
Mast fork frame	welding between inner mast, outer mast and beam is cracking or damaged or not				√	√	√
	Tilt cylinder bracket and the door frame weld whether cracking, damage				√	√	√
	Inner frame, outer frame weld whether cracking, damage				√	√	√
	Fork frame weld whether cracking, damage				√	√	√
	wheel loosen				√	√	√
	Mast bearing wear, damage						√
	Mast bearing cap bolts whether loose				√		√
	Whether Lift cylinder rod bolt head, bending plate bolts loose				√		√
	cracking, damaging status of welding of roller and roller shaft				√	√	√

(10) Else

Mainten- ance item	Maintenance item	Tools	Every- day (8h)	Every week (50h)	Every month (200h)	Three months (600h)	Six months (1200h)
Overhead guard and load backrest	Installation is firmly	Measur- ing hammer	√	√	√	√	√
	Check the deformation, cracking, damage		√	√	√	√	√
Indicator light for steering	Work and installations		√	√	√	√	√
Horn	Work and installations		√	√	√	√	√
Lamps and bulbs	Work and installations		√	√	√	√	√
Reversing Buzzer	Work and installations		√	√	√	√	√
Instrument	Working condition		√	√	√	√	√
Wire	Harness injury, loosening			√	√	√	√
	Electrical connection loose				√	√	√

2. Regular replacement of key safety parts

Periodic replacement of critical safety components.

When some parts difficult to find through regular maintenance of injury or damage, in order to further improve security, the user should replace the parts given in the following table for regular.

If the parts appeared abnormal before the time comes to replace, it should be replaced immediately.

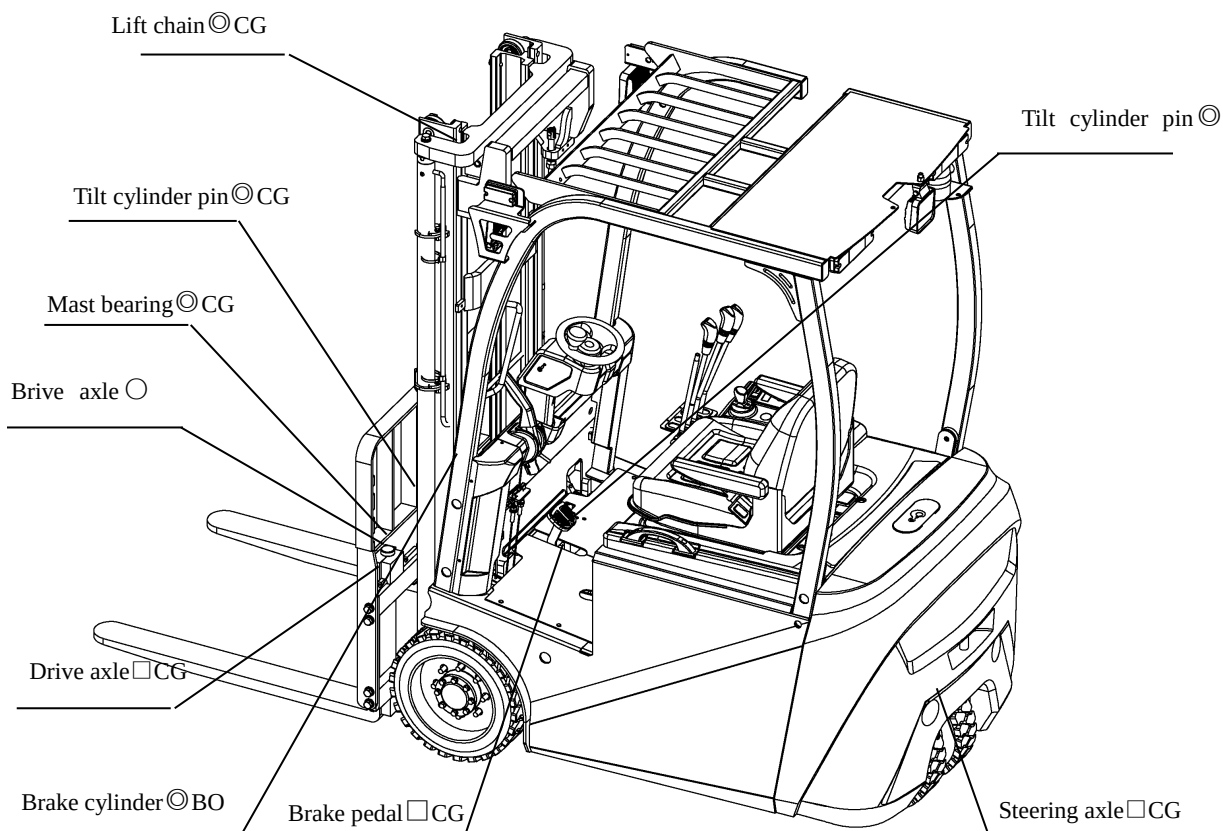
Name of critical safety components	Useful life
Brake tube or hard pipe	1~2
Hydraulic hose for lifting system	1~2
Lifting chain	2~4
High pressure hose/tube for hydraulic system	2
Oil cup of brake fluid	2~4
Cylinder cover and dust cover of brake pump	1
Internal hydraulic system seals, rubber parts	2

V. Area lubricated and lubricant recommended

1. Area lubricated

○: Change
 ◎: reinforce
 □: Check and adjust
 BO: Brake fluid

FO: Hydraulic oil
 GO: Gear oil
 CG: Grease
 W: Distilled water



2. Lubricant recommended

Name	Trademark	Capability(L)	Remark
Hydraulic oil	L-HM32	13	$\geq -5^{\circ} \text{ C}$
	L-HV32		$\geq -20^{\circ} \text{ C}$
Gear oil	85W/90GL-5	3.7(FE3R12N)	$-15^{\circ} \text{ C} \sim +49^{\circ} \text{ C}$
	80W/90GL-5	1.5(FE3R08-10N)	$-25^{\circ} \text{ C} \sim +49^{\circ} \text{ C}$
Brake fluid	Caltex DOT3	0.2	
Grease	3# Lithium Grease		

Chapter five DECLARATION OF CONFORMITY

[GB] Original CE Declaration of conformity

The signatory hereby declares that the specified machine conforms to the EC Directive 2006/42/EC (Machine Directive), and 2014/30/EU (Electro-Magnetic Compatibility, EMC) including their amendments as translated into national legislation of the member countries. The signatory is individually authorized to compile the technical documents and declares that the following standards, including the normative procedures contained therein, have been applied:

[D] Original EG- Konformitätserklärung

Der Unterzeichner erklärt hiermit, dass die angegebene Maschine den EG-Richtlinien 2006/42/EG (Maschinenrichtlinie) und 2014/30/EU (Elektromagnetische Verträglichkeit, EMV) einschließlich ihrer Änderungen in der Umsetzung in die nationale Gesetzgebung der Mitgliedsänder entspricht. Der Unterzeichner ist zur Zusammenstellung der technischen Unterlagen einzeln befugt und erklärt, dass folgende Normen, einschließlich der darin enthaltenen normativen Verfahren, angewendet wurden:

[E] Original DECLARACIÓN DE CONFORMIDAD CE

El signatario declara por la presente que la máquina especificada cumple con la Directiva CE 2006/42/EC (Directiva de Máquinas) y 2014/30/EU (Compatibilidad Electromagnética, EMC) incluidas sus enmiendas traducidas a la legislación nacional de los países miembros. El firmante está autorizado individualmente para compilar los documentos técnicos y declara que se han aplicado los siguientes estándares, incluidos los procedimientos normativos contenidos en ellos:

[F] Originale DECLARATION DE CONFORMITE CE

Le signataire déclare par la présente que la machine spécifiée est conforme à la directive CE 2006/42/CE (directive machine) et 2014/30/UE (compatibilité électromagnétique, CEM), y compris leurs modifications telles que traduites dans la législation nationale des pays membres. Le signataire est individuellement autorisé à compiler les documents techniques et déclare que les normes suivantes, y compris les procédures normatives qu'elles contiennent, ont été appliquées:

[NL] Origineel EG-CONFORMITEITSVERKLARING

De ondertekenaar verklaart hierbij dat de gespecificeerde machine voldoet aan de EG-richtlijnen 2006/42/EG (machinerichtlijn) en 2014/30/EU (elektromagnetische compatibiliteit, EMC) inclusief hun amendementen zoals vertaald in de nationale wetgeving van de aangesloten landen. De ondertekenaar is individueel gemachtigd om de technische documenten samen te stellen en verklaart dat de volgende normen, inclusief de normatieve procedures die daarin zijn opgenomen, zijn toegepast:

[P] Original DECLARAÇÃO DE CONFORMIDADE CE

O signatário declara que a máquina especificada está em conformidade com a Diretiva EC 2006/42/EC (Diretiva de Máquinas) e 2014/30/EU (Compatibilidade Eletromagnética, EMC), incluindo suas emendas traduzidas para a legislação nacional dos países membros. O signatário está individualmente autorizado a compilar os documentos técnicos e declara que as seguintes normas, incluindo os procedimentos normativos neles contidos, foram aplicadas:

[I] Originale DICHIARAZIONE DI CONFORMITÀ CE

Il firmatario dichiara che la macchina specificata è conforme alla Direttiva CE 2006/42/CE (Direttiva macchine) e 2014/30/UE (Compatibilità elettromagnetica, EMC) compresi i relativi emendamenti tradotti nella legislazione nazionale dei paesi membri. Il firmatario è autorizzato individualmente alla compilazione dei documenti tecnici e dichiara che sono state applicate le seguenti norme, comprese le procedure normative ivi contenute:

[BG] Оригинален ЕВРОПЕЙСКА ОБЩНОСТ - ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ

С настоящото подписалото лице декларира, че посочената машина отговаря на Директива на ЕО 2006/42/EC (Директива за машини) и 2014/30/EU (Електромагнитна съвместимост, EMC), включително техните изменения, преведени в националното законодателство на страните-членки. Подписалото лице е лично упълномощено да съставя техническите документи и декларира, че са приложени следните стандарти, включително съдържащите се в тях нормативни процедури:

[CZ] Originál EG - PROHLÁŠENÍ OSHODĚ

Signatář tímto prohlašuje, že uvedený stroj je ve shodě se směrnicí ES 2006/42/ES (Směrnice o strojích) a 2014/30/EU (Elektromagnetická kompatibilita, EMC) včetně jejich změn ve znění předložené do národní legislativy členských zemí. Podepisující osoba je samostatně oprávněna sestavit technické dokumenty a prohlašuje, že byly použity následující normy, včetně normativních postupů v nich obsažených:

[DK] Original EF-OVERENSSTEMMELSESESKLÆRING

Underskrivener erklærer hermed, at den specificerede maskine er i overensstemmelse med EF-direktivet 2006/42/EC (maskindirektivet) og 2014/30/EU (elektro-magnetisk kompatibilitet, EMC) inklusive deres ændringer som oversat til national lovgivning i medlemslandene. Underskrivener er individuelt bemyndiget til at udarbejde de tekniske dokumenter og erklærer, at følgende standarder, inklusive de normative procedurer indeholdt deri, er blevet anvendt:

[EST] Originaal EL vastavusavaldus

Allakirjutanu kinnitab käesolevaga, et nimetatud masin vastab EÜ direktiivile 2006/42/EÜ (masinadirektiiv) ja 2014/30/EL

(elektromagnetiline ühilduvus, EMC), sealhulgas nende muudatustele, nagu on t  gitud liikmesriikide siseriiklikesse   igusaktidesse. Allakirjutanul on individuaalselt   gus koostada tehnilisi dokumente ja ta kinnitab, et on kohaldatud j  rgmisi standardeid, sealhulgas neis sisalduvaid normatiivprotseduure:

[FIN] Alkuper   nen EU-YHDENMUKAISUUSSELOSTUS

Allekirjoittaja vakuuttaa t  ten, ett   m   ritetty kone on EY-direktiivin 2006/42/EY (konedirektiivi) ja 2014/30/EU (s  hk  magneettinen yhteensopivuus, EMC) mukainen, mukaan lukien niiden muutokset, sellaisina kuin ne on k   nnetty j  senmaiden kansalliseen lains  d  nt  n. Allekirjoittaja on henkil  kohtaisesti valtuutettu kokoamaan tekniset asiakirjat ja vakuuttaa, ett   seuraavia standardeja, mukaan lukien niihin sis  t  yv    normatiiviset menettelyt, on sovellettu:

[GR] Προ  τυπο ΔΗΛΩΣΗΥΜΜΟΡΦΩΣΗΣΕΟΚ

Ο υπογράφοντας δηλώνει με το παρόν ότι το συγκεκριμένο μηχ  νημα συμμορφ  νεται με την Οδηγία 2006/42/ΕΚ (Οδηγία Μηχαν  ν) και 2014/30/ΕΕ (Ηλεκτρομαγνητική Συμβατότητα, EMC) συμπεριλαμβανομένων των τροποποιήσεων τους   πως   χουν μεταφραστεί στην εθνική νομοθεσία των χωρών μελών. Ο υπογράφοντας είναι ατομικά εξουσιοδοτημένος να συντάξει τα τεχνικά   γγραφα και δηλώνει ότι   χουν εφαρμοστεί τα ακόλουθα πρότυπα, συμπεριλαμβανομένων των κανονιστικών διαδικασιών που περι  χονται σε αυτά:

[H] Eredeti EU KONFORMIT  SI NYILATKOZAT

Az al  f  ezennel kijelenti, hogy a megadott g  p megfelel a 2006/42/EC (g  p  r  nyelv)   s a 2014/30/EU (elektrom  gneses   sszef  rhet  s  g, EMC) ir  nyelveknek, bele  rtve azok m  d  s f   ait a tagorsz  gok nemzeti jogszab  lyaiba leford  tva. Az al    r   egy  nileg jogosult a m  szaki dokumentumok   ssze  ll  t  s  ra,   s kijelenti, hogy a k  vetkez   szab  v  nyokat, bele  rtve az abban foglalt normat  v elj  r  sokat, alkalmazt  k:

[LT] Originalus ES atitikim   deklaracija

Pasira  s   smuo parei  kia, kad nurodyta ma  šina atitinka EB direktyv   2006/42/EB (ma   in   direktyv  ) ir 2014/30/ES (elektromagnetinj suderinamum  , EMC), i  skaitant j   pakeitim  s, i  sverstus j     ali   nari   nacionalinius teis  s aktus. Pasira  s   smuo yra individualiai j  galiotas rengti techninius dokumentus ir parei  kia, kad buvo taikomi   ie standartai, i  skaitant juose nurodytas normines proced  ras:

[LV] Or  gin  ls ES atbilst  bas deklar  cija

Parak  st  t  js ar    o apliecina, ka nor  d  t   iek  rta atbilst EK Direkt  vai 2006/42/EK (Ma   inu direkt  va) un 2014/30/ES (Elektromagn  tisk   sader  b  , EMC), ieskaitot to groz  j  umus, kas ir tulkoti dal  bvalstu nacion  lajos ties  b   aktos. Parak  st  t  js ir individu  li pilnvarots sast  d  t tehniskos dokumentus un apliecina, ka ir piem  roti    adi standarti, tostarp tajos ietvert  s normat  v  s proced  ras:

[N] Opprinnelig EU-KONFORMIT  TSEK  L   RING

Underskriveren erkl  rer herved at den spesifiserte maskinen er i samsvar med EC-direktivet 2006/42/EC (maskindirektivet), og 2014/30/EU (elektromagnetisk kompatibilitet, EMC) inkludert deres endringer som oversatt til nasjonal lovgivning i medlemslandene. Underskriveren er individuelt autorisert til   sammenstille de tekniske dokumentene og erkl  rer at f  lgende standarder, inkludert de normative prosedyrene som finnes deri, er brukt:

[PL] Oryginalny DEKLARACJA ZGODNO  CI WE

Sygnatariusz niniejszym o  wiadcza,   e okre  lona maszyna jest zgodna z dyrektyw   WE 2006/42/WE (dyrektywa maszynowa) i 2014/30/UE (kompatybilno  c elektromagnetyczna, EMC) wraz z ich poprawkami w t  umaczeniu na ustawodawstwo krajowe kraj  w cz  łonkowskich. Sygnatariusz jest indywidualnie upowa  zniony do spor  ządzania dokumentacji technicznej i o  wiadcza,   e zastosowano nast  puj  ce normy, w tym zawarte w nich procedury normatywne:

[RO] Original DECLARATIE DE CONFORMITATE CE

Semnatarul declar   prin prezenta c   ma   ina specificat   este conform   cu Directiva CE 2006/42/CE (Directiva Ma   ini)   i 2014/30/UE (Compatibilitate electro-magnetic  , EMC), inclusiv amendamentele acestora, astfel cum au fost traduse   n legisla  ia na  ional   a   r  rilor membre. Semnatarul este autorizat individual s     ntocmeasc   documentele tehnice   i declar   c   au fost aplicate urm  toarele standarde, inclusiv procedurile normative cuprinse   n acestea:

[RUS] Оригина   Декларация соответствия стандартам ЕС

Настоящим подписывающая сторона заявляет, что указанная машина соответствует Директиве ЕС 2006/42/ЕС (Директива по машинам) и 2014/30/ЕС (Электромагнитная совместимость, ЭМС), включая их поправки, переведенные в национальное законодательство стран-членов. Подписавшаяся сторона имеет индивидуальное право на составление технических документов и заявляет, что были применены следующие стандарты, включая содержащиеся в них нормативные процедуры:

[S] Original EG-KONFORMIT  TSF  RKLARING

Undertecknaren intygar h  rmed att den specificerade maskinen   verensst  mmer med EG-direktivet 2006/42/EC (maskindirektivet) och 2014/30/EU (elektromagnetisk kompatibilitet, EMC) inklusive deras till  gg som   versatts till nationell lagstiftning i medlemsl  nderna. Undertecknaren   r individuellt beh  rig att sammanst  lla de tekniska dokumenten och f  rklarar att f  ljande standarder, inklusive de normativa procedurerna som finns d  r  , har till  mpats:

[SK] Origin  l vyhl   enie o zhode

Signat  r t  mt   vyhlasuje,   e   specifikovan   stroj je v s  l  de so Smernicou ES 2006/42/EC (Smernica o strojoch) a 2014/30/EU (Elektromagnetick   kompatibilita, EMC) vr  tane ich dodatkov prelo  en  ch do n  rodnej legislat  vy   lensk  ch kraj  n. Signat  r je

individuálne oprávnený zostavovať technické dokumenty a vyhlasuje, že boli aplikované nasledujúce normy vrátane normatívnych postupov v nich obsiahnutých:

[SLO] Original EU IZJAVA O SKLADNOSTI

Podpisnik s tem izjavlja, da je navedeni stroj v skladu z Direktivo ES 2006/42/ES (Direktiva o strojih) in 2014/30/EU (Electro-Magnetic Compatibility, EMC), vključno z njunimi spremembami, kot so prevedene v nacionalno zakonodajo držav članic. Podpisnik je posamično pooblaščen za sestavo tehnične dokumentacije in izjavlja, da so bili uporabljeni naslednji standardi, vključno z normativnimi postopki, ki jih vsebuje:

[TR] Orijinal AB Uvgunluk Açıklaması

İmza sahibi, belirtilen makinenin AB Direktifi 2006/42/EC (Makine Direktifi) ve 2014/30/EU (Elektro-Manyetik Uyumluluk, EMC) ve bunların üye ülkelerin ulusal mevzuatına tercüme edilen değişiklikleri ile uyumlu olduğunu beyan eder. İmza sahibi, teknik belgeleri derlemeye bireysel olarak yetkilidir ve burada yer alan normatif prosedürler dahil olmak üzere aşağıdaki standartların uygulandığını beyan eder:

<the applied standards have to be shown here>

- (1) Type: **XX XX– Self-propelled industrial truck**
- (2) Serial No: **XXXXXXXX**
- (3) Year of constr.: **YYYY**
- (4) Manufacturer: Noblift Intelligent Equipment Co., Ltd.
528 Changzhou Road, Taihu Sub-district, Changxing, 313100, PR China
- (5) Responsible for compiling the technical documentation: <Company name>,
<Company Address>
- (6) Date: <Place>, **YYYY.MM.DD**
- (7) Authorized signatory: <Position> **Mr. Sample**

- (1) Type/ Typ/ Tipo/ Modello/ Tyyppi/ Tipo / ΤΥΠΟΣ/ Τύπος/ Тип/ Tips/ Tipas/ Tüüp:
- (2) Serial No./ Serien-Nr./ N ° de s érie/ Seriennummer/ N °de serie/ Numero di serie/ Serienr./ Sarjanro/ [αυξανων αριθμός](#)/ Seriové číslo/ Szériaszám/ Nr.Seryjny/ Serijska številka/ Výrobné číslo/ Серийный номер/ Seri No./ Seerianr./ Sērijas Nr./ Serijos numeris:
- (3) Year of constr./ Baujahr/ Année de constr./ Bouwjaar/ Año de constr./ Anno di costruzione/ Produktionsår/ Byggeår/ Tillverkningsår/ Valmistusvuosi / Ano de fabrico / [έτος κατασκευής](#)/ Rok výroby/ Gyártási év/ Rok produkcji / Letnik / Годизготовления / Üretim yılı / V äljalaskeasta / Izgatavošanas gads / Gamybos metai
- (4) Manufacturer/ Hersteller/ Fabricante/ Fabricant/ Fabrikant/ Fabricante/ Produttore/ производитель/ Výrobce/ Fabrikant/ Tootja/ Valmistaja/ Κατασκευαστής/ Gyártó/ Gamintojas/ Ražotājs/ Produzent/ Producent/ Producător/ Производитель/ Tillverkare/ Výrobca/ Proizvajalec/ Üretici firma
- (5) Responsible for compiling the technical document/ Verantwortlich für die Zusammenstellung der technischen Dokumentation/ Responsable de compiler la documentation technique/ Responsable de la compilation de la documentation technique/ Verantwoordelijk voor het samenstellen van de technische documentatie/ Responsável pela compilação da documentação técnica/ Responsabile della compilazione della documentazione tecnica/ Отговаря за съставянето на техническата документация/ Zodpovídá za sestavení technické dokumentace/ Ansvarlig for udarbejdelse af den tekniske dokumentation/ Vastutab tehnilise dokumentatsiooni koostamise eest/ Vastaa teknisen dokumentaation laatimisesta/ Υπεύθυνος για τη σύνταξη της τεχνικής τεκμηρίωσης/ Felelős a műszaki dokumentáció összeállításért/ Atsakingas už techninės dokumentacijos sudarymą/ Atbildīgs par tehniskās dokumentācijas sastādīšanu/ Ansvarlig for sammenstilling av teknisk dokumentasjon/ Odpowiedzialny za kompletowanie dokumentacji technicznej/ Responsabil cu întocmirea documentatiei tehnice/ Ответственный за составление технической документации/ Ansvarig för att sammanställa den tekniska dokumentationen/ Zodpovedá za zostavenie technickej dokumentácie/ Odgovoren za pripravo tehnične dokumentacije/ Teknik dokümantasyonun derlenmesinden sorumlu
- (6) Date/ Datum/ Data/ Fecha/ datum/ Dato/ p äv ävs/ Kuup äev/ Datums/ [дата](#)/ D áum/ d áum/ tarih/ [ημερομηνία](#)
- (7) Authorised signatory/ ImAuftrag/ pour ordre/ Incaricato/ Por orden de/ por procura ção/ op last van/ p ävegneaf/ p äppdrag/ Etteropdrag/ psta./ Ülesandel / pævedus / v.i. / Попоручению / megbízásából / длъжностно лице / z pověřením / z poverenia / po nalogu / napolecenie / din sarcina / adına / θαη' ελληνική

Maintenance record

[illegible]

NOBLELIFT

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