

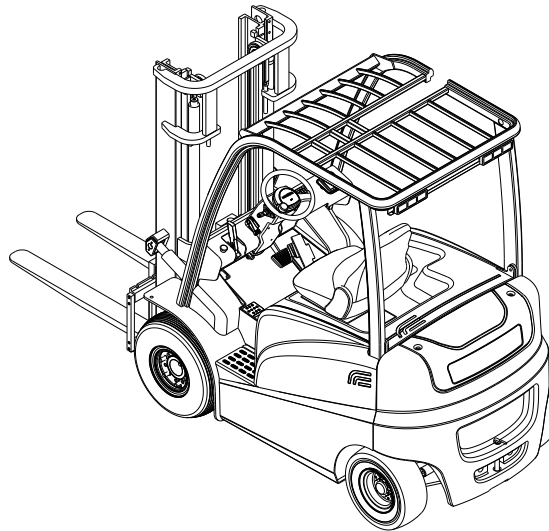


A Series

A series 1.0t-5.0t Lead acid Battery Counterbalanced Forklift Truck

A series 1.0t-5.0t Lithium Battery Counterbalanced Forklift Truck

OPERATION AND MAINTENANCE MANUAL



Original Instruction

HANGCHA GROUP CO., LTD.

05 / 2018

FOREWORD

Thanks for you purchasing our A series electric four-wheel forklift truck.

A series electric four-wheel forklift truck is our company's new product. It has the character of small turning radius, beautiful shape, small dimensions, low gravity, good stability, superior performance.

This operation manual is the explanations that how to use 1.0t~5.0t A series electric four-wheel forklift truck correctly. It will instruct you how to operate safety and precautionary maintenance. To ensure safety and exert the truck's potential, all the personnel that in charge of operation, maintenance and management must read this manual thoroughly before starting work with the forklift.

As the improvements of products of our company, maybe there are some differs between this operation manual with your forklift truck.

If you have any questions please keep touches with HANGCHA GROUP CO., LTD.sales department or let the agents know.

A series four-wheel model	Drive Motor	Pump Motor	Rated capacity(t) / Load center (mm)
CPD10~30-A	Curtis1244	Curtis1253	1.0 / 500, 1.5 / 500, 1.75 / 500 2.0 / 500, 2.5 / 500, 3.0 / 500
CPD10~18-AC3(F)	Curtis 1234	Curtis 1253	1.0 / 500, 1.5 / 500, 1.75 / 500
CPD20~30-AC3(F)	Curtis 1236	Curtis 1253	2.0 / 500, 2.5 / 500, 3.0 / 500
CPD35-AC3(F)	Curtis 1238	Curtis 1253	3.5 / 500
CPD10~18-AC4(F)	Curtis 1234	Curtis 1234	1.0 / 500, 1.5 / 500, 1.75 / 500
CPD20~25-AC4(F)	Curtis 1236	Curtis 1234	2.0 / 500, 2.5 / 500
CPD30-AC4(F)	Curtis 1236	Curtis 1236	3.0 / 500
CPD35-AC4(F)	Curtis 1238	Curtis 1236	3.5 / 500
CPD10~18-AD2	Kollmorgen ACS48S-35P	Kollmorgen ACS48S-23P	1.0 / 500, 1.5 / 500, 1.75 / 500
CPD20~25-AD2	Kollmorgen ACS48M-35P	Kollmorgen ACS48M-23P	2.0 / 500, 2.5 / 500
CPD30~35-AD2	Kollmorgen ACS80M-35P	Kollmorgen ACS80M-23P	3.0 / 500, 3.5 / 500
CPD25-ALC3(F)	Curtis 1236	Curtis 1253	2.5 / 500
CPD25-ALC4(F)	Curtis 1236	Curtis 1236	2.5 / 500
CPD25-ALD2	Kollmorgen ACS80M-35P	Kollmorgen ACS80M-23P	2.5 / 500

A series four-wheel model	Drive Motor	Pump Motor	Rated capacity(t) / Load center (mm)
CPD10~18-AC4-I	Curtis 1234	Curtis 1234	1.0 / 500, 1.5 / 500, 1.8 / 500
CPD20~25-AC4-I	Curtis 1236	Curtis 1234	2.0 / 500, 2.5 / 500
CPD30-AC4-I	Curtis 1236	Curtis 1236	3.0 / 500
CPD35-AC4-I	Curtis 1238	Curtis 1236	3.5 / 500
CPD10~18-AZ3	ACE2 36-48V/350A	Z-S HP 48/350 B C/CAN	1.0 / 500, 1.5 / 500, 1.75 / 500
CPD20~25-AZ3	ACE2 36-48V/450A	Z-S HP 48/500 B C/CAN	2.0 / 500, 2.5 / 500,
CPD25-ALZ3	ACE2 80/350A GRANDE	Z-S HP 80/500 C/CAN	2.5 / 500
CPD30-AZ3	ACE2 80/350A GRANDE	Z-S HP 80/500 C/CAN	3.0 / 500
CPD35-AZ3	AC-2 80/400A PW FLASH	Z-S HP 80/500 C/CAN	3.5 / 500
CPD10~18-AZ4	ACE2 36-48V/350A	ACE2 36-48V/350A	1.0 / 500, 1.5 / 500, 1.75 / 500
CPD20~25-AZ4	ACE2 36-48V/450A	ACE2 36-48V/350A	2.0 / 500, 2.5 / 500,
CPD25-ALZ4 CPD30~35-AZ4	Combi AC2 80 400+400 PW		2.5 / 500, 3.0 / 500, 3.5 / 500
CPD40~50-AZ4	ACE3 TRACTION 80V/550A	ACE3 PUMP 80V/550A	4.0 / 500, 4.5 / 500, 5.0 / 500
CPD40~50-AC4	1238E-6521	1236SE-6521	4.0 / 500, 4.5 / 500, 5.0 / 500
CPD40~50-AC4-I	1238E-6521	1236SE-6521	4.0 / 500, 4.5 / 500, 5.0 / 500
CPD25-AD2-A	Kollmorgen ACS48M-35P	Kollmorgen ACS48M-23P	2.5 / 500
CPD25-AC4-A	Curtis 1236	Curtis 1234	2.5 / 500
CPD10~18-AC4-E	Curtis 1232SE	Curtis 1232SE	1.0 / 500, 1.5 / 500, 1.8 / 500
CPD20~25-AC4-E	Curtis 1234SE	Curtis 1232SE	2.0 / 500, 2.5 / 500
CPD20~25-AC4-E/I	Curtis 1234SE	Curtis 1232SE	2.0 / 500, 2.5 / 500
CPD10~18-AC4-E/I	Curtis 1234SE	Curtis 1234SE	1.0/500, 1.5/500, 1.8/500
CPD25-ALC4-E/I	Curtis 1234SE	Curtis 1234SE	2.5/500
CPD30~35-AC4-E/I	Curtis 1234SE	Curtis 1234SE	3.0/500, 3.5/500
CPD10~18-AD2-I	ACS80S-35P	ACS80S-23P	1.0 / 500, 1.5 / 500, 1.8 / 500
CPD20~25-AD2-I	ACS80M-35P	ACS80S-23P	2.0 / 500, 2.5 / 500

A series four-wheel model	Drive Motor	Pump Motor	Rated capacity(t) / Load center (mm)
CPD30~35-AD2-I	ACS80M-35P	ACS48M-23P	3.0 / 500, 3.5 / 500
CPD25-ALC4-E CPD30-AC4-E	Curtis 1234SE	Curtis 1234SE	2.5 / 500, 3.0 / 500
CPD35-AC4-E	Curtis 1236SE	Curtis 1234SE	3.5 / 500
CPD10~25-AC3-E	1234SE-5421	1253-4804	1.0 / 500, 1.5 / 500, 1.8 / 500, 2.0 / 500, 2.5 / 500
CPD30-AC3-E	1234SE-6321	1253-8001	3.0 / 500
CPD35-AC3-E	1236SE-6521	1253-8001	3.5 / 500
CPD10~30-AZ3-E	ACE2 36-48V/450A	HP 48/500 B C/CAN	1.0 / 500, 1.5 / 500, 1.8 / 500, 2.0 / 500, 2.5 / 500, 3.0 / 500
CPD35-AZ3-E	ACE2 80/400A PW	HP 80/500 C C/CAN	3.5 / 500
CPD10~18-AZ4-E	ACE2 36-48V/350A	ACE2 36-48V/350A	1.0 / 500, 1.5 / 500, 1.8 / 500
CPD20~25-AZ4-E	ACE2 36-48V/450A	ACE2 36-48V/350A	2.0 / 500, 2.5 / 500,
CPD25-ALZ4-E CPD30~35-AZ4-E	Combi AC2 80 400+400 PW	Combi AC2 80 400+400 PW	2.5 / 500, 3.0 / 500, 3.5 / 500
CPD10~18-AC4-N A	1234SE-5421	1234SE-5421	1.0 / 500, 1.5 / 500, 1.8 / 500
CPD20~25-AC4-N A	1236SE-5621	1234SE-5421	2.0 / 500, 2.5 / 500

A series four-wheel model	Drive Motor	Pump Motor	PC motor	Rated capacity(t) / Load center (mm)
CPD10~18-AF4	FJ-03-10 -48V/450A	FJ-04-10 -48V/450A	FJ-02-10-48V -1.5T-KDS-HC	1.0 / 500, 1.5 / 500, 1.8 / 500
CPD20~30-AF4	FJ-03-10 -48V/450A	FJ-04-10 -48V/450A	FJ-02-10-48V -3T-KDS-HC	2.0 / 500, 2.5 / 500, 3.0 / 500
CPD35-AF4	FJ-03-10 -80V/500A	FJ-04-10 -80V/500A	FJ-02-10-80V -3.5T-KDS-HC	3.5 / 500

CONTENT

Foreword	
1. Characteristics	1
2. Main components	3
3. Displays and Controls	4
Multi-function display	6
Controls	35
Seat	40
OPS system (option)	43
4. Nameplate and Safety Labels	45
5. Technical Specifications	46
6. Safety Instructions	65
7. Forklift Transport,Lifting & Towing	70
Transport	70
Lifting	70
Towing	71
8. The Structure and Stability of Truck	72
9. Running-in of the new truck	75
10. Daily Maintenance	76
11. Driving and Operation	80
Driving	80
Traveling	80
Turning	80
Stopping or parking	80
Loading	81
Stacking load	81
Un-stacking load	82
Check after operation	82
12. Deposit	83
13. Battery	84
14. Lithium battery	92
Precautions for Use:	92
Lithium battery parameter	93
Battery work, storage temperature and transportation requirement	93
Charging precautions:	94
Charging procedures:	95
15. Maintenance summarization	97

Preventive maintenance schedule.....	98
Replace the key safe parts termly	106
Table for oil used in the truck	107
Table for bolts tightening torque	107
16. The use, Install and Safety Rules of attachment	109
Attachment assy	109
Attachment use	109
Check and maintenance:.....	110
17. Battery automatic filling water system(Optional)	111
18. Related Safety Instruction and Standard(For CE)	116

1. Characteristics

A series 1.0t-5.0t Lead acid Battery Counterbalanced Forklift Truck



Characteristics

1. The new design makes comprehensive improvement in outline, safety, comfort and reliability, and the truck performance improves greatly than the original one.
2. The adopted second generation load sensing technology makes steering reliable, sensitive and light.
3. International advanced parallel arrangement method adopted drive motor owns simple structure, reliable performance, and good stability with battery positioned at the bottom of the chassis.
4. Optimal designed wide view mast guarantees operator's vision and improves the safety.
5. Full open cover makes battery maintenance easy.
6. Easy-to-open airtight controller cover plate prevents the motor controller against rain and dust.
7. Major electrical components like motor controller, contactor, battery socket, emergency power off switch etc. are all world famous brands.
8. High-frequency MOSFET integrated control system guarantees smooth and accurate walking and lifting control, superior speed control performance with functions as regenerative braking, reverse braking and slope anti-gliding etc.

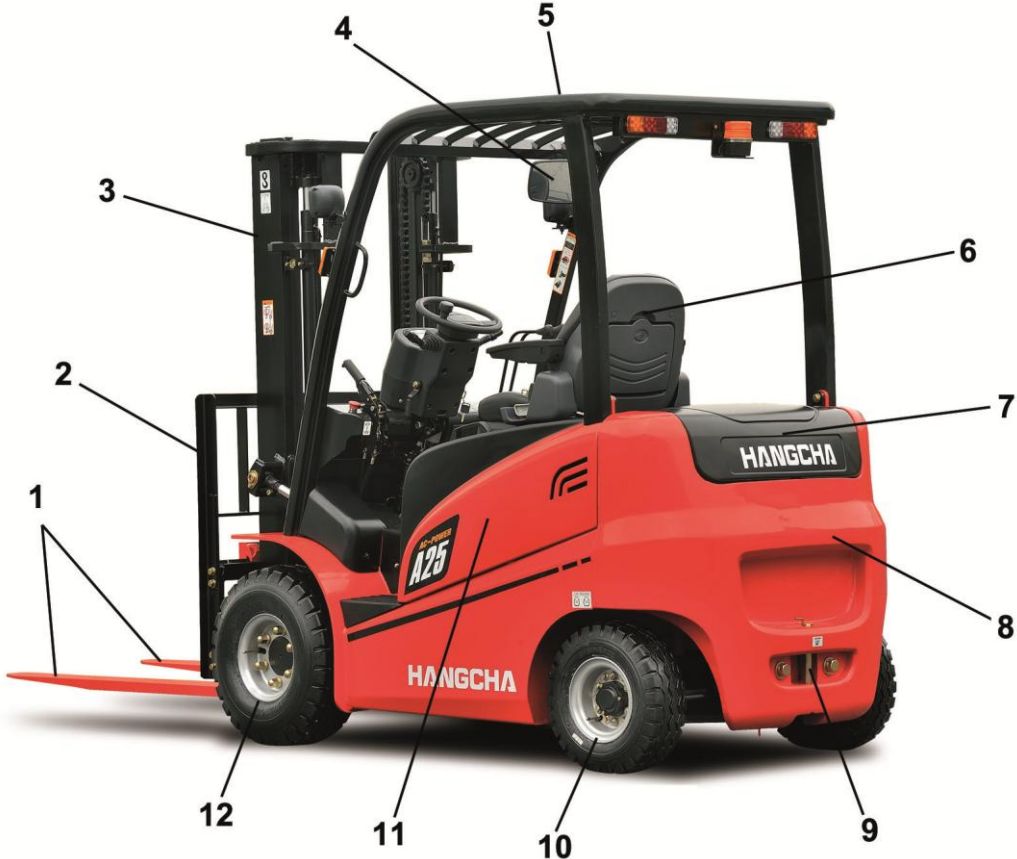
A series 1.0t-3.5t Lithium Battery Counterbalanced Forklift Truck



Characteristics

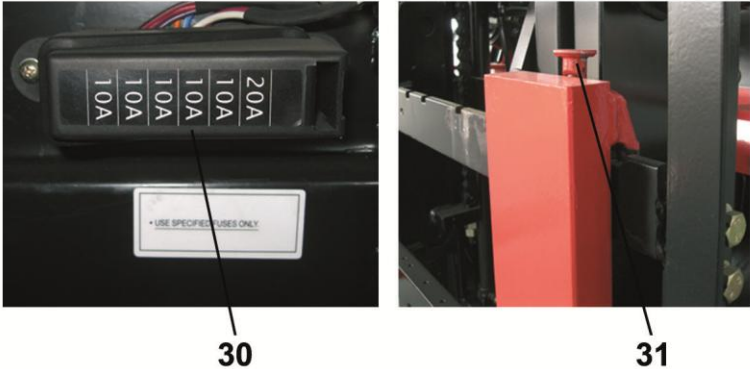
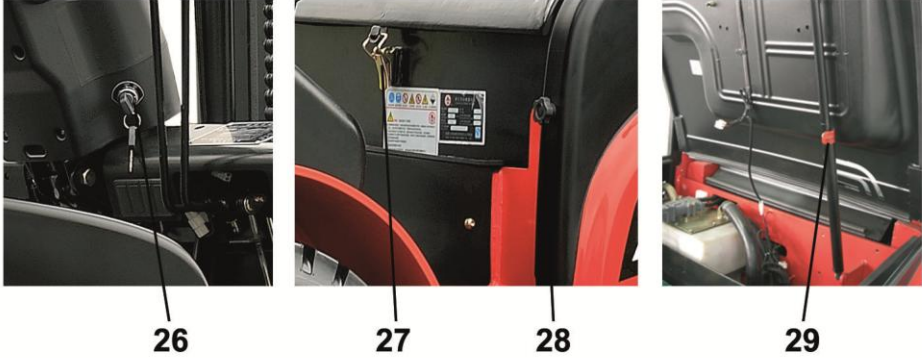
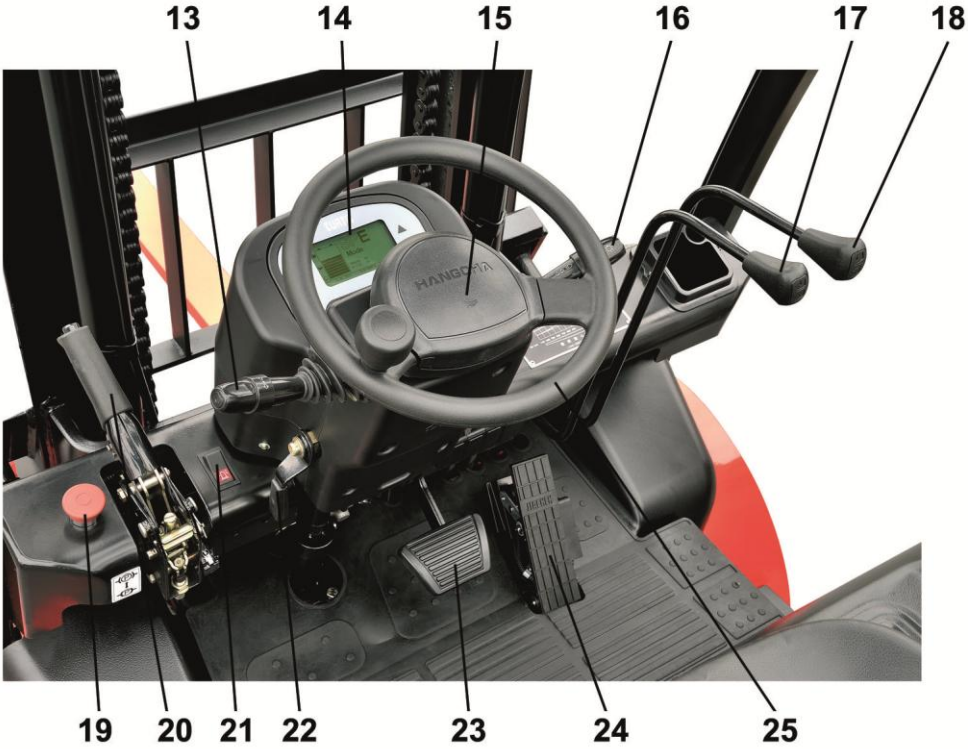
1. Based on A series forklift, it generates all advantages of A series AC electric forklift.
2. Every lithium iron phosphate cell is protected by a safety device to ensure the safety use of lithium battery.
3. With advanced BMS system, the power manager can communicate between battery and controller, real-time monitor battery temperature, voltage and charge-discharge current, and precisely calculate the discharge condition, to ensure that the battery is always in safe work condition, and its service life and safety is effectively improved.
4. Equipped with new energy electric vehicle conduction quick charger, it takes only 2.5-3h to be fully charged. No self discharge or engine start failure, safer and more reliable.
5. Long service life with 3000 charge-discharge cycles.
6. The lithium battery pack is protected by IP54 sealing structure, with great dust proof and water proof performance.
7. Maintenance-free batteries are eco-friendly, with no heavy metals pollution.

2. Main components



Item	Description
1	Fork
2	Load backrest
3	Mast
4	Rearview mirror
5	Overhead guard
6	Driver's seat
7	Counterweight cover
8	Counterweight
9	Towing pin
10	Rear wheel
11	Battery behind cover hood
12	Front wheel

3. Displays and Controls

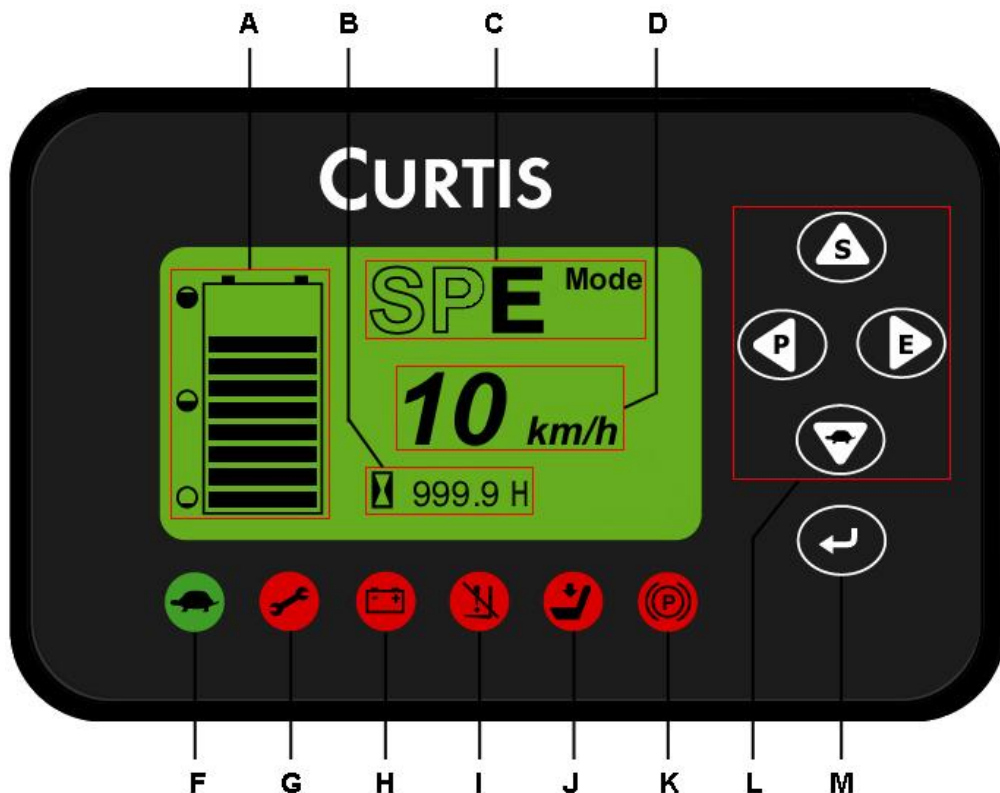


Item	Control / Display
13	Travel direction switch
14	Multi-function display
15	Horn
16	Combination light switch
17	Lifting lever
18	Tilting lever
19	Emergency disconnect switch
20	Parking brake lever
21	Warning light switch
22	Steering column positioning device
23	Brake pedal
24	Accelerator pedal
25	Steering wheel
26	Key switch
27	Locker of battery cover hood
28	Locking bolt of battery side plate
29	Air spring
30	Fuse box
31	Fork stopper

Multi-function display

CPD10~30-A	CPD10~35-AC3(F)	CPD25-ALC3(F)	CPD10~35-AC4(F)
CPD25-ALC4(F)	CPD10~35-AC4-I	CPD25-AC4-A	CPD10~35-AC4-E
CPD25-ALC4-E	CPD10~25-AC4-NA	CPD10~35-AC3-E	CPD25-ALC3-E
CPD10~35-AC4-E/I	CPD40~50-AC4	CPD40~50-AC4-I	

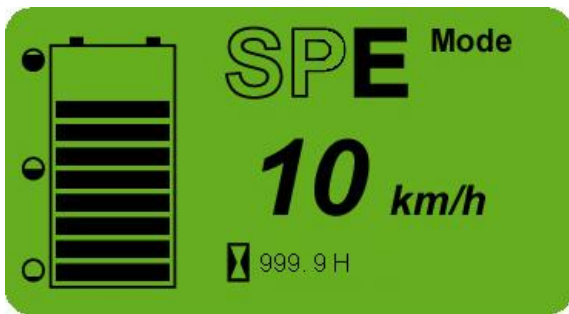
The multi-function display shows the battery capacity, the service hours, the operating mode, the travel speed and fault code information. Graphic illustrations on the multi-function display act as warning indicators. Through the multi-function display on the right button can also check fault code and parameter setting.



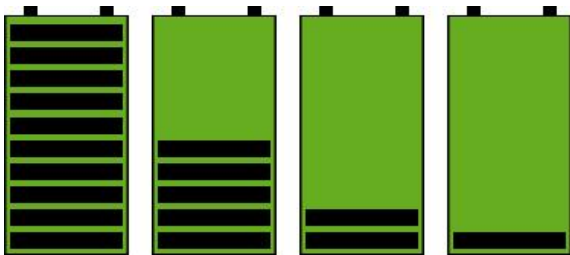
Item	Display
A	Battery capacity display
B	Service hours display
C	Operating mode display
D	Travel speed or fault code display
F	Crawl speed indicator
G	Fault indicator
H	Battery low capacity indicator
I	Lifting low speed indicator
J	Seat switch indicator
K	Parking brake applied indicator

L	Mode settings or direction choosing button
M	Menu button

Main display interface



Battery capacity display[A]



Indicates the available residual capacity.

As the following diagram shows, from the left to the right, the battery decreases from full state to the only one case, which represents that the battery leaves only 20%. Thus the whole battery indicator bar will twinkle, and the state indicator lamp will be bright, now please stop working and charge immediately.



CAUTION

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

Service hours display[B]



Hourglass icon indicates that timing function.

When you turn off the key switch, the hour meter will works and the minimum unit is 0.1 hour.

Operating mode display[C]




As the diagram shows, the pictures from the left to the right represent the mode of **S** mode → **P** mode → **E** mode → **SPE** mode.

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

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

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

SPE mode: The truck is in Safety Mode. In this mode, maximum traveling speed is limited to 7km/h. it is very good for working in a crowd warehouse or other compact space. In this mode, the slow indicator[F]  will be on.



CAUTION

- **The default mode is mode E. after power cutting every time, the work mode resets to mode E no matter which mode it is before power cutting, but the switch key is still in the mode before turn off.**

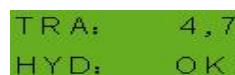
Travel speed or fault code display[D]

Travel speed display



Normal work, display the truck travel speed.

Fault code display



Failure occurs, display the controller's fault code.

Note: “TRA” means the traction controller, “HYD” means the pump controller.

Indicator light



Crawl speed indicator[F](Green)



When the truck in SPE mode, the crawl speed indicator light up.

Fault indicator[G](Red)



The light up when the controller is wrong or operation mistake, and the fault code shows in the main display screen.

Battery low capacity indicator[H](Red)



When there is only one line for the power, the indicator will be on to remind the user to charge the battery.

Lifting low speed indicator[I](Red)



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

Seat switch indicator[J](Red)



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

Parking brake applied indicator[K](Red)







When parking brake applied, the light up.


Button

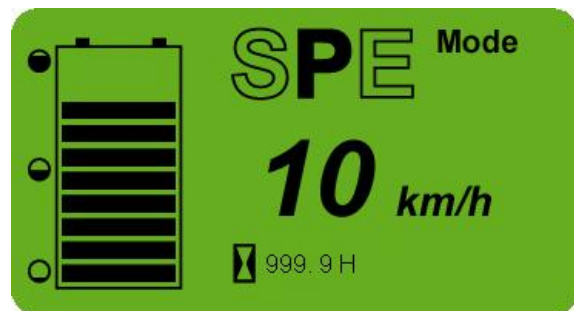
Mode settings or direction choosing button[L]







Mode settings

In the main display interface, the button , , , , corresponding S mode、P mode、E mode、SPE mode.

For example: In the main display interface, press the button , the screen shows as follows:




Direction choosing


In the menu interface, the button , , , , corresponding up、left、right、down four direction choosing button keys.

Menu button[M]



(1) In the main display interface, press the button , and then enter the fault code interface. The fault code shows as follow:



(2) In the main display interface, press the button  over 2 seconds, and then enter the main menu .

The main menu includes: operation menu, advanced settings and exit.



OPERATION MENU

The operation menu includes : Software version information, language settings, LCD contrast settings, LCD brightness settings, programmer settings and exit.




ADVANCED SETTINGS

This menu needs password.





Through the example below shows how to use the button settings parameter .


For example: The language from english switch to chinese.

① In the main display interface, press the menu button  over 2 seconds, and then enter the main menu .



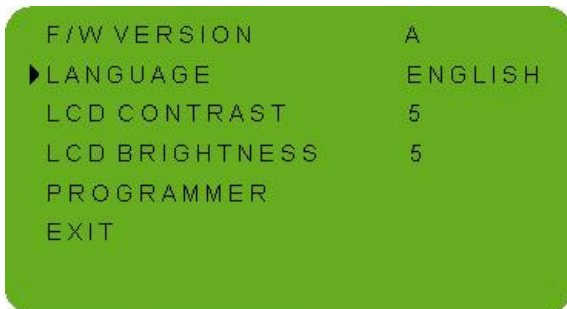
② Select the “OPERATION MENU” through up button  or down button  .





③ Press the menu button , enter the operation menu.





④ Select the “LANGUAGE” through **up button**() or **down button**() .



⑤ Enter the language setting state through **left button**() or **right button**() .



⑥ Through the **up button**() or **down button**() , select the chinese language.



⑦ Refer the steps ⑤ ④ ③ ② ①, return the main display interface.

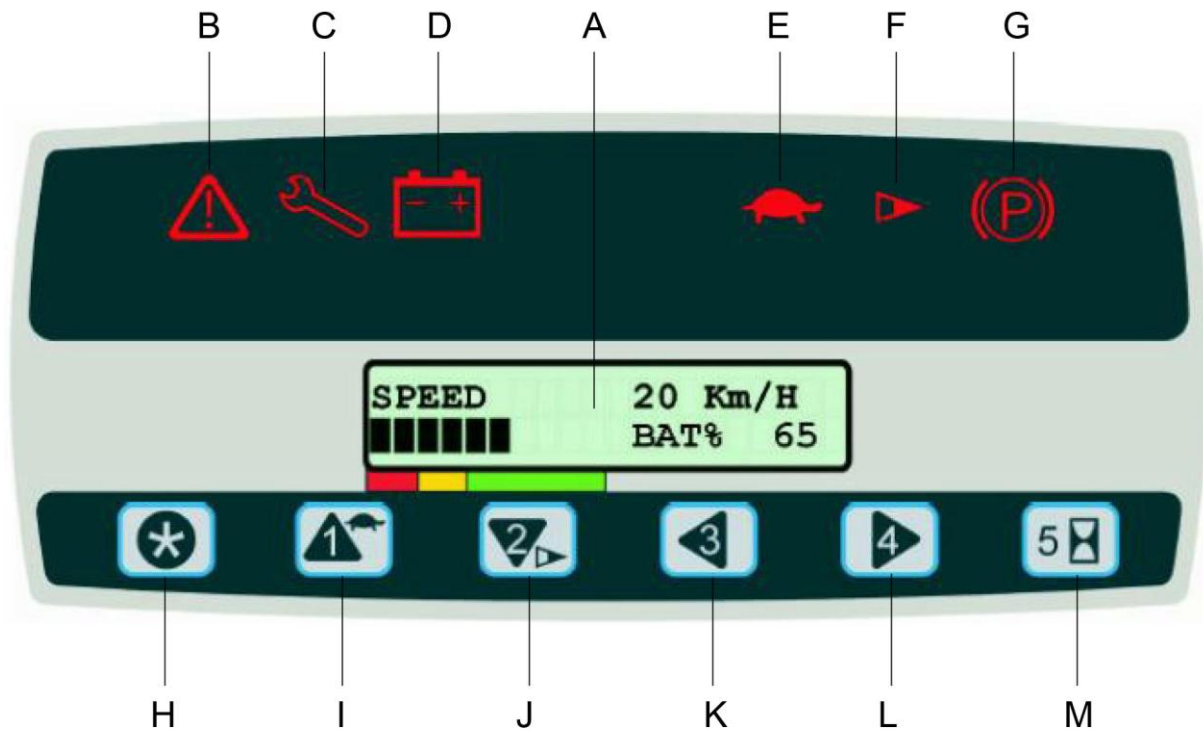
The language has been set up .

Note: this instrument supports two languages of Chinese and English, it will set to your wanted language and if you want to switch the language, please refer to the above example for operation.

CPD10/15/18/20/25/30/35-AD2

CPD25-ALD2

CPD10/15/18/20/25/30/35-AD2-I



Item	Display
A	Dashboard display LCD
B	Communicate indicator
C	Error indicator
D	Low battery warning
E	Speed limited indicator
F	Accelerate indicator
G	Parking brake indicator
H	Entrance button
I	Speed limited button
J	Accelerator limited button
K	Backup button
L	Backup button
M	Switch button of hour indication

Dashboard display LCD [A]



When turn on the key switch, the system will self-diagnose, the lamp will lights on one by one. After self-diagnose, LCD will display truck speed and battery capacity. You can know your truck's working condition through the LCD dashboard.

Communicate indicator [B]



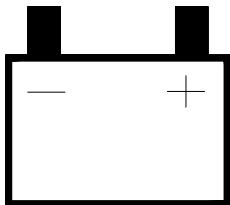
Only lights on when record program, usually it is no use.

Error indicator [C]



When operation is wrong or the truck is in trouble, error code will display on the dashboard. The error indicator lights on.

Low battery warning [D]



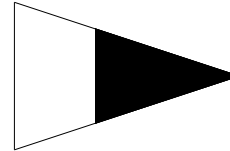
When battery quantity is lower than 20% of maximum capacity, the indicator lights are on, at the same time, buzzer beep. When LED shows no power, please charge battery as quick as possible.

Speed limited indicator [E]



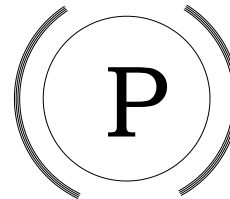
When this lamp lights, it meanings the truck working at low speed mode. The maximum speed of truck decreased. Press button 1, you can switch the high speed and low speed mode.

Accelerate indicator [F]



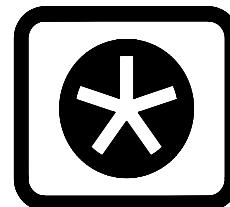
When this lamp lights on, it means the truck working at low acceleration mode. The maximum acceleration decreased. Press button 2, you can switch the high acceleration and low acceleration mode.

Parking brake indicator [G]



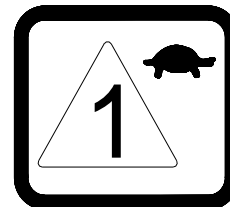
When pulling on the parking brake lever, this lamp lights on.

Entrance button [H]



This button is no use for operator.

Speed limited button [I]



Press this button to switch the high speed and low speed.

Accelerator limited button [J]



Press this button to switch the high acceleration and low acceleration.

Backup button [K]



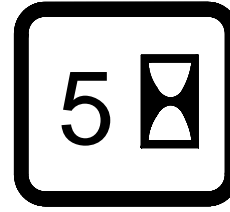
This button is no use for operator.

Backup button [L]

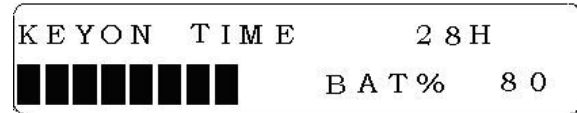


This button is no use for operator

Switch button of hour indication [M]



Push this button, it will display the total hours of truck, as follow figure:



Push again, it switch to the total traction hour.



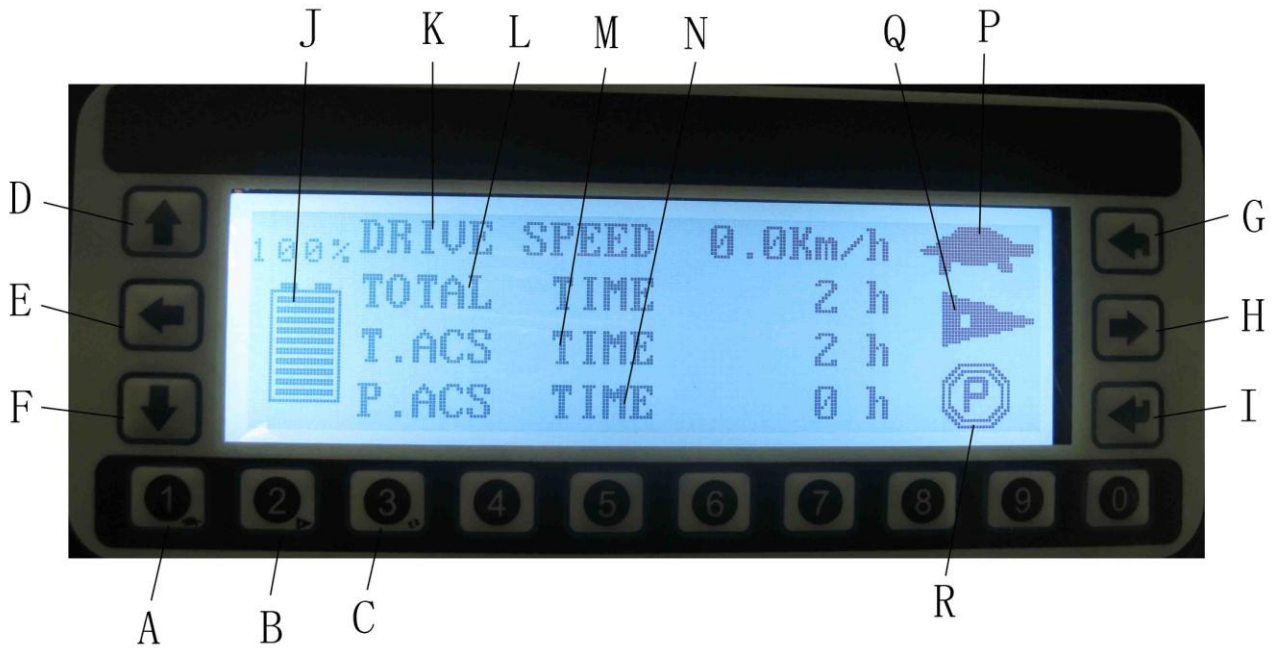
Push the button once again, it switch to speed display mode.

CPD10/15/18/20/25/30/35-AD2

CPD25-ALD2



CPD25-AD2-A




CPD10/15/18/20/25/30/35-AD2-I





No.	Name/ Symbol	No.	Name/ Symbol
A	Turtle Speed Button	J	Battery Level Display
B	Acceleration Button	K	Traveling Speed Display
C	Window-Switch Button	L	Total time Display
D	Up Button	M	Traction ACS Time Display
E	Left Button	N	Pump ACS Time Display
F	Down Button	P	Turtle Speed Symbol
G	Back Button	Q	Half Acceleration Symbol
H	Right Button	R	Parking Brake Symbol
I	Confirm Button	Digital Button	Number 0~9


Turtle Speed Button [A]



	
Turtle Speed Button	Turtle Speed Symbol

Turtle speed mode can be open and closed by pressing the Turtle Speed Button . When open, it is in slow traveling speed and only takes half of the normal traveling speed. Meanwhile the Turtle Speed Symbol  would appear in the upper right corner of the instrument. When closed, the traveling speed turns back to normal and the window of Turtle Speed Symbol  would disappear.




Acceleration Button [B]


	
Acceleration Button	Half Acceleration Symbol

Traveling acceleration speed can be switched between the normal speed and slow speed by pressing the Acceleration Button  (Accelerated speed is half of the normal speed).


When acceleration speed is in half, Half Acceleration Symbol  would appear on the right side of the window. When it's turned back to normal acceleration speed, window of Half Acceleration Symbol  would disappear.



Window-Switch Button [C]

	Window-Switch Button
	
Only traveling speed and battery level can be displayed in this window	
	
Driving status of the forklift is shown in this window.	


It can be switched to the speed and battery level window and forklift driving status window by pressing the Window-Switch Button .




Up Button [D]

	Up Button
--	-----------


By pressing the Up Button , the cursor can be moved up by one step or the number be added by one. When the cursor reaches on “+” or “-”, the two symbols can be switched by pressing the Up Button .



Left Button [E]

	Left Button
--	-------------


The cursor can be moved to left side by pressing the Left Button . If the cursor reaches on the “Cancel” button on the parameter modification window, it can be removed to “Confirm” button by pressing the Left Button . Meanwhile if the cursor reaches on the “Confirm” button, by pressing the Left Button , it can be removed to parameter number at far-right side.


Down Button [F]

	Down Button
---	-------------

By pressing the Down Button , the cursor can be moved down by one step or the number be decreased by one. When the cursor reaches on “+” or “-”, the two symbols can be switched by pressing Down Button .



Back Button [G]

	Back Button
--	-------------

It plays different functions by pressing the Back Button  when in different windows. Basically speaking, it can function as follow, No.1: to have the window turn back the menu interface or back to the home page. No.2: to delete the numbers. No.3: to move the cursor the cancel button.


Right Button [H]

	Right Button
--	--------------

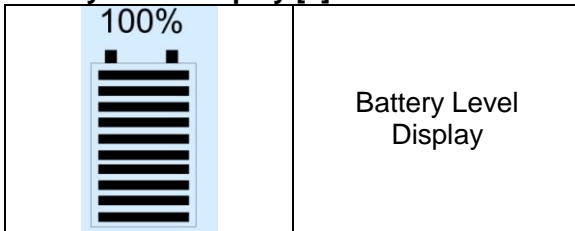
By pressing the Right Button , the cursor can be moved to the right by one step. When the cursor reaches on “Confirm” or “Cancel” in the parameter modification window, the cursor can be remove to the parameter number at far-left side or “+” or “-” next to the number by pressing the Right Button .

Confirm Button [I]



It plays different functions by pressing the Confirm Button  when in different windows. Basically speaking, it can function as follow: No.1: to enter the submenu page. No.2: to confirm the modification. No.3: to switch the password entrance window.

Battery Level Display [J]



This symbol demonstrates the battery level. The more of the lines in the figure, there will be more remaining battery and the higher of the remaining battery percent there will be. When the remaining battery drops to a certain value, there will be flashing light if the battery percentage drops to 25% which is set as the default values to flash. If it drops to 15%, not only there will be flash, but also with the fault code out of the instrument window and alarm as well. To modify the battery percentage to flash, go to "6.BDI SET" → "6.2 BDI LED %"; To modify the battery percentage to alarm, go to "6.BDI SET" → "6.3 BDI SLOW %".




Caution:

- It's suggested to charge when the remaining battery percent is less than about 30% so as to postpone the life cycle of the battery.
- To charge the battery monthly for trucks are parking for a prolonged period. Take out the plug when finished.

Traveling speed Display [K]



Driving speed can be shown when the forklift is running. To take a glance at the driving speed, the window can be switched to the following by pressing the Window-Switch Button , see the window switch as follow.










Total time Display[L]、Traction ACS Time Display[M]、 Pump ACS Time Display[N]





TOTAL TIME	2 h
T. ACS TIME	2 h
P. ACS TIME	0 h



Total time Display、 Traction ACS Time Display and Pump ACS Time Display can be shown in the menu interface. Total time Display is used to remind the operator or administrator to inspect and maintain the forklift timely.

Turtle Speed Symbol[P]、 Half Acceleration Symbol[Q]、 Parking Brake Symbol [R]

	Turtle Speed Symbol
	Half Acceleration Symbol
	Parking Brake Symbol



By pressing the Turtle Speed Button , the forklift drives in a slowing speed and meanwhile the Turtle Speed Symbol  would appear in the window. If the Turtle Speed Button  is pressed again, the window of Turtle Speed Symbol  would disappear and the traveling speed turns to the normal.

By pressing the Acceleration Button , the acceleration speed is decreased to a half and the Half Acceleration Symbol  would appear in the window. If the Acceleration Button  is pressed again, the window of Half Acceleration Symbol  would disappear and the traveling speed turns to the normal.

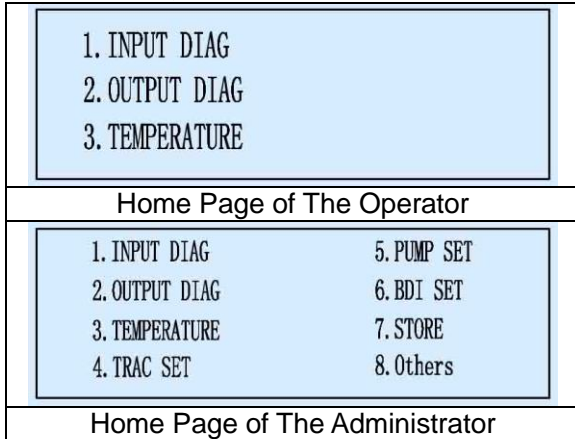
If Parking Brake Symbol  appears on the window, it means the forklift is in a parking brake status. To press the hand braking button and pull the brake forward, if the Parking Brake Symbol  disappears in the window, it can be safely concluded that the parking brake is released.

Digital Button 0 to 9



Type the right number, Digital Button 0 to 9, in the password entry window or password modification window. Type the wanted number to the parameter on the parameter modification window. For instance, in the following two windows, by removing the cursor to the Up Button  or Down Button  or typing the corresponding number, to select the

wanted items, both can function well.





System Password


Turn the key and start the instrument. Enter the system password window. The initial password is 00000.

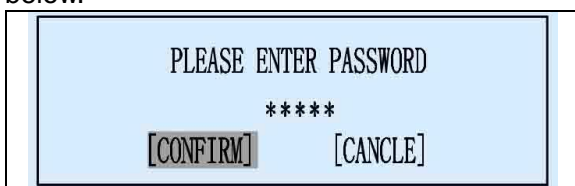




Caution:



- If the three wheel counterweight truck is equipped with turning sensor, press  button in the home page, the window can be switched to turning sensor display.
- If the window shows up fault code when the truck is started, do not operate the truck until the fault is corrected. If window shows up the fault code  when in the process of operation, stop the truck immediately and correct the fault before restart the truck. It's prohibited to operate a truck with faults.

Steps to view the parameter of the forklift— for operator

1. Open the password entry window by pressing the Confirm Button , see the figure below.



By pressing the Left Button  or Right Button , removing the cursor to the "Cancel"

button and pressing the Confirm Button , the operator can leave the password entry window. By pressing the Back Button  twice, it's also useful to leave the window.






Caution:

- The original password is 99966. To reset the password, the operator needs to enter the administrator home page→8. Others→8.1 set operator password.
- To view the forklift parameter is allowed in the operator home page but it's forbidden to modify the parameter.

2. The operator can log in the operator home page window through typing the password by pressing the digital numbers 0 to 9. See as follow.






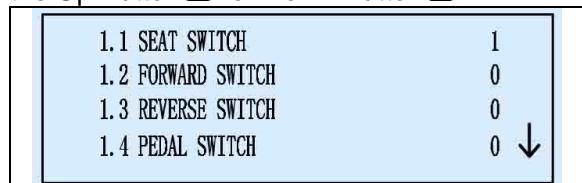
3. The operator can remove the cursor to the target items by pressing the Up Button  or Down Button . It is also accessible to remove the cursor to the target items by typing the corresponding number and pressing the Confirm Button  to enter the submenu interface. Operator is only allowed to view the parameter and he is not authorized to modify the parameter. Here below can manifest the windows of input diag., output diag. and temperature. The parameter of the above windows varies from other each as the configuration and the use of the truck differs.

Input Diag. Submenu Interface Window

1. To remove the cursor to "INPUT DIAG".



2. Enter the Input Diag. Submenu Interface Window by pressing the Confirm Button . Windows can be switched directly by pressing the Up Button  or Down Button .




1.5 PARKING SWITCH	1	↑
1.6 PUMP SWITCH 1	0	
1.7 PUMP SWITCH 2	0	
1.8 PUMP SWITCH 3	0	↓

1.9 PUMP SWITCH 4	0	↑
1.10 ACCEL SWITCH	1	
1.11 ACCELERATION	222	
1.12 PUMP POT	385	

Output Diag. Submenu Interface Window

1. To remove the cursor to "OUTPUT DIAG".

1. INPUT DIAG
2. OUTPUT DIAG
3. TEMPERATURE


2. Enter the Output Diag. Submenu Interface Window by pressing the Confirm Button .

2.1 MAIN CONTACTOR	1
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Temperature Diag. Submenu Interface Window


1. To remove the cursor to "TEMPERATURE".

1. INPUT DIAG
2. OUTPUT DIAG
3. TEMPERATURE

2. Enter the Temperature Diag. Submenu Interface Window by pressing the Confirm Button .





3.1 TRACT MOTOR TEMP	29
3.2 PUMP MOTOR TEMP	0
3.3 TRACT ACS TEMP	28
3.4 PUMP ACS TEMP	0

Steps to view the parameter of the forklift— for Administrator

1. Open the password entry window by pressing the Confirm Button , the initial password for the administrator is 55577. See as follow.




PLEASE ENTER PASSWORD

[CONFIRM] [CANCLE]

By pressing the Left Button  or Right Button , removing the cursor to the "Cancel" button and pressing the Confirm Button , the administrator can leave the password entry window. By pressing the Back Button  twice, it's also useful to leave the window.

2. The administrator can log in the administrator home page window through typing the password by pressing the digital numbers 0 to 9. See as follow.




1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others

3. The administrator can remove the cursor to the target items by pressing the Up Button  or Down Button . It is also accessible to remove the cursor to the target items by typing the corresponding number and pressing the Confirm Button  to enter the submenu interface. The administrator is not only allowed to view the parameter but also permitted to modify the parameter on the basis that the he can assure the modified parameter is accurate. Generally, it is not permitted to modify the parameter. Here below can manifest the eight submenu interface windows. The parameter of the above windows varies from other each as the configuration and the use of the truck differs.

1. Input Diag. Submenu Interface Window

1) To remove the cursor to "INPUT DIAG".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others

2) Enter the Input Diag. Submenu Interface Window by pressing the Confirm Button . Windows can be switched directly by pressing the Up Button  or Down Button .

1.1 SEAT SWITCH	1	
1.2 FORWARD SWITCH	0	
1.3 REVERSE SWITCH	0	
1.4 PEDAL SWITCH	0	↓


1.5 PARKING SWITCH	1	↑
1.6 PUMP SWITCH 1	0	
1.7 PUMP SWITCH 2	0	
1.8 PUMP SWITCH 3	0	↓

1.9 PUMP SWITCH 4	0	↑
1.10 ACCEL SWITCH	1	
1.11 ACCELERATION	222	
1.12 PUMP POT	385	

2. Output Diag. Submenu Interface Window

1) To remove the cursor to "OUTPUT DIAG".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others


2) Enter the Output Diag. Submenu Interface Window by pressing the Confirm Button .

2.1 MAIN CONTACTOR	1
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3. Temperature Diag. Submenu Interface Window

1) To remove the cursor to "TEMPERATURE".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others


2) Enter the Temperature Diag. Submenu Interface Window by pressing the Confirm Button .



3.1 TRACT MOTOR TEMP	29
3.2 PUMP MOTOR TEMP	0
3.3 TRACT ACS TEMP	28
3.4 PUMP ACS TEMP	0

4. Traction Set Submenu Interface Window

1) To remove the cursor to "TRAC SET".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others

2) Enter the Traction Set Submenu Interface Window by pressing the Confirm Button .

The cursor can be moved to up and down line by line by pressing the Up Button  or Down Button .

4.1 T. MAX SPEED	3300	
4.2 T. MAX ACCEL	15	
4.3 T. NEUTRAL BRAKE	20	
4.4 T. REVERSE BRAKE	30	↓




4.5 T. PEDAL BRAKE	20	↑
4.6 T. TURTLE VALUE	1900	
4.7 T. POWER VALUE	5	
4.8 T. SPEED PRECISION	0	↓

When "4.8 T.SPEED PRECISION" value is 1, the speed display is accurate to one decimal place. When "4.8 T.SPEED PRECISION" value is 0, the speed display is accurate to integer value.

5. Pump Set Submenu Interface Window

1) To remove the cursor to "PUMP SET".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others

2) Enter the Pump Set Submenu Interface Window by pressing the Confirm Button . The cursor can be moved to up and down line by line by pressing the Up Button  or Down Button .


5.1 P. MAX SPEED	3500	
5.2 P. LIFT ACCEL	50	
5.3 P. LIFT SPEED	3300	
5.4 P. CREEP SPEED	400	↓

5.5 P. MOTOR SPEED 1	500	↑
5.6 P. MOTOR SPEED 2	1500	
5.7 P. MOTOR SPEED 3	1500	
5.8 P. MOTOR SPEED 4	1300	

6. BDI Set Submenu Interface Window

1) To remove the cursor to "BDI SET".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others


2) Enter the BDI Set Submenu Interface Window by pressing the Confirm Button .

6.1 MIN VOLT SETTING	5
6.2 BDI LED %	25
6.3 BDI SLOW %	15

7. Store Submenu Interface Window

1) To remove the cursor to "STORE".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others




2) Enter the Store Submenu Interface Window by pressing the Confirm Button .

7.1 STORE PARAMETERS	0
7.2 RESTORE	0

8. Others Submenu Interface Window

1) To remove the cursor to "Others".

1. INPUT DIAG	5. PUMP SET
2. OUTPUT DIAG	6. BDI SET
3. TEMPERATURE	7. STORE
4. TRAC SET	8. Others

2) Enter the Others Submenu Interface Window by pressing the Confirm Button . The cursor can be moved to up and down line by line by pressing the Up Button  or Down Button .

8.1 SET OPERATER PASSWORD
8.2 SET ADMIN PASSWORD
8.3 SET STARTUP PASSWORD
8.4 LANGUAGES SETTING

Steps to set the password

1. Remove the cursor to the line of "SET OPERATER PASSWORD", "SET ADMIN PASSWORD" or "SET STARTUP PASSWORD" when the password needs to be revised.

8.1 SET OPERATER PASSWORD
8.2 SET ADMIN PASSWORD
8.3 SET STARTUP PASSWORD
8.4 LANGUAGES SETTING


Remove the cursor to this line when operator password needs to be revised.

8.1 SET OPERATER PASSWORD
8.2 SET ADMIN PASSWORD
8.3 SET STARTUP PASSWORD
8.4 LANGUAGES SETTING

Remove the cursor to this line when administrator password needs to be revised.




8.1 SET OPERATER PASSWORD
8.2 SET ADMIN PASSWORD
8.3 SET STARTUP PASSWORD
8.4 LANGUAGES SETTING

Remove the cursor to this line when startup password needs to be revised.

2. Enter the submenu interface window of "SET OPERATER PASSWORD", "SET ADMIN PASSWORD" or "SET STARTUP PASSWORD" by pressing the Confirm Button .


PLEASE ENTER OLD PASSWORD





[CONFIRM] [CANCLE]


3. Enter the old password by pressing the Left Button  or Right Button  and remove the cursor to "CONFIRM" and pressing the Confirm Button . A new window would pop up to request the new password. See as follow.

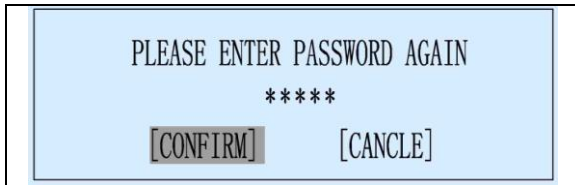
PLEASE ENTER NEW PASSWORD


[CONFIRM] [CANCLE]

If new password happens to enter incorrectly during the process of entering the new password, the incorrect password can be deleted one by one by pressing the Back Button .

There are two ways to leave the password window. The first one is to delete the password one by one by pressing the Back Button  and press it double times at last. The second one is to remove the cursor to "CANCLE" by pressing the Left Button  or Right Button  and then press the Confirm Button .

4. After entering the new password, remove the cursor to "CONFIRM" and press the Confirm Button . Enter the password again.



5. After entering the password again, remove the cursor to “CONFIRM” and press the Confirm Button . Window shows the new password is set successfully and it will return to the last interface window.


⚠ Caution

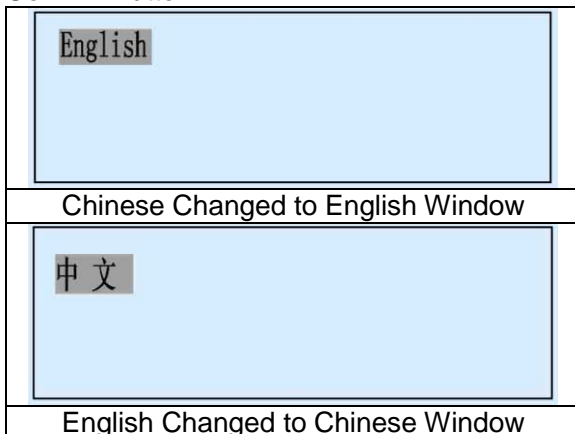
- The password is composed of 5 digital numbers. The passwords of operator, administrator or startup the system should be remembered. The administrator password should be kept safely and it's prohibited to expose to others.



Steps to set languages for administrator

1. Remove the cursor to the line of “LANGUAGES SETTING”.



2. Enter the submenu interface window of “LANGUAGES SETTING” by pressing the Confirm Button .

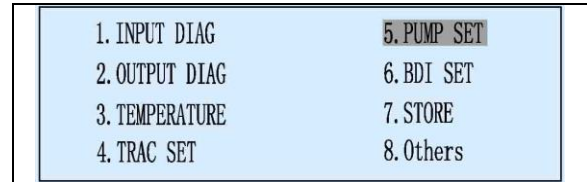





3. When the cursor reaches on “English”, language will be turn to English by pressing the Confirm Button . When the cursor reaches on “Chinese”, language will be turn to Chinese by pressing the Confirm Button .

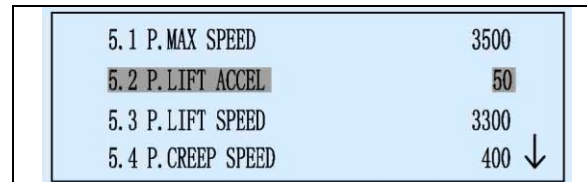
Steps to modify the parameter for administrator


The interface window of traction set, pump set, BDI set, store and others in the administrator home page can be revised. We will take the modification of “PUMP SET” → “P. LIFT ACCEL” as an example. Other parameter modification should be similar to this one.

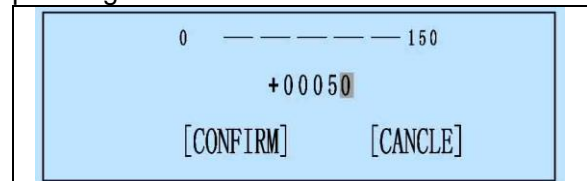
1. Remove the cursor to the line of “PUMP SET”.





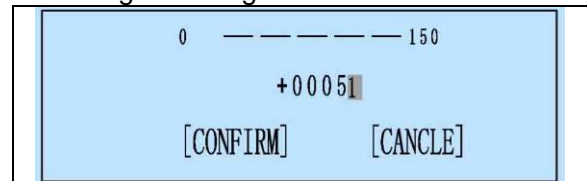
2. Enter the Pump Set submenu interface window by pressing the Confirm Button . Remove the cursor to “P. LIFT ACCEL” by pressing the Up Button  or Down Button .





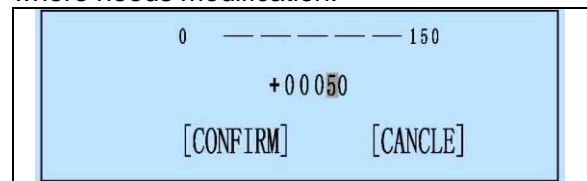
3. Enter the parameter modification window by pressing the Confirm Button .





4. Modify the parameter. When the cursor reaches on the digital number, the number can be added or decreased by pressing the Up Button  or Down Button . It's also accessible to type the number directly according to the digital button 0 to 9.

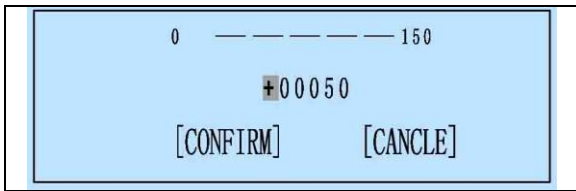




When the cursor does not point to the parameter which needs to modified , it is necessary to press the Left Button  or Right Button  and remove the cursor the position where needs modification.

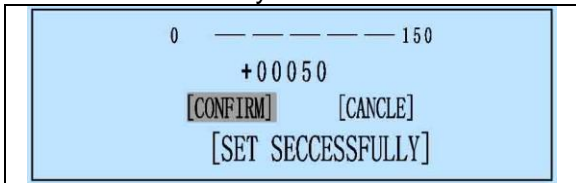




If the parameter of “+” or “-” needs to be modified, remove the cursor to the far left of




the parameter and press the Up Button  或 Down Button . It can be used to switch “+” / “-”.





When the parameter is modified correctly, press the Confirm Button  and remove the cursor to “CONFIRM” and press the Confirm Button . The window will show “SET SECCUSSFULLY” and return to the last window automatically.



When the cursor reaches on “CONFIRM”, remove it up to the parameter line and press the Right Button , the cursor would moves to the “+” or “-” or the parameter number at far left side. By pressing the Left Button , the cursor can remove to the parameter number at far right side.

When the cursor reaches on “CANCEL”, there are two ways to remove it to the parameter line. The first one is to press the Left Button , remove the cursor to “CONFIRM” and press the Left Button  again and then remove the cursor to the parameter line. The second way is to press the Right Button  and remove the cursor to the “+”/“-” at the parameter line or remove the cursor to the position at far left side.

When need to cancel the password setting and leave the window, press the Back Button , remove the cursor to “CANCEL” and press the Confirm Button , the window has returned to the last menu interface window.



Caution:

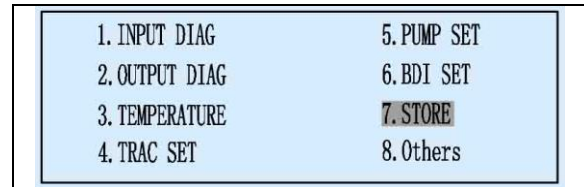
- To revise the parameter calls for prudence.
- The revised parameter can only be effective when the truck is power on. If the parameter is revised when the truck is power off, the effective parameter restored to the original one when truck is restarted.
- The revised parameter is still effective when truck is power off and restarted


as long as the parameter is saved in the parameter store controller.

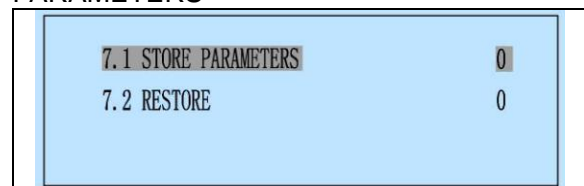
5. Parameter Store Controller


Only the parameter is stored in the controller that the parameter can be effective when the truck is power off and restarted.

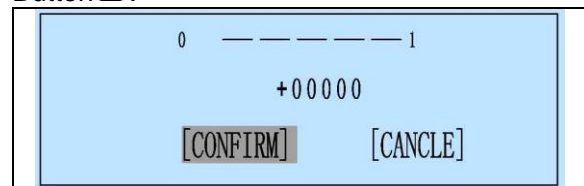
1) Remove the cursor to the line of “STORE”.




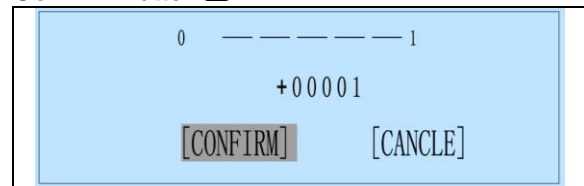
2) Enter the submenu interface window of “STORE” by pressing the Confirm Button . Remove the cursor to the line of “STORE PARAMETERS”



3) Enter the interface window of parameter modification by pressing the Confirm Button .

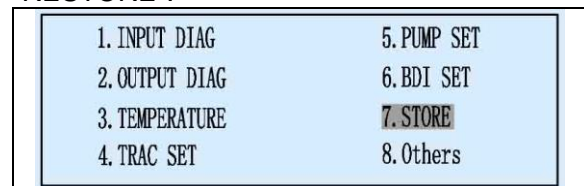



4) Modify the parameter to “1” and remove the cursor to the line of “CONFIRM” and press the Confirm Button .

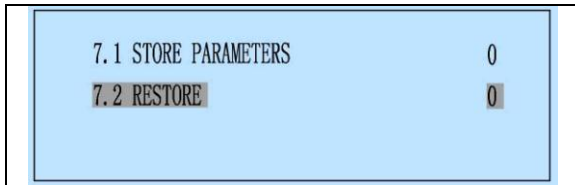



Restore Factory Setting

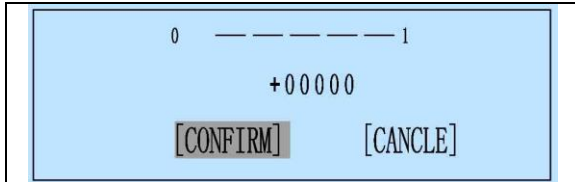
1. Remove the cursor to the line of “RESTORE”.




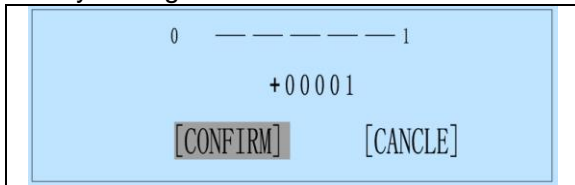
2. Enter the submenu interface window of “STORE” by pressing the Confirm Button . Remove the cursor to the line of “RESTORE”.



3. Enter the interface window of parameter modification by pressing the Confirm Button .



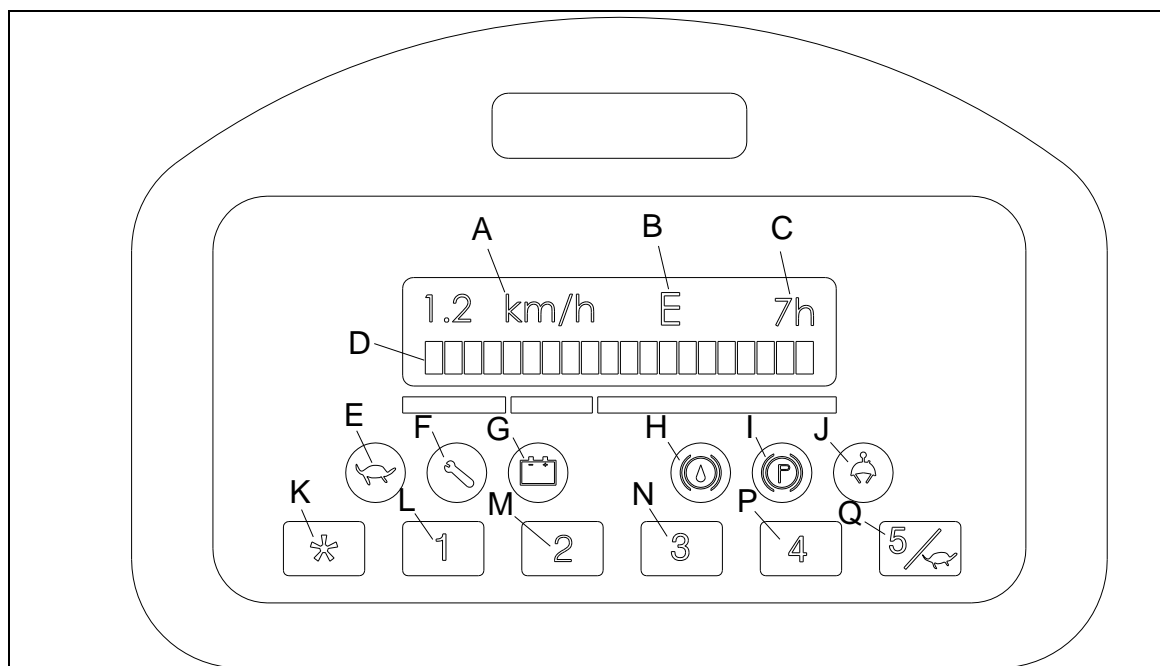
4. Modify the parameter to "1" and remove the cursor to the line of "CONFIRM" and press the Confirm Button . If "SET SECCUSSFULLY" shows in the window, the factory settings are well restored.



 **Caution**

- Input software may be different due to different truck models. If there is discrepancy with the actual LCD interface, take it as standard. Operation is the same.

CPD10/15/18/20/25/30-AZ3	CPD25-ALZ3	CPD10/15/18/20/25/30-AZ4	CPD25-ALZ4
CPD10/15/18/20/25/30-AZ4-E	CPD25-ALZ4-E	CPD40/45/50-AZ4	
CPD10/15/18/20/25/30-AZ3-E	CPD25-ALZ3-E		



No.	Display	No.	Function
A	Travel speed display	K	Enter key
B	Operating mode display	L	S mode shift key/up key /number key
C	Service hour display(Non -E series forklift truck) Steering angle display (For -E series forklift truck)	M	P mode shift key /down key /number key
D	Battery power display	N	E mode shift key /left key/ number key /return key
E	Crawl speed indicator	P	Right key /number key
F	Fault indicator	Q	SPE mode shift key /Escape key /number key
G	Low battery indicator		
H	Oil pressure indicator		
I	Parking brake indicator		
J	Seat indicator		

Travel speed display[A]



It displays vehicle travelling speed in normal work.

Operating mode display[B]



There are four operating modes: “S”, “P”, “E” and “SPE”, and the button to switch the operating mode is “1” key, “2” key, “3” key, “5” key respectively. When the operating mode is not changed, the default operating mode is E mode.

S mode: Super mode allows for the fastest acceleration and deceleration and the maximum grade ability. It is used for climbing steep inclines and handling a large number of goods in a short period of time. However, it consumes the most power and should therefore be used sparingly.

P mode: Power mode offers slightly lower performance than Super mode and is used for long-distance transport situations that require greater power or speed.

E mode: Economy mode offers optimized all-round performance and energy saving. It is suitable for prolonged operation on a single charge and is recommended for normal work.

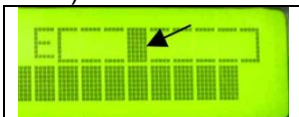
SPE mode: Safe mode limits the maximum travel speed to about 7 km/h. It is used for working in congested warehouses and confined spaces. In this mode, the slow speed indicator will be illuminated.

Service hour display [C](Non -E series forklift truck)



Display the truck accumulated service hour, and is calculated by whole hour.

Steering angle display[C] (For -E series forklift truck)



The arrow pointed cursor position indicates the steering angle. The cursor in the middle position of the steering angle, indicates the steering angle is 0; cursor in the left position, indicates turning left, on the contrary, indicates turning right. Compared to the middle position, the steering angle turns greater with the increasing of the cell numbers.

Battery power display[D]



It displays the remaining battery capacity. The residual capacity is reduced with the reducing of cell numbers. When the residual power is less than 20%, the low battery indicator illuminates. When the residual power is less than 10%, the fault indicator illuminates.



Caution:

- Too low battery power will influence the service life of the battery. Charge the battery once the low battery indicator illuminates.

Fault code display



In the event of a controller failure or operating error, the instrument displays fault, and the indicator illuminates. There are two lines in the fault interface: the first line displays the fault code; the second line displays the fault module code.



Warning:

- Do not operate the faulted truck. Operate until the fault is solved.

Crawl speed indicator [E]



Press button“5”, SPE Mode is started, and the crawl speed indicator illuminates.

Fault indicator [F]



In the event of a controller failure or operating error, this lamp will illuminate and a fault code will be displayed on the instrument.

Low battery indicator[G]



The default system parameter setting residual power is below 20%, this lamp will illuminate. Charge timely after the lamp illuminates.

Oil pressure indicator [H]



This indicator is useless to electric forklift.
Parking brake indicator [I]



This lamp illuminates whenever the parking brake is applied.
Seat indicator [J]



This lamp illuminates whenever the driver leaves the seat, indicating that the seat switch is OFF. At this point, the vehicle cannot move or lift. This feature requires the seat to be fitted with OPS.

Enter key [K]



The enter key is for confirmation. Press it twice continuously, enter password enter interface, and the initial password is 55555.

Number 1 key [L]



Functions of this key are as follows:

- 1) Switch the operating mode to S mode;
- 2) Menu up key;
- 3) Number key or number up key.

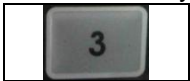
Number 2 key [M]



Functions of this key are as follows:

- 1) Switch the operating mode to P mode;
- 2) Menu down key;
- 3) Number key or number down key.

Number 3 key [N]

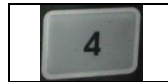


Functions of this key are as follows:

- 1) Switch the operating mode to E mode;
- 2) Cursor left key;
- 3) Cursor shifts to the left, return the last interface;

4) Number key.

Number 4 key [P]



Functions of this key are as follows:

- 1) Cursor right key;
- 2) Number key.

Number 5 key [Q]



Functions of this key are as follows:

- 1) Switch the operating mode to SPE mode, and the crawl speed indicator illuminates;
- 2) Escape key;
- 3) Number key.



Caution:

- As the instrument is in different interfaces, even pressing the same key may realize different functions, key “*”, “1”, “2”, “3”, “4” and “5” are subject to the actual.

Password process:

Add/off/edit/delete password

1. Press enter key “*” twice continuously. Pop up password input interface as follows:



2. Enter password.

3. Turn the interface to “PASSWORD”, press enter key “*”.

4. Press number “1” key and “2” key for page turning, the interface will appear: “ADD PASSWORD”, “OPERATOR PASSWORD OFF”, “EDIT PASSWORD”, “DELETE PASSWORD”. Process the corresponding password according to actual need.



Caution:

- The initial password is 55555. Do remember the revised password or newly added password.
- When setting “OPERATOR PASSWORD OFF”, switch between

“OFF” and “ON” by pressing number key “1” or “2”. When “OPERATOR PASSWORD ON” is set, start the forklift, and then the interface pops up “ENTER PASSWORD”.

- When to delete operator password, press number key “1” or “2” in “DELETE PASSWORD” for page turning, and delete the needed one.

Enter main menu

1. Press enter key “*” twice continuously. Pop up password input interface as follows:



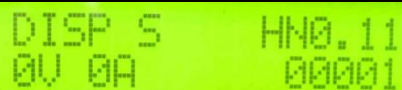
ENTER PASSWORD

2. Enter password.

3. Turn the interface to “ZAPI CONSOLE”, press enter key “*”. Pop up the following interface:



CONNECTING TO...
DISP S HN0.11



DISP S HN0.11
0V 0A 00001

Press “*” after popping up the interface, enter the next interface until it pops up the main menu.



Caution:

- Different forklift, different controller installed software, so the interface displayed information may be different, take the actual as standard.

4. Pop up main menu



* MAIN MENU *
PARAMETER CHANGE

5. Press number “1” key and “2” key for page turning, the menu interface will appear: “PARAMETER CHANGE”, “TESTER”, “ALARMS” and “PROGRAM VACC”. Press “*” and enter the interface to check or revise.

6. If the parameter has been adjusted or any other change, escape after pressing number “5” key, the interface pops up as follows:



ARE YOU SURE ?
YES=ENTER NO=OUT

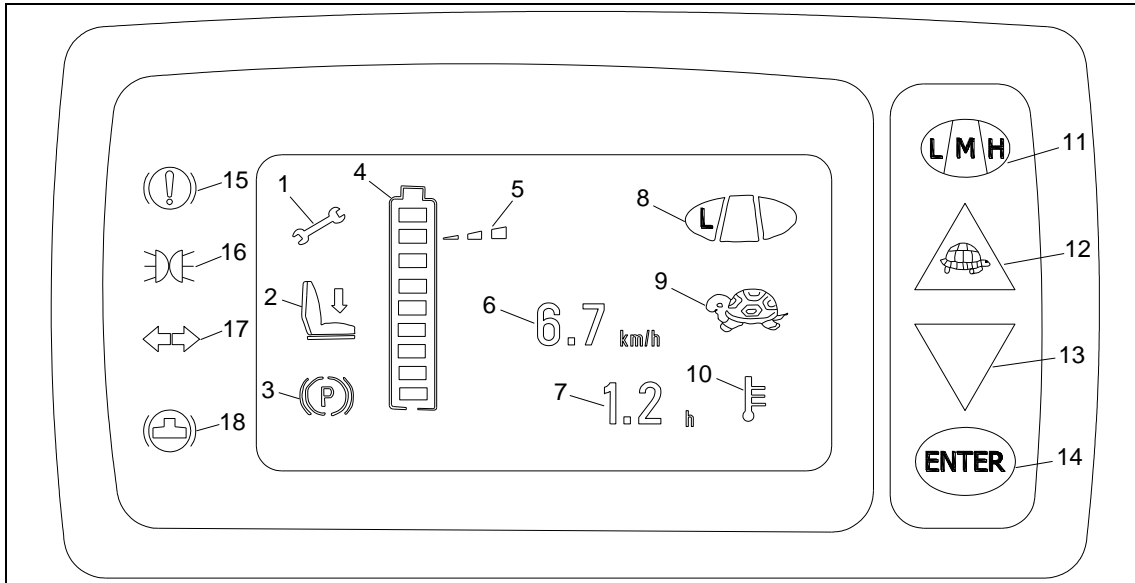
- Press enter button “*” to save, restart the forklift, and the revised parameter still remains.

- Press number “5” escape key, do not save the revised parameter, restart the forklift, and recover the previous parameter.



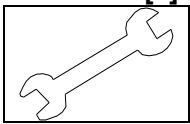
Warning:

- It's prohibited to revise the parameter by users, if needed, get professionals for debugging.



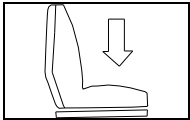
No.	Designation or indicator or remark	No.	Designation or indicator or remark
1	System maintenance overtime warning indicator	10	Overheat indicator
2	Seat switch indicator(option)	11	Energy mode L-M-H key/ mode interface switch
3	Parking brake indicator	12	Crawl speed key/up key
4	Battery level indicator	13	Down key/ switch among cumulative time, accumulated mileage and cargo weight
5	Travel speed indicator	14	Enter diagnostic mode key/return main screen key
6	Travel speed numerical display	15	Fault indicator
7	Cumulative time/accumulated mileage/cargo weight	16	Head light indicator (No this function)
8	Energy mode display	17	Turn light indicator (No this function)
9	Crawl speed symbol	18	Low braking oil indicator (No this function)

System maintenance overtime warning indicator [1]



The system has set how often to check maintenance, once the set time is reached, the instrument will appear this indicator to alert the user for inspection. The truck does not have this function once this function is turned off.

Seat switch indicator (option) [2]



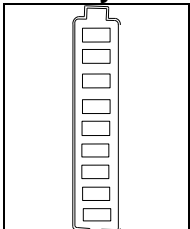
When people leave the seat, the instrument displays this indicator, indicating the seat switch is off, no truck travel or lift. Only truck equipped with OPS seat has this function.

Parking brake indicator[3]



When pulling up the hand brake, instrument displays this indicator. Only press the button on the parking brake while pushing it forward to the end, and then the parking brake indicator disappears from the instrument.

Battery level indicator[4]



This symbol shows the remaining battery power. The more the number of cells, indicate that more remaining battery power.

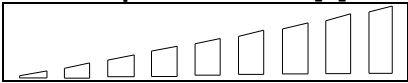
When the remaining battery power is less than 20%, the number of cells is two, and then the remaining battery power indicator is blinking, while lifting speed is limited to 50% the minimum speed state. When the remaining battery power is 10%, the instrument display shows a fault code, the truck traveling speed is by half, without lifting function at this time.

⚠ Caution:

- When the remaining battery power displays two cells, then the remaining battery power is about 20% to 30%, stop working, charge the battery in time, otherwise the battery life will be

shortened greatly.

Travel speed indicator[5]



Travel speed fast or slow indicator. Cell numbers are increased with the increasing travel speed. Nine cells show the maximum travel speed; zero cell shows zero speed.

Travel speed numerical display[6]



Display the truck travel speed.

Cumulative time/accumulated mileage/cargo weight [7]

The instrument has the function of displaying cumulative time, accumulated traveling mileage and cargo weight. In the main instrument screen, press down the number 13 button for a long time (about 3S), it will switch among cumulative time, accumulated mileage and cargo weight circularly.

Cumulative time display



It displays truck total running time.

Accumulated mileage display



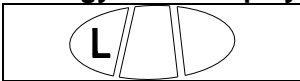
It displays truck total running mileage.

Cargo weight display



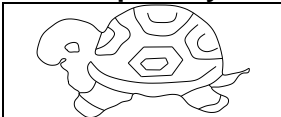
It displays the cargo weight. Forklift does not have this function generally.

Energy mode display[8]



Three kinds of energy mode, L (economic), M (standard) and H (high), is switched over circularly by pressing the number 11 L / M / H button. L-type, M-type and H-type energy mode, their power is enhanced successively, but continuous working time is shortened in turn. In general, we recommend that customers can choose L-type or M-type energy mode. When climbing steep slope or other conditions, we need a larger force, choose H-energy mode.

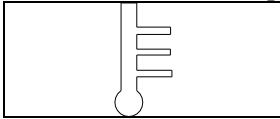
Crawl speed symbol[9]



When pressing the number 12 crawl speed

button, the instrument display shows the crawl speed symbol, indicating the truck starts crawl speed mode. When the truck is in crawl speed mode, whatever the truck is at the L-type or M-type or H-type, walking motor speed decreases, and the truck travels slowly. Crawl speed mode has no effect on the pump motor performance.

Overheat indicator[10]

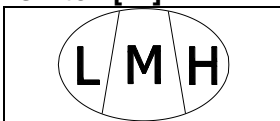


When the temperature exceeds the system set temperature, the instrument will display the overheat indicator. Two modules of walking and pump driver reaches 90°C, or pump motor reaches 145°C, or walking motor reaches 120°C, as long as it reaches one temperature, the instrument will display this symbol. It shows the overheating of the truck, stop operate the forklift until it is cooled. In the diagnostic mode, when you check the motor or controller temperature related parameter, the instrument interface will also display this symbol.

! Caution:

- Temperature protection value of walking motor and pump motor can be modified by connecting the PC software and controller.

Energy mode L-M-H key/mode interface switch [11]

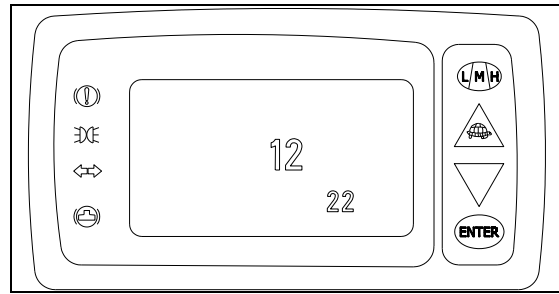


The button has two functions: energy mode switch and three kinds of interface modes switch.

In the main display screen, press the L / M / H key, you can see the energy mode L-type, M-type and H-type switch over circularly on the right top of the screen.

When pressing number 14 ENTER key with long time (approximately 5s), the instrument enters the diagnostic mode, then press the number 11 L / M / H key, the screen will be circularly switched over among fault history query mode interface, software version mode interface and vehicle parameter browse mode interface.

Fault history query mode interface

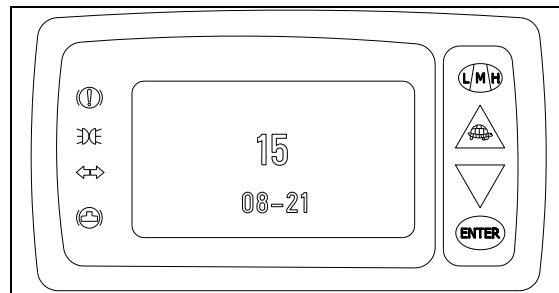


The top number indicates the fault code, and the below number indicates the fault incurred time. Take the fault interface as an example, the fault code is 12, and the forklift has appeared this failure at the 22nd hour of accumulated operation. Check the recent 10 fault codes by pressing no.12 up key or no.13 down key.

! Caution:

- The instrument displays different fault code for different fault incurred.
- The same fault appears, but the incurred time is different, when checking the fault history, you may find that the same fault code but with different fault incurred time on the interface.

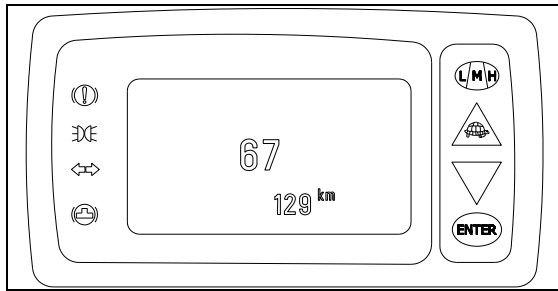
Software version mode interface



This screen displays the software version time is August 21, 2015. Due to the update of the system software, instrument displayed version time may be different, take the actual forklift as standard.

In the version mode, if you want the screen to return to the home screen, press number 14 ENTER key.

Vehicle parameter browse mode interface



The top number is the parameter index number, and the below number is the corresponding parameter values of the index number. Take the parameter browse diagram as an example, parameter index number is 67, 67 indicates the truck travelling mileage, so the truck total mileage is 129km.

Forklift has 67 parameter index numbers, check other parameter index numbers by pressing no.12 up key or no.13 down key.

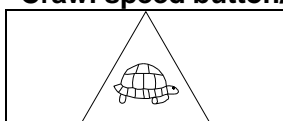
Index parameter and its corresponding meaning

Parameter index	Meaning	Unit /Remark
00	Pump motor current	0.1A
01	Current pump motor speed	rpm
02	Pump motor given speed	rpm
03	Enhance given voltage value	0.001V
04	Pressure sensor feedback value	0.001V
05	Cargo weight	Kg
06	Pump motor temperature	1°C
07	Temperature of pump motor diver module	1°C
08	Sampling value of battery voltage	
09	Sampling value of Bus voltage	
10	Sampling value of alternate sampling voltage 1	0.001V
11	Sampling value of alternate sampling voltage2	0.001V
12	Sampling value of alternate sampling voltage 3	0.001V
13	Voltage value of contactor negative coil	0.001V
14	Feedback voltage value of brake pedal	0.001V
15	Battery voltage value	0.1V
16	Drive motor bus voltage	0.1V
17	Pump motor bus voltage	0.1V
18	Drive motor current	0.1A
19	Current drive motor speed	rpm
20	Drive motor given speed	rpm
21	Feedback voltage value of accelerator pedal	0.001V

Parameter index	Meaning	Unit /Remark
22	Battery voltage classes	0~9
23	Voltage value of steering angle sensor	0.001V
24	Drive motor temperature	1°C
25	Drive motor module temperature	1°C
26	12V sampling voltage value	0.1V
27	5V voltage value	0.1V
28	Contactor negative coil state	High effective
29	Contactor positive coil state	High effective
30	Drive motor lv count value	
31	Drive motor lw count value	
32	Pump motor lv count value	
33	Pump motor lw count value	
34	Buzzer alarm state	
35	Reserve	
36	Traction motor fan state	High effective
37	Self-hold node 1 output state	High effective
38	Self-hold node 2 output state	High effective
39	Height limit switch1 input signal	Low effective
40	Height limit switch 2 input signal	Low effective
41	Auxiliary AUX4 input	High effective
42	Contactor positive coil fault	Low effective
43	Accelerator pedal start signal	High effective
44	Forward driving enable signal	High effective
45	Reversing driving enable signal	High effective
46	Seat signal input	High effective
47	Parking brake (hand brake)	Low effective
48	Service brake (foot brake)	High effective
49	Auxiliary AUX3 input	High effective
50	Auxiliary AUX2 input	High effective
51	Auxiliary AUX1 input	High effective
52	Tilting enable input signal	High effective
53	Reserve	
54	Reserve	
55	Reserve	
56	Reserve	

Parameter index	Meaning	Unit /Remark
57	Reserve	
58	Reserve	
59	Reserve	
60	Current state of lift motor	
61	Current state of traction motor	
62	Current alarm .level	
63	Current alarm .type	
64	Total traction working time	h
65	Total lifting working time	h
66	Total seat working time	h
67	Truck travelling mileage	Km

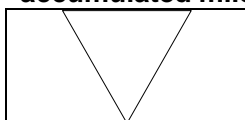
Crawl speed button/Up key[12]



This key can realize different functions under different state.

1. Switch forklift crawl speed mode. Press this key, the instrument displays the crawl speed symbol, which indicates the forklift starts the crawl speed mode and runs slowly. Press this key again, the crawl speed symbol disappears, which means the forklift is in normal running mode and resume normal running.
2. Up key. In the diagnostic mode, press this key, the screen switches to the last fault interface or last parameter index number Interface.

Down key/ switch among cumulative time, accumulated mileage and cargo weight [13]



This key can realize two functions.

1. Down key. In the diagnostic mode, press this button, the screen switches to the next fault interface or next parameter index number Interface.
2. Circularly switch among cumulative time, accumulated mileage and cargo weight. Press the key on the main screen for a

long time (about 3S), it switches among display cumulative time, accumulated mileage and cargo weight.

Enter diagnostic mode key/return main screen key [14]



Press the key, it can realize two functions under different screens.

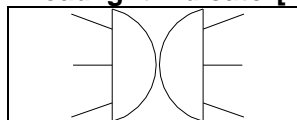
1. Enter diagnostic mode. Press the key on the main screen for long time(about 5s), and then enter diagnosis mode.
2. In the diagnostic mode, press the key, and then return main screen.

Fault indicator[15]



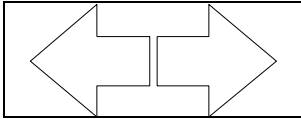
1. Under normal instrument operating conditions, when power on / off, this indicator light illuminates briefly.
2. Communication between the instrument and the control board failed: this indicator light illuminates after the communication stops for 3S.
3. Dashboard processor does not work: The indicator light illuminates.
4. This indicator light illuminates when there is a fault.

Headlight indicator[16]



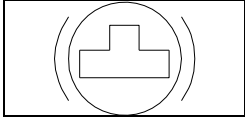
When you turn on the truck front and rear headlights, this light illuminates. The forklift does not have this function currently.

Turn light indicator[17]



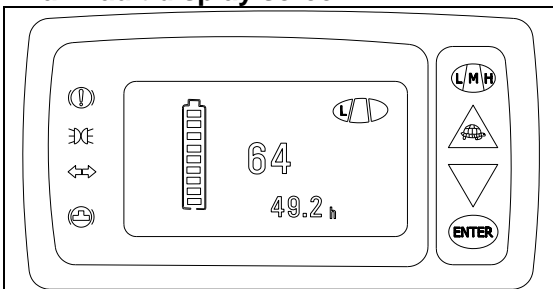
When the forklift turned on the left turn light or right turn light, this indicator illuminates. The forklift does not have this function currently.

Low braking oil indicator[18]



When the braking oil level is too low, this indicator illuminates. The forklift does not have this function currently.

Main fault display screen



When the forklift malfunctions, the main display shows a fault code while no.15 fault indicator illuminates. When the truck has multiple failures, solve the previous one, and then the screen displays the following fault code automatically. Shown as the above, 64 indicates a fault code.

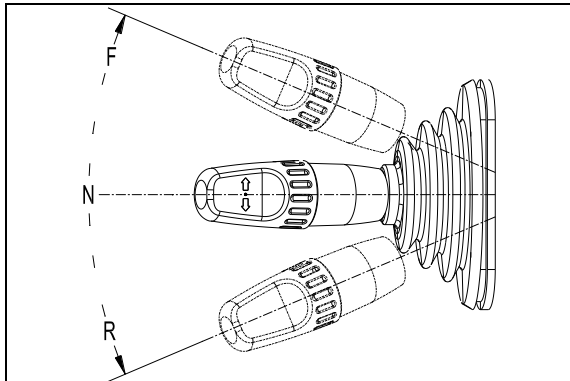
Warning:

- It can only check system parameters in diagnostic mode. System parameters are able to adjust in calibration mode. To prevent users from mistakenly adjusting system parameters and causing the forklift unable to work, it is prohibited to start the calibration mode, or activate the function of system parameter calibration through the instrument with PC software.
- For this series forklift, the instrument only opens the diagnostic mode, but not calibration mode.
- Factory reset can be performed by

the computer PC software and operated by professionals, and non-professionals are prohibited.

Controls

Travel direction switch [13]



Sets the required travel direction.

The travel direction switch is used for switching between forward and backward moves. When the travel direction switch is pushed forward and accelerator pedal pressed, the forklift trucks moved forward. When the travel direction switch is pushed backward, the forklift trucks moved backward.

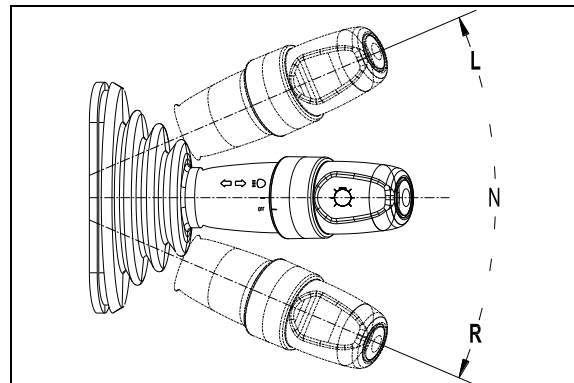
CAUTION

- While traveling, if change the travel direction switch, electric braking will operate, speed will lower until stop, then travel to the opposite direction.

WARNING

- Turning the key switch “on” does not make the forklift truck move, if the travel direction switch is not in the neutral position or the accelerator pedal is being pressed. In this case, the travel direction switch should be returned to neutral and move you foot from the accelerator pedal. Then the truck can be operated.

Combined light switch [16]



Control the turn signal lights, headlights and front small lights working condition.

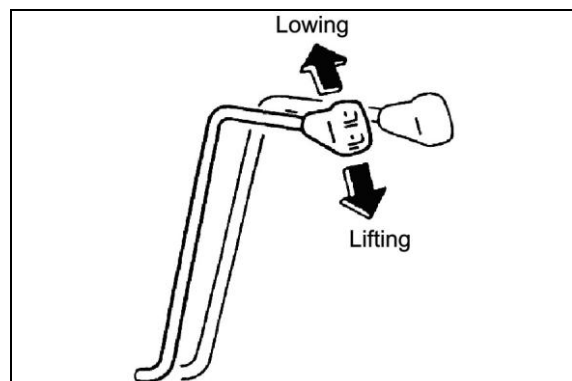
This combined light switch is composed of turning light switch and big/small lamp switch. Turning light indicates the traveling direction. When turn on the switch, the lamp flashes. The light switch has two shifts. First shift small lights on; second shift headlights and small lights both up.

Forward	Left turning lamp flashes
Neutral	Lamp goes off
Backward	Right turning lamp flashes

CAUTION

- The turn signal switch does not automatically return to the neutral position. Reset it by your hand.

Lifting lever [17]

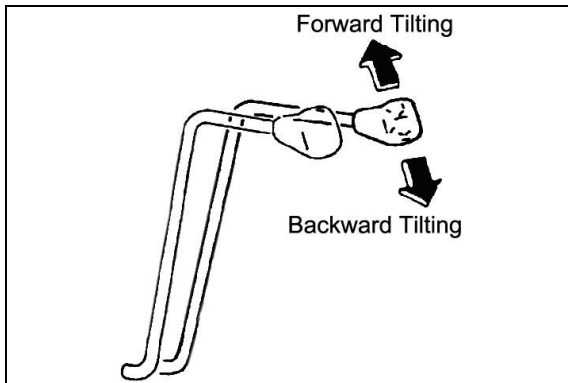


Lifts / lowers the forks.

The forks can be raised or fell by pulling

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

Tilting lever [18]



Tilts the forks forward / backward.

The forks can be tilted by operation of this tilt lever. Pulling on this lever backwards will tilt the forks backwards, and pushing it forwards will tilt the forks forwards. The tilt speed can be controlled by tilt angle of the lever.



CAUTION

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

Emergency disconnect switch [19]

Switches power supply on and off.

When happen emergency, presses down the emergency disconnect switch, and then the main power of the truck will be cut off, the truck stops working.



CAUTION

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

Parking brake lever [20](1.0t~3.5t non -E

series forklift truck)

Secures the truck when stationary.

Use this parking brake lever to park the lift truck. And the parking brakes are applied on the front two wheels by pulling up on this lever. To release the parking brakes, move the lever forwards.

There is a micro switch at the left side of the parking brake lever, tense the lever makes running invalid.

For the truck of CE: if you leave the seat without tensing the lever, it will warn and remind you to tense the lever.



WARNING

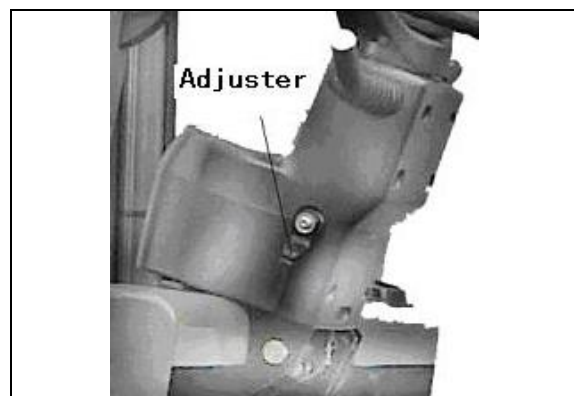
- **If parking on a grade is unavoidable, be sure to block the wheel.**

Parking brake switch(1.0t~3.5t For -E series forklift truck, 4.0t~5.0t)

Secures the truck when stationary.

Automatic start parking brake switch after power off. When the operator leaves the seat, press the parking brake switch to manually start the parking brake.

Steering column positioning device [22]



Adjusts and fixes the steering column to the required distance.

The tilting angle of the steering column is adjustable to suit individual operators. Turn the hand lever upward to release the steering

column and locked by turning it downward.

Brake pedal [23]

Decelerates the truck.

Press this pedal to slow or stop the truck. At the same time, the brake light comes on.



CAUTION

- **No permitted to press the brake pedal and the accelerator pedal at same time, otherwise, it is harmful to the traveling motor.**

Accelerator pedal [24]

Provides infinitely variable control travel speed.

As the accelerator pedal is slowly pressed, the drive motor start turning and the forklift truck will start to move. According to the force applied to the pedal, the speed is adjusted with not steps.



CAUTION

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



WARNING

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

Steering wheel [25]

It's can control the forklift steering.

The steering hand-wheel is operated in the conventional manner, that is, when the wheel is turn right, the truck will turn to the right; when the wheel is turn left, the truck will turn to the left. The steer wheels are located at the rear of the truck. These cause the rear of the

truck to swing out when a turn is made.



WARNING

- **This truck is provided with the power steering, so heavy hand-wheel operation is caused when the steering motor comes to a stall. To put the power steering in operation again, restart the steering motor without delay.**

Key switch [26]

Switches control current on and off. Removing the key prevents the truck from being switched on by unauthorised personnel.

The key switch has two "on/ off" position, you should push the Direction switch lever to neutral and loose the accelerator pedal, then turning the key switch to "on" position clockwise.



CAUTION

- **Turning the key switch "on" does not make the forklift truck move, if the Direction switch lever is not in the neutral position or the accelerator pedal is pushing.**
- **Error code maybe appear, don't worry about it.**
- **The Direction switch lever should be returned to neutral and move you foot from the accelerator pedal. Then the truck can be operated.**
- **Then the error code should be disappeared.**

Locker of battery cover hood [27]

Fixed the battery cover.

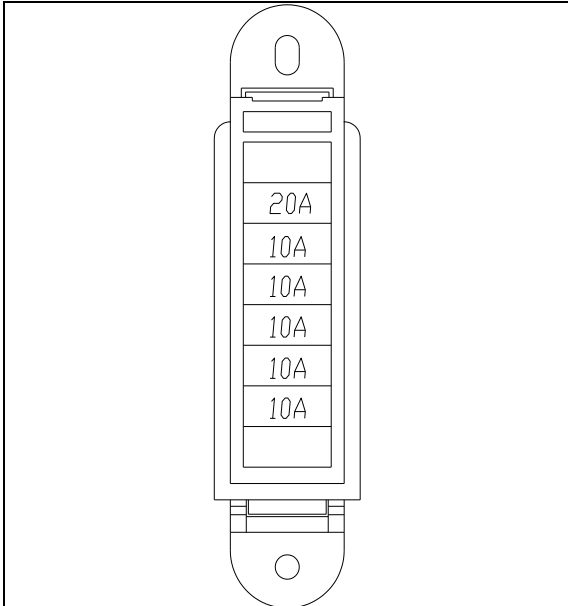
Locking bolt of battery side plate [28]

Locking the side plates on both of the battery box.

Air spring of battery cover [29]

When the battery cover hood opened, to support the cover hood. When closed the cover hood, press the red button, at the same time hard to press the cover hood.

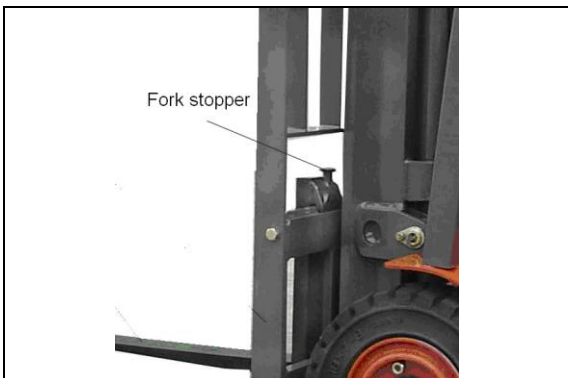
Fuse box [30]



CAUTION

- When replace a new fuse, please choose the same capacity fuse of the old one.

Fork stopper [31]



Fork stoppers are locked the forks in position.

To adjust fork spacing, pull up fork stoppers, turn 90° and shift the forks to the desired position. The fork spacing should be adjusting according to loads to be handled.



WARNING

- The forks should be set symmetrically to machine centerline and fork stoppers should always be locked again.
- There are one gap on the below beam. It is used to attach goods.
- It is forbidden to lock the fork on the gap position, to prevent the fork fall off from the gap.
- In the middle of the above beam, a bolt used to prevent fork works here. Please change the bolt as soon as it is damaged.

Change fork

Take down the old fork: Firstly, locate the fork to the middle, decline it to the ground and make the mast forward, then operate the truck traveling backward, the fork will be taken down.

Change new fork: Firstly, make the fork dead against the truck and forklift's mast to the bottom, then operate the truck traveling forward, aim at the two gaps and beams, and raise the mast. Adjust the position of the fork.

Battery cover hood

The cover hood can be swung up fully to provide easy examining and maintenance of the storage batteries.

You can lift up the cover hood with little effort with an aid of cover hood damper. To lock the cover hood, push down on the front of cover hood until it covered.



CAUTION

- Be careful do not to catch you fingers in the cover hood when closing it.

- **Depress the spring insurance before you close the cover hood, then press the head of the cover hood.**

Overhead guard

The overhead guard used is strong enough to meet safety standard, and protects the operator from falling materials. The top gap is used to lift the batteries. It is forbidden for use a truck that does not with safeguard.

L.H. & R.H. battery side plate


The battery is covered hood, one left and one right. When you want to take off the hood, you should take off the locking bolts at first.

Safety step and safety grip

The safely steps are provided on both side of the truck body. The safely grip is provided on the front left pillar of the overhead guard. Use the safely step and safely grip when mounting and dismounting the truck.

Brake fluid reservoir cup

The brake fluid reservoir cup is located at the meter board.

 **CAUTION**

- **The brake fluid is poisonous, be careful do not drop down. When add brake fluid, be careful do not let dirt and other thing drop into reservoir cup.**

Hydraulic oil reservoir cap

The hydraulic oil reservoir cap is located at the right rear end, below the battery hood; open the right side battery hood when adding oil. After fill in clean hydraulic fluid, tighten lock the cap.

Air leakage plug

There is an air leakage plug on the oil tank to

let air in the tank goes out. You'd better often check the plug and see whether been jammed.

Head lights and combination lights

Two headlights and combination lights (turn signal, show width lamp) are installed at the front side of the truck. Take care of the lights, and wipe dirt, if any, and replace any damaged light immediately.

Rear combination lights

The combination lights at the rear side serve as turn signal, show width lamp, brake lamp, and back-up lamp. Pay attention to keep them from being damaged or covered with dust, if any, clean or replace immediately.

Rear big lamp [For CE or Option]


The rear big lamp is set on the safeguard. If it is broken, please replace a new one at once.

Rear big lamp switch [optional]

Rear big lamp switch (push/pull) has only one shift.

x—Means connected

Position \ Connector	Battery	Far light
0	x	
1	x	x

 **CAUTION**

- **This light does not relate to key switch position, so please don't forget to turn off the rear big lamp when you leave the truck.**

Seat

Designing maximum comfort, this seat can be adjusted as follows.



Adjusting the seat to the driver's weight:

To achieve optimal seat cushioning the driver's seat must be adapted to the driver's weight.

- Sit on the driver's seat. When the correct weight adjustment has been made, the weight adjustment lever should be aimed at the driver's weight. If the weight adjustment lever ① is facing too far to the left or right, the seat must be adjusted to the driver's weight.
- To set the seat to a lesser weight, push the weight adjustment lever ① left.
- To set the seat to a greater weight, push the weight adjustment lever ① right.

To adjust the seat position:

- Pull up the longitudinal adjuster ② and push the driver's seat forwards or backwards to the desired position.
- Engage the longitudinal adjuster ② in position again.

⚠ WARNING

- **The longitudinal adjuster must be securely located in the desired position. The driver's seat setting must not be changed during travel.**

To adjust the backrest:

- Sit on the driver's seat.
- Press down the backrest adjustment button ③ and adjust the backrest tilt.
- Release the backrest adjustment button ③ to lock the backrest in position.

Safe belt

Put on the seat belt④ each time before starting the truck. The belt protects against serious injury.

Protect the belt from contamination and clean it regularly.

Correct use the safe belt:

- Sit correctly on the seat.
- Check that seat belt is not twisted.
- Place the seat belt at hip level.
- Attach the seat belt and check that it locks.
- Adjust the seat belt to your body shape without squeezing your hip and without over-slack.

Regular verification of seat belt related to:

- Cut or frayed straps.
- Worn or damaged hardware, including anchor points.
- Buckle or retractor malfunction.
- Loose stitching.

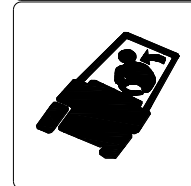
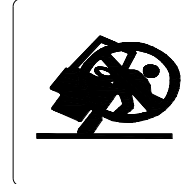
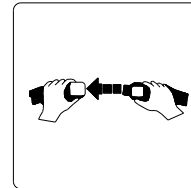


WARNING

- **In no event should the lift truck be used if the seat belt is defective (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.**
- **Do not alter the belt setting. Always replace the seat belt after an accident.**

How to act in unusual situations

- Fasten seat belt, stay in seat.
- Do not jump !
- Lean forward, hold on tight steering wheel, brace feet.
- Lean your body away from impact.





WARNING

- If the truck is about to tip over, never undo the restraint belt and try to jump out. This will only increase the risk of serious injury or death !



OPS system (option)

OPS (Operator Presence Sensing) system is a safeguard system that installs a sensor in the driver seat to sense if the driver sits on the seat correctly. If the driver does not sit on the seat correctly, driving force is cut off, meanwhile, all loading and unloading operations will be stopped. It helps to reduce accident when the driver leaves. When the driver does not sit correctly, the driver cannot drive the truck or operate the loading and unloading, thus the accidents by maloperation will be reduced.



Driving protection function

When the vehicle is travelling, the driver leaves the seat or the safety belt is released (if equip with safety belt protection switch) over 1 second, truck stops automatically, and the instrument displayed seat indicator light  lights up, meanwhile the buzzer sends out continuous alarm signal. Only when pulling up the hand brake or the driver sits on the seat correctly and the direction switch returns to neutral, the seat indicator light  goes out, travelling OPS status is released.

Working protection function

When the vehicle is under working condition, the driver leaves the seat or the safety belt is released (if equip with safety belt protection switch) over 1 second, working stops automatically, and the instrument displayed seat indicator light  lights up, meanwhile the buzzer sends out continuous alarm signal. OPS light comes on, buzzer sends out alarm signal, transportation operation stops automatically. When the driver sits down again, the seat indicator light  goes out, working OPS status is released.



Warning function

Once the seat sensor detects the seat switch is turned off, within 1 second, the buzzer sends out continuous alarm signal, and the seat indicator light  lights up. If the seat indicator light  keeps on when the seat switch is off, it means the OPS in the startup state.

Resume neutral function

If the direction switch does not return to neutral and the seat switch is turned on. The buzzer will send out continuous alarm signal to remind the driver that the OPS in the startup state.

OPS abnormal function handling

Park the truck in safe place and contact Hangcha agency to check if any below condition is occurred. a. after the driver leaves the seat, the seat indicator light  does not light up; b. when the driver sits down, the seat indicator light  does not go out.



Caution

- **As to forklift equipped with safety belt protection switch, after driver sits on the seat correctly, it also needs fasten safety belt, then can operate the truck normally. When driving on the uphill, starting the OPS will cut off the drive power and make the truck slip. In order to avoid this accident, the driver must sit correctly when operating on**

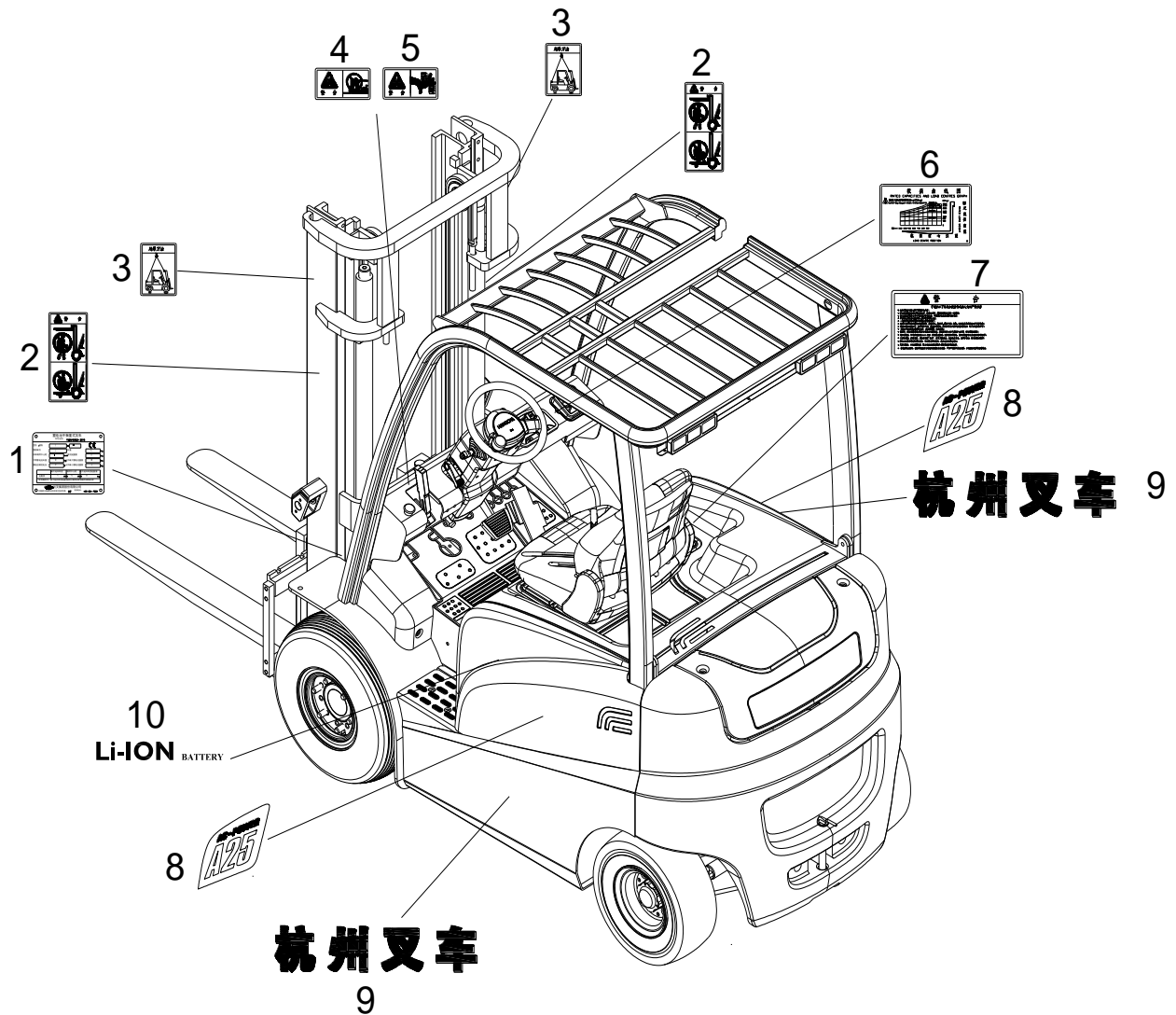
the uphill.

Fork locking function after power off

This function means: forks are locked when starting switch is closed or power failure, forks will not lower down even operate the control lever.

4. Nameplate and Safety Labels

Warnings and notices such as Rated capacities and load centers graph, Warning label and name plate must be legible at all times. Replace if necessary.



No.	Description
1	Nameplate
2	Warning label: Do not step onto or beneath the load
3	Lift method
4	Warning label: No climbing
5	Warning label: Risk of trapping with moving mast
6	Rated capacities and load centers graph
7	Warning label: Please abide by the operation instructions
8	Series and tonnage label
9	Hangcha fork
10	Lithium Battery Labels: Lithium Battery Forklifts

5. Technical Specifications

1.0 t / 1.5 t

No.	Item		CPD10-AC3 CPD10-AC3F	CPD10-AC4 CPD10-AC4F	CPD10-AD2	CPD10-AD2-I	CPD15-A	CPD15-AC3 CPD15-AC3F	CPD15-AC4 CPD15-AC4F	CPD15-AD2	CPD15-AD2-I	
1	Rated lifting capacity	kg	1000	1000	1000	1000	1500	1500	1500	1500	1500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	500	
3	Standard mast lift height	mm	3000	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	145	135	135	135	135	145	135	135	135	
5	Mast Tilt angle (front/back)	(°)	5 / 10	5 / 10	5 / 10	5/10	5 / 10	5 / 10	5 / 10	5 / 10	5/10	
6	Maximum travel speed(full load/no load)	km/h	14/14	14/14	14/14	12/	14/14	14/14	14/14	14/14	12/	
7	Maximum lifting speed (full load/no load)	mm/s	290 / 440	290 / 440	290 / 440	290/	290 / 440	290 / 440	290 / 440	290 / 440	290/	
8	Maximum grade ability (full load/no load)	%	15 / 16	15 / 16	15 / 16	13/	15 / 16	15 / 16	15 / 16	15 / 16	13/	
9	Minimum outside turning radius	mm	1900	1900	1900	1900	1900	1900	1900	1900	1900	
10	Minimum ground clearance	mm	110	110	110	100	110	110	110	110	100	
11	Maximum braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimensions	Length(to fork face)	mm	2098	2098	2098	2098	2098	2098	2098	2098	2098
		Width	mm	1120	1120	1120	1120	1120	1120	1120	1120	1120
		Height to overhead	mm	2050	2050	2050	2050	2050	2050	2050	2050	2050
13	Service weight	Include battery box	kg	2940	2940	2940	2940	2940	2940	2940	2940	
14	Battery	Standard	V/Ah	48 / 420	48 / 420	48 / 420	80/200	48 / 420	48 / 420	48 / 420	80/200	
15	Motor	Driven Motor	kW	8.0 AC	8.0 AC	8.0 AC	8.0AC	5.0 DC	8.0 AC	8.0 AC	8.0 AC	8.0AC
		Pump Motor	kW	8.2 DC	8.6 AC	8.6 AC	8.6AC	8.2 DC	8.2 DC	8.6 AC	8.6 AC	8.6AC
16	Tire	Frontx2		6.00-9	6.00-9	6.00-9	6.00-9	6.00-9/2	6.00-9	6.00-9	6.00-9	6.00-9
		Rearx2		5.00-8	5.00-8	5.00-8	5.00-8	5.00-8/2	5.00-8	5.00-8	5.00-8	5.00-8

1.8 t / 2.0 t

No.	Item		CPD18-AC3 CPD18-AC3F	CPD18-AC4 CPD18-AC4F	CPD18-AD2	CPD18-AD2-I	CPD20-A	CPD20-AC3 CPD20-AC3F	CPD20-AC4 CPD20-AC4F	CPD20-AD2	CPD20-AD2-I	
1	Rated lifting capacity	kg	1750	1750	1750	1800	2000	2000	2000	2000	2000	
2	Load center distance	mm	500	500	500	500	500	500	500	500	500	
3	Standard mast lift height	mm	3000	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	145	135	135	135	140	140	140	140	140	
5	Mast Tilt angle (front/back)	(°)	5 / 10	5 / 10	5 / 10	5/10	5 / 10	5 / 10	5 / 10	5 / 10	5/10	
6	Maximum travel speed (full load/no load)	km/h	13.5 /14	13.5 /14	13.5 /14	13/	14/14	14/14	14/14	14/14	14/	
7	Maximum lifting speed (full load/no load)	mm/s	285/440	285/440	285/440	270/	280/440	280/440	280/440	280/440	250/	
8	Maximum grade ability (full load/no load)	%	15 / 16	15 / 16	15 / 16	13/	13/14	13/14	13/14	13/14	14/	
9	Minimum outside turning radius	mm	1900	1900	1900	1900	2090	2090	2090	2090	2040	
10	Minimum ground clearance	mm	110	110	110	100	120	120	120	120	120	
11	Maximum braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimensions	Length(to fork face)	mm	2098	2098	2098	2098	2342	2342	2342	2342	2275
		Width	mm	1138	1138	1138	1120	1265	1265	1265	1265	1265
		Height to overhead	mm	2050	2050	2050	2050	2075	2075	2075	2075	2075
13	Service weight	Include battery box	kg	3090	3090	3090	3090	3700	3700	3700	3700	3800
14	Battery	Standard	V/Ah	48 / 420	48 / 420	48 / 420	80/200	48 / 630	48 / 630	48 / 630	48 / 630	80/252
15	Motor	Driven Motor	kW	8.0 AC	8.0 AC	8.0 AC	8.0AC	7.0 DC	11 AC	11 AC	11 AC	11AC
		Pump Motor	kW	8.2 DC	8.6 AC	8.6 AC	8.6AC	8.6 DC	8.6 DC	8.6 AC	8.6 AC	8.6AC
16	Tire	Frontx2		21x8-9	21x8-9	21x8-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x9-10
		Rearx2		5.00-8	5.00-8	5.00-8	2.00-8	18x7-8	18x7-8	18x7-8	18x7-8	18x7-8

2.5 t

No.	Item		CPD25-A	CPD25-AC3 CPD25-AC3F	CPD25-AC4 CPD25-AC4F	CPD25-AD2	CPD25-AD2-i	CPD25-ALC3 CPD25-ALC3F	CPD25-ALC4 CPD25-ALC4F	CPD25-ALD2	
1	Rated lifting capacity	kg	2500	2500	2500	2500	2500	2500	2500	2500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Standard mast lift height	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	140	140	140	140	140	140	140	140	
5	Mast Tilt angle (front/back)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5/10	5 / 10	5 / 10	5 / 10	
6	Maximum travel speed(full load/no load)	km/h	14/14	14/14	14/14	14/14	12/	14/14	14/14	14/14	
7	Maximum lifting speed (full load/no load)	mm/s	230/430	230/430	230/430	230/430	250/	230/430	230/430	230/430	
8	Maximum grade ability (full load/no load)	%	13/14	13/14	13/14	13/14	13/	13/14	13/14	13/14	
9	Minimum outside turning radius	mm	2090	2090	2090	2090	2090	2230	2230	2230	
10	Minimum ground clearance	mm	120	120	120	120	120	125	125	125	
11	Maximum braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimensions	Length(to fork face)	mm	2342	2342	2342	2342	2325	2482	2482	2482
		Width	mm	1265	1265	1265	1265	1265	1265	1265	1265
		Height to overhead	mm	2075	2075	2075	2075	2075	2110	2110	2110
13	Service weight	Include battery box	kg	4180	4180	4180	4180	4580	4580	4580	
14	Battery	Standard	V/Ah	48 / 630	48 / 630	48 / 630	48 / 630	80/252	80/500	80/500	80/500
15	Motor	Driven Motor	kW	7.0 DC	11 AC	11 AC	11 AC	11AC	15.0 AC	15.0 AC	15.0 AC
		Pump Motor	kW	8.6 DC	8.6 DC	8.6 AC	8.6 AC	8.6AC	10 .0DC	10 .0AC	10 .0AC
16	Tire	Frontx2		23x9-10	23x9-10	23x9-10	23x9-10	23x9-10	23x9-10 /2	23x9-10 /2	23x9-10 /2
		Rearx2		18x7-8	18x7-8	18x7-8	18x7-8	18x7-8	18x7-8 /2	18x7-8 /2	18x7-8 /2

3.0 t / 3.5 t

No.	Item		CPD30-A	CPD30-AC3 CPD30-AC3F	CPD30-AC4 CPD30-AC4F	CPD30-AD2	CPD30-AD2-I	CPD35-AC3 CPD35-AC3F	CPD35-AC4 CPD35-AC4F	CPD35-AD2	CPD35-AD2-I	
1	Rated lifting capacity	kg	3000	3000	3000	3000	3000	3500	3500	3500	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	500	
3	Standard mast lift height	mm	3000	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	145	145	145	145	145	145	145	145	145	
5	Mast Tilt angle (front/back)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5/10	5 / 10	5 / 10	5 / 10	5/10	
6	Maximum travel speed(full load/no load)	km/h	14/14	14/14	14/14	14/14	14/	12/13	12/13	12/13	13/	
7	Maximum lifting speed (full load/no load)	mm/s	250/400	250/400	250/400	250/400	220/	210/400	210/400	210/400	210/	
8	Maximum grade ability (full load/no load)	%	13/14	13/14	13/14	13/14	14/	13/14	13/14	13/14	12/	
9	Minimum outside turning radius	mm	2230	2230	2230	2230	2230	2310	2310	2310	2310	
10	Minimum ground clearance	mm	125	125	125	125	120	125	125	125	120	
11	Maximum braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimensions	Length(to fork face)	mm	2502	2502	2502	2502	2490	2582	2582	2582	2570
		Width	mm	1265	1265	1265	1265	1265	1302	1302	1302	1302
		Height to overhead	mm	2110	2110	2110	2110	2110	2110	2110	2110	2110
13	Service weight	Include battery box	kg	5050	5050	5050	5050	5050	5450	5450	5450	5460
14	Battery	Standard	V/A h	80 / 500	80 / 500	80 / 500	80 / 500	80/400	80 / 500	80 / 500	80 / 500	80/400
15	Motor	Driven Motor	kW	10.2 DC	15 AC	15 AC	15 AC	15AC	15 AC	15 AC	15 AC	15AC
		Pump Motor	kW	10.0 DC	10 DC	10 AC	10 AC	10AC	10 DC	10 AC	10 AC	10AC
16	Tire	Frontx2		23x9-10	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12	23x10-12	23x10-12	23x9-12
		Rearx2		18x7-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10	200/50-10	200/50-10	200/50-10

CPD10~35-AC4-I

No	Item		CPD10-AC4-I	CPD15-AC4-I	CPD18-AC4-I	CPD20-AC4-I	CPD25-AC4-I	CPD30-AC4-I	CPD35-AC4-I	
1	Rated load capacity	kg	1000	1500	1800	2000	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden)	km/h	12	12	12	14	12	13	13	
7	Max. lift speed (laden)	mm/s	290	290	270	250	250	220	210	
8	Max. gradeability (laden)	%	13	13	13	14	13	14	12	
9	Min. turning radius	mm	1900	1900	1900	2040	2090	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	120	120	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2275	2325	2490	2570
		Overall width	mm	1120	1120	1120	1265	1265	1265	1302
		Height of overhead	mm	2050	2050	2050	2075	2075	2110	2110
13	Service weight	Including battery	kg	2940	2940	3090	3800	4180	5050	5460
14	Battery	Standard	V/Ah	80 / 200	80 / 200	80 / 200	80 / 252	80 / 252	80 / 400	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9/2	6.00-9/2	21x8-9/2	23x9-10/2	23x9-10/2	23x9-10/2	23x9-12/2
		Rear tirex2		5.00-8/2	5.00-8/2	5.00-8/2	18x7-8/2	18x7-8/2	18x7-8/2	200/50-10/2

CPD10~35-AZ3

No	Item		CPD10-AZ3	CPD15-AZ3	CPD18-AZ3	CPD20-AZ3	CPD25-AZ3	CPD25-ALZ3	CPD30-AZ3	CPD35-AZ3	
1	Rated load capacity	kg	1000	1500	1750	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	145	145	145	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden/unladen)	km/h	14/14	14/14	13.5/14	14/14	14/14	14/14	14/14	12/13	
7	Max. lift speed (laden/unladen)	mm/s	290/440	290/440	285/440	280/440	230/430	230/430	250/400	210/400	
8	Max. gradeability (laden/unladen)	%	15/16	15/16	15/16	13/14	13/14	13/14	13/14	13/14	
9	Min. turning radius	mm	1900	1900	1900	2090	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	110	110	110	120	120	125	125	125	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2342	2342	2482	2502	2582
		Overall width	mm	1120	1120	1138	1265	1265	1265	1265	1302
		Height of overhead	mm	2050	2050	2050	2075	2075	2110	2110	2110
13	Service weight	Including battery	kg	2940	2940	3090	3700	4180	4580	5050	5450
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80 /500	80 / 500	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.2 DC	8.2 DC	8.2 DC	8.6 DC	8.6 DC	10 DC	10 DC	10 DC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AZ4

No	Item		CPD10-AZ4	CPD15-AZ4	CPD18-AZ4	CPD20-AZ4	CPD25-AZ4	CPD25-ALZ4	CPD30-AZ4	CPD35-AZ4	
1	Rated load capacity	kg	1000	1500	1750	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden/unladen)	km/h	14/14	14/14	13.5/14	14/14	14/14	14/14	14/14	12/13	
7	Max. lift speed (laden/unladen)	mm/s	290/440	290/440	285/440	280/440	230/430	230/430	250/400	210/400	
8	Max. gradeability (laden/unladen)	%	15/16	15/16	15/16	13/14	13/14	13/14	13/14	13/14	
9	Min. turning radius	mm	1900	1900	1900	2090	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	110	110	110	120	120	125	125	125	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2342	2342	2482	2502	2582
		Overall width	mm	1120	1120	1138	1265	1265	1265	1265	1302
		Height of overhead	mm	2050	2050	2050	2075	2075	2110	2110	2110
13	Service weight	Including battery	kg	2940	2940	3090	3700	4180	4580	5050	5450
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80 / 500	80 / 500	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AZ3-E

No	Item		CPD10-AZ3-E	CPD15-AZ3-E	CPD18-AZ3-E	CPD20-AZ3-E	CPD25-AZ3-E	CPD25-ALZ3-E	CPD30-AZ3-E	CPD35-AZ3-E	
1	Rated load capacity	kg	1000	1500	1800	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden)	km/h	12	12	12	12	12	12	12	12	
7	Max. lift speed (laden)	mm/s	290	290	270	270	250	250	250	210	
8	Max. gradeability (laden)	%	13	13	13	14	13	13	14	12	
9	Min. turning radius	mm	1900	1900	1900	2040	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	125	125	120	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2275	2325	2490	2490	2570
		Overall width	mm	1120	1120	1138	1265	1265	1265	1265	1302
		Height of overhead	mm	2130	2130	2130	2155	2155	2190	2190	2190
13	Service weight	Including battery	kg	2940	2940	3090	3800	4180	5050	5050	5460
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80 / 500	80 / 500	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AZ4-E

No	Item	CPD10-AZ4-E	CPD15-AZ4-E	CPD18-AZ4-E	CPD20-AZ4-E	CPD25-AZ4-E	CPD25-ALZ4-E	CPD30-AZ4-E	CPD35-AZ4-E		
1	Rated load capacity	kg	1000	1500	1800	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden)	km/h	12	12	12	12	12	12	12	12	
7	Max. lift speed (laden)	mm/s	290	290	270	270	250	250	250	250	
8	Max. gradeability (laden)	%	13	13	13	13	13	13	13	13	
9	Min. turning radius	mm	1900	1900	1900	2090	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	125	125	125	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2342	2342	2482	2502	2582
		Overall width	mm	1120	1120	1138	1265	1265	1265	1265	1302
		Height of overhead	mm	2050	2050	2050	2075	2075	2110	2110	2110
13	Service weight	Including battery	kg	2940	2940	3090	3700	4180	4580	5050	5450
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80 / 500	80 / 500	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AC3-E

No	Item		CPD10-AC3-E	CPD15-AC3-E	CPD18-AC3-E	CPD20-AC3-E	CPD25-AC3-E	CPD25-ALC3-E	CPD30-AC3-E	CPD35-AC3-E	
1	Rated load capacity	kg	1000	1500	1800	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden)	km/h	12	12	12	14	12	14.5	13	13	
7	Max. lift speed (laden)	mm/s	290	290	270	250	250	250	220	210	
8	Max. gradeability (laden)	%	13	13	13	14	13	15	14	12	
9	Min. turning radius	mm	1900	1900	1900	2040	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	125	120	120	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2275	2325	2490	2490	2570
		Overall width	mm	1120	1120	1120	1265	1265	1265	1265	1302
		Height of overhead	mm	2130	2130	2130	2155	2155	2190	2190	2190
13	Service weight	Including battery	kg	2940	2940	3090	3800	4180	4580	5050	5460
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80 /500	80 / 500	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AC4-E

No	Item		CPD10-AC4-E	CPD15-AC4-E	CPD18-AC4-E	CPD20-AC4-E	CPD25-AC4-E	CPD25-ALC4-E	CPD30-AC4-E	CPD35-AC4-E	
1	Rated load capacity	kg	1000	1500	1800	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden)	km/h	12	12	12	14	12	14.5	13	13	
7	Max. lift speed (laden)	mm/s	290	290	270	250	250	250	220	210	
8	Max. gradeability (laden)	%	13	13	13	14	13	15	14	12	
9	Min. turning radius	mm	1900	1900	1900	2040	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	125	120	120	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2275	2325	2490	2490	2570
		Overall width	mm	1120	1120	1120	1265	1265	1265	1265	1302
		Height of overhead	mm	2130	2130	2130	2155	2155	2190	2190	2190
13	Service weight	Including battery	kg	2940	2940	3090	3800	4180	4580	5050	5460
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80 /500	80 / 500	80 / 500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AC4-E/I

No	Item		CPD10-AC4-E/I	CPD15-AC4-E/I	CPD18-AC4-E/I	CPD20-AC4-E/I	CPD25-AC4-E/I	CPD25-ALC4-E/I	CPD30-AC4-E/I	CPD35-AC4-E/I	
1	Rated load capacity	kg	1000	1500	1800	2000	2500	2500	3000	3500	
2	Load center distance	mm	500	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	
6	Max. travel speed (laden)	km/h	12	12	12	14	12	14.5	13	13	
7	Max. lift speed (laden)	mm/s	290	290	270	250	250	250	220	210	
8	Max. gradeability (laden)	%	13	13	13	14	13	15	14	12	
9	Min. turning radius	mm	1900	1900	1900	2040	2090	2230	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	125	120	120	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of forks	mm	2098	2098	2098	2275	2325	2490	2490	2570
		Overall width	mm	1120	1120	1120	1265	1265	1265	1265	1302
		Height of overhead guard	mm	2130	2130	2130	2155	2155	2190	2190	2190
13	Service weight including battery	kg	2940	2940	3090	3800	4180	4580	5050	5460	
14	Battery	Standard	/	/	/	/	/	/	/	/	
		Voltage/capacity	V/Ah	80/200	80/200	80/200	80/252	80/252	80/400	80/400	80/400
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-10	23x10-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~35-AF4

No.	Item		CPD10-AF4	CPD15-AF4	CPD18-AF4	CPD20-AF4	CPD25-AF4	CPD30-AF4	CPD35-AF4	
1	Rated load capacity	kg	1000	1500	1800	2000	2500	3000	3000	
2	Load center distance	mm	500	500	500	500	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	3000	3000	3000	3000	
4	Free lift height	mm	135	135	135	140	140	145	145	
5	Tilt of mast (forward/backward)	(°)	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	
6	Max. travel speed (laden)	km/h	12	12	12	14	12	13	13	
7	Max. lift speed (laden)	mm/s	290	290	270	250	200	220	210	
8	Max. gradeability (laden)	%	13	13	13	14	13	14	12	
9	Min. turning radius	mm	1900	1900	1900	2040	2090	2230	2310	
10	Ground clearance, centre of truck frame	mm	100	100	100	120	120	120	120	
11	Max. braking distance	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
12	Dimension	Length to face of	mm	2098	2098	2098	2275	2325	2490	2570
		Overall width	mm	1120	1120	1120	1265	1265	1265	1302
		Height of overhead	mm	2130	2130	2130	2155	2155	2190	2190
13	Service weight	Including battery	kg	2940	2940	3090	3800	4180	5050	5460
14	Battery	Standard	V/Ah	48/420	48/420	48/420	48/630	48/630	80/500	80/500
15	Motor	Drive motor	kW	8 AC	8 AC	8 AC	11 AC	11 AC	15 AC	15 AC
		Lift motor	kW	8.6 AC	8.6 AC	8.6 AC	8.6 AC	8.6 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10	23x9-10	23x9-12
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8	18x7-8	200/50-10

CPD10~25-AC4-NA

No	Item			CPD10-AC4-NA	CPD15-AC4-NA	CPD18-AC4-NA	CPD20-AC4-NA	CPD25-AC4-NA
1	Rated load capacity	kg		1000	1500	1800	2000	2500
2	Load center distance	mm		500	500	500	500	500
3	Lifting height with standard mast	mm		3000	3000	3000	3000	3000
4	Free lift height	mm		135	135	135	140	140
5	Tilt of mast (forward/backward)	(°)		5 / 10	5 / 10	5 / 10	5 / 10	5 / 10
6	Max. travel speed (laden)	km/h		12	12	12	14	12
7	Max. lift speed (laden)	mm/s		290	290	270	250	250
8	Max. gradeability (laden)	%		13	13	13	14	13
9	Min. turning radius	mm		1900	1900	1900	2040	2090
10	Ground clearance, centre of truck frame	mm		100	100	100	120	120
11	Max. braking distance	m		2.5	2.5	2.5	2.5	2.5
12	Dimension	Length to face of forks	mm	2098	2098	2098	2275	2325
		Overall width	mm	1120	1120	1120	1265	1265
		Height of overhead	mm	2130	2130	2130	2155	2155
13	Service weight	Including battery	kg	2940	2940	3090	3800	4180
14	Battery	Standard	V/Ah	36/560	36/560	36/560	36/800	36/800
15	Motor	Drive motor	kW	6 AC	6 AC	6 AC	8 AC	8 AC
		Lift motor	kW	10 AC	10 AC	10 AC	10 AC	10 AC
16	Tires	Front tirex2		6.00-9	6.00-9	21x8-9	23x9-10	23x9-10
		Rear tirex2		5.00-8	5.00-8	5.00-8	18x7-8	18x7-8

CPD25-AD2-A

No.	Item			CPD25-AD2-A			
1	Rated load capacity	kg		2500			
2	Load center distance	mm		500			
3	Lifting height with standard mast	mm		3000			
4	Free lift height	mm		140			
5	Tilt of mast (forward/backward)	(°)		5 / 10			
6	Max. travel speed (laden)	km/h		12			
7	Max. lift speed (laden)	mm/s		250			
8	Max. gradeability (laden)	%		13			
9	Min. turning radius	mm		2090			
10	Ground clearance, centre of truck frame	mm		120			
11	Max. braking distance	m		2.5			
12	Dimension	Length to face of forks	mm	2325			
		Overall width	mm	1265			
		Height of overhead	mm	2155			
13	Service weight	Including battery	kg	4180			
14	Battery	Standard	V/Ah	48/630			
15	Motor	Drive motor	kW	11 AC			
		Lift motor	kW	8.6 AC			
16	Tires	Front tirex2		23x9-10			
		Rear tirex2		18x7-8			

CPD25-AC4-A

No.	Item		CPD25-AC4-A			
1	Rated load capacity	kg	2500			
2	Load center distance	mm	500			
3	Lifting height with standard mast	mm	3000			
4	Free lift height	mm	140			
5	Tilt of mast (forward/backward)	(°)	5 / 10			
6	Max. travel speed (laden)	km/h	12			
7	Max. lift speed (laden)	mm/s	250			
8	Max. gradeability (laden)	%	13			
9	Min. turning radius	mm	2090			
10	Ground clearance, centre of truck frame	mm	120			
11	Max. braking distance	m	2.5			
12	Dimension	Length to face of forks	mm	2325		
		Overall width	mm	1265		
		Height of overhead	mm	2155		
13	Service weight	Including battery	kg	4180		
14	Battery	Standard	V/Ah	48/630		
15	Motor	Drive motor	kW	11 AC		
		Lift motor	kW	8.6 AC		
16	Tires	Front tirex2		23x9-10		
		Rear tirex2		18x7-8		

CPD40/45/50-AZ4

No.	Item		CPD40-AZ4	CPD45-AZ4	CPD50-AZ4	
1	Rated load capacity	kg	4000	4500	5000	
2	Load center distance	mm	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	
4	Free lift height	mm	150	150	150	
5	Tilt of mast (forward/backward)	(°)	6 / 12	6 / 12	6 / 12	
6	Max. travel speed (laden)	km/h	14	13.5	13	
7	Max. lift speed (laden)	mm/s	270	260	250	
8	Max. gradeability (laden)	%	14.5	14	14	
9	Min. turning radius	mm	2640	2640	2675	
10	Ground clearance, centre of truck frame	mm	150	150	150	
11	Max. braking distance	m	2.5	2.5	2.5	
12	Dimension	Length to face of forks	mm	2928	2928	2967
		Overall width	mm	1440	1440	1470
		Height of overhead guard	mm	2310	2310	2310
13	Service weight	Including battery	kg	6700	6950	7220
14	Battery	Standard	V/Ah	80 / 700	80 / 700	80 / 700
15	Motor	Drive motor	kW	16.6 AC	16.6 AC	16.6 AC
		Lift motor	kW	25.4 AC	25.4 AC	25.4 AC
16	Tires	Front tirex2		250-15	250-15	28x12.5-15
		Rear tirex2		23x10-12	23x10-12	23x10-12

CPD40/45/50-AC4

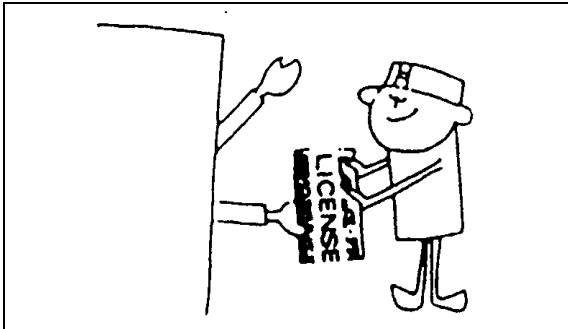
No.	Item		CPD40-AC4	CPD45-AC4	CPD50-AC4	
1	Rated load capacity	kg	4000	4500	5000	
2	Load center distance	mm	500	500	500	
3	Lifting height with standard mast	mm	3000	3000	3000	
4	Free lift height	mm	150	150	150	
5	Tilt of mast (forward/backward)	(°)	6 / 12	6 / 12	6 / 12	
6	Max. travel speed (laden)	km/h	14	13.5	13	
7	Max. lift speed (laden)	mm/s	270	260	250	
8	Max. gradeability (laden)	%	14.5	14	14	
9	Min. turning radius	mm	2640	2640	2675	
10	Ground clearance, centre of truck frame	mm	150	150	150	
11	Max. braking distance	m	2.5	2.5	2.5	
12	Dimension	Length to face of forks	mm	2928	2928	2967
		Overall width	mm	1440	1440	1470
		Height of overhead guard	mm	2310	2310	2310
13	Service weight	Including battery	kg	6700	6950	7220
14	Battery	Standard	V/Ah	80 / 700	80 / 700	80 / 700
15	Motor	Drive motor	kW	16.6 AC	16.6 AC	16.6 AC
		Lift motor	kW	25.4 AC	25.4 AC	25.4 AC
16	Tires	Front tirex2		250-15	250-15	28x12.5-15
		Rear tirex2		23x10-12	23x10-12	23x10-12

CPD40/45/50-AC4-I

序号	项 目		CPD40-AC4-I	CPD45-AC4-I	CPD50-AC4-I	
1	额定起重量	kg	4000	4500	5000	
2	额定载荷中心距	mm	500	500	500	
3	标配门架起升高度	mm	3000	3000	3000	
4	自由提升高度	mm	150	150	150	
5	门架自倾角(前/后)	(°)	6 / 12	6 / 12	6 / 12	
6	最大运行速度(满载)	km/h	14	13.5	13	
7	最大起升速度(满载)	mm/s	270	260	250	
8	最大爬坡度(满载)	%	14.5	14	14	
9	最小转弯半径	mm	2640	2640	2675	
10	车架中间处最小离地间隙	mm	150	150	150	
11	最大制动距离	m	2.5	2.5	2.5	
12	外形尺寸	长(至叉背)	mm	2928	2928	2967
		宽	mm	1440	1440	1470
		高(至护顶架)	mm	2310	2310	2310
13	自重	包括电瓶	kg	6700	6950	7220
14	蓄电池	型号		锂电池	锂电池	锂电池
		标准	V/Ah	80/400	80/400	80/400
15	电机	驱动电机	kW	16.6@3100rpm	16.6@3100rpm	16.6@3100rpm
		油泵电机	kW	25.4@1620rpm	25.4@1620rpm	25.4@1620rpm
16	轮胎	前轮×2		250-15	250-15	28×12.5-15
		后轮×2		23×10-12	23×10-12	23×10-12

6. Safety Instructions

1. Only trained and authorized operator shall be permitted to operate the truck.

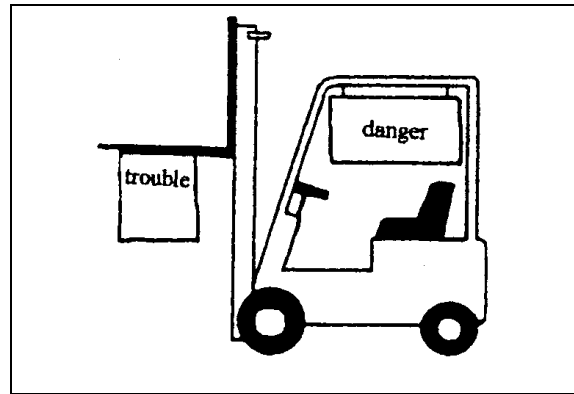


2. Inspect the truck at periodic intervals for oil or water leak, deformation, lousiness, etc. If neglected, short life of components will be caused and in the worst case a fatal accident would occur.

- Make sure having replaced good parts during periodic check.
- Wipe off oil, grease or water from the floor board and foot and hand controls, if any.
- Strictly prohibit smoking and spark nearby the storage battery when checking it.
- If maintenance on high position, such as mast, front and rear lamp, please be careful to prevent fall down or be clamped.
- Be careful do not be scalded when inspect the motor, controller and etc.

3. whatsoever in trouble, you must stop the forklift, hang a mark of "danger" or "trouble" and take off the key, at the same time inform the manager. Only after the trouble is removed, you may use the forklift.

- If trouble occurs when lifting cargo, to Climb or descend, or the storage battery electrolyte, the hydraulic fluid, the brake fluid has the revelation, please organizes the personnel to repair immediately.



4. Operator must wear helmet, safety shoes and work clothes.

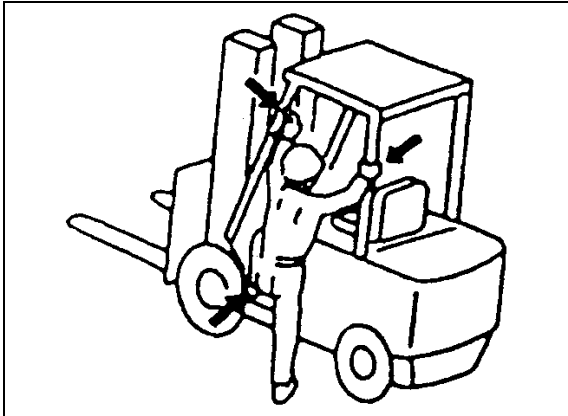
5. Because there will bring exploding gas in the bosom of the battery, prohibit any flame nearby it absolutely.

- Do not let any tools close the two terminal of the battery to avoid spark or short circuit.

6. The movement road of forklift should be solid and smooth coagulation road or similar to the road suitable for vehicle. Recheck the state of working ground.

- The considered climatic conditions when the forklift designs are: Temperature - 20°C-50°C; the wind speed does not surpass 5m/s; the air relative humidity is not bigger than 90% (temperature 20°C).
- The forklift is not suitable in the flammable explosive working conditions.
- Altitude: No more than 2000 meters.

7. Never mount or dismount the moving truck. Use the safety step(s) and safety grip facing the truck when mounting or dismounting the truck.



8. Never attempt to work the controls unless properly seated.

- Before starting, adjust the seat so you can get easy access to all hand and foot control.

9. Before starting up, make sure that:

- Please fasten seat bolts.
- The parking brake lever is applied securely.
- The forward-reverse lever is in neutral.
- Before starting, make sure no one is under, on and close to the truck.
- Don't step the accelerate pedal or control the lifting lever or tilting lever before turning on power.

10. Operate the controls smoothly. Avoid sudden stops or turns.

- It is dangerous to make a sharp brake. Otherwise the truck has the possibility of overturn.

11. Pay attention to the route of the truck; be sure to make a wide sight.

12. Never allow other person(s) to ride on the forks, pallets or on the truck.

13. Taking account of the shape and material of loads to be handled, use a proper attachment and tools.

- Avoid hoisting the load, with wire rope hung on the forks or attachment, since the wire rope may slide off. If needed, a

qualified personnel for slinging operation should perform, making use of a hook or crane arm attachment.

- Take care not to protrude the forks out of the load. The protruded fork tips may damage or turn over the adjacent load.

14. Know the rated capacity of your lift truck and its attachment, if any, and never exceed it.

- Do not use a man as an additional counterweight. It's quite dangerous.



15. Keep your mind on your work.

16. Keep your head, hands, arms, feet and legs within the confines of the operator's compartment. Never stretch out for any reason.



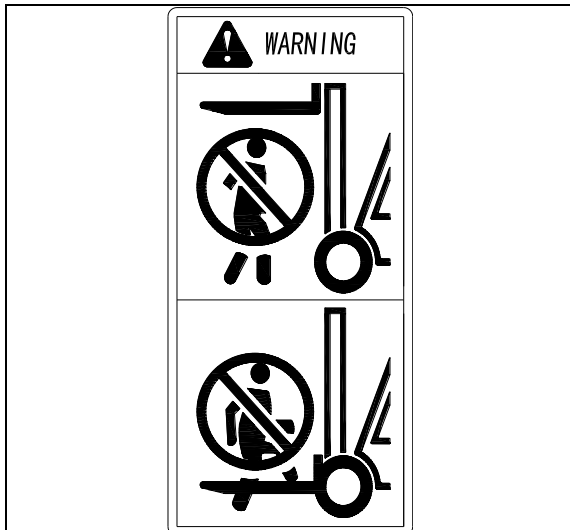
17. The pallet and skid used should be strong enough to endure the load. Never use damaged or deformed ones.

18. We afford all type of attachment, such as rotating roll clamp, bale clamp, side shifter, and crane jib etc. You should refit the truck under ours license if you want. It is forbidden to refit it by yourself.

19. Safeguard protect you do not be hurt by the goods fallen. Load bracket protect you load goods smoothly. It is forbidden to use truck without safeguard or load bracket.

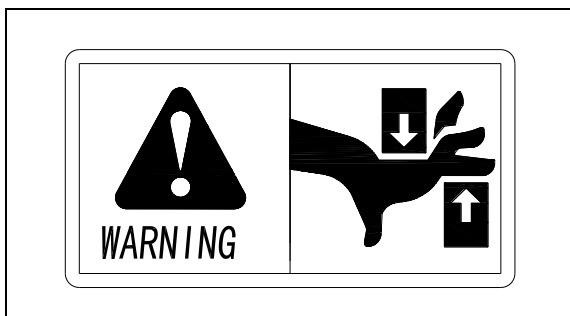
20. It is forbidden to walk down the fork or the attachment.

- It is forbidden to walk up the fork or stand on the fork.



21. It is forbidden to put your hands, arms or head stretch between the mast and safeguard. Once clamped, the life has danger.

- It is forbidden to put your hands in inner and outer mast.



22. The goods is liable to drop turning or passing rough road when it departs the center. And the forklift may turn over more probably.

23. Don't stack loads on forks in such a way that the top of loads exceeds the load backrest height. If unavoidable, make sure the load is fastened. When handling bulky loads that

restrict your vision operate the truck in reverse or have a guide. When lead by a guide, make sure you understand hand, flag, whistle or other signals. When handling long loads such as pipe, lumber etc or in the case of the Large-sized model, or operate with long attachment, be extremely careful of load end swing at corners or in narrow aisles. Be alert for others.

24. Use minimum forward and reverse tilt when stacking and un-stacking loads. Never tilt forward unless load is over stack or at low lift height.

- When stacking loads on a high place, once make the mast vertical at a height of 15 to 20 cm above the ground and then lift the load farther. Never attempt to tilt the mast beyond vertical when the load is raised high.
- To un-stack loads from a high place, insert forks into the pallet and drive backwards, then lower the load. Tilt the mast backwards after lowering. Never attempt to tilt the mast with the load raised high.

25. It is dangerous to travel with forks higher than appropriate position regardless of whether loaded or not. Keep the good traveling posture. (When traveling, the forks should be 15 to 30 cm above the ground or floor and the mast tilted backward)

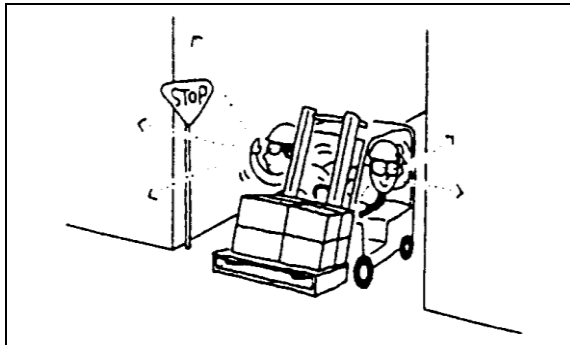
- Do not operate the side shift mechanism, if equipped, when the forks are raised and loaded, since this will cause the truck to be unbalanced.

26. Watch for branches, cables, doorways, or overhangs. Pay caution when working in congested areas.

- Slow down and sound horn at cross aisles

and other locations where vision is restricted.

- When make a turn, be sure the speed of the truck is lower than the 1/3 max. of allowable speed.

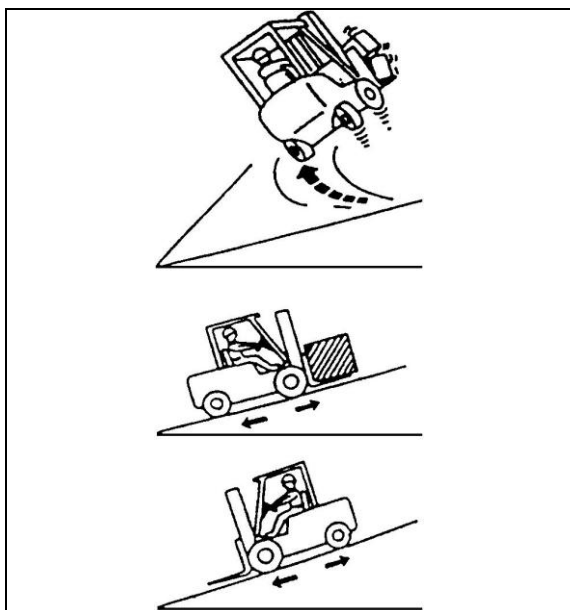


27. Affirm keeping some distance from roadside and flat roof.

28. Before driving over a dock-board or bridge-plate, be sure that it is properly secured and strong enough to sustain the weigh.

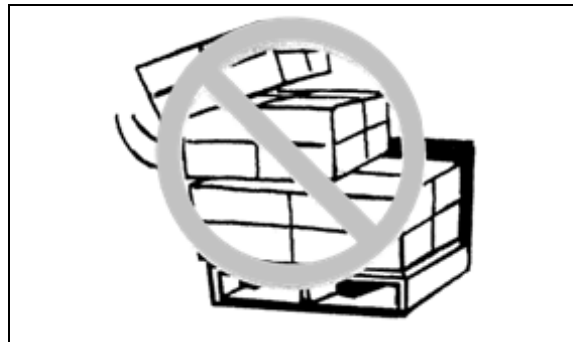
29. When operating loaded truck, have the rear end of your machine pointed downhill.

- When operating unloaded truck, have the rear end of your machine pointed upgrade.
- Do not make a turn on the grade, in order to avoid overturn.



30. the goods is liable to drop turning or passing rough road when it departs the

center. And the forklift may turn over more probably.



31. Never lift loads with the truck inclined.

Avoid loading work on a grade.

32. Never permit anyone to stand or walk under upraised forks or other attachments if machine is so equipped. If unavoidable, use a safety stand or block to prevent a possibility of fork attachments falling down or moving unexpectedly.

33. Inspect the surface over which you will run. Look for holes, drop-offs, obstacles, and look for rough spots. Look for anything that might cause you to lose control, bog down or upset.

- Clear away trash and debris. Pick up anything that might puncture a tire or let the load lose balance.
- Slow down for wet and slippery roads. Stay away from the edge of the road. If unavoidable, pay more attention.
- Do not operate the truck when the weather is execrable, such as windy, thunder storm, snow and etc. Especially when wind speed is higher than 5m/s, don't operate the truck outside.

34. An accumulator is required for controller. Forbid to touch within B+ and B- to prevent from wounding by electricity. Before checking or cleaning, please connect loads (contactor circuit or horn for example) between B+ and B-

first to discharge for capacitor of controller.

35. Pulling the hand brake when parking on flat. If necessarily parking on ramp, you should place the wedges under wheels.

- Descending the fork to the ground and keeping a little forward tilting, shut off key switch and take off key.
- Pull out the battery plug.
- The parking place must be far away from fireworks.

36. You can tow the forklift to the safe place with towing pin when the forklift can't run.

- Don't tow the truck which steering system or brake system has been damaged.

37. There is operating method and warning label on the truck. Please operate the truck obey the rules on the label and this manual. Often inspect the nameplate, when damaged or lost please replace it.

38. Fire extinguisher must be prepared at working place. Users can select fire extinguisher along with truck, and it usually is fixed on rear supported leg of safety shelf, it is easy to pick.

- Driver and manager should be familiar with the position and operation of fire extinguisher.

39. Please use stock when conveying little goods, it is forbidden to use fork directly.

40. Cold storage truck are not allowed to park in the cold storage

41. There are some chemical corrosive substances on the anti-corrosion truck surface, such as acid, alkali and salt etc. liquid, remove timely to avoid forklift corrosion.

42. In a corrosive environment, especially in heavy corrosion environment, such as acid, alkali, salt and other chemical etching medium,

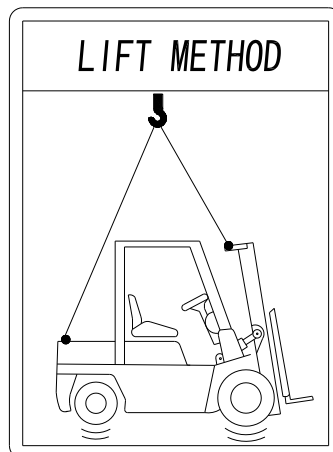
severe operation conditions as high temperature, humidity and dust etc., anti-corrosion truck cannot work continuously or park for a long time.

7. Forklift Transport, Lifting & Towing

Transport

- The Fork Lift Truck is designed for material handling only, It is inappropriate for long-distance transportation. If needed, the Fork Lift Truck must be transported by ship, train or lorry, of 5T loading. Use a lifting pallet to hoist the truck.
- Use the steel wire ropes to tie the holes in the two side of the outside mast's beam and the rear of truck's body, and then use the lifting device to hoist the truck.

Lifting



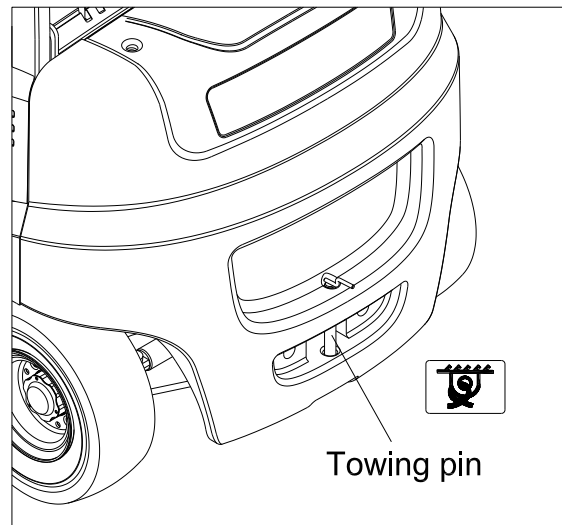
Use the steel wire ropes to tie the holes in the two side of the outside mast's beam and the hook of the counter balance, and then use the lifting device to hoist the truck. The steel wire rope attach to the counterweight should through the safeguard gap, and make the safeguard not be distorted.



WARNING

- **When hoist the truck, don't coil the overhead guard with the steel wire.**
- **The steel wire ropes and the lifting device must be very firm to support the truck because the truck is very heavy.**
- **Don't lift the truck by hoist the overhead guard.**
- **When lifting the truck, don't take yourself below the truck.**

Towing



- The towing rod on the bottom of the counter balance is used to pull and drag the truck.
- Turn off key and pull out power switch.
- Loosen the brake lever.
- Set switch lever to neutral position.




WARNING

- **Don't tie the steel wire ropes on the unfixed position.**
- **Don't carry a load to steel wire ropes suddenly.**
- **The truck would be damaged if you tow it with the electric lock working.**
- **The electromagnetic brake forklift truck would be damaged if you tow it, prohibited drag electromagnetic brake forklift truck!**

8. The Structure and Stability of Truck

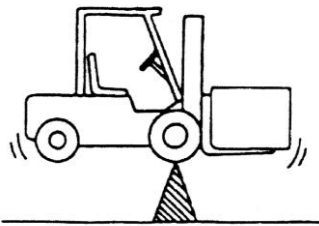
Prevent the forklift to turn over! It is very important for operator to know the truck's structure and relationship between load and stability.


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

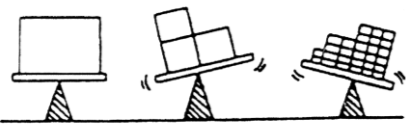
The lift truck keeps the balance of weight between the truck body and the load on the forks with the center of the front wheels as a fulcrum when the rated capacity load is placed in position.


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



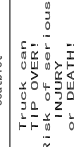
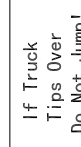







 CAUTION	Load center
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There is difference in gravity because of the loads' shape, such as box, board and large roller. It is very important to distinguish the difference of the gravity center of loads for evaluating the truck's stability.

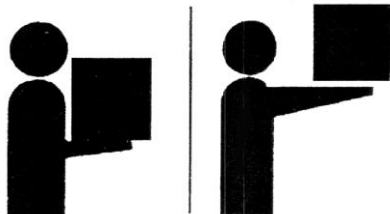


 WARNING	<p>If the truck will turn over, do not attempt to get out of the truck because the speed of overturn is much faster than your speed. You should hold the steering wheel handle, stretch your feet, and this practice will let you in the seats. Operator fastens the safety belt please.</p>
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 WARNING	 Fasten Seatbelt	 Truck can TIP OVER! Risk of serious INJURY or DEATH!	 If Truck Tips Over Do Not Jump!	 Lean Forward	 Hold on Tight	 Brace Feet	 Lean Away From Impact
--	---	--	---	--	---	--	---

 CAUTION	The max. load and load center
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The load center distance is defined that: the distance between the load center and the fork carriage or the front of the fork carriage. The max. load means the maximum load the truck can charge at the normal load center distance. The relation between the max. load and load center distance shows on the capacity chart. You should reduce the weight of load if the load center distance inclines to the fork carriage.



CAUTION Gravity center and stability

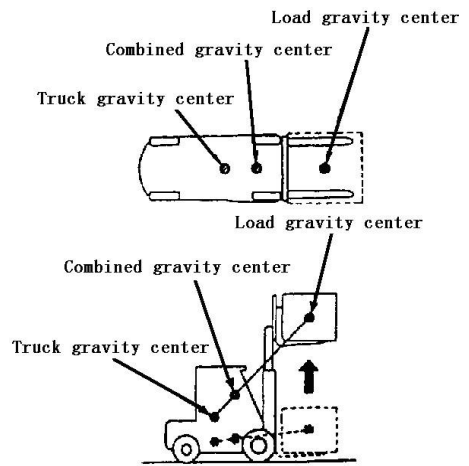
The combined gravity center that is composed of the forklift center and the load gravity center determine the stability of lift trucks.

When unloaded, the barycenter does not change; when loaded, the barycenter is determined by the truck and the load's center.

The barycenter is also determined by the tilting and lifting of the mast.

The combined center is determined by these factors:

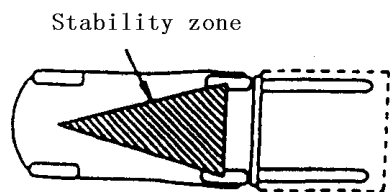
- Load's size, weight and shape
- The lifting height
- The tilting angle
- The acceleration
- The radius of turning
- The road and grade's angle
- The attachments



CAUTION The stable region of the load center

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

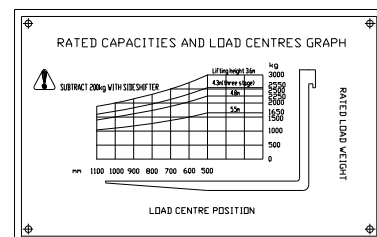
If the combined center is in the front driving axle, the two front wheels become two fulcrums, the truck will overturn. If the combined center departs the triangle, the trucks shall overturn in the corresponding direction.



CAUTION Capacity chart

The chart given shows the relation between the load center and the weight of loads.

Before loading, make sure that the load and the load center distance in the range of capacity chart. If the load's shape is complex, put the most weightily part on the middle of the forks, and close to the fork carriage.



**CAUTION****Velocity and acceleration**

One object will keep quiescence until force works on it. Also, a moving object will keep moving until force works on it. This is just inertia.

According to inertia, when truck starts moving, one force works backwards, and when truck stops moving, one force works forwards. So, it's dangerous to brake suddenly, because it causes one large force works forwards, and it's easy to cause truck overturn or load slide off.

When the forklift makes a turn, will exert a centrifugal force outward from the curve center. This strength pushes forklift outwards and causes it to turn over. About stability region is very small, so decelerate when turning. If the cargo transported at the high position, it's easier to turn over.

9. Running-in of the new truck

We recommended operating the machine under light load conditions for the first stage of operation to get the most from it. Especially the requirements given below should be observed while the machine is in a stage of 100 hours of operation.

- Must prevent the new battery from over discharging when early used. Usually should recharge when discharging down to 20%.
- Perform specified preventive maintenance services carefully and completely.
- Avoid sudden stop, starts or turns.
- Oil changes and lubrication are recommended to do earlier than specified.
- Limited load is 70%~80% of the rated load.

10. Daily Maintenance

The earnest complete maintenance, can keep the forklift to be at the good status. And the safety of the truck is related with your job and your life.

WARNING

- Except checking lights and operating capability, you should shut off the key switch and pull out the plug before checking electric system.
- Prohibit operate forklift with trouble.
- Little trouble brings big accident.

1. Inspect oil leakage: include hydraulic oil, electrolyte and brake fluid

Inspect connector of the oil pipe and storage battery to see whether there is any leakage. Use your hand or eyes to inspect, Forbid to use a flame.

2. Inspect tire

Turn the tire valve cap counter clock-wise and move it. Using a tire pressure gauge, measure the inflation pressure, and adjusting it to the specified pressure, if needed. After making sure there is no air leakage from the tire valve, reinstall the cap. Check that each tire does not get damaged at the tread surface or side face. Make sure the wheel felloe is not bended.

WARNING

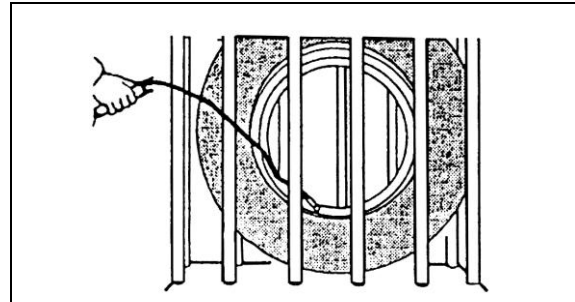
- Since the tires of forklift truck need have a high inflation pressure to carry heavy loads, even a small bending of rims or a little damage at the tread surface could cause an accident.
- When using an air compressor, at

first, adjust the air pressure of the compressor. Otherwise it will cause a serious accident, since the maximum pressure of compressor higher than the pressure tire can bear.

Tire Pressure

Only for the pneumatic-tire(GB/T2982-2001)

Model	Front wheel	Rear wheel
1.0t~1.8t	0.79 MPa	1.0 MPa
2.0t~3.5t	0.9 MPa	0.8 MPa



WARNING

- All bolts and nuts should be screw tight to the stipulation torque after the tire and the wheel felloe was assembled, then charge is allowed. Types have expansion energy after changing, so the tire pressure does not surpass the rating.
- Please put the tire in a protection frame or tie it with a iron chain when charging to prevent accident happening.

Replace tire

When the tire is damaged, you should replace it in time. Use a jack to make the tire just beyond ground, then put a wood block under the chassis. Loosen nut , replace a new tire.

Tighten the nut crossly and symmetrically.

3. Checking the wheel attachments.

- Parking the truck securely.
- Tighten the wheel nuts crosswise with a torque wrench.

Bolt tightening torque:

Model	Front wheel nut	Rear wheel nut
1.0t~1.8t	157-176 N.m	76-107 N.m
2.0t~3.5t	441-588 N.m	157-176 N.m



4. Check brake pedal

- Step the brake pedal, check it for slowness or block .
- The proper brake distance is 2.5m when free load .
- Adjust the height of pedal to 115~125mm .
- Adjust brake booster push rod clearance to 1-3mm .
- The brake lamp should be lighted when the brake pedal steps on 10-20mm .

5. Check the parking brake lever

The force of hand brake lever is adjusted by the bolt on the top of lever.

The force increases clock-wise screwing, and decreases counter lock-wise screw.



CAUTION

- To step the brake pedal is helpful to tighten or loose the hand brake lever.

6. Check accelerate pedal

The acceleration changes as the stroke changes.

7. Brake fluid level check

Open the brake lubricated cap cover. Check the fluid level in the range allowed. If lack, please add, and check if there is air mix into the pipe.

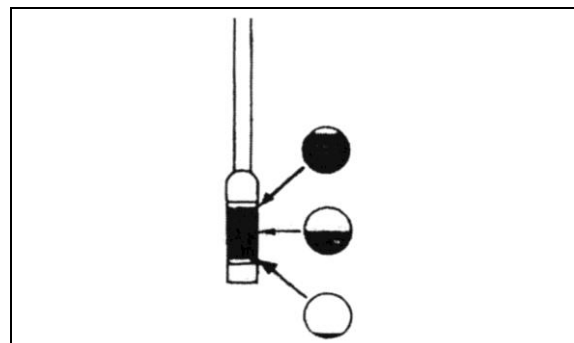


CAUTION

- Please use brake fluid with one type, do not mix.
- Don't spatter the brake oil onto the surface of paint otherwise the paint will be damaged.
- When adding fluid, due should be taken to prevent dirt or water from entering the reservoir.

8. Check hydraulic oil

Loose the cap of hydraulic oil inside of right frame, pull out dipstick and check it if the oil level is between the scales. Add oil when lack.



9. Replace hydraulic oil

Replace hydraulic oil once half year on schedule.

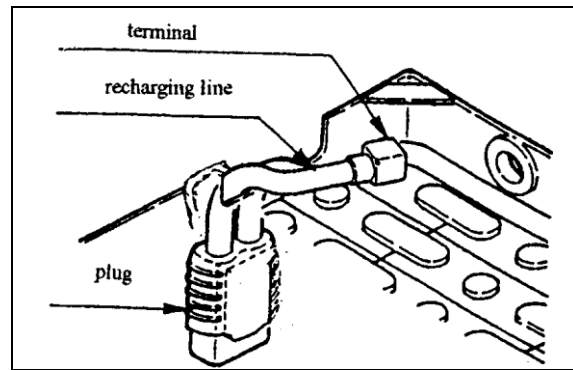
- Stop the truck on smooth ground.
- Turn steering wheel right to the bottom, and enable the fuel drain plug to have the enough space.
- Tilt mast backwards to the bottom, and fall the forks to the ground.
- Pull on the hand brake.
- Loose the cap of hydraulic oil, pull out dipstick.
- Set a plate under the chassis, then loose the fuel drain plug, and put the old oil.
- Dispose the old oil according to local environmental protection laws.
- Twist the fuel drain plug, join the new hydraulic fluid, and inspect whether have a leakage.
- Start the truck, lifting for 3-5 times, and tilting for 3-5 times.
- Add hydraulic oil to required scale.

10. Drivers seat adjustment

Make sure the driver's seat is properly located. If not properly, shift the adjusting lever to the right and move the driver's seat to a position which provides easy access to all foot and hand controls. After adjustment, shake the driver's seat a little to be sure that it is securely locked. Adjust the weight.

11. Check battery

- Check the battery whether be installed firmly.
- Check proportion of electrolyte. Refer to "Battery" section.
- Check the terminal for loose or damage. Otherwise it will be adjust or replace.



Pull in the plug and close the hood

Turn on the key switch

12. Instrument check (include battery capacity and error diagnose)

Refer to instrument section.

13. Lifting lever, tilting lever, attachment lever

Check the lifting lever, tilting lever and attachment lever for looseness. Return position well.

14. Mast

Check the mast and the forks to insure that:

- The fork does not have crack and distortion. Forks were installed firmly and correctly.
- Check the oil cylinder, oil pipes for leakage.
- Check the rotation of idler wheel
- Check the mast for crack or distortion
- Lifting lever, tilting lever, attachment lever
- Check the mast whether works normally, whether have unusual sounds.

15. Mast lubrication

You should grease lubrication to the orbit of mast on schedule base on requirement.

Adjust the lubricate schedule according to your working condition. Add times when busy.

To coordinate forklift's operation, grease lubrication to the guide pulley and in outer upright mounting.

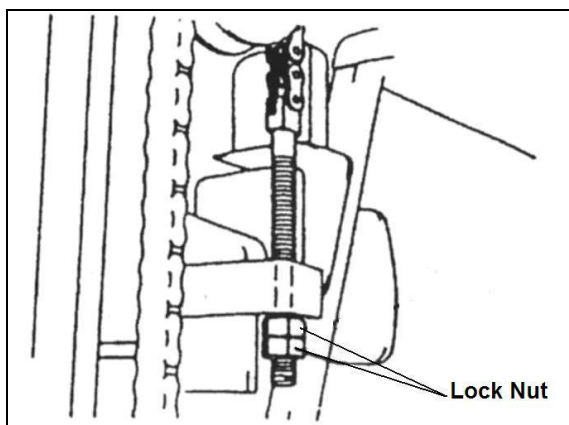
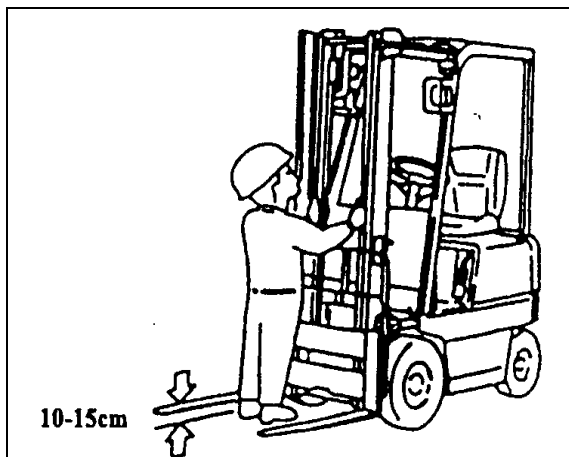
16. Lift chain tension check

- Raise the fork about 10-15 cm above the

ground vertically.

- Push the middle of the chain with the thumb. Make sure the tension for the right and left chains are equal.
- Adjust the chain tension: loosen the lock nut and adjust the chain by nut, then locked nut .

For instance, pay attention to abnormal noise.



17. Check steering system

Turn the wheel right and left separately to check steering system.

18. Turn signal, horn and other lamp check

Make sure that the turn signal operates properly by pull/push turn signal switch.

Make sure that the sound of horn is properly by press the horn button

Check the other lamp and back-up buzzer.

19. Battery maintenance

Refer to battery section.

20. Other

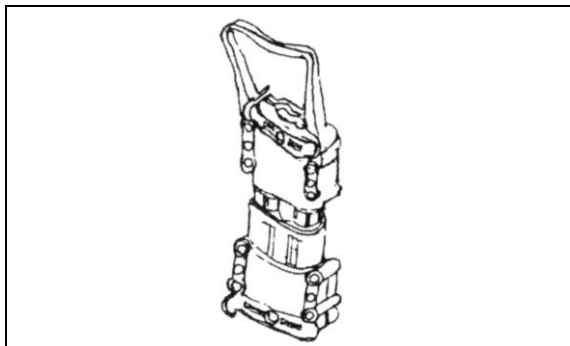
11. Driving and Operation

WARNING

- **Before operating the truck, check all controls and warning devices for proper operation. If any damage or fault is found, don't operate truck until corrected.**

Driving

- Open the cap, and insert the storage battery plug, then close the cap.



- Set the direction switch to neutral position .
- Turn on key switch .
- Hold the steering wheel with left hand and turn on the key switch with right hand.
- Tilt back the mast
- Control the lifting lever to set the bottom of the fork 100-200mm above the ground. Control the tilting lever to fully tilt back the mast.
- Control direction lever.
- Forward: Push the direction lever forward.
- Backward : Pull the direction lever backward.
- Loosen the hand brake lever
- Step the brake pedal and push the hand brake lever to the front position.
- Hold the steering wheel with your left hand and attach your right hand.

Traveling

Step the accelerate pedal slowly, the truck will travel forward or backward.

Decrease speed

Loosen the accelerate pedal slowly, the truck will decelerate.

CAUTION

Decelerate the truck in the situations following:

- **Turning;**
- **Close the goods or pallet;**
- **Close the deposit area;**
- **Enter a narrow passage;**
- **The condition of road surface is bad.**

WARNING

- **Don't step the accelerate pedal and brake pedal at the same time.**

Turning

Unlike general passenger-cars, the turning wheels are located at the rear of the truck. This cause the counterbalance swing out when turning.

Slow down the truck and turn the steering wheel toward the side which you are turning. The steering wheel should be turned a bit earlier than as with the front wheel steering car.

CAUTION

- **Drive the truck slowly and control the steering wheel carefully, assure there is enough space to steer.**

Stopping or parking

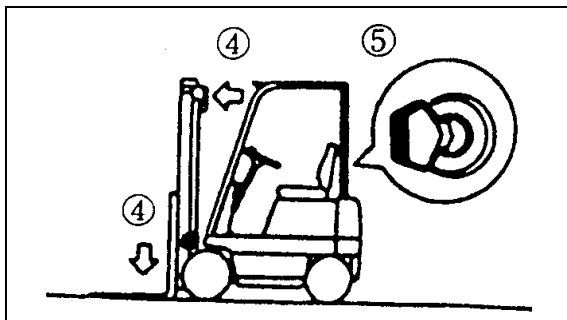
- Slow down and press the brake pedal to

stop the truck.

- Place the shift lever in neutral.
- Pull up the parking brake lever.
- Down the forks on the ground, tilt mast forwards fully.
- Place the key switch in "OFF" to shut off the battery. Remove the key and keep it.

⚠ CAUTION

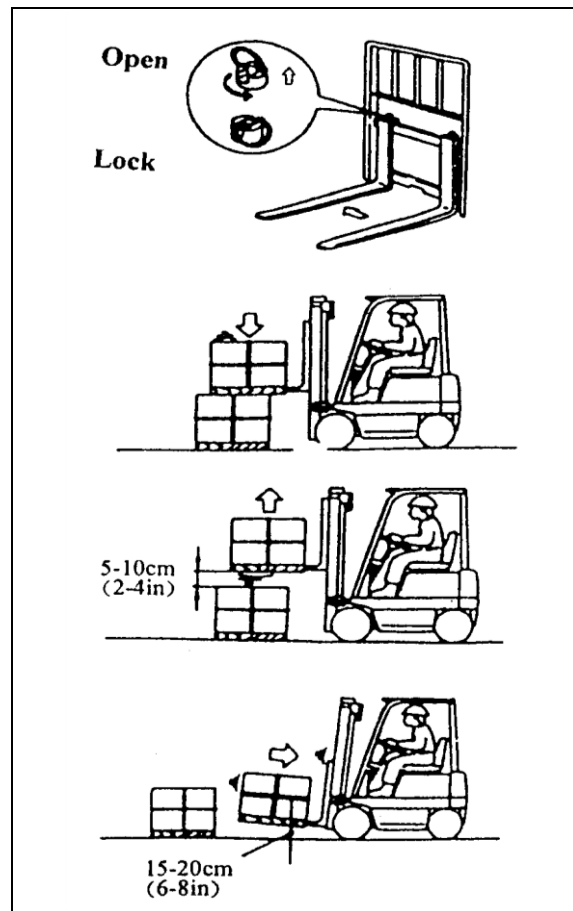
- **Don't dismount from the moving truck, never jump from the truck.**
- **Don't parking the truck on the working road.**



Loading

- The forks should be adjusted properly to maintain the balance of load.
- Place the truck right in front of the load to be handled.
- The pallet should be evenly positioned across both forks.
- Insert forks into the pallet as far as possible.
- To raise loads from the ground:
- Firstly, lift the forks 5 to 10 cm off the ground or floor and make sure loads lay stably.
- Then tilt the mast backwards fully and lift forks up to 15 to 20 cm off ground then start running.
- When handling bulky loads which restrict your vision, operate the truck in reverse


except when climbing grades.




Stacking load

- When approaching the deposit area slow down your truck.
- Stop the truck right 30 cm far away from the position where your load is to be deposited.
- Check the condition of the deposit area.
- Tilt the mast forward until forks become to horizontal. Raise forks until they are a little higher than the deposit position.
- Move forward to place the load directly over the desired area and stop the truck.
- Make sure your load is just over the desired area. Slowly lower the load into position. Make sure the load is securely stacked.
- Do necessary lift-tilt operations and then back away to make the forks leave loads.

- After making sure the forks leave the load, lower the forks to the basic position (15 to 20 cm off the ground).
- Tilt the mast backwards.

 **CAUTION**
Decelerate the truck in the situations following:


- **Turning;**
- **Close the goods or pallet;**
- **Close the deposit area;**
- **Enter a narrow passage;**
- **The condition of road surface is bad.**

 **WARNING**

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

Un-stacking load

- When approaching the area where the load is to be retrieved, slow down your truck.
- Stop the truck 30 cm far from the load.
- Check the condition of the load.
- Tilt the mast forward until forks become horizontal. Elevate forks up to the position of the pallet.
- Make sure forks are positioned properly to the pallet. Move forward slowly to insert forks into the pallet as far as possible.

 **CAUTION**

- **If the forks are hard to be fully inserted, use the following procedure: Move forward and insert 3/4 of the forks. Raise the forks 5 to**

10 cm and move backward 10 to 20 cm with the pallet on the forks, and then fall the pallet to the stack.


- **Move forward again to insert the forks fully.**

- Raise the forks 5 to 10 cm off the stack
- Check all around the truck to insure that the path of travel is unobstructed and back away slowly.
- Lower forks to a height of 15 to 20 cm above the ground. Tilt the mast backward fully and move to the desired area.

Check after operation

Clean and check the truck after operation:

- Damage or leakage.
- Add grease if necessarily.
- Check the tire if it is damaged or inset with foreign body.
- Check the wheel hub nut if it is loose.
- Check the height of electrolyte surface.
- If you haven't lift the fork to the max. height in the day, you should lift it to the max. height 2~3 times.

 **CAUTION**

- **If you find any trouble, must repair it in time.**
- **Prohibit operate the forklift before repairing it completely.**

12. Deposit

Daily Depositing

- Park your truck at the area appointed, and block the wheels to prevent accidental roll.
- Make sure the shift lever on neutral position.
- Pull up the hand brake lever.
- Shut off key switch and operate the lift and tilt lever several times so that the inner pressure in the hydraulic tube will decrease.
- Cramp out the electrical outlet.
- Take out the key and deposit it in a safe position.

Deposit the truck for a long time

On the basic of the “daily depositing” you should do these checks and maintenance additional:

- Take out plug to prevent discharge and place in shade.
- Brush antirust oil on those parts which is exposed such as piston rod and axle easy-rusted.
- Cover breather hole and so on which humidity easy to enter.
- Cover the whole truck with mantle
- All lubrication points add the oil (grease).
- Fill up the truck body and counter weight with stow-wood to reduce bearing of the two rear wheels.
- Operate the forklift once a week, and be required to lift the forks to its max. height many times .
- Check the proportion and the level of electrolyte once a month.
- Charge the battery equally once a month.



WARNING

- **The stow-wood must be single and hard enough to support the truck.**
- **Don't use a stow-wood higher than 300mm (11.81 inch) .**
- **Lift the truck to the height of placing on the stow-wood.**
- **Place two same size stow-woods under the left and right sides of the truck.**
- **After supporting the truck with stow-wood, swings the truck forward, backward, left and right, check its safety.**

Working after long deposit

- Get rid of antirust oil.
- Discharge the gear oil from driving axle, decelerator box, and clean up the internal of them. Add new oil.
- Charge the battery then install it to truck, and do not forget to connect the down-lead.
- Check carefully before starting, include start, advance, and back off, turning, lift, fall, tilt and so on.

13. Battery

Attention for using battery:

1. No firing

The gases produced during charging can cause explosions. This gas mixture is highly explosive and must not be ignited .

Explosive gas , smoking , flame and sparkle easily give off in the battery, each can cause battery explosion.



2. Protection against electric shock

⚠ WARNING

- Battery has high voltage and energy.
- Do not bring short circuit.
- Do not approach tools to the two poles of the battery , which can cause the sparkle.

3. Correct wire connection

Not allowing instead anode of cathode , otherwise, resulting in sparkle or burning or explosion.

4. Do not over-discharge

If you use the energy of battery till the forklift can't move, you will shorten its working hours. When the display of battery shows low capacity, please charge it quickly.

5. Inspection for electrolyte

Forbidden to use the truck when the electrolyte is shortage.

Inspection for electrolyte level every week.

When electrolyte level is low, you must add distilled water to the level appointed.

⚠ WARNING

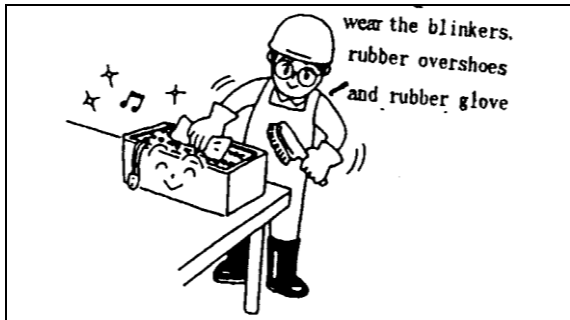
- The shortage of the electrolyte will cause the storage battery overheated, even cause the system part of storage battery and electric combustion.
- Vitriol include in the electrolyte can create burns, see doctor for emergency treatment quickly if touch it un-carefully.
- Splashing to the skin or eyes: wash with water 15~20 minutes;
- Splashing to the clothes: take it off immediately.
- Careless drinking: Instead of plenty of water and milk.
- Wearing glasses、rubber overshoes and rubber glove.

Remaining clean battery

Keep dryness and cleanness on the surface of battery .the poles for connection are also dry and clean. Operator must screw down the vent-cover of battery.

⚠ WARNING

- Do not use dry cloth or fiber cloth to clean the battery, avoiding static to cause the explosion.
- Pull out battery plug.
- Cleaning with wet cloth.
- Wearing glasses、rubber overshoes and rubber glove.



Measure in summer

In summer, water in the electrolyte is easy to evaporate, therefore, electrolyte must often be inspected if electrolyte is low, you must add distilled water to the level appointed.



WARNING

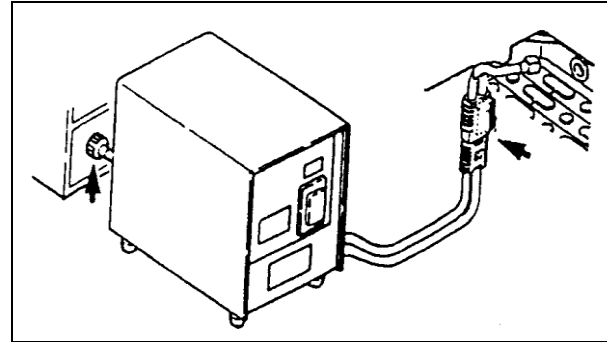
- **Filling with distilled water beyond the regulated range, Spilt electrolyte will cause corrosion and electricity leakage.**

Measure in winter

- Keep effective and good surrounding for charging.
- To prevent discharging, when it is cold, pull out the battery pin.
- Take measures, such as, covering battery for warmth.
- Charge in time after work.

Attentions for charging

- Please charge in the well-ventilated and appointed site.
- Mark 'no smoking' when charging.
- Inspect wire and electrical outlet.
- Before charging, please examine wire and electrical outlet whether been damaged.
- Check connections whether there is loosen, fasten if any.
- When wire or electrical outlet was damaged, please do not charge.



- Open forklift cover and battery lid when charging, in order to release the explosive gas .
- In the progress of charging, electrical source switch and battery pin are not to pull out, otherwise will destroy pin and electrical units. The normal procedure is that: press down the stopping button firstly, and then pick out the pin..

Charger

- Connect with earth wire when the charge is used.
- To replace fuse, make sure that the input and output circuits are disconnected.
- Only professional person is allowed to disassemble the cover to check and repair.
- Do not rebuild or disassemble charger.
- In high temperature season, pay attention to prevent the charge from destroy caused by high temperature. Stop the charge in short time when it is necessary.
- If a non-automatic charger is used, the charge voltage, current and charge time should be adjusted, and check the rate of battery electrolyte timely, so as to make sure that the charge of battery group is in good condition. The adjust parameters please refer to "battery charging" in the follow.
- Do not continuously charge.

- Continuously charge several batteries will cause charger overheat even be damaged. You can use the charger again after it has been rested for an hour.
- Select the charger according to battery's voltage and capacity (refer to parameter table).

Battery charging

There are two charge mode can be adopted, including intelligent charging and constant current charging. For the first charging, adopt the constant current charging.

All the batteries of the new truck are not added electrolyte.



CAUTION

- **During the charging, the temperature of electrolyte should not be exceeded 45°C . Otherwise you should low the temperature. If the temperature do not lowing, you should stop recharging , till the temperature drop down.**

Daily charging

- The battery that has been made the first charging and used regular, then charged again, is named daily charging.
- Its way is almost same as the first charging.
- The recharging value is 1.2 times than the last electric discharging. But the electric-change for new battery's fore five times should be 1.5 times than the last electric discharging.
- During any charge, the temperature of electrode should not be exceeded 45°C , otherwise it should be taken measures such as reducing artificially charging current or lowing the temperature. If the temperature doesn't drop, you should stop charging, till the temperature dropping down.
- Adopt intelligent charging for the daily charging. The first five charging should using Equilibrium Charge according to the intelligent charger operate manual.

Equilibrium Charge

- During using of the battery, it often occur disequilibrium among the voltage, the density and the capacity.
- Compared to most of the batteries , often finds that single battery's proportion of voltage and electrolyte rises slowly during the course of charge and during the course of discharge, its battery's proportion of voltage and electrolyte declines faster than most of other batteries.
- Make equilibrium charge in the following case:
 - a. Discharge voltage often drop down

ending voltage;

- b. Discharge current is often larger;
- c. Not charge in time after discharge
- d. The electrolyte is mixed with impurity with a little harm.
- e. It often be charged deficient or has not been used for a long time;
- f. After taking out the battery group for checking or cleaning settling.

The method of Equilibrium Charge:

- Firstly, charge the battery normally, and then rest for 1 hour after the end of charge.
- Charge it again with the current belongs to the second normally charge until the electrolyte gives off a large number of bubbles, then stop charging for 1 hour.
- Repeat it several times as mentioned above until the voltage and the density keep invariable and the battery gives off a large number of bubbles immediately when charge again.

Complementarity Charge

- If one day's work cannot be fulfilled with one charge, carry out opportunity charge during breaks.
- When the temperature of circumstance is low, carry out opportunity charge.

Charge for long-term storage

- Carry out equilibrium charge before storing.
- Carry out equilibrium charge once every 15 to 30 days during the storage period.
- The special orders storage battery carries on the charge according to "Accumulator Instruction for use".

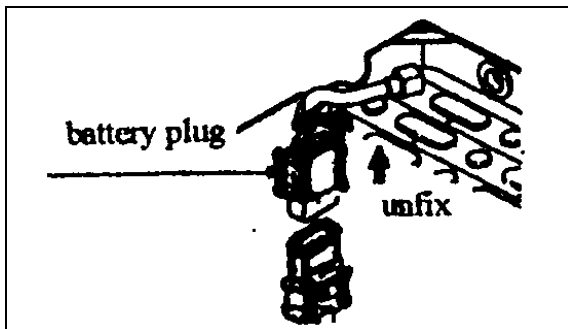
Battery replacement

⚠ CAUTION

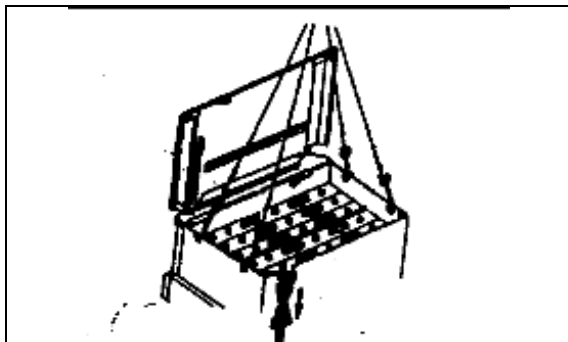
- Be sure that the voltage, the capability, the size and the weight of the new battery are according with the forklift truck before replacing the battery.
- Forbid to use battery with different voltage or capacity or weight except being promised by factory.

Replacement step

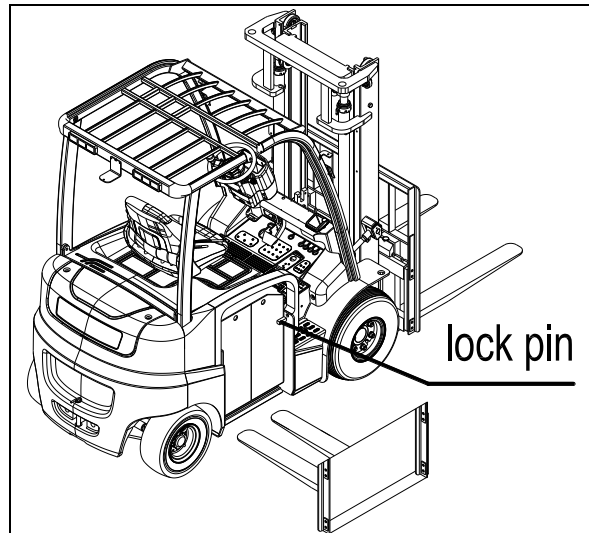
- Stop the forklift truck on the plain ground, pull up the hand brake lever.
- Open the hood cover.
- Disconnect the battery plug.



- Remove the lock pin.
- Use the proper tools to pull up the battery.



If you choose the forklift whose battery case can be move out from the side, you can use the fork to prop out the battery case tray..



Battery idposal

Batteries may only be disposed of in accordance with national environmental protection regulations or disposal laws. The manufacturer's disposal instructions must be followed.

The weight and dimension of Battery

Weight	Model	1.0t~1.8t
Min. Weight		700 kg
Max. Weight		900 kg
Dimension		980 mmx465 mmx780 mm

Weight	Model	2.0t~2.5t
Min. Weight		930 kg
Max. Weight		1200 kg
Dimension		1028 mmx570 mmx780 mm

Weight	Model	3.0t~3.5t 2.5t Long Wheelbase
Min. Weight		1200 kg
Max. Weight		1500 kg
Dimension		1028 mmx710 mmx780 mm

Weight	Model	4.0t~5.0t
Min. Weight		1800 kg
Max. Weight		1890 kg
Dimension		1028 mm×855 mm×784 mm



CAUTION

- The box must be pulled up with using 4 holes of the pothook at the same time. It is not allowed to pull up with only two holes. Otherwise, the asymmetric power will cause the battery damaged.
- The steering wheel and other equipment should not be bumped, avoid being damaged when pulling up the battery box.
- when you lift the battery side-on, you need to keep it stable and lift it slowly, to avoid hitting against the forklift which will break the battery.

- After exchange the full electricity of battery, plug into the lock pin, shut to the hood cover, and plug into the pin of the battery hard.

The waste electrolyte of the replaced battery should be dealt according to environment and protection law rather than reject at will.

The proportion and level of electrolyte



CAUTION

- If the level of the electrolyte is low, using the battery will cause the battery over-heat and shorten the battery's life.

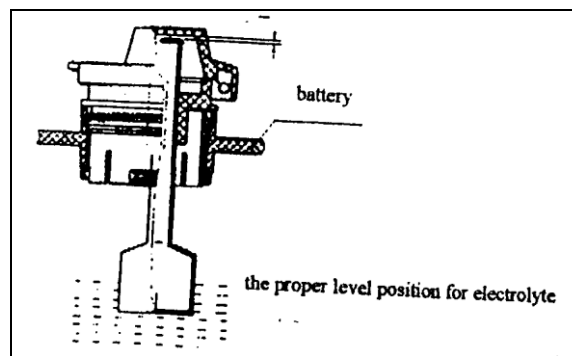
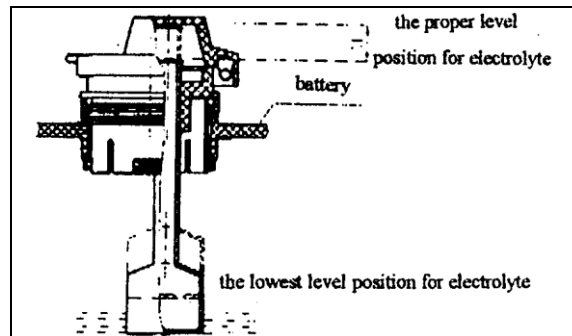
1. Inspect electrolyte

The battery without a dobber

It is proper to pour the electrolyte 15-20mm above the electrode plate.

The battery with a dobber

Depending on the dobber of the winded cover, and read the level position of the electrolyte.



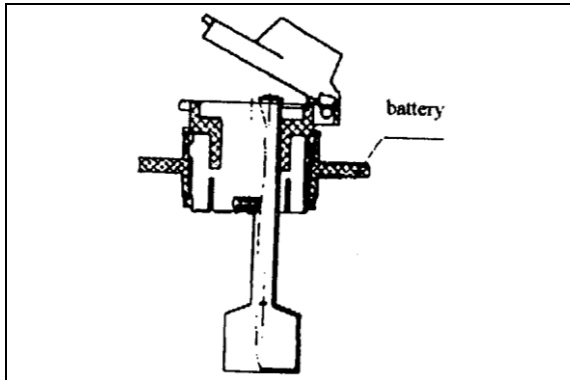
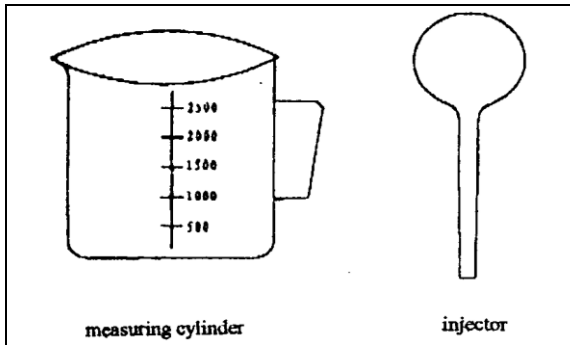
2. Replenish the distilled water

Wear the blinkers, rubber overshoes and rubber glove.

- Using the measuring cylinder to take out the distilled water with a certain quantity.
- Open the battery cover for every battery cell.
- Imbibe distilled water with injector and then supply it into the battery.

The battery with a dobber

When the red dobber rises, the white line is appeared, please stop to replenish the distilled water.



The battery without a dobber

When the electrolyte is above 15-20mm of the electrode plate, stop replenishing the distilled water.

- After replenishing the distilled water, close the pouring plug and battery cover.
- Using the damp cloth to clean the surface of every battery cell.

! CAUTION

- It is not permitted to overrun the appointed tiptop level when replenishing the distilled water. Adding it too much will result in leakage of electrolyte, and it will damage the truck when charging and discharging..
- Draw it out with injector if adding it too much.

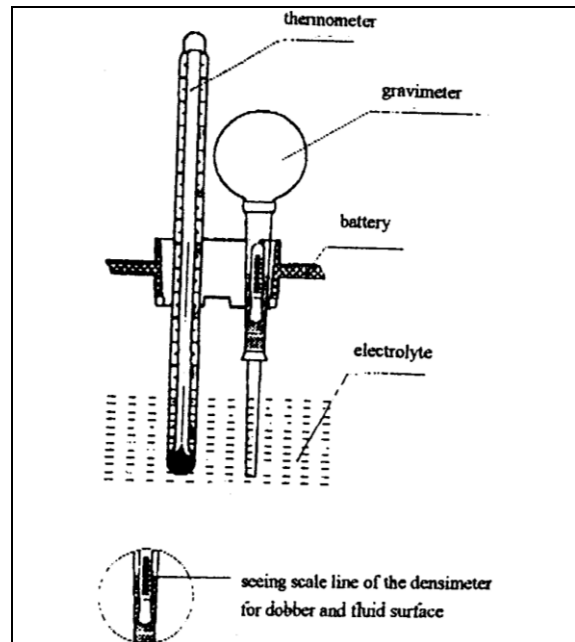
3. Read the specific gravity

- The specific gravity of the electrolyte should change follow the temperature.
 - a. Use thermometer to measure the temperature of electrolyte.

b. Put the straw of densimeter into electrolyte uprightly, extrude rubber tube with hand and the electrolyte will be sucked into the glasses tube and then the floater of the densimeter will float.

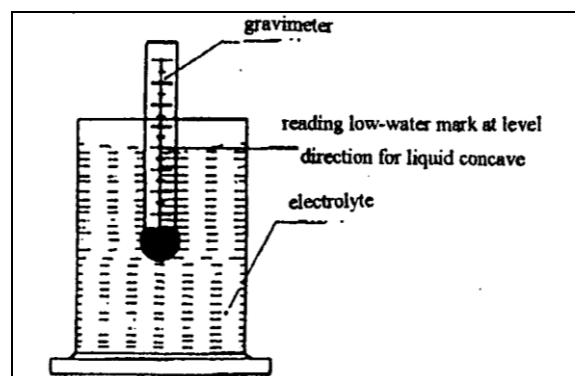
c. Numerate the reading of the densimeter.

Notice: The dobber of densimeter must rise uprightly without depending on the glass pipe.



- Specific gravity measure

Using the densimeter to measure the specific gravity.



- Conversion of the specific gravity

The specific gravity at the standard temperature of 30°C should be converted as follow:

$$D_{30} = D_t + 0.0007(t - 30)$$

Where : D_{30} —the specific gravity at the standard temperature of 30°C

D_t —the specific gravity at the temperature of $t^{\circ}\text{C}$.

t — the temperature of the distilled water during convert.

The specific gravity that was refered in this book is measured all at the temperature of 30°C .

14. Lithium battery

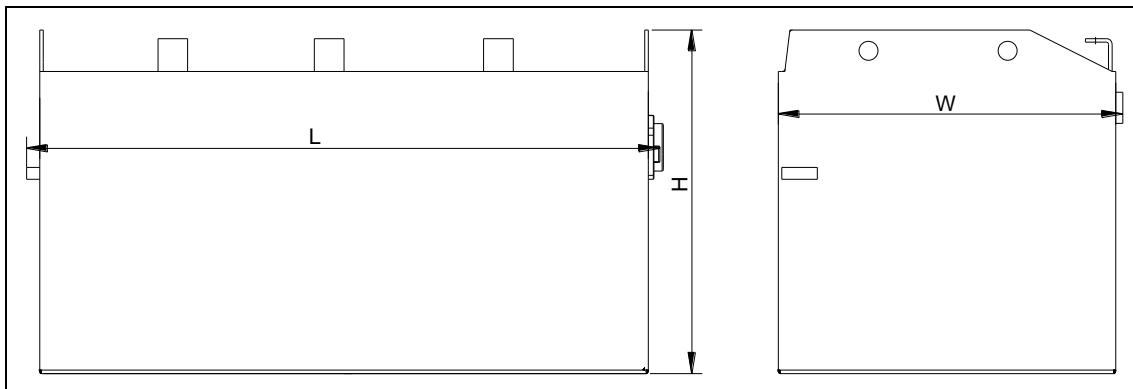
Precautions for Use:

1. Do not short-circuit the battery. Do not heat the battery or place the battery in water
2. Fully charge the new battery before use.
3. Do not remove the battery out of the safety valve.
4. Contact the manufacturer immediately in case of battery malfunction. Do not open the battery cover for maintenance.
5. To recharge the battery, use the battery charger specifically designed for the purpose, do not use other chargers to prevent battery damage.
6. If the battery occurs odour, heating, discoloration, deformation or any abnormal phenomenon during use, storage or recharging, immediately remove it from the equipment or charger and stop using it. Please immediately contact the manufacturer technician department or after-sales department.
7. If the battery post junction is oxidized, wipe with dry cloth and polish with fine sandpaper before use. Or it may lead to poor contact or performance failure.
8. Do not put the battery near heat source, dangerous goods and hazardous material, such as fire, heater, corrosive chemical or hazardous machinery; store the batteries in cool, dry and well ventilated places if not used.
9. Do not immerse the battery in water or any other liquids, which may cause personnel injury or property loss.
10. Electrodes short circuit is prohibited. Do not connect the battery terminals to any metal object other than compression bolt or conductive band or other conductive objects.
Do not connect the positive terminal of the battery to each other with any metal object other than compression bolt or conductive band.
11. Do not hammer, throw or step on the battery.
12. Do not connect the battery with the battery of other type in series or in parallel; do not operate the whole power system with lithium ion battery protection circuit board or battery management system in series or in parallel; if needed, contact our technical department for correct technical support.
13. Do not let children or other person lacking of safety knowledge have access to the equipment.
14. Do not disassemble, squeeze, puncture, storage at elevated temperature or bake the batteries. Violent vibration, impact and falls from heights should also be avoided.
15. Do not operate the equipment in a location where static electricity and magnetic field is strong. Or it may damage safety protection device, and lead to potential safety hazard.
16. Do not recharge without proper protection device(lithium ion battery circuit board protection, BMS etc.) or with improper charging device (charger or DC power).
17. Do not reverse charge, or it may completely damage the battery.
18. Clean the battery cover or pole with compressed air immediately if covered with dust, metal filing and other debris. Do not use water or soaked cloth for cleaning.
19. Do not expose battery cover or pole to water or other conductive objects when charging or discharging, such as rain.
20. If short-circuit the battery accidentally, cut the circuit immediately.
21. Traffic accident may cause the battery suffer destructive impacts and release a large amount of energy at once. Cool the battery with a dry powder extinguisher.
22. Evacuate all personnel in the case of battery crackle, smoke or burning. Spray the battery or immerse it in the water.
23. Burning or smoking hazards: If LFP battery is improperly used or effected by the environment, flammable electrolytic material leakage, evaporation or decomposition will occur at 150°C. It may produce HF or phosphorus oxide if burned. LIPF6 in electrolyte solution reacted with water will produce fluoride and carbon dioxide.
24. Extinguishing Media: Spray the battery or immerse it in the water. Class D fire extinguisher, CO₂, dry chemical or foam extinguisher is available.
25. If Ingestion: It may cause throat or respiratory infection. Drink plenty of water and seek medical attention. Do not swallow emetic. Keep respiratory tract not blocked, do not feed unconscious person any thing.

26. If Eye Exposure: Battery electrolyte solution may irritate eyes. Do not rub eyes, wash off with plenty of water for at least 15 minutes. Seek medical attention immediately when necessary or may lead to eye damages.
27. If Skin Exposure: Battery electrolyte solution may cause skin infection. Take off all contaminated clothing immediately .Wash off with soap and plenty of water for at least 15 minutes. Do not rub ointment.
28. If inhalation: Leakage or rupture may cause respiratory tract and edema etc. Evacuate to fresh air and keep pollution area well ventilated. Give oxygen or artificial respiration if necessary.
29. Protection measures: Use breathing equipment to protect from irritant gas. Wear protective clothing or other devices to protect from electrolyte solution.

Lithium battery parameter

Item		1.0t~1.8t	2.0t~2.5t	3.0t	3.5t	4.0t	4.5t	5.0t
Length (L)	mm	1027	1075	1075	1075	1028	1028	1028
Width (W)	mm	477	582	722	722	855	855	855
Height (H)		580	580	580	580	584	584	584
Lightest weight	kg	220	330	440	440	500	500	500
Rated capacity	Ah	200	252	400	400	400	400	400
Rated voltage	V	80	80	80	80	80	80	80



Battery work, storage temperature and transportation requirement

Battery working temperature is divided into charging temperature requirement and discharging temperature requirement:

- 1) The charging temperature range is 0°C-40°C. A high-rate recharging operation below 0°C may lead to battery damage;
- 2) The discharging temperature range is -20°C-60°C. If used in low temperature (-20°C-0°C) , battery discharge capacity will be smaller compared with the one in normal temperature condition, which is normal; battery used between 40°C-60°C in the long run will accelerate the aging of the internal material. It may shorten the service life of battery, so not recommended.
- 3) A recharging operation outside the above temperature range may negatively influence its performance or damage it, or shorten battery life. Avoid use at the above temperature.

Storage Temperature

1. Do not operate electric truck when it's above 60°C.
2. Do not recharge the battery pack/vehicle when it's below 0°C.
3. Do not immerse the battery pack in water.
4. It's recommended to charge to about 60% for long term(over 6 months) storage and cut off the power. Relative humidity should be above 95%.

The following table for reference


Storage temperature	Relative humidity	Storage time
-10°C-0°C	5%-95%	≤6 months 60% SOC
0°C-40°C	5%-95%	≤6 months 60% SOC
40°C-45°C	5%-95%	≤2 months 60% SOC

Transportation requirement:

- 1、 Violent vibration, impact, throwing, rolling, inversion, squeezing, excessive stacking etc. should be avoided in the handling and transport process;
- 2、 Do not expose in rain;
- 3、 Disconnect and cut off the power before transportation. Avoid charging or discharging.

Charging precautions:

- Charging in a safe environment (avoid liquid , fire source etc.);
- Equip fire extinguisher(sand and dry powder extinguisher) near the charger in case of emergency
- Make sure no dust, water and other debris in the charging gun and the charging socket before charging, charge until the debris are cleaned up, or it may cause heat by bad contact or even fire.
- Do not disassemble or modify the charging port or the charger. It may cause charging failure or fire hazard.
- To avoid sever injury, be aware of the below cases during charging:
 - (1) Do not touch the charging port or metal terminal in the charging gun.
 - (2) Do not recharge or touch the truck during lightning. Being struck by lightning may cause equipment damage or personnel injury.
- Do not touch the charger with wet hands or with feet in water when fully charged, which may lead to electric shock and personnel injury.
- Cover the charging port when fully charged to protect from debris during operation, which may cause charging port damage.
- Please be aware of the below cases to prevent equipment damage:
 - (1) Do not cover the port when the charging port is open;
 - (2) Do not pull or twist the charging cable;
 - (3) Do not hit the charger;
 - (4) Do not store or operate when it's above 50°C;
 - (5) Do not pull the charger when recharging, it may lead to arc discharging and cause property loss and personnel injury;
 - (6) Keep the charger away from heater or other heat source.

 **Caution:**

- Operate the truck under the supervision of technicians for the first use. Any questions, contact the manufacturer technician department or after-sales department. Do not disassemble and assemble the battery pack without authorization.

Charging procedures:

1. Stop the truck, turn off the key switch, and the truck is disconnected.
2. Pull up the four-wheel pedals on the charger tray, pull the charger to a proper position, step down four pedals to prevent movement.



3. Close the charger main input valve, make sure the emergency stop button bounce, the charger turns on automatically, the indicator illuminates, and the display screen starts automatically.

	Main input valve
	Emergency stop button
	Display screen

4. Remove the charging gun, press the button lock before pulling it out. Check the charging gun, make sure no water or debris on each port, or metal terminal damaged or influenced by rust or corrosion.



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



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





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

lay-down position, and pull down the charger main input valve.

9. Close the rechargeable lithium battery cover and truck charging door.



15. Maintenance summarization

- The fork lift truck needs inspection and maintenance periodically so as to make it in good working condition.
- Inspection and maintenance are usually ignored; you'd better find the problems and solve it in time.
- Use the orthodoxy spare part of HANGCHA GROUP CO., LTD.
- Don't use different oil when changing or adding oil.
- Forbid to repair the fork lift truck if you haven't been trained.
- Don't rave about oil and electrolyte used at will, and carry on handling according to the local environmental protection laws and regulations.
- Maintenance on schedule.
- After you make maintenance, you'd better make a record.



CAUTION

- No smoking.
- You should shut off key switch and pull off the plug before service(except some trouble shooting).
- Clean the electric part with compress air, do not with water.
- Do not place your hands, feet or any part of body into the gap between the mast and instrument.

The weight of the counterweight:

Tonnage	1.0 t/1.5 t	1.8 t	2.0 t 2.5t Wheelbase Long	2.5 t	3.0 t	3.5 t	4.0t	4.5t	5.0t
Weight	570(+0~40)	770(+0~40)	720(+0~40)	1020(+0~40)	1160(+0~40)	1530(+0~40)	1350(+0~40)	1600(+0~40)	1850(+0~40)

Preventive maintenance schedule

○ — Check, revise, adjust × — Replace

D—Daily; W—Weekly; M—Monthly; T—Trimonthly; S—Semiannually; Y—Yearly

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Lead-acid battery	Electrolyte level	Eyeballing		○	○	○	○	○
	Electrolyte proportion	Densimeter		○	○	○	○	○
	Battery quantity		○	○	○	○	○	○
	Terminal looseness		○	○	○	○	○	○
	Looseness of connecting wire		○	○	○	○	○	○
	Cleanness of the battery surface		○	○	○	○	○	○
	If there are tools on the battery.		○	○	○	○	○	○
	The tightness and smoothness of air cap			○				
	Far away from firing		○	○	○	○	○	○
Lithium battery	Check if there is crack or leakage on the battery.					○ 1 month for the first time	○	○
	Check for loose fastener bolt and nut					○ 1 month for the first time	○	○
	Check for the loose connection between the battery cells					○ 1 month for the first time	○	○
	If wire harness abraded or metal exposed					○ 1 month for the first time	○	○

Controller

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Controller	Check connector for worn					○	○	○
	Check contactor for running					○	○	○
	Check micromove switch for running					○	○	○

	Check the connection among motor, battery and power unit.					○	○	○
	Check the controller error diagnose system							First time 2 years

Motor

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Motor	Clean the foreign body on the motor				○	○	○	○
	Clean or replace the bearing						○	○
	Check the carbon brush and commutator for worn, whether spring is normal				○	○	○	○
	Whether the connection is correct and firm.				○	○	○	○
	Brush carbon powder on shift plate and shift device.					○	○	○

Driving system

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Heck wheel hub bolts for tighten torque	Check for noise		○	○	○	○	○	○
	Check for oil leaks		○	○	○	○	○	○
	Change oil						×	×
	Check wheel hub bearing for looseness,noise			○	○	○	○	○
	Clean and replace grease					×	×	×
	Leakage check		○	○	○	○	○	○
	Check wheel hub bolts for tighten torque				○	○	○	○

Wheels (Front, Rear Wheels)

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Tyre	Check for charge pressure	Barometer	○	○	○	○	○	○
	Check for abrasion, cracks or damage		○	○	○	○	○	○
	Check for spikes, stones or foreign matter				○	○	○	○
	Check the wheel hub for damage		○	○	○	○	○	○
	Check the split body wheel hub-bolts for looseness	Test hammer	○	○	○	○	○	○

Steering System

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Steering wheel	Check for clearance		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for radial looseness		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for axial looseness		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for operation		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Steering Gear box and valve	Check mounting bolts for looseness				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Steering axle	Check king pins for looseness or damage				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for deflection, deformation ,cracks or damage				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for fixing condition	Test hammer			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Steering cylinder	Check for operation		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for oil leaks		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for looseness when fixing or hinging				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Brake system

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Brake pedal	Check for free travel	Scale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for pedal travel		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for operation		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for air mixed in brake piping		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parking brake	Check for lever is securely locked and has sufficient lever stroke		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for operation		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rod, Cable, etc	Check for operation				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check connections for looseness				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check decelerator connector lug for abrasion					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hoses and Pipes	Check for damage, leakage or collapse				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check connection or clamping parts for looseness				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brake master cylinder and wheel cylinder	Check for leakage		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check for fluid level, Change brake fluid		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		×	×
	Check master cylinder and wheel cylinder for operation					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check master cylinder and wheel cylinders for fluid leaks or damage					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Check master cylinder piston cup, and check valve for wear or damage change						×	×

Hydraulic system

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Hydraulic reservoir	Check for oil level, Change oil		○	○	○	○	×	×
	Clean suction strainer						○	○
	Clean foreign matter						○	○
Control lever	Check levers for looseness		○	○	○	○	○	○
	Check for operation		○	○	○	○	○	○
Control valve	Check for oil leak		○	○	○	○	○	○
	Check relief valve and tilt lock valve for operation				○	○	○	○
	Measure relief pressure	Oil press gauge					○	○
Hose, Piping Hose Reel & Swivel Joint	Check for oil leak, looseness, collapse, deformation and damage				○	○	○	○
	Replace hoses.							× 1-2 years
Hydraulic Pump	Check hydraulic pump for oil leak or noise		○	○	○	○	○	○
	Check pump drive gear for wear				○	○	○	○

Lifting system

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Chains & Sheave	Check chain for tension, damage or rust		○	○	○	○	○	○
	Add lubrication for chains				○	○	○	○
	Check connection of chain anchor pin and chain for looseness				○	○	○	○
	Check sheaves for deformation or damage				○	○	○	○
	Check sheave bearings for looseness				○	○	○	○
Attachment	Perform general inspection				○	○	○	○
Lifting cylinder and tilting cylinder	Check piston rod, rod screw and connection for looseness deformation or damage	Test hammer	○	○	○	○	○	○
	Check cylinders for operation		○	○	○	○	○	○
	Check for oil leak		○	○	○	○	○	○
	Check pins and cylinder bushings for wear or damage				○	○	○	○
Fork	Check forks for damage, deformation or wear				○	○	○	○
	Check for stopper pins for damage or wear					○	○	○
	Check fork base and hook welding for defective cracks or wear				○	○	○	○
Mast & Lift Bracket	Check weld between cross members with outer and inner masts for defective, cracks or damage				○	○	○	○
	Check tilt cylinder bracket and mast for defective weld ,cracks or damage				○	○	○	○
	Check outer and inner masts for defective weld, cracks or damage				○	○	○	○
	Check for defective weld, cracks or damage of lift bracket				○	○	○	○
	Check roller bearings for looseness				○	○	○	○
	Check mast support bushings for wear or damage						○	○
	Check mast support cap bolts for looseness	Test hammer			○ (for 1st time)		○	○
	Check lift cylinder tall bolts, piston rod head bolts, U-bolts, and piston head guide bolts	Test hammer			○ (for 1st time)		○	○

	for looseness							
	Check rollers, roller pins and welded parts for cracks or damage				○	○	○	○

Others

Item	Service required	Tools	D (8 h)	W (40 h)	M (166 h)	T (500 h)	S (1000 h)	Y (2000h)
Overhead Guard & Load Backrest	Check for tight installation	Test hammer	○	○	○	○	○	○
	Check for deformation, cracks or damage		○	○	○	○	○	○
Turn signal	Check for proper operation and tight installation		○	○	○	○	○	○
Horn	Check for proper operation and tight installation		○	○	○	○	○	○
Light & Lamps	Check for proper operation and tight installation		○	○	○	○	○	○
Buck-up Buzzer	Check for proper operation and tight installation		○	○	○	○	○	○
Meters	Check meters for proper operation		○	○	○	○	○	○
wire	Wire damage or looseness			○	○	○	○	○
	Looseness of Electric circuit Joint				○	○	○	○

Replace the key safe parts termly

- Some parts should be checked periodically to detect the damage, for improving the safety, users should replace the parts periodically which are listed in the table as follows.
- If the parts are abnormal before the replacing time is coming, it should be replaced immediately.

Key safe part's description	Term of using (year)
Brake hose or tube	1~2
Hydraulic hose for lifting system	1~2
Lifting chain	2~4
High-pressure hose , hose for hydraulic system	2
Brake oil cup	2~4
Brake master cylinder, brake slave cylinder cover and dust sleeve	1
Inner hermetic, rubber matter	2
Rubber pad of the steering axle	4

Table for oil used in the truck

Name	Trademark, code name	Capability	Remark
Hydraulic oil	Normally: L- HM32 Cold environment :L-HV32	35 L	1.0t~3.5t
		45	4.0t~5.0t
Gear oil	GL-5 85W/90 (Cold environment Cold storage forklift: GL-5 80W/90)	4.5 L	1.0t~1.8t
		6 L	2.0t~3.5t
		8 L	4.0t~5.0t
Brake Fluid	(Choice) HZY3 or DOT3	0.6 L	1.0t~3.5t
		1.0 L	4.0t~5.0t
Industrial Vaseline	2#		Electrode of storage battery
Lubrication grease	Automobile general lithium base lubricant		

Table for bolts tightening torque

Unit: N·m

Bolt's diameter	Grade			
	4.6	5.6	6.6	8.8
6	4~5	5~7	6~8	9~12
8	10~12	12~15	14~18	22~29
10	20~25	25~31	29~39	44~58
12	35~44	44~54	49~64	76~107
14	54~69	69~88	83~98	121~162
16	88~108	108~137	127~157	189~252
18	118~147	147~186	176~216	260~347

20	167~206	206~265	245~314	369~492
22	225~284	284~343	343~431	502~669
24	294~370	370~441	441~539	638~850
27	441~519	539~686	637~784	933~1244

Note:

- Use entirely 8.8 grade bolt in the important joint position.
- Bolt's grade can be found in the head of the bolt, if it can't be found, the grade is 8.8.

16. The use, Install and Safety Rules of attachment

HANGCHA will choose attachment that according with International standard ISO2328 《Forklift pothook fork and install size of carriage》, such as clamp, rotator, paper roll clamp, carrying ram, side-shifter ect.

Attachment assy

- **Untempered technology licence of our company, any refit at safety and capability to attachment is strict prohibit.**
- **Fact rating load capacity should be the least of rating load capacity, the load capacity of attachment, colligate load capacity of truck. Generally speaking, the colligate load capacity of truck is the least. Attachment load capacity just a count value of attachment pressure.**
- **Assy go to in reason, credibility, safety to avoid the attachment glide around carriage in using.**
- **After hang attachment, embed the rise catch block to the gap of top beam, let the offset of centre line of attachment and carriage is less than 50mm. Otherwise, it will be affect the landscape orientation stability of forklift.**
- **To these attachment with rotating function, such as paper roll clamp, bale clamp, muti-purpose clamp, drum clamp, it needs to weld chock block in the joint of carriage beam and attachment to prevent move from side to side in the operation.**
- **Assy the attachment of below catch orientation, it need to adjust the clearance between below catch and beam of carriage.**

Attachment use

- Know well the content of nameplate on attachment, read the instruction manual before
- Usage. (Especially the manual from attachment company) Before operate the attachment, the people should be trained and obtain the qualification.
- It should be understand the basic capability and operate methods of attachment. Especially the admit load, lift height, size of cargo and adapt range of attachment.
- Operate the multi-functional attachment, such as with side-shifter, clamp or rotator, it is not allowed that two action at one time. Operate one functional then do another one.
- Prohibit the cargo at a high position when truck move with attachment. If the size of cargo is too big, prohibit the truck move on. Transport the cargo, make sure that the distance of bottom of cargo and ground is less than 300mm and mast incline back.
- The weight of cargo couldn't exceed the limited value of combination carrying capacity of forklift and attachment. It is not allowed that partial load at high position. It is a short time work for attachment with side-shifter. Partial load is around 100mm (Above 5 ton (including 5 ton), the side-shifter movable within 300mm).
- In the range of the projection forth 2m of the lower of attachment and cargo, prohibit stand to

avoid the suddenness except the driver position under overhead.

- It is not allowed that an emergency brake in moving. Run slowly with load.
- Prohibit outside force when attachment working.
- It couldn't be use at malfeasance situation and overstep normal work range.
- When the attachment failure, prohibit use without check.

Check and maintenance:

- Check the clearance of carriage beam and below catch of attachment if accord the attachment manual.
- Check the rise catch is right on the flute of fork carriage.
- Use the auto currency lithic-grease per 500 hours to bearing surface.
- If the tighten firmware become flexible.
- Check the tie-in of hydraulic pressure loop, if tube attaint. Prohibit use after repair.
- Check the drive of attachment timing or turn the component if fray or block, change betimes.
- Check each element if in normal under load attachment is work in gear. If not, check the hydraulic pressure loop, find out the broken part, change air poof or whole loop part.

17. Battery automatic filling water system(Optional)

Makeup of the automatic filling watering system:

- Automatic Watering Plug
- End Plug
- Floater
- T-piece & L-piece
- Flow Indicator (with filter)
- 6mm, 8mm ,10mm watering pipe
- Male & Female couplings (Kv10 and KV6, etc.)
- Water Tank



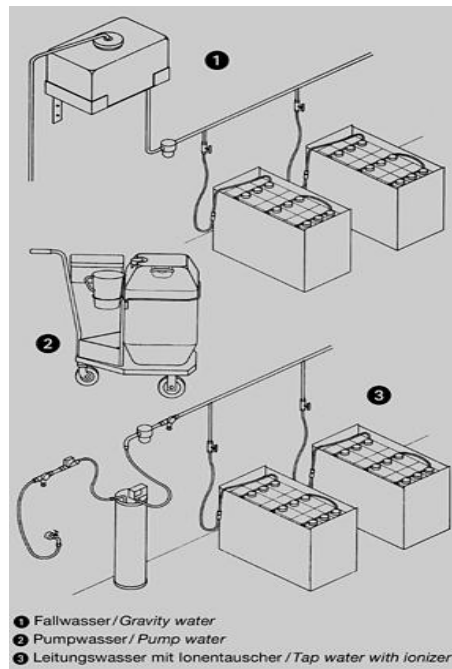
Application specification and installation

During the period of development and long-term practical usage, the leak tightness of automatic watering system has received complete recognition.

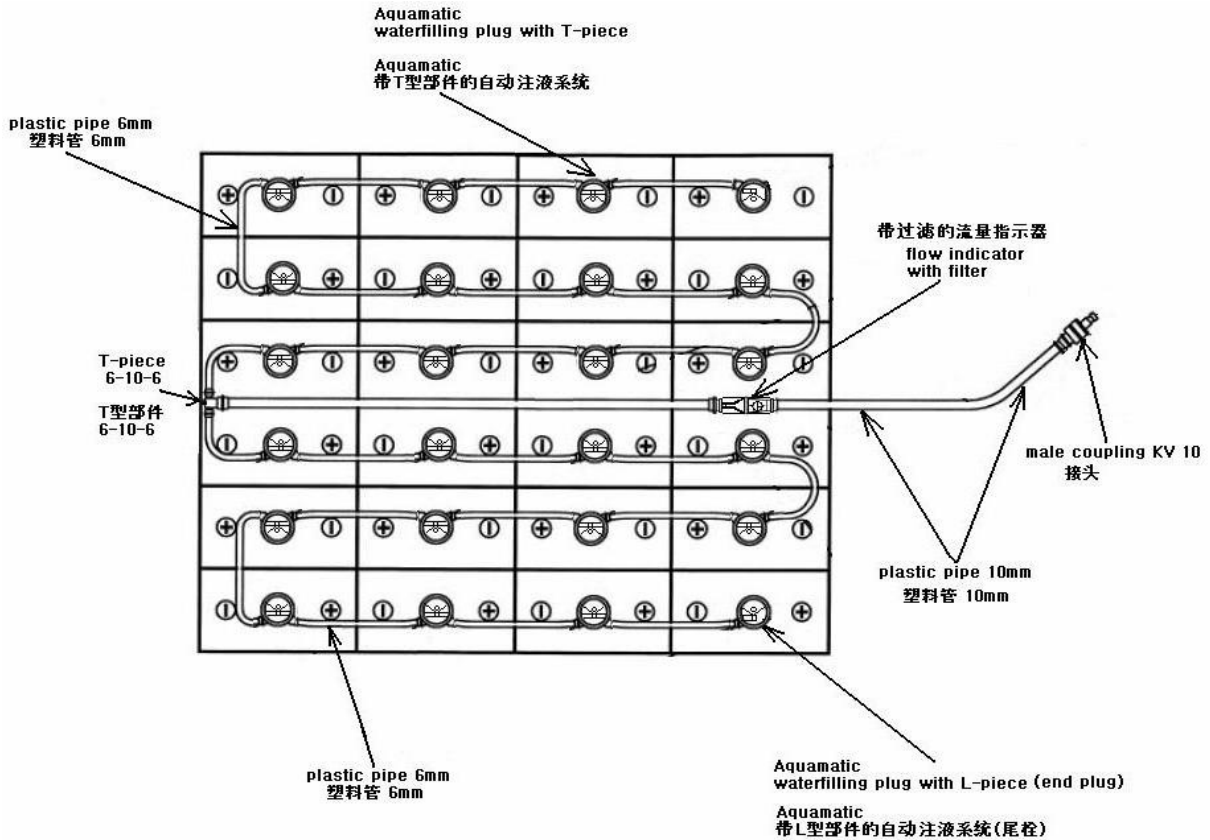
But when you use it, you need to keep the automatic watering system clean and there can't be any filth on the surface.

How to properly install the automatic watering system: Our automatic watering system is easy to operate, no need to finish watering the electrolyte in the storage battery by hand, time saving and labor saving, besides, it can extend the service life.

How to correctly install the water tank, choose proper floaters, how to confirm the specification & quantity of the installed accessories according to different types of battery, including correct application rules for automatic watering plug, watering pipe, T/L-pieces and male/female couplings as well as the cleaning of the flow indicator. We will give you a brief introduction for the above items as follows:



Battery spec.	Watering head	T-piece (6-10-6)	Flow indicator (filter)	6mm Watering pipe	10mm Watering pipe	end plug	Male/female K10	Water tank specification
	T-piece							
24 V	12 pcs	1 pcs	1 pcs	3m	5m	2pcs	1pcs	30L 1pcs
48 V	24 pcs	1 pcs	1 pcs	5m	5m	2pcs	1pcs	30L 1pcs
80 V	40 pcs	1 pcs	1 pcs	10m	5m	2pcs	1pcs	60L 1pcs



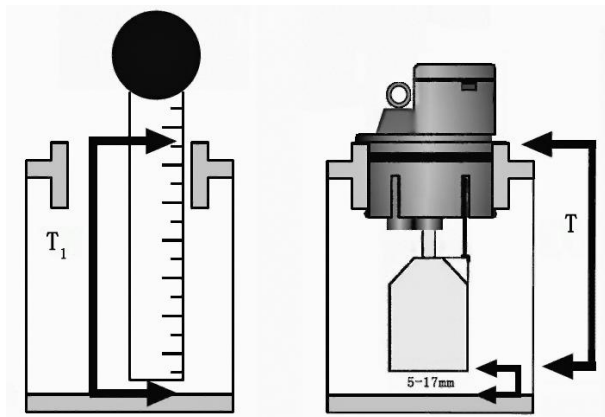
Automatic Watering System of Forklift Storage Battery-48V battery group

Floater

How to choose proper floaters correctly:

According to different storage battery, we have five kinds of floaters for you to choose. In order to achieve our expected standard and completely reflect the effectiveness of the automatic watering system, the most important thing is to choose proper floaters. At present our company can offer a rule for the client to make judgment and choose the type of floater. (see diagram)

The diagram the installation way of the floaters:



$T = T_1 - (5 \sim 17\text{mm})$

T approaching	47	50.5	58	61	72
Float	13	16.5	24	27	38

Watering pipe

Our company offers watering pipes of different types and the clients can choose what they need according to the specification of the battery. The watering pipe must be perfectly sealed with T-piece and L-piece.

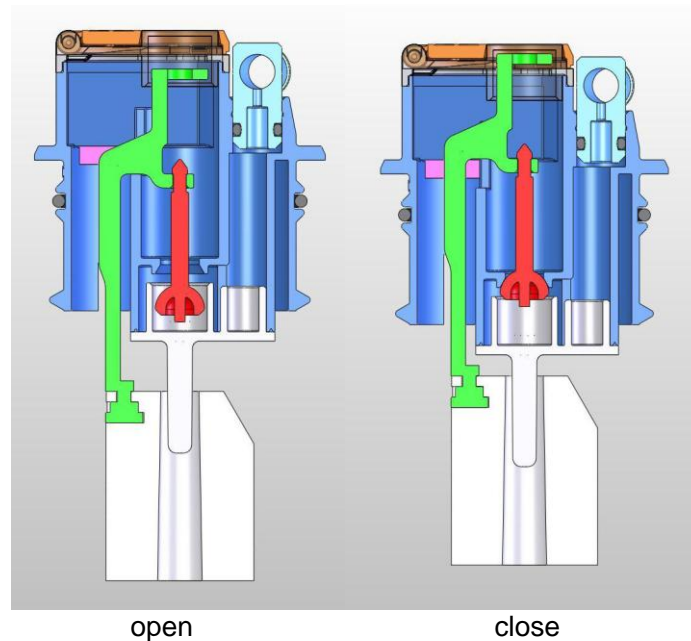
Notes during the filling process:

- In order to ensure a safe watering process, we hereby recommend you to use flow indicator (with filter), the flow indicator with filter can not only timely indicate whether it finishes watering, but also avoid unclean impurities entering the battery to result interruption.
- You'd better conduct watering within the specified periods, because frequent filling will lead to overflowing for too much water, which will do great damage to the storage battery.

Note: Filling after finishing charging is the best ideal state, besides, do not filling before charging.

Cleaning

- During the period of development and long-term practical application, the leak tightness of automatic watering system has been completely approved.
- When you use it, you must pay much attention to keep the automatic watering system clean. No filth remaining on the surface.
- The users should regularly clean the watering plug for the plug is a kind of plastic good. Clean the surface directly with tap water and no need to use other detergent.



Structure Diagram of the Watering Plug

Characteristics of the automatic filling watering system

- No need to water by hand, labor saving.
- No malfunction factor leading to damage the battery.
- Easy & safe operation.
- Ensure a precise electrolyte level in every battery cell.
- Prevent leakage when watering.
- Effectively avoid the acid liquid to erode the storage battery and the electrolytic bath.
- Extend the service life of the battery.
- Environment protection.
- Save energy.

Function Introduction:

- Function of the automatic watering system: the floater of the automatic watering plug can reach correct water level, when the level rises in the cell, the pressure closes the valves and prevents further water entering the cell. When the system finishes watering, the flow indicator will stop running and you can see the water-level indicator clearly through the top of the watering system.
- Besides, the material of floater can avoid damage and ineffectiveness.
- As for the structure of automatic watering system, there is a terraced step, when the electrolyte gas rises to the watering plug, the terraced part can prevent the leakage of the electrolyte gas as well as quickly cool the electrolyte gas to make them go back to the storage battery in time.

18. Related Safety Instruction and Standard(For CE)

For trucks exporting to Europe or option.

The model by CE certification which according to the following instruction and standard:

- DIRECTIVE 2006/42/EC OF THE EUROPEAN PAMENT AND OF THE COUNCIL, DIRECTIVE 2000/14/EC OF THE EUROPEAN PAMENT AND OF THE COUNCIL, EN1726-1:1998(Engineering Industry truck safety standardize), EN12053:2001, EN1175-1:1998, EN13059:2002 coordinate standard.
- Main safety factor will be according with DIRECTIVE 2006/42/EC OF THE EUROPEAN PAMENT AND OF THE COUNCIL and EN1726-1:1998、 EN1175-1:1998 standard.
- The design and manufacture of electrical element comply with the low voltage standard 2006/95/EC.
- Noise will be according with EN12053:2001 and 2000/14/EC.
Sound pressure level on the operator's position is lower than 75dB(A), measurement uncertainty is 1.5dB(A).
Vibration parameters are measured according to standards of ISO5349-2:2001, EN13059:2002, ISO2631-1:1997, and the result meets the requirement of 2002/44/EC.
Whole body vibration is lower than 1.1m/s^2 .
- Electromagnetism compatibility is measured according to standard of EN12895:2000, and meets the requirement of 2004/108/EC.

HANGCHA GROUP CO. , LTD.

- Address For: OVERSEAS USERS
- Address: 666 Xiangfu Road, Hangzhou, Zhejiang, China
- Fax: 0086-571-88926789 0086-571-88132890 ■ ZIP:311305
- Web: <http://www.hcforklift.com> ■ E-mail: sales@hcforklift.com