1.5t-5.5t（3300lb-11000lb）XF2 series

Internal Combustion Counterbalanced Forklift Truck

OPERATIONAL AND MAINTENANCE MANUAL

Original Instruction

HANGCHA GROUP CO., LTD.
OM24-XF204(12/2024)

Standard model

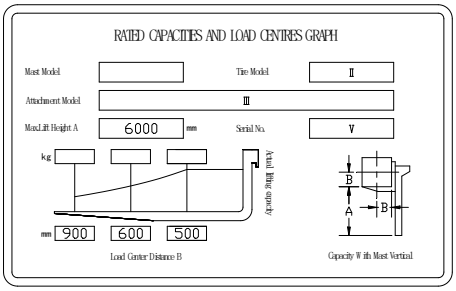
Load center mm(in)	500(24)				
Model	CPCD15-	CPCD18-	CPCD20-	CPCD25-	CPCD30-
Rated capacity kg(lb)	1500(3300)	1750(3850)	2000(4400)	2500(5500)	3000(6600)
Model	CPCD35-	CPCD40-	CPCD45-	CPCD50-	CPCD55-
Rated capacity kg(lb)	3500(7700)	4000(8800)	4500(10000)	5000(11000)	5500(12000)

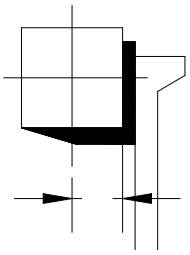
Load center mm(in)	600 (24)				
Model	CPCD15-	CPCD18-	CPCD20-	CPCD25-	CPCD30-
Rated capacity kg(lb)	1360 (3000)	1590(3500)	1810(4000)	2270(5000)	2720(6000)
Model	CPCD35-	CPCD40-	CPCD45-	CPCD50-	CPCD55-
Rated capacity kg(lb)	3180(7000)	3630(8000)	4080(9000)	4540(10000)	4990(11000)

CE model: Optional Overall maximum lift height 7000mm

Caution | **Loading Capacity Chart**

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





Load center

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

Hydraulic transmission forklift

Model	Engine	Hydraulic transmission
CPCD30/35-X2H7F1	XINCHAI 3E22YG51	X2F301-120000-G00
CPCD20/25-X2H7F1		
CPCD15/18-X2H7F1		X2F151-120000-G00
CPCD30/35-X2H7B1	XINCHAI 3E22YG51	X2B301-120000-G00
CPCD20/25-X2H7B1		
CPCD15/18-X2H7B1		X2B151-120000-G00
CPCD20/25-X2W97B1	Kubota V2607-CR-E5B	X2B301-120000-G00
CPCD30/35-X2W97B1		
CPCD20/25-X2W97B	Kubota V2607-CR-E5B	X2F301-120000-G00
CPCD30/35-X2W97B		
CPYD15/18-X2H23F1	GCT GK21VL02H	X2F151-120000-G00
CPYD15/18-X2H23B1		X2B151-120000-G00
CPQYD15/18-X2H24F1	GCT GK21VD01H	X2F151-120000-G00
CPQYD15/18-X2H24B1		X2B151-120000-G00
CPYD20/25-X2H21F1	GCT GK25VL02H	X2F301-120000-G00
CPYD30/35-X2H21F1		
CPYD20/25-X2H21B1	GCT GK25VL02H	X2B301-120000-G00
CPYD30/35-X2H21B1		
CPQYD20/25-X2H22F1	GCT GK25VD01H	X2F301-120000-G00
CPQYD30/35-X2H22F1		
CPQYD20/25-X2H22B1	GCT GK25VD01H	X2B301-120000-G00
CPQYD30/35-X2H22B1		
CPQYD20/25-X2W22F1	GK25 gasoline engine GCT	X2F301-120000-G00
CPQYD30/35-X2W22F1		
CPQYD20/25-X2W22B1		X2B301-120000-G00
CPQYD30/35-X2W22B1		
CPCD40/45-X2W99BN	Kubota V3307-CR-TIE5B	XBN458-130000-G01
CPCD50/55-X2XW99BN		
CPCD40/45-X2H8BN	XINCHAI 4E30YG52	XBN458-130000-G01
CPCD50/55-X2XH8BN		
CPYD40/45-X2H11BN	Kubota WG3800-L-E5C	XBN458-130000-G01
CPYD50/55-X2XH11BN		
CPQYD40/45-X2H12BN	Kubota WG3800-GL-E3C	XBN458-130000-G01
CPQYD50/55-X2XH12BN		

Model	Engine	Hydraulic transmission
CPYD40/45-X2H20BN	PSI 4.3	XBN458-130000-G01
CPYD50/55-X2XH20BN		
CPYD40/45-X2W24BN	PSI 4.3	XBN458-130000-G01
CPYD50/55-X2XW24BN		
CPCD40/45-X2H8F	XINCHAI 4E30YG52	XRF4611-120000-G00
CPCD50/55-X2XH8F		
CPCD40/45-X2W58BN	Cummins QSF2.8	XBN458-130000-G01
CPCD50/55-X2XW58BN		

Hydrostatic Transmission Forklift

Model	Engine
CPCJ30/35-X2H7	XINCHAI 3E22YG51
CPCJ20/25-X2H7	

Foreword

1.5t-5.5t(3300lb-7700lb) XF2 series internal combustion forklift is a new product developed by our company, and features high energy efficiency and environmental protection, an attractive shape and superior performance.

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

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

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

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

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

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

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

DANGER

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

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

WARNING

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

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

CAUTION

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

Contents

I、Forklift Overview

1、Forklift operating environment (conditions)

Forklifts are intended for use within the factory premises only, on solid and even surfaces such as cement, asphalt, or concrete roads. Operations should only be conducted after complete removal of snow, ice, water accumulation, or any foreign objects and obstacles; otherwise, there is a risk of vehicle loss of control and potential personal safety accidents.

Forklift operations should comply with the following normal climatic conditions:

a) The average ambient temperature for continuous operation: +25°C;

b) The highest ambient temperature for short-term use (≤1 hour): +40°C;

c) The minimum ambient temperature for normal indoor use of the vehicle: +5°C;

d) The minimum ambient temperature for normal outdoor use of the vehicle: -20°C;

e) Altitude: ≤2000m.

⚠ Caution

- Please inspect the road surface for any holes, steep slopes, obstacles, protrusions, and conditions that may lead to loss of control or rough driving before setting off.
- Remove any garbage, debris, and foreign objects that could potentially puncture tires or cause cargo to become unbalanced.
- Drive slowly on slippery surfaces, avoid driving along the roadside, and exercise extra caution when it is inevitable.
- Uneven terrain can cause vehicle vibration and noise. Overinflated tires can also result in vehicle vibration and noise.
- When loading uphill, ensure the forks are facing forward; do not drive laterally or diagonally. When descending, drive in reverse.

⚠ Warning

- Refrain from operating the forklift in severe weather conditions such as dust storms, snow, thunder, heavy rain, or high winds.
- It is forbidden to use this forklift in areas designated for explosion-proof equipment. If required, customers may consult and acquire specialized explosion-proof forklifts from our company.
- When using this forklift in extreme environments, particularly those with significant dust or that are prone to causing corrosion and rust, it is mandatory to install additional special equipment and to obtain our company's authorization.

2、Expected use of forklift

This forklift is permitted for the following uses only:

a) Loading, stacking, and unstacking goods;

b) Short-distance transportation of goods;

c) Prohibited from carrying passengers;

d) Prohibited from pushing or pulling goods;

e) Prohibited from towing other vehicles or items;

f) Forklifts equipped with attachments should be used in accordance with the purposes specified by the attachment manufacturer.

Danger

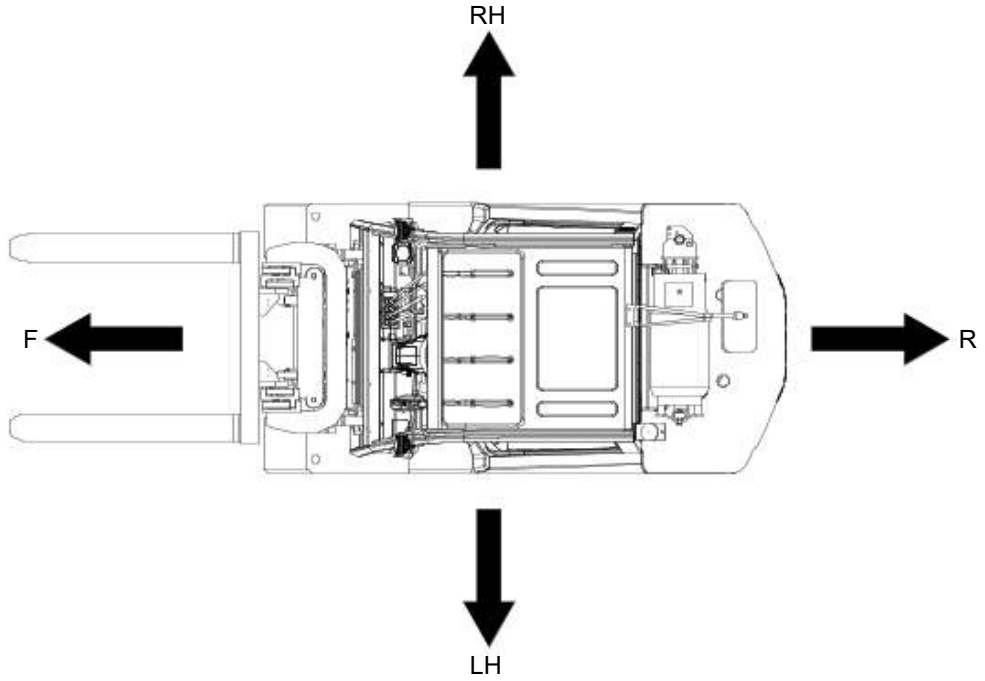
When stacking, unstacking, or moving goods over short distances, do not exceed the rated lifting capacity of the forklift.

Warning

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

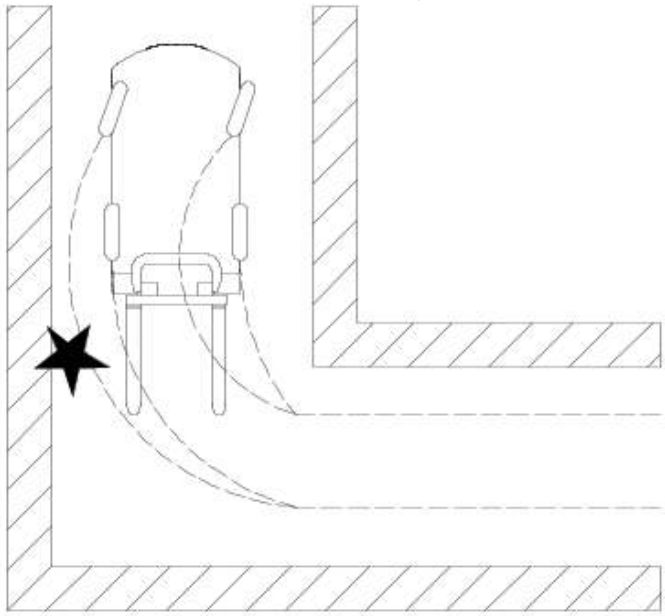
3、Forklift direction and wheel trajectory

The following figure shows the direction of the forklift when the operator faces the control panel.

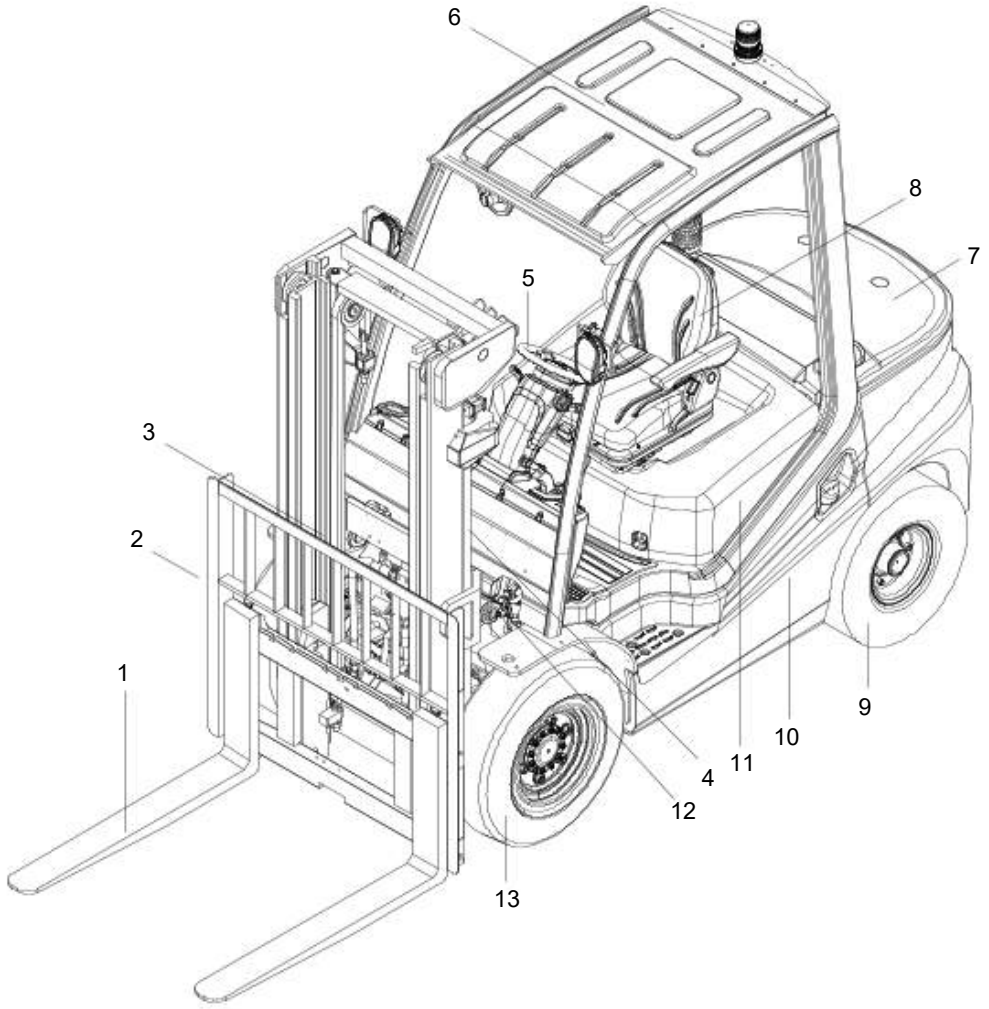


F-Forward direction R-Backward direction LH-Left direction RH-Right direction

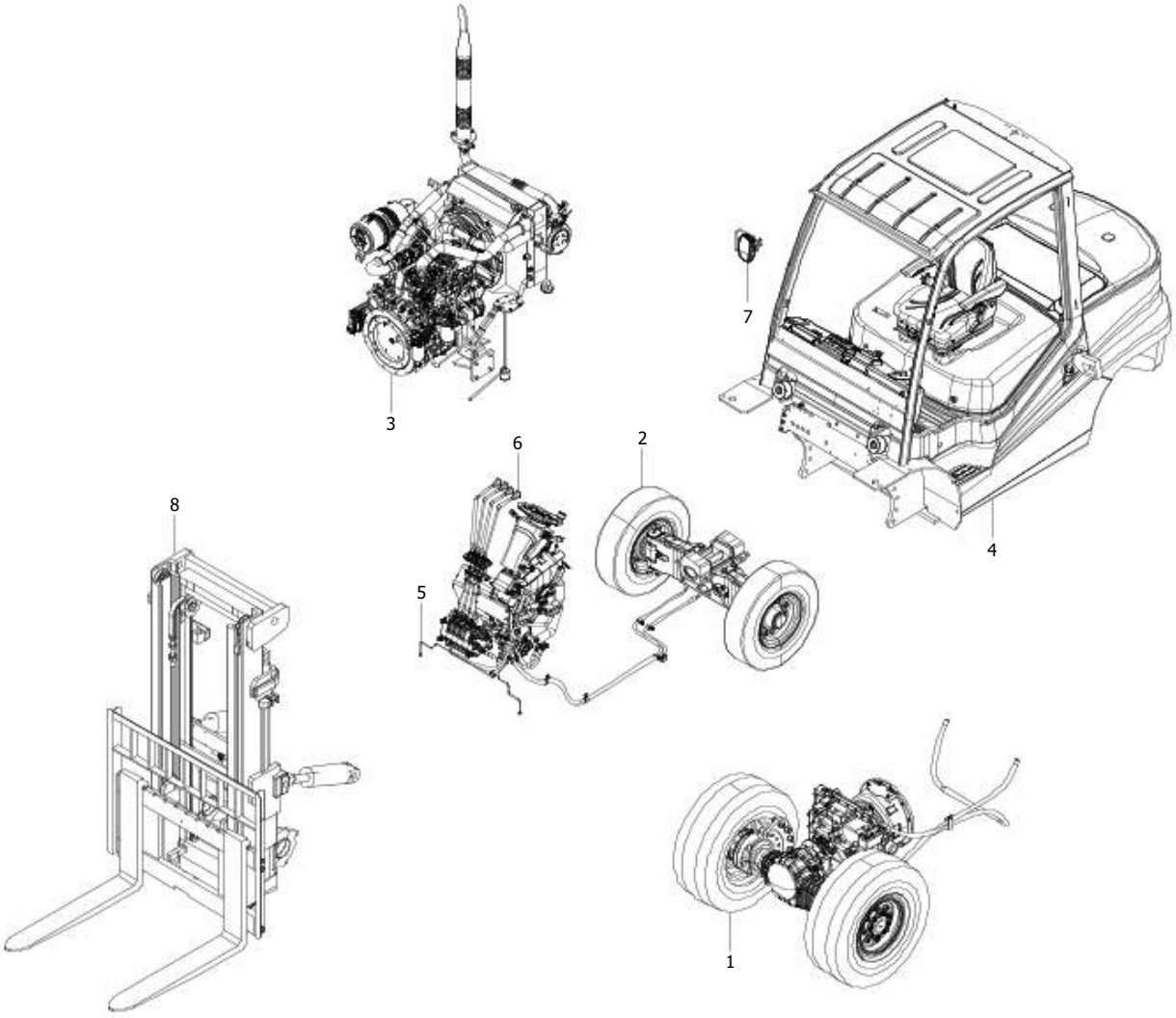
Unlike conventional vehicles, forklifts are equipped with rear-wheel steering, which results in the back of the forklift swinging outward when making turns. Operators should slow down when navigating turns and be particularly vigilant about any obstructions from goods or personnel on the outer side to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



4、Forklift truck component names



1.Fork	2.Load backrest	3.Lifting hydraulic cylinder	
4.Mast	5.Steering wheel	6.Overhead guard	7.Counterweight
8.Driver’s seat	9.Rear wheel	10.Frame	11.Hood
12.Tilt cylinder	13.Front wheel		



1.Driving system	2.Steering system	3.Power system	4.Body system
5.Control system	6.Hydraulic system	7.Electrical system	8.Mast system

Driving system

The driving system of a forklift serves to overcome various resistances and travel at different speeds, with functions such as speed reduction and torque increase, changing gear ratios, providing reverse gear, offering a neutral gear, smooth starting, and providing differential capabilities. It mainly consists of the driving axle, gearbox, tires, and cooling circuitry.

Steering System

The steering system of a forklift has the function of changing the direction of travel and maintaining a straight-line driving state, mainly composed of the steering wheel, steering column, hydraulic power steering, steering axle, and steering wheels.

Power System

The power system of a forklift provides the power source for the forklift's travel and the

operation of the working device, mainly consisting of the engine, intake system, exhaust system, cooling system, fuel system, engine mounting, LPG pipeline system (for LPG forklifts), and air storage system (for LPG forklifts).

Body system

The body system of a forklift provides a solid support carrier for the forklift and protects the personal safety of the driver, mainly composed of the frame, dashboard, hood and other covering parts, battery box, overhead guard, counterweights, etc.

Control System

The control system of a forklift mainly includes the driving brake control system and the parking brake control system. The driving brake uses the friction of the brake to consume the vehicle's kinetic energy, converting it into heat and dissipating it, thereby reducing the vehicle's travel speed. The parking brake system uses the frictional torque of the brake to prevent the vehicle from moving on its own due to external forces when the vehicle is stopped.

Hydraulic System

The hydraulic system of a forklift is mainly used to achieve the lifting and tilting functions of the lifting components and the steering function of the forklift. It mainly consists of a gear pump, multi-way valve, steering oil circuit, tilting oil circuit, and return oil filtration.

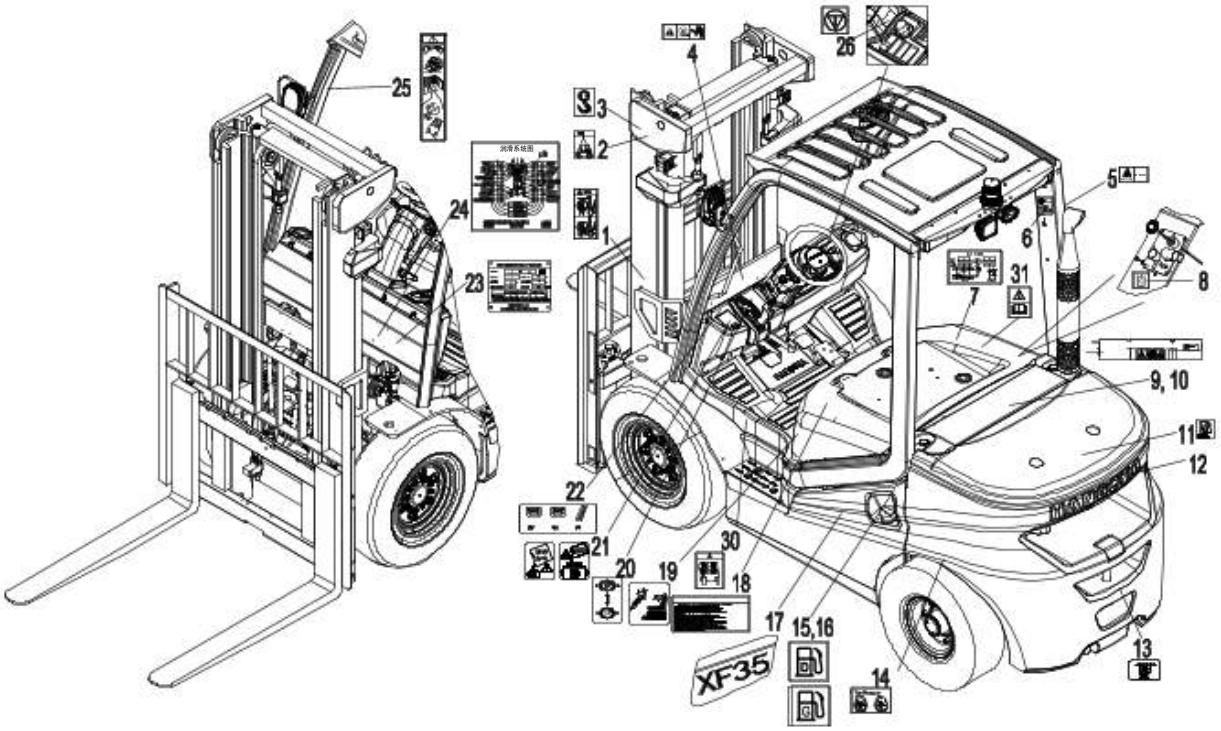
Electrical System

The electrical system of a forklift mainly consists of components such as the battery, display instruments, combination switch, horn, reversing beeper, lighting system, control box, main harness, accelerator pedal, and various sensors.

Mast system

The mast system of a forklift is composed of inner/outer masts, fork carriages, forks, anti-slip plates, lifting chains, rollers, lifting cylinders, and tilting cylinders, etc. It, together with the oil circuit and hydraulic system, constitutes the working device of the forklift and is the executive mechanism for the forklift's loading and unloading operations.

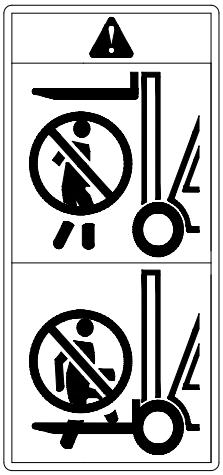
5、Labels on forklifts



1.Danger label	2.Hang label	3.Hang label	4.Danger label
5.No washing label	6.Noise label	7.Load curve label	8.Hydraulic oil label
9.Hand injury risk label	10.Antifreeze label	11.LPG label	12.Words label
13.Tie down label	14.Tire pressure label	15.Diesel label	16.Gasoline label
17.Tonnage label	18.Warning label	19.Hood open label	20.Hand brake label
21.Brake fluid label	22.Operate label	23.Nameplate label	
24.Lubrication system label		25.Safety belt label	
26.Emergency Stop Label		27.DPF Warning label	
28.Regeneration operating instructions label		29.CE label	
30.Passenger prohibition label		31.Safety notice label	

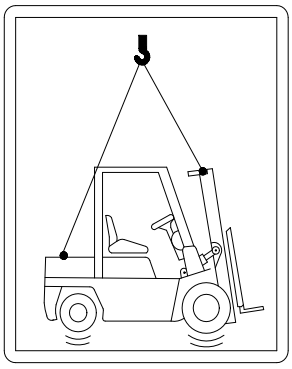
1.Danger Label：on the outside of mast

Don’t stand on or under fork, otherwise the life may be in danger.



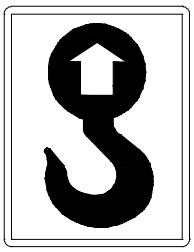
2.Hang Label：

It shows the hoisting position and method of truck lifting. Avoid the cord touch and damage the light when hoisting.



3.Hang Label：

It shows the hoisting position and method of truck lifting. Avoid the cord touch and damage the light when hoisting.

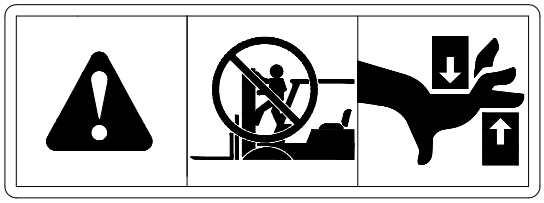


4.Danger label

The inner and outer mast, fork frame are all lifting slip parts. The hands are not allowed to reach in between the inner and outer masts.

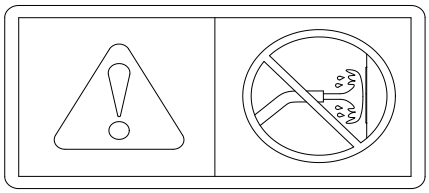
If a part needs to be check or repaired, the inspection and repair should be carried out after shutting down the engine. There should not be person on the truck or others to operate the truck to avoid accidents by handling mast lever wrongly.

Warning： It is dangerous of your life. If the body is crushed between the mast, instrument frame and shield cab, it can be fatal. If the part needs to be checked or repaired, the inspection and repair should be carried out after shutting down the engine. There should not be person on the truck or others to operate the truck to avoid accidents by handling mast lever wrongly.

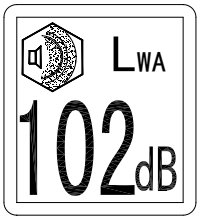


5.No washing label

On the right overhead guard, it's the air inlet passage of the engine. It is strictly prohibited to let water enter airshaft and avoid water during washing the truck.



6.Noise label

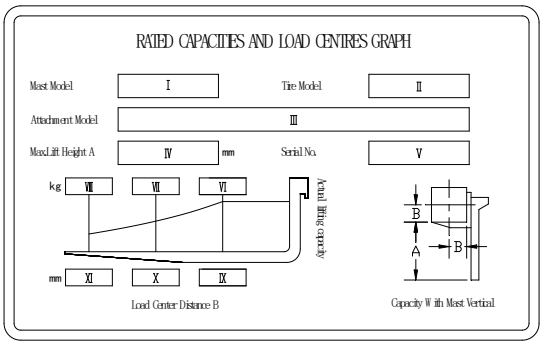


7.Load curve label

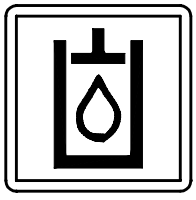
It shows the connection among load center position and max load, max lifting height.

Load capacity decreases if truck equips with sideshifter and attachment, or lifting height increases.

Before loading, please check whether the load and load centre in the range of load capacity chart. If the figure of load is complex, please make sure the heaviest part of load is in the centre of fork and close to backrest.

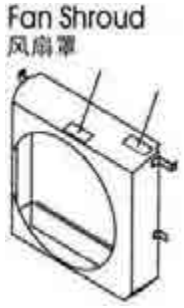


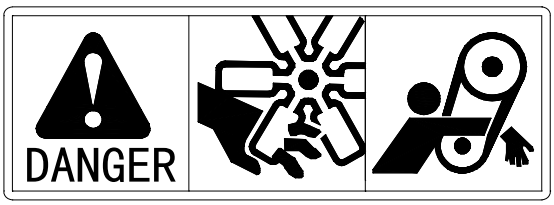
8.Hydraulic oil label



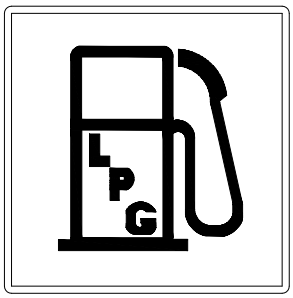
9.Hand injury risk label

10.Antifreeze labe





11.LPG Label（Only for LPG truck or dual fuel truck）



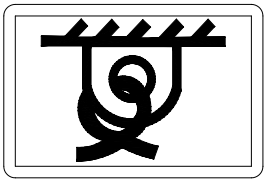
Stick this label on the cylinder：

Marked：Max. LPG weight is 52kg.

Max. LPG pressure 2.2MPa

Max. support bearing weight 105kg

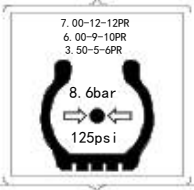
13.Tie down label



14.Tire pressure label

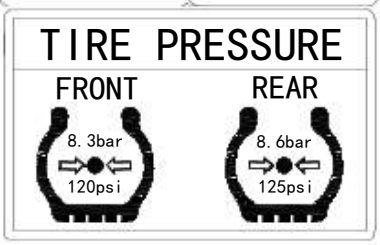
1.5t~1.8t

2.0t~2.5t



3.0t~3.5t

4.0t~X5.5t



15.Diesel label: it shows that oil filter position, which on the rear left outrigger of overhead guard.

(Gasoline, LPG truck without)

16.Gasoline label： it shows that oil filter position, which on the rear left outrigger of overhead guard.

(Diesel, single fuel LPG truck without)

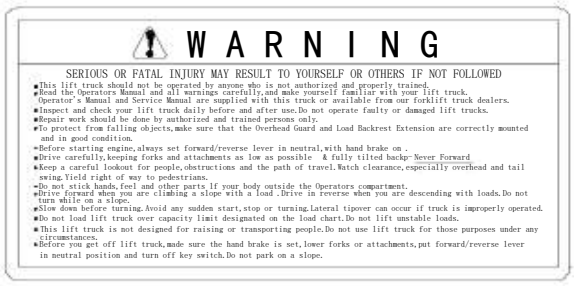
17.Tonnage label

For example, “30” means the rated capacity is 3.0ton, but if the load center distance increases or if attachments are used, the rated load capacity will decrease.

Not STAGE V：

STAGE V：

18.Warning label

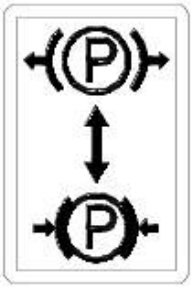


19.Hood open label

Before opening the hood, move forward the steering wheel, and tilt forward the seat back.

After closing the hood, steering wheel and seat back return to original position.

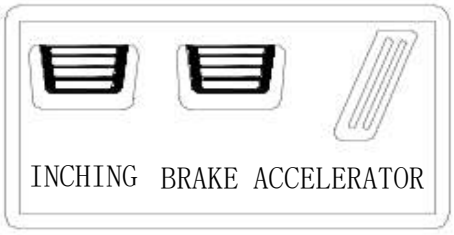
20.Hand brake label



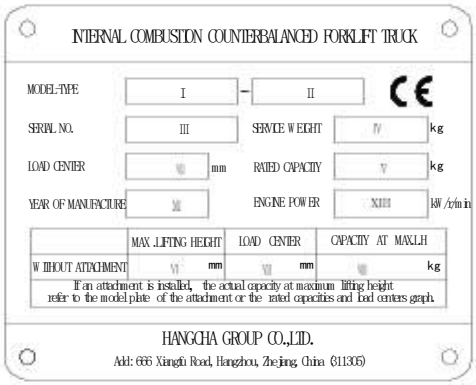
21.Brake fluid label(except wet brake axles)

21、Brake fluid label(wet brake axles)

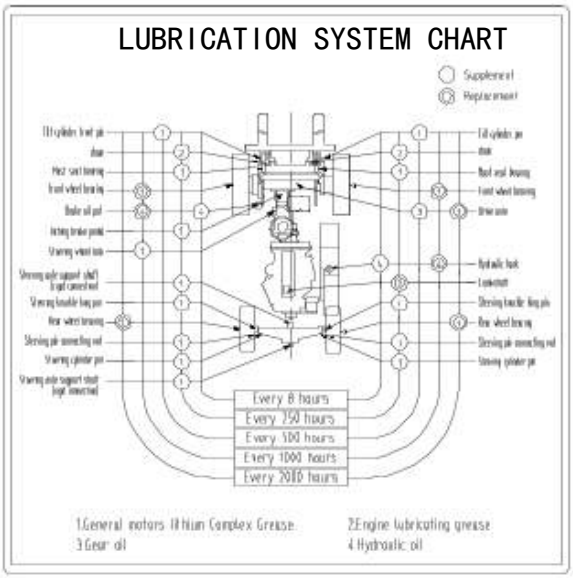
22.Operate label 1 Hydraulic truck



23.Nameplate label



24.Lubrication system label



25.Safety belt label and Anti-tilting Warning Label

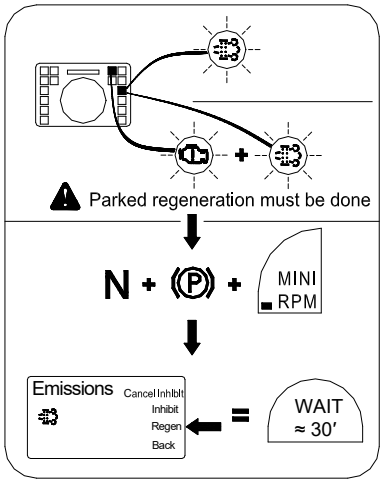
26.Emergency stop label

27.DPF Warning label

The operator should read the instructions related to DPF and start DPF regeneration operation on time to avoid damaging DPF due to improper operation.

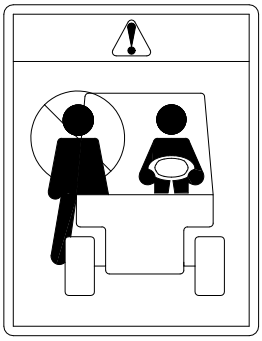
DPF will produce high temperature exhaust when it works, so pay attention to safety.

28.Regeneration operating instructions label

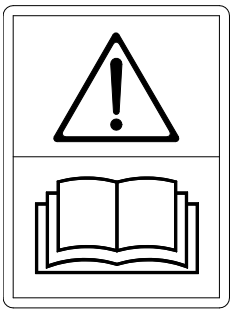


29.CE label

30.Passenger prohibition label

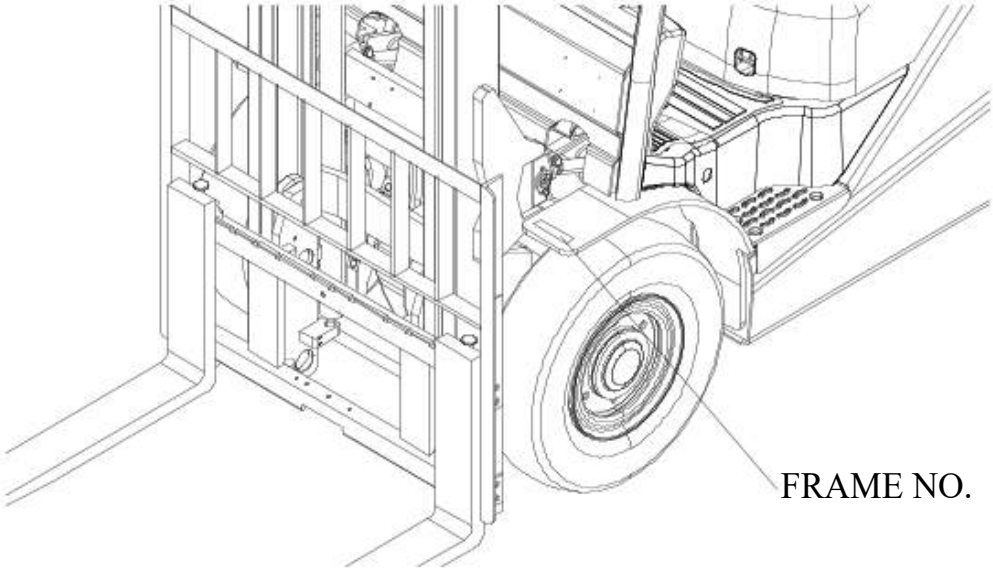


31.Safety notice label

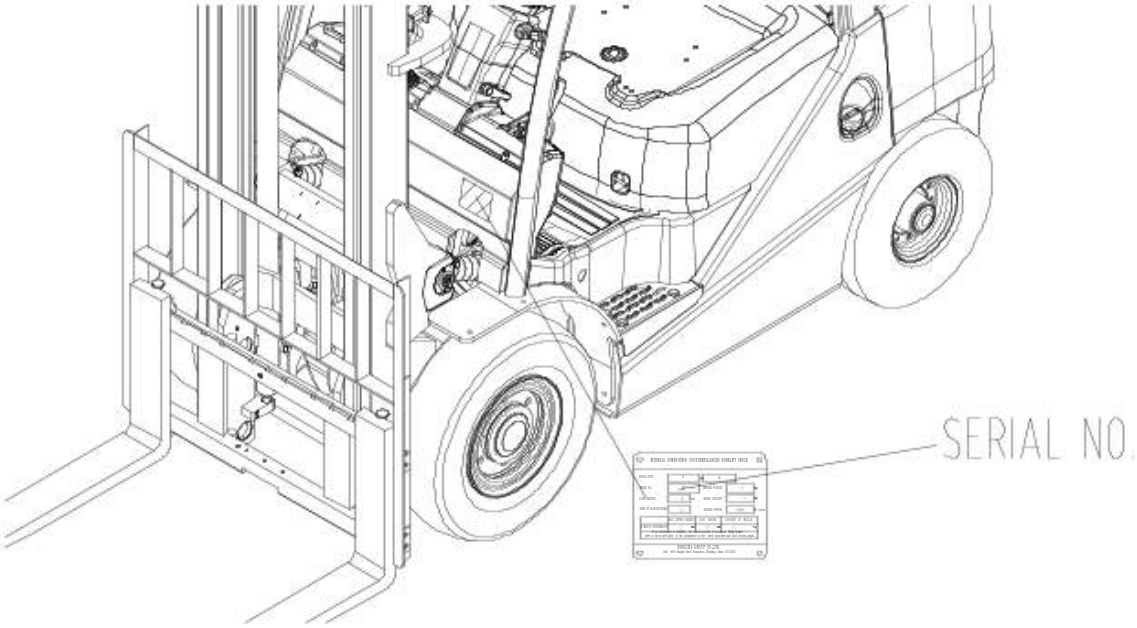


6、Frame NO.&Serial NO.

Frame NO.：



Serial NO.：



7、Main technical performance parameter

Model		CPCD20-X2H7F1 CPCD20-X2H7B1	CPCD25-X2H7F1 CPCD25-X2H7B1	CPCD30-X2H7F1 CPCD30-X2H7B1	CPCD35-X2H7F1 CPCD35-X2H7B1
Rated capacity	kg	2000 (4400lb)	2500 (5500lb)	3000 (6600lb)	3500 (7700lb)
Load centre distance	mm	500(19.685in)		500(19.685in)	
Overall maximum lift height	mm	3000(118.11 in)		3000(118.11 in)	
Free lift height	mm	140(5.51in)		145(5.71in)	150(5.90in)
Maximum lift speed (with load)	mm/s	620(24.41in/s)		580(22.83in/s)	460(18.11in/s)
Tilt of the mast	F/B	6°/11°	6°/11°	6°/11°	6°/11°
Max travel speed (without load)	km/h	20(12.427MPH)		19.5(12.109MPH)	
Ground clearance	mm	115(4.53in)		130(5.12in)	
Min outside turning radius	mm	2160(85.039in)	2230(87.795in)	2350(92.126in)	2415(95.079in)
Max. Grade ability (Full load)	%	36	32	28	22
Wheel-base	mm	1650(64.96in)		1700(66.93in)	
Track (F/R)	mm	965/973 (97.99 in /38.31 in)		1005/975 (39.57in /38.38 in)	
Service mass	kg	3455(7616.97lb)	3815(8410.63lb)	4400(9700.34lb)	4755(10482.98lb)
Overall dimension, mm/in (L×W×H)(include forks)		3587.5×1155×2165 (141.24×45.47×85.23)	3662.5×1155×2165 (144.19×45.47×85.23)	3782.5×1225×2180 (148.91×48.23×85.83)	3852.5×1225×2180 (151.67×48.23×85.83)
Tyre (F/R)		7.00-12-12PR 6.00-9-10PR	7.00-12-12PR 6.00-9-10PR	28×9-15-14PR/2 6.50-10-10PR/2	28×9-15-14PR/2 6.50-10-10PR/2
Battery V/ capacity Ah		12/90/20h	12/90/20h	12/90/20h	12/90/20h
Diesel engine	Model	XINCHAI, 3E22YG51-001			
	Rated capacity/rpm	44.8kW/2400 r/min(56.32hp/2400rpm)			
	Max torque/rpm	210N·m/1600-1800(154.89ft·lb/1600-1800rpm)			
	Displacement L	2.23(2230cc)			

Model			CPCD15-X2H7F1 CPCD15-X2H7B1	CPCD18-X2H7F1 CPCD18-X2H7B1
Rated capacity		kg	1500(3300lb)	1750(3850lb)
Load centre distance		mm	500(19.685in)	
Overall maximum lift height		mm	3000(118.11 in)	
Free lift height		mm	155(6.102in)	
Maximum lift speed (with load)		mm/s	650(25.59in/s)	
Tilt of the mast		F/B	6°/11°	
Max travel speed (without load)		km/h	20(12.42MPH)	
Ground clearance		mm	115(4.53in)	
Min outside turning radius		mm	1990(78.346in)	2010(79.13in)
Max. Grade ability (Full load)		%	24	22
Wheel-base		mm	1475(58.07in)	
Track (F/R)		mm	920/940 (36.22in/37in)	
Service mass		kg	2750(6062.71lb)	2900(6393.41lb)
Overall dimension (L×W×H)(include forks)			3205×1110×2155 (126.18×43.70×84.84)i	3235×1110×2155 (127.17×43.70×84.84)i
Tyre (F/R)			6.5-10-10PR/2 5.00-8-10PR/2	6.5-10-10PR/2 5.00-8-10PR/2
Battery V/ capacity Ah			12/60/20h	12/60/20h
Diesel engine	Model		XINCHAI, 3E22YG51P464	
	Rated apacity/rpm		34kW/2400 r/min(45.59hp/2400rpm)	
	Max torque/rpm		150N·m/1600-1800 r/min (110.64ft·lb/1600-1800rpm)	
	Displacement	L	2.227(2227cc)	

Model		CPCJ20-X2H7	CPCJ25-X2H7	CPCJ30-X2H7	CPCJ35-X2H7
Rated capacity	kg	2000 (4400lb)	2500 (5500lb)	3000 (6600lb)	3500 (7700lb)
Load centre distance	mm	500(19.685in)		500(19.685in)	
Overall maximum lift height	mm	3000(118.11 in)		3000(118.11 in)	
Free lift height	mm	140(5.51in)		145(5.71in)	150(5.90in)
‘’Maximum lift speed (with load)	mm/s	620(24.41in/s)		580(22.83in/s)	460(18.11in/s)
Tilt of the mast	F/B	6°/11°	6°/11°	6°/11°	6°/11°
Max travel speed (without load)	km/h	21(13.048MPH)		22(13.670MPH)	
Ground clearance	mm	115(4.53in)		130(5.12in)	
Min outside turning radius	mm	2160(85.039in)	2230(87.795in)	2350(92.126in)	2415(95.079in)
Max. Grade ability (Full load)	%	36	32	27	24
Wheel-base	mm	1650(64.96in)		1700(66.93in)	
Track (F/R)	mm	965/973 (97.99 in /38.31 in)		1005/975 (39.57in /38.38 in)	
Service mass	kg	3455(7616.97lb)	3815(8410.63lb)	4400(9700.34lb)	4755(10482.98lb)
Overall dimension, mm/in (L×W×H)(include forks)		3587.5×1155×2165 (141.24×45.47×85.23)	3662.5×1155×2165 (144.19×45.47×85.23)	3782.5×1225×2180 (148.91×48.23×85.83)	3852.5×1225×2180 (151.67×48.23×85.83)
Tyre (F/R)		7.00-12-12PR 6.00-9-10PR	7.00-12-12PR 6.00-9-10PR	28×9-15-14PR/2 6.50-10-10PR/2	28×9-15-14PR/2 6.50-10-10PR/2
Battery V/ capacity Ah		12/90/20h	12/90/20h	12/90/20h	12/90/20h
Diesel engine	Model	XINCHAI, 3E22YG51-014			
	Rated capacity/rpm	44.8kW/2400 r/min(56.32hp/2400rpm)			
	Max torque/rpm	210N·m/1600-1800(154.89ft·lb/1600-1800rpm)			
	Displacement L	2.23(2230cc)			

Model		CPCD20-X2W97B1 CPCD20-X2W97B	CPCD25-X2W97B1 CPCD25-X2W97B	CPCD30-X2W97B1 CPCD30-X2W97B	CPCD35-X2W97B1 CPCD35-X2W97B
Rated capacity	kg	2000 (4400lb)	2500 (5500lb)	3000 (6600lb)	3500 (7700lb)
Load centre distance	mm	500(19.685in)		500(19.685in)	
Overall maximum lift height	mm	3000(118.11 in)		3000(118.11 in)	
Free lift height	mm	140(5.51in)		145(5.71in)	150(5.90in)
Maximum lift speed (with load)	mm/s	650(25.59in/s)		550(21.65in/s)	450(17.32in/s)
Tilt of the mast	F/B	6°/11°	6°/11°	6°/11°	6°/11°
Max travel speed (without load)	km/h	19.5(12.11MPH)		18(11.18MPH)	
Ground clearance	mm	115(4.53in)		130(5.12in)	
Min outside turning radius	mm	2160(85.039in)	2230(87.795in)	2350(92.126in)	2415(95.079in)
Max. Grade ability (Full load)	%	31	28	25	21
Wheel-base	mm	1650(64.96in)		1700(66.93in)	
Track (F/R)	mm	965/973 (97.99 in /38.31 in)		1005/975 (39.57in /38.38 in)	
Service mass	kg	3455(7616.97lb)	3815(8410.63lb)	4400(9700.34lb)	4755(10482.98lb)
Overall dimension (L×W×H)(include forks)		3587.5×1155×2165 (141.24×45.47×85.23)	3662.5×1155×2165 (144.19×45.47×85.23)	3782.5×1225×2180 (148.91×48.23×85.83)	3852.5×1225×2180 (151.67×48.23×85.83)
Tyre (F/R)		7.00-12-12PR 6.00-9-10PR	7.00-12-12PR 6.00-9-10PR	28×9-15-14PR/2 6.50-10-10PR/2	28×9-15-14PR/2 6.50-10-10PR/2
Battery V/ capacity Ah		12/90/20h	12/90/20h	12/90/20h	12/90/20h
Diesel engine	Model	Kubota, V2607-CR-E5B			
	Rated capacity/rpm	37.4kW/2400 r/min(50.15hp/2400rpm)			
	Max torque/rpm	171.5N·m/1500 r/min(126.5ft·lb/1500rpm)			
	Displacement L	2.615(2165cc)			

Model		CPYD20-X2H21F11 CPYD20-X2H21B1	CPYD25-X2H21F11 CPYD25-X2H21B1	CPYD30-X2H21F11 CPYD30-X2H21B1	CPYD35-X2H21F11 CPYD35-X2H21B1
Rated capacity	kg	2000 (4400lb)	2500 (5500lb)	3000 (6600lb)	3500 (7700lb)
Load centre distance	mm	500(19.685in)		500(19.685in)	
Overall maximum lift height	mm	3000(118.11 in)		3000(118.11 in)	
Free lift height	mm	140(5.51in)		145(5.71in)	150(5.90in)
Maximum lift speed (with load)	mm/s	650(25.59in/s)		550(21.65in/s)	450(17.71in/s)
Tilt of the mast	F/B	6°/11°	6°/11°	6°/11°	6°/11°
Max travel speed (without load)	km/h	20.5(12.738MPH)		20(12.427MPH)	
Ground clearance	mm	115(4.53in)		130(5.12in)	
Min outside turning radius	mm	2160(85.039in)	2230(87.795in)	2350(92.126in)	2415(95.079in)
Max. Grade ability (Full load)	%	20	20	20	20
Wheel-base	mm	1650(64.96in)		1700(66.93in)	
Track (F/R)	mm	965/973 (97.99 in /38.31 in)		1005/975 (39.57in /38.38 in)	
Service mass	kg	3455(7616.97lb)	3815(8410.63lb)	4400(9700.34lb)	4755(10482.98lb)
Overall dimension, mm/in (L×W×H)(include forks)		3587.5×1155×2165 (141.24×45.47×85.23)	3662.5×1155×2165 (144.19×45.47×85.23)	3782.5×1225×2180 (148.91×48.23×85.83)	3852.5×1225×2180 (151.67×48.23×85.83)
Tyre (F/R)		7.00-12-12PR 6.00-9-10PR	7.00-12-12PR 6.00-9-10PR	28×9-15-14PR/2 6.50-10-10PR/2	28×9-15-14PR/2 6.50-10-10PR/2
Battery V/ capacity Ah		12/90/20h	12/90/20h	12/90/20h	12/90/20h
LPG engine	Model	GCT GK25VL02H			
	Rated capacity/rpm	47kW/2700 r/min(63.0hp/2700rpm)			
	Max torque/rpm	190N·m/1600 r/min(140.136ft·lb/1600rpm)			
	Displacement L	2.488(2488cc)			

Model		CPQYD20-X2H22F11 CPQYD20-X2H22B1	CPQYD25-X2H22F11 CPQYD25-X2H22B1	CPQYD30-X2H22F11 CPQYD30-X2H22B1	CPQYD35-X2H22F11 CPQYD35-X2H22B1
Rated capacity	kg	2000 (4400lb)	2500 (5500lb)	3000 (6600lb)	3500 (7700lb)
Load centre distance	mm	500(19.685in)		500(19.685in)	
Overall maximum lift height	mm	3000(118.11 in)		3000(118.11 in)	
Free lift height	mm	140(5.51in)		145(5.71in)	150(5.90in)
Maximum lift speed (with load)	mm/s	650(25.59in/s)		550(21.65in/s)	450(17.71in/s)
Tilt of the mast	F/B	6°/11°	6°/11°	6°/11°	6°/11°
Max travel speed (without load)	km/h	20.5(12.738MPH)		20(12.427MPH)	
Ground clearance	mm	115(4.53in)		130(5.12in)	
Min outside turning radius	mm	2160(85.039in)	2230(87.795in)	2350(92.126in)	2415(95.079in)
Max. Grade ability (Full load)	%	20	20	20	20
Wheel-base	mm	1650(64.96in)		1700(66.93in)	
Track (F/R)	mm	965/973 (97.99 in /38.31 in)		1005/975 (39.57in /38.38 in)	
Service mass	kg	3455(7616.97lb)	3815(8410.63lb)	4400(9700.34lb)	4755(10482.98lb)
Overall dimension, mm/in (L×W×H)(include forks)		3587.5×1155×2165 (141.24×45.47×85.23)	3662.5×1155×2165 (144.19×45.47×85.23)	3782.5×1225×2180 (148.91×48.23×85.83)	3852.5×1225×2180 (151.67×48.23×85.83)
Tyre (F/R)		7.00-12-12PR 6.00-9-10PR	7.00-12-12PR 6.00-9-10PR	28×9-15-14PR/2 6.50-10-10PR/2	28×9-15-14PR/2 6.50-10-10PR/2
Battery V/ capacity Ah		12/90/20h	12/90/20h	12/90/20h	12/90/20h
Dual fuel engine	Model	GCT GK25VD01H			
	Rated capacity/rpm	LPG:47kW/2700 r/min(63.0hp/2700rpm) GAS:44.5kW/2700 r/min(59.6hp/2700rpm)			
	Max torque/rpm	LPG:190N·m/1600 r/min(140.136ft·lb/1600rpm) GAS:175N·m/1600 r/min(129.073ft·lb/1600rpm)			
	Displacement L	2.488(2488cc)			

Model			CPYD15-X2H23F11 CPYD15-X2H23B1	CPYD18-X2H23F11 CPYD18-X2H23B1
Rated capacity		kg	1500(3300lb)	1750(3850lb)
Load centre distance		mm	500(19.685in)	
Overall maximum lift height		mm	3000(118.11 in)	
Free lift height		mm	155(6.102in)	
Maximum lift speed (with load)		mm/s	650(25.59in/s)	
Tilt of the mast		F/B	6°/11°	
Max travel speed (without load)		km/h	20.5(12.738MPH)	
Ground clearance		mm	115(4.53in)	
Min outside turning radius		mm	1990(78.346in)	2010(79.13in)
Max. Grade ability (Full load)		%	20	20
Wheel-base		mm	1475(58.07in)	
Track (F/R)		mm	920/940 (36.22in/37in)	
Service mass		kg	2750(6062.71lb)	2900(6393.41lb)
Overall dimension (L×W×H)(include forks)			3205×1110×2155 (126.18×43.70×84.84)i	3235×1110×2155 (127.17×43.70×84.84)i
Tyre (F/R)			6.5-10-10PR/2 5.00-8-10PR/2	6.5-10-10PR/2 5.00-8-10PR/2
Battery V/ capacity Ah			12/60/20h	12/60/20h
LPG engine	Model		GCT GK21VL02H	
	Rated apacity/rpm		43kW/2700 r/min (57.66hp/2700rpm)	
	Max torque/rpm		161N·m/1800r/min(118.74ft·lb/1800rpm)	
	Displacement	L	2.065	

Model			CPQYD15-X2H24F11 CPQYD15-X2H24B1	CPQYD18-X2H24F11 CPQYD18-X2H24B1
Rated capacity		kg	1500(3300lb)	1750(3850lb)
Load centre distance		mm	500(19.685in)	
Overall maximum lift height		mm	3000(118.11 in)	
Free lift height		mm	155(6.102in)	
Maximum lift speed (with load)		mm/s	650(25.59in/s)	
Tilt of the mast		F/B	6°/11°	
Max travel speed (without load)		km/h	20.5(12.738MPH)	
Ground clearance		mm	115(4.53in)	
Min outside turning radius		mm	1990(78.346in)	2010(79.13in)
Max. Grade ability (Full load)		%	20	20
Wheel-base		mm	1475(58.07in)	
Track (F/R)		mm	920/940 (36.22in/37in)	
Service mass		kg	2750(6062.71lb)	2900(6393.41lb)
Overall dimension (L×W×H)(include forks)			3205×1110×2155 (126.18×43.70×84.84)i	3235×1110×2155 (127.17×43.70×84.84)i
Tyre (F/R)			6.5-10-10PR/2 5.00-8-10PR/2	6.5-10-10PR/2 5.00-8-10PR/2
Battery V/ capacity Ah			12/60/20h	12/60/20h
Dual fuel engine	Model		GCT GK21VD01H	
	Rated apacity/rpm		LPG:43kW/2700 r/min (57.66hp/2700rpm) GAS:40kW/2700 r/min (53.64hp/2700rpm)	
	Max torque/rpm		LPG:161N·m/1800r/min(118.74ft·lb/1800rpm) GAS:153N·m/1800r/min(112.84ft·lb/1800rpm)	
	Displacement	L	2.065	

Model		CPQYD20-X2W22F1 CPQYD20-X2W22B1	CPQYD25-X2W22F1 CPQYD25-X2W22B1	CPQYD30-X2W22F1 CPQYD30-X2W22B1	CPQYD35-X2W22F1 CPQYD35-X2W22B1
Rated capacity	kg	2000 (4400lb)	2500 (5500lb)	3000 (6600lb)	3500 (7700lb)
Load centre distance	mm	500(19.685in)		500(19.685in)	
Overall maximum lift height	mm	3000(118.11 in)		3000(118.11 in)	
Free lift height	mm	140(5.51in)		145(5.71in)	150(5.90in)
Maximum lift speed (with load)	mm/s	650(25.59in/s)		550(21.65in/s)	450(17.71in/s)
Tilt of the mast	F/B	6°/11°	6°/11°	6°/11°	6°/11°
Max travel speed (without load)	km/h	20.5(12.738MPH)		20(12.427MPH)	
Ground clearance	mm	115(4.53in)		130(5.12in)	
Min outside turning radius	mm	2160(85.039in)	2230(87.795in)	2350(92.126in)	2415(95.079in)
Max. Grade ability (Full load)	%	19.5	19.5	19	19
Wheel-base	mm	1650(64.96in)		1700(66.93in)	
Track (F/R)	mm	965/973 (97.99 in /38.31 in)		1005/975 (39.57in /38.38 in)	
Service mass	kg	3455(7616.97lb)	3815(8410.63lb)	4400(9700.34lb)	4755(10482.98lb)
Overall dimension, mm/in (L×W×H)(include forks)		3587.5×1155×2165 (141.24×45.47×85.23)	3662.5×1155×2165 (144.19×45.47×85.23)	3782.5×1225×2180 (148.91×48.23×85.83)	3852.5×1225×2180 (151.67×48.23×85.83)
Tyre (F/R)		7.00-12-12PR 6.00-9-10PR	7.00-12-12PR 6.00-9-10PR	28×9-15-14PR/2 6.50-10-10PR/2	28×9-15-14PR/2 6.50-10-10PR/2
Battery V/ capacity Ah		12/90/20h	12/90/20h	12/90/20h	12/90/20h
Gasoline engine	Model	GCT GK25			
	Rated capacity/rpm	37.4kW/2300 r/min(50.15hp/2300rpm)			
	Max torque/rpm	176.5N·m/1600 r/min(130.179ft·lb/1600rpm)			
	Displacement L	2.488(2488cc)			

Model		CPCD40-X2W99BN	CPCD45-X2W99BN	CPCD50-X2XW99BN	CPCD55-X2XW99BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	580	580	500	500
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	30	28	26	25
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18/2 7.00-12-14/2
Battery V/ capacity Ah		12/105	12/105	12/105	12/105
Gasoline engine	Model	Kubota V3307-CR-TIE5B			
	Rated capacity/rpm	54.6kW/2200 r/min			
	Max torque/rpm	330N·m/1400 r/min			
	Displacement L	3.331			

Model		CPCD40-X2H8BN	CPCD45-X2H8BN	CPCD50-X2XH8BN	CPCD55-X2XH8BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	450	450	390	390
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	24	23	22	21
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/105	12/105	12/105	12/105
Gasoline engine	Model	XINCHAI 4E30YG52			
	Rated capacity/rpm	55.8kW/2200 r/min			
	Max torque/rpm	320N·m/1200-1600r/min			
	Displacement L	2.97			

Model		CPYD40-X2H11BN	CPYD45-X2H11BN	CPYD50-X2XH11BN	CPYD55-X2XH11BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	610	610	520	520
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	30	28	26	25
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/90	12/90	12/90	12/90
Gasoline engine	Model	Kubota WG3800-L-E5C			
	Rated capacity/rpm	61.6kW/2300 r/min			
	Max torque/rpm	282.4N·m/1200r/min			
	Displacement L	3.769			

Model		CPQYD40-X2H12BN	CPQYD45-X2H12BN	CPQYD50-X2XH12BN	CPQYD55-X2XH12BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	610	610	520	520
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	24	23	22	21
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6700	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/90	12/90	12/90	12/90
Gasoline engine	Model	Kubota WG3800-GL-E3C			
	Rated capacity/rpm	GAS：54.4kW/2300 r/min；LPG：54.6kW/2300 r/min			
	Max torque/rpm	GAS：248.5N·m/1400r/min；LPG：273.1N·m/1200r/min			
	Displacement L	3.769			

Model		CPYD40-X2H20BN	CPYD45-X2H20BN	CPYD50-X2XH20BN	CPYD55-X2XH20BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	500	500	430	430
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	30	28	26	25
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/90	12/90	12/90	12/90
Gasoline engine	Model	PSI4.3			
	Rated capacity/rpm	79.75kW/2300 r/min			
	Max torque/rpm	332.5N·m/2000r/min			
	Displacement L	4.294			

Model		CPYD40-X2W24BN	CPYD45-X2W24BN	CPYD50-X2XW24BN	CPYD55-X2XW24BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	500	500	430	430
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	30	28	26	25
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/90	12/90	12/90	12/90
Gasoline engine	Model	PSI GM4.3L LP			
	Rated capacity/rpm	77kW/2300 r/min			
	Max torque/rpm	332.85N·m/1400r/min			
	Displacement L	4.3			

Model		CPCD40-X2H8F	CPCD45-X2H8F	CPCD50-X2XH8F	CPCD55-X2XH8F
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	520	520	450	450
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	24	23	22	21
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/105	12/105	12/105	12/105
Gasoline engine	Model	XINCHAI 4E30YG52			
	Rated capacity/rpm	55.8kW/2200 r/min			
	Max torque/rpm	320N·m/1200~1600r/min			
	Displacement L	2.97			

Model		CPCD40-X2W58BN	CPCD45-X2W58BN	CPCD50-X2XW58BN	CPCD55-X2XW58BN
Rated capacity	kg	4000	4500	5000	5500
Load centre distance	mm	500	500	500	500
Overall maximum lift height	mm	3000	3000	3000	3000
Free lift height	mm	150	150	150	160
Maximum lift speed (with load)	mm/s	450	450	390	390
Tilt of the mast	F/B	6/12	6/12	6/12	6/12
Max travel speed (without load)	km/h	24	24	24	24
Ground clearance	mm	170	170	170	170
Min outside turning radius	mm	2630	2660	2750	2810
Max. Grade ability (Full load)	%	24	23	22	21
Wheel-base	mm	2000	2000	2100	2100
Track (F/R)	mm	1160/1130	1150/1130	1150/1130	1150/1130
Service mass	kg	6400	6600	6900	7300
Overall dimension, mm/in (L×W×H)(include forks)		4135×1420×2320	4165×1450×2320	4255×1450×2320	4320×1450×2345
Tyre (F/R)		8.25-15-14PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-12PR/2	300-15-18PR/2 7.00-12-14PR/2
Battery V/ capacity Ah		12/105	12/105	12/105	12/105
Gasoline engine	Model	Cummins QSF2.8			
	Rated capacity/rpm	55kW/2200 r/min			
	Max torque/rpm	298N·m/1600r/min			
	Displacement L	2.8			

II、stability and load capacity graph

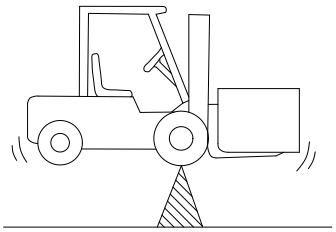
It is very important for operator to know the truck's structure and relationship between load and stability.

CAUTION | The structure of the truck

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

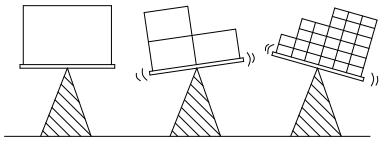
The lift truck keeps the balance of weight between the truck body and the load on the forks with the center of the front wheels as a fulcrum when the rated capacity load is placed in position.

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



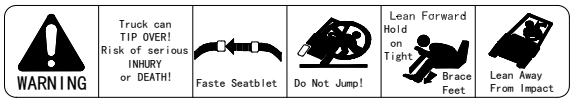
CAUTION | Load center

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



WARNING

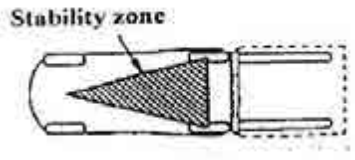
If the truck is going to turn over, do not attempt to get out of the truck, because the speed of overturn is much fast than you. You should hold the steering wheel handle, and this practice will let you in the seats.Please tie safety belt



WARNING | The stability zone of the barycenter

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

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



CAUTION | Gravity and stability

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

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

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

a）Load size, weight and shape;

b）Lifting height;

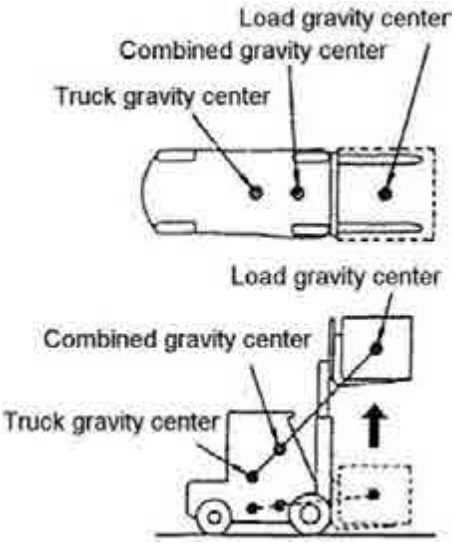
c）Mast tilt angle;

d）Tire inflation pressure

e）Acceleration, deceleration and turning radius;

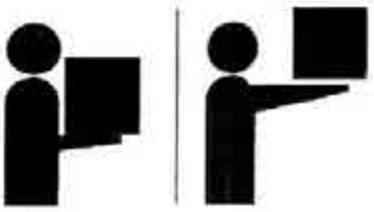
f）Driving surface conditions and inclination;

g）Attachment type.



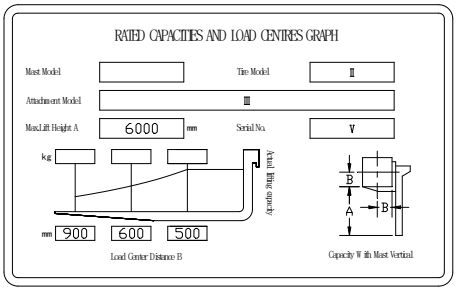
CAUTION | The max load

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



CAUTION | The load capability chart

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



CAUTION	Speed and acceleration

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

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

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

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

III、Safety rules

1、General rules

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

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

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

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

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

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

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

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

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

9. Do not stand or walk under the forks;

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

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

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

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

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

15. The driver should not stay in the truck and should shut down the engine when refueling; keep sources of ignition away when checking the battery or fuel tank level.

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

17. Drop the forks to the ground, switch the gear lever to the neutral position, engage the parking brake device properly, shut down the engine, and disconnect the power when leaving the

truck. Engage the parking brake device properly when parking on ramps; place cushion blocks under the wheels when parking for a long time.

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

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

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

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

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

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

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

25. The 5T-10t forklift truck is provided with an energy accumulator, which can provide at least one emergency braking operation after the forklift truck is shut down; in order to ensure your safety, please carefully read and strictly implement operations related to the energy accumulator in the manual.

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

27. Do not revise or modify the forklift truck without the written approval of the forklift truck manufacturer; otherwise, it may affect the rated load and stability or safe operation. This includes:

Assembly and disassembly of brake, steering and visibility systems, and attachments. When the forklift truck manufacturer agrees to revise or modify the truck, they should also agree to update and properly revise the bearing nameplate, label, and operation and maintenance manual.

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

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

2、Safety regulations

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

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

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

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

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

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

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

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

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

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

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

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

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

The workplace should be provided with a fire extinguisher.

Do not refuel when the engine is running.

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

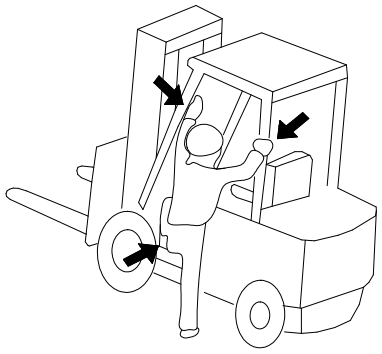
Do not open the water tank lid when the water temperature is higher than 70℃.

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

CAUTION

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

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



8.Operate the forklift truck only when sitting properly.

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

9.Before starting, confirm:

①Whether there are any people near the forklift truck.

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

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

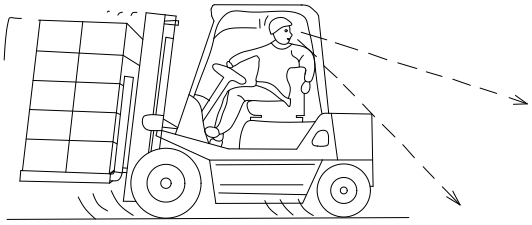
Shut down the engine and take out the key when the forks are lowered to the ground and slightly tilted forward.

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

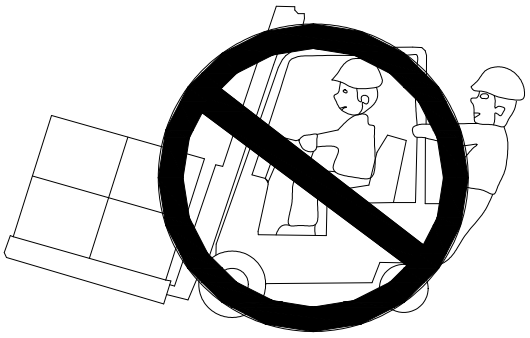
12.Control the speed and obey traffic signals.

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

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



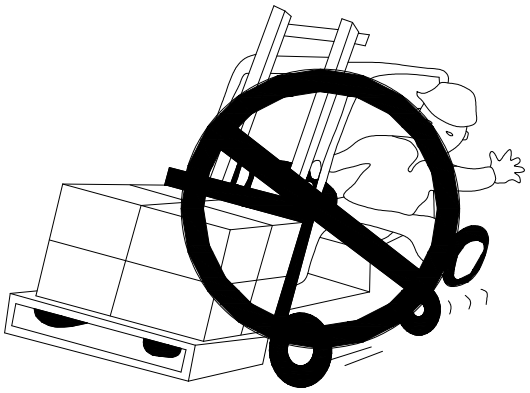
14.Other people must not sit on the fork, pallet or forklift truck.



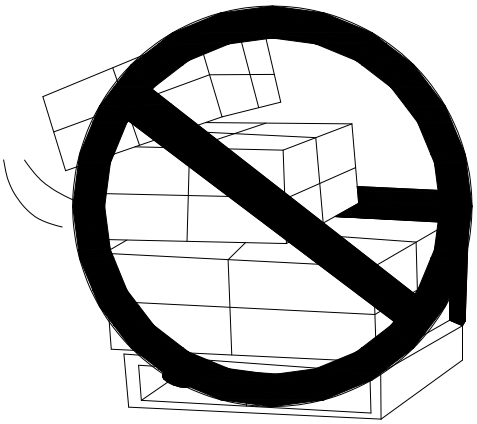
15.When crossing a ship deck or bridge, confirm that it is fixed correctly and has enough strength to bear the weight of the forklift, and check the ground conditions of the work site in advance.

16. Keep your mind on your work.

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

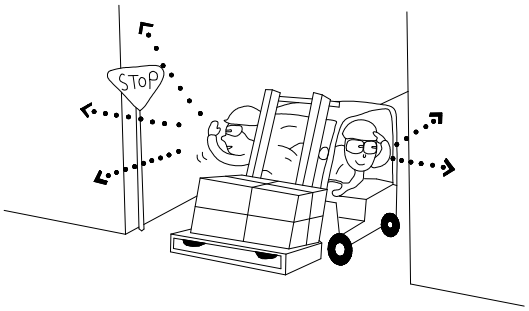


18.Cargo must not deviate from the fork center; when cargo is not aligned with the fork center, or when the truck turns or crosses uneven surfaces it may easily fall down. The possibility of rollover is also increased.



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

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



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

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

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

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

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

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

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

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

—— Altitude: ≤2 000m.

CAUTION

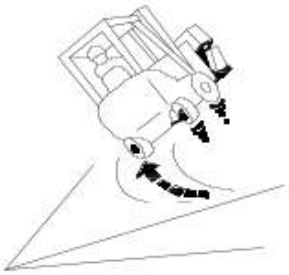
- Check the road to be driven for holes, abrupt slopes, barriers, bumps, and road conditions that may cause loss of control and vibration.
- Remove rubbish, debris and foreign matter that may puncture tires and throw cargo out of balance.
- Slow down on slippery roads, do not drive on the edge of the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

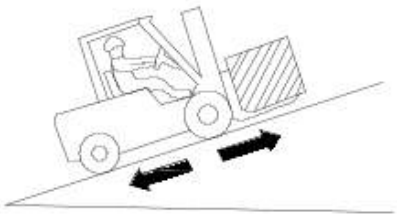
WARNING

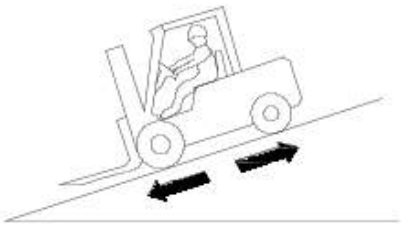
Do not use the forklift truck in sandstorms, snow, lightning, rain, wind and other bad weather conditions.

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

Do not turn on ramps to avoid rolling over.





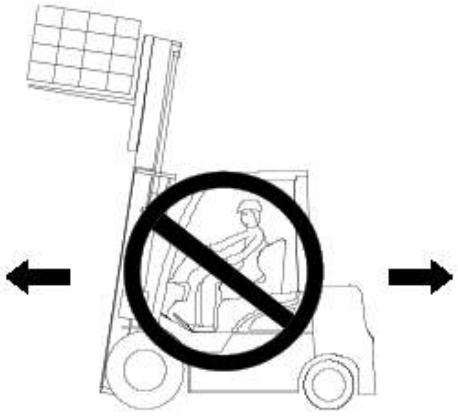


25.Keep the engine at idle and step on the brake pedal intermittently when driving downhill.

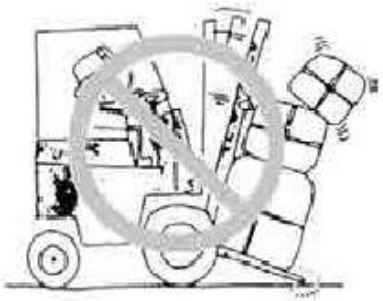
26.It is dangerous to lift the forks when driving with or without load; the standard driving condition (the distance between the forks and the ground is 15cm-30cm) should be adhered to.

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

Forklifts with attachments should be considered vehicle loads.



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



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

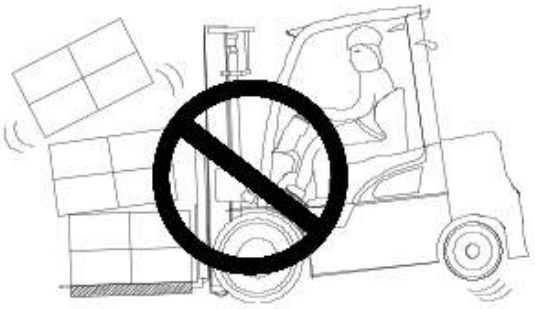
29.The forklift truck can only reverse after coming to a complete stop, and vice versa.

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

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

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

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



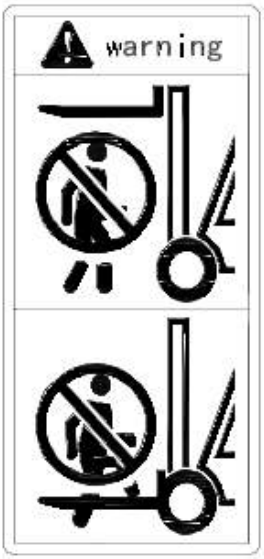
32.DO NOT use people as additional counterweights. It is quite dangerous.

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

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

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

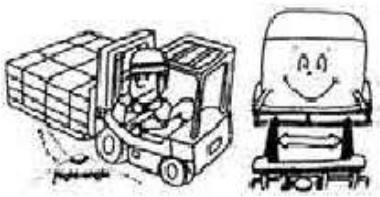
Do not stand on the fork.



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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

46.The workplace should be provided with a fire extinguisher. The user can choose to provide a fire extinguisher for the truck, which

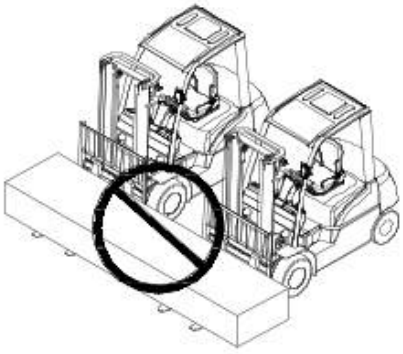
is generally installed on the rear leg of the safety frame for easy access.

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

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

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

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



51.Exhaust fumes

⚠ WARNING

- The exhaust fumes from internal combustion engines contain carbon monoxide and other harmful chemicals. Carbon monoxide is a colorless and odorless toxic substance and can cause loss of consciousness or death without any symptoms. Long-term exposure to exhaust fumes or emission chemicals may cause cancer, birth defects and other reproductive harm. Avoid exposure to engine exhaust fumes.
- If the engine is operating in an enclosed space, proper ventilation should be provided and the exhaust fumes should be vented to the outside. Do not exceed the acceptable air pollutant limits.
- Follow the inspection and maintenance schedules and procedures in this manual and the engine manual. Do not modify or refit the emissions, ignition or fuel system.

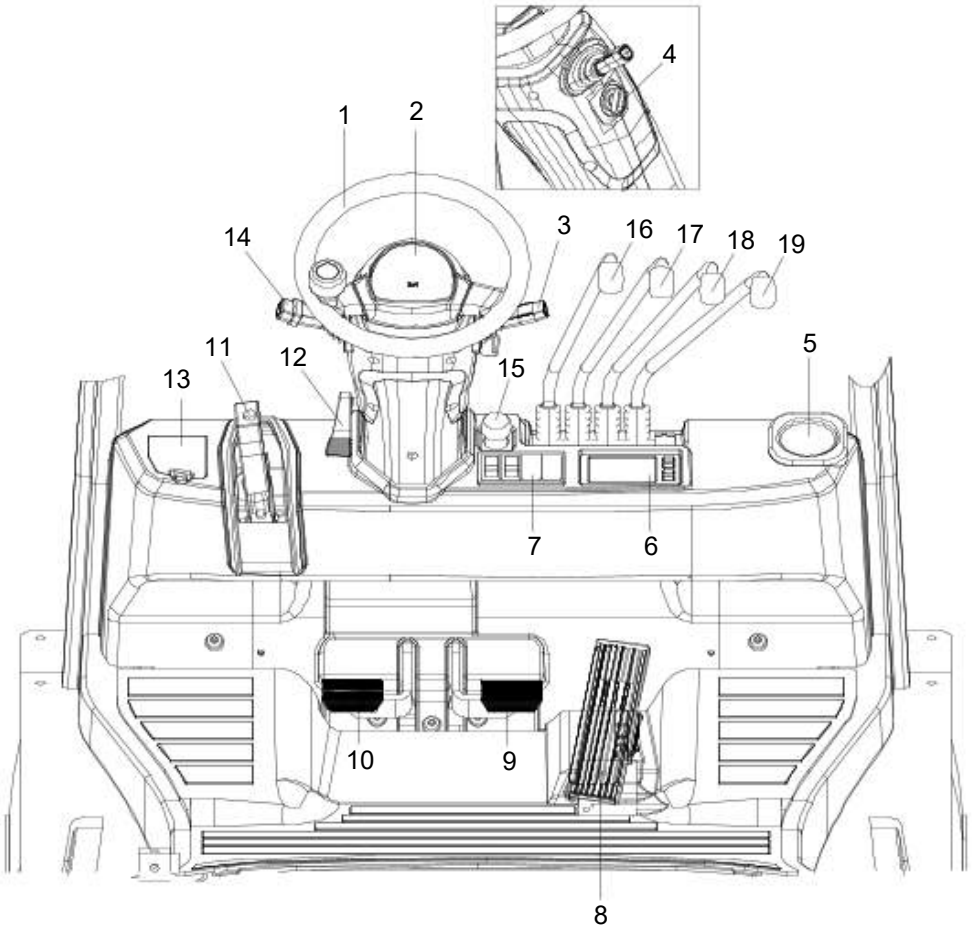
52.Fire risk

⚠ WARNING

If there are flammable gases, vapors, liquids, dust or fibers in the operating area of internal combustion engined forklift trucks, fires may be caused when the hot engine surface and exhaust fumes are exposed to them. The surface temperature of engine and exhaust parts may exceed the ignition temperatures of common solvents, fuel oil, engine oil, paper and other organic materials (wood, agricultural weeds/grains, cotton and wool, etc). Sparks from exhaust fumes can also ignite these materials. The surface temperature of the engine and exhaust pipe will rise after the engine is turned off, thus the risk of fires may be increased. The engine compartment should be inspected immediately after the forklift truck was operated in an area containing flammable dust, fibers or paper, and all debris should be removed.

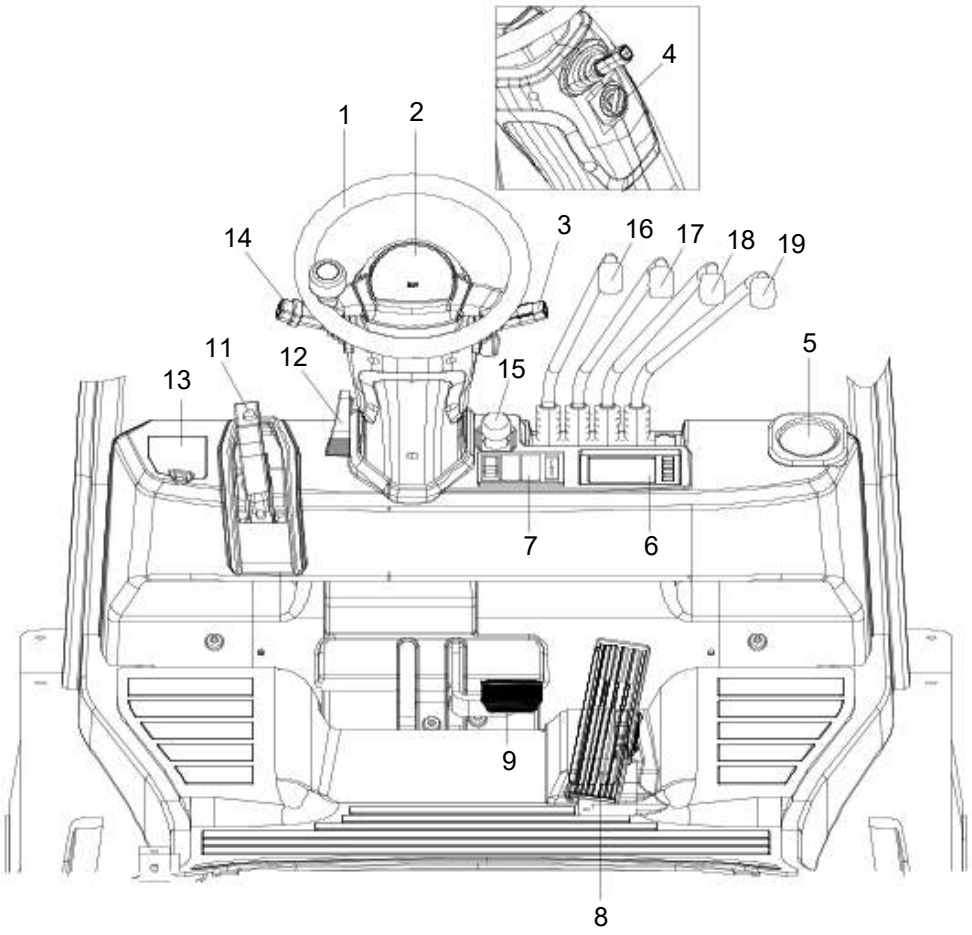
IV、Controls and Instruments

1、Controls



Hydraulic transmission forklift Control and Switch Diagram

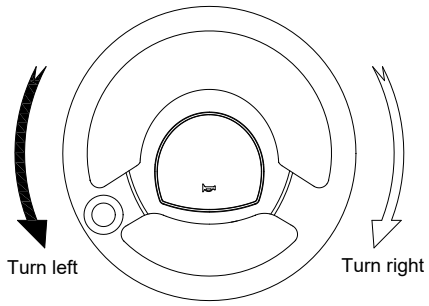
1.Steering wheel	2.Horn	3.Combination switch	4.Key switch
5.Cup holder	6.Instrument	7.Rocker switch	8.Accelerator pedal
9.Brake pedal	10.Inching pedal	11.Parking brake lever	
12.Steering wheel adjustment switch		13.Brake fluid tank cap	
14.Reversing lever	15.Emergency disconnect switch (OPT)		
16.Lift control lever	17.Tilt control lever	18.Side shift control lever (OPT)	
19.Attachment control lever (OPT)			



Hydrostatic transmission forklift Control and Switch Diagram

1.Steering wheel	2.Horn	3.Combination switch	4.Key switch
5.Cup holder	6.Instrument	7.Rocker switch	8.Accelerator pedal
9.Brake pedal		11.Parking brake lever	
12.Steering wheel adjustment switch		13.Brake fluid tank cap	
14.Reversing lever	15.Emergency disconnect switch (OPT)		
16.Lift control lever	17.Tilt control lever	18.Side shift control lever (OPT)	
19.Attachment control lever (OPT)			

Steering wheel [1]



Controls the driving direction of the truck Anticlockwise rotation

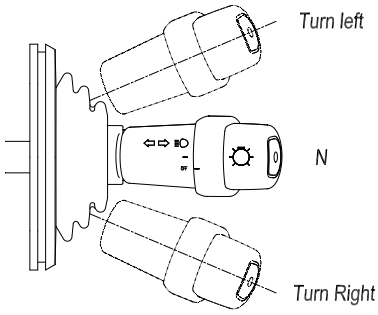
turns the truck to the left; clockwise rotation turns the truck to the right.

> ⚠ WARNING
>
> The forklift is equipped with a fully hydraulic steering mechanism. When the engine shuts down, it will be very difficult to steer the forklift. Before turning again, the engine must be restarted immediately.

Horn button [2]

The horn will sound by pressing the horn button in the center of the steering wheel.

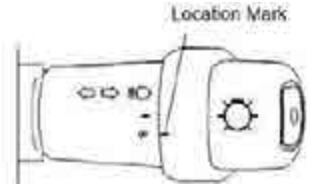
Combination switch （Turn signal switch/light switch） [3]



Use this lever which is at the right side of steering column to indicate the turning direction of the truck.

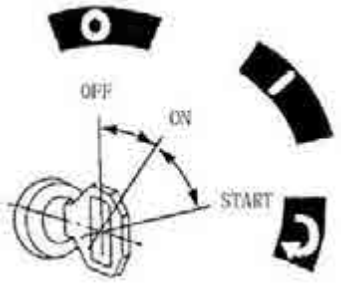
Forward-left turn light, N-neutral, Backward-right turn light

The turn signal lever does not automatically return to the neutral position unlike general passenger cars. It must be returned to the neutral position manually.



To turn on the headlights and the front signal light, turn this switch to align the position marker on the switch handle with the corresponding symbol on the switch body.

Ignition key switch [4]



O (off): The position to insert and pull out the key; when the key is in this position, the engine shuts down.

| (On): When the start key is in “ **|** ”, the circuit is connected; after the engine is started, the key remains in this position.

➲(Start): When the key is in the“➲” position, the engine is started; after the engine has started, the key automatically returns to the “ **|** ” position after release.

Diesel engine

When starting, the key is turned to the “ **|** ” position and the preheat indicator light turns

on for a while; after the light turns off, the key can be rotated to the“ ”position to start the engine.

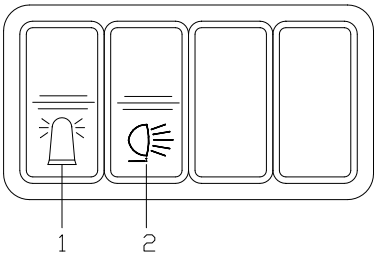
Caution

- When the engine stops, do not leave the key in the “ | ” position to avoid battery discharge.
- When the engine is running, do not put the key in the“ ” position to avoid motor damage.
- When starting, the starter motor cannot continuously rotate for more than 10s and the interval between consecutive starts should be 120s.

Cup holder [5]

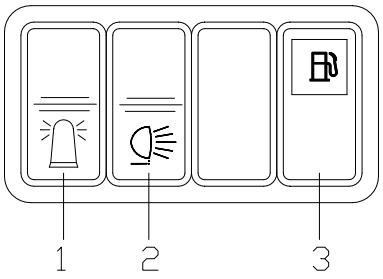
A cup holder is set on the right side of the instrument stand for the driver to place a cup.

Rocker switch [7]



1. Alarm light switch: When pressed down, the alarm light will flash; when pressed up, the alarm light will turn off.

2. Rear headlight switch (optional): When pressed down, the rear headlight will turn on; when pressed up, the rear headlight will turn off.



1.Alarm light switch: When pressed down, the alarm light will flash; when pressed up, the alarm light will turn off.

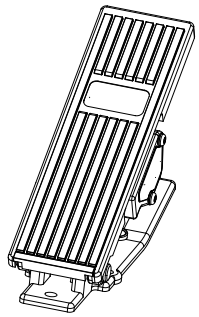
2.Rear headlight switch (optional): When pressed down, the rear headlight will turn on; when pressed up, the rear headlight will turn off.

3.LPG Warning Indicator: When the indicator light is on, it signals that there is insufficient LPG left in the LPG tank, and LPG needs to be replenished.

Hydrostatic drive mode switch

E N S	E: Economy mode, low speed
	N: Normal mode, medium speed
	S: Sport mode, high speed

Accelerator pedal [8]



When the accelerator pedal is pressed, the engine speed and the forklift speed will increase;

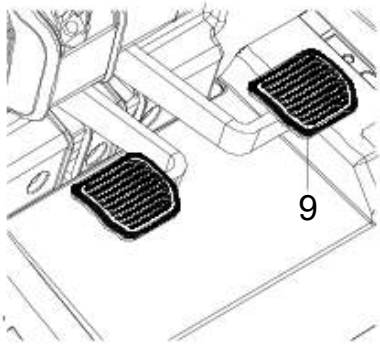
Hydraulic-powered transmission

When the accelerator pedal is released the engine speed and the forklift speed will decrease.

Hydrostatic drive

Release the gas pedal, the engine speed drops and the vehicle running speed drops more quickly. It provides smoother, faster speed changes.

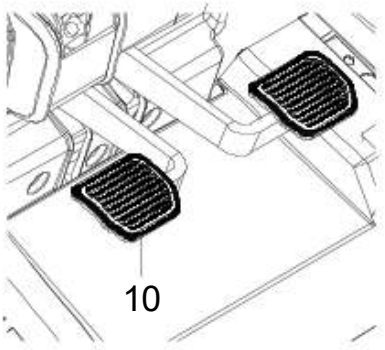
Brake pedal [9]



When the brake pedal is pressed the truck slows down; when the brake pedal is pressed to the bottom the truck stops. When the pedal is released, the forklift can run freely.

> Caution
>
> Avoid emergency braking. Emergency braking can easily cause the forklift to tilt or cargo to fall.

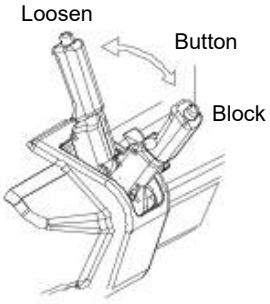
Inching pedal [10](excluding hydrostatic drive CPCJ vehicles).



When the pedal is pressed, the oil pressure of the hydraulic clutch will drop. When the pedal is pressed harder, the forklift truck will be braked. The pedal can be used when the forklift truck slows down to approach cargo or conducts loading and unloading operations.

> Caution
>
> Do not use the inching pedal excessively. If the pedal is used as a footrest or used for a long time, it may cause overheating of the

Handbrake lever [11]

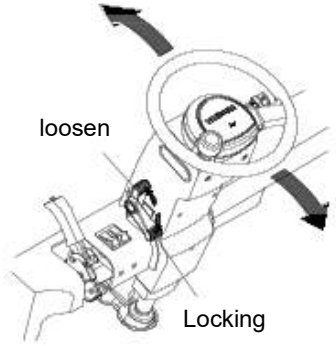


Pull the lever back to engage and push the lever forward to release. Engage the lever before the leaving the forklift truck.

> Caution
>
> In the event of brake system failure or emergency, the lever can be engaged for

emergency braking. Do not use the handbrake to slow down during normal use.

Adjusting lever for steering wheel tilt angle [12]

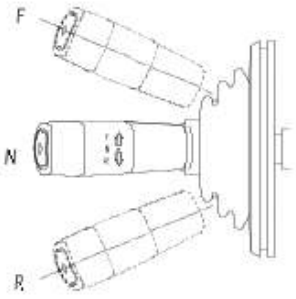


The position of the steering wheel can be adjusted. To perform adjustment, pull the adjusting lever installed on the left side of the steering hub column, move the steering wheel to the desired position, and push down the adjusting lever to lock.

Caution

- Adjust the steering wheel tilt angle only after the forklift truck has stopped and the hand brake is engaged.
- Forcibly move the steering wheel up and down to ensure that it has been locked after adjusting.

Direction control lever [14]



The direction control lever is installed on the left side of the steering hub column. This series of forklift trucks are EPS based and the functions realized by moving the lever forward and backward are as follows:

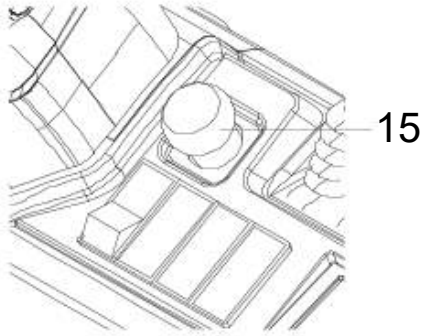
F	Forward
N	Neutral
R	Reverse

Press the brake pedal to the bottom to fully stop the truck before changing the driving direction; push the lever forward to engage forward gear. Press on the brake pedal to slow down if it is required to reverse; and then pull back the lever to engage reverse gear.

Caution

The engine can only be started when the lever is in the neutral position.

Emergency power-off switch [15]



Hydraulic drive:

Press down the emergency power-off switch to disconnect the electric appliances from the battery.

If the forklift truck needs to be restarted, the emergency power-off switch should be toggled.

Reset the emergency power-off switch 30s after shutdown.

Hydrostatic drive:

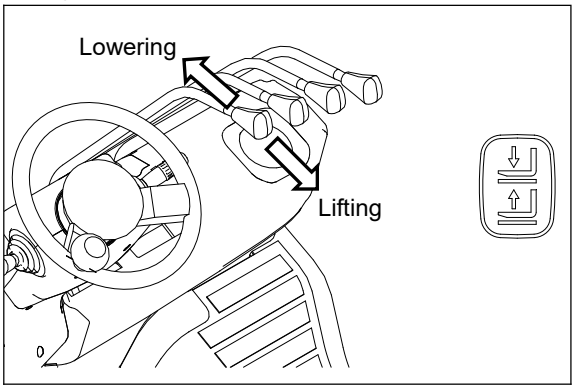
Pressing the emergency power-off switch

will cut off the RC controller signal output and emergency braking of the hydraulic drive circuit.

To resume operation, it is necessary to turn off the engine first by rotating the start switch to O (off), then reset the control valve control lever.

Then pull the emergency power-off switch and restart the forklift.

Lifting lever [16]

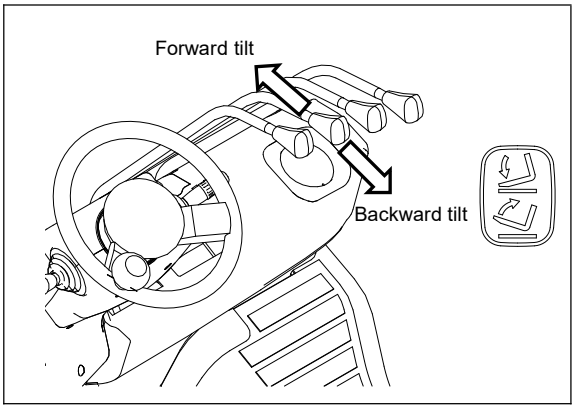


This lever is used to lift or lower the forks.

Push forward - Down; Pull back - Up

The lifting speed is controlled by the backward tilt angle of the lever and the accelerator pedal. The lowering speed is only controlled by the forward tilt angle of the lever.

Tilt lever [17]



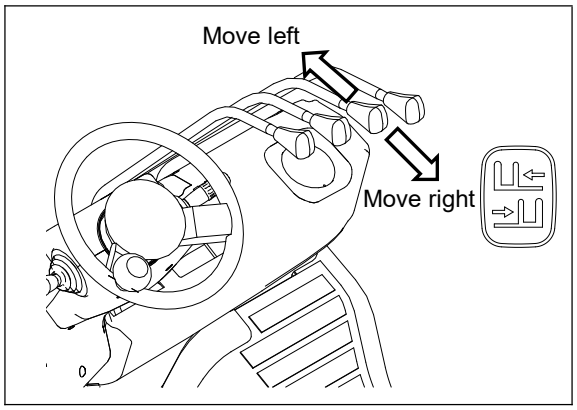
This lever is used to tilt the mast forward and backward.

Push forward - Forward tilt; Pull back - Backward tilt

The tilt speed is determined by the tilt angle of the lever and the throttle control.

> ⚠ Caution
>
> The multi-way valve is equipped with a forward tilt self-locking valve. Therefore, when the engine shuts down, the mast cannot tilt forward even if the tilt lever is pushed forward.

Side shift control lever [18]（OPT）



This lever is used to move the side shift frame to the left or right.

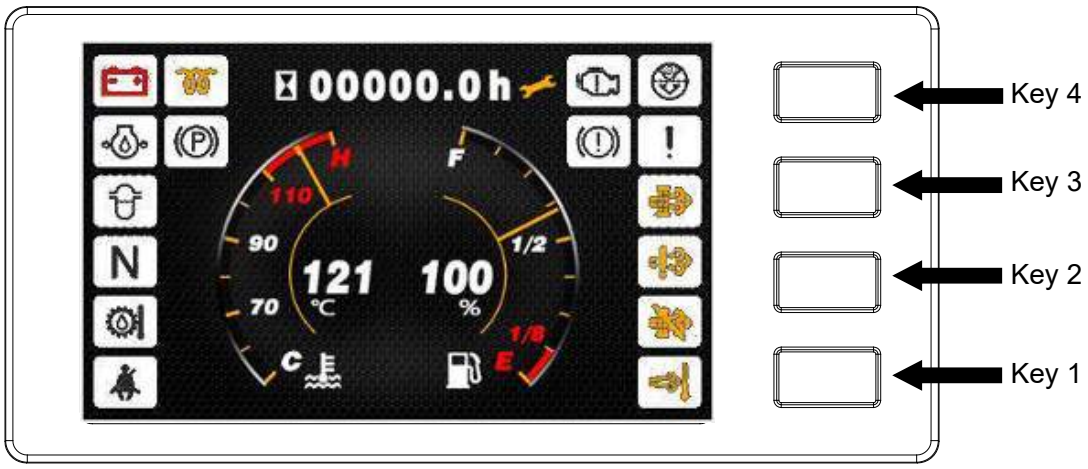
Push forward – Move left; Pull back – Move right

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

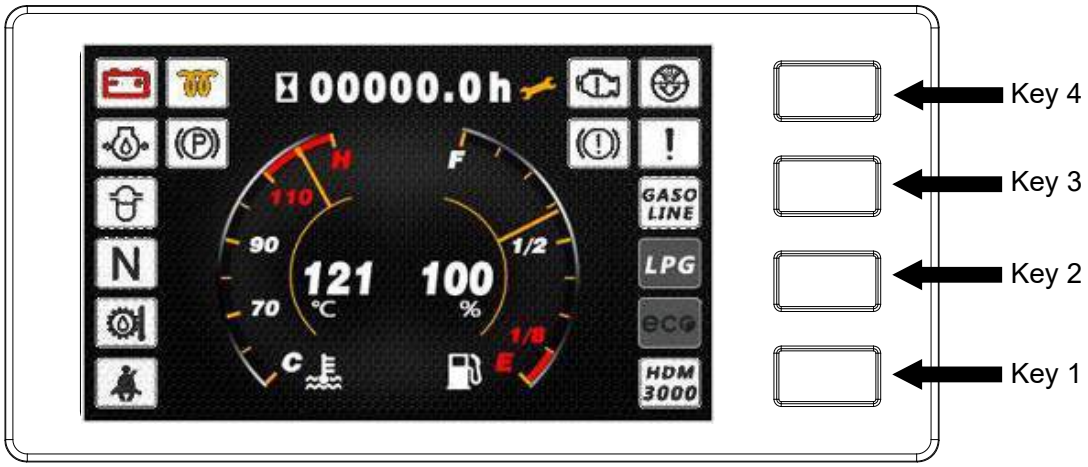
Different types of attachments with different functions are optional, thus the driver has to be familiar with the operating method for each

Attachment control lever [19]（OPT）

2、Instrumentation



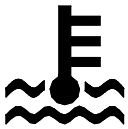
Diesel engine（Kubota/Xinchai/Cummins）Homepage



Gasoline and LPG forklifts(GCT Engine(except W22)&H11/W12 Engine) Homepage

Gasoline and LPG forklifts(H20/W24 Engine) Homepage

Water temperature gauge

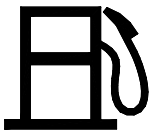


When the ignition key switch is in the | (open) position, the water temperature gauge is active, displaying the engine coolant temperature.

The water temperature numerical display range is from 0°C to 210°C, and the gauge pointer display range is from 50°C to 130°C. When the water temperature is below 0°C, the water temperature value is randomly displayed between 216°C and 255°C, which only indicates that the engine coolant temperature is below 0°C.

> Caution
>
> Stop operation immediately and reduce engine speed to cool down the engine and then stop the engine when the gauge is in the red area. Check the coolant level is sufficient and whether the fan belt is tight.

Fuel gauge



When the ignition key switch is in the | (open) position, the fuel gauge will display the approximate fuel level in the fuel tank.

It is recommended to fill up the fuel tank everyday after work.

> Caution
>
> For LPG single-fuel forklifts, this indicator light is inactive, and the value display is 0%.

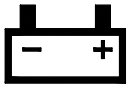
Timer

When the ignition key switch is in the | (open) position, the timer will start running. The timer reading will increase by one for every hour of operation.

The timer displays the cumulative working hours of the forklift truck.

> Caution
>
> After the cumulative hours reaches 100h (the factory default interval is 100h, and it can be adjusted) displayed on the stopwatch, the “wrench” icon will flash for 1 hour to prompt that the forklift truck needs to be serviced. Consult monthly maintenance after the first flash. Check the information about the maintenance cycle schedule in detail for each cycle. The specific flash time depends on the actual situation.

Charging indicator light



The light displays the battery charge status, turns on when the starting switch is in the | (open) position, and turns off when the engine is started.

Caution

If the light continues to turn on or flash during operation, it indicates that the charging is abnormal and immediate inspection is required.

Preheat indicator light [diesel forklift trucks]

The light turns on for a short period after the switch is moved to the | (open) position, and the switch can be moved to the ⇄ (start) position to start the engine after the light turns off.

Engine oil pressure alarm indicator light(except W97 engine)

The light displays the pressure of the engine lubricating oil, the light turns on when the starting switch is in the | (open) position, and turns off when the engine is started.

Caution

If the light continues to turn on or flash during operation, it indicates that the oil pressure is less than 0.05MPa and immediate inspection is required.

Engine oil pressure alarm indicator light(W97 engine)

The light displays the pressure of the engine lubricating oil.

When the engine oil pressure is normal, the indicator light goes out; when the engine oil pressure is abnormal, the indicator light comes on, and the instrument displays the corresponding fault code.

Caution

When the light comes on, please stop and inspect the vehicle in a timely manner to avoid causing more serious damage to the engine.

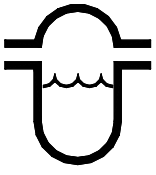
Parking indicator light

When the light turns on, it indicates that the parking brake is applied. In order to drive the truck, the parking brake lever (i.e. handbrake lever) should be released and the light will turn off.

Warning

Driving the truck when the light is on may cause damage to the engine, drive system and other components.

Fuel-water separator indicator light [diesel forklift trucks]



In general, the light turns on when the starting switch is in the ⇄ (start) position, and turns off when the engine is started.

The light turns on when the water precipitation reaches a certain level while the engine is running.

If the light continues to turn on or flash when the engine is running, the engine should be shut down immediately to discharge water.

> Caution
>
> If operation is continued after the light turns on, the fuel oil injection pump may be damaged.

Neutral start indicator light

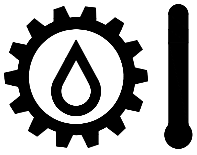
N

When the truck is temporarily stopped, the direction lever should be in the neutral position; in this position the light will turn on.

The truck can only be started when it is in neutral.

The truck must not be in the neutral position when driving downhill.

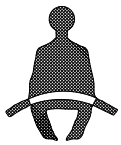
Transmission oil temperature alarm light [hydraulic forklifts]



In normal conditions, the light turns on when the starting switch is in the ⇄ (start) position. It turns off when the engine is started. When the engine is running and the transmission oil temperature exceeds the normal range (60℃-120℃), the alarm light will turn on.

> Caution
>
> If the alarm light turns on, please stop operation immediately and reduce engine speed to cool down until the light turns off. The fuel quantity should be checked or other inspections should be conducted.

Seat belt alarm indicator light (optional configuration)



When the start key is in the “ | ”, position, the engine is not started and the driver is not on the driver's seat. If the seat belt is not fastened properly, the seat belt alarm indicator light will turn on.

If the seat belt is not fastened or loose when the driver is operating the vehicle, the buzzer alarm will sound and the seat belt alarm indicator light will turn on at the same time. This is to remind the driver to safely park and refasten the seat belt; the buzzer alarm will then stop and the seat belt alarm indicator light will turn off.

Engine fault indicator light [for forklift trucks with an electronically controlled engine]

When the light turns on, it indicates that there is a fault and the forklift has to be stopped immediately.

Maintenance personnel can press the

right key of the instrument to check or connect the ECU diagnosis interface with the diagnostic equipment to read the fault code information stored in the ECU.

Air filter alarm indicator light

When the light turns on, it indicates that the air filter in the air intake system is blocked and the truck must be stopped to clean the air filter.

Low brake pressure alarm indicator light

The indicator light in the 1.0t-X5.0t forklift truck is not operative.

OPS indicator light

When the light turns on, it indicates that the driver is not on the driver's seat or is not sitting properly.

Engine fuel (gasoline) indicator light

When this light is on, it indicates that the engine is fueled by gasoline.

Engine fuel (LPG) indicator light

When this light is on, it indicates that the engine is fueled by LPG.

Energy saving mode indicator light

When the instrument displays the home page and pressing button 3 , the forklift enters energy-saving mode, and the energy-saving mode indicator light illuminates.

When the ECO indicator is on, it indicates that the cargo is working in energy saving mode. The load weight must be less than 50% of the full load, and the lifting speed can be reduced by 15%.

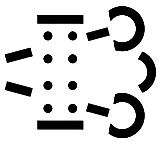
Caution

If the load weight is greater than 50% of the full load, exit the ECO mode(Pressing button 3 again when the instrument displays the home page will exit energy-saving mode), after exiting, the indicator light goes out.

Fault diagnosis instrument connection indicator light

When the forklift is connected to a diagnostic tool, the indicator light comes on.

Regen indicator light（Only EU stage V diesel engine）



There are three kinds of working status: Driving regen, parked regen, and service regen (aftersales solution).

In the first case, the regen indicator light turns on normally and is in the regen working status. At that time, manual intervention is not required and normal operations can be maintained. The light will automatically turn off after the regen prompt, which also indicates that the treatment of particulate matter is completed.

The driver should reduce the light-load running time as much as possible to increase the exhaust temperature and shorten the regen time.

In the second case, it prompts that the parked regen should be started.

Start parked regen (see operating instructions for instrument keys) after the parked regen conditions have been met.

Parked regen conditions:

① The forklift truck is parked on a well-ventilated flat road.

②Engage the handbrake.

③Release the accelerator pedal.

④ Keep the direction lever in the neutral position (gear N).

⑤Warm up the forklift truck until the water temperature reaches 70℃.

⑥Install the hazard warning sign near the exhaust port.

Caution

- Parked regen: The parking status is not suitable for heat dissipation. Stay away from inflammables and keep a safe distance from people.
- The driver should pay attention to safety, should not leave the site, and should monitor the engine conditions during regen.
- The driver should not stop the engine during regen; otherwise, it is likely to cause a DPF fault.

Warning

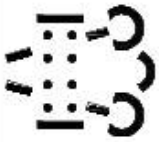
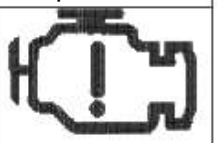
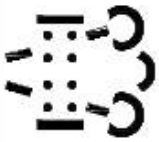
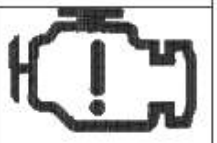
If it is necessary to inhibit parking regen in an emergency, only one of the conditions ②③④ to exit parking regen needs to be met.

The regen indicator light turns on when driving and the forklift truck can continue to be used normally or can be driven to the safe position for parked regen.

If the regen indicator light turns on when driving and the engine fault indicator light turns on as well, maintenance personnel or aftersales staff for the plant area should be contacted to check the engine fault code. Start parked regen after confirming that there are no other faults.

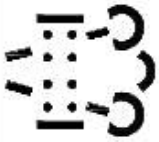
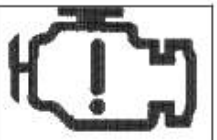
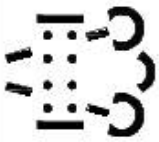
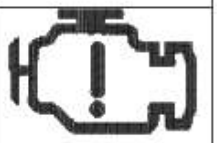
Caution

If the two indicator lights turn on and parked regen is not performed within 2h, the DPF is likely to become blocked, the parked regen will fail to start, and the DPF may be damaged, causing maintenance expenses.

H7,H8diesel engine	 Flash	 Fault code SPN:5270 FMI:15
W97,W99diesel engine	 Flash	 Fault code SPN:3701 FMI:15

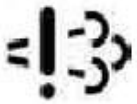
At the end of parked regen, the light will automatically turn off; the engine can be shut down after waiting for 2-3min until the engine restores to normal idling.

The third case, service regen.

H7,H8diesel engine	 Flash	 Fault code SPN:50261 FMI:15
W97,W99diesel engine	 Flash	 Fault code SPN:3701 FMI:16

When the DPF has been severely blocked, the engine has reduced power and torque, and the forklift truck does not work normally, aftersales staff should be contacted for service regen.

EATS system fault indicator light（Only EU stage V diesel engine）



If the EATS has a fault or exceeds the designated operating parameters, the engine fault light should turn on at the same time.

Inhibit indicator light（Only EU stage V diesel engine）

When the light turns on, it indicates that the regen status of the engine is restricted and driving regen or parked regen is inhibited.

Caution

When working in an environment that is not suitable for DPF regeneration, turn on the inhibit mode. After leaving, release the inhibit mode so that active regeneration can continue.

Warning

If the active regen has been inhibited, the exhaust filter and exhaust will become blocked and the performance of the forklift truck will degrade until the engine fault indicator light is activated.

High exhaust temperature indicator light（Only EU stage V diesel engine）

Caution

Light on: Reminds the driver that the regen process causes high exhaust temperature and to pay attention to safety.

Operator's guide to dpf functionality（Only EU stage V diesel engine）

This truck equipped with an EARS(Exhaust After Treatment System) utilizing a DPF(Diesel Particulate Filter) exhaust treatment system to reduce harmful emissions and to meet stringent emissions compliance standards.The DPF management system uses high exhaust temperatures to clear soot accumulation,different levels of regeneration are utilized. The operator of this forklift MUST become familiar with these different levels.To avoid injury or damage to equipment,please follow closely the instructions contain herein.

DPF Related indicators and Controls

A.Regeneration Active/Requested

B.EATS System Fault

C.Inhibit Regeneration

D.High Exhaust Temperature.

LEVELO (Passive Regeneration):

During this first stage,passive regeneration takes place automatically when sufficient exhaust temperatures are maintained during normal engine operation.The DPF will continually self-regenerate,no activated are required by the operator,and no DPF related indicators will light.

NOTE:Ensure the inhibit function has NOT been activated in the dash settings as this will prevent future regeneration requests.This function is identified active on the dash as and can be selected to prevent regeneration when safety preconditions cannot be met.

LEVEL1(Active Regeneration):

When exhaust temperatures are not high enough to support a passive regeneration,an active regeneration is required to remove a buildup of particulates in the DPF.This regeneration occurs automatically,requires no operator intervention,and NO loss in engine performance will result.The operator can continue using the truck normally since higher exhaust temperatures and engine speeds will lead to more successful regenerations.This level request and activation is indicated on the dash as a solid icon and is accompanied with to indicate a high exhaust temperature warning.These indicators will turn off once particulates level has adequately decreased.

NOTE:Running the engine on idle for prolonged periods WLL prevent proper regeneration and cause particulate levels to rise rapidly.

IEVEL2 (Active or Parked regeneration)：

If after 2 hours,the particulates level hasn't decreased sufficiently,a parked regeneration is requested by the ECU indicated by a flashing  icon.As soon as it becomes possible,the operator should place the truck in a well-ventilated are a clear of obstruction,place the transmission in neutral,engaged the park brake,release the accelerator pedal,and select "Regen"by pressing"Key2"on the dash to activate parked regeneration.Once activated,the dash will light a solid  icon along with an  icon to indicate a high exhaust temperature warning.This process will take several minutes,during which the truck must not be used,otherwise the process will be aborted.After a successful regeneration,the indicators on the dash light turn off,and engine speed will return to idle.

LEVEL3 (Necessary Parked regeneration）：

In the event soot levels continue to rise and a successful parked regeneration was not carried out,the  icon will flash along with a constant  icon to indicate fault code SFN：3701FMI5 has now been triggered.The engine output will be de rated to50%to protect the DPF from further damage,and a parked regeneration will now become necessary.A parked regeneration MUST be carried out immediately,following the steps as indicated in level 2.If the truck is operated during there generation,the process will be aborted,and regeneration will have failed.WARNING:This is the final level in which the operator can carry out a regeneration.Failure to success fully per form a parked regeneration at this stage will result in a rapid DPF status escalation to level 4 requiring the intervention of a service technician.

LEVEL4(Service Level regeneration）：

At this level,the  icon will flash along with a constant  icon to indicate fault code BPN3701FM1G has now been triggered.The engine output will be de-rated to protect the DPF from further damage.Parked regeneration can no longer be carried out by the operator and MUST instead be performed by a service technician using a service tool.

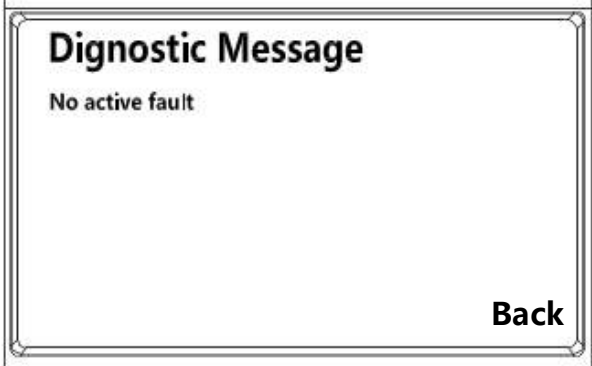
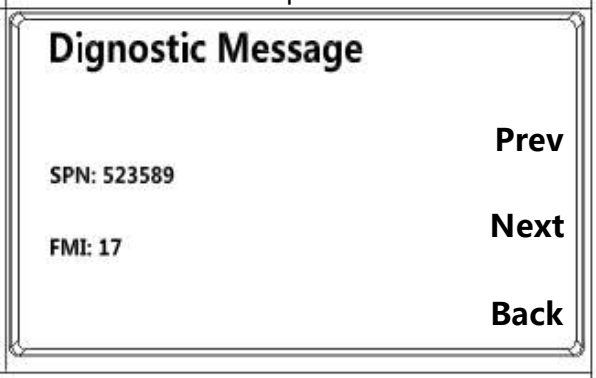
LEVEL5(Service Required):

DPF status has reached beyond the scope of a service level regeneration and can no longer be carried out.The  icon will flash along with a constant  icon to indicate fault code SPN：3701 FMI：00 has now been triggered.The engine output will be de-rated to protect the DPF from further damage.At this stage,the DPF MUST be removed,inspected,cleaned,or replaced by an authorized service representative.

Operating instructions for instrument keys

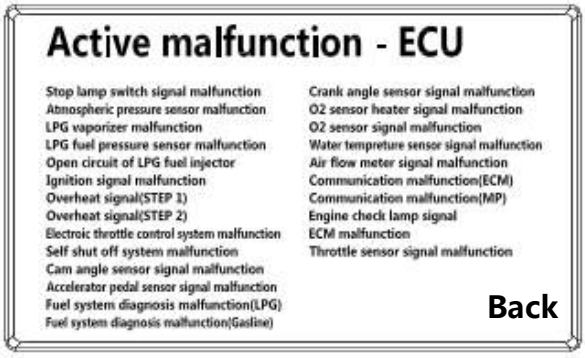
Engine fault information display page

（1）Diesel engine（Kubota/Xinchai/Cummins）and H11/H12/H20/W58engine

No faults	Fault present
	
① Enter the engine fault information display page: Homepage=》Key 4 ② Fault query page selection: Press key 2 or key 3 again for page selection (the page selection key is not displayed when there is no fault) ③ Back to the homepage: Press Key 1 to return to the homepage	

（2）GCT engine

① Enter the engine fault information display page:
Homepage=》Key 4
② Back to the homepage:
Press Key 1 to return to the homepage
Note: GCT engine fault information (English) will be directly displayed according to the fault content.

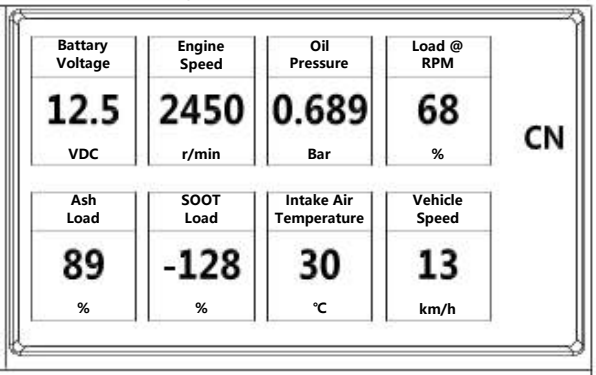


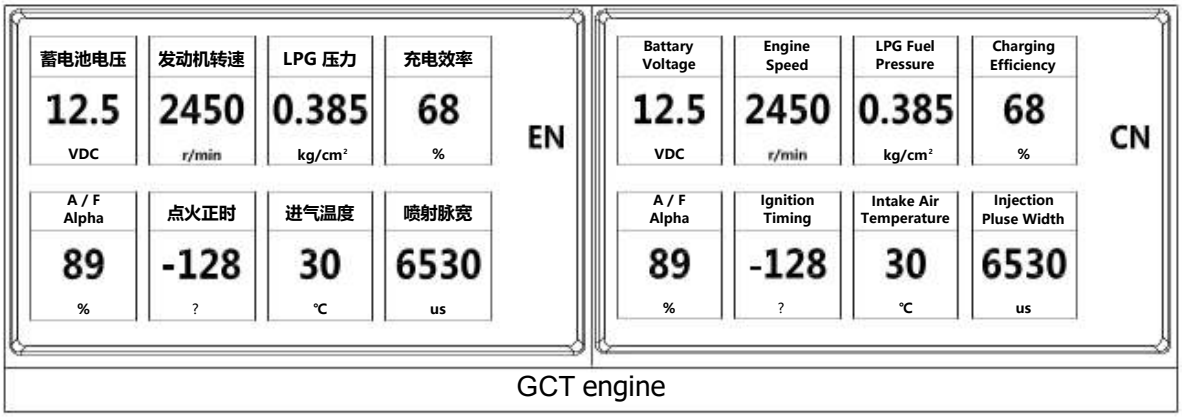
Forklift truck operating parameters and Chinese and English interface switch

① Enter the forklift truck operating parameter display page: Homepage=》Key 2 or Key 3

② Language switch: Press Key 3 again to switch language (CN/EN)

③ Back to the homepage: Press Key 1 to return to the homepage

	
KUBOTA/XINCHAI/Cummins diesel engine	



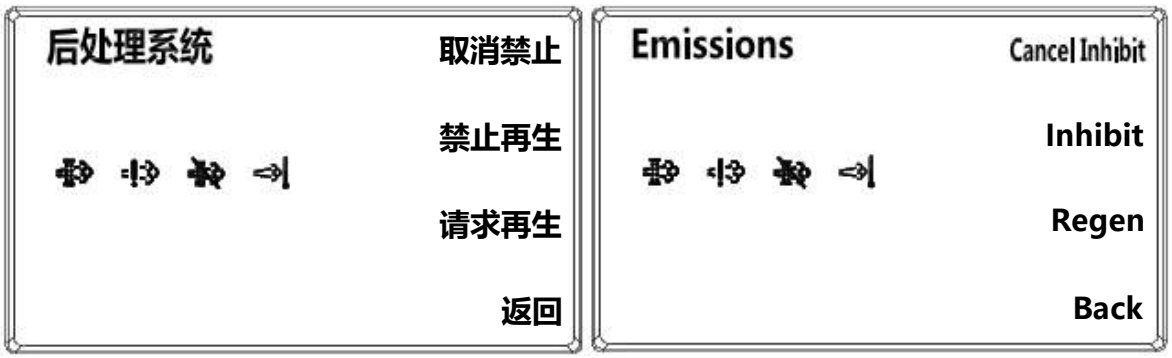
GCT engine

Setting page

（1）Operations on the setting page

- Enter the setting page: Homepage=》Key 1
- Enter the maintenance page: Homepage=》 Key 1=》 Key 2, to enter the maintenance repair page
- Enter the emissions system setting page: Homepage=》 Key 1=》 Key 3, to enter the emissions system setting page
- Enter the advanced setting page: Homepage=》 Key 1=》 Key 4, enter the advanced setting maintenance personnel password input page
- Back to the homepage: Press Key 1 to return to the homepage

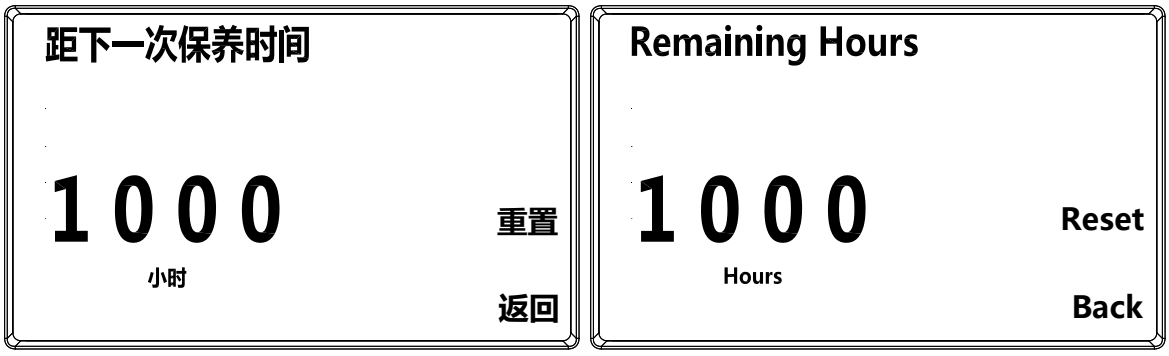
（2）DPF emissions function setting page (EU stage V diesel engine)



Cancel inhibit: Press Key 4 to enable the DPF automatic regen function
Inhibit: Press Key 3 to disable the DPF automatic regen function
Regen: Press Key 2 to enable DPF parked regen.
Back: Press Key 1 to return to the setting page

（3）Maintenance repair page

a.Remaining hours query page



The remaining hours can be observed on the page

Reset: Press Key 2 to be redirected to the maintenance hour reset page, and reset the remaining hours to the set initial value (maintenance cycle interval).

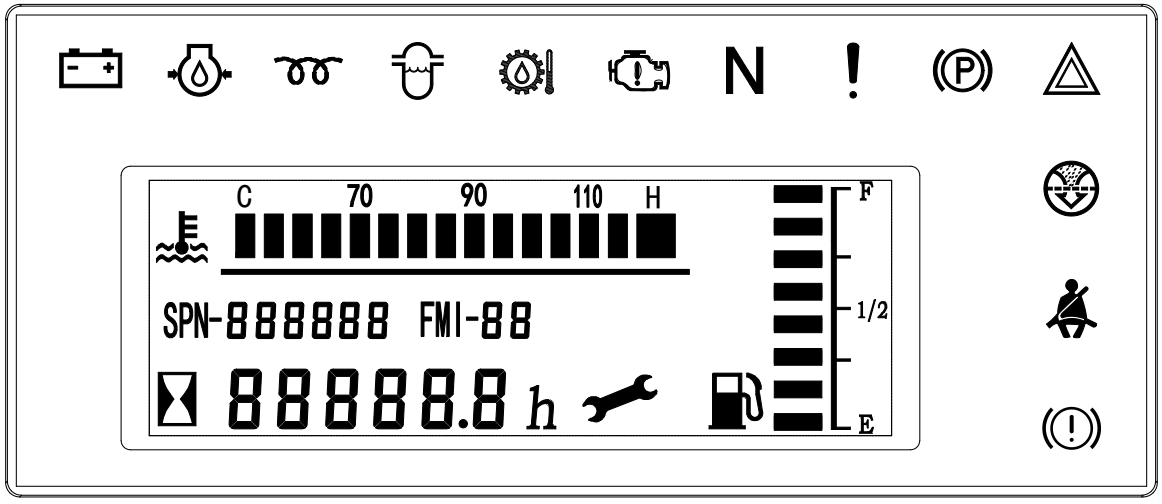
Back to the setting page: Press Key 1

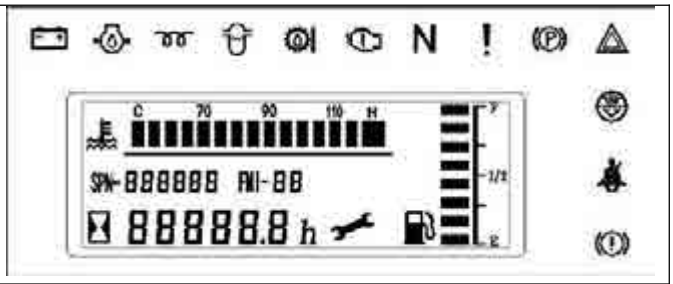
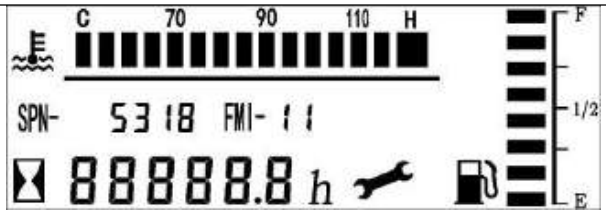
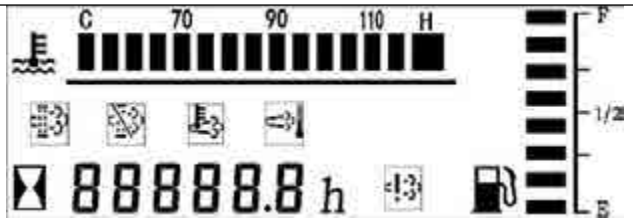
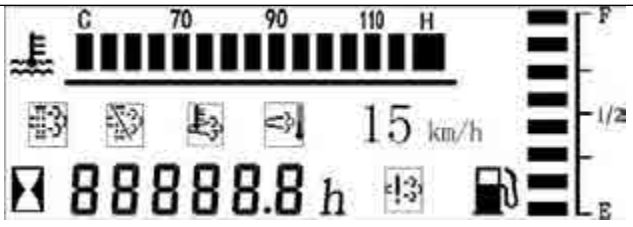
b.Maintenance hour reset page

Reset: Press Key 2 to confirm reset and automatically return to the maintenance query page i the reset confirmation was successful.

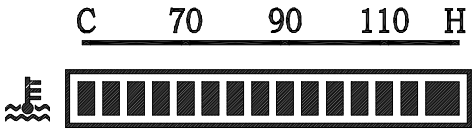
Back to the setting page: Press Key 1 to return to the setting page

Instruments of W22 engine



① Instrument self-test: When the instrument is powered on, the system starts the self-test.	
② Fault code warning display: Display the fault code.	
③ DPF display: Display the DPF-related indicator lights. (4t - 5t)	
④ Speed display: Display the speed (optional speed sensor)	

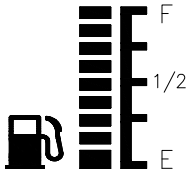
Water temperature gauge



When the ignition key switch is in the | (open) position, the water temperature gauge is active, displaying the engine coolant temperature; in normal operation the LCD will show that it is within the range 50℃-110℃.

> Caution
>
> Stop operation immediately and reduce engine speed to cool down the engine and then stop the engine when the liquid-crystal display is in the red area. Check the coolant level is sufficient and whether the fan belt is tight.

Fuel gauge



When the ignition key switch is in the | (open) position, the fuel gauge will display the approximate fuel level in the fuel tank.

It is recommended to fill up the fuel tank everyday after work.

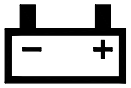
Timer

When the ignition key switch is in the | (open) position, the timer will start running. The timer reading will increase by one for every hour of operation.

The timer displays the cumulative working hours of the forklift truck.

> Caution
>
> After the cumulative hours reaches the first 100h and 350h and a certain period of time, the “wrench” icon will flash for 1 hour, which indicates that the forklift truck needs to be serviced. See monthly maintenance after first flash. See the information about the maintenance cycle schedule in detail for each cycle. The specific flash time depends on the actual situation.

Charging indicator light



The light displays the battery charge status, turns on when the starting switch is in the | (open) position, and turns off when the engine is started.

> Caution
>
> If the light continues to turn on or flash during operation, it indicates that the charging is abnormal and immediate inspection is required.

Engine oil pressure alarm indicator light

The light displays the pressure of the engine lubricating oil, the light turns on when the starting switch is in the | (open) position, and turns off when the engine is started.

Caution

If the light continues to turn on or flash during operation, it indicates that the oil pressure is less than 0.05MPa and immediate inspection is required.

Preheat indicator light [diesel forklift trucks]

The light turns on for a short period after the switch is moved to the | (open) position, and the switch can be moved to the (start) position to start the engine after the light turns off.

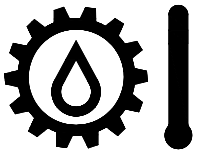
Engine oil pressure alarm indicator light

The light displays the pressure of the engine lubricating oil, the light turns on when the starting switch is in the | (open) position, and turns off when the engine is started.

Caution

If the light continues to turn on or flash during operation, it indicates that the oil pressure is less than 0.05MPa and immediate inspection is required.

Transmission oil temperature alarm light [hydraulic forklifts]

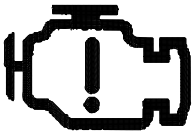


In normal conditions, the light turns on when the starting switch is in the (start) position. It turns off when the engine is started. When the engine is running and the transmission oil temperature exceeds the normal range (60℃-120℃), the alarm light will turn on.

Caution

If the alarm light turns on, please stop operation immediately and reduce engine speed to cool down until the light turns off. The fuel quantity should be checked or other inspections should be conducted.

Engine fault indicator light



When the light turns on, it indicates that there is a fault and the forklift truck must be stopped immediately and the fault must be addressed based on the engine fault code table.

Maintenance personnel can diagnose the faults based on the fault code displayed on the fault code indicator light or connect the ECU diagnosis interface with the diagnostic equipment to read the fault code information stored in the ECU.

See the engine manual for details.

Neutral start indicator light

N

When the truck is temporarily stopped, the direction lever should be in the neutral position;

in this position the light will turn on.

The truck can only be started when it is in neutral.

The truck must not be in the neutral position when driving downhill.

OPS indicator light

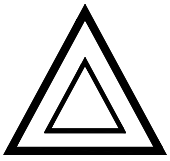
When the light turns on, it indicates that the driver is not on the driver's seat or is not sitting properly.

Parking indicator light

When the light turns on, it indicates that the parking brake is applied. In order to drive the truck, the parking brake lever (i.e. handbrake lever) should be released and the light will turn off.

> ⚠ Warning
>
> Driving the truck when the light is on may cause damage to the engine, drive system and other components.

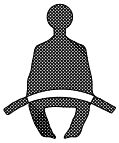
Major fault indicator light



Air filter alarm indicator light

When the light turns on, it indicates that the air filter in the air intake system is blocked and the truck must be stopped to clean the air filter.

Seat belt alarm indicator light (optional configuration)



When the start key is in the " | ", position, the engine is not started and the driver is not on the driver's seat. If the seat belt is not fastened properly, the seat belt alarm indicator light will turn on.

If the seat belt is not fastened or loose when the driver is operating the vehicle, the buzzer alarm will sound and the seat belt alarm indicator light will turn on at the same time. This is to remind the driver to safely park and refasten the seat belt; the buzzer alarm will then stop and the seat belt alarm indicator light will turn off.

Low brake pressure alarm indicator light

The indicator light in the 1.0t-X5.5t forklift truck is not operative.

Fault indicator light

When the forklift truck has a fault, the corresponding fault code will be displayed.

Caution

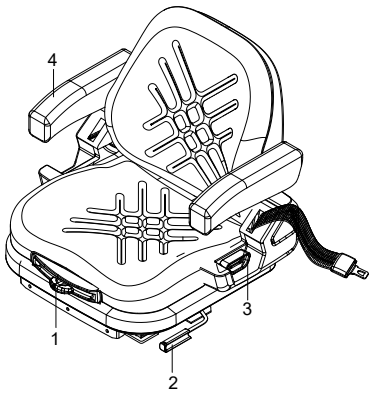
When any fault code is displayed on the fault indicator light, the forklift truck should be shutdown for maintenance.

3、Body and other parts

Load backrest

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

Driver's seat



1: Driver's seat weight adjustment handle
2: Forward and backward adjustment handle for the driver's seat
3: Backrest angle adjustment handle
4: Handrail adjustment knob

Driver's seat weight adjustment

The weight adjustment lever can be lifted up and put in the corresponding horizontal weight position for the user.

Forward and backward adjustment of the driver's seat

Pull the adjustment handle inward by hand, then push the whole seat forward and backward to reach the desired position, the handle is automatically locked when lowered.

Backrest angle adjustment

While sitting on the driver's seat, lean back on the backrest, pull the backrest angle adjustment lever upward with your left hand, lean forward or backward, and release the lever until the backrest angle reaches the desired position.

Handrail adjustment

The handrail tilt angle can be adjusted by rotating the adjustment knob. When rotating the knob outward, the front end of the handrail will lift. When rotating the knob inward, the front end of the handrail will lower

Warning

- The ignition key switch must be turned off before adjusting the driver's seat.
- The seat position can be adjusted only when the forklift truck has stopped.
- For safety reasons, do not adjust the driver's seat when driving.
- For front and rear adjustment and backrest angle adjustment, the handle should be pulled into place to ensure that the structure is completely disengaged before adjustment.
- After adjustment, the levers should return to the locked position. Ensure that all the components are locked securely before using the forklift truck.

Seat belt

Fasten the seat belt

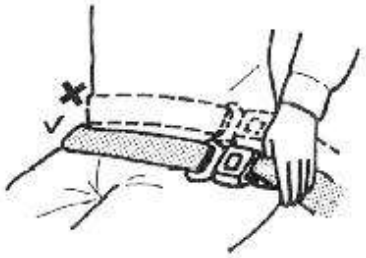
An auxiliary action is required before pulling out the seat belt which may require some familiarization.

One type of driver's seat: You need to press the white round button (with the text

"press to release") with one hand, and then the seat belt can be pulled out with the other hand. Then, the belt can be inserted into the socket on the other side of the driver's seat.

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

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



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

Do not knot or twist the belt.

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

Unfasten the seat belt

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

Check the seat belt

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

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

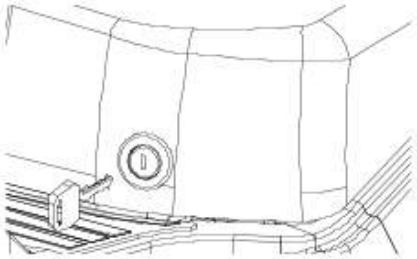
- Cutting or fraying;
- Wear or damage of metal parts, including the locating point;
- Buckle or retractor fault;
- Belt rips or tears.

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

Overhead guard

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

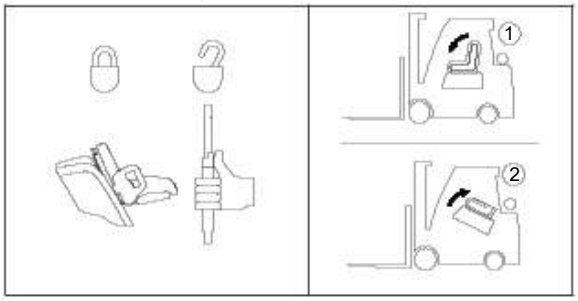
Lock catch assembly



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

Internal combustion engine hood

The internal combustion engine hood with a large opening is convenient for service and maintenance. The inner air strut of the internal combustion engine hood allows it to be fully opened with very little force.



Press the red button on the gas spring when closing; then, release the lock catch; press down the head of the internal combustion engine hood to close it; a click indicates that the hood has locked.

Caution

- In order to open the internal combustion engine hood, a key is required. Position the key horizontally and push backward to open the engine hood.
- Take care to prevent your fingers from being trapped by the hood when closing.

Warning

The engine must be shut down when maintenance and repairs are carried out under the internal combustion engine hood. Take care to prevent your hands or other body parts from being trapped by moving parts. However, provided the hands, feet, head, and body do not touch the components, it is permissible to open the internal combustion engine hood without turning off the engine in order to diagnose the fault by listening for abnormal noises.

Move the steering wheel forward and lean the backrest forward before opening the engine hood.

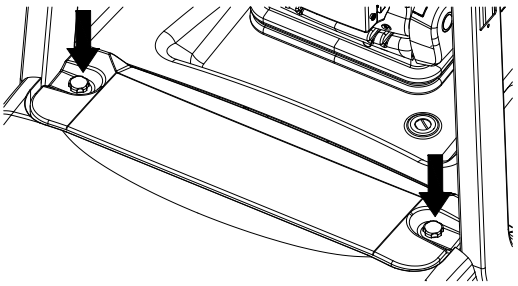
Return the steering wheel and backrest to their original positions after closing the engine hood.

Water tank cover plate

The water tank cover plate can be removed when the internal combustion engine hood is closed to check the coolant quantity.

The water tank cover plate is secured with hex bolts, which should be loosened using a socket wrench before removal; when

reinstalling, use the socket wrench to tighten the bolts properly.



Water tank lid and additional water tank

The additional water tank is under the internal combustion engine hood.

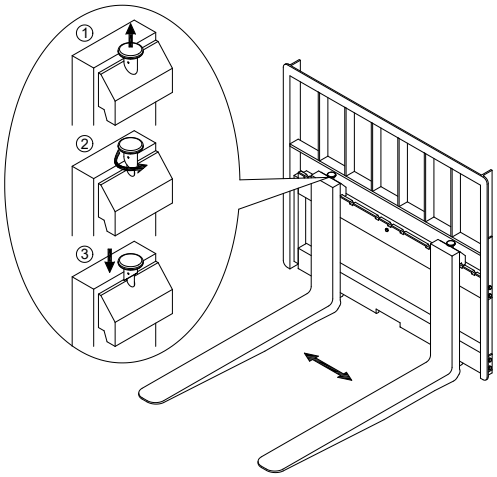
The water tank lid is under the rear cover plate of the internal combustion engine hood.

Danger

- Do not open the water tank lid when the engine water temperature is higher than 70℃. Press the lid down and slightly rotate it to the left to reduce the pressure in the water tank.
- Do not open the water tank lid when wearing gloves.
- The antifreeze is corrosive and toxic and should be rinsed off if your skin and body are exposed to it. Keep children away from the antifreeze.

Fork positioning pin

Used for adjusting the fork spacing. Pull out the positioner, rotate by 180°, and adjust the forks to the required position for the cargo to be unloaded.

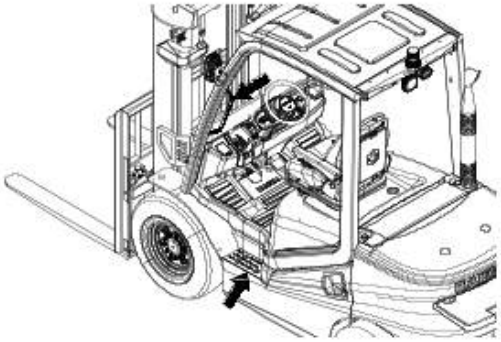


Warning

- The fork spacing adjustment should be based on the center line of the forklift truck and symmetrical on the left and right sides; the stop dowel should be tight after adjusting.
- There is an opening on the lower beam of the fork arm carrier for loading and unloading forks.
- Do not use the fork in the open position to prevent the fork from falling off from the open position. Regularly check the bolt in the middle of the fork arm, which prevents the fork from being used in the open position.

Step and handrail for getting on and off the forklift truck

The body is provided with a step for getting on and off on left sides; the handrails are installed on the left pillars of the overhead guard. Please use the handrails for safety when getting on and off the forklift truck.

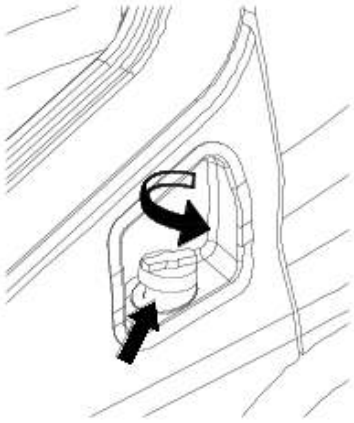


Hydraulic oil tank lid

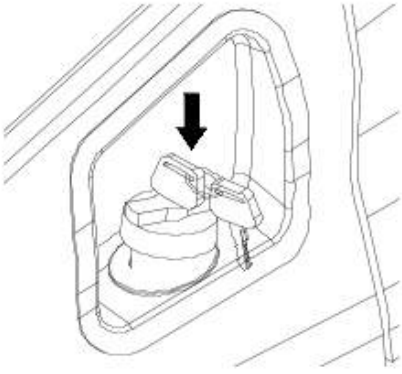
The hydraulic oil tank lid is on the right frame of the internal combustion engine hood that can be opened when refilling. Replenish with clean hydraulic oil through the oil filling port and screw down the lid after refilling.

Fuel tank lid

Fuel tank lid without a lock



Single-fuel LPG vehicle fuel tank lid lock



The fuel tank lid is on the left rear side of the body. There is a vent in the fuel oil tank and the vent should be checked for blockages when refueling.

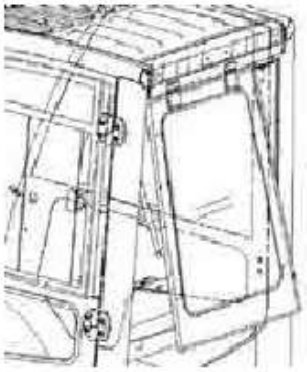
Note: Do not pour the gasoline into the fuel tank, because gasoline is not used for the LPG single-fuel trucks. To prevent the incorrect fuel being added, the fuel tank lid is equipped with a lock.

Caution

- When refueling, the forklift truck must be stopped, the engine must be shut down, and the handbrake lever must be engaged; the driver must get off the truck and there should be no naked flames nearby.
- The lid must be screwed down after refueling; otherwise, the fuel will leak which may result in a fire.
- The engine can be started only after wiping up the spilled fuel.
- Naked flames are prohibited when checking the fuel level.

Rear window of the cab（OPT）

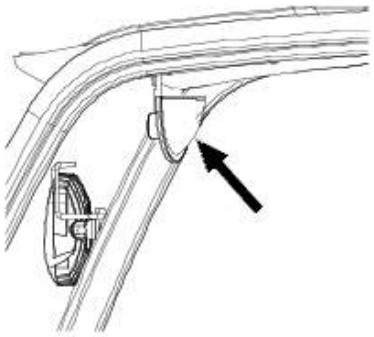
Open the rear window for ventilation or when opening the engine hood.



Caution

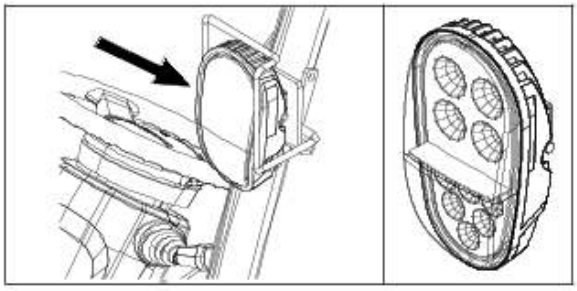
When opening the rear window of the LPG forklift truck, the steel cylinder may cause an obstruction, therefore it needs to be moved backward; after opening the rear window, the steel cylinder can return to the original position.

Mirror



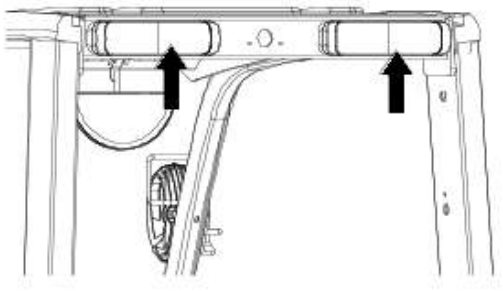
A mirror is installed on the upper right of the overhead guard for observing conditions behind the truck or when reversing.

LED front combination light



The two front combination lights (headlight, indicator light and clearance light) are installed on the front support of the overhead guard. Pay attention to the protecting lights; if there is any dust, they should be wiped clean; if there is any damage, they should be replaced.

Rear combination light



Disassemble the rear combination light from the overhead guard while taking care to ensure your safety.

Take the whole combination light to the maintenance site, remove the rear lampshade, and unscrew the four mounting screws on the back of the lamp housing.

Take out the panel, loosen the two screws that fix the connector, disconnect the connector, and replace with a new panel;

The assembly steps are a reverse of the disassembly ones.

ECU diagnosis interface

The ECU diagnosis interface of the engine is under the right engine hood of the truck and is provided with a dust cover.

Regularly check whether the dust cover is damaged and remove any dust and oil contamination on the ECU diagnosis interface.

Fuses, relays

If the fuse or relay is damaged, replace it with a new one.

① If the fuse is damaged, it is necessary to determine the cause before installing a new one.

② Do not use a fuse with a rating higher than the designed value.

V、Operation

Warning

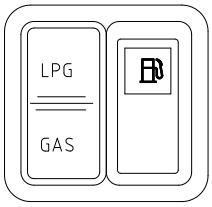
Before operating the truck, check all controls and warning devices for proper operation. If any damage of fault is found, don't operate truck until corrected.

1、Start-up

Starting the diesel/gasoline forklift truck

See step 2

Dual fuel forklift



Gasoline

Rotate the fuel changeover switch to "GAS".

Continue to see step 2.

LPG

Open the LPG tank supply valve.

Rotate the fuel changeover switch to "LPG".

Continue to see step 2.

Step 2

①Pull the shift lever in the neutral position.

②Start after rotating the starting switch to "➲"; turn the key back to " | " after starting.

Caution

- If the truck fails to start within 10s, the starting switch should be rotated to "O" and the truck should be restarted after an interval of 2min.
- If the truck fails to start three consecutive times, the cause should be investigated.

Starting the diesel forklift truck

Caution

When the ambient temperature is lower than -5℃, the key should be rotated to the right in the " | " position for preheating; after the preheat indicator light turns off, the key can be rotated to "➲" for starting.

After the engine is started

① Preheat the engine for about 5min.

②Check the operating conditions of the engine.

Caution

Step on the accelerator to make it run at intermediate speed after the diesel engine is started; preheat the engine without load.

③ Check the compression (no ignition) sound.

④ Check exhaust conditions.

⑤ Confirm that all indicator lights have turned off.

⑥ Operate the control valve control lever 2-3 times throughout the process and check the operation of the mast after the engine is fully preheated.

Caution

Dual fuel engine switch the fuel (GAS ↔ LPG) when the engine is running; the

engine should not run without load.

OPS Forklift truck starting state

The forklift truck can be started normally when the driver sits on the driver's seat properly, fastens the seat belt (if the seat belt protection switch is provided), or engages the handbrake, and pulls the shift switch to the neutral position. If the shift switch is not pulled to the neutral position, the truck cannot be started.

Warning

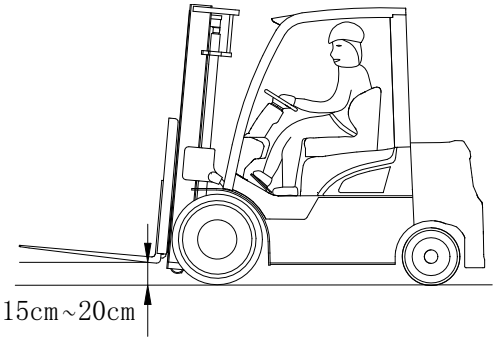
If the forklift truck is parked on a ramp, you must press the brake pedal to the bottom when starting the truck to prevent the truck from rolling back.

For details, see the OPS system description.

2、Operation

① Hold the steering wheel lever with your left hand. Put your right hand on the steering wheel gently to get ready for loading/unloading operations.

② When the distance between the fork bottom and the ground is 15cm-20cm (0.59in-0.78in), the mast will tilt backwards in place.



③ Look around the forklift truck to see if there are any pedestrians and sound the horn.

④ Step on the brake pedal and operate the front/rear changeover switch.

⑤ Release the hand brake.

⑥ When the brake pedal is released and the accelerator pedal is depressed, the truck will start moving.

Gear shift

①Stop the truck before shifting gear.

②Toggle the shift lever.

Slowing down

Gradually release the accelerator pedal, and step on the brake pedal, if necessary.

Steering

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

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

3、Reverse driving

① Observe the surrounding environment carefully, and if necessary, get out of the vehicle to check.

② Select your reversing target, and once you've shifted into reverse and started moving, slow down and drive carefully, paying attention to the surrounding conditions and making constant adjustments to your direction.

③ Straight-line reversing: Keep the rear

wheels aligned straight, and when making corrections, make small and precise movements with the steering wheel.

④ Curved reversing: At this time, pay special attention to the characteristic of the forklift's rear wheels being the steering wheels and the characteristic of the outer end of the counterweight swinging outwards. Consider whether the inner rear wheel and the outer steering wheel might drive off the road or collide with people or objects.

⑤ When reversing, you can choose to focus on the rear, the side, or use the rearview mirror for guidance, or be directed by a spotter. Aim to align the longitudinal centerline of the forklift with the center of the target, or have the vehicle's side edge or wheel close to the target's edge.

Danger

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

Caution

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

4、Stopping or parking the truck

①Slow down and step the brake pedal to stop the truck (in the case of clutch type machine, the clutch pedal is used).

②Place the shift lever in neutral.

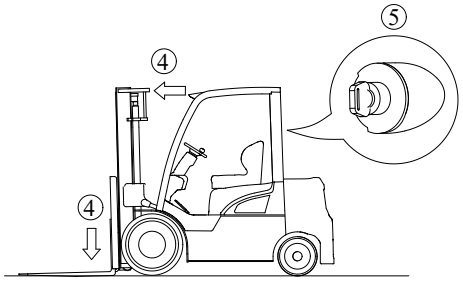
③Apply the parking brake.

④Lower the forks on the ground, and tilt the mast all the way forward.

⑤Place the key switch in “O” position to shut down the engine. For diesel trucks, pull out the engine stop button. Remove the key and take it with you.

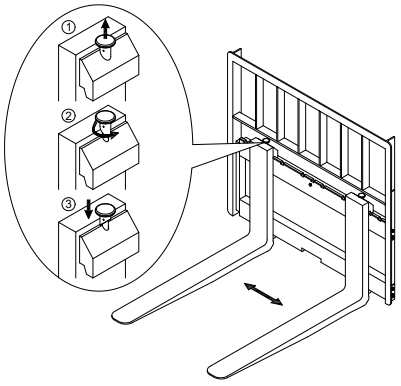
Warning

- Be careful to get off,Never jump off the truck.
- Do not park the truck on travelling route.



5、Pick up

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



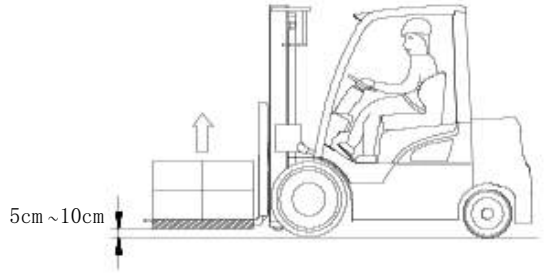
② Place the truck in front of the load to be handled.

③ The pallet should be evenly positioned across both forks

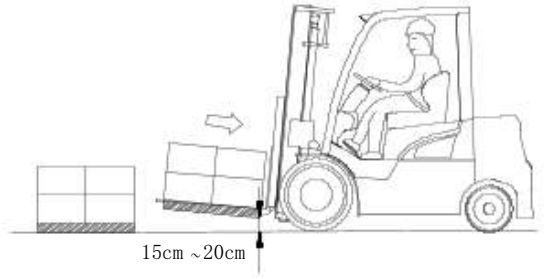
④ Insert forks into the pallet as far as possible.

⑤ To raise loads from the ground：

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



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



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

6、Stacking load

① Slow down when approaching the load deposit area.

② Stop the truck right in front of the area where your load is to be deposited.

③ Check the condition of the deposit area.

④ Tilt the mast forward until forks become horizontal. Raise forks until they are a little higher than the deposit position.

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

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

Warning

The goods should be stacked in the center.

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

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

⑨ Tilt the mast backwards.

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

7、Remove load

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

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

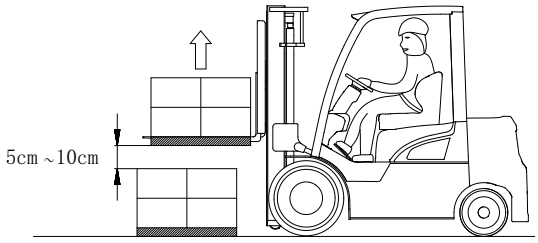
③ Check the condition of the loads.

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

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

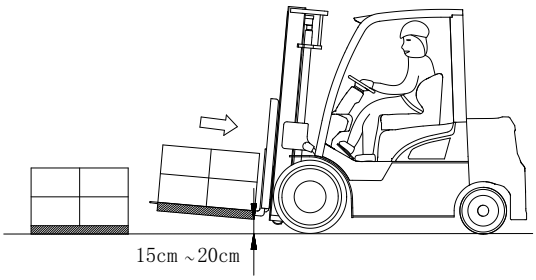
> **Caution**
>
> If the forks cannot be fully inserted, use the following procedure: move forward and insert the forks 3/4 of the way. Raise the forks 5 cm (1.97in) to 10 cm (3.93in) and move backward 10cm(3.93in) to 20 cm(7.87in) with the pallet or skid on the forks, then lower the pallet or skid on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

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



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

⑧ Lower forks to a height of 15cm(5.91in) to 20 cm (7.87in) above the ground. Tilt the mast backward fully and move to the desired area.



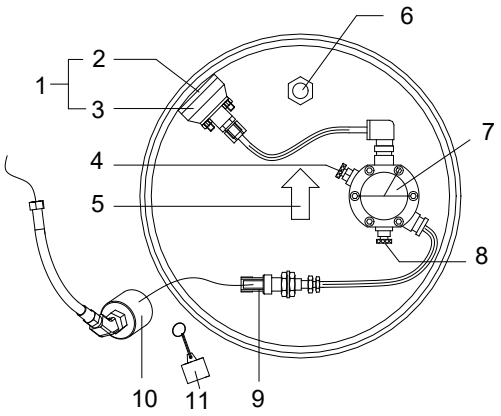
8、Precautions for using the LPG forklift truck

The LPG fuel system consists of a steel cylinder, filter, pressure reducing regulator, and mixer. LPG enters the pressure reducing regulator from the steel cylinder through the combination valve and high pressure pipeline via the filter. After vaporization, LPG enters the mixer and mixes with air in a certain proportion, then enters the engine cylinder for combustion and provides motive power for the forklift. The PSI 4.3L engine is provided with a pressure reducing regulator, mixer and other LPG elements.

8.1 LPG filling and replacement

After the fuel in the steel cylinder is used up, it must be replaced. First, close the outlet stop valve, loosen the pipe joint of the forklift truck, cover the outlet joint of the steel cylinder with a dust cap, and remove the steel cylinder fixed on the truck, and fill it at the gas station. Place the steel cylinder flat when refueling, put the intake limit valve at the upper end (at that time, the included angle between the liquid level gauge and the horizontal line should be 60°), unscrew the dust cover on the filling valve, insert the filling valve, open the intake limit valve for filling, take out the filling plug when the LPG quantity reaches 80% of the steel cylinder volume (when 80% of the rated capacity is reached, the limiting device will be automatically closed.) Pull out the filling plug, screw on the dust cover of the filling valve, and tighten the intake limit valve when filling is complete.

Connect the forklift truck line after installing the steel cylinder at the correct angle (the included angle between the liquid level gauge and the horizontal line should be about 60°), open the outlet stop valve switch of the steel cylinder, and check whether there is a gas leak. If a gas leak is found, the forklift truck can only be started after troubleshooting. Please close the valve on the steel cylinder after using the forklift truck each time.



Schematic Diagram for the End Face of the Steel Cylinder

1. Filling valve 2. Dust cover 3. Gas inlet 4. Intake limit valve
5. Upward installation sign 6. Safety valve 7. Liquid level display
8. Outlet stop valve 9. Outlet joint 10. Pipe joint of the forklift truck
11. Dust cap

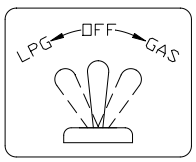
Warning

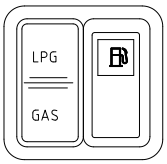
Pay special attention to the following points when the forklift truck is in use:

- Check whether there is a gas leak in the LPG steel cylinder and pipe before driving.
- If an LPG leak is found when the forklift truck is in use, the LPG switch should be shut off; the hydraulic valve should be closed; the pipe joints of the device units and fasteners should be checked for looseness and leakage and promptly dealt with.
- When the parking time is more than 10min， the LPG switch (or hydraulic valve) should be shut off.
- When the engine is running, the water temperature should be 70℃-85℃.

8.2 Operation and use of dual fuel changeover switch

1. If switched to GAS mode, it indicates that the engine fuel is gasoline.
2. If switched to LPG mode, it indicates that the engine fuel is LPG.
3. If switched to neutral, it indicates that neither of the above fuels are circulating.





8.3 Starting the dual fuel engine

（1）Start with gasoline

Shut off LPG, turn on the gasoline switch for a few seconds, rotate the ignition key, and start the motor to run the engine with gasoline.

（2）Start with LPG

Turn on the LPG switch for several seconds, rotate the key, and start the motor to run the engine.

8.4 Fuel switching when the engine is running

Kubota H12 dual fuel engine：

Switch from LPG to GAS:

Stop safely, pull the shift lever to the neutral position, and rotate the fuel changeover switch to "GAS".

Switch from GAS to LPG:

Stop safely, pull the shift lever to the neutral position, and rotate the fuel changeover switch to "LPG".

GCT dual fuel engine (GCT K21 DUAL, GCT K25 DUAL)

Switch from LPG to GAS:

Stop safely, pull the shift lever to the neutral position, rotate the ignition key switch to “off”, and shut down the engine. Rotate the fuel changeover switch to "GAS" and restart.

Switch from GAS to LPG:

Stop safely, pull the shift lever to the neutral position, rotate the ignition key switch to “off”, and shut down the engine. Rotate the fuel changeover switch to "LPG" and restart.

Caution

- Drive the truck for at least several kilometers with gasoline every two weeks to prevent the gasoline from degrading.
- Do not change the fuel used immediately after the engine is started; the engine should be at normal working temperature before changing the fuel.
- Pay special attention to the following points when the forklift truck is running on LPG:
  a）Check whether there is a gas leak in the LPG steel cylinder and pipelines before driving.
  b）Shut down the engine using the following methods after LPG is used:
  ① Rotate the fuel changeover switch to neutral;
  ② Let the engine idle until it stops;

③ Ensure that all of the remaining LPG has been used up. Rotate the ignition key switch to “off” after the engine stops.

- The outlet stop valve of the steel cylinder should be fully closed and the engine should be checked for air leakage after use if it is going to be stored for a long time.
- If air leakage, faults or other abnormalities are found during operation, the outlet stop valve of the steel cylinder should be closed immediately and professional maintenance personnel should be sent to check the LPG system.

8.5 Precautions

1）If an LPG leak is found when the forklift truck is in use, the LPG switch should be turned off; the hydraulic valve should be closed; the pipe joints of device units and fasteners should be checked for looseness or leakage and promptly dealt with. The truck should be driven using gasoline if the faults are not eliminated.

2）Gasoline 93# or vehicle LPG should be used for dual-fuel vehicles; otherwise, the accuracy of ignition timing will be affected, affecting performance.

3）When the parking time is more than 10min, the LPG switch (or hydraulic valve) should be closed.

4）When the engine is running, the water temperature should be 70℃-85℃.

8.6 Pressure reducing regulator

The pressure reducing regulator has two functions: I. Pressure reducing function. It can reduce the LPG pressure of the steel cylinder to barometric pressure; II. Evaporation function. LPG can be vaporized by absorbing the heat circulating in the engine.

8.7 Mixer

According to the engine running condition, the mixer sends the vaporized LPG mixed with air into the engine to meet the requirements of the engine.

8.8 Steel cylinder

1）Functions

It consists of a safety valve, LPG inlet, outlet section quick coupler, and corresponding fittings, it is the fuel storage supply system for LPG forklift trucks, and is installed at the rear. Main functions are:

a. Stop valve

Hand valve to control inlet and outlet pipes.

b. Filling limit valve

Automatically closed when the LPG quantity reaches 70%-80% of the steel cylinder capacity.

c. Liquid level display

Directly displays the liquid level in the steel cylinder.

d. Flow limit valve

Automatically closed when the flow rate is too high (system damage and flow rate exceeding the design value).

e. Safety valve

When the cylinder pressure exceeds the specified pressure, the safety valve automatically opens the pressure relief to prevent accidents.

2）Main parameters

Working temperature: -40℃ to +60℃; working pressure: 2.2MPa; opening pressure of safety valve: 2.5 MPa ± 0.2MPa; maximum filling volume: 80% of steel cylinder volume.

3）Replacement of steel cylinder

Affix the operating instructions for safe use on the steel cylinder (see Fig. 1)

1.Park the truck on a flat and solid road, shut down the engine and pull up the handbrake.

2.Remove the steel cylinder:

a）Close the outlet stop valve and loosen the outlet joint. (See Fig. 2)

Fig.1

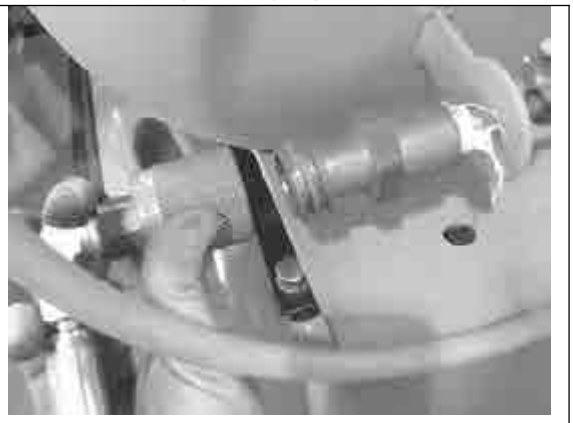


Fig.2

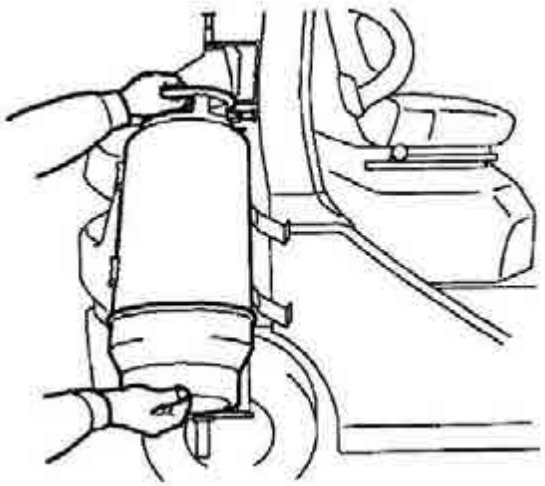
b）Loosen the steel cylinder. See the following schematic diagram for specific steps.

Steel belt bracket

Buckle bracket

 Buckle and tensioner	 1.Hold the tensioner with your right hand and pull out the lock catch with your forefinger, middle finger and ring finger.
 2.Continue 1, and push the tensioner up to press against the steel cylinder	 3.Continue to pull out the lock catch and pull the entire tensioner down hard
 4.Release the buckle from the tensioner	5.Release the buckle from the side tensioner with the same method.

4）Remove the steel cylinder and fill it at a gas station



Notes:

1. Protect the steel cylinder from colliding with heavy objects and take care when lifting, because it is heavy.

2. Ensure that the stop valve at the outlet end is closed.

3. The steel cylinder must be refueled at a gas station with an LPG filling permit issued by the quality and technology supervision bureau. Do not refill LPG privately; the LPG needs to conform to the Table 1: Automotive LPG Technical Requirements.

Table 1: Automotive LPG Technical Requirements.

Item	Quality Index	Test Method
Density（15℃）/（kg/m3）	Report	SH/T 0221a
Motor Octane Number	≤89.0	Appendix A
Mole fraction of dienes (including 1,3-butadiene) / %.	≤0.5	SH/T 0614
Hydrogen sulfide	Nothing	SH/T 0125
Copper corrosion （40℃，1h）/level	≤1	SH/T 0232
Total sulfuric acid content (including odorant b)/（mg/kg）	≤50	ASTM D 6667c
Evaporation residue/（mg/kg）	≤60	EN 15470
Mass fraction of C5 and above components/%	≤2.0	SH/T 0614
Steam pressure (40 ℃, surface pressure)/kPa	≤1550	Appendix B d
The temperature at which the minimum vapor pressure (surface pressure) is 150kPa	≤-10 ≤-5 ≤0 ≤10 ≤20	ISO 8793 and Appendix C
-10# -5# 0# 10# 20#		
Free water f	Pass	EN 15469
Smell	Noticeable odor when the volume concentration reaches 20% of the lower combustion limit	Appendix E

A.The determination method also includes the use of ISO 8793.

B.If the odor detection is not passed, an odorant must be added.

C.The test methods also include the use of SH/T 0222; in case of dispute, ASTM D 6667 is used as the arbitration method.

D.The test methods also include the use of ISO 8793 and Appendix C; in case of dispute, Appendix B is used as the arbitration method.

E.At the specified temperature, ISO 8793 and Appendix C should be used together to determine the product grading. For internal quality control within enterprises, the method provided in Appendix D can be used to determine grading.

F.At 0°C and under saturated vapor pressure, it is visually inspected that the liquefied petroleum gas for vehicles does not contain free water. The addition of methanol up to 2000mg/kg is permitted, but the addition of antifreeze and other non-hydrocarbon compounds, except methanol, is not allowed.

Source: National Standard of the People's Republic of China: Automotive liquefied petroleum gas (GB 19159-2012)

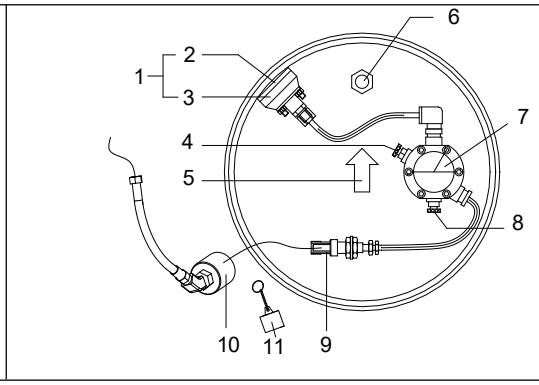
5）Operation steps for LPG cylinder replacement

(1) You must wear canvas gloves when refilling with gas to protect yourself from frostbite caused by evaporation of leaked gas.

(2) You should refill gas in a ventilated and empty space, should not smoke, and should avoid other naked flames.

(3) When filling with LPG, you should place the steel cylinder flat, put the intake stop valve at the upper end, unscrew the dust cover on the intake stop valve, insert the filling plug, open the intake stop valve for filling, and take out the filling plug when the LPG quantity reaches 80% of the steel cylinder volume (when filling to 80% of rated capacity, the limit device will be automatically closed). Pull out the filling plug, screw on the dust cover of the filling valve, and tighten the intake limit valve when the charge stops. Check whether the components of each part are in good condition.

(4) Lift the steel cylinder onto the truck and fix the cylinder firmly with the arrow (5) pointing up. Insert the dowel pin into the steel cylinder.



(5) Ensure that the intake and outlet stop valves (4,8) are closed.

(6) Connect the forklift truck pipe joint (10) with the outlet joint (9) and fasten them.

(7) Slowly open the stop valve (8) at the outlet end.

(8) You can use the stop valve after confirming that there is no leakage, close the stop valve (8) at the outlet end immediately if there is leakage, and unscrew the interface (3) at the inlet end of the forklift truck.

Warning

- Open the stop valve (8) at the outlet end of the steel cylinder after installing the steel cylinder and connecting the quick coupling with the connecting line and apply soap bubbles to each pipe joint to check for air leakage; if air leakage is found, the forklift truck can only be started after troubleshooting.
- Please close the stop valve (8) at the outlet end after using the forklift truck each time.

6）Steel cylinder mounting method:

Steel belt bracket

The steel belt fixation steps are the reverse of the disassembly steps

Buckle bracket

 a.Hold the tensioner with your right hand and carry the buckle with your left hand align with the ratchet shaft slots	 b.Insert the buckle into the ratchet shaft slots
 c. Pull down the buckle tightly with your left hand, pull out the lock catch with your forefinger, middle finger and ring finger of your right hand, and push up it to press against the steel cylinder at the same time.	 d. Tighten the buckle, keep the lock catch pulled out, and continue to rotate the tensioner downward with your right hand until it presses against the steel cylinder.
 e. Continue to tighten with your left hand, hold the tensioner with your right hand, release the lock catch, and rotate the tensioner upward and downward several times until it cannot be moved.	 f. Pull it down to press against the steel cylinder.

7）Precautions for use

(1) Open the stop valve at the intake end first and close the stop valve at the outlet end when the assembly is filled with LPG; close the stop valve at the intake end after filling.

(2) The assembly should be installed firmly on the truck; the direction arrow on the end surface of the steel cylinder should point up; the stop valves at the intake and outlet ends should be closed. Connect the interface at the input end of the forklift truck with that at the outlet end of the assembly, screw them in, open the stop valve at the outlet end, and check whether there is any leakage.

(3) Check for leakage when filling with LPG and every time the truck is used.

(4) Prevent dust ingress at the gas inlet of the intake end and rotate the dust cover straight after filling with LPG to ensure the gas inlet check valve is tight.

(5) The opening pressure of the safety valve has been factory set and should not be changed without permission.

(6) In case of any problem, it must be overhauled by a qualified organization, and should not be adjusted, dismantled and repaired without permission. Faulty steel cylinders should be stored separately.

(7) The assembly can be filled with LPG in two ways: the volume method and the gravity method. If the gravity method is used for filling, the steel cylinder needs to be placed vertically; if the volume method is used for filling, the steel cylinder needs to be placed flat with the direction sign pointing up.

(8) Filling, transport, storage, use and inspection of the steel cylinder should be in strict accordance with the Cylinder Safety Supervision Regulations issued by the national administration of quality and technology supervision

(9) Steel cylinders must be gently assembled and disassembled and should not collide against each other or be subject to other external impacts. Steel cylinder combination components should be in good condition and should not be dismantled, adjusted or replaced without permission.

(10) The steel cylinder can be filled with LPG in accordance with GB19159; the maximum filling quantity should be no more than 80% of the steel cylinder volume.

(11) Steel cylinders must be filled at gas stations with an LPG filling permit issued by the quality and technology supervision bureau. Filling without permission is prohibited;

(12) When a new steel cylinder or refurbished steel cylinder is used for the first time, the filling station should conduct vacuum or nitrogen displacement treatment;

(13) Before reinstallation, the steel cylinder should be positioned according to the vertical

installation mark on cylinder, and placed flat; the outlet stop valve should be closed; the intake stop valve should be opened. Check whether the liquid level gauge pointer rises with the liquid level synchronously when filling. Stop filling immediately and check whether the liquid level gauge pointer is in the normal position if the limit valve activates. The intake stop valve must be closed after filling.

(14) Check for leakage and other abnormalities before using the steel cylinder, defective steel cylinders should not be used.

(15) If an LPG leak is found when the forklift truck is in use, the LPG switch should be disconnected; the outlet stop valve should be closed; the pipe joints of device units and fasteners should be checked for looseness or leakage and promptly dealt with.

(16) When the parking time is more than 10min, the outlet stop valve should be closed.

(17) The steel cylinder should be kept away from exposure to the sun, heat sources and naked flames. The steel cylinder must not be heated above 40℃.

(18) The gas in the steel cylinder should not be completely depleted and the remaining gas should be no less than 0.5% of the specified filling quantity.

(19) Do not change the steel stamp and color mark of the steel cylinder without permission.

(20) The steel cylinder must be delivered to an inspection organization with a pressure vessel safety supervision organization approval qualification for regular inspection every five years according to the specified inspection date.

(21) Changes in the steel cylinder gas volume should be monitored when the forklift truck is in use; if the gas consumption is found to be inconsistent with working hours, the truck should be stopped to check whether there is a gas leakage; if a gas leakage is found, the power and valves should be disconnected and closed immediately and remedial measures should be taken at once.

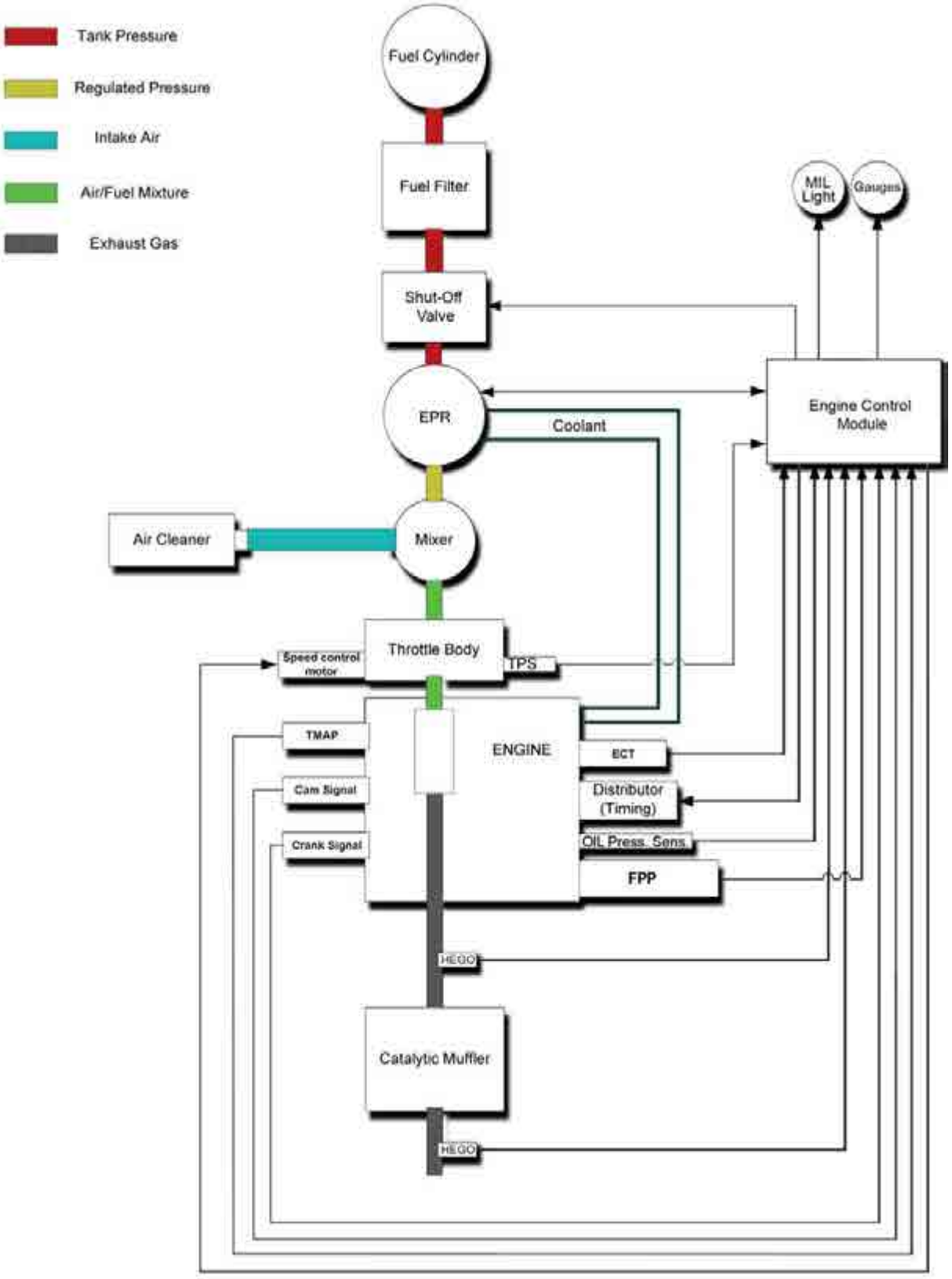
(22) The forklift truck should be stopped in a cool and ventilated place, steel cylinder valves should be closed, and the steel cylinder should be kept away from exposure to the sun.

(23) The power supply and valves should be disconnected and closed when the forklift truck enters the garage, which should be well ventilated and provided with fire fighting facilities.

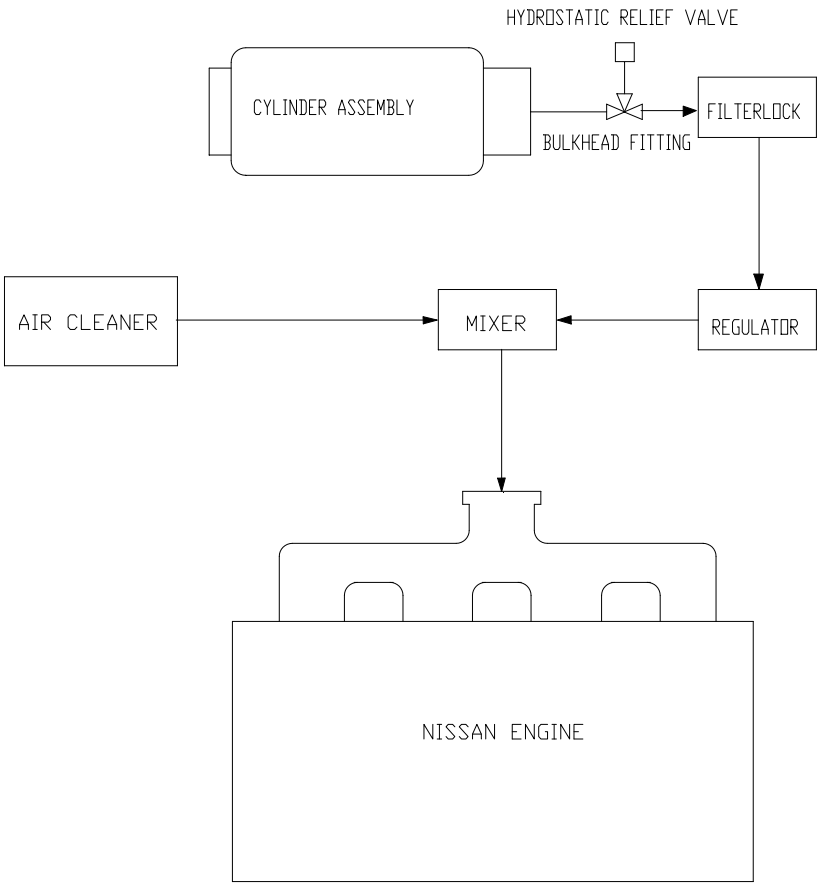
(24) Do not repair the LPG steel cylinder, valves or pipes in the garage or parking lot; the driver should not smoke in the truck.

8）Maintenance and repair

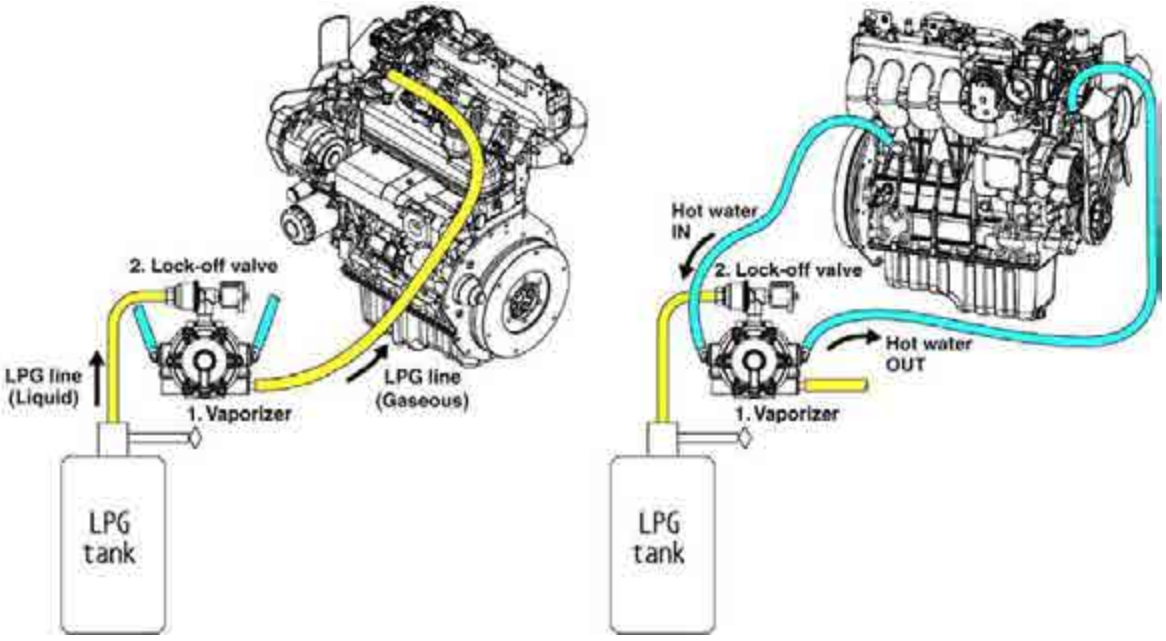
1. The forklift truck passed the pressure test and quality inspection when leaving the factory; if any quality problem arises during use, repair without permission is prohibited.
2. The outlet stop valve of the steel pipe should be closed before disassembly and repair of the LPG device.
3. The gas consumption of the forklift truck may vary with the seasons and the mixer should be regulated properly.
4. The air cleaner and LPG cleaner need to be checked and cleaned frequently and should be replaced promptly in case of any damage. The air cleaner element should be cleaned frequently.
5. After assembly, debugging of the LPG forklift truck or at the end of a working day (or use of a cylinder of gas), the pressure reducing regulator has to be adjusted to ensure the proper air-fuel ratio.
6. The connections of the electric appliance switch system should be checked for oxidization and rust after being used for three months; if any is found it should be removed immediately.
7. Regular maintenance should be conducted for the complete LPG fuel system after being used for a year; maintenance content includes cleaning of the pressure reducer and a check of high pressure and low pressure gas pipe joints for tightness.



PSI 4.3 single fuel system



GCT single fuel system

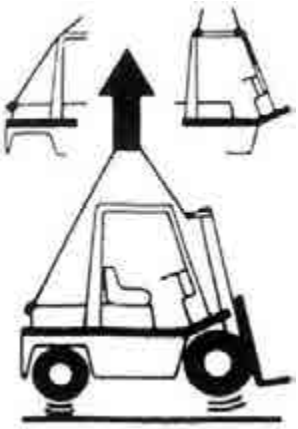


WG3800,LPG fuel system diagram

VI、Lifting, handling and towing of the forklift truck

Lift the forklift truck

Tie the steel rope on the lifting hole and counterweight lifting hook at both ends of the beam of outer mast firmly and lift the forklift truck with the lifting device.

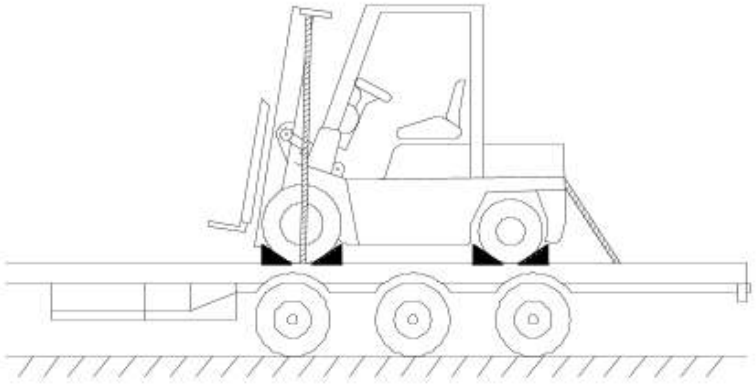


Warning

- Only lifting tools with adequate load capacity should be used.
- When lifting a forklift, ensure not to entangle the steel wire rope with the overhead guard frame.
- The steel wire rope and lifting device must be very sturdy, capable of safely supporting the forklift, as forklifts are extremely heavy.
- Never use the cab frame (overhead guard frame) to lift the forklift.
- When lifting a forklift, never enter under the forklift.

Handling

The forklift can be used for loading and unloading and short distance transport, but should not be used for long distance transport. If the forklift is transported over a long distance, it should be handled with a ship, train or vehicle with a load capacity of more than 7t. Chock the wheels with wedges firmly and tie the body down firmly at the same time to protect the truck from sliding during transport.



Warning

- When securing a forklift, effective measures must be taken according to the specific situation to ensure the safety of transportation.
- Forklifts must be properly secured when being transported using a truck or trailer.
- Use chocks to secure the forklift to prevent accidental movement.
- Only tension straps or lashing straps with a sufficiently high nominal strength should be used to secure the forklift.

Towing

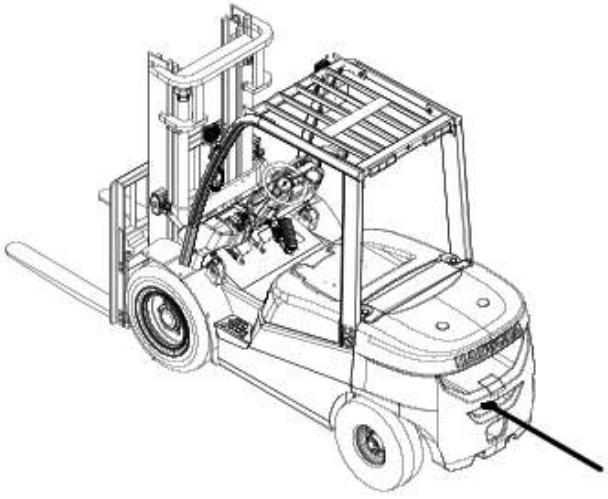
The towing rod on the bottom of the counter balance is only used to pull and drag the forklift truck, for installing the rod, first remove the towing rod and then install the ropes. After that, replace the rod

Caution

Release the handbrake lever.

Towing method for damaged truck:

Release the handbrake lever. Pull the shift lever into the neutral position. Pay attention to traffic safety and hang the towing sign.



Warning

- Do not tow trucks with defective steering systems or damaged brake systems.
- Obey traffic rules when towing a truck on the way.
- Only attach the steel rope to the specified position.
- Do not suddenly apply load on the steel rope.

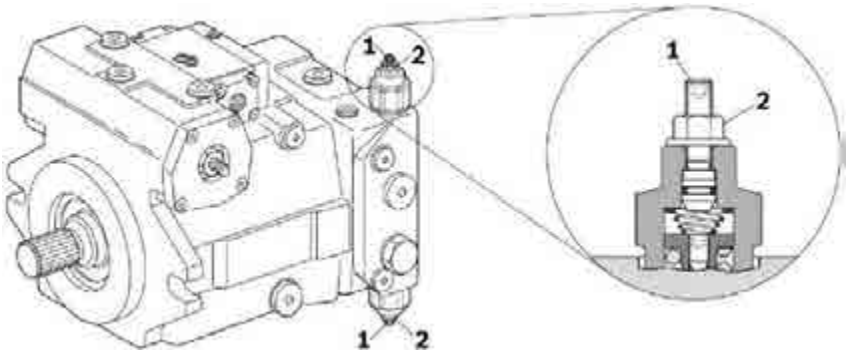
Hydrostatic travel Forklift truck:

The tow pin under the counterweight can only be used for towing the forklift truck; the tow pin should be pulled out first; then, the steel rope should be attached and the tow pin should be reinstalled.

If the traveling hydraulic system fails, the front and rear axles and wheels function normally, the flow can be altered first using a bypass function in order to tow the vehicle out of the immediate danger zone. Turning the corresponding screw allows the hydraulic fluid to flow freely.

The bypass function must be deactivated again before restarting the machine

Activating the bypass function



To activate the bypass function:

1. Switch off the combustion engine.
2. Remove the plastic tamper-proof cap (1) of the high-pressure relief valve with a suitable tool (e.g. gripper).
3. Loosen the lock nut (2) by turning counter-clockwise one half rotation with a Hexagon wrench (external hexagon WAF 13).
4. Use a inner hexagon spanner (WAF 4) to screw in the screw (1) clockwise until the screw (1) is against the spring seat. This is apparent by the increased resistance. Then screw the screw (1) one half turn into the spring seat.
5. Tighten the lock nut (2) clockwise with a torque of 22 Nm.

Caution

- The maximum towing speed shall not exceed 3km/h.
- Impermissible heat generation and insufficient lubrication.
- Risk of burning or property damage. High towing speeds and long towing distances result in impermissible heat generation and insufficient lubrication. This overheats and damages the axial piston unit.
- Wear heat-resistant protective clothing, e.g., gloves.
- Only tow the vehicle out of the immediate danger zone.

Warning

- The bypass function only suitable for towed out of the immediate danger zone.Don't long distance towing, to avoid further damage to the drive hydraulic system.
- Contact maintenance personnel for Troubleshooting.

VII、First use of forklift

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

Warning

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

Caution

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

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

a）Inspect to ensure the equipment is complete;

b）Check that the engine oil level complies with the specifications;

c）Verify the hydraulic oil level complies with the specifications;

d）Inspect the gear oil and transmission fluid levels to ensure they meet the requirements;

e）Check that the brake fluid level is in accordance with the regulations;

f）Ensure the battery connections are securely fastened;

g）Check the electrolyte level in the battery (except for maintenance-free batteries);

h）Conduct other checks (refer to the daily maintenance items for inspection).

After the inspection is complete and no issues are found, the forklift may be used.

Warning

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

VIII、Forklift cleaning

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

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

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

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

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

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

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

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

IX、Disposal of scrapped forklifts.

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

X、Maintenance

1、Daily maintenance (8 hours)

1.Leakage check: Electrolyte, hydraulic oil, cooling liquid,and LPG（LPG forklift） hydraulic transmission oil.

> Warning
>
> Do not drive the truck if a fuel leak is found before work; start the engine only after eliminating the leakage.

Check whether there are any fuel leaks or water leaks in the engine, hydraulic pipe connectors, water tank and drive system by hand and visual inspection. Do not use naked flames.

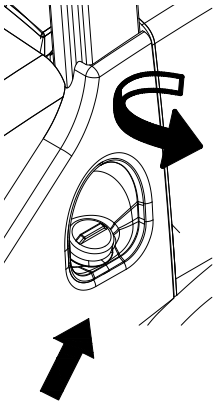
2.Visual inspection

Check whether lights and instruments work normally.

Check tires, air pressure and ensure the bolts are tight.

Check whether the tires are damaged and whether tire pressures are normal.

3.Fuel quantity check

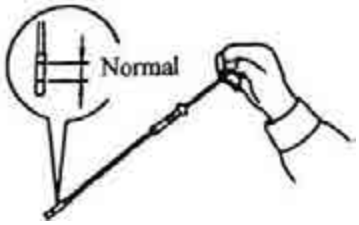


The fuel gauge is installed on the instrument panel to check the fuel level everyday before work. Fill up the fuel tank every day after work. The fuel filler is on the left leg of the overhead guard.

4.Engine oil level check

> Warning
>
> - The forklift truck must be placed on a flat surface to conduct the oil level check.
> - When the engine has cooled, the level can be checked accurately.

Pull out the oil dipstick first, wipe the scale head, reinsert it and pull it out to check whether the oil level is between the two scale marks.



> Warning
>
> - It is prohibited to mix engine lubricants from different brands.
> - If the brand of the new lubricant differs from the previous one, the remaining lubricant must be completely drained before adding the new lubricant.
> - For forklifts equipped with a Diesel Particulate Filter (DPF), a small amount of fuel may mix with the engine lubricant during the regeneration process, diluting the lubricant and increasing its volume. If the lubricant level is found to be above the upper limit of the oil dipstick, it indicates

that the lubricant has been excessively diluted, which may lead to engine failure. Please immediately drain and add new lubricant to the level between the upper and lower marks on the oil dipstick.

- If the DPF regeneration interval is 5 hours or less, please replace the engine lubricant with new oil.

5.Engine coolant quantity check

Check the coolant level in the additional water tank when the engine is cool. If it is lower than “MIN”, it should be supplemented to “MAX”. If there is no coolant in the additional water tank, the coolant quantity in the main water tank should be checked. If the coolant quantity in the main water tank is insufficient, coolant with a freezing point of -36.5 ℃ should be added to the water tank; the coolant should be added to the “MAX” level of the additional water tank.

Danger

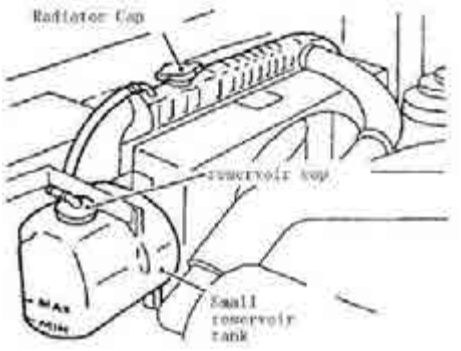
- Do not open the water tank lid when the engine water temperature is higher than 70℃. Press the lid and slowly turn to the left to allow the steam to escape, place a thin cloth around the lid and unscrew it.
- Do not screw in the water tank lid with gloves to avoid being scalded by high pressure hot water.

Warning

- Antifreeze contains substances harmful to the human body. If you swallow it by accident, you should induce vomiting immediately and go to hospital.
- Keep children away from the antifreeze.

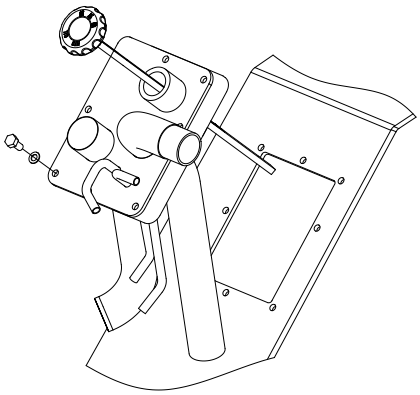
Caution

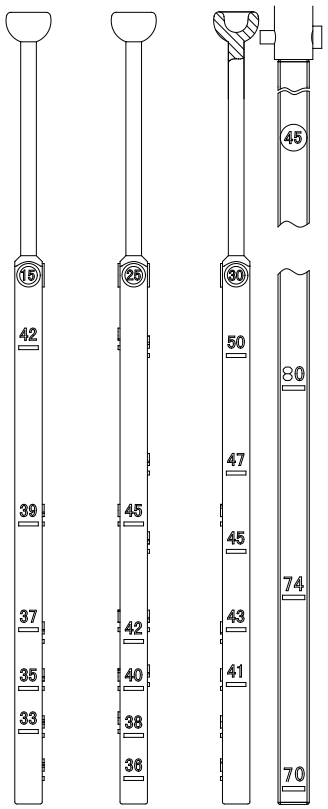
- The water added to the water tank should be clean tap water. If antifreeze is used, the same type of antifreeze should be added.
- Pay special attention to the water tank and cooling system in hot seasons.



6.Hydraulic oil tank level check

Check the oil level in the hydraulic oil tank





1.0t~3.5t square oil scale has scales on three sides; the circled number on the top indicates the applicable model tonnage (see the figure):

Symbol ⑮ scale value is applicable to 1t-1.8t forklift trucks.

Symbol ㉕ scale value is applicable to 2t-2.5t forklift trucks.

Symbol ㉚ scale value is applicable to 3t-3.5t forklift trucks.

When the mast is in the minimum position, the refueling quantity is as follows:

1t-1.8t standard mast requires hydraulic oil to be added to above scale “39” and forklift trucks with a tertiary mast require hydraulic oil to be added to above scale “42”;

2t-2.5t standard mast requires hydraulic oil to be added to above scale “42” and forklift trucks with a tertiary mast require hydraulic oil to be added to above scale “45”;

3t-3.5t standard mast requires hydraulic oil to be added to above scale “47” and forklift trucks with a tertiary mast require hydraulic oil to be added to above scale “50”;

In addition to meeting the aforesaid requirements, the refueling liquid level should not exceed the scale mark by 30mm.

The full free lift mast, sideshift fork mast and installed attachment mast should be implemented according to the aforesaid standards.

4.0t-5.5t

Symbol ㊺ scale value is applicable to the 4.0t-X5.5t forklift truck.

When the mast is in the minimum position, the refueling quantity is as follows:

Standard mast requires hydraulic oil to be added to scale “70” and the forklift truck with tertiary mast requires hydraulic oil to be added to scale “74”;

7.Brake fluid quantity check (1.0t-X5.5t)

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

> ⚠ Caution
>
> - Prevent dust and water from mixing when adding brake fluid.
> - Brake fluid is toxic and corrosive and should be rinsed off if you are exposed to it.

Replacement of brake fluid

See the Daily maintenance (1000 hours)

8.Light check

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

9.Indicator light check

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

10.Hand brake check

① The truck slows down.

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

11.Reversing light and reversing buzzer check

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

12.Steering

① The truck should be driven slowly.

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

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

13.Horn

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

14.Seat adjustment and seat belt check

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

Check whether the seat belt works normally.

15.Shift lever

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

16.Lift lever, tilt lever and attachment lever

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

Increase the engine speed, respectively operate the lift lever, tilt lever, and attachment lever, and ensure that the forks can be fully lifted and lowered and the mast can tilt forward and backward.

17.Instruments and sensors

Check whether the stopwatch, water-thermometer, oil thermometer, transmission oil temperature sensor, fuel sensor, engine water temperature sensor, oil pressure sensor and others are normal.

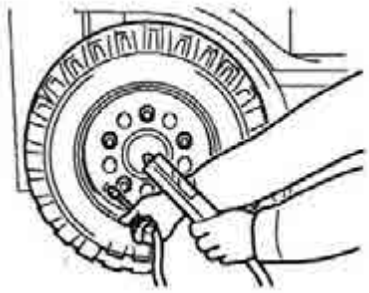
18.Brake and inching pedal check

Slow down and step on the brake pedal; after stepping on the brake pedal, the brake light should turn on.

Slow down and step on the inching pedal; check whether the inching pedal function is normal.

19.Tire check and tire pressure check

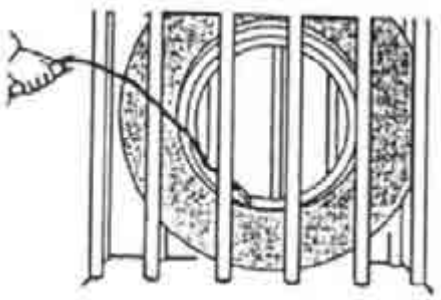
Screw the cap back on after confirming that there is no air leakage; check whether there is damage on the tire surfaces and sides and whether the rims are deformed.



Unscrew the cap anticlockwise and measure the tire pressure with an air pressure gauge. Increase the pressure to the specified value if it is insufficient.

Warning

- The forklift truck tires require very high pressure to bear loads; tiny deformation of the rim or surface damage to the tire may cause an accident.
- When using an air compressor, as the maximum output pressure of the air compressor is higher than the specified pressure of tire, the pressure setting should be adjusted first, see the following table for pressure values; over pressurizing may cause a serious accident.
- In order to ensure safety, the tire should be placed in a protective frame during air inflation.



Tire pressures should adopt the new standard GB/T2982-2014:

Model	Driving wheels (front wheels)	Steering wheels (rear wheels)
1t-1.8t	790kPa	1000kPa
2t-2.5t	860kPa	860kPa
3t-3.5t	970kPa	790kPa
4t-X5.5t	830kPa	860kPa

2、Weekly maintenance (40 hours)

Add the following maintenance items in addition to daily maintenance.

1.Air filter maintenance

Generally:

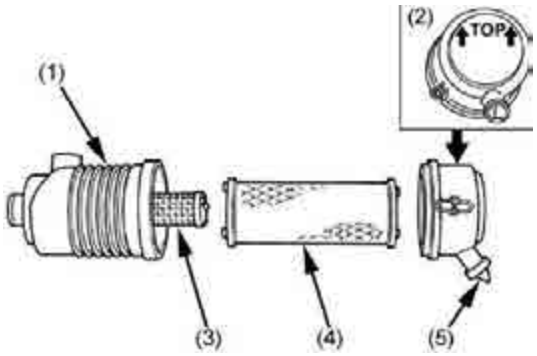
Please service the filter after the truck has worked for 50-250 hours.

Please replace the filter after six maintenance intervals.

> Caution
>
> If the truck is used in harsh working conditions, the maintenance and replacement cycle of the filter should be more frequent.

For trucks in a harsh working environment with a large amount of dust, the maintenance and replacement cycle should be shortened according to the actual situation, and it is recommended to maintain the filter every 8-50 hours and replace it with a new one every 100-300 hours.

Maintenance procedures for 1.0t-X5.5t trucks:



(1) Air filter housing (2) Dustproof cup

(3) Safety filter cartridge (4) Main filter cartridge

(5) Exhaust valve

① Under normal conditions, open the exhaust valve once a week and once a day when using in dusty areas. This will remove large particles of dust and dirt.

② If the inside of the air filter housing is dirty or wet, please wipe it clean with a cloth.

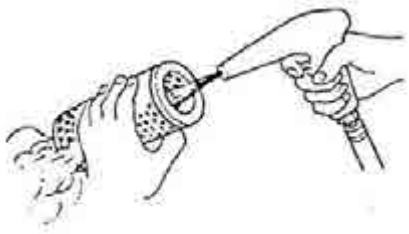
③Remove the end cover of the air filter.

④Take the main filter cartridge out.

> Caution
>
> Do not forcibly remove dirty filter elements or strike the filter housing with the filter element.

⑤Blow out the dust inside and outside the main filter cartridge with compressed air.

⑥Blow the filter elements clean from the inside out with dry compressed air at a pressure below 0.6 MPa, ensuring to clean the entire circumference.



Warning

Flying dust may get into your eyes, so protective glasses should be used before blowing.

⑦Please clean the inside of the filter housing with a clean, soft cloth, taking care not to drop any contaminants into the intake pipe.

⑧Reinstall the filter element and the air filter cover in sequence, and securely fasten the air filter clips.

Caution

Failure to maintain and replace the filter cartridges in time as required will lead to premature engine wear.

For forklift trucks equipped with air filter maintenance indicators:

Scale line: Engine air intake resistance

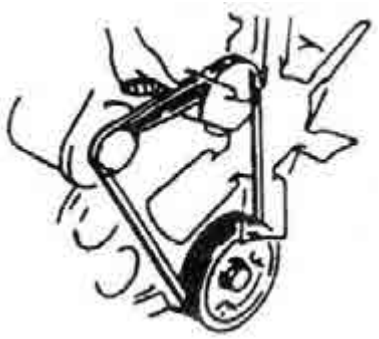
Viewing window	Engine air intake resistance
Yellow	No air intake resistance, no maintenance needed currently.
Yellow + Red	Slight air intake resistance, maintenance needed
Red or the air pressure is larger than 6.2kPa	Severe air intake resistance, maintenance required or replace the main filter cartridge

① It is not necessary to remove all the filter cartridges during the maintenance of the main filter cartridge since the safety filter cartridge does not need any maintenance.

② If the main cartridge has been serviced 3 times or the viewing window still shows red after the maintenance, the main filter cartridge and the safety filter cartridge need to be replaced at the same time.

③ After maintaining or replacing the filter cartridges, please press the reset button on its top to reset the viewing window.

2.Fan belt



①Shut the engine down.

Danger

Do not check the belt sag while the engine is running to prevent fingers from being pinched or cuffs from being caught.

②Use your finger to apply 10kg force downward in the middle of the two pulleys to check whether the deflection complies with the specified value.

Engine	Deflection (mm)
GK21，GK25	11-13
V2607-CR V3307-CR WG3800	10-12

Use your finger to apply 6kg force downward in the middle of the two pulleys to check whether the deflection complies with the specified value.

Engine	Deflection (mm)
PSI4.3（H20） PSI4.3（W24）	≤13

The 3E22YG51, 4E30YG52 engine with auto-tensioning pulley does not need the fan belt tension to be adjusted.

> ⚠ Caution
>
> If the belt has been stretched beyond the adjustment margin or is cut or cracked, it should be replaced.

3.Hydrodynamic transmission oil level

Open the inspection cover, pull out the level scale and check whether the oil level is between the scale range.

4.Mast and fork inspection

Inspect the mast and fork to ensure that:

① The fork is not cracked or bent and is firmly and correctly mounted on the fork arm.

② Check the oil cylinder and oil pipe for any oil leakage.

③ Check the rotation of the rollers.

④ Check whether there are cracks or deformation in the mast.

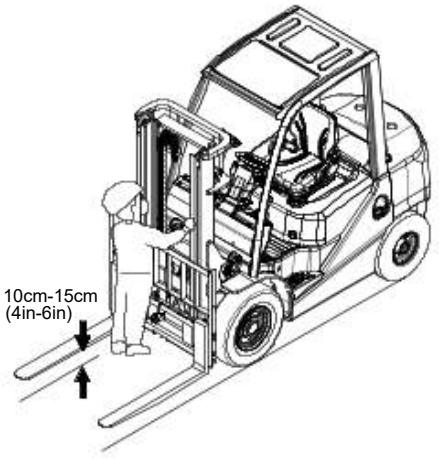
⑤ Manipulate the lifting, tilting, and attachment handle to check whether the mast works normally and whether there is any abnormal noise.

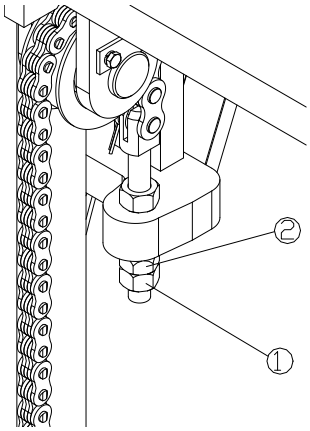
5.Chain tension check

① Raise the fork by 10cm-15cm with the mast vertical.

② Press the middle of the chain with your thumb to check whether the tension of the left and right chains is the same.

③ Tension adjustment: loosen locknut 1, screw nut 2 to adjust the chains so that the tension of the two chains is the same, and then tighten locknut 1.



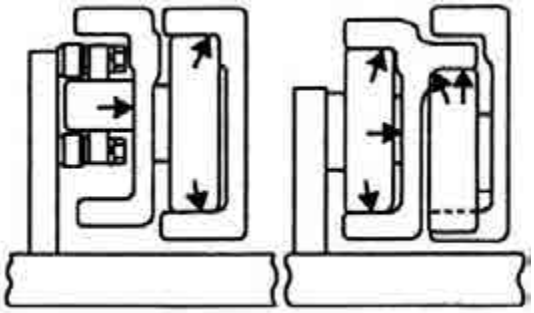


6.Lubrication of mast

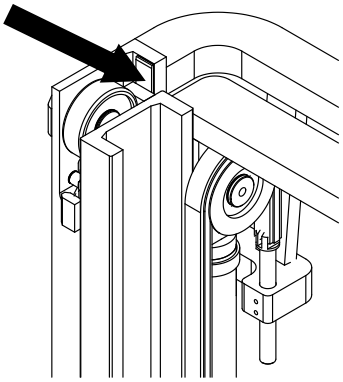
According to the requirements of the regular maintenance and lubrication cycle, the following parts should be lubricated regularly.

① The lubrication cycle should be changed according to the operating conditions. In the busy months of operation, the lubrication cycle should be shortened.

② In oder to ease the forklift operation, apply a layer of grease to the contact surface of the lifting guide wheel and the inner & outer mast.



Apply a layer of grease on the supporting guide rails.



Warning

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

7.Chain lubrication

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

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

① Lubrication of mast seat bearing;

② Lubrication of inching brake pedal;

③ Lubrication of steering axle support shaft;

④ Lubrication of steering knuckle spindle;

⑤ Lubrication of steering linkage pin;

⑥ Lubrication of steering cylinder pin.

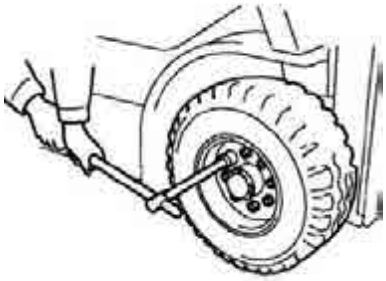
⑦Lubrication of the side-shifting attachment slider.

9.Bolt and nut tightening

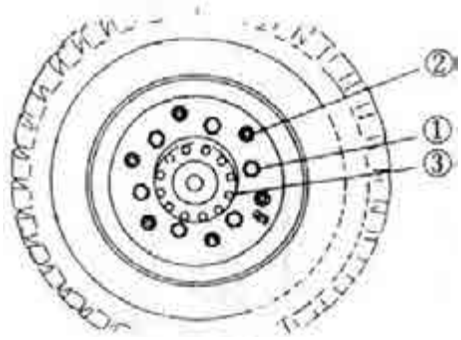
See the maintenance cycle table.

10.Tire nut tightening torque check

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



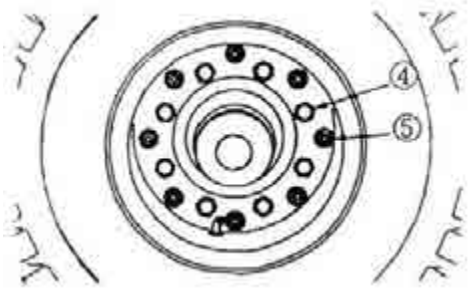
Driving wheel (front wheel)



① Wheel nuts; ② Split rim bolts (only applicable for 1-1.8t forklift trucks); ③ Drive shaft bolts

Tightening torque N·m (ft·lb):		
Wheel nuts	1.5t-1.8t	157-176
	2.0t-3.5t	363-490
	4.0t-X5.5t	441～558

Steering wheel (rear wheel)

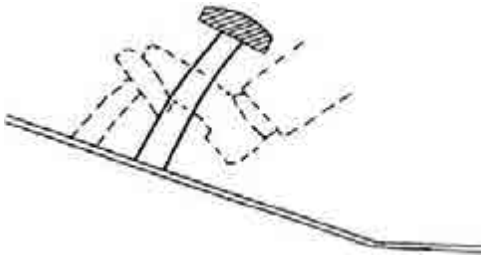


④ Rear wheel nuts;

Tightening torque N·m：		
Wheel nuts	1.0t-1.8t	78-98
	2.0t-3.5t	157-176
	4.0t-X5.5t	363-490

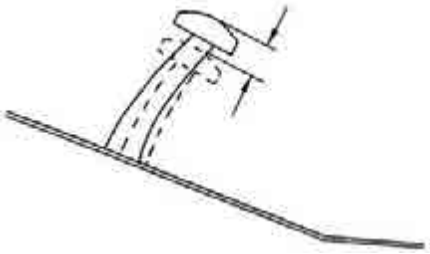
⑤ Split rear rim bolts.

11.Brake pedal, inching pedal and clutch check



With the engine still running, press the brake pedal fully down, the distance between the surface of the brake pedal and the floor should be 60mm or more.

Check the height of the inching pedal and clutch pedal in the same way.



1.0t-1.8t height and free clearance

	Height mm	Free clearance mm
Brake pedal	135±5	1-3
Inching pedal	135±5	Inching pedal contact bolt - brake pedal: 0 mm

2.0t-3.5t height and free clearance:

	Height mm	Free clearance mm
Brake pedal	135±5	1-3

Inching pedal	135±5	Inching pedal contact bolt - brake pedal China transmission: 6 Nissan transmission: 2.9 - 3.4 Okamura transmission: 7.1 - 7.6

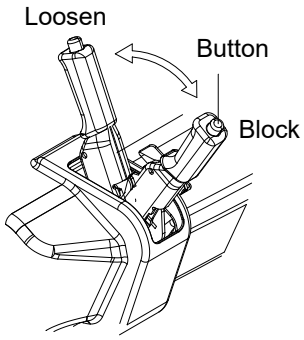
4.0-X5.5t height and free clearance:

	Height mm	
Brake pedal	145±5	Push rod empty stroke：1-3mm
Inching pedal	145±5	Inching pedal contact bolt - brake pedal:：$5^{+0.5}$mm

12.Handbrake

Make sure the handbrake handle acts normally after it is tightened and then loosened to its original position.

1.0t-X5.5t Tension requirement: 245N-295N



13.Cylinder frame (LPG trucks only)

Pull the cylinder outward to check whether its frame is secure and put it back to check whether it is fixed safely.

3、Every one and a half month maintenance (250 hours)

Add the following maintenance items in addition to the weekly maintenance.

1.the engine oil and oil filter (only for the first time, then every 500 hours thereafter)

① Start the engine, warm it up fully, and then turn it off.

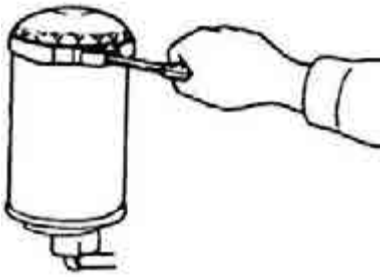
② Remove the oil filler cap and oil pan drain plug and drain the engine oil.

> **Warning**
>
> Be careful not to scald yourself as the engine oil may be hot.

> **Caution**
>
> Emulsified oil indicates that coolant is mixed in with the oil and the cause should be found and corrected.

③ Wipe clean and install the drain plug and gasket. Tightening torque of oil drain plug: 29-39 N·m

④ Remove the oil filter with an appropriate tool.

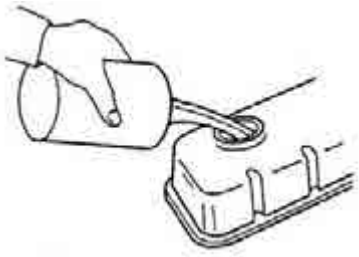


⑤ Wipe the oil filter mounting surface with a clean cloth.

⑥ Apply a small amount of oil to the rubber ring of the new oil filter.

⑦ Install the new oil filter by hand only, do not use a wrench to tighten it.

⑧ Refer to the Forklift Oil List and add the recommended oil.



⑨ Start the engine and check if there is any oil leakage in the area around the oil drain plug and oil filter.

If there is any visible leakage, it indicates that the part is not properly installed.

⑩ Warm up the engine sufficiently, then shut it down for a while to recheck the oil level. Add more engine oil if necessary.

When checking the oil level, the forklift should be parked on level ground.

> **Warning**
>
> - It is prohibited to mix engine lubricants from different brands.
> - If the brand of the new lubricant differs from the previous one, the remaining lubricant must be completely drained before adding the new lubricant.
> - For forklifts equipped with a Diesel Particulate Filter (DPF), a small amount of

fuel may mix with the engine lubricant during the regeneration process, diluting the lubricant and increasing its volume. If the lubricant level is found to be above the upper limit of the oil dipstick, it indicates that the lubricant has been excessively diluted, which may lead to engine failure. Please immediately drain and add new lubricant to the level between the upper and lower marks on the oil dipstick.

- If the DPF regeneration interval is 5 hours or less, please replace the engine lubricant with new oil.

2.Add lubricating grease on the front and rear pins of the tilt cylinder.

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

3.Check the drive axle housing gear oil and add more if necessary.

If the working environment is dusty, it is recommended that after the truck has worked for the first 100 hours, the gear oil in the drive axle housing should be changed.

4.Replace the transmission oil filter (only for the first time, and then every six months thereafter)

Check the fluid condition of the hydrodynamic transmission, taking into account the application environment, e.g. if the working environment is dusty, then the Automatic Transmission Fluid (ATF) should be changed. This is only applicable for the initial change.

① Park the forklift truck on a horizontal road, lower the forks to the ground, tilt the mast back, pull up the handbrake handle tightly, put the transmission in neutral and turn off the engine.

Danger

Hot hydraulic oil, ATF and associated parts may scald the human body. Do not allow them to come into contact with your skin.

② Remove the rubber gasket and front base.

③ Remove the filter and dispose of it according to local regulations.

④ Wipe the filter base and make sure the old gasket on the base has been removed.

⑤ Apply a small amount of ATF to the new filter cartridge gasket.

⑥ Fit the filter by hand. When the filter touches the base, re-tighten it 1/2 to 3/4 turn.

5.Change the hydrodynamic transmission ATF (only for the first 100 hours, and then every six months afterwards)

Park the forklift truck on a horizontal road, lower the forks to the ground, pull up the handbrake handle tightly, put the transmission in neutral and turn off the engine.

Danger

Hot hydraulic oil, ATF and associated parts may scald the human body. Do not allow them to come into contact with your skin.

① Put a container under the transmission

(with a volume of 20L or more).

② Remove the oil drain plug and drain the oil into the container.

③ Clean the oil drain plug and install it.

④ Take out the oil dipstick, add the ATF (see the Forklift Oil List) and then replace the dipstick.

⑤ Start the engine. With the brake pedal depressed, while the engine is idling, place the transmission in forward and reverse to prime the clutch.

⑥ Put the transmission in neutral and pull the hand brake up.

⑦ Remove the dipstick and observe the fluid level. If the fluid level is insufficient, add more ATF to keep the fluid level between the maximum scale line and the minimum scale line.

⑧ Check the filter and oil drain plug for any leakage.

⑨ Turn off the engine and install the front base.

6.Fuel system exhaust [diesel engines]

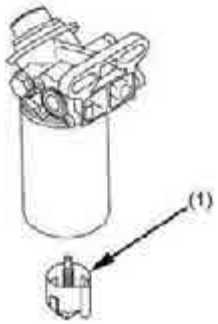
After adding fuel or in the process of draining water from the oil-water separator, it is also necessary to drain air from the fuel system.

① Loosen the handle of the oil-water separator.

② Keep pressing until no air comes out.

③Tighten the handle of the oil-water separator.

7.Oil-water separator water drainage [diesel engines]



(1)Exhaust valve

Rotating type:

① Turn off the engine;

② Place a container under the fuel filter;

③ Open the drain valve by hand.

④ Drain the water in the separator until clean fuel is seen.

> ⚠ Caution
>
> Do not overtighten when closing the drain valve. Overtightening will damage the threads. To close the valve, lift the valve and rotate it clockwise until it is hand tight.

8.Battery and electrolyte inspection

For details, please refer to the procedures for Using and Maintaining Lead-Acid Batteries.

9.Exhaust check

Colorless	Complete combustion - normal
Black	Incomplete combustion - abnormal
Blue	Engine oil burning - abnormal
White	Water in combustion chamber - abnormal

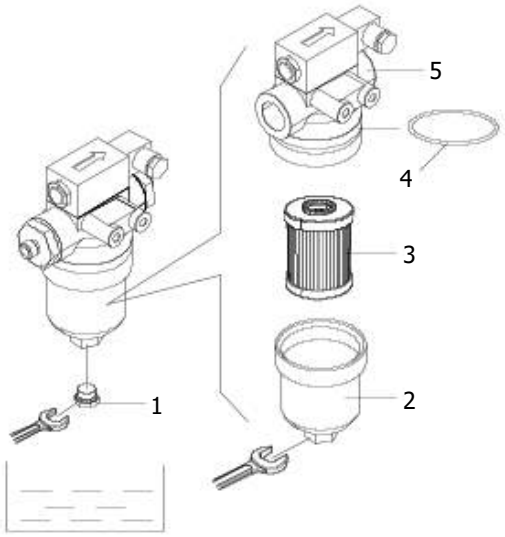
Danger

Do not run the engine in places with poor ventilation as the exhaust contains carbon monoxide which is poisonous to humans.

10.Replace the piston pump filter cartridge (only for the first time, then every 500 hours thereafter)

Replace the pump filter cartridge according to the pump filter alarm indication signal. (whichever comes first).

Engine fault indicator light	
	Fault code SPN:521217



1. Filter plug 2. Filter cylinder
3. Filter cartridge 4.O-ring 5. Filter head

Park the forklift truck on a horizontal road, lower the forks to the ground, tilt the mast back, pull up the handbrake handle firmly, put the transmission in neutral and turn off the engine.

①Place a container under the plunger pump filter;

②Turn counterclockwise (Allen wrench:19mm) to rotate the oil screw plug (1) to drain the oil in the cylinder.

③Rotate counterclockwise (outer hexagonal WAF:27mm) and screw down the cylinder (2) from the filter head (5).

④Remove the used filter cartridge (3) from the filter housing (2).

⑤Check the filter housing (2) for damage, wear and contamination.

⑥Insert the new filter cartridge (3) into the filter housing (2).

⑦Check the O-ring (4) and O-ring groove for damage, wear and contamination.

⑧Replace O-ring (4) if necessary.

⑨Screw the plug back onto the cylinder, install the filter head (5) and screw it in tightly.

⑩Turn the shift switch to neutral and start the engine. Depress the brake pedal and let the engine idle for 5 minutes to exhaust air from the pump and oil pipeline.

⑪Turn the engine off and check the filter for leakage.

Caution

Do not over tighten the filter screw plug when screwing it back into the cylinder. Overtightening will damage the threads. Screw plug reference tightening torque: 40Nm

4、Semi-annual maintenance (1000 hours)

Add the following maintenance items in addition to the monthly maintenance.

1.Replacement of brake fluid (1.0t-X5.5t)

① Park the forklift truck on a horizontal road at the designated maintenance place, lower the forks to the ground, pull up the handbrake handle firmly, put the transmission in neutral and turn off the engine.

② Take off the rubber dust cap on the drain port, put the two ends of a prepared transparent hose in the drain port and the waste oil collection bottle respectively, and then use a wrench to loosen the drain port screw counterclockwise while the other person on the forklift repeatedly presses the brake pedal. The brake fluid will be sprayed from the drain port, pay attention to the level of the brake fluid reservoir, and add new brake fluid as the fluid level drops. Tighten the drain port screws after clear brake fluid flows out.

③ Repeatedly press the brake pedal to the bottom and hold it there while the person under the forklift loosens the drain port screws, then tightens the screws after clear brake fluid comes out and asks the person on the forklift to release the brake pedal. Repeat the above operation several times until there are no air bubbles in the released brake fluid. Pay attention to the fluid level in the brake fluid reservoir and add new brake fluid as the level drops.

⚠ Caution

- Prevent dust and water from mixing when adding brake fluid.
- Brake fluid is toxic and corrosive and should be rinsed off if you are exposed to it.

2.Lubrication of the steering wheel locking device

Apply lubricating grease to the steering wheel locking device.

3.Check, clean and replace the hydraulic return oil filter, breathing apparatus and filter screen

Park the forklift truck on a horizontal road, lower the forks to the ground, tilt the mast back, pull up the handbrake handle firmly, put the transmission in neutral and turn off the engine.

① Loosen the bolts on the upper cover assembly of the hydraulic oil reservoir.

② Remove the return oil filter from the upper cover.

③ Install the new return oil filter by hand.

④ Remove the filter screen from the oil reservoir.

⑤ Install a new filter screen by hand.

⑥ Install the upper cover of the oil reservoir and tighten the bolts.

⑦ Remove the breathing apparatus, clean and dry the separate air filter screens with a clean and non-flammable cleaning agent.

⑧ Install the breathing apparatus.

⑨ Start the engine and operate the

hydraulic system so that the entire system is primed with hydraulic oil. Check for leaks.

⑩ Turn off the engine to check the oil level. Retract all cylinder rods so that the oil level remains between the scales of the dipstick.

4.Check, clean and replace the fuel filter

> ⚠ Caution
>
> In dusty or dirty operating environments, it is necessary to clean the fuel filter once a month and replace it every six months.

① Remove the fuel filter assembly.

② Remove the sensor assembly.

③ Install the existing sensor assembly and apply a little clean fuel to the filter sealing point before installing a new one.

> ⚠ Caution
>
> Do not refill the filter with fuel before installation. Otherwise, it will accelerate the wear of the fuel system components.

④ Install the new filter assembly.

⑤ Turn the new filter until the gasket is attached to the sealing surface.

⑥ Tighten it by 2/3 turn.

5、Annual maintenance (2,000 hours)

Add the following maintenance items in addition to the semi-annual maintenance.

1.Change hydraulic oil

Park the forklift truck on a horizontal road, lower the forks to the ground, tilt the mast back, pull up the hand brake handle firmly, put the transmission in neutral and turn off the engine.

> ⚠ Danger
>
> Hot hydraulic oil, ATF and associated parts may scald the human body. Do not allow them to come into contact with your skin.

① Place a container (with a volume over 60 liters) under the hydraulic oil reservoir, remove the hydraulic oil reservoir drain plug and drain the hydraulic oil into the container.

② Remove the hydraulic oil dipstick and hydraulic oil reservoir cover.

③ Take out the magnet in the reservoir to clean it, and at the same time flush the drain port at the bottom of the reservoir with hydraulic oil.

④ Clean and install the oil drain plug.

⑤ Fill the hydraulic oil reservoir. See the Forklift Oil List. Install the hydraulic oil reservoir cover and dipstick.

> ⚠ Caution
>
> - Hydraulic oil contamination!
> - Typically, the cleanliness level of commercial hydraulic fluids is not sufficient for the requirements of hydrostatic drives.
> - Although an oil filter with an absolute filtration accuracy of 10u is installed on the oil pump, about 1% to 2% (determined by the filter ratio of the oil filter) of the particles with a size of 10u will still pass through the oil filter into the main circuit (high-pressure line). If new oil is added directly to the system without filtration, it may also cause wear on the pump and motor moving parts.

⑥ Start the engine and operate the multi-valve lever and steering system to fill the whole system with hydraulic oil.

⑦ Check each hydraulic component and pipeline for oil leakage.

⑧ Turn off the engine, retract all the cylinder rods, and check the oil level of the hydraulic oil reservoir. Add hydraulic oil to the required scale line.

2.Change the hydrodynamic transmission ATF

See the Change the hydrodynamic transmission ATF in Monthly Maintenance Sheet

3.Change the front wheel bearing lubricating grease

Refer to the content on the drive axle hub in the Maintenance Manual, disassemble the wheel bearing, and then change the grease.

4.Change drive axle gear oil

Park the forklift on horizontal ground. Put it in neutral and turn off the engine.

① Take off the oil drain plug and drain the

oil into a container. Clean the oil drain plug.

② Install the oil drain plug.

③ Remove the air vent plug and oil level plug. Add oil into the drive axle housing from the curved plug seat hole until the oil overflows from the horizontal plug hole. See the “Refilling Amount”.

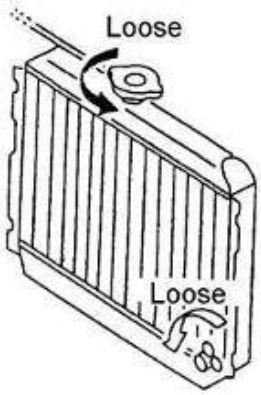
④ Install the horizontal plug and curved plug holder.

⑤ Start the forklift truck. Make the engine idle and put the direction control handle in the neutral position.

⑥ Remove the horizontal plug. Maintain the oil level until the oil overflows.

6、Two-yearly maintenance (4,000 hours)

1.Change the engine coolant



① Open the radiator cover and drain plug to drain the coolant, then flush the cooling system.

② Tighten the drain plug.

③ Fill the radiator with coolant up to the port.

④ Let the engine run fully.

⑤ Stop the engine, fill the radiator with coolant up to the port after it has cooled down completely, then add coolant into the reservoir to the Max. level.

⑥ Check if there is any leakage from the drain plug.

> ⚠ Danger
>
> To avoid the risk of scalding, never change the coolant when the engine coolant temperature is higher than 70℃.

The engine coolant added must be an anti-rust & anti-freeze coolant. Refer to the Forklift Oil List.

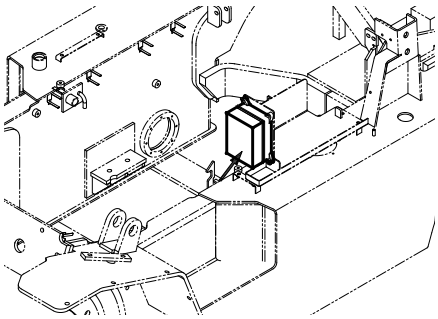
7、Others

1..Fuses and relays

① Before replacing any defective fuse or relay, please find out the cause of failure.

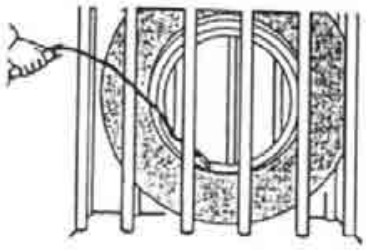
② Replace the fuse with a new one of the correct specification.

The forklift control unit is installed on the left side of the engine inside the internal combustion engine hood.



2.Tire replacement

> **Warning**
>
> - When using an air compressor, as the maximum output pressure of the air compressor is higher than the specified pressure of the tire, the pressure setting should be adjusted first; otherwise, it may cause a serious accident.
> - In order to ensure safety, the tire should be placed in a protective frame during inflation.



Front wheel tires

①Park the forklift on level and solid ground.

②Start the engine and raise the mast by approximately 100 mm.

③Place wooden blocks behind the rear wheels to prevent the forklift from moving.

④Loosen each wheel nut 1-2 turns counterclockwise.

⑤Tilt the mast backward and place wooden blocks at the sides of the outer mast.

⑥Tilt the mast forward until the front wheels are lifted off the ground.

> **Warning**
>
> Do not loosen the nuts until the front wheels have been lifted off the ground.

⑦Place wooden blocks on each front side of the forklift frame to support the forklift and then turn off the engine.

> **Danger**
>
> - When only using wooden blocks to support the forklift, never enter under the forklift.
> - The wooden blocks should be solid and strong enough.

⑧Remove the wheel nuts and replace the front wheels.

Warning

When removing the tire from the hub, the rim bolts and nuts should not be removed until deflating.

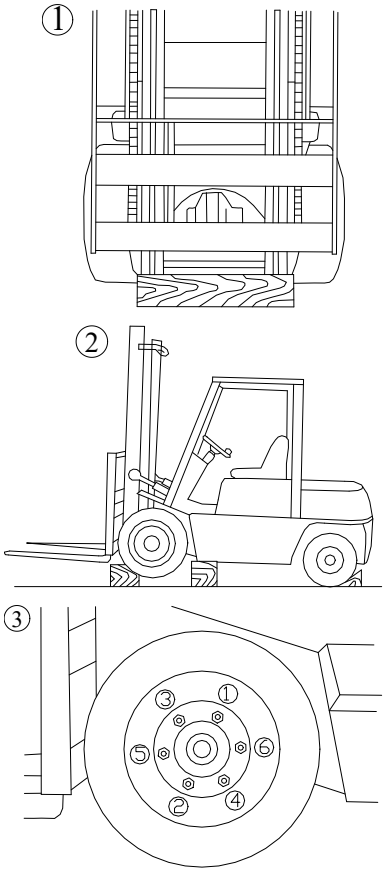
⑨Put on the nuts in sequence as shown in the diagram and lock them temporarily.

⑩Start the engine and remove the wooden blocks from the forklift frame.

⑪Tilt the forklift frame backward so that the forklift is slowly lowered, and then take out the wooden blocks under the forklift frame and at the rear wheels.

⑫Tighten the tire bolts symmetrically and crosswise in sequence.

⑬Adjust the tire pressure to the specified value.



Rear wheel tires

① Park the forklift on level and solid ground.

② Engage the hand brake and place wooden blocks behind the front wheels to prevent the forklift from moving.

③Place the jack at the bottom cut of the counterweight as shown in the diagram.

Warning

Make sure the minimum bearing weight of the jack is 2/3 of the total weight of the forklift truck.

④Loosen the nuts on the wheel 1-2 turns counterclockwise.

Warning

Do not remove the nuts until the rear wheels are lifted off the ground.

⑤Slowly lift the forklift with a jack until the rear wheels are completely off the ground. Place wooden blocks on each rear side of the forklift frame to support the forklift as shown in the diagram.

Danger

- The wooden blocks should be solid and strong enough.
- When only using wooden blocks to support the forklift, never enter under the forklift.

⑥Remove the wheel nuts and replace the rear tires.

Warning

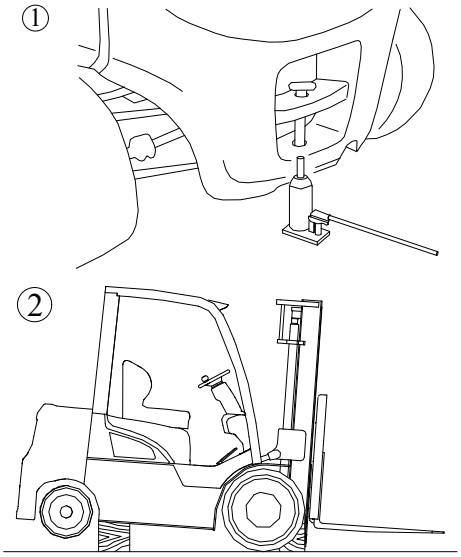
When removing the tire from the hub, the rim bolts and nuts should not be removed until deflating.

⑦ Put on the nuts in sequence as shown in the diagram and lock them temporarily.

⑧Remove the wooden blocks under the frame, lower the forklift slowly to the ground and remove the wooden blocks and jack behind the front wheels.

⑨Tighten the nuts to the specified torque in a crosswise manner. Please refer to the Tightening Torque Table.

⑩Adjust the tire pressure to meet the specified parameters.



3.Oil viscosity

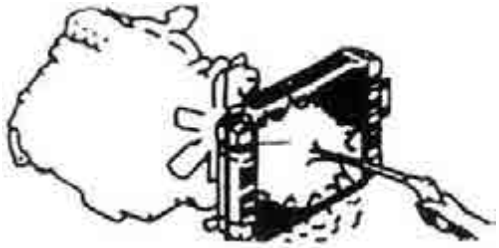
Select oil with an appropriate viscosity for the ambient temperature.

4.Clean the radiator fins

> **Warning**
>
> Airborne dust may get into your eyes, so protective glasses or dust goggles should be used.

If the radiator fins are blocked it will cause overheating, so compressed air, steam or water should be used to blow the fins.

> **Caution**
>
> When using compressed air or steam to clean the radiator fins, place the nozzle at a right angle to the radiator.



5.Operations for an overheated engine

If the engine is overheated, do not stop the engine immediately, the following steps should be taken:

①Run the engine at low speed.

②Open the hood to improve the ventilation.

③Stop the engine when the water temperature decreases.

④Check the coolant and add water if necessary.

6.DPF ash removal

The longer the DPF is run, the more ash (combustion residue) will be collected in the filter. Excessive ash accumulation can adversely affect DPF performance.

W97,W99 Engine

If there is an alarm or every 6000 working hours, it is necessary to contact the after-sales service to clean the DPF with a professional ash cleaning device.

H7,H8 Engine

If there is an alarm or every 4000 working

hours, it is necessary to contact the after-sales service to clean the DPF with a professional ash cleaning device.

For any queries, please contact the sales company or agent of HANGCHA GROUP CO., LTD.

8、Regular maintenance schedule

Note:

①Do not repair forklifts without training.

② It is necessary to perform regular checks and maintenance to keep the performance of the truck at optimum.

③ When operating in dusty or polluted environments, it is necessary to increase the frequency of maintenance.

④Checks and maintenance are often neglected, so it is better to find the problems early and solve them in time.

⑤When changing or adding oil, do not use oil which is not the same as the original.

⑥If the engine power drops, there is any black smoke or engine noise becomes louder before the maintenance period arrives, inspection and checks should be carried out and the opening pressure of the diesel nozzle and fuel atomization state should be adjusted if necessary.

⑦The used oil/fluid and used battery should be recycled according to the local environmental protection laws and regulations to prevent pollution of the environment, rather than poured away or disposed of at will.

⑧Develop a comprehensive maintenance and repair plan.

⑨Complete records should be made after each maintenance and repair.

⑩Use the spare parts from Hangcha.

○——Check, correction, adjustment

×——Replacement

Engine Regular Maintenance Schedule

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Engine . .	Visual inspection of the engine running condition (including sound, exhaust color)		○	○	○	○	○
	Clean or replace the air filter cartridge		○	○	○	×	×
	Oil-water separator water drainage (Diesel engines)			○	○	○	○
	Check crankcase and remove dirt				○	○	○

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
	Check and adjust valve clearance	Plug gauge		First time ○	○	○	○
	Tighten the cylinder head bolts	Torque wrench		First time ○	○	○	○
	Check cylinder compression pressure	Pressure gauge					
	Ignition plug (gasoline engine)			○	○	○	○
	Check the distributor block contact, lid and rotor (gasoline engine) (1)			○	○	○	○
	Check the distributor block interior (IC ignition system) (1)						○
Common-rail engine	Check whether the rail pressure sensor and its wiring operates normally		○	○	○	○	○
	Check whether the accelerator pedal is normal.		○	○	○	○	○
	Check the rail pressure relief valve functions and check for leaks		○	○	○	○	○
	Check the ECU function and wiring		○	○	○	○	○
	Check the camshaft sensor and its wiring				○	○	○
	Check the crankshaft sensor and its wiring				○	○	○
	Fill with specified fuel		○	○	○	○	○
	DPF Cleaning (W97, W99)		Clean the DPF in the event of an alarm or every 6,000 working hours.				
	DPF Cleaning (H7, H8)		Clean the DPF in the event of an alarm or every 4000 working hours.				

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
LPG Engine	1. Check the LPG pipelines and the joints for any leakage (1)		○	○	○	○	○
	2. Drain the tar from the pressure reducing regulator		○	○	○	○	○
	3. Check the pipelines and the joints for any damage		○	○	○	○	○
	4. Check the LPG tank mounting bracket for any looseness or damage		○	○	○	○	○
	5. LPG Filter				○	○	×
Gas storage system（LPG forklift）	1.Whether the installation bracket of the LPG tank is loose or damaged		○	○	○	○	○
	2.Check the gas cylinder inflation valve		○	○	○	○	○
	3.Check the gas cylinder vent valve		○	○	○	○	○
	4.Check the shut-off valve at the inlet end of the steel cylinder		○	○	○	○	○
	5.Check the shut-off valve at the outlet end of the steel cylinder		○	○	○	○	○
	6.Check the safety valve of the steel cylinder		○	○	○	○	○
	7.Check the liquid level indicator of the steel cylinder		○	○	○	○	○
Crankshaft ventilator	Check for clogged or damaged PCV valves and tubes					○	○

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Speed controller or injection pump	Check maximum speed without load	Tachometer					○
Lubrication System	Check the engine for leaks		○	○	○	○	○
	Check the oil level and cleanliness		○	○	○	○	○
	Change the engine oil (1)			× First time	×	×	×
	Change the engine oil filter cartridge (1)			× First time	×	×	×
Fuel System	Visual inspection of oil pipes, oil pumps and oil tanks for leaks		○	○	○	○	○
	Replace the fuel filter			× First time	×	×	×
	Check the nozzle and adjust the pressure state (diesel engine) (2)	Fuel injection testbed			○	○	○
	Ignition timing (gasoline engine)			○	○	○	○
	Injection timing (diesel engine)						○
	Water drainage of fuel tank				○	○	○
	Clean the fuel tank					○	○
	Check the fuel amount		○	○	○	○	○
Cooling · System ·	Coolant amount		○	○	○	○	○
	Check for any leakage		○	○	○	○	○
	Change the engine coolant						×
	Check the fan belt tension and check for any damage		○	○	○	○	○

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
	Clean the water tank outer surface			Monthly in summer	○	○	○
	Performance and mounting condition of water tank cover			○	○	○	○
	Condition of the inlet/outlet pipe					○	○

Drive system periodical maintenance schedule

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Hydraulic transmission gear box	Clean the coarse strainer			× First time		×	×
	Hydraulic strainer, Change		○	○	○	○	○
	Leakage condition			× First time	○	○	×
	Check oil quantity and change oil		○	○	○	○	○
	Inching pedal idle stroke and run condition		○	○	○	○	○
	Control valve and hydraulic clutch performance		○	○	○	○	○
	Inching valve performance		○	○	○	○	○
	Hydraulic oil filter					×	×
Drive axle(Front axle)	Check hub bearing looseness and noise			× First time	○	○	×
	Wipe and re-add lubrication oil		○	○	○	○	○
	Leakage check				○	○	○
	Check axle deformation, crack or damage				○	○	○
	Check chassis connected bolt looseness	Torque wrench	○	○	○	○	○
transmission shaft	Check and add lubricating grease			○	○	○	○

Regular maintenance schedule for the hydrostatic transmission driving system.

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
walking hydraulic	Inspect the axial piston unit for any leakage.		○	○	○	○	○
	Check for any abnormal noises coming from the axial piston unit.		○	○	○	○	○
	Verify that the installed components are securely fastened. Examine all fasteners after the hydraulic system has been powered off, depressurized, and cooled down.			○	○	○	○
	Replace the pump filter element according to the pump filter alarm indicator.			× First time	×	×	×

Wheel（front, rear wheel）periodical maintenance schedule

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Tire	Charge pressure	Barometer	○	○	○	○	○
	Abrasion, crack or damage			○	○	○	○
	If there is nail, stone or other foreign body on the tyre		○	○	○	○	○
	Rim damage condition						
	Split-type rim bolt looseness	Test hammer					

Steering system periodical maintenance schedule

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Steering wheel	Check clearance		○	○	○	○	○
	Check axial looseness		○	○	○	○	○
	Check radial looseness		○	○	○	○	○
	Check operation condition		○	○	○	○	○
Steering gear	Check if erection bolt loosen			○	○	○	○
steering axle	Check the pin for looseness			○	○	○	○
	Replace the lubricating grease for the rear wheel bearings						×
	Check for any deformation, cracks or damage			○	○	○	○
	Check the installation condition	Inspection hammer		○	○	○	○
	Check the tightening torque of the wheel hub bolts	Torque wrench	○	○	○	○	○
Steering cylinder	Check operation condition		○	○	○	○	○
	Check for leakage		○	○	○	○	○
	Check if loosen when installing and hinging			○	○	○	○

Regular Maintenance Schedule for Brake System

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Brake. pedal.	Idle running	Calibrated scale	○	○	○	○	○
	Pedal travel		○	○	○	○	○
	Check the operating condition		○	○	○	○	○
	Check the brake line for air		○	○	○	○	○
Parking brake operation	Check whether the brake is safe and reliable, and has enough travel.		○	○	○	○	○
	Operating performance		○	○	○	○	○
Rod, dragline, and others	Operating performance			○	○	○	○
	Check the joint for looseness			○	○	○	○
Pipeline.	Damage, leaks, cracks		○	○	○	○	○
	Check the joints and clamping parts for any looseness			○	○	○	○
Wet brake system	Brake performance inspection		○	○	○	○	○
	Damage, leakage, and rupture		○	○	○	○	○
	Check the friction pad and brake pad assembly	Vernier caliper	Check every 4000h				

Regular Maintenance Schedule for Hydraulic System

Maintenance Item	**Maintenance content**	**Tools**	**8h**	**250h**	**500h**	**1000h**	**2000h**
Hydraulic oil tank	Check the oil level or change it (1)		○	○	○	○	×
	Clean the oil absorption filter (1)					○	○
	Replace the return oil filter (1)					×	×
	Clear away any foreign objects					○	○
Control valve stem	Check the joint for looseness		○	○	○	○	○
	Check the operating condition		○	○	○	○	○
Filter	Check for any leakage			○	○	○	○
Multi-way valve	Check for any oil leakage		○	○	○	○	○
	Safety valve and tilt self-locking valve Check the operating condition		○	○	○	○	○
	Measure the safety valve pressure	Oil pressure gauge				○	○
Pipeline. joint.	Check for any leakage, looseness, fracture, deformation or damage		○	○	○	○	○
	Replace the pipe						× 1-2 years

Regular Maintenance Schedule for Electrical System

Maintenance Item	**Maintenance content**	**Tools**	**8h**	**250h**	**500h**	**1000h**	**2000h**
Starting motor	Gear engagement				○	○	○
Storage battery	Check the electrolyte level and add more distilled water if necessary.			○	○	○	○
	Clean the storage battery				○	○	○
Wires	Wire harness damage, any looseness .			○	○	○	○
	Any looseness in circuit connections				○	○	○
Steering indicator light	Check the operating and installation condition		○	○	○	○	○
Horn	Check the operating and installation condition		○	○	○	○	○
Lights and bulbs	Check the operating and installation condition		○	○	○	○	○
Back up buzzer	Check the operating and installation condition		○	○	○	○	○
Display	Check the operating condition		○	○	○	○	○

Regular Maintenance Schedule for Lifting System

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Chain. , Chain wheel	Check the chain tension and check for any deformation, damage or rust.		○	○	○	○	○
	Lubricate the chain		○	○	○	○	○
	Check the riveted pin for any looseness		○	○	○	○	○
	Check the chain wheel for any deformation or damage			○	○	○	○
	Check the chain wheel gear for any looseness			○	○	○	○
Attachments	Check the operating status			○	○	○	○
	Check the wear of the friction block (with built-in lateral displacement)					○	○
Lifting cylinder.	Check the piston rod, the thread and joint for any looseness, deformation or damage.	Inspection hammer	○	○	○	○	○
	Check the operating condition		○	○	○	○	○
	Leakage		○	○	○	○	○
	Check the pin and steel-backed bearing of the cylinder for any wear or damage		○	○	○	○	○
Hydraulic. pump	Check the hydraulic pump for any leakage or noise		○	○	○	○	○
Fork	Check the forks for any damage, deformation or wear		○	○	○	○	○
	Check the positioner for any damage or wear		○	○	○	○	○
	Check the welded part of the hook at the root of fork for any cracks or wear		○	○	○	○	○
Mast.	Check the welding between the inner/outer mast and beam for any cracks or damage		○	○	○	○	○

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Fork arm carrier.	Check the welding between the tilt cylinder frame and mast for any poor welding, cracks or damage		○	○	○	○	○
	Check the inner/outer mast for any poor welding, cracks or damage		○	○	○	○	○
	Check the fork arm for any poor welding, cracks or damage		○	○	○	○	○
	Check the roller for any looseness		○	○	○	○	○
	Check the bearing shaft bush of the mast for any wear or damage		○	○	○	○	○
	Check the bearing cap bolts of the mast for any looseness	Inspection hammer	○	○	○	○	○
	Check the bolts at the bottom of the lifting cylinder, bolts at the top of piston rod, U-bolts and the bolts of the movable beam guide rail for any looseness	Inspection hammer	○	○	○	○	○
	Check the roller, roller shaft and welding part for any cracks or damage		○	○	○	○	○
Mast	Check the looseness of the fixing bolts at the connection with the drive axle		○	○	○	○	○

Regular Maintenance Schedule for Safety Devices and Accessories

Maintenance Item	Maintenance content	Tools	8h	250h	500h	1000h	2000h
Overhead guard and load backrest	Check whether they are secured	Inspection hammer	○	○	○	○	○
	Check for any deformation, cracks or damage		○	○	○	○	○
Rear view mirror	Check for any dirt or damage		○	○	○	○	○
	Check the rear visibility		○	○	○	○	○
Driver's seat	Check the bolts for looseness or damage					○	○
	Check if the seat belt is loose, damaged, or broken		○	○	○	○	○
Forklift body	Check the frame and beam for any damage or cracks						○
	Check the rivets and bolts for any looseness						○
Apply lubricating grease or change the oil	Check the lubrication of the chassis after cleaning			○	○	○	○
	Check the oil in the reservoir						○
OPS system	Check the operating condition		○	○	○	○	○
Balance weight	Check for loose bolts at the connection with the frame			○	○	○	○

9、Forklift Oil List

1.0t-3.5t Forklift Oil List

Name	Model/Code	Volume (L)	Remarks
GAS	95#	50	1.5t~1.8t
		58	2t~2.5t
		60	3t~3.5t
Diesel	Sulphur content: ＜15ppm 0# (Summer) -10# to -35# (Winter)	50	1.5t~1.8t
		58	2t~2.5t
		60	3t~3.5t
LPG	HD-5 or equivalent liquefied petroleum gas	50	
Diesel engine oil	Normal weather: CJ-4 15W／40 Winter: CJ-4, 10W／30 or refer to the Engine Maintenance Manual	10.2	H7, W97 Engine
LPG engine oil	Normal weather: SF 15W/40 Winter: SF 10W/30 (Severely cold environments: Caltex API SAE 5W-30) or refer to the Engine Maintenance Manual	3.5~4	GK21, GK25
Hydraulic oil	L—HM32 (severely cold environments: L—HV32)	41~44	1.0t~1.8t
		45~49	2.0t~2.5t
		49~52	3.0t~3.5t
Hydraulic oil（Hydrostatic drive）	L—HM46 (severely cold environments: L—HV46)	41~44	1.0t~1.8t
		45~49	2.0t~2.5t
		49~52	3.0t~3.5t
Automatic Transmission Fluid (ATF) (transmission)	ATF -3 or Conforms to the universal Dexron III standard.	9	F1 China transmission
		9	B1 Okamura transmission
Gear oil (Wet-type drive axle)	Mobil 424	3.5	1.0t~1.8t
	Mobil 424	6.5	2.0t~3.5t
Brake fluid (Added to brake fluid reservoir)	Mobil Delvac hydraulic oil SAE10W	1	Wet-type drive axle

Anti-rust & antifreeze coolant (water tank)	-35 automotive antifreeze (added before delivery) or FD-2 antifreeze	10~11	1t~3.5t
Industrial vaseline	2#		Battery electrode pole
Grease (each lubrication point)	No.3 general purpose automotive lithium grease		Each lubrication point
	HP-R grease (polyurea-based)		Applicable for high-temperature resistant lubrication points

4.0t~5.5t Forklift Oil List

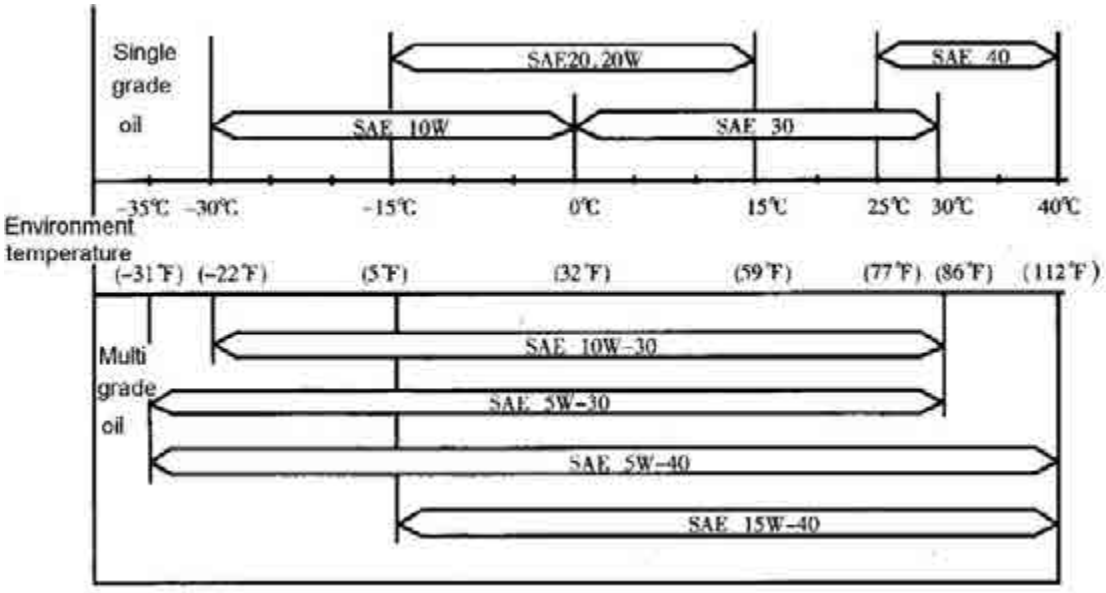
Name	Model/Code	Volume (L)	Remarks
GAS	95#	90	4.0t~4.5t
		100	5.0t~5.5t
Diesel	Sulphur content: ＜15ppm 0# (Summer) -10# to -35# (Winter)	90	4.0t~4.5t
		100	5.0t~5.5t
LPG	HD-5 or equivalent liquefied petroleum gas	50	H11,H12,H20
Diesel engine oil	Normal weather: CJ-4 15W／40 Winter: CJ-4, 10W／30 or refer to the Engine Maintenance Manual	11.2	W99
		7	H8
		6.2	W58
LPG engine oil	Normal weather: SL 15W/40 Winter: SL 10W/30 (Severely cold environments: Caltex API SAE 5W-30) or refer to the Engine Maintenance Manual	12.2	H11,H12
Gasoline engine oil	5W-40 or according to the engine maintenance manual	4.7	H20,W24
Hydraulic oil	L—HM46 (severely cold environments: L—HV32)	70~74	
Automatic Transmission Fluid	ATF DEXRON III	12	BN Okamura transmission
	6# Transmission Fluid	16	F China transmission
Gear oil	Mobil 424	8	BN Okamura transmission
		9	F China transmission

Brake fluid	Mobil Delvac hydraulic oil SAE10W	1	Added to brake fluid reservoir
Anti-rust & antifreeze coolant (water tank)	-35 automotive antifreeze (added before delivery) or FD-2 antifreeze	20	water tank
Industrial vaseline	2#		Battery electrode pole
Grease (each lubrication point)	No.3 general purpose automotive lithium grease		Each lubrication point
	HP-R grease (polyurea-based)		Applicable for high-temperature resistant lubrication points

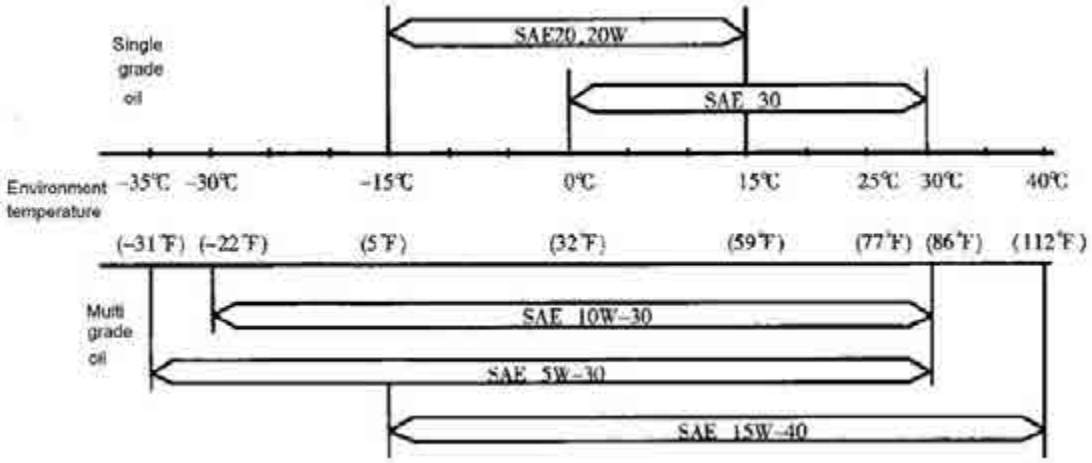
Caution

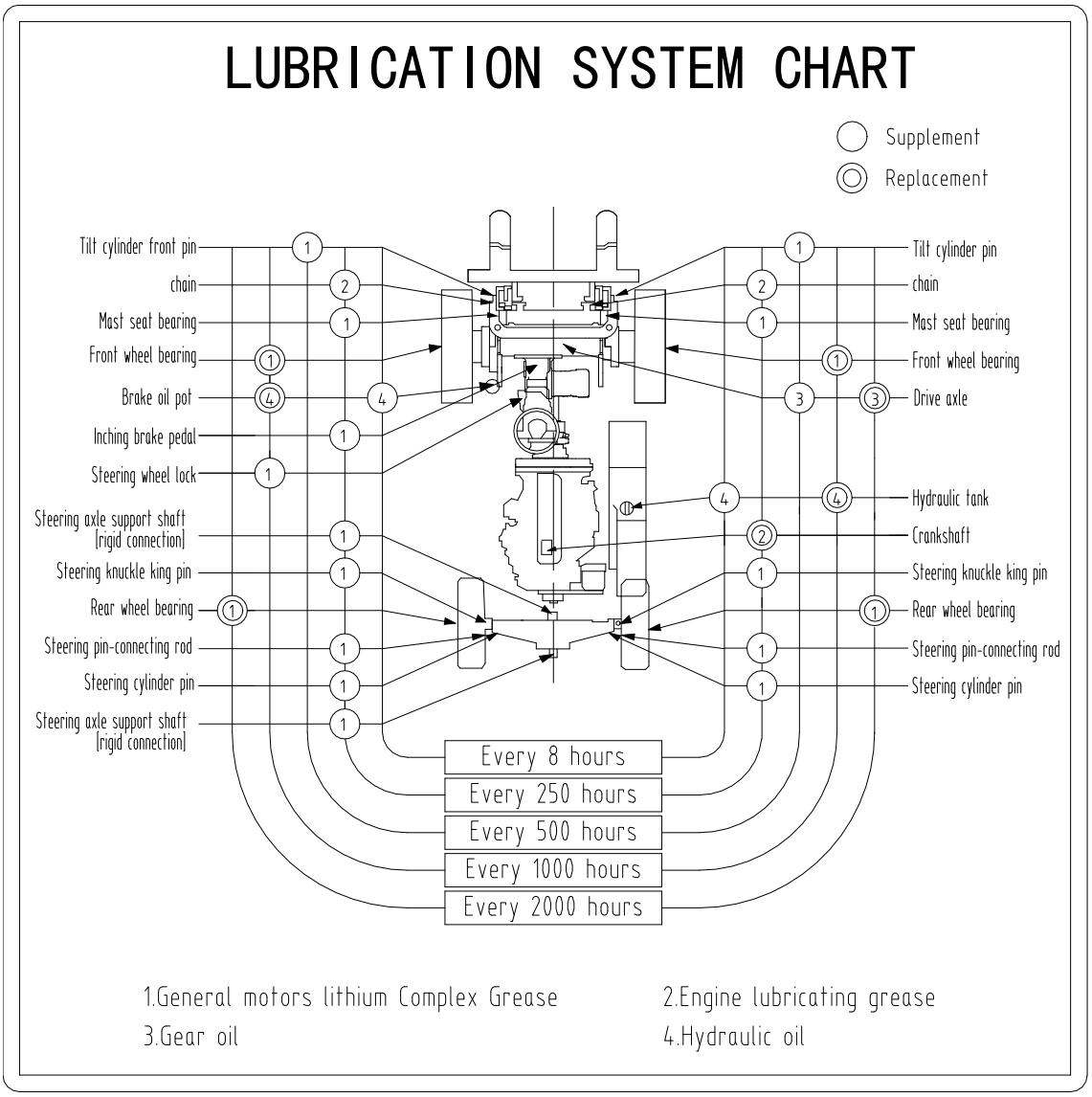
- The forklift truck was filled with anti-rust and antifreeze coolant at the factory. It is not necessary to drain the coolant even in winter. Fill its reservoir to the required level if necessary and change it once every 2-4 years.
- If the forklift truck was not filled with anti-rust and antifreeze coolant at the factory, the user can add it as required. In winter, the coolant must be drained out of forklift trucks not filled with anti-rust and antifreeze coolant.
- The last letter of the forklift model number is F1/F/B1/BN, which indicates the transmission type.
- Different brands of oil products cannot be mixed.
- Diesel forklifts are recommended to use diesel with a sulfur content of less than 15ppm, either 0# (summer) or -10# to -35# (winter). Long-term use of poor-quality diesel may pose a risk of engine damage.
- For the use of biodiesel, HVO fuel, or other types of fuel, please refer to the corresponding engine's manual (operation and maintenance instructions) before use, and ensure it is correct before proceeding.
- LPG engines are recommended to use HD-5 or equivalent liquefied petroleum gas. For other grades of liquefied petroleum gas, please refer to the corresponding engine's manual (operation and maintenance instructions) before use, and ensure it is correct before proceeding.
- Long-term use of liquefied petroleum gas that does not meet the requirements may pose a risk of engine damage.

Recommended viscosity of diesel engine oil at different ambient temperatures



Recommended viscosity of gasoline engine oil at different ambient temperatures





Note:

1. Please refill the truck with the specific lubrication oil according to the specific truck model based on the Forklift Oil List.

2. Refer to the Weekly Maintenance (40h) for the lubrication of the mast and chain.

Environmental protection:

1. Clean, maintain and repair the vehicle at the designated place.

2. Before dismantling the pipeline, joints or related parts, special containers should be used to receive used fluids (including coolant, engine oil, hydraulic oil, transmission oil, ATF, brake fluid, grease, etc.) and used batteries.

3. The used oil/fluid should be recycled according to the local environmental protection laws and regulations to prevent pollution of the environment, rather than poured away or disposed of at will.

Safety awareness:

The temperature of coolant, engine oil, hydraulic oil, transmission oil and ATF after a long operation is very high, the oil change should not be carried out until the temperature drops below 70℃; skin should be protected, otherwise it may be burnt or corroded by the oil.

10、Tightening Torque Table of Common Bolts

Unit: N·m

Nominal Diameter mm	Strength Grade			
	4.6	5.6	6.8	8.8
6	4～5	5～7	7～9	9～12
8	10～12	12～15	17～23	22～30
10	20～25	25～32	33～45	45～59
12	36～45	45～55	58～78	78～104
14	55～70	70～90	93～124	124～165
16	90～110	110～140	145～193	193～257
18	120～150	150～190	199～264	264～354
20	170～210	210～270	282～376	376～502
22	230～290	290～350	384～512	512～683
24	300～377	370～450	488～650	651～868
27	450～530	550～700	714～952	952～1269
30	540～680	680～850	969～1293	1293～1723
33	670～880	825～1100	1319～1759	1759～2345
36	900～1100	1120～1400	1694～2259	2259～3012
39	928～1237	1160～1546	1559～2079	2923～3898

Note:

a）Grade 8.8 bolts are used for all key joints.

b）The bolt grade can be found in the head, if not it is Grade 8.8.

11、Regular replacement of key safety parts

It is difficult to find any damage to some parts through regular maintenance, thus in order to ensure the safety of forklift operation, the user should regularly replace the parts given in the table below.

If the replacement time is not reached and there is any abnormality in these parts, the defective parts should be replaced immediately.

Key Safety Part	Service Life (Years)
Brake hose or rigid pipe	1～2
Hydraulic rubber hose for the lifting system	1～2
Lifting chain	2～4
High-pressure rubber hose and flexible tube for the hydraulic system	2
Brake fluid reservoir	2～4
Fuel hose	2
Sealing parts and rubber parts in the hydraulic system	2

XI、Storage

1、Daily storage

①Park the forklift at the designated place and use wedge blocks to support the wheels.

②Place the shift lever in the neutral position.

③Pull up the handbrake handle.

④Turn off the engine and operate the multi-valve handle several times to release the remaining pressure in the oil cylinder and pipeline.

⑤Remove the key and keep it in a safe place.

> Warning
>
> Once a forklift is found to be defective, it should be reported to the management and

Then the following maintenance items should be carried out.

①Remove oil and grease from the vehicle body with cloth and water.

②Check the overall condition of the vehicle, in particular, check whether the tires are damaged or have any foreign objects such as nails.

③Fill the fuel tank with specified fuel.

④Check for leaks of hydraulic fluid, engine oil, fuel and coolant.

⑤Apply lubricating grease.

⑥Check whether the mating surface of the wheel nut and cylinder piston rod is loose and whether the surface of piston rod is scratched.

⑦Check whether the rollers of the mast act smoothly.

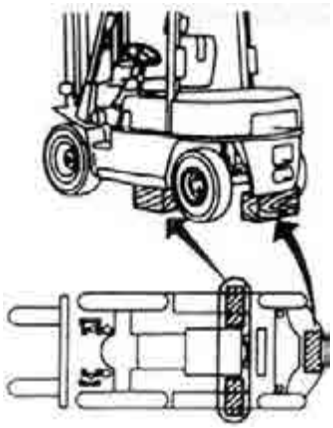
⑧Raise the lifting cylinder to the top to fill the cylinder with oil.

⑨In winter or cold environments, long-lasting antifreeze does not need to be drained, but if cooling water is used, the reservoir should be emptied.

2、Long-term storage

When the forklift is parked for a long time, use wooden blocks to support the vehicle body and counterweight to reduce the loading on the rear wheels.

> Warning
>
> - The wooden block must be solid and should be strong enough to support the weight of the truck.
> - Do not use blocks higher than 300 mm (11.81 inches).
> - Raise the forklift just enough to place it on the supporting blocks.
> - Place blocks of the same size under the left and right sides of the forklift frame.
> - After supporting the forklift with the blocks, push the forklift back and forth & left and right to check whether it is stable.



Make the following maintenance and checks in addition to maintenance as required in Daily Storage.

①Remove the battery from the forklift, put it in a dry and cool place, and charge it once a month.

②Apply anti-rust oil to exposed parts such as the piston rod and shaft that may rust.

③Parts such as vent plugs and air filters should be covered to prevent water ingress.

④Start the forklift truck once a week. If the cooling water was drained out, it should be refilled. Install the battery. Remove the anti-rusting oil on the piston rod and shaft, start the engine and warm up fully, run slowly back and forth, operate the mast to raise and lower, and tilt back and forth several times.

⑤Forklift trucks should not be parked on asphalt roads in summer.

⚠ Caution

When storing a forklift for an extended period, it is essential to avoid leaving it outdoors. Instead, cover the forklift with a waterproof tarp or store it in a dry space that is frost-free and does not experience freezing temperatures.

3、Operation of forklift trucks after long-term storage

①Remove the anti-rust oil from the exposed parts.

②Drain oil from the engine crankcase, drain gear oil or transmission oil from the drive axle housing (hydrodynamic transmission)/piston pump and motor (hydrostatic transmission), clean the interior, and add new oil.

③Clear away the foreign matter and water in the hydraulic oil tank and fuel tank.

④Remove the engine cylinder head, valve and rocker arm shaft, and check whether each valve clearance is normal.

⑤ Add coolant to the specified scale line.

⑥Charge the battery, mount it on the forklift and connect the battery leads.

⑦ Carefully carry out a pre-start inspection to check the starting, forward, reverse, steering, lifting, lowering, front and rear tilting functions of the forklift truck.

⑧ Preheat the forklift truck.

XII、Usage and maintenance methods for the lead-acid battery

1、Lead-acid battery and use

The battery is used as the power source to start the engine, and it is used as the power supply of the voltage regulator and overload generators. Light weight, low failure rate, easy to use and maintain. All batteries are sealed except for maintenance-free batteries which are provided with two vents (to release gas produced by the battery) on both sides. The lead-acid battery is provided with a filling hole on the upper cover of battery.

2、Battery storage and handling

2.1.Storage

When the vehicle is out of use, the battery should be stored in a clean, dry and ventilated environment, and the battery needs to be recharged once every 3 months.

2.2.Maintenance

a）Make sure there is no terminal corrosion, link part looseness, outer crack and fastening looseness on the battery.

b）Check and clean the battery vent hole frequently to ensure that the battery vent hole is not blocked, and check and clean the water in the vent hole frequently in winter to prevent the vent hole from being blocked by ice and water.

2.3.Check and maintenance of battery

Check for maintenance-free battery

The indicator of the electric eye will be green when the capacity is normal, density of electrolyte reaches the standard; it will be white when capacity is not enough, density of electrolyte does not reach the standard; it will be red when the electrolyte is acute shortage, the shell should be carefully examined whether there is rupture, leakage or battery failure.

1：Green：Sufficiently charged.

2：White：Insufficiently charged.

3：Red：Replace battery.

The indicator of battery sees particularly the prompt of the battery label.

Maintenance of maintenance-free battery

1)Insure the green status visual in inner indicator (electric eye);

2)Disconnect negative earth wire to avoid discharging by additional current release;

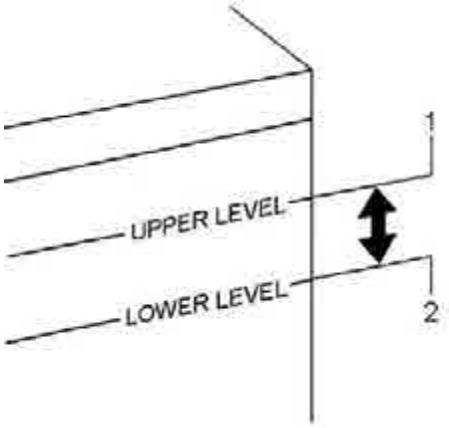
3)Keep the battery charge completely if the battery can not be removed down from truck;

4)Make a general schedule, charge every 30-45 days；

5)Check battery when the green status of indicator at battery are invisible, then charge or replace battery;

Check for low-maintenance battery

As the forklift is used in a high temperature ambient, and the battery easily consumes water, you should do pay attention to the liquid level when using the forklift. The battery top cover is left with a liquid filling port. Please add enough water up to the UPPER LEVEL when the liquid level is below the LOWER LEVEL and be sure the water is not so much that can spill out to erode your forklift.



Check and make sure the electrolyte is between "UPPER LEVEL" and "LOWER LEVEL"

1："UPPER LEVEL"

2："LOWER LEVEL"

If the electrolyte is or lower than “Lower Level”, please add distilled water

When a serious shortage of electrolyte is found, the shell should be carefully checked for rupture, leakage or battery failure.

The indicator of the electric eye will be green when the capacity is normal, density of electrolyte reaches the standard; it will be white when capacity is not enough, density of electrolyte does not reach the standard; it will be red when the electrolyte is acute shortage, the shell should be carefully examined whether there is rupture, leakage or battery failure.

The indicator of battery sees particularly the prompt of the battery label.

Maintenance of low-maintenance battery

1)Ensure that the battery electrolyte fluid level in the UPPER LEVEL.

2)Disconnecting negative earth wire to avoid discharging by additional current release;

3)Keep the battery charge completely if the battery can not be removed down from truck;

4)Make a general schedule, charge every 30-45 days;

5) When the battery electrolyte level is lower than LOWER LEVEL, please add distilled water to UPPER LEVEL, install the vent-plug to original place and fix it.

Caution

Avoid overfill when adding distilled water. During battery recharging, spilled water may cause corrosion.

2.4.Before recharging

When battery is recharging, the generated hydrogen is flammable and explosive gas, so pay attention to the following item before operation:

1)If charge to the battery still installed on the truck, one must disconnect the ground cable.

2)When connecting and disconnecting the battery charger cable, make sure the charger power is off.

Caution

- Safe place for battery charging should be at open ground. Never charge in bad ventilated garage or closed indoor.
- Never charge the battery when the engine is working. Make sure close all enclosure.

3、Notice for battery usage

Battery can produce explosive gas, electrolyte is corrosive, and the current can burn skin from battery producing. When handling battery or working near it, comply with the following cautions

Caution

- When working near the battery, one must wear safety inspection.
- Never let tools contact battery terminal and cause spark.
- Never expose the battery in open fire or spark.
- When the battery is connected to the electric equipment, make sure the electric equipment is correctly connected with the battery positive and negative to avoid damage of electric equipment or battery;
- Never cover electric things on the battery to avoid battery short cut.
- Avoid electrolyte splashing on eyes, skin or clothes.
- Keep children away from the battery.

Emergency measure to electrolyte

（1）If the electrolyte spilled eyes

Please wash your eyes at least for 15 minutes and seek medical advice at once. If possible, use wet sponge or cloth clean eye on the way to hospital.

（2）If the electrolyte spilled skin

Wash this part thoroughly. If you have burn pain, please seek medical advice at once.

（3）If the electrolyte spilled clothes

It may permeate clothes and contact skin. You must take off the clothes at once and do the above measure is necessary.

XIII、Main optional accessories

1、OPS system description

OPS system (only limited to electric reversing hydraulic trucks)

The OPS (Operator Presence Sensing) system is mainly used for safety, when the operator is not in the correct driving position the forklift cannot be driven and transported, thereby reducing accidents caused by misuse.

Forklift truck shutdown conditions

When the driver leaves his/her seat or his/her seat belt is loose (if the seat belt protection switch is provided) and the handbrake is not engaged, the buzzer will sound an alarm.

Without the seat belt protection switch: When the driver sits back on the driver's seat properly or engages the handbrake, the buzzer alarm will turn off.

With the seat belt protection switch: When the driver first sits back on the driver's seat properly and fastens his/her seat belt or engages the handbrake, the buzzer alarm will turn off.

Forklift truck starting state

1. Starting

The forklift truck can be started normally when the driver sits on the driver's seat properly, fastens the seat belt (if the seat belt protection switch is provided), or engages the handbrake, and pulls the shift switch to the neutral position. If the shift switch is not pulled to the neutral position, the truck cannot be started.

> ⚠ Warning
>
> If the forklift truck is parked on a ramp, you must press the brake pedal to the bottom when starting the truck to prevent the truck from rolling back.

2.Forward and backward protection

When you are ready to drive the forklift truck after the engine has started, you can start the truck normally by pulling the shift switch to forward gear 1 or reverse gear 1. If the shift switch is pulled to forward gear 2 or backward gear 2 directly the neutral indicator light will flash; if the truck cannot be started, the shift switch should be returned to the neutral position to release protection.

When the driver leaves his/her seat or his/her seat belt is loose (if the seat belt protection switch is provided) for more than 3s when the forklift truck is driving, the buzzer will sound an alarm, the neutral indicator light will flash, the OPS indicator light will turn on, and the truck will be automatically stopped.

When the driver sits on the driver's seat properly again, the buzzer alarm will turn off and the

OPS indicator light will turn off; when the shift switch is pulled to the neutral position, the flashing neutral indicator light will be constantly lit; when the shift switch is pulled forward or backward, the forklift truck will resume normal operation.

Warning

If the OPS system is started by accident when driving uphill, it will disconnect the driving power, making the forklift truck roll backwards. In order to avoid accidents, the driver must sit on the driver's seat properly when driving uphill.

Caution

- Some models are not equipped with an "!"OPS indicator light on the instrument panel.
- For the forklift trucks with seats provided with a seat belt protection switch, after the driver first sits back on the driver's seat properly and fastens his/her seat belt, normal operation can be conducted.
- The neutral indicator light flashes: The shift switch is in the neutral position by default in the program, and the driver is reminded about pulling to the neutral position.

3.Working device protection

When the driver leaves his/her seat or his/her seat belt is loose (if the seat belt protection switch is provided) for more than 3s when operating, the buzzer will sound an alarm, the OPS indicator light will turn on, and the handling operation will be automatically stopped. If the driver sits on the driver's seat properly again, the handling operation will continue.

Caution

- For the forklift trucks with seats provided with a seat belt protection switch, after the driver first sits back on the driver's seat properly and fastens his/her seat belt, normal operation can be conducted.
- Tilt the lever and attachment lever to the initial positions before releasing protection.

OPS controller faults

In the event of the following conditions, the forklift truck should be stopped in a safe place and Hangcha agency should be contacted for inspection.

a）When you are ready to start the forklift truck, and you pull the shift switch to forward gear 1 or backward gear 1, the neutral indicator light flashes.

b）When you pull up the handbrake, the buzzer continues to sound an alarm.

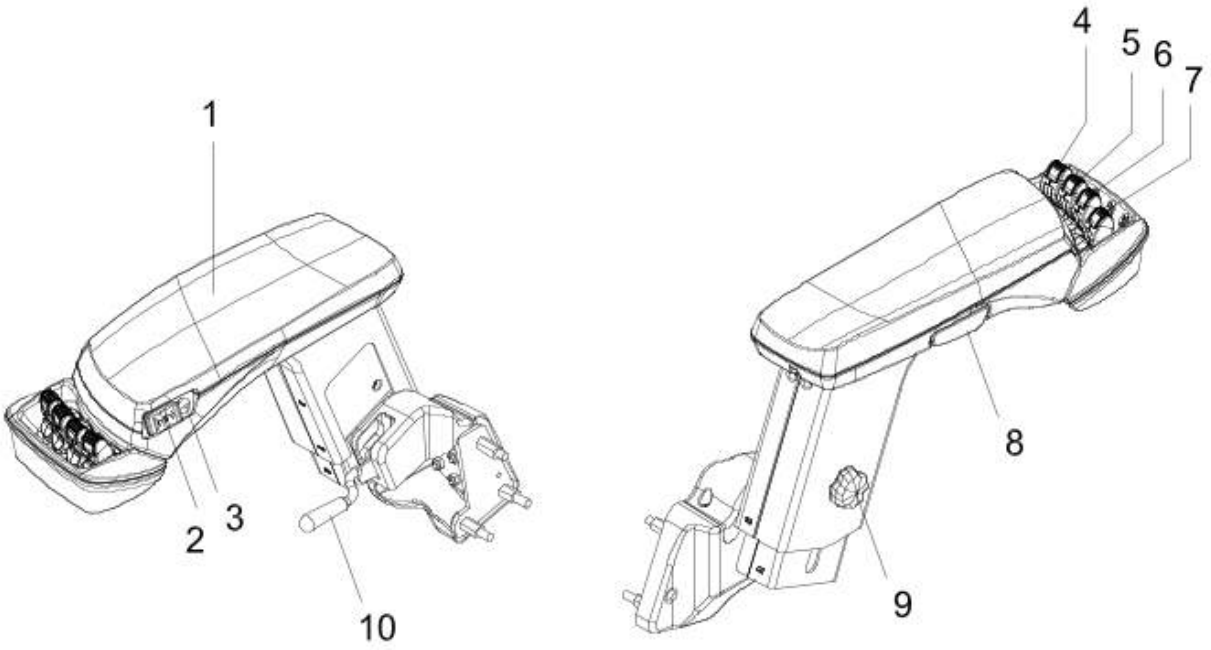
c）When the shift switch is pulled to the neutral position, the neutral indicator light continues to flash.

d）When the driver leaves his/her seat or his/her seat belt is loose (if the seat belt protection switch is provided) for more than 3s, the buzzer does not sound an alarm, and the OPS indicator light does not turn on.

e）When the driver sits on the driver's seat properly again, the buzzer continues to sound an alarm and the OPS indicator light does not turn off.

2.Fingertip Control On Seat Armrest

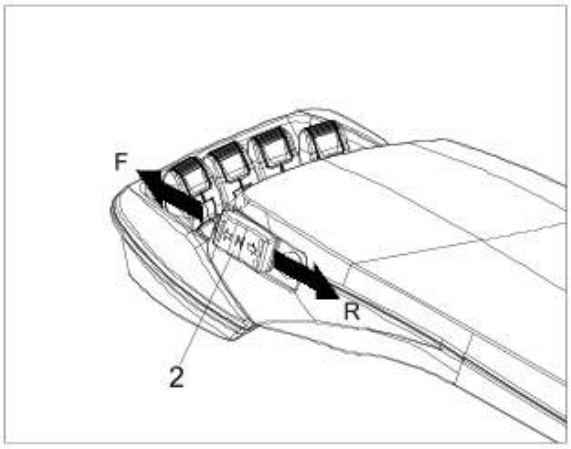
2.1 Operation and Control Components



Item	Description	Function
1	Armrest	Platform for control components and the driver`s arm.
2	Trave direction switch	Selects travel direction / neutral position.
3	Horn button	Activates an audible warning.
4	Lever for lifting and lowering	Control the load lifting and lowering.
5	Lever for tilting the mast forward / backward	Control the mast tilt forward and backward.
6	Lever for position of the sideshift	Control the sideshift move to left / right.
7	Lever for attachments (Option)	Control the attachments working.
8	Locating plate	Adjust the armrest horizontally position. (working stroke 110mm)
9	Adjusting knob	Adjust the armrest vertically position. (working stroke 100mm)
10	Adjusting handle	Adjust the armrest tilt (0°- 85°)

2.1.1 Control components

Trave direction switch [2]



The forklift trucks are electronic reversing, push this switch to realize the following functions：

⇦	Forward
N	Neutral
⇨	Reverse

NOTE:Only change direction when the Internal combustion forklift truck has stopped.

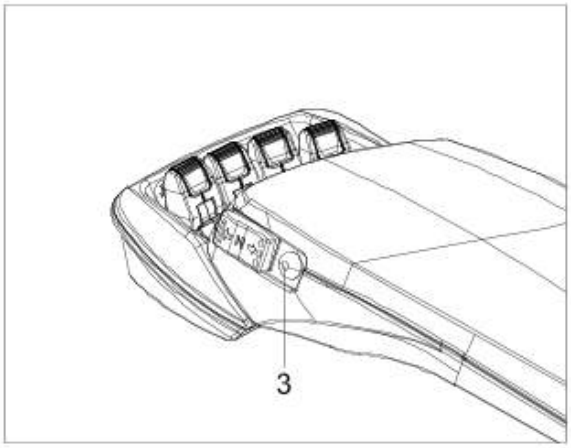
F:To select the forward gear, push the switch forward.

R: To select the reverse gear, pull the switch back.

The forklift truck travels in the direction selected.

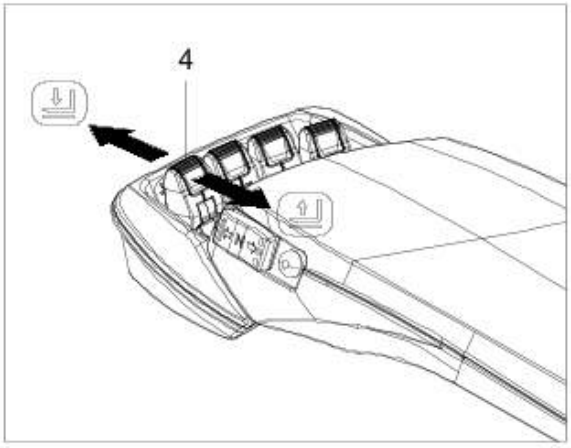
> ⚠ Caution
>
> Only place the lever in neutral can you start the engine

Horn button[3]



Press this button to send alert or warning signal.

Lever for lifting and lowering [4]



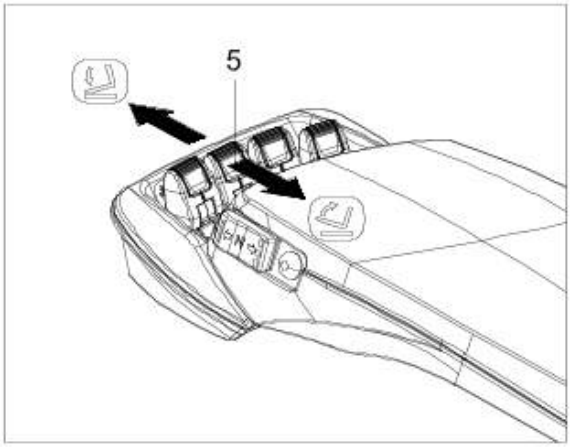
Control the load lifting and lowering.

Pull the lever (4) in direction F to lower the load.

Pull the lever (4) in direction R to raise the load.

Release the lever, the lever will revert automatically to neutral.

Lever for tilting the mast forward/backward [5]



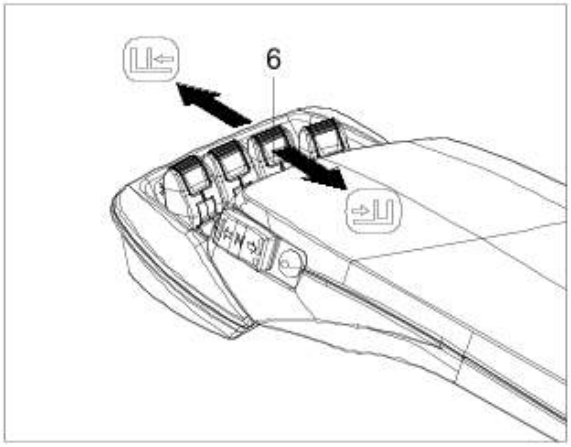
Control the mast tilt forward and backward.

Pull the lever (5) in direction F to tilt the mast forward.

Pull the lever (5) in direction R to tilt the mast backward.

Release the lever, the lever will revert automatically to neutral.

Lever for positio of the sideshift [6]



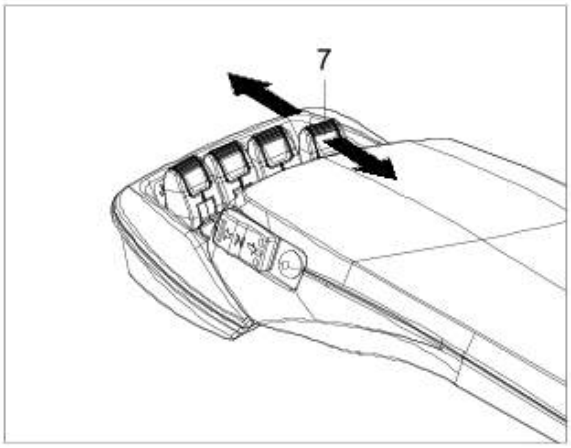
Control the sideshift move to left / right.

Pull the lever (6) in direction F to move the load handler to the left (from the driver`s viewpoint).

Pull the lever (6) in direction R to move the load handler to the ringht (from the driver`s viewpoint).

Release the lever, the lever will revert automatically to neutral.

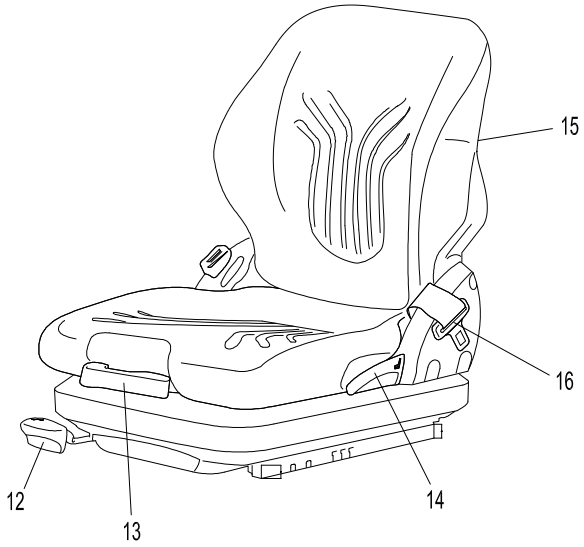
Lever for attachments [7] (Option)



Use for Optional install attachments.

2.1.2 Driver`s Seat

In order to ensure the safety of the forklift truck operation, before operat the forklift truck, the driver must be adjust driver`s seat according to oneself circumstance, and fasten the seat belt. If not properly adjust the driver's seat may lead to accidents or a health hazard.



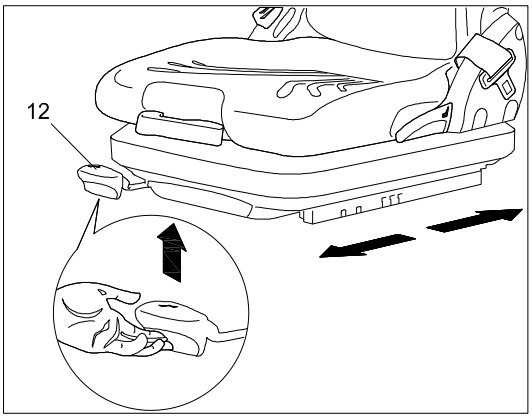
12. Driver`s seat locking lever
13. Weight adjustment lever
14. Backrest adjustment lever
15. Lumbar support adjustment hand wheel
16. Seat belt

Adjusting the driver`s seat

Adjusting the seat position

Procedure:

- Sit on the driver`s seat.
- Pull up the driver`s seat locking lever (12) in the direction of the arrow.
- Push the driver`s seat forwards or backwards to the desired position.
- Engage the driver`s seat locking lever (12) in position.



The seat position is now correctly set.

After the adjustment, the locking lever must latch into the desired position with an audible click. It should not be possible to move the driver's seat into another position when it is locked.

Warning

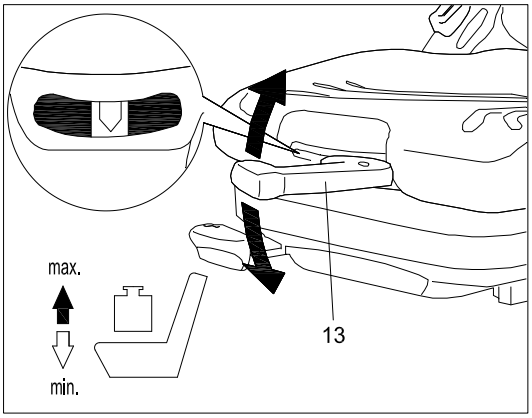
- Risk of crushing ! Only touch the lever at the indented grip, do not reach back under the lever.
- Risk of accident ! Do not operate the locking lever while driving.

Adjusting the driver`s weight

To achieve optimal seat cushioning the driver`s seat must be set to the driver`s weight.

Procedure:

- Set the driver`s weight when the seat is occupied.
- Fold out the weight adjustment lever (13) as far as it will go in the arrow direction.
- Move the weight adjustment lever (13) up and down to set the seat to a higher weight.
- The driver`s weight is correct when the arrow is in the middle of the display window. The minimum or maximum weight setting is reached when you can feel a return stroke on the lever.
- After setting the weight, move the lever (13) back in full.



Warning

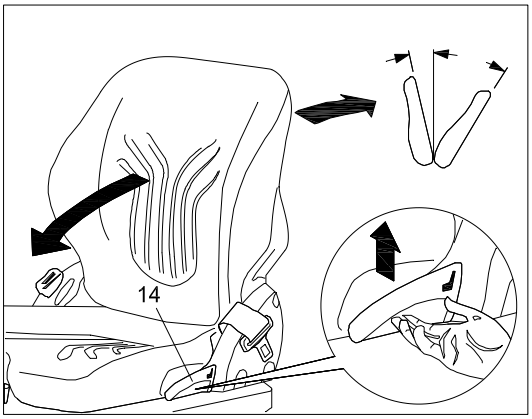
- The driver's seat position locking pin must be securely engaged in the set position.
- The driver's seat must not be adjusted during travel.

Adjusting the backrest

Procedure:

- Sit on the driver`s seat.
- Pull the lever (14) to adjust the backrest.
- Adjust the backrest tilt.
- Release the lever (14) again. The backrest is locked.

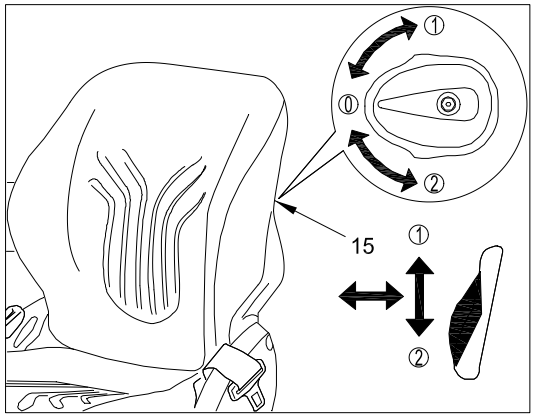
  The backrest in now set.



Adjusting the lumbar vertebrae support

Procedure:

- Trun the hand wheel (15) to the required position.
- Position 0 = no warping in lumbar vertebrae area.
- Position 1 = increasing warping in upper lumbar vertebrae area.
- Position 2 = increasing warping in lower lumbar vertebrae area.

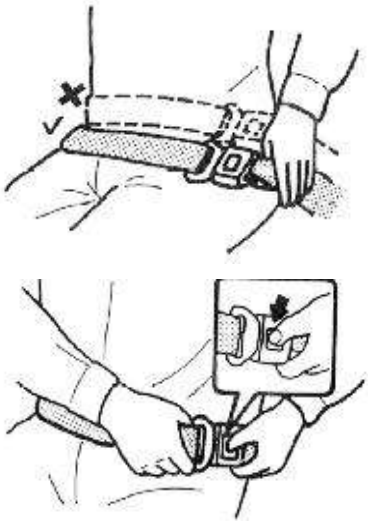


Seat Belt

Put on the seat belt(16)each time before starting the truck. The belt protects against serious injury. Protect the belt from contamination and clean it regularly.

Correct use the safe belt:

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



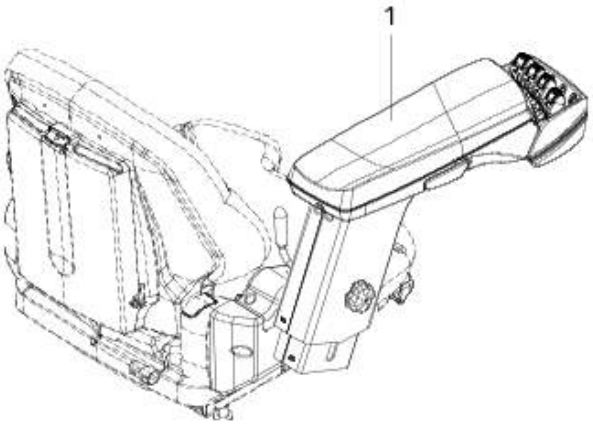
Regular verification of seat belt related to:

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

Warning

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

2.1.3 Adjusting the Armrest

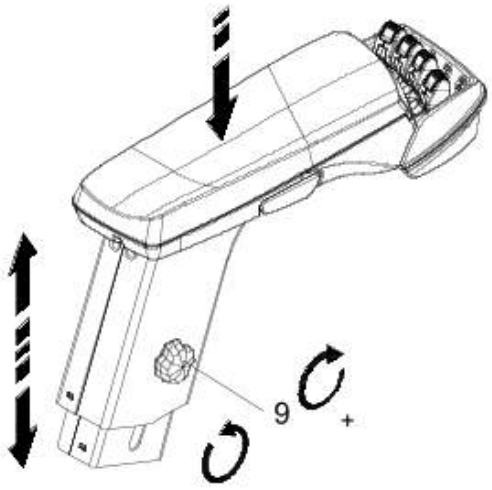


The armrest (1) is fixed on the right of the driver's seat. When adjusting the driver's seat position, the armrest (1) together with the seat moved. So before adjust the armrest position, you should adjust the position of the deiver`s seat.

Adjusting the armrest forward / backward position

Procedure:

- Flip up rotate the armrest Locating plate (8), unlocked the armrest.
- Move the armrest (1) horizontally to the appropriate position. (working stroke 110mm/4.33in)
- loosen the armrest Locating plate(8), locked the armrest.



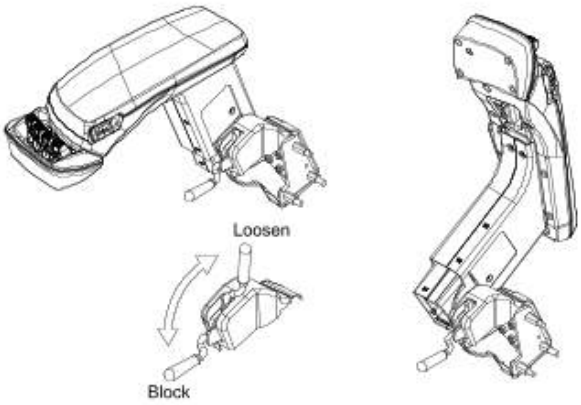
Adjusting the armrest up / down position

Procedure:

- Counterclockwise（-） rotate the armrest Adjusting knob (9), unlocked the armrest.
- Move the armrest (1) vertically to the appropriate position. (working stroke 100mm/3.937in)
- Clockwise （ + ） rotate the armrest Adjusting knob (9), locking the armrest.

Adjusting the armrest tilt

- Clockwise rotate the armrest adjusting handle (10), unlocked the armrest.
- Adjust the armrest tilt (0° - 85°).
- Counterclockwise rotate the armrest adjusting handle(10), locking the armrest.



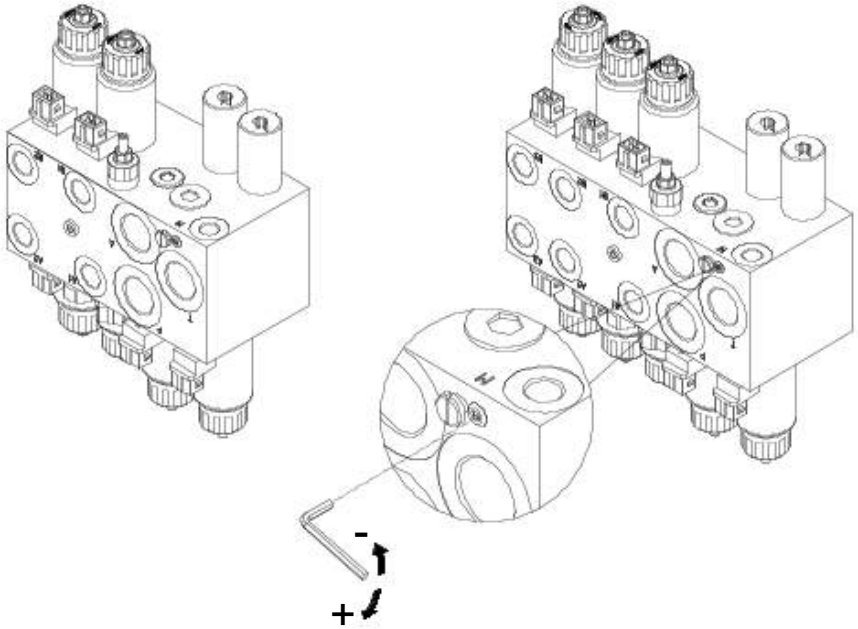
2.2 Electromagnetic proportional control vale

Mast emergency lowering

The mast can be lowered manually if a fault occurs in the hydraulic system.

Procedure:

- Turn the key switch and emergency disconnect switch off.
- Disconnect the battery.
- Remove the front/ back floor plates by undoing the floor plates mounting screws ;.
- Slowly rotate the counterclockwise (-) with a hexagon socket screw keys; the mast and load handler will lower.
- Slowly rotate the clockwise(+) with a hexagon socket screw keys as far as the stip; the lowering process stops.



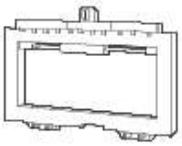
Maximum Torque= 2.5N·m/T=1.843ft·lb, Maximum opening 1.5 turns

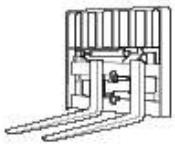
Warning

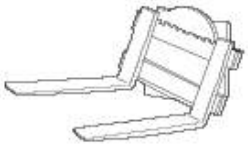
- Only operate the emergency lowering valve when standing next to the truck.
- Emergency lowering of the mast cannot be applied when the load handler is in the rack.
- Only return the truck to service when you have identified and rectified the fault.

XIV、Use, installation and safety rules for attachments

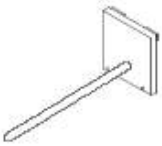
Hangcha selects attachments, such as the flat clamp, rotating clamp, roll clamp, string rod, sideshifter and others in accordance with ISO2328 Fork Lift Trucks-Hook-on Type Fork Arms and Fork Carriers- Mounting Dimensions.

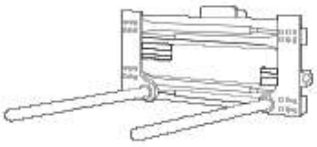

Sideshifter

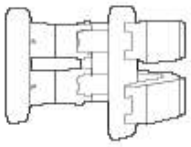

Fork Positioner

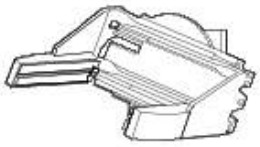

Rotator


Push-puller

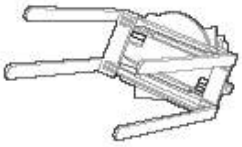

String rod


Round rod clamp


Roll clamp


Brick clamp


Load bearing stabilizer


Rotating fork

1、Use of attachments

(1) Become familiar with the relevant content on the nameplate of the forklift truck, read the relevant operation manual carefully before use (especially the user manual and installation manual of the professional attachment company), and ensure you are trained and qualified to operate the forklift truck attachments.

(2) Fully understand the basic performance and operation methods of forklift attachments, especially the allowable load, lift height, cargo size and the fitting range of attachments;

(3) When operating forklift truck attachments with multiple functions, such as side shift, clamping or rotation, do not perform multiple operations at the same time. One action can be carried out only after the other one is completed.

(4) Forklift trucks provided with attachments must not be driven when the cargo is at a high level; when the cargo volume is too large do not drive the forklift truck forwards; when transporting cargo, ensure that cargo is 300mm above the ground, and the mast is tilted backward;

(5) The weight of the cargo should not exceed the limit of the combined bearing capacity of the forklift truck and attachments. Try not to load eccentrically at high cargo positions. Attachments with side shift function can only be operated for a short time. Eccentric load is strictly limited to 100mm on the left and right (the side shift amount for side shifters above 5 tons (including 5 tons)) is within the range of ±150mm);

(6) Except for the driver's position which is protected by the overhead guard, it is strictly prohibited to stand within 2 meters of the projection area under attachments and cargo to avoid injury.

(7) It is strictly prohibited to engage the emergency brake when the forklift truck with attachments is running and it is required to drive slowly with a load.

(8) Do not allow external forces to act on the truck when the attachment is working; it is forbidden to use the attachment for unsuitable purposes, and the normal working range of the attachment must not be exceeded;

(9) Do not use attachments for unsuitable purposes, do not exceed the normal scope of work of attachments;

(10) When attachments are faulty, they should not be used until the fault has been eliminated.

The following inspection and maintenance should be carried out frequently

(1) Check whether the spacing between the lower beams of the forks of the forklift truck and the lower hooks of attachments conform to the requirements of the attachment manual.

(2) Check whether the upper hook is properly embedded in the groove of the fork arm carrier of the forklift truck.

(3) The upper and lower sliding support surfaces should be lubricated with general lithium based grease for automotive use every 500 hours.

(4) Check fasteners for tightness.

(5) Regularly check whether hydraulic circuit connections are loose and whether the hose is damaged. If it is damaged, it must not be used before repair.

(6) Regularly check whether the transmission or rotating elements of attachments are worn or stuck, and replace them promptly if any damage or defect is found.

(7) In the case of dynamic loads, check whether the working elements of the attachments are normal, whether the working pressure of the attachments is normal, and whether the attachments work normally. If not, it is necessary to check the hydraulic circuit, find any leaking elements, and replace the seals or the whole circuit.

2、Installation of attachment

Warning

- 1Without the technical permission of the company, it is strictly prohibited to modify the safety and performance of the forklift truck attachments.
- 2The actual rated bearing capacity shall be the rated bearing capacity of the forklift truck, the bearing capacity of attachments, or the overall bearing capacity of the complete truck, whichever is the smallest. Generally speaking, the comprehensive bearing capacity of the complete truck is the lowest of the three. "Bearing capacity of attachments" is a calculated value for the force applied on attachments.
- The installation and positioning should be reasonable, reliable and safe, to avoid attachments sliding from side to side along the fork arm carrier of the forklift truck during use.
- After attachments are mounted, if there is a upper hook block, it should be embedded in the notch of the upper beam, so that the offset between the center line of attachments and that of the fork arm carrier is less than 50mm; otherwise, it will affect the lateral stability of the forklift truck.
- For attachments with a rotation function, (roll clamp, soft clamp, multi-purpose rigid arm clamp, bucket clamp) after hanging and installation, stop blocks should be welded on both sides of the joint between the upper beam of the fork arm carrier and the attachments to prevent sliding when operating them;
- When attachments with lower hook positioning are installed, the joint spacing between the lower hook and the lower beam of the fork arm carrier should be adjusted appropriately.

XV、Relevant safety command and standard

The model with CE certification which accords to the following directive and standard: Machinery Directive 2006/42/EC (The European Council of the Laws of the Member States concerning Machinery), Noise Directive 2000/14/EC (Directive of the Laws of the Member States concerning Outdoor Equipment Noise Radiation), EN ISO 12100:2010 (Safety of machinery — General principles for design — Risk assessment and risk reduction), EN ISO 3691-1:2015+A1:2020,EN16307-1:2020, EN1175:2020, EN 12053:2001+A1:2008, EN13059:2002+A1:2008, etc. coordinative standards.

- Main safety factors accord with Machinery Directive 2006/42/EC, EN ISO 12100:2010, EN ISO 3691-1:2015+A1:2020, EN1175:2020, EN 16307-1:2020.
- Noise is measured according to EN 12053:2001+A1:2008, EN ISO 3744:1995, and meets with 2000/14/EC, 2005/88/EC.
- Vibration parameter is measured according to EN13059:2002+A1:2008.

Model	Vibration coefficient m/s^2	At the operator' position: measure with sound pressure level dB(A)	Acoustic power level of radiation noise dB(A)
CPCD35-X2H7F1	0.9	80	102
CPCD35-X2H7B1	0.9	80	102
CPCD15-X2H7F1 CPCD15-X2H7B1	1.29	85	98
CPCD18-X2H7F1 CPCD18-X2H7B1	1.31	85	99
CPCJ20-X2H7	0.9	80	100
CPCJ25-X2H7	0.9	80	100
CPCJ30-X2H7	0.9	81	101
CPCJ35-X2H7	0.9	81	101
CPCD20-X2W97B1 CPCD20-X2W97B CPCD25-X2W97B1 CPCD25-X2W97B	0.8	81	103
CPCD30-X2W97B1 CPCD30-X2W97B CPCD35-X2W97B1 CPCD35-X2W97B	0.9	82	103
CPQYD15-X2H24F11 CPQYD15-X2H24B1 CPYD15-X2H23F11 CPYD15-X2H23B1	0.9	82	100
CPQYD18-X2H24F11 CPQYD18-X2H24B1 CPYD18-X2H23F11	0.9	82	100

Model	Vibration coefficient m/s^2	At the operator' position: measure with sound pressure level dB(A)	Acoustic power level of radiation noise dB(A)
CPYD18-X2H23B1			
CPQYD20-X2W22F1 CPQYD20-X2W22B1 CPYD20-X2H21F11 CPYD20-X2H21B1	1.0	83	101
CPQYD25-X2W22F1 CPQYD25-X2W22B1 CPYD25-X2H21F11 CPYD25-X2H21B1	1.0	83	101
CPQYD30-X2W22F1 CPQYD30-X2W22B1 CPYD30-X2H21F11 CPYD30-X2H21B1	1.0	83	101
CPQYD35-X2W22F1 CPQYD35-X2W22B1 CPYD35-X2H21F11 CPYD35-X2H21B1	1.0	83	101

- Electromagnetism compatibility is measured according to EN 12895:2015, and meet with 2014/30/EU Directive.
- Static test coefficient for lifting attachment is 1.33.

Declaration example：

DECLARATION OF CONFORMITY
EG-KONFORMITÄTSERKLÄRUNG

Business name of the manufacturer: Hangcha Group Co., Ltd.
Firmenbezeichnung des Herstellers:

Full address of the manufacturer: ***666 Xiangfu Road, Lin'an District, Hangzhou City, Zhejiang Province 311305, P.R. China***
Vollständige Adresse des Herstellers:

Name and address of the person (established in the Community) compiled the technical file:
Name und Adresse der Person (innerhalb der Gemeinschaft), die das technische Datenblatt erstellt hat
Hangcha Europe GmbH
Mariechen-Graulich-Straße 12a,65439 Flörsheim am main Germany
Tel: 0049-61453769188 , Andy Yang(General Manager)

We declare that the machinery
Wir erklären hiermit, dass die Maschine

product name: ***Internal combustion counterbalanced forklift truck***
Produktbezeichnung:

commercial name:
Handelsbezeichnung:

function:
Funktion:

model: ***CPCD20-X2H7F1, CPCD25-X2H7F1, CPCD30-X2H7F1, CPCD35-X2H7F1, CPCD20-X2H7B1, CPCD25-X2H7B1, CPCD30-X2H7B1, CPCD35-X2H7B1***
Modell:

type:
Typ:

serial number: ***above mentioned products***
Seriennummer:

fulfills all the relevant provisions of Directives
entspricht allen relevanten Anforderungen folgender Richtlinien

2006/42/EC

tested in accordance with below standards
wurde gemäß folgender Normen geprüft

EN ISO 3691-1:2015
EN ISO 3691-1:2015/AC:2016
EN ISO 3691-1:2015/A1:2020
EN 16307-1:2020
EN 1175:2020

place and date of the declaration: Hangzhou 16.12.2022
Ausstellungsort und Datum der Erklärung

signature of the person:
Unterschrift des Ausstellers

DECLARATION OF CONFORMITY
EG-KONFORMITÄTSERKLÄRUNG

Business name of the manufacturer: Hangcha Group Co., Ltd.
Firmenbezeichnung des Herstellers:

Full address of the manufacturer: *666 Xiangfu Road, Lin'an District, Hangzhou City, Zhejiang Province 311305, P.R. China*
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product name: *Internal combustion counterbalanced forklift truck*
Produktbezeichnung:

commercial name:
Handelsbezeichnung:

function:
Funktion:

model: *CPCD20-X2H7F1, CPCD25-X2H7F1, CPCD30-X2H7F1, CPCD35-X2H7F1, CPCD20-X2H7B1, CPCD25-X2H7B1, CPCD30-X2H7B1, CPCD35-X2H7B1*
Modell:

type:
Typ:

serial number: *above mentioned products*
Seriennummer:

fulfills all the relevant provisions of Directives
entspricht allen relevanten Anforderungen folgender Richtlinien

2006/42/EC

tested in accordance with below standards
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EN ISO 3691-1:2015
EN ISO 3691-1:2015/AC:2016
EN ISO 3691-1:2015/A1:2020
EN 16307-1:2020
EN 1175:2020

place and date of the declaration: Hangzhou 16.12.2022
Ausstellungsort und Datum der Erklärung

signature of the person:
Unterschrift des Ausstellers

杭叉集团股份有限公司
HANGCHA GROUP CO.,LTD.
地址：浙江省杭州市临安区相府路 666 号 邮编：311305 Website: www.hcforklift.com
Add：666 Xiangfu Road, Lin'an District, Hangzhou, Zhejiang 311305, P.R. China
E-Mail: sales@hcforklift.com Tel: +86-571-88926666 Fax: +86-571-88144682

EC DECLARATION OF CONFORMITY

CE Original Declaration

MANUFACTURER:

Name HANGCHA GROUP CO., LTD.

Address 666 Xiangfu Road, Lin'an District, Hangzhou City, Zhejiang Province 311305, P.R. China

AUTHORIZED REPRESENTATIVE (TECHNICAL DOCUMENT WAS COMPILED BY):

Name Andy Yang

Address Die das technische Datenblatt erstellt hat Mariechen-Graulich-Straße 12a, 65439 Flörsheim am main Germany Tel: 0049-61453769188

HEREBY DECLARES THAT THE PRODUCT DESCRIBED BELLOW:

Name	Internal Combustion Counterbalanced Forklift Truck
Model	CPQYD30-X2H22F1
Serial No.	S1BA00057

COMPLIES WITH THE PROVISIONS OF THE FOLLOWING EUROPEAN DIRECTIVES AND STANDARDS

2006/42/EC	Machinery Directive	2014/30/EU	EMC Directive
2000/14/EC, 2005/88/EC	Noise Directive		
EN ISO 12100:2010		EN ISO 3691-1:2015+A1:2020	
EN 1175:2020		EN 16307-1:2020	
EN 12053:2001+A1:2008		EN 13059:2002+A1:2008	
EN 12895:2015+A1:2019		EN ISO 3744:1995	

Category to Noise Directive 2000/14/EC:	Artice12	Measured Sound Power Level:	101 dB(A)
Definition:	Annex I, item 36	Guaranteed Sound Power Level:	102 dB(A)
Conformity Assessment procedure		Annex VII –unit verification	

Place: Hangzhou, Zhejiang, P.R. China Date: ??/??/2022

Signature and stamp (签字并盖章):

Name:

Position: Legal Representative

According to Annex II 1.A of the Directive 2006/42/EC

XVI、Maintenance record

Date	Item of maintenance	Signature	Remark

Date	Item of maintenance	Signature	Remark

Date	Item of maintenance	Signature	Remark

Revision	Version no.	Date	Note
00	OM21-XF201	05/2021	Original
01	OM22-XF202	05/2022	
02	OM22-XF203	08/2022	
03	OM24-XF201	01/2024	
04	OM24-XF202	07/2024	
05	OM24-XF203	09/2024	
06	OM24-XF204	12/2024	

HANGCHA GROUP CO. , LTD.

■Address For: OVERSEAS USERS

■Address: 666 Xiangfu Road, Lin'an District, Hangzhou, Zhejiang 311305, P.R. China

■Fax: 0086-571-889267890086-571-88132890■ ZIP:311305

■Web: http://www.hcforklift.com■E-mail: sales@hcforklift.com