Thank for purchasing our product.

This is safety operation manual for operators, maintenance personnel and management of our forklift. Please read this manual and understand it to fully exert each performance, improving production efficient using the forklift. If there is any problem, contact the dealer.

This manual is revised based on the standard vehicle and for other vehicle types, only differences are described. In addition, the description may differ from your purchased forklift due to improvement and modification of use method for the vehicle.

⚠Caution:

In case of vehicle transfer, please hand this manual over to the new user with the forklift.

Duties of our dealer

When delivering the new vehicle to the customer, the dealer shall describe the maintenance procedures voluntarily and shall explain the importance of periodic vehicle maintenance. After periodic maintenance, the dealer shall enter the record of periodic maintenance as required.

Responsibilities of the owner

1. Please take corresponding purchase materials to the our dealer for free and mandatory maintenance after you've operated the vehicle for about 50 hours.
2. Please store corresponding service and maintenance record properly which shall be shown under some circumstances to verify the necessary maintenance is completed.
3. It is not allowed to modify your vehicle at discretion because modifications under this condition may affect the mechanical performance, safety or life and even violate local government regulations.

Free and mandatory maintenance

To maintain your vehicle under a good operation condition and to prolong its life, please maintain it in our dealer as necessary. Initial maintenance must be conducted after about 50 hours in the dealer with corresponding purchase materials taken.

Caution: The maintenance right is deemed abandoned automatically for vehicles that fail to experience the mandatory maintenance as required.

Contents

Load weight	Vehicle type	Installed engine		Load weight	Vehicle type	Installed engine		Load weight	Vehicle type	Installed engine
1-1.8t H series	CPC10/15/18 CPCD10/15/18 CPC10/15/18 CPCD10/15/18 CPC10/15/18 CPCD10/15/18 CPC10/15/18 CPCD10/15/18 CPC10/15/18 CPCD10/15/18	Xinchang 485 Xinchang 485 C240PKJ-30 C240PKJ-30 Guangqing 4Y Guangqing 4Y NISSAN K21 NISSAN K21 Xinchang 4N23G31 Xinchang 4N23G31 Quanchai 4B4-45V32 Quanchai 4B4-45V32		3-3.5t H-II	CPC30/33 CPCD30/33 CPC35 CPCD35 CPQ30/35 CPQ(Y)D30/35 CPC30/33/35 CPCD30/33/35 CPC30/35 CPCD30/35 CPC30/33/35 CPCD30/33/35 CPC35 CPCD35 CPC30/35 CPCD30/35 CPC30/35 CPCD30/35 CPC(D)35	Xinchang A495 Xinchang A495 Xinchang C490 Xinchang C490 Guangqing 4Y & LPG Guangqing 4Y & LPG Dachai 498 Dachai 498 Quanchai 490 Quanchai490 4DC1 4DC1 Xinchang A495（special for porcelain） Xinchang 4D27G31 Xinchang 4D27G31 Quanchai 4C2-50V32 Quanchai 4C2-50V32 Xinchang 4D30G31		2-3.5t J series	CPCD20/25 CPCD20/25 CPQ(Y)D20/25 CPCD30/35 CPCD30/35 CPQ(Y)D30/35 CPCD30/35 CPCD30 CPCD30 CPCD20/35 CPCD20/35 CPCD30/35 CPCD30/35 CPCD30 CPCD30/35	C240PKJ-30 4DC1 NISSAN K25 & LPG C240PKJ-30 4DC1 NISSAN K25 & LPG 4JG2 4Tne98 4TNV94L Xinchang C490BPG-30 Xinchang 4D27G31 Xinchang 4D30G31 Xinchang C498BT1-71A S4S QSF2.8

2-2.5t H series	CPC20/25 CPCD20/25 CPC20/25 CPCD20/25 CPQ(Y)20/25 CPQ(Y)D20/25 CPC20/25 CPCD20/25 CPC20/25 CPCD20/25	Xinchang C490 Xinchang C490 Quanchai 490 Quanchai 490 Guangqing 4Y & LPG Guangqing 4Y & LPG Xinchang 4D27G31 Xinchang 4D27G31 Quanchai 4C2-50V32 Quanchai 4C2-50V32		3.8-4t H-II	CPC38/40 CPCD38/40 CPC38 CPCD38 CPC40 CPCD40 CPC38/40 CPCD38/40	Dachai 498 Dachai 498 Xinchang A495 Xinchang A495 Xinchang A498 Xinchang A498 Quanchai 4C4-50V31 Quanchai 4C4-50V31		3-3.5t T series	CPC30 CPC35 CPC30/35 CPCD30/35 CPC30/35 CPCD30/35 CPC30/35 CPCD30/35 CPC30/35 CPCD30/35 CPC(D)35	Xinchang A490 Xinchang A495 4DC1 4DC1 Dachai 498 Dachai 498 Xinchang4D27G31 Xinchang4D27G31 Quanchai 4C2-50V32 Quanchai 4C2-50V32 Xinchang4D30G31

1. Safety issues

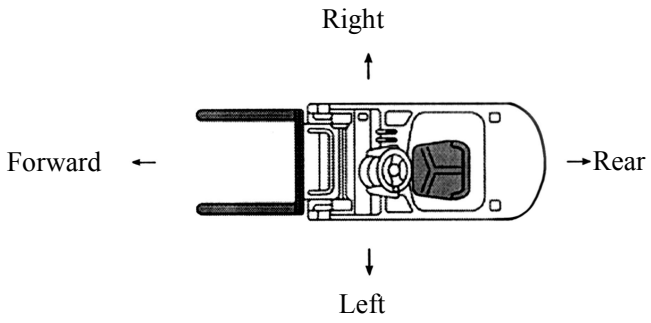
Contents

Following terms for considerations are provided in this manual.

To ensure safety considerations for vehicle's owner and operator, please observe the rules strictly.

Unless you are quite familiar with the vehicle, do not operate, spot-check and service it. Meanings of terms and symbols used in this manual and on the nameplate are as follows:

Symbol for danger degree	Meaning
Danger	It indicates the accidents that cause deaths and injuries quite easily and must be observed.
Warning	It indicates the accidents that may cause deaths and injuries and must be observed.
Caution	It indicates the accidents that may cause deaths and injuries and damage vehicle and surrounding items and must be observed.
Note	It is the symbol irrelative with accidents and failure yet which needs familiarization to prolong vehicle's life.



Front, *rear*, *right* and *left* used in this manual are shown in the above figure.

Notice for use

Forklift accidents have caused hundreds of deaths every year and much more injuries.

Manufacturer has re-designed and re-manufactured the forklift for several times to improve it, ensuring its safe and highly efficient use. Accidents are generally caused by erroneous use methods and not only brought about by misoperation but also by other causes such as incorrect type selection, inappropriate selection of accessories, use condition or operator, or insufficient degree of education and training.

Our company is incapable of anticipating and monitoring the dangers of operation, spot inspection and service during the onsite use by the customers.

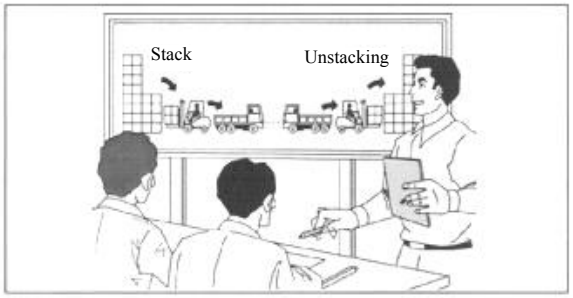
Therefore, warnings, cautions and signs covered in this manual and marked on this product are incapable of providing absolute safety.

Moreover, customers shall consider the necessary safety in case of those operations, spot inspections and modifications that are not covered in this manual.

This chapter mainly introduces the necessary considerations to prevent every accident from happening as a manager.

- Pages 4-14 summarize the precautions that must be observed by managers for running and operation of the forklift and that require drivers' reading as well.
- Necessary considerations are mainly covered for direct drivers from page 15.

Safety on stacking must be presented.



Stacking intends to storage not by stacking the cargo on a platform or storage rack but by overlaying it.

Therefore, the cargo may fall down easily and the safety of driver and surrounding workers may get threatened if the stacking is not correctly performed.

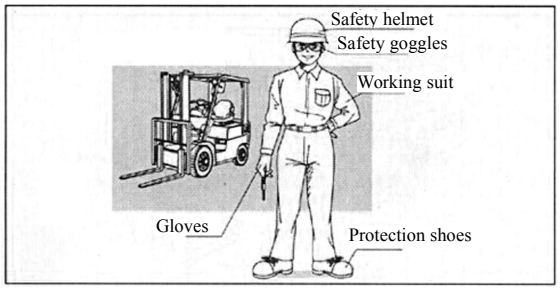
Safety on stacking must be presented to those drivers who frequently perform the stacking and unstacking.

（Contact the special manufacturer dealer for issues on safety presentation on stacking）

■ **Do not allow overfatigue drivers and those who are uncomfortable physically to drive!**

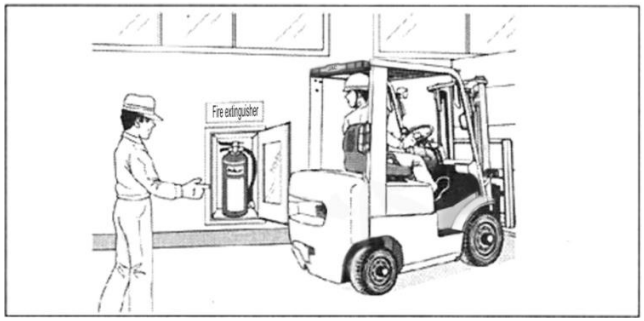
Do not allow designated drivers to drive if they are overfatigue or uncomfortable physically because it is also easy for them to cause accidents due to inattention.

■ Wear safety clothes.



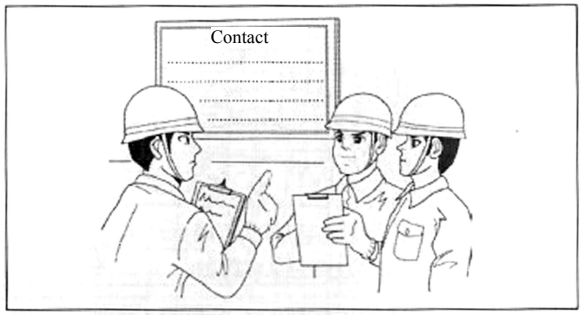
- Wear appropriate working suits when driving the vehicle. Inappropriate working suits may get affixed to the control stick or pedal, causing false vehicle action.
- Wear safety helmet and shoes.
- Wear other necessary protections except for safety helmet and shoes in accordance with the operation field.

■ Prepare and confirm the fire extinguishers and first-aid box.



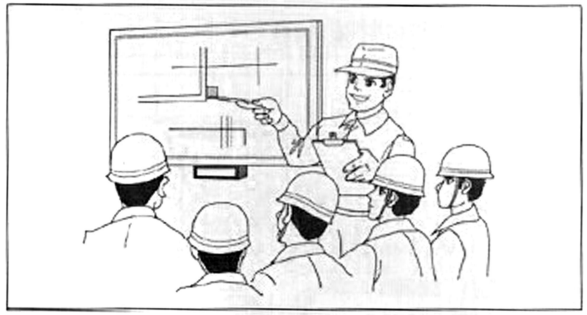
To prevent the fire, accidents or other unpredictable conditions, prepare the fire extinguishers and first-aid boxes and confirm their storage place and use method in the first place.

■ Confirm the emergency contact.



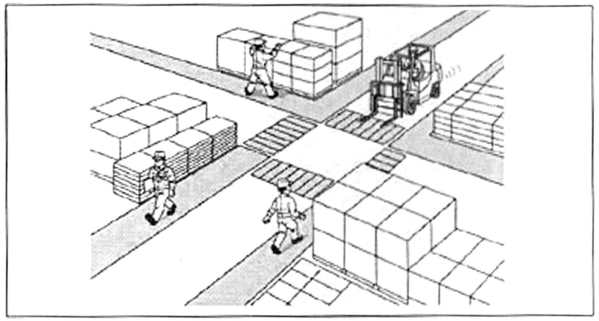
After a fire, accident or other unpredictable situation occurs, you must confirm the emergency contact plan for subsequent proper treatment.

■ Establish operation plan and discuss it sufficiently.



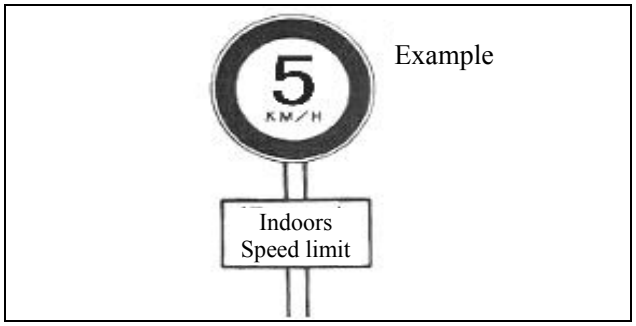
Prior to the operation, confirm the forklift moving route and operation method and discuss the safety issues sufficiently.

■ Specify the forklift running area and clear the road.



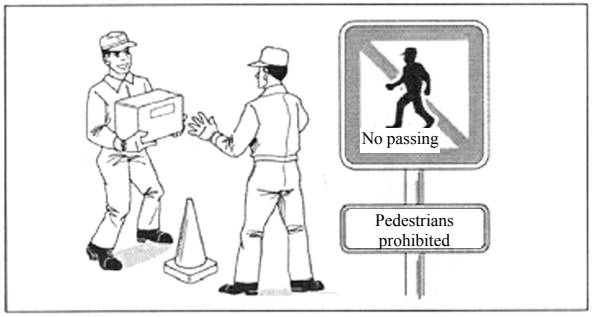
The vehicle running area must be specified and cleared with no obstructions.

■ Designate a speed limit



Designate a speed limit for the operation zone and place a conspicuous sign to indicate it.

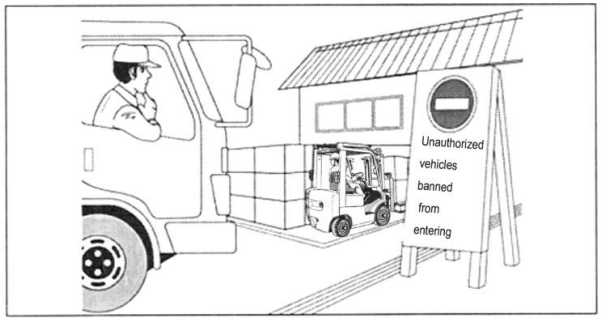
■ Pedestrians are prohibited in the operation zone.



Do not allow other pedestrians to walk into the forklift operation zone at discretion.

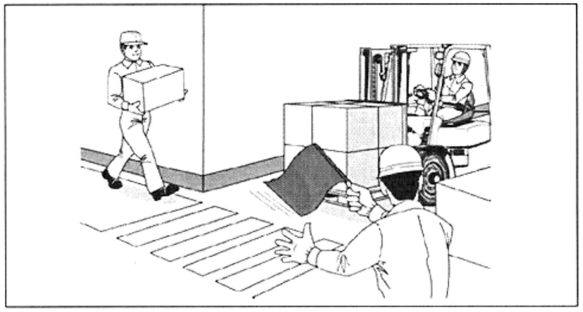
In addition, do not contact the forklift as a vehicle guide.

■ Vehicles without permits are prohibited in the site.



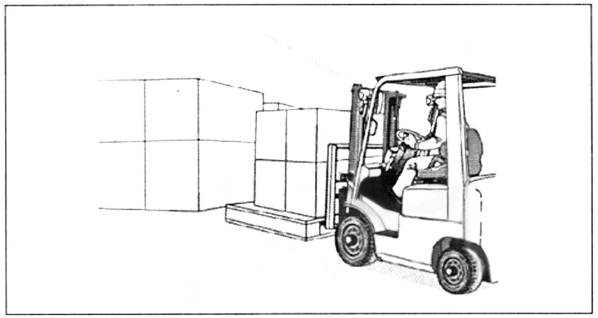
Vehicles without permits are not allowed in the operation site, for which a conspicuous sign shall be made.

■ Assign a director when operating in a narrow zone.



A director must be assigned during operating in a narrow zone or in a place where other operators and vehicles are filled and operation shall be done as per his direction.

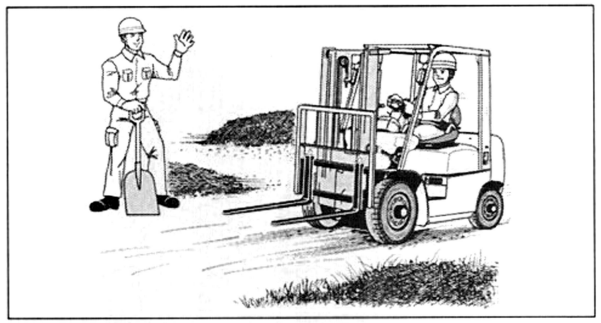
■ Ensure the necessary light for safe driving.



It is difficult to distinguish pedestrians and obstructions in a dark passage, which is hazardous.

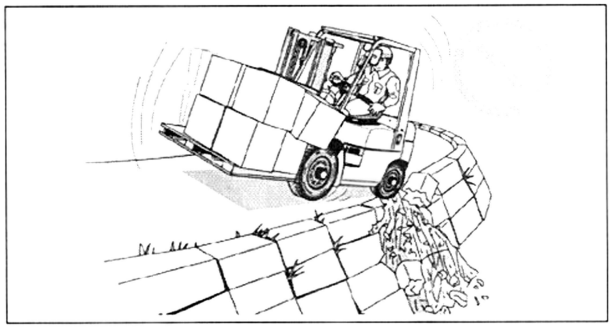
Headlamps and rear lamps must be complete and turned on to light the passage and operation zone with sufficient light.

■ Operation zone shall be as flat as possible and clear the grease.



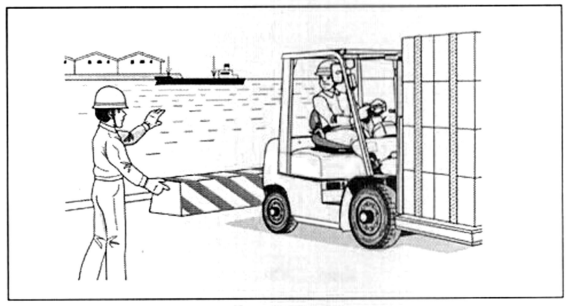
Flat the operation zone as much as possible and clear the greases on the road.

■ Safety treatment in dangerous fields



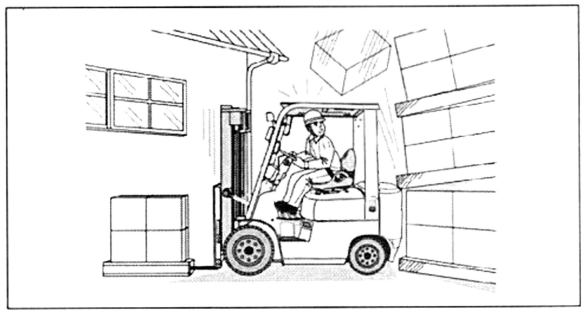
Conspicuous signs must be prepared in dangerous fields to prevent vehicles from getting close to them.

■ Prevent the falling down



Protective device shall be prepared at the end between the loading platform and quay wall to prevent the forklift from falling down.

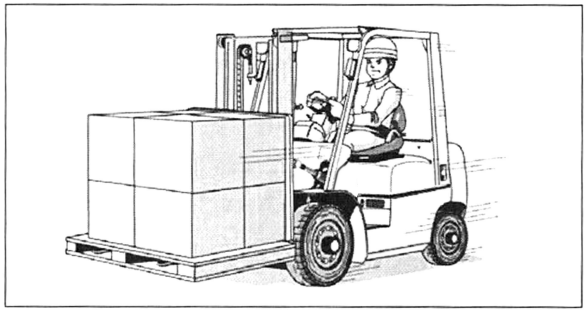
■ Do not trust the overhead guard excessively.



An overhear guard is used to protect the driver's head from being impacted by fallen objects. However, it is not available to resist the impact of all kinds of objects.

Take falling precautions to prevent heavier objects from falling down.

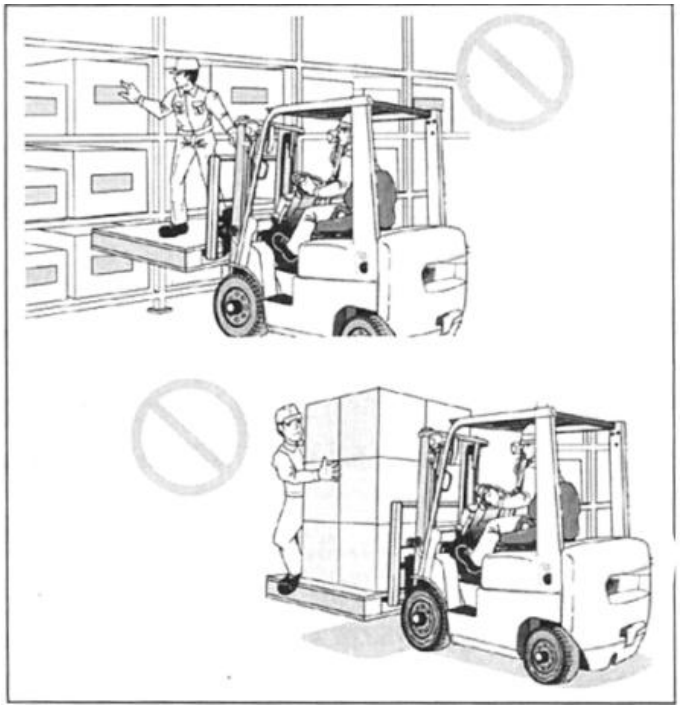
■ Main function of a forklift



A forklift is mainly used to transfer cargo placed in a pallet and to stack it to a certain height.

Moreover, after proper accessories are installed on a forklift, it can also be used to transfer and stack cargo that is not placed in a pallet.

■ Do not use the vehicle beyond specified purpose.



Operation beyond specified purpose is to drive the forklift with a person and lift the person to a higher place or to tow other vehicles. Use methods prohibited in this manual cannot be and are not allowed to be exercised

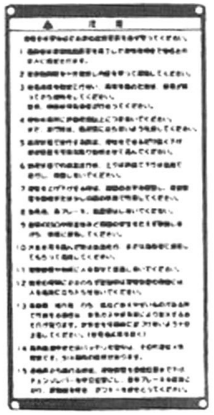
- During lift, no persons are allowed to stand on the pallet or fork.
- To hang the cargo by directly suspending a steel wire on the fork.
- To tow other vehicles.
- To push the cargo or other vehicles using the fork.
- To open or close doors of other trucks using the fork.

■ Please read the operation manual and caution signs.

Prior to driving, read the operation manual carefully and understand it sufficiently. Then drive the forklift. Composition of each one may vary. Please observe the instructions on the vehicle nameplate.

Store the operation manual properly and do not lose it.

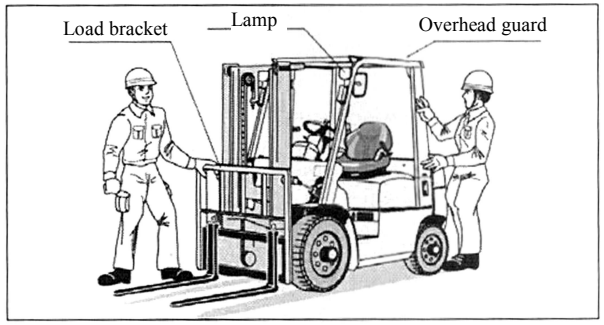
■ Caution signs must be quite legible.



New caution signs must be re-affixed if they are broken or lost.

Check caution signs during periodic spot inspection.

■ Do not use the forklift after its lamps, overhead guard and cargo bracket are removed.



Do not use the forklift when its headlamps, rear lamps, overhead guard, cargo bracket, horn and turn signal lamps are not installed.

■ Manufacturer's modification at discretion is prohibited.

Do not perform any modifications that affect the vehicle performance and safety structure and strength as well as the vehicle itself and accessories. For instance, the operation manufacture is not allowed to increase the weight for forklift's counterweight.

■ Are types and capabilities of the forklift appropriate?

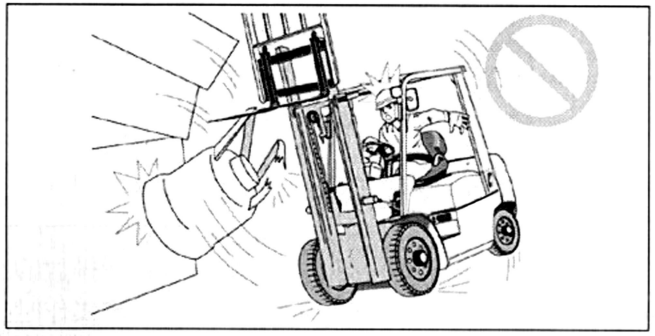
Types and capabilities selected as per cargo types and conditions of operation fields

Key check point	Selection method
Loading capability	Loading capability of the small tonnage internal combustion forklift is ranged from 1t to 4t. Caution the load center (types of our forklift: 1t, 1.5t, 1.8t, 2t, 2.5t, 3t, 3.3t, 3.5t, 3.8t and 4t).
Power source	Fuel costs and components of emitted waster gas are different among gasoline type (LNG type), diesel type and battery type vehicles.
Type of counterweight	A counterweight type forklift is a forklift that has a counterweight installed in the rear and whose dimensions are greater than a reach forklift. The reach forklift loads via forward extension and retraction of the mast, which is compact and convenient.
Difference of tires	Solid tires (i.e. reach forklift) or cushion tires (i.e. internal combustion type and battery type) are used indoors generally which are quite compact. Pneumatic tires are used outdoors generally. Compared with solid tires, if they leak via holes, it is very troublesome.
Loads and environment	If the loads are of grease and inflammable, it is very dangerous to use internal combustion forklifts. At this moment, it is necessary to use the explosion-proof forklift or the battery vehicle with safety structure installed. (Generally, the battery vehicle is superior than the internal combustion vehicle in terms of fire safety)

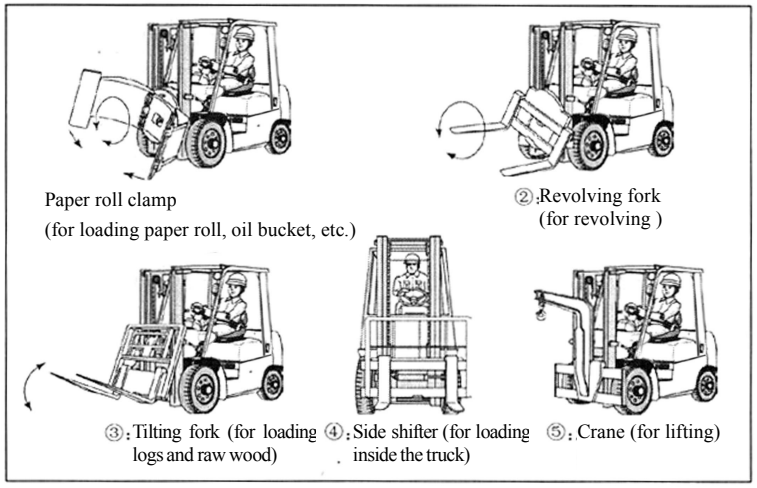
■ Select appropriate accessories

⚠Warning

It is very dangerous to lift the cargo by hanging a steel wire on the fork or by hanging the cargo directly on the fork. Please use a suspension crane and lifting hook.



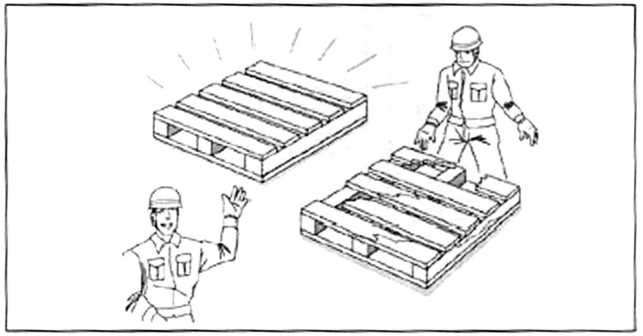
Examples are as follows:



■ Good ventilation shall be provided.

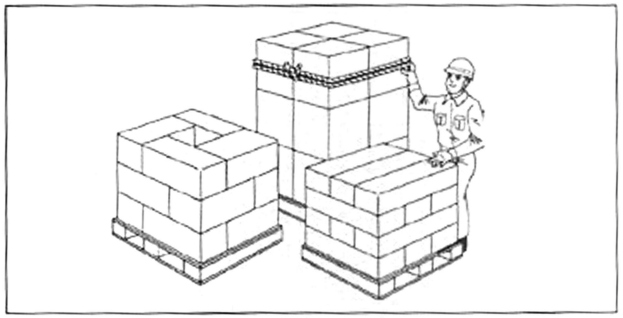
In an enclosed warehouse, waste gas emitted from the engine operation may cause toxic hazard and deaths under the worst condition. Open windows and doors during production and turn on the ventilator for ventilation. In case of operation in the warehouse for long, ventilation capability must be researched in details.

■ Use firm pallets



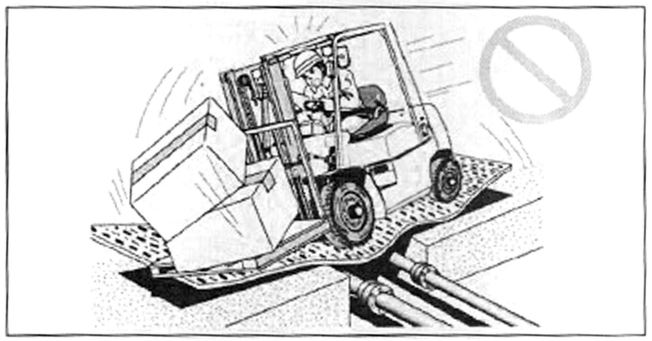
Pallets to be used must bear the cargo weight and repair the broken ones timely.

■ Load the cargo when it is stable.



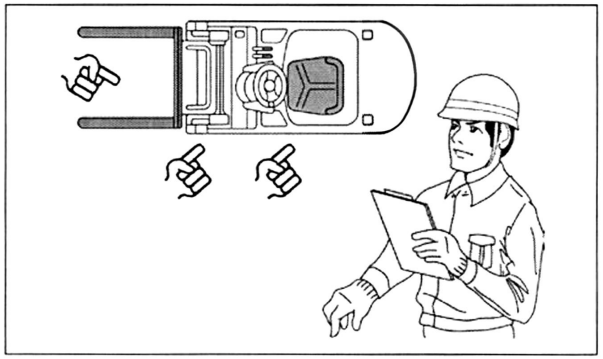
When stacking cargo on the pallet, avoid cargo falling or unbalanced loading and place the cargo stably. It is better to tie the cargo top with ropes.

■ Note the floor load-bearing capability.



A forklift seems to be heavy just from its appearance (a 2-tonnage vehicle can weigh about 3.5t under no load).Especially when it is loaded, 80%~90% of its total weight concentrates on its front wheels. Inquire the strength in the warehouse and passages and enhance it if necessary.

■ Develop a spot inspection habit before operation.



The spot inspection before operation generally means that the vehicle operator needs to spot-check all parts that cannot be ignored before operation. In case of any abnormalities, report to the manager immediately and the manager will direct orders on the treatment.

■ Conduct periodic spot inspection and record in details.

Conduct the monthly and annual spot inspection. In case of any abnormalities, repair them immediately. This spot inspection requires highly technique and equipment. Please allow the assigned repair shop. Record of the spot inspection will be stored for 3 years.

■ Replace critical safety components and parts periodically.

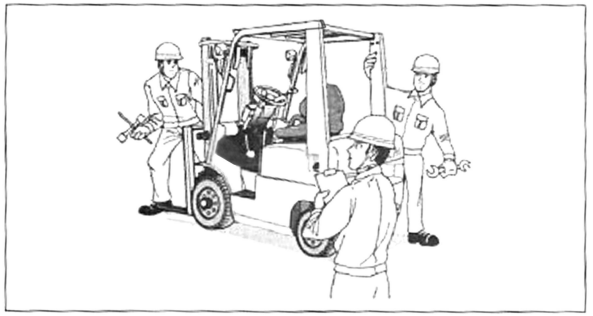
	Name of safety components	Qty. of year
1	Covers of master and servo cylinders and dust washers	1
2	Oil pipe for power steering device	2
3	Body of auxiliary water tank	2-4
4	Fuel pipe	2-4
5	Rubber pipe of torque converter	2
6	Rubber parts of power steering device	2
7	Chains	2-4
8	Oil pipe for mast system	1-2

There parts are difficult to discriminate whether they are degenerated from their appearances. Replace them periodically.

■ Do not drive the forklift without service and maintenance.

Do not drive the vehicle that has abnormality during the spot inspection until it is repaired by the shop. Affix a label saying **No Driving** and take out the key. Report the situation to the manager and authorize him to repair it.

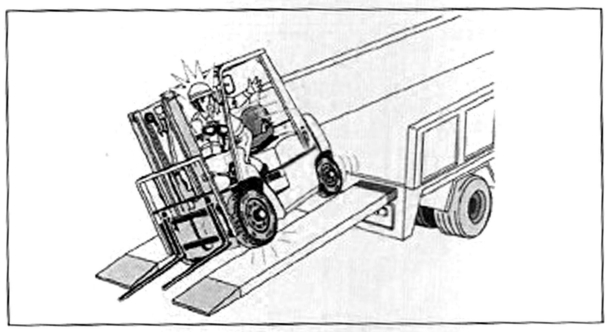
■ Assign a director to perform the vehicle service and accessory loading/unloading.



For this operation, a director must be assigned and operation shall be performed according to his instructions.

The body and parts of a forklift are heavy and partial parts have high voltage. Possible injury may be caused in case of carelessness during the service.

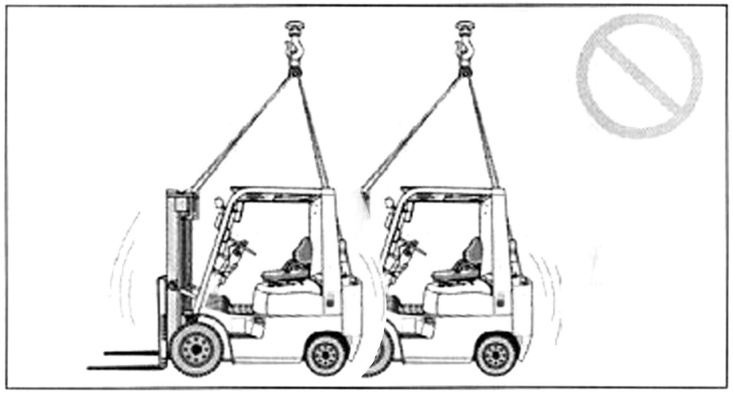
■ Transfer

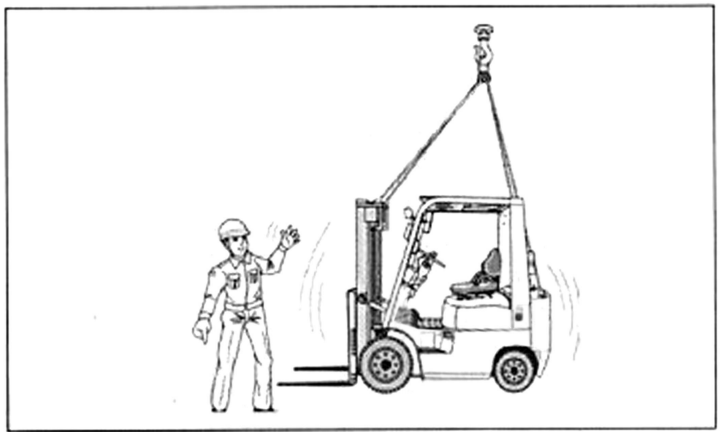


Loading/unloading the cargo in/from the truck shall be performed on flat and firm road. In addition, pay attention to the length, width and strength of the shelf to be used to ensure safety. Because shelves are slippery in rainy days, stop the operation or use anti-slip connecting plates.

Moreover, when loading/unloading cargo on the truck, it is quite safe to use a shelf loading truck installed with a jack and winch. Tilt the cargo box using the jack and left by hanging the winch to the towing pin of the forklift, the driver is not required to drive the forklift for operation in a safe place.

■ Please use special body lifting tool during the operation.





⚠Warning

When lifting the forklift using the overhead guard and counterweight, the vehicle body may be broken or fall. Do not use this method for lifting.

If it is necessary to lift the vehicle body, use special lifting tool for vehicle body.

⚠Warning

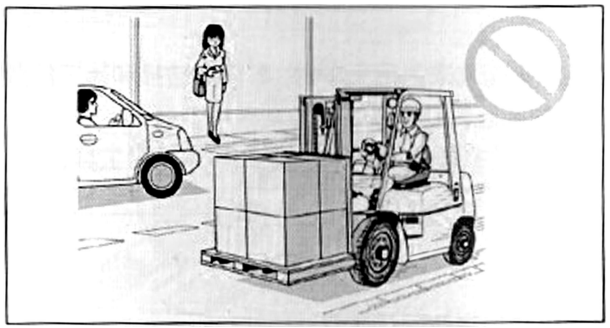
Vehicle body lifting method

- **Use the optional vehicle body lifting tool.**
- **Use the steel wire that can bear the body weight.**
- **Do not use deformed and cracked steel wires.**
- **In case of lifting using a crane, operator without driving license is not allowed to operate it.**
- **No persons are allowed to stand under or enter the area of a lifted vehicle body.**

■ Obtain the license.

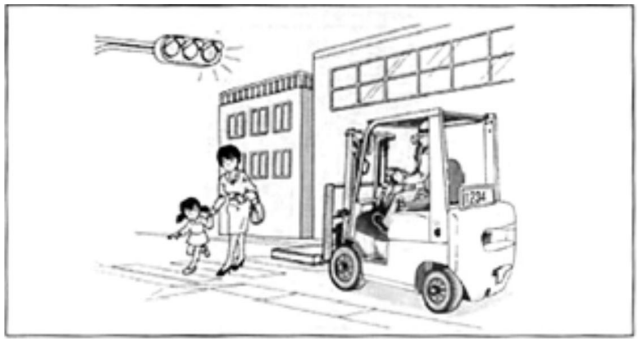
Vehicles that are allowed to run on public roads must be approved by laws and permitted by the vehicle management administration. Moreover, the license is required.

■ Do not drive under load and towing conditions.



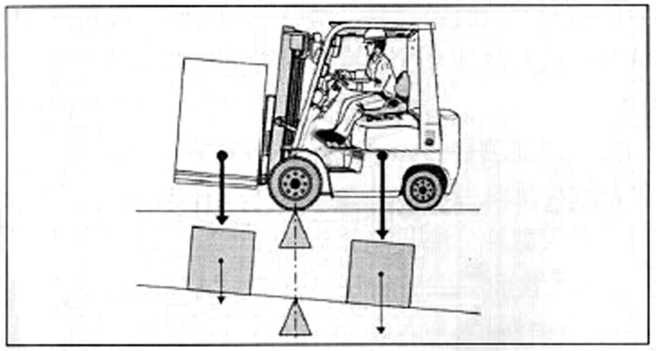
Do not drive the forklift on public roads under load and towing conditions (except running under towing a faulty vehicle). Do not drive it under towing condition beyond public roads as much as possible.

■ Observe the traffic rules and turn off the operation lamps and rear lamps.



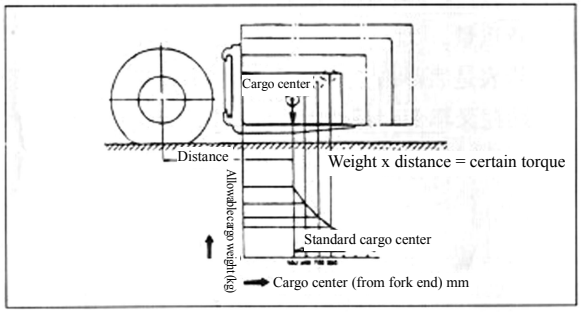
During driving, please observe all traffic rules. Besides, do not turn on the operation lamps and rear lamps during running on public roads.

■ Maintain the forklift balance.



The mast and fork are installed in the forward of a forklift (Handling device). A forklift uses its front wheels as the pivot to balance the vehicle center and cargo weight. Therefore, the relationship between the center of a forklift and that of the fork is critical.

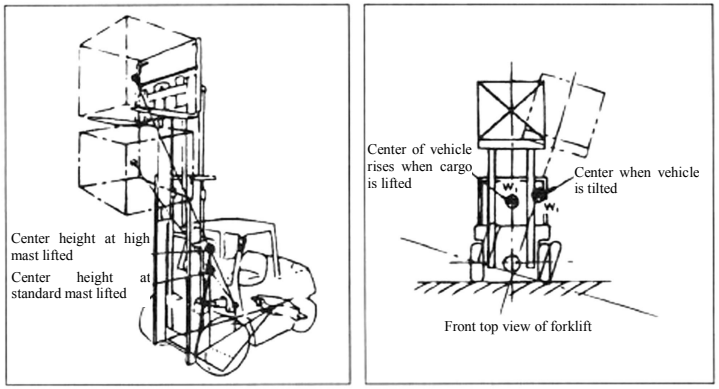
■ The center of the load must be known.



The loaded cargo has diverse shapes such as box shape, plate shape and long bar shape.

To judge the safety and stability, it is critical to understand its center position.

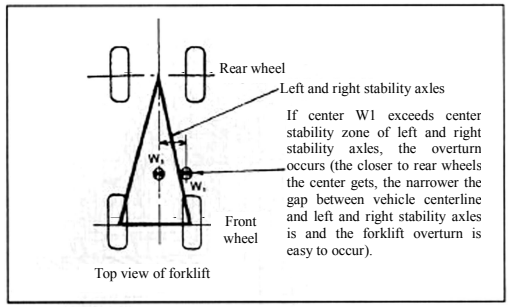
■ Change of the center position



Stability of a forklift is determined by the combined center formed by its center and cargo's center. With no load, the position is the forklift's center. With load, the position is the combined center formed by that of the forklift and that of the cargo. The load center varies with the forward and backward tilting of the mast and cargo elevation thus the combined center varies as well. Moreover, the forklift's center is determined by following factors.

- Size, mass and shape of the load
- Elevation speed of the cargo
- Tilting angle of the mast
- Tire pressure
- Radius of acceleration, deceleration and turning
- Road condition and gradient
- Types of accessories

■ The forklift falls if the center is beyond the triangle.

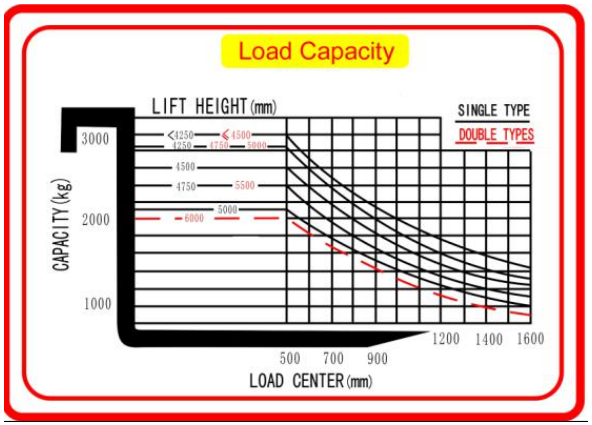


To stabilize the forklift, its combined center must fall within the triangle formed by three points of left and right front wheel contact points and rear wheels center (center safety zone).

If the combined center is beyond the front wheels, the forklift may overturn about the front wheels deemed as the pivot.

If the combined center reaches beyond the right or left of the triangle, the forklift overturns to that direction.

■ Max. load weight (load weight and center)



The horizontal distance between the center of a loaded forklift and the root of the fork (forward of load bracket) is referred to the load center. The maximum weight that can be borne at the center of standard load is deemed as the maximum load weight.

The load and weight ratio is the relationship between the maximum load weight and load center, which shall be affixed on the nameplate in a table. When the load center move forwards towards the fork, the combined weight move forwards as well; however, the cargo weight cannot be decreases accordingly.

■ Acceleration, deceleration and turning

An object keeps its stationary status permanently without any external force. In addition, a moving object maintains its moving speed permanently without any external force. This is called the inertia.

When the forklift moves forward, its inertia acts as a backward force. When it stops, its inertia acts as a forward force. Therefore, in case of emergency brake, the forward tilting force increases and this is very dangerous. Moreover, in case of forklift turning, the centrifugal force from the rotating center acts. This force may overturn the forklift laterally, especially in case of narrow safety zone lateral to the forklift. Therefore, reduce the speed greatly when rotating the forklift to prevent the side overturns.

During elevation of the cargo, the combined center will be higher, which causes that the possibilities of forward and lateral overturn are great.

⚠ Do not drive the forklift with check unfinished.

Do not drive the forklift with check unfinished prior to operation.

Report the abnormality, if any, to the manager immediately and conduct the service process. Do not drive the forklift until the repair is finished.

⚠ Get on or off the forklift correctly.

Do not get on/off a forklift if it is moving. When getting on/off a forklift, confirm that it is stationary in the first place and get on/off as per correct steps. Tread on the step and hold the handrail to support the body when getting on/off. In addition, the steps shall be clean.

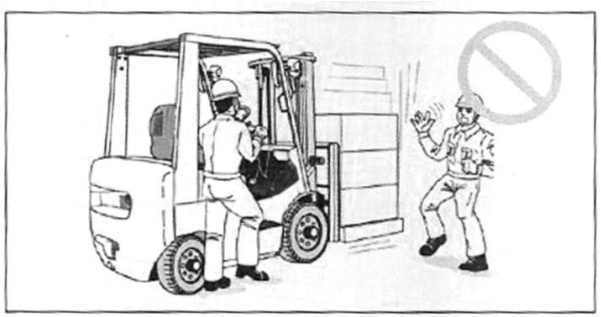
Precautions on starting the engine

When starting the engine, please observe the following sequence.

1) Apply the hand brake.
2) Place the steering stick and gear stick to their neutral positions.
3) Adjust the steering wheel, each handle and seat before the start and it is very dangerous to adjust during driving, which may cause misoperation.

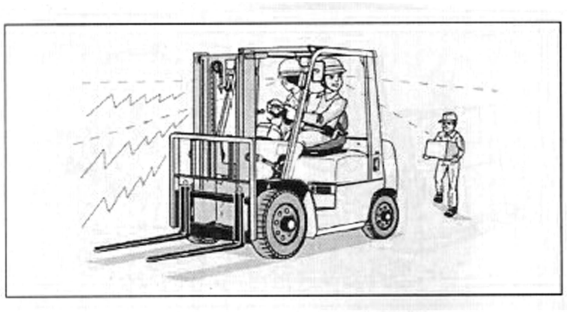
   In addition, confirm they are fixed securely after adjustment.
4) Tie the seatbelts after sitting.
5) Depress the clutch pedal (mechanically) and brake pedal (hydraulically).
6) Confirm the surrounding safety and start the engine.

Do not operate the forklift in a place beyond the seat.



Do not operate (control stick and pedals) in a place beyond the seat.

Press the horn during the start

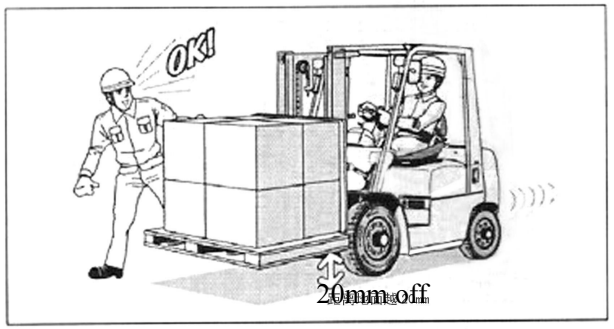


When starting the vehicle, please confirm the surrounding safety and move forward after pressing the horn.

Keep your hands clean

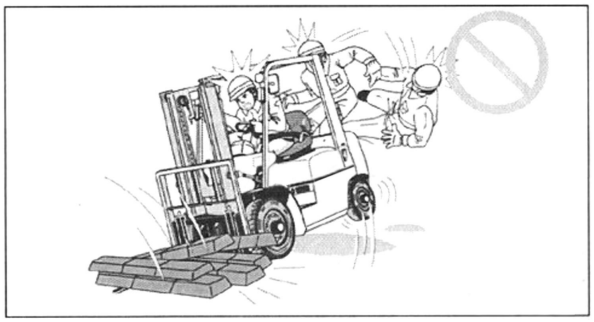
Wet hands may slip from the steering wheel and control stick during operation. If grease, oil or sludge is on your hands, clean them immediately.

Make the center as low as possible during driving (especially during loading).



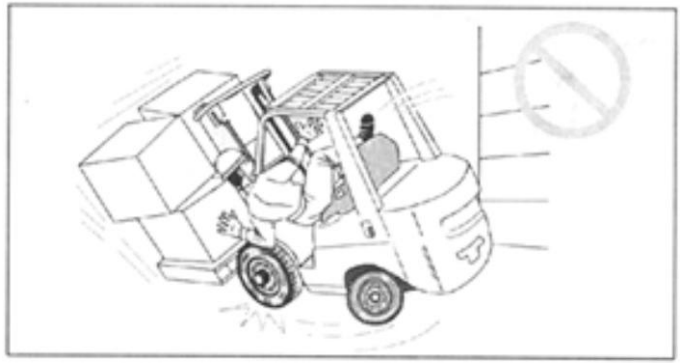
To make the center lower during driving (especially under load), it is preferred to keep a distance between the fork and ground to be over 20cm and tilt the mast in position.

Do not use a person to substitute the counterweight.



Do not use persons to substitute the counterweight and persons except the driver is not allowed to get on the vehicle.

Rough driving such as emergency moving forward, stop and turning is prohibited.



Do not drive roughly such as emergency moving forward, stop and turning.

Especially when the vehicle is not loaded, its rear is quite heavy, which may easily cause overturn in case of emergency turning and moving forward.

Change between moving forward and backward must be performed after the forklift stops.

Quick direction change is hazardous.

Lower the fork as much as possible during loading.

Regardless of loaded cargo, if the fork is placed at a certain height during running, the vehicle enter becomes high, which increases the overturn probability.

Do not drive and turn the forklift when the fork is elevated.

Do not get close to soft wayside.

Do not get close to soft wayside that may collapse.

Keep a safe distance away from the wayside during running n a narrow road or platform to avoid vehicle fall-off.

Do not drive on roads that are immersed by water or have accumulated water.

During driving, avoid roads that are immersed by water or that have accumulated water or holes.

⚠ **Do not drive on soft roads.**

⚠ **Do not drive on slippery roads.**

⚠ **Do not drive across obstructions (rocks, steel channels and grooves)**

Drive the forklift carefully if necessary.

⚠ Safe driving

- **Do not drive with low concentration.**

Concentrate on the front during driving, which otherwise may easily cause traffic accidents. Reduce the speed when meeting with the other vehicle and keep a proper distance with it.

- **Observe the maximum speed limit**

Observe the maximum speed limit where it is regulated.

- **Pay attention to surroundings during driving.**

Please pay attention to the safety conditions around the vehicle and along the forward and turning direction.

- **Do not overtake other vehicles in a place with low visibility.**

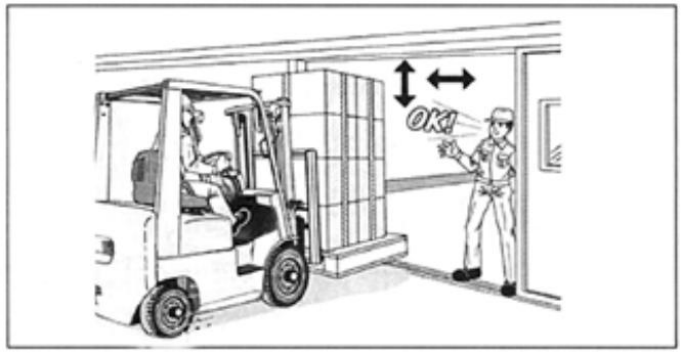
Do not overtake other vehicles in intersections and corners where the visibility is bad.

- **Reduce the speed and operate the horn in places where visibility is bad.**

In intersections and corners where visibility is bad and in exits and entrances of narrow passages, stop for while and operate the horn to guarantee the safety.

- **Stop for a while to guarantee the safety when crossing the road and turning.**

Precautions on accessing restricted fields

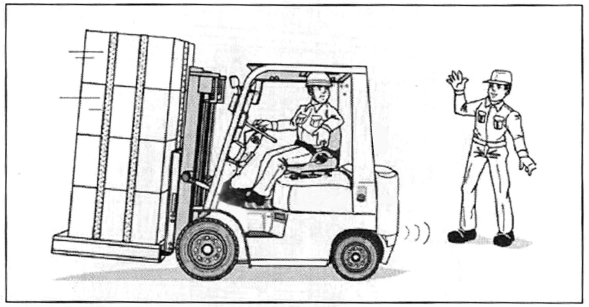


- Ensure sufficient width and height when accessing the area.
- Do not extend your hands and feet out of the vehicle.
- Confirm the surrounding safety.
- Be cautious on wires and obstructions indoors and outdoors.

Backward turning and swinging

When turning during running forward, ensure the distance between the vehicle and wall because the vehicle rear will swing externally significantly.

A guide shall be assigned when the forklift moves backwards with high loaded cargo.

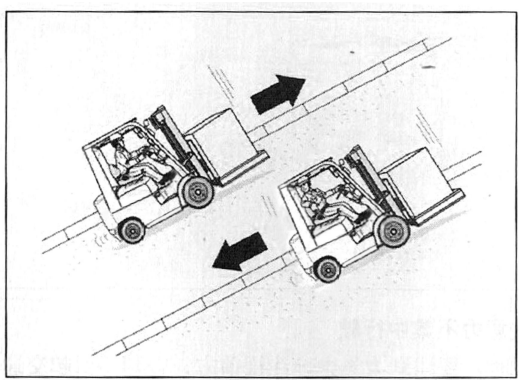


When the cargo is high, the front sight is disadvantageous and a guide shall be assigned for moving backwards.

Backward moving

Face the rear when driving backwards and start driving after confirming the rear condition directly. Do not depend on only rear-view mirrors and reversing buzzer.

⚠ Driving on a slope



- Do not turn the forklift or drive it laterally or diagonally; otherwise, the forklift may overturn.
- Be cautious on the height if a steep slope exists to prevent the fork and pallet from impacting the ground.
- For driving on a slope with no load, drive the forklift backwards when driving uphill and drive it forward when driving downhill.
- For driving on a slope with load, move the forklift forwards when driving uphill and move it backward when driving downhill.
- Use the engine brake when driving downhill.

If the forklift moves too quickly, do not depress the brake pedal. When using the engine brake, do not operate the gear stick and inching pedal.

- When moving downhill, use the brake pedal.

⚠ Prolonged brake

Driving downhill or on wet roads requires longer brake than on common roads.

Drive carefully and estimate the brake allowance sufficiently.

⚠ Do not allow flameout to happen during driving.

（for forklifts with power steering and brake）

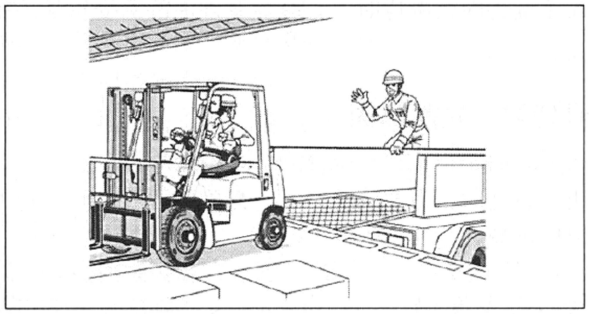
In case of engine flameout, the power units of a vehicle with power steering and brake are inoperative.

⚠ Do not turn the key to OFF during driving.

⚠ Engine brake fails after inching pedal is depressed.

Brake is applied after the inching pedal is depressed. However, if the clutch is disengaged, the engine brake fails.

⚠ During operation in the compartment



- Do not drive on the platform edge; otherwise the vehicle may fall down, which can often cause deaths.
- Confirm the allowable weight and degree of safety before operation and do not use inappropriate connecting plates.
- Apply the truck’s parking brake and place chocks against the wheels to prevent it from slipping.
- Apply the jack for the tractor to prevent the forklift from dropping greatly along its running direction due to sudden load.

- Reduce the speed when accessing the compartment and be cautious on the safety of connecting plates.
- Be cautious on pedestrians.
- Do inform the truck driver not to move the truck before the operation is completed.
- Confirm the connecting plates are secured to avoid their fall-off.

⚠ Be fully cautious on load-bearing limit of the floor.

When entering a building or elevator, be fully cautious on the load-bearing limit of the floor and do not drive with overload.

⚠ Practice carefully and get familiar with the vehicle.

Practice the operation carefully to get familiar with the vehicle before operation.

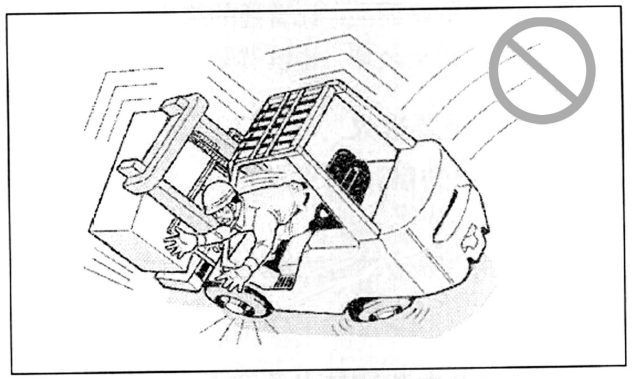
Even you have already become familiar with the operation, drive it carefully. Operation that fails to comply with regulations may easily cause person injury and cargo damage.

⚠ During driving several forklifts respectively

For driving several forklifts respectively, even they share the same performance, their brake, acceleration and lifter may not be identical.

After the vehicle change, analyze and master the operation positions accurately and especially, the feeling on brake is critical.

⚠ Do not jump out of the vehicle in case of the overturn.



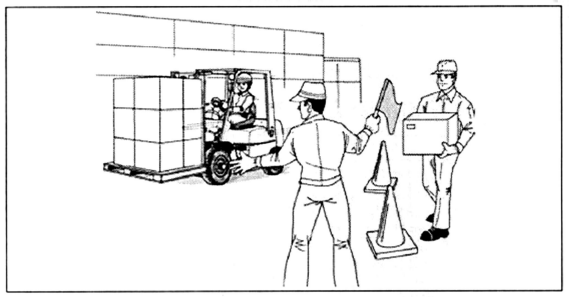
Vehicle unbalance due to such as the sudden turning may cause the overturn.

In case of the overturn, do not jump out of the vehicle. Hold the steering wheel firmly and extend your feet to support and maintain the body stable. Tilt the body opposite to the overturn direction.

If the driver jumps out in case of the overturn, he may get crushed, which may cause death or injury.

Tie the seatbelt when driving.

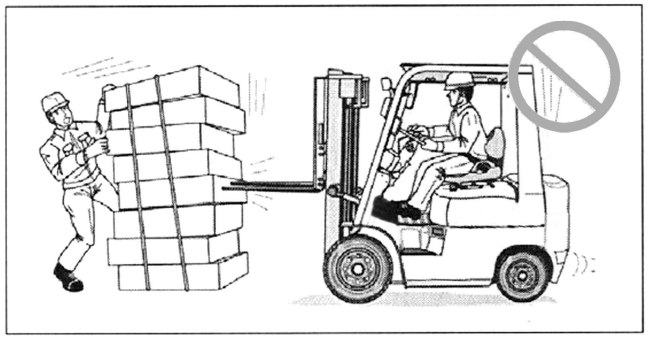
⚠ No pedestrians are allowed except the guide within operation field.



⚠ Do not allow persons or other vehicles to get close to the forklift during loading/unloading.

⚠ Observe the guide's order during joint operation.

⚠ Do not use the forklift beyond the specified purpose.



- Do not use a forklift to open/close the doors of railway vehicles and warehouse.
- Do not use it to push other vehicles.
- Do not hang steel wire on the fork for lifting.
- Do not use it for towing or trailing.
- Do not use the fork to push or pull the cargo because the cargo may fall and get damaged. Especially at a lift height over 150cm, the vehicle may overturn.

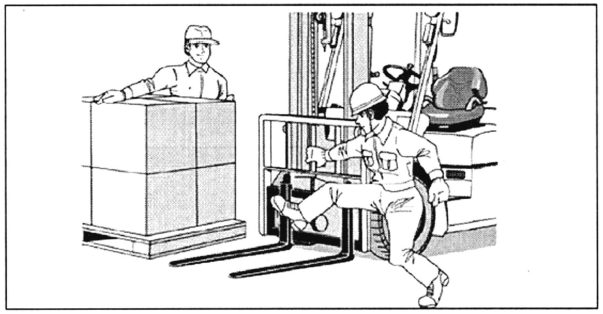
⚠ Be cautious on the forward end of a fork.

Because the front end of the fork is sharper, it may harm persons. In addition, if other items are hung on the front end, vehicle may move to an unpredictable direction, which is very dangerous.

⚠ Adjust the gap between forks to a proper value.

According to size of the cargo, adjust the gap between forks to a proper value.

⚠ Adjust the gap between forks using feet.



Because of possible clamping, adjust the gap between forks using feet**.**

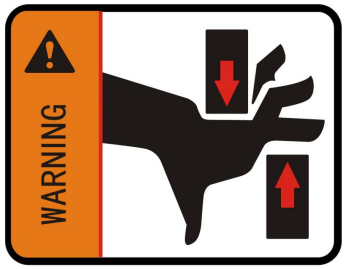
⚠ Confirm the security of the forks.

After adjusting the fork gap, use a stop pin to secure the forks and confirm the condition.

⚠ Do not put hand and foot in the mast gap.

⚠Warning

Never put hand or foot in the mast and connecting gap; otherwise, the actuated mast may cause injury.

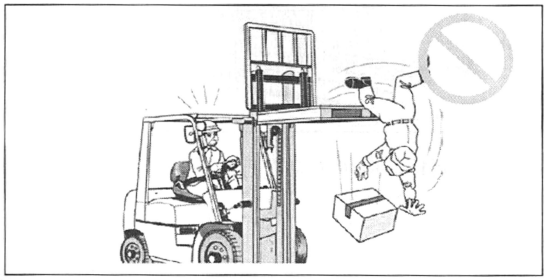


Do not carry persons.

Warning

Never allow persons to stand on the fork to elevate or descend.

Persons are easy to fall off of the forks, which may cause injuries.



Do not stand under the forks.

Warning

Never allow persons to stand under lifted forks.

Forks descend rapidly, which may cause personal injury.

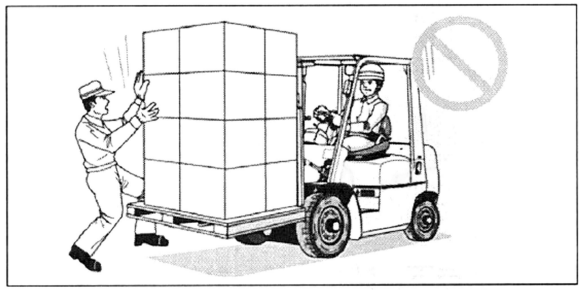
Do not climb the forklift body.

It is hazardous to use the forklift body as the step and mast as the ladder. Unintentional operation of the control stick may cause an unpredictable movement of the mast and the person may be crushed between the mast and body, causing major accidents.

Do not unload the forklift directly.

Do not unload the forklift directly with forks lifted; otherwise, cargo may be unbalanced or fall down.

⚠ Do not manually press the cargo on the forks.



Do not manually press the cargo on the forks because the unpredictable vehicle movement may cause cargo fall-off, which is very dangerous.

⚠ Place the cargo against the load bracket.

Place the cargo against the load bracket and drive the forklift.

⚠ Do not load the cargo with its height higher than the load bracket.

The load height is limited within the load bracket height. If it exceeds this height, do not transfer the cargo. If the cargo is higher than the load bracket, it is easy to cause the cargo to fall towards the operator, which to the worst condition causes death.

⚠ Do not load/unload the cargo that is unstable.

Do not load/unload unstable cargo. If the cargo seems easy to fall or slip down, secure and then load/unload it.

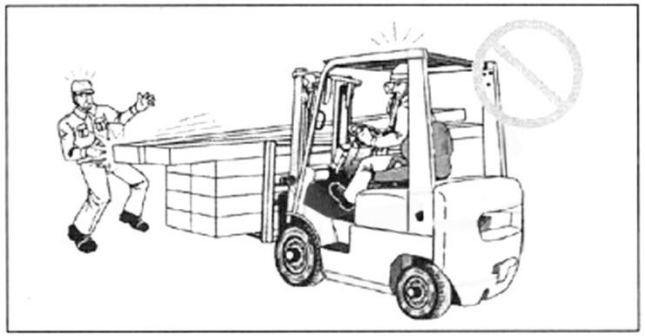
⚠ Pay attention to the stability during loading/unloading stacked cargo.

Load/unload the stacked cargo by tying it securely to prevent fall-off.

⚠ Use the pallet with sufficient strength.

Please use a pallet with sufficient strength. The cargo may fall if a broken pallet is used.

⚠ Be cautious when loading/unloading long and wide cargo.



Drive carefully when loading/unloading long and wide cargo. Lift or lower it slowly and especially do not collide it with other cargo.

Moreover, lower the cargo as much as possible and keep it stable. Operate slowly during turning to prevent the cargo from moving.

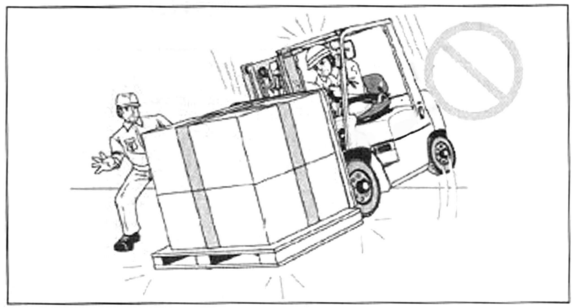
⚠ Pay attention to overhead wires, pipes and house beams.

Pay attention to overhead wires, pipes and house beams. Keep them away from the mast or overhead guard. Once they collide with each other, cargo may fall down and the vehicle may overturn. Especially when the forks are being lifted, be cautious on the increasing mast height.

⚠ Overload is prohibited.

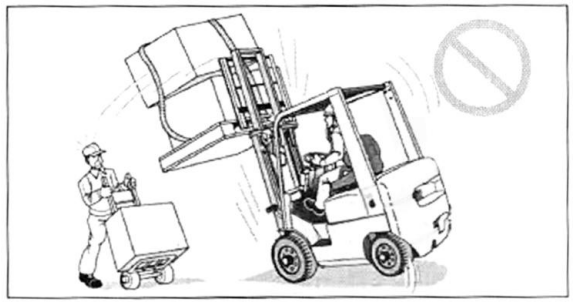
⚠Warning

Allowable load weight is clearly specified on the vehicle load weigh list. Do not overload the vehicle. Once the rear wheels are raised, the vehicle cannot run or turn, in addition to which, the overturn may be caused.



⚠ When loading the cargo, do not operate the forks (to lift, descend or tilt); otherwise, the forklift is easily get overturned.

⚠ Forward tilting is prohibited when the cargo is lifted.



Do not tilt the mast forward when the cargo is lifted; otherwise, it is easy to cause cargo fall-off and vehicle overturns.

⚠ Lifting and driving are prohibited when the mast is tilted forward.

Lifting and driving are prohibited when the mast is tilted forward.

⚠ Loading/unloading is prohibited when the vehicle is tilted.

⚠ Do not compact the cargo excessively.

Do not use the vehicle the traction force to compact the cargo excessively because this may cause damaged vehicle and cargo and even overturned forklift.

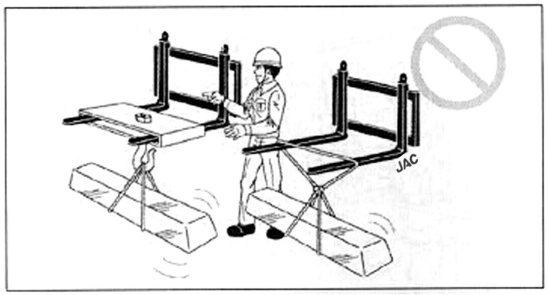
⚠ Unbalanced loading is prohibited.

Keep the center of the cargo consistent with that of the vehicle. Do not drive the forklift with unbalanced loading.

⚠ Do not allow the chain to be slack.

Once the chain is slack, the mast steel channel and forks are easy to catch the cargo or rack and it is easy to cause cargo fall-off and vehicle overturns. Check the chain frequently to prevent slackness.

⚠ Do not lift the cargo by suspending it on the forks by steel wire.



- If the cargo is lifted with it suspended on the forks by steel wire, the wire may be sheared or slip off, which is very dangerous.

  Especially when the cargo is lifted with a single fork, the above-mentioned manner may easily cause lateral forklift overturn thus do not conduct so.

- Use an accessory such as the lifting hook or suspension crane to lift the cargo.
- The steel wire and other suspension rope shall be sufficient in accordance with the weight and strength of the cargo. In addition, use an appropriate lifting angle and operate when the rope is as short as possible.
- Slowly and carefully drive or turn the forklift when lifting the cargo with steel wire. The cargo that swings greatly may cause the forklift overturns. Moreover, lower the cargo as low as possible.

⚠ Heavy wind may cause the cargo fall-off or forklift overturn.

Heavy wind may cause the cargo fall-off or forklift overturn, possibilities of which may increase especially when the cargo is lifted. During heavy wind, stop the operation or take necessary preventive measures.

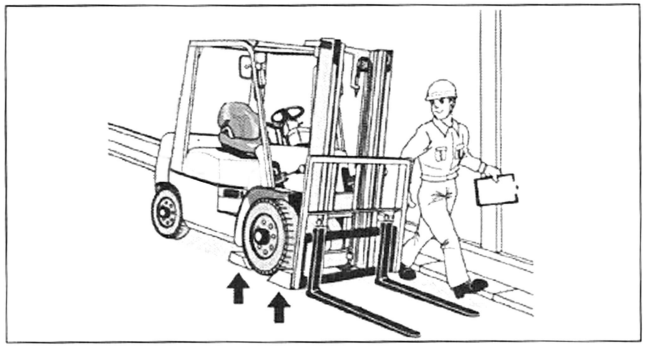
⚠ Park the forklift in the designated lot.

⚠ Stop the forklift on a surface with sufficient strength.

⚠ Do not hinder the traffic to stop the forklift.

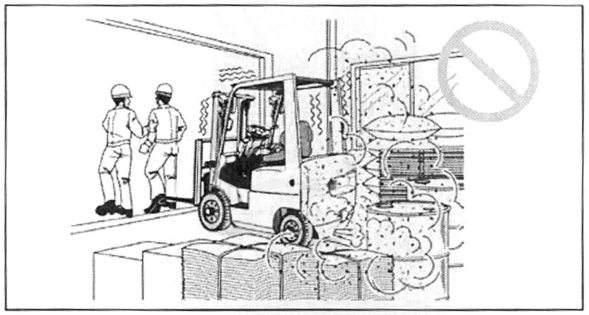
Avoid stopping the forklift near the emergency exit, stairs and fire extinguishers and stop it in a place pedestrians and traffic safety will not be affected.

⚠ Place chocks against the wheels when parking it on a slope.

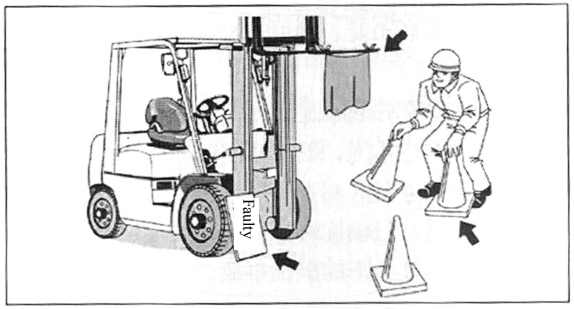


If it is necessary to park the vehicle on a slope, except for normal parking sequence, place chocks against the wheels to prevent the vehicle from moving.

⚠ Do not park the forklift near inflammables.



⚠ Parking of faulty vehicles

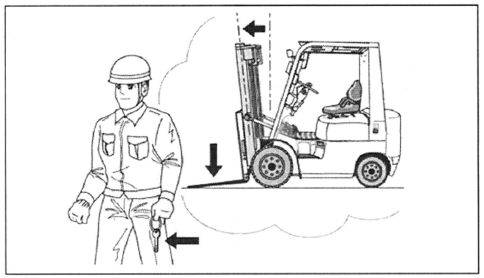


If the forklift is faulty and the forks cannot touch the ground, a conspicuous sign must be placed at its front end to prevent it from impacting pedestrians and other vehicles. In addition, it is preferred to park the vehicle in a place where no pedestrians and vehicles will pass through. Moreover, make the area beneath the forks unavailable for access as much as possible.

⚠ The key of a faulty vehicle must be taken out and a sign saying NO USE shall be affixed.

The key of a faulty vehicle must be taken out and a sign saying **NO USE** shall be affixed.

⚠ Before leaving the forklift, following operation sequence must be observed.



1) Lower the forks on the ground in a safe place.
2) Tilt the mast forward slightly to make the front end of the forks to touch the ground.
3) Apply the parking brake.
4) Move the gear stick (change of directions and speeds) to the neutral position.
5) Turn the key to OFF.
6) Pull out the key.

⚠Warning

Spot inspection, maintenance and service of the vehicle must be performed by qualified persons with the license. Erroneous operation is harmful to the vehicle.

Spot inspection and routine service must be performed only by persons with the license.

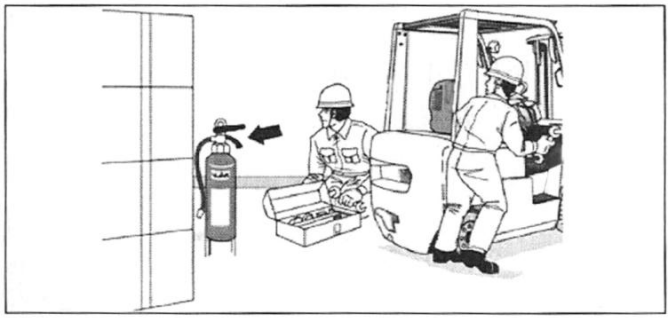
Place the vehicle in a flat place with sufficient strength.

Spot inspection and routine maintenance shall be performed in a flat, dry and dust-free place.

Favorable ventilation shall be provided.

The ventilation must be provided during spot inspection in the workshop.

Confirm the position of fire extinguishers and use method.



Prepare the fire extinguishers and correctly understand the use method.

Wipe off overflowed oil and grease.

Wipe off the oil and grease once it drops. Moreover, after the oil overflows clear it immediately as well. It is hard to find defects such as cracks after contamination.

Fire is prohibited (especially when using cloth for grease and fuel).

Fire is prohibited. Cloth for grease and fuel is easy to cause a fire, which is hazardous.

Use appropriate operation tools.

Please use tools applicable to spot inspection and repair. Using tools not applicable enough is dangerous.

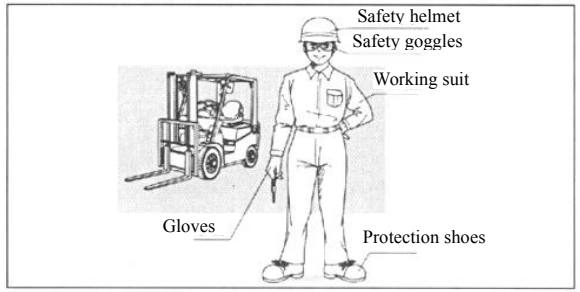
Do not use tools beyond their designated purposes.

Do not use tools beyond their designated purposes; otherwise, it is dangerous.

Wear appropriate working suit.

Wear appropriate working suit that is convenient for operation.

⚠ Wear safety devices (safety helmet, shoes, goggles and gloves).



⚠ Confirm a guide for joint operation and observe his instructions.

⚠ Shut down the engine before operation.

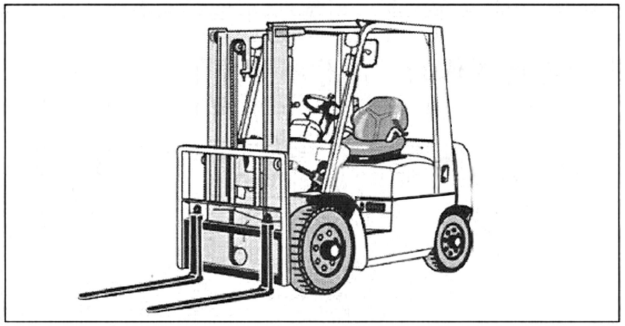
Shut down the engine before operation.

⚠ Shut down the engine without any special instructions.

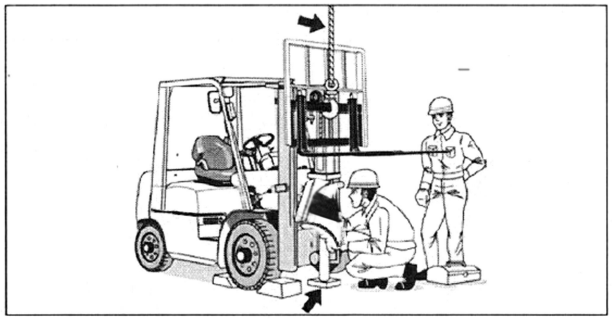
Shut down the engine for spot inspection and service without any special instructions.

⚠ Move the control handle to neutral position before operation.

⚠ Place forks and other accessories (if any) on the ground before operation.



⚠ If it is necessary to perform the spot inspection under the lifted forks or accessory, place a support block beneath the inner mast to prevent the forks and accessory from falling off.

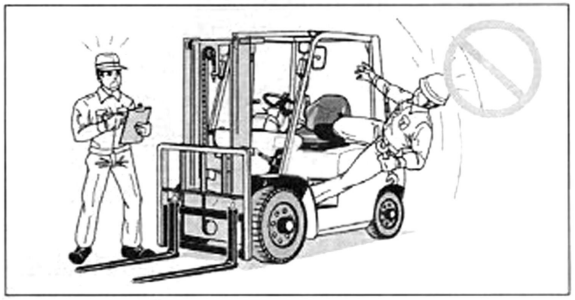


⚠ Do not put foot under the fork.

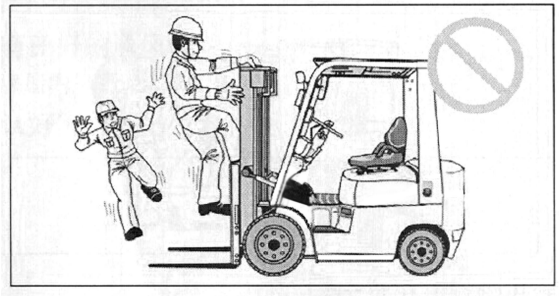
⚠ Make sure not to crush your hand between the front plate and engine hood.

Watch your hand when opening/closing the battery cover or engine hood.

⚠ Make sure not to fall off when operating in the vehicle.



⚠ Do not use the mast as a ladder.



- Do not use the mast connection plate or load bracket as a ladder to climb during spot inspection and adjustment because this is dangerous. Unpredictable mast movements may cut off your hands or feet.
- If a person climbs using the mast as a ladder, he may slip down or fall off of the mast.

⚠ Spot inspection of rotation section must be performed after the engine is shut down.

Your body or a tool is easy to get rolled if it contacts the rotation section, which is dangerous. Therefore, do not touch it. Turn the switch to **OFF** before starting the spot inspection. Do not place anything that is easy to get rolled around the rotation section.

⚠ The engine cannot be serviced until it cools.

The engine oil may be of high temperature and pressure after vehicle operation. Oil drain and filter element replacement under this condition will cause high temperature engine oil to be sprayed out, causing scald easily.

⚠ Do not open the water tank cover when the antifreeze is hot.

The antifreeze is of high temperature and pressure after vehicle operation. Do not open the water tank cover under this condition; otherwise, high temperature antifreeze may be sprayed out, causing scald easily.

⚠ Unscrew the water tank cover by rotating it slowly to release the pressure.

⚠ Be cautious that high temperature hydraulic oil may be sprayed out.

The engine oil may be of high temperature and pressure after vehicle operation. Oil drain and filter element replacement shall not be performed under this condition because high temperature engine oil to be sprayed out, causing scald easily.

⚠ Operation shall be conducted after releasing the pressure that exists often in the hydraulic system.

The hydraulic system often has existing pressure thus releasing the pressure before the operation.

Please wear the safety goggles and thick gloves before checking for oil leakage. Use thick paper or composite plate to touch the target position for spot inspection. It is dangerous to touch the high pressure oil with skin and eyes.

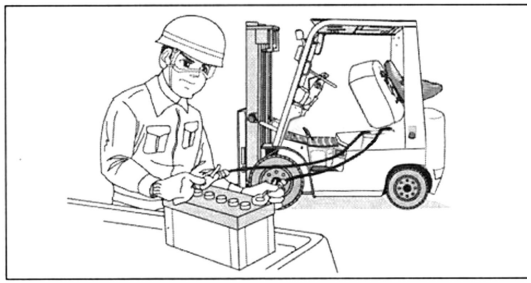
⚠ Spot inspection of accumulator and its associated pipes is dangerous.

During spot inspection of associated pipes of the accumulator, cracked pipes and splashing may occur thus contact a designated service shop.

⚠ Go to medical are immediately after contacting the high pressure oil.

⚠ Do not jump on a started forklift because it may move, causing accidents.

⚠ Be cautious on using the auxiliary battery to start.



- Please wear the safety goggles when using the auxiliary battery lead to start the vehicle. When using the battery of another vehicle to start, do not allow the battery to contact the normal vehicle and the one with battery in.
- Connect the battery lead after the engine shuts down.
- The battery lead is easy to get rolled by the fan and belt, which is dangerous. Be cautious.
- Do not connect the auxiliary lead inversely and never allow the terminals + and – to contact mutually.

⚠ Please use the designated brake fluid.

⚠ Do not allow the dust and the like to enter the auxiliary water tank.

⚠ Please do not allow the breather hole of the auxiliary water tank to get clogged.

Use of antifreeze (LLC)

Because the antifreeze is inflammable and toxic, affix a danger sign for it in the case of storage and place it in a place where persons cannot reach.

- The antifreeze (LLC) is inflammable, no smoking and fire is allowed during using it.
- The antifreeze (LLC) is toxic, do not drink it. If it is taken unintentionally, drink much water and take medical care immediately.

Precautions on operation using a jack

Warning

During using the jack, never go beneath the vehicle because the vehicle may fall on the ground suddenly.

- It is dangerous to use a jack when the vehicle is loaded. Before operation, unload the vehicle.
- In the case of lifting using a jack, the operator must leave the seat. Stop lifting when the wheels are slightly off the ground using the jack and place cushion blocks on both sides of the frame to prevent the vehicle from dropping down suddenly
- Place chocks against the wheels before using the jack to prevent the vehicle from moving.

Precautions on vehicle lifting

Warning

In the case of lifting the forklift using the overhead guard and counterweight, the body may be damaged and fall off. Therefore, never adopt this method to lift the forklift.

During lifting in transfer, please use special vehicle body lifting tool and contact the our dealer.

- The vehicle lifting must be operated by operators of the crane and hoist.
- Steel wires must be installed at designated positions on the vehicle for lifting.
- Use steel wires of sufficient strength.

Steel wires used for lifting cannot be damaged and have sufficient strength.

Precaution on battery use

- **Once touching the battery electrolyte, flush it immediately with much water.**

The electrolyte of the battery contains the dilute sulphuric acid that corrodes the clothes and skin. If the electrolyte contacts the clothes or skin, flush it immediately with much water.

- **Take medical care immediately if the electrolyte splashes in the eye.**

Flush it immediately with much clean water if the electrolyte splashes in the eye and then take the emergency medical care.

- **Treatment after the battery electrolyte is swallowed unintentionally**

After the battery electrolyte is swallowed unintentionally, take much clean water immediately or take the milk mixed with egg white of raw eggs or salad oil and then take the emergency medical care.

- **Wear safety goggles and the like during using the battery.**

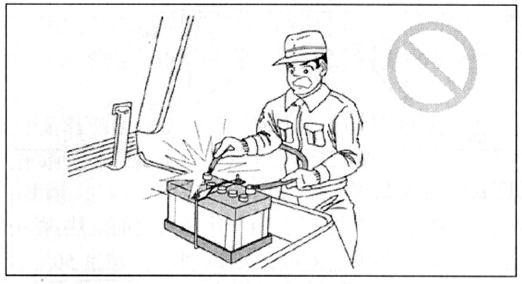
During operation such as battery replacement and charging, electrolyte filling, and proportion adjustment, wear the rubber gloves, boots, safety goggles, etc.

- **No fire is allowed around the battery.**

Because the battery emits hydrogen, explosion may occur. Therefore, fire sources such as the lighters are not allowed around the battery.

- **Do not place metal tools on the battery.**

- **Make sure not to short the battery.**



Do not allow any metal to directly contact the battery terminals – and + to short it. A slack terminal – may spark due to poor connection, which may cause an explosion. Terminals must be securely tightened. After removing the battery, confirm its terminals – and +. Do not connect them inversely when re-installing the battery.

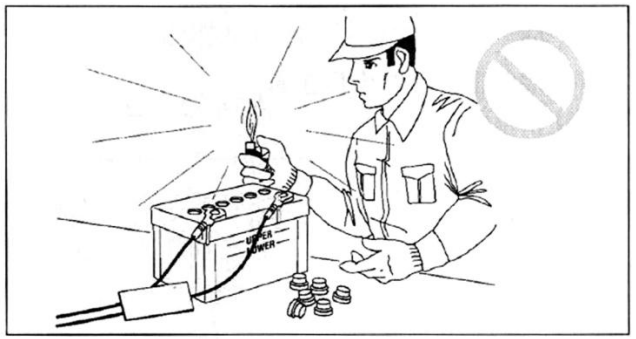
- **Do not allow the tool to contact the engine or vehicle metal during screwing the battery positive screw.**

Otherwise, the negative terminal may spark.

- **Please charge the battery completely in accordance with instructions specified on the operation manual.**

- **No fire is allowed during battery charging.**

The battery is easy to emit hydrogen when being charged, which may cause an explosion. Do not allow the battery to be near the fire.



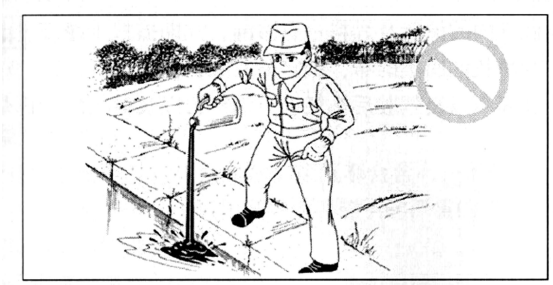
- **Charge the battery after its electrolyte cools below 40℃.**

The battery easily emits hydrogen during being charged and is heated from the chemical action. Therefore, charge the battery after its electrolyte cools below 40℃. (Stop charging the battery once the temperature reaches over 50℃ and charge it again after it cools below 40℃.)

- **Charge the battery in a well-ventilated place.**

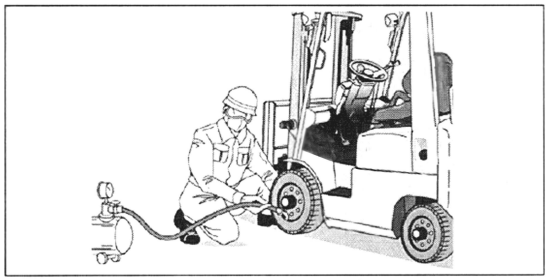
The battery easily emits hydrogen during being charged, which may cause an explosion. Please charge it in a well-ventilated place.

⚠ Observe the laws and regulations.



Please dispose hazardous materials such as oil, solvent, and battery according to applicable laws and regulations.

⚠ Precautions on adjustment of air pressure in wheels (rim, air compressor)



- Adjust the tire pressure at a place faced directly by the tire patterns and do not do this in the side of it.
- When charging the tire using an air compressor, adjust the air pressure of the compressor in the first place. If the pressure is not adjusted, the maximum pressure of the air compressor may be reached, which is dangerous
- Operators for high pressure charging must be specially trained.

  Operators for charging disassembled and assembled tires must be specially trained and instructed.
- Wear safety goggles and respirator during using the compressed air.

  During tire pressure charging, because of the air pressure, the dust easily scatters and may enter the mouth and eyes. Please wear safety goggles and respirator.

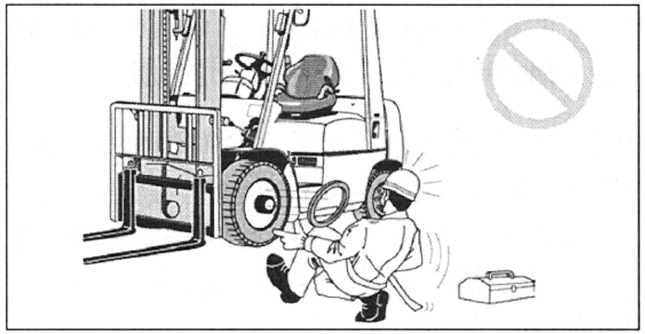
⚠ Nuts for tire installation cannot be slack.

The wheel fixation comes in two forms, one of which is hub nut form, that is, to fix the wheel on the hub while the other is the fixing nut form, that is, to press tightly the wedge ring between the wheel interior and the hub.

The tire is fixed by the wheel via the side ring and locking ring.

During the tire removal from the vehicle, if the locking ring is poorly fitted, the side ring, tire and wedge ring may burst out. Therefore, perform complete check before this operation.

⚠ Bolts and nuts for rim assembly cannot be slack.



- The hub bolts that assembles the hub on the wheel are provided on the wheel and the rim nuts and bolts that are used to install the two rims are also provided. Do not loosen the bolts and nuts for rim assembly when removing the tire from the vehicle

  Because of the tire inflation pressure the rim as well as the bolts and nuts may burst out, which is dangerous.
- Be cautious on the rim assembly direction during replacing the tire. The installation bolt head of the rim must face outwards.

  （Under the vehicle assembly condition, the rim bolts are hard to be slack thus bolts of special shapes are provided.）

- After the tire is replaced, start the drive test and then confirm whether the rim bolts are slack. Tighten them as per specified torque if the tightening torque is insufficient.

⚠ Contact a special factory for assembly/disassembly of tires, inner tubes and rims.

Contact a special factory for assembly/disassembly of tires of the forklift.

The tire inflation pressure is very high (generally 700~1000kPa) and be cautious. If the tires are poorly assembled, they are easily damaged and parts may scatter, causing major accidents.

⚠ Keep consistent the tension of left and right chains.

Adjust the tension of left and right chains to be identical. If not, even the cargo loading is correct, the forklift may overturn due to effect of unbalanced loading.

⚠ Repair the rear-view mirrors, reversing buzzer and lamps immediately when they are abnormal.

Adjust the rear-view mirrors to a place where it is easy to observe the rear and clean their surfaces (if any). When reversing, the buzzer must be heard; if not, repair the buzzer. Make sure that all lamps are normal. In case of damaged bulbs, replace them immediately.

⚠ Be cautious on fire

- Once the grease and fuel leaks from the engine compartment, wipe it off.
- Cloth and paper soaked with fuel and grease is easy to catch fire.
- The exhaust pipe, muffler and exhaust manifold are hot during and after driving the forklift.

⚠ Carbon monoxide poisoning

Avoid the carbon monoxide poisoning.

■ Characteristics of carbon monoxide

The waste gas emitted from engines of all internal combustion vehicles contains the carbon monoxide that is colorless and odourless and toxic. The carbon monoxide poisoning may cause serious injury or health problems and even life danger.

● Places where carbon monoxide is concentrated

Carbon monoxide can concentrate in following places such as the trailer, container, refrigerator and poorly-ventilated rooms and buildings. Therefore, internal combustion engines are not allowed in above-mentioned places.

● Symptoms of carbon monoxide poisoning

Symptoms of carbon monoxide poisoning generally includes the headache, dizziness and nausea. If the waste gas of internal combustion engine is smelled, it indicates the carbon monoxide is emitted.

● Treatment for carbon monoxide poisoning

If the operator has the above-mentioned symptoms, move him to a place with fresh air immediately and provide necessary medical aid. Meanwhile, report the company superiors to control the forklift use in this area (shut down the internal combustion engine in the first place).

■ Control of harmful gas

● Source of carbon monoxide

The carbon monoxide is the product from an incompletely combusted material, such as the coal, gasoline, LPG, natural gas and diesel. Internal combustion engines emit harmful gases in the operation field when those fuels are used.

● Control of carbon monoxide

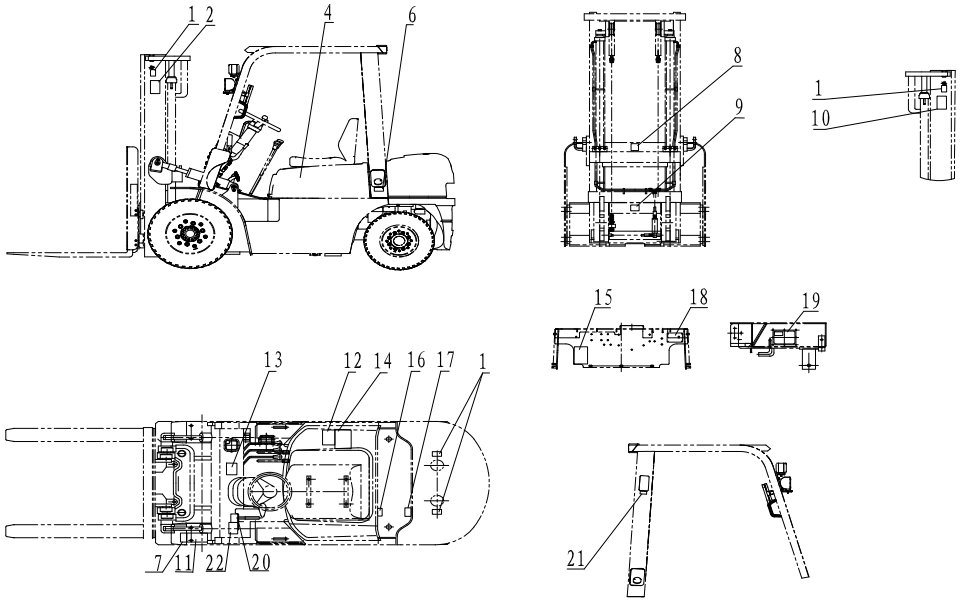
Control of carbon monoxide standard in the operation field depends on the ventilation and correct maintenance of devices that emit carbon monoxide, especially the internal combustion devices. Refer to the periodic maintenance in this operation manual.

Carbon monoxide is still emitted even the internal combustion engine is correctly operated.

● Ventilation

Ventilation must be ensured in an enclosed area. Those internal combustion devices shall ensure the air will not be polluted but those pollution standards in the restrictions in the air pollution regulation stipulated by the US government associations are not included.

Caution labels affixed on the vehicle are used to specify the operation method and precautions. Refer to the operation manual and conduct the operation, which is for your own good and your vehicle as well. Affix the labels immediately when they drop down.



Caution

The introduction of caution labels in this manual may vary from ones affixed on the forklift. In such a case, labels affixed on the forklift prevail.

A Precautions on safe operation

⚠Warning

To prevent personal injuries or deaths, following rules must be followed.

1. **Operators must be trained and gain the operation qualification, understand the operation and service manuals, and follow regulations thereof.**
2. **Perform the safety check before operation. If any abnormalities are found, do not operate until the service is completed.**

   The services must be performed in a qualified service factory.
3. **Turn, start, stop or load/unload the forklift slowly. Place the cargo as low as possible during transfer and tilt the mast backwards and do not tilt it to the maximum until the stacking almost horizontal.**
4. **See clearly the driving direction and be cautious on persons and ground or persons on the top and danger factors. Keep rear gap during lowering or turning.**
5. **Overturned vehicles may cause deaths thus turning shall be slow. Do not turn the forklift on a slope.**
6. **Never overload or transfer loose cargo.**

   Drive slowly when transferring cargo of over-length, over-width or over-height. Allow the fork to have sufficient width.

   Drive backwards if the cargo hinders the field of sight.

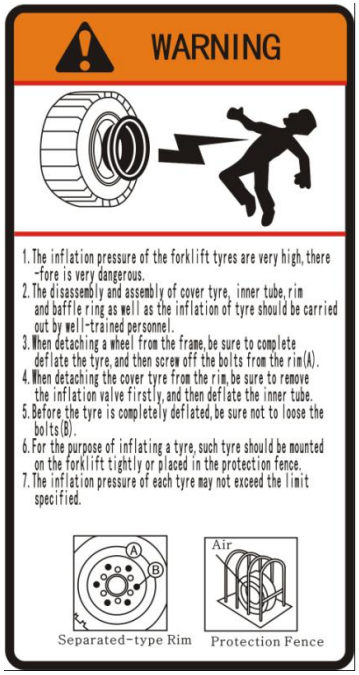
   Use of accessories requires special training and reporting to superiors.
7. **Keep the ramp clean and straight when running upwards and downwards. Confirm the safety before moving aboard the deck or a tow truck.**
8. **Overhead guard and load bracket must be installed.**

   Always keep yourself within the overhead guard.
9. **Shut down the engine during refueling and observe the refueling regulations specified in the operation and service manuals.**
10. **The forklift will descend rapidly with no load.**

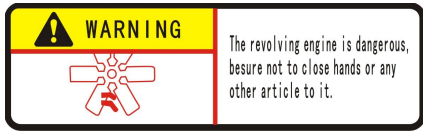
    Do not allow persons to stand under the fork or on the vehicle.
11. **Park the vehicle at the designated place and never park it on a slope.**

    Lower the fork on the ground, move the gear stick to neutral position and pull out the key and apply the parking brake.
12. **Tie the seatbelt when operating the forklift.**

B Use method for pneumatic tires



C Warning sign for lifting device



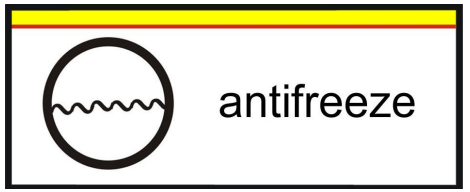
D Do not climb the forklift body

It is dangerous to use the forklift's body as the step and mast as a ladder. Unintentional contact with the control handle may cause unpredictable mast movement and the person may be crushed between the mast and vehicle body, causing a major accident.

E Do not load passengers on the forklift.

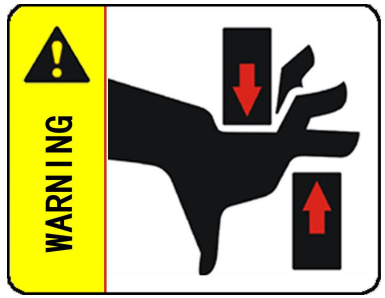
It is not safe to load passengers on the forklift because the vehicle body vibrates greatly in case of bumpy roads. Especially, because of small turning radius, persons are easy to be swung externally.

F Do not open the water tank cover if the antifreeze is hot.



The antifreeze is of high temperature and pressure after the forklift is operated. Under such a case, do not open the water tank cover because high temperature antifreeze may be sprayed out, which causes the scald

G Do not put hand or foot in mast gap.



Never put your hand or foot in the mast or gap connecting the mast; otherwise, once the mast moves, injuries may be caused.

Caution labels for battery use

Warning

The degradation of battery internals is accelerated if the battery is used and charged when its level is below the LOWER LEVEL, along which not only battery life is shortened but an explosion may occur.

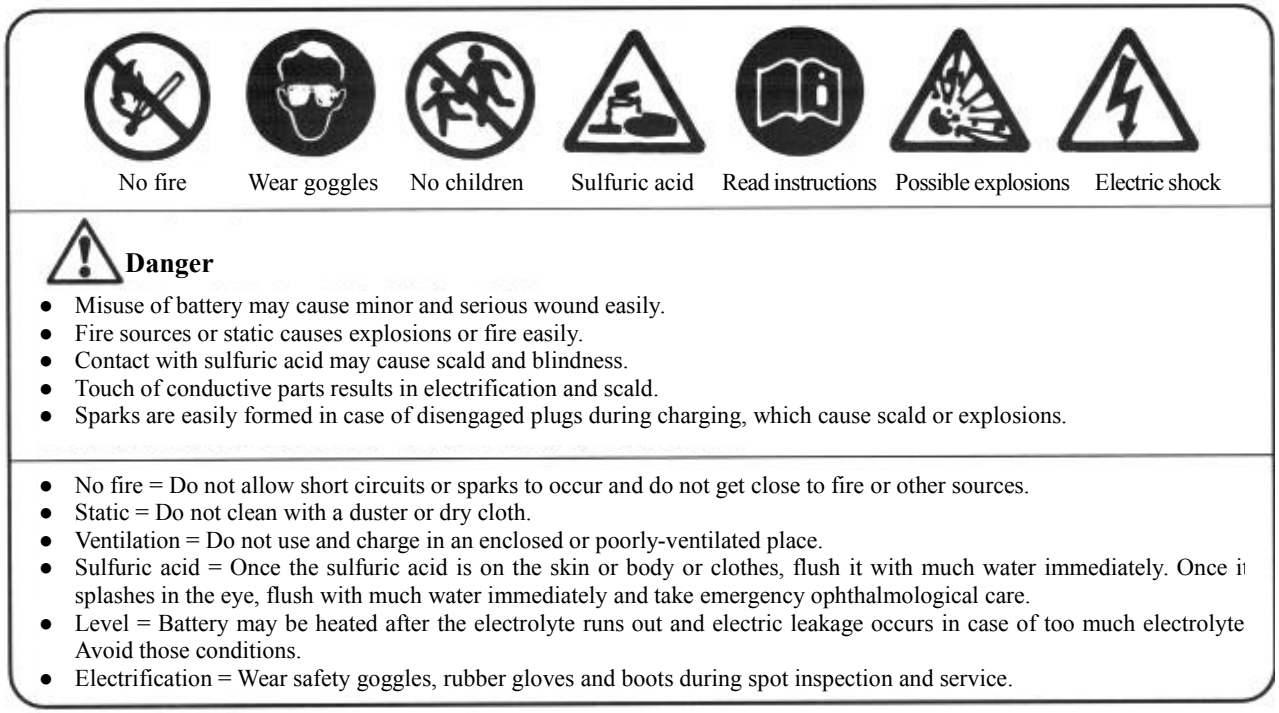
Add the fluid frequently to keep the battery level between the UPPER LEVEL and LOWER LEVEL.

Warning

The battery emits the hydrogen that may cause explosions.

Do not allow lighters to be near the fire sources and never make sparks.

To not make sparks, shut down the engine first and turn the charger switch to OFF for removal of cables of the battery and charger.



2. Operation devices

Contents

This manual covers following precaution terms.

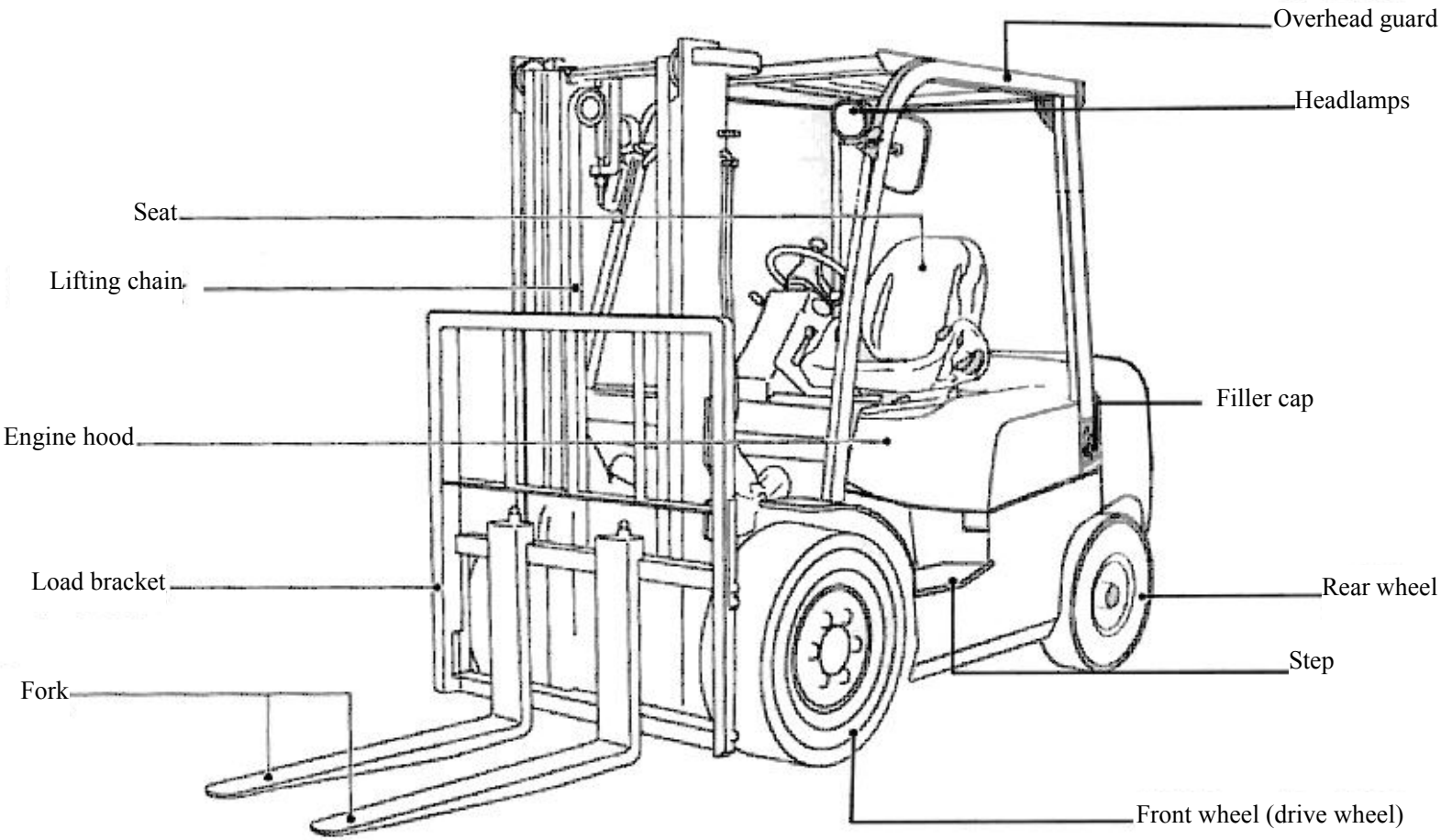
To ensure safety considerations for vehicle's owner and operator, please observe the rules strictly.

Unless you are quite familiar with the vehicle, do not operate, spot-check and service it.

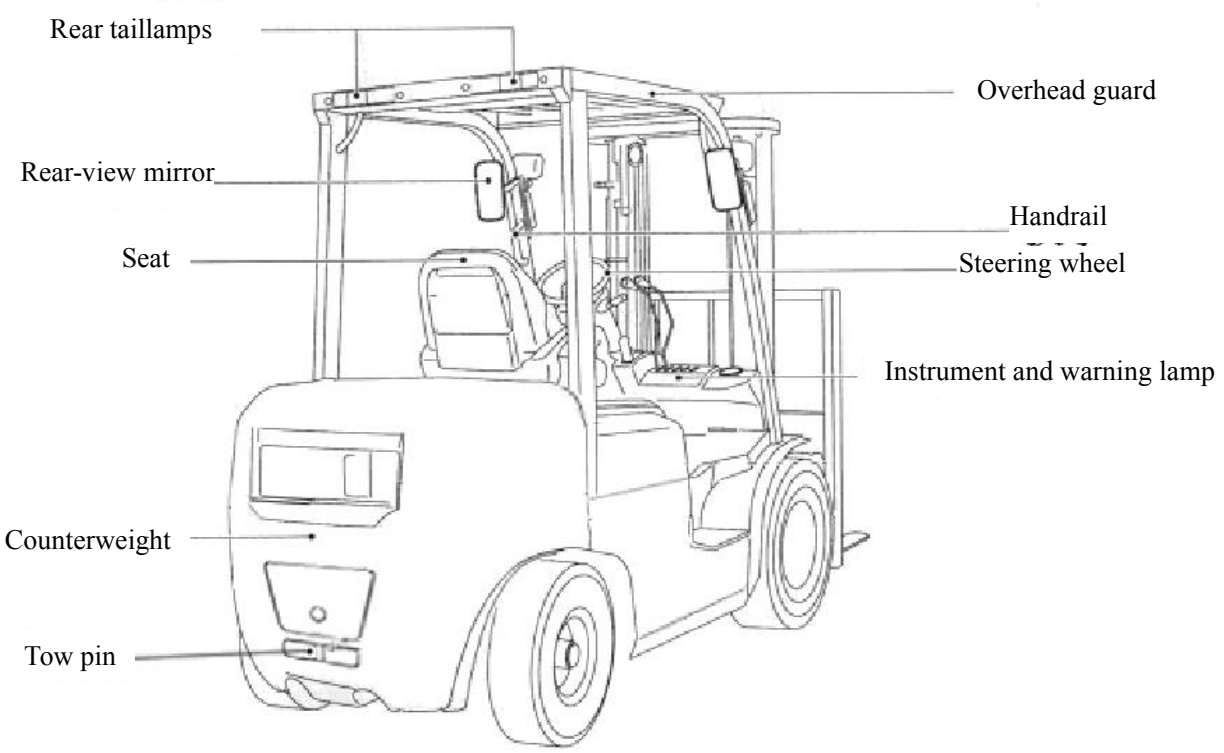
Meanings of terms and symbols used in this manual and on the nameplate are as follows:

Symbol for danger degree	Meaning
Danger	It indicates the accidents that cause deaths and injuries quite easily and must be observed.
Warning	It indicates the accidents that may cause deaths and injuries and must be observed.
Caution	It indicates the accidents that may cause deaths and injuries and damage vehicle and surrounding items and must be observed.
Note	It is the symbol irrelative with accidents and failure yet which needs familiarization to prolong vehicle's life.

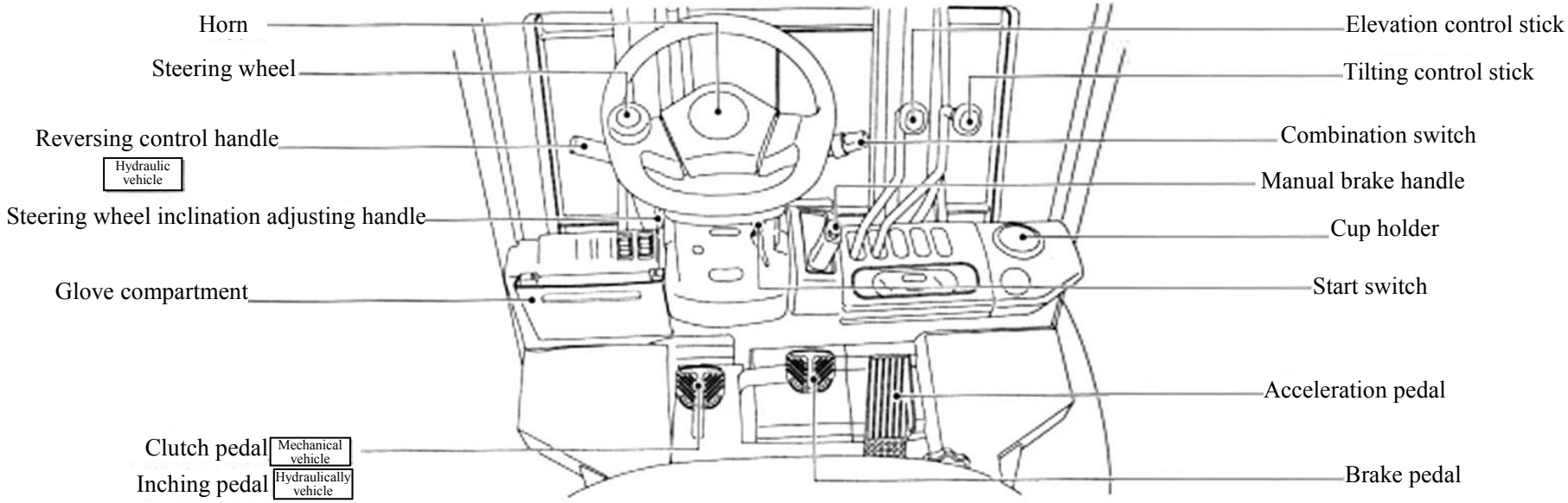
Name of each component

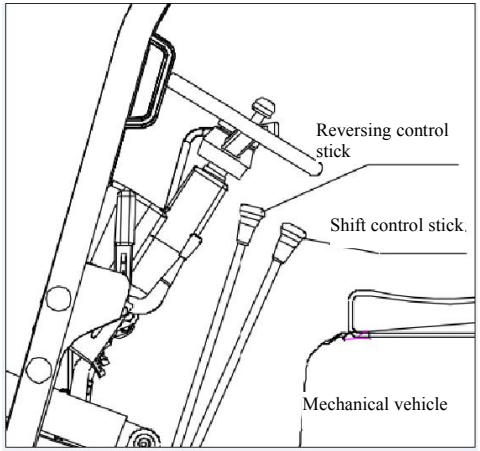


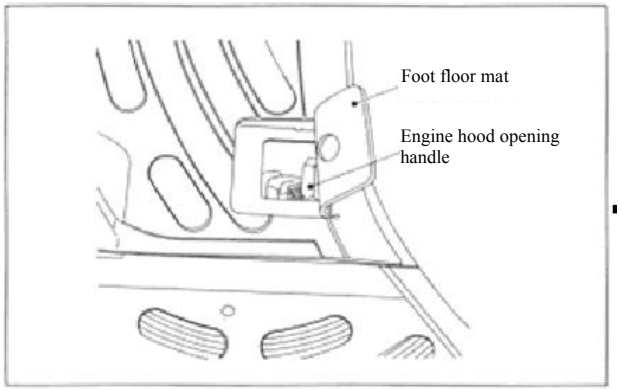
Name of each component



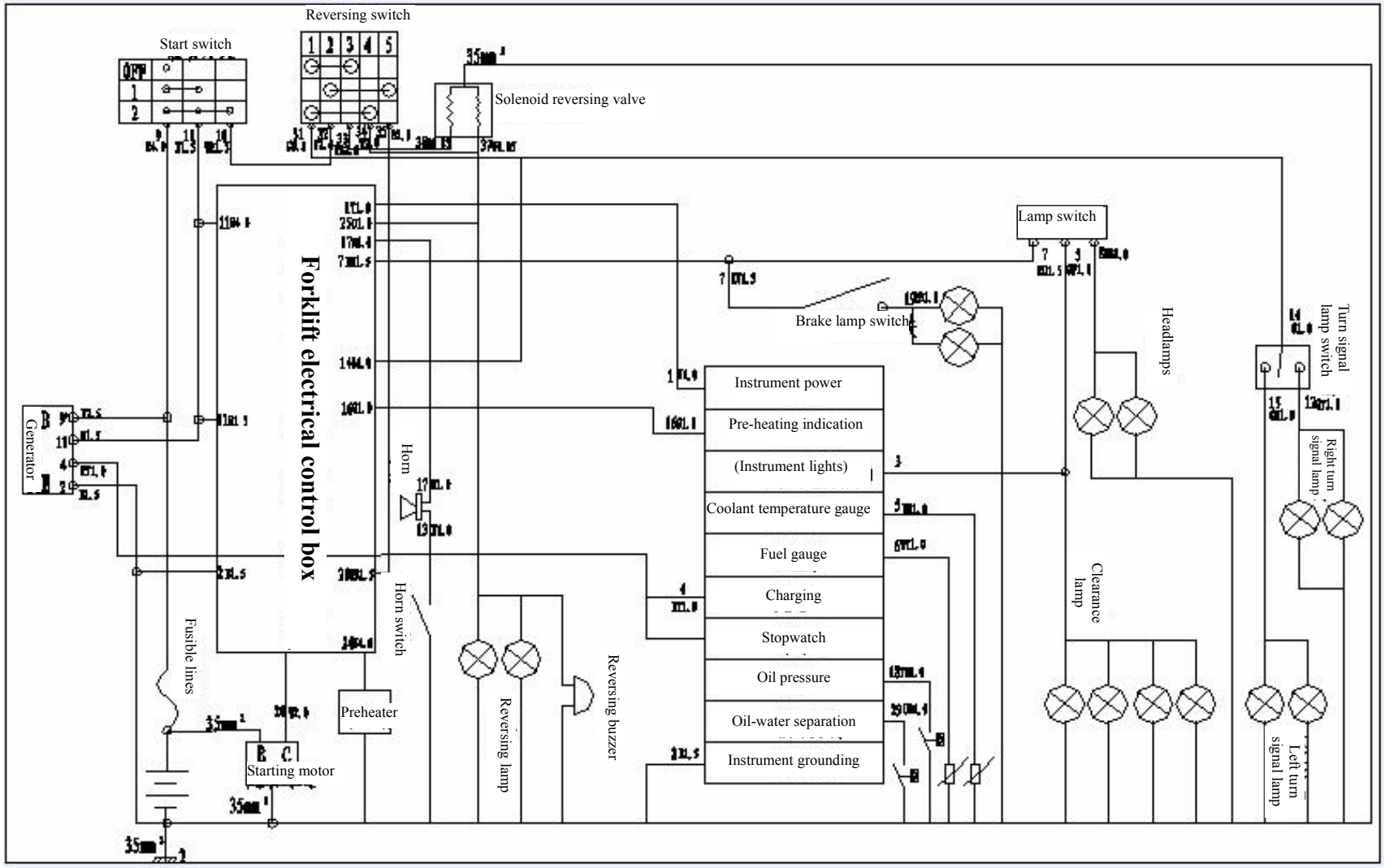
Operation device and use method



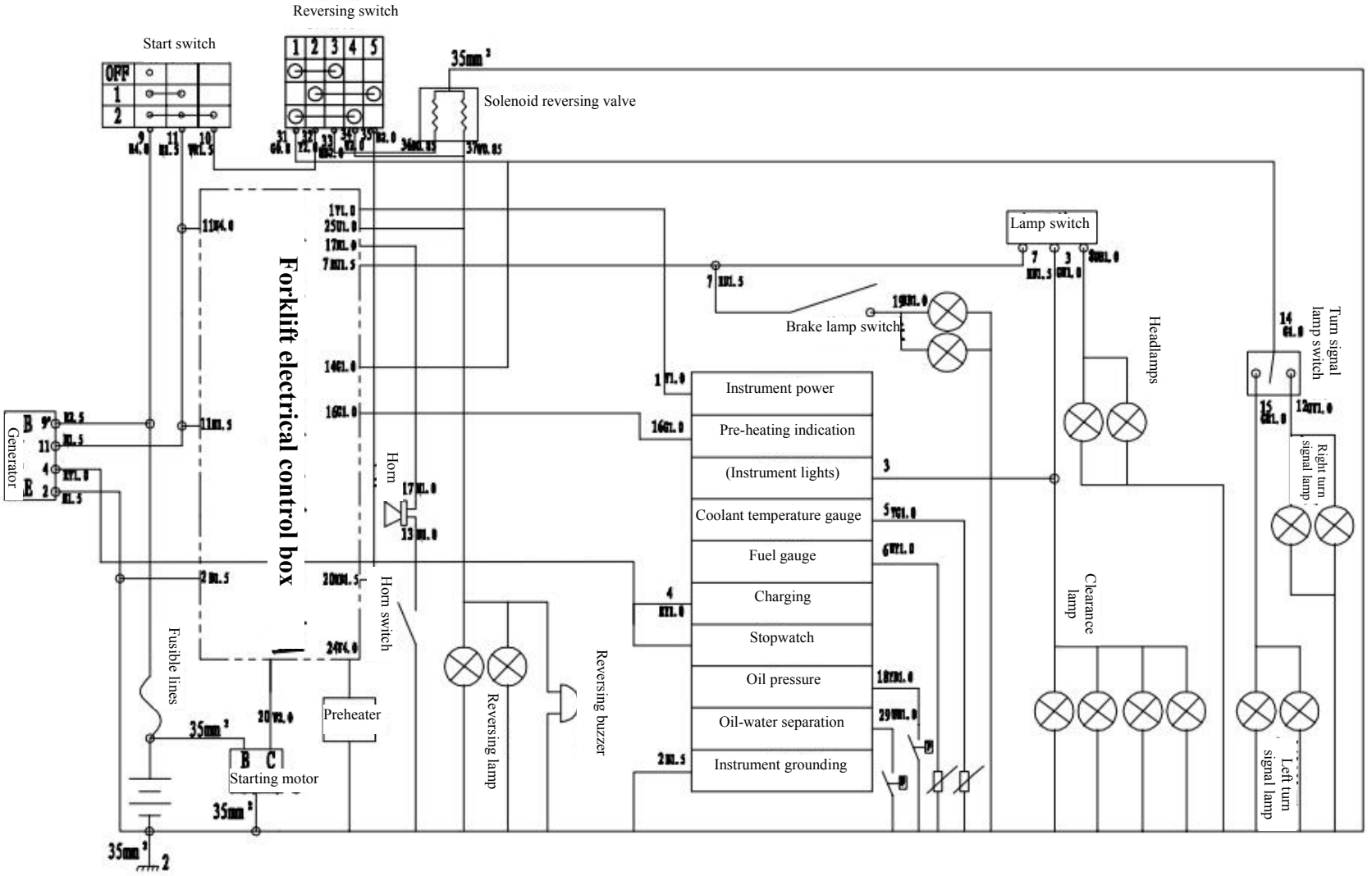




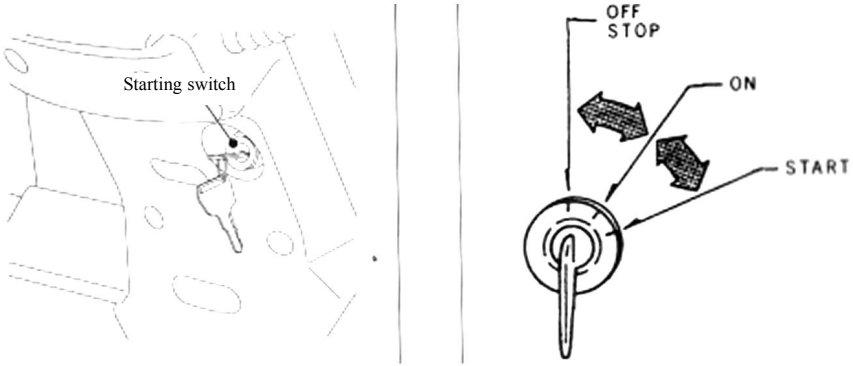
Schematic diagram for H series electrical system



Schematic diagram for J series electrical system



Keys



Starting switch

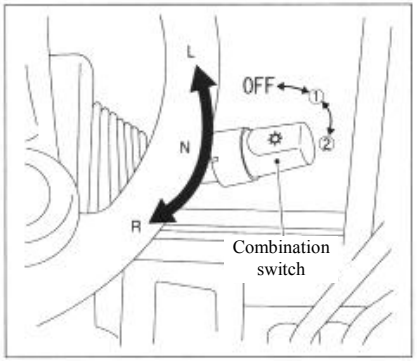
OFF

STOP (OFF)

This is the position to insert the key.

Turn the starting switch to OFF.

Moreover, if the key is turned to this position during operation, the engine shuts down.

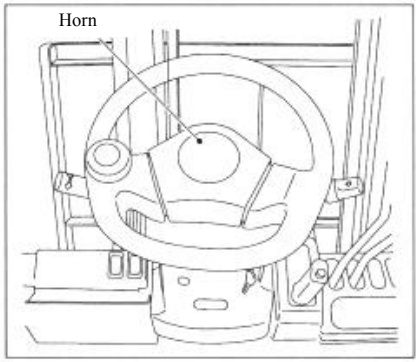


ON (ON)

It indicates the starting motor and such electrical circuits are engaged.

In the case of a diesel engine, once the key is turned to this position, the green indicator lamp in the monitor is on.

After the indicator lamp is off, turn the key to START. In addition, leave the key at this position after the engine starts



START (Start)

This is the position to start the engine. After it starts, release the key and it will automatically return to ON.

Note

1. Do not keep the key at ON after the engine shuts down to prevent battery discharging.
2. During engine operation, do not turn the starting switch to START; otherwise the motor will be damaged.
3. Never allow the starting motor to rotate for over 10s for starting the engine.
4. Unless the transmission stick and gear shift stick are at neutral positions, the engine cannot be started. Unless the gear shift stick is at neutral position, the engine cannot be started.

Combination switch

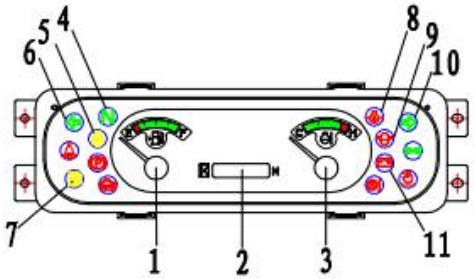
(Lamp switch)

This switch is a 2-position rotation switch.

	OFF	①	②
Clearance lamp	OFF	ON	ON
Taillamp	OFF	ON	ON
Instrument lights	OFF	ON	ON
Headlamps	OFF	OFF	ON

Note

This switch is irrelative to its position. Remember to turn it off.



J series instrument

Instruments and warning lamps

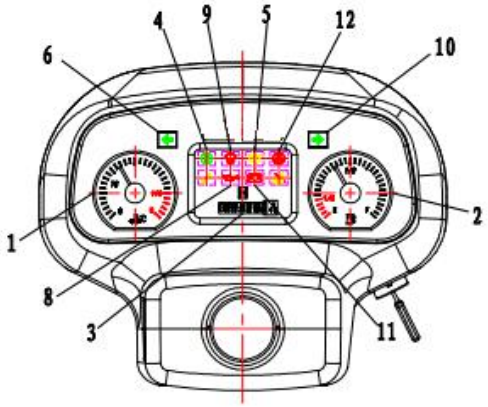
(Turn signal indicator lamps)

This is a switch used to make the turn signal indicator lamp (front & rear) to flash to indicate to indicate the driving direction.

L	Left lamp flashes
N	Neutral
R	Right lamp flashes

Note

Switches of some vehicle may be installed on the left.



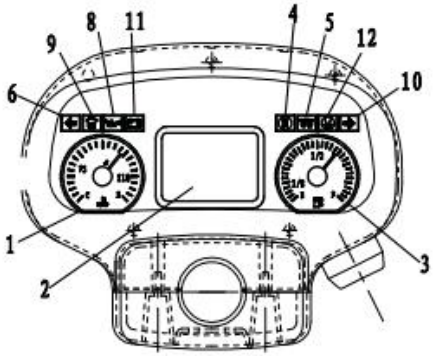
Mechanical instrument

Horn

Normal operation of the horn depends on the position of the starting switch.

The horn is inoperative when the key is not at ON.

1. Fuel gauge
2. Stopwatch
3. Coolant temperature gauge
4. Neutral position lamp
5. Preheating indicator lamp
6. Left turn signal lamp
7. Fuel quantity warning lamp
8. Engine oil pressure warning lamp
9. Oil-water separator warning lamp
10. Right turn signal lamp
11. Charging warning lamp
12. Air cleaner warning indication



Hydraulic instrument

Stopwatch

It accumulates the vehicle operation time during engine operation. In the first grid on the right, "1" means 1/10 hour (6min). Ensure the periodic spot inspection using the vehicle operation time.

Fuel gauge

It shows the fuel quantity in the tank.

Note

- It cannot display the fuel quantity correctly during running on a slope.。
- Add the fuel immediately before it runs out.

Coolant temperature gauge

It shows the coolant temperature during engine operation. It indicates normal condition during operation when the pointer is within range A.

Overtemperature may occur once the pointer is within range B (red). At this time, drive it to a safe field and idle the engine to cool until the pointer returns within range

Note

Do not shut down the engine if the pointer is within range B (red); otherwise, failures may occur easily.

Warning and indicator lamps

Neutral lamp

This lamp is on when the reversing control handle is at neutral position.

Preheating indicator lamp

(Diesel forklift)

This lamp is on when the key is turned to ON to preheat.

If the lamp is off, the preheating is finished and the engine is easy to be started.

Seatbelt warning lamp

(Optional)

The lamp is on if the seatbelt is not tied and is off if it is tied.

Fuel quantity warning lamp

The lamp is on when the fuel in the tank is (less) below the specified quantity.

Parking brake warning lamp

(Optional)

This lamp is on when the parking brake is applied and is off when it is released.

Engine oil pressure warning lamp

The lamp is on to warn when the engine lubricant pressure is low. The lamp is off by turning the starting switch to ON and depressing the accelerator after engine is started to raise the rotating speed.

Note

If this lamp is on during engine operation, the lubricant may be insufficient or lubricating system may be abnormal. Stop the operation immediately and contact a local dealer to check your forklift.

If the air cleaner is clogged during engine operation, this lamp is on to warn. After the lamp is on, shut down the engine and then clean the filter element and dust cover.

Oil-water separator indicator lamp

(Diesel forklift)

During engine operation, this lamp is on when sediment is sufficient in the water.

Note

If this lamp is on during engine operation, shut the engine down immediately and clear the water. If the operation continues, the fuel injection pump may be burnt. See page 4-22 for method for clearing water.

Electrolyte warning lamp

(Optional)

This lamp is on if the battery electrolyte level is below the LOWER LEVEL. When the lamp is on, add distilled water in the battery until the UPPER LEVEL position.

Coolant quantity warning lamp

(Optional)

When the coolant level in the auxiliary water tank is below the lower limit, this lamp is on to warn that the coolant is insufficient.

When the warning lamp is on, add coolant in the auxiliary water tank until the upper limit.

Charging warning lamp

During operation and when the generation system is abnormal, this warning lamp is on.

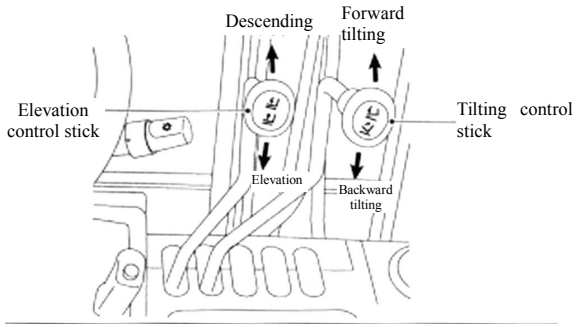
After the starting switch is turned to ON, this lamp is on and is off after the engine is started.

Note

If the lamp is still on after the engine is started, the cause may be that the fan belt is slack or broken, or that the engine system is abnormal. Shut down the engine immediately and service it.

Control sticks and pedals

Elevation control stick



Caution

Operate the elevation control stick on the driver seat after confirming the surrounding safety.

Pull the control stick backwards and the mast is lifted. Push it forward to lower the mast.

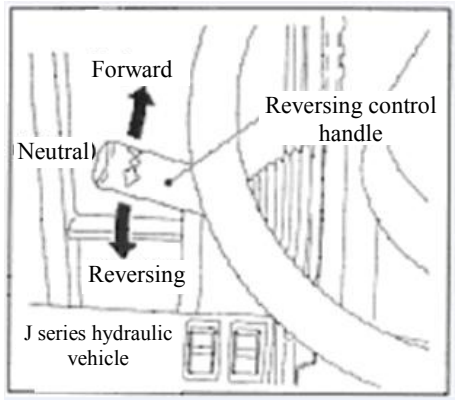
Proper elevation speed is gained via engine rotating speed, that is, via the accelerator depression extent and operation travel of the control stick.

The descending speed depends only on the operation travel of the control stick rather than on the engine rotating speed.

Titling control stick

Caution

Operate the tilting control stick on the driver seat after confirming the surrounding safety.



Pull the control stick backwards and the mast is tilted backwards. Push it forward to tilt the mast forward.

Proper tilting speed is gained via engine rotating speed, that is, via the accelerator depression extent and operation travel of the control stick.

Note

After the engine shuts down, pushing the control stick forward will not tilt the mast forward.。

For safety, the tilting self-lock mechanism is installed in the multi-channel valve, which is normal.

Reversing control handle (J series internal combustion vehicle)

Caution

Before operating the reversing stick, depress the brake completely.

Release the brake at positions other than N and the vehicle starts to move slowly.

Do not release the brake before complete forward moving.

The reversing control handle installed on the reserving tube has one forward gear and one reversing gear.

When the handle is set to R, the rear reversing lamp is on and buzzer sounds.

During reversing (F for forward and R for reversing), stop the vehicle and then continue to reverse.

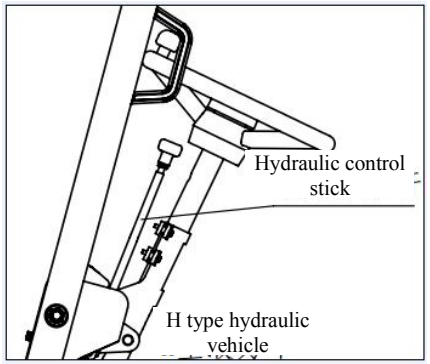
Reversing control stick (mechanical vehicle)

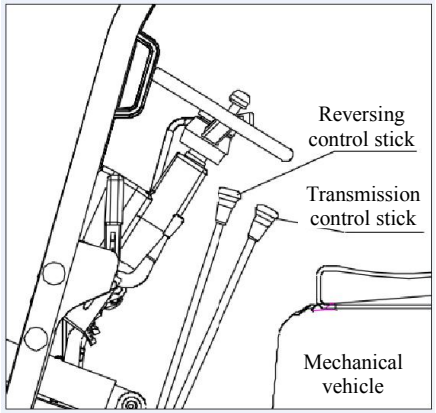
Transmission control stick (mechanical vehicle)

The control stick installed on the front base plate is of two gear positions (forward and reversing and speed range: two gears for each forward and reversing position)

When the stick is at R, the rear reversing lamp is on and buzzer sounds.

Floor the clutch pedal to change the gear. Before reversing, stop the vehicle and then continue to reverse.





Note

Neutral switches are designed for control sticks of both mechanical and hydraulic vehicles. Place the control stick to the neutral position before starting the engine. Otherwise, the engine cannot be started.

Manual brake handle

Caution

Place chocks against the wheels when parking the vehicle on a slope.

Use the manual brake when parking the vehicle by pulling the control handle backwards to apply the brakes of front two wheels and to lock the handle.

Release the manual brake by pressing the lock button for J series and pushing the control handle forward simultaneously. For other series, push the handle forward directly to release the manual brake.

Steering wheel

Caution

If the engine shuts down during running, the power steering will be inoperative. If the engine shuts down, restart it.

Grab the steering wheel ball handle with the left hand during running. Do not release the ball handle during operation.

Steering wheel inclination adjusting handle

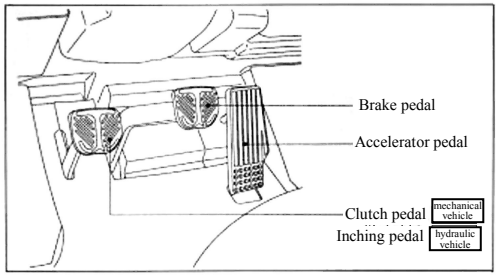
Caution

- **Adjust the inclination before operation.**
- **After adjustment, return the direction lock to secure it.**
- **It is dangerous to adjust the inclination during operation and never do so.**

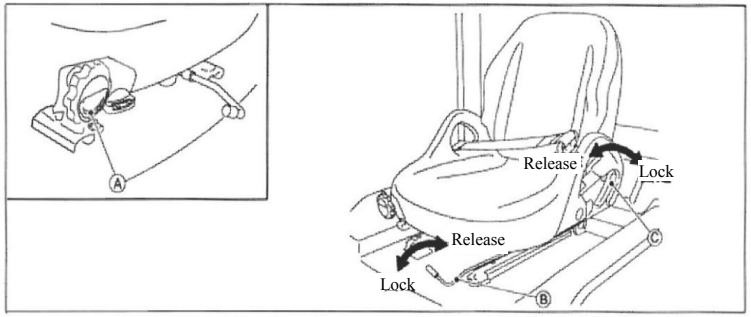
Adjust the forward and backward inclination of the steering tube to fit the steering wheel position with the operator's build. Move the handle to RELEASE to release the wheel and to LOCK to lock it.

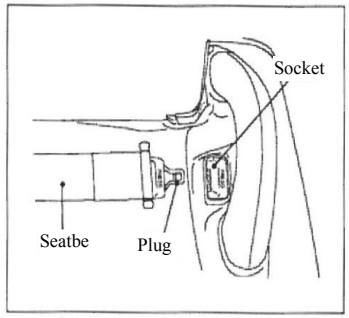
Clutch pedal (mechanical vehicle)

Use the clutch pedal to engage and disengage the engine and transmission. Depressing the clutch to disengage the engine and transmission and return it to transfer the engine power to the transmission.



Inching pedal (hydraulic vehicle)





Caution

For deceleration during running or acceleration during climbing, as well as running downhill, do not depress the inching pedal.

If under above-mentioned conditions the inching pedal is depressed, the clutch will be shut off and the engine brake will be inoperative, which is dangerous.

During high speed movement of the loading device, use this pedal for loading/unloading when running close to the cargo slowly. Gently depress this pedal; the hydraulic clutch pressure decreases (clutch linkage) and depress it further to disengage the clutch, the forklift will brake.

Note

Avoid clutch linkage as much as possible.

Refer to Use Method for Inching Pedal in this manual.

Brake pedal

When the brake pedal is depressed, the vehicle brakes and the brake lamps are on.

Accelerator pedal

When this pedal is depressed, the engine rotating speed is increased. Release this pedal to return it and the engine is at idle.

Seat

Suspension seat adjusting handle Ⓐ

Caution

Adjust the handle before operation. Adjustment during operation is dangerous.

Adjust the seat to a comfortable position according to the driver's weight. Rotate the adjusting handle to make its scale to be identical with your weight so that the vehicle can absorb the impact and vibration, developing comfortable riding.

Seat adjusting handle Ⓑ

Backrest adjusting handle Ⓒ

Caution

Adjust the seat before operation and confirm it is locked after adjustment.

Adjusting the handle can fit the seat with the operator's build. Along the arrow direction, pull the handle upwards to release the lock. After adjustment, the seat can be gently moved forward and backward and confirm it is securely locked.

Seatbelt (optional)

Warning

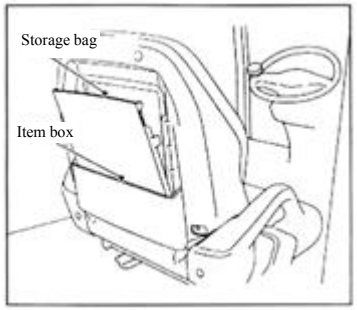
Tie the seatbelt. If it is not installed, the driver may be swung externally in case of the overturn.

A metal button is installed on the right. Pull the seatbelt out from the metal button and insert it in the left buckle until a click is heard. Then secure it.

For releasing it, press the red button on the buckle and retract it in the metal button.

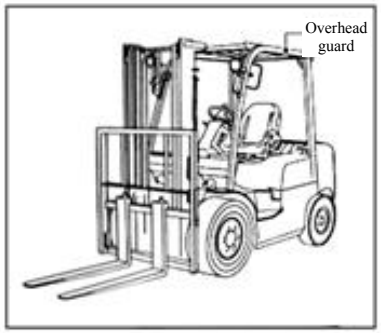
Storage bag

Item box



The storage bag for operation manual and item box for small articles are designed on the seat back. Close the item box after use.

Overhead guard



Warning

The overhead guard is an important component to prevent objects on the top from dropping down and protect the operator. Loose installation, use after removal and use after modification is dangerous and may cause major accidents.

Note

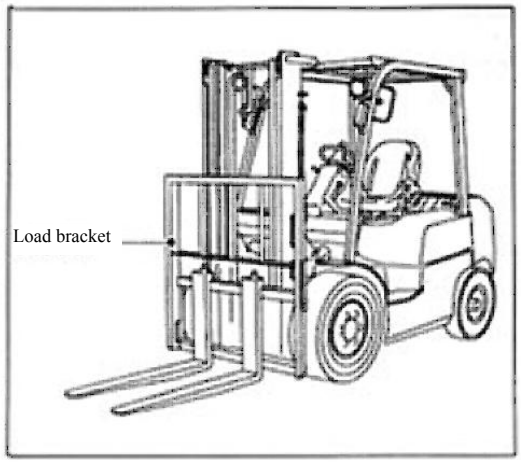
Keep the waterproof cloth on the overhead guard clean and prevent accumulated garbage.

Load bracket

Caution

Do not remove and loosen the load bracket. Otherwise:

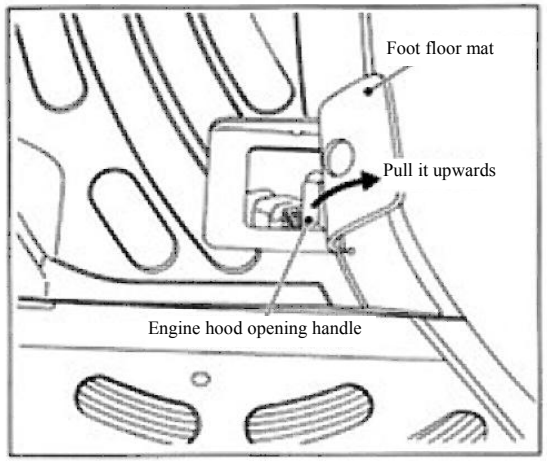
- **Operator is easy to get hurt by fallen cargo.**
- **Vehicle is easy to get impacted by other machinery.**



Engine hood

Caution

Press the engine hood surface to close the cover. Do not crush the fingers.



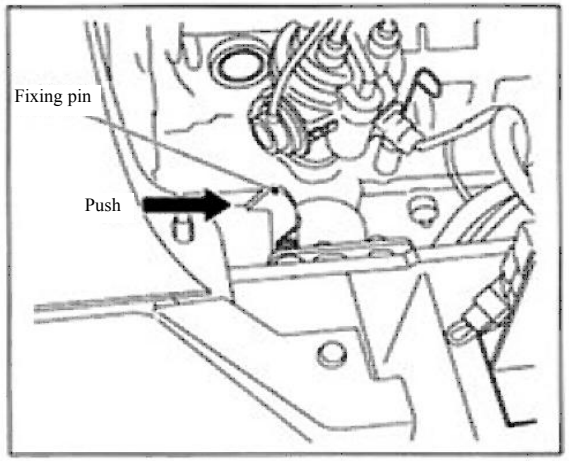
Pull this handle upwards so as to open the engine hood easily.

Because the engine hood is configured with pneumatic spring, it is not difficult to open it backwards, which is convenient for routine spot inspection and maintenance.

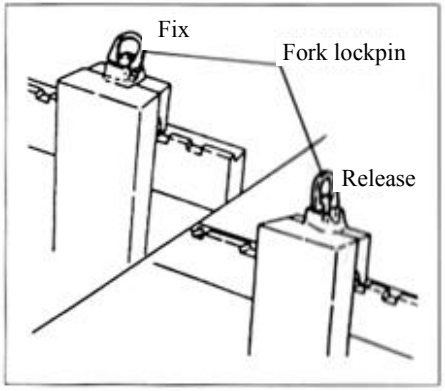
If the engine hood cannot be opened

Treat as per following methods if the engine hood cannot be opened after its handle is pulled.

1. Prepare a thin iron plate with length about 20cm (e.g.: iron ruler).
2. Push the fixing hook using the thin iron plate along the arrow direction in the figure.
3. The engine hood will be opened after the hook is disengaged.



Fork lockpin



The forklift locating pin is used to fix the forklift.

Pull the handle of the fork lockpin upwards slightly and rotate it by 90° to release the lock so as to adjust the forklift gap.

Adjust the forklift gap properly in accordance with cargo size.

⚠Caution

- **In according to principle of keeping the cargo center consistent with the vehicle center, the forklift gap shall be adjusted equidistantly on the left and right. After the adjustment, fix the forklift using its locating pin to secure it.**
- **During adjusting the forklift gap, lean the body against the load bracket and adjust it by pushing the fork by feet after standing firmly. Never use hands to adjust.**

Prevent the fork bolt from dropping down.

⚠Caution

Except for above situations, do not remove this bolt to prevent the fork from dropping down from its rack.

- **When removing the fork.**
- **When left and right forks must be combined in the center due to operation requirement.**

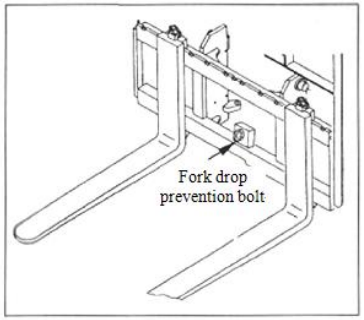
The fork on one side may drop when it is at the center of the carrier.

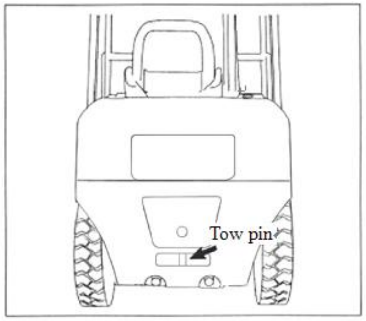
This bolt can be used to make unavailable the use of the fork that is at the center of the carrier.

Tow pin

⚠Caution

Never use it in towing or trailing.





It is only applicable to following situations:

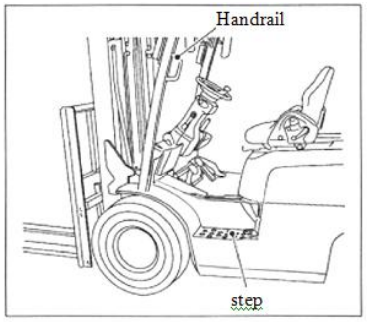
- Where the driving is impossible such as the vehicle drops on a side ditch and it is used to get the vehicle out of the trouble.
- Where the vehicle transfer requires loading in a truck or unloading from a truck.

Handrail and step for getting in and off the vehicle

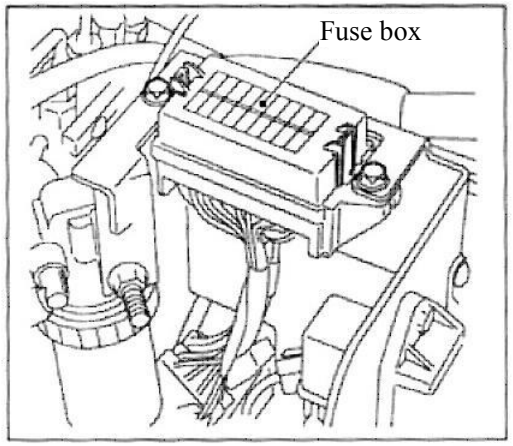
⚠Caution

When getting in or out of the driver seat, use the handrail and step to confirm the safety.

Handrails are installed on left and right sides of the overhead guard and steps are designed in the front and both left and right sides. When getting in or off the vehicle, use the handrail and step to confirm the safety.

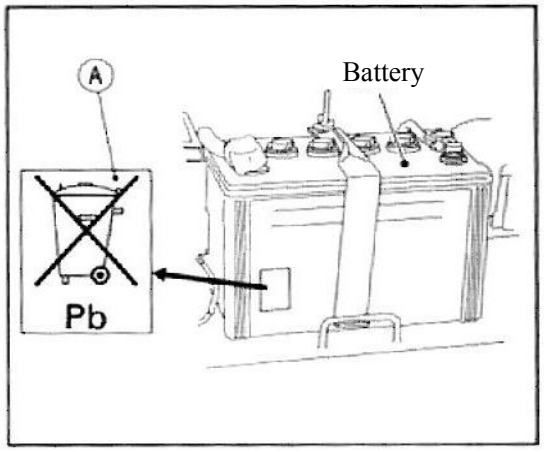


Fuse box



The fuse box is installed on the left in the engine hood.

Battery

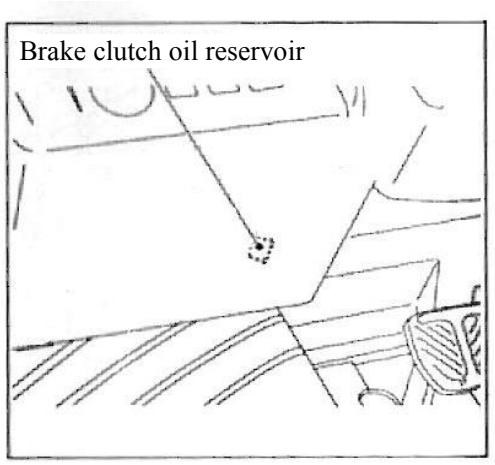


The battery is installed on the left in the engine compartment. Open the engine hood to perform battery spot inspection.

Nameplate Ⓐ

- Do not discard the battery.
- Recycle the battery.

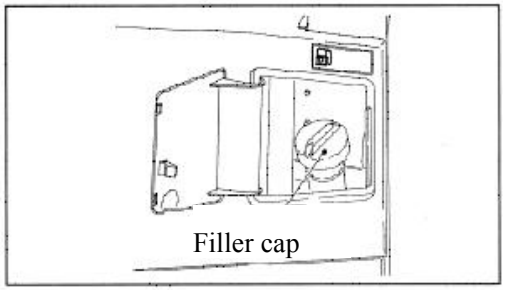
Brake and clutch oil reservoir



The J series brake oil reservoir is in the instrument support covering part. Open the covering part on the left front of the driver seat for spot inspection of reservoir level. Except 1-1,8t series for which the brake oil reservoir is under the instrument support, the reservoirs for other series are under the foot floor. Open the foot floor for spot inspection.

For mechanical vehicles, be cautious on the combined use of the brake and clutch oil reservoirs.

Filler cap



Caution

- **Before filling the fuel, stop the vehicle, shut down the engine and apply the parking brake. No fire source is allowed and the operator is required to get off the vehicle.**
- **After filling the fuel, install the filler cap securely. A loose cap may cause fuel leakage and fire.**
- **Start the engine after securely installing the filler cap and treating the overflowed fuel.**
- **Wipe off any overflowed fuel.**
- **Confirm no open flame (matches, lighters, etc.) can be used during refueling.**

The filler cap is installed on the rear left of the vehicle.

Rotate to the left to remove the cap.

The fuel tank breather pipe is installed inside the cap.

If this breather pipe is damaged or clogged, be cautious.

Note

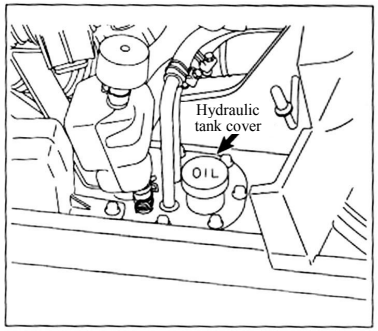
- Fuel to be used.
- Use of the diesel (light)

  Please use quality diesel.

  The diesel freezes at a temperature below -10℃ and blocks the fuel pipe. Use local diesel in cold regions.
- If the kerosene is used, the engine performance may degrade and the spraying pump may be faulty.

Cover plate of hydraulic tank

The cover plate of hydraulic tank is on the right in the engine hood and a vernier gauge is installed in the fuel tank cap.



Water tank

Caution

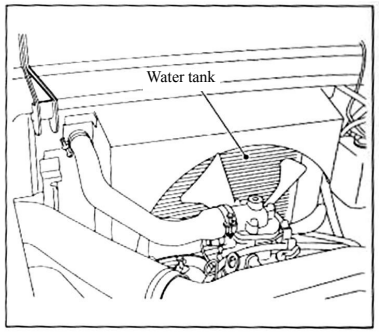
It is dangerous to open the water tank cover in a hurry when the engine is hot.

Rotate the water tank cover to the left slightly after the engine cools to reduce the pressure in it and then remove the cover.

The water tank cover is under its plate behind the engine hood.

Remove the cover by rotating it to the left by 90°.

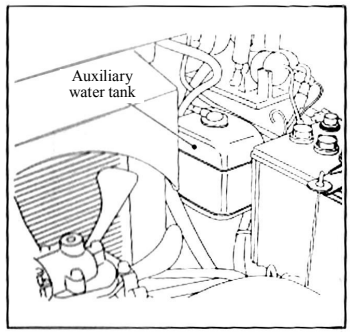
The figure sees the water tank from inside the engine hood.



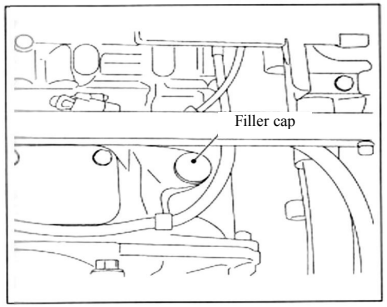
Auxiliary water tank (optional)

It is installed behind the battery in the engine hood.

The spot inspection of coolant quantity can be performed via the auxiliary water tank.



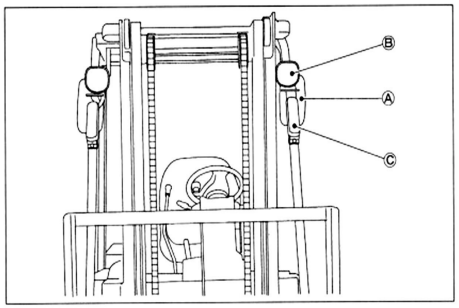
Filler of torque converter (for hydraulic vehicles)



The filler of torque converter is under the base plate.

A vernier gauge is installed on the filler cap.

Lamps

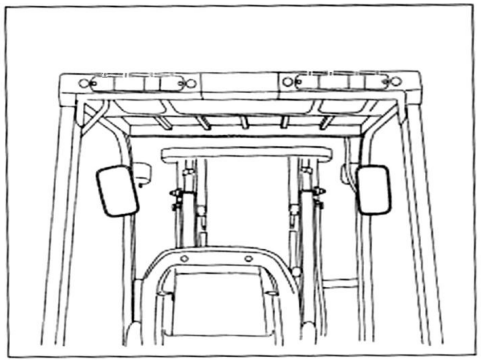


⚠Caution

Confirm the working conditions of lamps. In case of burnt bulbs, or damaged or dirty bulb cover, replace or repair them.

In the front are installed the headlamps Ⓑ and combination lamps Ⓒ (turn signal lamps and clearance lamps).

Rear-view mirror Ⓐ



⚠Caution

- **Face the back and confirm the condition during reversing and do not depend only on the rear-view mirrors.**
- **Rear-view mirrors shall be clean.**
- **Adjust the rear-view mirrors to positions where rear view is good.**

Each rear-view mirror is installed on the front feet of the overhead guard on the left and right.

Rear

In the rear are installed the combination lamps consisting of turn signal lamps, brake/clearance lamps, and reversing lamps.

Rear working lamp

⚠Caution

Even laws are complied with, if necessary lamps are not prepared, rear working lamps must be installed.

Rear working lamps are used during night operation to illuminate the rear road, so as to find any obstructions on the road.

Revolving lamp

This lamp is used if it is noisy around when vehicles and pedestrians are on the road.

Volume-adjustable reversing buzzer

This buzzer enjoys a two-position switching between high and low volume according to the ambient noise.

High load bracket (HBR）

It is used to ensure the safety and to stabilize the cargo when it is higher.

Overhead guard with steel wire mesh

It is designed to protect the operator in case the cargo, especially small objects, falls down at a high position.

Solid tire (special tire TR01)

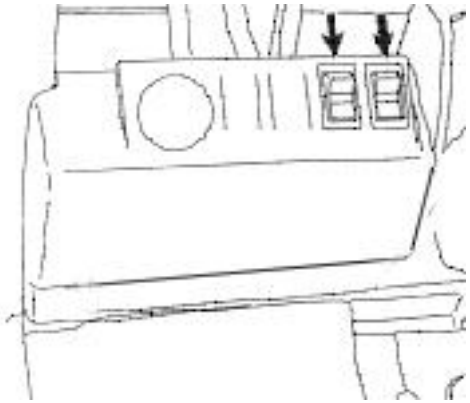
These tires are used if iron chips exist on the road.

Fire extinguisher (FE)

It is used to extinguish the fire at the initial period and installed on the rear foot of the overhead guard so as to take it in an emergency.

Switches

Other switches (of heater, wiper, etc.) of J series are shown in the figure and labels are affixed on all switched.



3. Operation

Contents

Following terms for considerations are provided in this manual.

To ensure safety considerations for vehicle's owner and operator, please observe the rules strictly.

Unless you are quite familiar with the vehicle, do not operate, spot-check and service it. Meanings of terms and symbols used in this manual and on the nameplate are as follows:

Symbol for danger degree	Meaning
Danger	It indicates the accidents that cause deaths and injuries quite easily and must be observed.
Warning	It indicates the accidents that may cause deaths and injuries and must be observed.
Caution	It indicates the accidents that may cause deaths and injuries and damage vehicle and surrounding items and must be observed.
Note	It is the symbol irrelative with accidents and failure yet which needs familiarization to prolong vehicle's life.

Please follow the cautions for longer service life, safe operation and higher profits.

A new forklift

Service life of the forklift greatly depends on early operation.

Please pay attention to following instructions in the first 200 hours.

⚠ **Never start up the engine when it is cold whatever the season is;**

⚠ **Spot inspection whenever you remember;**

⚠ **Never treat the forklift roughly;**

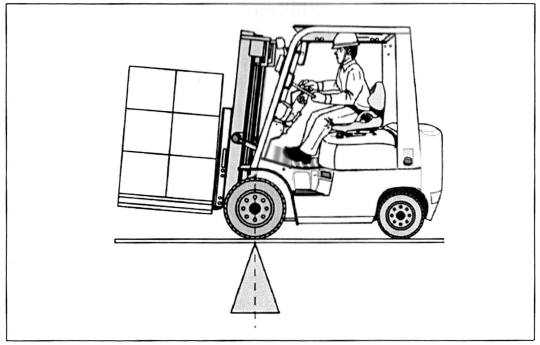
⚠ **Add lubrication oil, grease and change oil;**

⚠ **Never run the engine always at high speed;**

Load and stability of forklift

The forklift is supported by the front wheels and balances the load on the rear part, just like a seesaw.

Always pay attention to the center of gravity of the load to keep balance.



The rear wheels would rise off the ground and the forklift may roll over in case it is overloaded. In addition, the load will be heavier if the center of gravity of the load is closer to the tip of the fork. In such condition, the load weight shall be reduced.

Load center and load capacity

⚠ **Caution**

- **When the forklift is traveling with load, lift the load to 15-20cm above the ground and tilt the mast backward to place.**
- **Load of forklift with attachments shall be lighter than regular one.**

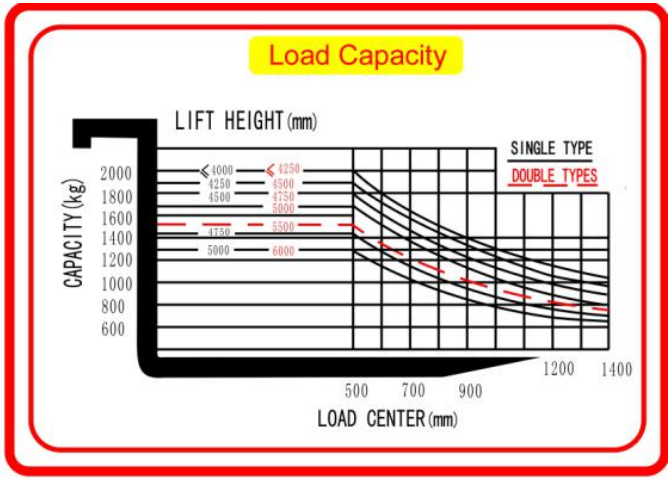
Load of forklift with attachments (tilt fork, bale clamps, rotator) shall be lighter than regular one.

In case of installation of the attachments on the forklift, the weight shall never exceed the allowed load value specified on the nameplate.

Why the weight shall be reduced?

1) Weight of the attachments shall be subtracted;

2) Thick attachment makes the load center move forward and reduces the load;



The distance from the root of the fork to the center of the load is called load center. The above picture shows the relation between load center of a 2t forklift and allowed load. The relation shows load capacity curve. The figure is attached to the forklift.

Stability of forklift

Stability of forklift is specified in JIS. The forklift can be stable in following conditions:

- On even and firm ground or road;
- Travelling with allowed load or without load;
- The forklift shall be level when it is loaded or unloaded; moreover, be slow when lifting;

For safety concern, it is necessary to keep the forklift in good conditions.

Traveling forklift without load

The upper surface of the fork is 30cm above the ground and the mast shall tilt backward to proper position. The forklift bears no load.

Traveling forklift with load

Allowed load on the load center; the upper surface of forklift is 30cm above the ground and the mast tilt backward to proper position.

Inching operation of pedal (hydraulic model)

Inching operation of pedal is same with operation of clutch pedal of mechanical forklift.

The inching pedal is used when the forklift is moving slowly and the mast is moving quickly (inching operation).

1) Inching operation only;
2) Shift the gear lever to forward gear (or backward gear);
3) Accelerate slowly and release the pedal inch by inch and the forklift will move little by little;

Startup on slope

- In case of starting up on a slope, place the load on the upper part to climb up or climb down. In case of empty truck, place the balance weight on the upper part to climb up or climb down to avoid slipping front wheel.
- Use brake pedal, instead of inching pedal, in case of running downhill or starting up on a slope; otherwise the forklift may run due to inertia. Therefore, brake performance of forklift is poor. If you use inching pedal, the forklift would slide down, which is very dangerous.

Transportation of forklift

Caution

When transport the forklift with truck:

- Immobilize wheels of forklift and the forklift. To stop forklift movement in the compartment, retain the wheels still and immoblize the forklift fully using the cables.
- When load and unload the truck and when transport on road, the overall length, width and height shall meet requirements of relevant laws;

Caution to loading and unloading

Caution

- Do not turn or make lateral movement on the slab.
- Use long, wide and tough slab;
- Pull up the parking brake of the truck reliabily to immoblize the the wheels;
- Reliabily fasten the slab in the middle of the compartment and the slab shall not be polluted by oil;
- The slab shall be horizontally fastened for safe loading and unloading;
- When loading the truck, reverse the truck slowly to enable the left wheel and

right wheel of the forklift to board the truck together;

Operation of forklift

Getting on and getting off the forklift

1) Walk around the forklift before operation to make sure it is safe.

2) Getting on or off the forklift with help of the step on the left side.

Caution

Never hold the steering wheel or engine hood to get on or off the forklift, because you might slip or fall down and cause potential accident.

3) Fasten yourself with safety belt to protect yourself in case of turnover.

Engine startup

Caution

- **The operator shall sit in driver' seat before starting up the engine.**
- **Make sure that there is no one standing close to the forklift;**
- **In case of indoor startup, open the door and windows for ventilation purpose.**

Before startup, make sure the gear lever is placed in the middle and the parking brake lever is completely laid down.

1) Sit in the driver's seat and insert the ignition key;

2) Sound the horn to warn people nearby;

3) Depress the clutch pedal to the end (mechanical model) or depress the brake pedal to the end (hydraulic model). Turn the key to "START" to start up the engine (10 seconds);

4) Release the key as soon as the engine is started. Release the clutch pedal or brake pedal and the key will return to "ON".

5) Never run the engine at high speed as soon as it is started. When warming up the engine, check if the charging indicator and engine oil pressure warning light are on and if the instruments work well.

6) Once the engine runs stably, run the engine at idle speed to warm it up;

Warm-up of engine

Warm up the engine for around 5 minutes once it is started up whenever in summer or winter.

In case of immediate operation without warm-up, the incomplete combustion of lubrication oil and fuel might degrade the parts of engine.

Startup in cold weather

It is difficult to start up the engine in cold weather due to poor performance of battery and thicker lubrication oil.

Follow below instructions to start up the engine in cold weather:

Gasoline forklift

Caution

As the engine runs at high speed once it is started up, be careful when driving, loading and unloading.

- Turn the ignition key to "START": the starter motor begins to run and the engine is started up (the acceleration pedal shall be released);
- The heater begins to work once the engine is started up;
- In case the first startup fails, return the key to "OFF" and start again 30 seconds later.

Note

Release the acceleration pedal once the engine is started up.

Diesel forklift

Pre-heating time depends on temperature of coolant.

- Right turn the key to "ON": the pre-heating indicator is on; after the preheating, the indicator goes off;

- When the pre-heating indicator is off, depress the acceleration pedal and turn the key to “START” to start up the engine. Never turn the key for over 10s;
- In case the startup fails, return the key to “OFF” and start again 30 seconds later.

If the startup is difficult……

Caution

Prohibited! It is extremely dangerous to push or draw the forklift to start up the engine.

- The starter motor shall never turn continuously longer than 10 seconds. It is hard to start up the engine, stop and wait till the battery is recovered.
- In case of difficult startup and successive failures, check if the fuel tank is empty, if air has slipped into the start system and if the electrical wire is broken.
- Do not start up the engine if the starter motor turns but fails in reaching specified speed. In such case, use auxiliary battery and leading wire to start up the engine.

Note

Startup with auxiliary battery

Before driving away

1) Pull up the lift lever backward to lift the fork 15-20cm above the ground;
2) Pull up the tilt lever backward to tilt the mast to desired position;
3) Make sure the surrounding area is safe and sound the horn to drive away;

Driving away

Caution

Driving at low speed in following conditions:

- **Sharp turn**
- **Narrow channel**
- **Bad condition road**
- **When approaching the goods or barrier**

Mechanical forklift

1) Depress the clutch pedal to the end;
2) Push the direction lever to forward (or backward) gear;
3) Push the speed lever to low-speed gear;
4) Pull down parking brake lever;
5) Release the clutch pedal when depressing the acceleration pedal to drive away;

Note

Release the clutch pedal once the forklift begins to move; otherwise the friction plate may be worn.

Hydraulic forklift

Caution

Depress the brake pedal to the end once the speed lever is shifted to forward or backward gear.

Shift the speed lever to enable the forklift to move little by little (inching)

Note

Release the inching pedal once the forklift begins to move

1) Depress the brake pedal;
2) Shift the speed lever to forward or backward gear;
3) Press the lock button and lay down the parking brake;
4) Release the brake pedal and depress the acceleration pedal to drive away;

Speeding up

⚠Caution

In case it is necessary to travel backward, the operator shall face the back and make sure it is safe. It is dangerous if the operator stares at the rearview mirror only when traveling backward.

Mechanical forklift

- Stop the forklift before shifting from backward gear to forward gear or from forward gear to backward gear;
- When you release the acceleration pedal, depress the clutch pedal in case of shifting from low speed to high speed to from high speed to low speed, or in case of acceleration when the forklift begins to move. Release the clutch pedal when depressing the acceleration.

Hydraulic forklift

Stop the forklift before shifting from forward gear to backward gear or from backward gear to forward gear.

Speeding down

Mechanical forklift

Depress the clutch pedal, release the acceleration pedal, shift the speed lever to low speed gear and then depress the acceleration pedal; depress the brake pedal if necessary;

Hydraulic forklift

Release the acceleration pedal and depress the brake pedal if necessary;

Steering

⚠Caution

The rear part (balance weight) of the forklift would deviate outward when steering.

Different from common vehicles, the forklift uses the rear wheels to turn and the rear part would deviate outward. Therefore, the forklift shall speed down before turning and turn earlier than common vehicles.

- The left hand hold the steering wheel to turn;
- The right hand operate the lever of lifting system;

Generally, you shall put you right hand on your knee or on the armrest unless special operation is required.

Parking

Speed down, depress the brake pedal to stop the forklift and shift the speed lever to the middle position (for mechanical model, depress the clutch pedal).

⚠Caution

Safe parking

- Park the forklift on wide and even ground;

  In case an empty forklift has to stop on a slope, the mast end shall face downhill and the wheels shall be immobilized.
- In case of parking at place or specified place other than the operation site, use warning sign or light.
- Park the forklift on firm ground and take action to protect it from sliding or sinking.
- In case the fork fails in descending due to failure, hang a piece of cloth on the tip of the fork and face the fork to inaccessible side.
- Be careful with slipped and collapsed ground;
- Do not descend the fork unless the forklift has completely stopped. It is very dangerous to descend the fork while the forklift is moving.
- Never jump down from the forklift;

- Face the forklift when getting off and use the step;

Conduct following operations after the forklift is parked at safe place:

1) Pull the parking brake lever backward in place;
2) Descend the fork to ground;
3) Turn the key to “OFF” to flame out the engine;
4) Pull out the key and take care of it;
5) Be careful when getting off;

Road condition

Caution

- **Be careful when driving on uneven road;**
- **Stop the forklift before a railway to check if it is safe;**
- **Bypass barriers such as stone tablet, wood and dented or protruded ground; if it is difficult to bypass the barriers, drive slowly and avoid the lower part of the forklift from the barrier. When traveling across small steps, if the road is wide.**

The forklift is not only limited to driving speed in terms of road condition.

Driving on freeze road

Caution

The driving force will be heavier when the forklift is equipped with tire chain (optional); however it is of little help in protect the forklift from side slipping; therefore, be careful when driving.

Use tire chain when traveling on road covered with snow or ice;

Be careful in case of emergent acceleration, deceleration, braking and turning;

Use acceleration pedal to control speed;

Note

For some models, special parts are required when installing tire chain. Please contact with dealers.

Operation in cold winter

Pay attention to following instructions in case of operation in cold days.

Refueling

Caution

Before refueling, flame out the engine and keep the forklift far away from smoke and fire (cigarette, etc);

The fuel tank shall be fully filled; otherwise the moisture in air may be frozen, which may rust the fuel system and make the startup difficult.

Note

The fuel tank shall be tightly covered to protect it against snow or rain.

Cooling unit

Frozen coolant may damage the engine or coolant tank.

Operation in hot summer

Cooling unit

Caution

Never uncover the coolant tank before it is completely cooled down. Otherwise you might be burnt.

Protect the cooling system from leaking, scaling or rusting.

- As the cooling system is easily troubled with scale or rust in hot summer, use clean water only. In case of L.L.C as anti-freezing solution, it can be used in any season.
- In case of hot engine, it may be caused by blocked radiator. Once the problem is removed, inspect for water leak.
- Inspect if the fan belt is loose; if so, adjust to specified tension.

Hot engine

Caution

In case of hot engine, do not uncover the coolant tank and do not get you hands and face close to the tank; otherwise you might be burnt.

In case of hot engine:

1) Idly run the engine and completely open the hood for good ventilation;
2) Stop the engine when the coolant has cooled down;
3) Uncover the tank when the coolant has cooled down and replenish the coolant tank;
4) Examine the coolant system for water leak; check if the radiator is blocked and if the fan belt is loose;

Load or unload the forklift

1) The space between the forks shall as wide as possible for better horizontal stability.
2) The load shall be placed in the middle of the forks;
3) Parallelly insert the forks into the holes of pallet;
4) Insert the forks to the end;
5) When the forks are lifted above the ground:

① Lift the forks 5-10 cm above the ground at one action; check if the load is stable and in the middle of the forks;

② If everything is ok, rear tilt the mast to the specified position, lift the forks 20cm above the ground, then drive the forklift away;

6) In case of high load that blocks your sight of view, reverse drive the forklift.

Stacking

1) Speed down to safety speed when the forklift is getting close the stack;
2) Stop the forklift before the stack;
3) Make sure the stacking is safe;
4) Tilt the mast (forward) to vertical position;
5) Lift the fork to a little above the stack;

Caution

- **In case of stacking on firm platform or rack, no tilt operation is allowed, except tilt the mast forward.**
- **Never leave the forklift when the goods are highly stacked.**

6) Determine the position for the goods, drive to the position at slow speed and stop before the position.
7) Descend slowly and well stack the goods;
8) Never get the pallet or goods caught by the forks; reverse the forklift if it is safe;
9) Once the tip of the fork has left the pallet or goods, descend the fork to 20cm above the ground;
10) Tilt the mast backward;

Unstacking

⑴ Speed down to safe speed;

⑵ Stop the forklift before the stack (the fork tip is about 30cm above the stack);

⑶ Make sure the forklift is safe and will not over turn;

⑷ Tilt the forks to vertical position and lift the forks and insert into the holes of pallet or rack;

⑸ Slowly insert the forks into the pallet or rack to the end and then stop the forklift;

- In case it is impossible to completely insert the forks:

① Move the forklift forward to insert the forks to 3/4 length and then lift the forks by 5—10cm, or reverse the pallet or rack for 10—20cm and descend the mast;

② Move the forklift forward to insert the forks again;

⑹ Once the forks are completely inserted, lift up for 5—10cm;

⑺ Make sure it is safe to drive backward and then drive backward slowly till the mast can be descended;

⑻ Make the load 20cm above the ground, rear tilt the mast to specified position and then deliver the load to target location;

Before forklift entering garage

⚠Caution

- **Tiny failure may cause serious. Operator shall report any thing that is abnormal to manager. No operation is allowed before the trouble is removed.**
- **Protect the electrical appliances against water when washing the forklift.**

Follow below instructions to clean and inspect the forklift before parking it in garage. These instructions are important in any condition.

- Clean the forklift with clean water;
- Inspect the appearance of the forklift: if the tire is damaged and if anything is stuck in the pattern;
- Check the fuel amount left in the tank; add fuel if necessary;

Inspection for oil leak

- Add lubrication oil and grease as necessary;
- Inspect the hub nuts and piston lock of cylinder;
- Inspect of the turning of mast roller is smooth;
- Lift and descend the fork to its travel to run oil all over the cylinder;
- Drain off coolant in winter (excluding L.L.C);

Daily management

- Park the forklift at specified location and immobilize the wheels;
- Shift the lever to “N” and pull up the parking brake;
- Flame out the engine and operate each lever for 2-3 times to release the pressure;
- Pull out the key and take care of it;

Long-period storage

Following instruction shall also be followed:

- Park the forklift on high and firm ground in rainy days;
- Remove the battery from the forklift;
- In case the forklift is parked indoor, where is hot and wet, leave the battery in cool and dry place.
- Exposed parts, such as oil cylinder, piston rod and sliding shaft, shall be applied with anti-rust grease.
- Cover the parts that may be easily wet, such as exhaust port and air fresheners;
- Operate the forklift at least once per week; start up the engine, run the heater and drive the forklift forward and backward for a certain distance.
- Never park the forklift on soft ground, such as asphalt pavement in hot

summer;

Operation of forklift after long-period storage

- Remove the anti-moisture shield;
- Remove anti-rust grease on exposed parts;
- Drain off oil in oil tank and gear oil (mechanical model) or differential oil (hydraulic model); clean the inside and add fresh oil;
- Remove foreign matter and water from hydraulic oil tank and fuel tank;
- Remove cylinder head to add oil at the valves and rocker arm shaft; inspect performance of the two valves;
- Add coolant of specified amount;
- Inspection before operation;
- Warm up the engine;

4. Spot inspection

Contents

Following terms for considerations are provided in this manual.

To ensure safety considerations for vehicle's owner and operator, please observe the rules strictly.

Unless you are quite familiar with the vehicle, do not operate, spot-check and service it. Meanings of terms and symbols used in this manual and on the nameplate are as follows:

Symbol for danger degree	Meaning
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Caution	It indicates the accidents that may cause deaths and injuries and damage vehicle and surrounding items and must be observed.
Note	It is the symbol irrelative with accidents and failure yet which needs familiarization to prolong vehicle's life.

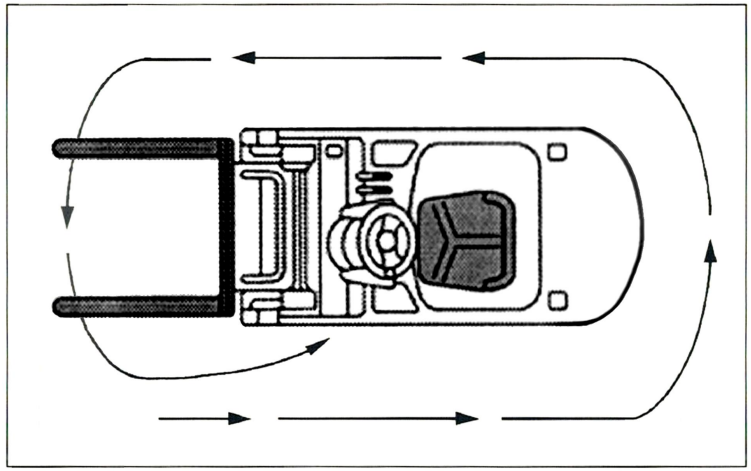
Following spot inspection shall be conducted everyday for safe operation and maintain service life of forklift.

Caution

- **In case of any abnormality found out in inspection, place a warning plate nearby. Pull out the key and report to the management. No operation is allowed before the trouble is removed.**
- **Oil leak may cause fire.**
- **Improper treatment (drain to underground pipe, soil or burn) of waste oil may pollute the water, soil and air, which is prohibited by law.**

Precaution to safe operation

- Use authentic manufacturer parts;
- Use authentic manufacturer oil and grease;
- Before adding oil or grease, clean the filler cap or nozzle with brush or clutch;
- Park the forklift on even ground before adding oil or checking oil amount;
- Protect you from injury during spot inspection;
- In case of spot inspection under a lifted fork, place a block under the mast to avoid it descending.
- Report anything abnormal to the manager during spot inspection; never operate the forklift before the trouble is removed;



■ Inspection around the forklift

Walk around the forklift to check the body and tires before operation.

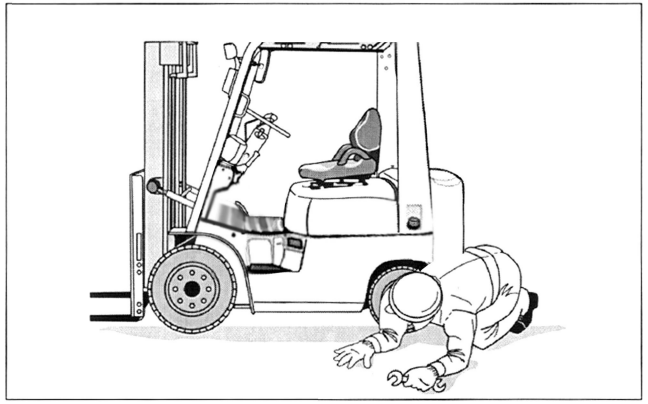
■ Status of forklift

In case the forklift inclines to any side, the tires that contact with the ground may be troubled. In such condition, please contact with specified manufacturer engineer.

■ Oil or water leak

Inspect the ground that the forklift stops at for oil or water leak.

In case of anything abnormal, please contact with specified manufacturer service station.



Spot inspection

[1] Inspect the position that is troubled sometime

⚠Caution

Never use any forklift that is under repair

[2] Inspect the wheels for abnormal noise

⚠Caution

The tire is charged with pressured air. Check if the tire and hub are in good condition. Charge the tires at pressure not higher than standard atmosphere pressure.

In case of charging the tire with air compressor, adjust the pressure in advance; otherwise the pressure may be higher than the maximum pressure of the compressor, which may result in serious accident.

Little deformed hub or tiny damage on the tire may lead to tire explosion.

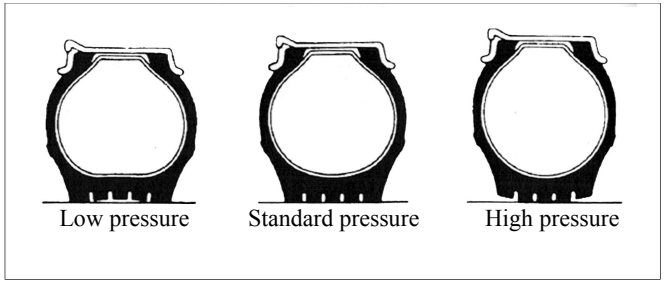
In case of anything abnormal, contact with manufacturer service station.

Always keep right pressure for the tires.

Note

Low pressure cuts short of tire service life.

In case the left tire and right one are of different pressure, it may cause the steering wheel to shake and make the steering operation difficult.



Standard tire pressure can be found on the nameplate in left front of the forklift.

Tire pressure:

Front wheel

(1-1.8 t).....790 kPa

(2-2.5 t).....860 kPa

(3-3.5 t).....970 kPa

(3.8-4 t).....930 kPa

Rear wheel

(1-1.8 t).....1000 kPa

(2-2.5 t).....860 kPa

(3-4 t).....790 kPa

Screw off the cap of tire valve to test the tire pressure and adjust the pressure to specified value.

Inspect the tire for air leak and then screw on the cap.

Inspect if there is any damage on the tread and the sides and if the hub is deformed or damaged.

Spot inspection of tire wear

All tires are designed with wear marks ("△") based on 1.6mm depth left of tire pattern. Once the mark is shown the tire shall be changed. The two front tires or rear tires shall be changed with same ones together.

Inspection of hub nut

Caution

It is very danger if any of the hub nuts is loose, for the wheel may come off and the forklift may over turn.

Inspect the hub nuts and tighten any loose nut to specified torque.

Tightening torque of hub nut

	Front wheel	Rear wheel
1.0-1.8 t	Single tire:150-175N·m (15-17.5kfg·m) Double tires： 230-280N·m 23-28kfg·m	128-190n·m (13-19.4kfg·m)
2-4 t	Single tire and double tires: 471-549 N·m (48-56kfg·m)	128-190n·m (13-19.4kfg·m)

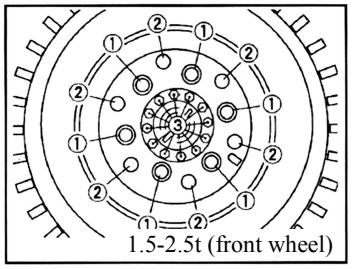
Tightening sequence of interior and exterior nuts

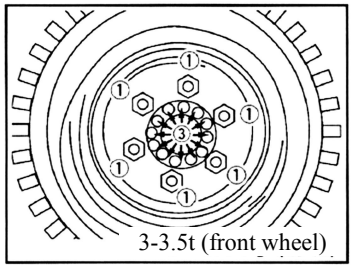
The interior nuts (quadrangle) of double-tire fasten the hub of the inner tube while the exterior nuts (hexagonal) fasten the hub of outside tube.

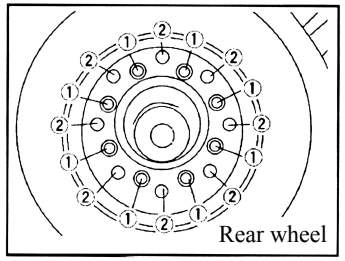
Sequence: tighten the interior nuts on diagonal to specified torque and then tighten the exterior nuts on diagonal to specified torque.

Tightening of installation bolts (nuts) of drive shaft

If any of the bolts or nuts is loose, tighten it to specified torque 96-111N·m (9.8-11.3kfg·m).







① Hub nut

② Hub connection nut

③ Drive shaft installation nut

⚠Caution

Tires shall not be used in case the bolts of split hub are loose.

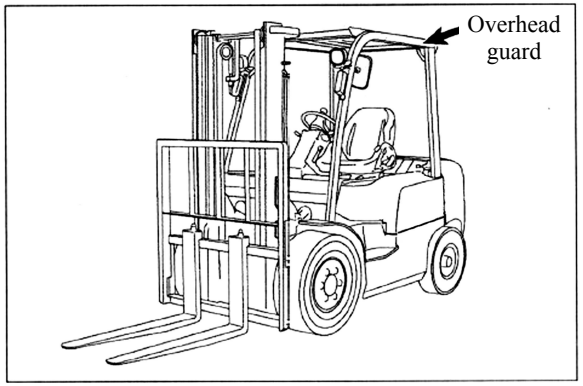
In case the split hub, the interior and exterior hubs are connected with bolts. If any of the bolts is loose, the forklift shall not be used.

Release air in the tire and remove the tire from the forklift (refer to disassembling sequence on page 4-27).

To loose or tighten bolts of split hub, special tool is required. For operation such as hub disassembly and tire charging shall be conducted by qualified personnel.

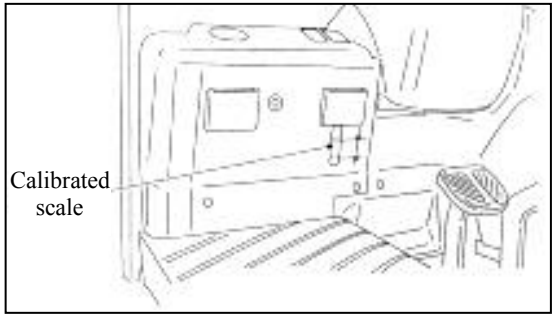
3 Spot inspection of overhead guard

Inspect if the bolts or nuts are loose or damaged.



4 Inspection of brake liquid amount

Remove the panel under operator's feet and uncover the instruments to check if the brake liquid reaches the specified level.



Open the hood

Pull the handle to open the hood; make sure the hood is locked by the air spring lock.

5 Spot inspection of electrolyte

Caution

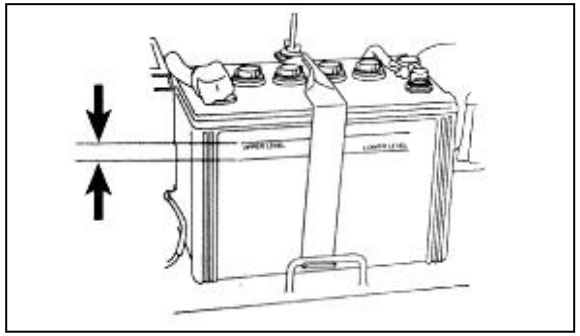
In case of charging the battery when the electrolyte level is below "LOWER LEVEL", the pole plates will be damaged and the battery may explode.

Never use naked light to check the electrolyte; otherwise it may cause fire and even explosion.

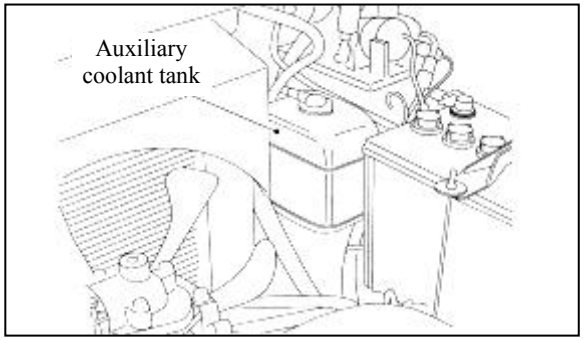
Remove the battery from the bracket on the left of the forklift;

Check electrolyte level, which shall be between "UPPER LEVEL" and "LOWER LEVEL".

Clean the battery housing and the upper part.



6 Inspection of coolant amount in auxiliary coolant tank



The level shall be between "FULL" and "LOW" (when the coolant is cool).

In case the level is low, uncover the tank and add clean water (soft) to "FULL".

Note

In case the tank is empty, please the check the level.

Inspection of level in coolant tank

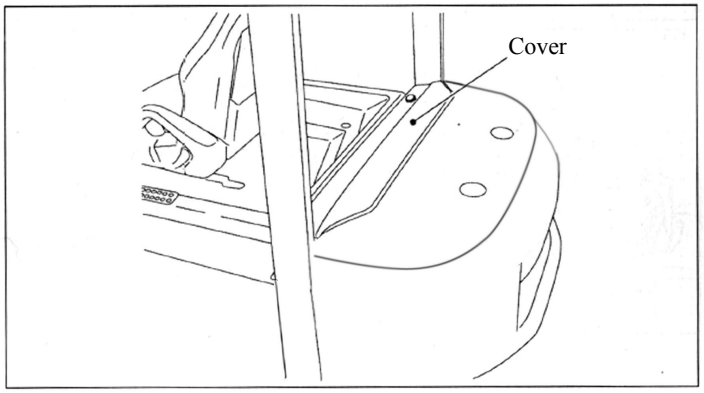
⚠Caution

Never remove the cover when the engine is hot, or you will be burnt.

Before removing the cover, slightly knock the cover to release pressure.

Loose the bolts on the tank cover to remove the tank.

Check the coolant level; if the level is low, add coolant from the filler.



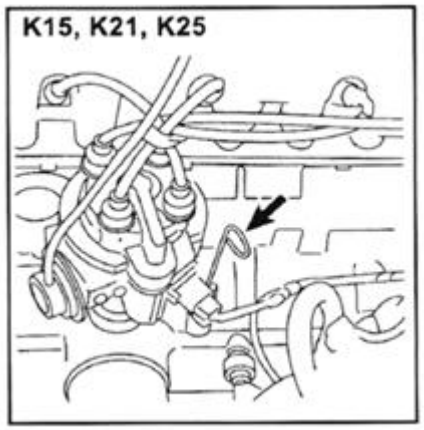
7 Inspection of oil

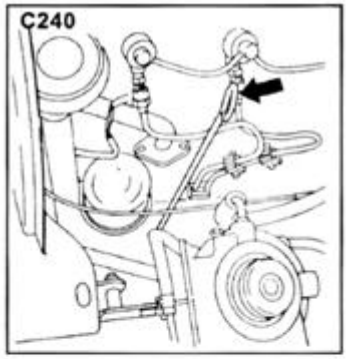
⚠Caution

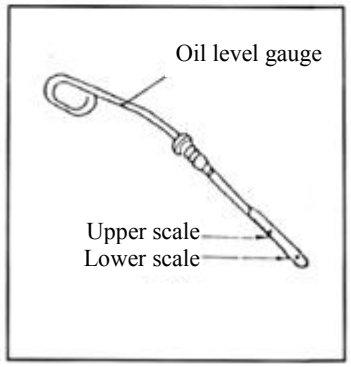
Be careful about the exhaust system that is very hot.

The oil dipstick is at the left of the engine.

Pull out the oil dipstick, wipe it clean and then dip it into the oil; the oil level shall reach the specified position. In case of low level, add oil to but not above the upper limit.







Note

Park the forklift on even ground and flame out the engine at least 10 minutes before checking the oil amount.

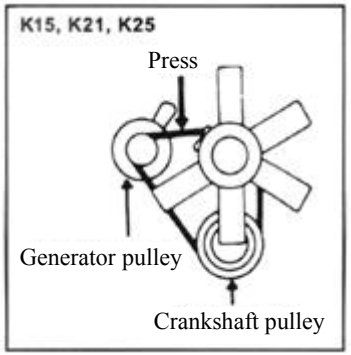
8 Inspection of fan belt

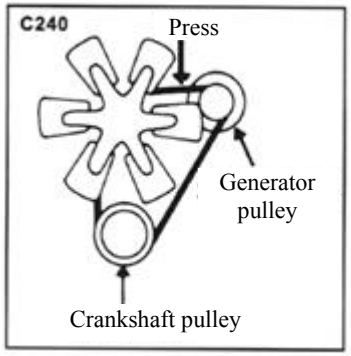
Caution

Stop the engine before check the belt tension.

Press the middle of the belt (as the arrow indicated) with fingers) to check the tension. In addition, inspect the belt for cracks, damages or anything that is abnormal. If so, change the belt.

Type of engine	Belt tension	
K15,K21,K25	12-14mm	Press with 98N(kgf) force
C240	10-15mm	Press with 98N(kgf) force





9 Inspection of combination lights

Inspect if the housing of rear combination lights (turn light, tail light, brake light, reverse light and rear reflector) is damaged or dirty.

10 Inspection of hydraulic oil amount

Check oil level with the dipstick;

First, uncover the oil tank to pull out the oil dipstick and wipe it clean; dip the stick into the oil to check the oil level; add oil in case of low level;

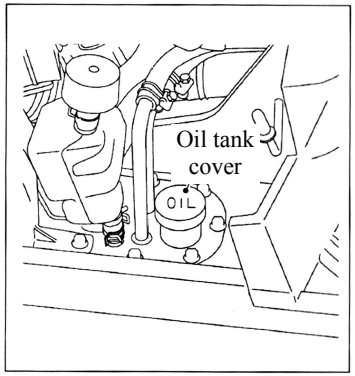
“H”: the maximum level;

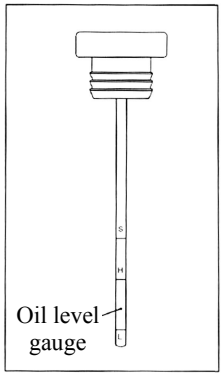
“L”: the minimum level;

“S”: for lifting height higher than 6cm or special model specified by manufacturer, the oil level shall be within 10mm above or below;

Note

Before checking the oil amount, the engine shall be flamed out, the mast shall be vertical, the forks shall be descended to the ground and the forklift shall be level.





11 Inspection of oil leak at oil pressure piping and oil cylinders (lifting and tilting)

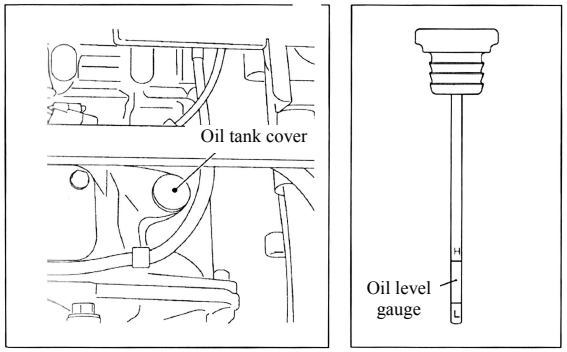
Inspect oil leak at oil pressure piping and oil cylinders (lifting and tilting).

12 Inspection of oil amount of torque converter (hydraulic model)

Pull out the oil dipstick and wipe it clean; dip the stick into the oil to check the oil level;

The oil level shall reach the specified scale.

Add oil if the oil is low;



13 Inspection of leak of master brake cylinder

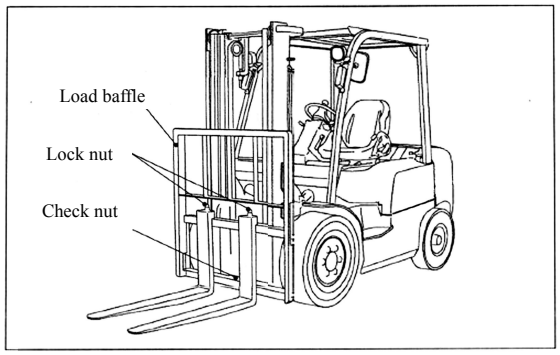
Inspect the master brake cylinder for leak.

14 Inspection of load backrest

Inspect if the backrest is damaged and if the bolts are loose or missing. Tighten the loose bolt;

15 Inspection of fork and check bolts

Inspect if the check pin is inserted, if the fork deforms, cracks and if the bolts are loose.



16 Inspection of headlamp and front/rear combination lights

Inspect if the housing of the headlamp is broken or dirty;

Inspect if the housing of front and rear combination lights (clearance lights and turn lights);

Close the hood

⚠Caution

Never put your finger between the hood and forklift.

Install front base plate and then close the hood.

17 Adjust seat and steering wheel

Depress the pedals and adjust the seat; check if it is easy to operate the steering wheel when sitting in the seat;

Lock the handle once the seat and steering wheel are well adjusted.

18 Inspection of rearview mirror

Inspect if the rearview mirror is broken and damaged;

Adjust the rearview mirror sitting in the seat;

19 Inspection of speed shift lever

Inspect if the turn lever and speed shift lever (mechanical model) and turn lever (hydraulic model) are blocked and if the operation is smooth;

20 Inspection of operation lever of lifting and tilting

⚠Caution

The fork will not descend when pushing the operation lever forward; even the engine has flamed out.

21 Inspection of parking brake

Pull up the lever and check if the parking brake works.

Startup of engine

Caution

Shift the steering lever to the middle and pull up the parking brake before starting up the engine.

22 Inspection of warning lights

Check if the warning lights flash and then go off when the ignition key is turned from “OFF” to “ON”.

23 Inspection of fuel

Check fuel amount from the instrument; make sure the fuel is enough for one day operation; check if the coolant gauge and fuel gauge work well;

24 Inspection of lights

Operate the switch to check if the lights work well;

25 Inspection of turn lights

Operate the switch to check if the lights work well;

26 Inspection of horn

Press the horn button to check the horn works well;

27 Inspection of brake pedal and inching brake pedal

Caution

In case the brake pedal or inching brake pedal fails or the clearance is wrong, please call local dealer.

Depress the brake pedal and inching brake pedal and then release the pedals to check if the pedals return.

28 Inspection of clutch pedal and brake pedal

Mechanical model

Caution

In case the clutch pedal or brake pedal fails or the clearance is wrong, please call local dealer.

Depress the pedals to check if the operation is stable; release the pedal to check if the pedals return.

Check height and clearance of each pedal.

29 Inspection of mast action

Operate the lever of lifting and tilting for 2 or 3 times to check if the action of fork and mast is ok.

Check if the operation is blocked.

(Check the attachments and operation levers if provided in the same way)

Caution

Get the cylinder be ready

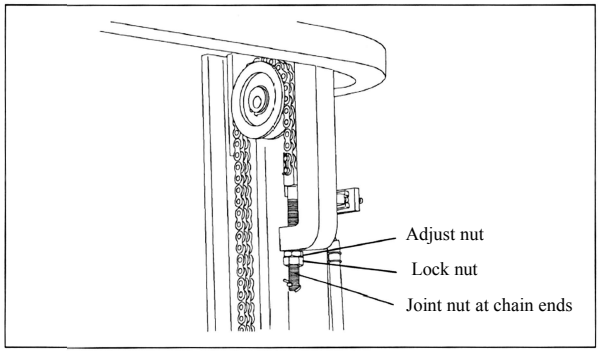
Operate the cylinder before inspection to lubricate the sealing parts

30 Inspection of chain tension

Lift the fork 50mm above the ground to check the tension of left and right chains.

If the tension at the two sides is different, adjust via the nuts;

Tighten the nuts after adjustment and then check if the chain is deformed, rusted or damaged.



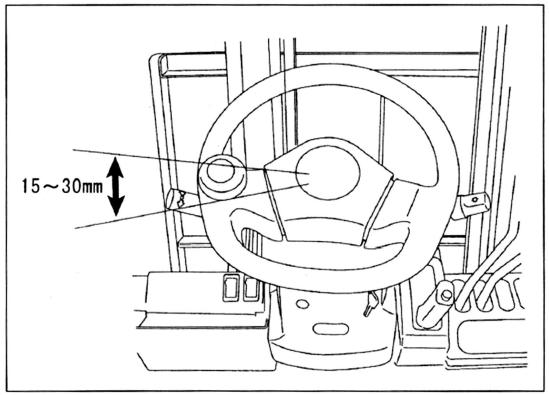
31 Inspection of steering wheel

Turn the steering wheel to left and right to check the clearance, which shall be 15-30mm.

Check if the steering wheel is blocked;

Note

The clearance shall be checked when the engine is running.



32 Inspection of exhaust gas

Caution

- **The exhaust gas is poisonous. In case of indoor operation, keep good ventilation and move the forklift outside as soon as possible.**
- **Naked fire is prohibited. Inspect if there is leak of oil or fuel; keep inflammable materials away from the forklift; understand how to use the fire extinguisher;**

We can understand engine status via the color of exhaust gas.

Colorless or light blue: normal----complete combustion

Dark: abnormal----incomplete combustion

White: abnormal---oil burning

Check the engine noise and vibration.

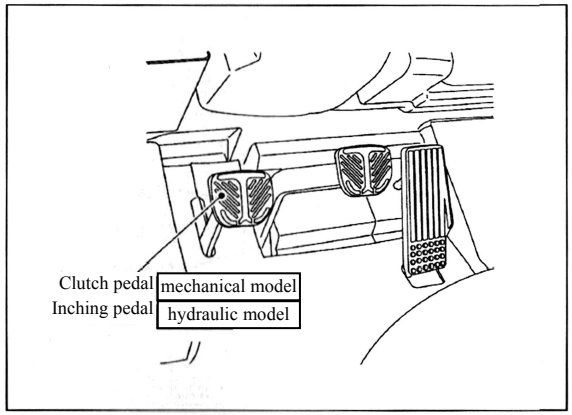
Driving at low speed (at safe place)

33 Inspection of clutch action (mechanical model)

Drive the forklift at low speed and then depress the clutch pedal to proper position.

34 Inspection of inching brake action (hydraulic model)

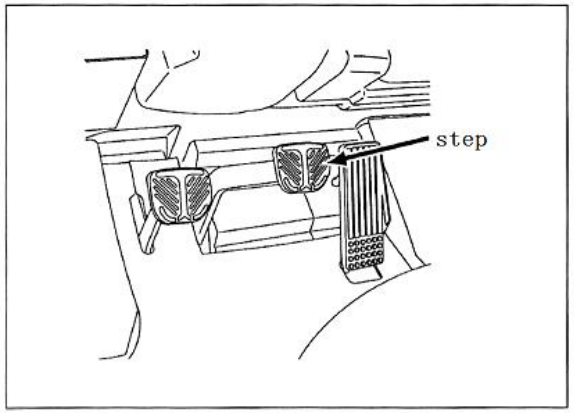
Drive the forklift at low speed and then depress the inching brake pedal to check if the forklift speeds down.



35 Inspection of brake action

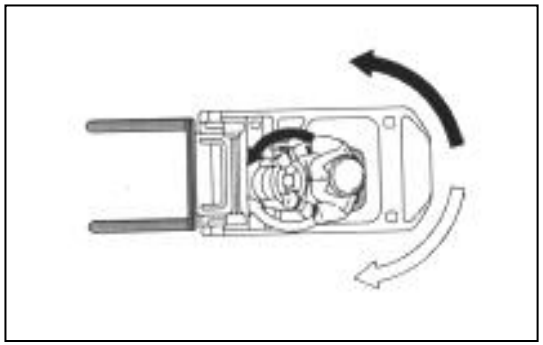
When braking, inspect the brake efficiency and check if the brake acts at only one side.

Depress brake pedal to check if the brake light goes on.



36 Inspection of steering wheel operation

Turn the steering wheel to left or right to check the clearance, which shall be 15-30mm. Check if the steering wheel is blocked when moving upward and downward.



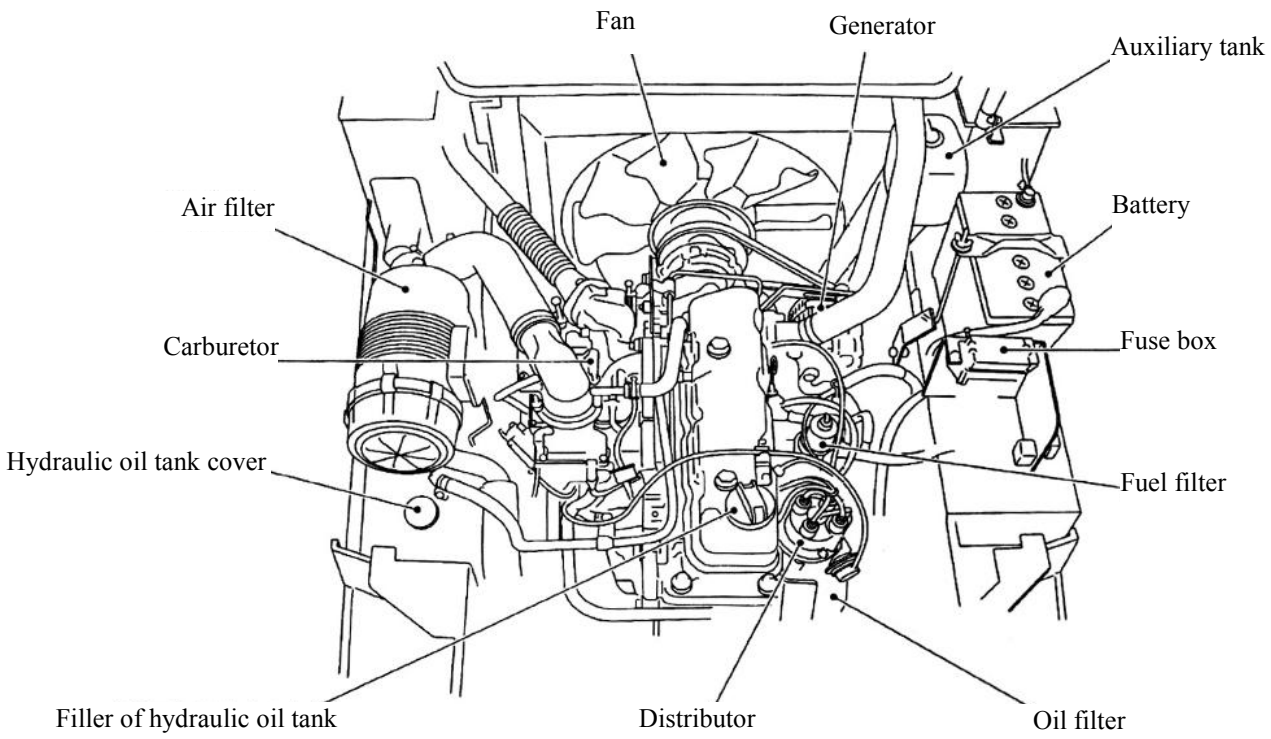
37 Inspection of parking brake action

Pull up the parking brake handle to check if the forklift stops and maintains its position.

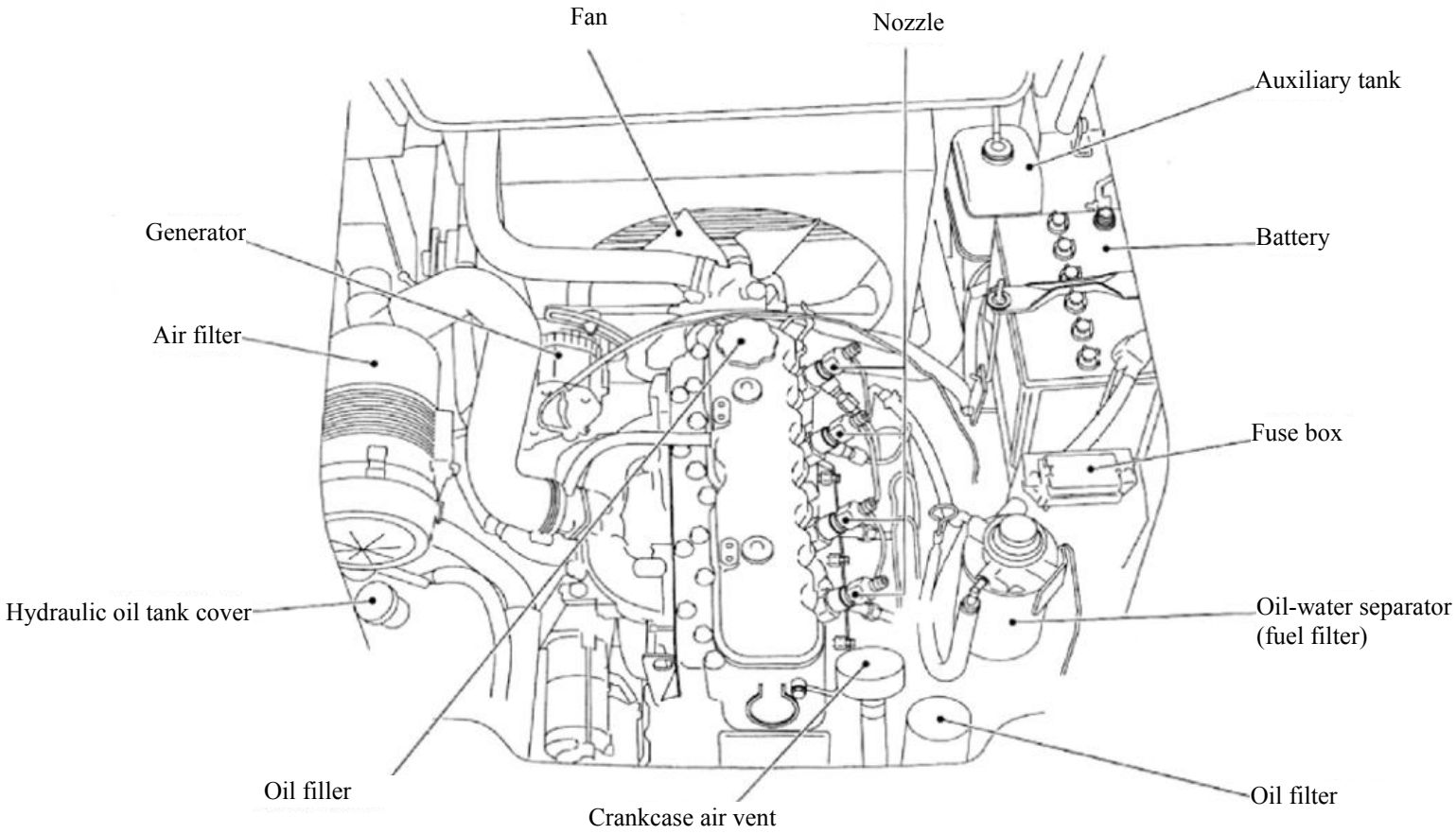
38 Inspection of reverse light and buzzer

Shift speed lever or reverse gear and check if the reverse light goes on and if the reverse buzzer sounds.

K21 and K25 engine chamber



C240 engine chamber



Drain water from oil-water separator

The oil-water separator is integrated with fuel filter element to remove water from fuel.

If the warning light of oil-water separator goes on, it indicates the water level has reached the maximum scale and it is necessary to drain off the oil-water separator following below steps:

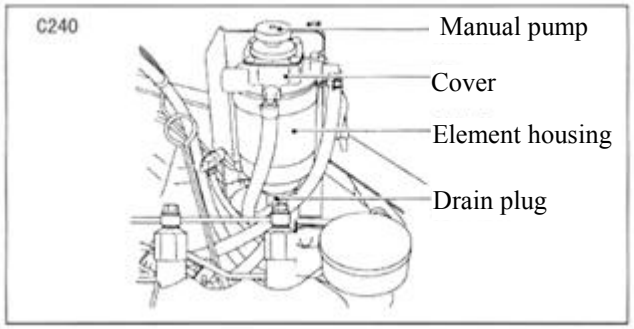
1. Stop the engine;
2. Turn loose the screw plug for 4-5 rounds to drain water;

> **Note**
>
> Never turn the screw plug over 4-5 rounds; otherwise the fuel may leak.

3. Press the manual pump for several times to check if there is fuel leak.
4. Tighten the screw plug and then press the manual pump for several times to check if there is fuel leak.

> **Caution**
>
> **Wipe off the fuel, for it may cause fire.**

5. Start up the engine to check if the warning light of oil-water separator goes off.



The oil-water separator removes water from fuel.

If the warning light of oil-water separator goes on, it indicates the water level has reached the maximum scale and it is necessary to drain off the oil-water separator following below steps:

1. Stop the engine;
2. Turn the switch of oil-water separator upward for 90° to close it;
3. Loose the ring of oil-water separator to drain water from the element cap;
4. Recover the oil-water separator and recover the switch;
5. Turn the screw plug for 4-5 rounds to drain water;
6. Press the manual pump for several times to drain water;
7. Tighten the screw plug;

> **Caution**
>
> **Wipe off the fuel, for it may cause fire.**

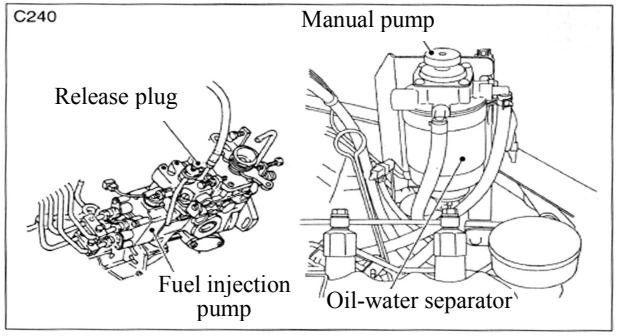
8. Start up the engine to check if the warning light of oil-water separator goes off.

Exhaust of fuel system

Diesel forklift

> **Caution**
>
> - **Make there is no fuel leak around the screw plug, for it may cause fire.**
> - **Wipe off the fuel, for it may cause fire.**

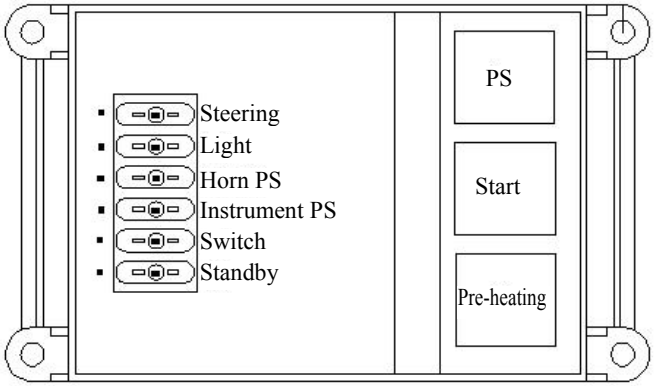
Release air in the fuel system after changing of element.



C240

1. Loose the exhaust screw plug (overflow valve) of injection pump;
2. Press the manual pump on the oil-water separator till bubble comes out;
3. Tighten the screw plug;

Change fuse

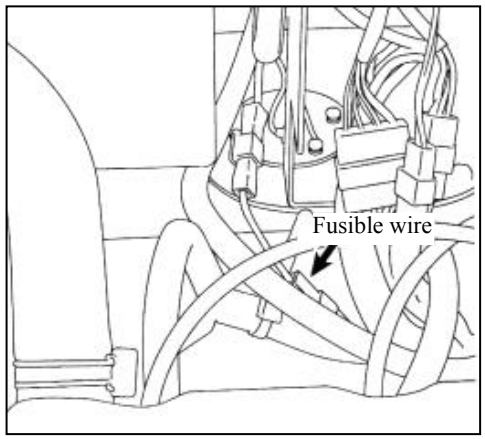


Caution

The fuse protects the electrical system. Use fuse of same capacity only.

Each fuse is designed for different circuits. Inspect if the circuits work; if any circuit fails, the fuse must have been broken and shall be changed with a new one of same capacity. In case some parts of the circuits fail, it must be caused by broken bulb, instead if by broken fuse. In such condition, change the bulb with a new one of same capacity.

Fusible wire (main fuse)

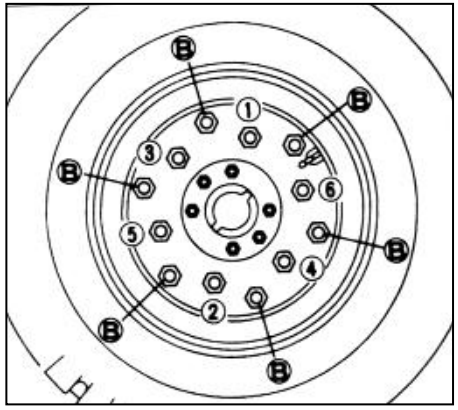


The main fuse in located at the battery (+) side.

In case all circuits of forklift fail, change the fuse.

In addition, it is necessary to ask the authorized plant by manufacturer to change the fuse and find out the reason.

Change the tire and treatment of flat tire



Caution

- **Release air before taking the tire out of the hub. For assembled hub, release the air before loosing hub bolt (B) or before removing the retainer ring.**
- **Assembly and disassembly of tire, inner tube, hub and washer and charging of tires shall be conducted by special personnel.**
- **Tire pressure of forklift is higher than common tires; therefore, improper operation or poor quality parts may cause accident. Tires shall be charged by special personnel in safety fence.**
- **Hub bolt shall be tightened by special tools to specified torque when the air is completely released.**
- **When install hub on forklift, the head of hub bolt shall face outward.**

Tools such as jack are necessary.

Front wheel

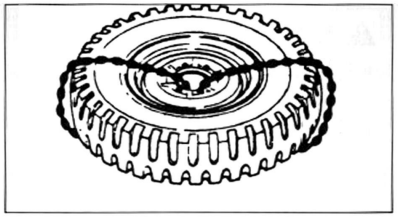
Caution

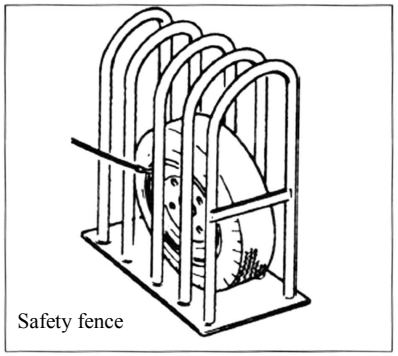
In case a tire is removed from the forklift, release air before removing the hub bolt;

1. First, park the forklift on firm and even ground; flame out the engine and remove load from the forklift;
2. Pull up the parking brake lever, immobilize the wheels and install the jack under the forklift;
3. Jack up the tire to above the ground and loose hub nuts (①-⑥);
4. Jack up the tire to above the ground to remove the hub nuts;
5. Remove the tire;
6. Follow opposite sequence to install the wheel;
   - Hub bolts: tighten bolts on diagonal;
   - Hub bolts: refer to page 4-4 for tightening torque;
7. Charge the tire to standard pressure;
   - Refer to page 4-3 for standard pressure of tire;

Rear wheel

When changing rear wheels, place the jack under the balance weight and follow the same sequence with the front wheel.





Safety fence

Note

- **Use tire and hub of specified size.**
- **The rear wheels and front wheels shall be changed together.**

Note

- **Use tire and hub of specified size.**
- **The rear wheels and front wheels shall be changed together.**

Change bulbs

Caution

During bulb replacement, use designated parts of identical capacity. Use of different bulbs may cause the fire of electrical system.

In case any bulb is burnt, change it in accordance with following data:

Bulb capacity

Headlamp	12V—55W
Clearance light	12V--5 W
Turn light (front)	12V—21/10 W
Turn light (rear)	12V--21 W
Brake light	12V--21 W
Reverse light	12--10 W

Engine failure due to dying battery

Warning

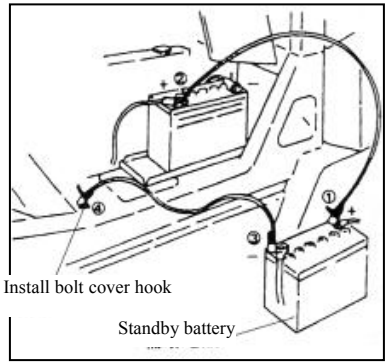
Do not push or pull the forklift if the engine cannot be started due to exhausted battery. If the engine shuts down, there is no power steering and brake, which is dangerous.

Start up the engine with auxiliary battery;

Caution to engine startup with auxiliary battery

Warning

- **The negative pole (—) of auxiliary battery shall be connected with other parts (e.g. tilt cylinder) other than the battery (—) so as to avoid spark.**
- **Make sure that voltage of auxiliary battery is same with that of the battery.**



Startup with auxiliary battery

1. The voltage of auxiliary battery shall be 12V.
2. Connect the battery in following sequence:
   ① Connect red (+) with (+) of auxiliary battery;
   ② Connect red (+) with (+) of forklift battery;
   ③ Connect black (—) with (—) of auxiliary battery;
   ④ Connect the black (—) with frame that is far away from the forklift battery, such as hood and installation bolt;

Caution

- **The wire of auxiliary battery shall not move while the motor is turning; otherwise it may cause spark.**
- **(+) wire and (-) wire of auxiliary battery shall not be connected; the ignition wire shall not be used if it is broken, for it may cause short circuit.**

3. Start up the engine;
4. Remove the wires of from auxiliary battery once the engine is started up;

Adjustment of operation force of parking brake lever

How to adjust:

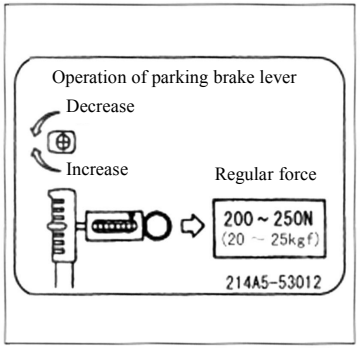
1. Turn the screws inside the parking brake lever to adjust the force;

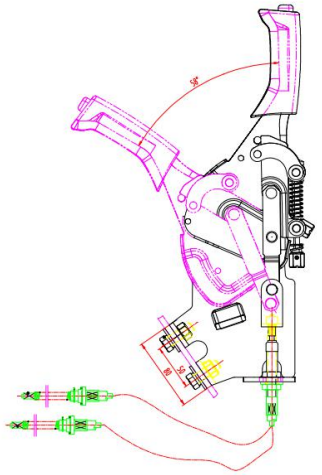
   Regular operation force: 200-250N (20-25kgf).

2. Decrease: reduce the force;

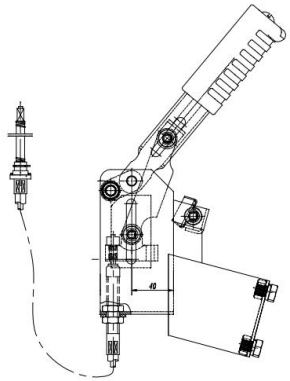
   Increase: increase the force;

3. For a new forklift, as the cable has extended, the force shall be adjusted at times after operation.





J series hand brake



H series hand brake

Regular inspection is necessary for safety and longer service life.

Accidents are caused by forklift failures, which may be ignored during inspection and maintenance. It is necessary to find out and solve the failures as soon as possible for longer service life and higher profits.

For easy inspection and maintenance, such as refueling and cleaning, it can be done by users. For complicated inspections, it shall be done by authorized service station of manufacturer, where there are special tools and devices; otherwise it may cause accidents.

In this manual, a month equals to 200 hours.

⚠Caution

Please read "Inspection and reconditioning" in the manual before operation.

Parts that shall be changed regularly

These safety components are subject to damage after use for a period. It is difficult to determine whether their use limits are exceeded via general service and maintenance. These parts shall be changed before its service life, though the parts look good. Safety components are beyond coverage in the warranty.

Pre-maintenance is important for safe operation. Parts listed below shall be changed regularly, because they are important and easily damaged.

> **Note**
>
> The regular change of parts is different from failure treatment.

	Parts	Year
1	Master cylinder of brake, cup of wheel cylinder and dust cover	1
2	Steering cylinder oil hose	2
3	Brake liquid tank hose	2-4
4	Fuel hose	2-4
5	Oil hose of transmission case	2
6	Sealing element of steering oil tank	2
7	Lift chain	2-4
8	Oil pipe of lift system	1-2

1 month (200 h) inspection

Inspect and examine the forklift by following items:

One month inspection requires special technique and tools, for the adjustment and change are complicate.

Inspection items (additional inspections)

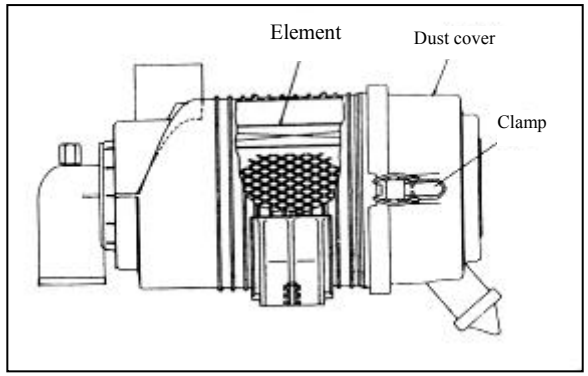
- Air filter ——clean the element
- Cylinder head bolt ——tighten (gasoline engine , the first time)
- Engine oil ——change (the first time in the first week (50 hours))
- Engine oil element ——change (the first time)
- Cooling system——inspect if the hose is degraded;
- Coolant tank cover——inspect the installation
- Clutch ——inspect the oil amount in the tank(oil clutch forklift)
- Torque converter——change (hydraulic model, the first time)
- Front axle installation bolt ——inspect if it is loose;
- Front axle——deformation, crack and damage inspection
- Tire pattern——inspect if it is worn or if there is any foreign matter;
- Wheel bearing ——inspect if it is loose or make noise
- Rear axle ——deformation, crack and damage inspection
- Steering gear——if the installation bolts are loose;
- Steering gear——oil leak Inspection
- Connection rod, rocker arm and king pin——inspect blockage, deformation, crack and damage;
- Rear axle ——deformation, crack and damage inspection
- Steering cylinder ——inspect if the installation is loose;
- Brake pipe——inspect if there is air
- Piston rod and cable of brake system——inspect the action, loose and blockage;
- Brake pipe——damage, oil leak, interference and loose;
- Brake drum——installation;
- Fork ——crack and damage inspection
- Mast ——crack and damage inspection
- Mast Hough section——bolt Inspection (the first time)
- Lift cylinder——bottom bolt, bolts on piston rod head, and U-shaped bolts (the first time)
- Fork carrier——inspect crack and damage;

- Roller of lift system——inspect if the roller is blocked, cracks or damaged;
- Lift chain——expansion inspection

Inspection

- Lift chain——refueling and lubrication
- Lift chain and joint ——blockage
- Roller and bearing ——deformation, damage and shake
- Attachment——abnormality and installation
- Lift cylinder——wear and damage of pin and bushing
- Multi-way valve——overflow valve and tilt lock valve
- Harness——damage and loose joint
- ●——Add oil for each location

■ Air filter element inspection and cleaning



Open the hood, remove the clamp of air filter element and remove the element;

Examine if the element is dirty or damaged; in addition, check if the sealing strip is damaged or dirty;

Clean the element

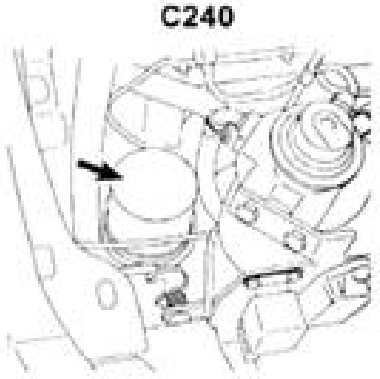
⚠Caution

Please wear safety glasses when cleaning the element with high pressure air.

Blow pressured air into the element or knock it with your hands;

Inspection if the element is broken;

■ Change engine oil (C240)



⚠Caution

Exhaust oil shall not be poured into sewer or ground, which may lead to pollution.

The exhaust oil shall be handled by specified unit and oil shall be changed by authorized service station of manufacturer.

⚠Caution

Never change oil as son as the engine stops;

As the oil temperature is high, never change oil before the oil has cooled down.

Preparation before changing oil

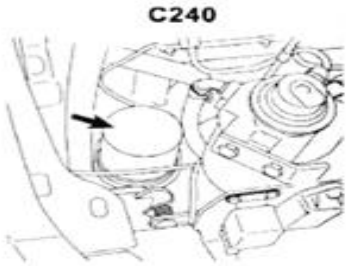
1. If the engine is cold, warm it up;
2. Park the forklift on even ground;
3. Pull up the hand brake lever and pull out the key after the engine has stopped;
4. Open the hood

Change oil (K21 and K25)

1. Remove filler cap;
2. Wipe the cap clean;
3. Place an oil disc below the screw plug;
4. Wipe the screw plug and oil disc clean;
5. Loose the screw plug with box spanner;
6. Back turn the screw plug with your hands;
7. Pay attention to flow direction of oil;
8. Wipe the screw plug clean;
9. Screw on the plug once the oil has completely drained off;
10. Wipe the surrounding area of screw plug;
11. Cover the surrounding area of the filler with cloth to avoid dirty matters;
12. Add oil;

    Add oil 1L less than the specified amount and then use dipstick to help you too add to specified level;
13. Wipe off oil left on the filler and then screw on the cap;
14. Start up the engine to circulate the oil;
15. Stop the engine and later check the H-L scale of dipstick; if the level is low, add oil;

■ Change oil filter element (C240)



Caution

The engine is hot after operation. In such condition, no operation is allowed before the engine has cooled down.

Please follow below instructions to change the element.

Please follow below instructions to change the element.

1. Use a wrench to remove the filter;
2. Prepare a new filter;
3. Wipe off dust at the seat of filter;
4. Apply a thin layer of oil on the O ring;
5. Tighten the new filter with your hand; tighten the element with the wrench once the O ring contacts with the sealing face;

tightening requirement

K15·K21·K25: about 1/3 rounds

C240: about 1/4 rounds

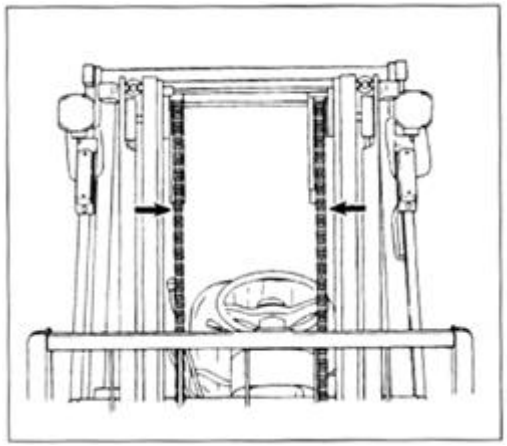
6. Inspect the filer installation for oil leak;

(Add oil to specified level and start up and run the engine idly)

Note

When disassemble the filter, the oil may splash on ground; therefore, prepare a container of a piece of cloth for the splashed oil;

■ Lift chain lubrication



Lubricate the lift chain; pin shaft of chain and chain plate shall be completely dipped in oil;

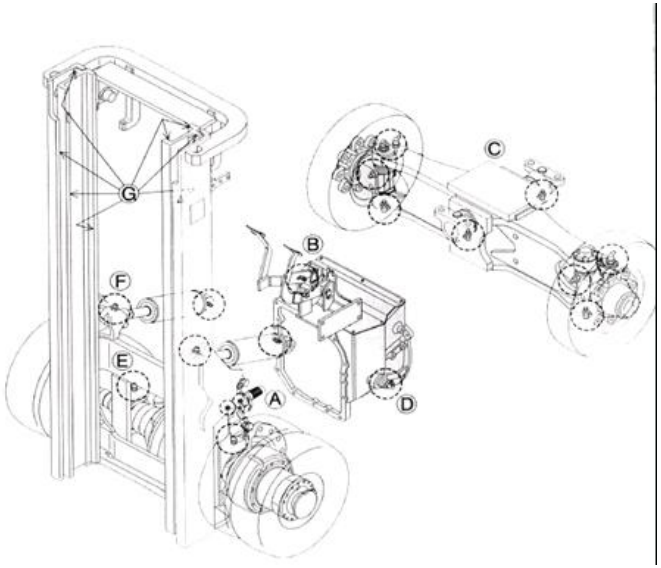
- The lubrication shall be performed when the chain is loose.
- After lubrication, run the mast up and down for at least 10 times;

> **Note**
>
> Wash with clean water after strong wind before lubrication in case of port and close to the coast so as to avoid erosion of salt.

■ Lubrication locations

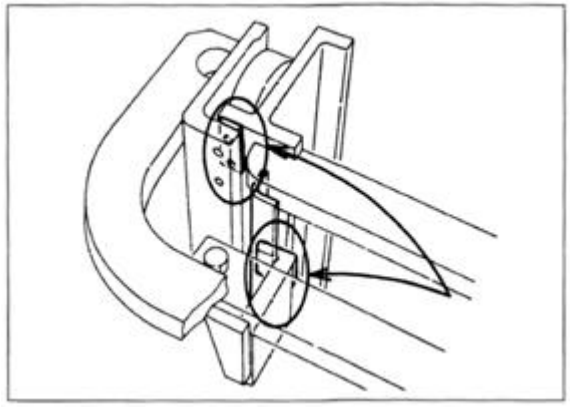
- Drive shaft (2)..... Ⓐ
- Clutch, inching brake and brake pedal shaft (1)..... Ⓑ
- Rear axle (8..... Ⓒ

  (Axle base (2), steering pin (3), steering knuckle (3)
- Connecting rod shaft of clutch operation (1)..... Ⓓ
- Mast support (2)..... Ⓔ
- Tilt cylinder (4)..... Ⓕ
- Apply grease inside the mast and the contact position of outside mast with the main roller..... Ⓖ



Rear check block of mast

Apply grease on the position as the arrow indicated (with free lifting mast).



Caution

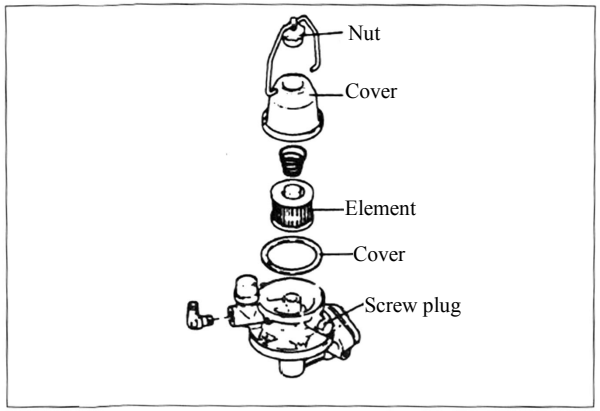
Never climb the mast and never put your hands and feet on the connection materials or inside the mast, for the mast may move unexpectedly.

Three months (600h) spot inspection

Additional inspections based on one month (200 hours) inspection:

Inspection
● Crankshaft —clean the ventilation device
● Oil element —change
● Fuel element —clean (gasoline model)
● Fuel element ——change (diesel model)
● Carburetor—shack of connection rod and dirty matter
● Fuel tank—drain off water (diesel model)
● Coolant—Change (once per two years if antifreezing solution is used)
● Locking pin of fork—damage and wear
● Distributor—cover crack (gasoline model)
● Spark plug—clearance adjustment (gasoline model)
● Spark plug—clean (gasoline model)
● Distributor—wheel, cover of stator and rotor (gasoline model)
● Distributor shaft— lubrication (gasoline model)
● Starter—clutch gears
● Charging device—Action inspection
● Electrolyte—specific gravity
● Electrical wires—connection

■ Clean the fuel filter element Gasoline model



⚠Caution

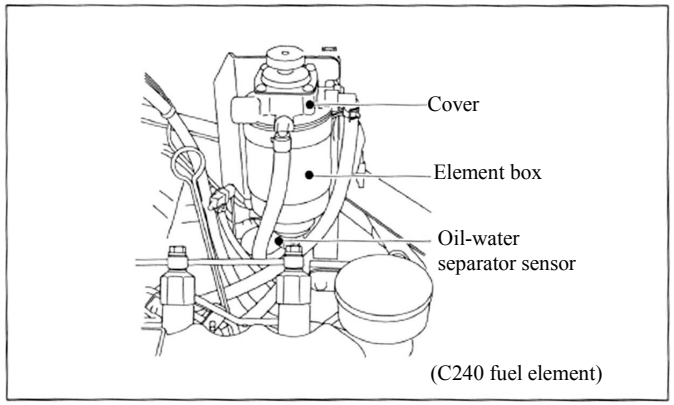
The engine shall be flamed out before changing and cleaning the element; naked fire is prohibited around the forklift.

Loose the nuts and remove the cover to take out and clean the element;

Do not forget the sealing element and tighten the nuts;

The screw plug is used to drain off dirty water.

■ Clean the fuel filter element Diesel model



(C240 fuel element)

⚠Caution

To avoid fire, please wipe away fuel around the filter.

Use a wrench to remove the cover from the housing;

Remove the oil-water separator;

Install the oil-water separator on a new housing and then cover the element;

6 months (1200 hours) inspection

Inspection before operation, one month (200 hours) inspection and three months (600 hours) inspection and following additional inspections:

Spot inspection
● Air filter—change ● Valve clearance --Inspection ● Exhaust reduction device—blockage and damaged of pin valve and pipes; ● Injection nozzle —injection pressure and spray inspection ● Engine —ignition time (gasoline model) ● Fuel tank—clean ● Clutch oil and brake liquid —Change ● Transmission case oil (gear oil)—Change (Mechanical model) ● Torque converter oil-Change (Hydraulic model) ● Torque converter filter —Change (Hydraulic model) ● Front axle oil—Change ● Hub bearing—blockage, noise and change grease; ● Mast Hough section—loose bolt ● Lift cylinder— bottom bolt, cylinder head bolt, U-shaped bolt ● Hydraulic oil —change ● Hydraulic oil tank—sucked oil element —change ● Hydraulic oil tank—returned oil element —change ● Multi-way valve —overflow pressure ● Seat —damage, bolts

One year (2400 h) spot inspection

Inspection before operation, one month (200 hours) inspection, three months (600 hours) inspection, six months inspection (1200 hours) and following additional inspections:

Time schedule of regular inspection

The schedule is designed for regular operation time and condition. In case the operation time and condition are changed, inspect or change as soon as possible.

Engine

○: Adjust, repair or change in case of anything abnormal; ●: Change

Spot inspection
● Bolts of cylinder head— tighten (C240)
● Air cylinder —test pressure
● Speed regulator—spot inspection of action (highest speed when no load)
● Fuel filter element —change (gasoline engine)
● Injection time—spot inspection (diesel engine)
● Clutch release bearing —lubrication
● Oil bath clutch —change the filter in the oil tank and clean the primary filter; (oil clutch)
● Contact ring of horn on steering wheel—add rubber oil
● Master cylinder and wheel cylinder—change cup and examine the reducing valve;
● Wheel brake—disassembly, inspection, adjustment and change brake drum and shoes;
● Wheel brake—examine if the base plate is deformed, cracks or loose;
● Mast Hough section—wear of bushing and inspection of damage;
● Drive device of oil pump—inspection of wear;
● Lift system—change the hose (per 1-2 years);
● Spark plug —inspection of combustion (gasoline engine);
● Distributor—inspect when the HV wire is inserted (gasoline engine);
● Contacts of distributor—inspection of burnt contacts —(gasoline engine);
● HV wire—inspection of broken wire (gasoline engine);
● Frame and connection materials—inspection of damage, crack, rivets and bolts;

G: gasoline engine; D: diesel engine

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Engine	Operation performance	Visual check	○	○	○	○	○
	Noise	Listen	○	○	○	○	○
	Exhaust gas (color)	Visual check	○	○	○	○	○
	Clean the dirty air filter element	Visual check		○	○	●	●
	Clean the dirty vent of crankshaft, D	Operation			○	○	○
	Air valve clearance	Feeler gauge				○	○
	Tighten the bolts on cylinder head	Torque spanner		●(First time)			○ (C240)
	Test cylinder pressure	Pressure gauge					○
Exhaust reduction unit	Blockage and damage G of metering valve and pipes	Visual check and listen				○	○
Speed regulator	Maximum revolution without load	Tachometer					○
Lubrication device	Oil leak	Visual check	○	○	○	○	○
	Oil amount and cleanliness	Visual check	○	○	○	○	○
	Change oil	Operation		●First 50 hours	●	●	●
	Change element	Operation		●(First time)			

Engine

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Fuel device	Fuel leak (pipes, pumps, fuel tank, etc)	Visual check	○	○	○	○	○
	Element blockage, G	Visual check		○	○	○	○
	Clean the element, G	Operation			○	○	○
	Change the element, D	Operation			●	●	●
	Injection nozzle pressure and atomization, D	Test bench of injection nozzle				○	○
	If the carburetor linkage is stuck or dirty G	Visual check			○	○	○
	Ignition time, G	Ignition time light				○	○
	Injection time, D	Operation					○
	Remove water from fuel filter element D	Operation			○	○	○
	Clean the fuel tank	Operation				○	○
	Fuel amount	Visual check	○	○	○	○	○
Cooling device	Coolant amount	Visual check	○	○	○	○	○
	Coolant leak	Visual check	○	○	○	○	○
	Poor hose	Visual check		○	○	○	○
	Cover and sealing	Visual check		○	○	○	○
	Clean and change coolant	Operation			●	●	●(2 years with long-acting anti-freezing liquid)
	Fan belt tension and damage on it	Visual check	○	○	○	○	

Power transmission

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Engine	Free travel of clutch pedal and clearance with the bottom plate once it is released	Ruler	○	○	○	○	○
	Abnormal noise and gear shifting	Operation	○	○	○	○	○
	Poor sliding and connection	Operation	○	○	○	○	○
	Oil leak and change liquid for master cylinder and wheel cylinder of clutch	Operation	○	○	○	●	●
	power assisting device function (power assisted clutch)	Operation	○	○	○	○	○
	power assisting device oil leak (power assisted clutch)	Operation	○	○	○	○	○
	Oil level in clutch oil tank for model with optional oil filter clutch	Visual check		○	○	○	●
Transmission case	Speed lever action and if it is stuck	Operation	○	○	○	○	○
	Oil leak	Visual check	○	○	○	○	○
	Change oil	Operation				●	●
Torque converter and transmission case	Oil leak	Visual check	○	○	○	○	○
	Oil level and change oil	Visual check	○	○	○	●	●
	Speed lever action and if it is stuck	Operation	○	○	○	○	○
	Function of control valve and clutch	Operation	○	○	○	○	○
	Function of inching	Operation	○	○	○	○	○
	Free travel and action of inching pedal	Operation	○	○	○	○	○
	Change filter and element	Operation		●(First time)		●	●
Front axle	Oil leak	Visual check	○	○	○	○	○
	Oil amount	Operation				●	●
	Installation bolts	Test hammer		○	○	○	○
	If the axle is rusted, cracks or damaged;	Visual check		○	○	○	○

Tire/wheel

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Tire	Pressure	Pressure gauge	○	○	○	○	○
	Crack or damage on tire	Visual check	○	○	○	○	○
	Pattern depth	Depth gauge		○	○	○	○
	Abnormal wear	Visual check	○	○	○	○	○
	Metal sheet, stone or other foreign matter stuck in the pattern	Visual check		○	○	○	○
Installation bolts and nuts of rim and hub	Loose	Hammer	○	○	○	○	○
	Damage	Visual check	○	○	○	○	○
Rim and side ring	Damage on rim, side ring and wheel disc	Visual check	○	○	○	○	○
Wheel disc bearing	If the bearing is stuck or makes noise	Touch		○	○	○	○
	Disassembly of bearing and change grease	Operation				●	●
Axle body	Deformation, crack and damage	Visual check		○	○	○	○

Tire/wheel

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Steering wheel	Free clearance	Operation	○	○	○	○	○
	Axially and diametrically seized	Touch	○	○	○	○	○
	If the operation is smooth	Operation	○	○	○	○	○
	Apply rubber oil on horn contact ring	Operation					●
Steering gear	Nuts are loose	Operation		○	○	○	○
	Oil leak	Visual check		○	○	○	○
Piston, connection rod, etc	If the rod is stuck or loose;	Operation		○	○	○	○
	If it is bent, damaged or worn	Visual check		○	○	○	○

Steering device

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Steering knuckle	If the main pin is stuck or damaged	Touch		○	○	○	○
Rear axle	Bending, deformation, crack and damage	Visual check		○	○	○	○
	Installation	Test hammer		○	○	○	○
	Apply grease on bushing pin	Operation		○	○	○	○
Power-assisted steering	Action	Operation	○	○	○	○	○
	Oil leak	Visual check	○	○	○	○	○
	The installation part and connection part are stuck	Visual check		○	○	○	○

Brake device

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Brake pedal	Clearance and travel	Ruler	○	○	○	○	○
	Height and return of pedal	Ruler	○	○	○	○	○
	Brake effectiveness and unilateral effectiveness	Operation	○	○	○	○	○
	Air in brake pipe	Operation		○	○	○	○
	Function and oil leak of power assisting device	Operation	○	○	○	○	○
Parking brake handle	Lock and tension allowance	Operation	○	○	○	○	○
	Brake effectiveness	Operation	○	○	○	○	○
Connection rod, cable, etc	action	Operation	○	○	○	○	○
	Connection part is loose or stuck	Touch		○	○	○	○
Hose and pipe	Damage, oil leak and interference	Visual check		○	○	○	○
	Connection part and clamp are loose	Touch		○	○	○	○

Brake device

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Oil-bath brake	Liquid leak (power-assisted brake and oil leak)	Visual check	○	○	○	○	○
	Liquid amount	Visual check	○	○	○	●	●
	Function, oil leak and damaged of master cylinder and wheel cylinder	Operation	○	○	○	○	○
	Wear and damage of master cylinder, dust ring and wheel cylinder and change the damaged or worn one	Disassembly					●
	If the brake hub installation is loose	Test hammer		○	○	○	○
Brake hub and brake shoe	Shoe worn	Callipers					○
	Action of shoe	Operation					○
	Pin installation	Visual check					○
	Decrease of return spring force	Ruler					○
	Function of auto clearance adjusting device	Operation					○
	Wear and damaged of brake hub	Visual check					○
Chassis	Deformation, crack	Visual check					○
	Loose installation	Test hammer					○

Lifting device

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Fork	Damage, deformation and worn	Visual check	○	○	○	○	○
	Damaged and wear of lock pin	Visual check	○	○	○	○	○
	Cracks and wear at the root of fork	Visual check		○	○	○	○
Mast and fork carriage	Cracks and damage at welded beam of inside and outside masts	Visual check		○	○	○	○
	Cracks and damage at welded seat of tilting cylinder and mast	Visual check		○	○	○	○
	Cracks and damage at welded inside and outside masts	Visual check		○	○	○	○
	Cracks and damage at welded fork	Visual check		○	○	○	○
	If the roller is seized	Touch		○	○	○	○
	Wear and damage at mast Hough bushing	Visual check					○
	If mast Hough bolts are loose	Torque spanner		○(First time)		○	○
	If the bolts on the end of lifting cylinder, bolts on piston rod head and U-bolt are loose	Test hammer		○(First time)		○	○
	Crack and damaged at roller and welded roller shaft	Visual check		○	○	○	○
	Proper operation of mast	Operation	○	○	○	○	○
Chain and chain wheel	Chain tension, deformation, damage and rust	Touch	○	○	○	○	○
	Chain extending	Ruler		○	○	○	○
	Chain lubrication	Operation		○	○	○	○
	If the connection of end joint and chain is seized	Visual check		●	●	●	●
	Wheel deformation and damage	Visual check		○	○	○	○
	If wheel bearing is seized	Touch		○	○	○	○
Attachments	If any part is abnormal	Operation/Touch		○	○	○	○

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Oil cylinder	If the piston rod and thread on piston are worn or damaged	Visual check/Test hammer	○	○	○	○	○
	Cylinder action	Operation	○	○	○	○	○
	Cylinder oil leak	Visual check	○	○	○	○	○
	Wear and damage of pin and bearing	Visual check		○	○	○	○
Oil pump	Oil leak and abnormal noise	Visual check/ Listen	○	○	○	○	○
	Wear of driving device	Visual check/ Listen					○

Oil pressure device

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Hydraulic oil tank	Oil level; if the oil is clean; change oil;	Visual check	○	○	○	●	●
	Change suction element	Operation				●	●
	Change return element	Operation				●	●
Operation lever of multi-way valve	If the operation levers are blocked	Operation	○	○	○	○	○
	Function of operation levers	Operation	○	○	○	○	○
Multi-way valve	Oil leak	Visual check	○	○	○	○	○
	Function of overflow valve and self-lock valve of tilting	Listen		○	○	○	○
	Test of overflow pressure	Oil pressure gauge				○	○
Joint of hose and pipe and ball joint	Oil leak, loose, deformation and damage	Visual /Touch	○	○	○	○	○
	lift oil pipe	Operation					●(1-2 years)

Electrical device

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Ignition unit (gasoline engine)	If the distributor cover cracks	Visual check			○	○	○
	If the spark plug is burnt	Visual check					○
	Adjust spark plug clearance	Clearance gauge			○	○	○
	Clean the spark plug	Operation			○	○	○
	Connection of HV wire on distributor cover	Visual check					○
	If the d distributor platinum is burnt	Visual check					○
	If the middle of distributor is burnt or worn	Visual check					○
	Clearance between shaft and seat	Micrometer			○	○	○
	Lubrication of distributor shaft	Operation			○	○	○
	If the HV wire breaks	Ampere meter					○
Starter	Engagement of clutch gears	Operation			○	○	○
Charging unit	Charging	Ampere meter			○	○	○
Battery	Electrolyte amount and clean the battery	Visual check/Operation	○	○	○	○	○
	Electrolyte specific gravity	Aerometer			○	○	○
Electrical wires	If the harness is damaged and if the socket is loose	Visual check		○	○	○	○
	If the connection is loose	Touch			○	○	○

Safety device and other

Location	Item	Tool	Inspection before operation	Every month (per 200hours)	Every three months (per 600 hours)	Every six months (per 1,200 hours)	Every year (per 2,400 hours)
Overhead and load backrest	If the installation is loose	Test hammer	○	○	○	○	○
	Deformation, cracks and damage	Visual check	○	○	○	○	○
Direction indicator	Function and installation and if it is dirty or damaged	Operation/Visual check	○	○	○	○	○
Warning device	Function and installation status	Operation	○	○	○	○	○
Light	Function and installation status; If the light is damaged or dirty	Operation/Visual check	○	○	○	○	○
Reverse warning	Function and installation	Operation	○	○	○	○	○
Rearview mirror	If it is dirty or damaged	Visual check	○	○	○	○	○
	Rear view	Visual check	○	○	○	○	○
Instrument	Function	Operation	○	○	○	○	○
Reflector plate	If it is dirty or damaged	Visual check	○	○	○	○	○
Seat	Damage and if the bolts are loose	Visual check	○	○	○	○	○
Body	Damage and cracks on frame and beam	Visual check				○	○
	If the attachment and bolts are loose	Test hammer					○
	Abnormal parts found out the day before	Visual check	○	○	○	○	○
	Appearance	Visual check	○	○	○	○	○
Add oil or change oil	Clean the rear part of the truck and add oil	Oil pump		●	●	●	●
	Investigation of drain period	Investigation					○

5. Specification and after-market service

Following terms for considerations are provided in this manual.

To ensure safety considerations for vehicle's owner and operator, please observe the rules strictly.

Unless you are quite familiar with the vehicle, do not operate, spot-check and service it. Meanings of terms and symbols used in this manual and on the nameplate are as follows:

Symbol for danger degree	Meaning
⚠**Danger**	It indicates the accidents that cause deaths and injuries quite easily and must be observed.
⚠**Warning**	It indicates the accidents that may cause deaths and injuries and must be observed.
⚠**Caution**	It indicates the accidents that may cause deaths and injuries and damage vehicle and surrounding items and must be observed.
☞**Note**	It is the symbol irrelative with accidents and failure yet which needs familiarization to prolong vehicle's life.

Dimension of H series forklift

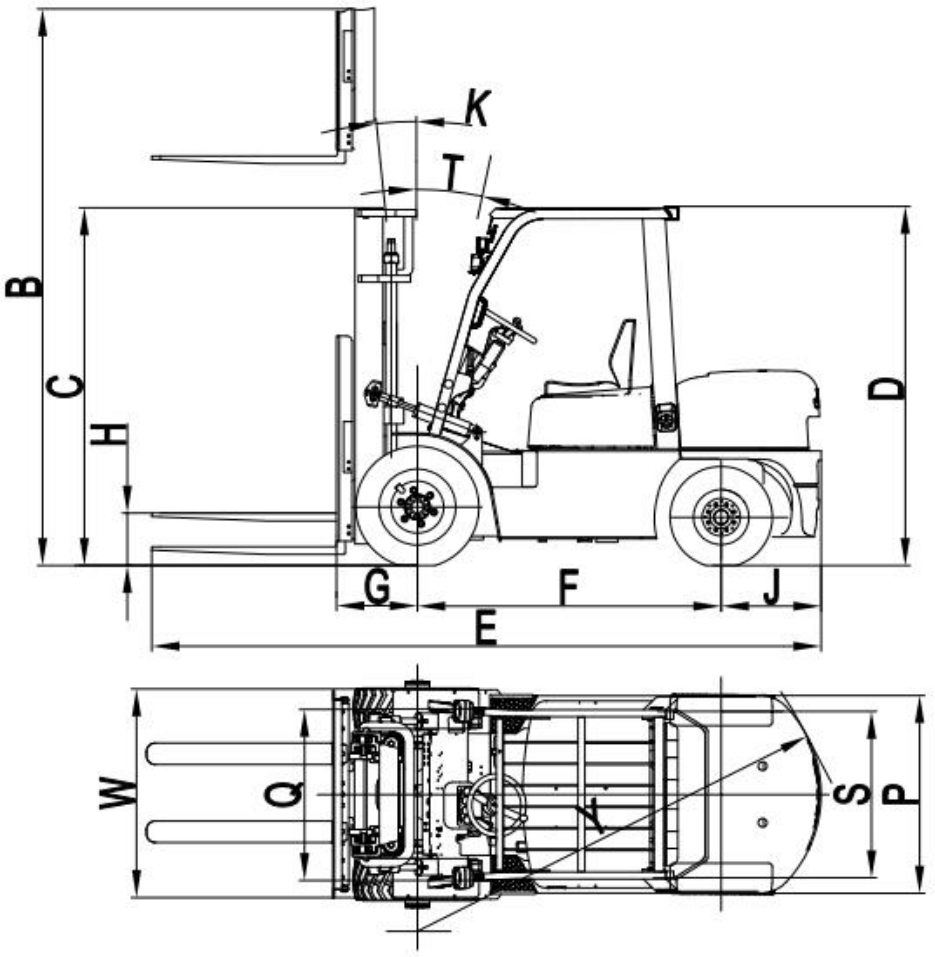


Table 1-1 H series 1-1.8t-Xinchang NC485BPG

H series 1-1.8t technical data (Xinchang NC485BPG engine)												
Item				CPC10	CPCD10	CPC15	CPCD15	CPC18	CPCD18
Performance data	Rated load		kg	1000		1500		1800	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	155					
	Mast tilt angle (front/rear)°			6/12					
	Lift speed	Zero load	mm/s	590					
		Full load	mm/s	550					
	Travel speed	Zero load	km/h	14.5					
		Full load	km/h	13.5					
	Maximum traction	Zero load	KN	7.1		8.4		9.1	
		Full load	KN	12.35		14.45		18.85	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	1880`		1955		1985	
	Minimum cross channel		mm	3387		3462		3492	
Dimension	Overall length E		mm	3071		3131		3174	
	Overall width P		mm	1080					
	Overall height D		mm	2060					
	Overall height B		mm	3930					
	Wheelbase F		mm	1400					
	Wheel tread front/rear		Q/S mm	890/920					
	Front suspension length G		mm	410					
	Rear suspension length J		mm	350		424		461	
	Fork size L×W×H		mm	920×100×40					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	110					
	Overall weight		kg	2320	2340	2740	2760	2940	2960

Table 1-2 H series 1-1.8t-Xinchang 4N23G31

H series 1-1.8t technical data (Xinchang 4N23G31 engine)												
Item				CPC10	CPCD10	CPC15	CPCD15	CPC18	CPCD18
Performance data	Rated load		kg	1000		1500		1800	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	155					
	Mast tilt angle (front/rear)°			6/12					
	Lift speed	Zero load	mm/s	550					
		Full load	mm/s	510					
	Travel speed	Zero load	km/h	14.8					
		Full load	km/h	14.6					
	Maximum traction	Zero load	KN	7.1		8.4		9.1	
		Full load	KN	12.35		14.45		18.85	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	1880`		1955		1985	
	Minimum cross channel		mm	3387		3462		3492	
Dimension	Overall length E		mm	3071		3131		3174	
	Overall width P		mm	1080					
	Overall height D		mm	2060					
	Overall height B		mm	3930					
	Wheelbase F		mm	1400					
	Wheel tread front/rear		Q/S mm	890/920					
	Front suspension length G		mm	410					
	Rear suspension length J		mm	350		424		461	
	Fork size L×W×H		mm	920×100×40					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	110					
	Overall weight		kg	2320	2340	2740	2760	2940	2960

Table 1-3 H series 1-1.8t-Quanchai 4B4-45V32

H series 1-1.8t technical data (Quanchai 4B4-45V32 engine)												
Item				CPC10	CPCD10	CPC15	CPCD15	CPC18	CPCD18
Performance data	Rated load		kg	1000		1500		1800	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	155					
	Mast tilt angle (front/rear)°			6/12					
	Lift speed	Zero load	mm/s	550					
		Full load	mm/s	510					
	Travel speed	Zero load	km/h	14.8					
		Full load	km/h	14.6					
	Maximum traction	Zero load	KN	7.1		8.4		9.1	
		Full load	KN	12.35		14.45		18.85	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	1880`		1955		1985	
	Minimum cross channel		mm	3387		3462		3492	
Dimension	Overall length E		mm	3071		3131		3174	
	Overall width P		mm	1080					
	Overall height D		mm	2060					
	Overall height B		mm	3930					
	Wheelbase F		mm	1400					
	Wheel tread front/rear		Q/S mm	890/920					
	Front suspension length G		mm	410					
	Rear suspension length J		mm	350		424		461	
	Fork size L×W×H		mm	920×100×40					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	110					
	Overall weight		kg	2320	2340	2740	2760	2940	2960

Table 1-4 H series 1-1.8t -ISUZU C240PKJ

H series 1-1.8t technical data (ISUZU C240PKJ engine)											
Item				CPC10	CPCD10	CPC15	CPCD15	CPC18	CPCD18
Performance data	Rated load		kg	1000		1500		1800	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	155					
	Mast tilt angle (front/rear)°			6/12					
	Lift speed	Zero load	mm/s	590					
		Full load	mm/s	550					
	Travel speed	Zero load	km/h	14.5					
		Full load	km/h	14					
	Maximum traction	Zero load	KN	7.1		8.4		9.1	
		Full load	KN	12.35		14.45		18.85	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	1880		1955		1985	
	Minimum cross channel		mm	3387		3462		3492	
Dimension	Overall length E		mm	3071		3131		3174	
	Overall width P		mm	1080					
	Overall height D		mm	2060					
	Overall height B		mm	3930					
	Wheelbase F		mm	1400					
	Wheel tread front/rear Q/S		mm	890/920					
	Front suspension length G		mm	410					
	Rear suspension length J		mm	350		424		461	
	Fork size L×W×H		mm	920×100×40					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	110					
	Overall weight		kg	2320	2340	2740	2760	2940	2960

Table 1-5 H series 1-1.8t -Guangqing 491

H series 1-1.8t technical data (Guangqing 491 engine)												
Item					CPQ10	CPQD10	CPQ15	CPQD15	CPQ18	CPQD18
Performance data	Rated load			kg	1000		1500		1800	
	Load center			mm	500					
	Lift height			mm	3000					
	Free lift height			mm	155					
	Mast tilt angle (front/rear)			°	6/12					
	Lift speed	Zero load		mm/s	590					
		Full load		mm/s	550					
	Travel speed	Zero load		km/h	15.5					
		Full load		km/h	15					
	Maximum traction	Zero load		KN	7.1		8.4		9.1	
		Full load		KN	12.35		14.45		18.85	
	Gradeability	Full load		%	20					
	Minimum turning radius			mm	1880		1955		1985	
	Minimum cross channel			mm	3387		3462		3492	
Dimension	Overall length E			mm	3071		3131		3174	
	Overall width P			mm	1080					
	Overall height D			mm	2060					
	Overall height B			mm	3930					
	Wheelbase F			mm	1400					
	Wheel tread front/rear Q/S			mm	890/920					
	Front suspension length G			mm	410					
	Rear suspension length J			mm	350		424		461	
	Fork size L×W×H			mm	920×100×40					
	Adjustable space of fork W			mm	——	——	——	——	——	——
	Ground clearance H (from the mast)			mm	110					
	Overall weight			kg	2320	2340	2740	2760	2940	2960

Table 1-6 H series 1-1.8t -Nissan K21

H series 1-1.8t technical data (Nissan K21 engine)												
Item				CPQ10	CPQD10	CPQ15	CPQD15	CPQ18	CPQD18
Performance data	Rated load		kg	1000		1500		1800	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	155					
	Mast tilt angle (front/rear)		°	6/12					
	Lift speed	Zero load	mm/s	585					
		Full load	mm/s	505					
	Travel speed	Zero load	km/h	16.2					
		Full load	km/h	15.6					
	Maximum traction	Zero load	KN	7.1		8.4		9.1	
		Full load	KN	12.35		14.45		18.85	
		Full load	%	20					
	Minimum turning radius		mm	1880		1955		1985	
	Minimum cross channel		mm	3387		3462		3492	
Dimension	Overall length E		mm	3071		3131		3174	
	Overall width P		mm	1080					
	Overall height D		mm	2060					
	Overall height B		mm	3930					
	Wheelbase F		mm	1400					
	Wheel tread front/rear Q/S		mm	890/920					
	Front suspension length G		mm	410					
	Rear suspension length J		mm	350		424		461	
	Fork size L×W×H		mm	920×100×40					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	110					
	Overall weight		kg	2320	2340	2740	2760	2940	2960

Table 2-1 H series 2-2.5t- Xinchang C490BPG

H series 2-2.5t technical data (Xinchang C490BPG engine)								
Item				CPC20	CPCD20	CPC25	CPCD25	
Performance data	Rated load		kg	2000		2500		
	Load center		mm	500				
	Lift height		mm	3000				
	Free lift height		mm	160				
	Mast tilt angle (front/rear)		°	6/12				
	Lift speed	Zero load	mm/s	530				
		Full load	mm/s	500				
	Travel speed	Zero load	km/h	20				
		Full load	km/h	19.5				
	Maximum traction	Zero load	KN	9.3		8.8		
		Full load	KN	11.7		11.4		
	Gradeability	Full load	%	20				
	Minimum turning radius		mm	2170		2245		
	Minimum cross channel		mm	3805		3880		
Dimension	Overall length E		mm	3555		3630		
	Overall width P		mm	1150				
	Overall height D		mm	2070				
	Overall height B		mm	4030		4030		
	Wheelbase F		mm	1600		1600		
	Wheel tread front/rear Q/S		mm	970/970				
	Front suspension length G		mm	465				
	Rear suspension length J		mm	420		495		
	Fork size L×W×H		mm	1070×122×40				
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	110		110		
	Overall weight		kg	3500	3520	3720	3740	

Table 2-2 H series 2-2.5t- Xinchang 4D27G31

H series 2-2.5t technical data (Xinchang 4D27G31 engine)								
Item				CPC20	CPCD20	CPC25	CPCD25	
Performance data	Rated load		kg	2000		2500		
	Load center		mm	500				
	Lift height		mm	3000				
	Free lift height		mm	160				
	Mast tilt angle (front/rear)		°	6/12				
	Lift speed	Zero load	mm/s	700				
		Full load	mm/s	670				
	Travel speed	Zero load	km/h	18				
		Full load	km/h	17				
	Maximum traction	Zero load	KN	9.3		8.8		
		Full load	KN	11.7		11.4		
	Gradeability	Full load	%	20				
	Minimum turning radius		mm	2170		2245		
	Minimum cross channel		mm	3805		3880		
Dimension	Overall length E		mm	3555		3630		
	Overall width P		mm	1150				
	Overall height D		mm	2070				
	Overall height B		mm	4030		4030		
	Wheelbase F		mm	1600		1600		
	Wheel tread front/rear Q/S		mm	970/970				
	Front suspension length G		mm	465				
	Rear suspension length J		mm	420		495		
	Fork size L×W×H		mm	1070×122×40				
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	110		110		
	Overall weight		kg	3500	3520	3720	3740	

Table 2-3 H series 2-2.5t- Quanchai 4C2-50V32

H series 2-2.5t technical data (Quanchai 4C2-50V32 engine)								
Item				CPC20	CPCD20	CPC25	CPCD25	
Performance data	Rated load		kg	2000		2500		
	Load center		mm	500				
	Lift height		mm	3000				
	Free lift height		mm	160				
	Mast tilt angle (front/rear)		°	6/12				
	Lift speed	Zero load	mm/s	700				
		Full load	mm/s	670				
	Travel speed	Zero load	km/h	18				
		Full load	km/h	17				
	Maximum traction	Zero load	KN	9.3		8.8		
		Full load	KN	11.7		11.4		
	Gradeability	Full load	%	20				
	Minimum turning radius		mm	2170		2245		
	Minimum cross channel		mm	3805		3880		
Dimension	Overall length E		mm	3555		3630		
	Overall width P		mm	1150				
	Overall height D		mm	2070				
	Overall height B		mm	4030		4030		
	Wheelbase F		mm	1600		1600		
	Wheel tread front/rear Q/S		mm	970/970				
	Front suspension length G		mm	465				
	Rear suspension length J		mm	420		495		
	Fork size L×W×H		mm	1070×122×40				
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	110		110		
	Overall weight		kg	3500	3520	3720	3740	

Table 2-4 H series 2-2.5t-ISUZU C240PKJ

H series 2-2.5t technical data (ISUZU C240PKJ engine)								
Item				CPC20	CPCD20	CPC25	CPCD25	
Performance data	Rated load		kg	2000		2500		
	Load center		mm	500				
	Lift height		mm	3000				
	Free lift height		mm	160				
	Mast tilt angle (front/rear)		°	6/12				
	Lift speed	Zero load	mm/s	530				
		Full load	mm/s	500				
	Travel speed	Zero load	km/h	20				
		Full load	km/h	19.5				
	Maximum traction	Zero load	KN	9.3		8.8		
		Full load	KN	11.7		11.4		
	Gradeability	Full load	%	20				
	Minimum turning radius		mm	2170		2245		
	Minimum cross channel		mm	3805		3880		
Dimension	Overall length E		mm	3555		3630		
	Overall width P		mm	1150				
	Overall height D		mm	2070				
	Overall height B		mm	4030		4030		
	Wheelbase F		mm	1600		1600		
	Wheel tread front/rear Q/S		mm	970/970				
	Front suspension length G		mm	465				
	Rear suspension length J		mm	420		495		
	Fork size L×W×H		mm	1070×122×40				
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	110		110		
	Overall weight		kg	3500	3520	3720	3740	

Table 2-5 H series 2-2.5t- Nissan K21

H series 2-2.5t technical data (Nissan K21 engine)								
Item				CPQ20	CPQD20	CPQ25	CPQD25	
Performance data	Rated load		kg	2000		2500		
	Load center		mm	Load center mm				
	Lift height		mm	Lift height mm				
	Free lift height		mm	Free lift height mm				
	Mast tilt angle (front/rear)		°	Mast tilt angle (front/rear)°				
	Lift speed	Zero load	mm/s	518				
		Full load	mm/s	415				
	Travel speed	Zero load	km/h	22				
		Full load	km/h	21.5				
	Maximum traction	Zero load	KN	9.3		8.8		
		Full load	KN	11.7		11.4		
	Gradeability	Full load	%	20				
	Minimum turning radius		mm	2170		2245		
	Minimum cross channel		mm	3805		3880		
Dimension	Overall length E		mm	3555		3630		
	Overall width P		mm	1150				
	Overall height D		mm	2070				
	Overall height B		mm	4030		4030		
	Wheelbase F		mm	1600		1600		
	Wheel tread front/rear Q/S		mm	970/970				
	Front suspension length G		mm	465				
	Rear suspension length J		mm	420		495		
	Fork size L×W×H		mm	1070×122×40				
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	110		110		
	Overall weight		kg	3500	3520	3720	3740	

Table 2-6 H series 2-2.5t-Guangqing 491

H series 2-2.5t technical data (Guangqing 491 engine)								
Item				CPQ20	CPQD20	CPQ25	CPQD25	
Performance data	Rated load		kg	2000		2500		
	Load center		mm	500				
	Lift height		mm	3000				
	Free lift height		mm	160				
	Mast tilt angle (front/rear)		°	6/12				
	Lift speed	Zero load	mm/s	600				
		Full load	mm/s	550				
	Travel speed	Zero load	km/h	20				
		Full load	km/h	19.5				
	Maximum traction	Zero load	KN	9.3		8.8		
		Full load	KN	11.7		11.4		
	Gradeability	Full load	%	20				
	Minimum turning radius		mm	2170		2245		
	Minimum cross channel		mm	3805		3880		
Dimension	Overall length E		mm	3555		3630		
	Overall width P		mm	1150				
	Overall height D		mm	2070				
	Overall height B		mm	4030		4030		
	Wheelbase F		mm	1600		1600		
	Wheel tread front/rear Q/S		mm	970/970				
	Front suspension length G		mm	465				
	Rear suspension length J		mm	420		495		
	Fork size L×W×H		mm	1070×122×40				
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	110		110		
	Overall weight		kg	3500	3520	3720	3740	

Table 2-7 H series 2-2.5t-Dachai CA498-06T2/01

H series 2-2.5t technical data (Dachai CA498-06T2/01 engine)							
Item				CPC20	CPCD20	CPC25	CPCD25
Performance data	Rated load		kg	2000		2500	
	Load center		mm	500			
	Lift height		mm	3000			
	Free lift height		mm	160			
	Mast tilt angle (front/rear)		°	6/12			
	Lift speed	Zero load	mm/s	518			
		Full load	mm/s	415			
	Travel speed	Zero load	km/h	22			
		Full load	km/h	21.5			
	Maximum traction	Zero load	KN	7.07		7.4	
		Full load	KN	17.9		17.7	
	Gradeability	Full load	%	20			
	Minimum turning radius		mm	2170		2245	
	Minimum cross channel		mm	3805		3880	
Dimension	Overall length E		mm	3555		3630	
	Overall width P		mm	1150			
	Overall height D		mm	2070			
	Overall height B		mm	4030		4030	
	Wheelbase F		mm	1600		1600	
	Wheel tread front/rear Q/S		mm	970/970			
	Front suspension length G		mm	465			
	Rear suspension length J		mm	420		495	
	Fork size L×W×H		mm	1070×122×40			
	Adjustable space of fork W		mm	——	——	——	——
	Ground clearance H (from the mast)		mm	110		110	
	Overall weight		kg	3500	3520	3720	3740

Table 3-1　H series 3-3.5t XinChang C490BPG、A495BPG、4D27G31、4D30G31

H series 3-3.5t technical data (Xinchang C490BPG、A495BPG、4D27G31、4D30G31 engine)											
Item				CPC30	CPCD30	CPC33	CPCD33	CPC35	CPCD35
Performance data	Rated load		kg	3000		3300		3500	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	165					
	Mast tilt angle (front/rear)		°	6/12					
	Lift speed	Zero load	mm/s	512		512		515	
		Full load	mm/s	490		470		420	
	Travel speed	Zero load	km/h	20		20.8		21.1	
		Full load	km/h	19		19.8		18.5	
	Maximum traction	Zero load	KN	16		16		22	
		Full load	KN	20		20		28	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	2549		2551		2573	
	Minimum cross channel		mm	4109		4109		4144	
Dimension	Overall length E		mm	3833		3843		3869	
	Overall width P		mm	1230					
	Overall height D		mm	2090					
	Overall height B		mm	4256					
	Wheelbase F		mm	1760					
	Wheel tread front/rear Q/S		mm	1000/970					
	Front suspension length G		mm	474					
	Rear suspension length J		mm	530		540		566	
	Fork size L×W×H		mm	1070×125×45					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	130					
	Overall weight		kg	4080	4100	4280	4300	4400	4420

Table 3-2 H series 3-3.5t QuanChai4C2-50V32

H series 3-3.5t technical data (QuanChai4C2-50V32 engine)											
Item				CPC30	CPCD30	CPC33	CPCD33	CPC35	CPCD35
Performance data	Rated load		kg	3000		3300		3500	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	165					
	Mast tilt angle (front/rear)		°	6/12					
	Lift speed	Zero load	mm/s	512		512		515	
		Full load	mm/s	490		470		420	
	Travel speed	Zero load	km/h	20		20.8		21.1	
		Full load	km/h	19		19.8		18.5	
	Maximum traction	Zero load	KN	16		16		22	
		Full load	KN	20		20		28	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	2549		2551		2573	
	Minimum cross channel		mm	4109		4109		4144	
Dimension	Overall length E		mm	3833		3843		3869	
	Overall width P		mm	1230					
	Overall height D		mm	2090					
	Overall height B		mm	4256					
	Wheelbase F		mm	1760					
	Wheel tread front/rear Q/S		mm	1000/970					
	Front suspension length G		mm	474					
	Rear suspension length J		mm	530		540		566	
	Fork size L×W×H		mm	1070×125×45					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	130					
	Overall weight		kg	4080	4100	4280	4300	4400	4420

Table 3 -3 H series 3t-NissanK25

H series 3-3.5t technical data (NissanK25 engine)						
Item					CPQ30	CPQD30
Performance data	Rated load			kg	3000	
	Load center			mm	500	
	Lift height			mm	3000	
	Free lift height			mm	165	
	Mast tilt angle (front/rear)			°	6/12	
	Lift speed	Zero load		mm/s	460	
		Full load		mm/s	430	
	Travel speed	Zero load		km/h	20	
		Full load		km/h	19.5	
	Maximum traction	Zero load		KN	10.5	
		Full load		KN	18.7	
	Gradeability	Full load		%	20	
	Minimum turning radius			mm	2549	
	Minimum cross channel			mm	4293	
Dimension	Overall length E			mm	3834	
	Overall width P			mm	1230	
	Overall height D			mm	2090	
	Overall height B			mm	4256	
	Wheelbase F			mm	1760	
	Wheel tread front/rear Q/S			mm	1000/970	
	Front suspension length G			mm	474	
	Rear suspension length J			mm	530	
	Fork size L×W×H			mm	1070×125×45	
	Adjustable space of fork W			mm	——	——
	Ground clearance H (from the mast)			mm	130	
	Overall weight			kg	4020	4040

Table 3 -4 H series 3-3.5t-Guangqing 491

H series 3-3.5t technical data (Guangqing 491 engine)												
Item				CPQ30	CPQD30	CPQ33	CPQD33	CPQ35	CPQD35
Performance data	Rated load		kg	3000		3300		3500	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	165					
	Mast tilt angle (front/rear)		°	6/12					
	Lift speed	Zero load	mm/s	460		460		460	
		Full load	mm/s	430		420		400	
	Travel speed	Zero load	km/h	20		20		19.5	
		Full load	km/h	19.5		19		18	
	Maximum traction	Zero load	KN	10.5		12		13	
		Full load	KN	18.7		20		22	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	2549		2551		2573	
	Minimum cross channel		mm	4293		4295		4317	
Dimension	Overall length E		mm	3834		3844		3870	
	Overall width P		mm	1230					
	Overall height D		mm	2090					
	Overall height B		mm	4256					
	Wheelbase F		mm	1760					
	Wheel tread front/rear Q/S		mm	1000/970					
	Front suspension length G		mm	474					
	Rear suspension length J		mm	530		540		566	
	Fork size L×W×H		mm	1070×125×45					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	130					
	Overall weight		kg	4000	4020	4200	4240	4320	4360

Table 3 -5 H series 3-3.5t- Dachai CA498-06T2/01

H series 3-3.5t technical data Dachai CA498-06T2/01 engine)												
Item				CPC30	CPCD30	CPC33	CPCD33	CPC35	CPCD35
Performance data	Rated load		kg	3000		3300		3500	
	Load center		mm	500					
	Lift height		mm	3000					
	Free lift height		mm	165					
	Mast tilt angle (front/rear)		°	6/12					
	Lift speed	Zero load	mm/s	500		570		520	
		Full load	mm/s	400		400		420	
	Travel speed	Zero load	km/h	20		19		20	
		Full load	km/h	19		18		19.5	
	Maximum traction	Zero load	KN	11.3		12		13	
		Full load	KN	20		18		18	
	Gradeability	Full load	%	20					
	Minimum turning radius		mm	2549		2551		2573	
	Minimum cross channel		mm	4293		4295		4317	
Dimension	Overall length E		mm	3834		3844		3870	
	Overall width P		mm	1230					
	Overall height D		mm	2090					
	Overall height B		mm	4256					
	Wheelbase F		mm	1760					
	Wheel tread front/rear Q/S		mm	1000/970					
	Front suspension length G		mm	474					
	Rear suspension length J		mm	530		540		566	
	Fork size L×W×H		mm	1070×125×45					
	Adjustable space of fork W		mm	——	——	——	——	——	——
	Ground clearance H (from the mast)		mm	130					
	Overall weight		kg	4080	4100	4280	4300	4400	4420

Table 3 -7 H series 3-3.5t- 4DC1

H series 3-3.5t technical data (4DC1 engine)												
Item				CPC30		CPCD30		CPC33		CPCD33	CPC35	CPCD35
Performance data	Rated load		kg	3000				3300			3500	
	Load center		mm	500								
	Lift height		mm	3000								
	Free lift height		mm	165								
	Mast tilt angle (front/rear)		°	6/12								
	Lift speed	Zero load	mm/s	500				570			540	
		Full load	mm/s	400				400			420	
	Travel speed	Zero load	km/h	20				20			20	
		Full load	km/h	19				19			19.5	
	Maximum traction	Zero load	KN	12				8			13	
		Full load	KN	20				18			18	
	Gradeability	Full load	%	20								
	Minimum turning radius		mm	2549				2551			2573	
	Minimum cross channel		mm	4293				4295			4317	
Dimension	Overall length E		mm	3834				3844			3870	
	Overall width P		mm	1230								
	Overall height D		mm	2090								
	Overall height B		mm	4256								
	Wheelbase F		mm	1760								
	Wheel tread front/rear Q/S		mm	1000/970								
	Front suspension length G		mm	474								
	Rear suspension length J		mm	530				540			566	
	Fork size L×W×H		mm	1070×125×45								
	Adjustable space of fork W		mm	——		——		——		——	——	——
	Ground clearance H (from the mast)		mm	130								
	Overall weight		kg	4105		4125		4305		4325	4425	4445

Table 4 -1　H series 3-3.5t-XingChang C490BPG、A495BPG、4D27G31、4D30G31

T series 3-3.5t technical data (XingChang C490BPG、A495BPG、4D27G31、4D30G31 engine)							
Item			CPC30	CPCD30	CPC35	CPCD35	
Performance data	Rated load	kg		3000		3500	
	Load center	mm		500		500	
	Lift height	mm		3000		3000	
	Free lift height	mm		165		70	
	Mast tilt angle (front/rear)	°		6/12		6/12	
	Lift speed	Zero load	mm/s	460		496	
		Full load	mm/s	430		485	
	Travel speed	Zero load	km/h	20		21.5	
		Full load	km/h	19		21	
	Maximum traction	Zero load	KN	16		22	
		Full load	KN	20		28	
	Gradeability	Full load	%	20		20	
	Minimum turning radius	mm		2540		2575	
	Minimum cross channel	mm		4290		4370	
Dimension	Overall length E	mm		3809		3859	
	Overall width P	mm		1230		1230	
	Overall height D	mm		2090		2090	
	Overall height B	mm		4256		4228	
	Wheelbase F	mm		1760		1760	
	Wheel tread front/rear Q/S	mm		1000/970		1000/970	
	Front suspension length G	mm		474		485	
	Rear suspension length J	mm		530		544	
	Fork size L×W×H	mm		1070×125×45		1070×125×45	
	Adjustable space of fork W	mm	——	——	——	——	
	Ground clearance H (from the mast)	mm		130		130	
	Overall weight	kg	4160	4200	4660	4700	

Table 4 -2　T series 3-3.5t—QuanChai 4C2-50V32

T series 3-3.5t technical data (QuanChai 4C2-50V32 engine)							
Item				CPC30	CPCD30	CPC35	CPCD35
Performance data	Rated load		kg	3000		3500	
	Load center		mm	500		500	
	Lift height		mm	3000		3000	
	Free lift height		mm	165		70	
	Mast tilt angle (front/rear)		°	6/12		6/12	
	Lift speed	Zero load	mm/s	460		496	
		Full load	mm/s	430		485	
	Travel speed	Zero load	km/h	20		21.5	
		Full load	km/h	19		21	
	Maximum traction	Zero load	KN	16		22	
		Full load	KN	20		28	
	Gradeability	Full load	%	20		20	
	Minimum turning radius		mm	2540		2575	
	Minimum cross channel		mm	4290		4370	
Dimension	Overall length E		mm	3809		3859	
	Overall width P		mm	1230		1230	
	Overall height D		mm	2090		2090	
	Overall height B		mm	4256		4228	
	Wheelbase F		mm	1760		1760	
	Wheel tread front/rear　Q/S		mm	1000/970		1000/970	
	Front suspension length G		mm	474		485	
	Rear suspension length J		mm	530		544	
	Fork size L×W×H		mm	1070×125×45		1070×125×45	
	Adjustable space of fork W		mm	——	——	——	——
	Ground clearance H (from the mast)		mm	130		130	
	Overall weight		kg	4160	4200	4660	4700

Table 4-3 T series 3-3.5t- 4DC1

T series 3-3.5t technical data (4DC1 engine)								
Item				CPC30	CPCD30	CPC35	CPCD35	
Performance data	Rated load		kg	3000		3500		
	Load center		mm	500		1500		
	Lift height		mm	3000		3000		
	Free lift height		mm	165		70		
	Mast tilt angle (front/rear)		°	6/12		6/12		
	Lift speed	Zero load	mm/s	496		496		
		Full load	mm/s	490		485		
	Travel speed	Zero load	km/h	20		21.5		
		Full load	km/h	19		21		
	Maximum traction	Zero load	KN	20		22		
		Full load	KN	26		28		
	Gradeability	Full load	%	20		20		
	Minimum turning radius		mm	2540		2575		
	Minimum cross channel		mm	4290		4370		
Dimension	Overall length E		mm	3809		3859		
	Overall width P		mm	1230		1230		
	Overall height D		mm	2090		2090		
	Overall height B		mm	4256		4228		
	Wheelbase F		mm	1760		1760		
	Wheel tread front/rear Q/S		mm	1000/970		1000/970		
	Front suspension length G		mm	474		485		
	Rear suspension length J		mm	530		544		
	Fork size L×W×H		mm	1070×125×45		1070×125×45		
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	130		130		
	Overall weight		kg	4160	4200	4660	4700	

Table 5-1 H series 3.8-4t- XinchangA495BPG and A498BPG

H series 3.8-4t technical data (XinchangA495BPG and A498BPG engine)							
Item				CPC38	CPCD38	CPC40	CPCD40
Performance data	Rated load		kg	3800		4000	
	Load center		mm	500		500	
	Lift height		mm	3000		3000	
	Free lift height		mm	110		110	
	Mast tilt angle (front/rear)		°	6/12		6/12	
	Lift speed	Zero load	mm/s	465		550	
		Full load	mm/s	430		460	
	Travel speed	Zero load	km/h	21		20	
		Full load	km/h	20		19	
	Maximum traction	Zero load	KN	30		32	
		Full load	KN	36		38	
	Gradeability	Full load	%	20		20	
	Minimum turning radius		mm	2835		2835	
	Minimum cross channel		mm	4535		4535	
Dimension	Overall length E		mm	4020		4020	
	Overall width P		mm	1250		1250	
	Overall height D		mm	2140		2140	
	Overall height B		mm	4220		4220	
	Wheelbase F		mm	1900		1900	
	Wheel tread front/rear Q/S		mm	1160/1070		1160/1070	
	Front suspension length G		mm	490		490	
	Rear suspension length J		mm	560		560	
	Fork size L×W×H		mm	1070×125×50		1070×125×50	
	Adjustable space of fork W		mm	——	——	——	——
	Ground clearance H (from the mast)		mm	138		138	
	Overall weight		kg	5030	5070	5165	5205

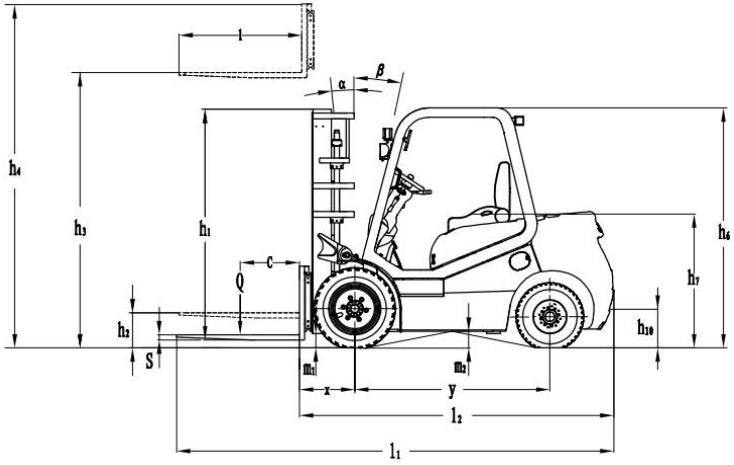
Table 5-2 H series 3.8-4t-QuanChai4C4-50V31

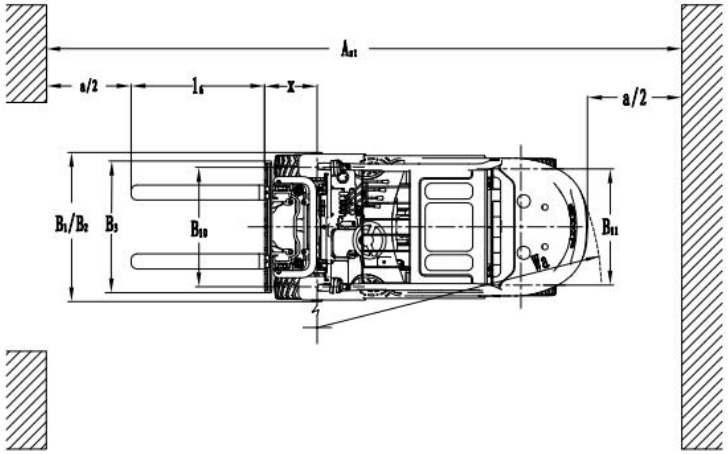
H series 3.8-4t technical data (QuanChai4C4-50V31 engine)							
Item				CPC38	CPCD38	CPC40	CPCD40
Performance data	Rated load		kg	Rated load	kg	4000	
	Load center		mm	Load center	mm	500	
	Lift height		mm	Lift height	mm	3000	
	Free lift height		mm	Free lift height	mm	110	
	Mast tilt angle (front/rear)		°	Mast tilt angle (front/rear)	°	6/12	
	Lift speed	Zero load	mm/s	465		465	
		Full load	mm/s	380		380	
	Travel speed	Zero load	km/h	21		20.5	
		Full load	km/h	20		20	
	Maximum traction	Zero load	KN	19		20	
		Full load	KN	21		22	
	Gradeability	Full load	%	20		20	
	Minimum turning radius		mm	Minimum turning radius		2835	
	Minimum cross channel		mm	Minimum cross channel		4535	
Dimension	Overall length E		mm	4020		4020	
	Overall width P		mm	1250		1250	
	Overall height D		mm	2140		2140	
	Overall height B		mm	4220		4220	
	Wheelbase F		mm	1900		1900	
	Wheel tread front/rear Q/S		mm	1160/1070		1160/1070	
	Front suspension length G		mm	490		490	
	Rear suspension length J		mm	560		560	
	Fork size L×W×H		mm	1070×125×50		1070×125×50	
	Adjustable space of fork W		mm	——	——	——	——
	Ground clearance H (from the mast)		mm	138		138	
	Overall weight		kg	5030	5070	5165	5205

Table 5-3 H series 3.8-4t- Dachai498 CA498-06T2/01

H series 3.8-4t technical data (Dachai498 CA498-06T2/01 engine)								
Item				CPC38	CPCD38	CPC40	CPCD40	
Performance data	Rated load		kg	3800		4000		
	Load center		mm	500		500		
	Lift height		mm	3000		3000		
	Free lift height		mm	110		110		
	Mast tilt angle (front/rear)		°	6/12		6/12		
	Lift speed	Zero load	mm/s	550		550		
		Full load	mm/s	460		460		
	Travel speed	Zero load	km/h	20		20		
		Full load	km/h	19		19		
	Maximum traction	Zero load	KN	30		32		
		Full load	KN	36		38		
	Gradeability	Full load	%	20		20		
	Minimum turning radius		mm	2835		2835		
	Minimum cross channel		mm	4535		4535		
Dimension	Overall length E		mm	4020		4020		
	Overall width P		mm	1250		1250		
	Overall height D		mm	2140		2140		
	Overall height B		mm	4220		4220		
	Wheelbase F		mm	1900		1900		
	Wheel tread front/rear Q/S		mm	1160/1070		1160/1070		
	Front suspension length G		mm	490		490		
	Rear suspension length J		mm	560		560		
	Fork size L×W×H		mm	1070×125×50		1070×125×50		
	Adjustable space of fork W		mm	——	——	——	——	
	Ground clearance H (from the mast)		mm	138		138		
	Overall weight		kg	5010	5050	5165	5205	

Dimension of J series forklift





2-3.5t J series internal combustion forklift data

Features								
Model	CPCD20	CPCD25	CPCD30	CPCD35	CPCD20	CPCD25	CPCD30	CPCD35
Engine type	Diesel engine							
Rated load	2000	2500	3000	3500	2000	2500	3000	3500
Load center	500							
Way of driving	Seated							
Size								
Maximum lift height	3000							
Mast height	1995	1995	2080	2120	1995	1995	2080	2120
Maximum lift height of fork	4020	4024	4260	4270	4020	4024	4260	4270
Fork lift height	190		130		190		130	
Overall height (to the overhead guard)	2070		2090		2070		2090	
Minimum ground clearance (from the mast)	115		135		115		135	
Height from driver’s seat to the inner side of overhead guard	950		1005		950		1005	
Ground clearance of traction pin	180		200		180		200	
Overall length (with fork/without fork)	2536/3606	2596/3666	2740/3810	2805/3875	2536/3606	2596/3666	2740/3810	2805/3875
Wheelbase	1600		1700		1600		1700	
Front suspension length	476	476	480	495	476	476	480	495
Rear suspension length	460	520	555	610	460	520	555	610
Widest frame	1190		1220		1190		1220	
Wheel tread (front/rear)	970/970		1000/970		970/970		1000/970	
Minimum turning radius	2190	2295	2500	2575	2190	2295	2500	2575
Tilt angle of mast	6°/12°							
Fork size (L×W×H)	1070×122×40		1070×125×45		1070×122×40		1070×125×45	1070×125×50

			1070×125×50					
Performance								
Highest speed (full/empty)	17/19		17/18	19/19.5	17/19		17/18	19/19.5
Lifting speed (full/empty)	530/550	538/710	435/545	368/449	530/550	530/550	460/505	330/370
Descending speed (full/empty)	450/450	404/470	484/415	343/338	450/450	450/450	490/500	350/340
Max. traction (full/empty)	16.6/8.3	16.6/8.3	25/21	27/21	16.6/8.3	16.6/8.3	23.5/20	19.8/19
Weight								
Total weight	3400	3800	4280	4820	3400	3800	4280	4820
Weight distribution, full load (front/rear)	4752/648	2620/660	6360/920	7240/1080	4752/648	5544/756	6340/920	7240/1080
Weight distribution, empty load (front/rear)	1530/1870	1480/2280	1700/2580	1720/3100	1530/1870	1710/2090	1700/2580	1720/3100
Wheel and tire								
Tire type	Pneumatic tire							
Tire size (front/rear)	7.00-12-12PR		28×9-15-14PR		7.00-12-12PR		28×9-15-14PR	
	6.00-9-10PR		6.50-10-10PR		6.00-9-10PR		6.50-10-10PR	
Service brake	Hydraulic -pedal							
Parking brake	Mechanical-lever							
Driving and transmission control device								
Battery (voltage/ capacitance)	12/80							
Engine model	4DC1				ISUZU C240PKJ			
Engine rated power	45				35.4			
Engine rated speed	2500				2500			
Engine displacement	3.059				2.369			
Engine fuel tank volume	60				60			

2-3.5t J series internal combustion forklift data (Yanmar 4JG2)

Model	CPCD30	CPCD35	CPCD30	CPCD30
Engine type	Diesel			
Rated load	3000	3500	3000	3000
Mast height (fork is on ground and the mast is vertical)	2080	2120	2080	2080
Maximum lift height of fork (with backrest)	4260	4270	4260	4256
Fork lift height	130			140
Overall height (to the overhead guard)	2090			2090
Minimum ground clearance (from the mast)	115			135
Height from driver's seat to the inner side of overhead guard	1005			1005
Ground clearance of traction pin	200			200
Overall length (with fork/without fork)	2740/3810	2805/3875	2740/3810	2735/3805
Wheelbase	1700			1700
Front suspension length	480	495	480	480
Rear suspension length	555	610	555	555
Widest frame	1220			1220
Wheel tread (front/rear)	1000/970			
Minimum turning radius	2500	2575	2500	2500
Tilt angle of mast (L×W×H)	1070×125×45	1070×125×50	1070×125×45	
Highest speed (full/empty)	17/18	19/19.5	19/20	19/20
Lifting speed (full/empty)	410/530	380/460	468/505	468/505
Descending speed (full/empty)	440/420	350/385	500/490	500/490
Max. traction (full/empty)	25/20	27/21	27/21	23.5/20
Maximum gradeability (full/empty load)				
Total weight	4280	4820	4280	4260
Weight distribution, full load (front/rear)	6340/920	7640/720	6500/820	6340/900
Weight distribution, empty load (front/rear)	1700/2580	1840/2980	1760/2560	1680/2560
Tire size (front/rear)	28×9-15-14PR/6.50-10-10PR			
Engine model	4JG2		4TNE98	4TNV94L
Engine rated power	45		42.1	34.6
Engine rated speed	2450		2300	2400
Engine displacement	3.059			
Engine fuel tank volume	60		60	60

Example of regular equipment

★ Wide visual field mast

★ Fork (1.5t-1.8t：920mm,2t-3.5t：1070mm)

★ J-type pattern tire

★ Power-assisted steering

Overhead guard

★ Traction pin

★ Rotating air filter

★ Crank-type parking brake lever

★ 2-plate valve (lift and tilt)

★ 3-plate valve

★ Transmission vernier scale [hydraulic model]

★ Hydraulic vernier scale

★ Filter cartridge [hydraulic model]

★ Cut-off valve (control descending speed of fork in case the lift oil pipe is broken)

★ Self-lock valve of tilting (do not tilt when the engine has flamed out)

★ Speed valve

★ Headlamp

★ Rear combination lights

★ Rearview mirror

★ Backup buzzer

★ Horn

★ Neutral switch

★ Rubber mat of bottom plate

★ Air spring of engine hood

★ Auxiliary coolant tank

★ Regulative steering wheel

★ Direction indicator

★ Oil-water separator (D truck)

★ Stop watch

★ Engine coolant temperature gauge

★ Fuel gauge

★ Engine oil pressure gauge

★ Charging warning light

★ Warning light of oil-water separator (D truck)

★ Pre-heating light

★ Auto pre-heating

★ Key switch ★file folder

★ Pencil vase

★ Canvas of overhead guard (plastic canopy for J series and T series)

★ Tool set

Main optional parts

☆ Front wheels (two tires) (fender)

☆ Solid tire

☆ Steel cab (2t-3.5t)

☆ Steel cab (heater) (2t-3.5t)

☆ Steel cab (A/C) (2t-3.5)

☆ Ampere meter

☆ Fire extinguisher silencer

☆ Purification silencer

☆ Upper exhaust pipe

☆ Fire extinguisher

☆ Shield of tilting cylinder

☆ LPG appliance

☆ Rear work light

☆ Yellow rotating light

☆ With metal mesh and overhead guard

☆ Specified paint color

☆ 3-plate (4- and 5-plate) valve and pipe;

☆ Dual-element air filter

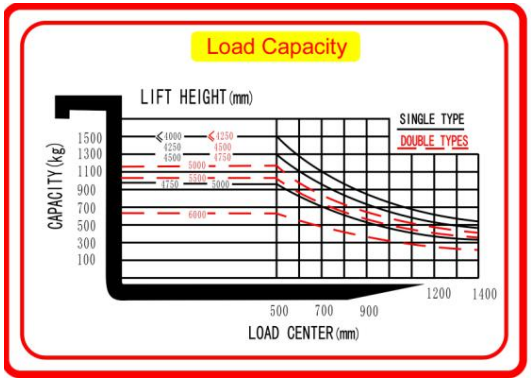
☆ Lifting appliance

Load chart

⚠Caution

The load chart is applicable to regular forklift and forklift with mast rising less than 5m.

The load chart for mast rising over 5m or vehicles equipped with accessories is different.



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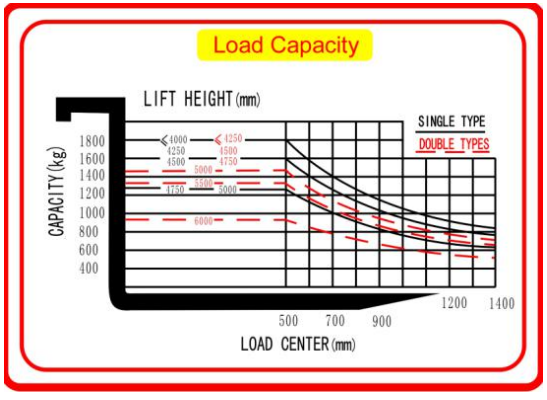

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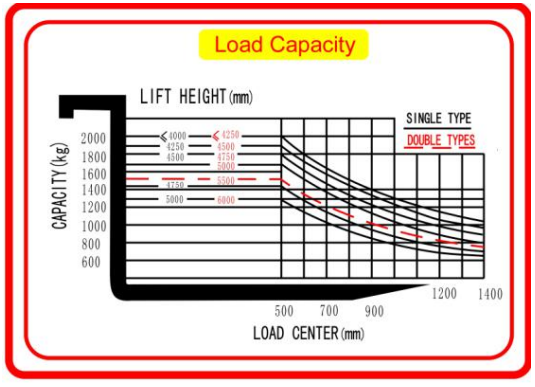

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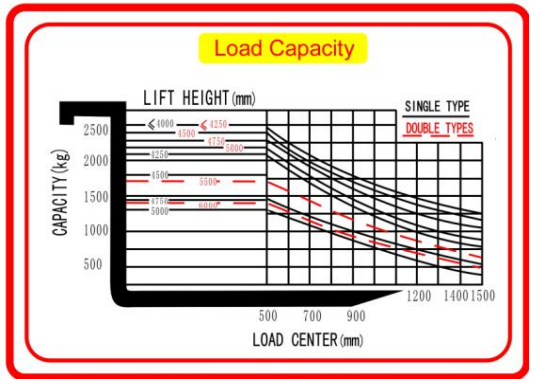

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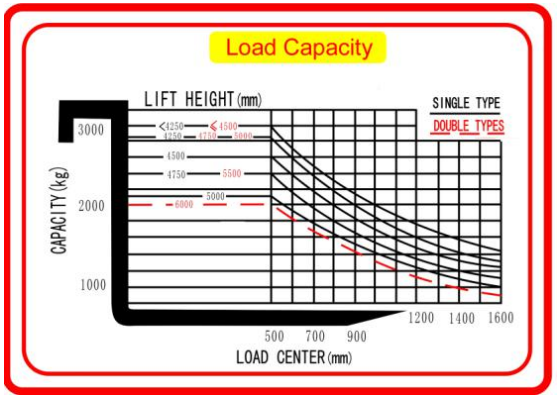

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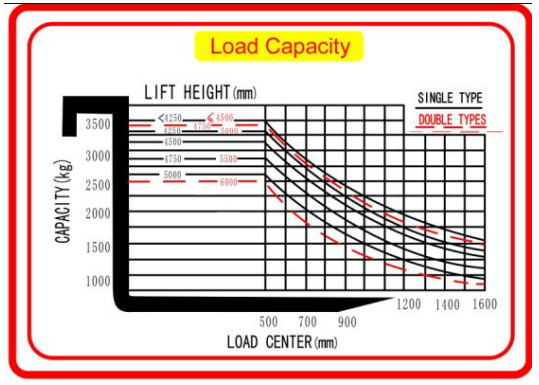

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Maintenance data

- Engine data

	Xinchang NC485BPG-504A	Xinchang 4N23G31	Xinchang C490BPG-203A	Xinchang A490BPG-63A
Type of pump	Four cycle、Water cooled、Inline engine	Four cycle、Water cooled、Inline engine	Four cycle、Water cooled、Inline engine	Four cycle、Water cooled、Inline engine
NO. of cylinders-bore×stroke mm	4-85×100	4-85×100	4-90×105	4-90×100
Total piston displacement L	2.27	2.27	2.67	2.54
Compression ratio	18：1	18：1	18.5：1	18.5:1
Rated output/speed kw(PS)/rpm	30/2600	30/2600	40/2650	36.8/2650
Max. torque/speed N.m(kg.m)/rpm	131/1700~1900	131/1700~1900	160/1800~2000	148/1800~2000
Idle speed r/min	750±30	730±25	750±30	750±30
Fuel consumption at 100% rated output g/kw.h	≤245	≤235	≤238	≤245
L×W×H mm	709×558×623	801.5×535.8×623	752×565.4×690.6	752×565.4×690.6
Dry weight （kg）	≤220	≤210	≤260	≤260
Cooling system	Water cooled	Water cooled	Water cooled	Water cooled

	Xinchang 4D27G31	Xinchang A498BPG-7A	Xinchang A495BPG-510A	新 Xinchang 4D30G31
Type of pump	Four cycle、Water cooled、Inline	Four cycle、Water cooled、Inline	Four cycle、Water cooled、Inline	Four cycle、Water cooled、Inline
NO. of cylinders-bore×stroke mm	4-90×100	4-98×105	4-95×105	4-95×105
Total piston displacement L	2.67	3.17	2.98	2.98
Compression ratio	18.5:1	18.5：1	18.5:1	18.5:1
Rated output/speed kw(PS)/rpm	36.8/2500	45/2500	42/2650	36.8/2500

Max. torque/speed N.m(kg.m)/rpm	156/1700~1900	193/1800	174/1800~2000	174/1800~2000
Idle speed r/min	750±30	750±30	750±30	750±30
Fuel consumption at 100% rated output g/kw.h	≤235	≤238	≤238	≤235
L×W×H mm	738×565.4×694	752×565.4×690.6	750×565.4×696.6	736×574.0×701.5
Dry weight （kg）	≤260	≤270	≤270	≤260
Cooling system	Water cooled	Water cooled	Water cooled	Water cooled

	Guangqin 491	Isuzu C240PKJ	Nissan K21	Nissan K25
Type of pump	Four cycle、Water cooled、Inline、Wedge combustion chamber	Four cycle、Water cooled	Four cycle、Water cooled、Inline	Four cycle、Water cooled、Inline
NO. of cylinders-bore×stroke mm	4-91×86	4-86×102	4-89×100	4-89×100
Total piston displacement L	2.237	3.168	2.065	2.487
Compression ratio	8.8：1	21.3：1	8.7:1	8.7:1
Rated output/speed kw(PS)/rpm	41/2800	45/2500	31.2/2250	37.4/2300
Max. torque/speed N.m(kg.m)/rpm	159/1600~1800	137.7/1800	143.7/1600	176.5/1600
Idle speed r/min	——	700	850	850
Fuel consumption at 100% rated output g/kw.h	≤285	292.3	290	290
L×W×H mm	760×636×691	693×550.5×689	708×553×679	708×553×679
Dry weight （kg）	150	252	150	150
Cooling system	Water cooled	Water cooled	Water cooled	Water cooled

	Dachai CA498-06T2/01-042	Isuze 4JG2	JAC 4DC1	Quanchai 4B4-45V32
Type of pump	Four cycle、Water cooled	Four cycle、Water cooled	4 cycle，Inline、Four cycle、Non-Direct Injection	Four cycle、Water cooled、Inline

NO. of cylinders-bore×stroke mm	4-98×105	4-95.4×107	4-95.4×107	4-85×100
Total piston displacement L	3.168	3.059	3.059	2.27
Compression ratio	18.5：1	20.5：1	20.5：1	18.5：1
Rated output/speed kw(PS)/rpm	45/2500	44.9/2450	45/2500	32/2600
Max. torque/speed N.m(kg.m)/rpm	190/1800	184.7/1700	200/1700	138/1950
Idle speed r/min	700~750	700±25	700	800±25
Fuel consumption at 100% rated output g/kw.h	225	269	245	≤228
L×W×H mm	765×589×769	718.6×572×745.5	730×590×700	801.5×535.8×623
Dry weight （kg）	245	245	245	≤210
Cooling system	Water cooled	Water cooled	Water cooled	Water cooled

	Quanchai 4C2-50V32	Quanchai 4C4-50V31
Type of pump	Four cycle、Water cooled、Inline	Four cycle、Water cooled、Inline
NO. of cylinders-bore×stroke mm	4-90×100	4-98×105
Total piston displacement L	2.67	3.17
Compression ratio	18.5:1	18：1
Rated output/speed kw(PS)/rpm	36.8/2500	36.8/2500
Max. torque/speed N.m(kg.m)/rpm	156/1700~1900	185/1800
Idle speed r/min	750±30	750±30
Fuel consumption at 100% rated output g/kw.h	≤230	≤230
L×W×H mm	738×565.4×694	752×565.4×690.6
Dry weight （kg）	≤260	≤265
Cooling system	Water cooled	Water cooled

Installation and maintenance of mechanical transmission case

Installation:

(1) Before installation, inspect if each bolt is tightened and the if the main drive shaft can be turned by hand;

(2) Apply proper amount grease before operation (add grease to oil level plug of axle housing as required by forklift).

(3) The gear lever shall be placed at neutral position before startup of engine;

(4) 50-hour running-in is required for a new transmission and load shall be 70% of rated value during the running-in; pay attention to oil temperature and bolts; after running-in, change oil;

Maintenance:

① Inspect performance of synchronizer and transmission gear;

② Inspect if the bolts and nuts are tightened;

③ Inspect oil leak of transmission;

④ Inspect oil level of transmission case;

⑤ Change lubrication oil regularly and keep the oil clean;

Operation and maintenance of hydraulic transmission case

1. Before installation, wipe up oil on oil sealing; do not disassemble the transmission case to avoid oil leak;

2. Never knock mounting face, torque converter and exposed gear to avoid installation and precision;

3. Run-out of installation hole of engine flywheel shall be not greater than 0.15mm and end face run-out shall be not greater than 0.1mm; run-out of installation face of flywheel housing shall be not greater than 0.2mm; the two lock pin holes on the installation face shall be not greater than Φ0.1mm;

4. The operation mechanism shall ensure precise and reliable operation of valve rod. The valve rod shall return once the pedal is released. Characteristic curve of inching valve is shown in figure 2. The installation shall ensure that the inching valve rod is interconnected with brake pedal and travel of inching valve rod be not less than 14mm. The brake pedal shall never work unless the oil to the clutch is closed. Before shifting gear lever, close the inching valve.

5. When lifting the transmission case, keep it horizontal to avoid the torque converter from slipping out;

6. Never change the oil devices of the transmission case. To ensure good performance of transmission, the lubrication shall be good and oil shall not be used for other purpose. Oil or liquid shall meet specified grade.

7. The oil and liquid shall be clean. Change oil or liquid per 1,000 hours or after long period outage.

8. Add oil and liquid, run the truck at neutral gear for 5 minutes. Then, check the oil level, which shall reach specified level. The oil filler cap can be used as vent cap.

Maintenance of lifting system

Adjustment of lifting cylinder

When removing and changing the lifting cylinder, inside mast or outside mast, the lifting cylinder travel shall be re-adjusted following below instructions:

(1) Install the head of piston rod on upper beam of inside mast;

(2) Slowly lift the mast to the maximum travel of cylinders and check if the two cylinders are synchronous.

(3) Add washers between the cylinder that stops first and the outside mast. Thickness of washer shall be 0.2mm or 0.5mm.

(4) Adjust tension of chain;

Adjust height of fork carriage

(1) Park the truck on even ground and make the mast vertical;

(2) Contact the bottom of the fork with the ground and adjust nuts of upper joint of chain to leave certain distance A between the main roller and the fork carriage.

(3) Lay the fork on ground and then tilt backward to place to adjust the nut of upper joint of chain to enable same tension of the two chains;

Change fork carriage roller

(1) Place a tray under the fork and park the truck on even ground;

(2) Lay the fork and tray on ground;

(3) Remove upper joint of chain and remove the chain from the wheel;

(4) Lift the inside mast;

(5) Make sure that the fork carriage has been released from the outside mast, then reverse the forklift；

(6) Change the main roller;

(a) Remove all spring snap rings and pull out the main roller; the washers shall be preserved;

(b) Make sure the new roller is same with the one to be changed; install the new roller on fork carriage and place the snap ring;

Change mast roller

(1) To change fork carriage roller, remove the fork carriage in the same way described above;

(2) Drive the forklift to even ground and prop up the front wheels for 250 ㎜~300 ㎜ high;

(3) Pull up hand brake lever and underlay the rear wheels with wedges; (4) Remove bolts that fasten the lifting cylinder with inside mast and lift the inside mast; never miss the adjusting washers at the head of piston rod;

(5) Remove bolts that connecting the lifting cylinder with the bottom of outside mast; remove oil pipe between the lifting cylinders; do not loose the joint of oil pipes;

(6) Put down the inside, remove main roller on the bottom of inside mast; the main roller of outside mast will show from the top of inside mast;

(7) Change the main roller;

(a) Remove the main roller with pulling tool and never miss the adjusting washers;

(b) Install the new roller and adjusting washers removed in step (a);

(8) Lift the inside mast till all rollers have get into the inside mast;

(9) Install lifting cylinder and fork carriage following opposite sequence;

Key tightening torque

S/N	Location	(N •m)
1	Installation bolts of engine and transmission case	45-60
2	Rear axle installation bolt	156-230
3	Mounting bolts of transmission case and drive axle	85-90
4	1-1.8t steering axle installation	120-150
5	2-4t steering axle installation	160-180
6	Steering pipeline installation	58-67
7	Installation of axle shaft	85-90
8	Straight joint of gear pump	280-310
9	High pressure hose of gear pump	110-120
10	1-1.8t front axle Hough installation	120-150
11	2-4t front axle Hough installation	160-180
12	Mounting bolt of steering gear and connection shaft	45-55
13	Joint of multi-way valve and tilting pipe	110-120
14	Steering gear joint	65-75
15	Steering gear inlet hose	35-45
16	Speed valve inlet high pressure hose	110-120
17	Connection of tilt pipe and multi-way valve	58-67
18	Tilting cylinder and high pressure tilt hose	34-40
19	Connection of steering hose and steering gear	58-67
20	Installation of 1-1.8t driving wheel;	147-172
21	Installation of 2-4t driving wheel;	470-550
22	Installation of turning wheel;	147-172
23	Balance weight installation bolts	500-550
24	Speed valve torque	180-220
25	1-1.8t mast Hough bolt	120-150
26	2-4t mast Hough bolt	160-180
27	Multi-way valve high pressure hose and speed valve	110-120

Unit: L

Oil of forklift

Item / S/N	Name	Regular		Low temperature		Remark
		Model	Suitable temperature	Model	Suitable temperature	
1	Diesel engine	15W/40	-18-40℃	5W/30	-35-40℃	
2	Gear oil	85W/90	-15-40℃	75W/90	-35-40℃	
3	Anti-freezing solution	-25	-25-40℃	-45	-45-40℃	
4	Hydraulic transmission oil	8#	-30-33℃	8#	-30-33℃	
5	Diesel oil	0#	Above 4℃	-20#	Above -14℃	Applicable temperature shall be above -29℃, which shall be purchased by the user
6	Hydraulic oil	32# high-temperature and wear resistant	Above -30℃	32# high-temperature and wear resistant	Above -30℃	

Mast model / Forklift model	Regular mast		2-level free mast			Remark	
	≤4500	＞4500	≤3000	3000-4500	＞4500	≤4500	＞4500
1-1.8t	35	37	37	38	40	38	40
2-3.5t	38	41	41	42	45	42	45
3.8-4t	40	43	43	45	48	45	48

Note: 1. How to judge the oil amount: all actions shall be still; all oil cylinders shall be placed at the lowest position;
2. The front data (column 2-8) is not applicable to forklift with attachments; the hydraulic oil shall be added based on previous amount; additional 2L for cylinder with attachments;

Oil / Forklift model	Diesel engine oil (L)	Gear oil (L)	Brake liquid (g)	Anti-freezing solution (L)	Hydraulic transmission oil (L)
	APICF-4SAE15W/40	GL-5(85W/90)	DOT3 synthetic brake liquid	-25°long-acting 6+1 anti-freezing solution	8#
1-1.8t	5	7(5 hydraulic)	38	40	7
2-3.5t	6.5	7.8(5 hydraulic)	42	45	7.8

3.8-4t	6.5	7.8(5.5 hydraulic)	45	48	8

Troubleshooting

The 1-4t internal combustion counter balanced forklift truck is powered by Japan diesel engine and domestic diesel engine. For engine model and data, please refer to ***Engine Manual***.

I. Why the engine fails in starting up or it is difficult to start up the engine?

1. Socket of starter may be loose and disconnected
2. Fuse burnt
3. Wiring of battery is loose
4. Low battery
5. The front and rear operation levers are not in proper position
6. Screen of diesel oil is blocked
7. Low fuel level
8. The diesel engine is not warmed up

Find out and remove the trouble one by one.

II. For a hydraulic forklift, it does not move or moves slowly

Cause	How to remove
1. Oil channel of inching valve is blocked (installation position is shown on the illustrated in the manual);	Wash oil channel of inching valve and find out why it is blocked;
2. Snap ring of clutch friction plate jumps out of the groove;	Reassemble
3. Two ends of return spring is not parallel or the length is not same;	Change
4. Sealing ring of clutch piston is seriously damaged;	Change the sealing ring
5. Oil channel is blocked or damaged;	Wash the oil channel and change the sealing ring
6. Claw of torque converter inserted into replenishing pump is broken, leading to pump failure;	Change torque converter and inspect if the pump is stuck;
7. Low oil level	Inspect oil leak and add oil;
8. Wrong hydraulic oil grade;	Change to 6° hydraulic oil or SAE10W oil
9. Serious worn of oil replenish pump leads to less oil supply;	Change the pump
10. Improper adjustment of control valve rod and gear lever results in closed oil channel when forward and backward gears;	Readjust the position
11. Axle shaft broken	Change the axle shaft
12. Small or even no clearance between brake drum and friction plate;	Adjust the clearance to at least 0.25
13. Worn friction plate of clutch	Change the friction plate
14. Inching valve rod wrong position	Idle travel of brake pedal shall be 1-3MM;

15. High oil temperature	Stop to cool down

III. Troubleshooting of service brake and parking brake

Type of service brake and parking brake of forklift;

t	1-4T
Service brake	Installed on front wheel; internal expanding; hydraulic
Parking brake	Installed on front wheel; internal expanding; hydraulic

Troubleshooting:

Symptom	Cause	How to remove
Powerless brake	1. Improper position of brake pedal;	Adjust
	2. Oil leak of brake system;	Repair or change
	3. Air in brake system;	Release air
	4. Improper clearance between brake shoes;	Adjust the adjustor
	5. Rubber cups of master and wheel cylinders are deformed or damaged;	Find out the reason or change the cup
	6. The brake drum holes are polluted by oil;	Repair to 6.3(▽5)
Uneven brake	1. The surface of friction plate is polluted by oil;	Clean or change
	2. Brake drum holes are of decentraction;	Repair for concentricity
	3. Improper clearance between brake shoes;	Adjust the adjustor
	4. Return spring of brake shoe failure;	Change
	5. Wheel cylinder failure;	Repair or change
	6. Self-adjusting mechanism failure;	Return spring is deformed; repair or change;
Noisy brake	1. The surface of friction plate is hard or polluted by foreign matter;	Change
	2. Base plate is deformed or the bolts are loose;	Repair
	3. Brake shoe is deformed or improperly installed;	Change or repair
	4. The friction disk is worn	Change
	5. Hub shaft is loose	Change
Poor brake	1. The brake is hot	inspect if it is slippery
	2. The brake liquid is polluted by foreign matters	Inspect and change the brake liquid
	3. Hand brake cable is deformed and joint has come off	Repair or change

IV. Troubleshooting of steering system

Symptom	Cause	How to remove
Steering	1. Air in hydraulic steering system;	Release the air
	2. Low oil level and air gets in;	Add oil and release air;
	3. Split-flow valve hole is blocked and the valve cone is stuck;	Wash and change
	4. Steering cylinder piston rod is bent;	Change piston rod;
	5. steering knuckle and its pin are seized;	Lift the rear axle and turn it to left and right to check if it is smooth;
	6. Relative surface is seized;	
	7. Steel ball inside the steering gear valve fails and blocked;	Remove and repair;
	8. Steering gear return fails or the spring plate is broken;	Change the spring plate;
	9. Serious leak inside the steering cylinder	Inspect or change sealing ring of piston;
	10. Split-flow valve pressure is low and flow is less;	Adjust the pressure and flow;
	11. Thick oil;	Use qualified oil;
	12. Serious worn between the valve cone and valve body resulting in large clearance;	Change
	13. Pump is over worn;	Change
Oil leak	1. The joint is loose;	Tighten;
	2. The engagement face of steering gear valve stator and rear cover is dirty;	Wash
	3. External leak of oil cylinder;	Inspect the sealing at the joint of guide sleeve;
Abnormal noise	1. Oil level in oil tank is low and noise of hydraulic system;	Ad oil and release air;
	2. Suction tank or oil filter is blocked;	Wash and change

V. Troubleshooting of lift system

Symptom	Cause	How to remove
The forklift shakes and makes great noise when the forks are lifting or descending	1. Large clearance between the upper side roller of outside carriage and steel channel if inside carriage (＞1mm);	Reduce adjust washers
	2. Large clearance between the lower side roller of outside mast and the channel steel of inside mast (＞1mm);	Increase adjust washers
	3. Large clearance between the side roller of fork carriage and the channel steel of inside mast (＞1mm);	Reduce adjust washers
	4. Bolts of side roller shaft are loose;	Tighten
	5. Foreign matter in channel steel carriage and channel steel of inside mast;	Remove the foreign matter and add oil regularly;
The fork carriage inclines	Different pressure of left and right tires;	Charge the tire;
	Different tightness of left and right chains;	Adjust the tightness;
	Oil channel of speed valve is blocked;	Wash and change
	Inlet of lifting cylinder is partly blocked;	Repair and wash
Unsynchronized lifting or descending of the left and right sides	1. Different travel of left and right lifting cylinders;	Turn the cylinder head for 180°;
	2. Different height of left and right lifting cylinders;	Use the bolts in the cylinder to adjust;
	3. Great difference between travel of left and right lifting cylinders that exceeds range of adjustment;	Add washers on piston rod of the cylinder;
Lifting speed with full load can not reach specified value or fails in lifting;	1. Low oil amount for operation;	Add oil
	2. Orifice of speed valve is blocked;	Disassemble and wash
	3. Safety valve is blocked or stuck;	Wash and repair
	4. Air leak at the screen suction in the oil tank;	Weld and air leak;
	5. Pipe joint is loose;	Tighten
	6. Serious friction between the pump gear and pump, resulting in large clearance;	Inspect if the oil is clean, which shall reaches 9-11 grade;
	7. Sealing ring in the lifting cylinder is seriously damaged or serious leak inside the cylinder;	Change sealing ring
	8. Clearance between the multi-way valve and sliding valve core is large; pressure of main valve is low;	Change and adjust
	9. Improper splitting of split-flow valve;	Adjust

VI. Troubleshooting of electrical system

1. The pointer of water temperature gauge does not move when the ignition switch is turned to “ON”;	Sensing plug or wiring of water temperature gauge is open;
2. The pointer of water temperature gauge moves from 0 to the final scale when the ignition switch is turned to “ON”;	Short circuit of sensing plug or wiring of water temperature gauge;
3. The pointer of fuel gauge always points to “1” when the ignition switch is turned to “ON”, regardless of full or empty fuel tank;	A. Connection of fuel gauge and sensor is broken; B. Sensor failure; C. Fuel gauge failure;
4. The pointer of fuel gauge always points to “0” when the ignition switch is turned to “ON”, regardless of full or empty fuel tank;	A. Terminals of fuel gauge are inversely connected; B. Connection wires short circuit; C. Sensor failure;
5. Horn always sounds;	Short circuit of horn button;
6. Horn does not sound;	Open circuit of horn
7. Light is burnt;	High engine voltage; sped regulator failure;
8. One or more lights are on when the switch is connected;	Light circuit broken and broken bulb;
9. The fuse soon gets burnt once the switch is connected;	Light circuit failure;
10. Dim light	Poor contact of wiring or poor contact at the installation of light;
11. Reverse buzzer does not sound;	Broken buzzer Poor contact of reverse switch; Poor connection of wiring;

VII. Troubleshooting of transmission case

Symptom	Cause and remedy
Reduced efficiency and high oil temperature	1. Friction plate is stuck or worn; check if the friction plate is adhered, uneven contact or warped;
	2. Low oil supply of torque converter; Check if the pump is worn and if the oil level is right;
	3. Bearing broken; change the bearing
	4. Inspect if the lubrication channel is blocked;
	5. Check wheel of torque converter is stuck;
Oil leak	1.Broken sealing wash; change the washer;
	2. Aged or broken rubber parts; change the parts;
	3. Parts are damaged or crack; change the parts;
Low clutch pressure and excessive swing	1. Low oil level; check the level and add to specified level;
	2. Input shaft assembly and sealing ring of piston are worn; change the sealing ring;
	3.Worn pump; change the pump;
	4. If the inching valve rod returns;

VIII. Troubleshooting of multi-way valve

Symptom	Reason	How to remove
External oil leak	1. Lip sealing is worn;	1. Change the sealing ring
	2.Valve rod sealing is damaged;	2. Change valve rod or valve plate assembly
	3. Lip sealing is filled with paint, dust, etc;	3. Remove the foreign matter; do not hurt the valve rod and sealing surface;
	4. O-ring is damaged (cut)	4. Change the O-ring
	5. Sealing ring between valve plates is aged and deformed;	5. Change a new sealing ring;
	6. Sealing plain of valve plate is scratched (new valve) or foreign matters;	6. Remove the foreign matter or change valve plate
	7. Decentraction of valve hole and the hole on sealing ring groove (new valve);	7. Change the valve plate
	8. Back pressure of return oil is above the allowed value;	8. Inspect the circuit and reduce the back pressure to specified value;
	9. Uneven stress of double-head bolt or the bolt is not tightened;	9. Tighten the bolt to specified torque;
The valve rod can not reset	1.Operation mechanism is stuck;	1. Check the operation lever;
	2.The valve rod is stuck by dirty matter;	2.Wash valve, oil tank and pipeline;
	3. Deformed or broken return spring	3. Remove the rear cover to inspect and change the spring;
	4. The valve rod is deformed;	4. Re-assemble the valve rod or change sub-assembly of valve;
	5. Uneven mounting surface and deformed valve cause the valve stuck;	5. Adjust the mounting surface;

The load descends when the valve rod stays at the neutral position (serious leak when the valve stays at neutral position)	1. Valve rod is worn and the clearance is enlarged, leading to serious leak; 2. Valve rod or valve hole is scratched, leading to serious leak; 3. Valve rod has not returned to the neutral position; 4. Overflow valve or the sealing between the screw plug and valve is poor; 5. Serious leak inside the oil cylinder; 6. Groove of the valve is large, resulting in short oil sealing;	1.Re-assemble the valve rod; 2. Re-assemble the valve rod or change sub-assembly of valve; 3. Inspect the directional mechanism; 4. Inspect if the O-ring is damaged; if so, change the O-ring; 5. Inspect if the sealing of cylinder piston is damaged; 6.Change valve plate
Heavy steering	1. Dirty oil; split-flow valve cone or split-flow safety valve cone is stuck by foreign matter; 2. Spite-flow safety valve does not open or close correctly or the split-flow safety valve pressure is set low; 3.Pump low flow; 4.Steering gear failure;	1. Wash the valve cone or safety valve cone and oil tank and pipeline; 2. Change the split-flow safety valve or re-adjust the pressure of split-flow safety valve; 3. Inspect for low supply pressure of pump; 4. Change Steering gear
Cylinder no action (low pressure or no pressure)	1. Overflow valve or foreign matter is stuck between the main cone of overflow valve and seat; 2. Damping hole is blocked; 3. Cone valve cone is worn; 4. Spring deformed 5.overflow valve adjusting screw is loose; 6.Pump failure	1.Wash the valve, oil tank and pipeline; 2. The hydraulic oil is seriously polluted; wash the hydraulic system; 3. Inspect the wearing and change overflow valve assembly; 4. Inspect the spring quality; 5. Adjust the pressure and then tighten the nuts; 6.Change Pump
Overflow valve shakes and makes noise	1. Air in hydraulic system 2. Pump sucks air 3. Great resistance in suction pipeline or negative pressure at suction side of pump; 4. Suction filter is blocked; 5. A point on the overflow valve shakes and makes noise;	1. The air is released when the system has run for some time; 2. Inspect suction side of pump; 3. Find out reason of negative pressure; 4.Wash the filter and filter the oil; 5. Adjust pressure of overflow valve for 1 or 2 scales;
Forward tilting without self lock or forward tilting with surplus self lock	1. The oil is dirty that blocks the valve core; 2. Oil port connection is wrong;	1.Wash valve, oil tank and pipeline; 2. Correct the connection;

IX. Troubleshooting of gear pump

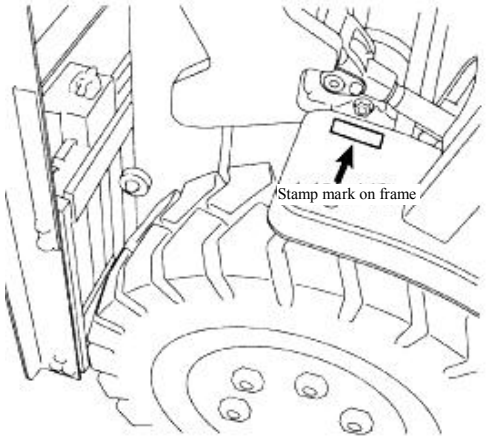
Symptom	Reason	How to remove
The pump fails in sucking oil or the oil suction is difficult	1. Small area of filter or the filter is blocked; 2. Low oil level; 3.The oil pump is installed at high position; 4. Low oil temperature leads to sticky oil;	1. Change with a filter with proper open area or wash the blocked filter; 2. Fill the tank with hydraulic oil as specified; 3. The pump shall be installed within 500mm; 4. Use proper oil according to temperature or heat the oil;

	5. Too thin or too long hose, resulting in great resistance; 6. Oil sealing of oil pump is damaged and air has got in; 7. Wrong turn direction of oil pump or the speed is high; 8. Air leak at the suction side;	5. Use a wider pipe to cut short length of the pipe; 6 Change with a new oil sealing 7. Change rotation direction of pump to enable it to reach specified speed; 8. Inspect the oil suction and sealing; change the failed sealing element;
Oil does not come out from the discharge side	1. If none of above reason, the pump has been damaged; The overflow valve is damaged or blocked by dirty materials that oil returns to oil tank from overflow valve.	1 Inspect and repair the pump or change the pump; 2. Inspect and repair the overflow valve or change the overflow valve; filter the oil or change the oil;
Low pressure at discharge side	1.The side plate has been seriously worn, resulting in small volume. 2. Cone valve element of overflow valve is seriously worn; 3. The overflow valve is stuck by dirty material that is fails in closing reliably; 4. The overflow valve is set at low pressure; 5. The inlet port has sucked air;	1. Repair or change the oil pump; 2. Change the cone valve element; 3. Filter the oil to remove dirty material; 4. Adjust to specified value; 5. Inspect if the sealing ring at the inlet port is broken;
Low pump volume	1.Sealing elements of the pump are damaged; 2. The side plate is worn; 3. Dirty material in the pump or large clearance; 4. Low or high pump speed; 5. Negative pressure inside the tank	1. Change the sealing ring 2. Change the plate; 3. Filter the oil to remove the dirty material or change the pump; 4. Run the pump at specified speed; 5. Enlarge volume of air filter;
The oil pump makes noise	1. It is often caused by insufficient suction of oil by the pump, for example, the filter is blocked, low oil level, suction of air or air leak at the sealing; 2.Return pipe is above the oil level; lots of air bubbles in the oil; 3. Too sticky oil or oil temperature is low; 4.Pump shaft is over coaxial with prime motor shaft; 5. The driven gear is installed in opposite direction after overhaul and the engagement area is reduced;	1. Keep oil level; the sealing shall be tight to protect the oil from being polluted; 2. The return pipe shall be under the oil level; 3. Use proper oil according to temperature or heat the oil; 4. Adjust the coaxiality; 5. Disassemble the pump to turn round the driven gear;
Hot oil pump	1. High pressure, high speed or the side plate is burnt; 2.Too sticky oil or serious oil leak inside; 3. High backpressure of return oil; 4. Small oil tank, poor radiation	1.Adjust overflow valve to reduce to specified speed; repair the pump; 2. Use proper oil and inspect the sealing; 3. Remove cause of high backpressure; 4. Use a larger oil tank

X. Troubleshooting

Symptom	Cause	How to remove
Abnormal noise during traveling	1. Poor quality engine oil, transmission oil and differential oil	Use manufacturer authorized oil
	2. Front and rear hub bearings are loose or broken;	Tighten the bearing and nut, then return for 1/8 round, the hub shall turn freely; if the bearing is broken, it shall be changed with a new one.
	3. Transmission case, gears and friction plates are worn;	Change
	4. Differential and cross shaft are broken;	Change
	5. Air leak of exhaust pipe	Tighten
	6. Fasteners are loose	Tighten
Oil leak	Oil leak at the pipe joint Sealing element is worn or damaged; Foreign matter in oil Pipe clamp is loose	Change Remove Tighten
	Oil leak of hydraulic element Too much oil of hydraulic transmission case Broken claw of torque converter damages sealing element of oil replenish pump Bolts of oil replenish pump are loose	Change Tighten
	Oil leak at joint surface Different tightening torque of connecting bolts Foreign matter on joint surface Uneven joint surface	Repair

Engraved mast number



Frame number is engraved on the left guard board.

Manufacturing number of main parts

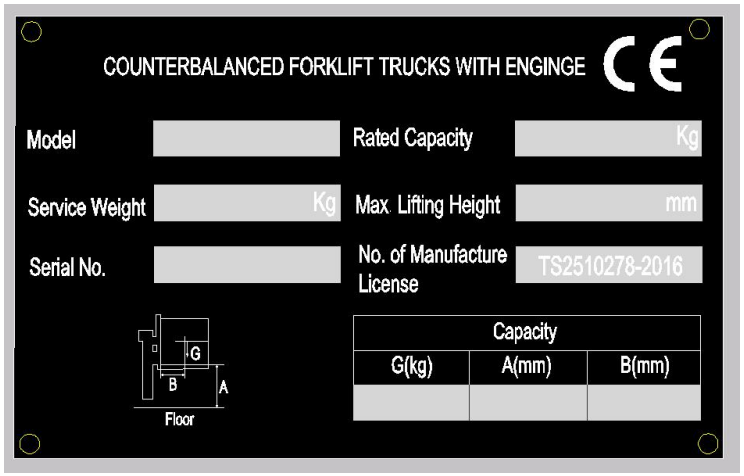
Manufacturing number (assembly number) of main parts is engraved on the nameplate apart from the manufacturing number of the forklift.

The above picture shows manufacturing number of mast.

Service personnel shall understand the number and record it.

Forklift nameplate

The nameplate is located in the front of the instrument panel, recording rated load, weight and serous number of the forklift.



Manufacturer authorized oil

High quality gives way to time.

To expand service life, please use manufacturer authorized parts only.

Manufacturer authorized grease

Use manufacturer authorized grease only.

6. Index

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