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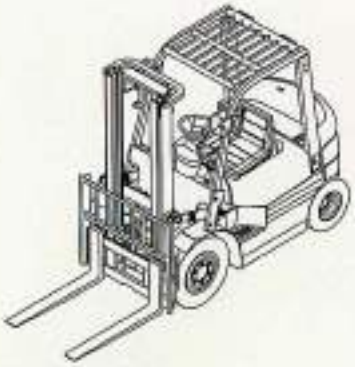

1–10t

Counterbalanced Type
Forklift Truck with Engine

OPERATOR'S MANUAL

HELI 安徽合力股份有限公司
ANHUI HELI CO., LTD.

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INTRODUCTION

This manual should be kept by operator and read it repeatedly.

·This operators manual provides the proper operation, easy maintenance and routine inspection.

·Prior to operation, read this carefully to secure safe and efficient materials handling by proper driving and maintenance.

·This manual content might not correspond with the actual condition because of the improving of our products.

·When lend or transfer the forklift truck, this manual should be attached to the forklift truck.

·If you have any questions, please consult with the sale apartment of our company.

⚠ and ☞ marked instruction is very important to you and others for safety. You shall keep to the instruction.

⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. You must observe this instruction.
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. You must observe this instruction.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. You must observe this instruction.
☞ NOTE	Indicates a statement of directly or indirectly related to the safety of personnel and maintain of the truck.

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Ⅰ. About Safety

Safety is your business and your responsibility. The "ABOUT SAFETY" covers basic safety procedures and warnings of general application to the typical forklift truck. However, safety precautions given on the following pages are also applicable to lift trucks that have special specifications or attachments.

1.Main Use of Forklift Trucks

(1)Main use of forklift trucks

The main use of forklift trucks is handle and stack the loads that on the pallets. When they are assembled with proper attachments, they also can handle and stack the loads that not on the pallets.

(2)Prohibitive use

The following prohibitive uses are not allow to use anyway.

·Stand on the forks or pallets and rise

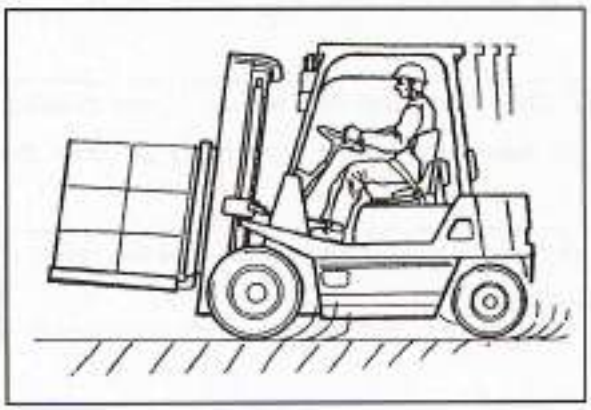
·Stand on the pallets to press the loads.

·Hoist the loads with the steel wire rope hang on the forks directly.

·Tow other trucks.

·Push the loads or other trucks with forks.

·Open or close the doors of other trucks with forks.



2.Working Environment and Areas of Forklift Trucks

(1)Ground condition

Keep good condition of flat road surface and ventilation.

Lift truck performance depends on the ground or floor conditions and travel speed should be adjusted properly. Use extreme care when operating on a ramp or rough ground or floor.

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⚠WARNING

·When crossing the railroad, be sure to once stop and make sure to be safe.

·Go around rocks and stumps. If unavoided, reduce speed and go slowly and carefully. Use caution not to damage the bottom of the truck.

When traveling on grounds covered with snow or ice, use tire chains. On such ground conditions, avoid sudden accelerations, stops, or turns. It is good practice to control the travel speed by accelerator pedal effort.

⚠WARNING

·When equipped with tire chains, the truck get a larger driving power. However, sideway antislip performance is almost reduced so extreme care should be used.

(2)Weather condition

The following requirements apply in these climatic conditions:

- Average ambient temperature for continuous duty:+25℃;

-Maximum ambient temperature, short term (up to 1 h):+40℃;

-Lowest ambient temperature for trucks in tended for use in normal indoor conditions: +5℃;

-Lowest ambient temperature for trucks intended for use in normal outdoor conditions: -20℃;

-Altitude:up to 2000m.

⚠CAUTION

·Do not rise the mast too high in the air when it's windy, this will lead to a dangerous condition unexpectedly.

(3)Measures against cold and hot weathers

a)Oil

Use the oil suitable for ambient temperature.

Always fill the tank up to the top in cold weather. This minimizes the air within the tank and thus reduces possible freezing from moisture condensation, rust in the fuel system and hard starting.

b)Battery

·In cold weather

Under normal charged conditions, the freezing point of electrolyte is about -35℃.

Always keep the battery in a well-charged condition since there is danger of damaging the battery jar if electrolyte freezes. To prevent the freezing, charge at least 75% of the whole capacity.

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Also it is effective to keep the specified gravity up to 1.260, but not higher than this value.

·In hot weather

As the water of electrolyte is especially likely to evaporate in hot weather, replanish distilled water from time to time. Check the battery once a week, and supply distilled water.

In a region where the ambient temperature is intensely hot, it is practicable to lower the specified gravity of a completely charged battery down to 1.220±0.01.

Since the battery is better in efficiency under hot temperatures, no other cares are needed.

⚠ DANGER

·Gases produced by the battery can be explosive. Do not smoke, use an open flame, create an arc or sparks in the vicinity of the battery. Ventilate well when in an enclosed space and when charging. The battery contains SUI PHURIC ACID which causes severe burns. Do not get in eyes, on skin or clothing. In case of contact, flush immediately and thoroughly with clean water. Obtain medical attention when eyes are affected.

c)Cooling system

Your lift truck is generally shipped with the cooling system filled with Long Life Coolant (LLC)of 50% volumetric mixture. The freezing point of the coolant of such a mixing ratio is -35℃.

In hot weather, to maintain good cooling effect, special care should be paid to radiator and cooling system. Parking in the shade is recommended.

Clogged radiator fins can cause overheating. Clean them out regularly with a blast of compressed air. Also check for water leakage at the same time.

Check the fan belt tension and adjust to the specified tension.

Even if the engine overheats and the coolant boils over, let the engine idle awhile until the temperature falls, before shutting it off. Long Life Coolant is mixed in with the coolant, so do not run tap water into it right away. Raise the engine hood and allow it to cool down by itself.

(4)Work environment

In special work environments, it may not be possible to use this forklift under its standard specifications.Consult with us if this forklift will be used in any of the following environments:

·In harbours or waterfronts where there is the risk of salt corrosion.

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·In chemicals plants where the forklift may be affected by acids or other chemicals.

·In environments where there is a risk of explosions due to suspended particulate matter or explosive gases, etc.

·In cold regions, hot regions, or at high altitudes.

·In environments with exhaust emission standards.

For engine-powered forklifts

·Do not use the forklift in bad weather conditions such as thunderstorms or high winds. Similarly, when dense fog arises, wait until visibility is good before using the forklift.

·When working indoors, exhaust gas(carbon monoxide) can be hazardous. Where work must be done indoors, ensure that windows or doors are open to allow adequate ventilation.

3.Safety Problem Before Use

(1)Get permission from supervisor

⚠CAUTION

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

·The characteristic of brake, accelerator and hydraulic control levers are different an every truck which has same specification. After getting accustomed to operating, operate the forklift truck.

(2)Clothing of forklift truck working

⚠CAUTION

·Wear a helmet, safety shoes and a working clothes.

·For security, do not wear a loose clothes which has a fear to be hooked or caught in. When hooked the clothes, this will lead to a dangerous condition unexpectedly.

(3)Do not operate after drinking

⚠CAUTION

·Do not operate the forklift truck when you have tired, mix emotional problems, drugs or alcohol.

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(4)Safety for your place of work

⚠CAUTION

·Ensure that any water, oil, sand, ice or snow is removed from the road surface before work begins as these may cause the operator to lose control of the forklift.

·Never operate on rough or potholed roads, or roads with sharp objests on them, as any one of them could damage the forklift or cause it to tip over. Always ensure that the forklift will travel on a smooth surface free of hazards.

·Excessive peripheral noise can distract the operator and cause fatigue. There is also the risk that warnings to pedestrians and will go unnoticed. Operators must take particular care when using the forklift in noisy environments.

·Lighting for operating area is needed for safety working.

·Operating on a platform and dockboards is in danger of turnover, provide wheel stops or other positive protection to prevent a turnover.

(5)Keep clean condition of operator's compartment

⚠CAUTION

·Operator's compartment shall be kept in a clean condition at all times.

·When having slippery oily hands or muddy hands, this condition will lead a dangerous operation.

·Tools and other metallic objects shall be kept away from the operator's compartment. These obstruct the movements of lever or pedal.

(6)Truck complete

Only in the event that the truck manufacturer is no longer in business and there is no successor in the interest to the business, the user may arrange for a modification or alteration to a powered industrial truck, provided, however, that the user shall:

·Arrange for the modification or alteration to be designed, tested and implemented by an engineer(s) expert in industrial trucks and their safety;

·Maintain a permanent record of the design, test(s) and implementation of the modification or alteration;

·Approve and make appropriate changes to the capacity plated(s), decals, tags and instruction handbook;

·Affix a permanent and readily visible label to the truck stating the manner in which the truck has been modified or altered together with the date of the modification or alteration, and the name and address of the organisation that accomplished the tasks.

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⚠ CAUTION

·Truck should be equipped with an overhead guard and a load backrest.

NOTE

·An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intend to offer protection from the impact of small packages, boxes, etc., representative of job application, but not to withstand the impact of falling capacity load. Precaution shall be taken to falling objects.

(7)Periodic servicing

⚠ CAUTION

·Carry out daily servicing and periodic servicing.

⚠ WARNING

·When find a damage or a fault at the truck, stop operating the truck and inform an employee about the truck condition inmediately. Do not operate the truck until the truck has been repaired completely.

(8)Avoid fire hazard

⚠ CAUTION

·Setting fire extinguisher to avoid fire hazard, accident or other indeterminism thing. Use the fire extinguisher according to it's operating rules.

(9)Prohibition of overload

⚠ CAUTION

·Do not overload and observe the allowable load and the capacity chart on the truck. Make sure the weight of load and the center of gravity at the load position.

NOTE

·Allowable capacity means what the maximum load can be put on the forks in accordance with a load center.

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(10)Using a proper pallet

⚠ CAUTION

·Use a pallet which is suitable size and strength for a load.

·Make sure palletised load is in proper shape and securely palletised.

·Prohibition of handling materials without pallets.

4.Safety Problem During Operation

(1)Cautionary proceeding for start

⚠ CAUTION

·The parking brake lever is applied securely.

·The directional switch lever is in "N".

·Depress the clutch pedal or the brake pedal.

·Adjust the seat so you can get easy access to all hand and foot controls.

·Make sure no one is under, on and close to the truck.

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(2)Safety around the truck

⚠ CAUTION

·When carrying the large load and visibility is poor, make a drive backward or someone should induces the truck.

·When driving to backward, make sure no person is around the truck. The rear view mirror and the buzzer are for helping.

·Someone should induces the truck at narrow aisle.

·The driver shall be required to stop at cross aisles and other location where vision is obstructed and make sure security at right and left of the truck.

·Make sure the safety distance from sideways or platform's edges. Working on the sideways or platform may cause the truck dropping, put stopper and so on.

·A forklift truck is a rear wheel steering which is different from a car, slow down the traveling speed and approach to a turing corner then operate steering wheel with taking care of a turn at the truck back.

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(3)Prohibition of rough driving

⚠ CAUTION

·Do not turn on the key switch with depressing the accelerator pedal.

·Do not make a sudden start, braking or turn. A sudden start and braking can cause a falling of load. A sharp turn on traveling can cause a overturn of truck and may relate to a serious accident.

·Operate hydraulic control levers slowly when loading and unloading. There is a danger of falling load or overturning the truck when operating the levers suddenly at high height position of forks.

NOTE

·Do not run over bumps and obstacles scattered on the road.

·When passing by the other truck, slow down tle traveling speed and sound the horn.

·Do not drive into a weak floor or ground.

·Slow down the traveling speed on a wet, slippery, uneven and inclined place, etc.

·Make sure that there is sufficient clearance between mast and ceiling or entrance of a structure.

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(4)Prohibition of driving with forks lifted up in the air

⚠ CAUTION

·Do not drive with forks lifted up. When traveling with lifted forks, this could cause an unstable condition and a turn over of the truck.

(5)Prohibition of fork tip working

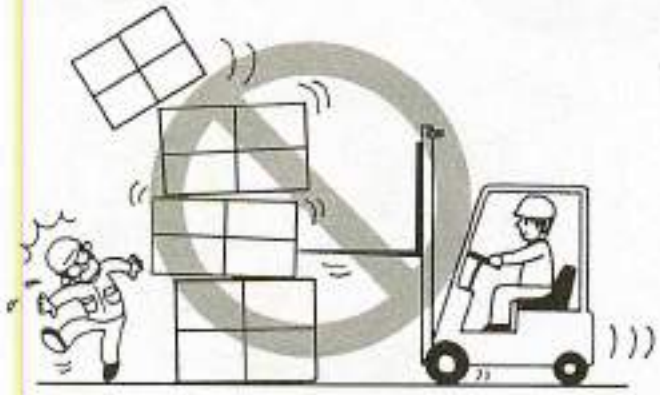
⚠ CAUTION

·Do not push a load or lift up by the tip of forks. When catch a load by the tip of forks, it can cause jumping up the truck or a load.

(6)Prohibition of pushing and pulling working

⚠ CAUTION

·Do not push or pull a load. The load would be damaged or dropped.



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(7)Driving on a slope

⚠CAUTION

·Drive the truck on a slop as following.

LOADED:Drive the truck forward to ascend and backward to descend.

UNLOADED:Drive the truck backward to ascend and forward to descend.

·When the truck goes down on a slope, drive slowly with the brakes on. Make sure that the forks should not touch the ground.

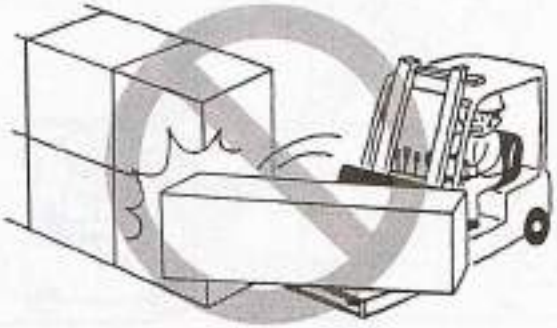
·Driving, turning and loading shall not be taken on a slope. It could cause turning sideways of the truck, it is very dangerous.

(8)Prohibition of off-center loads

⚠CAUTION

·Make sure if loads are arranged stable and safely, insent the forks to the pallet correctly and care must be taken not to handle off-center loads.

·To handle off-center loads could lead to overturn the truck and falling loads.



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(9)Prohibition of permitting passengers to ride

⚠WARNING

·Do not permit passenger to ride on the forks or a pallet.

·Do not ride people on the truck except driver.

·Do not ride people on the truck as a counterbalance.

·Do not stand on the load or pass under forks.

(10)Prohibition of putting into mast structure

⚠WARNING

·Never put any part of the body into the mast structure or between the mast and truck.

⚠CAUTION

·Keep hands and feet inside the operator's compartment. Do not put any part of the body outside the operator campartment of the truck.

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(11)Prohibition of lifting when tilting loads forward

⚠ CAUTION

·Do not lift up load and drive a truck when tilting the mast forward. When lifting loads or diving the truck, tilt the mast backward enough and stabilize the load. When traveling with or without load, raise the forks for 150-200mm from the floor.

·Do not tilt the mast forward with the load.

·When lifting or lowering the load, be sure to stop the truck.

·Do not load and unload the load at the condition which the truck is leaning.

(12)Driving into trailer

⚠ CAUTION

·Operate the truck at the place where has holding means of a trailer at docks.

·Before starting operation of truck, fix a dockboard and inspect it's strength.

·When getting into or off the trailer, drive carefully and slowly across the dockboard or bidge plate.

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(13)Getting on and off truck

⚠ CAUTION

·Do not jump on and off the truck.

·When get on and off the truck, grasp a grip, put on your foot at step and supporting your body.

·When getting on the truck, do not grasp a steering wheel or hydraulic control levers.

(14)Prohibition of loading high stacked loads

⚠ CAUTION

·Loaded load should be contacting with a load backrest. Do not handle the load which a exceeded height of a backrest. When loads go over a load backrest, there is a danger of loads's falling against operator.

·When making a double stack loading, fasten the loads with rope to protect falling of loads.

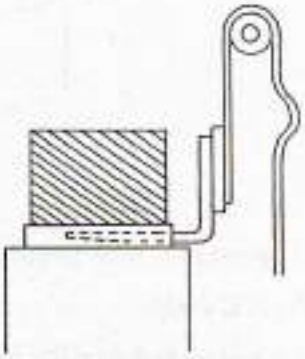
(15)Loosen chains

⚠ CAUTION

·Do not draw out the forks from a pallet when chains are loosen. When chains are loosen, there is a danger of catching loads and rack by forks or falling of loads and overturning of truck.

NOTE

·When chains are loosen, pull the lift lever a little and lift the forks, the loosen chains could be corrected. After correcting the loosen chains, draw out the forks from a pallet.



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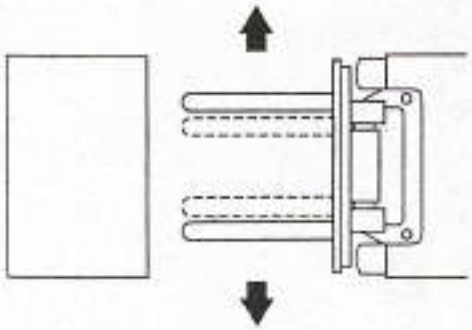
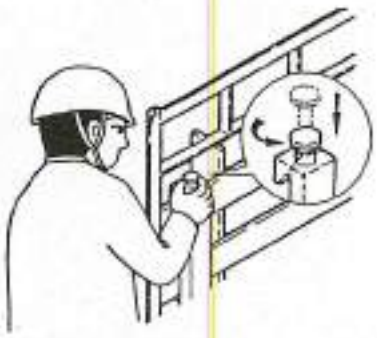
(16)Adjustment of forks

⚠CAUTION

·Adjust the spreading of forks in accordance with a pallet size. Care must be taken not to pintch fingers when adjusting a spreading of forks.

·When adjusting the width of forks, make sure that the setting pin of forks are fixed. When the forks are not fixed, the forks could move and there is a danger of load's crumbling and falling.





(17)Handling of wide loads

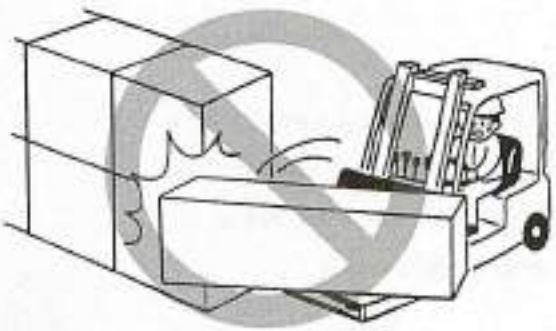
⚠CAUTION

·Careful driving should be taken when handling long or wide loads.

·Be careful of around security when turning, and turn slowly in order not to move loads.

·Be careful of balancing of loads, and handle the loads at low height position.

·Lifting and lowering loads should be slowly, and be carful of around security.



(18)Prohibition of holding down loads by hands

⚠CAUTION

·Do not hold down the loads by hands. There is a danger of load's falling.

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(19)Parking of disabled forklift truck

NOTE

·When park the off road forklift truck, warning or "out of order" signs shall be placed on the truck and remove the key.

·When the forks could not be lowered by fault, place a large mark in order not to be hit by other truck or walkers.

(20)Information of after finished working

NOTE

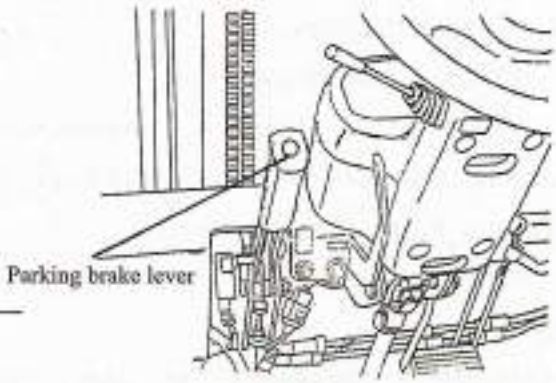
Before leaving the truck:

·Tilt the mast ass'y forward and fully lower the forks. If do not lower the forks to the floor, there is a danger of stumbling or hitting body.

·Place directional switch lever in neutral.

·Apply the parking brake securely.

·Turn off the key switch and remove the key.



(21)Parking

CAUTION

·Park at reserved place.

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·Parking place should be hard sufficiently and does not disturb a traffic.

·Do not park on or near an inflammable object.

·Do not park trucks on a slope. When park trucks on a slope, the trucks could move inconceivable. When park trucks on a slop by necessity, put wheel drags securely.

(22)Noise

According to the measure method specified in ISO 12053, max.noise at the outboard of the truck should be not more than 101dB(for 1-3t)and 103dB(for 5-10t). It is measured in sound pressure level at the operator's position and in sound power level around. If the A-weighted emission sound pressure level at workstations exceeds 80 dB(A), additional ear safeguard shall be added.

CPCD10-18	CPQD10-18 CPYD10-18 CPQYD10-18	CPCD20-25	CPQD20-25 CPYD20-25 CPQYD20-25	CPCD30-35	CPQD30-35 CPYD30-35 CPQYD30-35	CPCD50-70	CPCD80-100
84dB	82dB	82dB	82dB	90dB	84dB	90dB	88dB

⚠ CAUTION

·Driving on the rough road will make the noise of the truck be increased as well as the distortion of the tyres.

(23)Travel with full speed

500kg ~ 3500kg forklift truck assembled with mast no less than 5m or attachment heavier than 250kg should not travel with full speed no matter whether it is loaded.

5.Safety Problem During Service

(1)Service place

⚠ CAUTION

·Servicing facility should be provided adequate equipment and safety guards, and this place should be appointed.

·Servicing place should be a flat footing.

·Servicing place should be provided for adequate ventilation.

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·Fire extinguishers shall be provided at the servicing facility.

(2)Precautions of service

⚠ CAUTION

·Smoking shall be prohibited.

·Wear safeguard (helmet, shoes, glasses, gloves and boots) and suitable clothes.

·Wipe off split oil at once.

·On lubricating, lubricate after removing grease and dust off nipples and fittings with a brush or a cloth.

·Turn off key switch and pull out the battery plug except being in case of need.

·When servicing a forklift truck, lower forks to the floor.

·Clean the electrical components with compressed air.

(3)Cautions of service

⚠ CAUTION

·Care must be taken not to put your feet under forks and not to stumble over forks.

·When forks are lifted up, put blocks under an inner mast not to fall down forks and mast.

·Care must be taken nat to snip your hands when opening and shutting of a floor plate and a battery cover.

·When having a groop work, proceed working by making a sign each other.

·Use suitable tools and do not use temporary tools.

·As maintenance of hydraulic ciruit is always high pressure condition, do not work before lowering inside pressure.

·When being struck by a high voltage shock, consult a physician immediately.

·Do not use a mast ass'y instead of a ladder.

·Prohibit putting into your hands, feet and body between the frame and mast ass'y positively.

·Bear in mind that the transmission or the hydraulic system can be hot while operating. Let the truck cool before servicing to avoid burning.

(4)Inspection and exchange of tyre

⚠ CAUTION

·Leave a dismounting and mounting tyres to qualified service facility by our company.

·Handling a high pressure air shall be made by authorized personnel.

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·When use a compressed air , wear goggle.

·When dismounting the tyre, do not loosen bolts and nuts of joint rim. As inside tyre is high pressure, there is a danger of breaking bolts, nuts and rim.

(5)Jack up working (exchanging tyres)

⚠ WARNING

·Do not enter under the truck while jacking up the truck.

⚠ CAUTION

·Before jacking up, make sure that nobody in the truck and no load on the truck.

·When wheels rise up from ground, stop jacking up and put blocks under the truck to prevent the truck falling down.

·Before jacking up , put wheel drags.

(6)Drain the waster(electrolyte, oil, etc.)

⚠ CAUTION

·The waster of the forklift truck must be reclaimed obeying the government's rules. Do not drain the waster randomly.

6.Safety Problem of Battery Using

(1)Smoking shall be prohibited

⚠ CAUTION

·A battery produces hydrogen gas. When making a short circuit, sparking and a fire of cigar approaching to the battery, it causes an explosion and a fire.

(2)Prevention of an electric shock

⚠ CAUTION

·The battery has a high voltage. Do not touch the electric conductor of the battery when installing and servicing. It causes a serious burn.

(3)Connecting correctly

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⚠ CAUTION

·Do not charge the battery which the ⊕ terminal is changed places with the ⊖ terminal. It cause heating, ignition, smoking and an ignite explosion.

(4)Prohibition of putting a kind of metallic goods on the battery surface

⚠ CAUTION

·Do not make a short circuit between both terminals by bolt or tool. It causes injuries and an ignite explosion.

(5)Prohibition of over discharging

⚠ CAUTION

·Do not operate the truck until it does not move. The battery life will be shortened. When the battery capacity warner flushes, charge the battery.

(6)Keep clean

⚠ CAUTION

·Keep the upper surface of the battery clean.

·Do not use a dry cloth, a chemical fiber cloth for cleaning the battery surface. And do not cover the battery by a vinyl sheet.

·It causes a ignite explosion by a static electricity.

·Use a wet cloth for cleaning the top of uncovered battery.

(7)Wearing safeguard

⚠ CAUTION

·When servicing the battery, wear goggle, rubber gloves and boots.

(8)Electrolyte of battery is hazardous

⚠ CAUTION

·The electrolyte of battery is made of the dilute sulphuric acid. Handling should

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be taken care.

·When the electrolyte adheres to eye, skin and clothes, it causes to lose eyesight and a scald.

(9)Emergency first aid

NOTE

When an accident is occurred, take the emergency first aid as following and consult a physician immediately.

·Spilled on the skin: It should be washed off with water for 10-15 minutes.

·Splashed in eye: It should be washed off with water for 10-15 minutes.

·Flow out on a large scale: Neutralize the electrolyte of battery by the baking soda (sodium bicarbonate) or it should washed off with water.

·Swallowed: Drink milk or water on a large quantity.

·Splashed on clothes: Take off clothes immediately.

(10)Close the vent caps securely

CAUTION

·Close the vent caps of the battery securely in order not to leak the electrolyte of battery.

·Care must be taken not to refill electrolyte excessively. An overflowed battery could cause a electric leakage.

(11)Washing

CAUTION

·Do not wash the truck which the battery is getting on. If washing the battery, it causes damage to the truck.

·Tighten the vent caps in order to protect water.

(12)Sea water

CAUTION

·The battery should not be got wet with rain or sea water. It causes a damage of battery or fire.

(13)Abnormal battery

CAUTION

When the battery shows the following condition, contact sale apartment of our company.

·The battery stinks.

·The electrolyte becomes muddy.

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·The temperature of electrolyte is high.

·The decreasing speed of electrolyte is fast.

(14)Prohibition of disassembling

⚠ CAUTION

·Do not drain the electrolyte from the battery.

·Do not disassemble the battery.

·Do not repair the battery.

(15)Storage

⚠ CAUTION

·When do not use the battery for a long time, store it in the place where is well ventilated and there is no sign of fire.

(16)Abandonment of battery

⚠ CAUTION

·Regarding used batteries, contact sale apartment of our company.

7.Decal

The decals sticking on the trucks are used to explain to the driver how to operate the truck and what to pay attention to. When any of them fall off the truck, please re-stick it at once.

(1)Decal of safety

⚠ WARNING

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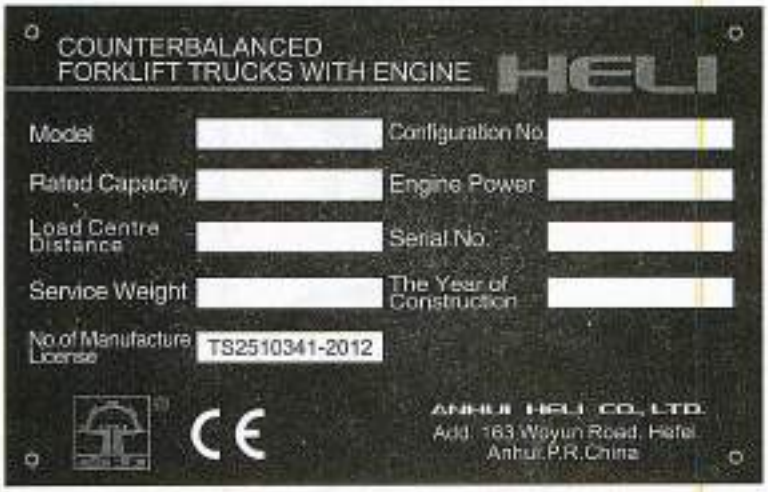
(2)Decal of notice

⚠ CAUTION

(3)Name plate



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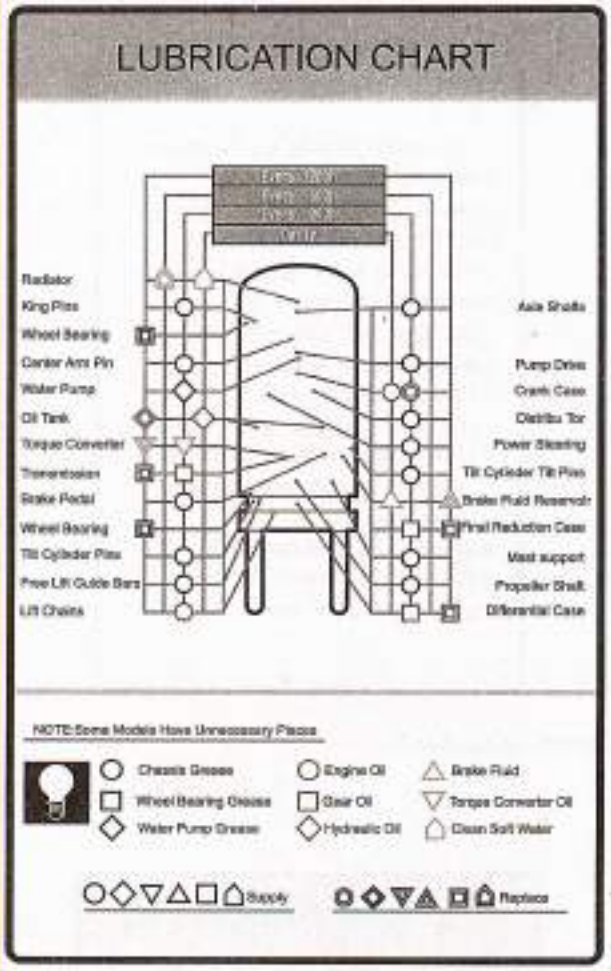
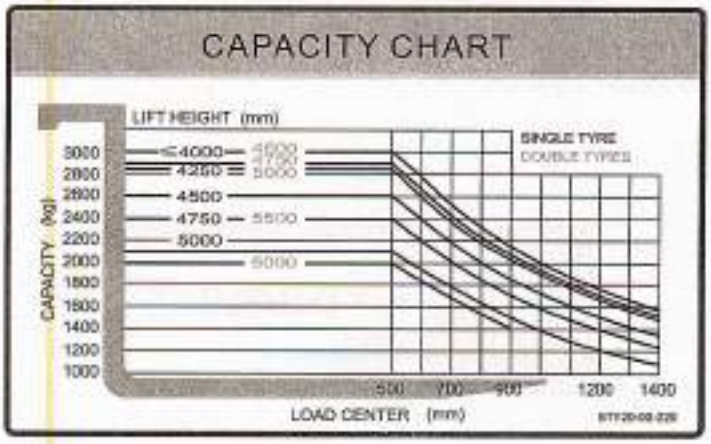
(4)Decal of lubrication chart



(5)Decal of capacity chart(For example)

⚠ CAUTION



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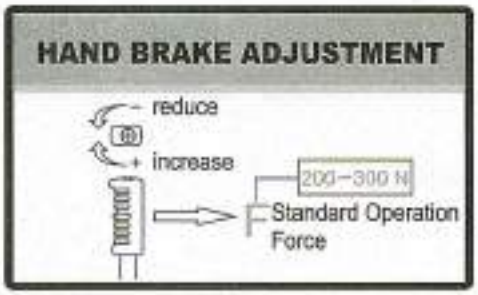
(6)Decal of caution before start

⚠ CAUTION

(7)Decal of hand brake adjustment

⚠ CAUTION



(8)Decal of adding hydraulic oil

NOTE

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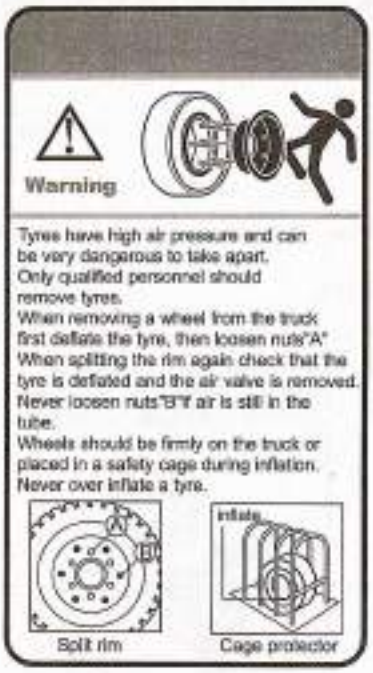
(9)Decal of tyre safety(pneumatic tyres)

⚠ WARNING



(10)Decal of sling

⚠ CAUTION

(11)Decal of no entry into the space behind the mast

⚠ WARNING

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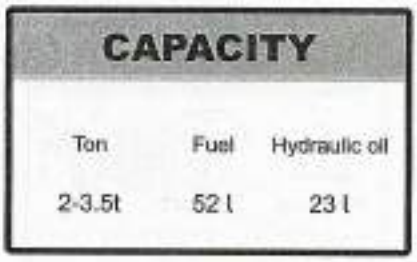
(12)Decal of tyre's air pressure(For example)



(13)Decal of mind your hands

WARNING

(14)Decal of add fuel oil

NOTE

(15)Decal of add antifreeze liquid

NOTE

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(16)Decal of mind your hands

WARNING

(17)Decal of tie safety belt

WARNING

(18)Decal of noise (For example)

NOTE

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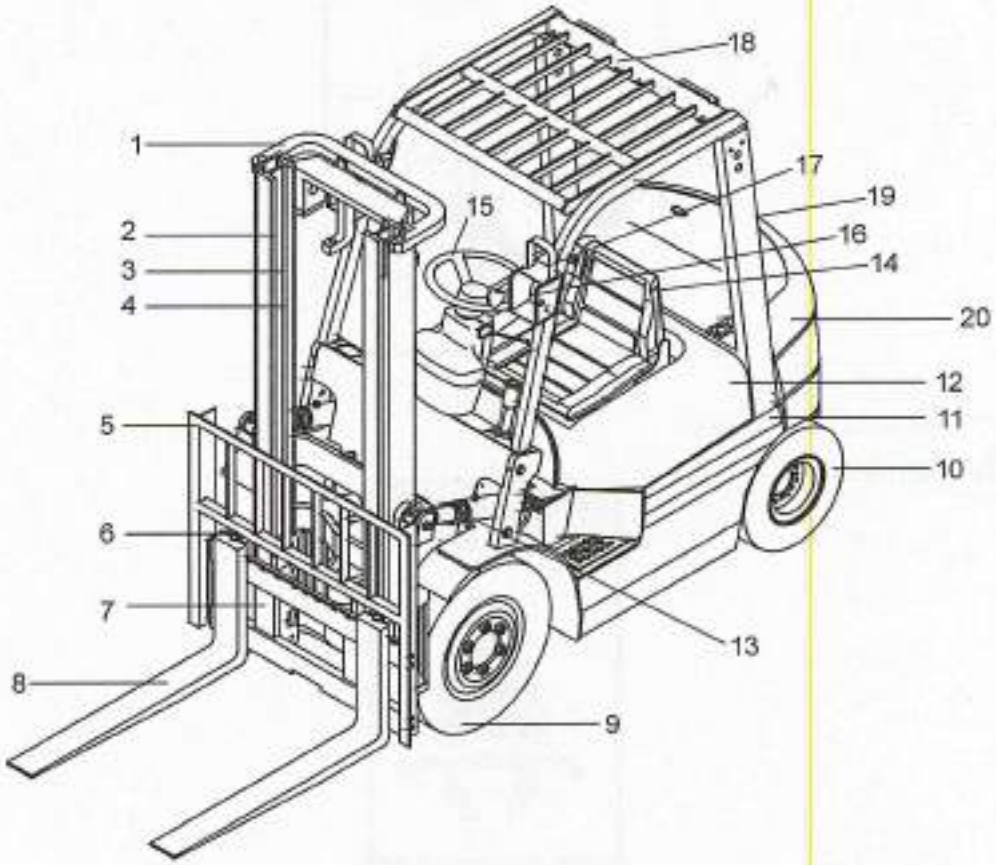
Ⅱ.Operation Device & Use Method



1.Outer mast	2.Inner mast	3.Lift chain
4.Lift cylinder	5.Load backrest	6.Fork stopper
7.Carriage	8.Fork	9.Drive wheel
10.Steer wheel	11.Fuel reservoir cap	12.Hood
13.Tilt cylinder	14.Seat	15.Steering handwheel
16.Head light	17.Front combination lamp	18.Overhead guard
19.Rear combination lamp	20.Balanceweight	

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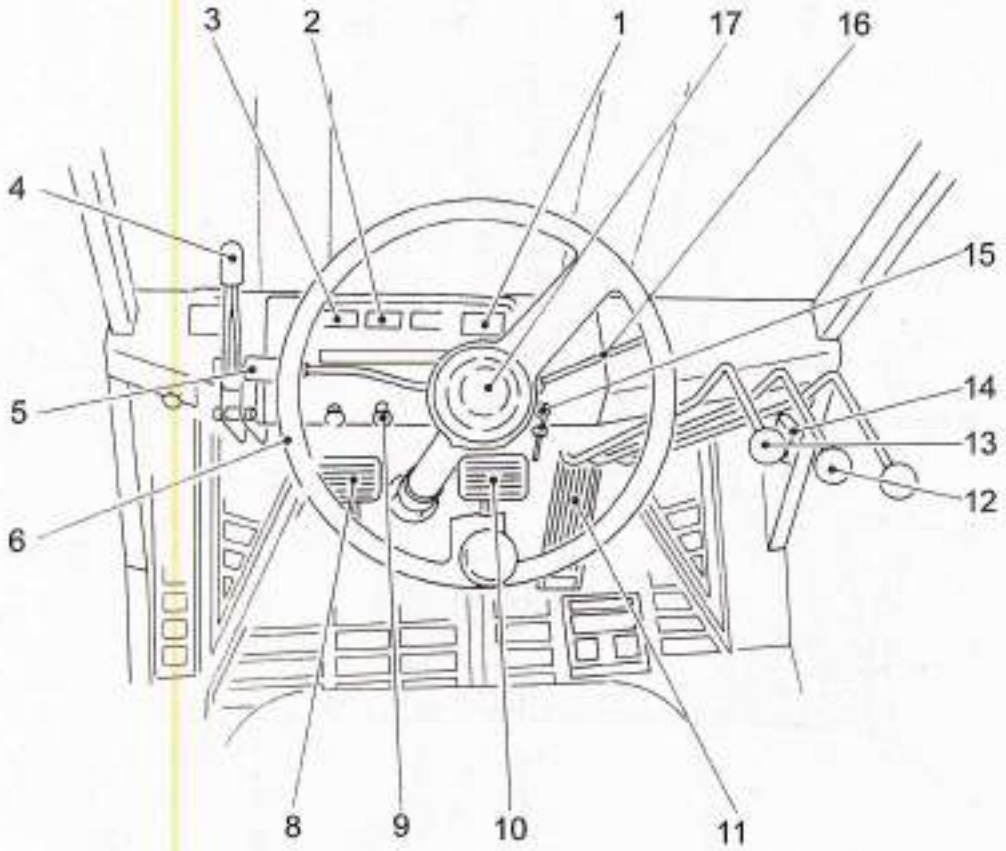
TORQUE CONVERTER TYPE



1.Hour meter
2.Coolant temp. gauge
3.Fuel gauge
4.Parking brake lever
5.Forward backward lever
6.Steering handwheel
8.Inching pedal
9.Light switch
10.Brake pedal
11.Accelerator pedal
12.Tilt lever
13.Lift lever
14.Fuse box
15.Ignition switch
16.Turn signal lever
17.Horn button

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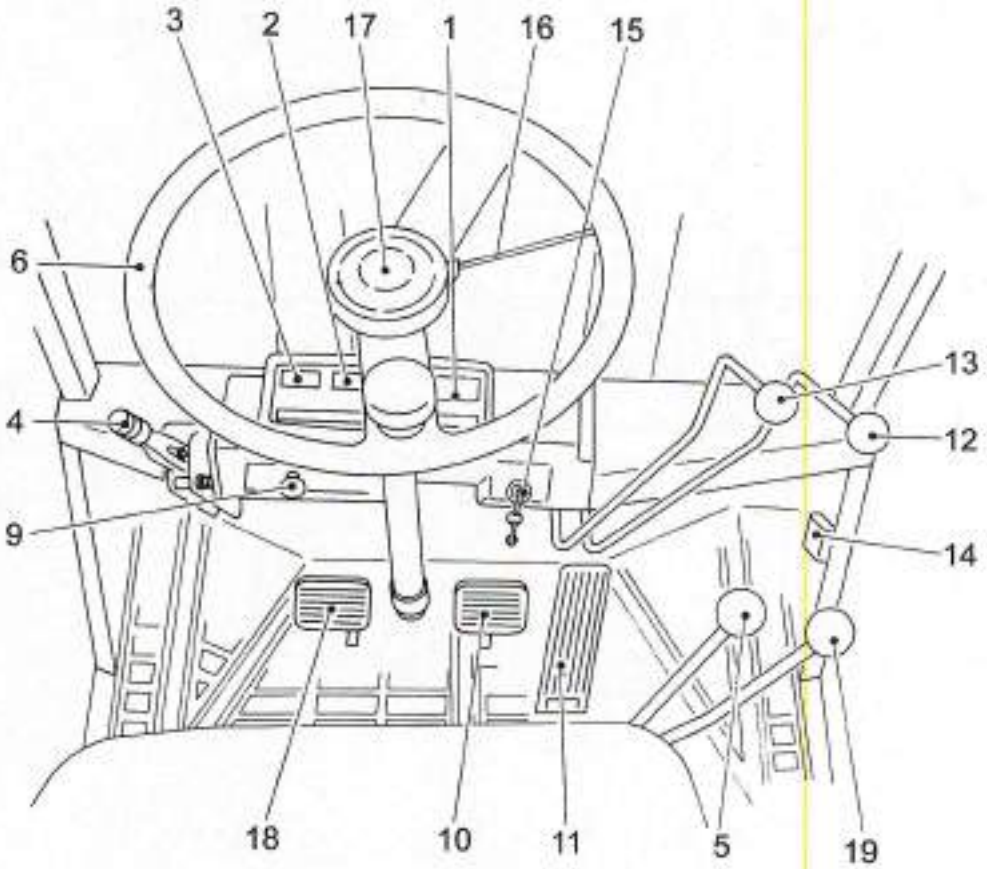
FRICTIONAL CLUTCH TYPE



1.Hour meter
2.Coolant temp. gauge
3.Fuel gauge
4.Parking brake lever
5.Forward-backward lever
6.Steering handwheel
9.Light switch
10.Brake pedal
11.Accelerator pedal
12.Tilt lever
13.Lift lever
14.Fuse box
15.Ignition switch
16.Turn signal lever
17.Horn button
18.Clutch pedal
19.Speed select lever

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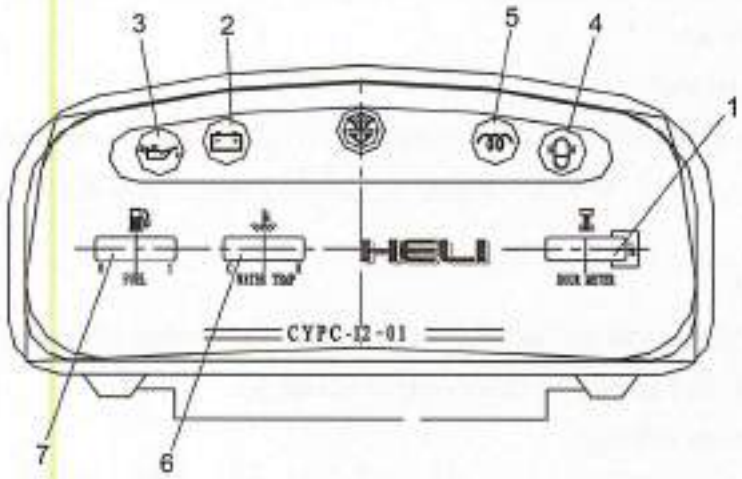
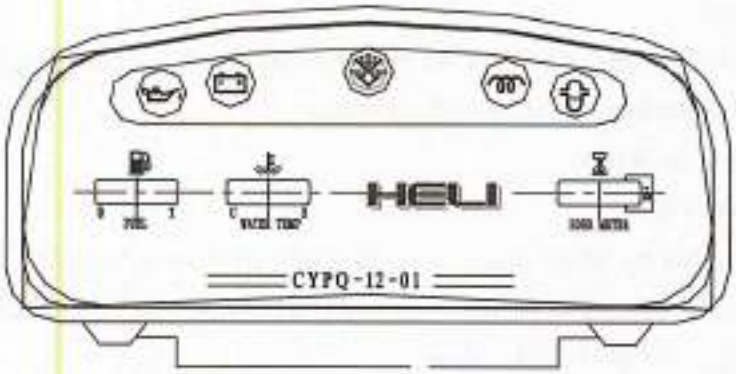
1.Liquid Crystal Instrument



For diesel forklift truck



For gasoline forklift truck

Optional parts

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(1)Hour meter

This meter measures working time of engine.Use meter to schedule lubrication and maintenance periods.

(2)Charge indicator

This lamp indicates the battery condition of charge.The lamp comes on when the ignition switch is set at "ON",but it goes out as the engine starts and accelerator pedal is pressed.

⚠ CAUTION

· If the light continues to stay lit or lights up during operation, the charging circuit has fault and should be checked immediately.

(3)Oil pressure indicator

This lamp indicates the pressure condition of engine lube oil.Although it lights up when the ignition switch is set at "ON",once the engine starts up and the accelerator pedal is depressed,this lamp goes out.

⚠ CAUTION

· If this light continues to stay lit or lights up during operation,the pressure is insufficient and should be checked immediately.

(4)Sedimentor indicator

DIESEL TRUCK

This lamp lights up when water in sedimentor reaches to a certain level while the engine is running.In normal state, once the starter is set to "ON"position,this lamp lights up.After the engine is started up,it goes out.

If this lamp continues to stay lit or lights up during the engine running,stop the engine and discharge water immediately.

⚠ CAUTION

· If the truck is operated when the lamp continues to stay lit, the fuel injetion pump may be damaged.

(5)Glow indicator

DIESEL TRUCK

This model truck has integral "QUICK-ON-START" system as a cold starting aid and has no"PREHEAT"position at the starter switch.

Turn the key to "ON" position and the indicator lights up for a moment.After the indicator goes out,turn the key to "START"position.

(6)Engine coolant temperature

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This gauge indicates the temperature of engine coolant.Under normal conditions,the pointer should be in the natural range(75℃ ~ 110℃). If the pointer stays in the alarm range(110℃ ~ 145℃),idle the engine until it enters the natural range.

⚠ CAUTION

·If the pointer enters the alarm range,stop the operation instantly and slow down engine speed to cool the coolant and wait until the pointer goes into the natural range.

(7)Fuel gauge

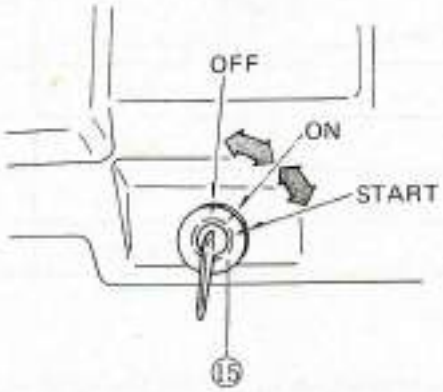
When ignition switch is set to the position"ON",the gauge informs operator how much fuel remains in the fuel tank. "E" mark stands for "Empty", "F" "Filled". The pointer enters alarm range when the fuel level drops to a 1/8 capacity.

⚠ CAUTION

· Fill the fuel tank at the end of each workday(or each shift). This practice will reduce the condensation of moisture within the tank.

2.Switches

(1)Ignition switch⑮



OFF

This is position at which the key is inserted or drawn out.

Gasoline engine and diesel engine stop at this position.

ON

The electric circuit is closed with the starter switch at "ON".After the engine is started ,the key is at this position.

START

As the key is placed in the "START"position,the starter motor is engaged.When removing hand off key,it is automatically returned to the "ON" position by spring force.

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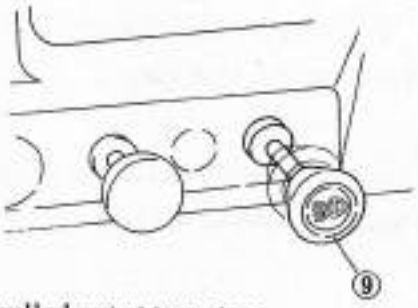
⚠ CAUTION

·Do not keep the starter switch in the "ON"position while the engine is shut down.This results in a discharged battery.

· With the engine running,do not turn the starter switch into the "START" position, since there is a danger of the starter motor being damaged.

·Do not keep the starter engaged for more than 15 seconds at a time. Wait about 20 seconds before trying again.

(2)Light switch ⑨



This light switch can be pulled out at two steps.

Stage / Light	O (OFF)	1st	2nd
Clearance & Parking Light	OFF	ON	ON
Tail Light	OFF	ON	ON
Number Plate Light	OFF	ON	ON
Head Light	OFF	OFF	ON

⚠ CAUTION

· The above lights are turned on or off by the light switch regardless of starter switch position.

3.Controls

(1)Steering handwheel ⑥

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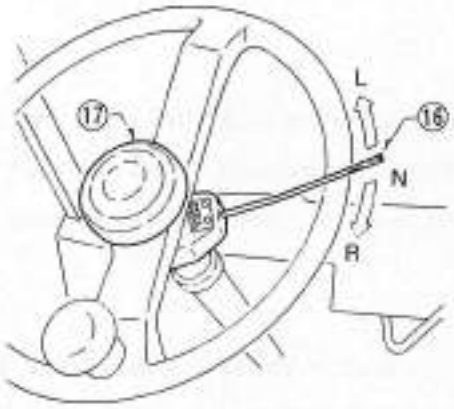
The steering handwheel is operated in the conventional manner,that is,when the wheel is turned right,the truck will turn to the right; when the wheel is turned left,the truck will turn to the left.The steer wheels are located at the rear of the truck.These cause the rear of the truck to swing out when a turn is made.With a little practice,this type steering will be easily mastered.

⚠ WARNING

·This truck is provided with the power steering,so heavy handwheel operation is caused when the engine comes to a stall.To put the power steering in operation again,restart the engine without delay.

(2)Horn button ⑰

Press the rubber cover at the center of steering wheel to sound horn.The horn sounds even when the key switch is OFF.



(3)Turn signal lever ⑯

Use this lever to indicate the turning direction of the truck.When this lever is placed in a turn position, the turn signal light blinks.

R	Right Turn
N	Neutral
L	Left Turn

⚠ CAUTION

·The turn signal lever does not automatically return to the Neutral position unlike general passenger cars.Reset it by hand.

(4)Lift lever ⑬

The forks can be raised or lowered by pulling backwards or pushing forwards on the

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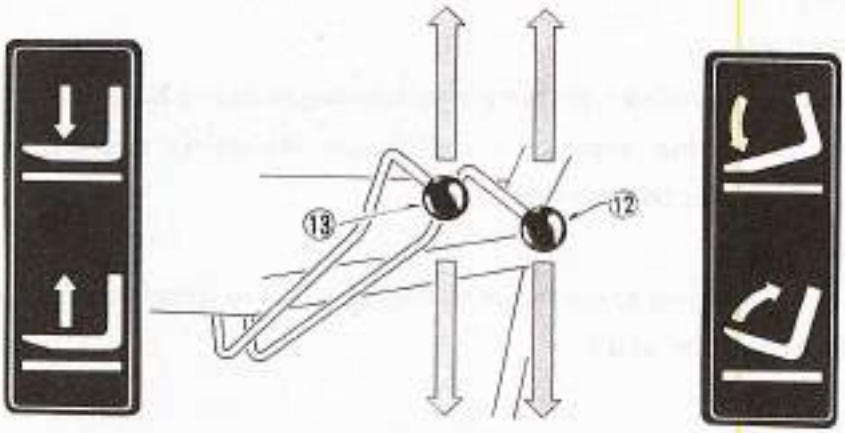
this lever. The lift speed is controlled by tilt angle of the lever and accelerator pedal effort.The lowering speed can be controlled by tilt angle of the lever.The bigger the angle,the faster the speed.The engine speed,or accelerator pedal does not have to do with the lowering speed of the forks.



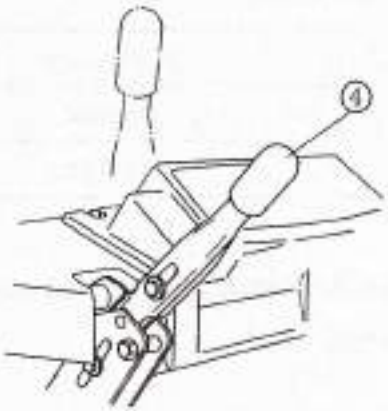
(5)Tilt lever ⑫

The mast can be tilted by operation of this tilt lever. Pulling on this lever backwards will tilt the mast backwards,and pushing it forwards will tilt the mast forwards.The tilt speed can be controlled by tilt angle of the lever and accelerator pedal effort.The bigger the angle,the faster the speed.

⚠ CAUTION

·The tilt lock mechanism built in the hydraulic circuit does not allow tthe mast to tilt forwards while the engine is being shut down even if the tilt lever is pushed forwards.

(6)Parking brake lever ④



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

⚠ WARNING

·If parking on a grade is unavoidable,be sure to block the wheels.

(7)Shift lever ⑤⑲

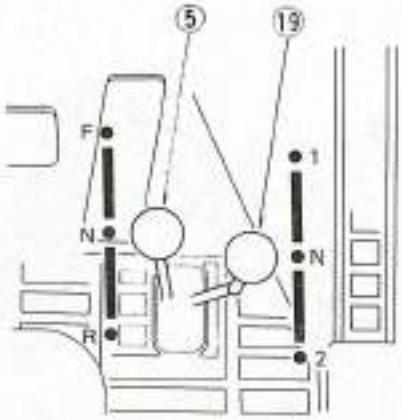
CLUTCH TYPE TRUCKS

Forward-reverse lever⑤

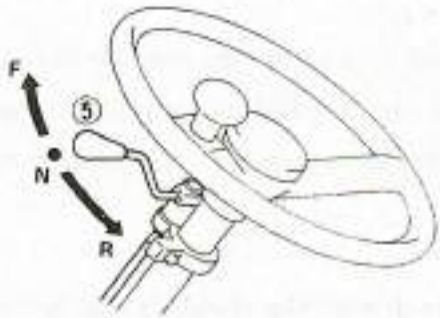
F	FORWARD
N	NEUTRAL
R	REVERSE

Speed select lever ⑲

1	LOW
N	NEUTRAL
2	HIGH



The transmission control is a floorboard-mounted type and has two speeds at forward and reverse travel respectively.Before gearshifting,be sure to press the clutch pedal to the full.Always brake to a full stop before reversing the direction of travel.Shifting the lever in reverse turns on the back-up lights.



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TORQUE CONVERTER TYPE TRUCKS

Forward-reverse lever⑤

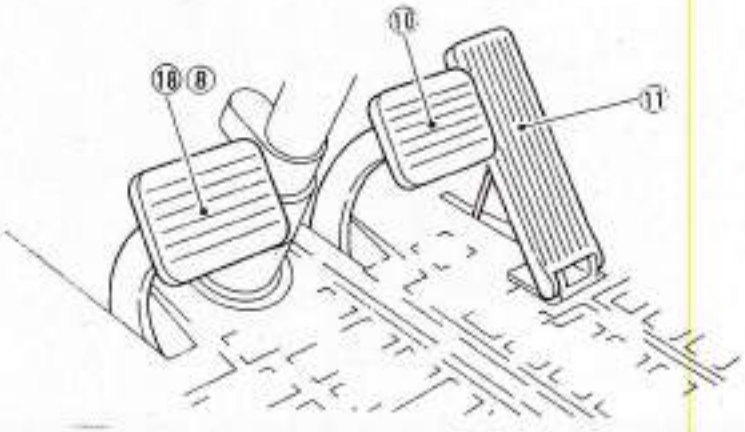
F	FORWARD
N	NEUTRAL
R	REVERSE

The transmission control is a steering column-mounted type and has one speed at forward and reverse respectively. Always brake to a full stop before reversing the direction of travel.Shifting the lever in reverse turns on the back-up lights.

⚠CAUTION

· The neutral switch is equipped.Do not fail to place the forward-reverse lever in the neutral position before starting the engine.

(8)Foot controls



See the above photo:Clutch pedal or inching pedal(left),brake pedal (center),and accelerator pedal (right).

CLUTCH TYPE TRUCKS

Clutch pedal ⑱

The purpose of the clutch is to permit the operator to couple or uncouple the engine and transmission.When the clutch pedal is pressed,the engine and transmission are uncoupled,and when released,it allows power to flow through the clutch from the engine to transmission.

⚠CAUTION

·Do not run the lift truck with the clutch in a half-clutch condition as much as possible.

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Inching pedal⑧

As the inching pedal is pressed,the oil pressure in the hydraulic clutch drops accordingly(the needle of the oil pressure gauge swings to the left)allowing the operator to perform inching operation.Use this pedal to inch the truck while operating the hoist system at a high speed.

When pressed to the full,this inching pedal serves as a brake pedal.

⚠ DANGER

·Don't use the inching pedal when descending.Please use the brake pedal.

Accelerator pedal ⑪

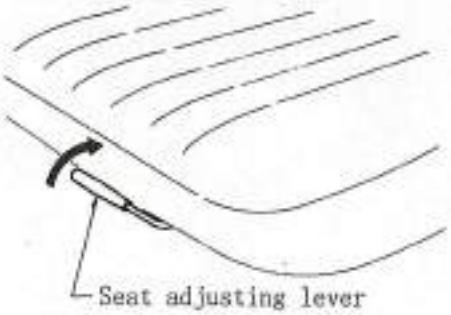
The accelerator pedal increases the engine speed.With this pedal released,the engine runs at idle rpm.

Brake pedal⑬

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

4.Body & Others

(1)Seat



An operator-oriented operator's seat is equipped.

⚠ WARNING

1)The Use of Seat Belt:

·The seat belt is not allowed to be put under the arm and should be hung on the chest with the belt buckle reliably inserted into the buckle slot.

·The working structure of the seat belt is forbidden to be altered.

·The seat belt must be changed after serious crashing and rolling-over events.

·The seat belt must be changed when it is damaged, rips or becomes soft and

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deformed due to chemical reaction and sun light.

·The seat belt must be changed when its metal connecting part is bent, deformed or rusted.

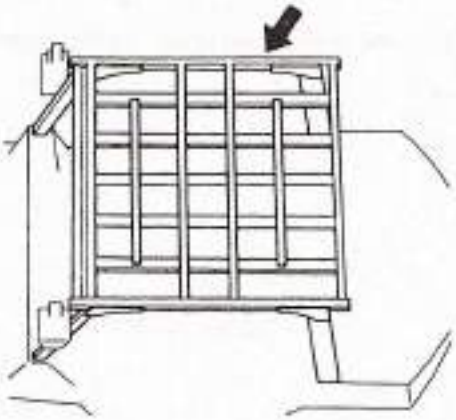
·The seat belt must be changed when its service performance is not so good.

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

(2)Seat adjusting lever

Adjust operator's seat to position which is comfortable for you and provides easy access to all hand and foot controls.The seat is unlocked by moving the adjusting lever to the right.Before proceeding with work,adjust operator's seat and make sure that it is securely locked.

(3)Overhead guard



⚠ WARNING

·The overhead guard used is strong enough to meet safety standard, and protects the operator from falling materials.It's very dangerous to dismantle or rebuild the overhead guard, because these conditions could lead to an accident.

(4)Load backrest

⚠ WARNING

·The load backrest is used to prevent the loads loading on the forks slide to the operator.It's very dangerous to dismantle or rebuild the load backrest,because these conditions could lead to an accident.

(5)Hood

The hood can be swung up fully to provide easy maintenance service.

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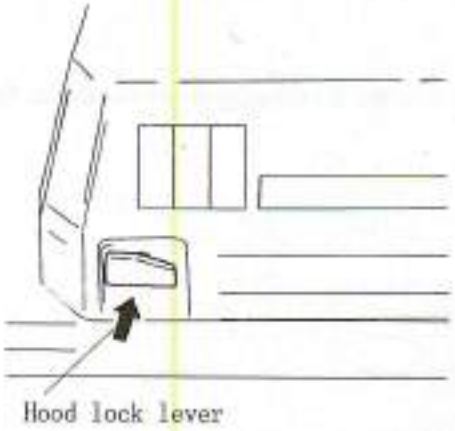
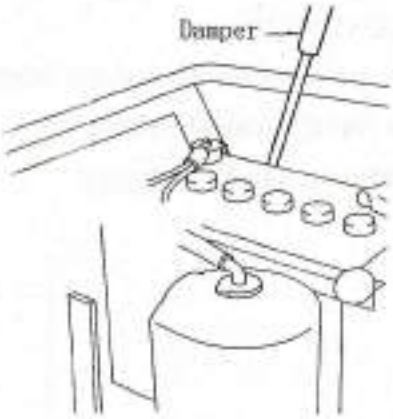
To swing up the hood,lift upward on the arrowed hood lock lever and the hood can be lifted up with little effort with an aid of hood damper.

To lock the hood,push down on the front of hood until it locks.

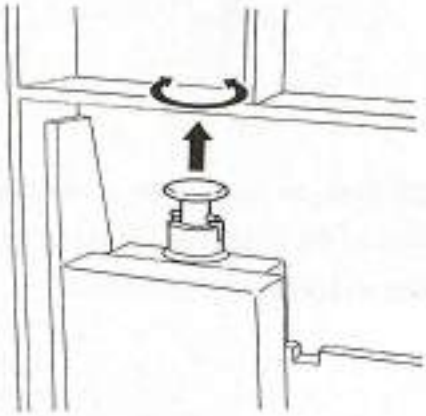




⚠ WARNING

·Use caution not to catch your fingers in the hood when closing it.

(6)Fork stopper



Fork stoppers are to lock the forks in position.To adjust fork spacing,pull up fork stoppers, turn, and shift the forks to the desired positions. The fork spacing should be adjusted according to loads to be handled.

⚠ WARNING

·The forks should be set symmetrically to machine centerline and fork stoppers should always be set.

·when you adjust the fork spacing,depend your body on the load backrest,then push the forks with your feet.Do not push the forks with your hands.

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(7)Draw-bar pin

The draw-bar pin only used for following situation:

·While the truck can't moving.

·While transporting the truck.

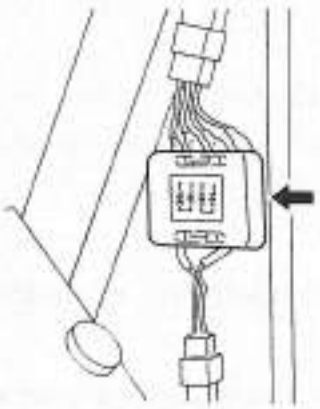
⚠ CAUTION

·Do not operate the forklift truck as a tow tractor by using a draw-bar pin. Do not tow the forklift truck by other truck.

(8)Safety step & safety grip

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

(9)Fuse box



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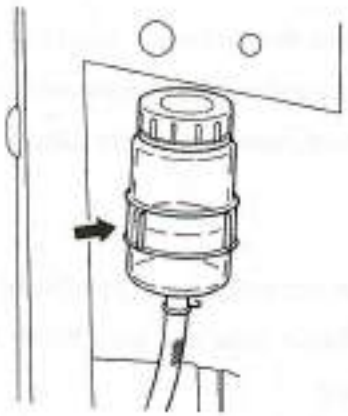
The fuse box is located at the right side of the cabinet inner surface.

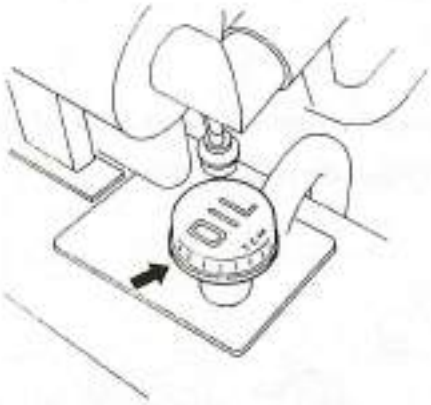
(10)Brake fluid reservoir



The brake fluid reservoir is provided at the left inside of the cabinet.

This translucent reservoir allows to inspect the fluid level from the outside.

(11)Hydraulic fluid reservoir cap



The hydraulic fluid reservoir cap is located at the right side in the hood.Fill hydraulic fluid through this filler port.The cap is provided with the dipstick.

(12)Fuel reservoir cap

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The fuel reservoir cap is located at the rear left side of the truck body.To open,turn it counterclockwise.

⚠ CAUTION

·The fuel reservoir cap has the breather inside it to allow air to enter into the reservoir.If the breather is damaged or clogged,the fuel system will get troubled.Check to see that the breather is in good condition every time addition of fuel is made.

⚠ WARNING

-FUEL HANDLING-

·Stop the truck,shut down the engine and apply the parking brake securely.Make sure that there is no naked flame near the area.Never smoke.The driver should not remain seated when adding fuel.

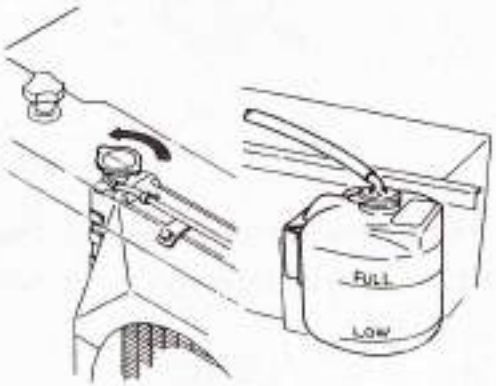
·After addition of fuel is finished,securely close the reservoir cap.A loose cap could cause fuel leak or fire hazard in the worst case.

·Before attemption to start the engine,make certain that the fuel reservoir cap is securely tightened and that no fuel is spilt on or around the truck.

·For the purpose of fuel level inspection,never use naked flame such as a match or lighter.

(13)Radiator cap

The radiator cap is located under the cover plate at the rear of the hood.At daily maintenance,you need not remove the radiator cap.



(14)Coolant reservoir

The reservoir is located near the battery.

⚠ WARNING

·Do not remove the radiator cap abruptly while the engine is hot.Turn the cap a little to the left to relieve the pressure in the radiator,then remove the cap.

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·Do not wear glove when removing radiator cap.

(15)Lamps

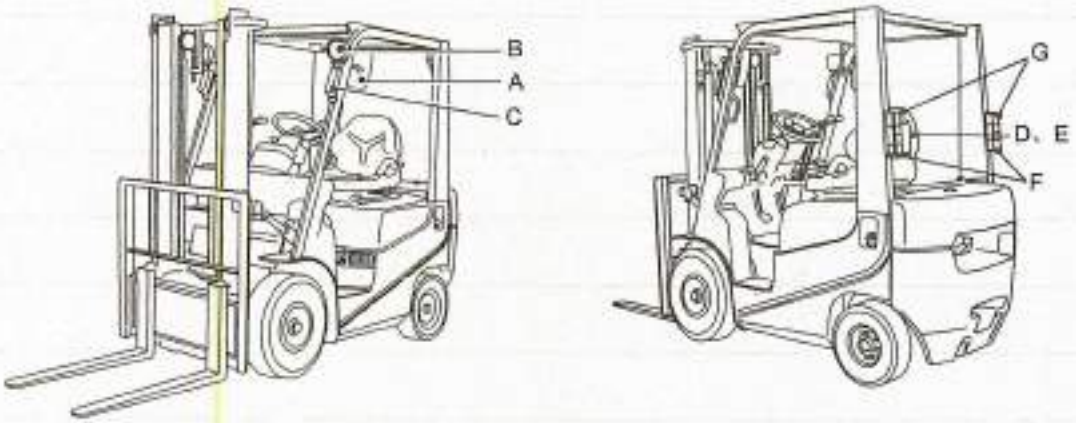
Two head lamps and combination lamps (turn signal,parking and clearance)are installed at the front side of the truck.

The combination lamps at the rear side serve as turn signal,tail lamp, brake lamp, parking lamp, back-up lamp and rear reflector.

⚠CAUTION

·Take care of the lamps,and wipe dirt,if any,and replace any damaged lamp immediately.

·If you want to install the rear lamp, please contact the sale apartment of our company.



(16)Rear view mirror (A)

The rear view mirrors are located at the right and left front foot of the overhead guard.

⚠CAUTION

·keep the surface of the mirrors clean.

·Adjust the mirrors in order to see the rear area clearly.

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NOTE

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Ⅲ.Driving and Operation

To operate the truck safely and get the most out of it, we describe the correct operating proce-dures on the following pages.

1.During Break-in

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

⚠CAUTION

·Always warm up your machine before putting it to work…irrespective of season.

·Perform specified preventive maintenance services carefully and completely.

·Avoid sudden stop, starts or turns.

·Oil changes and lubrication are recommended to do earlier than specified.

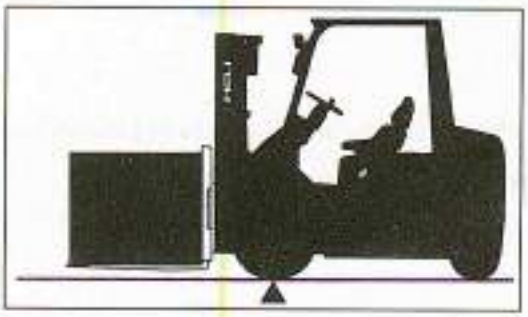
·Don't run engine at high rpm without load need lessly.

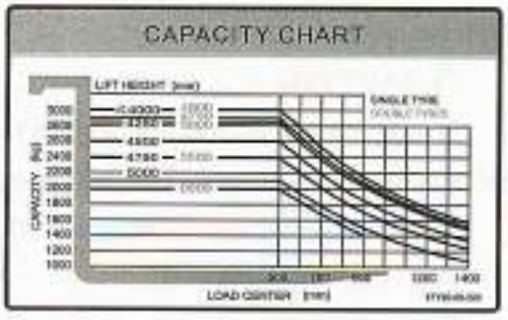
2.Relationship Between Load and Stability of Truck

The lift truck keeps the balance of weight between the truck body and the load on the forks with the center of the front wheels as a fulcrum when the rated capacity load is placed in position. Due care should be paid to the weight and the center of gravity of loads to maintain the stability of the truck.

⚠WARNING

·If the rated capacity is exceeded, there is a danger of the rear wheels being raised and in the worst case, the truck will turn over, resulting a fatal accident. As seen from the above sketches, the load placed near the fork tips practically has the same effect that the weight of the load is increased. In this case, the load weight is reduced accordingly.





3.Load Center and Rated Load

The load center is the distance from the front face of the forks to the center of gravity

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of the load. The chart given above shows the relation between the load center and the weight of loads to be allowable for the 2 ton lift truck (Allowable Load).The load Chart will be attached onto the truck. Replace damaged or missing load chart with new one.

⚠WARNING

If a truck is equipped with a load-handling attachment such as a side shifter, load grab or rotating clamp, its allowable load is reduced as compared with that of a standard truck(without any attachment) due to the following reasons.

1)The load equal to the weight of attachment is reduced.

2)Since the width of attachment causes the load center to move forward the allowable load is reduced on the same principle as a seesaw.

The installation of attachment causes the load center to move forward, which is called"lost load center".

Never exceed the allowable load indicated on the load chart attached onto the truck or attachment.

4.Stability of Forklift Truck

The stability standard of lift trucks is specified by the ISO or other standards. However, the stability stated in these standards is not applicable in all operating conditions. The stability of your lift truck varies according to the operating conditions. In the following operating conditions, the maximum stability is secured:

1)Ground or floor is level and hard.

2)Traveling under standard unloaded or loaded condition.

Standard unloaded conditions: This means that the forks or other load engaging means are raised 30cm above the ground and the mast is tilted fully backward without loads.

Standard loaded conditions: This means that the forks or other load engaging means are raised 30cm above the ground and given capacity loads at the basic load center on it and the mast is tilted fully backward.

⚠WARNING

Use minimum forward and reverse tilt when stacking and unstacking loads.Never tilt forward unless load is over stable stack or rigid rack or at low lift height.

5.Transporting and Loading the Truck

(1)Transporting the truck

⚠CAUTION

·When transporting the truck, riggings are used to fix the truck as well as blocks are to be inserted under the wheels to prevent the vehicle from moving in carriage.

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·The truck's length, width, height should be cared when loading it, unloading it or transporting it on the road. And all rules must be complied with.

(2)Loading and unloading the truck

⚠CAUTION

·Please use the dockboard with enough length, enough width and enough strength to load and unload the truck.

·Apply the parking brake effectively and prevent the wheels from moving.

·Fix the dockboard on the center of trailer, and there must be no grease on the dockboard.

(3)Hanging up the truck

⚠CAUTION

·Hang up the truck by trained person.

·Hook the wire at the appointed position.

·Use wire rope which has a sufficient strength.

·The battery, mast and balanceweight of the truck also have there appointed hang up position.

6.Before Starting Engine & after Engine Has Started

(1)Before starting engine

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

·Check the safety around the machine.

·If water,grease or soil is sticking to the floor,pedals,levers or operator's hands,clean it off.

·Make sure that the shift lever(s)and loading levers are in NEUTRAL and HOLD positions and that the parking brake lever is fully engaged.

a)Starting gasoline engine

·Cold engine

Depress the accelerator pedal to the floor two or three times and release it.With your foot OFF the pedal,crank the engine by turning the ignition key to "START".Release key when engine starts.

·Warm engine

Press down the accelerator pedal halfway and hold.Crank the engine by turning the ignition key to "START".Release key when engine starts.

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⚠CAUTION

·Do not press down the accelerator pedal fully when starting warm engine.This operation may harden the engine starting.Pressing down the accelerator pedal several times will cause harder starting.

b) Starting diesel engine

Turn the ignition switch to ON position until the G LOW indicator goes out,then turn the ignition switch to START position.

If the engine is hard to start,check for low fuel level,air mixed in the fuel system or broken wire of the glow plug.

(2)After engine has started

·Warm up the engine(for about 5 minutes).

·Check the rotation(sound or gear)of the engine.

·Check the combustion (or misfiring)sound.

·Check the condition(density)of exhaust.

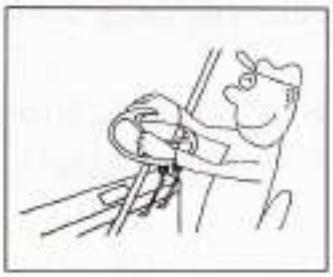
·Make sure that all the warning lamps are off.

·After thoroughly warming up the engine,operate the loading levers 2 to 3 times in their full stroke and check their working conditions.

7.Traveling

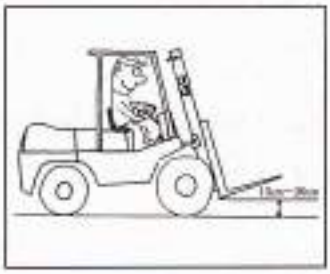
(1)Operator's posture

Hold the knob on the steering wheel with your left hand and get the right hand ready for loading work,lightly putting it on the wheel.



(2)Basic state for traveling

Set the bottom of the fork 15 to 20cm above the ground and fully tilt back the upright.



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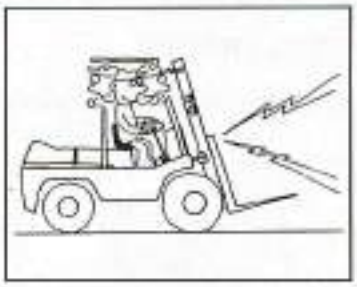
Check the safety around the truck and give a signal when starting the truck.



CLUTCH TYPE TRUCKS

Depress the clutch pedal and engage the shift levers.

Release the parking brake lever.

Gradually release the clutch pedal while depressing the accelerator pedal to start the truck.

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⚠CAUTION

·Do not rest your foot on the clutch pedal while you are driving.

TORQUE CONVERTER TYPE TRUCKS

Depress brake pedal and engage the forward-backward lever.

Release the parking brake lever.

Release brake pedal and depress the accelerator pedal to start the truck.

(3)Gear shifting

Without loads,the truck can start even with gears in high speed.However,under loaded condition,place the gear in low speed to start the truck.

CLUTCH TYPE TRUCKS

a)Always stop the truck before reversing the direction of travel.

b)When gearshifting from high to low speed or vice versa,once increase the engine speed and release accelerator pedal.At the same time, press the clutch pedal while shifting

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the shift lever into the desired position.Then press the accelerator pedal while releasing the clutch pedal.

TORQUE CONVERTER TYPE TRUCKS

a)Always stop the truck before reversing the direction of travel.

(4)Slow-down

CLUTCH TYPE TRUCKS

Since this machine uses the synchromesh transmission,it is not necessary to perform the double-clutch operation.Remove your foot from the acce-lerator pedal,press the clutch pedal to the full,place the speed shift lever into the "first speed"position,and press the accelerator pedal while releasing the clutch pedal.

TORQUE CONVERTER TYPE TRUCKS

Release accelerator pedal depression a little,and press the brake pedal,if needed.

⚠WARNING

You must slow dwon:

·At aisle intersections

·In crowded areas

·On rough ground or floor surfaces

·When approaching loads or obstacles

(5)Steering

Unlike general passenger-cars,the steer wheels are located at the rear of the truck.These cause the rear of the truck to swing out when a turn is made.Slow down the truck and move toward the side to which you are turning.The steer handwheel should be turned a bit earlier than as with the front-wheel steering car.

(6)Stopping or parking the truck

Slow down and press the brake pedal to stop the truck(in the case of clutch type machine,the clutch pedal is used).Place the shift lever in NEUTRAL.

⚠CAUTION

·Never stop the truck in ascending on a grade by pressing the accelerator pedal with the clutch in "half-clutch"and torque converter in operation.This will cause undue wear of clutch plates and abnormal rise of torque converter oil temperature, resulting in short life of clutch or torque converter.

To park the truck:Park the truck in an out-of-traffic area and…

a) Apply the parking brake by pulling up on the parking brake lever.

b)Down the forks on the ground.

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c)Place the key switch in "OFF"to shut down the engine.In the case of the diesel truck,pull out the engine stop button.

d)Remove the key and keep it.

⚠WARNING

Safe parking

a)Park your truck on a level ground-preferably in a wide area.If Parking on a slope is unavoidable,position the truck so that it cross the slope and block the wheels to prevent accidental roll.

b)Park your truck in a designated area or out-of-traffic.If necessary,put a signpost or signal lights around the truck.

c)Park your truck on a hard ground. Avoid soft ground, deep mud or slippery surfaces.

d)If you can not lower the forks on the ground due to break-down of the loading system,put a caution cloth to the fork end and park in an out-of-traffic area.

8.Pick Up

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

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

(3)The pallet should be evenly positioned across both forks.

(4)Insert forks into the pallet as far as possible.

(5)To raise loads from the ground:

a)Once lift the forks 5 to 10cm off the ground or floor and make sure loads rest stably.

b)Then,tilt the mast backwards fully and lift forks up to 15 to 20cm off ground then start running.

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

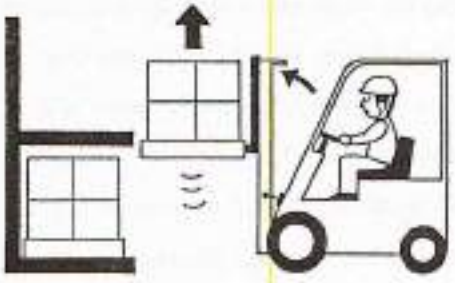
9.Stacking Operation

⚠CAUTION

Check the following items before starting operation of truck.

·Make sure that there is not load's falling and damage of load at loading area.

·Make sure that there is no objects and stacking is carried out safely.



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When stacking a load, observe the following procedures.

(1)Slow down the travel speed when approaching a stacking area.

(2)Stop the truck in front of stacking area.

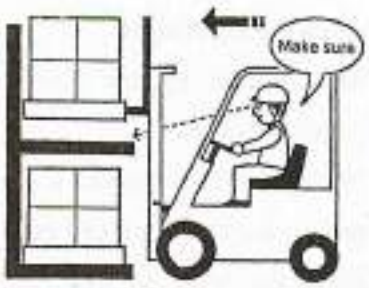
(3)Check for safety around the stacking area.

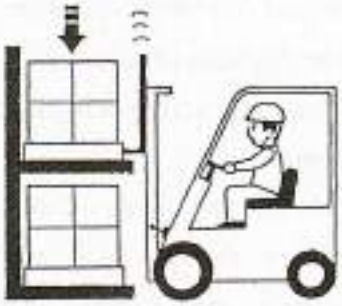
(4)Adjust the truck position which a load (pallet) locates in front of the stacking area.

(5)Tilt the mast to vertical position and lift up the forks above the stacking position.

(6)Check the stacking position and move forward and stop slowly at the proper position.

(7)Make sure the load is just above the stacking position and lower the forks slowly. Make sure the load stacked correctly.





NOTE

·When the load is not aligned at front/rear ends of the load or pallet:

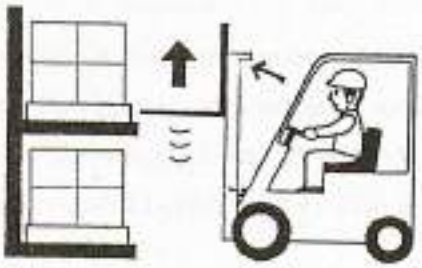
a)Lower the forks until the load weight on the forks becomes free.

b)Move the truck backward about 1/4 length of the forks.

c)Lift(50-100mm)the forks again and move to forward then lower the load slowly at a proper stacking position.

(8)Check clearance backward and move backward avoiding hitching forks to pallet or load.

(9)Make sure the tips of forks are off the load or pallet, and lower the forks to the position for running(150-200mm above the



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floor).

10.Picking Operation

When picking up the loads, observe following procedures.

(1)Slow down the traveling speed when approaching a load to be picked up.

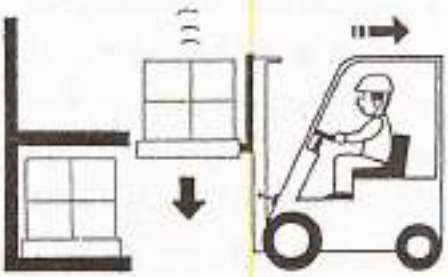
(2)Stop the truck in front of the load (about 30cm between the load and the fork tips).

(3)Adjust the truck position which a forks locates in front of the load.

(4)Make sure safety of the load which is not collapsed.

(5)Tilt the mast to vertical position.

(6)Check the inserting position and move the truck forward slowly until the forks are fully inserted into the pallet.



NOTE

·When it is difficult to insert the forks fully into the pallet:

a)Insert the forks by its 3/4 length and lift up the pallet a little(50-100mm),and draw out the pallet about 100-200mm and lower the pallet again.

b)Insert the forks fully ito the pallet.

(7)After inserting the forks, lift up the pallet(50-100mm).

(8)Check the clearance and move the truck backward until the load is lowered.

(9)Lower the load up to 150-200mm above the floor.

(10)Tilt the mast backward for stabilizing the load.

(11)Carry the load to its destination.

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11.Storing

(1)Before storing

Before storing your lift truck, clean it thoroughly and perform inspection using the following procedures.

a)Wipe away grease, oil, etc.adhering to the body of the truck with waste cloth, and use water, if needed.

b)While washing the truck body, check general condition of the truck. Especially check the truck body for recess or damage and tires for wear or nails or stones in the tread.

c)Check for leakage of hydraulic oil, engine oil, fuel, or coolant.

d)Apply grease, where needed.

e)Check for looseness of hub nuts, cylinder piston rod joints.

f)Check mast rollers to see that they rotate smoothly.

g)Prime oil into the lift cylinders by actuating the lift cylinders at the full stroke.

⚠WARNING

·If at any time your lift truck is found to be in need of repair, defective, or in any way unsafe, the condition should be reported to the supervisor, and the truck should be taken out of service until it has been restored to safe operating condition.

(2)Daily storage

a)Park the lift truck at a specified place and block the wheels.

b)Place the shift lever(s) in the neutral position and apply the parking brake securely.

c)Remove the key and keep it sure.

(3)Long time storage

Perform the following service and checks in addition to the "DAILY STORING" services.

a)Taking the rainy season into cosideration, park the machine at a higher and hard ground.

b)Dismount the battery from the machine.

Even though the machine is parked indoors, if the place is hot or humid, the battery, should be kept in a dry, cool place.Charge the battery once a month.

c)Apply antirust to the exposed parts such as cylinder rods and shafts which tends to rust.

d)Cover components such as the breather and air cleaner which may be caught with humidity.

e)The machine should be operated at least once a week. Fill with HELI exclusive

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coolant (refer to OPERATION & SERVICE MANUAL for operation notes) if the engine coolant is discharged. and mount the battery. Remove grease from the cylinder rods and shafts. Start the engine and warm up thoroughly. Move the machine a little forwards and backwards. Operate the hydraulic controls several times.

f)Avoid parking on soft grounds such as an as phalt ground in summer.

(4)To operate the forklift truck after a long time storage

a)Remove antirust from the exposed parts.

b)Discharge foreign matter and water from the hydraulic oil reservoir.

c)Charge the battery and mount it on the machine. Connect the cables.

d)Perform pre-oprational checks carefully.

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Ⅳ.Periodic Inspection & Servicing

Complete inspections of the forklift truck prevents faults previously and extends an usable period of the truck.Hours shown below are based on 8-hour operation per a day and 200-hour operation per a month.

Do the detailed record well after checking and keep the record for 3 years at least.

⚠CAUTION

·Only trained and authorized serviceman shall be permitted to service the truck.

·Daily servicing,weekly servicing and monthly servicing are all could be done by the operator.

1.General Rules on Inspection

(1)Use genuine parts only.

(2)Use genuine or recommended oil only.

(3)Clean oil fillers and grease fittings with a brush or waste cloth before adding oil or greasing.

(4)Oil level check and addition of oil should be made with the truck parked on a level surface.

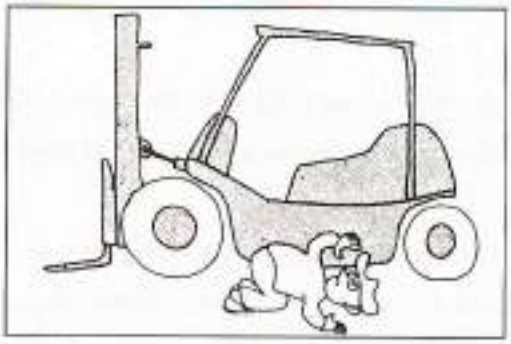
(5)Preventive maintenance services shluld be done in an orderly manner and due care taken not to injure yourself.

(6)If unavoidable to work under the raised forks or attachment,use a stable support to prevent the forks and inner mast from falling down.

(7)If any damage or fault is found,the matter should be reported to your supervisor and the truck should not be operated until corrected.

2.Inspection Contnents

(1)Check leaks of oil,fuel or water



Check joints of the hydraulic piping,engine,radiator and driving system for oil and water leaks.Check leakage with your finger as well as visually.

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Check if there is any impurity in the fuel.

⚠WARNING

·Don't attempt to operate the truck if leaked fuel is found through pre-operational check.Correct the leak before starting engine.

(2)Tire inflation pressure check(pneumatic tyres)

Check condition of tires.Low air pressure reduces tire service life and increase fuel consumption.Uneveness of air pressure between right and left tires or unevenly worn or badly damaged tires will cause uneven steering forces.

The standard tire pressures are indicated on the decal at the front left side of the hood.

Tonnage / Tire pressure	1-1.8t	2-2.5t	3-3.5t	5-7t	8-10t
Front tire	790kPa	860kPa	830kPa	830kPa	760kPa
Rear tire	1000kPa	860kPa	790kPa	830kPa	760kPa

Turn the tire valve cap counterclockwise and remove it. Using a tire pressure gauge, measure the inflation pressure,and adjust it to the specified pressure,if needed.After making sure there is no air leakage from the tire valve,reinstall the cap.Check that each tire does not get damaged at the tread surface or side face or bending at the rim.

Since the forklift truck needs tires that have a high inflation pressure to carry heavy loads,even a small bending of rims or damage at the tread surface could cause an accident.

⚠WARNING

·All nuts and bolts should be properly installed and torqued before inflating tire and rim assembly.An inflated tire contains potentially explosive energy.

·Don't overinflate.

·When using an air compressor,first adjust the air pressure of the compressor.Failure to do so will cause a serious accident,since the compressor delivers the maximum pressure.

(3)Hub nut torque check

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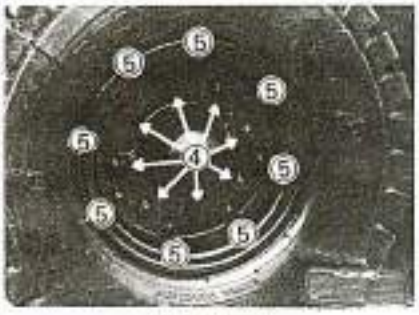
Front



Rear

①Hub nut
②Divided rim bolt
③Drive shaft bolt
④Hub nut
⑤Divided rim bolt

Check hub nuts for correct torque.

All hub nuts should be tightened to the specified torque securely.

1-1.8t:150-175Nm

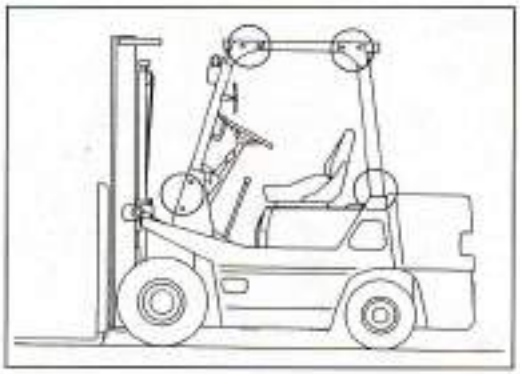
2-10t:480-560Nmely.

⚠CAUTION

·Do not dismantle divided rim bolt ② and ⑤ when detaching hub nut ① and ④.

·It is very dangerous that the hub nut becomes flexible. In case the hub nut became flexible, the wheel may came off and the vehicle would turn to.

(4)Overhead guard check



The overhead guard is for your protection.Make certain that it is securely mounted and all structural members are secure.

(5)Brake fluid level check

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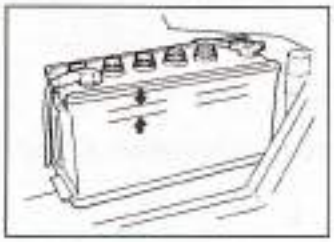
Check the fluid level in the brake fluid reservoir.The level should be between the two seams of the reservoir.When adding fluid,due care should be taken to prevent dirt or water from entering the reservoir.

OPEN THE HOOD

Open the hood from the left side of the truck.

(6)Battery electrolyte check



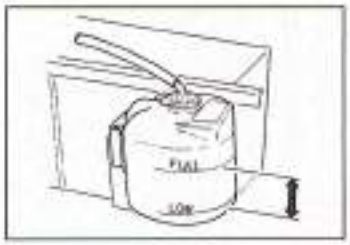
Check electrolyte level in the battery.

The battery case is given upper and lower level marks to allow the operator to see the electrolyte level.The level should be between the two marks.

⚠DANGER

·Never allow flame or sparks near the battery filler holes because explosive hydrogen gas may be present.

(7)Coolant level check



Check the radiator coolant reservoir fluid level.It should be between high and low level mark.Add coolant if necessary.

⚠WARNING

·Use extreme care when removing the radiator pressure cap.In pressure system,the sudden release of pressure can cause a steam flash which would cause a serious presonal injury.Loosen cap slowly to allow steam to escape.After that,tighten cap securely.It is good practice to use thick waste cloth or the like when removing the cap.Avoid putting on gloves,since you may get burnt at your hand if hot water splashes on it.

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(8)Engine oil level check

The dipstick is located on the left side of the engine.Remove the dipstick,clean the rod and reinstall.Pull it out again and check the oil level.The level should be within the mark on the dipstick.

(9)Fan belt tension check

Check the fan belts for correct tension and damage.Push the midway between the water pump pulley and the generator pulley by the thumb.

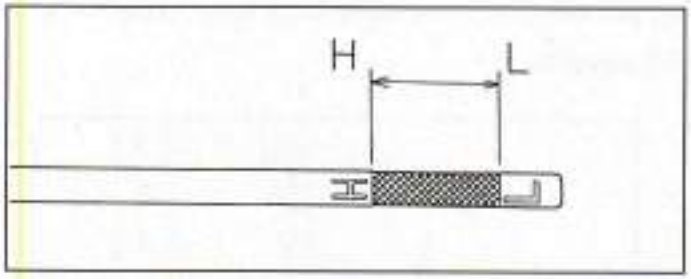
⚠WARNING

Fan belt deflection check should be made with engine shut down.

(10)Rear combination lamp check

Check rear combination lamps(tail,brake,back-up)for damage or contamination.

(11)Hydraulic oil level



Check hydraulic oil level by means of the oil level dipstick:Remove the oil level dipstick and clean it.Reinsert it and remove again to see if the oil level is between two slots:High and Low.

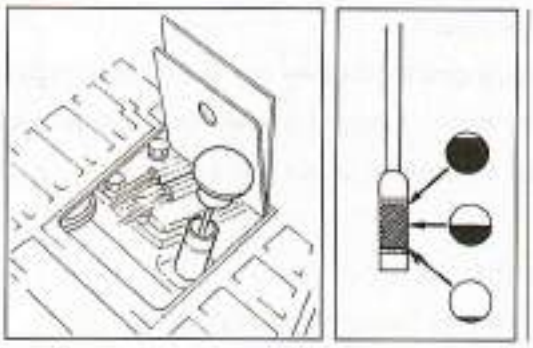
⚠CAUTION

·The oil level check should be done with engine shut down,forks on the ground or floor,and the truck itself on a level surface.

(12)Piping & cylinders

Visually check hydraulic oil pipings and lift and tilt cylinders for oil leaks.

(13)Powershift transmission fluid level



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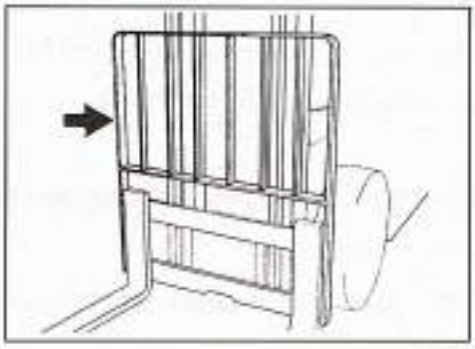
TORQUE CONVERTER TYPE TRUCKS

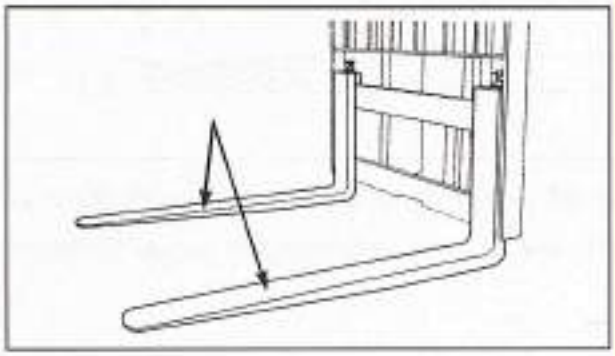
Open the inspection cover and remove the filler cap.Inspect the level gauge to make sure that the fluid level is on the upper mark of the gauge.Add specified fluid,if necessary.

(14)Load backrest check



Check for loose mounting bolts for the load backrest.Retighten where needed.

(15)Fork & fork stoppers



Check fork stoppers for correct installation and forks for bending or cracks.

(16)Head lamps & front combination lamps

Check for dirty or damaged lens.

Close the hood,sit on the seat and…

Take care not to catch your finger in the hood.

(17)Drivers seat adjustment

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

(18)Shift lever(s) check

Check the shift lever(s) for looseness and operation.

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(19)Loading levers check

Check the loading levers(for lift,tilt & optional attachment)for looseness and smooth operation.

(20)Parking brake operation check

Make sure that the parking brake is securely applied by operating the parking brake lever.

Start the engine...

Before starting the engine,make certain the shift lever(s) is in neutral and parking brake is securely applied.

(21)Meters & gauges

The hour meter,coolant temperature gauge and fuel level gauge are provided to inform the operator of the operating condition of the truck during operation.

(22)Fuel level check

The fuel level gauge is provided on the indicator panel.Check that fuel level is sufficient for the day's work.

(23)Lights & lamps

Actuate each light or lamp switch to be certain that the respective light or lamp comes on properly.

(24)Turn signal check

Make sure that the turn signal operates properly by moving the turn signal lever.

(25)Horn button operation check

Press the horn hutton to make certain the horn sounds.

(26)Clutch pedal check

CLUTCH TYPE TRUCKS

Check that the clutch pedal travels smoothly.The free travle is about 40mm.On the truck with the optional power clutch device,start the engine,then proceed with this clutch pedal check.

(27)Brake pedal free travel

Press the brake pedal and inching pedal(on torque converter type only)to make certain that each pedal can be pressed smoothly and that is also can restore without interference.

(28)Mast operation

Sound horn and actuate the lift and tilt levers to be certain that the carriage moves up and down properly and the mast can be tilted smoothly.Make certain that the relief valve operates accompanying its relieving sound when each cylinder piston reaches the stroke

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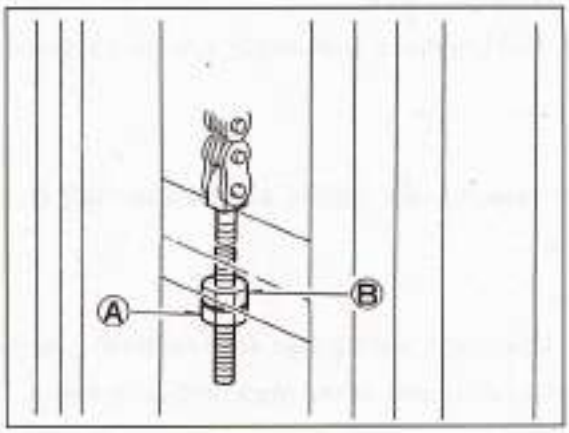
end.

Pay attention to system operating sound.

(29)Lift chain tension check

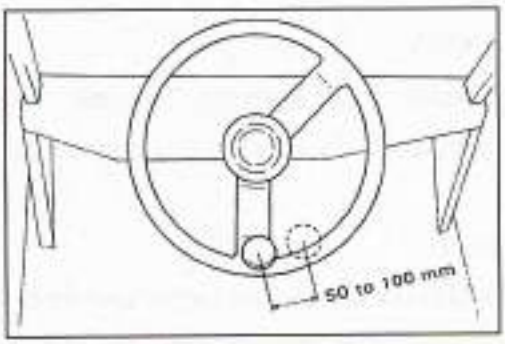


Check the tension and abnormality of the lift chains.To check the tension,raise the fork about 5cm above the ground and push the middle of the chain with the thumb.Make certain the tension for the right and left chains is even.If uneven tension is found,loosen the lock nut(A)of anchor pin and adjust the chain,turning the adjusting nut(B)of the chain anchor pin.

⚠CAUTION

·Don't use "Grease" but "Machine Oil (ex.Hydraulic Oil)" only for lift chain lubrication.

(30)Steer handwheel free play



Check the steer handwheel for play and vertical looseness.The normal play is 50 to 100mm and vertical looseness is not permitted.

(31)Exhaust gas check

Check condition of exhaust gas after the engine warm-up is finished.

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Colorless or bluish… … …Normal:Complete combustion

Black … … … … … … … … Abnormal:Incomplete combustion

White … … … … … … … … Abnormal:Oil burns

Check also the engine and driving system for clicking or any abnormal noise or vibration.

⚠DANGER

·Exhaust fumes are very dangerous.When starting the lift truck in enclosed space,make sure there is enough ventilation.The exhaust gas check should be done outdoors.Especially use caution to avoid fire hazards.Pay special attention to signs of oil or fuel leaks and never leave waste cloth or paper inside the engine room.Make sure you know where the fire extinguishers are kept and how to use them.

Run at a low speed … … (at a safe place)

(32)Clutch operation check (CLUTCH TYPE TRUCKS ONLY)

Press the clutch pedal to be certain that the clutch is properly disengaged and does not drag.

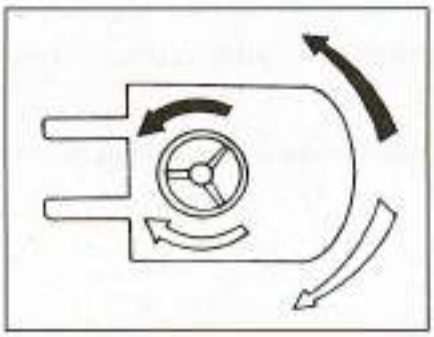
Inching pedal check (TORQUE CONVERTER TYPE TRUCKS ONLY)

Press the inching pedal a little (3mm or less)and check that the truck speed decreases.

(33)Brake test

Run the truck slowly and press the brake pedal to check the braking effect.When the brake pedal is pressed,the stop lamp comes on.

(34)Steering check



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Turn the steering wheel traveling slowly to see that the steering forces are equal in right and left or that any abnormality does not exist.

(35)Parking brake test

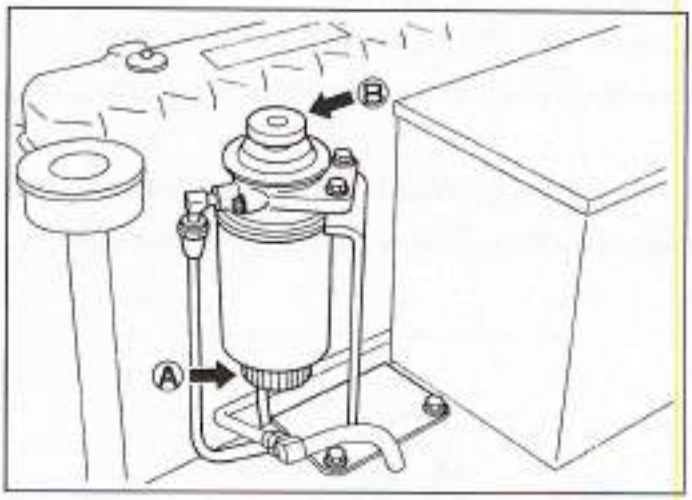
Make certain that the slowly running truck can be stopped by pulling on the parking brake lever.

(36)Back-up lamp operation

The back-up lamp comes on when the shift lever or directional control lever is placed in reverse position.

3.Maintenance

(1) Water discharge from sedimentor



DIESEL

When sedimentor indicator lights up …

a)Stop the engine, loosen the drain plug by turning 4 to 5 turns(A)and press the priming pump(B).Continue pressing the priming pump (B)until water is entirely discharged through the sedimentor.

b)Fasten the drain plug and press the priming pump several times to see that there is no fuel leakage from the plug.

c)Start the engine to confirm that the indicator does not light up.

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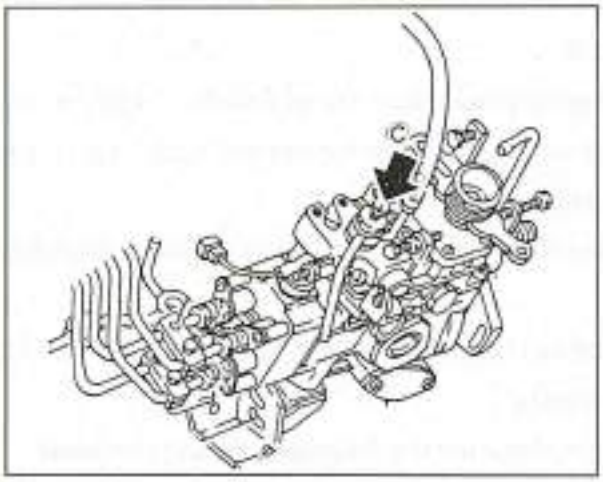
(2)When air-bleeding fuel system

DIESEL



a)Stop the engine and loosen the bleed plug(C) on the injection pump.

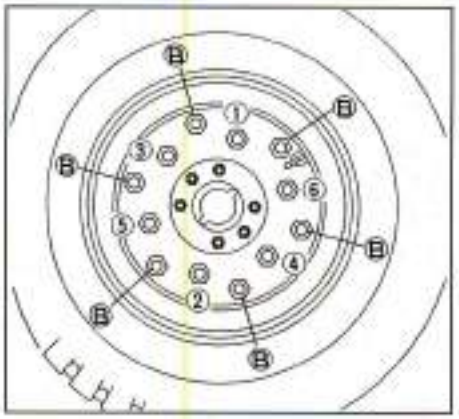
Press the priming pump until fuel coming through the bleed plug contains no bubble.

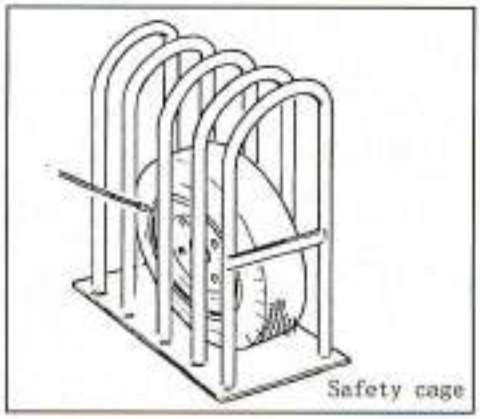
b)Fasten the bleed plug to confirm that there is no fuel leakage from the plug screw.

(3)Replacing fuse

The fuse protects the electric system against overcurrent.Use the specific ampere rating of fuse.Check to see that the components in each circuit are operating properly.If every component in a circuit is not functioning, it is an indication that the corresponding fuse is blown out.Replace the blown fuse with a spare fuse of the same capacity.If a part of the components in the circuit does not function properly,it is suspected that a bulb has burnt out.The burnt bulb should be replaced with new one of the same capacity.

(4)Replacing or repairing tire





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Prepare tools and jack necessary for replacing or repairing tires.

a) Front wheel

·Stop the truck on a level,hard surface and shut down the engine.All loads should be unloaded from the truck.

·Apply the parking brake and block the wheels.Put the jack under the truck frame.

·Jack up the truck to the extent that the tire still remains on the ground.Loosen the hub nuts.Do not remove them.

·Again jack up the truck until the tire leaves off the ground.Remove the hub nuts,and detach the wheel.

·The wheel should be reinstalled in the reverse order:The hub nuts should be tightened in the diagonal order evenly.

After reinstallation,check the tire for proper inflation pressure.

Tire inflation pressure … 700kPa.

b)Rear wheel

Use the same manner as with the front wheel tire repair or replacement except for the position of the jack which goes under the counterweight.

Tire inflation pressure … 700kPa.

4. Preventive Maintenance Service Schedule

This service schedule is worked out on the assumption that the lift truck will be used under typical working conditions. If the lift truck is used under severe working conditions, earlier preventive maintenance services are required.(The black dots in the table means "Replacement".)

G: Gasoline truck D:Diesel truck

ENGINE

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Engine	Visually inspect condition of engine rotation.		○	○	○	○	○
	Check for working noise from engine.		○	○	○	○	○
	Check that exhaust gas has proper-color.		○	○	○	○	○
	Check air cleaner element for dirt and clean.			○	○	●	●
	Check crankcase air breather for dirt and clean(C240 Diesel)				○	○	○
	Check that valve clearance is correct.	Thickness gauge				○	○
	Retighten cylinder head bolt.	Torque wrench		○ All gas engines, for 1st time only			○ C240 diesel only
	Check cylinders for proper compression.	Compression gauge					○
PCV Device	Check metering valve and pipe for clogging or damage (G).					○	○
Governor or Injection Pump	Check no-load maximum rpm.	Tachometer					○
Lubri-cation System	Check for engine oil leak.		○	○	○	○	○
	Check engine oil for level and dirt.		○	○	○	○	○
	Replace engine oil.			● (at initial 25 hrs)	●	●	●
	Replace engine oil filter cartridge.			● (at initial 200 hrs)	●	●	●

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ENGINE

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Fuel System	Visually check for fuel leak from pipe, pump or tank.		○	○	○	○	○
	Check fuel filter for clogging.				○	○	○
	Clean fuel filter(G).				○ (H20)	○ (H20)	● (A15&H20)
	Replace fuel filter cartridge(D).				●	●	●
	Check that injection nozzle has correct inject press and pattern(D).	Nozzle tester				○	○
	Check carbureter link mechanism for looseness or dirt(G).				○	○	○
	Check for ignition timing(G).	Timing light				○	○
	Check for injection timing(D).						○
	Drain off water from fuel tank.				○	○	○
	Clean fuel tank.					○	○
	Check for fuel level.		○	○	○	○	○
Cooling System	Check for coolant level.		○	○	○	○	○
	Check for coolant leak.		○	○	○	○	○
	Check hoses for deterioration.			○	○	○	○
	Check radiator cap for condition and installation.			○	○	○	○
	Clean and change coolant.				●	●	●
	Check fan belt for tension and damage.		○	○	○	○	○

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POWER TRAIN

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Frictional Clutch	Check clutch pedal for free travel and clearance between pedal surface and floor when clutch is unlocked.	Scale	○	○	○	○	○
	Check for noise and operation.		○	○	○	○	○
	Check for slipping and engagement.		○	○	○	○	○
Transm-ission	Check change lever for operation and looseness.			○	○	○	○
	Check for oil leaks.		○	○	○	○	○
	Change oil.					●	●
Torque Converter Transm-ission	Check for oil leaks.		○	○	○	○	○
	Check for oil level,or change oil.			○	○	●	●
	Check change lever for operation and looseness.			○	○	○	○
	Check control valve and clutch for proper operation.		○	○	○	○	○
	Check inching valve for proper operation.		○	○	○	○	○
	Check inching pedal for free travel and pedal travel.		○	○	○	○	○
	Replace line filter element.			● (at initial 200 hrs)		●	●
Front Axle	Check for oil leak.		○	○	○	○	○
	Change oil.					●	●
	Check mounting bolts for looseness.	Test hammer		○	○	○	○

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WHEELS

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Tires	Check for inflation pressure.	Tire gauge	○	○	○	○	○
	Check for cracks or damage.		○	○	○	○	○
	Check for tread wear.	Depth gauge		○	○	○	○
	Check for undue wear.		○	○	○	○	○
	Check for spikes, stones, or foreign matter.			○	○	○	○
Tire Fastners	Check for looseness.	Test hammer	○	○	○	○	○
	Check for damage.		○	○	○	○	○
Rim,Side Ring	Check rim,side ring and disk wheel for damage.		○	○	○	○	○
Wheel Bearing	Check for looseness and noise.			○	○	○	○
	Clean and repack grease.					●	●
Axle	Check axle for deformation,cracks or damage.			○	○	○	○

STEERING SYSTEM

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Steer Handwheel	Check for peripheral play.		○	○	○	○	○
	Check for vertical looseness.		○	○	○	○	○
	Check for sideways looseness.		○	○	○	○	○
	Check for proper operation.		○	○	○	○	○
Steering Gear Box	Check mounting bolts for looseness.			○	○	○	○

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WHEELS

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Knuckle Rear Axle	Check king pins for looseness or damage.			○	○	○	○
	Check for deflection, deformation, cracks or damage.			○	○	○	○
	Check for mounting condition.	Test hammer		○	○	○	○
Power Steering	Check for operation.		○	○	○	○	○
	Check for oil leaks.		○	○	○	○	○
	Check for mounting parts and joints for looseness.			○	○	○	○

BRAKE SYSTEM

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Brake pedal	Check for free travel.		○	○	○	○	○
	Check for pedal travel.	Scale	○	○	○	○	○
	Check for proper operation.		○	○	○	○	○
	Check for air mixed in brake piping.			○	○	○	○
Parking Brake Lever	Check that lever is securely locked and has sufficient lever stroke.		○	○	○	○	○
	Check for proper operation.		○	○	○	○	○
Rod, Cable,etc.	Check for operation.			○	○	○	○
	Check connections for looseness.			○	○	○	○
Hoses and Pipes	Check for damage, leakage or collapse.			○	○	○	○
	Check for loose connections or clamping parts.			○	○	○	○

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BRAKE SYSTEM

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Brake Master Cylinder, Wheel Cylinder	Check for fluid leaks.			○	○	○	○
	Check for fluid level.Change brake fluid.		○	○	○	●	●
	Check master cylinder and wheel cylinders for proper operation.						○
	Check master cylinder and wheel cylinders for fluid leaks or damage.						○
	Check master cylinder piston cup,and check valve for wear or damage.Change.						●
Brake Drum & Brake Shoe	Check drum mounting part for looseness.	Test hammer		○	○	○	○
	Check lining for wear.	Slide calipers					○
	Check brake shoes for proper operation.						○
	Check anchor pin for rust.						○
	Check return spring for deterioration.	Scale					○
	Check automatic clearance adjuster for operation.						○
	Check drum for wear or damage.						○
Back Plate	Check back plate for deformation.						○
	Check for cracks.	Penetrant test					○
	Check mounting parts for looseness.	Test hammer					○

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LOADING SYSTEM

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Fork	Check forks for damage,deformation or wear.		o	o	o	o	o
	Check for stopper pins for damage or wear.				o	o	o
	Check fork base and hook weldings for defective cracks or wear.			o	o	o	o
Mast & Lift Bracket	Check cross members on outer and inner masts for defective weld,cracks or damage.			o	o	o	o
	Check tilt cylinder bracket and mast for defective weld,cracks or damage.			o	o	o	o
	Check outer and inner masts for defective weld,cracks or damage.			o	o	o	o
	Check for defective weld, cracks or damage of lift bracket.			o	o	o	o
	Check roller bearings for looseness.			o	o	o	o
	Check mast support bushings for wear or damage.						o
	Check mast support cap bolts for looseness.	Test hammer		o (for 1st time only)		o	o
	Check lift cylinder tail bolts,piston rod head bolts,U-bolts,and piston head guide bolts for looseness.	Test hammer		o (for 1st time only)		o	o
	Check rollers,roller pins and welded parts for cracks or damage.			o	o	o	o

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LOADING SYSTEM

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Chains & Sheave	Check chains for tension,deformation,damage or rust.		o	o	o	o	o
	Lubrication of chains.			o	o	o	o
	Check connection of chain anchor pin and chain for looseness.			o	o	o	o
	CHeck sheaves for deformation or damage.			o	o	o	o
	Check sheave bearings for looseness.			o	o	o	o
Optional Attachment	Perform general inspection.			o	o	o	o
Cylinders	Check piston rod,rod screw and rod end for looseness, deformation or damage.	Test hammer	o	o	o	o	o
	Check cylinders for proper operation.		o	o	o	o	o
	Check for oil leaks.		o	o	o	o	o
	Check pins and cylinder bushings for wear or damage.			o	o	o	o
Hydraulic Pump	Check hydraulic pump for oil leaks or noise.		o	o	o	o	o
	Check pump drive gear for wear.			o	o	o	o

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HYDRAULIC SYSTEM

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Hydraulic Reservoir	Check for oil level.Change oil.		○	○	○	●	●
	Clean suction strainer. Drain foreign matter.					○	○
Return Filter	Replace return filter.					●	●
Control Lever	Check levers for looseness at link.		○	○	○	○	○
	Check for proper operation.		○	○	○	○	○
Control Valve	Check for oil leaks.		○	○	○	○	○
	Check relief valve and tilt lock valve for proper operation.			○	○	○	○
	Measure relief pressure.	Oil pres.gauge				○	○
Hose, Piping Hose Reel & Swivel Joint	Check for oil leaks,looseness,collapse,deformation and damage.		○	○	○	○	○
	Change hoses.						● (1 or 2 years)

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ELECTRICALS

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Ignition Device (for gasoline truck)	Check distributor cap for crack.				○	○	○
	Check spark plug for burn.						○
	Adjust spark plug clearance.	Plug gap gauge			○	○	○
	Clean spark plug.				○	○	○
	Check distributor cap high-voltage cord for installation.						○
	Check distributor segment for burn.						○
	Check distributor center piece for wear or damage.						○
	Apply grease on shaft,cam heel and breaker fulcrum.				○	○	○
	Check high-voltage cord for breakage.	Tester					○
Starter	Check pinion gear for correct engagement.				○	○	○
Battery	Check battery electrolyte level. Clean battery.			○	○	○	○
	Check specific gravity of electrolyte.	Hydro-meter			○	○	○
Wiring	Check wire harness for damage and clamps for looseness.			○	○	○	○
	Check connections for looseness.				○	○	○

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SAFETY APPARATUS & ACCESSORIES

Checking Item	Service Required	Tools	Daily (8 hrs)	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Overhead Guard & Load Backrest	Check for tight installation.	Test hammer	○	○	○	○	○
	Check for deformation,cracks or damage.		○	○	○	○	○
Turn Signal	Check for proper operation and tight installation.		○	○	○	○	○
Horn	Check for proper operation and tight installation.		○	○	○	○	○
Lights & Lamps	Check for proper operation and tight installation.		○	○	○	○	○
Buck-up Buzzer	Check for proper operation and tight installation.		○	○	○	○	○
Rear View Mirror	Check for dirt or damage.		○	○	○	○	○
	Check for good field of vision.		○	○	○	○	○
Meters	Check meters for proper operation.		○	○	○	○	○
Driver's Seat	Check for damage or loose bolts.					○	○
Body	Check frame and cross members for damage or cracks.						○
	Check for loose rivets or bolts.	Test hammer					○
	Check items repaired in preceding inspection,if any.		○	○	○	○	○
	Inspection general condition of body.						○
Grease-up & Oil Change	After cleaning,check for greased condition of chassis.	Grease pump		○	○	○	○
	Check oil condition of oil and fluid in reservoir.						○

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⚠ CAUTION

·Local refined oils and cooling water, coolant, or anti-freeze do not allow the same operation period designated in this manual. So must be changed more frequently as half or quarter of the designated period in this manual.

·Multi-viscosity oils allow a wider temperature range for operation but must be changed more frequently as the addition that provides the multi-viscosity gradually deteriorates lowering the viscosity. Degradation of viscosity at the higher temperatures can be very detrimental to the hydraulic system.

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NOTE

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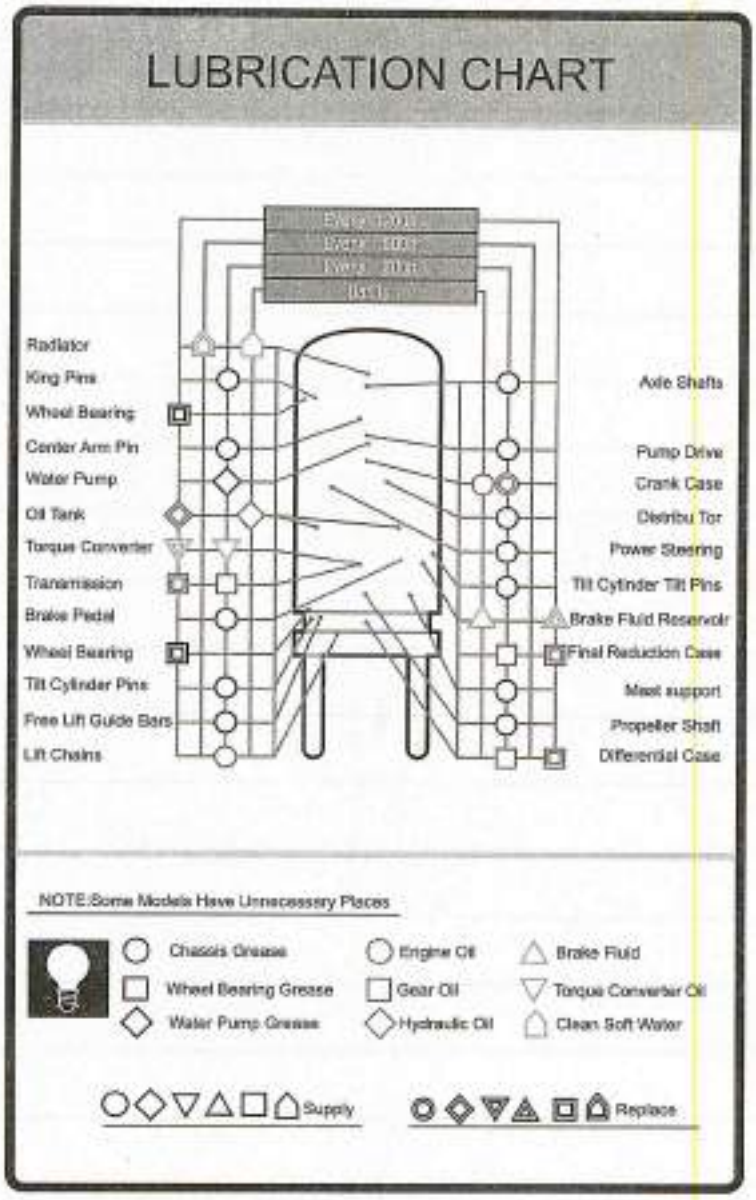
V.Others

1. Lubrication chart



Brand / Product	General Standard	Recommened Temperature	GREAT WALL	MOBIL	SHELL	ESSO
Engine Oils		Assess "Viscosity Gread" according to environment temperature	SF	Abolished	Shell X100	Esso Extra Motor Oil
	API SG		SG	Abolished	Shell Helix	
	API SJ		SJ	Mobil super S		Esso Superflo
			CD	Abolished	Shell Rimula C Diesel Engine Oil	Essolube XT ID
	API CF-4		CF-4	Mobil Delvac Super 1300		Essolube XT2
	API CH-4		CH-4	Mobil Delvac MX	Shell Rimula X Diesel Engine Oil	Essolube XT5
Hydraulic Fluids	ISO 6743/4 L-HM DIN 51524 Ⅱ		Antiwear Hydraulic Fluid L-HM32	Mobil DTE24	Shell Tellus Oil 32	Nuto H32
	ISO 6743/4 L-HV	≥-20℃	Low Temperature Antiwear Hydraulic Fluid L-HV32		Shell Tellus Oil 32	Univis N32
	ISO 6743/4 L-HS	≥-40℃	Low Pour Point Antiwear Hydaulic Fluid L-HS32	Mobil DTE 13M	Shell Tellus T32	
Automatic Transmission Fluid	GM Dexron Ⅲ		ATF-Ⅲ	Mobil ATF	Shell ATF Ⅲ	Esso ATF
Break Fluid	FMVSS 116-DOT3		JG-3	Mobil Super Heavy Duty Break Fluid	Shell Donax B	Esso Brake Fluid (DOT-4)
Greases		-20℃ ~ +120℃	3# General Lithium Grease	Mobilgrease	Shell Retinax Grease	Esso Multipurpose Grease H
		-20℃ ~ +120℃	MoS_2EP Lithium Grease	Mobilgrease XHP 222 Special	Shell Alvania HDX2 Grease	
Coolant Fluid		≥-25℃ ≥-35℃ ≥-45℃	-25℃ -35℃ -45℃	Mobil Coolant	Shell Freeze Guard	Esso Coolant
Automotive Gear Oils	API GL-5 or MIL-L-2105D	-15℃ ~ +49℃	Heavy Duty Automotive Gear Oil 85W/90GL-5	Mobil HD 85W/90GL-5	Shell Spirax A Gear Oila	Esso Gear oil Gx 85W/90GL-5

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Correction measures:

The light diesel oil of different brands should be used for diesel engine according to various atmospheric temperatures and refer to the following table for details:

Atmospheric temperature	Above 0℃	0 ~ -10	-10 ~ 20℃	-20 ~ 30℃
Brand of diesel oil	No.0	No.-10	No.-20	No.35

The fuel oil must maintain a high degree of cleanliness; the fuel oil should be clarified for more than three days and nights before filling in the fuel tank of diesel engine so that the dust and moisture inside the fuel oil are deposited at the bottom, then take the clean fuel oil at the top.

The gasoline brand recommended in the operation instructions of engine or forklift should be chosen for gasoline engine. If there is no clear recommendation, the brand can be chosen according to the compression ratio of gasoline engine. The gasoline engine with high compression ratio should use the gasoline with higher octane value and the gasoline engine with low compression ratio should use the gasoline with lower octane value. The automobile gasoline of No.90 should be chosen for the engine with the compression ratio lower than 7.0, the automobile gasoline of No.90 and No.93 for the engine with the compression ratio between 7.0-8.0 and that of No.93 and No.95 or higher for the engine with the compression ratio larger than 8.0.

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