

TYPHON

Use and maintenance instructions

Battery counterbalanced forklift

TYPH-0601

Declare

The following models of vehicles produced by our company :

CPD full range of forklifts

It is only in specific areas such as factories, tourist attractions, and amusement parks as prescribed by the "Special Equipment Safety Supervision Regulations"

Special motor vehicles used in the field (factory).

caveat

Please do not start, operate or repair the machine until you have read and understood the manual and received regular training. Using the machine under unsafe conditions or improperly may cause serious injury or death. Drivers and maintenance personnel must read this manual and receive training before operating or maintaining the machine. This manual should be kept with the machine for reference. The driver and the personnel in contact with the machine should read this manual repeatedly on a regular basis.

table of Contents

table of Contents.....	1	Causes of fork failure	52
Preface	2	Fork inspection	54
introduction	2	Initial installation	53
Safety	2	Daily inspection	54
Driver safety system (if equipped)	2	12 months testing	54
operating	2	Maintenance and repair	55
maintain	3	Tire inflation information	56
Maintenance cycle	3	Tyre inflation	56
Environmental management.....	3	Tire working pressure.....	56
Product Introduction	3	Adjust the air pressure	56
Important safety information	4	Torque specifications	57
Safety	5	Metric tools	57
Warning sign	5	Standard hose clamp torque-threaded drive belt type ...	56
Parking brake.....	9	Torque of standard screws, nuts and conical locking bolts	57
General hazard information	10	Metric fastener torque	58
Operating data	11	Lubricant specifications.....	58
Avoid forklift overturn	21	Lubricant Information	58
Safety rules	23	Hydraulic oil (HYDO).....	58
How to escape danger when the forklift tipples.....	28	Lubricating Grease (MPGM)	58
Battery	29	Brake fluid	58
Warnings and signs for drivers	30	Lubricant viscosity and oil filling capacity	59
Driver's warning sign	30	Maintenance interval	60
Identification, rated load capacity	30	On-demand maintenance	61
Hood	30	Seat, hood latch and support cylinder – check and lubricate ...	60
Light switch	31	Fuse, light bulb, circuit breaker, relay-replacement, reinstallation	61
Seat switch system (if equipped)	32	Tyres and wheels-inspection, inspection	62
Seat.....	32	Fork sprocket extension-adjustment.....	62
Adjust the steering wheel position	33	100 hours of initial operation and maintenance	63
Forklift control	34	Drive axle transmission gear oil-replacement.....	63
Tilt control	35	Parking brake-test, adjust	64
Before starting the forklift.....	36	Maintenance every 300 hours of operation	65
Detour inspection.....	36	Drive axle oil level-check	65
Forklift operation	37	Main frame, fork frame, chain, attachment-inspection, lubrication	65
Power shift transmission/drive axle	37	Steering mechanism-inspection, lubrication	65
Troubleshooting	38	Battery terminal-cleaning, testing	67
Operation Technology	41	Wheel bolts and nuts-inspection	67
Jogging loading.....	41	Maintenance every 600 hours of operation	68
Lifting cargo	41	Door frame hinge pin-lubrication.....	68
Loaded driving	42	Cross head sprocket-inspection.....	69
Unloading.....	42	Overhead Guard-Inspection.....	70
Turn.....	43	Drive axle gear oil-replacement and cleaning	70
Lifting cylindrical or round objects	44	Steering suspension-check.....	71
Parked forklift.....	45	Parking brake-test, adjust	71
Fork adjustment.....	45	Horn and lights (if equipped) - check	72
Hook type fork.....	46	After-sales service.....	73
Storage requirements	47	Annex	73
Parking a forklift	47		
Long-term storage	47		
Operating the forklift after long-term storage	47		
Transport tips	48		
Forklift shipping.....	48		
About machine hoisting and fixing.....	48		
Lifting the forklift with a crane	49		
How to fix the forklift to the carrier	49		
Traction data	50		
Inspection, maintenance and repair of forks	52		
Environmental protection	52		

Preface

introduction

This manual should be placed in the cab or behind the seat in the storage place.

It includes safety, operation, transportation, lubrication and maintenance information.

The detailed structure and attachments on the photos or illustrations in the manual may be different from your forklift. Sometimes the cover and cover are removed for the convenience of explanation.

This manual does not include changes to forklift products due to continuous improvement and improvement of design. Read and study this manual and bring it with the car.

For questions about forklifts and manuals, please contact our agent for the latest information.

Safety

The safety part lists basic safety protection knowledge. In addition, the content and location of warning signs and warning signs on forklifts are also listed. Before operating a forklift or forklift for lubrication, maintenance, or repair, please read and understand the basic safety protection content in the safety section.

Driver safety system (if equipped)

This manual contains the safety, operation and maintenance information of the TYPHON forklift driver's safety system. Please study carefully and keep it at hand.



Your TYPHON forklift is equipped with a driver safety system. If the seat needs to be replaced for some reason, the entire driver safety system needs to be replaced.

The photos and illustrations can guide the driver to inspect, operate and maintain the TYPHON forklift driver's safety system in accordance with the correct procedures.

The safe and efficient operation of forklifts depends to a large extent on the skills and vigilance of the driver. In order to improve this skill, the driver should read and understand the "Safe Driving Practice" section of this manual.

The forklift will almost never tip over, but once the truck is overturned, the driver may be caught on the ground by the forklift or the roof guard. This may cause serious injury or death.

Driver training and safety warnings are effective ways to avoid accidents, but even so, accidents may still occur. TYPHON's driver safety system can minimize injuries. The TYPHON driver safety system can firmly restrict the driver to the seat between the cab and the roof guard.

This manual contains safe operation information. Before operating the forklift, be sure to obtain and understand the necessary instructions.

operating

The operating part is not only a bibliography for new drivers, but also a review for skilled drivers. This part includes descriptions of instruments, switches, forklift and attachment control, transportation and towing.

The photos and illustrations are used to guide the driver to check, start, operate, and stop the forklift in the correct way.

The operation methods listed in the manual are the most basic. Once the functions and knowledge of the forklift are mastered, the driver's skills and skills will be improved.

maintain

The maintenance part is a guide for equipment maintenance. The maintenance cycle consists of each step of the maintenance details shown in the illustration. Items that do not specify a period are listed under the heading "Maintenance on demand". The maintenance items in "Maintenance Cycle" are detailed below.

Maintenance cycle

Use the maintenance hour meter to determine the maintenance interval. The schedule cycle display (day, week, month, etc.) can replace the maintenance hour meter if the maintenance date and approximate maintenance hours can be displayed more conveniently. Regular maintenance must be performed.

Working in a heavy, dusty, and humid environment may require shortening the lubrication interval specified in the "Maintenance Period".

The previous maintenance project should be repeated. For example, in the case of "500 hours per operation or 3 months of quarterly maintenance", the items required for "250 hours per operation or monthly maintenance" and "10 hours per operation or daily maintenance" should be carried out at the same time.

Environmental management

Note: The company has passed ISO 14001 certification and complies with ISO 9001 standards. Evaluation agencies at home and abroad have conducted regular environmental review and environmental performance evaluation. Life cycle analysis is also carried out throughout the life of the product. The environmental protection management system is designed with environmental considerations at the beginning.

The environmental management system involves environmental laws and regulations, energy saving; environmental product design (low noise, low vibration, no use of heavy metals and ozone-depleting substances); reuse; low consumables and education for employees on environmental protection.

Product Introduction

Forklifts play a very important role in the company's logistics system and are the main force in material handling equipment. It is widely used in various sectors of the national economy such as stations, ports, airports, factories, warehouses, etc. It is an efficient equipment for mechanized loading and unloading, stacking and short-distance transportation. China began manufacturing forklifts in the early 1950s. Especially with the rapid development of China's economy, the material handling of most companies has departed from the original manual handling and replaced it with forklift-based mechanized handling.

Important safety information

Most accidents related to product operation, maintenance, and repair are caused by ignorance of basic safety rules and protection knowledge. Recognizing the potential danger before the accident can often avoid the accident. The driver must be alert to potential dangers, must be trained, master the technology, and correctly understand the functions of the tools used.

Improper operation, lubrication, maintenance or repair of the product may be dangerous and cause injury or death.

After reading and understanding the operation, lubrication, maintenance or repair information, operate the machine and perform lubrication, maintenance or repair work.

Safety warnings are mentioned on the equipment and in the manual. If you do not pay attention to them, it may cause injury or death to you and others.

The danger is indicated by the "safety warning symbol" and the words "warning" shown below.



The meaning of the safety warning signs are as follows:

note! caveat! Danger!

Warning information can be written or illustrated on the machine and this manual.

For operations that may cause damage to the machine, use caution signs on the machine and in this booklet.

It is impossible for our company to list all possible dangerous situations, so the warnings on the machine and this manual do not include all dangers. If a tool, operation process, working method and operation technique are not specified by the company, then you must operate under the condition that the safety of you and others can be guaranteed, and ensure that the operation, lubrication, maintenance and repair methods you choose are used. Will not make the machine damaged or unsafe.

The data, specifications, and illustrations in the manual are the information that can be obtained when this manual is written. Specifications, torque, pressure, measurements, adjustments, illustrations and other items are subject to change. These changes affect the maintenance of the machine. Before doing any work, you must receive the complete and up-to-date information. The agent can provide the latest information.

Safety

Some of the safety rules and regulations in this manual are representative parts of the "Occupational Safety and Health Regulations" (OSHA), but not all of it is extracted from its content, and the method of free translation is adopted instead of copying verbatim.

Please refer to 1910.178 Federal Register 37 Volume 202, National Fire Protection Committee No. 5 05 (NFPA), American National Standard ANSI B56.1 "Safety Standards for Low-Lift and High-Lift Forklift Trucks" and all subsequent amendments to OSHA specifications and regulations as Safety operation specifications for motorized industrial forklifts. As the rules of countries outside the United States are different, forklift operations should be carried out in accordance with local regulations.

TYPHON forklifts are based on EU Directive 98/37/EC and EMC89/336/ Manufactured according to the rules and standards of the EC Directive. Please refer to Directives 89/655/EC and 89/391/EC and their revisions for safe use of TYPHON forklifts.

The most effective way to avoid serious injury or death to the operator and other personnel is that the forklift driver should be familiar with the specific operations of the forklift, and be careful and avoid activities or dangerous conditions that may cause accidents.

It is forbidden to operate the forklift when it needs to be repaired, is malfunctioning or in any unsafe conditions. Report faults and unsafe conditions immediately. Untrained and unauthorized personnel should not make any adjustments and repairs.

Warning signs

There are several special safety signs on your forklift. This section once again describes its exact location and warning of danger. Please take the time to become familiar with these safety signs.

Make sure you can see all safety signs. If you cannot see these characters or icons, you must clean or replace them. Use cloth, water and soap to clean, do not use solvents, gasoline, etc.

If the sign is damaged, lost or cannot be seen clearly, it must be replaced. When replacing, be sure to leave the new sign in place and ask your agent for the new sign.



caveat

Improper operation or maintenance can cause casualties. Do not operate or work on the forklift without training. Please read and understand the operation and maintenance manual.

Supplementary manuals can be provided by TYPHON forklift agents.

Information on the load capacity of forklifts is also provided here.

General warning to the driver



Only trained and authorized personnel can operate this car. For safety, please read and operate this forklift in accordance with the operation and maintenance manual, and pay attention to the following warnings:

1. Before starting, check all controllers and alarm devices.
2. Refer to the load curve label of the machine and do not overload it. When operating a forklift equipped with attachments, the attachments should be regarded as part of the load when not loaded.
3. Before the key switch is turned on, the shift handle should be placed in the neutral position.
4. Start, steering and braking should be stable. Slow down on smooth and uneven roads and when turning. Avoid loose objects and pits on the road. Pay special attention when turning on slopes.
5. When driving under load, lower the cargo as much as possible and tilt backward. If the goods obstruct the view, the vehicle can travel backwards.
6. When operating on a ramp, the load should face the top of the slope.
7. Pay attention to pedestrians and obstacles, and ensure a good front view.
8. It is not allowed to ride on forks or forklifts at any time.
9. No one is allowed to stand or pass under the lifting part of the forklift.
10. Confirm that the road in the operation area can safely support the forklift.
11. Only operate the forklift and attachments in the driver's position.
12. Cannot carry unstable or loose goods.
13. Use the minimum angle of inclination when loading and unloading goods.
14. Be especially careful when handling long, wide or high cargo.
15. The forks should be fully extended under the cargo, and the distance between the forks should be increased as much as possible if the cargo allows.
16. Forklift trucks should be equipped with overhead guards or appropriate protection. When necessary, also equipped with retaining shelves. Be especially careful without these devices.
17. Lower the lifting device to the ground when parking. The reversing handle is placed in the middle position. Set stop/secondary braking. Turn off the "ON-OFF" switch. If the machine is on a slope, plug it with a wedge. Disconnect the battery when storing the electric forklift.
18. When replacing batteries with electric forklifts, safety regulations must be followed.

Do not touch warning



Do not touch. Do not put your hands in this area. Do not touch, lean on, or stretch your hands across the door frame, and do not allow others to do so.

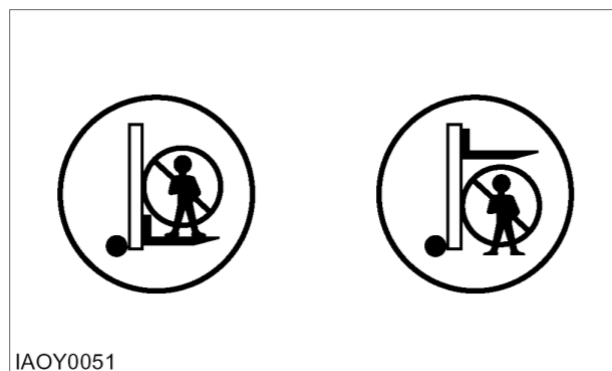


Prohibition of standing on forks warning

Prohibition of standing under the fork warning



Do not stand or sit on the fork. Do not stand or sit on the pallet or cargo of the fork. Do not stand or walk under the forks.



IAOY0051

Located on the lifting cylinder.

The shelf must be warned in the designated position



It is very dangerous if the device is not operated in the designated position.



ILOS004P

Located on the shelf.

Overhead guard must be installed warning



The absence of this device here may be dangerous. The overhead guard conforms to the fourth part of the standard A.N.S.I.B56.1 and F.E.M.

The device has passed the crash test of appropriate value.



Located on the overhead guard.

No manned warning





In order to avoid personal injury, manning is strictly prohibited. Only one driver is allowed on a forklift, and no boarding is allowed.



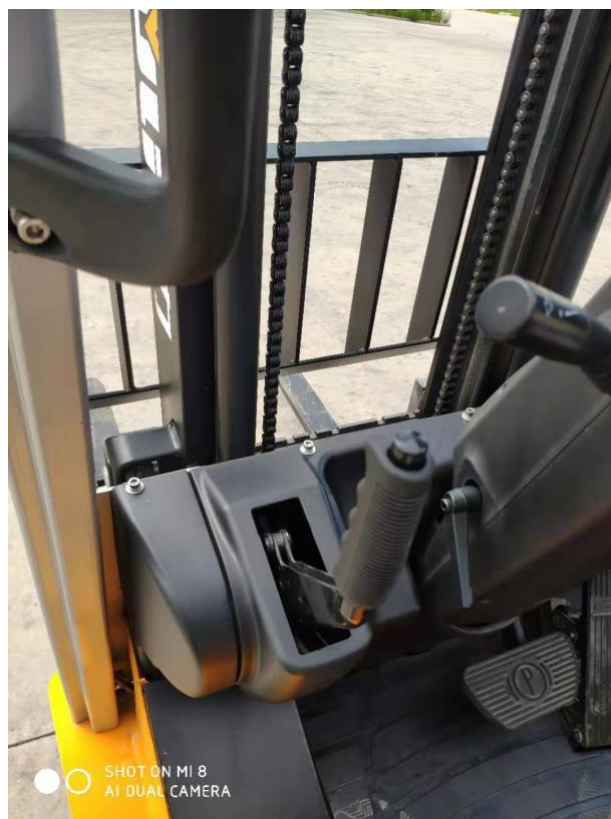
Parkingbrake



 Pull the lever back to apply the parking brake.

 Push the lever forward to release the parking brake.

Pull the hand brake to the rear position and apply the parking brake. The parking brake must be applied when leaving and starting the forklift. If the driver leaves the seat without applying the parking brake, an alarm can be heard. (If equipped)



caveat

When leaving the forklift, apply the parking brake!
The parking brake cannot be applied automatically.
If the parking brake is not applied, an alarm will be heard. (If equipped)



General hazard information



When servicing or repairing the forklift, attach a "no operation" or similar warning label to the start switch or control handle.

Do not start or repair the forklift when there is a "no operation" or similar label attached to the starter switch or joystick.

According to the needs of the working conditions, please wear a safety helmet, protective glasses or other protective equipment.

The driver should understand the width of the forklift's attachments, so that when the forklift is working near fences or around obstacles, they can maintain proper spacing.

It is forbidden to wear loose clothes or wear jewelry to avoid hanging up the forklift controller or other parts.

There must be no debris, oil, tools, or other foreign objects that are not part of the forklift on the forklift, especially on the floor and pedals.

Fix all loose items such as lunch boxes, tools and other items not belonging to the forklift firmly.

The driver should know the sign language on the construction site and know who issued it, and only receive a signal from one person.

Be sure to use the overhead guard, which protects the driver from top obstacles and falling objects.

When the forklift is transporting small items or the load is uneven, it must use the shelf to secure the goods.

If the overhead guard cannot be used due to the small headspace, be very careful when handling it. Confirm that it is impossible to drop objects from any work area or nearby storage yard. Make sure that the goods are stable and are all supported by fork racks or racks (if equipped).

The lifting load should not exceed the required height. After removing the overhead guard, never lift the load above 1830mm (72in).

When the fork frame or attachment can not fully support the load, the shelf must be used. The shelf is used to prevent any part of the load from falling backwards in the driver's position.

When operating a forklift, do not rely on flashing lights or reverse alarms (if available) to warn passers-by.

Always pay attention to pedestrians. Only when pedestrians notice the presence of the forklift and move a certain distance from the forklift or the load, can the forklift be operated.

Do not drive the forklift to the person standing in front of the object.

Obey the traffic rules and warning signs.

The driver's hands, feet, and head should be in the driver's position. Do not hold the overhead guard when operating the forklift. Do not climb any part of the mast and overhead guard, and do not allow other personnel to do so.

Unauthorized persons shall not be allowed to ride on any position of the fork or forklift at any time.

When vehicles are operating in buildings or docks, attention should be paid to the bearing capacity of the ground and the headroom height.

Do not put the curing liquid in glassware.
Use all cleaning solvents carefully.

Do not use steam, solvents or high-pressure gas to clean electronic devices.

Report all items that need repair.



Check the part of the chain that goes around the cross-head sprocket during normal operation. When the chain bends around the sprocket, the movement of the parts against each other will cause wear.

Check and confirm that the chain pin shaft must not protrude from the pin hole.

If any pin protrudes out of the chain, it may break in the hole.

Check the wear of the chain and pin.

If you are not authorized and have received special training, please do not change the factory setting adjustment parameters (including the drive motor revolution/min setting). In particular, safety devices and switches must not be removed or incorrectly adjusted. Incorrect repairs, adjustments and maintenance will lead to dangerous factors during operation.

When carrying out inspection, repair, adjustment, maintenance and any other work related to your forklift, please contact our agent. We must remind you that if there is any secondary injury caused by improper operation, insufficient maintenance, wrong repair or the use of other components other than this spare component, we are not responsible for this.

Operating data

On and off

Get on and off the car carefully.

Clean your shoes and hands before getting on the bus.

Get on and off with both hands firmly and facing the forklift.

Hold the armrest when getting in and out of the car.

Do not get on or off the car while holding tools or other objects.

When entering or leaving the driver's position, do not use any handles or the like.

Never get on or off while the forklift is in motion.
Never jump off a forklift.

Avoid getting slippery substances on your hands and steering wheel.

Before using the forklift

Carry out a "detour" inspection every day and before the start of each shift. Refer to the "Walking Inspection" in the "10 hours per operation or daily maintenance" section of the manual.

Adjust the seat so that the driver always leans against the seat back when stepping on the pedals. Confirm that the forklift has been equipped with the lighting system according to the required conditions.

Confirm that all hydraulic control handles are in the locked position.

Confirm that the reversing handle is in mid-range.

Confirm that the parking brake has been applied.

Before starting or driving the forklift, make sure that no one is standing and/or working on the forklift, near the forklift, and under the forklift.

Only in the driver's position can the forklift be operated and controlled.

Safety part

Confirm that forklift horns, lamps, reversing warning lights (if equipped) and other facilities are working properly.

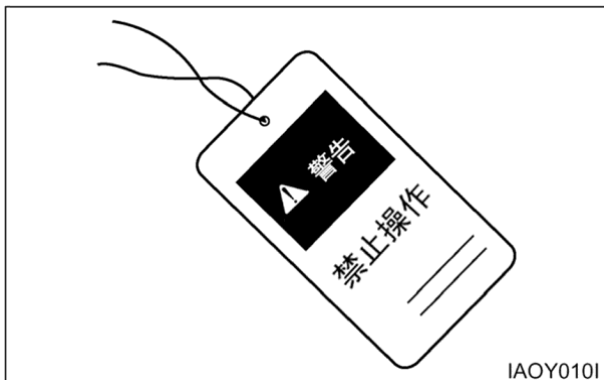
Check that the mast and attachments are in proper operating conditions. Pay special attention to abnormal noises and abnormal movements that show problems.

Check whether the service and parking brake, steering gear, and reversing handle are normal.

Make sure that all personnel leave the forklift and driving directions.

Please refer to the "Forklift Operation" instructions in the "Operation Part" of this manual for detailed starting instructions.

Start the forklift



It is not allowed to start the forklift or move any control handle when the start switch or the control handle is attached with a "no operation" or similar label.

Before operating the forklift

Check whether the brakes, steering handles, horns and other facilities are working properly. Report all malfunctioning items and do not operate the forklift until the repair is completed.

Understand the working principle of your forklift, its safety equipment, and the role of attachments. Before operating the forklift, check around the truck. Keep steady when starting, turning and braking.

The driver must always check whether the forklift is working properly.

Operating a forklift

Be sure to keep the forklift in a controllable state.

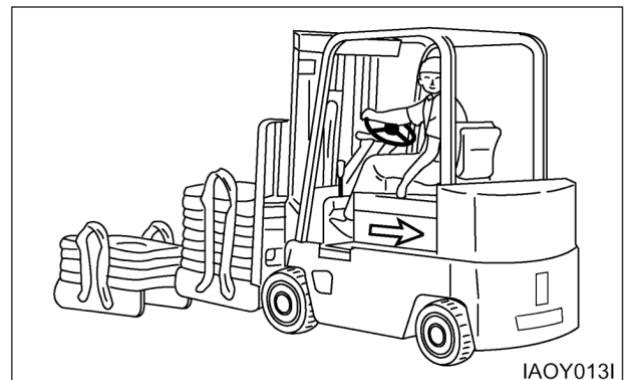
Obey the traffic rules and warning signs.

Never leave the forklift when the drive motor is running or when the parking brake is not applied.

Regardless of whether there is a load, the mast needs to be lowered before turning or driving, otherwise it will cause the car to roll over. Pay attention to obstacles above the overhead guard.

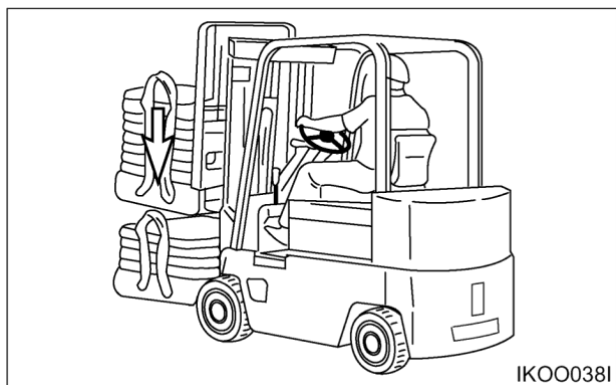
Attention should be paid to the bearing capacity of the ground and the headroom height.

Start, turn, and brake should be stable, and slow down when driving on turning, ramps, and smooth or uneven roads.



Be especially careful when driving on a ramp. Do not turn on a ramp or walk at an angle. Do not use the forklift on smooth ramps. When driving without load, the forks should face downhill, and when there is a load, they should face uphill.

Do not overload or carry offset, unstable and loosely stacked goods. Refer to the load curve label of the forklift. Be especially careful when handling suspended, ultra-long, ultra-wide, and ultra-high cargo.



Only in the unloading area, when the load is lifted, can the load be tilted forward and the load should be reduced as much as possible.

Stunt driving and playing are not allowed.

Observe and keep a clear view of the driving route at all times.

If the goods or accessories block the line of sight, you can drive in the reverse direction. If the line of sight is blocked, be especially careful.

The forklift should be parked on the designated driving route, and far away from the edge of the dock, ditch, steep slope and road surface that cannot safely support the forklift.

Slow down and be especially careful when passing through doorways, intersections, and other venues with poor visibility.

When passing through passages, corners, slopes, pits, uneven or smooth roads, or areas with heavy traffic, slow down to avoid pedestrians, other vehicles, obstacles, pits, or other dangerous objects on the driving route.

Except when operating conditions do not allow it, the overhead guard should always be used. Do not operate the forklift when there is no overhead guard and the load stack is high.

When stacking, pay attention to observing falling objects, and use retaining shelves and overhead guards.

Refer to the "Operation Technical Requirements" item in the "Operation Part" of this manual.

Loading and unloading on vehicles/trailers

It is strictly forbidden to operate forklifts on vehicles or trailers that are not allowed to operate forklifts.

Before driving onto the vehicle or trailer, confirm that the vehicle or trailer is braked and the wheels are wedged (or confirm that the unit is fixed on the loading platform).

If the trailer is not connected to the tractor, make sure that the trailer anchoring device has been clamped in place. Some trailers require additional support to prevent tipping or local sinking.

Confirm that the platform platform is in good condition and in an appropriate position, and is firmly fixed. Do not exceed the rated load capacity of the platform slab or bridge slab.

Forklift parking

When leaving the driver's position, park the forklift at the designated location and do not block the traffic.

- Park the forklift horizontally with the forks lowered, the mast tilted forward, and the fork tips hit the ground.
- The reversing control handle is placed in the middle.
- Apply the parking brake.
- Turn off the key switch and remove the key.
- Place the emergency stop switch in the "OFF" position (if equipped).
- Wedge the driving wheels when the forklift is parked on a slope.

Safety part

If there is no other situation, please follow the steps below to maintain the vehicle:

- Forklift trucks can only be parked in designated areas.
- Park the forklift horizontally. The forks are all lowered, the mast is tilted forward, and the fork tips touch the ground.
- The reversing handle is placed in the middle gear.
- Apply the parking brake.
- Turn off the key switch.
- Remove the key and place the emergency stop switch in the "OFF" position (if installed).
- Wedge the driving wheels when the forklift is parked on a slope.

Compressed air

Compressed air can cause injuries. Wear a protective mask, protective clothing and protective shoes when cleaning with compressed air.

The maximum pressure of compressed air for cleaning must be lower than 205kPa (30psi).

Liquid leakage

Use wooden boards or cardboard to check for leakage. Leaking liquid under pressure, even if it leaks from a small hole, can enter the human body and cause serious injury or even death. If fluid gets into your body, it must be treated immediately by a doctor familiar with such injuries.

Extrusion or cutting prevention

When working on and under the equipment, properly support them and their attachments. Do not rely on hydraulic cylinders for support. If the control lever moves or the hydraulic tubing breaks, any attachment may fall.

Unless otherwise specified, adjustments are not allowed when the forklift is moving or the motor is running.

In areas with linked equipment, the gap in the linked area increases or decreases as the equipment moves.

Keep a certain distance from all rotating and sports equipment.

Do not use knotted or frayed cables, and use gloves to extract the cables.

When the positioning pin is struck hard, fragments and iron filings may fly out and cause injury to nearby personnel. Make sure that there are no other people around before hitting the positioning pin.

When hitting the positioning pin hard, wear protective goggles to avoid eye damage.

Debris and iron filings may fly out when hitting an object. Make sure that no one will be injured by the flying debris before striking any object.

Falling Body Protection Structure (FOPS)

The overhead guard is an accessory device located above the cab to protect the forklift.

In order to prevent the function of the Falling Body Protective Structure (FOPS) from being weakened, please consult our agent before adding weight, welding, cutting or drilling on the overhead guard.

The overhead guard cannot protect all possible shocks. It cannot withstand objects that penetrate the driver's position from the side or end of the forklift.

Forklifts are usually equipped with standard overhead guards. Any accidents caused by changes that are not expressly authorized by this are not within the scope of this responsibility. Do not weld brackets or drill holes to install fire extinguishers, first aid kits, lamps, etc. on the roof guard. Consult your agent for installation instructions.

Burn prevention

Hydraulic oil

Hot oil and hot parts can cause personal injury. Do not let hot oil or parts come into contact with the skin.

At operating temperature, the hydraulic oil tank is hot and under pressure.

Slowly unscrew the hydraulic oil tank filler cap to release the pressure.

Before disconnecting or removing any pipes, components or related parts, release the air pressure, oil pressure, or cooling system pressure.

Battery

Batteries can volatilize flammable gases that cause explosions.

Do not smoke when checking the battery electrolyte level.

The electrolyte is acid, and if it comes in contact with the skin or eyes, it will cause personal injury.

Wear protective glasses when handling batteries.

Prevent fire or explosion

Most lubricants and coolants and batteries are flammable.

Do not smoke in areas where the battery is replaced or where flammable materials are stored.

The batteries of the battery pack can be placed separately. When using a jumper cable, connect the positive (+) wire of the positive (+) terminal of the battery to the starter relay. And connect the negative (-) wire pulled from the outside to the negative (-) terminal of the starter.

See the operating section of this manual for special startup instructions.

Clean and tighten all electrical connections. Check the wire for looseness and wear every day. Before forklift operation, repair or replace all loosely tightened and worn wires.

Store all lubricants in marked appliances and keep them away from unauthorized personnel.

Put all tarpaulins or other flammable materials in protective equipment in a safe place.

Do not weld or gas cut pipelines containing flammable liquids. After cleaning with flame retardant solvent, welding or gas cutting.

Remove fuel, oil and other flammable debris before they accumulate on the forklift.

Try not to place the forklift in an environment such as smoke or burning.

Do not operate the forklift in places where there is or may be explosive gas.

Pipes, hoses and hoses

Do not bend or knock high-pressure pipelines. Do not use bent or damaged high-pressure pipes, hoses and hoses.

Repair loose or damaged oil circuits, hoses and hoses. Leakage can cause fire. Contact our agent for repair or replacement.

Check the pipes, hoses and hoses carefully. Do not use your bare hands to check for leaks. Use wood or cardboard to check for leaks. For details, see the "liquid leakage" instructions in the safety section. Tighten all couplings to the specified torque. Find out the following situations in time.

Damaged or leaking joints.

The outer layer is worn and cut, and the metal layer is exposed.

Local uplift of the outer layer.

The hose is obviously twisted or broken.

The protective layer is laminated into the outer layer of the hose.

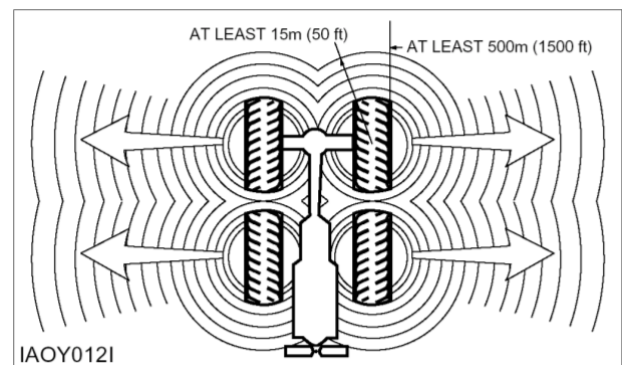
The joint has been displaced.

Make sure that all clips, guards, or heat insulation layers are installed correctly to prevent vibration during operation and wear with other parts to generate excessive heat.

Tire information

The heat generated by the combustion of the gas in the tire causes the tire to explode. The heat generated by welding or gas cutting steel ring components, external flames, and excessive use of brakes can all cause the overheated gas to burn.

A tire explosion is much more violent than a flat tire. The explosion can blow up tires, steel rims and driving components 500m (1500ft) or more away from the forklift. Explosive force and flying debris can cause casualties and property damage.



Do not enter the area around the tire as shown in the picture above.

It is recommended to use dry nitrogen (N₂) to inflate the tires. Even if the tire is originally filled with air, nitrogen is preferred to adjust the pressure. Nitrogen and air can be mixed appropriately.

Since nitrogen is not easy to burn, tires filled with nitrogen will reduce the risk of tire explosion. At the same time, nitrogen helps prevent oxidation and the resulting rubber aging and steel ring corrosion.

In order to avoid over-inflation, proper nitrogen inflation equipment and necessary training should be provided. Improper use or abuse of the equipment can cause tire flattening or failure of steel rims.

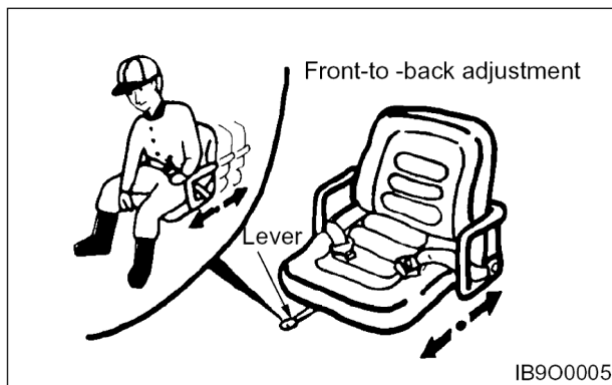
Inflate the tire, stand behind the tire and use a self-locking card seat.

Maintenance and replacement of tires and steel rims may be dangerous. This work can only be carried out by trained personnel using appropriate tools and appropriate procedures. If the correct procedures are not followed when servicing tires and rims, the components may suddenly explode and cause serious personal injury or death. You should carefully follow the detailed information provided by the tire or rim service provider or dealer.

Safety part

Operator safety system (if equipped)

Seat adjustment



Move the handle, adjust the seat to the desired position, and then release the handle. Adjust the seat before operating the forklift. After adjusting, shake the seat to see if it is properly secured. Do not adjust the seat while the forklift is in operation.

caveat

Do not put your hands or fingers under the seat, as the seat will cause serious injury to your opponent when the seat moves up and down.

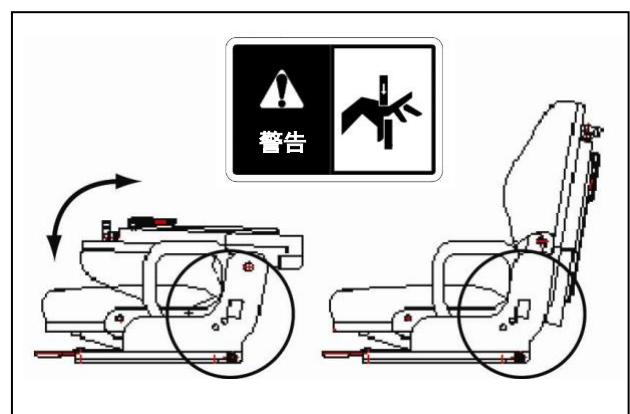
note

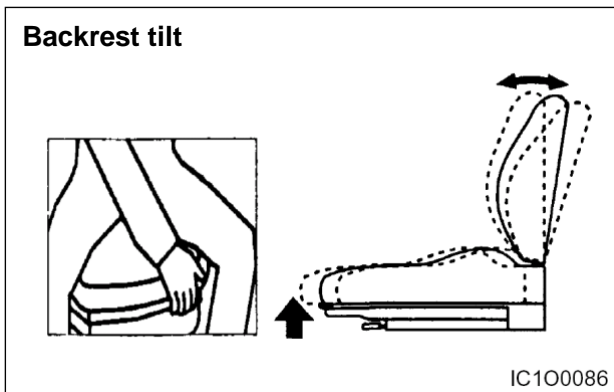
Before entering the forklift, use clamps to adjust the suspension height of the seat at the rear of the seat (if equipped).



caveat

When raising or lowering the seat back, please do not put your hands or fingers on the hinge area shown in the circle in the figure to avoid injury.



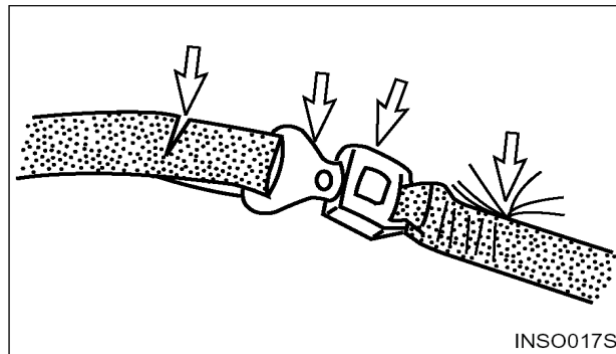


seat belt

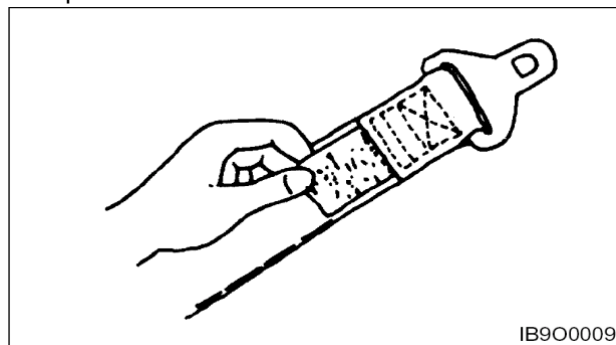
The driver's safety system can prevent the driver from bouncing off the cab when the forklift is tilted forward or sideways.

The function of this system design is to fix the driver on the seat in the operating room when the car rolls over.

Detect



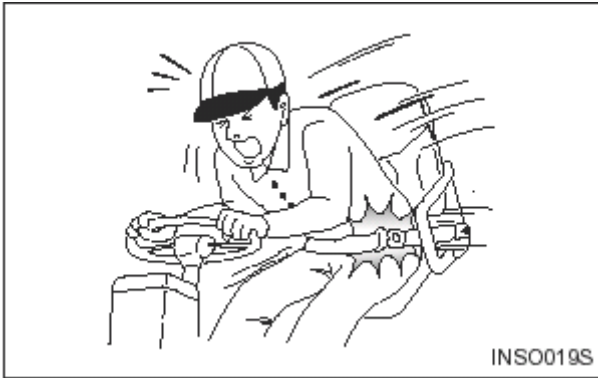
1. If the seat belt is cracked, or jammed when the seat belt is stretched out, or the seat belt cannot be inserted into the buckle normally, please replace the entire seat belt.



2. Seat belt maintenance-maintenance every 500 hours of operation. Check whether the fasteners of the seat belt are in good condition, and the winding part will not be twisted when yanked. Check whether the seat belt is properly fastened to the seat. Check that the seat is secure and safe between the hood and the chassis. When performing visual inspection, confirm that the fasteners must be intact, otherwise please contact the safety management personnel.

⚠ caveat

Your TYPHON forklift is equipped with a TYPHON driver safety system. If the seat needs to be replaced for some reason, another set of TYPHON operator safety system should be replaced at the same time.



3. If the vehicle is overturned, check the seat and safety system for damage. If necessary, replace it.

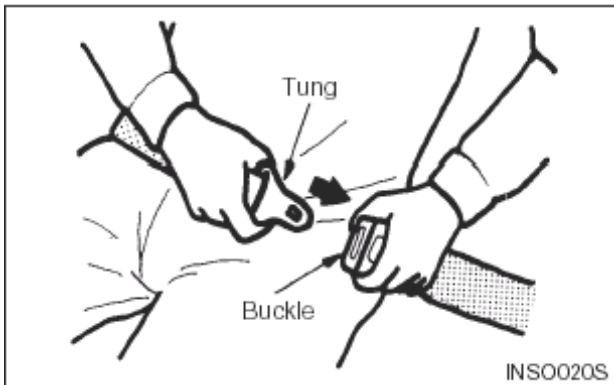
Note: The driver's safety system inspection should be included in the regular maintenance of the forklift. If the following conditions are found, it is recommended to replace the safety system.

The seat belt is cracked or worn. The parts including the fixing pin are worn or damaged. The buckle or the shell fails. Loosen the suture

⚠ caveat

The seat belt may cause the driver to bend over. If you are pregnant or have abdominal problems, please consult your doctor before operating the forklift.

Fasten seat belt

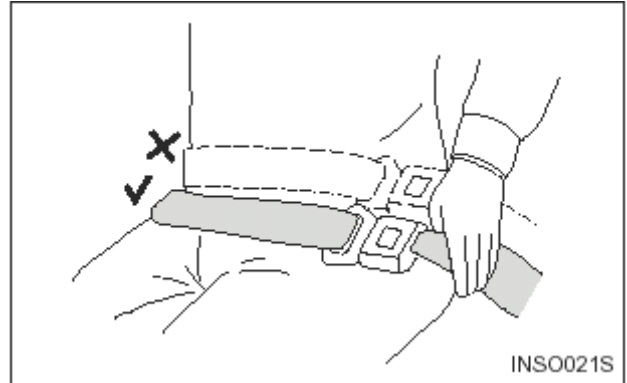


1. Hold the buckle (connection) of the seat belt, and then pull the seat belt out of the shell. Then insert the belt clip into the buckle until you hear a pop. Pull the seat belt to make sure it is locked.

2. Make sure that the seat belt is not twisted.

⚠ caveat

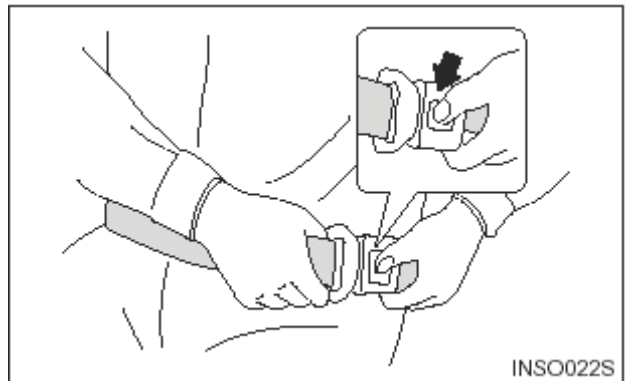
If you fasten your seat belt to your abdomen, you may cause abdominal injury in the event of an accident.



3. Make sure to attach the seat belt to your hips, not your abdomen.

Note: The seat belt can automatically adjust to suit your size and operation. In the event of an accident, when the seat belt is suddenly tightened, the automatic adjuster will pull the seat belt back.

Loosen the seat belt



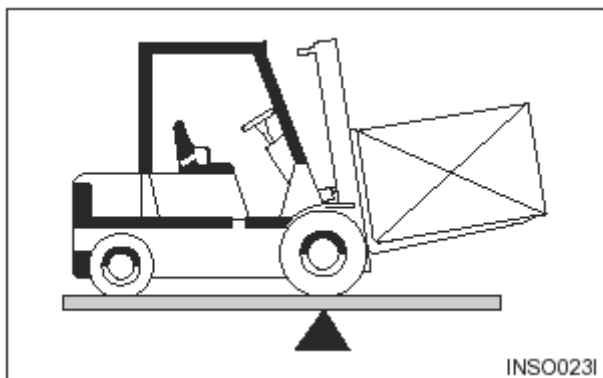
Press the button on the buckle to release the seat belt.

The seat belt should retract automatically when released.

Grasp the seat belt connector and let the seat belt retract automatically.

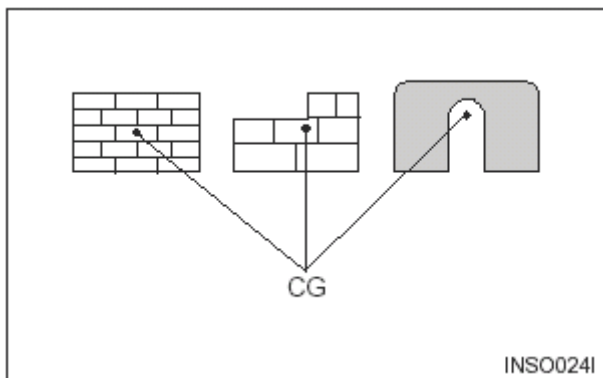
Avoid forklift overturn

Forklift stability



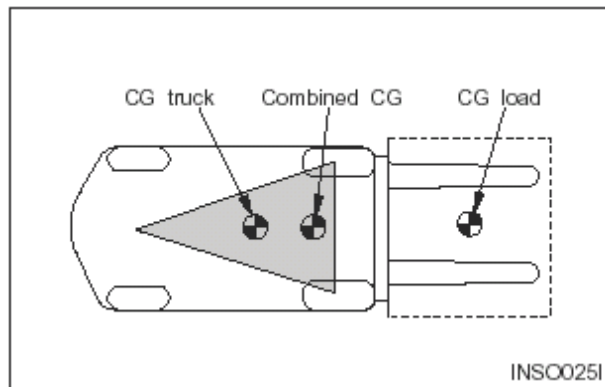
The balance design principle of forklifts is to maintain the balance of weight in opposite directions on both sides of the fulcrum (front axle). The weight of the cargo on the fork must be balanced with the weight of the forklift. The central location of the forklift and the cargo is an important factor. This is the basic principle of lifting goods. The lifting capacity of the forklift depends on the center of gravity and the front and the horizontal and vertical balance of the forklift.

Center of gravity (CG)



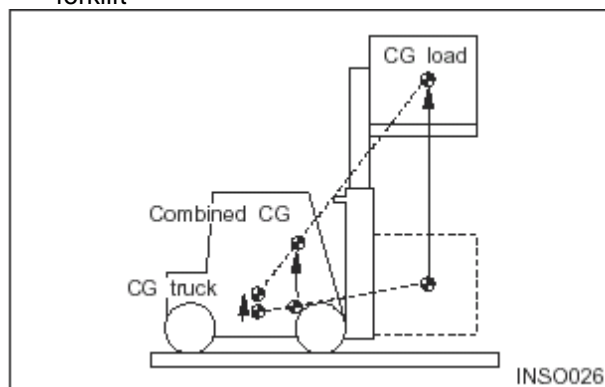
A point within an object can be regarded as a point where the weight of the entire object is concentrated, and is called the center of gravity or CG. If the object is of regular shape, then its geometric center coincides with the center of gravity. If it is irregularly shaped, the center of gravity may be outside the object. When the forklift lifts the goods, the forklift and the goods have a new composite center of gravity.

Stability and center of gravity



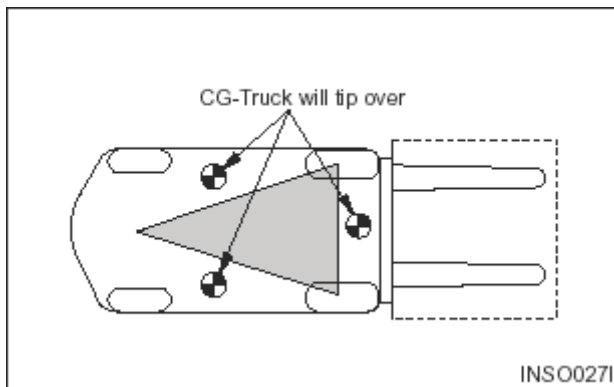
The stability of the forklift is determined by the position of the center of gravity; if the forklift lifts the goods, it is determined by the combined center of gravity of the forklift and the goods. The forklift has movable parts, so its center of gravity is also mobile. When the mast tilts forward or backward, the center of gravity of the forklift also moves forward or backward. When the mast moves up or down, the center of gravity of the forklift also moves up or down. Therefore, the center of gravity and stability of forklifts that are lifting goods are affected by the following factors:

- The size, weight, shape and location of the cargo
- The height of the goods being lifted
- Angle of inclination forward or backward
- Tire pressure
- The power generated when a forklift is accelerating, braking or turning
- Road conditions and slope when operating the forklift



These factors are equally important for forklifts that are not loaded. They are more likely to tip over on both sides than forklifts loaded with low-position goods.

Basic stable area of forklift

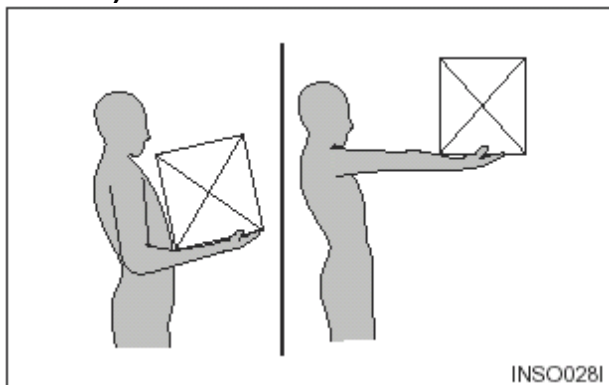


In order to keep the forklift stable (not tip over to the front or on both sides), the center of gravity must be maintained in the basic stable area of the forklift—the triangular area between the forklift's front wheel and the steering wheel pivot. If the center of gravity is moved in front of the front axle, the forklift will roll forward. If the center of gravity moves to the outside of the two sides of the stable area, the forklift will roll over to both sides.



The power (brake, acceleration, steering) of the forklift will also affect the stability, and even when the center of gravity is in the stable triangle area, it may also cause the vehicle to roll over.

Rated load (weight and load center distance)



The rated load capacity of the forklift is written on the load curve plate of the forklift. It is related to weight and loading center distance. The load center of gravity of the cargo is determined by the position of the center of gravity of the cargo.

The load center shown on the nameplate is the horizontal distance between the vertical section of

the fork or the load-bearing surface of the attachment and the center of the cargo. The position of the center of gravity in the vertical direction is the same as the horizontal scale.

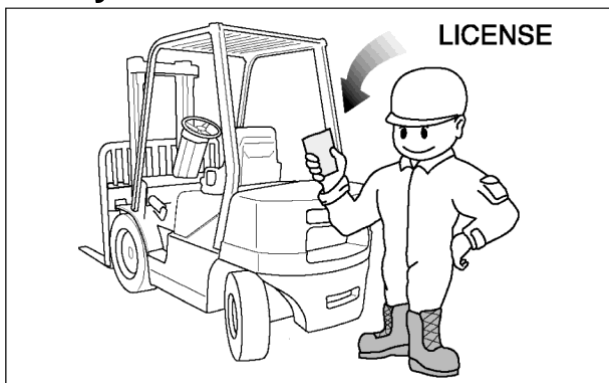
Please keep in mind that, unless otherwise specified, the rated load capacity shown on the nameplate is for standard forklifts equipped with standard backrests, forks and masts, and without special attachments. In addition, the premise of meeting the rated load capacity is that the distance between the load center and the top of the fork cannot be greater than the distance between it and the backrest surface. If these conditions are not met, the driver must reduce the safe operation load, because the stability of the forklift may be reduced. If the load curve plate of the forklift does not indicate the rated load capacity, it cannot be operated.

Note: If the shape of the cargo is irregular, the heaviest end should be placed on the side near the backrest and in the center of the fork.

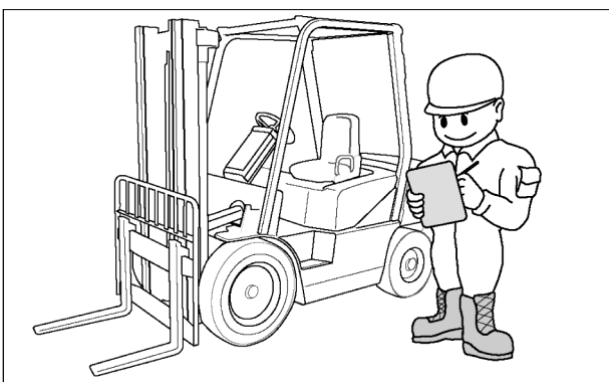
note

- 1. The load curve plate attached to the factory of TYPHON forklift cannot be removed, changed or replaced without this permission.**
 - 2. This is not responsible for forklifts without TYPHON nameplates that are put into use.**
 - 3. If it is necessary to replace your manual, please contact TYPHON forklift agent.**
-

Safetyrules



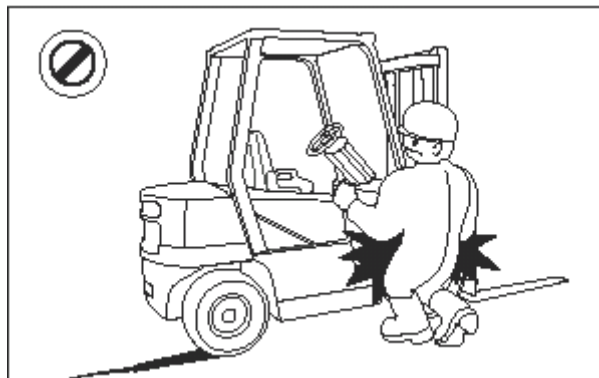
The forklift can only be operated by officially trained and authorized personnel. Wear a safety helmet and protective shoes when operating the forklift. Don't wear loose clothes.



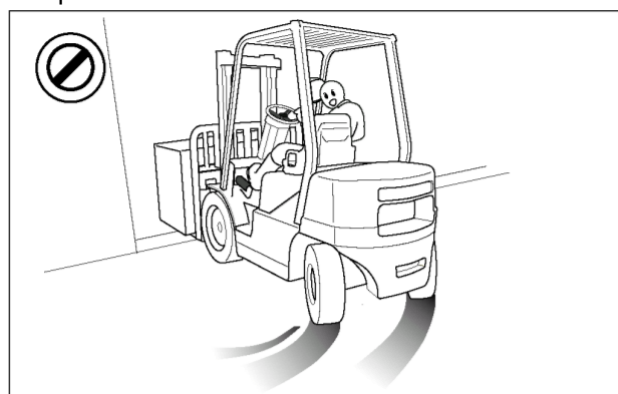
Before operating the forklift, refer to the operator's inspection schedule to inspect and inspect the forklift. If an obvious fault is found or needs repair, report it to the supervisor immediately.



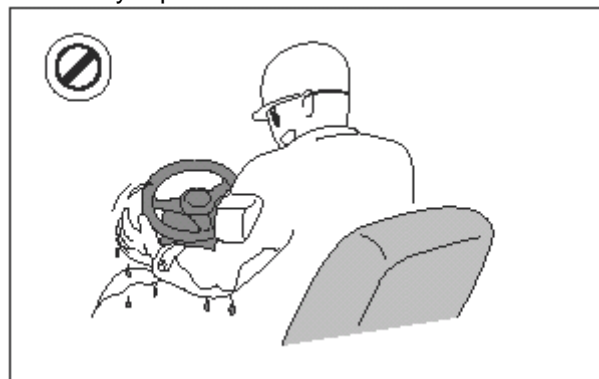
Only operate the forklift in the designated area. To understand your forklift, be aware of safety. Don't ignore security issues. Follow all safety rules and understand all warning symbols.



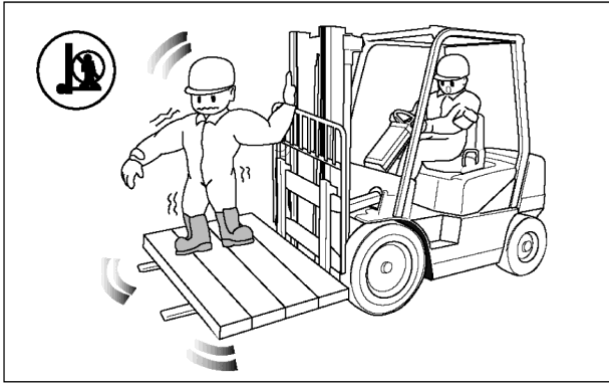
Only operate the forklift from the driver's seat. Keep all parts of the body in the driver's operating area. Do not let hands and feet touch the door frame components.



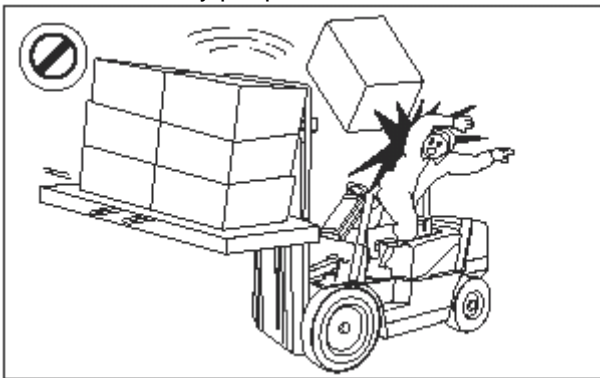
Do not start, stop, turn or change directions suddenly, and do not drive the forklift at high speed. Sudden movement can cause the forklift to tip over. When approaching corners, exits, and entrances, reduce the speed of the forklift and honk the horn. If the forklift is equipped with a steering knob, do not operate the knob vigorously to avoid accidents caused by rapid rotation.



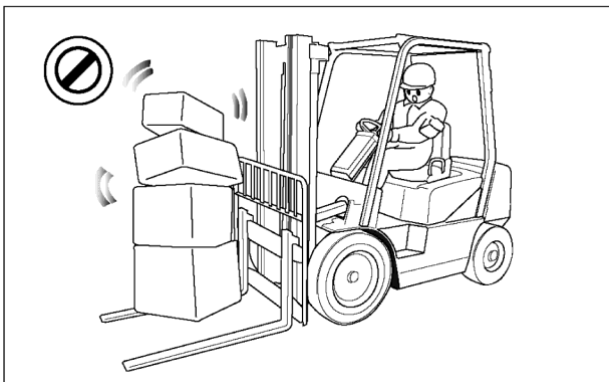
Never operate the forklift when your hands or shoes are wet. Never operate the handle when you have grease on your hands. Doing so can prevent the hands or feet from slipping off the operating position and avoid accidents.



Unless an approved safety lift is used, a fork cannot be used to lift a person. Do not let other people stand on the forklift. Forklifts are used to transport loads, not to carry people.



Do not operate forklifts without racks and overhead guards. Tilt the door frame backwards so that the load rests on the shelf.



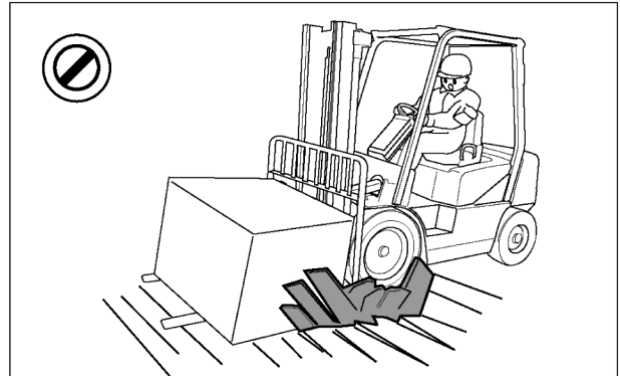
Do not lift or move unsafe loads. Do not pick up and place irregular loads to prevent the forklift from tipping sideways. Make sure that the load is stably stacked and placed on two forks. Be sure to use an appropriately sized pallet. The forks should be as wide as possible. Pick up the load steadily and maintain balance. Do not use a fork to pick up the load.



Don't overload. Do not exceed the regulations of the load curve label on the forklift.

Do not attach additional counterweights to the forklift.

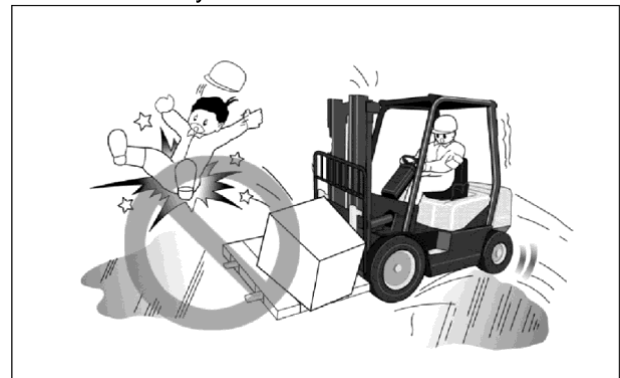
Overloading can cause the forklift to roll over, causing personal injury and damage to the forklift.



Do not drive the forklift on soft ground.

Observe the regulations, especially the relevant regulations on the maximum load-bearing capacity of the floor, the load-bearing capacity of the lift and the clearance height.

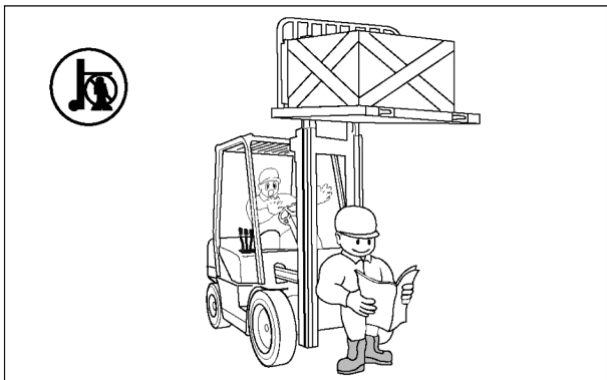
Handle the load carefully and check its stability and balance carefully.



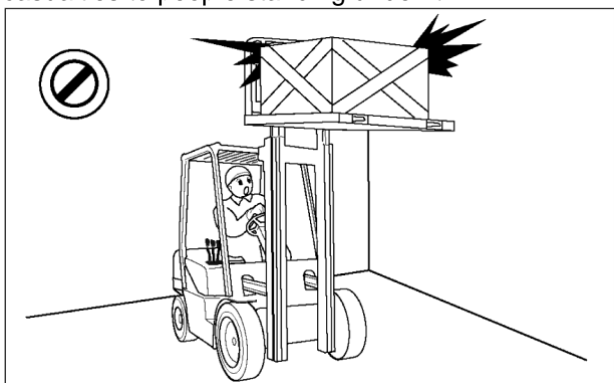
Do not drive on slippery roads.

Sand, gravel, ice or mud can cause the forklift to tip over.

If it cannot be avoided, drive at a reduced speed.



Do not allow anyone to stand or pass under the load or lifting device. The load may fall and cause casualties to people standing under it.



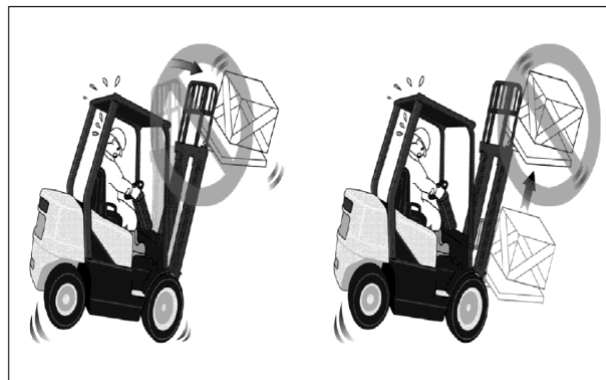
Pay attention to obstacles overhead when lifting or stacking loads. Do not drive the forklift when the load is raised. Do not drive the forklift when the mast is raised. The forklift may roll over and cause injury to the driver or other personnel.



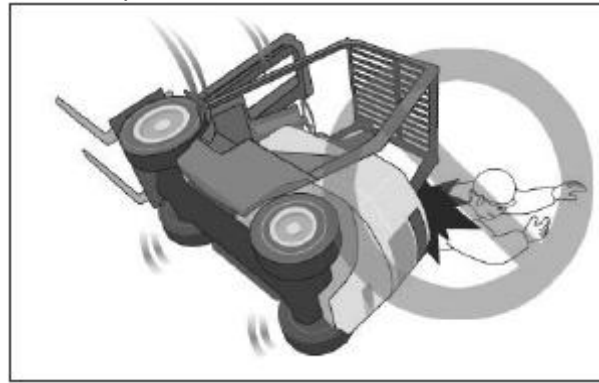
Do not move the loose load higher than the shelf. Be vigilant when stacking loads and don't let them fall.

Tilt the load backwards while driving and keep the fork as low as possible.

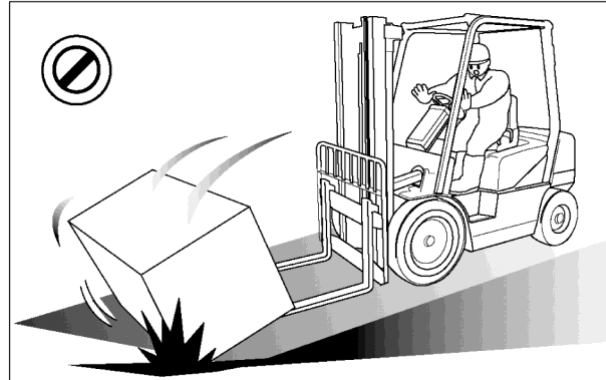
This will increase the stability of the forklift and the load and make the vision clearer.



Do not lift the load when the mast is tilted forward. Do not tilt the raised load forward. This will tip the forklift forward.



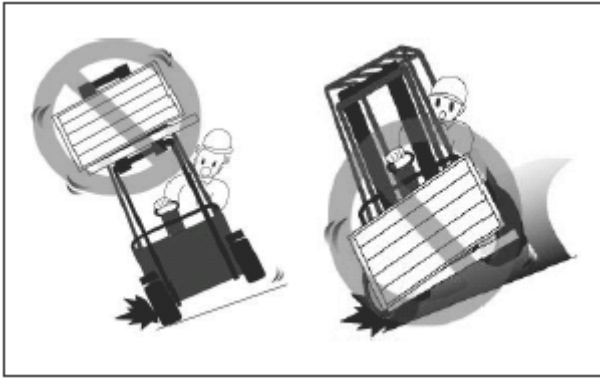
Do not jump off the forklift when it starts to tip over. Stay on the seat for escape.



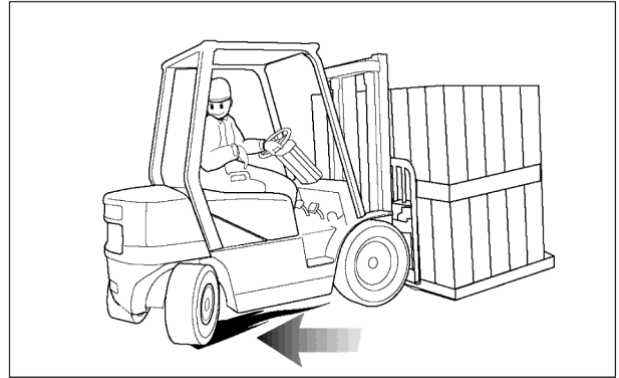
When the vehicle is driving on a slope, the load should face the top of the slope.

Do not lift the load on the ramp. Go straight. Use auxiliary tools when carrying heavy loads up and down the ramp.

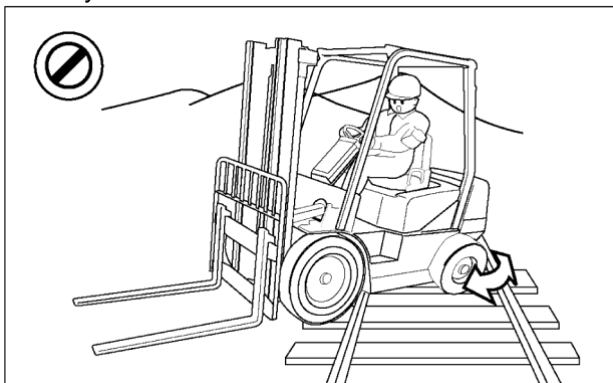
Safety part



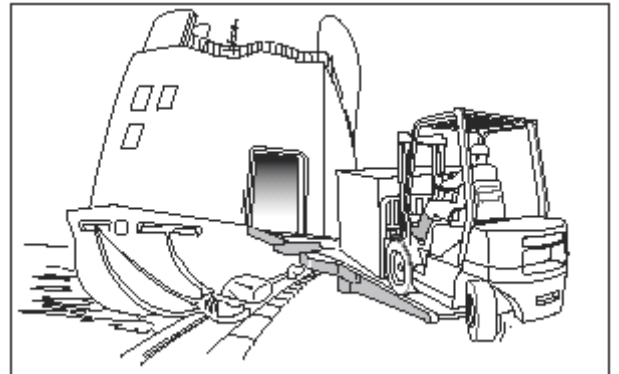
Do not stack loads or turn on the ramp.
Do not attempt to fork or lower the load when the forklift is unstable. Do not turn on the ramp or drive sideways.



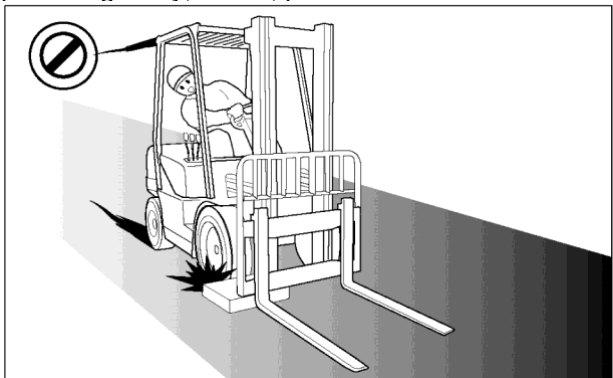
Do not drive forward when the load obstructs the view. If you are not driving on a ramp, drive backwards for a clear view.



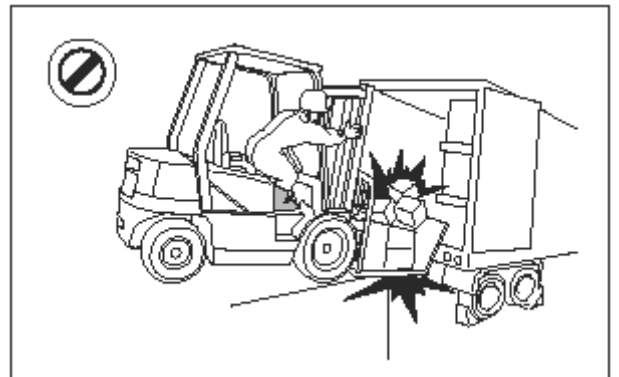
Don't drive on rough roads. If it cannot be avoided, slow down.
When passing railroad tracks, drive slowly and diagonally. A loaded forklift may shake when it passes the rails. In order to pass more smoothly, pass diagonally, that is, pass one wheel at a time.



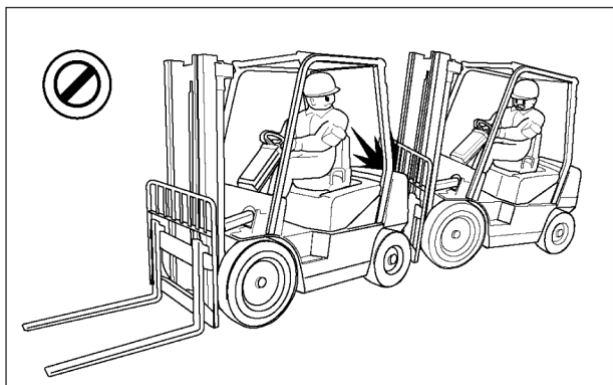
Be careful when operating the forklift on the edge of the dock or on a ramp.
Keep a safe distance from the edge of the pier, ramps and platforms.
Be careful not to let the tail sway.
The forklift may fall from the edge and cause casualties.



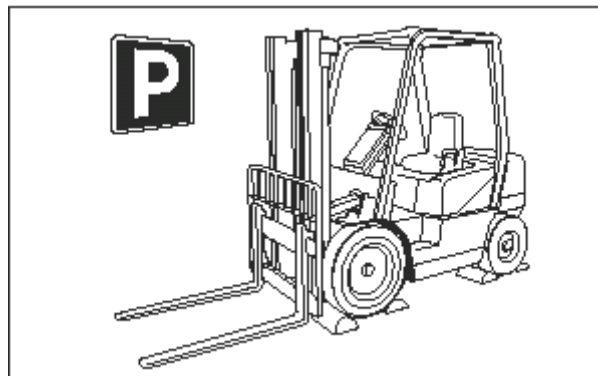
Avoid driving over loose objects.
Pay attention to the direction of travel. Pay attention to pedestrians and obstacles in the direction of travel.
The driver must be able to fully control the forklift at any time.



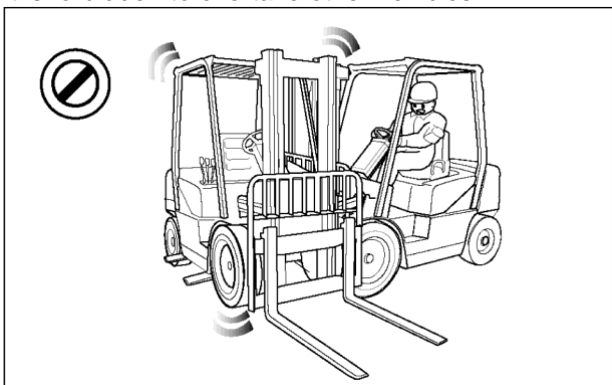
If the bridge cannot support the forklift and its load, do not operate the forklift on the bridge.
Make sure that the positions of all parts are correct.
Wedge the forklift to prevent it from moving.



When operating the forklift, do not let the two forklifts be too close.
Keep a safe distance from other forklifts and ensure that there is enough distance to park the forklift safely.
It is forbidden to overtake other vehicles.



Only park the forklift in the designated area. Completely lower the fork to the ground, place the reversing handle in the neutral position, apply the parking brake, turn off the key switch, remove the key, and place the wedge behind the wheel to prevent the forklift from moving. Turn off the forklift when leaving. Check the forklift at the end of the work.

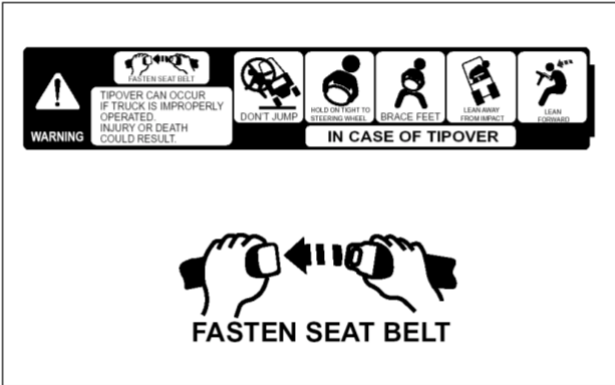


Do not use a forklift to push or drag other vehicles.
Do not let other forklifts push or drag your forklift.
If the forklift cannot be operated, consult a maintenance technician.

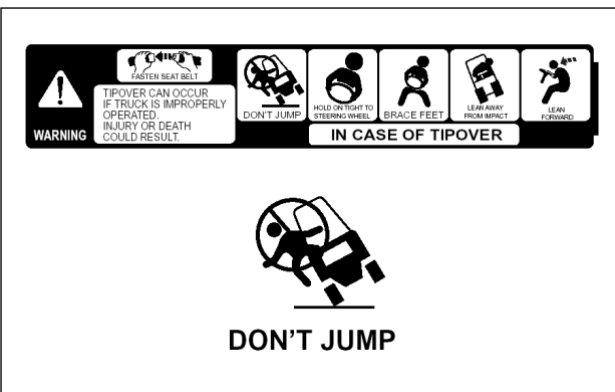
How to escape danger when the forklift tipples



In the event of a rollover, the driver will reduce the risk of serious injury or death if the driver uses the driver's safety protection system and follows the instructions.



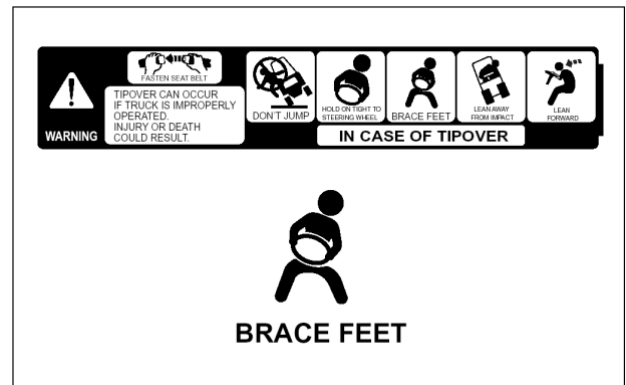
Be sure to use the driver's safety protection system.



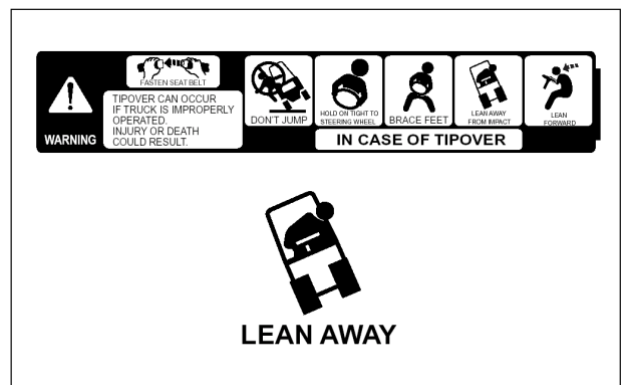
Don't jump off the forklift.



Hold the steering wheel firmly.



Spread your feet in the cab, but do not extend the cab.



Lean your body in the opposite direction of the fall.



Battery

When using compressed air to clean the battery, you should wear a protective mask and protective clothing. The maximum air pressure must be lower than 207kpa (30psi).

Smoking is strictly prohibited in the storage area of the battery or when checking the liquid level.

The electrolyte is acid, which can cause burns and avoid splashing on the skin and eyes.

The life and performance of the battery depend on the driver and the charging, maintenance and repair of the battery.

Forklift drivers are not allowed to use the battery that has just been charged. A fully charged battery needs to be cooled and stabilized. Before the charging cycle is completed, the charging is not allowed to end.

It is forbidden to use a battery with insufficient power, otherwise it will damage the battery and cause the electrical system to overcurrent, damage the contactor contacts, and reduce the life of the motor.

A fully charged battery should be equipped with an identification mark.

After the battery is discharged, it should be charged for 8-12 hours (depending on the charger model), and then the battery should be cooled and stabilized for 4-8 hours. Repeated non-saturated charging is prohibited, otherwise the battery will be damaged.

After at least every 20 normal charge-discharge cycles, the battery should be equalized. This helps correct and prevent differences in the specific gravity of the electrolyte in different cells. Equalization charging is used to adjust the charging cycle, usually all cells are equalized in a certain period. Equalization charging is usually 3-4 hours longer than cycling charging at a lower charging rate. After cyclic charging, if the specific gravity difference between each cell of the battery exceeds 20 points (0.020), it is usually equalized charging.

One charging cycle can fully charge the battery.

For a fully discharged battery, the typical charging cycle time is 8 hours. The battery must be charged before the battery discharge exceeds 80% discharge rate. In order to make the battery discharge less than 80% of its discharge rate, forklift operations should be reasonably arranged.

The battery cannot be stored in a discharged state (sulfate will be formed). This will greatly reduce battery life. To prolong the service life of the battery, it should be charged immediately after it is discharged.

Repeated discharge of the battery will damage the battery cell, reduce its service life and increase the cost of use. The battery life (cycle charge and discharge times) decreases as the depth of discharge increases. If the battery discharge rate reaches 80%, its life is about twice the battery life when the discharge rate reaches 100%.

Add water regularly, and the liquid level should exceed the plate by about 13.0mm (0.5in). It is easier to add water using an automatic liquid injector, that is, when the liquid level reaches the requirement, the light is on to give a reminder. Add water before charging, mainly to ensure that the water and acid are completely mixed when bubbles are generated at the end of charging. The additional water should be distilled water or used after water analysis.

To ensure proper charging, it is very important to follow the manufacturer's instructions. Most chargers are fully automatic and should be checked regularly. It is forbidden to use a fully discharged battery as this will damage the battery.

Pay attention to the disposal of used batteries
Improper disposal of used batteries will endanger the environment and pose a danger to personnel. Only authorized personnel are allowed to handle batteries.

Do not open or disassemble the battery cell.

Warnings and signs for drivers

The driver should be familiar with the content of the identification plate, the load curve and the attachment plate. The content of the forklift is prohibited from overloading.

Driver's warning sign



Located on the front panel.

Identification, rated load capacity and attachment signs



Located at the upper left corner on the outside of the front panel.

The following are the abbreviations and their meanings that may appear on the identification, lifting load, and attachment nameplates.

Hood



1. The hood can be opened by pressing the gusset on the hood to lift the hood and seat assembly.



typical example

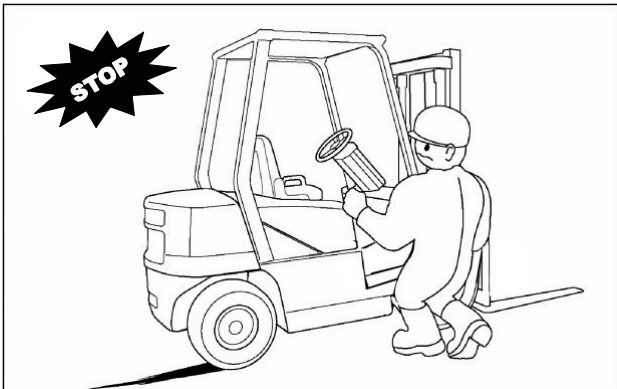
2. The hood and seat assembly are supported by

gas springs. Before doing any work in the hood, make sure that the gas spring is operating normally and the hood is firmly supported.

Light switch



Seat switch system (if equipped)



This forklift is equipped with a seat switch system. Under normal operating conditions, if the direction handle is placed in the forward or reverse position, the forklift will travel at a speed consistent with the position of the accelerator pedal. If the driver leaves the seat without applying the parking brake, the seat switch system will transmit relevant signals to the controller, and the controller will lock all actions of the drive motor and pump motor.

Before leaving the forklift, apply the parking brake.

caveat

When leaving the forklift, apply the parking brake!

The parking brake cannot be applied automatically.

Note: Some forklifts can be equipped with an alarm (if this function is applicable to your forklift, you can apply to the agent). When leaving the forklift, if the parking brake is not applied, the alarm will sound.

note

1. Before forklift operation, be sure to understand and check the seat switch system.
2. Under normal operation and leveling the ground, select the reversing handle to control the direction and release the parking brake. You will notice that when you select the direction and step on the accelerator pedal, the forklift will travel normally. If you leave the seat, the forklift automatically stops.
3. Return the forklift to normal operation, sit in the driver's seat, depress the brake pedal to control the forklift, return the reversing handle to the mid-gear position, and then select the driving direction (forward or backward). The forklift returned to normal driving.
4. If necessary, replace the seat or seat switch, be sure to use the original parts of the company's forklift. Do not use a forklift without an operable seat switch system..

caveat

When closing the hood, be careful not to pinch your hands.

Seat

Note: The placement of the seat can be adjusted. The basic operation method is similar.

Adjust the seat every time the job changes and when the driver changes.

Lock the seat in a fixed position before operation to prevent the seat from sliding suddenly.

Adjust the seat so that the driver's back rests on the back of the seat so that the brakes are fully applied.



Note: The driver must sit on the seat to adjust the seat correctly.

Adjust steering wheel position





Adjust the position of the steering wheel, press down the handle, move the steering column to the desired position, and then lift the handle.

Forklift control





Service brake pedal

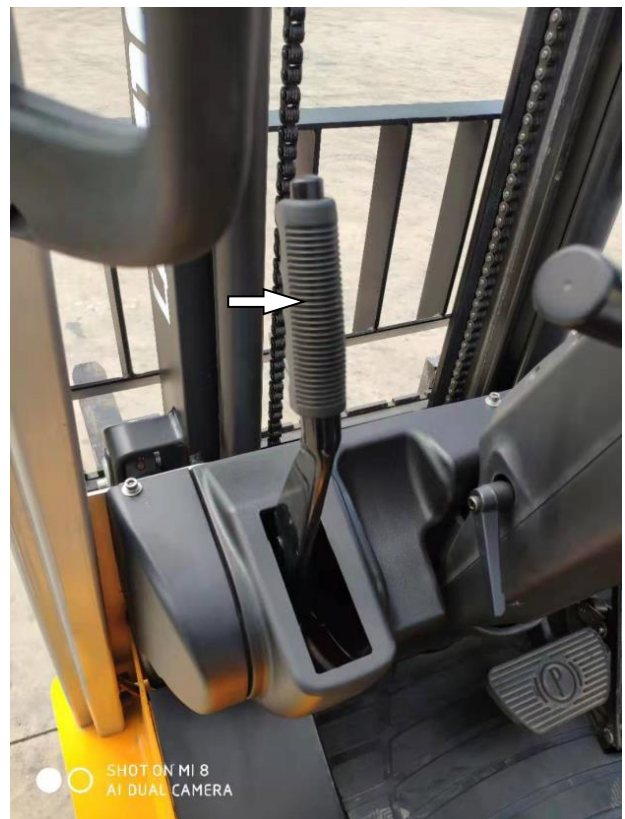
-  Depress the brake pedal and the forklift will slow down or stop.
-  Release the brake pedal and the forklift continues to move.



Accelerator



-  Depress the pedal to increase the number of revolutions (speed) of the drive motor.
-  Release the pedal to reduce the number of revolutions (speed) of the drive motor.

Parking brake lever



-  Pull the lever back to apply the parking brake.
-  Push the lever forward to release the parking brake.

Lifting control



Note: In order to avoid sudden changes in the load position, all lifting, tilting and attachment operations must be controlled steadily.



1. Lowering state-push the control rod forward smoothly to reduce the load.



2. Fixed state-After releasing the lever, it will become fixed or centered. The lifting or lowering action will stop.



3. Lifting state-Pull the control rod back steadily to lift the load.

4.

Tilt control



1. Tilt the mast forward-push the lever forward smoothly to tilt the mast forward.

2. The mast is fixed-when the lever is released, it will return to the fixed or center position. The tilting motion stops.

3. Tilt the main frame backwards-Push the control lever back smoothly to tilt the main frame backward.

Before starting the forklift

Check around the forklift

Before getting on the truck or starting, check around the forklift. Items to be checked include loose bolts, waste accumulation, oil or coolant leakage, tire condition, mast, fork rack, fork or attachments. If necessary, repair and remove all debris.

1. Check whether the seat is loose, and remove all debris around the seat.
2. Check whether the instrument panel is broken, whether the indicator light or the instrument panel is damaged.
3. Test whether the horn and other safety devices are normal.
4. Check whether the mast and lifting chain are worn, broken, whether the pin is damaged, and whether the sprocket is loose.



5. Check whether the fork frame, forks or attachments are worn, damaged, and whether the bolts are loose or missing.
6. Check the tires and wheels, whether the air pressure is normal, whether the tires have cuts, scratches, embedded foreign objects, and whether the nuts are loose or missing.

7. Check whether the overhead guard is damaged, whether the bolts are loose or missing.

8. Check whether the hydraulic system is leaking, the hoses are worn, and the pipelines are damaged.

9. Check the transmission system and drive axle to see if oil is leaking onto the forklift or on the ground.



Improper seat adjustment can cause accidents and personal injury. Therefore, before starting the forklift, the driver's seat must be adjusted. Before going to work and when changing shifts, the driver's seat must be adjusted.



13. Push the control handle away from the seat rail and move the seat back and forth to the proper position.

Forklift operation

Power shift transmission/drive axle

1. Start the forklift.



- 2. Step on the brake pedal to stop the forklift until it is ready to move.
- 3. Release the parking brake.

Note: Before using the steering control, the parking brake must be released.

- 4. When selecting the driving direction, push the reversing handle forward, or Pull the reversing handle backwards. .



- 5. Release the service brake.
- 6. Depress the accelerator pedal to get the desired driving speed. Releasing the pedal reduces the driving speed.

suddenly backs up, which will cause the load to tip over or the forklift to tip over. Before moving backward, be sure to stop the forklift completely before changing directions. Otherwise, it will cause personal injury.

- 7. Release the accelerator pedal and change the driving direction of the forklift.
- 8. Step on the brake pedal to reduce the driving speed of the forklift.



typical example

- 9. Push the reversing handle to the desired driving direction position. When changing the direction of the forklift, slowly depress the accelerator pedal.
- 10. After changing the direction, continue to depress the accelerator pedal to obtain the desired driving speed.



- 11. In order to stop a forklift driving in a certain direction, release the accelerator pedal.
- 12. Step on the brake pedal to let the forklift stop smoothly.



caveat

The forklift with the load moving forward

Operation part

Serial number	Fault name	Fault conditions and treatment methods	Failure exit conditions	Failure phenomenon
1	Motor open	Conditions : Motor phase has a phase more missed ; Method : Check the motor phases is firmly attached , and the motor cable without damage.	1. Connect the phase wire ; 2. Restart the key	1 Open immediately after the contactor is closed ; 2.The fault indicator reports 3-7 fault codes
2	The main contactor coil is open or shorted	Conditions : IRV1 short circuits or DRV1 open ; Method : Check the contact element wire is intact , and is securely connected	1. Connect the IRV1 coil ; 2. Restart the interlock switch	1.The main contactor is disconnected ; 2.The fault indicator reports 3-1 fault code
3	Main contactor adhesion	Condition : main contactor adhesion (note : contactor detection needs to be enabled) ; method : use a multimeter to measure whether the two contacts of the contactor are conductive when the power is off	1. Replace the main contactor ; 2. Restart the key	1.The main contactor does not pull ; 2.2 fault indicator within the second packet 3-8 DTCs
4	Precharge failure	Condition : Pre-charging failed ; Method : First check whether the B+B- connection is correct , if there is no problem, use a multimeter diode file red and black test pen to measure the diode voltage drop of controller B- , B+ to controller U , V , W (need to open the motor phases), normal 400-600 between , such as open circuit and short circuit can be a direct replacement controller	1. Make sure that the B+ and B- lines are connected correctly ; 2. Restart the key	1.The main contactor does not pull ; 2.2 fault indicator packet within the second 1-4 DTCs
5	High pedal	Condition : Close the key , the given direction or throttle output > 25% ; Method : This fault is a common fault , the walking controller is mainly the direction signal input when the key is opened , and the pump controller is the switch of lift, tilt, side shift, etc. The signal is input when the key is opened , and the corresponding switch can be replaced or adjusted You can also directly judge which signal input is faulty through monitoring , and directly troubleshoot	Neutral and throttle output < 25%	1. The controller does not output ; 2.The fault indicator reports 4-7 fault codes
6	Undervoltage	Condition : power supply voltage < configured undervoltage value $\pm 2v$; Method : use a multimeter to measure the battery voltage to see if it is too low , compare it with the multimeter voltage through monitoring , and if it is consistent, check whether the undervoltage parameter configuration is correct	Power supply voltage > (configured undervoltage value + 2v) $\pm 2v$	1. Proportionally limit the maximum current output by the controller ; 2.The fault indicator will report 2-3 fault codes
7	Severe undervoltage	Conditions : power supply voltage < severe undervoltage value $\pm 2v$ (Note : severe undervoltage value - configured voltage value + battery voltage power reduction graph) Method : use a multimeter to measure the battery voltage to see if it is too low , and monitor and multimeter voltage Contrast , if they are the same, check whether the severe undervoltage parameter configuration is correct	Power supply voltage > (severe undervoltage value - 2v) $\pm 2v$	1.The controller does not output ; 2.The fault indicator reports 1-7 fault codes
8	Overpressure	Condition : power supply voltage > configured overvoltage value $\pm 2V$ Method : Use a multimeter to measure the battery voltage to see if it is too low , compare it with the multimeter voltage through monitoring , if they are consistent, check whether the overvoltage parameter configuration is correct	Power supply voltage < (configured overvoltage value + 2V) $\pm 2V$	1. Proportionally limit the maximum current output by the controller ; 2.The fault indicator reports 2-4 fault codes
9	Severe overpressure	Condition : power supply voltage > severe overvoltage value $\pm 2V$ (Note : severe overvoltage value - configured overvoltage value + 10v) Method : use a multimeter to measure the battery voltage to see if it is too low , compare it with the multimeter voltage through monitoring , if it is	1. Power supply voltage < severe overvoltage $\pm 2V$; 2. Restart the key	1. The controller does not output ; 2.The fault indicator reports 1-8 fault codes

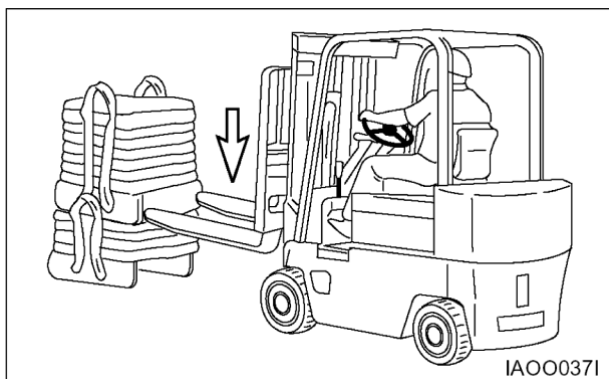
		consistent , Then check if the parameter configuration is correct		
10	Motor over temperature	Condition : motor temperature \geq motor over-temperature value Method : through monitoring to see whether the motor temperature reaches the motor over-temperature value , if it reaches the motor over-temperature value , stop and rest , if the monitored temperature is much different from the actual temperature, replace the motor temperature sensor or replace the motor	Motor temperature $<$ motor over temperature	1. Proportionally limit the maximum current of the control output : 2.The fault indicator will report 2-8 fault codes
11	Motor temperature sensor failure	Conditions : Motor output temperature sensor is not connected or shorted to ground (Note : the need to enable the motor temperature detection): Method : Check whether the motor temperature sensor harness good connection , if good good the motor temperature sensor replacement or replace the motor	Correctly connect the motor temperature sensor	1. The limit for the maximum current output of the controller is 50%: 2. Fault indicator message 2-9 it fault lamp
12	The controller temperature is seriously too low	Condition : Controller temperature $\leq -40^{\circ}\text{C}$: Method : Check whether the controller temperature has reached a severely low value through monitoring , if it reaches, the ambient temperature is too low Not suitable for operation , if the monitored temperature is much different from the actual, replace the controller	1. Controller temperature $> -40^{\circ}\text{C}$; 2. Restart key	1.The controller does not output : 2.The fault indicator reports 1-5 fault codes
13	Controller temperature is too high	Condition : Controller temperature $\geq 85^{\circ}\text{C}$: Method : Check to see if the controller temperature reaches the controller over-temperature value through monitoring , if it reaches, stop and rest. If the monitored temperature is much different from the actual temperature, replace the controller	Controller temperature $< 85 \pm ^{\circ}\text{C}$	1. Proportionally limit the maximum current of the control output : 2.The fault indicator reports 2-2 fault code
14	The controller temperature is too high	Condition : Controller temperature $\geq 95^{\circ}\text{C}$: Method : Through monitoring, see if the controller temperature reaches the serious overtemperature value of the controller , if it reaches the value , stop and rest , if the monitored temperature is much different from the actual temperature, replace the controller	1. Controller temperature $< 95^{\circ}\text{C}$; 2. Restart key	1. The controller does not output : 2.The fault indicator reports 1-6. Fault code
15	External + 5 V fault external power supply overload	Conditions : external + 5V voltage $<$ 4.5V or $>$ 5.5V current of the external power supply outputs $<$ output configurations minimum electrical current value or the $>$ maximum output current value of the configuration; methods : by monitoring a multimeter or the external output 5v is normal (typically in the code wheel with the motor power supply J26 foot), and being in the production of the external monitor output current value , if the lines are properly connected outside the range check , if the connection is good and less than the minimum level by changing the value of the flow parameter may be the minimum electric current value , see Whether it is resolved , if not resolved replace the motor : If the connection is good and greater than the maximum current value, you can directly replace the motor	External + 5V voltage $\geq 4.5\text{V}$ and $\leq 5.5\text{V}$, the output current of the external power supply \geq configuration of minimum electric current value and \leq configured maximum current value	The fault indicator reports 2-5 , 6-9 fault codes
16	Accelerator output is too high	Conditions : Accelerator missed or the output voltage of the accelerator $\geq 5.5\text{v}$: Method : If the accelerator measured by monitoring the voltage or multimeter . $\geq 5.5\text{V}$ then use a multimeter to check whether the end of the accelerator control terminal is turned on , will be reported when the general signal line not connected This fault	Connect the accelerator correctly	1. The equivalent output of the accelerator is 0: 2. Therefore, the Chen indicator reports a 4-1 fault code
17	Test car output is too high	Condition : The sharp car device is not connected or its output is $\geq 5.5\text{v}$ (Note : this fault is only detected when the brake pedal is enabled): Method : If the brake voltage is $\geq 5.5\text{v}$ measured by monitoring or a multimeter, check the controller end and the brake with a multimeter Whether the terminal	Connect the brake correctly	1. throttle equivalent output of the full vehicle measured value ; 2. fault indicator message 4-3 it

Operation part

		is turned on. Generally, this fault will be reported when the signal line is not connected.		fault code
18	Accelerator overcurrent	Condition : The current at the low end of the accelerator or brake is too large (100ma); Method : Disconnect the accelerator connector to see if the fault can be eliminated. If it is eliminated, replace the accelerator. If it is not eliminated, replace the controller (only 5v powered accelerators have this Failure)	Connect the accelerator or brake correctly	1. throttle equivalent output is 0; 2. Brake full brake equivalent output value 3. The fault indicator message 4-5 it fault code
19	Writing to EEPROM fails	Conditions : 1. Cannot write correct data to EEPROM ; 2. The written data is not in the set range ; method : replace the controller	1. Ensure that the hardware is correctly connected ; 2. Write the correct data ; 3. Restart the key	1. The controller does not output ; 2. The fault indicator reports 4-6 fault codes
20	EEPROM data out of range	Conditions : 1- The correct data cannot be read from EEPROM ; 2. The read data is not within the set range ; method : restore factory parameter settings	1. Ensure that the hardware is correctly connected ; 2. Restore factory settings ;	1 The controller runs according to the default configuration parameters ; 2. The fault indicator reports 4-8 fault codes
21	Important parameter modification failure	The host computer modified important parameters after the contactor was closed	Restart key	1. The controller does not output ; 2. The fault indicator reports 4-9 fault
22	Controller overcurrent	The phase current output by the controller >1.1 times the current limit value	Restart key	1. The controller does not output ; 2. The fault indicator reports 1-2 faults
23	Motor blocked	Conditions : Motor current >325A , accelerator input >50% speed <50rpm , duration >5s Method : Check whether the code wheel harness is properly connected and whether the code disc parameter is wrong or the code disc is damaged . If changing the code disc parameter cannot solve the problem, replace the code disc sensor or replace the motor	1 Confirm whether the code disk wiring harness is in good condition ; 2 Modify the parameters to exchange the code disk or exchange the phase line ; 3. Restart the key ;	1The controller does not output ; 2. The fault indicator reports 7-3 fault
24	Motor learning failure	Report this after the motor self-learning is completed	Restart the key after reading the learning parameters	1. The controller does not output ; 2. The fault indicator reports 2-6 fault
25	Current sensor failure	Condition : The sensor midpoint voltage is out of range ; Method : Replace the controller	Replace the controller	13 The controller does not output ; 2. The fault indicator reports 1-3 faults
26	DSP configuration parameter error	Condition : Set when configuring DSP parameters ; Method : Replace the controller	Restart key	1. The excavator does not output ; 2. The fault indicator reports a 1-1 fault
27	MCU and DSP CAN transceiver failure	Conditions : Mcu the DSP through information fails ; Method : replacing the controller	Restart key	1. The controller does not output ; 2. The fault indicator reports 2-1 fault

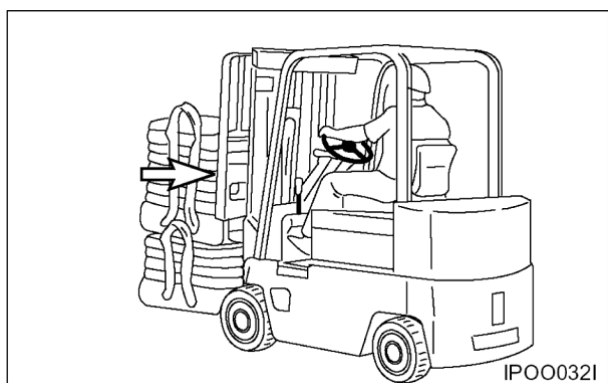
Operation technology

Jogging loading



typical example

1. Slowly move the forklift forward and fork the goods. The forklift should face the cargo, the forks should be inserted symmetrically into the pallet and the distance between the forks should be as wide as possible.

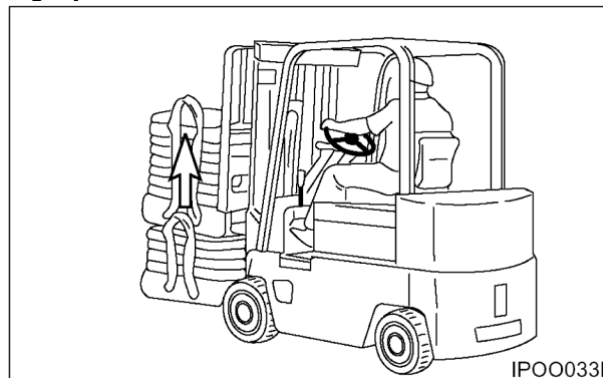


typical example

2. Move the forklift forward until the cargo touches the fork frame.

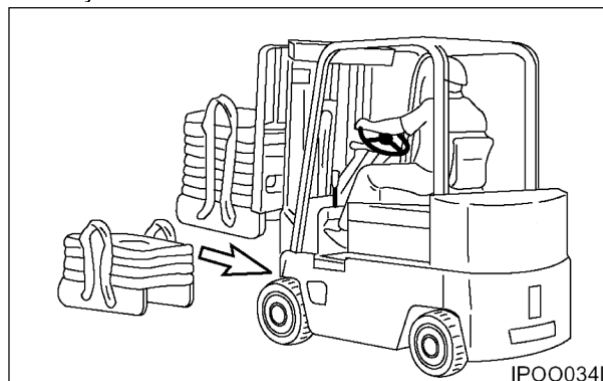
Lifting cargo

1. Carefully lift the cargo and tilt the mast back slightly.



typical example

2. Tilt the mast back again so that the goods are firmly loaded on the forks.



typical example

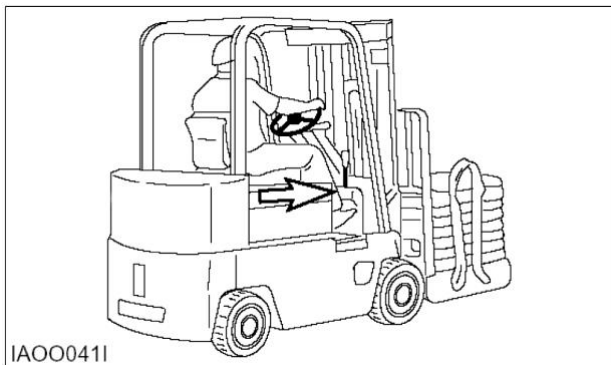
3. Reverse the forklift until the loaded goods are separated from other goods.
4. Lower the cargo to the travel position.

Note: The lifting and tilting speed is controlled by the pump motor speed.

Load-carrying

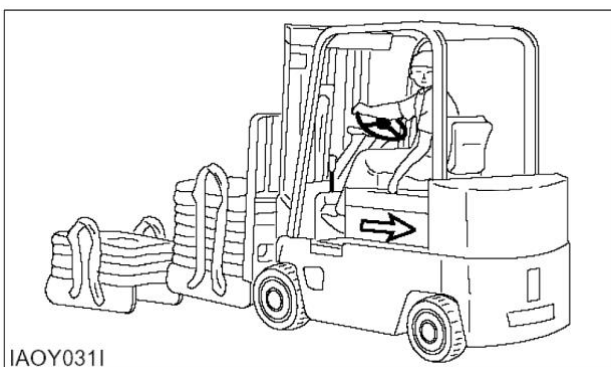
note

When carrying a load, lower the cargo as much as possible while ensuring ground clearance.



typical example

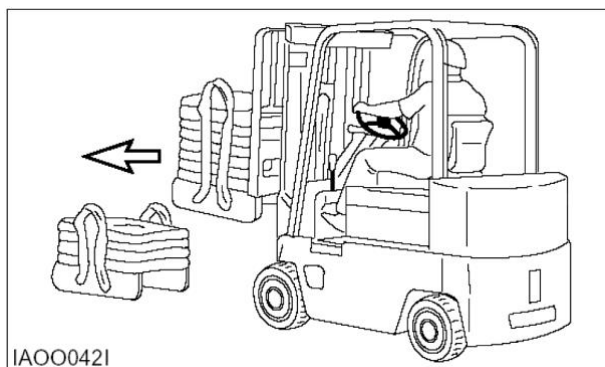
1. If the road has a slope, be sure to turn the cargo toward the higher side, as shown in the figure above.



typical example

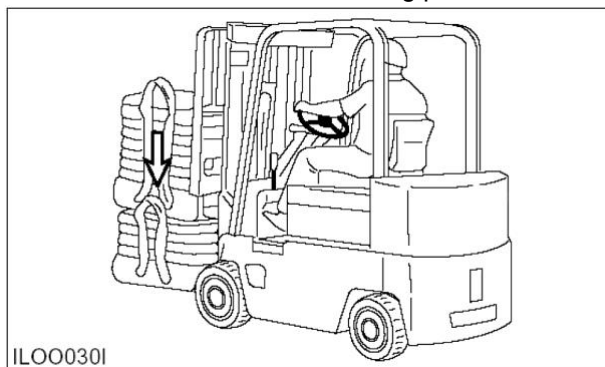
2. If handling large cargo, the forklift should go backwards. This will get a better perspective.

discharge



typical example

1. Drive the forklift to the unloading position.

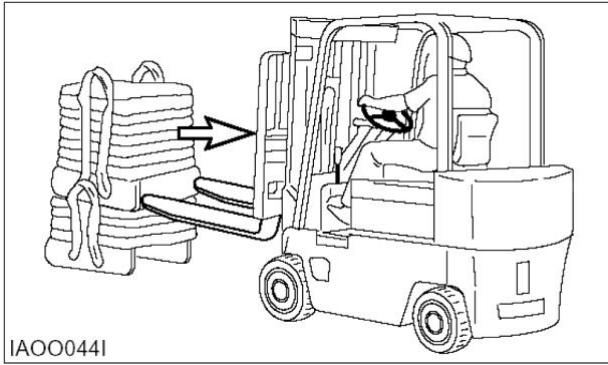


typical example

2. Do not tilt the mast forward until it reaches directly above the unloading area.

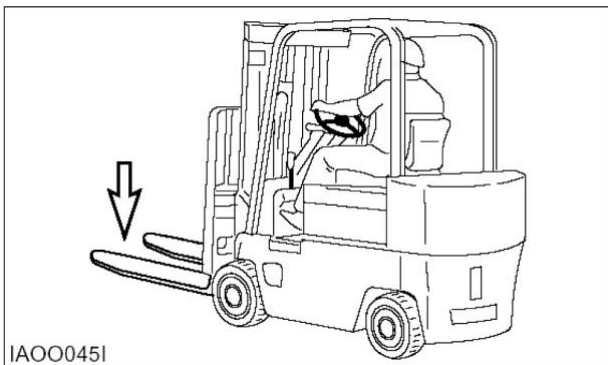
⚠ caveat

Even if the power has been disconnected, do not tilt the mast forward until it reaches directly above the unloading area.



typical example

3. Stack the goods, and then back carefully to separate the forks from the goods.



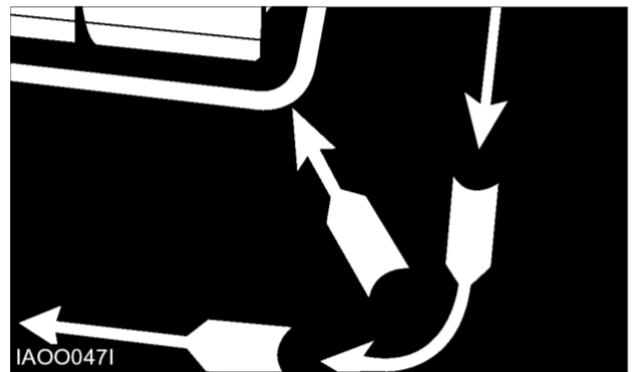
typical example

4. Lower the fork frame and fork to the driving position or parking position.

Turn

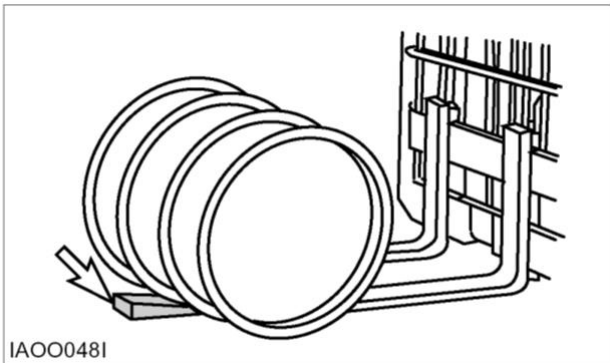


1. When encountering a sharp turn, stay close to the inside of the corner. When the inner driving wheel reaches the corner, it starts to turn.

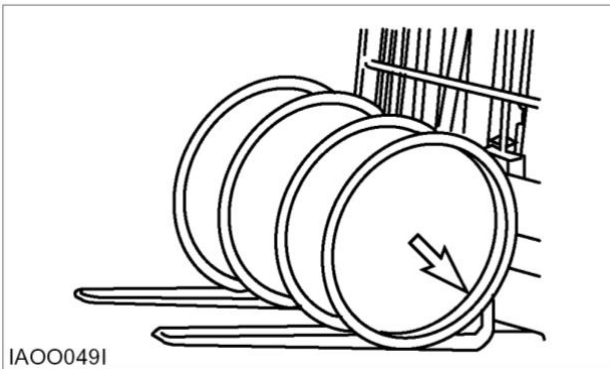


2. In the case of turning in a narrow aisle, try to keep the distance from the piles when turning into the aisle, the farther the better.

Lifting cylindrical or round objects



1. Fix the cylinder or round object with a wedge. Tilt the mast forward, slide the tip of the fork on the ground, and insert it under the cargo.



2. Slowly tilt the mast back until the goods are stowed on the forks, and then lift.

Park the forklift



typical example

Note: When the forklift is parked on a level road, lower the forks at the same time, and tilt the mast forward until the fork tip touches the ground. When parking on a ramp, the wheels should be wedged.

1. The forklift should be parked in a designated place, and traffic should not be hindered.
2. Place the reversing handle in the neutral position.
3. Apply the parking brake.
4. Tilt the mast forward and lower the fork to the ground.

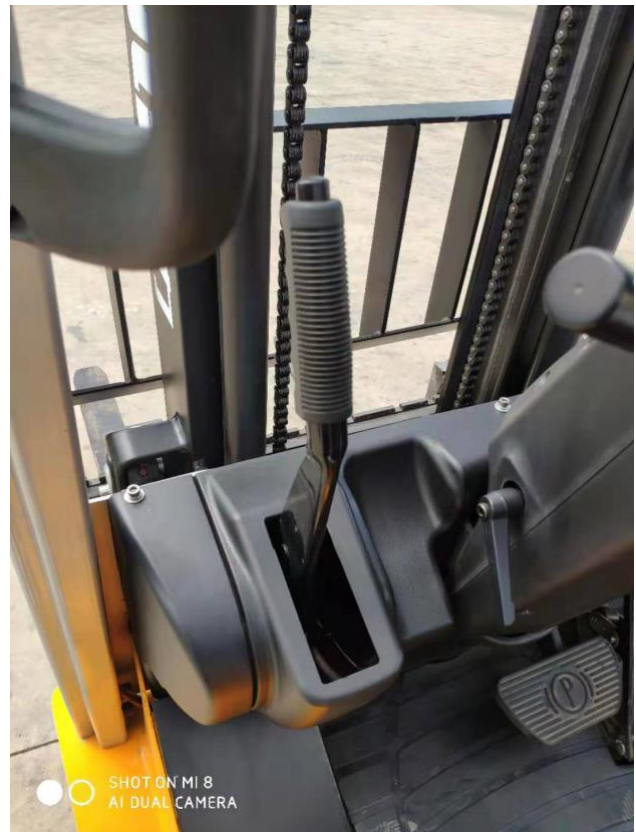
⚠️ caveat

Wedge the wheels to prevent accidental movement of the forklift, otherwise it may cause personal injury.

5. Turn the key switch to the OFF position (otherwise the battery will continue to discharge) and remove the key.

6. Pull the multi-way valve control handle several times to release the residual pressure in each cylinder and hose.

If there is a parking brake alarm device.



⚠️ caveat

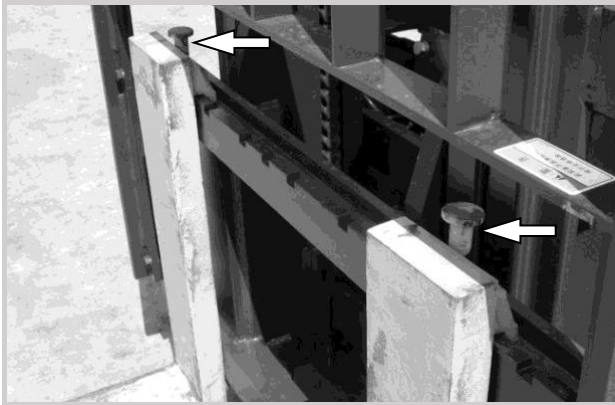
Use the parking brake when leaving the machine! The parking brake will not brake open. If the parking brake is not turned on, the alarm system will alarm.

Fork adjustment

⚠️ caveat

When adjusting the fork extension, be careful not to pinch your hand between the fork and the fork frame slot.

Hook type fork



1. Move the hook pin upward to any position.
2. Lift each fork hook pin and hang the fork on the fork frame beam.
3. Adjust the position of the fork to the most suitable position for the cargo and try to widen it to achieve the best loading stability.
4. When adjusting the fork, ensure that the weight of the cargo is in the center of the forklift.
5. After adjustment, lock the fork lock to position the fork.



Before moving goods, make sure that the forks are locked.

Storage requirements

Park the forklift

Before storing the forklift, it needs to be cleaned and inspected according to the following procedures.

Wipe off the grease and engine oil on the forklift body with an old cloth. If necessary, wipe it with water.

When cleaning the forklift, check the overall condition of the forklift. In particular, whether the fuselage has dents or damage, whether the tires are worn, and whether there are nails or stones on the tire surface.

Fill the fuel tank with the specified fuel.

Check whether there is leakage of hydraulic oil, fuel, or coolant.

Apply lubricating oil where necessary.

Check whether the nuts and bolts are loose, especially the hub nuts.

Check whether the mast sprocket rotates smoothly.

Long-term storage

- In addition to operating according to the requirements in "Parking a Forklift", the following maintenance and inspections should also be carried out.
 - Taking into account the rainy season, park the forklift on a high ground and hard ground.
 - Avoid parking the forklift on soft ground, such as asphalt roads in summer.
 - Even if the forklift is parked indoors, the battery should be removed from the forklift. If the environment is high temperature and humidity, the battery should be stored in a dry and cool place. Charge the battery once a month.
 - Apply rust inhibitor to the exposed and easily rusted parts.

Operating the forklift after long-term storage

- Remove the covering on each component and exposed parts and remove the rust inhibitor.
- Drain the oil in the transmission clutch, differential and final reduction gear, clean their inner surfaces, and then refill the oil.
- Remove impurities and water in the hydraulic oil tank.
- Charge the battery, install it on the forklift, and connect the cable.
- Carry out the pre-work inspection carefully.
- The forklift is warmed up.◦

Shipping tips

Forklift shipment

Check whether the transportation route has enough space. When transporting high masts, high overhead guards or forklifts with cabs, make sure there is enough space.

Before the forklift is transported, it is necessary to remove the ice, snow and other materials that can cause sliding on the loading deck and the flatbed of the tractor, so as to prevent the forklift from sliding when loading and unloading or the forklift moving during transportation.

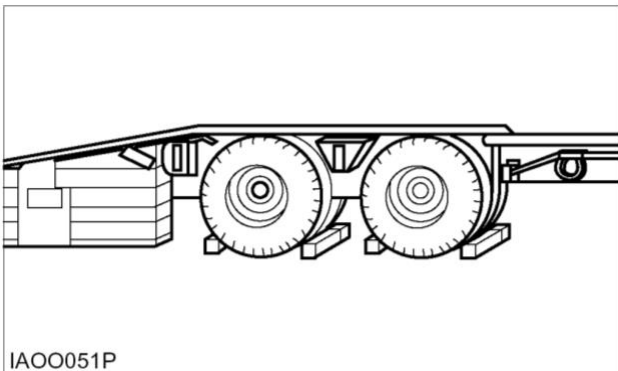
note

Comply with national and local regulations regarding the weight, width and length of the transported goods.

Comply with relevant documents regarding ultra-wide cargo.

note

Remove ice, snow and other materials that can cause slippage from transport vehicles and shipping decks.



When loading a forklift, be sure to wedge the wheels of the trailer or train.

Fix the position of the forklift on the trailer or train.

Apply the parking brake and place the reversing handle in mid-range.

Tilt the mast forward and lower the fork to the ground.

Turn the key switch to the "OFF" position and remove the key.

Wedge the tires to secure the forklift.

About machine hoisting and fixing

note

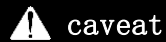
Improper lifting and fixing, the goods may move and cause injury and/or loss.

1. This is the cargo weight and instructions for the forklifts produced.
2. Use appropriate ropes and hooks when lifting. When using a crane for lifting, the forklift cannot be tilted.
3. The width of the boom should be appropriate to avoid contact with the forklift.
4. Use the fastening positions provided on the forklift to tighten.

Inquire about the relevant national and local regulations regarding the weight, width and length of the cargo.

For transportation instructions, please contact the TYPHON forklift agent.

Use crane to lift forklift

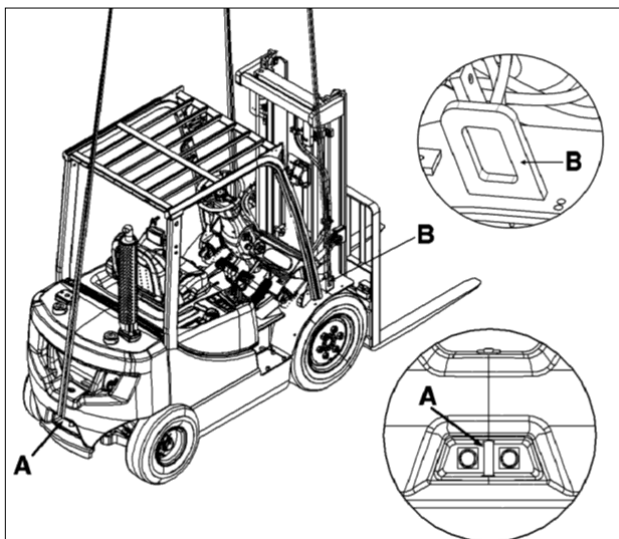


1. If the rope breaks, serious injury/injury may occur.
2. The lifting rope must be long enough to avoid contact with the forklift. Too short sling may damage the vehicle. If it is too long, interference may occur.

If necessary, wrap the sling/chain with rubber or cotton cloth to prevent damage to the vehicle.

3. The sling/chain and other lifting tools must have sufficient strength and be free of nicks or wear.
4. Avoid affecting the load of lifting vehicles/tools.

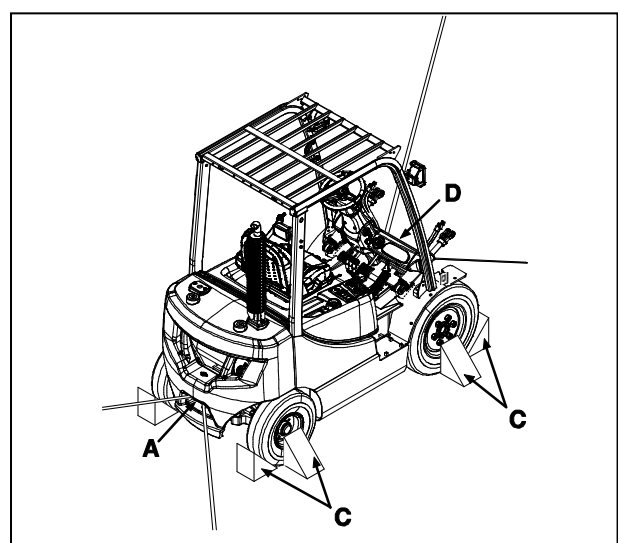
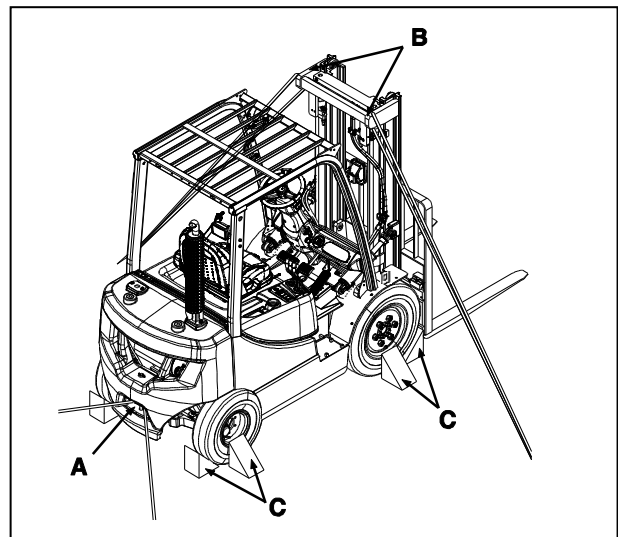
1. Check the weight, length, width and height of the vehicle before lifting.
2. Park the crane at a suitable location.
3. Connect the sling/chain to points A and B in the figure below
4. If the sling/chain touches the vehicle, insert a rubber sheet between the sling/chain and the vehicle to protect the vehicle.



5. Slowly raise the vehicle.

How to fix the forklift to the consignment truck

1. The sling/chain must have enough length for fixing.
2. Park the vehicle on a flat surface.
3. Make the mast vertical. Lower the fork or accessory to the lowest position.
4. Place all moving equipment in empty positions. Turn off the key switch.
5. Apply the parking brake. Place a stop (C) under the tire.
6. As shown in the figure below, connect the hook to point B on the top of the mast (if there is no mast, connect to the front drive shaft fixing frame or the lower fixing hole D of the front baffle) and point A of the rear hanging pin.



Traction data

caveat

Improper towing of a faulty forklift may cause casualties.

Before releasing the forklift brake, wedges the wheels to prevent them from moving. If it is not fixed, the forklift can move freely.

When carrying out forklift towing, please follow the suggestions below.

Towing instructions are for towing the faulty forklift to a place that is convenient for maintenance at a low speed and a short distance of not more than 2 km/h (1.2 mph). These instructions only apply to emergency situations. Transport tools must be used for long-distance transportation.

When towing a forklift, protective measures must be taken to protect the operator if the towing rope or towing rod is broken.

Only when the driver can control the steering and/or braking, can the towed forklift carry people.

Before towing, make sure that the tow rope or tow bar is intact and has sufficient strength to adapt to the work being performed. When pulling a forklift stuck in a mud pit or pulling a forklift on a slope, the towing rope or towing rod must have at least 1.5 times the strength of the total weight of the towed forklift.

Minimize the angle of the traction rope. The angle with the horizontal plane cannot exceed 30°. The towing point of the towed forklift should be as low as possible.

Towing the forklift too fast will overload the tow rope or the tow bar, causing it to break. Therefore, the forklift must move slowly and smoothly.

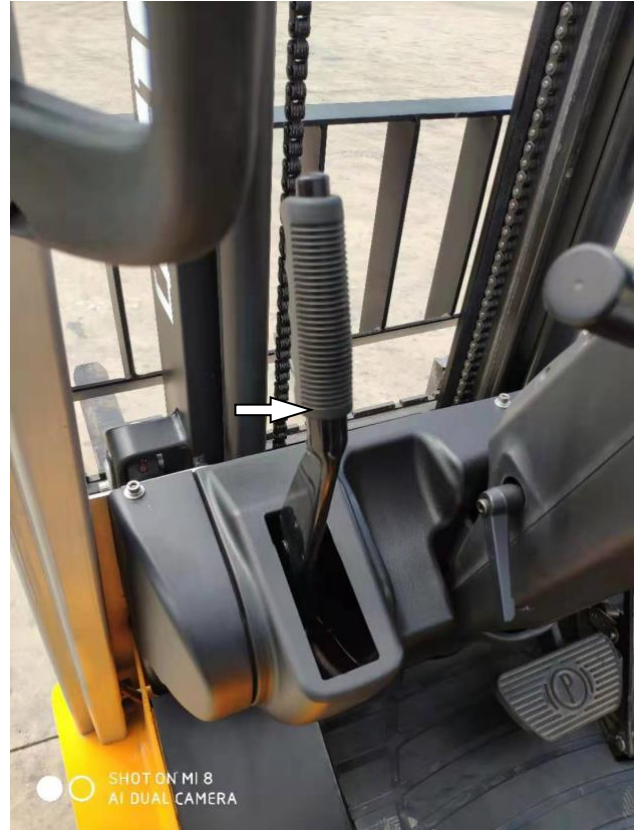
Under normal circumstances, the traction forklift should be equivalent to the failure forklift, and the traction forklift must have sufficient braking capacity, weight and power to ensure the safety of the traction forklift and the towed forklift on the slope and driving route.

When towing a faulty forklift downhill, a larger towing forklift is required, or another forklift is required to be connected behind it in order to provide sufficient control and braking. This can prevent a malfunctioning forklift from losing control.

The minimum traction capacity of the forklift required on level roads and the maximum traction capacity of the forklift required on slopes or uneven roads have

different requirements in different situations, which are not introduced in this manual.

When towing a faulty forklift, please contact the agent of TYPHON forklift.



typical example

1. Release the parking brake.

note

Releasing the parking brake can prevent excessive wear and damage to the parking brake system.

2. Release the service brake pedal.
3. Turn off the key switch.
4. Place the reversing handle in the middle position.
5. Fix the tow bar to the forklift.
6. Remove the wheel chocks and slowly move the forklift. The speed cannot exceed 2 km/h (1.2 mph).

caveat

Before the forklift in the maintenance area returns to work, make sure that the forklift has been repaired and adjusted as necessary.

Inspection, maintenance and repair of forklift forks

Here are some practical guidelines for the inspection, maintenance and repair of forklift forks, as well as some explanations on the design, use and general failure reasons of the forks.

Improper modification or maintenance will seriously weaken the strength of the fork. Forklift forks can also be damaged due to aging, wear, corrosion, overload, and improper use.

Failure of the fork during operation may damage the equipment and cargo. It may also cause serious casualties.

Good inspection and maintenance combined with correct use are the most effective ways to prevent sudden failure of the fork.

The modification or repair of the fork can only be carried out by the fork manufacturer or by skilled technicians who understand the materials used and the welding and heat treatment processes.

The user should consider whether it is more economical to return the fork to the production plant for repair or purchase a new fork, which is affected by many factors, such as the size and type of the fork.

The size of the fork should be consistent with the weight and length of the cargo and the specifications of the equipment. The general standard is that the total rated load capacity of the fork is equal to or greater than the "standard (or rated) load capacity" of the forklift.

Usually, forks are marked with rated load capacity in obvious places. Generally, the mark is located on the top or side of the vertical section of the fork.

□ A fork with a rated load capacity of 1500 pounds and a load center distance of 24 inches is marked as 1500x24.

□ A fork with a rated load capacity of 2000 kg and a load center distance of 600 mm is marked as 2000x600.

The production plant and production date are usually also marked on the forks.

Some countries have promulgated standards or specifications specifically for the inspection and repair of forks.

Users can also refer to the International Organization for Standardization (ISO) Technical Report No. 5057-"Inspection and Maintenance of Wishbone" and "Wishbone-Technical Parameters and Testing" in the ISO2330 standard.

If there is no specific standard or regulation in the United States, the user should understand the information on the inspection and maintenance of forklift trucks in the section 29 of Federal Registration No. 29 of 1910.178, as well as the ANSI/ASME safety standards B56.1, B56.5 or B56.6 Information related to the locomotive in use.

Environmental protection

Forklift maintenance should be carried out in designated areas. Before disassembling pipelines, fittings, and parts, use approved containers to store coolant, oil, fuel, grease, electrolyte, and other items that may cause environmental pollution. After the maintenance work is completed, these items should be handled in designated areas and approved containers. Forklift cleaning must also be carried out in designated areas. .

Causes of fork failure

Improper modification or repair

Improper modification or repair. Partial trimming of the forks including welding, flame cutting or other similar processes can cause fork failures, which will affect the heat treatment and reduce the strength of the forks.

In most cases, special alloy steel welding requires special processes and techniques. Improper method will affect key parts such as fork root, bracket and fork tip.

Bent or deformed fork

The fork is seriously overloaded, and the fork can bend and deform when it violently hits the wall or other fixed objects and picks up objects with the fork.

Bent or twisted forks are very easy to break, causing damage and personal injury, and should be stopped immediately.

fatigue

Parts subjected to repeated or pulsating loads will be damaged even if the maximum stress is less than the static strength of the part after a large number of cyclic loads.

The first feature of fatigue failure is often the occurrence of cracks where the stress is highly concentrated. This phenomenon is common at the fork root or the fork bracket.

Under the action of cyclic loading, cracks continue to develop. The effective section of the bearing is continuously reduced until fracture occurs when the load cannot be carried.

Fatigue failure is the most common type of fork failure. It is also a predictable failure, which prevents fatigue failure by confirming the conditions that caused the failure and stopping use before the failure occurs.

Repeated overload

Repetitive cyclic loading exceeding the fatigue strength of the material causes fatigue failure. The overload is caused by the cargo exceeding the rated load capacity of the fork and the fork tip is used to pick up the cargo. Similarly, the lateral deformation of the fork tip during loading and unloading can also cause the bracket to twist.

Wear

Sliding between the fork and the ground and the cargo will cause wear. The thickness of the fork will gradually become smaller until it cannot carry the goods of the original load capacity.

Stress concentration

Scratches, pits, and corrosion points are stress concentrations for crack propagation. These cracks will continue to grow under repeated loads that cause typical fatigue failures.

overload

Severe overload will cause permanent deformation or immediate damage to the fork. The common cause of overload is the use of forks with low load capacity, or the use of forks not in accordance with the design requirements.

Fork inspection



Establish a system for daily and 12-month fork inspection and record keeping.

The original information of the fork includes the serial number of the vehicle used, the manufacturer of the fork, the model, the original section size, the original length and the load capacity. At the same time, the special parameters specified in the fork design should be listed.

Record the date and result of each inspection and confirm that the following content is included.

- Actual wear conditions, such as the percentage of actual fork thickness to original fork thickness.
- Damage, malfunction and deformation that hinder the use of the vehicle.
- Indicate the repairs and maintenance done.

The tracking record of this information helps to determine the appropriate inspection period, helps to determine the scope of the problem and solve the problem, and helps to predict the time to replace the fork.

Initial installation

1. Check the fork, confirm that its size is suitable for the forklift to be installed, and confirm that its length and form are suitable for the goods being moved.

If used forks are used, check items daily and 12 months.

If the fork has rusted, see "Maintenance and Repair".

2. Ensure that the flatness of the upper surface of the two fork horizontal sections is within the allowable tolerance range. See "Fork, step 4" in "2,000 hours per operation or annual maintenance" in "Maintenance cycle".
3. Confirm that the positioning pin is in place and working normally, and the fork must be fixed before using the forklift. See "Maintenance per operation 2,000 hours or yearly" "Fork, step 7" in "Maintenance cycle".

Daily inspection

1. Check for cracks on the fork surface, especially the fork root, bracket and all welding points. Check whether the prongs are broken or chipped. Whether the horizontal section and vertical section of the fork are bent or twisted.
2. Confirm that the positioning pin is in place and working properly. Secure the forks before using the forklift. See "2,000 hours per operation or annual maintenance" in "Maintenance Cycle".
3. Remove all damaged forks.

12 months testing

The forks must be inspected at least every 12 months. If the forklift is used in multi-shift or heavy work situations, it should be inspected every 6 months. Please refer to the section "2,000 hours per operation or annual maintenance" in "Maintenance Cycle".

Maintenance and repair

1. Only repair the forks according to the manufacturer's recommendations.

Most of the repairs should be done by the original manufacturer or professionals who know the fork material, design, welding and heat treatment process.

2. Do not perform the following maintenance or modification.

- Flame cutting holes or cutting fork partitions.
- Weld the bracket or newly installed hook.
- Repair cracks or other damages by welding.
- Bend or find a right job.

3. The following repairs can be performed.

- The surface of the fork can be polished or lightly polished to remove rust spots, corrosion spots or minor defects.
- The fork root can be polished with a carbon structure grinding stone to remove surface cracks or defects. Polish the inner diameter of the fork root to extend the service life of the fork. Be sure to grind along the horizontal and vertical directions of the blade.
- Repair or replace the positioning lock of the hook type fork.
- You can use other types of fork holding force components to repair or replace most of the holding force components.

4. Before the fork is put into use again, it must be inspected to ensure that the repair has been completed in accordance with the manufacturer's instructions and authorization.

Most manufacturers and maintenance standards require that the repaired fork should pass the 2.5 times the rated load capacity test at the load center marked on the fork arm. Fix the fork according to the way the fork is installed on the forklift, and then perform two load tests without shaking. Hold for 30 seconds each time.

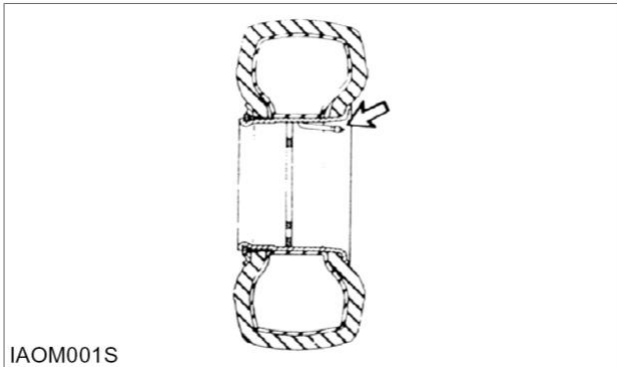
Check the wishbones before and after the second load. There should not be any permanent deformation.

For information applicable to specific types of forks, please contact the fork manufacturer.

There is no need to test when repairing positioning pins and markings.

Tire inflation information

Tire Air Refill



caveat

Improper tire inflation can cause casualties.

Use a self-locking valve and stand behind the tire when inflating.

Use suitable inflatable equipment and train in its use. This is necessary to prevent over-inflation. Improper use or misuse of inflatable equipment will cause tire bursts or damage to steel rims.

note

Set the tire inflation device adjuster below 140 kPa (20 psi), which is the recommended tire pressure.

Tire working pressure

The inflation pressure listed in the following table is the cold inflation working pressure of TYPHON forklift.

Model	Rated number of layers or strength index	working pressure	
		kPa	psi
7.00-12	12	825	120
28X9-15	14	970	141

* For standard tires, rated number of layers and working pressure, only two tires are listed here as examples. For other tires, please refer to the pressure resin indicated on the tire.

The working air pressure of the tire should be determined according to the weight of the forklift without attachments, the rated payload and the general operating conditions. The air pressure is different due to different operating conditions. These data should be obtained from the tire supplier.

Note: The inflation pressure of the tire should be the value in the recommended table +35 kPa (5 psi), and the tire can be filled with nitrogen.

Adjust the inflation pressure

Tyres that are inflated at 18°C to 21°C (65°F to 70°F) in a warm environment will reduce the tire pressure when operating in a low temperature environment. Low tire pressure will reduce tire life..

Torque specifications

Metric Tools

Most of the nuts, bolts, studs and threaded holes of forklift trucks are almost all in metric system. The torque requirements are given in metric and American customary units. Be sure to use metric tools. Refer to the parts manual when changing tools.

Note: Only use suitable metric tools, other tools may slip and cause personal injury.

Standard hose clamp torque-threaded drive belt type

note

For the initial installation of the new hose clamp and the reinstallation or tightening torque of the clamp. See the table below.

Pipe clamp width	Initial installation torque of new hose	
	N · m ¹	lb · in
16 mm (.625 in)	7.5 ± 0.5	65 ± 5
13.5 mm (.531 in)	4.5 ± 0.5	40 ± 5
8 mm (.312 in)	0.9 ± 0.2	8 ± 2
Pipe clamp width	Torque to reinstall or re-tighten the original hose	
	N · m ¹	lb · in
16 mm (.625 in)	4.5 ± 0.5	40 ± 5
13.5 mm (.531 in)	3.0 ± 0.5	25 ± 5
8 mm (.312 in)	0.7 ± 0.2	6 ± 2

* 1 Newton meter (N·m) is approximately equal to 0.1 kg·m.

Torque of standard screws, nuts and conical locking bolts

note

The following table gives the general torque requirements for bolts, nuts and conical locking bolts with a quality higher than SAE level 5.

Torque of standard threaded screws and nuts

Thread model Inch	Torque of standard nut and bolt	
	N · m	lb · ft
1/4	12 ± 4	9 ± 3
5/16	25 ± 7	18 ± 5
3/8	45 ± 7	33 ± 5
7/16	70 ± 15	50 ± 11
1/2	100 ± 15	75 ± 11
9/16	150 ± 20	110 ± 15
5/8	200 ± 25	150 ± 18
3/4	360 ± 50	270 ± 37
7/8	570 ± 80	420 ± 60
1	875 ± 100	640 ± 75
1 1/8	1100 ± 150	820 ± 110
1 1/4	1350 ± 175	1000 ± 130
1 3/8	1600 ± 200	1180 ± 150
1 1/2	2000 ± 275	1480 ± 200

* 1 Newton meter (N·m) is approximately equal to 0.1 kg·m.

Conical locking bolt torque

Thread model Inch	Torque of standard taper lock bolt	
	N · m ¹	lb · ft
1/4	8 ± 3	6 ± 2
5/16	17 ± 5	13 ± 4
3/8	35 ± 5	26 ± 4
7/16	45 ± 10	33 ± 7
1/2	65 ± 10	48 ± 7
5/8	110 ± 20	80 ± 15
3/4	170 ± 30	125 ± 22
7/8	260 ± 40	190 ± 30
1	400 ± 60	300 ± 45
1/8	500 ± 700	370 ± 50
1/4	650 ± 80	480 ± 60
3/8	750 ± 90	550 ± 65
1/2	870 ± 100	640 ± 75

* 1 Newton meter (N·m) is approximately equal to 0.1 kg·m.

Metric fastener torque

note

Carefully distinguish between metric fasteners and American customary (standard) fasteners, and don't confuse them. Improper assembly or incorrect fasteners can cause damage or malfunction of the forklift, and even personal injury.

The original fasteners provided with the forklift should be stored for easy use at any time. If new fasteners are replaced, their model and grade should be the same.

The bolt grade is marked on the bolt head (such as 8.8, 10.9, etc.). The following table lists the standard tightening torque of 8.8 grade bolts and nuts.

Note: Metric tools must be replaced with metric tools. Refer to the parts manual when replacing.

Thread model Metric	Standard torque	
	N · m ¹	lb · ft
M6	12 ± 4	9 ± 3
M8	25 ± 7	18 ± 5
M10	55 ± 10	41 ± 7
M12	95 ± 15	70 ± 11
M14	150 ± 20	110 ± 15
M16	220 ± 30	160 ± 22
M20	450 ± 70	330 ± 50
M24	775 ± 100	570 ± 75
M30	1600 ± 200	1180 ± 150
M36	2700 ± 400	2000 ± 300

*1 Newton meter (1N·m) is approximately equal to 0.1kg·m.

* ISO-International Organization for Standardization.

Lubricant specifications

Lubricant Information

The acronyms used in this article are selected from the terminology section of the Society of Automotive Engineers (SAE) J754. The classification part uses the abbreviation part in SAE J183.

The MIL standard is a U.S. military standard.

The recommended oil viscosity can be found in the lubricating oil viscosity table in this book.

Grease is classified by the National Lubricating Grease Institute (NLGI), which is based on the viscosity number standard ASTM D217-68, which determines the working penetration performance.

Hydraulic oil (HYDO)

The following commercial grades can be applied to hydraulic systems.

- | | |
|---------------------|-------------|
| • ISO 6743/4 | HM |
| • AFNOR NFE 48-603 | HM |
| • DIN 51524 TEIL 2 | H-LP |
| • HAGGLUNDS DENISON | HFO-HF2 |
| • CINCINNATI | P68, 69, 70 |
| • GSCALTEX RANDO | DFL32 |

Viscosity: ISO VG32

High-quality industrial hydraulic oil has passed the test of the Wacker vane pump (35VQ25).

These oil suppliers guarantee that these products have anti-wear, anti-foam, anti-rust and antioxidant effects on frequently working locomotives. Products with an ISO viscosity grade of 32 are generally available.

system, the water or air will cause the pump to fail. Drain the hydraulic oil, re-tighten all hydraulic pipe joints, and reinstall the hydraulic oil into the system after purification. For cleaning method, contact our forklift dealer.

Drive axle oil

note: Do not use gear oil in the final drive or differential gear. Gear oil can cause sealing material failure and possible oil leakage.

Note: If you do not follow the recommendations in the manual, it will cause excessive wear of the gear and shorten the service life.

You can use API CD/TO-2 specifications or MIL-L-2104D, E or F oil.

Lubricating Grease (MPGM)

Use molybdenum disulfide grease (MPGM) on bearings and joints that are prone to wear. If you do not use molybdenum disulfide grease, you can use grease containing 3% -5% molybdenum disulfide.

NLGI No. 2 grade oil is suitable for most temperature ranges. NLGI No.1 or No.0 grade oil is suitable for extremely low temperature conditions.

Brake fluid

Please use oil that meets the following specifications.

- SAE J1703f DOT-3或DOT-4。

note

To add hydraulic oil to the hydraulic tank, it must be evenly mixed with the original oil in the hydraulic system. Only petroleum products can be used, unless special products are specified. If the hydraulic oil is turbid, water or air enters the

Lubricating oil viscosity

Lubricating oil viscosity

Lubricating oil viscosity at different ambient (outside) temperatures					
Component or system	Oil viscosity	°C		°F	
		mini mum	maxi mum	mini mum	maxi mum
Hydraulic and power steering system ISO 6743/4 HM	ISO VG32	-20	+30	-4	+86
	ISO VG46	-10	+40	+14	+104
	ISO VG68	0	+50	+32	+122
Drive axle housing API GL-5	SAE80W90	-20	+50	-4	+122

SAE grade shows the viscosity of lubricating oil. The appropriate SAE level should be selected according to the ambient temperature.◦

and oil filling capacity

Oil filling capacity

Oil filling capacity-(approximate value)		
Component or system	Liter	US gallons
Hydraulic system	44	11.6
Drive axle	8	2.11

Maintenance cycle

note

Except for every 10 hours or daily maintenance, all maintenance and repairs of the forklift must be performed by authorized professionals.

note

Improper disposal of waste oil will harm the environment and personnel.

Waste oil disposal can only be done by authorized personnel.

typical example

3. Gently apply oil to the hood latch mechanism and the hood gas spring cylinder rod.

Maintenance on demand

Before performing any operation and maintenance work, you must read and understand the warnings and instructions in the safety section of this manual.

Seat, hood latch and support cylinder-check and lubricate

1. Check the working status of the seat adjustment lever. Confirm that the seat can slide freely in its slide.

If necessary, add a small amount of lubricant to the slide.



typical example

. Push the adjustment lever to raise the hood and seat assembly. Make sure that the gas spring supports the hood. .

Fuse, light bulb, circuit breaker, relay-replacement, reinstallation

Insurance

note: If the fuse is blown, you can only replace it with a fuse of the same type and size. If the newly replaced fuse is still blown, check the circuit and equipment.

note

The current rating of the replaced fuse must be correct.

Check the insurance department. If necessary, use a flashlight.

Determine the fuse according to the specifications indicated on the fuse box label.

Determine the fuse as follows:

1. Total power-20 amps.
2. DC power supply-15 amps.
3. Speaker power-15 amps.
4. Light power supply-15 amps.
5. USB power supply-15 amps.

Open the front cover of the fuse box, the fuse is located under the cover.

Fuse-used to protect the electrical system from damage due to circuit overload. If the circuit is overloaded, an open circuit occurs (fuse blown).

light bulb

The bulbs used by TYPHON forklifts are all LED bulbs.

*Optional lamp or lighting

Tires and wheels-inspection, inspection



Maintenance and replacement of tires and wheels can be dangerous, so it can only be performed by trained personnel, using appropriate tools and under correct procedures. Before removing the wheel nuts, deflate the tires.

In the maintenance of tires and wheels, if the procedures are not correct, the components will rupture due to the blasting force and cause serious personal injury or death.

Carefully follow the specific requirements provided by tire service personnel or agents.

Check for inflation and damage

Inflation and damage inspection

Inspect the tires for wear, cuts, scratches and foreign objects. Check whether the hub is bent and whether the clamp ring is in place.

Check whether the tire is properly inflated, see "Tire Inflation Pressure".

When inflating the tire, be sure to clamp the air nozzle. Connect the air nozzle to the pipe valve and the pressure gauge with a minimum length of 60 cm (24 inches) hose.

Be sure to stand behind the tire when inflating, not in front of the wheel hub.



It is strictly forbidden to inflate tires that are running under flat or under-inflated conditions before determining whether the hub clamp is damaged and the position is correct.

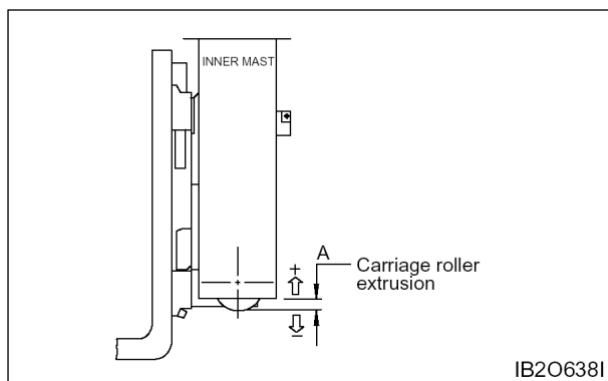
When changing tires, be sure to clean all wheel hub parts, and repaint if necessary to prevent corrosion. It is recommended to use sandpaper to remove rust.

Check all parts carefully. Replace cracked, severely worn, damaged and severely corroded parts with new parts of the same model and specifications.

Under any circumstances, it is strictly prohibited to attempt to reuse, weld, heat process or braze any wheel hub parts.

Fork frame sprocket extension-adjustment

1. Make the mast vertical.
2. Fully lower the mast.
3. In full free lifting and full free 3 times speed lifting modes, the bottom of the inner mast should be flush with the bottom of the fixed mast.



4. Measure the distance between the bottom of the inner main frame and the bottom of the upper fork bearing.
5. The measured value (A) should be consistent with the table below.

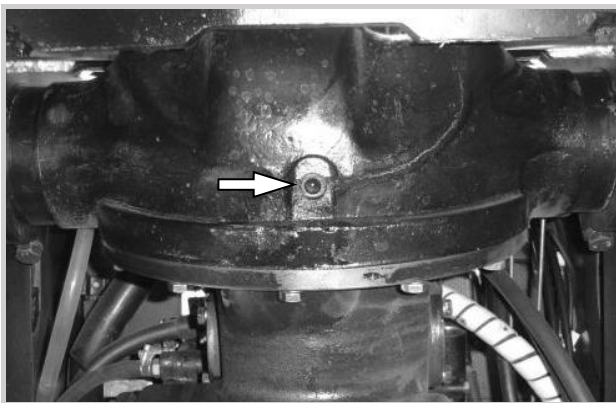
The height of the fork roller extension (A)		
Standard door frame	Two-level full free door frame	Three-level full free door frame
0	41	41

100 hours maintenance for the first operation

Before performing any operation and maintenance work, you must read and understand the warnings and instructions in the safety section of this manual.

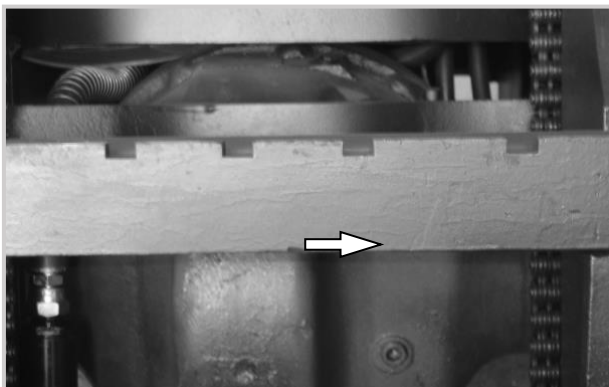
Drive axle transmission gear oil-replacement

Park the forklift horizontally, apply the parking brake, and move the reversing switch to the mid-range position.



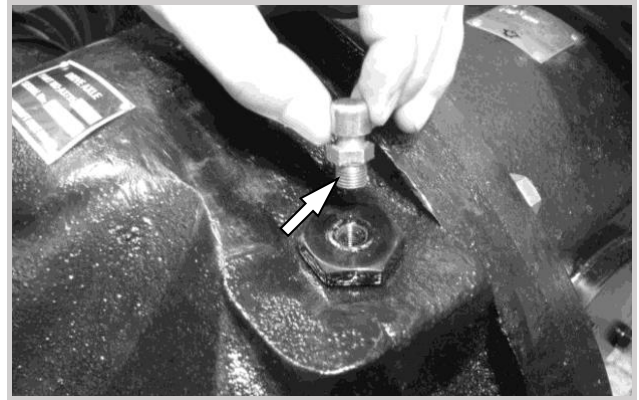
1. Remove the oil drain plug. Drain the oil into a suitable container and clean the drain plug.
2. Install the drain plug.
3. Take out the dipstick/oil filler cap. Fill the drive axle box with oil. See "Oil Filling Capacity"
4. Start the forklift.

Raise the front wheel, pull the direction control lever to the forward position, and step on the accelerator pedal.



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

6. Install the horizontal plug.



7. Install the dipstick/oil filler cap.

note: Tighten the dipstick/oil filler cap to prevent foreign matter (rain, water, etc.) from entering the drive axle.

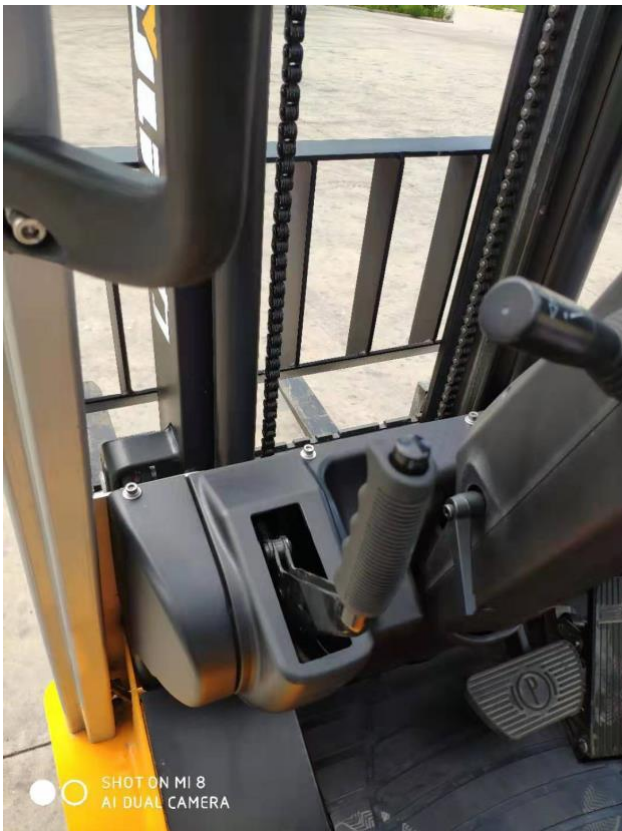
Parking brake-test, adjust

Parking brake test

note

OSHA requires forklifts to apply parking brakes on a slope of N% under full load conditions. The test requires a test load equivalent to the full load capacity and a slope of N%.

1. The forklift is fully loaded and climbs a slope of N% degrees.



2. Climb a slope of N% degrees forward. In the middle of the ramp, step on the service brake to stop it. (N is the grade of the vehicle)

3. Apply the parking brake and slowly release the service brake.

4. Brake the forklift and pull the shift switch to the neutral position. Slowly release the service brake.

5. If the forklift can be stopped on a slope, the brake is adjusted correctly. If the forklift cannot be stopped on a slope, the brakes need to be adjusted continuously.

6. If the parking brake is activated, the forklift still starts to reverse on the slope, use the service brake to stop, release the parking brake and use the service brake control to slowly reverse down the slope.

⚠ caveat

If the parking brake is not adjusted properly, the driver must always be prepared to brake the forklift to prevent personal injury when the forklift starts to move.

Parking brake adjustment

1. Park the forklift horizontally, lower the fork, brake the forklift, place the shift switch in the middle, turn off the key, and wedge the driving wheel. Remove the floor mat and floor.

2. Wedge the forklift tires to prevent accidental movement of the forklift.

3. Confirm that the parking brake lever has been released.

4. Tighten the adjustment screw to adjust the parking brake to a proper level.

5. Brake the forklift, remove the tire wedges and test the parking brake. Refer to the previous "Parking Brake Test" section.

note

The parking brake is a mechanical internal expansion type and is built into the wheel brake. It shares the brake shoe and brake drum with the service brake. The gap between the brake shoe and the brake drum can be automatically adjusted by the gap adjuster. The gap adjustment The device only works when reversing.

Maintenance every 300 hours of operation

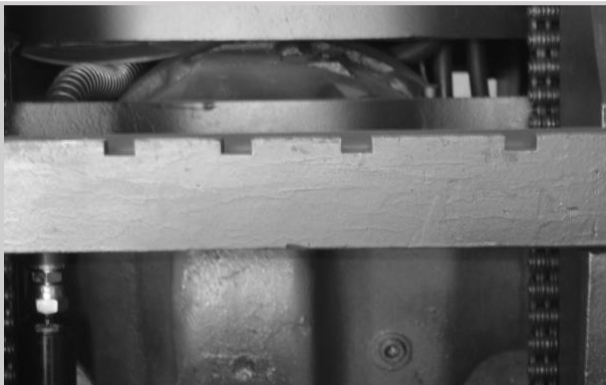
Before performing any operation and maintenance work, you must read and understand the warnings
Brake oil level-check (replacement cycle)

The brake oil can is installed on the left side of the steering column.

- Remove the oiler lid.
-
- Keep the amount of brake oil in the brake oil tank at 2/3 of the oil tank.
-
- Clean and install the oiler lid.
-
- Note: Brake oil replacement cycle

Drive axle oil level-check

Park the forklift horizontally and apply the parking brake. Place the reversing handle in the mid-range position.



1. Take out the screw plug on the front surface of the drive axle.
2. Use lighting to see if the liquid level of the drive axle is lower than the bottom edge of the screw plug hole, if not enough, add it.

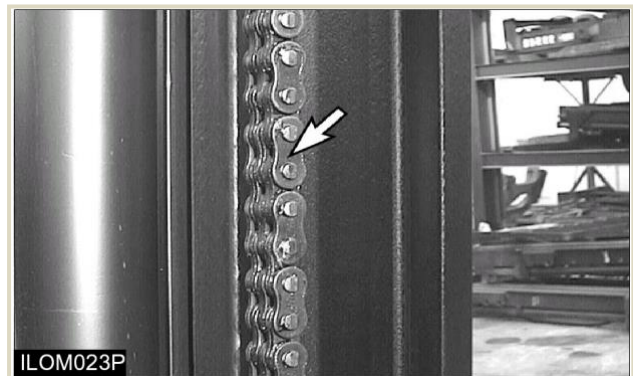
Main frame, fork frame, chain, attachment-inspection, lubrication

1. Perform lifting, tilting and attachment control operations. Whether there is abnormal noise in the note. If there is any abnormality, repair

and instructions in the safety section of this manual.

is needed.

2. Check whether there are loose bolts and nuts on the fork frame and the shelf. Remove the attachments on the main frame and fork frame.
3. Check whether the forks and attachments are moving or damaged. Repair if necessary.



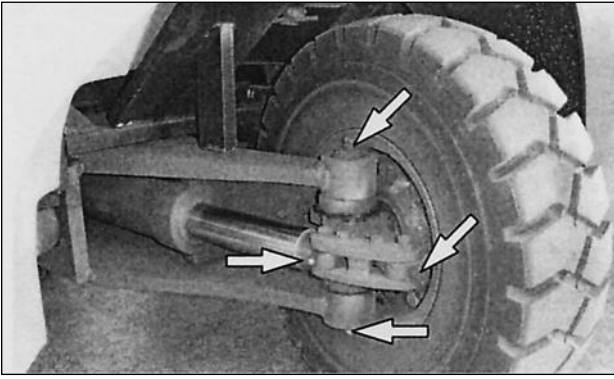
4. Apply a coat of lubricant to all chain links.
5. Lift the fork frame several times to get the lubricant into the chain.

note

In an environment where air will cause corrosion of components or where forklifts must frequently perform lifting operations, the chain should be lubricated more frequently than usual.

6. Check whether the anchor chain and their respective links are worn, and whether the pins are loose or broken.

Steering mechanism-inspection, lubrication



1. Lubricate the center pin of the steering axis. There are a total of four oil filling points, two on each side.
2. Lubricate the steering link bearings, there are a total of four oil injection points, two on each side.
3. Check the steering mechanism for wear or loose parts. Remove debris when necessary.

Battery terminal-cleaning and testing



Batteries can volatilize flammable gases that cause explosions.

Do not smoke when checking the battery electrolyte level.

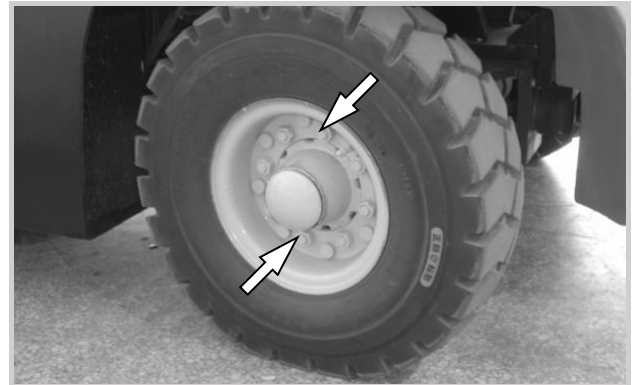
The electrolyte is acid, and if it comes in contact with the skin or eyes, it will cause personal injury.

Wear protective glasses when handling batteries.

Wheel bolts and nuts-inspection

Check tightness

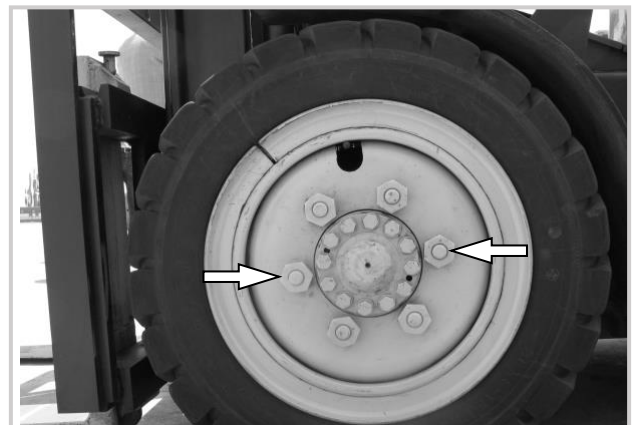
steering wheel



typical example

1. Diagonally check whether the tightening degree of the wheel nuts reaches 120 N•m (82 lb•ft).

Driving wheel



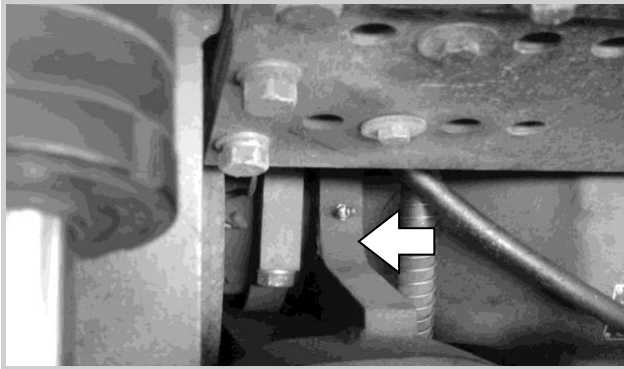
typical example

2. Check whether the wheel nuts are tightened to 520 N•m (384 lb•ft) diagonally in turn.

Maintenance every 600 hours of operation

Before starting any operation or maintenance procedures, you must read and understand Warnings and instructions in the "Safety" section of this manual.

Door frame hinge pin-lubrication



typical example

1. Lower the fork and tilt the mast forward.
2. Lubricate the two oil filling points of the hinge pin of the mast. There is one on each side of the mast.

Mast coupling shaft-lubrication



typical example

1. Lubricate the two oil injection points of the inclined cylinder connecting earrings. One on each side of the mast.
2. Check whether the connecting shaft pin positioning bolt is loose and worn.

Piston rod extension-adjustment

note: The following description is for tilting forward. Because of the reduced inclination of the piston rod, the rod ring should not move by the inclination of the eye circle. If this is not the case, the O-ring in the rod ring needs to be replaced. In order to adjust the tilting bar, a spacer can be added or removed.



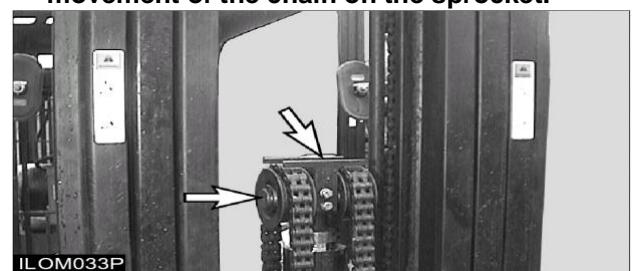
typical example

1. Check and make sure that the oil cylinder extends and retracts smoothly.
2. When all forward or backward tilting, if one cylinder has stopped, and the other One cylinder is still moving, and one of the cylinders must be adjusted.
3. To adjust the extension of the cylinder rod, move the gasket at the back and loosen it Fastening bolts on the spacer.
4. Screw the cylinder rod into or out of the spacer for adjustment. Screw in Short stroke, screw out to increase stroke.
5. Tighten the fastening bolts in accordance with $95\pm 15\text{N.M.}$. Check whether the cylinder rod movement smooth.

Cross head sprocket-inspection

Run check

1. Operate the mast to do a lifting cycle. Observe the movement of the lifting chain on the sprocket. Confirm the normal meshing movement of the chain on the sprocket.



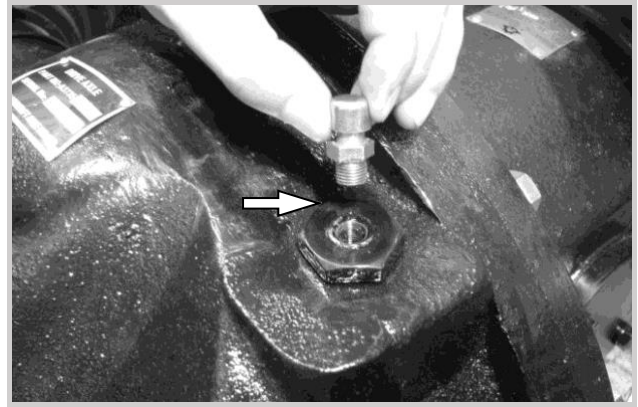
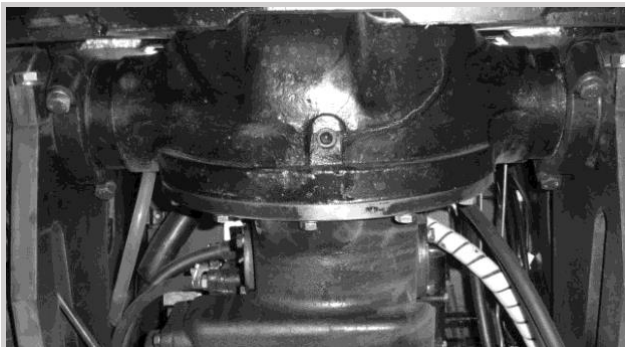
typical example

2. Check whether the sprocket, guard plate and fixing card are damaged.

Overhead Guard-Inspection

1. Check the tightness of the mounting bolts of the overhead guard with a tightening torque of 95 N·m (70 lb·ft).
2. Check whether there are bends and cracks in the overhead guard. Repair if necessary.

Drive axle gear oil-replace and clean

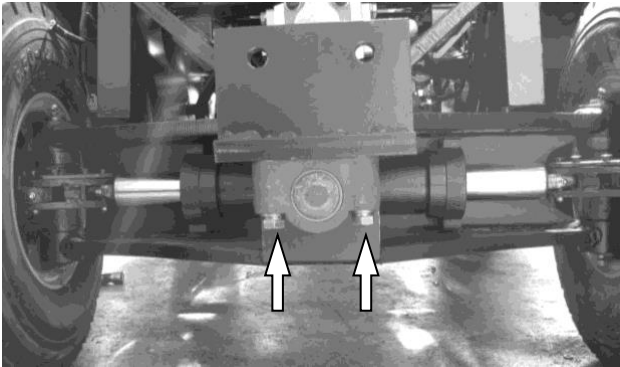


7. Install the oil filler cap.

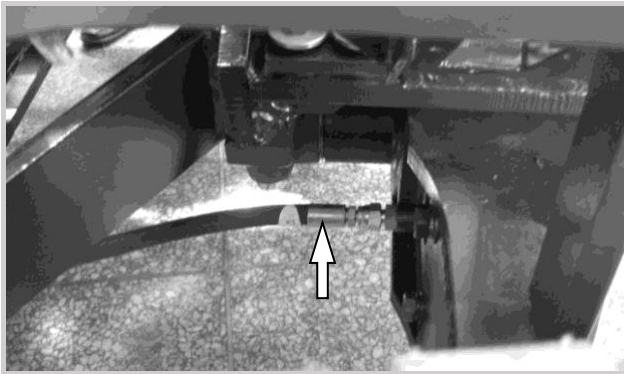
Park the forklift horizontally, lower the fork, tighten the parking brake, place the shift switch at the mid-range position, and turn off the vehicle key.

1. Remove the crankcase oil drain plug and drain the oil into a suitable container. Clean the drain plug.
2. Install the drain plug.
3. Clean the filter assembly in a clean, non-flammable solvent and let it dry. Install the filter assembly and connect the hose.
4. Remove the oil filler cap and fill the drive shaft sleeve with oil.
See "Oil Filling Capacity".
5. Start the forklift and set the direction switch to the middle position.
6. Use lighting to see if the liquid level of the drive axle is lower than the bottom edge of the screw plug hole, if not enough, add it.

Steering suspension-check



1. Check the mounting bolts of the suspension device. If necessary, tighten it to $240 \pm 30\text{N}\cdot\text{m}$ ($180 \pm 20\text{ lb}\cdot\text{ft}$).



2. Check for leaks at the power steering hose connection.
3. Remove dust and dirt on the suspension device and steering wheel.

Parking brake-test, adjust

Refer to "Parking Brake-Test and Adjust" in "Maintenance for the First 100 Hours of Operation".

Horn and lights (if equipped)-check



1. Press the horn button to confirm whether the horn is working properly.
2. Check and replace all damaged meters.
3. Check whether all warning lights, direction lights, reversing lights, driving lights and flood lights are working properly. Replace all burned out bulbs. Repair if necessary.

After-sales service

After-sales service is the effective and timely treatment and resolution of product quality problems reported by customers, so as to provide customers with satisfactory services.

1. After-sales service form

Online service: Answer users' questions through telephone guidance.

Video guidance: For customers who purchase TYPHON forklifts, they will arrange for after-sales engineers to provide video guidance as soon as they encounter technical problems. On-site service: When customers use our products, they encounter unsolvable technical problems or product quality problems. At the time, the service department will arrange service personnel to provide on-site guidance and service at the user's place.

Entrusted service: For products sold by dealers, our company will entrust dealers to provide services, and our company will direct direct sales to customers in more remote areas, and entrust nearby dealers to provide services.

2. Value-added services

Customer training: It can provide customers (and employees) with driving training and forklift maintenance training.

Non-standard customization: If you have special needs, we can customize products specifically for you according to the parameters you provide.

Service years: According to the contract, one year warranty and lifetime maintenance.

Large customer policy: For customers with relatively large purchases, we will provide dedicated staff in the factory service.