

Operations & Maintenance Manual 4-Wheel LPG Forklift

GLP Series

**GLP40 / GLP50 / GLP60
GLP70 / GLP85**



Instructions for use

Please read this manual carefully and operate the vehicle safely.

- Do not operate this vehicle without training.
- Please comply with ISO3691 “Safety Specification for Motor Vehicles Industry”.
- Please do not modify or change the repair parameters, including adjusting the pressure. Any loss or damage to the vehicle resulting from such actions will be your responsibility, and doing so will void our warranty commitment.

SPECIAL WARNING:

The company is committed to innovation and sustainable development. As part of this commitment, we continually improve the technology of our products. Therefore, we reserve the right to make changes and improvements to any product described in this specification without prior notice.

Safety Alert Indications

This manual and the safety decals on the forklift use the following signal words to indicate the level of hazard and the potential consequences of improper operation.

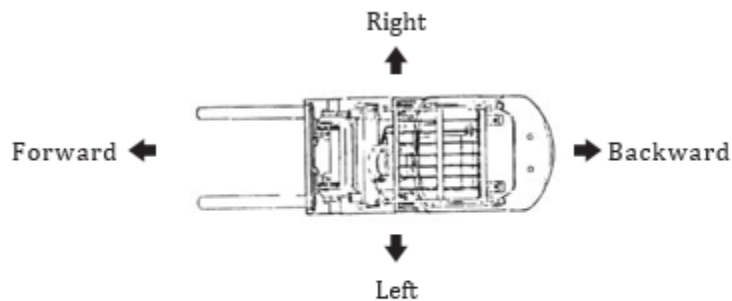
Signal Word Classification

 **DANGER** Failure to follow these instructions will likely cause serious injury or death.

 **WARNING** Failure to follow these instructions might cause serious injury or death.

 **CAUTION** Failure to follow these instructions may cause personal injury or damage to the forklift or property.

 **NOTE** This information helps prolong the service life of the forklift. It is not directly related to accident prevention.



The diagram above defines the directional terms "forward", "backward", "right" and "left" as used throughout this manual.

FOR SUPERVISORS

Forklift accidents cause numerous injuries and fatalities each year. Although modern forklifts are designed with safety in mind, accidents still occur due to improper operation, inadequate training, unsuitable equipment selection, or unsafe working conditions.

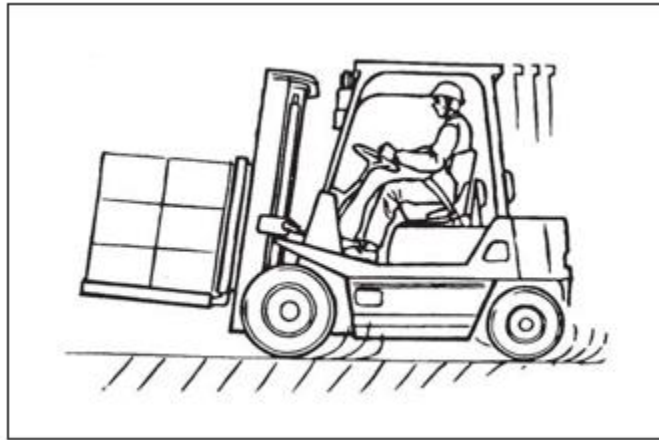
Supervisors play a critical role in preventing accidents by:

- Ensuring operators are properly trained and authorized
- Selecting the correct equipment and attachments for the job
- Maintaining safe operating environments

- Enforcing safe work practices at all times

Proper and Improper Use of the Forklift

Proper Use



A forklift is designed for lifting, transporting, and stacking materials that are placed on pallets or other approved load-handling platforms.

When equipped with an approved attachment, the forklift may also handle loads positioned outside of a pallet, provided the attachment is suitable for the task and installed correctly.

Proper use includes:

- Handling loads that are stable, secured, and within the rated capacity.
- Using only approved attachments designed for the intended load.
- Operating the forklift on surfaces suitable for safe travel.
- Following all safety instructions, decals, and workplace rules.
- Keeping loads within the recommended height limits during travel.

Improper Use



Any use of the forklift outside of its intended purpose is unsafe and must not be permitted. Improper use can lead to equipment damage, loss of load, or serious injury.

Examples of improper use include:

- Transporting or elevating a person on the forks, pallet, or load.
- Allowing a person to ride on the forklift for any reason.
- Using the forks to push, pull, pry, or open doors.
- Suspending loads from the forks using chains, cables, or slings.
- Towing or pushing another vehicle or piece of equipment.
- Using the forklift as a work platform without an approved personnel-lifting device.
- Operating the forklift with removed, disabled, or modified safety devices.
- Using damaged pallets or unstable load bases.

Supervisor Responsibility

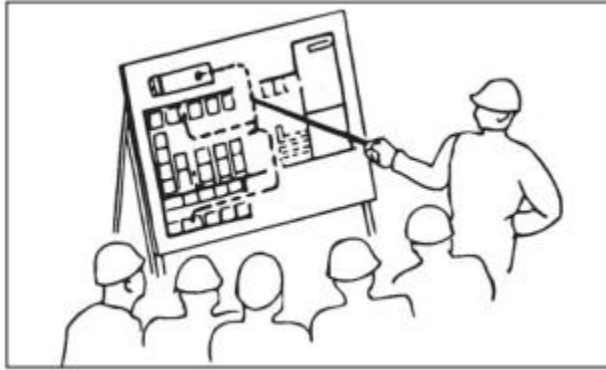
Supervisors must ensure that operators understand the difference between proper and improper use and enforce safe practices at all times.

Improper use must be corrected immediately to prevent accidents and maintain a safe working environment.

Planning and Working Area

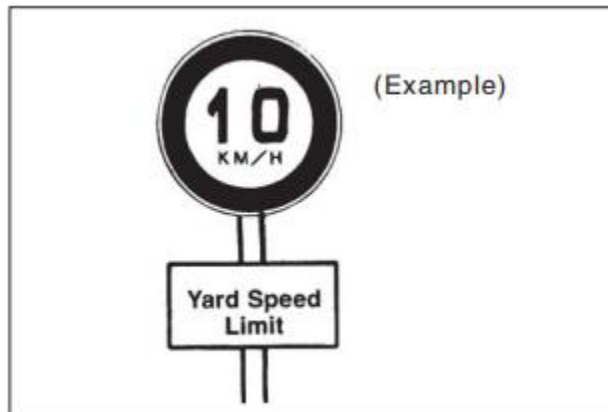
Make an Operating Plan and Discuss It

Before beginning forklift operations, plan the travel routes and work procedures. Review the plan with all personnel involved to ensure everyone understands the operating area, traffic flow, and safety precautions.



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Set Speed Limits



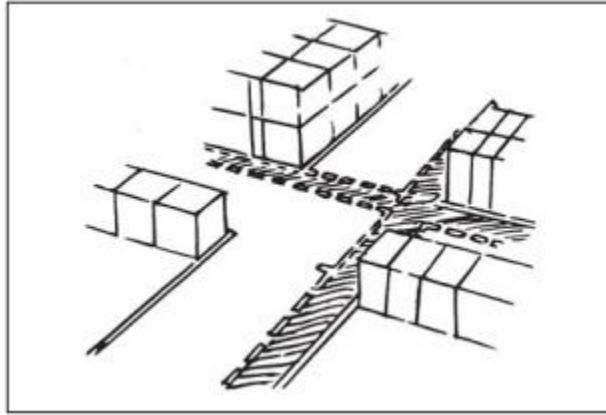
Establish safe speed limits for all forklift operations. Speed limits should reflect the conditions of the work area, including surface type, visibility, pedestrian activity, and congestion. Post clear signs showing the maximum permitted speed.

Install Curbs or Railings



If forklifts are used on loading docks, elevated platforms, or near edges, install curbs, guardrails, or other protective barriers. These measures help prevent accidental falls and protect both operators and equipment.

Mark the Travel Lanes



Designate and clearly mark travel lanes for forklifts. Separate pedestrian walkways from vehicle routes whenever possible. Use floor markings, barriers, or signage to maintain safe and organized traffic patterns.

Keep People Out of the Operating Area



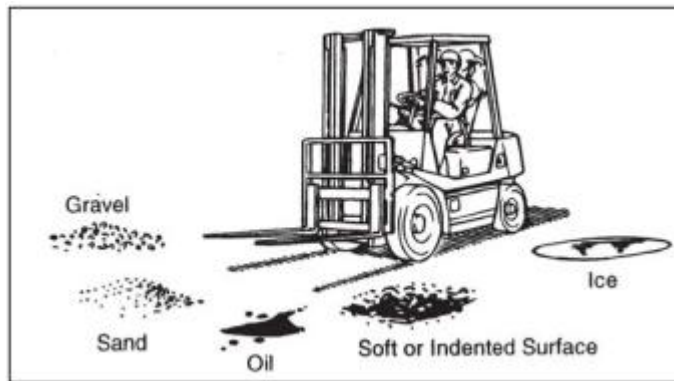
Only authorized personnel should be allowed in areas where forklifts are operating. If other workers must be present, assign a trained guide to ensure pedestrians remain clear of moving vehicles. Post signs or barriers to mark restricted zones.

Keep Unauthorized Vehicles Out



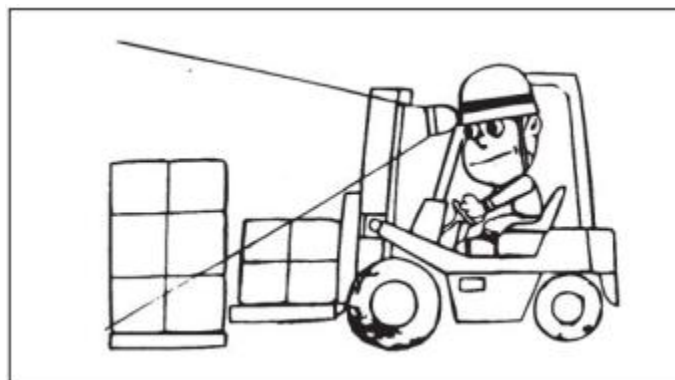
Restrict access to load-handling areas to authorized vehicles only. Use signage, cones, or signals to prevent other vehicles from entering forklift operating zones.

Keep the Ground Level and Dry



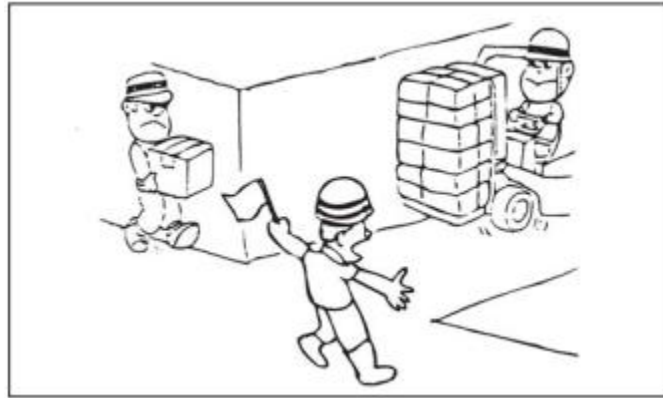
Ensure all travel surfaces are level, firm, and free of hazards. Remove oil, water, ice, or debris that could cause slipping or loss of control. Avoid operating on soft or uneven ground whenever possible.

Provide Adequate Lighting



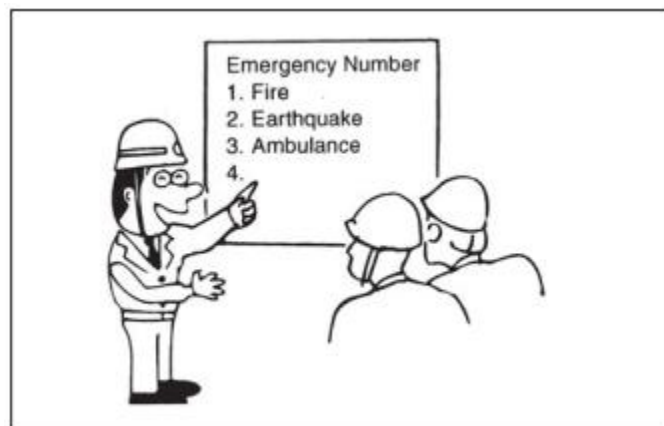
Safe operation requires well-lit travel routes so pedestrians, obstacles, and loads are clearly visible. Use headlights, taillights, and auxiliary lighting as needed to maintain visibility in dim or enclosed areas.

Assign Traffic Guides to Congested Areas



In confined or congested areas where people or other vehicles may pass, assign a trained traffic guide to direct movement safely. All personnel must follow the guide's instructions to prevent collisions and maintain smooth traffic flow.

Know Who to Call in an Emergency



Keep emergency contact information posted and easily accessible. Include numbers for fire, medical assistance, and other relevant services. Ensure all personnel know how to report emergencies quickly and accurately.

Proper Use of Emergency Equipment



Fire extinguishers and first-aid kits must be provided, inspected regularly, and kept in clearly marked locations. All personnel should be familiar with the location and proper use of emergency equipment.

Safety Measures for Danger Spots



Identify areas with potential hazards and mark them clearly with warning signs or barriers. Take additional precautions—such as restricted access or protective equipment—where risks cannot be eliminated.

Traveling on Public Roads

Got a License?



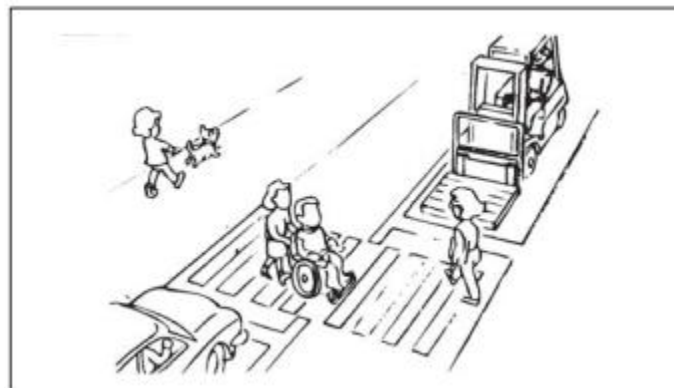
Before operating a forklift on public roads, ensure the vehicle has been properly licensed and inspected according to local regulations. Only trained and authorized operators may drive forklifts outside company property.

No Load, No Towing



Carrying loads or towing other vehicles on public roads is generally prohibited. Do not transport materials or tow another vehicle except in emergencies involving a disabled vehicle. Never tow or push another vehicle, even within company premises, unless specifically authorized and equipped for that purpose.

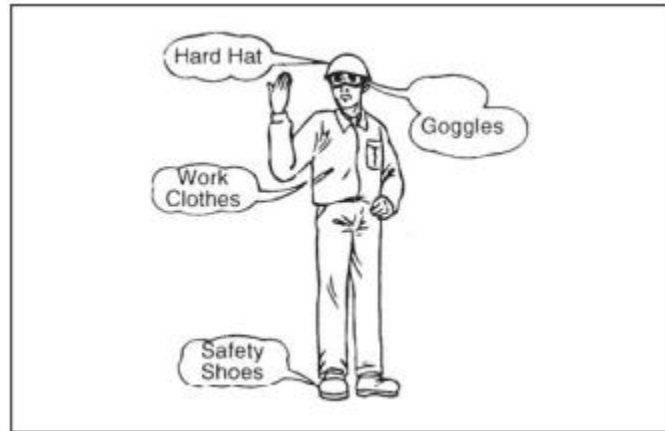
Obey Traffic Laws and Turn Off Work Lights



When traveling on public roads, forklifts must comply with all traffic laws and regulations, just like any other vehicle. Use turn signals and headlights as required by law, but turn off rear work lights or auxiliary lamps that may distract other drivers. Operate with caution near pedestrians, crosswalks, and intersections.

Operator Safety and Fitness

Wear Protective Gear



Always wear proper work clothing when operating a forklift. Work clothes should be designed to prevent any part from catching on controls, knobs, or other equipment components. Shirts and trousers should have snug cuffs and fit securely.

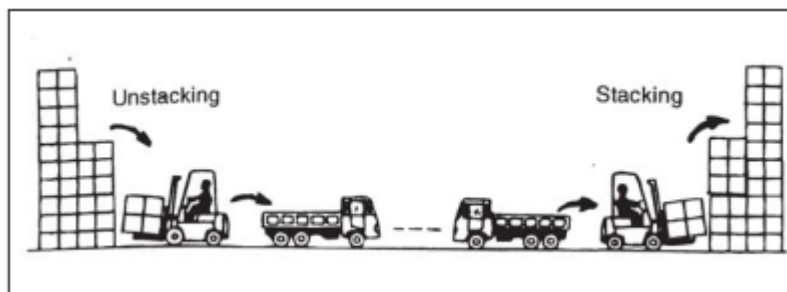
Personnel without license is not allowed to operate

The operator must take formal proper training.

Required protective gear includes:

- **Hard hat** – protects against falling objects or overhead hazards.
- **Safety shoes** – prevent foot injuries from dropped materials or equipment.
- **Work clothes** – durable, fitted garments that reduce snagging risks.
- **Additional protective gear** – such as goggles, gloves, or hearing protection, depending on worksite conditions.

Train Your Staff to Stack Safely



“Stacking” means placing palletized loads or materials directly on top of each other without racks or shelves for separation. If stacking is done improperly, loads may slip or fall, creating a serious hazard for operators and nearby personnel.

Safe stacking practices include:

- Ensuring loads are stable and evenly distributed.
- Avoiding excessive height that could compromise balance.
- Using pallets and materials in good condition.
- Keeping the stacking area clear of obstructions.

All operators should receive training in proper stacking and unstacking methods. Safety instruction should emphasize load stability, visibility, and awareness of surrounding personnel.

Tired or Unwell? Send Them Home

Never allow an operator to work while fatigued, ill, or under the influence of alcohol, drugs, or medication that impairs judgment or reaction time. Operating a forklift requires full attention and coordination. Supervisors must ensure that only alert, capable personnel are permitted to operate equipment.

Types of Vehicles and Loads**Use the Right Forklift for the Job**

Always ensure the type and capacity of the forklift are suitable for the work environment and load requirements.

Check Point Guidelines

Capacity Forklift capacities range widely. Always verify the rated capacity and load center before use. Never exceed the manufacturer's specified limits.

Power Source Forklifts may be powered by gasoline, diesel, natural gas, or battery. Choose the power source appropriate for the environment—battery-powered units are preferred for indoor or enclosed areas.

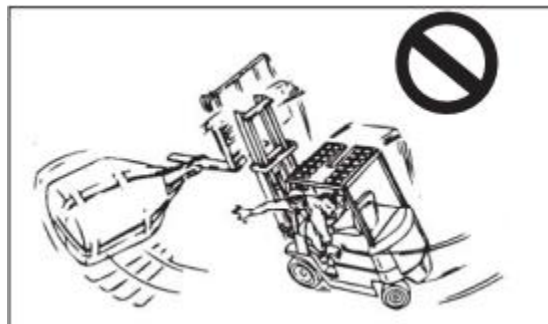
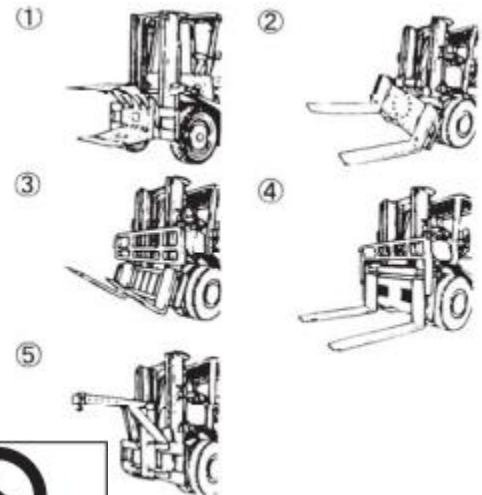
Check Point Guidelines

Balance	Counterbalanced forklifts use a rear counterweight for stability. Reach trucks extend the mast forward for loading and unloading in tight spaces. Select the design that best fits your workspace.
Tires	Use solid or cushion tires for indoor operations and pneumatic tires for outdoor surfaces. Solid cushion tires may be used where punctures are likely. Always inspect tires for wear and damage.
Flammable Materials	When handling flammable or combustible materials, use only forklifts with explosion-proof or safety-reinforced construction. Electric models provide better protection against fire hazards than combustion engines.

Use the Proper Attachment

Attachments expand forklift capability but must be used correctly and safely. Common examples include:

1. **Roll Clamp** – for paper rolls or drums
2. **Rotating Fork** – for dumping or charging work
3. **Hinged Fork** – for lumber handling
4. **Side Shift** – for precise stacking in narrow spaces
5. **Crane Arm** – for slinging or lifting suspended loads



⚠ Warning

Never hoist a load using wire rope or chains hung directly from the forks or an attachment. Do not lift freight containers with forks unless specifically designed for that purpose. Improper

lifting can cause the forklift to tip over. If suspended lifting is required, have a qualified operator use a hook or crane arm attachment.

Equipment Safety and Modifications

No Operation Without Lights, Overhead Guard, or Load Backrest



A forklift must not be operated if any essential safety components have been removed or are not functioning. These include headlights, taillights, overhead guard, load backrest, horn, and turn signals. If any part has been temporarily removed for maintenance or repair, it must be reinstalled before the forklift is used.

Do Not Rely on the Overhead Guard



The overhead guard is designed to reduce the impact of small falling objects, but it cannot withstand heavy impacts. Never assume the guard will fully protect against large or heavy items. If there is a risk of falling materials, take preventive measures to secure the load or adjust the work area to eliminate the hazard.

Have Good Ventilation



When operating a lift truck indoors—such as in an enclosed warehouse—ensure adequate fresh-air ventilation. Exhaust fumes contain harmful gases that can cause chemical poisoning or, in severe cases, fatal exposure.

Safety Practices

- Open windows and doors when warming up or operating the truck indoors.
- Use exhaust fans or ventilation systems to maintain airflow.
- Never operate combustion-engine trucks in confined spaces without ventilation.

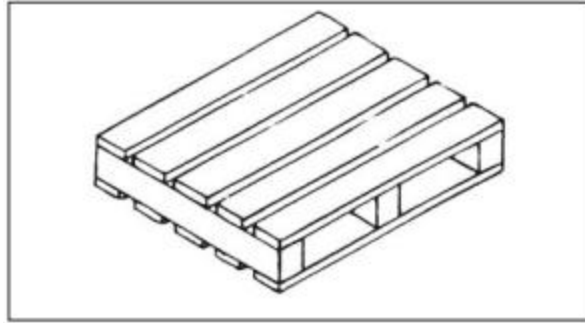
⚠ WARNING: Exhaust fumes can kill. Always verify that ventilation systems are functioning before starting the engine.

Obtain Approval for Any Modification



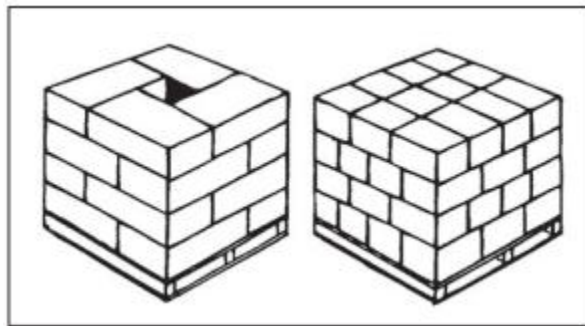
Do not modify or alter the forklift's structure, capacity, or components without written approval from the manufacturer. Unauthorized modifications can compromise safety and void equipment certification. Examples include adding counterweights, changing mast height, or altering electrical systems. Always consult the manufacturer or authorized service provider before making any changes.

Use Sturdy Pallet Materials



Pallets and skids must be strong enough to support the full weight of the load. Inspect pallets before use and remove or repair any that are cracked, broken, or weakened. Using damaged pallets can cause load instability and accidents.

Stack Loads Securely



When stacking loads, arrange them in a stable, interlocking pattern to prevent shifting or collapse. Ensure the weight is evenly distributed across the pallet. Secure the top layer with strapping, shrink wrap, or other suitable restraints to keep the load intact during movement.

Know the Load-Bearing Capacity of the Floor

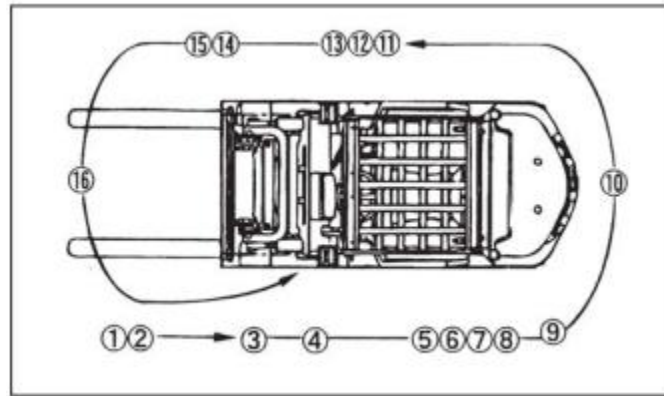


Forklifts are heavier than they appear. For example, a 2-ton forklift may weigh over 3 tons when empty, and when loaded, up to 90 percent of the total weight is concentrated on the front wheels. Before operating, verify that floors, ramps, and roadways can safely support the combined

weight of the forklift and its load. Reinforce weak areas if necessary to prevent structural damage or collapse.

Inspection and Maintenance

Always Inspect Before Operating



Before each use, the operator must inspect the forklift to ensure all safety features and components are functioning properly. Any irregularities or damage must be reported immediately to a supervisor, who is responsible for arranging repairs. Never operate a forklift that shows signs of malfunction or missing safety equipment.

Periodic Inspections Are Mandatory

Comprehensive inspections must be performed monthly and annually by certified personnel with the proper tools and training. All defects must be repaired promptly. Inspection records should be maintained and preserved for at least three years to ensure compliance and traceability.

Replace Safety Parts Regularly

Certain critical parts must be replaced at scheduled intervals, even if no visible wear is detected. Failure to replace these components can lead to serious accidents or equipment failure.

Safety Part	Recommended Replacement Interval (Years)
Cups and dust seals of master cylinder and wheel cylinders	1
Power steering hose	2
Reserve tank tubing	2–4
Steering actuator rubber boots	2

Safety Part	Recommended Replacement Interval (Years)
Lift chain	2–4
Load-handling hoses	1–2

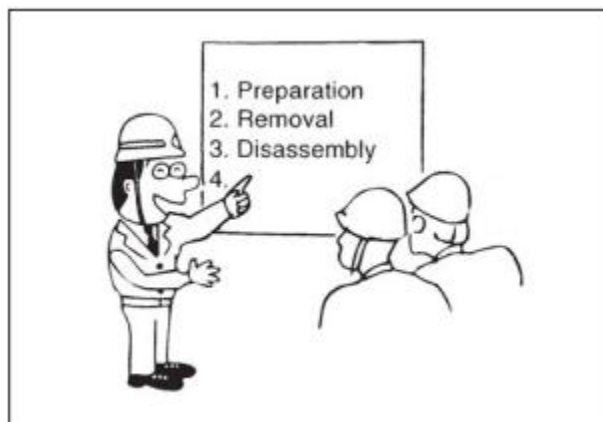
Never Use an Unmaintained Forklift



A forklift that has not passed inspection must not be operated. Tag the equipment **“Out of Service”** and remove the ignition key to prevent unauthorized use. Report the issue to a supervisor and wait until repairs are completed and the forklift is cleared for operation.

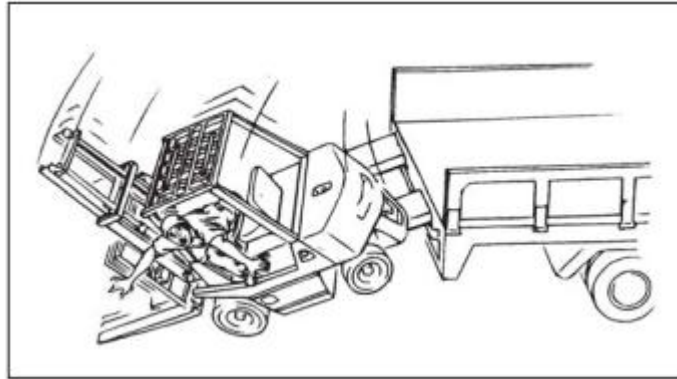
Inspection and Transporting the Forklift

Designate a Repair and Assembly Supervisor



All repair, assembly, and attachment work must be performed under the supervision of a designated, qualified individual. Forklift components are heavy and may be under high pressure. Unsupervised or improperly prepared repair work can result in serious injury. Ensure all personnel involved understand the procedures for preparation, removal, and disassembly before beginning work.

Transporting the Forklift

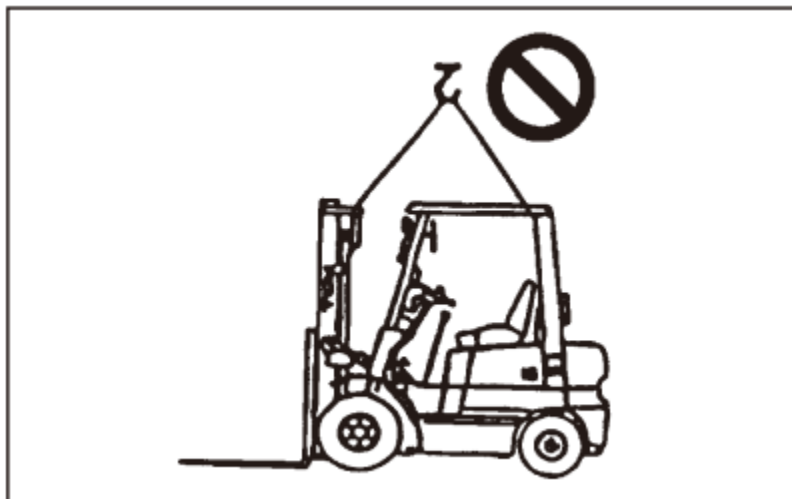


When loading or unloading a forklift onto a trailer, always use a level, hard surface. Confirm that loading ramps are strong enough and wide enough to support the forklift's weight. Avoid loading or unloading during rain unless ramps have anti-slip surfaces.

Safe loading practices:

- Use a self-loading trailer equipped with a jack and winch when possible.
- For loading, tilt the pallet with the jack, attach the winch to the towing pin, start the engine, and pull the forklift up slowly.
- Never ride on the forklift while it is being loaded or unloaded.

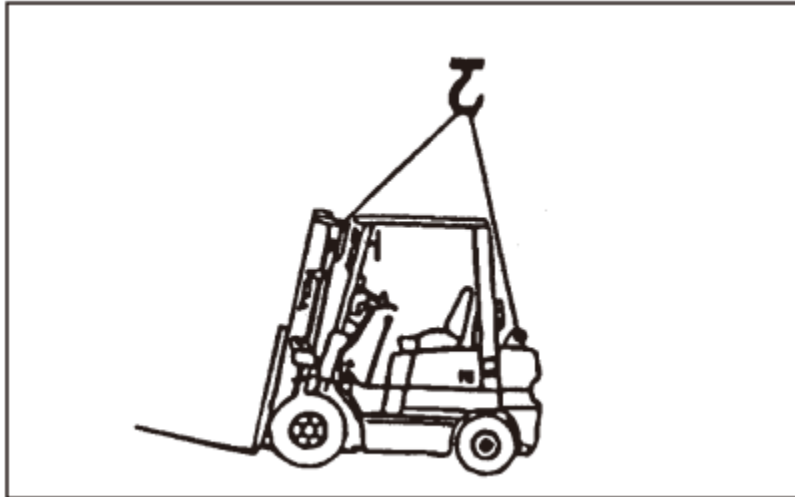
Using Optional “Lifting Eyes”



When lifting the truck, always use the optional lifting eyes provided for safe hoisting. Improper lifting can cause severe injury or equipment damage.

 **WARNING**

- Never hoist the lift truck by its overhead guard or counterweight. Doing so may cause the truck to fall.
- If hoisting is necessary, use only the designated lifting eyes.



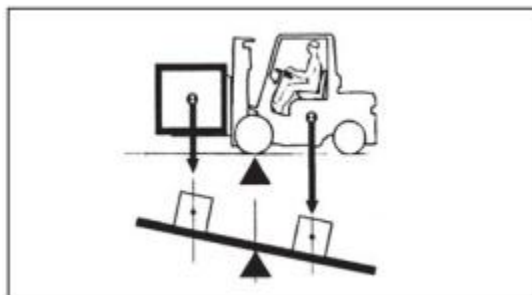
WARNING

When lifting the lift truck:

- Use optional lifting eyes only.
- Ensure ropes or slings are rated for the full weight of the truck.
- Do not use ropes or wires that are kinked, frayed, or deformed.
- Lifting must be performed only by qualified personnel.
- Never stand or pass beneath a lifted truck.

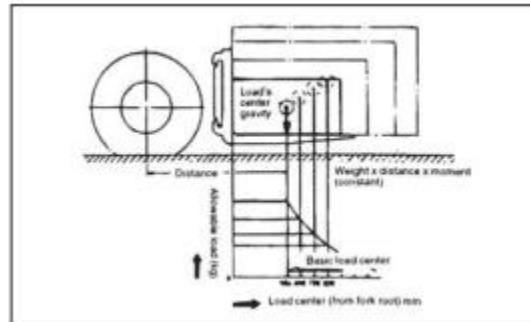
How the Forklift Works

Keep People Out of the Operating Area



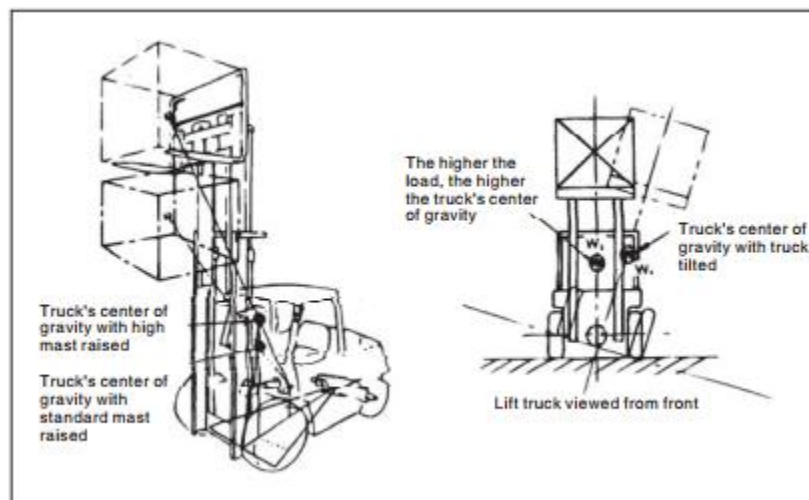
Forklifts use a mast and forks at the front to lift and carry loads. The front wheels act as a fulcrum, balancing the center of gravity of both the truck and the load. Understanding how these two centers of gravity interact is essential for safe operation. Always keep personnel clear of the operating area to prevent accidents caused by shifting loads or sudden movements.

Know the Center of Gravity of Your Load



Different materials—boxes, flat items, or cylindrical objects—affect the center of gravity in unique ways. Operators must know where the center of gravity lies for each load type to maintain stability. Improperly balanced loads can cause tipping or loss of control. Ensure the load is positioned evenly on the forks and secured before lifting or moving.

How the Center of Gravity Shifts



The forklift's overall stability depends on its combined center of gravity—the balance point between the truck and the load. When the truck is empty, the center of gravity lies within the vehicle itself. When loaded, it shifts forward toward the load. Raising or tilting the mast changes this balance, increasing the risk of tipping.

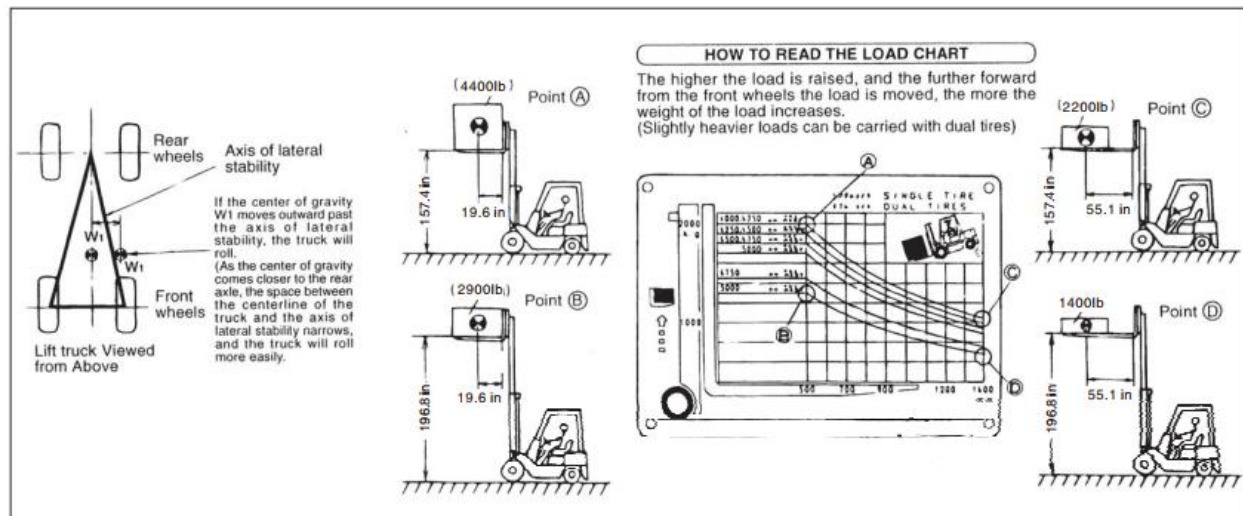
Factors affecting the center of gravity include:

- Size, weight, and shape of the load

- Height of the lift or unloading position
- Tilt angle of the forks
- Tire inflation and condition
- Acceleration, deceleration, and turning
- Surface condition and slope
- Type of attachment used

The higher the load or the more the mast is tilted, the higher and farther forward the center of gravity moves—reducing stability. Operators must adjust speed and mast position accordingly to maintain control.

Understanding Forklift Stability and Load Rating



Outside the Triangle of Balance – The Truck Tips

For a forklift to remain stable, its overall center of gravity must stay within the **stability triangle** formed by the contact points of the left and right front tires and the center point between the rear steering wheels. This triangle defines the safe zone for the center of gravity.

If the center of gravity moves forward beyond the front wheels, the forklift will tip forward, using the front wheels as a pivot. If it moves outside the triangle to either side, the truck will roll in that direction. Maintaining the center of gravity within this triangle is essential for preventing tip-overs and ensuring safe operation.

Rated Load (Load Weight and Load Center)

The **load center** is the horizontal distance from the front face of the forks to the load's center of gravity. The **rated load** is the maximum weight that can be safely lifted at the nominal load center, as specified by the manufacturer.

A **load chart** is attached to each forklift, showing how rated capacity changes with load center and lift height. As the load center moves farther forward or the mast is raised, the rated capacity decreases because the center of gravity shifts forward.

Key points:

- Heavier loads can be handled only when the load center is close to the mast.
- Raising the load or extending the forks reduces stability and allowable weight.
- Always consult the load chart before lifting to confirm safe limits.

Accelerating, Decelerating, and Turning

The principle of inertia states that an object at rest remains at rest and an object in motion continues moving at a constant speed unless acted upon by an external force.

This principle directly affects forklift stability during acceleration, braking, and turning.

Acceleration and Braking

When a forklift begins to move, inertia creates a momentary backward force.

When it stops, inertia produces a forward force.

If brakes are applied suddenly, the forward momentum can cause the forklift to tip forward—especially when carrying a raised load.

Always apply brakes smoothly and gradually to maintain control.

Turning

During turns, **centrifugal force** pushes the forklift outward from the center of rotation.

This outward force can cause the truck to tip sideways if speed is too high or the load is elevated.

Because the zone of lateral stability is narrow, operators must reduce speed significantly when turning, particularly with raised loads.

Elevated Loads

When the load is lifted, the overall center of gravity rises, reducing stability.

A high center of gravity increases the risk of tipping forward or sideways during sudden stops or sharp turns.

Operate slowly and cautiously whenever the mast is raised.

Traveling

 **Read Manual and Decals**

Always read the **Operation and Maintenance Manual** and all caution plates on the forklift before use. Each model may differ in design and operation. Familiarize yourself with all safety decals and keep the manual accessible for anyone who operates or services the truck.

⚠ When Starting

Before turning the key switch on:

- Apply the parking brake securely.
- Place the forward/reverse lever in neutral.
- Press the brake pedal.
- Adjust the steering column and seat to a comfortable position.

Never adjust these during operation. Ensure no one is near or under the truck before seating yourself in the driver's position.

⚠ Before Reversing Direction

Always bring the forklift to a complete stop before changing direction. Abrupt reversal can cause mechanical damage or loss of control.

⚠ Carry the Load Low

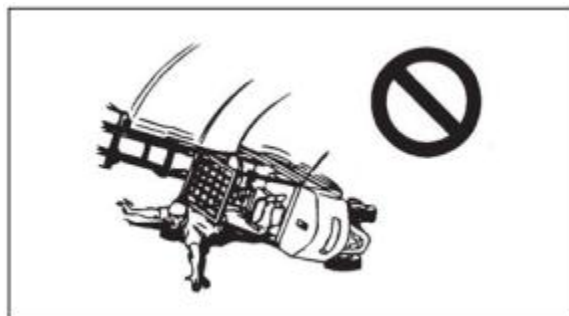
Travel with the forks as low as safely possible, regardless of whether the truck is loaded. Do not turn with the load raised—this increases the risk of tipping.

⚠ Keep the Truck's Center of Gravity Low While Traveling

When loaded, keep the forks approximately 7–8 inches above the ground and tilted slightly back. This helps maintain a low center of gravity and improves stability.

⚠ Do Not Jerk the Forks When Loaded

Avoid sudden lifting, lowering, or tilting movements. Abrupt actions can cause the truck to tip forward or lose load stability.



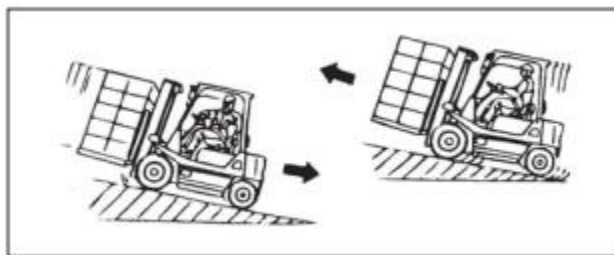
⚠️ Avoid Sharp Starts, Stops, and Turns

Operate smoothly. Reduce speed before turning, especially when the truck is unloaded—its rear weight can cause instability. Gradual acceleration and braking help maintain control and prevent tipping.



⚠️ Back Down and Drive Up on a Slope

- Never make turns on a slope — this can cause the forklift to tip.
- Keep forks and pallets at a safe ground-clearance height.
- When operating **unloaded**, keep the rear of the truck pointed uphill.
- When operating **loaded**, keep the rear of the truck pointed downhill.
- Use foot and regenerative brakes properly when descending.
- Never turn off the key switch while descending a grade.



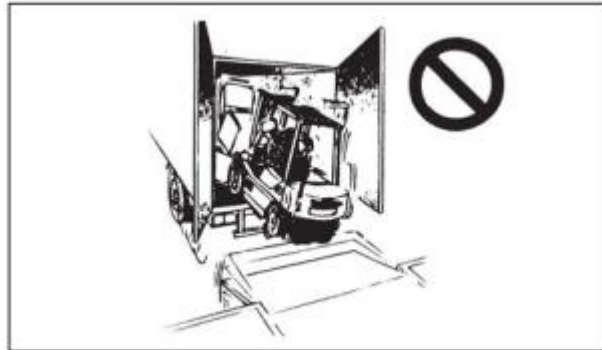
⚠️ Stay Away from the Edge of the Road

Avoid operating near the edge of soft or unstable ground, as it may collapse. Maintain a safe distance from the edge of narrow roads, ramps, or platforms to prevent accidents.



⚠ When Driving Over a Dockboard or Bridgeplate

- Do not ride on the edge of a dockboard or bridgeplate — the truck could fall, causing serious injury or death.
- Ensure the dockboard or bridgeplate is properly secured and undamaged.
- Never exceed its rated capacity.
- Set the trailer brakes and block the wheels to prevent movement.
- Install jacks to support the trailer when entering with the forklift.



- Drive slowly and carefully across the dockboard or bridgeplate.
- Watch for bystanders and instruct the trailer driver not to move until loading or unloading is complete.
- Always confirm the dockboard or bridgeplate is secure before crossing.

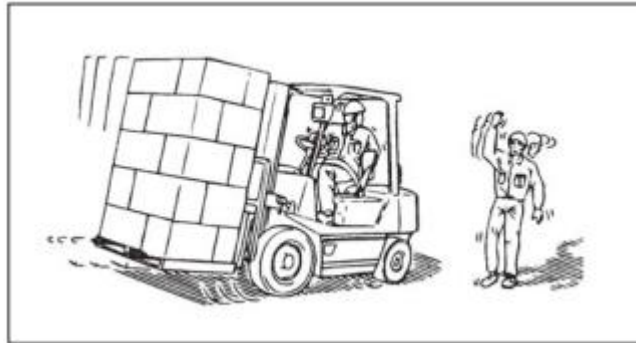
⚠ Never Use a Person as a Counterweight

Never use a person as an additional counterweight or allow anyone to ride on the forklift. Doing so can cause severe injury or death.



⚠ Have a Guide When Handling Bulky Loads

When handling large or bulky loads that obstruct your view, operate the forklift in reverse and use a trained guide to direct movement. Maintain clear communication with the guide at all times.



⚠ Reverse Travel

When traveling in reverse, always look in the direction of travel. Do not rely solely on mirrors or backup alarms. Turn your head and check surroundings to ensure a clear path.



⚠ Pre-Operational Checks

Do not begin work until all pre-operational inspections are complete. If any issue is found, report it immediately to your supervisor and do not operate the forklift until repairs are made.

⚠ Keep Mirrors, Backup Alarm, and Lamps in Good Condition

- Adjust mirrors for full rear visibility and keep them clean.
- Ensure the backup alarm sounds when the forklift is in reverse.
- Replace burned-out bulbs and repair any malfunctioning lights or alarms before operating.

⚠ Keep Your Hands Clean

Operating controls with greasy or dirty hands can cause slippage and loss of control. Clean hands thoroughly before handling the steering wheel or levers.

⚠ Mount Properly

Never mount or dismount a moving forklift. Always bring the truck to a complete stop before getting on or off. Use designated steps and hand grips for support, and keep them clean and free of oil or debris.

⚠ Do Not Move Controls Unless Properly Seated

Operate levers and pedals only when seated correctly. Standing or leaning while operating controls can cause loss of balance or control.



⚠ Sound Horn When Starting

Before starting, ensure no one is near the forklift. Sound the horn to alert nearby workers and bystanders that the truck is about to move.



⚠ Do Not Turn the Key Switch Off While Moving

Turning off the key switch disables power steering, making it difficult to control the truck. Always keep the power on while operating.

⚠ Safe Traveling

- **Always look in the direction of travel.** Failure to do so can lead to collisions or accidents.
- When passing another truck, slow down and maintain a safe distance.
- Keep a clear area around the forklift and ensure no obstacles are in your path or turning radius.
- **Observe speed limits** and adjust speed according to workplace conditions.



- **Do not pass other trucks** at intersections, corners, or areas with restricted visibility.
- **Slow down at corners** and sound the horn when approaching intersections or blind spots.
- **Come to a complete stop** before crossing roads or turning at corners.

⚠ Do Not Travel Over Wet or Soft Surfaces



Avoid driving over floors or ground covered with water, potholes, or soft soil. Wet or unstable surfaces can cause loss of traction and tipping. If unavoidable, proceed slowly and cautiously.

⚠ Do Not Ride on Obstacles

Avoid crossing curbs, railroad tracks, or ditches. If crossing is unavoidable, reduce speed and maintain control.

Avoid Running on Slippery Surfaces

Operate slowly and carefully on wet, oily, or icy floors. Sudden acceleration or braking can cause skidding.

Know the Load-Bearing Capacity of the Floor

Before entering a building, elevator, or platform, confirm that the surface can support the combined weight of the forklift and its load. Never assume structural strength without verification.

When Entering Areas With Height or Width Limits

- Ensure sufficient clearance for the forklift to pass safely.
- Keep hands and feet inside the operator's compartment.
- Confirm no one is near the truck.
- Watch for overhead cables, beams, or other obstacles.

Rear Steer and Rear Swing

When turning forward, the rear of the forklift swings outward. Always check for walls, racks, or other obstacles before turning.

Brake the Truck in Good Time

Forklifts require longer stopping distances on slippery or downhill surfaces. Brake early and maintain a controlled speed to prevent sliding or loss of control.

Practice Safe Driving and Load Handling

Before operating, practice safe driving and load handling techniques. Even experienced operators must remain cautious—reckless driving or improper handling can cause injury or damage.

When Using Multiple Trucks

Different forklifts may have unique control layouts or braking systems, even if they appear similar. Review each truck's controls before operation and pay special attention to braking performance.

Load Handling

⚠ WARNING

Never overload

Know the rated capacity of your lift truck and its attachment, if any, and never exceed it; otherwise the rear wheels will be raised, thus making it difficult to travel and turn.

There is also danger of the truck tipping over.

Never lift a load over anyone

Never permit anyone to stand under raised forks.

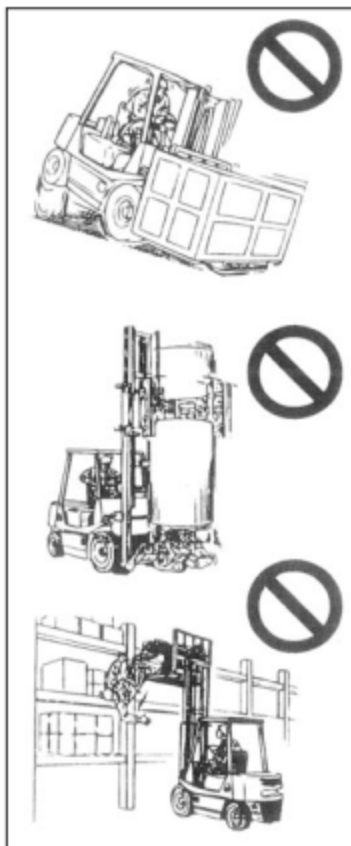
The forks might fall down unexpectedly, thus causing a personal injury.

Never elevate a man

Never allow other person(s) to ride on the forks. He might fall off the forks, getting injured.

Do not put your hands or feet into the load handling system

Never put your hands or feet on the mast or mast connecting members; otherwise your hands or feet might be cut if the mast moves unexpectedly.



⚠ Do Not Lift Off-Centered Loads

Ensure loads are evenly positioned across the forks and aligned with the truck's center of gravity. Off-centered loads can cause tipping or loss of control.

⚠ Make Loads Contact the Load Backrest

Insert forks fully into the pallet so the load rests against the backrest. This prevents shifting or falling during movement.

⚠ Do Not Lift Unstable Loads

Avoid handling loose or unstable materials. Confirm that loads are secure and balanced before lifting.

⚠ Use Caution When Handling Loads

Secure loads with ropes, straps, or other restraints to prevent items from falling off during transport.

⚠ Do Not Stack Loads Too High

Do not stack loads higher than the top of the load backrest. Excessive height increases the risk of falling materials, which can cause injury or death.

⚠ Do Not Tilt the Mast With Loads Raised

Use only minimal forward or reverse tilt when stacking or unstacking loads. Never tilt forward unless the load is positioned over the stack—doing so can cause the forklift to tip forward.



⚠ Do Not Lift or Start With Mast Tilted Forward

When the mast is tilted forward, do not lift, start, or move the forklift. Always return the mast to a neutral position before operating.

⚠ Do Not Stack or Unstack Loads on a Slope

Perform stacking and unstacking only on level ground. Uneven surfaces can cause instability and tipping.

⚠ Keep Lift Chains Tight

Loose or slack chains can cause the carriage or mast to hang up, leading to sudden load drops or tipping. Inspect and maintain proper chain tension at all times.

⚠ Do Not Use the Forklift for Unintended Purposes

Never use the forklift to push other vehicles, open doors, or move freight car doors. Operate only within the manufacturer's intended use.

⚠ Do Not Hoist or Tow Loads Improperly

- Do not hoist loads using ropes or cables hung on the forks.

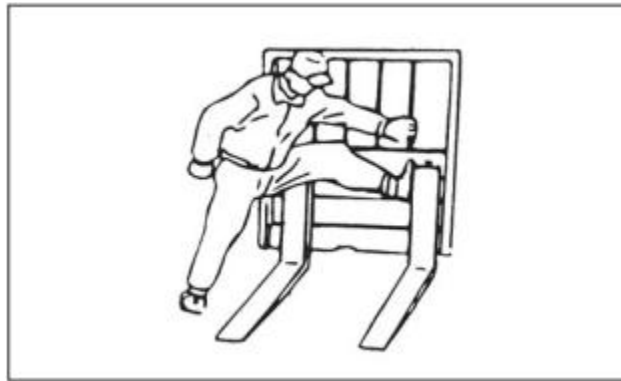
- Do not tow other vehicles.
- Do not push or pull loads with the forks—this can damage the load or cause tipping, especially at high lift heights.

⚠ Adjust Fork Spacing Properly

Set fork spacing according to the size and shape of the load. Proper spacing ensures balanced lifting and prevents shifting.

⚠ Adjust Fork Spacing With Feet, Not Hands

Use your feet to adjust fork spacing. Never use your hands—pinch points between the forks and carriage can cause serious injury.



⚠ Ensure Forks Are Securely Locked

After adjusting fork spacing, lock the forks with stoppers. Unlocked forks can slide during travel, causing loads to fall.

⚠ Keep Chain Tension Even

Ensure the right and left lift chains have equal tension. Uneven tension can cause loads to tilt or shift, even if properly placed, and may lead to broken chains.

⚠ Pay Attention to Fork Tips

Fork tips are sharp and can cause injury. If they catch on obstacles, the forklift may lose control and cause an accident. Always maintain awareness of fork position and clearance.

⚠ Keep Only the Guide in the Work Area

During operation, only the designated guide should be near the forklift. Keep all other personnel and vehicles clear of the working zone.

⚠ Do Not Allow Others or Trucks to Approach During Operation

Maintain a safe perimeter around the forklift while handling loads. Unexpected movement or contact can cause serious injury.

Work With a Guide When in a Group

When multiple people are involved, assign one person to give clear guidance and follow their instructions precisely.

Use Strong Pallets and Skids

Always use pallets and skids capable of supporting the full load weight. Damaged or weak pallets can collapse, causing the load to fall.

Handle Long or Bulky Loads With Extreme Caution

Lift and lower carefully to avoid striking nearby objects. Keep the load as low as possible while moving. Turn slowly to prevent shifting or falling.

Be Alert for Overhead Hazards

Watch for overhead cables, pipes, sprinklers, or beams. Contact with overhead structures can cause the load to fall or the truck to tip. Remember that mast height increases when forks are raised.

Do Not Pick Up Loads From Another Truck

Never take loads from the raised forks of another forklift. This can create off-centered loads or cause the load to fall.

Do Not Hold Loads by Hand

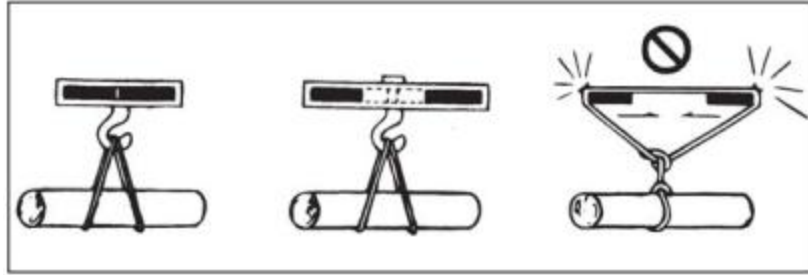
Never steady or hold loads manually. If the forklift moves unexpectedly, the load can fall and trap the operator or bystander.

Do Not Squeeze Loads Into a Stack

Avoid using traction force to push loads into a stack. This can damage both the load and the forklift, and may cause tipping.

Do Not Hang Loads With Wire Ropes Attached Directly to Forks

Never attach wire ropes directly to the forks or attachments. If a rope breaks or slips, it can cause serious injury or overturn the forklift. Using a rope on only one fork is especially dangerous—it can shift the center of gravity and cause tipping.



✔ Use Proper Attachments

Use a **hook attachment** or **crane arm** designed for hanging loads. Ensure wire ropes are strong enough to support the load and properly secured. Keep rope lengths short, with an adequate spread angle between legs for stability.

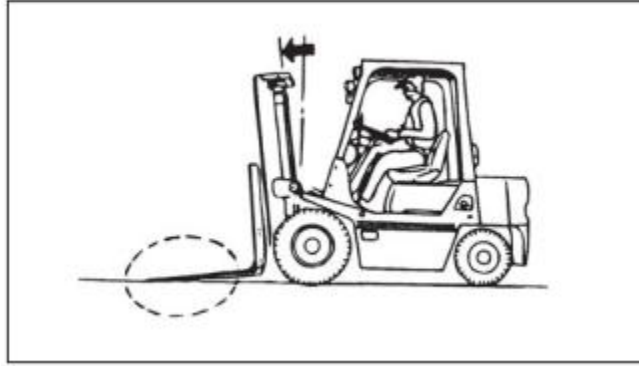


Parking

⚠ When Leaving the Forklift

Before leaving the truck, follow these steps:

1. Lower the forks to the ground in an out-of-traffic area.
2. Tilt the forks slightly forward so the tips rest against the ground.
3. Apply the parking brake.
4. Set the direction control lever to neutral.
5. Turn off the key switch.
6. Remove the key.



⚠ **Park in a Safe Location**

- Park only in designated areas.
- Choose a hard, level surface.
- Avoid parking near emergency exits, stairs, fire hydrants, or flammable materials.
- Always park in an out-of-traffic zone.

⚠ **Block Wheels When Parking on a Slope**

If parking on a slope is unavoidable, apply the parking brake firmly and block the wheels to prevent movement.

⚠ **When Parking a Faulty Forklift**

If the forks cannot be lowered due to a malfunction:

- Attach a warning sign to the fork tips to alert pedestrians and vehicles.
- Park in an out-of-traffic area.
- Take precautions to prevent anyone from passing under raised forks.

⚠ **Remove the Key and Post a Warning Sign**

For faulty trucks, turn off the key switch, remove the key, and attach a **DO NOT OPERATE** sign near the controls.

⚠ **Do Not Ride on the Front Guard**

Never use the mast or truck body as a ladder or platform. Climbing on the front guard can result in entrapment between the mast and truck body, causing serious injury.



Inspection and Service

⚠ Authorized Personnel Only

Inspection and maintenance must be performed **only by qualified and authorized personnel**. Improper inspection, maintenance, or repair can cause serious accidents or equipment failure.

⚠ Before Inspection

- **Park on a hard, level surface.** Ensure the area is dry and free of dust.
- **Provide adequate ventilation.** When working indoors, maintain good airflow.
- **Keep fire prevention equipment nearby.** Know how to use it.
- **Lower forks and attachments to the ground.**
- **Turn off the key switch** and disconnect the battery receptacle.
- **Set all control levers to neutral.**
- **Ensure accelerator and load control levers are neutralized.**

⚠ Cleanliness and Fire Safety

- **Wipe off any spilled oil or grease.** Contaminants can hide cracks or defects.
- **No open flames or smoking.** Never use fire near lubricants, batteries, or oily materials.
- **Avoid loose clothing.** Wear protective gear suited to the job.

⚠ Personal Protective Equipment

Always wear:

- Hard hat
- Safety shoes
- Safety glasses

- Gloves

Worksite Safety

- **Use caution when working on the truck.** Avoid falls.
- **Never place feet under the forks.**
- **Watch for pinch points.** Keep fingers clear when closing battery covers or doors.

Working Under Raised Forks or Attachments

If it is absolutely necessary to work beneath raised forks or attachments, place a **stable support** under the inner mast and/or carriage to prevent accidental lowering.
Never rely solely on hydraulic pressure to hold the forks in place.

Team Coordination

When working in a group, designate a leader and follow their instructions carefully to maintain safety and efficiency.

Use Appropriate Tools

Always use tools designed for the specific maintenance task.
Improper tools can cause damage or lead to serious injury.

Do Not Misuse Tools

Never use tools for purposes other than their intended function.
Misuse can result in equipment failure or accidents.

Hydraulic Oil Safety

Hydraulic oil remains **hot and pressurized** immediately after operation.
Do not attempt to drain or replace filters until the system has cooled.
Hot oil can spray out and cause burns.

Release Oil Pressure Before Working

Residual pressure may remain in the hydraulic circuit.
Before servicing, release the pressure safely.
To check for leaks, wear safety glasses and gloves, and use cardboard or wood—not your hands.
High-pressure oil can penetrate skin and cause blindness.

Accumulator and Piping Inspection

Inspection of piping connected to an accumulator is hazardous.
Only qualified service personnel or authorized dealers should perform this task.

⚠ **High-Pressure Oil Contact**

If hydraulic oil under pressure contacts your skin, **seek medical attention immediately**. High-pressure injection injuries require urgent treatment.

⚠ **Disconnect Power Before Working on Rotating Parts**

Before inspecting or servicing rotating components, **turn off the key switch** and **disconnect battery receptacles**. Keep hands, clothing, and tools away from moving parts. Never bring objects near rotating mechanisms.



⚠ **Do Not Use the Mast as a Ladder**

The mast or load backrest must never be used as a ladder or climbing aid. Unexpected mast movement can cause crushing or cutting injuries. Always use proper ladders or platforms for elevated work.

⚠ **Tire Inflation Safety**

When checking or adjusting tire pressure:

- Stand **in the path of rotation**, not directly beside the tire.
- Adjust the compressor's air pressure before inflating. Excess pressure can cause tire rupture or explosion.
- Only qualified personnel should inflate tires.
- Wear **safety glasses and a mask** to protect against dust and debris.

Inflating tires to high pressure requires specialized skill—never attempt without training.



Inflation and Inspection Procedures

- When checking tire inflation pressure, stand in the path of rotation, not directly beside the tire.
- Before inflating, adjust the compressor's air pressure to the correct level. Over-pressurization can cause tire rupture and serious injury.
- Inflating tires to high pressure requires specialized skill — only qualified personnel should perform this task.
- When using compressed air, wear safety glasses and a mask to protect against dust or debris.

WARNING — Tire Disassembly and Reassembly

Leave the disassembly and reassembly of tires, tubes, and rims to a qualified specialist. Lift-truck tires operate at very high pressures (approximately 700 – 1,000 kPa). Improper handling or assembly can cause an explosive failure, resulting in severe injury or death.

Wheel Assembly and Tire Handling

- Do not loosen wheel assembly nuts when changing a tire. The wheel assembly is secured by hub and wedge rings. Removing nuts or rings improperly can cause the tire, side ring, or wedge ring to eject violently, resulting in serious injury.
- Do not loosen bolts or nuts on split-rim assemblies. Internal tire pressure can cause rims, bolts, or nuts to blow off if disassembled incorrectly.
- When replacing rims, ensure dowel bolt heads face outward to prevent accidental loosening.

- After tire replacement, perform a test run and verify hub nuts are tightened to the specified torque.

WARNING — Jack Use

- Never go under a truck while it is jacked up.
- Remove all loads before jacking.
- The operator must leave the truck during lifting.
- Support the truck with blocks or stands on both sides of the frame.
- Block wheels to prevent movement.
- Only qualified personnel may perform lifting or slinging operations.
- Use designated lifting points and undamaged wire ropes rated for the truck's weight.

CAUTION — Battery Handling

- If electrolyte contacts skin: Flush immediately with large amounts of water.
- If electrolyte contacts eyes: Rinse thoroughly with water and seek medical attention.
- Battery electrolyte contains dilute sulfuric acid, which is highly corrosive and can cause severe burns or blindness.
- Always wear acid-resistant gloves, goggles, and protective clothing when servicing batteries.

Battery Handling Safety

- **Wear protective gear:** Always use rubber gloves, boots, and safety glasses when handling batteries, adding electrolyte, or checking specific gravity.
- **If electrolyte is swallowed:** Have the person drink water or milk mixed with egg white and salad oil, then seek medical attention immediately.
- **No fire or sparks:** Batteries release hydrogen gas, which is highly explosive. Never smoke or use open flames near batteries. Turn off the charger before connecting or disconnecting cables.

- **Avoid short circuits:** Never short battery terminals or use metal tools across poles. Ensure terminals are tight and correctly connected.
- **Disconnect sequence:** Remove the negative (–) terminal first and reconnect it last.
- **Do not connect or disconnect battery receptacles while energized.**
- **Avoid metal tools on battery cases** — accidental contact can cause sparks or short circuits.
- **Use caution when tightening positive terminal screws** to avoid contact with metal parts of the truck.

Battery Electrolyte and Charging

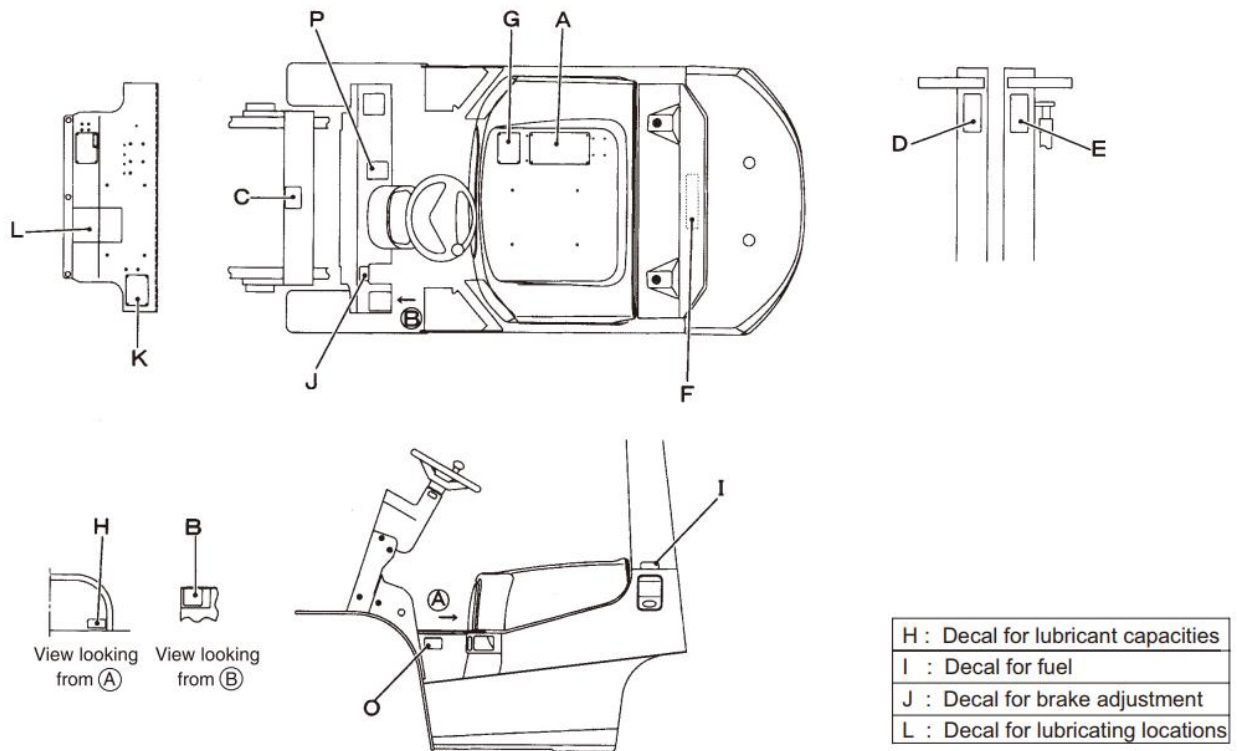
- **Monitor electrolyte level:** Keep fluid between the **UPPER** and **LOWER** marks. Add purified water if low.
- **Secure battery caps** before cleaning.
- **Ensure good ventilation during charging:** Hydrogen gas buildup can cause explosions. Keep covers open and ventilate the area.
- **Follow charger instructions** exactly as described in the manufacturer's manual.
- **No fire during charging:** Avoid flames and sparks.
- **Temperature limits:** Do not charge if electrolyte temperature exceeds **35 °C**. If it reaches **50 °C**, stop charging until it cools.
- **High voltage warning:** Electric truck batteries exceed **48 V** — accidental contact can cause shock or burns.
- **Static electricity:** Avoid wiping battery surfaces with dry cloths that can generate static discharge.

CAUTION PLATES

Caution plates attached to the lift truck provide essential safety information and operating procedures. Always read and follow the messages displayed on these plates, as well as the related instructions in this manual.

Safety Guidelines

- Ensure all caution plates and decals are **clearly visible** and **legible**.
- Replace any **damaged, faded, or missing decals** immediately with genuine replacements.
- Never operate the truck if caution plates are missing or unreadable.
- Keep plates **clean and unobstructed** to maintain visibility.



A. Safe operation

 CAUTION
YOU MUST FOLLOW THESE RULES TO AVOID SEVERE INJURY OR DEATH TO YOURSELF AND OTHERS. 1. Operate truck only if trained and authorized by your employer. Know Operation & Maintenance Manual and all work rules. 2. Safety check truck every day. Do not start if damaged or faulty; stop if problems start. Repair allowed only by trained, authorized mechanics. 3. Turn, start, stop, and handle loads smoothly and slowly. Carry loads low and tilted back; stack only on level using minimum tilt. 4. Look where you are going. Watch out for people, hazards on floors and overhead, drop-offs and tail swing clearance. 5. Truck overturn can kill you. Slow for turns even when empty. Never turn on inclines. 6. Do not lift overweight or loose loads. Move slowly with wide, high, or long loads. Keep forks wide and fully under loads. Travel in reverse if loads block view. Attachments require special training, ask your employer. 7. Keep loads upgrade on all inclines. Stay clear of ramp and dock edges. Make sure dockboards and trailers are secure before going on them. 8. Overhead guard and load backrest must be on truck. Always keep yourself completely inside guard. 9. Stop engine when refueling. Follow Operation & Maintenance Manual and employer's work rules about fuel, battery and tire maintenance hazards. Forks can fall rapidly even with light loads. 10. Do not raise people or allow them under forks. No passengers allowed on truck. 11. Park only in authorized areas, never on inclines. Lower forks to bottom, put direction control in neutral, turn off key and make sure parking brake is set. 12. Fasten the seat belt, when operating the lift truck.

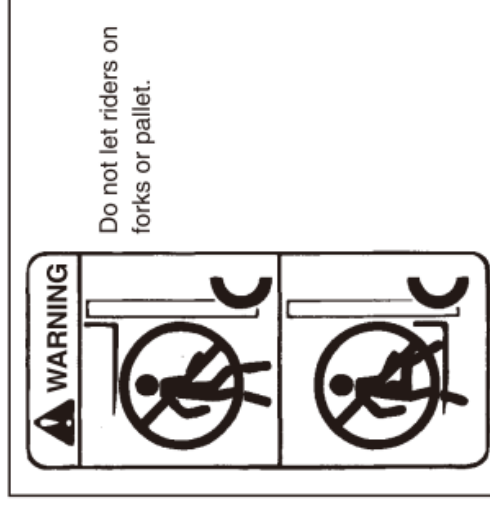
B. Warning decal for handling inflated tires



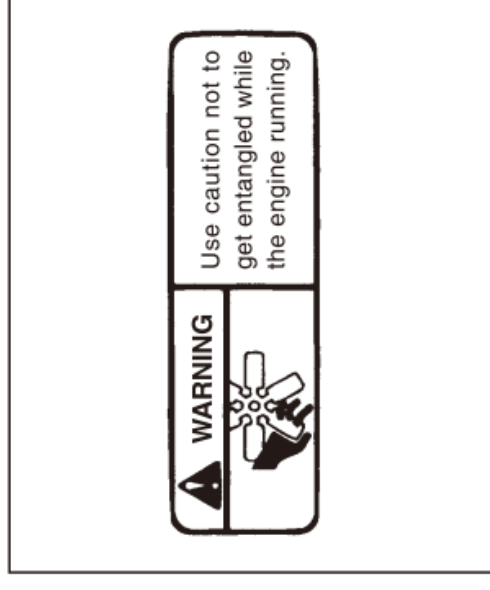
C. Warning decal for mast connecting member



D, E Warning decal for load handling means



F. Warning decal for fan and other rotating parts



P. Load chart: Decal for overloading

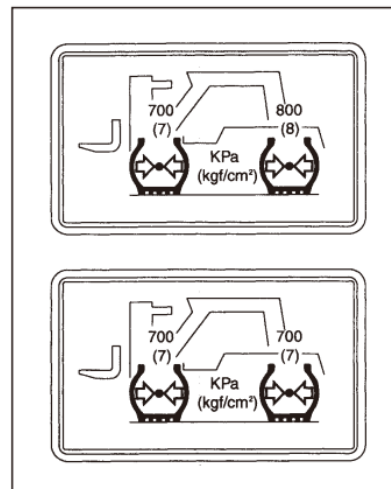
K. Name plate

MODEL	
RATED CAPACITY	kg lbs
MAX. FORK HEIGHT	mm in
APPROX. WEIGHT	kg lbs
SERIAL NO.	

P. Warning decal for front guard



O. Decal for tire inflation pressure



⚠ WARNING

If the battery is used or charged when the electrolyte level is below the **LOWER LEVEL** mark, the battery may be damaged. It may also reduce the battery life or cause an explosion.
Add electrolyte so that the level is between the **UPPER LEVEL** and **LOWER LEVEL** marks.

⚠ WARNING

Hydrogen gas produced by a battery can explode. Keep all open flames and sparks away from the battery. To prevent sparks, when connecting or disconnecting the battery or charger cables, be sure to stop the engine or turn off the charger switch.

No fire	Wear safety glasses	Keep children away	Sulfuric acid	Read manual	Explosive	Electric shock

⚠ DANGER

- Handle the battery carefully; otherwise you will get injured.
- Pay attention to an open flame or static electricity which might cause an explosion or a fire.
- Sulfuric acid will cause painful and serious burns if it gets on the skin. It can cause blindness if it gets into eyes.
- Touching a conducting part with bare hands will cause an electric shock accident.
- Do not connect or disconnect the battery plugs during the battery turned ON; otherwise you might get burnt or an explosion might occur.

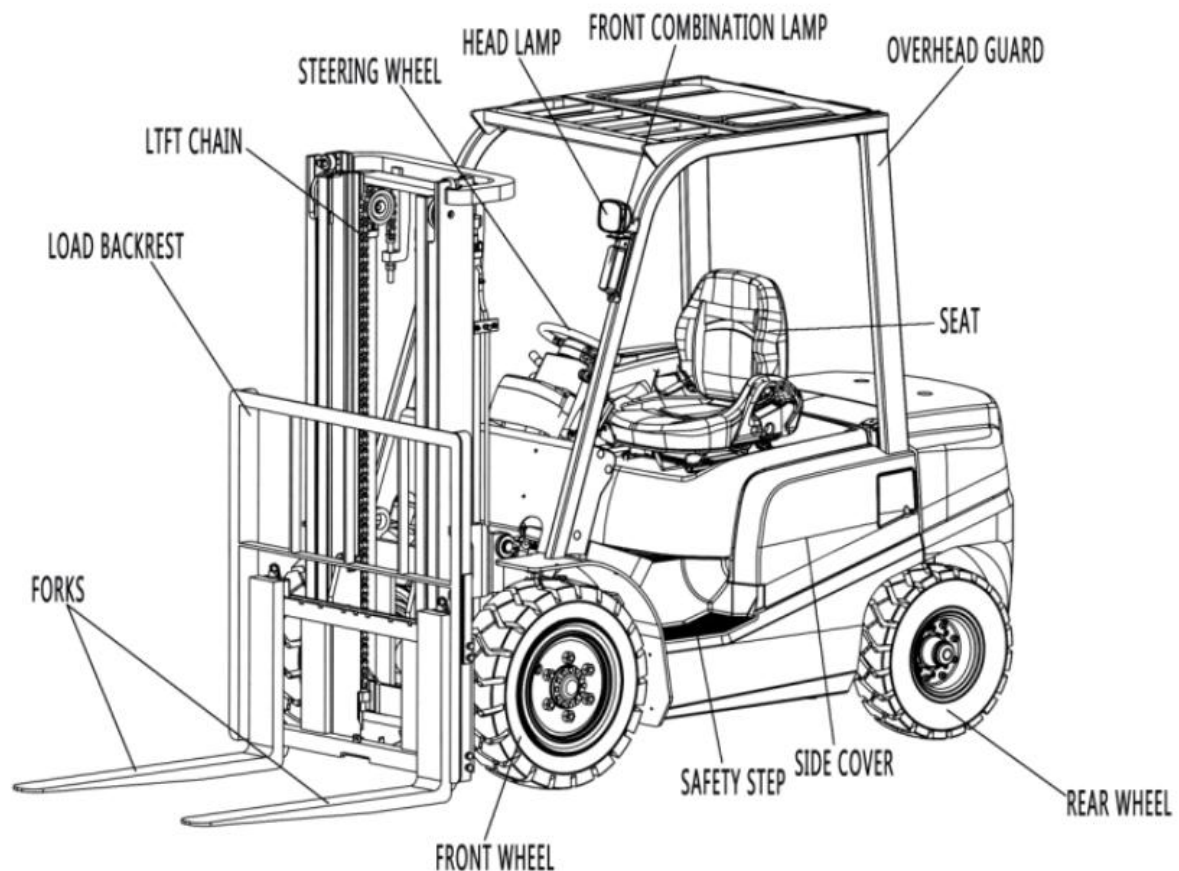
- No fire. Do not smoke. Keep sparks or flames away from batteries.
- Static electricity: Do not clean batteries with a duster or dry cloth.
- Ventilation: Get a good ventilation. Do not use or charge batteries in a closed place or an area where ventilation is poor.
- Sulfuric acid: If sulfuric acid comes in contact with you skin or clothing, wash it away using a copious amount of water immediately.
- If sulfuric acid gets into your eyes, wash your eyes with a copious amount of water immediately and get to a doctor.
- Electrolyte level: Keep the battery electrolyte level proper at all times. If the level is too low, the battery will build up heat or the level is too high, electric leakage will occur.
- Electric shock accident: Wear safety glasses, rubber gloves, and shoes with rubber soles when servicing or inspecting batteries.

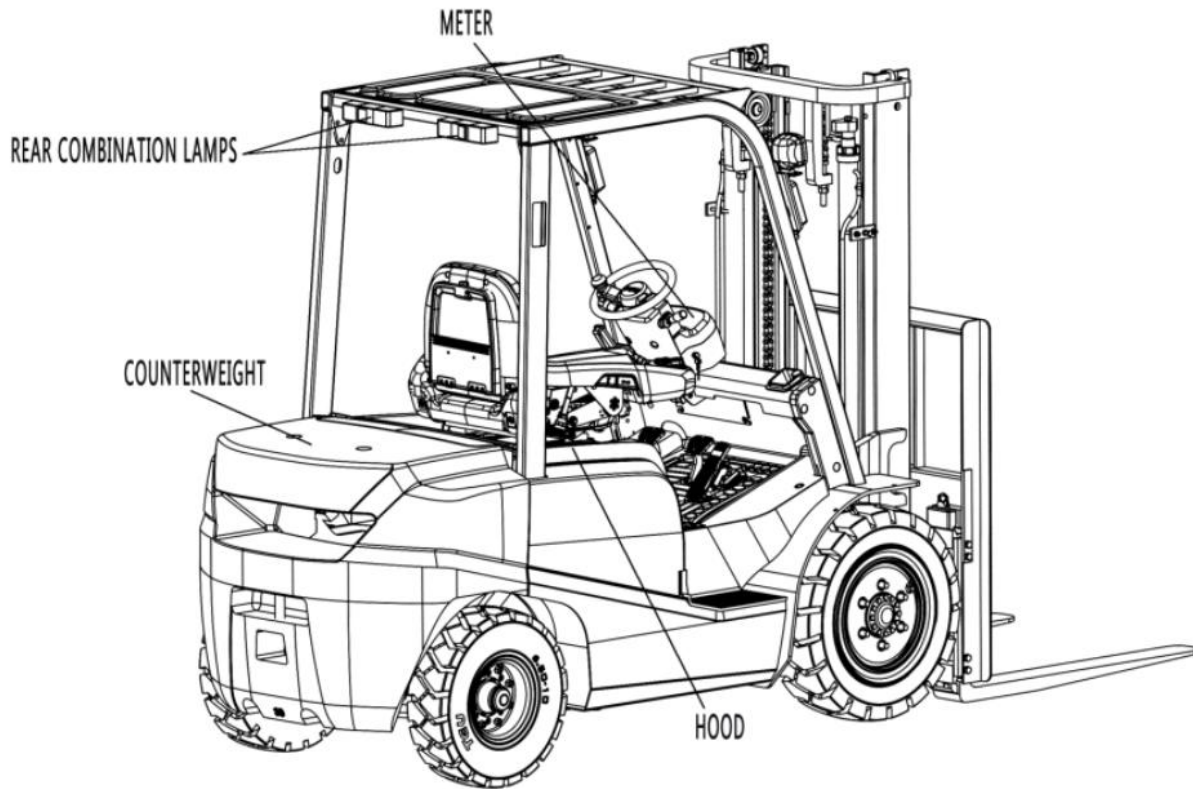
The following symbols, found throughout this manual, alert you to potentially hazardous conditions to the owner and the operator. Become completely familiar with the truck before proceeding with operating, checking and servicing.

This manual and decal affixed to the truck use the following safety alert indications.

SIGNAL WORD	CLASSIFICATION
⚠ DANGER	Failure to follow the instructions in the message will likely cause a serious accident or death.
⚠ WARNING	Failure to follow the instructions in the message might cause a serious accident or death.
⚠ CAUTION	Failure to follow the instructions in the message may cause personal injury or damage to the truck or other property.
👉 NOTE	The information will help to prolong the service life of the truck. The message is not directly related to accident prevention.

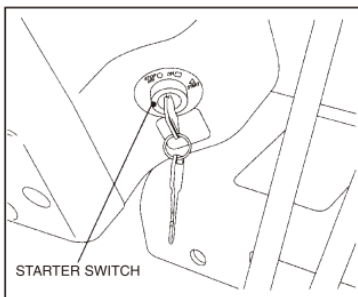
TRUCK COMPONENT LAYOUT





INSTRUMENTS AND CONTROLS

SWITCHES



STARTER SWITCH

OFF STOP

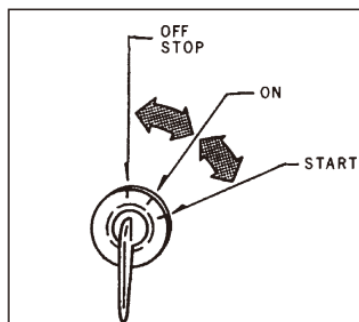
The position at which the key is inserted or drawn out.

The starter switch is "OFF" at this position. The engine stops when the starter switch is turned to this position.

ON

The electric circuit for the starter motor and others is closed.

On the diesel engine truck, the glow indicator will come on when the key switch is turned to "ON". After the glow indicator goes out, turn the starter switch



to the "START" position. While the engine is running, keep the key switch at the "ON" position.

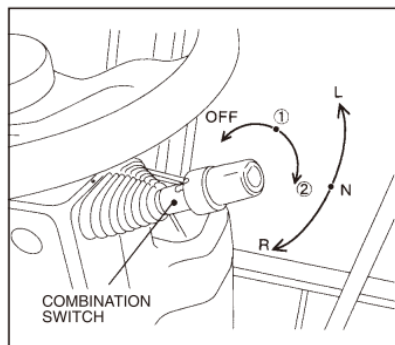
START

The engine starts. After the engine starts up, remove your hand from the key. The key switch will automatically return to the "ON" position.

NOTE

- Do not keep the key switch in the "ON" position while the engine is not running. This will cause a discharged battery. While the engine is running, keep the key switch in the "ON" position.

- While the engine is running, do not turn the key switch to the "START" position. It will cause a damaged starter motor.
- Do not keep the starter motor turning for more than 10 seconds at a time. If the engine "won't" start, wait about 20 seconds before trying again.
- The engine "won't" start up unless the direction and speed range shift levers are in neutral "N" (T type)
- The engine "won't" start up unless the direction shift lever is in neutral "N" (C type)
- For the automatic choke, see page 3-5. (Gasoline engine trucks)



COMBINATION SWITCH (LIGHTING) (TURN SIGNAL)

This light switch can be pulled out in 2 steps.

Light	Stage	OFF	①	②
Clearance light		OFF	ON	ON
Tail light		OFF	ON	ON
Meter panel		OFF	ON	ON
Head light		OFF	OFF	ON



NOTE

The above lights turn on or off regardless of the starter switch. Remember to turn them off when leaving the truck.

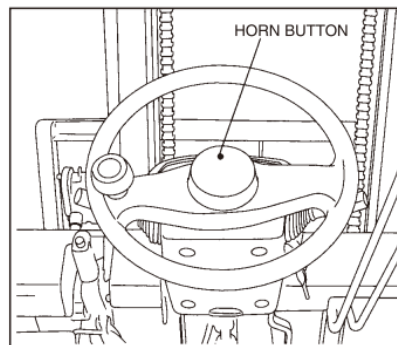
Use the turn signals (front and rear) to indicate the traveling direction of the truck.

L	Left lights turn on.
N	OFF
R	Right lights turn on.



NOTE

The turn signal lever automatically returns to neutral when the steering wheel is returned to the straight position.

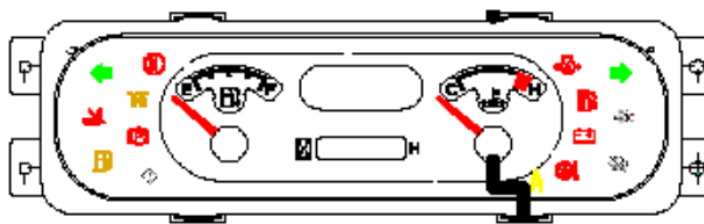


HORN BUTTON

Press the horn button at the center of the steering wheel to sound the horn.

The horn sounds regardless of the starter switch position.

METERS AND WARNING LIGHTS



COMBINATION METER

The meter panel contains meters and monitors. Use them to check the operating status of the truck.

FUEL GAUGE

The fuel gauge indicates the fuel level in the fuel tank.

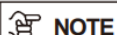


NOTE

- When checking the fuel level, park the truck on a level surface; otherwise you cannot get the correct fuel level.
- Add fuel before the fuel level drops to the minimum, to avoid the entrance of air into the fuel system.

ENGINE WATER TEMP. GAUGE

This gauge indicates the temperature of the engine cooling water. Under the normal operating condition, the pointer stays in the "white" range. If the point enters the "H" (red) range, it suggests that the engine is overheating. Park the truck at an out-of-traffic area and let the engine run at idle rpm until the pointer returns to the "white" range.



NOTE

- Do not shut off the engine even if the pointer enters the "red" range; otherwise the engine might cause malfunction.
- For the procedure for remedying an overheated engine, see page 3-14.

HOUR METER

The hour meter operates only while the starter switch is "ON" and records total operating time of the truck in hours and tenth of an hour (6 minutes). Use it to determine maintenance schedule.

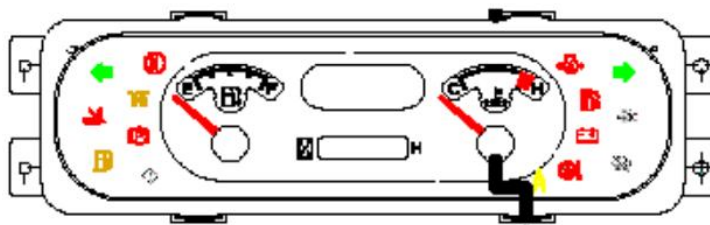
GLOW INDICATOR LAMP

Diesel engine truck

When the key switch is turned to "ON" the engine is preheated with the glow indicator coming on.

The glow indicator goes out in about 3.5 seconds after the key switch is turned to "ON", indicating that the engine is ready for starting.

Note that the glow indicator will go out immediately when the engine cooling water temperature is more than 60°C (140°F).



SEDIMENTER WARNING LIGHT

Diesel engine truck

Light comes on when the water level in the sedimeter exceeds the specified value. The fuel injection pump lubricates inside the engine using fuel. For this reason, the water content in the fuel is removed using the sedimeter. If light comes on during operation, stop the operation immediately and drain water.

CAUTION

- If the truck is used neglecting the warning light, the fuel injection pump might be seized.
- For the procedure for draining water from the sedimeter, see page

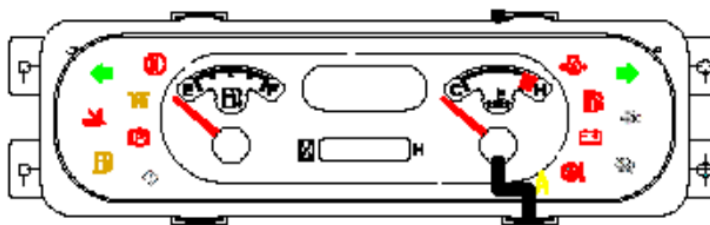
CHARGE WARNING LIGHT

Light comes on when the power generating system fails to operate normally. This warning light comes on when the starter switch is turned to "ON" and goes out when the engine starts up. If light does not go out after the engine starts up, it suggests that the fan belt is loose or broken, or that the power generating system is defective. Stop the operation immediately and troubleshoot.

ENGINE OIL PRESS. WARNING LIGHT

Light comes on when the engine oil pressure drops.

Light also comes on when the starter switch is turned to "ON" and goes out when the engine speed is increased by pressing the accelerator pedal after cranking the engine. If light comes on during operation, it suggests that the engine oil level is low or the lubricating system is defective. Stop the operation immediately and troubleshoot.



AIR CLEANER CLOGGING WARNING LIGHT

Light comes on when the air cleaner becomes clogged. If light comes on during operation, stop the engine immediately and clean the element and dust cup.

PARKING BRAKE INDICATOR

Light comes on when the parking brake is applied and goes out when the parking brake is released.

FUEL LEVEL WARNING LIGHT

Light comes on when the fuel level in the fuel tank drops below the specified value.

BATTERY ELECTROLYTE LEVEL WARNING LIGHT

Light comes on when the electrolyte level drops below the LOWER LEVEL. If light comes on, add purified water for battery up to the UPPER LEVEL.

RADIATOR WATER WARNING LIGHT

Light comes on when the cooling water in the radiator reservoir tank drops below the lower limit. If light comes on, add cooling water up to the upper limit of the reservoir tank.

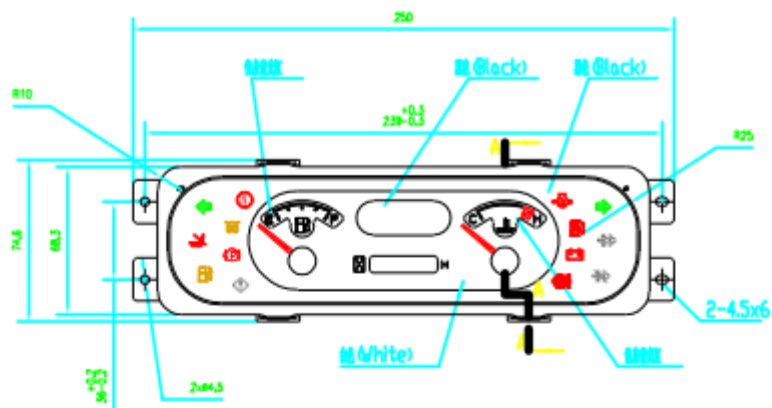
TORQUE CONVERTER OIL TEMP. GAUGE

The gauge indicates the temperature of the torque converter oil.

NOTE

If the pointer enters the red range, stop the truck and check the torque converter oil level and piping for leaks. If the oil level is proper and no oil leaks are found, consult your local dealer.

Switch introduction			
	Name	Function	Remark
 DPF regeneration request switch DPF regeneration suppression switch	DPF regeneration request switch	When the DPF regeneration reminder light is on or flashing slowly, and the parking regeneration conditions are met, press the DPF regeneration request switch to start the parking regeneration	When parking regeneration is required, the vehicle must be stable and unable to work, the gear is in neutral, pull up the handbrake, press the DPF regeneration request switch to start parking regeneration
	DPF regeneration suppression switch	Press to prohibit driving regeneration	



A--A

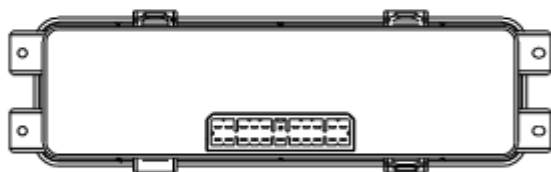
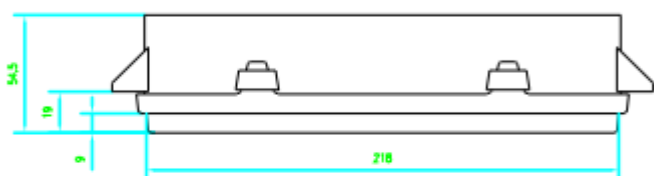
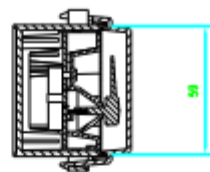
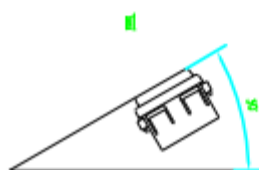
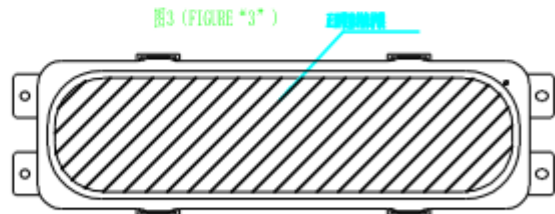


图3 (FIGURE "3")



AMP-171457-1



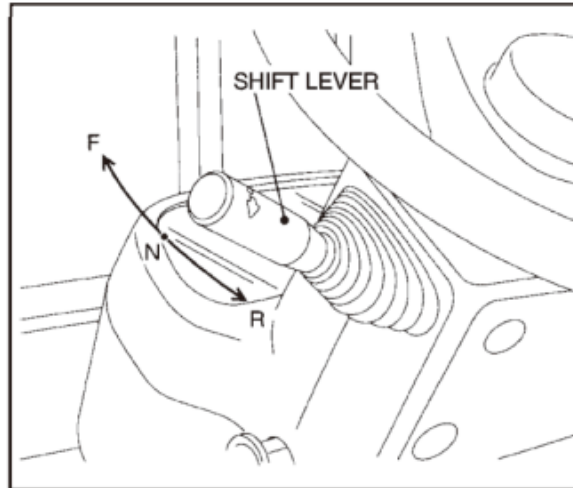
Technical parameters of switching quantity:

Item name	Alarm lamp and color	Alarm indication level		Input signal level in normal state	Input signal level in alarm state	Picture	Remarks
Low engine oil pressure	LED and red	Normally on	Buzzer	Suspended	0V (grounding)		
Charging indication	LED and red	Normally on	No buzzer	12V (24V)	0V (grounding)		
Oil-water separation	LED and red	Normally on	Buzzer	Suspended	0V (grounding)		
Preheating indication	LED and yellow	Normally on	No buzzer	Suspended	0V (grounding)		
Left turn	LED and green	Normally on	No buzzer	Suspended	12V (24V)		
Right turn	LED and green	Normally on	No buzzer	Suspended	12V (24V)		
Low oil level indication	LED and yellow	Normally on	Buzzer	Send alarm when the level is lower than 1/16, corresponding sensor resistance value: $\leq 1 \Omega$			Analog signal
Neutral gear indication	LED and green	Normally on	No buzzer	Suspended	0V (grounding)		
High oil temperature of torque converter	LED and red	Normally on	Buzzer	Send alarm at 120°C, corresponding sensor resistance value: $\leq 0 \Omega$			Analog signal
Hand brake	LED and red	Normally on	No buzzer	Suspended	0V (grounding)		
Seat	LED and red	Normally on	No buzzer	Suspended	0V (grounding)		
Engine self-check	LED and red	Normally on	No buzzer	Suspended	0V (grounding)		
DPF regeneration	LED and yellow	Normally on	No buzzer	Suspended	0V (grounding)		
DPF regeneration inhibition	LED and yellow	Normally on	No buzzer	Suspended	0V (grounding)		

Definition of socket connector terminal:

7		14	Fuel sensor 	21	DPF regeneration inhibition (-) Yellow 
6	Power ground (-)	13	Engine self-check (-) Red 	20	Charging indication (-) 
5		12	Hand brake (-) 	19	Oil temperature sensor of torque converter 
4	Left turn (+) 	11	Oil-water separation (-) 	18	Water temperature (PWM signal)
3	Neutral gear (-) 	10	DPF regeneration (-) Yellow 	17	Power supply (+) (16 and 17 shall be connected to the power supply at the same time)
2	Seat (-) 	9	Low oil pressure (-) 	16	Power supply (+) (16 and 17 shall be connected to the power supply at the same time)
1	Preheating (-) 	8	Right turn (+) 	15	Instrument lighting (+)
Terminal code	Function	Terminal code	Function	Terminal code	Function

***Note: Pins 16 and 17 shall be connected to the power supply (positive pole) at the same time, so that the instrument can work normally.



SHIFT LEVER (T TYPE)

The truck is equipped with a single shift lever on the steering column (1 speed for forward and reverse).

When the shift lever is placed in the reverse position "R" the back-up lamp comes on and the back-up buzzer sounds.

Bring the truck to a complete stop when reversing the direction of travel, from forward to reverse or vice versa.



CAUTION

Press the brake pedal to the floor before operating the shift lever.

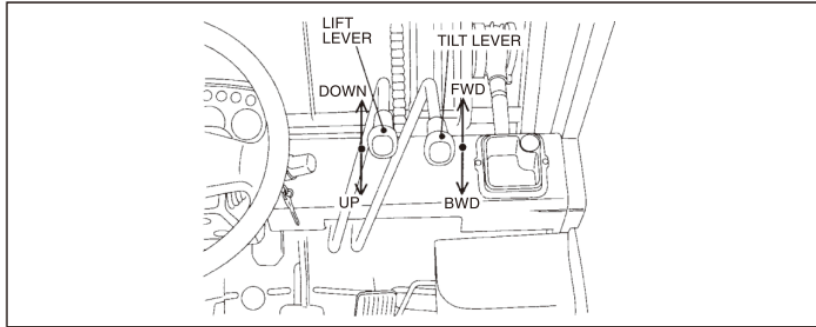
The truck start moving slowly or creeps when the brake is released if the shift lever is in positions other than neutral.

Do not release the brake pedal until you are ready to start.



NOTE

The direction shift lever (C type) and shift lever (T type) have a neutral switch. Before starting the engine, make sure the lever is in neutral. Neither the C- or T- type truck "won't" start if the direction shift lever (C type) or the shift lever (T type) is not in neutral.



LIFT LEVER

⚠ CAUTION

Seat yourself in the driver's seat and make sure there is no one around the truck before operating the lift lever.

Pull back on the lever to raise the forks and push forward on it to lower the forks. The lifting speed of the forks can be controlled by the tilt angle of the lever and accelerator pedal effort or engine speed. Note that the lowering speed of the forks is controlled by the tilt angle of the lift lever alone. The engine speed has no connection with the lowering speed of the forks.

TILT LEVER

⚠ CAUTION

Seat yourself in the driver's seat and make sure there is no one around the truck before operating the tilt lever.

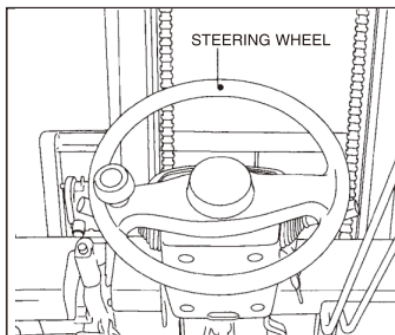
Pull back on the tilt lever to tilt back the mast and push forward on it to tilt the mast forward.

The tilting speed of the mast can be controlled by the tilt angle of the tilt lever and accelerator pedal effort or engine speed.

📖 NOTE

When the engine is not running, the mast won't tilt forward even if the tilt lever is operated, because the tilt-lock mechanism installed in the control valve operates.

Note that the forks drop when the lift lever is pushed forward, even when the engine is not running.

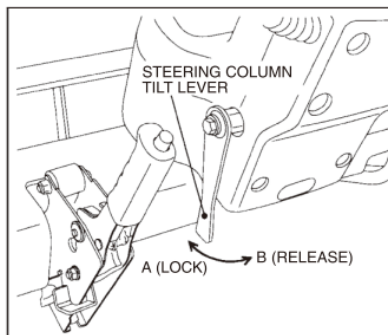


STEERING WHEEL

⚠ CAUTION

When the engine is not running, power steering is inoperative. If the engine stops during operation, restart the engine as soon as possible.

When traveling the truck, hold the steering wheel knob with your left hand. Do not remove your hand from the knob during traveling. The truck comes with power steering to provide smooth, light steering while the engine is running.



STEERING COLUMN TILT LEVER

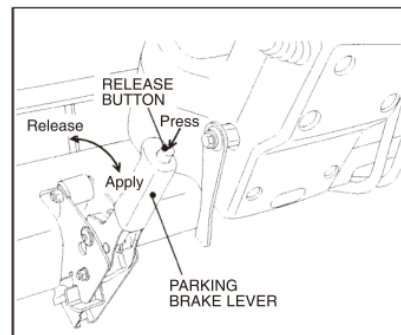
⚠ CAUTION

Adjust the steering column angle properly before starting the day's work or shift.

After adjustment, turn the lever in the direction "A" to lock the steering column securely. Do not try to adjust the steering column angle during operation.

Adjust the steering column angle according to the individual operator's physique.

Turn the lever in the direction "B" and adjust the steering column angle properly, and then turn the lever in the direction "A" to lock securely.

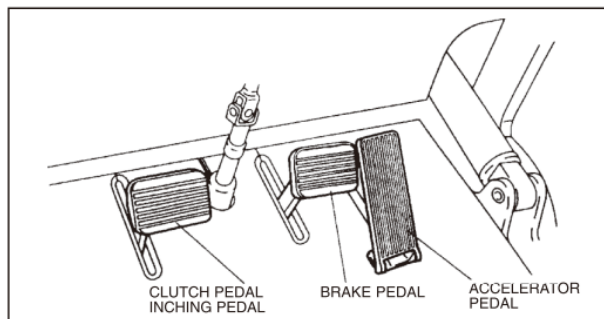


PARKING BRAKE LEVER

⚠ CAUTION

Block the wheels when parking on an incline.

Pull back on the lever to apply the brakes to the front two wheels. The lever is locked there. To release the parking brake, press and hold down the lock release button on the tip of the lever while pushing forward on the parking brake lever.



PEDALS

The truck has three foot controls: clutch (or inching pedal), brake pedal and accelerator pedal.

CLUTCH PEDAL (C TYPE)

The clutch pedal turns on and off the power transmission from the engine. The clutch is disengaged by pressing the pedal and engaged by releasing.



NOTE

Do not travel the truck with the clutch engaged slightly, as much as possible.

INCHING PEDAL (T TYPE)

CAUTION

Do not press the inching pedal for slowing down the traveling speed, when starting uphill, or when descending downhill; otherwise the clutch is disengaged to make engine braking unavailable.

Use the inching pedal to move the truck slowly while operating the load handling means at high speed.

When the inching pedal is pressed slightly, the hydraulic clutch pressure drops (clutch engaged slightly). If the pedal is further pressed, the clutch is completely disengaged and the brake is applied to the truck.

For more information, look up "Using the incline pedal" on page 3-4.

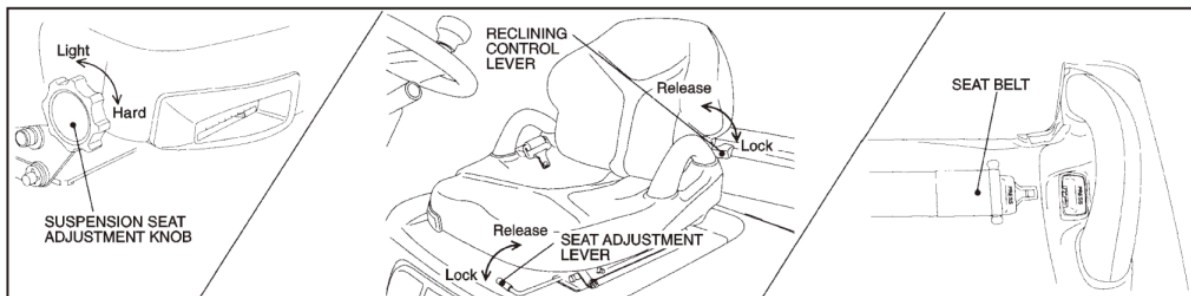
BRAKE PEDAL

Press the brake pedal to slow down the truck. Brake lamps come on when the brake pedal is pressed.

ACCELERATOR PEDAL

Press the accelerator pedal to increase engine speed. When the accelerator pedal is released, the engine runs at idle rpm.

TRUCK BODY



DRIVER'S SEAT SUSPENSION (OPTIONAL)

CAUTION

Adjust the suspension of the driver's seat using the adjustment knob before starting the day's work or each shift. Do not try to adjust the suspension during operation.

Adjust the driver's seat suspension properly to suit the individual operator's physique and to provide best comfort.

Turn the adjustment knob to the value of your weight. The seat absorbs shock and vibration to provide comfort during traveling and operation.

SEAT ADJUSTMENT LEVER RECLINING CONTROL LEVER (OPTIONAL)

CAUTION

Adjust the seat position before starting your day's work or each shift. Make sure the seat is securely locked.

Adjust the driver's seat to a position to suit the individual operator's physique.

To unlock, pull up the lever.

After adjustment, try to move the seat back and forth to make sure that the seat is securely locked.

DOCUMENTS POCKET AND MAGAZINE BOX

The driver's seat has a document pocket and magazine box at its back. Use them for storing the Instruction Manual and others. Remember to close the document pocket before operation.

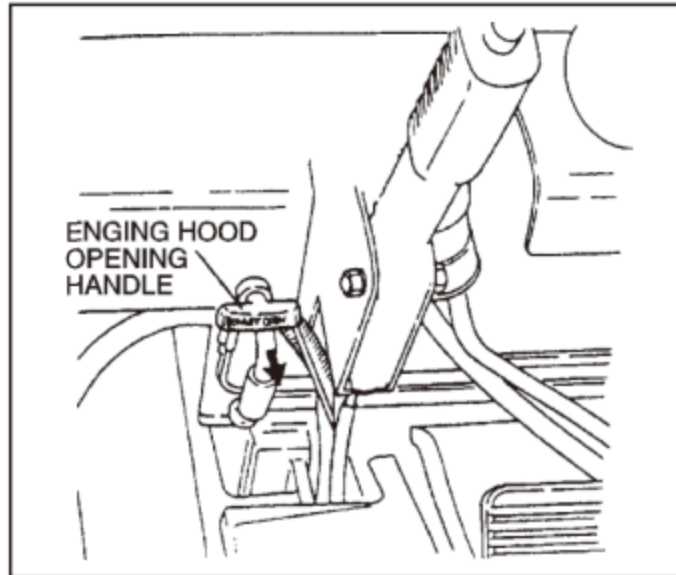
SEAT BELT

WARNING

Be sure to fasten the seat belt before starting traveling or operation; otherwise, if the truck turns over, the operator might be thrown out and, in the worst case, the operator can be crushed by the truck causing severe injury or even death.

Pull out the connector at the right side and insert it into the receptacle at the left side until it clicks into place.

To unfasten the seat belt, press the red button by the receptacle, and the belt automatically winds up into the seat.



ENGINE HOOD OPENING HANDLE

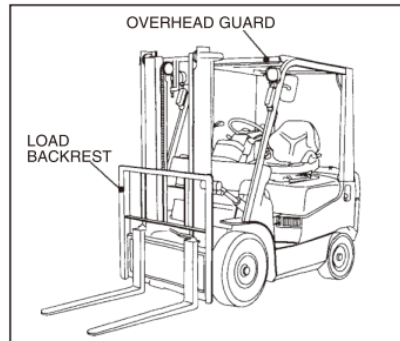


CAUTION

Use caution not to pinch your hand when closing the engine hood.

The engine hood can be opened full easy maintenance and service. Push down the front of engine hood when closing it, making sure it is locked.

Drawing out the handle, the engine hood opens slowly.



OVERHEAD GUARD

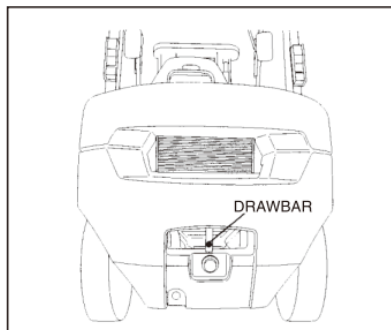
⚠ WARNING

The overhead guard is an important safety device which protects the operator from falling objects. Make sure it is securely installed. Do not use the truck with the overhead guard removed or modified; otherwise it might cause a serious accident.



NOTE

Keep the vinyl rain gutter always clear of dust.



DRAWBAR

⚠ CAUTION

Do not use the drawbar for towing another vehicle or for being towed by another vehicle.

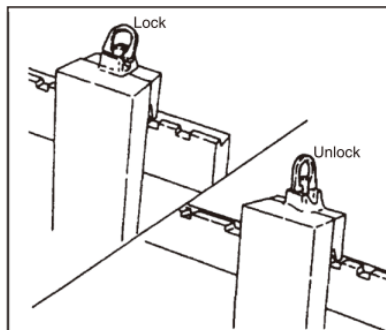
Use the drawbar for the following cases:

- When the truck has bogged down in the mud or a side ditch.
- When loading onto or unloading from a trailer for transportation.

LOAD BACKREST

⚠ CAUTION

The load backrest is an important safety device which protects the operator from a falling load if the forks disengage from the carriage. Make sure the load backrest is securely installed. Do not use the truck with the load backrest removed or modified; otherwise it might cause a serious accident.

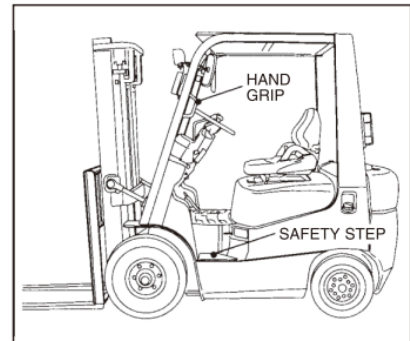


FORK STOPPER

⚠ CAUTION

- The forks should be set symmetrically to the truck centerline, and fork stoppers should always be set.
- When adjusting fork spacing, hold the load backrest and push the forks with your foot. Do not use your hand.

Secure the forks with the fork stoppers. Pull up the fork stoppers a little and turn 9Q. Then adjust the fork spacing using your foot according to the size of the load you are going to carry.

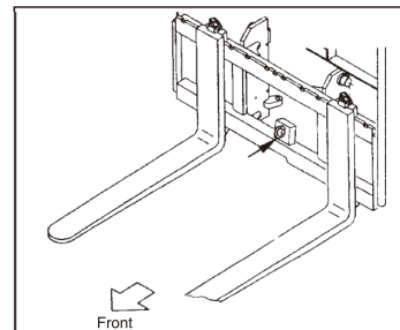


SAFETY STEP AND HAND GRIP

⚠ CAUTION

Use the safety step and hand grip when mounting and dismounting. Do not hold the levers when getting on or off. Do not mount or dismount while the truck is in motion.

The truck is equipped with safety steps at right and left sides of the truck body and a hand grip on the left front pole of the overhead guard. When mounting or dismounting, use the safety step and hand grip.



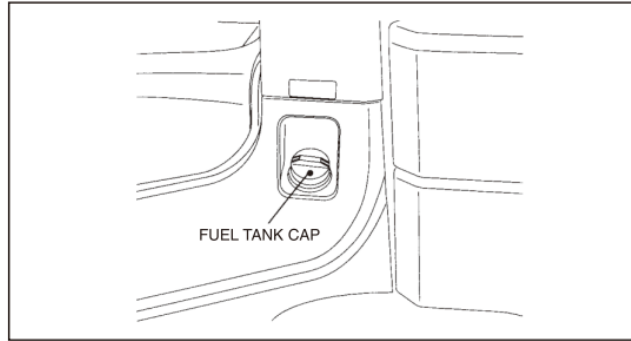
FORK LOCK BOLT

⚠ CAUTION

Do not remove the fork lock bolt other than the following cases; otherwise the forks might disengage from the carriage, causing personal injury.

- When removal of the forks is needed.
- When gathering the right and left forks together to the center for any reason.

When a fork prong is moved to the center, it will come off the carriage. This bolt prevents the fork from being used at the center.



FUEL TANK CAP

⚠ CAUTION

- When adding fuel, stop the truck, shut down the engine, and apply the parking brake securely. Never smoke. Keep fire or naked flame away from the truck. The operator must get off the truck.
- After adding fuel, tighten the cap securely. A loose fuel cap might cause fuel leaks, leading to a serious accident.
- Before starting the engine, make sure the fuel tank cap is securely tightened and any spilt fuel wiped away.

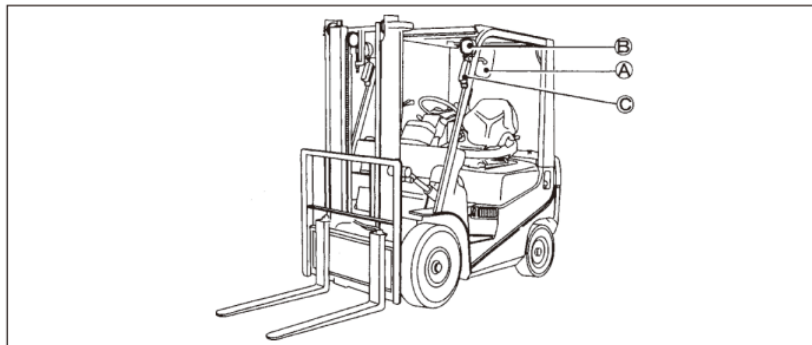
- Never use naked flame (match or lighter) for checking the fuel level

The fuel tank cap is located at the left side of the truck.

Turn the cap counterclockwise to open. Inside the cap is breather which allows the entrance of air into the tank. Make sure the breather is not damaged or clogged; otherwise the fuel system might malfunction.

📖 NOTE

- Use light oil for diesel engine trucks.
- **Diesel fuel**
Use good quality of light oil as diesel fuel. The light oil freezes when the ambient temperature is below -10°C (14°F), causing the fuel piping to become clogged. If the truck is to be used in cold regions, use proper quality of light oil according to the weather condition of the region.
- Do not use kerosene as the fuel; otherwise the engine performance will be deteriorated or the fuel injection pump might be damaged.



LIGHTS AND LAMPS

⚠ CAUTION

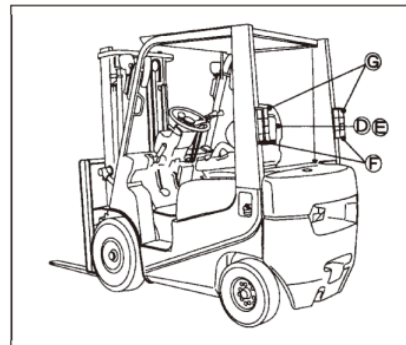
Check that lights and lamps come on and off properly. If any light bulb is blown out, replace with a new one. If the lens is contaminated or damaged, clean or repair.

Front side

The truck has head lamps (B) and front combination lamps (C) (turn signal and clearance lamps) at its front side.

Rear side

The truck has rear combination lamps (tail lamps (D), brake lamps (E), back-up lamps (F), turn signals (G) and rear reflector) at its rear.

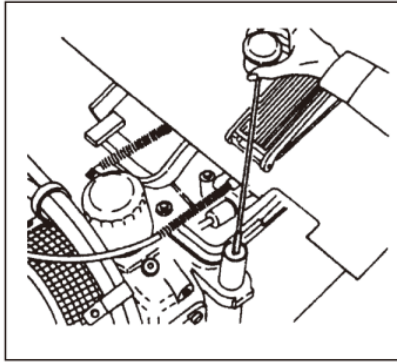


SIDEVIEW MIRRORS

⚠ CAUTION

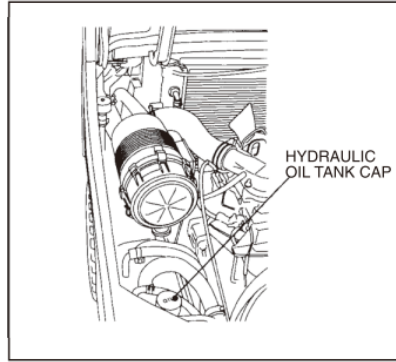
- When traveling in reverse, always look in the direction of travel. Do not rely too much on the sideview mirrors.
- Keep the mirror surfaces always clean.
- Adjust the sideview mirrors to gain full rear vision.

The sideview mirrors are provided on the front poles of the overhead guard, one for each.



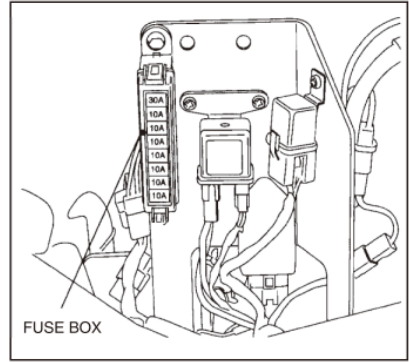
TORQUE CONVERTER OIL FILLER (T TYPE)

The torque converter oil filler is located under the floorboard. The filler has a cap with an oil dipstick.



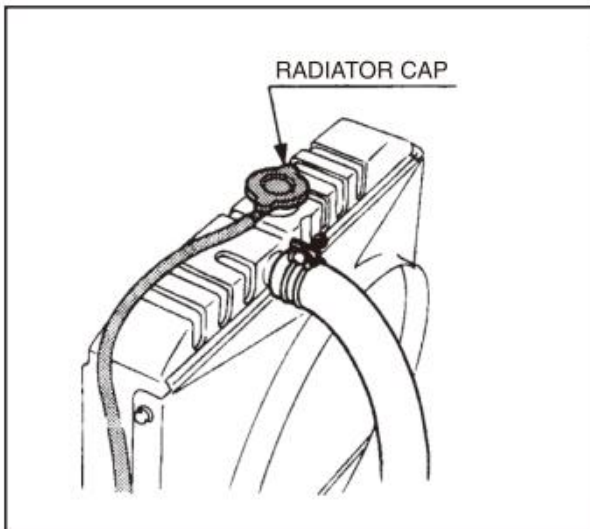
HYDRAULIC OIL TANK CAP

The hydraulic oil tank cap is located at the right area inside the engine hood. The cap is provided with an oil dipstick.



HYDRAULIC OIL TANK CAP

The fuse box is located at the left area inside the engine hood.

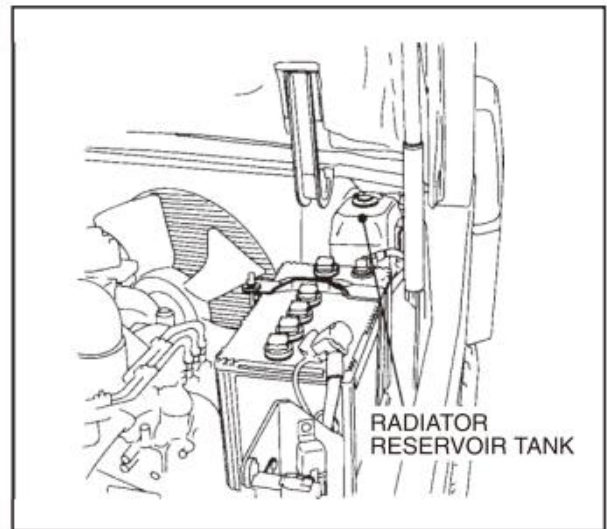


RADIATOR CAP

⚠ CAUTION

Do not remove the radiator cap abruptly while the engine is hot. Make sure the engine has cooled down completely and turn the cap counterclockwise a little to relieve the pressure in the radiator, and then remove the cap.

The radiator cap is located inside the cover at the rear part of the engine hood. To remove the cap, turn it 90.



RADIATOR RESERVOIR TANK

The radiator reservoir tank is located behind the battery unit inside the engine hood. You can check the cooling water level using this tank.

Optional Equipment

The following optional equipment enhances safe operation and visibility. For installation or service details, contact your authorized EKKO dealer.

Rear Work Light (RWL)

 **CAUTION:** Use a rear work light when operating in areas with insufficient illumination. This light improves visibility behind the truck, helping the operator detect obstacles on the floor or roadway.

Beacon Light

Install a beacon light when operating near other workers or in noisy environments. It provides a visual warning of truck movement.

Sound-Volume Adjustable Back-Up Buzzer

The buzzer's volume can be adjusted in two stages to suit workplace noise levels.

Speedometer (SM)

Displays the truck's travel speed (km/h) and total distance traveled. The dial illuminates when the light switch is turned on.

Speed Alarm System (SAS)

Activates a buzzer and beacon light when travel speed exceeds the preset limit (5 km/h, 10 km/h, or 15 km/h).

High Load Backrest (HBR)

Use when handling tall or stacked loads to prevent load shift or rearward fall.

Overhead Guard with Wire Netting

Protects the operator from falling small parts or debris during high-level handling.

Pneumatic Cushion Tire (TR01)

Recommended for areas with debris or rough surfaces that may damage standard tires.

Fire Extinguisher (FE)

An optional extinguisher may be mounted on the rear support of the overhead guard. Use only approved extinguishers suitable for electrical and fuel fires.

PROPER OPERATION

To operate the lift truck safely and achieve optimal performance, follow the procedures below.

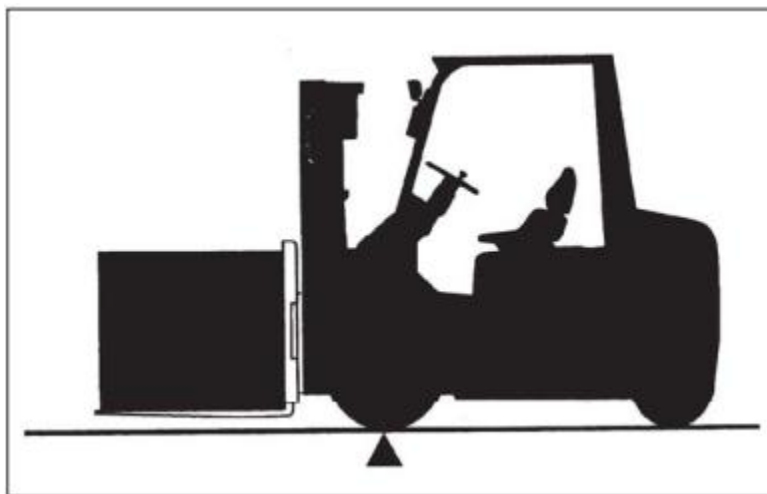
DURING BREAK-IN

Operate the truck under light load conditions during the first stage of operation (approximately 200 hours). This helps components seat properly and ensures long-term reliability.

- ⚠ Always warm up the truck before use, regardless of season. Allow sufficient time for hydraulic fluid and engine oil to reach operating temperature before lifting or driving.
- ⚠ Perform all specified preventive maintenance services carefully and completely. Follow the manufacturer's maintenance schedule to prevent premature wear or failure.
- ⚠ Never "race" or play games with the truck. Avoid sudden stops, starts, or turns. Abrupt movements can cause loss of control, tip-over, or damage to the load.
- ⚠ Perform oil changes and lubrication earlier than standard intervals during break-in. Early service helps remove initial wear particles and protects moving components.

RELATIONSHIP BETWEEN LOAD AND STABILITY

The lift truck maintains balance between its own weight and the load, using the front wheels as the fulcrum when the rated capacity load is properly positioned. Always consider both load weight and center of gravity to maintain stability.



If the rated capacity is exceeded or the load is placed too far forward, the rear wheels may lift, and the truck can tip forward. This can result in severe injury or death. Loads positioned near the fork tips act as heavier loads—reduce weight accordingly.

BASIC LOAD CENTER AND RATED LOAD

⚠ CAUTION

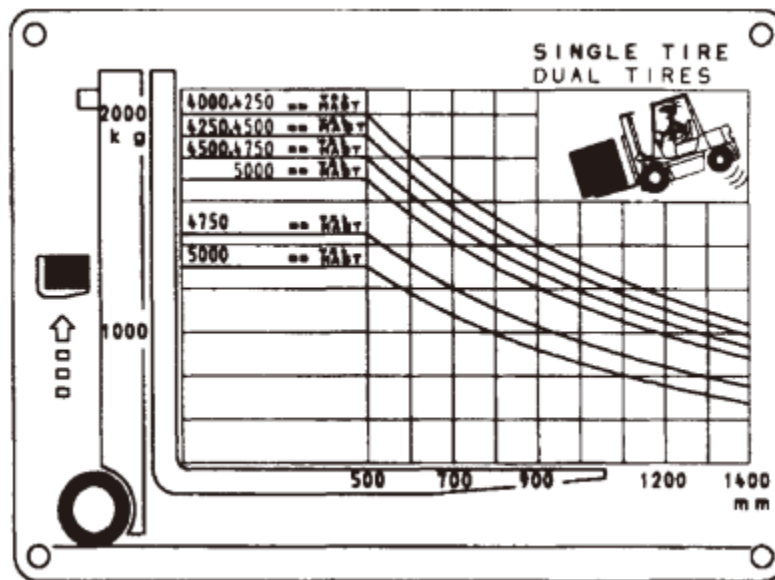
- When traveling with loads, keep the forks **15 – 20 cm (6 – 18 in.)** above the ground and tilt the mast slightly backward.
- The **allowable load** of a truck equipped with an attachment is **reduced** compared with that of a standard truck.

If the truck uses a load-handling attachment (e.g., hinged fork, load grab, or rotating clamp), its rated capacity decreases due to:

- The **added weight** of the attachment.
- The **forward shift** of the load center caused by the attachment.

Never exceed the rated load shown on the **load chart** affixed to the truck or attachment.

Load Chart and Center



The **basic load center** is the horizontal distance from the front face of the forks to the load's center of gravity. The **load chart** illustrates the relationship between load weight and load center distance for the truck model. As the load center increases, the allowable load decreases.

The Stability of the Lift Truck

Lift-truck stability is defined by national and international standards (JIS, ANSI B56.1, and OSHA 1910.178). Stability is maintained only when the following conditions are met:

- The ground or floor surface is level and hard.

- The truck travels under standard loaded or unloaded conditions.
- The truck is operated carefully, and the forks are not tilted forward more than necessary when stacking or unstacking.
- Load handling is performed slowly and smoothly.

Keep the truck in good working condition to ensure safe operation and travel.

In addition, keep the truck in good working condition for safe operation and traveling.

Standard unloaded condition This means that the forks are raised 30 cm (12 in.) above the ground or floor surface and tilted back fully without loads. Standard loaded condition This means that the forks are raised 30 cm (12 in.) above the ground or floor surface with a load placed at the basic load center position of the forks.

Traveling and Starting on a Slope

When traveling on a slope:

- With a load on the forks, keep the load pointed uphill.
- Without a load, keep the rear of the truck pointed uphill to prevent drive-wheel skidding.

CAUTION – Transporting the Lift Truck

When transporting the lift truck on a trailer:

- Securely lock the truck in place to prevent movement. Use **wire ropes or chains** and **block the wheels** firmly.
- When loading or unloading, or when traveling over public roads, pay attention to the truck's **overall length, height, and weight** to avoid collisions or clearance issues.

CAUTION – Loading and Unloading

- Never attempt to turn the steering wheel while halfway up a ramp—this can cause the truck to fall and lead to serious injury.
- Use **ramps of sufficient length, width, and strength** rated for the truck's total weight.
- Before loading or unloading, **apply the trailer's parking brake** and **block its wheels**.
- Ensure ramps are **securely locked** to the trailer and that surfaces are **clean, dry, and free of debris**.

- Perform loading and unloading only on a **level surface**. Both ramps must be the same height.
- When loading the truck onto a trailer, **back up slowly and carefully** to maintain control.

OPERATING LIFT TRUCK

Mounting and Dismounting

 **CAUTION** Do not hold the steering wheel when mounting or dismounting. Do not jump on or off the truck — slipping or falling can cause serious injury.

Safe Procedure

1. Ensure no vehicles or pedestrians are approaching. Confirm the truck is completely stopped.
2. Enter or exit from the **left side** using the safety step and hand grip.
3. Fasten your **seat belt securely** before operation. The seat belt protects you in case of sudden movement or collision.

Starting the Engine and After Engine Has Started

CAUTION

- Do not start the engine unless seated properly in the driver's seat.
- Ensure no one is near the truck before starting.
- When operating indoors, open doors or windows and use ventilation fans to prevent **exhaust gas poisoning**.

Starting the Engine

1. Press the **clutch pedal** (C-type) or **brake pedal** (T-type) fully.
2. Turn the **starter switch** to **START** — do not hold it for more than **10 seconds**.
3. Once the engine starts, release the key; it will return automatically to **ON**.
4. Do not accelerate immediately. Allow the engine to stabilize at idle speed.
5. Confirm that the **CHARGE** and **ENGINE OIL PRESSURE** warning lights turn off and all gauges operate normally.

Warming Up the Engine

Warm up the engine for approximately **5 minutes** before operation, regardless of ambient temperature. Operating the truck before sufficient warm-up may cause **incomplete lubrication** and **poor combustion**, leading to engine damage.

Starting a Cold Engine

In cold climates, battery performance decreases and oil viscosity increases, making cranking difficult. Follow these steps for cold starts:

Diesel Engine Trucks

- Preheating is automatically controlled by coolant temperature.
- Turn the starter key to **ON**.
 - If coolant temperature is **below 60 °C (140 °F)**, the **glow indicator** illuminates for about **3.5 seconds**.
 - If coolant temperature is **above 60 °C (140 °F)**, the indicator lights for about **0.3 seconds**.
- When the glow indicator goes out, press the accelerator and turn the key to **START**.
- Do not engage the starter motor for more than **10 seconds** at a time.

When the Engine Won't Start

 **CAUTION** Never attempt to start the engine by **pushing or towing** the truck.

Troubleshooting Steps

1. Do not engage the starter motor for more than **10 seconds** at a time. If the engine fails to start, wait briefly before trying again.
2. If repeated attempts fail, check:
 - Fuel level and fuel system for air leaks or blockages.
 - Electrical wiring for loose or broken connections.
3. If the starter motor fails to reach proper speed, use an **auxiliary battery and booster cable** following manufacturer instructions.

NOTE: Refer to “*Starting with Auxiliary Battery*” (see page 4-26).

Before Starting the Lift Truck

 **CAUTION** Ensure no one is near the truck. Warn nearby personnel by **honking** before startup.

Preparation

1. Pull back the lift lever to raise forks **15 – 20 cm (5.9 – 7.8 in.)** above the ground.
2. Pull back the tilt lever to fully tilt the mast backward.
3. Confirm the area is clear of people and obstacles before starting.

Starting the Lift Truck

 **CAUTION** Operate carefully and reduce speed when:

- Making turns
- Driving through narrow aisles
- Running on rough surfaces
- Approaching loads or obstacles

C-Type Transmission

1. Press the **clutch pedal** fully.
2. Set the **direction shift lever** to *Forward* or *Reverse*.
3. Place the **speed range lever** in *Low*.
4. Release the **parking brake**.
5. Press the **accelerator pedal** while gradually releasing the clutch to start movement.

NOTE: Do not rest your foot on the clutch pedal after starting — this causes **premature clutch wear**.

T-Type Transmission

 **CAUTION** Press the brake pedal fully before shifting into **Forward** or **Reverse**. Failure to do so may cause the truck to creep unexpectedly.

 **NOTE** Do not rest your foot on the **inching pedal** while traveling — it can cause clutch wear and reduced control.

Starting Procedure

1. Press the brake pedal.
2. Move the shift lever to **Forward** or **Reverse**.
3. Release the parking brake.
4. Release the brake pedal and press the accelerator to begin movement.

C-Type Transmission

 **CAUTION** When reversing direction, always look in the direction of travel. Be alert for pedestrians, other trucks, or obstacles — do not rely solely on mirrors.

Gearshifting

- Bring the truck to a **complete stop** before changing direction.
- When changing speed range (**Low** ↔ **High**):
 1. Start the truck and accelerate.
 2. Release the accelerator while pressing the clutch pedal.
 3. Shift to the desired range.
 4. Press the accelerator while releasing the clutch smoothly.

Slowing Down

- **C-Type:** Release the accelerator and press the clutch pedal. Shift to **Low** range and apply the brake as needed.
- **T-Type:** Ease off the accelerator and apply the brake pedal if necessary.

Turning

 **CAUTION** Be aware that the **rear end (counterweight)** of the truck swings outward when turning.

Unlike passenger vehicles, lift trucks steer from the **rear wheels**, causing the counterweight to swing in the opposite direction of the turn. To maintain control and prevent collisions:

Safe Turning Practices

- Slow down before entering a turn.
- Steer slightly earlier than you would with a front-wheel vehicle.
- Keep clear of pedestrians and nearby objects.
- Grip the steering wheel knob with your **left hand**; use your **right hand** for load-handling levers.

Parking

 **CAUTION — Safe Parking**

- Park only on **level, firm ground** in a designated area.

- If parking on a slope is unavoidable, position the **load-handling end downhill** and **block the wheels**.
- Avoid soft, muddy, or slippery surfaces.
- Lower the forks completely to the ground.
- Never stop on an incline by controlling the accelerator — this causes clutch wear and overheating.
- Dismount only after the truck has come to a complete stop.
- Always face the truck when dismounting, using the **safety step and hand grip**.
- Never jump off the truck.

Parking Procedure

1. Bring the truck to a full stop using the brake pedal.
2. Press the clutch pedal (C-type) and shift to **Neutral (N)**.
3. Pull the **parking brake lever** fully.
4. Lower the forks to the ground.
5. Turn the key switch **OFF** to shut down the engine.
6. Dismount carefully.

⚠ CAUTION – Safe Parking

- Park the truck on level, firm ground, preferably in a wide, designated area.
- If parking on a slope is unavoidable, position the load-handling attachment downhill and block the wheels to prevent rolling.
- Park in a designated or out-of-traffic area. Use cones, barriers, or signal lights if necessary.
- Avoid parking on soft ground, deep mud, or slippery surfaces.
- If the forks cannot be lowered due to a malfunction, cover the fork tips with a caution cloth and park in a safe area.
- Always check the ground condition—it may be slippery or uneven.
- Never dismount while the truck is moving. Wait until it has come to a complete stop.
- Never jump off the truck.
- When dismounting, face the truck and use the safety step and hand grip for support.

- After stopping, place the F/R lever in neutral (“N”) and ensure the truck is fully secured.

Parking Procedure

Park the truck in an out-of-traffic area and follow these steps:

1. Pull the parking-brake lever fully to apply the brake.
2. Lower the forks completely to the ground.
3. Turn the key switch OFF.
4. Remove the key and keep it in a secure location.
5. Dismount carefully using the safety step and hand grip.

⚠ CAUTION – Ground Condition

Use due caution when traveling on rough or uneven surfaces.

- When crossing railroad tracks, stop first, ensure safety, and cross at an angle to reduce impact.
- Avoid obstacles such as rocks, stumps, or potholes. If unavoidable, reduce speed and cross slowly.
- Prevent damage to the underside of the truck by crossing small bumps diagonally when space allows.
- Adjust travel speed according to surface conditions—lift-truck performance depends on ground stability and traction.

⚠ CAUTION – Traveling on Snowy or Frozen Roads

When operating on snowy, icy, or frozen surfaces:

- Avoid sudden acceleration, stops, or turns—these can cause skidding and loss of control.
- Control traveling speed carefully using the accelerator pedal.
- Increase stopping distance and operate at reduced speed to maintain traction.

MEASURES AGAINST COLD OR HOT WEATHER

In Cold Weather

When operating the lift truck in cold conditions, take special precautions to prevent fuel and coolant system damage.

Fuel Handling

⚠ CAUTION

- Shut down the engine before refueling.
- Never smoke near fuel.

Fill the tank to the upper limit to prevent condensation and freezing of water in the fuel system.

 **NOTE:** Ensure the fuel cap is securely tightened — a loose cap allows rain or snow to enter the tank.

Cooling System Precautions

⚠ CAUTION — Handling Long Life Coolant (LLC)

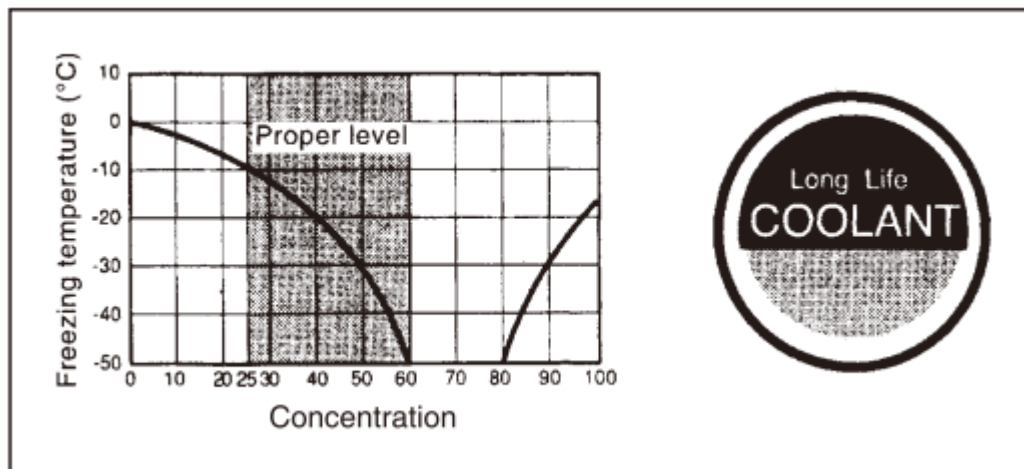
- LLC is flammable — keep away from open flames.
- LLC is poisonous (lethal dose ≈ 100 cc). Do not swallow; if ingested, induce vomiting and seek medical attention immediately.
- Store with a “Dangerous Substance” label and keep out of reach of children.

Cold-Weather Operation

Frozen coolant can damage the engine or radiator. When ambient temperature is below 0°C (32°F), use an anti-freeze mixture or drain the cooling water after operation.

Trucks labeled “Long Life Coolant” use a 50 % LLC mixture that remains effective for two years. When adding coolant, mix equal parts water and LLC.

Coolant Concentration Reference



Maintain coolant within the proper level range indicated on the reservoir.

Battery Care

CAUTION — Cold Weather Operation

- Never pour hot water over the battery case to warm it. Sudden temperature change can crack the case and cause electrolyte leakage.
- Keep the battery fully charged; a charged battery has higher electrolyte specific gravity and resists freezing.
- Battery electrolyte typically freezes at around -35°C (-31°F) when fully charged.
- To prevent freezing:
 - Maintain charge above 70 %.
 - Keep electrolyte specific gravity at 1.280 or less.
 - If the truck is stored for long periods, remove the battery and keep it in a warm, dry area.

NOTE: Add purified water immediately before charging or starting to prevent dilution and freezing.

DANGER — Battery Handling

Battery gases and electrolyte are hazardous. Follow these precautions:

Explosion and Fire Prevention

- Do not smoke or use open flames near batteries.
- Avoid sparks during inspection or maintenance.
- Maintain proper electrolyte level — low levels cause overheating and may lead to explosion.
- Ensure adequate ventilation; never charge or store batteries in confined spaces.

Personal Protection

- Wear rubber gloves and eye protection when servicing batteries.
- Electrolyte contains sulfuric acid, which can cause severe burns or blindness.
- If electrolyte contacts skin or clothing, rinse immediately with copious water.
- If electrolyte enters eyes, flush with water continuously and seek medical attention.

In Hot Weather

Cooling System

⚠ CAUTION Ensure the engine is cold before opening or closing the radiator cap. Hot coolant can spout out and cause severe burns.

Maintenance Guidelines

- Prevent leaks and corrosion by maintaining clean coolant circulation.
- In hot conditions, scale and rust form more easily — use Long Life Coolant (LLC) year-round for anti-rust and anti-corrosion protection.
- Keep radiator fins clean and free of debris to maintain airflow.
- Inspect for water leaks and ensure the fan belt is properly tensioned. A loose belt reduces cooling efficiency and may lead to overheating.

When the Engine Has Overheated

⚠ CAUTION Do not open the radiator cap or touch the reservoir tank while hot. Steam and boiling coolant may erupt, causing burns.

Procedure

1. Let the engine idle with the hood open to improve ventilation.
2. After the coolant temperature drops, shut down the engine.
3. Open the reservoir tank and add cooling water as needed.
4. Inspect for leaks, clogged radiator fins, or a loose fan belt before restarting.

LOAD HANDLING

Pick-Up

⚠ CAUTION Fork spacing should be adjusted to more than half and less than three-quarters of the pallet opening.

Procedure

1. Adjust fork spacing as wide as possible for load balance.
2. Position the truck squarely in front of the load.
3. Ensure the pallet is evenly positioned across both forks.
4. Insert forks fully beneath the pallet.
5. Raise the load:
 - Lift forks 5–10 cm (2–4 in.) off the ground and confirm stability.

- Once stable, tilt the mast fully backward and lift forks 15–20 cm (6–8 in.) before moving.
6. When handling bulky loads that restrict visibility, drive in reverse.

Stacking

 **CAUTION** Never tilt the mast forward with the load raised except when forks are directly over the rack or stack. Do not leave the truck unattended with the load upraised.

Procedure

1. Approach the stacking area slowly.
2. Stop directly in front of the deposit location.
3. Inspect the stacking surface for stability.
4. Tilt the mast forward until forks are horizontal.
5. Raise forks slightly above the deposit level.
6. Move forward slowly until the load is positioned over the stack.
7. Lower the load carefully and ensure it is securely placed.
8. Disengage forks using controlled lift-tilt operation, then back away.
9. Lower forks to the traveling position (15–20 cm / 5.9–7.8 in.) above the ground.
10. Tilt the mast back to neutral.

UNSTACKING

Purpose: To safely retrieve loads from a stack while maintaining truck stability and preventing damage to pallets or goods.

Procedure

1. Approach Slowly Reduce speed when nearing the stack to maintain control and visibility.
2. Position the Truck Stop approximately 30 cm (12 in.) from the load. Ensure the truck is squarely aligned with the pallet or skid.
3. Inspect the Stack Confirm the load is stable and the surrounding area is clear of obstructions.
4. Adjust Mast and Forks Tilt the mast forward until forks are horizontal, then raise to the pallet level.
5. Insert Forks Move forward slowly to insert forks fully beneath the pallet.

- If insertion is difficult:
 1. Insert forks $\frac{3}{4}$ depth, raise 5–10 cm (2–4 in.), back away 10–20 cm (4–8 in.), lower the pallet, then re-insert fully.
- 6. Lift the Load Raise forks 5–10 cm (2–4 in.) above the stack to clear it safely.
- 7. Check Surroundings Verify the travel path is clear before backing away slowly.
- 8. Lower and Secure Lower the load to 15–20 cm (6–8 in.) above the ground, tilt the mast fully backward, and proceed to the designated area.

STORING

CAUTION – Before Storing

If the lift truck is found to be defective, unsafe, or in need of repair, report the condition to your supervisor immediately. Do not operate or store the truck until it has been restored to safe operating condition.

Pre-Storage Inspection and Cleaning

Before storing the lift truck:

- **Clean thoroughly** — wipe away grease, oil, and dirt from the body using a shop rag or mild detergent.
- **Inspect for damage** — check for dents, cracks, or tire wear; remove nails or stones lodged in treads.
- **Check for leaks** — inspect hydraulic lines and fittings for oil leakage.
- **Lubricate** — apply grease to all required points.
- **Check fasteners** — verify hub nuts and cylinder-rod joints are secure.
- **Inspect mast rollers** — ensure smooth rotation.
- **Cycle the lift system** — raise forks to the top position, then lower to the bottom limit to prime oil in lift cylinders.

Daily Storage

When parking the truck for daily storage:

1. Park in a designated area and block the wheels.
2. Place the F/R lever in neutral (“N”).
3. Pull the brake lever fully.

4. Remove the starter key and store it in a safe location.

Long-Term Storage

Perform the following checks in addition to “Before Storing” and “Daily Storage” procedures:

- Park the truck on high, firm ground—avoid low or soft surfaces, especially during rainy seasons.
- Remove the battery from the truck.
 - Store it in a cool, dry place.
 - Charge once per month to maintain capacity.
- Apply anti-rust compound to exposed metal parts such as cylinder rods and shafts.
- Cover components sensitive to humidity, including the air breather and air cleaner.
- Once a week, start the truck, warm it up, and move it slightly forward and backward to circulate fluids.
- Avoid parking on soft asphalt or other surfaces that may deform under weight, particularly in hot weather.

Operating After Long-Term Storage

Before returning the truck to service:

1. Remove protective covers used during storage.
2. Clean off anti-rust coatings from exposed parts.
3. Drain any water or foreign matter from the hydraulic oil tank.
4. Charge the battery fully, reinstall it, and reconnect cables securely.
5. Perform a complete pre-operation inspection before use.

PREOPERATIONAL CHECKS

General Condition

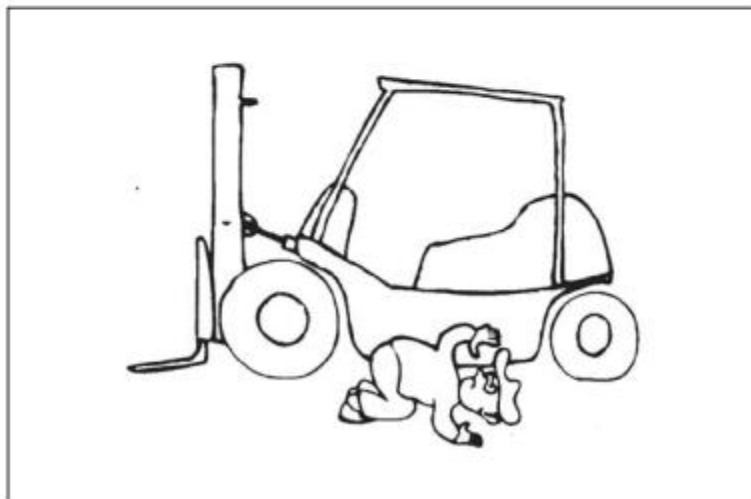
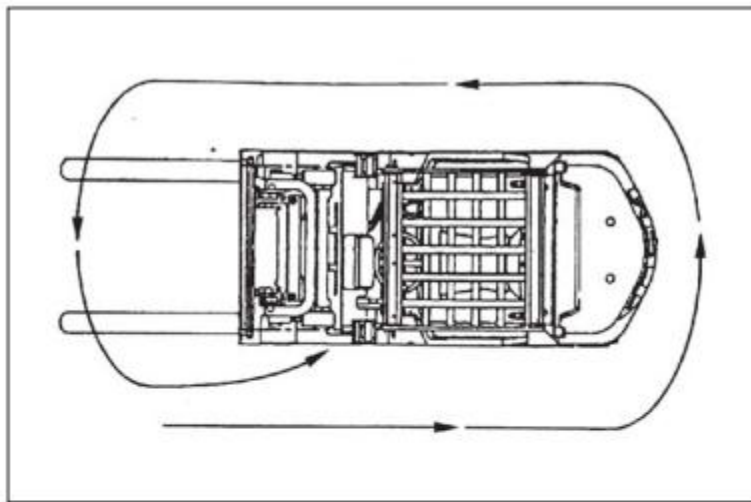
Before operating the truck, inspect its overall condition carefully. Examine the body for dents, cracks, or other visible damage that could affect structural integrity. Check the tires for wear, cuts, or embedded nails that may cause air loss or uneven traction. A thorough visual inspection helps identify potential hazards before operation and ensures the truck remains in safe working order.

State of the Truck

Observe the truck's inclination when parked on level ground. If the truck appears tilted to either side, this may indicate uneven tire pressure, wheel damage, or suspension issues. A tilted stance can compromise stability during lifting and travel. If any irregularity is found, do not operate the truck—contact your local dealer or maintenance department for inspection and repair.

Oil and Water Leaks

Inspect the area beneath the truck for signs of oil or water leakage. Pools or drips on the floor can indicate hydraulic, transmission, or cooling system problems. Leaks not only reduce performance but also pose slip hazards and environmental concerns. If any leakage is detected, report it immediately and have the truck serviced before use.



1. Defects Found in Previous Checking

Before operating the truck, confirm that any defects identified during the previous inspection have been properly repaired. Never attempt to operate a faulty truck under any circumstances. Doing so may lead to mechanical failure or serious injury. Always ensure that maintenance

records are up to date and that all repairs have been verified by authorized personnel before beginning operation.

2. Tire Condition Check

Tires on lift trucks are designed to operate at high inflation pressures. Before use, inspect each tire and rim for visible damage, cracks, or deformation. Set the inflation pressure to the manufacturer's standard level, as indicated on the decal located on the left side of the front guard. Never overinflate tires. When using an air compressor, adjust the compressor pressure beforehand to prevent accidental overinflation, which can cause a tire or rim to rupture. Even minor rim bends or tire damage can lead to sudden air loss and serious accidents. Keep tire pressure at the proper level at all times.



Proper tire inflation is critical for safe operation and load stability. Refer to the pressure decal located on the left side of the front guard.

Tire Position		Specification Pressure
Front wheels (single & double)	Standard	700 kPa (7 kg/cm ²)
Rear wheels (2–4 ton trucks)	Standard	700 kPa (7 kg/cm ²)

Inspection and Adjustment

1. Remove the tire valve cap and measure pressure using a calibrated gauge.
2. Adjust to the specified pressure.
3. Check for air leaks at the valve and reinstall the cap securely.
4. Inspect tread and sidewalls for cuts, cracks, or deformation near the rim.
5. Ensure tires are free from embedded debris or excessive wear.

Inflation Guidelines

- Underinflation causes excessive sidewall flexing and heat buildup, leading to premature failure.

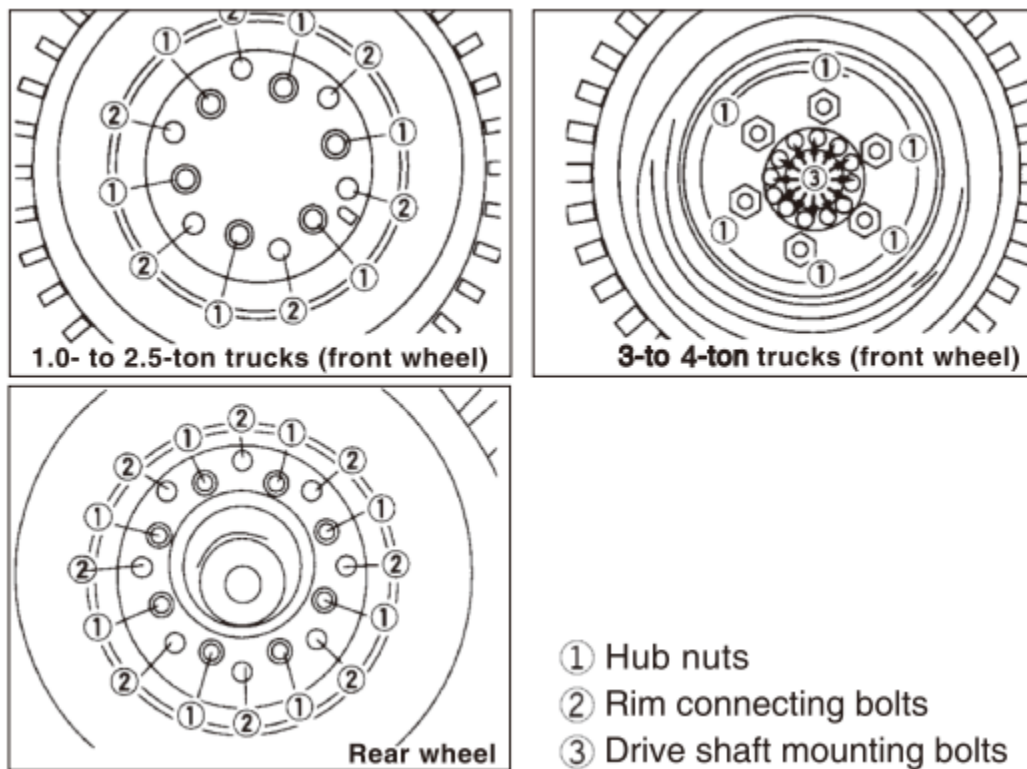
- Overinflation reduces traction and increases risk of tread damage.
- Maintain “Good” inflation for optimal contact and load distribution.
- Lift trucks require high inflation pressure to support heavy loads safely.

HUB NUT CHECK

Safety Precautions

⚠ CAUTION A loose hub nut can cause wheel detachment, leading to severe injury or equipment damage. Always inspect hub nuts for tightness and torque them to specification before operation.

Hub Nut Tightening Torque



Double-tire specifications are identical to single-tire values.

Tightening Order for Double Nuts

1. Inner Tire Rim (Square Nuts): Tighten diagonally to the specified torque.
2. Outer Tire Rim (Hex Nuts): Tighten in the same diagonal sequence.

Drive Shaft Mounting Bolts: Retighten any loose bolts to 96 – 111 N·m (9.8 – 11.3 kgf·m).

Split Rim Assembly Precautions

⚠ CAUTION Do not operate the truck if any rim connecting bolts are loose.

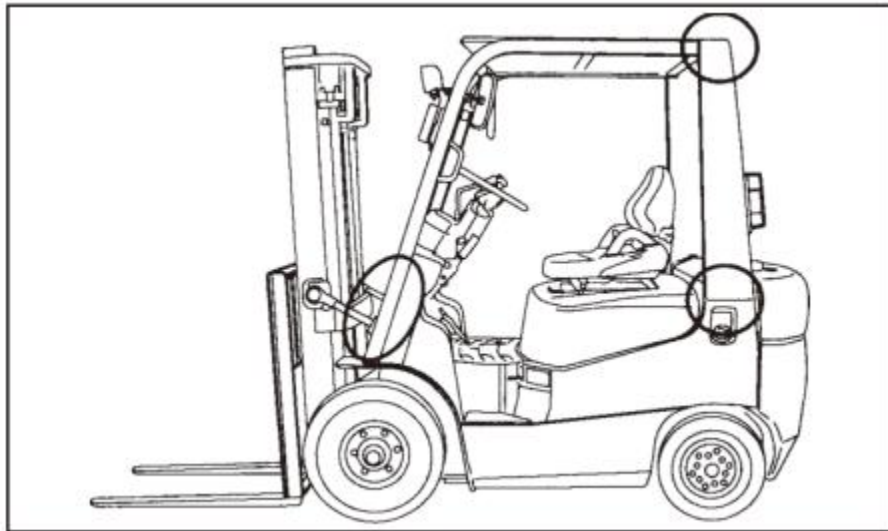
Procedure for Split Rim Tires

- Remove the air valve core to release pressure before disassembly.
- Loosen rim connecting bolts using approved tools.
- Have a qualified technician perform disassembly, reassembly, and inflation.
- Never attempt to tighten or inflate split rims without proper training and equipment.

Inspection Checklist

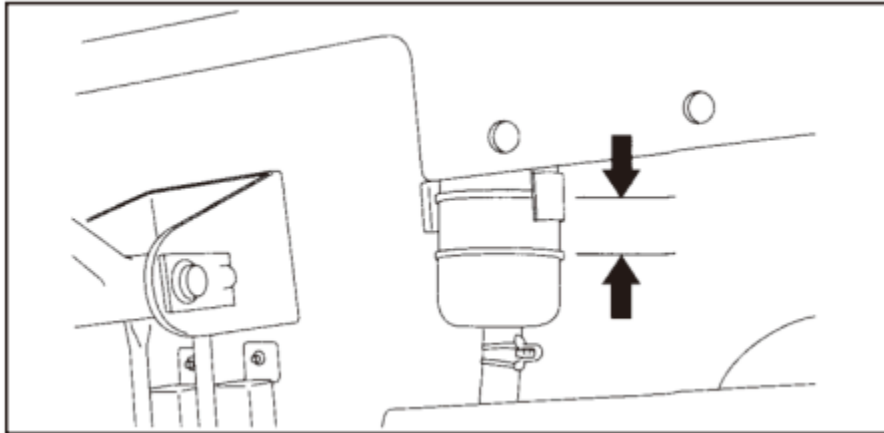
- Verify all hub nuts are torqued correctly.
- Check rim bolts for looseness or corrosion.
- Inspect wheel studs and nuts for thread damage.
- Confirm valve stems are intact and caps are installed.

3. Overhead Guard



Check the overhead guard for loose mounting bolts or nuts or damage.

4. Brake Fluid Level (excl. trucks with power brake)



You can check the brake fluid level from outside the reservoir tank, without having to remove the tank cap. Make sure the fluid level is as specified.

Open the engine hood

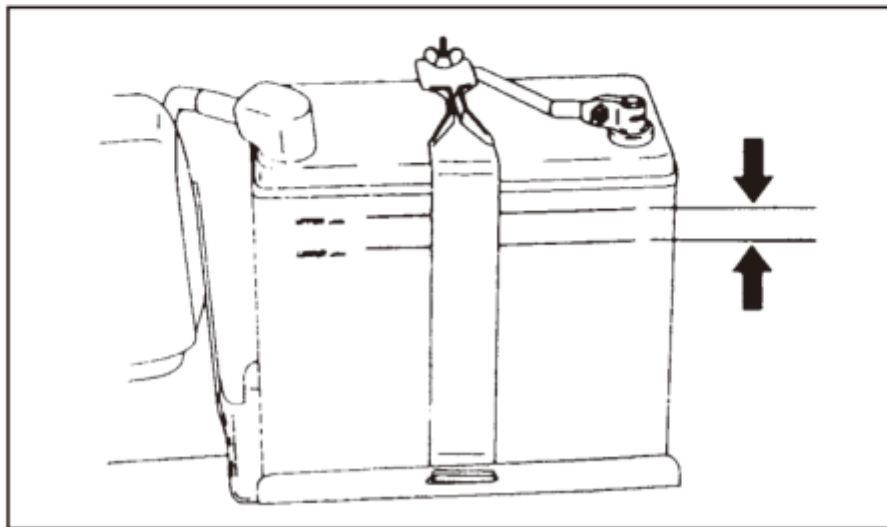
⚠ CAUTION

Pull the hood opening lever and open the hood fully. Make sure the hood is locked securely and remove your hand.

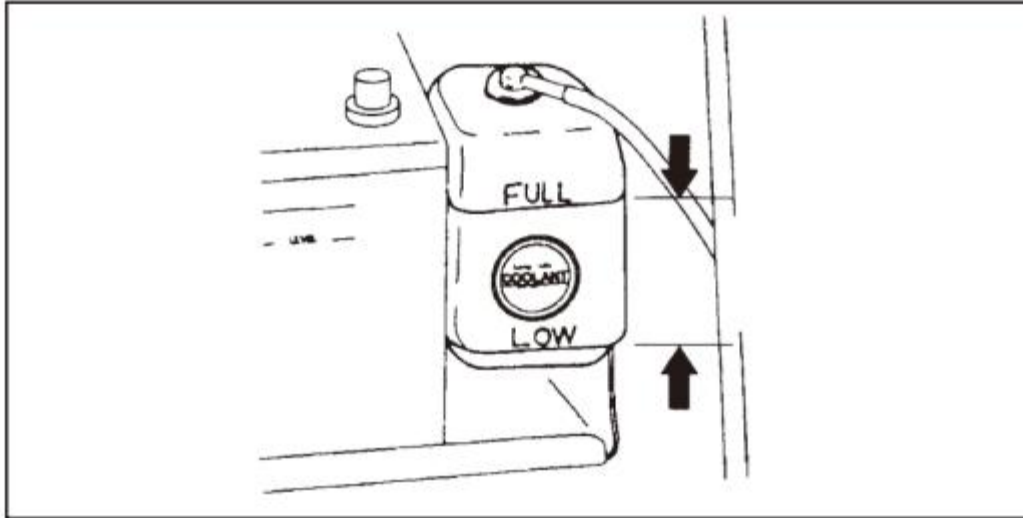
5 BATTERY ELECTROLYTE LEVEL

⚠ CAUTION

- Do not use or charge the battery with the electrolyte level below the "LOWER LEVEL" otherwise the inside of the battery deteriorates to cause a short battery life and in the worst case it might cause an explosion.
- Never use open flame for checking the electrolyte level. There is a danger of causing an explosion.



6. Cooling Water Level



⚠ CAUTION Check the cooling water level only when the radiator is cold. Hot coolant may spout out and cause serious burns.

Procedure

1. Inspect the coolant reservoir tank.
2. Ensure the level is between the “FULL” and “LOW” markings.
3. If coolant is low, remove the reservoir cap and add clean (soft) water.
4. Reinstall the cap securely before operation.

Removing the Radiator Cap

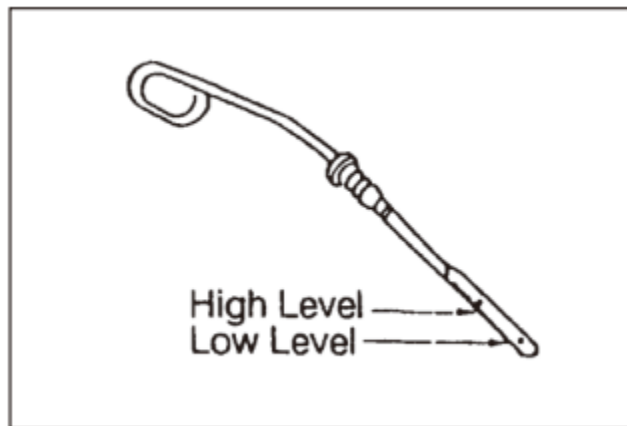
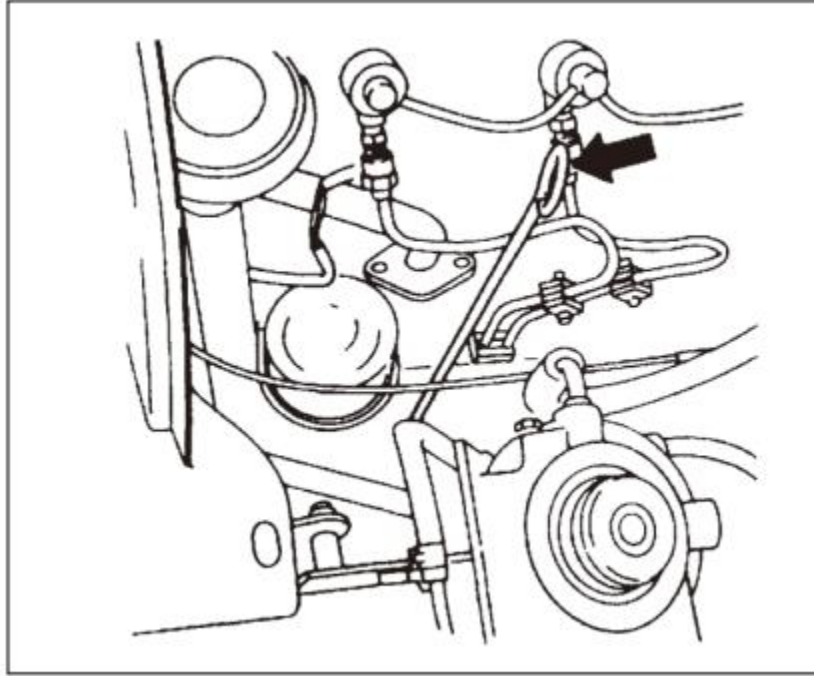
⚠ CAUTION Do not remove the radiator cap when the engine is hot. Always check coolant level before starting or after the engine has cooled.

Safe Removal Steps

1. Release pressure first:
 - Turn the cap counterclockwise slightly to vent internal pressure.
 - Wait until hissing stops before removing completely.
2. Avoid burns:
 - Use a thick waste cloth when loosening the cap.
 - Do not use gloves — hot water may soak through and cause injury.
 - Never look directly into the filler port while releasing pressure.

7. Engine Oil Level

⚠ CAUTION The exhaust system remains hot immediately after shutdown. Avoid contact to prevent burns.



Procedure

1. Park the truck on a level surface and wait at least 10 minutes after stopping the engine.
2. Locate the dipstick on the left side of the engine.
3. Remove the dipstick, wipe it clean, and reinsert fully.
4. Pull it out again and check the oil level:
 - The level must be between the High and Low marks.

- Do not add oil above the High mark.

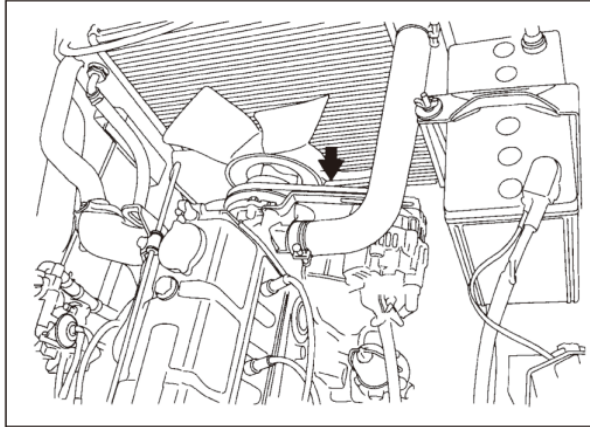
5. If oil is below the Low mark, add oil gradually and recheck.

NOTE: Oil level cannot be accurately measured immediately after shutdown because oil drains slowly back into the pan. Always wait before checking.

8 FAN BELT

⚠ CAUTION

Make sure the engine is shut down before checking the fan belt for tension.

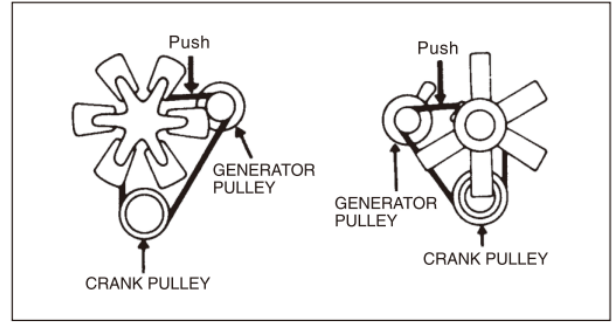


WARNING



Keep fingers or objects away from fan when engine is running.

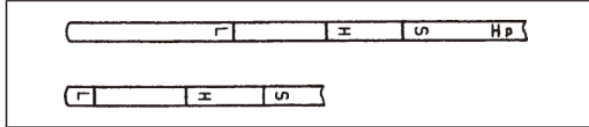
Check the fan belt for proper tension and cracks or damage.



9 REAR COMBINATION LAMP

Check the rear combination lamps (turn signals, tail lamps, brake lamp, back-up lamp, and rear reflector) for a damaged or contaminated lens.

10 HYDRAULIC OIL LEVEL



Check the hydraulic oil level in the tank using the oil level dipstick. Remove the dipstick, clean the rod with a clean cloth and reinsert it. Remove the dipstick again and check the oil level.

If the level is low, add hydraulic oil.

"H" mark: Highest position of the standard truck

"L" mark: Lowest position of the standard truck

"S" mark: For trucks with a lift height of 6m or more or for special trucks, the oil level should be within 10 mm above or below this mark.

"HP" mark: Use this mark for 2- to 4-ton trucks with high-power specification.



NOTE

The oil level check should be performed with the engine shut down, the mast vertical, the forks on the ground or floor surface, and the truck parked on a level surface.

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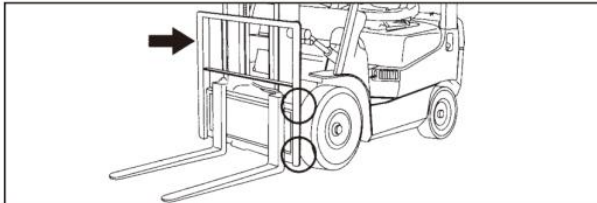
13 LOAD BACKREST



CAUTION

Do not modify or remove the load backrest.

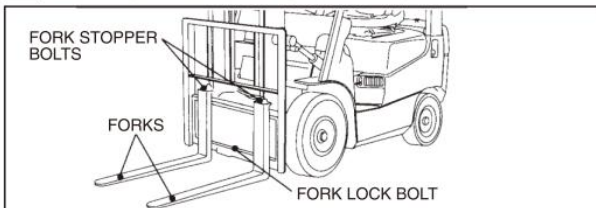
- The operator might get injured by a falling load.
- The forks might come off the carriage.



Check the load backrest for damage or loose or missing mounting bolts.

Retighten where needed.

14 FORKS AND FORK STOPPERS

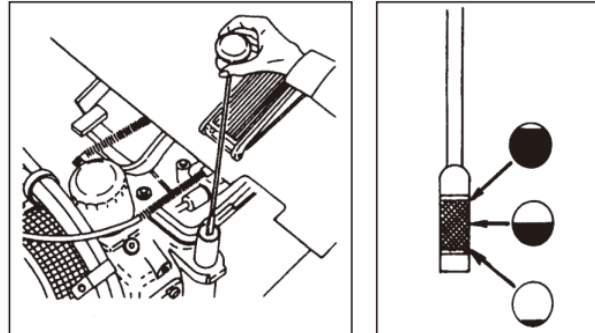


Check that the fork stopper are properly engaged, the fork lock bolt at the middle of the carriage is not damaged, the forks are not bent and do not have cracks.

11 HYDRAULIC OIL PIPING AND CYLINDERS

Visually check the hydraulic oil piping and lift and tilt cylinders for oil leaks.

12 TORQUE CONVERTER OIL LEVEL (T TYPE)



The torque converter oil filler cap is located under the floorboard. Remove the oil dipstick of the filler cap. Clean the rod with a clean cloth and reinstall it.

Remove the dipstick again and check the oil level.

The oil level should be within the specified range. If the level is low, add oil.

15 HEAD LAMPS AND COMBINATION LAMPS

Check for dirty or damaged lens of the head lamps. Check also the combination lamps (clearance lamps and turn signals) for a dirty or damaged lens.

Close the engine hood



CAUTION

Take care not to pinch your fingers in the hood.

16 ADJUSTING DRIVER'S SEAT AND STEERING COLUMN ANGLE

Get on the truck and adjust the driver's seat to a position which provides easy access to all foot and hand controls. Also make sure you can operate the steering wheel smoothly. After adjustment of the driver's seat position and steering column angle, lock the seat and steering column securely.

17 SIDEVIEW MIRRORS

Check the sideview mirrors for contamination or damage.

Adjust the mirrors to gain full rearview when you are seated in the driver's seat.

18 SHIFT LEVERS

Check the direction and speed range shift levers (C type) and shift lever (T type) for looseness and smooth operation.

19 LOAD HANDLING LEVERS

⚠ CAUTION

Note that the forks drop when the lift lever is pushed forward even if the engine is not running.

Check the load handling levers (lift, tilt and attachment) for looseness and smooth operation.

20 PARKING BRAKE OPERATION

Pull the parking brake lever to check if the parking brake is properly applied.

Start the engine

⚠ CAUTION

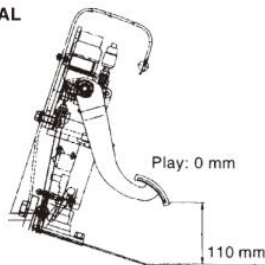
Make sure the shift levers are in neutral "N" and the parking brake is applied before starting the engine.

21 WARNING LIGHTS

turn the starter switch from "OFF" to "ON" Make sure the warning lights come on in red and go out soon after the engine has started.

26 CLUTCH PEDAL (C TYPE)

CLUTCH PEDAL



Press the clutch pedal to check if it operates smoothly. Release the pedal to check if it returns securely.
(For trucks with power clutch, start the engine before checking the clutch pedal.)

22 FUEL LEVEL

Check the fuel level using the fuel level gauge on the meter panel. Make sure the fuel level is sufficient for the day's work or for each shift. In addition, if the truck is equipped with a water temperature gauge or oil temperature gauge, check it, too, for proper operation.

23 LIGHTS AND LAMPS

Operate the lighting switch to check if the lights and lamps come on and off properly.

24 TURN SIGNALS

Operate the turn signal lever to see if the turn signals blink normally.

25 HORN

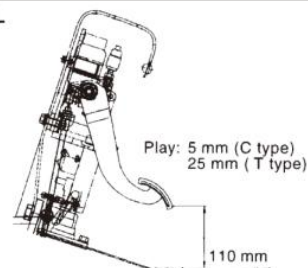
Press the horn at the center of the steering wheel to check if the horn sounds properly.

27 BRAKE AND INCHING PEDALS

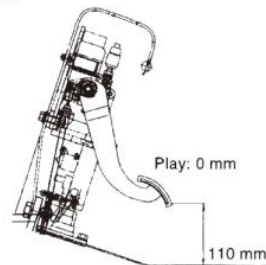
⚠ CAUTION

If the pedal returns poorly or the pedal height is not as specified, check the return spring and take necessary measures. If neglected, the pedal might become locked, making it difficult to press.

BRAKE PEDAL



INCHING PEDAL



Press the brake pedal and inching pedal (T type) to check if the pedal can be pressed smoothly and returns securely. Check the brake pedal and inching pedal for play (see the sketches).

28 MAST OPERATION

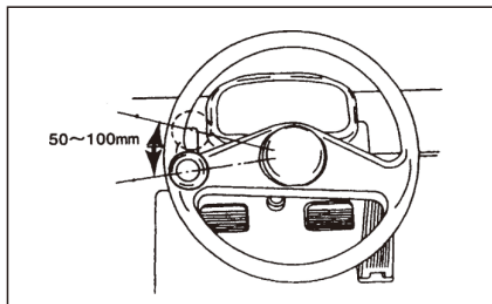
Operate each of the lift and tilt levers to check if the forks and mast operate smoothly without squeaking. Check also each lever for looseness. (If the truck is equipped with a hydraulic attachment, check the attachment itself and its control lever.)

NOTE

WARMING UP CYLINDERS

Before starting the day's work, warm up the cylinders. This lubricates packings and seals in the cylinders to make them ready for operation.

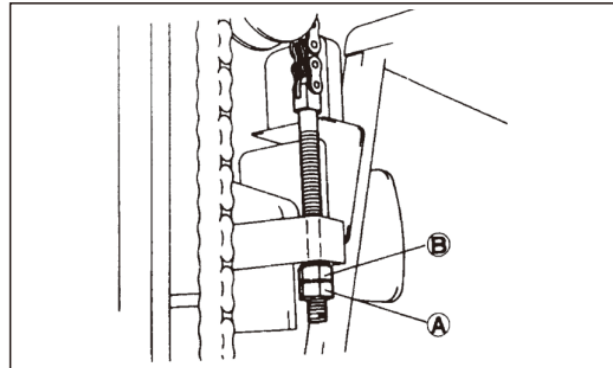
30 STEERING WHEEL



Turn the steering wheel counterclockwise and clockwise to check for play.

The normal play is within the range of 50 to 100 mm(1.9 to 3.9 in). Check also for vertical looseness.

29 LIFT CHAIN TENSION



Raise the forks 50 mm(1.96 in) off the ground or floor surface and check

that the right and left lift chains have the same tension. If uneven tension is found, adjust the tension using the adjusting nut (B) of the chain anchor bolt. After adjustment, securely tighten the lock nut (A).

31 EXHAUST GAS CONDITION

CAUTION

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

Check the condition of exhaust gas after the engine has been warmed up.

Colorless or light blue: Normal (Complete combustion)

Black: Abnormal (Incomplete combustion)

White: Abnormal (Oil burns)

Check also the engine for abnormal noise or vibration.

Run the truck at a low speed (at an out-of-traffic area)

32 CLUTCH PEDAL OPERATION TEST (C TYPE)

Run the truck slowly and press the clutch pedal for proper operation.

Run the truck slowly and press the inching pedal (T type)
a little to check if the truck slows down.

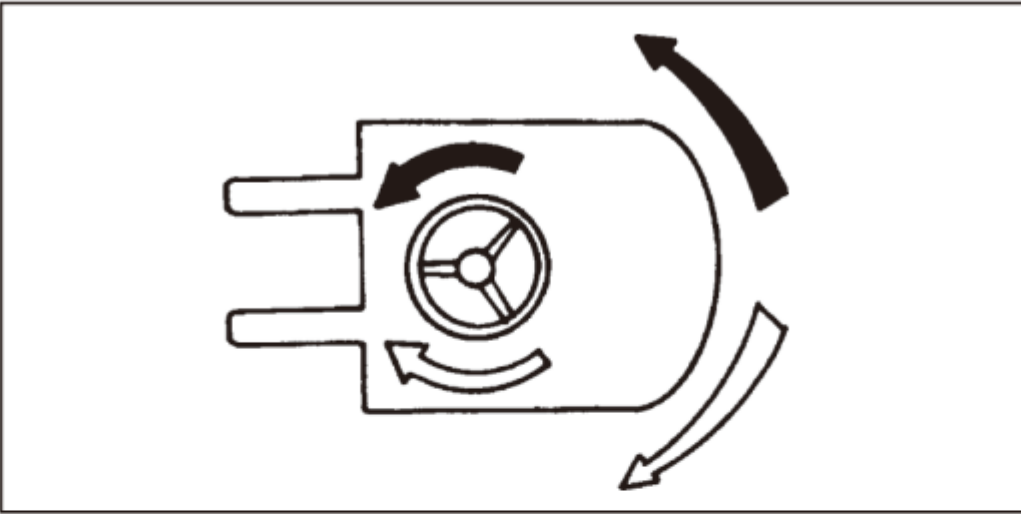
33 BRAKE TEST



Run the truck slowly and press the brake pedal to check if the truck is braked properly without being pulled to one side.

Make sure the brake lamps come on when the brake pedal is pressed.

34 STEERING TEST



Run the truck at a low speed and turn the steering wheel a little to the right and left to check if the truck is steered properly.

35 PARKING BRAKE TEST

Pull the parking brake lever to check if the truck is properly braked. Also make sure the truck does not move and keeps its stopping position.

36 BACK-UP LIGHT AND ALARM TEST

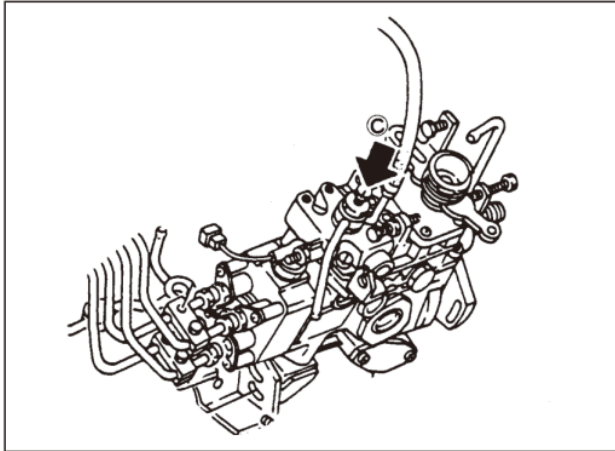
Check that the back-up lamp comes on and alarm sounds when the shift lever is shifted into reverse "R".

AIR BLEEDING FUEL SYSTEM

DIESEL ENGINE TRUCKS

CAUTION

- Make sure there is not any fuel leak from the air bleeding plug port. If any, there is a danger of causing a fire hazard.
- Wipe away any split fuel from areas around the air bleeding plug. There is a danger of causing a fire hazard.

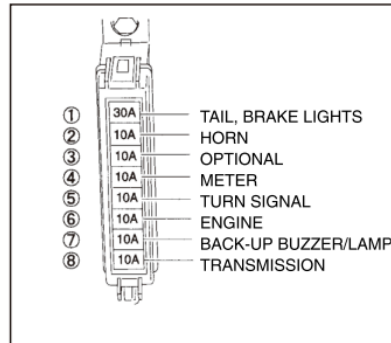
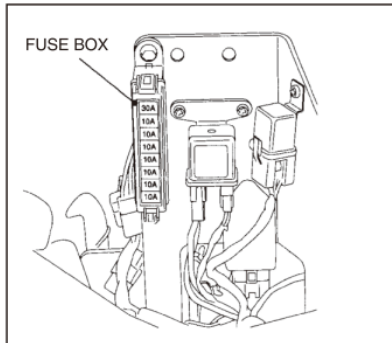


Whenever the fuel filter is replaced or the fuel tank is drained, air bleed the fuel system in the following manner:

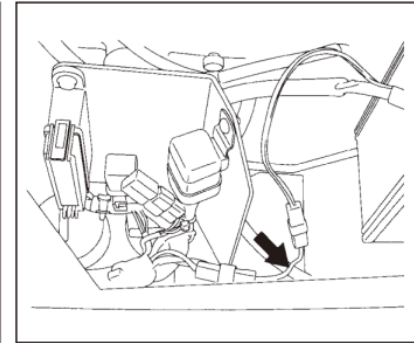
490BPG

- 1) Loosen the air bleeding plug (overflow valve) of the injection pump.
- 2) Loosen the priming pump of the sedimenter and pump the priming pump until the fuel coming from the plug hole is free from bubbles.
- 3) Reinstall the air bleeding plug securely.
- 4) Tighten the priming pump securely.

REPLACING FUSES



FUSIBLE LINK (MAIN FUSE)

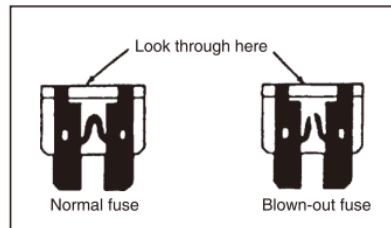


Check to see that the components in each circuit are operating properly. If every component in a circuit is not functioning, it indicates that the corresponding fuse is blown out. Replace the blown fuse with a spare fuse of the same capacity and color. If some of the components in a circuit do not function properly, it suggests that a bulb has burnt out. Replace the burnt bulb with a new one of the same capacity.

NOTE

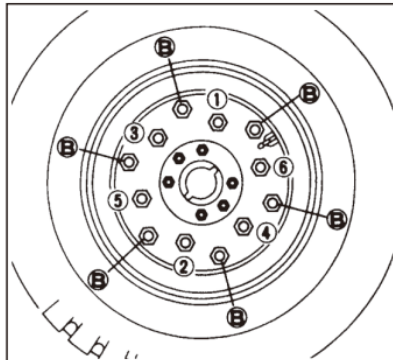
The fuses protect the electric circuit against overcurrent. Use fuses of the specific amperage rating.

- ① - ③: They function regardless of the key switch position.
④ - ⑧: They function when the key switch is in "ON".



As the main fuse for the entire truck, a fusible link wire (red cable) is provided at the positive (+) side of the battery. If the entire electrical circuit of the truck does not function, replace this fusible link wire with a new one.

REPLACING TIRES AND REPAIRING FLAT TIRE



Get tools and jack necessary for replacing tires.

Frontwheel

CAUTION

When removing a tire from the truck, remove air from the tire completely and then remove the hub nuts.

- 1) Park the truck on a level, hard surface and shut down the engine. Do not have any load on the forks.
- 2) Apply the parking brake and block the

wheels. Put a jack under the truck frame.

- 3) Jack up the truck to an extent that the tire still remains on the ground. Loosen the hub nuts (① - ⑥). Do not remove them yet.
- 4) Jack up the truck until the tire leaves off the ground. Remove the hub nuts.
- 5) Remove the tire from the hub.
- 6) When reinstalling the tire, use the reverse order of removal. Tighten the hub nuts in a diagonal order and evenly. Hub nut tightening torque: See page 4-5. After installing the tire to the truck, adjust the inflation pressure to the standard inflation pressure, if needed.

Rear wheel

Proceed in the same manner as with the front wheel tire, except that the position of the jack goes under the counterweight. Hub nut tightening torque: See page 4-4.

WARNING

AVOID SEVERE INJURY OR DEATH
Tire servicing requires special training. Do not take tires off truck until all air pressure is out. Loosen only WHEEL LUG NUTS "A". Do not loosen wheel assembly nuts "B" until all air pressure is out of tire. See OPERATORS MANUAL for more important instructions for wheel service and reassembly. Make sure all nuts and bolts are in place and tight. Never add air to a tire that looks low. Let all air out and check for proper assembly. Inflate all tires in a safety cage. See MANUAL for proper pressures.

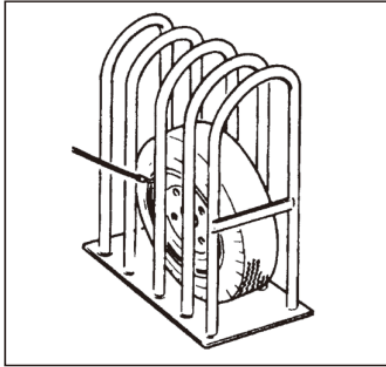
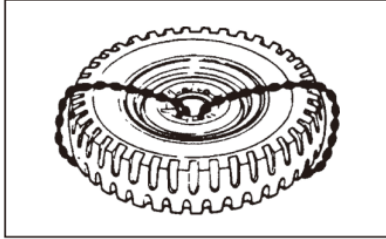
Split-type

Safety cage

Remove a tire from the rim

⚠ CAUTION

- Before removing a tire from the rim, remove the valve core to release the air pressure from the tire completely. In the case of the split type rim, remove air from the tire before loosening the split rim connecting bolt (B); in the case of the side ring type rim, remove air from the tire before removing the side ring (lock ring).
- The assembling of a tire, tube, rim, and flap and inflating of a tire which has been removed from the truck should be done only by qualified personnel. The lift truck uses tires which have an inflation pressure far higher than those of general passenger cars. The use of improper parts or work procedure will cause a serious accident. Tires should be inflated with them attached to the truck or by putting in a safety cage, even if you are qualified to inflate tires.
- The split rim connecting bolts must be tightened to the specified torque using the special tool, with the tire inflation pressure removed completely.
- Install the split rim on the truck with the rim connecting bolt head pointing outside.



REPLACING LAMP BULBS

If any light bulb burns out, replace it with a new one of the same capacity, referring to the following table:

Lamp capacity

1. Head lamp	12V-55W
2. Clearance lamp	12V-10W
3. Turn signal	
Front	12V-27W
Rear	12V-23W
4. Tail lamp	12V- 8W
5. License number plate lamp (option)	12V-10W
6. Rear work light (option)	12V-55W
7. Brake lamp	12V-23W
8. Back-up lamp	12V-10W
9. Meter panel light	14V-1.4W

WHEN YOU CANNOT START THE ENGINE BECAUSE THE BATTERY HAS BEEN EXHAUSTED

⚠ WARNING

Do not push or tow the truck to jump start it when the battery is exhausted. While the engine is not running, power steering and power brake are inoperative.

When the battery has been exhausted, use an auxiliary battery to start the engine.

CAUTION TO BE TAKEN WHEN STARTING ENGINE WITH AUXILIARY BATTERY

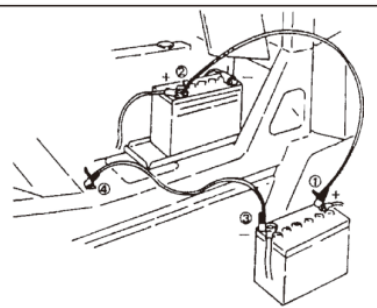
⚠ WARNING

When starting the engine using an auxiliary battery, make sure to connect the (-) cable finally. Connect the cable to a point away from the battery, such as either of the two tilt cylinders, but not to the (-) terminal of the battery. This will help prevent the occurrence of sparks which might cause a fire.

STARTING WITH AUXILIARY BATTERY

⚠ CAUTION

- Keep the booster cable in place while the starter motor is turning; otherwise sparks occur to cause an accident.
- Never allow the (+) terminal of the booster cable to come in contact with the (-) terminal of the booster cable.



- 1) Make sure that the auxiliary battery supplies 12V.
- 2) Connect the booster cables in the following order:
 - ① Connect red cable (+) to the (+) terminal of the auxiliary battery.

- ② Connect the red cable (+) to the (+) terminal of the battery on the truck.
- ③ Connect the black cable (-) to the (-) terminal of the auxiliary battery.
- ④ Connect the black cable (-) to the (-) terminal of the frame at a point away from the battery on the truck, such as to either of the two tilt cylinders.

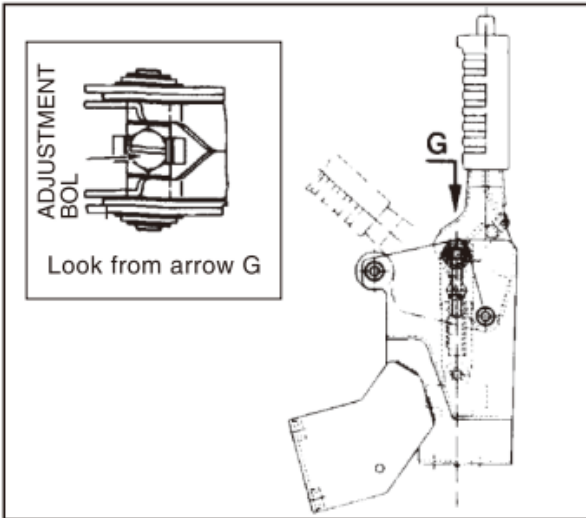
3) Start the engine.

📖 NOTE

For more information, see "STARTING ENGINE AND AFTER ENGINE HAS STARTED" on page 3-6.

- 4) After the engine has started, remove the booster cables in the reverse order of connection.

ADJUSTING OPERATING FORCE OF PARKING BRAKE



ADJUSTMENT

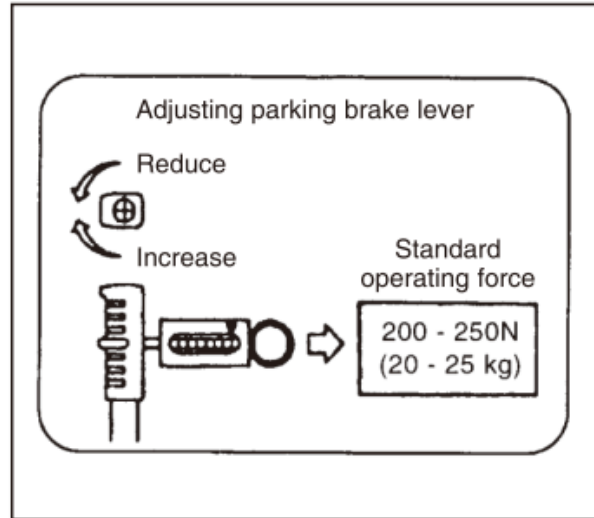
- 1) Engage the spring scale to the parking brake lever as shown above and measure the force required to operate the lever.

Standard operating force: 200 - 250 N (20 - 25 kg).

- 2) If the measurement is not within the range of the standard operating force, turn the adjustment bolt with a screwdriver to adjust the operating force of the lever.

Reduce by turning the bolt counterclockwise.

Increase by turning the bolt clockwise.



- 3) The cable of a new truck tends to elongate. It is advisable to adjust it sometimes after the day's work or each shift.

PERIODICAL CHECK

Purpose

To maintain safe operation, certain components must be replaced periodically regardless of appearance or performance. These parts deteriorate over time and may fail suddenly if used beyond their service life.

⚠ CAUTION Failure to replace safety parts at the recommended intervals can result in mechanical failure or injury. Always follow the replacement schedule below.

 **NOTE** Safety parts listed here are not covered under warranty. Replacement is part of routine preventive maintenance.

Replacement Schedule

No. Safety Part	Replacement Interval (Years)
1 Master cylinder and wheel cylinder cups and dust seals	1
2 Power cylinder hose	2
3 Reservoir tank tubing	2 – 4
4 Fuel hose	2 – 4
5 Torque converter hose	2
6 Rubber parts inside power steering unit	2
7 Lift chain	2 – 4
8 Load-handling means hose	1 – 2

Maintenance Guidance

- Inspect all listed parts during scheduled service intervals.
- Replace immediately if cracks, leaks, or deformation are observed.
- Use only manufacturer-approved replacement parts.
- Record replacement dates in the maintenance log for compliance tracking.

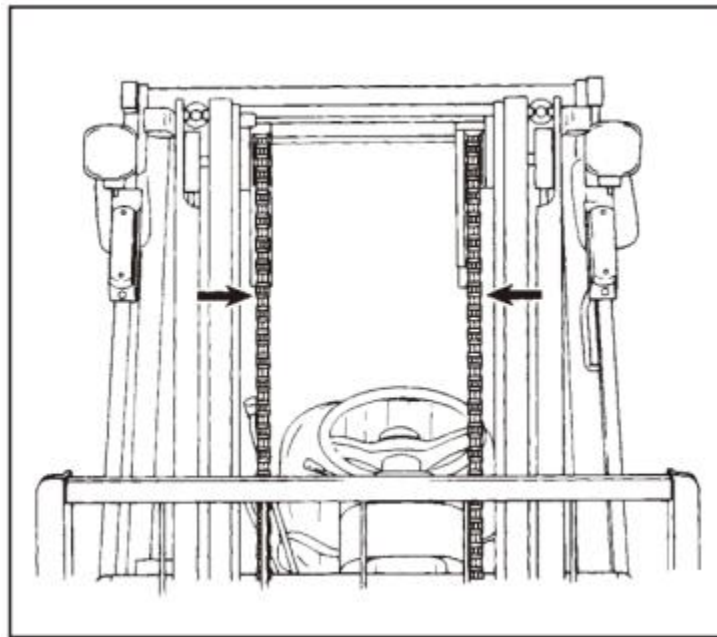
Items to Be Checked

Perform the following inspections regularly to ensure safe and efficient operation:

- Brake piping: Check for air intrusion, leaks, or looseness.
- Brake system rods and cables: Verify proper operation and secure fittings.
- Brake fluid: Inspect for leaks.
- Forks: Check for cracks, bends, or excessive wear.
- Mast and mast support: Inspect for cracks, damage, and loose bolts.
- Lift cylinders: Confirm tightness of mounting bolts and absence of leaks.
- Carriage: Check for cracks or deformation.

- Mast rollers: Inspect for looseness, cracks, or damaged pins.
- Lift chain: Check for elongation, looseness, and proper lubrication.
- Sheaves and bearings: Inspect for deformation or wear.
- Attachments: Verify proper operation and secure installation.
- Control valve: Test relief and tilt lock valve operation.
- Battery: Check electrolyte level and cleanliness.
- Wire harness: Inspect for damage or loose clamps.
- Chassis: Lubricate all designated points.

Lubricating Lift Chain



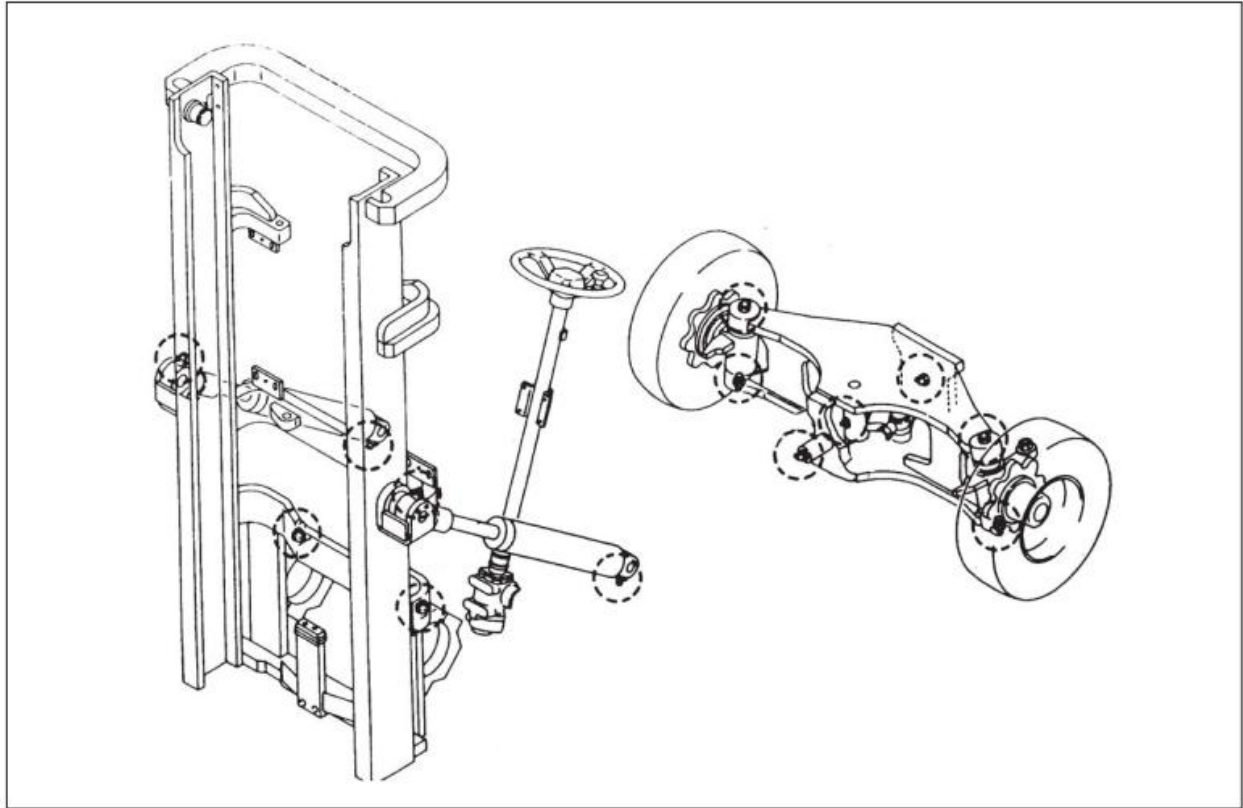
Procedure

1. Apply engine oil to the lift chains using an oiler or brush.
2. Loosen the chain slightly to allow oil to penetrate between pins and link plates.
3. After lubrication, raise and lower the mast at least 10 times to distribute oil evenly.

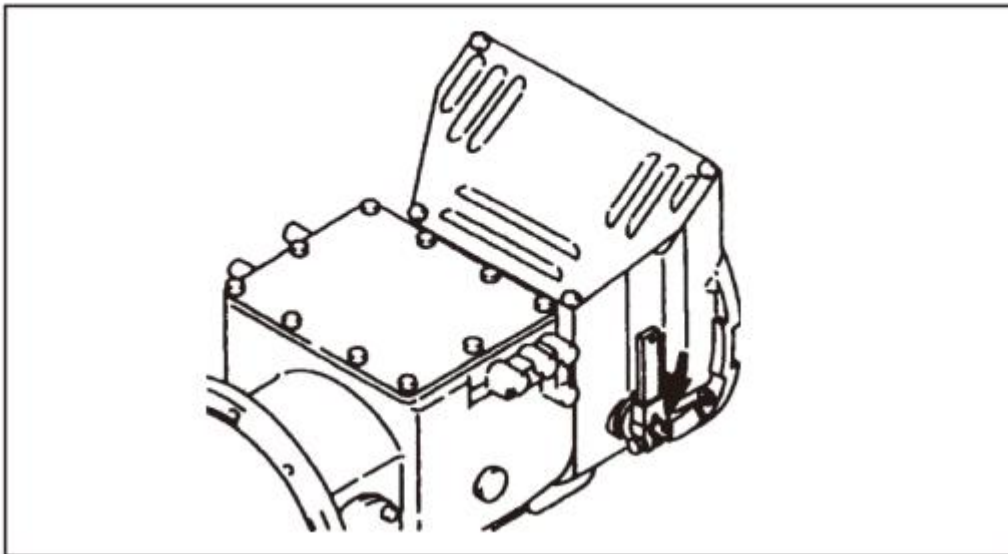
NOTE: For trucks operating near ports or coastal areas, wash chains with clean water after exposure to salty air, storms, or typhoons before lubricating. Salt corrosion can accelerate chain wear and reduce service life.

Greasing points

Mast and Steering System

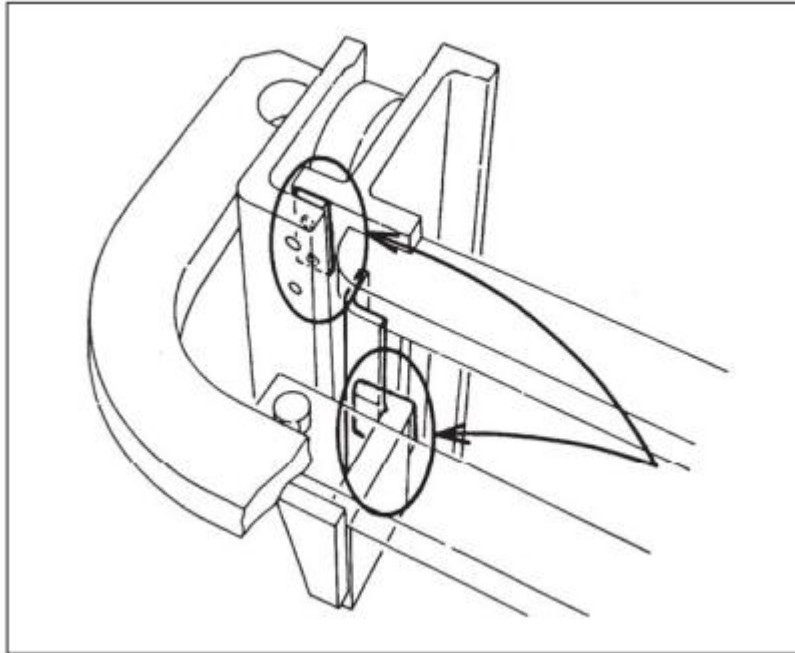


CLUTCHRELEASEYOKESHAFT(CTYPE)



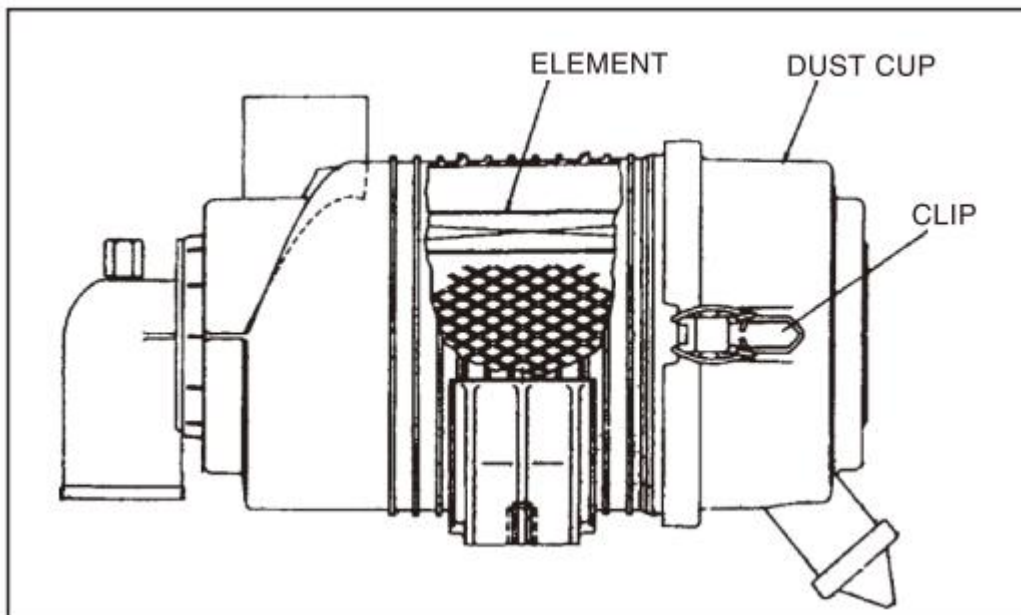
Mast Rear Slipper (for Optional Mast)

⚠ WARNING Do not climb the mast or place hands or feet on connecting members or inside the mast assembly. Accidental mast movement can cause serious injury.



Apply grease to the U-shaped guides shown in the illustration (for masts equipped with a free-lift mechanism). Proper lubrication ensures smooth mast operation and prevents wear on sliding components.

AIR CLEANER ELEMENT MAINTENANCE



Inspection

Purpose: To ensure proper engine performance and prevent dust or debris from entering the intake system.

Procedure

1. Open the engine hood.
2. Disengage the air cleaner case clips and remove the element.
3. Inspect the element for **contamination, cracks, or damage**.
4. Check the **rubber seal** for deterioration or contamination.

Removing the Element

1. Release the **two or three clips** securing the case.
2. Remove the **wing nut** holding the element in place.
3. Carefully lift out the element for cleaning or replacement.

Cleaning the Element

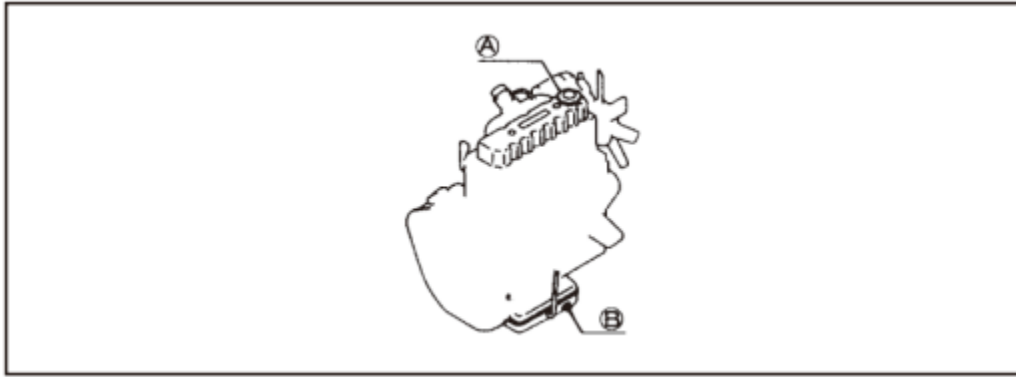
 **CAUTION** When using compressed air, **wear safety glasses** to protect against flying debris.

Cleaning Steps

1. Blow compressed air **from the inside outward** to remove dust.
2. Tap lightly by hand to dislodge remaining particles.
3. Inspect for **ruptures or pinholes** — replace if damaged.
4. Clean the element **once per month** (≈ 200 hours of operation).
5. Replace with a new element **every six months** (≈ 1200 hours of operation).

Changing Engine Oil

 **CAUTION** Do not dispose of waste oil into waterways or onto the ground. Used oil must be collected and handled by a qualified service provider or recycling facility.



Replacement Interval

- Change engine oil **once per month** (≈ 200 hours of operation).
- For **new trucks**, perform the first oil change after **50 hours** or **one week** of use.

⚠ CAUTION Do not change oil immediately after shutting down the engine — hot oil can cause burns. Change oil only when it is **warm**, not hot.

Preparation

1. Start the engine and let it idle briefly to warm the oil.
2. Park the truck on a **level surface** and engage the **parking brake**.
3. Turn off the engine and remove the key.
4. Open the engine hood fully.

Oil Change Procedure

1. Remove the **oil fill port cap** and wipe clean.
2. Place a drain pan under the **oil pan drain plug**.
3. Clean the drain plug and surrounding area.
4. Loosen the plug with a socket wrench, then remove by hand.
5. Allow oil to drain completely.
6. Clean and reinstall the drain plug securely.
7. Wrap a cloth around the fill port neck to catch spills.
8. Add new oil gradually, checking the level with the **dipstick**.
 - Keep the level between the **H** and **L** marks.
9. Wipe clean around the fill port and reinstall the cap.

10. Start the engine and let it idle to circulate oil.
11. Shut down, wait a few minutes, and recheck the level.
 - Add oil if below the **L** mark.

Environmental Compliance

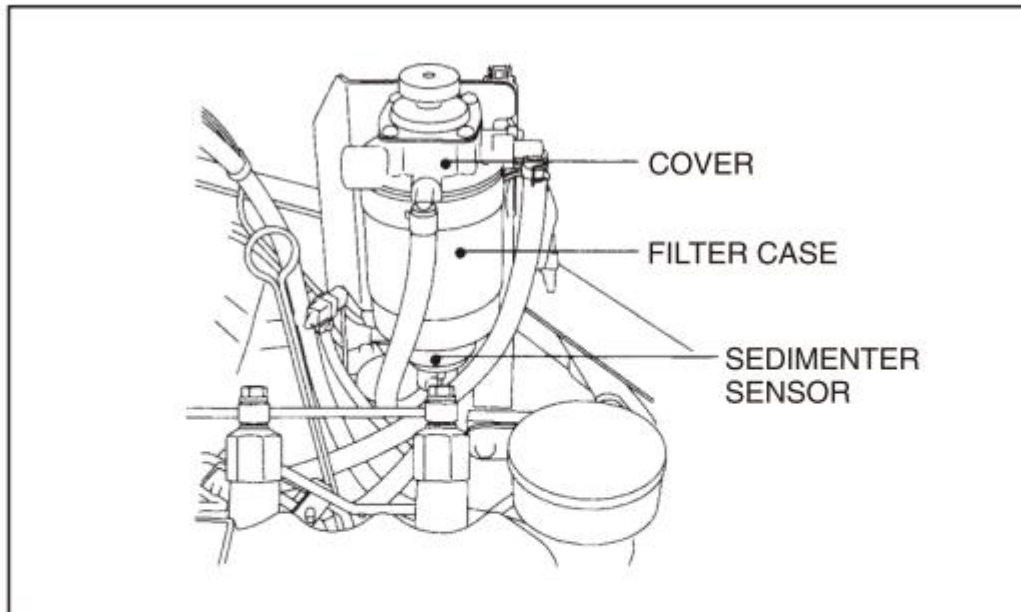
Used oil must be disposed of according to **EPA 40 CFR 279** and **OSHA 1910.178(q)** requirements. Never mix waste oil with other fluids or discard it improperly.

3 Months (600 Operating Hours) Checks

Perform these checks in addition to daily, weekly (50 hours), and monthly (200 hours) inspections. These ensure safe operation and prevent mechanical failure.

Items to be checked
● Cooling water – Change (every 2 years for trucks using LLC). ● Crankcase – Check the air breather for contamination and clean if necessary. ● Engine oil filter – Change (200 hours for first time only). ● Fuel filter – Change (diesel engine trucks). ● Fuel tank – Drain water. ● Fork stopper pins – Check for damage or wear. ● Starter – pinion gear – Check for proper engagement. ● Charger – Check for proper operation. ● Battery – Check the specific gravity of the electrolyte. ● Electrical wiring – Check for loose connections.

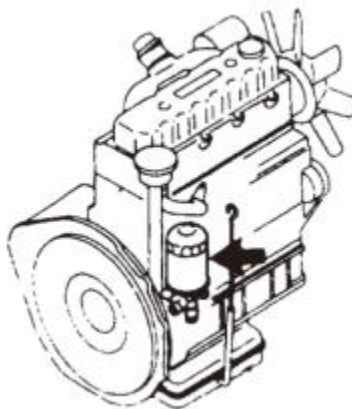
CHANGING FUEL FILTER



Using a filter wrench, remove the filter case from the cover. Remove the sedimentor sensor from the bottom of the filter case. Attach the sedimentor sensor to a new filter case and install the filter case into the cover.

- Sedimentor sensor tightening torque: 12-14 N-m (120 - 140 kg-m)
- Filter case mounting torque: 12 - 14 N - m (120 - 140 kg-m)

CHANGING ENGINE OIL FILTER



⚠ CAUTION The engine remains extremely hot immediately after shutdown. Wait until the engine has cooled sufficiently before replacing the oil filter to prevent burns.

Replacement Procedure

1. Remove the old filter:

- Use a filter wrench to loosen the cartridge.
- Remove carefully to avoid spilling oil.

2. Prepare the new filter:

- Obtain a new filter cartridge of the correct specification.
- Wipe the cylinder block mounting surface clean.
- Apply a thin coat of engine oil to the gasket on the new filter.

3. Install the new filter:

- Hand-tighten until the gasket contacts the sealing surface.
- Then use a filter wrench to tighten securely.

4. Check for leaks:

- Add engine oil to the specified level.
- Start the engine and let it idle briefly.
- Inspect the filter mounting area for leaks.

NOTE

- Replace the engine oil filter every two oil changes.
- When removing the filter, oil may spill — use a drain pan or absorbent cloth.
- Each filter cartridge contains approximately 0.54 L (0.14 gal) of oil.

6 Months (1200 Operating Hours) Checks

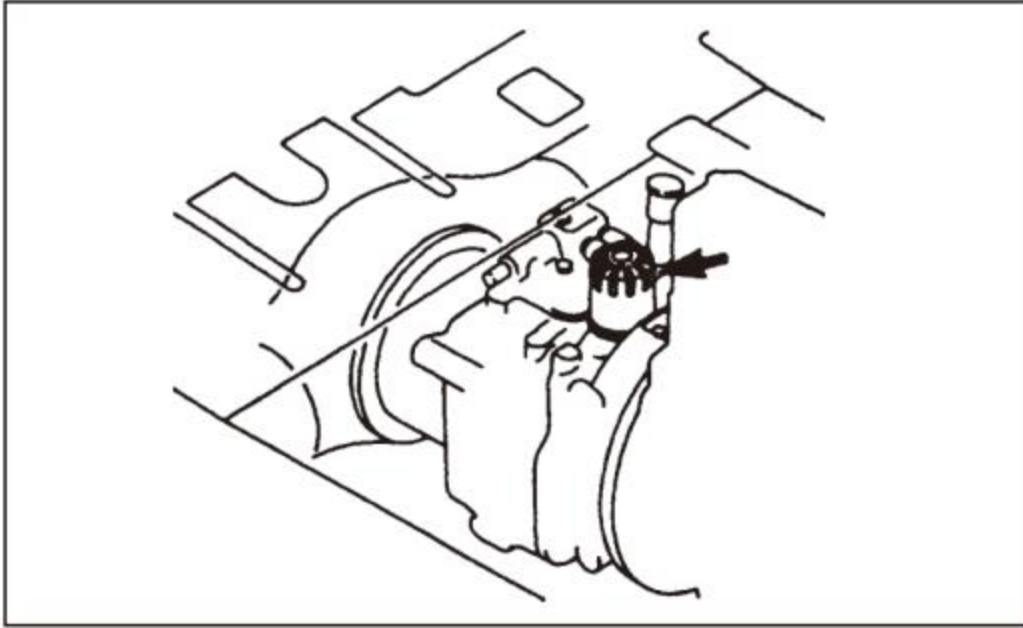
Perform these checks in addition to preoperational, weekly (50 hours), monthly (200 hours), and 3-month (600 hours) inspections. These ensure safe, efficient, and reliable operation.

Annual (2400 Operating Hours) Checks

Perform these checks in addition to preoperational, weekly (50 hours), monthly (200 hours), 3-month (600 hours), and 6-month (1200 hours) inspections. Annual checks ensure long-term reliability and safe operation.

Items to be checked
• Air cleaner element – Change. • Valve clearance – Check. • Engine oil filter – Change. • Injection nozzle – Check injection pressure and spray pattern. • Clutch and brake fluid – Change. • Fuel tank – Clean inside. • Torque converter oil (engine oil or torque converter oil) and transmission oil (gear oil) – Change. • Torque converter type transmission inline filter – Change (T type). • Hydraulic oil tank suction filter – Clean. • Hydraulic oil – Change. • Front axle – Change oil. • Front axle: – Check oil level. • Wheel bearing – Check for looseness and noise. • Wheel bearing – Change grease. • Suction strainer – Change. • Steering gear box – Check loose mounting bolt. • Mast support – Check for loose cap bolt. • Lift cylinder (of the view mast) – Check for looseness of cylinder tail fixing bolts, piston rod-to-connecting member bolts and cylinder fixing U bolts and retighten where necessary. • Control valve – Measure relief pressure. • Driver's seat– Check for damage and loose mounting bolts.

Replacement Procedure



1. **Shut down the engine** and allow it to cool.
2. **Release pressure** from the power transmission line.
3. **Remove the filter cartridge** from the housing as shown in the diagram.
4. **Prepare the new filter:**
 - Apply a thin coat of **engine oil** to the gasket.
 - Position the new cartridge and **hand-tighten** until the gasket contacts the seat.
 - Then tighten securely by hand — do not overtighten.
5. **Inspect for leaks** after installation and restart the engine to verify proper operation.

Replacement Interval

- **Initial replacement:** After **200 hours** of operation.
- **Regular replacement:** Every **1200 hours** thereafter.

ANNUAL (2400 OPERATING HOURS) CHECKS

Purpose

To ensure long-term reliability and compliance with preventive maintenance standards. These checks supplement daily, monthly (200 hours), quarterly (600 hours), and semi-annual (1200 hours) inspections.

Items to be checked
• Cylinder head bolts – Retighten (C240 engine) • Cylinder – Measure compression pressure. • Injection timing – Check. • Governor – Check proper operation (maximum rpm under unloaded condition). • Clutch retainer bearing – Lubricate. • Clutch oil tank (trucks with optional oil clutch) – Change clutch oil and clean strainer. • Parking brake – Check for proper operation, wear and damage. • Master cylinder and wheel cylinder – Check for proper operation, oil leaks and damage. • Master cylinder and wheel cylinder – Change piston cup and check valve. • Wheel brake – Disassemble, check, adjust and change brake drum and brake shoe. • Mast support – Check bushings for wear or damage . • Hydraulic pump drive – Check for wear. • High-voltage cable – Check for breakage. • Main frame and cross members – Check for damage, cracks, loose rivets or bolts.

Preventive Maintenance Schedule

This schedule establishes the standard intervals for inspection and servicing of lift trucks under normal operating conditions. If the truck operates in severe environments — such as dusty, humid, or high-temperature areas — maintenance should be performed more frequently than indicated.

Key:

- Black dots (●) in the schedule table indicate items requiring replacement or addition.
- All other items should be inspected, cleaned, or adjusted as specified.

Purpose

Preventive maintenance ensures:

- Safe operation and compliance with OSHA 1910.178(q) and ANSI B56.1 § 7.2.6.
- Extended equipment life and reduced downtime.
- Early detection of wear, leaks, or mechanical failure.

Maintenance Intervals

Perform checks at the following intervals:

- Daily – Pre-operation safety and fluid checks.
- Monthly (200 hours) – Basic lubrication and filter inspection.
- Quarterly (600 hours) – Hydraulic and brake system inspection.
- Semi-annual (1200 hours) – Comprehensive system servicing.
- Annual (2400 hours) – Full inspection and component replacement.

POWER TRAINS

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Engine	Visually check for proper rotation	Visual	○	○	○	○	○
	Check working noise	Auditory	○	○	○	○	○
	Check exhaust gas (color)	Visual	○	○	○	○	○
	Check air cleaner element for contamination and clean, if needed	Visual		○	○	●	●
	Check crankcase air breather for contamination and clean, if needed	Operate			○	○	○
	Check valve clearance	Thickness gauge				○	○
	Retighten cylinder head bolts	Torque wrench					
	Check cylinder compression pressure	Compression gauge					○
Governor	Check maximum speed under unloaded condition	Tachometer					○
Lubrication system	Check for engine oil leaks	Visual	○	○	○	○	○
	Check engine oil for level and contamination	Visual	○	○	○	○	○
	Change engine oil	Operate		● (at initial 50 hrs)	℃	●	●
	Change engine oil filter	Operate		● (first time only)	℃	●	●

POWER TRAINS

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Fuel system	Check for fuel leaks (piping, pump tank).	Visual	○	○	○	○	○
	Check for fuel filter for clogging.	Visual			○	○	○
	Clean fuel filter.	Operate			○	○	○
	Change fuel filter element.	Visual			●	●	●
	Check injection nozzle for injection pressure and spray pattern.	Nozzle tester				○	○
	Check injection timing	Operate					○
	Clean the inside of fuel tank.	Visual				○	○
	Check fuel level.	Visual	○	○	○	○	○
Cooling system	Check cooling water level.	Visual	○	○	○	○	○
	Check for water leaks.	Visual	○	○	○	○	○
	Check rubber hose for deterioration.	Visual		○	○	○	○
	Check radiator cap for proper function and installation.	Visual		○	○	○	○
	Clean and change water.	Operate			●	●	● (every 2 years when LLC is used.)
	Check fan belt for proper tension and damage.	Visual	○	○	○	○	○

POWER TRAINS

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Clutch	Check clutch pedal for play and the clearance between pedal and floorboard when disengaged.	Operate and scale	○	○	○	○	○
	Check for noise and proper disengagement.	Operate	○	○	○	○	○
	Check for slipping and proper engagement.	Operate	○	○	○	○	○
	Check master cylinder and release cylinder for fluid leaks and change fluid.	Operate		○	○	●	●
	Check the function of booster (trucks with power clutch).	Operate	○	○	○	○	○
	Check booster for oil leaks (trucks with power clutch).	Operate	○	○	○	○	○
	Check clutch oil level in tank of trucks with optional oil clutch (Clean strainer whenever oil is changed.)	Visual		○	○	○	●
Transmission	Check shift levers for operation and looseness.	Operate				○	○
	Check for oil leaks.	Visual	○	○	○	○	○
	Check oil level and change oil if necessary.	Operate				●	●
Torque converter type transmission	Check for oil leaks.	Visual	○	○	○	○	○
	Change oil.	Visual		○	○	●	●
	Check shift lever for operation and looseness.	Operate		○	○	○	○
	Check control valve and clutch for proper function.	Operate	○	○	○	○	○
	Check inching valve for function.	Operate	○	○	○	○	○
	Check inching pedal for play and travel.	Operate	○	○	○	○	○
	Change inline filter and element.	Operate		● (first time only)		●	●
Front axle	Check for oil leaks.	Visual	○	○	○	○	○
	Change oil.	Visual				●	●
	Check for loose mount bolt.	Visual		○	○	○	○

STEERING SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Tire	Check inflation pressure	Tire gauge	○	○	○	○	○
	Check for cracks or damage	Visual	○	○	○	○	○
	Check tread depth	Depth gauge		○	○	○	○
	Check for undue wear	Visual	○	○	○	○	○
	Check for debris, stones or foreign matter in tread	Visual		○	○	○	○
Hub, rim mounting bolt, nut	Check for looseness	Test hammer	○	○	○	○	○
	Check for damage	Visual	○	○	○	○	○
Rim, side ring	Check rim, side ring, and disk wheel for damage	Visual	○	○	○	○	○
Wheel bearing	Check for looseness or noise	Touch		○	○	○	○
	Disassemble and change grease	Operate				●	●
Axle	Check for deformation, cracks or damage	Visual		○	○	○	○

CONTROLS

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Steering wheel	Check for play.	Operate	○	○	○	○	○
	Check for looseness in axial direction.	Touch	○	○	○	○	○
	Check for looseness in radial direction.	Touch	○	○	○	○	○
	Check for proper operation.	Operate	○	○	○	○	○
Steering gear box	Check for loose mounting bolt.	Operate		○	○	○	○
Rod, arm	Check for looseness.	Operate		○	○	○	○
	Check for bending, damage or wear	Visual		○	○	○	○

CONTROLS

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Knuckle	Check king pin for looseness or damage.	Touch		○	○	○	○
Rear axle	Check for bending, damage or wear.	Visual		○	○	○	○
	Check mounting condition.	Test hammer		○	○	○	○
Power steering	Check for proper operation.	Operate	○	○	○	○	○
	Check for oil leaks.	Visual	○	○	○	○	○
	Check for loose mounting or linkage.	Visual		○	○	○	○

BRAKE SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Brake pedal	Check for play.	Scale	○	○	○	○	○
	Check for pedal height and returning.	Scale	○	○	○	○	○
	Check for braking or uneven braking.	Operate	○	○	○	○	○
	Check for the entrance of air into braking piping.	Operate		○	○	○	○
	Check booster for proper function and oil leaks (truck with power brake).	Operate	○	○	○	○	○
Parking brake lever	Check for proper operation and allowance.	Operate	○	○	○	○	○
	Check for braking effect.	Operate	○	○	○	○	○
Rod, cable	Check for proper operation.	Operate		○	○	○	○
	Check for loose linkage.	Touch		○	○	○	○
Hose and pipe	Check for damage, leaks or intervention.	Visual		○	○	○	○
	Check for loose connections or clamp.	Touch		○	○	○	○

BRAKE SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Oil brake	Check for fluid leaks (oil leaks for trucks with power brake).	Visual		○	○	○	○
	Check fluid level.	Visual	○	○	○	●	●
	Check master cylinder and wheel cylinder for proper operation.	Operate					○
	Check master cylinder and wheel cylinder for oil leaks or damage.	Visual					○
	Check master cylinder, piston cup and check valve for wear or damage, and replace if needed.	Disassembly					●
Brake drum and brake shoe	Check brake drum for loose installation.	Test hammer		○	○	○	○
	Check loose lining.	Vernier calipers					○
	Check brake shoe for operation.	Operate					○
	Check anchor pin for corrosion.	Visual					○
	Check return spring for deterioration.	Scale					○
	Check automatic clearance adjuster for operation.	Operate					○
	Check drum for wear or damage.	Visual					○
Back plate	Check for deformation.	Visual					○
	Check for cracks.	Visual					○
	Check loose installation.	Test hammer					○

LOAD HANDLING SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Forks	Check for damage, deformation or wear.	Visual	○	○	○	○	○
	Check fork stopper pin for damage or wear.	Visual			○	○	○
	Check for roots and teeth welded area for cracks or wear.	Visual		○	○	○	○
Mast and carriage	Check mast cross members for cracked weld or damage.	Visual		○	○	○	○
	Check tilt cylinder bracket and mast for cracks or damage in welded areas.	Visual		○	○	○	○
	Check outer and inner masts for cracked weld or damage.	Visual		○	○	○	○
	Check carriage for cracked weld or damage.	Visual		○	○	○	○
	Check roller bearing for looseness.	Touch		○	○	○	○
	Check mast support bushing for wear or damage.	Visual					○
	Check mast support cap bolts for looseness.	Torque wrench		○ (first time only)		○	○
	Check for looseness of lift cylinder tail bolts, piston rod head bolts, U bolts, piston head guide bolts.	Test hammer		○ (first time only)		○	○
	Check rollers, roller pins and welds for cracks or damage.	Visual		○	○	○	○
Chains and sheaves	Check chains for tension, deformation, damage or corrosion.	Touch	○	○	○	○	○
	Check chains for elongation.	Gauge		○	○	○	○
	Lubricate chains.	Operate		●	●	●	●
	Check loose linkage of chain anchor pin and chain.	Visual		○	○	○	○
	Check sheaves for deformation or damage.	Visual		○	○	○	○
	Check sheave bearings for looseness.	Touch		○	○	○	○
Attachments	Check for operation and installation.	Operate/visual		○	○	○	○

LOAD HANDLING SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Cylinder	Check piston rod, rod bolt, rod end for looseness, deformation or damage.	Visual/ test hammer	○	○	○	○	○
	Check for proper operation	Operate	○	○	○	○	○
	Check for oil leaks	Visual	○	○	○	○	○
	Check pin and cylinder bushing for wear or damage	Visual		○	○	○	○
Hydraulic pump	Check for oil leaks or noise	Visual & auditory	○	○	○	○	○
	Check drive for wear	Visual & auditory					○

HYDRAULIC SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Hydraulic oil tank	Check oil level and change oil, if contaminated.	Visual	○	○	○	●	●
	Change suction strainer.	Operate				●	●
	Change return filter.	Operate				●	●
Control valve lever	Check for loose linkage of the lever.	Operate	○	○	○	○	○
	Check for function of the lever.	Operate	○	○	○	○	○
Control valve	Check for oil leaks.	Visual	○	○	○	○	○
	Check relief valve and tilt-lock valve for function.	Auditory		○	○	○	○
	Measure relief valve pressure.	Oil pressure gauge				○	○

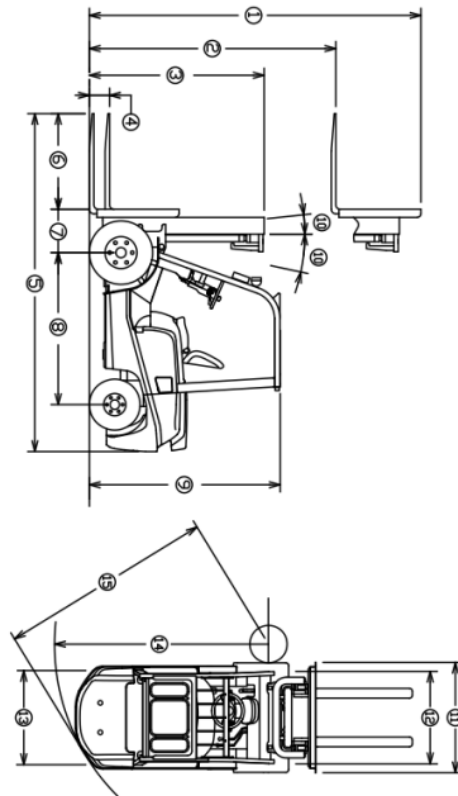
ELECTRICAL SYSTEM

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Starter	Check proper engagement of pinion gears	Operate			○	○	○
Charger	Check for proper operation	Ammeter			○	○	○
Battery	Check electrolyte level and clean	Visual & auditory		○	○	○	○
	Check specific gravity of electrolyte	Gravimeter			○	○	○
Electrical wiring	Check wire harness for damage and loose clamp	Visual		○	○	○	○
	Check for loose connections	touch			○	○	○

SAFETY DEVICE AND OTHERS

Checking item	Service Required	Tools	Daily	Monthly (200 hrs)	Trimonthly (600 hrs)	Semiannually (1200 hrs)	Annually (2400 hrs)
Overhead guard and load backrest	Check for loose mounting	Test hammer	○	○	○	○	○
	Check for deformation, cracks or damage	Visual	○	○	○	○	○
Turn signal	Check for operation and installation	Operate	○	○	○	○	○
Alarm	Check for operation and installation	Operate	○	○	○	○	○
Lights	Check for operation and installation	Operate	○	○	○	○	○
Back-up alarm	Check for operation and installation	Operate	○	○	○	○	○
Sideview mirrors	Check for contamination or damage	Visual	○	○	○	○	○
	Check for proper visibility	Visual	○	○	○	○	○
Meters	Check for operation	Operate	○	○	○	○	○
Rear reflector/ License number plate	Check for contamination or damage	Visual	○	○	○	○	○
Driver's seat	Check for damage or loose mounting bolts	Visual				○	○
Truck body	Check frame and cross members for damage or cracks	Test hammer					○
	Check for loose rivets and bolts	Visual					○
	Check the results of previous checks	Visual	○	○	○	○	○
	Check general condition of truck	Visual	○	○	○	○	○
Lubricants and oil change	After cleaning, check for lubrication of each part	Grease pump		●	●	●	●
	Check condition of lubricants	Check					○

Specifications



Specifications are subject to change without notice.

Truck model		GLP40	GLP50	GLP60/70	GLP85
Leading particulars					
Rated load	kg/lb	2000/4000	2500/5000	3000/3500 6000/7000	4000/8500
Basic load center	mm/in	500/24	←	←	←
Max. height	A mm/in	3000/118	←	←	←
Free lift	B mm/in	160/6.2	160/6.2	160/6.2	160/6.2
lifting speed	mm/s in/s				
No load		580/22.8	←	470/18.5	480/18.8
Loaded		550/21.6	←	450/17.7	380/14.9
Traveling speed (fwd/rev)	km/h mph				
1st speed		8/5	←	8.5/5.3	16.5/10.3
2nd speed		18.5/11.5	←	19.5/12.1	-
Gradability (1.6 km/h)	%				
No load		20	18	20	←
Loaded		21 20 27	18 18 23	15 20 18	
Min. turning radius	C mm/in	2170/85.4	2240/88.1	2400/94.4	2560/100.7
Min. stacking aisle width	mm/in	1920/75.5	2010/79.1	2110/83	2220/87.4
Overall length	D mm/in	3375/132.8	3600/141.7	3730/146.8	3890/153.1
Overall width	E mm/in	1150/45.2	←	1225/48.2	1345/52.9
Overall height (mast)	F mm/in	1995/78.5	←	2075/81.6	2150/84.6
(overhead guard)	G mm/in	2070/81.4	←	2090/82.2	2140/84.2
Overall height, mast raised	H mm/in	4030/158.6	←	4250/167.3	←
Wheelbase	J mm/in	1600/62.9	←	1700/67	1800/70.8
Tread, front	mm/in	970/38.1	←	970/38.1	1120/44
rear	mm/in	970/38.1	←	←	970/38.1
Fork size	mm/in				
length (K) x width (M) x thickness (N)		920X122X32 / 36.2X4.8X1.4	1070X122X40 / 42.1X4.8X1.5	1070X125X45 / 42.1X4.9X1.7	1070X150X50 / 42.1X5.9X1.9
Fork spacing	P mm/in	245~1020 / 9.6~40.1	←	250~1090 / 9.8~42.9	300~1090 / 11.8~42.9
Ground clearance (mast)	mm/in	110/4.3	←	140/5.5	←
Weight	kg/lb	3330/7341	3670/8090	4310/9500	5100/11243
Tire					
Front		7.00-12-12PR (I)		28 × 9-15-12PR (I)	2.50-15-16PR
Rim size	L	5.00S-12DT		7.00T-15	7.50T-15
Rear	cc	6.00-9-10PR (I)		6.50-10-10PR (I)	6.50-10-10PR
Rim size	ps(kw)	4.00E-9DT		5.00F-10	5.00F-10
Inflation pressure	kg.cm/rpm	700kPa (7.0kg/cm ²)		700kPa (7.0kg/cm ²)	

Standard equipment

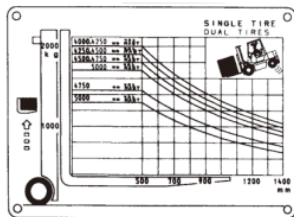
- ★ View mast
- ★ Forks (920mm for 2- ton type, 1070mm for 2.5-ton/3- ton type)
- ★ J-lug tire
- ★ Power steering
- ★ Overhead guard
- ★ Suspension seat with seat belt
- ★ Drawbar
- ★ Cyclone pack air cleaner
- ★ Parking brake lever (w. lock)
- ★ Dual valve (lift and tilt) safety valve
- ★ Triple valve
- ★ Torque converter oil dipstick (T type)
- ★ Hydraulic oil dipstick
- ★ Cartridge filter (T type)
- ★ Cut-off valve
(Restricts the fork lowering speed if the lift hose should burst.)
- ★ Tilt-lock valve (Prevents mast from tilting while engine is not running.)
- ★ Flow control valve
- ★ Halogen head lamp
- ★ Rear combination lamp
- ★ Rear/side view mirror
- ★ Back-up buzzer

- ★ Horn
- ★ Neutral switch
- ★ Floor mat
- ★ Engine hood damper stay
- ★ Upward air intake port
- ★ Radiator reservoir tank
- ★ Tilt steering wheel
- ★ Turn signal
- ★ Lamp guard
- ★ Hour meter
- ★ Engine water temp. gauge
- ★ Fuel gauge
- ★ Engine oil pressure gauge
- ★ Charge warning light
- ★ Glow plug indication light
- ★ Automatic glow plug unit
- ★ Key stop
- ★ Hand grip
- ★ Glove compartment with pen holder

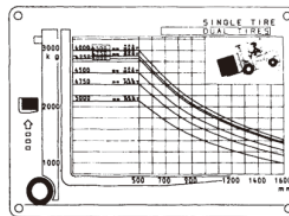
- ☆ Speedometer
- ☆ Ammeter
- ☆ Spark prevention muffler (D)
- ☆ Exhaust purification muffler
- ☆ Upward-pointed tail pipe
- ☆ Fire extinguisher
- ☆ Tilt cylinder boot
- ☆ Steering cylinder boot
- ☆ Rear work light
- ☆ Yellow beacon light
- ☆ Overhead guard with wire netting
- ☆ Overhead guard canvas
- ☆ Paint color specified by the customer
- ☆ Triple (quadruple, quintuple) valves and piping
- ☆ Fishery specification
- ☆ Non-slip differential (2- to 3-ton T type)
- ☆ Double-element air cleaner (2- to 2.5- ton trucks)
- ☆ Pre-cleaner
- ☆ Plate-fin radiator
- ☆ Lifting eye

Optional equipment

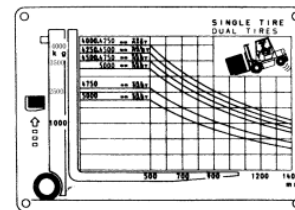
- ☆ Front double tires (w/ fender)
- ☆ Unique tire
- ☆ Steel cab (2- to 3-ton trucks)
- ☆ Steel cab (w./heater)
- ☆ Color tires (white, green)



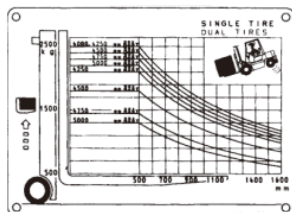
GLP40



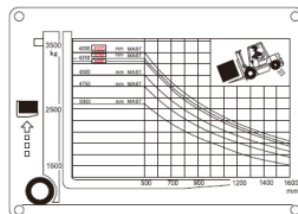
GLP60



GLP85

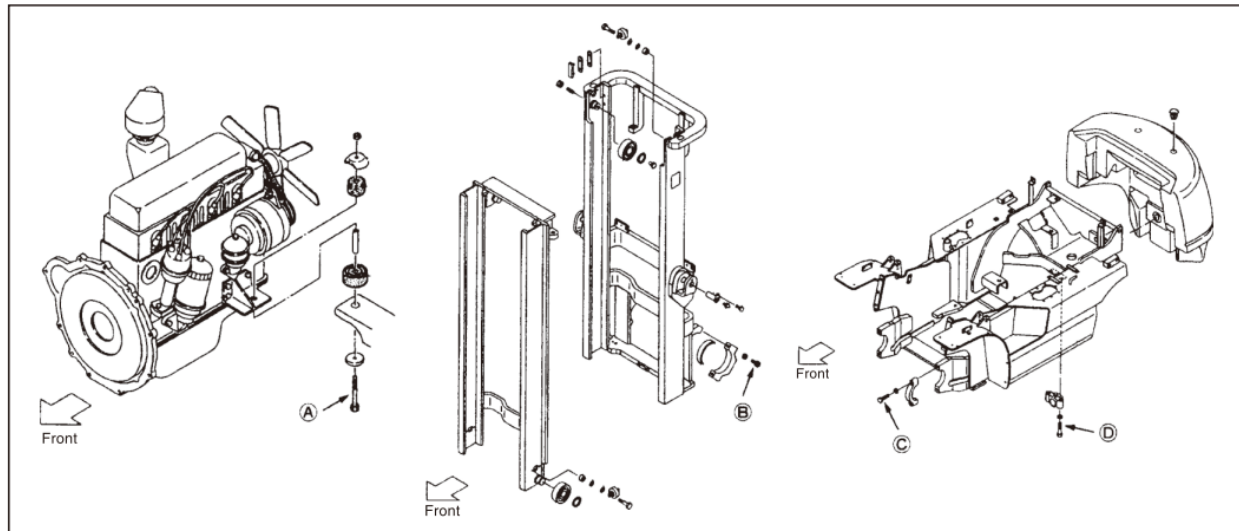


GLP50



GLP70

BOLT AND NUT TORQUE



A Engine mount bolt	
Torque	32 - 49 N-m (3.3 - 5 kg-m)

C Front axle mount bolt	
Torque	75 - 111N-m (7.6 - 11.3kg-m)

B Mast support cap bolt	
Torque	[2 to 3t] 148 - 223 N-m (15.1 - 22.7 kg-m)

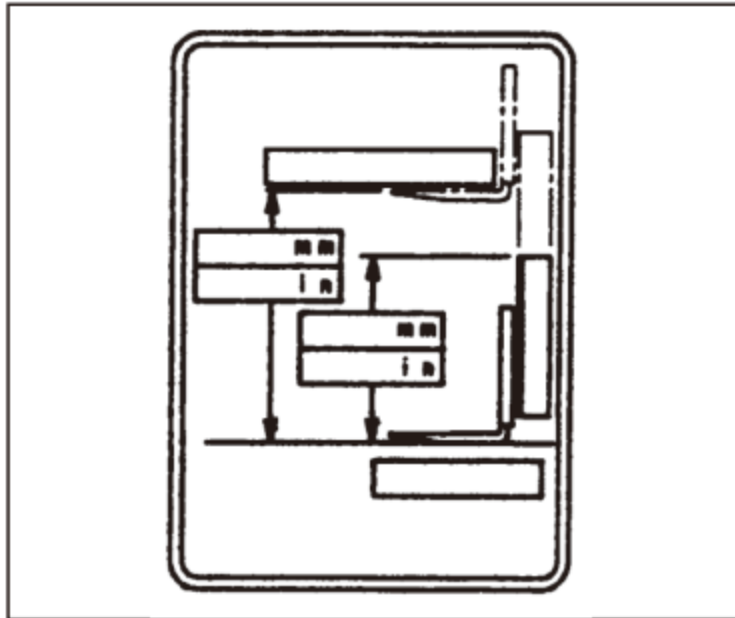
D Rear axle mount bolt	
Torque	153 - 230 N-m (15.6 - 23.4 kg-m)

REFILL CAPACITY

Item	Truck model	Standard 2 - to 4-ton	Ambient temperature when engine is started
1	Hydraulic oil tank	32L / 8.45gal	32" HYDRAU LIC OIL
2	Brake reservoir tank	0.2L / 0.05gal	4902"
3	Transmission, differential (C type)	D 11L / 2.9gal	GEAR OIL
4	Reduction gear, differential (T type)	D 7.5L / 1.98gal	
5	Transmission, torque converter (T type)	3T / 6000lb 7L / 1.85gal	-25°C & above: GEAR OIL -40°C & above: GEAR OIL
6	Radiator	490BPG 10.7L / 2.82gal	COOLANT (50%)
7	Fuel tank	70L / 18.5gal	
8	Engine crankcase		C-1, S-3, X-3 SD/CC C-1 SAE10W-30 (-25°C~35°C) CD X-3 SAE10W (-25°C~35°C) CD S-3 SAE30(0 °C)
9	Grease fittings	As required	LUBRICANTS

- Notes: 1. Use light oil for diesel engine trucks.
2. For more information about lubricants to be used, contact your local dealer.

SERIAL NUMBERS OF MAJOR COMPONENTS



In addition to the truck serial number, the serial numbers (unit numbers) of the major components are imprinted on the truck or indicated on name plates. The above sketch shows the serial number plate of the mast. These decals should be replaced immediately if missing or defaced (damaged or illegible).

Load Chart

⚠ CAUTION

The load charts below refer to the lift trucks of standard specifications, and those with high mast whose lifting height is less than 5m. Lift trucks with a high mast whose lifting heights is 5m or higher, or those with an attachment have different load charts.

