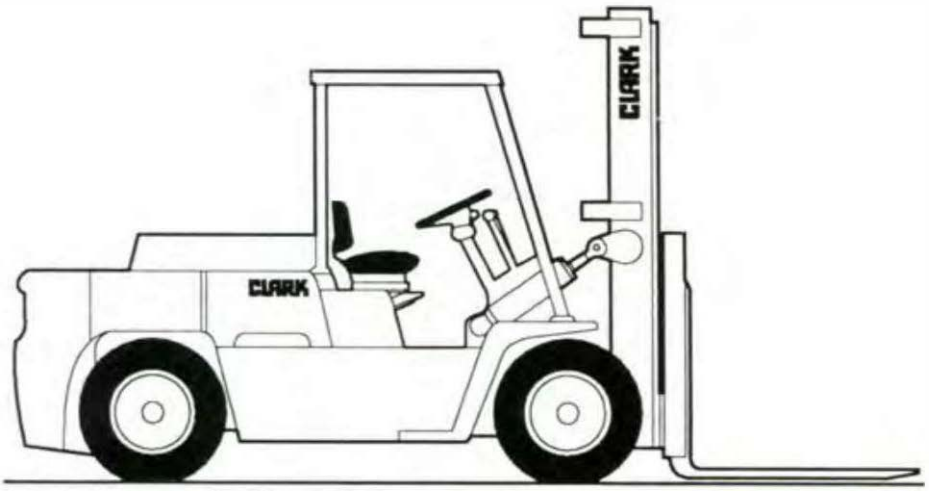
Operator's Manual

Do not remove this manual from the truck.



C500 Y 110/135/155/165 (D)

CLARK

Book No. 2793653
OM 591

The first Section of the manual is devoted to a review, with illustrations and brief messages, of general safety rules and the major operating hazards you can encounter while operating a lift truck. Next, you will find descriptions of the components of your specific lift truck model and how the instruments, gauges, and controls operate. Then, you will find a discussion of safe and efficient operating procedures, followed by instructions on how to tow a disabled lift truck. The later sections of the manual are devoted to maintenance and truck specifications.

Take time to carefully read the "Know Your Truck" section. By acquiring a good basic understanding of your truck's features, and how they function, you are better prepared to operate it both efficiently and safely.

In "Planned Maintenance," you will find essential information for correct servicing and periodic maintenance of your truck, including charts with recommended maintenance intervals and component capacities. Carefully follow these instructions and procedures.

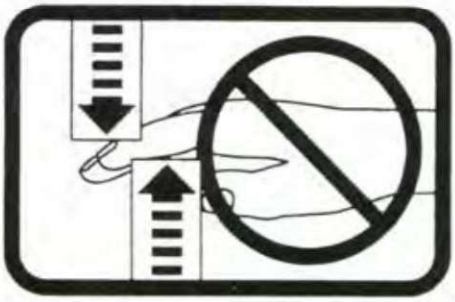
Each major Section has its own table of contents, so that you can find the various topics more easily. If you cannot find a topic in the table of contents, check the index at the back of the manual.

We urge you to first carefully read the manual from cover to cover. Take time to read and understand the information on general safety rules and operating hazards. Acquaint yourself with the various procedures in this manual. Understand how all gauges, indicator lights, and controls function. Please contact your authorized CLARK dealer for the answers to any questions you may have about your lift truck's features, operation, or manuals.

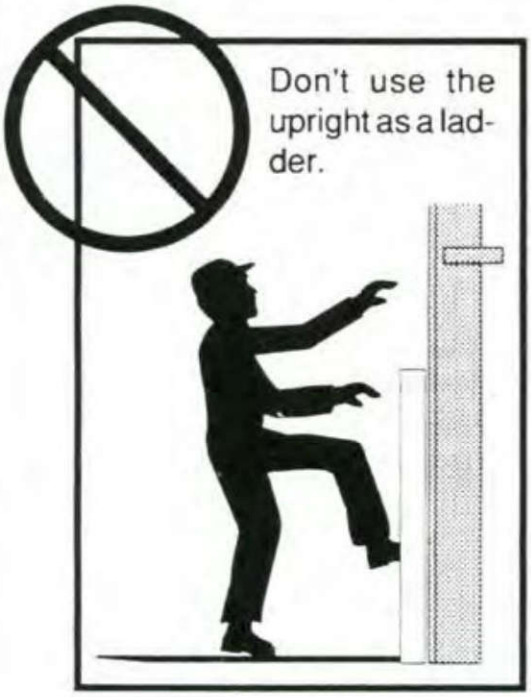
Operate your lift truck safely; careful driving is your responsibility. Drive defensively and think about the safety of people who are working nearby. Know your truck's capabilities and limitations. Follow all instructions in this manual, including all IMPORTANT, CAUTION, WARNING, and DANGER messages to avoid damage to your lift truck or the possibility of any harm to yourself or others.

This manual is intended to be a permanently attached part of your lift truck. Keep it on the truck as a ready reference for anyone who may drive or service it. If the truck you operate is not equipped with this manual, ask your supervisor to obtain one and have it attached to the truck. And, remember, your CLARK dealer is pleased to answer any questions about the operation and maintenance of your lift truck and will provide you with additional information should you require it.

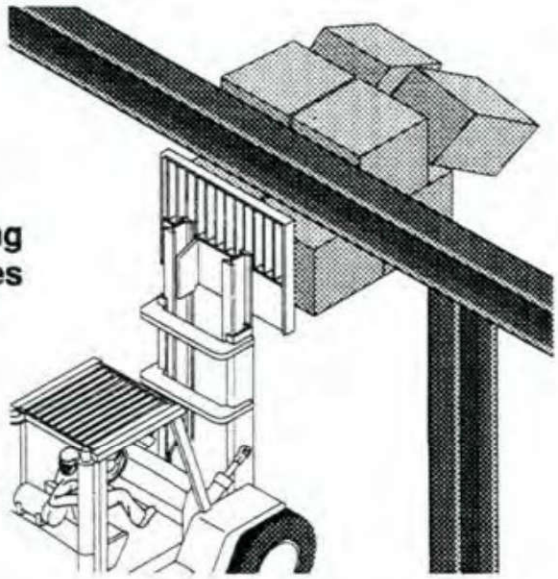
Pinch Points



Keep hands, feet and legs out of the upright.



Low Overhead Clearance

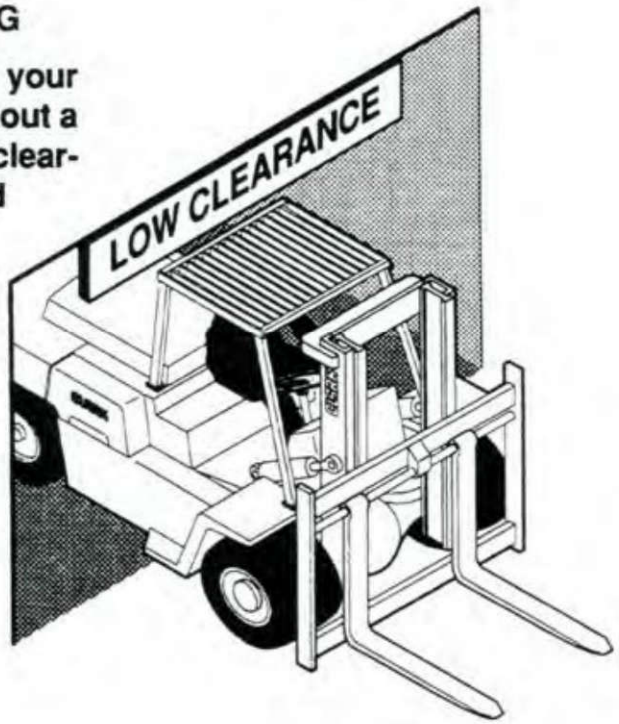


WARNING

Watch overhead: Moving into overhead structures can tip a truck over.

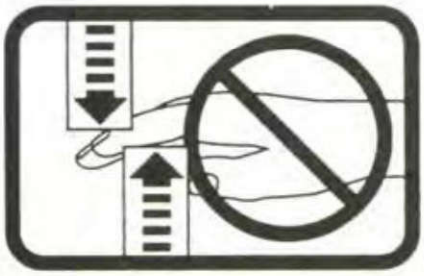
WARNING

Know the height of your truck, with and without a load. Check your clearances. Keep the load low and tilted back.



Upright Warning Decal

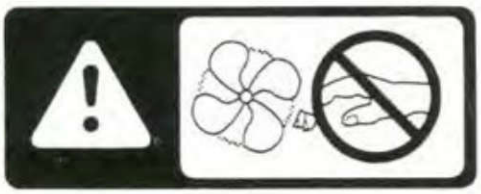
This safety decal is placed on the upright to warn of the danger of injury from movement between rails, chains, sheaves, fork carriage, and other parts of the upright assembly. Do not climb on or reach into the upright. Personal injury will result if any part of your body is put between moving parts of the upright.



Keep Away from Forks Decal

This safety decal is placed on the upright to warn of the danger of injury from forks when they are in the raised position. Do not ride on or stand under forks or attachments. The forks can fall and cause injury or death. Always make sure that the forks are in the fully lowered position when they are not handling a load.

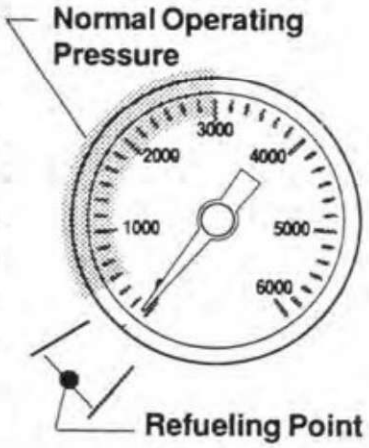
Fan Warning Decal



This safety decal is displayed on the cooling fan shroud of the radiator to warn of the danger of injury from spinning fan blades when the engine is running. Be sure that you keep your hands, fingers, arms, and clothing away from a spinning fan. Don't stand in line with a spinning fan. Fan blades can break at excessively high RPM and be thrown out of the engine compartment.

CNG Fuel Level Gauge

The amount of fuel remaining in the tank can be checked by looking at the gauge either on the dash or on the seat deck just to the right of the driver's seat. The gauge reads from 0 to 6000 psi. When the tank is full the gauge should read 3000 psi, this is the maximum working pressure. The truck should be refueled when the pressure drops below 500 psi.



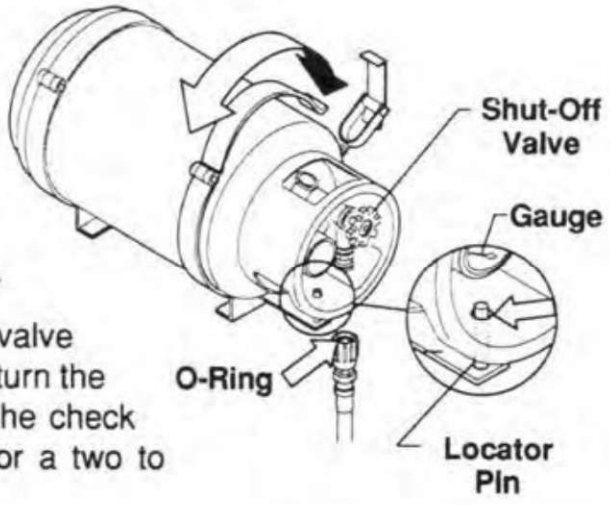
DANGER

If you smell natural gas in or around the engine area you may have a CNG leak. Turn the emergency shut-off valve to the OFF position. Have a trained and authorized mechanic look at the truck.

LPG Fuel System

If your lift truck uses liquefied petroleum gas (LPG), the fuel is stored in a tank mounted on the truck. A shut-off valve, a safety check valve, a relief valve, and a pressure gauge are attached to the tank.

You manually operate the shut-off valve to control the flow of fuel from the tank. You must close this valve when the engine is not running. Close this valve by hand, only to a firm tightness. **Do not over-tighten.**



When you open the shut-off valve before starting the engine, turn the handle slowly; otherwise, the check valve will block fuel-flow for a two to three minute period.

The O-ring on the coupling must be kept in good condition. The tank must lock onto the locator pin before the fastener is secured.

4. When the tank reaches full, the fueling station automatically shuts off. Your pressure gauge will read about 3000 psi. This is the maximum operating pressure.

Before disconnecting the fuel probe, it may be necessary to vent the fuel line. You do this by turning the valve to the VENT position, pause, then turn the valve to the CLOSED position. The probe can now be easily removed from the fill block. Return the probe to its proper holder.

CAUTION

If leakage should occur, close the valve on the probe and have qualified personnel make repairs.

RECOMMENDED SAFETY MAINTENANCE PROCEDURE FOR COMPRESSED NATURAL GAS FORKLIFT TRUCKS

WARNING

- Natural Gas is a combustible fuel that is lighter than air. Escaping gas may accumulate in enclosed areas.
- The fuel cylinders are permanently mounted to the truck.
- The tank and fuel lines are under extreme pressure, take care not to damage the tank or fuel lines.
- The tank valve should be turned off when the machine is not in service.
- All pipe thread fittings should be installed using an approved sealing compound.
- Fuel lines should be supported by clamps to minimize vibration and wear.
- This truck is equipped with a vacuum operated fuel shutoff valve that prevents fuel flow when the engine is not running.
- Do not operate truck if you smell gas in or around the tank and engine area.
- In the event of a leak turn off emergency shutoff valve or the valve at the tank, then immediately report the leak to your supervisor.
- The fuel tank requires periodic pressure testing and inspection.
- Use only CLARK authorized replacement parts.

ALL SERVICE WORK SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.

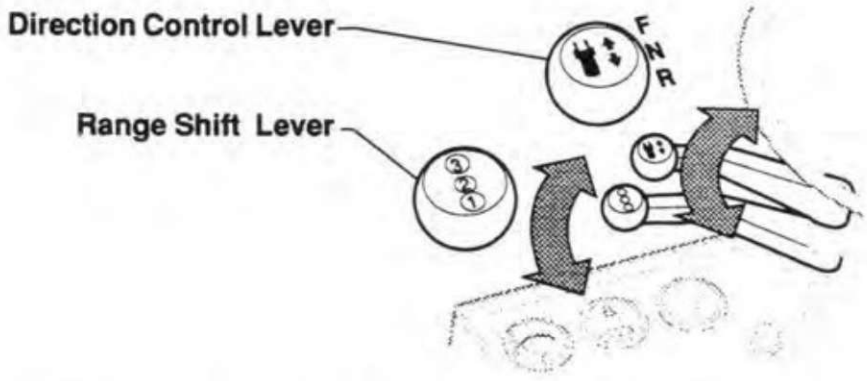
NOTICE

When the upright (carriage and/or load) is raised into a high (elevated) position, the stability of the truck is reduced. Some of the other conditions that may affect stability are ground and floor conditions, grade, speed, loading, dynamic and static forces, and the judgement exercised by the operator. Trucks equipped with attachments behave as partially loaded trucks even when operated without a load on the attachment. Also, improper operation, faulty maintenance, or poor housekeeping may contribute to a condition of instability.

CAUTION

For stability, do not travel with the load or carriage in a highly elevated position. Travel with the lift mechanism raised only enough to clear the ground or obstacles.

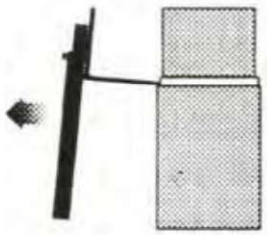
Selecting Speed Range and Direction



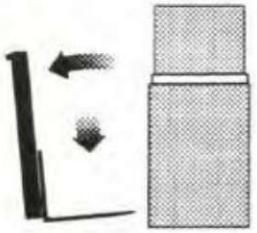
Use the range shift lever to select a gear range appropriate for your load and task. Speed 1 is for heavy-duty applications. Speed 2 is for normal handling and maneuvering. Speed 3 (if equipped) is for traveling. Slow down to idle speed before you shift to a lower gear.

Push the direction control lever forward, center it, or pull it back for FORWARD, REVERSE, or NEUTRAL, respectively. Traction is disabled in NEUTRAL.

6. Lower the forks slightly to clear the load pallet. Tilt the forks forward slightly, if necessary.



6. Check your travel path, then carefully back away until the forks are clear of the stack. Stop and lower the forks to the travel position (6 to 8 inches [152-203 mm] above the ground), then tilt to level for travel.



To move a load from a stack:

Approach the stack carefully, truck lined up squarely with the load. With upright mast vertical, raise the forks to the correct height for freely engaging the load pallet. Adjust fork angle as necessary to fit squarely under the load. Move (inch) forward until the forks are under the load.

Be sure that the forks do not extend beyond the load, causing damage or tipping of other adjacent loads or materials behind the load being moved. If the forks are longer than the load, move the tips partially under the load without extending beyond the load. Raise the load to clear the undersurface. Back out several inches, then set the load down and move forward until the front face of the forks contacts the load.

Raise the load from the stack by tilting the upright back just enough to lift the load from the surface. Or, with the mast still vertical, raise the forks until they begin to lift the load. At this point, apply the minimum back tilt that will stabilize the load.

Check your travel path, slowly back off until clear of the stack, stop, and then lower the load to the travel position (6 to 8 inches [152-203 mm] off the ground). Tilt full back to travel (except for certain loads that may have to be transported as level as possible). Be sure the load is back flush against the carriage or front face of the forks.

NOTICE

Certain loads must be transported as level as possible.

Safe Maintenance Practices

The following instructions have been prepared from current industry and government safety standards applicable to industrial truck operation and maintenance. These recommended procedures specify conditions, methods, and accepted practices that aid in the safe maintenance of industrial trucks. They are listed here for the reference and safety of all workers during maintenance operations. Carefully read and understand these instructions and the specific maintenance procedures before attempting to do any repair work. When in doubt of any maintenance procedure, please contact your local CLARK dealer.

1. Powered industrial trucks can become hazardous if maintenance is neglected. Therefore, suitable maintenance facilities and trained personnel and procedures shall be provided.
2. Maintenance and inspection of all powered industrial trucks shall be performed in conformance with the manufacturer's recommendations.
3. Follow a scheduled planned maintenance, lubrication, and inspection system.
4. Only trained and authorized personnel are permitted to maintain, repair, adjust, and inspect industrial trucks—and must do so in accordance with the manufacturer's specifications.
5. Always wear safety glasses. Wear a safety (hard) hat in industrial plants and in special work areas where protection is necessary and required.
6. Properly ventilate work area, vent exhaust fumes, and keep shop clean and floors dry.
7. Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check for level or leakage of fuel, electrolyte, or coolant. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.
8. Before starting work on truck:
   a. Raise drive wheels free of floor and use oak blocks or other positive truck positioning devices.
   b. Remove all jewelry (watches, rings, bracelets, etc.).

Inspect the truck, before and after starting the engine, for any sign of external leakage of fuel, engine coolant, transmission fluid, etc.

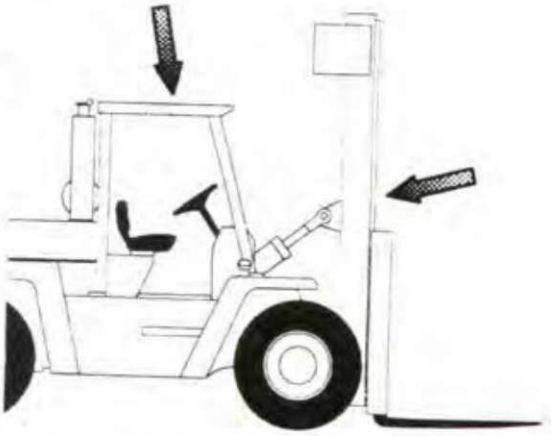
Check for hydraulic oil leaks and loose fittings.

CAUTION

HYDRAULIC FLUID PRESSURE: Do not use your hands to check for hydraulic leakage. Fluid under pressure can penetrate your skin and cause serious injury.

Overhead Guard: Be sure that the driver's overhead guard and any safety devices are in place, undamaged, and attached securely.

Check the overhead guard for damage. Be sure that it is properly positioned and all mounting fasteners are in place and tight.



Load Handling Components: Inspect the upright assembly, rails, carriage rollers, lift chains, and lift and tilt cylinders. Look for obvious wear and maintenance problems and damaged or missing parts. Check for any loose parts or fittings. Check for leaks, damaged or loose rollers, and rail wear (metal flaking). Carefully check the lift chains for wear, rust, corrosion, cracked or broken links, stretching, etc. Check that the lift and carriage chains are correctly adjusted to have equal tension. Check that the lift chain anchor fasteners and locking means are in place and tight.

Inspect all lift line hydraulic connections for leaks.

IMPORTANT

Uprights and lift chains require special attention and maintenance to remain in safe operating condition. Refer to "Lift Chain Maintenance" in this Section for additional information.

Hydraulic Sump Tank: Check the hydraulic sump tank fluid level. Correct fluid level is important for proper system operation. Low fluid level can cause pump damage. Overfilling can cause loss of fluid or lift system malfunction.

Hydraulic fluid expands as its temperature rises. Therefore, it is preferable to check the fluid level at operating temperature (after approximately 30 minutes of truck operation). To check the fluid level, first park the truck on a level surface and apply the parking brake. Put the upright in a vertical position and lower the fork carriage fully down. Pull the dipstick out, (attached to the sump breather) wipe it with a clean wiper, and reinsert it. Remove dipstick and check oil level. Keep the oil level above the LOW mark on the dipstick by adding recommended hydraulic fluid only, as required. **Do not overfill.**

Check the condition of the hydraulic fluid (age, color or clarity, contamination). Change (replace) the oil as necessary.

Hydraulic Fluid and Filter Change: Drain and replace the hydraulic sump fluid every 2000 operating hours. (Severe service or adverse conditions may require more frequent fluid change). Replace the hydraulic oil filters elements at every oil change. Remove, clean, and reinstall the hydraulic and steer system suction line screens at first PM and every 500 hours thereafter. Check for leaks after installation of the filters. Also, check that the hydraulic line connections at the filter adapter are tightened correctly. The procedure for draining hydraulic sump tank is in your Service Manual.

Sump Tank Breather Maintenance and Inspection: Remove the sump tank fill cap/breather and inspect for excessive (obvious) contamination and damage. Replace the fill cap/breather, per recommended PM schedule or as required by operating conditions.

Access to the Drive Axle: The best method to use for reaching the drive axle check points (oil level/filler plug and drain plug) is dependent upon the style of upright, carriage, and attachments on your truck. One method is to raise the upright carriage to provide easy access to the drive axle. **Apply the parking brake and block the wheels. Be sure to put blocking under the carriage and upright rails.**