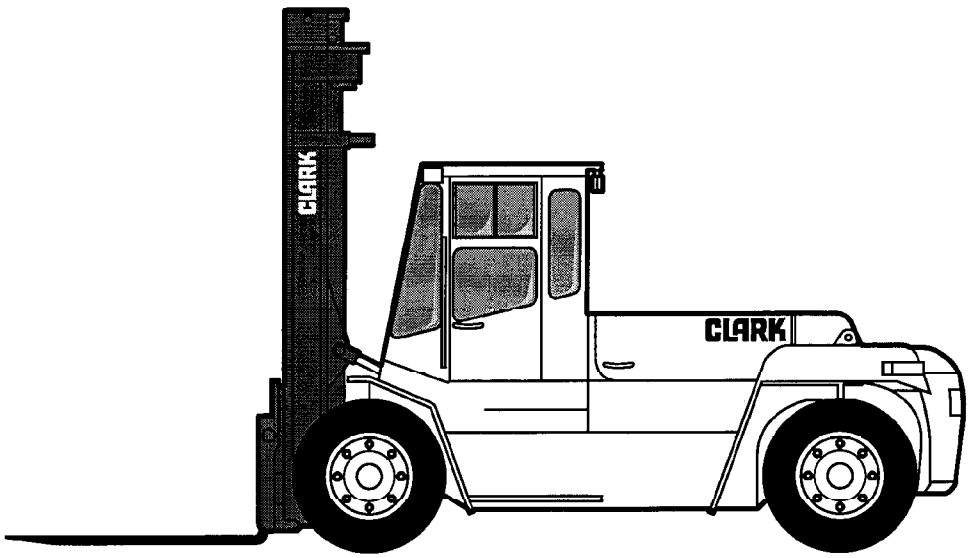
Main Table of Contents

SM 622
CDP 100/164
Service Manual



ISO 9001 CERTIFIED CLARK

CLARK Technical Publications
Lexington, KY
40508

Contents of this Manual

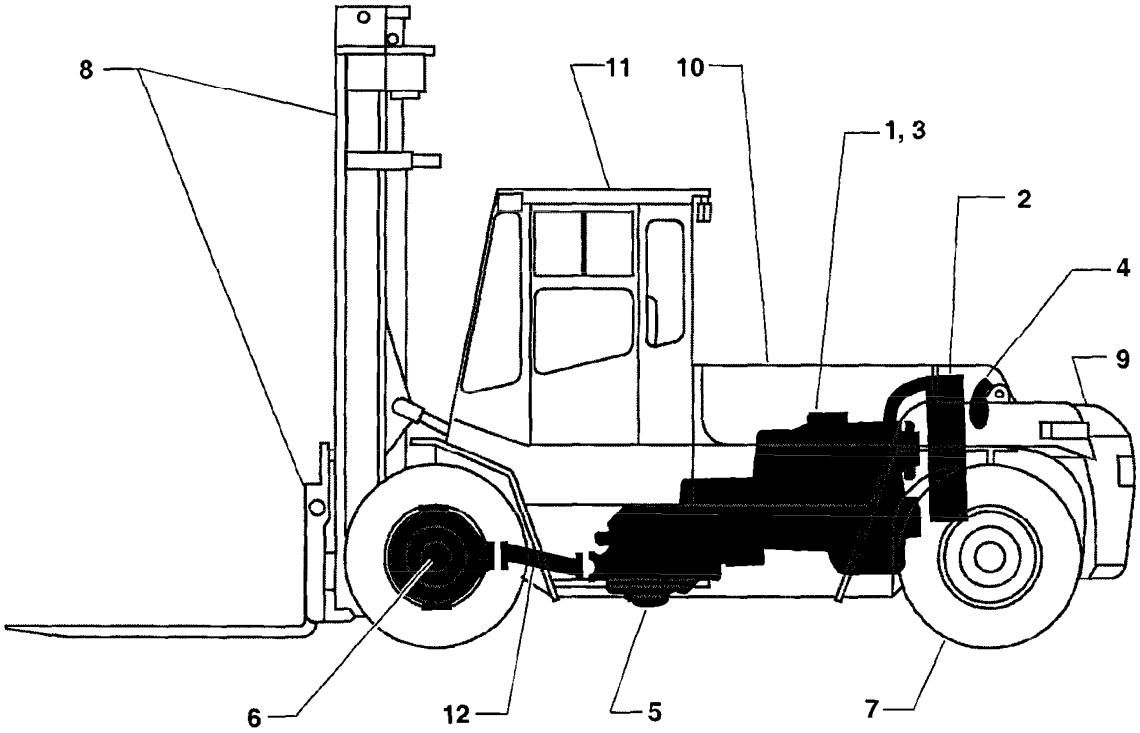
Group Index

Alphabetical Index

CLARK Material Handling Company

Major Component Location

Use this illustration to help locate components included in the PM procedures.



1. Engine
2. Cooling
3. Fuel
4. Exhaust
5. Transmission
6. Drive Axle-Differential
7. Wheels and Tires
8. Upright and Carriage
9. Frame and Counterweight
10. Sheet Metal
11. Cab Overhead Structure
12. Prop Shaft

CLARK® Material Handling Company

GROUP PS

PERIODIC SERVICE

Section 1.

INTRODUCTION

Proper maintenance and care are essential if your Clark truck is to be always ready for use.
These preventative maintenance procedures provide a basic guide which should be followed when servicing your Clark truck.
A lubrication guide and recommended preventative maintenance program is included in this section and for further information regarding adjustment procedures, specifications, etc., please refer to the index in the front of this manual.

IMPORTANT

Your Clark dealer has both the facilities, parts, and adequately trained personnel enabling them to carry out all necessary service procedures, including complete inspections, maintenance and lubrication programs, all aimed at ensuring your Clark Lift truck will perform safety and efficiently and most importantly, maximizing its availability for your day to day work schedules.

RECOMMENDED MAINTENANCE PROCEDURE

Particular attention should be paid to the conditions under which your CDP 100/164 forklift truck is used as those conditions play a significant role in determining how long the interval between each maintenance task should be.

It is quite clear that a truck used in sandy, dusty, dirty locations will require more frequent maintenance than one being used in a clean warehouse situation.

The maintenance schedules and recommendations made in this book apply for use under normal operating conditions.

The following classifies the different types of operating conditions..

Class 1 - Normal conditions of use

Basically transfer and loading of goods and materials for eight hours per day in buildings or in the open air.

Class 2 - Longer hours of use or continuous 3 shift operation.

Class 3 & 4 - Extreme conditions

a) Use in sandy or dusty places, such as cement works, steel mills, saw mills, flour mills, brick factories, or rock breaking applications.
b) Use in areas of high temperature including steel works, foundries, etc.
c) Use in areas of frequent temperature changes such as loading bays handling frozen goods, at refrigeration plants, or making frequent trips from a building into the open air and back again.

IMPORTANT

Your Clark truck is designed for work in all of the above conditions, however if your particular application should fall into Class 2, 3 or 4 then appropriate changes to service frequencies must be made to all maintenance procedures.

LUBRICATION

Greasing should be carried out every 250 hours, or after any washing.

SAFETY PRECAUTIONS DURING MAINTENANCE

- When lifting parts or assemblies, make sure that all slings, chains or cables are correctly fastened and that the load being lifted is balanced. Make sure that the crane, cables and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand. Use a lifting mechanism.
- Wear safety glasses.
- Disconnect the battery ground cable.
- Always use correct blocks to prevent the unit from rolling or falling.
- Keep the unit and working area clean and in order.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use original Clark parts when making repairs.
- Make sure that all nuts, bolts, snap rings and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE sign to the controls of the unit when making repairs or if the unit needs repairs.
- Make sure you follow the DANGER WARNING and CAUTION notes in the instructions.
- Diesel is a flammable fuel. Make sure that you follow the necessary safety precautions when handling fuel and when working on the fuel system.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area has ventilation.

Group PS, Periodic Service

SAFETY PRECAUTIONS DURING LIFTING, JACKING & BLOCKING

Lifting or jacking any large piece of equipment, such as your Clark fork truck, presents obvious hazards. It must be with great care and forethought. Consult the truck weight tabulations in the specifications sections of this manual to ensure that your lifting equipment is of adequate capacity.

1. The correct way to lift the front of the CDP100/164 is by rigging a chain pull lift or hoist to the upright through the lift eyes provided. Chock the steer wheels before lifting. Place wheel stands under the drive tires or solid blocking under the base of the upright rails.

⚠ WARNING

The upright should be fully down before lifting. On uprights with negative drop such as Marina trucks, clamp or chain the rails together so they cannot move if at all possible, remove the forks before lifting by the upright.

2. The rear of the truck may be lifted by the counterweight. Chock the drive wheels before lifting and be sure lifting equipment is of adequate capacity.

⚠ WARNING

Check to see if the counterweight bolt is in place and property torqued before lifting. Never attempt to lift the rear of the truck with another fork truck.

3. Place wheel stands under the steer tires or put solid blocking under the truck frame.

⚠ WARNING

Take care to place block under the frame back far enough from the truck center of gravity so that it is stably supported.

INITIAL SERVICING & MAINTENANCE RECORDS

a) Initial Service

An initial service should be carried out after your Clark forklift truck has been in operation for fifty hours.

In this service, the following work must be carried out: (Check the Preventative Maintenance schedule)

Engine *(at operating temperature)*

- Check engine oil level
- Check fan belt tension
- Start engine and check for obvious leaks in fuel system, lubricating oil system and cooling system stem.
- Check that all external screws, nuts, and securing parts are firm.

Transmission *(at operating temperature 83° - 94°C)*

- Change transmission- oil filter
- Take sample of transmission oil (if on S.O.S. system)
- Check all screws, nuts and securing parts are tight and have a firm seat.

General

- Grease all grease points (steer axle, upright, etc.)
- Check that all screws, nuts and securing parts are firm and pay particular attention to the wheel and upright studs and nuts. (See Critical Torque areas on following page).

IMPORTANT This work should be carried out by a qualified Clark service mechanic.

b) Maintenance Records

Any preventative maintenance system relies on the programmed planning of all service work and also on correct, up to date records being held, enabling systematic scheduling and tracking of maintenance costs per unit. This does not vary from systems which are of a manual nature or computer assisted.

To ensure that the daily inspections and periodical preventative maintenance services are properly performed, we recommend the use of inspection forms. Such forms not only provide a guide for the person carrying out such inspections and services, but serve as a record in keeping track of maintenance requirements for each vehicle. Moreover, such records eventually assist you in determining when to schedule downtime for major component overhaul without the disruptive effects of unscheduled downtime. Your Clark dealer is always able to provide assistance in setting up maintenance systems and also in keeping maintenance records on your behalf.

A typical maintenance schedule is provided in this manual. This should be used as a guide to the minimum requirements and should be adapted to suit local conditions and operational experience.

VISUAL CHECKS

Check that all capacity, safety and warning plates or decals are attached and legible.

Check, before and after starting engine, for any sign of external leakage; fuel, engine coolant, transmission fluid, etc. Check for hydraulic oil leaks and loose fitting.

⚠ WARNING

Do not use bare hands to check. Oil may be hot or under pressure.

Be sure that the devices safety devices are in place, undamaged and attached securely. For example: seat belt, horn, load safety rail, beacon etc.

Then check all of the critical components that handle or carry the load.

Inspect the upright and lift chains. Check for obvious wear and maintenance problems such as damaged or missing parts, leaks, slack or broken chains, bent parts, etc.

Carefully inspect the load forks for cracks, breaks, bending, twists and wear. Be surd that the forks are correctly Installed and looked In their proper position.

Inspect the wheels and lyres for safe mounting, wear condition and correct inflation pressure.

Function Checks

Test warning devices, horn, lights and other safety equipment and accessories. Start the engine and be sure all controls and systems are functioning correctly. Check the hour meter for operation. Operate the service and parking brakes, all hydraulic controls: lift, tilt and auxiliary functions. accelerator, directional control and steering system. Be sure all controls operate freely and return to neutral properly. Operate the lift mechanism and auxiliary functions, accelerator, directional control and steering system. Be sure all controls operate freely and return to neutral properly. Operate the lift mechanism and auxiliary function (if Installed).

Standard Shut Down Procedure

When parking and leaving truck unattended, lift mechanism shall be fully lowered, controls placed in neutral, engine shut off, brakes set and key removed. Chock the wheels if truck is parked on an incline or has the possibility of moving.

Make a record on the Drivers Daily Checklist of all the operating and truck problems that you find. Review the checklist to be sure it has been completed and turn It In to the person responsible for lift truck maintenance. Be sure any unusual noises or problems are investigated immediately.

Do not operate a lift truck that has a maintenance problem, or is not safe to operate.

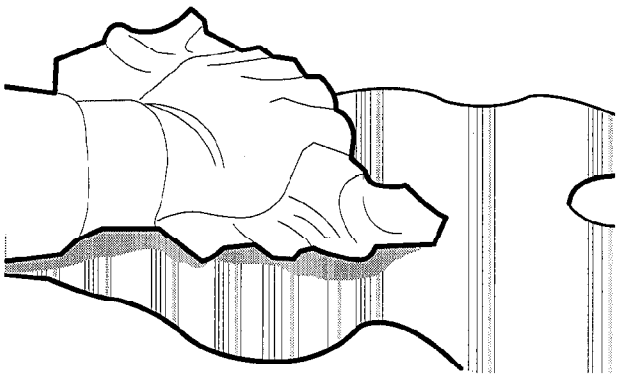
Remove the key from the-ignition switch and put an "Out of Service" tag on the truck.

If all of the "Before Operation" checks were normal or satisfactory, the truck can be operated.

FUEL SAFETY PRACTICES

Take care when filling, not to allow any fuel to spill or flow into the engine compartment. Fuel in the engine compartment is a fire hazard and should be completely removed immeadiately.

Use clean, properly marked fuel cans.



Clean up spills.

Section 2.

Lift Truck Maintenance

Group PS, Periodic Service

Regular maintenance and care of your lift truck is not only important for full and efficient truck life; it is essential for your safety. The importance of maintaining your lift truck in a safe operating condition by servicing it regularly and, when necessary, repairing it promptly cannot be emphasized too strongly. Experience has shown that powered industrial trucks can cause injury if improperly used or not maintained. In the interest of promoting safety, several current industry and government safety standards specify that any powered industrial truck not in safe operating condition be removed from service, and that all repairs be made by trained and authorized persons. To assist you in keeping your lift truck in service in good operating condition, this section outlines maintenance procedures to be done at regular intervals and that are considered essential to the life and safe performance of your truck. It is your responsibility to be alert for any indication that your truck may need service and have it attended to promptly. You play an important part in maintenance. You should make sure that your lift truck regularly receives the care it needs.

⚠ CAUTION

Powered industrial trucks may become hazardous if maintenance is neglected.

Planned Maintenance

As outlined previously, a safety inspection of your lift truck should always be made before operating it. The purpose of this daily examination is to check for any obvious damage and maintenance problems, and to have minor adjustments and repairs made to correct any unsafe conditions. In addition to the daily inspection, OSHA recommends that you set up and follow a periodic planned maintenance and inspection program. Performed on a regular basis, the program will provide the opportunity to make thorough inspections and checks on the safe operating condition of your lift truck.

Your local Clark dealer is prepared to help you with your Planned Maintenance Program He has specially trained service personnel who are authorized to check your lift truck according to the respective safety regulations.

In the specifications section you will find a listing of useful specifications for selected components, fuel and lubricants, critical bolt torques, refill capacities and settings for your truck.

If you have the need for more information on the care and repair of your truck, contact your Clark dealer.

Operating Conditions

Time intervals between maintenance/service are largely determined by operating conditions. For example, operation in sandy, dusty locations requires shorter maintenance intervals than operation in clean warehouses. The indicated intervals are intended for normal operation.

Daily Check Lift

Following are the items to be checked on your Clark lift truck before the commencement of each working shift. These items, if checked correctly, will ensure the safe and highly efficient operation of your Clark lift truck.

1. Walk around truck and visually check for damage and leaks. Check mast structure for cracking and lift chain adjustment and security. Note all damage and leaks, and report to maintenance personnel.
2. Check pressure and condition of all drive and steer tires and wheels. Tire pressure tags are located on frame adjacent to each wheel. Remove foreign material such as stones and nails etc., which have become lodged in tire treads. Note apparent tire or wheel damage.
3. Visually check drive and steer wheel mounting nuts. Tighten any loose wheel lugs or nuts to the specified torque. (See Critical Torque attachment);
4. Examine twist lock shafts located on the lift frame, for any fatigue fractures or damage. Report any faults immediately.
5. Remove hydraulic tank cap and check to make sure tank is filled to the proper level.
6. Check cab base mounting for damage, loose or missing studs.
7. Visually check condition of engine, wiring, fan, belts, hoses, etc.
8. Check the condition of the batteries, battery terminals, electrolyte level and cables.
9. Check water level in windshield washer reservoir.
10. Check engine oil level and add oil if necessary DO NOT OVERFILL.
11. Always check radiator coolant level with the engine turned off and when possible, with the engine cold. Proper coolant level is one inch below the bottom of the filler neck.

⚠ CAUTION

Use extreme care when removing radiator pressure cap. The sudden release of pressure can cause a steam flash resulting in serious injury. Place a rag over cap and loosen slowly to allow gradual escape of steam.

NEVER add cold water or antifreeze to the radiator of an overheated engine. Always allow the engine to cool to avoid the danger of cracking the cylinder block or heads. Keep engine running when adding water or antifreeze. A solution of ethylene glycol and water is recommended. NEVER USE WATER ONLY.

Safe Parking

Before working on truck:

1. Park truck on a hard, level, and solid surface, such as a concrete floor with no gaps or breaks.
2. Put upright in vertical position and fully lower the forks or attachment.
3. Put all controls in neutral. Turn key switch OFF and remove key.
4. Apply the parking brake and block the wheels.

⚠ WARNING

Defective equipment can cause accidents. All tools and lifting equipment must be in good condition, meet the load capacity requirements, and have OSHA labels when required. Tools with defects can have failures causing severe injury or death.

⚠ WARNING

Take care to place blocks under the frame back far enough from the trucks center of gravity so that stability is not lost.

Lifting, Blocking, and Jacking Points

Use the following illustration to locate general lifting, blocking, and jacking points and lifting eyes on the truck. Read the procedures for raising, blocking, or jacking specific components of the truck to make sure you understand the correct, safe procedures.

IMPORTANT

Check and make sure the lifting devices are capable of lifting the weight of the truck.

The CDP 100/164 lift truck has been fitted with lifting eyes to allow you to lift the truck safely.

1. The proper way to lift the front of the truck is to place the hooks through the lifting eyes provided on the upright.
   a. Chock the steer wheels before lifting.
   b. Place wheel stands or a solid hardwood blocks under the drive tires.
2. The rear of the truck may be lifted by the counterweight through the lifting eyes provided.

⚠ WARNING

Make sure counterweight bolts are in place and properly torqued before lifting. Never attempt to lift the rear of a truck with another lift truck.

   a. Chock the drive wheels before lifting.
   b. Place wheel stands or a solid hardwood block under the steer tires