Rated Capacity : 1000~2500kg

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CLARK
THE FORKLIFT

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CONTENTS

"Periodic Service" and "Planned Maintenance"

The term "periodic service" includes all maintenance tasks that should be performed on a regularly scheduled basis.

The term "Planned Maintenance" indicates a formalized program of basic inspections, adjustments, and lubrications that the Clark service organization provides customers at a prescribed interval, usually 50-250 hours. The recommended basic "Planned Maintenance" procedure is given in Section 2 of this Group.

The current Section,"Maintenance Schedules," specifies all maintenance tasks.including Planned Maintenance tasks.that should be performed periodically, and suggests intervals at which they should be performed.

Determining Maintenance Intervals

Time intervals on the charts on the next four pages and elsewhere in this manual relate to truck operating hours as recorded on the hourmeter, and are based on experience Clark has found to be convenient and suitable under normal operation. Standard operating condition classifications are:

Normal Operation: Eight-hour material handling, mostly in buildings or in clean, open air on clean, paved surfaces.

Severe Operation: Prolonged operating hours or constant usage.

Extreme Operation:

- In sandy or dusty locations, such as cement plants, lumber mills, and coal dust or stone crushing sites.
- High-temperature locations, such as steel mills and foundries.
- Sudden temperature changes, such as constant trips from buildings into the open air, or in refrigeration plants.

IMPORTANT

MAINTENANCE INTERVALS. If the lift truck is used in severe or extreme operating conditions, the maintenance intervals should be shortened accordingly.

Since the operating environments of lift trucks vary widely, the above descriptions are highly generalized and should be applied as actual conditions dictate.

Section 2
The Planned Maintenance Program

This Section defines a set of basic service procedures, known as the "Planned Maintenance Program,"and describes a systematic approach for performing them.

Introduction to Planned Maintenance

A program of regular, routine inspections, lubrication, and other service tasks is important for the long life and troublefree operation of the lift truck.

The Clark service organization offers customers a formalized program.called Planned Maintenance, or PM.for performing these tasks.

PM Intervals

The PM inspections, adjustments, and lubrications are typically performed on each covered truck at 50-250 hour intervals. (See Section 1, in this Group about defining service intervals.)

The PM Form

As an aid to service technicians performing and documenting PM inspections, Clark has prepared a "Planned Maintenance Report" form. A copy of this form is inserted in Section 3 of this Group.

We recommend that you use this form as a checklist and to make a record of your inspection and truck condition. This record can be used to inform the owner of needed repairs and help establish the optimal PM intervals.

When you have finished the PM inspections, be sure to give a copy of the report to the person responsible for lift truck maintenance.

The Basic PM Procedures

The basic PM procedure is to perform checks first, repairs and adjustments last. As you go through each step of the PM, you should note all your findings on the PM report form.

The PM report form serves as a record of what you did in the PM and what further service needs to be performed. "Further service" consists of any repair, adjustment, inspection, or lubrication that you discovered during the PM or any periodic service procedure that is due but not covered by the PM agreement).

You should consult the previous PM report forms, periodic service chart, and truck hour meter to determine what periodic service is due. List the service due on the new PM form.

The PM procedure, in outline form, is as follows:

1. **External visual checks.** Perform these as you walk around the truck with it turned off.
2. **Operational checks.** Perform these while operating the truck.
3. **Internal visual checks.** Perform these after removing the floor board and cowl cover.
4. **Air cleaning internal components.** Do this while performing the previous step.
5. **Critical fastener torque checks.**
6. **Minor adjustments and repairs** you found in your inspection.
7. **Fluid level checks and fill.**
8. **Chassis lubrication.**
9. **Final clean up.**
10. **Minor adjustments** to the responsible party.

Each of these steps is explained in detail beginning on the next page.

CAUTION

- **Do not make repairs or adjustments unless authorized to do so.**
- **Disconnect the battery before you work on electrical components.**
- **Always wear safety glasses.**
- **Wear a safety (hard) hat in industrial plants and in special areas where protection is necessary or required.**
- **Remove all jewelry (watch, rings, bracelets, etc.) before working on the truck.**

Truck Location and Parking

Before starting the external inspection, make sure the truck is parked on a clean, level surface. Fully lower upright, turn truck off, and engage the parking brake.

If it is necessary to drive the truck to a suitable inspection location, perform the initial braking and steering checks, given later in this Section, as you begin to move the truck.

To perform the operational checks, the truck must be where there is sufficient clearance to raise the upright and room to maneuver the truck at full speed without endangering personnel, equipment, or materials.

External Inspection

Walk around the truck and take note of any obvious damage and maintenance problems, as follows:

Decals

Check to be sure all capacity, safety, and warning plates and decals are attached and legible.

NOTE

Do not operate a lift truck with damaged or missing decals and nameplates. Replace them immediately. They contain important information. See Group 40 for decal locations.

Fittings and Fasteners

Make sure that fittings and fasteners are present, in usable condition and fully fastened. Critical fastener torque checks should be performed later--when making minor adjustments and repairs.

Overhead Guard and Chassis

Be sure that the overhead guard and any other safety devices are in place, undamaged, and attached securely. Inspect welds and structural members for cracks or other damage.

Lights and Safety Devices

Check safety devices, such as lights, horn, and audible alarms, to make sure they are securely attached and have on visible damage.

Leaks

Look under the truck and on the chassis, uprights, and exposed hoses for any signs of external leakage: brake fluid, drive axle oil, and hydraulic fluid, and battery fluid.

When you suspect hydraulic oil leaks and loose fittings,

DO NOT USE BARE HANDS TO CHECK.

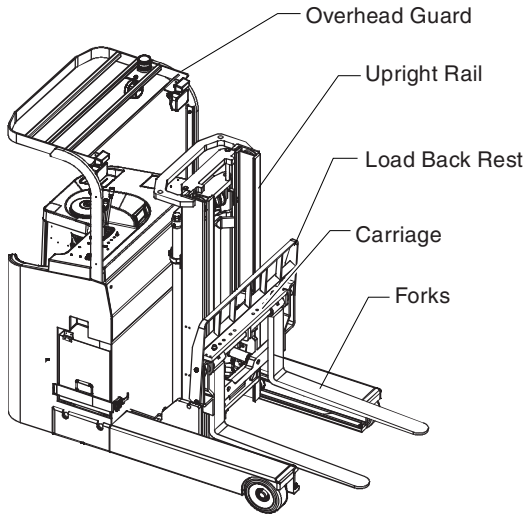
CAUTION

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

Carriage, Load Backrest, and Upright

(See Group 34 for more detailed inspection procedure.)

Inspect the welds on the carriage, load backrest, and upright for cracks. Be sure that the mounting fasteners are in place and tight.



Inspect the upright assembly: rails, carriage rollers, load backrest, 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, any damaged or loose rollers and rail wear (metal flaking).

Carefully check the lift chains for wear, rust and corrosion, cracked or broken links, and stretching. Check that the lift and carriage chains are correctly adjusted to have equal tension and that the tops of the rails are within 4 mm (1/8 in) of each other.

Check that the lift chain anchor fasteners and locking means are in place and tight. Be sure all safety guards and chain retainers are in place and not damaged.

Inspect the carriage stops and cylinder retainer bolts. Check all welded connections.

Inspect all lift line hydraulic connections for leaks. Check the lift cylinder rods for wear marks, grooves and scratches. Check the cylinder seals for leaks.

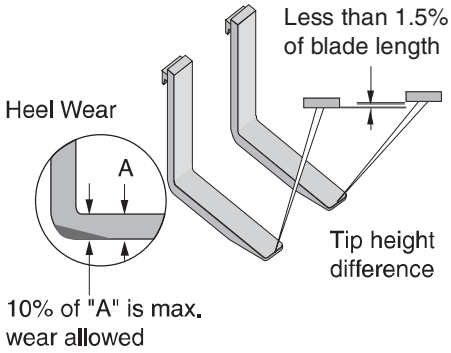
Forks

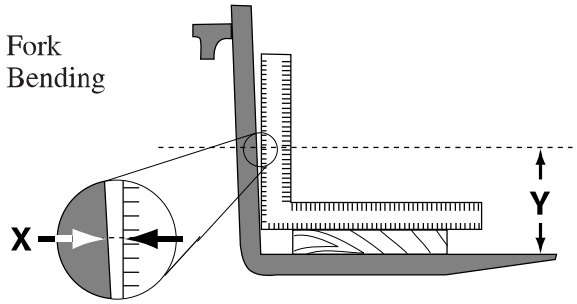
Inspect the load forks for cracks, breaks, bending, and wear.

WARNING

HEEL WEAR. If the fork blade at the heel is worn down by more than 10 percent, the load

capacity is reduced and the fork must be replaced.





X must be less than 25.4 mm (1 in) when measured at **Y** height of 46 cm (18 in).

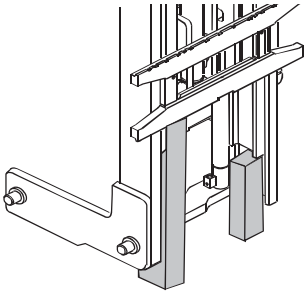
Measure fork bending with a T-square and wood bock as shown above.

Inspect the fork latches to ensure that they are in good condition, operate freely, and lock correctly. See Group 34 for more details on inspection procedures, including use of fork wear gage.

Operational Checks

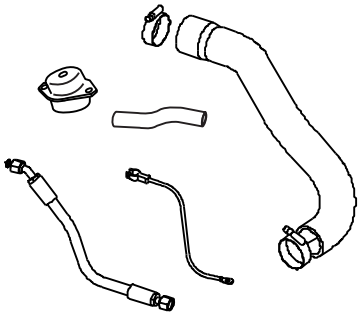
Safety tips

- When working under a raised fork carriage, never forget to secure the fork carriage and the inner rail (both inner rails on Triple stage upright) with suitably dimensioned wooden beams and chains. The forklift truck can be secured against inadvertently moving by applying the parking brake and by chocking the wheels.



Hoses, cables and rubber parts

- Hoses, cables and rubber parts succumb to a natural process of ageing, which is dependent on outside influences (e.g., temperature, environmental factors, etc.).
- At every maintenance, check all hoses, cables and rubber parts for damage and ageing.
  - Replace all defective parts.



Electronic system

WARNING

Before carrying out any maintenance work on electrical components, always disconnect the battery and take off watches, jewellery, rings or other metal objects.

High-performance, modern controls are equipped with capacitors. Residual voltage can still be present after the battery has been disconnected.

For this reason, undertake the following measures before servicing:

1. Switch off the ignition.
2. Disconnect the battery connector.

3. Switch on the ignition and wait until the display lights go out. Activate the horn for approx. 5 seconds.
4. Switch off the ignition.

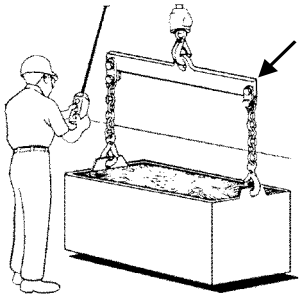
Before calling the customer service of your CLARK dealer because of a performance drop or total failure of your forklift truck, please check the following points :

1. Is the battery sufficiently charged?
2. Is the battery connector connected correctly and securely?
3. Are there any foreign particles in the operating panel?
4. Are all wires, cables and plug connections securely connected and damagefree?
5. Are all fuses in working order?
   (Check the fuse connections for corrosion).

Batteries - General information

1. Always observe the instructions provided by the battery and charger manufacturers
   Charging and maintenance operations are to be performed exclusively by qualified personnel working in well ventilated areas.
   Never smoke or use exposed light sources when working on the batteries, as the emerging gases and cause an explosion..

2. Never place electrically conductive parts on the battery cell connectors.
3. Always observe the following during both charging and the subsequent gas generation phase:
   – Battery cover open.
   – Battery plugs removed if the batteries are not equipped with a forced ventilation system (consult battery manual).
   – Remove all cover plates.
   – Check electrolyte level.
   – Switch off charger immediately when connection between charger and battery is interrupted.
4. Replace damaged cells.
5. Ensure that cables remain free and are not crimped
6. Always wash hands thoroughly after working with batteries (health and precaution).
7. For lifting out the batteries, a special device must be used (see figure).



- Make sure that the chains and safety hooks are checked and offer a sufficient load carrying capacity. Never use chains fixed to a centre ring. These chains will pull the compartment walls to the inside, thus damaging the battery cells.

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.
- 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.

Disposing of lubricants, filters and batteries

- Used parts and lubricants which arise during repair work must be stored safely until they can be disposed of in accordance with the regulations..

- In this respect, follow the regulations applicable in your country.

Clean the lift chains

- Never clean the lifting chains with a steam cleaner. Clean the chains with a self-lubricating cleaner (e.g. diesel).

Lubricate the lift chains

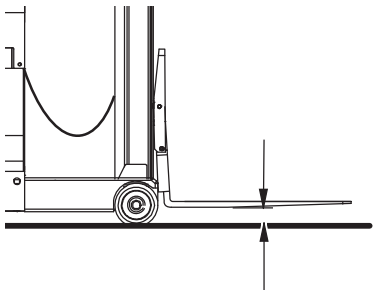
- The lift chains are subjected to heavy loading and therefore can only attain their maximum life if they are oiled regularly and adequately. Oiling the lift chains is therefore an important part of the maintenance work. You can carry out this work quickly and correctly with chain lube, see lubricant recommendations.

Lubricate the Upright inside rails, rollers and side-shifter

- Clean and lubricate the upright inside rails, rollers and side shifter (if fitted).
  Use only suitable lubricants in accordance with the recommended lubricants list.
  For add-on equipment the service instructions of the manufacturer, see separate operating manual, must be observed.

Check the lift chain adjustment

- Lift the rated load of the forklift on the forks. Bring the upright to the vertical and lower the fork carrier completely. The underside of the forks at the heel must be 10 mm above the floor.

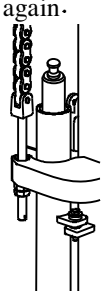


NOTE

It is important to use a load equal to the rated capacity of the forklift when checking the lift chains, since any expansion of the chains is then allowed for.

Adjust the lift chains

- The lift chains are adjusted at the chain anchors. For this, the locknuts must be undone and, depending on the required setting, the top nut screwed up or down. After the adjustment has been made, the lock-nuts must be tightened up again.



CAUTION

If the lift chains stretch by more than 2% or 3% of their original length, they must be replaced for safety reasons. Observe the statutory regulations of your country. You can contact your CLARK dealer with confidence for this.

Measures for longer lay-off periods, storage (> 6 months)

- The following measures must be carried out:
  - Clean the fork lift truck and grease the piston rods.
  - Remove the battery.
  - Jack up the fork lift truck to prevent the tyres going flat.
  - All lubricants must be replaced before recommissioning.
  - Be sure to recharge a battery regularly(2 times/a month)

General Cautions For Inspection And Maintenance

WARNING

When inspecting or maintaining, make sure to disconnect the battery plug.

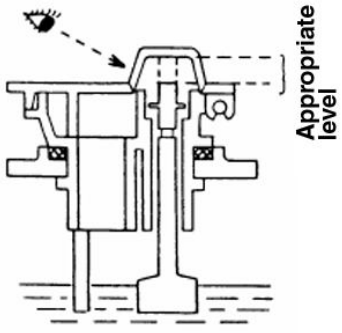
If the inspecting and maintenance is surely carried out, an accident can be prevented and the life of machine becomes long. Even if you are busy, fix the date and carry out the periodic inspection so as to increase the working ratio of machine and to reduce the maintenance cost of machine. Also, the hour written in the inspection item is based on 8hours of a day and 200hours of a month. At actual inspecting, make out the schedule in the unit of day and date, etc.
Before starting operation, check the periodic inspection schedule, and when that inspection time comes to, check the checking points.

- Use the genuine part of our company to replace a part.
- Use the recommended oil, especially hydraulic oil, must be the recommended domestic supply oil.
- To supply oil, clean up the grease on the oiling inlet with brush or cloth at first.
- To supply or drain oil and to check the oil level, stop the machine on an even ground and carry out.
- To inspect the electric system, disconnect the battery plug and carry out.

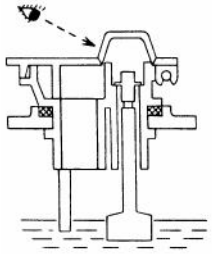
Inspection Every Week (50HR)

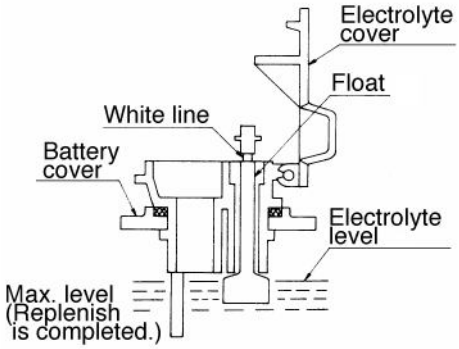
Inspecting electrolyte

For inspecting the level of electrolyte, check the condition of battery and float from outside. If the float lowers down, fill up the electrolyte immediately. To fill up the distilled water, open the cover completely. When the float goes up and the white line is to be seen, stop filling up the distilled water.



After filling up, close the electrolyte cover completely. Be careful when filling up the electrolyte because if the electrolyte is excessively filled up, it can overflow.





Measuring Specific Gravity

Measure the specific gravity and temperature of all cells. If the specific gravity converted into 20°C is almost the same with the specific gravity of whole cell, it is good.

If there is a cell whose specific gravity is 0.05 or lower than the average value, it is abnormal. At this time, make contact your local dealer.