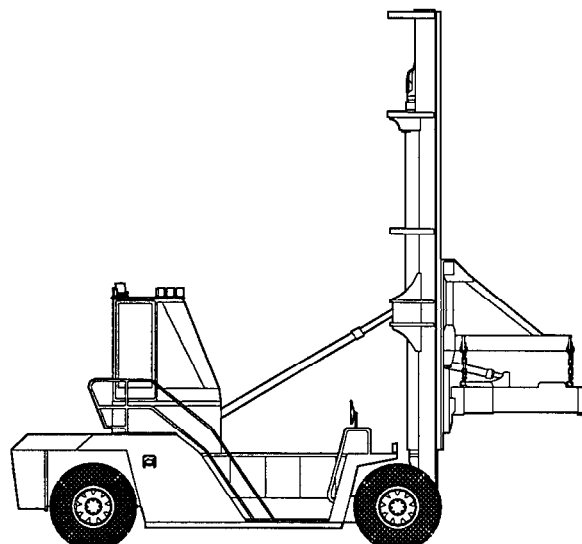


Service Manual



SM580 C500 Y 950 CH

This manual cover machine:

Serial No. Y950-1-8695 & above

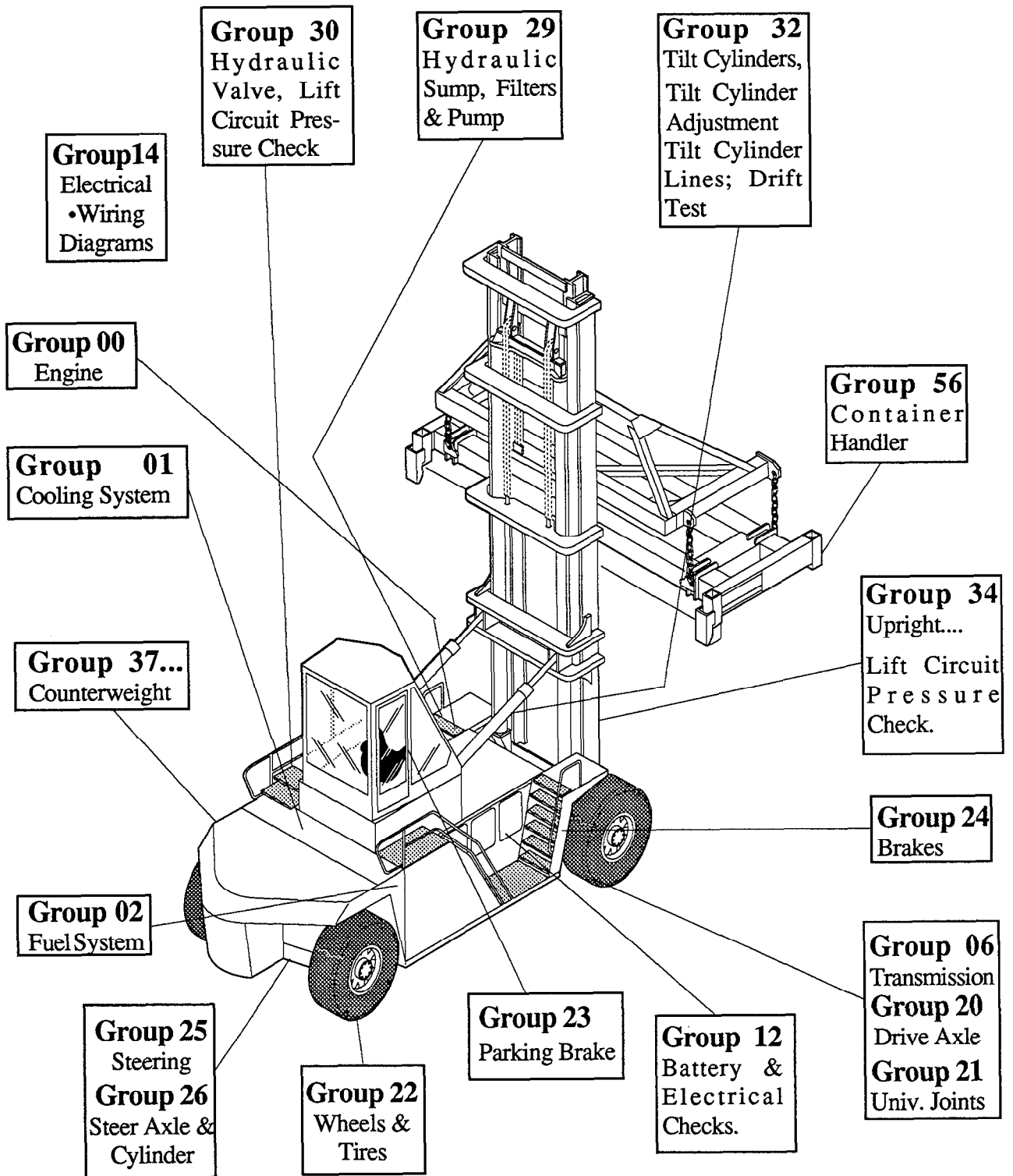
Serial No. Y950-1-8855 & above

**ALWAYS GIVE THE MACHINE SERIAL
NUMBER WHEN ORDERING PARTS**

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Technical
Publications
Lexington, KY
40507-1640



Group 39

Decal Replacement and Placement

Group 40

Truck and Engine Specifications. Lubrication Specifications and Grease Chart
PM Inspection and Drivers Daily Inspection Forms

C500 Y 950 Container Handler Truck

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Safety Signs and Safety Messages

SAFETY SIGNS and MESSAGES are placed in this manual and also on the truck to provide instructions and to identify specific areas where potential hazards exist and special precautions must be taken. Be sure you know and understand the meaning of these instructions, signs and messages. Damage to the truck or serious injury to you or other persons may result if these messages are not followed. If warning decals are damaged they must be replaced. Contact your Clark dealer for replacements.

NOTICE This message is used when special information, instructions or identification is required relating to procedures, equipment, tools, pressures, capacities and other special data.

IMPORTANT This message is used when special precautions should be taken to ensure a correct action or to avoid damage to or malfunction of the truck or a component.



CAUTION This message is used as a reminder of safety practices which can result in personal injury if proper precautions are not taken.



WARNING This message is used when a hazard exists which can result in serious personal injury or death, if proper precautions are not taken.



DANGER This message is used when an extreme hazard exists.

User 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, trained personnel and procedures must be provided.
2. Maintenance and inspection of all powered industrial trucks shall be done in conformance with the manufacturer's recommendations.
3. A scheduled planned maintenance, lubrication and inspection program shall be followed.
4. Only trained and authorized personnel shall be permitted to maintain, repair, adjust and inspect industrial trucks and in accordance with the manufacturer's specifications.
5. Properly ventilate work area, vent exhaust fumes and keep shop clean and floor dry.
6. 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.

Introduction

7. Before Starting Work On Truck:

- (a) Raise drive wheels off of floor or disconnect power source and use blocks or other positive truck positioning devices.
- (b) Disconnect battery before working on the electrical system.

8. Before working on engine fuel system of gasoline or diesel powered trucks, be sure the fuel shut-off valve is closed.

9. Operation of the truck to check performance must be conducted in an authorized, safe, clear area.

10. Before Starting To Drive Truck:

- (a) Be in operating position.
- (b) Be sure parking brake is engaged.
- (c) Put direction control in neutral.
- (d) Start engine.
- (e) Check functioning of direction and speed controls, steering, brakes, warning devices and Container Handler controls.

11. Before Leaving The Truck

- (a) Stop truck.
- (b) Apply the parking brake.
- (c) Put directional control in neutral.
- (d) Stop the engine by turning off the ignition circuit.
- (e) Put blocks at the wheels if truck is on an incline.
- (f) Lower the Container Handler to fully down position.

12. Brakes, steering mechanisms, control mechanisms, warning devices, lights, governors, guards and safety devices and frame members must be carefully and regularly inspected and maintained in a safe operating condition.

13. Special trucks or devices designed and approved for hazardous area operation must receive special attention to ensure that maintenance preserves the original approved safe operating features.

14. Fuel systems must be checked for leaks and condition of parts. Extra special consideration must be given in the case of a leak in the fuel system. Action must be taken to prevent the use of the truck until the leak has been corrected.

15. The truck manufacturer's capacity, operation and maintenance instruction plates, tags or decals must be maintained in legible condition.

16. Batteries, motors, controllers, limit switches, protective devices, electrical conductors and connections must be inspected and maintained in conformance with good practice. Special attention must be paid to the condition of electrical insulation.

17. To avoid injury to personnel or damage to the equipment, consult the manufacturer's procedures in replacing contacts on any battery connection.

18. Industrial trucks must be kept in a clean condition to minimize fire hazards and help in the detection of loose or defective parts.

19. Modifications and additions that affect capacity and safe truck operation must not be done without the manufacturer's prior written approval. Capacity, operation and maintenance instruction plates, tags or decals must be changed accordingly.

20. Care must be taken to assure that all replacement parts, including tires, are interchangeable with the original parts and of a quality at least equal to that provided in the original equipment. Parts, including tires, are to be installed per the manufacturer's procedures. Always use genuine CLARK or CLARK-approved parts.

21. Use special care when removing heavy components from the truck, such as counterweight, seat deck, upright, top pickup, Container Handler, etc. Be sure that lifting and handling equipment is of the correct capacity and in good condition.

22. The Container Handler incorporates the Top Pick Up constructed of massive beams. This design dramatically improves load visibility during container stacking operations. It also brings the load closer to the weight bearing axle.

23. The Top Pick Up has four chains supporting the Container Handler. This design compensates for uneven ground conditions and allows the Container Handler to self-align with the container top. There is also a set of side shifting and skewing chains which are powered by four hydraulic cylinders. This enables faster engagement and more accurate stacking with less time positioning the truck. Through the use of these chains and cylinders, the Container Handler can be shifted 12 inches either way from the center point, with skewing up to 10 degrees.

24. The Container Handler hydraulically extends and contracts to fit containers from 20 feet to 40 feet. The Container Handler is equipped with twist locks at each corner, which are actuated by levers within the operator's compartment. Indicator bars and twist lock indicator lights signal when the container has been securely engaged. It is imperative that both of these systems be operative whenever the Container Handler truck is in service.

NOTICE -- You should also be familiar with additional operating and maintenance safety instructions contained in the following publications:

ANSI/ASME B56.1 - 1988 Safety Standard For Low and High Lift Trucks (Safety Standard For Powered Industrial Trucks). Published by: Society of Mechanical Engineers, United Engineering Center, 345 E. 47th Street, New York, N. Y. 10017.

NFPA 505-1982: Fire Safety Standard for Powered Industrial Trucks: Type Designations, Areas of Use, Maintenance and Operation. Available from: National Fire Protection Assoc., Inc., Batterymarch Park, Quincy, Ma 02269.

General Industrial Standards, OSHA 2206: OSHA Safety and Health Standards (29 CFR 1910), Subpart N-Materials Handling and Storage, Section 1910.178 Powered Industrial Trucks. For sale by: Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.-

PM - PLANNED MAINTENANCE PROGRAM

A planned maintenance program of regular, routine inspections and lubrication is important for long life and trouble-free operation of your Container Handler truck. Make and keep records of your inspections. Use these records to help establish the correct PM intervals for your application and to indicate maintenance required to prevent major problems from occurring during operation.

PM Report Form

As an aid in performing and documenting your PM inspections, Clark has prepared a "GAS, LPG OR DIESEL PLANNED MAINTENANCE REPORT" form. Copies of this form may be obtained from your authorized Clark dealer. We recommend that you use this form as a checklist and to make a record of your inspection and truck condition.

The periodic maintenance procedures outlined in this manual are intended to be used with the PM report form. They are arranged in groupings of maintenance work that are done in a logical and efficient sequence.

A check mark or entry is made on the PM Report Form when the PM is performed. Please note the special coding system for indicating the importance of needed repairs and/or adjustments.

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

**DO NOT MAKE REPAIRS OR ADJUSTMENTS
UNLESS AUTHORIZED TO DO SO.**

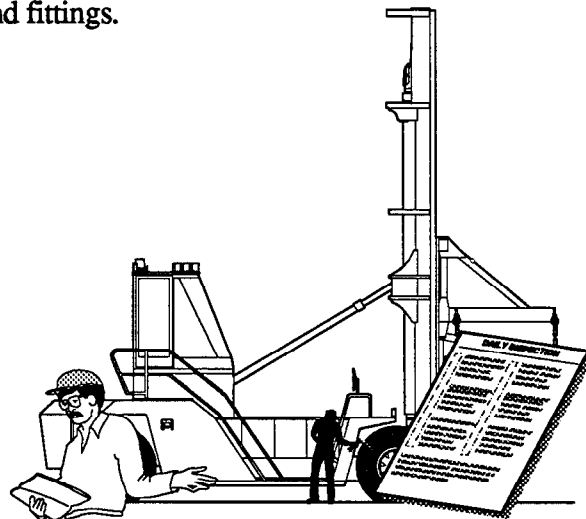
Remove all jewelry (watch, rings, bracelets, etc.) before working on the truck.

Disconnect the battery ground cable (-) from the engine or frame before working 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.

How To Perform The PM Periodic Inspection and Maintenance**Visual Inspection**

First, perform a visual inspection of the Container Handler truck and its components. Walk around the truck and take note of any obvious damage and maintenance problems. Check for loose fasteners and fittings.



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

NOTICE: Do not operate a Container Handler truck with damaged or missing decals and nameplates. Replace them immediately. They contain important information.

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

Check for hydraulic oil leaks and loose fittings. **DO NOT USE BARE HANDS TO CHECK.** Oil may be hot or under pressure.

**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.

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

Inspect the welds and structural members on the top pick up, container handler, carriage and upright for cracks. Report any cracks noted immediately. Be sure that the mounting fasteners are in place and tight.

Inspect the upright assembly: rails, rollers, lift chains, lift, tilt and container handler cylinders. Look for obvious wear and maintenance problems, 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, 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. Check all top pick up and container handler chains and chain fasteners for cracks or other damage.

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.

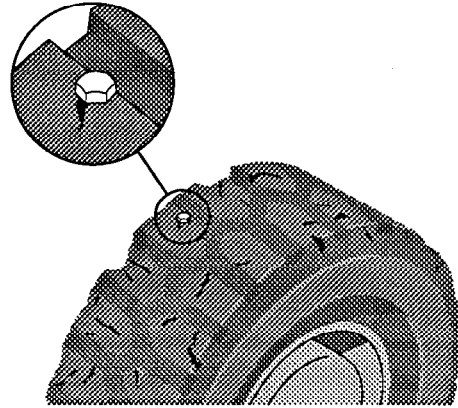
Inspect all lift line hydraulic connections for leaks. Check the lift cylinder rods for wear marks, grooves and scratches. Check the cylinder seals for leaks.

IMPORTANT

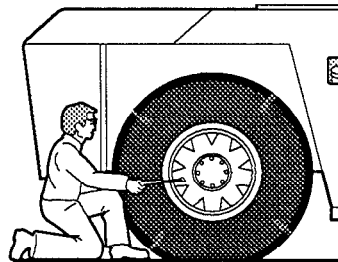
Uprights and lift chains require special attention and maintenance to maintain them in a safe operating condition. Refer to Lift Chain Maintenance section for additional information.

Wheels and Tires

Check the condition of the drive and steer wheels and tires. Remove objects that are embedded in the tread. Inspect the tires for excessive wear or breaks or "chunking out".



Check all wheel lug nuts or bolts to be sure none are loose or missing. Have missing bolts or lug nuts replaced and tightened to the the correct torque before operating truck. Torque drive wheel lug nuts to 425 - 475 lbs. ft. [576,3-644,2 N•m]. Torque steer wheel lug nuts to 275 - 325 lbs. ft. [373,0-440,7 N•m].



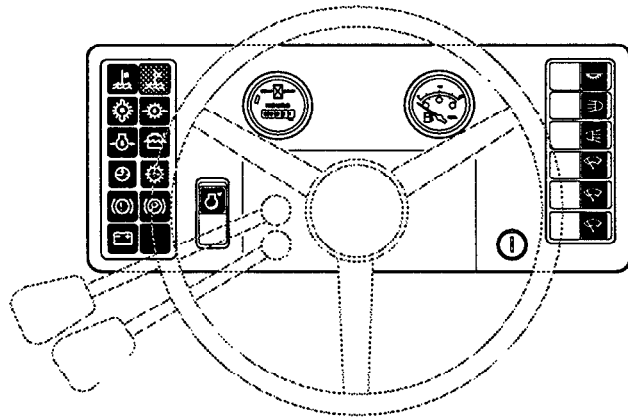
! WARNING

Check tire pressure from a position facing the tread of the tire not the side. Use a long handled gauge to keep your body away from the side. A soft tire, below 80 psi [552 kPa] should always be completely deflated and removed from the truck. Find and repair leak and place tire in a safety cage for re-inflation. Incorrect (low) tire pressure can reduce stability of your container handler truck. Proper cold inflation is 110 psi [758 kPa].

Functional Tests

Now be sure that all controls and systems are functioning correctly

After checking that the parking brake is set, test horn, lights and all other safety equipment and accessories. Be sure they are properly mounted and working correctly.



Besides the indicator lights, fuel gauge, hour meter and ignition switch, a bank of switches are located on the instrument panel which control the windshield wipers and lights as shown. Each of these switches should be checked for operation at the beginning of each shift. Also note the condition of the windshield wiper blades.

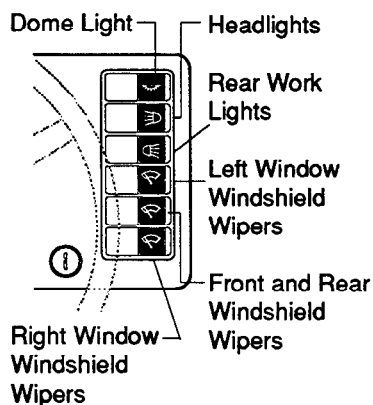
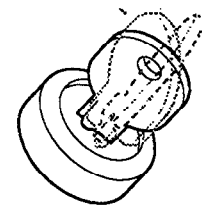
Press the horn button to check horn function. If the horn or any other part does not operate, make repairs before the truck is put into operation.

Check the operation of the neutral start switch by placing direction control lever in forward or reverse and turning key switch to START position. Starter must not engage until direction control lever is moved to the neutral position.

Place direction control lever in reverse to check the operation of the back-up alarm.

Instrument Panel

A "check circuit" is provided to determine that all the indicator lights are operating. When the ignition switch is turned to the "start" position, all indicator lights should be illuminated. If any light fails to come on during the "start" mode, it is inoperative and will not warn you of a malfunction. Determine the cause and repair the malfunction before putting the truck in service.

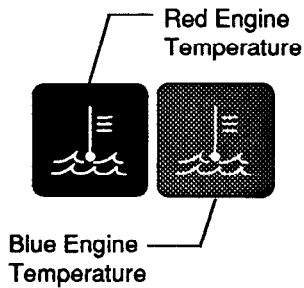


Key/Start Switch

A 3-position switch is standard equipment. To start engine, rotate clockwise. Release to "run" position when engine starts. The switch incorporates an "anti-restart" feature which requires that the key be returned to the "off" position before it can again be turned to "start". If engine does not start on the first attempt, do not re-engage the starter until engine comes to a complete stop. (Approximately five seconds).

PM Section

Indicator Lights



The top pair of indicator lights, red on the left and blue on the right, indicate engine coolant temperature. The blue light comes on automatically with engine start up and goes out when the engine reaches operating temperature. The red light indicates engine overheat and will come on at the same time that the shut down system alarm sounds.

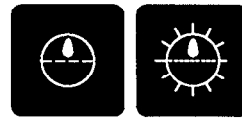


The left light when red, indicates that the work being performed is overheating the transmission. An audible alarm will sound and the truck will shut down 30 seconds later. When the truck has cooled down, continue work with the transmission in a lower gear. The right light when red, indicates inadequate transmission oil pressure due to clutch pack leakage.



The left light when red, indicates low engine oil pressure. It will come on simultaneously with an audible alarm followed by engine shut down 30 seconds later.

The right light when red, indicates low coolant level. This requires topping off of the coolant and the possible need for cooling system repair. Add coolant to the overflow bottle only.



Either of these lights when red, indicate that the hydraulic filter, left light, or the transmission filter, right light, require servicing.

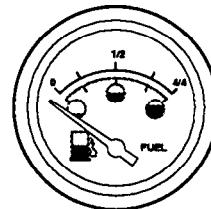


The left light when red, indicates reduced pressure in the accumulator that provides reserve power brake assist for use in the event of engine failure. When light first comes on there will still be adequate reserve pressure to safely stop the truck.

The right light when red, indicates that the parking brake is partially or fully engaged.

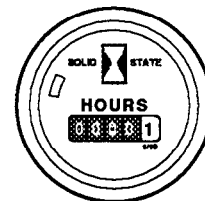


The left light when red, indicates that the alternator is not charging sufficiently or at less than 12 volts.



Fuel Gauge

Indicate quantity of fuel remaining in the tank in fractions of the whole.



Hour Meter

Indicates total engine operating time in hours and tenths. The indicated hours are used for planned maintenance.

Checks with the engine running

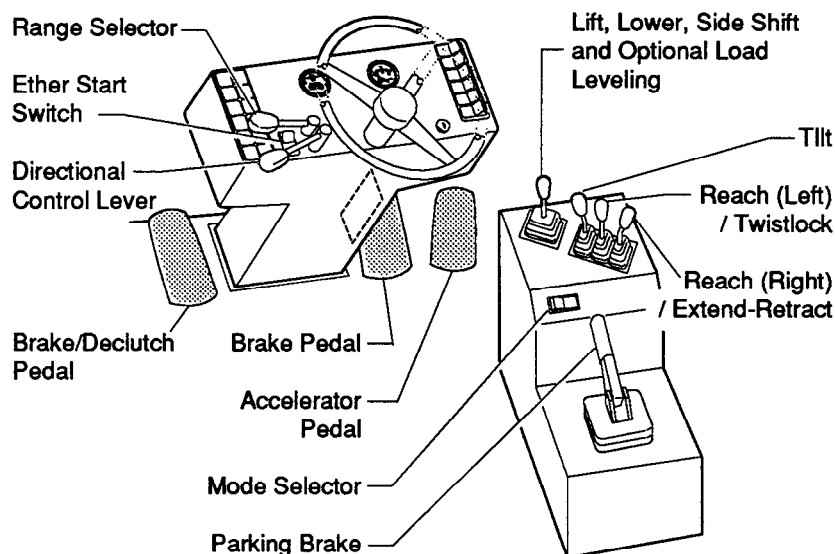
Be sure that:

- Parking brake is applied.
- Directional control is in "N" (neutral).
- Start the engine and let it warm up until it runs evenly and accelerates smoothly when you push on the accelerator pedal.
- Check the hour meter for operation with the engine running.



CAUTION

Do not operate a container handler truck if the service or parking brakes are not operating properly.



Brake System

- Operate service and parking brakes, all hydraulic controls: lift, tilt and container handler, accelerator, directional controls and steering system. Be sure all controls operate freely and return to neutral position. Check the service brake system. Push the brake pedal down fully and hold. The brakes should be applied before the pedal reaches the floor. If the pedal continues to creep downward, trouble shoot the brake system and make such repairs as are required. If repairs cannot be made immediately, tag the truck as inoperative until proper repairs can be made.
- Check the function of the parking brake. To check parking brake holding capacity, park the truck and apply the parking brake. Put the truck in 2nd gear and accelerate to full throttle. The truck should hold without moving. If the truck moves, release brake lever and adjust for addition tension and check again. Repeat until brake holds as required.

Lift Mechanisms and Controls

- Check the function of the hydraulic system and controls with the hydraulic pumps (engine) running.
- Operate the lift lever (joystick) to raise the extendable lift frame to its maximum height and then lower it fully. Operate the side shifting cylinders to maximum in/out.
- Pull back on the tilt control lever and hold until the upright reaches the full back tilt position. Push forward on the lever to full forward tilt position. Pull back on the lever to return the upright to vertical.
- With the mode selector switch in the reach (skew) position, operate the third and fourth levers to the maximum in/out position.

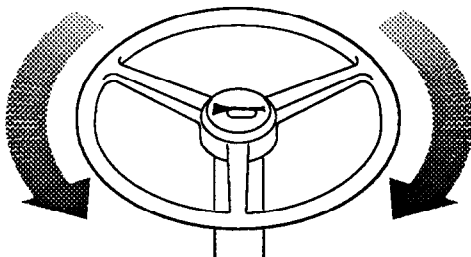
(Cont)

Lift Mechanisms and Controls (cont)

- With the mode selector switch in twistlock and extend retract position, operate the fourth lever to fully extend and retract the expandable lift frame.
- Then operate the third lever to check out the function of the twistlock and twistlock lights. (A container is required to do this).

Steering System

The steering system, steer axle and steering linkage on the truck should be inspected periodically for abnormal looseness and damage, leaking seals, etc. Also, be alert for any changes in steering action. Hard steering, excessive freeplay (looseness) or unusual sounds when turning or maneuvering indicates a need for inspection and servicing or repair.



- Check the steering system by moving the steering handwheel in a full right turn and then in a full left turn. Return the handwheel (steer wheels) to the straight ahead position. The steering system components should operate smoothly when the steering wheel is turned.



CAUTION
Never attempt to operate a truck which has a steering system problem.

Shift Control and Brakes

Check and make sure that the travel area is clear in front of the truck.

- Push firmly on the brake pedal. Release the parking brake. Move the directional control lever from "N" (neutral) to FORWARD travel position.
- Remove your right foot from the brake pedal and put it on the accelerator pedal. Push down until the truck moves slowly forward. Remove your foot from the accelerator pedal and push down on the brake pedal to stop the truck. The brakes should apply smoothly.
- Be sure the travel area is clear behind the truck.
- Put the directional control lever in the REVERSE travel position with the back-up alarm now activated, push down on the accelerator pedal until the truck moves slowly in the reverse direction. Remove your foot from the accelerator pedal and push down on the brake pedal to stop the truck. The brakes should apply smoothly.

When you have completed the operational tests, park and leave truck according to standard shut down procedures. Be sure to make a record of all maintenance and operating problems you find.

Fluid and Filters

Check fluid levels and other components within the engine compartment.....



CAUTION
To avoid the possibility of personal injury, never work in the engine compartment with the engine running except when absolutely necessary to check or make adjustments. Take extreme care to keep hands, tools and loose clothing, etc., away from fan and drive belts. Also, remove watches, bracelets and rings.

Engine Accessories

Inspect the engine coolant hoses and fan belts. Look for leaking and obvious damage, worn (frayed) condition, breaks, etc., which could cause failure during operation.

Engine Air Cleaner

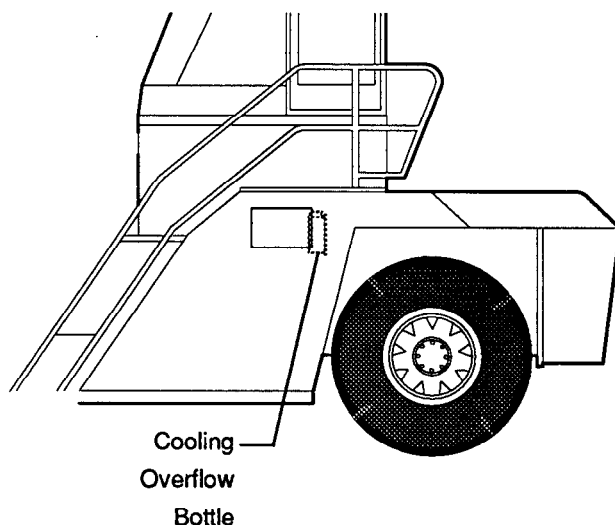
Check the engine air cleaner for damage and contamination (excessive dirt buildup and clogging). Check for correct mounting attachments of the air cleaner. Be sure that the air cleaner hose is securely connected (not loose or leaking). Fan or cone shaped dust deposits on tube or hose surfaces indicate a leak.

Change or service the air cleaner element every 50 to 250 operating hours, depending upon your application. Service intervals may also be determined by the air restriction indicator. Each time the element is removed, there is danger of some dirt getting into the air intake. It is therefore desirable to open the air cleaner housing only when necessary.

Batteries

Inspect the batteries for any damage, cracks, leaking condition, etc. If the terminals are corroded, clean and protect them with CLARK Battery Saver (available from your Clark dealer). If your batteries have removable cell caps, check to be sure the cells are all filled. If possible, refill with distilled water.

Engine Cooling System



! CAUTION
STEAM

Do not remove the radiator cap when the radiator is hot. Steam from the radiator will cause severe burns.

The engine coolant level should be at the "Cold Level" line on the overflow bottle when the engine is cold. Inspect the coolant level in this recovery bottle only. Add coolant only to the overflow bottle. If you must add a quart or more of coolant, inspect the cooling system for leaks and make any necessary repairs. **DO NOT REMOVE THE RADIATOR CAP TO CHECK THE COOLANT LEVEL.**

The Container Handler Truck cooling system is equipped with an indicator light that will come on when coolant is low in the top tank of the radiator. If this light comes on and there is still coolant in the recovery bottle, this would indicate a defective radiator cap. Replace the cap if necessary.

- Inspect the coolant for condition. Look for excessive contamination or rust or oil in the coolant solution. Check the PM time interval for need to change coolant.
- Check condition of radiator cap rubber seal, fiber seal and radiator filler neck for damage. Be sure they are clean. Check overflow hose for clogging or damage.

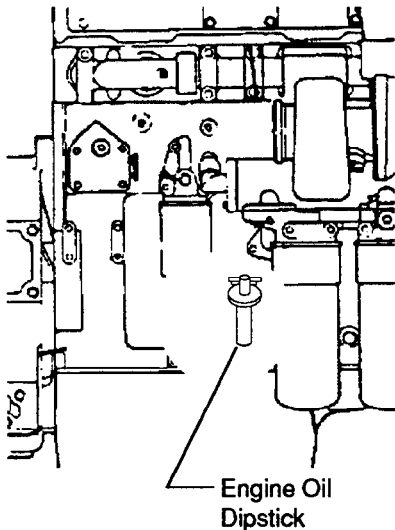
! WARNING

Never remove the radiator cap while the engine is hot or running. Stop the engine and wait until it has cooled. Even then, use extreme care when removing the cap from the radiator. It is a good safety practice to use a shop cloth to cover the radiator cap while it is being removed. Wrap the cloth around the cap and turn it slowly to the first stop. Step back until any pressure has been released; press down on the cap, turn and remove it. Stand clear, hot coolant may splash out. Failure to follow these instructions could result in serious injury.

Engine Cooling System (cont)

NOTICE - Container Handler Truck cooling system is filled with a factory installed solution of 50% water and 50% anti-freeze containing rust and corrosion inhibitors. You should leave it in year around. Water may be used in an emergency, but replace it with the specified coolant as soon as possible to avoid damage to the system. Do not use alcohol or methanol antifreeze.

Engine Oil



Check the engine oil level. Truck must be on level ground to check the oil. Wait five minutes after running to check. Access the dipstick through the left rear side door. Pull the dipstick out. Wipe it with a clean wiper and reinsert it fully into the dipstick tube. Remove the dipstick and check oil level. It is normal to add some oil between oil changes. Keep the oil level above the ADD mark on the dipstick by adding oil as required. **DO NOT OVERFILL.** Use the correct oil as specified under Lubricant Specifications.

Engine Oil and Filter Change

It is recommended to:

- Drain and replace the engine crankcase oil every 50 to 250 operating hours. See NOTICE below.
- Replace the engine oil filter every oil change.
- Remove the oil pan drain plug to drain old oil, after truck has been in operation and engine oil is hot (at operating temperature).



CAUTION

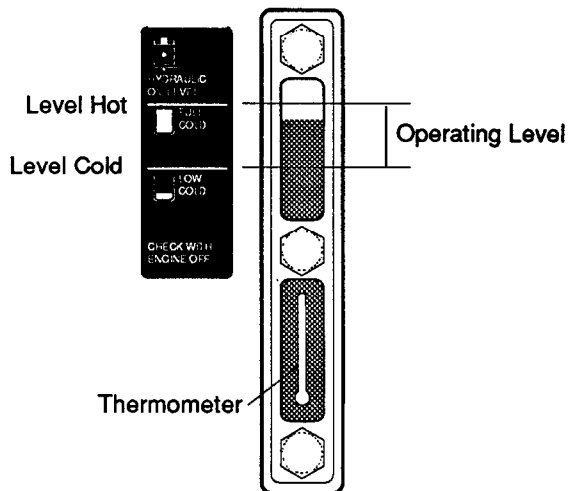
Avoid skin contact with hot oil which can cause burns.

NOTICE - The time interval for changing engine oil will depend upon your application and operating conditions. To determine the correct schedule for your truck it is suggested that you periodically submit oil samples to a commercial laboratory for analysis of the condition of the oil. The presence of particular contaminants can also provide early warning of engine problems.

OIL PERFORMANCE DESIGNATION - To help achieve proper engine performance and durability, use only engine lubricating oils of the proper quality. These oils also help promote engine efficiency which results in improved fuel economy. A symbol has been developed by the API (American Petroleum Institute) to help you select the proper engine oil. It should be included on the oil container you purchase. For diesel engines, CLARK recommends that you use motor oil that meets API Service Classification CE/SF. CC/CD OR CD/SF oils can be used in areas where CE oil is not available.

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. Over filling can cause loss of fluid or lift system malfunction.

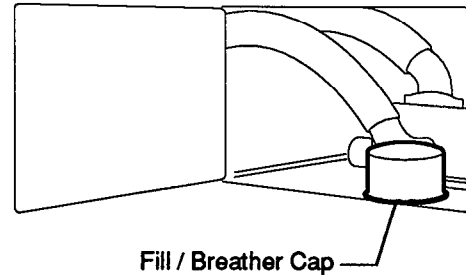


Hydraulic fluid expands as its temperature rises. Therefore, it is preferable to check the fluid level at operating temperature (after approximately 30 minutes of truck operation). To check the fluid level, first park the truck on a level surface and apply the parking brake. Put the upright in a vertical position and lower the lift frame down fully. Observe the sight gauge on the left side of the truck. Oil level should be kept in the operating level 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

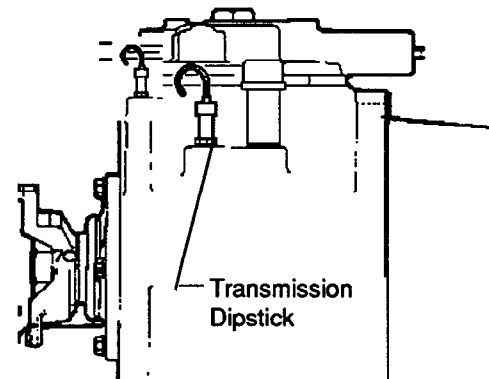
Drain and replace the hydraulic sump fluid every 2000 operating hours. (Severe service or adverse conditions may require more frequent fluid change). Replace the hydraulic oil filter elements at every oil change. Remove, clean and reinstall the hydraulic and steer system suction line screens at first 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.

Sump Tank Breather Maintenance and Inspection



Remove the sump tank fill cap/breather and inspect for excessive (obvious) contamination and damage. Clean or replace the fill cap/breather, per recommended PM schedule or as required by operating conditions.

Transmission Fluid Check

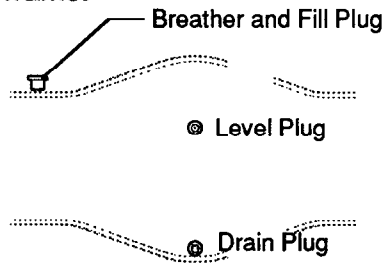


- Before making check, run engine until unit is at operating temperature. Apply the parking brake.
- With the engine operating at idle and the transmission in NEUTRAL, check the fluid on the dipstick. Fill if necessary to the FULL mark on the dipstick Special Purpose Transmission Fluid meeting Specifications C2 or C3, Amoco 1000, Texaco 1893TDH or equivalent.

Differential Fluid and Breather Check

WARNING

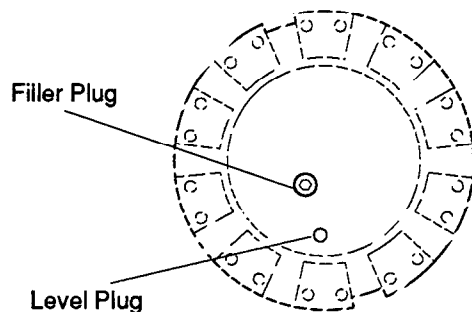
A hard hat should be worn when working under the lift frame.



- Check the differential breather to be sure it is free of obstruction. Remove and clean in a Stoddard type cleaning solvent if necessary. Dry breather with compressed air before replacing it on differential.
- Remove fill/level plug and verify differential lubricant level. Oil level should be maintained to the height of the level plug.

NOTICE: Check the planned maintenance interval (operating hours) or the condition of the oil to determine if the drive axle fluid needs to be replaced.

Axle End Fluid Level Check



Check the fluid level in each axle end in position shown. Top off as required with gear lubricant. See specification section for proper lubricant.

Truck Chassis Inspection and Lubrication

Inspect and lubricate truck chassis components, including steer wheels, steer axle linkage, steering cylinder and wheel bearings. Inspect the steering cylinder piston rods, seals and fasteners for damage, leaks and looseness. Lubricate the steer axle linkage: rod ends and linkage pivot points. Be sure to clean the grease fittings before lubricating and remove the excess grease from all points after lubricating. Lubricate miscellaneous linkage as needed. It is possible to access most lubrication points without the jacking and blocking procedures necessary on smaller material handling equipment.

Upright and Tilt Cylinder Lubrication

Clean the fittings and lubricate the tilt cylinder rod end bushings (forward end). Clean the fittings and lubricate the tilt cylinders base end bushings (rear end).

Lift Chains

Lubricate the entire length of the upright rail lift and carriage chains with Clark Chain and Cable Lube.

Extendable Lift Frame Lubrication

Clean the fittings and lubricate the self-aligning ends of the main frame cylinders.

Lubricate the twist lock fittings. The fitting is positioned on the inside wall of the twist lock housing and can be reached with a flexible hose through the access hole in the housing.

Beam channels are greased with frame at 40 foot length, by applying grease through main frame openings. Also grease channels when extendable beam has been removed, just before reinstallation.

NOTE: Refer to grease fitting location drawing in Group 56, Section 1, Page 3.

Air Cleaning

Always maintain a Container Handler Truck in a clean condition. Do not allow dirt, dust, lint or other contaminants to accumulate on the truck. Keep the truck free from leaking oil or grease. Wipe up all oil spills. Keep the controls and floorboards clean, dry and safe. A clean truck makes it easier to see leakage, loose, missing or damaged parts and will help prevent fires. A clean truck will run cooler. The environment in which a Container Handler Truck operates will determine how often and to what extent cleaning is necessary. For example, trucks operating in manufacturing plants which have a high level of dirt, dust or lint, (e.g. cotton fibers, paper dust, etc.) in the air or on the floor or ground, will require more frequent cleaning. The radiator, especially, may require daily air cleaning to ensure correct cooling. If air pressure does not remove heavy deposits of grease, oil etc., it may be necessary to use steam or liquid spray cleaner.

IMPORTANT

Container Handler Trucks should be air cleaned at every PM interval and otherwise as often as necessary.

Air cleaning should be done using an air hose with special adapter or extension having a control valve and nozzle to direct the air properly. Use clean, dry, low pressure compressed air. Restrict air pressure to 207 kPa (30 psi), maximum. (OSHA requirement).



CAUTION

Wear suitable eye protection and protective clothing.

Air clean the:

- Upright assembly
- Drive axle
- Radiator (from both counterweight and engine side).
- Engine and accessories
- Driveline and related components
- Steer axle and steer cylinder
- Extendable lift frame

Critical Fastener Torque Checks

Fasteners in highly loaded (critical) components can quickly fail if they become loosened: also, loose fasteners can cause damage or failure of the component. For safety it is important that the correct torque be maintained on all critical fasteners of components which directly support the load and protect the operator.

Check Torque Of Critical Items, Including:

- Drive and steer wheel mounting lugs
- Tilt cylinder mounting & yokes
- Counterweight mounting bolts
- Clevises - Lift frame to top pick-up
- Chain anchor lock nuts
- Upright trunnion cap bolts
- Tilt anchor pin keeper bolts
- Twistlock shaft lock nuts (remove cover to access)
- Axle spindle bolts (visual check for grease leakage)
- Drive axle caps
- Brake disc to differential bolts, leakage from differential pinion nut
- Steer axle bellcrank at kingpin

Refer to Groups covering items listed for specific torque values.

PM Section

Lift Chain Maintenance

Lift chains are very important components of Container Handler Trucks. The chain system on the upright was designed for safe, efficient and reliable transmission of lifting force from hydraulic cylinder to the lift frame. Safe use of your truck with minimum down-time depends on the correct care and maintenance of the lift chains. Most complaints of unacceptable chain performance are a result of poor maintenance. Chains need periodic maintenance to give maximum service life.

Lift Chain Adjustment Check

It is very important that the lift chains be adjusted to have equal tension to prevent one chain from carrying most of the load. Check the chain tension with the top pick-up and lift frame lowered as far as they will go and the upright vertical. Check for equal tension by pushing on each chain. If the lift chains have unequal tension, they should be adjusted. Refer to chain adjustment procedure in Group 34-Uprights.



WARNING

Do not attempt to repair a worn chain. Replace worn or damaged chains.

Lift Chain Inspection and Measurement

Inspect and lubricate the lift chains every truck PM (50 - 250 hours). When operating in corrosive environments, inspect the chains every 50 hours. During the inspection, check for the following conditions:

- Rust and corrosion - Cracked plates - Raised or turned pins - Tight joints - Wear, worn pins or holes.
- When the pins or holes become worn, the chain becomes longer. When a section of chain is 3% longer than a section of new chain of equal number of links, the chain is worn and must be discarded.

- Chain wear can be measured by using a chain scale or a steel tape measure. When checking chain wear, be sure to measure a segment of chain that moves over a sheave. Do not repair chains by cutting out the worn section and joining in a new piece. If part of a chain is worn, replace all the chains on a truck.

Lift Chain Lubrication

Lift chain lubrication is an important part of your maintenance program. The lift chains operate under heavy loading and will function more safely and have longer life if they are regularly and correctly lubricated. Clark chain lubricant is recommended; it is easily sprayed on and provides superior lubrication.

Lift Chain Inspection and Wear Criteria

- 1 (NEW CHAIN LENGTH) The distance from the first pin counted to the last pin counted in a span while the chains are lifting a small load.
- 2 (WORN CHAIN LENGTH) The distance from the first pin counted to the last pin counted in a span while the chains are lifting a small load.
- 3 (SPAN) The number of pins in the length (segment) of chain to be measured.
- 4 (PITCH) The distance from the center of one pin to the center of the next pin.

