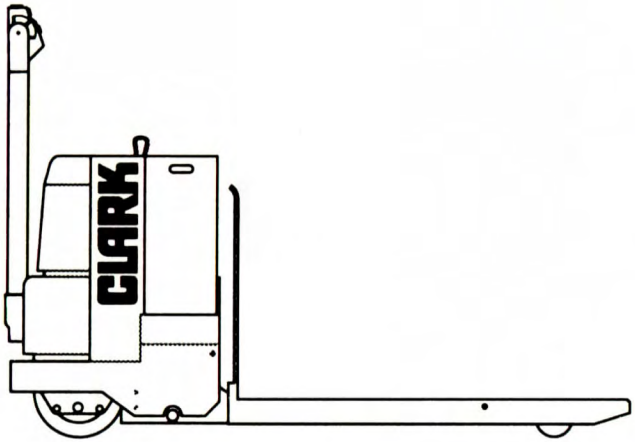
Operator's Manual

Do not remove this manual from the truck.



P40
HWP40

CLARK

Book No. 2795287
OM-594

Record the following information pertaining to your truck.

Model No. _____

Serial No. _____

Customer Truck Identification No. _____

Truck Weight, Empty _____

Truck Rated Capacity _____

Truck Gross Weight, Loaded w / Rated Load _____

Special Equipment _____

IMPORTANT
Do not expose this manual to hot water or steam.

Welcome to the growing group of professionals who own, operate, and maintain CLARK lift trucks. We take pride in the long tradition of quality products and superior value that the CLARK name represents. This manual will familiarize you with the safety, operation, and maintenance aspects of your lift truck.

Contents

The general topics covered in this manual are shown below. Detailed tables of contents are given at the beginning of each Section.

Before You Operate Your Lift Truck...

You must be trained and authorized to operate a lift truck.

LEARN TO PREVENT ACCIDENTS

First: Learn safe operating rules and your company rules.

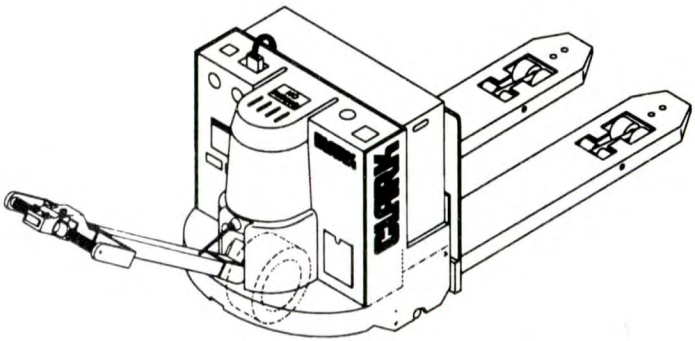
Next: Read your *Operator's Manual.* If you do not understand it, ask your supervisor for help.

Learn about the unit you operate.

KNOW YOUR TRUCK

Then: Practice operating your truck safely.

And: Keep your truck in safe operating condition with correct and timely maintenance.



Breaking these rules will cause serious or fatal injury to yourself and others

...Be Prepared

Lift trucks are specialized machines with unique operating characteristics. They are not like cars or ordinary trucks. They require specific instructions and rules for safe operation and maintenance. CLARK lift trucks are built to take hard work, but not abuse. They are built to be dependable, but they are only as safe and efficient as the operator and the persons responsible for maintaining them.

Safety Standards

Your CLARK lift truck is designed and built to be as safe and efficient as today's technology can make it. As manufactured, it meets all the applicable mandatory requirements of ANSI B56.1 -1988 Safety Standard for Powered Industrial Trucks. In addition, all standard trucks conform to Underwriters Laboratories requirements for the type designation shown on the truck capacity plate. Each truck is also furnished with certain safety devices—horn, for example—as standard equipment.

ANSI B56.1, the standard for lift truck operation, includes rules about operation, selection, training, supervision, and maintenance. We suggest that owners, operators, and supervisors read this standard. See "Safety Standards" in Section 6 for more information.

Safe Operation

Safe operation of lift trucks is of primary importance to CLARK. Our experience with lift truck accidents has shown that when accidents happen and people are killed or injured, the causes are:

- **Operator is not properly trained**
- **Operator is not experienced with lift truck operation**
- **Basic safety rules are not followed**
- **Lift truck is not maintained in safe operating condition.**

For these reasons, CLARK wants you to know about the safe operation and correct maintenance of your lift truck. Clark provides this *Operator's Manual* to help.

This manual is not a training manual, however. It is a guide to help trained and authorized operators safely operate their lift trucks. It emphasizes and illustrates the correct procedures, but it cannot cover every possible situation which may result in an accident. You must watch for all hazards in your work areas and avoid or correct them. While

it is important that you know and understand the information in this manual, you must also know and follow your company safety rules! Be sure that your equipment is maintained in a safe condition. Do not operate a damaged truck. Practice safe operation every time you use your lift truck.

Remember, before you start operating this lift truck, be sure that you understand all operating procedures. It is your responsibility, and it is important to you and your family, to operate your lift truck safely and efficiently. Be aware that the Federal Occupational Safety and Health Act (OSHA) and state laws require that operators be completely trained in the safe operation of lift trucks. If you think you need training, ask your supervisor.

Safety and Planned Maintenance

Regular maintenance and care of your lift truck is essential for your safety. A faulty lift truck is a potential source of danger to the operator, and to other personnel working near it. Proper maintenance is also important for economy and utilization. As with all quality equipment, keep your lift truck in good operating condition by following the recommended schedule of maintenance.

A lift truck should be examined by the user on a daily basis to be sure it is safe to operate. Do not make any repairs to this truck unless you have been trained in safe lift truck repair procedures and are authorized by your employer.

In addition to the daily user inspection, CLARK recommends that a planned maintenance and safety inspection program (PM) be performed by trained and authorized personnel. Inspections, adjustments, and repairs done during the PM increase the life of components and reduce unscheduled downtime. The PM can be scheduled to meet your particular application and lift truck usage.

Your CLARK dealer is prepared to help you implement a PM program with trained service personnel who know your lift truck and can keep it operating safely and efficiently.

About this Manual

To operate a truck safely and productively, the operator must know and understand the appropriate safety practices, including safe driving and load handling techniques. To develop the skill required, the operator must become familiar with the construction and features of the lift truck. The operator must also understand the capabilities and limitations of the lift truck and see that it is kept in a safe condition.

This manual is a digest of essential information on the above subjects. The information is provided in eight Sections:

Section 1, Know Your Truck, describes the major operating components, systems, controls, and other features of your truck.

Section 2, General Safety Rules, reviews and illustrates accepted practices for safe operation of a lift truck.

Section 3, Operating Hazards, warns of conditions that could cause damage to the truck or injury to the operator or other personnel.

Section 4, Operating Procedures, presents specific instructions on the safe, efficient operation of your lift truck.

Section 5, Daily Inspection, explains how to perform the operator's daily safety inspection.

Section 6, Planned Maintenance, serves as reference for trained service personnel performing planned maintenance and battery maintenance.

Section 7, Towing, presents procedures for towing.

Section 8, Specifications, provides reference information on features, components, and maintenance items.

Also, the **Index** helps you locate information about various topics.

NOTICE

The descriptions and specifications in this manual were in effect at the time of printing. CLARK Material Handling reserves the right to make improvements and changes in specifications or design, without notice and without incurring obligation. Check with your authorized CLARK dealer for information on possible updates or revisions.

We urge you to carefully read this manual from cover to cover. Take time to understand the information on general safety rules, operating hazards, and operating procedures. Understand how all gauges, indicator lights, and controls function.

This manual is permanently attached to your lift truck to serve as a reference for anyone who may operate or service it. If the truck 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 questions about the operation and maintenance of your lift truck and will provide you with additional information should you require it.

For detailed service information, refer to the *Service Manual.*

Safety Signs and Safety Messages

Improper operation can cause accidents. Don't take chances with incorrect or damaged equipment. **Read** and **understand** the procedures for safe driving and maintenance outlined in this manual. Don't hesitate to ask for help. **Stay alert!** Follow safety rules, regulations, and procedures. Avoid accidents by recognizing dangerous procedures or situations before they occur. **Drive and work safely** and follow the safety signs and their messages on the truck and in this manual.

Safety signs and messages are placed in this manual and on the truck to provide instructions and identify specific areas where potential hazards exist and special precautions should be taken. Know and understand the meaning of these instructions, signs, and messages. Damage to the truck, death, 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 a reminder of safety practices that can result in personal injury if proper precautions are not taken.

WARNING

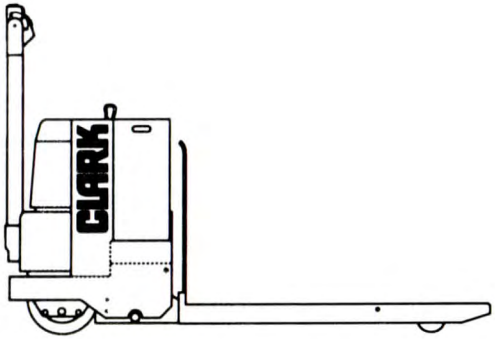
This message indicates a hazard exists that can result in injury or death if proper precautions are not taken.

DANGER

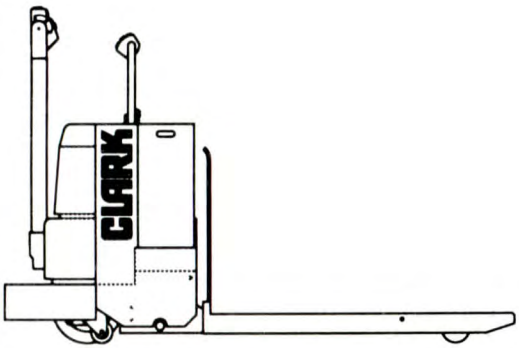
This message is used when an extreme hazard exists.

Truck Application

Each model is designed for a specific set of work tasks and conditions. Be sure you are using the right truck for the job.



P model lift trucks are designed for moving loads short distances. No riding is allowed on P model trucks.

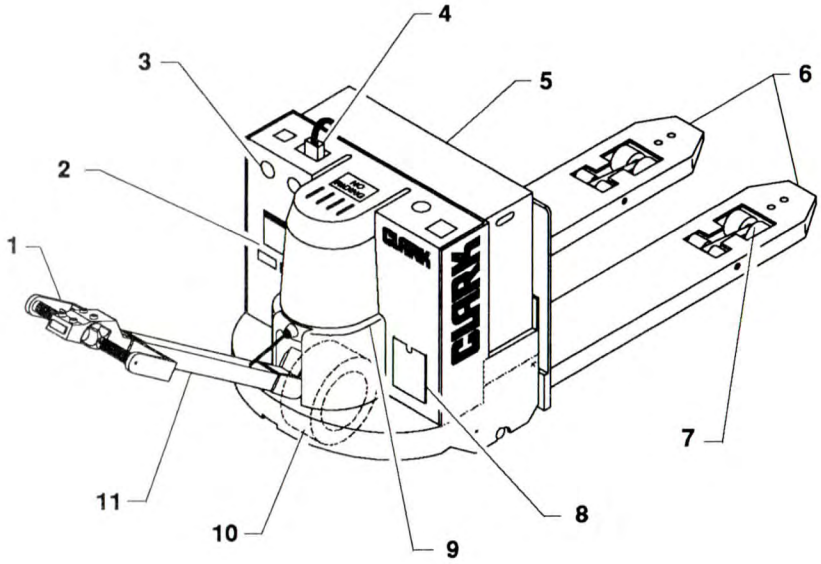


HWP model lift trucks are designed for moving loads longer distances. Operators can walk with the truck or ride using the hand rail.

Know Your Truck

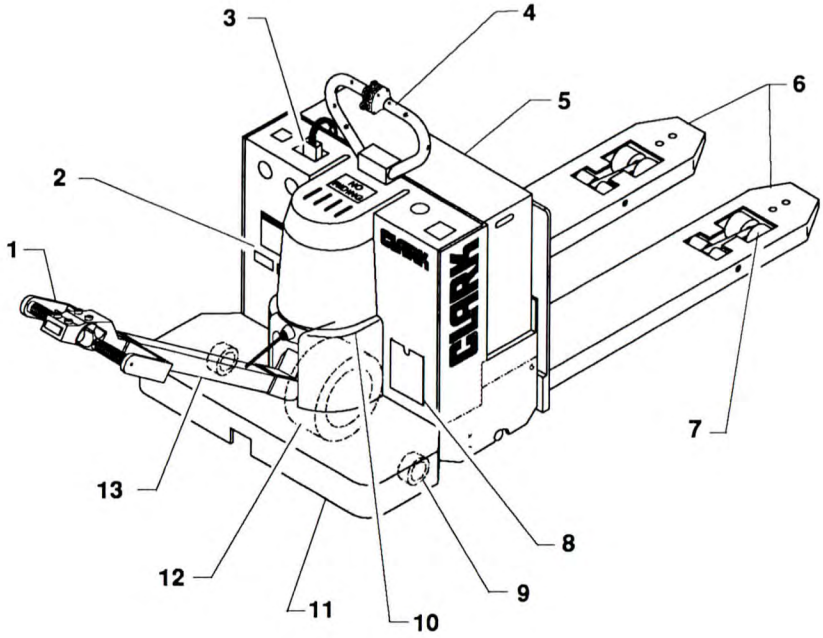
Contents

Component Locations (P Model)



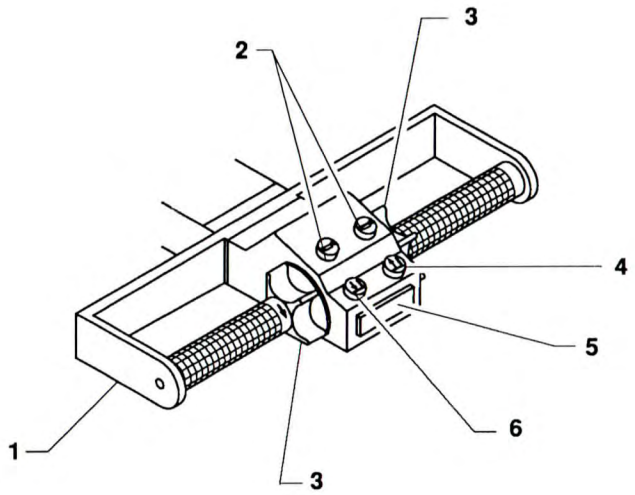
1. Steering and Brake Control Handle
2. Warning Decals
3. Hour Meter (optional)
4. Battery Connector
5. Battery
6. Load Forks
7. Load Wheels
8. Operator's Manual
9. Cover
10. Drive Wheel
11. Nameplate

Component Locations (HWP Model)



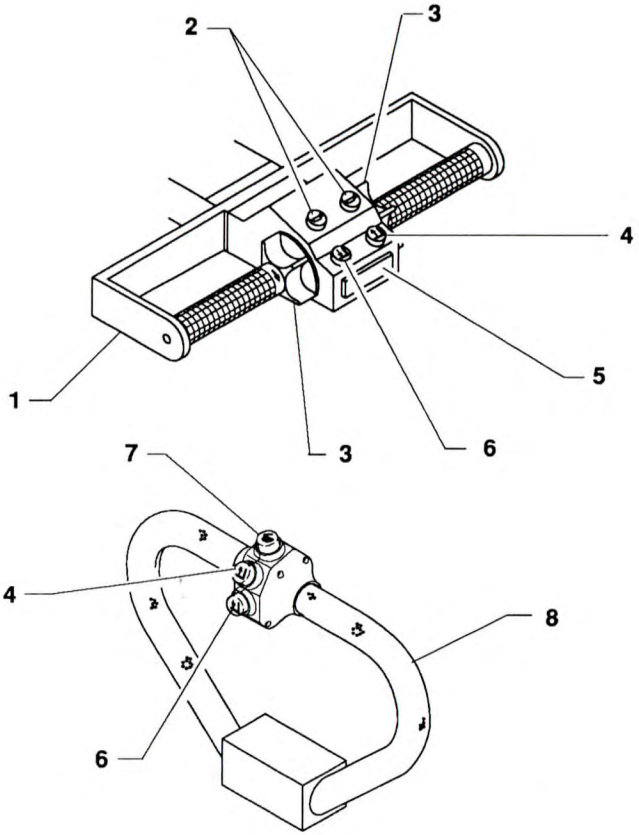
1. Steering and Brake Control Handle
2. Warning Decals
3. Battery Connector
4. Operator Hand Rail
5. Battery
6. Load Forks
7. Load Wheels
8. Operator's Manual
9. Stability Casters
10. Cover
11. Rider Platform
12. Drive Wheel
13. Nameplate

Operator's Controls
(P Model)



1. Steering and Brake Control Handle
2. Horn Control
3. Direction/Speed Control
4. Lift Control
5. Emergency Reversal Switch
6. Lower Control

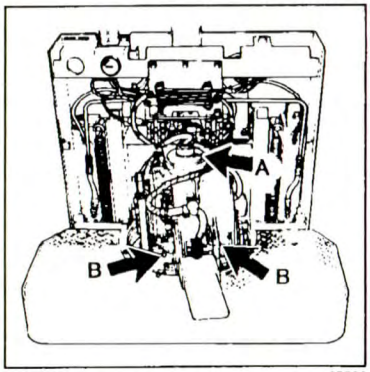
Operator's Controls (HWP Model)



1. Steering and Brake Control Handle
2. Horn Control
3. Direction/Speed Control
4. Lift Control
5. Emergency Reversal Switch
6. Lower Control
7. High-Speed Control
8. Operator Hand Rail

Maintenance

Lubrication



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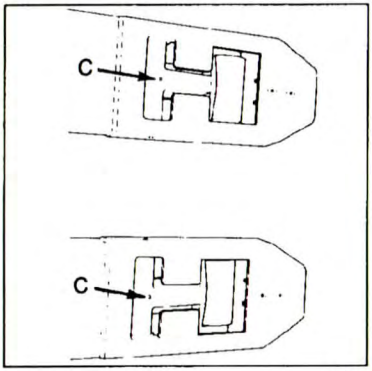

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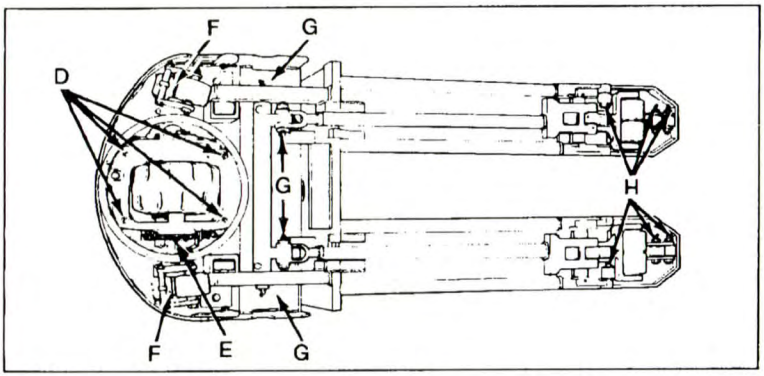

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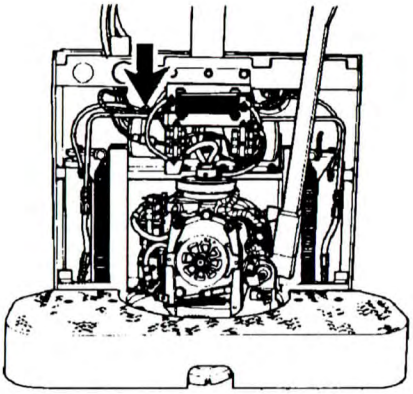
Lubricate the following fittings with the recommended lubricant every 50-250 operating hours:

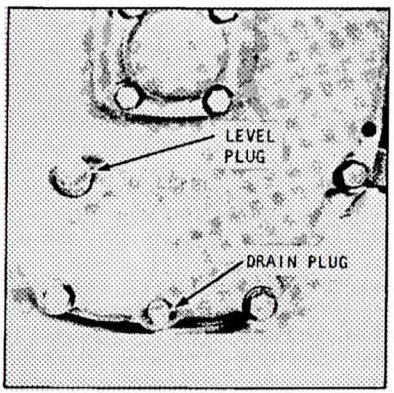
A. Radial thrust collar grease fitting
B. Steer handle grease fittings
C. Load wheel grease fittings
D. Drive unit thrust roller grease fittings
E. Drive wheel grease fittings
F. Stability caster grease fittings (if equipped)
G. Lift linkage grease fittings
H. Entry roller grease fittings

Hydraulic Unit Fluid Level Check



With the truck on a level floor and the forks fully lowered, remove the fill plug and check the hydraulic tank fluid level. The fluid should be 0.5 inch (13 mm) from the fill plug hole. Add the recommended fluid as required.

Drive Unit Fluid Level Check



With the truck on a level floor, check the drive unit fluid level. The fluid should be slightly below the fluid fill hole. Add the recommended fluid if the level is low.

System Description

Control Handle:

- Controls travel direction and speed, lift and lower, horn, braking, and steering
- Has butterfly-type speed control for left or right hand operation
- Applies brake when tilted fully up or down
- Has safety reversing switch mounted in handle end
- Rotates the steer/drive unit 180° for maneuverability.

Operator Hand Rail (HWP model):

- Provides control of lift, lower, and high speed travel functions; provides stability for rider.

Drive Unit:

- Has double reduction spur gears
- Is totally enclosed with lubricating oil bath
- Has spline-fitted drive wheel for maximum service life and easy tire replacement.

Brake:

- Is external-shoe type
- Is easy to access for service.

Electrical System:

- Has 12-volt electrical system
- Is U.L. listed, type "E"
- Has class "H" insulation in drive and hydraulic motors.

Hydraulic System:

- Integral motor-pump-reservoir assembly features a control valve and pressure relief valve for controlled lowering and system overload protection
- Closed system reduces contamination
- Self-aligning lift cylinders are vertically mounted.

Standard Equipment:

Includes full 6-inch lift height, frame of formed plate steel with steel bar reinforcements,12-volt electrical system, cushion rubber drive tire, poly load wheels, 7-inch or 13.6-inch-wide battery compartments, SB-175 amp grey connector, horn, and high visibility CLARK green and black finish. HWP also includes spring-loaded stability casters, operator platform with non-skid metal surface, and operator hand rail with center-mounted control buttons.

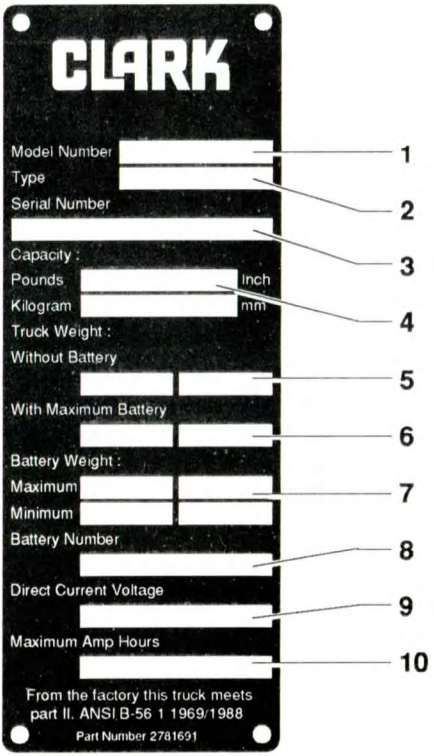
Optional Equipment:

Includes battery discharge indicator, key switch, spring-loaded stability casters (P40), hour meter, dual load wheels, and polyurethane drive tire.

Nameplate Description

IMPORTANT

If the truck is modified, the capacity of the truck may be affected. Contact your authorized CLARK dealer for a new nameplate showing the revised capacity.



Know the data on the nameplate:

1. Model number.
2. Type of construction. The code number signifies the type of protection. Check with proper authority before entering areas where flamable or explosive material may be present.
3. Serial number.
4. Capacity.
5. Truck weight, without battery.
6. Truck weight, with heaviest battery
7. Battery weight.
8. Battery identification number.
9. System voltage.
10. Battery ampere-hour rating.

Warning Decals

Here are examples of decals that give important information about operation and safety. OSHA and ANSI require you to replace them if they are missing or unreadable. Get familiar with them and follow the instructions. If you don't understand them, ask your supervisor for help.

Operator Safety Warning Decal

The operator's safety warning decal gives basic instructions for safe operation of a lift truck. Read and understand these instructions and the other safety messages in this manual and on the lift truck.

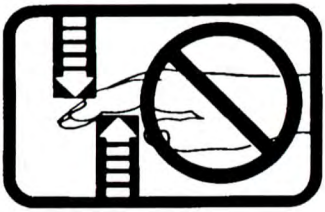
No Riding Decal

This safety decal, placed on the top cover, warns of the danger of injury from attempting to ride P model trucks. Always walk with P model trucks.

No Riders Decal

This safety decal, placed on the top cover, warns of the danger of injury from attempting to ride as a passenger on HWP model trucks. The operator must be the only rider on HWP model trucks.

Pinch Points



This decal is located at the base of the control handle. Do not place any portion of your body under any part of the base of the control handle.

Battery Warning Decal

This decal, placed on the right cover, warns you to disconnect the battery before servicing the truck—to prevent injury to personnel or damage to the truck. It also reminds you that the positive and negative connections to the battery may not be reversed, or damage to the truck will result.

General Safety Rules

Contents

Do's and Don'ts

Don't mix drugs and/or alcohol with operating a lift truck.

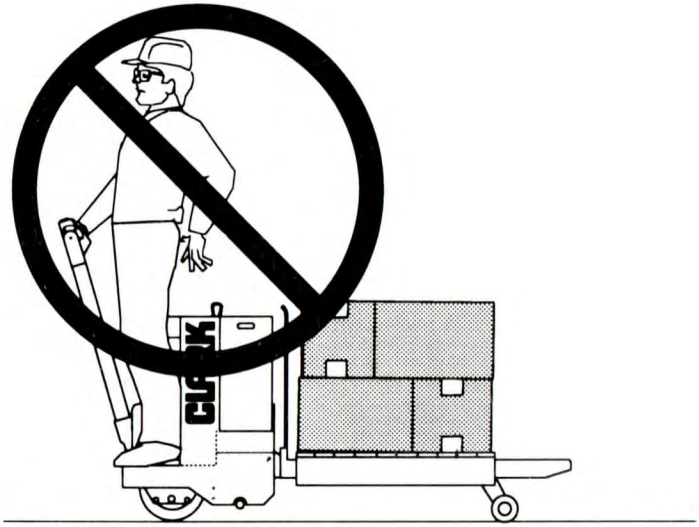
Do watch for pedestrians.

Don't block doors, safety, or emergency equipment.

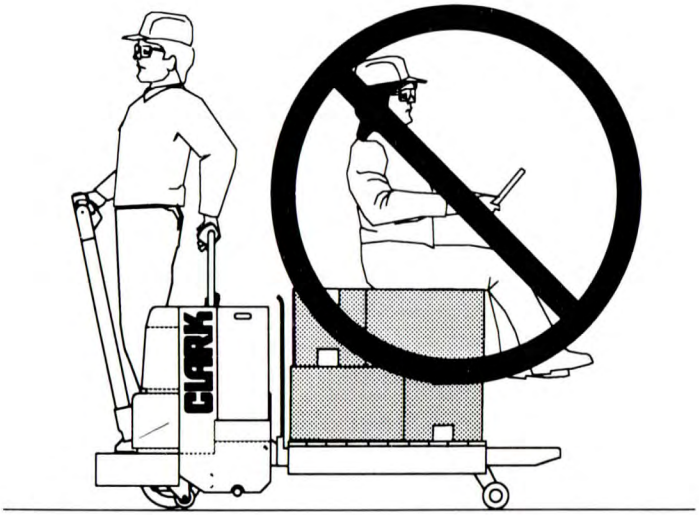
Do wear all the required safety equipment.

Don't smoke in "No Smoking" areas.

No Riders

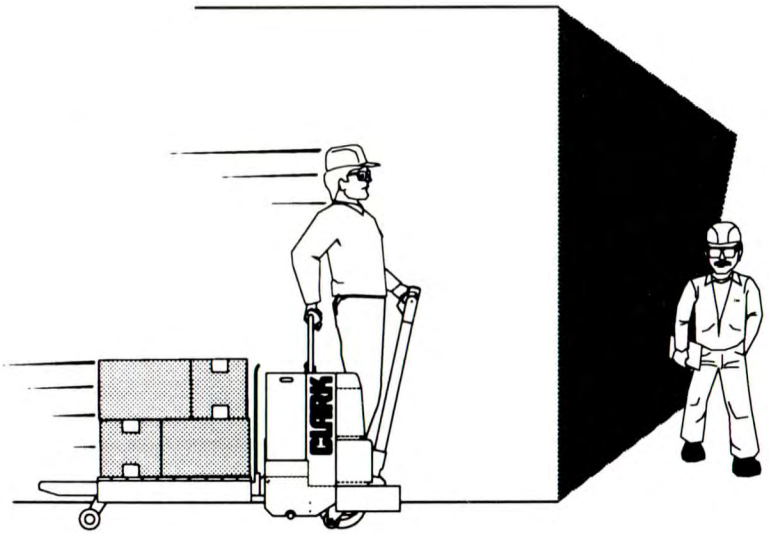


Always walk with P model trucks. Never attempt to ride.



The operator must be the only rider on HWP model trucks.

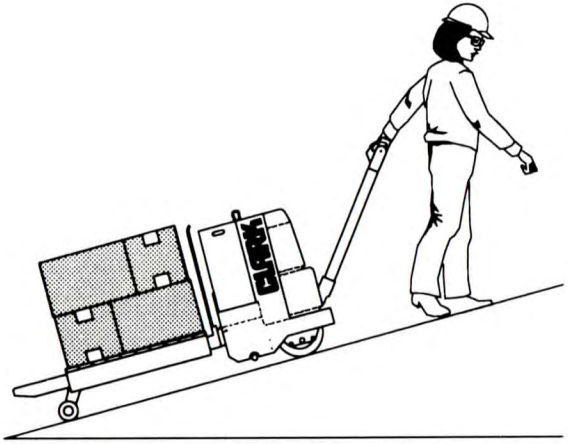
Pedestrians



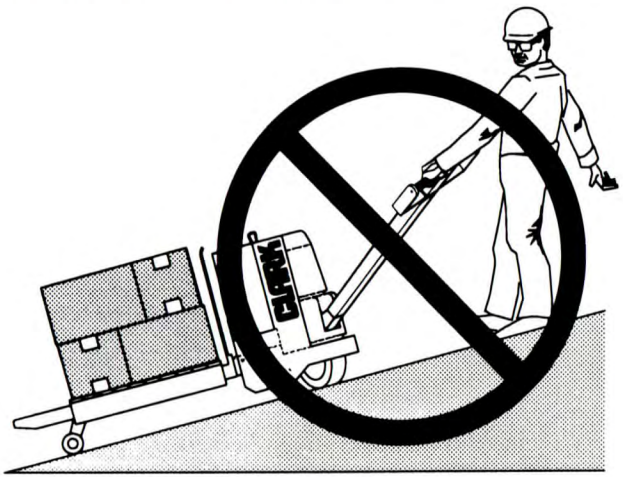
Watch where you are going. Pedestrians may use the same roadway you do. Sound your horn at all intersections.

Watch for people in your work area. They may not watch for you.

Grades

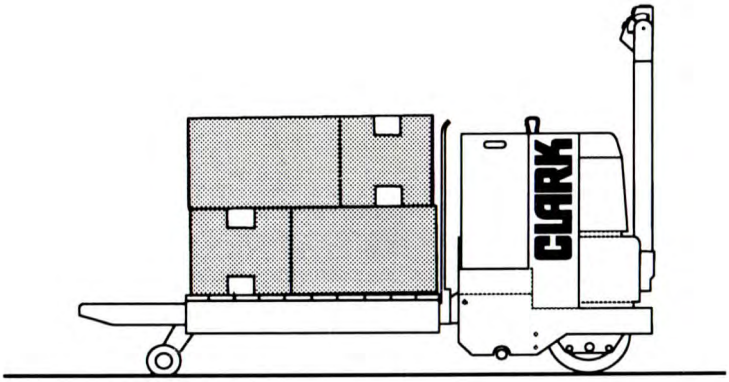


Always keep forks downgrade and in the raised position when working on a grade. Do not ride HWP models on a grade. Trucks are designed to travel up a 6% maximum grade with load.

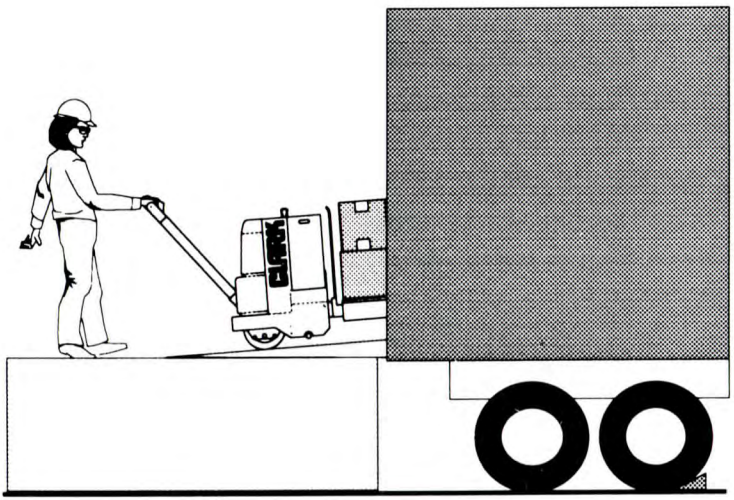


Never attempt to turn on a grade.

Travel

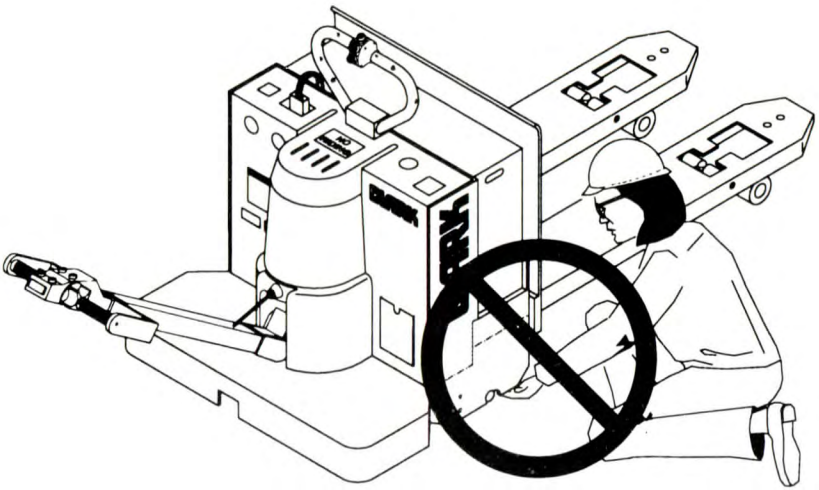


Always carry loads in the "raised" position.



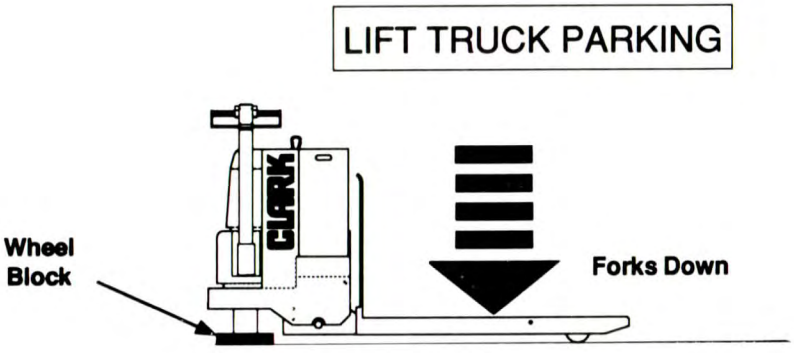
Enter confined areas such as semi-trailers, trucks, boxcars, or elevators with the load end of your truck first. This will minimize the maneuvering necessary to exit. If the load blocks your view while traveling in reverse, make sure the path is clear of personnel and obstructions.

Pinch Points

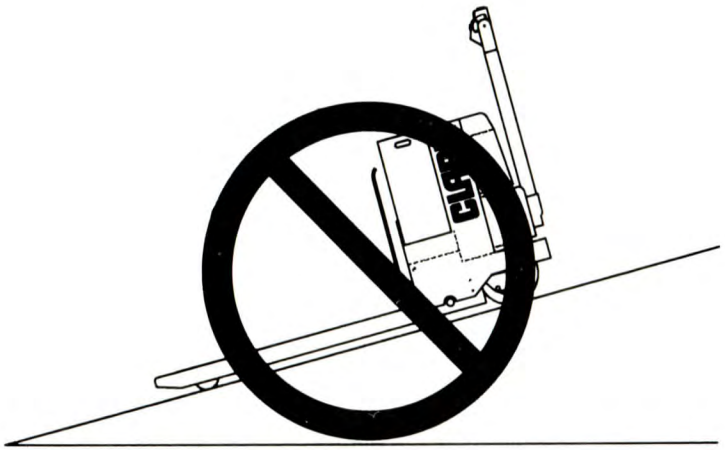


Never allow anyone to reach under or around the edge of the truck. Be especially careful not to put any portion of your body under the load forks. Keep your feet clear of the truck when traveling.

Parking



Park trucks in designated parking areas only. Do not obstruct traffic lanes or aisles. Lower forks to floor. Place control handle in full turn and raise handle to "up" position to apply brake. Turn key switch off and remove key (if equipped). Unplug battery connector. Block drive wheel to prevent accidental roll. Turn key in to proper authority.



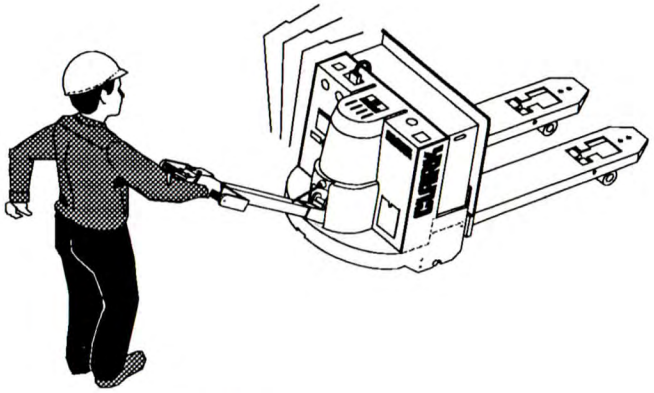
Never park on a grade.

Operating Hazards

Contents

The operation of lift trucks involves many hazardous situations. This Section describes some of the more common ones. Your place of work may have hazards not described. Be alert to those situations that can result in injury and, possibly, death.

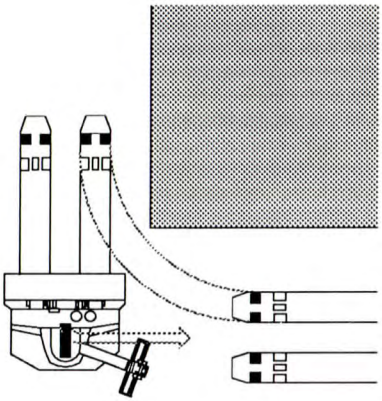
Fast Turns



WARNING

Slow down on turns. An empty truck can tip over easier than a loaded truck.

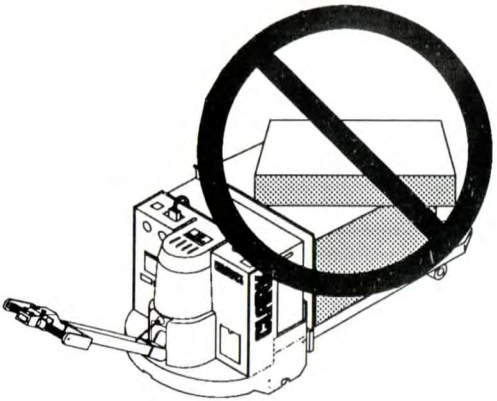
Corner-Cutting



WARNING

Always use caution when making a turn into an aisle. The load wheels do not follow the turn path of the drive wheel and will tend to "cut" the corner.

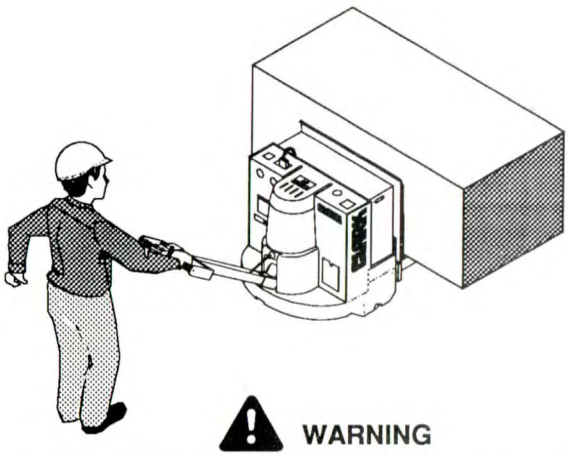
Loose Loads



WARNING

Falling loads can seriously injure yourself or others. Never carry uneven material. Stack loose material evenly.

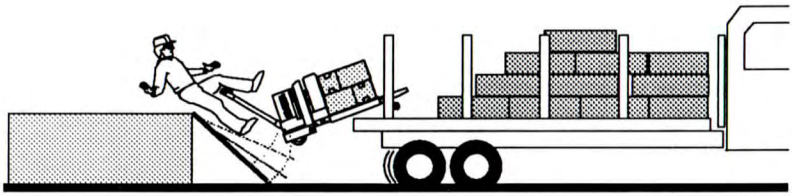
Long or Wide Loads



WARNING

Long or wide loads are less stable and may strike objects or persons in their path. Watch load clearance, move slowly and turn carefully.

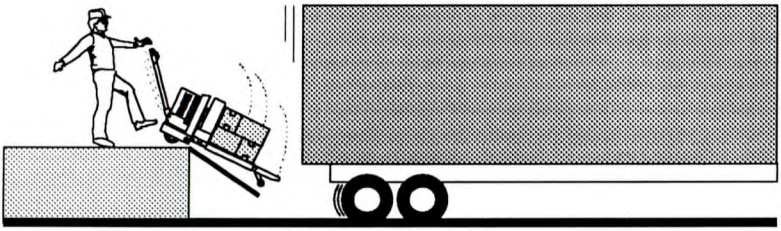
Dock or Trailer Drop-Offs



WARNING

Talk to the truck driver yourself and make sure the driver does not move the trailer until you are done! Make sure the driver applies the trailer brakes.

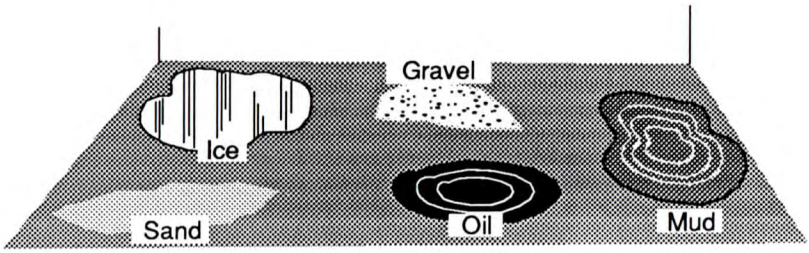
Trailer Creep



WARNING

The impact of moving in and out of a trailer may cause the trailer to move. Use wheel chocks. Use trailer-to-dock locking systems if available.

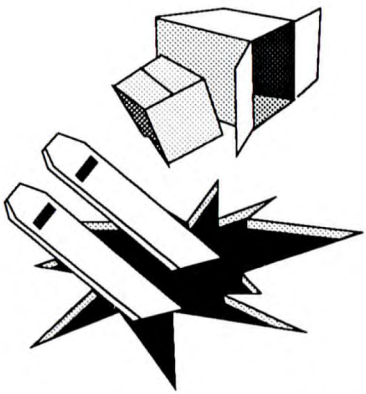
Debris on Floor

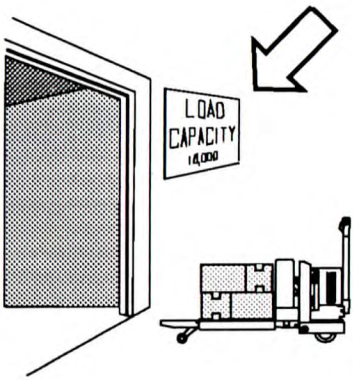


WARNING

Oil, water, sand, mud, wood, gravel, and other materials will make the floor slippery, uneven, and dangerous. Be careful when crossing these areas.

Floor and Elevator Capacity

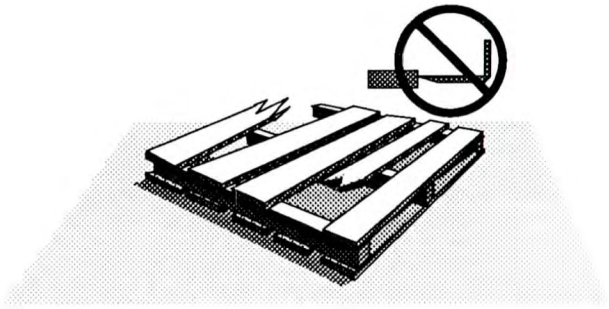


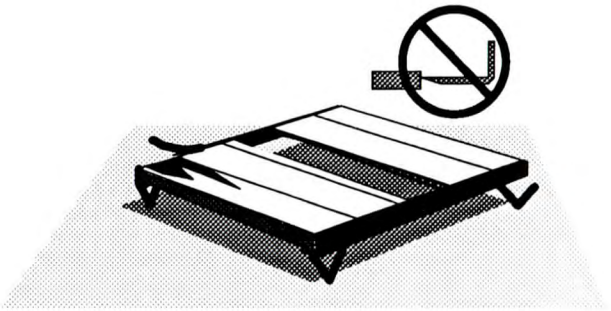


WARNING

Check floor and elevator capacities. They must be able to support the weight of the truck and a full capacity load. If you are in doubt, check with your supervisor first.

Damaged Pallets and Skids

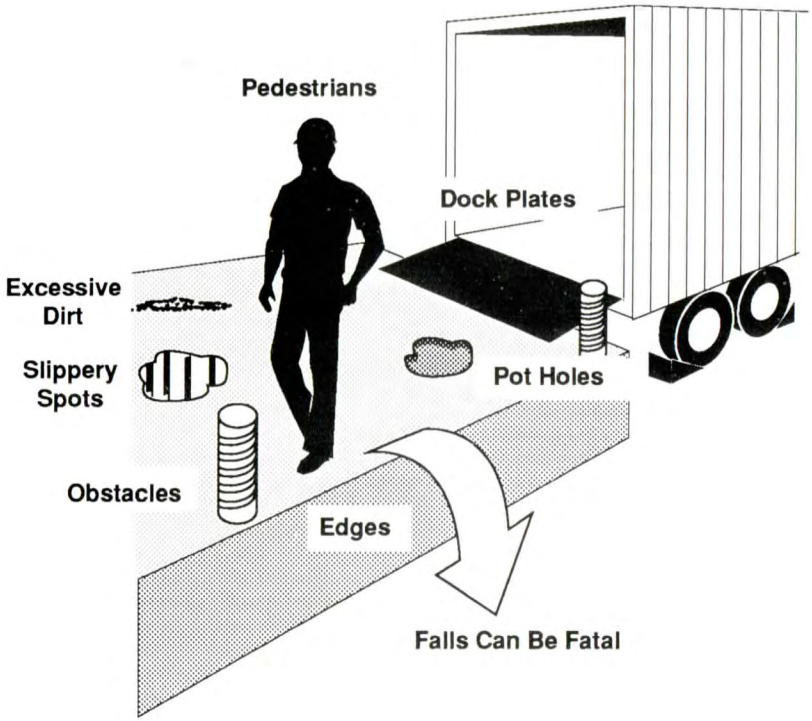




WARNING

Do not move or store materials on damaged or poorly maintained pallets and skids. Items can fall through or off them them causing severe injury or death.

Loading Dock



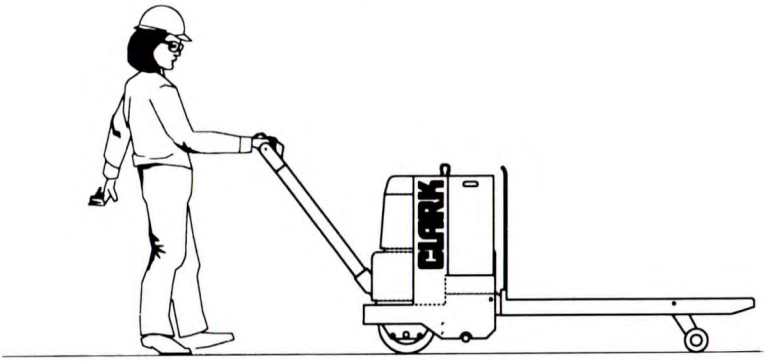
WARNING

Use caution when operating in the dock area. Some of the hazards you may find in the dock area are shown above.

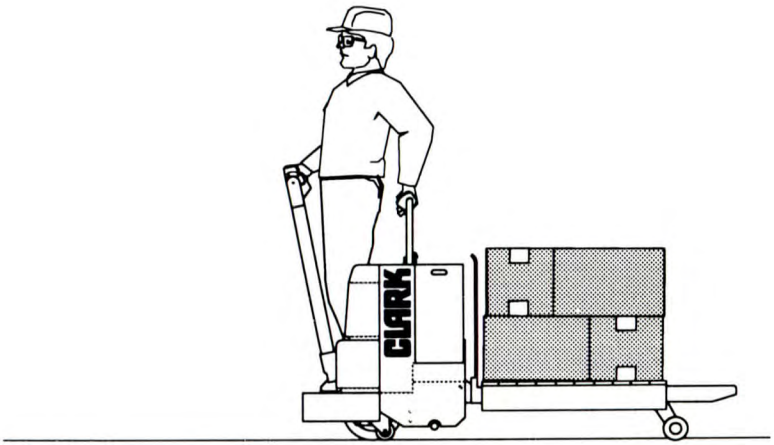
Operating Procedures

Contents

Beginning Truck Operation

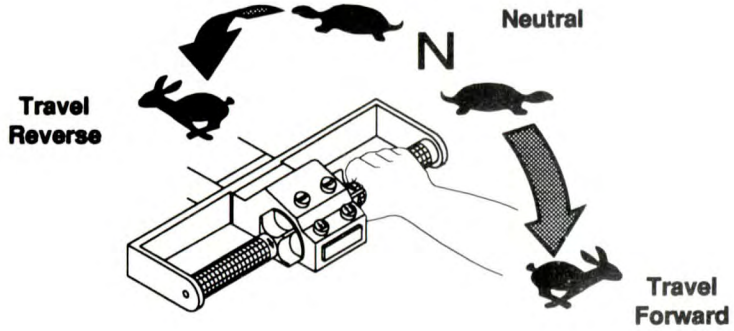


Remove chocks from drive wheel. Plug in battery connector. Insert key and turn clockwise to "on" position (if equipped). Lower control handle to comfortable operating position and swing handle in line with intended path of travel. Check to make sure your path of travel is clear of people or obstructions.

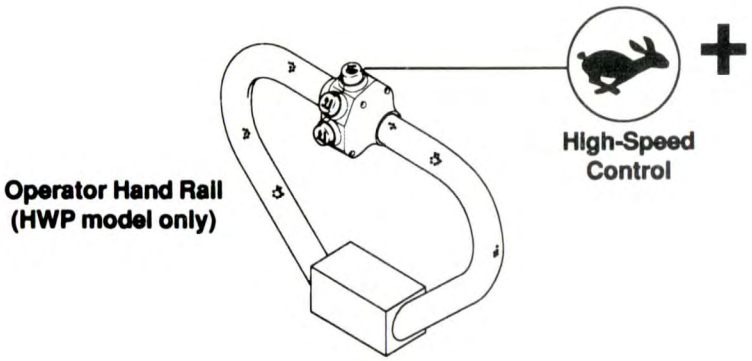


Make sure HWP models are completely stopped before you get on or off. Keep one hand on control handle and other hand on operator hand rail. Keep your feet back from edge of operator's platform while operating truck. Do not straddle control handle while riding truck. Do not ride HWP model trucks while traveling on ramps, picking up or depositing loads, or maneuvering in close quarters.

Travel Control

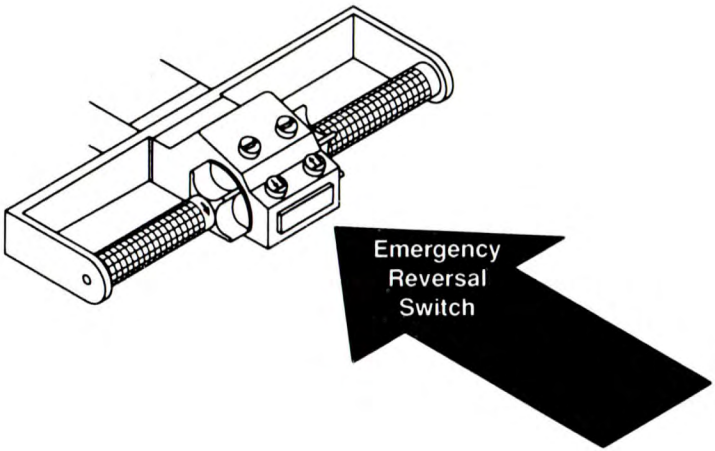


Rotate the direction/speed control as shown above to travel forward. Rotate the direction/speed in the opposite direction to travel in reverse. ("Reverse" is defined as the direction in which the forks point.) Truck speed increases the further you rotate the direction/speed control. When you release the control, it rotates back to the neutral position.



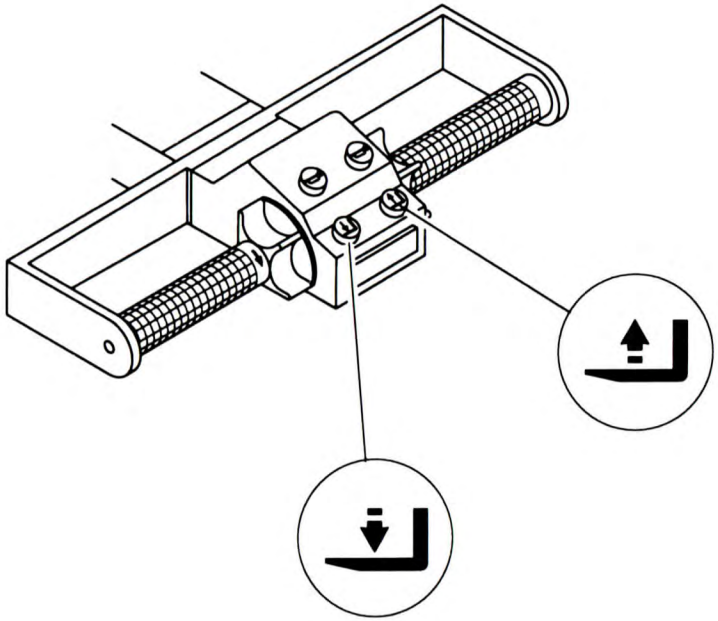
When riding HWP model trucks for long distances, you can use the high-speed control on the operator hand rail to provide additional speed. Rotate the direction/speed control fully to the maximum speed position, then press and hold down the high-speed control button. In about 2 seconds, the truck goes into a higher speed and stays there until you take your finger off the button.

Emergency Reversal Switch



When the emergency reversal switch strikes an object or a person, or is held in by the operator, the truck automatically propels itself in the "reverse" direction. ("Reverse" is defined as the direction in which the forks point.) When the switch no longer contacts the person or object, the switch pops up and the truck resumes normal control. Emergency reversal is disabled when the brake is "on" or when the truck is already in reverse.

Lift and Lower Controls (P Model)



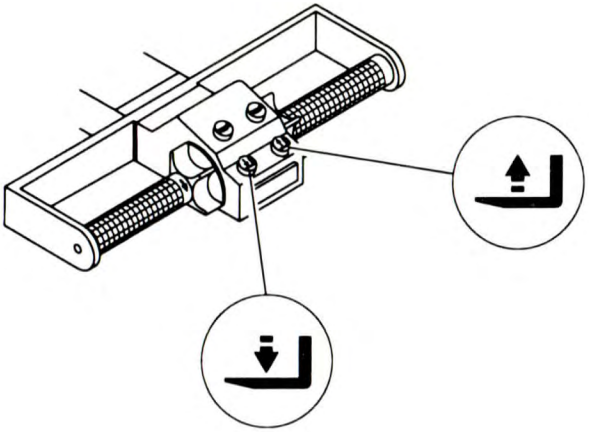
Press the "lift" control to raise the load forks.

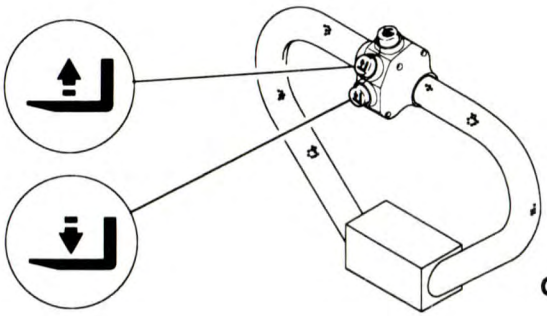
Press the "lower" control to lower the load forks.

IMPORTANT

Always travel with the load forks fully elevated to provide maximum floor clearance.

Lift and Lower Controls (HWP Model)





Operator Hand Rail

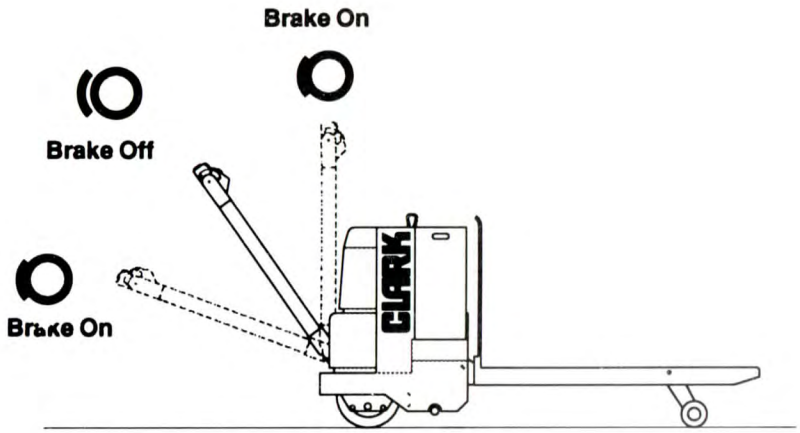
Press the "lift" control to raise the load forks.

Press the "lower" control to lower the load forks.

IIMPORTANT

Always travel with the load forks fully elevated to provide maximum floor clearance.

Braking

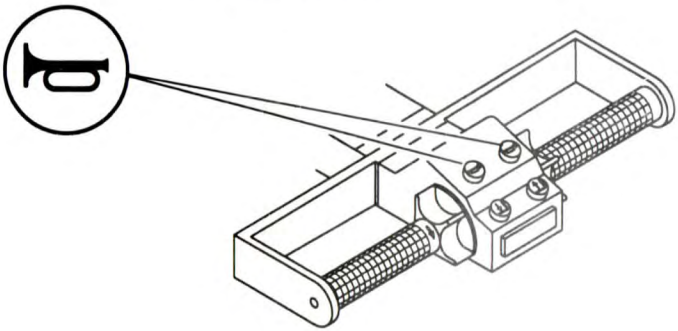


Lowering the control handle to the operating position disengages the brake. Pushing the control handle to the "up" position or pulling the control handle to the "down" position applies the brake and shuts off the drive motor.

To stop the truck during operation, release the direction/speed control and apply the brake to bring the truck to a stop.

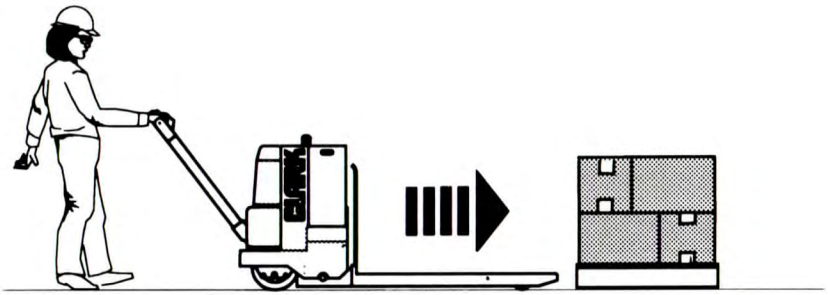
When operating a HWP "rider" truck, always bring the truck to a complete stop before getting on or off.

Horn Control



Press either horn button to sound the horn.

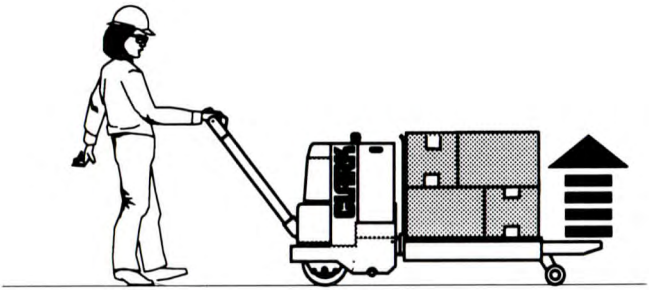
Load Handling



Lower forks completely before entering load.

Center forks with load as you approach.

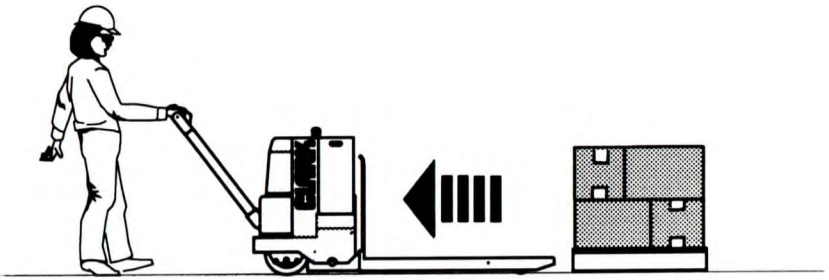
Enter load as far as possible.



Make sure the lifting area is clear before lifting load.

Raise forks completely before moving truck.

Avoid operating hazards and observe general safety rules while moving load.



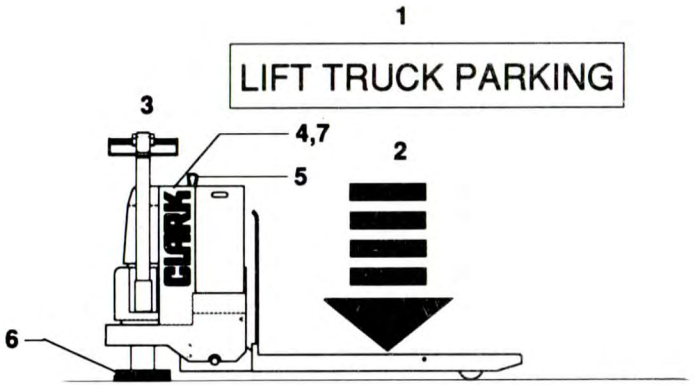
Always approach load deposit areas squarely and cautiously

Be especially careful when placing loads near water pipes, electrical wiring or outlets, steam pipes, heaters, and other dangerous or fragile equipment.

After placing the load in position, lower the forks completely.

Withdraw the forks squarely from the load.

Parking



1. Park truck in designated parking area.
2. Lower forks to floor.
3. Place control handle in full turn and raise handle to "up" position to apply brake
4. Turn key switch to "off" position and remove key (if equipped).
5. Unplug battery connector.
6. Block drive wheel to prevent accidental roll.
7. Turn key in to proper authority.

Daily Inspection

Contents

OSHA requires inspection before starting each shift to keep lift trucks in safe operating condition. The following information points out important areas to check during these inspections.

Daily Inspection Sheet

As an aid in carrying out this inspection, CLARK has prepared a form called "Driver's Daily Check List." Copies of this form may be obtained from your CLARK dealer. We recommend that you use this form to make a daily record of your inspection and truck condition.

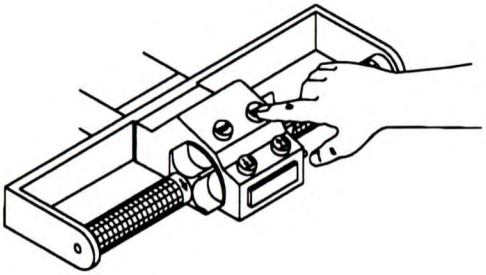
Operator Repairs

Do not make repairs yourself. Lift truck mechanics are trained professionals. They know how to make repairs safely.

WARNING

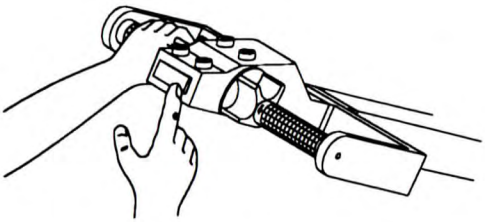
OPERATIONAL CHECKS: Perform the following checks in a safe area away from people, walls, or equipment. Do not operate the truck if you find a maintenance problem. Remove the truck from service, tag the truck with an "Out-of-Service Tag," and report the problem.

Horn



Check the horn. Either of the horn buttons should operate the horn.

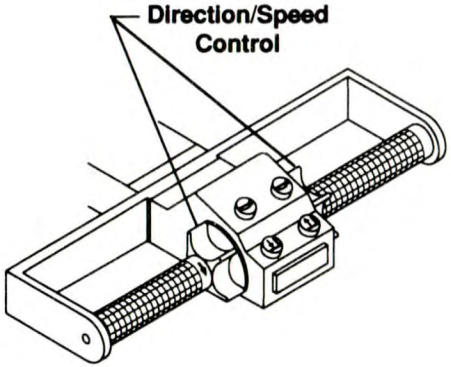
Emergency Reversal Switch



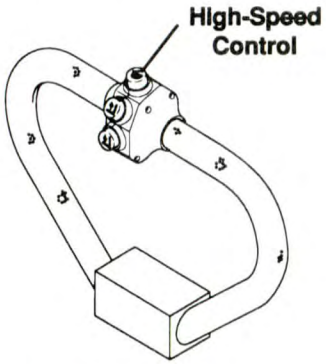
Check the emergency reversal switch. It should depress easily and pop back out on its own. Position the control handle to release the brake. Then, with the truck in "neutral" or "forward," depress the emergency reversal switch. The truck should move away from you until you take your hand off the switch or apply the brake.

Travel Control

Check travel control. Operate the truck in both forward and reverse directions. The direction/speed control must return to the neutral position when released.

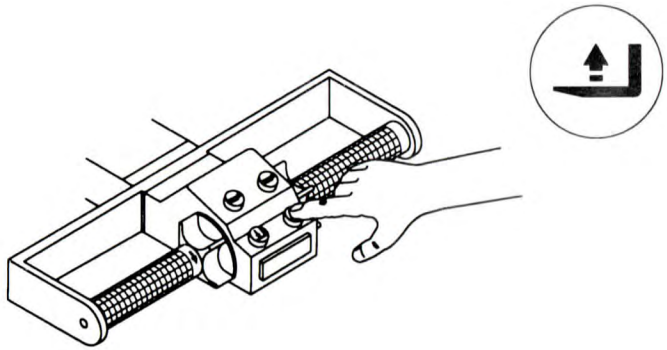


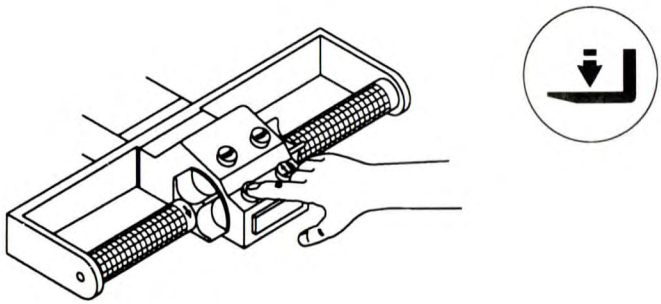
On the HWP, test the high-speed control: While riding the truck, rotate the direction/speed control to full forward speed. Depress and hold the high-speed control button on the hand rail. After about two seconds, truck speed should increase and remain at that level until you take your finger off the high-speed control.



Operator Hand Rail
(HWP model only)

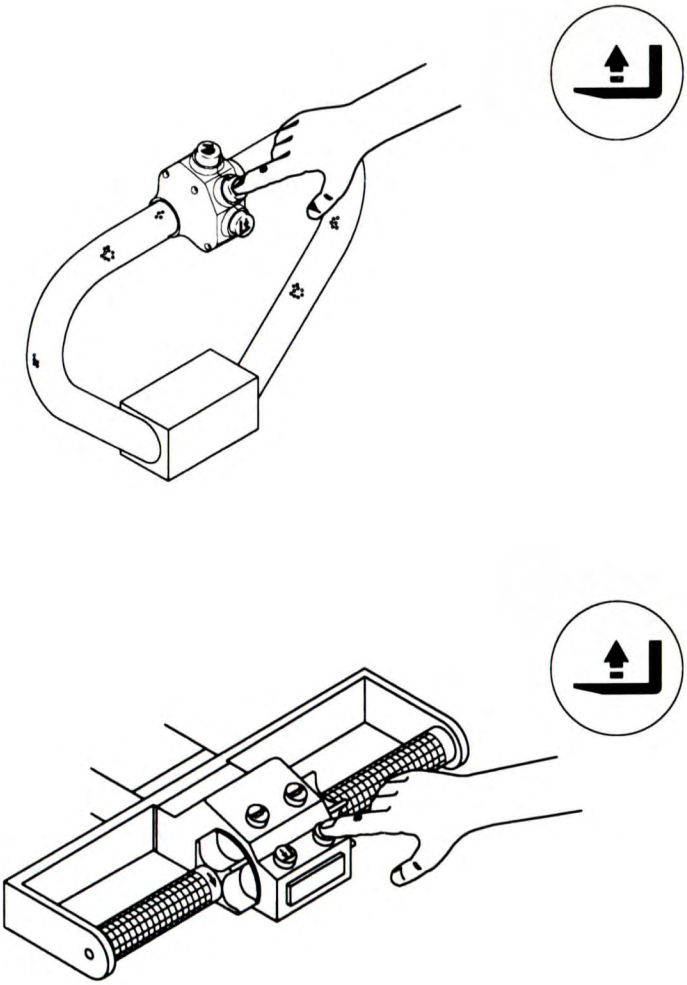
Lift and Lower Controls (P Model)





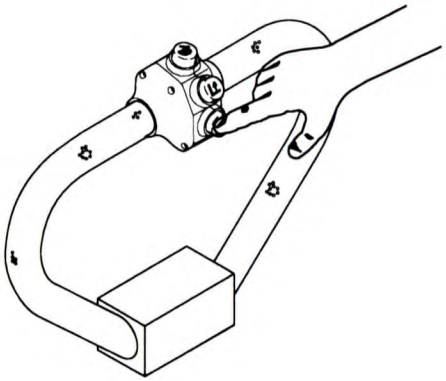
Check the lift and lower controls. The control buttons must return to the "off" position when released. Lift pump motor should stop when maximum lift height is reached.

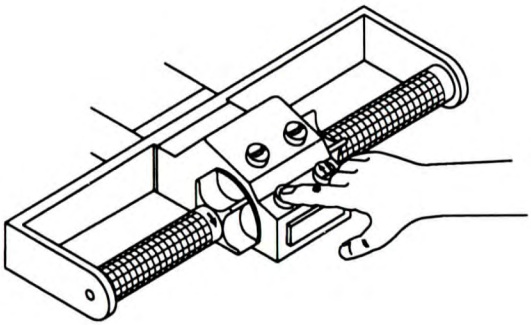
Lift Controls (HWP Model)



Check the lift control. The control buttons must return to the "off" position when released. The lift pump motor should stop when maximum lift height is reached.

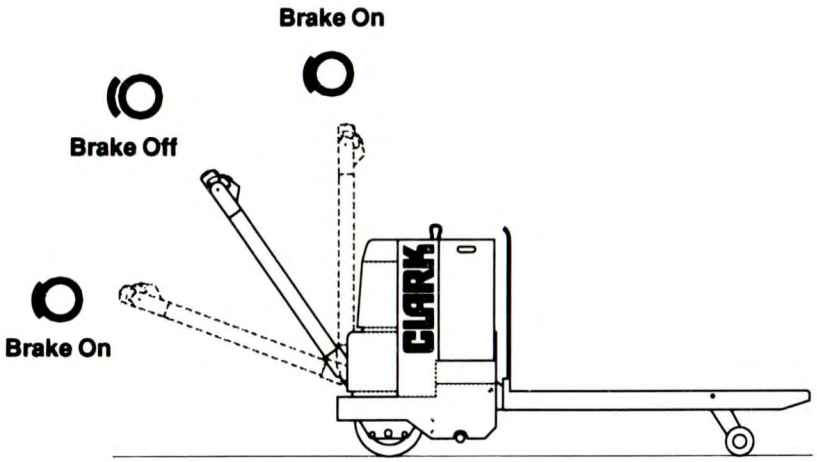
Lower Controls (HWP Model)





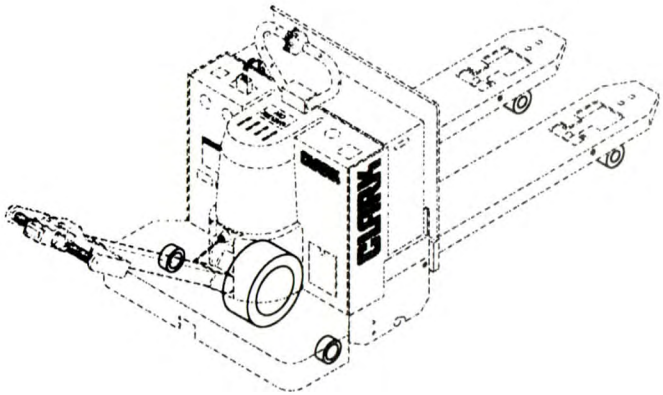
Check the "lower" control. The control buttons must return to the "off" position when released.

Brake



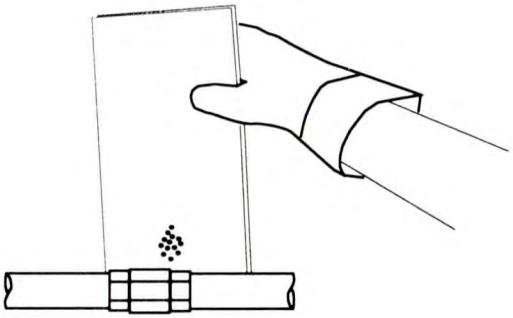
Check the brake. The brake should be applied with the control handle in the fully raised and fully lowered positions. The drive motor should stop when the brake is applied.

Wheels and Tires



Check the condition of the wheels and tires. Remove any embedded objects. Report excessive wear, breaks, "chunking out," or bond failure.

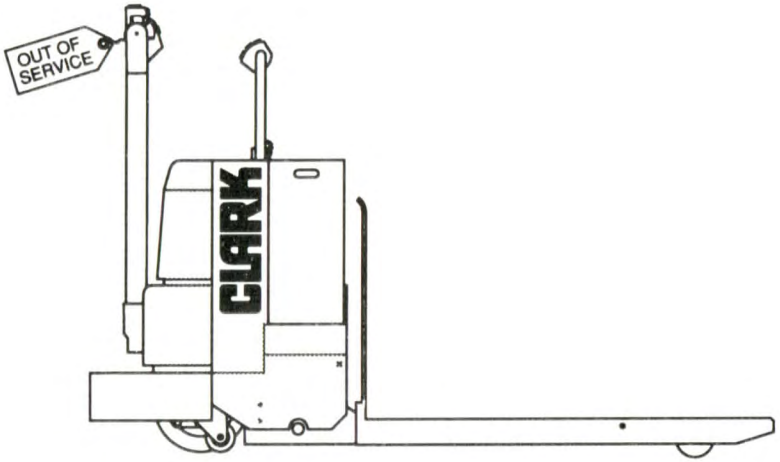
Hydraulic System



Check the hydraulic system and components for damage. Use white cardboard to check for hydraulic leaks. Wear heavy gloves.

Do not check for hydraulic pressure leaks with your hands or body. Hydraulic oil may be injected into your skin causing serious injury.

Maintenance Problems



Do not operate a truck that has a maintenance problem. Park the truck properly and remove the key, if equipped. Put an "Out-of-Service" tag on the truck. Report the truck problem to the proper authority.

Planned Maintenance and Lubrication

Contents

NOTICE

THIS SECTION IS FOR TRAINED SERVICE PERSONNEL to use as a reference for Planned Maintenance procedures. Complete maintenance information is in the *Service Manual.*

Daily Inspection Points

The following should be done every 8-10 hours:

- Check truck for obvious damage and leaks.
- Check/clean battery terminals.
- Check battery electrolyte level and specific gravity.
- Check capacity plate, warning plates, and decals.
- Check condition of tires and wheels and remove embedded objects.
- Check optional hour meter and battery discharge indicator.
- Check brake operation.
- Check horn operation.
- Check emergency reversal switch operation.
- Check direction/speed control operation.
- Check lift and lower operation.

Typical Operating Conditions

Time intervals between maintenances are largely determind by operating conditions. The intervals specified in the following table are for **normal** operation. For more severe operation, the maintenance intervals should be shortened accordingly. Contact your CLARK dealer for recommendations.

Normal Operation:

Basically, eight-hour material handling in clean buildings with smooth level floors and clean, open air.

Severe Operation:

Prolonged operating hours or constant usage, with ramps and/or bumpy floors.

Extreme Operation:

- Sandy or dusty locations.
- High temperature locations.
- Sudden temperature changes such as refrigeration facilities.

Maintenance and Lubrication Schedule

Recommended Planned Maintenance Intervals
A = 8 - 10 hours or daily
B = 50 - 250 hours or every month
C = 450 - 500 hours or every 3 months
D = 900 - 1000 hours or every 6 months
E = 2000 hours or every year

Planned Maintenance and Lubrication To be performed by Trained and Authorized Personnel (See Service Manual for other important information)	A	B	C	D	E
Check truck visually and inspect components		●			
Test drive truck - Check functional performance		●			
Air clean truck		●			
Check torque on critical fasteners		●			
Lubricate truck		●			
Clean / check battery terminals, electrolyte level		●			
Check battery cables & truck receptacle		●			
Perform battery load test		●			
Check drive motor brushes		●			
Check lift pump motor brushes		●			
Test truck ground		●			
Clean drive motor air vents		●			
Check drive unit fluid level		●			
Drain and replace drive unit fluid					●
Check hydraulic unit fluid level		●			
Drain and replace hydraulic unit fluid					●
Check brake shoe linings		●			

Safe Maintenance Practices

The following instructions have been prepared from current industry and government safety standards applicable to industrial truck operation and maintenance. They are listed here for the reference and safety of all workers during inspection/maintenance operations. When in doubt of any inspection/maintenance procedures, 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 shall 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 system 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, 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 electrolyte level. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.
7. Before starting to work on the truck:
   a. Raise the drive wheel free 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. Operate the truck in an authorized, safe, clear area when checking performance.

9. Before operating the truck:
   a. Remove drive wheel chocks.
   b. Plug-in battery connector.
   c. Lower and turn control handle to operating position.
   d. Insert key (if equipped) and turn to "on" position.
   e. Make sure path of travel is clear.
   f. Check function of controls and emergency reversal switch.
10. Before leaving the truck:
   a. Park truck in designated area.
   b. Fully lower forks.
   c. Raise and turn control handle.
   d. Turn off key switch and remove key.
   e. Unplug battery connector.
   f. Block drive wheel.
11. Brakes, control and lift mechanisms, and frame members must be carefully and regularly inspected and maintained in a safe operating condition.
12. 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.
13. All hydraulic systems must be regularly inspected and maintained in conformance with good practices. Lift cylinders must be checked to assure that "drift" or leakage has not developed to the extent that it would create a hazard.
14. When working on hydraulic system, be sure the battery is disconnected, forks fully lowered, and hydraulic pressure relieved in hoses and tubing.
15. Truck capacity, operation, and maintenance instruction plates and decals must be maintained in legible condition.
16. Batteries, motors, controllers, limit switches, electrical conductors, and connections must be inspected and maintained in conformance with good practices. 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.

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 prior written approval from CLARK. Capacity, operation, and maintenance instruction plates or decals must be changed accordingly.

20. Care must be taken to ensure 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. When removing tires, follow industry safety practices.

22. Use special care when removing heavy components from the truck. Be sure that lifting and handling equipment is of the correct capacity and in good condition.

IMPORTANT

Your new CLARK lift truck has been built to meet all applicable mandatory requirements of ANSI B56.1-1988 Safety Standard for Powered Industrial Trucks. Each truck also includes certain safety devices—such as horn and overhead guard—as standard equipment. No additions, omissions, or modifications should be made that affect compliance to the above requirements or in any way minimize the effectiveness of the safety devices.

Safety Standards

NOTICE

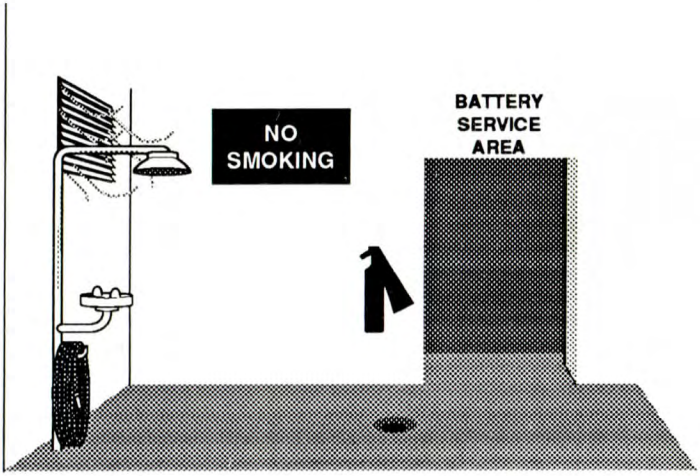
You should be familiar with additional operating and maintenance safety instructions contained in the following publications:

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

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

General Industrial Standards, OSHA 2206: OSHA Safety and Health Standards (929 CFR 1910), Subpart N-Materials Handling and Storage, Section 1910.178 Powered Industrial Trucks. For sale by: Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

Electric Truck Battery Maintenance



Battery charging installations must be located in areas designated for that purpose. These areas must be kept free of all non-essential combustible materials.

Facilities must be provided for:

- Flushing spilled electrolyte
- Fire protection
- Protecting charging apparatus from damage by trucks
- Adequate ventilation for dispersal of fumes from gassing batteries.

When handling acid concentrates greater than 50% acid (above 1.400 specific gravity), an eye wash fountain must be provided.

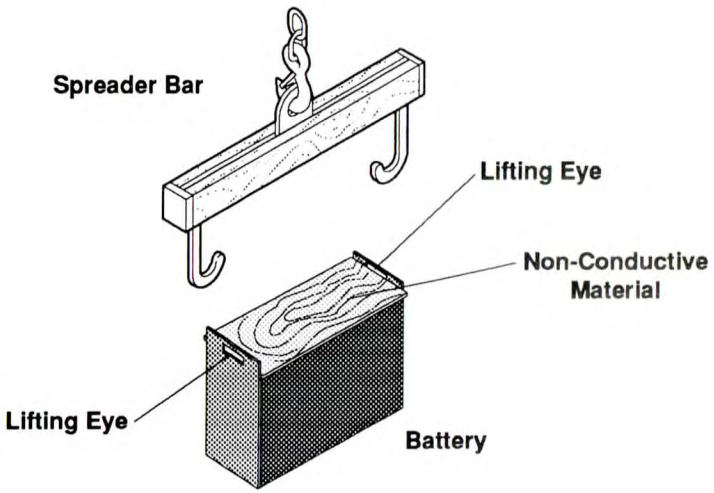
A conveyor, overhead hoist, or equivalent material handling equipment must be provided for handling batteries.

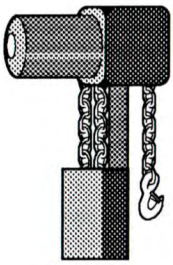
IMPORTANT

Electric truck batteries are heavy and awkward to handle. They are filled with a very hazardous chemical solution. On charge, they give off hydrogen which, in certain concentrations, is explosive. And, they are costly. Before you remove, service, or install a truck battery, carefully read the following recommendations and instructions.

Battery Handling

1. Change (remove) or service storage batteries only in an area designated for this purpose.
2. Be sure this area has provisions to flush and neutralize spillage, to ventilate fumes from gassing batteries, and for fire protection.
3. This area should be equipped with material-handling tools designed for removing and replacing batteries, including a conveyor or overhead hoist. Use lift hooks that have safety latches.
4. Always use a special lifting device such as an insulated spreader bar to attach the hoist to the battery. The width of the spreader bar hooks must be the same as the lifting eyes of the battery, to prevent damage to the battery. If the spreader bar hooks are movable, carefully adjust the position (width) of the hooks so that the pull is directly upward (vertical) and no side load or force (pressure) is exerted on the battery case. Be sure the lift hooks are the correct size to fit the lifting eyes of the battery.
5. If the battery does not have a cover of its own or has exposed terminals and connectors, cover the top with a non-conductive (insulating) material, such as a sheet of plywood or heavy cardboard, prior to attaching the lifting device.





6. Chain hoists or power battery hoists must be equipped with load-chain containers to accumulate the excess lifting chain.
7. Keep all tools and other metallic objects away from the terminals.

⚠ WARNING

BATTERY SERVICE must be done by trained and authorized personnel. Battery acid can cause severe burns and injury.

Battery Charging

1. Persons maintaining storage batteries must wear protective clothing, such as face shield, long sleeves, and gloves.
2. Hydrogen emissions from charging batteries are flammable. No smoking is allowed in the charging area. Do not check the electrolyte level with an open flame. Do not allow open flame, sparks, or electric arcs in battery charging area.

⚠ WARNING

SULFURIC ACID: The battery contains corrosive acid that can cause injury. If acid contacts your eyes or skin, flush immediately with water and get medical assistance.

WARNING

EXPLOSIVE GASES: Do not smoke or have open flames or sparks on battery charging areas or near batteries. An explosion can cause injury or death.

3. When charging batteries, the vent caps must be kept in place to avoid electrolyte spray. Care must be taken to ensure that vent caps are open (clean) and functioning. The battery (or compartment) cover(s) must be open to dissipate heat and gas.

IMPORTANT

If batteries discharge rapidly during normal operation or do not charge to the correct specifications, contact a qualified battery service technician to check the battery for you. Do not add electrolyte or attempt to service the battery.

Battery Removal from Truck

1. Check the designated service and charging area for fire protection. Be sure all sources of ignition are cleared from the area. **Do not smoke**. Be sure all previously noted equipment is in the area, in good repair, and working properly. If the battery is to be serviced, be sure there are provisions to flush and neutralize spillage and to disperse (ventilate) fumes from gassing batteries on charge. And, be sure there are provisions for handling electrolyte.
2. Before attempting to remove or charge a storage battery, the truck should be positioned in the designated battery service area and the parking brake should be applied so the truck cannot move.
3. Disconnect the battery connector.

WARNING

• Disconnect battery before handling electrical components.
• Polarity must be correct to prevent damage.

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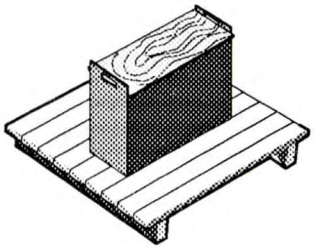
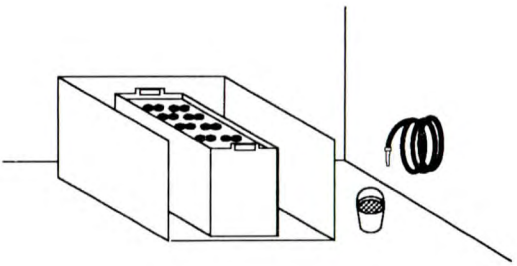
4. If the battery to be handled is not equipped with its own cover, cover it with a non-conductive (insulating) material, such as plywood or heavy cardboard, before attaching the lifting device.
5. Use an approved lifting device with an insulated spreader bar to remove and transport a truck battery. Be sure the hoist and lifting chains are equipped with safety hooks.
6. Remove the battery and move it to a safe storage location. Store batteries either on an approved battery rack or on a wooden pallet.



Battery Cleaning and Care

Never wash the battery when it is in the truck. The easiest and most satisfactory method of cleaning a battery is to wash it occasionally with a low-pressure cold-water spray. The top can also be washed off with a solution of baking soda and water (add a box of baking soda to a pail of water and stir until dissolved) and rinsed with clean water. It is good practice to have this solution in a battery room at all times.



IMPORTANT

During cleaning, the battery vent caps must be tightly in place.

Refer to the battery manufacturer or supplier for their recommended battery maintenance and care procedures.

BATTERY SAVER and CLEANER, CLARK Part Number 886398, may be used to clean and protect the truck battery.

Apply a light coat of BATTERY SAVER and CLEANER to entire surface of battery. Allow to set for approximately 30 seconds, then wipe thoroughly with a wiping cloth or rag. Chemical action will dissolve rust and corrosion. After cleaning, apply a second coating for protection. This will prevent the start and growth of corrosion on battery terminals and cable connections.

Battery Service Records

Keep a record of battery service and maintenance to obtain the best service life from your battery and truck. Select a pilot cell, take readings of specific gravity and temperature before and after charging, and record the readings with the date. It is best to change the location of the pilot cell occasionally to distribute any electrolyte loss over the battery. Every 2 or 3 months, take complete battery readings (specific gravity, temperature, and voltage) and make a record of them.

How to Get Maximum Battery Life

1. Follow normal battery maintenance procedures, recharging before 80% discharged and with periodic equalizing charges.
2. Don't add acid to a battery. Only a person trained and qualified to do battery maintenance should determine if this is necessary.
3. Lift battery only with a correctly-constructed lifting device that will not put pressure on the battery case.
4. Keep open flames, tools, and metal objects away from the top of battery to prevent short circuits and explosions.
5. Do not overcharge.
6. Check the battery electrolyte level **after** each charging. Add water if the top of the separator or plates are visible. **Do not overfill!**
7. **Keep the battery clean and dry**. Wash down as needed.
8. Keep battery service records.

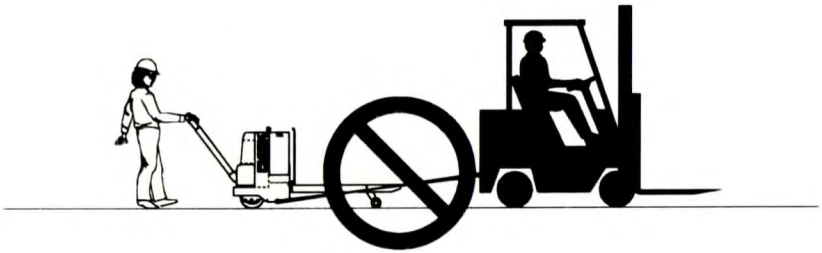
Battery Installation

1. Use only a lead-acid battery with the voltage and kilowatt-hour rating specified for the truck. The ratings are given in Section 8, "Specifications."
2. When changing batteries on battery electric trucks, replacement batteries must be of the service weight that falls within the minimum/maximum range specified on truck nameplate.
3. Be sure truck is properly positioned and parking brake applied.
4. Handle battery only with approved lifting device.
5. Install the battery correctly in the truck and secure it in position.
6. Reconnect the battery connector.

NOTICE

Some trucks are equipped with battery stops or blocks. Others do not require them. If the truck being serviced has battery stops or blocks, be sure none are missing or damaged. Replace them as necessary. If they are an adjustable type, be sure they are correctly adjusted and tightened.

Towing



Pull a disabled truck by hand to a service area. Do not tow or push the truck with another vehicle.

Specifications

Load Capacity

Model:	*Capacity:*
P40	4000 lbs (1814 kg)
HWP40	4000 lbs (1814 kg)

Service Weight

Model:	*Battery Compartment:*	*Service Weight:*
P40	8.13"	1624 lbs (737kg)
HWP40	8.13"	1650 lbs (748kg)

Battery

Minimum Weight:	*Battery Compartment:*
430 lbs	8.13"
430 lbs	13.38"

Capacity (6 hour rate maximum):	*Battery Compartment:*
7.6 KW•h	8.13"
15.3 KW•h	13.38"

Specific Gravity (fully charged): 1.320

Type:

12 Volt Lead Acid	6 cells (8.13" Battery Compartment)
12 Volt Lead Acid	6 cells (13.38" Battery Compartment)

Fluid Recommendations

Hydraulic Unit: Clark Specification MS - 68
Drive Unit: AMOCO 1000

Fluid Capacities

Hydraulic Unit: 1.6 quarts (nominal)
Drive Unit: 0.8 quarts

General Purpose Grease

CLARK Specification MS - 107C; use Grade NLGI #2 per MS - 107C.

Index

SERIAL NUMBERS:

TRUCK **P/HWP 465 -** _____ **-** _____

CONTROL PANEL _____

DRIVE MOTOR _____

STEER PUMP MOTOR _____

DRIVE UNIT _____

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