OPERATORS INFORMATION MANUAL

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INTRODUCTION TO THIS MANUAL

Section 1
Introduction to this Manual

Some photographs or illustrations in this publication show details or attachments that can be different from you lift truck. Guards and covers might have been removed for illustrative purposes.

MESSAGE TO RICO LIFT TRUCK OPERATORS

Lift trucks are specialized machines with unique operating characteristics, designed to perform a specific job. Their function and operation is not like a car or ordinary truck. They require specific instructions and rules for safe operation and maintenance.

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

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

For these reasons, RICO wants you to know about the safe operation and correct maintenance of your lift truck.

This manual is designed to help you operate your lift truck safely. This manual shows and tells you about safety inspections and the important general safety rules and hazards of lift truck operation. It describes the special components and features of the truck and explains their functions. The correct operating procedures are shown and explained. Illustrations and important safety messages are included for clear understanding. A Section on maintenance and lubrication is included for the lift truck mechanic.

The operator's manual is not a training manual. It is a guide

to help trained and authorized operators safely operate their lift truck by emphasizing and illustrating the correct procedures. However, it cannot cover every possible situation that may result in an accident. You must watch for hazards in your work areas and avoid or correct them. It is important that you know and understand the information in this manual and that you know and follow your company safety rules! Be sure that your equipment is maintained in a safe condition. Do not operate a damaged or malfunctioning truck. Practice safe operation every time you use your lift truck. Let's join together to set high standards in safety.

Remember, before you start operating this lift truck, be sure you understand ail driving 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; it is also an (OSHA) requirement that a machine inspection be performed before every shift. If you think you need training in operating or inspecting your lift truck, ask your supervisor.

RICO 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. 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.

Section 1
Introduction to this Manual

INTRODUCTION

RICO welcomes you to the growing group of professionals who own, operate, and maintain RICO lift trucks. We take pride in the long tradition of quality products and superior value the RICO name represents. This manual familiarizes you with safety, operating, and maintenance information about your new lift truck. It has been specially prepared to help you use and maintain your RICO lift truck in a safe and correct manner.

Your RICO lift truck has been 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. Each truck is also furnished with equipment to help you operate safely; for example, load back rest, parking brake and horn are standard equipment.

Safe, productive operation of a lift truck requires both skill and knowledge on the part of the operator. The operator must know, understand, and practice the safety rules and safe driving and load handling techniques described in this manual. To develop the skill required, the operator must become familiar with the construction and features of the lift truck and how they function. The operator must understand its capabilities and limitations, and see that it is kept in a safe condition.

Routine Servicing and Maintenance

Regular maintenance and care of your lift truck is not only important for economy and utilization reasons; it 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. As with all quality equipment, keep your lift truck in good operating condition by following the recommended schedule of maintenance.

Operator Daily Inspection - Safety and Operating Checks

Section 1
Introduction to this Manual

A lift truck should always be examined by the operator, before driving, to be sure it is safe to operate. The importance of this procedure is emphasized in this manual with a brief illustrated review and later with more detailed instructions. RICO dealers can supply copies of a helpful "Drivers Daily Checklist."

Planned Maintenance

In addition to the daily operator inspection, RICO recommends that a planned maintenance and safety inspection program (PM) be performed by a trained and authorized mechanic on a regular basis. The PM will provide an opportunity to make a thorough inspection of the safety and operating condition of your lift truck. Necessary adjustments and repairs can be done during the PM, which will increase the life of components and reduce unscheduled downtime and increase safety. The PM can be scheduled to meet your particular application and lift truck usage.

The procedures for a periodic planned maintenance program that covers inspections, operational checks, cleaning, lubrication, and minor adjustments are outlined in this manual. Your RICO dealer is prepared to help you with a Planned Maintenance Program by trained service personnel who know your lift truck and can keep it operating safely and efficiently.

Service Manual

In-depth service information for trained service personnel is found in Parts & Service Manual.

Section 1
Introduction to this Manual

How to Use this Manual

This manual is a digest of essential information about the safe operation, the features and functions and explains how to maintain your lift truck. This manual is organized into seven major parts:

Section 1, Introduction to this Manual, overview of manual and its contents.

Section 2, Safety Rules & Operating Hazards, warns of conditions that could cause damage to the truck or injury to the operator or other personnel. Reviews and illustrates accepted practices for safe operation of a lift truck.

Section 3, Know Your Truck, describes the major operating components, systems, controls, and other features of your truck and tells how they function.

Section 4, Operator Maintenance, presents details on how to perform the operator's daily safety inspection and refuel the lift truck.

Section 5, Operating Procedures, discusses specific instructions on the safe, efficient operation of your lift truck.

Section 6, Emergency Towing, gives instructions for towing your truck in an emergency.

Section 7, Planned Maintenance, describes the PM program.

NOTICE: The descriptions and specifications included in this manual were in effect at the time of printing. RICO reserves the right to make improvements and changes in specifications or design, without notice and without incurring obligation. Please check with your authorized RICO dealer for information on possible updates or revisions.

Section 1
Introduction to this Manual

The examples, illustrations, and explanations in this manual should help you improve your skill and knowledge as a professional lift truck operator and take full advantage of the capabilities and safety features of your new lift truck.

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

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

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

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

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

Section 1
Introduction to this Manual

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

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

SAFETY SIGNS & 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 RICO dealer for replacements.

NOTICE

This message is used when special information, instructions or identification are 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.

SECTION 2

SAFETY RULES
&
OPERATING HAZARDS

FORWARD

This manual's purpose is to remind users of potential dangers associated with using equipment without proper instruction, knowledge, and safety practices.
No single rule in the booklet can be followed to the exclusion of others.

Each rule must be considered in light of the other rules, the knowledge and training of the man (operator), the limitations of the machine, and the workplace environment.

This manual, of course, cannot cover all circumstances and situations. We urge all users of equipment to obtain necessary training and instruction; make sure the equipment has been serviced and systems are functioning properly before operation; make sure the environment is proper for the operation of the machine, and always be alert and cautious.

Section 2
Safety Rules & Operating Hazards

INTRODUCTION

Powered industrial trucks, commonly called forklifts, come in many shapes and sizes, and are intended for use in general industry. They lift, carry, and deposit many different types, sizes, and weights of loads. They are under the control of an operator who works in an environment controlled by the employer. The forklift can be a safe tool, but only if the operator himself is safe and works in an environment made safe by the employer. Safe operation does not just happen. It is the result of hard work and planning. Knowing the types of accidents that commonly occur with forklifts can help both the operator and the employer plan ahead.

The most common types of accidents are:

A. Stability Related Accidents
- **1. Forward tip over**
- **2. Lateral tip over**
- **3. Lost loads**

B. Pedestrian run-over Accidents
- **1. Forward**
- **2. Reverse**
- **3. Tail swing**

C. Slip and Fall Accidents

D. Maintenance / Servicing Accidents

Classification Of Forklift Fatalities, CFOI, 1991 - 1992

How Accident Occurred	Number	Percent
Forklift overturned	41	24
Forklift struck something, or ran off dock	13	8
Worker pinned between objects	19	11
Worker struck by material	29	17

Worker struck by forklift	24	14
Worker fell from forklift	24	14
Worker died during forklift repair	10	6
Other accident	10	6
Total	170	100

Source: Bureau of Labor Statistics, Fatal Workplace Injuries in 1992, A Collection of Data and Analysis, Report 870, April 1994.

STABILITY RELATED ACCIDENTS

Some stability related accidents are listed below.

Operating the machine without proper training

Operating the machine without understanding that rated capacity is with the mast vertical

Traveling without the seatbelt fastened

Jumping from a moving or tipping machine

Traveling with the load raised too high

Tilting the mast with the load out past vertical when not over a rack or stack

Braking too hard or too quickly with a load; accelerating too quickly

Turning too sharply or too quickly; turn the steering wheel slowly

Operating the machine on uneven surfaces or in unstable yard conditions

Traveling on an incline with the load downhill

Raising the load when wind velocity is excessive

Backing away from a load in a rack or stack without completely releasing the load

Handling an off-center load improperly, "binding" the mast and its action, or improperly shimming the mast

Moving a load not properly arranged on the forks or the attachment

Operating the machine in areas with inadequate overhead clearance

Forklifts are designed to keep everything in proper balance; many different factors affect this balance:

Capacity of the machine (at a specified load center)
Weight of the load and its center of gravity
Position of the load on the forks or attachment
Type and weight of the attachment
Acceleration or braking
Condition of the ground surface and grade angle
Tilt of the mast and height of the load
Weather conditions

The operator must consider these factors before operating the machine. Each of these factors can affect safe operation of the machine.

The balance for proper operation is safe if all different parts of the machine are properly maintained AND the machine is safely operated by you, the operator.

For example, the rated capacity of a machine is set

for a special combination of the machine, mast, and attachment. If the attachment or mast is changed, the capacity may change. You must know what the actual changes are and what the actual capacity is.

For your safety you must:

- **Know the machine's size**
- **Know the machine's operating capacity**
- **Know how to operate the machine**
- **Know what safety features are available**
- **Know the safe operating procedures at your work site**
- **Check the machine daily for proper operation**
- **Use every safety feature**
- **follow safe operating procedures**
- **be alert and use common sense**

WARNING

Death or serious injury may result from improper operation of this machine.

Many safety features are designed into forklift trucks to help protect you (the operator), your fellow workers, and the property in the area where you work.

But. . . NO safety feature.. NO safety equipment is effective unless you operate the machine properly every time!

The instructions in this manual, the OSHA Standards, and ASME/ANSI B56.1 are all intended to advise how to operate this vehicle safely. These instructions are primarily directed at one or the other of the two basic modes of lift truck operation. They are (a) the loading or stacking mode, and (b) the traveling mode.

The transitional operation between these modes must be accomplished with extreme care. Regardless of all the safety features we build into our equipment, safe operation still largely depends upon the operator's safe, cautious

observance of safety rules.

WARNING

DANGEROUS ACTION

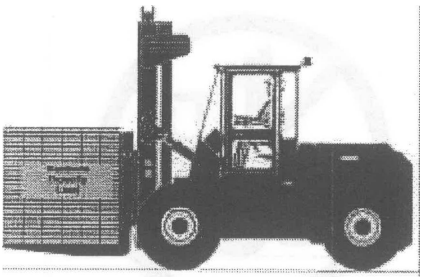
Operating the machine without understanding that rated capacity is with the mast vertical.

WHAT CAN HAPPEN

Death or serious injury could occur. The machine could tip over or an unattached load could fall from the forks

HOW TO AVOID THE DANGER

Understand that the machine's maximum rated load capacity is with the mast vertical, the load retracted and fully back on the forks against the backrest. Never tilt the machines mast forward while holding a capacity load, near- capacity load, or an unattached load at high elevation, without using extreme caution, and having the load positioned over a rack or stack ready for deposit.



WARNING

DANGEROUS ACTION

Braking too hard or too quickly with a load or accelerating too quickly

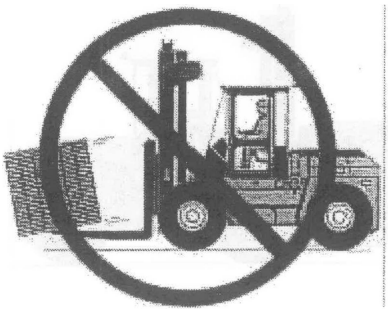
WHAT CAN HAPPEN

The load can fall or the machine can tip over

HOW TO AVOID THE DANGER

Apply the brakes smoothly and evenly. Accelerate in a like manner.

A sharp braking action can slow the machine, but can not slow the load; the proper balance of the machine and the load will be shifted. A quick acceleration action will likewise cause the load to be lost or the machine to be tipped

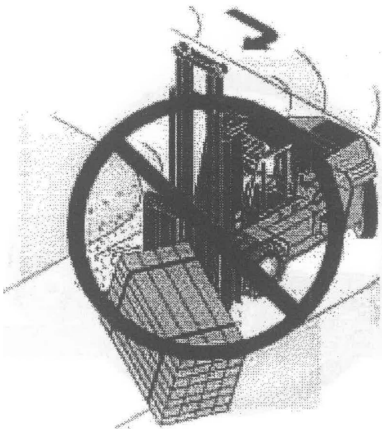


WARNING

DANGEROUS ACTION
Turning to sharply or too quickly.

WHAT CAN HAPPEN
The load can drop or the machine can tip over.

HOW TO AVOID THE DANGER
Make turns smoothly and evenly; turn the steering wheel slowly. If the load is securely attached to the lift truck the machine may tip over because o improper turning.



WARNING

DANGEROUS ACTION

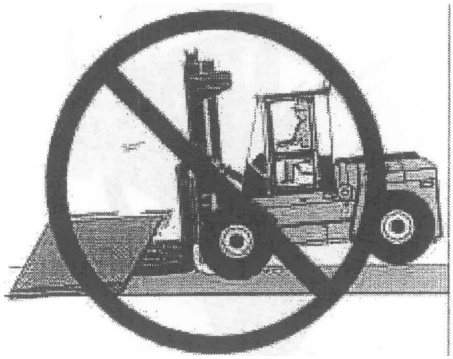
Operating the machine on uneven surfaces or poor floor conditions.

WHAT CAN HAPPEN

Machine control can be lost; the machine and load can jerk or tip.

HOW TO AVOID THE DANGER

Do not operate the machine when holes or objects create an unsafe floor. Report holes to your supervisor. Do not run over boards, rail road tracks or trash on the floor. Remove the obstacles or have them removed.



WARNING

DANGEROUS ACTION

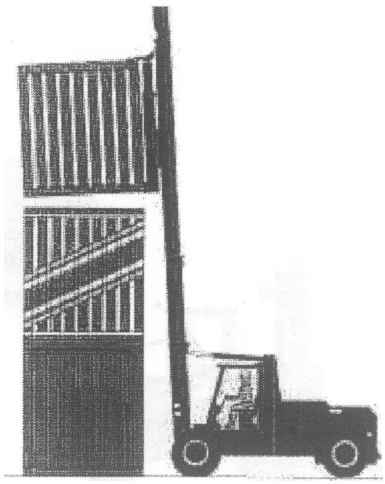
Tilting the mast with the load out past vertical when the load is not over a rack or stack.

WHAT CAN HAPPEN

The machine and its load can tip over causing death or serious injury.

HOW TO AVOID THE DANGER

Do not tilt the load out unless the load is over a rack or a stack and ready for placement. The rack or stack will stop the machine from tilting over.



WARNING

DANGEROUS ACTION

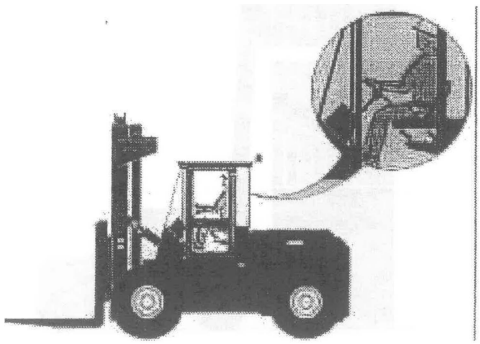
Traveling without the seat belt fastened.

WHAT CAN HAPPEN

Death or severe injury could occur if the machine should tip over or if you lose control and strike a fixed object.

HOW TO AVOID THE DANGER

Always travel with your seat belt properly and securely fastened. Do not allow riders.



⚠ WARNING

DANGEROUS ACTION

Jumping from a moving vehicle or tipping machine

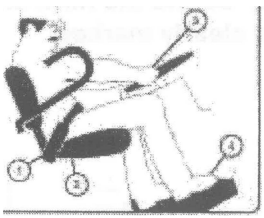
WHAT CAN HAPPEN

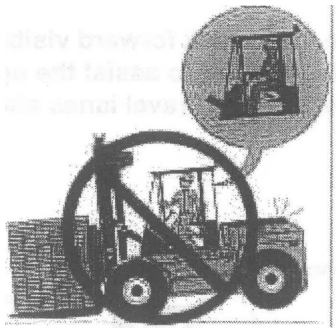
Death or serious injury could occur if you jump from a tipping machine.

HOW TO AVOID THE DANGER

Remain seated in the operator's stations with the seat belt securely and properly fastened whenever the machine is in motion. If the machine tips:

1. **Make sure your seatbelt is fastened.**
2. **Stay in your seat.**
3. **Grip the wheel tightly.**
4. **Brace your feet firmly on the floor.**
5. **Lean away from the direction of the fall.**





WARNING

DANGEROUS ACTION
Improperly traveling on grades.

WHAT CAN HAPPEN
You can lose control of the machine and the load.

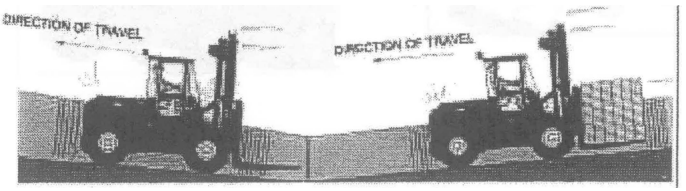
HOW TO AVOID THE DANGER
Grades shall be ascended or descended slowly.

When ascending or descending grades, loaded trucks shall be driven with the load upgrade.

Unloaded trucks should be operated on all grades with the load engaging means down grade.

On all grade the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

If the load block forward visibility on ramps use a ground guide (spotter) to assist the operator. Sound the horn and travel slowly. Travel lanes should be clearly marked.



WARNING

DANGEROUS ACTION

Backing away from the load in a rack or stack without complete release of the load.

WHAT CAN HAPPEN

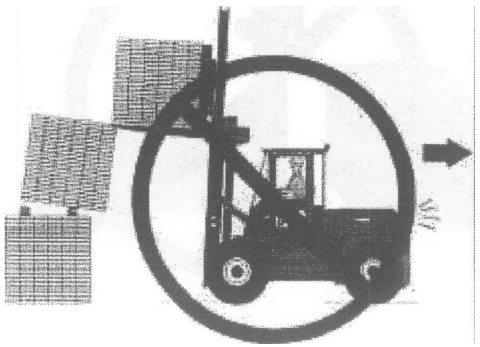
Death, serious bodily injury, and property damage can be caused by dripping the load on your machine, or a bystander, or on the ground.

HOW TO AVOID THE DANGER

Be certain the load is properly placed and completely released from holding devices (such as forks) before backing away from the rack or stack.

Back away slowly and visually check to see if the load is being pulled with the machine because part or all of the load has not been released. If part of the load has failed to release, the entire load could be pulled from the rack or stack and dropped by the backing action and momentum of the machine.

Always inspect holding devices (such as forks) for proper action before placing the machine into service each day.



WARNING

DANGEROUS ACTION

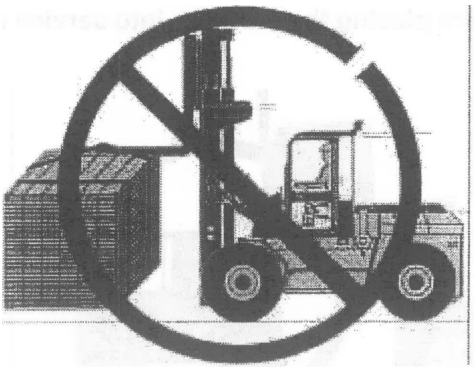
Handling an off-center load improperly and "binding" the mast and its action or improperly shimming the mast.

WHAT CAN HAPPEN

Death or serious injury can result. The lifting action can be restricted, the load dropped, and/or the machine tipped over.

HOW TO AVOID THE DANGER

Always lift the load properly in accordance with procedures described in the booklet. Never attempt to lift and out-of-balanced load without using extreme caution. Never attempt to lift a load with one fork or on one side of the attachment without using extreme caution.



WARNING

DANGEROUS ACTION

Moving a load not properly arranged on the forks or attachment.

WHAT CAN HAPPEN

The load can shift, become unbalanced, and fall causing death or serious injury.

HOW TO AVOID THE DANGER

Never pick up a load that is not balanced on the forks or the attachment.

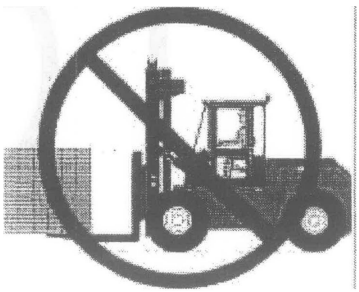
Never carry a load at the tip end of the forks.

Because a forklift trucks needs to be balanced between the front and rear to operate properly, the load must be properly balanced on the forks or the attachment.

Always carry the load back on the forks or the attachment as near the carriage as possible. The load MUST BE centered on the forks.

Always carry the load with the mast tilted back slightly and the load carried as low as possible to provide good, safe visibility.

Stay clear of loads on a forklift.



WARNING

DANGEROUS ACTION

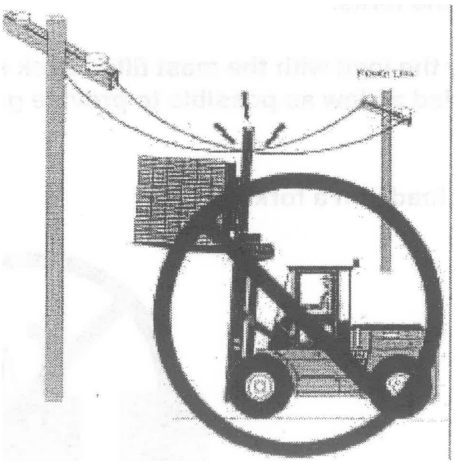
Operating a forklift in areas without proper overhead clearance.

WHAT CAN HAPPEN

Death or serious injury can be caused by electrocution, the forklift can be damaged, goods or buildings can be damaged.

HOW TO AVOID THE DANGER

Ensure the sufficient headroom exists under overhead installations, power lines, lights, doors, pipes, sprinkler systems, etc.



WARNING

DANGEROUS ACTION

Traveling forward with a load that blocks forward visibility.

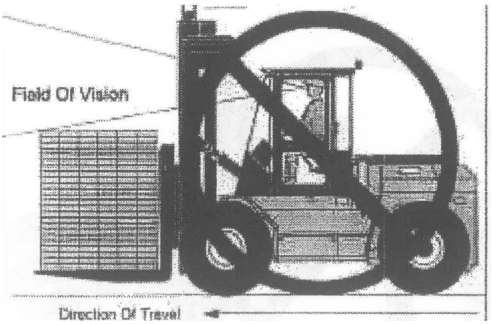
WHAT CAN HAPPEN

You could strike a pedestrian causing serious injury or death.

HOW TO AVOID THE DANGER

Travel forward only if you can keep a clear view of the path of travel. Drive in reverse if the load blocks forward view.

A forklift can carry many different sizes, shapes, and weights of loads. Size, shape, and weight, of loads determine proper carrying position. Proper carrying position determines which traveling direction (forward or reverse) should be chosen. Some loads can be carried low enough to see over; others can be carried high enough to see under. Some loads must be carried in reverse because of the size, weight, or shape. Forward travel is preferable but only when you can keep a clear view of the path of travel and the truck and load are stable.



WARNING

DANGEROUS ACTION

Walking or standing between a machine and/or a load, a rack, stack, or other object.

WHAT CAN HAPPEN

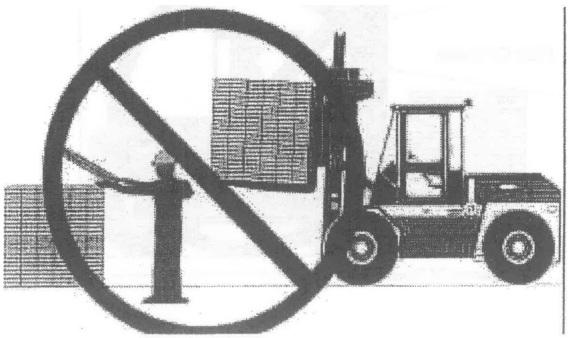
Death or serious injury can be caused by the machine moving forward and crushing anyone between the machine and the load or other obstacles.

HOW TO AVOID THE DANGER

Never walk or stand between the machine and a load, or other physical obstructions.

Never allow anyone to stand under a machine, near a machine, or between a machine and its load or other physical obstructions.

Always place the machine in neutral, apply the parking brake and lower the forks completely to the ground.

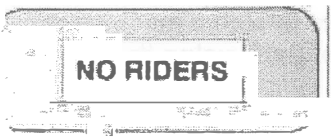


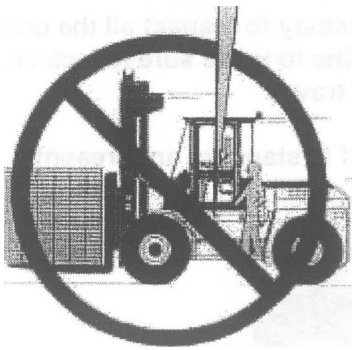
⚠ WARNING

DANGEROUS ACTION
Operating a machine with riders on the truck.

WHAT CAN HAPPEN
Riders could be thrown from the truck and seriously injured.

HOW TO AVOID THE DANGER
Never allow riders on the machine or load .





WARNING

DANGEROUS ACTION
Moving a machine without clearing all blind spots.

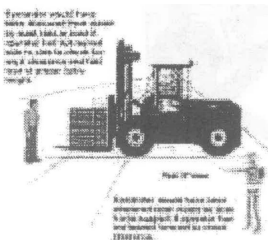
WHAT CAN HAPPEN
Death or serious injury could occur.

HOW TO AVOID THE DANGER
Never move the machine without checking all possible blind spots to see if people are to close the machine or load.

Overhead guard supports may cause blind spots in the operator's line of vision from certain positions. Overhead guard supports are necessary to provide overhead protection for the operator. Lift trucks must have massive load support members to support the forks and to manipulate the load which necessarily limits up and down visibility. All attempts to design a machine without heavy supports and capable of performing its task have been unsuccessful.

Always look around supports and load engaging apparatus completely before putting the machine or load in motion. Shift your head or body as necessary to inspect all the area around and in front of the machine to make sure it is clear. Keep a clear view of the path of travel.

Refuse to operate the machine if bystanders are present.



WARNING

DANGEROUS ACTION

Relying on a back-up alarm or flashing light and not looking in the direction of travel.

WHAT CAN HAPPEN

You could cause death or serious injury to someone.

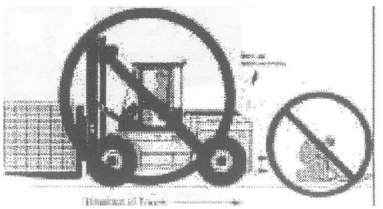
HOW TO AVOID THE DANGER

Never rely upon a back-up alarm or flashing light (if the machine you operate is equipped with one) to warn bystanders of machine approach.

The American National Standards Institute (ANSI) requires the user of a machine to determine if a back-up alarm is needed in a specific work application. Back-up alarms are not standard on all machines.

Bystanders may become conditioned to the sound of back-up alarms. This conditioning may result from frequent use of a truck traveling in reverse with the alarm sounding, and/or the presence of many machines in the area, with each sounding an alarm when placed in reverse. As a result, many bystanders do not consciously recognize the sound as a warning and respond accordingly.

Refuse to operate the machine if bystanders are present. Discuss the need for and advisability of a back-up alarm or flashing light with your employer.



WARNING

DANGEROUS ACTION

Relying on mirrors while backing up or traveling in reverse.

WHAT CAN HAPPEN

You could cause death or serious injury to someone.

HOW TO AVOID THE DANGER

Never rely on mirrors (if the machine you operate is equipped with them) for visual guidance when backing up or traveling in reverse.

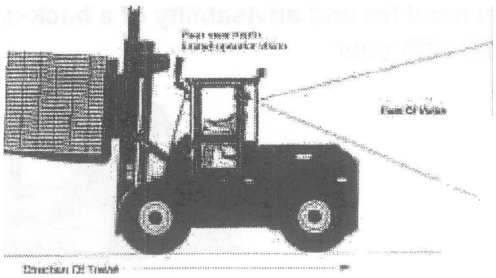
OSHA regulations states that the operator must look in the direction of travel. Mirrors are to be used only for visual advise to operators of potential hazards approaching the machine (such as trucks) from the rear and at a distance. The locations of mirrors on a machine may encourage inappropriate use and reliance on them. As a result, the manufacture discourages the use of mirrors for visual guidance.

The potential problems associated with blind spots may be made worse by reliance on mirrors because the area of vision is limited in a mirror.

Never rely on mirrors to guide you when backing up; always look in the direction of travel.

Never rely on mirrors to warn you of hazard located close to the machine. Keep a clear view of the path of travel.

Always look over the entire area before placing the machine in motion; and look in the direction of machine travel while moving with or without a load.



WARNING

DANGEROUS ACTION

Not ensuring the path of the machine's tail swing is clear.

WHAT CAN HAPPEN

You could cause death or serious injury to someone or damage to the truck or other property.

HOW TO AVOID THE DANGER

Do not operate the machine or move the load if other people are near the machine or load.

Steer axles on forklifts are located at the rear of the machine. This means the major swing of the machine, when it turns in the forward mode, is at the back. As a result, a movement to shift a load at the front six inches left or right, for example, will cause the rear of the truck to move 18 to 24 inches or more in a direction opposite to the front. This steer action and tail swing will occur if the machine is in either forward or reverse. And if, for example, a movement at the front is greater than six inches, the swing of the rear end can be much greater than the 18 to 24 inches mentioned above.

The lift truck operator's attention is focused on the load movement. When the front end of the machine and the load are moved the rear end of the machine may inadvertently strike a bystander who is also watching the load and does not consider how much movement may occur at the steer axle.

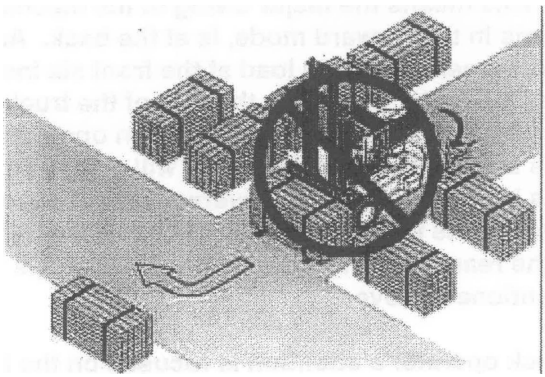
The operator must remember that the tail swing may be greater than expected. The operator should refuse to operate the machine if bystanders are present.

Start turns on the inside of aisles to ensure adequate clearance for tail swing. Slow down and sound the horn at cross aisles and other locations where vision is obstructed (such as corners of buildings). Make sure the path of the

machine's tail swing is clear!

Property damage can occur if the counterweight strikes stacked goods, corners of buildings, etc.

Slow down and sound the horn when approaching blind corners; but, never attempt to"blast" your way through with a horn.



⚠ WARNING

DANGEROUS ACTION
Improperly fueling the truck.

WHAT CAN HAPPEN
An explosion could occur causing serious bodily injury or death.

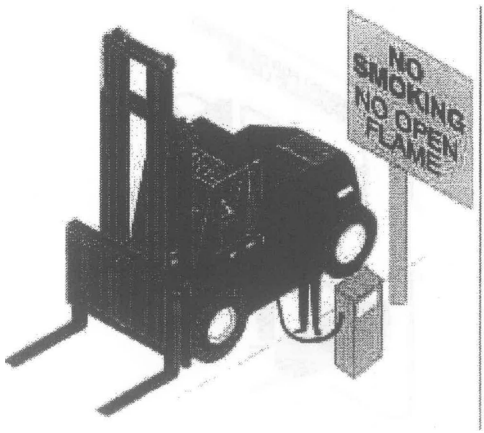
HOW TO AVOID THE DANGER
Never fill the fuel tank while the engine is running, while smoking, or when near an open flame.

Never overfill the tank or spill fuel or any other petroleum based fluid. If a spill occurs, clean it up immediately.

Ground the fuel funnel or nozzle against the filler neck to prevent sparks.

Be sure to replace the fuel tank cap.

Make sure you know where the fire extinguishers are and know how to use them.



WARNING

DANGEROUS ACTION

Improperly checking for hydraulic leaks or diesel fuel leaks.

WHAT CAN HAPPEN

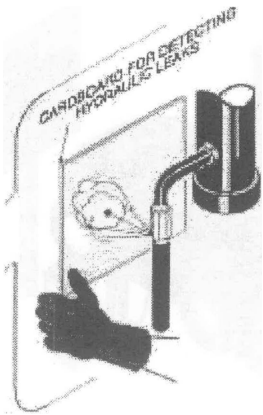
Hydraulic fluid under pressure can penetrate the skin or injure eyes, causing you to lose your hands or to be blinded. Wires in worn hydraulic hoses can cut your hands.

HOW TO AVOID THE DANGER

Wear heavy gloves and safety goggles when checking for hydraulic leaks, diesel fuel leaks and worn and damaged hydraulic hoses.

Use a piece of cardboard or wood to find leaks. Remember, a hydraulic systems is under pressure whenever the engine is running and may hold pressure even after shut down. Replace any hydraulic hose that is worn or frayed or shows any sign of damage.

If fluid enters the eyes or skin, get immediate medical attention.



WARNING

DANGEROUS ACTION

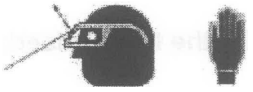
Improperly checking the engine cooling system

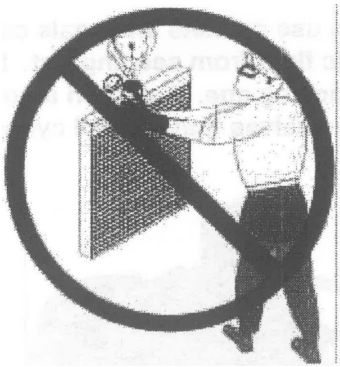
WHAT CAN HAPPEN

You could be severely burned or blinded by spewing engine coolant.

HOW TO AVOID THE DANGER

Wear heavy gloves and safety goggles when checking engine coolant. Liquid cooling systems build up pressure as the engine gets hot. Stop the engine and let the system cool before removing the radiator cap.





WARNING

DANGEROUS ACTION

Using the lift truck hydraulic system as a substitute for a fixed stand.

WHAT CAN HAPPEN

A load could fall as the cylinder "drifts" down.

HOW TO AVOID THE DANGER

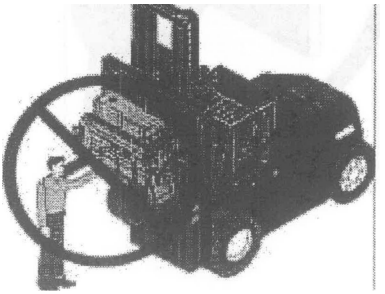
Never use a hydraulic system as a fixed stand. Understand hydraulic drift.

Never work around, under, or on top of a load supported by a lift truck cylinder.

Never plate arms or hands between the uprights and the mast.

Never leave a truck with the forks raised; they will drift down.

Hydraulic cylinders use gaskets and seals called "packing" to prevent hydraulic fluid from seeping out. Drift may occur as cylinders and packing age. A certain amount of drift is expected across the valves that control cylinder movement even when cylinders and packing are new.



WARNING

DANGEROUS ACTION

Operating a truck that is damaged or in need of repair.

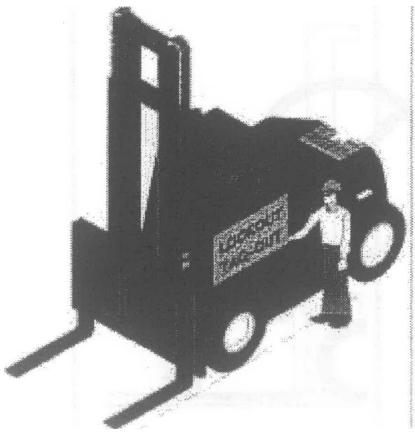
WHAT CAN HAPPEN

A number of serious injuries could occur, depending on the nature of the damage or needed repair.

HOW TO AVOID THE DANGER

Refuse to operate a truck that is damaged o in need of repair. Ver few "extra" exist on a workplace forklift. Every item, a lift chain, a cotter pin on an axle spindle, a door latch, is an important safety item. Even the smallest damages or broken item can result in an injury somewhere down the line. Take the truck out of service. Use a "Lock-Out-Tag-Out" procedure; take the key. Do not operate the truck until the repairs have been completed.

Use only service replacement parts recommended by the manufacture.



⚠ WARNING

DANGEROUS ACTION

Climbing on the mast of a forklift, on the top of the overhead guard, or other high placed on the machine.

WHAT CAN HAPPEN

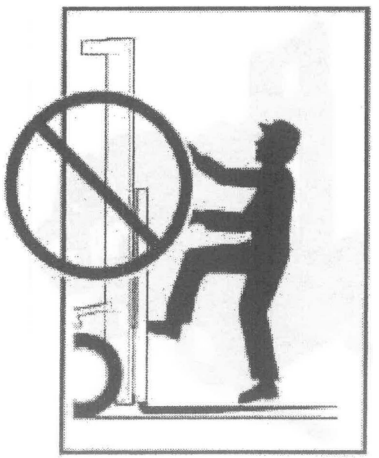
You could fall and be seriously injured or killed.

HOW TO AVOID THE DANGER

Use OSHA approved ladders, stands, or man lifts to reach high places.

Sometimes maintenance must be performed on high or other hard to reach places on a forklift (e.g., greasing the mast rollers, changing strobe lights). Never climb on the mast or overhead guard. Never ride the forks.

Always use OSHA approved ladders, stands, or man lifts which are specifically designed to elevate personnel.



WARNING

DANGEROUS ACTION

Operating a machine which has been modified without the manufacturer's approval. This includes the attachment, the counterweight, the tires, etc.

WHAT CAN HAPPEN

Death or serious injury, or property damage can result from these modifications.

HOW TO AVOID THE DANGER

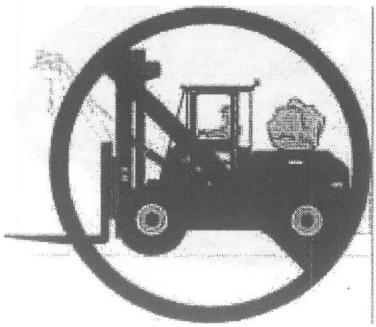
Refuse to operate a machine which has been modified unless the modification has been approved by the manufacturer, and a new serial plate with the correct capacity information has been issued and place don the machine.

Any modification on the attachment, counterweight, tires or other components can make a major change in the performance capabilities of the machine. For example, a machine may be shipped from the manufacturer rated to carry a 25,000 pound load at a 24 inch load center; if another attachment is added, the load the machine can safely carry may be significantly reduced. Adding counterweight will not increase the safe working capacity of the machine and may overload other components.

Always know the changes that have been made to a machine before you operate it.

Always know the actual maximum capacity of a machine that has been modified.

Refuse to operate a modified machine without proper official change in capacity rating.



⚠ WARNING

DANGEROUS ACTION

Lifting people with a forklift not properly equipped for elevating personnel

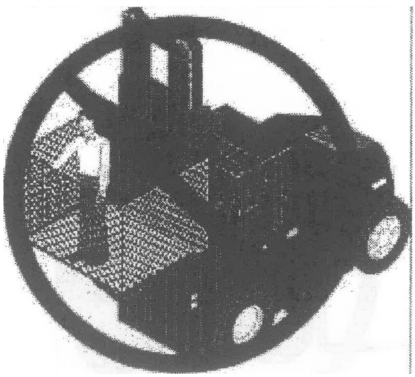
WHAT CAN HAPPEN

The person(s) could fall and be seriously injured or killed.

HOW TO AVOID THE DANGER

Do not use a material handling forklift as a means to elevate personnel.

Forklifts used for material handling generally are not equipped for lifting people. OSHA requires that trucks used for this purpose have controls that elevate with the lifting mechanism, a safety platform secured to the carriage, means for the person(s) being lifted to shut off power to the machine, and protection from falling objects as needed under operating conditions. The truck should be equipped with an anti-drop hydraulic valve in case of hose failure.



SECTION 3

KNOW YOUR TRUCK

Section 3
Know Your Truck

TRUCK DATA & CAPACITY TAG

Truck serial number-An identification number assigned to this particular truck and should be used when requesting information or ordering service parts for this truck from your authorized RICO dealer. The serial number is also stamped on the frame.

Attachment description (if any installed)-The user must see that the truck is marked to identify the attachment(s), including the weight of the truck/attachment combination and truck capacity with the attachment.

Capacity rating, load center, and lifting height data-Shows the maximum load capacity of this truck with relation to load centers and fork heights (see diagram on plate).Personal injury and damage to the truck can occur if these capacities are exceeded. Do not exceed the maximum capacity specified.

Truck weight-The approximate weight of the truck without a load on the forks. This weight plus the weight of the load must be considered when operating on elevators, elevated floors, etc. to be sure they are safe.

CAUTION

When attachments are added or if the truck is modified, the capacity of the truck may be affected. Contact your authorized RICO dealer for a new nameplate showing the revised capacity.

IMPORTANT

It is OSHA law that written approval from the truck manufacturer is required before modifications to the truck that effect capacity or safety systems may be made.

IMPORTANT

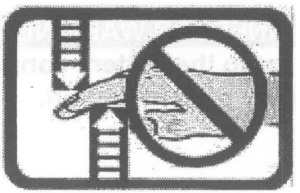
Safety and warning decals are placed in conspicuous locations on the truck to remind you of essential procedures or to prevent you from making an error that could damage the truck or possibly cause personal injury. You should know, understand, and follow these instructions. Safety and warning decals should be replaced immediately if missing or defaced (damage or illegible). Refer to your Service Manual for location of all decals.

OPERATOR/TIP-OVER WARNING DECAL

This decal is located on the front right hand leg of the drivers overhead. It is to remind the operator that staying in the seat provides the best chance of avoiding injury in the event of a truck-tipping or driving off a dock a dock mishap.

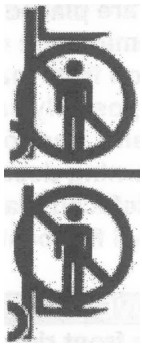
Lift trucks can be tipped over if operated improperly. Analysis of lift truck accidents has shown that the driver cannot react quickly enough to jump clear of the truck and overhead guard as the truck tips. To protect operators from severe injury or death in the event of a tip-over, it is best to be held securely in the seat. So, please, always buckle up when driving your lift truck.

UPRIGHT WARNING DECAL



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

KEEP AWAY FORM FORKS DECAL



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

⚠ WARNING

Turn key switch off and set parking brake before removing or inserting battery connector.
Truck may start in motion if you do not.

BATTERY CONNECTOR WARNING DECAL

This decal is placed next to the battery connector to warn of the danger of the truck starting in motion.

⚠ IMPORTANT

Familiarize yourself with the controls and follow safe operating rules.

KEY SWITCH

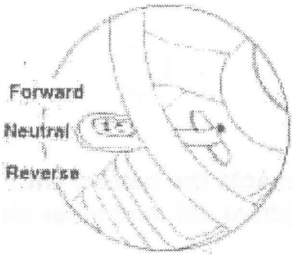
The Key Switch connects the battery with all truck operating systems (drive, lift, and steer electrical circuits) except the horn.

The Key Switch also connects battery to the diagnostic display hour meter and battery charge status.

The key switch must always be turned to the ON position to operate the truck. When the key is in the vertical OFF position, instruments, drive, and pump motor electrical circuits are disconnected (shut off), and the key can be removed. The horn should operate at all times, if an adequately charged battery is connected at the truck receptacle.

Section 3
Know Your Truck

DIRECTION CONTROL LEVEL



Direction of travel is selected with a control on the left-hand side of the steering column. The control lever has three positions:
The control lever is held positively in each position by spring detents in the lever assembly. Selection of travel direction may be noted by visual check of the lever position.

ACCELERATOR CONTROL PEDAL

The accelerator pedal controls the required speed and power. The accelerator pedal connect to the accelerator control mounted directly beneath the floorboard.

SERVICE BRAKES

Your truck has a manual service brake system with a single pedal that actuates the master cylinder.
The brake master cylinder reservoir is supplied with oil from the steering circuit. The fluid in the brake circuit is hydraulic fluid.

WARNING

Never operate your lift truck with the service or parking brakes not working correctly.

PARKING BRAKE

The parking brake pedal (or lever) mechanically operates the parking brake. To apply the parking brake push pedal down with your left foot until pedal stops (or pull the lever up). The parking brake release is located just above the brake pedal as shown. To release the parking brake pull toward you. The parking brake, which is independent from the service brake system, is actuated by a cable.

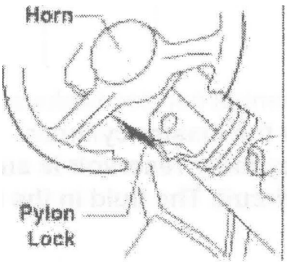
CAUTION

Always apply parking brake before leaving truck.

WARNING

Never operate your lift truck with a defective parking brake.

HORN BUTTON



The horn button is located in the center hub of the steering handwheel and is electrically connected by contacts and wiring to the horn assembly.

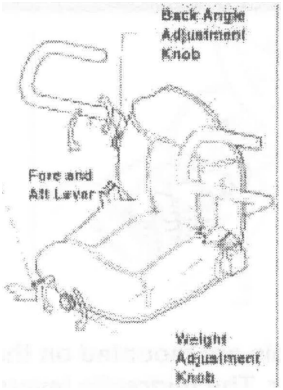
STEERING COLUMN PYLON

The steering column pylon can be tilted forward or backward to aid steering comfort and to allow battery removal.

To release the pylon, pull the latch handle upward as you tilt the pylon to the desired position.

To lock the pylon, release the lever.

SEAT ADJUSTMENT FORE-AND-AFT



The fore-and-aft adjustment lever is located on the right side under the seat. To unlock, push the lever to the left and adjust the seat, release the lever. Be sure that the seat locking mechanism is engaged.

BACK ANGLE ADJUSTMENT (Option)

To adjust the angle of the seat back turn the knob on the right side of the drivers seat. To tilt the seat back, turn the knob counterclockwise. To tilt the seat back forward, turn the knob clockwise.

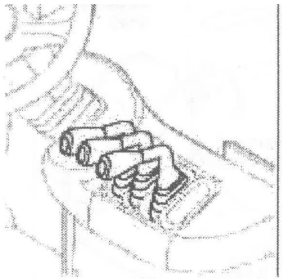
WEIGHT ADJUSTMENT(Option)

This adjustment allows you to set the cushion of the ride to the weight of the individual operator.

⚠ CAUTION

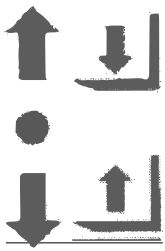
Never adjust driver's seat while truck is moving, to avoid the possibility of loss of control and of personal injury.

HYDRAULIC CONTROL LEVERS



The hydraulic controls are mounted on the dash within easy reach of the operator. The hydraulic levers actuate the lift, tilt functions and any other hydraulic devices which are installed on the truck.

LIFT CONTROL LEVER



The lift control lever raises and lowers the fork carriage on the upright. The lifting and lowering speeds are controlled through the main hydraulic valve by varying the lever position (amount of movement from center or neutral position).

When the lift control lever is pushed forward, the fork carriage is lowered. By varying the amount of movement of the lever from the center or neutral position, you determine the lowering speed. You can lower the fork carriage even if the key switch is OFF.

TILT CONTROL LEVER

With the tilt control lever, you are able to control the tilting or vertical positioning of the upright and the angle of the forks. When the lever is pulled back, the upright and forks tilt backward. Push the lever forward to tilt the upright and forks forward.

AUXILIARY CONTROL LEVER (Option)

An auxiliary control lever is mounted to the right of the tilt control lever. If your lift truck is equipped with an optional attachment, this lever will control the flow of hydraulic oil to the attachment.

MAIN HYDRAULIC SYSTEM

The main hydraulic system consists of a hydraulic sump tank, main hydraulic pump and motor, main control valve, and associated hydraulic lines and hoses.

The hydraulic sump is a separate, removable tank in the left-hand side compartment of the truck frame.

Oil from the hydraulic sump is fed by a gear pump to the main control valve. From the main control valve, the oil is directed to the lift cylinders, tilt cylinders, or back to the sump. Filtration of the main hydraulic system oil is provided through a spin-on, full-flow return line filter in the steering circuit.

POWER STEERING SYSTEM

All RICO sit down rider trucks are equipped with a hydrostatic power steering system. Full-time power steering is provided by oil pressure from a separate electric motor and pump. Oil for the power steering system is drawn from the main hydraulic sump and circulated back to the sump through the return-line filter.
The steering handwheel operates a steering control valve that directs oil flow to the double acting steering cylinder on the steering axle. The steering control valve can also act as a pump to provide manual steering if the steer motor (steer pump flow) stops.

CAUTION

Never operate a lift truck that has a steering system fault.

SECTION 4

OPERATOR MAINTENANCE

INSPECTING YOUR TRUCK

Before using a lift truck, it is the operator's responsibility to check its condition and be sure it is safe to operate.

Check for damage and maintenance problems. Have repairs made before you operate the truck. Unusual noises or problems should be reported immediately to your supervisor or other designated authority.

Do not make repairs yourself unless you have been trained in lift truck repair procedures and authorized by your employer. Have a qualified mechanic correct all discrepancies using genuine RICO or RICO approved parts.

Do not operate a truck if it is in need of repair. If it is in an unsafe condition, remove the key and report the condition to the proper authority. If the truck becomes unsafe in any way while you are operating it, stop operating the truck, report the problem immediately, and have it corrected.

Lift trucks should be inspected every eight hours, or at the start of each shift. In general, the daily inspection should include the visual and functional checks described on the following pages.

As an aid in carrying out this inspection, RICO has prepared a form called the "Driver's Daily Checklist." We recommend that you use this form to make a daily record of your inspections and truck condition. You may obtain copies of this form from your RICO dealer.

WARNING

Leaking hydraulic oil may be hot or under pressure. When inspecting a lift truck:

• Wear safety glasses

• Do not check for leaks with bare hands.

VISUAL CHECKS

Section 4
Operator Maintenance

First, perform a visual inspection of the truck and its major components:

1. **Walk around your lift truck and take note of obvious damage that may have been caused by operation during the last shift.**

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

3. **Check that the battery is installed and secured in position correctly. Check battery connector for safe condition.**

4. **Look for any external leakage around drive axle.**

5. **Check for hydraulic oil leaks and loose fittings. Do not use bare hands.**

6. **Be sure that the driver's overhead guard and any other safety devices are in place, undamaged, and attached securely.**

7. **Check all of the critical components that handle or carry the load.**

8. **Check the upright and lift chains. Check for obvious wear and maintenance problems such as damaged or missing parts, leaks, slack or broken chains, bent parts, and so on.**

9. **Carefully inspect the load forks for cracks, breaks, bending, twists, and wear. Be sure that the forks are correctly installed and locked in their proper position.**

10. **Inspect the wheels and tires for safe mounting and wear condition.**

11. **Check the hydraulic sump oil level.**

FUNCTIONAL CHECKS

Check the operation of the truck as follows:

NOTICE

Before performing these checks, familiarize yourself with the operating procedures in Section 5, "Operating Procedures." Be sure there is enough overhead clearance to fully raise the upright.

1. **With key switch off be sure all controls and systems operate freely and return to neutral properly. Check the:**

   • Service and parking brakes
   • Hydraulic controls: lift, tilt, and aux functions (if installed)
   • Accelerator control
   • Directional control
   • Steering system

2. **Test warning devices, horn, lights, and other safety equipment and accessories.**

3. **With the truck on, check the Command System display. The diagnostic display should show the charge remaining on the battery or a fault code. If the fault code is not an operator fault code (described in Section 5, "Operating Procedures" under "Using the Diagnostic Display"), call a service technician.**

4. **Check hydraulic fluid level: With the truck parked on a level surface, lift the carriage to maximum height while listening for a high-pitched squeal. This sound, called "cavitation," indicates the fluid is low. Add just enough to stop the cavitation".**

When the functional checks are completed:

1. Bring truck to a complete stop.

2. Put the directional control lever in the NEUTRAL position.

3. Apply the parking brake.

4. Turn the key switch to the OFF position.

5. Lower the lift mechanism fully.

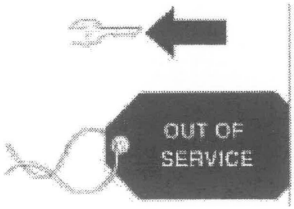
If you are going to leave the truck unattended:

6. Remove the key.
7. Block the wheels if the truck has any possibility of moving.

Concluding the Inspection

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

Do not operate a lift truck that has a maintenance problem, or is not safe to operate. Remove the key from the ignition switch and put an "Out of Service" tag on the truck.



SECTION 5

OPERATING PROCEDURES

Section 5
Operating Procedures

If all of the Daily Inspection checks were normal or satisfactory, the truck can be operated.

BEFORE OPERATING THE TRUCK

Be sure that you have read and understand the information in this Operator's Manual before operating the lift truck. The Operator's Manual Holder is located on the back of the seat.

⚠ WARNING

This equipment can be dangerous if not used properly. Safe operation is the responsibility of the operator.

Do not start or operate the truck, or any of its functions or attachments, from any place other than the designated operator's position.

⚠ CAUTION

Inspect your lift truck before operating at the start of the day or shift. Before putting your truck to use, check the operation of the controls and all systems.

Protect yourself. Do not operate truck without a driver's overhead guard unless conditions prevent its use. Do not remove overhead guard unless specifically authorized. Use special care if operation without this safety device is required.

STARTING FROM A SAFE CONDITION

Always start from a safe condition. Before operating a lift truck, make sure that:

8. **Parking brake is applied.**

9. **Forks are fully lowered to the floor or ground.**

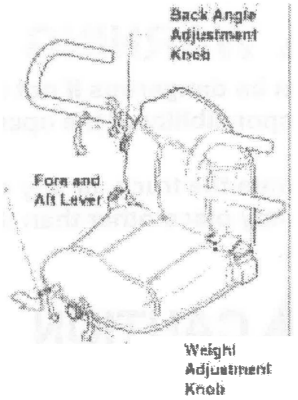
10. **You are familiar with how all the controls function.**

11. All controls are in neutral or other correct position.

12. Truck has received its daily inspection and is ready and safe to operate.

Put the direction control lever in the NEUTRAL position, before turning the key switch to ON.

ADJUSTING THE SEAT



Adjust the seat to a comfortable position for you. Adjust the seat by moving and holding the release lever at the front edge of the seat. Put Fore the seat in a position that will provide easy reach to all controls. Re-and Aft lease the seat lever. Make sure that Lever the seat locking mechanism is engaged.

⚠ CAUTION

Never adjust the driver's seat while the truck is moving, to avoid the possibility of loss of control and of personal injury.

BUCKLING UP

Buckle up. Be sure that you put on the seat belt. Connect and adjust the seat belt strap to a snug, comfortable position.

⚠ WARNING

Always wear your seat belt when operating a lift truck.

STARTING THE TRUCK

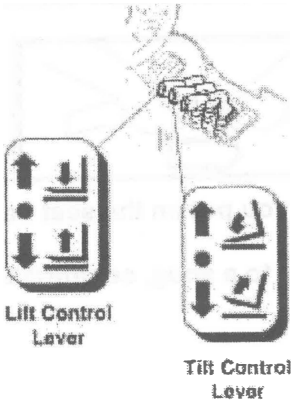
Before you start the truck, make sure that you have taken all the above mentioned precautions and that the directional control is in NEUTRAL. To start the truck, turn the key switch clockwise to the ON position.

USING THE DISPLAY

The display should turn "ON" all symbols and "8888" appear on numeric display for about 2 seconds when the key switch is turned "ON".

If the battery symbol light comes on, the digital readout shows the percentage of charge remaining on the battery. When the remaining charge registers as 20% or less, the readout flashes. At 10% remaining charge, the lift and tilt functions become inoperable.

If the wrench symbol comes on, a status code appears on the digital readout. The status code may indicate an easily correctable "operator fault" or it may indicate that you need to have the truck serviced.



A complete listing of status codes appears in the service manual. When you return the key switch to the OFF position, the hourglass symbol light should come on, and the hours registered on the truck should appear on the digital readout for about four seconds.

POSITIONING FORKS & UPRIGHT

When driving, with or without a load, it is good practice to have the forks slightly raised and tilt the upright (forks) backward. Having the forks raised and tilting back prevents the fork tips from catching on possible obstructions and reduces the wear on the fork blades from striking or dragging on the floor or ground. See the NOTICE and CAUTION below.

Pull back on the lift control lever and raise the forks 6 to 8 inches (152 to lift Control 203 mm) above the floor. Then, using the tilt control, tilt the upright back slightly to raise the fork tips.

NOTICE

When the upright (carriage and/or load) is raised into a high (elevated) position, the stability of the truck is reduced.

Some of the other conditions that may affect stability are: ground and floor conditions, grade, speed, loading, dynamic and static forces and the judgement exercised by the operator. Trucks equipped with attachments behave as partially loaded trucks even when operated without a load on the attachment. Also, improper operation, faulty maintenance or poor housekeeping may contribute to a condition of instability.

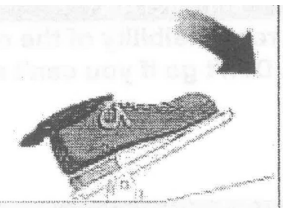
⚠ CAUTION

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

CONTROLLING SPEED

With the direction control in FORWARD or REVERSE, the parking brake released, put your foot on the accelerator pedal and push down smoothly until the truck is moving at the desired speed.

BRAKING



To stop the truck, lift your foot from the accelerator pedal and put it on the brake pedal. Push down on the brake pedal in a smooth, firm motion until the truck is stopped.

IMPORTANT

Stop a lift truck as gradually as practical. Hard braking and wheel sliding are dangerous and can cause tip-over or the truck could loose its load. Also hard braking can increase wear and can be harmful to the lift truck.

PLUGGING

You can change direction, without braking, by "plugging." As you are traveling, move the direction control lever to the opposite direction and keep the accelerator pedal depressed. The truck should slow to a smooth, controlled stop and then accelerate in the opposite direction. You can control the plugging distance with the accelerator pedal: The farther the accelerator is depressed, the shorter the reversal distance. By lifting your foot from the accelerator pedal as the truck comes to a stop (before going in the opposite direction) the truck can be stopped without use of the brakes.

CAUTION

Be careful when plugging. Any sudden change indirection can cause the load to move or fall off the forks.

IMPORTANT

Safe operation is the responsibility of the operator. Watch where you are going. Don't go if you can't see.

OPERATING SAFELY

Before driving, check all around to be sure that your intended path of travel is clear of obstructions and pedestrians.

While driving, be alert for pedestrians, other vehicles or obstructions in your path of travel.

Section 5
Operating Procedures

Watch people. Do not allow anyone to stand or pass under the load or raised forks. Watch for people in your work area even if your truck has warning lights or alarms. They may not watch for you.

Sound horn at intersections and wherever vision is obstructed. Do not drive a truck up to anyone standing in front of an object.

Protect yourself and those around you ...

Operate the truck only from the designated operator's position. Stay within the confines of the lift truck profile dimensions. Keep arms, legs and hands inside the operator's compartment and away from the danger of passing obstructions. Keep under the overhead guard.

NOTICE

An overhead guard is intended to offer protection to the operator from falling objects, but cannot protect against every possible impact. Therefore, it should not be considered a substitute for good judgement and care in loading, handling, storage, etc..

Keep clear of the upright and lift mechanism. NEVER reach into or put hands, arms, legs or head into or through the upright structure or near the carriage or lift chains. Never put any part of your body between the upright and the truck. Don't use the upright as a ladder.

Keep all other persons clear of the load and upright mechanism while attempting to handle a load.

No riders ...

Do not carry passengers. The operator is the only one who should be on the truck.

Always be in full control of your lift truck ...

Never operate a lift truck or its attachments if you are not in the designated operator's position.

Never operate a lift truck when your hands are wet or greasy.

Always pick the smoothest travel route for your lift truck. Avoid bumps, holes, slick spots, and loose objects or debris in your path that may cause the truck to swerve or tip. If these conditions are unavoidable, slowdown and carefully drive past them. Slowdown for wet or slippery surfaces.

Avoid any sudden movement. Start, stop, travel, steer, and brake smoothly.

Operate your lift truck under all conditions at a speed that will permit it to be brought safely to a stop.

WARNING

Travel slowly when turning. Use special care when traveling without a load because the risk of tipping over is greater with an empty truck, especially at high speed and when cornering.

Travel with the fork carriage tilted back and raised only enough to fully clear the ground or obstacles. When the carriage (load) is in an elevated position the stability of the truck is reduced.

Do not elevate the load except during stacking.

Grades, ramps, and inclines ...

Use special care when operating on ramps, inclines, and uneven areas. Travel slowly. Travel straight up and down. Do not turn or drive at an angle across an incline or ramp.

When the truck is loaded, travel with the load upgrade. When the truck is empty, travel with lifting mechanism (upright) downgrade.

Practice safe operation every time you use your truck ...

Section 5
Operating Procedures

Careful driving and operation is your responsibility. Be completely familiar with all the safe driving and load handling techniques in this operator's manual. Use common sense. Drive carefully; do not indulge in stunt driving or horseplay. Observe traffic rules. Watch for people and hazards. Slow down. Be in full control of your lift truck at all times.

Follow the instructions in this manual to avoid damage to your truck or the possibility of injury to yourself or others. During your work, observe all functions of your lift truck. This allows you to immediately recognize a problem or irregularity that could affect the safe operation of your truck.

Periodically check the gauges and warning indicator lights in the instrument panel to be sure they indicate a normal condition. If an abnormal condition appears, shut off the key switch immediately and report the problem.

IMPORTANT

Do not continue to operate a truck that has a malfunction. Stop and have it fixed.

IMPORTANT

Always wear your seat belt when operating your lift truck.

⚠ CAUTION

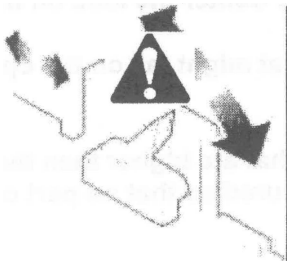
Operate your lift truck only in areas that have been approved for your lift truck type designation. Certain areas contain flammable gases, liquids, dust, fibers, or other hazardous materials. Lift truck operations in these areas must have special approval. These areas must be desig-

nated to show the type of lift truck approval required for operation in the area. Be aware that changes to special equipment or poor maintenance can cause the lift truck to lose its special approval.

Be sure that your truck is the correct fire safety type for the area in which you are working. The proper type designation for this truck is listed on the nameplate. In areas classified as hazardous, use only trucks approved for use in those areas. If you are unsure of the classification of the area you wish to enter, check before entering.

Section 5
Operating Procedures

Adjusting the Load Forks



The load forks are adjustable on the hanger shaft. Forks should be spaced as far apart as the load being carried will allow. Both forks should always be the same distance from the center of the fork carriage. To adjust the forks, raise the carriage slightly. Tilt the upright fully forward to reduce friction and make the forks slide easier. Unlock the fork locking pins. Position the forks. Secure the fork locking pins.

CAUTION

Forks are heavy, keep fingers clear. Move forks by pushing with one foot while holding on to the load back rest with hands. Be sure to have firm footing before attempting to move forks. Do not attempt this where the floor is slippery or wet.

LOAD HANDLING

Handle only loads that are within the truck rated capacity as shown on the nameplate. This rating specifies the maximum load that should be lifted. However, other factors such as special load handling attachments, loads having a high center of gravity, or uneven terrain may dictate that the safe working load be less than the rated capacity. Under these conditions, the operator must reduce the load carried so that the lift truck remains stable.

Handle only stable or safely arranged loads. Do not handle loads made up of loose, unevenly stacked or unstable items that can easily shift and fall. Take the time to correctly stack and band loose items. Center the load on the forks.

Do not lift anything that might fall on the operator or a bystander.

Do not handle loads that are higher than the fork carriage unless the load is secured so that no part of it can fall backwards.

Keep the load back against the carriage. Loads placed out on the ends of the forks can make the lift truck less stable and more likely to tip up.

Lift and lower with the upright mast vertical or tilted slightly back - never tilted forward.

Operate lift and tilt controls slowly and smoothly. Never tilt forward when carriage (load) is raised, except to pick up or deposit a load over a rack or stack.

WARNING

Slack chains mean rail or carriage hang-up. Raise the upright before you move. If the upright malfunctions in any way or becomes stuck in a raised position, operate the lift control to eliminate any slack chains. DO NOT go under a raised upright or forks to attempt repairs. DO NOT climb on upright to free hang-up.

Remember, your lift truck is designed to carry loads forward of the front wheels so that the weight of the load is counter-balanced by the weight of the truck.

The farther the load is carried from the pivot point (center of front wheels), the greater will be the uplift at the rear of the truck. Therefore, always carry the load as close to the front

wheels as possible (back and flush against the face of the forks).

The capacity load shown on the nameplate is represented by a cube in which the weight is evenly distributed, with the center of gravity located a standard distance from the face of the forks. If the weight of the actual load to be handled is not evenly distributed, put the heaviest part closest to the carriage.

TRAVELING WITH A LOAD

Travel with load or carriage as low as possible and tilted back. Never travel with the load or carriage raised (elevated) in a high position. Do not elevate the load except during stacking.

Observe all traffic regulations and watch for other traffic, pedestrians, and safe clearances. Always look in the direction of travel. Keep a clear view of the path of travel, and when the load blocks your visibility, travel in reverse with load trailing (except when climbing an incline).

Avoid sudden movements when carrying a load-start, stop, travel, steer, and brake smoothly. Steer clear of bumps, holes, and loose materials or debris on the ground. Lift and tilt slowly and smoothly. Go slowly when turning. Cross railroad tracks slowly at an angle wherever possible.

Use special care when handling and traveling with long, high, or wide loads-to avoid losing the load, striking bystanders or obstructions, or tipping the truck.

Watch clearances around the truck and load as you travel. Raise the forks or attachment only to pick up or stack a load. Look out for obstructions, especially overhead.

Be aware that exaggerated tail swing, when turning while traveling forward, is a characteristic of lift trucks that are steered by the rear wheels. Accordingly, you need to become accustomed to tail swing and always check the tail

swing area of the counterweight to be sure it is clear before you turn.

Always be concerned about the stability of your lift truck. When attachments are used, extra care should be taken in securing, manipulating, positioning, and transporting the load. Because attachments generally add extra weight and complexity to the truck, operate trucks equipped with attachments as partially-loaded trucks when not handling a load.

PICKING UP & MOVING LOADS

When picking up a load from the ground, approach the load slowly and carefully align the truck square with the load. The forks should be adjusted to fit the load or pallet being handled and spread as wide as possible to provide good stability and balance. Before lifting, be sure the load is centered and the forks are fully under and supporting the load. Fork length should be at least 2/3 of load length. With the lift and tilt controls, adjust the forks to the correct height and angle for freely engaging the load pallet. Move forward until the forks are squarely and completely under the load.

NOTICE

Be sure that the forks do not extend beyond the load, causing damage or tipping of other adjacent loads or materials behind the load being moved.

If the forks are longer than the load, move the tips partially under the load without extending beyond the load. Raise the load to clear the floor. Back out several inches, or whatever distance is necessary, then set the load down and move forward until the load is positioned against the carriage.

Raise the load from the floor or stack by tilting the upright back just enough to lift the load from the surface. When stacking or tiering, use only enough backward tilt to stabilize the load.

Then raise the load to traveling height and tilt fully back to travel (except for loads that must be transported as level as possible).

UNLOADING

To deposit a load on the floor after being moved into the correct position, tilt the upright forward to a vertical position and lower the load.
Adjust the fork height and tilt the upright forward slightly, as necessary, for smooth removal of the forks from the load (pallet).

Carefully back away to clear the forks from the load.

Raise the forks to traveling height and tilt fully back.

STACKING

To put a load on a stack:

Approach slowly and align the lift truck and load squarely with the stack.

Raise (elevate) the load as the lift truck is nearing the stack.

Move forward, slowly, until the load is almost touching the stack. The leading edge and sides of the load pallet should be lined up exactly with the near edge and side of the load or rack on which you are stacking.

Stop close to the stack and further lift (raise) the load high enough to clear the top surface of the stack. Slowly move the load into position. Be careful not to damage or move adjacent loads.

When the load is aligned with the stack beneath it, tilt the upright to the vertical position and carefully lower the load onto the top surface of the stack.

Lower (drop) the forks slightly to clear (disengage) the load pallet. Tilt the forks forward slightly, if necessary.

Check your travel path, then carefully back away until the forks are clear of the stack. Stop and lower the forks to the travel position (6 to 8 inches above the ground), then tilt back to travel.

MOVING A LOAD FROM A STACK

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

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

Raise the load from the stack by tilting the upright back just enough to lift the load from the surface. Or, with the mast still vertical, raise the forks until they begin to lift the load. At this point, apply the minimum back tilt that will stabilize the load.
Check your travel path, slowly back off until clear of the stack, stop, and then lower the load to the travel position (6 to 8 inches off the ground). Tilt full back to travel (except for certain loads that may have to be transported as level as possible). Be sure the load is back flush against the carriage or front face of the forks.

NOTICE

Certain loads may have to be transported as level as possible.

AFTER OPERATING THE TRUCK

Always leave your lift truck in a safe condition. When you leave your truck, or park it, follow these safety rules:

• Park in a safe area away from normal traffic.

• Never park on a grade.

• Never park in areas that block emergency routes or equipment, access to fire aisles, or stairways and fire equipment.

Before leaving the operator's position:

Bring truck to complete stop.

Put the directional control lever in the NEUTRAL position.

Apply the parking brake.

Lower the lifting mechanism-carriage and forks or attachment fully to the floor.

In addition, when leaving the truck unattended:

Tilt the upright forward until the forks are level and flat on the floor.

Turn the key switch to the OFF position.

Block the wheels if the truck must be left on an incline or you have any doubt about the truck moving from a safe position.

SECTION 6

EMERGENCY TOWING

Section 6
Emergency Towing

TOWING PRECAUTIONS

If your lift truck becomes disabled but can be moved freely on its own wheels without further damage, use the following procedures to tow it safely to a repair area. It is important for your safety and to the care of your lift truck to use the proper equipment and carefully follow these recommendations for safe towing.

⚠ WARNING

DO NOT tow a lift truck if there is a problem with the brakes or tires, or the steering cannot be operated.

DO NOT tow up or down ramps and steep inclines.

DO NOT attempt to tow a lift truck if traction or weather conditions are poor.

DO NOT tow with truck in either "Forward" or "Reverse". Always tow with the truck in "Neutral"

Personal injury or death could result when towing a disabled lift truck incorrectly.

TOWING PROCEDURES

Be sure to apply the parking brake or block the drive wheels on the disabled truck while working around it.

If possible, raise the carriage (forks) on the disabled truck about 12 inches (300 mm) from the floor. Secure the carriage with a chain.

Normally, the towing lift truck should be as large as the disabled lift truck. Satisfy yourself that the towing lift truck has enough brake capacity, weight and power, to control both lift trucks for the grade and the distance involved.

To provide sufficient control and braking when

moving a disabled lift truck down hill, a larger towing lift truck or additional lift trucks connected to the read could be required. This will help prevent uncontrolled rolling.

Before towing, make sure the tow line or bar is in good condition and has enough strength for the towing situation involved. Use a towing line or bar with a strength of at least 1.5 times the gross weight of the towing lift truck.

A shield must be provided on the towing vehicle to protect the operator if the tow line or bar should break.

Keep the tow line angle to a minimum. Do not exceed a 30-degree angle fro the straight ahead position. Connect the tow line as low as possible.

Check that the counterweight bolts are in place and properly torqued. (The counterweight bolts are made of special high tensile steel and are not commercially available. Replace, when necessary, only with genuine RICO replacement part).

Tow the disabled truck backwards. An operator must be on the towed truck wearing a seat belt.

Tow the truck slowly. Careful towing is necessary to prevent injury to personnel or damage to the truck. The truck should be towed in neutral and at a speed of less than 1.2 mph (2 km/h) with a driver in the seat. Do not lift the truck or any wheels off the floor while the truck is being towed.

Section 6
Emergency Towing

CAUTION

The power steering does not operate on the disabled truck when the power steer motor is not running, which makes the steering handwheel difficult to turn.

Park the disabled truck in authorized areas only. Fully lower the forks to the floor, put directional control lever in the NEUTRAL position and turn the key switch to the OFF position. Engage the parking brake. Disconnect the battery. Remove the key and, when necessary, block the wheels to prevent the truck from rolling.

WARNING

Always engage the parking brake when parking a lift truck. The truck can move and cause injury or death to personnel near it.

SECTION 7

PLANNED MAINTENANCE

Section 7
Planned Maintenance

LIFT TRUCK MAINTENANCE

Regular maintenance and care of your lift truck is not only important for full and efficient truck life; it is essential for your safety. The importance of maintaining your lift truck in a safe operating condition by servicing it regularly and, when necessary, repairing it promptly cannot be emphasized too strongly. Experience has shown that powered industrial trucks can cause injury if improperly used or maintained. In the interest of promoting safety, several current industry and government safety standards specify that any powered industrial truck not in safe operating condition be removed from service and that all repairs be made by trained and authorized persons.

To assist you in keeping your lift truck in service and in good operating condition, this section outlines maintenance procedures that should be done at regular intervals. This planned approach is considered essential to the life and safe performance of your truck.

It is your responsibility to be alert for any indication that your truck may need service and have it attended to promptly. You play an important part in maintenance. Only you can make sure that your lift truck regularly receives the care it needs.

CAUTION

Powered industrial trucks may become hazardous if maintenance is neglected.

PLANNED MAINTENANCE

As outlined previously, you should always make a safety inspection of your lift truck before operating it. The purpose of this daily examination is to check for any obvious damage and maintenance problems, and to have minor adjustments and repairs made to correct any unsafe

condition.

In addition to the daily inspection, RICO recommends that you set up and follow a periodic planned maintenance (PM) and inspection program. PM inspections should only be performed by a trained and authorized fork lift mechanic. Performed on a regular basis, the program provides thorough inspections and checks on the safe operating condition of your lift truck. The need for major adjustments, repairs, or replacements is found and corrections made as required, not after failure has occurred. The specific schedule (frequency) for these PM inspections depends on the conditions of your particular application and lift truck usage.

The recommended planned maintenance and lubrication schedule lists those items considered essential to the safety, life, and performance of your truck with typical recommended service intervals. Brief procedures for inspections, operational checks, cleaning, lubrication, and minor adjustments are included for your reference.

Your local RICO dealer is prepared to help you with your Planned Maintenance Program, if you want assistance. Your RICO dealer has specially trained service personnel who are authorized to check your lift truck according to the applicable safety regulations.

"Section 8, Specifications," contains some useful information for selected components, fuel and lubricants, critical bolt torques, refill capacities, and settings for your truck.

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

PLANNED MAINTENANCE INTERVALS- TYPICAL OPERATING CONDITIONS

Time intervals between maintenance are largely determined

by operating conditions. For example, operation in sandy, dusty locations requires shorter maintenance intervals than operation in clean warehouses. The indicated intervals are intended for normal operation. The following operating conditions are defined:

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

Severe Operation: Prolonged operating hours or constant usage.

Extreme Operation:
• In sandy or dusty locations, such as: cement plants, lumber mills, and coal dust or stone crushing sites

• High-temperature locations, such as: steel mills, foundries, etc.

• Sudden temperature changes, such as: constant trips from buildings into the open air, refrigeration plants, etc..

If your fork lift truck is used in severe or extreme operating conditions, you must shorten the maintenance intervals accordingly.

NOTICE

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

SAFE MAINTENANCE PRACTICES

The following instructions have been prepared from current industry and government safety standards applicable to industrial truck operator 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 RICO dealer.

Powered industrial trucks can become hazardous if maintenance is neglected. Therefore, suitable maintenance facilities, trained personnel, and procedures shall be provided.

Maintenance and inspection of all powered industrial trucks shall be done in conformance with the manufacturer's recommendations.

A scheduled planned maintenance, lubrication, and inspection system shall be followed.

Only trained and authorized personnel shall be permitted to maintain, repair, adjust, and inspect industrial trucks-and in accordance with the manufacturer's specifications.

Properly ventilate work area, and keep shop clean and floor dry.

Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check fluid or electrolyte levels. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.

Before starting work on truck:

Raise drive wheels free of floor and use blocks or other positive truck positioning devices.

Put blocks under the load-engaging means, inner masts, or chassis before working on them.

Disconnect battery before working on the electrical system.

NOTICE

Refer to the "Jacking and Blocking" section in the Service Manual for proper procedures.

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

Before starting to drive the truck:

- **Be seated in operating position.**
- **Make sure parking brake is applied.**
- **Put directional control in NEUTRAL.**
- **Turn the key switch to the ON position.**
- **Release the parking brake.**
- **Check functioning of lift and tilt systems, directional and speed controls, steering, brakes, warning devices, and any load handling attachments.**

Before leaving the truck:

- **Stop truck.**
- **Fully lower the load-engaging means; upright, carriage, forks or attachments. Tilt upright forward.**
- **Put directional control in neutral.**
- **Apply the parking brake.**
- **Turn the key switch to the OFF position.**
- **Disconnect battery.**
- **Put blocks at the wheels if truck must be left on an incline.**

Brakes, steering mechanisms, control mechanisms, warning devices, lights, lift overload devices, lift and tilt mechanisms, articulating axle stops, and frame members must be carefully and regularly inspected and maintained in a safe operating condition.

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

All hydraulic systems must be regularly inspected and maintained in conformance with good practice. Tilt and lift cylinders, valves, and other parts must be checked to assure that "drift" or leakage has not developed to the extent that it would create a hazard.

When working on hydraulic system, be sure the battery is disconnected, upright is in the fully-lowered position, and hydraulic pressure is relieved in hoses and tubing. Do not check for hydraulic leaks with bare hands.

WARNING

Always put blocks under the carriage and upright rails when necessary to work with upright in an elevated position.

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

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

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

Section 7
Planned Maintenance

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

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.

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 RICO or RICO-approved parts.

Use special care when removing heavy components from the truck, such as counterweight, upright, etc.., the truck can become unstable and tip over. Be sure that lifting and handling equipment is of correct capacity and in good condition.

NOTICE

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

ANSI/ASME B56.1: 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 Assoc., Inc., Batterymarch Park, Quincy, MA 02269.

Section 7
Planned Maintenance

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, U.S. Government Printing Office, Washington, DC, 20402.

IMPORTANT

Your new RICO lift truck has been built to meet all applicable mandatory requirements of ANSI B56.1 Safety Standard for Powered Industrial Trucks. Each truck also includes certain safety devices, e.g., 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.

PM REPORT FORM

A planned maintenance (PM) program of regular, routine inspections and lubrication is important for long life and trouble-free operation of your lift 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.

As an aid in performing and documenting your PM inspections, RICO prepared an Electric Truck Planned Maintenance Report Form (PM Report Form). Copies of this form may be obtained from your authorized RICO dealer. We recommend that you use this form as a checklist and a record of your inspection and truck condition.

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

You make check marks or entries on the PM Report Form

when you perform the PM. Please notice on the form a 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 responsible for lift truck maintenance.

Do not make repairs or adjustments unless authorized to do so.

For safety, it is good practice to:

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

Disconnect the battery before working on electrical components.

Always wear safety glasses. Wear a safety (hard) hat in industrial plants and in special work areas where protection is necessary and required.

VISUAL INSPECTION

Begin the PM routine with a visual inspection of the lift 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 or decals are attached and legible.

NOTICE

NAMEPLATES AND DECALS: Do not operate a lift truck with damaged or lost decals and nameplates. Replace them

immediately. They contain important information.

Inspect the truck for any sign of external leakage: transmission fluid, etc..

Check for hydraulic oil leaks and loose fittings.

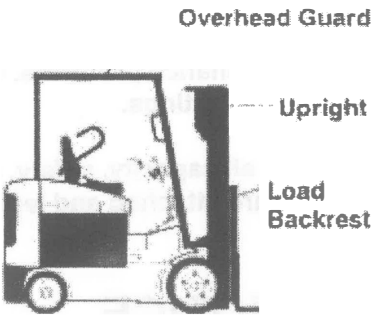
CAUTION

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

Be sure that the driver's overhead guard, load backrest extension, and safety devices are in place, undamaged, and attached securely. Then check all of the critical components that handle or carry the load.

Overhead Guard

Check the overhead guard for damage. Be sure that it is properly positioned and all mounting fasteners are in place and tight. Make sure no cracks have developed.



Upright Assembly

Inspect the upright assembly: rails, carriage rollers, lift chains, and lift and tilt 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). Inspect all lift line hydraulic connections for leaks.

IMPORTANT

Make sure that no structural members have developed any cracks.

Forks

Inspect the load forks for cracks, breaks, bending and wear. The fork top surfaces should be level and even with each other. The height difference between both fork tips should be no more than 3% of the fork length.

USER FORK WEAR STANDARDS

From ASME/ANSI B56. 1d-1993 6.2.8 Inspection and Repair of Forks in Service on Fork Lift Trucks
(a) Forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any defect or permanent deformation is detected. Several applications will require more frequent inspection.

(b) Individual and Load Rating of Forks. When forks are used in pairs (the normal arrangement), the rated capacity of each fork shall be at least half of the manufacturer's rated capacity of the truck, and at the rated load center distance shown on the lift truck nameplate.

Inspection. Fork inspections shall be carried out carefully by trained personnel with the aim of detecting any damage, failure, deformation, etc., which might impair safe use. Any fork which shows such a defect shall be withdrawn from service, and shall not be returned to service unless it has been satisfactorily repaired in accordance with ASME B56.1

para 6.2.8.2.

Surface Cracks. The fork shall be thoroughly examined visually for cracks and if considered necessary, subjected to a non-destructive crack detection process, special attention being paid to the heel and welds attaching all mounting components to the fork blank. This inspection for cracks must also include any special mounting mechanisms of the fork blank to the fork carrier including bolt type mountings and forged upper mounting arrangements for hook or shaft type carriages. The forks shall not be returned to service if surface cracks are detected.

Straightness of Blade and Shank. The straightness of the upper face of the blade and the front face of the shank shall be checked. If the deviation from straightness exceeds 0.5% of the length of the blade and/or the height of the shank, respectively, the fork shall not be returned to service until it has been repaired in accordance with para 6.2.8.2.

Fork Angle (Upper Face of Blade to Load of the Shank). Any fork that has a deviation of greater than 3 deg. from the original specification shall not be returned to service. The rejected fork shall be reset and tested in accordance with para 6.2.8.2.

Difference in Height of Fork Tips. The difference in height of one set of forks when mounted on the fork carrier shall be checked. If the difference in tip heights exceeds 3% of the length of the blade, the set of forks shall not be returned to service until repaired in accordance with para 6.2.8.2.

Positioning Lock (Where Originally Provided). It shall be confirmed that the positioning lock is in good repair and correct working order. If any fault is found, the fork shall be withdrawn from service until satisfactory repair has been effected.

Wear: Fork Blade and Shank. The fork blade and shank shall be thoroughly checked for wear, special attention being paid to the vicinity of the heel. If the thickness is reduced to 90% of the original thickness, the fork shall not be returned to service.

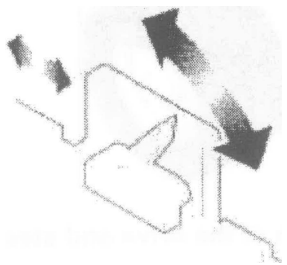
Wear: Fork Hooks (Where Originally Provided). The support face of the top hook and the retaining faces of both hooks shall be checked for wear, crushing, and other local deformations. If these are apparent to such an extent that the clearance between the fork and the fork carrier becomes excessive, the fork shall not be returned to service until repaired in accordance with para 6.2.8.2.

Wear: Legibility of Marking (When Originally Provided). If the fork marking in accordance with para 7.25.2 is not clearly legible, it shall be renewed. Marking shall be renewed per instructions from original supplier.

Fork Repair and Testing: Only the manufacturer of the fork or an expert of equal competence shall decide if a fork may be repaired for continual use, and the repairs shall only be carried out by such parties.

It is not recommended that surface cracks or wear be repaired by welding. When repairs necessitating resetting are required, the fork shall subsequently be subjected to an appropriate heat treatment, as necessary.

Load Backrest



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

⚠ CAUTION

If the load backrest extension has been removed, a bolt and washer must be in place on each end of the top fork bar to act as a fork stop.

Lift Chain

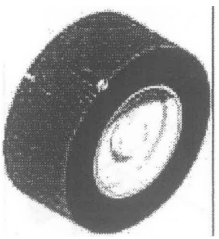
Carefully check the lift chains for wear, rust, and corrosion, cracked or broken links, stretching, etc.. Check that the lift and carriage chains are adjusted to have equal tension. Check that the lift chain anchor fasteners and locking means are in place and tight.

⚠ WARNING

Uprights and lift chains require special attention to maintain them in safe operating condition.

- **Uprights can drop suddenly. Look at the upright, but keep hands out.**
- **Lift chain repairs and adjustments should be made by trained service personnel.**

Wheels and Tires



Check the condition of the drive and steer wheels and tires.

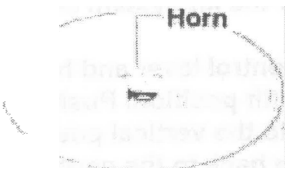
Remove objects that are embedded in the tire. Inspect the tires for excessive wear and breaks or "chunking out" and bond failure between the tire and the rim.

Check all wheel lug nuts or bolts to be sure none are loose or missing.

Have missing bolts replaced and loose bolts tightened to the correct torque before operating truck.

FUNCTIONAL TEST

Now, check that all controls and systems are functioning correctly. Test horn, lights, and all other safety equipment and accessories. Be sure they are properly mounted and working correctly.



Press the horn button to check horn function. If the horn or any other part does not operate, report the failure, and have it repaired before the truck is put into operation.

Service and Parking Brakes

Operate service and parking brakes; all hydraulic controls-lift, tilt, and auxiliary (if installed); accelerator; directional controls; and steering system. Be sure all controls operate freely and return to neutral properly.

Check the service brake system. Push the brake pedal fully down and hold. The brakes should be applied before the pedal reaches the floor plate. Check for a feeling of solid resistance when the pedal stops. The pedal must feel firm and not move down farther after it stops. If the pedal continues to creep downward, report the failure

immediately. Do not operate the truck until the brakes are repaired.

Check the function of the parking brake. Release, then apply the parking brake with the lever. When correctly adjusted, the lever should snap-lock easily into the over-center applied position.

To check parking brake holding capability and adjustment, park the lift truck on a grade and apply the parking brake. The parking brake should hold a lift truck with rated load on a 15% grade. When the lever is released, the brakes should not drag.

Lift Mechanisms and Controls

Check the function of the lift system and controls.

Pull back on the tilt control lever and hold until the upright reaches the full back tilt position. Push forward on the lever to return the upright to the vertical position. Release the lever. It should spring back to the neutral position freely without assistance.

⚠ CAUTION

Be sure that there is adequate overhead clearance before raising the upright.

Pull back on the lift control lever and raise the fork carriage to full height. Watch the upright assembly as it rises. All movements of the upright, fork carriage, and lift chains must be even and smooth, without binding or jerking.

Watch for chain wobble or looseness; the chains should have equal tension and move smoothly without noticeable wobble. Release the lever. It should spring back to the

center position.

If the maximum fork height is not reached, this indicates there is an inadequate (low) oil level in the hydraulic sump tank or severe binding within the upright.

Push forward on the lift control lever. Watch the upright as it lowers. Movement should be smooth and even. When the forks reach the floor, release the lever. It should spring back to the center position.

Auxiliary Controls

If your lift truck is equipped with an attachment, test the control lever for correct function and briefly operate the attachment.

Steering System

NOTICE

The steering system, steer axle, and steering linkage on your 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 free play (looseness), or unusual sound when turning or maneuvering indicates a need for inspection or servicing.

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.

IMPORTANT

Never operate a truck with a steering system fault.

⚠ WARNING

Fasten your seat belt before driving the truck.

Direction 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 direction control lever from 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 and equally. Be sure the travel area is clear behind the truck.

Put the directional control lever in the REVERSE travel position. 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 and equally.

Transistorized Traction Control

Test for correct function of the traction control. Check creep speed, 1A range, and plugging.

CAUTION

Check and make sure the travel area is clear before each

movement and before each change of direction

Check creep speed and 1A range while driving the truck in a straight line in both forward and revere directions. All speed changes should be smooth while increasing and decreasing speed. Notice any unusual drive train noise or action of the control and drive train components.

Stop the truck with the service brakes. Note any unusual reactions in driving or braking performance. Note any need for adjustment.

Check the plugging function first at a slow speed. If operating correctly then test at full speed..

First drive the truck in the FORWARD direction. Push the accelerator pedal and allow the truck to accelerate to the desired travel speed. Then, move the direction control to the REVERSE position while your foot is still depressing the accelerator pedal. The truck should slow to a smooth, controlled stop and accelerate in the opposite direction.

Check the accelerator control while conducting the speed range tests. It must move easily and smoothly throughout the acceleration stroke and return without binding.

Test the service brake (drive motor cut-off) switch.

Drive the truck in FORWARD (or in REVERSE) at creep speed. While holding the accelerator pedal steady, push on the brake pedal with your left foot. The brake action should interrupt power to the drive motor and stop the truck. Release the brake pedal. The drive motor should start moving the truck again.

IMPORTANT

When you have completed the operations test, park and

leave the truck according to standard shut down procedures.

Be sure to make record of all maintenance operating problems you may find.

Checking the Hydraulic Fluid

Check the hydraulic sump tank fluid level. Correct fluid level is important for proper system operation. Low fluid level can cause pump damage.

Hydraulic fluid expands as 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 an apply the parking brake. Put the upright in a vertical position and lower the fork carriage fully down. Pull the dipstick out (under the sump breather), wipe it clean, and reinsert it. Remove the dipstick and check oil level. Keep the oil level above the LOW mark on the dipstick by adding recommended hydraulic fluid only, as required. Do not overfill.

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

IMPORTANT

When checking hydraulic oil, make sure you use a clean wiper and don not let contaminants get on the dipstick or in the sump.

Critical Fasteners 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 that directly support, handle, or control the load and protect the operator. Check critical items, including:

Drive axle mounting

Drive and steer wheel mounting

Counterweight mounting

Load back rest and extension

Overhead guard

Tilt cylinder mounting and yokes

Upright mounting & components

Air Cleaning the Truck

Always maintain a lift 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 and grease. Wipe up all oil spills. Keep the controls and floorboards clean, dry, and safe. A clean truck makes it easier to see leakage and loose, missing, or damaged parts. A clean condition helps prevent fires and helps the truck run cooler.

The environment in which a lift truck operates determines how often and to what extent cleaning is necessary. For example, trucks operating in manufacturing plants with a high level of dirt, dust, or lint, (e.g., cotton fibers, paper dust, etc.) in the air or on the floor require more frequent cleaning. If air pressure does not remove heavy deposits of grease, oil, etc., it may be necessary to use steam or liquid spray cleaner.

IMPORTANT

Do not steam or use liquid spray cleaner on SCR control panel.

Lift trucks should be air cleaned at every PM interval, and more often if needed.

Use 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 30 psi (207 kPa), maximum (OSHA requirement).

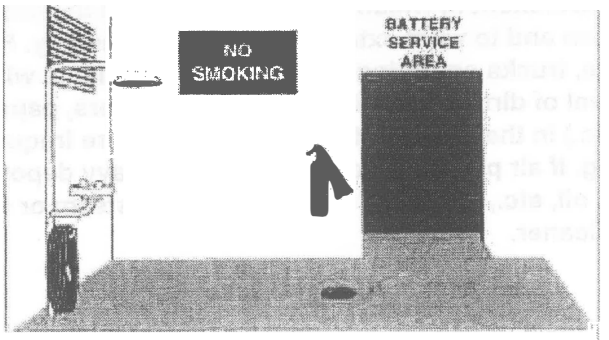
⚠ CAUTION

Wear suitable eye protection and protective clothing.

Air clean: upright assembly; drive axle; battery; cables; switches and wiring harness; transistor traction controls and wiring; drive, lift, and steer motors; and steer axle, steer cylinder, and linkage.

ELECTRIC TRUCK BATTERY MAINTENANCE

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
- Eye wash facility
- 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 percent 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 and oxygen which, in certain concentrations, are explosive. And they are costly. Before you remove, service, or install a truck battery, carefully read the following recommendations and instructions.

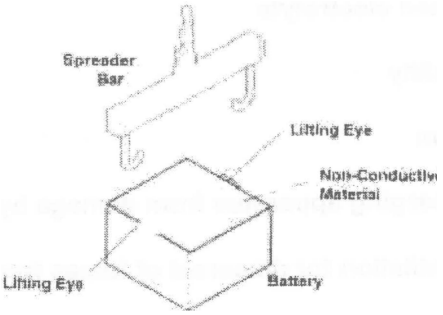
Battery Handling

1. Change (remove) or service storage batteries only in an area designated for this purpose.

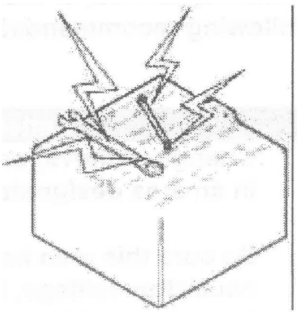
2. Be sure this area has provisions to flush and neutralize spillage, to ventilate fumes from gassing batteries, and for fire protection.

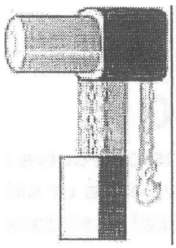
3. This area should be equipped with material-handling tools designed for removing and replacing batteries,

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, e.g., 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: 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 assure 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, and be sure all sources of ignition are cleared from the area. Do not smoke. Be sure all previous 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 applied so the truck cannot move.

3. If the battery to be handled is not equipped with its own cover, cover the battery when handling with a non-conductive (insulating) material, e.g., plywood or heavy cardboard, before attaching the lifting device.

4. 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.

5. 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.

New Truck Batteries: 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, re-charging before 80% discharged and with periodic equalizing charges. Let cool eight hours after charging before using.**

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

Use only a lead-acid battery with the voltage and ampere-hour rating specified for the truck.

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.

Be sure truck is properly positioned and parking brake applied.

Handle battery only with approved lifting device.

Install the battery correctly in the truck and secure it in position.

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. There should be no more than ½" total clearance around the battery. The battery weight must be within the range specified on the truck nameplate.

Hydraulic Fluid Recommendation

Normal application

Drive Axle Fluid Recommendation:

Power Steering Fluid Recommendation

Uses main hydraulic sump oil supply.

Brake Reservoir:
Uses main hydraulic sump oil supply.

Multi-Purpose Grease
Axle Ends, Wheel Bearings:
NLGI Grade No. 1 Lithium soap base grease
NLGI Grade No. 2 Lithium soap base grease,
Steering linkage, upright mast & carriage rollers, trunnion bushings, tilt cylinder rod ends, brake pedal shaft: