UNICARRIERS®

UniCarriers Americas Corporation

OPERATOR'S MANUAL

MODEL 1S1

Platinum SCX Series 3-Wheel Stand-Up
36V AC Powered Electric
3,000-4,000 lb. Capacities

OPERATOR

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Reliability.

It's the defining trait of our company and our forklifts.

UniCarriers' roots extend back over 100 years, and over that time, strong, reliable performance has always been the hallmark of our organization, our people and our equipment.

Today, our unrivaled reliability continues to provide UniCarriers' customers with a competitive edge. And together, we move the merchandise that moves world commerce with greater efficiency, economy and reliability.

When it comes to providing forklifts that make a difference for our customers and theirs...

We Never Quit.

UNICARRIERS AMERICAS OPERATOR'S MANUAL
MODEL 1S1 SERIES

WARNING

- **This Original Manual contains important safety information and must be made available to the operator.**
- **Keep this manual on the truck at all times.**
- **Do not operate the forklift unless you have reviewed and fully understand the Operator's Manual. Failure to follow all of the instructions in this manual could be a violation of the Occupational Safety and Health Act.**
- **Do not operate this forklift unless you are trained and authorized by your employer. Improper operation may result in a serious or fatal injury to yourself or others.**
- **On December 1st, 1998 the Occupational Safety and Health Administration (OSHA) adopted a new and stringent Powered Industrial Truck Operator Training rule 29 CFR 1910.178(1). Based on the Industrial Truck Standards Development Foundation (ITSDF) B56 2000 standard, Operator Training is now explained in detail. The employer shall ensure that operators of powered industrial trucks are competent and trained in the safe and proper operation of powered industrial trucks. This training will include formal training, practical demonstrations and an on-site evaluation.**

OSHA also requires a proper pre-shift inspection, and any repair required shall be performed by a person trained and authorized to repair industrial trucks.

As the employer you should be familiar with the rules of 29 CFR 1910.178(1) as well as ANSI/ITSDF B56.1 for the user. You should also be aware of any state OSHA rules that may differ from the federal rules.

THE FOLLOWING WARNING IS PROVIDED PURSUANT TO CALIFORNIA HEALTH & SAFETY CODE SECTIONS 25249.5 ET. SEQ.

WARNING

California Proposition 65

This product contains and emits
chemicals known to the
State of California to cause cancer,
birth defects and other reproductive harm.

WARNING

An important message for the operator (for North America)

- **Do not operate this truck unless you are trained and authorized by your employer. Improper operation may result in a serious or fatal injury to yourself or others. Make sure that you read and fully understand the Operator's Manual supplied with this truck. Failure to follow all instructions in this manual could be a violation of the Occupational Safety and Health Act.**

A WORD TO UNICARRIERS FORKLIFT OPERATORS

This Original Manual describes operating procedures, daily checks and simple maintenance for safe usage of your UniCarriers industrial truck. We urge you to read this manual carefully before operating a UniCarriers industrial truck to familiarize yourself with the safety instructions. An operator of any industrial truck should maintain safety as the number one priority at all times. In addition, we strongly recommend that you obtain and read the Industrial Truck Standards Development Foundation (ANSI/ITSDF) B56.1 Manual entitled “Safety Standard for Low Lift and High Lift Trucks” before operating any industrial truck. These instructions will not only reduce mechanical issues with a forklift, but may also save a life.

Contact your Local Authorized Dealer to keep your industrial truck in peak operating performance. If you encounter any problems with a UniCarriers industrial truck, contact your Local Authorized Dealer and request a complete checkup. The dealership will ensure that your forklift is serviced in accordance with the latest factory approved methods.

This manual is not a training manual, it is a guide to help trained and authorized operators safely operate this forklift. Please consult your employer for proper training on the appropriate use of this forklift while performing your job. Illustrations in this manual will show the operator the correct procedures for checking, starting, operating and stopping this forklift.

OSHA 1910.178 requires that only trained and authorized operators use powered industrial trucks.

All information, specifications and illustrations in this manual are based on the latest data obtainable at the time of publication. UniCarriers Americas Corporation, hereafter referred to as UCA, reserves the right to make changes or improvements at any time without notice.

This Operator’s Manual has been prepared on the assumption that your forklift is fully equipped (including all optional equipment). Thus, if you have any questions regarding equipment, please contact your Local Authorized Dealer.

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240 N. Prospect Street
Marengo, IL 60152 USA

TRUCK MODIFICATIONS

Unauthorized forklift modification is not permitted.

Per OSHA 1910.178, no modifications or alterations to a powered industrial truck, which may affect capacity, stability or safe operation of the forklift shall be made without the prior written approval of UniCarriers Americas Corporation [UCA], its authorized representative or a successor thereof.

After receiving the approval of UniCarriers Americas Corporation, its authorized representative or a successor thereof, the data & capacity plate, decals, tags, operation and maintenance manuals shall also be changed appropriately.

Only in the event that UniCarriers Americas Corporation is no longer in business and there is no successor to the business, the user may arrange for a modification or alteration to a powered industrial forklift, provided however, that the user shall:

a. Arrange for the modification or alteration to be designed, tested and implemented by an engineer(s) expert in industrial forklifts for their safety;
b. Maintain a permanent record of the design, test(s) and implementation of the modification or alteration;
c. Approve and make appropriate changes to the data & capacity plate(s), decals, tags, and operation and maintenance manuals;
d. Affix a permanent and readily visible label to the forklift stating the manner in which the forklift has been modified or altered together with the date of the modification or alteration, and the name and address of the organization that performed the modification or alteration.

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INTRODUCTION

UniCarriers model 1S1 series industrial trucks meet all applicable requirements of ITSDF B56.1 at the time of manufacture. UCA will not assume, and expressly disclaims, any liability for injuries or damage arising from or caused by the removal, disconnection or disengagement of any part from any of its forklifts. UCA recommends that all replacement parts be of OEM (Original Equipment Manufacture) origin.

UCA would like to take this opportunity to thank you for purchasing our product. Your UniCarriers industrial truck was carefully designed and manufactured to ensure maximum reliability, ease of service and reasonable cost for our customers. The purpose of this guide is to introduce and familiarize you, the operator, with the controls and features of the unit.

This manual will help you learn how to operate your powered industrial truck. This manual describes the controls, their function and some special features which may be installed on the unit. UniCarriers industrial trucks are built to work hard but not for misuse and/or abuse.

MAINTENANCE AND SERVICING

UniCarriers industrial trucks are built to be dependable, but as with any industrial truck, they are only as efficient as the operator and the persons responsible for maintaining them. It is essential to keep your lift truck in good operating condition by following a recommended maintenance schedule. A damaged lift truck is a potential source of danger to the operator, and to other personnel around it.

DAILY INSPECTION

OSHA 1910.178 requires a daily or per shift inspection. Before operating a lift truck it should always be inspected by the operator. This procedure is detailed in the “Daily Inspection” (refer to page 59) and the “Operator’s Daily Checklist Sample” (refer to page 60).

PLANNED MAINTENANCE

A Periodic Planned Maintenance program is used in addition to the daily inspection of the lift truck and is performed by a trained and authorized mechanic. Planned Maintenance (PM) provides the opportunity to do a thorough inspection of the operating system and safety condition of your lift truck. This can reduce unscheduled downtime by doing necessary adjustments and repairs. Our dealers are ready to help you with a Planned Maintenance Program by trained service personnel (refer to page 68).

HOW TO USE THIS MANUAL

Included in this manual are the essentials of safe forklift operation, truck features and functions and explanation of how to maintain your lift truck. This manual is organized as follows:

SAFETY RULES AND PRACTICES

Safety rules and major operating hazards you could encounter while operating a lift truck.

OPERATING CONTROLS AND FUNCTIONS

Description of each major component of the 1S1 series forklifts and how the instruments, gauges, and controls operate.

OPERATING THE TRUCK

Details of safe and efficient operating procedures.

GENERAL CARE AND MAINTENANCE

Care and planned maintenance of the battery, forklift, forks and side shift.

SPECIFICATIONS

Truck and mast specifications.

The operating instructions in this guide do not replace any other rules or laws of safety that are used in or required by federal, state, local agencies or your own operational area. The operating practices listed do not follow any order of importance but are all to be learned and used in your daily operation. Make sure that your truck is correctly equipped for use in your work area according to these rules or laws.

There may be certain hazards that may not or cannot be avoided solely by mechanical means in the everyday use of material handling trucks. Only the intelligence, good judgement and care of the operator, along with proper planned maintenance, will help assure that the unit operates correctly. It is important to have only trained, reliable personnel operating material handling trucks. 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.

UCA recommends that this Operator's Manual be kept with the unit at all times or in a location easily accessed by the operator. If a replacement manual is needed, please contact your Local Authorized Dealer and a replacement will be sent for a nominal fee.

SAFETY SIGNS AND SAFETY MESSAGES

Safety signs and Safety messages are placed in this manual and on the truck to provide instruction 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.

WARNING SYMBOLS & LEVELS

Always follow the warnings in this Operator's Manual and any located on the truck to help avoid accidents and/or injuries from occurring.

WARNING LEVELS

Warning text is given three levels and provides information on the risks, describes the consequences and instructs how to avoid accidents

DANGER

- **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

WARNING

- **Indicates a hazardous situation which, if not avoided, could result in death or serious injury.**

CAUTION

- **Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.**

SAFETY RULES AND PRACTICES

OPERATOR QUALIFICATIONS

WARNING

- **Operator must be trained, evaluated and authorized to drive the forklift and must understand safety techniques and rules for forklift operation.**
- **Under OSHA regulations in the U.S., all operators must be formally trained and tested. These tests must be about basic forklift knowledge and in the operators' work environment. Refer to OSHA regulations or you may also contact the Industrial Truck Standards Development Foundation (ANSI/ ITSDF) 1750 K Street NW, Suite 460, Washington, DC 20006 and request a copy of B56.1 Safety Standard for Power Industrial Trucks “Section for the User”.**

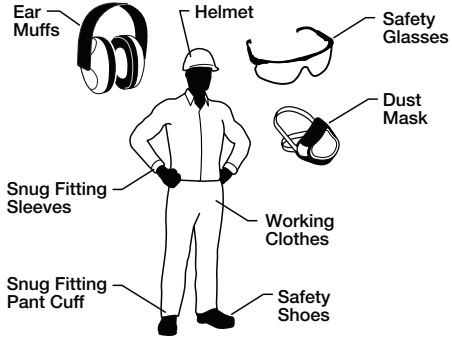
SAFETY GUARDS

WARNING

- **An overhead guard is intended to offer protection 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.**
- **Do not remove overhead guard or backrest unless specifically authorized per ANSI/ITSDF B56.1 Section 4.5.1.**

SAFETY RULES AND PRACTICES

PERSONAL PROTECTIVE EQUIPMENT FOR OPERATING FORKLIFT



WARNING

- **For operation of the forklift, the protective equipment for the operator shall be dependent upon the conditions of use and the applicable provisions of the local laws and regulations.**
- **The working clothes worn by the operator shall be such that sleeves and cuffs fit snugly so as to prevent them from getting caught on forklift levers, etc. Personal Protective Equipment such as safety glasses, earmuffs, dust mask, helmet (hard hat) and safety shoes should also be worn, as required by the work environment, employer or local and state regulations.**

DAILY INSPECTION

WARNING

- **OSHA 1910.178 requires a daily or per shift inspection. Inspect the forklift before operating. Do not operate the forklift if it is in need of repair. If it is in need of repair, tag the forklift, remove the key, if equipped, and report the condition to the proper authority. Do not attempt repair unless you are trained and authorized to perform repairs (refer to “Daily Inspection” on page 59 and "Operator's Daily Checklist Sample" on page 60).**

SAFETY RULES AND PRACTICES

OPERATOR RESPONSIBILITY

WARNING

- **Safe operation is the responsibility of the operator.**
- **The operator shall develop safe working habits and also be aware of hazardous conditions in order to protect himself, other personnel, the truck, and material being handled.**
- **The operator shall be familiar with the operation and function of all controls and instruments before undertaking to operate the truck.**
- **Before operating any truck, operators shall have read and be familiar with the operator's manual for the particular truck being operated and they shall also abide by the safety rules and practices.**
- **Before operating any truck, the operator shall be familiar with unusual operating conditions that may require additional safety precautions or special operating instructions.**

GENERAL

WARNING

- **Use 3-point contact when mounting or dismounting a truck when the operator's compartment floor height is 300 mm or higher. Maintain contact with one hand and two feet or two hands and one foot at all times. Keep hands free of items (i.e. food, beverage, tools).**

WARNING

- **Do not allow anyone to stand or pass under the elevated portion of any truck, whether empty or loaded.**
- **Before starting to operate the truck conduct daily inspection.**
- **Do not start or operate the truck, any of its functions or attachments, from any place other than from the normal operator's position.**

SAFETY RULES AND PRACTICES

GENERAL (cont'd)

WARNING

- **Keep hands, feet and other parts of your body inside the operator's compartment. Do not put any part of the body outside the operator compartment of the truck.**
- **Never put any part of the body into the mast structure or between the mast and the truck.**
- **Never put any part of the body within any attachments that may be installed on the truck.**
- **Understand truck limitations and operate the truck in a safe manner so as not to cause injury to personnel. Safeguard pedestrians at all times.**
  a. Do not drive a truck up to anyone standing in front of an object.
  b. Ensure that personnel stand clear of the rear swing area before conducting turning maneuvers.
  c. Exercise particular care at cross aisles, doorways, and other locations where pedestrians may step into the path of travel of the truck.

WARNING

- **A powered industrial truck is unattended when the operator is more than 8 m (25 ft) from the truck which remains in his view, or whenever the operator leaves the truck and it is not in his view.**
- **Before leaving the operator's position:**
  a. Bring truck to a complete stop.
  b. Lower load-engaging means fully.
  c. Place multi-functional lever in neutral.
  d. Turn the ignition switch off.
  e. Push the battery disconnect button.
  f. If unit is unattended remove the key, if equipped.
- **Maintain a safe distance from the edge of ramps, platforms, and other similar working surfaces. Do not move railroad cars with a powered industrial truck.**
- **When powered industrial trucks are driven on and off highway trucks or trailers, the brakes on the highway trucks or trailers shall be applied, and wheel chocks or other positive mechanical means shall be used to prevent unintentional movement.**
- **Whenever powered industrial trucks are driven on and off semitrailers not coupled to a tractor, supports may be needed to prevent upending or corner dipping.**
- **Provision shall be made to prevent railroad cars from being moved during loading and unloading. Wheel stops, hand brakes, or other recognized positive means shall be used to prevent movement of railroad cars during loading and unloading.**

SAFETY RULES AND PRACTICES

GENERAL (cont'd)

WARNING

- **Care shall be taken not to contact overhead installations such as lights, wiring, pipes, sprinkler systems, etc.**

- **A load backrest extension shall be used when necessary to guard against a load, or part of it, from falling toward the operator.**
- **In areas classified as hazardous, use only trucks approved for use in those areas.**
- **Report all accidents involving personnel, building structures, and equipment to the supervisor or as directed.**
- **Do not block access to fire aisles, stairways, or fire equipment.**

NO RIDERS

WARNING

- **Do not sit on the forks (when loaded or not) or get under the forks or operator's platform.**
- **Do not permit riders on any part of the truck at any time. The operator is the only one who should be on a truck.**

SAFETY RULES AND PRACTICES

TRAVELING

WARNING

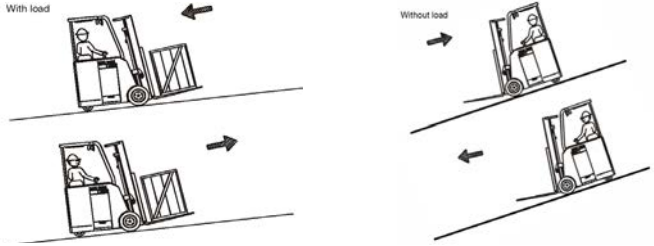
- **Observe all traffic regulations including authorized plant speed limits. Under normal traffic conditions, keep to the right. Maintain a safe distance, based on speed of travel, from the truck ahead; and keep the truck under control at all times.**
- **Yield the right of way to pedestrians and emergency vehicles such as ambulances and fire trucks.**
- **Do not pass another truck traveling in the same direction at intersections, blind spots, or at other dangerous locations.**
- **Slow down and sound the audible warning device(s) at cross aisles and other locations where vision is obstructed.**
- **Cross railroad tracks at an angle wherever possible. Do not park closer than 2 m (6 ft) to the nearest rail of a railroad track.**
- **Keep a clear view of the path of travel and observe for other traffic, personnel, and safe clearances.**
- **If the load being carried obstructs forward view, travel in the opposite direction.**

WARNING

- **When descending a grade, stopping distance will be greater than on-level operation. Methods shall be provided to allow for this condition. Some methods are: reduce speed, limit loads, allow adequate clear space at the bottom of grade, etc.**

SAFETY RULES AND PRACTICES

TRAVELING (cont'd)



WARNING

- **Ascend or descend grades slowly, and with caution.**
  - When ascending or descending grades, loaded rider trucks shall be driven with the load upgrade.
  - Unloaded trucks should be operated on all grades with the load-engaging means downgrade.
  - On all grades the load and load-engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.

  - Avoid turning, if possible, and use extreme caution on grades, ramps, or inclines; normally travel straight up and down.

WARNING

- **Under all travel conditions, operate the truck at a speed that will permit it to be brought to a stop in a safe manner.**
- **Travel with load-engaging means or load at lowered height except during stacking operation.**

- **Make starts, stops, turns, or direction reversals in a smooth manner so as not to cause unsafe conditions.**
- **Do not indulge in stunt driving or horseplay.**
- **Slow down for wet and slippery floors.**

SAFETY RULES AND PRACTICES

TRAVELING (cont'd)

WARNING

- **Before driving over a dockboard or bridge plate, be sure that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate, and never exceed its rated capacity.**
- **Do not drive trucks onto any elevator unless specifically authorized to do so. Do not exceed the capacity of the elevator. Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off power, and set brakes. It is advisable that all other personnel leave the elevator before truck is allowed to enter or leave.**
- **Avoid running over loose objects on the driving surface.**
- **When negotiating turns, reduce speed to a safe level consistent with the operating environment. Make the turns smoothly. Except when maneuvering at a very low speed, turn the steering control at a moderate, even rate.**

LOADING

WARNING

- **Handle only stable or safely arranged loads.**
  a. When handling off-center loads that cannot be centered, operate with extra caution.

  b. Handle only loads within the capacity of the truck.
  c. Handle loads exceeding the dimensions used to establish truck capacity with extra caution. Stability and maneuverability may be adversely affected.
  d. Handle loads only with the load engaging means and do not transport loads or miscellaneous items with the operator's compartment or other areas of the truck.

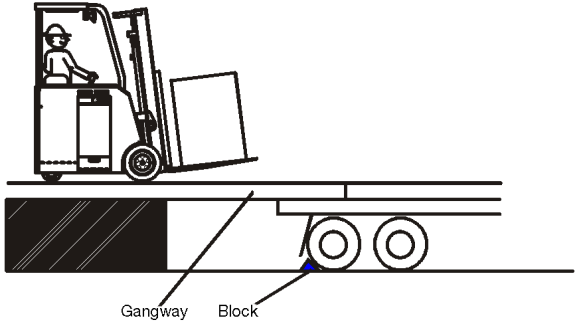
SAFETY RULES AND PRACTICES

LOADING (cont'd)

WARNING

- **When attachments are used, extra care shall be taken in securing, manipulating, positioning, and transporting the load. Operate trucks equipped with attachments as partially loaded trucks when not handling a load.**
- **Completely engage the load with the load-engaging means. Fork length should be at least two-thirds of load length. Where tilt is provided, carefully tilt the load backward to stabilize the load. Caution should be used in tilting backward with high or segmented loads.**
- **Use extreme care when tilting load forward or backward, particularly when high tiering. Do not tilt forward with the load-engaging means elevated except to pick up or deposit a load over a rack or stack. Use only enough backward tilt to stabilize the load when picking up or depositing a load in a rack or from a stack.**

DOCKBOARDS (BRIDGE PLATES), TRUCKS AND RAILROAD CARS



WARNING

- **Portable and powered dockboards shall be marked conspicuously (in plain sight) with their carrying capacity. The carrying capacity indicated shall not be exceeded.**
- **Portable dockboards shall be secured in position, either by being anchored or by being equipped with devices that will prevent unexpected movement.**
- **Handholds or other effective means shall be provided on portable dockboards to permit safe handling. When possible, fork loops or lugs shall be provided for handling by fork trucks.**

SAFETY RULES AND PRACTICES

DOCKBOARDS (BRIDGE PLATES), TRUCKS AND RAILROAD CARS (cont'd)

WARNING

- **All types of dockboards shall have a high friction surface designed to reduce the possibility of employees or trucks slipping and shall be designed and maintained so that one end will have a substantial contact with the dock (or loading platform) and the other end with the transport vehicle to prevent the dockboard from rocking or sliding.**
- **When powered industrial trucks are driven on and off highway trucks or trailers, the brakes on the highway trucks or trailers shall be applied, and wheel chocks or other positive mechanical means shall be used to prevent unintentional movement of highway trucks and trailers.**
- **Provision shall be made to prevent railroad cars from being moved during loading and unloading. Wheel stops, hand brakes, or other recognized positive means shall be used to prevent movement during loading and unloading.**
- **Whenever powered industrial trucks are driven on and off semitrailers not coupled to a tractor, supports may be needed to prevent upending or corner dipping.**
- **Maintain a safe distance from the edge of ramps, platforms, or other similar working surfaces.**
- **Do not move railroad cars or trailers with a powered industrial truck unless the truck is properly designed and equipped for that operation.**

SURFACE & CAPACITY

WARNING

- **The 1S1 models must be used on only smooth, solid floor conditions. The following conditions should be avoided at all times.**

  -Sand -Gravel
  -Oil -Ice
  -Mud -Unstable surfaces

- **Operating the truck on these surfaces may cause dangerous conditions for the operator, other personnel and equipment.**

SAFETY RULES AND PRACTICES

INSTALLATION OF ATTACHMENTS

WARNING

- **The 1S1 series forklifts have been designed for attachments (refer to "Truck Modifications" on page 4).**
- **Before installing hook-on attachments, be sure to read the installation manual issued by the attachment manufacturer to assure correct and proper installation. Contact your Local Authorized Dealer for a revised data plate.**

ANSI/ITSDF STANDARDS FOR FORKLIFT CLAMP ATTACHMENTS

WARNING

The ANSI/ITSDF Standards regarding forklift mounted clamp attachments took effect for trucks shipped on or after October 7, 2010. This current standard affects lift trucks equipped with a load bearing clamp (paper roll clamp, carton clamp, etc.) and requires the operator to perform two distinct motions before opening (releasing) the clamp. For example, the operator must press a button and then move a lever to release the load.

ANSI B56.1 Section 7.25 “Load-Handling Controls” can be reviewed by visiting the ITSDF website at www.itsdf.org

IN CASE OF TIP-OVER

WARNING

If the unit starts to tip over or fall in any direction, step off the rear and away from the truck.

SAFETY RULES AND PRACTICES

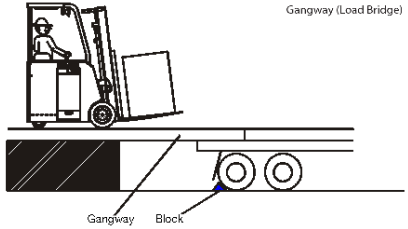
TRANSPORTING FORKLIFT

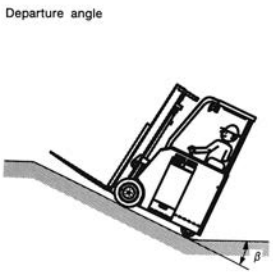
WARNING

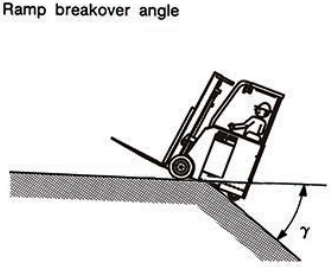
- **Tilt the mast back to the maximum without load.**
- **Check the approach and departure angles to make sure the underside of the forklift does not come into contact with the load carrying platform or the ground.**
- **When using a load bridge, make sure the planks are capable of withstanding the deadweight of the forklift and battery.**
- **Be sure to use lashing points and firmly secure the forklift to the load carrying platform.**
- **When hoisting (lifting) up the forklift, be sure to use the lifting points (refer to page 22).**
- **Apply parking brake, push the battery disconnect button, turn off the ignition switch and remove key, if equipped.**
- **Make sure the battery connector is disconnected.**

APPROACH ANGLE, DEPARTURE ANGLE AND GANGWAY

Refer to Grade Clearance Specifications on page 85.







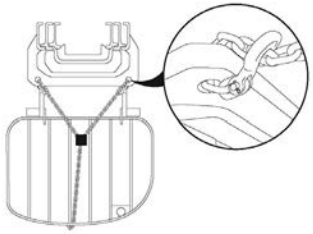
TRANSPORTING FORKLIFT (cont'd)

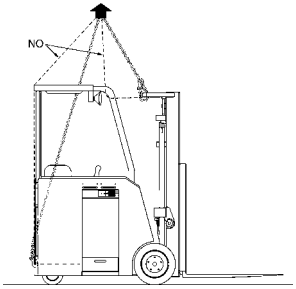
HOISTING (LIFTING) UP THE FORKLIFT

WARNING

- **Only use this method as a last resort to move the forklift if the normal application requires repeated lifting. Permanent lifting devices must be mounted on the forklift by UCA. Contact your Local Authorized Dealer for more details.**

When lifting the entire forklift, secure cables/wire ropes to holes on both sides of the outer mast cross beam and to the counterweight, and then utilize a lifting device.





WARNING

- **Do not use wooden blocks whose height exceeds 300 mm (11.81 in).**
- **Make sure that the cables/wire ropes do not interfere with the overhead guard while lifting the forklift.**
- **Make sure that cables/wire ropes and the lifting device are strong enough to support the forklift safely, as the forklift is extremely heavy.**
- **Do not use the overhead guard to lift up the forklift.**
- **Never get under the forklift while lifting the forklift.**

1. Attach lifting wire to outer mast crossbeam. Use hoist to raise the front of vehicle.
2. Place wooden blocks under frame on both sides.
3. Slowly lower vehicle onto wooden blocks. Double-check to make sure that wooden blocks are positioned correctly.
4. Make sure that vehicle is settled firmly on wooden blocks by trying to shake the vehicle. It should be perfectly steady.
5. Chock rear wheels to hold vehicle stationary.

TRANSPORTING FORKLIFT (cont'd)

FUNCTION TESTS

The functional tests are carried out to check whether the forklift functions correctly after it has been transported (over land or water), or after it has been taken out of storage. The test covers the following items, but since exclusive tools and equipment are required for Items 1 and 2, request that your Local Authorized Dealer perform the test.

Items

1. Those that are indicated in "Daily Inspection" (refer to page 59).
2. Dynamic tests

   Mobility (traveling and maneuvering) test

   Make sure the forklift moves in the direction specified by the forward-reverse lever, and the forklift operates correctly when the parking brake pedal is depressed or released. Also check to see that the steering feels normal and that it operates satisfactorily. Elevate and lower test load.

   Stacking test

   Raise the test load to the maximum height of the mast and lower at maximum speed, stopping the descent several times, to see that it stops smoothly.

   Lowering speed test

   Make sure the maximum lowering speed does not exceed 2.0 ft/s (0.6 m/s) (by measuring the speed).
3. Test for holding load

   Check the rate at which the mast lowers naturally [3.94 in (100 mm)/10 min. max]. Check the rate at which the tilt cylinder tilts forwards naturally (5 degrees/10 min. max).

MOVING A STUCK OR DISABLED FORKLIFT

Only a trained and authorized technician should perform this procedure (refer to Section GI of the 1S1 Service Manual).

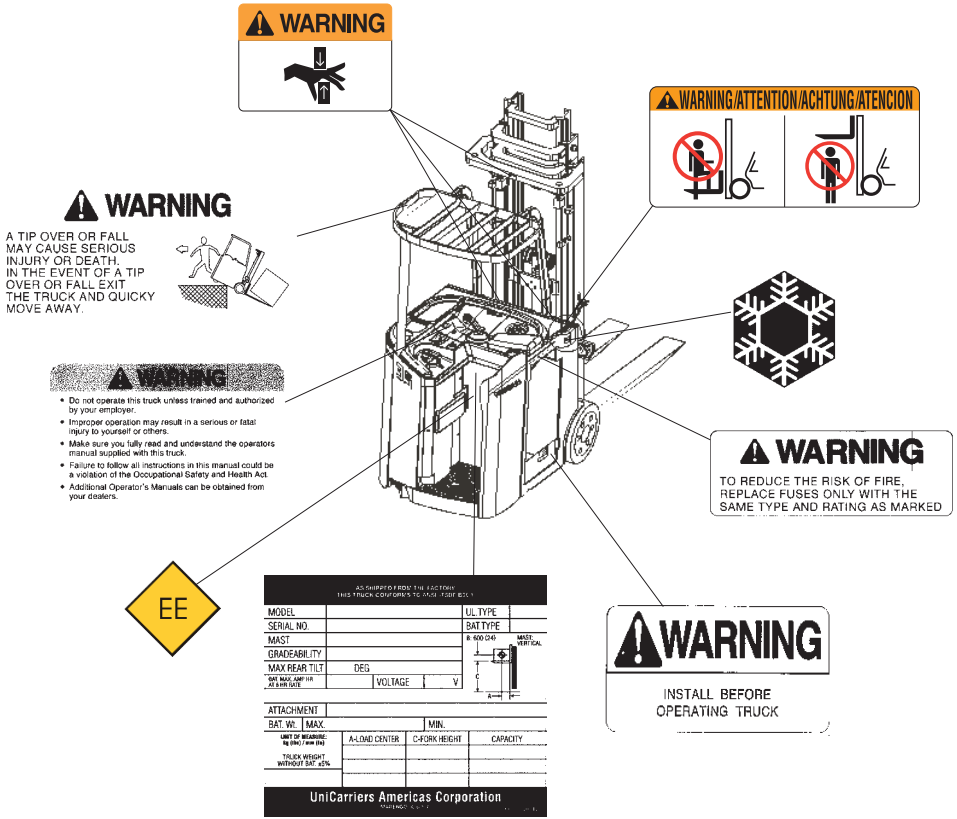
POSITION OF DATA & CAPACITY PLATES AND DECALS

WARNING

- **When data & capacity plates or warning & caution decals are damaged such that they cannot be read or have peeled off, they should be immediately replaced with new ones to ensure that they are constantly maintained in a legible condition. The plates and decals are available from your Local Authorized Dealer.**
- **The warning and caution decals are affixed to the designated locations of the forklift as shown in the figure on page 24. Before operating the forklift, be sure to take note of the details given in the decals so as to ensure proper and safe operation.**

SAFETY RULES AND PRACTICES

POSITION OF DATA & CAPACITY PLATES AND DECALS

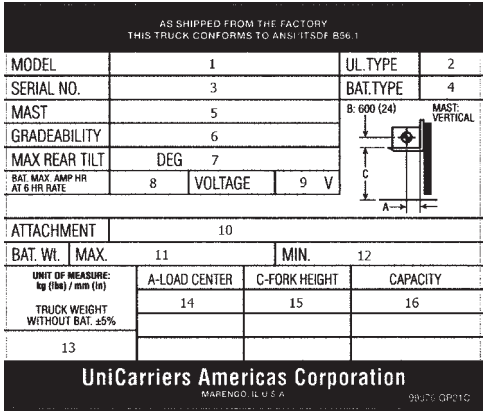


SAFETY RULES AND PRACTICES

DATA & CAPACITY PLATES AND DECALS

Know your unit. The data plate indicates all necessary information regarding the type of attachments, lifting capacity, etc. Always check the unit's data plate and understand areas 1 through 16 as shown in the illustration below.

Data Plate



1. Model Variation (Long Model Code)
2. UL Type ("E" or "EE")
3. Chassis No. (Truck Serial Number)
4. Battery Type
5. Mast Type
6. Gradeability
7. Maximum Tilt Degree
8. Battery Amp Hour Max @ 6 Hours
9. Voltage (36V)
10. Attachment (Model & Serial Number)
11. Battery Weight Maximum
12. Battery Weight Minimum
13. Truck Weight without Battery
14. Load Center
15. Fork Height
16. Maximum Lifting Capacity

Actual Capacity will vary with forklift configuration and load center. Mast configuration will determine the maximum lifting distance. These values are stamped on the data plate.

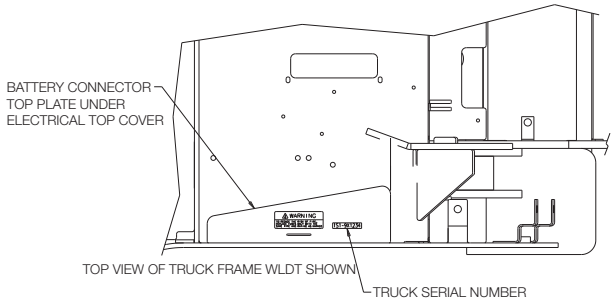
WARNING

- **Do not exceed the actual capacity of the forklift. Note the specifications of the forklift you are using and operate the forklift accordingly.**

Knowing the model and serial number for this unit are very helpful whenever ordering repair parts. For any further information and specifications on this unit or any other, contact your Local Authorized Dealer.

Identification Numbers

The serial number of the forklift is stamped on the frame.



Truck Serial Number

1S1	-	9Xxxxx
S1S1	-	9Xxxxx

SAFETY RULES AND PRACTICES

DATA & CAPACITY PLATES AND DECALS (cont'd)

Caution Drive Decal (In Case of Tip-Over Decal)

WARNING

- **If the forklift starts to tip over or fall in any direction, step off the rear and away from the forklift.**

Battery Gate Decal

WARNING

- **Battery gates must be installed before operating the truck.**

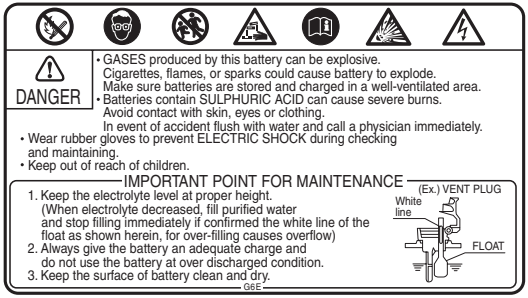
EE Decal

- **"EE" labeled and classified forklifts require special equipment and enclosures.**
- **These include but are not limited to; static strap, enclosed fuse(s), contactors, motors and switches. The battery compartment is reinforced with battery covers that can be locked.**
- **Refer to NFPA 505 for specific location classifications and application guidelines.**
- **To maintain this classification of electrical protection, all guards, covers and enclosures must be in good working order and in place whenever the forklift is in operation. Lock battery covers should only be removed when servicing or in approved battery charging areas.**
- **If damaged in any way, the unit must be taken out of service until repaired or replaced.**

SAFETY RULES AND PRACTICES

DATA & CAPACITY PLATES AND DECALS (cont'd)

Battery Decal (Sample)



DANGER

- **GASES produced by this battery can be explosive. Cigarettes, flames, or sparks could cause battery to explode. Make sure batteries are stored and charged in a well-ventilated area.**
- **Batteries contain SULFURIC ACID, which can cause severe burns. Always use personal protective equipment. Avoid contact with skin, eyes or clothing. In event of accident flush with water and call a physician immediately.**
- **Wear rubber gloves to reduce a possible ELECTRIC SHOCK during checking and maintaining.**
- **Keep out of reach of children.**

Warning Drive Decal (Trained and Authorized)

WARNING

- Do not operate this truck unless trained and authorized by your employer.
- Improper operation may result in a serious or fatal injury to yourself or others.
- Make sure you fully read and understand the operators manual supplied with this truck.
- Failure to follow all instructions in this manual could be a violation of the Occupational Safety and Health Act.
- Additional Operator's Manuals can be obtained from your dealers.

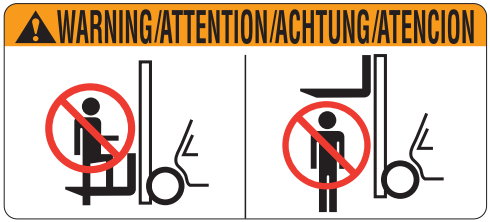
WARNING

- **Operator must be trained and authorized to drive the forklift, and must understand safety techniques and rules for the forklift operation.**
- **Make sure that you read and fully understand the Operator's Manual supplied with this forklift. Failure to follow all instructions in this manual could be a violation of the Occupational Safety and Health Act.**

SAFETY RULES AND PRACTICES

DATA & CAPACITY PLATES AND DECALS (cont'd)

Caution Fork Decal



WARNING

Do not stand on or underneath forks.

- **Riding on the forks is strictly prohibited. Furthermore, do not stand immediately underneath the forks. Otherwise, serious accidents can occur if the forks should move abruptly and the load placed on the forks unexpectedly falls down.**

Pinch Point Decal

WARNING

- **This decal instructs the operator to keep fingers away. Do not reach into the mast area. Personal injury may occur if any part of your body is between the moving and fixed sections of the mast.**

Fuse Warning Decal

WARNING

- **This label indicates that when replacing fuses only replace with the same type and rating as marked to reduce the risk of fire.**

Refrigerator Symbol Decal

CAUTION

Usable in refrigerator

- **This label indicates that the forklift can be used in a refrigerator and to use the appropriate hydraulic oil (refer to page 44).**

OPERATING CONTROLS AND FUNCTIONS

APPLICATIONS

These trucks are operated in a standing position. The truck is available in different fork lengths and lifting heights. Refer to the truck's data plate for this information.

The trucks are equipped with a 36 Volt electrical system. Travel and lifting speeds are transistor controlled to provide smooth operations. In addition, the travel function and the different hydraulic functions have additional controls which further enhance these features. Different speeds can be set by a trained service technician.

APPLICATION AREA FOR UNICARRIERS TRUCKS

UniCarriers industrial trucks are solely designed and manufactured to handle goods. The truck should only be fitted with the appropriate accessories relevant to the application.

PROHIBITED APPLICATIONS FOR UNICARRIERS TRUCKS

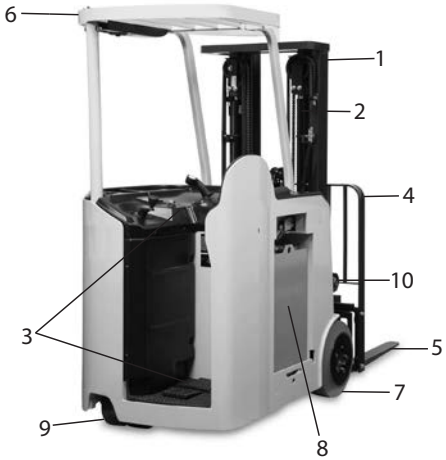
It is not permitted to use these trucks for other purposes including the following:

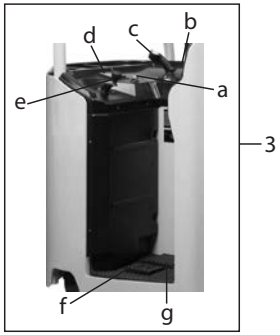
WARNING

- **Do not operate in areas that contain gases which can cause fire or explosions**
- **Do not use as a towing truck for trailers**
- **Not to be used for pushing applications**
- **Do not tow other lift trucks**
- **Do not transport or lift passengers**
- **Do not drive on any non-paved areas (refer to page 19)**

OPERATING CONTROLS AND FUNCTIONS

MAIN COMPONENTS



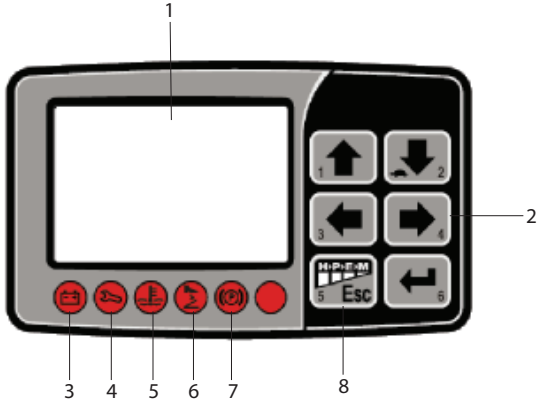


1. **Mast Upright:** The mast upright is the lifting device for the forks. The lifting is done through hydraulic lift cylinders and chains.
2. **Lift Cylinders:** The cylinders are used to lift the forks up and down.
3. **Operator Compartment:** This compartment houses the (a) ignition switch, (b) battery disconnect button, (c) multi-functional handle, (d) meter panel, (e) steering tiller, (f) brake pedal, and (g) operator presence pedal (refer to page 39).
4. **Backrest:** Portion of the carriage and forks serving to restrain the load when the load is tilted rearward or upward.
5. **Forks:** Their widths can be easily adjusted to fit differing pallets or loads.
6. **Overhead Guard:** Intended to offer protection from falling objects, but cannot protect against every possible impact.
7. **Drive Tire**
8. **Battery Compartment:** This compartment houses the battery and battery connector.
9. **Steer Tire**
10. **Tilt Cylinder:** Used to vary the degree of the forks and load backrest

OPERATING CONTROLS AND FUNCTIONS

METERS, INDICATORS AND LAMPS

The operator compartment contains the 1S1 main functional controls to operate the truck in a safe and controlled manner. The meter panel consists of two sections: LCD (Liquid Crystal Display) monitor and function keys. The graphic smart display has six built-in red LED's which provide the operator with quick visual information about the status of some truck devices.



1. LCD (Liquid Crystal Display)
2. Function Keys
3. Battery
4. Wrench
5. Thermometer
6. Operator Presence Pedal
7. Parking/Emergency Brake
8. Performance Mode Setting

1. LCD

When the ignition switch is in the ON position, backlighting makes the displays clearly visible to the forklift operator. It displays normal operation (battery capacity meter, hour meter, clock, speedometer, steering wheel angle gauge, etc.), malfunction and adjustment data. To lighten the contrast, push function key FN1. To darken the contrast, push function key FN2.

2. FUNCTION KEYS

Function keys control the LCD contrast, display changes and other adjustments. Function key operation is described in the individual part descriptions and in the items related to adjustment.

NOTE:

- If an incorrect operation is performed, the malfunction code will be displayed.

3. BATTERY

This LED lights when the measured battery voltage is equal to or less than 40% nominal battery voltage.

4. WRENCH

This LED blinks when truck is in alarm condition.

5. THERMOMETER

This LED blinks when on truck's controller is in alarm due to IMS temperature.

6. OPERATOR PRESENCE PEDAL

This LED lights when the operator is not on the operator presence pedal.

7. PARKING/EMERGENCY BRAKE

This LED lights when the parking/emergency brake is applied.

8. PERFORMANCE MODE SETTING

Refer to page 32.

OPERATING CONTROLS AND FUNCTIONS

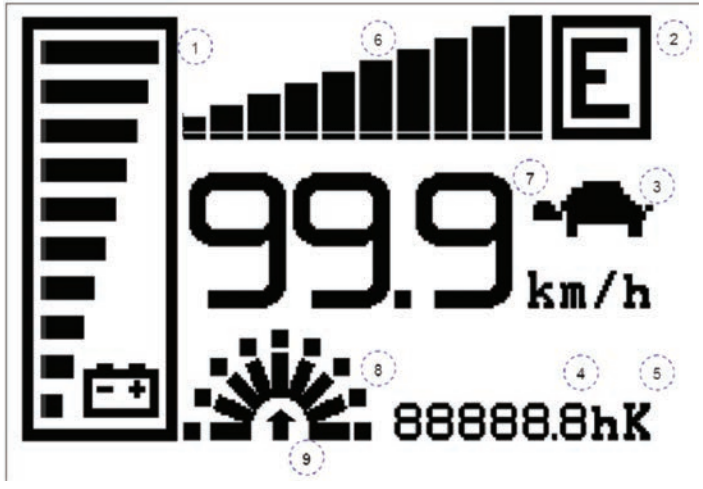
METERS, INDICATORS AND LAMPS (cont'd)

SETTING AND ADJUSTMENT ITEMS (NORMAL MODE)

Adjustment Item	Shift to Adjust Mode	Adjustment	Details
LCD Contrast	-	Push FN1	LCD contrast is dimmed
		Push FN2	LCD contrast is brightened
Performance Mode	Push FN5	Push FN1 Push FN2	Hour meter ↔ Performance Hour meter ↔ Performance
		Push FN6	Select Performance
		Push FN1 Push FN2	H → M → E → P H → P → E → M
		Push FN5	Exit without making change
		Push FN6	Selects performance mode Are you sure? FN5 = No/out FN6 = Yes/save
Hour Meter	Push FN5 K = Key P = Pump T = Traction S = Pedal	Push FN1 Push FN2	Hour meter ↔ Performance Hour meter ↔ Performance
		Push FN6	Select hour meter
		Push FN1 Push FN2	K → S → T → P K → P → T → S
		Push FN5	Exit without making change
		Push FN6	Selects hour meter display Are you sure? FN5 = No/out FN6 = Yes/save

OPERATING CONTROLS AND FUNCTIONS

METERS, INDICATORS AND LAMPS (cont'd)



1. Battery Capacity
2. Performance Mode
3. Turtle Mode (Soft Mode)
4. Hour Meter
5. Hour Meter Log
   - K = Key Switch
   - S = Pedal
   - P = Pump
   - T = Traction
6. Acceleration Bar Graph
7. Speedometer
8. Wheel Position
9. Arrow Indication - Travel Direction

OPERATING CONTROLS AND FUNCTIONS

METERS, INDICATORS AND LAMPS (cont'd)

1. BATTERY CAPACITY

This meter indicates the remaining charge capacity of the battery. As the remaining capacity decreases, the number of black steps decreases. Before only the last black step remains, discontinue forklift operation and charge the battery.

The battery capacity meter has a 10-step display.

CAUTION

- **Continued operation of the forklift with discharged battery may damage the battery and electrical components.**

2. PERFORMANCE MODE

In this mode, the power level for traveling and loading operation can be adjusted.

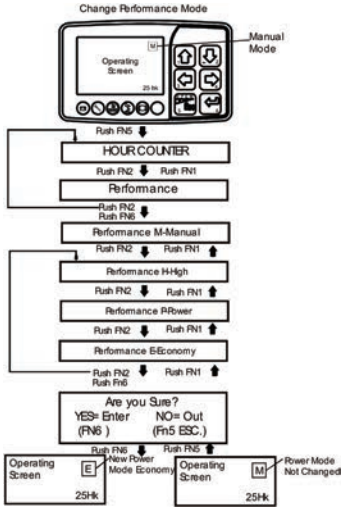
Mode M: Manual mode:
The power levels for traveling and loading can be individually set according to customer requests.

Mode E: Economy mode:
For applications requiring extended working hours.

Mode P: Power mode:
Mid-range performance operation and battery life.

Mode H: High-power mode:
For applications requiring high performance.

NOTE:
Operation in the High-power mode (H) requires more battery power than Power mode (P) and Economy mode (E). Contact your Local Authorized Dealer for more information about how to set the Manual mode (M).



WARNING

- **After performance change, operate the forklift slowly and carefully until you become accustomed to the new performance mode. Be especially careful when the performance level has been increased. Higher performance levels can cause loads to shift, fall off or to be unstable during starts, which could result in serious injury or death.**

OPERATING CONTROLS AND FUNCTIONS

METERS, INDICATORS AND LAMPS (cont'd)

3. TURTLE MODE (SOFT MODE)

The turtle symbol is normally off; when it appears (fixed) it shows activation of the "soft" mode of the truck, in which maximum speed and acceleration, loading operation are reduced by controller protection devices or when inhibitor functions are activated above free lift. Refer to pages 40 & 41.

4. HOUR METER

The number displayed on the bottom right side of the unit (Item number 4 on page 33) shows the hours worked.

5. HOUR METER LOG

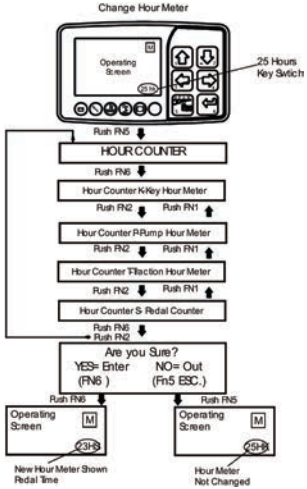
The letter presence near the hour meter (Item number 5 on page 33) shows which hour meter is being displayed:

K: Key "ON" time equal to the total operating hours when the key switch is in the ON position.

S: Operator presence equal to the hours the operator presence pedal is depressed.

T: Traveling time equal to the total time that the traction motor is operational.

P: Loading time equal to the total time that steering and the forks are optional (lifting, tilting and sideshift).



6. ACCELERATION BAR GRAPH

The accelerator level indication (Item number 6 on page 33) is displayed on the central top side of the unit; it is shown by ten notches. When the accelerator level is minimum only a notch is displayed, when the accelerator level is maximum all ten notches are displayed. Each notch represents 1/10 of the difference between.

7. SPEEDOMETER

The number displayed under the acceleration bar graph on the center of the unit (Item number 7 on page 33) shows the truck speed. The unit can be km/h or mph depending the "Speed Unit" parameter setting.

8. WHEEL POSITION

The notch displayed on the left of the unit (Item number 8 on page 33) represents the angle of the wheel (only one of the nine notches is displayed) and shows the steering angle (it corresponds to the relative truck direction of travel if the truck is moving).

9. ARROW DIRECTION - TRAVEL DIRECTION

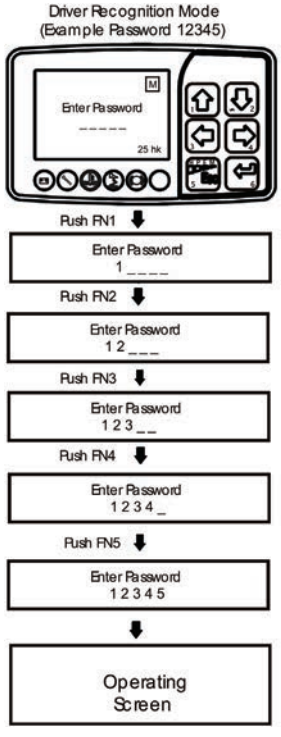
The arrow (Item number 9 on page 33) shows the direction of the travel command. The arrow will point up when the truck is traveling forward (forks leading) running; the arrow will point down when the truck is traveling in reverse (forks trailing). If the truck is not moving a dot is displayed instead of an arrow.

OPERATING CONTROLS AND FUNCTIONS

METERS, INDICATORS AND LAMPS (cont'd)

DRIVER RECOGNITION MODE

Registering a password can restrict the operators of the forklift. You can register a password for up to 5 personnel. Contact your Local Authorized Dealer for information about the registration of the password.

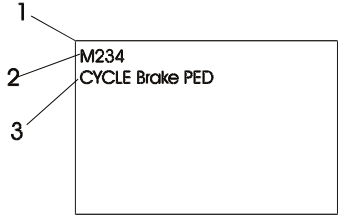


OPERATING CONTROLS AND FUNCTIONS

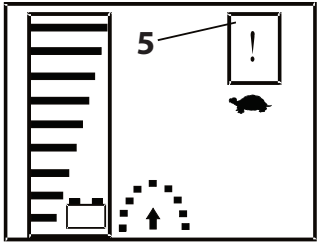
MALFUNCTION AND WARNING INDICATIONS

LCD MONITOR

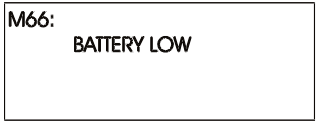
1. LCD (Liquid Crystal Display)
2. Error Code
3. Malfunction Message
4. Battery Warning Mark
5. Exclamation Point



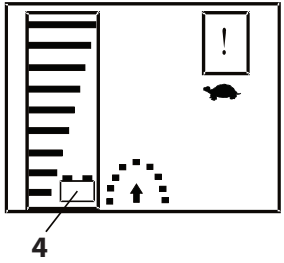
Push FN5



Battery Low



Push FN5



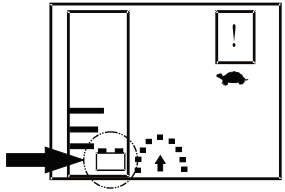
If any malfunction occurs when the ignition switch is in the ON position, the LCD will display a message explaining the details of the malfunction.

NOTE:
During forklift operation, periodically check the battery capacity. Make every effort to recharge the battery before the battery low message appears.

Exclamation Point (reference Item #5)

The controller and the sensors act together to regulate the forklift's electrical system. Whenever one of the malfunctions listed below occurs. The LCD will show an indication explaining the details of the malfunction.

- Control system malfunction (Traction, Hydraulic loading, Power steering)
- Overheating controller or motor



Battery warning mark (reference Item #4)

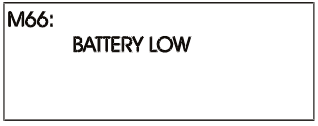
Pump cut warning

The bar display will start to flash when the battery capacity meter's remaining capacity indication changes from 4 bars to 3 bars.

OPERATING CONTROLS AND FUNCTIONS

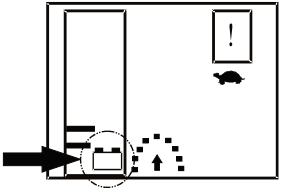
MALFUNCTION AND WARNING INDICATIONS (cont'd)

LCD MONITOR (CONT'D)

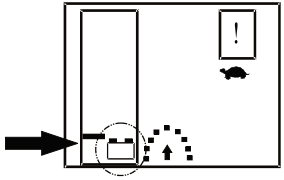


Push FN5

When the battery capacity meter display changes from 3 bars to 2 bars the pump cut/battery low message will be displayed.



When FN5 is pushed, the display will switch. The battery capacity meter will now show 2 bars and the battery warning mark will flash. The exclamation point will appear in the top right corner and lift/tilt function will be inoperable. The forklift may be operated during pump cut, however, move the forklift to a safe location and promptly charge the battery.



Low voltage lock warning
If the vehicle is subjected to continuous operation after the pump cut warning was activated, the low voltage lock warning will be activated. Then the display will appear as shown above. The vehicle cannot be operated during the low voltage lock warning.

NOTE:
The interval between the first appearance of the battery warning mark and the interruption of operation is dependant of the charge/condition of the battery.

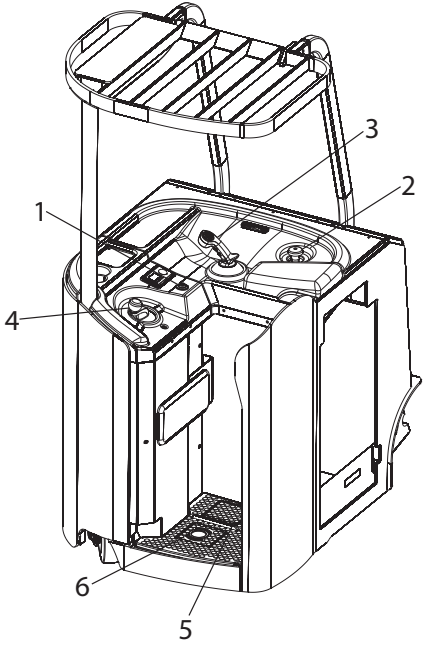
WARNING

- **When a malfunction is indicated, immediately stop forklift operation. Turn off the ignition switch and turn on again. If the malfunction remains, suspend the forklift operation. Contact your Local Authorized Dealer for inspection and necessary repair.**

OPERATING CONTROLS AND FUNCTIONS

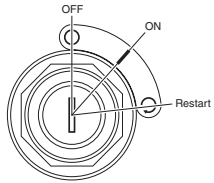
OPERATING CONTROLS AND SWITCHES

1. Ignition switch
2. Battery disconnect button
3. Multi-functional handle
4. Steering tiller
5. Operator presence pedal
6. Brake pedal



IGNITION SWITCH

Insert the key into the ignition switch to start or stop the motor. Each new forklift comes with two keys, use one for operation and store the other in a safe place as a spare.



OFF Position
This position allows the key to be inserted or removed.

ON Position
When the ignition switch is in the ON position, backlighting for the LCD will be on. The hour meter, battery capacity meter and steer wheel angle gauge will all be active. The forklift is now ready for operation.

RESTART Position
If the traveling, cargo-handling and power steering systems have not been operated for the preset time, the power to the truck is automatically turned off. Restart can be used to resume operation without turning the ignition switch to OFF and ON again. Once you release the ignition switch after turning to RESTART the ignition switch automatically returns to the ON position.

NOTE:
Factory setting preset time is 15 minutes and adjustable range for power-off is 1-60 minutes. The power-off control can be deactivated.

WARNING

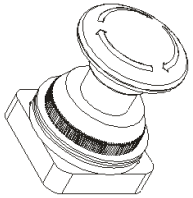
- **Before leaving the operator's compartment, be sure to push in the battery disconnect button to set the brake and turn the ignition switch OFF.**

OPERATING CONTROLS AND FUNCTIONS

OPERATING CONTROLS AND SWITCHES (cont'd)

BATTERY DISCONNECT BUTTON

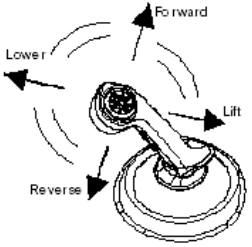
Pushing the battery disconnect button will disconnect the battery from the forklift's electrical system. To reset, twist in the direction indicated by the arrows on top of the button. Pushing this button down will immediately apply the brakes.



MULTI-FUNCTIONAL HANDLE

Travel Control

Pushing the control handle toward the forks makes the truck travel forward (forks leading). To change direction, move the multi-functional handle in the opposite direction the truck is traveling, regardless of travel speed (refer to controlled reversing below). If the multi-functional handle is released, it will return to neutral and the truck will slow down to a stop (refer to soft mode operation on pages 35 & 41).



Controlled Reversing

Braking by plugging (controlled reversing) is the recommended method of slowing down this unit. Controlled reversing can be performed during normal operating conditions to slow down and/or stop an electric powered industrial truck. To activate controlled reversing simply move the multi-functional handle in the opposite direction of travel. The unit should come to a smooth stop. If the operator should continue to hold the handle in the changed (new) direction, the unit will then begin to accelerate in that new direction. The farther you push the control handle, the faster the truck will accelerate or decelerate.

The multi-functional handle controls the direction and speed at which the carriage moves vertically (lifts and lowers) on the mast.

The additional buttons are used to control additional hydraulic functions, such as push/pull clamp attachment, etc.

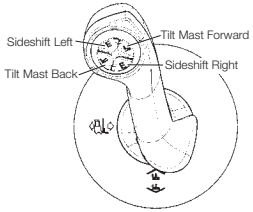
Lift/Lower

Lift/lower is activated by moving the entire handle towards the left or right side of the truck. To control lift speed pull the multi-functional handle towards the operator. To lower the mast push the handle away from the operator. Lift and lower speeds are proportional to the movement of the handle. The more the handle is moved, the faster the lift/lower speed (refer to soft mode operation on pages 35 & 41).

Lift speed will reduce when traveling at high speed. It is not recommended to lift loads or mast while traveling.

NOTE:
For both lifting and lowering, the speed can be changed by controlling the tilt angle of the handle.

Tilt and Sideshift Controls



The tilt/sideshift control is located at the top of the multi-functional handle. This controls the tilting of the mast and sidshifting of the carriage. The control toggle is operated with the thumb of the right hand. To tilt the mast forward, push to the right (toward forks) of the handle. To tilt the mast back, push to the left of the handle. On trucks equipped with sideshifting carriage, press the top of the control toggle to move the carriage to the left. To sideshift right press the bottom side. Tilt and sideshift are single speed functions (refer to soft mode operation on pages 35 & 41).

OPERATING CONTROLS AND FUNCTIONS

OPERATING CONTROLS AND SWITCHES (cont'd)

HIGH MAST INHIBIT FUNCTIONS TURTLE MODE (SOFT MODE)

Mast Height	Below Free Lift	Above Free Lift *
Travel Speed	No Speed Reduction	50% Speed Reduction
Pedal Braking	No Reduction	40.4% Reduction
Lift Speed	No Speed Reduction	100% Speed Reduction **
Tilt Speed	No Speed Reduction	24.8% Reduction
Side Shift Speed	No Speed Reduction	24.8% Reduction
Auxiliary Speed	No Speed Reduction	24.8% Reduction
Vertical Mast Stop	Not Active ***	Active ***

* 1066 mm (42 in) for 2 Stage Mast.

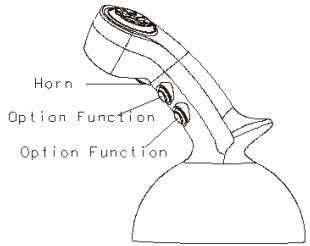
** Default setting 100%, may be adjusted by a factory trained technician.

*** May be turned on/off only by a factory trained technician.

Steer Angle	
30°	Controller begins to cut back and slowing inside drive wheel.
80°	Controller reaches 20% speed reduction and begins to reverse inside drive wheel.

HORN BUTTON

The horn button is activated by using the index finger on the right hand.

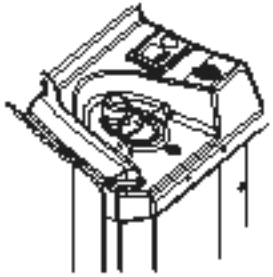


OPTIONAL FUNCTION CONTROL BUTTONS

The additional buttons are used to control any additional hydraulic functions, such as a push/pull clamp attachment, etc. (refer to soft mode operation on pages 35 & 41).

STEERING TILLER

The steering tiller is used to manoeuvre the truck. With standard steering, traveling forward (forks first), turn the steering tiller clockwise to make the truck turn right; turn the steering tiller counterclockwise to make the truck turn left. Reverse steering is an option. If installed, when traveling forward (forks first), turn the steering tiller counterclockwise to make the truck turn right; turn the steering tiller clockwise to make the truck turn left.



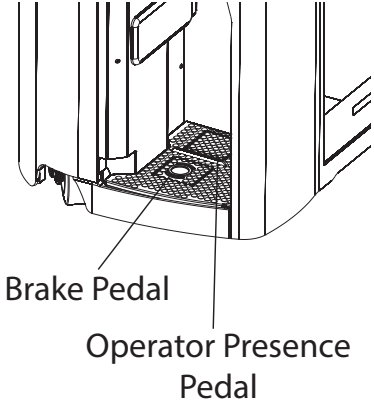
When turning, the controller will restrict (reduce) the travel speed.

OPERATING CONTROLS AND FUNCTIONS

OPERATOR PRESENCE PEDAL

This pedal is the one on the right (farthest in). Step down on this pedal to power up the unit, to travel or make use of the hydraulic or steer systems.

NOTE:
If you remove your foot from this pedal, the truck will slow down to a stop and the brakes will be applied. Both the operator presence and brake pedals must be depressed to enable travel.



BRAKE PEDAL

This pedal is the first one (closest to the opening of the operator's compartment). The brake pedal enables the travel functions of the truck. When the operator steps on the pedal, the brakes are released and the travel functions are enabled (refer to controlled reversing on page 40).

NOTE:
Both the operator presence and brake pedals must be depressed to enable travel.

If the multi-functional handle is tilted forward or back before the brake pedal is engaged, travel is disabled until the multi-functional handle is released and returns to neutral. To stop travel and apply the brakes, release the brake pedal completely. If the truck is turned on while the brake pedal is depressed, a message will appear on the meter panel informing the operator to "Cycle Brake Pedal", to verify pedal function. Release brake pedal to continue meter panel start-up.

M234	CYCLE BRAKE PED.

WARNING

- **Never use two feet on the brake pedal.**
- **Do not use the brake pedal to stop the truck except in an emergency. A full and rapid release of the brake pedal will stop the truck abruptly and could cause damage or injury.**

OPERATING THE TRUCK

The following are the recommended procedures that should be followed before and while operating a UniCarriers forklift.

Since the Occupational Safety and Health Act (OSHA) 29CFR1910.178(l) requires that "**only trained and authorized operators shall be permitted to operate a powered industrial truck**", it is the owner/end user's responsibility to comply. The following is intended as a guide in training operators in safe truck operation; it is not a training manual nor is it intended to preclude good judgment and common sense.

For a complete listing of what should be covered in a training program, obtain a copy of ANSI/ITSDF B56.1 Safety Standard for Low Lift and High Lift Trucks.(www.itsdf.org).

INSPECTION BEFORE OPERATING

The OSHA regulation requires that the operator completely checks the unit at the beginning of **each shift** or **work period**. Ensure that all of the Daily Inspection checks (refer to page 59, also refer to page 60 for Sample Operator's Daily Checklist) have been made before operating the unit.

FORKLIFT OPERATING PRECAUTIONS

1. **Safety stop system:** This system is designed to stop the forklift when malfunctions occur in the electric system which controls forklift speed. If this system should be activated, turn the ignition switch OFF; then turn it ON again and resume driving the forklift. If the safety stop system begins to operate frequently while starting the forklift or operating the forklift, record all codes on meter panel and contact your Local Authorized Dealer.
2. **Low voltage protection system:** When battery voltage drops below a certain level, this system will activate causing the low voltage lock indicator/mark to illuminate, causing the forklift to lockout hydraulic functions and reduce travel speeds. At this time, the battery warning indicator/mark will be displayed on the meter panel. The battery must be recharged or replaced before further forklift operation is possible. If the operator continues to drive on low battery at reduced performance, the controller will stop all functions and no further operation is possible. Refer to pages 37 & 38.

WARNING

- **When the low voltage system becomes active, immediately have the forklift moved to a service area and replace the existing battery with a fully-charged battery.**

CAUTION

a. **The low voltage protection system is not a device which warns of a weak battery, but rather one that prevents possibly erroneous operation of electrical parts. Always determine whether or not the battery should be recharged by referring to the battery capacity meter.**
b. **After the low voltage protection system has activated, take sufficient time to recharge the battery so that the specific gravity of the electrolyte is resumed.**

3. **Prohibit overloading the traction motor:** Do not overload the forklift by climbing a steep slope or pushing heavy objects for an extended period of time. This will cause a high current in motor and controller resulting in high temperatures, which will cause the control system to go into thermal cut-back. Continued operation could cause damage to the motor or controller.

OPERATING THE TRUCK

FORKLIFT OPERATING PRECAUTIONS (cont'd)

4. Action to be taken in an emergency: In an emergency, push the battery disconnect button. By pushing this button all power will be cut and all functions will be inoperable (refer to page 40).

- The mechanical emergency/parking brake will be applied and if the truck was traveling it will come to an abrupt stop.
- Do not tow this unit, it has an electric brake which can only be released by applying power. This procedure can only be performed by a trained and authorized technician (refer to moving a stuck or disable forklift on page 23).
- If mast is up contact your Local Authorized Dealer to lower.

PRECAUTIONS FOR OPERATING IN COLD STORAGE

This unit has been designed to operate in cold storage and freezer operations as follows:

Standard unit can be operated:
Continuous to -5ºC (+23ºF)
Intermittent to -15ºC (+5ºF)

Unit with Optional Freeze Package can be operated:
Continuous to -29ºC (-20ºF)
Intermittent to -40ºC (-40ºF)

Use hydraulic oil for cold storage (refer to page 74).

Even with the freezer option keep in mind that the battery must be charged correctly to avoid damage or poor truck performance.

OPERATIONAL PROCEDURES

There are certain hazards that cannot be avoided solely by mechanical means in the everyday use of material handling trucks. Only the intelligence, good sense, and care of the operator, along with proper maintenance, will assure that the trucks are operated properly. It is important to have trained, reliable personnel operating your units. If, at any time, the operator finds that the unit is not performing properly, discontinue operation of the truck and report the condition to your supervisor for correction.

When operating the forklift under severe climatic conditions such as high temperature, high altitudes, in cold storages, and when handling explosives and combustibles, and in areas where the forklift is apt to cause radio interference, make sure that the forklift is manufactured and approved as conforming to the local specifications, laws and regulations.

Proper operation of this unit is the mast should be tilted back and the forks should be approximately 200 mm (8 in) above the ground. Steering the truck is easier with the forks leading. Always look in the direction of travel.

Operate the unit from the operator's position after assuring that the operation will not endanger the operator or any other person. Do not operate a truck in hazardous areas. Make sure that the forks and/or load have clearance to lower and do not "hang-up".

OPERATING THE TRUCK

OPERATIONAL PROCEDURES (cont'd)

Before plugging in the battery

- Make sure that the ignition switch is in the "off" position
- Plug in the battery connector
- Ensure that the battery disconnect button is pushed
- Ensure that all covers are secure
- Ensure the multi-functional handle is in the neutral position

WARNING

- **Do not turn the ignition switch ON unless the Multi-Functional handle is in neutral.**

1. Step into the operator's compartment. Ensure that one foot is on the operator's presence pedal and the other is on the brake pedal to release the brake.

   Note: You may have to cycle brake pedal once to turn on truck controller.

2. Reset the battery disconnect button (twist in direction indicated by arrows).
3. Ensure the Multi-functional Handle is in the neutral position and turn ignition switch to the "on" position.
4. Make sure that the LCD is ON and make sure that the LCD is not showing a malfunction indication mark. The meter panel will indicate to cycle the brake pedal to ensure proper operation.
5. Check battery condition. If the gauge shows a low battery condition, the battery must be charged or replaced before operating the truck.
6. Check horn operation; if it does not work do not operate the truck. Always sound horn at blind corners and intersections before proceeding to travel.

WARNING

- **Always be sure that all body parts are kept within the operator's compartment.**

7. Check the lift/lower/tilt functions. Report any malfunctions

WARNING

- **Always perform operational checks in a clear area.**

8. Once the forks are lowered, place the Multi-functional Handle in the desired direction of travel. The mast should be tilted back and the forks should be approximately 200 mm (8 in) above the ground.

WARNING

- **Avoid quick steering or acceleration as this may cause an accident, which could result in serious injury or death.**

9. Check the steering function during travel testing. The smaller the radius of a turn to be made, the lower the speed of the forklift should be. When making a sharp turn, always drive the forklift at a low speed.

WARNING

- **Because the movement of a forklift is different from that of a passenger car, in case of taking a turn, sufficiently lower the speed and look around.**
- **Do not take a turn with the forklift lifted high or at a high speed. It may cause a serious accident: for example, the forklift becomes unbalanced and tips over.**

OPERATING THE TRUCK

BRAKING BY PLUGGING (CONTROLLED REVERSING)

Braking by plugging is a method of braking in which the Multi-functional Handle is switched to the opposite direction in which the forklift is traveling (refer to page 40).

LOADING

Adjust distance between the forks so that they are at or near the same distance to the centerline of the forklift. The wider the interval between forks, the better the balance. Be sure to apply the fork lock pin's (refer to page 47) after setting the forks.

Approach slowly, straight toward the load, and stop just in front of it. Adjust mast to a vertical position, matching the height of the forks to the position of the pallet. Advance slowly and completely insert forks beneath the load. Move the multi-functional handle to the Neutral position and set the brake by removing your foot from the brake pedal. Then raise the load. Confirm that the load is stable and tilt it backward. Step on the brake pedal and back up the forklift slowly.

TRANSPORTING LOADS

When transporting loads, the forklift should be driven carefully at a slow speed with the load kept low and tilted back. When the load is big enough to block forward visibility, drive the forklift backward. Follow the safety rules.

UNLOADING

Slowly approach the unloading site and stop facing straight ahead. Move the multi-functional handle into the Neutral position. After adjusting the mast to the vertical position, raise the load a little above the stack on which it is to be placed. Advance slowly into the proper position for stowing. Place the multi-functional handle in the Neutral position.

Slowly lower the forks to set down the load. Move the multi-functional handle to the Reverse position and back up the forklift until the forks separate completely from the load.

OPERATING THE TRUCK

CLIMBING

For safety reasons, when driving a loaded forklift up a steep grade, it must be driven forward with the load in front; on a downgrade, backward with the load behind.

STOPPING AND PARKING THE TRUCK

1. Park truck in designated parking areas only.
2. Make sure truck does not block fire aisles, fire equipment, stairways or walkways.
3. Stop the forklift by moving the multi-functional handle to the neutral position or use controlled reversing until the truck comes to a stop.

WARNING

- **Do no make sudden stops as the forklift will pitch forward and drop load.**

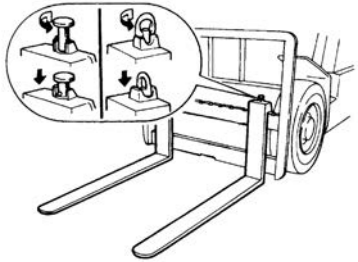
4. Remove foot from brake pedal.
5. Adjust mast to vertical position and lower forks fully.
6. Push in battery disconnect button, turn ignition switch to “off” position and remove key, if equipped.

WARNING

- **To prevent unauthorized use, always remove the key, if equipped, from the ignition switch when left unattended unless you are within sight of or less than 8 m (25 ft) from the truck.**

FORKS

The fork-to-fork distance can be properly adjusted by unlocking the lock pins on the forks. These pins are unlocked by turning them 90°. Forks must be equally located from the center of the forklift. After correct fork-to-fork distance is obtained, secure the forks with the lock pins.



CAUTION

- **Various kinds of forks are available depending on the lifting capacity. Select proper forks so that the specifications stamped on the upper face of them will meet the lifting capacity of your forklift. Do not use forks below the lifting capacity of your forklift.**

WARNING

(in United States)

- **Forks should be inspected daily for any damage, bending or other abnormal conditions. Report any conditions to your supervisor.**
- **ANSI/ITSDF & OSHA require that forks be replaced if worn more than 10% of the starting thickness, this should be checked during normal P.M. or at minimum, yearly by your Local Authorized Dealer.**

OPERATING THE TRUCK

BATTERY CONNECTOR

WARNING

- **Before operating the forklift, check the battery gates/ restraint are in place.**

The battery connector is used to supply battery power to the required electrical units or parts. Always connect the connector before forklift operation and check that the gate is secure. In the case of an emergency, immediately push in the battery disconnect button. Before replacing or inspecting fuses or any other electrical units/parts, be sure to disconnect the battery connector.

GENERAL CARE AND MAINTENANCE

BATTERY AND BATTERY CHARGING EQUIPMENT

CAUTION

The following information is general information regarding the best methods for using and maintaining the battery, and it in no way can cover every type of manufacture of battery/charger. You should always contact the manufacturer of the battery or charger to ensure that you are following their recommended procedures and operation methods of the equipment.

BATTERY CARE AND MAINTENANCE

Refer to the appropriate manuals attached to the battery for information about how to handle and maintain the battery.

CAUTION

- **Do not allow the alkaline solution to fall in the battery cell, this will result in a dead or weak battery.**

Proper care and servicing of the battery is vital to ensure satisfactory operation and life of your electric truck. Battery acid is extremely corrosive and should be washed off the unit if any spills occur.

CAUTION

- **Check with Local and State Regulations on storing, charging and cleaning of corrosive materials. There may be conditions locally which will not allow you to simply wash off acid spills.**

WARNING

- **Only trained and authorized personnel should conduct any maintenance or servicing of this unit and its battery.**
- **Always turn ignition switch off and disconnect battery before doing any servicing of the battery.**
- **Always wear personal protective equipment (PPE), i.e. safety goggles, rubber gloves and boots, when servicing the battery. Battery acid will cause severe burn or injury.**
- **The battery generates highly explosive hydrogen gas. A short circuit resulting in sparks or even a lit cigarette in the vicinity of the battery can cause a serious explosion. Do not permit smoking, open flames or sparks near the battery or battery maintenance area. Be particularly careful during battery charging and for the first 30 minutes following battery charging.**
- **Battery fluid contains highly corrosive sulfuric acid. If acid contacts your skin or clothing, flush the area immediately with large amounts of clean fresh water. If acid enters your eyes, immediately wash out your eyes with large amounts of clean fresh water and contact a physician. If acid is accidentally swallowed, immediately contact a physician.**
- **If a large quantity of battery fluid is spilled, neutralize it with an equivalent quantity of basic neutralizing agent (baking soda, calcium hydroxide, or sodium carbonate). Wash away the resulting solution with large quantities of clean fresh water.**

GENERAL CARE AND MAINTENANCE

BATTERY CARE AND MAINTENANCE (cont'd)

WARNING

- **When changing industrial batteries, replacement batteries shall be of the service weight that falls within the minimum/ maximum range specified on the truck data plate by the truck manufacturer.**
- **Do not place tools or other metallic objects on the top surface of the battery where they may come in contact with the battery terminals and cause an electrical short. This electrical short may cause sparking. The sparking may ignite the hydrogen gas escaping from the battery resulting in a serious explosion. It may cause some nearby object to burn.**
- **Battery fluid exhaustion (gases) creates the danger of explosion. Replenish the battery fluid frequently to maintain the specified fluid level. During battery charging, the proportion of water in the battery fluid decreases. Before battery charging, always check that the battery fluid level is above plates. If the fluid level is low, replenish it with distilled water to cover the plates. Do not overfill to standard level.**
- **After charging is complete fill cells to the standard fill level.**
- **During battery charging, there is a high risk of hydrogen gas explosion. To reduce this risk, always perform battery charging in a well-ventilated room or area. Continue ventilation for at least 30 minutes after the completion of charging.**
- **Do not attempt to recharge a frozen battery; this may cause it to rupture or explode.**

WARNING

- **Cleaning the battery upper surface and connections with certain types of dry cloth or laying a dust cover or vinyl sheet across these areas may create a static electricity charge that can lead to dangerous sparking. An explosion can result. Do not use dust covers or vinyl sheets to protect the battery. If you are cleaning battery surfaces, use a slightly damp cloth.**

CAUTION

- **Over-discharge precautions. Recharge the battery immediately after the meter panel battery warning mark begins to blink. Do not operate the forklift until it simply stops running and then recharge the battery. This technique will result in greatly reduced battery service life. After completing forklift operations, park the forklift and immediately begin battery charging. Do not store a discharged battery for an extended period of time. Recharge it before storing.**
- **The battery and its surroundings should be kept clean and dry at all times. Keep the battery plugs tightly closed to prevent the leakage of battery fluid. Battery fluid leakage will result in battery corrosion.**

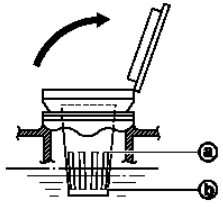
GENERAL CARE AND MAINTENANCE

BATTERY CARE AND MAINTENANCE (cont'd)

Adding Water

On a routine basis after every 50 hours of operation, remove the battery vent caps and inspect the electrolyte level. The water in the electrolyte solution evaporates at high temperatures or with excessive charging rates.

The level should be between part "a" and "b" after charging; if not, replenish to the proper lever with distilled water after charging.



Cleaning Terminals and Cable Connections

The top of the battery must be kept clean. Tighten the vent caps and clean the battery with a brush dipped in an alkaline solution (ammonia or baking soda and water). After the foaming has stopped, flush top of battery with clean water. If terminals and cable clamps are corroded, disconnect the cables and clean them with the same solution.

PRECAUTIONS FOR COLD AND HOT WEATHER

In Cold Weather

Battery electrolyte freezing point varies with acid concentration or its specific gravity. A battery with an insufficient charge will freeze at higher temperatures.

NOTE:

Use extreme caution to avoid freezing the battery since freezing will generally ruin the battery.

In Hot Weather

Since the battery electrolyte quickly evaporates in hot weather, it is necessary to fill with distilled water frequently.

GENERAL CARE AND MAINTENANCE

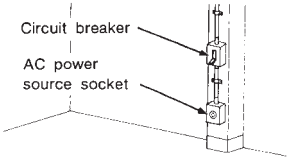
BATTERY CHARGERS

The off-truck type charger is a separate entity. The battery charger may or may not be included with the truck.

WARNING

Determine the type of battery charger that is used for the forklift you are using. Operate the forklift accordingly.

- **Alternating current power source voltage will vary with the area in which the forklift is used. Determine the local voltage before attempting to charge the battery. Use the appropriate transformer tap on the battery charger.**
- **Tap adjustment requires specialized knowledge and expertise.**
- **Tap configuration must be set before battery charging. For full charging, select a time frame in which minimum voltage fluctuation occurs, then select the appropriate transformer tap. If the wrong tap is selected, over-charging or under-charging will result. If you have any questions, contact your Local Authorized Dealer.**
- **A current or over-current circuit breaker (hereafter referred to simply as breaker) must always be connected to the AC power supply side of the battery charger.**



- **Always use charging equipment that is appropriate for the forklift battery being charged.**

WARNING

- **If multiple battery chargers are in use, each battery charger must be equipped with its own circuit breaker.**
- **Alternating current requires high-capacity units. Set the charging equipment power source to the appropriate level.**
- **Specialized knowledge and expertise is required. For information on the legal requirements of your country, contact your Local Authorized Dealer.**

GENERAL CARE AND MAINTENANCE

BATTERY CHARGE CLASSIFICATIONS

Normal Battery Charge

The normal battery charge is used to restore the battery to its original power level.

Equation Battery Charge

When the normal battery charge is applied many times, the voltage level and the battery fluid specific gravity of the individual cells will show a wide variation. This wide variation will prevent full charging of the battery. Equation battery charge is used to equalize individual cell voltage and battery fluid specific gravity and make full battery charging possible again.

As a general rule, a battery charged and discharged on a daily basis should have equation charging applied after every 10 or 15 charge/discharge cycles.

Additionally, equation charging should be performed as soon as possible if any of the following conditions occur.

a. Battery discharge in excess of the specified limit.
b. Battery charging following discharge is delayed for an extended time period.
c. A battery short circuit has occurred.
d. A battery that has not been used for an extended time period is readied for use.

CAUTION

- **Equation battery charging is used to restore a battery to its full potential. However, it should not be performed too frequently. Frequent equation battery charging will result in a greatly reduced battery service life.**

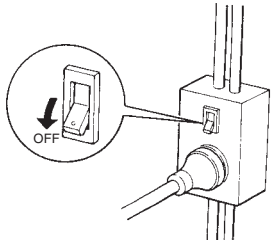
NOTE:

- The battery consists of lead cells connected in series to one another. Each cell has a capacity of approximately 2 volts. There are several dozen cells. The connected cells are contained in the battery case. When there is significant variation in voltage and battery fluid specific gravity between individual battery cells, full charging will not be possible.
- With some battery charging equipment, equation battery charging occurs automatically after some specified number of charge/discharge cycles. Manual selection of the equation battery charging mode is not required.

GENERAL CARE AND MAINTENANCE

CHARGING PREPARATIONS

1. Move the forklift to the charging area and park it.
2. Check the battery fluid level. Replenish the battery fluid to the specified level with distilled water as required.
3. Check that the circuit breaker on the AC power supply side is OFF.



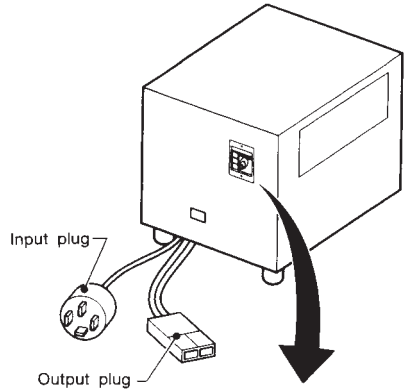
WARNING

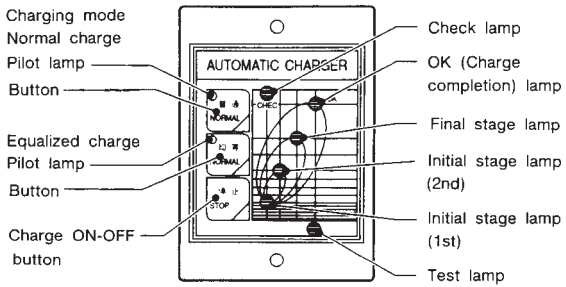
- **During battery charging, large quantities of highly-explosive hydrogen gas may be released from the battery. To minimize the danger of an explosion, battery charging should be performed in a well-ventilated area protected from direct sunlight. Remove all objects that might ignite the gas from the immediate area before beginning charging.**

NOTE:
Transformer tap selection is required before beginning charging. Measure the charger power supply voltage. Select the appropriate transformer tap.

Selection of the wrong tap will result in battery over-charging or under-charging. Contact your Local Authorized Dealer if you require more detailed information.

EXAMPLE ONLY





GENERAL CARE AND MAINTENANCE

HOW TO CHARGE BATTERY (OFF-FORKLIFT TYPE)

Charge the battery according to the manual supplied with the charger being used.

1. Ensure the supply side voltage corresponds with the charger input voltage.

NOTE:
The battery chargers may be preset to the following input voltages at the time of delivery:
220V ... 200-volt charger
440V ... 400-volt charger

2. If the charger input voltage does not correspond with the supply voltage, the input side voltage is adjustable as follows using the transformer taps located inside the charger (refer to NOTE on page 54) or contact your Local Authorized Dealer.

⚠ WARNING

- **Unplug the charger before adjustment. Serious injury or death can occur by electrical shock.**

3. Connect the charger output plug to the battery plug.

⚠ CAUTION

- **Do not connect the charger output plug to the body harness connection. The battery will not charge through this connection.**

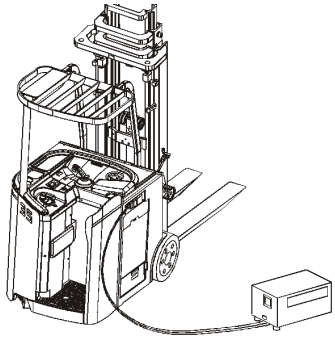
4. Connect the charger input plug to the wall outlet (in the service shop).

⚠ CAUTION

- **To prevent a short circuit, install a no-fuse breaker on the wall outlet side (in the service shop) to connect the charger input plug.**

5. Push the NORMAL or EQUAL button to select normal or equalizing charge, respectively.

   When an equalizing charge is desired, press the EQUAL button to set the charger in that mode. The NORMAL pilot lamp will go out and the EQUAL pilot lamp will come on. Make sure only the pilot lamp of the selected charging mode is lit. At this time, charging will be started automatically.



NOTE:
Push the NORMAL or EQUAL button for about 2 seconds. Do not push it more than 5 seconds. If the button is pushed for extended periods of time, the timer will enter test mode. The test lamp will come on. The test mode will end in 10 seconds to 2 minutes and the test lamp will go off. When the test mode is operating, charging will not start because the charging mode is not selected.

- After charging is started, it is not possible to change the charging mode (NORMAL or EQUAL). If it is necessary to change the mode, stop charging (push the STOP button), and then select the charging mode again.

GENERAL CARE AND MAINTENANCE

HOW TO CHARGE BATTERY (OFF-FORKLIFT TYPE) (cont'd)

- It is advisable to charge the battery using the equalize charging mode at least two or three times a month.

6. While charging, the charge indicator lamp will come on sequentially and remain lit. Firstly, the Initial (1st) lamp comes on, then the 2nd lamp, and they remain lit. Finally, the Final lamp will come on.
6.

NOTE:
When the FINAL lamp comes on, the timer will activate.

7. When charging has been completed, the charging circuit automatically opens. At this point, the Initial (1st) lamp, 2nd lamp, Final lamp and OK (charge completion) lamp will all come on to indicate that charging has been completed.

   At this time, the charging mode lamp will go out.

8. After ensuring that the Initial (1st and 2nd), Final and OK lamps are on, disconnect the charger output connector from the battery plug. All lamps will then go out.

NOTE:
Do not disconnect the input plug while charging is taking place.

- Before disconnecting the charger output plug from the battery plug, make sure the Initial (1st and 2nd), Final and OK lamps are lit (4 lamps in all).

⚠ WARNING

- **If the CHECK lamp remains on after charging the battery, the problem may be due to a malfunctioning main timer or an abnormal battery. Immediately contact your Local Authorized Dealer for inspection. When the charger output plug is disconnected from the battery plug, the CHECK lamp will go out.**
- **Leave the battery lid open during the charging process.**
- **While the battery is being charged or immediately afterward, inflammable gases are actively produced. Be careful to keep any open flame away from the battery.**
- **Keep the parking brake engaged during the battery charging process on the truck.**
- **Before charging the battery, add distilled water up to the upper limit level. Do not overfill.**
- **If a fuse located on the transformer is blown, replace it with one of the same type and rating.**
- **Periodically clean the caps, removing any foreign matter from gas vents. The caps need not be removed during the charging operation.**
- **When charging is complete, ascertain with a gravimeter that the specific gravity is 1.28 at a temperature 20°C (68°F).**

GENERAL CARE AND MAINTENANCE

BATTERY REMOVAL

CAUTION

- **Always park forklift on a level, smooth floor when changing (rolling) the battery.**
- **This forklift has an electric brake which will set when the ignition switch is in the off position or the battery is unplugged.**
- **Always use an approved battery changing cart that is working properly.**
- **Use care not to damage harness of battery cable, etc., and battery support when mounting and removing battery.**

1. Disconnect battery connector.

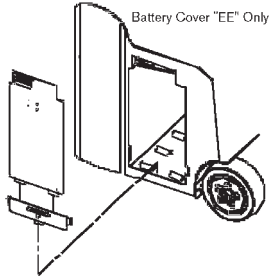
CAUTION

- **Do not pull cable when holding battery connector.**
- **Disconnect battery connector after turning OFF key switch.**

2. Remove the side gate from the left or right side of the battery.

Standard Cover

Battery Cover "EE" Only



3. Align the battery cart with the battery.

4. Set the battery cart brake.

5. Carefully slide the battery out of the compartment.

WARNING

- **Use extra care with cart. Never let battery terminals make contact with chassis when replacing it. If contact is made, sparks, leading to burns and explosions occur.**

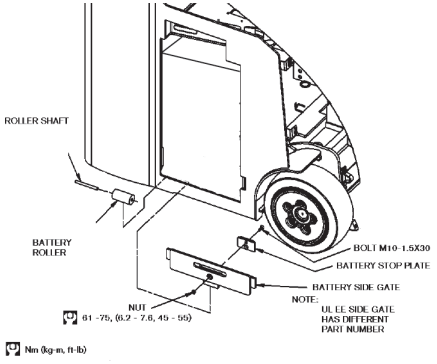
GENERAL CARE AND MAINTENANCE

BATTERY REPLACEMENT

Battery Selection

A battery also serves as a counterweight, and the lifting capacity will vary according to the weight of the battery which is mounted on the forklift.

Accordingly, it is necessary to choose a battery which is within the battery weight range specified on the data plate attached to each forklift.



WARNING

- **Do not use any battery that is not with-in the weight range on the data plate, as it could affect the stability of the forklift.**

NOTE:
The battery supports (North America models only) are set to the maximum battery compartment size, and should be adjusted to limit horizontal movement to not more than 1/2 inch for a battery of nominal voltage rating and representative of the maximum ampere-hour rating, per UL 583.

WARNING

- **Avoid damage to battery, battery cable and upper panel during battery removal and installation.**

GENERAL CARE AND MAINTENANCE

DAILY INSPECTION

To maintain your forklift in proper condition and ready for safe operation, be sure to perform the daily checks indicated below. If you note any malfunction notify your Local Authorized Dealer.

1. Check battery fluid level.
2. Check hydraulic oil level and for oil line leaks.
3. Check for full motion and proper function of all the steering and travel controls.
4. Check steering tiller play.
5. Check the condition of tires and wheels. Check for looseness, wear or damage of wheel nuts and bolts.
   - Remove objects that are embedded in the tread.
   - Check for damage and friction of wheels and for bends and cracks in the rim.
6. Check that all guards, horn, lights, limit switches, warning and safety devices, indicators, etc. are functional.
7. Check safety start systems operation:
   - Operator Presence Pedal
   - Brake Pedal
   - Mast Interlock
8. Check operation of hydraulic control valve.
9. Check mast operation for the following items:
   - Smooth lifting and lowering
   - Smooth roller rotation
   - Wear or damage to chains
   - Wear or damage on mast rail
   - Lift bracket and forks for bends or damage
10. Conduct an operational check, including braking functions and plugging distance.
11. Check forks and frame for cracks, breaks, bend and wear.
12. "EE" rated forklifts must have battery covers installed and locked for operation.
13. Check the fork latches.
14. Check the backrest and overhead guard for proper installation and function.
15. Inspect the condition of battery connectors, electrical cables, wiring and chains. Make a report of any found to be worn or cracked.
16. Check that the battery retainers, if used, are in place and working properly.
17. Check additional options, i.e. attachments or special equipment as specified by the manufacturer or employer.
18. Check that capacity plates and decals are legible, if not replace.

WARNING

- **If the truck is found to be in need of repair or in any way unsafe, or contributes to an unsafe condition, or if during operation the truck becomes unsafe in any way, the matter shall be reported immediately to your designated authority, and the truck shall not be operated until it has been restored to safe operating condition.**
- **Do not make repairs or adjustments unless specifically authorized to do so.**
- **Do not use open flames when checking electrolyte level in storage batteries.**
- **Be certain that your truck is the correct UL safety rating type for the area in which you are working. The proper type designation for the industrial truck is on the data plate. In areas classified as hazardous, use only trucks approved for use in those areas. All hazardous areas should have classified markings. If you are unsure of the classification of the area you wish to enter, ask your designated authority before entering.**

GENERAL CARE AND MAINTENANCE

OPERATOR'S DAILY CHECKLIST (SAMPLE)

WARNING

Carry out the daily checks as per “Daily Inspection” in this Operator’s Manual on page 59 and the applicable provisions of laws and regulations of your country. (In U.S. OSHA 29CFR1910.178)

Operator’s Daily Checklist and Safety Inspection (sample)
I.T.A. Class I, II & III

IMPORTANT: Check each of the following items before the start of each shift. Notify your supervisor and/or maintenance department if there are any problems with the forklift.
DO NOT OPERATE A FORKLIFT WITH ANY MALFUNCTION.

FORKLIFT DETAILS:
Electric Sit-down Electric Stand-up Electric Pallet Serial/Unit Number:_____ Operator:_____ Supervisor’s OK:_____
Please review the list below and mark each item accordingly. Please provide any additional explanation as necessary.

#	OK	NG	Visual Check Items	#	OK	NG	Operational Checks
01			Forks: bent, worn, stops, forklocks OK	18			Horn Operation
02			Load Backrest: bent, cracked, loose, missing	19			Operator Restraint (if equipped): operation
03			Tires/Wheels: wear, damage, nuts tight	20			Brake: loose/binding, operation, adjustment
04			Battery Connectors: cracked, loose, missing	21			Seat Brake (if equipped): loose/binding, operation
05			Hydraulic Oil: level, dirty, leaks	22			Mast: smooth lifting/lowering and roller rotation, wear or damage to chains or mast rails
06			Covers/Sheet Metal: damage, missing	23			Tilt: loose/binding, excessive drift, “chatters”, leaks
07			Overhead Guard: bent, cracked, loose, missing	24			Carriage and Attachments: operation, leaks
08			Battery: connections loose, state of charge, electrolyte level	25			Control levers: loose/binding, free return to neutral position
09			Warning Decals/Operator’s Manual: missing, unreadable	26			Battery Test: indicator shows full charge while holding full forward tilt
10			Data Plate/Capacity Plate: incorrect: unreadable, missing	27			Directional Control: loose/binding, find neutral position OK
11			Operator Restraint (if equipped): damage, mounting, operation, oily, dirty	28			Drive Axle: noise, leaks
12			Gauges/Instruments: damage, operation	29			Steering: loose/binding, leaks, operation
13			Brakes: linkage loose, reservoir fluid level, leaks	30			Warning Lights (if equipped): mounting, operation
14			Carriage and Attachments: damage, mounting, operation, leaks	31			Back-Up Alarm (if equipped): mounting, operation
15			Head/Tail/Working Lights: damage, mounting	32			Head/Tail/Working Lights: mounting, operation
16			Side Gates: damage	33			Side Gates: operation, binding
17			Battery Retainer: damage, latched, operation	34			Battery Retainer: operation

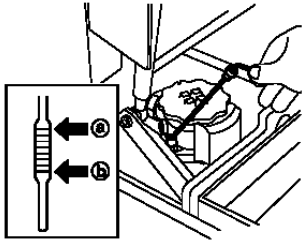
Additional explanation of problems marked above:_____

GENERAL CARE AND MAINTENANCE

MAINTENANCE AND INSPECTION

HYDRAULIC OIL LEVEL

Check the oil level in the hydraulic oil tank. The oil level should be between point "A" and point "B" on the gauge rod. If it is below point "B" add oil to point "A".



NOTE:
For correctly checking the hydraulic oil level, park the forklift on level ground and stand the mast vertically with the forks lowered to their lowest limit beforehand.

REFILLING HYDRAULIC OIL

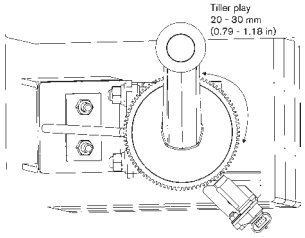
Remove the hydraulic oil filler cap. While checking the hydraulic oil level with the level gauge, pour the specified hydraulic oil into the oil filler until the oil level is in the proper area (refer to page 74).

CAUTION

- **Do not use any hydraulic oil other than those specified by the OEM, otherwise it may cause not only deterioration in the performance of the forklift but could result in an accident.**
- **Carefully add the hydraulic oil so as not to mix dust and foreign substances in the oil.**

STEERING TILLER PLAY

Make sure that the steering tiller play is within the standard on the circumference with the key switch turned off. Free play should be 20 to 30 mm (0.79 to 1.18 in).



WARNING

- **If there is excessive play or looseness, have the steering wheel adjusted by your Local Authorized Dealer.**

GENERAL CARE AND MAINTENANCE

MAINTENANCE AND INSPECTION (cont'd)

TIRE REPLACEMENT

WARNING

- **Do not remove the wheels unless you are familiar with the procedure. For wheel replacement, contact your Local Authorized Dealer.**
- **Do not get under or ride on the forklift when it is supported only by a jack. Doing so could lead to a serious accident, including death in the case the jack comes off accidentally.**
- **Use a jack with a capacity of 3.0 tons or more.**

CAUTION

- **Always park the forklift on a flat, level and solid surface.**
- **Unload cargo from the forklift.**
- **Do not turn the ignition switch to "ON" or "OFF", or operate control levers from any position other than the operator's seat.**
- **Keep the emergency disconnect switch engaged.**
- **Make sure the multi-functional handle is in the neutral position. Check the forklift and its surroundings for safety.**
- **Use hardwood blocks that do not slip easily and are strong enough to withstand the forklift weight. Do not use broken or cracked blocks or metal blocks that slip easily.**

CAUTION

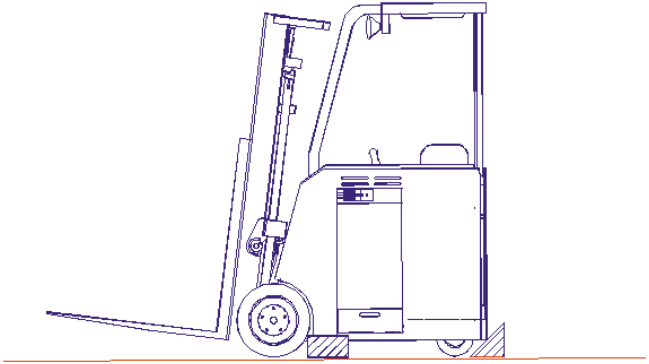
- **Use wood blocks of the following size:**

  Height: Allows the block to tightly fit between the backward tilted mast and the road surface.

  Width: 50 to 100 mm (1.97 to 3.94 in) larger than the longitudinal length of the mast rail.

  Length: 20 to 40 mm (0.79 to 1.57 in) larger than the width of the outside mast.

- **To prevent the forklift from inclining, do not place wood blocks of different heights under the right and left mast.**



Front Wheel:

1. Place the forklift on a level and solid surface.
2. Turn the ignition switch to the "OFF" position.

GENERAL CARE AND MAINTENANCE

MAINTENANCE AND INSPECTION (cont'd)

TIRE REPLACEMENT (cont'd)

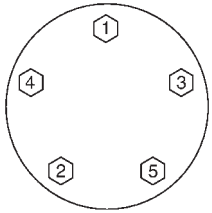
Front Wheel: (cont'd)

3. Place chocks behind the rear wheel to prevent movement of the forklift.
4. Loosen the wheel nuts one or two turns each by turning the counterclockwise.
5. Jack unit so wheel is off the ground and block frame.

WARNING

- **Do not operate the multi-functional handle quickly. Doing so may cause the mast on wood blocks on the ground to become unstable.**
- **Stop jacking up the forklift when the tires are slightly raised off the ground. Jacking up the forklift excessively high could cause it to roll over.**
- **Do not remove the wheel nuts until the front tires are raised off the ground.**

6. Support the forklift by putting additional wood blocks under each side of the front-end of the frame as shown on page 62.
7. Remove the wheel nuts and replace the front tire.



WARNING

- **Never get under the forklift while it is supported only by the wood blocks.**

8. Reinstall the wheel nuts and temporarily tighten them in the sequence as shown.
9. Jack frame up and remove the wood blocks from the underside of the frame.
10. Lower the forklift slowly.
11. Tighten the wheel nuts to the specified torque in the correct sequence (refer to illustration at left and page 64).
12. Remove chocks from rear wheel.
13. After replacing a tire, drive the forklift and check the tightening torque of each wheel nut again.

CAUTION

- **Each wheel nut has a conical bearing surface and each hole in the rim is countersunk so that they can fit with each other. After attaching all wheel nuts, make sure each nut tightly fits with the countersunk hole. If wheel nuts are attached in the wrong direction, they will loosen easily and might cause bolts to break and the wheel to come off.**

GENERAL CARE AND MAINTENANCE

MAINTENANCE AND INSPECTION (cont'd)

TIRE REPLACEMENT (cont'd)

Rear Wheel:

WARNING

- **The rear wheel replacement requires you to be trained in the correct procedure in removal of the wheels. If you have not been trained and do not have the correct tools do not attempt this repair. For wheel replacement, contact your Local Authorized Dealer.**

● - standard ○ - option

Tire			Model	S1S1	1S1	
				3000	3000 - 3500	4000
Front	Tire size (Poly)			18 x 7 x 12-1/8		
	Tread (Cushion)	in (mm)		35.49 (901)		
	Type	Poly		●	●	●
Rear	Tire size (Poly)			10 x 5 x 6-1/2		
	Tread	in (mm)		5.28 (134)		
	Type	Poly		●	●	●

Tightening Torque

	Model	1S1 series
Wheel nut Nm (kgf-m, ft/lb)	Front	157 to 196 (16 to 20, 116 to 145)

GENERAL CARE AND MAINTENANCE

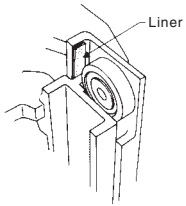
MAINTENANCE AND INSPECTION (cont'd)

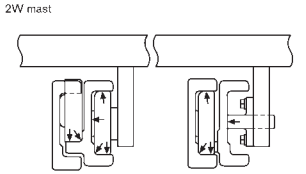
CHECKING MAST

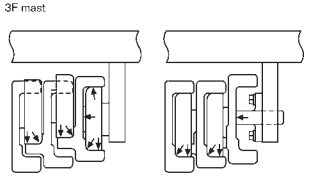
Check the mast to ensure that:

a. No oil leakage occurs at or around the lift and tilt cylinders.
b. Check rollers for proper rotation.
c. Check the chain anchors and pins.

Lubricate the points shown periodically in accordance with the Periodic Maintenance and Lubrication Schedule (refer to page 74). Apply a coat of grease to the thrust metals and liner.







NOTE:

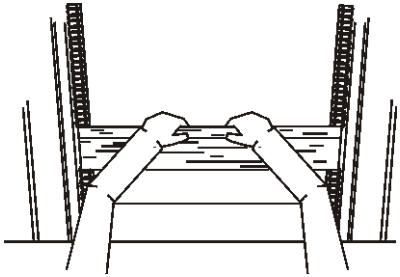
a. The lubrication interval will vary with working conditions. During months in which working conditions are severe, it will be necessary to grease the parts frequently.
b. When forklift is operated, apply a coat of grease to the contact surface of the lift roller and inner mast or outer mast.

CHECKING LIFT CHAIN

WARNING

- **Use extreme care when checking lift chain tension.**

Check the chains for cracks or broken links and pins.
Check lift chain tension periodically. Lift up the forks slightly and depress the midpoint of the lift chain with a board.



Deflection:
25 - 35 mm (0.98 - 1.38 in)

If the deflection is not within the specifications, have the chain adjusted by your Local Authorized Dealer.

GENERAL CARE AND MAINTENANCE

MAINTENANCE AND INSPECTION (cont'd)

FORK INSPECTION

Ensure the forks are secured in their proper position and they are not damage.

WARNING

- **Forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any damage or permanent deformation is detected. Severe applications will require more frequent inspection. (see ANSI/ ITSDF B56.1 Section 6.2.8 for inspection and repair of forks in service on forklift trucks.)**

- **Individual Load Rating of Forks. When forks are used in pairs (the normal arrangement), the rated capacity of each fork shall be at lease half of the manufacturer's rated capacity of the truck, and at the rated load center distance shown of the truck's data plate.**

- **Fork inspection 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 that shows such damage shall be withdrawn from service, and shall not be return to service unless it has been satisfactorily repaired in accordance with ANSI/ITSDF B56.1-2009 standards.**

FORK REPAIR

Repair - Only the manufacturer of the fork or an expert of equal competence shall decide if a fork may be repaired for continued 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.

GENERAL CARE AND MAINTENANCE

MAINTENANCE AND INSPECTION (cont'd)

CHECKING HORN

Check the horn for proper operation.

CHECKING LIGHTS

Mark sure that lights illuminate when switches are placed into the "ON" position.

CHECKING MULTI-FUNCTIONAL HANDLE

Check the multi-functional handle for proper operation. Ensure that the forks lift, lower, and tilt forward and backward properly. Check any optional functions that may be installed on the forklift.

CHECKING SAFETY START SYSTEM OPERATION

WARNING

- **Do this test in an open area away from pedestrians and other operations.**

With the ignition switch in the "OFF" position, barely move the multi-functional handle to either the forward or reverse direction and then turn the ignition switch to the "ON" position. Make sure that the traction drive will not operate and the forklift does not move. If the forklift starts to move turn the ignition switch to the "OFF" position and contact your Local Authorized Dealer for service before operating.

If the forklift does not move during the test, return the multi-functional handle to the neutral position and try to move the in both the forward and reverse directions.

CHECKING BRAKE PEDAL OPERATION

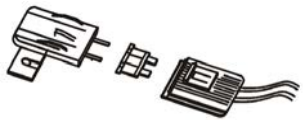
With the ignition switch in the "OFF" position depress both the operator presence and brake pedals. Turn the ignition switch in the "ON" position, the forklift will signal the operator to cycle (release and then depress) the brake pedal to test operation (refer to page).

FUSES

WARNING

- **Remove all jewelry.**
- **Make sure the ignition switch is "OFF" and disconnect the battery before changing any components or disconnecting any wiring. This will reduce the possibility of damage to the controller system.**

Remove the fuse cover and visually check if the fuse is blown. Before replacing any malfunctioning fuse, check and correct the cause of the malfunction. Use a fuse of the specified rating which is clearly shown on the label.



GENERAL CARE AND MAINTENANCE

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE

Before delivery of your new forklift, your dealer provides a pre-delivery inspection and adjustment service specified by the factory and designed to ensure satisfactory performance.

The following tables list the servicing required to keep your forklift operating in good mechanical condition. The forklift should be attended to as indicated, preferably by your Local Authorized Dealer.

⚠ WARNING

- **Do not inspect any part of the system while the battery is being charged.**
- **Before checking any part of the system, be sure to disconnect both connectors from the battery.**
- **When it is necessary to check with the battery connected, raise the drive wheels. Be extremely careful to prevent electric shocks.**

NOTE:

- Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.
- Under dusty, dirty or heavy operation, more frequent maintenance is necessary. All items listed must be maintained in order to meet and keep control systems operating at design level. Failure to maintain the systems could compromise the warranty.
- The inspection/service intervals shown are based on the assumption that the vehicle is operated in a clean and dry environment for 200 hours or less in one month. When determining the inspection/service intervals, consider the actual working conditions of the vehicle.

GENERAL CARE AND MAINTENANCE

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE (cont'd)

Inspection Items			Interval												How to check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	
Drive system	Motor	Dust from traction and pump motor							C						C	Clean
	Controller	Resistance between forklift body and +/- terminal of battery/controller		I		I			I			I			I	Measure tension
		Contactor operation				I			I			I			I	Visual
		Contactor tips													I	Visual
		Resistance contactor coil													I	Measure
		Low voltage detection		I					I						I	Test
		Wiring, bolts and nuts		I		I			I			I			I	Visual
		Controller surface		C		C			C			C			C	Clean
Electric system		Battery: gate mounting		I		I			I			I			I	Visual
		Battery fluid level and specific gravity		I		I			I			I			I	Visual/Test
		Harness and connectors		I		I			I			I			I	Visual
		Fuses		I											I	Visual
		Relays		I					I						I	Visual
		Switches		I					I						I	Test
		Lights (all)		I		I			I			I			I	Test
		Horn/Buzzer		I		I			I			I			I	Test
		Meter panel: gauges and indicators		I		I			I			I			I	Test
		Multi-functional handle: operation of forward & reverse														Test

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

GENERAL CARE AND MAINTENANCE

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE (cont'd)

Inspection items			Interval												How to check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	
Differential/ drive unit		Reduction gear oil level		I		I			I			I			I	Visual
		Crack, damage and leakage		I		I			I			I			I	Visual
		Reduction gear oil													R	Replace
Chassis and body maintenance	Front axle	Mounting bolts		I					I						I	Visual
		Oil Leakage		I					I						I	Visual
	Steer axle	Wheel bearing grease (repack)													R	Replace
	Wheels	Wheel nuts - drive and steer		T		T			T			T			T	Visual/torque
		Tire: wear, damage and foreign materials		I		I			I			I			I	Visual

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

GENERAL CARE AND MAINTENANCE

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE (cont'd)

Inspection items			Interval												How to check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	
Chassis and body maintenance	Steering system	Function of steering system		I		I			I			I			I	Test
		Mounting of column, orbitrol, cylinder, tubes and hoses		I					I						I	Visual
		Tubes and hoses (leakage, mounting, cracks damaging)		I		I			I			I			I	Visual
	Brake system	Function of brake system		I		I			I			I			I	Test
		Brake pedal switch		I		I			I			I			I	Test
		Operator presence pedal switch		I		I			I			I			I	Test
		Pedal pad - floor cushion		I					I						I	Visual
		Brake disc gap		I					I						I	Test

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

GENERAL CARE AND MAINTENANCE

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE (cont'd)

Inspection items			Interval												How to Check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	
Chassis and body maintenance	Hydraulic system	Function of hydraulic system		I		I			I			I			I	Test
		Hydraulic oil level		I		I			I			I			I	Visual
		Hydraulic oil replacement													R	Replace
		Micron oil filter													R	Replace
		Suction filter													C	Clean
		Control valve (mounting)		I					I						I	Visual
		Operation of multi-functional handle hydraulics		I		I			I			I			I	Test
		Hydraulic hoses (cracks, damage and fittings)		I		I			I			I			I	Visual
		Lift and tilt cylinder mounting		I		I			I			I			I	Visual
		Tilt cylinder pin		L		L			L			L			L	Grease

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

GENERAL CARE AND MAINTENANCE

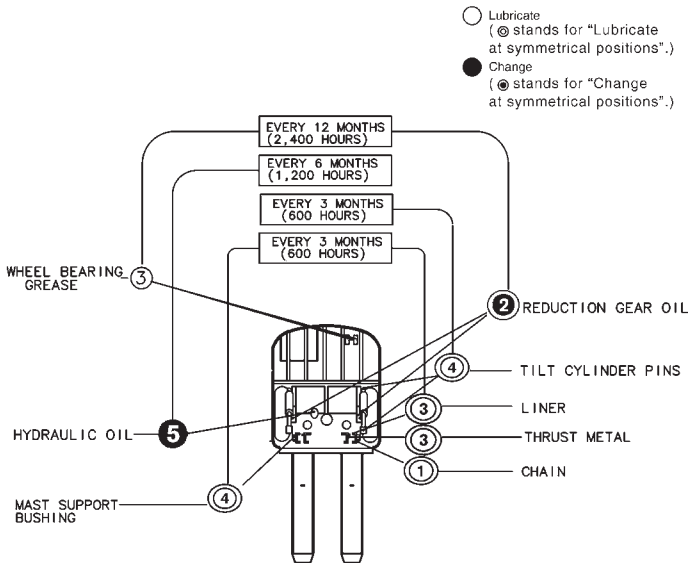
PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE (cont'd)

Inspection items			Interval												How to Check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	
Chassis and body maintenance	Mast	Function of mast		I		I			I			I			I	Test
		Mast system (damage/cracks/wear)		I		I			I			I			I	Visual
		Clearance of each stage		If Necessary												Measure
		Mast rail		L		L			L			L			L	Grease
		Mast/carriage rollers		If Necessary												Visual/test
		Back up metals		L		L			L			L			L	Grease
		Thrust metals		L		L			L			L			L	Grease
		Lift chains wear/tension		I		I			I			I			I	Visual/Adjust
		Attachments mounting (if equipped)		I		I			I			I			I	Visual
		Attachments (if equipped)		L		L			L			L			L	Grease
		Lift chains		L		L			L			L			L	Lubricate
		Hose pulley's		I		I			I			I			I	Visual/Test
		Mast support		L		L			L			L			L	Grease
		Forks (wearing/damage/cracks)		I		I			I			I			I	Visual
		Carriage height		I					I						I	Test/Adjust

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

GENERAL CARE AND MAINTENANCE

LUBRICATION CHART



	ITEM		SUITABLE OIL	
			Below 15°C (60°F)	Above 15°C (60°F)
1	LIFT CHAIN		Sprayon LU202 Moly Chain Lubricant	
2	GEAR OIL	Differential and reduction gear	API GL-4 (SAE 80W)	
3	GREASE	Chassis	N.L.G.I No. 1	
		Wheel Bearing	N.L.G.I No. 2	
4		Mast and chain guide bar	N.L.G.I No. 2	
5	HYD OIL	Standard Forklift	ISO VG32 or equivalent	
		Freezer/cold storage forklift (refer to page 44)	Mobilube DTE 13M (ISO VG15)	

GENERAL CARE AND MAINTENANCE

PUTTING FORKLIFT IN STORAGE

Putting the forklift in storage involves storing the forklift at the end of each working day or storing the forklift over a long period of time.

Be sure to observe the precautions for forklift storage.

DAILY STORAGE

At the end of the working day, check the forklift for oil leakage and other malfunctions. Always park it in the designated location. Put chocks under the tires to prevent the forklift from moving by itself.

Keep the body and areas surrounding the driver seat clean. Make it a habit to always keep the forklift clean.

CAUTION

- **The forklift has many electrical parts, do not wash with water. However, the battery can be washed with water after removing it from the forklift, but it must be completely dry before use.**
- **Blow off dust and dirt using compressed air with OSHA air nozzle or wipe with a wet cloth to clean the forklift.**

WARNING

- **As soon as a malfunction is detected, immediately report it to the appropriate personnel or contact your Local Authorized Dealer for repair. Do not operate the forklift until the malfunctions is repaired.**

STORAGE OVER A LONG PERIOD OF TIME

When the operation of the forklift is completely suspended for a given period of time, take the following measures and store the forklift in a dry area.

NOTE:

- When the forklift cannot be stored indoors, park it on level ground. Cover with a waterproof sheet or protective cover.
- When storing for a long period of time, be sure to consult your Local Authorized Dealer.

WARNING

- **Do not use a protective covering or waterproof sheet made of vinyl which is liable to produce static electricity. Static electricity may cause the battery to explode.**

PRE-STORAGE SERVICING

1. Lubricate the forklift (refer to page 74). Change the oil and coat all exposed areas of hydraulic cylinders with corrosion resistant grease.
2. Charge the battery and leave it disconnected from the forklift. Store the forklift in a low fire-risk area.

SERVICING THE FORKLIFT IN STORAGE

1. Periodically check the specific gravity and level the battery fluid. Charge and replenish as necessary. Perform uniform charge on the battery every 2 months.
2. Check various sections of the forklift for stains or corrosion. Clean such areas and coat with a corrosion preventive agent.

GENERAL CARE AND MAINTENANCE

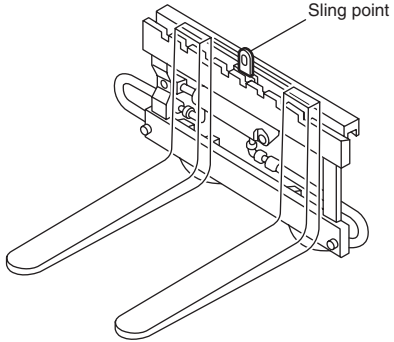
PUTTING FORKLIFT IN STORAGE (cont'd)

POST-STORAGE SERVICING

1. Wipe anticorrosive grease off the outer parts of the oil pressure cylinder.
2. Lubricate each part.
3. Check the battery fluid level and specific gravity. Fully charge the battery.
4. Turn the ignition switch "ON" and check the meters, warning lights and indicators.
5. Perform Daily Inspection (refer to page 59).

SIDE SHIFT (OPTION)

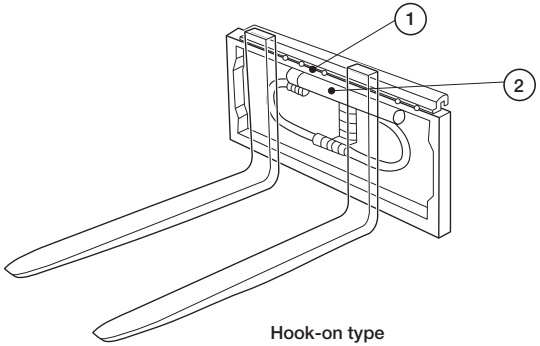
SLING POINT FOR HOOK-ON TYPE SIDE SHIFT



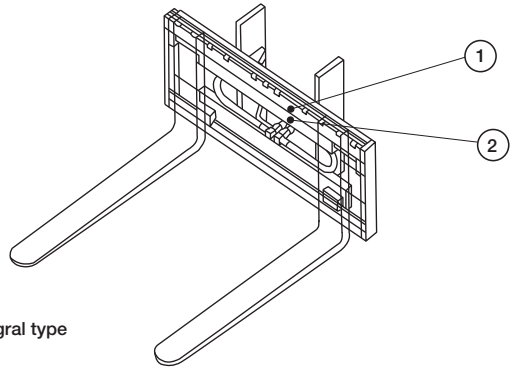
This illustration shows the sling point of the hook-on type side shift attachment which is used for installation and removal.

GENERAL CARE AND MAINTENANCE

SIDE SHIFT (OPTION)



Hook-on type



Integral type

1. Shift finger bar.
2. Side shift cylinder.

This section describes only the handling of loads using the side shift option. Before using the side shift, be sure to read this section thoroughly and understand it. For handling (safety, operations, inspection) of the forklift, refer to the applicable sections of this manual.

OVERVIEW OF SIDE SHIFT

Since the shift finger bar (on which the forks and the backrest are mounted) can be shifted to the right and left only by operating the lever from the operator's seat, you can accurately insert the fork under pallets or stack loads correctly at targeted positions.

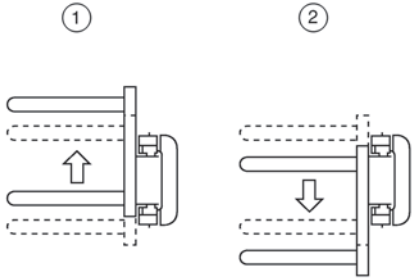
The following is the standard amount of side shift.

Model Variation	Side Shift Distance
1S1 series	Each to right/left 100 mm (3.94 in)

GENERAL CARE AND MAINTENANCE

SIDE SHIFT (OPTION) (cont'd)

1. Shift to right.
2. Shift to left.



MAIN TERMS USED IN THIS SECTION

Shift: To move the forks or load to the right or the left.

Side Shift Stroke: The maximum distance the forks or load can travel to the right or the left.

Shift Finger Bar: An oblong board on which the forks and the backrest are mounted. This shift finger bar shifts (moves) to the right and left.

Attachment: Equipment or parts to be added or replaced with the loading/unloading devices to perform a variety of loading and unloading.

SAFETY RULES AND PRACTICES

WARNING

- **Do not make sudden and quick shifts with the forks loaded or raised.**

If you make sudden shifts with the forks loaded, there is a risk of a load collapse. This can cause the forklift to become unstable and possibly tip over.

WARNING

- **Only operate the side shift when entering or placing a load to correct position before lowering.**
- **Never operate side shift during travel.**
- **Never operate side shift during lifting or lowering.**

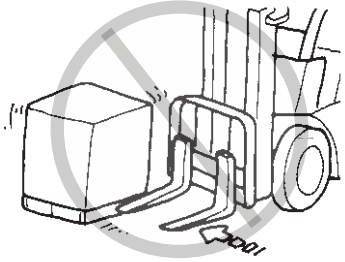
GENERAL CARE AND MAINTENANCE

SIDE SHIFT (OPTION) (cont'd)

SAFETY RULES AND PRACTICES (CONT'D)

WARNING

- **Do not use the shift function to push or pull loads or pallets.**



If you use the side shift to pull or push loads, the equipment can be overstrained, resulting in a malfunction. In addition, there are risks of damaging loads or injuring people. Never push or pull loads with the side shift.

WARNING

- **Do not shift when the forks are in contact with the floor or on a table.**

If you do so, it can result in a malfunction of the equipment or a load collapse. Do not shift when the forks are in contact with the ground.

WARNING

- **Do not travel with unstable or unsecured loads.**

Do not travel with loads shifted to one side.

When loads are shifted (off centered) they will be less stable. This could cause the load to shift or fall off unit.

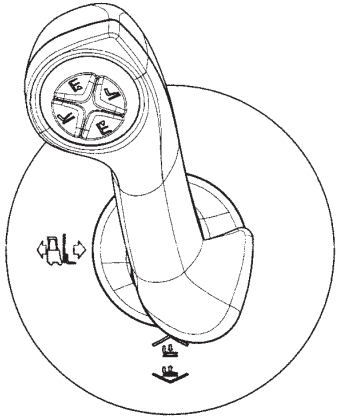
It also could cause the forklift to become unstable and tip over.

GENERAL CARE AND MAINTENANCE

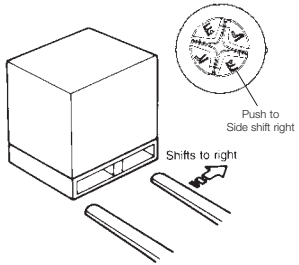
SIDE SHIFT (OPTION) (cont'd)

OPERATION OF THE CONTROL TOGGLE FOR THE SIDE SHIFT

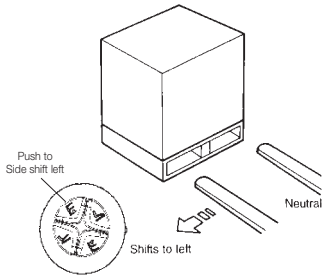
A forklift attached with a side shift has a control toggle to operate the side shift, in addition to the control toggle for standard operations.



When you push the control toggle position shown below, the shift finger bar (with forks mounted) shifts (moves) to the right.



When you push the control toggle position shown below, the shift finger bar (with forks mounted) shifts (moves) to the left.



CAUTION

- **Do not move the levers suddenly and quickly. There is a risk of a load collapse.**

NOTE:
The shifting speed changes depending on the amount the lever is moved forward or backward.

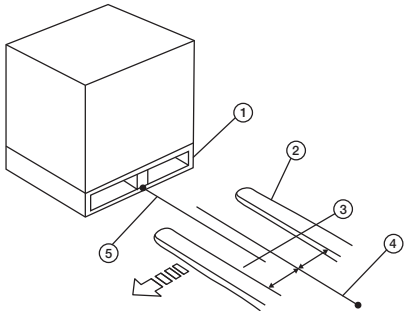
WARNING

- **When you operate your side shift, make sure to raise the forks approximately 100 - 200 mm (3.94 - 7.87 in) from the ground before operation. If you shift with the forks while they are in contact with the ground, the side shift forks or load could get caught and damage the forklift or load.**

GENERAL CARE AND MAINTENANCE

SIDE SHIFT (OPTION) (cont'd)

SIDE SHIFT OPERATION



1. Pallet
2. Fork
3. Deviation
4. Center of forks
5. Center of pallet

This section describes the operation of your side shift.

Always keep the side shift finger bar in the neutral position except during load handling.

Adjust the forks as far apart as possible in order to minimize the deviation.

For basic operations, refer to the instructions in "Loading and Unloading" previously in this manual.

If the forks deviate either to the right or the left, operate the side shift lever and shift (move) the forks until the center of the pallet matches the center of the interval between the forks.

CAUTION

- **Do not shift the forks while the forks are inserted into the pallet. This could cause the load to shift if the pallet is pushed.**
- **If it is not possible for the forks to be centered under the load even with them shifted as far as possible, back the forklift out and try to center the forks under the load. Always ensure loads are centered and secure before lifting or traveling.**

WARNING

- **Do not shift while traveling with loads.**

Stacking

WARNING

- **Do not operate the side shift when loads are lifted until load is in position to be placed. Doing so could cause loads to shift or a forklift to possibly tip over.**
- **Do not operate the side shift lever and the lift lever quickly. It is dangerous if a load collapse occurs.**

GENERAL CARE AND MAINTENANCE

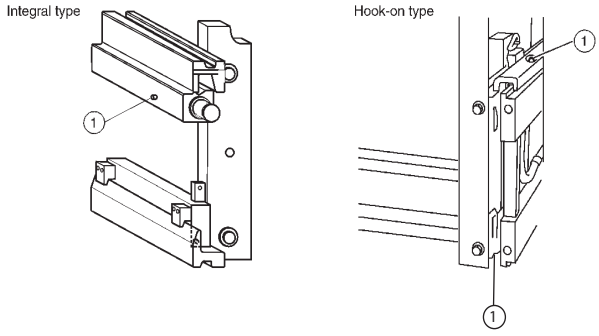
SIDE SHIFT (OPTION) (cont'd)

DAILY CHECKS AND SIMPLE MAINTENANCE

WARNING

- **If any abnormality is noted in the daily checks, immediately report it to the appropriate personnel or contact your Local Authorized Dealer for repair. Do not operate the forklift until the malfunctions is repaired.**
- **To assure safe operation and maintain the side shift in proper functional condition, be sure to perform the daily checks below in addition to the "Daily Checks" outlined previously in this manual.**

1. Check that any problems noted the previous day have been completely repaired.
2. Check all parts of the hydraulic piping and the cylinder of the side for oil leaks and looseness.
3. Check that the side shift is not damaged or deformed.
4. Check visually the jaw installation bolt on the finger bar for looseness.
5. Operate the side shift several times to check that it operates smoothly without abnormal noise. Also check that the side shift lever operates smoothly without rattling.



1. **Integral type:** Grease nipple (1 each on right and left)
   Hook-on type: Grease nipple (1 each on right and left / top and bottom)

NOTE:
Apply chassis grease once a week (or every 50 hours) to the grease nipples in the sleeve of the shift finger bar.

SPECIFICATIONS

MODEL VARIATION (LONG MODEL CODE) BREAKDOWN - 1S1 SERIES

DESTINATION

V : North America (UL-E)
E : North America (UL-EE)

BRAND

N : UniCarriers

LOAD CAPACITY / LOAD CENTER

15 : 1.5 ton / 3,000 lb
18 : 1.75 ton / 3,500 lb
20 : 2.0 ton / 4,000 lb

GEAR

L : Reduction Gear

BASE MODEL

WHEEL BASE

S : Short Wheel Base
No code : Standard Wheel Base

SPECIFICATIONS

MAIN TRUCK - 1S1 BASED ON 2W330 MAST, 42 IN (1070 MM) FORKS AND MINIMUM BATTERY SPECIFICATIONS

Item / Model code			1S1			
			S1S1L15NV	1S1L15NV	1S1L18NV	1S1L20NV
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate			
Load center		in (mm)	24 (600)			
Overall Length (to face of forks)		in (mm)	66 (1680)	68.2 (1735)		70.5 (1790)
Overall Width (standard tires)		in (mm)	42.5 (1080)			
Wheelbase		in (mm)	41.8 (1065)	43.9 (1115)		46.3 (1175)
Front Overhang		in (mm)	14.6 (370)			
Rear Overhang		in (mm)	10.3 (260)			
Tread - Center of Tire (standard tires)	Front	in (mm)	35.5 (900)			
	Rear	in (mm)	5.3 (135)			
Minimum Turning Radius	Outside	in (mm)	52.3 (1330)	54.5 (1385)		56.8 (1445)
Minimum Right Angle Stack	Add load length & clearance	in (mm)	66.9 (1700)	69.1 (1755)		71.4 (1815)
Fork Length (standard)		in (mm)	42 (1070)			
Fork Width x Thickness		in (mm)	4 x 1.5 (100 x 40)			
Ground Clearance	Lowest Point	in (mm)	2.1 (110)			
	Under Frame, center of wheelbase	in (mm)	4.0 (100)			
Gradeability Maximum	Full Load	%	29.1	27.6	26.9	26.1

SPECIFICATIONS

MAIN TRUCK - 1S1 BASED ON 2W330 MAST, 42 IN (1070 MM) FORKS AND MINIMUM BATTERY SPECIFICATIONS

Item / Model code				1S1			
				S1S1L15NV	1S1L15NV	1S1L18NV	1S1L20NV
Grade Clearance		Approach Angle	%	Not Available			
		Ramp Breakover Angle	%	43.3	40.8		38.4
		Departure Angle	%	41			
Lifting Speed	2W	Full Load	fpm (mm/sec)	71 (362)		66 (334)	62 (317)
		Empty	fpm (mm/sec)	114 (577)			
	3F	Full Load	fpm (mm/sec)	71 (362)		66 (334)	62 (317)
		Empty	fpm (mm/sec)	114 (577)			
Lowering Speed	2W	Full Load	fpm (mm/sec)	92 (469)		91 (463)	93 (470)
		Empty	fpm (mm/sec)	93 (472)			
	3F	Full Load	fpm (mm/sec)	92 (469)		91 (463)	93 (470)
		Empty	fpm (mm/sec)	93 (472)			
Travel Speed		Full Load	mph (km/h)	7.8 (12.6)			
		Empty	mph (km/h)	8.0 (12.9)			
Truck Weight			lb (kg)	Refer to Truck Data Plate			

SPECIFICATIONS

MAIN TRUCK - 1S1 BASED ON 2W330 MAST, 42 IN (1070 MM) FORKS AND MINIMUM BATTERY SPECIFICATIONS

Item \ Model code			1S1			
			S1S1L15NV	1S1L15NV	1S1L18NV	1S1L20NV
Traction Motor	Type		AC Induction			
	Control Type		AC Inverter			
	Rating	kW	4.8			
Pump Motor	Type		AC Induction			
	Rating	kW	8.3			
Battery Data	Voltage	V	36			
	Weight Minimum/Maximum	lb (kg)	1885/2400 (855/1085)	2175/2700 (990/1225)		2460/3000 (1115/1360)
Battery Compartment Size	Maximum - W x H	in (mm)	38.5 x 32 (975 x 810)			
	Maximum - L	in (mm)	16.3 (415)	18.4 (465)		20.8 (530)
Battery	Lead Acid	Type	18-125-13	18-125-15		18-125-17
	Max. Capacity 6hr. rating	Ah	930	1085		1240
Lead Length	Position B/SB-350 Gray)	in (mm)	24 (610)			

SPECIFICATIONS

MAST - 1S1

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/ Backward	Overall Height		
					Lowered Mast Position in (mm)	Extended Mast Position in (mm)	
					Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View)	2W270	106 (2700)	3.8 (95)	3/5	71.3 (1810)	155.7 (3955)	130.0 (3300)
	2W300	118 (3000)	3.8 (95)	3/5	77.2 (1960)	167.5 (4255)	141.9 (3600)
	2W330	130 (3300)	3.8 (95)	3/5	83.1 (2115)	179.3 (4555)	153.7 (3900)
	2W350	138 (3500)	3.8 (95)	3/5	88.5 (2250)	187.2 (4755)	161.5 (4100)
THREE STAGE (Full Free)	3F385	152 (3850)	46.9 (1200)	4/4	71.3 (1810)	200.9 (5105)	168.3 (4275)
	3F430	169 (4300)	52.8 (1300)	3/5	77.2 (1960)	218.7 (5555)	186.0 (4720)
	3F475	187 (4800)	58.7 (1500)	3/5	83.1 (2110)	236.4 (6005)	203.7 (5170)
	3F515	203 (5150)	64.0 (1600)	3/5	88.5 (2250)	252.3 (6410)	219.7 (5580)
	3F550	217 (5500)	68.9 (1800)	3/5	93.4 (2375)	265.9 (6755)	233.3 (5925)
	3F600	236 (6000)	76.4 (1900)	3/5	100.9 (2565)	285.6 (7255)	253.0 (6425)
	3F650	256 (6500)	86.2 (2190)	3/5	110.7 (2810)	305.3 (7755)	275.8 (7005)
	3F700	276 (7000)	96.1 (2440)	3/5	120.6 (3065)	325.0 (8255)	297.4 (7555)

SPECIFICATIONS

OIL CAPACITY

Model	S1S1/1S1
Reduction Gear (Drive Unit) ℓ (US oz, Imp oz)	0.4 (13.5, 14.0)
Transmission ℓ (US gal, Imp gal)	17.01 (4.5, 4.8_

BULBS

Item	Voltage
Head Lamp	12/24V LED
Back Operation Lamp	12/24V LED
Strobe Light	12-80V LED

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- **Also consult your Local Authorized Dealer.**

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