

OPERATING MANUAL

NARROW AISLE

N30-40XMR3, N25XMDR3 (C470)

N50XMA3 (C471)

N45XMR3, N30XMDR3 (G138)

**DO NOT REMOVE THIS MANUAL
FROM THIS UNIT**

LIFT TRUCK MODEL _____

SERIAL NUMBER _____

TRACTION MOTOR _____

SERIAL NUMBER _____

HYDRAULIC PUMP MOTOR _____

SERIAL NUMBER _____

STEERING GEAR MOTOR _____

SERIAL NUMBER _____

LIFT HEIGHT _____

GROUP NUMBER _____

DRIVE TIRE SIZE _____

COMPOSITION _____

SPECIAL EQUIPMENT OR ATTACHMENTS

REGISTERED TRADEMARKS

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NARROW AISLE

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FOREWORD

TO OWNERS, USERS, AND OPERATORS:

The safe and efficient operation of a lift truck requires skill and alertness on the part of the operator. To develop the skill required the operator must:

- receive training in the proper operation of this lift truck.
- understand the capabilities and limitations of the lift truck.
- become familiar with the construction of the lift truck and see that it is maintained in good condition.
- read and understand the warnings and operating procedures contained in this manual.

In addition, a qualified person, experienced in lift truck operation, must guide a new operator through several driving and load handling operations before the new operator attempts to operate the lift truck alone.

It is the responsibility of the employer to make sure that the operator can see, hear, and has the physical and mental ability to operate the equipment safely.

Various laws and regulations require the employer to train lift truck operators. These laws and regulations include:

Occupational Safety and Health Act (OSHA) (USA)

Canada Material Handling Regulations

NOTE: A comprehensive operator training program is available from **HYSTER COMPANY**. For further details contact your **HYSTER** lift truck dealer.

This Operating Manual is stored in the container on the mast screen. Read and understand this manual before operating the lift truck. This is a permanent reference and must be available for use at all times.

This Operating Manual contains information necessary for the operation and maintenance of a basic fork lift truck. Optional equipment is sometimes installed that can change some operating characteristics described in this manual. Make sure the necessary instructions are available and understood before operating the lift truck.

NARROW AISLE

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FOREWORD

TO OWNERS, USERS, AND OPERATORS:

Some of the components and systems described in this OPERATING MANUAL will **NOT** be installed on your unit. If you have a question about any item described, contact your dealer for **HYSTER** lift trucks.

Additional information that describes the safe operation and use of lift trucks is available from the following sources:

- Employment safety and health standards or regulations (Examples: "Occupational Safety and Health Standards (USA)", "Canada Material Handling Regulations").
- Safety codes and standards (Example: American National Standard, ANSI B56.1, *Safety Standard for Low Lift and High Lift Trucks*).
- Publications from government safety agencies, government insurers, private insurers and private organizations (Example: *Accident Prevention for Industrial Operations* from the National Safety Council).
- "Guide for Users of Industrial Lift Trucks" describes lift truck safety, good maintenance practices, and training

programs. Available from your dealer for **HYSTER** lift trucks. **HYSTER** part number 852930.

NOTE: **HYSTER** lift trucks are not intended for use on public roads.

NOTE: Throughout this manual, the terms right, left, front and rear relate to the viewpoint of an operator standing in the operator's compartment facing the forks.

NOTE: The following symbols and words indicate safety information in this manual:



DANGER

Indicates a condition which will cause immediate injury or death.



WARNING

Indicates a condition that can cause injury



CAUTION

Indicates a condition that can cause property damage!

TABLE OF CONTENTS

FOREWORD	1	MAINTENANCE PROCEDURES	50
MODEL DESCRIPTION	7	CHECKS WITH THE KEY SWITCH OFF	50
NAMEPLATE	8	Hydraulic System	50
OPERATING PROCEDURES	21	Forks	51
GENERAL	21	Reach, Tilt and Sideshift	54
Stability and Center of Gravity	21	Articulation Stop Adjustment	54
CHECKS WITH THE KEY SWITCH OFF	24	Battery	55
CHECKS WITH THE KEY SWITCH ON	25	CHECKS WITH THE KEY SWITCH ON	56
OPERATING TECHNIQUES	25	Gauges, Horn and Fuses	56
Starting Sequence	27	Control Levers and Pedals	56
Driving and Direction Changes	28	Lift System Operation	56
Steering (Turning)	28	Brake	57
Load Handling - General	30	HOW TO CHARGE THE BATTERY	58
Lifting, Lowering and Tilting	30	HOW TO CHANGE THE BATTERY	60
How to Engage and Disengage a Load	32	Battery Removal	60
Traveling	35	Battery Installation	61
Highway Trucks, Railroad Cars and Docks ...	37	BATTERY SPECIFICATIONS	63
MAINTENANCE	41	TIRES AND WHEELS	64
GENERAL	41	Drive/steer tire	64
HOW TO MOVE A DISABLED LIFT TRUCK	42	Load Wheels	65
How to Tow the Lift Truck	42	Caster Wheels	66
How to put a Lift Truck on Blocks	43	Tire and Wheel Sizes	66
		CHANGES TO THE OVERHEAD GUARD	67

NOTES

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WARNING



WARNING

**FAILURE TO OBSERVE THE FOLLOWING RULES CAN CAUSE SERIOUS INJURY OR DEATH!
AUTHORIZED, TRAINED OPERATOR ONLY!**

KNOW THE EQUIPMENT:

- Know operating, inspection and maintenance instructions and warnings in Manual.
- Inspect truck before use. Do not operate if truck needs repair. Tag truck and remove key. Repair truck before use.
- Use attachments for intended purpose only.
- Make sure truck is equipped with overhead guard and load backrest adequate for the load.

LOOK WHERE YOU ARE GOING: IF YOU CAN'T SEE, DON'T GO!

- Travel in reverse if load blocks forward vision.
- Make sure tailswing area is clear before turning.
- Sound horn at intersections or wherever vision is blocked.
- Watch clearances, especially overhead.

KNOW YOUR LOADS:

- Handle only stable loads within specified weight and load center. See nameplate on this truck.
- Space forks as far apart as load allows and center load between forks.
- Keep load against load backrest.
- Do not handle loose loads higher than load backrest.

KNOW THE AREA:

- Check dockboard width, capacity and security.
- Never enter a trailer or railroad car unless its wheels are blocked.
- Watch floor strength.
- Charge battery only in designated area. Avoid sparks or open flame. Provide ventilation. When charging, keep vent caps clear. Disconnect battery during servicing.

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USE COMMON SENSE:

- Never transport people on any part of the truck.
- Do not use truck to lift people unless there is no other practical option. Then use only a securely attached special work platform. Follow instructions in manual.
- Allow no one under or near lift mechanism or load.
- Do not move truck if anyone is between truck and stationary object.
- Keep arms, legs, and head inside operator's compartment.
- Operate truck only from the designated operator's position.
- Obey traffic rules. Yield right-of-way to pedestrians.
- Be in complete control at all times.
- Before dismounting, neutralize travel control, lower carriage, set brake. Do not exit truck until it has completely stopped moving.
- When parking, also shut off power. Block wheels on inclines.

PROTECT YOURSELF:

- Avoid bumps, holes, loose materials, and slippery areas.
- Avoid sudden starts or stops. Operate all controls smoothly.
- Never turn on or angle across an incline. Travel slowly.
- Travel on inclines with load uphill or unloaded with mast downhill.
- Tilt slowly and smoothly. Lift and lower with mast or carriage vertical or tilted slightly back. Use minimum tilt when stacking elevated loads.
- Travel with carriage as low as possible and tilted back.
- Slow down before turning - especially without load.
- FAILURE TO FOLLOW THESE INSTRUCTIONS CAN CAUSE THE LIFT TRUCK TO TIP OVER!

Although there is no sure way in all circumstances to avoid injury, where possible, in the event of an imminent tipover or off-the-dock accident, the operator should **STEP OFF AND AWAY FROM THE TRUCK**. These actions are intended to reduce the risk of serious injury or death.

NARROW AISLE

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MODEL DESCRIPTION

MODEL DESCRIPTION

This Operating Manual describes the operation and basic maintenance of the **HYSTER** Narrow Aisle N30XMR3, N40XMR3, N45XMR3 (reach), N25XMDR3, N30XMDR3 (double reach) and N50XMA3 (straddle) lift trucks. The lift trucks are available with 24 volt or 36 volt systems, depending upon the model selected. These battery powered lift trucks have lifting capacities of 1,134 to 2,268 kg (2,500 to 5,000 lb) at a 610 mm (24 inch) load center and are available with two or three stage masts.

These trucks feature a SEM (Separately Excited Motor) traction control system as well as neutral braking. The controller has diagnostic capabilities and thermal protection. Travel acceleration, top speed and operator drive modes are set through the traction controller. Proportional plugging is standard.

A multi-function control handle provides control of direction, lift/lower, extend/retract, tilt and optional sideshift. The horn button is also on the side of the control handle.

The instrument display includes a battery discharge indicator with lift interrupt, hourmeters, LED function selection lights, operator selectable drive modes for speed

of traction and an LCD display which provides the status of systems and fault messages in English, not in numerical codes.

All lift trucks have operator protection equipment. The overhead guard is intended to offer reasonable protection to the operator from falling objects, but cannot protect against every possible impact. Therefore, it must not be considered a substitute for good judgement and care when handling loads. A rear overhead guard leg provides protection for the operator and unobstructed operation of the lift truck. A full height wire mast guard is mounted to the rear of the mast. Do not remove any equipment provided for the protection of the operator.

The battery compartment must have spacers to prevent horizontal movement of more than 13 mm (0.5 in). The battery restraint panels must be in place before the lift truck is operated. The battery can be removed from either side of the lift truck, although right side removal is preferred to avoid damage to the battery cables. A roller rack under the battery permits easy battery movement. For correct battery sizes, see the Battery Specifications in the Maintenance Section.

NARROW AISLE

MODEL DESCRIPTION

HYSTER

NAMEPLATE

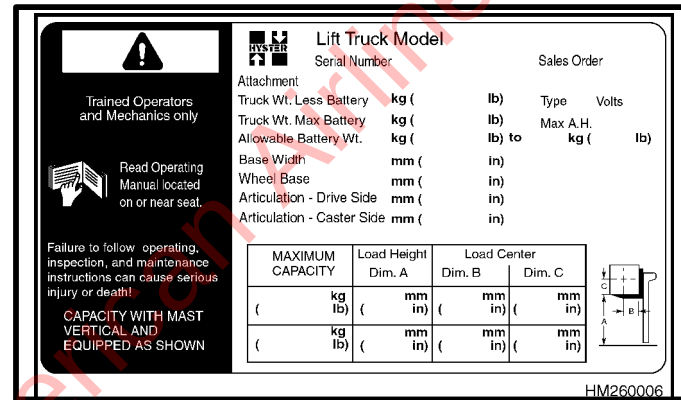
WARNING

Any change to the lift truck, the tires or its equipment can change the lifting capacity. If the nameplate does not show the maximum capacity, or if the lift truck equipment, including the battery, does not match that shown on the nameplate, then the lift truck must not be operated.

The lift truck nameplate is located inside the operator's compartment. The shown is for a lift truck equipped as shown on the nameplate. The capacity is specified in kilograms (kg), and pounds (lb). The capacity is the maximum load the lift truck can handle for the load condition shown on the nameplate.

The maximum capacity for the lift truck must be shown on the nameplate. If the lift truck nameplate already has a capacity for special load handling equipment, it will be listed. Make sure the nameplate data is complete and fully understood before operating the lift truck.

The lift truck serial code number is on the nameplate. The serial code number is also stamped on the lift truck frame.



MAXIMUM CAPACITY		Load Height Dim. A		Load Center Dim. B		Dim. C	
kg (lb)	()	mm (in)	()	mm (in)	()	mm (in)	()
kg (lb)	()	mm (in)	()	mm (in)	()	mm (in)	()

FIGURE 1. NAMEPLATE



NOTICE TO USER

The U.S.A. Occupational Safety and Health Act of 1970 and other national safety codes require a new plate if this unit is equipped other than as stated on plate. Obtain the correct plate from your authorized dealer.

To remove pull here

FIGURE 2. DECAL

When a unit is shipped incomplete from the factory to the dealer, the nameplate is covered by a label as shown in FIGURE 2. If your lift truck has this type of label, do not operate the lift truck. Contact your dealer for **HYSTER** lift trucks to obtain a complete nameplate.

NARROW AISLE

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MODEL DESCRIPTION

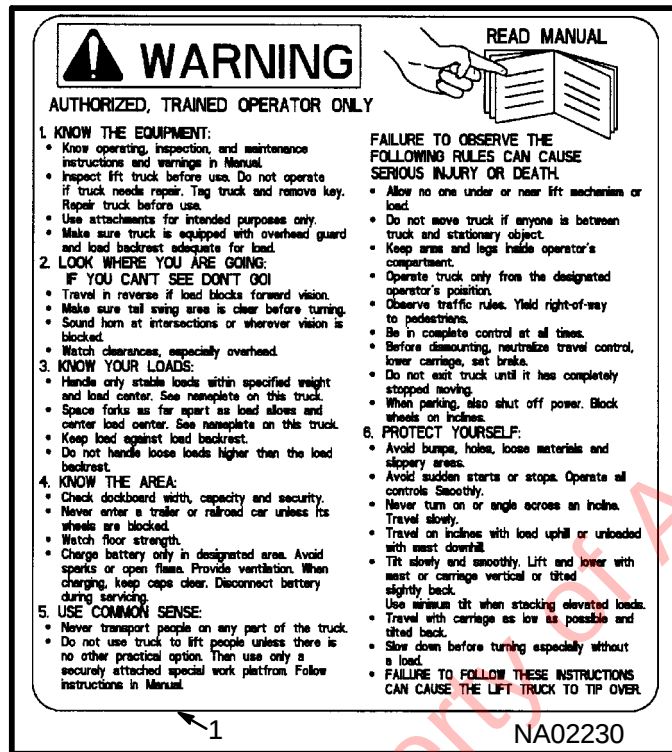


FIGURE 3. WARNING LABELS

WARNING LABELS (FIGURE 3. & FIGURE 4.)

1. Label, Operator Warning
2. Label, Multi-Function Handle
3. Label, Fork Warning
4. Label, Overhead Guard
5. Label, Pinch Points
6. Label, Articulation
7. Label, Identification EE
8. Label, Freezer Identification
9. Operating Manual
10. Label, Manual Lowering
11. Label, Underwriters Laboratory
12. Label, Cooler Identification

NARROW AISLE

MODEL DESCRIPTION

HYSTER

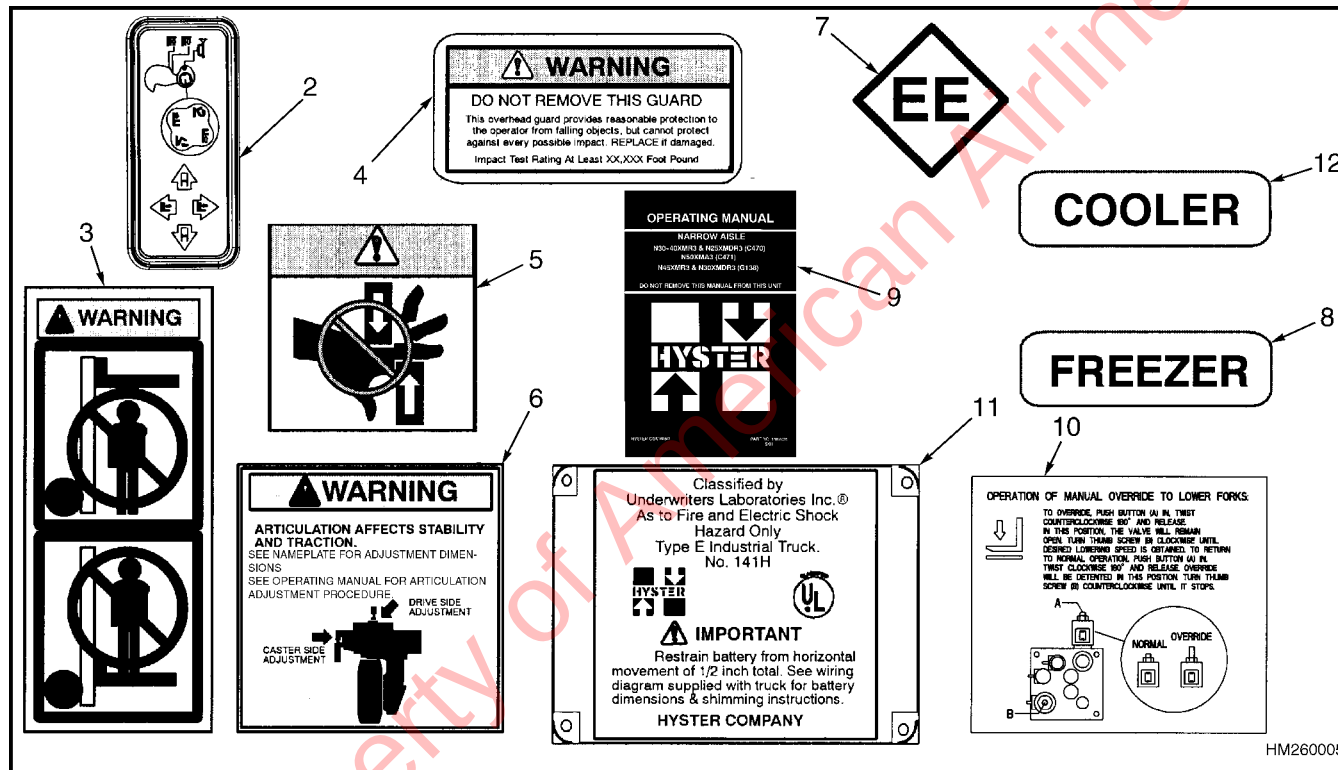


FIGURE 4. WARNING LABELS

NARROW AISLE

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MODEL DESCRIPTION

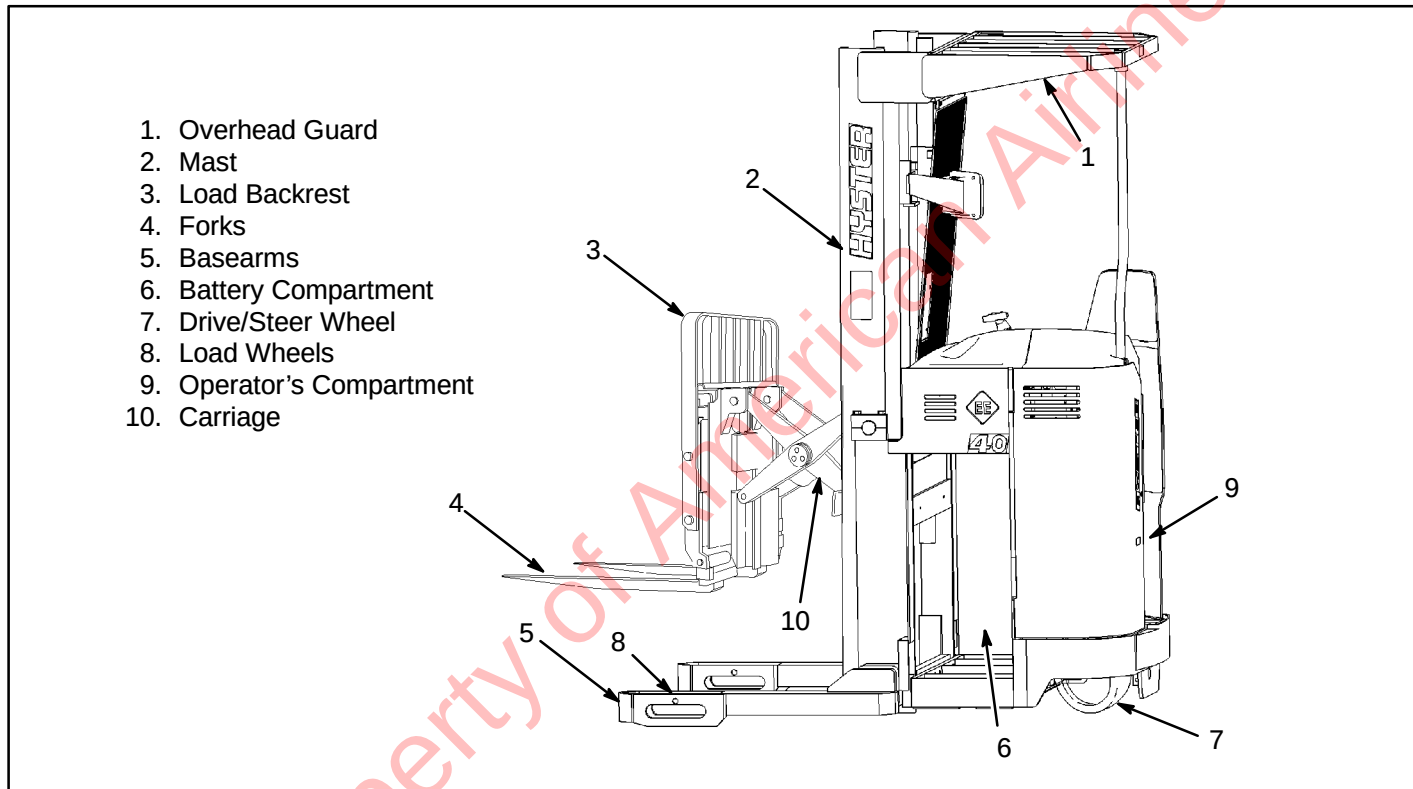


FIGURE 5. MAJOR COMPONENTS OF THE LIFT TRUCK

NARROW AISLE

MODEL DESCRIPTION

HYSTER

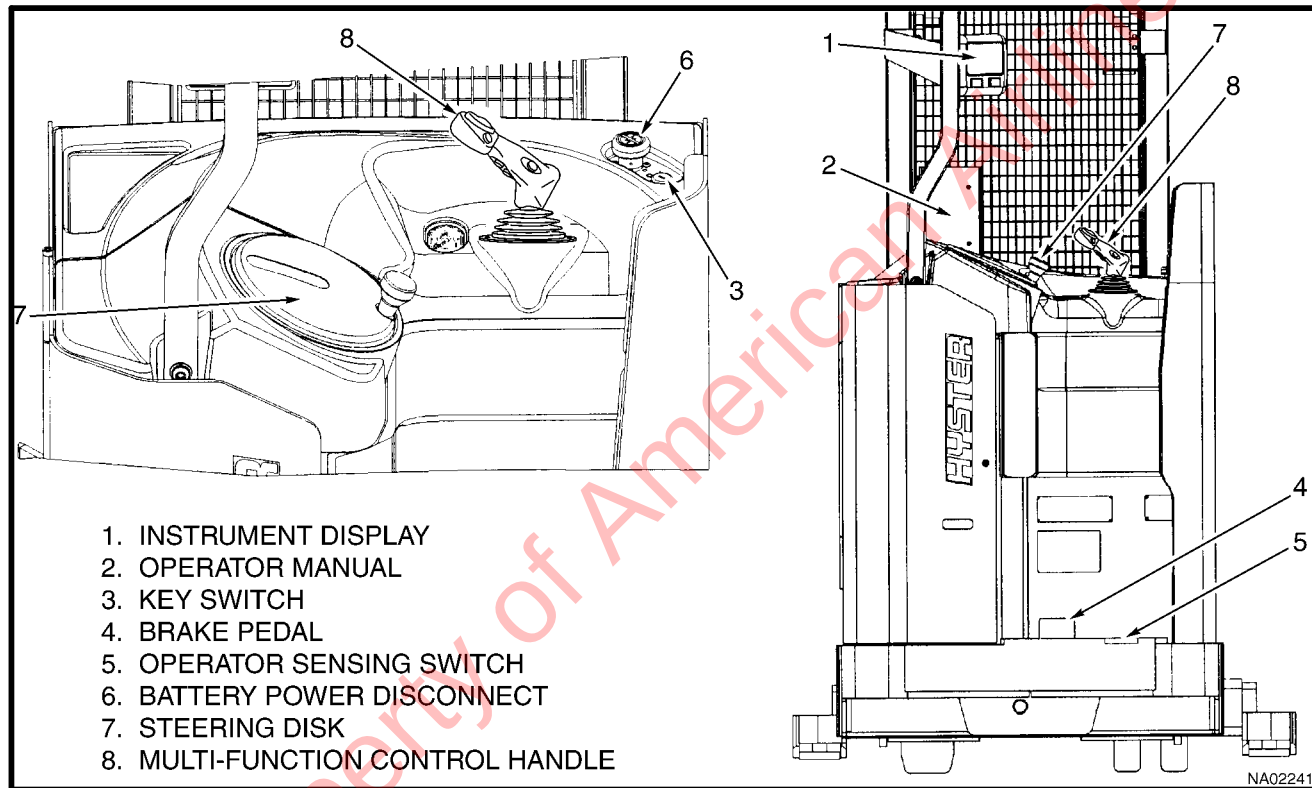


FIGURE 6. INSTRUMENTS AND CONTROLS

NARROW AISLE

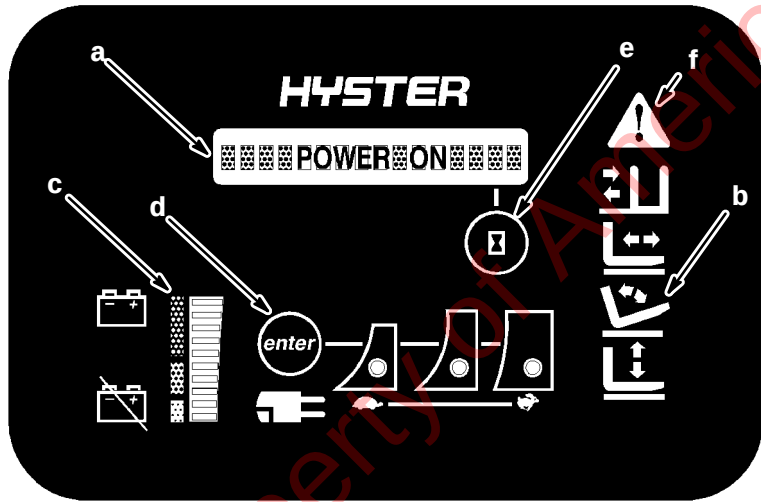
HYSTER

MODEL DESCRIPTION



WARNING: If any of the instruments or controls do not operate as described in this table, report the problem immediately. DO NOT operate the lift truck until the problem is corrected.

TABLE 1. INSTRUMENTS AND CONTROLS

ITEM NO.	ITEM	FUNCTION
1	Instrument Display 	The instrument display is mounted on a bracket at eye level in the operator's compartment and has the following features: a. Message Center b. Function Selection Lights c. Battery Indicator d. Drive Mode Feature e. Hourmeter f. Warning Lights The instrument display is powered even when the vehicle is not being operated. When the battery is disconnected, the dashboard contains an internal back-up battery, capable of memory retention of the battery indicator and hourmeter.

NARROW AISLE

MODEL DESCRIPTION

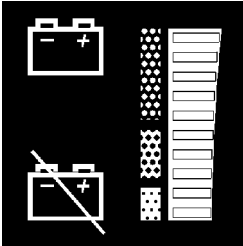
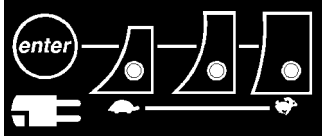
HYSTER

ITEM NO.	ITEM	FUNCTION
a	Message Center  LCD indicators	The Message Center is a 16 character, dot matrix LCD (Liquid Crystal Display) with green backlighting. The 16 character, alpha-numeric display shows the hourmeter readings, lift truck performance status, and warning or fault conditions in English. When a warning message is received, the warning/fault indicator will blink as a yellow light. When a fault message is received, the warning/fault indicator will blink as a red light.
b	Function Selection Lights  LED indicators	The Function Selection Lights display the selected hydraulic function. Status messages will be displayed for LIFT, REACH, TILT AND SIDESHIFT. The function selection lights will display the current hydraulic function, independent of the present LCD display.

NARROW AISLE

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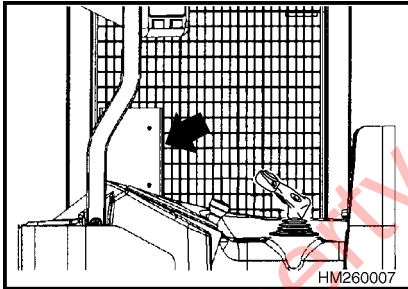
MODEL DESCRIPTION

ITEM NO.	ITEM	FUNCTION
c	Battery Indicator 	The Battery Indicator has a 10 bar multicolor LED (Light Emitting Diode) to indicate battery charge status. The bars are green, yellow and red. As battery power is used, the LED light bars turn OFF, first green, then yellow, then red. The next to bottom red bar will flash indicating a nearly discharged battery. At empty, the bottom red bar will alternately flash with the LO-BATT indicator LED (a crossed battery symbol). The lift function will be locked out at this point. Continued operation with a discharged battery can damage the battery, motors or the contactors.
d	Drive Mode Display 	The Drive Mode Display allows the operator to select the traction motor controller speed most suited to the application. Operation of the drive mode switch will cause the green indicators and corresponding drive modes to increase from Turtle to Mid to Rabbit. Turtle mode provides slower acceleration and reduced top speed. It is also a valuable setting when training new operators or on wet floors for better traction. Mid mode reduces acceleration with full travel speed. Rabbit mode provides maximum acceleration and travel speed. When the key switch is turned to OFF, the selected drive mode is retained. When the battery is disconnected the drive mode returns to the Rabbit mode. The rates of acceleration and travel speeds are programmable and can be adjusted by a qualified service technician. The drive mode can only be selected while in neutral.

NARROW AISLE

MODEL DESCRIPTION

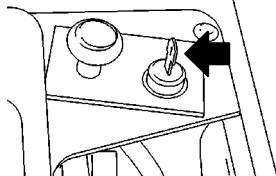
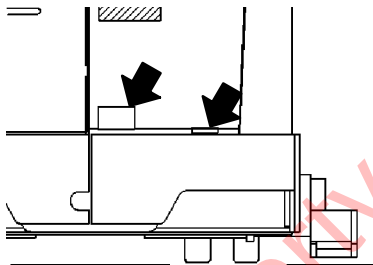
HYSTER

ITEM NO.	ITEM	FUNCTION
e	Hourmeter 	The Hourmeter switch is controlled by the operator and is used for on-demand display of hourmeter information. The hourmeter data can be displayed at any time by pressing the hourmeter switch. The switch is marked with an hour glass symbol. Press the switch once to display truck hours to 1/10 of an hour. Press twice to display drive motor hours. Press three times to display the lift motor hours. Press four times to return to the normal display mode. If the hourmeter is left in any of the first three positions, the display will return to the normal display mode, which indicates the current operational status of the lift truck after 30 seconds.
2	Operating Manual 	The Operating Manual is sent with the lift truck and is located in the container on the wire mast guard mounted behind the mast. The Operating Manual is a permanent reference and must be available for the operator's use at all times. Read and understand this manual before operating the lift truck.

NARROW AISLE

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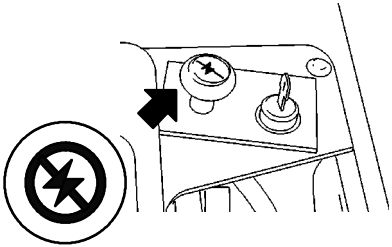
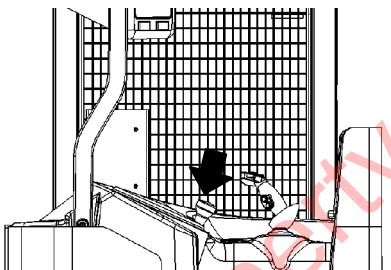
MODEL DESCRIPTION

ITEM NO.	ITEM	FUNCTION
3	Key Switch 	The key switch is a three position switch. The first position is OFF (marked O). The second position is RUN (marked I). The third position is unmarked and not used. It is spring loaded and automatically returns the key to the RUN position after the key is released. The key switch is located to the right side of the battery power disconnect knob.
4, 5	Brake Pedal and Operator Sensing Switch 	The brake is designed for both service and parking brake use. The brake is spring applied and hydraulically released. The push down brake pedal is on the floor in the rear of the operator's compartment. The brake is automatically applied when the brake pedal is released. An operator sensing switch is on the floor to the right of the brake pedal and must be closed with the brake pedal switch before lift truck operation is permitted. The operator must step into the operator's compartment and close both switches before driving or operating any hydraulics. When the operator leaves the lift truck the parking brake is automatically applied.

NARROW AISLE

MODEL DESCRIPTION

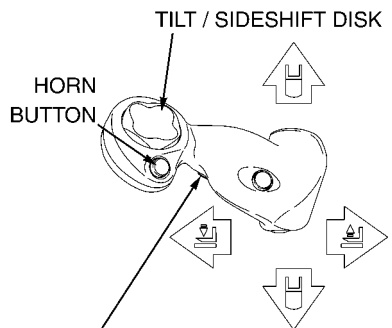
HYSTER

ITEM NO.	ITEM	FUNCTION
6	Battery Power Disconnect 	The red battery power disconnect switch is located next to the key switch. When pressed, power is shut off to all circuits in the lift truck. Power is restored to the lift truck by pulling the switch upward.
7	Steering Disk 	The steering disk controls lift truck direction with 4 turns lock to lock.  WARNING: Reverse steering is available for this lift truck. The operator should check the steering direction before operating the lift truck.

NARROW AISLE

HYSTER

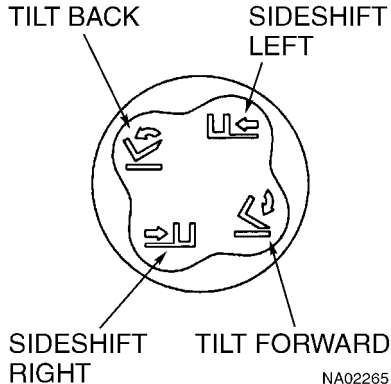
MODEL DESCRIPTION

ITEM NO.	ITEM	FUNCTION
8	Multi-function Control Handle  TILT / SIDESHIFT DISK HORN BUTTON EXTEND / RETRACT BUTTONS ARE ON THE UNDERSIDE OF THE HANDLE. NA02315	The multi-function control handle allows the operator to control travel, lift, lower, tilt, sideshift, horn, and extend and retract functions. Each function has an independent control device. Travel is activated by tilting the entire control handle in the direction of travel. Pushing the control handle toward the forks makes the lift truck travel forward. To change direction, move the multi-function handle in the opposite direction the lift truck is traveling, regardless of travel speed. The lift truck will come to a stop, then accelerate in the opposite direction. This control is proportional; therefore, the farther the control handle is pushed, the faster the lift truck will accelerate or decelerate. If the multi-function handle is released, it will return to neutral, and the truck will decelerate at a programmed rate to a stop. The multi-function handle controls the direction and speed at which the carriage moves vertically on the mast. Lift/Lower is activated by tilting the entire control handle toward the left or right side of the lift truck. If the control handle is tilted toward the right, the carriage lifts; if the control handle is tilted toward the left, the carriage lowers. The farther the lever is tilted, the faster the carriage lifts or lowers. The Horn button is located on the side of the multi-function handle facing the operator, just to the left of the tilt/sideshift disk. The horn is activated by pressing the button with the thumb.

NARROW AISLE

MODEL DESCRIPTION

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ITEM NO.	ITEM	FUNCTION
8	Tilt/Sideshift Disk  NA02265	The Tilt/Sideshift Disk, located at the top of the multi-function handle lever, controls the tilting and side-shifting of the carriage. The disk is operated with the thumb of the right hand. To tilt the carriage forward, press the top of the disk. To tilt the carriage back, press the bottom of the disk. On lift trucks equipped with a sideshifting carriage, press the left side of the disk to move the carriage to the left, and press the right side of the disk to move the carriage to the right. Tilt and sideshift are single speed functions. The Extend and Retract buttons are located on the shaft of the multi-function handle. Press the top button to provide low speed extend. While the top button is still actuated, press the bottom button to provide high speed extend. Press the bottom button to provide low speed retract. While the bottom button is still actuated, press the top button to provide high speed retract. The multi-function handle is capable of providing variable traction, variable lift or lower, a single auxiliary function and the horn simultaneously for improved productivity.

NARROW AISLE

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OPERATING PROCEDURES

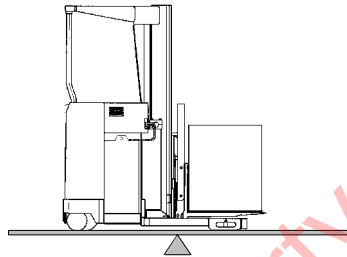
OPERATING PROCEDURES

GENERAL

Know Your Lift Truck

The fork lift truck is designed to pick up and move materials. The basic lift truck has a lift mechanism with forks on the front to engage the load. The lift mechanism lifts the load so that it can be moved and stacked.

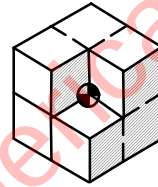
In order to understand how the lift truck can pick up a load, you must first know some basic things about the lift truck. The lift truck is based on the principle of two weights balanced on opposite sides of a pivot (fulcrum). In order for



this principle to work, the load on the forks must be balanced by the weight of the lift truck and battery. The weight of the battery is a major part of the total lift truck

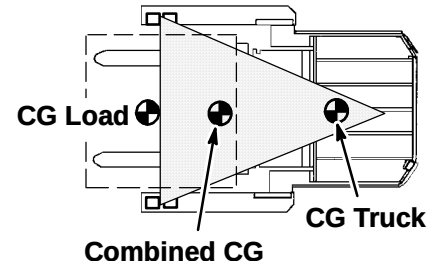
weight. The location of the center of gravity of both the lift truck and the load is also a factor. This basic principle is used to pick up a load. The ability of the lift truck to handle a load is discussed in terms of center of gravity and stability.

Stability and Center of Gravity



The center of gravity (CG) of any object is the single point about which the object is balanced in all directions. Every object has a CG. When the lift truck picks up a load, the truck and load have a new combined CG.

The stability of the lift truck is determined by the location of its CG, or if the truck is loaded, the combined CG. The lift truck has moving parts and therefore has a CG that moves.



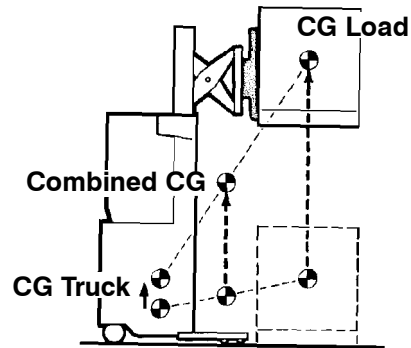
The CG moves forward and back as the forks are extended or retracted. The CG moves up and down as mast moves

NARROW AISLE

OPERATING PROCEDURES

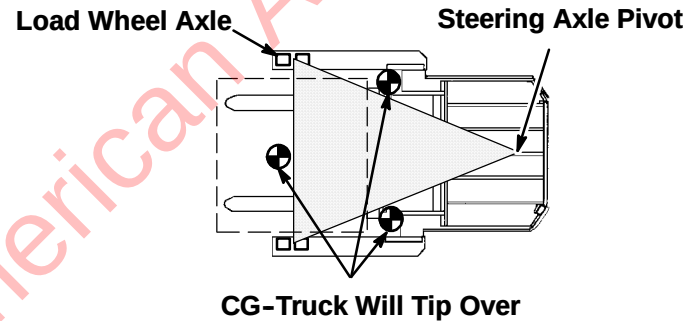
HYSTER

up and down. The center of gravity, and therefore the stability of the loaded lift truck is affected by a number of factors, such as size, weight, shape, and position of the load; the height to which the load is raised; the amount of forward or backward tilt and the dynamic forces created when the truck is moving.



These dynamic forces are caused by things like acceleration, braking, turning, and operating on uneven surfaces or on an incline. These factors must be considered when traveling with an unloaded truck, as well, because **an unloaded truck will tip over to the side easier** than a loaded truck with its load in the lowered position.

In order for the lift truck to be stable (not tip over forward or to the side) the CG must stay within the area of the lift truck represented by a triangle drawn between the load wheels and the pivot of the steering axle.



If the CG moves forward of the load wheels, the lift truck will tip forward. If the CG moves outside of the line represented by the lines drawn between the load wheels and the steering axle pivot, the lift truck will tip to that side.

Stability and traction will also be affected if the drive unit articulation stops are not adjusted properly. The articulation stop screws must be adjusted to the proper setting as listed on the nameplate and in the Articulation Chart found in the Maintenance Section.

NARROW AISLE

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OPERATING PROCEDURES

Capacity (Weight and Load Center)

The capacity of the fork lift truck is shown on the nameplate. The capacity is listed in terms of weight and load center. The weight is specified in kilograms or pounds. The load center is specified in millimeters and inches. The capacity is the maximum load that the lift truck can handle. This load must weigh less than the maximum weight for a load center shown on the nameplate.

Trained Operators and Mechanics only

Read Operating Manual located on or near seat.

Failure to follow operating, inspection, and maintenance instructions can cause serious injury or death!

CAPACITY WITH MAST VERTICAL AND EQUIPPED AS SHOWN

Lift Truck Model		Serial Number		Sales Order	
Attachment					
Truck Wt. Less Battery	kg (lb)	Type	Volts		
Truck Wt. Max Battery	kg (lb)	Max A.H.			
Allowable Battery Wt.	kg (lb) to	kg (lb)			
Base Width	mm (in)				
Wheel Base	mm (in)				
Articulation - Drive Side	mm (in)				
Articulation - Caster Side	mm (in)				

MAXIMUM CAPACITY	Load Height Dim. A	Load Center	
		Dim. B	Dim. C
(kg lb)	(mm in)	(mm in)	(mm in)
(kg lb)	(mm in)	(mm in)	(mm in)

HM260006

FIGURE 7. NAMEPLATE

The load center of a load is determined by the location of its center of gravity. The load center is measured from the front face of the forks, or the load face of an attachment, to

the center of gravity of the load. Both the vertical and horizontal load centers.

Loads should be transported while centered on the centerline of the lift truck. The operator must know whether or not a load is within the maximum capacity of the lift truck before the load is handled.

WARNING

Inspect the lift truck and check the operation of the systems at the start of the day or shift. Do the inspections and checks before lift truck operation. If repair is required, put a tag on the control handle stating DO NOT OPERATE. Do not operate the lift truck until problems are corrected. Remove the key.

See Checks and Inspection Procedures in the Maintenance Section of this manual for detailed instructions. Also refer to Table 1 for operation and description of controls.

NARROW AISLE

OPERATING PROCEDURES

HYSTER



CHECKS WITH THE KEY SWITCH OFF

Inspect the lift truck before use and every eight hours or daily as described in the MAINTENANCE section of this OPERATING MANUAL.

Before using the lift truck, make the following checks:

- Oil level in the hydraulic tank.
- Electrolyte level and specific gravity of the battery.
- Battery weight is within the range of battery weights on the nameplate.
- Battery panels are in place and correct spacers are installed to limit horizontal battery movement to no more than 1/2 inch.
- Condition of forks, carriage, chains, mast and overhead guard.
- Leaks from the hydraulic system.
- Condition of wheels and tires.



WARNING

Report damage or faulty operation immediately. Do not operate a lift truck if it is damaged or does not operate correctly. A lift truck will only do its job when it is in proper working order. If repairs are required, install a tag in the operator's area stating **DO NOT OPERATE** and remove the key from the key switch.

How to Check the SRO Circuit

The lift truck is equipped with a Static Return to **OFF** (SRO) circuit that prevents travel of the lift truck if the starting sequence is not correct. The function of the SRO circuit is to make sure the operator is in the correct position to operate the controls before the lift truck will operate. The starting sequence:

1. Stand in the operator's compartment with one foot pressing the brake pedal and one foot on the operator sensing switch and the key switch on the **ON** position.
2. Move the multi-function control handle for forward travel.

If Step 2 is done before Step 1 and the lift truck moves, the SRO function is not operating correctly. The sequence within Step 1 is not important. The lift truck must not be operated if the SRO circuit does not function correctly.

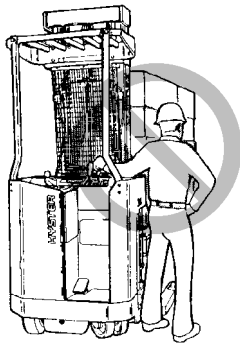
NARROW AISLE

HYSTER

OPERATING PROCEDURES



CHECKS WITH THE KEY SWITCH ON



Do not start or operate the lift truck, including any of its functions or attachments, from any place other than the designated operator's position. Make sure that the area around the lift truck is clear before making any operational checks. Be careful when making the checks. Allow the lift truck to move only enough to check for correct operation.

WARNING

The operator must be aware that the lift truck can tip over. There is a risk that the operator or someone else can be killed or injured if trapped or hit by the truck as it tips over.



CAUTION

If the lift truck is stationary during a check, release the brake pedal and proceed carefully.

Check the operation of the following functions as described in the MAINTENANCE section.

- Check the operation of the horn, gauges and indicator lights.
- Operate the lift, tilt, reach and auxiliary functions to check for correct operation of the mast, carriage and attachments.
- Check the operation of the steering system.
- Check the operation of the control handle.
- Check the operation of the brake.

OPERATING TECHNIQUES



WARNING

The lift truck can tip over during operation. If you have not read the WARNING page in the front of this Operating Manual, do so now. As you read the following information remember the warnings.

NARROW AISLE

OPERATING PROCEDURES

HYSTER

Many people make the mistake of thinking that operating a lift truck is the same as driving an automobile. This is not true. It is true that some lift truck operating procedures are as simple and obvious as driving the family automobile. (Example: Look where you are going, start and stop smoothly, etc.) But a lift truck is a special machine designed to do a much different job than an automobile. Because of the close areas in which a lift truck operates and its other operating characteristics (like rear wheel steering and tailswing), every operator must receive additional training, even if they have a license to drive an automobile.

The following discussion lists basic procedures applicable to lift truck operation.

1. Authorized and Trained Operator Only - This means the operator must be trained to drive the lift truck and it means that the operator must thoroughly understand the procedures for lift truck operation. It also means that a qualified person experienced in lift truck operation must guide the operator through several driving and load handling operations before the operator attempts to operate the lift truck alone. A basic education in proper driving and load handling techniques is absolutely necessary to prepare the new operator for proper defensive driving and to expect the unexpected.

2. Hazardous Area - Operate the lift truck only in areas that have been approved for lift truck operation.



HAZARDOUS AREA

Certain areas contain hazardous flammable gases, liquid, dust, fibers or other materials. Lift trucks that are operated in these areas must have special fire safety approval.

These areas must be designated to show the type of lift truck approval required for operation in the area. Changes to special equipment or poor maintenance can make the lift truck lose its special approval.

3. No Riders - A lift truck is built for only one person -- the operator. It is dangerous for anyone to ride on the forks or anywhere else on the lift truck.



4. Lifting Personnel - A lift truck is designed to handle materials. A lift truck is not designed to lift people. Do not

NARROW AISLE

HYSTER

OPERATING PROCEDURES

use a lift truck to lift people unless it has been determined that there is no other practical option (scaffolds, elevated work platforms, aerial baskets, etc.) to perform the needed work.

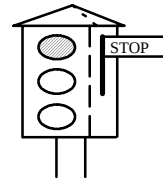
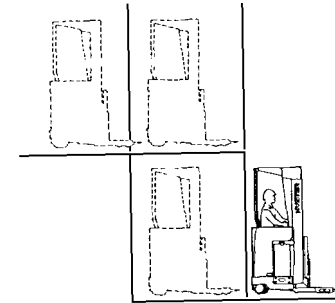
WARNING

If a lift truck is used to elevate a worker, a safety platform must be attached to the forks and carriage. The safety platform must be built to meet or exceed the requirements of ANSI B56.1. The safety platform must have a solid floor with a surface to prevent the feet of the worker from slipping. It must have a hand rail, toe board and a screen or shield at least 2 meters (7 feet) high between the people on the platform and the lift mechanism.

Before anyone is allowed in the platform, lift and lower the mast slowly with the platform in place to make sure the mast functions properly. Apply the park brake. Do not travel with people in the platform. The operator must remain at the controls. Watch for overhead obstructions.

5. Elevators - Do not drive a lift truck into a elevator unless authorized to do so. Approach the elevator slowly. After the elevator is properly leveled, the lift truck must be centered so that the elevator is balanced.

When the lift truck is in the proper position in the elevator, set the brakes, put the controls in **NEUTRAL**, and shut off the power. It is advisable that all other personnel leave the elevator before the lift truck enters or leaves.



6. Drive Carefully - Observe traffic rules and be in full control of the lift truck at all times. Be completely familiar with all the driving and load handling techniques contained in this OPERATING MANUAL.

Starting Sequence

1. Make sure a charged battery of the correct voltage is installed and connected.

NARROW AISLE

OPERATING PROCEDURES

HYSTER

2. Step into the operator's compartment. Press the operator sensing switch and the brake pedal to release the brake and allow lift truck operation.

3. Turn key switch to the **ON** position. All indicator lamps on the dash display should light. The dash display will indicate warning or fault statements.

4. Move the multi-function control handle for forward or reverse travel.

Contact authorized maintenance personnel if a warning or fault statement appears on the dash display. (**Do Not** operate the truck until the problem is corrected.)

Driving and Direction Changes

The operator can change the direction of travel while the lift truck is moving by moving the control handle in the opposite direction. This action uses the motor for braking and is called **PLUGGING**. Plugging can take place at any travel speed. The lift truck will come to a stop and then accelerate in the opposite direction. Plugging is a normal method used to stop the lift truck and is proportional to how much the control handle is moved in the opposite direction.

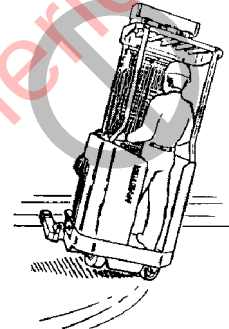
To stop the lift truck quickly, step off the brake pedal to apply the brake.

Steering (Turning)



WARNING

Travel slowly when turning. Lift trucks can tip over even at very slow speeds. The combination of speed and the sharpness of a turn can cause a tipover.



A lift truck is less stable when the forks are raised, with or without a load. Most operators can understand the need to be careful when handling loads. But some operators do not realize that a tipover can occur with an empty lift truck because similar dynamic forces are present. The lift truck will actually tip over easier when empty, than when loaded with

the load lowered. Backward tilt, off center load and uneven ground will aggravate these conditions.

NARROW AISLE

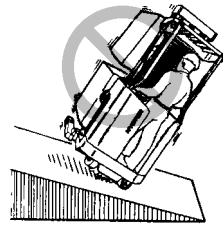
HYSTER

OPERATING PROCEDURES



WARNING: Do not move the Reach or Tilt control when the lift truck is traveling. The attachment can be damaged if it is extended when the lift truck is traveling.

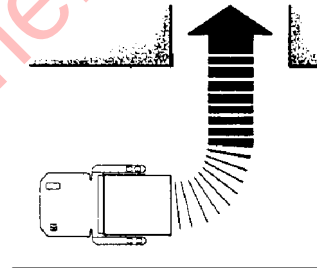
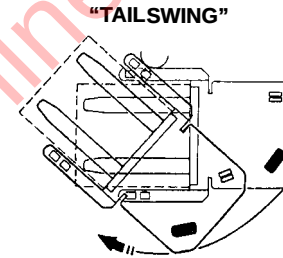
Do not turn on an incline. To reduce the possibility of a tipover, a lift truck must not be driven across an incline.



WARNING

Failure to observe tailswing area when making a turn can injure or kill someone.

Because lift trucks are designed to work in a relatively small space, they can turn sharper than some other vehicles. Most lift trucks are steered by the rear wheels and the rear of the lift truck can move to the side very fast during a turn. This movement is called tailswing. An operator must be aware of tailswing and always check to make sure the tailswing area is clear before turning.



When turning the lift truck from a wide aisle into a narrow aisle, start the turn as close to the opposite stock pile as tailswing will permit. This action permits the lift truck to enter the narrow aisle going straight ahead.

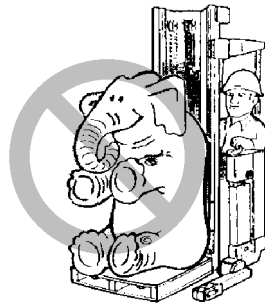
NARROW AISLE

OPERATING PROCEDURES

HYSTER

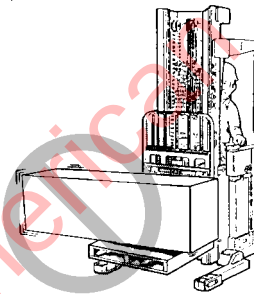
Load Handling - General

1. The capacity is the maximum load that the lift truck can handle for the load condition shown on the nameplate. The operator must know whether or not a load is within the maximum capacity of the lift truck before the load is handled. However, such factors as weak floors, uneven terrain, special load handling attachments or loads having a high center of gravity can mean that the safe working load is less than the capacity. When such conditions exist, the operator must reduce the load so that the lift truck will remain stable.



2. Handle only stable loads. A load can have unstable items that can easily shift and fall on someone. Do not handle a load if any loose part of it is above the load backrest or any part of the load is likely to fall.

3. Position each fork the same distance from the center of the carriage. This action will help center the load on the carriage. Set the forks as far apart as possible for maximum support of the load. Center the weight of the load between the forks.



If the weight of the load is not centered between the forks, the load can fall from the forks when you turn a corner or hit a bump. An off center load will increase the possibility of the truck tipping over to the side. Make sure the pins that keep the forks in position are engaged so that the forks cannot move.

4. Check the condition of the driving surface. Make sure the floor will support the weight of the lift truck and the load.

Lifting, Lowering and Tilting

During most loading or unloading operations, the operator steers with the left hand. The right hand is used to operate the multi-function control handle.

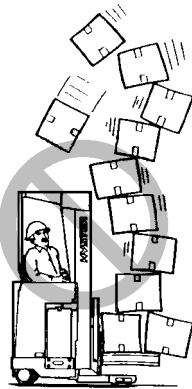
The **LIFT**, **EXTEND**, **TILT** and **SIDESHIFT** functions are operated by the multi-function control handle. The multi-function handle controls the direction and speed at which

NARROW AISLE

HYSTER

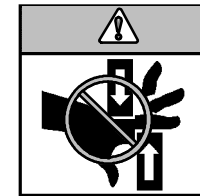
OPERATING PROCEDURES

the carriage moves vertically on the mast. **Lift/Lower** is activated by tilting the entire control handle toward the left or right side of the lift truck. If the control handle is tilted toward the right, the carriage lifts; if the control handle is tilted toward the left, the carriage lowers. The farther the lever is tilted, the faster the carriage lifts or lowers. The speed of the hydraulic function is controlled by the degree of movement of the multi-function handle from the neutral position. The farther the control is moved, the faster the speed of the hydraulic function. See the **Instruments and Controls** section for the correct operation.



Do not lift or hit anything that can fall on the operator or a bystander. Remember, a lift truck equipped with a HYSTER overhead guard and load backrest extension provides reasonable protection to the operator from falling objects, but cannot protect against every possible impact. A lift truck without an overhead guard provides no such protection and other personnel have no overhead protection. Avoid hitting objects such as stacked material that could become dislodged and fall.

Avoid hitting objects such as stacked material that could become dislodged and fall. The operator must exercise care while working near such objects. Whether the lift truck is loaded or empty, do not travel with the load or carriage in a raised position. Lift and lower with the forks vertical or tilted slightly backward from vertical.



WARNING

Keep yourself and all others clear of the lift and reach mechanisms. Never allow anyone under or on the forks. NEVER put hands, arms, head or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator, but also a helper. A helper must not be near the load or lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

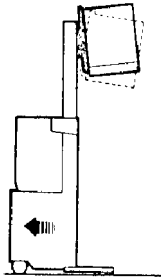
NARROW AISLE

OPERATING PROCEDURES

HYSTER

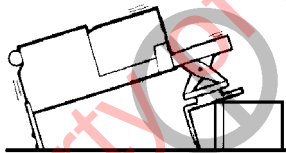
WARNING

The lift truck can tip over forward when the load is raised. Forward tipping is even more likely when extending the forks, tilting forward, braking when traveling forward or accelerating in reverse.



Tilt elevated loads forward only when directly over the unloading place. If the lift mechanism is raised to pick up or deposit a load, keep the tilt angle in either direction to a minimum. Backward and forward tilt are helpful, but they affect side and forward stability. Do not tilt in either direction more than

necessary when handling a load that is raised. The lift truck can tip forward if the forks are tilted forward with a load in the raised position.

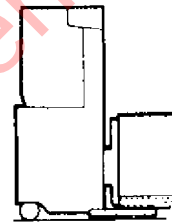


How to Engage and Disengage a Load

1. Avoid fast starts. Sudden movement can cause the lift truck to tip. People can be hurt or killed and material can be damaged. Approach the load carefully.



Make sure that the truck is perpendicular to the load. Raise the forks to the proper height for engaging the load.



2. Move forward slowly or extend the forks slowly, until the forks are in position under the load. The forks must support at least two-thirds (2/3) of the length of the load. Make sure that the load is centered between the forks. Make sure that

the forks do not extend past the load so that loads or equipment that are behind the load being lifted are not damaged. Lift the load a small distance from the floor to make sure the lift truck has the capacity to lift the load.

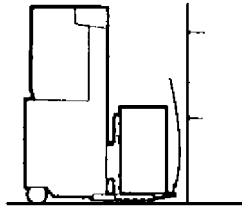
NARROW AISLE

HYSTER

OPERATING PROCEDURES

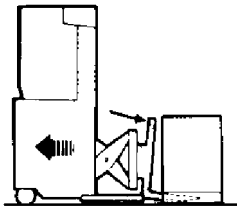
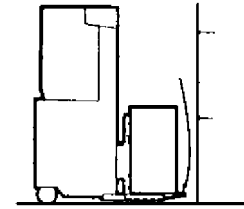
If the forks are longer than the load, move the forks under the load so that the tips of the forks do not extend beyond the load. Lift the load from the surface. Move backward or retract forks a few inches, then lower the load onto the surface and inch forward or extend forks to engage the load against the carriage. Tilt the forks backward just far enough to lift the load from the surface. Raise the load to clear the base arms and retract the forks.

Be Careful of Forks Beyond the Load

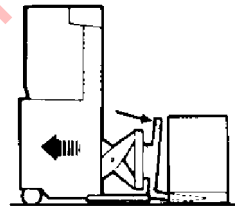


If the forks are longer than the load, move the forks under the load so that the tips of the forks do not extend beyond the load. Lift the load from the surface. Move backward or retract forks a few inches, then lower the load onto the surface and inch forward or extend forks to engage the load against the carriage. Tilt the forks backward just far enough to lift the load from the surface. Raise the load to clear the base arms and retract the forks.

Be Careful of Forks Beyond the Load



3. Put the load on the floor. If the lift truck is equipped with a tilt function tilt the carriage forward to permit smooth removal of the forks. Carefully move the lift truck backward to remove the forks from under the load.



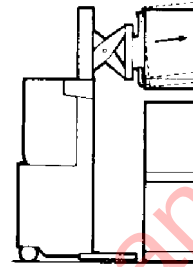
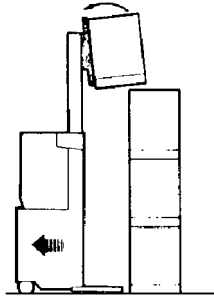
3. Put the load on the floor. If the lift truck is equipped with a tilt function tilt the carriage forward to permit smooth removal of the forks. Carefully move the lift truck backward to remove the forks from under the load.

NARROW AISLE

OPERATING PROCEDURES

HYSTER

4. If the load is being removed from a stack without using the reach function, slowly move the lift truck away from the stack. If the load is being removed from a stack and the forks are extended, slowly retract the forks. When the load is clear of the stack, lower the load for traveling. Always travel with the load as low as possible, retracted and tilted backward. Lowering speed is controlled by the distance you move the multi-function handle or the distance the control lever is moved from neutral. Lower slowly and smoothly. Slowly return the multi-function handle or the control lever to the neutral position so that the load is not dropped or that the lift truck is not tipped over due to the rapid stop of the load.



5. To put the load on a stack, align the lift truck with the stack. Lift the load to eye level and then tilt the load forward until it is level. Raise the load higher than the point where it will be placed. Do not raise the load to a point below where the load is to be placed and jog the load up into position. This operation uses added energy, particularly with an electric lift truck. Be careful not to damage or move adjacent loads.

WARNING

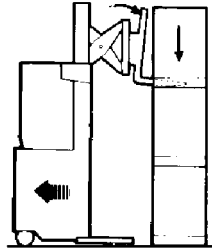
Move carefully and smoothly when the load is raised over a stack. When the load is elevated the center of gravity of the lift truck and the load is much higher. The lift truck can tip over when the load is raised.

NARROW AISLE

HYSTER

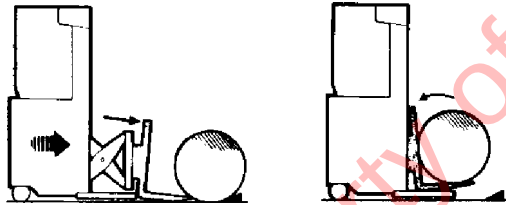
OPERATING PROCEDURES

Move forward, or extend forks slowly. When the load is in position, lower the load on to the stack or the rack. Lower the forks just enough to remove them from under the load. Do not lower the forks so that they will drag on the surface under the load.



Carefully move the lift truck backward or retract the forks to remove the forks from under the load. Lower the forks when traveling.

NOTE: Not every load can be lifted using only the forks of a lift truck. Some loads will require a special attachment.

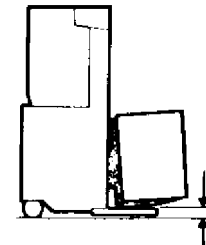


6. When lifting round objects, use a block behind the object. Tilt the forks forward so that the forks can slide along the floor under the object to be lifted. Tilt the mast fully backward to help keep the load on the forks.

Traveling

1. When traveling with the load lowered, keep the load against the carriage, the forks retracted and the forks tilted fully backward. This action will help keep the load on the forks and give good forward and side stability.

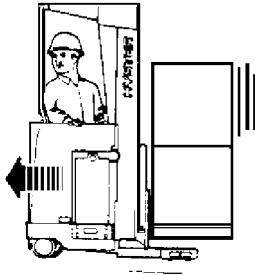
2. Travel with the lift mechanism raised only enough to clear the ground, base arms or obstacles. When any part of the mast is raised, with or without a load, the stability of the lift truck is reduced. The ability of the lift truck to resist side tipping can be less for a lift truck that is not carrying a load than it is for a lift truck that is carrying a load in the lowered (travel) position. Therefore, a lift truck without a load is more likely to tip sideways, especially in a turn, than a lift truck with a load, provided the load is carried in the lowered position.



NARROW AISLE

OPERATING PROCEDURES

HYSTER



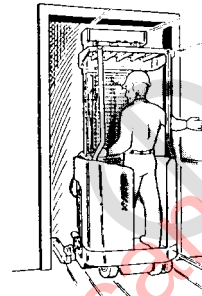
3. For better visibility with large loads, travel with the load trailing, but always keep a proper lookout in the direction of travel. Normally, direction of travel is determined by the best visibility available to the operator. If the lift truck must travel in a direction where visibility is obstructed, a lookout helper may be required.

4. If you must operate on a grade, keep the load up-
grade. If the lift truck is unloaded, keep the rear of the lift truck up-
grade.



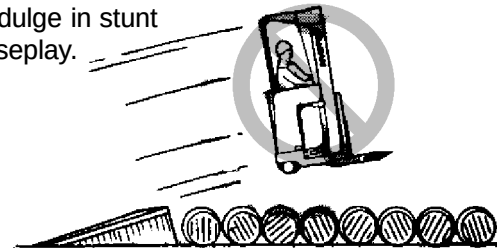
5. Watch out for pedestrians at all times. Do not drive up close to anyone standing in front of an object. Use extra care at cross aisles, doorways and other locations where pedestrians can step into the path of travel of the lift truck.

Slow down when approaching blind intersections or turns. Sound the horn to warn pedestrians that there is a vehicle in the area and to be alert to possible danger.



6. Anytime the lift truck is moving keep arms, legs, etc., inside the operator's compartment. Arms and legs outside the machine can be injured when passing obstructions.

7. Do not indulge in stunt driving or horseplay.



WARNING

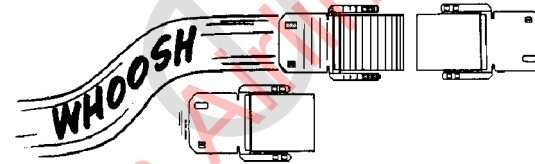
Serious accidents can be caused by mast and overhead guards hitting pipes and beams near the ceiling.

NARROW AISLE

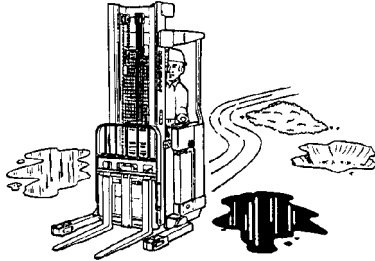
HYSTER

OPERATING PROCEDURES

8. Watch clearances, especially forks, mast, overhead guard and tailswing. A lift truck is designed to perform a wide variety of functions within limited space. The operator must be aware that the forks can sometimes extend beyond the front of the load. If the forks extend beyond the load, the operator can hit an object or lift another load.



11. Stay away from the edge of the road. Keep the wheels of the lift truck, particularly the steer wheels, on the roadway. If the wheels are allowed to run off the edge of the travel surface onto soft ground, the lift truck can tip over.



9. Avoid bumps, holes, slick spots and loose materials that may cause the lift truck to swerve or tip. If unavoidable, slow down.



12. Under all travel conditions, operate the lift truck at a speed that will permit it to be brought to a stop in a safe manner.

10. Do not pass another lift truck traveling in the same direction at intersections, blind spots or at other dangerous locations.

Highway Trucks, Railroad Cars and Docks

Before operating in a highway truck or railroad car, observe the following:

NARROW AISLE

OPERATING PROCEDURES

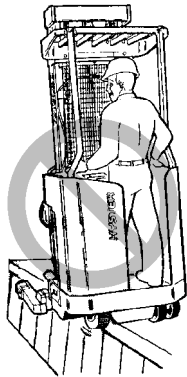
HYSTER

Check the condition of the driving surface. Make sure the floor will support the weight of the lift truck and the load.

Make sure the dock board is secured, in good condition and of the proper capacity.

DO NOT use a lift truck to move a railroad car.

DO NOT use a lift truck to open or close the door on a railroad car unless the lift truck has an attachment that is specifically designed for opening and closing railroad car doors and the operator is trained in its use.



WARNING: Maintain a safe distance from the edge of docks, ramps, platforms and other similar working surfaces. Watch the tailswing. Remember when traveling in the forward direction and the steering tiller is turned to move the lift truck away from the edge of the dock the rear will swing toward the edge. This action can cause the lift truck to fall off the dock.

Make sure that the railroad car brakes are set and the wheels are blocked while loading or unloading. Do this so that the railroad car will not move due to the movement of the lift truck in and out of the railroad car.

When entering a railroad car the operator can enter at an angle (if the dock plate or bridge is wide enough). This will reduce the turning required after entering.

Check to make sure that the brakes on the highway truck are set and that wheel blocks have been placed on both sides of the rear wheels (unless a dock locking mechanism is engaged). Fixed jacks may be necessary to support the front and rear of a semi-trailer to prevent it from moving or tipping during loading or unloading.

Attachments

If an attachment is installed on the lift truck, make sure the operating instructions are available and understood before operating the attachment. See Table 1 for the operation of attachment control levers.



NARROW AISLE

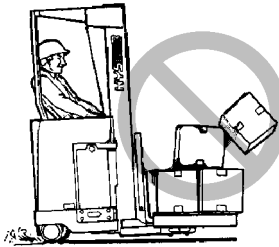
HYSTER

OPERATING PROCEDURES

WARNING

If an attachment has been installed on the lift truck, make sure the nameplate is correct.

Stopping



Stop the lift truck as gradually as possible. Hard braking and wheel sliding can cause the load to fall off of the forks and damage the load or hurt someone. Gradually stop the lift truck using plugging or the brake.

Slowly releasing the brake pedal will stop the lift truck gradually. Releasing the brake pedal completely and quickly will make the lift truck stop abruptly.

Parking

The operator must never leave a lift truck in a condition so that it can cause damage and injury. When parking the lift truck, do the following operations:

1. Bring the lift truck to a stop. Release the control handle so that it returns to the neutral position.
2. Release the brake pedal to apply the brake.
3. Fully lower the forks or carriage. Fully retract the forks. Tilt the forks forward.
4. Turn the key switch to **OFF**. (If the lift truck is parked because of a malfunction, also disconnect the battery.)
5. Step out of the operator's compartment.
6. If the lift truck must be left on an incline, put blocks on the down hill side of the wheels so that the lift truck cannot move.
7. Do not park the lift truck so that it limits access to fire aisles, stairways, and fire equipment.

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OPERATING PROCEDURES	HYSTER
NOTES	

40

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OPERATING PROCEDURES	<i>HYSTER</i>
NOTES	

40

NARROW AISLE

HYSTER

MAINTENANCE

MAINTENANCE

GENERAL

This section contains a MAINTENANCE SCHEDULE and the instructions for daily (8 hour) maintenance and inspection. See the **PERIODIC MAINTENANCE** section for instructions for other maintenance intervals.

The Maintenance Schedule has time intervals for inspection, lubrication and maintenance. The time intervals are based on a normal operation. A normal operation is considered to be one eight hour shift per day in a relatively clean environment on an improved surface. Multiple shifts, dirty operating conditions, etc., will require a reduction in the recommended time periods in the MAINTENANCE SCHEDULE.

Your **HYSTER** lift truck dealer has the facilities and trained personnel to do the maintenance. A complete program of inspection, lubrication, and maintenance will help your lift truck perform efficiently and operate over a longer period of time.

Some users have service personnel and facilities to do the items listed in the MAINTENANCE SCHEDULE. Service

Manuals are available from your **HYSTER** lift truck dealer to help users who do their own maintenance.

Maintenance, service and repair must be performed by trained personnel.

Do not make repairs or adjustments unless specifically authorized to do so. Repairs and adjustments must be done by trained service people.

Put the lift truck on a level surface. Lower the carriage and forks, apply the park brake and turn the key switch to **OFF**. Open the access panels and check for leaks and conditions that are not normal. Clean any oil or other spills. Make sure that lint, dust, paper, and other materials are removed from the compartments.



WARNING

Do not operate a lift truck that needs repairs. Report the need for repairs immediately. If repair is necessary, put a DO NOT OPERATE tag in the operator's area. Remove the key from the key switch.

NARROW AISLE

MAINTENANCE

HYSTER

HOW TO MOVE A DISABLED LIFT TRUCK



WARNING

Use extra care when towing a lift truck if there is a problem with any of the following:

1. Brakes do not operate correctly.
2. Steering does not operate properly.
3. Tires are damaged.
4. Traction conditions are bad.
5. The lift truck must be moved on a steep grade.

Poor traction can cause the disabled lift truck or towing vehicle to slide. Steep grades will require additional brake force to stop the lift truck.

Never carry a disabled lift truck unless the lift truck **MUST** be moved and cannot be towed. The lift truck used to carry the disabled lift truck **MUST** have a rated capacity equal to or greater than the weight of the disabled lift truck. The

capacity must be for a load center equal to half the width of the disabled lift truck.

See the nameplate of the disabled lift truck for the approximate total weight. The forks must extend the full width of the disabled lift truck. Center the weight of the disabled lift truck on the forks and be careful not to damage the under side of the lift truck.

How to Tow the Lift Truck

1. The towed lift truck must have an operator.
2. Press the brake pedal during towing to release the brake.
3. Tow the lift truck slowly.
4. Raise the carriage and forks approximately 30 cm (12 inches) from the surface. Install a chain to prevent the carriage and mast channels from moving.
5. If another lift truck is used to tow the disabled lift truck, that lift truck must have an equal or larger capacity than the disabled lift truck. Install an approximate half-capacity load on the forks of the lift truck that is being used to tow the

NARROW AISLE

HYSTER

MAINTENANCE

disabled lift truck. This half-capacity load will increase the traction of the lift truck. Keep the load as low as possible.

How to put a Lift Truck on Blocks

WARNING

The lift truck must be put on blocks for some types of maintenance and repair. The removal of the following assemblies will cause large changes in the center of gravity, mast, drive axle and battery.

WARNING

Put the lift truck on blocks only if the surface is solid, even, and level. Make sure that any blocks used to support the lift truck are solid, one piece units.

WARNING

Do not raise the lift truck by attaching an overhead crane to the overhead guard or areas of the mast that will be damaged. Some of these components and other lift points are not designed to support the weight of the lift truck. The truck can be damaged or it can fall on someone causing serious injury. Attach a chain or sling to a support structure of the lift truck frame.

How To Raise The Drive/steer Tire and caster wheels (See FIGURE 8.)

NARROW AISLE

MAINTENANCE

HYSTER

1. Put blocks on each side (front and back) of the load wheels to prevent movement of the lift truck.
2. Use a special low clearance hydraulic jack under the rear frame to raise the drive/steer tire and caster wheels. Another lift truck can also be used to raise the lift truck. Make sure that the jack or other lift truck has a capacity of at least $\frac{2}{3}$ the total weight of the lift truck as shown on the nameplate.
3. Raise the lift truck only enough to suspend the drive/steer tire and the caster wheels. Install blocks under the rear of the frame to support the lift truck.

How to Raise the Load Wheels (See FIGURE 8.)

1. Release the brake pedal to apply the brake. Put blocks on both sides (front and back) of the drive/steer tire and the caster wheels to prevent movement of the lift truck.
2. Use an overhead crane and web sling under the base arms at the mast to raise the load wheels. Another lift truck can also be used to raise the base arms. Make sure that the crane and sling or other lift truck has a capacity of at least $\frac{2}{3}$ of the total weight of the lift truck as shown on the nameplate.
3. Raise the base arms only enough to suspend the wheels. Install blocks under the base arms at the rear of the wheels to support the lift truck.

NARROW AISLE

HYSTER

MAINTENANCE

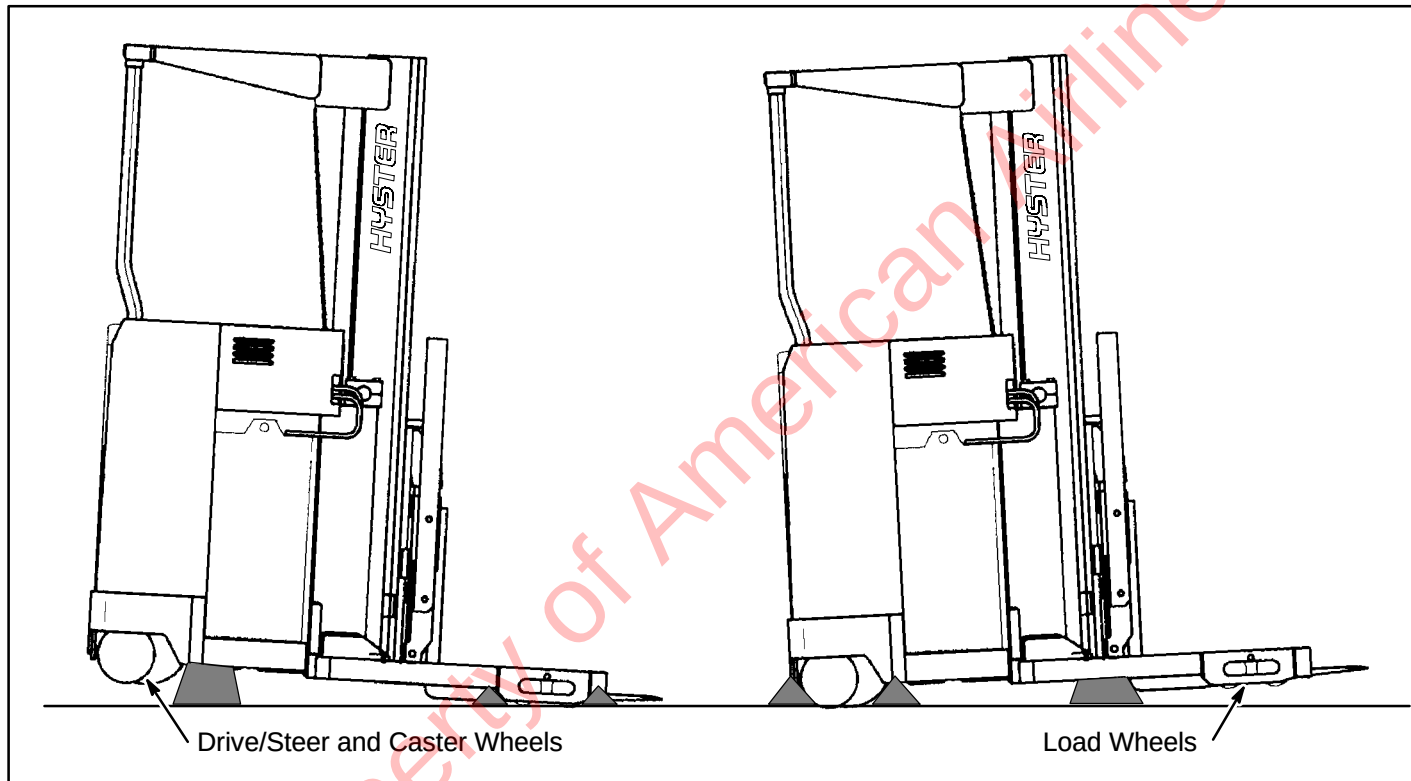


FIGURE 8. PUTTING THE LIFT TRUCK ON BLOCKS

NARROW AISLE

MAINTENANCE

HYSTER

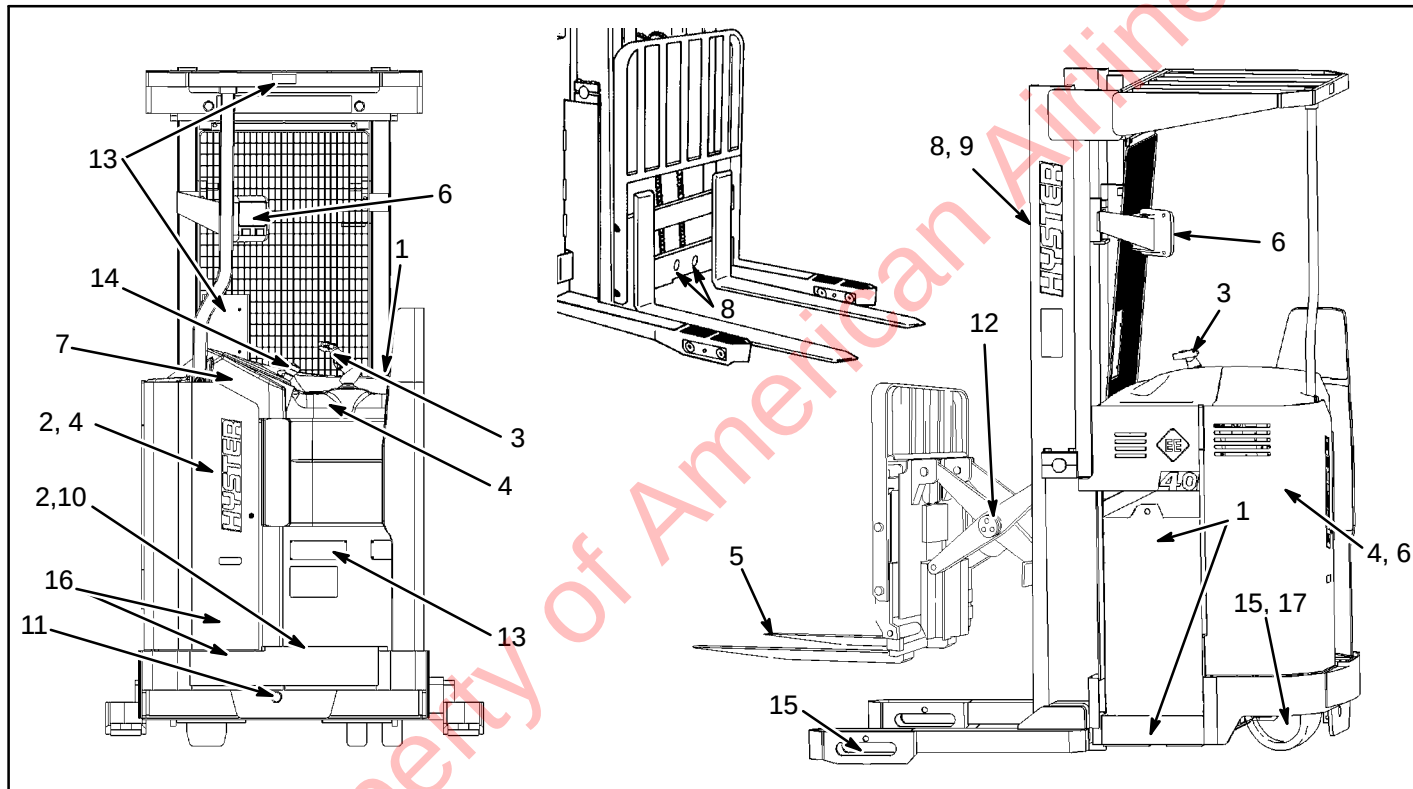


FIGURE 9. MAINTENANCE POINTS

NARROW AISLE

HYSTER

MAINTENANCE

Table 1 - MAINTENANCE SCHEDULE

ITEM NO.	ITEM	8 HR/ 1 day ⁴	350 HR/ 2 month ⁴	2000 HR /1 year ⁴	PROCEDURE OR QUANTITY	SPECIFICATION
1.	Battery Panels Power Disconnect	X X X	⁵		Check Level Check Condition Check Operation	See Specifications
2.	Brake Fluid Rods and Drum Splines Master Cylinder	X	X L	C	Check Operation .45 liters (.12 gal.) As Required Drain, Flush, Fill	SAE J-1703 Brake Fluid Anti-Seize Lubricant SAE J-1703 Brake Fluid
3.	Control Handle	X			Check Operation	
4.	Electrical Circuits Contactors Motor Brushes Traction Motor	X	X X	X, C ^{8,4}	Check Operation Check Operation Check Operation Replace	See Specifications Bearings Seal
5.	Forks - All Hook Fork Guides and Locks	X X	L		Check for Damage As Required	Anti-Seize Lubricant ³
6.	Gauges, Horn, Lights, Fuses	X			Check Operation	
X = Check C = Change L = Lubricate ¹ Hydraulic Oil, Hyster P/N 131820 ² Chevron EP Hydraulic Oil 68 or equivalent ³ Anti-Seize Lubricant, Hyster P/N 328388 ⁴ Whichever comes first ⁵ Equalization Charge approx. each month, not more than each week ⁶ Multi-Purpose Grease with 2-4% Molybdenum Disulfate for normal operations, Hyster P/N 344117 ⁷ Change after to 500 hrs. No subsequent change for life of unit ⁸ Change every 3000 hrs/3 yrs ⁹ Change after first 100 hours of operation. NOTE: Never use steam to clean electrical parts.						

NARROW AISLE

MAINTENANCE

HYSTER

ITEM NO.	ITEM	8 HR/ 1 day ⁴	350 HR/ 2 month ⁴	2000 HR /1 year ⁴	PROCEDURE OR QUANTITY	SPECIFICATION
7.	Hydraulic Oil Leaks Hydraulic Oil Level (Full Mark) Dipstick/Breather Cap Hydraulic Oil Filter Hydraulic Oil Strainer	X X	X C ⁹	C C C	Check for Leaks Clean or Replace Replace Clean or Replace	Above 0° C (32° F) ¹ Below 0° C ² See Parts Manual See Parts Manual
8.	Lift Chains Articulating Chain Anchors N50XMA3 – 3 Stage Mast	X	L L		Check for Damage 2 Lube Fittings	Engine Oil Multi-Purpose Grease ⁶
9.	Mast and Carriage Pivots, Sliding Surfaces	X	L ⁶		Check Operation As Required	Multi-Purpose Grease ⁶
10.	Pedals, Levers, Cables, Hinges, Linkages		L L		As Required As Required	Anti-Seize Lubricant ³ Anti-Seize Lubricant ³
11.	Articulation Shaft Articulation Shaft Retaining Bolt Articulation Shaft Ends		L L L		1 Lube Fitting	Multi-Purpose Grease ⁶ Anti-Seize Lubricant ³ Anti-Seize Lubricant ³
12.	Reach Arms – N30/40/45XMR3 Reach Arms – N25/30/XMDR3 Reach Cylinder Pivot Pins Thrust Rollers – Reach Frame	X	L L L L		6 Lube Fittings 12 Lube Fittings 4 Lube Fittings 2 Lube Fittings	Multi-Purpose Grease ⁶ Multi-Purpose Grease ⁶ Multi-Purpose Grease ⁶ Multi-Purpose Grease ⁶
X = Check C = Change L = Lubricate 1 Hydraulic Oil, Hyster P/N 131820 2 Chevron EP Hydraulic Oil 68 or equivalent 3 Anti-Seize Lubricant, Hyster P/N 328388 4 Whichever comes first 5 Equalization Charge approx. each month, not more than each week 6 Multi-Purpose Grease with 2-4% Molybdenum Disulfate for normal operations, Hyster P/N 344117 7 Change after to 500 hrs. No subsequent change for life of unit 8 Change every 3000 hrs/3 yrs 9 Change after first 100 hours of operation. NOTE: Never use steam to clean electrical parts.						

NARROW AISLE

HYSTER

MAINTENANCE

ITEM NO.	ITEM	8 HR/ 1 day ⁴	350 HR/ 2 month ⁴	2000 HR /1 year ⁴	PROCEDURE OR QUANTITY	SPECIFICATION
13.	Safety Labels & Operating Man.	X			Replace if Necessary	See Parts Manual
14.	Steering Operation	X			Check Operation	
15.	Tire & Wheels	X			Check Condition	
	Caster Wheel Assembly	X	L		4 Lube Fittings	Multi-Purpose Grease ⁶ Anti-Seize Lubricant ³
16.	Master Drive Unit Bearing		L		2 Lube Fittings	Multi-Purpose Grease ⁶
	Master Drive Unit Chain		L			Multi-Purpose Grease ⁶
	Master Drive Unit, N30/40XMR3		X, C ⁷		.66 liters (.17 gal.)	SAE 80W-90 or Mobilgear 627
	N25XMDR3, N50XMA3		X, C ⁷		.98 liters (.26 gal.)	SAE 80W-90 or Mobilgear 627
	Master Drive Unit, N45XMR3,		X, L			Anti-Seize Lubricant ³
	N30XMDR3					
	Articulation Adjustment Stops					
17.	Drive Wheel Bolt Torque		X		Tighten if Required	135 N•m (100 lbf ft)
	Drive Wheel Lugs		L			Anti-Seize Lubricant ³
X = Check C = Change L = Lubricate ¹ Hydraulic Oil, Hyster P/N 131820 ⁶ Multi-Purpose Grease with 2-4% Molybdenum Disulfate ² Chevron EP Hydraulic Oil 68 or equivalent for normal operations, Hyster P/N 344117 ³ Anti-Seize Lubricant, Hyster P/N 328388 ⁷ Change after to 500 hrs. No subsequent change for life of unit ⁴ Whichever comes first ⁸ Change every 3000 hrs/3 yrs ⁵ Equalization Charge approx. each month, not more than each week ⁹ Change after first 100 hours of operation. NOTE: Never use steam to clean electrical parts.						

NARROW AISLE

MAINTENANCE

HYSTER

MAINTENANCE PROCEDURES



CHECKS WITH THE KEY SWITCH OFF

Hydraulic System

Inspect the hydraulic system for leaks and damaged or loose components.



WARNING

At operating temperature the hydraulic oil is HOT. Do not permit the oil to contact the skin and cause a burn.



CAUTION

Do not permit dirt to enter the hydraulic system when the oil level is checked or the filter is changed. Never operate the pump without oil in the hydraulic system. The operation of the hydraulic pump without oil will damage the pump.

Check the hydraulic oil level when the oil is at operating temperature, the carriage is lowered, the reach mechanism retracted and the key switch is in the **OFF** position.

Table 2 - Hydraulic Oil Tank Capacities

BATTERY COMPARTMENT SIZE	OIL TANK CAPACITY TO FULL MARK
318 mm (12.5 in)	21.6 litres (5.70 gal)
371 mm (14.6 in)	23.5 litres (6.22 gal)
422 mm (16.6 in)	25.5 litres (6.73 gal)
478 mm (18.8 in)	29.3 litres (7.74 gal)
536 mm (21.1 in)	29.3 litres (7.74 gal)
Hydraulic System = Tank Capacity + 4.01 litres (1.06 gallons) in lines	

Add hydraulic oil only as needed. Be careful not to add too much. If more hydraulic oil is added than the FULL level, the hydraulic oil will leak from the breather during operation.

NARROW AISLE

HYSTER

MAINTENANCE

Forks

The identification of a fork is determined by how it is connected to the lift truck. These lift trucks have hook type forks.

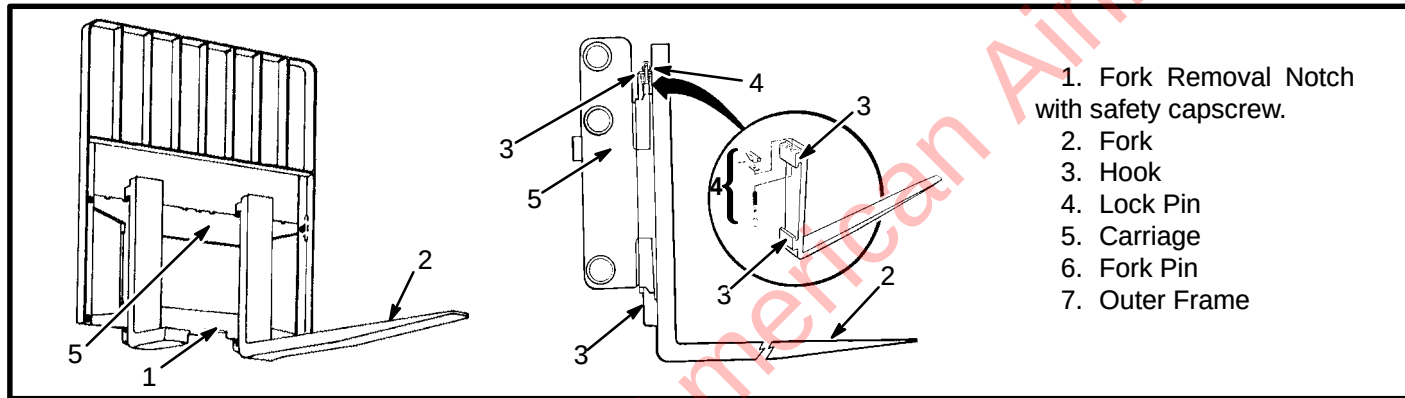


FIGURE 10. HOOK TYPE FORK

Adjustment Procedure

⚠ WARNING

NEVER work under a raised carriage or forks. Lower the carriage or use chains on the mast weldments and carriage so that they cannot move. Make sure the moving parts are attached to a part that does not move. See the PERIODIC MAINTENANCE section.

⚠ WARNING

Do not try to lift a fork without a lifting device. On some trucks the forks can weigh up to 180 kg (400 lb) each.

Adjust the forks as far apart as possible for maximum support of the load. Hook forks are connected to the carriage by hooks and lock pins. These lock pins are installed through the top fork hooks and fit into slots in the

NARROW AISLE

MAINTENANCE

HYSTER

top carriage bar. Raise the lock pin in each fork to slide the fork on the carriage bar.

Removal

Slide a hook fork to the fork removal notch on the carriage. Lower the fork onto blocks so that the bottom hook of the fork moves through the fork removal notch. Lower the carriage further so that the top hook of the fork is disengaged from the top carriage bar. Move the carriage away from the fork, or use a lifting device to move the fork away from the carriage.

Installation

Move the fork and carriage so that the top hook on the fork can engage the top carriage bar. Raise the carriage to move the lower hook through the fork removal notch. Slide the fork on the carriage so that both upper and lower hooks engage the carriage. Engage the lock pin with a notch in the top carriage bar.

Inspection of Mast, Forks and Lift Chains



WARNING

Do not try to correct fork tip alignment by bending the forks or adding shims. Never repair damaged forks by heating or welding. Forks are made of special steel using special procedures. Replace damaged forks.

1. Inspect the welds on the mast and carriage for cracks. Make sure that the nuts and bolts are tight.

2. Inspect the channel for excessive wear in the areas of roller contact. Check the rollers for wear or damage.

3. Inspect the load backrest extension for cracks and damage.

4. Inspect the forks for cracks and wear. Check that the fork tips are aligned within 3% of the length of the fork of each other [40 mm (1.5 in.) for a 1220 mm (48 in.) fork]. Some applications can require closer alignment. Check that the bottom of the fork is not worn (Item 4 in Figure 10).

5. Replace any damaged or broken parts that are used to keep the forks locked in position.

6. If the lift truck is equipped with a sideshift carriage or attachment, inspect the parts for cracks and wear.

Make sure the parts that fasten the sideshift carriage or attachment to the carriage are in good condition.

7. Check that the lift chains are correctly lubricated. See the **PERIODIC MAINTENANCE** section.

NARROW AISLE

HYSTER

MAINTENANCE

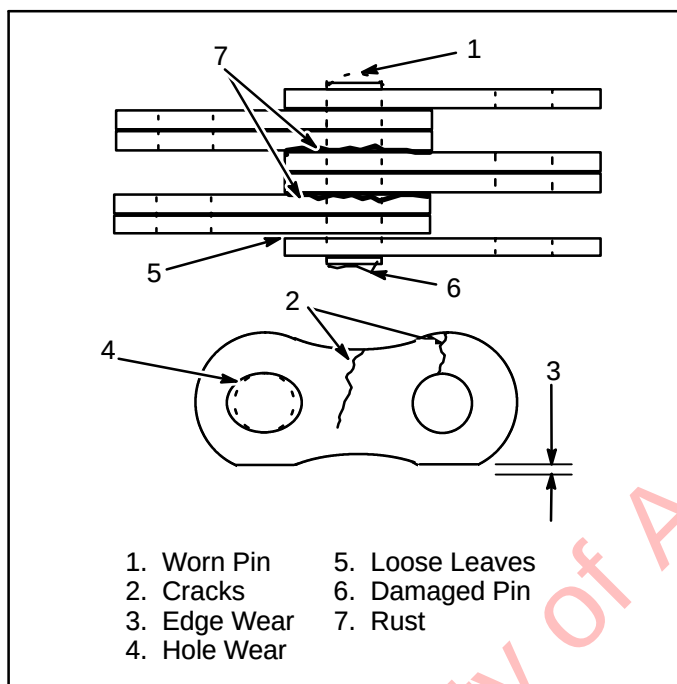


FIGURE 11. CHECK THE LIFT CHAINS

8. Inspect the lift chains for cracks or broken links and pins.

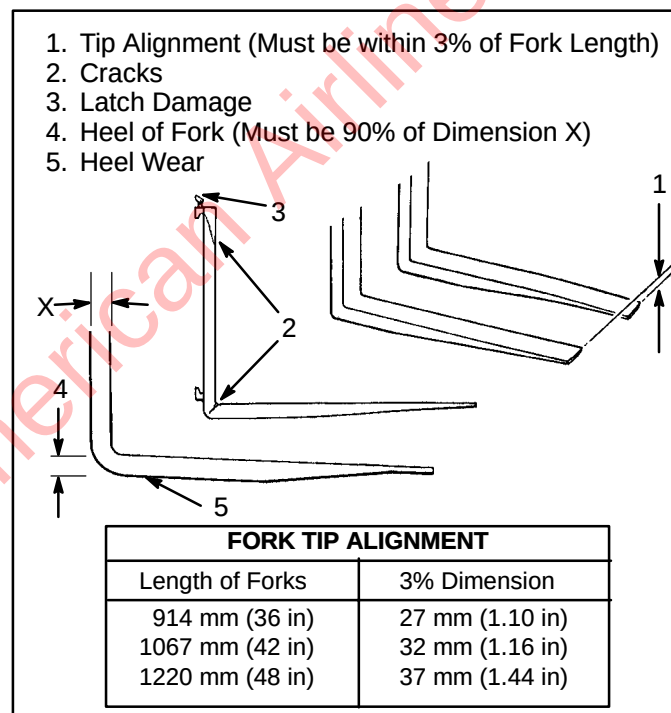


FIGURE 12. CHECK THE FORKS

9. Inspect the chain anchors and pins for cracks and damage.

NARROW AISLE

MAINTENANCE

HYSTER

10. Make sure the lift chains are adjusted so that they have equal tension. If the chains need to be replaced or adjusted, it must be done by authorized personnel.

Reach, Tilt and Sideshift

If the reach mechanism is retracted it will be necessary to extend the mechanism to make the following checks.

WARNING

Make sure the key switch is in the OFF position and the key is removed from the switch before doing this check.

- 1.** Check for cracks at the welds on the reach frames and scissor arms.
- 2.** Check the frame channel for excessive wear in the areas of roller contact. Check the rollers for wear or damage.
- 3.** Check the load backrest extension for cracks and damage. Make sure that the nuts and bolts for the load backrest extension are tight.

Articulation Stop Adjustment

The articulation stop screws must be adjusted to the proper setting as listed on the nameplate and in the Articulation Chart, at the following times:

- 1.** Every 350 hours during routine maintenance.
- 2.** When a drive and/or caster wheel is changed.
- 3.** When any repairs are carried out on the articulation axle.

Table 3 - Articulation Stop Setting Chart

STOP SETTING	MAXIMUM FORK HEIGHT	
	BELOW 6147 mm (242 in)	6147 mm (242 in) AND ABOVE
DRIVE SIDE	4.8-6.4 mm (0.19-0.25 in)	1.5-3.2 mm (0.06-0.125 in)
CASTER SIDE	4.8-6.4 mm (0.19-0.25 in)	4.8-6.4 mm (0.19-0.25 in)

NOTE: The articulation stop settings are also listed on the nameplate.

NARROW AISLE

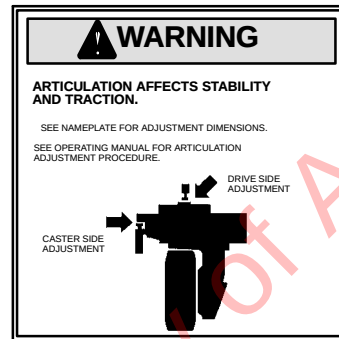
HYSTER

MAINTENANCE

Adjustment Procedure

1. Position the truck on a flat, level floor.
2. Disconnect the battery.
3. Open the drive unit compartment door. Turn the latch capscrew to unlock the door.

4. Check the articulation stop clearance on both the drive and caster stop screws. If the clearance between the stops are not within the range listed in the Articulation Chart, loosen the locknuts and adjust the stop screws to the correct setting.



5. Tighten the locknuts and torque to 80 lbf ft (108 N•m).
6. Close and lock the compartment door.

Safety Labels

WARNING

Safety labels are installed on the lift truck to give information about possible hazards. It is important that all safety labels are installed on the lift truck and can be read.

Check that all safety labels are installed in the correct locations on the lift truck. See the **PARTS MANUAL** or the Frame Section of the **SERVICE MANUAL** for the correct locations of the safety labels.

Battery

Check the level of the electrolyte daily on a minimum of one cell. Add only distilled water, as necessary, to all cells that do not have the correct electrolyte level. The correct level is half-way between the top of the plates and the bottom of the fill hole.

WARNING

The acid in the electrolyte can cause injury. If electrolyte is spilled, use water to flush the area. Use a solution of sodium bicarbonate (soda) to make the acid neutral. Acid in the eyes must be flushed with water immediately.

NARROW AISLE

MAINTENANCE

HYSTER



CHECKS WITH THE KEY SWITCH ON

WARNING

Make sure the area around the lift truck is clear before moving the lift truck. Always look in the direction that you intend to move the lift truck. Be careful when making the checks.

Gauges, Horn and Fuses

1. Check the operation of the gauges and horn.
2. The battery indicator will operate when the key switch is in the **ON** position. If the battery is replaced with a fully charged battery, the battery indicator will not indicate a fully charged battery until the lift truck has operated for a short period of time. Tilt the forks backward until the hydraulic relief valve operates. The battery indicator will then indicate correctly.
3. All the fuses are located in the rear electrical compartment.

Control Levers and Pedals

Check that the controls for the lift/lower, extend/retract, tilt and sideshift operate as described in Table 1. Check that the brake operates as described in Table 1.

Lift System Operation

WARNING

Never allow anyone under a raised carriage. Do not put any part of your body in or through the lift mechanism unless all parts of the mast are completely lowered and the key switch is OFF.

Before making any repairs, put chains on the mast weldments and carriage so that they cannot move. Make sure the moving parts are attached to a part that **does not move**.

Do not try to locate hydraulic leaks by putting hands on pressurized hydraulic components. Hydraulic oil can be injected into the body by pressure.

1. Check for leaks in the hydraulic system. Check the condition of the hydraulic hoses and tubes.
2. Slowly raise and lower the mast several times without a load. The mast components must raise and lower smoothly in the correct sequence. The carriage raises first, then the inner mast and intermediate mast (three stage full free lift mast only).

NOTE: Parts of the mast move at different speeds during raising and lowering.

NARROW AISLE

HYSTER

MAINTENANCE

3. The inner mast and the carriage must lower completely.
4. Raise the mast one meter (three feet), with a capacity load. The inner mast and carriage must raise smoothly. Lower the mast. All moving components must lower smoothly.
5. With the load lowered, tilt the forks backward and forward. The forks must tilt smoothly.
6. Check that the controls for the attachment correctly operate the functions of the attachment. See the symbols by each of the controls. Make sure all of the hydraulic lines are connected correctly and do not leak.

Brake

WARNING

Loss of fluid from the brake fluid reservoir indicates a leak. Repair the brake system before using the lift truck. Replace the brake fluid in the system if there is dirt, water or oil in the system.

Check the operation of the brake. The brake is applied when the operator removes the foot from the brake pedal. The brake pedal can be released slowly to gradually apply the brake. The brake, when in good condition and correctly

adjusted, will hold a lift truck with a capacity load on a 15% grade [1.5 meter rise in 10 meters (1.5 ft rise in 10 ft)]. If the brake does not hold the truck on a grade as described have a qualified maintenance mechanic make the necessary adjustment.

Steering System

Make sure that the steering system operates smoothly and gives good steering control.

WARNING

Because the lift truck has hydraulic power steering, the lift truck can be difficult to steer when the power steering pump is not operating.

NARROW AISLE

MAINTENANCE

HYSTER

HOW TO CHARGE THE BATTERY

WARNING

California Proposition 65- This product contains and/or emits chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

WARNING

The acid in the electrolyte can cause injury. If electrolyte is spilled, use water to flush the area. Neutralize the acid with a solution of sodium bicarbonate (soda) and water. Acid in the eyes must be immediately flushed with water.

WARNING

Batteries generate explosive fumes when they are being charged. Keep fire, sparks and burning material away from the battery charger area. Prevent sparks from the battery connectors.

WARNING

Charge batteries only in a special area for charging batteries. When charging the batteries, keep the vent caps clean. The battery charger area must have ventilation to remove the explosive fumes. Open the hood over the battery or remove the cover if the battery has a cover. Disconnect the battery when doing cleaning and maintenance.

WARNING

If the lift truck has been operated with a low battery, check the contactors for welded contacts before a charged battery is connected. See the Service Manual section, Periodic Maintenance, available from a HYSTER Dealer.

CAUTION

Never connect the battery charger directly to the lift truck. You can damage the traction control circuit. Make sure the charger voltage is the correct voltage for the battery.

NARROW AISLE

HYSTER

MAINTENANCE

Correct use of the hydrometer and proper operation of the battery charger is important. Follow the instructions of the charger manufacturer. Never let the battery discharge below the minimum value given by the battery manufacturer. A fully charged battery will have a specific gravity of 1.265 to 1.310 at 25° C (77° F). Never charge a battery at a rate that will raise the electrolyte temperature above 49° C (120° F). Do not let a battery stay discharged for a long period of time.

1. Normal Charge: This charge is normally given to a battery that is discharged from normal operation. Many customers charge the battery at regular intervals that depend on use. This procedure will keep the battery correctly charged if the battery is not discharged below the limit. Always use a hydrometer to check the battery if the battery is charged at regular intervals. Frequent charging of a battery that has a two-thirds (2/3) or more charge can decrease the life of the battery.

2. Equalizing Charge: Is a low rate charge and balances the charge in all the cells. The equalizing charge is given approximately once a month. It is a charge at a slow rate for three to six hours in addition to the regular charging cycle. Do not give an equalizing charge more than once a week.

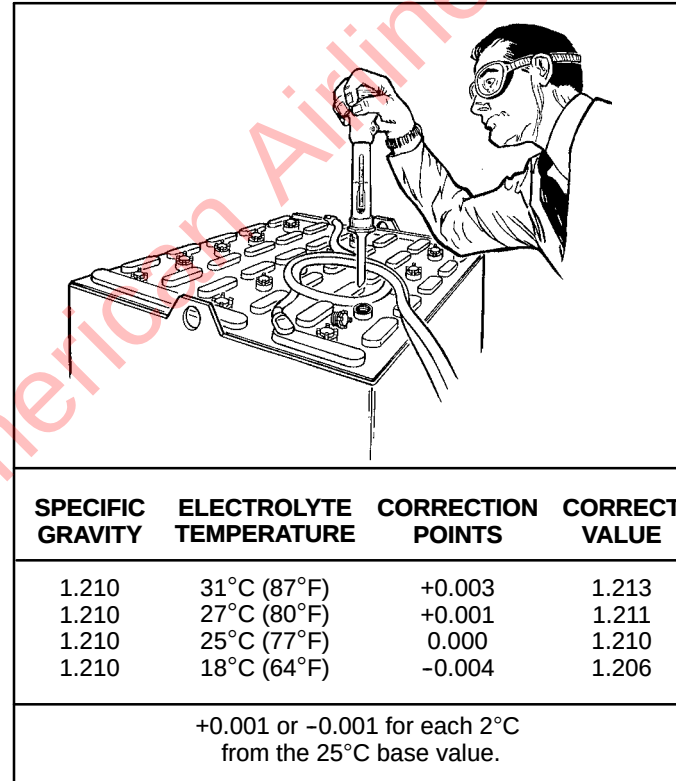


FIGURE 13. CHECK SPECIFIC GRAVITY

NARROW AISLE

MAINTENANCE

HYSTER

The most accurate specific gravity measurements for a charged battery will be taken after an equalizing charge. If the specific gravity difference is more than 0.020 between cells of the battery after an equalizing charge, there can be a defective cell. Consult your battery dealer.

NOTE: Some battery chargers have a program to automatically charge the battery according to recommendations of the battery manufacturer. Use the recommendations of the battery manufacturer to charge the battery.

HOW TO CHANGE THE BATTERY

WARNING

Batteries are heavy and can cause an injury. Use care to avoid injury. Do NOT put hands, arms, feet and or legs between the battery and a solid object.

To prevent personal injury and battery movement that is not expected, the battery must be level when it is moving. Make sure the battery stand is on a level surface and is aligned and adjusted as described in the following procedure.

Battery Removal

1. Make sure the key is in the **OFF** position. Disconnect the battery. Move the connector and cables so that they will not be damaged when the battery is moved.

2. Remove the battery restraint panel from the right hand side of the lift truck.

3. Align the battery stand with the battery so that the end of the stand is against the roller frame of the battery compartment. Adjust the capscrew legs of the battery stand so that the tops of the rollers are the same height as the bottom of the battery. Adjust all four capscrew legs of the stand so that the rollers are level. Install the battery puller on the end of the stand at the center.

Release the ratchet lock and attach the hook to the lifting hole of the battery. Do not let the hook make contact with cell connectors. Stand on the base of the battery puller, release the ratchet and operate the crank to pull the battery onto the battery stand.

4. If the battery is lifted from the battery stand use a spreader bar and crane.

NARROW AISLE

HYSTER

MAINTENANCE

WARNING

Make sure the capacity of the crane and spreader bar is greater than the weight of the battery. The weight of the battery is normally shown on the battery case. The maximum battery weight is shown on the lift truck nameplate. The spreader bar must **NOT** be made of metal or it must have insulated straps.

CAUTION

Disposal of batteries must meet local environmental regulations.

Battery Installation

WARNING

If a different size battery is installed in the lift truck the battery spacers must be changed. See the service manual for the correct battery spacer arrangement.

WARNING

If the lift truck has been operated with a low battery,

check the contactors for welded contacts before a charged battery is connected. The circuit will not reset and lift truck operation cannot be controlled if the contacts are welded. To check the contacts, see the Maintenance Manual for this truck.

1. Make sure that the battery voltage and weight of the replacement battery is correct as shown on the nameplate.
2. Install the battery puller on the lift truck frame at the center of the battery compartment on the side opposite the battery stand. Release the ratchet lock, pass the hook through the battery compartment and attach the hook to the battery lifting hole. Do not let the hook make contact with the cell connectors. Stand on the base of the battery puller and release the ratchet lever. Operate the crank to pull the battery off the stand and into the battery compartment.
3. The replacement battery must fit the battery area correctly. Use spacers to prevent the battery from moving more than a total of 13 mm (0.5 in) in any one horizontal direction.

If the spacers cannot be adjusted for a battery that is specified for this lift truck, see your dealer for **HYSTER** lift trucks for the correct spacers.

NARROW AISLE

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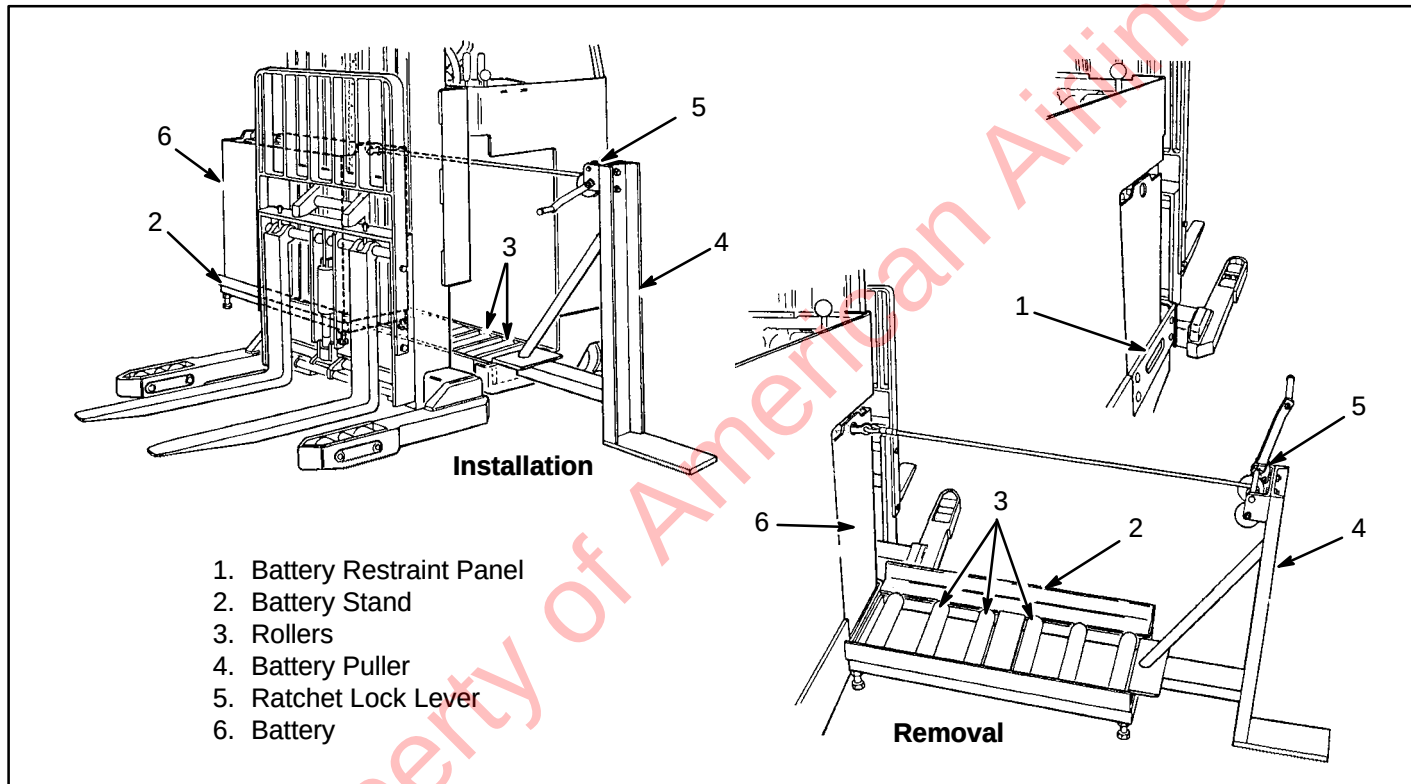


FIGURE 14. CHANGE THE BATTERY

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BATTERY SPECIFICATIONS

TABLE 2. BATTERY SPECIFICATIONS			
VOLTAGE	MAXIMUM BATTERY COMPARTMENT SIZE	MAXIMUM BATTERY SIZE	BATTERY WEIGHT
	Width × Length × Height	Width × Length × Height	Minimum/Maximum
24	318 × 986 × 787 mm 12.5 × 38.8 × 31 in	311 × 986 × 782 mm 12.25 × 38.8 × 30.8 in	635/862 kg 1400/1900 lb
	371 × 986 × 787 mm 14.6 × 38.8 × 31 in	364 × 986 × 782 mm 14.35 × 38.8 × 30.8 in	703/953 kg 1550/2100 lb
36	371 × 986 × 787 mm 14.6 × 38.8 × 31 in	364 × 986 × 782 mm 14.35 × 38.8 × 30.8 in	703/953 kg 1550/2100 lb
24	422 × 986 × 787 mm 16.6 × 38.8 × 31 in	415 × 986 × 782 mm 16.35 × 38.8 × 30.8 in	771/1032 kg 1700/2275 lb
36	422 × 986 × 787 mm 16.6 × 38.8 × 31 in	415 × 986 × 782 mm 16.35 × 38.8 × 30.8 in	771/1089 kg 1700/2400 lb
36	478 × 986 × 787 mm 18.8 × 38.8 × 31 in	471 × 986 × 782 mm 18.55 × 38.8 × 30.8 in	998/1293 kg 2200/2850 lb
36	536 × 986 × 787 mm 21.1 × 38.8 × 31 in	530 × 986 × 782 mm 20.85 × 38.8 × 30.8 in	1134/1361 kg 2500/3000 lb
 WARNING: The battery must fit the battery compartment so that the battery restraint system will operate correctly. Use the spacers designed by the HYSTER COMPANY to prevent the battery from moving more than 13mm (0.5 in) in any horizontal direction. NOTE: Maximum tolerances are +0 and - 13 mm (+0 and - 0.5 in) for the size of the battery compartment. The battery specification chart shows the maximum size tolerances that will permit the battery to still fit into the battery compartment.			

NARROW AISLE

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TIRES AND WHEELS

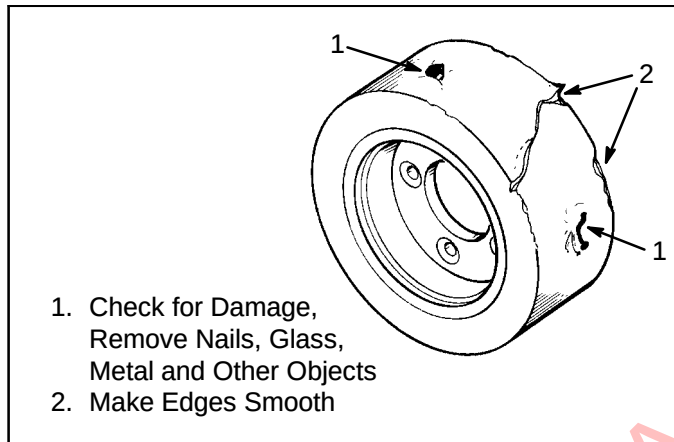


FIGURE 15. CHECK THE TIRES

Inspect the tires for wire, rocks, glass, pieces of metal, holes, cuts and other damage. Remove any object that will cause damage. Check for loose or missing hardware. Remove any wire strapping or other material that is wrapped around the axle. Make sure the drive wheel nuts are tight. Tighten the wheel nuts in a cross pattern to the correct torque value shown in the Maintenance Schedule table.

⚠ WARNING

Wheels must be changed and tires repaired by trained personnel only. Always wear safety glasses.

⚠ WARNING

The lift truck capacity can change with different types of tires. Make sure the capacity on the nameplate is for the type of tires installed on the truck.

Drive/steer tire

1. Raise the rear of the lift truck as described in How to Put a Lift Truck on Blocks.

2. Remove the wheel nuts that fasten the drive/steer wheel to the hub. Slide the wheel out from under the lift truck. Use the reverse procedure to install the wheel. Tighten the wheel nuts to 136 N•m, 100 lbf ft, torque after installation.

3. The correct tools, equipment and a press ring must be used for each size of wheel. Use a press to push the wheel from the rim and tire.

NARROW AISLE

HYSTER

MAINTENANCE

CAUTION

Check all wheel nuts after 2 to 5 hours of operation: when new lift trucks begin operation and on all lift trucks when the wheels have been removed and installed. Tighten the nuts if required. Tighten the nuts in a cross pattern to 136 N•m (100 lbf ft). When the nuts stay tight for eight hours, the interval for checking torque can be extended to 350 hours.

Load Wheels

Put the base arms on blocks as described in How to Put a Lift Truck on Blocks. For easier installation remove and install one load wheel before removing the next load wheel. The load wheel brackets are held in the load arms by the load wheels. Remove the axle nut, axle and load wheel. Remove the axle sleeve from the load wheel. Install the new load wheel, axle and axle nut.

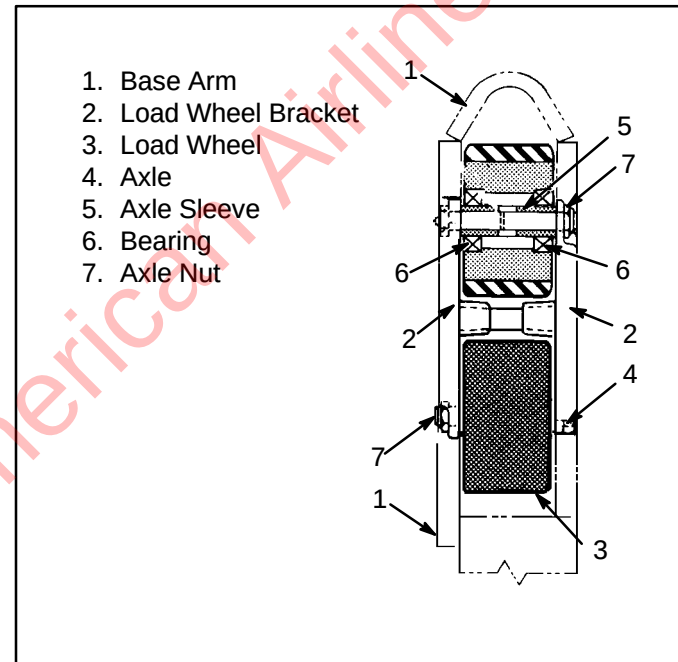


FIGURE 16. REPLACE THE LOAD WHEELS

NARROW AISLE

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Caster Wheels

The caster wheels must be replaced by authorized service personnel. See the PERIODIC MAINTENANCE section supplied with this lift truck for the correct procedure to replace the caster wheels.

Tire and Wheel Sizes

TABLE 3. N30/45XMR3, N25/30XMDR3		
Tires and Wheels	Tire Size	Compound
Drive Tire	12 × 5.5	Rubber
Drive Tire	12 × 5.5	Polyurethane
Caster	8 × 2	Polyurethane
Load Wheels	5 × 3	Polyurethane
Load Wheels	5 × 4	Polyurethane

TABLE 4. N50XMA3

Tires and Wheels	Tire Size	Compound
Drive Tire	12 × 5.5	Rubber
Drive Tire	12 × 5.5	Polyurethane
Caster	8 × 2	Polyurethane
Load Wheels	4 × 3	Polyurethane
Load Wheels	4 × 4	Polyurethane

NARROW AISLE

HYSTER

MAINTENANCE

TABLE 5. N45XMR3, N30XMDR3

Tires and Wheels	Tire Size	Compound
Drive Tire	13.5 × 5.5	Rubber
Drive Tire	13.5 × 5.5	Polyurethane
Caster	8 × 2.5	Polyurethane
Load Wheels	5 × 4	Polyurethane

CHANGES TO THE OVERHEAD GUARD



WARNING

Do not operate the lift truck without the overhead guard correctly fastened to the lift truck. Do not make changes to the overhead guard by welding. Changes that are made by welding, or by drilling holes that are too big or in the wrong location, can reduce the strength of the overhead guard. See the instructions for Changes to the Overhead Guard in the PERIODIC MAINTENANCE section.

MODEL DESCRIPTION



NO MATTER HOW YOU SAY IT . . .

La Prudence Paye
La Seguridad Paga
Betriebssicherheit Macht Sich Bezahl
Passaa Oll Huolellinen
Veiligheid Voor Alles
Säkerhet Först
Essere Sicuro Paga
Seguranca Paga
Sikkerhet Først
Pinter Be Awas

सावधान और जिन्दा रहो !

في التأنى السلامة

安全第一

**SAFETY
PAYS!**



WARNING: California Proposition 65 - This product contains and emits chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

12/05 (7/05) (8/03)(5/01) Litho in U.S.A.

OPERATING MANUAL

NARROW AISLE

N30-40XMR3, N25XMDR3 (C470)

N50XMA3 (C471)

N45XMR3, N30XMDR3 (G138)

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1487036

**DO NOT REMOVE THIS MANUAL
FROM THIS UNIT**

12/05