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6401 IMPERIAL DRIVE
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MLT 735 -120 LSU Series 4-E3

OPERATOR'S MANUAL

THIS OPERATOR'S MANUAL MUST BE KEPT IN THE LIFT TRUCK AND MUST BE READ AND UNDERSTOOD BY THE OPERATOR.

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R11-10

- INTRODUCTION TO SAFETY -

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ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

STUDY THE OPERATOR/SERVICE MANUALS

The information in this manual provides general instructions for the safe operation and maintenance of your forklift truck. This information is vital and must be clearly understood by the operator and serviceman. Study this manual and the Rough Terrain Forklift Safety Manual (part no. 422494) thoroughly and carefully before operating or servicing your forklift. Contact your dealer or Manitou North America, Inc. if you have any questions concerning your forklift, its operation, service or parts. Keep both manuals in the literature box on the forklift available for reference. If either manual becomes illegible or is missing, contact your dealer for replacements immediately. This manual cannot cover every situation that might result in an accident. It is the responsibility of the operator to always remain alert for potential hazards and be prepared to avoid them!

ADDITIONAL RECOMMENDED LITERATURE:

ANSI / ITSDF B56.6 is the national consensus standard for rough terrain forklift trucks. It contains rules about forklift safety, maintenance, safe operation, training, and supervision. Forklift owners should learn this standard and make it available for their operators, service personnel, and supervisors. These standards can be obtained, free of charge, from the Industrial Truck Standards Development Foundation (ITSDF) on their website at www.itsdf.org. The following references are examples from the standard, addressing forklift operators:

A.) OPERATOR TRAINING QUALIFICATIONS

1.) The user shall ensure that operators understand that safe operation is the operator's responsibility. The user shall ensure that operators are knowledgeable of, and observe, all safety rules and practices.
2.) Create an effective operator training program centered around user company's policies, operating conditions, and rough terrain forklift trucks. The program should be presented completely to all new operators and not be condensed for those claiming previous experience.
3.) Information on operator training is available from several sources, including rough terrain forklift truck manufacturers, users, government agencies, etc.
4.) An operator training program should consist of the following:

a.) careful selection of the operator, considering physical qualifications, job attitude, and aptitude;
b.) emphasis on safety of stock, equipment, operator, and other personnel;
c.) citing of rules and why they were formulated;
d.) basic fundamentals of rough terrain forklift truck and component design as related to safety, e.g., in.-lb (N-m) loading, mechanical limitations, center of gravity, stability, etc.;
e.) introduction to equipment, control locations, and functions. Explain how they work when used properly and problems when used improperly.
f.) supervise practice on operating course remote from normal activity and designed to simulate actual operations, e.g., lumber stacking, elevating shingles to the roof, etc.;
g.) oral, written, and operational performance tests and evaluations during and at completion of the course;
h.) refresher courses, which may be condensed versions of the primary course, and periodic "on job" operator evaluation;
i.) understanding of nameplate data and operator instructions and warning information appearing on the rough terrain forklift truck.

B.) GENERAL SAFETY PRACTICES

1.) Rough terrain forklift trucks can cause injury if improperly used or maintained.
2.) Only authorized operators trained to adhere strictly to all operating instructions shall be permitted to operate rough terrain forklift trucks. Unusual operating conditions may require additional safety precautions, training, and special operating instructions.
3.) Modifications and additions which affect capacity or safe operation shall not be preformed without the manufacturer's prior written approval. Where such authorization is granted, capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.
4.) If the rough terrain forklift truck is equipped with front end attachment(s) or optional forks, the user shall see that the truck is marked to identify the forks or attachment(s), show the approximate weight of the truck and fork or attachment combination, and show the capacity of the truck with forks or attachment(s) at maximum elevation with load laterally centered.
5.) The user shall see that all nameplates and caution and instruction markings are in place and legible.
6.) The user shall consider that changes in load dimension may affect rough terrain forklift truck capacity.

B.) GENERAL SAFETY PRACTICES (cont.)

7.) Where steering can be accomplished with either hand and the steering mechanism is of a type that prevents road reactions from causing the handwheel to spin (power steering or equivalent), steering knobs may be used. When used, steering knobs shall be of a type that can be engaged by the operator's hand from the top and shall be within the periphery of the steering handwheel.
8.) Experience has shown that rough terrain forklift trucks which comply with stability requirements are stable when properly operated. However, improper operation, faulty maintenance, or poor housekeeping may contribute to a condition of instability and defeat the purpose of the requirements.
9.) Users shall give consideration to special operating conditions. The amount of forward and rearward tilt to be used is governed by the application. Although the use of maximum rearward tilt is allowable under certain conditions, such as traveling with the load lowered, the stability of a rough terrain forklift truck as determined by standardized tests does not encompass consideration for excessive tilt at high elevations or the operation of trucks with excessive off-center loads.
10.) Some of the conditions which may affect stability are ground and floor conditions, grade, speed, loading (rough terrain forklift trucks equipped with attachments behave as partially loaded trucks even when operated without a load on the attachment), dynamic and static forces, improper tire inflation, and the judgement exercised by the operator.

C.) OPERATING SAFETY RULES AND PRACTICES

1.) Safe operation is the responsibility of the operator.
2.) This equipment can be dangerous if not used properly. The operator shall develop safe working habits and also be aware of hazardous conditions in order to protect himself, other personnel, the rough terrain forklift truck, and other material.
3.) The operator shall be familiar with the operation and function of all controls and instruments before undertaking to operate the rough terrain forklift truck.
4.) Before operating any rough terrain forklift truck, truck operators shall have read and be familiar with the operator's manual for the particular truck being operated.
5.) Before starting to operate the rough terrain forklift truck:
    a.) be in operating position and fasten seat belt;
    b.) place directional controls in neutral;
    c.) apply brakes;
    d.) start engine.
6.) Do not start or operate the rough terrain forklift truck, any of its functions, or attachments from any place other than the designated operator's position.
7.) Keep hands and feet inside the operator's designated area or compartment. Do not put any part of the body outside the operator compartment of the rough terrain forklift truck.
8.) Never put any part of the body into the mast structure or between the mast and the rough terrain forklift truck.
9.) Never put any part of the body within the reach mechanism of the rough terrain forklift truck or other attachments.
10.) Understand rough terrain forklift limitations and operate the truck in a safe manner so as not to cause injury to personnel.
11.) Do not allow anyone to stand or pass under the elevated portion of any rough terrain forklift truck, whether empty or loaded.
12.) Do not permit passengers to ride on rough terrain forklift trucks.
13.) Check clearance carefully before driving under electrical lines, bridges, etc.
14.) A rough terrain forklift truck is attended when the operator is less than 25 ft (7.6m) from the truck, which remains in his view.
15.) A rough terrain forklift truck is unattended when the operator is 25ft (7.6m) or more from the truck, which remains in his view, or whenever the operator leaves the truck and it is not in his view.
16.) Before leaving the operator's position:
    a.) bring rough terrain forklift truck to a complete stop;
    b.) place directional controls in neutral;
    c.) apply the parking brake;
    d.) lower load-engaging means fully, unless supporting an occupied elevated platform;
    e.) stop the engine;
    f.) if the rough terrain forklift truck must be left on an incline, block the wheels;
    g.) fully lower the load-engaging means.
17.) Maintain a safe distance from the edge of ramps, platforms, and other similar working surfaces.
18.) Do no move railroad cars or trailer with a rough terrain forklift truck.

C.) OPERATING SAFETY RULES AND PRACTICES (cont.)

19.) Do not use a rough terrain forklift truck for opening or closing railroad car doors.
20.) In areas classified as hazardous, use only rough terrain forklift trucks approved for use in those areas.
21.) Report all accidents involving personnel, building structures, and equipment to the supervisor or as directed.
22.) Do not add to, or modify, the rough terrain forklift truck.
23.) Do not block access to fire aisles, stairways, and fire equipment.
24.) For rough terrain forklift trucks equipped with a differential lock, the lock should not be engaged when driving on the road or at high speeds or when turning. If the lock is engaged when turning, there could be loss of steering control.
25.) Observe all traffic regulations including authorized speed limits. Under normal traffic conditions, keep to the right, maintain a safe distance, based on speed of travel, from the truck ahead; and keep the truck under control at all times.
26.) Yield the right-of-way to pedestrians and emergency vehicles such as ambulances and fire trucks.
27.) Do not pass another truck traveling in the same direction at intersections, blind spots, or at other dangerous locations.
28.) Slow down and sound the audible warning device(s) at cross-aisles and other locations where vision is obstructed.
29.) Cross railroad tracks at an angle wherever possible. Do not park closer than 6 ft (1.8m) to the nearest rail of a railroad track.
30.) Keep a clear view of the path of travel and observe other traffic, personnel, and safe clearances.
31.) If the load being carried obstructs forward view, travel with the load trailing.
32.) Ascend or descend grades slowly and with caution.
    a.) When ascending or descending grades in excess of 5%, loaded rough terrain forklift trucks should be driven with the load upgrade.
    b.) Unloaded rough terrain forklift trucks should be operated on all grades with the load-engaging means downgrade.
    c.) On all grades, the load and load-engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.
    d.) Avoid turning, if possible, and use extreme caution on grades, ramps, or inclines; normally travel straight up or down.
33.) Under all travel conditions, operate the rough terrain forklift truck at a speed that will permit it to be brought to a stop in a safe manner.
34.) Travel with load-engaging means or load low and, where possible, tilted back. Do not elevate the load except during stacking.
35.) Make starts, stops, turns, or direction reversals in a smooth manner so as not to shift load and/or overturn the rough terrain forklift truck.
36.) Do not indulge in stunt driving or horseplay.
37.) Slow down for wet and slippery surfaces.
38.) Before driving over a dockboard or bridge plate, be sure that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate, and never exceed its rated capacity.
39.) Do not drive rough terrain forklift trucks onto any elevator unless specifically authorized to do so. Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off engine, and set brakes. It is advisable that all other personnel leave the elevator before truck is allowed to enter or leave.
40.) Avoid running over loose objects on the roadway surface.
41.) When negotiating turns, reduce speed to a safe level, and turn steering handwheel in a smooth sweeping motion. Except when maneuvering at a very low speed, turn the steering handwheel at a moderate, even rate.
42.) Use special care when traveling without load, as the risk of lateral overturning is greater.
43.) Improper use of stabilizer controls (if so equipped) could cause rough terrain forklift truck upset. Always lower the carriage before operating stabilizer controls.
44.) For rough terrain forklift trucks equipped with lateral leveling:
    a.) Always level the frame before raising the boom or mast, with or without a load.
    b.) Lateral leveling should not be used to position an elevated load; instead, lower the load and reposition the rough terrain forklift truck.
45.) Handle only stable or safely arranged loads.
    a.) When handling off-center loads which cannot be centered, operate with extra caution.
    b.) Handle only loads within the capacity of the rough terrain forklift truck.
    c.) Handle loads exceeding the dimensions used to establish rough terrain forklift truck capacity with extra caution. Stability and maneuverability may be adversely affected.

C.) OPERATING SAFETY RULES AND PRACTICES (cont.)

46.) When attachments are used, extra care shall be taken in securing, manipulating, positioning, and transporting the load. Operate rough terrain forklift trucks equipped with attachments as partially loaded trucks when not handling a load.

47.) Completely engage the load with the load-engaging means. Fork length should be at least two-thirds of load length. Where tilt is provided, carefully tilt the load backward to stabilize the load. Caution should be used in tilting backward with high or segmented loads.

48.) Use extreme care when tilting load forward or backward, particularly when high tiering. Do not tilt forward with load-engaging means elevated except to pick up or deposit a load over a rack or stack. When stacking or tiering, use only enough backward tilt to stabilize the load.

49.) The handling of suspended loads by means of a crane arm (boom) or other device can introduce dynamic forces affecting the stability of a rough terrain forklift truck. Grades and sudden starts, stops, and turns can cause the load to swing and create a hazard if not externally stabilized. When handling suspended loads:

a.) do not exceed the truck manufacturer's capacity of the rough terrain forklift truck as equipped for handling suspended loads.

b.) only lift the load vertically and never drag it horizontally;

c.) transport the load with the bottom of the load and the mast as low as possible;

d.) with load elevated, maneuver the rough terrain forklift truck slowly and cautiously, and only to the extent necessary to permit lowering to the transport position;

e.) use tag lines to restrain load swing whenever possible.

50.) At the beginning of each shift and before operating the rough terrain forklift truck, check its condition, giving special attention to:

a.) tires and their inflation pressure

b.) warning devices

c.) lights

d.) lift and tilt systems, load-engaging means, chains, cables, and limit switches

e.) brakes

f.) steering mechanism

g.) fuel system(s)

51.) If the rough terrain forklift truck is found to be in need of repair or in any way unsafe, or if it contributes to an unsafe condition, the matter shall be reported immediately to the user's designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

52.) If during operation the rough terrain forklift truck becomes unsafe in any way, the matter shall be reported immediately to the user's designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

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

54.) When refueling, smoking in the area shall not be permitted, the engine shall be stopped, and the operator shall not be on the rough terrain forklift
truck.

55.) Spillage of oil or fuel shall be carefully and completely absorbed or evaporated and fuel tank cap replaced before restarting engine.

56.) Do not use open flames when checking electrolyte level in storage batteries, liquid level in fuel tanks, or the condition of LPG fuel lines and connectors.

57.) Do not lift personnel with the forklift. If the forklift must be used to lift people, precautions for the protection of the personnel must be taken (see ITSDF B56.6, chapter 5.15 Elevating Personnel).

D.) SUSPENDED LOADS

A jib or truss boom should ONLY be used to lift and place loads when the machine is stationary and the frame is level. Transporting suspended loads must ALWAYS be done slowly and cautiously, with the boom and load as low as possible. Use taglines to restrict loads from swinging, to avoid overturn.

The handling of suspended loads by means of a truss boom or other similar device can introduce dynamic forces affecting the stability of the machine that are not considered in the stability criteria of industry test standards. Grades and sudden starts, stops and turns can cause the load to swing and create a hazard.

Guidelines for "Free Rigging / Suspended Loads"

1. DO NOT exceed the rated capacity of the telescopic handler as equipped for handling suspended loads. The weight of the rigging must be included as part of the load.

2. During transport, DO NOT raise the load more than 12 inches (305 mm) above the ground, or raise the boom more than 45 degrees.

3. Only lift the load vertically – NEVER drag it horizontally.

4. Use multiple pickup points on the load when possible. Use taglines to restrain the load from swinging and rotating.

5. Start, travel, turn and stop SLOWLY to prevent the load from swinging. DO NOT exceed walking speed.

6. Inspect rigging before use. Rigging must be in good condition and in the U.S. comply with OSHA regulation §1910.184, "Slings," or §1926.251, "Rigging equipment for material handling."

7. Rigging equipment attached to the forks must be secured such that it cannot move either sideways or fore and aft. The load center must not exceed 24 inches (610 mm).

8. DO NOT lift the load with anyone on the load, rigging or lift equipment, and NEVER lift the load over personnel.

9. Beware of the wind, which can cause suspended loads to swing, even with taglines.

10. DO NOT attempt to use frame-leveling to compensate for load swing.

WARNING

U.S. OSHA regulations effective November 8, 2010 (29 CFR Part 1926, Subpart CC - Cranes and Derricks in Construction) include requirements for employers that use powered industrial trucks ("forklifts") configured to hoist (by means of a winch or hook) and move suspended loads horizontally. In particular, this regulation applies to any rough-terrain forklift (e.g., "telescopic handler") equipped with a jib or truss boom with a hook (with or without a winch), or a hook assembly attached to the forks. [Note: This regulation is in addition to the OSHA regulation that requires specific forklift operator training: §1910.178(l).]

When a forklift / telescopic handler is configured and used for hoisting, the employer must ensure that:

1. **Forklift, lift equipment and rigging have been inspected (each shift, month and year) and are in good, safe condition and properly installed.**

2. **An operator's manual and applicable load charts are on the forklift.**

3. **Work zone ground conditions can support the equipment and load. Any hazardous conditions in the work area have been identified, and the operator notified.**

4. **Equipment is being used within its rated capacity and in accordance with the manufacturer's instructions.**

5. **Operator and crew members have been trained in the safe use and operation of the equipment, including how to avoid electrocution.**

6. **During use, no part of the equipment, load line or load will be within the minimum clearance distance specified by OSHA [10 feet (3.0 m), and more for lines rated over 50 kV] of any energized power line, and any taglines used are non-conductive.**

7. **In addition, for lift equipment with a rated capacity greater than 2000 lbs. (907 kg), the employer must ensure that:**

   a.) An accessible fire extinguisher is on the forklift;

   b.) Monthly and annual inspections are performed and documented, and records retained (three months for monthly, one year for annual);

   c.) Before November 10, 2014, operators must have had the additional training and qualification / certification required by OSHA regulations §1926.1427 and §1926.1430.

Note: Refer to the full text of the OSHA crane regulation (29 CFR Part 1926, Subpart CC) for a detailed description

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CONCLUSION:

1.) ATTEND OPERATOR TRAINING CLASSES

The forklift operator must clearly understand all instructions concerning the safe operation of the forklift and all safety rules and regulations of the work site. They must have successfully completed a training coarse in accordance with the Powered Industrial Truck Standard (29 CFR 1910.178) as described by the Occupational Safety and Health Administration (OSHA). They must be qualified as to their visual, hearing, physical, and mental ability to operate the equipment safely. NEVER use drugs or alcohol while operating a forklift! NEVER operate or allow anyone to operate a forklift when mental alertness or coordination is impaired! An operator on prescription or over-the-counter drugs must consult a medical professional regarding any side effects of the medication that may impair their ability to safely operate the forklift.

2.) CREATE A MAINTENANCE PROGRAM

OSHA recommends a maintenance log, listing repairs requested and completed, for each forklift. Also, “lock out tag procedures” should be utilized. If the forklift malfunctions; park it safely, remove the key, tag “Do Not Use”, and report the problem to the proper authority or authorized service personnel immediately.

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

2.) CREATE A MAINTENANCE PROGRAM (cont.)

For the best forklift performance and operation, a maintenance program is required. Use the hour meter on the instrument panel to keep maintenance properly scheduled (see SECTION TWO - “Servicing Schedule”). For repairs on major components (engine, transmission, etc.), contact your nearest dealer for a Repair Manual. Do not operate a forklift that is damaged or does not function properly. Only authorized personnel may make repairs or adjustments to the lift truck. After repairs, the lift truck must be tested for safe operation before returning to service.

3.) FORKLIFT KNOWLEDGE

Forklift trucks can cause serious injury if improperly used or maintained. Study all of the manuals provided for your forklift model. Learn the locations and meanings of all safety decals. If any decals are illegible or missing, have them replaced immediately. Make sure all safety features provided by the original manufacturer are in place and function properly. Do not operate a forklift with damaged, missing or unsafe components. Have it repaired by authorized service personnel. Learn the functions of all controls, gauges, indicator lights, etc. on the forklift. Know the speed/gear ranges, braking and steering capabilities, load ratings and clearances. When referring to the location of forklift components, the terms “left”, “right”, “front”, and “rear” are related to the operator seated normally, facing forward in the operator’s seat. If you have any questions about the forklift, consult your supervisor. Failure to fully understand or obey safety warnings can result in serious injury or death!

4.) WORK SITE KNOWLEDGE

Before operating on a work site, learn the rules for movement of people, forklifts and all other traffic. Check the size, weight, and condition of the loads you will be expected to handle. Verify that they are properly secured and safe to transport. Learn where the loads are to be placed, planning your route for a safe approach, watching for hazardous conditions. Will a signal man be required to help place the load? Remove any debris which may cause tire damage or rupture. Plan your route around problem areas or have them corrected. Inform the supervisor of any unsafe conditions observed at the site. Examples of hazards: power lines, cables, low clearance structures, garage doors, telephone pole guide lines, fencing, loose lumber, building materials, drop-offs, trenches, rough/soft spots, oil spills, deep mud, steep inclines, railroad tracks, curbs, etc.. NEVER approach power lines, gas lines or other utilities with the forklift! Always verify that local, state/provincial and federal regulations have been met. Report any accidents involving personnel, building structures, and equipment to the supervisor immediately. Always remain alert - conditions are constantly changing at the work site!

TECHNICAL SUPPORT

All data provided in this manual is subject to production changes, addition of new models, and improved product designs. If a question arises regarding your forklift, please consult your dealer or K-D Manitou, Inc. for the latest information. When ordering service parts or requesting technical information, be prepared to quote the applicable Model/Serial Numbers.

SAFETY MESSAGES

NOTE THE SAFETY ALERT SYMBOL (SHOWN BELOW). IT IDENTIFIES POTENTIAL HAZARDS WHICH, IF NOT AVOIDED MAY RESULT IN INJURY OR DEATH! Also, observe the safety messages places throughout this manual; providing special instructions, telling you when to take precautions and to identify potential hazards. The safety messages are highlighted and outlined in a box similar to those shown in the examples below.

SAFETY ALERT SYMBOL

NOTE or NOTICE
Provides information, special instructions or references about the lift truck.

IMPORTANT
Precautions which must be taken to avoid damage to the lift truck.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also alert unsafe practices.

WARNING
Indicates a potentially hazardous situation which, if not avoided, *may result in death or serious injury!*

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

CALIFORNIA PROPOSITION 65 WARNING

Diesel Engine Exhaust and some of its constituents are known to the State of California to cause cancer, birth defects or other reproductive harm.

WARNING: Battery posts, terminals and related accesories and related accessories contain lead and lead compounds. **Wash hands after handling.**

SAFETY DECALS

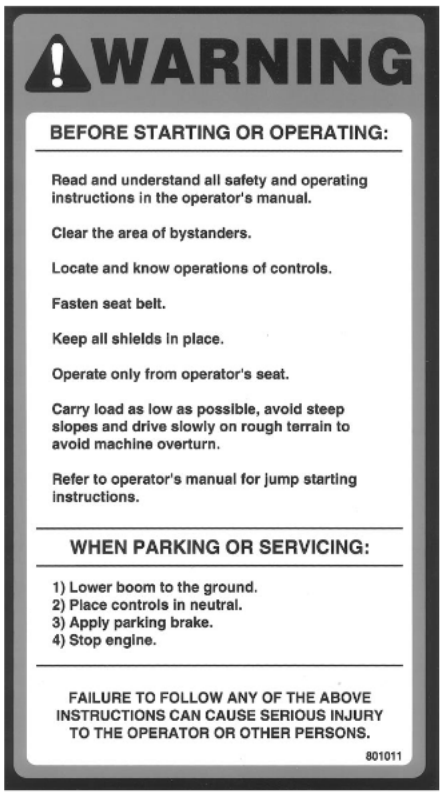
The purpose of this chapter is to introduce you to the safety messages, decals, and nameplates found on your forklift truck. The decals are identified by name, part number, location, and a brief description. (The forklift model logos, and other misc. decals not shown, can be found in your forklift parts manual.) The decals illustrated may not be exactly the same as those installed on your forklift; installation of the decals varies depending on the forklift model, series, decal updates, etc.. The size and location of some decals limit the amount of information that can be placed upon it. For this reason, additional detailed information not found on the decals is provided through-out this manual.

Every decal placed on the lift truck is important; they are constant reminders of safety and instructions that should never be taken for granted. Even experienced operators can be seriously injured or killed by ignoring, refusing to enforce, or forgetting to follow safe operating procedures! Do not assume you know all safety issues concerning the decals. Before operating the lift truck; learn the meaning(s) of the decals as described in this manual. If any decal becomes illegible or missing, have it replaced immediately! Always replace decals using the same decal part no., unless otherwise specified by the manufacturer. For replacement decals not found in your parts manual, contact your nearest dealer. If you have any questions, contact your supervisor or nearest dealer for advice before operating your forklift!

801011

Before Starting - 801011

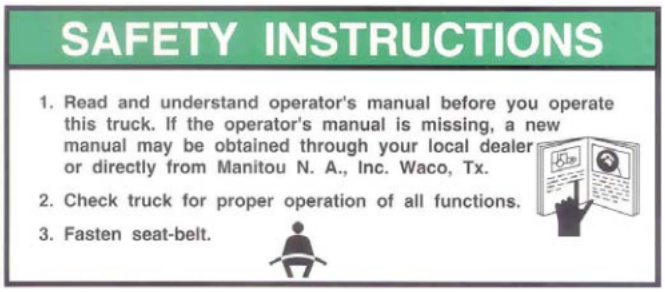
(Boom equipped models). Location: on the brake fluid cover panel (to the left and below the dash panel).



Safety Instructions - 420792

(Mast equipped models). Location: on or near the operator manual storage case, and/or on the dash panel.

Instructions for the forklift operator; before operating the forklift.



Use of Seat Belt - 801012

(Boom equipped models). Location: to the right of the operator, near the hydraulic control lever.

Instructs the operator to always wear the seat belt during operations, and never jump from an over-turning forklift.

Emergency and Parking Brake - 801010

Location: near the park brake lever.

Identifies the Emergency/Parking Brake Lever.

Alarm Must Sound - 496162

Location: on the dash, in direct view of the operator.

The backup alarm must sound when the forklift is placed in reverse gear.

No Riders - 420732

Location: on the cab entrance(s), and on or near wheel fenders and engine cover.

Informs: riders are not allowed on the forklift.

Clear of Raised Boom - 801006

(Boom equipped models). Location: on both sides of the boom nose.

Keep away from unsupported boom.

Clear of Power Lines - 801007

(Boom equipped models). Location: on both sides of the boom nose.

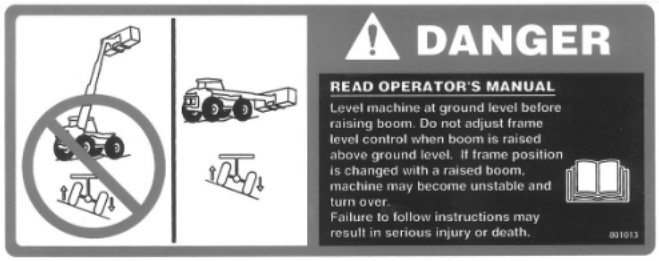
Keep away from power lines.

SAFETY DECALS

Use of Frame Leveling - 801013

(Boom equipped models). Location: to the right of the operator near the hydraulic control lever.

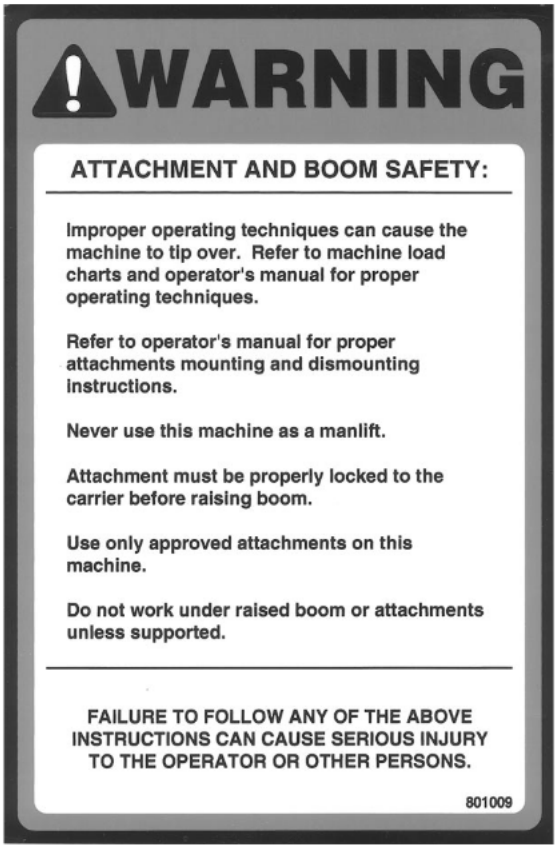
Frame leveling notice; load must be lowered.



Attachment and Boom Safety - 801009

(Boom equipped models). Location: on both sides of the boom nose.

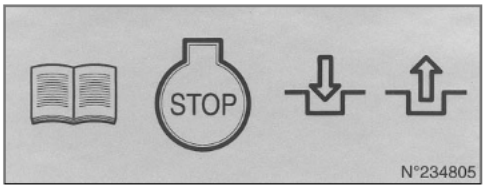
Important reminders of attachment and boom safety.



Hydraulic Coupling - 234805

Location: near the quick-disconnect adapters.

Stop the engine and release hydraulic pressure before changing attachments.



Rotating Fan and Belt(s) - 801008

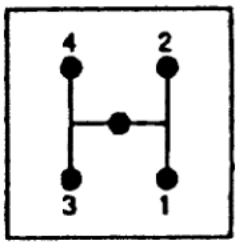
Location: on the radiator near the fan, and on any fan belt/pulley cover(s).

Keep hands and clothing away from rotating fan and belts.

Gear Shift Pattern - 33460

(4-speed transmission models). Location: near the gear shift lever.

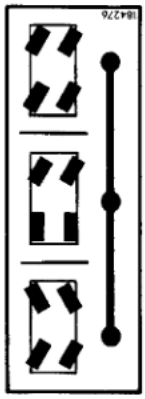
Identifies the gear shift pattern of the forklift transmission.



Steering Mode - 184276

(4 wheel steer equipped models). Location: near the steering mode selection lever.

Identifies the steering mode selection.



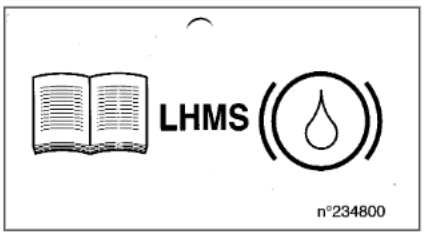
Mineral Oil (Brake Reservoir) - 221322 or 234800 has been replaced by 164091.

Location: near the brake fluid reservoir where applicable.

Refer to the Operator/Service Manual for the correct brake fluid (mineral oil) to be used in the brake system.

221322

234800



SAFETY DECALS

Hydraulic Oil - 234798 or 76573
Location: on the hydraulic tank or filler cap.

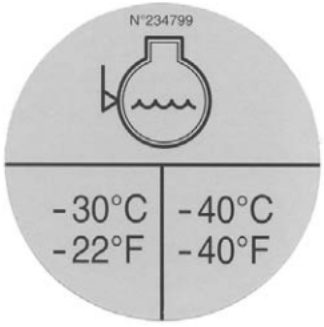
Identifies the hydraulic reservoir (tank) or filler cap.

Hydraulic Oil - 61024
Location: on the hydraulic tank.

Identifies the hydraulic reservoir (tank).

Anti-Freeze - 234799
Location: on the radiator, near the radiator filler cap.

Indicates required minimum to maximum anti-freeze protection (-22^{0}F to -40^{0}F).



Diesel Fuel - 161101
Location: on the fuel tank, near the filler cap.

Identifies the fuel tank, and use of diesel fuel.

No Step - 496735
Location: varies, depending on the forklift model.

Instructs personnel not to use the designated area as a step.

Do Not Tow - 494918
(Hydrostatic equipped models). Location: on the dash, in view of the operator.

Towing the forklift will damage the transmission; refer to the operator's manual.

SAFETY DECALS

Attachment Warning - 421016

(Boom equipped models). Location: on the boom coupler, near where the retaining shaft is installed.

Reminder to operator; install attachment retaining shaft and safety pin before operations.

Hook Here - 24653

Location: at points provided on the forklift, where straps or chains may be attached to secure the forklift to a trailer during transport.

Fork Safety - 426641

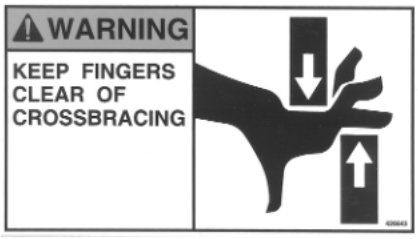
(Mast equipped models). Location: on the front and back side of the mast's outer rails, at eye level (4 required).

Instructs personnel not to travel beneath or upon the lift truck forks.

Pinch Point, Large, 2.5 x 4.5 in. - 426643
Pinch Point, Small, 1.5 x 2.75 in. - 426642

(Mast equipped models). Location: on the front and rear sides of the mast cross bracing.

Keep fingers away from the mast crossbracing.



HAND THROTTLE DANGER - 804784

(Boom equipped models, option). Location: Near the hand throttle mechanism.

Reminder to operator; set parking brake before operating hand throttle. Disengage hand throttle before leaving the forklift.

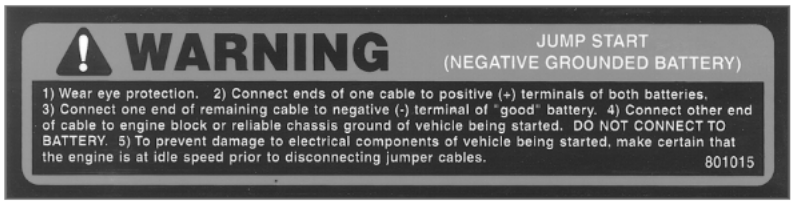
SAFETY DECALS

Acid in Battery - 801014
Location: in or near the battery storage compartment.

Addresses battery hazards.

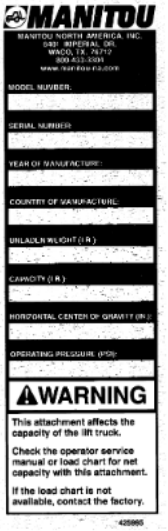
Jump Start Battery - 801015
Location: in or near the battery storage compartment.

Jump start instructions.



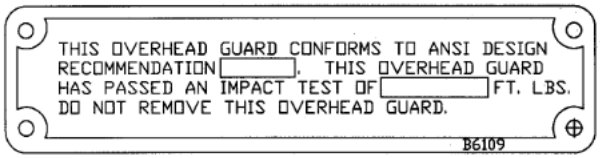
Attachment Plate - 425995
Location: on the optional removeable forklift attachment.

Important manufacturer information about the attachment. Record this information for use when contacting the maufacturer for parts and service.



Overhead Guard Data Plate - B6109
Location: attached to the overhead guard.

Overhead guard conformity.

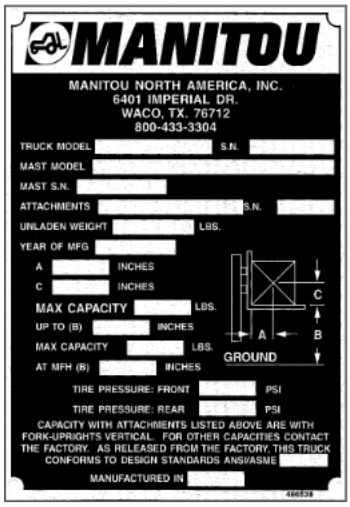


Forklift Data Plate - 496550
(Boom equipped models)
Forklift Data Plate - 496538
(Mast equipped models)
Location: within the operator's compartment.

Important forklift truck identification. Record this information for use when contacting the manufacturer for parts and service.

496550

496538




MANITOU
MANITOU

1 - OPERATING AND SAFETY INSTRUCTIONS

TABLE OF CONTENTS

INSTRUCTIONS TO THE COMPANY MANAGER

THE OPERATOR

- Only qualified, authorized personnel may operate the lift truck. The authorization is to be given to the operator in writing by the company manager. Authorization must be carried by the operator during all operations.

WARNING

On the basis of experience, there are a number of possible situations in which operating the lift truck is prohibited. Such foreseeable abnormal uses, the main ones being listed below, are strictly forbidden.
- The foreseeable abnormal behavior of neglect, but not intending to put the machinery to any improper use.
- The reflex reactions of a person in the event of a malfunction, incident, fault, etc. During operation of the lift truck.
- Behavior resulting from application of the "principle of least action" when performing a task.
- For certain machines, the foreseeable behavior of such persons as unauthorized: apprentices, teenagers, handicapped persons and trainees tempted to drive a lift truck. Truck drivers tempted to operate a truck to win a bet, in competition or for their own personal experience.
The person in charge of the equipment must take these criteria into account when assessing whether or not a person will make a suitable driver.

THE LIFT TRUCK

A - THE LIFT TRUCK'S SUITABILITY FOR THE JOB

- MANITOU has ensured that this lift truck is suitable for use under the standard operating conditions defined in this operator's manual, in accordance to ASME B56.6 - 2002.
- Before commissioning, the company manager must make sure that the lift truck is appropriate for the work to be done, and perform tests as required (in accordance with current legislation).

B - ADAPTATION OF THE LIFT TRUCK TO STANDARD ENVIRONMENTAL CONDITIONS

- In addition to standard equipment mounted on your lift truck, additional options are available : road lighting, stop lights, flashing light, reverse lights, front light, rear light, light at the boom head, etc.
- The operator must take into account the operating conditions to determine the lift truck's signalling and lighting equipment requirements. Contact your dealer.
- Take into account climatic and atmospheric conditions of the work site.
  - . Protection against frost (see : 3 - MAINTENANCE : LUBRICANTS AND FUEL).
  - . Adaptation of lubricants (ask your dealer for information).
  - . I.C. engine filtration (see : 3 - MAINTENANCE : FILTERS CARTRIDGES AND BELTS).

IMPORTANT	*For operation under average climatic conditions, i.e. between -15 °C and + 35 °C (5° to 95°F), correct levels of lubricants in all the circuits are provided in production. For operation under more severe climatic conditions, before starting up, it is necessary to drain all the circuits, then add the correct levels of lubricants properly suited to the relevant ambient temperatures. It is the same for the cooling fluid (Contact your dealer for information, if necessary).*

- A lift truck operating in an area without fire extinguishing equipment must be equipped with an individual extinguisher, consult your dealer.

WARNING	*Your lift truck is designed for outdoor use under normal atmospheric conditions and indoor use in suitably aerated and ventilated premises. It is prohibited to use the lift truck in areas where there is a risk of fire or which are potentially explosive (i.e. refineries, fuel or gas depots, stores of inflammable products...). For use in these areas, specific equipment is available (ask your dealer for information).*

C - MODIFICATION OF THE LIFT TRUCK

- For your safety and that of others, you must not change the structure or settings of the various components used on your lift truck (i.e. hydraulic pressure, calibrating limiters, I.C. engine speed, addition of extra equipment, addition of counterweight, unapproved attachments, etc.). The manufacturer cannot be held responsible for unauthorized modifications.

INSTRUCTIONS

- The operator's manual must always be in good condition and kept in the place provided on the lift truck and in the language used by the operator.
- The operator's manual and any plates or decals which are no longer legible or are damaged, must be replaced immediately.

MAINTENANCE

- Maintenance or repairs other than those detailed in part : 3 - MAINTENANCE must be carried out by qualified personnel (consult your dealer) and under the necessary safety conditions to maintain the health of the operator and any third party.

WARNING	*Your lift truck must be inspected periodically to ensure that it remains in compliance. The frequency of this inspection is defined by current legislation in the country in which the lift truck is used.*

INSTRUCTIONS FOR THE OPERATOR

DANGER	*The risk of accident while operating, servicing or repairing your lift truck can be reduced if you follow the safety instructions and safety measures detailed in this manual. Failure to respect the safety and operating instructions, or the instructions for repairing or servicing your lift truck can lead to serious injury or fatal accident.*

- Only the operations and maneuvers described in this operator's manual may be performed. The manufacturer cannot predict all possible situations of risk. Consequently, the safety instructions given in the operator's manual and on the lift truck itself are not conclusive.
- At any time, as an operator, you must envision, within reason, the possible risk to yourself, to others or to the lift truck itself during use.

GENERAL INSTRUCTIONS

A - OPERATOR'S MANUAL

- Read the operator's manual carefully.
- The operator's manual must always be kept good condition and in the place provided on the lift truck.
- You must report any plates and decals which are no longer legible or are damaged.

B - AUTHORIZATION FOR USE

- Only qualified, authorized personnel may operate the lift truck. This authorization is given in writing by the company manager, in charge of using the lift truck, and must be carried by the operator during operations.
- The operator is not authorized to allow others to operate the lift truck.

C - MAINTENANCE

- The operator must notify his manager immediately if his lift truck is not in good working order or does not comply with the safety standards.
- The operator is prohibited from performing repairs or adjustments, unless he has been trained for this purpose. He must keep the lift truck properly cleaned if this is among his responsibilities.
- The operator must carry out daily maintenance (see : 3 - MAINTENANCE : A - DAILY OR EVERY 10 HOURS SERVICE).
- The operator must ensure that the tires are suited for the work site. (There are optional solutions, consult your dealer.)
  - . SAND tires.
  - . LAND tires.
  - . Snow chains.

DANGER	*Do not operate the lift truck if the tires are incorrectly inflated, damaged or excessively worn, Bad tires can put your safety or that of others at risk, or cause damage to the lift truck. The installation of foam inflated tires is prohibited and is not guaranteed by the manufacturer (prior authorization is required).*

D - MODIFICATION OF THE LIFT TRUCK

- For your safety and others, you must not change the structure or settings of the various components used on your lift truck (hydraulic pressure, calibrating limiters, I.C. engine speed, addition of extra equipment, addition of counterweight, unapproved attachments, etc.). The manufacturer cannot be held responsible for such modifications.

E - LIFTING PEOPLE

- The use of working equipment and load lifting attachments to lift personnel is strictly forbidden.

A - BEFORE STARTING THE LIFT TRUCK

- Perform daily maintenance (see : 3 - MAINTENANCE : A - DAILY OR EVERY 10 HOURS SERVICE).
- Make sure the lights, indicators and windshield wipers are working properly.
- Make sure the rear view mirrors are in good condition, clean and properly adjusted.
- Make sure the horn and backup alarm works properly.

B - DRIVER'S OPERATING INSTRUCTIONS

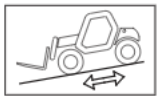
- The operator is advised to familiarize himself with the position and operation of all controls and instruments before operating the lift truck.
- Wear clothes suited for driving the lift truck, avoid loose clothing.
- Make sure you have the appropriate protective equipment for the job to be done.
- Prolonged exposure to high noise levels may cause hearing problems. It is recommended to wear ear muffs to protect against excessive noise.
- Always pay attention when using the lift truck. Do not listen to the radio or music using headphones or earphones.
- Never operate the lift truck when hands or feet are wet or slippery.
- For increased comfort, adjust the seat to your requirements, adopt a comfortable reach of the forklift controls.

CAUTION	*Under no circumstances should the seat be adjusted while the lift truck is moving.*

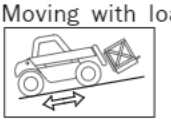
- The operator must always be properly seated in the driver's cab. It is prohibited to have arms, legs, or generally any part of the body, protruding from the cab of the lift truck.
- The safety belt must be worn, adjusted to the operator's size.
- The control levers must never be used for climbing onto or down from the lift truck, etc.
- If any of the control components are fitted with an engagement device (manual throttle, etc.), it is forbidden to leave the cab without first placing these controls in neutral.
- Never carry passengers on the lift truck or in the cab.

C - ENVIRONMENT

- Always comply with all worksite safety regulations.
- If you have to use the lift truck in a dark area or at night, make sure it is equipped with working lights.
- During handling operations, make sure that no one is in the way of the lift truck or its load.
- Do not allow personnel to come near the working area of the lift truck or pass beneath an elevated load.
- When using the lift truck on an incline, before lifting the boom, follow the instructions given in the Section : INSTRUCTIONS FOR HANDLING A LOAD : D - HORIZONTAL ATTITUDE OF THE LIFT TRUCK.
- Travelling on a longitudinal slope :
  - Drive and brake gently.
  - Moving without load : Forks or attachment facing downhill.



  - Moving with load : Forks or attachment facing uphill.



  - Never move onto a loading platform without having first checked :
  - That it is suitably positioned and made secure.
  - That the unit to which it is connected (tractor, etc.) will not shift.
  - That the platform is approved for the total weight of the lift truck to be loaded.
  - That the platform is approved for the overall size of the lift truck.
- Never move onto a foot bridge, floor or freight lift, without being certain that they are approved for the weight and size of the lift truck to be loaded and without having checked that they are in sound working order.
- Be extra careful maneuvering around loading bays, trenches, scaffolding, soft terrain and manholes.
- Make sure the ground is stable and firm under the wheels and/or stabilizers before lifting or removing the load. If necessary, add sufficient wedging under the stabilizers (where applicable).
- Make sure that the scaffolding, loading platform, pilings or ground is capable of bearing the load.
- Never stack loads on uneven or soft ground, they may tip over.
- When working near power lines, ensure that the safety distance is sufficient between the working area of the lift truck and the power lines.

DANGER	*You must consult your local electrical agency. You could be electrocuted or seriously injured if you operate or park the lift truck too close to power lines.*

DANGER	*During high winds do not attempt moving loads that may catch the wind or cause the fork lift to be unstable.*

D - VISIBILITY

- While maneuvering, maintain clear visibility throughout the route. In reverse, either look directly behind you or use the panoramic rear-view mirrors. In any case, avoid backing over long distances.
- Visibility may be reduced on the right-hand side when the boom is raised; before lifting the boom make sure that the movement can be made in a safe manner.
- If the visibility in forward motion is not clear because of the bulkiness of the load, drive in reverse motion. This maneuver must remain exceptional and for short distances.
- Ensure you have good visibility (clean windows, adequate lighting, correctly adjusted rear view mirrors, etc.).
- If visibility of your route is inadequate, request a signal person for help. Be sure to keep them in sight and outside the work area of the lift truck and load being handled.

E - STARTING THE LIFT TRUCK

SAFETY NOTICE

WARNING	*The lift truck must be started or maneuvered only when the operator is sitting in the driver's cab, his seat belt fastened and properly adjusted.*

- Never try to start the lift truck by pushing or towing it, such operation will cause severe damage to the transmission. If necessary, to tow the lift truck in an emergency, the transmission must be placed in the neutral position (see : 3 - MAINTENANCE : G - OCCASIONAL MAINTENANCE).
- If using an emergency battery for start-up, use a battery with the same specifications. Insure correct battery polarity (+ or -) when connecting to it. Connect at first the positive terminals before the negative terminals.

WARNING	*Failure to respect polarity between batteries can cause serious damage to the electrical circuit. The electrolyte in the battery may produce an explosive gas. Avoid flames and generation of sparks close to the batteries. Never disconnect a battery while it is charging.*

INSTRUCTIONS

- Insure the hood(s) are properly secured and locked in place.
- Make sure that the forward/reverse lever is in neutral.
- Turn the ignition key to the position I to activate the electrical system.
- Make sure the signal lights on the instrument control panel and fuel level indicators are working properly (see : 2 - DESCRIPTION : INSTRUMENTS AND CONTROLS).
- Turn the ignition key to position II to preheat for 15 seconds, then turn the ignition key fully : the I.C. engine should then start. Release the ignition key and let the I.C. engine run at idle.
- Do not engage the starter motor for more than 15 seconds and perform preheating for 10 seconds between unsuccessful starting attempts.
- Insure all signal lights on the instrument control panel go off before driving the forklift.
- Check all instruments and controls again after the I.C. engine is warm and at frequent intervals during use.
- If an instrument does not show the correct display, safely park the forklift and stop the I.C. engine. Report the problem immediately and make necessary arrangements for repair or service.

F - DRIVING THE LIFT TRUCK

SAFETY NOTICE

DANGER	*Operators' attention is drawn to the risks involved in using the lift truck, in particular :* *- Risk of losing control.* *- Risk of losing lateral and frontal stability of the lift truck.* *The operator must remain in control of the lift truck. In the event of the lift truck overturning, do not try to leave the cab during the incident. YOUR BEST PROTECTION IS TO STAY FASTENED IN THE CAB.*

- Do not perform operations which exceed the capacities of your lift truck or attachments.
- Always drive the lift truck with the forks or attachment in the transport position, i.e. at 12 in. above the ground, the boom retracted and the carriage sloping backwards.
- Carry only loads which are balanced and properly secured to avoid any risk of a load falling off.
- Ensure that pallets, cases, etc, are in good order and suitable for the load to be lifted.
- Familiarize yourself with the lift truck on the terrain where it will be used.
- Ensure that the service brakes are working properly.
- The loaded lift truck must not travel at speeds in excess of 7mph.
- Drive smoothly at an appropriate speed for the operating conditions (land configuration, load on the lift truck).
- Do not use the hydraulic boom controls while the lift truck is moving.
- Do not maneuver the lift truck with the boom in the raised position unless under exceptional circumstances and then with extreme caution, at very low speed and using gentle braking. Ensure that visibility is adequate.
- Take turns slowly.
- In all circumstances make sure you are in control of your speed.
- On damp, slippery or uneven terrain, drive slowly.
- Brake gently, never abruptly.
- Use the lift truck's forward/reverse lever from a stationary position only and never abruptly.
- Do not drive with your foot on the brake pedal or with the parking brake on.
- Always remember that hydrostatic type steering is extremely sensitive to movement of the steering wheel, turn it gently and not abruptly.
- Never leave the I.C. engine running while the lift truck is unattended.
- Do not leave the cab while the lift truck has a raised load.
- Watch where you are going and always make sure you have good visibility along the route.
- Use the rear-view mirrors frequently.
- Drive around obstacles.
- Never drive on or along the edge of a ditch or steep slope.
- It is dangerous to use two lift trucks simultaneously to handle heavy or over-sized loads, do not attempt such operations, always procure the proper equipment for the job.

INSTRUCTIONS

- Always drive the lift truck with the forks or attachment to the transport position, i.e. at 12 in. from the ground, the boom retracted and the carriage sloping backwards.
- Select the appropriate steering mode for the working conditions.
- Shift the forward/reverse lever to the desired direction of travel.
- Release the parking brake and accelerate gradually until the lift truck moves off.

G - STOPPING (PARKING) THE LIFT TRUCK

SAFETY NOTICE

- When the lift truck is stationary, or if the operator has to leave his cab (even for a moment), place the forks or attachment on the ground, apply the parking brake and place the forward/reverse lever in neutral.
- Make sure that the lift truck is not parked in any position that will interfere with the traffic flow and at least 3.5 ft from the track of a railway.
- For prolonged parking on site, protect the lift truck from bad weather, particularly from frost (check the level of antifreeze), close and lock all lift truck accesses (door, window, engine compartment...).

INSTRUCTIONS

- Park the lift truck on flat ground or on an incline of less than 15 %.
- Place the forward/reverse lever in neutral.
- Apply the parking brake.
- Completely retract the boom.
- Lower the forks or attachment to rest on the ground.
- When using an attachment with a grab or jaws, or a bucket with hydraulic opening, close the attachment completely.
- Before stopping the lift truck after a hard working period, let the I.C. engine idle for a few moments, allowing the coolant and oil to lower the temperature of the I.C. engine and transmission. Do not neglect this precaution : in the event of frequent stops or stopping a hot I.C. engine, the temperature of certain parts will rise significantly, with the risk of badly damaging such parts.
- Stop the I.C. engine.
- Remove the ignition key.
- Make sure all means of access to the lift truck are closed and locked (door, window, engine compartment...).

H - DRIVING THE LIFT TRUCK ON THE PUBLIC HIGHWAY

SAFETY INSTRUCTIONS

- Operators driving on the public highway must comply with all current highway codes.
- The lift truck must also comply with all current road use codes. If necessary, there are optional solutions. Contact your dealer.

INSTRUCTIONS

- Make sure the revolving light is in place, switch it on and verify its operation.
- Check for the good working order and cleanness of lights, indicators and windshield wiper.
- Switch off the overhead work lights if the lift truck is equipped with them.
- Select the steering mode “HIGHWAY TRAFFIC” (see : 2 - DESCRIPTION : INSTRUMENTS AND CONTROLS).
- Retract the boom completely and place the attachment at 12 in. above the ground.
- Place the frame in the level or central position (as per model of lift truck).
- Lift the stabilizers to the maximum and turn the blocks inward (as per model of lift truck).

DANGER	*Do not allow the lift truck to coast in neutral (using either the forward/reverse lever, gear shift lever or transmission cut-off button). Coasting on a slope will lead to excessive speed which may make the lift truck uncontrollable (steering, brakes) and may cause serious mechanical damage.*

DRIVING THE LIFT TRUCK WITH A FRONT-MOUNTED ATTACHMENT

- You must comply with current regulations in your country, covering the possibility of driving on the public highway with a front-mounted attachment on your lift truck.
- If highway legislation in your country authorizes road use with a front-mounted attachment, you must at least :
    - Protect and label any sharp and/or dangerous edges on the attachment (see : 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE : ATTACHMENT SHIELDS).
    - The attachment must not be loaded.
    - Make sure that the attachment does not mask the lighting range of the forward lights.
    - Make sure that highway legislation in your country does not require other obligations.

OPERATING THE LIFT TRUCK WITH A TRAILER

- When using a trailer, observe the regulations in your country (maximum travel speed, braking, maximum weight of trailer, etc.).
- Do not forget to connect the trailer’s electrical equipment to that of the lift truck.
- The trailer’s braking system must comply with current legislation.
- If pulling a trailer with assisted braking, the lift truck must be equipped with a trailer braking mechanism. In this case, do not forget to connect the trailer braking equipment to the lift truck.
- The maximum vertical pull on the trailer hook must not exceed 3350 ft/lbs.
- The authorized maximum weight must not exceed the maximum weight authorized by the manufacturer (consult the manufacturer’s plate on your lift truck).

IF NECESSARY, CONSULT YOUR DEALER.

INSTRUCTIONS FOR HANDLING A LOAD

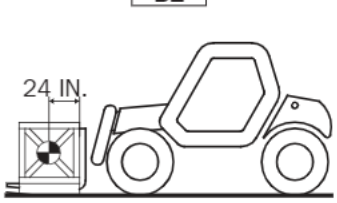
A - CHOICE OF ATTACHMENTS

- Only attachments approved by MANITOU can be used on its lift trucks.
- Make sure the attachment is appropriate for the work to be done (see : 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE).
- Make sure the attachment is correctly installed and locked onto the lift truck carriage.
- Make sure that your lift truck attachments work properly.
- Comply with the load chart limits for the lift truck and attachment used.
- Do not exceed the rated capacity of the attachment.
- Never lift a load in a sling without the attachment provided for the purpose. There are optional solutions; contact your dealer.

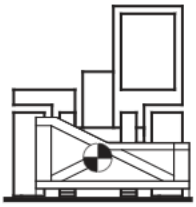
B - MASS OF LOAD AND CENTER OF GRAVITY

- Before taking up a load, you must know its mass and center of gravity.
- The load chart for your lift truck is valid for a load in which the position of the center of gravity is 24 in. from the base of the forks (fig. B1). For a higher center of gravity, contact your dealer.
- For irregular loads, determine the center of gravity before any movement (fig. B2) and set it in the longitudinal axis of the lift truck.

B1



B2



CAUTION

Do not attempt to move a load heavier than the effective capacity defined on the lift truck load chart.

CAUTION

For loads with a moving center of gravity (i.e., liquids), take into account the variations of the center of gravity in order to determine the load to be handled (Consult your agent or dealer). Be vigilant and take extra care to limit these variations as much as possible.

C - N/A

D - TRANSVERSE (LEVEL) ATTITUDE OF THE LIFT TRUCK

The transverse or level attitude is the angle of tilt of the chassis with respect to the horizontal.
Raising the boom while on a slope reduces the lift truck's lateral stability . The transverse attitude must be set with the boom in the down position as follows:

1 - LIFT TRUCK WITHOUT SLOPE CORRECTOR (FRAME LEVELING) USED ON TIRES

- Position the lift truck so that the bubble in the level is between the two lines (see : 2 - DESCRIPTION : INSTRUMENTS AND CONTROLS).

E - TAKING UP A LOAD FROM THE GROUND

- Position the lift truck perpendicular to the load, with the boom retracted and the forks in a horizontal position (fig. E1).
- Adjust the fork spread and centering in alignment with the load (fig. E2) (optional solutions exist, consult your dealer).
- Never lift a load with a single fork.

CAUTION

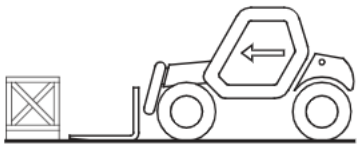
Beware of the risks of pinching or crushing limbs when manually adjusting the forks.

- Move the lift truck forward slowly (1) and bring the forks to the front of the load (fig. E3), if necessary, slightly lift the boom (2) while taking up the load.
- Bring the load into the transport position.
- Tilt the load far enough backwards to ensure stability (to avoid loss of load while braking).

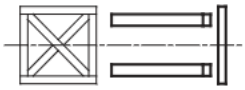
FOR A NON-PALLETIZED LOAD

- Tilt the carriage (1) forwards and move the lift truck slowly forwards (2), insert the forks under the load (fig. E4) (block the load if necessary).
- Continue to move the lift truck forwards (2) tilting the carriage (3) (fig. E4) backwards to position the load on the forks. Check the load's longitudinal and lateral stability.

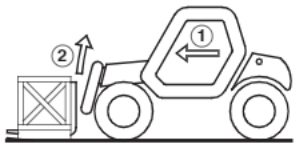
E1



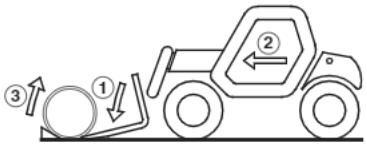
E2



E3



E4



F - TAKING UP AND LAYING A HIGH LOAD ON TIRES

WARNING

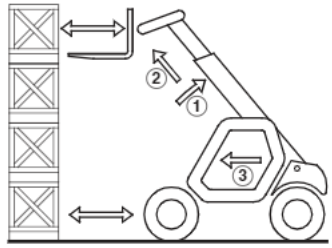
Do not raise the boom until you have first checked the level attitude of the lift truck (see : INSTRUCTIONS FOR HANDLING A LOAD : D - TRANSVERSE ATTITUDE OF THE LIFT TRUCK).

REMINDER : Make sure that the following operations can be performed with clear visibility (see : OPERATIONS INSTRUCTIONS UNLADEN AND LADEN : D - VISIBILITY).

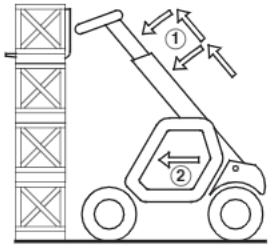
TAKING UP A HIGH LOAD ON TIRES

- Ensure that the forks will easily pass under the load.
- Lift and extend the boom (1) (2) until the forks are level with the load, moving the lift truck (3) forward if necessary (fig. F1), moving very slowly and carefully.
- Keep the shortest distance possible to place the forks under the load, between the pile and the lift truck (fig. F1) and use the shortest possible length of boom.
- Place the forks in front of the load by alternately extending and retracting the boom (1) or, if necessary, moving the lift truck forward (2) (fig. F2). Set the parkbrake and place the forward/reverse gear to neutral.
- Slightly lift the load (1) and incline the carriage (2) backwards to stabilize the load (fig. F3).
- Tilt the load sufficiently backwards to ensure its stability.
- Respect load capacites (see : INSTRUCTIONS FOR HANDLING A LOAD). If the lift truck is overloaded, return the load to the place from which it was taken.
- If possible lower the load without shifting the lift truck. Lift the boom (1) to raise the load, retract (2) and lower the boom (3) to bring the load into the transport position (fig. F4).
- If this is not possible, back the lift truck (1), maneuvering very gently and carefully to remove the load. Retract (2) and lower the boom (3) to bring the load into the transport position (fig. F5).

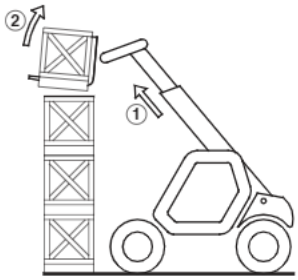
F1



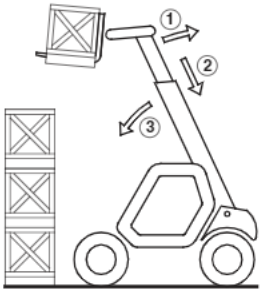
F2



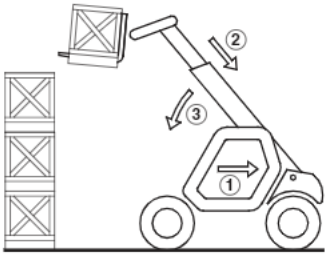
F3



F4



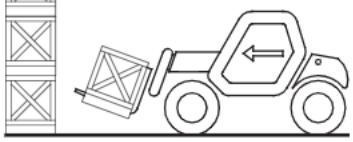
F5



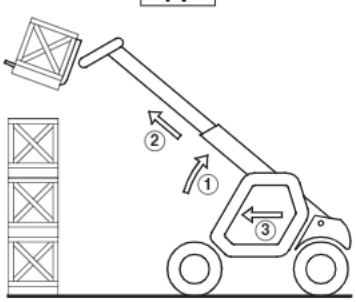
LAYING A HIGH LOAD ON TIRES

- Approach with the load in the transport position, aligning to the front of the pile (fig. F6).
- Set the handbrake and place the forward/reverse lever in neutral.
- Lift and extend the boom (1) (2) until the load is above the pile, respect load capacites (see : INSTRUCTIONS FOR HANDLING A LOAD). If necessary, move the lift truck (3) forward (fig. F7), driving very slowly and carefully.
- Adjust the load to a horizontal position and place it on the pile by lowering and retracting the boom (1) (2) until the load is stabilized (fig. F8).
- If possible, release the forks by alternately retracting and raising the boom (1) (fig. F9). Then move the forks into transport position.
- If this is not possible, back the lift truck (1) very slowly and carefully to release the forks (fig. F10). Then move the forks into transport position.

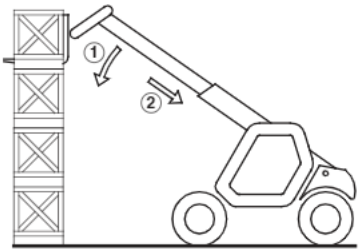
F6



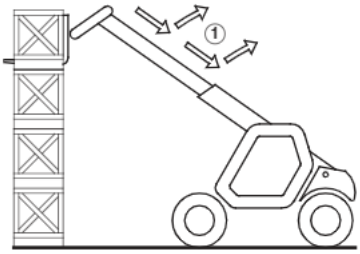
F7



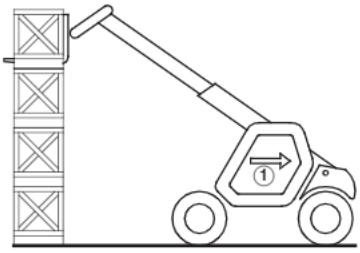
F8



F9



F10



MAINTENANCE INSTRUCTIONS OF THE LIFT TRUCK

GENERAL INSTRUCTIONS

- Ensure the area is sufficiently ventilated before starting the lift truck.
- Wear clothes suitable for the maintenance of the lift truck, avoid wearing jewelry and loose clothing. Tie and protect your hair, if necessary.
- Stop the I.C. engine and remove the ignition key, when service is necessary.
- Read the operator's manual carefully.
- Perform all necessary repairs immediately, including minor repairs.
- Repair all leaks immediately, including minor leaks.
- Insure disposal of all used materials and spare parts are carried out in a safe and ecological manner.
- Beware of the risk of burns and/or splashing of components while servicing the lift truck (engine/exhaust, radiator, fluids, etc.).

MAINTENANCE

- Perform periodic services (see: 3 - MAINTENANCE) to keep your lift truck in good working conditions. Failure to perform the periodic services may cancel warranty.

LUBRICANT AND FUEL LEVELS

- Use the recommended lubricants (never use contaminated lubricants).
- Do not fill the fuel tank while the I.C. engine is running.
- Fill the fuel tank only in areas specified for this purpose.
- Do not fill the fuel tank to the maximum level.
- Do not smoke or approach the lift truck with a flame, while the fuel tank is open or is being filled.

HYDRAULIC

- Do not attempt to loosen connections of hoses or any hydraulic component with the circuit under pressure.

WARNING	*BALANCING VALVE : For inspection, see : 3 – MAINTENANCE : D - EVERY 500 HOURS SERVICE. It is dangerous to change the setting or remove the balancing valves or safety valves which may be fitted to your lift truck cylinders. These operations must only be performed by approved personnel (consult your dealer).*

WARNING	*The HYDRAULIC ACCUMULATORS which may be fitted on your lift truck, are under high pressure, it is dangerous to dismantle them. This operation must only be performed by approved personnel (consult your dealer).*

ELECTRICITY

DANGER	*Do not short-circuit the starter relay to start the lift truck. If the forward/reverse gear is not in neutral, the lift truck will start to move immediately!*

- Do not drop metallic objects on the battery.
- Disconnect the battery before working on the electrical circuit.

WELDING

- Always disconnect the battery before performing welding operations on the lift truck.
- When welding on the lift truck, connect the negative cable from the welding equipment directly to the part being welded, so as to avoid high tension current passing through the alternator.
- Never perform welding or work which directs heat onto an inflated tire. The heat may increase the air pressure which can cause the tire to explode.
- If the lift truck is equipped with an electronic control unit, disconnect it before welding, to avoid the risk of causing irreparable damage to electronic components.

WASHING THE LIFT TRUCK

- Clean the lift truck before servicing.
- Remember to close and lock all access to the lift truck (door, window(s), engine compartment...).
- During washing, avoid the articulations, electrical components and connections.
- Protect components susceptible of being damaged against penetration of water, steam or cleaning agents, particularly electrical components, hose connections and the fuel injection pump.
- Remove any residue of fuel, oil or grease from the lift truck.

FOR ANY INTERVENTION OTHER THAN REGULAR MAINTENANCE, CONSULT YOUR DEALER.

IF THE LIFT TRUCK IS NOT TO BE USED FOR A LONG TIME

INTRODUCTION

The following recommendations are intended to prevent damage to the lift truck while it is removed from service for an extended period of time.

IMPORTANT	*It is recommended that your dealer perform the following procedures for lift truck storage and returning it to service.*

PREPARING THE LIFT TRUCK

- Clean the lift truck thoroughly.
- Check for and repair any fuel, oil, water or air leaks.
- Replace or repair any worn or damaged parts.
- Wash the painted surfaces of the lift truck with clear, cold water and dry them.
- Touch up the paint where necessary.
- Park the lift truck (see : OPERATING INSTRUCTIONS UNLADEN AND LADEN).
- Make sure the boom cylinder rod ends are all in retracted position.
- Release the pressure in the hydraulic circuits.

PROTECTING THE I.C. ENGINE

- Fill the tank with fuel (see : 3 - MAINTENANCE : A - DAILY OR EVERY 10 HOURS SERVICE).
- Empty and replace the antifreeze (see : 3 - MAINTENANCE : F - EVERY 2000 HOURS SERVICE).
- Allow the I.C. engine to run at idle for a few minutes, then switch off.
- Replace the I.C. engine oil and oil filter (see : 3 - MAINTENANCE : D - EVERY 500 HOURS SERVICE).
- Add a preservative product to the engine oil.
- Run the I.C. engine for a short time so that the oil and cooling liquid circulate.
- Disconnect the battery and store it in a safe place away from the cold, after charging it to a maximum.
- Remove the injectors and spray a protective product into each cylinder for two seconds with the piston in low neutral position.
- Turn the crankshaft once slowly and refit the injectors (see I.C. engine REPAIR MANUAL).
- Remove the intake hose from the manifold or turbocharger and spray the protective product into the manifold or turbocharger.
- Cap the intake manifold or turbocharger hole with waterproof adhesive tape.
- Remove the exhaust pipe and spray the protective product into the exhaust manifold or turbocharger.
- Refit the exhaust pipe and block the outlet with waterproof adhesive tape.

NOTE : The spray time is noted on the preservative packaging and must be increased by 50% for turbo engines.

- Open the oil filler plug, spray the protective product around the rocker arm shaft and install the filler plug.
- Cap the fuel tank using waterproof adhesive tape.
- Remove the drive belts and store them in a safe place.
- Disconnect the engine cut-off solenoid on the injection pump and carefully insulate the connection.

PROTECTING THE LIFT TRUCK

- Set the lift truck on axle stands so that the tires are not in contact with the ground and release the parkbrake.
- Protect all exposed cylinder rods from corrosion.
- Cover the tires.

NOTE : If the lift truck is to be stored outdoors, cover it with a waterproof covering.

BRINGING THE LIFT TRUCK BACK INTO SERVICE

- Remove the waterproof adhesive tape from all the holes.
- Install the intake hose.
- Install and reconnect the battery.
- Remove the protection from the cylinder rods.
- Perform the daily service (see : 3 - MAINTENANCE : A - DAILY OR EVERY 10 HOURS SERVICE).
- Engage the parkbrake and remove the axle stands.
- Empty and replace the fuel and fuel filter (see : 3 - MAINTENANCE : D - EVERY 500 HOURS SERVICE).
- Refit and set the tension on the drive belts (see : 3 - MAINTENANCE : C - EVERY 250 HOURS SERVICE).
- Turn the I.C. engine using the starter, to allow the oil pressure to rise.
- Reconnect the engine cut-off solenoid.
- Lubricate the lift truck components (see : 3 - MAINTENANCE : SERVICING SCHEDULE).

WARNING	*Insure the area is adequately ventilated before starting the lift truck.*

- Start the lift truck following the safety instructions and regulations (see : OPERATING INSTRUCTIONS UNLADEN AND LADEN).
- Run all of the boom's hydraulic movements, verifying the full travel of each cylinder.

2 - DESCRIPTION

TABLE OF CONTENTS

IDENTIFICATION OF THE LIFT TRUCK

As our policy is to promote a constant improvement of our products, our range of telescopic lift trucks may undergo certain modifications, without prior notice.

When you order parts, or when you require any technical information, always specify:

NOTE: For the owner's convenience, it is recommended that a note of these numbers be made in the spaces provided, at the time of the delivery of the lift truck.

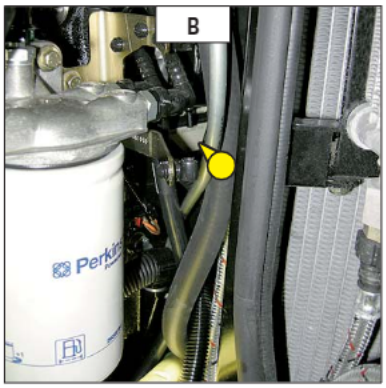
LIFT TRUCK MANUFACTURER'S PLATE (FIG. A)

- Model .....
- Series .....
- Serial No. .....
- Chassis No. .....
- Year of manufacture .....

For any further technical information regarding your lift truck refer to chapter: 2 - DESCRIPTION: CHARACTERISTICS.

I.C. ENGINE (FIG. B)

- I.C. engine No. .....

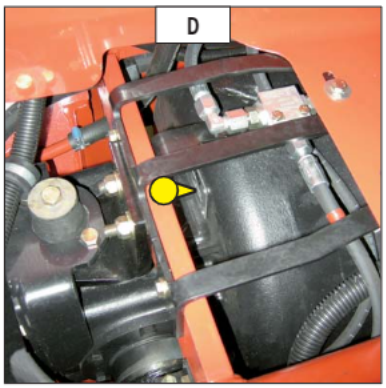


GEAR BOX (FIG. C)

- Type .....
- MANITOU reference .....
- Serial No. .....

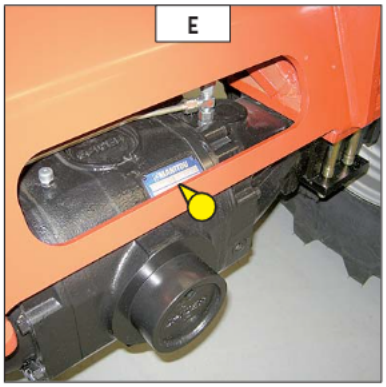
ANGLE GEARBOX (FIG. D)

- Type .....
- MANITOU reference .....
- Serial No. .....



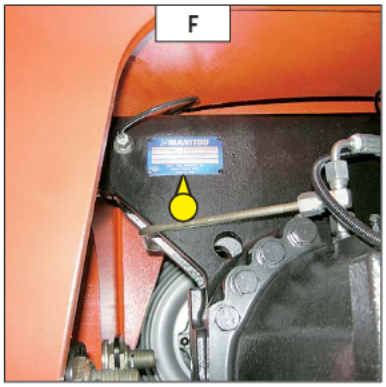
FRONT AXLE (FIG. E)

- Type .....
- Serial No. .....
- MANITOU reference .....



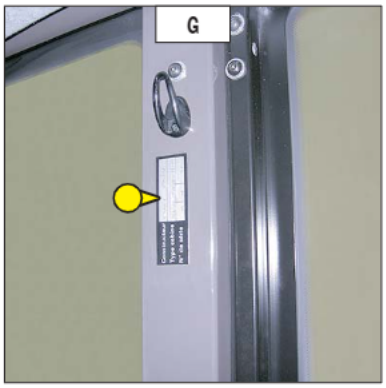
REAR AXLE (FIG. F)

- Type .....
- Serial No. .....
- MANITOU reference .....



CAB (FIG. G)

- Type .....
- Serial No. .....



JIB (FIG. H)

- MANITOU reference .....
- Date of manufacture .....

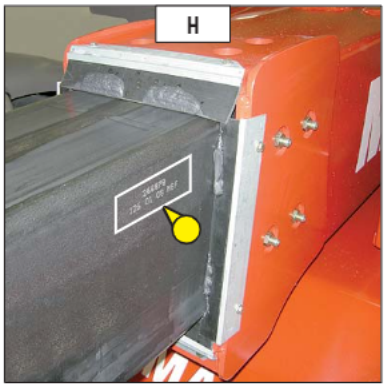


PLATE MANUFACTURER OF THE ATTACHMENT (FIG. I)

- Model .....
- Serial No .....
- Year of manufacture .....

CHARACTERISTICS

MLT 735 -120 LSU Series 4-E3

I.C. ENGINE		
Type		PERKINS 1104D-E44TA NJ38698
Fuel		Diesel
Number of cylinders		4 in line
Suction		Supercharged
Injection system		Direct
Ignition sequence		1,3,4,2
Capacity	cm3	4400
Bore and stroke	mm	105 x 127
Compression ratio		16,2:1
Nominal rating loaded	rpm	2200
Rating slow unladen	rpm	930
Max. rating unladen	rpm	2360
Power ISO/TR 14396	cv- kW	124 - 91
Power SAE J 1995	cv- kW	124 - 91
Maximum torque ISO/TR 14396	Nm	490 to 1400 rpm
Air cleaner	µm	3
Type of cooling		By water
Fan		Puller

TRANSMISSION		
Gear box		TURNER
Type		Mechanical
Forward/reverse selector		Electro-hydraulic
Torque converter		SACHS
Number of forward speeds		4
Number of reverse speeds		4
Angle gear box		TURNER
Front axle		DANA
Differential		Limited slip
Rear axle		DANA
Differential		Without locking
Drive wheels		4RM Permanent
Switch for 2/4 drive wheels		No
Front tires		MICHELIN
Size		460-70 R24 159A8 TL
Pressure	bar	3,4
Rear tires		MICHELIN
Size		460-70 R24 159A8 TL
Pressure	bar	3,4

ELECTRIC CIRCUIT		
Battery	Standard	12 V - 150 Ah - 1000 A EN
	Option	12 V - 2 x 74 Ah - 2 x 680 A EN
Alternator		12 V - 85 A
Type		Denso Ai115
Starter		12 V - 4,2 kW
Type		AZF

BRAKE CIRCUIT	
Service brake	Hydraulic power brake
Type of brake	Multidisk brake immersed in oil
Type of control	Foot-operated for the front and rear axles
Parking brake	Mechanical
Type of brake	Discon gear-box output
Type of control	Manual

SOUND AND VIBRATION		
Level of sound pressure in the driver's cab LpA (according to standard NF EN 12053)	dB	79
Level of sound power ensured in the LwA environment (according to directive 2000/14/EC modified by directive 2005/88/EC)	dB	106 (measured) 107 (ensured)
Average weighted acceleration on driver's body (according to standard NF EN 13059)	m/s2	
The average weighted acceleration transmitted to the driver's hand/arm system (according to standard ISO 5349-2)	m/s2	< 2,5

HYDRAULIC CIRCUIT		
Hydraulic pump		
Type		Variable volume pistons
Capacity	cu. in.	3.8
Max. rating capacity unladen	gal/min	39.4
Flow rate at 1600 rpm	gal/min	26.7
Filtration		
Return	µm	15
Suction	µm	125
Maximum service pressure	psi	3915
Telescoping circuit	psi	3915 / 2900
Lifting circuit	psi	3915 / 3915
Tilt circuit	psi	2755 / 3915
Attachment circuit	psi	3915
Steering circuit	psi	2030

HYDRAULIC MOVEMENTS		
Lifting motions (jib retracted)		
Unladen lifting	sec - ft/min	6,7 - 132
Laden lifting	sec - ft/min	7,3 - 121
Unladen lowering	sec - ft/min	4,8 - 184
Laden lowering	sec - ft/min	4,6 - 192
Telescoping motions (jib raised)		
Unladen extending	sec - ft/min	7,1 - 73
Laden extending	sec - ft/min	7,3 - 75
Unladen retracting	sec - ft/min	5,7 - 93
Laden retracting	sec - ft/min	5,5 - 97
Tilting movements		
Unladen digging	sec - °/sec	3,0 - 48,8
Forward tilting unladen	sec - °/sec	2,35 - 62,3

SPECIFICATIONS AND WEIGHTS		
Speed of movement for lift truck in standard configuration on flat ground (except particular conditions)		
Front unladen 1	mph	3.3
2	mph	5.3
3	mph	11.3
4	mph	20.2
Rear unladen 1	mph	3.3
2	mph	5.3
3	mph	11.3
4	mph	20.2
Standard attachment		
Weight of equipment	lb	209
Weight of forks (each one)	lb	159.8
Rated capacity with standard attachment	lb	7714
Tipping load at maximum reach on tires	lb	3284
Distance from the center of gravity of the load to the lug of the forks	in	24
Standard lifting height	ft	22.5
Lift truck weight without attachment	lb	14679
Lift truck weight with standard attachment		
Unladen	lb	15208
At rated load	lb	22922
Weight per axle with standard attachment (transport position)		
Front unladen	lb	7383
Rear unladen	lb	7824
Front rated load	lb	20277
Rear rated load	lb	2645
Weight per axle with standard attachment (jib extended)		
Front rated load	lb	16420
Rear rated load	lb	1322
Contact pressure on the ground for the whole surface of each stabilizer at maximum load when tilting	kg/cm2	N/A-
Drag strain on the coupling hook		
Unladen (sliding)	ft/lb	11825
At rated load (transmission setting)	ft/lb	17570
Pull strain with open carrier (according to standard ISO 8313)	ft/lb	9440

FRONT AND REAR TIRES

		PRESSURE (bar) / TIRE LOAD (kg)	MLT 630 TA Série D-E3	MLT 634 TA LSU Série D-E3	MLT 634 -120 LSU Série D-E3	MLT 634 -120 LSU POWERSHIFT Série D-E3	MLT 731 TA Série D-E3	MLT 731 TA LSU Série D-E3	MLT 735 -120 LSU Série 4-E3	MLT 735 -120 LSU POWERSHIFT Série 4-E3	MLT 741 -120 LSU Série 4-E3	MLT 741 -120 LSU POWERSHIFT Série 4-E3	MLT 742 TA Série 4-E3	MLT 1035 L TA LSU Série 4-E3
MICHELIN	460/70R24 XMCL 159A8 TUBELESS	PRESSURE	3,4	3,4	3,4	3,4	3,4	3,4	50 psi	3,4	3,4	3,4	3,6	3,4
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	400/80-24 162A8 IND POWER CL TUBELESS	PRESSURE	*	*	*	*	*	*	55 psi	3,8	3,8	3,8	3,8	3,8
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	500/70R24 XMCL 164A8 TUBELESS	PRESSURE	-	-	-	-	-	-	38 psi	2,6	2,6	2,6	2,6	2,6
		Front unladen	-	-	-	-	-	-						
		Front laden	-	-	-	-	-	-						
		Rear unladen	-	-	-	-	-	-						
		Rear laden	-	-	-	-	-	-						
	15,5R25 XHA TUBELESS	PRESSURE	2,75	2,75	2,75	2,75	2,75	2,75	40 psi	2,75	3,5	3,5	3,5	3,5
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	1200R20 X MINE D2	PRESSURE	5,5	5,5	5,5	5,5	5,5	5,5	-	-	-	-	-	-
		Front unladen							-	-	-	-	-	-
		Front laden							-	-	-	-	-	-
		Rear unladen							-	-	-	-	-	-
		Rear laden							-	-	-	-	-	-
DUNLOP	14,9X24 T35 STABILARGE 18PR	PRESSURE	3,4	3,4	3,4	3,4	3,4	3,4	52 psi	-	3,6	-	-	3,4
		Front unladen								-		-	-	
		Front laden								-		-	-	
		Rear unladen								-		-	-	
		Rear laden								-		-	-	
	400/70-20 T37 150B 14PR TUBELESS	PRESSURE	3,25	3,25	3,25	3,25	3,25	3,25	55 psi	3,8	3,8	3,8	3,3	3,3
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	405/70-24 EM SPT9 158A2 TUBELESS	PRESSURE	-	5	5	5	-	-	-	-	-	-	-	-
		Front unladen	-				-	-	-	-	-	-	-	-
		Front laden	-				-	-	-	-	-	-	-	-
		Rear unladen	-				-	-	-	-	-	-	-	-
		Rear laden	-				-	-	-	-	-	-	-	-

IMPORTANT

When changing or replacing the tires and wheels; use only the manufacturer's approved components as installed at the factory. Any substitutes or modifications must first be approved by the manufacturer.

		PRESSURE (bar) TIRE LOAD (kg)	MLT 630 TA Série D-E3	MLT 634 TA LSU Série D-E3	MLT 634 -120 LSU Série D-E3	MLT 634 -120 LSU POWERSHIFT Série D-E3	MLT 731 TA Série D-E3	MLT 731 TA LSU Série D-E3	MLT 735 -120 LSU Série 4-E3	MLT 735 -120 LSU POWERSHIFT Série 4-E3	MLT 741 -120 LSU Série 4-E3	MLT 741 -120 LSU POWERSHIFT Série 4-E3	MLT 742 TA Série 4-E3	MLT 1035 L TA LSU Série 4-E3
GOODYEAR	15,5/80-24 SGI 12PR TUBELESS	PRESSURE	4	4	4	4	4	4	58 psi	4	4	4	4	4
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	460/70R24 IT520 150A8 TUBELESS	PRESSURE	3,3	3,3	3,3	3,3	3,3	3,3	48 psi	3,3	3,3	3,3	3,3	3,3
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	445/70R24 MPT IT510 151G TUBELESS	PRESSURE	4,1	4,1	4,1	4,1	4,1	4,1	60 psi	4,1	4,1	4,1	4,1	4,1
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
NOKIAN	460/65R24 SF TRI STEEL TUBELESS	PRESSURE	3,8	3,8	3,8	3,8	3,8	3,8	55 psi	3,8	3,8	3,8	3,8	3,8
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
	500/65R24 IND. AGRO TUBELESS	PRESSURE	3	3	3	3	3	3	44 psi	3	3	3	3	3
		Front unladen												
		Front laden												
		Rear unladen												
		Rear laden												
TRELLEBORG	500-60/22,5 TWIN 404 12PR	PRESSURE	2,5	2,5	2,5	2,5	2,5	2,5	-	-	-	-	-	-
		Front unladen							-	-	-	-	-	-
		Front laden							-	-	-	-	-	-
		Rear unladen							-	-	-	-	-	-
		Rear laden							-	-	-	-	-	-

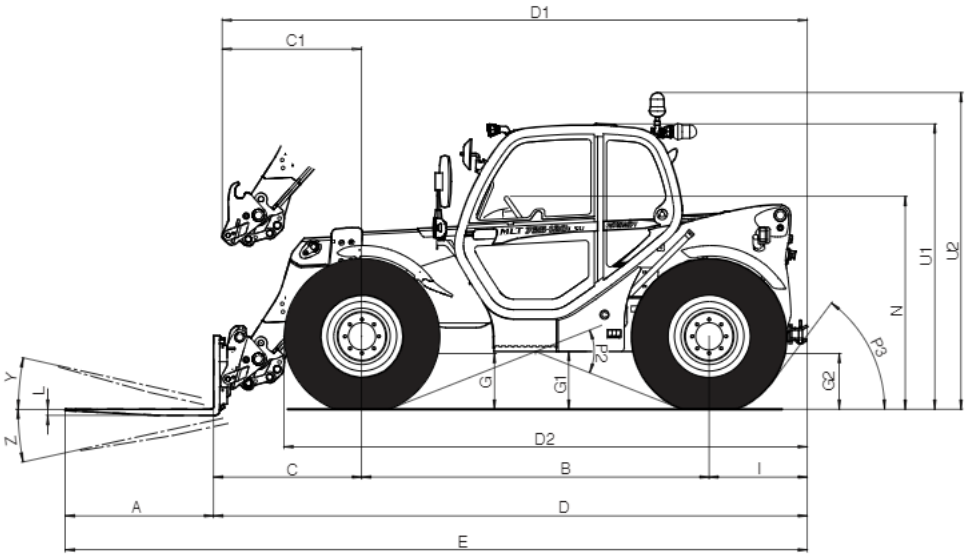
IMPORTANT

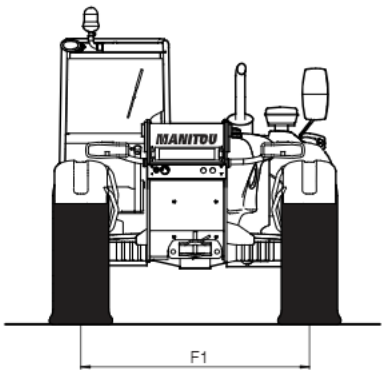
When changing or replacing the tires and wheels; use only the manufacturer's approved components as installed at the factory. Any substitutes or modifications must first be approved by the manufacturer.

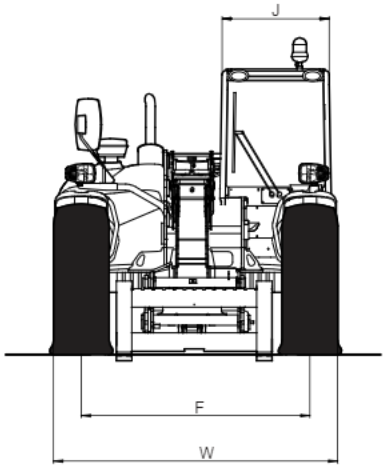
DIMENSIONS AND LOAD CHART

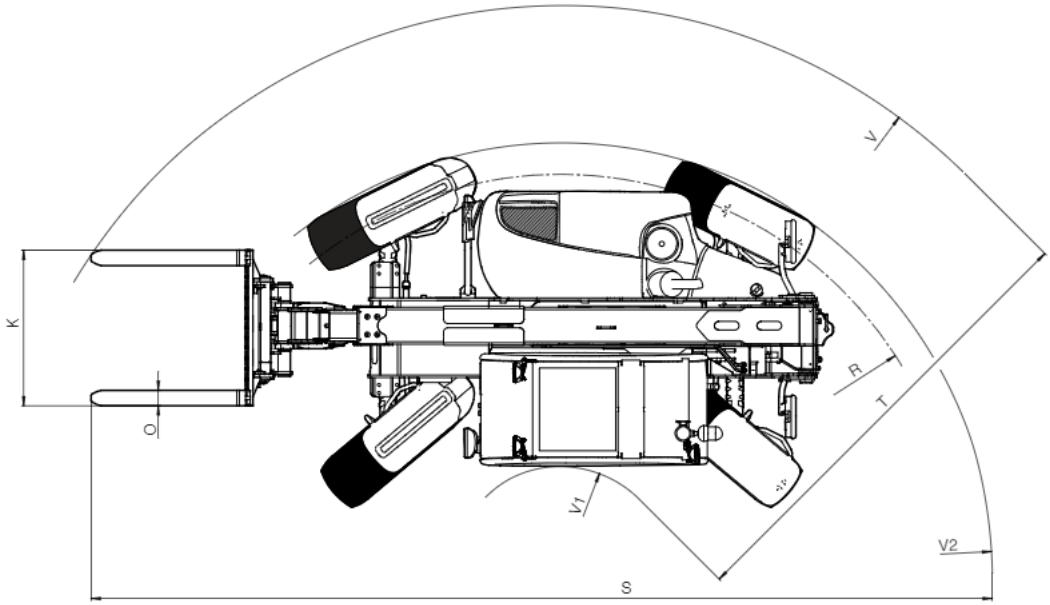
MLT 735 -120 LSU Series 4-E3

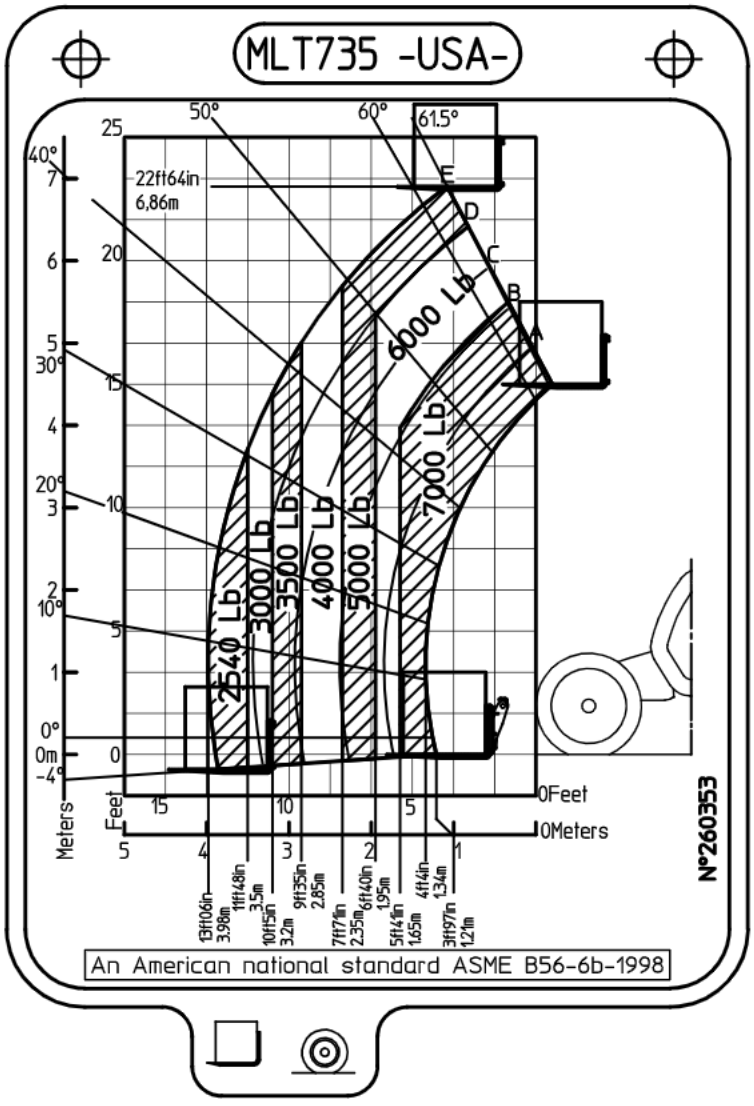
A	mm (in.)	1200 (47.2)
B	mm (in.)	2810 (110.6)
C	mm (in.)	1191 (46.9)
C1	mm (in.)	1287 (50.7)
D	mm (in.)	4790 (188.6)
D1	mm (in.)	4886 (192.4)
D2	mm (in.)	4165 (164.0)
E	mm (in.)	5990 (235.8)
F	mm (in.)	1870 (73.6)
F1	mm (in.)	1870 (73.6)
G	mm (in.)	450 (17.7)
G1	mm (in.)	435 (17.1)
G2	mm (in.)	435 (17.1)
I	mm (in.)	789 (31.1)
J	mm (in.)	865 (34.1)
K	mm (in.)	1260 (49.6)
L	mm (in.)	45 (1.8)
N	mm (in.)	1715 (67.5)
O	mm (in.)	125 (4.9)
P2	(°)	38
P3	(°)	53
R	mm (in.)	3625 (142.7)
S	mm (in.)	7655 (301.4)
T	mm (in.)	3505 (138.0)
U1	mm (in.)	2295 (90.4)
U2	mm (in.)	2545 (100.2)
V	mm (in.)	4865 (191.5)
V1	mm (in.)	1360 (53.5)
V2	mm (in.)	3859 (151.9)
W	mm (in.)	2337 (92.0)
Y	(°)	12,5
Z	(°)	133,7

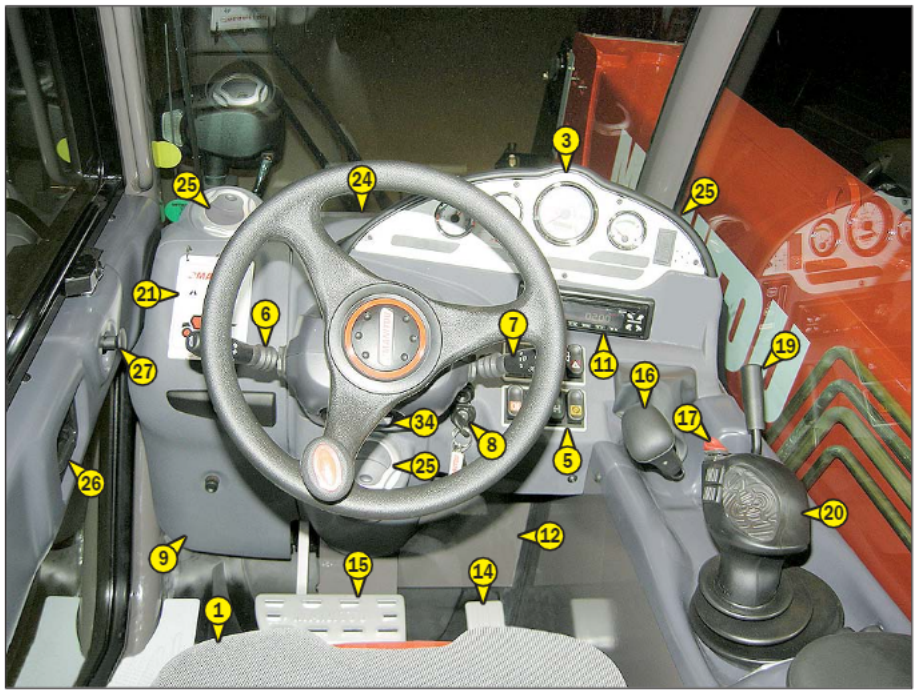









MLT735 -USA-
50°
60°
61.5°
22ft64in
6,86m
E
D
C
B
6000 Lb
7000 Lb
5000 Lb
4000 Lb
3500 Lb
3000 Lb
2540 Lb
40°
30°
20°
10°
0°
0m
Meters
Feet
0Feet
0Meters
13ft10in 3.98m
11ft4in 3.5m
10ft5in 3.2m
9ft3in 2.85m
7ft7in 2.35m
6ft4in 1.95m
5ft4in 1.65m
4ft4in 1.34m
3ft9in 1.21m
N°260353
An American national standard ASME B56-6b-1998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DESCRIPTION

1 - DRIVER'S SEAT
2 - SAFETY BELT
3 - CONTROL AND SIGNAL LIGHTS PANEL
4 - N/A
5 - SWITCHES
6 - LIGHTR SWITCH, HORN AND INDICATOR SWITCH
7 - FRONT AND REAR WINDSCREEN WIPER SWITCH
8 - IGNITION SWITCH
9 - BRAKING OIL TANK AND WINDSCREEN WASHER ACCESS PANEL
10 - ARMREST AND STORAGE
11 - CAR RADIO (OPTION)
12 - FUSES AND RELAYS IN THE CAB
13 - FUSES AND RELAYS UNDER THE ENGINE HOOD
14 - ACCELERATOR PEDAL
15 - SERVICE BRAKE PEDAL AND TRANSMISSION CUT-OFF
16 - GEAR LEVER AND TRANSMISSION CUT-OFF
17 - FORWARD/NEUTRAL/REVERSE GEAR SELECTION
18 - PARKING BRAKE LEVER
19 - STEERING SELECTION
20 - HYDRAULIC CONTROLS AND TRANSMISSION CUT-OFF
21 - FUNCTION FILES
22 - HEATER CONTROL
22 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)
23 - CAB FILTER VENTILATORS
24 - WINDSCREEN DEMISTER VENTS
25 - HEATING VENTS
26 - DOOR LOCK
27 - LOCKING HANDLE FOR UPPER HALF-DOOR
28 - UNLOCKING BUTTON FOR UPPER HALF DOOR
29 - HANDLE FOR REAR WINDOW OPENING
30 - DOCUMENT HOLDER
31 - FRONT LIGHTS (NOT ILLUSTRATED)
32 - REAR LIGHTS (NOT ILLUSTRATED)
33 - FLASHING LIGHT (NOT ILLUSTRATED)
34 - STEERING WHEEL ADJUSTMENT LEVER
35 - SPIRIT LEVEL
36 - SUN VISOR
37 - ROOF LIGHT
38 - HOOK
39 - CIGARETTE LIGHTER
40 - DIAGNOSTIC SOCKET
41 - TOOL BOX (NOT ILLUSTRATED)

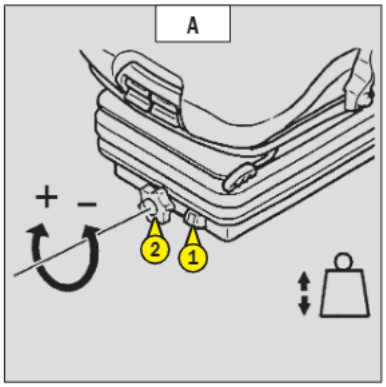
NOTE: Terms such as: RIGHT, LEFT, FRONT, REAR are meant for an observer seated in the driver's seat facing forward.

1 - DRIVER'S SEAT

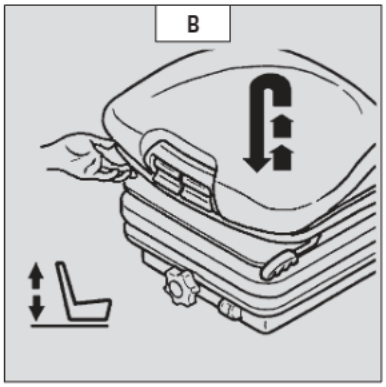
DESIGNED FOR MAXIMUM COMFORT, THIS SEAT CAN BE ADJUSTED AS FOLLOWS.

WEIGHT ADJUSTMENT (FIG. A)
It is advised that the weight be adjusted when the driver is not sitting in the cab.
- Refer to graduation 1 of the seat.
- Turn handle 2 depending on the driver's weight.

NOTE: To avoid any health problems, it is recommended that the weight should be checked and adjusted before starting up the lift truck.

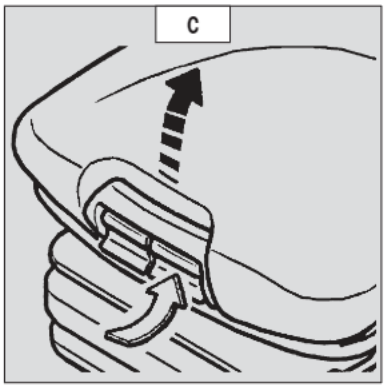


SEAT HEIGHT ADJUSTMENT (FIG. B)
- Raise the seat to the desired position, until you hear the ratchet click. If you raise the seat above the last notch (stop), the seat drops down to the lowest position.

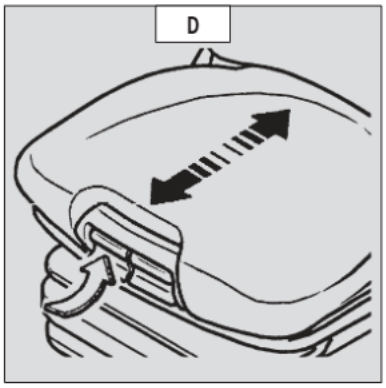


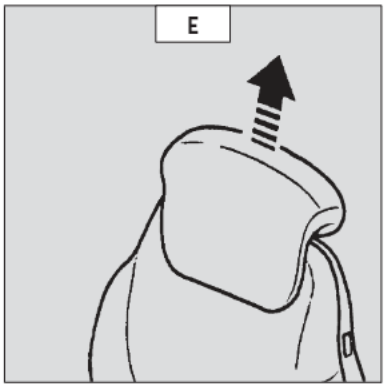
SEAT BACK-REST ANGLE ADJUSTMENT (FIG. C)
The back-rest angle of the seat may be adjusted to suit the individual.
- Press the left-hand button while pushing on the seat or relaxing pressure on the seat to find a comfortable position.

SEAT DEPTH ADJUSTMENT (FIG. D)
The depth of the seat may be adjusted to suit the individual.
- Press the right-hand button while raising or lowering the seat to find the desired position.



EXTENDING THE HEAD-REST (FIG. E)
- The height of the back-rest can be adjusted by pulling it upwards (the notches will click) up to the stop.
- The head-rest can be removed by applying sufficient pressure to pull it off the stop.

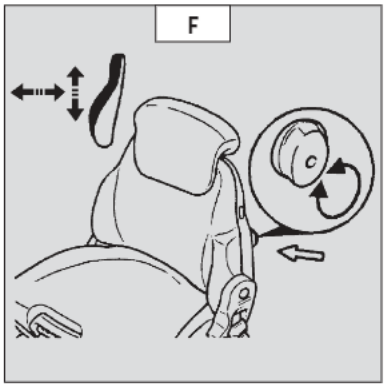




LUMBAR ADJUSTMENT (FIG. F)

This increases the comfort of the seat and the driver's freedom of movement.

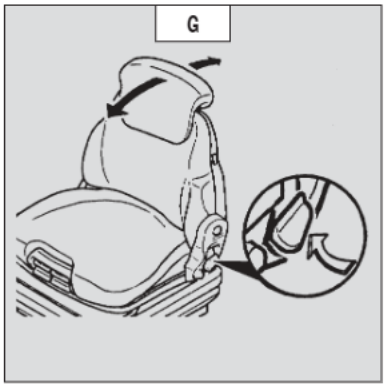
- Turn the handle either left or right to adjust the height or depth of the lumbar support.



ADJUSTMENT OF THE ANGLE OF THE BACK-REST (FIG. G)

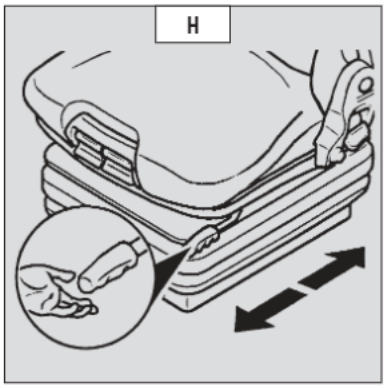
- Support the back-rest, pull the lever and position the back-rest to find the desired position.

CAUTION	*If you do not support the back-rest when making adjustments, it swings completely forwards.*



LONGITUDINAL ADJUSTMENT (FIG. H)

- Adjust the locking lever until you reach the position required. This then locks and the seat will not shift into another position.



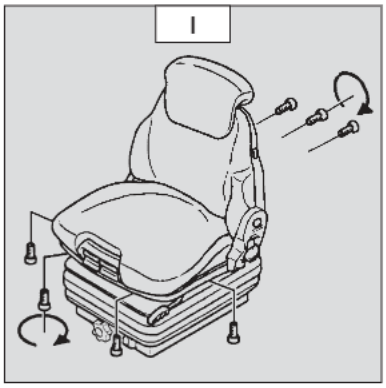
MAINTENANCE (FIG. I)

Dirt may adversely affect the correct functioning of the seat. For this reason, make sure your seat is always clean.

- To clean or change the cushions, simply remove them from the seat frame.

CAUTION	*A rocking head-rest increases the risk of an accident!*

Avoid wetting the cushion fabric when cleaning. Check the resistance of the fabric on a small hidden area before using any fabric or plastic cleaner.



1 - BASIC PNEUMATIC DRIVER'S SEAT (OPTION)

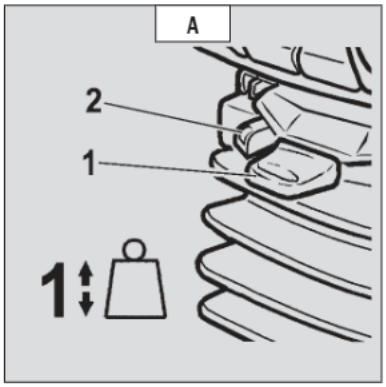
DESIGNED FOR MAXIMUM COMFORT, THIS SEAT CAN BE ADJUSTED AS FOLLOWS.

WEIGHT ADJUSTMENT (FIG. A)

It is advised that you adjust the seat according to your weight when sitting.

- Switch on lift truck ignition.
- Push or pull lever 1 until green appears in display 2 indicating correct adjustment according to your weight.

NOTE: To avoid any health problems, it is recommended that the weight should be checked and adjusted before starting up the lift truck.

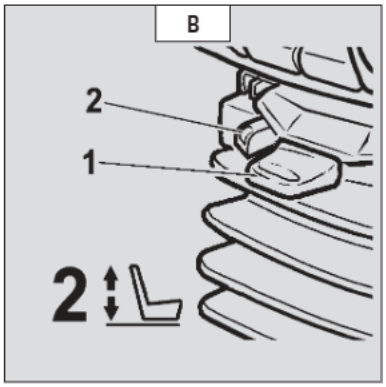


SEAT HEIGHT ADJUSTMENT (FIG. B)

When weight adjustment has been carried out, you can then modify seat height.

- Keep the ignition on in the lift truck.
- Push or pull lever 1 until green appears and adjust the height of the seat while checking that the green in display 2 remains visible.

IMPORTANT	*To avoid causing damage, do not activate the compressor for over 1 minute.*



SEAT BACK-REST ANGLE ADJUSTMENT (FIG. C)

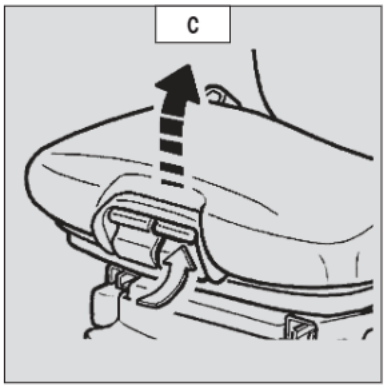
The back-rest angle of the seat may be adjusted to suit the individual.

- Press the left-hand button while pushing on the seat or relaxing pressure on the seat to find a comfortable position.

SEAT DEPTH ADJUSTMENT (FIG. D)

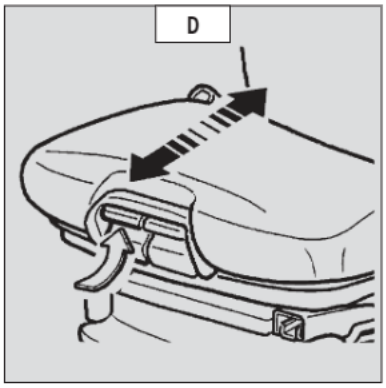
The depth of the seat may be adjusted to suit the individual.

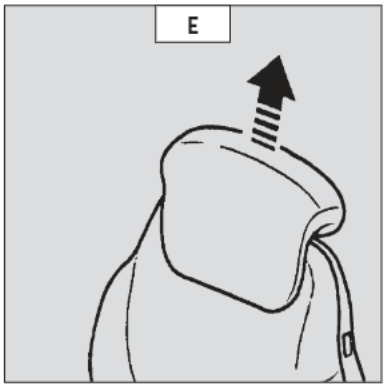
- Press the right-hand button while raising or lowering the seat to find the desired position.



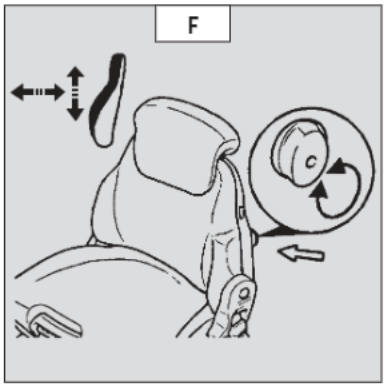
EXTENDING THE HEAD-REST (FIG. E)

- The height of the back-rest can be adjusted by pulling it upwards (the notches will click) up to the stop.
- The head-rest can be removed by applying sufficient pressure to pull it off the stop.



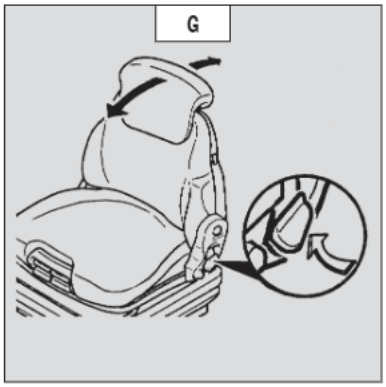


LUMBAR ADJUSTMENT (FIG. F)
This increases the comfort of the seat and the driver's freedom of movement.
- Turn the handle either left or right to adjust the height or depth of the lumbar support.

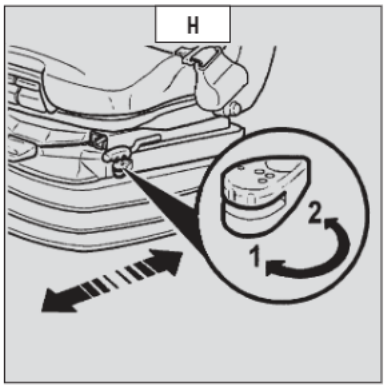


ADJUSTMENT OF THE ANGLE OF THE BACK-REST (FIG. G)
- Support the back-rest, pull the lever and position the back-rest to find the desired position.

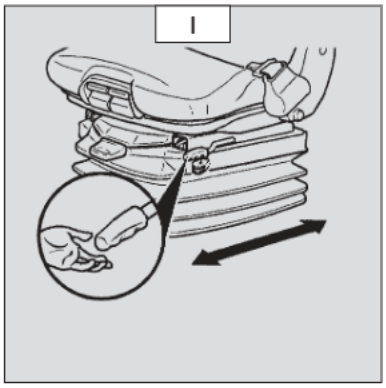
CAUTION	*If you do not support the back-rest when making adjustments, it swings completely forwards.*



HORIZONTAL SHOCK ABSORBER (FIG. H)
In certain conditions (e.g. driving with a trailer) it is advised that a horizontal shock absorber be used. The driver's seat is thus better able to absorb jerks in the direction of travel.
- Position 1: Horizontal shock absorber fitted.
- Position 2: Horizontal shock absorber removed.



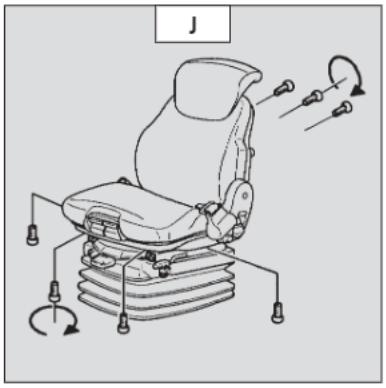
LONGITUDINAL ADJUSTMENT (FIG. I)
- Adjust the locking lever until you reach the position required. This then locks and the seat will not shift into another position.



SERVICING (FIG. J)
Dirt may adversely affect the correct functioning of the seat. For this reason, make sure your seat is always clean.
- To clean or change the cushions, simply remove them from the seat frame.

CAUTION	*A rocking head-rest increases the risk of an accident!*

Avoid wetting the cushion fabric when cleaning. Check the resistance of the fabric on a small hidden area before using any fabric or plastic cleaner.

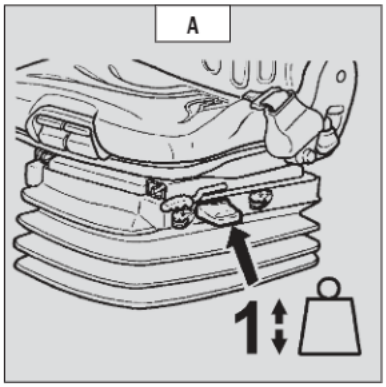


1 - DELUXE PNEUMATIC DRIVER'S SEAT (OPTION)

DESIGNED FOR MAXIMUM COMFORT, THIS SEAT CAN BE ADJUSTED AS FOLLOWS.

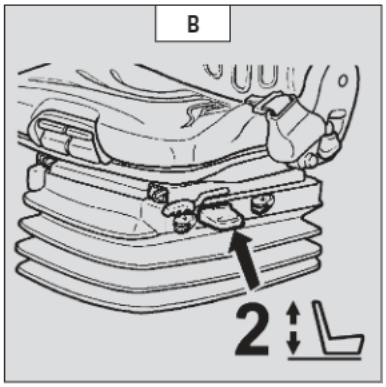
WEIGHT ADJUSTMENT (FIG. A)
It is advised that you adjust the seat according to your weight when sitting.
- Switch on lift truck ignition.
- Pull or push lever 1 briefly. Adjustment is automatic.

NOTE: To avoid any health problems, it is recommended that the weight should be checked and adjusted before starting up the lift truck.



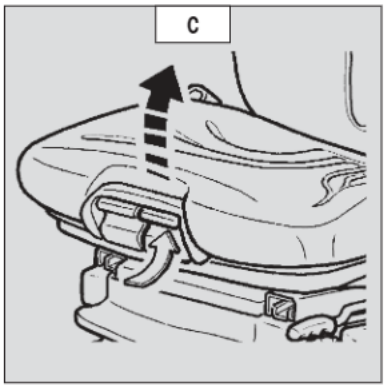
SEAT HEIGHT ADJUSTMENT (FIG. B)
When weight adjustment has been carried out, you can then modify seat height.
- Keep the ignition on in the lift truck.
- Pull or push lever 1 and adjust the seat height.

IMPORTANT	*To avoid causing damage, do not activate the compressor for over 1 minute.*



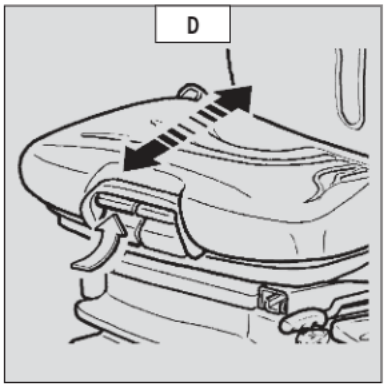
SEAT BACK-REST ANGLE ADJUSTMENT (FIG. C)
The back-rest angle of the seat may be adjusted to suit the individual.
- Press the left-hand button while pushing on the seat or relaxing pressure on the seat to find a comfortable position.

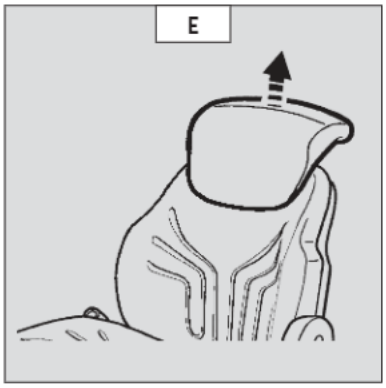
SEAT DEPTH ADJUSTMENT (FIG. D)
The depth of the seat may be adjusted to suit the individual.
- Press the right-hand button while raising or lowering the seat to find the desired position.

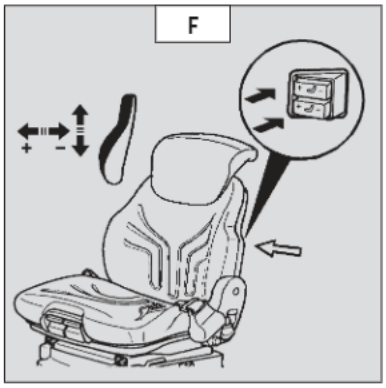


EXTENDING THE HEAD-REST (FIG. E)
- The height of the back-rest can be adjusted by pulling it upwards (the notches will click) up to the stop.
- The head-rest can be removed by applying sufficient pressure to pull it off the stop.

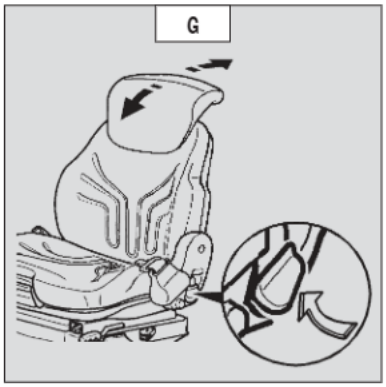
LUMBAR ADJUSTMENT (FIG. F)
This increases the comfort of the seat and the driver's freedom of movement.
- Press the raise and lower switches to adjust the curvature of the seat back to your requirements.







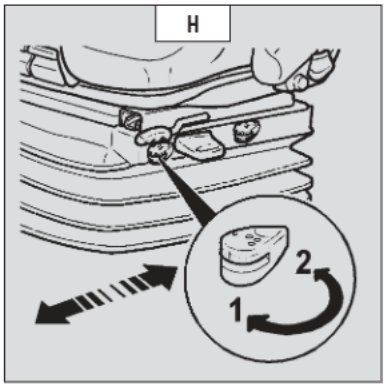
ADJUSTMENT OF THE ANGLE OF THE BACK-REST (FIG. G)
- Support the back-rest, pull the lever and position the back-rest to find the desired position.



CAUTION	*If you do not support the back-rest when making adjustments, it swings completely forwards.*

HORIZONTAL SHOCK ABSORBER (FIG. H)
In certain conditions (e.g. driving with a trailer) it is advised that a horizontal shock absorber be used. The driver's seat is thus better able to absorb jerks in the direction of travel.
- Position 1: Horizontal shock absorber fitted.
- Position 2: Horizontal shock absorber removed.

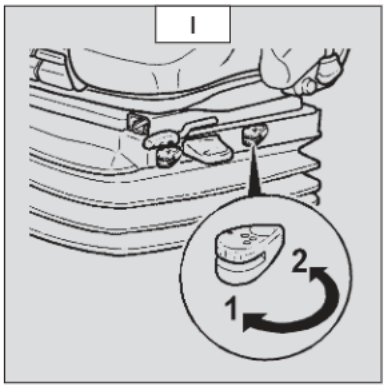
DAMPING (FIG. I)
The damping of the seat can be adjusted to suit the nature of the terrain. The comfort of the seat is thus adjustable to suit your requirements.
- Position 1: Soft damping.
- Position 2: Hard damping.



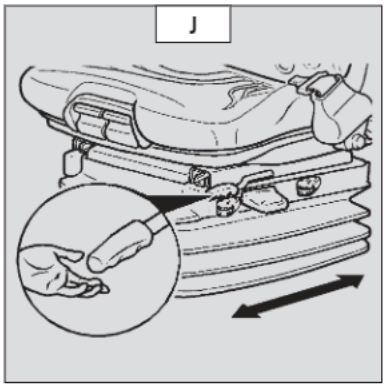
LONGITUDINAL ADJUSTMENT (FIG. J)
- Adjust the locking lever until you reach the position required. This then locks and the seat will not shift into another position.

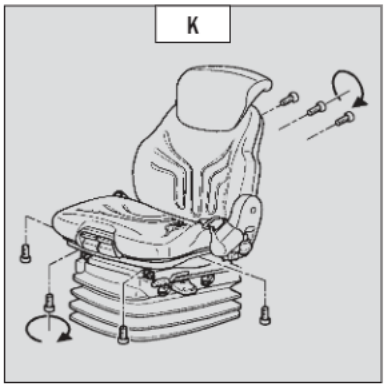
MAINTENANCE (FIG. K)
Dirt may adversely affect the correct functioning of the seat. For this reason, make sure your seat is always clean.
- To clean or change the cushions, simply remove them from the seat frame.

CAUTION	*A rocking head-rest increases the risk of an accident!*



Avoid wetting the cushion fabric when cleaning. Check the resistance of the fabric on a small hidden area before using any fabric or plastic cleaner.



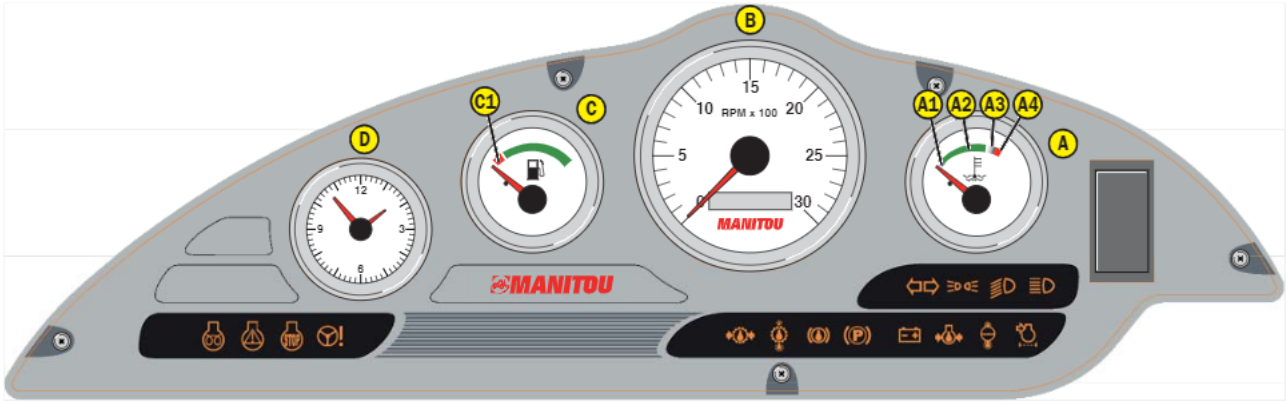


2 - SAFETY BELT

- Sit correctly on the seat.
- Check that seat belt is not twisted.
- Place the seat belt at hip level.
- Attach the seat belt and check that it locks.
- Adjust the seat belt to your body shape without squeezing your hip and without over-slack.

WARNING	*Do not operate the lift truck with a defective seat belt (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.*

3 - CONTROL AND SIGNAL LIGHTS PANEL



CONTROL INSTRUMENTS

A - I.C. ENGINE WATER TEMPERATURE

Temperature zone:

A1 - Blue zone (0° - 50°) Use the lift truck with moderation, wait for temperature to increase before normal operation.
A2 - Green zone (50° - 100°) Use lift truck normally.
A3 - White/red zone (100° - 105°) Use lift truck with moderation, monitor the temperature.
A4 - Red zone (105° - 120°) Stop the lift truck, look for the cause of overheating.

NOTE: Red indicator light comes on between zone A3 and A4.

B - HOOUR METER AND REV COUNTER

C - FUEL LEVEL

Red zone C1 indicates that you are using the reserve supply and that time of use is limited.

D - TIME DIAL

SIGNAL LIGHTS

WARNING	*A permanently lit or flashing warning lamp, with the engine running, is the sign of an operating fault. The lighting of some lamps may be accompanied by an audible signal. Do not ignore this warning, consult your dealer without delay. If one of the warning lamps comes on while the lift truck is in motion, stop the lift truck under the safest possible conditions. In order to comprehend the diagnostic and find cause of the malfunction, refer to chapter: 3 - MAINTENANCE: SERVICING SCHEDULE.*

When activating the electrical system of the lift truck, all the red and orange lamps and the panel's buzzer must light to indicate their good working order. If one of the red lamps or the buzzer does not function, carry out the necessary repairs.

NOTE: The indicator lights go off after engine preheating.

ORANGE I.C. ENGINE PREHEATING INDICATOR LIGHT
Preheating is necessary. When the lift truck is switched on, the lamp comes on for 2 seconds and off as soon as preheating is ended. Start the lift truck's I.C. engine.

ORANGE I.C. ENGINE WARNING INDICATOR LIGHT
If the lamp comes on or flashes while the lift truck is in operation, a diagnostic fault has been detected. The lift truck will operate in reduced mode. Consult your dealer without delay.

RED I.C. ENGINE STOPPED INDICATOR LIGHT
If the lamp comes on or flashes, when the lift truck is running, stop the I.C. engine immediately and consult your dealer.

RED STEERING SYSTEM OIL PRESSURE WARNING INDICATOR LIGHT (OPTION)
If the lamp comes on when the lift truck is running, stop the I.C. engine immediately and look for the cause (possible leak, etc.).

RED GEAR BOX OIL PRESSURE WARNING INDICATOR LIGHT

The lamp and buzzer come on when there is an abnormal drop in gear box pressure, in forward gear. Stop the I.C engine and look for the cause (gear box oil level, possible leak, radiator, etc.).

NOTE: The signal light operates in forward travel conditions only, the signal should not be taken into account when the I.C. engine is running at idle or is stopped.

RED TRANSMISSION OIL TEMPERATURE FAULT NDICATOR LIGHT

The lamp and buzzer come on when the gearbox oil temperature is abnormally high. Stop the I.C engine and look for the cause (gear box oil level, possible leak, radiator, etc.).

RED BRAKING OIL LEVEL WARNING INDICATOR LIGHT

If the lamp and the buzzer come on, when the lift truck is running, stop the I.C. engine immediately and look for the cause (braking oil level, possible leak, etc.). In the event of an abnormal dropping of the level, consult your dealer.

RED PARKING BRAKE LAMP

This lamp comes on when the parking brake is applied.

BATTERY CHARGE WARNING INDICATOR LIGHT

If the lamp and the buzzer come on when the lift truck is running, stop the I.C. engine immediately and look for the cause (electric circuit, alternator belt, alternator, etc.).

RED I.C. ENGINE OIL PRESSURE WARNING INDICATOR LIGHT

If the lamp and the buzzer come on when the lift truck is running, stop the I.C. engine immediately and look for the cause (engine oil level, possible leak, etc.).

RED I.C. ENGINE WATER TEMPERATURE WARNING INDICATOR LIGHT

If the lamp and the buzzer come on when the lift truck is running, stop the I.C. engine immediately and look for the cause (coolant level, possible leak, radiator, etc.).

RED AIR FILTER OR HYDRAULIC RETURN FILTER CLOGGED INDICATOR LIGHT

The lamp and buzzer come on when the air filter cartridge or the hydraulic return oil filter cartridge is clogged up. Stop the I.C. engine and carry out the necessary repairs (see cleaning and replacement requirements in chapter: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).

GREEN DIRECTION INDICATOR LAMP

GREEN SIDELIGHTS LAMP

GREEN LOW BEAM LAMP

BLUE MAIN BEAM LAMP

4 - N/A

5 - SWITCHES

NOTE: The location of the switches may vary depending on the options.

A - ELECTRICAL JIB PROVISION OPTION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

B - ATTACHMENT HYDRAULIC CONTROL FORCED OPERATION OPTION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

C - WHEEL ALIGNMENT LAMPS

D - WARNING LIGHTS

E - REAR FOG LIGHT

F - SELF-CLEANING FAN OPTION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

G - STEERING SELECTION

H - TRANSMISSION CUT-OFF
The switch selects transmission cut-off to the service brake pedal or the hydraulic controls lever.

- Position 1: Indicator light on, transmission cut-off to service brake pedal effected.

- Position 2: Indicator light off, transmission cut-off to hydraulic control lever effected.

USE OF TRANSMISSION CUT-OFF
Transmission cut-off to brake pedal (position 1).
- When loading.

Transmission cut-off to hydraulic controls lever (position 2).
- When driving.
- For inching and continuous stopping and starting (delicate handling). In order to optimize hydraulic movements, cut off transmission to the hydraulic controls lever.
- Starting up on a slope.

NOTE: In all cases transmission cut-off can be effected using the gear lever.

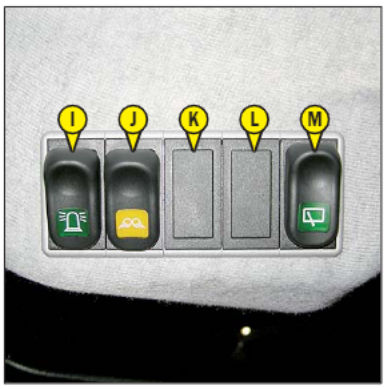
I - REVOLVING LIGHT

J - FRONT AND REAR WORKING LIGHTS

K - JIB HEAD LIGHT OPTION

L - REAR WINDOW DEFROSTING OPTION

M - SIDE WINDSCREEN WIPER + ROOF WINDSCREEN WIPER OPTION



N - DUAL EFFECT HYDRAULIC TOWING HOOK OPTION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

O - SINGLE OR DUAL EFFECT REAR HYDRAULIC PREDISPOSITION OPTION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

P - ATTACHMENT HYDRAULIC LOCKING DEVICE OPTION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

Q - OPTION JIB SUSPENSION
See: 2 - DESCRIPTION: DESCRIPTION AND USE OF THE OPTIONS.

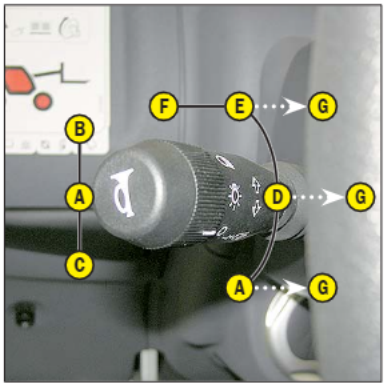
R - NEUTRALIZATION OF HYDRAULIC MOVEMENTS
When driving on the road, it is highly recommended that you cut-off all the hydraulic movements. The lamp shows when it is in use.

6 - LIGHTS SWITCH, HORN AND INDICATOR SWITCH

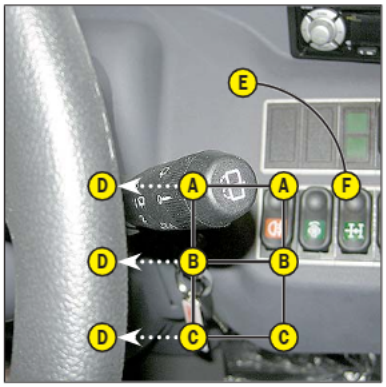
The switch controls the visual and sound alarms.

A - All lights are off, the direction indicators do not flash.
B - The right hand direction indicators flash.
C - The left hand direction indicators flash.
D - The sidelights and the rear lights are on.
E - The dipped headlights and the rear lights are on.
F - The main beam headlights and the rear lights are on.
G - Headlight signal.

Pressing the switch sounds the horn.
NOTE: The positions D - E - F - G can be carried out without the ignition being on.



7 - FRONT AND REAR WINDSCREEN WIPER SWITCH



FRONT WINDSCREEN WIPER
A - Front windscreen wiper off.
B - Front windscreen wiper low speed setting.
C - Front windscreen wiper high speed setting.
D - Front windscreen wiper intermittent setting.

REAR WINDSCREEN WIPER
E - Rear windscreen wiper off.
F - Rear windscreen wiper on.

NOTE: These functions will only work when the ignition is switched on.

8 - IGNITION SWITCH

The key switch has five positions:

P - Ignition off, parking position.
O - Ignition switched off and I.C. engine stopped.
I - Ignition and pre-heating.
II - Not used.
III - The I.C. engine starts, return to position I as soon as the key is released.

9 - BRAKING OIL AND WINDSCREEN WASHER TANK ACCESS PANEL

- Loosen screw 1 and lift up the braking oil and windscreen washer tank access panel.

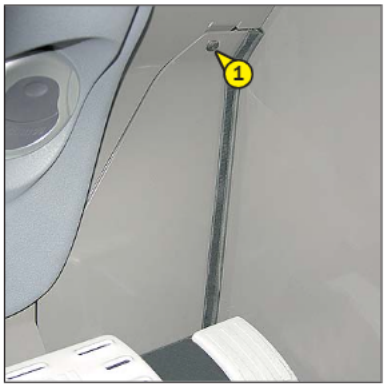
See: 3 - MAINTENANCE: B - EVERY 50 HOURS SERVICE.

10 - ARMREST AND STORAGE

- Lift the armrest 1 to access the storage.

11 - CAR RADIO (OPTION)

12 - FUSES AND RELAYS IN THE CAB



- Lift up the fuse and relay access panel 1.

NOTE: A decal on the inside of the access panel gives a clear display of the use of the components described below.

IMPORTANT	*Always replace a faulty fuse with another of equivalent rating. Never use a fuse that has been repaired.*

F1 - Electronic control unit power supply (7,5A).
- OPTION Attachment hydraulic locking device (7,5A).

F2 - Working tail light (10A).
F3 - Rear windscreen wiper (7,5A).
- OPTION Side windscreen wiper + Roof windscreen wiper (10A).

F4 - Stop I.C. engine electrovalve (7,5A).
- OPTION Attachment easy hydraulic connection (7,5A).

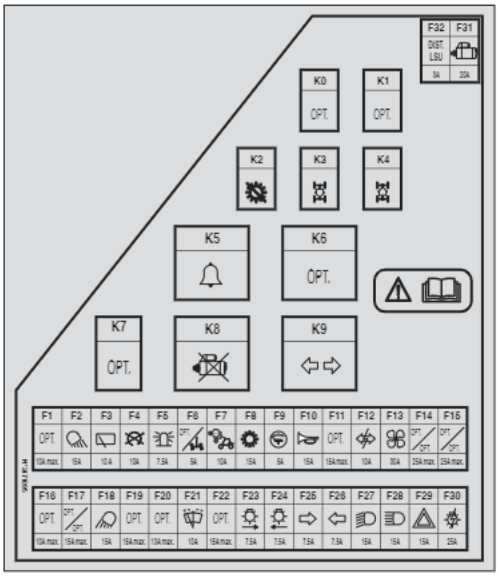
F5 - Revolving light (7,5A).
F6 - Wheel alignment (5A).
F7 - OPTION Cutting off “simple” hydraulic movements (10A).
F8 - Forward/neutral/reverse selector (15A).
- Transmission cut-off (15A).
- Reverse lights (15A).
- OPTION Reverse buzzer alarm (15A).

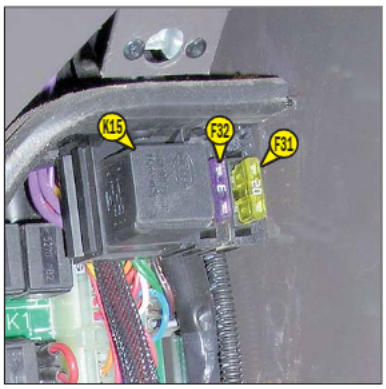
F9 - Control panel (5A).
F10 - Sound alarm (15A).
- Stop switch (15A).

F11 - OPTION Jib head light (10A).
F12 - Indicator power supply (10A).
F13 - Heating (30A).
F14 - Cigar lighter (10A).
F15 - OPTION Oil cooler (25A).
F16 - OPTION Air conditioning (7,5A).
F17 - OPTION Electrovalve on jib head (10A).
- OPTION Electrovalve on jib head +attachment hydraulic locking device (10A).
- OPTION Electrical jib provision (10A).
- OPTION Anti-theft device provision (10A).
- OPTION Anti-theft system (10A).
- OPTION Anti-start system (10A).
- OPTION Self-cleaning fan (10A).
- OPTION Electrovalve on jib head + self-cleaning fan (15A).
- OPTION Hydraulic towing hook (10A).
- OPTION Single or dual effect rear hydraulic predisposition (10A).
- OPTION Two dual effect rear hydraulic (15A).
- OPTION Hydraulic towing hook +single or dual effect rear hydraulic predisposition (15A).
- OPTION Dual effect rear hydraulic predisposition +single effect rear hydraulic predisposition (15A).

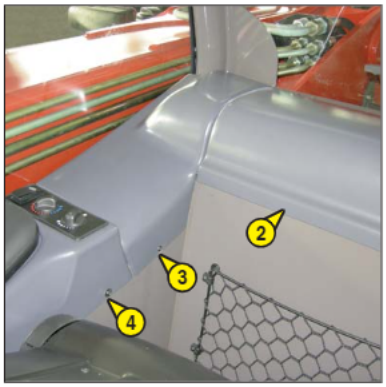
F18 - Front working light (15A).
F19 - OPTION Rear window defrosting (15A).
F20 - OPTION Pneumatic seat (10A).
F21 - Front windscreen wiper and windscreen washer (10A).
F22 - OPTION Jib suspension (10A)
F23 - Right sidelight (7,5A).
- Sidelight indicator light (7,5A).
- Control panel lighting (7,5A).
- OPTIONAL Number plate lighting (7,5A).

F24 - Left sidelights (7,5A).
F25 - Right indicators (7,5A).
F26 - Left indicators (7,5A).





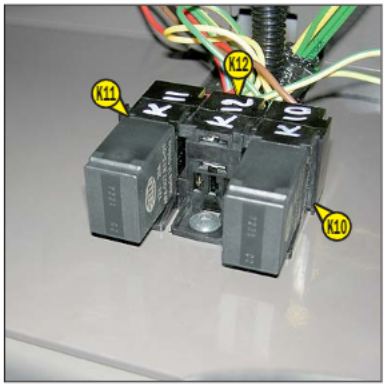
F27 - Low beam (15A).
- Low beam indicator light (15A).
- Rear fog light (15A).
F28 - Main beam (15A).
- Main beam lamp (15A).
F29 - Warning lights (15A).
- Roof light (15A).
- OPTIONAL (+)permanent (15A).
F30 - Lights, horn and indicator switch (25A).
F31 - Starter (20A).
F32 - Electroproportional hydraulic control modules (3A)
- OPTION Jib suspension (5A)
- OPTION Cutting off "aggravating" hydraulic movements (5A)
- OPTION Attachment hydraulic control forced operation (5A)



K0 - OPTION Air conditioning.
K1 - Relay cutting transmission to hydraulic controls.
K2 - Transmission cut-off relay.
K3 - Reverse gear relay.
K4 - Forward gear relay.
K5 - Buzzer.
K6 - OPTIONAL Electrovalve on jib head.
- OPTION Electrical jib provision.
- OPTION Electrovalve on jib head + attachment hydraulic locking device.
K7 - OPTION Cutting off "simple" hydraulic movements.
K8 - Safety system starting switch relay.
K9 - Flashing unit.
K15 - Relay cutting power supply to proportional hydraulic controls.

Lift the lid 2 of the tool box for access to fuse.
F33 - Electronic control unit (1A).
F34 - Diagnostic socket (5A).

- Remove the les casings 3 and 4 of the hydraulic control for access to relays.
K10 - OPTION Jib suspension.
K11 - OPTION Jib suspension.
K12 - OPTION.



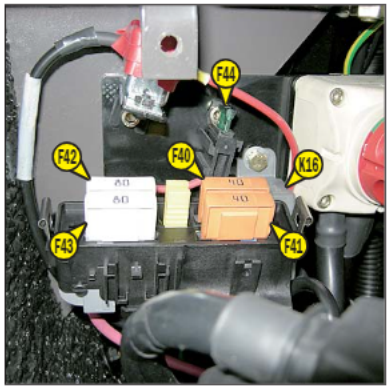
13 - FUSES AND RELAYS UNDER THE ENGINE HOOD

Remove casing 1 and cover 2 for access to fuses and relays.

IMPORTANT	*Always replace a faulty fuse with another of equivalent rating. Never use a fuse that has been repaired.*

F40 - Lift truck electrical equipment (40A).
F41 - Lift truck electrical equipment (40A).
F42 - Preheating I.C. engine (80A).
F43 - Alternator (80A).
F44 - I.C engine electronic control unit (30A).
F45 - OPTION Diesel decongealant (15A).

K16 - Engine preheating relay.
K20 - OPTION Diesel decongealant.



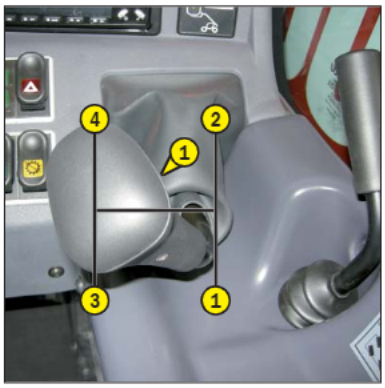
14 - ACCELERATOR PEDAL

NOTE: There is an OPTIONAL hand-operated accelerator in the cabin.

15 - SERVICE BRAKE PEDAL AND TRANSMISSION CUT-OFF

The pedal applies on the front and rear wheels by an hydraulic brake system, and allows the lift truck to be slowed down and stopped. Depending on the position of the transmission cut-off switch, it enables the free travel to cut off transmission (see: 2 - DESCRIPTION: 5 - SWITCHES PANEL).

16 - GEAR LEVER AND TRANSMISSION CUT-OFF



In order to change speeds, it is necessary to cut the transmission by pressing the button 1 on the lever.

1st gear: to the right, backwards.
2nd gear: to the right, forwards.
3rd gear: to the left, backwards.
4th gear: to the left, forwards.

USING THE GEARS ON THE GEAR BOX

- On these lift trucks with a torque converter, it is not necessary to automatically start up in 1st speed and progress up the gears.

CAUTION	*The choice of transmission gear ratio should be made carefully according to the nature of the work being carried out. A poor choice may result in the rapid rise of the transmission oil temperature through excessive slipping of the converter, which could lead to serious damage to the transmission (it is essential to stop and change the working conditions if the transmission oil temperature indicator light comes on). This poor choice may also result in a reduction in the lift truck's performance in forward gear. When the forward force increases, the forward speed in the gear (for example, in 3rd gear) may be lower than the forward speed that could be obtained with the 2nd instead of 3rd gear.*

In general, we would advise you to use the following gears according to the nature of the work being carried out.

- On the road: Set off in 3rd gear and go up to 4th if the conditions and state of the road permit it. In hilly areas, set off in 2nd gear and go up to 3rd if the conditions and state of the road permit it.
- With a trailer on the road: Set off in 2nd gear and go up to 3rd if the conditions and state of the road permit it.
- Handling: 3rd gear.
  2nd gear in restricted spaces.
- Loading (reclaiming with bucket, manure fork, etc.): 2nd gear.
- Earth moving: 1st gear.

17 - FORWARD/NEUTRAL/REVERSE GEAR SELECTION

FORWARD: Push the knob forward (position A).
REVERSE: Pull the knob backwards (position B).
NEUTRAL: The knob must be in the intermediate position to start the lift truck (position C).

When operating this control, the lift truck should be travelling at slow speed and not accelerating.

SAFETY FOR MOVING THE LIFT TRUCK

Authorization to move the lift truck is controlled by an electronic unit. The operator must observe the following sequence to move the truck forwards or backwards:

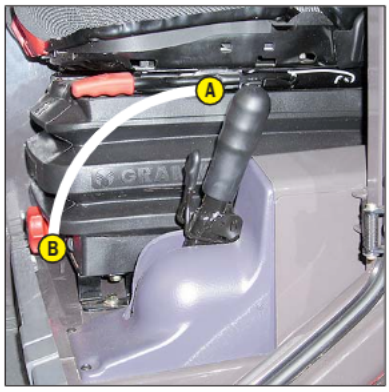
1 - sit down correctly in the driver's seat,
2 - release the parking brake,
3 - engage forward or reverse movement.

To stop the lift truck, he must observe the following sequence:

1 - Set the forward/reverse selector to neutral,
2 - engage the parking brake,
3 - get out of the lift truck.

NOTE: If the operator leaves the driving cab with forward or reverse engaged, a continuous alarm will sound. When this alarm sounds, the operator can simply sit back in the seat and continue advancing or reversing.
If the alarm contines, the operator must sit back in the seat, put the forward/reverse selector back in neutral and select forward or reverse if he wishes to continue moving.

18 - PARKING BRAKE LEVER



To prevent accidental loosening or release, the lever is fitted with safety locking.

- To apply the parking brake, pull the lever backwards (position A).
- To loosen the parking brake, release and push the lever forwards (position B).

19 - STEERING SELECTION

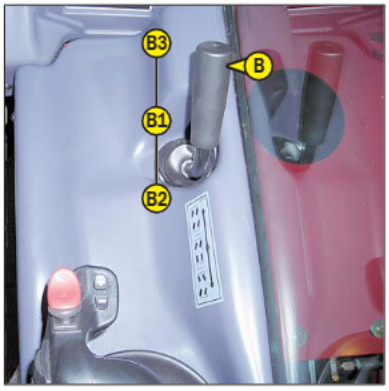
Before selecting one of the three possible steering positions, bring the 4 wheels into alignment, i.e., in the straight ahead position.

A - GREEN WHEEL ALIGNMENT LAMPS

These lamps come on to indicate the alignment of the wheels in relation to the lift truck. Lamp A1 for the front wheels and lamp A2 for the rear wheels.

CAUTION	*Before selecting one of the three possible steering positions, bring all 4 wheels into alignment with regards to the lift truck axle. Never change the steering mode while driving.*

B - STEERING SELECTION LEVER



B1 - Front drive wheels (highway traffic).

B2 - Front and rear drive wheels in opposite direction (short steering lock).

B3 - Front and rear drive wheels in the same direction (crab steering).

C - SWITCH FOR ALIGNMENT OF THE WHEELS

This switch enables the use of the device for alignment of the wheels. The indicator light indicates its use.

CONTROL FOR ALIGNMENT OF THE WHEELS
- Connect the switch (signal light ON).
- Shift the steering selection lever B into position B2 (short steering lock).
- Turn the steering wheel and bring the rear wheels into alignment until lamp A2 lights up.
- Shift the steering selection lever B into position B1 (highway traffic).

WARNING	*Before driving on public roads, it is necessary to set the alignment of the rear wheels and to drive in front wheel steer. Long distance travel requires periodically stopping the lift truck to check the rear wheel's alignment (using the green lamps). In case of anomalies, consult your dealer.*

20 - HYDRAULIC CONTROLS AND TRANSMISSION CUT-OFF

WARNING	*Do not attempt to alter the hydraulic system pressure by interfering with the pressure regulating valve. In the event of suspected malfunction, contact your dealer. ANY ALTERATION MAY VOID THE WARRANTY.*

WARNING	*Use the hydraulic controls carefully without sudden movements, to avoid accidents caused by shaking the lift truck.*

NOTE: If necessary use the steering to reset the hydraulic control steering accumulator.

A - Lifting and tilting control lever.
B - Telescoping control button.
C - Attachment control button.
D - Jib head electrovalve option control button.

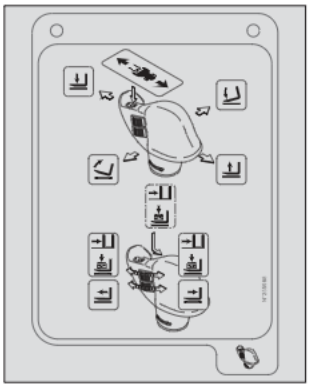
LIFTING THE LOAD
- The lever A backwards when lifting.
- The lever A forwards when lowering.

TILT OF CARRIAGE
- The lever A to the left for reverse tilt

TELESCOPING
- Button B forwards for extending.
- Button B backwards for retracting.

ATTACHMENT
- The button C forwards or backwards.

OPTION JIB HEAD ELECTROVALVE
- Button D (see: 2 - DESCRIPTION: DESCRIPTION AND USE OF ELECTRICAL AND HYDRAULIC OPTIONS).

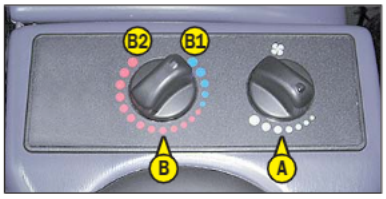


NOTE: When driving on the road, it is highly recommended that you cut-off all the hydraulic movements (see 2 - DESCRIPTION 5 - SWITCH PANEL).

21 - FUNCTION FILES

These files contain the description of the hydraulic controls and the load charts for the attachments used on the lift truck.

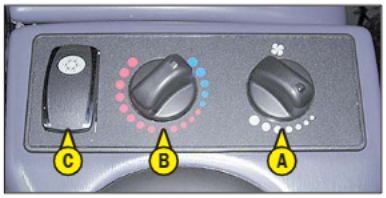
22 - HEATER CONTROL



A - HEATING FAN CONTROL
This 3-speed control regulates warm or cold air through the heating ventilators.

B - HEATING TEMPERATURE CONTROL
Allows the temperature inside the cab to be adjusted.
B1 - With the valve closed, the fan delivers fresh air.
B2 - With the valve opened completely, the fan delivers warm air.
The intermediate positions allow the temperature to be adjusted.

22 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)



IMPORTANT
The air conditioning operates only while the lift truck engine is running. During use, keep the doors and windows closed. ***In the winter : To ensure correct operation and efficiency of the air conditioning unit, run the compressor once a week, for a few minutes, to lubricate the internal seals.*** ***In cold weather : Warm the I.C. engine before switching on the compressor, this will allow the coolant that has collected in the liquid state at the lowest point of the compressor circuit to turn into gas by the heat given off by the I.C. engine (otherwise the compressor is liable to be damaged by pumping coolant in the liquid state when operated).***

WARNING	
⚠ WARNING	***If your air conditioning does not seem to be working properly, have it examined by your dealer (see : 3 - MAINTENANCE : H - EVERY TWO YEARS "OPTION AIR CONDITIONING"). The air conditioning system is under high pressure, repairs must be made by a professional airconditioning repairman.***

DESCRIPTION OF THE AIR CONDITIONING CONTROLS
A - Air conditioning system ON/OFF control switch with indicator lamp. Only works when control switch "C" set to 1, 2 or 3.
B - Air temperature control.
C - Air flow and fan speed control. When this control is set to "0" the air conditioning system will not work.

NOTE: Possible losses of water under the lift truck are due to condensate discharges caused by the drying effect of the installation, especially with high outside temperatures and high relative humidity.
For the air conditioning to perform properly, the air intakes must not be blocked by frost, snow or leaves.
When the facility is running, at least one of the cab air grilles must be open so as to avoid any risk of freezing to the evaporator.

HEATING MODE
The controls must be adjusted in the following way:
A - Control with signal light off.
B - At the required temperature.
C - To the desired position 1, 2 or 3.

CONDITIONED AIR MODE
The controls must be adjusted in the following way:
A - Control with signal light on.
B - At the required temperature.
C - To the desired position 1, 2 or 3.

DEMISTING MODE
The controls must be adjusted in the following way:
A - Control with signal light on.
B - At the required temperature.
C - To the desired position 1, 2 or 3.
NOTE: Direct the ventilators onto the cab's windows for increased efficiency.

23 - CAB FILTER VENTILATORS

See: 3 - MAINTENANCE: D - EVERY 500 HOURS SERVICE.

24 - WINDSCREEN DEMISTER VENTS

For optimum effectiveness, close the heating ventilators.

25 - HEATING VENTS

These heating vents enable the air to be directed to the interior of the cabin and onto the side windows.

26 - DOOR LOCK

Two keys are provided with the lift truck to enable the cabin to be locked.

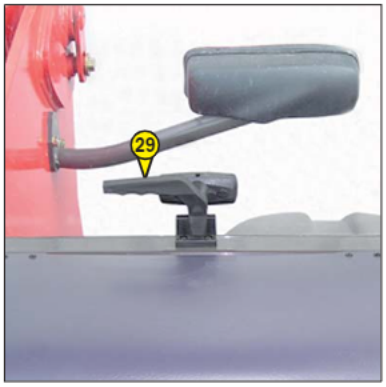
27 - LOCKING HANDLE FOR UPPER HALF-DOOR

28 - UNLOCKING BUTTON FOR UPPER HALF DOOR

29 - HANDLE FOR REAR WINDOW OPENING

EMERGENCY EXIT
Use the rear window as an emergency exit, if it is impossible to leave the cab by the door.

NOTE: There is an OPTIONAL rear window stay.

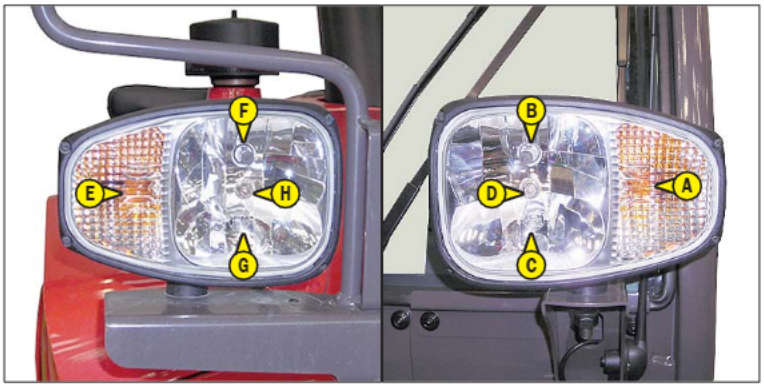


30 - DOCUMENT HOLDER

Ensure that the operator's manual is in its place in the document holder.

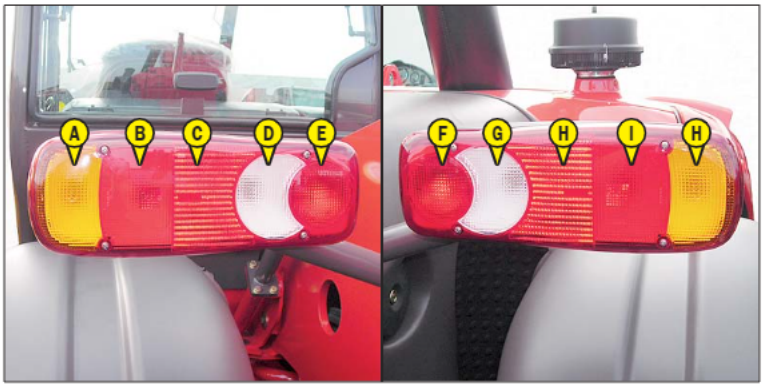
31 - FRONT LIGHTS

A - Left front indicator.
B - Left front dipped headlight.
C - Left front main beam.
D - Left front sidelight.
E - Right front indicator.
F - Right front dipped headlight.
G - Right front main beam.
H - Right front sidelight.



32 - REAR LIGHTS

A - Left rear indicator.
B - Left rear stoplight.
C - Left tail light.
D - Left rear reverse light.
E - Left rear fog light.
F - Right rear fog light.
G - Right rear reverse light.
H - Right tail light.
I - Right rear stoplight.
J - Right rear indicator.



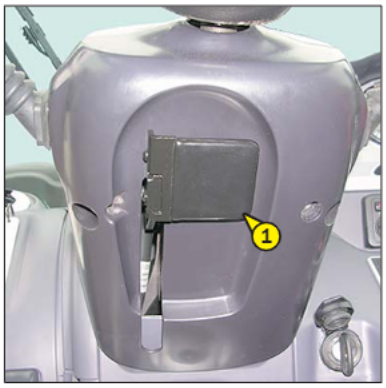
33 - REVOLVING LIGHT

The magnetic revolving light must be clearly visible on the roof of the cab and plugged-in to socket 1.

34 - STEERING WHEEL ADJUSTMENT LEVER

This handle enables the angle and height of the steering wheel to be adjusted.

- Pull handle 1 to adjust the steering wheel.
- Push in handle 1 to lock the steering wheel in the desired position.



35 - SPIRIT LEVEL

Enables the operator to check that the lift truck is in the horizontal position.

36 - SUN VISOR

37 - ROOF LIGHT

38 - HOOK

39 - CIGAR LIGHTER

40 - DIAGNOSTIC CONNECTOR

41 - TOOL BOX

TOWING PIN AND HOOK

Located at the rear of the lift truck, this device is used to attach a trailer. Its capacity is limited for each lift truck by the authorized gross vehicle weight, tractive effort and maximum vertical force on the coupling point. This information is given on the manufacturer's plate fixed to each lift truck (see: 2 - DESCRIPTION: IDENTIFICATION OF THE LIFT TRUCK).

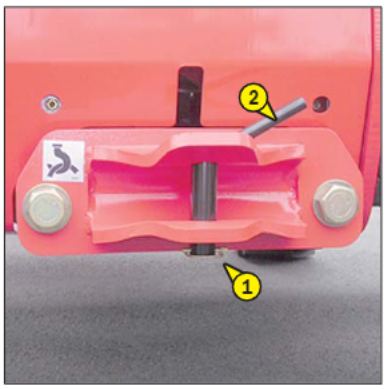
- To use a trailer, see current regulations in your country (maximum running speed, braking, maximum weight of trailer, etc.).
- Verify the trailer's condition before using it (tire condition and pressures, electrical connection, hydraulic hose, brake system...).

WARNING	*Do not tow a trailer or accessory which is not in proper working order. Using a trailer in poor condition may effect the lift truck's steering and braking, and safety.*

WARNING	*If a third party helps in coupling or uncoupling the trailer, they must be continually visible to the driver until the lift truck is parked and the I.C. engine is turned off.*

NOTE: There is an OPTIONAL rear-view mirror which allows the lift truck to be directed more closely to the trailer ring.

B - PROJECTING HOOK

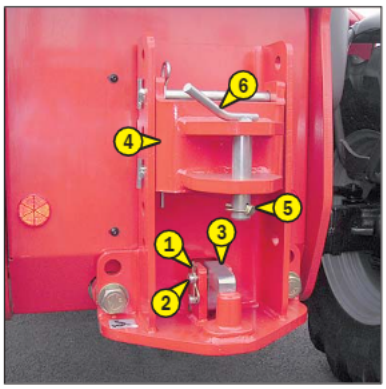


COUPLING AND UNCOUPLING THE TRAILER

- To couple the trailer, position the lift truck as close as possible to the trailer ring.
- Put the handbrake on and switch off the I.C. engine.
- Remove the clip 1, lift the trailer pin 2 and place or remove the trailer ring.

WARNING	*Risk of crushed fingers or hands! Keep hands and fingers clear while coupling the trailer! The safety clip 1 must be installed after coupling. Before uncoupling, make sure the trailer is blocked in place and independently supported.*

B - COUPLING LADDER (OPTIONAL)



COUPLING AND UNCOUPLING THE TRAILER

- To couple the trailer, position the lift truck as close as possible to the trailer ring.
- Put the handbrake on and switch off the I.C. engine.

ON THE FIXED PIN

- Remove pin 1, remove rod 2 and raise latch 3.
- Insert or remove the trailer ring, lower latch 3 and install rod 2.

WARNING	*Risk of crushed fingers or hands! Keep hands and fingers clear while coupling the trailer! The safety clip 1 must be installed after coupling. Before uncoupling, make sure the trailer is blocked in place and independently supported.*

ON THE COUPLING LADDER

- Set the coupling fitting 4 according to the height of the trailer ring.
- Remove the clip 5, lift the trailer pin 6 and place or remove the trailer ring.

C - HYDRAULIC TRAILER HOOK (OPTIONAL)

NOTE: The rear-view mirror OPTION is mandatory with the hydraulic trailer tow hook.

CAUTION	*Never use the tow hook to raise the rear of the lift truck (when changing the rear wheel for example).*

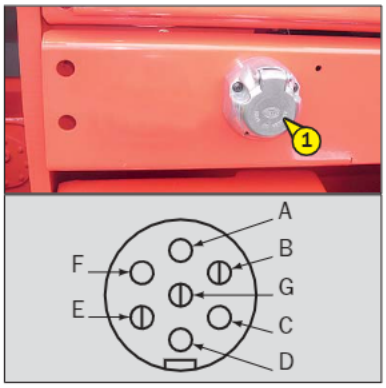
- Raise the hydraulic tow hook to release the hook lock 1 by pressing the upper part of switch 2.
- Pull the knob 3, retain this position and press the lower part of switch 2 to lower the tow hook.
- Release knob 3.
- Couple or uncouple the trailer.

CAUTION	*When uncoupling, make sure that the trailer is supported independently*

- Raise the trailer hook by pressing the upper part of switch 2 and then lower the hook to verify that the lock pin is in proper contact with hook 1 lock.

D - REAR ELECTRIC SOCKET

- Connect the male plug to the female socket 1 on the lift truck and make sure the lights of the trailer or the light bar are working properly.
  - A - Left rear indicator.
  - B - OPTION Rear fog lights.
  - C - Earth.
  - D - Right rear indicator.
  - E - Rear lights.
  - F - Rear stoplight.
  - G - Reversing light.



E - CONNECTING THE BRAKE SYSTEM (OPTION)

- Connect the brake hose to the provided brake unit 1 on the lift truck.
- Make sure the trailer brakes are working properly and test the effects of braking before taking the trailer onto the public highway.

DESCRIPTION AND USE OF THE OPTIONS

1 - BATTERY CUT-OFF

2 - REVERSE BUZZER ALARM

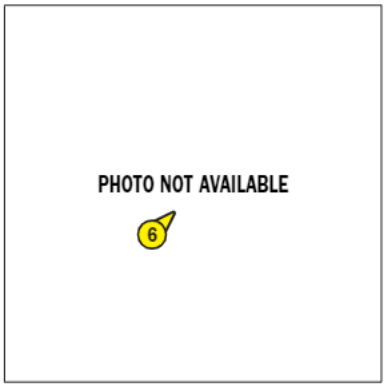
3 - NUMBER PLATE

4 - NUMBER PLATE LIGHTING

5 - REAR REFLECTORS

6 - PREHEATING ELEMENT

Enables the engine to be kept warm during prolonged periods of parking and thus improves engine starting.



SUPPLY CHARACTERISTICS OF PREHEATING SYSTEM:

- Rated range of power: 220-240V; 50-60Hz
- Current consumed: 4,5A
- Equipment in class 1
- Equipment connectable only on feeder circuit TT or TN
- Category of insulation 2

ENVIRONMENTAL CONDITIONS FOR USE:

- Maximum ambient temperature for using preheating: 77°F
- Pollution level 2

CONDITIONS FOR CONNECTION AND USE OF PREHEATING:

- The preheating system should not be used for an external ambient temperature higher than 77°F.
- It is essential that the power supply to the preheating system is:
  - Effected with a cable that conforms to the installation standards in force and contains a protective earth conductor.
  - Contains an appropriate sectioning system.
  - Incorporate an appropriate safety system against short circuits (fuses or circuit breaker) and a differential circuit breaker with 30 mA sensitivity.
- Only connect to and disconnect from the power supply while the unit is off and the I.C. engine is stopped.

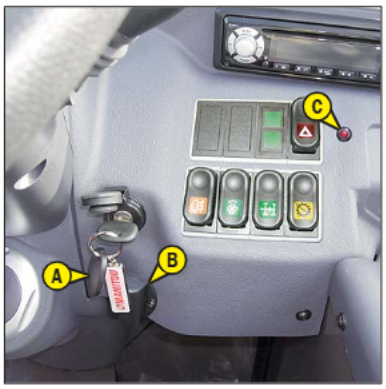
7 - MODCOD ANTI-THEFT SYSTEM

OPERATION

- Switch on the lift truck: the red indicator 1 will flash.
- Enter your user code followed by “V” to validate: the green indicator 2 will come on.
- Start the lift truck within the next 60 seconds; otherwise the anti-theft system will be reactivated and the red indicator 1 will flash.

NOTE: If you make a mistake when entering the code, press key “A” to cancel and re-enter the code in full.
If you wait more than 5 seconds between key presses or do not complete entering the code, the anti-theft system will be reactivated and the red indicator will flash.

8 - FINTRONIC ANTI-START SYSTEM



OPERATION

- Switch on the lift truck and set the black key A next to the antenna B (maximum 80 mm).
- Wait a few seconds for red LED C to go out before starting the lift truck.

NOTE: You can restart the lift truck within 20 seconds of stopping it: after this time, the anti-start system reacts and LED C flashes red.

9 - ELECTRICAL JIB PROVISION

Enables an electrical function to be used at the head of the jib.

OPERATION

- Hold button 1 down and move button 2 forwards or backwards.

NOTE: Switch 3 enables the function controlled by button 1 to be locked. Indicator 4 lights up to show when it is in use.

10 - QUICK-RELEASE COUPLER MACH2 ON ATTACHMENT CIRCUIT

PHOTO NOT AVAILABLE

11 - EXTERIOR DRAIN-BACK

Enables connection of an attachment for which drain-back is required.

PHOTO NOT AVAILABLE

12 - HYDRAULIC ATTACHMENT LOCKING

Enables attachment locking to be controlled on the carriage and the use of a hydraulic attachment on the same hydraulic circuit (see: 4 - OPTIONAL ATTACHMENTS FOR USE WITH THE RANGE: PICKING UP THE ATTACHMENTS).

13 - QUICK-RELEASE COUPLER MACH2 ON ATTACHMENT CIRCUIT + HYDRAULIC ATTACHMENT LOCKING

PHOTO NOT AVAILABLE

14 - ELECTROVALVE ON JIB HEAD

Enables use of two hydraulic functions on the attachment circuit.

IMPORTANT	*To make connection of the rapid connectors easier, decompress the hydraulic circuit by pressing button 1 on the electrovalve.*

PHOTO NOT AVAILABLE

OPERATION

- Button 1 not engaged, button 2 controls a hydraulic function.
- Hold button 1 down, button 2 controls another hydraulic function.

NOTE: Switch 3 enables the hydraulic function controlled by button 1 to be locked. Indicator 4 lights up to show when it is in use.

15 - JIB HEAD ELECTROVALVE + HYDRAULIC ATTACHMENT LOCKING

The addition of these two options enables the combining of several hydraulic functions.

PHOTO NOT AVAILABLE

16 - PREARRANGED TRAILER LOCKING

Enables the hydraulic connection of a braked trailer (see: 2 - DESCRIPTION: TOWING PIN AND HOOK).

17 - SINGLE OR DUAL EFFECT REAR HYDRAULIC CONTROL PREDISPOSITION

Enables the use of a hydraulic attachment at the rear of the lift truck (i.e. a trailer with hydraulic tipping).

OPERATION
- Switch 1 controls this predisposition.

18 - DUAL EFFECT REAR HYDRAULIC CONTROL PREDISPOSITION + SINGLE OR DUAL EFFECT REAR HYDRAULIC CONTROL PREDISPOSITION

OPERATION
- Switch 1 is used to select one or other of the rear hydraulic predispositions.

19 - DUAL EFFECT TOWING HOOK + SINGLE OR DUAL EFFECT REAR HYDRAULIC CONTROL PREDISPOSITION

OPERATION

- Switch 1 is used to select control of the towing hook (see: 2 - DESCRIPTION: TOWING PIN AND HOOK) or rear hydraulic predisposition.

20 - ATTACHMENT HYDRAULIC CONTROL FORCED OPERATION

DANGER	*This OPTION must only be used with an attachment requiring continuous hydraulic movement of type: brush, supply bucket, mixer, spray... It is strictly forbidden in handling operations or with other options (winch, crane jib, crane jib with winch, hook, etc.).*

CONTINUOUS HYDRAULIC MOVEMENT OF THE ATTACHMENT

- Make sure the potentiometer C is set to 0%.
- Switch button A to the front or the back (depending on the type of attachment), press button B and release button A. The red indicator 1, flashes to indicate that it is in operation.
- Set the required flowrate using potentiometer C.
- To stop continuous hydraulic movement of the attachment, move switch A forwards or backwards or press button B. Indicator 1 goes out.
- Set potentiometer C to 0%.

DANGER	*Never leave the driver's cab without resetting the potentiometer C to 0%. Before starting the lift truck, make sure the potentiometer is set to 0%.*

NOTE: If the operator leaves the driver's cab, the continuous hydraulic movement will automatically stop and must be restarted.

21 - JIB SUSPENSION

The jib is suspended to reduce shaking of the lift truck on rough ground (e.g. moving straw in a field).

OPERATION

- Set the forks or attachment on the ground and relieve the front wheels a few centimetres only.
- Press switch 1 set to position A, the visual indicator comes on indicating that jib suspension is activated.
- Press switch 1 set to position B, the visual indicator goes out indicating that jib suspension is deactivated.

IMPORTANT	***Jib suspension is active to a lifting height of 9.8 feet from the axis of articulation of the carriage with respect to the ground with the jib retracted. When you move beyond this height or make another hydraulic movement (tilting, telescoping, attachment), jib suspension is momentarily deactivated and the visual indicator of switch 1 goes out.***

- When the I.C. engine is off, jib suspension is automatically deactivated.

25 - CLEANFIX SELF-CLEANING FAN

This system, operated by switch 1, cleans the radiator core and the grille of the engine cover by reversing the air flow.

CAUTION	***When in use, protect eyes from risk of flying debris.***

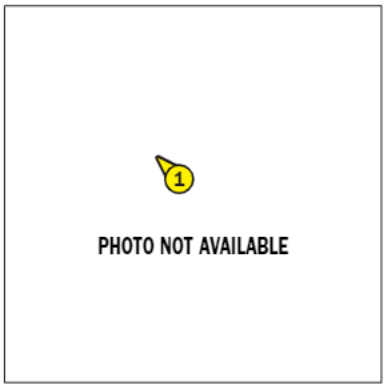
Position A: The indicator light is on, the fan operates in self-cleaning mode for a few seconds once every 3 minutes.
Position B: The indicator light is off, the fan is in normal operating mode.

26 - ATTACHMENT EASY HYDRAULIC CONNECTION

For easily connecting and disconnecting the attachment.

OPERATION

- Press the push-button 1 to release the attachment circuit hydraulic pressure.
- Connect or disconnect the rapid connectors of the hydraulic attachment.



3 - MAINTENANCE

TABLE OF CONTENTS

MANITOU ORIGINAL SPARE PARTS AND EQUIPMENT

OUR LIFT TRUCKS MUST BE SERVICED USING ORIGINAL MANITOU PARTS.

IF YOU USE PARTS WHICH ARE NOT ORIGINAL MANITOU PARTS,

YOU RISK

- Legally - to be held responsible in the event of an accident.

- Technically - to generate operating failure or shorten the life of the lift truck.

THE USE OF COUNTERFEIT PARTS OR COMPONENTS NOT APPROVED BY THE MANUFACTURER, MEANS YOU LOSE THE BENEFIT OF THE CONTRACTUAL GUARANTEE.

BY USING ORIGINAL MANITOU PARTS FOR MAINTENANCE OPERATIONS,

YOU BENEFIT EXPERTISE

Through its network, MANITOU provides the user with

- Know-how and competence.

- The guarantee of high-quality work.

- Original replacement components.

- Help with preventive maintenance.

- Efficient help with diagnosis.

- Improvements due to experience feedback.

- Operator training.

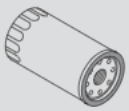
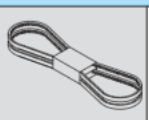
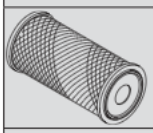
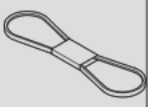
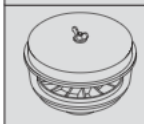
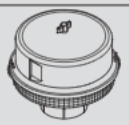
- Only the MANITOU network has detailed knowledge of the design of the lift truck and therefore the best technical ability to provide maintenance.

ORIGINAL REPLACEMENT PARTS ARE DISTRIBUTED EXCLUSIVELY BY MANITOU AND ITS DEALER NETWORK.

FILTERS CARTRIDGES AND BELTS

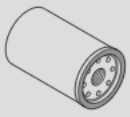
MLT 735 -120 LSU Series 4-E3

I.C. ENGINE

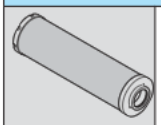
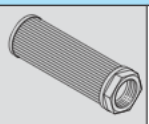
	I.C. ENGINE OIL FILTER Part number: 746954 Change: 500 H		ALTERNATOR BELT Part number: 244288
	DRY AIR FILTER CARTRIDGE Part number: 563416 Clean: 50 H* Change: 500 H*		FAN BELT Part number: 257524
	SAFETY DRY AIR FILTER CARTRIDGE Part number: 563415 Change: 1000 H*		COMPRESSOR BELT (OPTION AIR CONDITIONING) Part number: 244237
	FUEL FILTER Part number: 747351 Change: 500 H		CYCLONIC PREFILTER Part number: 224713 Clean: 10 H
	FUEL PRE-FILTER Part number: 747462 Change: 500 H		AUTOMATIC VACUUM-CLEANING PRE-FILTER (OPTION) Part number: 226611

*: This schedule is given for reference only (see: 3 - MAINTENANCE: SERVICING SCHEDULE) for cleaning and changing.

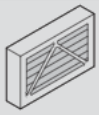
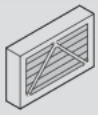
TRANSMISSION

	GEAR BOX OIL FILTER Part number: 561749 Change: 500 H

HYDRAULIC

	HYDRAULIC RETURN OIL FILTER CARTRIDGE Part number: 236094 Change: 500 H		SUCTION STRAINER FOR HYDRAULIC OIL TANK Part number: 224726 Clean: 1000 H
	FILTER CAP FOR HYDRAULIC OIL TANK Part number: 62415 Change: 1000 H		DISTRIBUTOR CONTROL HEAD FILTER Part number: 254780 Change: 1000 H

CAB

	CAB VENTILATION FILTER (WITHOUT AIR CONDITIONING) Part number: 225052 Clean: 500 H		CAB VENTILATION FILTER (WITH AIR CONDITIONING) Part number: 225052 Clean: 50 H Change: 250 H

LUBRICANTS AND FUEL

USE THE RECOMMENDED LUBRICANTS AND FUEL

For topping up, do not mix the oils.

DIAGNOSTIC ANALYSIS OF OILS

If a service or maintenance contract has been organized with the dealer, a diagnostic analysis of engine, gear box and axle oils may be requested depending on the rate of use.

(*) RECOMMENDED FUEL SPECIFICATION

Use a high-quality fuel to obtain optimal performance of the I.C. engine.

- N590 diesel fuel type - Auto/C0/C1/C2/C3/C4
- BS2869 Class A2
- ASTM D975-91 Class 2-2DA, US DF1, US DF2, US DFA
- JIS K2204 (1992) Grades 1, 2, 3 and Special Grade 3.

I.C. ENGINE				
COMPONENT	CAPACITY	RECOMMENDATION		
I.C. ENGINE	2.9 gal	Shell: Rotella 15w40 Citgo: C-600 15w40		
COOLING CIRCUIT	4.9 gal	Tulco 50/50 Premix Anti-freeze		
FUEL TANK	31.7 gal	Diesel fuel (*)		

TRANSMISSION				
COMPONENT	CAPACITY	RECOMMENDATION		
TRANSMISSION	4.4 gal	Shell: Donax TG Dexron III Citgo: Transgard ATF Dexron III		
ANGLE GEAR BOX	2.3 qts	Shell: Spirax DH 80w90 Citgo: Premium Gear MP 80w90		
TRANSMISSION UNIVERSAL JOINT		Shell: Rentinax Am Citgo: Lithoplex CM-2		

JIB			
COMPONENT	RECOMMENDATION		
JIB PADS	Shell: Rentinax Am Citgo: Lithoplex CM-2		
GREASING OF THE JIB	Shell: Rentinax Am Citgo: Lithoplex CM-2		

HYDRAULIC				
COMPONENT	CAPACITY	RECOMMENDATION		
HYDRAULIC OIL TANK	33.8 gal	Shell: Tellus T46 Citgo: Transgard THF Lo-Temp		

BRAKE			
COMPONENT	RECOMMENDATION		
BRAKE CIRCUIT	Shell: Donax TG Dexron III Citgo: Transgard ATF Dexron III		

CAB			
COMPONENT	RECOMMENDATION		
WINDSCREEN WASHER TANK	Windscreen washer fluid		

FRONT AXLE				
COMPONENT	CAPACITY	RECOMMENDATION		
FRONT AXLE DIFFERENTIAL*	1.9 gal	Shell: Donax TD Citgo: Transgard (THF)		
FRONT WHEELS REDUCERS	0.8 qt	Shell: Spirax DH 80w90 Citgo: Premium Gear MP 80w90		
FRONT WHEELS REDUCERS PIVOTS FRONT AXLE OSCILLATION		Shell: Rentinax Am Citgo: Lithoplex CM-2		

REAR AXLE				
COMPONENT	CAPACITY	RECOMMENDATION		
REAR AXLE DIFFERENTIAL*	1.9 gal	Shell: Donax TD Citgo: Transgard (THF)		
REAR WHEELS REDUCERS	0.8 qt	Shell: Spirax DH 80w90 Citgo: Premium Gear MP 80w90		
REAR WHEELS REDUCERS PIVOTS REAR AXLE OSCILLATION		Shell: Rentinax Am Citgo: Lithoplex CM-2		

CHASSIS			
COMPONENT	RECOMMENDATION		
TILTING CORRECTOR	Shell: Rentinax Am Citgo: Lithoplex CM-2		

* First 200 hrs: Use Manitou Special Immersed Brakes 549 Lubricant. (5 gal. drum, p/n: 545608)

SERVICING SCHEDULE

(*): Every 10 hours during the first 50 hours, then once at 250 hours.
(**): Consult your dealer.

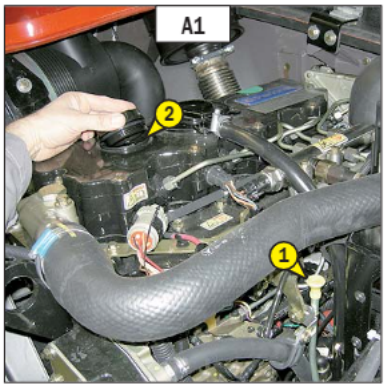
A = ADJUST, C = CHECK, G = GREASE, N = CLEAN,P = BLEED, R = REPLACE, V = DRAIN/CHANGE	PAGE	AFTER THE FIRST 50 HOURS	DAILY OR EVERY 10 HOURS	50 HOURS	250 HOURS	1 YEAR OR 500 HOURS	1 YEAR OR 1000 HOURS	2 YEARS OR 2000 HOURS	4000 HOURS	OCCASIONALLY
I.C. ENGINE										
I.C. engine oil level			C	<<<	<<<	<<<	<<<	<<<	<<<	
Cooling liquid level			C	<<<	<<<	<<<	<<<	<<<	<<<	
Fuel level			C	<<<	<<<	<<<	<<<	<<<	<<<	
Fuel pre-filter			C	<<<	<<<	<<<	<<<	<<<	<<<	
Cyclonic pre-filter			N	<<<	<<<	<<<	<<<	<<<	<<<	
Dry air filter cartridge				C/N	<<<	R	<<<	<<<	<<<	
Radiator cores				N	<<<	<<<	<<<	<<<	<<<	
Condenser core (OPTION Air conditioning)				C/N	<<<	<<<	<<<	<<<	<<<	
Fan belt tension		A			C/A	<<<	<<<	<<<	<<<	
Alternator/crankshaft belt tension		A			C/A	<<<	<<<	<<<	<<<	
Compressor belt tension (OPTION Air conditioning)		A			C/A	<<<	<<<	<<<	<<<	
I.C. engine oil		V				V	<<<	<<<	<<<	
I.C. engine oil filter		R				R	<<<	<<<	<<<	
Fuel pre-filter		R				R	<<<	<<<	<<<	
Fuel filter		R				R	<<<	<<<	<<<	
Fuel tank							N	<<<	<<<	
Safety dry air filter cartridge							R	<<<	<<<	
I.C. engine silent blocks							C**	<<<	<<<	
I.C. engine rates							C**	<<<	<<<	
Valves clearances		C**					C**	<<<	<<<	
Cooling liquid								V	<<<	
Radiator								C**	<<<	
Water pump and the thermostat								C**	<<<	
Alternator and the starter motor								C**	<<<	
Turbo compressor								C**	<<<	
TRANSMISSION										
Oil levelgear box			C	<<<	<<<	<<<	<<<	<<<	<<<	
Transmission universal joint				G	<<<	<<<	<<<	<<<	G/C**	
Angle gear box oil level					C	<<<	<<<	<<<	<<<	
Gear box oil filter		R				R	<<<	<<<	<<<	
Gear box oil		V					V	<<<	<<<	
Gear box sump strainer							N	<<<	<<<	
Angle gear box oil		V					V	<<<	<<<	
Silentblocks in the gear box							C**	<<<	<<<	
Gear box controls							C**	<<<	<<<	
Gear box pressures								C**	<<<	
Converter pressure								C**	<<<	
TIRES										
Tires pressure			C	<<<	<<<	<<<	<<<	<<<	<<<	
Wheel nuts torque			C	<<<	<<<	<<<	<<<	<<<	<<<	
Condition of wheels and tires							C**	<<<	<<<	
Wheel										R
JIB										
Jib pads			G*	<<<	<<<	<<<	<<<	<<<	<<<	
Jib				G	<<<	<<<	<<<	<<<	<<<	
Jib pads wear							C**	<<<	<<<	
Condition of jib unit								C**	<<<	
Bearings and articulation rings								C**	<<<	
HYDRAULIC										
Hydraulic oil level				C	<<<	<<<	<<<	<<<	<<<	
Hydraulic return oil filter cartridge		R				R	<<<	<<<	<<<	
Hydraulic oil							V	<<<	<<<	
Suction strainer for hydraulic oil tank							N	<<<	<<<	
Filter cap for hydraulic oil tank							R	<<<	<<<	
Distributor control head filter							R	<<<	<<<	
Speeds of hydraulic movements							C**	<<<	<<<	
Condition of hoses and flexible pipes							C**	<<<	<<<	
Condition of cylinders (leakage, shafts)							C**	<<<	<<<	
Hydraulic circuit pressures								C**	<<<	
Hydraulic circuit outputs								C**	<<<	
Hydraulic oil tank								N**	<<<	

A = ADJUST, C = CHECK, G = GREASE, N = CLEAN,P = BLEED, R = REPLACE, V = DRAIN/CHANGE	PAGE	AFTER THE FIRST 50 HOURS	DAILY OR EVERY 10 HOURS	50 HOURS	250 HOURS	1 YEAR OR 500 HOURS	1 YEAR OR 1000 HOURS	2 YEARS OR 2000 HOURS	4000 HOURS	OCCASIONALLY
BRAKE										
Brake oil level				C	<<<	<<<	<<<	<<<	<<<	
Parking brake					C/A	<<<	<<<	<<<	<<<	
Parking brake lever mechanism						G	<<<	<<<	<<<	
Parking brake mechanism on the transmission						G**	<<<	<<<	<<<	
Brake oil							V**	<<<	<<<	
Brake system							P**	<<<	<<<	
Brake system pressure							C**	<<<	<<<	
Brake							A**	<<<	<<<	
STEERING										
Steering								C**	<<<	
Steering swivel joints									C**	
CAB										
Windscreen washer liquid level				C	<<<	<<<	<<<	<<<	<<<	
Cab door				G	<<<	<<<	<<<	<<<	<<<	
Cab ventilation filter (OPTION Air conditioning)				N	R	<<<	<<<	<<<	<<<	
Heating block non-return valve					N	<<<	<<<	<<<	<<<	
Cab ventilation filters						N	<<<	<<<	<<<	
Seat belt							C	<<<	<<<	
Condition of the rear view mirrors							C**	<<<	<<<	
Structure							C**	<<<	<<<	
Air conditioning (OPTION)								C	<<<	
ELECTRICITY										
Condition of wiring harness and cables							C**	<<<	<<<	
Lights and signals							C**	<<<	<<<	
Warning indicators							C**	<<<	<<<	
Front headlights										A
FRONT AXLE										
Front wheels reducers pivots				G	<<<	<<<	<<<	<<<	G/C**	
Front axle oscillation				G	<<<	<<<	<<<	G/C**	<<<	
Front axle differential oil level					C	<<<	<<<	<<<	<<<	
Front wheels reducers oil level					C	<<<	<<<	<<<	<<<	
Front axle differential oil		V				V	<<<	<<<	<<<	
Front wheels reducers oil		V					V	<<<	<<<	
Wear of front axle brake discs									C**	
Front wheels reducers universal joint									C**	
Front wheels reducers clearance									C**	
REAR AXLE										
Rear wheels reducers pivots				G	<<<	<<<	<<<	<<<	G/C**	
Rear axle oscillation				G	<<<	<<<	<<<	G/C**	<<<	
Rear axle differential oil level					C	<<<	<<<	<<<	<<<	
Rear wheels reducers oil level					C	<<<	<<<	<<<	<<<	
Rear axle differential oil		V				V	<<<	<<<	<<<	
Rear wheels reducers oil		V					V	<<<	<<<	
Wearing of rear axle brake discs									C**	
Rear wheels reducers universal joint									C**	
Rear wheels reducers clearance									C**	
CHASSIS										
Tilting corrector				G	<<<	<<<	<<<	<<<	<<<	
Structure							C**	<<<	<<<	
Bearings and articulation rings								C**	<<<	
ATTACHMENTS										
Forks wear						C**	<<<	<<<	<<<	
Attachment carriage							C**	<<<	<<<	
Condition of attachments							C**	<<<	<<<	
LIFT TRUCK										
Tow the lift truck										XXX
Sling the lift truck										XXX
Transport the lift truck on a platform										XXX

A - DAILY OR EVERY 10 HOURS SERVICE

A1 - I.C. ENGINE OIL LEVEL

CHECK

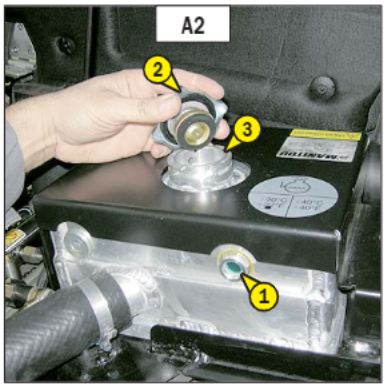


Park the lift truck on level ground with the I.C. engine stopped, and let the oil drain into the sump.

- Open the I.C. engine cover.
- Remove the dipstick 1 (fig. A1).
- Clean the dipstick and check the correct level between the two notches.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the filler port 2 (fig. A1).
- Check visually that there is no leakage or seepage of oil in the I.C. engine.

A2 - COOLING LIQUID LEVEL

CHECK



Park the lift truck on level ground with the I.C. engine stopped, and allow the I.C. engine to cool.

- Open the I.C. engine cover.
- Check the correct level in the middle of gauge 1 (fig. A2).
- If necessary, add cooling liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).
- Slowly turn the cap of the radiator 2 (fig. A2) up to the safety stop.
- Allow the pressure and the steam to escape.
- Press down and turn the cap so as to release it.
- Add cooling liquid via filler port 3 (fig. A2) up to the middle of gauge 1 (fig. A2).
- Lubricate slightly the filler neck in order to ease the removal of the radiator cap.
- Check visually that there is no leakage in the radiator and pipes.

WARNING	*To avoid any risk of spraying or burning, wait until the I.C. engine has cooled down before removing the cooling circuit filler plug. If the cooling liquid is very hot, add only hot cooling liquid (176°F). In an emergency, you can use clean water as a cooling liquid, then change the cooling circuit liquid as soon as possible (see: 3 - MAINTENANCE: F1 - COOLING LIQUID).*

A3 - FUEL LEVEL

CHECK

Keep the fuel tank full, to reduce condensation due to the atmospheric conditions.

- Remove cap 1 (fig. A3).
- Fill the fuel tank with clean fuel (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL), filtered through a strainer or a clean, lint free cloth, through filler port 2 (fig. A3).
- Put the cap back 1 (fig. A3).
- Check visually that there is no leakage on the tank and hoses.

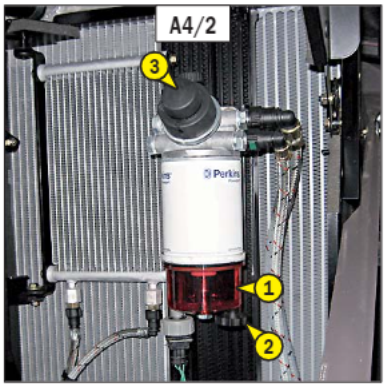
WARNING	*The fuel tank is vented via the filler plug. When changing it, always use an original part, with vented hole.*

NOTE: A locking tank cap is available as an OPTION.

A4 - FUEL PRE-FILTER

CHECK

- Open the I.C. engine cover.
- Check for the presence of water in the pre-filter bowl 1 (fig. A4/2) and empty it out if necessary.
- Place a receptacle under the drain plug 2 (fig. A4/2) and loosen it in two to three thread turns.
- Allow the diesel fuel to flow out until it is free from impurities and water.
- Tighten the drain plug.
- Pressurize the circuit with the hand pump 3 (fig. A4/2).



A5 - CYCLONIC PREFILTER

CLEAN

The cleaning interval is given as a guide, however the pre-filter must be emptied as soon as impurities reach the MAX. level on the tank.

- Loosen nut 1 (fig. A5), remove cover 2 (fig. A5) and empty the tank.
- Clean the pre-filter unit with a clean dry cloth and reassemble the unit.

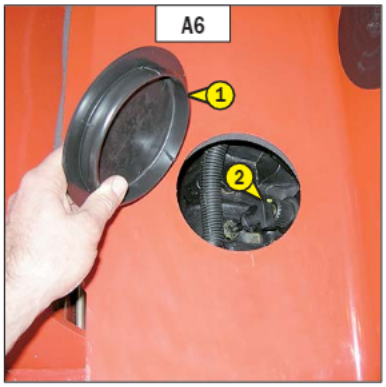
IMPORTANT	*When cleaning, take care not to let impurities into the dry air filter.*

A6 - GEAR BOX OIL LEVEL

CHECK

Park the lift truck on level ground with the jib raised, the I.C. engine cold and stopped. Check the oil within 5 minutes of the I.C. engine being stopped.

- Remove the plastic cap 1 (fig. A6).
- Remove the dipstick 2 (fig. A6).
- Wipe the dipstick and check the correct level between the two MIN and MAX marks.
- If necessary, add oil (see: 3 - MAINTENANCE: E3 - GEAR BOX OIL).
- Check visually that there is no leakage or seepage of oil in the transmission.



A7 - TIRES PRESSURE AND WHEEL NUTS TORQUE

CHECK

- Check the condition of the tires, to detect cuts, wear, etc.
- Check the torque load of the wheel nuts. Non compliance with this instruction can cause damage and rupture to the wheel bolts and distortion to the wheels.

  Wheel nuts tightening torque
  - Front tires: 465 ft/lb
  - Rear tires: 465 ft/lb
- Check and adjust the tire pressures if necessary (see: 2 - DESCRIPTION: FRONT AND REAR TIRES).

WARNING	***Check that the air hose is correctly connected to the tire valve before inflating and keep all persons at a distance during inflation. Respect the recommended tire pressures given.***

NOTE: There is an OPTIONAL wheel toolkit and anti-puncture kit.

A8 - JIB PADS

CLEAN - GREASE

To be carried out every 10 hours during the first 50 hours service, then once at 250 hours.

- Extend the jib completely.
- With a brush, apply a coat of grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) on the 4 sides of the telescope(s) (fig. A8).
- Telescope the jib several times in order to spread the coat of grease evenly.
- Remove the surplus grease.

IMPORTANT	***If the lift truck is used in an abrasive environment (dust, sand, coal...), use a dry graphite lubricate. Contact your dealer.***

B - EVERY 50 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

B1 - DRY AIR FILTER CARTRIDGE

CHECK - CLEAN

In case of use in a heavily dust laden atmosphere, there are pre-filtration cartridges (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS). Also, the checking and cleaning schedule of the cartridge must be reduced.

IMPORTANT	*If the clogging indicator light comes on, this operation must be carried out as quickly as possible (1 hour maximum). The cartridge must not be cleaned more than seven times, after which the cartridge must be replaced. Never use the lift truck without an air filter or with a damaged air filter.*

- For the disassembly and reassembly of the cartridge, see: 3 - MAINTENANCE: D3 - DRY AIR FILTER CARTRIDGE.
- Clean the filter cartridge using a compressed air jet (max. pressure 45 psi) directed from the top to the bottom and from the inside towards the outside at a minimum distance of 1 1/2 in. from the cartridge wall.
- Cleaning is completed when there is no more dust on the cartridge.

IMPORTANT	*Avoid tearing or making a hole in the cartridge. The cartridge must not be blown anywhere near the air filter box. Never clean the cartridge by tapping it against a hard surface. Your eyes must be protected during this intervention.*

- Clean the cartridge seal surfaces with a damp, clean lint-free cloth and grease with a silicone lubricant.
- Check visually the outer condition of the air filter and its mounts. Verify the condition of the hoses and their mounts also.

IMPORTANT	*Do not clean the dry air filter cartridge by washing it in liquid. Do not clean the safety cartridge located inside the filter cartridge, change it for a new one if it is dirty or damaged.*

B2 – RADIATOR CORES

CLEAN

IMPORTANT	*In a heavy dust atmosphere, clean the radiator core every day. Do not use a water jet or high-pressure steam as this could damage the radiator fins.*

- Open the I.C. engine cover.
- If necessary, clean the suction grid on the engine hood.
- Using a soft cloth, clean the radiator cores in order to remove as much dirt as possible.
- Undo the screw 1 (fig. B2/1) of the fuel radiator and pivot for easier cleaning.
- Clean the cores using a compressed air jet aimed in the same direction as the cooling air flow (fig. B2/2).
- Clean with the fan running for best results.

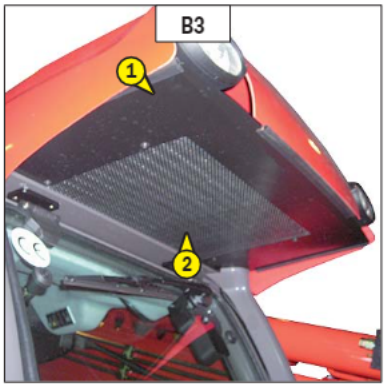
NOTE: An OPTIONAL straw defector and self-cleaning fan can also be fitted.

B2/1

B2/2

B3 - CONDENSER CORE (OPTION AIR CONDITIONING)

CHECK - CLEAN



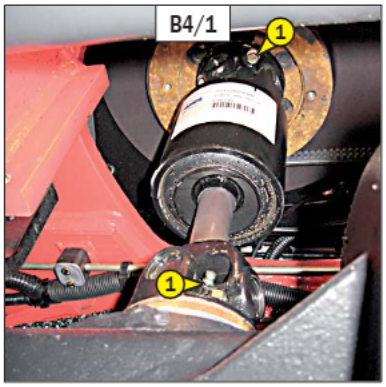
IMPORTANT	*In a heavy dust atmosphere, clean the radiator core every day. Do not use a water jet or high-pressure steam as this could damage the radiator fins.*

- Remove the protective grid 1 (fig. B3) and clean it if necessary.
- Visually check whether the condenser 2 (fig. B3) is clean and clean it if necessary.
- Clean the condenser using a compressed air jet aimed in the same direction as the air flow (fig. B3).

NOTE: So as to enhance the cleaning, carry out this operation with the fans running.

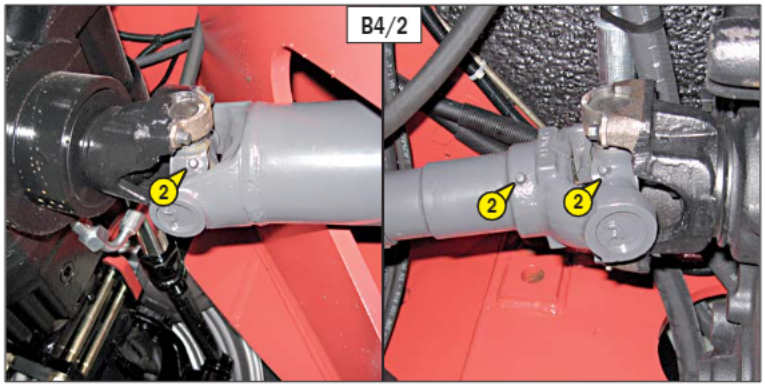
B4 - TRANSMISSION UNIVERSAL JOINT

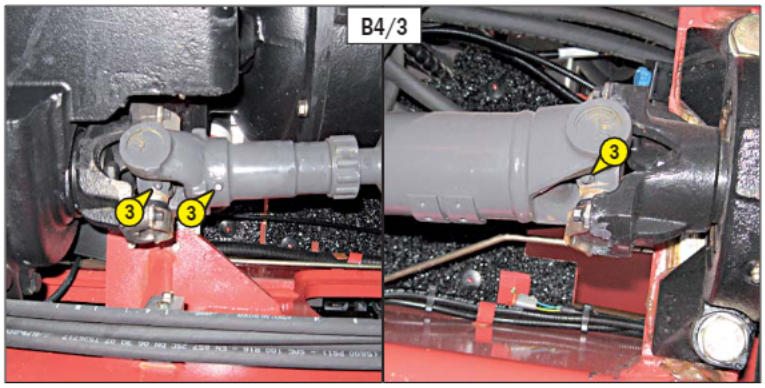
GREASE



- Clean and lubricate the following points with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus grease.

1 - Lubricators of the universal joint I.C. engine/Angle gear box (2 lubricators) (fig. B4/1).
2 - Lubricators of the universal joint Transmission/Front axle (3 lubricators) (fig. B4/2).
3 - Lubricators of the universal joint Transmission/Rear axle (3 lubricators) (fig. B4/3).





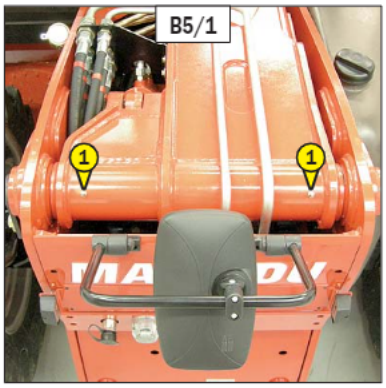
To be carried out weekly, if the lift truck has been operated for less than 50 hours during the week.

IMPORTANT	*In the event of prolonged use in an extremely dusty or oxidizing atmosphere, reduce this interval to 10 working hours or every day.*

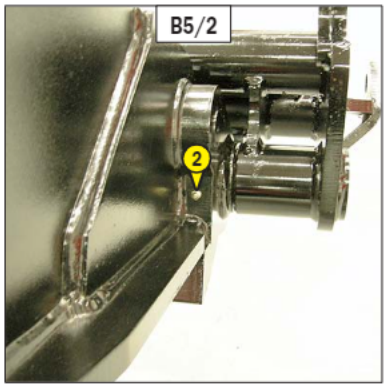
- Clean and lubricate the following points with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

1 - Lubricators of the jib axle (2 lubricators) (fig. B5/1).
2 - Lubricators of the carriage axle (2 lubricators) (fig. B5/2).
3 - Lubricator of the tilt cylinder foot axle (1 lubricator) (fig. B5/3).
4 - Lubricator of the tilt cylinder head axle (1 lubricator) (fig. B5/4).
5 - Lubricators of the carriage connecting rod axle (2 lubricators) (fig. B5/5).
6 - Lubricator of the lifting cylinder foot axle (1 lubricator) (fig. B5/6).
7 - Lubricator of the lifting cylinder head axle (1 lubricator) (fig. B5/7).
8 - Lubricator of the compensation cylinder foot axle (1 lubricator) (fig. B5/6).
9 - Lubricator of the compensation cylinder head axle (1 lubricator) (fig. B5/8).

B5/1

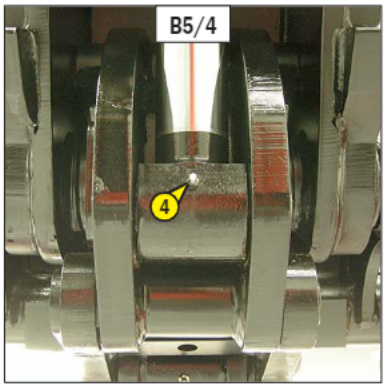


B5/2

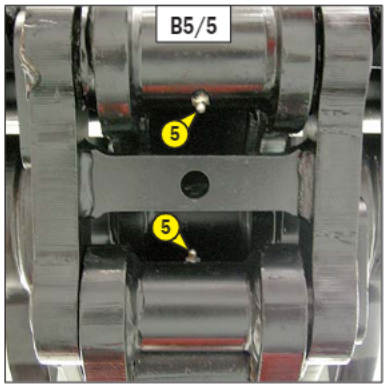


B5/3

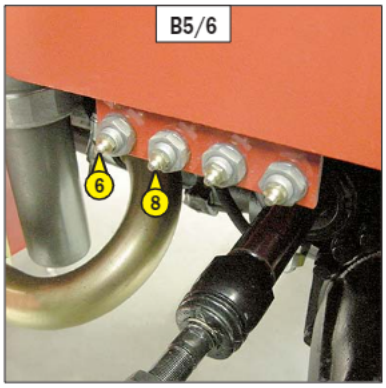
B5/4



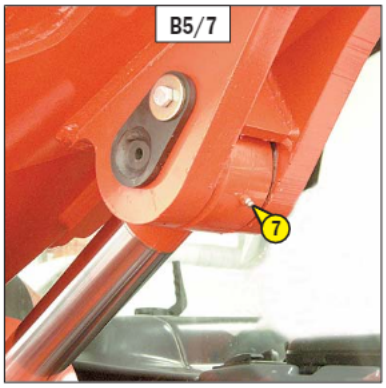
B5/5



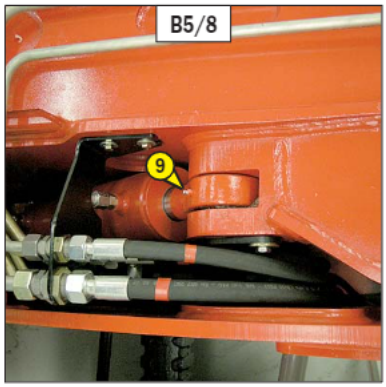
B5/6



B5/7



B5/8



B6 - HYDRAULIC OIL LEVEL

CHECK

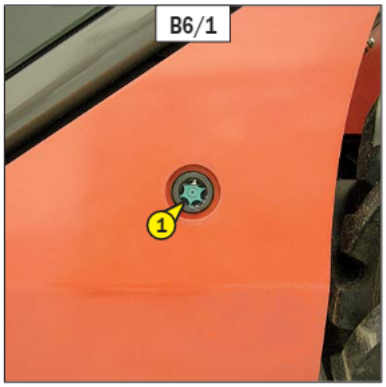
Park the lift truck on level ground with the I.C. engine stopped, and the jib retracted and lowered as far as possible.

- Refer to gauge 1 (fig. B6/1).
- The oil level is correct when it is at the level of the red point.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).
- Remove cap 2 (fig. B6/2).
- Add oil by filler port 3 (fig. B6/2).

IMPORTANT	*Use a clean funnel and clean the underside of the oil can before filling.*

- Put the cap back.
- Check visually that there is no leakage in the tank and pipes.

Always maintain the oil level at maximum as cooling depends on the oil flowing through the tank.



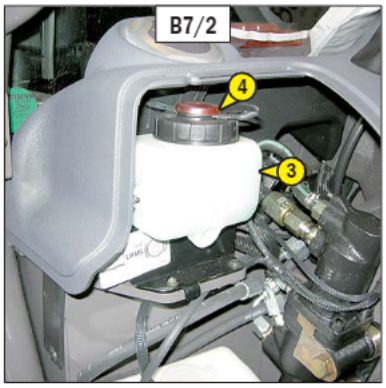
B7 - BRAKE OIL LEVEL

CHECK

Park the lift truck on level ground.

- Loosen screw 1 (fig. B7/1) and remove the access panel for braking oil tank and windscreen washer tank 2 (fig. B7/1).
- The level is correct when it is at the MAX. level in tank 3 (fig. B7/2)
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the filler port.
- Pivot the tank 3 (fig. B7/2) to access the filler cap 4 (fig. B7/2).
- Check visually that there is no leakage in the tank and pipes.

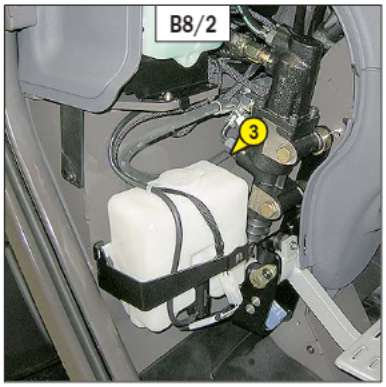
WARNING	*If the braking oil level is abnormally low, consult your dealer.*



B8 - WINDSCREEN WASHER LIQUID LEVEL

CHECK

- Loosen screw 1 (fig. B8/1) and remove the access panel for braking oil tank and windscreen washer tank 2 (fig. B8/1).
- Check visually the level.
- If necessary add windscreen washer liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 3 (fig. B8/2).



B9 - CAB DOOR

GREASE

- Clean and lubricate the points 1 (4 lubricators) (fig. B9) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

B10 - CAB VENTILATION FILTER (OPTION AIR CONDITIONING)

CLEAN

- Lift up protective casing 1 (fig. B10).
- Lift out cabin ventilation filter 2 (fig. B10).
- Clean the filter with a compressed air jet.
- Check its condition and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Install the filter and protective casing.

B11 - FRONT AND REAR WHEEL REDUCER PIVOTS

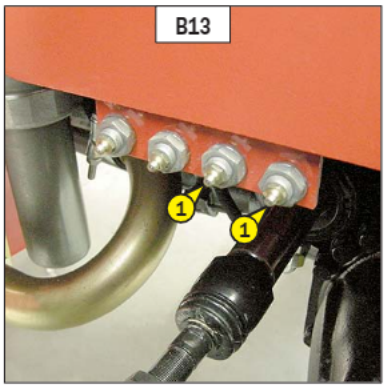
GREASE

- Clean and lubricate the points 1 (8 lubricators) (fig. B11) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

B12 - REAR AXLE OSCILLATION

GREASE

- Clean and lubricate the points 1 (2 lubricators) (fig. B13) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.



C - EVERY 250 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

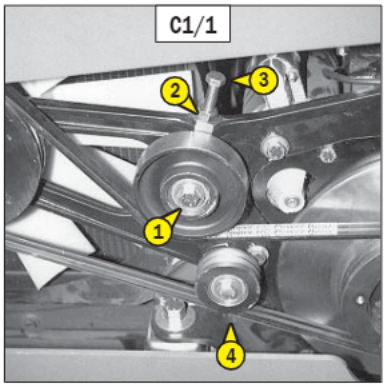
C1 - FAN BELT TENSION

CHECK - ADJUST

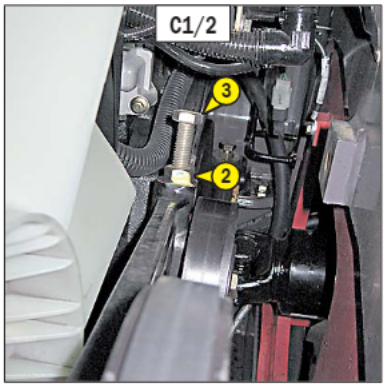
- Open the I.C. engine cover.
- Check the belt for signs of wear and cracks and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Loosen screw 1 (fig. C1/1) on the tension pulley.
- Loosen lock nut 2 (fig. C1/1 and C1/2) and screw 3 (fig. C1/1 and C1/2).
- Tighten the screw 2 (fig. C1/1 and C1/2) until the belt is as close as possible to the groove of the pulley 4 (fig. C1/1).
- Make a mark on the head of screw 3 (fig. C1/1 and C1/2) and tighten, turning it 5 times.
- Tighten the lock nut 2 (fig. C1/1 and C1/2).
- Retighten screw 1 (fig. C1/1) on the tension pulley.

IMPORTANT	*When changing the fanbelt, tighten screw 3 (fig. C1/1 and C1/2) by one and a half turns, having allowed the I.C. engine to idle for 30 minutes.*

C1/1



C1/2



C2 - ALTERNATOR/CRANKSHAFT BELT TENSION

CHECK - ADJUST

For this operation, we suggest you to use a tension meter (fig. C2/1).

- Open the I.C. engine cover.
- Unscrew the fastening screws 1 (fig. C2/2).
- Lay down the protective guard 2 (fig. C2/2).
- Check the belt for signs of wear and cracks and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Check the belt tension between the pulleys of the crankshaft and of the alternator.

NEW BELT:
- At a pressure of 4 ft/lb on strap 3 (fig. C2/3), the displacement must be about 3/16 in.

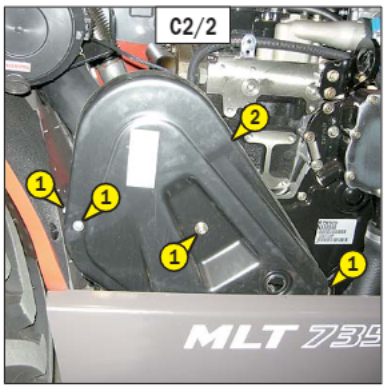
BELT AFTER 20 HOURS OF OPERATION:
- At a pressure of 4 ft/lb on strap 3 (fig. C2/3), the displacement must be about 3/16 in.

- Carry out adjustments if necessary.
- Loosen screws 4 (fig. C2/3) by two to three thread turns.
- Swivel the alternator assembly so as to obtain the belt tension required.
- Retighten screws 4 (fig. C2/3) (tightening torque 16 ft/lb).
- Put the protective guard back 2 (fig. C2/2).

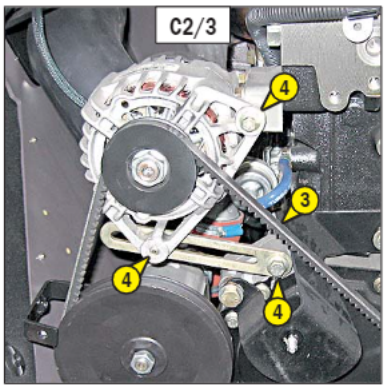
IMPORTANT	*If the alternator belt has to be changed, check the tension again after the first 20 hours of operation.*

C2/1

C2/2



C2/3



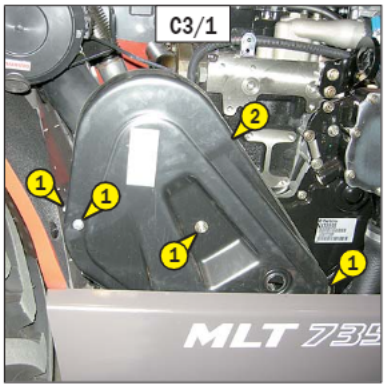
C3 - COMPRESSOR BELT TENSION (OPTION AIR CONDITIONING)

CHECK - ADJUST

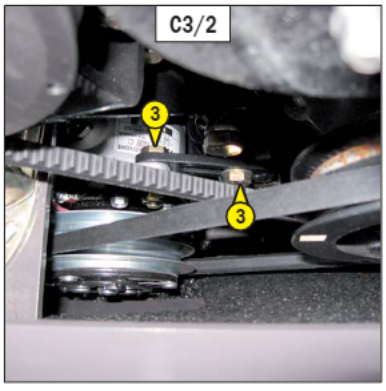
- Open the I.C. engine cover.
- Unscrew the fastening screws 1 (fig. C3/1).
- Lay down the protective guard 2 (fig. C3/1).
- Check the belt for signs of wear and cracks and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Check the belt tension between the pulleys of the crankshaft and of the compressor.
- Under a normal pressure exerted with the thumb (10 ft/lb), the belt should move approximately 3/8 in.
- Carry out adjustments if necessary.
- Loosen screws 3 (fig. C3/2) with two to three thread turns.
- Swivel the compressor assembly so as to obtain the belt tension required.
- Retighten screws 3 (fig. C3/2).
- Put the protective guard back 2 (fig. C3/1).

IMPORTANT	*If the compressor belt has to be changed, check the tension again after the first 20 hours of operation.*

C3/1



C3/2



C4 - ANGLE GEAR BOX LEVEL

CHECK

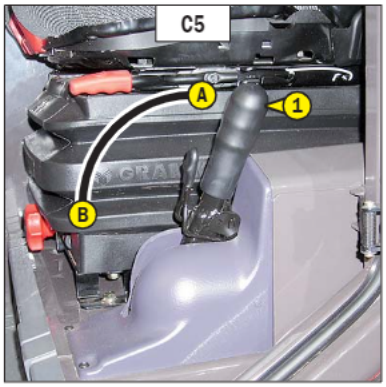
Park the lift truck on level ground with the jib raised and the I.C. engine stopped.

- Remove level plug 1 (fig. C4).
- Wipe the dipstick and check the correct level between the MINI and MAX. marks.
- If necessary, add oil (see: 3 - MAINTENANCE: E5 - ANGLE GEAR BOX OIL).

C5 - PARKING BRAKE

CHECK - ADJUST

Park the lift truck on a slope less than 15% with the rated load in the transport position.
- Check the tightening adjustment by locking the parking brake in position A (fig. C5).
- The adjustment is correct when the lift truck is held stationary on a slope.
- Carry out adjustments if necessary.
- Press and release the brake pedal, then release the parking brake, putting it in position B (fig. C5).
- Progressively tighten the end piece of the lever 1 (fig. C5) and recheck braking.
- Repeat the operation until the correct braking adjustment is obtained.



C6 - CAB VENTILATION FILTER (OPTION AIR CONDITIONING)

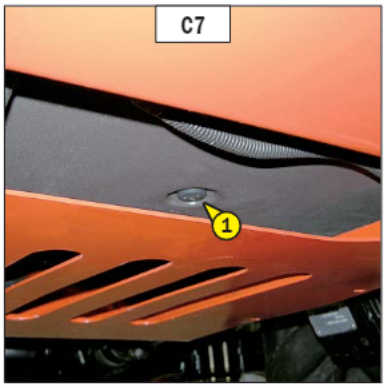
CHANGE

- Lift up protective casing 1 (fig. C6).
- Lift out cabin ventilation filter 2 (fig. C6) and fit new replacement filter (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Install the protective casing.

C7 - HEATING BLOCK NON-RETURN VALVE

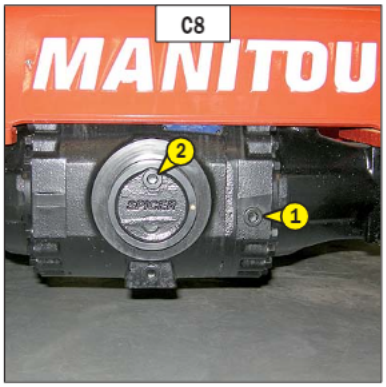
CLEAN

- Since non-return valve 1 (fig. C7) is located under the cab, it is possible for it to become obstructed with spattered mud for example. Clean if necessary.



C8 - FRONT AND REAR DIFFERENTIAL OIL LEVEL

CHECK



Park the lift truck on level ground with the I.C. engine stopped.

- Remove level plug 1 (fig. C8). The oil should be flush with the edge of the hole.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the filler port 2 (fig. C8).
- Replace and tighten the level plug 1 (fig. C8) (tightening torque 30 ft/lb).
- Repeat this operation for the rear axle differential.

C9 - FRONT AND REAR WHEELS REDUCERS OIL LEVEL

CHECK

Park the lift truck on level ground with the I.C. engine stopped.

- Check the level on each front wheel reducer.
- Place level plug 1 (fig. C9) in the horizontal position as shown.
- Remove the level plug, the oil should be flush with the edge of the hole.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the same hole.
- Replace and tighten the level plug 1 (fig. C9) (tightening torque 30 ft/lb).
- Repeat this operation on each rear wheel reducer.

D - EVERY 500 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

D1 - I.C. ENGINE OIL

DRAIN

D2 - I.C. ENGINE OIL FILTER

CHANGE

Park the lift truck on level ground, let the I.C. engine run at idle for a few minutes, then stop the I.C. engine.

DRAINING THE OIL

- Open the I.C. engine cover.
- Remove access panel 1 (fig. D1/1).
- Place a container under drain plug 2 (fig. D1/2) and unscrew the plug 3 (fig. D1/3).
- Take drain hose 4 (fig. D1/4).
- Place the end of the drain hose in the container and screw fully the union on draining port 5 (fig. D1/5).
- Remove filler cap 6 (fig. D1/6) in order to ensure that the oil is drained properly.

IMPORTANT	*Dispose of the drain oil in an ecological manner.*

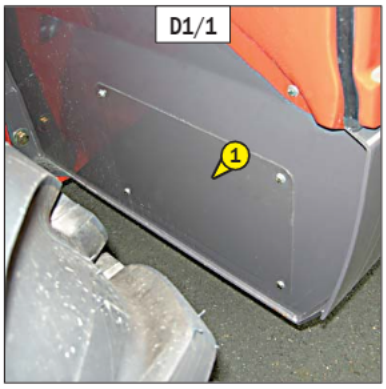
REPLACEMENT OF THE FILTER

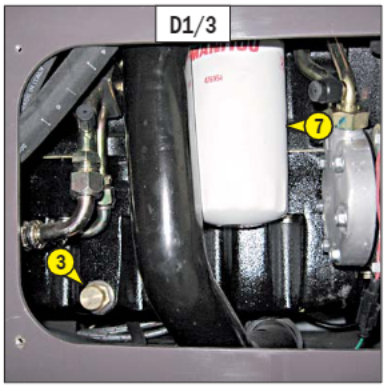
- Remove I.C. engine oil filter 7 (fig. D1/3); discard the filter and the filter seal.
- Clean the filter bracket with a clean, lint-free cloth.
- Lightly grease the new oil filter seal and install the oil filter (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS) on the filter bracket.

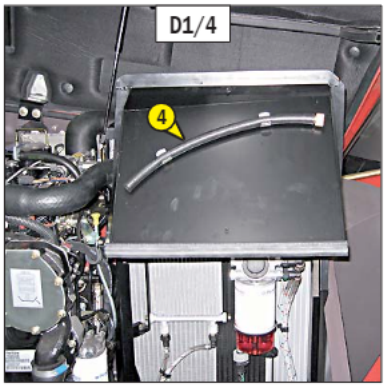
IMPORTANT	*Tighten the oil filter by hand pressure only and lock the filter in place by a quarter turn.*

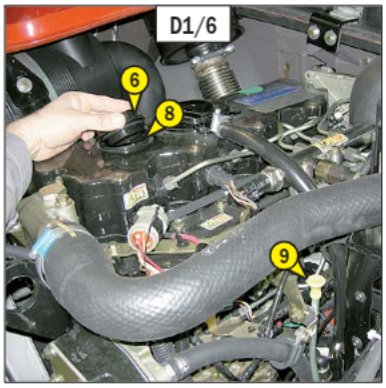
FILLING UP THE OIL

- Loosen, clean and install the drain hose 4 (fig. D1/4).
- Install and tighten drain plug 3 (fig. D1/3).
- Install access panel 1 (fig. D1/1).
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) through filler port 8 (fig. D1/6).
- Wait a few minutes to allow the oil to flow into the sump.
- Start the I.C. engine and let it run for a few minutes.
- Check for possible leaks at the drain plug and the oil filter.
- Stop the I.C. engine, wait a few minutes and check the level between the two notches on dipstick 9 (fig. D1/6).
- Top up the level if necessary.



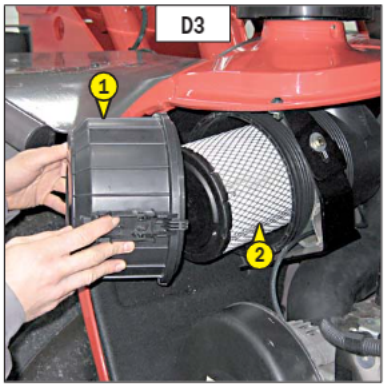






D3 - DRY AIR FILTER CARTRIDGE

CHANGE



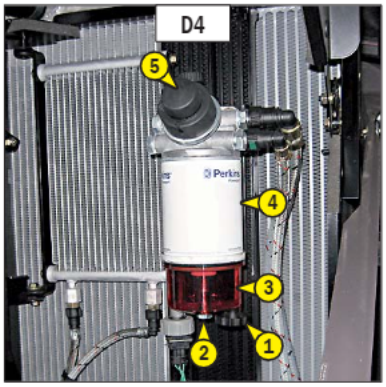
In case of use in a heavily dust laden atmosphere, there are pre-filtration cartridges, see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS. Also, the checking and cleaning schedule of the cartridge must be reduced (every 250 hours in a heavily laden dust atmosphere and with pre-filtration).

IMPORTANT	*Change the cartridge in a clean location, with the I.C. engine stopped. Never operate the lift truck with the air filter removed or damaged.*

- Open the I.C. engine cover.
- Loosen the bolts and remove cover 1 (fig. D3).
- Gently remove the cartridge 2 (fig. D3), taking care to avoid spilling the dust.
- Leave the safety cartridge in place.
- The following parts must be cleaned with a damp, clean lint-free cloth.
    - The inside of the filter and cover.
    - The inside of the filter inlet hose.
    - The gasket surfaces in the filter and in the cover.
- Check pipes and connections between the air filter and the I.C. engine and the connection and state of the clogging indicator on the filter.
- Before installing check the state of the new cartridge (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Introduce the cartridge into the filter axis and push it in, pressing the edges and not the middle.
- Reassemble the cover, guiding the valve downwards.

D4 - FUEL PRE-FILTER

CHANGE



- Open the I.C. engine cover.
- Carefully clean the outside of the pre-filter and its holder, to prevent dust from getting into the system.
- Place a container under the pre-filter and drain it using drain plug 1 (fig. D4).
- Unscrew locking screw 2 (fig. D4).
- Remove housing 3 (fig. D4) and discard cartridge 4 (fig. D4) as well as the seals of the cartridge.
- Clean the inside of the pre-filter head and the housing, using a brush immersed in clean diesel oil.
- Install the assembly with a new pre-filter and new seals (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Pressurize the circuit by means of the hand pump 5 (fig. D4).

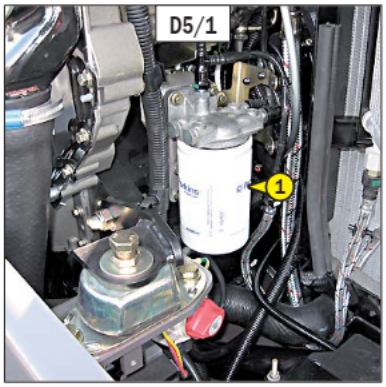
D5 - FUEL FILTER

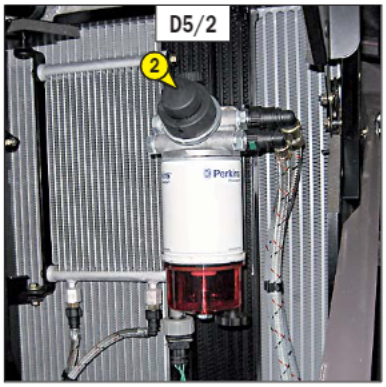
CHANGE

- Open engine hood and lift the battery cover.
- Carefully clean the outside of the filter and its holder, to prevent dust from getting into the system.
- Place a container under the fuel filter 1 (fig. D5/1) and undo the filter.
- Fill up the new fuel filter (see: 3 - MAINTENANCE: FILTERS AND BELTS) with clean diesel.
- Install the filter onto its holder.

IMPORTANT	*Tighten the oil filter by hand pressure only and lock the filter in place by a quarter turn.*

- Pressurize the circuit by means of the hand pump 2 (fig. D5/2).
- Remove the container from under the filter.
- Start up the I.C. engine and make sure there is no leakage.





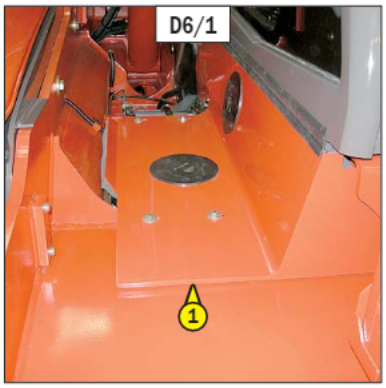
D6 - GEAR BOX OIL FILTER

CHANGE

- Remove the cover plate 1 (fig. D6/1).
- Unscrew and discard gear box oil filter 2 (fig. D6/2).
- Carefully clean the filter head with a clean, lint-free cloth.
- Slightly lubricate the new seal and fit the seal on the filter.
- Fill up the new gear box oil filter (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS) with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).
- Install the filter, making sure that the seal is correctly positioned and tightened.

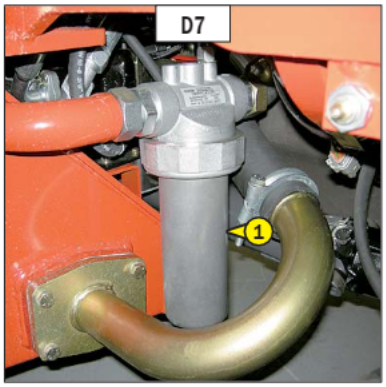
IMPORTANT	*Tighten the oil filter by hand pressure only and lock the filter in place by a quarter turn.*

- Install the cover plate 1 (fig. D6/1).



D7 - HYDRAULIC RETURN OIL FILTER CARTRIDGE

CHANGE



Stop the I.C. engine and remove the pressure from the circuits by acting on the hydraulic controls.

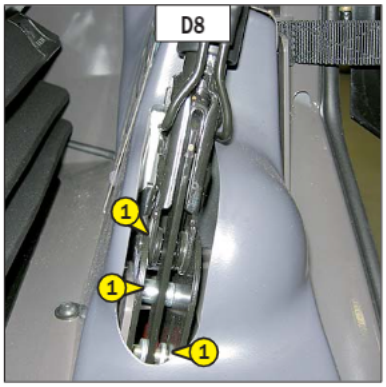
IMPORTANT	*Thoroughly clean the outside of the filter and its surroundings before servicing, prevent any pollution from entering the hydraulic circuit.*

- Place a container under hydraulic drain filter 1 (fig. D7).
- Unscrew the body of the filter.
- Remove the hydraulic return oil filter cartridge and fit new replacement cartridge (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Make sure that the cartridge is correctly positioned and install the body of the filter.

IMPORTANT	*Tighten the oil filter by hand pressure only and lock the filter in place by a quarter turn.*

D8 - PARKING BRAKE LEVER MECHANISM

GREASE



- Clean and grease articulation axles 1 (fig. D8) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).

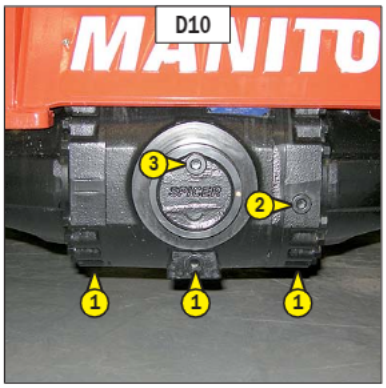
D9 - CAB VENTILATION FILTER

CLEAN

- Lift up protective casing 1 (fig. D9).
- Lift out cabin ventilation filter 2 (fig. D9).
- Clean the filter with a compressed air jet.
- Check its condition and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Install the filter and protective casing.

D10 - FRONT AND REAR AXLE DIFFERENTIAL OIL

DRAIN



Park the lift truck on level ground with the I.C. engine stopped and the differential oil still warm.

IMPORTANT	*Dispose of the drain oil in an ecological manner.*

- Place a container under drain plugs 1 (fig. D10) and unscrew the plugs.
- Remove level plug 2 (fig. D10) and filler plug 3 (fig. D10) in order to ensure proper emptying.
- Install and tighten drain plugs 1 (fig. D10) (tightening torque 31 ft/lb).
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) through filler port 3 (fig. D10).
- The level is correct when the oil level is flush with the edge of port 2 (fig. D10).
- Check for any possible leaks at the drain plugs.
- Install and tighten level cap 2 (fig. D10) (tightening torque 31 ft/lb) and filler port 3 (fig. D10) (tightening torque 31 ft/lb).
- Repeat this operation for the rear axle differential.

E - EVERY 1000 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

E1 - FUEL TANK

CLEAN

WARNING	*While carrying out these operations, do not smoke or work near a flame.*

Park the lift truck on level ground with the I.C. engine stopped.

- Inspect the parts susceptible to leaks in the fuel circuit and in the tank.
- In the event of a leak, contact your dealer.

WARNING	*Never perform welding on the fuel system, this could cause an explosion or a fire.*

- Place a container under drain plug 1 (fig. E1/1) and unscrew the plug.
- Remove filling plug 2 (fig. E1/2) in order to ensure that the oil is drained properly.
- Rinse out with ten litres of clean diesel through filler port 3 (fig. E1/2).
- Install and tighten the drain plug (tightening torque 26 ft/lb).
- Fill the fuel tank with clean diesel filtered through the filler port.
- Install the filling cap.

E2 - SAFETY DRY AIR FILTER CARTRIDGE

CHANGE

- For the disassembly and reassembly of the dry air filter cartridge, see: 3 - MAINTENANCE: D3 - AIR FILTER CARTRIDGE.
- Gently remove the dry air filter safety cartridge 1 (fig. E2), taking care to avoid spilling the dust.
- Clean the gasket surface on the filter with a damp, clean lint-free cloth.
- Before installing, check the state of the new safety cartridge (see: 3 - MAINTENANCE: FILTERS AND BELTS).
- Introduce the cartridge into the filter axis and push it in, pressing the edges and not the middle.

NOTE: The schedule for changing the safety cartridge is given for reference only. It must be changed for every two changes of the dry air filter cartridge.

E3 - GEAR BOX OIL

DRAIN

E4 - GEAR BOX SUMP STRAINER

CLEAN

Park the lift truck on level ground with the I.C. engine stopped, the gear box oil still warm.

DRAINING THE OIL

- Place a container under drain plug 1 (fig. E3/1) and under cover 2 (fig. E3/2) and unscrew the drain plug.
- Remove cover plate 3 (fig. E3/3).
- Remove dipstick 4 (fig. E3/4) and unscrew filling plug 5 (fig. E3/4) in order to ensure that the oil is drained properly.

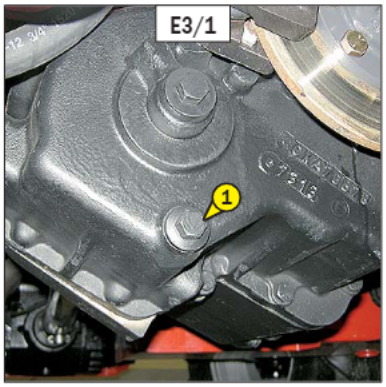
IMPORTANT	*Dispose of the drain oil in an ecological manner.*

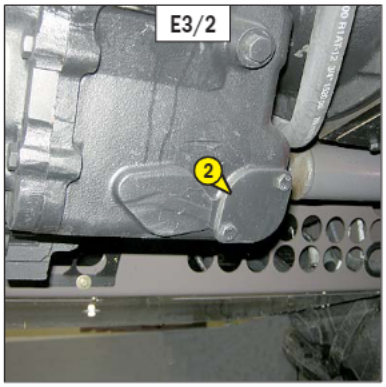
CLEANING THE STRAINER

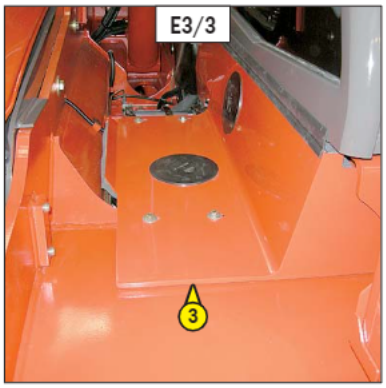
- Remove cover 2 (fig. E3/2) and set aside the O-ring joint and sealing washer.
- Allow the rest of the oil to drain away.
- Remove and clean the strainer using a compressed air jet.
- Clean the magnetic section on the plate.
- Install the assembly and tighten up plate 2 (fig. E3/2) (tightening torque 18 ft/lb).

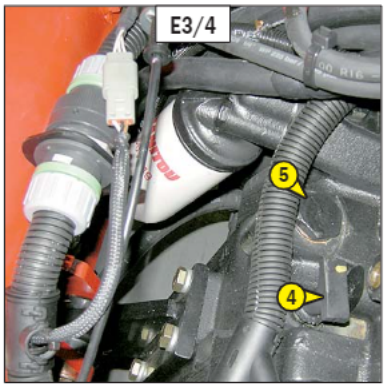
FILLING UP THE OIL

- Install and tighten drain plug 1 (fig. E3/1) (tightening torque 33 ft/lb).
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 5 (fig. E3/4) and install the filler cap.
- Start the I.C. engine and let it run for a few minutes.
- Check any possible leaks from the drain plug or cover.
- Stop the I.C. engine, and within 5 minutes of the I.C. engine being stopped, check on the dipstick 4 (fig. E3/4) the correct level between the two MIN and MAX. marks.
- Top up the level if necessary.
- Install the cover plate 3 (fig. E3/3).









E5 - ANGLE GEARBOX OIL

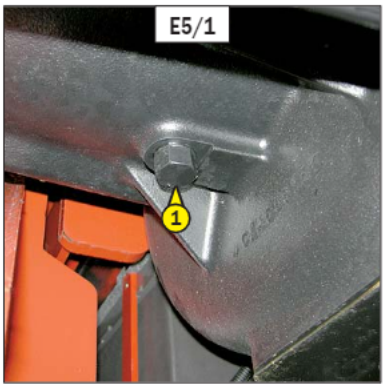
DRAIN

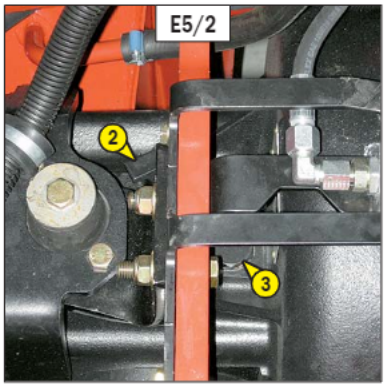
Park the lift truck on level ground with the I.C. engine stopped, the angle gear box oil still warm.

- Place a container under drain plug 1 (fig. E5/1) and unscrew the plug.
- Remove dipstick 2 (fig. E5/2) and unscrew filler cap 3 (fig. E5/2) in order to ensure that the oil is drained properly.

IMPORTANT	*Dispose of the drain oil in an ecological manner.*

- Install and tighten drain plug 1 (fig. E5/1) (tightening torque 18 ft/lb).
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 3 (fig. E5/2) and install the filler cap.
- Check the correct level between the MINI and MAX. marks on dipstick 2 (fig. E5/2).
- Check for any possible leaks at the drain plug.





E6 - HYDRAULIC OIL

DRAIN

E7 - SUCTION OIL STRAINER FOR HYDRAULIC OIL TANK

CLEAN

E8 - FILTER CAP FOR HYDRAULIC OIL TANK

CHANGE

E9 - DISTRIBUTOR CONTROL HEAD FILTER

CHANGE

Park the lift truck on level ground with the I.C. engine stopped and telescope jib retracted and lowered as far as possible.

IMPORTANT	*Before any intervention, thoroughly clean the area surrounding the drain plugs and the suction cover on the hydraulic tank.*

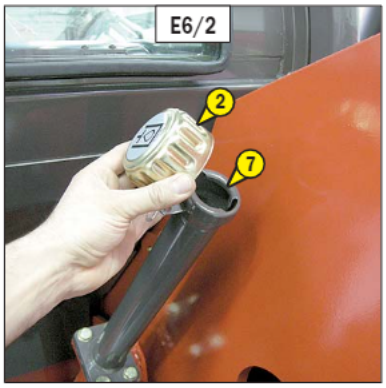
DRAINING THE OIL

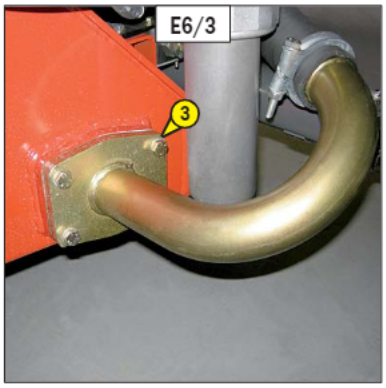
- Place a container under drain plug 1 (fig. E6/1) and unscrew the plug.
- Remove filler cap 2 (fig. E6/2) in order to ensure that the oil is drained properly.

IMPORTANT	*Dispose of the drain oil in an ecological manner.*

CLEANING THE STRAINER

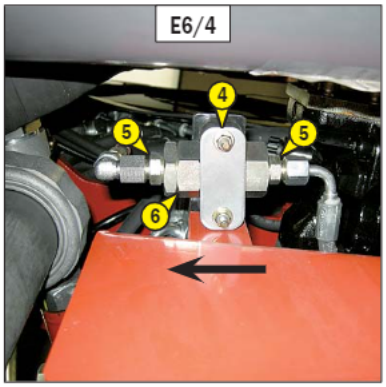
- Remove suction cover 3 (fig. E6/3).
- Remove and clean the strainer using a compressed air jet, check its condition and replace if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Install the strainer and tighten the suction cover 3 (fig. E6/3) (tightening torque 60 ft/lb) making sure the seal is in the correct position.





REPLACING THE DISTRIBUTOR CONTROL HEAD FILTER

- Remove the half clamp 4 (fig. E6/4).
- Undo the two couplings 5 (fig.E6/4) and replace the filter 6 (fig. E6/4).



IMPORTANT	*Be careful to mount the filter 6 (fig. D6/4) in the same direction as the arrow shown.*

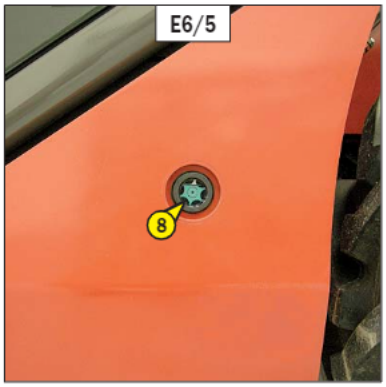
- Install the half clamp 4 (fig. E6/4).

FILLING UP THE OIL

- Clean and install drain plugs 1 (fig. E6/1) (tightening torque 29 to 39 N.m).
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 7 (fig. E6/2).

IMPORTANT	*Use a clean container and funnel and clean the underside of the oil can before filling.*

- Observe the oil level on dipstick 8 (fig. E6/5), the oil level should be at the level of the red point.
- Check for any possible leaks at the drain plugs.
- Replace filler plug 2 (fig. E6/2) with a new filler plug (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).



HYDRAULIC CIRCUIT DECONTAMINATION

This should be carried out by your dealer after each oil change.
The hydraulic oil used in the circuit must be at least equal in quality to class 8 (according to NAS 1638). Your dealer will be able to clean the hydraulic circuit using an external unit and check the quality of the oil in order to ensure the long life of hydraulic components and main pump.

E10 - SEAT BELT

CHECK

SEAT BELT WITH TWO ANCHORING POINTS

- Check the following points:
  - Fixing of the anchoring points on the seat.
  - Cleanness of the strap and the locking mechanism.
  - Triggering of the locking mechanism.
  - Condition of the strap (cuts, curled edges).

REELED BELT WITH TWO ANCHORING POINTS

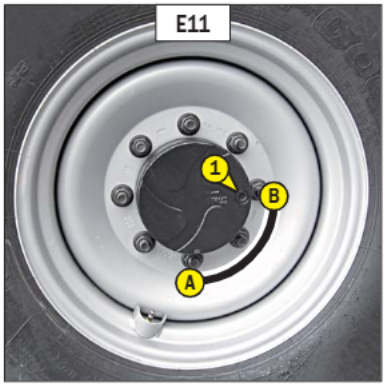
- Check the points listed above together with the following points:
  - The correct winding of the belt.
  - Condition of the reel guards.
  - Roller locking mechanism when the strap is given a sharp tug.

NOTE: After an accident, replace the seat belt.

WARNING	*Under no circumstances should you use the lift truck if the seat belt is damaged! Repair or replace the seat belt immediately!*

E11 - FRONT AND REAR WHEELS REDUCERS OIL

DRAIN



Park the lift truck on level ground with the I.C. engine stopped and the reducers oil still warm.

IMPORTANT	*Dispose of the drain oil in an ecological manner.*

- Drain and change each front wheel reducer.
- Place drain plug 1 (fig. E11) in position A.
- Place a container under the drain plug and unscrew the plug.
- Let the oil drain fully.
- Place the drain port in position B, i.e. in a level port.
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by level port 1 (fig. E11).
- The level is correct when the oil level is flush with the edge of the hole.
- Install and tighten the drain plug 1 (fig. E11) (tightening torque 31 ft/lb).
- Repeat this operation on each rear wheel reducer.

F - EVERY 2000 HOURS OF SERVICE

Carry out the operations described previously as well as the following operations.

F1 - COOLING LIQUID

DRAIN

These operations are to be carried out if necessary or every two years at the beginning of winter. Park the lift truck on level ground with the I.C. engine stopped and cold.

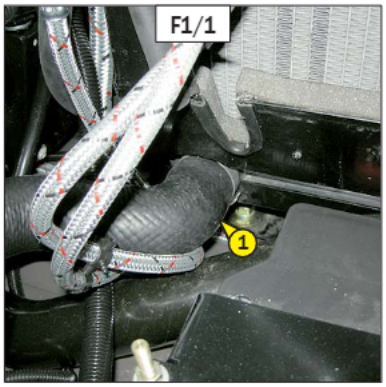
DRAINING THE LIQUID

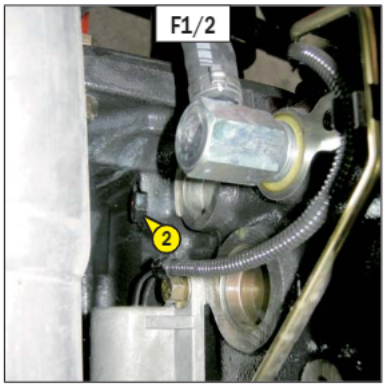
- Open engine hood and lift the battery cover.
- Place a container under hose 1 (fig. F1/1) on the radiator and drain plug 2 (fig. F1/2) of the engine block. Remove the hose and loosen the drain plug.
- Remove filling plug 3 (fig. F1/3) of the radiator.
- Let the cooling circuit drain entirely while ensuring that the ports do not get clogged.
- Check the condition of the hoses as well as the fastening devices and change the hoses if necessary.
- Rinse the circuit with clean water and use a cleaning agent if necessary.

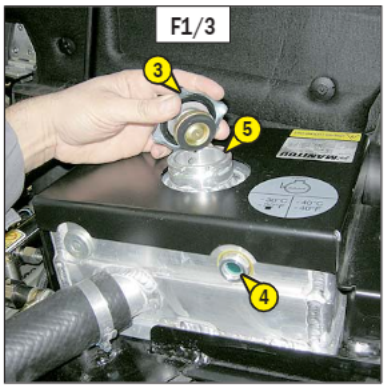
FILLING THE LIQUID

- Install and tighten the hose 1 (fig. F1/1) and drain plug 2 (fig. F1/2) (tightening torque 30 ft/lb).
- Slowly fill up the circuit with cooling liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) to the middle of gauge 4 (fig. F1/3) through filler port 5 (fig. F1/3).
- Install the filling plug 3 (fig. F1/3).
- Run the I.C. engine at idle for a few minutes.
- Check for any possible leaks.
- Check the level and refill if necessary.

IMPORTANT	*The I.C. engine must be filled with a minimum mixture containing 25% of ethylene glycol-based antifreeze to prevent corrosion.*







CLEANING CONDENSER AND EVAPORATOR COILS (*)
CLEANING CONDENSATE TRAY AND RELIEF VALVE (*)
COLLECTING COOLANT TO REPLACE FILTER-DRIER (*)
REFILLING WITH COOLANT AND CHECKING THE THERMOSTATIC CONTROL AND PRESSURE SWITCHES (*)

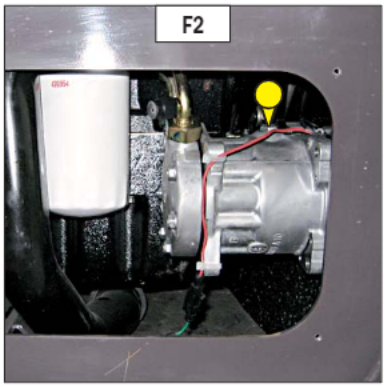
NOTE: When opening the evaporator unit, remember to replace the cover seal.

(*): (CONSULT YOUR DEALER).

WARNING	*DO NOT ATTEMPT REPAIRS. ONLY A QUALIFIED AIR CONDITIONING SERVICEMAN SHOULD MAKE REPAIRS. CONTACT YOUR DEALER.*

WARNING	Do not open the cooling circuit under any circumstances, this will cause the coolant to be lost. The cooling circuit contains a gas which can be dangerous under certain conditions. This gas, coolant R 134a, is colorless, odorless and heavier than air. *If the gas is inhaled, take the victim into fresh air, give oxygen or artificial respiration if necessary and call a doctor.· If the gas is in contact with the skin, wash it immediately under running water and remove any contaminated garments.· If the gas is in contact with the eyes, rinse them in clear water for 15 minutes and call a doctor.*

- The compressor has an oil level gauge (fig. F2). Never unscrew this gauge because it would depressurizes the installation. The oil level is only checked when changing the oil in the circuit.


F2

G - OCCASIONAL MAINTENANCE

G1 - WHEEL

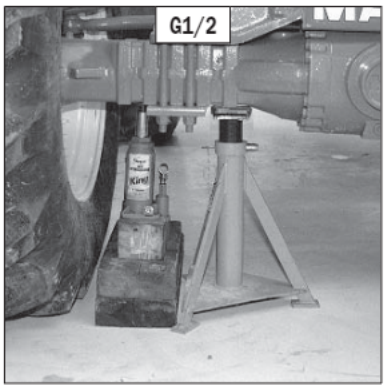
CHANGE

WARNING *In the event of a wheel being changed on the public highway, make sure of the following points:*

For this operation, we advise you to use a properly rated hydraulic jack and safety support.
- Park the lift truck away from traffic, if possible on even and hard ground.
- Put the warning lights on.
- Immobilize the lift truck in both directions on the axle opposite to the wheel to be changed.
- Unlock the nuts of the wheel to be changed.
- Place the jack under the flared axle tube, as near as possible to the wheel and adjust the jack (fig. G1/1).
- Lift the wheel until it comes off the ground and put in place the safety support under the axle (fig. G1/2).
- Completely unscrew the wheel nuts and remove them.
- Free the wheel by reciprocating movements and roll it to the side.
- Slip the new wheel on the wheel hub.
- Install the nuts by hand, if necessary grease them.
- Remove the safety support and lower the lift truck with the jack.
- Tighten the wheel nuts with a torque wrench (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE for tightening torque).

G1/1

G1/2



G2 - FRONT HEADLAMPS

ADJUST

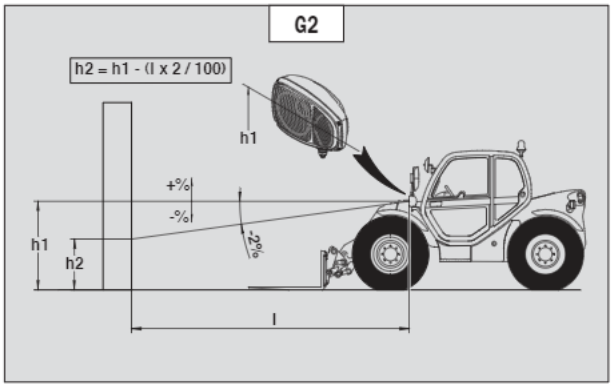
RECOMMENDED SETTING

(as per standard ECE-76/756 76/761 ECE20)

Set to - 2% of the dipped beam in relation to the horizontal line of the headlamp.

ADJUSTING PROCEDURE
- Park the lift truck unloaded and in the transport position and perpendicular to a white wall on flat, level ground (fig. G6).
- Check the tire pressures (see: 2 - DESCRIPTION: CHARACTERISTICS).
- Place the forward/reverse selector in neutral and release the parking brake.

G2



CALCULATING THE HEIGHT OF THE DIPPED BEAM (H2)
- h1 = Height of the dipped beam in relation to the ground.
- h2 = Height of the adjusted beam.
- l = Distance between the dipped beam and the white wall.

G3 - LIFT TRUCK

TOW

IMPORTANT	*Do not tow the lift truck at more than 15 mph.*

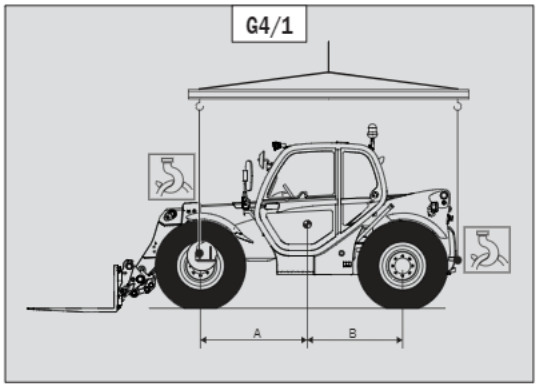
- Place the forward/reverse selector in neutral and the gear shift in neutral.
- Release the hand brake.
- Put the warning lights on.
- If the I.C. engine is not running there will be no steering or braking assistance. Operate the steering and pedal slowly avoiding sudden abrupt movements.

G4 - LIFT TRUCK

SLING

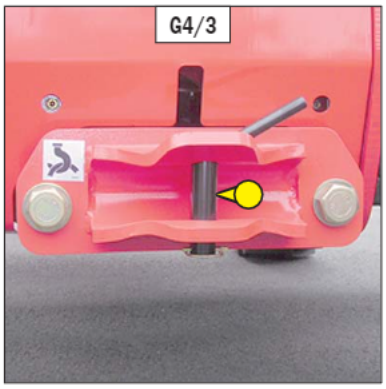
- Take into account the position of the lift truck center of gravity for lifting (fig. G4/1).
- Place the hooks in the fastening points provided (fig. G4/2 and G4/3).

G4/1



G4/2

G4/3



G5 - LIFT TRUCK ON A PLATFORM

WARNING	*Ensure that the safety instructions for the platform are followed before loading the lift truck and that the driver of transport is informed about the dimensions and weight of the lift truck.*

WARNING	*Ensure that the platform has dimensions and load capacity sufficient for transporting the lift truck. Check also the allowable pressure on the contact surface of the platform/trailer.*

IMPORTANT	*For lift trucks equipped with a turbo-charged I.C. engine, block off the exhaust outlet to avoid rotation of the turbo shaft - it may spin (without lubrication) during transport.*

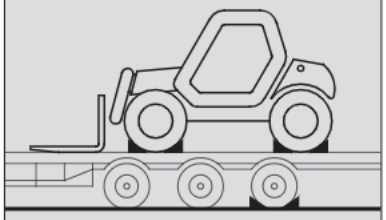
LOAD THE LIFT TRUCK

- Block the wheels of the platform.
- Fix the loading ramps so that you obtain an angle as little as possible to lift the lift truck.
- Load the lift truck parallel to the platform.
- Park the lift truck (see: 1 - OPERATING AND SAFETY INSTRUCTIONS: DRIVING INSTRUCTIONS UNLADEN AND LADEN).

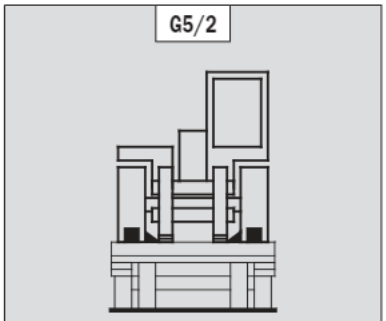
STOW THE LIFT TRUCK

- Fix the chocks to the platform at the front and at the back of each tire (fig. G5/1).
- Fix also the chocks to the platform in the inside of each tire (fig. G5/2).
- Stow the lift truck on the platform with enough resisting straps/chains. At the front of the lift truck, on the fastening points 1 (fig. G5/3) and at the back, on the towing pin 2 (fig. G5/4).
- Tighten the straps/chains (fig. G5/5).

G5/1

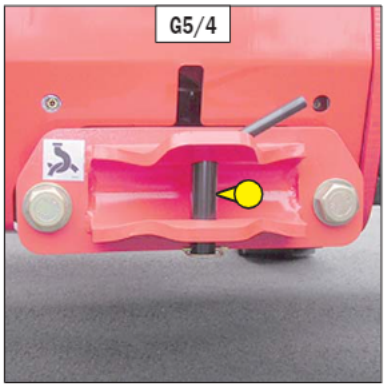


G5/2

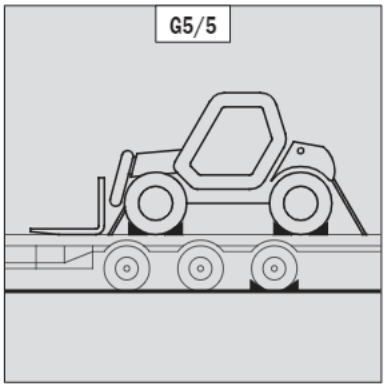


G5/3

G5/4



G5/5



4 - ENGAGING THE ATTACHMENTS

TABLE OF CONTENTS

INTRODUCTION

- Your lift truck must be used with interchangeable equipment. These items are called: ATTACHMENTS.

- A wide range of attachments, specially designed and perfectly suitable for your lift truck is available and guaranteed by MANITOU.

- The attachments are delivered with a load chart concerning your lift truck. The operator's manual and the load chart should be kept in the places provided in the lift truck. For standard attachments, their use is governed by the instructions contained on this notice.

- Some particular uses require the adaptation of the attachment which is not provided in the price-listed options. Optional solutions exist, consult your dealer.

IMPORTANT

Only attachments approved by MANITOU are to be used on our lift trucks. The manufacturer's liability will be voided in case of modification(s) without prior written permission.

Maximum loads are defined by the capacity of a lift truck taking into account the attachment's mass and center of gravity. In the event of the attachment having less capacity than the lift truck, never exceed its limit.

WARNING

Depending on their size, certain attachments (when the boom is lowered and/or retracted, or the tilt is activated) may come into contact with the front tires and cause damage to them. TO AVOID TIRE DAMAGE, EXTEND THE TELESCOPE TO A SUFFICIENT DISTANCE TO AVOID DAMAGING THE TIRES!

PICKING UP THE ATTACHMENTS

A - ATTACHMENT WITHOUT HYDRAULICS AND HAND LOCKING DEVICE

TAKING UP AN ATTACHMENT

- Ensure that the attachment is in alignment to the carriage. If it is not correctly oriented, take the necessary precautions in order to move it safely.
- Check that the locking pin and the clip are in position in the bracket (fig. A).
- Place the lift truck with the jib fully lowered in front of and parallel to the attachment, tilt the carriage forwards (fig. B).
- Bring the carriage under the locking tube of the attachment, slightly lift the jib, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.

HAND LOCKING

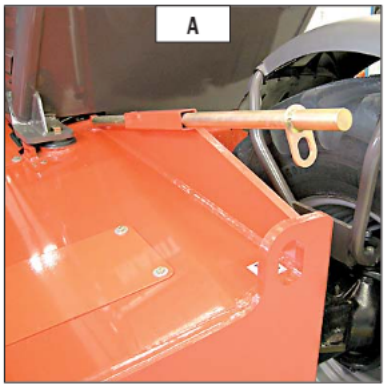
- Take the locking pin and the clip on the bracket (fig. A) and lock the attachment (fig. D). Do not forget to install the clip.

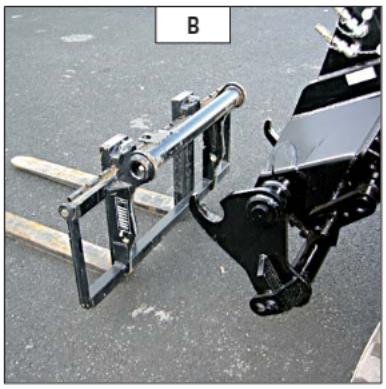
HAND RELEASING

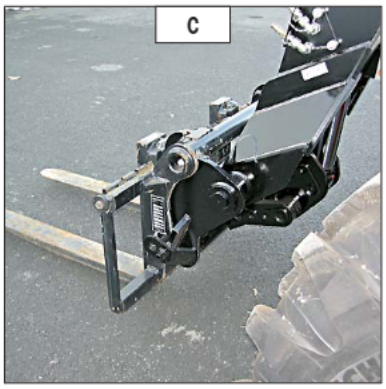
- Proceed in the reverse order of paragraph HAND LOCKING while making sure you install the locking pin and the clip in the bracket (fig. A).

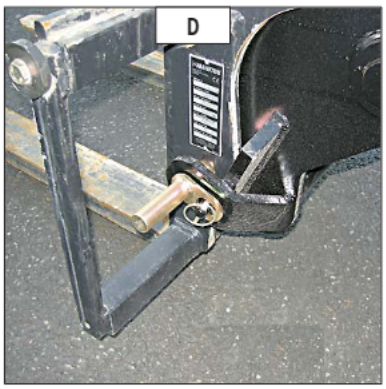
LAYING AN ATTACHMENT

- Proceed in the reverse order of paragraph TAKING UP AN ATTACHMENT while making sure you place the attachment flat on the ground and in closed position.





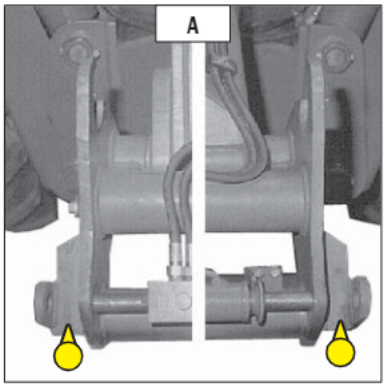




B - ATTACHMENT WITHOUT HYDRAULICS AND HYDRAULIC LOCKING DEVICE (OPTION)

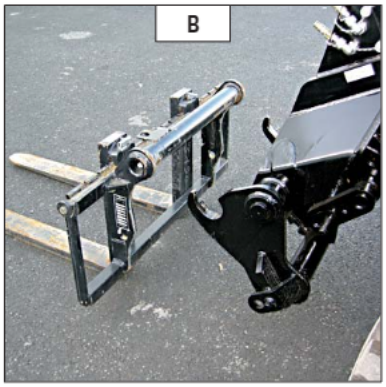
TAKING UP AN ATTACHMENT

- Ensure that the attachment is in alignment to the carriage. If it is not correctly oriented, take the necessary precautions in order to move it safely.
- Check that the rods on the locking cylinder are retracted (fig. A).
- Place the lift truck with the jib fully lowered in front of and parallel to the attachment, tilt the carriage forwards (fig. B).
- Bring the carriage under the locking tube of the attachment, slightly lift the jib, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.



HYDRAULIC LOCKING

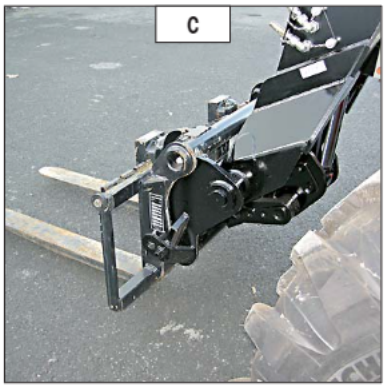
- Put the valve in position A (fig. D), that is to say, the hydraulic circuit of the attachment locking open.
- Switch button 1 (fig. E) of the distributor lever forwards to completely lock the attachment on the carriage.
- Close the valve in position B (fig. D), that is to say, the hydraulic circuit of the attachment locking closed.



WARNING	*Always close the valve in position B (fig. D) after locking the attachment, to avoid accidental unlocking! Use the attachment safely.*

HYDRAULIC RELEASING

- Put the valve in position A (fig. D), that is to say, the hydraulic circuit of the attachment locking open.
- Switch button 1 (fig. E) of the distributor lever backwards to completely release the attachment.



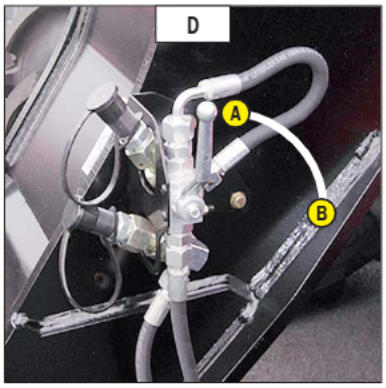
LAYING AN ATTACHMENT

- Proceed in the reverse order of paragraph TAKING UP AN ATTACHMENT while making sure you place the attachment flat on the ground and in closed position.

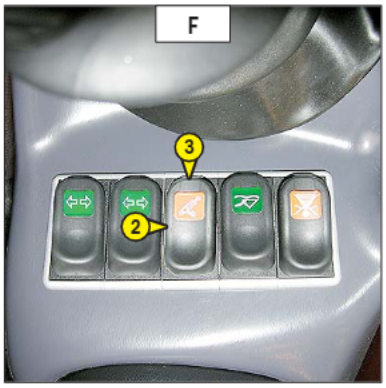
INACTIVATE THE HYDRAULIC RELEASE CONTROL

You can change an attachment without leaving the control post, by cutting the electricity supply to the hydraulic control.

- Leave the valve in position A (fig. D).
- Use switch 2 (fig. F) to cut the electricity supply to the hydraulic control. The circuit is out of action when indicator 3 (fig. F) is on.



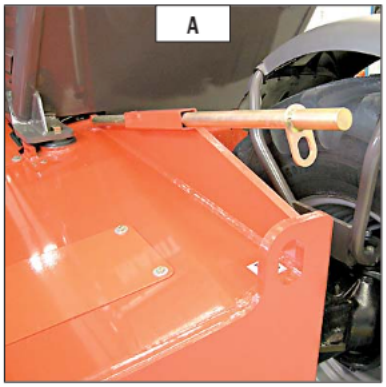
WARNING	*Always cut the electrical power to the circuit using switch 2 (fig. F) after each change of attachment to avoid involuntary release. Use the attachment safely.*



C - HYDRAULIC ATTACHMENT AND HAND LOCKING DEVICE

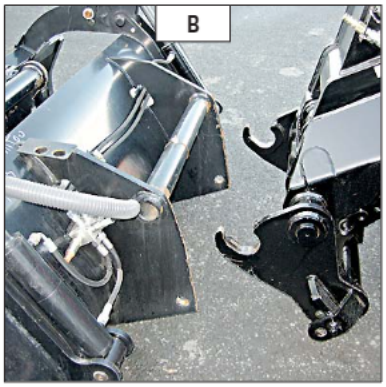
TAKING UP AN ATTACHMENT

- Ensure that the attachment is in alignment to the carriage. If it is not correctly oriented, take the necessary precautions in order to move it safely.
- Check that the locking pin and the clip are in position in the bracket (fig. A).
- Place the lift truck with the jib fully lowered in front of and parallel to the attachment, tilt the carriage forwards (fig. B).
- Bring the carriage under the locking tube of the attachment, slightly lift the jib, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.



MANUAL LOCKING AND CONNECTION OF THE ATTACHMENT

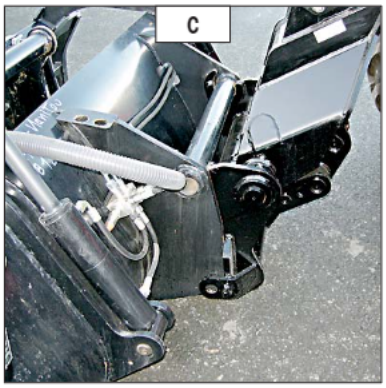
- Take the locking pin and the clip on the bracket (fig. A) and lock the attachment (fig. D). Do not forget to install the clip.
- Stop the I.C. engine and keep the ignition on the lift truck.
- Remove the pressure of the hydraulic circuit by operating switch 1 (fig. E) on the distributor lever backwards and forwards 4 or 5 times.
- Connect the rapid connectors according to the attachment's hydraulic movements.



IMPORTANT	*Make sure that the rapid connectors are clean. When not in use protect the openings with the caps provided.*

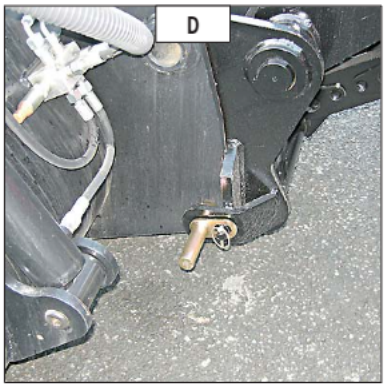
HAND RELEASING AND DISCONNECTING THE ATTACHMENT

- Proceed in the opposite order to that described in MANUAL LOCKING AND CONNECTION OF THE ATTACHMENT while making sure you put the locking pin back into the bracket (fig. A).



LAYING AN ATTACHMENT

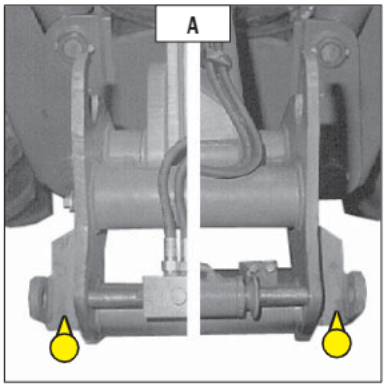
- Proceed in the reverse order of paragraph TAKING UP AN ATTACHMENT while making sure you place the attachment flat on the ground and in closed position.



D - HYDRAULIC ATTACHMENT AND HYDRAULIC LOCKING (OPTION)

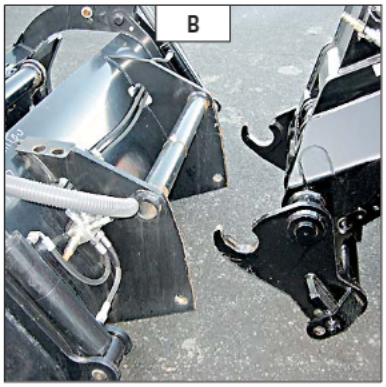
TAKING UP AN ATTACHMENT

- Ensure that the attachment is in inalignment to the carriage. If it is not correctly oriented, take the necessary precautions in order to move it safely.
- Check that the rods on the locking cylinder are retracted (fig. A).
- Place the lift truck with the jib fully lowered in front of and parallel to the attachment, tilt the carriage forwards (fig. B).
- Bring the carriage under the locking tube of the attachment, slightly lift the jib, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.



HYDRAULIC LOCKING AND CONNECTING THE ATTACHMENT

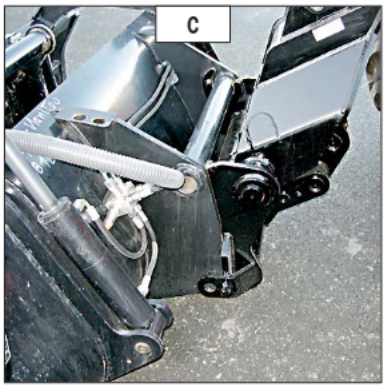
- Put the valve in position A (fig. D), that is to say, the hydraulic circuit of the attachment locking open.
- Switch button 1 (fig. E) of the distributor lever forwards to completely lock the attachment on the carriage.
- Stop the I.C. engine and keep the ignition on the lift truck.
- Remove the pressure of the hydraulic circuit by operating switch 1 (fig. E) on the distributor lever backwards and forwards 4 or 5 times.
- Connect the rapid connectors according to the attachment's hydraulic movements.



IMPORTANT	*Make sure that the rapid connectors are clean. When not in use protect the openings with the caps provided.*

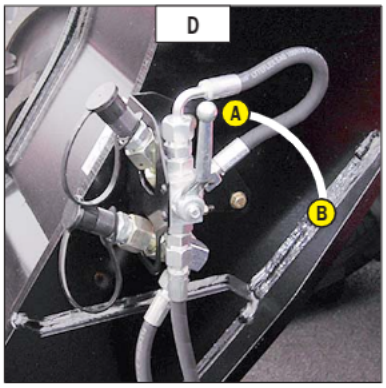
- Close the valve in position B (fig. D), that is to say, the hydraulic circuit of the attachment locking closed.

WARNING	*Always close the valve in position B (fig. D) after locking the attachment, to avoid accidental unlocking. Use the attachment safely.*



HYDRAULIC RELEASING AND DISCONNECTING THE ATTACHMENT

- Close the attachment.
- Put the valve in position A (fig. D), that is to say, the hydraulic circuit of the attachment locking open.
- Switch button 1 (fig. E) of the distributor lever backwards to completely release the attachment.
- Stop the I.C. engine and keep the ignition on the lift truck.
- Remove the pressure of the hydraulic circuit by operating switch 1 (fig. E) on the distributor lever backwards and forwards 4 or 5 times.
- Disconnect the rapid connectors of the attachment.



IMPORTANT	*Make sure that the rapid connectors are clean. When not in use protect the openings with the caps provided.*

LAYING AN ATTACHMENT

- Proceed in the reverse order of paragraph TAKING UP AN ATTACHMENT while making sure you place the attachment flat on the ground and in closed position.