



MANITOU NORTH AMERICA, INC.

6401 IMPERIAL DRIVE
WACO, TX 76712-6803

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MT 523 Series B-E2
MLT 523 Turbo MONO-ULTRA
Series B-E2

S/N: 204734 and ABOVE

OPERATOR'S MANUAL

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

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ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

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).

SAFETY DECALS

Attachment Warning - 421016

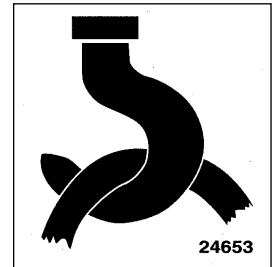
(Boom equipped models). Location: on the boom coupler, near where the retaining shaft is installed.

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



Hook Here - 24653

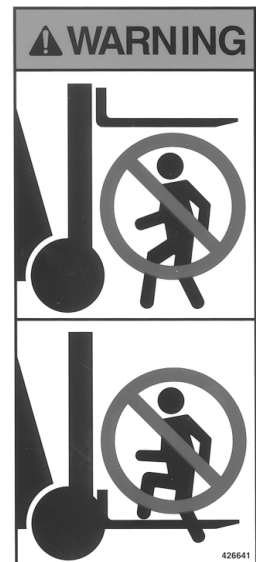
Location: at points provided on the forklift, where straps or chains may be attached to secure the forklift to a trailer during transport.



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.

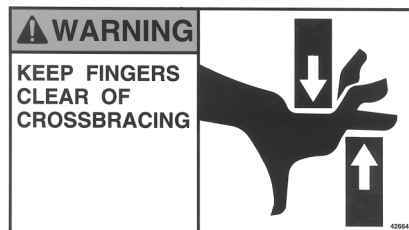


Pinch Point, Large, 2.5 x 4.5 in. - 426643

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

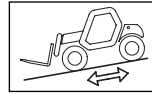
(Boom equipped models, option). Location: Near the hand throttle mechanism.

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

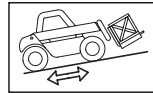


C - ENVIRONMENT

- Comply with site 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 and its load.
- Do not allow anybody to come near the working area of the lift truck or pass beneath an elevated load.
- When using the lift truck on a transverse slope, before lifting the boom, follow the instructions given in the paragraph : INSTRUCTIONS FOR HANDLING A LOAD : D - TRANSVERSE 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.

- Take into account the lift truck's dimensions and its load before trying to negotiate a narrow or low passageway.
- Never move onto a loading platform without having first checked :
 - That it is suitably positioned and made fast.
 - That the unit to which it is connected (wagon, truck, etc.) will not shift.
 - That this platform is prescribed for the total weight of the lift truck to be loaded.
 - That this platform is prescribed for the size of the lift truck.
- Never move onto a foot bridge, floor or freight lift, without being certain that they are prescribed for the weight and size of the lift truck to be loaded and without having checked that they are in sound working order.
- Be careful in the area of loading bays, trenches, scaffolding, soft land 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.
- Make sure that the scaffolding, loading platform, pilings or ground is capable of bearing the load.
- Never stack loads on uneven ground, they may tip over.

 <p>WARNING</p>	<p><i>If the load or the attachment must remain above a structure for a period of time, there is the risk that it will settle upon the structure as the hydraulic oil in the cylinders cools.</i></p> <p><i>To eliminate this risk :</i></p> <ul style="list-style-type: none"> - Regularly check the distance between the load or the attachment and the structure and readjust as necessary. - If possible use the lift truck at an oil temperature as close as possible to ambient temperature.
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- In the case of work near aerial lines, ensure that the safety distance is sufficient between the working area of the lift truck and the aerial line.

 <p>DANGER</p>	<p><i>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.</i></p>
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 <p>DANGER</p>	<p><i>During high winds do not attempt moving loads that may catch the wind or cause the fork lift to be unstable.</i></p>
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D - VISIBILITY

- Maintain permanently good visibility throughout the route. In reverse, either look directly behind you or use the panoramic rear-view mirrors. In any case, avoid reversing over long distances.
- Visibility may be reduced on the right-hand side when the boom is raised, so before lifting the boom make sure that the movement can be made in complete safety.
- If the visibility in forward motion is not sufficient 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 road is inadequate, ask someone to help, standing outside the area in which the truck will be moving, and make sure you always have a good view of this person.

WELDING

- Disconnect the battery before any welding operations on the lift truck.
- When carrying out electric welding work on the lift truck, connect the negative cable from the equipment directly to the part being welded, so as to avoid high tension current passing through the alternator.
- Never carry out welding or work which gives off heat on an assembled tire. The heat would increase the pressure which could cause the tire to explode.
- If the lift truck is equipped with an electronic control unit, disconnect this before starting to weld, to avoid the risk of causing irreparable damage to electronic components.

WASHING THE LIFT TRUCK

- Clean the lift truck or at least the area concerned before any intervention.
- Remember to close and lock all accesses to the lift truck (doors, windows, cowls...).
- During washing, avoid the articulations and electrical components and connections.
- If necessary, protect against penetration of water, steam or cleaning agents, components susceptible of being damaged, particularly electrical components and connections and the injection pump.
- Clean the lift truck of any fuel, oil or grease trace.

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

FRONT AXLE

- Type
- Hub reducers

DANA
Epicyclical

REAR AXLE

- Type
- Hub reducers

DANA
Epicyclical

BRAKE

- Service brake
 - . Type
- Parking brake
 - . Type

Foot pedal. Hydraulic brake, applied on the front wheels.
Multidisc brake immersed in oil.
Mechanical hand lever applied on the front wheels.
Multidisc brake immersed in oil.

ELECTRIC CIRCUIT

- Earth
- Battery
- Alternator
 - . Type
 - . Tension regulator
- Starter
 - . Type

Negative
12 V - 110 Ah - 750 A EN
12 V - 75 A
Denso A115i
Incorporated into the alternator
12 V - 3,0 kW
Denso E95RL

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

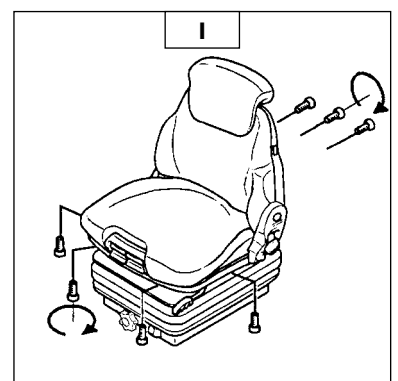
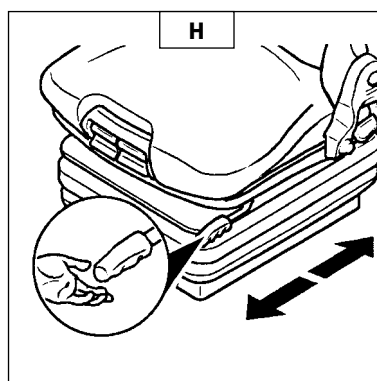
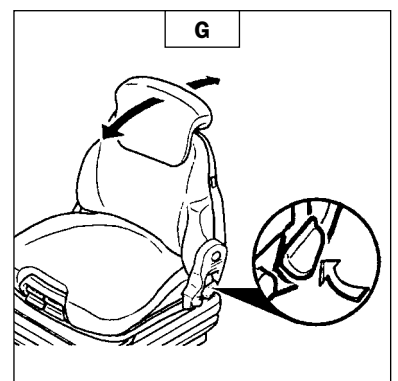
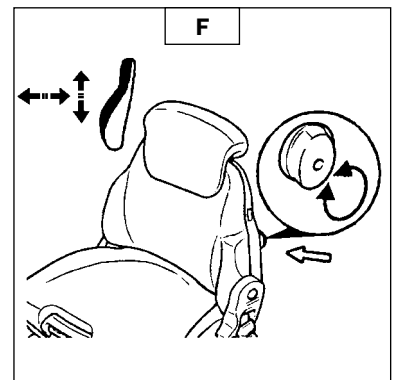
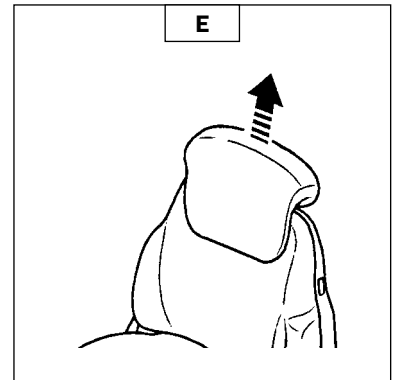
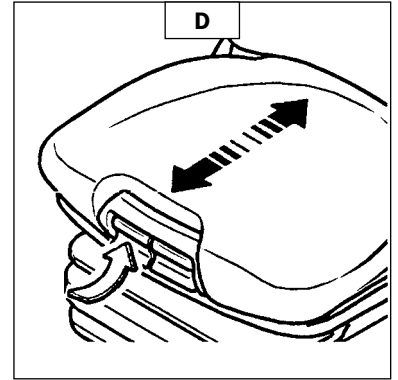
MAINTENANCE (FIG. I)

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	<i>A rocking head-rest increases the risk of an accident!</i>
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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.



21 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)

MLT 523 Turbo MONO-ULTRA Series B-E2

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).

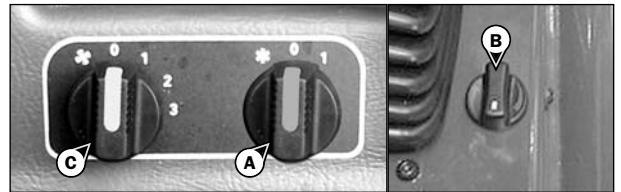


WARNING

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 - Control with signal light indicating start-up and cutout of the air conditioning system, if control "C" is in position 1, 2 or 3.
- B - Heating air temperature control.
- C - Air flow setting and fan speed control. In position "0" the air conditioning system no longer functions.



NOTE : Possible losses of water under the forklift truck are due to condensate discharges caused by the drying effect of the installation, especially with high outside temperatures and high relative humidity.

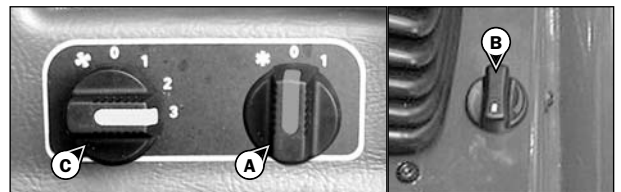
For the air conditioning to perform properly, the air intakes must not be blocked by frost, snow or leaves.

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 :

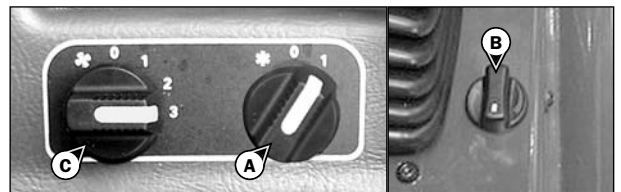
- A - Control with signal light off.
- B - At the required temperature.
- C - At the required temperature 1, 2 or 3.



CONDITIONED AIR MODE

The controls must be adjusted in the following way :

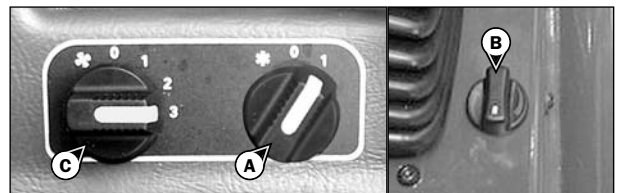
- A - Control with signal light on.
- B - At the required temperature.
- C - At the required temperature 1, 2 or 3.



DEMISTING (DEFROST) MODE

The controls must be adjusted in the following way :

- A - Control with signal light on.
- B - At the required temperature.
- C - At the required temperature 1, 2 or 3.



22 - CAB FILTER VENTILATORS

MLT 523 Turbo MONO-ULTRA Series B-E2

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

23 - WINDSCREEN DEMIST VENTS

MLT 523 Turbo MONO-ULTRA Series B-E2

For optimum effectiveness, close the heating ventilators.

3 - MAINTENANCE

A = AJUST	N = CLEAN
C = CHECK	P = BLEED
D = DESCALE	R = CHANGE
G = GREASE	V = DRAIN/CHANGE

After the first 50 hours	Day or 10 hours	50 hours	250 hours	1 year or 500 hours	1 year or 1000 hours	2000 hours	4000 hours
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BRAKE

Brake oil level		C	◀◀	◀◀	◀◀	◀◀	◀◀
Parking brake			C/A	◀◀	◀◀	◀◀	◀◀
Parking brake lever mechanism				G	◀◀	◀◀	◀◀
Brake oil					V**	◀◀	◀◀
Brake circuit					P**	◀◀	◀◀
Brake circuit 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	◀◀	◀◀	◀◀	◀◀
Cab ventilation filter				N	◀◀	◀◀	◀◀
Seat belt					C	◀◀	◀◀
Condition of the rear view mirrors					C**	◀◀	◀◀
Structure					C**	◀◀	◀◀
OPTION Air conditioning							

ELECTRICITY

Battery electrolyte level		C	◀◀	◀◀	◀◀	◀◀	◀◀
Battery electrolyte density				C	◀◀	◀◀	◀◀
Condition of wiring harness and cables					C**	◀◀	◀◀
Lights and signals					C**	◀◀	◀◀
Warning indicators					C**	◀◀	◀◀
Adjust the front headlamps							

FRONT AXLE

Front wheels reducers pivots		G	◀◀	◀◀	◀◀	◀◀	G/C**
Transfer box oil level				C	◀◀	◀◀	◀◀
Front axle differential oil level				C	◀◀	◀◀	◀◀
Front wheels reducers oil level				C	◀◀	◀◀	◀◀
Transfer box oil		V			V	◀◀	◀◀
Front axle differential oil		V			V	◀◀	◀◀
Front wheels reducers oil		V			V	◀◀	◀◀
Wearing of front axle brake discs							C**
Front wheels reducers universal joint							C**
Front wheels reducers clearance							C**
Bearings clearance of the transfer box							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	◀◀	◀◀
Rear wheels reducers clearance							C**

CHASSIS

Structure						C**	◀◀
Bearings and articulation rings						C**	◀◀

ATTACHMENTS

Forks wear				C**	◀◀	◀◀	◀◀
Attachment carriage					C**	◀◀	◀◀
Condition of attachments					C**	◀◀	◀◀

LIFT TRUCK

Tow the lift truck							
Sling the lift truck							
Transport the lift truck on a platform							

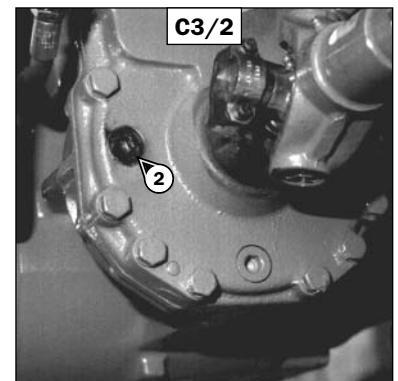
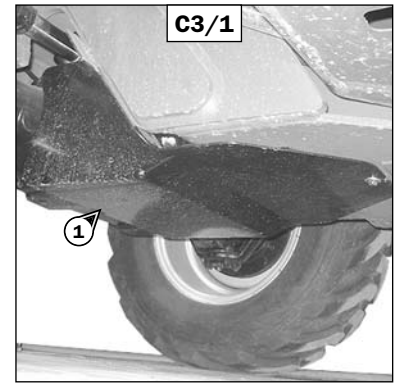
(*) : Every 10 hours during the first 50 hours, then once at 250 hours.
(**) : Consult your dealer.

C3 - LEVEL OF THE TRANSFER BOX OIL

CHECK

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

- Remove access panel 1 (fig. C3/1).
- Remove level plug 2 (fig. C3/2). The oil should be flush with the edge of the filler port.
- If necessary, add oil (see : 3 - MAINTENANCE : LUBRICANTS AND FUEL) by the same filler port.
- Set back and tighten the level plug 3 (fig. C3/2) (tightening torque 31 ft/lb).



C4 - PARKING BRAKE

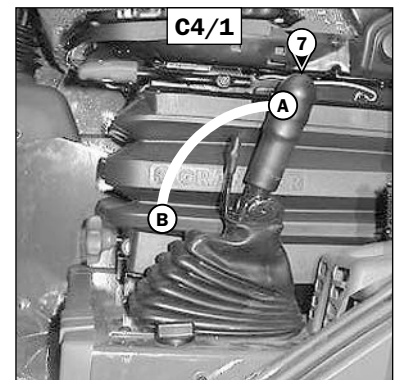
CHECK - ADJUST

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. C4/1).
- The adjustment is correct when the lift truck is held stationary on a slope.
- Carry out adjustments if necessary.

Adjustment of the parking brake cable on the front axle

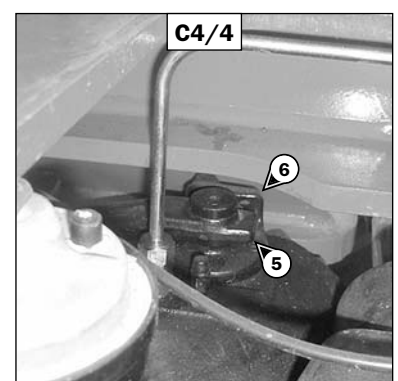
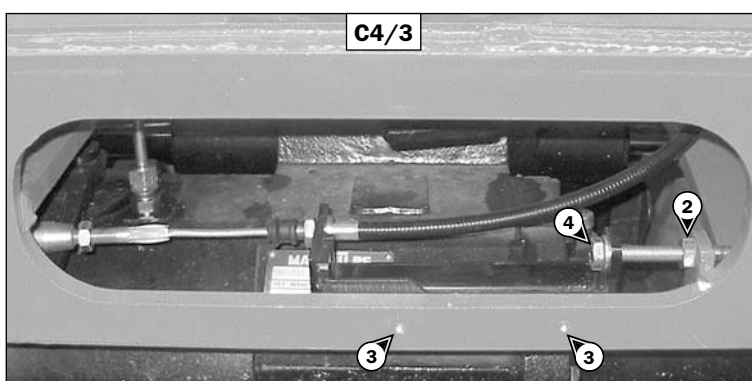
- Press and release the brake pedal, then release the parking brake, putting it in position B (fig. C4/1).
- Remove the cover plate 1 (fig. C4/2).
- Unscrew nut 2 and screws 3 (fig. C4/3).
- Adjust the cable by loosening the screw 4 (fig. C4/3), until a clearance of 0.06 in. between cams 5 (fig. C4/4) and stops 6 (fig. C4/4) is obtained.



WARNING The adjustment of the stops performed by the manufacturer must not be modified under any circumstances.

ADJUSTMENT OF THE PARKING BRAKE

- Leave the parking brake in position B (fig. C4/1).
- Progressively tighten the end piece of the lever 7 (fig. C4/1) and recheck braking.
- Repeat the operation until the correct braking adjustment is obtained.



E3 - HYDRAULIC OIL

DRAIN

E4 - SUCTION STRAINER FOR HYDRAULIC OIL TANK

CLEAN

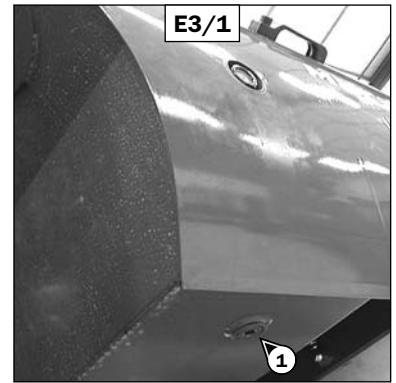
E5 - FILTER CAP FOR HYDRAULIC OIL TANK

CHANGE

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

IMPORTANT

Thoroughly clean the area surrounding the drain plug and the suction cover on the hydraulic tank.

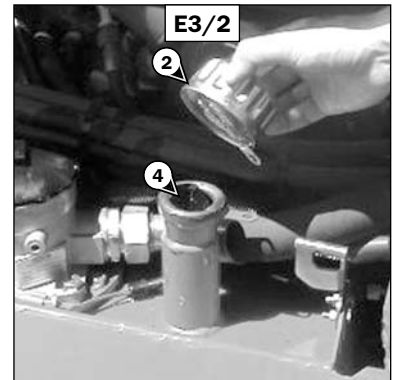


DRAINING THE OIL

- Place a container under drain plug 1 (fig. E3/1) and unscrew the plug.
- Open the side cover.
- Remove filler cap 2 (fig. E3/2) in order to ensure that the oil is drained properly.

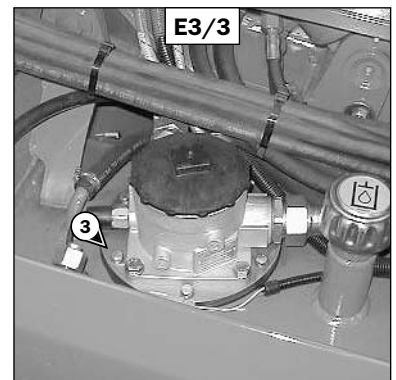
IMPORTANT

Dispose of the drain oil in an ecological manner.



CLEANING THE STRAINER

- Remove the inspection panel 3 (fig. E3/3).
- 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 inspection panel 3 (fig. E3/3) making sure the seal is in the correct position.



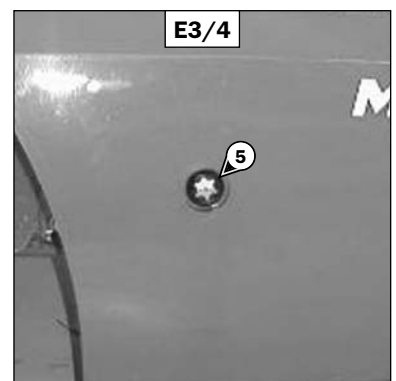
FILLING UP THE OIL

- Clean and install drain plug 1 (fig. E3/1) (tightening torque 26 ft/lb).
- Fill up with oil (see : 3 - MAINTENANCE : LUBRICANTS AND FUEL) by filler port 4 (fig. E3/2).

IMPORTANT

Use a clean container and funnel, and clean the underside of the oil nozzle before filling.

- Observe the oil level on dipstick 5 (fig. E3/4) ; the oil level should be at the level of the red point.
- Check for any possible leaks at the drain plug.
- Replace filler plug 2 (fig. E3/2) with a new filler plug (see : 3 - MAINTENANCE : FILTERS CARTRIDGES AND BELTS).
- Close the side cover.



POLLUTION ABATEMENT OF THE HYDRAULIC CIRCUIT

- Let the I.C. engine run (accelerator pedal at halfway travel) for 5 minutes without using anything on the lift truck, then for 5 more minutes while using completely the hydraulic movements (except the steering system).
- Accelerate the I.C. engine at full speed for 1 minute, then activate the steering system.
- This operation makes a pollution abatement of the circuit possible through the hydraulic return oil filter.

4 - PICKING UP THE ATTACHMENTS

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