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YOUR DEALER

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OPERATOR'S MANUAL
(ORIGINAL INSTRUCTIONS)

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

1 - OPERATING AND SAFETY INSTRUCTIONS

2 - DESCRIPTION

3 - MAINTENANCE

4 - ELECTRIC AND HYDRAULIC SYSTEMS

5 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE

6 - SPECIFIC AUSTRALIA

Operator manual supplement:

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1 - OPERATING AND SAFETY INSTRUCTIONS

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INSTRUCTIONS TO THE COMPANY MANAGER

THE SITE

- Proper management of lift truck's area of travel will reduce the risk of accidents:
 - . ground not unnecessarily uneven or obstructed,
 - . no excessive slopes,
 - . pedestrian traffic controlled, etc.

THE OPERATOR

- Only qualified, authorized personnel can use the lift truck. This authorization is given in writing by the appropriate person in the establishment with respect to the use of lift trucks and must be carried permanently by the operator.

 **On the basis of experience, there are a number of possible situations in which operating the lift truck is contra-indicated. Such foreseeable abnormal uses, the main ones being listed below, are strictly forbidden.**

- **The foreseeable abnormal behaviour resulting from ordinary neglect, but does not result from any wish 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.**
 - **Behaviour resulting from application of the «principle of least action» when performing a task.**
 - **For certain machines, the foreseeable behaviour of such persons as: apprentices, teenagers, handicapped persons, trainees tempted to drive a lift truck, operator 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 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, with a STATIC test coefficient OF 1.33 and a DYNAMIC test coefficient OF 1, as specified in harmonized norm EN 1459 for variable range trucks.
- Before commissioning, the company manager must make sure that the lift truck is appropriate for the work to be done, and perform certain tests (in accordance with current legislation).

B - ADAPTATION OF THE LIFT TRUCK TO STANDARD ENVIRONMENTAL CONDITIONS

- In addition to series equipment mounted on your lift truck, many options are available, such as: road lighting, stop lights, flashing light, reverse lights, reverse buzzer alarm, front light, rear light, light at the jib head, etc... (as model of lift truck).
- The operator must take into account the operating conditions to define the lift truck's signalling and lighting equipment. Contact your dealer.
- Take into account climatic and atmospheric conditions of the site of utilisation.
 - . 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).

 **For operation under average climatic conditions, i.e.: between - 15 °C and + 35 °C, correct levels of lubricants in all the circuits are checked in production.**
For operation under more severe climatic conditions, before starting up, it is necessary to drain all the circuits, then ensure correct levels of lubricants using lubricants properly suited to the relevant ambient temperatures. It is the same for the cooling liquid.

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

 **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 (e.g. Refineries, fuel or gas depots, stores of inflammable products...).**
For use in these areas, specific equipment is available (ask your dealer for information).

- Our trucks comply with Directive 2004/108/EC concerning electromagnetic compatibility (EMC), and with the corresponding harmonized norm EN 12895. Their proper operation is no longer guaranteed if they are used within areas in which the electromagnetic fields exceed the limit specified by that norm (10 V/m).
- Directive 2002/44/EC requires company managers to not expose their employees to excessive vibration doses. There is no recognized code of measurement for comparing the machines of different manufacturers. The actual doses received can therefore be measured only under actual operating conditions at the user's premises.
- The following are some tips for minimizing these vibration doses:
 - Select the most suitable lift truck and attachment for the intended use.
 - Adapt the seat adjustment to the operator's weight (according to lift truck model) and maintain it in good condition, as well as the cab suspension. Inflate the tires in accordance with recommendations.
 - Ensure that the operators adapt their operating speed to suit the conditions on site.
 - As far as possible, arrange the site in such a way as to provide a flat running surface and remove obstacles and harmful potholes.

C - MODIFICATION OF THE LIFT TRUCK

- For your safety and that of others, you must not change the structure and settings of the various components used in your lift truck (hydraulic pressure, calibrating limiters, I.C. engine speed, addition of extra equipment, addition of counterweight, unapproved attachments, alarm systems, etc.) yourself. In this event, the manufacturer cannot be held responsible.

D - FRENCH ROAD TRAFFIC RULES

(or see current legislation in other countries)

- Only one certificate of conformity is issued. It must be kept in a safe place.

THE 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 stickers which are no longer legible or are damaged, must be replaced immediately.

THE 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.

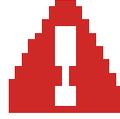


Your lift truck must be inspected periodically to ensure that it remains in compliance. The frequency of this inspection is defined by current legislation in the country in which the lift truck is used.

INSTRUCTIONS FOR THE OPERATOR

PREAMBLE

WHENEVER YOU SEE THIS SYMBOL IT MEANS:



WARNING ! BE CAREFUL ! YOUR SAFETY OR THE SAFETY OF THE LIFT TRUCK IS AT RISK.

 **The risk of accident while using, servicing or repairing your lift truck can be restricted if you follow the safety instructions and safety measures detailed in these instruction.**

- Only the operations and manœuvres described in these operator's manual must be performed. The manufacturer cannot predict all possible risky situations. Consequently, the safety instructions given in the operator's manual and on the lift truck itself are not exhaustive.
- At any time, as an operator, you must envisage, within reason, the possible risk to yourself, to others or to the lift truck itself when you use it.

 **Failure to respect the safety and operating instructions, or the instructions for repairing or servicing your lift truck may lead to serious, even fatal accident.**

GENERAL INSTRUCTIONS

A - OPERATOR'S MANUAL

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

B - AUTHORISATION FOR USE IN FRANCE

(or see current legislation in other countries)

- Only qualified, authorized personnel can use the lift truck. This authorization is given in writing by the appropriate person in the establishment with respect to the use of lift trucks and must be carried permanently by the operator.
- The operator is not competent to authorise the driving of the lift truck by another person.

C - MAINTENANCE

- The operator must immediately advise his superior if his lift truck is not in good working order or does not comply with the safety notice.
- The operator is prohibited from carrying out any repairs or adjustments himself, 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 tyres are adapted to the nature of the ground (see area of the contact surface of the tyres in the chapter: 2 - DESCRIPTION: FRONT AND REAR TYRES). There are optional solutions, consult your dealer.
 - . SAND tyres.
 - . LAND tyres.
 - . Snow chains.

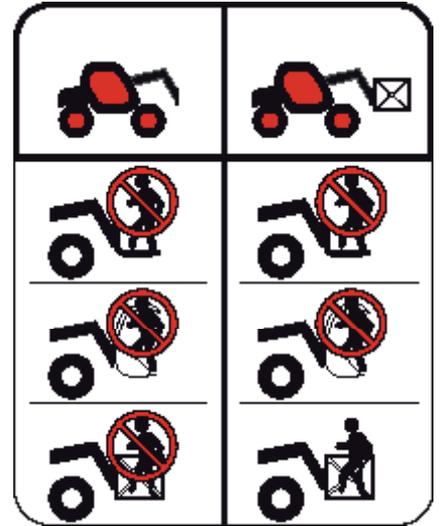
 **Do not use the lift truck if the tyres are incorrectly inflated, damaged or excessively worn, because this could put your own safety or that of others at risk, or cause damage to the lift truck itself. The fitting of foam inflated tyres is prohibited and is not guaranteed by the manufacturer, excepting prior authorisation.**

D - MODIFICATION OF THE LIFT TRUCK

- For your safety and that of others, you must not change the structure and settings of the various components used in your lift truck (hydraulic pressure, calibrating limiters, I.C. engine speed, addition of extra equipment, addition of counterweight, unapproved attachments, alarm systems, etc.) yourself. In this event, the manufacturer cannot be held responsible.

E - LIFTING PEOPLE

- The use of working equipment and load lifting attachments to lift people is:
 - either forbidden
 - or authorized exceptionally and under certain conditions (see current regulations in the country in which the lift truck is used).
- The pictogram posted at the operator station reminds you that:
 - Left-hand column
 - It is forbidden to lift people, with any kind of attachment, using a non PLATFORM-fitted lift truck.
 - Right-hand column
 - With a PLATFORM-fitted lift truck, people can only be lifted using platforms designed by MANITOU for the purpose.
- MANITOU sells equipment specifically designed for lifting people (OPTION PLATFORM lift truck, contact your dealer).



OPERATING INSTRUCTIONS UNLADEN AND LADEN

A - BEFORE STARTING THE LIFT TRUCK

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

B - DRIVER'S OPERATING INSTRUCTIONS

- Whatever his experience, the operator is advised to familiarize himself with the position and operation of all the controls and instruments before operating the lift truck.
- Wear clothes suited for driving the lift truck, avoid loose clothes.
- 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 face the lift truck when getting into and leaving the driving seat and use the handle(s) provided for this purpose. Do not jump out of the seat to get down.
- 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 soiled with greasy substances.
- For increased comfort, adjust the seat to your requirements and adopt the correct position in the driver's cab.



Under no circumstances must the seat be adjusted while the lift truck is moving.

- The operator must always be in his normal position in the driver's cab. It is prohibited to have arms or legs, or generally any part of the body, protruding from the driver's cab of the lift truck.
- The safety belt must be worn and adjusted to the operator's size.
- The control units must never in any event be used for any other than their intended purposes (e.g. climbing onto or down from the lift truck, portmanteau, etc.).
- If the control components are fitted with a forced operation (lever lock) device, it is forbidden to leave the cab without first putting these controls in neutral.
- It is prohibited to carry passengers either on the lift truck or in the cab.

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 jib, 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, lorry, 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.

⚠ If the load or the attachment must remain above a structure for a long time, there is the risk that it will rest on the structure because of the jib descending owing to the oil in the cylinders cooling down.

To eliminate this risk:

- Regularly check the distance between the load or the attachment and the structure and readjust this if necessary.
- If possible use the lift truck at an oil temperature as close as possible to ambient temperature.

- 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.

⚠ 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 cables.

⚠ In the event of high winds, do not carry out handling work that jeopardizes the stability of the lift truck and its load, particularly if the load catches the wind badly.

D - VISIBILITY

- The safety of people within the lift truck's working area, as well as that of the lift truck itself and the operator are depend on good operator visibility of the lift truck's immediate vicinity in all situations and at all times.
- This lift truck has been designed to allow good operator visibility (direct or indirect by means of rear-view mirrors) of the immediate vicinity of the lift truck while traveling with no load and with the jib in the transport position.
- Special precautions must be taken if the size of the load restricts visibility towards the front:
 - moving in reverse,
 - site layout,
 - assisted by a person directing the maneuver (while standing outside the truck's area of travel), making sure to keep this person clearly in view at all times.
 - in any case, avoid reversing over long distances.
- Certain special accessories may require the truck to travel with the jib in the raised position. In such cases, visibility on the right hand side is restricted, and special precautions must be taken:
 - site layout,
 - assisted by a person directing the maneuver (while standing outside the truck's area of travel).
- If visibility of your road is inadequate, ask someone to assist by directing the maneuver (while standing outside the truck's area of travel), making sure to keep this person clearly in view at all times.
- Keep all components affecting visibility in a clean, properly adjusted state and in good working order (e.g. windscreens, windows, windscreen wipers, windscreen washers, driving and work lights, rear-view mirrors).

E - STARTING THE LIFT TRUCK SAFETY INSTRUCTIONS



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

- Never try to start the lift truck by pushing or towing it. Such operation may 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 characteristics and respect battery polarity when connecting it. Connect at first the positive terminals before the negative terminals.



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

- Check the closing and locking of the hood(s).
- Check that the cab door is closed.
- Check that the forward/reverse selector is in neutral.
- Turn the ignition key to the position I to activate the electrical system and the preheat.
- Whenever you switch on the lift truck, perform the automatic check on the longitudinal stability limiter and warning device system (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS). Do not use the lift truck if it does not conform to the regulations.
- Check the fuel level on the indicator.
- 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 carry out the preheating between unsuccessful attempts.
- Make sure all the signal lights on the control instrument panel are off.
- Check all control instruments when the I.C. engine is warm and at regular intervals during use, so as to quickly detect any faults and to be able to correct them without any delay.
- If an instrument does not show the correct display, stop the I.C. engine and immediately carry out the necessary operations.

F - DRIVING THE LIFT TRUCK SAFETY INSTRUCTIONS



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 cabin during the incident. YOUR BEST PROTECTION IS TO STAY FASTENED IN THE CABIN.

- Observe the company's traffic regulations or, by default, the public highway code.
- Do not carry out operations which exceed the capacities of your lift truck or attachments.
- Always drive the lift truck with the forks or attachment to the transport position, i.e. at 300 mm from the ground, the jib retracted and the carriage sloping backwards.
- Only carry loads which are balanced and properly anchored 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.
- Familiarise 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 12 km/h.
- Drive smoothly at an appropriate speed for the operating conditions (land configuration, load on the lift truck).
- Do not use the hydraulic jib controls when the lift truck is moving.
- Never change the steering mode whilst driving.
- Do not manoeuvre the lift truck with the jib 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 bends 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.
- Only use the lift truck's forward/reverse selector from a stationary position and never do so abruptly.
- Do not drive with your foot on the brake pedal.
- Always remember that hydrostatic type steering is extremely sensitive to movement of the steering wheel, so turn it gently and not jerkily.
- Never leave the I.C. engine on when the lift truck is unattended.
- Do not leave the cab when the lift truck has a raised load.
- Look where you are going and always make sure you have good visibility along the route.

- Use the rear-view mirrors frequently.
- Drive round obstacles.
- Never drive on the edge of a ditch or steep slope.
- It is dangerous to use two lift trucks simultaneously to handle heavy or voluminous loads, since this operation requires particular precautions to be taken. It must only be used exceptionally and after risk analysis.
- The ignition switch has an emergency stop mechanism in case of an operating anomaly occurring in the case of lift trucks not fitted with a punch-operated cut-out.

INSTRUCTIONS

- Always drive the lift truck with the forks or attachment to the transport position, i.e. at 300 mm from the ground, the jib retracted and the carriage sloping backwards.
- For lift trucks with gearboxes, use the recommended gear (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).
- Select the steering mode appropriate for its use and/or working conditions (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS) (as model of lift truck).
- Release the parking brake.
- Shift the forward/reverse selector to the selected direction of travel and accelerate gradually until the lift truck moves off.

G - STOPPING THE LIFT TRUCK

SAFETY INSTRUCTIONS

- Never leave the ignition key in the lift truck during the operator's absence.
- 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 selector in neutral.
- Make sure that the lift truck is not stopped in any position that will interfere with the traffic flow and at less than one meter from the track of a railway.
- In the event of prolonged parking on a site, protect the lift truck from bad weather, particularly from frost (check the level of antifreeze), close and lock all the lift truck accesses (doors, windows, cowls...).

INSTRUCTIONS

- Park the lift truck on flat ground or on an incline lower than 15 %.
- Set the forward/reverse selector to neutral.
- Apply the parking brake.
- For lift trucks with gearboxes, place the gear lever in neutral.
- Retract entirely the jib.
- 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 fully.
- Before stopping the lift truck after a long working period, leave the I.C. engine idling for a few moments, to allow the coolant liquid and oil to lower the temperature of the I.C. engine and transmission. Do not forget this precaution, in the event of frequent stops or warm stalling of the I.C. engine, or else the temperature of certain parts will rise significantly due to the stopping of the cooling system, with the risk of badly damaging such parts.
- Stop the I.C. engine with the ignition switch.
- Remove the ignition key.
- Lock all the accesses to the lift truck (doors, windows, cowls...).

H - DRIVING THE LIFT TRUCK ON THE PUBLIC HIGHWAY

(or see current legislation in other countries)

SAFETY INSTRUCTIONS

- Operators driving on the public highway must comply with current highway code legislation.
- The lift truck must comply with current road legislation. 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.
- Make sure the lights, indicators and windscreen wipers are working properly.
- Switch off the working headlights if the lift truck is fitted with them.
- Select the steering mode "HIGHWAY TRAFFIC" (as model of lift truck) (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).
- Retract entirely the jib and put the attachment at 300 mm from the ground.
- Place the slope correctors in the central position, i.e. the transverse shaft of the axles parallel to the chassis (as model of lift truck).
- Lift up the stabilizers to the maximum and turn the blocks inwards (as model of lift truck).



Never move in neutral (forward/reverse selector or gear lever in neutral or transmission cut-off button pressed) to preserve the lift truck engine brake. Failure to respect this instruction on a slope will lead to excessive speed which may make the lift truck uncontrollable (steering, brakes) and 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 road legislation in your country authorizes circulation with a front-mounted attachment, you must at least:
 - Protect and report 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 current legislation in your country does not require other obligations.

OPERATING THE LIFT TRUCK WITH A TRAILER

- For using a trailer, observe the regulations in force 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 tractor 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 vertical force on the towing hook must not exceed the maximum authorised by the manufacturer (consult the manufacturer's plate on your lift truck).
- The authorised gross vehicle weight must not exceed the maximum weight authorised by the manufacturer (see: 2 - DESCRIPTION: CHARACTERISTICS).

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).
- If the lift truck is equipped with the Single side-shift carriage OPTION (TSDL), use only the authorised attachments (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 for the 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, as the sling risks to slip (see: INSTRUCTIONS FOR HANDLING A LOAD: H - TAKING UP AND LAYING DOWN A SUSPENDED LOAD).

B - MASS OF LOAD AND CENTRE OF GRAVITY

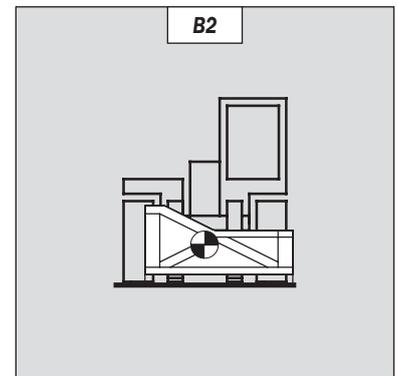
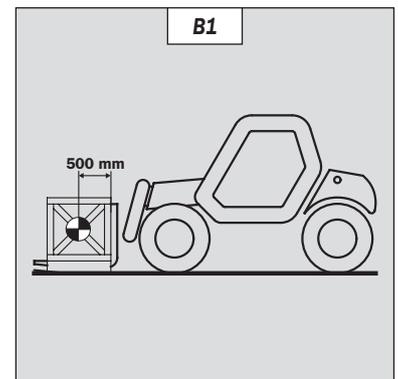
- Before taking up a load, you must know its mass and its centre of gravity.
- The load chart for your lift truck is valid for a load in which the longitudinal position of the centre of gravity is 500 mm from the base of the forks (fig. B1). For a higher centre of gravity, contact your dealer.
- For irregular loads, determine the transverse centre of gravity before any movement (fig. B2) and set it in the longitudinal axis of the lift truck.



It is forbidden to move a load heavier than the effective capacity defined on the lift truck load chart.



For loads with a moving centre of gravity (e.g. liquids), take account of the variations in the centre of gravity in order to determine the load to be handled and be vigilant and take extra care to limit these variations as far as possible.



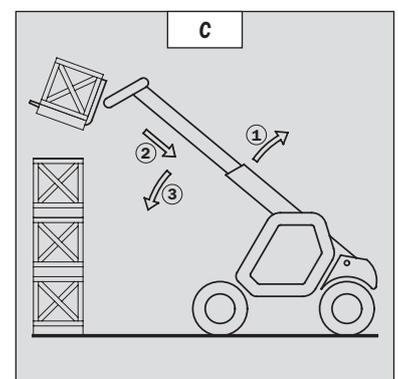
C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

This device gives an indication of the longitudinal stability of the lift truck, and limits hydraulic movements in order to ensure this stability, at least under the following operating conditions:

- when the lift truck is at a standstill,
 - when the lift truck is on firm, stable and consolidated ground,
 - when the lift truck is performing handling and placing operations.
- Move the jib very carefully when approaching the authorized load limit (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).
 - Always watch this device during handling operations.
 - In the event that "AGGRAVATING" hydraulic movements are cut-off, only perform de-aggravating hydraulic movements in the following order (fig. C): if necessary, raise the jib (1), retract the jib as far as possible (2) and lower the jib (3) to set down the load.



The instrument reading may be erroneous when the steering is at its maximum limit or the rear axle oscillated to its limit. Before lifting a load, make sure that the lift truck is not in either of these situations.



D - TRANSVERSE ATTITUDE OF THE LIFT TRUCK

Depending on the model of lift truck

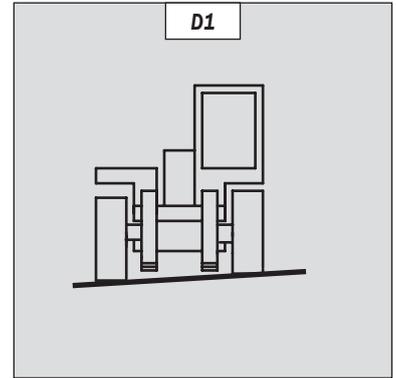
The transverse attitude is the transverse slope of the chassis with respect to the horizontal. Raising the jib reduces the lift truck's lateral stability. The transverse attitude must be set with the jib in down position as follows:

1 - LIFT TRUCK WITHOUT SLOPE CORRECTOR USED ON TYRES

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

2 - LIFT TRUCK WITH SLOPE CORRECTOR USED ON TYRES

- Correct the slope using the hydraulic control and verify the horizontality via the level. The bubble in the level must be between the two lines (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).



E - TAKING UP A LOAD ON THE GROUND

- Approach the lift truck perpendicular to the load, with the jib retracted and the forks in a horizontal position (fig. E1).

- Adjust the fork spread and centering in connection with the load (fig. E2) (optional solutions exist, consult your dealer).

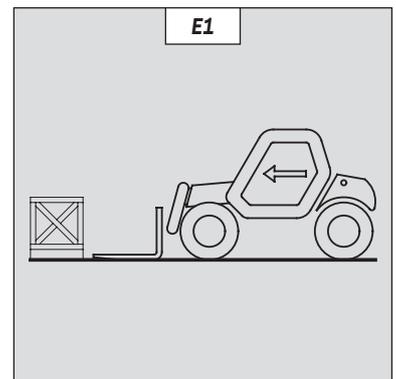
- Never lift a load with a single fork.

 **Beware of the risks of trapping or squashing limbs when manually adjusting the forks.**

- Move the lift truck forward slowly (1) and bring the forks to stop in front of the load (fig. E3), if necessary, slightly lift the jib (2) while taking up the load.

- Bring the load into the transport position.

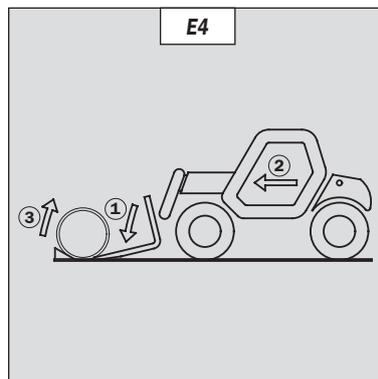
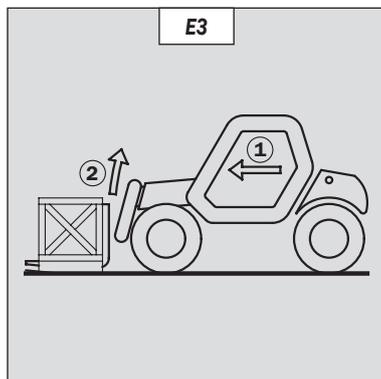
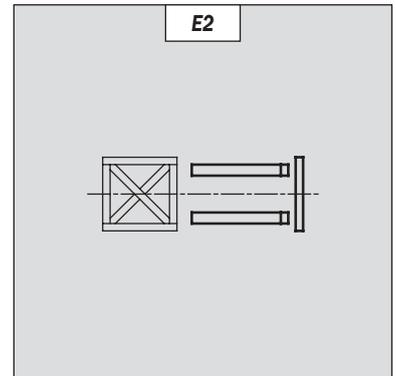
- Tilt the load far enough backwards to ensure stability (loss of load on braking or going downhill).



FOR A NON-PALLETIZED LOAD

- Tilt the carriage (1) forwards and move the lift truck slowly forwards (2), to insert the fork 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 and check the load's longitudinal and lateral stability.



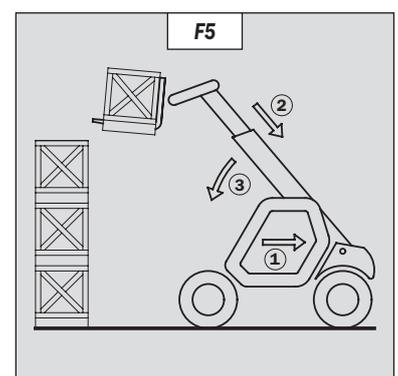
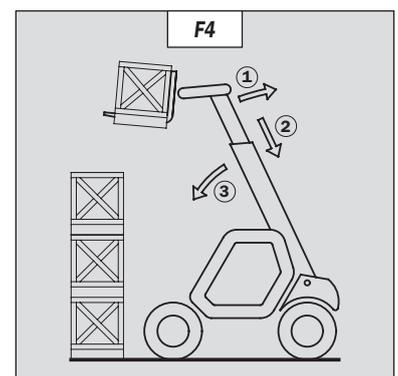
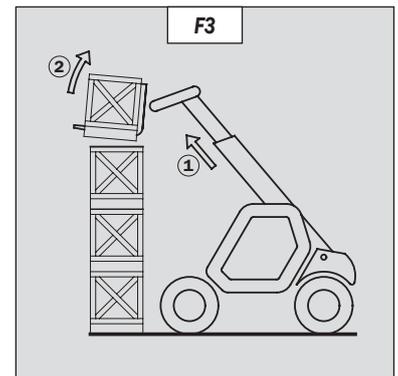
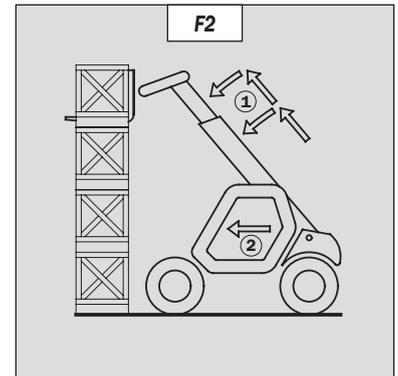
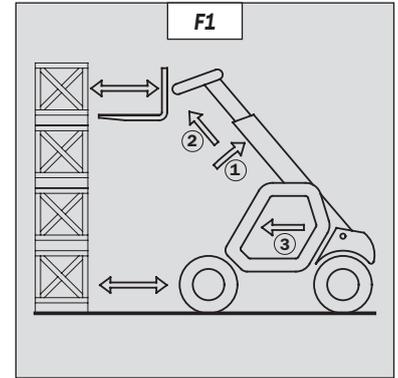
F - TAKING UP AND LAYING A HIGH LOAD ON TYRES

⚠ You must not raise the jib if you have not checked the transverse 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 good visibility (see: OPERATIONS INSTRUCTIONS UNLADEN AND LADEN: D - VISIBILITY).

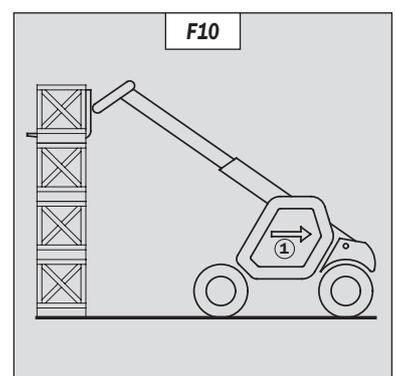
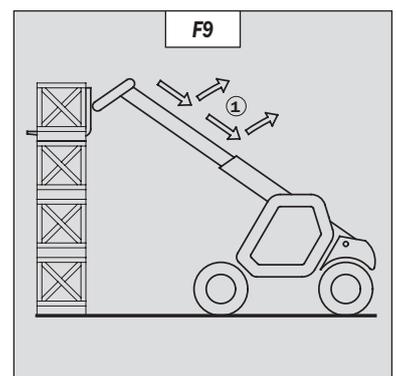
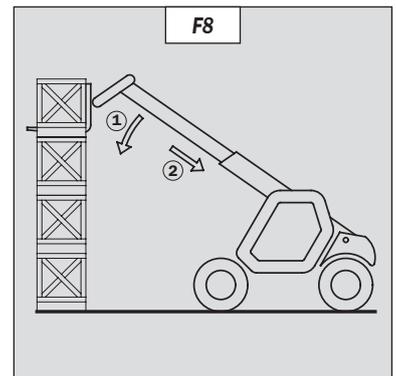
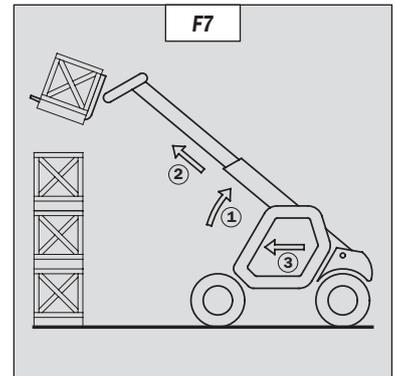
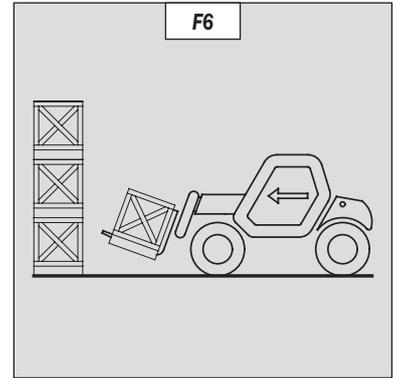
TAKING UP A HIGH LOAD ON TYRES

- Ensure that the forks will easily pass under the load.
- Lift and extend the jib (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.
- Always think about keeping the distance necessary to fit the forks under the load, between the pile and the lift truck (fig. F1) and use the shortest possible length of jib.
- Stop the forks in front of the load by alternately extending and retracting the jib (1) or, if necessary, moving the lift truck forward (2) (fig. F2). Put the handbrake on and set the forward/reverse selector 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.
- Watch the longitudinal stability limiter and warning device (see: INSTRUCTIONS FOR HANDLING A LOAD: C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE). If it is overloaded, replace the load in the place from which it was taken.
- If possible lower the load without shifting the lift truck. Lift the jib (1) to release the load, retract (2) and lower the jib (3) to bring the load into the transport position (fig. F4).
- If this is not possible, back up the lift truck (1), manoeuvring very gently and carefully to release the load. Retract (2) and lower the jib (3) to bring the load into the transport position (fig. F5).



LAYING A HIGH LOAD ON TYRES

- Approach the load in the transport position in front of the pile (fig. F6).
- Put the handbrake on and set the forward/reverse selector to neutral.
- Lift and extend the jib (1) (2) until the load is above the pile, while keeping an eye on the longitudinal stability limiter and warning device (see: INSTRUCTIONS FOR HANDLING A LOAD: C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE). If necessary, move the lift truck (3) forward (fig. F7), driving very slowly and carefully.
- Place the load in a horizontal position and lay it down on the pile by lowering and retracting the jib (1) (2) in order to position the load correctly (fig. F8).
- If possible, release the fork by alternately retracting and raising the jib (1) (fig. F9). Then set the forks into transport position.
- If this is not possible, reverse the lift truck (1) very slowly and carefully to release the forks (fig. F10). Then set them into transport position.



G - TAKING UP AND LAYING DOWN A SUSPENDED LOAD



WARNING: Failure to follow the above instructions may lead the lift truck to loose stability and overturn.



MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

CONDITIONS OF USE

- The length of the sling or the chain shall be as short as possible to limit swinging of the load.
- Lift the load vertically along its axis, never by pulling sideways or lengthways.

HANDLING WITHOUT MOVING THE LIFT TRUCK

- Whether on stabilisers or on tyres, the lateral attitude must not exceed 1 % and the longitudinal attitude must not exceed 5%, the bubble of the level must be held at "0".
- Ensure that the wind speed is not higher than 10 m/s.
- Ensure that there is no one between the load and the lift truck.

H - TRAVELLING WITH A SUSPENDED LOAD

- Before moving, inspect the terrain in order to avoid excessive slopes and cross-falls, bumps and potholes, or soft ground.
- Ensure that the wind speed is not higher than 10 m/s.
- The lift truck must not travel at more than 0.4 m/s (1.5 km/h, i.e., one quarter walking speed).
- Drive and stop the lift truck gently and smoothly to minimise swinging of the load.
- Carry the load a few centimetres above the ground (max. 30 cm) the shortest possible jib length. Do not exceed the offset indicated on the load chart. If the load begins to swing excessively, do not hesitate to stop and lower the jib to set down the load.
- Before moving the lift truck, check the longitudinal stability limiter and warning device (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS), only the green LEDs and possibly the yellow LEDs should be lit.
- During transport, the lift truck operator must be assisted by a person on the ground (standing a minimum of 3 m from the load), who will limit swinging of the load using a bar or a rope. Ensure that this person is always clearly in view.
- The lateral attitude must not exceed 5%, the bubble in the level must be kept between the two "MAX." marks
- The longitudinal attitude must not exceed 15%, with the load facing uphill, and 10%, with the load facing downhill.
- The jib angle must not exceed 45°.
- If the first red LED of the longitudinal stability limiter and warning device (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS) comes on while travelling, gently bring the lift truck to a stop and stabilise the load. Retract the telescope to reduce the offset of the load.

PLATFORM OPERATING INSTRUCTIONS

For PLATFORM-fitted lift trucks

 **Installation of the platform on the lift truck is only possible if the shields “operating the platform” of the lift truck and the platform are identical (see: 2 - DESCRIPTION: OPERATING THE PLATFORM).**

A - AUTHORISATION FOR USE

- Operation of the platform requires further authorisation in addition to that of the lift truck.

B - SUITABILITY OF THE TRUCK FOR USE

- MANITOU has ensured that this lift truck is suitable for use under the standard operating conditions defined in this operator’s manual, with a STATIC test coefficient of 1.25 and a DYNAMIC test coefficient of 1.1, as specified in harmonised standard EN 280 for “mobile elevating work platforms”.
- Before commissioning, the company manager must make sure that the platform is appropriate for the work to be done, and perform certain tests (in accordance with current legislation).

C - PRECAUTIONS WHEN USING THE PLATFORM

- Wear clothes suited for operating the platform, avoid loose clothes.
- Never operate the platform when hands or feet are wet or soiled with greasy substances.
- Always pay attention when using the platform. Do not listen to the radio or music using headphones or earphones.
- For increased comfort, adopt the correct position at the platform’s operator station.
- The platform’s guard rail exempts the operator from wearing a safety harness under normal operating conditions. As a result, you are responsible deciding whether to wear a safety harness.
- The controls must not be used for any other than their intended purpose (e.g. getting in and out of the lift truck, coat hanger etc.).
- Safety helmets must be worn.
- The operator must always be in the normal operator’s position. It is prohibited to have arms or legs, or generally any part of the body, protruding from the basket.
- Ensure that any materials loaded onto the platform (pipes, cables, containers, etc.) cannot fall out. Do not pile these materials to the point where it is necessary to step over them.

D - USING THE PLATFORM

- However experienced they may be, operators must acquaint themselves with the emplacement and operation of all control instruments prior to operating the platform.
- Check before operating that the platform has been correctly assembled and locked onto the lift truck.
- Check before operating the platform that the access gate has been properly locked.
- The platform should be operated in an area free of any obstructions or danger when it is lowered to the ground.
- The operator using the platform must be aided on the ground by a person with adequate training.
- You should stay within the limits set out in the platform load chart.
- The lateral stresses are limited pressure (see: 2 - DESCRIPTION: CHARACTERISTICS).
- It is strictly forbidden to hand a load from the platform or the lift truck jib without a specially designed attachment (see: INSTRUCTIONS FOR HANDLING A LOAD: H - TAKING UP AND LAYING DOWN A SUSPENDED LOAD).
- The platform cannot be used as a crane or a lift for permanently transporting people or materials, nor as jacks or supports.
- The lift truck must not be moved with one (or more) person(s) in the platform.
- It is forbidden to transport people on the platform using the hydraulic controls in the lift truck’s driver’s cab (except in case of rescue).
- The operator must not get in or out of the platform when it is not on ground level (jib retracted and in the down position).
- The platform must not be fitted with attachments that increase the unit’s wind load.
- Do not use ladders or improvised structures in the platform to gain extra height.
- Do not climb onto the sides of the platform to gain extra height.

E - ENVIRONMENT

 **Operating the platform close to electricity cables is forbidden. Maintain the specified safe distances.**

NOMINAL VOLTAGE	DISTANCE ABOVE THE GROUND OR THE FLOOR IN METRES
50 < U < 1000	2,30 M
1000 < U < 30000	2,50 M
30000 < U < 45000	2,60 M
45000 < U < 63000	2,80 M
63000 < U < 90000	3,00 M
90000 < U < 150000	3,40 M
150000 < U < 225000	4,00 M
225000 < U < 400000	5,30 M
400000 < U < 750000	7,90 M



Operation of the platform is strictly forbidden in the event of wind speeds of over 45 km/h.

- The following scale is given for an empiric evaluation of the wind speed:

BEAUFORT scale (wind speed at a height of 10 m from flat ground)						
Force	Type of wind	Speed (knots)	Speed (kph)	Speed (m/ s)	Effects on Land	Sea condition
0	Calm	0 - 1	0 - 1	< 0,3	Smoke rises vertically.	Sea like a mirror.
1	Light air	1 - 3	1 - 5	0,3 - 1,5	The wind bends the smoke.	Ripples but without foam crests.
2	Light breeze	4 - 6	6 - 11	1,6 - 3,3	The wind can be felt on the face, shakes the leaves.	Small but evident wavelets.
3	Gentle breeze	7 - 10	12 - 19	3,4 - 5,4	The wind continuously shakes the leaves and twigs.	Large wavelets Perhaps scattered white horses.
4	Moderate breeze	11 - 16	20 - 28	5,5 - 7,9	The wind raises dust and scraps of paper, shakes the twigs.	Small waves. Fairly frequent white horses.
5	Fresh breeze	17 - 21	29 - 38	8 - 10,7	Leafy shrubs sway.	Small waves form on inland waters. Moderate waves, many white horses.
6	Strong breeze	22 - 27	39 - 49	10,8 - 13,8	Shakes thick branches, metal wires hum, it becomes difficult to keep an umbrella open.	Large waves begin to form, white foam crests, probably spray.
7	Near gale	28 - 33	50 - 61	13,9 - 17,1	Whole trees sway, it is difficult to walk against the wind.	Sea heaps up and white foam blown in streaks along the direction of the wind.
8	Gale	34 - 40	62 - 74	17,2 - 20,7	Breaks the branches of trees, it is almost impossible to walk against the wind.	Moderately high waves, crests begin to break into spindrift.
9	Strong gale	41 - 47	75 - 88	20,8 - 24,4	Causes slight damage to buildings (stacks, tiles, etc..).	High waves. Dense foam along the direction of the wind. Crests of waves begin to roll over. Spray may affect visibility.
10	Storm	48 - 55	89 - 102	24,5 - 28,4	Rare inland, uproots trees, causes considerable damage to buildings.	Very high waves with long overhanging crests. Visibility affected.
11	Violent storm	56 - 63	103 - 117	28,5 - 32,6	Very rare, causes extensive devastation.	Exceptionally high waves that may hide medium sized ships. Visibility affected.
12	Hurricane	64 +	118 +	32,7 +	Causes very serious catastrophes.	The air is filled with foam and spray. Sea completely white with driving spray. Visibility very seriously affected.

F - MAINTENANCE



Your platform must be periodically inspected to ensure its continued compliance. The inspection frequency is defined by the current legislation in the country in which the platform is used.

INSTRUCTIONS FOR USING THE RADIO-CONTROL

For lift trucks with RC radio control

HOW TO USE THE RADIO-CONTROL

SAFETY INSTRUCTIONS

- This radio-control consists of electronic and mechanical safety elements. It cannot receive commands from another transmitter because the internal encoding is unique to each radio-control.



If it is used improperly or incorrectly, there is a risk of danger to:

- ***The physical and mental health of the user or others.***
- ***The lift truck and other neighbouring items.***



Everyone working with this radio-control:

- ***Must be qualified in line with current regulations and therefore appropriately trained.***
- ***Must follow this instruction manual as closely as possible.***

- The system is used to control the lift truck remotely via radio waves. Commands are also transmitted if the lift truck is out of sight (behind an obstacle or a building for example), this is why:

- After stopping the truck and removing the key button (only possible when it is stationary), always place the transmitter in a safe, dry place.
- Before performing any installation, servicing or repair work, always switch off power sources (in particular, electric welding devices and electric head units on hydraulic distributors must be disconnected at each section).
- Never remove or alter the safety devices (such as the hand-guard frame, key, emergency stop button, etc.).



Never drive the lift truck if it is not continuously and perfectly within view of the operator!

- Before leaving the transmitter, the operator must make sure that it cannot be used by an unauthorized third person: either by removing the key button from the transmitter or locking it in an inaccessible place.
- The user must ensure that the instruction manual is accessible at all times and that operators have read and understood it.

INSTRUCTIONS

- Take up position in a stable place with no risk of slipping.
- Before using the transmitter, make sure there is nobody within the working area.
- Only use the transmitter with its carrying device or installed correctly on the platform.



When you remove the transmitter, remove the accumulator and key button so that it cannot be used accidentally or deliberately by anyone else.

PROTECTIVE DEVICES

- The lift truck will be immobilised within 450 milliseconds (approx. 0.5 second) at most:
 - If the transmitter emergency stop button (50 milliseconds), or the one on the lift is pressed.
 - If the transmission distance of the radio waves is exceeded.
 - If the transmitter is faulty.
 - If an interfering radio signal is received from elsewhere.
 - If the accumulator is removed from its housing in the transmitter.
 - If the accumulator reaches the end of its autonomy.
 - If the transmitter is switched off by turning the key button to stop.
- These protective devices are provided for the safety of personnel and property and must never be altered, removed or bypassed in any way whatsoever!
- The hand-guard frame prevents external action on a manipulator (if the transmitter falls, for example, or if the operator leans on a guard-rail).
- An electronic safety device prevents radio transmission from being initiated if the manipulators are not mechanically and electrically at rest and if the internal combustion engine speed selector is not set to idle.



In an emergency, press the transmitter emergency stop button immediately ; then follow the manual's instructions (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).

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 jewellery and loose clothes. Tie and protect your hair, if necessary.
- Stop the I.C. engine and remove the ignition key, when an intervention is necessary.
- Read the operator's manual carefully.
- Carry out all repairs immediately, even if the repairs concerned are minor.
- Repair all leaks immediately, even if the leak concerned is minor.
- Make sure that the disposal of process materials and of spare parts is carried out in total safety and in a ecological way.
- Be careful of the risk of burning and splashing (exhaust, radiator, I.C. engine, etc.).

MAINTENANCE

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

MAINTENANCE LOGBOOK

- The maintenance operations carried out in accordance with the recommendations given in part: 3 - MAINTENANCE and the other inspection, servicing or repair operations or modifications performed on the lift truck or its attachments shall be recorded in a maintenance logbook. The entry for each operation shall include details of the date of the works, the names of the individuals or companies having performed them, the type of operation and its frequency, if applicable. The part numbers of any lift truck items replaced shall also be indicated.

LUBRICANT AND FUEL LEVELS

- Use the recommended lubricants (never use contaminated lubricants).
- Do not fill the fuel tank when the I.C. engine is running.
- Only fill up the fuel tank 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, when the fuel tank is open or is being filled.

HYDRAULIC

- Any work on the load handling hydraulic circuit is forbidden except for the operations described in part: 3 - MAINTENANCE.
- Do not attempt to loosen unions, hoses or any hydraulic component with the circuit under pressure.

 **BALANCING VALVE:** It is dangerous to change the setting and 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).

 **The HYDRAULIC ACCUMULATORS** that may be fitted on your lift truck are pressurized units. Removing these accumulators and their pipework is a dangerous operation and must only be performed by approved personnel (consult your dealer).

ELECTRICITY

- Do not short-circuit the starter relay to start the IC engine. If the forward/reverse selector is not in neutral and the parking brake is not engaged, the lift truck may suddenly start to move.
- Do not drop metallic items on the battery.
- Disconnect the battery before working on the electrical circuit.

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 tyre. The heat would increase the pressure which could cause the tyre 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.

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

INTRODUCTION

The following recommendations are intended to prevent the lift truck from being damaged when it is withdrawn from service for an extended period.

For these operations, we recommend the use of a MANITOU protective product, reference 603726.

Instructions for using the product are given on the packaging.



Procedures to follow if the lift truck is not to be used for a long time and for starting it up again afterwards must be performed by your dealership.

PREPARING THE LIFT TRUCK

- Clean the lift truck thoroughly.
- Check and repair any leakage of fuel, oil, water or air.
- Replace or repair any worn or damaged parts.
- Wash the painted surfaces of the lift truck in clear and cold water and wipe them.
- Touch up the paintwork if necessary.
- Shut down the lift truck (see: OPERATING INSTRUCTIONS UNLADEN AND LADEN).
- Make sure the jib cylinder rods 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 cooling liquid (see: 3 - MAINTENANCE: F - EVERY 2000 HOURS SERVICE).
 - Leave the I.C. engine running at idling speed 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 the protective product to the engine oil.
 - Run the I.C. engine for a short time so that the oil and cooling liquid circulate inside.
 - 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 the 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 product packaging and must be increased by 50 % for turbo engines.
- Open the filler plug, spray the protective product around the rocker arm shaft and refit 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 tyres are not in contact with the ground and release the handbrake.
- Protect cylinder rods which will not be retracted, from corrosion.
- Wrap the tyres.

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

BRINGING THE LIFT TRUCK BACK INTO SERVICE

- Remove the waterproof adhesive tape from all the holes.
- Refit the intake hose.
- Refit 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).
- Put the handbrake on and remove the axle stands.
- Empty and replace the fuel and replace the fuel filter (see: 3 - MAINTENANCE: D - EVERY 500 HOURS SERVICE).
- Refit and set the tension in 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 completely (see: 3 - MAINTENANCE: SERVICING SCHEDULE).



Make sure the area is adequately ventilated before starting up the lift truck.

- Start up the lift truck, following the safety instructions and regulations (see: OPERATING INSTRUCTIONS UNLADEN AND LADEN).
- Run all the jib's hydraulic movements, concentrating on the ends of travel for each cylinder.

2 - DESCRIPTION

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1) **DECLARATION "CE" DE CONFORMITE (originale)**
" EC" DECLARATION OF CONFORMITY (original)

2) La société, *The company* : **MANITOU C.I.**

3) Adresse, *Address* : **Via Cristoforo Colombo 2, 41013 Cavazzona in Castelfranco Emilia -ITALIE**

4) Dossier technique, *Technical file* : Manitou C.I., Via Cristoforo Colombo 2, 41013 Cavazzona in Castelfranco Emilia (MO) , Italie

5) Constructeur de la machine décrite ci-après, *Manufacturer of the machine described below* :

CHARIOT ELEVATEUR MLT ... T N° 3

PFB p.n..... + FOURCHES FEM KG p.n.....

6) Déclare que cette machine, *Declares that this machine* :

7)- Est conforme aux directives suivantes et à leurs transpositions en droit national, *Complies with the following directives and their transpositions into national law* :

8) - Pour les machines annexe IV , *For annex IV machines* :

9) - Numéro d'attestation, *Certificate number*: /

10) - Organisme notifié, *Notified body* : /

11) -Procédure appliquée, *Applied procedure* : **Annexe VI – 2000 / 14 / CE proc.I**

10) - Organisme notifié, *Notified body* : **ECO s.p.a. EUROPEAN CERTIFYNG**

ORGANIZATION,

**Via Mengolina 33 48018 Faenza- Ravenna - Italia -
Organismo notificato n° 0714**

12) - Niveau de puissance acoustique, *Sound power level* :

13) Mesuré, *Measured* : 104 dB (A)

14) Garanti, *Guaranteed* : 106 dB (A)

15) -Normes harmonisées utilisées, *Harmonised standards used* : **EN 12895**

16) -Normes ou dispositions techniques utilisées, *Standards or technical provisions used* :
EN 1459 : 1999 + A1 : 2007

17) - Fait à, *Done at* : **CASTELFRANCO EMILIA** 18) - Date, *Date* : **04/10/2010**

19) - Nom du signataire, *Name of signatory* : **FELICANI DANIELE**

20) - Fonction, *Function* : **DIRECTEUR TECHNIQUE**

21) - Signature, *Signature* :

MANITOU COSTRUZIONI INDUSTRIALI S.R.L.
A Socio Unico - Sede Legale e Amm.va - Via C. Colombo, 2
Località Cavazzona - 41013 CASTELFRANCO E. (MO)
Tel. 059 / 959811 - Fax 059 / 959850
Cap. Soc. € 5.000.000 I.V.
Reg. Impr. di Modena g. n. 173970369
PVA IT 02891050360 - N. Mecc. MO 033322 R.E.A. 148776

bg : 1) удостоверение за « CE » съответствие (оригинална), 2) Фирмата, 3) Адрес, 4) Техническо досие, 5) Фабрикант на описаната по-долу машина, 6) Обявява, че тази машина, 7) Отговаря на следните директиви и на тяхното съответствие национално право, 8) За машините към допълнение IV, 9) Номер на удостоверението, 10) Наименувана фирма, 15) хармонизирани стандарти използвани, 16) стандарти или технически правила, използвани, 17) Изработено в, 18) Дата, 19) Име на разписалия се, 20) Функция, 21) Функция.

cs : 1) ES prohlášení o shodě (původní), 2) Název společnosti, 3) Adresa, 4) Technická dokumentace, 5) Výrobce níže uvedeného stroje, 6) Prohlašuje, že tento stroj, 7) Je v souladu s následujícími směrnici a směrnici transponovanými do vnitrostátního práva, 8) Pro stroje v příloze IV, 9) Číslo certifikátu, 10) Notifikační orgán, 15) harmonizované normy použity, 16) Norem a technických pravidel používaných, 17) Místo vydání, 18) Datum vydání, 19) Jméno podepsaného, 20) Funkce, 21) Podpis.

da : 1) EF Overensstemmelseserklæring (original), 2) Firmaet, 3) Adresse, 4) tekniske dossier, 5) Konstruktor af nedenfor beskrevne maskine, 6) Erklærer, at denne maskine, 7) Overholder nedennævnte direktiver og disses gennemførelse til national ret, 8) For maskiner under bilag IV, 9) Certifikat nummer, 10) Bemyndigede organ, 15) harmoniserede standarder, der anvendes, 16) standarder eller tekniske regler, 17) Udfærdiget i, 18) Dato, 19) Underskrivers navn, 20) Funktion, 21) Underskrift.

de : 1) EG-Konformitätserklärung (original), 2) Die Firma, 3) Adresse, 4) Technischen Unterlagen, 5) Hersteller der nachfolgend beschriebenen Maschine, 6) Erklärt, dass diese Maschine, 7) den folgenden Richtlinien und deren Umsetzung in die nationale Gesetzgebung entspricht, 8) Für die Maschinen laut Anhang IV, 9) Bescheinigungsnummer, 10) Benannte Stelle, 15) angewandten harmonisierten Normen, 16) angewandten sonstigen technischen Normen und Spezifikationen, 17) Ausgestellt in, 18) Datum, 19) Name des Unterzeichners, 20) Funktion, 21) Unterschrift.

el : 1) Δήλωση συμμόρφωσης CE (πρωτότυπο), 2) Η εταιρεία, 3) Διεύθυνση, 4) τεχνικό φάκελο, 5) Κατασκευάστρια του εξής περιγραφόμενου μηχανήματος, 6) Δηλώνει ότι αυτό το μηχάνημα, 7) Είναι σύμφωνο με τις εξής οδηγίες και τις προσαρμογές τους στο εθνικό δίκαιο, 8) Για τα μηχανήματα παραρτήματος IV, 9) Αριθμός δήλωσης, 10) Κοινοποιημένος φορέας, 15) εναρμονισμένα πρότυπα που χρησιμοποιούνται, 16) Πρότυπα ή τεχνικούς κανόνες που χρησιμοποιούνται, 16) Είναι σύμφωνο με τα εξής πρότυπα και τεχνικές διατάξεις, 17) Εν, 18) Ημερομηνία, 19) Όνομα του υπογράφοντος, 20) Θέση, 21) Υπογραφή.

es : 1) Declaración DE de conformidad (original), 2) La sociedad, 3) Dirección, 4) expediente técnico, 5) Constructor de la máquina descrita a continuación, 6) Declara que esta máquina, 7) Está conforme a las siguientes directivas y a sus transposiciones en derecho nacional, 8) Para las máquinas anexo IV, 9) Número de certificación, 10) Organismo notificado, 15) normas armonizadas utilizadas, 16) Otras normas o especificaciones técnicas utilizadas, 17) Hecho en, 18) Fecha, 19) Nombre del signatario, 20) Función, 21) Firma.

et : 1) EÜ vastavusdeklaratsioon (algupärane), 2) Äriühing, 3) Aadress, 4) Tehniline dokumentatsioon, 5) Seadme tootja, 6) Kinnitab, et see toode, 7) On vastavuses järgmiste direktiivide ja nende riigisisesele õigussesse ülevõtmiseks vastuvõetud õigusaktidega, 8) IV lisas loetletud seadmete puhul, 9) Tunnistuse number, 10) Sertifitseerimisasutus, 15) kasutatud ühtlustatud standardite, 16) Muud standardites või spetsifikatsioonides kasutatakse, 17) Väljaandmise koht, 18) Väljaandmise aeg, 19) Allkirjastaja nimi, 20) Amet, 21) Allkiri.

fi : 1) EY-vaatimustenmukaisuusvakuutus (alkuperäiset), 2) Yritys, 3) Osoite, 4) teknisen eritelmän, 5) Jäljessä kuvaton koneen valmistaja, 6) Vakuuttaa, että tämä kone, 7) Täyttää seuraavien direktiivien sekä niitä vastaavien kansallisten säännösten vaatimukset, 8) Liitteen IV koneiden osalta, 9) Todistuksen numero, 10) Ilmoitettu laitos, 15) yhdenmukaistettuja standardeja käytetään, 16) muita standardeja tai, 17) Paikka, 18) Aika, 19) Allekirjoittajan nimi, 20) Toimi, 21) Allekirjoitus.

ga : 1) « EC » dearbhú comhréireachta (bunaidh), 2) An comhlacht, 3) Seoladh, 4) comhad teicniúil, 5) Déantóir an innill a thuiriscítear thíos, 6) Dearbhaíonn sé go bhfuil an t-inneall, 7) Go gclonn sé le na treoracha seo a leanas agus a trasúimh isteach i ndlí náisiúnta, 8) Le haghaidh innill an aguisín IV, 9) Uimhir teastais, 10) Comhlacht a chuireadh i bhfios, 15) caighdeán comhchuíithe a úsáidtear, 16) caighdeán eile nó sonraíochtaí teicniúla a úsáidtear, 17) Déanta ag, 18) Dáta, 19) Ainm an tsintheora, 20) Feidhm, 21) Síniú.

hu : 1) CE megfelelőségi nyilatkozat (eredeti), 2) A vállalat, 3) Cím, 4) műszaki dokumentáció, 5) Az alábbi gép gyártója, 6) Kijelenti, hogy a gép, 7) Megfelel az alábbi irányelveknek valamint azok honosított előírásainak, 8) A IV. melléklet gépeihez, 9) Bizonylati szám, 10) Értésített szervezet, 15) felhasználó harmonizált szabványok, 16) egyéb felhasználó műszaki szabványok és előírások hivatkozásai, 17) Kelt (hely), 18) Dátum, 19) Aláíró neve, 20) Funkció, 21) Aláírás.

is : 1) (Samræmisvottorð ESB (upprunalega), 2) Fyrirtækið, 3) Aðsetur, 4) Tæknilegar skrá, 5) Smíður tækisins sem lýst er hér á eftir, 6) Staðfestir að tækið, 7) Samræmist eftirfarandi stöðlum og staðfærslu þeirra með hljóðjón af þjóðarrétti, 8) Fyrir tækin í aukakafli IV, 9) Staðfestingarnúmer, 10) Tilkynt til, 15) samhæfða staðla sem notaðir, 16) önnur staðlar eða forskriftir notað, 17) Staður, 18) Dagsetning, 19) Nafn undirritaðs, 20) Staða, 21) Undirskrift.

it : 1) Dichiarazione CE di conformità (originale), 2) La società, 3) Indirizzo, 4) fascicolo tecnico, 5) Costruttore della macchina descritta di seguito, 6) Dichiaro che questa macchina, 7) È conforme alle direttive seguenti e alle relative disposizioni nel diritto nazionale, 8) Per le macchine Allegato IV, 9) Numero di Attestazione, 10) Organismo notificato, 15) norme armonizzate applicate, 16) altre norme e specifiche tecniche applicate, 17) Stabilità a, 18) Data, 19) Nome del firmatario, 20) Funzione, 21) Firma.

lt : 1) CE atitikties deklaracija (originalas), 2) Bendrovė, 3) Adresas, 4) Techninė byla, 5) Žemiau nurodytas įrenginio gamintojas, 6) Pareiškia, kad šis įrenginys, 7) Atitinka toliau nurodytas direktyvas ir į nacionalinius teisės aktus perkeltas jų nuostatas, 8) IV priedas dėl mašinų, 9) Sertifiko Nr, 10) Paskelbtoji įstaiga, 15) suderintus standartus naudojamus, 16) kitį standartai ir technines specifikacijas, 17) Pasirašyta, 18) Data, 19) Pasirašiusio asmens vardas ir pavardė, 20) Pareigos, 21) Parašas.

lv : 1) EK atbilstības deklarācija (oriģināls), 2) Uzņēmums, 3) Adrese, 4) tehniskās lietas, 5) Tālāk aprakstītās iekārtas ražotājs, 6) Apliecinā, ka šī iekārta, 7) Ir atbilstoša tālāk norādītajām direktīvām un to transpozīcijai nacionālajā likumdošanā, 8) Iekārtām IV pielikumā, 9) Apliecināšanas numurs, 10) Reģistrētā organizācija, 15) lietotajiem saskaņotajiem standartiem, 16) lietotajiem tehniskajiem standartiem un specifikācijām, 17) Sasādīts, 18) Datums, 19) Praksītāja vārds, 20) Amats, 21) Paraksts.

mt : 1) Dikjarazzjoni ta' Konformità KE (originali), 2) Il-kumpanija, 3) Indirizz, 4) fajl tekniku, 5) Manifattriċi tal-magna deskritta hawn isfel, 6) Tiddikjara li din il-magna, 7) Hija konformi hija konformi mad-Direttivi segwenti u l-liġijiet li jimplimentawhom fil-liġi nazzjonali, 8) Għall-magni fl-Anness IV, 9) Numru taċ-certifikat, 10) Entità nnotifikata, 15) l-istandards armonizzati użati, 16) standards tekniċi u speċifikazzjonijiet oħra użati, 17) Magħmul f, 18) Data, 19) Isem il-firmatarju, 20) Kariga, 21) Firma.

nl : 1) EG-verklaring van overeenstemming (oorspronkelijke), 2) Het bedrijf, 3) Adres, 4) technisch dossier, 5) Constructeur van de hierna genoemde machine, 6) Verklaart dat deze machine, 7) In overeenstemming is met de volgende richtlijnen en hun omzettingen in het nationale recht, 8) Voor machines van bijlage IV, 9) Goedkeuringsnummer, 10) Aangezegde instelling, 15) gehanteerde geharmoniseerde normen, 16) andere gehanteerde technische normen en specificaties, 17) Opgemaakt te, 18) Datum, 19) Naam van ondergetekende, 20) Functie, 21) Handtekening.

no : 1) CE-samsvarserklæring (original), 2) Selskapet, 3) Adresse, 4) tekniske arkiv, 5) Fabrikant av følgende maskin, 6) Erklærer at denne maskinen, 7) Oppfyller kravene i følgende direktiver, med nasjonale gjennomføringsbestemmelser, 8) For maskinene i tillegg IV, 9) Attestnummer, 10) Notifisert organ, 15) harmoniserte standarder som brukes, 16) Andre standarder og spesifikasjoner brukt, 17) Utstedt i, 18) Dato, 19) Underskrivers navn, 20) Stilling, 21) Underskrift.

pl : 1) Deklaracja zgodności CE (oryginalne), 2) Spółka, 3) Adres, 4) dokumentacji technicznej, 5) Wykonawca maszyny opisanej poniżej, 6) Oświadcza, że ta maszyna, 7) Jest zgodna z następującymi dyrektywami i odpowiadającymi przepisami prawa krajowego, 8) Dla maszyn załącznik IV, 9) Numer certyfikatu, 10) Jednostka certyfikująca, 15) zastosowanych norm zharmonizowanych, 16) innych zastosowanych norm technicznych i specyfikacji, 17) Sporządzono w, 18) Data, 19) Nazwisko podpisującego, 20) Stanowisko, 21) Podpis.

pt : 1) Declaração de conformidade CE (original), 2) A empresa, 3) Morada, 4) processo técnico, 5) Fabricante da máquina descrita abaixo, 6) Declara que esta máquina, 7) Está em conformidade às directivas seguintes e às suas transposições para o direito nacional, 8) Para as máquinas no anexo IV, 9) Número de certificado, 10) Entidade notificada, 15) normas harmonizadas utilizadas, 16) outras normas e especificações técnicas utilizadas, 17) Elaborado em, 18) Data, 19) Nome do signatário, 20) Cargo, 21) Assinatura.

ro : 1) Declarație de conformitate CE (originală), 2) Societatea, 3) Adresa, 4) cărțile tehnice, 5) Constructor al mașinii descrise mai jos, 6) Declară că prezenta mașină, 7) Este conformă cu directivele următoare și cu transpunerea lor în dreptul național, 8) Pentru mașinile din anexa IV, 9) Număr de atestare, 10) Organism notificat, 15) standardele armonizate utilizate, 16) alte standarde și specificații tehnice utilizate, 17) Întocmit la, 18) Data, 19) Numele persoanei care semnează, 20) Funcția, 21) Semnătura.

sk : 1) ES vyhlásenie o zhode (pôvodný), 2) Názov spoločnosti, 3) Adresa, 4) technickej dokumentácie, 5) Výrobca nižšie opísaného stroja, 6) Vyhlasuje, že tento stroj, 7) Je v súlade s nasledujúcimi smernicami a smernicami transponovanými do vnútroštátneho práva, 8) Pre stroje v prílohe IV, 9) Číslo certifikátu, 10) Notifikačný orgán, 15) použité harmonizované normy, 16) použité iné technické normy a predpisy, 17) Miesto vydania, 18) Dátum vydania, 19) Meno podpisujúceho, 20) Funkcia, 21) Podpis.

sl : 1) ES izjava o ustreznosti (izvirna), 2) Družba, 3) Naslov, 4) tehnične dokumentacije, 5) Proizvajalac tukaj opisanega stroja, 6) Izjavlja, da je ta stroj, 7) Ustreza naslednjim direktivam in njihovi transpoziciji v državno pravo, 8) Za stroje priloga IV, 9) Številka potrdila, 10) Obvestilo organu, 15) uporabljene harmonizirane standarde, 16) druge uporabljene tehnične standarde in zahteve, 17) V, 18) Datum, 19) Ime podpisnika, 20) Funkcija, 21) Podpis.

sv : 1) CE-försäkran om överensstämmelse (original), 2) Företaget, 3) Adress, 4) tekniska dokumentationen, 5) Konstruktor av nedan beskrivna maskin, 6) Försäkrar att denna maskin, 7) Överensstämmer med nedanstående direktiv och införlivandet av dem i nationell rätt, 8) För maskinerna i bilaga IV, 9) Nummer för godkännande, 10) Organism som underrättats, 15) Harmoniserade standarder som använts, 16) andra tekniska standarder och specifikationer som använts, 17) Upprättat i, 18) Datum, 19) Namn på den som undertecknat, 20) Befattning, 21) Namnteckning.

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 obligation for us to advise our customers.

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 is made in the spaces provided, at the time of the delivery of the lift truck.

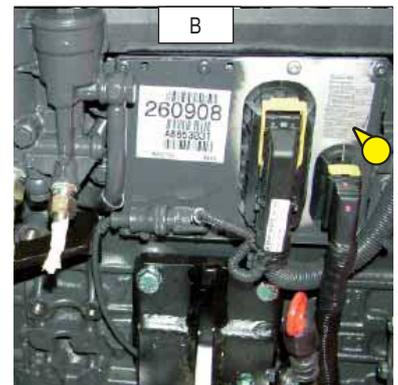
LIFT TRUCK MANUFACTURER'S PLATE (FIG. A)

- Model
- Series
- Serial Nr
- Year of manufacture



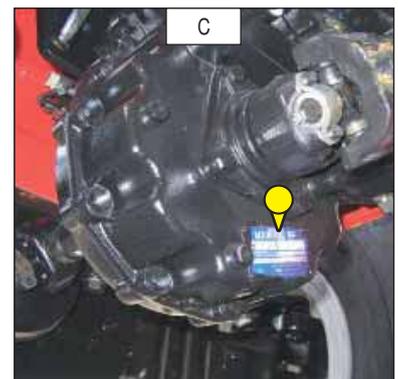
I.C. ENGINE (FIG. B)

- I.C. engine Nr



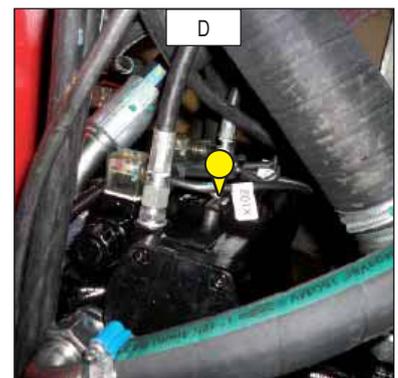
GEAR BOX (FIG. C)

- Type
- Serial Nr
- MANITOU reference



HYDROSTATIC PUMP (FIG. D)

- Type
- MANITOU reference
- Serial Nr

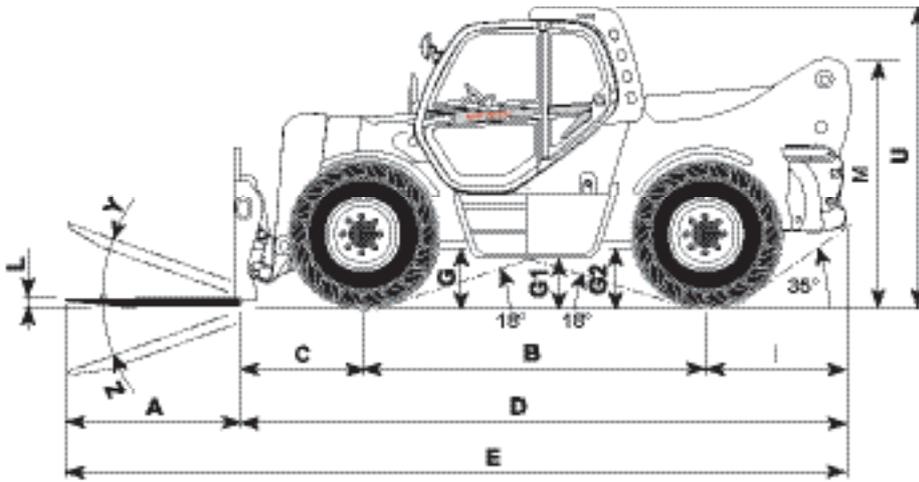


CHARACTERISTICS

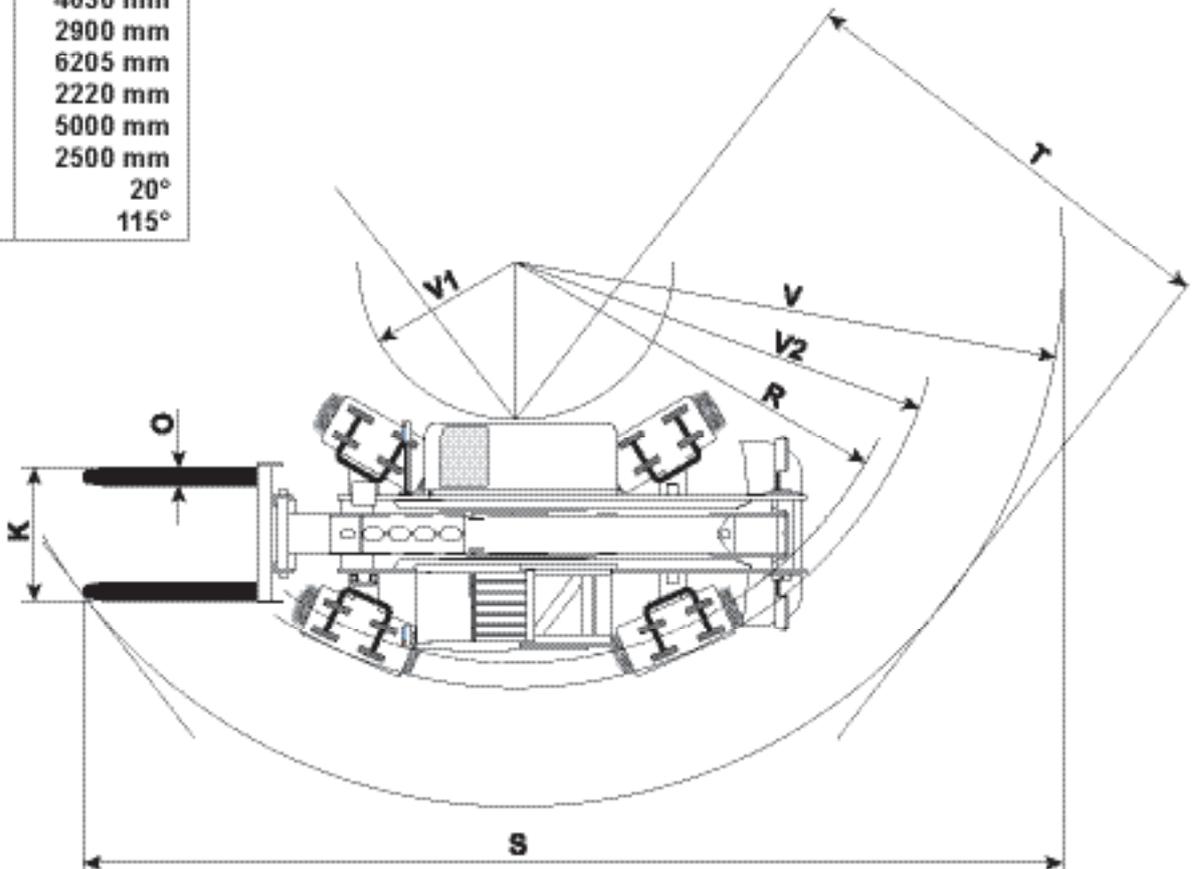
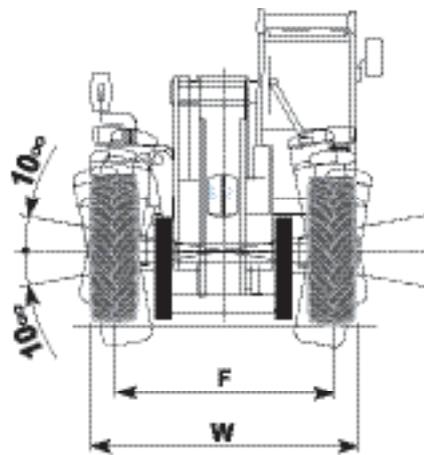
I.C. ENGINE		
Type		MERCEDES-BENZ (OM 904 LA)
Fuel		Diesel
Number of cylinders		4 in line
Suction		Supercharged
Injection system		Direct
Ignition sequence		1,3,4,2
Capacity	cm ³	4250
Bore and stroke	mm	102 x 130
Compression ratio		18:1
Nominal rating loaded	rpm	2200
Rating slow unladen	rpm	800
Max. rating unladen	rpm	2400
Power ISO/TR 14396	cv- kW	175 - 129
Power SAE J 1995	cv- kW	175 - 129
Maximum torque ISO/TR 14396	Nm	675 Nm from 1200 to 1600 rpm
Air cleaner	µm	3
Type of cooling		By water
Fan		Puller
TRANSMISSION		
Gear box		DANA
Type		Hydraulically operated
Forward/reverse selector		Electromagnetic
Number of forward speeds		2
Number of reverse speeds		2
Hydrostatic pump		REXROTH
Type		A4VG71DA Hydrostatic with continuous speed adjustment and engine with inching
Main pump		
displacement min./max.	cm ³ /giri	0 a 71
Capacity max.	L/min.	170
Pressure	bar	450
Supply pump		
displacement	cm ³	19,6
Capacity max.	L/min.	47
Pressure	bar	32 ±2
Hydrostatic motor		REXROTH
Type		A6VM140DA
displacement min./max.	cm ³ /giri	38 a 140
Front axle		DANA
Differential		Limited slip
Reduction gear		Planetary gear
Rear axle		DANA
Reduction gear		Planetary gear
Drive wheels		4RM Permanent
Front tyres		MITAS
Size		17.5 R25 EM 20 TL
Pressure	bar	7
Rear tyres		MITAS
Size		17.5 R25 EM 20 TL
Pressure	bar	7
ELECTRIC CIRCUIT		
Battery	Standard	12 V - 120 Ah - 850 A EN
Alternator		14 V - 90 ÷ 150 A
Starter		12 V - 3,2 kW
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		
Type of brake		Negative action, acts on front axle service brakes
Type of control		Electro-hydraulic
SOUND AND VIBRATION		
Level of sound pressure in the driver's cab LpA (according to standard NF EN 12053)	dB	79,7
Level of sound power ensured in the LwA environment (according to directive 2000/ 14/ EC modified by directive 2005/ 88/ EC)	dB	103 (measured) 105 (ensured)
Average weighted acceleration on driver's body (according to standard NF EN 13059)	m/s ²	
The average weighted acceleration transmitted to the driver's hand/arm system (according to standard ISO 5349-2)	m/s ²	< 2,5

HYDRAULIC CIRCUIT		
Hydraulic pump		
Type		Variable volume pistons
		1st casing
Capacity	cm ³	75
Max. rating capacity unladen	l/mn	170
Flow rate at 1600 rpm	l/mn	120
Maximum service pressure	bar	350
Telescoping circuit	bar	290 / 350
Lifting circuit	bar	320 / 320
Tilt circuit	bar	200 / 350
Attachment circuit	bar	270
Steering circuit	bar	200
HYDRAULIC MOVEMENTS		
Longitudinal stability limiter and warning device		Electronic
Lifting motions (boom retracted)		
Unladen lifting	s - m/mn	-
Unladen lowering	s - m/mn	-
Telescoping motions (boom raised)		
Unladen extending	s - m/mn	-
Unladen retracting	s - m/mn	-
Tilting movements		
Unladen digging	s - °/s	-
Forward tilting unladen	s - °/s	-
SPECIFICATIONS AND WEIGHTS		
Speed of movement for lift truck in standard configuration on flat ground (except particular conditions)		
Front unladen	km/h	28
laden	km/h	10
Rear unladen	km/h	28
laden	km/h	10
Rated capacity with standard attachment	kg	8000
Standard lifting height	kg	6800
Standard attachment forks		PFB
Fork dimensions (length x width x thickness)	mm	1800 x 200 x 70
Distance from the centre of gravity from the load to the lug of the forks	mm	12000
Lift truck weight with standard attachment		
Unladen	kg	9650
At rated load	kg	
Weight per axle with standard attachment (transport position)		
Front unladen	kg	29200
Rear unladen	kg	
Front rated load	kg	6250
Rear rated load	kg	10950
Drag strain on the coupling hook		
Unladen (sliding)	daN	-
At rated load (transmission setting)	daN	12450
Pull strain with open carrier (according to standard ISO 8313)	daN	-

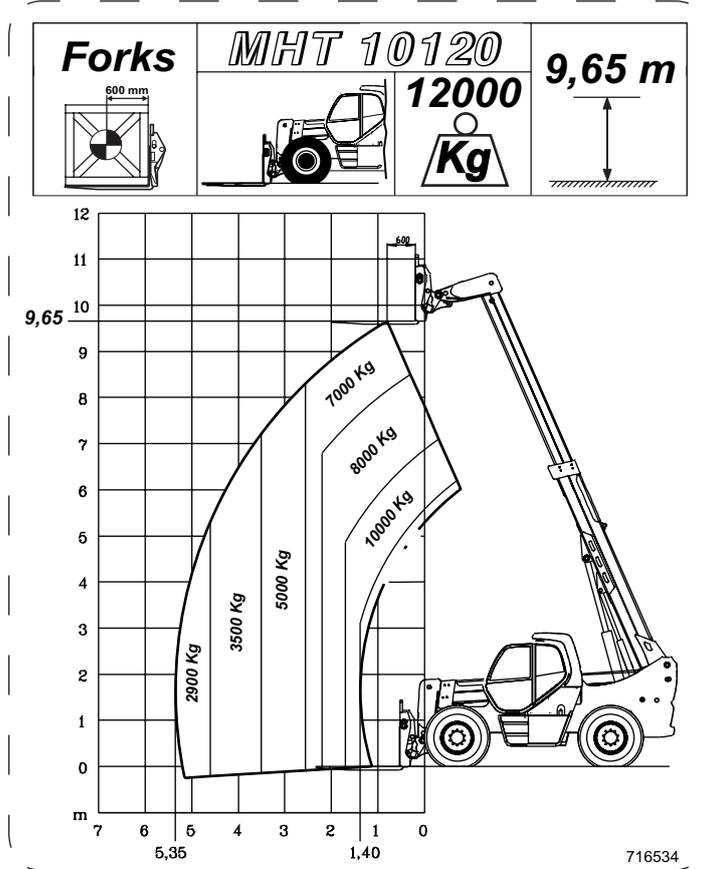
DIMENSIONS AND LOAD CHART



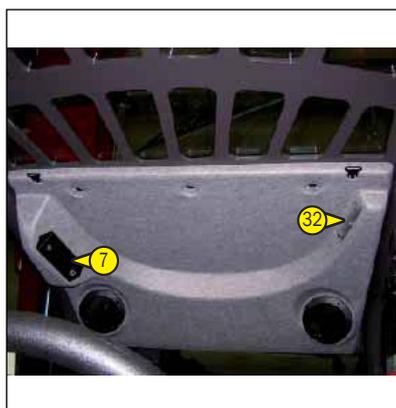
A	1800 mm
B	3300 mm
C	1225 mm
D	5940 mm
E	7750 mm
F	2060 mm
G	550 mm
G1	445 mm
G2	550 mm
I	1425 mm
K	1430 mm
L	70 mm
M	2300 mm
O	200 mm
R	4775 mm
S	10880 mm
T	4630 mm
U	2900 mm
V	6205 mm
V1	2220 mm
V2	5000 mm
W	2500 mm
Y	20°
Z	115°



Ai sensi Normativa EN 1459-allegato B



INSTRUMENTS AND CONTROLS



DESCRIPTION

- 1 - DRIVER'S SEAT
- 2 - SAFETY BELT
- 3 - CONTROL AND SIGNAL LIGHTS PANEL
- 4 - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE
- 5 - EMERGENCY STOP BUTTON
- 6 - EMERGENCY EXIT
- 7 - SWITCHES
- 8 - LIGHT SWITCH, HORN AND INDICATOR SWITCH
- 9 - FRONT AND REAR WINDSCREEN WIPER SWITCH
- 10 - IGNITION SWITCH
- 11 - FUSES AND RELAYS IN THE CAB
- 12 - FUSES AND RELAYS UNDER THE ENGINE HOOD (NOT ILLUSTRATED)
- 13 - DIAGNOSTIC SOCKET
- 14 - ACCELERATOR PEDAL
- 15 - SERVICE BRAKE PEDAL AND TRANSMISSION CUT-OFF
- 16 - FORWARD/ NEUTRAL/ REVERSE GEAR SELECTION
- 17 - HYDRAULIC CONTROLS AND TRANSMISSION CUT-OFF
- 18 - FUNCTION FILES
- 19 - LEVEL INDICATORS
- 20 - HEATER CONTROL
- 20 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)
- 21 - CAB FILTER VENTILATORS
- 22 - WINDSCREEN DEMISTER VENTS
- 23 - HEATING VENTS
- 24 - WINDSCREEN WASHER ACCESS PANEL
- 25 - STEERING WHEEL REGULATING HANDLE
- 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 - SUN VISOR
- 32 - OVERHEAD LIGHT
- 33 - HOOK
- 34 - CIGAR LIGHTER
- 35 - ARMREST AND STORAGE
- 36 - CAR RADIO (OPTION)
- 37 - INSIDE REAR-VIEW MIRROR (OPTION) (NOT ILLUSTRATED)
- 38 - NUMBER PLATE (NOT ILLUSTRATED)
- 39 - NUMBER PLATE LIGHTING (NOT ILLUSTRATED)
- 40 - REAR REFLECTORS (NOT ILLUSTRATED)
- 41 - FRONT LIGHTS (NOT ILLUSTRATED)
- 42 - REAR LIGHTS (NOT ILLUSTRATED)
- 43 - FLASHING LIGHT (NOT ILLUSTRATED)

NOTE: All the terms such as: RIGHT, LEFT, FRONT, REAR are meant for an observer seated on driver's seat and looking in front of him.

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.

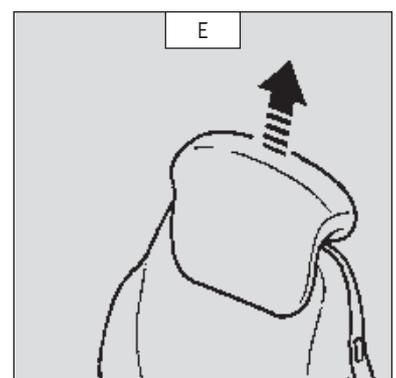
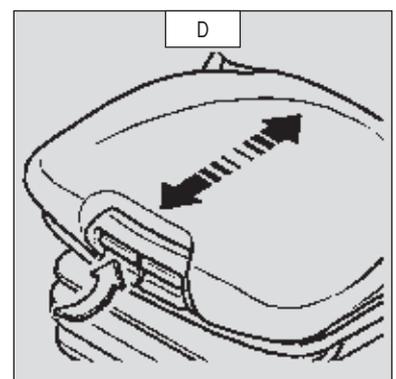
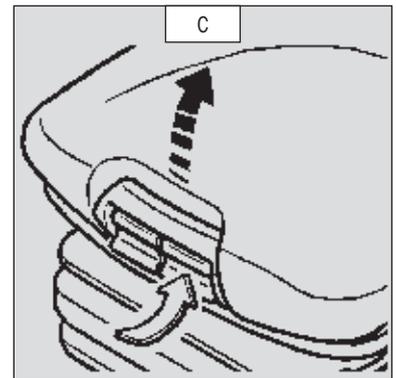
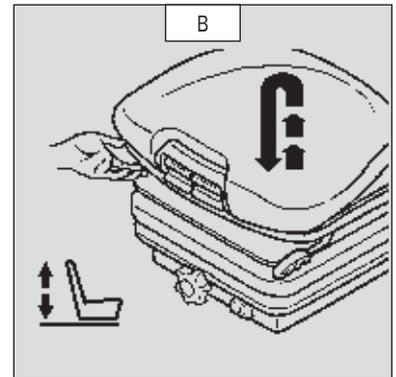
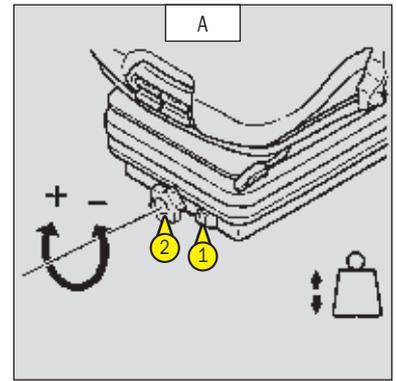
SEAT DEPTH ADJUSTMENT (FIG. D)

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)

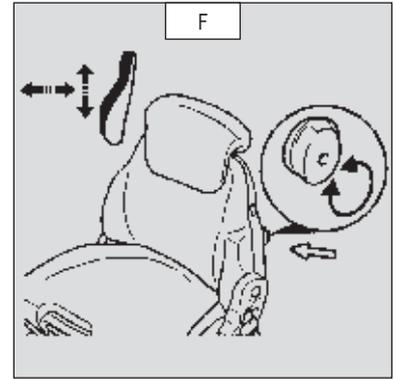
- The height of the back-rest can be adjusted by pulling it upwards (the notches will click) up to the stop.
- The head-rest can be removed by applying sufficient pressure to pull it off the stop.



LUMBAR ADJUSTMENT (FIG. F)

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

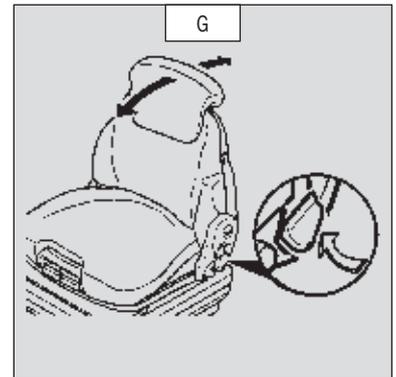
- Turn the handle either left or right to adjust the height or depth of the lumbar support.



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

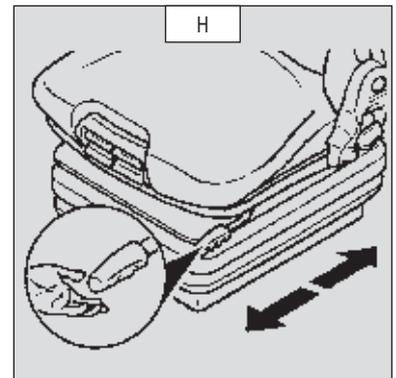
- Support the back-rest, pull the lever and position the back-rest to find the desired position.

⚠ 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.



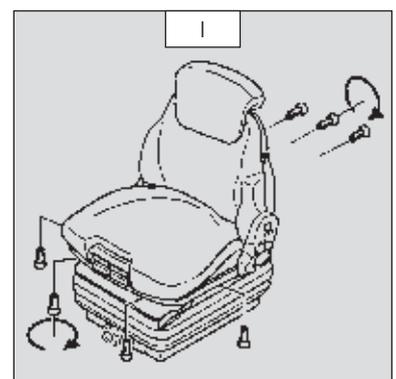
MAINTENANCE (FIG. I)

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.

⚠ 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.



To avoid causing any 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.

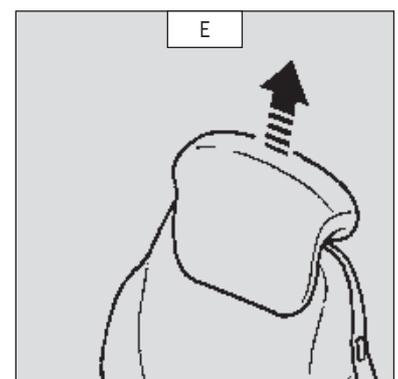
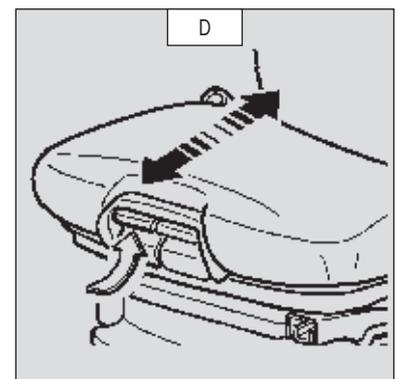
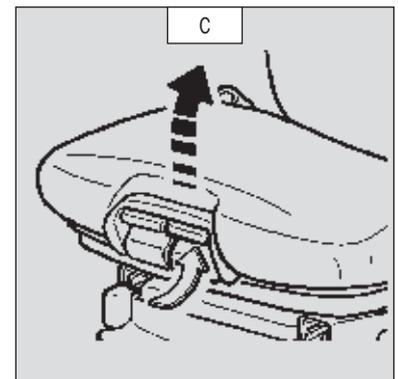
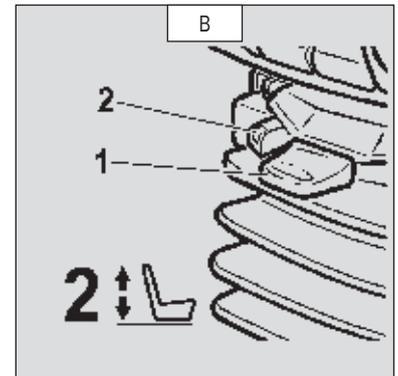
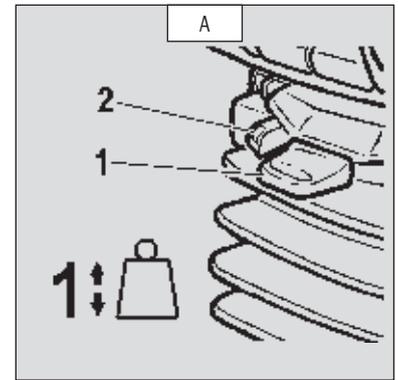
SEAT DEPTH ADJUSTMENT (FIG. D)

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.

 **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.

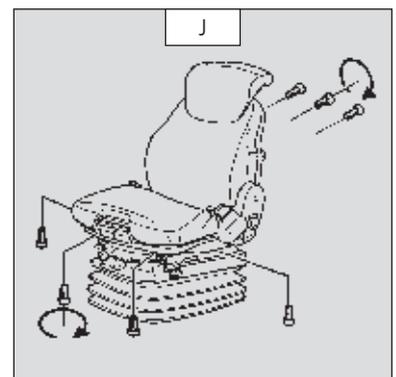
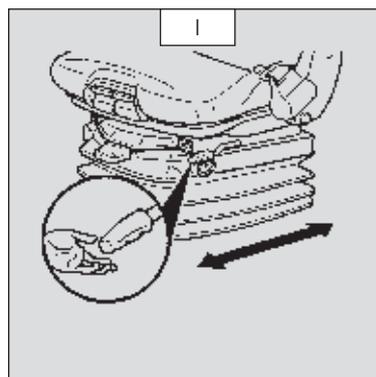
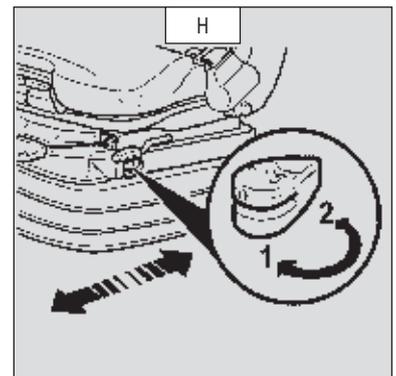
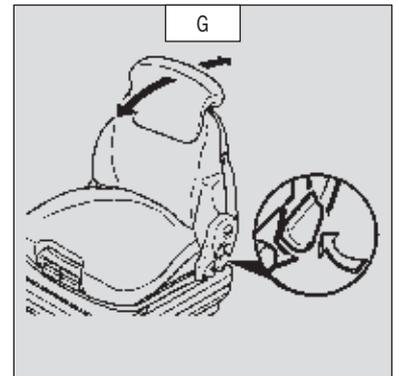
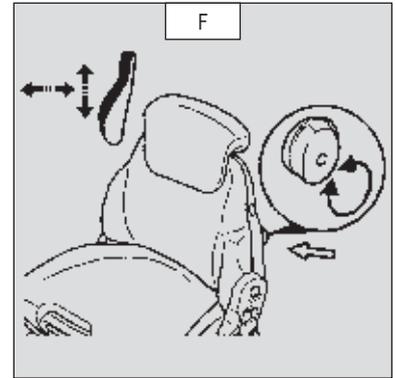
SERVICING (FIG. J)

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.

 **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.



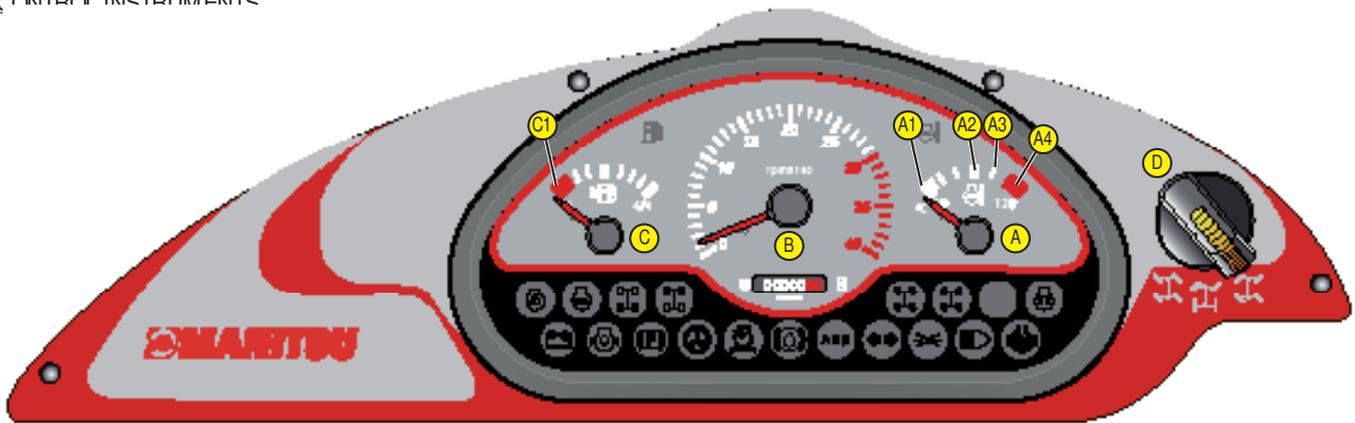
2 - SAFETY BELT

- 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.

 **In no event should the lift truck be used if the seat belt is defective (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 - White zone (0° - 50°) Use the lift truck with moderation, wait for temperature to increase before normal operation.

A2 - White 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.

B - HOUR 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 - STEERING TYPES SELECTOR

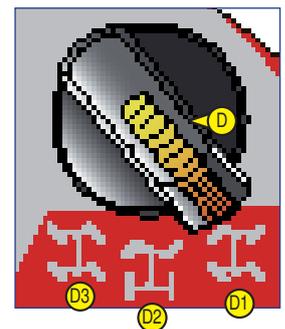
To select from the three different steering options turn knob D as follows:

D1: front and rear steering wheels.

D2: front steering wheels.

D3: wheel in oblique position (crab steering).

Before selecting a type of steering, check the ALIGNMENT OF THE REAR AND FRONT WHEELS .



SIGNAL LIGHTS

! 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.

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.



RED 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.



YELLOW 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.



REAR WHEELS ALIGNMENT YELLOW INDICATOR LIGHT

Indicates alignment of the rear wheels in relation to the vehicle axis.
When the wheels are aligned the indicator lights up.*



FRONT WHEELS ALIGNMENT GREEN INDICATOR LIGHT

Indicates alignment of the front wheels in relation to the vehicle axis.
When the wheels are aligned the indicator lights up. *

* Procedure: Turn the selector for steering type to "concentric steering", turn the wheel so that the rear wheels alignment yellow indicator does not light up; then position the selector on "front steering" and turn the wheel so that the front wheels alignment green indicator does not light up.

When the front and rear wheels are aligned, one of the three steering modes mentioned above can be selected.

The wheels coordination may be lost with use; carry out realignment of the wheels every 20 hours of service by following the procedure described above.



GREEN SIDWAYS OR CRAB MOVEMENT INDICATOR LIGHT
The green light on indicates the steering selection for sideways or crab movement.



GREEN SHORT STEERING INDICATOR LIGHT
The green light on indicates the short steering selection.



RED LIFT-TRUCK ELECTRONIC SYSTEM INDICATOR LIGHT
The lifting truck functions as a degraded mode. To consult your dealer as soon as possible.



YELLOW 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.



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 PARKING BRAKE LAMP
This lamp comes on when the parking brake is applied.



RED STEERING SYSTEM OIL PRESSURE WARNING INDICATOR LIGHT
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 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).



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.



ARB RED SAFETY SYSTEM EXCLUDING INDICATOR LIGHT
If the indicator light and the buzzer sounds security system is disabled.



GREEN DIRECTION INDICATOR LAMP



GREEN SIDELIGHTS LAMP



BLUE MAIN BEAM LAMP



YELLOW CENTRAL DIFFERENTIAL BLOCK INDICATOR LIGHT

4 - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

This device warns the operator of the lift truck's longitudinal stability limits. However, lateral stability can reduce the load chart in the upper part, and this reduction is not detected by the device.

According to the type of work required, the longitudinal stability limiter and warning device allows the operator to operate the lift truck in complete safety.



The operator must respect the lift truck's load chart, and the operating mode according to the attachment.

A	"HANDLING" MODE							
B	"BUCKET" MODE							
C	"SUSPENDED LOAD" MODE							

A - "HANDLING" MODE

Use on forks (TFF, PFB, TDL), and adjustable accessories on forks (BB, GL).

- By default, the device is in "HANDLING" MODE when the lift truck is started-up, except if the "SUSPENDED LOAD" MODE has been selected before shutting-down the engine.

A1 - A2 - A3: There is a significant reserve of longitudinal stability.

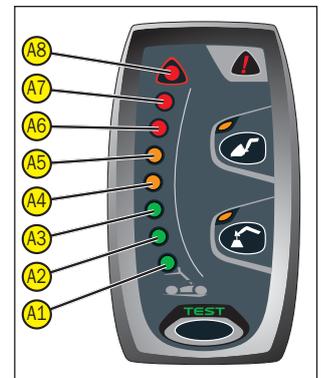
A4 - A5: The lift truck is approaching the limit of longitudinal stability, move with care.

A6: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a slow intermittent sound. Move with care.

A7: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a fast intermittent sound. Move with extreme care.

A8: The lift truck is at the authorized limit of longitudinal stability. A continuous acoustic alarm is simultaneously sounded. All "AGGRAVATING" hydraulic movements are cut-off. Cut-off may be preceded by automatic slowing of hydraulic movements. Only perform hydraulic movements that increase stability in the following order; retract and raise the jib.

NOTE: When the jib is retracted, the function for cutting-off "AGGRAVATING" hydraulic movements is disconnected.



B - "BUCKET" MODE

Use with a bucket (CB, CBA, CBC, CBG, CBR, CBM, FFGR).

- Place the lift truck in the transport position.

- Press the button  for 2 seconds, the "BUCKET" MODE is confirmed by an audible beep and the lighting of the lamp.

- Return to "HANDLING" MODE by pressing the button , or loss of driver presence for a few seconds, or shutting down the engine.

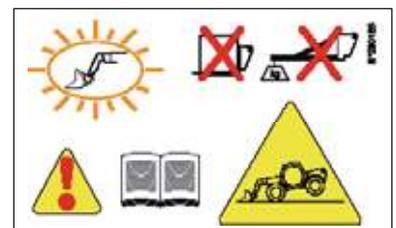
A1 - A2 - A3: There is a significant reserve of longitudinal stability.

A4 - A5: The lift truck is approaching the limit of longitudinal stability, move with care.

A6: The lift truck is approaching the limit of longitudinal stability. An audible beep is sounded. Move with care.

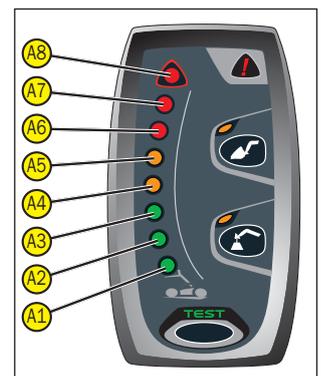
A7: The lift truck is very close to the limit of longitudinal stability. Move with extreme care.

A8: The lift truck is at the authorized limit of longitudinal stability.



 All hydraulic movements remain available, ONLY PERFORM DE-AGGRAVATING HYDRAULIC MOVEMENTS IN THE FOLLOWING ORDER: RETRACT AND RAISE THE JIB.

NOTE: According to the version, the jib lowering and extension movements may be cut-off and preceded by an automatic slowing of hydraulic movements. In this case, when the jib is retracted, the function for cutting-off "AGGRAVATING" hydraulic movements is disconnected.



C - "SUSPENDED LOAD" MODE

Use with crane jib (P, PC, PT, PO).

- Place the lift truck in the transport position.



- Press the button for 2 seconds, "SUSPENDED LOAD" MODE is validated by an audible beep and the lighting of the lamp.



- Return to "HANDLING" MODE by pressing the button

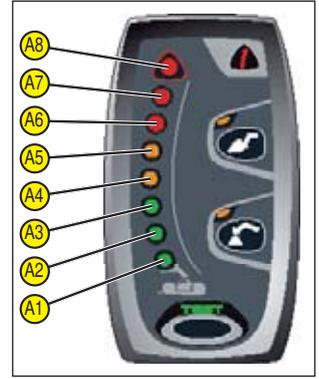
A1 - A2 - A3: There is a significant reserve of longitudinal stability.

A4 - A5: The lift truck is approaching the limit of longitudinal stability, move with care.

A6: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a slow intermittent sound. Move with care.

A7: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a fast intermittent sound. Move with extreme care.

A8: The lift truck is at the authorized limit of longitudinal stability. A continuous acoustic alarm is simultaneously sounded. All "AGGRAVATING" hydraulic movements are cut-off. Cut-off may be preceded by automatic slowing of hydraulic movements. Only perform hydraulic movements that increase stability in the following order; retract and raise the jib.



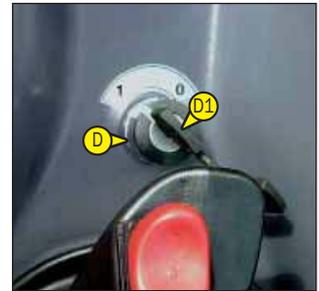
NOTE: When the jib is retracted, the function for cutting-off "AGGRAVATING" hydraulic movements is disconnected.

D - KEY SELECTOR FOR DISCONNECTING THE LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

In certain cases, in order to get out of a difficult situation, the operator can bypass this safety system.

Key selector D temporarily disables the cutting-off of "AGGRAVATING" hydraulic movements.

-Keep key selector D turned in position "0" to proceed and simultaneously perform the necessary "AGGRAVATING" hydraulic movement with extreme care. The combined use of these two actions is limited to 60 seconds.



! Remain very vigilant during this operation. The only information available to the operator is the lift truck's dynamic stability.

! The safety system can be deactivated manually only in case of emergency and for reasons of safety. With the safety system deactivated, the operator and the truck are exposed to risks and there is nothing to prevent overloading and/or tipping over of the vehicle.

Key selector D has two positions "1" and "0":

- in position "1" the safety system is activated;
- in position "0" the safety system is deactivated.

During normal use, the key selector is turned to position "1", the safety system is activated.

Key D is kept safe inside a safety box D2 placed behind the driver's seat.

Break the safety glass to pick up the key D3.



Note: When the safety system is disabled, an alarm sound is automatically activated to warn the driver and other persons who may be present in the area of a possible danger situation.

! When the emergency procedures have been completed the key must put back in the safety box and the safety glass must be replaced.



E - TESTING OF THE LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

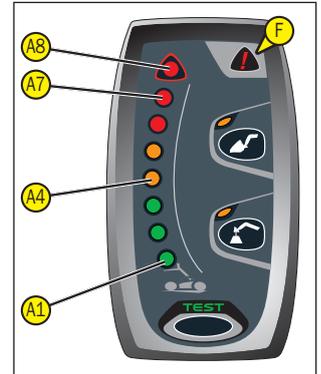
- Short press the button  at any time to check the correct operation of the longitudinal stability limiter and warning device.
- Correct operation: All the leds light for two seconds and an audible beep is sounded.

NOTE: This test does not check the proper adjustment of the device that must be inspected daily or after every 10 hours of service (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE).

F - FAULT INDICATOR LAMP

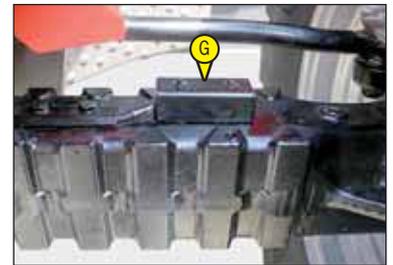
A permanently lit fault indicator lamp F, together with a combination of illuminated leds, indicates a major fault liable to affect the safety of the lift truck. Refer to your agent or dealer.

- The fault indicator lamp  plus leds A1 and A7 lighting alternately with A4 and A8 indicates a defective link in the operation of the longitudinal stability limiter and warning device.
- The fault indicator lamp  plus continuously lit leds A7 and A8 indicate a faulty box.



G - STRAIN GAUGE

-  Disassembly or calibration of the strain gauge is prohibited, this must only be done by specially trained personnel, consult your dealer.



5 - EMERGENCY STOP BUTTON

- In the event of danger, it lets you stop the I.C. Engine and thereby cut out all hydraulic movements.
- Pull the button to disable it before restarting the lift truck.

 Be ready for hydraulic movements suddenly stopping when you press this button.



6 - EMERGENCY EXIT

EMERGENCY HAMMER Use the emergency hammer to break one of the windows in the event that it is impossible to exit the cab by the door or by opening the rear window.



7 - SWITCHES

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

A - PARKING BRAKE SWITCH

Two-position luminous switch with safety block.
The parking brake acts on the front axle.

- To release the brake, press the pushbutton in position A1".
 - To lock the brake, press the pushbutton in position A2.
- To release the brake from A2 to A1, while pressing the switch, act on safety lock .

B - REAR FOG LIGHT SWITCH

Two-position luminous switch.

C - EMERGENCY WARNING LIGHTS SWITCH

D - RESET TRANSMISSION.

In normal operating conditions, the button is illuminated.
For more detailed information on use, see point "E" .

E - RUNNING SELECTOR (SLOW-FAST) .

The machine has two speeds :

- Slow (work site speed)
- Fast (for road travel)

To change the speed follow the instructions given below:

- stop vehicle movement completely
- keep the I.C. engine running at minimum speed
- set the reverse gear in idle (see point)
- push the brake pedal down all the way and press the fast-slow E button till the respective light E1 or E2 switches on.

If the forward or reverse speed is not engaged, follow the instructions given below :

- set the reversal lever in the required position (Forwards - Backwards)
- discharge pressure from the brake pedal
- press the "RESET TRANSMISSION" button D to engage in the required direction.
- If the vehicle does not move, accelerate the I.C. engine slowly and gradually till the truck starts moving.

These instructions must be followed for proper working of the transmission.

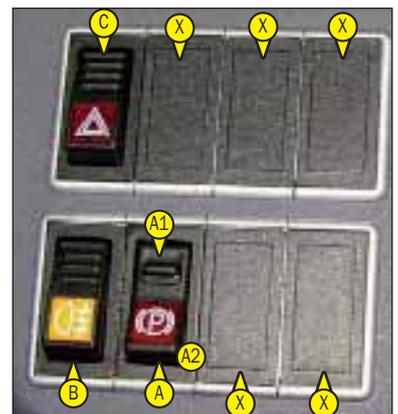
E1 - FAST SPEED GREEN LIGHT

When the green light is ON it indicates selection of fast speed.

E2 - SLOW SPEED GREEN LIGHT

When the green light is ON it indicates selection of slow speed.

X - OPTION



O - OPTIONAL DISCONNECT SWITCH (accessories hydraulic block)

The two-position switch is used for activating or deactivating the optional. With the switch pressed in pos. "O1" (red indicator light On) the Optional/accessories hydraulic block function is activated. With the switch pressed in pos. "O2" (red indicator light Off) the Optional/accessories hydraulic block function is deactivated.

P - STOPPING HYDRAULIC MOVEMENTS

While travelling on roads, it is advisable (compulsory in Italy and Germany) to stop all hydraulic movements. The indicator lights up when the movements are being used.

Q - LEVELLING CONTROL PUSHBUTTON

The pushbutton has two positions; it controls the truck level correction movements to the right and left.
- pressing the button in position "Q1" will level the truck on the left
- pressing the button in position "Q2" will level the truck on the right

Verify the correct levelling using the spirit level placed in the cab (see point "17" on page 23 "Spirit level")

N. B.: The levelling operation is not possible when the telescopic boom is inclined beyond approx. 30° from the ground.

R - 2° / 3° HYDRAULIC EXIT SWITCH (OPTIONAL)

The switch has two or three positions depending on the machine setup. It is used for switching the hydraulic control for making two or three hydraulic movements using the accessory.

S - ROTARY BEACON SWITCH

Two-position switch for turning the rotary beacon light on/off.

T - FRONT AND REAR WORK LIGHTS SWITCH (OPTIONAL)

Three-position switch for turning the work lights On/off.

U - SWITCH FOR WORK LIGHT AT THE TOP OF THE BOOM (OPTIONAL)

Z - SWITCH FOR ROOFTOP WINDOW WIPER (OPTIONAL)



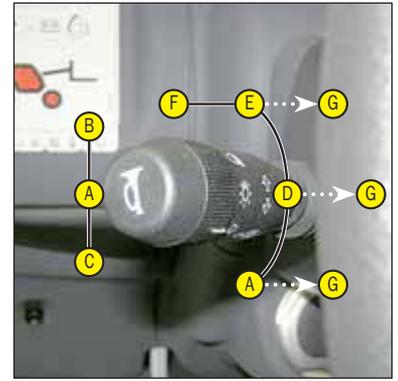
8 - LIGHT SWITCH, HORN AND INDICATOR SWITCH

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.



9 - FRONT AND REAR WINDSCREEN WIPER SWITCH

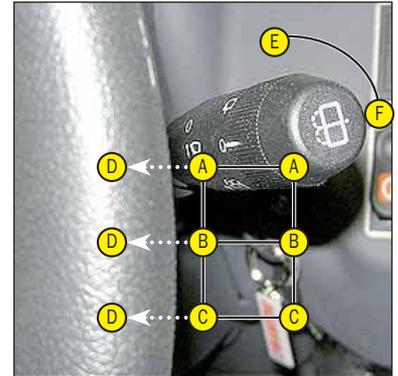
FRONT WINDSCREEN WIPER

- 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.

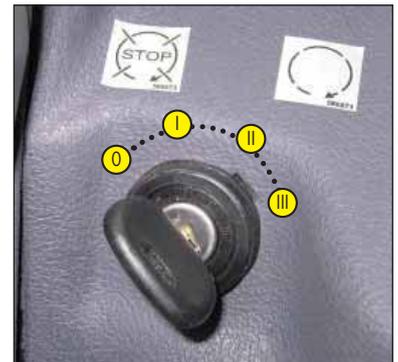
NOTE: These functions will only work when the ignition is switched on.



10 - IGNITION SWITCH

The key switch has four positions:

- 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.



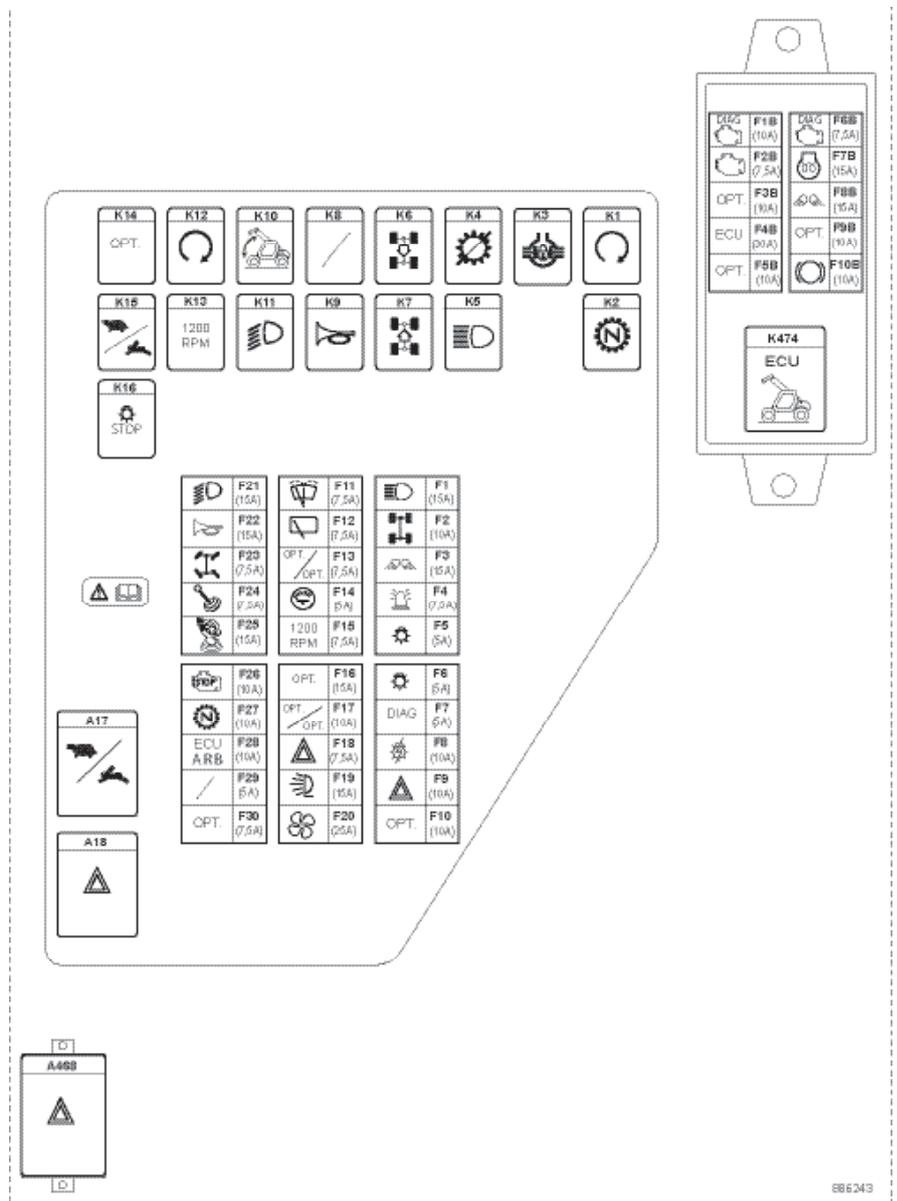
11 - FUSES AND RELAYS IN THE CAB

Remove the door that provides access to the fuses and relays 1

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

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

- A17 – Slow-fast relay
- A18 - Warning relay.
- A468 - Relay services
- F1 - Headlights (15A).
- F2 - Axles alignment power supply(10A)
- F3 - Rear work lights (15A)
- F4 - Rotating lamp (7,5A).
- F5 - Position lights (5A)
- F6 - Position lights (5A)
- F7 - +15 / diagnostics power supply (5A).
- F8 - Light switch/rear fog lights power supply (10A).
- F9 - +30 / warning (10A).
- F10 - +30 / Radio/ antitheft (10A).
- F11 - anterior windshield wiper switch (7,5A).
- F12 - rear windshield wiper power supply (7,5A).
- F13 - pneumatic seat / radio (7,5A).
- F14 - Siege micro / indicator lights and instruments (5A).
- F15 - Valve 1200 RPM (7,5A).
- F16 - +15 OPTIONAL (15A)
- F17 - OPTION 2°/3° predispositions Hydraulic (10A).
- F18 - +15 warning (7,5A)
- F19 - boom work lights (15A)
- F20 - ventilation / heating (55A)
- F21 - Low beams (15A).
- F22 - Horn (15A).
- F23 - Steering sector (7,5A).
- F24 - Boom hydraulic movements (7,5A).
- F25 - Joystick (J.S.M.) (15A).
- F26 - mushroom-shaped emergency pushbutton (10A).
- F27 - Neutral gear (10A).
- F28 - Longitudinal stability limiter and warning device (10A)
- F29 - +15 antitheft (5A).
- F30 - + 15 / predisposition (7,5A)
- K1 - Consensus start relay
- K2 - Neutral gear relay
- K3 - Central differential block relay
- K4 - Transmission cut off relay
- K5 - Headlights relay
- K6 - Reverse movement relay
- K7 - Forwards movement relay
- K8 - Option
- K9 - Horn relay
- K10 - Boom hydraulic movements relay
- K11 - Low beams relay
- K12 - Engine consensus
- K13 - Valve 1200 RPM relay
- K14 - Option
- K15 - Change gear relay
- K16 - Brake light relay
- F1B - +30 engine electronic
- F2B - +30 Engine diagnostic
- F3B - +30 Radio
- F4B - +15 Lift-truck electronic system
- F5B - +30 Basket OPTION
- F6B - +15 Engine diagnostic
- F7B - +15 Fuel filter pre-heating
- F8B - +15 Front work lights
- F9B - +15 Basket
- F10B - +15 Emergency Brake (OPTION)
- K474 - “VP” Lift-truck electronic system



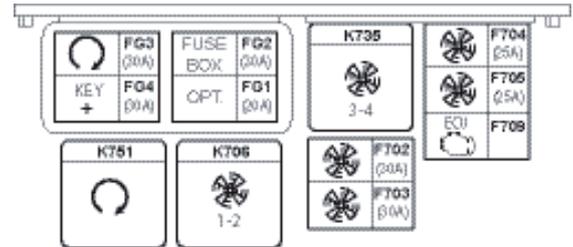
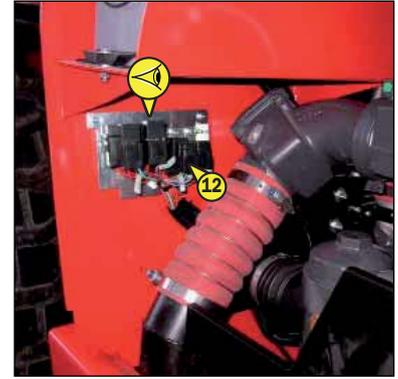
886243

12 - FUSES AND RELAYS UNDER THE ENGINE HOOD

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

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

FG1 - OPTIONAL 30 (20A).
 FG2 - Fuse and relay unit (30A)
 FG3 - Start engine relay (30A).
 FG4 - +30 key (30A)
 F702 - Electric fan 1 (25A)
 F703 - Electric Fan 2 (25A)
 F704 - Electric Fan 3 (25A)
 F705 - Electric Fan 4 (25A)
 F709 - 30 Mercedes Unit
 K706 - Electric Fan 1 and 2 Relays
 K735 - Electric fans 3 and 4 Relays
 K751 - Start engine Relay



13 - DIAGNOSTIC CONNECTOR

Remove the door that provides access to the diagnostic connector A.

- A - Lift-truck electronic system
- B - Mercedes electronic system



14 - ACCELERATOR PEDAL

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).



16 - 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.

NOTE: The reverse lights indicate that the lift truck is running in reverse motion. An OPTIONAL audible reversing alarm can also be fitted.

SAFETY FOR MOVING THE LIFT TRUCK

Authorisation 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:

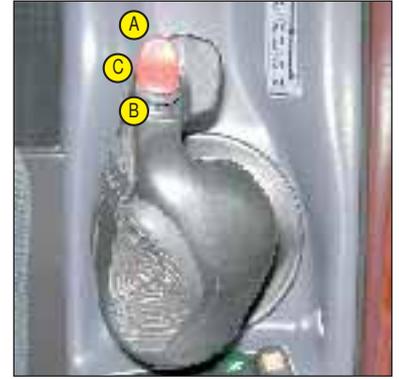
- 1 - sit down correctly in the driver's seat,
- 2 - release the parking brake,
- 3 - engage forward or reverse movement.

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. While this alarm sounds, the operator can simply sit back in the seat and continue advancing or reversing.

If the alarm becomes discontinuous, 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.



17 - HYDRAULIC CONTROLS AND TRANSMISSION CUT-OFF

⚠ 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 RENDER THE WARRANTY NULL AND VOID.

⚠ Use the hydraulic controls carefully without jerking, to avoid accidents caused by shaking the lift truck.

NOTE: When driving on the road, it is highly recommended (mandatory in Germany) that you cut-off all the hydraulic movements (see: 2 - DESCRIPTION 7 - SWITCHES).

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.

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.
- The lever A to the right for forward tilt.

TELESCOPING

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

ATTACHMENT

- The button C forwards or backwards.

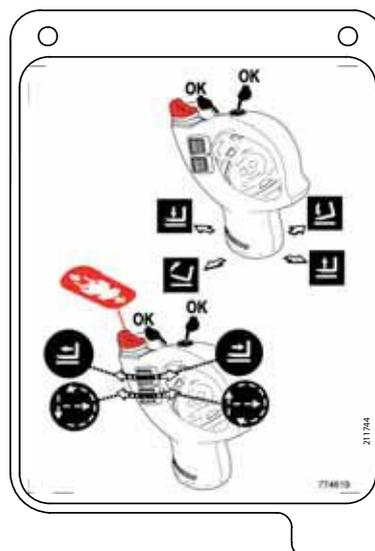
DECOMPRESSION OF OPTIONAL CIRCUIT

This operation must be carried out each time a lift truck supplementary accessory is to be connected or disconnected.

- 1) Switch the combustion engine off and turn ignition key to position "I".
- 2) Rotate roller "C" forwards and backwards, turn the roller for 3 seconds for each position (pushbutton D pressed and red indicator light On).

When the operation is complete, the optional is depressurized; it will therefore be easier to connect/disconnect the quick-release couplings on the top of the boom.

N. B. The operations must be carried out immediately after the combustion engine is switched off, and not for more than 3 seconds for each command.



18 - FUNCTION TAB

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



19 - LEVEL INDICATOR

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



20 - HEATER CONTROL

A - HEATING FAN CONTROL

This 3-speed control regulates warm or cold air through the heating ventilators.

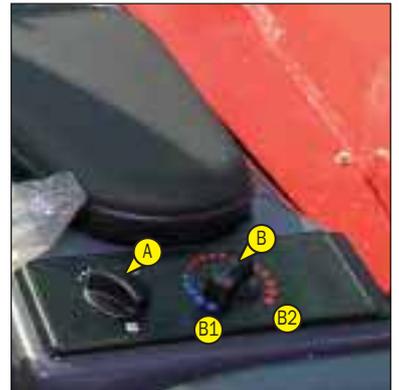
B - HEATING TEMPERATURE CONTROL

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.



20 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)

! The air conditioning only comes on when the forklift truck has been started up. When using your air conditioning, you must work with the doors and windows closed.

In winter: So as to ensure correct operation and complete efficiency of the air conditioning unit, start up the compressor once a week, if only for a short spell, so as to lubricate the internal seals.

In cold weather: Warm the I.C. engine before switching on the compressor, so as to allow the coolant that has collected in the liquid state at the lowest point of the compressor circuit to turn into gas under the effect of the heat given off by the I.C. engine, as the compressor is liable to be damaged by coolant in the liquid state.

! If your air conditioning does not seem to be working properly, have it examined by your dealer (see: 3 - MAINTENANCE: F - EVERY 2000 HOURS OF SERVICE). Never try to repair any possible problems by yourself.



LEGEND OF FUNCTIONS

- | | |
|------------------------------------|---|
| 1 - Internal temperature reduction | 8 - Fan speed reduction command |
| 2 - Internal temperature increase | 9 - Internal air temperature sensor |
| 3 - Preset temperature indicator | 10 - °C / °F conversion and vice versa |
| 4 - Fan 1st speed indicator | 11 - External temperature reading command |
| 5 - Fan 2nd speed indicator | 12 - Recirculation command |
| 6 - Fan 3rd speed indicator | 13 - Compressor exclusion |
| 7 - Fan speed increase command | 14 - Restore automatic function |



ERROR CODES

In case of a fault that affects the automatic regulation, the control unit displays an error code consisting of the letter E followed by a number which identifies the type of fault according to the following Table:

- E 1 external air temperature sensor (E.T.) interrupted.
- E 2 external air temperature sensor (E.T.) short circuit.
- E 3 cab air temperature sensor (I.T.) interrupted.
- E 4 cab air temperature sensor (I.T.) short circuit.
- E 5 mixed air temperature sensor (M.T.) interrupted.
- E 6 mixed air temperature sensor (M.T.) short circuit.

Since automatic regulation is not possible, the keys for increasing and decreasing the internal temperature are used to change the position of the mixer, while the fan speed is fixed at the 2nd speed.

When the error is solved, the control unit resumes normal operation only after resetting the + key.

AIRCONDITIONING PLANT – CHECKING THE WORKING

Electronic control of the temperature (E.A.C.C.)

To check to ensure the correct working of the heating and cooling system, make sure the engine is started up with the hoods closed, at ambient temperature between +15 °C and 30 °C and the engine cooling fluid sufficiently hot. If the ambient temperature is higher or lower than these values, the system automatically adjusts itself in the maximum cooling or maximum heating conditions.

1 – Checking the water regulator valve

Press the cab internal temperature increase/decrease button, the water regulator valve shifts to the maximum heating HI or maximum cooling LO condition. Make sure the mixed air temperature changes accordingly.

2 – Checking the mixed air temperature sensor

If the sensor is defective, the following error codes appear on the display: E5 = Mixed air temperature sensor (MT) open. E 6 = Mixed air temperature sensor (MT) short circuit.

3 – Checking the cab internal air temperature sensor

If the sensor is defective, the following error codes appear on the display: E5 = Internal air temperature sensor (IT) open. E 6 = Internal air temperature sensor (IT) short circuit.

4 - Compressor activation

On pressing the ECON button, the relative LED lights up and switches off alternately and the compressor is activated and deactivated, respectively, by means of the electromagnetic clutch.

5 – External air inlet and recirculation command

On pressing the Recirculation button, the relative LED lights up indicating the condition of ventilation with recirculating air. On pressing the recirculation button again, the LED switches off indicating the condition of ventilation with external air inlet.

6 – Fan speed command

The cab ventilation can be adjusted at three fan speeds: minimum, medium and maximum.

7 - °C and °F selection

When the relative LED is Off, the temperature is indicated in °C, when the LED is On the temperature is read in °F (Fahrenheit).

The maximum cab temperature value setting is 37 °C or 99 °F.

8 – Checking the external temperature sensor

On pressing the external temperature button , the external temperature value appears on the display.

If the sensor is defective, the following error codes appear on the display:

E5 = External air temperature sensor (ET) open.

E6 = External air temperature sensor (ET) short circuit.

21 - CAB FILTER VENTILATORS

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



22 - WINDSCREEN DEMISTER VENTS

For optimum effectiveness, close the heating ventilators.



23 - HEATING VENTS

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

24 - WINDSCREEN WASHER TANK ACCESS PANEL

- Loosen screw 1 and lift up the windscreen washer tank access panel (see: 3 - MAINTENANCE: B - EVERY 50 HOURS OF SERVICE).



25 - STEERING WHEEL REGULATING HANDLE

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.



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, in the event that it is impossible to leave the cab by the door or by opening the windscreen.

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.

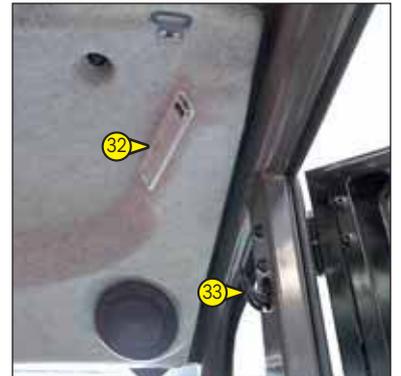


31 - SUN VISOR



32 - OVERHEAD LIGHT

33 - HOOK



34 - CIGAR LIGHTER

For 12 V appliance and max. amperage 10A.



35 - ARMREST AND STORAGE

- Lift the armrest 1 to access the storage.

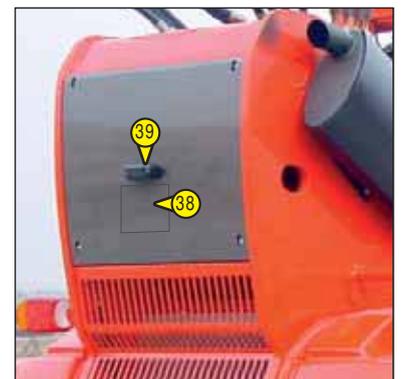


36 - CAR RADIO (OPTION)

37 - INSIDE REAR-VIEW MIRROR (OPTION)

38 - NUMBER PLATE

39 - NUMBER PLATE LIGHTING

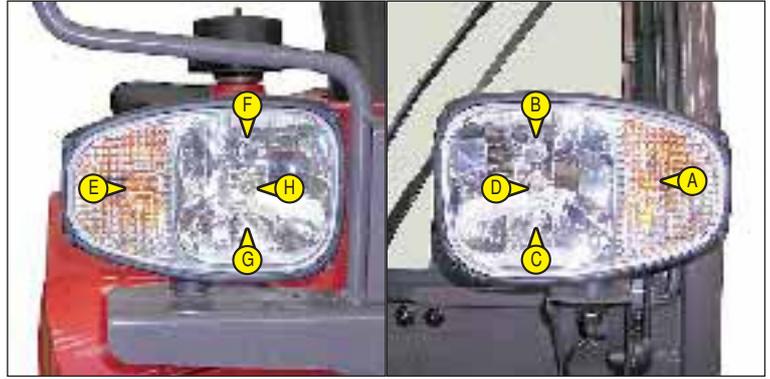


40 - REAR REFLECTORS



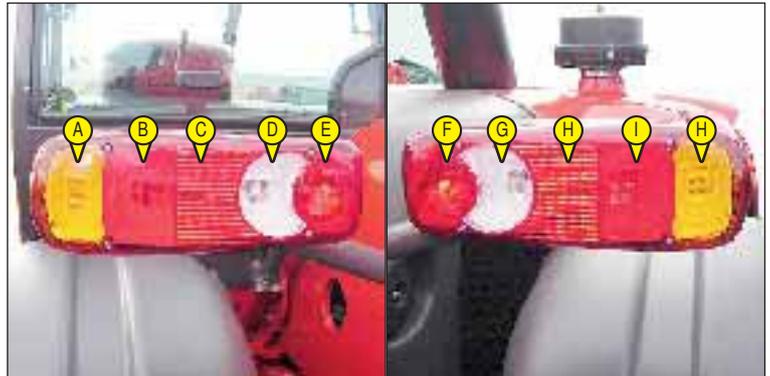
41 - FRONT HEADLIGHTS

- 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.



42 - 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.



43 - REVOLVING LIGHT

STANDARD

The revolving light pivots for space-saving on the lift truck and can be detached to prevent theft.

- Loosen nut 1 and remove the revolving light.
- Protect mounting 2 with cap 3.



OPTIONAL AIR CONDITIONING

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



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 force and maximum vertical force on the coupling point.

- 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 (tyre condition and pressures, electrical connection, hydraulic hose, brake system...).



Do not tow a trailer or attachment which is not in perfect working order. Using a trailer in poor condition may affect the lift truck's steering and braking, and hence safety.



If a third party helps in coupling or uncoupling the trailer, this person must be permanently visible to the driver and wait until the lift truck has stopped, the handbrake is on and the I.C. engine is switched off before performing the operation.

NOTE: A rear-view mirror allows the lift truck to approach more closely to the trailer ring.

A - COUPLING FITTING

COUPLING AND UNCOUPLING THE TRAILER

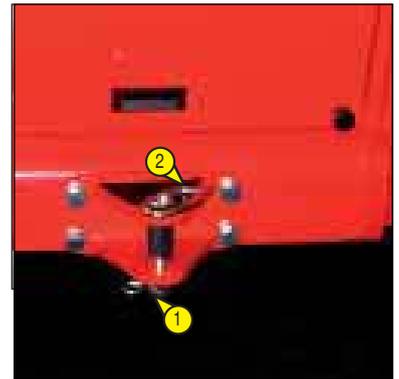
- To couple the trailer, position the lift truck as close as possible to the trailer ring.
- Put the handbrake on and switch off the I.C. engine.
- Remove the clip 1, lift the trailer pin 2 and place or remove the trailer ring.



Be careful not to get your fingers caught or crushed during this operation.

Do not forget to put clip 1 back in place.

When uncoupling, make sure that the trailer is supported independently.



DESCRIPTION AND USE OF THE OPTIONS

- 1 - JIB SUSPENSION
- 2 - ATTACHMENT EASY HYDRAULIC CONNECTION

1 - BOOM SUSPENSION

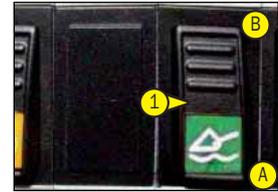
The boom is suspended to reduce shaking of the lift truck on rough ground (e.g. moving straw in a field).

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 boom suspension is activated.
- Press switch 1 set to position B, the visual indicator goes out indicating that boom suspension is deactivated.

 Boom suspension is active to a lifting height of 3m00 from the axis of articulation of the carriage with respect to the ground with the boom retracted. When you move beyond this height or make another hydraulic movement (tilting, telescoping, attachment), boom suspension is momentarily deactivated and the visual indicator of switch 1 goes out.

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

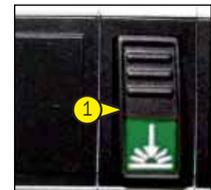


2 - ATTACHMENT EASY HYDRAULIC CONNECTION

For easily connecting and disconnecting the attachment.

OPERATION

- Press for two seconds on push-button 1 to release the attachment circuit hydraulic pressure.
- Connect or disconnect the rapid connectors of the hydraulic attachment (see: 4 - OPTIONAL ATTACHMENTS FOR USE WITH THE RANGE: PICKING UP THE ATTACHMENTS).



3 - MAINTENANCE

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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.
the dealer network list is available on manitou web site www.manitou.com

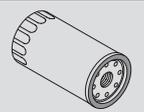
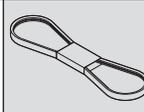
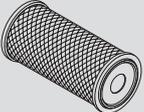
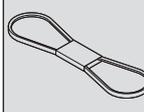
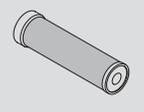
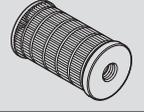
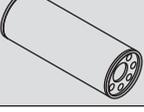
START-UP CHECKLIST

0 = OK 1 = Missing 2 = Incorrect

100 ENGINE	
01	Air filter
02	Fuel tank
03	Fuel lines - Filter
04	Injection or carburetion system
05	Radiator and cooling system
06	Belts
07	Hoses
101 TRANSMISSION	
01	Direction reversal system
02	Gear shift
03	Cut-off pedal
04	Clutch
102 AXLES/TRANSFER GEAR BOX	
01	operation and seal
02	Stop settings
103 HYDRAULIC/HYDROSTATIC CIRCUIT	
01	Tank
02	Pumps and couplings
03	Tightening of connections
04	Lift cylinder(s)
05	Tilt cylinder(s)
06	Attachment cylinder(s)
07	Telescope cylinder(s)
08	Compensation cylinder(s)
09	Steering cylinder(s)
10	Control Valve
11	Balancing valve
104 BRAKE SYSTEM	
01	Service brake and parking brake operation
02	Brake fluid level
105 LUBRICATION AND GREASING	
106 JIB/MANISCOPIC/MANIACCESS ASSEMBLY	
01	Beam and telescope(s)
02	Skid
03	Hinges
04	Carriage
05	Forks
107 MAST ASSEMBLY	
01	Fixed and mobile uprights
02	Carriage
03	Chains
04	Rollers
05	Forks

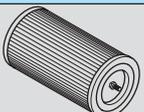
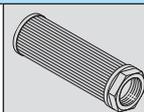
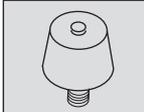
108 ATTACHMENTS	
01	Fitting on machine
02	Hydraulic couplings
109 CABIN/PROTECTOR/ELECTRIC CIRCUIT	
01	Seat
02	Dashboard and radio
03	Sound and visual alarm/safety system
04	Heating/Air conditioning
05	Windscreen wiper/windscreen washer
06	Road horn
07	Reversing horn
08	Road lights
09	Additional lights
10	Rotating beacon light
11	Battery
110 WHEEL	
01	Rims
02	Tyre/Pressure
111 SCREWS	
112 FRAME AND BODYWORK	
113 PAINTING	
114 GENERAL OPERATION	
115 OPERATOR'S MANUAL	
116 CUSTOMER INSTRUCTIONS	

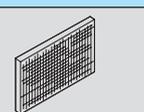
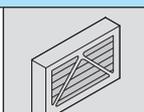
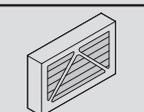
FILTERS CARTRIDGES AND BELTS

I.C. ENGINE			
	I.C. ENGINE OIL FILTER Part number: 709666 Change: 500 H		ALTERNATOR BELT Part number: 739731
	DRY AIR FILTER CARTRIDGE Part number: 723755 Clean: 50 H* Change: 500 H*		COMPRESSOR BELT (OPTION AIR CONDITIONING) Part number: 732364
	SAFETY DRY AIR FILTER CARTRIDGE Part number: 723574 Change: 1000 H*		AUTOMATIC VACUUM-CLEANING PRE-FILTER (OPTION) Part number: 688091
	FUEL FILTER CARTRIDGE Part number: 709664 Change: 500 H		
	FUEL PRE-FILTER Part number: 709667 Change: 500 H		
	SAFETY CARTRIDGE FUEL PRE-FILTER Part number: 709663 Change: 500 H		

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

TRANSMISSION			
	GEAR BOX OIL FILTER Part number: 485695 Change: 500 H		

HYDRAULIC			
	HYDRAULIC RETURN OIL FILTER CARTRIDGE Part number: 724670 Change: 500 H		SUCTION STRAINER FOR HYDRAULIC OIL TANK Part number: 513752 Clean: 1000 H
	FILTER CAP FOR HYDRAULIC OIL TANK Part number: 586106 Change: 1000 H		SUCTION STRAINER FOR HYDRAULIC OIL TANK Part number: 448269 Clean: 1000 H

CAB			
	FILTRE AIR EXTERNE CABINE Part number: 882133 Clean: 500 H		CAB VENTILATION FILTER (WITH AIR CONDITIONING) Part number: 780978 Clean: 50 H Change: 250 H
	CAB VENTILATION FILTER (WITHOUT AIR CONDITIONING) Référence: 22552 Nettoyé: 500 H		

LUBRICANTS AND FUEL



USE THE RECOMMENDED LUBRICANTS AND FUEL:

- For topping up, oils may not be miscible.

- For oil changes, MANITOU oils are perfectly appropriate.

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				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
I.C. ENGINE	15 + 0,8 Litres	MANITOU Oil API CH4	5 l	661706
			20 l	582357
			55 l	582358
			209 l	582359
			1000 l	490205
COOLING CIRCUIT	16 Litres	Cooling liquid (protection - 25°)	2 l	788245
			5 l	788246
			20 l	788247
			210 l	788248
		Cooling liquid (protection - 35°)	20 l	788249
			210 l	788250
1000 l	788251			
FUEL TANK	200 Litres	Diesel fuel (*)		

TRANSMISSION				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
GEAR BOX	1,7 Litres	MANITOU Oil Automatic transmission	1 l	62148
			20 l	546332
			55 l	546217
			209 l	546195
			1000 l	720148
TRANSMISSION UNIVERSAL JOINT		MANITOU Grease BLUE multi-purpose	400 g	161589
			1 kg	720683
			5 kg	554974
			20 kg	499233
			50 kg	489670

BOOM			
ORGANS TO BE LUBRICATED	RECOMMENDATION	PACKAGING	PART NUMBER
BOOM PADS	MANITOU Grease BLACK multi-purpose	400 g	545996
		1 kg	161590
		5 kg	499235
GREASING OF THE BOOM	MANITOU Grease BLUE multi-purpose	400 g	161589
		1 kg	720683
		5 kg	554974
		20 kg	499233
		50 kg	489670

HYDRAULIC				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
HYDRAULIC OIL TANK	200 Litres	MANITOU Oil Hydraulic ISO VG 46	5 l	545500
			20 l	582297
			55 l	546108
			209 l	546109

CAB				
ORGANS TO BE LUBRICATED		RECOMMENDATION	PACKAGING	PART NUMBER
CAB DOOR		MANITOU Grease BLUE multi-purpose	400 g	161589
			1 kg	720683
			5 kg	554974
			20 kg	499233
			50 kg	489670
WINDSCREEN WASHER TANK		Windscreen washer fluid	1 l	490402
			5 l	486424

FRONT AXLE				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
FRONT AXLE DIFFERENTIAL	17 Litres	MANITOU Oil Special immersed brakes	5 l	545976
			20 l	582391
			209 l	546222
			1000 l	720149
FRONT WHEELS REDUCERS	1,9 Litre	MANITOU Oil SAE80W90 Mechanical transmission	2 l	499237
			5 l	720184
			20 l	546330
			55 l	546221
FRONT WHEELS REDUCERS PIVOTS FRONT AXLE OSCILLATION		MANITOU Grease BLACK multi-purpose	209 l	546220
			400 g	545996
			1 kg	161590
			5 kg	499235

REAR AXLE				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
REAR AXLE DIFFERENTIAL	14,5 Litres	MANITOU Oil Special immersed brakes	5 l	545976
			20 l	582391
			209 l	546222
			1000 l	720149
REAR WHEELS REDUCERS	1,9 Litre	MANITOU Oil SAE80W90 Mechanical transmission	2 l	499237
			5 l	720184
			20 l	546330
			55 l	546221
REAR WHEELS REDUCERS PIVOTS REAR AXLE OSCILLATION		MANITOU Grease BLACK multi-purpose	209 l	546220
			400 g	545996
			1 kg	161590
			5 kg	499235

CHASSIS				
ORGANS TO BE LUBRICATED		RECOMMENDATION	PACKAGING	PART NUMBER
TILTING CORRECTOR		MANITOU Grease BLUE multi-purpose	400 g	161589
			1 kg	720683
			5 kg	554974
			20 kg	499233
			50 kg	489670

SERVICING SCHEDULE

(1): MANDATORY 500 HOUR OR 6 MONTH SERVICE

This service must be carried out after approximately the first 500 hours of operation or within the 6 months following the start-up of the machine (whichever occurs first).

A = ADJUST, C = CHECK, G = GREASE, N = CLEAN,
P = BLEED, R = REPLACE, V = DRAIN

	PAGE	 (1)	DAILY OR EVERY 10 HOURS SERVICE	EVERY 50 HOURS SERVICE	EVERY 250 HOURS SERVICE	EVERY 500 HOURS SERVICE OR 6 MONTHS	EVERY 1000 HOURS SERVICE OR 1 YEAR	EVERY 2000 HOURS SERVICE OR 2 YEARS	EVERY 4000 HOURS SERVICE	OCCASIONALLY
I.C. ENGINE										
I.C. engine oil level	3-12	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Cooling liquid level	3-12	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Fuel level	3-13	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Fuel pre-filter	3-13	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Dry air filter cartridge	3-18/29	R		C/N	<<<	R	<<<	<<<	<<<	
Radiator cores	3-18	N		N	<<<	<<<	<<<	<<<	<<<	
Condenser core (OPTION Air conditioning)	3-19	C/N		C/N	<<<	<<<	<<<	<<<	<<<	
Alternator/crankshaft belt tension	3-24	C/A			C/A	<<<	<<<	<<<	<<<	
I.C. engine oil	3-26	V				V	<<<	<<<	<<<	
I.C. engine oil filter	3-26	R				R	<<<	<<<	<<<	
Fuel pre-filter	3-29	R				R	<<<	<<<	<<<	
Fuel filter	3-29	R				R	<<<	<<<	<<<	
Fuel tank	3-33						N	<<<	<<<	
Safety dry air filter cartridge	3-33						R	<<<	<<<	
I.C. engine silent blocks							C**	<<<	<<<	
I.C. engine rates							C**	<<<	<<<	
Valves clearances	3-28	C**					C**	<<<	<<<	
Cooling liquid	3-36							V	<<<	
Radiator								C**	<<<	
Water pump and the thermostat								C**	<<<	
Alternator and the starter motor								C**	<<<	
Turbocompressor								C**	<<<	
Fuel system										P
TRANSMISSION										
Gear box oil level	3-25	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Oil filter transmission	3-19	R				R	<<<	<<<	<<<	
Gear box oil	3-31	V					V	<<<	<<<	
Silentblocks in the gear box	3-34						C**	<<<	<<<	
TYRES										
Tyres pressure	3-14	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Wheel nuts torque	3-14	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Condition of wheels and tyres							C**	<<<	<<<	
Wheel	3-38									R
BOOM										
Boom pads	3-14		G*	<<<	<<<	<<<	<<<	<<<	<<<	
Boom	3-20	G		G	<<<	<<<	<<<	<<<	<<<	
Boom pads wear							C**	<<<	<<<	
Condition of boom unit								C**	<<<	
Bearings and articulation rings								C**	<<<	
HYDRAULIC										
Hydraulic oil level	3-21	C		C	<<<	<<<	<<<	<<<	<<<	
Hydraulic return oil filter cartridge	3-31	R				R	<<<	<<<	<<<	
Hydraulic oil	3-34						V	<<<	<<<	
Suction strainer for hydraulic oil tank	3-34						N	<<<	<<<	
Filter cap for hydraulic oil tank	3-34						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

	PAGE	 (1)	DAILY OR EVERY 10 HOURS SERVICE	EVERY 50 HOURS SERVICE	EVERY 250 HOURS SERVICE	EVERY 500 HOURS SERVICE OR 6 MONTHS	EVERY 1,000 HOURS SERVICE OR 1 YEAR	EVERY 2,000 HOURS SERVICE OR 2 YEARS	EVERY 4,000 HOURS SERVICE	OCCASIONALLY
BRAKE										
Brake system							P**	<<<	<<<	
Brake system pressure							C**	<<<	<<<	
Brake							A**	<<<	<<<	
STEERING										
Steering								C**	<<<	
Steering swivel joints									C**	
CAB										
Windscreen washer liquid level	3-22	C		C	<<<	<<<	<<<	<<<	<<<	
Cab door	3-22	G		G	<<<	<<<	<<<	<<<	<<<	
Cab ventilation filter (OPTION Air conditioning)	3-22/26	R		N	R	<<<	<<<	<<<	<<<	
Cab ventilation filters	3-34	N				N	<<<	<<<	<<<	
Seat belt							C	<<<	<<<	
Condition of the rear view mirrors							C**	<<<	<<<	
Structure							C**	<<<	<<<	
ELECTRICITY										
Longitudinal stability limiter and warning device	3-15/41	C	C	<<<	<<<	<<<	<<<	<<<	<<<	XXX
Condition of wiring harness and cables							C**	<<<	<<<	
Lights and signals							C**	<<<	<<<	
Warning indicators							C**	<<<	<<<	
Front headlights	3-39									A
FRONT AXLE										
Front wheels reducers pivots	3-23	G		G	<<<	<<<	<<<	<<<	G/C**	
Front axle oscillation	3-23	G		G	<<<	<<<	<<<	G/C**	<<<	
Tilting corrector	3-25	G		G	<<<	<<<	<<<	G/C**	<<<	
Front axle differential oil level	3-25	C			C	<<<	<<<	<<<	<<<	
Front wheels reducers oil level	3-25	C			C	<<<	<<<	<<<	<<<	
Front axle differential oil	3-32	V				V	<<<	<<<	<<<	
Front wheels reducers oil	3-32	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	3-25	G		G	<<<	<<<	<<<	<<<	G/C**	
Rear axle oscillation	3-25	G		G	<<<	<<<	<<<	G/C**	<<<	
Rear axle differential oil level	3-28	C			C	<<<	<<<	<<<	<<<	
Rear wheels reducers oil level	3-28	C			C	<<<	<<<	<<<	<<<	
Rear axle differential oil	3-35	V				V	<<<	<<<	<<<	
Rear wheels reducers oil	3-38	V					V	<<<	<<<	
Wearing of rear axle brake discs									C**	
Rear wheels reducers universal joint									C**	
Rear wheels reducers clearance									C**	
CHASSIS										
Structure							C**	<<<	<<<	
Bearings and articulation rings								C**	<<<	
ATTACHMENTS										
Forks wear		C**					C**	<<<	<<<	<<<
Attachment carriage							C**	<<<	<<<	
Condition of attachments							C**	<<<	<<<	
LIFT TRUCK										
Tow the lift truck	3-42									XXX
Sling the lift truck	3-43									XXX
Transport the lift truck on a platform	3-44									XXX

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

(**): Consult your dealer.

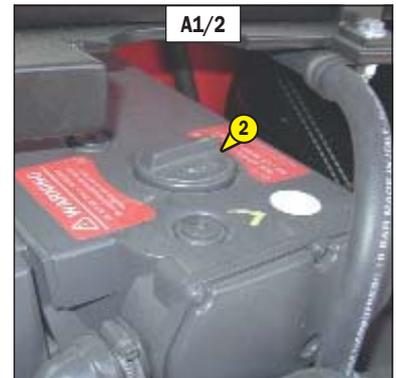
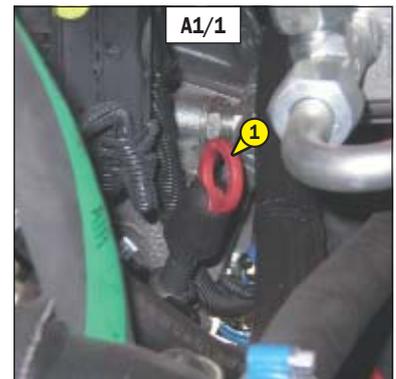
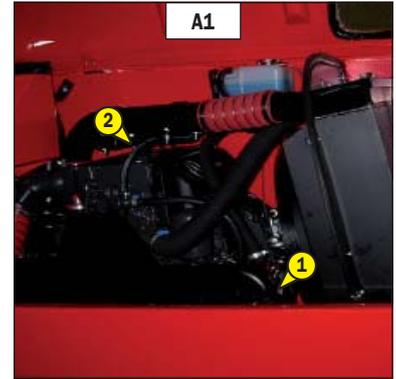
A - DAILY OR EVERY 10 HOURS SERVICE

A1 - I.C. ENGINE OIL LEVEL

CHECK

Place 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 bonnet.
- Remove the dipstick 1 (fig. A1-A1/1).
- 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-A1/2).
- Check visually that there is no leakage or seepage of oil in the I.C. engine.

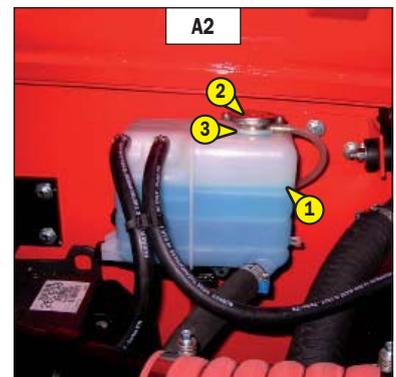


A2 - COOLING LIQUID LEVEL

CHECK

Place 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 bonnet.
- 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 facilitate the setting and the removal of the radiator cap.
- Check visually that there is no leakage in the radiator and pipes.



⚠ 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 (80°C). In an emergency, you can use 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

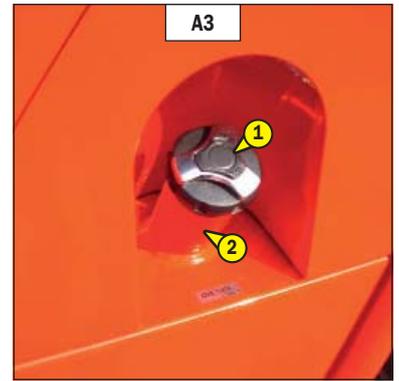
Keep the fuel tank full, to reduce as much as possible any condensation due to the atmospheric conditions.

- 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 in the tank and pipes.

 **Never smoke or approach with a flame during filling operations or when the tank is open. Never refill while I.C. engine is running.**

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

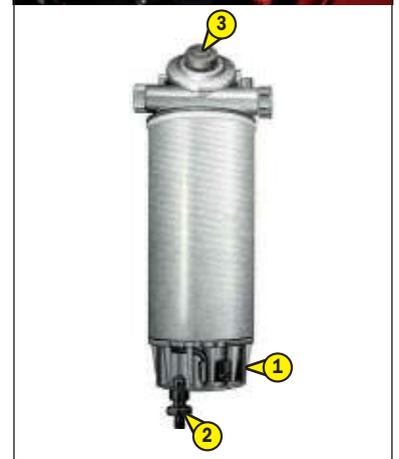
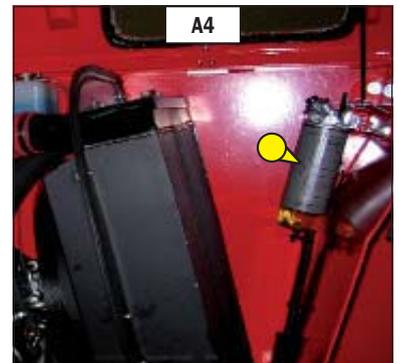
NOTE: A locking tank cap is available as an OPTION.



A4 - FUEL PRE-FILTER

CHECK

- Open the I.C. engine bonnet.
- 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.
- Pressurise the circuit with the hand pump 3 (fig. A4/2).



A5 - TYRES PRESSURE AND WHEEL NUTS TORQUE

CHECK

- Check the condition of the tyres, to detect cuts, protuberances, 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 tyres: 630 N.m \pm 15%
 - Rear tyres: 630 N.m \pm 15%
- Check and adjust the tyre pressures if necessary (see: 2 - DESCRIPTION: FRONT AND REAR TYRES).

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

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

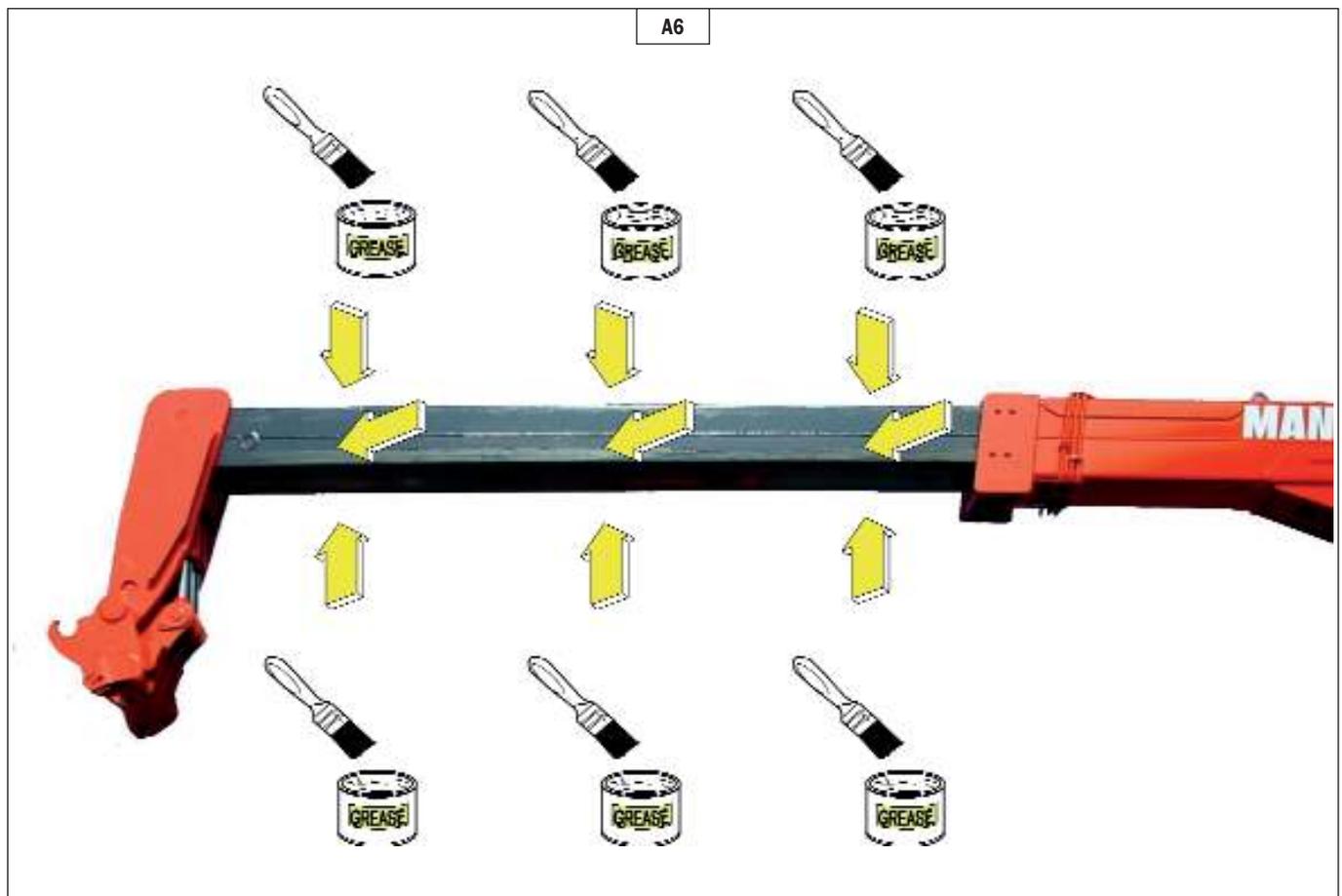
A6 - BOOM PADS

CLEAN - GREASE

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

- Extend the boom completely.
- With a brush, apply a coat of grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) on the 4 sides of the telescope(s) (fig. A6).
- Telescope the boom several times in order to spread the coat of grease evenly.
- Remove the surplus of grease.

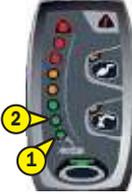
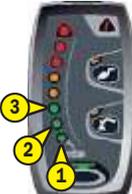
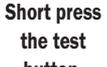
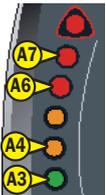
! If the lift truck is used in an abrasive environment (dust, sand, coal...) Use lubricating varnish (MANITOU reference: 483536). In this respect, consult your dealer.



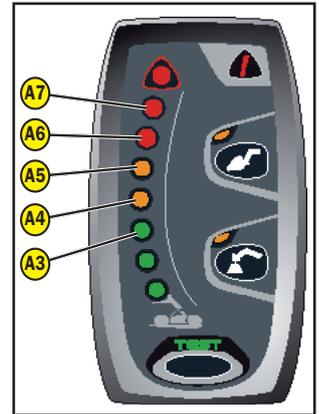
- These tests are essential for checking the correct operation and adjustment of the different components of the device.

! Use the test button  only when requested to do so, performing short presses (less than 1 second) and long presses (2 seconds) as instructed. If in doubt during the test procedure, exit cleanly by short pressing the "BUCKET" MODE  or "SUSPENDED LOAD" MODE button .

Long press on the test button. 

<p>STAGE 1</p>	 <ul style="list-style-type: none"> - An audible beep. - First green led flashing. - Test button lit. 	<p>→</p>  <ul style="list-style-type: none"> - Place the lift truck without any attachment, with the jib fully retracted and raised. 	<p>→</p> <p>Short press the test button.</p> 	<p>→</p> <p>TEST OK</p> <ul style="list-style-type: none"> - One audible beep and progresses to stage 2. <p>TEST NOT OK</p> <ul style="list-style-type: none"> - Two audible beeps and lighting of the fault warning light . - Exit test mode. - Go to stage 4.
↓				
<p>STAGE 2</p>	 <ul style="list-style-type: none"> - First green led continuously lit. - Second green led flashing. - Test button lit. 	<p>→</p>  <ul style="list-style-type: none"> - Lower the jib with the engine running at full revs and the hydraulic control at the maximum setting. Lowering slows until movement is cut-off. 	<p>→</p> <p>Short press the test button.</p> 	<p>→</p> <p>TEST OK</p> <ul style="list-style-type: none"> - One audible beep and progresses to stage 3. <p>TEST NOT OK</p> <ul style="list-style-type: none"> - Two audible beeps and lighting of the fault warning light . - Exit test mode. - Go to stage 4.
↓				
<p>STAGE 3</p>	 <ul style="list-style-type: none"> - First and second green leds continuously lit. - Third green led flashing. - Test button lit. 	<p>→</p> <ul style="list-style-type: none"> - Lower the jib until the movement is cut-off. - Request the following, in order: a reverse tilt, a forward tilt (dumping) and a telescope extension. None of these 3 movements should be possible. 	<p>→</p> <p>Short press the test button.</p> 	<p>→</p> <p>TEST OK</p> <ul style="list-style-type: none"> - Conformity of aggravating movement cut-off. - Exit test mode. All the LEDs will light for 2 seconds and an audible beep will be sounded. <p>TEST NOT OK</p> <ul style="list-style-type: none"> - Fault warning light comes on . - Exit test mode. - Go to stage 4.
↓				
<p>STAGE 4</p>	 <ul style="list-style-type: none"> - The fault warning light remains permanently on until the error is repaired. 	<p>→</p> <ul style="list-style-type: none"> - The fault indicator  and a beep indicate a fault. - Press the button  briefly to view the error code. - If there are several error codes, press the button  briefly several times to loop through the error codes. <p>NOTE: A defective fuse can generate several error codes. If this is the case, check the fuses (see: 2 - DESCRIPTION: 11 - FUSES AND RELAYS IN THE CAB)</p>  <ul style="list-style-type: none"> - If error code "A3" is displayed", the problem may be resolved by resetting the longitudinal stability limiter and warning device (see: 3 - MAINTENANCE: G - OCCASIONAL MAINTENANCE). - Contact your dealer, stating the error code or error codes (see following table). <p>NOTE: For the stage 3 test, specify the non-conforming aggravating hydraulic movements, if necessary.</p>		

The error codes are indicated by leds A3 to A7 on the warning device and longitudinal stability limiter.



ERROR CODES					
DESIGNATIONS	LEDS				
	A7	A6	A5	A4	A3
Regulating fault (fault detected during the test).	☀	☀	☀	☀	☀
Lowering regulating valve fault.	☀	☀	☀	☀	☐
Safety valve cut-off fault (fault detected during the test).	☀	☀	☀	☐	☀
Safety valve fault.	☀	☀	☀	☐	☐
Gauge calibration fault (fault detected during the test). the problem may be resolved by resetting the longitudinal stability limiter and warning device (see: 3 - MAINTENANCE: G - OCCASIONAL MAINTENANCE).	☀	☀	☐	☀	☀
Angle calibration fault (fault detected during the test).	☀	☀	☐	☀	☐
Inclination cut-off valve fault.	☀	☀	☐		☀
Strain gauge fault.	☀	☐	☀	☀	☀
Jib angle sensor fault.	☀	☐	☀	☀	☐
Telescope or attachment control fault.	☀	☐	☀	☐	☀
Telescope retracted sensor fault.	☀	☐	☀	☐	☐
Computer earth output fault.	☀	☐	☐	☀	☀
Aggravating hydraulic movement cut-off disable fault.	☀	☐	☐	☀	☐
Stability indicator fault.	☐	☀	☀	☀	☐
Electronic handling controller fault.	☐	☀	☀	☐	☀
Hydraulic control lever control setting fault.	☐	☀	☀	☐	☐
Transmission cut-off output fault.	☐	☀	☐	☀	☀
Electronic handling controller supply fault.	☐	☀	☐	☐	☀
Telescope retracted sensor fault (fault detected during the test).	☐	☀	☐	☐	
Forward tilt cut-off valve fault. (according to model)	☐	☐	☀	☀	☀
Jib head electrovalve fault. (OPTION)	☐	☐	☀	☀	
Attachment easy hydraulic connection fault button. (OPTION)	☐	☐	☀	☐	☀
Electrovalve attachment hydraulic control and electrical jib provision fault button. (OPTION)	☐	☐	☀	☐	☐
Attachment forced operation indicator fault. (OPTION)	☐	☐	☐	☀	☀
Electric handling controller 10V output fault.	☐	☐	☐	☀	☐
Forced operation button fault. (OPTION)	☐	☐	☐	☐	☀

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 periodicity of the cartridge must be reduced.

⚠ 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 changed. 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 3 bar) directed from the top to the bottom and from the inside towards the outside at a minimum distance of 30 mm from the cartridge wall.
- Cleaning is completed when there is no more dust on the cartridge.

⚠ Respect the safety distance of 30 mm between the air jet and the cartridge to 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 (MANITOU reference: 479292).
- Check visually the outer condition of the air filter and its mounts. Verify the condition of the hoses and their mounts also.

⚠ Never clean the dry air filter cartridge by washing it in liquid. Do not clean by any means the safety cartridge located inside the filter cartridge, change it for a new one if it is clogged or damaged.



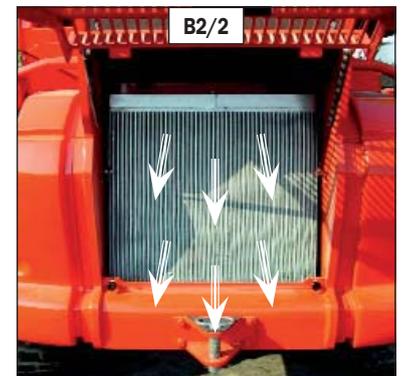
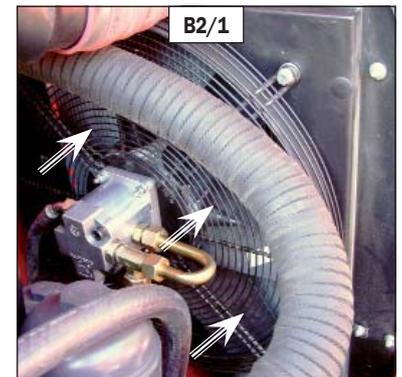
B2 - RADIATOR CORES

CLEAN

⚠ The compressed air can cause accidents. While using compressed air, wear a protective device for the face protective clothing. The maximum pressure of the compressed air at the nozzle outlet must be 2 bar (30 PSI).

Check the radiator (water Fig. B2/1; oil Fig. B2/2) for: damaged fins, corrosion, dirt, grease, insects, leaves, oil or other debris.

- Direct the compressed air jets in the direction of the arrows.
- Keep the air nozzle at a distance of about 6mm from the radiator fins.
- Also use pressurized water to soften mud or solid debris.
- The maximum water pressure must be less than 2.7 bar (40 PSI).
- To remove oil and grease, use a degreaser and steam. Clean both sides of the radiator mass.
- Wash the radiant mass with detergent and boiling water. Rinse the radiant mass thoroughly with clean water.
- After cleaning the radiator/s, start the I.C. engine, keeping it running at minimum for about five minutes.
- Bring the I.C. engine to maximum operating speed without load (this operation helps to remove debris and to dry the radiant mass). Gradually reduce the I.C. engine speed to the minimum and stop it.
- Use a light to check behind the radiant mass to see if it is clean.
- If necessary, clean again.
- Check to see if fins are damaged. Bent fins can be straightened using a "comb".
- Check to make sure the following elements are in good condition. welded parts, mounting brackets, piping, connections, clamps and gaskets.
- Carry out repairs, if necessary.



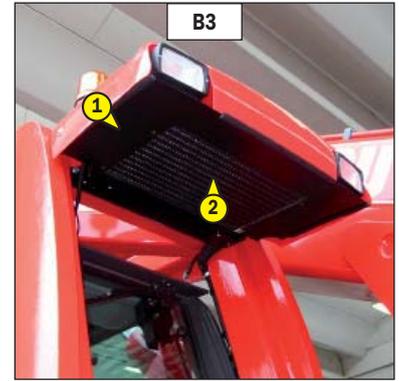
B3 - CONDENSER CORE (OPTION AIR CONDITIONING)

CHECK - CLEAN

⚠ In a polluting atmosphere, clean the radiator core every day. Do not use a water jet or high-pressure steam as this could damage the condenser 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.

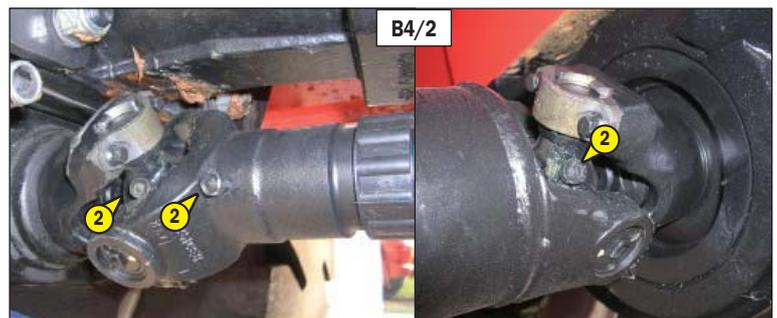
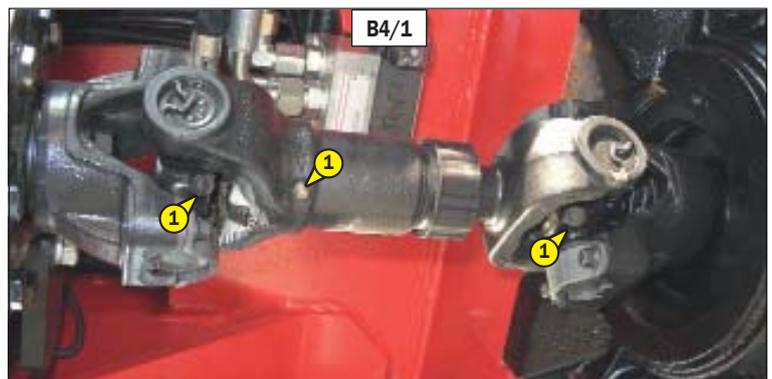


B4 - TRANSMISSION UNIVERSAL JOINT

GREASE

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

- 1 - Lubricators of the universal joint Transmission/Front axle (3 lubricators) (fig. B4/1).
- 2 - Lubricators of the universal joint Transmission/Rear axle (3 lubricators) (fig. B4/2).

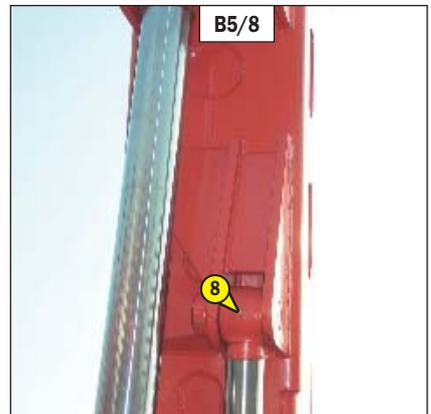
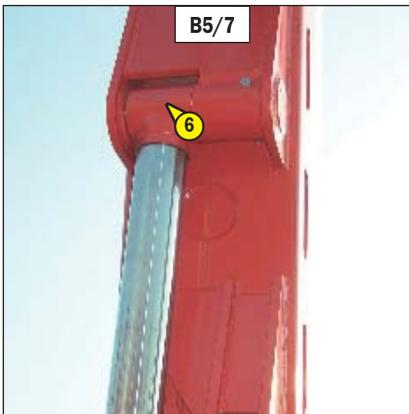
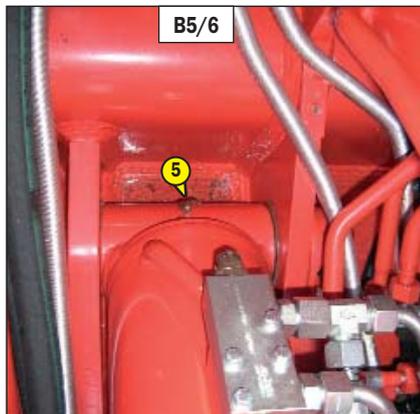
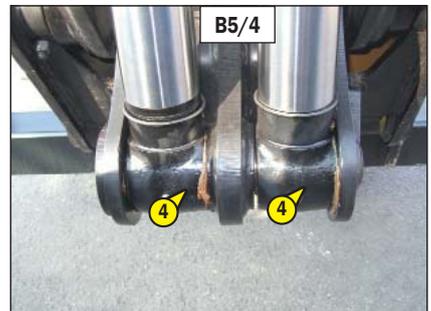
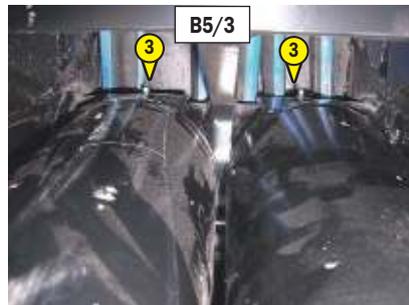
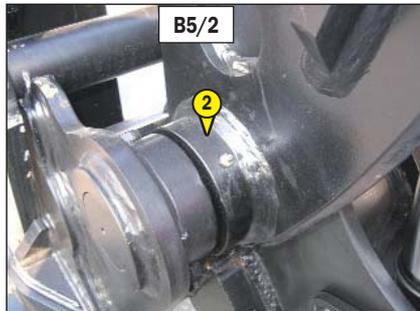
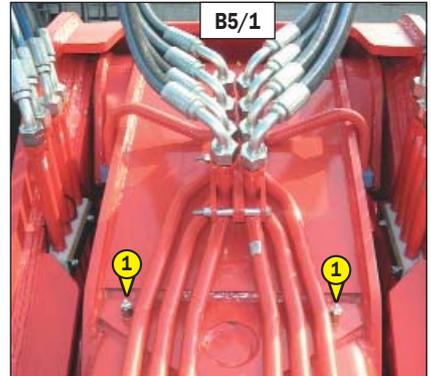


To be carried out weekly, if the lift truck has been operated for less than 50 hours during the week.

⚠ In the event of prolonged use in an extremely dusty or oxidising 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 boom 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 - Lubricator of the lifting cylinder foot axle (1 lubricator) (fig. B5/5).
- 6 - Lubricator of the lifting cylinder head axle (1 lubricator) (fig. B5/6).
- 7 - Lubricator of the compensation cylinder foot axle (1 lubricator) (fig. B5/7).
- 8 - Lubricator of the compensation cylinder head axle (1 lubricator) (fig. B5/8).



B6 - HYDRAULIC OIL LEVEL

CHECK

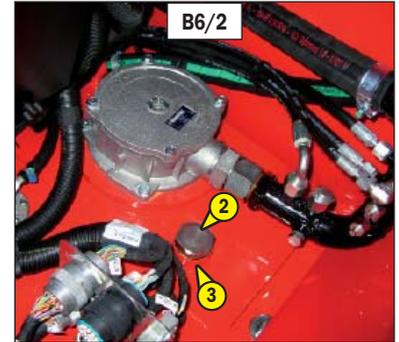
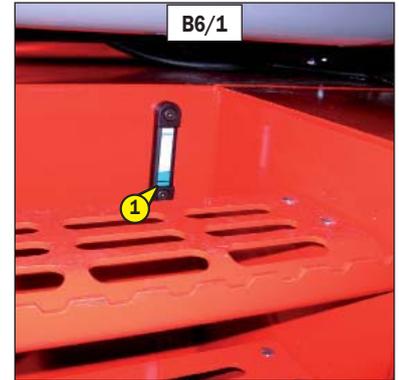
Place the lift truck on level ground with the I.C. engine stopped, and the boom retracted and lowered as far as possible.

- Refer to the gauge 1 (fig. B6/1).
- The oil level is correct when it is 10 mm under the maximum the upper and lower marks.
- 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).

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

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

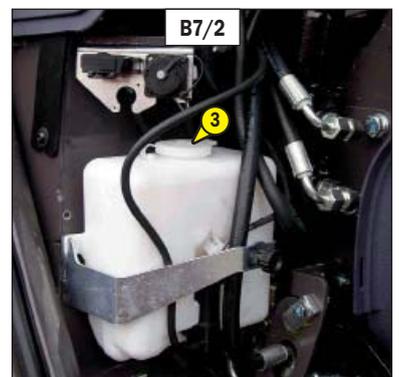
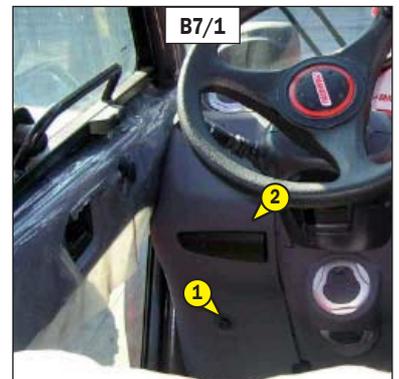
Always maintain the oil level at maximum as cooling depends on the oil flowing through the tank.



B7 - WINDSCREEN WASHER LIQUID LEVEL

CHECK

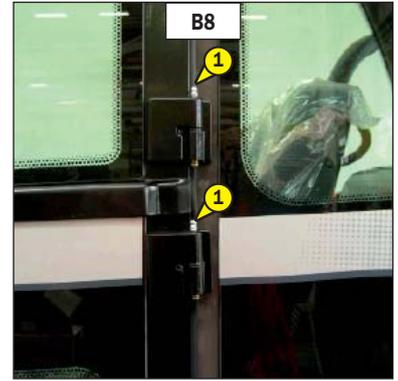
- Loosen screw 1 (fig. B7/1) and remove the access panel for braking oil tank and windscreen washer tank 2 (fig. B7/1).
- Visually check the level.
- If necessary add windscreen washer liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 3 (fig. B7/2).



B8 - CAB DOOR

GREASE

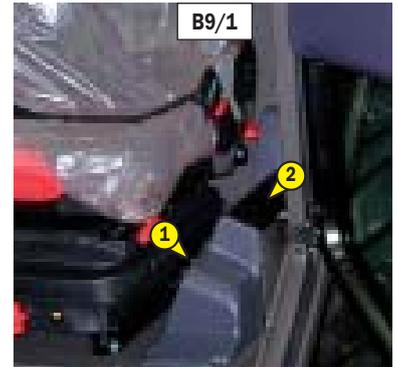
- Clean and lubricate the points 1 (4 lubricators) (fig. B8) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.



B9 - CAB VENTILATION FILTER (OPTION AIR CONDITIONING)

CLEAN

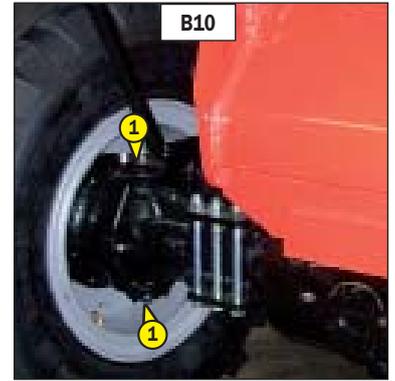
- Unscrew the thumbscrew 1 (fig. B9/1) and remove protective guard back 2 (fig. B9/1).
- Lift out cabin ventilation filter 3 (fig. B9/2).
- Clean the filter using a compressed air jet.
- Check its condition and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Refit the filter and protective casing.



B10 - FRONT AND REAR WHEEL REDUCER PIVOTS

GREASE

- Clean and lubricate the points 1 (8 lubricators) (fig. B10) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.



B11 - FRONT AXLE OSCILLATION

GREASE

- Clean and lubricate the points 1 (2 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. B12) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

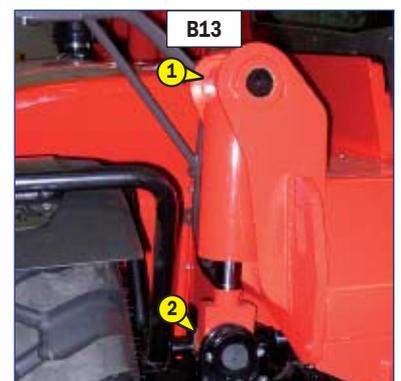


B13 - TILTING CORRECTOR

GREASE

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

- 1 - Lubricator of the tilting corrector cylinder foot axle (1 lubricator) (fig. B13).
- 2 - Lubricator of the tilting corrector cylinder head axle (1 lubricator) (fig. B13).



C - EVERY 250 HOURS SERVICE

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

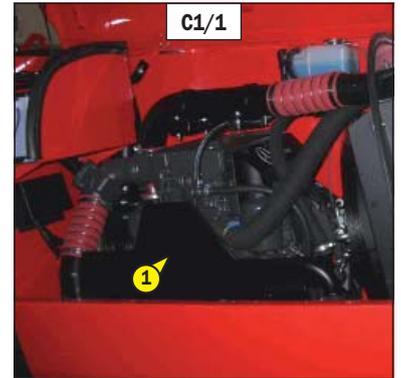
C1 - POLY-V RIBBED BELT TENSION

CHECK - ADJUST

Open the engine hood and remove crank case 1 (Fig.C1).

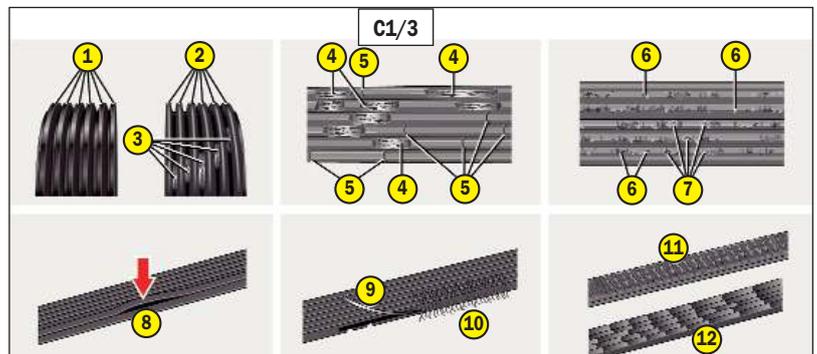
Check for the presence of damage on ribbed belt 2 (Fig.C1/2) moving one section at a time; to carry out this check:

- Make a mark with chalk on the ribbed belt;
- Make the engine run in bursts or move the ribbed belt by means of a rotation device up to the chalk mark;
- Replace ribbed belt 2 (Fig.C1/2) if one of the following types of damage mentioned are present (Fig.C1/3).



The damage (Fig.C1/3)

- 1 - New belt (comparison; ribbing)
- 2 - Wear on the sides: wedge-shaped ribbing
- 3 - Frame visible at the bottom of the ribbing
- 4 - Ribbing broken
- 5 - Transverse cracks in different ribs
- 6 - Rubber nodules at the bottom of the belt
- 7 - Dirt or rubble deposits
- 8 - Ribbing detached from the bottom of the belt
- 9 - Wires of the frame torn on the sides
- 10 - Outer wires of the frame frayed
- 11 - Transverse cracks on the back
- 12 - Transverse cracks in different ribs

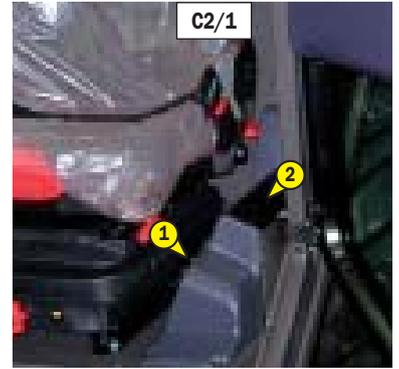


For assembling and disassembling the ribbed belt, see point **D3**.

C2 - CAB VENTILATION FILTER (OPTION AIR CONDITIONING)

CHANGE

- Unscrew thumbscrew 1 (fig. C2/1) and remove protective guard back 2 (fig. C2/1).
- Lift out cabin ventilation filter 3 (fig. C2/2) and replace it with a new one (see: 3 - MAINTENANCE: FILTERS AND BELTS).
- Refit the protective casing.

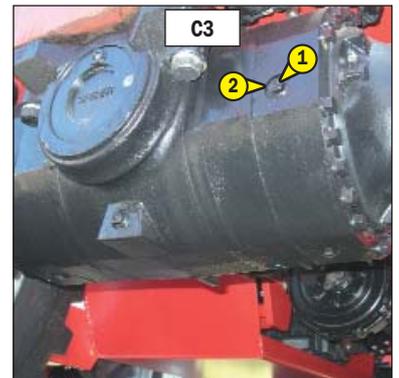


C3 - FRONT AND REAR DIFFERENTIAL OIL LEVEL

CHECK

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

- Remove level plug 1 (fig. C3). 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. C3).
- Replace and tighten the level plug 1 (fig. C3) (tightening torque 34 to 49 N.m).
- Repeat this operation for the rear axle differential.

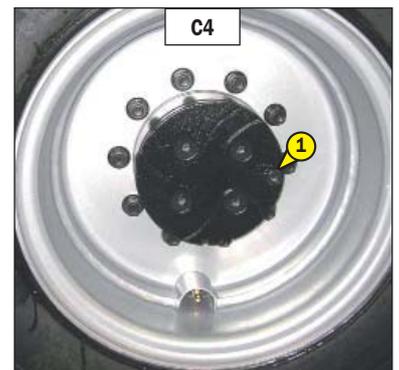


C4 - FRONT AND REAR WHEELS REDUCERS OIL LEVEL

CHECK

Place 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. C4) in the horizontal position.
- 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. C4) (tightening torque 34 to 49 N.m).
- Repeat this operation on each rear wheel reducer.

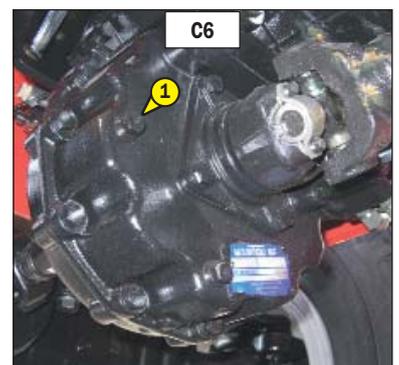


C6 - GEAR BOX OIL LEVEL

CHECK

Position the lift truck on a horizontal surface, with the combustion engine switched off.

- Remove level plug 1 (Fig. C5), the oil must reach the level of the opening.
- Top up with oil, if necessary (See the "LUBRICANTS" Table).
- Refit and retighten level plug 1 (Fig. C5).



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

Change the oil only with the engine at operating temperature.

ENGINE OIL FILTER

Unscrew the threaded oil filter cap using a 36mm pipe wrench. Drain the oil out of the filter casing.

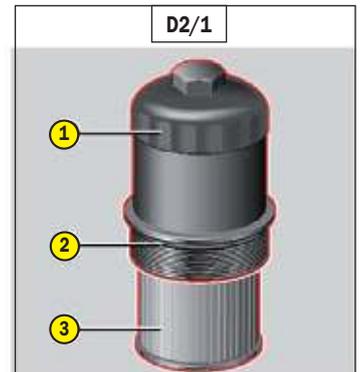
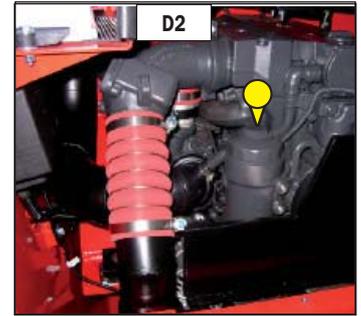
Remove threaded cap "1" (fig. D2/1) together with oil filter cartridge "3" (Fig. D2/1) and release cartridge "3" (Fig. D2/1) by pressing on the sides of the lower edge.

Make sure no foreign bodies enter the filter casing. The filter casing must not be wiped with cloth or anything similar.

Change sealing ring "2" (Fig. D2/1) present on threaded cap "1" (Fig. D2/1). Grease sealing ring "2" slightly (Fig. D2/1).

Introduce the new cartridge "3" (fig. D2/1) in threaded cap "1" (Fig. D2/1) and press to fit it in place.

Screw the threaded cap on the oil filter casing and lock it tight.
Tightening torque: 40 Nm.



DRAIN THE ENGINE OIL

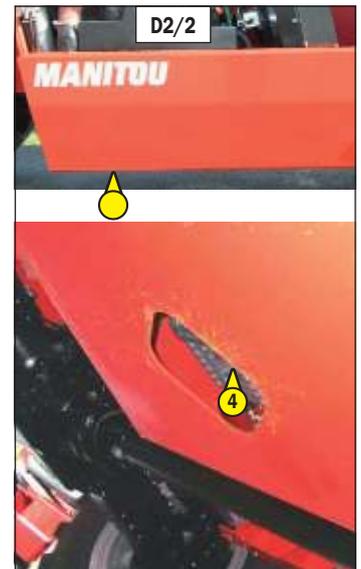
Place a suitable container under the oil drainage screw "4" (fig. D2/2) present on the lower part of the oil cup.

Unscrew the drainage screw carefully and allow the oil to flow out.

 **The engine oil and the filter must be disposed off in compliance with the legal prescriptions applicable in the place where the engine is used.**

Refit the drainage screw with a new sealing ring and tighten it.

Tightening torque:
M20 x 1.5 – 60 Nm
M26 x 1.5 – 85 Nm



CHANGE THE ENGINE OIL

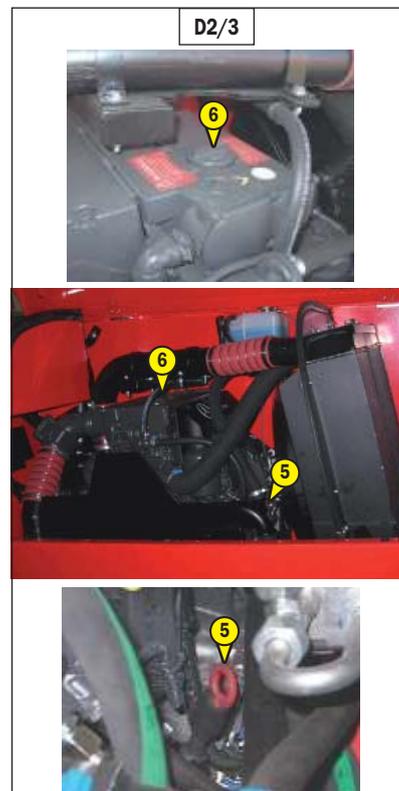
Pour fresh oil into the engine through filler plug "5" (fig. D2/3), until the level reaches the max. notch on level rod "6" (Fig. D2/3).

Start up the engine at minimum speed and observe the oil low pressure indicator.

Keep the engine running at minimum speed until the low pressure indicator switches off. Switch off the engine immediately if the low pressure indicator does not switch off after about 10 seconds and check for the cause of the oil pressure failure in the engine.

Check the oil filter seal and the discharge screw seal.

About 5 minutes after switching off the engine, check the oil level and, if necessary, top up with oil up to the max. notch on level rod "6" (Fig. D2/3).



D3 - POLY-V RIBBED BELT

REPLACER

Replace the ribbed V-belt if one of the following types of damage illustrated is present (C1/3).

Take great care while disassembling and assembling the ribbed V-belt, keeping the fingers well out of the area between the pulley and the belt.

Insert release lever "2" (fig. D3) using a 17 mm wrench on the hex head screw of the belt tightener roller "1" (Fig. D3) .

Tip the belt-tightener roller upwards and remove the ribbed V-belt. Reposition the belt-tightener device.

Check to make sure the belt-tightener device and the pulleys are in perfect condition (for example, that there are no damaged bearings on the belt-tightener device, the belt-tightener roller and the return rollers and that the pulley profile is not worn); replace the components if necessary.

Apply the ribbed V-belt (new) on all the pulleys, except on the belt-tightener roller (observe Fig. D3 which shows the route of the ribbed V-belt).

Rise the belt-tightener roller by means of a lever, apply the ribbed V-belt and then bring the belt-tightener roller backwards.

Remove the release lever and check to ensure the ribbed V-belt is lodged correctly on the pulleys.

Route of the ribbed V-belt (Fig. D3):

- 3 Alternator
- 4 Belt-tightener roller
- 5 Cooling liquid pump
- 6 Engine shaft



Operation to be performed the first time on reaching 500 hours of service, **periodically every 1500 hours of service.**

 **Adjust the valve clearance with the engine cold.**

 **Disassembling/assembling the cover of the head end "1" (Fig. D4).**

If the head covers are excessively smeared, wipe and then remove them.

Disassembly:

Remove the engine vent tube "6" (fig. D4/1) from the cover of the cylinders head "2" (Fig. D4/1).

Unscrew and remove the hollow, hex head screw "3" (fig. D4/1) from the cover of the cylinders head together with sealing ring "4" (Fig. D4/1).

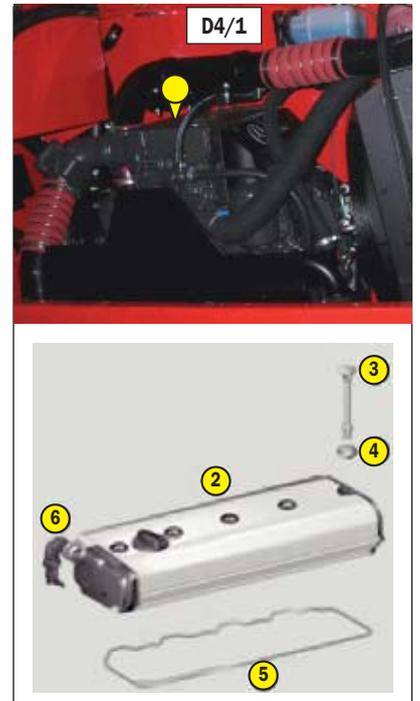
Remove the head cover "2" (Fig. D4/1).

Assembly:

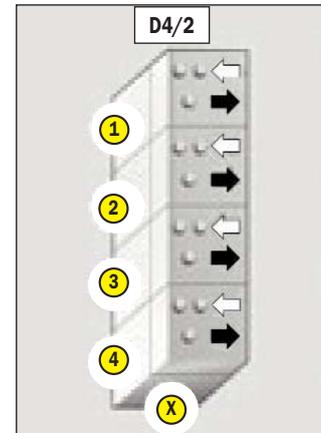
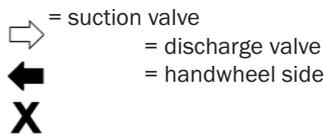
Clean the sealing surfaces of the cylinder heads and relative cover "2" (Fig. D4/1).

Always replace gasket "5" (fig. D4/1) between the cover of the cylinder head and the head. Fit the cylinders head cover "2" (Fig. D4/1).

Insert the hollow, hex head screw "3" (Fig. D4/1) with new sealing rings "4" (Fig. D8/1) and tighten: tightening torque: 30 Nm.



Layout of cylinders and valves (Fig. D4/2)



Checking/adjusting the clearance of the valves

Measure the valve clearance between the rocker arm and the valve stem (discharge valve) or the valves bridge (suction valve) using a thickness gauge (arrow).

The thickness gauge must be able to pass through with slight resistance.

Valve clearance:

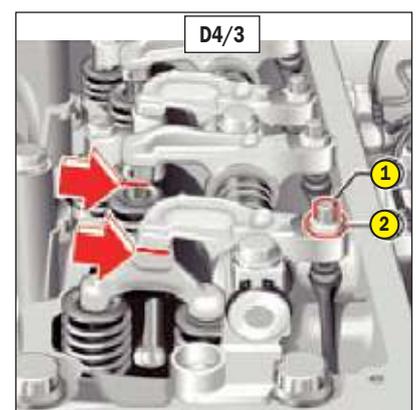
- suction valve = 0.40 mm
- discharge valve = 0.60 mm

To adjust the valve clearance, slacken lock nut "1" (fig. D4/3).

Adjust the valve clearance by turning adjuster screw "2" (Fig. D4/3).

Retighten the lock nut. Tightening torque: 25 Nm.

Check the valve clearance again and correct it if necessary.



D5 - FUEL PREFILTER CARTRIDGE

NETTOYER

- Open the tank cap to discharge the excess pressure inside the system.
 - Clean the outside of the fuel prefilter, after taking care to cover the ducts, hoses and cables which may be present under the prefilter.
 - Unscrew the threaded cap "1" (fig. D5) and remove it from the filter casing together with filter cartridge "2" (Fig. D5).
 - Clean the threaded cap "1" (Fig. D5) and filter cartridge "2" (Fig. D5).
 - Replace the filter cartridge if it is excessively dirty or damaged.
 - Check sealing ring "3" (Fig. D5) for the threaded cap and replace it, if necessary.
 - Grease sealing ring "3" slightly (Fig. D5).
 - Insert the filter cartridge in the threaded cap and screw the latter in the filter casing.
- Tightening torque: 25 Nm.



D6 - FUEL FILTER CARTRIDGE

REPLACER

- Open the tank cap to prevent overpressure from building up inside.
Unscrew threaded cap "1" (Fig. D6) of the fuel filter using a pipe wrench.
Remove threaded cap "1" (Fig. D6) together with cartridge "3" (Fig. F3) of the filter from filter casing "5" (Fig. D6). Drain out the fuel.
Remove the threaded cap "1" (Fig. D6) with filter cartridge "3" (Fig. D6).
Release filter cartridge "3" (Fig. D6) from the retainer by pressing on the sides of the lower edge.
Remove the cup containing the impurities "4" (fig. D6) from filter casing "5" (fig. D6) holding it by the tabs.
The filter casing must never contain water or impurities.

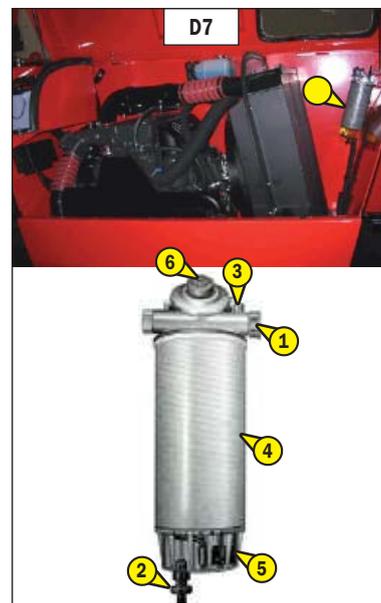
- Clean the threaded cap "1" (Fig. D6) and cup for collecting impurities "4" (Fig. D6).
Replace sealing ring "2" (Fig. D6).
Fit the new filter cartridge "3" (Fig. D6) back in place in threaded cap "1" (Fig. D6).
Grease sealing ring "2" (Fig. D6) and the filter cartridge gaskets slightly.
Insert the cup containing the impurities "4" (fig. D6) in filter casing "5" (Fig. D6) ensuring it is fitted in the correct position.
Screw and tighten the threaded cap with the filter cartridge.
Tightening torque: 25 Nm.
Start up the engine and run it for about one minute to bleed the supply system.
With the engine switched on, check the fuel filter seal.



D7 - FUEL PREFILTER CARTRIDGE WITH WATER SEPARATOR

REPLACER

- Turn knob "1" (Fig. D7) clockwise to close the fuel flow during cartridge replacement.
- Open drainage valve "2" (Fig. D7) and bleed screw "3" (Fig. D7) and collect the water-fuel mixture flowing out of the filter element in a container.
- Unscrew and remove filter cartridge "4" (Fig. D7).
- Unscrew and remove the separator container "5" (fig. D7) from the filter cartridge and clean or replace it, as required.
- Reassemble by following the procedure described in reverse order, tightening elements "4" and "5" (fig. D7) manually on the filter body.
In the assembly phase, use new lubricated sealing rings.
- Close drainage valve "2" (Fig. D7).
- Turn knob "1" (Fig. D7) anticlockwise to open the fuel flow.
- Press the small hand pump "6" (Fig. D7) repeatedly until the fuel flows out through the vent hole "3" (Fig. D7).
- Then close venting screw "3" (Fig. D7).
- Start up the engine and keep it running at minimum for about one minute to let out the air bubbles automatically from the supply system.
- Check for fuel leaks from the prefilter.- S'assurer qu'il n'y a pas de fuites de carburant par le pré-filtre.



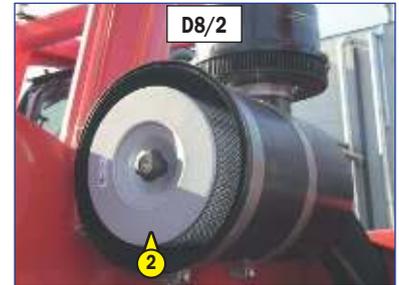
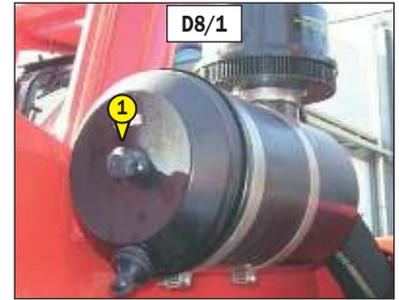
D8 - DRY AIR FILTER CARTRIDGE

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 periodicity of the cartridge must be reduced (up to 250 hours in a heavily laden dust atmosphere and with pre-filtration).

⚠ 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 bonnet.
- Loosen the bolts and remove cover 1 (fig. D8/1).
- Gently remove the cartridge 2 (fig. D8/2), 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 mounting 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.

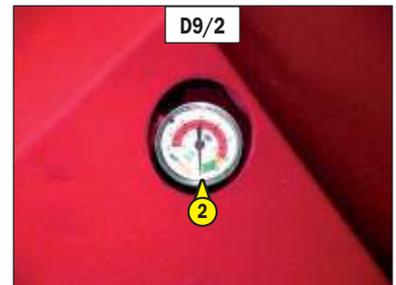
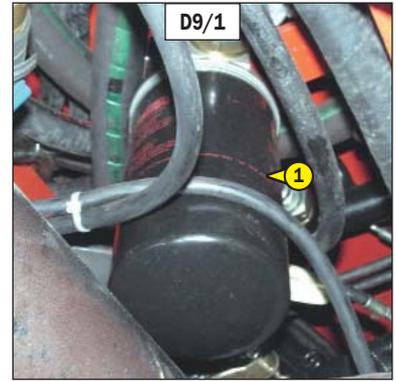


D9 - TRANSMISSION OIL FILTER

CHANGE

Use a collar wrench to remove the transmission oil filter “1” (fig. D9/1) and throw it away together with the gasket.
Clean the filter support with a clean cloth which does not leave threads.
Fit the new filter of the same characteristics, see table (“FILTER ELEMENTS AND BELTS”) using your hands only, taking care that the gasket (lubricated before fitting) is properly positioned.
Start the truck and check that there are no leaks.

To check the efficiency of the filter see the indicator “2” (fig. D9/2).
If the indicator reach the “red” zone before 500 working hours change immediately the filter.

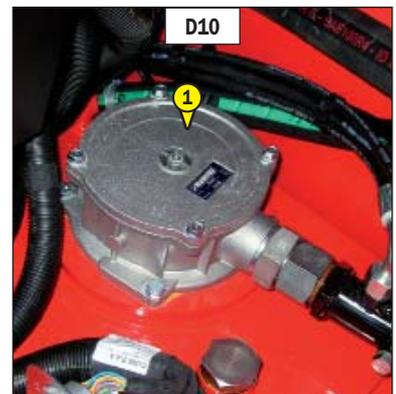


D10 - HYDRAULIC OIL EXHAUST FILTER CARTRIDGE

CHANGE

Slacken the 4 screws that fix the cover of filter “1” (fig. D10), remove the old cartridge.
Fit the new filter of the same characteristics, see table (“FILTER ELEMENTS AND BELTS”), taking care that the gasket (lubricated before fitting) is properly positioned.
Start the truck and check that there are no leaks.

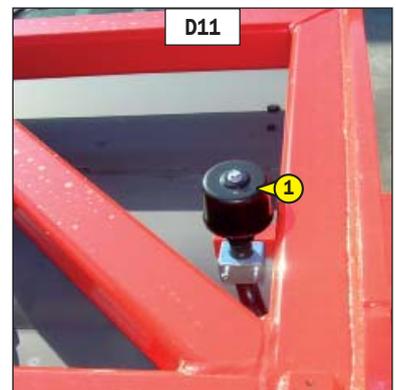
 Before fitting the cover of filter “1” (Fig. D10), check that the cartridge has been correctly installed.



D11 - BREATHER FILTER

CHANGE

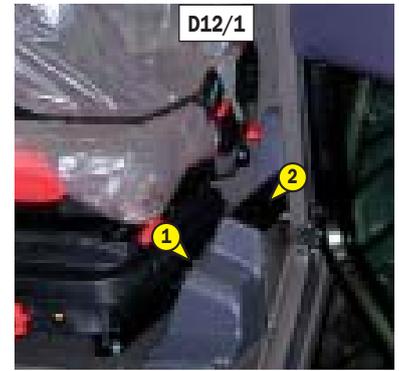
Unscrew the filter “1” (fig. D11) in the back of the cab and replace it with a new one of the same characteristics, see table (“FILTER ELEMENTS AND BELTS”).
Fit the new filter, tightening it by hand.



D12 - CAB VENTILATION FILTER

CLEAN

- Unscrew thumbscrew 1 (fig. D12/1) remove protective guard back 2 (fig. D12/1).
- Lift out cabin ventilation filter 3 (fig. D12/2).
- Clean the filter using a compressed air jet.
- Check its condition and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Refit the filter and protective casing.



D13 - FRONT AND REAR AXLE DIFFERENTIAL OIL

DRAIN

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



Dispose of the drain oil in an ecological manner.

Drain out the front axle differential oil.

Place a container under drain plugs 2 (Fig. D11) and let the oil drain out.

Remove level plug 3 (Fig. D13) and filler plug 1 (Fig. D13) to ensure complete drainage.

Refit and tighten plugs 2 (Fig. D13).

Fill oil (see Table "LUBRICANTS") through filler hole 1 (Fig. D13).

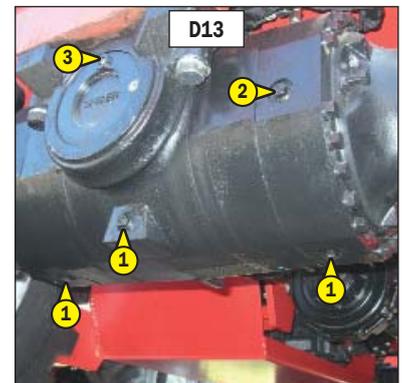
The level is correct when the oil reaches the level hole 3 (Fig. D13).

Check for leakage from the drain plugs.

Refit and tighten level plug 3 (Fig. D13) and refit plug 1 (Fig. D13).

Repeat the operation for the rear axle differential.

Dispose off the used oil according to the regulations in force in the country of use.



E - EVERY 1000 HOURS SERVICE

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

E1 - FUEL TANK

CLEAN

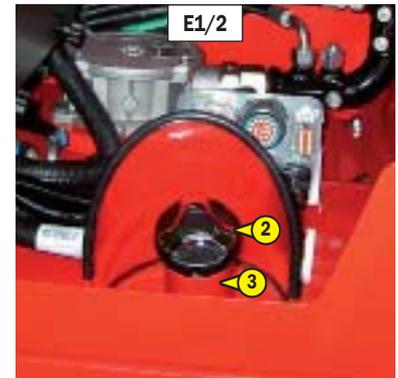
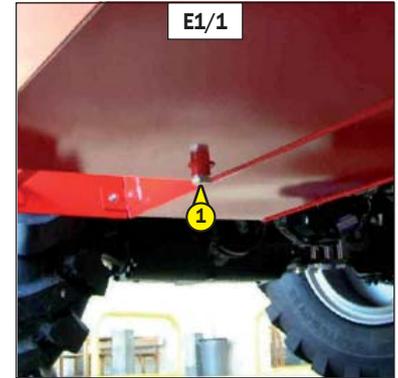
 **While carrying out these operations, do not smoke or work near a flame.**

Place 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.

 **Never try to carry out a weld or any other operation by yourself, this could provoke 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).
- Refit and tighten the drain plug (tightening torque 29 to 39 N.m).
- Fill the fuel tank with clean diesel filtered through the filler port.
- Refit the filling cap.
- If necessary, bleed the fuel circuit (see: 3 - MAINTENANCE: G1 - FUEL SYSTEM).

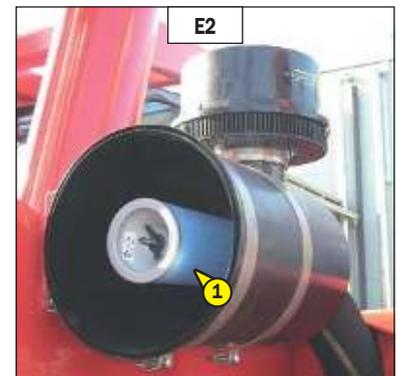


E2 - SAFETY DRY AIR FILTER CARTRIDGE

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 mounting, 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 periodicity for changing the safety cartridge is given for information only. It must be changed for every two changes of the dry air filter cartridge.



E3 - OIL GEAR BOX

DRAIN

Set the truck on a horizontal surface with the engine off and the oil in the reduction gear still hot. Place a receptacle under drain plug "1" (fig. E3).

Remove plug 1 and allow the oil to drain out.

Remove fill and level plug "2" (fig. E3) to ensure that all oil has drained out.

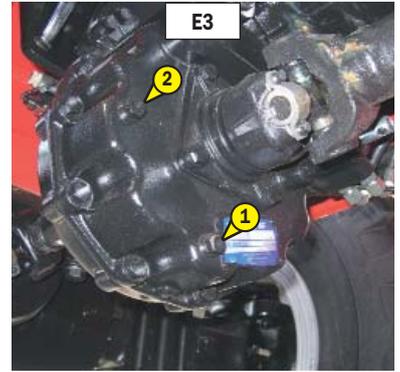
Refit and tighten plug "1" (fig. E3).

Fill with oil (see "LUBRICANT" chart) through fill and level plug "2" (fig. E3).

The level is correct when flush with the top of the hole.

Refit and tighten the fill and level plug "2" (fig. E3).

Check for any leaks from the drain plug.



E4 - HYDRAULIC OIL

DRAIN

E5 - SUCTION OIL STRAINER FOR HYDRAULIC OIL TANK

CLEAN

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

⚠ 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. E3/1) and unscrew the plug.
- Remove filler cap 2 (fig. E3/2) in order to ensure that the oil is drained properly.

⚠ Dispose of the drain oil in an ecological manner.

CLEANING THE STRAINER

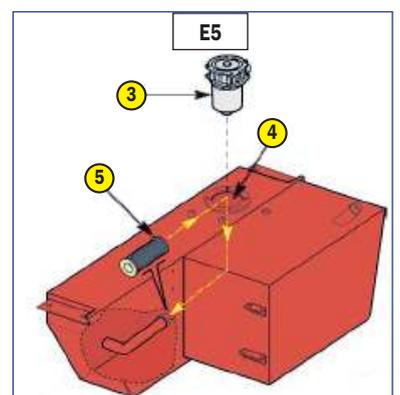
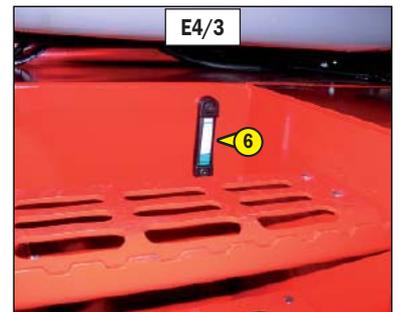
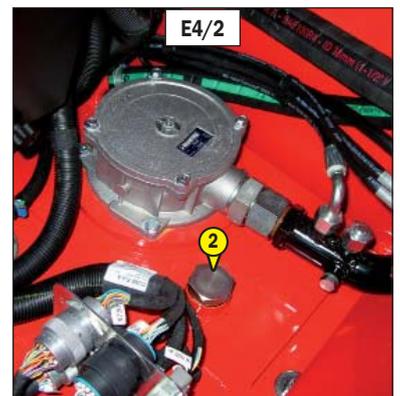
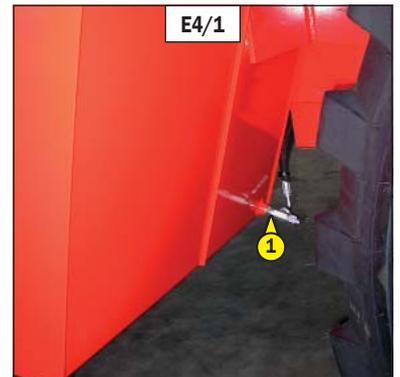
- Dismantle and take off from the oil tank the exhaust filter "3" (fig. E5).
- Enter with the hand inside the oil tank through the hole "4" (fig. E5) to reach the suction filter "5" (fig. E5) placed on the bottom.
- Unscrew the filter, dismantle it and replace "3" (fig. E5) it with a new one (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).

FILLING UP THE OIL

- Clean and refit drain plugs 1 (fig. E4/1) (tightening torque 29 to 39 N.m).
- Fill up with oil (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS) by filler port 2 (fig. E4/2).

⚠ Use a clean container and funnel and clean the underside of the oil drum before filling.

- Observe the oil level on dipstick 6 (fig. E4/3), 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. E4/2) with a new filler plug (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).



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.



In no event should the lift truck be used if the seat belt is defective (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.

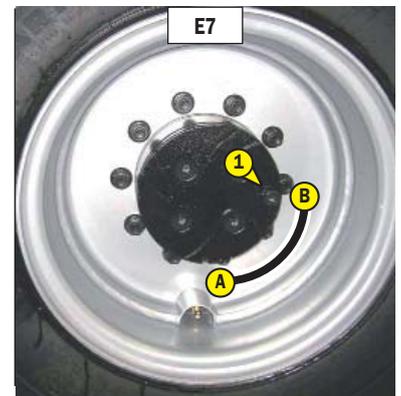
E7 - FRONT AND REAR WHEELS REDUCERS OIL**DRAIN**

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



Dispose of the drain oil in an ecological manner.

- Drain and change each front wheel reducer.
- Place drain plug 1 (fig. E7) 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. E7).
- The level is correct when the oil level is flush with the edge of the hole.
- Refit and tighten the drain plug 1 (fig. E7) (tightening torque 34 to 49 N.m).
- 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

Before changing the cooling liquid, check the seals and conditions of the cab cooling and heating system.

Drain the cooling liquid

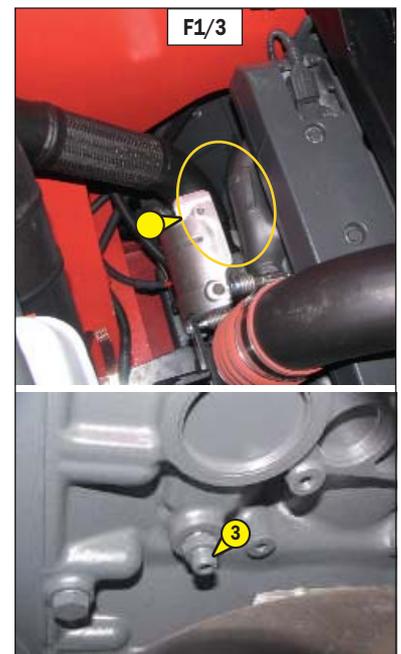
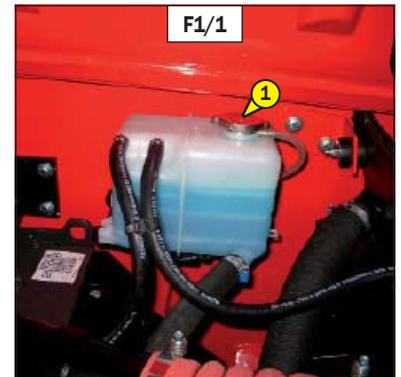
Before draining the liquid, cover the cables, piping etc, present under the drainage screw. Place a container under the drainage screw large enough to hold the quantity of liquid to be collected.

Gradually open the cap on the tank "1" (Fig. F411), discharge the excess pressure, then remove the cap.

Turn the temperature regulator knob "2" (Fig. F1/2) present in the cabin completely.

Insert a tube (recommended length 1m) on drainage screw "3" (Fig. F1/3) present on the engine.

Unscrew drainage screw "3" (Fig. F1/3) (1 - 2 turns) and let the cooling liquid flow out from the engine block.



Place a container large enough for the quantity of liquid to be collected, under the radiator drainage screw “4” (Fig. F4/4).

Unscrew the radiator drainage screw “4” (fig. F4/4) (in the lower part of the radiator) and drain out the cooling liquid.

Clear the drainage opening of obstruction, if present.

Tighten the cooling liquid drainage screws present on engine “3” (Fig. F4/3) and on radiator “4” (Fig. F4/4).



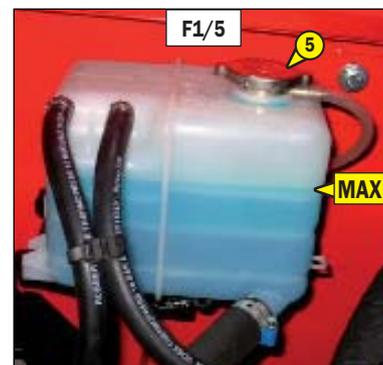
REPLISSAGE DU LIQUIDE

Pour the cooling liquid through the opening in tank “5” (Fig. F1/5) up to the MAX. mark.

Refit cap “5” to close the tank (Fig. F1/5).

Start up the engine and run it for about one minute, changing the speed to release air bubble from the cab cooling and heating system.

Switch the engine off and top up with cooling liquid to the MAX level in the tank.



 **The I.C. engine does not contain any corrosion resistor and must be filled during the whole year with a mixture containing 25% of ethylene glycol-based antifreeze.**

G - OCCASIONAL MAINTENANCE

G1 - WHEEL

CHANGE



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

- Stop the lift truck, if possible on even and hard ground.
- To pass on stop of lift truck (see: 1 - OPERATING AND SAFETY INSTRUCTIONS: DRIVING INSTRUCTIONS UNLADEN AND LADEN).
- Put the warning lights on.
- Immobilise 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.
- Refit 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).

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



G2 - FRONT HEADLAMPS

ADJUST

RECOMMENDED SETTING

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

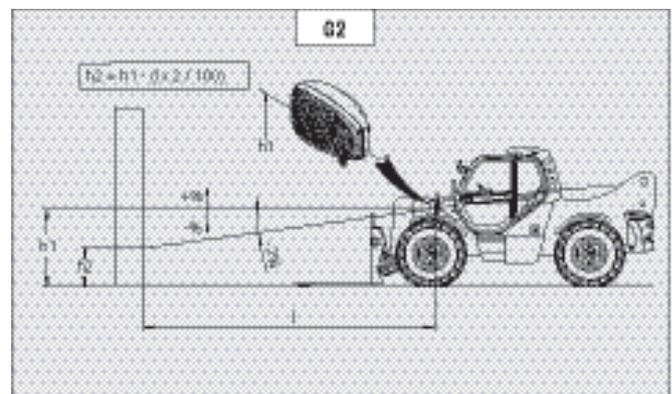
Set to - 2% of the dipped beam in relation to the horizontal line of the headlamp.

ADJUSTING PROCEDURE

- Place the lift truck unloaded and in the transport position and perpendicular to a white wall on flat, level ground (fig. G2).
- Check the tyre pressures (see: 2 - DESCRIPTION: CHARACTERISTICS).
- Place the forward/reverse selector in neutral and release the parking brake.

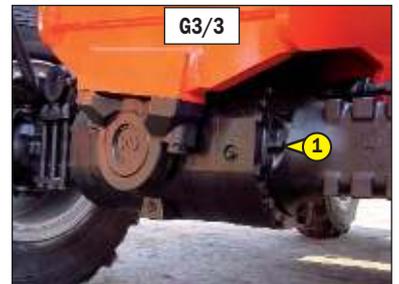
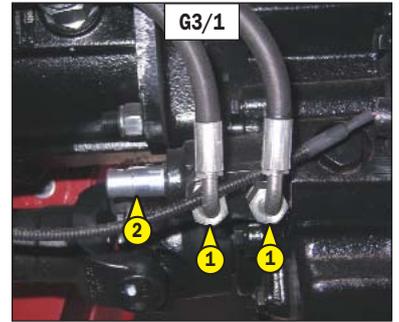
CALCULATING THE HEIGHT OF THE DIPPED BEAM (H2)

- 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.



 To the lift truck for short distance with slow speed.

- Shut down engine
- Put the forward/reverse lever in neutral position
- Release the parking brake
- Put the emergency lights
- put the gear selector in neutral position:
 - a) disconnect and close the hydraulic “1” (Fig. G3/1) of the cylinder of the gear selector.
 - b) put the rod “2” (Fig. G3/1) in neutral position (this is on half stroke between two “release”)
- Deactivate the negative brake:
 - c) screw the screws with lock nut “1” (Fig. G3/2) and “1” (Fig. G3/3) placed on both sides of the front axle box until they touch of the rod. Now screw the same one turn.
- If the engine is not running there will be no steering or braking assistance. Operate the steering and pedal slowly avoiding sudden jerky movements.



IT'S IMPORTANT THAT THE TWO SCREWS HAVE THE SAME TURNS.

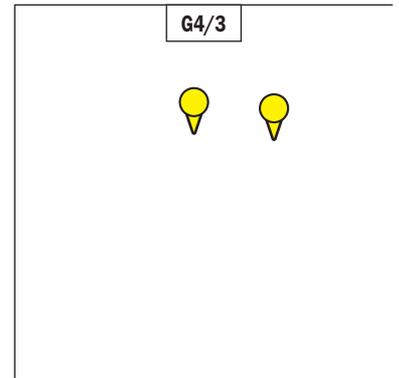
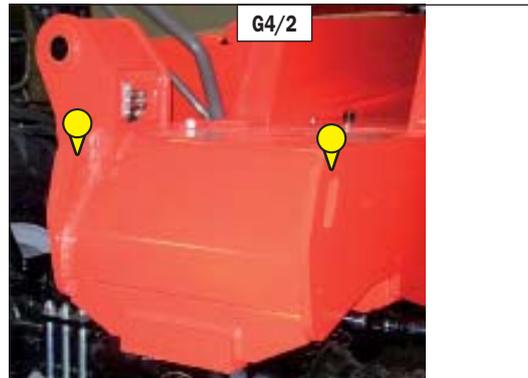
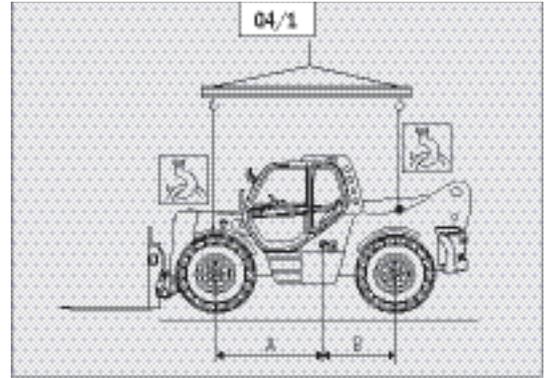
G4 - LIFT TRUCK

SLING

- Take into account the position of the lift truck centre of gravity for lifting (fig. G4/1).

A = 2060 mm B = 1240 mm

- Place the hooks in the fastening points provided (fig. G5/2 and G5/3).



G5 - LIFT TRUCK ON A PLATFORM

TRANSPORT

⚠ Ensure that the safety instructions connected to the platform are respected before the loading of the lift truck and that the driver of the means of transport is informed about the dimensions and the weight of the lift truck (see: 2 - DESCRIPTION: CHARACTERISTICS).

⚠ Ensure that the platform has got dimensions and a load capacity sufficient for transporting the lift truck. Check also the pressure on the contact surface allowable for the platform in connection with the lift truck.

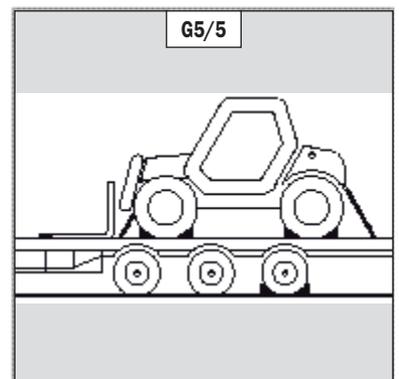
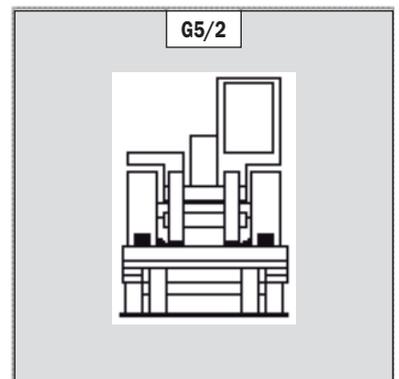
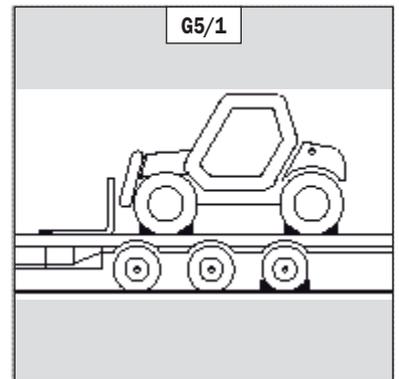
⚠ For lift trucks equipped with a turbo-charged I.C. engine, block off the exhaust outlet to avoid rotation of the turbo shaft without lubrication when transporting the vehicle.

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.
- Stop 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 tyre (fig. G5/1).
- Fix also the chocks to the platform in the inside of each tyre (fig. G5/2).
- Secure the lift truck to the platform with sufficiently strong ropes. At the front of the lift truck, attach the ropes to the fastening points 1 (fig. G5/3) and at the rear to the towing pin 2 (fig. G5/4).
- Tighten the ropes (fig. G6/5).

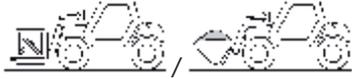


According to the use of the lift truck, the device may require to be periodically reset.

This operation can be easily performed by means of the following procedure.

- Provide a fork carrier or a bucket and a load corresponding to at least half the lift truck's rated capacity.
- Preferably perform the reset when the lift truck is still cold (before it is used) or ensure that the temperature of the rear axle is not more than 50 °C.
- Place the lift truck on flat, level ground with the wheels straight.

⚠ Scrupulously follow the jib positioning instructions. Should you fail to follow these instructions, two audible beeps will be sounded and the fault indicator lamp ⚠ will come on. If in doubt, consult your dealer.

<p>STAGE 1 START</p>	 <ul style="list-style-type: none"> - Without attachments. - Jib fully retracted and raised. 	<p>➔ Simultaneously press and hold down the "BUCKET" MODE  and TEST  buttons.</p> <ul style="list-style-type: none"> - Two audible beeps will be sounded and all the leds will flash twice to confirm the start of the procedure.
<p>STAGE 2</p>	 <ul style="list-style-type: none"> - An audible beep. - First green led flashing. - Flashing test button. 	<p>➔  ➔ Short press the test button. </p> <ul style="list-style-type: none"> - Without attachments. - Carriage tilted fully backward. - Jib fully retracted and in the down position a few centimetres off the ground.
<p>STAGE 3</p>	 <ul style="list-style-type: none"> - First green led continuously lit. - Second green led flashing. - Flashing test button. 	<p>➔  ➔ Short press the test button. </p> <ul style="list-style-type: none"> - With the fork carrier or the bucket and a load (keep jib retracted to allow all other hydraulic movements). - Jib fully retracted and in the down position a few centimetres off the ground. <p>➔  ➔ Two audible beeps will be sounded and all the leds will flash twice to confirm the end of the procedure.</p> <p>⚠ Keep the load as close to the ground as possible throughout this operation.</p> <ul style="list-style-type: none"> - Hold down the disable the "aggravating" hydraulic movement cut-off button, and telescope the jib until the rear wheels are off the ground. <p>NOTA: This stage consists in unloading the rear axle. It can be done using a jack but without bearing on the rear axle.</p>
<p>STAGE 4 FINISH</p>	 <ul style="list-style-type: none"> - All leds lit. - A continuous audible beep. 	<p>➔ </p> <ul style="list-style-type: none"> - After completing the resetting procedure, the lift truck is in an overloaded condition. Retract the telescope to restore the situation.

⚠ When the reset is completed, check the operation of the longitudinal stability limiter and warning device (see: 3 - MAINTENANCE: A - DAILY OF EVERY 10 HOURS SERVICE).

4 - ELECTRIC AND HYDRAULIC SYSTEMS

ELECTRIC SYSTEM

STARTER MOTOR

The starter motor is fitted to the left of the engine and it needs no maintenance apart from cleaning and tightening of the terminals. Contact your agent or dealer if the starter motor does not work correctly.

ALTERNATOR

The alternator is mounted on the left of the engine. The alternator and the regulator are designed to function in a system polarized in one direction only, it is therefore necessary to take the following precautions while working on the battery charge circuit as it can otherwise cause serious damage to the electrical equipment:

Do not activate the alternator with the circuit open, but make sure all the terminals are tightened.

Do not dismantle the terminals on the back of the alternator with the combustion engine running, as it can otherwise damage the alternator. When installing a battery, make sure the connections are polarized correctly. The wire marked (+) must be connected to the positive terminal (+) of the battery and the wire marked (-) must be connected to the negative terminal (-) of the battery, and it must be earthed.

If a second battery is used to start up the combustion engine, always connect terminals having the same polarity (Fig. A). Mount a battery having the same voltage as that on the truck.

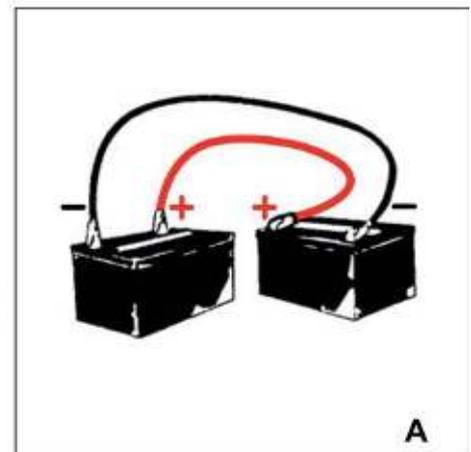
If an outside charger is used, always connect the (+) wire of the charger to the (+) terminal of the battery and the (-) wire of the charger to the (-) terminal of the battery and earthing.

Never short circuit the alternator terminals or earth them.

Never invert the alternator connections on the battery.

Never dismantle or change an electric connection with the engine running.

In case of electric welding on the truck, connect the negative cable of the welder directly to the part to be welded to prevent high voltage current from passing through the alternator and then disconnect the battery.



LIGHTING

A fused bulb must be replaced immediately.

Never handle a new bulb with bare or dirty hands, since traces of grease, oil or sweat will evaporate when the bulb is heated and thus stain the reflector.

Never touch or try to polish the reflector. Open the headlight only to change the bulb.

BATTERY

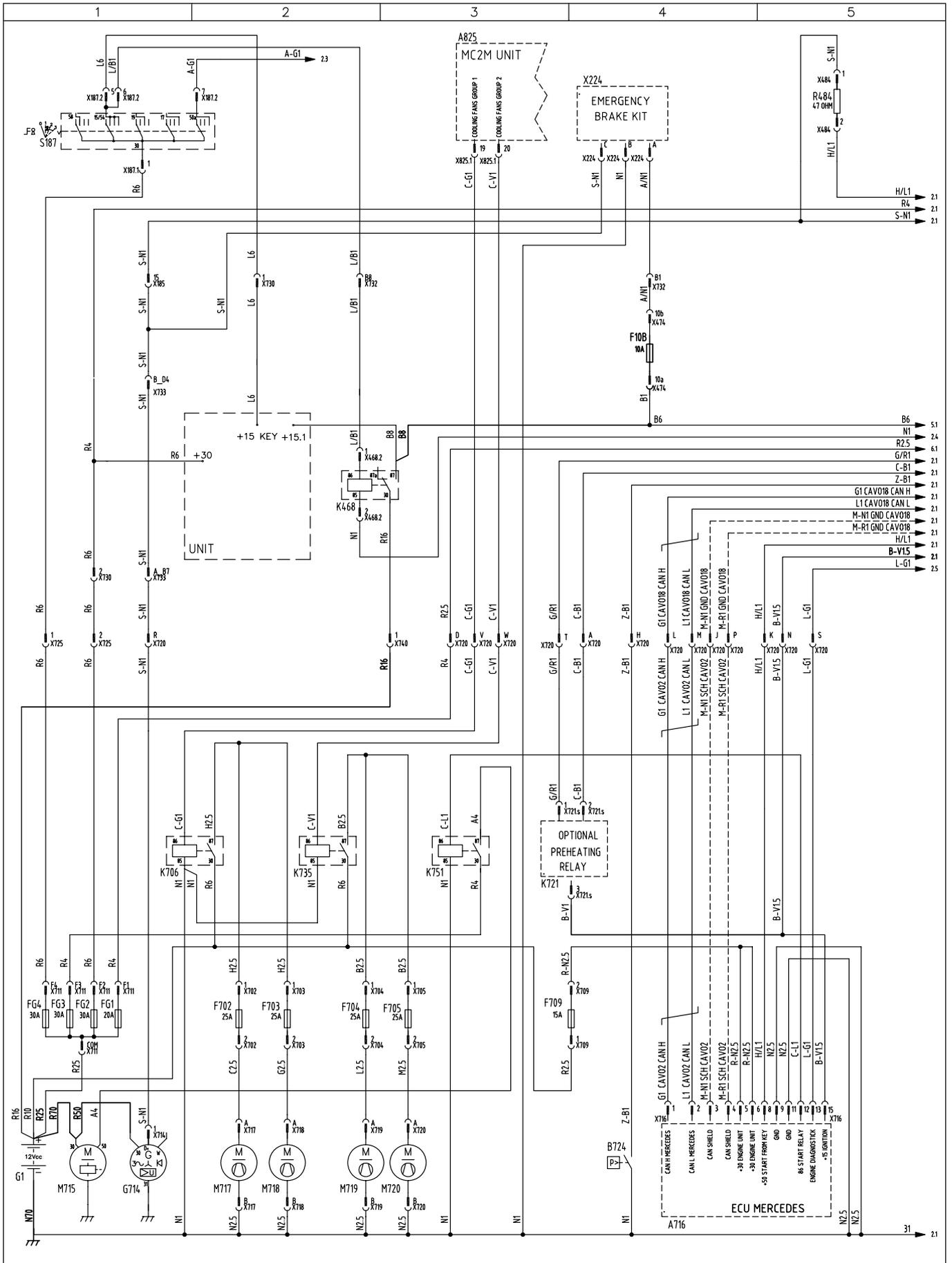
The battery efficiency is proportional to the reduction in temperature and finally ceases at -40°C .

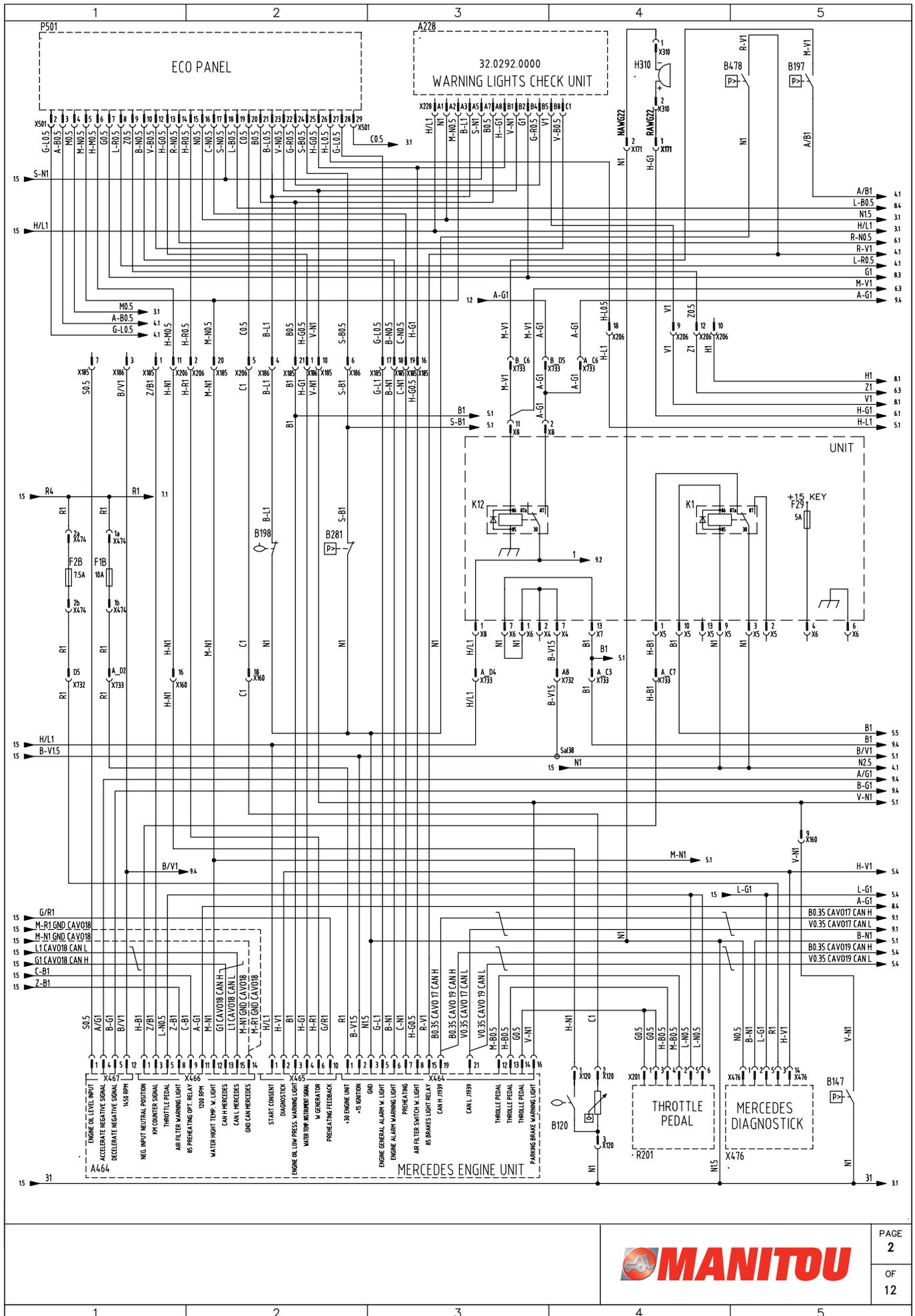
Never try to use the starter motor if the battery is exposed to a temperature around -29°C .

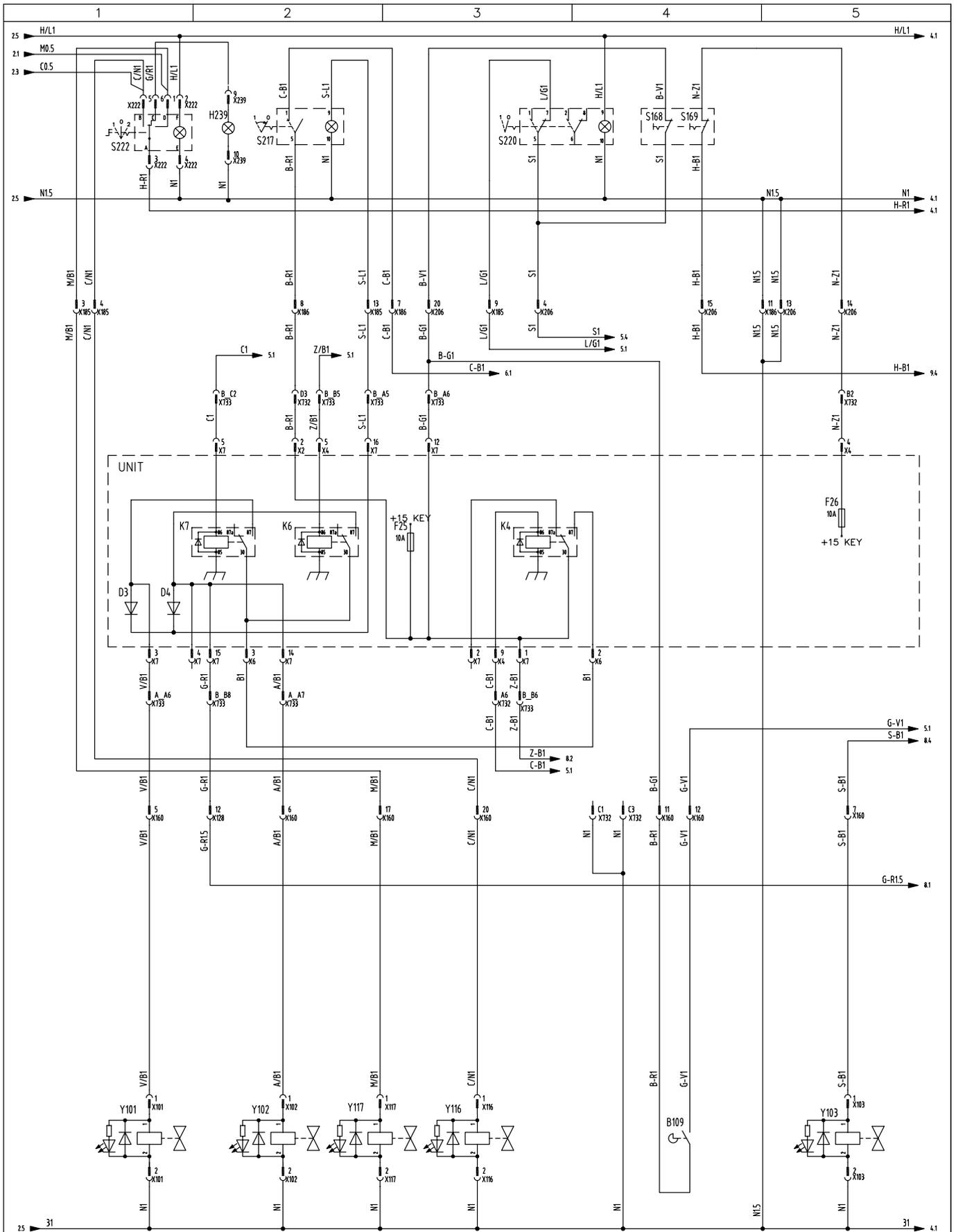
In such cases, heat the battery by immersing it in warm water, to a level of 5 cm below the covers.

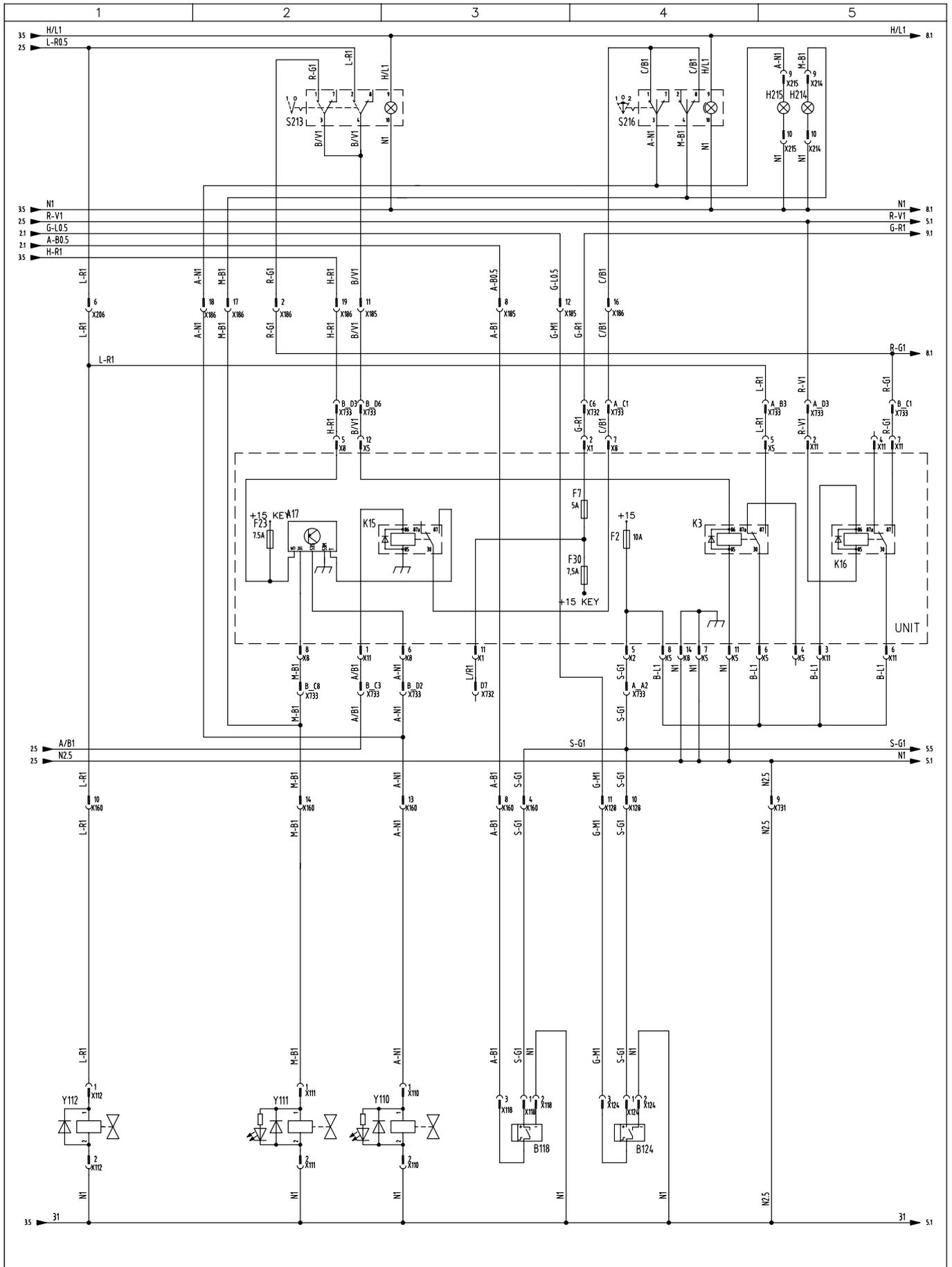
In case of very low temperatures, remove the battery from the truck and store it in a warm place until it is used.

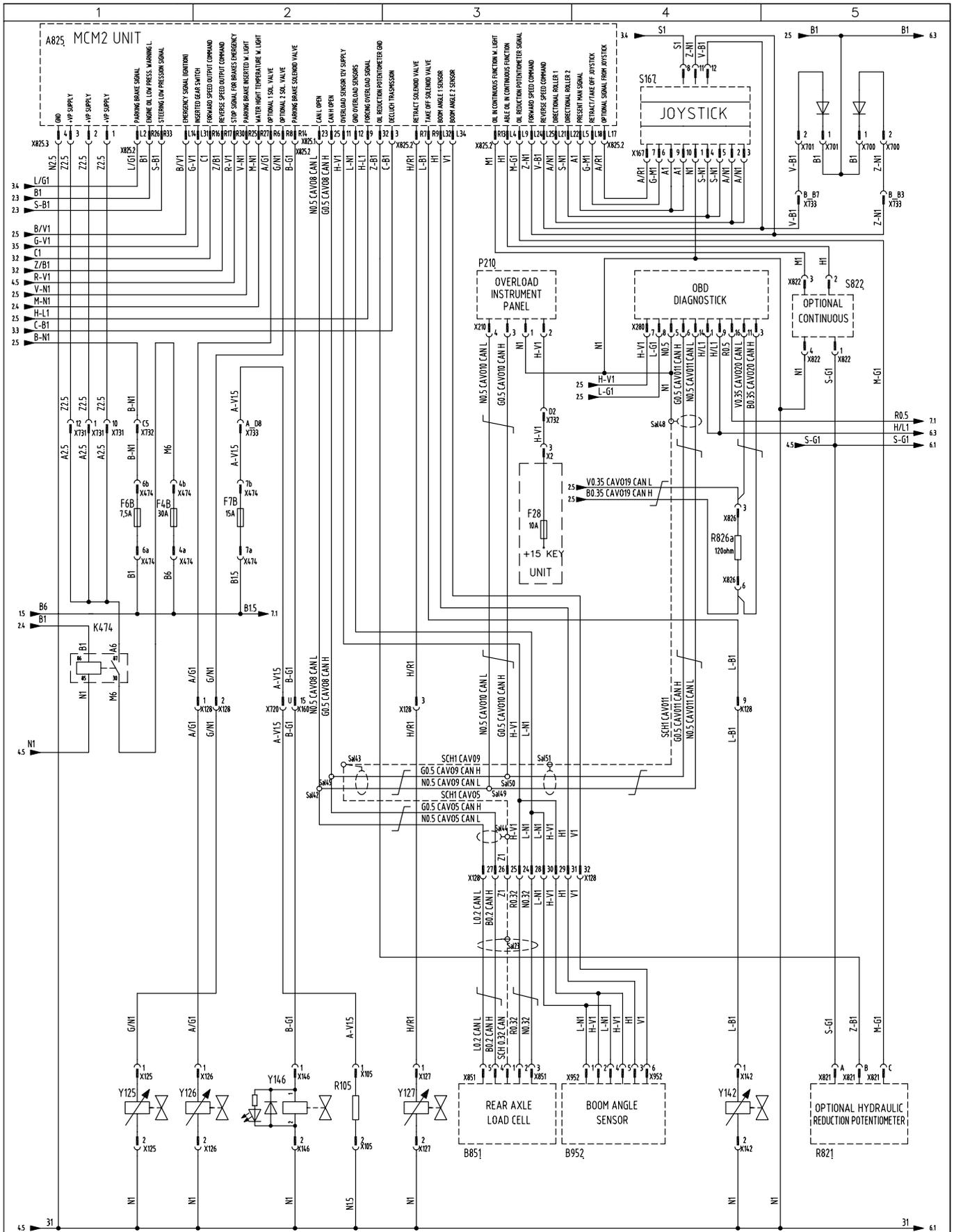
ELECTRIC SYSTEMS

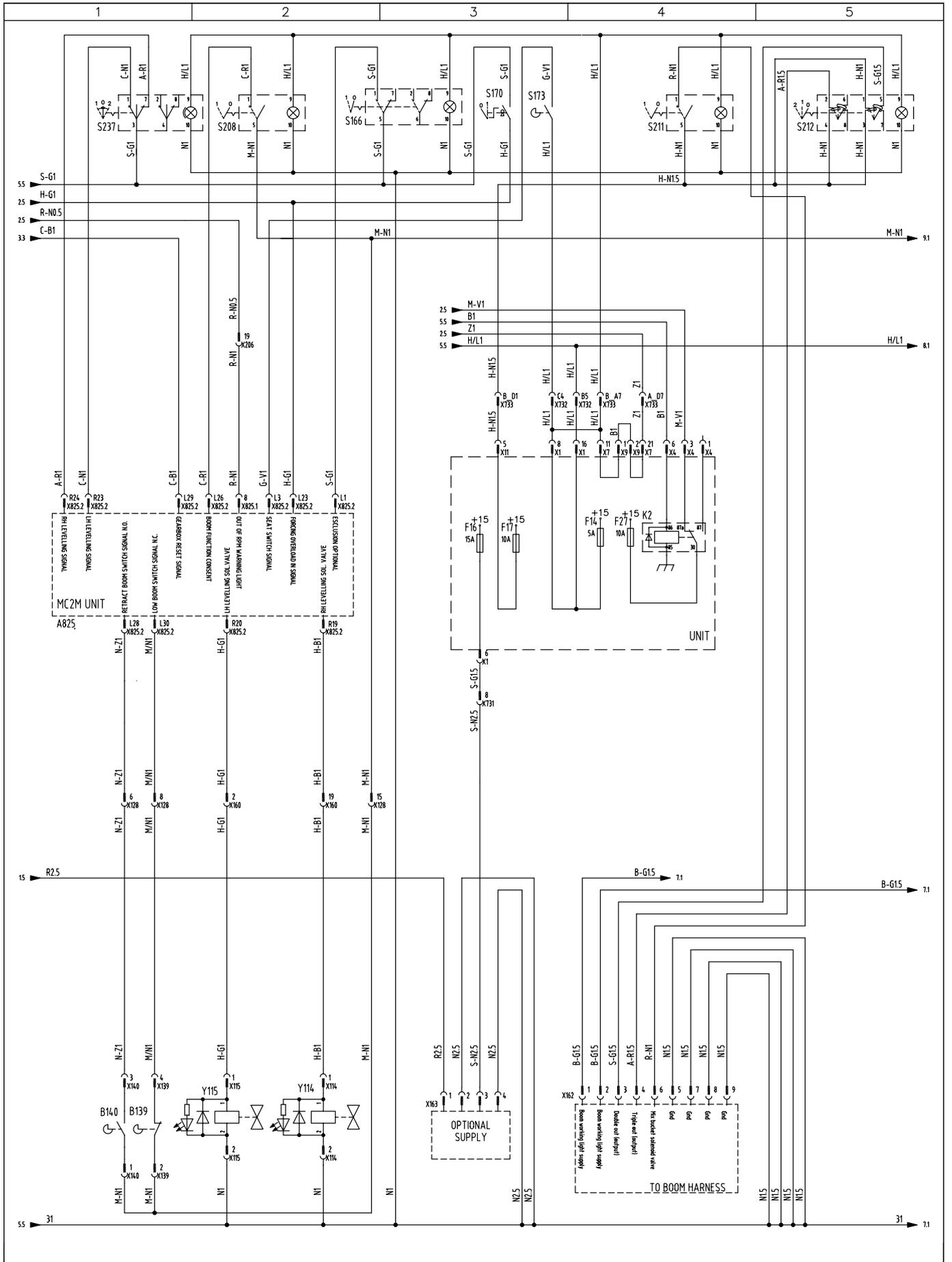


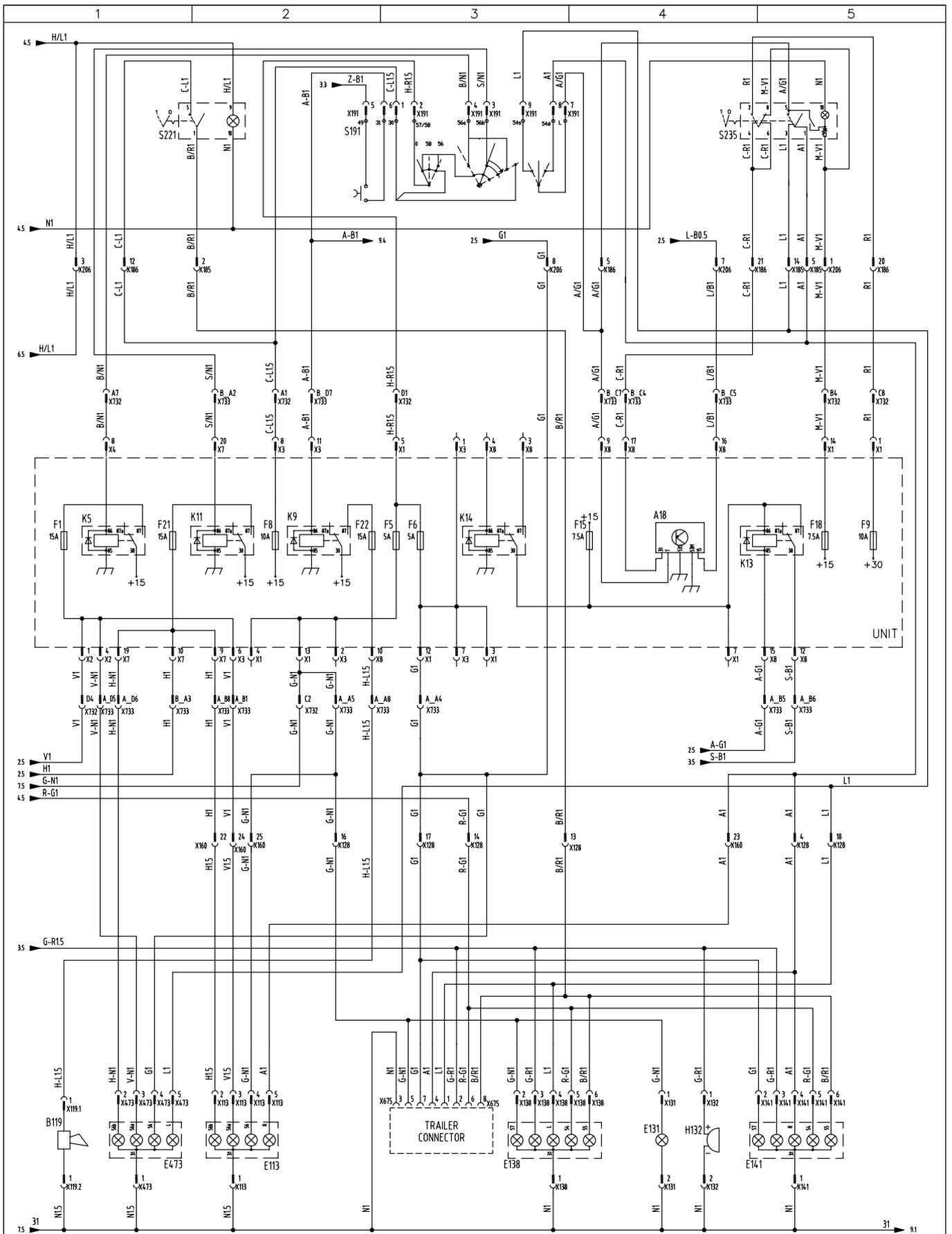


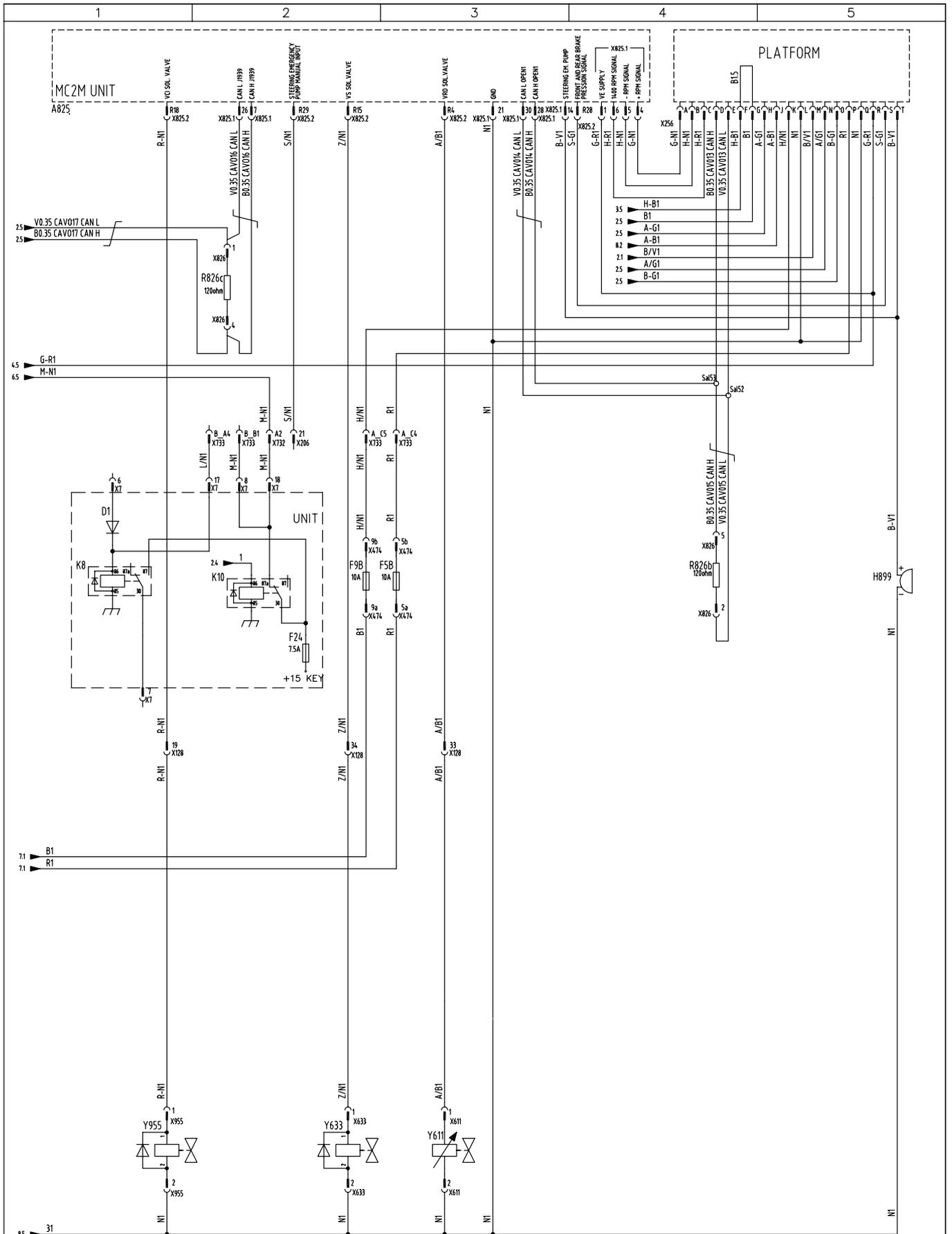












Nome/Item	Descrizione/Description	Fg/Sh
A17	CENTRALINA CAMBIO CILINDRATA / CHANGE POWER UNIT	4.2
A18	CENTRALINA FLASHER / FLASHER UNIT	8.4
A200	AUTORADIO / RADIO	7.3
A207	AUTORADIO / RADIO	7.3
A228	CENTRALINA CHECK SPIE / WARNING LIGHTS CHECK UNIT	2.3
A464	CENTRALINA MOTORE MERCEDES / MERCEDES ENGINE UNIT	2.1
A716	CENTRALINA ECU MERCEDES / MERCEDES ECU UNIT	1.4
A825	CENTRALINA MC2M / MC2M UNIT	9.1
A825	CENTRALINA MC2M / MC2M UNIT	5.1
A825	CENTRALINA MC2M / MC2M UNIT	1.3
A825	CENTRALINA MC2M / MC2M UNIT	6.1
B109	MICRO MARCIA INSERITA / INSERTED GEAR SWITCH	3.4
B118	SENSORE ALLINEAMENTO ASSALE ANTERIORE (SOLO PER MHT 10120)/ FRONT AXLE ALIGNMENT SENSOR (ONLY FOR MHT 10120)	4.3
B119	AVVISATORE ACUSTICO / CLAXON	8.1
B120	SENSORE LIVELLO CARBURANTE / FUEL LEVEL INDICATOR SENSOR	2.3
B124	SENSORE ALLINEAMENTO ASSALE POSTERIORE (SOLO PER MHT 10120)/ REAR AXLE ALIGNMENT SENSOR (ONLY FOR MHT 10120)	4.4
B139	MICRO BRACCIO BASSO / LOW BOOM SWITCH	6.1
B140	MICRO BRACCIO RIENTRATO / RETRACTED BOOM SWITCH	6.1
B147	PRESSOSTATO FRENO DI PARCHEGGIO / PARKING BRAKE PRESSURE SWITCH	2.5
B197	PRESSOSTATO PEDALE STOP / STOP PEDAL PRESSURE SWITCH	2.5
B198	SENSORE LIVELLO OLIO FRENI / BRAKES OIL LEVEL SENSOR	2.2
B281	PRESSOSTATO COMPENSATORE STERZO / STEERING COMPENSATOR PRESSURE SWITCH	2.2
B478	PRESSOSTATO LUCI STOP / STOP LIGHTS PRESSURE SWITCH	2.5
B724	PRESSOSTATO FILTRO ARIA INTASATO / AIR FILTER PRESSURE SWITCH	1.4
B851	CELLA DI CARICO ASSALE POSTERIORE / REAR AXLE LOAD CELL	5.3
B952	SENSORE ANGOLO BRACCIO / BOOM ANGLE SENSOR	5.4
E113	FANALE ANTERIORE DESTRO / RIGHT FRONT LIGHT	8.2
E131	LUCE TARGA / NUMBER PLATE LIGHT	8.4
E138	FANALE POSTERIORE SINISTRO / LEFT REAR LIGHT	8.3
E141	FANALE POSTERIORE DESTRO / RIGHT REAR LIGHT	8.5
E473	FANALE ANTERIORE SINISTRO / LEFT FRONT LIGHT	8.1
F1	FUSIBILE LUCI ABBAGLIANTI / MAIN BEAM FUSE	8.1
F1b	FUSIBILE CENTRALINA MOTORE MERCEDES / MERCEDES ENGINE UNIT FUSE	2.1
F2	FUSIBILE ALIMENTAZIONE SENSORI ASSALI + BLOCCO DIFFERENZIALE / AXLES SENSORS AND DIFFERENTIAL LOCK SUPPLY FUSE	4.4
F2b	FUSIBILE DIAGNOSI MOTORE / ENGINE DIAGNOSTICK FUSE	2.1
F3	FUSIBILE FARI LAVORO / WORKING LIGHTS FUSE	7.4
F3b	FUSIBILE AUTORADIO / RADIO FUSE	7.1
F4	FUSIBILE ALIMENTAZIONE GIROFARO / BEACON LAMP SUPPLY FUSE	7.2
F4B	FUSIBILE ALIMENTAZIONE CENTRALINA MC2M / MC2M UNIT SUPPLY FUSE	5.1
F5	FUSIBILE LUCI DI POSIZIONE ANTERIORE DX E POSTERIORE SX / RIGHT FRONT AND LEFT REAR TRAFFIC LIGHTS FUSE	8.3
F5b	FUSIBILE +30 CESTELLO / +30 PLATFORM FUSE	9.3
F6	FUSIBILE LUCI DI POSIZIONE ANTERIORE SX E POSTERIORE DX / LEFT FRONT AND RIGHT REAR TRAFFIC LIGHTS FUSE	8.3
F6B	FUSIBILE +15 DIAGNOSI MOTORE / ENGINE DIAGNOSTICK +15 FUSE	5.1
F7	FUSIBILE ALIMNE +VE MC2M E DIAGNOSTICA ODB / +VE MC2M AND ODB DIAGNOSTICK FUSE	4.4
F7B	FUSIBILE RISCALDATORE CARBURANTE / FUEL HEATER FUSE	5.2
F8	FUSIBILE ALIMENTAZIONE DEVIO LUCI E RETRONEBBIA / STEERING COLUMN LIGHTS AND FOG BACK LIGHT SWITCHES SUPPLY FUSE	8.2
F8b	FUSIBILE ALIMENTAZIONE INT RE FARI LAVORO ANTERIORI / FRONT WORKING LIGHTS SWITCH SUPPLY FUSE	7.1
F9	FUSIBILE WARNING +30 / +30 WARNING FUSE	8.5
F9b	FUSIBILE +15 CESTELLO / +15 PLATFORM FUSE	9.2
F10	FUSIBILE PLAFONIERA-AUTORADIO-ACCENDISIGARI / CABIN LAMP-RADIO-CIGAR LIGHTER FUSE	7.4
F10b	FUSIBILE +15 KIT EMERGENZA FRENO / EMERGENCY BRAKE KIT +15 FUSE	1.4
F11	FUSIBILE INTERRUOTTORE TERGI/ WINDSHIELD WIPER SWITCH FUSE	7.3
F12	FUSIBILE ALIMENTAZIONE TERGI POSTERIORE E SBRINATORE / REAR WINDSHIELD WIPER AND NO FROST SUPPLY FUSE	7.3
F13	FUSIBILE ALIMENTAZIONE COMPRESSORE SEDILE- +15 AUTORADIO / SEAT COMPRESSOR AND +15 RADIO SUPPLY FUSE	7.3
F14	FUSIBILE SPIE E SPRUMENTI + MICRO SEDILE / WARNING LIGHTS, INSTRUMENTS PANEL AND SEAT SWICHT FUSE	6.4
F15	FUSIBILE ELETTROVALVOLA 1200 GIRI / 1200 RPM SOLENOID VALVE FUSE	8.4
F16	FUSIBILE ALIMENTAZIONE OPZIONALE / OPTIONAL SUPPLY FUSE	6.3
F17	FUSIBILE ALIMENTAZIONE INTERRUOTTORI BENNA MIX E DOPPIA, TRIPLA USCITA / MIX BUCKET AND DOUBLE-TRIPLE OUTPUT SWITCHES SUPPLY FUSE	6.3
F18	FUSIBILE WARNING +15 / +15 WARNING FUSE	8.5
F19	FUSIBILE ALIMENTAZIONE FARI LAVORO BRACCIO+ TERGI CABINA / BOOM WORKING LIGHTS-CABIN WHINDSHIELD WIPE SUPPLY FUSER	7.2
F20	FUSIBILE RISCALDAMENTO / HEATING FUSE	7.2
F21	FUSIBILE LUCI ANABBAGLIANTI / LOW BEAM FUSE	8.1
F22	FUSIBILE AVVISATORE ACUSTICO / HORN FUSE	8.2
F23	FUSIBILE ALM. INT. CAMBIO CILINDRATA + STERZATE / CHANGE POWER AND STEERING SWITCHES SUPPLY FUSE	4.2
F24	FUSIBILE ABILITAZIONE FUNZIONE BRACCIO / BOOM ENABLE FUNCTION FUSE	9.2
F25	FUSIBILE ALIMENTAZIONE PULSANTE CLAXON E TRALAZIONE / TRASALATION AND CLAXON BUTTON SUPPLY FUSE	3.3
F26	FUSIBILE FUNGO DI EMERGENZA / EMERGENCY SWITCH FUSE	3.5
F27	FUSIBILE NEUTRAL POSITION / NEUTRAL POSITION FUSE	6.4
F28	FUSIBILE ALIM. DISPLAY ANTIRIBALTAMENTO / OVERLOAD SYSTEM DISPLAY FUSE	5.3
F29	FUSIBILE OPTIONAL / OPTIONAL FUSE	2.5
F30	FUSIBILE ALIMNE +VE MC2M E DIAGNOSTICA ODB / +VE MC2M AND ODB DIAGNOSTICK FUSE	4.3
F702	FUSIBILE ELETTROVENTOLA 1 / COOLING FAN 1 FUSE	1.2
F703	FUSIBILE ELETTROVENTOLA 2 / COOLING FAN 2 FUSE	1.2
F704	FUSIBILE ELETTROVENTOLA 3 / COOLING FAN 3 FUSE	1.2
F705	FUSIBILE ELETTROVENTOLA 4 / COOLING FAN 4 FUSE	1.3
F709	FUSIBILE +30 ECU MERCEDES / MERCEDES ECU FUSE	1.4
FG1	FUSIBILE +30 OPZIONALE / +30 OPTIONAL SUPPLY FUSE	1.1
FG2	FUSIBILE CENTRALINA RELE'-FUSIBILI / RELAYS AND FUSES UNIT FUSE	1.1
FG3	FUSIBILE RELE' AVVIAMENTO / STARTING FUSE RELAY	1.1
FG4	FUSIBILE QUADRO AVVIAMENTO / START FUSE	1.1
G1	BATTERIA / BATTERY	1.1
G714	ALTERNATORE / GENERATOR	1.1
H132	BUZZER RETROMARCIA / REVERSE SPEED BUZZER	8.4
H214	SPIA MARCIA LENTA / SLOW GEAR WARNING LIGHT	4.5
H215	SPIA MARCIA VELOCE / FAST GEAR WARNING LIGHT	4.5
H239	SPIA STERZO STRADALE / STREET STEERING WARNING LIGHT	3.2
H310	BUZZER ESCLUSIONE ARB / OVERLOAD DISABLED BUZZER	2.4
H899	BUZZER POMPA EMERGENZA / EMERGENCY PUMP BUZZER	9.5
K1	RELE' NEUTRAL POSITION / NEUTRAL POSITION RELAY	2.4
K2	RELE' NEUTRAL POSITION ACTIA/ ACTIA NEUTRAL POSITION RELAY	6.4
K3	RELE' BLOCCO DIFFERENZIALE / DIFFERENTIAL LOCK RELAY	4.4
K4	RELE' STACCO TRASMISSIONE / DECLUCH RELAY	3.3
K5	RELE' LUCI ABBAGLIANTI / MAIN BEAM RELAY	8.1
K6	RELE' MARCIA INDIETRO / REVERSE RELAY	3.2
K7	RELE' MARCIA AVANTI / FORWARD RELAY	3.2
K8	RELE' OPTIONAL / OPTIONAL RELAY	9.1
K9	RELE' AVVISATORE ACUSTICO / HORN RELAY	8.2
K10	RELE' ABILITAZIONE FUNZIONE BRACCIO / BOOM ENABLE FUNCTION RELAY	9.2
K11	RELE' LUCI ANABBAGLIANTI / LOW BEAM RELAY	8.2

1	2	3	4	5
Nome/Item	Descrizione/Description			Fg/Sh
K12	RELE' CONSENSO AVVIAMENTO / CONSENT STARTER RELAY			2,3
K13	RELE' ELETTROVALVOLA 1200 GIRI / 1200 RPM SOLENOID VALVE RELAY			8,5
K14	RELE' OPTIONAL / OPTIONAL RELAY			8,3
K15	RELE' CAMBIO VELOCITA' / CHANGE SPEED RELAY			4,3
K16	RELE' BLOCCO DIFFERENZIALE / DIFFERENTIAL LOCK RELAY			4,5
K46B	RELE' SERVIZI / SERVICE RELAY			12
K474	RELE' CENTRALINA MC2M - VP / MC2M UNIT -VP RELAY			5,1
K706	RELE' ELETTROVENTOLE 1 E 2 / COOLING FANS 1 AND 2 RELAY			1,1
K721	RELE' PRERISCALDO OPTIONAL / OPTIONAL PREHEATING RELAY			1,3
K735	RELE' ELETTROVENTOLE 3 E 4 / COOLING FANS 3 AND 4 RELAY			1,2
K751	RELE' AVVIAMENTO / STARTING RELAY			1,3
M172	COMPRESSORE SEDILE / SEAT COMPRESSOR			7,4
M188	TERGI ANTERIORE / FRONT WINDSHIELD WIPER MOTOR			7,5
M196	POMPETTA TERGI / WINDSHIELD WASHER PUMP			7,5
M715	MOTORINO AVVIAMENTO / STARTER MOTOR			1,1
M717	ELETTROVENTOLA 1 / COOLING FAN 1			1,2
M718	ELETTROVENTOLA 2 / COOLING FAN 2			1,2
M719	ELETTROVENTOLA 3 / COOLING FAN 3			1,2
M720	ELETTROVENTOLA 4 / COOLING FAN 4			1,3
P175	PANNELLO RISCALDAMENTO / HEATING PANEL			7,2
P210	VISUALIZZATORE ARB / OVERLOAD INSTRUMENT PANEL			5,3
P501	STRUMENTO ECO / ECO PANEL			2,1
R105	RISCALDATORE CARBURANTE / FUEL HEATHER			5,2
R201	PEDALE ACCELERATORE / THROTTLE PEDAL			2,4
R484	RESISTENZA ALTERNATORE / GENERATOR RESISTOR			1,5
R821	POTENZIOMETRO RIDUZIONE IDRAULICA OPZIONALE / OPTIONAL HYDRAULIC REDUCTION POTENTIOMETER			5,5
R826a	RESISTENZA CAN BUS / CAN BUS RESISTOR			5,4
R826b	RESISTENZA CAN BUS / CAN BUS RESISTOR			9,4
R826c	RESISTENZA CAN BUS / CAN BUS RESISTOR			9,2
S166	INTERRUTTORE ESCLUSIONE OPZIONALI / OPTIONAL DISABLED SWITCH			6,3
S167	MANIPOLATORE / JOYSTICK			5,4
S168	FUNGO EMERGENZA CONTATTI STACCO TRASMISSIONE / DECLUCH CONTACT EMERGENCY SWITCH			3,4
S169	FUNGO DI EMERGENZA CONTATTI ARRESTO MOTORE / SOLENOID ENGINE SHUT-OFF EMERGENCY SWITCH			3,4
S170	CHIAVE FORZATURA ARB / OVERLOAD SYSTEM DISABLE KEY SWITCH			6,3
S173	MICRO SEDILE / SEAT SWITCH			6,3
S174	GRUPPO RISCALDAMENTO / HEATING GROUP			7,1
S187	QUADRO AVVIAMENTO / STARTING SWITCH			1,1
S191	DEVIO LUCI-FRECCHE / LIGHT STEERING COLUMN SWITCH			8,3
S192	DEVIO TERGI / WINDSHIELD MOTOR STEERING COLUMN SWITCH			7,3
S208	INTERRUTTORE ABILITAZIONE BRACCIO / ENABLE BOOM SWITCH			6,2
S211	INTERRUTTORE BENNA MIX / MIX BUCKET SWITCH			6,4
S212	INTERRUTTORE DOPPIA E TRIPLA USCITA / DOUBLE AND TRIPLE OUTPUT SWITCH			6,5
S213	INTERRUTTORE BLOCCO DIFFERENZIALE (SOLO PER MHT 10160-10210)/ DIFFERENTIAL LOCK SWITCH (ONLY FOR MHT 10160-10210)			4,2
S216	INTERRUTTORE CAMBIO VELOCITA' / SPEED CHANGE SWITCH			4,4
S217	INTERRUTTORE RESET CAMBIO / GEAR RESET SWITCH			3,2
S220	INTERRUTTORE FRENO DI PARCHEGGIO / PARKING BRAKE SWITCH			3,3
S221	INTERRUTTORE RETRONEBBIA / FOG BACKLIGHT SWITCH			8,2
S222	INTERRUTTORE SELETORE STERZATE / STEERING SWITCH			3,1
S235	INTERRUTTORE WARNING / WARNING SWITCH			8,4
S237	INTERRUTTORE LIVELLAMENTO / LEVELLING SWITCH			6,1
S822	PULSANTE OPTIONAL CONTINUO / OPTIONAL CONTINUOUS PUSH BUTTON			5,5
Y101	ELETTROVALVOLA MARCIA AVANTI / FORWARD GEAR SOLENOID VALVE			3,1
Y102	ELETTROVALVOLA RETROMARCIA / REVERSE GEAR SOLENOID VALVE			3,2
Y103	ELETTROVALVOLA 1200 GIRI / 1200 RPM SOLENOID VALVE			3,5
Y110	ELETTROVALVOLA MARCIA VELOCE / FAST GEAR SOLENOID VALVE			4,3
Y111	ELETTROVALVOLA MARCIA LENTA / SLOW GEAR SOLENOID VALVE			4,2
Y112	ELETTROVALVOLA BLOCCO DIFFERENZIALE / DIFFERENTIAL LOCK SOLENOID VALVE			4,1
Y114	ELETTROVALVOLA LIVELLAMENTO DX / RIGHT LEVELLING SOLENOID VALVE			6,2
Y115	ELETTROVALVOLA LIVELLAMENTO SX / LEFT LEVELLING SOLENOID VALVE			6,2
Y116	ELETTROVALVOLA STERZATURA GRANCHIO / CRAB STEERING SOLENOID VALVE			3,3
Y117	ELETTROVALVOLA STERZATURA TONDO / ROUND STEERING SOLENOID VALVE			3,2
Y125	ELETTROVALVOLA PROP. OPTIONAL 2 / OPTIONAL 2 PROPORTIONAL SOLENOID VALVE			5,1
Y126	ELETTROVALVOLA PROP. OPTIONAL 1 / OPTIONAL 1 PROPORTIONAL SOLENOID VALVE			5,2
Y127	ELETTROVALVOLA PROP. RIENTRO / RETRACT PROPORTIONAL SOLENOID VALVE			5,3
Y142	ELETTROVALVOLA PROP. SFILÒ / TAKE OFF PROPORTIONAL SOLENOID VALVE			5,4
Y146	ELETTROVALVOLA FRENO DI PARCHEGGIO / PARKING BRAKE SOLENOID VALVE			5,2
Y611	ELETTROVALVOLA PROP. VRD / VRD PROPORTIONAL SOLENOID VALVE			9,3
Y633	ELETTROVALVOLA VS / VS SOLENOID VALVE			9,2
Y955	ELETTROVALVOLA VCI / VCI SOLENOID VALVE			9,1
X1	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X2	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X3	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X4	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X5	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X6	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X7	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X8	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X9	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X10	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X11	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X128	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA TELAIO POSTERIORE / DRIVER POSITION - REAR CHASSIS HARNESS INTERFACE CONNECTOR			
X160	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA TELAIO POSTERIORE / DRIVER POSITION - REAR CHASSIS HARNESS INTERFACE CONNECTOR			
X162	CONNETTORE INTERFACCIA A LINEA BRACCIO / BOOM HARNESS INTERFACE CONNECTOR			6
X163	CONNETTORE ALIMENTAZIONI OPZIONALI / OPTIONAL SUPPLY CONNECTOR			6
X164	CONNETTORE INTERFACCIA A LINEA CABINA / CABIN HARNESS INTERFACE CONNECTOR			7
X165	CONNETTORE INTERFACCIA A LINEA CABINA / CABIN HARNESS INTERFACE CONNECTOR			7
X171	CONNETTORE PREDISPOSIZIONE ALLARME FORZATURA ANTIRIBALTAMENTO / OVERLOAD SYSTEM FORCING ALARM OPTIONAL CONNECTOR			2
X178	CONNETTORE PRESA ACCENDISIGARI / CIGAR LIGHTER CONNECTOR			7
X185	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA CRUSCOTTO / DRIVER POSITION - DASHBOARD HARNESS INTERFACE CONNECTOR			
X186	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA CRUSCOTTO / DRIVER POSITION - DASHBOARD HARNESS INTERFACE CONNECTOR			
X206	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA CRUSCOTTO / DRIVER POSITION - DASHBOARD HARNESS INTERFACE CONNECTOR			
X224	CONNETTORE KIT EMERGENZA FRENO / EMERGENCY BRAKE KIT CONNECTOR			1
X280	CONNETTORE DIAGNOSTICA ODB / ODB DIAGNOSTICK CONNECTOR			5
X474	CONNETTORE SCATOLA RELE'-FUSIBILI / RELAYS-FUSES BOX CONNECTOR			
X476	CONNETTORE DIAGNOSTICA MERCEDES / MERCEDES DIAGNOSTICK CONNECTOR			2
X675	CONNETTORE KIT PRESA RIMORCHIO / TRAILER KIT CONNECTOR			8
X720	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA MOTORE / DRIVER POSITION - ENGINE HARNESS INTERFACE CONNECTOR			
X725	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA MOTORE / DRIVER POSITION - ENGINE HARNESS INTERFACE CONNECTOR			
X730	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.			

Nome/Item	Descrizione/Description	Fg/Sh
X731	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	
X732	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	
X733	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	
X740	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	

COLORI FILI	
A	AZZURRO
B	BIANCO
C	ARANCIONE
G	GIALLO
H	GRIGIO
L	BLU
M	MARRONE
N	NERO
R	ROSSO
S	ROSA
V	VERDE
Z	VIOLA

NOTA: LA COLORAZIONE DEI FILI BICOLORE VIENE INDICATA CON LA COMPOSIZIONE DELLE SIGLE SOPRA INDICATE , ESEMPIO:
 G/V ->GIALLO/VERDE(COLORAZIONE TRASVERSALE)
 G-V ->GIALLO-VERDE(COLORAZIONE LONGITUDINALE)

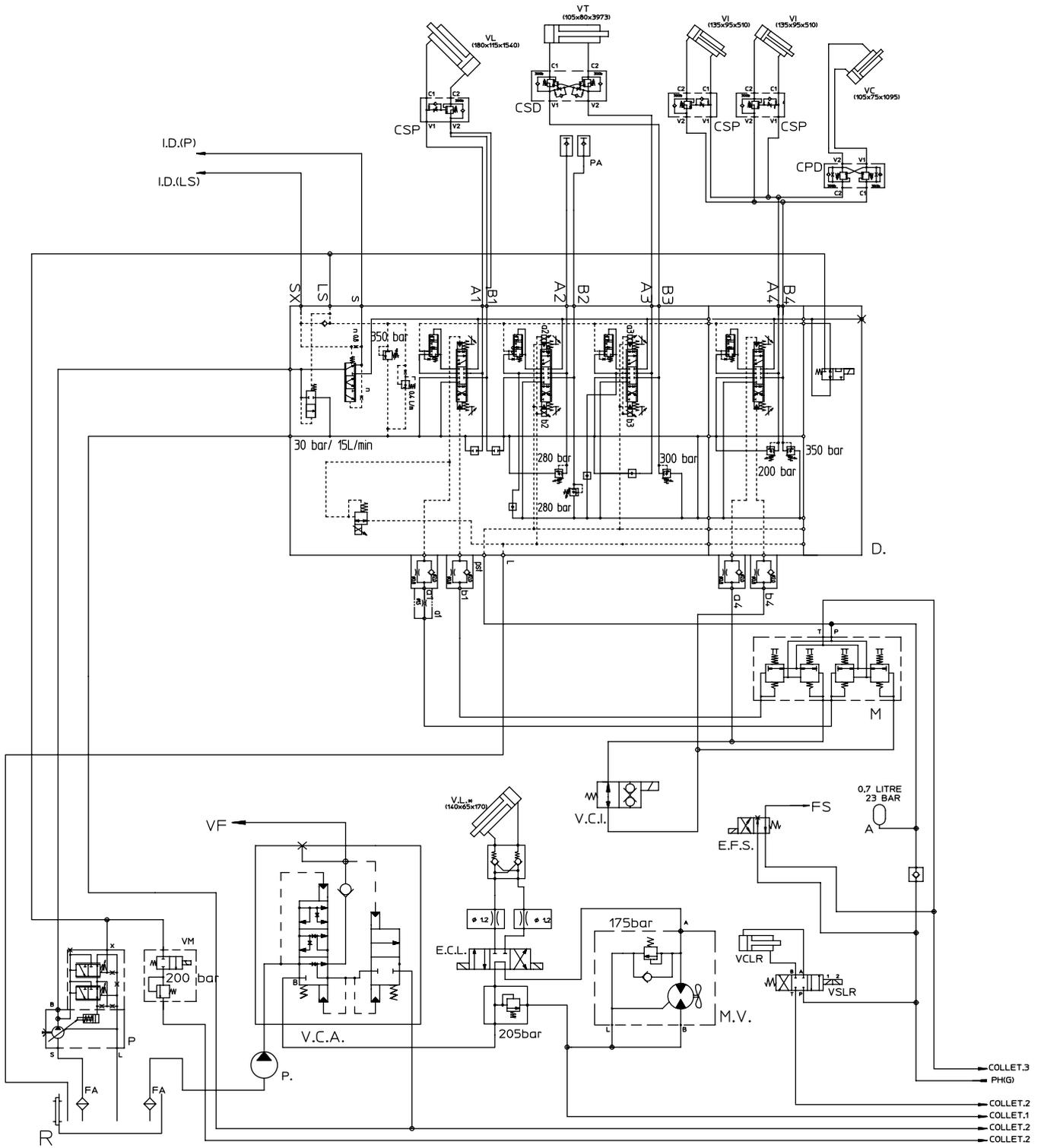
WIRING COLOURS	
A	LIGHTBLUE
B	WHITE
C	ORANGE
G	YELLOW
H	GREY
L	BLUE
M	BROWN
N	BLACK
R	RED
S	PINK
V	GREEN
Z	VIOLET

EXAMPLE:
 G/V ->YELLOW/GREEN(TRANSVERSE COLOURS)
 G-V ->YELLOW-GREEN(LONGITUDINAL COLOURS)

REV.	DESCRIPTION	DATE	DRAWN	CHECKED	CID	CIAM REF.	PAGE/CAT

HYDRAULIC SYSTEMS

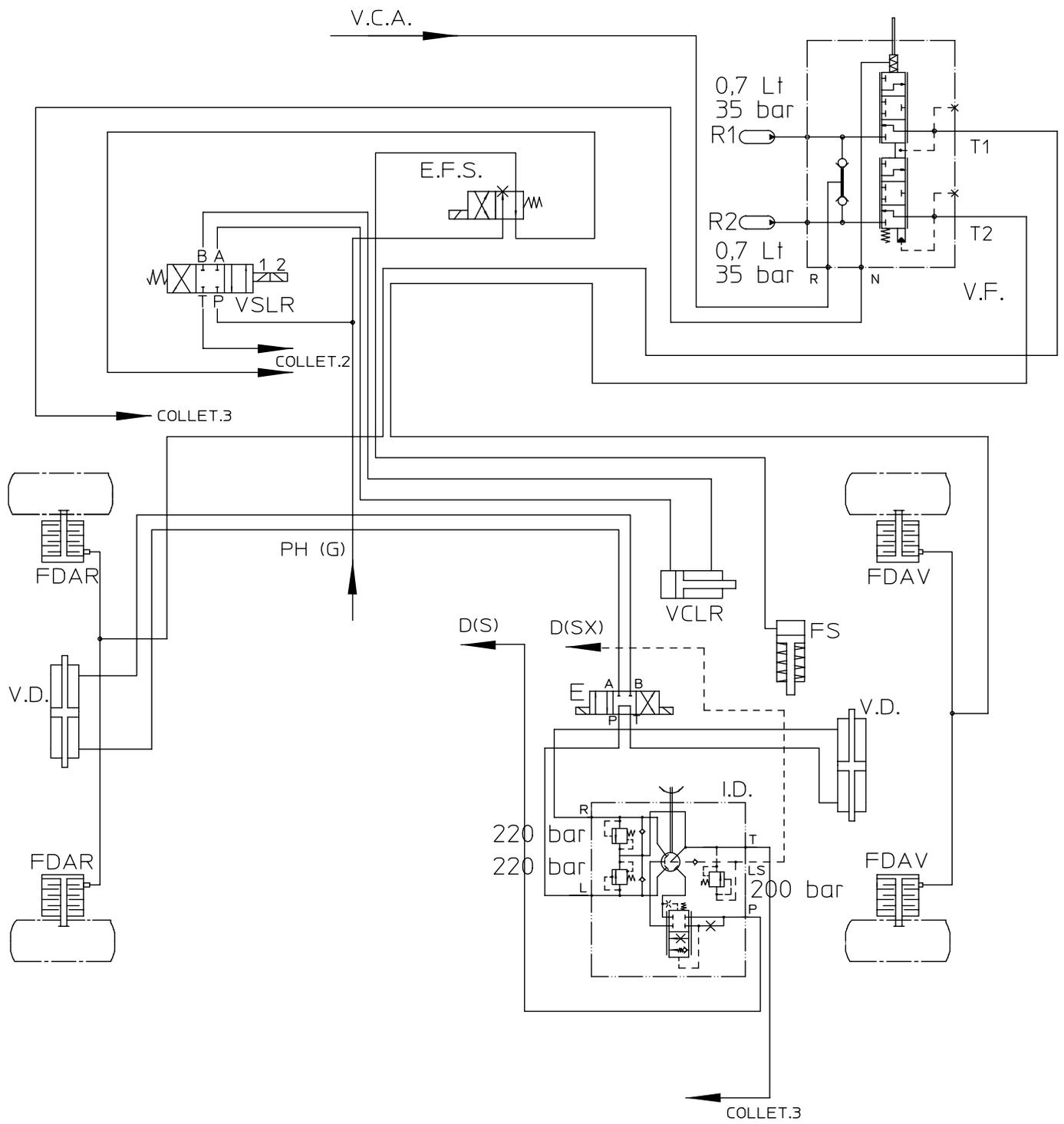
MOVEMENT HYDRAULIC SYSTEM DIAGRAM



KEY TO MOVEMENT HYDRAULIC SYSTEM DIAGRAM

A	= Pressure booster
COLLET	= Manifold
CPD	= Locking and balancing valve
CSD	= Double piloted relief valve
CSP	= Piloted relief valve
D.	= Directional control valve
ECL	= Levelling control solenoid valve
EFS	= Parking brake electrovalve
F.A.	= Intake lter
FS	= Parking brake control cylinder
I.D.(P)	= P connection of power steering unit
I.D.(LS)	= LS connection of power steering unit
M	= Control lever
M.V.	= Fan motor
P.	= Movement pump
P.A.	= Optional attachment
PH (G)	= G connection of hydrostatic pump
P.V.	= Fan pump
R.	= Hydraulic uid tank
SM	= Valve for telescope and option control
V.C.	= Compensation cylinder
VCA	= Accumulator charging valve
VCI	= Tilting cutting valve
VCLR	= Slow-fast control cylinder
VF	= Brakes valve
V.I.	= Tilting cylinder
V.L.	= Lifting cylinder
V.L.*	= Levelling cylinder
V.T.	= Boom extension cylinder
VM	= Solenoid and relief valve
VSLR	= Slow-fast selector valve

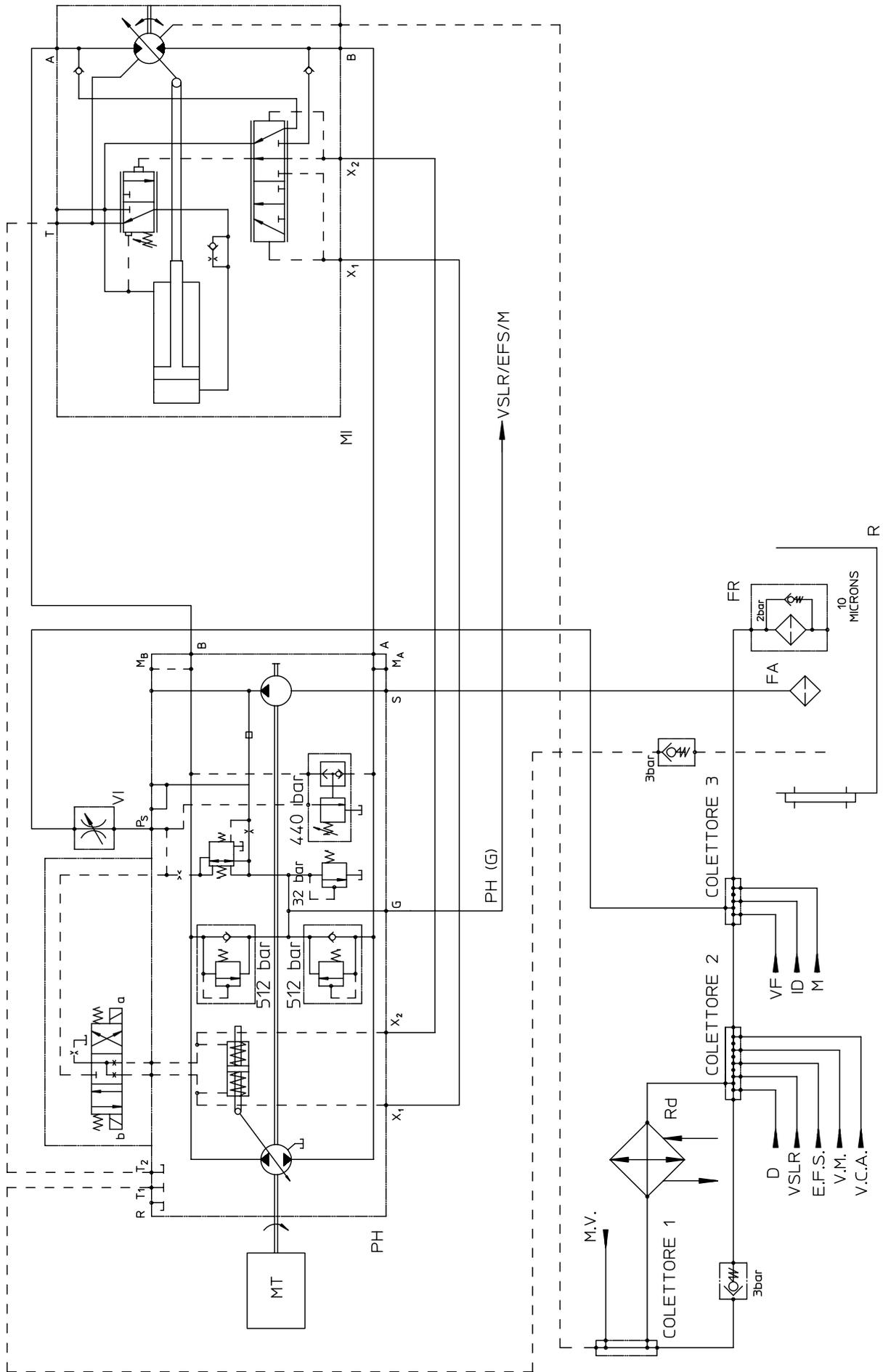
BRAKE/STEERING SYSTEM DIAGRAM



KEY TO BRAKE/STEERING SYSTEM DIAGRAM

COLLET	= Manifold
D. (S)	= S connection of directional control valve
D. (SX)	= SX connection of directional control valve
E	= Solenoid valve
F.S.	= Parking brake control cylinder
EFS	= Parking brake electrovalve
FDAR	= Rear axle disk brake
FDAV	= Front axle disk brake
I.D.	= Power steering unit
PH (G)	= G connection of hydrostatic pump
V.D.	= Steering Cylinder
VCA	= Accumulator charging valve
VF	= Brakes valve
VCLR	= Slow-fast control cylinder
VSLR	= Slow-fast selector valve

TRANSMISSION HYDRAULIC SYSTEM DIAGRAM



KEY TO TRANSMISSION HYDRAULIC SYSTEM DIAGRAM

COLLETTORE	= Manifold
D.	= Directional control valve
F.A.	= Intake filter
EFS	= Parking brake electrovalve
F.R.	= Drain filter
I.D.	= Power steering unit
M	= Control lever
M.I.	= Hydrostatic motor
M.T.	= Engine
M.V.	= Fan Motor
P.	= Movement pump
P.H.	= Hydrostatic pump
P.H. (G)	= G connection of hydrostatic pump
R.	= Hydraulic fluid tank
Rd	= Oil radiator
V.I.	= Inching valve
VF	= Brakes valve
VCA	= Accumulator charging valve
VM	= Solenoid and relief valve
VSLR	= Slow-fast selector valve

***5 - OPTIONAL
ATTACHMENTS
FOR USE WITH
THE RANGE***

TABLE OF CONTENTS

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TECHNICAL SPECIFICATIONS OF ATTACHMENTS 5-8

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.



All attachments with a suspended load (winch, crane jib, crane jib with winch, hook, etc.) MUST be used with a lift truck equipped with a hydraulic movement cut-out device. In this case, the movement cut-out must be switched on and the transverse attitude perfectly horizontal.



Only attachments approved by MANITOU are to be used on our lift trucks (see: 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE: TECHNICAL SPECIFICATIONS OF ATTACHMENTS). The manufacturer's liability will be denied in case of modification or of attachment adaptation carried out without his knowing it.



Depending on their size, certain attachments may, when the boom is lowered and retracted, come into contact with the front tyres and cause damage to them, if reverse tilt is activated in the forward tilt direction. TO REMOVE THIS RISK, EXTEND THE TELESCOPE TO A SUFFICIENT EXTENT FOR THE PARTICULAR LIFT TRUCK AND ATTACHMENT SO THAT THIS CONTACT IS NOT POSSIBLE.



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

PICKING UP THE ATTACHMENTS

A - ATTACHMENT WITHOUT HYDRAULICS AND HAND LOCKING DEVICE

TAKING UP AN ATTACHMENT

- Ensure that the attachment is in a position facilitating the locking 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 boom 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 boom, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.

HAND LOCKING

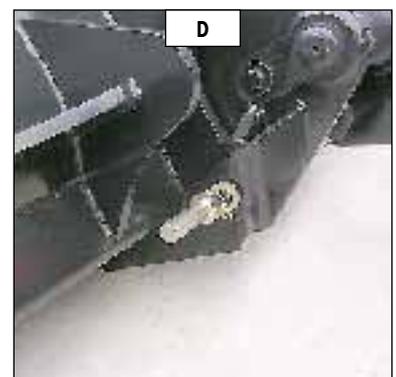
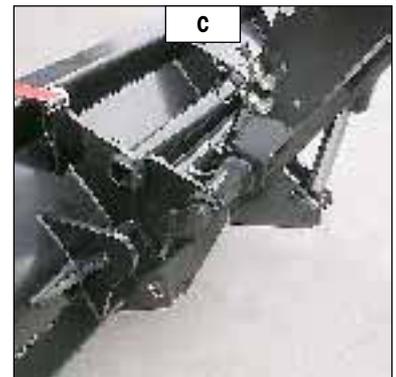
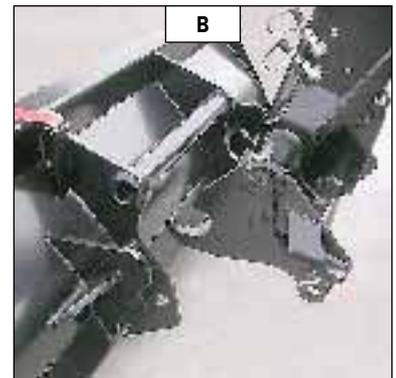
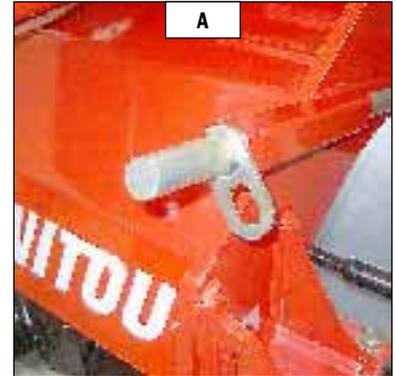
- Take the locking pin and the clip on the bracket (fig. A) and lock the attachment (fig. D). Do not forget to refit the clip.

HAND RELEASING

- Proceed in the reverse order of paragraph HAND LOCKING while making sure you put back 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 - HYDRAULIC ATTACHMENT AND HAND LOCKING DEVICE

TAKING UP AN ATTACHMENT

- Ensure that the attachment is in a position facilitating the locking 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 boom 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 boom, 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 refit 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 logic of the attachment's hydraulic movements.

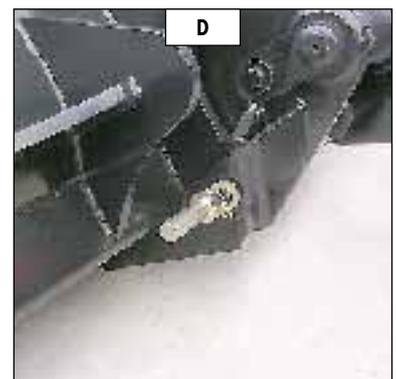
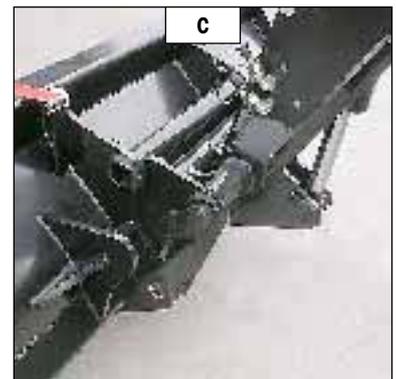
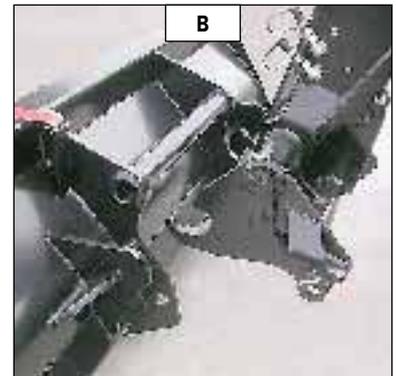
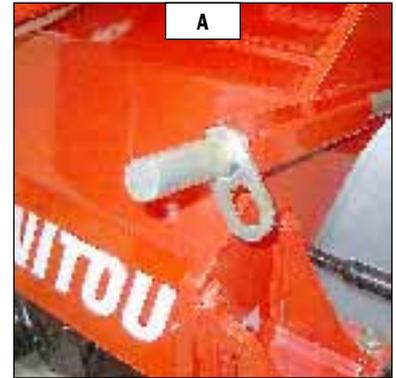
 **Make sure that the rapid connectors are clean and protect the holes which are not used, with the caps provided.**

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).

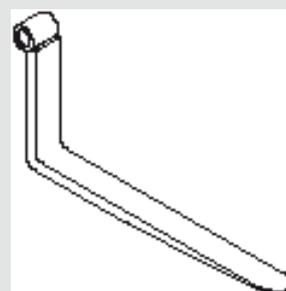
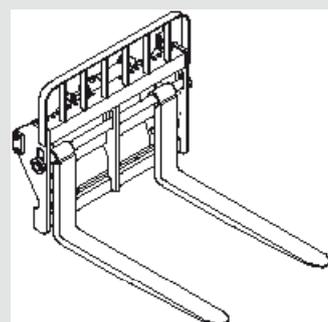
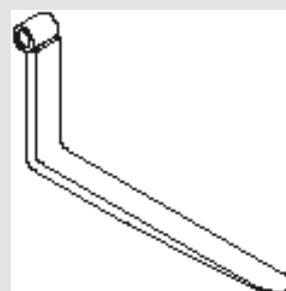
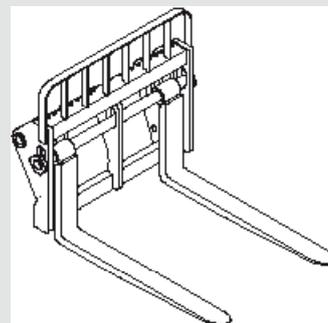
LAYING AN ATTACHMENT

- 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.

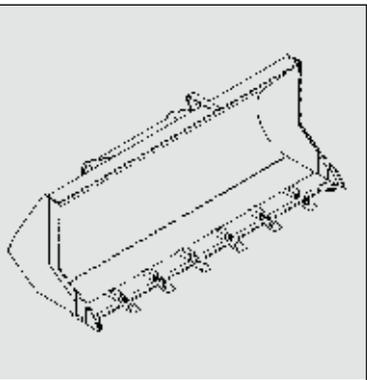


TECHNICAL SPECIFICATIONS OF ATTACHMENTS

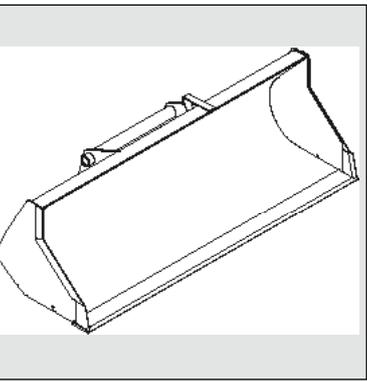
FLOATING FORK CARRIAGE			
	PF FLOTT / L 1430	PF FLOTT / L 2200	
PART NUMBER	690996	719327	
Rated capacity	12000 kg	12000 kg	
Width	1430 mm	2200 mm	
Weight	430 kg	495 kg	
FLOATING FORK			
PART NUMBER	719178	882950	688975
Section	200x70x1500 mm	200x70x1800 mm	200x80x2400 mm
Weight	125 kg	130	145
FLOATING FORK SIDE-SHIFT CARRIAGE			
	TDL FL / 550-2245	TDL FL / 600-2200	
RÉFÉRENCE	724189	718018	
Capacité nominale	8000 kg	8000 kg	
Déplacement latéral	2x200 mm	2x200 mm	
Largeur	2600 mm	2600 mm	
Masse	1310 kg	1310 kg	
FLOATING FORK			
PART NUMBER	743599	724875	719370
Section	200x70x1500 mm	200x70x1800 mm	200x80x2400 mm
Weight	125 kg	130	145



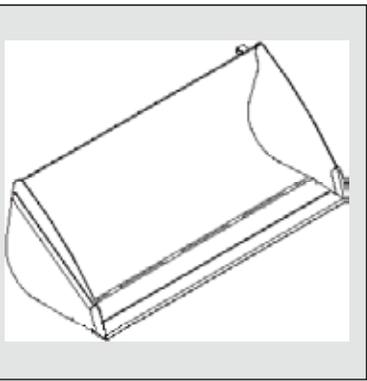
BUILDING BUCKET			
	CBC 1000 L2500	CBC 1500 L2500	CBC 2000 L2500
PART NUMBER	744053	744054	744055
Rated capacity	1000 l	1500 l	2000 l
Width	2500 mm	2500 mm	2500 mm
Weight	618 kg	704 kg	898 kg



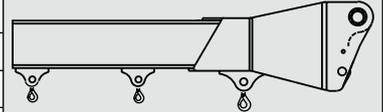
LOADING BUCKET			
	CBR 1000 L2500	CBR 1500 L2500	CBR 2000 L2500
PART NUMBER	744051	744052	743646
Rated capacity	1000 l	1500 l	2000 l
Width	2500 mm	2500 mm	2500 mm
Weight	690 kg	775 kg	940 kg



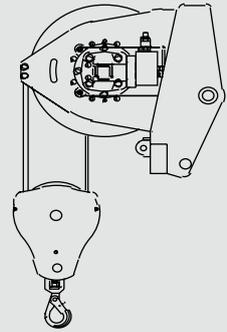
GRAIN BUCKET			
	CBA 2000 L2500	CBA 3000 L2500	CBA 4000 L2500
PART NUMBER	744024	744025	743598
Rated capacity	2000 l	3000 l	4000 l
Width	2500 mm	2500 mm	2500 mm
Weight	716 kg	868 kg	1040 kg



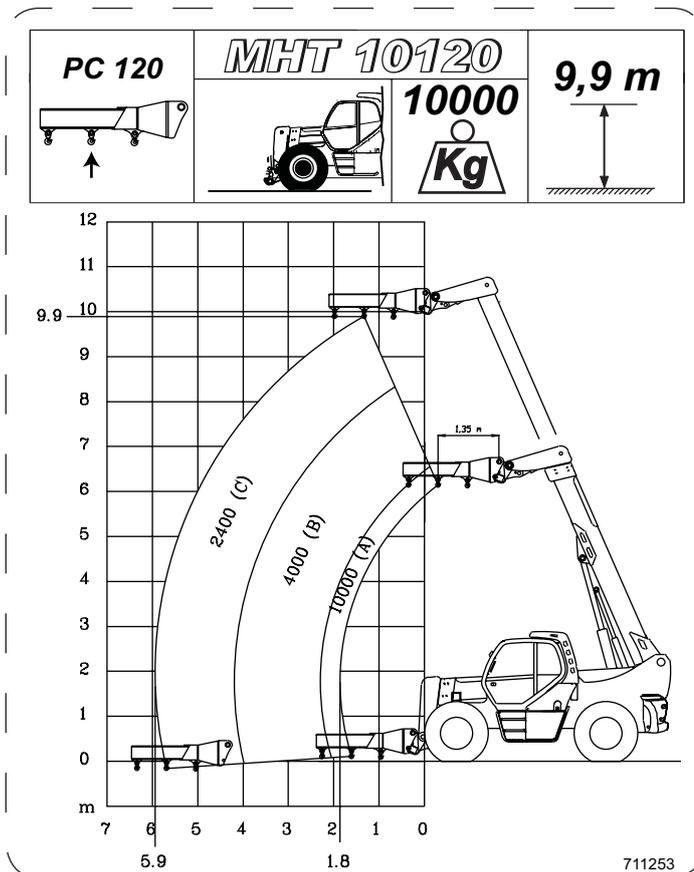
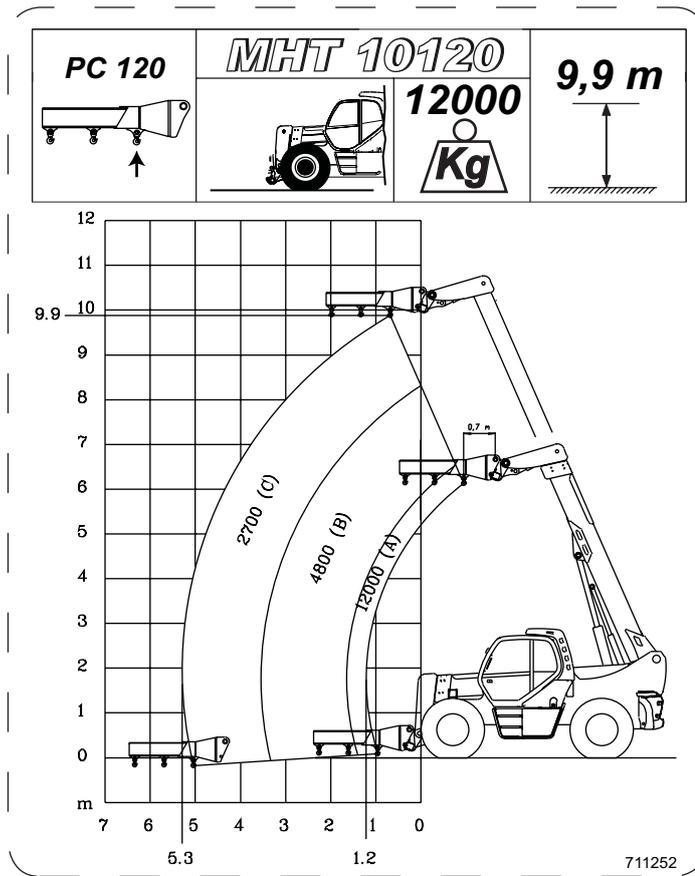
JIB with HOOKS			
 MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.			
	PC120		
RÉFÉRENCE	710403		
Capacité nominale	12000/10000/7500kg		
Masse	650 kg		

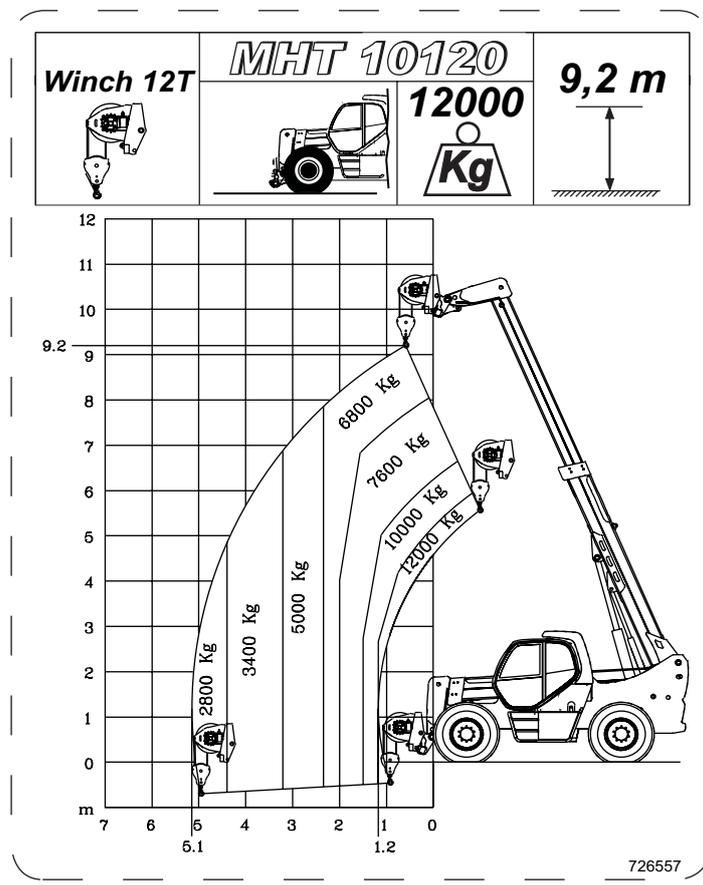
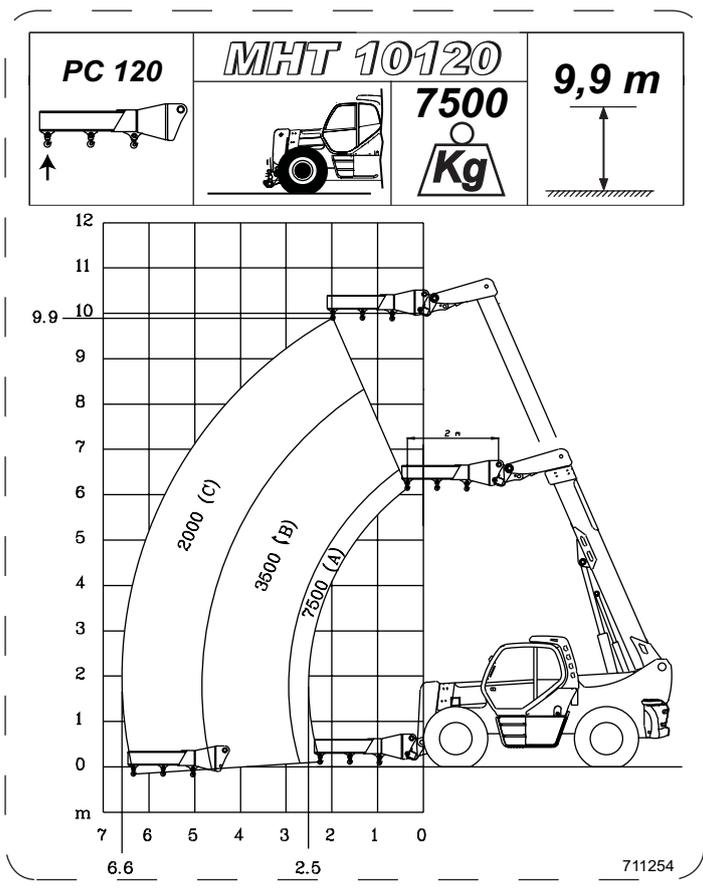


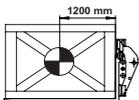
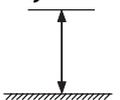
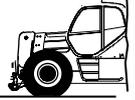
WINCH			
 MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.			
	TREUIL 12 T		
RÉFÉRENCE	710405		
Capacité nominale	12000 kg		
Masse	1185 kg		

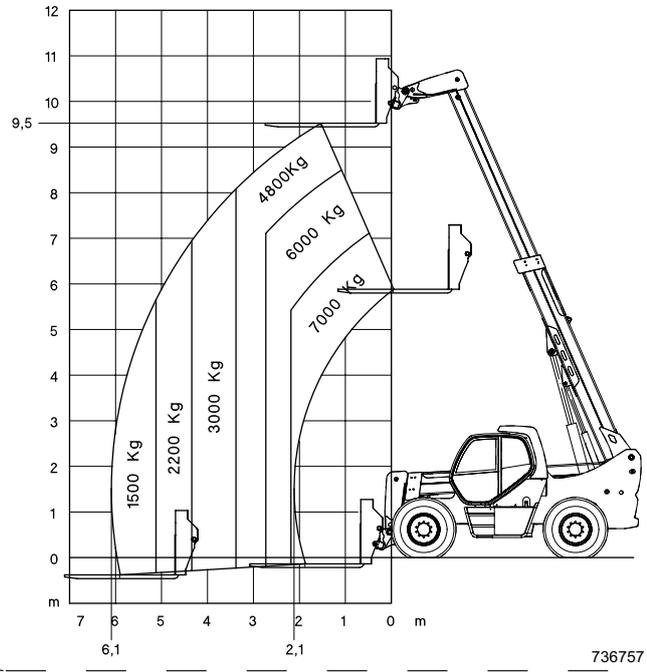


ABAUQE DE CHARGE

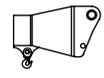
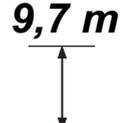


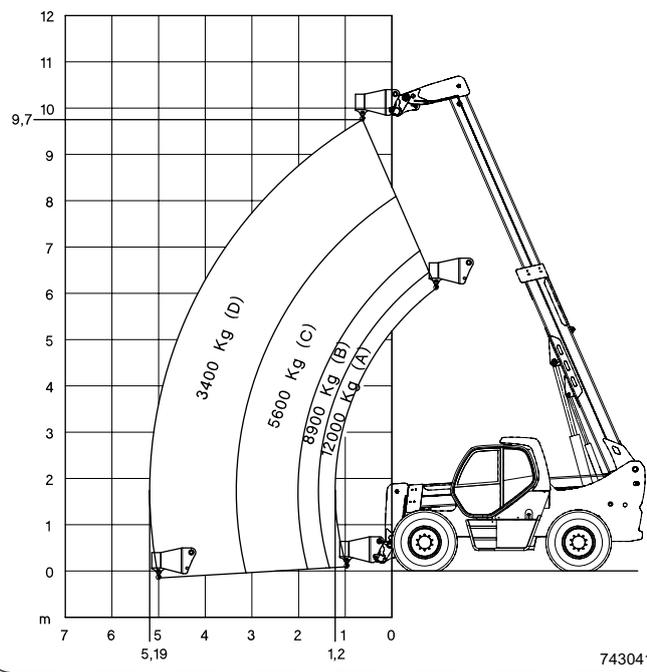


Fork TDL + positioner L 2,5 m 	MHT 10120	9,5 m 
	 7000 	

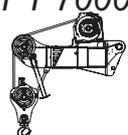
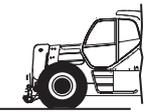
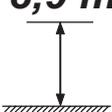


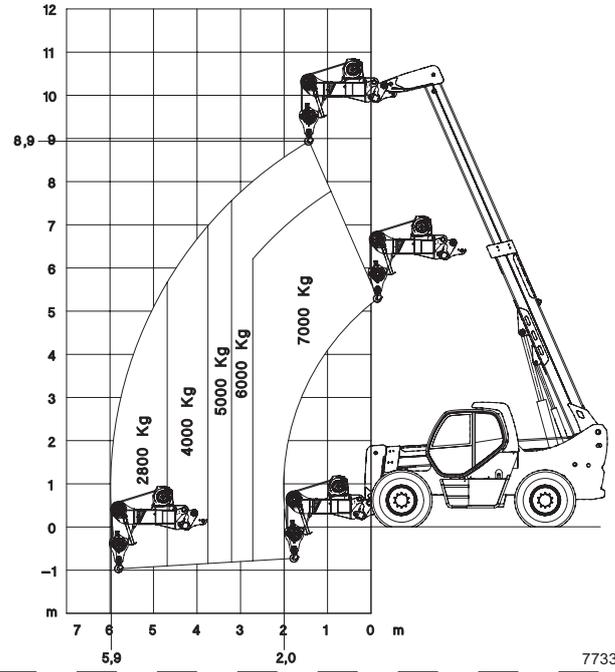
736757

PC 12 T 	MHT 10120	9,7 m 
	 12000 	



743041

PT 7000 	MHT 10120 	7000  8,9 m 
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773376

6 - SPECIFIC AUSTRALIA

Operator manual supplement:

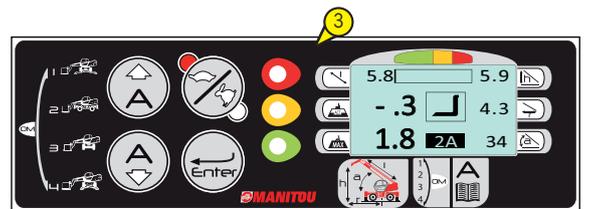
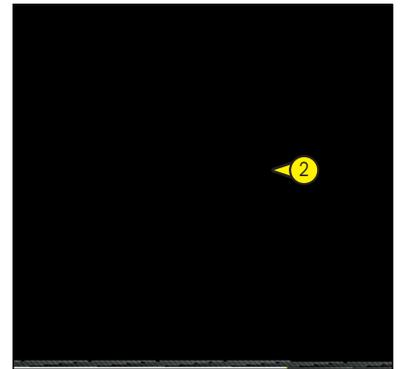
HOOK SUSPENDED LOAD and ATTACHMENT FORKS

1 - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE (SAFETY SYSTEM LMI)

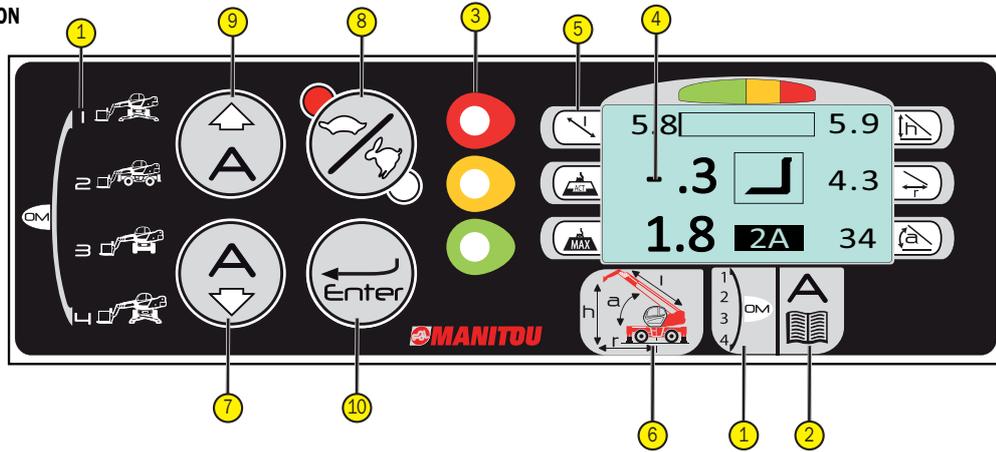
Components location on the machine.

The sensors are positioned on the boom and cylinders in order to detect data when working, while the main unit and the control panel are located inside the cabin.

- 1 - Length/Angle sensor: on the left side of the boom.
- 2 - Nr. 4 Pressure Transducers: on Main and Compensation cylinders.
- 3 - Control Panel: in the cabin.



CONTROL PANEL DESCRIPTION



It gives to the operator all information in order to work in safe conditions and allows correct setting.

- 1 - Symbols identifying the operating modes of the machine (frontal on tyres).
The selections are made automatically.
- 2 - Identification symbols of the attachments (manual selection via the panel using the Ahkey).
- 3 - Green/Yellow/Red indicator lights signalling the operating status (safety/alarm/block).
- 4 - Alphanumerical LCD display showing the operating data.
- 5 - Symbols and letters concerning the indications provided by the display.
- 6 - Icon depicting the machine and the letters of the geometric data displayed.
- 7 - Contrast regulating key.
- 8 - Key for selecting the speed of the hydraulic movements: standard or slow.
- 9 - Key for selecting the type of attachment (amongst those installed).
- 10 - Key for confirming the attachment and contrast value.

What do we have to check when starting the machine?

Once the self test is completed, the control panel informs the operator of the working conditions which the machine is set, asking to check it and at this stage, the display shows the page where the main readings are monitored.

SWITCHING THE MACHINE ON

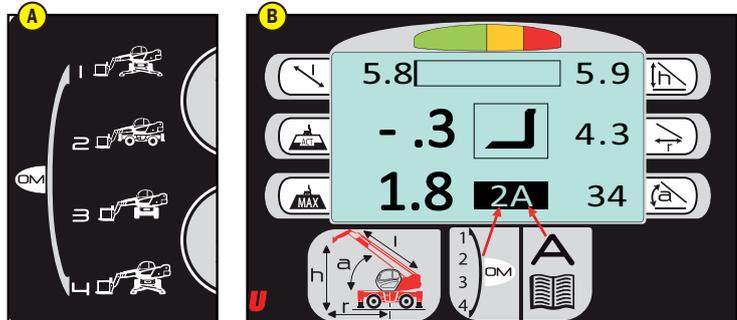
⚠️ it is compulsory, before doing any work, to make sure that the selected table corresponds to the selected attachment.
⚠️ if a different attachment is selected, it's compulsory to select the corresponding table (please see "attachment selection and operating mode" section).

OM = operating mode (Fig. A)

There are 4 operating modes available :

- 1 - On Stabilisers
- 2 - On tyres (turret frontal).
- 3 - On tyres (turret rotated).
- 4 - On partially extended stabilisers.

A = Loading Table corresponding to attachments used.(Fig. B)



LCD DISPLAY CONTRAST ADJUSTMENT KEY

Press the  (Fig. C) key to enter the "display autocontrast" function.

The automatic display carries out a scan and changes the contrast.

Press Enter to select the required display contrast.

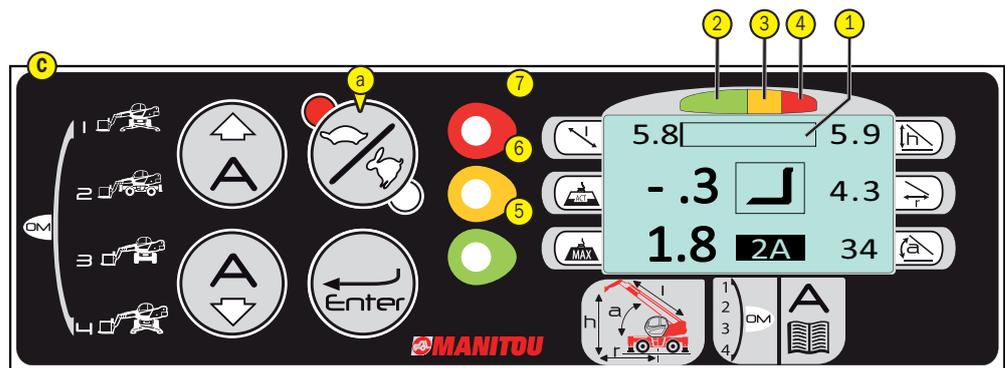
MOVEMENT SPEED SELECTOR KEY

Press this key (ref. a Fig. C) to modify the speed of the hydraulic movements (not activated when platform is used).

Slow =  Standards = 

PANEL MONITORING

Lifting Conditions % and alarms



1 - LCD BAR SHOWING THE LIFTED LOAD IN PERCENTAGE TO THE MAXIMUM ADMITTED LOAD IN THAT WORKING CONDITION.

2 - GREEN REFERENCE: SAFE ZONE.

3 - AMBER REFERENCE: ALARM ZONE (LIFTED LOAD HIGHER THAN 90% OF MAXIMUM ADMITTED LOAD).

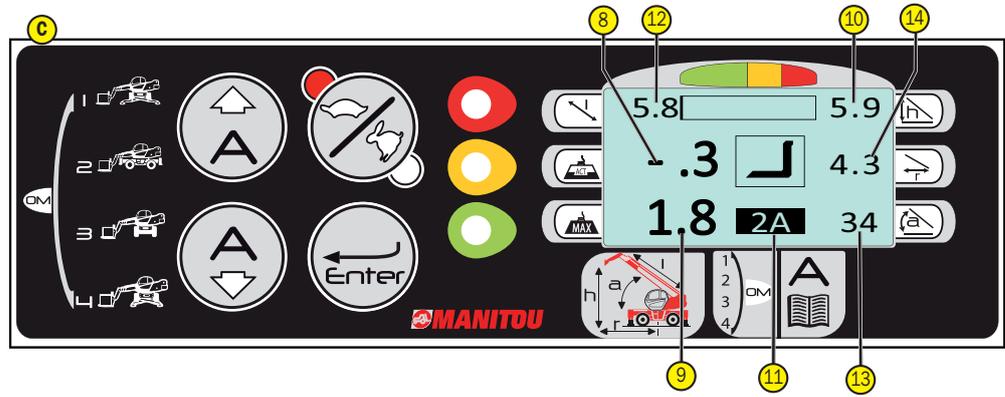
4 - RED REFERENCE: SHUT-OFF ZONE (LIFTED LOAD HIGHER THAN 100% OF MAXIMUM ADMITTED LOAD).

5 - GREEN LIGHT ON: SAFE WORKING.

6 - AMBER LIGHT ON: ALARM (EXTERNAL BUZZER ON).

7 - RED LIGHT ON: DANGEROUS MOVEMENTS SHUT OFF (EXTERNAL BUZZER ON).

Main Working Data Reading on the display.



8 - WEIGHT OF LIFTED LOAD,

Symbol: **ACT** (reading in "Tonnes", with a decimal point).

9 - MAXIMUM ADMITTED LOAD: In machine present configuration.

Graphic symbol: **MAX** (Reading in "Tonnes", with a decimal point).

10 - WORKING RADIUS: distance from the centre of turret rotation to applied load.

Graphic symbol : **r** (Reading in "Metres", with a decimal point).

11 - OPERATING CONFIGURATION.

The first figure concerns the operating mode (**OM**) while the second figure concerns the attachment used (A - to obtain correct letter-accessory references, consult the manual (chap. 5) or the diagram book e.g. : A= forks, C= Winch 3T....).



In case of Imperial Measure System, the weight will be defined in "Pounds/1000" and the geometric data in "Feet".

12 - BOOM LENGTH.

Graphic Symbol : **l** (Reading in "Metres", with a decimal point).

13 - BOOM ANGLE.

Graphic Symbol : **a** (Reading in "Degrees" with a decimal point).

14 - HEIGHT FROM GROUND.

Graphic Symbol : **h** (Reading in "Metres", with a decimal point).

SELECTING THE ATTACHMENT AND OPERATING MODE

The machine can work with different attachments and their related Tables which are selected by the Operator. The load Charts, are also changed by the different Operating Modes of the machine which is done automatically by microswitches installed onboard.

Each time an attachment is replaced, e.g. the forks are removed and a jib fitted, this setting must be done manually on the control panel, selecting the proper related Table **(A)**.

The selection of the Operating Mode **(OM)** is automatic because of the external micro-switches.

In the main working page, the Table of the selected attachment **(A)** and the Operating Mode **(OM)** of the machine appear in the indicated area, in the form of numbers/letters.

Monitoring through text messages

In order to have an easier understanding of working condition, the Operating Mode **(OM)** and the attachment **(A)**. Load Table can also be monitored in text form:

Pressing the  button, the display will show very clearly the Operating Mode and the selected attachment.

This page will be held for three seconds; after which the display returns to the main working page.

Setting up Load Tables

Starting from the basic monitoring, press the  button in order to change from that page to the page related to the **(OM)** Operating Mode and the **(A)** Tables related to the attachment being used.

The first pushed  button shows the jib used, to change and visualised the jib push again the switch until to see wich you disered.



 **During this operation, the system will automatically put itself in shut-down condition.**

After the right Table gets selected, press the  button to **confirm the selection** in order to make it effective.
Now the machine is ready to work.

 **Stopping and/or restarting the machine the previous Table will be kept valid, until the next manual selection is carried out.**

AUTO-DIAGNOSTIC

The LMI is equipped with an auto diagnostic system which is able to detect faulty pressure transducers, or boom angle/length sensors, broken cables or internal electronic faults. When an alarm occurs, the LMI puts itself in a safe condition stopping the dangerous movements and at the same time the display shows an alarm message on the first row. According to alarm code and message, it should be possible to identify the fault.

 **If necessary, contact your agent or dealer.**

WARNINGS

Ensure you conform with all recommendations and rules from the Manufacturer

- The LMI is an electronic device with the aim to help the operator in the current use of the machine, warning him by means of visual and acoustic signals while approaching dangerous conditions.
- However this device can't replace the operator good experience in the safe use of the machine.
- The responsibility of the operations in safe conditions of the machine is the operator concern as well as the accomplishment of all prescribed safety rules
- The Operator must be able to detect if the data given by the LMI are correct and correspond to actual working conditions.
- He must be able to utilise the data given by the LMI in order to operate in safe conditions in any time.
- The LMI is an electronic device including several sensing components, therefore it can be subject to failures or defects.
- The operator must recognise these events and he must take action (to proceed to repair if possible or to call MANITOU Assistance)
- Before starting the operations with the machine, the user must fully read this manual and follow the instructions at any time.
- The LMI is supplied with a key for shut-down function by-passing.
- In normal working operations, this key must be positioned not to by-pass shut-down.
- It's forbidden to use the key to lift loads exceeding the loads values allowed by the Manufacturer.
- The key can be used only when an emergency/malfunctioning occurs or a situation justifying its use.
- Only Authorised Personnel is allowed to the use of the key; they are also responsible for it.
- The LMI has a powerful FAIL-SAFE autodiagnosis program suitable to verify its good operations and the one of its transducers.
- In case a trouble has been detected, the LMI puts itself in a safe state by stopping the manoeuvres (please see the AUTODIAGNOSTIC chapter).
- In spite of this, the Operator, before starting the operation with the machine, must take care that the LMI is working correctly.
To do this, he must verify the validity of the displayed values by doing some tests.
He must verify that there are not messages or alarm indications; he must verify the correct operation of the manoeuvre stopping functions.
The operator is responsible for the correct setting of the machine load table and therefore for the right LMI set.
When switching-on the machine the last selected Table is kept valid, to allow Operator check.
- About this, please follow the instructions given in the ATTACHMENT SELECTION chapter.
An incorrect setting of the tables, can cause an incorrect LMI operation and therefore can provoke a dangerous situation for the machine.
- Operating conditions usually change when: Further attachment are fitted or removed (jib, winch, basket, forks) and relevant.
Table selecting mode is set on the control panel.
Outriggers Extension / Withdrawn, Turret Front/360° rotation, On Wheels/Outriggers, Operating Modes are set in automatic way by micro-switches.
- If the load machine is on the frontal rubbers and the tower slews 3° right or 3° left, automatically the LMI change load chart between frontal rubbers and rubbers 360°. It is allowed the reenter of the tower use of the key that it close the LMI.



Hazard on the safety system.

If the boom is completely lowered, take errors in the reading of the load lifted.

In these conditions, raise the boom slightly before extending it and check that the load reading on the display is the same as the actual load.

Generally, it's compulsory to follow the Manufacturer instructions and procedures at any time.

2 - SAFETY SYSTEM INHIBIT KEY (See chapter 2)

This key has two positions: "1" - "0".

In position "1" the safety system is enabled.

In position "0" the safety system is disabled

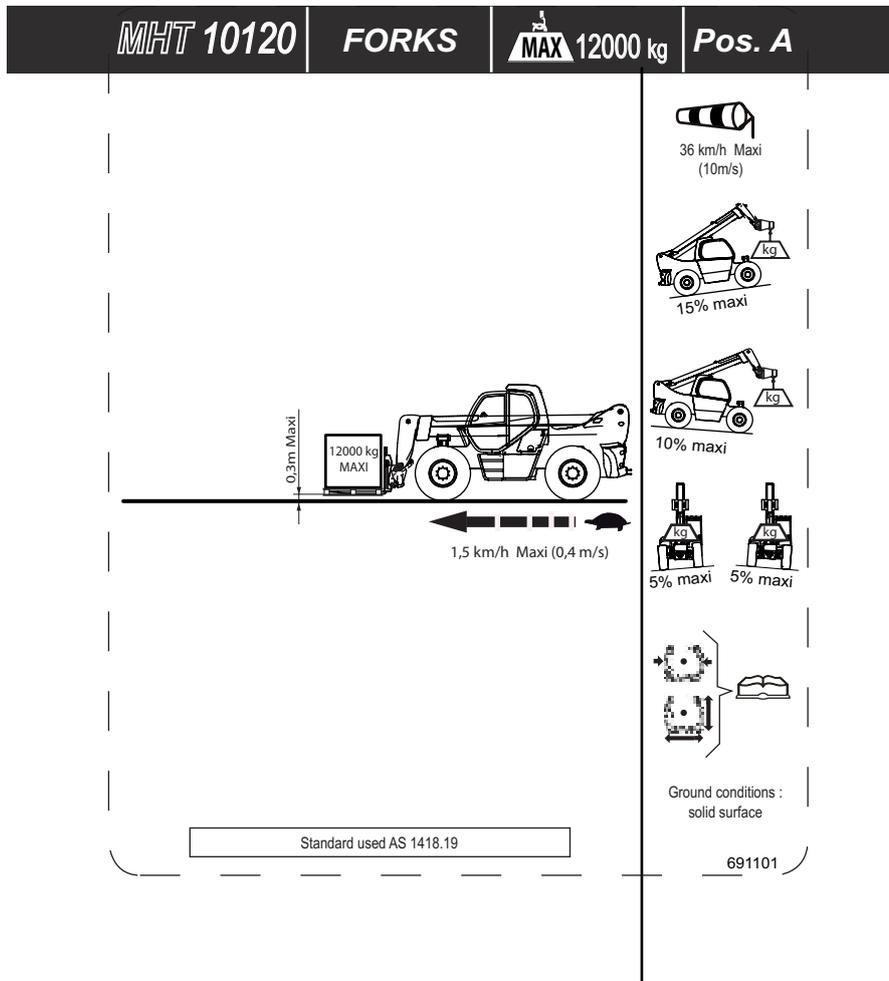
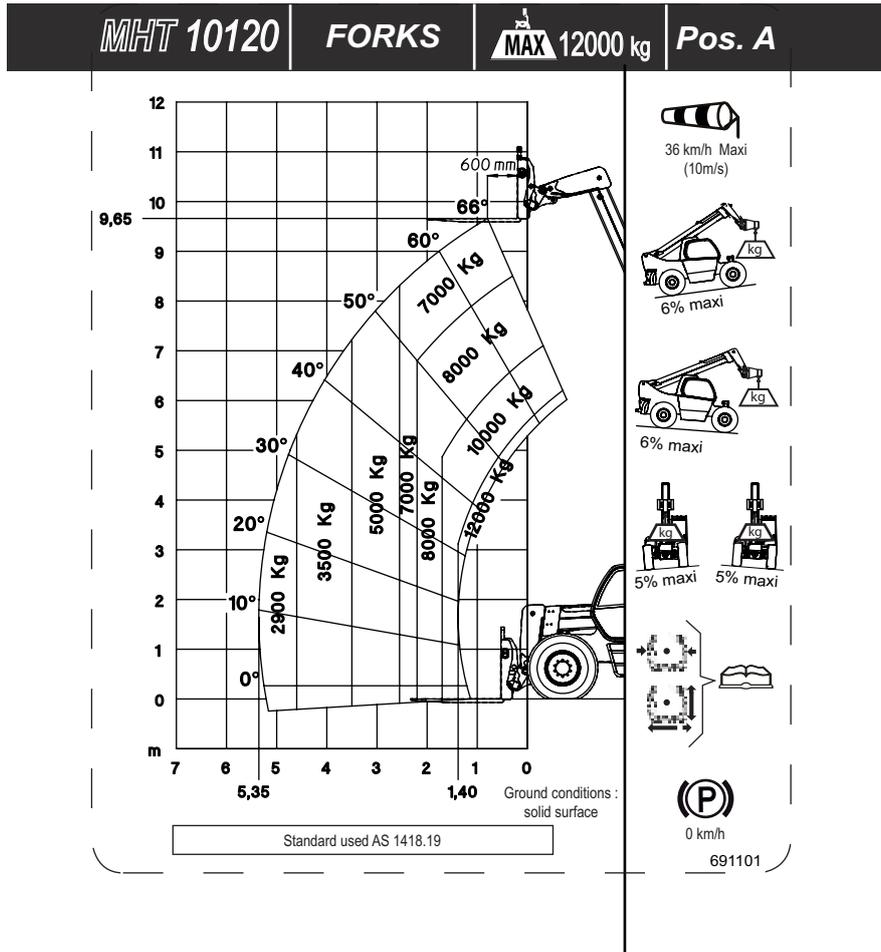


ATTENTION : the safety system can be inhibited only when operating with a shovel, by turning key "2".

With the system inhibited, there is nothing to prevent tilting or overloading of the lift truck.



LOAD CHART WITH HOOK and FORKS ATTACHMENT

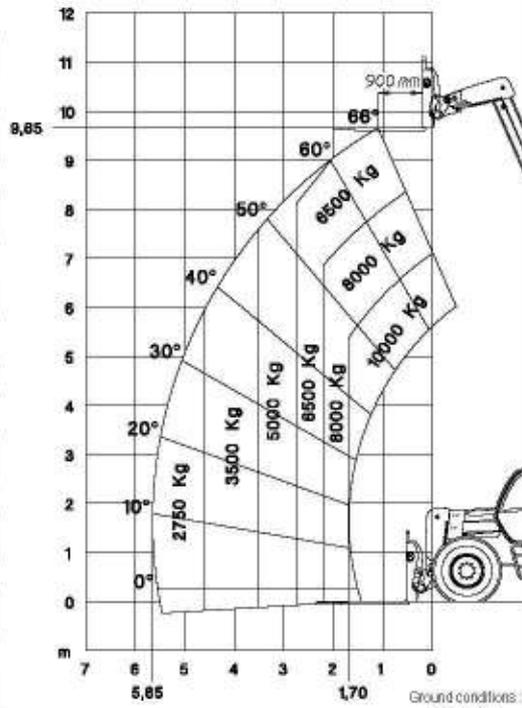


MHT 10120

FORKS

MAX 10000 kg

Pos. B



Standard used AS 1418.19



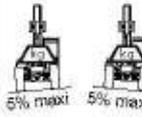
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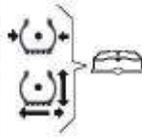
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0 km/h

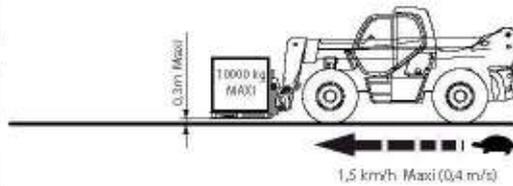
675407

MHT 10120

FORKS

MAX 10000 kg

Pos. B



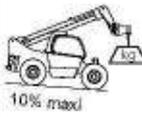
Standard used AS 1418.19



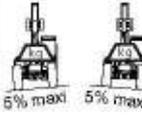
36 km/h Maxi (10 m/s)



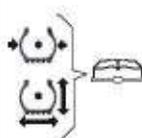
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Ground conditions:
solid surface

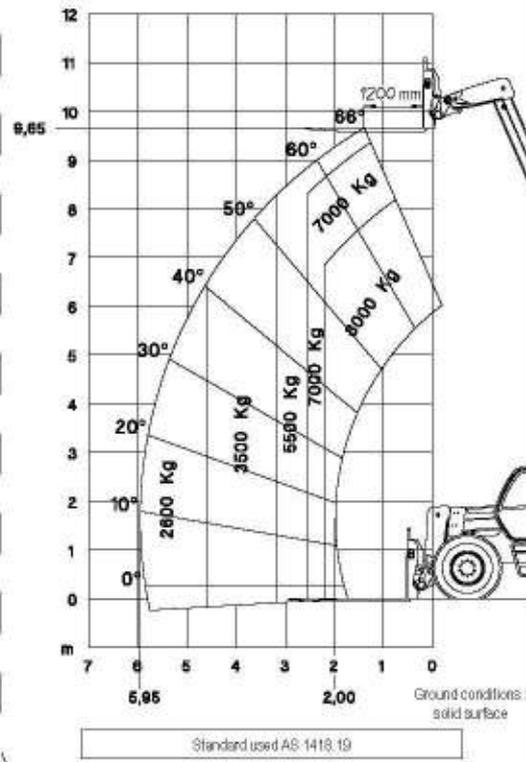
675407

MHT 10120

FORKS

MAX 8000 kg

Pos. C



36 km/h Max (10 m/s)

6% maxi

6% maxi

5% maxi

5% maxi

0 km/h

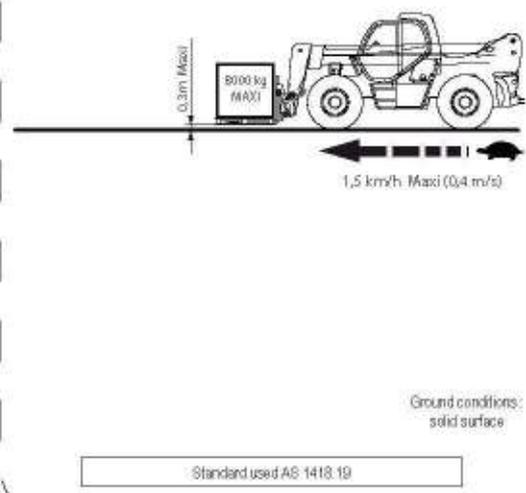
691102

MHT 10120

FORKS

MAX 8000 kg

Pos. C



36 km/h Max (10 m/s)

16% maxi

10% maxi

5% maxi

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Ground conditions: solid surface

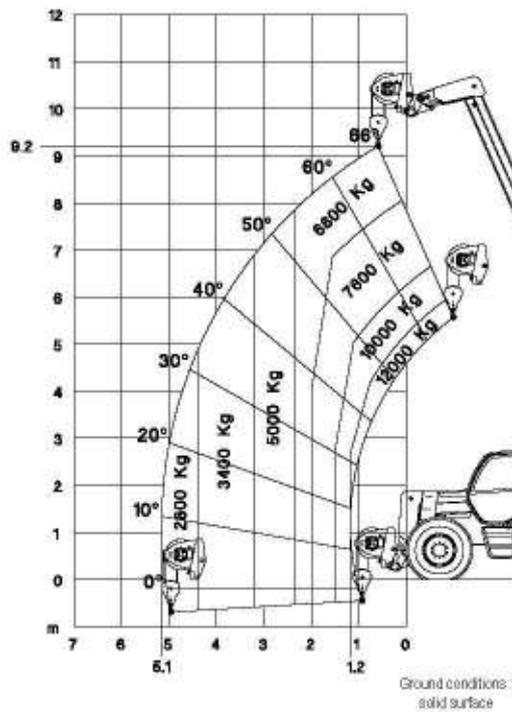
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MHT 10120

WINCH 12T

MAX 12000 kg

Pos. 1



Standard used AS 1418.19



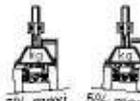
36 km/h Maxi
(10 m/s)



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0 km/h

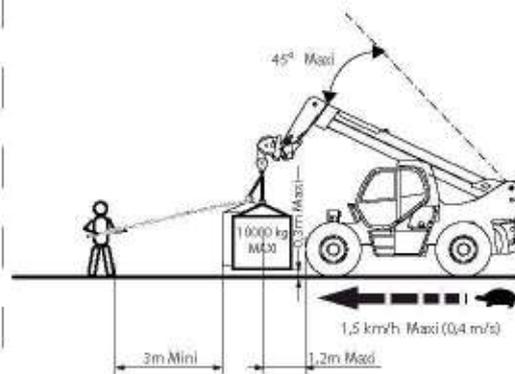
728577

MHT 10120

WINCH 12T

MAX 10000 kg

Pos. 1



Standard used AS 1418.19



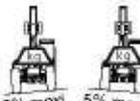
36 km/h Maxi
(10 m/s)



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5% maxi



5% maxi



5% maxi

Ground conditions:
solid surface

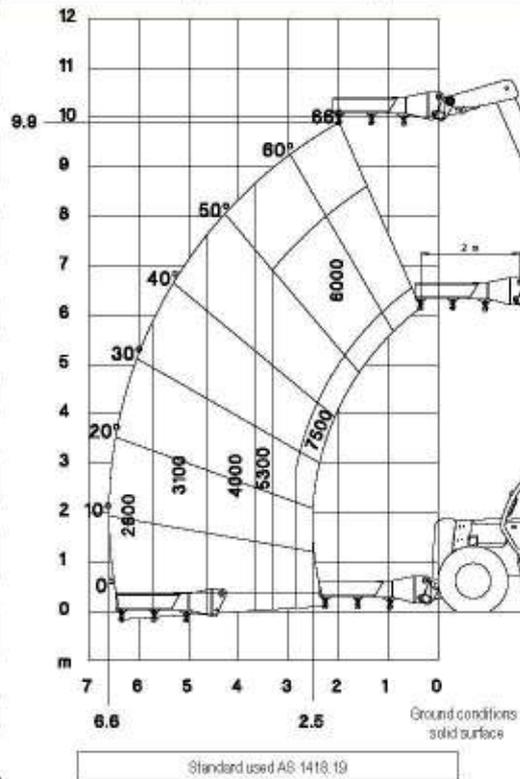
728577

MHT 10120

P 12000

MAX 7500 kg

Pos. Q



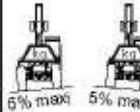
36 km/h Maxi (10 m/s)



6% maxi



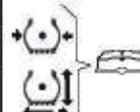
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5% maxi



0 km/h

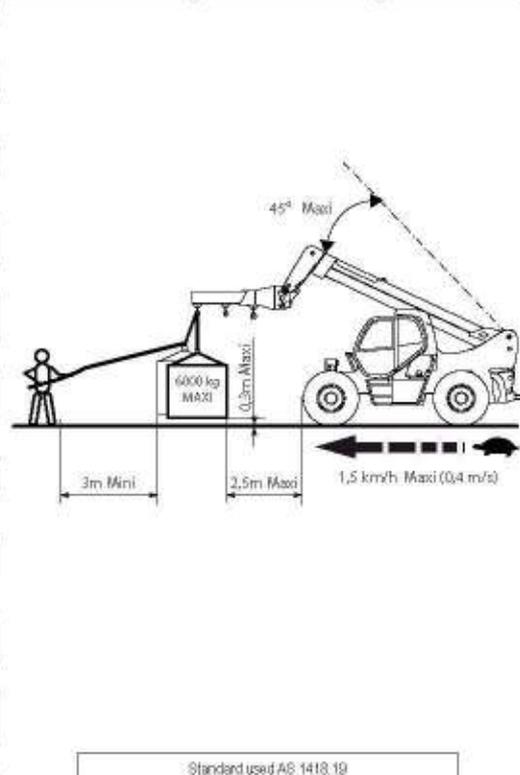
711254

MHT 10120

P 12000

MAX 6000 kg

Pos. Q



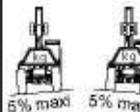
36 km/h Maxi (10 m/s)



15% maxi



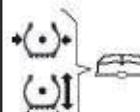
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Ground conditions: solid surface

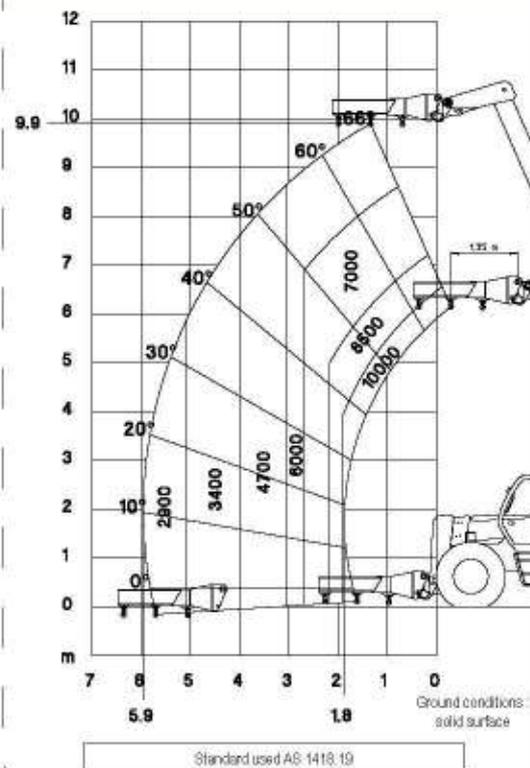
711254

MHT 10120

P 12000

MAX 10000 kg

Pos. R



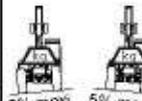
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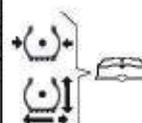
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0 km/h

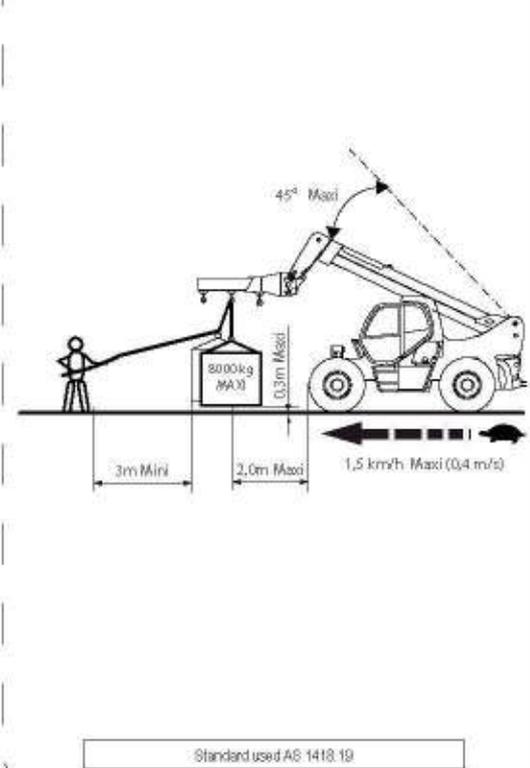
711253

MHT 10120

P 12000

MAX 8000 kg

Pos. R



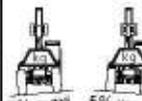
36 km/h Max (10 m/s)



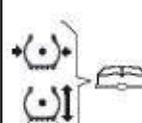
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Ground conditions: solid surface

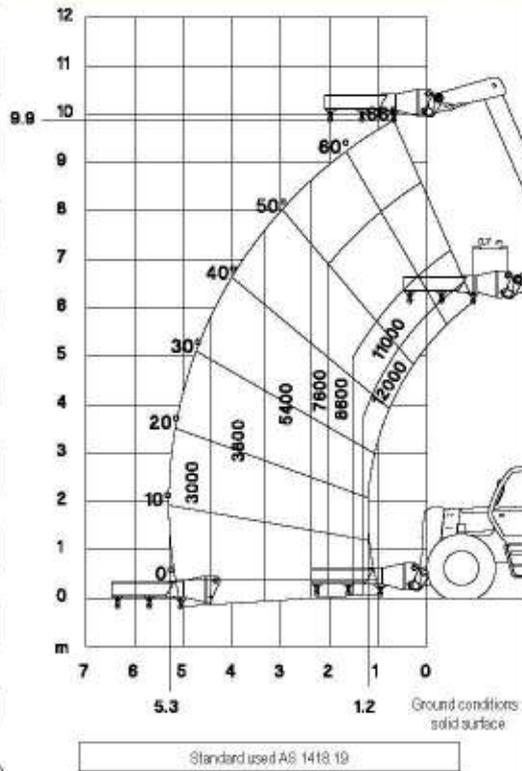
711253

MHT 10120

P 12000

MAX 12000 kg

Pos. S



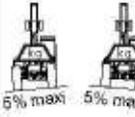
36 km/h Maxi (10 m/s)



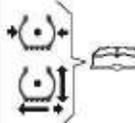
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0 km/h

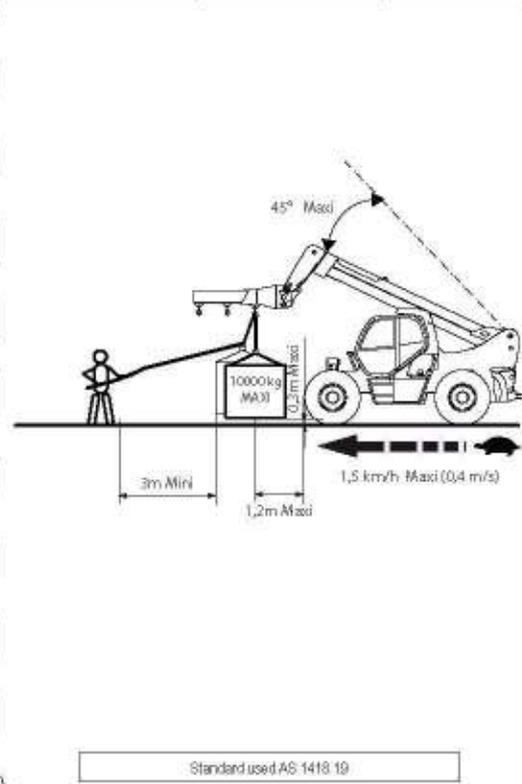
711252

MHT 10120

P 12000

MAX 10000 kg

Pos. S



36 km/h Maxi (10 m/s)



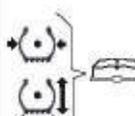
15% maxi



10% maxi



5% maxi



Ground conditions: solid surface

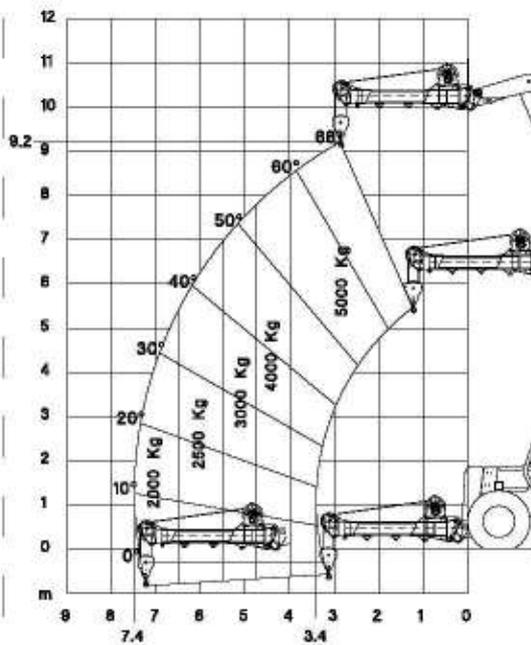
711252

MHT 10120

PT 5000

MAX 5000 kg

Pos. U



Ground conditions: solid surface

Standard used AS 1418.19



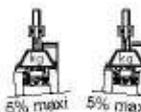
36 km/h Maxi (10m/s)



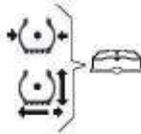
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0 km/h

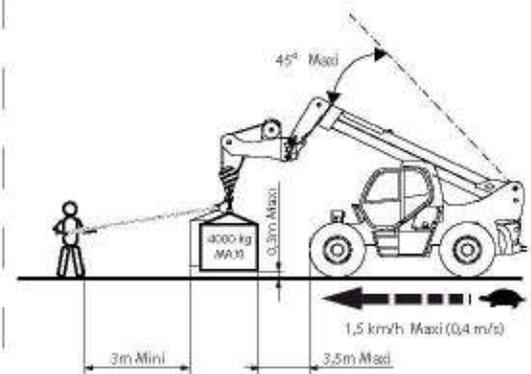
741471

MHT 10120

PT 5000

MAX 4000 kg

Pos. U



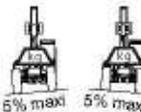
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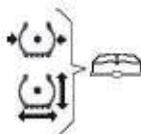
15% maxi



10% maxi



5% maxi



5% maxi

Ground conditions: solid surface

Standard used AS 1418.19

741471

4 - ELECTRIC AND HYDRAULIC SYSTEMS

ELECTRIC SYSTEM

STARTER MOTOR

The starter motor is fitted to the left of the engine and it needs no maintenance apart from cleaning and tightening of the terminals. Contact your agent or dealer if the starter motor does not work correctly.

ALTERNATOR

The alternator is mounted on the left of the engine. The alternator and the regulator are designed to function in a system polarized in one direction only, it is therefore necessary to take the following precautions while working on the battery charge circuit as it can otherwise cause serious damage to the electrical equipment:

Do not activate the alternator with the circuit open, but make sure all the terminals are tightened.

Do not dismantle the terminals on the back of the alternator with the combustion engine running, as it can otherwise damage the alternator. When installing a battery, make sure the connections are polarized correctly. The wire marked (+) must be connected to the positive terminal (+) of the battery and the wire marked (-) must be connected to the negative terminal (-) of the battery, and it must be earthed.

If a second battery is used to start up the combustion engine, always connect terminals having the same polarity (Fig. A). Mount a battery having the same voltage as that on the truck.

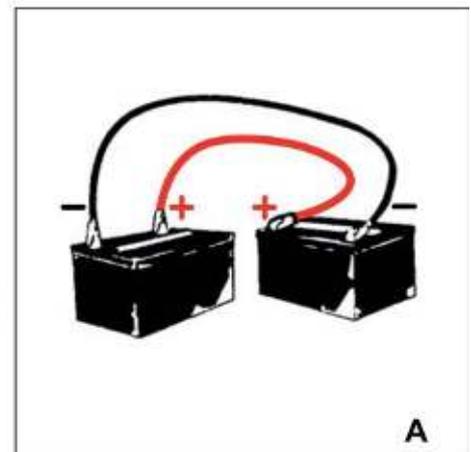
If an outside charger is used, always connect the (+) wire of the charger to the (+) terminal of the battery and the (-) wire of the charger to the (-) terminal of the battery and earthing.

Never short circuit the alternator terminals or earth them.

Never invert the alternator connections on the battery.

Never dismantle or change an electric connection with the engine running.

In case of electric welding on the truck, connect the negative cable of the welder directly to the part to be welded to prevent high voltage current from passing through the alternator and then disconnect the battery.



LIGHTING

A fused bulb must be replaced immediately.

Never handle a new bulb with bare or dirty hands, since traces of grease, oil or sweat will evaporate when the bulb is heated and thus stain the reflector.

Never touch or try to polish the reflector. Open the headlight only to change the bulb.

BATTERY

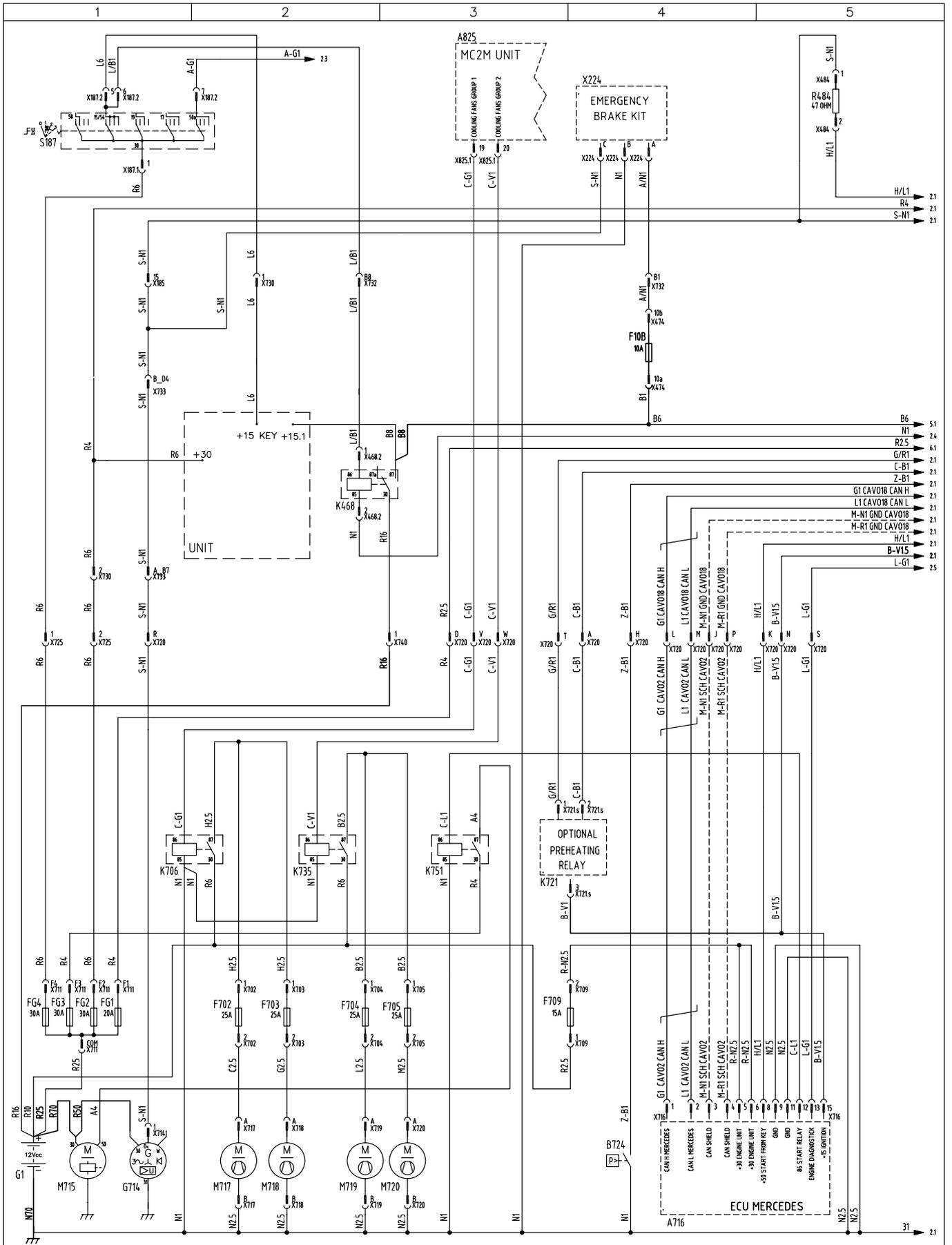
The battery efficiency is proportional to the reduction in temperature and finally ceases at -40°C .

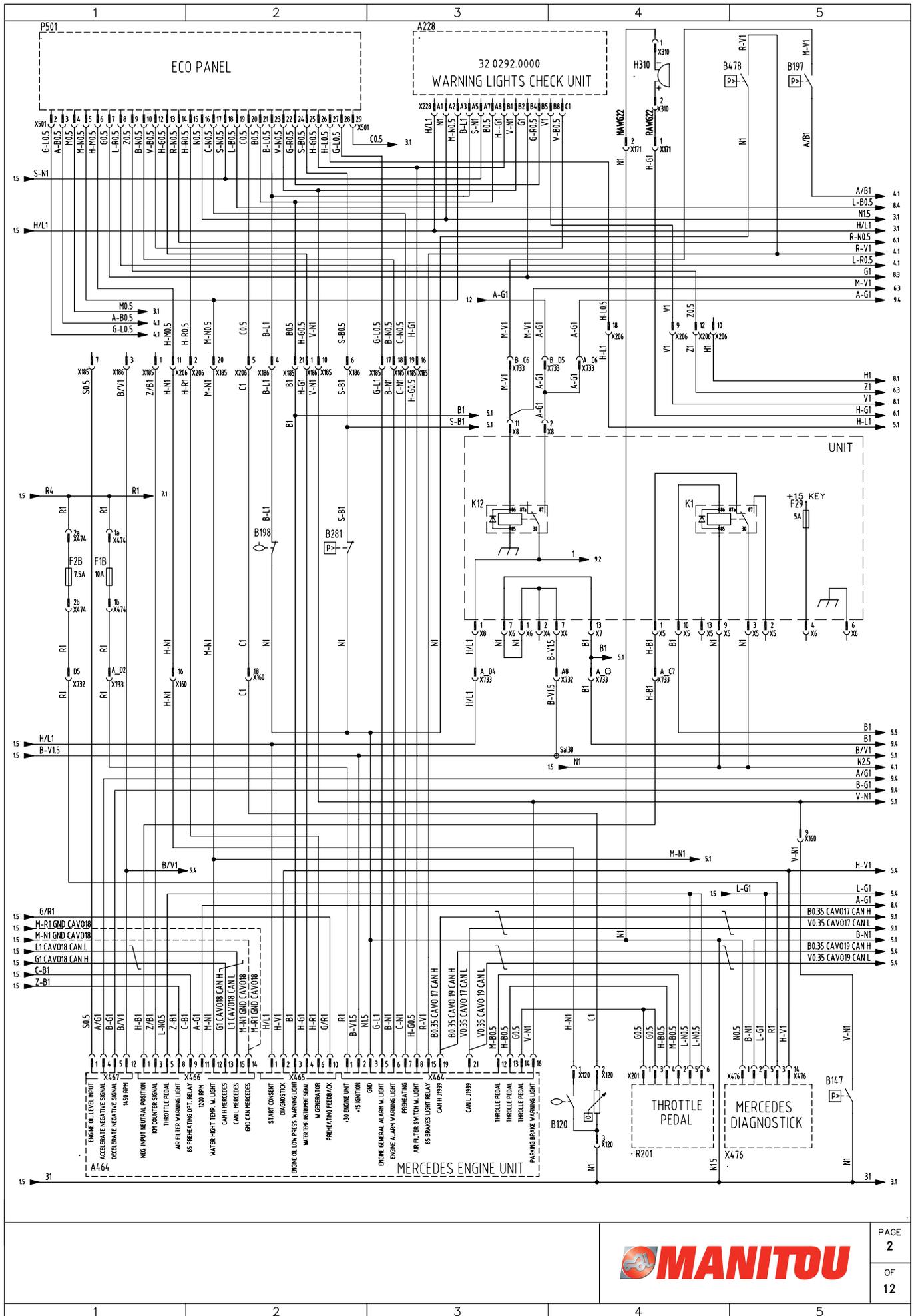
Never try to use the starter motor if the battery is exposed to a temperature around -29°C .

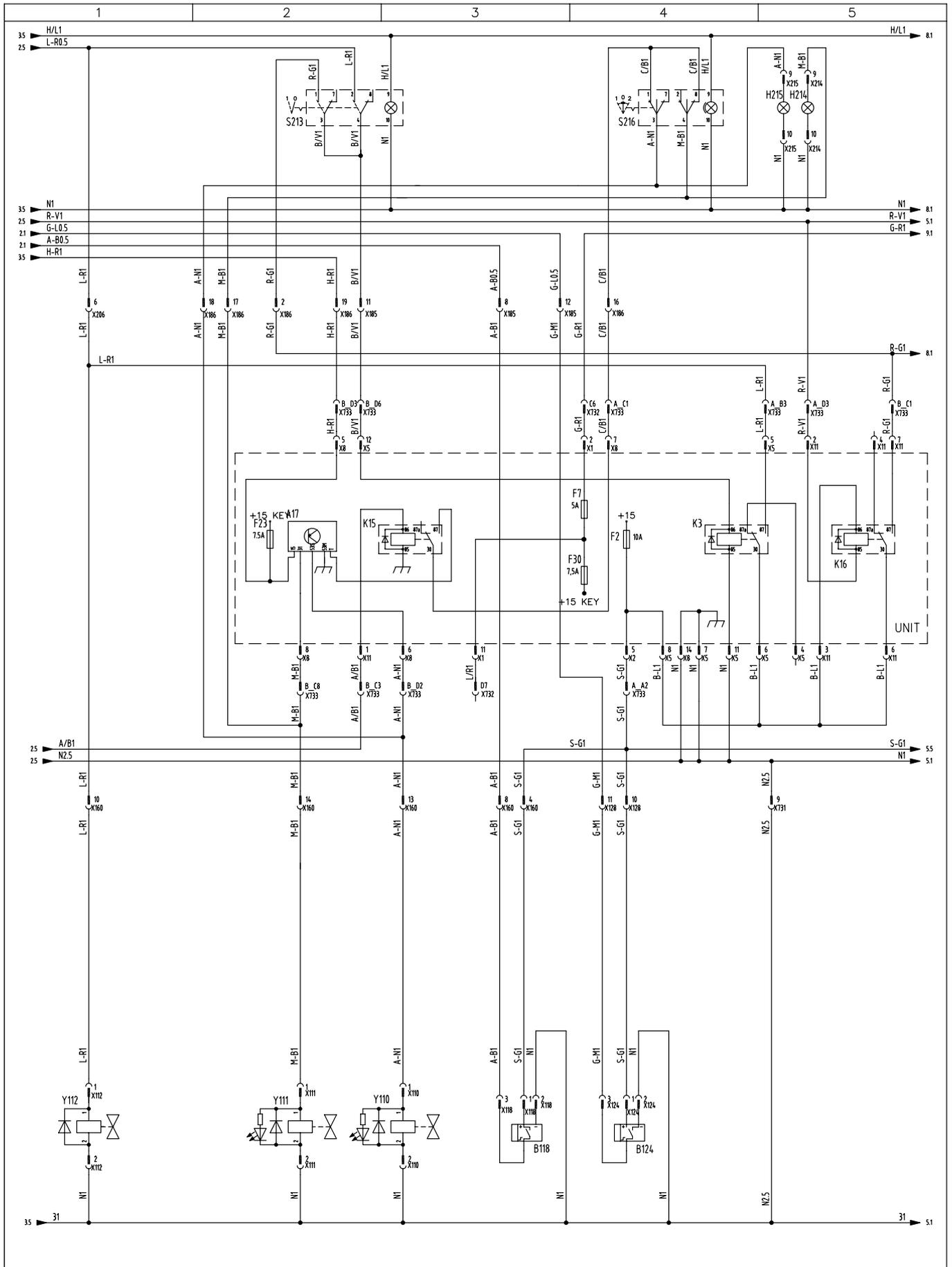
In such cases, heat the battery by immersing it in warm water, to a level of 5 cm below the covers.

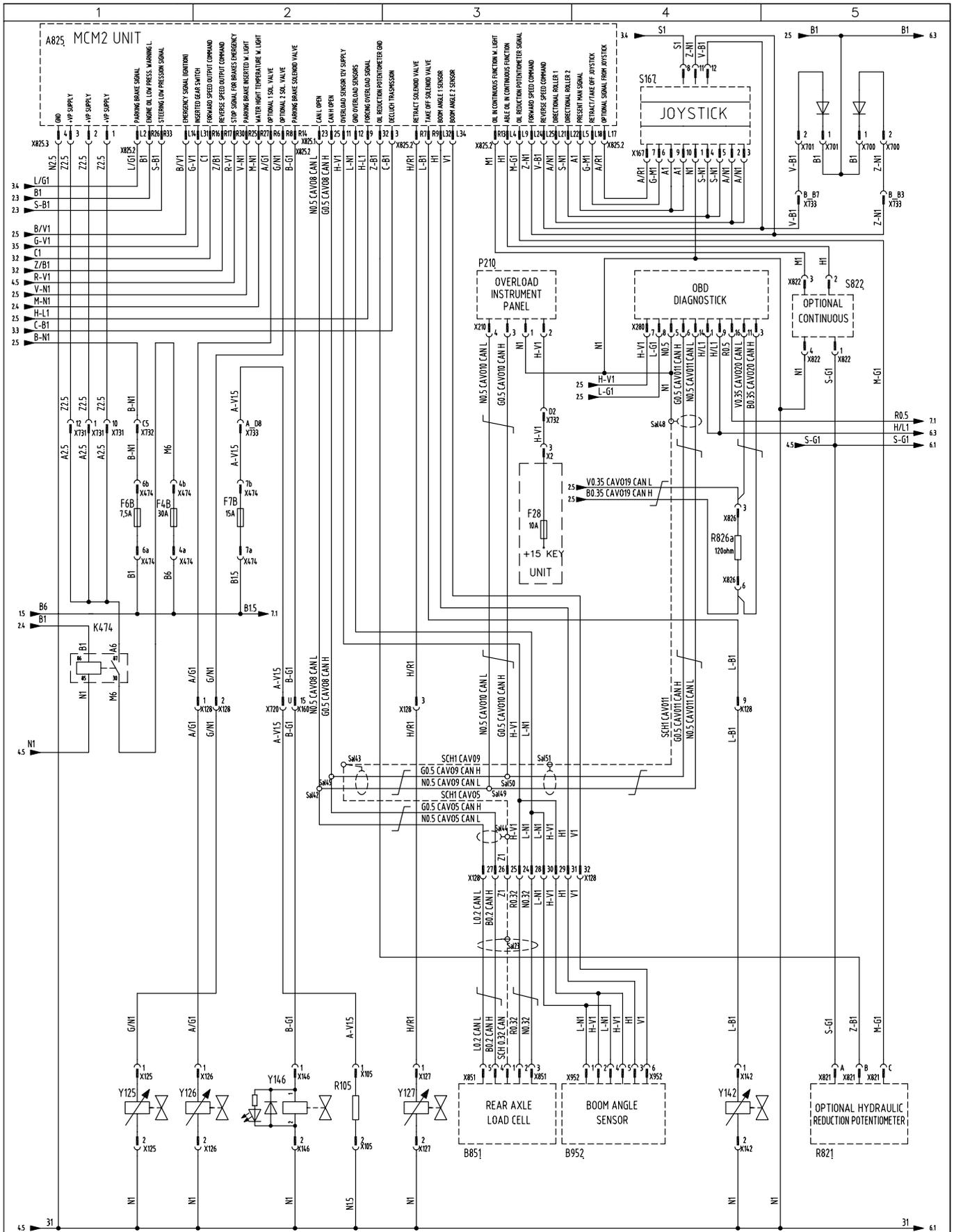
In case of very low temperatures, remove the battery from the truck and store it in a warm place until it is used.

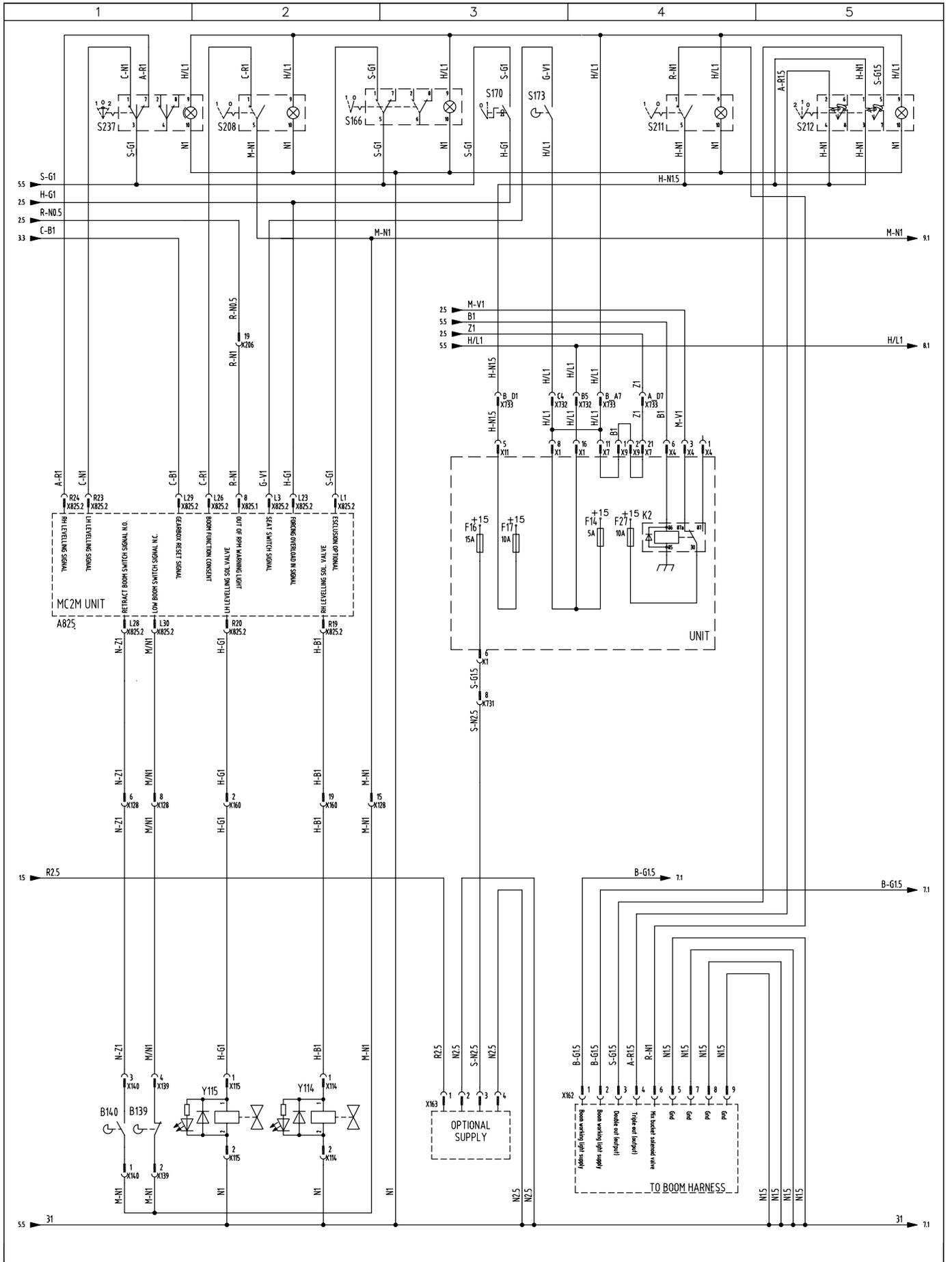
ELECTRIC SYSTEMS

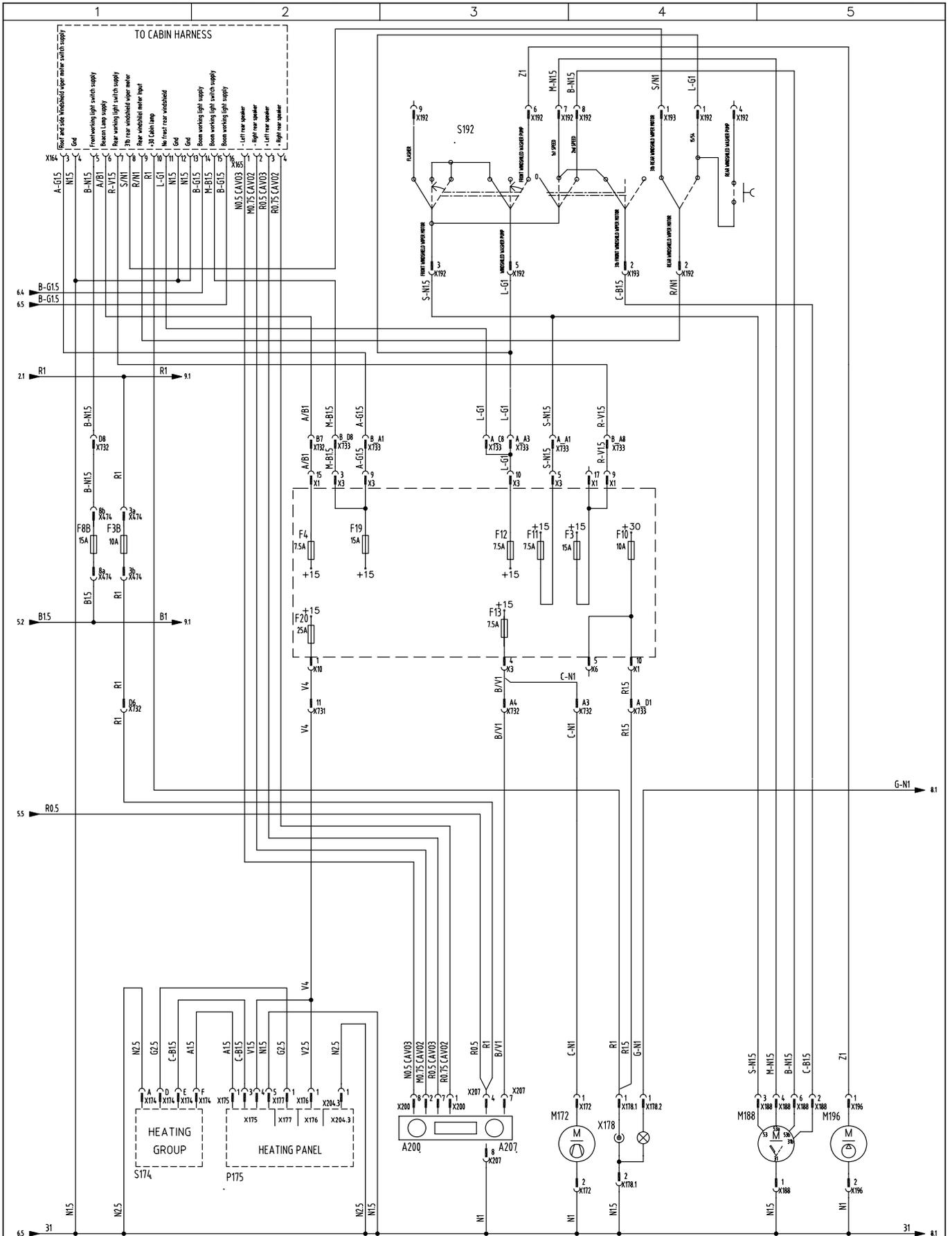


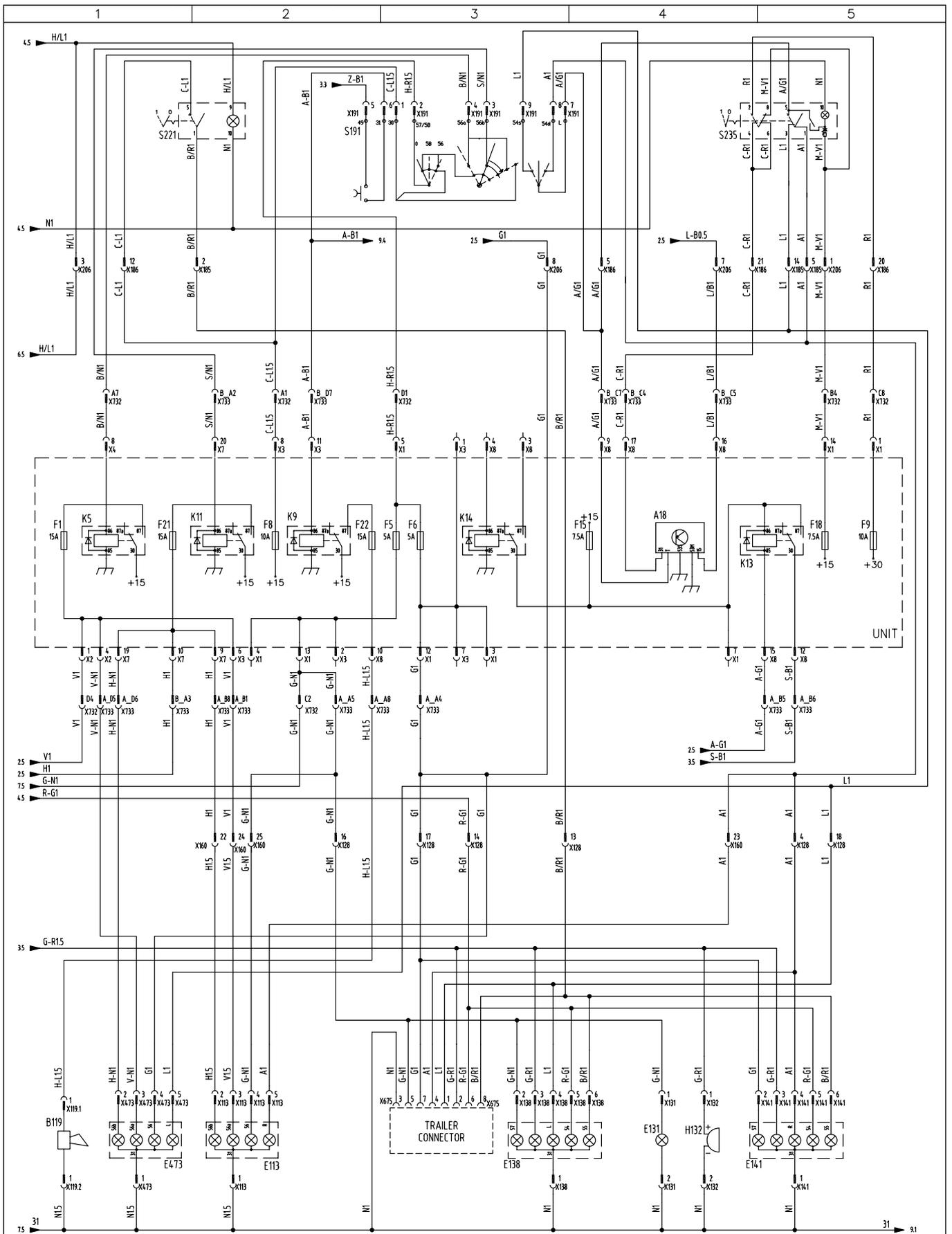


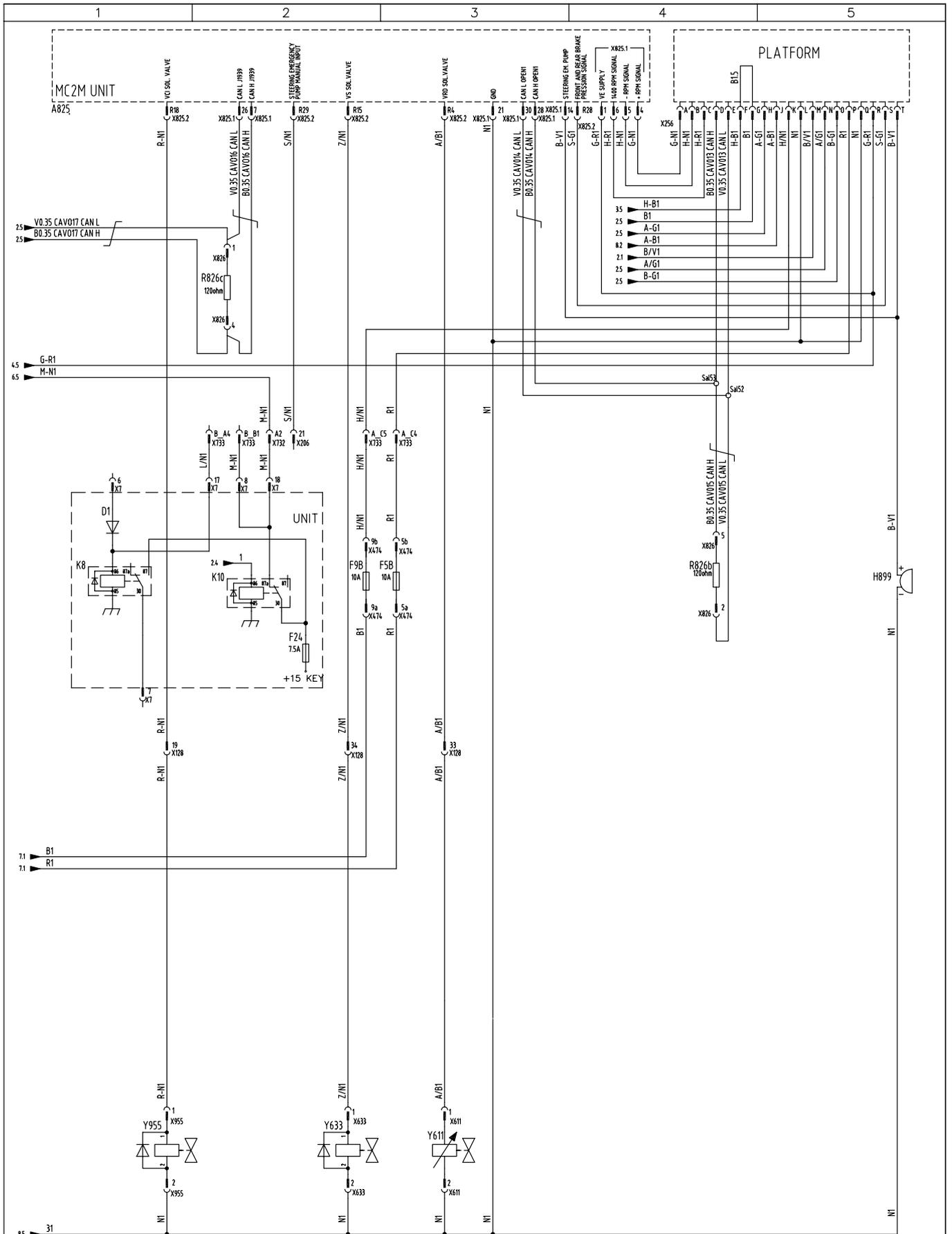












Nome/Item	Descrizione/Description	Fg/Sh
A17	CENTRALINA CAMBIO CILINDRATA / CHANGE POWER UNIT	4.2
A18	CENTRALINA FLASHER / FLASHER UNIT	8.4
A200	AUTORADIO / RADIO	7.3
A207	AUTORADIO / RADIO	7.3
A228	CENTRALINA CHECK SPIE / WARNING LIGHTS CHECK UNIT	2.3
A464	CENTRALINA MOTORE MERCEDES / MERCEDES ENGINE UNIT	2.1
A716	CENTRALINA ECU MERCEDES / MERCEDES ECU UNIT	1.4
A825	CENTRALINA MC2M / MC2M UNIT	9.1
A825	CENTRALINA MC2M / MC2M UNIT	5.1
A825	CENTRALINA MC2M / MC2M UNIT	1.3
A825	CENTRALINA MC2M / MC2M UNIT	6.1
B109	MICRO MARCIA INSERITA / INSERTED GEAR SWITCH	3.4
B118	SENSORE ALLINEAMENTO ASSALE ANTERIORE (SOLO PER MHT 10120)/ FRONT AXLE ALIGNMENT SENSOR (ONLY FOR MHT 10120)	4.3
B119	AVVISATORE ACUSTICO / CLAXON	8.1
B120	SENSORE LIVELLO CARBURANTE / FUEL LEVEL INDICATOR SENSOR	2.3
B124	SENSORE ALLINEAMENTO ASSALE POSTERIORE (SOLO PER MHT 10120)/ REAR AXLE ALIGNMENT SENSOR (ONLY FOR MHT 10120)	4.4
B139	MICRO BRACCIO BASSO / LOW BOOM SWITCH	6.1
B140	MICRO BRACCIO RIENTRATO / RETRACTED BOOM SWITCH	6.1
B147	PRESSOSTATO FRENO DI PARCHEGGIO / PARKING BRAKE PRESSURE SWITCH	2.5
B197	PRESSOSTATO PEDALE STOP / STOP PEDAL PRESSURE SWITCH	2.5
B198	SENSORE LIVELLO OLIO FRENI / BRAKES OIL LEVEL SENSOR	2.2
B281	PRESSOSTATO COMPENSATORE STERZO / STEERING COMPENSATOR PRESSURE SWITCH	2.2
B478	PRESSOSTATO LUCI STOP / STOP LIGHTS PRESSURE SWITCH	2.5
B724	PRESSOSTATO FILTRO ARIA INTASATO / AIR FILTER PRESSURE SWITCH	1.4
B851	CELLA DI CARICO ASSALE POSTERIORE / REAR AXLE LOAD CELL	5.3
B952	SENSORE ANGOLO BRACCIO / BOOM ANGLE SENSOR	5.4
E113	FANALE ANTERIORE DESTRO / RIGHT FRONT LIGHT	8.2
E131	LUCE TARGA / NUMBER PLATE LIGHT	8.4
E138	FANALE POSTERIORE SINISTRO / LEFT REAR LIGHT	8.3
E141	FANALE POSTERIORE DESTRO / RIGHT REAR LIGHT	8.5
E473	FANALE ANTERIORE SINISTRO / LEFT FRONT LIGHT	8.1
F1	FUSIBILE LUCI ABBAGLIANTI / MAIN BEAM FUSE	8.1
F1b	FUSIBILE CENTRALINA MOTORE MERCEDES / MERCEDES ENGINE UNIT FUSE	2.1
F2	FUSIBILE ALIMENTAZIONE SENSORI ASSALI + BLOCCO DIFFERENZIALE / AXLES SENSORS AND DIFFERENTIAL LOCK SUPPLY FUSE	4.4
F2b	FUSIBILE DIAGNOSI MOTORE / ENGINE DIAGNOSTICK FUSE	2.1
F3	FUSIBILE FARI LAVORO / WORKING LIGHTS FUSE	7.4
F3b	FUSIBILE AUTORADIO / RADIO FUSE	7.1
F4	FUSIBILE ALIMENTAZIONE GIROFARO / BEACON LAMP SUPPLY FUSE	7.2
F4B	FUSIBILE ALIMENTAZIONE CENTRALINA MC2M / MC2M UNIT SUPPLY FUSE	5.1
F5	FUSIBILE LUCI DI POSIZIONE ANTERIORE DX E POSTERIORE SX / RIGHT FRONT AND LEFT REAR TRAFFIC LIGHTS FUSE	8.3
F5b	FUSIBILE +30 CESTELLO / +30 PLATFORM FUSE	9.3
F6	FUSIBILE LUCI DI POSIZIONE ANTERIORE SX E POSTERIORE DX / LEFT FRONT AND RIGHT REAR TRAFFIC LIGHTS FUSE	8.3
F6B	FUSIBILE +15 DIAGNOSI MOTORE / ENGINE DIAGNOSTICK +15 FUSE	5.1
F7	FUSIBILE ALIMNE +VE MC2M E DIAGNOSTICA ODB / +VE MC2M AND ODB DIAGNOSTICK FUSE	4.4
F7B	FUSIBILE RISCALDATORE CARBURANTE / FUEL HEATER FUSE	5.2
F8	FUSIBILE ALIMENTAZIONE DEVIO LUCI E RETRONEBBIA / STEERING COLUMN LIGHTS AND FOG BACK LIGHT SWITCHES SUPPLY FUSE	8.2
F8b	FUSIBILE ALIMENTAZIONE INT RE FARI LAVORO ANTERIORI / FRONT WORKING LIGHTS SWITCH SUPPLY FUSE	7.1
F9	FUSIBILE WARNING +30 / +30 WARNING FUSE	8.5
F9b	FUSIBILE +15 CESTELLO / +15 PLATFORM FUSE	9.2
F10	FUSIBILE PLAFONIERA-AUTORADIO-ACCENDISIGARI / CABIN LAMP-RADIO-CIGAR LIGHTER FUSE	7.4
F10b	FUSIBILE +15 KIT EMERGENZA FRENO / EMERGENCY BRAKE KIT +15 FUSE	1.4
F11	FUSIBILE INTERRUOTTORE TERGI/ WINDSHIELD WIPER SWITCH FUSE	7.3
F12	FUSIBILE ALIMENTAZIONE TERGI POSTERIORE E SBRINATORE / REAR WINDSHIELD WIPER AND NO FROST SUPPLY FUSE	7.3
F13	FUSIBILE ALIMENTAZIONE COMPRESSORE SEDILE -15 AUTORADIO / SEAT COMPRESSOR AND -15 RADIO SUPPLY FUSE	7.3
F14	FUSIBILE SPIE E SPRUMENTI + MICRO SEDILE / WARNING LIGHTS, INSTRUMENTS PANEL AND SEAT SWICHT FUSE	6.4
F15	FUSIBILE ELETTROVALVOLA 1200 GIRI / 1200 RPM SOLENOID VALVE FUSE	8.4
F16	FUSIBILE ALIMENTAZIONE OPZIONALE / OPTIONAL SUPPLY FUSE	6.3
F17	FUSIBILE ALIMENTAZIONE INTERRUOTTORI BENNA MIX E DOPPIA, TRIPLA USCITA / MIX BUCKET AND DOUBLE-TRIPLE OUTPUT SWITCHES SUPPLY FUSE	6.3
F18	FUSIBILE WARNING +15 / +15 WARNING FUSE	8.5
F19	FUSIBILE ALIMENTAZIONE FARI LAVORO BRACCIO+ TERGI CABINA / BOOM WORKING LIGHTS-CABIN WHINDSHIELD WIPE SUPPLY FUSER	7.2
F20	FUSIBILE RISCALDAMENTO / HEATING FUSE	7.2
F21	FUSIBILE LUCI ANABBAGLIANTI / LOW BEAM FUSE	8.1
F22	FUSIBILE AVVISATORE ACUSTICO / HORN FUSE	8.2
F23	FUSIBILE ALM. INT. CAMBIO CILINDRATA + STERZATE / CHANGE POWER AND STEERING SWITCHES SUPPLY FUSE	4.2
F24	FUSIBILE ABILITAZIONE FUNZIONE BRACCIO / BOOM ENABLE FUNCTION FUSE	9.2
F25	FUSIBILE ALIMENTAZIONE PULSANTE CLAXON E TRALAZIONE / TRASALATION AND CLAXON BUTTON SUPPLY FUSE	3.3
F26	FUSIBILE FUNGO DI EMERGENZA / EMERGENCY SWITCH FUSE	3.5
F27	FUSIBILE NEUTRAL POSITION / NEUTRAL POSITION FUSE	6.4
F28	FUSIBILE ALIM. DISPLAY ANTIRIBALTAMENTO / OVERLOAD SYSTEM DISPLAY FUSE	5.3
F29	FUSIBILE OPTIONAL / OPTIONAL FUSE	2.5
F30	FUSIBILE ALIMNE +VE MC2M E DIAGNOSTICA ODB / +VE MC2M AND ODB DIAGNOSTICK FUSE	4.3
F702	FUSIBILE ELETTROVENTOLA 1 / COOLING FAN 1 FUSE	1.2
F703	FUSIBILE ELETTROVENTOLA 2 / COOLING FAN 2 FUSE	1.2
F704	FUSIBILE ELETTROVENTOLA 3 / COOLING FAN 3 FUSE	1.2
F705	FUSIBILE ELETTROVENTOLA 4 / COOLING FAN 4 FUSE	1.3
F709	FUSIBILE +30 ECU MERCEDES / MERCEDES ECU FUSE	1.4
FG1	FUSIBILE +30 OPZIONALE / +30 OPTIONAL SUPPLY FUSE	1.1
FG2	FUSIBILE CENTRALINA RELE'-FUSIBILI / RELAYS AND FUSES UNIT FUSE	1.1
FG3	FUSIBILE RELE' AVVIAMENTO / STARTING FUSE RELAY	1.1
FG4	FUSIBILE QUADRO AVVIAMENTO / START FUSE	1.1
G1	BATTERIA / BATTERY	1.1
G714	ALTERNATORE / GENERATOR	1.1
H132	BUZZER RETROMARCIA / REVERSE SPEED BUZZER	8.4
H214	SPIA MARCIA LENTA / SLOW GEAR WARNING LIGHT	4.5
H215	SPIA MARCIA VELOCE / FAST GEAR WARNING LIGHT	4.5
H239	SPIA STERZO STRADALE / STREET STEERING WARNING LIGHT	3.2
H310	BUZZER ESCLUSIONE ARB / OVERLOAD DISABLED BUZZER	2.4
H899	BUZZER POMPA EMERGENZA / EMERGENCY PUMP BUZZER	9.5
K1	RELE' NEUTRAL POSITION / NEUTRAL POSITION RELAY	2.4
K2	RELE' NEUTRAL POSITION ACTIA/ ACTIA NEUTRAL POSITION RELAY	6.4
K3	RELE' BLOCCO DIFFERENZIALE / DIFFERENTIAL LOCK RELAY	4.4
K4	RELE' STACCO TRASMISSIONE / DECLUCH RELAY	3.3
K5	RELE' LUCI ABBAGLIANTI / MAIN BEAM RELAY	8.1
K6	RELE' MARCIA INDIETRO / REVERSE RELAY	3.2
K7	RELE' MARCIA AVANTI / FORWARD RELAY	3.2
K8	RELE' OPTIONAL / OPTIONAL RELAY	9.1
K9	RELE' AVVISATORE ACUSTICO / HORN RELAY	8.2
K10	RELE' ABILITAZIONE FUNZIONE BRACCIO / BOOM ENABLE FUNCTION RELAY	9.2
K11	RELE' LUCI ANABBAGLIANTI / LOW BEAM RELAY	8.2

1	2	3	4	5
Nome/Item	Descrizione/Description			Fg/Sh
K12	RELE' CONSENSO AVVIAMENTO / CONSENT STARTER RELAY			2,3
K13	RELE' ELETTROVALVOLA 1200 GIRI / 1200 RPM SOLENOID VALVE RELAY			8,5
K14	RELE' OPTIONAL / OPTIONAL RELAY			8,3
K15	RELE' CAMBIO VELOCITA' / CHANGE SPEED RELAY			4,3
K16	RELE' BLOCCO DIFFERENZIALE / DIFFERENTIAL LOCK RELAY			4,5
K46B	RELE' SERVIZI / SERVICE RELAY			1,2
K474	RELE' CENTRALINA MC2M - VP / MC2M UNIT -VP RELAY			5,1
K706	RELE' ELETTROVENTOLE 1 E 2 / COOLING FANS 1 AND 2 RELAY			1,1
K721	RELE' PRERISCALDO OPTIONAL / OPTIONAL PREHEATING RELAY			1,3
K735	RELE' ELETTROVENTOLE 3 E 4 / COOLING FANS 3 AND 4 RELAY			1,2
K751	RELE' AVVIAMENTO / STARTING RELAY			1,3
M172	COMPRESSORE SEDILE / SEAT COMPRESSOR			7,4
M188	TERGI ANTERIORE / FRONT WINDSHIELD WIPER MOTOR			7,5
M196	POMPETTA TERGI / WINDSHIELD WASHER PUMP			7,5
M715	MOTORINO AVVIAMENTO / STARTER MOTOR			1,1
M717	ELETTROVENTOLA 1 / COOLING FAN 1			1,2
M718	ELETTROVENTOLA 2 / COOLING FAN 2			1,2
M719	ELETTROVENTOLA 3 / COOLING FAN 3			1,2
M720	ELETTROVENTOLA 4 / COOLING FAN 4			1,3
P175	PANNELLO RISCALDAMENTO / HEATING PANEL			7,2
P210	VISUALIZZATORE ARB / OVERLOAD INSTRUMENT PANEL			5,3
P501	STRUMENTO ECO / ECO PANEL			2,1
R105	RISCALDATORE CARBURANTE / FUEL HEATHER			5,2
R201	PEDALE ACCELERATORE / THROTTLE PEDAL			2,4
R484	RESISTENZA ALTERNATORE / GENERATOR RESISTOR			1,5
R821	POTENZIOMETRO RIDUZIONE IDRAULICA OPZIONALE / OPTIONAL HYDRAULIC REDUCTION POTENTIOMETER			5,5
R826a	RESISTENZA CAN BUS / CAN BUS RESISTOR			5,4
R826b	RESISTENZA CAN BUS / CAN BUS RESISTOR			9,4
R826c	RESISTENZA CAN BUS / CAN BUS RESISTOR			9,2
S166	INTERRUTTORE ESCLUSIONE OPZIONALI / OPTIONAL DISABLED SWITCH			6,3
S167	MANIPOLATORE / JOYSTICK			5,4
S168	FUNGO EMERGENZA CONTATTI STACCO TRASMISSIONE / DECLUCH CONTACT EMERGENCY SWITCH			3,4
S169	FUNGO DI EMERGENZA CONTATTI ARRESTO MOTORE / SOLENOID ENGINE SHUT-OFF EMERGENCY SWITCH			3,4
S170	CHIAVE FORZATURA ARB / OVERLOAD SYSTEM DISABLE KEY SWITCH			6,3
S173	MICRO SEDILE / SEAT SWITCH			6,3
S174	GRUPPO RISCALDAMENTO / HEATING GROUP			7,1
S187	QUADRO AVVIAMENTO / STARTING SWITCH			1,1
S191	DEVIO LUCI-FRECCHE / LIGHT STEERING COLUMN SWITCH			8,3
S192	DEVIO TERGI / WINDSHIELD MOTOR STEERING COLUMN SWITCH			7,3
S208	INTERRUTTORE ABILITAZIONE BRACCIO / ENABLE BOOM SWITCH			6,2
S211	INTERRUTTORE BENNA MIX / MIX BUCKET SWITCH			6,4
S212	INTERRUTTORE DOPPIA E TRIPLA USCITA / DOUBLE AND TRIPLE OUTPUT SWITCH			6,5
S213	INTERRUTTORE BLOCCO DIFFERENZIALE (SOLO PER MHT 10160-10210)/ DIFFERENTIAL LOCK SWITCH (ONLY FOR MHT 10160-10210)			4,2
S216	INTERRUTTORE CAMBIO VELOCITA' / SPEED CHANGE SWITCH			4,4
S217	INTERRUTTORE RESET CAMBIO / GEAR RESET SWITCH			3,2
S220	INTERRUTTORE FRENO DI PARCHEGGIO / PARKING BRAKE SWITCH			3,3
S221	INTERRUTTORE RETRONEBBIA / FOG BACKLIGHT SWITCH			8,2
S222	INTERRUTTORE SELETORE STERZATE / STEERING SWITCH			3,1
S235	INTERRUTTORE WARNING / WARNING SWITCH			8,4
S237	INTERRUTTORE LIVELLAMENTO / LEVELLING SWITCH			6,1
S822	PULSANTE OPTIONAL CONTINUO / OPTIONAL CONTINUOUS PUSH BUTTON			5,5
Y101	ELETTROVALVOLA MARCIA AVANTI / FORWARD GEAR SOLENOID VALVE			3,1
Y102	ELETTROVALVOLA RETROMARCIA / REVERSE GEAR SOLENOID VALVE			3,2
Y103	ELETTROVALVOLA 1200 GIRI / 1200 RPM SOLENOID VALVE			3,5
Y110	ELETTROVALVOLA MARCIA VELOCE / FAST GEAR SOLENOID VALVE			4,3
Y111	ELETTROVALVOLA MARCIA LENTA / SLOW GEAR SOLENOID VALVE			4,2
Y112	ELETTROVALVOLA BLOCCO DIFFERENZIALE / DIFFERENTIAL LOCK SOLENOID VALVE			4,1
Y114	ELETTROVALVOLA LIVELLAMENTO DX / RIGHT LEVELLING SOLENOID VALVE			6,2
Y115	ELETTROVALVOLA LIVELLAMENTO SX / LEFT LEVELLING SOLENOID VALVE			6,2
Y116	ELETTROVALVOLA STERZATURA GRANCHIO / CRAB STEERING SOLENOID VALVE			3,3
Y117	ELETTROVALVOLA STERZATURA TONDO / ROUND STEERING SOLENOID VALVE			3,2
Y125	ELETTROVALVOLA PROP. OPTIONAL 2 / OPTIONAL 2 PROPORTIONAL SOLENOID VALVE			5,1
Y126	ELETTROVALVOLA PROP. OPTIONAL 1 / OPTIONAL 1 PROPORTIONAL SOLENOID VALVE			5,2
Y127	ELETTROVALVOLA PROP. RIENTRO / RETRACT PROPORTIONAL SOLENOID VALVE			5,3
Y142	ELETTROVALVOLA PROP. SFILO / TAKE OFF PROPORTIONAL SOLENOID VALVE			5,4
Y146	ELETTROVALVOLA FRENO DI PARCHEGGIO / PARKING BRAKE SOLENOID VALVE			5,2
Y611	ELETTROVALVOLA PROP. VRD / VRD PROPORTIONAL SOLENOID VALVE			9,3
Y633	ELETTROVALVOLA VS / VS SOLENOID VALVE			9,2
Y955	ELETTROVALVOLA VCI / VCI SOLENOID VALVE			9,1
X1	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X2	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X3	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X4	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X5	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X6	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X7	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X8	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X9	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X10	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X11	CONNETTORE CENTRALINA RELE'-FUSIBILI / RELAYS-FUSES UNIT CONNECTOR			
X128	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA TELAIO POSTERIORE / DRIVER POSITION - REAR CHAISS HARNESS INTERFACE CONNECTOR			
X160	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA TELAIO POSTERIORE / DRIVER POSITION - REAR CHAISS HARNESS INTERFACE CONNECTOR			
X162	CONNETTORE INTERFACCIA A LINEA BRACCIO / BOOM HARNESS INTERFACE CONNECTOR			6
X163	CONNETTORE ALIMENTAZIONI OPZIONALI / OPTIONAL SUPPLY CONNECTOR			6
X164	CONNETTORE INTERFACCIA A LINEA CABINA / CABIN HARNESS INTERFACE CONNECTOR			7
X165	CONNETTORE INTERFACCIA A LINEA CABINA / CABIN HARNESS INTERFACE CONNECTOR			7
X171	CONNETTORE PREDISPOSIZIONE ALLARME FORZATURA ANTIRIBALTAMENTO / OVERLOAD SYSTEM FORCING ALARM OPTIONAL CONNECTOR			2
X178	CONNETTORE PRESA ACCENDISIGARI / CIGAR LIGHTER CONNECTOR			7
X185	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA CRUSCOTTO / DRIVER POSITION - DASHBOARD HARNESS INTERFACE CONNECTOR			
X186	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA CRUSCOTTO / DRIVER POSITION - DASHBOARD HARNESS INTERFACE CONNECTOR			
X206	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA CRUSCOTTO / DRIVER POSITION - DASHBOARD HARNESS INTERFACE CONNECTOR			
X224	CONNETTORE KIT EMERGENZA FRENO / EMERGENCY BRAKE KIT CONNECTOR			1
X280	CONNETTORE DIAGNOSTICA ODB / ODB DIAGNOSTICK CONNECTOR			5
X474	CONNETTORE SCATOLA RELE'-FUSIBILI / RELAYS-FUSES BOX CONNECTOR			
X476	CONNETTORE DIAGNOSTICA MERCEDES / MERCEDES DIAGNOSTICK CONNECTOR			2
X675	CONNETTORE KIT PRESA RIMORCHIO / TRAILER KIT CONNECTOR			8
X720	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA MOTORE / DRIVER POSITION - ENGINE HARNESS INTERFACE CONNECTOR			
X725	CONNETTORE INTERFACCIA LINEA POSTO GUIDA - LINEA MOTORE / DRIVER POSITION - ENGINE HARNESS INTERFACE CONNECTOR			
X730	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.			

Nome/Item	Descrizione/Description	Fg/Sh
X731	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	
X732	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	
X733	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	
X740	CONNETTORE INTER. LINEA POSTO GUIDA - LINEA BOX-CENTR. RELE' FUSIBILI / DRIVER POSITION - RELAYS FUSES UNIT BOX HARNESS INTERFACE CONN.	

COLORI FILI	
A	AZZURRO
B	BIANCO
C	ARANCIONE
G	GIALLO
H	GRIGIO
L	BLU
M	MARRONE
N	NERO
R	ROSSO
S	ROSA
V	VERDE
Z	VIOLA

NOTA: LA COLORAZIONE DEI FILI BICOLORE VIENE INDICATA CON LA COMPOSIZIONE DELLE SIGLE SOPRA INDICATE , ESEMPIO:
 G/V ->GIALLO/VERDE(COLORAZIONE TRASVERSALE)
 G-V ->GIALLO-VERDE(COLORAZIONE LONGITUDINALE)

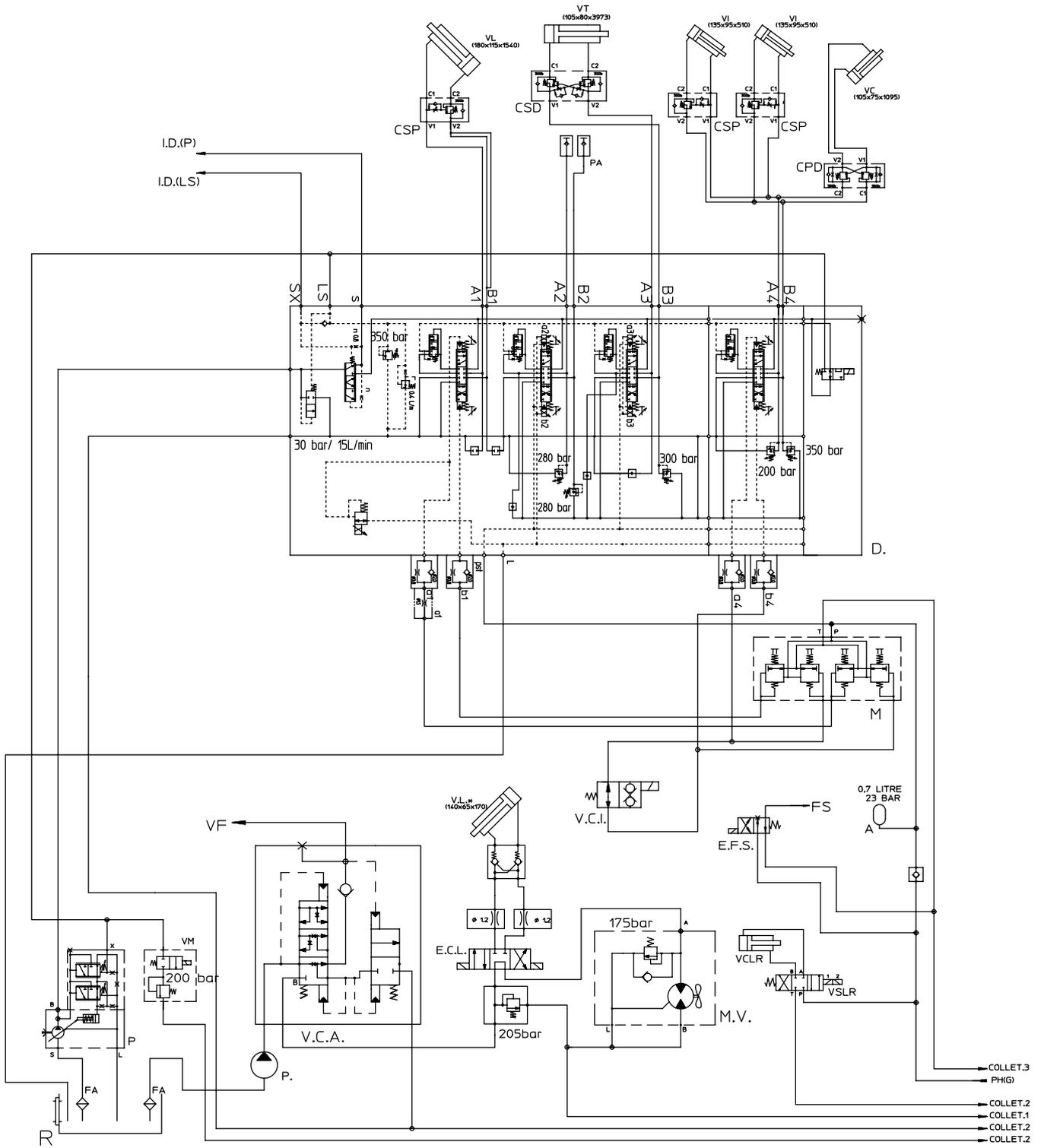
WIRING COLOURS	
A	LIGHTBLUE
B	WHITE
C	ORANGE
G	YELLOW
H	GREY
L	BLUE
M	BROWN
N	BLACK
R	RED
S	PINK
V	GREEN
Z	VIOLET

EXAMPLE:
 G/V ->YELLOW/GREEN(TRANSVERSE COLOURS)
 G-V ->YELLOW-GREEN(LONGITUDINAL COLOURS)

REV.	DESCRIPTION	DATE	DRAWN	CHECKED	CID	CIAM REF.	PAGE/CAT

HYDRAULIC SYSTEMS

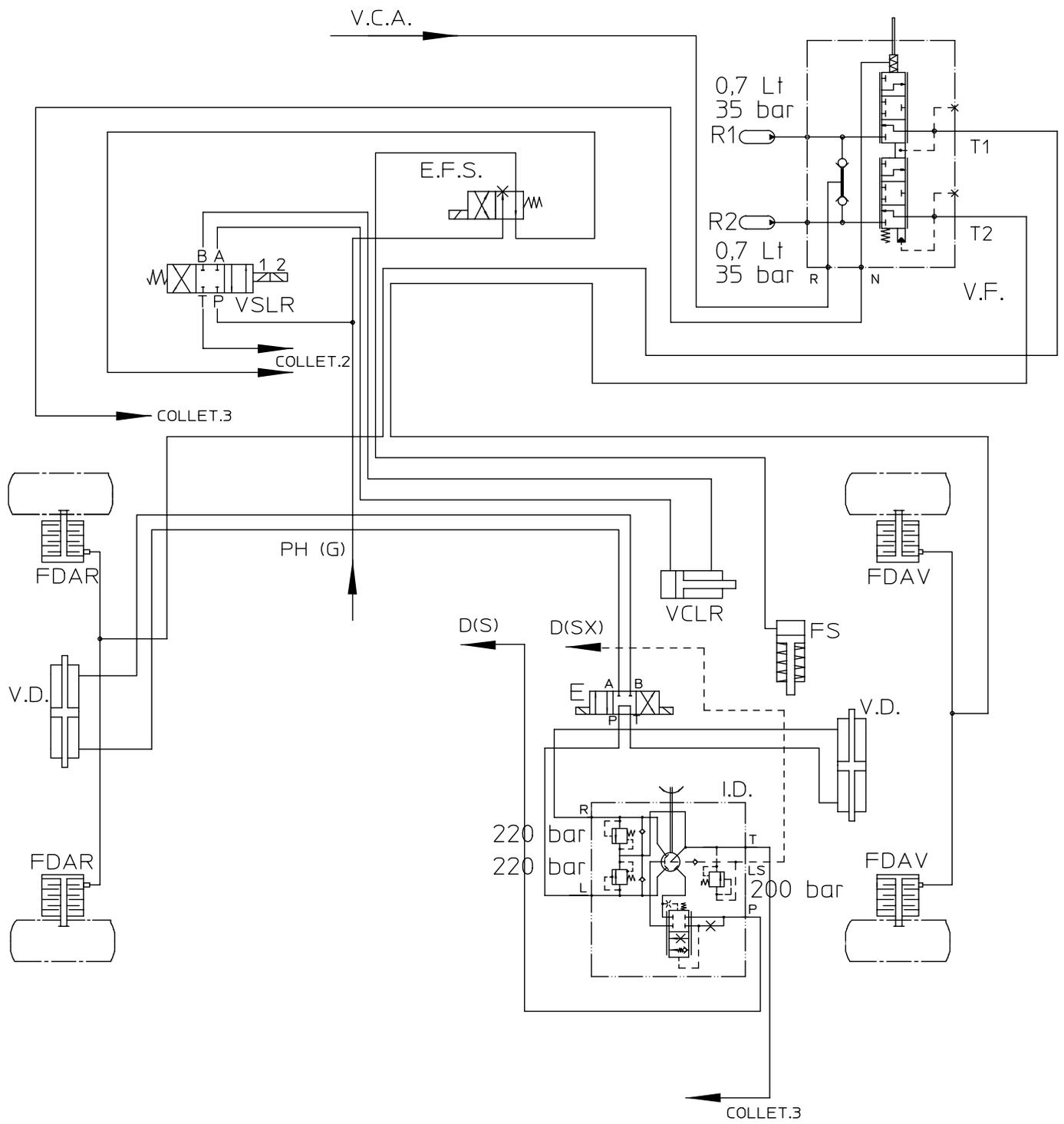
MOVEMENT HYDRAULIC SYSTEM DIAGRAM



KEY TO MOVEMENT HYDRAULIC SYSTEM DIAGRAM

A	= Pressure booster
COLLET	= Manifold
CPD	= Locking and balancing valve
CSD	= Double piloted relief valve
CSP	= Piloted relief valve
D.	= Directional control valve
ECL	= Levelling control solenoid valve
EFS	= Parking brake electrovalve
F.A.	= Intake lter
FS	= Parking brake control cylinder
I.D.(P)	= P connection of power steering unit
I.D.(LS)	= LS connection of power steering unit
M	= Control lever
M.V.	= Fan motor
P.	= Movement pump
P.A.	= Optional attachment
PH (G)	= G connection of hydrostatic pump
P.V.	= Fan pump
R.	= Hydraulic uid tank
SM	= Valve for telescope and option control
V.C.	= Compensation cylinder
VCA	= Accumulator charging valve
VCI	= Tilting cutting valve
VCLR	= Slow-fast control cylinder
VF	= Brakes valve
V.I.	= Tilting cylinder
V.L.	= Lifting cylinder
V.L.*	= Levelling cylinder
V.T.	= Boom extension cylinder
VM	= Solenoid and relief valve
VSLR	= Slow-fast selector valve

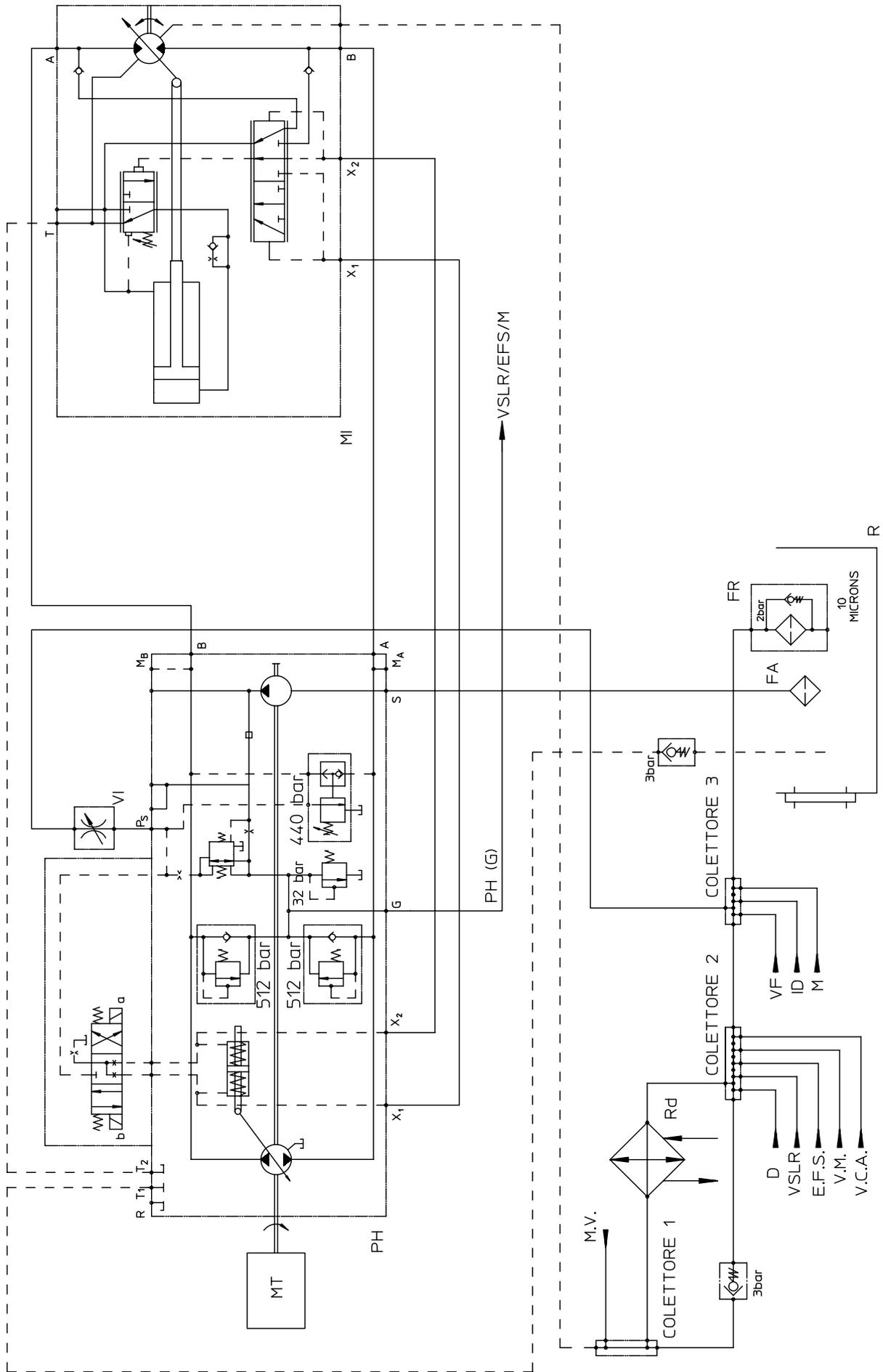
BRAKE/STEERING SYSTEM DIAGRAM



KEY TO BRAKE/STEERING SYSTEM DIAGRAM

COLLET	= Manifold
D. (S)	= S connection of directional control valve
D. (SX)	= SX connection of directional control valve
E	= Solenoid valve
F.S.	= Parking brake control cylinder
EFS	= Parking brake electrovalve
FDAR	= Rear axle disk brake
FDAV	= Front axle disk brake
I.D.	= Power steering unit
PH (G)	= G connection of hydrostatic pump
V.D.	= Steering Cylinder
VCA	= Accumulator charging valve
VF	= Brakes valve
VCLR	= Slow-fast control cylinder
VSLR	= Slow-fast selector valve

TRANSMISSION HYDRAULIC SYSTEM DIAGRAM



KEY TO TRANSMISSION HYDRAULIC SYSTEM DIAGRAM

COLLETTORE	= Manifold
D.	= Directional control valve
F.A.	= Intake filter
EFS	= Parking brake electrovalve
F.R.	= Drain filter
I.D.	= Power steering unit
M	= Control lever
M.I.	= Hydrostatic motor
M.T.	= Engine
M.V.	= Fan Motor
P.	= Movement pump
P.H.	= Hydrostatic pump
P.H. (G)	= G connection of hydrostatic pump
R.	= Hydraulic fluid tank
Rd	= Oil radiator
V.I.	= Inching valve
VF	= Brakes valve
VCA	= Accumulator charging valve
VM	= Solenoid and relief valve
VSLR	= Slow-fast selector valve

