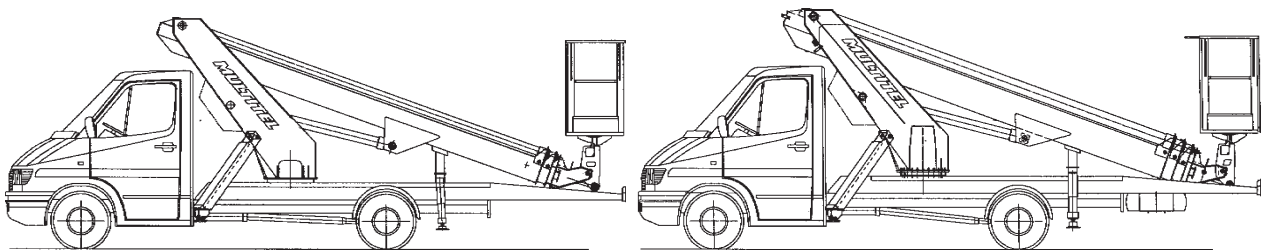


MULTITEL PAGLIERO

160 ALU / 180 ALU / 220 ALU



Operating instructions

Issued : 01 - 06 - 2000
Rev. 1.0 : 01 - 11 - 2006
Rev. 2.0 : 01 - 02 - 2007

OWNER :
ADDRESS :
CITY :
PLATFORM TYPE :
SERIAL N° :
YEAR OF MANUFACTURE :

WIRING SYSTEM DRG N° :
HYDRAULIC SYSTEM DRG N° :

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The purpose of this manual is to provide the user with full information on the use, the safety and the maintenance of the **MULTITEL** platform, and to facilitate its use so as to obtain the top performance for which it was designed and built.

For reasons of safety, all the personnel entrusted with operating the machine, supervising the works for which it is used and servicing it should study this manual carefully.

This manual should be considered an integral part of the machine, and should therefore always be kept together with it.

Technology evolves rapidly and we are constantly at work with the aim of improving our products, to make them more functional and safer. A yearly inspection of your machine by one of our branch offices is therefore recommended, not only in order to carry out a thorough check on the existing devices but also to give you advice on the installation of newer and more efficient systems so that you can improve the performance and safety of the model you use.

IMPORTANT NOTICE: ALL OPERATORS SHOULD READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED IN THIS MANUAL BEFORE USING THE PLATFORM.

MULTITEL
PAGLIERO

INDEX

-	FOREWORD	pag. 4
-	SAFETY REGULATIONS	
-	- learning and awareness	pag. 5
-	- rules for using the platform	pag. 6
-	WORK IN THE VICINITY OF LIVE ELECTRICAL LINES	pag. 7
-	INSULATION	pag. 7
-	DESCRIPTION OF THE PLATFORM	pag. 9
-	USE AND CONTROLS	
-	- stabilising of the vehicle	pag. 11
-	- operating procedure	pag. 12
-	- operations for starting and for stowing the boom	pag. 13
-	ELECTRIC MOTOR	pag. 13
-	HORIZONTAL LEVELLING OF THE CAGE	pag. 14
-	EMERGENCY LOCKING	pag. 14
-	SOUND LEVELS AND VIBRATIONS	pag. 14
-	LIMITING DEVICE	pag. 15
-	EMERGENCY DESCENT	pag.16-17
-	CLEANING THE FILTERS	pag. 18
-	PERIODICAL CHECKS	
-	- checks to be carried out on starting each day of work	pag. 18
-	- tightness check	pag. 19
-	- operational check of the controlled check valves on the stabilisers and the boom	pag. 20
-	- check of the outreach limiting device	pag. 20
-	LUBRICATION	pag. 20
-	- cleaning the boom	pag. 20
-	- platform rotation gear box	pag. 21
-	- platform rotation slew ring	pag. 21
-	MAINTENANCE PLAN	
-	- daily checks	pag. 22
-	- weekly checks	pag. 22
-	- monthly checks	pag. 22
-	- six-monthly checks	pag. 22
-	- extraordinary maintenance	pag. 22
-	ADDITIONAL INSTRUCTIONS FOR PARTICULAR OPTIONS	pag. 23
-	MANUAL OF PERIODICAL CHECKS TO BE CARRIED OUT ON PAGLIERO MULTITEL PLATFORMS	pag. 24

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FOREWORD

Thank you for choosing one of our platforms for your work.

Our first commitment in manufacturing the products is to ensure safety.

We hope that you will pay the same attention while using the platform so as to ensure your own safety and that of other operators.

During daily use of the platform you should comply with the following rules:

- 1) apply all the appropriate national and local laws and regulations concerning equipment for lifting persons;
- 2) read, understand and apply the instructions contained in this manual;
- 3) use the platform and the working tools with common sense;
- 4) the platform may only be used by authorised personnel who have been trained for this job.

If there is anything in this manual which is not clear to you, do not hesitate to contact our sales or servicing organisation through the nearest representative.

PAGLIERO's **MULTITEL** range platforms are made entirely of light alloys and high-quality high-tensile steels.

This means that they can be mounted on vehicles of the lighter type, with considerable savings on capital expenditure and greater manoeuvrability even in urban environments, high displacement speeds and an ideal distribution of the loads on the axles for easy and safe driving. The movements are controlled entirely by the oil-hydraulic system, by means of jacks with thickly coated chromium-plated steel stems and ground cylinders. Rotation through 360° is possible.

All the pivots rotate on bearings made of anti-friction metal.

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SAFETY REGULATIONS

LEARNING AND AWARENESS

- 1) Do not use the platform before you know exactly how it works. It should only be used by authorised personnel who have proved themselves capable of doing so safely.
- 2) Do not overload the cage in excess of the permissible capacity, taking both the personnel and their tools and materials into account.
- 3) Do not exceed the maximum number of persons allowed onto the platform, as indicated on the label on the cage.
- 4) Do not disassemble any components and do not remove any ballast from the vehicle, since stability is ensured only if everything is in place on the vehicle as at the time of delivery by us.
- 5) Use of the platform is only allowed with wind speeds of up to 45 k.p.h.. Do not use the platform when the wind speed exceeds this limit.
- 6) Do not alter or disconnect the safety devices.
- 7) Do not raise the platform when it is loaded on vehicles, ships, scaffolding or other similar structures.
- 8) Keep the floor of the cage and your shoes clean and free from grease or other products which might make them slippery.
- 9) If there are any other raised booms present in the working area, make sure that they will not interfere with safe operation.
- 10) Do not enter the platform if you are not perfectly fit.
- 11) When you have finished work, remove the keys from the control panels so as to prevent unauthorised use.
- 12) Do not use the platform if it has not been suitably inspected and serviced. Any problems or upsets should be reported immediately to the person in charge, and operations should be suspended until the problem has been eliminated;
- 13) Keep the written notices on the machine clearly visible and clean, replacing any that get mislaid or become difficult to read.
- 14) When using welding equipment, do not use the platform for earthing purposes.
- 15) Only use the platform in areas where there is sufficient daylight or which are properly illuminated by artificial lighting.
- 16) If any maintenance service has to be performed in areas which can be reached with raised boom only, the boom itself has to be fixed by means of appropriate belts to a bridge crane or a normal crane with minimum load capacity of 1000 kg.

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REGULATIONS FOR USE

- 1) The aerial platform is a piece of equipment designed and manufactured to let the operator carry out work at a certain height in safety. The max. capacity we have indicated includes people and tools.
- 2) The vehicle must be positioned on firm ground, with the base positioned in such a way that there is no risk of losing its horizontal alignment. This can be checked using a water level for the adjustment of the horizontal position. The bubble must be contained within the limits indicated by the tolerance marks, in relation to the longitudinal and transverse axes of the vehicle
- 3) In the event that the ground in the vicinity is not sufficiently solid, wooden planks should be positioned under the stabilisers to increase the supporting surface area.
- 4) Before operating the platform check that all the stabilisers have reached the ground and that the working conditions permit the load to be taken off the vehicle suspensions.
- 5) To level the platform on sloping or uneven ground, use shims made of wood or other suitable material to be inserted under the stabilisers.
- 6) The operator can have access to the basket (primary control station) by means of the access ladders installed on the vehicle platform by following the instructions in this manual or by taking the basket to the ground first by means of the secondary controls (ground station).
- 7) It is compulsory for workers on the platform to use safety belts secured to the actual platform.
- 8) Wearing safety helmets is recommended both for the workers in the cage and for the personnel working at the base of the platform.
- 9) It's forbidden to stay in the vehicle cab when the machine is stabilized.
- 10) The platform should never be made to rest on other structures whether they be fixed or mobile.
- 11) All the movements necessary to reach the intervention point must be undertaken by operators on the cage. Ground manoeuvres are only permitted in emergency situations.
- 12) In the event of the temporary absence of supervision from the ground by another operator, the control panel must be blocked and access to the cab area by third parties forbidden.
- 13) The instructions for use must be carefully followed and in the correct order, being sure to never exceed the capacity indicated on the plate.
- 14) The throwing up or down of tools from the platform is forbidden, they must be supplied by means of a service hoist. The use of a tool bag is also required.
- 15) Standing at the base of the vehicle during platform manoeuvre is forbidden.
- 16) Should the truck-mounted platform be used on roads open to traffic, its presence must be indicated by means of road signals.
- 17) Loading of persons or materials into the cage when already raised from the ground is forbidden.

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- 18) Load all materials on the ground before beginning lifting movements, making sure that the maximum permissible capacity and number of people is not exceeded. The maximum capacity indicated includes both people and tools.
- 19) Do not fix hooks, cables or ropes to lift material onto the platform.
- 20) Do not use the boom of the platform as a crane, do not drag loads.
- 21) Do not increase the working height by positioning ladders or stools in the cage.
- 22) Do not climb onto the parapet to increase the working height.
- 23) Do not use the platform for exhibitions or acrobatics or for jumping with elastic ropes.
- 24) It is forbidden to install in the basket or on the structure whatever might increase the wind load (ex. installation of advertising panels and such,...)
- 25) **DO NOT TAMPER WITH CONTROL SYSTEMS OR SAFETY DEVICES TO IMPROVE MACHINE PERFORMANCE.**

WORK IN THE VICINITY OF LIVE ELECTRICAL LINES

- 1) Should the platform, boom or other parts of the structure come into contact with live wires which have not been insulated, serious bodily injury may be caused.
- 2) If it is necessary to work in the vicinity of live wires, make sure that the safety distances are complied with and follow the specific procedures agreed to with the parties responsible for safety.
- 3) Before starting to work near electricity lines, make sure that whoever is in charge of the lines has been notified and that same will not be unexpectedly energised.
- 4) In any case, put barriers or shields into place in order to avoid physical contact and electric arcs.
- 5) Possible swaying of the platform and of overhead lines must also be taken into account.

INSULATION

If specifically requested, some platforms can be built with insulation arrangements inserted between the cage and the boom and between the boom and the turret, or both.

The resistance values at the rated insulation voltage will be tested at the time of delivery. These values should be checked on a monthly basis to make sure that they do not drop off in time.

The presence of dust, accumulated dirt and an excess of moisture in the air may affect the insulation negatively even to a drastic extent.

Keep the insulating area clean by washing it with water. Avoid using acids, solvents and sprays of pressurised or overheated water. Allow to dry before using the machine again.

In the event of servicing or replacement of oil pipes, pay attention to the fact that some pipes may be of the insulated type without metal braids.

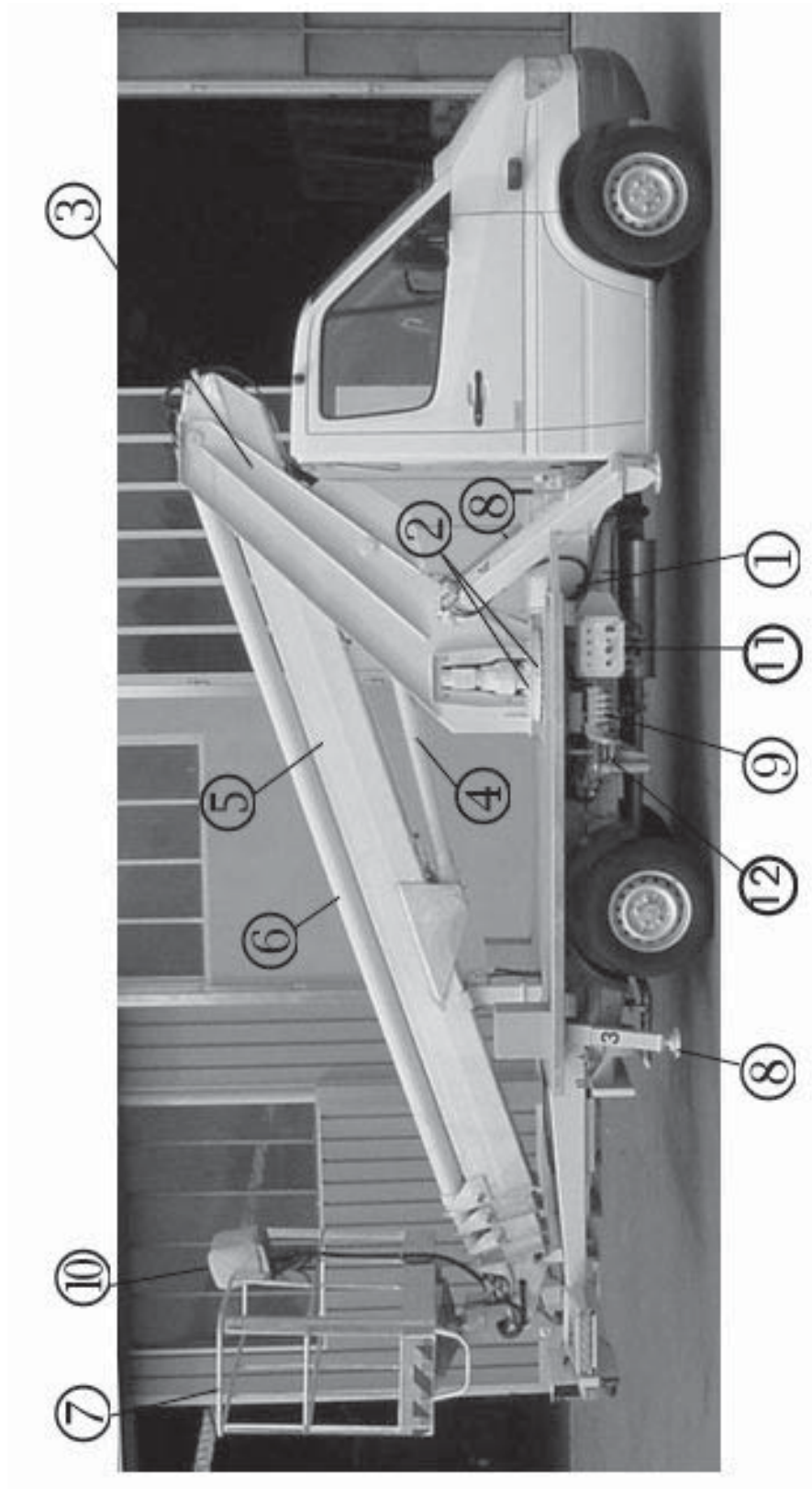
Insulation of the platform does not, in any case, provide protection against electric shocks due to contact of the operator with two leads or between a lead and earth.

In the stowed position, the insulation no longer has any effect.

Use of a fibreglass-reinforced plastic cage is not sufficient to indicate that the machine is insulated. Check this requisite carefully before working with energised materials.

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MULTITEL 220 ALU/AF



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DESCRIPTION OF THE PLATFORM

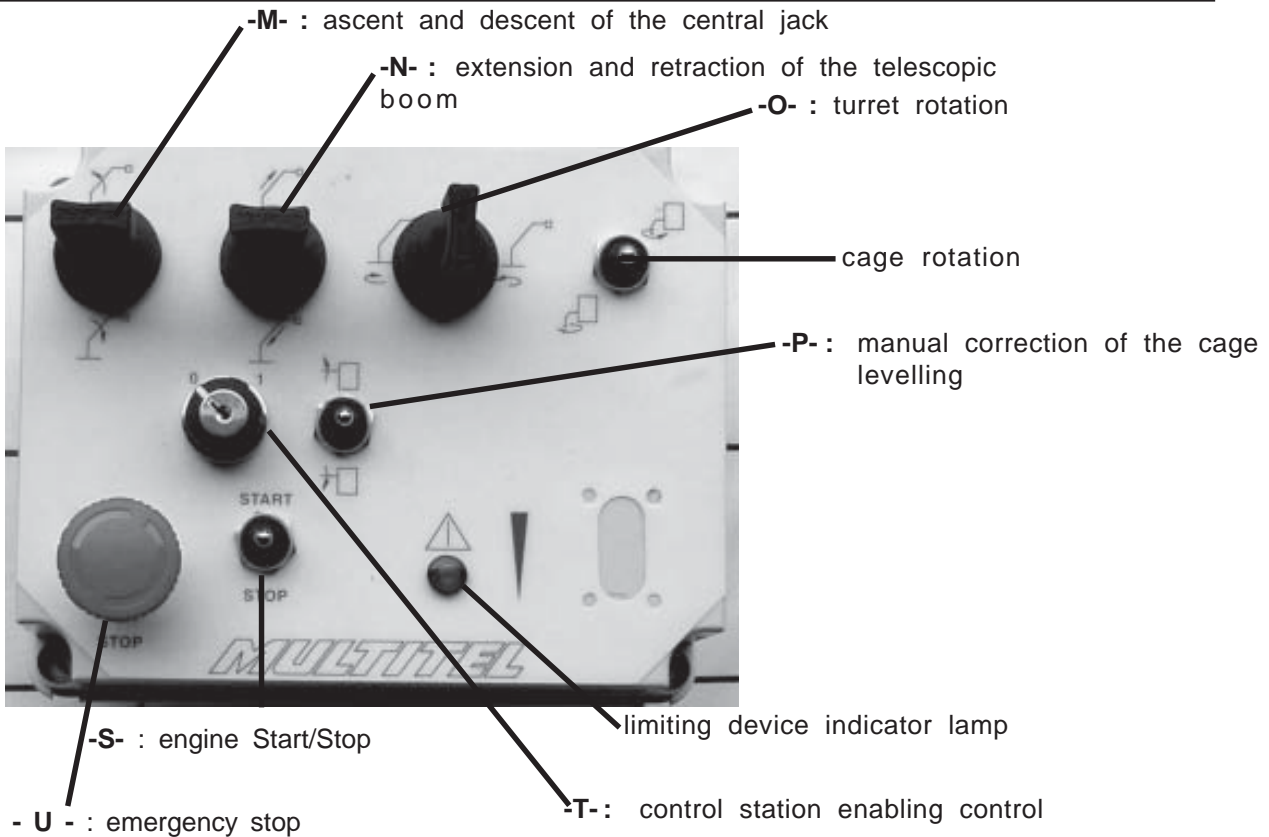
The platform consists basically of the following :

- 1) Counter-frame for securing the platform to the main frame members of the chassis of the carrying vehicle (item 1).
- 2) Rotation system consisting of an internally toothed large-diameter ball-circulation slew ring, with automatic brake operation and an epicyclic reduction gear (item 2).
- 3) Turret or basic unit inside which the control and activation valves of the oil-hydraulic system are arranged (item 3).
- 4) Hydraulic cylinder for turning the boom, of the double-acting type, complete with hydraulically controlled locking valve (item 4).
- 5) Telescopic boom with one or more simultaneously extracted hydraulically operated telescopic sections (item 5) controlled by a double-acting hydraulic jack, complete with a balanced hydraulically operated valve (item 6).
- 6) Working cage (item 7), made of aluminium sections or fibreglass-reinforced plastic, complete with hydraulic circuit for automatic levelling. On request, the cage can be mounted on bushings made of a high-insulation material, in order to insulate the cage electrically from the booms.
- 7) Four hydraulically operated outriggers consisting of four double-acting cylinders, which are operated separately, and which can be used to place the machine on a perfect level (item 8).
- 8) Control devices, consisting of :
 - a) a control panel located on the right side of the vehicle, containing the controls for the outriggers (item 9);
 - b) a control panel on the working cage, containing the boom controls, which are of the proportional type with the possibility of changing speed at the discretion of the operator, in addition to the various other controls such as those for starting and stopping the engine of the vehicle, starting the motor-driven pump, etc. (item 10);
 - c) an emergency control panel, for operation from the ground, including all the functions of the bottom (item 11).

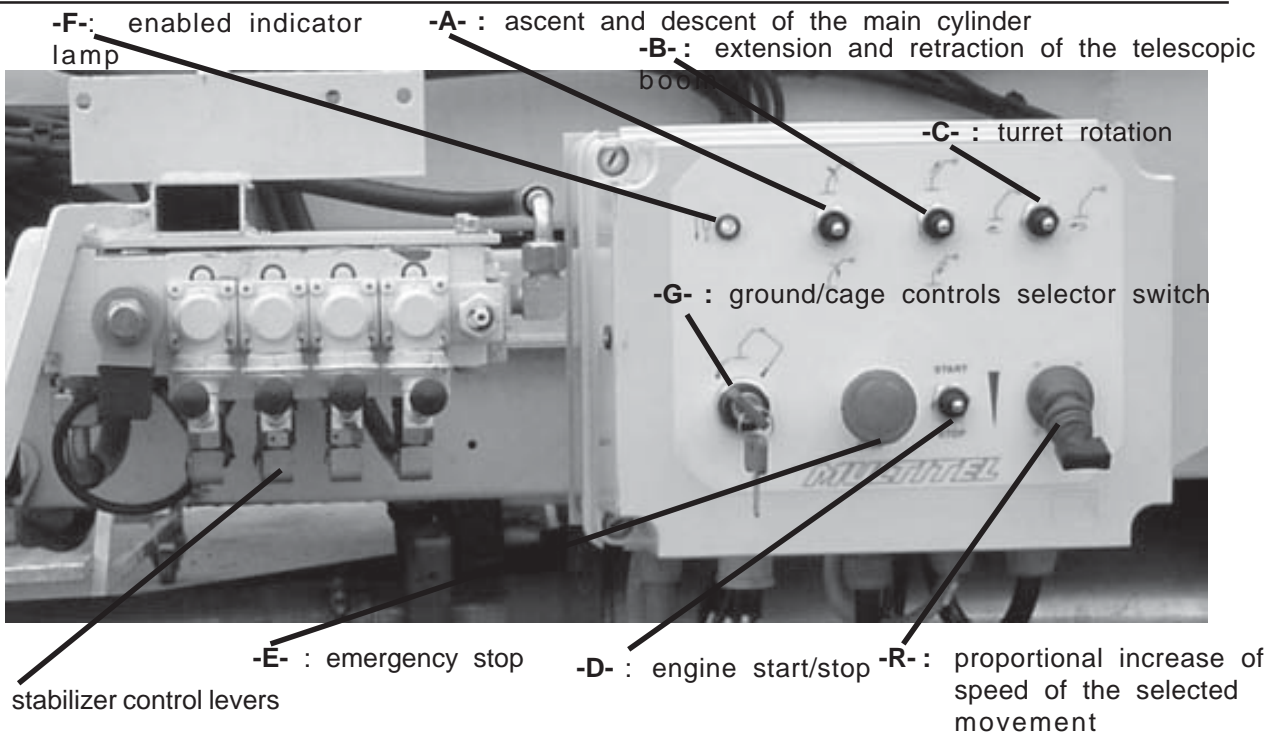
These controls consist of levers with automatic return to the neutral position. Suitable safety devices prevent incorrect manoeuvres, and in particular it is impossible to lift the bottoms out of the stowed position if the outriggers are not resting firmly on the ground. Similarly, it is not possible to lift the outriggers from the ground if the bottom is not in the stowed position.
 - d) Level indicator for finding the horizontal position of the platform (item 12).

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CONTROL BOX IN CAGE



GROUND CONTROL BOX - STABILIZER CONTROLS



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USE AND CONTROLS

The controls and signalling devices available on the platform are illustrated in this section. A perfect knowledge of these devices is essential for the operator, and it is absolutely necessary for him to be familiar with the controls and the relevant symbols before starting to use the machine.

STABILISING OF THE VEHICLE

To work in safety, perfect stabilising of the vehicle is essential..

Make sure that the ground is firm, and that there are no underground trenches which might give way. The few minutes spent making sure that the machine is stable will more than make up for the possibility of having to reposition the machine just as work has started.

With the hand brake of the vehicle on, the gear lever in neutral position (no gear engaged) , accelerate the engine until the number of turns indicated of the label in the driver's cab is reached. Press the clutch pedal down as far as it will go and then engage the power take-off lever. A red light will turn on to signal that it has been engaged.

While operating the outriggers check visually that no-one can be injured as the jacks are being lowered to the ground. If it is not possible to see all the outriggers from the control station , fence off the area to prevent access.

The controls for the outriggers are on the right side of the vehicle (see item 9) consisting of four control levers, each of which operates a single outrigger. By pushing down the lever the corresponding outrigger should be lowered, by pulling up the lever the corresponding outrigger should be raised . When the vehicle is lifted off the ground, a green "enabled" indicator lamp -F- turns on allowing all the boom functions. This lamp is located on the electric box near the outrigger control box.

Use the level indicator to make sure that the vehicle is on a perfect level. If it is not, use the control levers to lower the appropriate one.

If not otherwise indicated, the max. slope allowed is 1°.

Once this operation has been completed, check that the green "Enabled" lamp is on.

To achieve correct stabilisation, the wheels of the vehicle must have been lifted off the ground.

For machines fitted with box-type oblique outriggers, it is compulsory to extend them until the green area is reached.

Before starting to raise the cage, it is always advisable to make sure that all the outriggers are resting on firm ground, with no holes, protruding stones, manhole covers, gratings or bridging structures, since these are unable to guarantee solidity.

If it is necessary to work on ground which is not very firm, a hard wooden plank must be placed under the outrigger in question.

For machines equipped with a 5th foot under the operator's cab, check that once stabilising has been completed, this foot is not loaded with a weight and only just touches the ground. If it is too far from the ground, after completing stabilising reduce the gap by inserting a hard wooden plank underneath this foot.

IMPORTANT NOTICE: ONCE THE WHEELS HAVE BEEN LIFTED OFF THE GROUND, THE HAND-BRAKE OF THE VEHICLE NO LONGER HAS ANY EFFECT. IF THE VEHICLE IS ON A SLOPE, THEREFORE, IT MUST BE BLOCKED IN PLACE BY MEANS OF WEDGES OR OTHER EQUIVALENT SYSTEMS.

At this point it is possible to start lifting the cage.

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OPERATING PROCEDURE

The operator climb directly into the cage or he may lower it to the ground using the emergency controls on the ground control box.

On the ground control unit there is a two-position selector switch (G), used to activate the main controls in the cage or the emergency controls from the ground.

Activating one of these functions automatically excludes the other.

Once the cage-mounted controls have been activated, the key must be removed from selector switch (G) and inserted into selector switch (T) located in the cage, turning it to position 1 to enable this control station (see photograph).

The controls in the cage include n. 3 proportional levers (see picture) :

1st lever - M - : When this control lever is pushed the central jack is raised, and when it is pulled it is lowered.

2nd lever - N - : When this control is pushed the telescopic boom is extended and when it is pulled it is retracted.

3rd lever - O - : Rotation of the turret.

On top of that there is a little lever -P- for the manual correction of the cage levelling.

The controls from the ground or the base station include the following (see picture):

1st lever - A - : When this control is pushed the central jack is raised, and when it is pulled it is lowered.

2nd lever - B - : When this control is pushed the telescopic boom is extended, and when it is pulled it is retracted.

3rd lever - C - : Rotation of the turret.

4th lever - R - : Proportional increase of the speed of the movement which has been selected.

Both on the ground and in the cage there are mechanically locked red emergency push-buttons - E - and - U - activation of which locks all the movements and also, when envisaged, the engine of the vehicle.

The engine can only be started after releasing this push-button. It should not be used simply to stop the engine.

The following may also be provided :

- start/stop engine - D -S :

control to be used for starting and stopping the engine of the vehicle

- motor-driven pump activation control:

(if provided) to be used exclusively for emergency lowering. This control should not be used as an alternative to the main pump.

- cage-rotation control :

To use it, press the switch for activating the motor-driven pump then operate the required control. when this control is activated the cage is rotated.

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To start moving the aerial platform it is necessary to select first the type of movement required by using the appropriate levers, then the control -R- can be activated by pushing the lever gradually to increase and adjust the speed of the movement which has been selected.

The movements must be started and terminated gradually, without sudden stops and starts.

Jerky operations would cause triggering of the device for limiting the working outreach and could lead to vibrations of the valves. In this case the movement must be stopped and then resumed more gradually.

OPERATIONS FOR STARTING AND FOR STOWING THE BOOM

In order to avoid damaging the mechanical stop of the boom in the stowed position and its support, it is necessary to proceed as follows:

- with the machine in the stowed position, before raising the boom use the control to select telescopic retraction and then select the movement for raising the boom until it moves outwards from its support.

Never, under any circumstances, perform rotating or extraction movements while the boom is in the stowed position on its support.

- to place the machine in the stowed position, after lowering the boom to bring it close to the support, rotate it until it is perfectly centred and the green reference marks on the slew ring coincide with one another. Then retract the telescopic boom completely and lower it gently into its support.

Do not exert any force against the uprights at the sides of the support.

ELECTRIC MOTOR

If requested by the customer, it is possible to install an electric motor for operating the hydraulic pump feeding the oil-hydraulic system.

If the platform is to be used with an electric motor, it is also necessary to connect the power take-off of the vehicle and switch on the ignition key of the engine of the vehicle.

The engine is protected by means of a magnetic thermal switch.

The engine must be fed by means of a cable with a minimum cross-section of 4 mm² with an earthing lead. Avoid using excessively long cables.

Make sure that the socket has fuses and differential switches for protection purposes.

To make sure that the charge of the battery of the vehicle is maintained while the platform is being used with the electric motor, a battery charger is installed. This is activated when the engine is started.

Adjust the charging current so that 10 % of the capacity of the battery is not exceeded.

DO NOT EXCLUDE THE PROTECTION DEVICES OF THE ENGINE AND BATTERY CHARGER WHEN THE EXTERNAL 220 V POWER SUPPLY IS ON.

DO NOT SWITCH ON THE PUMP OF THE VEHICLE AND THAT OF THE ELECTRIC MOTOR AT THE SAME TIME.

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HORIZONTAL LEVELLING OF THE CAGE

The cage is fitted with a hydraulic circuit for keeping it horizontal. If you need to adjust the horizontal levelling, use lever - P - of the cage controls (see photograph).

EMERGENCY LOCKING

Each control station (in the cage and on the ground) has a locking push-button - E - U - easily recognised by its red colour and mushroom shape (see photograph).

If the platform does not work properly or if all the controls are out of service, press this push button immediately. If the machine has a remote starting and stopping device for the main engine, the locking push-button will also cause the engine to stop.

To unlock the push-button, naturally after eliminating the cause which led to its being pressed, turn the head in the direction of the arrow.

SOUND LEVEL AND VIBRATIONS

- 1) The maximum sound level is the same of the vehicle engine used for the running of the hydraulic-pumps (Engine of the vehicles - auxiliary engine - electrical motor).

Take off this value from the characteristic supplied from the engine manufacturer.

- 2) This kind of equipment does not produce important vibrations.

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LIMITING DEVICE

With very few exceptions, the boom is fitted with an automatic device which limits its range of action, so as to ensure stability in any operating condition. This device functions automatically, as follows :

- the telescopic boom is made up of several sections and can only be extended to a given length. When it reaches this point the downward movements of the main jack and the movements for extending the telescopic boom are disabled. Only rotational, upward and retraction movements are possible.

A red lamp on the cage control panel indicates that the locking condition has been reached. Once the lamp has turned on, do not add any more loads to the cage and proceed carefully since the performance limits of the platforms have been reached.

The maximum outreach varies depending on the load in the cage, that is to say it corresponds to the measurements shown in the table for the rated load on the cage, and increases proportionally for the lighter loads.

The best performance levels can be reached by making smooth movements.

Vice versa, if the movements are jerky, the pressure peaks will trigger the locking device sooner.

CHECK PROPER OPERATION OF THE LIMITING DEVICE ON A MONTHLY BASIS

The check should be carried out as follows:

- place the rated load in the cage;
- give the boom an inclination of 20 ° then extend the telescope;
- the platform should stop when the outreach indicated in test book ("Technical Features of the access platform", "AIF or APAVE Approval Certificate", "Prüfbuch für Hebebühnen", "ABOMA Approval Certificate", etc.) is reached;
- activate the central jack lowering control: the boom may not move any lower;
- perform these operations on free ground;
- afterward, with the operator on the cage, check if the red indicator lamp on the cage controls lights on when the boom reaches the stop (Limiting device indicator lamp - see photograph page 22);
- define beforehand the point where the boom should stop, and if there is any doubt, rather than continuing with the operations bring the machine to the stowed position and call in a specialised technician.

NEVER OPERATE THE MACHINE, UNDER ANY CIRCUMSTANCES, IF THERE IS ANY DOUBT AS TO OPERATION OF THE LIMITING DEVICE.

This kind of machine is provided of double circuit limiting working on two channels. In case of a default in the operation of one of the two channels the movements stop. Push the emergency button to re-enable the controls. If the problem recurs, put the boom in the stowed position and asks a specialised technician for an accurate check.

NEVER OPERATE IF THE LIMITING CIRCUIT IS NOT PERFECTLY EFFICIENT.

The limiting device of the 160-180-220 ALU has the special feature that the descending movement is only possible when the boom has an inclination of less than 20°, even when the range limiting device is working.

This means that greater outreaches can be achieved when the boom works in a position closer to the horizontal position.

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- 1 GENERAL PRESSURE-CONTROL VALVE
- 2 PROPORTIONAL FLOW CONTROLLER (SCREW IN CASE OF EMERGENCIES)
- 3 SOLENOID VALVE OF THE TELESCOPIC BOOM
- 4 A-EXTENSION OF BOOM
B-RETRACTION OF BOOM
- 5 SOLENOID VALVE OF THE CENTRAL JACK
- 6 A-BOOM UP
B-BOOM DOWN
- 7 SOLENOID VALVE FOR ROTATION
- 8 A-LEFT
B-RIGHT
- 9 LEVEL-CORRECTING SOLENOID VALVE
- 10 A-UP
B-DOWN
- 11 RANGE LIMITING VALVE (PRESS IN EMERGENCIES)
- 12 ELECTROVALVE FOR CAGE ROTATION (ONLY IF REQUIRED)



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EMERGENCY DESCENT

This chapter illustrates the procedure needed to take the basket down to ground in the event of a breakdown.

The staff on ground shall be trained and shall have already attempted the operation of manual recovery. The instructions in this manual shall therefore be only a reminder.

If the description of the manoeuvres is not clear enough, please contact customer service immediately and do not start using the platform.

In an emergency for a safe basket recovery, evacuate the people and the materials from the basket first if possible.

Should this not be possible make sure people have their safety belts on and the materials are tied to prevent them from falling if the basket should oscillate.

Decide which movements are needed to take the basket down in safety and try to bring the telescopic arms back in as soon as possible.

Before using the manual pump and the manual drive of the electric valves check whether the breakdown is localized, for example:

- if the basket controls do not work check the operation of the ones at ground level, if necessary use the spare wrench for selection . This wrench is supplied upon delivery of the vehicle and shall be kept in the cabin.
- if the main pump works correctly, there is no need for using the manual pump
- if the main pump does not work, but the controls work from an electrical standpoint, pump manually but work from one of the control seats

In the event of faulty operation of the platform, it is possible to lower the cage to the ground again by proceeding as follows :

- 1) For the models 180 and 220 ALU remove the carter located behind the turret; for the model 160 ALU open the door of the drawer located under the truck body, to reach the hydraulic components;
- 2) Turn the hand-wheel of the speed-control valve (2) as far as it will go but without forcing it;
- 3) Press the small push-buttons of the solenoid valves to obtain the required movements, keeping in mind that the valves are arranged as follows, starting from the bottom:

3rd : telescopic boom control solenoid valve;

4th : main cylinder control solenoid valve;

5th : turret rotation solenoid valve;

6th : cage level correction solenoid valve,

To lower the central jack, since this movement is controlled by the circuit of the limiting device it is necessary to press at the same time the small push-button on the end of the coil of the solenoid valve - 7 - located above the set of control solenoid valves. This push-button is sealed, and after use it should be resealed in order to ensure correct operation of the circuit controlling the limiting device. To hold the electric valve -7- in pressed position use the fork supplied. When the operation is terminated take the fork away.

Either the main pump of the vehicle or, if this is not working, the hand pump may be used for pumping.

While operating the machine using the emergency controls, the automatic control and safety devices do not work. It is therefore necessary to retract the telescopic boom completely first, and then to proceed with rotation and lowering.

When the operation is over and before using the platform again check the operation of all the safety devices.

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CLEANING THE FILTERS

Top performance, constant efficiency and a long service life of the hydraulic components is ensured by taking proper care of the cleaning operations and using the correct quality of oil.

We therefore recommend that you always use **AGIP ARNICA 32** hydraulic oil or a compatible equivalent (ISO - L - HV).

We must remind you that mixing oils which are not perfectly compatible may cause serious damages inside the oil-hydraulic system.

There are two filters, one on the high-pressure delivery line and one on the suction line. The delivery filter has a visual indicator to show when it is clogged. When the indicator has turned completely red the cartridge must be replaced. Unscrew the body of the filter with a wrench, replace the cartridge, clean the container, lubricate the sealing gasket and then screw tightly back in place by hand, without using a wrench.

The suction filter should be cleaned once every six months.

If it is of the spin-on type, unscrew the cartridge and replace it.

If it is of the cartridge type, it may be sufficient to wash it with Diesel oil and to blow it clean with compressed air. If the filters are to be replaced, use cartridges having the same filtering capacity, since different degrees of filtering can cause serious damages to the pump and to the oil-hydraulic system.

Check the level of the oil in the tank regularly, using the level indicators engraved on the rod under the sealing cap (the level must be checked with the booms in the stowed position). The level must be comprised between the "min." and the "max." marks.

The hydraulic oil must be replaced every 5000 hours or every three months.

When replacing the oil, use personal protection equipment such as gloves and goggles. In the event of accidental contact, wash thoroughly with water and soap.

Oil is polluting for the environment and nature. Collect any oil which has spilled during these operations and contact a specialised firm or consortium for disposing of it.

PERIODICAL CHECKS

CHECKS TO BE CARRIED OUT ON STARTING EACH DAY OF WORK

- Make sure that there are no visible leakages from the oil-hydraulic system;
- make sure that there are no torn wires or cables;
- make sure that there are no pins protruding from their seats or with signs of seizure;
- make sure that the parapet of the cage are sound;
- make sure that none of the limit switches are broken or out of place;
- check operation of all controls before lifting the boom completely.

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TIGHTNESS CHECK

The system for securing the machine to the chassis undergoes considerable stress during use, and has to absorb the continuous vibrations of the equipment when the carrying vehicle is moved from one place to another.

Periodical checking of the tightness of the bolts holding the slew ring in place and of the counter-frame is therefore recommended.

Check the tightness of the bolts of the power takeoff and of the hydraulic pump periodically. For the tightness values, consult the attached table of tightening torques:

TIGHTENING TORQUES USING A TORQUE WRENCH (Nm)

	Class of resistance of the bolt		
	8,8	10,9	12,9
Thread Diameter M5	5,5	8,0	9,3
Thread Diameter M6	9,3	13,9	16,2
Thread Diameter M8	22,5	33	38
Thread Diameter M10	45	67	78
Thread Diameter M12	78	117	135
Thread Diameter M14	126	184	216
Thread Diameter M16	193	279	333
Thread Diameter M18	270	387	459
Thread Diameter M20	387	558	648
Thread Diameter M22	522	747	873
Thread Diameter M24	666	954	1116
Thread Diameter M27	990	1395	1665
Thread Diameter M30	1350	1890	2250

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OPERATIONAL CHECK OF THE CONTROLLED CHECK VALVES ON THE STABILIZERS:

- place the vehicle-mounted platform in the working position, with the stabilisers in place;
- turn off the engine of the vehicle, leaving the main switch of the control panel on;
- move the control lever of the outriggers repeatedly, making sure that none of the stabilisers move.

OPERATIONAL CHECK OF THE CONTROLLED CHECK VALVES ON THE BOOM:

- partly raise the platform;
- turn off the engine of the vehicle, leaving the main switch of the control panel on;
- move the control levers of the various movements repeatedly, making sure that the boom does not move.

CHECK OF THE OUTREACH LIMITING DEVICE

(see chapter on page 15)

LUBRICATION

Lubricate all the points where the grease nipples are located at least once a week (see table 1 in the Spare Parts Manual).

Use AGIP GREASE 30 grease or products of equivalent quality.

Grease the articulated joints, if any, of the cardan propelling shaft of the hydraulic pump once a week.

CLEANING THE BOOM

The telescopic boom should be cleaned once a month, or more frequently if it is used to work in particularly dirty environments. Remove the old grease.

Once every three months, raise the boom completely, remove the rear cover, extend and retract the telescope device several times to allow the dirt and any residues which have accumulated inside it to drop out. This operation is particularly important if the platform has been used to carry out tree-pruning work.

MULTITEL
PAGLIERO

ROTATION GEAR BOX

Check the level of the oil in the reduction gear every six months.

It was originally filled with **AGIP ROTRA 80 W/90** oil.

The oil should be replaced with the reduction gear warm, taking the opportunity also to wash the guards.

ROTATION SLEW RING

Regular lubrication using quality lubricants is essential for proper operation.

It is recommended that lubrication should be carried out in such a way that the grease comes out of the slits in the rings so as to form a collar around the whole circumference. Make sure that the grease is evenly distributed, turning the bearing as it is being greased. Choose the lubrication frequency depending on the operating conditions so that the average interval corresponds to about 100 hours of use.

LIST OF RECOMMENDED GREASES AND TEMPERATURES FOR USING THEM:

GREASE	TEMPERATURES
IP Alvania 32	-30° +130°
IP Fluid 12	-20° +60°
MOBIL Mobilux 2	-35° +130°
MOBIL Mobiltac 81	-30° +120°
ESSO Beacon 2	-30° +130°
ESSO Surret Fluid 30	-20° +60°

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MAINTENANCE PLAN

1) DAILY CHECKS:

- carry out the checks listed on page 18

2) WEEKLY CHECKS:

- check operation of the control enabling device;
- check operation of the outreach limiting device.

3) MONTHLY CHECKS:

- make sure that the points indicated in TAB 1 of "Spare parts catalogue" are greased;
- make sure that the filters are cleaned;
- make sure that the safety devices work properly;
- make sure that the hand-pump works properly;
- make sure that the locking bolts of the base of the vehicle are correctly tightened;
- check the level of oil in the tank;
- make sure that the wiring boxes are dry inside;
- visual check of the structures with special attention to the welding points connecting the articulated parts of the boom and jib.

4) SIX-MONTHLY CHECKS:

- it is advisable to have the machine inspected by the manufacturer every six months.
If you wish to carry out a complete check of the machine yourselves and you have the necessary specialised personnel, proceed according to the list of the recommended checks to be carried out, attached to this manual.

EXTRAORDINARY MAINTENANCE

IMPORTANT NOTICE: Any repairs requiring the use of welding equipment must be carried out by a qualified welder according to UNI EN 287 or equivalent standards.

The added material used must suit the characteristics of the material to be welded. If required, we are at your disposal for any information on this subject.

Before carrying out any welding, disconnect the battery terminals, starting with the negative pole.

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ADDITIONAL INSTRUCTIONS FOR PARTICULAR OPTIONS

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MANUAL OF PERIODICAL CHECKS TO BE CARRIED OUT ON PAGLIERO MULTITEL PLATFORMS

INTRODUCTION

This manual has been drafted in order to help the technical staff responsible for periodically checking the work platforms manufactured by us to carry out their work, also on the basis of their own experience. This means that depending on the condition of the machine. Other checks not listed here may be required.

It should be stressed that the checks must be carried out by experienced and qualified personnel. In case of doubt, request a copy of the final test report of the platform from our offices in Manta.

The machines are available in various versions, which differ in terms of their construction, performance, safety devices and control systems. For this reason, not all the checks listed can be carried out on all the models of platform. On the other hand, special models may require checks which are not included in the list.

This list does not have the purpose of explaining how to carry out the checks except in general terms, or of specifying the critical limits of any upsets.

Our products undergo technical evolution in time in order to improve their performance and ensure maximum operating reliability. Many of these innovations can also be installed on existing platforms. You should therefore request copies of these alterations periodically, so that they can be carried out on the machines you are already responsible for.

Each platform is delivered together with a User's Guide and Instructions containing, among other things, the wiring and hydraulic diagrams used to make the platform.

Having this manual close at hand during the checks will make your job easier.

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DATE _____ TYPE _____ SERIAL N. _____

CUSTOMER _____

TECHNICIAN CARRYING OUT THE CHECK _____

STABILISERS

Check of engagement of power take-off and indicator lamp	Checked	<input type="checkbox"/>
Check of level of oil in tank	Done	<input type="checkbox"/>
Check of pressure of outrigger control system	Checked	<input type="checkbox"/>
Check of control enabling	Checked	<input type="checkbox"/>
Check of vehicle level indicator	Checked	<input type="checkbox"/>
Check of tightness of stays on counter-frame	Done	<input type="checkbox"/>
Check of sealing of supporting jacks	Done	<input type="checkbox"/>
Check of tightness of flanging screws of the valves	Checked	<input type="checkbox"/>
Inspection of suction and delivery oil filters	Done	<input type="checkbox"/>
Operational check of the locking devices of the outriggers with the boom raised	Checked	<input type="checkbox"/>
Operational check of rotation disabling with outriggers partly extended	Checked	<input type="checkbox"/>

BOOM

Check of pressure of distributor on turret	Checked	<input type="checkbox"/>
Check of setting of limit microswitch of central jack	Checked	<input type="checkbox"/>
Operational check of the hose-burst valve	Done	<input type="checkbox"/>
Check of locking of valve or cock on LS DANFOSS	Checked	<input type="checkbox"/>
Check of pressure on pump of telescopic device	Done	<input type="checkbox"/>
Sealing check of valves on the jacks	Checked	<input type="checkbox"/>
Check of tightness of flanging screws of valves	Checked	<input type="checkbox"/>
Adjustment of the slides of the boom	Done	<input type="checkbox"/>
Operation of 220 V socket	Checked	<input type="checkbox"/>
Operation of hand-pump and emergency descent movements	Checked	<input type="checkbox"/>
Operation of locking push-button	Checked	<input type="checkbox"/>
Check of seals and locking devices	Done	<input type="checkbox"/>

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LIMITING DEVICE

TYPE WITH PRESSURE SWITCHES

Check of horizontal outreach	Checked	<input type="checkbox"/>
Check of range at 30°	Checked	<input type="checkbox"/>
Check of operation of 2nd safety device	Checked	<input type="checkbox"/>

TYPE 3B6

Operational check	Checked	<input type="checkbox"/>
Check of check point	Checked	<input type="checkbox"/>
If the machine has more than one working area, repeat the check for each area	Checked	<input type="checkbox"/>
Check that the box of the 3B6 card is perfectly dry	Checked	<input type="checkbox"/>

WORKING CAGE

Pressure on cage distributor	Checked at	Bars	<input type="checkbox"/>
Tightness of cage securing bolt	Checked		<input type="checkbox"/>
Check of smoothness of movements	Checked		<input type="checkbox"/>
Check of operation of locking push-button	Done		<input type="checkbox"/>
Check of pressure in the levelling circuit (for models with electro-hydraulic levelling)	Done		<input type="checkbox"/>

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CHECK OF COUPLING OF THE WORM SCREW AND WORM GEAR

For some types of platforms the movement of the jib and levelling of the cage are carried out by means of a worm reduction unit and worm gear device.

For these gear boxes the following must be checked:

- 1) Wear of the tooth of the worm screw.
The amount of wear must be less than 2 mms. If it is greater, replace the screw.
- 2) Wear of the tooth of the worm gear.
The amount of wear must be less than 2 mms. If it is greater, replace the gear.

On completing the check, put the guard back into place.

The grease contained in the box may be re-used if it does not contain any traces of metallic dust or other materials which might have an abrasive effect.

If it has to be replaced, request the special mixture.

GENERAL CHECKS

CHECK OF THE STRUCTURE

Check the condition of the welds on the following structures:

turret	Checked	<input type="checkbox"/>
telescopic boom	Checked	<input type="checkbox"/>
cage	Checked	<input type="checkbox"/>
Make sure that the clearance of the pins in their articulated joints is not excessive and that they are correctly greased	Checked	<input type="checkbox"/>
Check the clearance of the slew ring and of the rotation reduction gear	Done	<input type="checkbox"/>
Check the clearance of the slew ring and of the rotation reduction gear	Checked	<input type="checkbox"/>
Make sure that the wiring boxes are dry inside	Checked	<input type="checkbox"/>
Check that the structure does not have any marks or deformations due to blows or excessive wear	Checked	<input type="checkbox"/>
Check that there are no leakages in the hydraulic system and the jacks	Checked	<input type="checkbox"/>
Make sure that the indications on the controls and the warning notices are in place	Checked	<input type="checkbox"/>

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