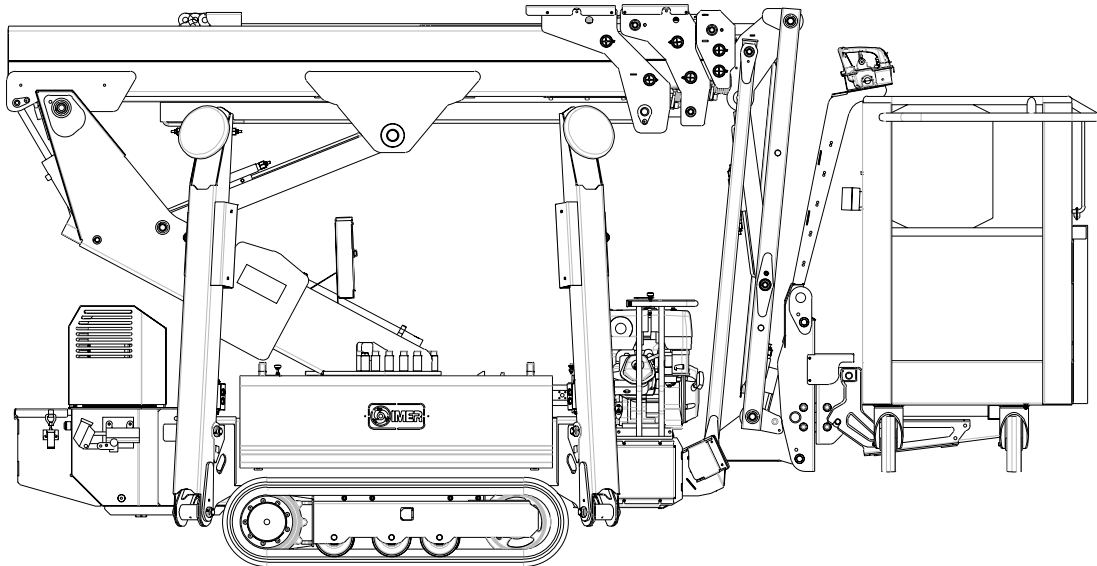


IM R13 T

**MOBILE ELEVATING WORK PLATFORM
USE AND MAINTENANCE MANUAL**

MUM IM R13 T USA R00 07/2019



TRANSLATION OF THE ORIGINAL INSTRUCTIONS



IMER International S.p.A.

Access Platform Division

Via San Francesco d'Assisi, 8 - 46020 Pegognaga (Mantova) - ITALY

Tel. +39 0376 554011 - Fax +39 0376 559855

www.imergroup.com





Headquarters

IMER International S.p.A.

Via Salceto, 53-55 - 53036 POGGIBONSI (SI)
(ITALY)

Tel. +39 0577 97341 - Fax +39 0577 983304



Access Platform Division

46020 PEGOGNAGA (MN) ITALIA

Via S. Francesco D'Assisi, 8

Tel. +39 0376 554011 Fax +39 0376 559855



IM R13 T è conforme allo standard

ANSI A92.20/2018

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This edition comprises the use and maintenance manual for a tracked, self-propelled, hydraulic scissor lift platform:

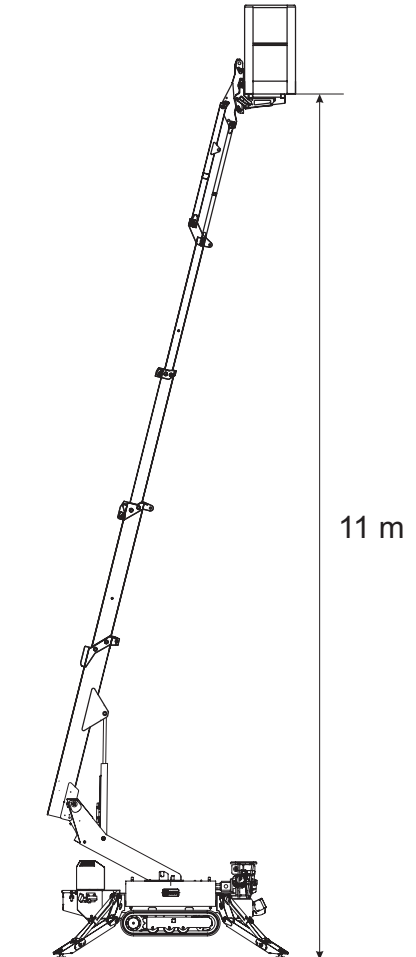
IM R13

Designed and manufactured to be:

- Powered with petrol;
- Hydraulically operated and wit. proportional controls.

IM R13 reaches a height of 11 m (13 m working height) and can be used outdoors.

Only qualified and skilled operators can use these machines.



This manual was compiled in order to furnish the user with all the necessary instructions for a correct and safe use of the machine to prevent serious damage to the user or any third party.

All information and instructions comprised in this manual are fully binding, and must be read carefully and properly understood prior to the initial operation of the machine.

The manual is to be construed as an integral part of the machine, and therefore should always remain within reach on the platform for any future reference.

All framed parts of the text provide safety instructions and must be read with particular attention

Static and dynamic tests

Before commissioning, the static and dynamic tests have been performed in full compliance with the harmonised industrial standard EN 280 Art. 6.3.

After-sale service

For any mechanical interventions, repairs and alterations/modifications, please refer to the authorised workshops only. For any specific information please contact our Technical After-Sale Assistance.

Spare-parts service

Good working performance of the unit, as well as its long life may be ensured by using the original spare parts only. Please make use of the "SPARE PARTS CATALOGUE" for this purpose.

Please always quote the information/data provided on the identification plates placed on the chassis and the cage, should you require any spare parts or technical assistance.

Liability

La IMER International S.p.A. shall be released from any liability or any obligations for any damage to persons or objects caused by any of the reasons listed further below:

- Non-observance of the instructions comprised in this MANUAL referring to driving, use and maintenance of the machine.
- Erroneous actions in regarding the use and maintenance of the machine.
- Modifications introduced either to the structure, and/or parts of the machine without prior authorisation of IMER International S.p.A., and/or making use of any inappropriate equipment for the task.
- Non-standard and/or incorrect use of the machine, in contravention of the specific instructions comprised in the present MANUAL.
- Use of any non-original spare parts not specifically authorised by the Manufacturer.

General instructions - safety



Manual

A suitable working safety is very important in order to avoid serious injuries for the operator himself and for the other persons, therefore it is compulsory to carefully read and well-understand this manual to know the exact and essential instructions for the use of the machine and the maintenance operations.

This manual is to be considered as an integral part of the machine and it should always remain on the platform for future reference.

The user manual must be carefully stored by the user for the entire service life of the machine, also if the machine is lent, rented or sold

The figures presented in this manual do NOT always exactly reproduce the described model, but are used to make the text easier to understand

Safety systems

The safety systems applied to the machine are inevitably subject to wear and to lose calibration. Therefore, they must be controlled and kept in perfect efficiency. It is not advisable to evaluate their operational and safety conditions only on the basis of their functioning.

No such systems may in any way relieve the operator of his individual responsibility of operating the machine with all due diligence.

It is absolutely forbidden to remove, modify or tamper with parts of the self-propelled aerial platform, which are important for safety and stability.

Any tampering whatsoever with the main members of the self-propelled aerial platform and associated safety devices immediately nullifies guarantee conditions.



Labels and plates

Potential dangers and instructions regarding the machine are given on labels and plates; these should therefore be kept in a clearly legible, good condition.

Operator's requirements

Only qualified and skilled operators can use these machines



The operator shall:

1. Read and well understand all the documentation provided with the machine, be properly trained and instructed in the correct use of the machine and know the safety rules and devices.
2. Be physically in good conditions and not make use of dope, alcohol or drugs that could affect the attention, the reaction, the sight and the hearing.
3. Give a great importance to safety and refuse to work if you think you are not working under safe conditions.
4. Well-know the maximum working load.
5. Use suitable accident prevention equipment accordingly with the working conditions and the local rules in force.
6. When you are on the cage keep all the parts of the body inside the guard rails and both feet have to be firmly rest on the floor surface.
7. Make always use of an assistant in areas where the sight is obstructed.
8. Always work under highest safe conditions, tidiness and cleaning.
9. Before using the machine check daily the controls and safety devices and make sure they are in perfect working order.
10. Check that the working area is free from persons, animals or obstacles before making any movement of the machine.
11. Check that the ground where the machine has to operate is free from holes, bumps, drops, uneven level, obstructions, debris and coverings which could hide possible potholes or others dangers.
12. Clean the ladder, the floor surface of the platform and the handrails from oil and grease.
13. Once the work has been finished and when the machine remains unattended, always remove the key to prevent unauthorised persons from using it.
14. While commuting platform control panel, always remove the key to avoid any unauthorized use from the ground control panel while personnel is present on the platform. The safety manager must keep a spare key, making it possible to use the ground control panel in an emergency. (In case of failure it is possible to lower the machine).

In particular



- Be aware that the tracked platforms with remote control can be used by qualified personnel only.
 - Do not give the platform control panel to people who have not been thoroughly trained.
 - Familiarize yourself with the symbols and the positions of the levers for the operation of functions and handling.
-
- Always check before starting work, the functionality of the button for the emergency stop of the platform control panel.
 - Whenever the machine is moving along on the ground, make use of the platform control panel while staying at a safe distance from the machine at all times. No unauthorised persons may remain within the working area of the machine when it is in operation.
 - Release all the levers if the movement of the machine becomes uncontrollable and immediately press the emergency stop button of the platform control panel.
 - Always press the emergency button of the platform control panel when the unit is not in use. This also applies for short breaks.
 - Always press the emergency button of the platform control panel at the end of the work. The platform control panel must be kept out of reach of unauthorized persons.

Distance from the electric lines



The machine is not electrically insulated and does not offer any protection against active parts, electrical lines and plants which are not protected or not sufficiently protected.

Here below you can find a table concerning the safety distances to be compulsory observed according to the Italian law.

In other countries the operator may have different limitations to observe

Un (kV)	Minimum allowed distance (m)	
da 0 a 300V	avoid contact	
da 300V a 50kV	10ft	3.05m
da 50kV a 200kV	15ft	4.60m
da 200kV a 350kV	20ft	6.10m
da 350kV a 500kV	25ft	7.62m
da 500kV a 750kV	35ft	10.67m
da 750kV a 1000kV	45ft	13.72m

Un = nominal voltage

Unpermitted operations



It is strictly forbidden to use the machine:

- On public roads.
- Without an adequate environmental lighting to work or to move under safety conditions.
- Work in case of strong storm, with or without rain, or with wind with speed higher than 12.5 m/s, 6th grade of the Beaufort scale described below.
- Without making sure that the platform gate bar is closed.
- Without using the safety belts.
- While moving, with boxes opened.
- If the working area is not free from obstacles which could cause dangerous conditions.
- While entering in contact with fixed or mobile objects.
- Under bad working conditions.
- In a different way from what it has been described in the instruction manual.
- After modifying or removing the safety devices.
- After fastening it to adjacent structures.

In addition, it is forbidden to:

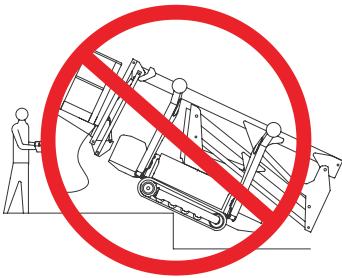
- Operate or lift the platform when it is placed on the truck loading platform or other vehicle.
- To throw some objects and tools from the top to down and vice versa.
- Use the boom for purposes other than setting the staff, their tools and equipment to work position.
- Control the machine from the ground control panel with a second operator on the cage.

Beaufort Wind Scale

	Wind description	Wind speed (km/h)	Wind speed (m/s)	Sea conditions	Land conditions
0	Calm	0	0	Flat Calm.	Smoke rises vertically.
1	Light air	1-6	0.3-1.5	Ripples without crests. White foamy crests are not yet formed.	Wind motion visible in smoke.
2	Light Breeze	7-11	1.6-3.4	Small wavelets. Crests of glassy appearance, not breaking.	Wind felt on exposed skin. Leaves rustle.
3	Gentle breeze	12-19	3.4-5.4	Crests begin to break; scattered whitecaps.	Leaves and smaller twigs in constant motion.
4	Moderate breeze	20-29	5.5-7.9	Waves becoming longer. The whitecaps are more frequent.	Dust and paper raised. Branches are moving.
5	Fresh breeze	30-39	8.0-10.7	Moderate longer waves. Abundant whitecaps and possible sprays.	Smaller trees sway. Small waves are formed in interior waters.
6	Strong breeze	40-50	10.8-13.8	Large waves with foam crests. Sprays are probable.	Large branches in motion. Umbrella use becomes difficult.
7	Near gale / Moderate gale	51-62	13.9-17.1	Large waves form. The foam formed by the braking of the waves forms streaks due to the wind.	Whole trees in motion. Effort needed to walk against the wind.
8	Fresh gale	63-75	17.2-20.7	High waves. Breaking crests forming spindrift.	Some twigs broken from trees. Cars veer on road.
9	Strong gale	76-87	20.8-24.4	High waves (6-7 m) with dense foam. Wave crests start to roll over. Considerable spray.	Slight structural damage (chimneys and removed tiles).
10	Whole gale / Storm	88-102	24.5-28.4	Very high waves. The sea surface is white and there is considerable tumbling. Breaking waves are much more intense and visibility is reduced.	(Rare on the mainland) Unrooting of trees. Considerable structural damage.
11	Violent storm	103-117	28.5-32.6	Enormous waves that could hide ships with medium tonnage from view. The sea is completely covered with dense foam. Air filled with foam and spray, visibility is greatly reduced.	Considerable damage, extensive structural damage.
12	Hurricane	> 117	> 32.5	Huge waves. Air filled with foam and spray, sea completely white.	Extremely serious disasters. Enormous and widespread damage to structures.

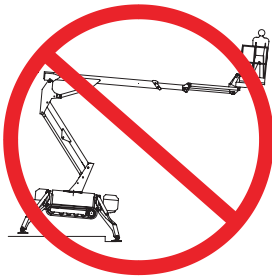
To minimize risks

Follow the instructions below:

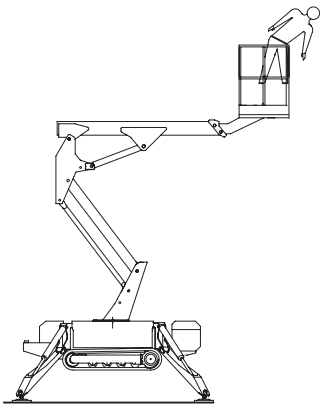


Risk of overturning

- Check the ground is firm and even.
- Do not use the machine on slippery, icy, muddy ground and with holes, which has a slope higher than the allowed limit.
- Keep a distance of at least 2 m from steep unevenness (ditches, steep terrain, etc.).
- Check that the ground where the machine has to operate is free from holes, bumps, drops, uneven level, obstructions, debris and coverings which could hide possible potholes or others dangers.
- Comply with the maximum load and the allowable number of persons.
- Distribute the load on the entire platform surface uniformly.

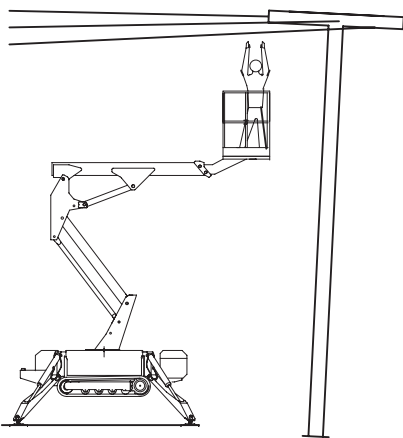


- Avoid the machine knocks against fixed or mobile obstacles.
- Do not use the machine as a crane with materials suspended to the lifting structures or to the cage.
- Do not increase the maximum available working height by putting ladders or scaffolds on the platform or climbing onto the guard rails.
- Do not place materials on the guard rails.
- Give the best attention during movements with mobile travelling platform.
- Carry out the movements only if the working area visibility is complete.
- Do not use an horizontal force above 400 N.
- Do not equip the machine with elements (ex. panels) which increase the wind exposure.



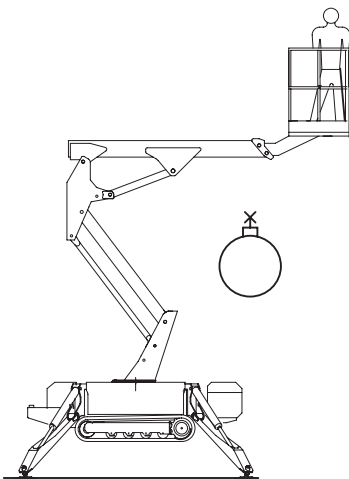
Risk of falling

- The use of safety belts is compulsory.
- Do not lean out of the safety perimetric guard rails of the platform.
- Do not use guard rails as admittance means to get on or get down from the platform.
- Do not get on or get down from the platform when it is lifted.



Electrical risks

- As the machine is not electrically insulated, the operator has to pay a particular attention to avoid any contact with probably energized parts.
- Do not carry out works near electrical lines at a distance lower than the one indicated in the table page 15.



Explosion or burn hazards

- Do not use the machine near open flames or heat sources.
- Charge batteries in ventilated environment, far from heat sources or explosive fluids.
- Do not use the machine if there are oil leakage.
- Do not use the machine in environments with explosive atmosphere.
- Shut the engine down during refuelling.
- Make refuelling in a well-ventilated area.
- Dry fuel in case it is poured out.
- Do not smoke during refuelling.

Residual risks

The plates and labels listed below indicate the residual risks that remain despite there being protective measures incorporated into the machine’s design and regardless of the safety devices adopted.



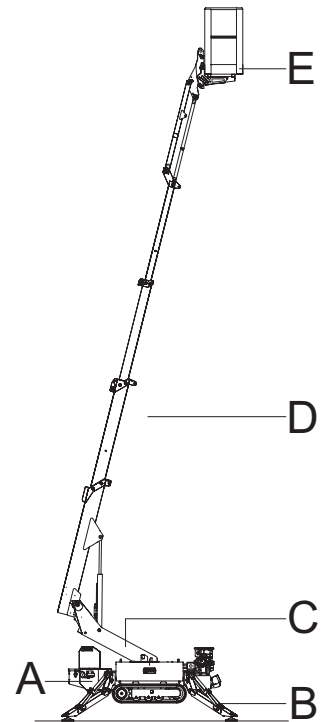
Description of the machine

The tracked aerial platform IM R13 is used to lift persons, materials and equipment to enable works to be performed at certain heights (indoor and outdoor).

It is intended to be used accordingly with the foreseen technical data described in the suitable sheet, on solid and strong grounds and not before a Qualified Operator has checked the operational safety.

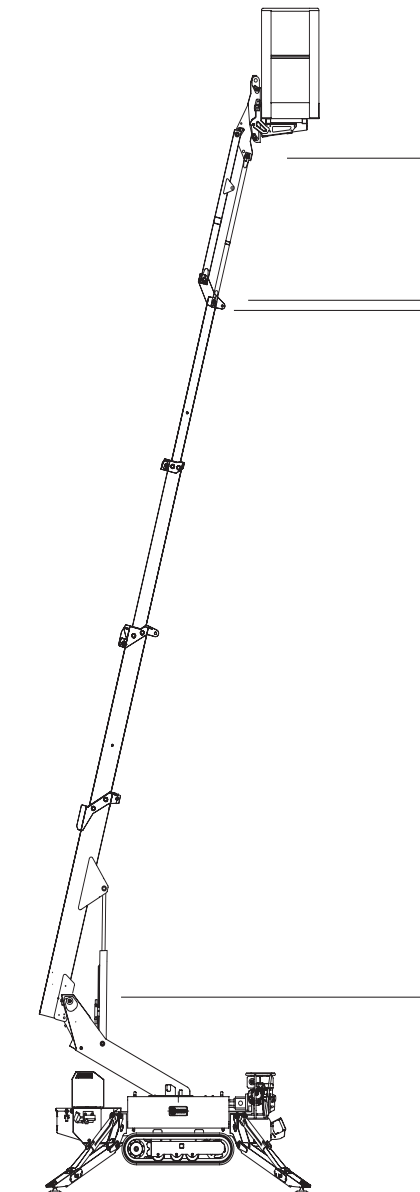
It is equipped with:

- A. Chassis
- B. Stabilizers
- C. Turret
- D. Lifting structure
- E. Platform or cage

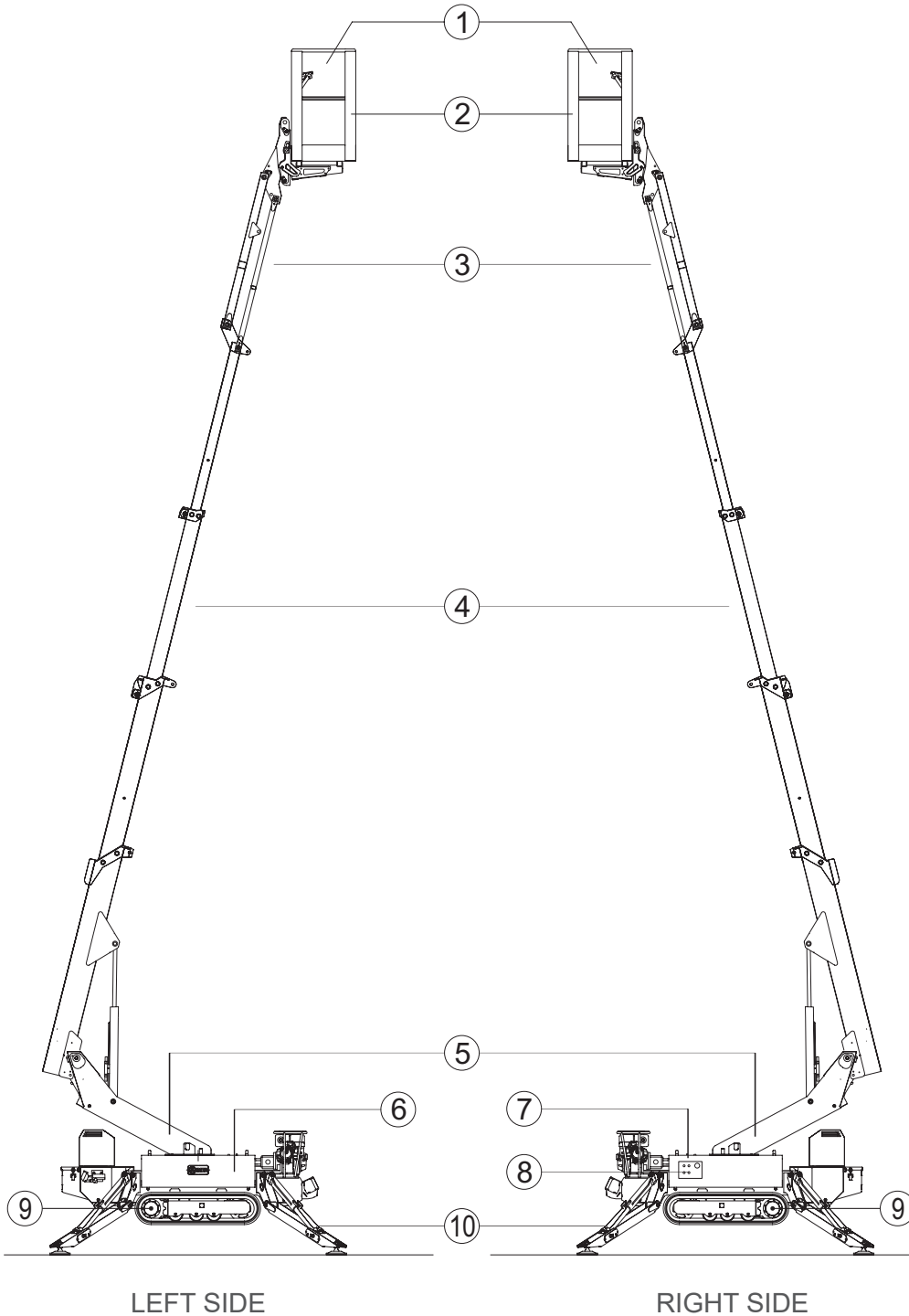


The lifting system consists of 2 main structures operated by hydraulic cylinders:

- Jib
- Telescopic boom



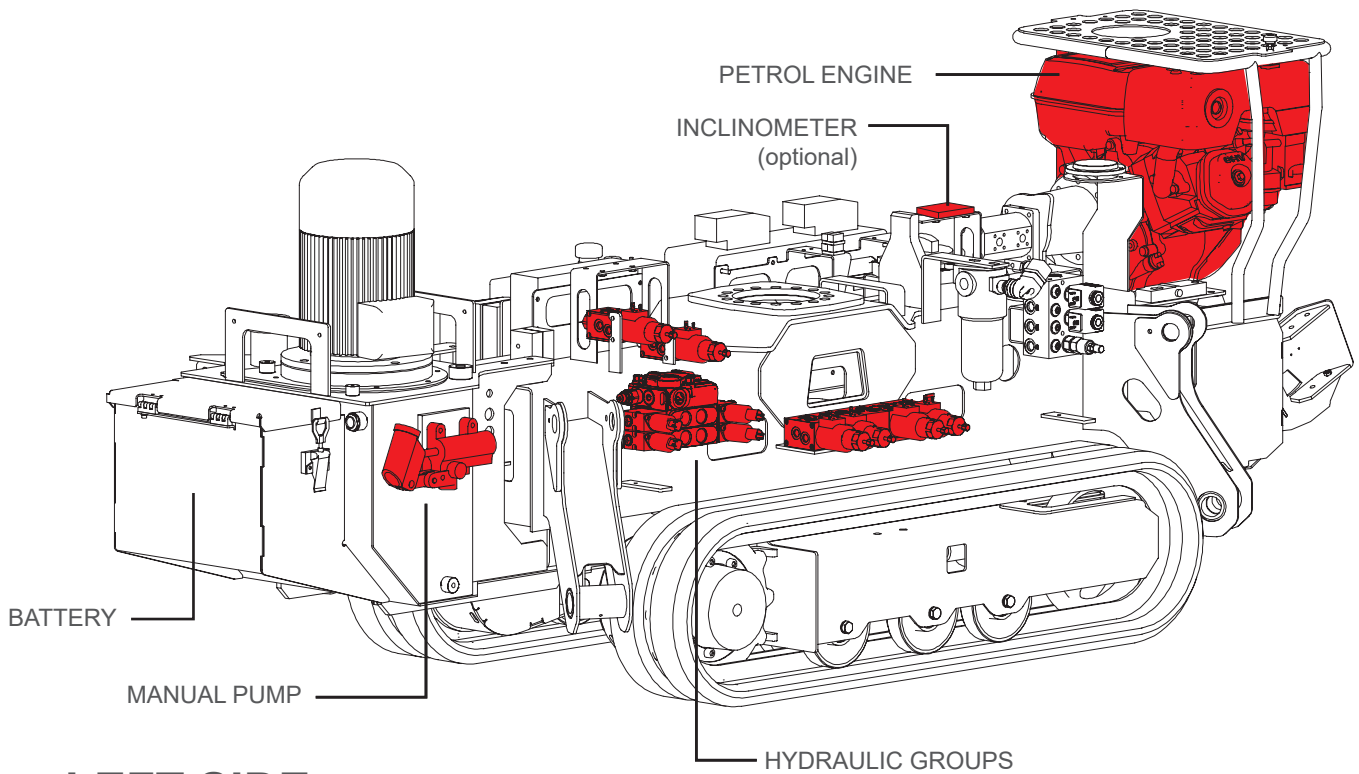
Main components



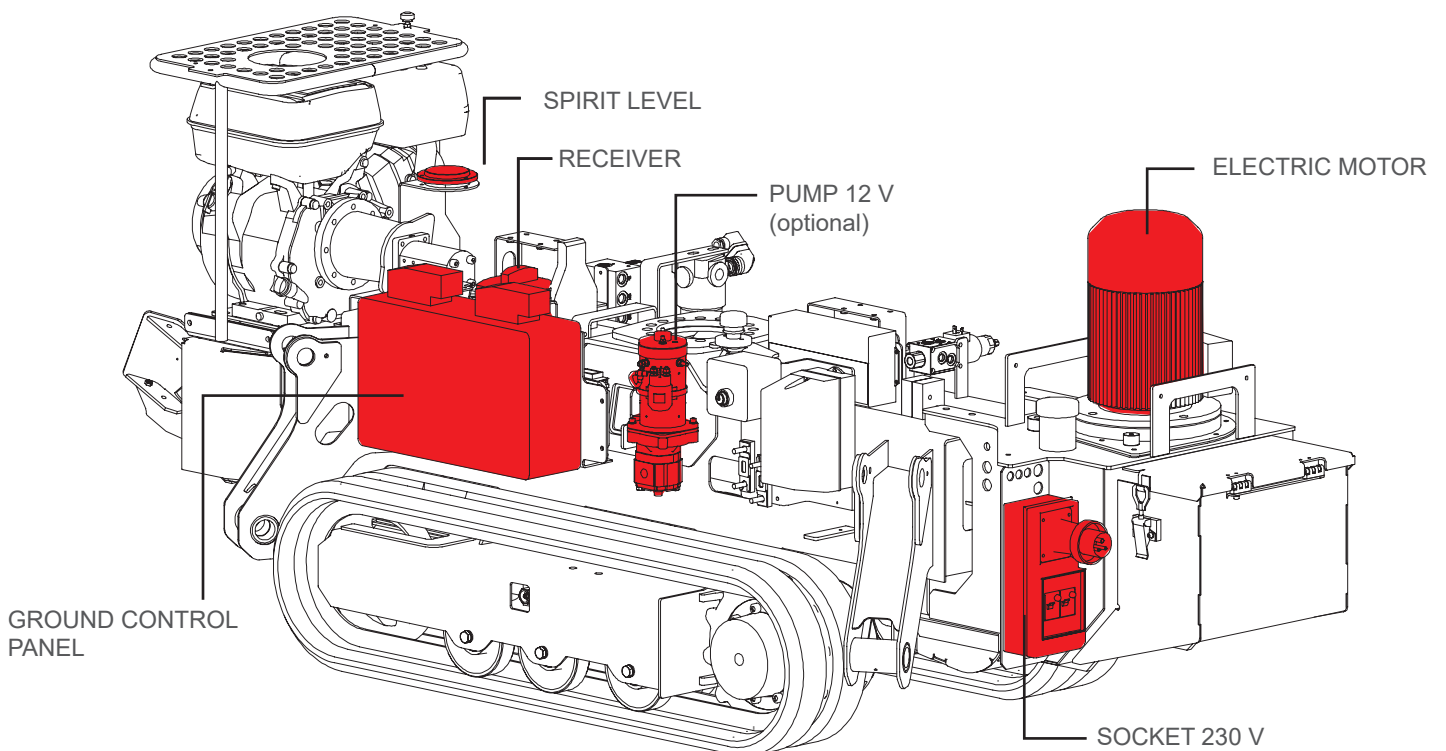
- 1. Platform control panel
- 2. Platform - cage
- 3. Jib
- 4. Telescopic booms
- 5. Turret
- 6. Left box
- 7. Right box
- 8. Ground control panel
- 9. Driving wheels
- 10. Stabilizers

Control and power instruments

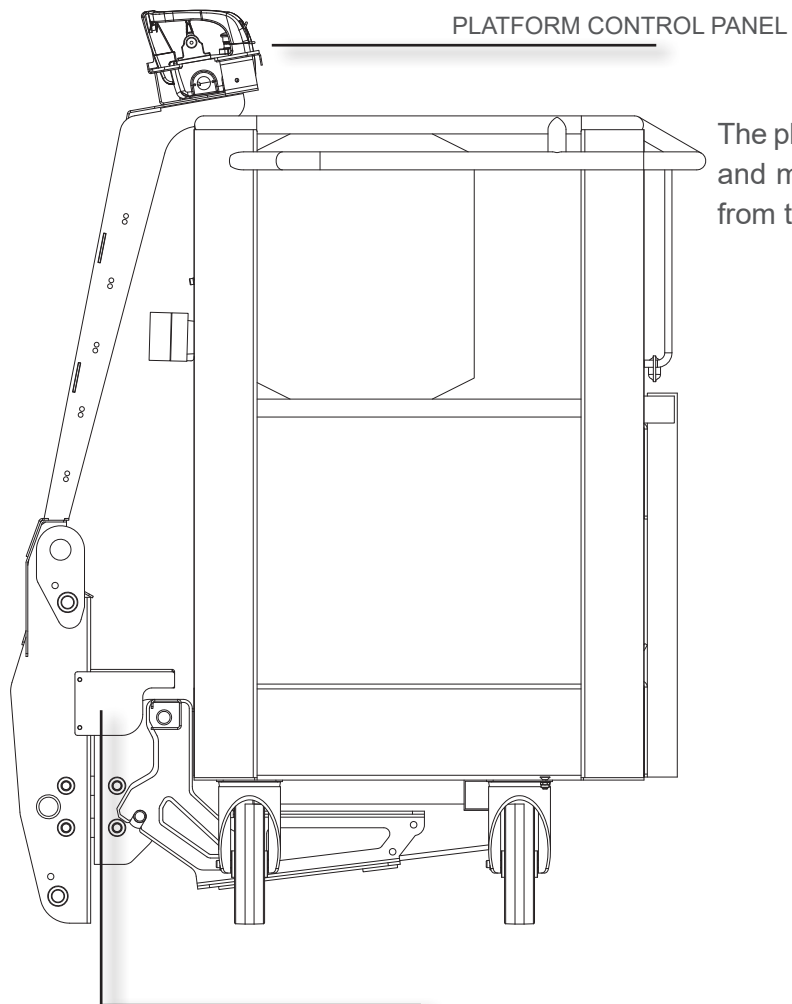
RIGHT SIDE



LEFT SIDE



CAGE



The platform control panel is extractable and may be used by the operator also from the ground.

Electronic circuit

The electronic equipment consists of electronic microprocessor devices for the machine operation:

- Two main control units located behind the ground control panel.
- Receiver (communicating via the CAN Bus transmission protocol with the two main boards)
- Platform control panel with display (communicating with the receiver by wire).

Electrical circuit

Voltage of the power supply should comply with the data referenced on the label of the electric motor. At full load, it must be between 205 V and 240 V.

To start up the machine it is necessary to make use of a 2-pole cable + earth to plug it into the mains socket.

Dimensions of the power supply cable

The electric power supply cable should be appropriately designed to avoid any voltage drops. Use of automatic winders should be avoided. The diameter of the power supply cable must comply with the nominal current value and the actual length of the cable in order to avoid excessive voltage drops.

Cable section (mm ²)			Length of the cable (m)
1.5	2.5	4.0	
0 - 8	9 - 13	14 - 22	

Power supply cables used in the yard should have an appropriate outer coating resistant to squeezing and wear, as well as to any adverse weather conditions.

In order to ensure full conformity with the power supply unit, consult the provisions of the CEI-64-8 industrial standard (document of harmonisation CENELEC HD384).

Control proportionality

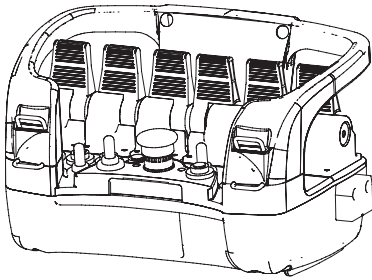
Drive and all lifting system movements are proportionally controlled: depending on the movements of the joystick controls on the platform control panel, an electronic system provides more or less energy to the electro-hydraulic valves that regulate the oil flow to the hydraulic actuators.

Radio control and remote control

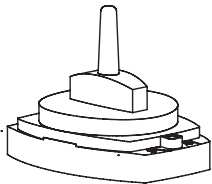
Radio control (optional)

The radio control is a digital remote control system, based on microprocessor technology, protected against electromagnetic and radio interference.

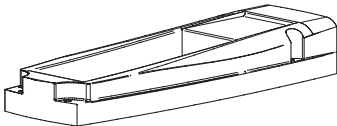
The radio control consists of:



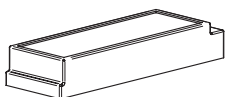
- a **PORTABLE CONTROL UNIT (Platform PANEL)** with joystick controls for proportional control of movements (switches and buttons for ON/OFF functions, warning lights, graphic LCD).



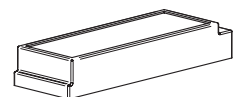
- a **UNIT RECEIVER**



- a **BATTERY CHARGER**



- two **BATTERIES** for platform panel



- a **SERIAL CABLE**

The platform panel and the receiver are combined so that a radio control operates only the machine for which it is intended.

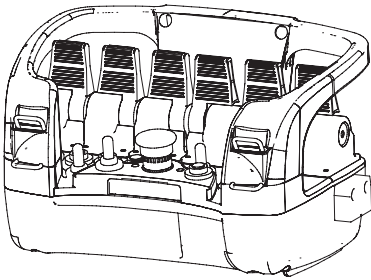
Where you can't use the radio control (for example in airports) you can connect to the platform panel:

- on the cage by the especially provided control cable;
- on the ground through the serial control cable connected to the central unit (the cable is contained within the document holder box).

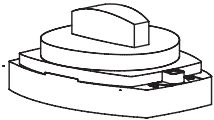
Remote control

The remote control is a wire control system with the same functionality as the radio system, but without the remote control.

The remote control consists of:



- a **PORTABLE CONTROL UNIT (Platform PANEL)** with joystick controls for proportional control of movements (switches and buttons for ON/OFF functions, warning lights, graphic LCD).



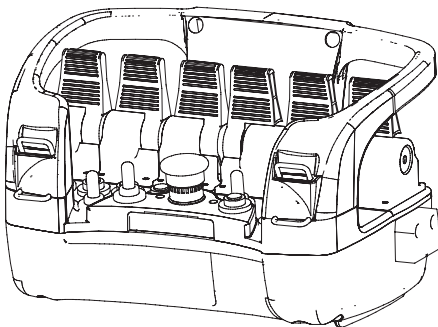
- a **UNIT RECEIVER**



- a **SERIAL CABLE**

The platform control panel is powered by the serial control cable connected to the central unit. The remote control model has no batteries for the platform control panel.

The platform panel



The portable control unit is sturdy, weather resistant, light and compact.

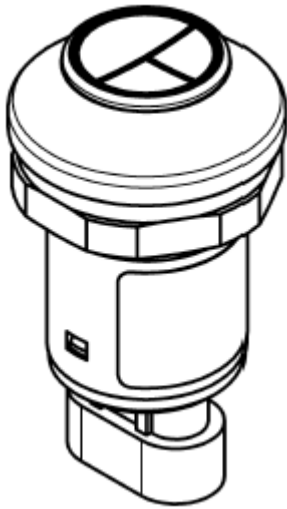
The levers and the joystick controls are proportional with spring return to the center. The platform panel is equipped with an emergency stop button to stop immediately all the movements.

The joystick controls are surrounded by a frame to protect against any accidental activation and mechanical damage.

A LED and an audible alarm are used to indicate the normal operation, the battery charge status and as a diagnostic tool for the detection of any malfunction.

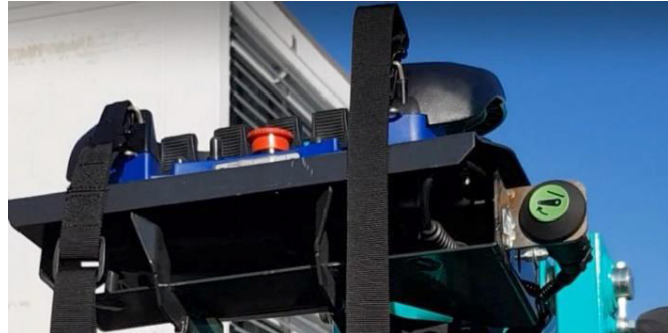
For the models with a radio control unit, the platform control panel functions with a battery inserted in its lower part (see "Battery for platform control panel").

Dead Man Button

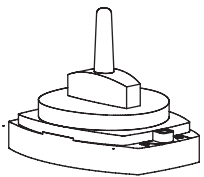


Dead Man Button is located on the right side of the platform panel, on the basket

It is an additional security for operator, because it allows movements only if it is pressed



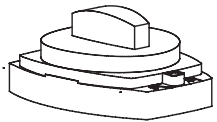
Receiver



The electronic control unit is contained in a sturdy plastic box and is provided with connectors that connect the platform panel.

The electronic control unit of the radio control mount the antenna and the radio receiver, the remote control no.

Status and alarm indications are reported by the central unit through a 7-segment display placed on the receiver.



In the event of a malfunction the display unit will show “Er” followed by four characters divided into two blocks corresponding to the allocated error code.

If the problem is regarded as “temporary” only, the error code will be repeated 3 times and then the radio control will return to stand-by, just as in the switched-on mode.

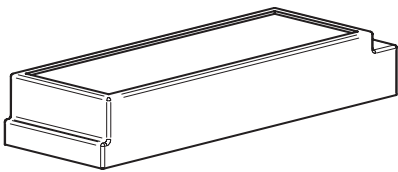
If the malfunction is regarded as “blocking”, the display will show the error code continuously until the radio control is turned off.

The error code may be displayed upon the activation of the receiver, or upon the activation of the platform control panel (thus enabling the operating mode).

Platform panel battery for radio control

The battery inserted into the lower part of the platform panel, allows for the use by radio. Another battery is supplied to be always placed in the battery charger.

The replacement is quick and very simple to perform.. The operation of a fully charged battery is about 8 hours.



When the battery is low, the platform panel beeps three times as a warning and the red LED ON begins to flash (led on the left of the emergency stop button). When a battery is fully charged the red LED ON is activated.

The battery must be used until the red LED turns off, after which it must be changed. If the capacity of the battery is too low, the platform panel may not turn on.

The battery capacity and operational performance are reduced in conditions of extreme cold. The battery recharges automatically during the use of the platform panel with the serial cable.

In order to minimize the consumption of the battery, and, for safety reasons, the platform panel turns off automatically after a period of inactivity of 30 minutes.

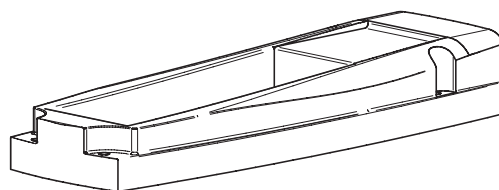
Battery charger

Battery charger is placed in a box of the left-hand side of the turret.

It is supplied from a 12 V battery for the motor start-up and it is designed to prevent damage to the battery even if it is subjected to the long cycles of continuous charging.

There are two LED indicators on the upper part of battery charger:

- **Red LED** (power) - Indicates the presence of the supply voltage.
- **Green LED** (status of charge)
 - **Flashing**, the battery is charging (the battery charger is in fast charge mode)
 - **Lit up steady**, the battery is charging (the battery charger is in charge maintenance mode).



Charging the battery

The battery charger starts a charge cycle when a battery is inserted (the green LED starts blinking). The battery charging of the radio control takes place in two consecutive steps:

- first step with a high current, to reach the level of nominal charge in short time;
- second step, with a low current, to maintain the charge reached until the battery is removed.

The time normally used to recharge a dead battery is about 3 hours (the green LED is lit up steady).

If the voltage at the device is lost, the battery charger, recalls the last work mode and resumes charging in “fast” or “maintenance” mode when power is restored.

As a precaution the battery charger stops always to charge after 3 hours, even if the battery has not reached full charge. When charge is finished, the green LED will remain on at all times.

Battery charge with serial cable

If the operator is using the platform panel with the serial cable connected, the battery in the battery compartment is automatically recharged.

In case of need the platform panel can be used as alternative instrument for the charge of the batteries even when the system is not used.

Insert the battery into the appropriate compartment (emergency stop button of the platform panel pressed) and connect the serial cable between platform panel and central unit. The charging time is approximately 12-14 hours.

Technical data

Description	Unit of measurement	IM R13 T
Max. working load (including 2 person)	lbs - kg	510 - 230
Drive speed	mph - km/h	0.8 - 1.3
Max. slope	%	27
Max. allowed side force	lbf - N	90 - 400
Max. allowed side inclination for the chassis	°	1
Turret rotation	°	355
Petrol engine	kW/rpm	8.2 / 3600
Electric pump	V/kW	220 / 2.2
Battery	V /Ah	12 / 110 C20
Battery weight	lbs - kg	75 - 34
Battery charger	V / A	12 / 12
Stabilizers load	lbf - daN	2700 - 1200
Machine weight	lbs - kg	3300 - 1500
Oil tank	gal - l	8 - 30
Measured sound power level	dB	102
Guaranteed sounding power level	dB	104
Level of acoustic pressure weighed at operator's place	dB	82
Max. hydraulic pressure	psi - bar	3190 - 220
Working temperature	°F	-4 ÷ +104

Pressure bearing

Pressure bearing of the crawler = 0,48 kg/cm²

Pressure bearing for the stabilizers = 3,74 kg/cm² (standard plate diameter 20 cm)

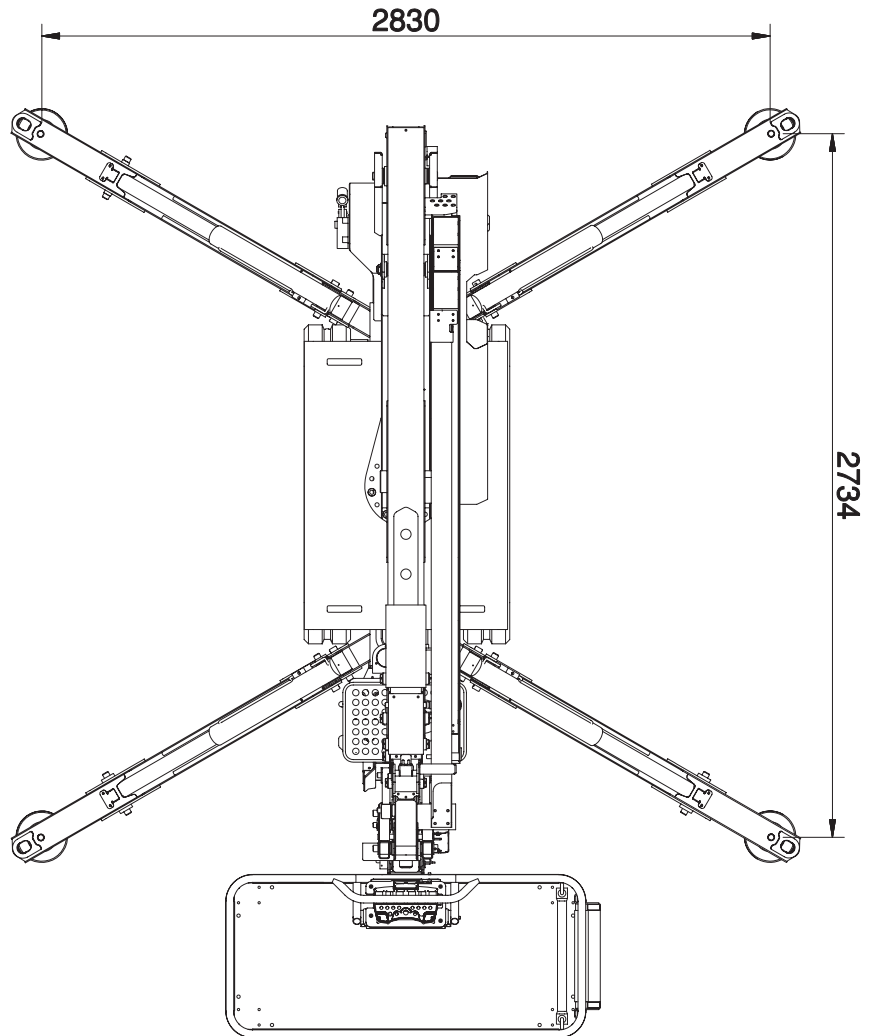
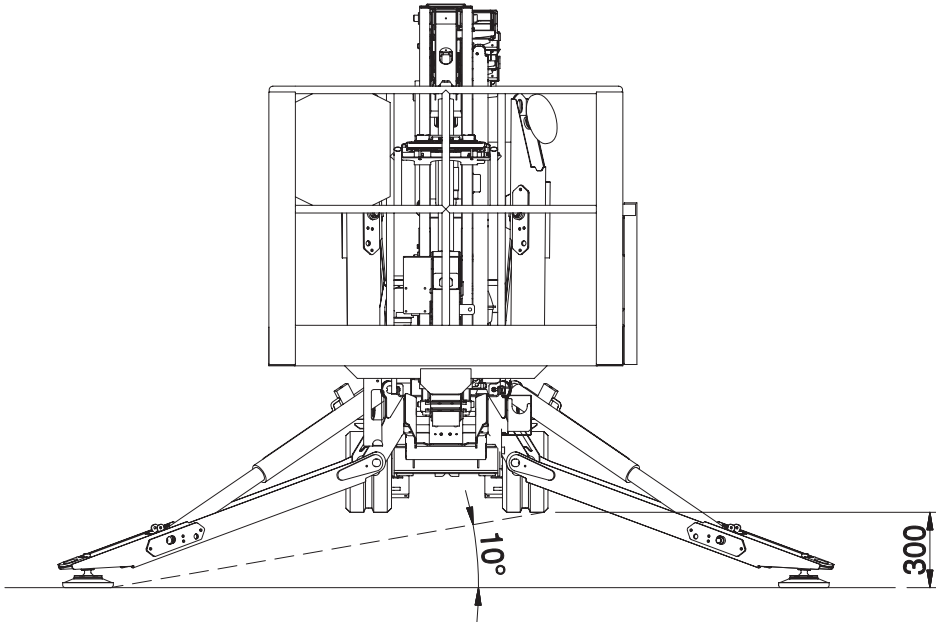
Pressure bearing for the stabilizers = 1,22 kg/cm² (optional plate diameter 35 cm)

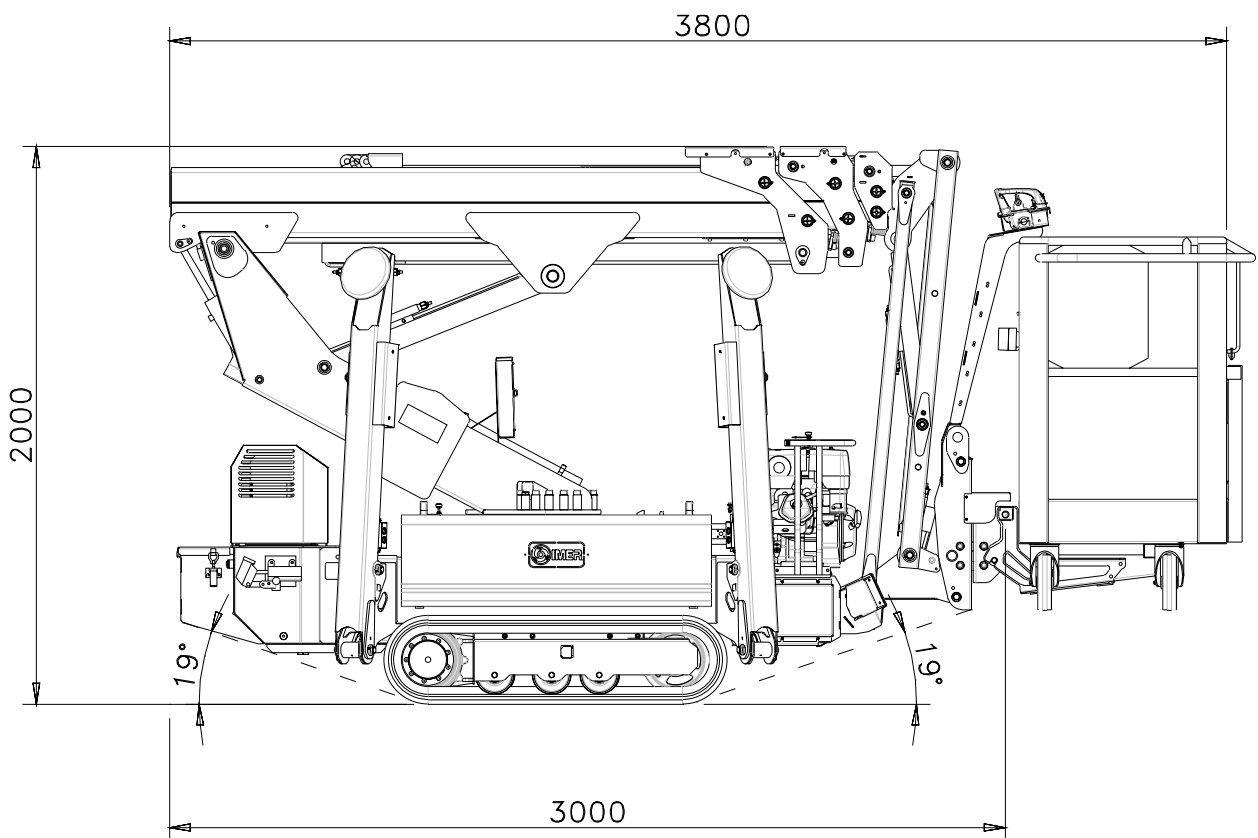
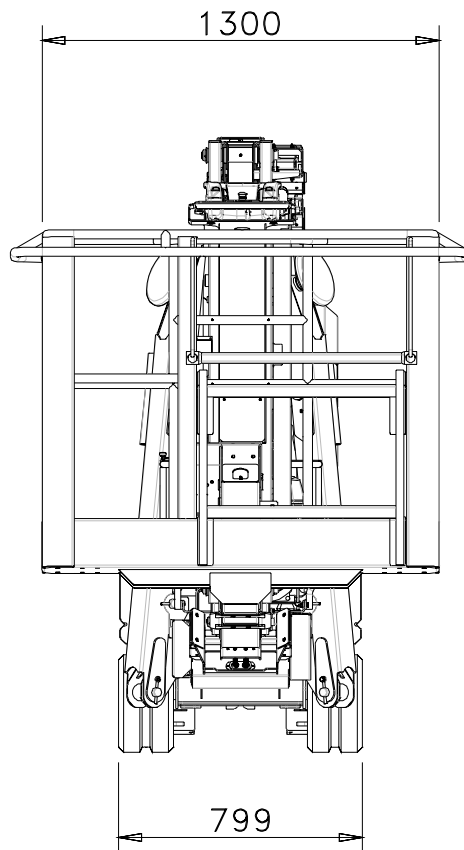
Vibrations

As regards vibrations, according to the measurements carried out in the most unfavourable conditions of use, it has been established that:

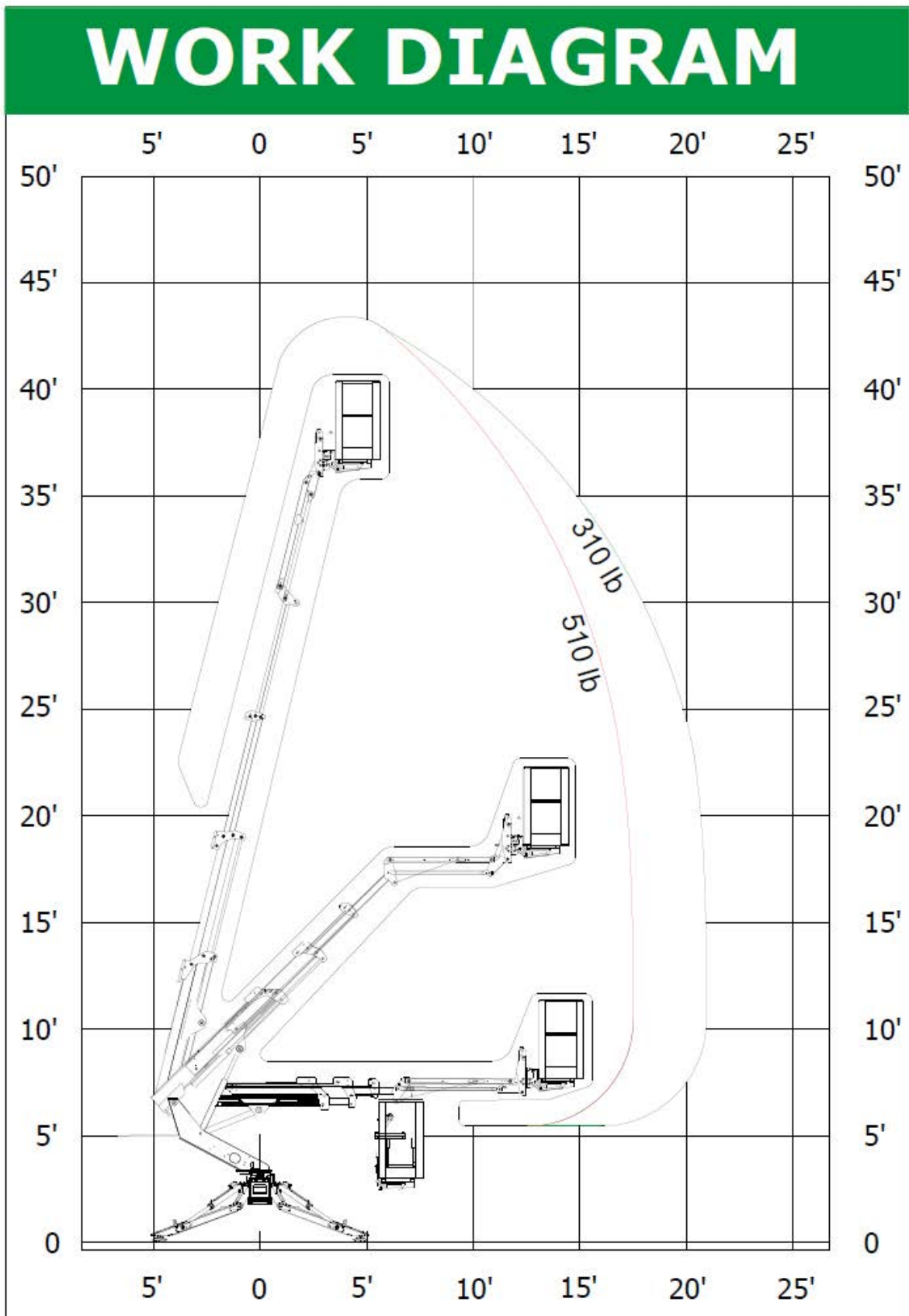
- the average weighted quadratic value in frequency of the acceleration relevant to the upper limbs is lower than 2.5 m/sec²;
- the average weighted quadratic value in frequency of the acceleration relevant to the body is lower than 0.5 m/sec².

Overall dimensions





Work diagram



Plates and labels

Using the illustrations, check that all the plates and labels are in place.

Plates and labels that contain no text will have an 8-digit numbering or an alphanumeric code ending with XX.


Plates and labels that contain text will have an alphanumeric code ending with the relevant country code for the machine's destination country.

79421033	YELLOW / BLACK STRIPES	1
82521034	YELLOW / BLACK STRIPES	4
A00001XX	CE	1
A00040XX	YELLOW / BLACK STRIPES	4
A00110XX	BATTERY CHARGER PLUG	1
A00145XX	DOCUMENT BOX	1
A00148XX	STABILIZERS LOAD	4
A00150XX	CRUSHING HAZARD	4
A00174XX	TYPE OF OIL ISO VG 46	1
A00193XX	CAGE ROTATION	2
A00201XX	SAFETY BELTS ANCHORAGE	1
A00296XX	ELECTRIC LINES DISTANCE	1
A00302XX	LOGO	4
A00304XX	LOGO	1
A00322XX	LOGO	1
A00352XX	IM R13	3
A00353XX	HANDS CRUSHING HAZARDS	4
A00356XX	WORK DIAGRAM	1
A00357XX	TURRET ALIGNMENT	1
A00190XX	LIFTING HOOKS	4
A00360XX	EMERGENCY	1
A00361XX	HYDRAULIC BLOCK LETTERS	1
A00362XX	SERIAL CABLE	1
A00363XX	ROPES FOR TRANSPORT	4
A00364XX	CIRCUIT BREAKER	1
A00144XX	DIRECTION ARROW	1
3231792	MADE IN ITALY MADE IN EU	1

A00034EN	EMERGENCY PUMP	1
A00103EN	NO STOPPING	4
A00383EN	REMOVE THE KEY	2
A00033EN	EMERGENCY	1
A00031EN	SERIAL NUMBER PLATE	2
A00217EN	MAXIMUM LOAD	2
A00354EN	WARNING PLATE	1

Identification

Two metal plates fixed to the chassis and the cage specify all data necessary to identify the model of the machine.

 IMER International SpA Via Salceto, 53-55 53036 Poggibonsi (SI) ITALY	
DENOMINATION	MOBILE ELEVATING WORK PLATFORM
MODEL	IM R13 T
MEWP CLASSIFICATION	TYPE 1 GROUP B
SERIAL N.	POWER 8,2 + 2,2 kW
MANUFACTURING YEAR	BATTERY 12/110 C20 V/Ah
MASS <input type="text"/> kg-lbs	MAX PRESSURE <input type="text"/> bar-psi
MAX WORKING HEIGHT <input type="text"/> m-ft	WIND SPEED ALLOWED <input type="text"/> m/s-mph
MAXIMUM ALLOWABLE OPERATING INCLINATION <input type="text"/>	
RATED LOAD <input type="text"/> kg-lbs	<input type="text"/> kg-lbs
n.PERSONS <input type="text"/>	<input type="text"/>
MASS OF EQUIPMENT <input type="text"/> kg-lbs	<input type="text"/> kg-lbs
MANUAL FORCE <input type="text"/> N-lbf	<input type="text"/> N-lbf

A00031USA

The data refers to the standard model.

Standard equipment

- Proportional and simultaneous movements
- Remote control for wire control
- Parking brakes
- Rubber crawling tracks
- Electric pump 230 V - 16 A for internal use
- 360° turret rotation (180° + 180°)
- Hydraulic balancing of the cage
- Manual stabilisation
- Moment limiter
- Blocking valves on the stabiliser cylinders
- Manually operated emergency platform lowering
- Double controls, i.e. from the ground and from the cage
- Electric timer
- Machine movements acoustic signalling
- Battery isolator
- Power socket 230 V - 16 A on the cage
- Socket, plug and safeguard for the 230 V power supply cable
- Petrol engine Honda GX 270 4.6 kW
- Air/water line in the cage
- Marking CE–EN280

Optional

- Wireless radio control
- Hydraulically widened span of the crawling tracks
- Automatic levelling
- Cage beacon kit
- No marking tracks kit
- Emergency electric pump 12 V
- Oversized stabiliser feet (ø 350 mm)

Ground movements - Aerial movements

The operations refer to the two parts of the machine: the lower (ground) part and the aerial part that extends upward into the air.

The lower (ground) part of the machine is made up of the carriage (with crawling tracks and stabilisers).

The operations performed by the lower part:

- Drive and steering;
- Stabilisation.

The aerial part comprises the lifting system.

The operations performed by the aerial part:

- Lifting/lowering of the boom;
- Turret rotation;
- Extension/retraction of the telescopic booms;
- Lifting/lowering of the jib;
- Cage balancing.

Depending on the actual position of the machine (see MACHINE STATUS), the operations can be performed either on the ground or in the air.

Ground movements

Drive and Steering

For driving purposes the chassis is equipped with two hydraulic motors which drive the rubber crawling tracks. The steering is facilitated by driving the tracks at different speeds.

Stabilisation

Overall stabilisation of the machine is ensured with the aid of 4 hydraulic cylinders.

Can be manual or automatic (optional).

Manual

Every stabiliser is lowered or lifted separately.

Automatic (optional)

Apart from a simultaneous lowering of 4 stabilizers, automatic stabilisation also comprises the levelling out of the machine with a tolerance lesser than 1°.

Widening of the crawling tracks span (optional)

Track widening makes it possible to obtain greater stability during any repositioning of the machine on worksites or hazardous terrain.

The movement is facilitated by a hydraulic cylinder placed in the internal part of the chassis.

Aerial movements

Lifting/lowering of the boom

A hydraulic cylinder located between turret and the lifting boom facilitates this operation.

Turret rotation

The operation is facilitated by a hydraulic motor, which moves a turntable on the chassis. The turret rotates 360° (180° + 180°).

Extension/retraction of the telescopic boom

The movement is actuated by a hydraulic cylinder.

Lifting/lowering of the jib

A hydraulic cylinder located between the frame and the jib arms facilitates this operation.

Cage balancing

During boom lifting and lowering operations, the cage is balanced automatically by two master – slave cylinders to keep it in a horizontal position.

Cage levelling can be corrected manually, as it may become unbalanced during repeated boom lifting and lowering manoeuvres.

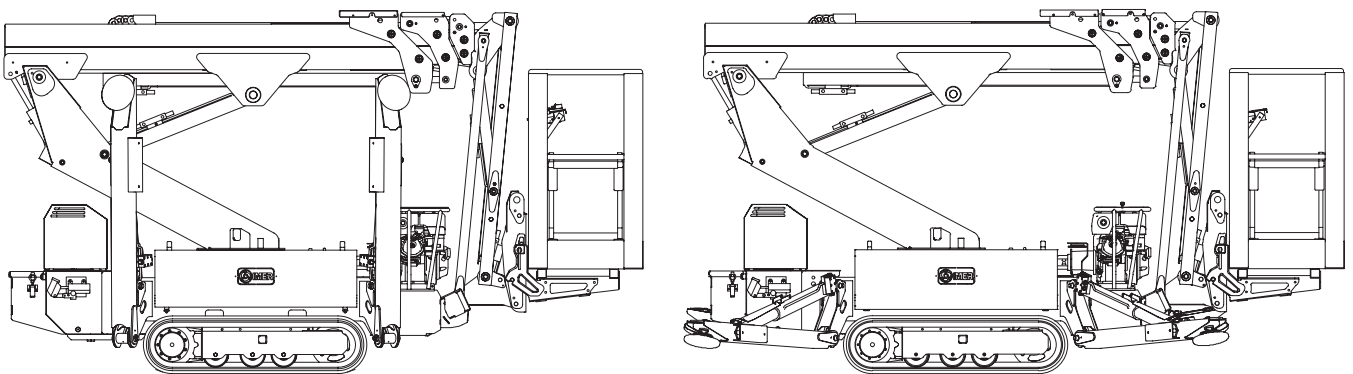
Machine status

Various terms indicating the status or position of the machine are often referenced throughout this Manual.

Every status of the machine is shown on the display unit of the platform control panel.

Stowed away machine

The machine is deemed stowed away when the cage is in its shelter position and no stabilisers are under pressure.

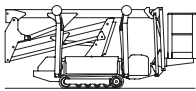


The stowed away mode of the machine facilitates:

- MOVING the machine with the aid of the drive and steering
- STABILISATION of the machine

The stowed away machine mode is the only position in which the stabilisers can be moved

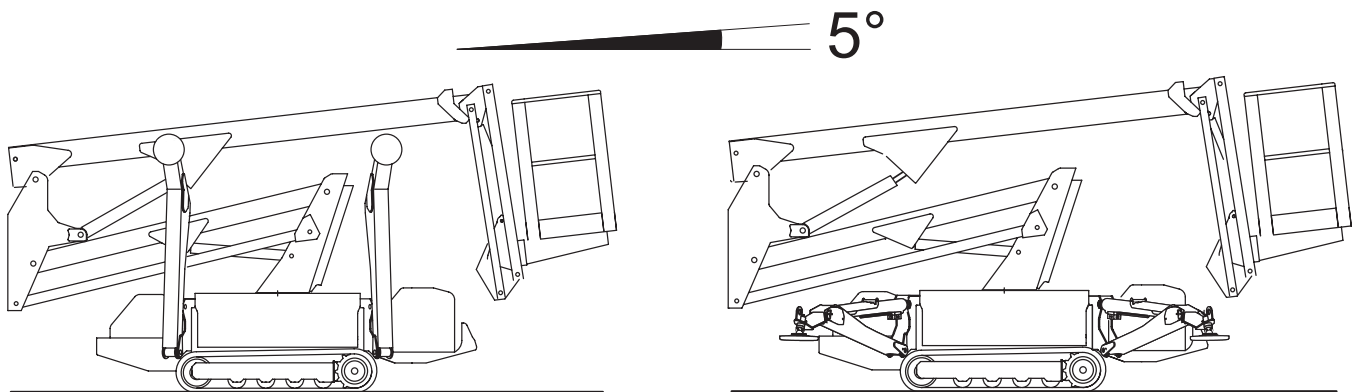
PICTOGRAMS DISPLAYED ON THE PLATFORM CONTROL PANEL

When the machine is in a stowed away mode, a pictogram  will appear on the platform control panel.

The stowed away mode of the machine is the position that should be assumed by the machine at the commencement and at the end of work.

Machine in the safety transport mode

The machine is in **SAFETY TRANSPORT** mode when the lifting boom is lifted no more than **5°** and no stabiliser is pressurised.



The safety transport mode facilitates:

- MOVING the machine with the aid of the drive and steering

PICTOGRAMS DISPLAYED ON THE PLATFORM CONTROL PANEL

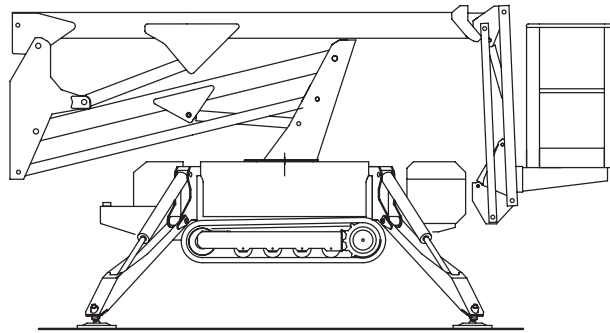
When the machine is in the **SAFETY TRANSPORT MODE**, a pictogram will appear on the platform control panel.



When the machine is in the **SAFETY TRANSPORT MODE** it may be safely loaded/unloaded on a carrying vehicle with no accidental impact on the cage.

Stabilised and stowed away machine

The machine is **STABILISED AND STOWED AWAY** when all 4 stabilisers are under pressure and the cage is in a stowed away position.



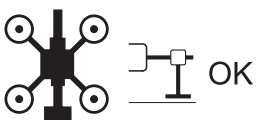
The **STABILISED AND STOWED AWAY MODE** facilitates:

- opening of the lifting system by raising the boom upon the commencement of work
- returning to the stowed away mode of the machine by lifting the stabilisers at the end of work

PICTOGRAMS DISPLAYED ON THE PLATFORM CONTROL PANEL



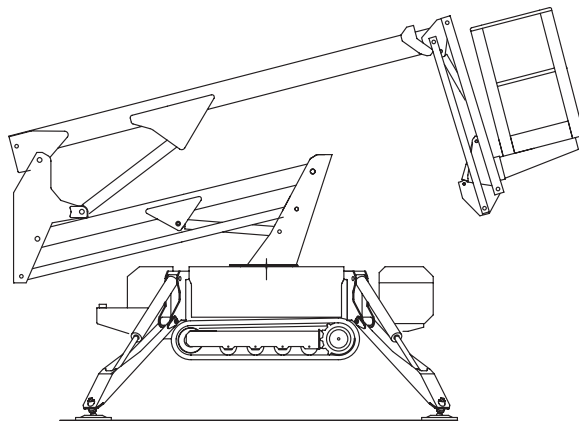
STABILISED AND STOWED AWAY MACHINE



The machine is **STABILISED, LEVELLED AND STOWED** (with optional Automatic Levelling)

Open machine

The machine is **OPEN** when it is stabilised and the boom lifted over **5°** angle.



When the MACHINE is **STABILISED AND STOWED AWAY**:

- By lifting the **BOOM ABOVE 5°** all the movements of the aerial part are activated.

The machine mode becomes now the OPEN MACHINE MODE.

In this position all the movements of the aerial part of the machine can be executed, excluding the cage balancing.

PICTOGRAMS DISPLAYED ON THE PLATFORM CONTROL PANEL

When the boom is lifted, a pictogram will appear on the platform control panel.

Moment control is now activated.



Safety systems

The machine is provided with several safety devices safeguarding its normal operation in order to preclude any accidental injuries (accidents).

Adequate command of the characteristics of the safety devices on the machine is crucial. The machine is not to be put into operation unless the following sections of the manual have been read carefully and understood.

Depending of the position of the machine, its safety devices may be optionally activated. It is important to be well informed of the CONFIGURATION and the actual significance of the respective MACHINE MODES, as referenced on the preceding pages.

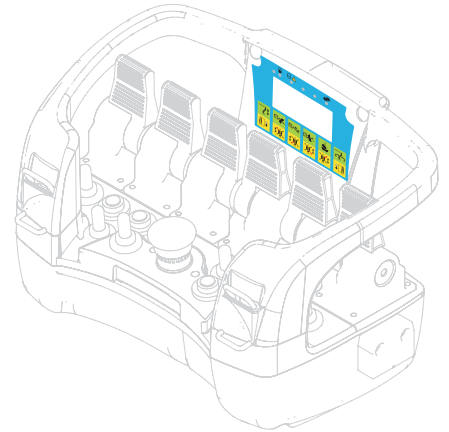
If a safety device does not function due to a fault or tampering, this could cause serious damage to the machine and, as a result, place the operator's life in danger

Check periodically all the safety devices according to what is described in the manual

The safety devices must never be tampered with. The manufacturer shall not be held liable for any accidents caused by tampering with them

Operating irregularities

In the case of any malfunction detected by the self-diagnostics of the main control units, the display unit on the platform control panel will show an error code.



Safety belt attachment points

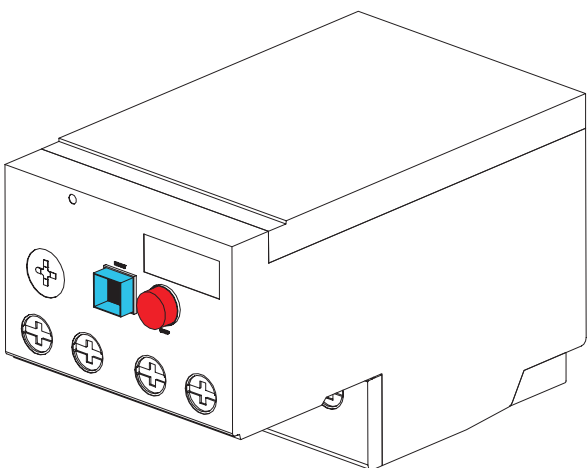
The machine is fitted with suitable anchorage points for the safety belts.

If there is more than one person on the platform, use different attachment points. Never hook multiple safety belts to the same point.

Audible alarms

In the case of any operating irregularities: they are signalled by a high frequency intermittent sound. Machine's movements are then either entirely or partly blocked until the machine is effectively returned under the safety operating conditions.

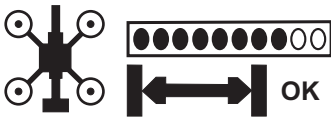
Normal functioning: any movement of the machine is signalled by a low frequency intermittent sound.



Moment limiter

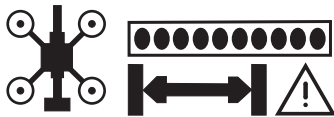
The overturning moment limiter consists of a strain pivot placed on the pin at the boom of the lift cylinder and checks whether the overturning moment has exceeded its maximum value

Maximum overturning moment is the maximum moment that a machine can support while remaining in safety mode



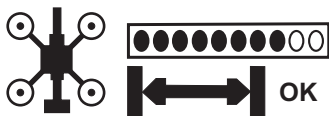
When the boom is lifted, the moment control is activated.
 The machine is stabilised, not stowed away, and the aerial system is fully operational.
 Full spots indicate the percentage of the actually reached moment.

- When the 80% - 100% range of the maximum permissible moment has been reached, the **movements will slow down**.
- With the moment equal to 100% of the permissible value, **every movement causing the increase of the moment itself will be blocked**: extension pull up, lowering the boom, jib movement. Alert will sound out and the following pictogram will appear on the display unit:



The only movements remaining fully operational will be the movements that reduce the moment itself: lifting of the boom, extension retraction and turret rotation.

In order to have all the movements activated one should introduce the moment value of at least 85% of the maximum permissible value. The following pictogram will appear on the display unit:



If the moment exceeds 110% of the permissible value, all machine movements will be blocked and the machine can be reset to the safety mode only by using the emergency movements

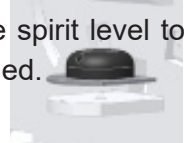
Clogged up oil filter sensor

It consists of a sensor placed in the oil filter within the hydraulic installation.
 If the filter is clogged up, all the movements are slowed down to 40% of the maximum value allowed.

Spirit level

The spirit level is placed in the in the rear part part of the chassis, visible both from the cage and from the ground.

During the levelling out procedures, make sure to use the spirit level to check if the permissible level of inclination of 1° is maintained.



After every levelling out operation, make sure to always check the correct inclination of the machine



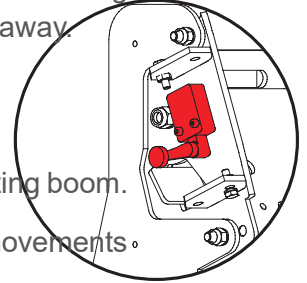
If the machine is not correctly levelled out, its stability is then compromised, posing a hazard both for the operator and any other persons working near the machine



Microswitches

Microswitches SQ1A-B

The SQ1A and SQ1B micro switches are located in the stowing seat of the cage indicating its presence there, therefore representing the condition of the machine stowed away.



Microswitch SQ8 (lifting boom)

The SQ8 micro switch is located on the turret and checks the angulation of the lifting boom.

With the machine STABILISED, lifting the boom at an angle exceeding 5° all the movements of the aerial part will be activated, excluding the cage balancing.

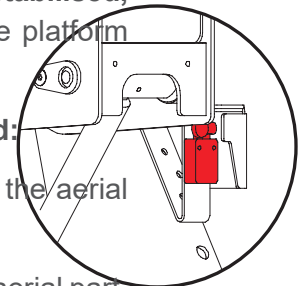
Micro switch SQ10 (control panel in the cage) For radio versions

SQ10 - micro switch is located on the platform control panel and it indicates its presence.

If the platform control panel is in its seat on the machine and the machine is stabilised, all the movements of the aerial part of the machine may be activated from the platform control panel.

If the platform control panel is not in its seat and the machine is stabilised:

- Machine with radio control: it is not possible to activate the movements of the aerial part.
- Machine with a guiding cable: it is possible to activate the movements of the aerial part.



Microswitches SQ11-12 (chain break)

The SQ11-12 micro switches control the telescopic boom extension chains.

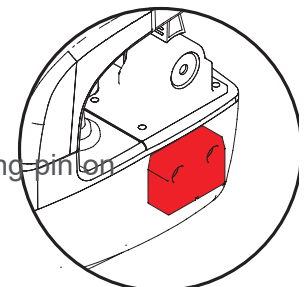
When the chain is broken, it blocks the movement of the boom.

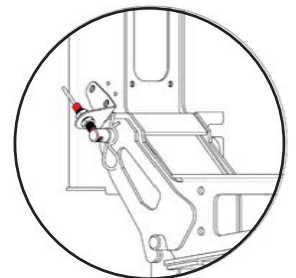
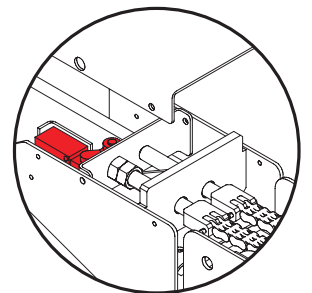
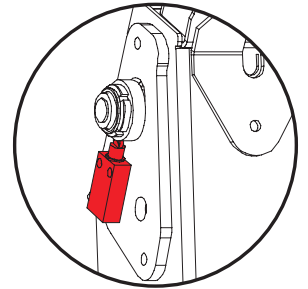
Microswitches SQ3-4-5-6

SQ3 SQ4 SQ5 SQ6 - micro switches are located in the proximity of the locating pin on the stem of the stabiliser cylinders.

They control the pressure of the stabilisers.

- If only one of the stabilisers is under pressure, the drive is blocked.
- If all 4 stabilisers are under pressure, it is possible to move the aerial part.





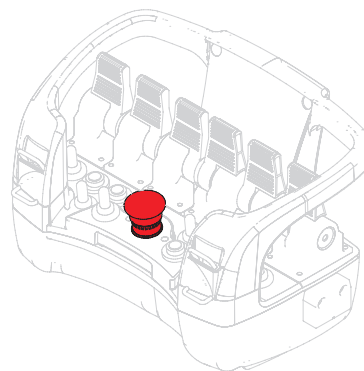
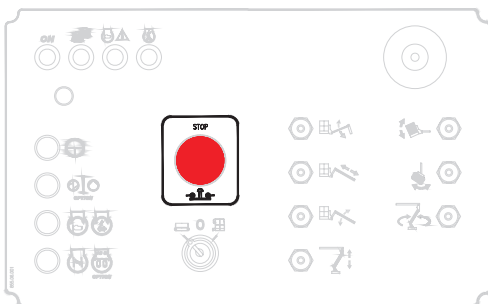
Emergency devices

Emergency devices are fitted onto the machine.

It is fundamental to know the characteristics and the functioning of all the emergency devices; it is recommended not to operate the machine before reading and understanding well the following section.

Emergency stop

Emergency stop is situated on the platform control panel of the ground, as well as on the platform control panel located in the cage.



When pressing down one or both emergency stops, all the movements are blocked, thus facilitating an immediate arrest of every machine function at an emergency.

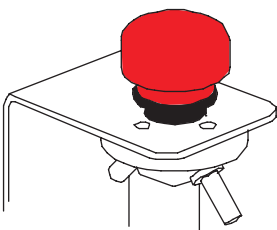
In order to restart the normal functions of the machine, rotate the emergency stop in the clockwise direction.

Battery switch

The battery switch is located in the left-hand side box.

This security device isolates all power supply and control circuits from the battery, blocking all operations.

It should be used in the case of extended shut downs, or during any maintenance procedures on the electrical systems.



Electric valves for emergency operations

Hydraulic blocs mounted onto the machine are fitted with the electric valves to be used in the case of any emergency operations.

See the section on “Manual Emergency Procedures” in the Manual.

Manual pump

The manual pump is located on the right-hand side of the oil tank, while its operating lever is located at the base of the turret.

The manual pump is used to supply oil under pressure in any emergency situations.

See the section on “Manual Emergency Procedures” in the Manual.

Electric pump 12 V (optional)

The electric pump is located in the left-hand side box.

The electric pump is used to supply oil under pressure in any emergency situations.

See the section on “Manual Emergency Procedures” in the Manual.

Control stations

The operators control stations are:

- Platform control station located on the ground
- Platform control station located on the cage support
- Ground control station located on the frame base

When one of the control station is operated, the other one is disabled.

During routine operations **all the functions are executed from the control station located in its proper seat in the cage.**

The platform control panel is extractable and may be used by the operator also from the ground. In this case in the radio-controlled versions, the following movements are available: **driving, stabilisation and lifting of the boom up to an angle of 5°**; in the radio-controlled version all the movements are available.

The ground control panel is used mostly in emergency situations or during any maintenance procedures. It is not possible to control driving, steering and the stabilisation of the machine from the control panel on the ground.

In the radio-controlled models the platform control panel must always be activated, even if the machine is controlled from the control panel on the ground

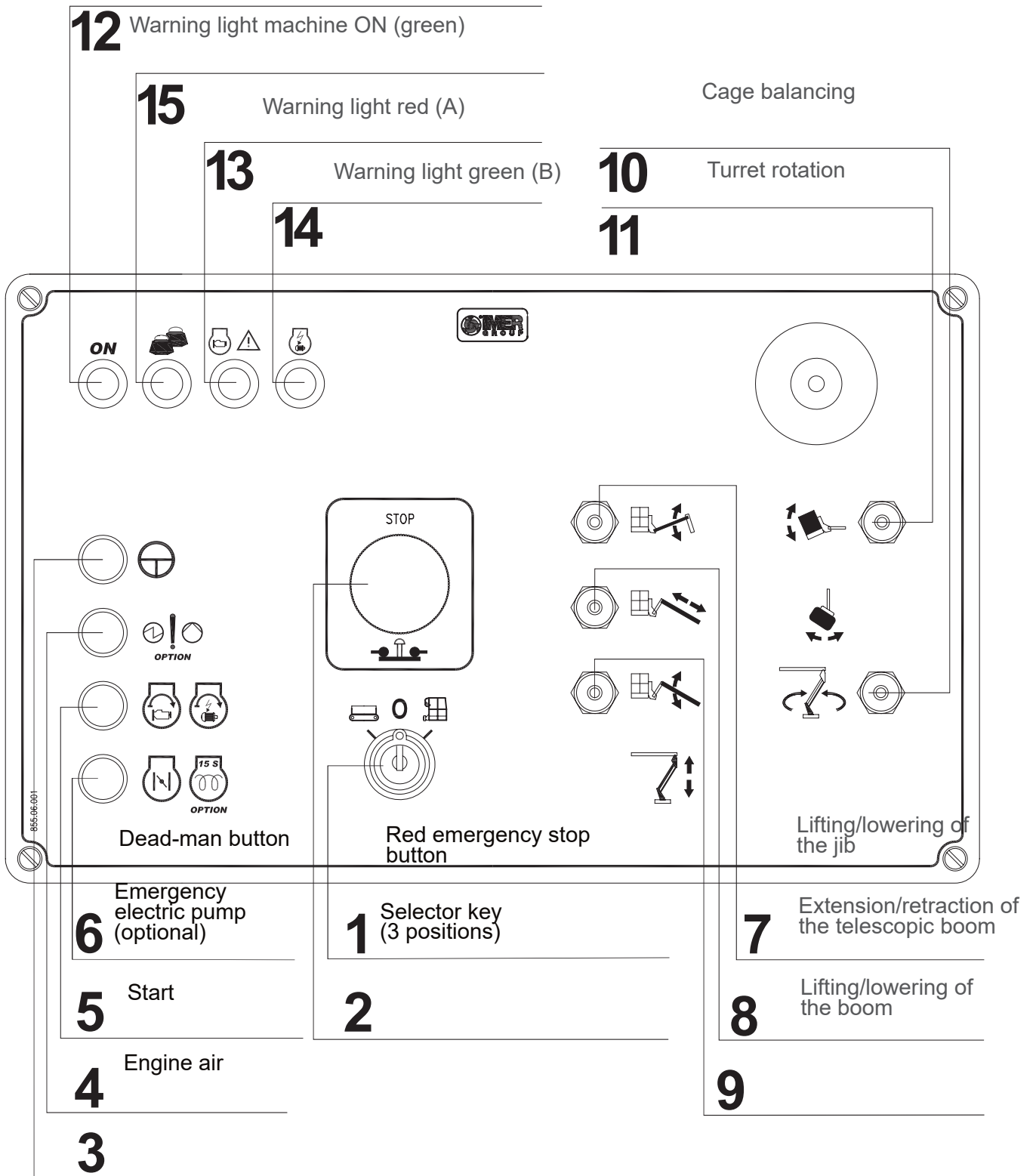
Types of machine operations:

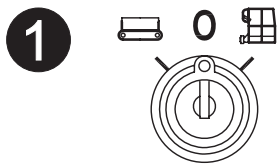
- Drive (backward and forward)
- Steering
- Stabilisation
- Lifting/lowering of the boom
- Turret rotation
- Extension/retraction of the telescopic boom
- Lifting/lowering of the jib
- Cage levelling

The following movements may be performed simultaneously:

- Lifting/lowering of the boom
- Extension/retraction of the telescopic booms
- Turret rotation

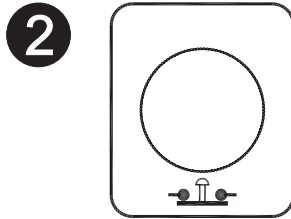
Ground control panel





Selector key (3 positions)

- Central position: the machine is powered off
- Right-hand position: controls in the platform control panel are active
- Left-hand position: controls in the ground control panel are active



Red emergency stop button

- When pressed - it arrests all the functions of the machine
- When released - it allows the operation of the machine

Once it has been pressed, rotate it clockwise to have it released.



Dead-man button

Control of every movement of the aerial part of the machine is possible by using the selector keys from 7 to 11 and pressing down also Button 3 equipped with a dead-man function (operator's presence is required).



Emergency electric pump

Starting emergency electric pump (optional).



Start

Starting of the diesel/petrol engine. If the machine is connected to the mains voltage, the electric motor will be started.



Air (petrol engine)

It helps firing off the engine in cold weather.

- Press it down simultaneously with button 5 to activate the air supply to the engine

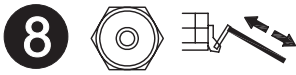
7....11 - Movement selectors - aerial part

Movements of the aerial part are facilitated with the selector keys no: 7 - 8 - 9 - 10 - 11 and button 3 with a dead-man's function.



Lifting/lowering of the jib

- Upwards to lift the jib
- Downwards to lower the jib



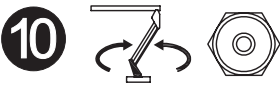
Extension/retraction of the telescopic boom

- To the right to extend the telescopic boom
- To the left to retract the telescopic boom



Lifting/lowering of the lifting boom

- Upwards to lift the boom
- Downwards to lower the boom



Turret rotation

- To the right to turn the turret anti-clockwise
- To the left to turn the turret clockwise

Cage balancing

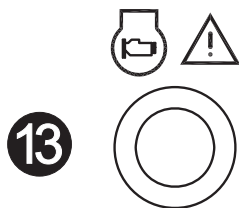
- To the right to lift the cage
- To the left to lower the cage





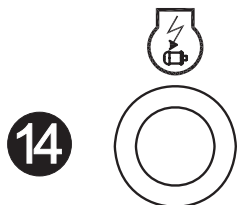
Machine ON warning light

The green ON warning light lights up when the selector key 1 is not in its central position.



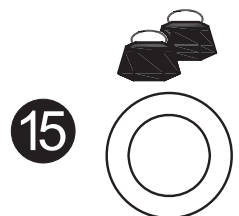
Disconnected mains warning light

If the red warning light lights up, the mains is disconnected. When the diesel/ petrol engine is started, the warning light goes out.




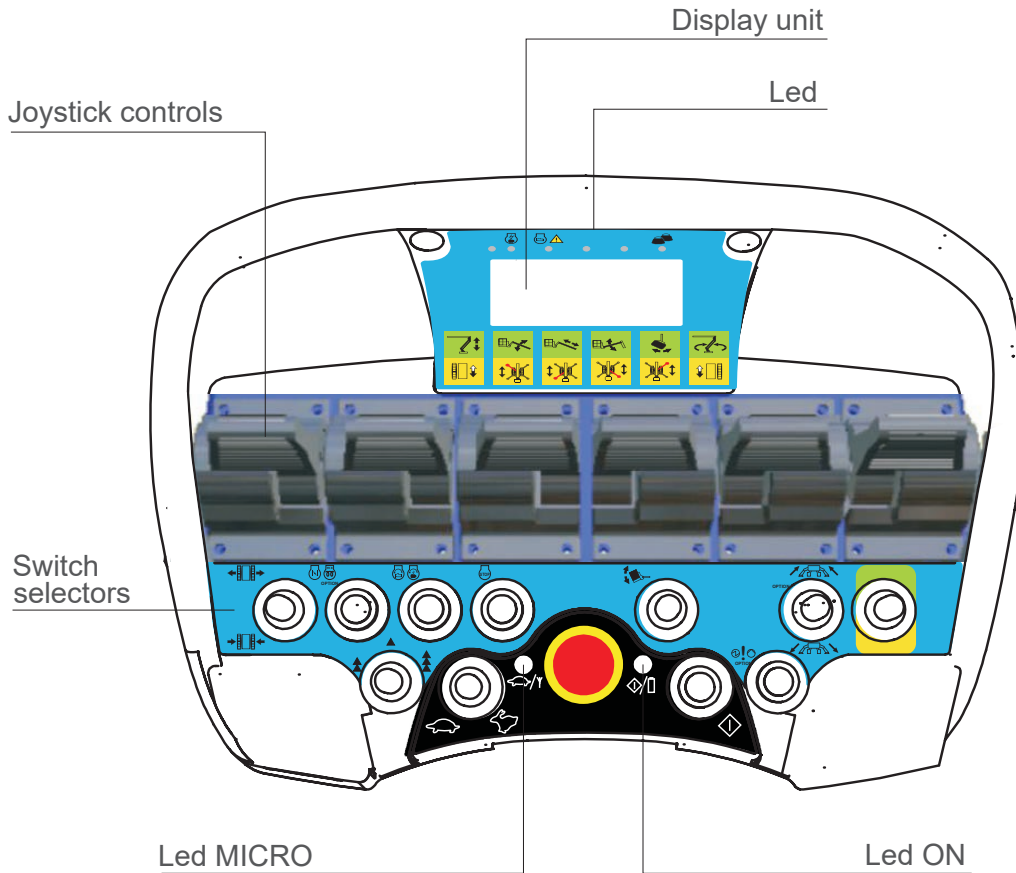
Connected mains warning light

If the green warning light lights up, the mains is connected. The electric motor can be used.








Platform control panel

Switch the platform control panel on with the switch  and wait until red LED ON is on .



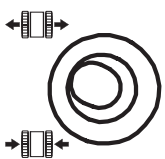
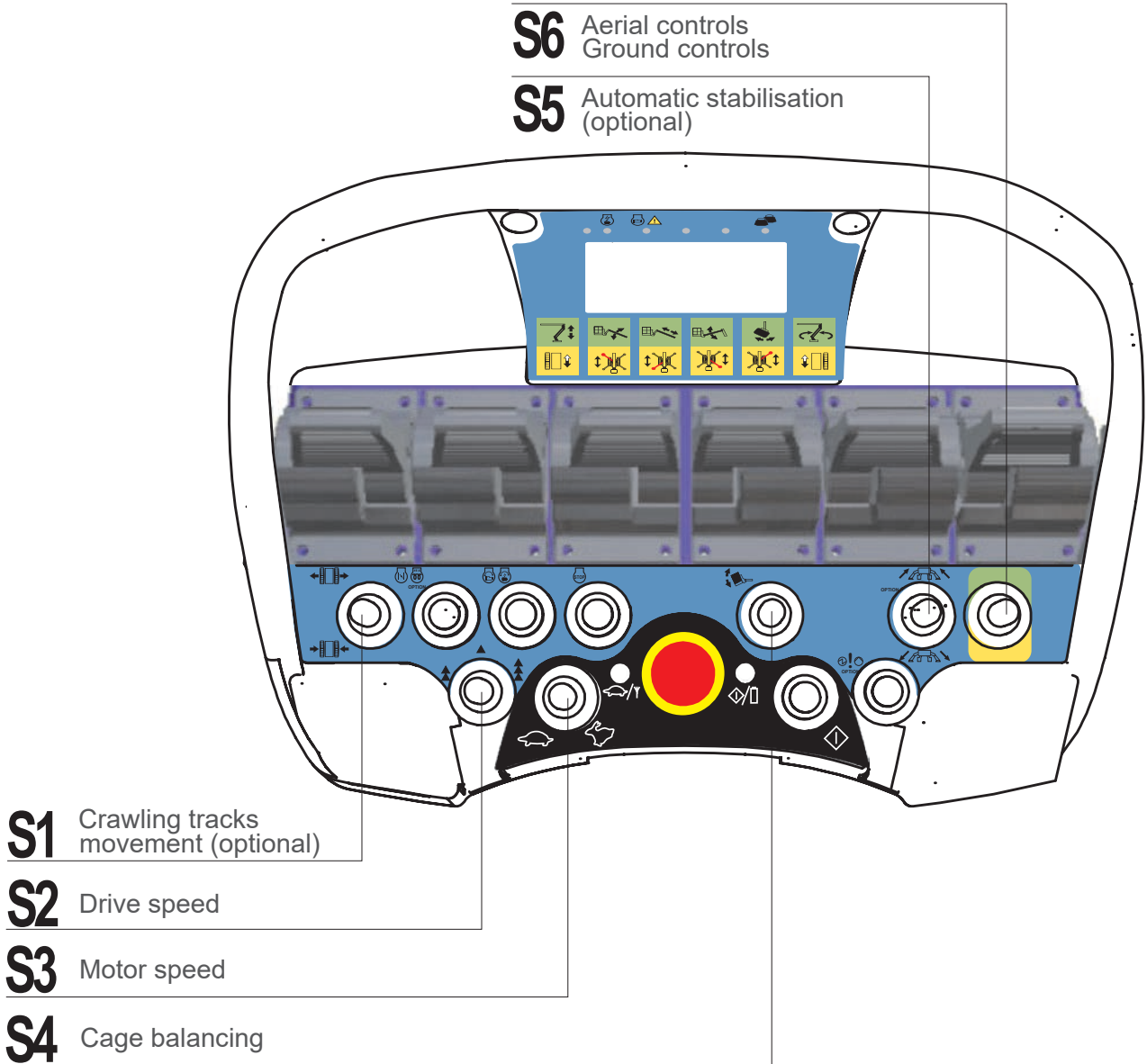
The LED ON and LED MICRO indicate the functioning status and any potential alerts.

-  **RED LED ON lit up:** platform control panel is active and transmitting via cable or via radio.
-  **RED LED ON flashing once every second, (for radio versions):** the battery is running low. This indication is preceded by three beeps from the internal buzzer.
-  **RED LED MICRO lit up:** radio communication signal is lost (for radio versions).
-  **Green LED MICRO off** indicates that the HARE speed is active for the diesel/petrol engine.
-  **Green LED MICRO flashing** indicates that the TURTLE speed is active for the diesel/petrol engine.

Error code

The platform control panel performs a check on its own parts at each start-up and in the event of any faults it shows an error code by causing the LED ON to flash and the internal buzzer to beep a number of times, depending on the actual type of error found. Refer to the platform control panel manual attached to the machine.

Selector keys



S1 Crawling tracks movement (OPTIONAL)

- forward - it widens the span of the crawling tracks
- backward - it reduces the span of the crawling tracks

Tracks widening function is permitted only when the machine is stabilised and stowed away.



S2 Driving speed

- to the right - maximum speed
- to the left - average speed
- at the centre - minimum speed

Using the diesel/petrol engine

The speed can only be selected when the machine is stowed away and in the safety transport mode.

Using the electric motor

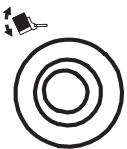
The speed selection function is not active. Driving may be attempted in the safety mode only.



S3 Diesel/petrol engine speed

- to the right - “hare” - higher revolutions
- to the left - “turtle” - lower revolutions

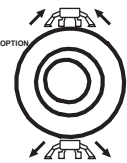
In certain operations, e.g. driving the machine in a safety transport mode, the motor runs in lower revolutions, irrespective of the actual position of the S3 key selector.



S4 Cage balancing

- forward - cage lifting
- backward - cage lowering

The prerequisite condition for executing this movement is the LIFTING BOOM MAY NOT BE LIFTED OVER 5°.



S5 Automatic stabilisation (OPTIONAL)

- forward - feet lifting automatic destabilisation
- backward - feet lowering automatic stabilisation

A prerequisite condition for executing this movement: THE CAGE MUST BE HOUSED IN ITS STOWED AWAY SEAT.

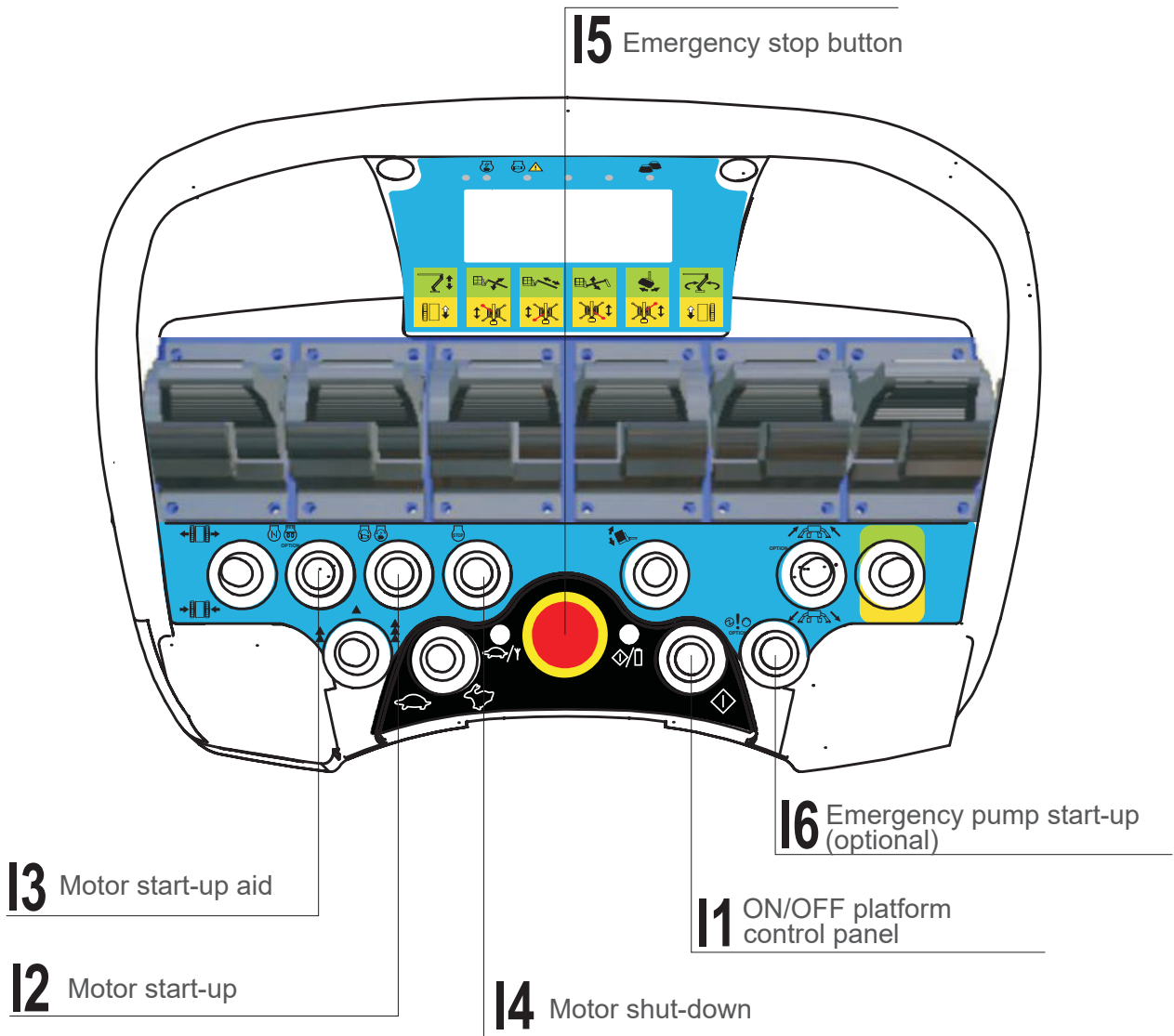
The machine is levelled out with a maximum error of 0.1° with respect to 0.



S6 Selection of movements

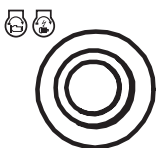
- forward - joysticks move the aerial part
- backward - joysticks facilitate driving, steering (M1-M6), lifting/lowering of every cylinder or the stabiliser (M2-M3-M4-M5) for the manual stabilisation

Switches



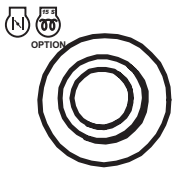
11 Platform control panel switching on

The I1 switch must be used to switch the platform control panel on.
To switch the platform control panel off, the I5 switch is used.



12 Starting-up the electric motor or diesel/petrol engine

To start-up the electric motor the machine must be connected to the electric mains. If it is not connected up to the mains, the diesel/petrol engine will be started-up instead.
In order to start-up the diesel/petrol engine in cold weather, use the I3 switch.



I3 Engine start-up aid

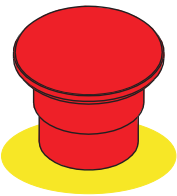
Helps to start-up the engine in cold weather.

- Press down simultaneously with the I2 key to activate the air supply into the engine



I4 Engine shutdown

It shuts down the electric motor or a diesel/petrol engine.



I5 Emergency stop button

When pressed down it arrests all operations in the machine and also shuts down the platform control panel. To release, turn it clockwise.

The platform control panel will be reactivated with the use of the I1 key.



I6 Activating the emergency pump (OPTIONAL)

Activates the electric emergency pump.

Joystick controls

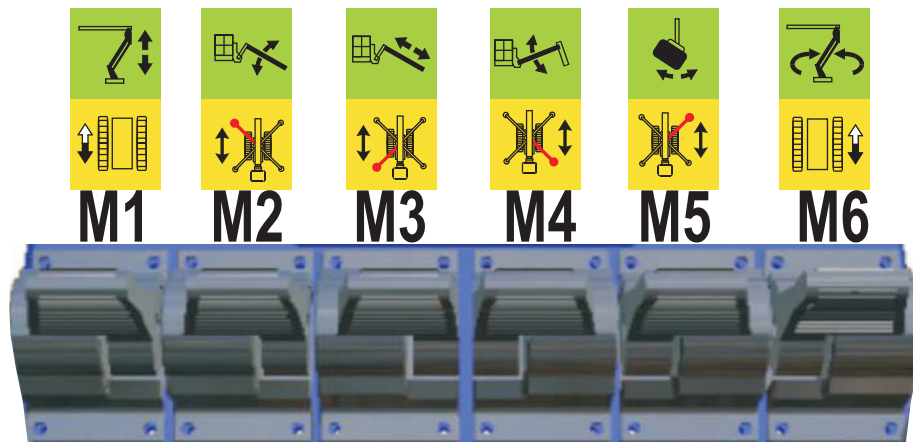


Table of operations controlled by the joystick controls, depending on the actual position of the S6 selector key.

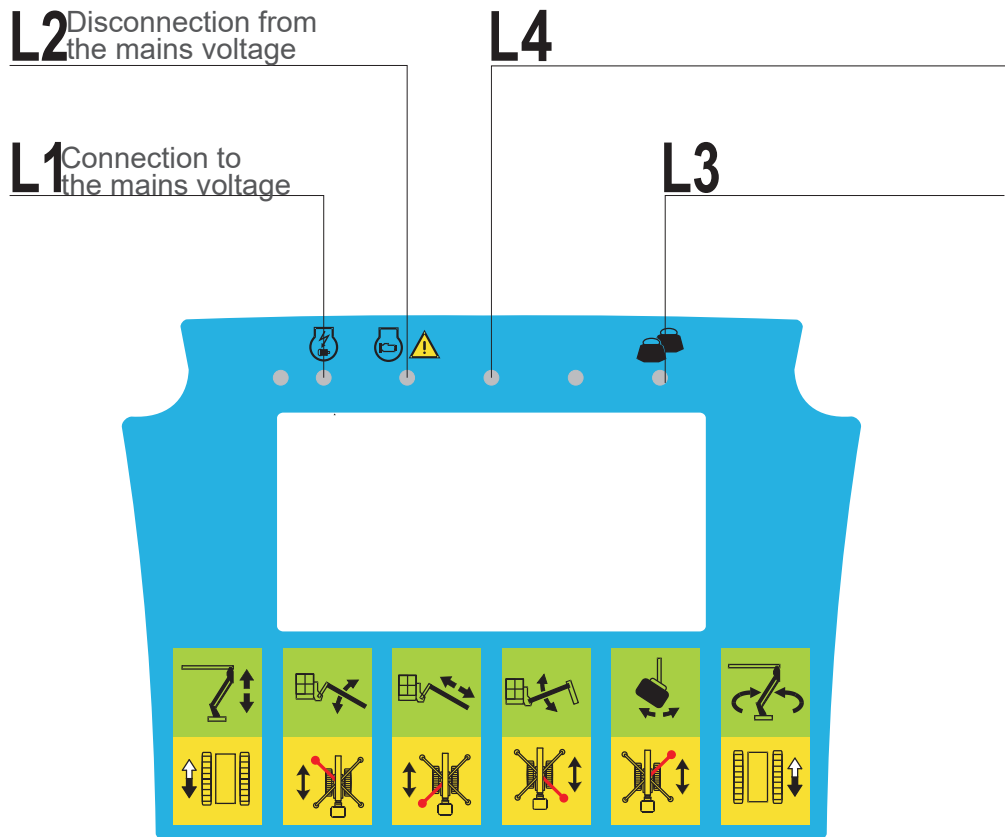


S6 forward Aerial part operations		
M1 - NOT USED		
M2 - BOOM	Forward	Lifting
	Backward	Lowering
M3 - TELESCOPIC BOOM	Forward	Extension
	Backward	Retraction
M4 - JIB	Forward	Lifting
	Backward	Lowering
M5 - NOT USED		
M6 - TURRET ROTATION	Forward	Turret rotation clockwise
	Backward	Turret rotation anti-clockwise



S6 backwards Ground part operations		
M1 - LEFT-HAND CRAWLING TRACK	Forward	Forward
	Backward	Backward
M2 - FRONT LEFT-HAND STABILISER	Forward	Lifting
	Backward	Lowering
M3 - REAR LEFT-HAND STABILISER	Forward	Lifting
	Backward	Lowering
M4 - REAR RIGHT-HAND STABILISER	Forward	Lifting
	Backward	Lowering
M5 - FRONT RIGHT-HAND STABILISER	Forward	Lifting
	Backward	Lowering
M6 - RIGHT-HAND CRAWLING TRACK	Forward	Forward
	Backward	Backward

LED bar



L1 Connection to the mains voltage

Green warning light; when it lights up the machine is connected to the mains.



L2 Disconnection from the mains voltage

Orange warning light; when it lights up the machine is disconnected from the mains. When the diesel/petrol engine is started, the warning light goes out.



Display unit

The display unit shows:

- Engine status
- Machine status
- Alerts

Engine status



The engine status is visualised by 4 pictograms :



Diesel/petrol engine on



Oil in the engines

- The oil level is too low.



Alternator and starter battery status

- Off after start-up: the alternator is working.
- Lit up steadily: the alternator is not working.
- If it flashes with the engine switched off, it indicates that the starter battery is drained (flat).



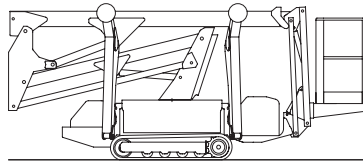
Oil filter clogged-up

- The oil filter in the hydraulic circuit is clogged-up and needs to be replaced as soon as possible. All machine operations are slowed down by 40% of the maximum speed allowed.

Machine status

STOWED AWAY MACHINE

The machine is stowed away when the cage is in its stowed away seat and none of the stabilisers are under pressure.

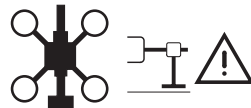


When the machine is stowed away the following actions may be executed:

- Driving at all speeds (if a diesel/petrol engine is used)
- Driving at a reduced speed (when an electric motor is used)
- Repositioning of the stabilisers
- Lifting the boom up to the angle of 5° (**in this case the machine is not stowed away any more but moves right into the safety driving mode**)
- Cage balancing
- Tracks widening function (if the option is present)

MACHINE IN THE SAFETY TRANSPORT MODE

The machine is in safety transport mode when the boom is lifted no more than 5° and no stabiliser is pressurised.

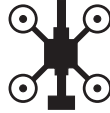


The machine in the safety driving mode may perform the following operations:

- Driving at all speeds and with minimum rotations of the engine (when a diesel/petrol engine is used)
- Driving at a reduced speed (when an electric motor is used)
- Lifting the boom up to a 5° angle
- Lowering of the boom
- Cage balancing

STABILISED AND STOWED AWAY MACHINE

The machine is **STABILISED AND STOWED AWAY** when all 4 stabilisers are under pressure and the cage is in its stowed away seat.

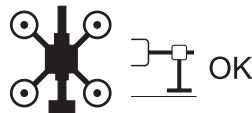


With the machine in the stabilised and stowed away mode the following operations may be performed:

- Repositioning of the stabilisers
- Lifting of the boom (in this case the machine is no longer stowed away)
- Tracks widening function (if the option is present)
- Cage balancing

STABILISED, LEVELLED OUT AND STOWED AWAY MACHINE

The machine is **STABILISED, LEVELLED OUT AND STOWED AWAY** when all 4 stabilisers are under pressure, the machine is levelled out and the cage is in its stowed away seat.



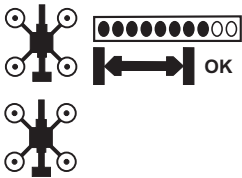
Visually check the actual levelling-out of the machine by making use of the special spirit level.

With the machine in the stabilised, levelled out and stowed away mode, the following operations may be performed:

- Repositioning of the stabilisers
- Lifting of the boom (in this case the machine is no longer stowed away)
- Cage balancing
- Tracks widening function (if the option is present)

- If one of these pictograms appears on the display, it means that one or more stabilisers feet lost touch with the ground.
- The machine is not stabilised any more.
- The stabilisation phase should be repeated.

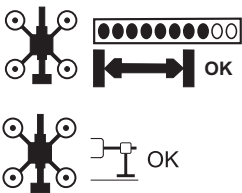
By lifting the boom and taking the cage out of its stowed away seat, the pictogram of moment control will appear on the display unit. By taking in consideration other pictograms more information on the machine status may thus be obtained.



The machine is STABILISED and NO LONGER STOWED AWAY

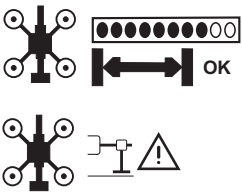
The stabilisers movement is blocked.

By raising the boom above 5°, all the movements of the aerial part are activated.



The machine LOST ITS TOUCH WITH THE GROUND WITH REGARD TO ONE OF ITS STABILISER FEET

The machine’s electronic system does not actuate any blocking of its operations as the conditions are still deemed safe. In is up to the operator to decide either to continue using the machine, or to close its aerial part and restore its stability.

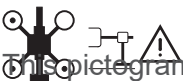


The machine LOST ITS TOUCH WITH THE GROUND WITH REGARD TO TWO OF ITS STABILISER FEET

The loss of touch with the ground by two stabiliser feed is deemed a hazardous condition for continuing any operations.

The movements of the aerial part will be blocked, except for the following cases:

- Retraction of the extension
- Lowering of the jib



This pictogram will appear when the moment is equal to or higher than 98% of the allowed value, and the operation still increasing it is being executed:

- Rising of the extension
- Lowering of the boom



The movement will be blocked and the alarm will sound out.

It will be possible to perform only those operations that actually reduce the moment:

- Lifting of the boom
- Retraction of the extension
- Turret rotation

The following pictograms may be displayed if the **automatic stabilisation** option is present:

The machine is STABILISED, LEVELLED OUT and NO LONGER STOWED AWAY.



The stabilisers movement is blocked.

By lifting the boom above 5°, all the movements of the aerial part are activated.

The machine is INCLINED OVER 1° angle

The loss of levelling is not the best condition for operating the machine. Nevertheless, the machine's electronic system does not actuate any blocking of its operations as the conditions are still deemed safe. It is up to the operator to decide either to continue using the machine, or to close its aerial part and restore its stability.

Use of the machine

Before carrying out any operations, it is necessary to read and well understand the contents of this manual, as well as all the instructions on the plates and labels

Checking before using

Before the machine is put into operation and any operation is executed, it must be thoroughly checked visually in the way described further below. It is also vital to carry out all the checks on the machine's safety systems/devices prior to putting it into any operation.

Make sure that the following malfunctions DO NOT occur:

- oil leakage from the pipes and other components of the hydraulic system
- cut or disconnected electric wires
- cuts on or irregular wear of the crawling rubber tracks
- damaged, deformed, loosened up or missing screws and bolts, or cracked up welds

Make sure to check that:

- terrain where the platform is to operate is solid (compact) and actually able to support the maximum allowable load per each crawling track and stabiliser feet
- present Manual is on board
- all plates and labels are well visible and have not been removed
- both the handrails and the platform itself are free from any grease and oil residue
- working area remains totally unobstructed, without any potholes, and the ground is even

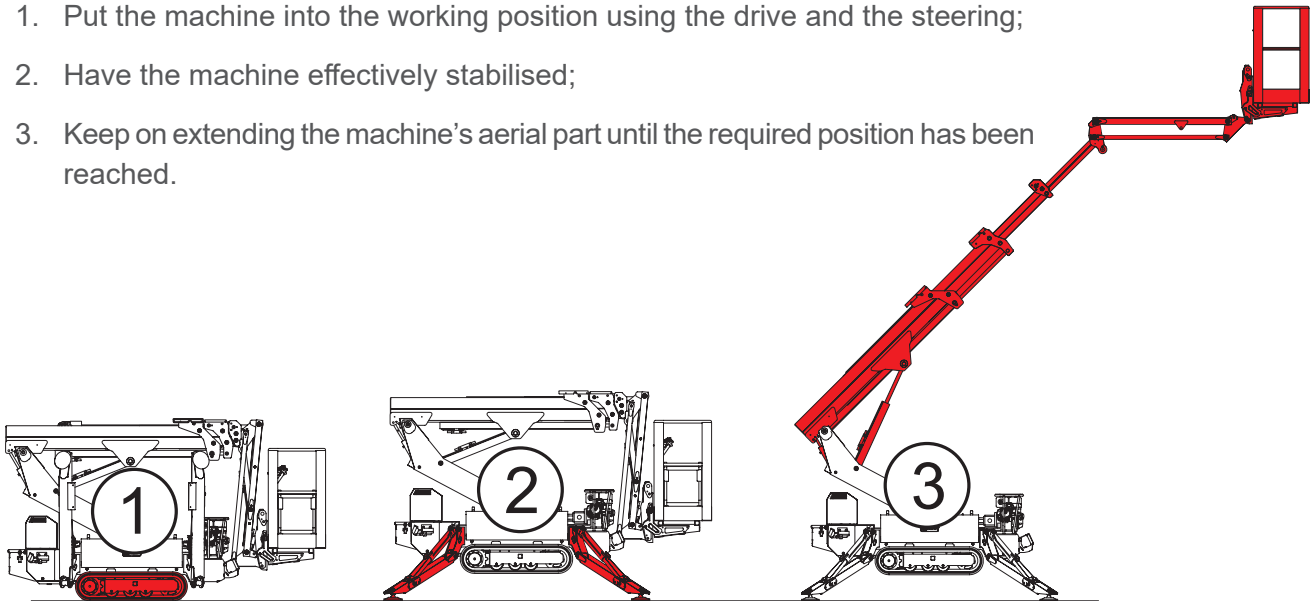
Also:

- Check the hydraulic oil level
- Make sure there is fuel in the tank
- Make sure the tension of the rubber crawling tracks is correct
- First switch on the ground control panel and then the platform control panel and wait for about ten seconds for the switching-on sequence to be completed
- Make sure no errors are reported on the display unit on the platform control panel, or on the light indicators of the ground control panel

Operation of the machine

In order to lift up persons, materials and/or equipment to facilitate the works at some height, it is necessary to do the following:

1. Put the machine into the working position using the drive and the steering;
2. Have the machine effectively stabilised;
3. Keep on extending the machine's aerial part until the required position has been reached.

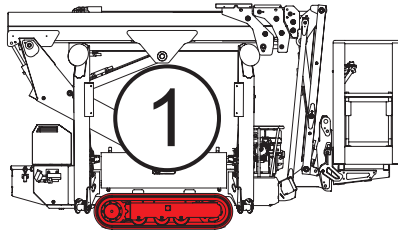


To execute these operations it is necessary to:

- Control the drive and machine stabilisation from the ground platform control panel
- Climb onto the cage
- Have the aerial part extended upwards

Make sure that the red emergency stop button is not pressed down neither on the ground control panel nor on the platform control panel

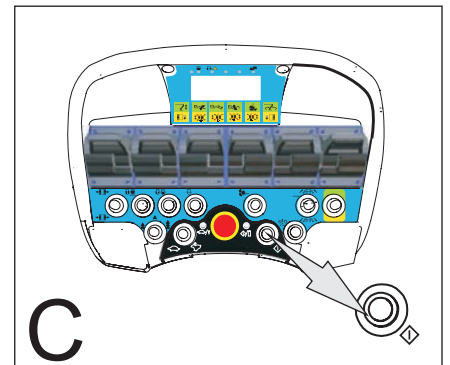
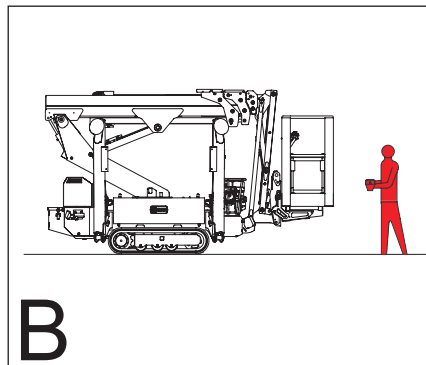
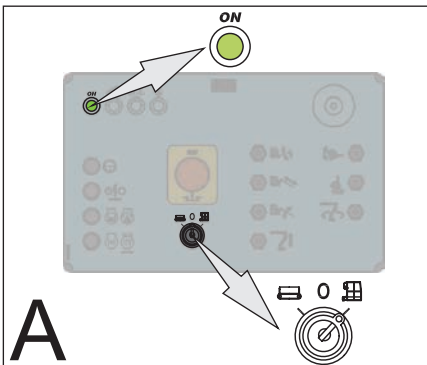
1 Setting the machine into the working position



To place the machine in the working position:

- Turn on the machine
- Start the engine
- Perform a movement

Starting the machine up



- A.** Insert the selector key 1 into the ground control panel and turn it to the right; warning light 12 is lit up.
Each time the machine is started up, audible alarms (buzzer) and warning lights light up to confirm their correct operation. Before putting the machine into operation, wait until they are all switched off.
- B.** Take the platform control panel to the ground.
- C.** Switch on the platform control panel with the I1 switch.

Start the engine

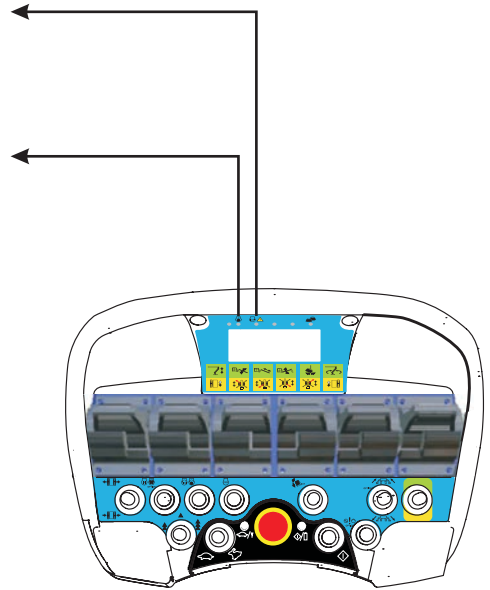
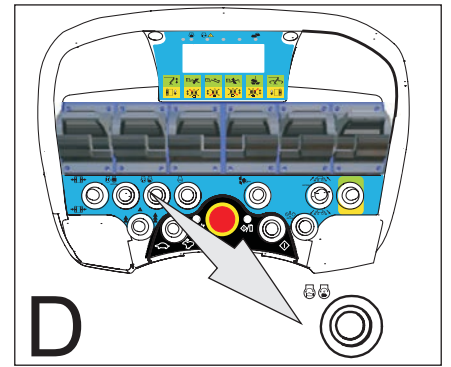
- D. Start up the diesel/petrol engine or electric motor by pressing down the I2 selector key.



When the yellow warning light is lit up, the machine is disconnected from the mains and the diesel/petrol engine will start up.

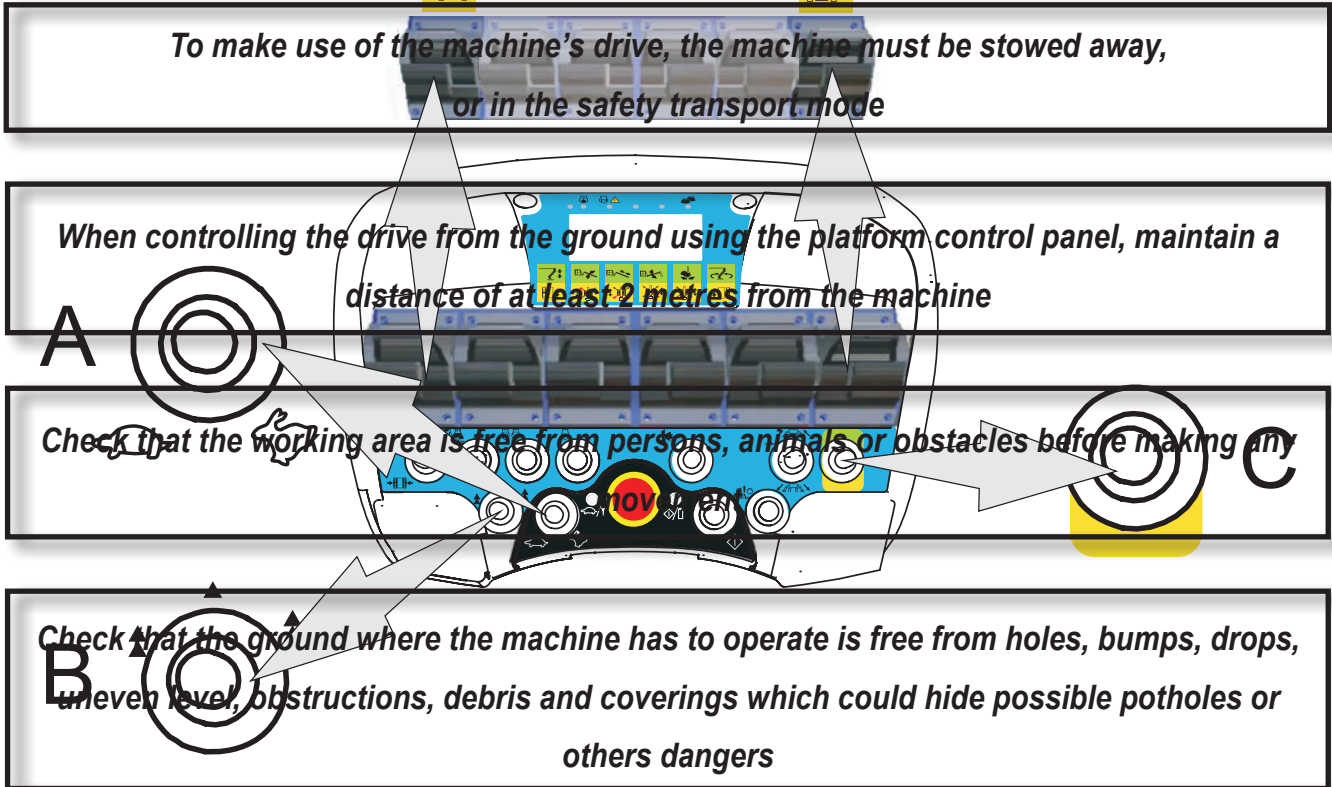


When the green warning light is lit up, the machine is connected to the mains and the electric motor will start up.
Differential magneto-thermal switch must be activated.



Drive and Steering

D



Use the S3 selector key to **set the engine speed** (if a diesel/petrol engine is used).

Use the S2 selector key to **select the speed** (if a diesel/petrol engine is used).

Move backward S6 to **activate ground movements**.

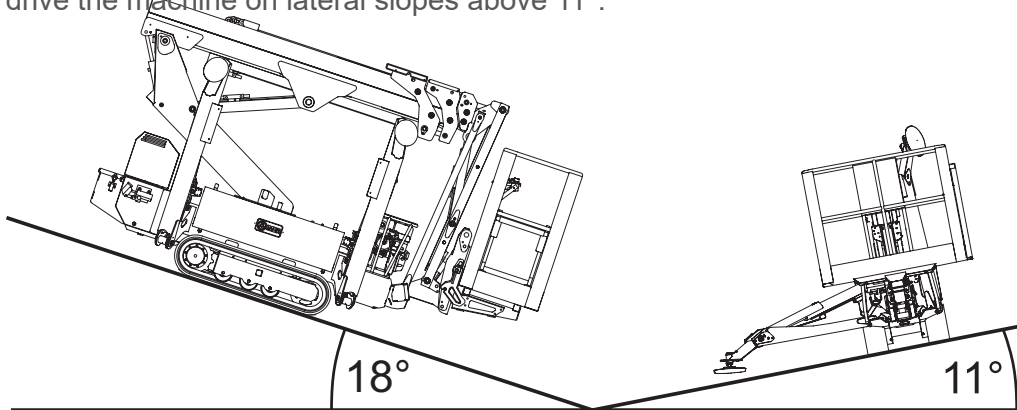
Move forward the two joystick controls M1 – M6 for the tracks.

In order to steer the machine the speed of the respective crawling tracks must be different, therefore that **M1 and M6 have different inclinations**.

- **Steering to the right:** will require the **M1** joystick to be inclined more
- **Steering to the left:** will require the **M6** joystick to be inclined more

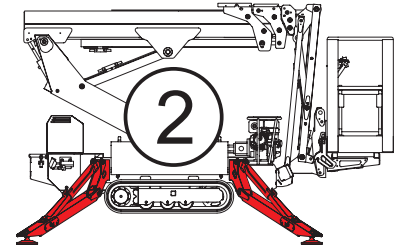
Driving on an inclined terrain

- Never attempt to drive the machine along the terrain of an inclination exceeding 15° (27%).
- When driving the machine across any laterally sloping terrain, widen the span of the crawling tracks to the maximum width (if provided by the machine configuration) to increase the machine's stability; also lower the stabilisers down to the position almost reaching the ground level. Do not drive the machine on lateral slopes above 11° .



2 Machine stabilisation

Once the machine is properly positioned, the procedures of stabilisation and levelling out may be commenced.



Stabilisers may be repositioned only when the machine is stowed away

Before commencing any machine stabilisation operations, make sure there are no persons in the proximity of the plates and stabiliser cylinders

Before commencing any machine stabilisation operations, make sure the terrain is flat (without any potholes or depressions), with a good adhesion and able to support the maximum load transferred onto the ground by the stabilisers, that is described on the rating plate placed on the machine

If necessary place some strong weight distribution plates under the stabiliser small plates

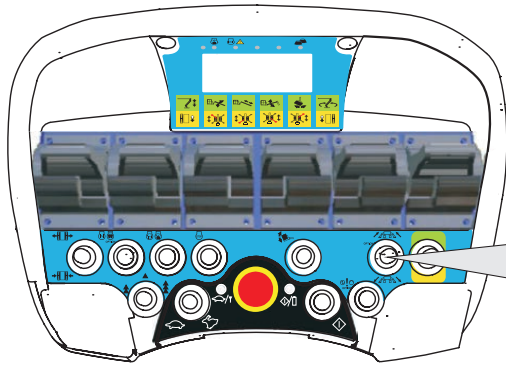
Make sure the stabilisers do not rest on any underground pipes or road drainage wells

Machine stabilisation is achieved when the machine is in a horizontal position with tolerance below 1°

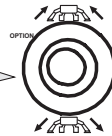
Attempting to have the machine stabilised on a terrain of a higher inclination than the permitted one may result in compromising its overall stability and consequently cause serious damage to people and property.

It is absolutely mandatory to work with the machine stabilised well within the limit actually allowed by the manufacturer

Manual stabilisation



Using the 4 joysticks: **M2 – M3 – M4 – M5** push them backward to have the machine effectively stabilised.



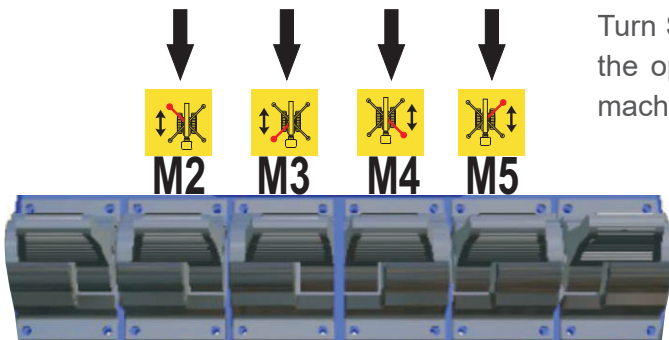
This pictogram will appear on the platform control panel

A single stabiliser foot that touches the ground may not be lowered until all four feet have contact with the ground

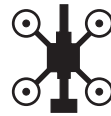
After the stabilisation has been completed, please:

- check that **the crawling tracks are lifted from the ground**
- visually check how the **stabilising cylinders are in contact with the ground**
- visually check the **actual levelling-out of the machine** by making use of the special spirit level

Automatic stabilisation (optional)



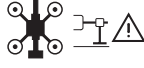
Turn **S5** backward and keep it pressed for the duration of the operation; the stabilisers are lowered down and the machine is now stabilised and levelled out.



When the pictogram  or  appears on the display unit on the platform control panel, the levelling out is completed and the operation is automatically stopped.

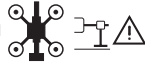
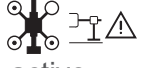
- Reset the selector into a neutral position.
- When another operation has raised the chassis out of the ground, another automatic stabilisation operation should be carried out.
- Always check visually the effective levelling out of the machine by making use of the special spirit level.

With the cage in its stowed away seat:

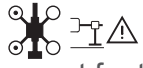
- If the machine is inclined above 1° , the pictogram  on the display unit will signal the loss of levelling.
- If one or more stabiliser feet should lose touch with the ground, the pictogram will appear on the display unit and all the movements of the aerial part will be blocked.

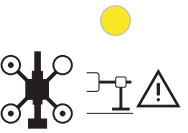
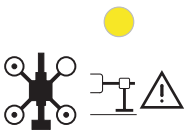
The stabilisation operation should be repeated in every one of the above referenced cases.

With the aerial part of the machine open:

- If the machine is inclined above 1° the pictogram  on the display unit will signal the imminent hazard of overturning.
- If one of the stabiliser feet should lose touch with the ground, the pictogram  will appear on the display unit, whereas all the movements of the aerial part will remain active.

In none of the above referenced cases the electronic system of the machine will block any operations. It is the operator's prerogative to decide whether to continue operating the machine, or to close down the aerial part of the machine and have it reset in a stabilised mode.

- If two stabiliser feet should lose touch with the ground, the pictogram  will appear on the display unit and all the movements of the aerial part will be blocked, except for the following ones:
 - Retraction of the extension
 - Lowering of the jib

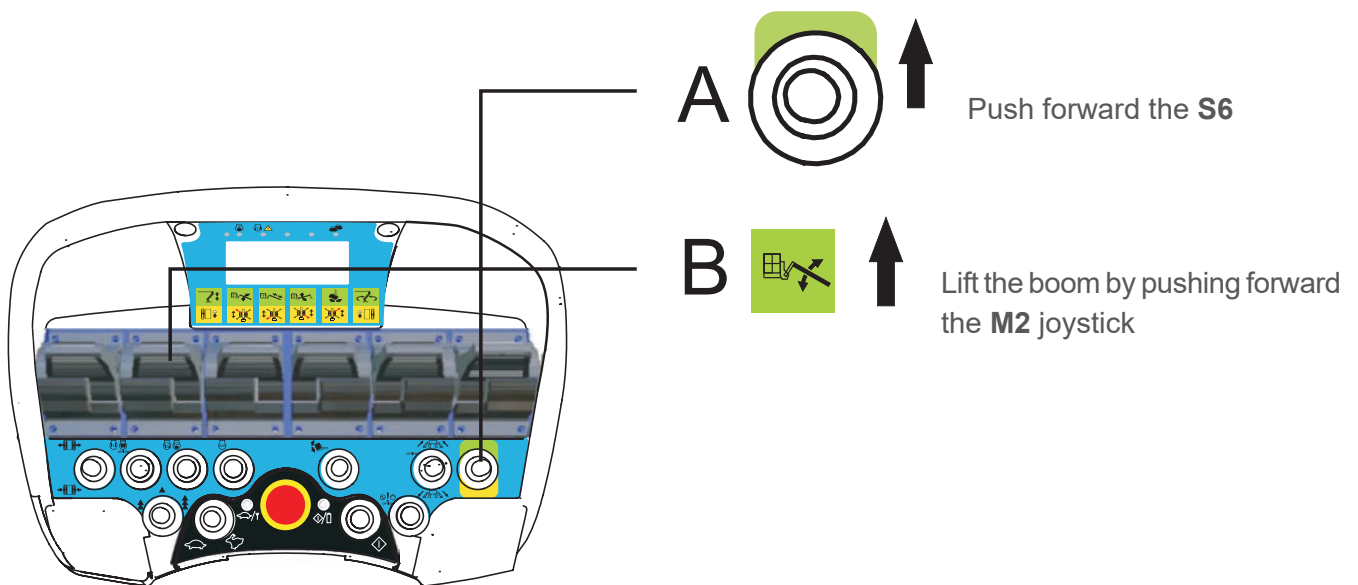
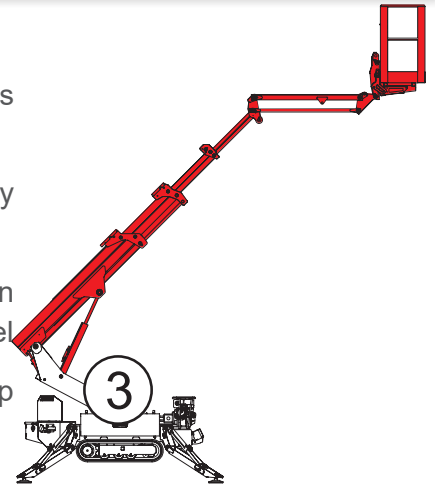


- 3** After the completion of the positioning and the stabilisation phases have the platform control panel inserted back into its docking station in the cage.

If there is the radio control unit make sure that micro-magnetic switch placed on the side of the platform control panel is securely pushed into its socket.

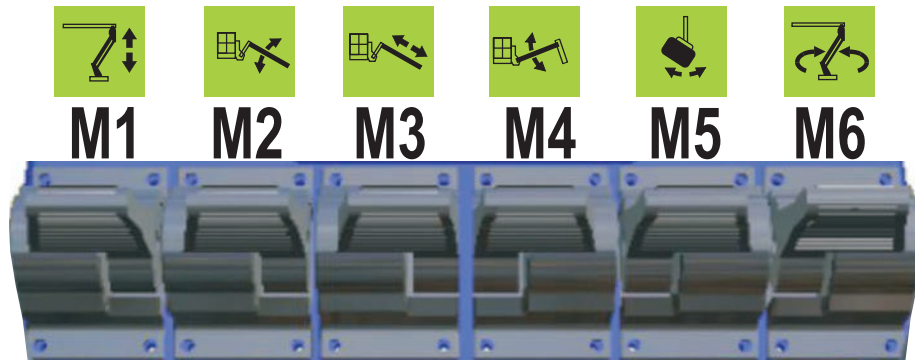
Moving the aerial part







- Make sure that the load conforms to the originally set limits and is well distributed around
- Make sure that the bar closing access to the platform is properly secured
- Make sure that the red emergency stop button is not pressed down neither on the ground control panel nor on the platform control panel
- Always check that the warning emergency lights are not lit up indicating some sort of emergency situation



Lifting of the boom is the first operation to be executed in order to commence the activation of the lifting system

By lifting the boom above 5°, all the movements of the aerial part are activated.

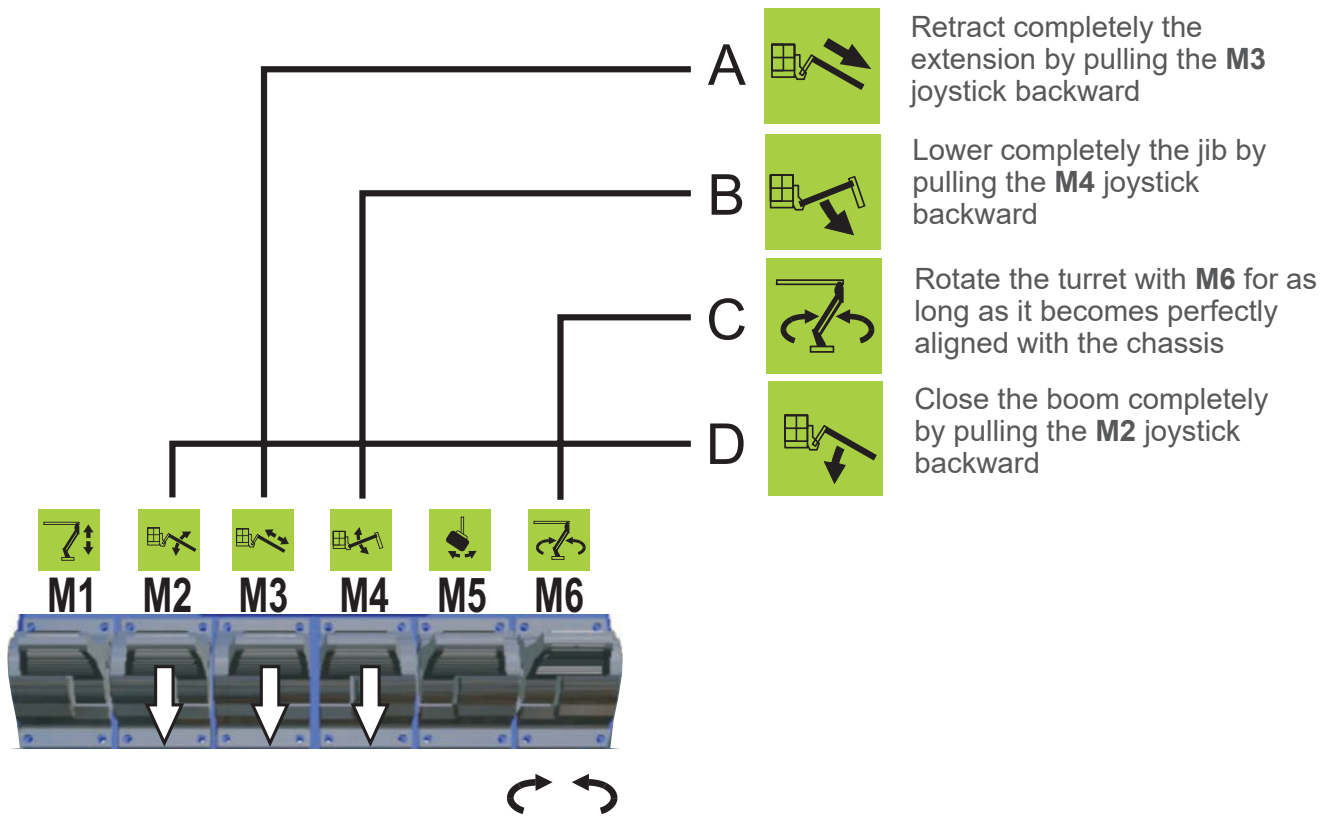


JOYSTICK		AERIAL MOVEMENT	
 M1 Not used			
 M2 Boom	Forward	Lifting	
	Backward	Lowering	
 M3 Boom retraction	Forward	Extension	
	Backward	Retraction	
 M4 Jib	Forward	Lifting	
	Backward	Lowering	
 M5 Not used			
 M6 Turret rotation	Forward	Clockwise rotation	
	Backward	Anticlockwise rotation	

Returning to the stowed away mode

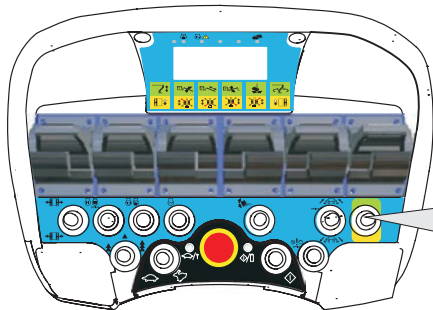
After completing the works at height return to the stowed away mode.

Retraction of the aerial part



Retraction of the stabilisers

The retraction of the stabilisers is possible only with the cage in its stowed away seat.

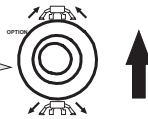
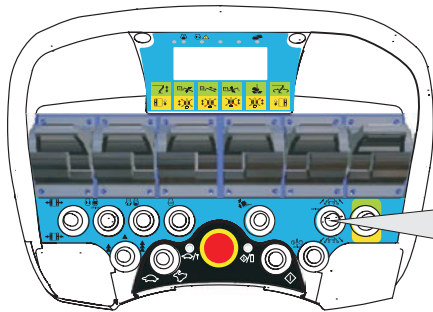


Push S6 backwards to **activate the ground movements**.



Manual procedure

Using the 4 joystick controls M2 – M3 – M4 – M5 push them forward to lift the feet.



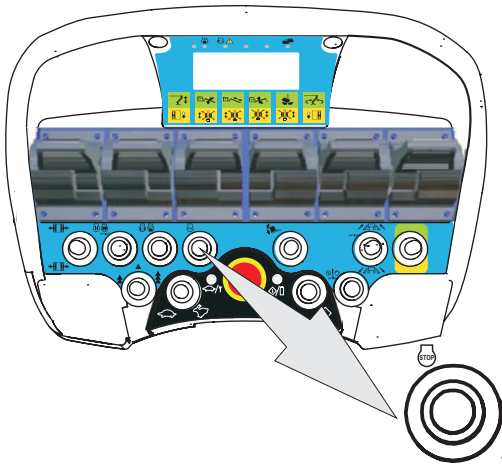
At this stage there is no possibility to check out the movement sequence of the stabilisers, so be very careful when trying to lower the platform, and always make sure to keep the machine as much levelled out as possible



Automatic procedure (OPTIONAL)

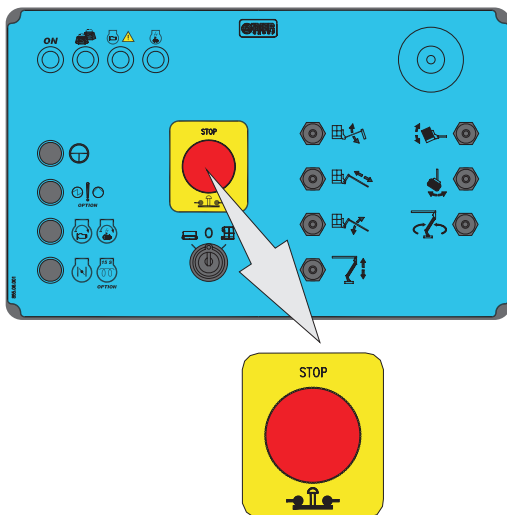
Move S5 forward until the movement stops.

Switching off the engine



From the platform control panel

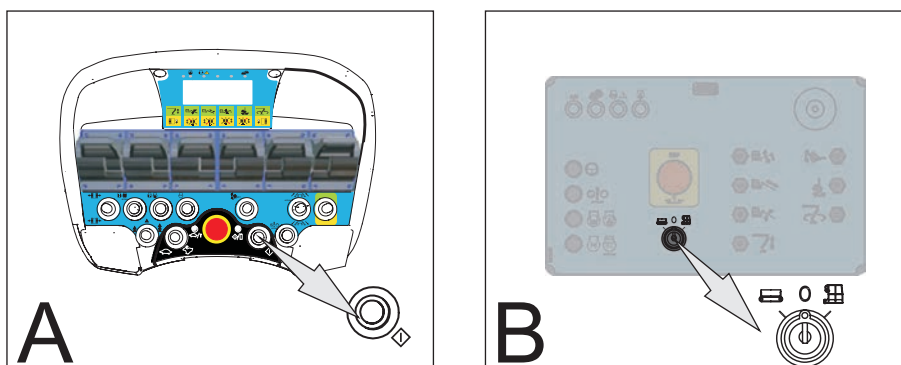
- Switch the diesel/petrol engine or electric motor off using the I4 switch



From the ground control panel

- Press the emergency button 2

Switching the machine off



- A** . Switch off the platform control panel with the I1 button
- B** . Turn the key into the central position in the ground control panel

End of work

- Always make sure to remove the key from the selector.

Emergency procedures

Emergency manual procedures

If the machine is blocked due to mechanical or electrical fault, or due to the operator's fault, it is possible to put it into the transport configuration which can be facilitated by the operator from the ground.

In the **standard configuration** of the machine, the emergency procedure consists in using the electric valves of the hydraulic blocks located on the machine and the movements are performed using the manual pump located to the side of the tank.

If the **optional 12 V electric pump** is installed on the machine, the movements are performed electrically.

There are two emergency procedures requiring the use of electric 12 V pump depending on the problem to be addressed:

- The machine is blocked and no alert is signalled (e.g. no fuel)
- The machine is blocked with the alert activated

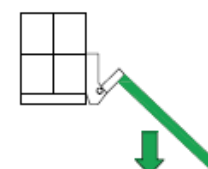
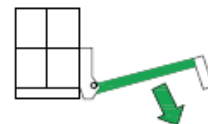
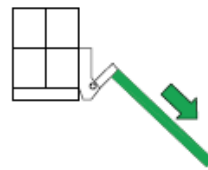
The procedure to follow when the machine is blocked with an alert is the same used for the standard configuration with a manual pump.

The 12V electric pump is connected to the starter battery and its prolonged use will cause it to discharge quickly

Any manually executed procedures may cause the machine to overturn, so make sure you always perform them very carefully

Before carrying out any emergency operations, press down the red emergency stop button

Before carrying out any emergency operations, make sure there are no obstacles of any kind around the machine



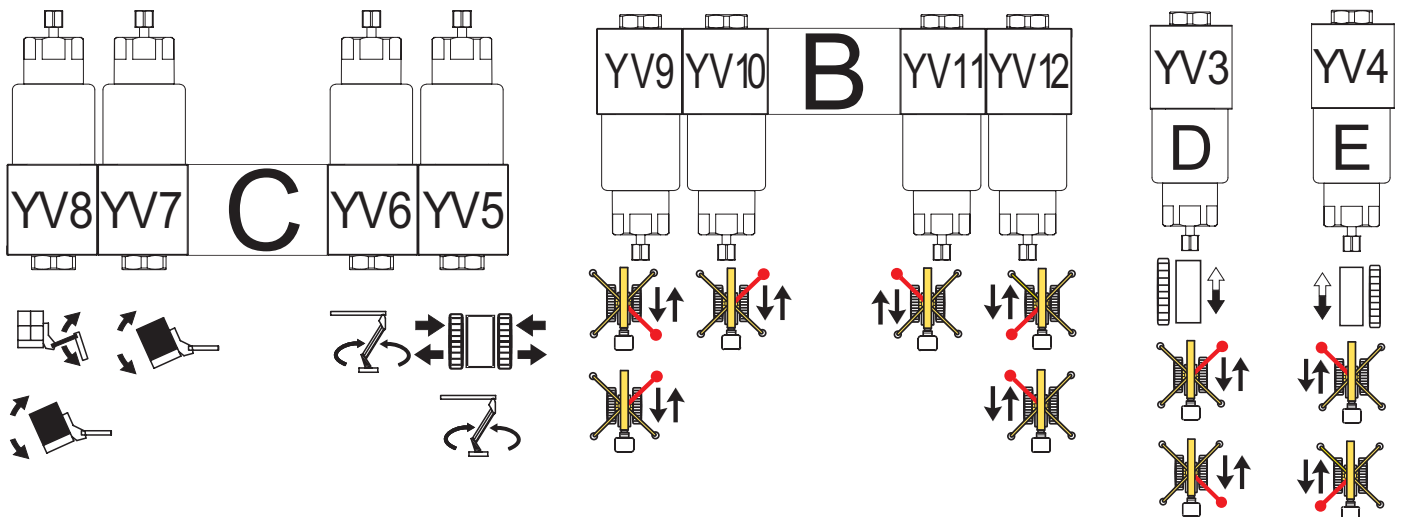
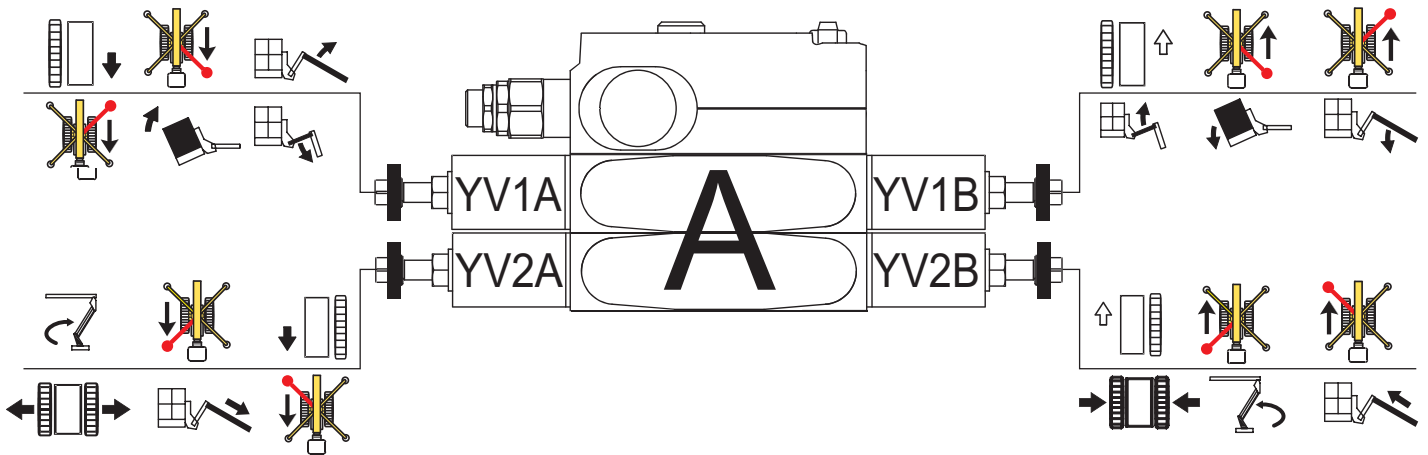
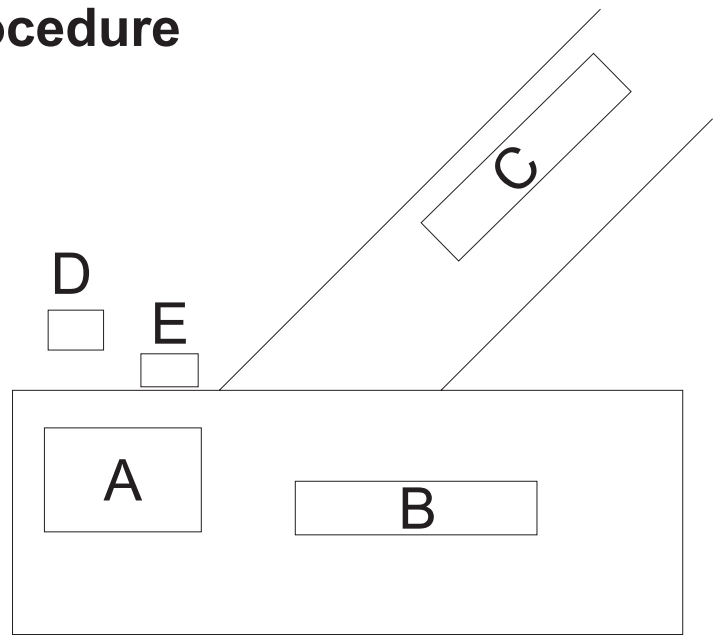
Standard emergency procedure

Emergency electric valves

The electric valves to use for the emergency movements are positioned on the hydraulic blocks (A - B - C - D - E):

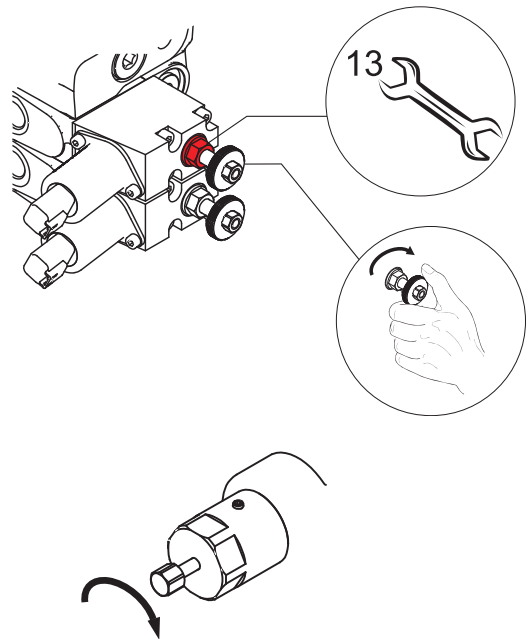
- A and B in the left box
- D and E on the chassis
- C on the right side of the turret

Every movement is controlled by an electric valve of block A and one or more electric valves of blocks B - C - D - E.

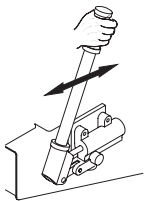


To perform a movement:

1. Identify on main block A the electric valve associated with the operation.
2. Unscrew the protective nut on the electric valve (using adjustable wrench No. 13).
3. Screw the electric valve pawl to the end without forcing it.
4. Screw the protective nut on the electric valve (using adjustable wrench No. 13).
5. Check if the movement is associated with one or two electric valves on the blocks B - C - D - E.
6. Having identified it/them, screw the pawl.



7. To perform the movement, start the hydraulic pump up by using the appropriate lever, activate the 12 V electric pump by turning the start switch to 1 and keeping it in this position until the movement is complete.



The starting up switch of the electric 12 V pump is situated in the right-hand box.

At the end of this operation, check the emergency electric valves, which must resume their initial setting, as indicated below:

In the MAIN BLOCK A

1. Unscrew the protective nut on the electrical valve (using the adjusting wrench No. 13).
2. Unscrew the electric valve pawl to the end without forcing it.
3. Screw the protective nut on the electric valve (using adjustable wrench No. 13).

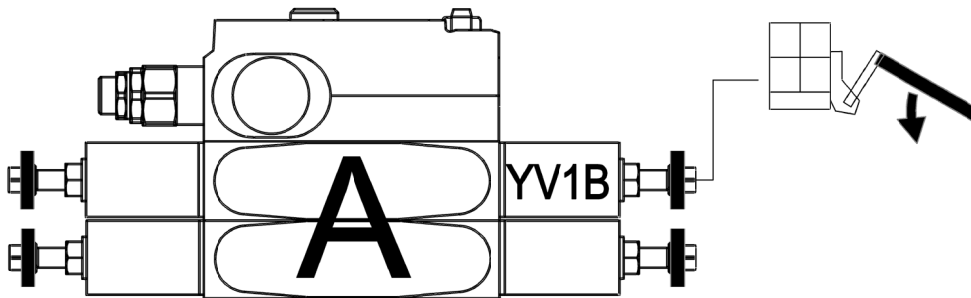
In BLOCKS B - C - D - E

1. Unscrew the electric valve pawl to the end without forcing it.

EXAMPLE 1

If necessary, carry out the **boom lowering** operation:

1. This operation is associated with the electric valve **YV1B** of the main block **A**.



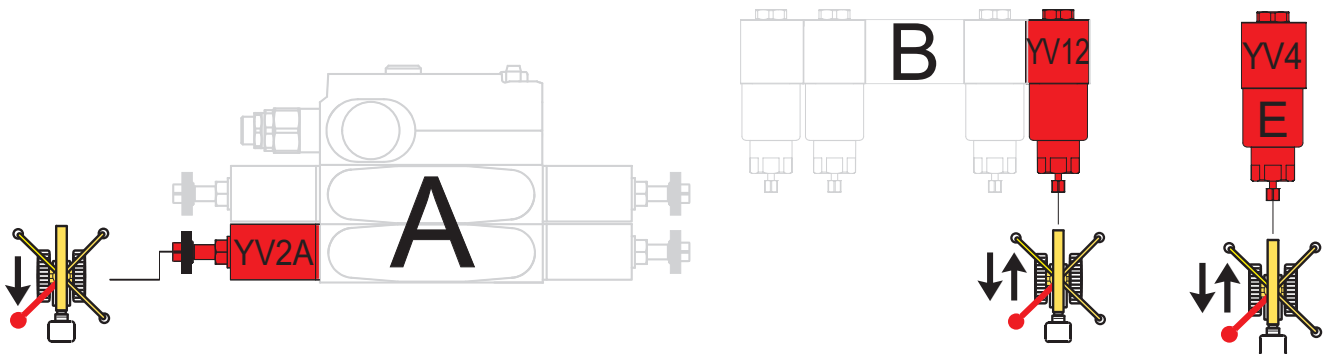
2. Unscrew the protective nut on the electric valve **YV1B** (using adjustable wrench No. 13).
3. Screw the emergency pawl to the end without forcing it.
4. Screw the protective nut on the electric valve **YV1B** (using adjustable wrench No. 13).
5. Start the hydraulic pump up by using the appropriate lever until the boom is completely lowered or activate the 12 V electric pump by turning the start switch to 1 and keeping it in this position until the operation is complete.
6. Unscrew the protective nut on the electric valve **YV1B** (using adjustable wrench No. 13).
7. Unscrew the pawl of the electric valve **YV1B** without forcing it.
8. Screw the protective nut on the electric valve **YV1B** (using adjustable wrench No. 13).

EXAMPLE 2

If necessary, carry out the **lowering of the rear left stabiliser** operation:

The operation is associated with the electric valves:









- **YV2A** of main block **A**.
- **YV12** of block **B**.
- **YV4** (block **E**).



1. Unscrew the protective nut on the electric valve **YV2A** (using adjustable wrench No. 13).
2. Screw the emergency pawl to the end without forcing it.
3. Screw the protective nut on the electric valve **YV2A** (using adjustable wrench No. 13).
4. Screw the pawl of the electric valve **YV12** and **YV4** without forcing it.
5. Start the hydraulic pump up by using the appropriate lever until the stabiliser is completely lowered or, if present, activate the 12 V electric pump by turning the start switch to 1 and keeping it in this position until the operation is complete.
6. Unscrew the protective nut on the electric valve **YV2A** (using adjustable wrench No. 13).
7. Unscrew the pawl of the electric valve **YV2A** without forcing it.
8. Screw the protective nut on the electric valve **YV2A** (using adjustable wrench No. 13).
9. Unscrew the pawl of the electric valve **YV12** and **YV4** without forcing it.

On this page and in the following 2 tables there is a summary of the electric valves and the operations controlled by them.

	YV1A	YV1B	YV2A	YV2B	YV3	YV4	YV5	YV6	YV7	YV8	YV9	YV10	YV11	YV12

	YV1A	YV1B	YV2A	YV2B	YV3	YV4	YV5	YV6	YV7	YV8	YV9	YV10	YV11	YV12
		■			■						■	■		
	■				■						■	■		
				■		■							■	■
			■			■							■	■
		■			■						■			
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				■		■								■
			■			■								■

Procedure with the machine blocked without alert signals (optional)

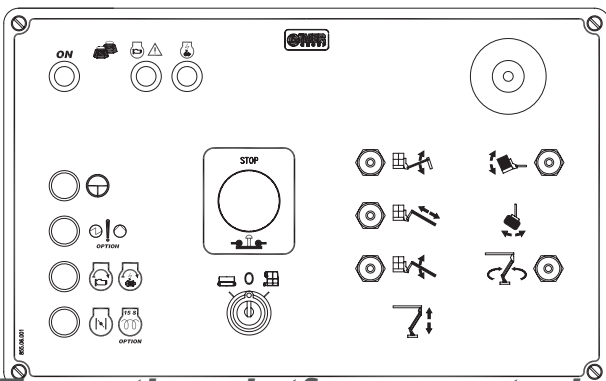
Make sure that the machine is not connected to the 220 V network or that the differential magneto-thermal switch is deactivated

In the radio-controlled models, the platform control panel must be switched on

From the ground

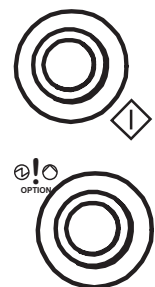
Execute the following operations from the ground control panel.

1. Move the selector key to the left.
2. Press down the button 4 to activate the electric 12 V pump.
3. Keeping pressed down the button 3 simultaneously move the selector of the operation to be executed.

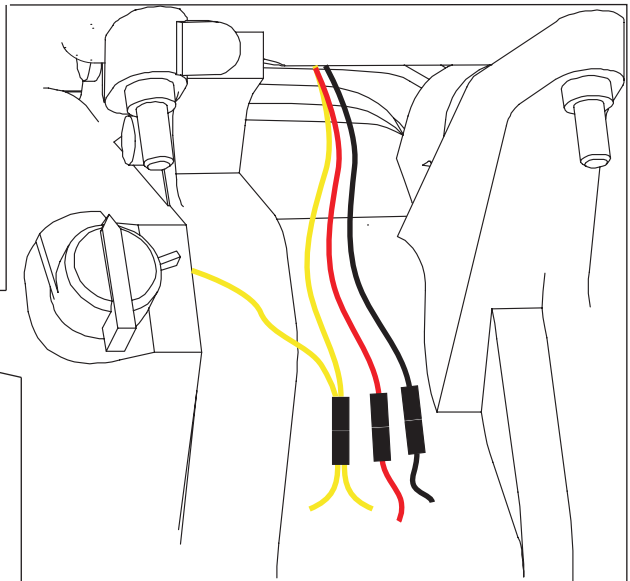
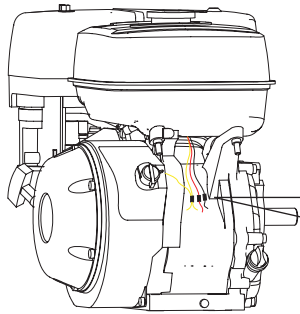


From the platform control panel

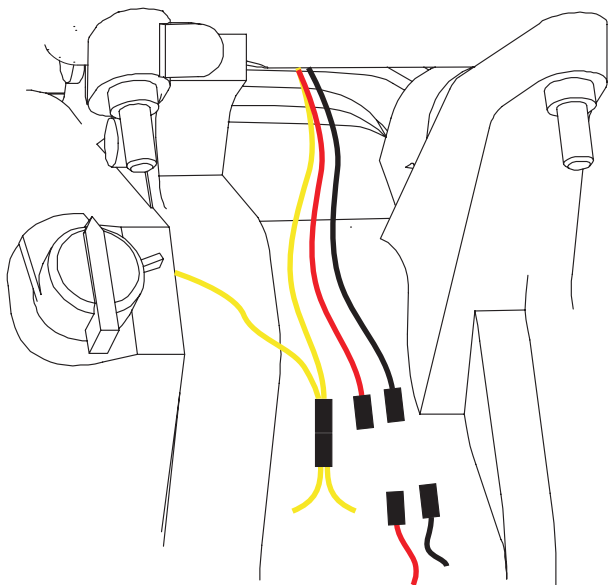
1. Turn the selector key to the right on the ground control panel.
2. Switch on the platform control panel with the I1 switch.
3. Press the I6 switch to switch the electric 12 V pump on.
4. Move the joystick and choose the required operation.



Manual start-up of the diesel/petrol engine

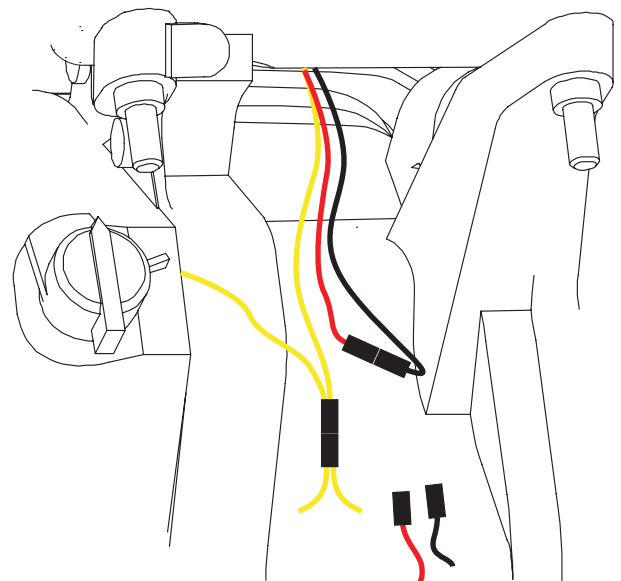


1. Find the 4 wires, as shown in the figure, on the right-hand side of the engine, (2 yellow ones, 1 red and 1 black)

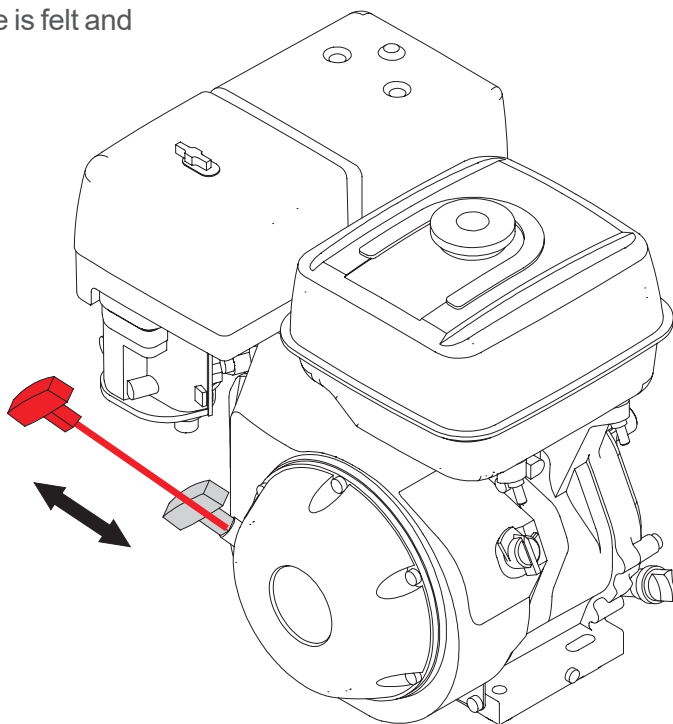


2. Remove the red and black wires from the respective connectors

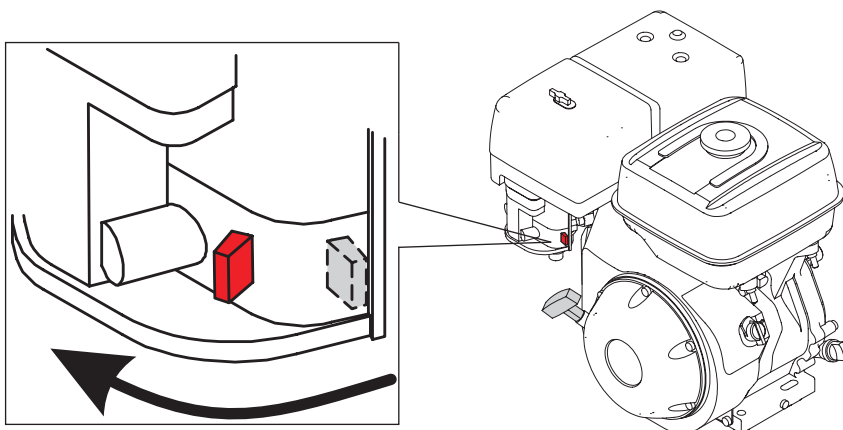
3. Connect up both terminals



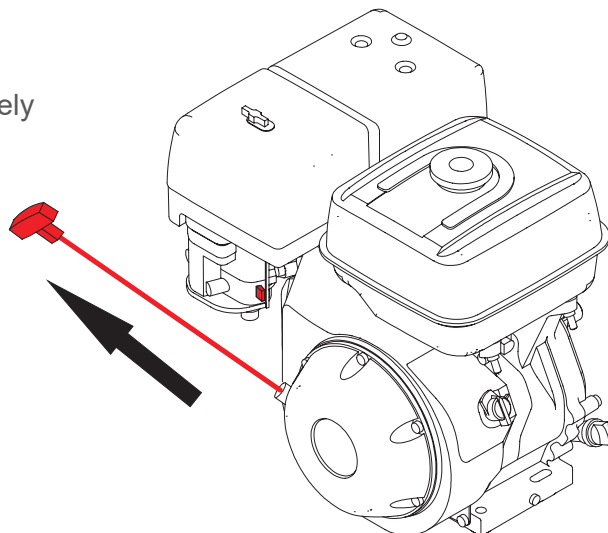
- 4. Pull the engine start-up lever until resistance is felt and then release it



- 5. Pull the air lever to the outside



- 6. Pull the lever decisively



Battery recharging



The following pictogram on the display unit on the platform control panel will appear, in addition to indicating the fault of the alternator (lit up steadily); it indicates the status of the starter battery:

- Flashing: the starter battery is below the warning level and must promptly be recharged.

To have it recharged the machine needs to be connected to the 220 V (or 110 V) mains and the circuit breaker on the electric pump battery charger needs to be switched on.

The battery charger will switch on a green warning light while it is charging the battery and a red warning light when charging is complete.

Battery charges characteristics; 220 V line

- Battery charger 12 V 12 A
- Power supply 185/265 V – 47/62 Hz
- Operating temperature from -10°C to +40°C
- Charging curve IUoU
- Protection against output short circuit
- Protection against polarity reversal
- Weight: 1.3 Kg

Battery charges characteristics; 110 V line (optional)

- Battery charger 12 V 12 A
- Power supply 85/264V – 50/60Hz
- Operating temperature from -10°C to +45°C
- Charging curve IUoU
- Protection against output short circuit
- Protection against polarity reversal
- Weight: 1.5 Kg

Transport

Make sure the vehicle used for the transport and/or lifting of the machine can support its weight

Loading and unloading of the machine

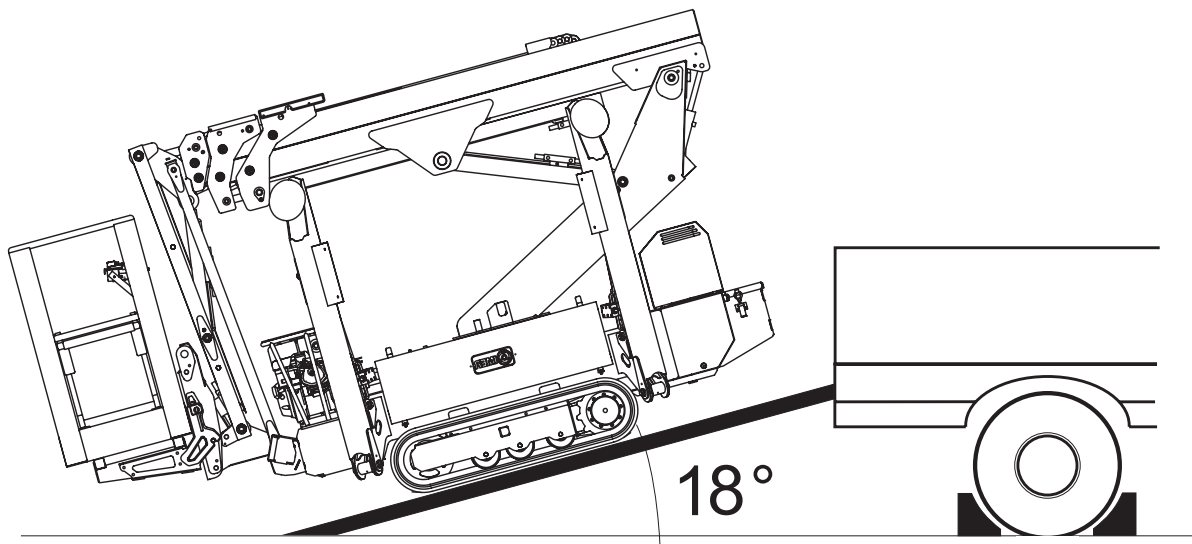
Loading and unloading of the machine onto the platform of the carrying vehicle may be done as follows:

- with the aid of a loading platform
- by having it lifted directly

If necessary, detach the cage to reduce the length of the machine, as illustrated in the corresponding paragraph

With the aid of a loading platform

- Park the carrying vehicle on a flat surface.
- Position the loading platforms in a parallel position to each other at a distance equal to that of the crawling tracks, and at the inclination lower than 15°.
- Lift the boom setting the machine into a safety transport mode. This way the cage is safe from any impacts.
- Always carry out all the loading/unloading operations, as well as lift the machine off the ground maintaining a safe distance.
- Proceed with caution, with a minimum speed, to avoid shaking up the machine.
- Place the machine in such a position on the loading platform that none of its parts protrudes outside it.

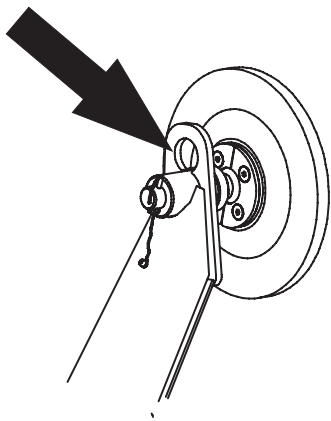


By having it lifted directly

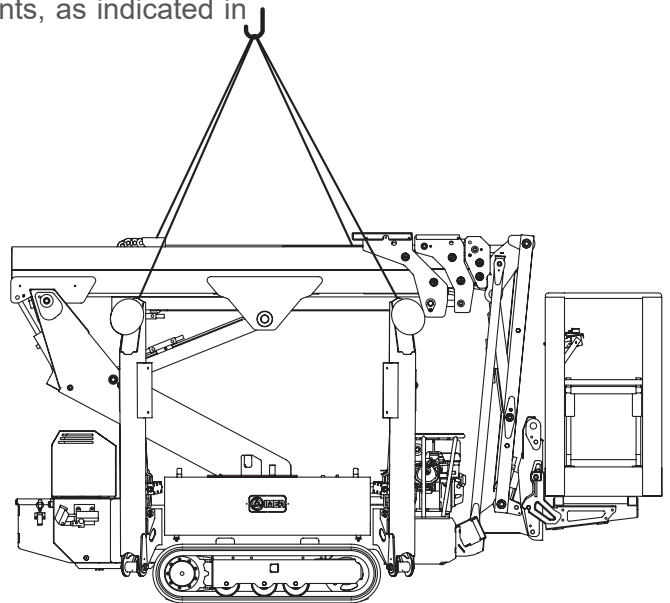
The lifting may be carried out with a crane or a bridge crane.

Use the tape, chains and hooks in perfect operating condition only.

- The machine may be lifted up in a stowed away mode only.
- No operator may be in the cage at the time.
- The entire area of the lifting operation must be free from personnel and/or any objects.
- Do not move the machine over the heads of any persons.

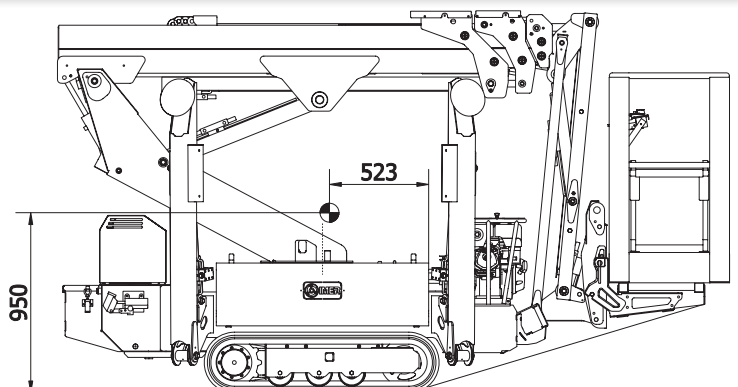


Attach the machine with the ropes and chains through the 4 attachment points, as indicated in the labels.



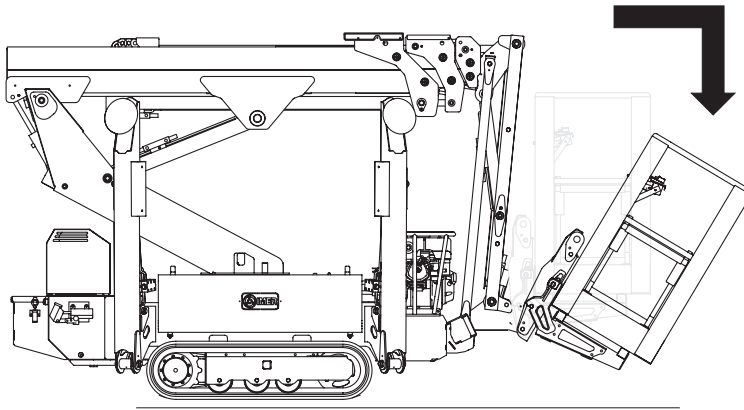
Do not sling the machine differently than what is shown, as this could cause structural damage

In the figure the machine is positioned within its own centre of gravity.

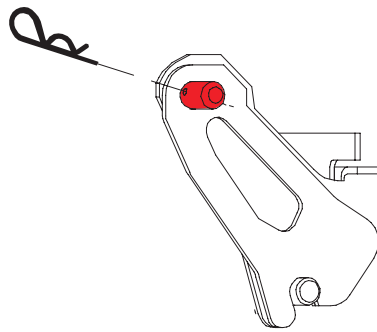


How to uncouple the cage

- Park the carrying vehicle on a flat surface
- Keep on lowering the cage, using the balancing control, until it touches the ground

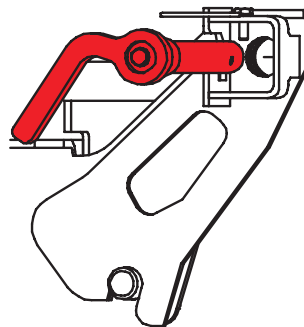


- Remove the flexible plug out of the pin



***The following operation detaches the cage from the machine:
at least two operators are required to support it***

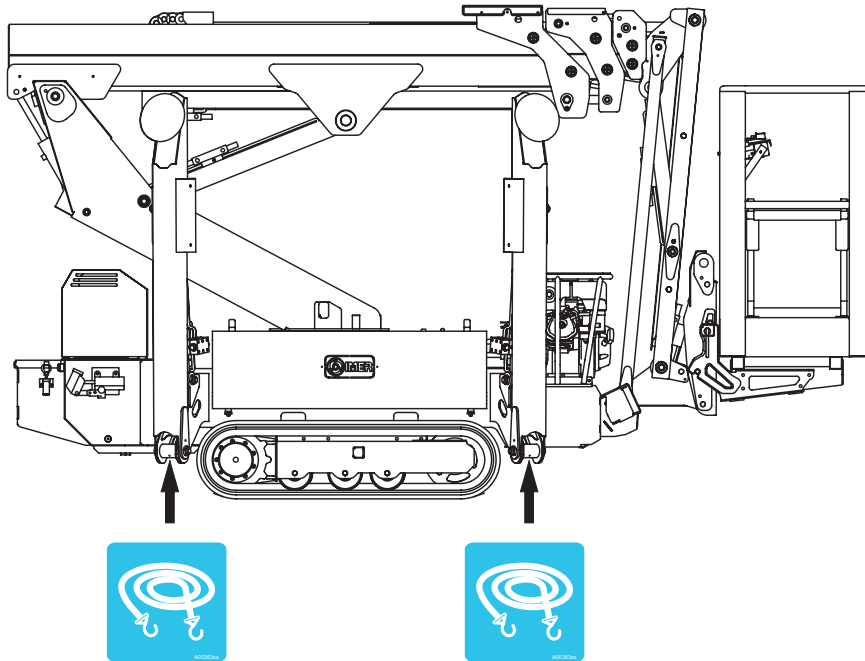
- Rotate the pin and then pull it out



- Place the cage onto the ground

Fastening the machine

Prior to shipment make sure the machine is properly secured on the carrying vehicle platform with tapes threaded through the 4 attachment points (2 front and 2 rear), as indicated on the appropriate labels.



Do not secure the machine to any different points than those specifically indicated on the labels

Secure the cage on the vehicle platform to prevent any lateral movements of the rotating part

It is strictly prohibited to start the machine up when on the transport vehicle platform

Storage

In the event of long storage periods, shelter the machine in a dry and ventilated place, with the battery fully charged. If possible, keep the battery charger connected and powered to keep the battery charged, otherwise recharge the battery on regular basis, every 2 months.

Storage temperature: -20/+50°C

Before using the machine after a storage period exceeding 30 days, perform the checks indicated in the maintenance summary table, in the section “after long periods of inactivity”

Disposal and scrapping

The machine consists mainly of steel, aluminium, plastic, synthetic rubber and copper.

Special attention must be paid to disposal of electric batteries (Italian legislation D.Lgs. 188/08) and of the hydraulic oil contained in the tank of the hydraulic circuit (Italian legislation: DPR 691/82).

The main components of the machine are listed below:

- Cast iron
- Nylon
- Steel
- Teflon
- Copper
- Polycarbonate
- PVC
- Ertalyte

Maintenance

Long life and maximum safety during machine operation can only be assured by careful and regular maintenance.

The schedule indicated in the maintenance summary table refers to normal use conditions, whereas in the case of any heavy duty working conditions (extreme temperature, polluted atmosphere, high humidity, high elevation, etc.) those intervals must be shorter.

The frequency and scope of periodical maintenance and inspections may depend on applicable national regulations.

It is recommended to have at least an annual inspection carried out by an authorised service centre.

Machine cleaning

Once each working-shift has been finished, or when you feel it is necessary, have the machine cleaned:

- Clean all the surfaces by means of a compressed air blow, preventing undue accumulation of grime and dirt.
- Spray a normal degreasing product and eliminate the residual dirt using of cotton clothes.

Never use diluents, scrapers or steel brushes to prevent damaging the painted surface

Do not clean the machine using pressurised jets of water; the penetration of water or moisture inside the electric components could cause malfunctions and /or damage to the electric/electronic control components

Maintenance summary table

*It is recommended to have an annual inspection
carried out by an authorised service centre*

OPERATIONS TO BE CARRIED OUT	AFTER THE FIRST 50 HOURS	EVERY DAY	EVERY MONTH	EVERY 100 HOURS OR EVERY 6 MONTHS	EVERY 250 HOURS OR ONCE A YEAR	AFTER LONG PERIODS OF INACTIVITY (30 DAYS)
Check plates and labels		o				o
Check the oil level			o			o
Change the oil filter cartridge	o					o
Grease the mechanisms	o			o		
Check the batteries charge			o			o
Check the tightening of all the screws	o			o		o
Check the safety devices	o			o		o
Check emergency manual operations				o		o
Brakes check on a slope				o		
Carry out structural check	o		o			o
Check the hydraulic tubes					o	
Check the performance					o	
Check the power and auxiliary cables					o	o
Maintenance of rubber crawling tracks	o			o		o

The following pages describe the options indicated in the table.

Maintenance of the diesel/petrol engine

The petrol/diesel engine maintenance table is provided below. For more detailed instructions consult the Manual enclosed with the machine documentation.

OPERATIONS TO BE CARRIED OUT	AFTER EVERY USE	EVERY 20 HOURS OR EVERY MONTH	EVERY 50 HOURS OR EVERY 3 MONTHS	EVERY 100 HOURS OR EVERY 6 MONTHS	EVERY 300 HOURS OR ONCE A YEAR
Check the oil level in the engine	X				
Change the oil in the engine				X	
Check the air filter			X		
Clean the r filter			X		
Replace the air filter					X
Clean the filter bowl				X	
Check/adjust the ignition plug				X	
Replace the ignition plug					X

Maintenance of the electric motor

Periodically check:

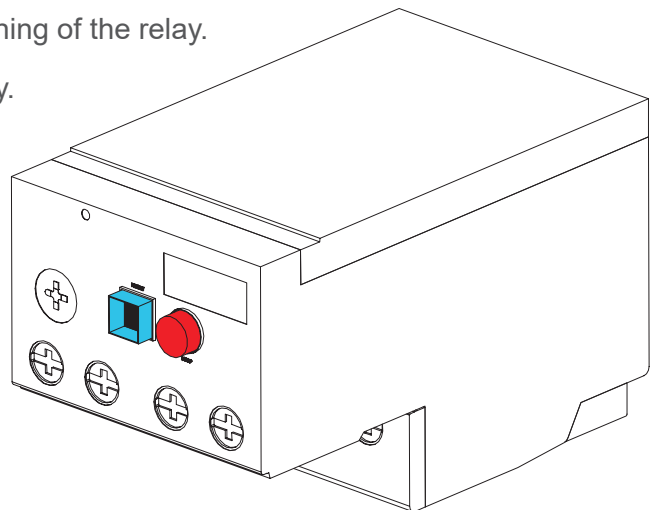
- engine functions for any vibrations or irregular noise
- air inlet on the rotor cover for any obstructions
- for dust, oil leakage or other undue grime on the motor

Temperature relay

The temperature relay fitted on the machine serves to protect the electric motor against any possible overload.

Perform the following test to check a correct functioning of the relay.

1. Open the protection box of the temperature relay.
2. Start the electric motor up.
3. Press down the red STOP key on the relay.
4. Check if the motor switches off.
5. Reset the motor using the blue RESET key.



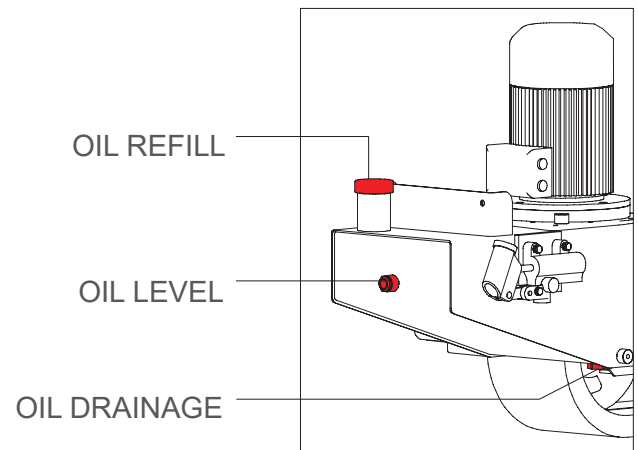
Check plates and labels

Check that all plates and labels are well visible and have not been removed.

Oil level check

The oil level check and any topping up must be performed with the machine stowed away

Check that the oil level remains above the minimum value; the oil level readout must be in the middle. Whenever necessary, top up the oil level with the oil of the same viscosity as indicated on the tank.



The use conditions of the machine and quality of the hydraulic oil prevent the oil from being replaced at regular intervals. During checks, verify that oil keeps its clarity, colour and viscosity characteristics; replace, if necessary.

IMER suggests anyway to replace the oil completely every 3 years.

The complete oil change must be carried out with the machine stowed away

The tap placed under the tank facilitates a total oil drainage.

- The oil should be drained out of the tank to an appropriate container.
- Close the drainage tap.
- Refill with the new oil through the inlet tap.

Change the oil filter cartridge

The cartridge must be replaced when:

- upon every oil replacement
- in compliance with the schedule stipulated in the Table of Maintenance
- when the error code 556 is displayed on the platform control panel display and all the machine operations have been slowed down

The first replacement of the cartridge must be carried out after the first 50 working hours i

Hydraulic oil is a pollutant

Avoid spilling the hydraulic fluid by using collection tanks, and take precautions against the accidental loss and escape of hydraulic fluid by using oil-absorbent products

The exhausted oil must be collected and may not be disposed of in the normal drain lines. Use a specialised company authorised to dispose of or recycle industrial oils, under the control of the current laws in the individual countries

Grease the mechanisms

Thrust block:

- 3 greasers on the worm
- 2 greasers on the sides of the chassis to distribute the grease over the teeth

Stabilisers:

- 1 on the cylinder
- 1 on the pin

Housing:

- All the cylinder pins (excluding the strain pivot of the moment control)

Battery

The AGM battery does not require the electrolyte level to be checked.

Clean the terminal contact surfaces and then lubricate with antiaacid grease or Vaseline.

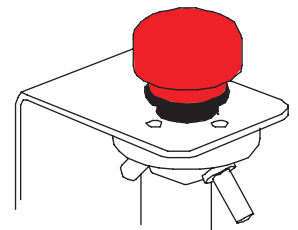
Charge the battery

The battery charge level can be read out on the pushbutton panel.

For the battery recharge, please see section on "Battery recharge".

Battery replacement

- The battery is housed in the front part of the chassis.
- Set the battery switch in the OFF position.
- Open the cover protecting the battery compartment.
- Disconnect the battery terminals, always starting off with the negative (-) pole.
- Reconnect the electric cables always starting off with the positive (+) pole.



Replace the battery with an equivalent one

Check the tightening of all the screws

DESCRIPTION	TYPE	Qty	Tightening torque	
			Nm	kgm
Screws fastening the thrust block to the chassis	M16X70 UNI5931	18	250	25
	M16X70 UNI5739	6	250	25
Screws fastening the thrust block to the turret	M16X70 UNI5931	18	250	25
Screws fastening the wheel reduction gear to the base tracks	M10x30 UNI5931	16	50	5
Screws fastening the motor to the drive wheel	M10x30 UNI5931	16	50	5

Check the safety devices

The following test facilitates checking that all the safety devices on the machine are fully operational.

The safety systems installed on the machine are inevitably subject to wear and loss of calibration, therefore they must be periodically checked and maintained in perfect service condition. It is not recommended to have their efficacy verified on the basis of their performance only.

No such systems may in any way relieve the operator of his individual responsibility of operating the machine with all due diligence.

Red emergency stop button

- Press down the emergency stop button on the ground control panel and check that no operation is possible, either from the ground or from the platform. Reset the button into the ON position.
- Press down the emergency stop button on the platform control panel and check that no operation is possible, either from the ground or from the platform. Reset the button into the ON position.

Diesel/petrol engine speed

Before performing the check, make sure there are no obstacles immediately near the machine

None of the 4 stabilisers (levelling outriggers) should be left under pressure and the diesel/petrol engine is to be used for the task.

Start the test on the machine in the stowed away mode.

- Switch on the engine using the platform control panel, carry out the boom lifting until it stops. Make sure that the engine cannot be accelerated.
- Lower the boom until reaching the stowed away position and make sure that all the speeds settings are operational, so the engine can be accelerated, if required.

Moment limiter

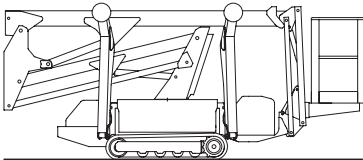
- Put a load of 200 kg onto the cage
- Position the boom and the jib horizontally
- Extend the boom until the moment control blocks the operation
- Make sure that the distance between the front edge of the cage and the centre of the thrust block is between $4,550 \pm 25$ cm

Microswitches

SQ1A-B

SQ1A and SQ1B micro switches are located in the stowing seat of the cage indicating their presence there.

Set the machine into the stowed away position, and check if the following pictogram is displayed on the platform control panel:



SQ8

SQ8 checks the angulation of the boom.

With the machine in a safety transport mode:

- Check if the boom lifting over 5° is blocked.
- Make sure that the drive is not accelerated.

With the machine in the stowed away position:

- Stabilise the machine.
- Lift the boom over 5° angle and check if all aerial movements are released, except the cage balancing.

Check emergency manual operations

See paragraph “Manual emergency operations”.

Checking the brakes

Good grip

Parking brakes must be capable of stopping the machine on a maximum slope, as indicated in the “Technical Data” Table.

Make sure that brakes immobilise the machine in both directions on the slope, as indicated in the above referenced table.

Braking distances

Perform the tests with the machine on a level surface, the diesel/petrol engine on and the engine switched to “harc”

FAST SPEED

- Select fast speed on the platform control panel.
- Set the crawling tracks joysticks to maximum forward position.
- Release the joystick and check that the braking distance is less than 60 cm.

SLOW SPEED

- Select slow speed on the platform control panel.
- Set the crawling tracks joysticks to maximum forward position.
- Release the joystick and check that the braking distance is less than 10 cm.

Carry out structural check

General

- Check that mechanical structures are protected against oxidation and, if necessary, retouch the oxidised areas.

Chassis

- Check the most important welds visually or by means of penetrating fluids:
 - Bearing structure
 - Wheel supports
 - Trunnions on the spindles
 - Bushing; replace them by using lubricating grease, if necessary
 - Status of the crawling tracks

Turret

- Check the most important welds visually or by means of penetrating fluids
- Check the correct positioning and fixing of various components
- Check the correct positioning and fixing of the ballasts
- Check the condition of the turntable and the rotation pinion

Booms

- Check the most important welds visually or by means of penetrating fluids (lifting boom, telescopic boom, hinge of various cylinders and jib boom)
- Check the cage balancing system, welding of various parts
- Check the correct positioning and fixing of various components (hinge pins, etc.)

Check the wear of the telescopic boom guides

- Check if the extended booms are sufficiently rigid and without any clearance between the extensions and the guides.

Cage and Cage Support

- Check the most important welds visually or by means of penetrating fluids
- Make sure that metal sheet flooring in the cage is in good condition, as well as the side railings
- Check the tightening of the screws and nuts fixing the cage to its support
- Check the correct positioning and fixing of the hinge pins of the cage support to the jib boom

Checking the hydraulic tubes

Hydraulic oil is a pollutant

***Avoid spilling the hydraulic fluid by using collection tanks,
and take precautions against the accidental loss and escape of
hydraulic fluid by using oil-absorbent products***

- Control visually all hydraulic joints and tighten the junctions, if necessary.
- Check all flexible hydraulic tubes; replace them, if necessary.

Check the performance

Use a chronometer for performing the following checks:

Perform the tests with the machine on a level surface, with the diesel/petrol engine on and the engine switched to “harc”

Safety speed

- Select safety speed on the platform control panel.
- Set the crawling tracks joysticks to maximum forward position.
- Check that the machine covers a 10 m distance in more than 75 sec.

Lifting/lowering of the boom

- Select the boom lifting function from the ground control panel and check that it takes about 36 sec. to complete the lift.
- Lower the boom and check that it takes about 36 sec.

Extension/retraction of the telescopic boom

- Select the extension of the telescopic boom from the ground control panel and check that it takes about 30 sec. for a complete extension.
- Retract the boom and check that it takes about 30 sec.

Turret rotation

- Select the turret rotation function from the ground control panel and check that it takes:
 - 120 sec. approx. for a complete rotation to the right.
 - 120 sec. approx. for a complete rotation to the left.

Lifting/lowering of the jib

- Select the jib lifting function from the ground control panel and check that it takes 16 sec. approx. for a complete lift.
- Lower the jib and check that it takes about 13 sec.

Check the power and auxiliary cables

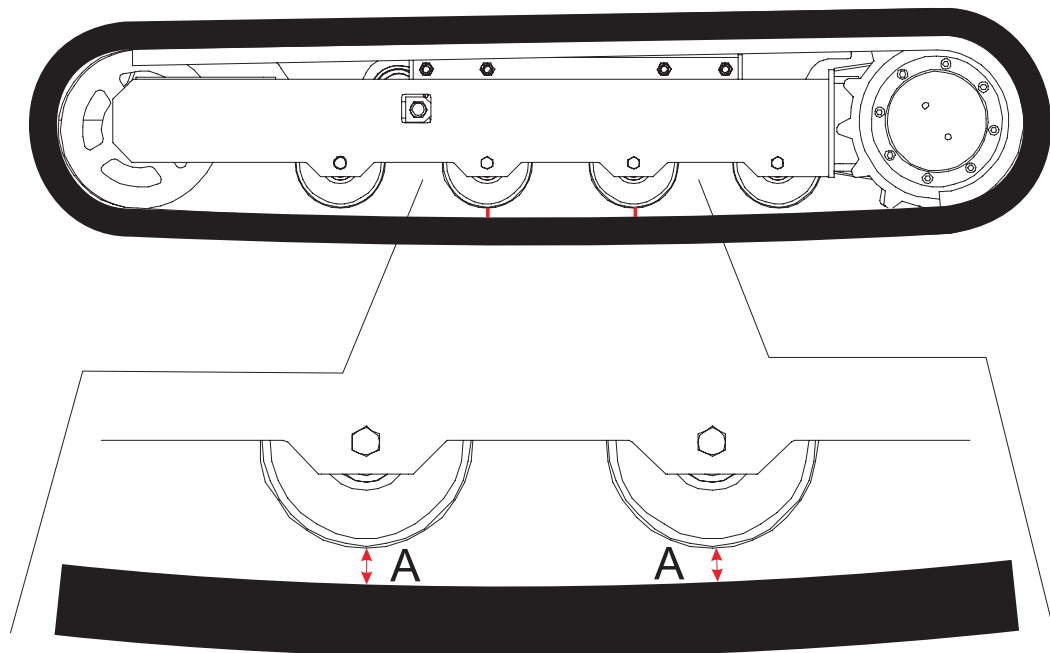
Check that the electric terminals are tightened, the cables are positioned correctly and that there is no corrosion or abrasion.

Maintenance of rubber crawling tracks

Checking the tension of the crawling tracks

- Position the machine on a compact and flat surface
- Have the machine stabilised
- Measure the distance A between the outer and inner part of the rubber track in relation to 2 central rolls

The tension is normal if the distance is between 10 and 15 mm.

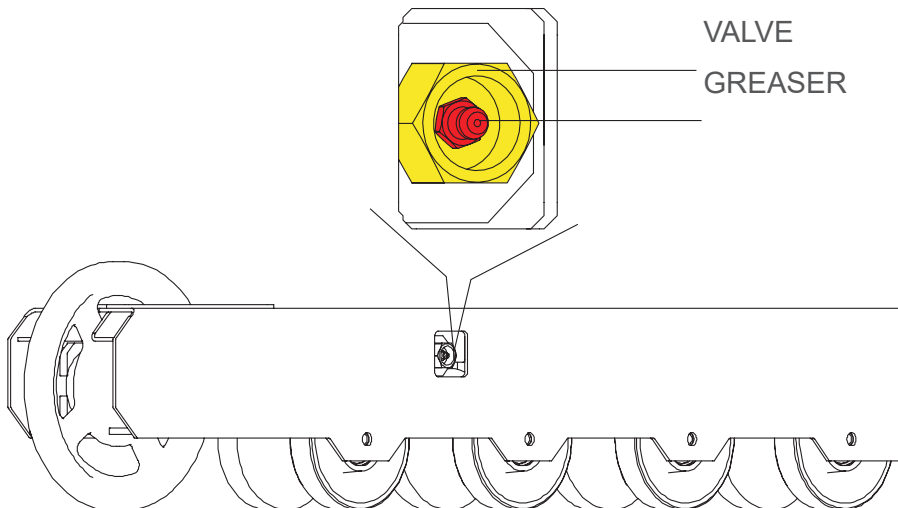


If the value A does not correspond to the indicated values, the crawling track is loosened up or overstretched; see the following paragraph: “How to loosen up - stretch the crawling track”.

How to loosen up or stretch the crawling track

Perform the operations with the machine stabilised.

*The grease contained in the hydraulic crawling track is pressurised.
Do not loosen the valve by more than one turn; if the valve is loosened too much, it may be blown off due to the pressure of the grease.
Never loosen the greaser.*



To loosen up the crawling track:

- Slowly open the valve in the anticlockwise direction, not more than half a turn, to drain the grease. If the grease does not come out turn the crawling track slightly.
- Once the correct tension of the crawling track is obtained, close and tighten the valve in the clockwise direction.
- Clean any grease residues outside the mechanism.

To tense up the crawling track:

- Connect the grease gun to the greaser.
- Fill the track with the grease until the track tension reaches the correct value.

How to replace the crawling tracks

Perform the operations with the machine stabilised.

***The grease contained in the hydraulic crawling track is pressurised.
Do not loosen the valve by more than one turn; if the valve is loosened too much, it may be blown off due to the pressure of the grease.
Never loosen the greaser.***

- Widen the span of the crawling tracks.
- Complete the following operation to loosen up the crawling track due for replacement:
 - Slowly open the valve in the anticlockwise direction, not more than half a turn, to drain the grease. If the grease does not come out turn the crawling track slightly.
- Take the crawling track out.
- Before fixing a new crawling track, make sure that the direction of the drive is correct.
- Match the track links with the toothed wheel and then place the track of the tension wheel.
- Rotate the driving wheel in the reverse gear.
- Make sure that the links of the crawling track are correctly matched with the toothed wheel and the tension wheel.
- Adjust the tension of the crawling track.

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Machine Logbook

Reference to legislation

This Machine Logbook is issued to the aerial platform users, in compliance with the provisions of the Enclosure No. I of the 2006/42/EC Directive.

Instructions for keeping the Machine Logbook

This Machine Logbook must be considered as an integral part of the aerial platform and must be stored on the platform for the duration of its service life, until it is finally dismantled.

Instructions for compiling the Machine Logbook

These instructions were originally supplied when the machine was first marketed. Should the amended/modified instructions be introduced, the user's obligations might change accordingly.

This Machine Logbook is intended to keep a record of following events related to the machine's service life:

- Delivery of the machine to the first buyer
- Transfer of ownership
- Replacement of components in the hydraulic system
- Replacement of components in the electric system
- Replacement of mechanisms or structural components
- Replacement of safety devices and their components
- Periodical maintenance checks except daily inspections indicated in the maintenance summary table
- Major failures and their repairs

The MONTHLY checks and control can be recorded in the Machine Logbook every 6 months