IM R15

CE

MOBILE ELEVATING WORK PLATFORM
USE AND MAINTENANCE MANUAL

MUM IM R15 EN R00 06/2013

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

IMER INTERNATIONAL S.p.A.

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EN

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Contents of the CE conformity declaration

We: IMER International S.p.a.

Address: Via Salceto, 53-55 53036 Poggibonsi (SI) - Italy

Declare under our own sole responsibility that the mobile elevating work platform, with internal combustion engine

IM R15

- Conforms to the conditions of the Machine Directive 2006/42/CE
- Conforms also to the provisions of the following Directives:

  2004/108/CE (Electromagnetic Compatibility Directive) and following amendments and integrations

  2006/95/CE (Low Voltage Directive) and following amendments and integrations

  2000/14/CE (environmental acoustic emission of equipment and machines having the aim to work outdoor) and standards transferring them into every national legislation.

  Procedures: annex V

		Diesel	Petrol
Measured sound power level	dB	104	102
Guaranteed sound power level	dB	107	104
Net installed power	kW	6,5	8,2

- We further certify that the following harmonised rules have been applied:

  EN 60204-1, EN ISO 12100, EN280

- The name of the person authorised to compile the technical documentation is Paolo Pianigiani, Director of Business Unit IMER ACCESS – Via S.Francesco d'Assisi 8 - 46020 Pegognaga (MN) – Italy

Static and dynamic tests

Before commissioning, the static and dynamic tests have been performed according to the harmonised standard EN 280 section 6.3.

This edition contains the use and maintenance manual of the tracked self-propelled aerial platform IM R15.

IM R15 reaches a working height of 15 m.

Designed and manufactured to be hydraulically operated and with proportional controls, remote-controlled by remote control.

The machine can be used outdoors.

Only qualified and skilled operators can use these machines.

Platform manufacturer:

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After-sale service

For interventions, repairs and revisions, address to authorized workshops. For information contact our Technical After-Sale Assistance.

Spare-part service

A good and lasting working guarantee is assured by using original spare parts only; make reference to the "SPARE PARTS CATALOGUE".

Always state the data described on the identification plate placed on the chassis if you need spare parts or assistance.

Standard equipment

The machine is equipped with the following:

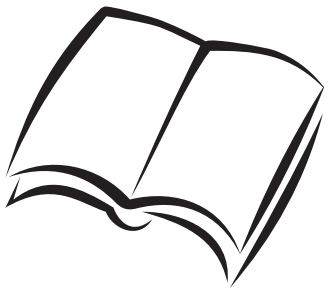
- Simultaneous and proportional controls
- Remote control for wire control
- Parking brakes
- Rubber tracks
- Hydraulically widening tracks
- Turret rotation of 355°
- Hydraulic cage balancing
- Hydraulic cage rotation
- Manual stabilization
- Overturning moment limiter
- Load limiter
- Lock valve on lifting cylinders
- Emergency manual lowering
- Dual controls: ground and cage
- Hour-counter
- Audible motion alarms
- Battery isolator
- Plug, socket and circuit breaker for 230V line
- Cable pre-set for 230V line to the cage
- Water/air line to the cage
- EC marking–EN280

Optional

- Wireless radio control kit
- Automatic levelling jacks
- Cage beacon kit
- No marking tracks kit
- 12V emergency electric pump
- Preheating kit for diesel motor

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.

This use manual must be carefully preserved by the user for the whole machine life, even if the machine is lent, rent or sold.

The figures described in this manual DON'T always exactly reproduce the model described but these are used for a better and easier understanding of the text.

Safety systems

The safety systems applied to the machine are inevitably subject to wear and to go out of tune. Therefore, they must be controlled and kept in perfect efficiency; also, it is not advisable to evaluate their operational and safety conditions only on the basis of their functioning.

Such systems do not relieve the operator of the responsibility of carrying out an informed and appropriate use of the machine.

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

The operator shall:

- Read and well understand all the documentation enclosed to the machine, be properly trained and instructed in the correct use of the machine and know the safety rules and devices.
- 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.
- Give a great importance to safety and refuse to work if you think you are not working under safe conditions.
- Well-know the maximum working load.
- Use suitable accident prevention equipment accordingly with the working conditions and the local rules in force.
- 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.
- Make always use of an assistant in areas where the sight is obstructed.
- Always work under highest safe conditions, tidiness and cleaning.
- Before using the machine check daily the controls and safety devices and make sure they are in perfect working order.
- Check that the working area is free from persons, animals or obstacles before making any movement of the machine.
- 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.
- Clean the ladder, the floor surface of the platform and the handrails from oil and grease.
- Once the work has been finished and when the machine remains unattended, take the key off to avoid that unauthorized persons can use it.
- Commuting platform control panel, always remove the key to avoid an unauthorized use from the ground control panel while personnel is present on the platform. The safety manager must hold a spare key enabling to use the ground control panel as emergency place. (In case of failure it is possible to lower the machine).

In particular

- Be aware that the tracked platforms can be used by qualified personnel only.
- Do not give the push-button 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 push-button panel
- Stay at a proper distance from the machine during its use, in order to maintain a good view of the working field. Unauthorised persons must not stand within the working area of the machine.
- Release all the levers if the movement of the machine becomes uncontrollable and immediately press the emergency stop button of the push-button panel.
- Always press the emergency button of the push-button panel when the unit is not in use. This also applies for short breaks, for example, if the driver wants to move the machine.
- Always press the emergency button of the push-button panel at the end of the work. The push-button 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 be observed.

Un (kV)	**Minimum allowed distance** (m)
≤ 1	3
10	3,5
15	3,5
132	5
220	7
380	7

Un = nominal voltage

Not allowed 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 strom, with or without rain, or with wind with speed higher than 12,5 m/s, 6 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.

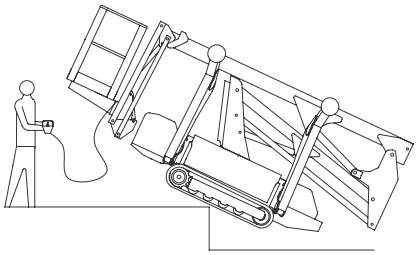
Beaufort Wind Scale

	Description	Wind speed (km/h)	Wind speed (km/h)	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.	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	Large wavelets. Crests begin to break; scattered whitecaps.	Leaves and smaller twigs in constant motion.
4	Moderate breeze	20-29	5.5-7.9	Small waves.	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	30-39	8.0-10.7	Moderate (1.2 m) longer waves. Some foam and spray.	Smaller trees sway.
6	Strong breeze	40-50	10.8-13.8	Large waves with foam crests and some spray.	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	Near gale / Moderate gale	51-62	13.9-17.1	Sea heaps up and foam begins to streak.	Whole trees in motion. Effort needed to walk against the wind.
8	Fresh gale	63-75	17.2-20.7	Moderately high waves with breaking crests forming spindrift. Streaks of foam.	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.	Larger branches break off trees, construction/temporary signs and barricades blown over, damage to circus tents and canopies.
10	Whole gale / Storm	88-102	24.5-28.4	Very high waves. The sea surface is white and there is considerable tumbling. Visibility is reduced.	Trees broken off or uprooted, saplings bent and/or deformed, poorly attached asphalt shingles and shingles in poor condition peel off roofs.
11	Violent storm	103-117	28.5-32.6	Exceptionally high waves.	Widespread vegetation damage, minor damage to most roof shingles/ surfaces, gravel may be blown from flat roofs.
12	Hurricane	> 117	> 32.5	Huge waves. Air filled with foam and spray. Sea completely white with driving spray. Visibility greatly reduced.	Considerable and widespread damage to vegetation, a few windows broken, structural damage to mobile homes and poorly constructed sheds and barns.

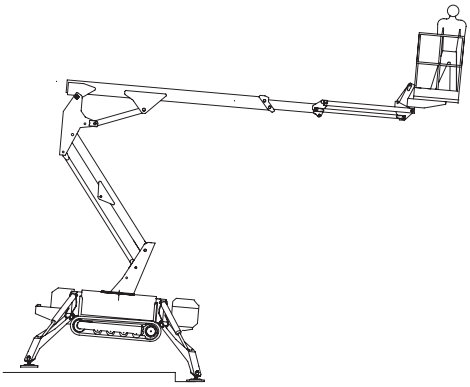
To minimize hazards

Follow the instructions below:

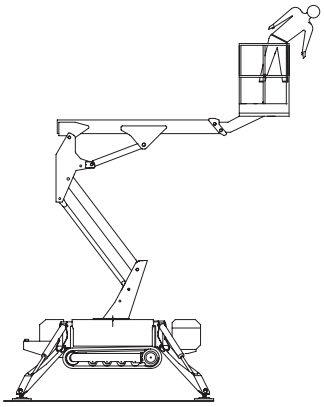
Risk of folding



- 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.

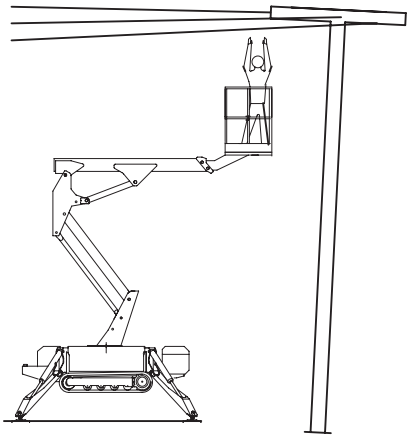


- Do not use the machine as a crane with materials suspended to the lifting structures or to the basket.
- Do not increase the maximum available working height by putting ladders or scaffolds on the platform or climbing onto the guard rails.
- Do not place materials on the guard rails.
- Give the best 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 400N.
- Do not equip the machine with elements (ex. panels) which increase the wind exposure.



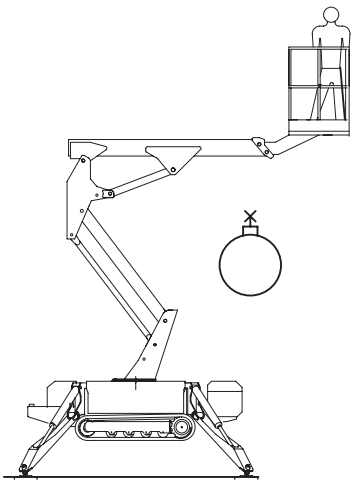
Risk of falling

- 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.



Electric hazards

- 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 13.

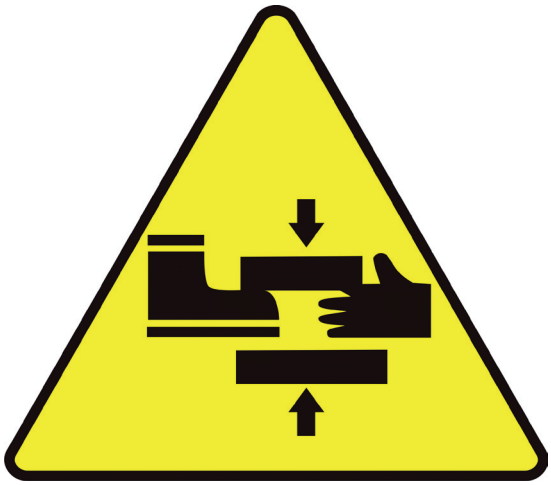


Explosion or burn hazards

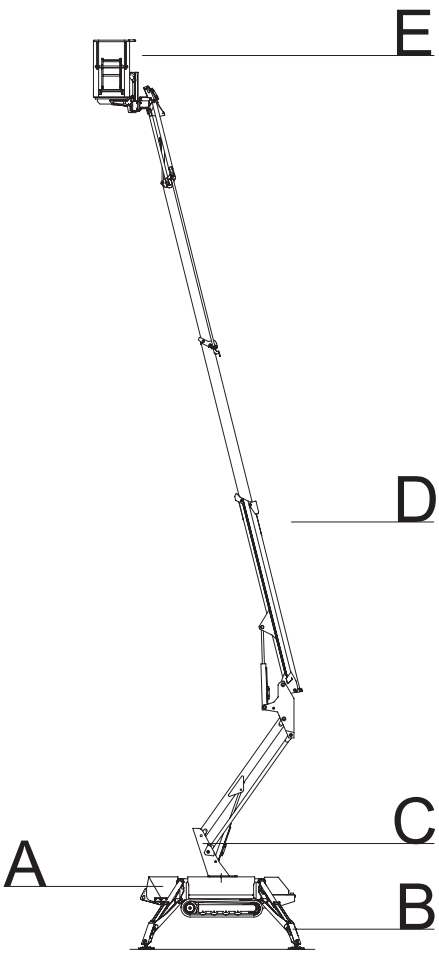
- Do not use the machine near open flames or heat sources.
- Charge batteries in ventilated environment, far from heat sources or explosive fluids.
- Do not use the machine if there are oil leakage.
- Do not use the machine in environments with explosive atmosphere.
- Shut the engine down during refuelling.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

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



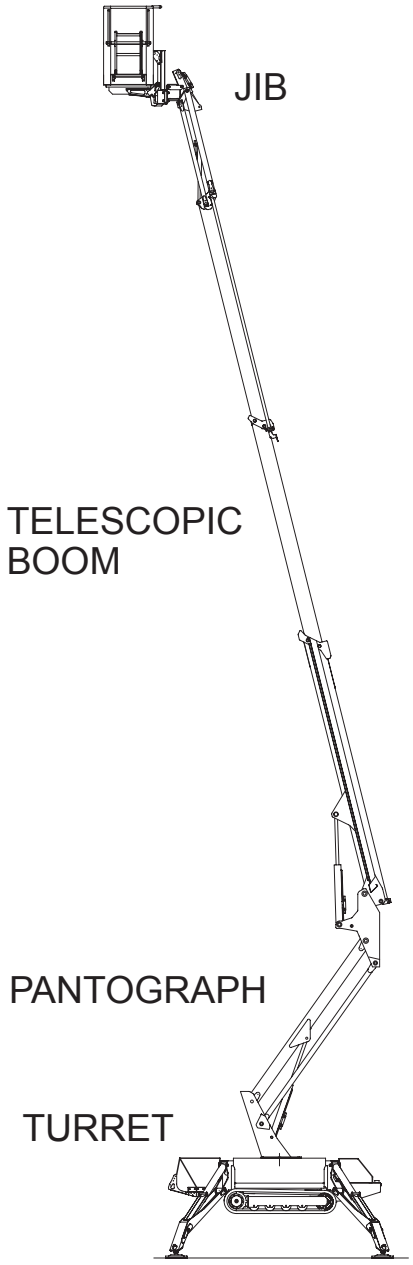
Presentation

The remote-controlled aerial platform IM R15 **is used to lift persons, materials and equipment** to enable works to be performed at certain heights.

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:

- Chassis (**A**)
- Stabilizers (B)
- Turret (C)
- Lifting structure (D)
- Bearing structure or basket (E)



The lifting system consists of 3 main structures:

- Pantograph
- Telescopic boom
- Jib

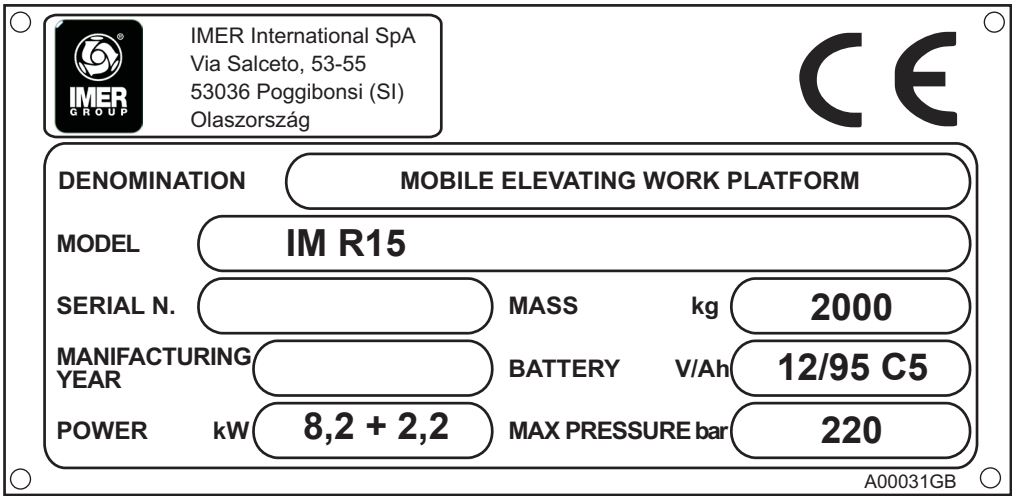
operated by hydraulic cylinders:

- pantograph cylinder
- boom cylinder
- telescoping cylinder
- jib cylinder

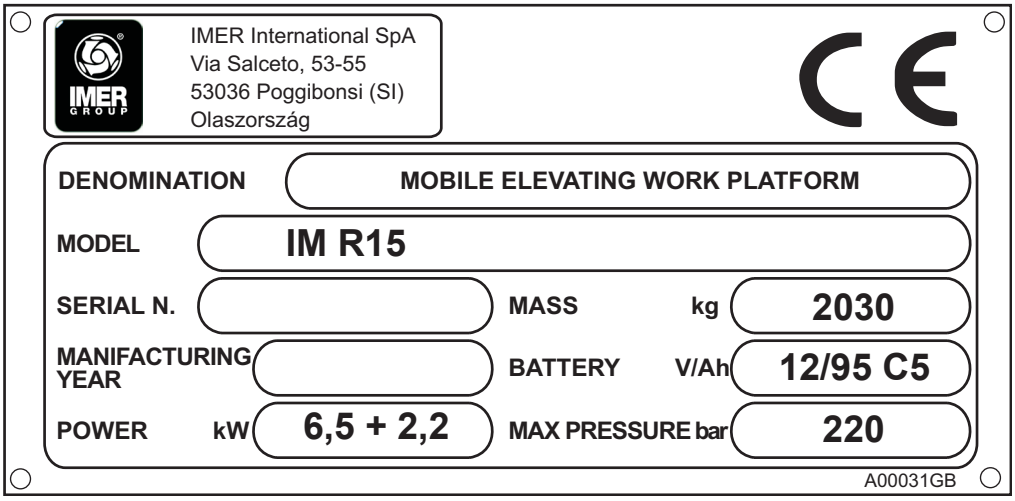
Identification

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

With PETROL engine

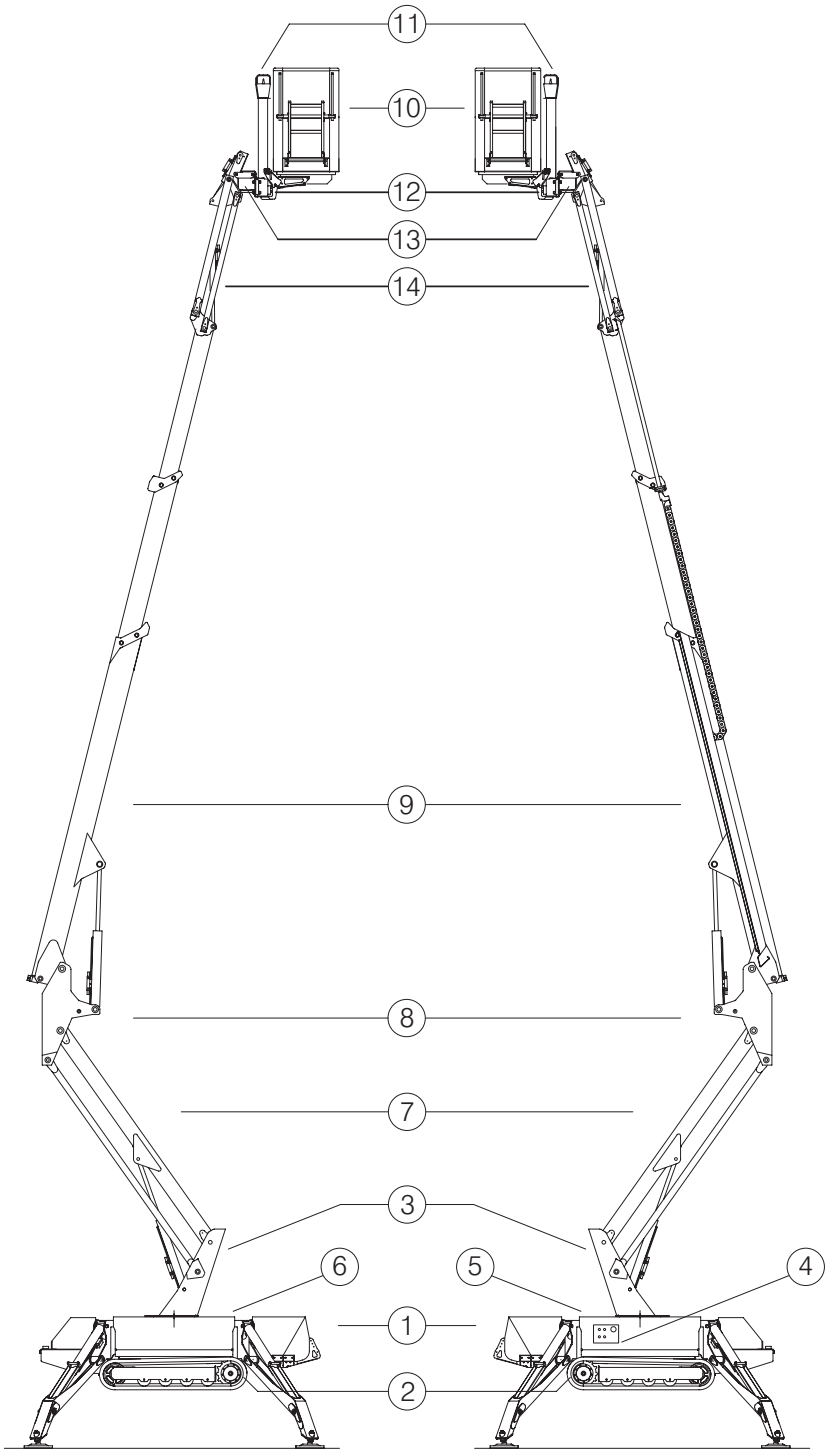


Whit DIESEL engine



The data refers to the standard model

Main components



LEFT SIDE RIGHT SIDE

1. Chassis
2. Driving wheels
3. Turret
4. Ground control panel
5. Right box
6. Left box
7. Knee
8. Rods Pantograph
9. Telescopic booms
10. Platform - basket
11. Push-button panel
12. Actuator rotation
13. Load cell
14. Jib

Operation

The foreseen control panels for the operator are two:

- on the cage from the platform control panel (push-button panel or portable control);
- in the vicinity of the chassis from the ground control panel.

Using one control panel doesn't allow the other panel to come into operation.

The platform control panel (or portable control unit or push-button panel) is extractable and can be used by the operator on the ground as well. In this case, it will not be possible to control the movements of the aerial part, except the raising of the boom up at an angle of 5 °.

For normal use of the machine, **the movements are carried out by the push-button panel placed on the cage** which is the main control panel.

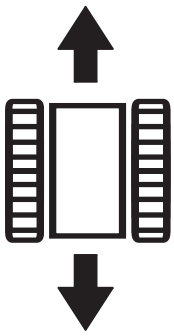
The ground control panel is primarily used in cases of emergency or during maintenance. From the ground control panel it is not possible to drive, steer and stabilize.

The machine movements are:

- Drive (backward and forward)
- Steering;
- Tracks widening
- Stabilization
- Lifting/lowering lifting boom
- Lifting/lowering pantograph
- Turret rotation
- Extension/retraction telescopic boom
- Lifting/lowering jib
- Basket rotation
- Basket levelling

The energy required to movements is provided by two drive systems; one endothermic and one electric which feed a pump; all the movements described below are driven by the pump which supplies energy to the hydraulic components.

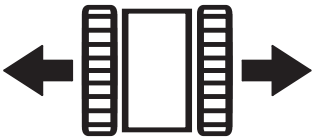
Movement list



Drive and Steering

For drive purposes the chassis has two hydraulic motors which move the rubber tracks. The steering is obtained by moving the tracks at different speeds.

Drive and steering are enabled if no stabilizer rests on the ground.



Tracks widening

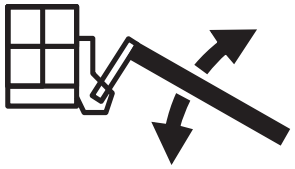
Tracks widening makes it possible to obtain greater stability during displacements at worksites or impervious areas.

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

Stabilization

Stabilization takes place through 4 hydraulic cylinders.

In the standard machine configuration stabilization is manual. An option allows you to perform the procedure automatically.



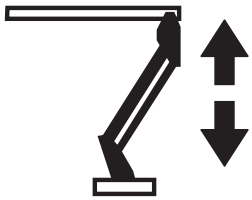
Boom lifting/lowering

The movement is operated by a hydraulic cylinder located between the upper knee of the pantograph and the boom.

With machine not stabilized, lifting is allowed up to the angle of 5 °.

With stabilized machine there are no restrictions.

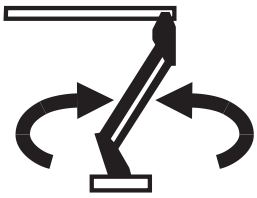
After stabilizing, first raise the boom exiting the stowed machine condition.



Pantograph lifting/lowering

The movement is operated by a hydraulic cylinder located between the lower and upper tie rod of the pantograph.

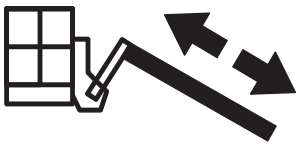
The lifting of the pantograph is only allowed with machine stabilized and no longer stowed.



Turret rotation

The movement is operated by a hydraulic motor which moves a turntable on the chassis. The turret turns by 355°.

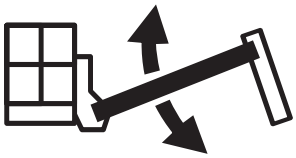
The rotation of the turret allows to reach points placed on the side of the machine. The movement is only allowed if the machine is stabilized with lifted boom and/or pantograph.



Telescopic boom extension/retraction

The movement is operated by a hydraulic cylinder located between the boom and the telescopic boom.

The movement is only allowed if the machine is stabilized and the boom and/or pantograph are open.



Jib lifting/lowering

The movement is operated by a hydraulic cylinder located between the frame and the jib arms.

The lifting of the jib is allowed only if machine is stabilized with lifted boom and/or pantograph.

Cage rotation

The movement is driven by a hydraulic rotor placed between the jib and the cage.

The movement is always working unless an alarm is active.

Cage levelling

The movement is driven by a hydraulic cylinder placed between the jib and the cage.

The automatic levelling is assured by two cylinders, master - slave, connected to the boom and the jib.

Control proportionality

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

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 for the push-button panel (communicating via the CAN Bus transmission protocol with the two main boards)
- push-button panel with display (communicating with the receiver by wire or radio)
- overload controller on the platform located near the cage

Remote control and Radio control

Remote control

The **remote control** is a wire controlled system, based on microprocessor technology.

The system is protected against electromagnetic and radio interference.

The **remote control** consists of:

- a **portable control unit (push-button panel)** with joystick controls for proportional control of movements (switches and buttons for ON/OFF functions, warning lights, graphic LCD);
- a **central unit** with built-in receiver.

The push-button panel is powered by the serial control cable connected to the central unit.

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

Radio control (optional)

The **radio control** is a digital remote control system with the same functionality as the wire controlled system, but with remote control.

Where you can't use the radio control (for example in airports) you can connect to the push-button 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).

The push-button 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 push-button 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.

The push-button panel operation requires a battery inserted into the lower part (see "Push-button panel battery").

Central unit

The electronic control unit of the **remote control** is contained in a sturdy plastic box.

The electronic control unit of the **remote control** is the same as the previous one but does not mount the antenna and the radio receiver.

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 will show "Er" followed by four characters divided into two blocks corresponding to the error code found.

Example of the error code:

"Er"->"15"->"1A" -> "Er"->"15"->"1A" -> "Er"->"15"->"1A"

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

Otherwise, if the malfunction is considered “blocking”, the display will show the error code continuously until the radio control will be turned off.

The error code may occur after the start of the receiver or after the start of the push-button panel (enabling operating mode).

In the event of a malfunction detected by the self-diagnostic of the main control units of the machine, the display of the push-button panel will show an error code.

The electronic control unit of the **radio control** is the same as the previous one but does not mount the antenna and the radio receiver.

Push-button panel battery

Battery for wire controlled versions

In wire controlled versions a battery is present in the push-button panel which has a long operational life.

If the battery is damaged or flat it is necessary to replace it.

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

Battery for versions with radio control

The battery inserted into the lower part of the push-button 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 push-button panel beeps three times as a warning and the red LED ON begins to flash (led on the left of the emergency stop button).

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 push-button 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 push-button panel with the serial cable.

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

Charging the battery (only for radio versions)

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 battery charger is designed to prevent damage to the battery even if it is subjected to long cycles of continuous charging.

Operation

The battery charger starts a charge cycle when a battery is inserted (the green LED starts blinking).

After about 3 hours, the battery is charged and ready to use (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.

There are two LED indicators on the 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).
- Green LED (status of charge) - Lit up steady, the battery is charging (the battery charger is in charge maintenance mode).

Battery charge with serial cable

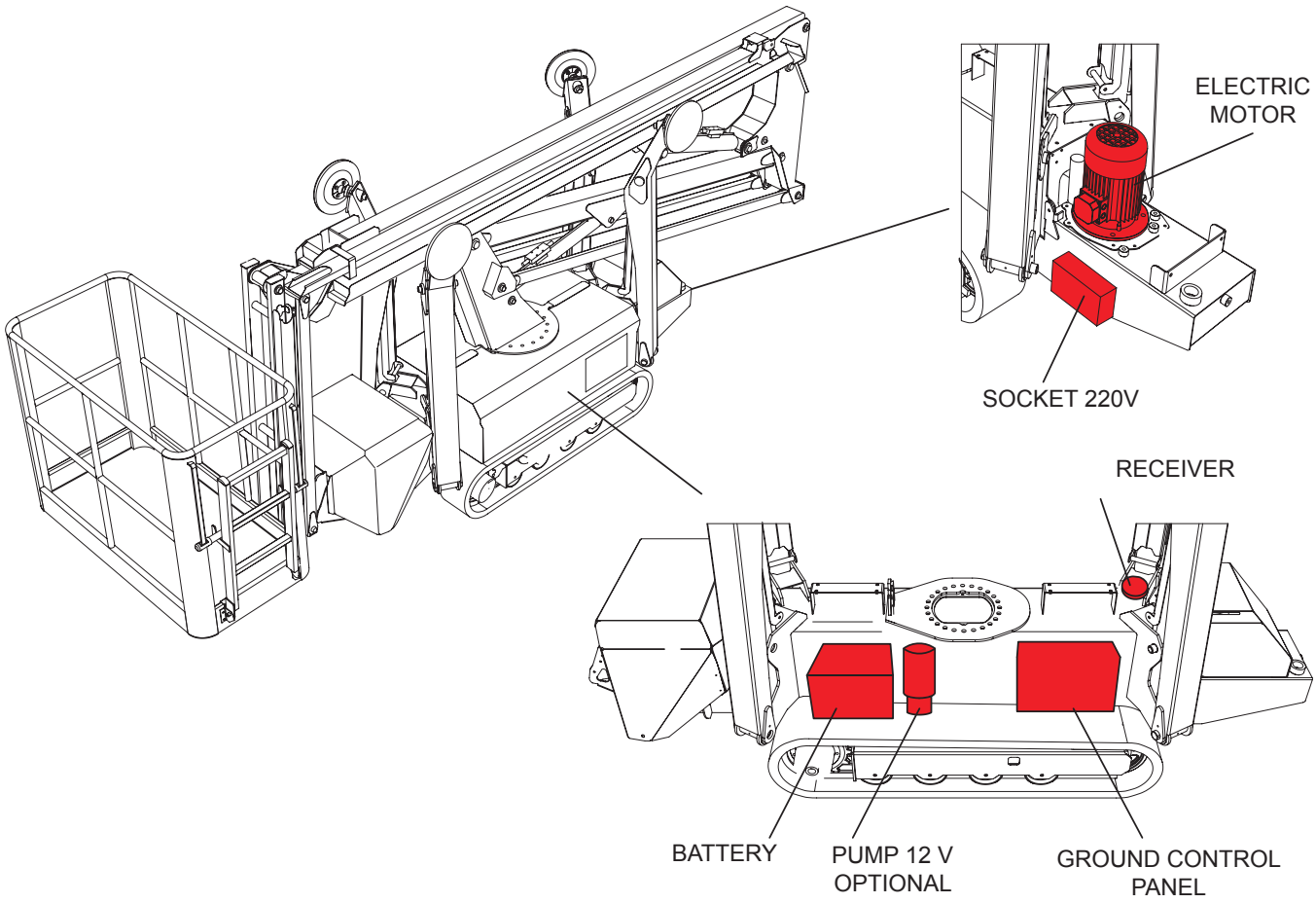
If the operator is using the push-button panel with the serial cable connected, the battery in the battery compartment is automatically recharged.

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

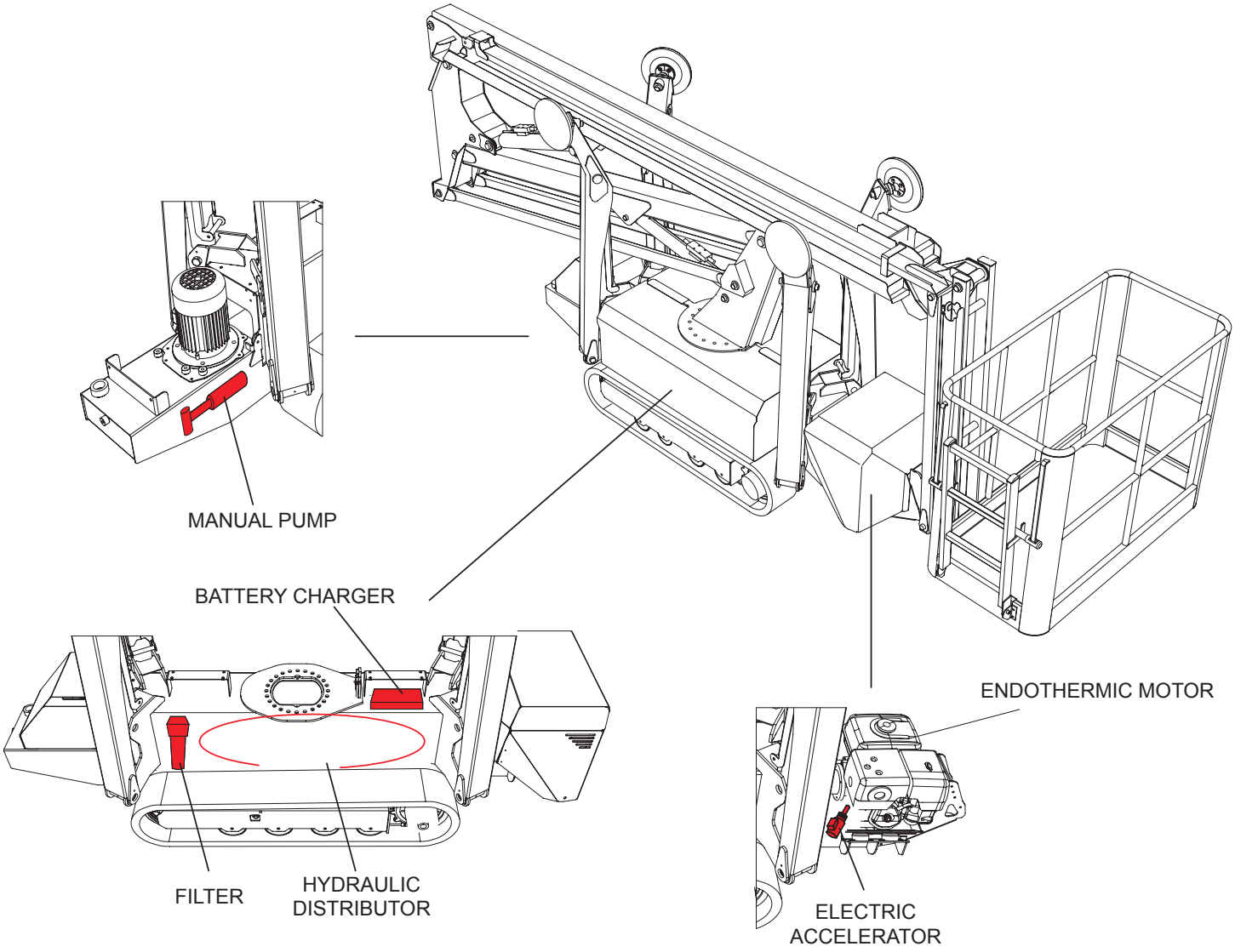
Insert the battery into the appropriate compartment (emergency stop button of the push-button panel pressed) and connect the serial cable between push-button panel and central unit. The charging time is approximately 12-14 hours.

Control and power instruments position

RIGHT SIDE



LIFT SIDE


MANUAL PUMP
BATTERY CHARGER
ENDOTHERMIC MOTOR
FILTER
HYDRAULIC DISTRIBUTOR
ELECTRIC ACCELERATOR

Technical specifications

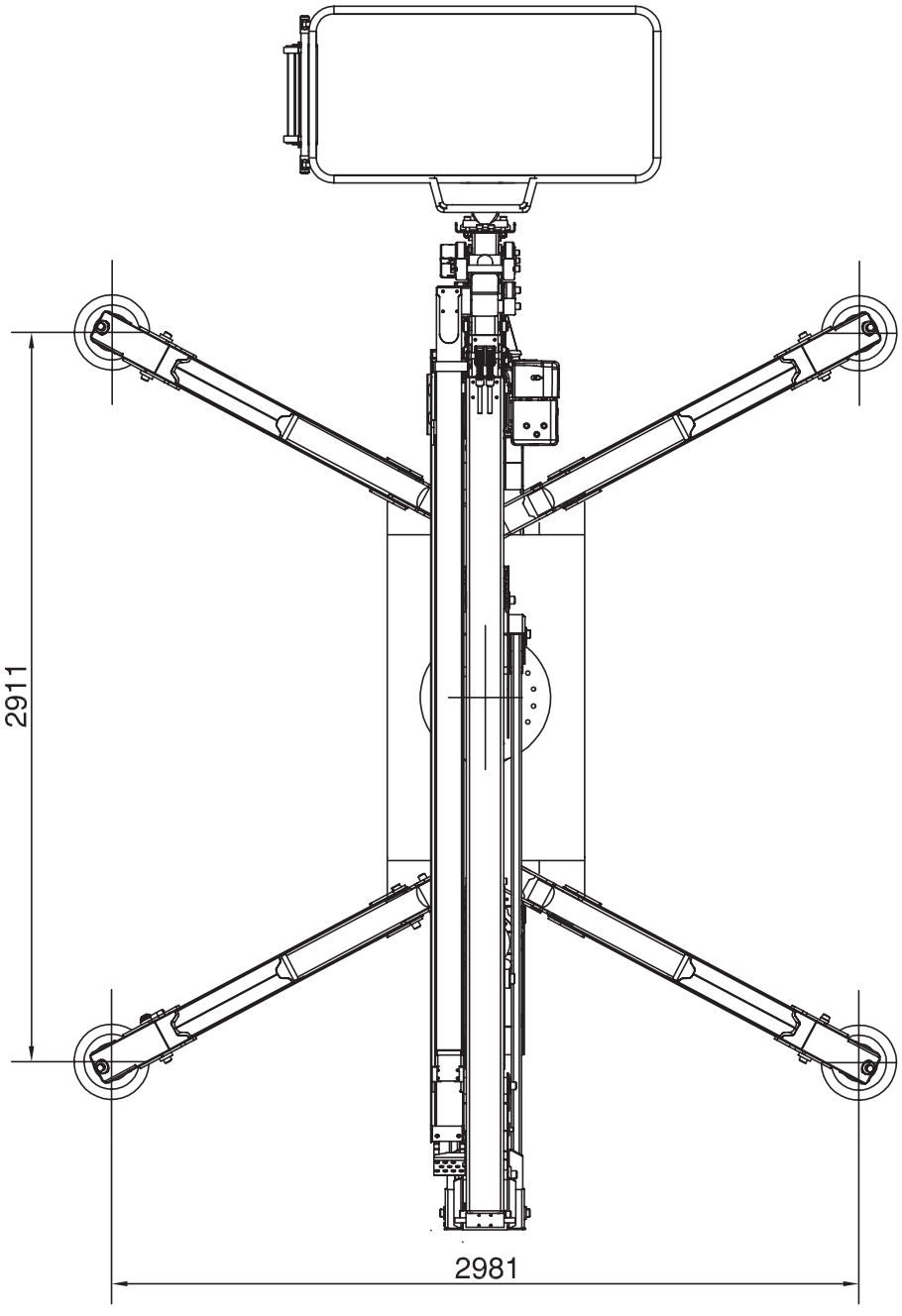
Description	Unit of measurement	Diesel	Petrol
Max. working load (including 2 person)	kg	200	
Drive speed	km/h	0 - 1,4	
Max. slope	%	25	
Max. allowed side force	N	400	
Max. allowed side inclination for the chassis	°	1	
Turret rotation	°	355	
Basket rotation	°	124	
Endothermic motor	kW/giri	6,5 / 3000	8,2 / 3600
Electric pump	V/kW	220 / 2,2	
Battery	V /Ah	12 / 95 C5	
Battery charger	V / A	12 /12	
Stabilizers load	daN	1750	
Machine weight	kg	2030	2000
Oil tank	l	30	
Measured sound power level	dB	104	102
Guaranteed sounding power level	dB	107	104
Level of acoustic pressure weighed at operator’s place	dB	85	82
Max. hydraulic pressure	Bar	220	
Working temperature	°C	da -20 a +40	

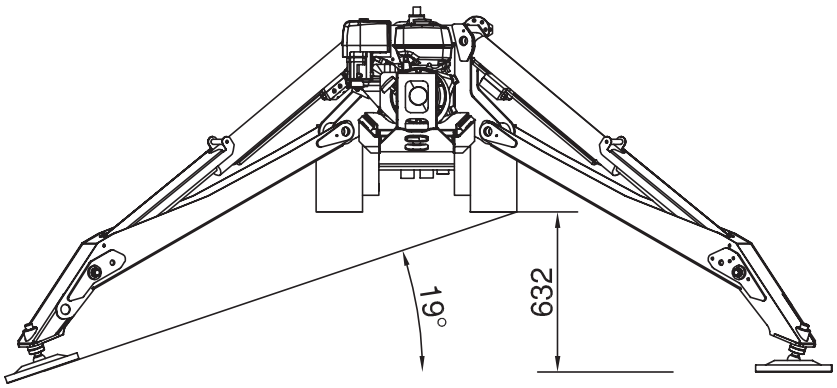
Vibrations

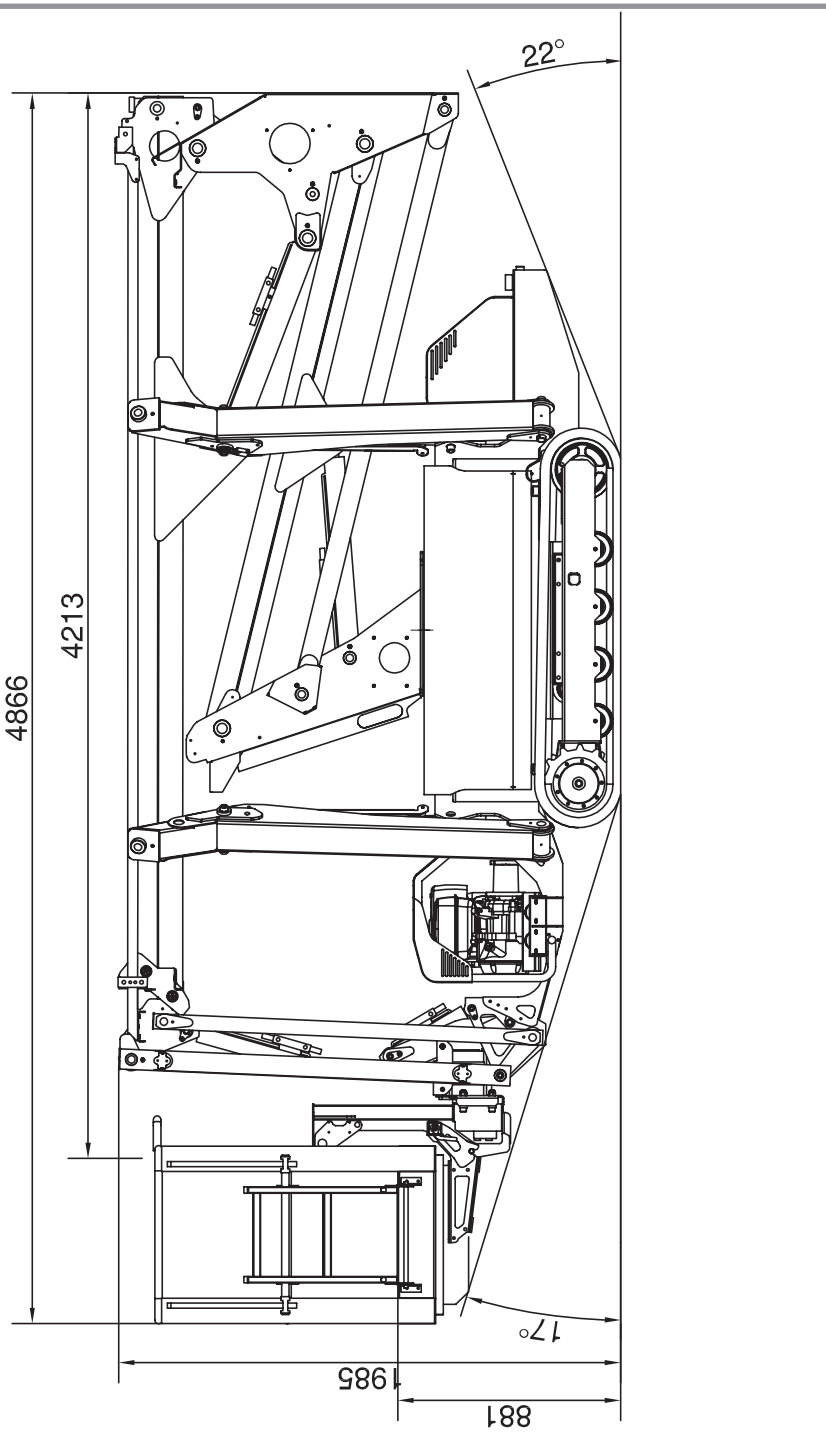
As regards vibrations, according to the measurings carried out in the most unfavourable conditions of use, it has been established that:

- the average weighted quadratic value in frequency of the acceleration relevant to the upper limbs is lower than 2.5 m/sec^2;
- the average weighted quadratic value in frequency of the acceleration relevant to the body is lower than 0.5 m/sec^2.

Overall dimensions






22°
4866
4213
17°
1985
881

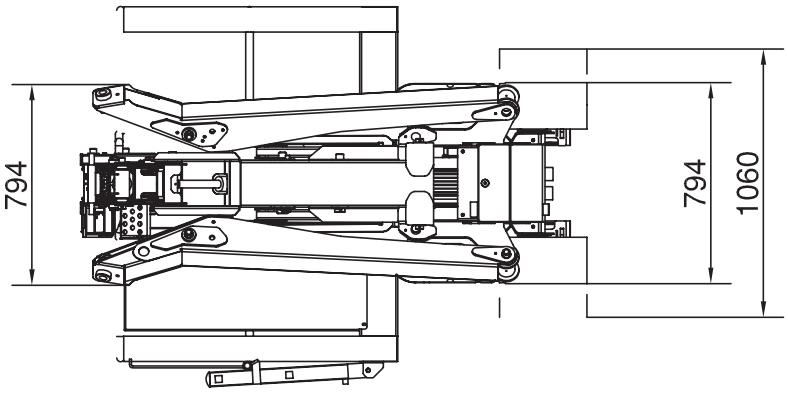
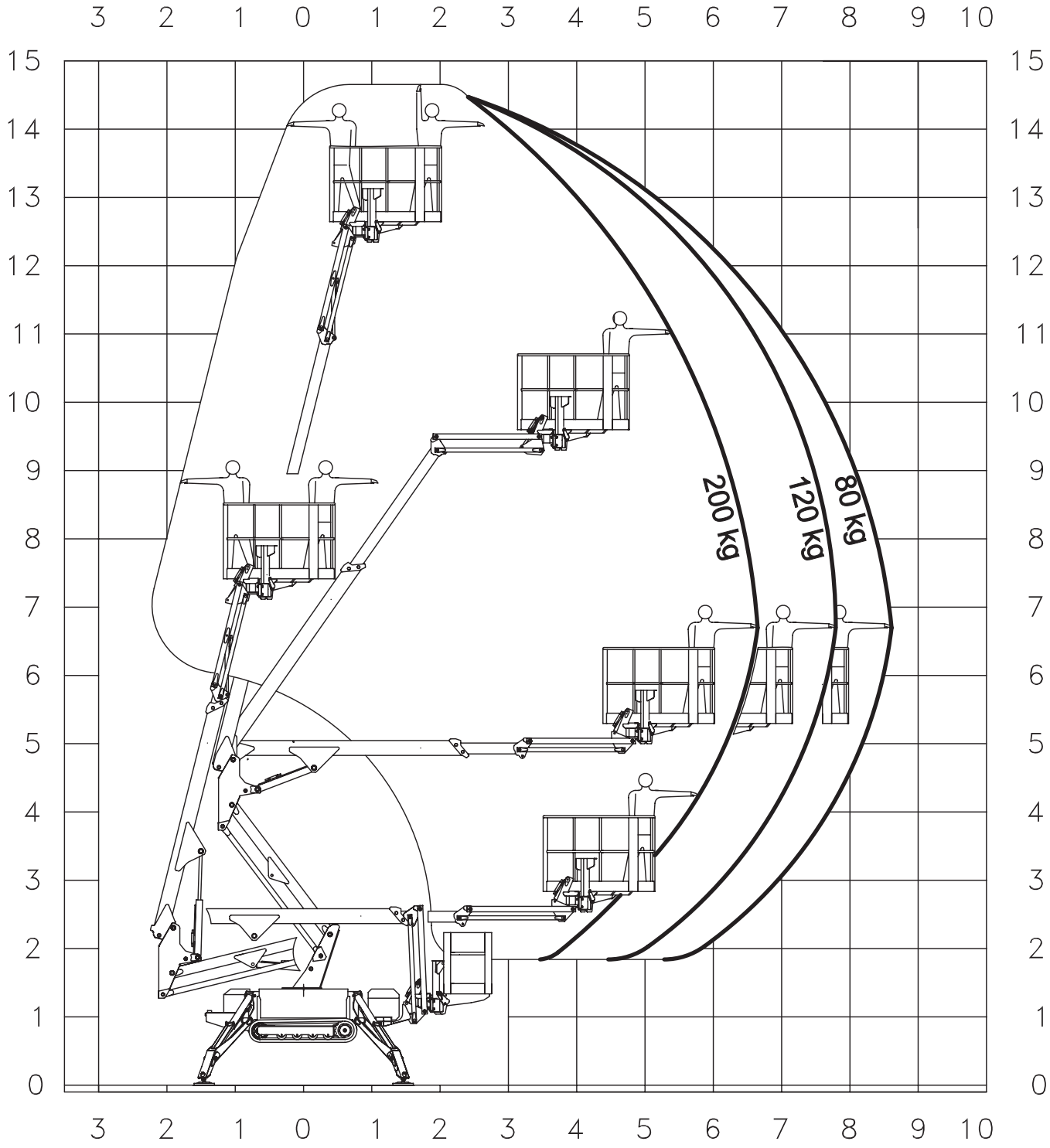

794
794
1060

Diagram work



Plates and labels

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

Plates and labels that contain no text will have 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	BLACK/YELLOW STRIPS	1
82521034	BLACK/YELLOW STRIPS	4
A00001XX	CE MARK	1
A00032XX	READ THE INSTRUCTIONS	1
A00037XX	HIGHT TEMPERATURES	1
A00038XX	FUEL	1
A00039XX	NO SMOKING	1
A00040XX	BLACK/YELLOW STRIPS	4
A00110XX	BATTERY CHARGER PLUG	1
A00145XX	DOCUMENT HOLDER	1
A00148XX	STABILIZERS LOAD	4
A00150XX	CRUSHING HAZARD	4
A00174XX	TYPE OF OIL ISO VG 46	1
A00193XX	ROTATING BASKET	2
A00201XX	SAFETY BELTS ANCHORAGE	1
A00296XX	ELECTRIC LINE DISTANCE	1
A00302XX	LOGO	4
A00304XX	LOGO	1
A00322XX	LOGO	1
A00351XX	IM R19	3
A00353XX	CRUSHING HAZARD	4
A00355XX	DIAGRAM WORK	1
A00357XX	TURRET ALIGNMENT	1
A00190XX	LIFTING HOOKS	4
A00360XX	EMERGENCY	1
A00361XX	HYDRAULIC BLOCKS LETTERS	1
A00362XX	SERIAL CABLE	1
A00363XX	ROPE FOR TRANSPORT	4
A00364XX	CIRCUIT BREAKER	1
A00144XX	DIRECTION ARROW	1

A00034EN	EMERGENCY PUMP	1
A00103EN	NO STOPPING	4
A00101EN	REMOVE THE KEY	1
A00033EN	EMERGENCY	1
A00031EN	SERIAL NUMBER PLATE	2
A00217EN	MAXIMUM LOAD	2
A00354EN	WARNING PLATE	1

Use of the machine

Before carrying out any operation it is necessary to read and well-understand this manual along with the instructions described on plates and labels.

Checking before use

Before setting at work the machine and carrying out any operation, the machine itself is to be subjected to a visual and operating check described here below.

During the setting at work it is also necessary to carry out the safety device checking.

Visual checking

Make sure that the following failures are NOT occurred:

- Oil leakage from pipes and other hydraulic components.
- Cut or disconnected electric wires.
- Unloosed or missing nuts in the wheels.
- Irregular worn or cuts in the wheels.
- Damages, deformations, loosen or missing screws and bolts, cracked welding on chassis, wheel supports, steering systems, lifting systems, platforms and guard rails.

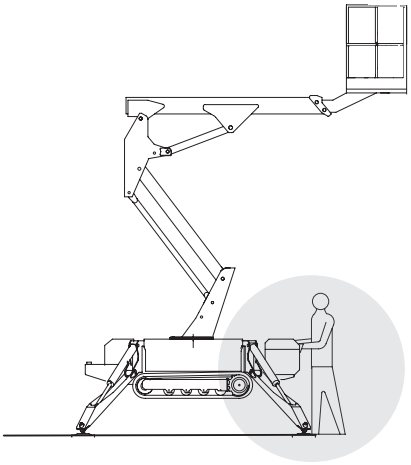
Check that:

- The soil where the platform should operate is solid and able to support the maximum load per each wheel.
- The use manual is on board and plates and labels well visible.
- The handrails and the platform are free from grease and oil traces.
- The working area is free, without holes and uneven grounds.

Operating check

Once the visual inspection has been finished it is also necessary to carry out an operating check.

- Check the hydraulic oil level.
- Check that all the foreseen plates and labels have been suitably positioned and are legible.

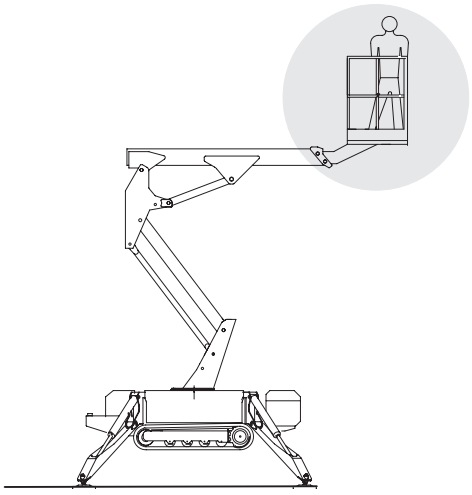


From ground

- Make sure that there is fuel in the tank.
- Turn on the ground panel first and then the joystick control and wait about ten seconds for the end of the power-on sequence.
- Make sure no errors are reported on the display of the push-button panel or light indicators of the ground panel.
- Press emergency STOP button and check that no operation can be enabled both from ground and from platform. Put button to ON position again.
- Carry out the stabilization of the machine so that you can move the aerial part.
- Lift and lower the platform more times and check that no obstacle can occur during these operations.
- Carry out the operations described in the “Retraction Manual emergency” section and check that everything works well.

From platform

- Press emergency STOP button and check that no operation can be enabled both from ground and from platform. Put button to ON position again.
- Turn on the push-button panel again.
- Carry out the stabilization of the machine so that you can move the aerial part
- Lift and lower the platform more times and check that no obstacle can occur during these operations.
- Return the machine to stowing conditions (machine closed) and retract the levelling outrigger feet.
- Drive forward and back and check that the operation is correct and audible alarm well works.
- Right and left steer and check that the operation is correct.
- During drive release the joystick to check the brakes work correctly: the machine must block in a narrow space.



Operation

Machine configurations

Aerial part - Ground part

The controls refer to two parts of the machine: the aerial part and the ground part.

The controls of the aerial part are all controls that allow the movements of:

- Turret
- Pantograph
- Boom (beyond the angle of 5 °)
- Extending boom
- Jib
- Cage

The controls of the ground part are all the controls allowing the drive of the machine and movement of:

- Tracks
- Outriggers

Depending on the different positions that the machine can take (see next page) the movements of the aerial and/or ground part can be performed.

Machine status

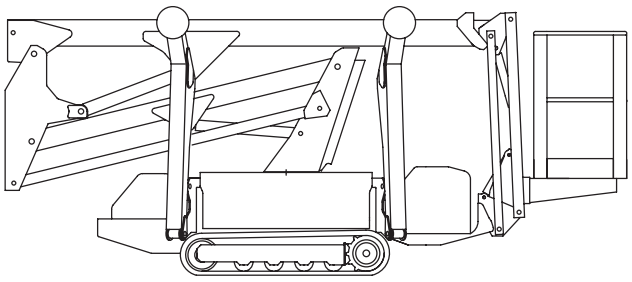
In the following pages terms indicating the status or position of the machine are often used, on the basis of which you can perform different movements.

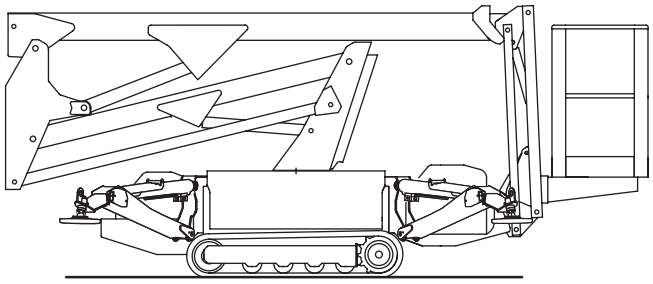
On the display of the push-button panel some icons indicate the status of the machine.

Machine stowed

The machine is stowed when the aerial part is closed:

- Closed pantograph
- Lowered boom
- Telescopic boom not extended
- Closed jib
- stowed cage
- Turret longitudinal to the chassis





With machine stowed it is possible to perform the movements of the ground part and some movements of the aerial part:

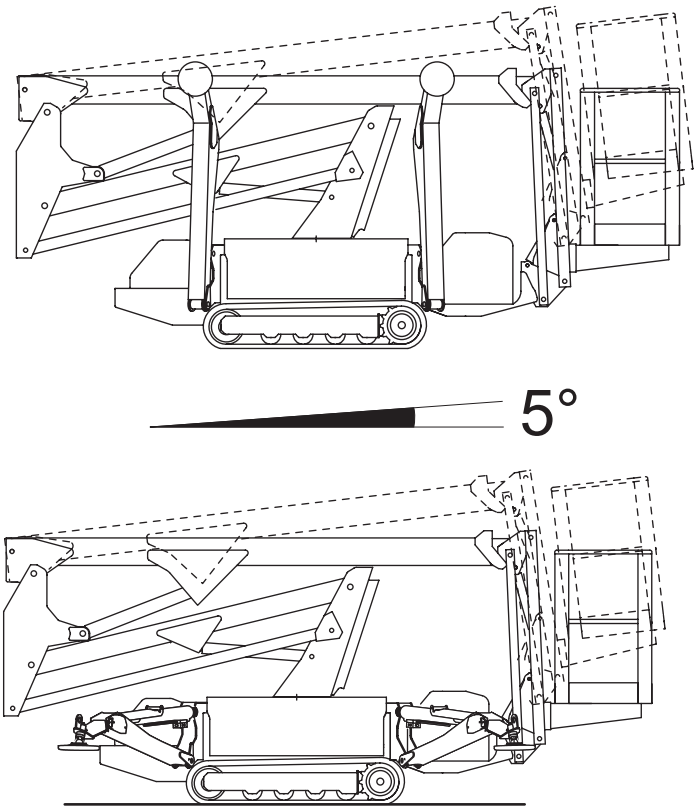
- drive at any speed
- steering
- tracks closing/opening
- boom lifting
- cage rotation
- cage levelling
- levelling outriggers movement

Machine in safety transport

If from the state of stowed machine you lift the boom up to an angle of 5°, the status of the machine becomes safety transport.

With the machine in safety transport, you can perform:

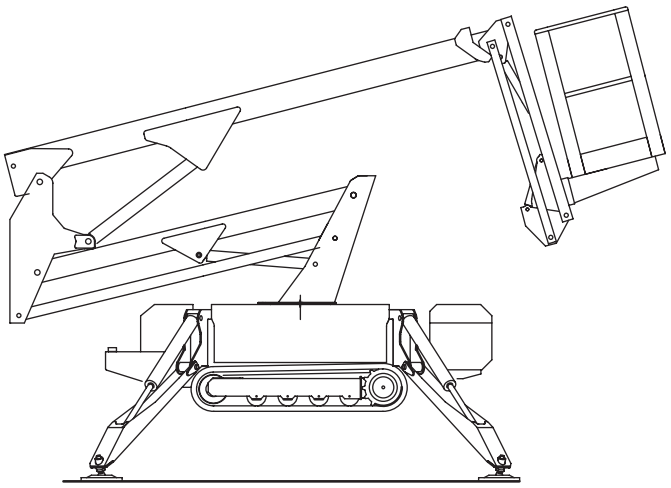
- drive at safety speed
- steering
- tracks closing/opening
- boom lifting not more than 5°
- cage rotation
- cage levelling



Machine open

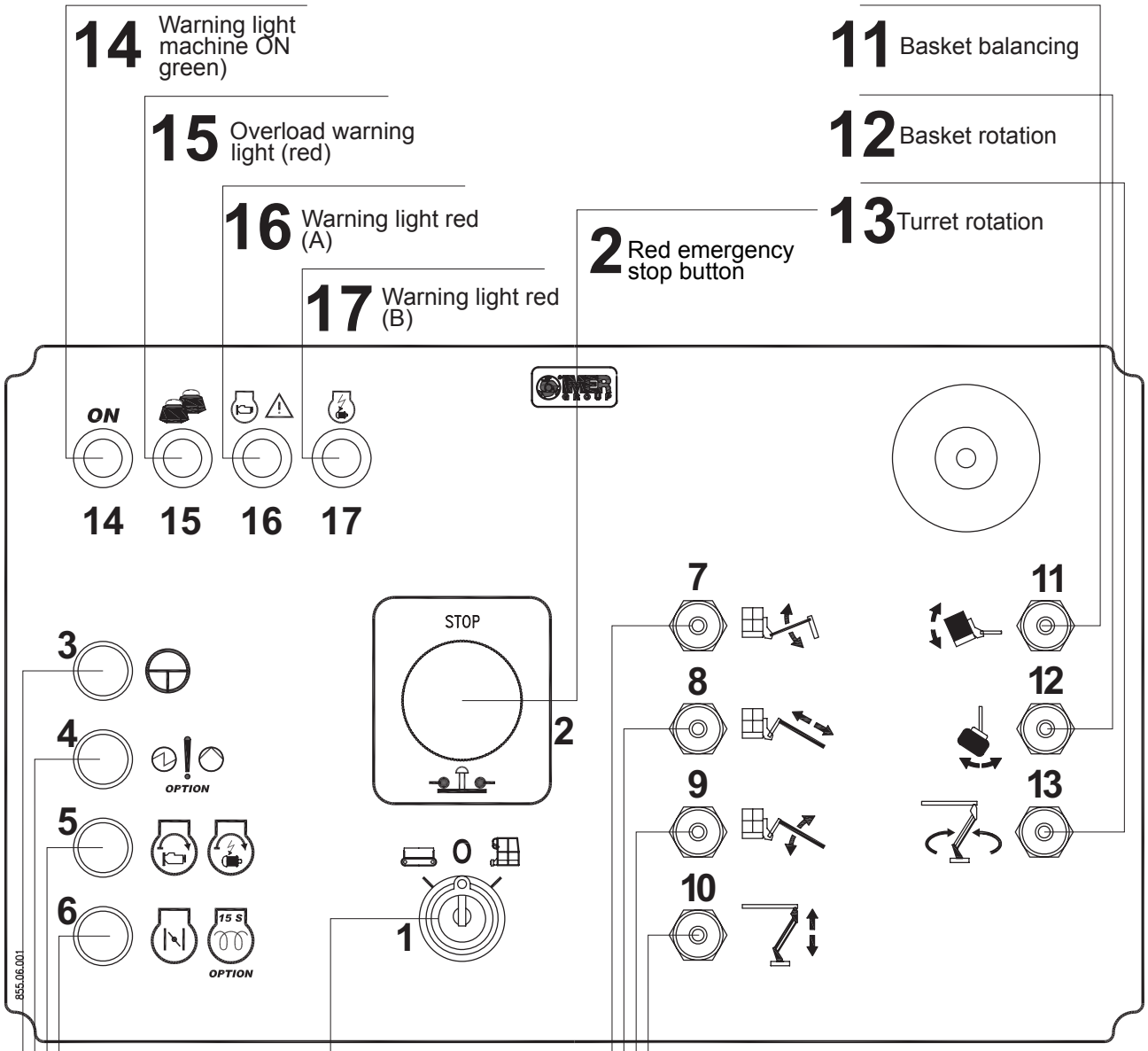
The machine is open when it is stabilized and the boom raised above 5 °.

In this status, you can perform the movements of the aerial part, all the other movements are disabled.



Control panels

Ground control panel



3 Dead-man button

4 Emergency electric pump (optional)

5 Start

6 Air (petrol motor) Preheating (diesel)

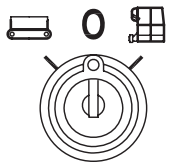
1 Key selector (3 positions)

7 Jib lifting/lowering

8 Telescopic boom extension/retraction

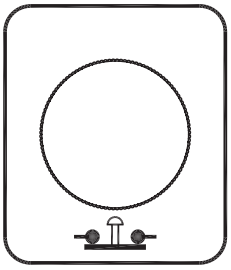
9 Boom lifting/lowering

10 Pantograph lifting/ lowering



1 - Key selector (3 positions)

- Central position: the machine is off
- Right position: controls from platform control panel are active
- Left position: controls from ground control panel are active.



2 - Red emergency stop button

- Pressed it locks all the functions of the machine.
- Released it allows for the operation of the machine.

Once it has been pressed, to release it rotate it clockwise.

3 - Dead-man

Every movement from the ground control panel must be coordinated by button 3 with deadman function

4 - Emergency electric pump

Starting of emergency electric pump (optional)

5 - Start

Starting of endothermic motor (diesel or petrol) or electric motor if the machine is connected to the mains voltage.

6 - Air (petrol motor) Preheating (diesel)

It helps starting the motor if it's cold.

- Petrol motor: simultaneously press and hold down with 5 to activate the air of the motor.
- Diesel motor: press and hold for a few seconds before starting with I2 to preheat * the motor.

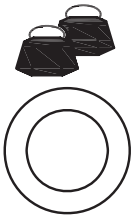
* Air preheating in diesel motor is optional

7 .... 13 - Movement selectors - aerial part

With selectors 7 - 8 - 9 - 10 - 11 - 12 - 13 and button 3 the movements of the aerial part are performed.

14 - Warning light machine ON

The green warning light 14 goes on when selector 1 is not in a central position.



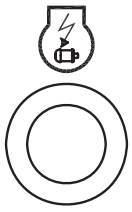
15 - Overload warning light

The red warning light 15 goes on when an overload is present.

During the starting phase of the machine the warning light 15 goes on for a few seconds.

16 - Disconnected mains voltage warning light

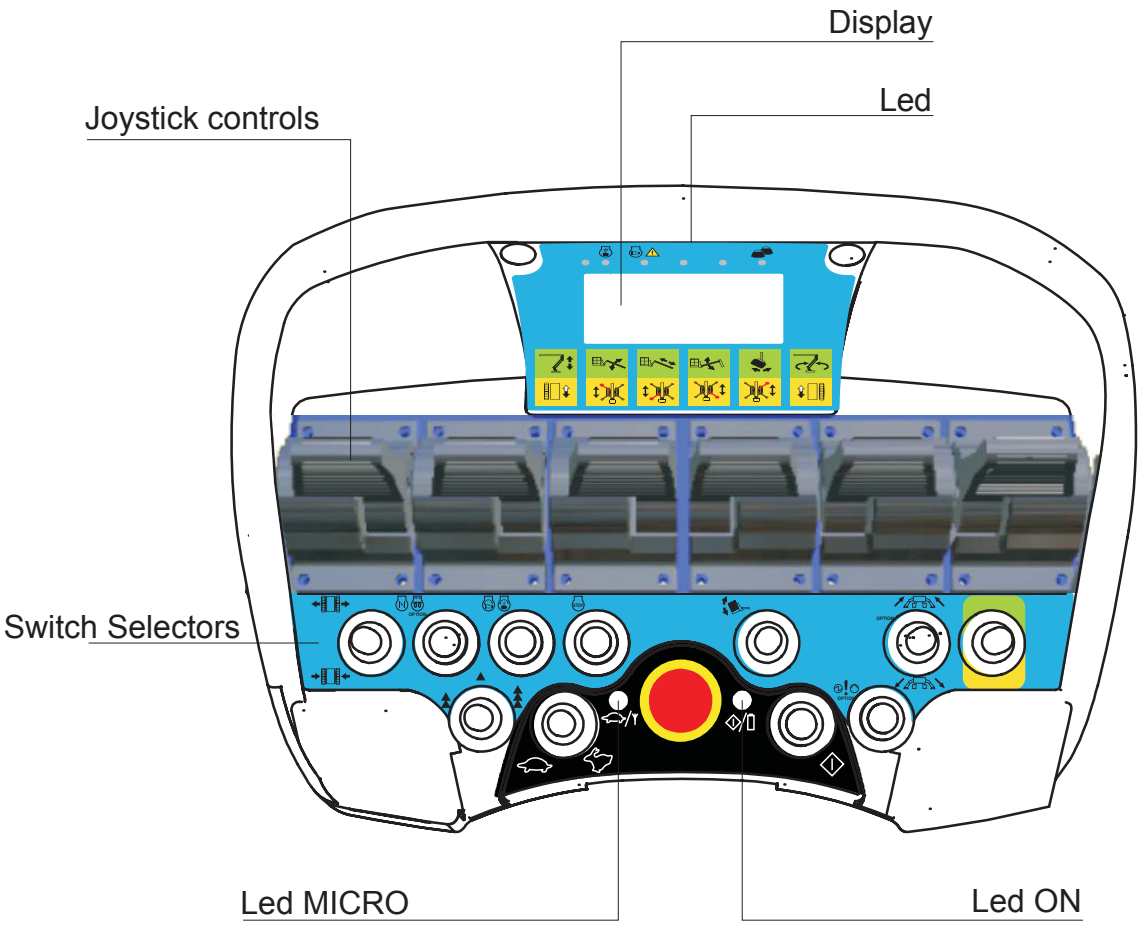
If the red warning light 16 goes on the mains voltage is disconnected and the motor to use is the endothermic motor. When the endothermic motor is started, the warning light goes out.



17 - Connected mains voltage warning light

If the red warning light 17 goes on, the mains voltage is connected and the electric motor can be used.

Push-button panel



The push-button panel uses the LED ON and the LED MICRO to indicate the current operating status and alarms.

red **LED ON lit up**; push-button panel is active and is transmitting via cable or radio.

red **LED ON flashing once every second** ; the battery is running low. This indication is preceded by three beeps from the internal buzzer.

red **MICRO LED lit up**; radio communication lost (for radio versions)

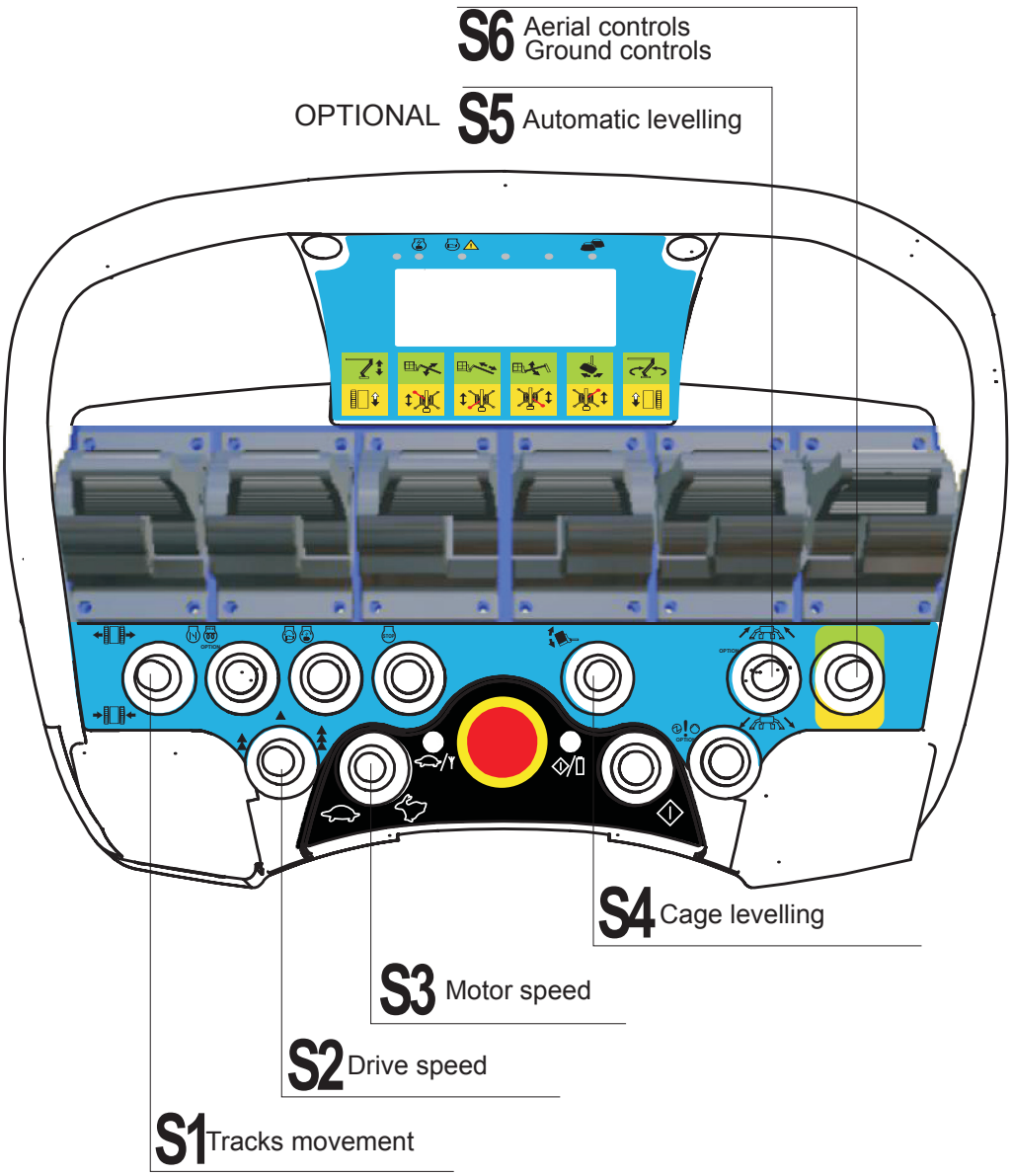
green **MICRO LED lit up flashing once every second**; it indicates the currently active operating speed

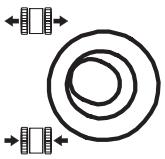
Error code

The push-button panel performs a check on its own parts at each starting and in case of faults it shows an error code by causing the red LED ON to flash and the internal buzzer to beep a number of times, depending on the type of error found.

No. OF FLASHES	MEANING
1	The joystick control of 1st function is not in neutral position while starting the push-button panel or it is faulty
2	The joystick control of 2nd function is not in neutral position while starting the push-button panel or it is faulty
3	The joystick control of 3rd function is not in neutral position while starting the push-button panel or it is faulty
4	The joystick control of 4th function is not in neutral position while starting the push-button panel or it is faulty
5	The joystick control of 5th function is not in neutral position while starting the push-button panel or it is faulty
6	The joystick control of 6th function is not in neutral position while starting the push-button panel or it is faulty
13	Emergency stop button found to be defective during the self-test

Selectors





S1

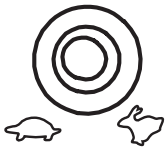
- forward it widens the tracks
- backward it reduces the tracks.

Tracks widening is permitted if the machine is in conditions of carriage or if it is stabilized and stowed.

S2

- to the right maximum speed
- to the left average speed
- at the center minimum speed.

The speed can only be selected when the machine is stowed. Otherwise automatically drive speed is the minimum one.



S3

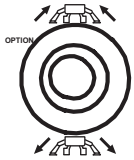
- to the right: hare - higher revolutions
- to the left: tortoise - lower revolutions

S4

- forward cage lifting
- backward cage lowering

It restores the horizontal position of the cage, which during repeated lifting and lowering manoeuvres, can be lost. The movement is only allowed if:

- boom is lifted not more than 5°
- pantograph is not open



S5 (OPTIONAL)

- forward: feet lifting automatic stabilization.
- bacward: feet lowering automatic destabilisation

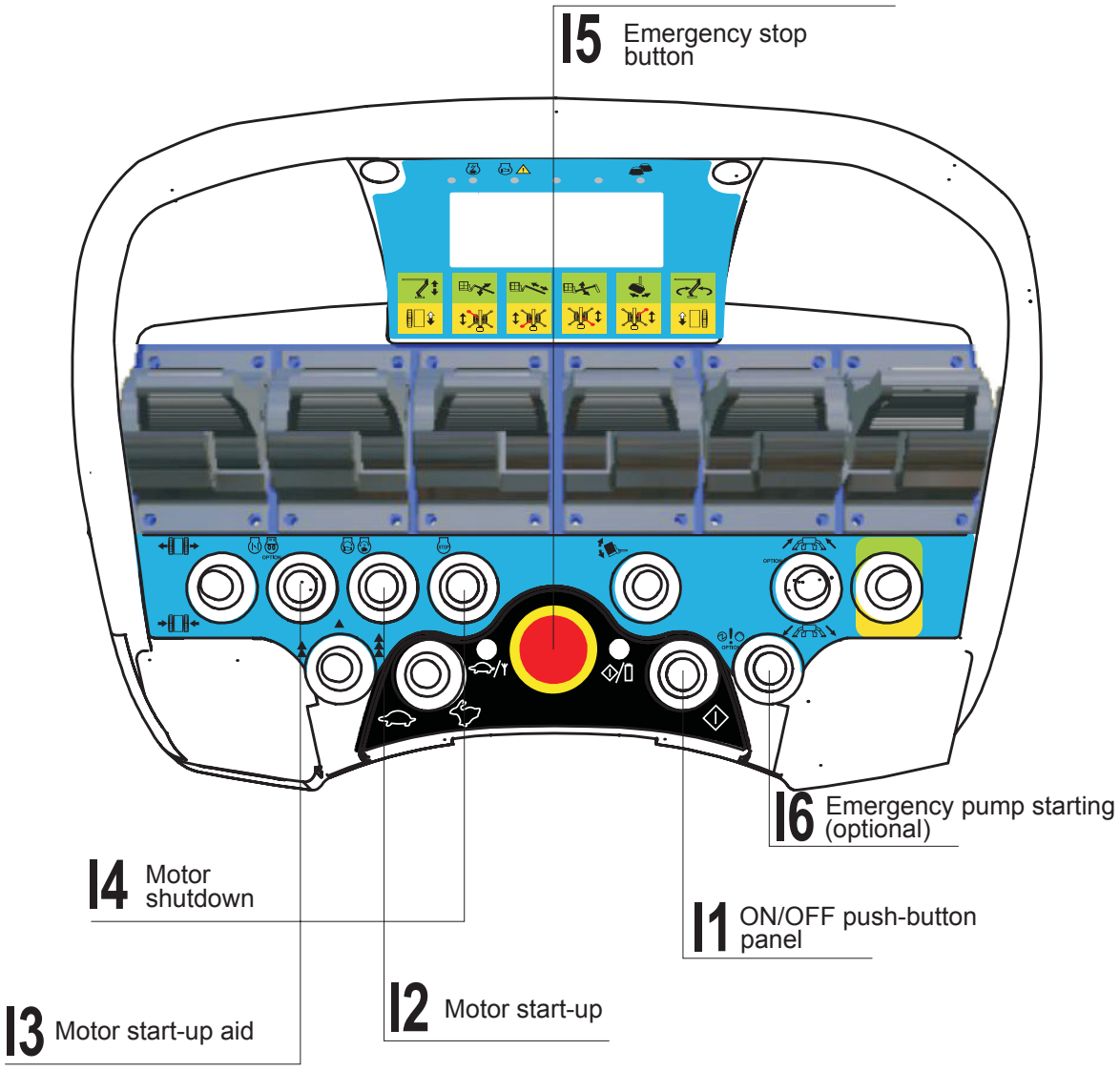
Automatic stabilization : levelling outriggers lower and machine is stabilized with a maximum error of 0.1° with respect to 0.
After stabilization the movement stops.
If you want to raise further the chassis from the ground perform several automatic stabilisations (returning the selector in neutral position and then back). See also "machine status icons".
After automatic stabilization you can compensate for the stabilization manually (see manual stabilization).

Automatic destabilisation : levelling outriggers liftt, trying to keep the level of the machine, in fact, when an outrigger lifts from the ground it is stopped as long as even the others are lifted. See also "machine status icons".

S6

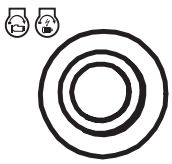
- forward: joystick control function for aerial movements
- backward: joystick control function for ground movements

Switches



I1

ON/OFF push-button panel

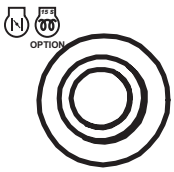


I2

Starting-up the electric or endothermic motor

To start the electric motor the machine must be connected to the mains voltage.

To start the endothermic motor when cold see switch I3.



I3

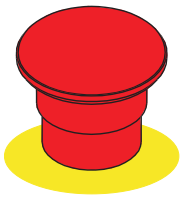
It helps starting the motor if it's cold.

- Petrol motor: simultaneously press and hold down with I2 to activate the air of the motor
- Diesel motor: press and hold for a few seconds before starting with I2 to preheat * the motor.

* Air preheating in diesel motor is optional

I4

Electric or endothermic motor turning off



I5

Emergency stop button: if pressed it locks the entire machine and turns off the pushbutton panel; released it allows for the machine operation. Once it has been pressed, to release it rotate it clockwise.

I6

Starting of emergency electric pump (optional).

Joystick controls

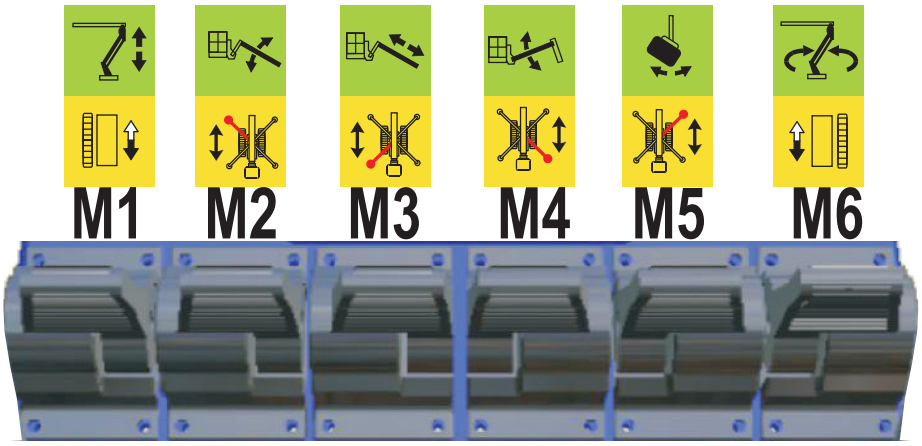
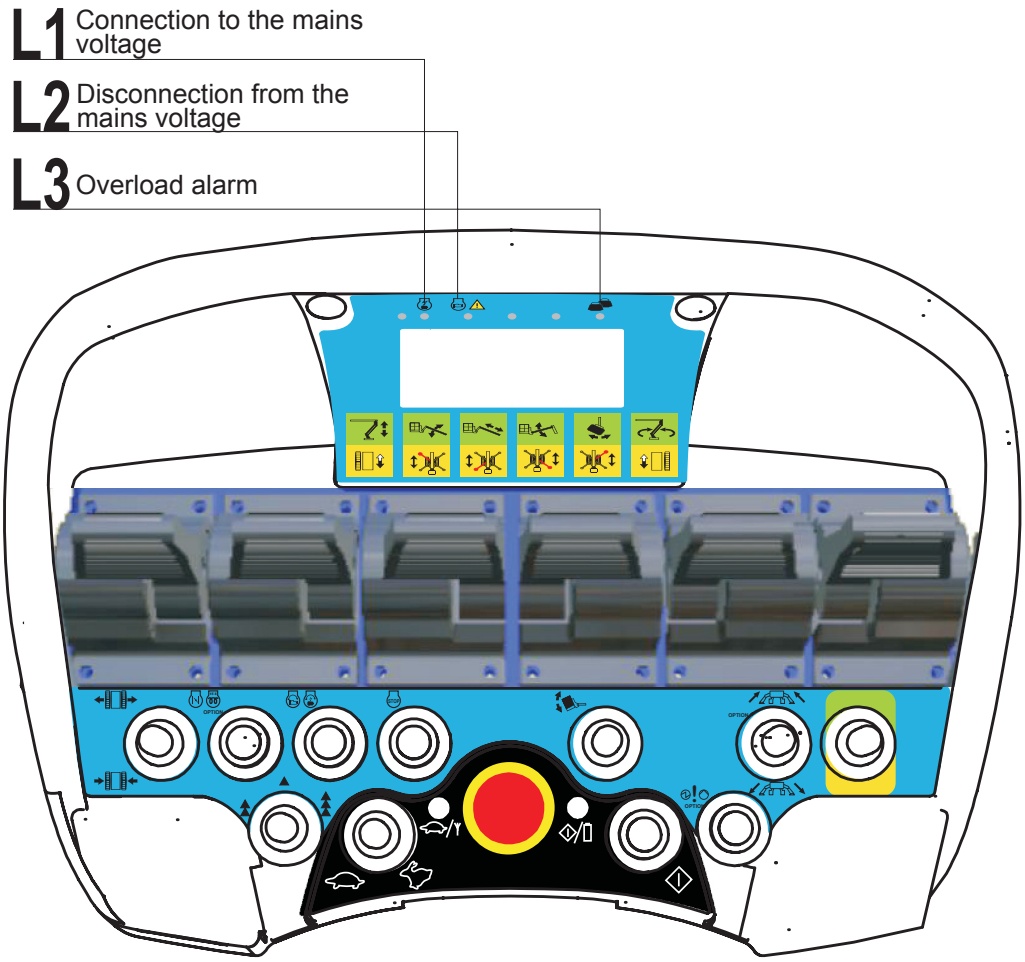


Table of operation of joystick controls depending on the position of S6

S6 forward aerial part movements		
M1	Forward	Pantograph lifting
	Back	Pantograph lowering
M2	Forward	Boom lifting
	Back	Boom lowering
M3	Forward	Telescopic boom extension
	Back	Telescopic boom retraction
M4	Forward	Jib lowering
	Back	Jib lifting
M5	Forward	Cage rotation clockwise
	Back	Cage anticlockwise rotation
M6	Forward	Turret rotation clockwise
	Back	Turret rotation anticlockwise

S6 backward ground part movements		
M1	Forward	Left track forward
	Back	Left track backward
M2	Forward	Left front levelling outrigger lifting
	Back	Left front levelling outrigger lowering
M3	Forward	Left rear levelling outrigger lifting
	Back	Left rear levelling outrigger lowering
M4	Forward	Right front levelling outrigger lifting
	Backl	Right front levelling outrigger lowering
M5	Forward	Right rear levelling outrigger lifting
	Back	Right rear levelling outrigger lowering
M6	Forward	Right track forward
	Back	Right track backward

Leds Bar



L1

green warning light; if it goes on, the mains voltage is connected and the electric motor can be used.

L2

orange warning light; if it goes on, the mains voltage is disconnected and the motor to use is the endothermic motor. When the endothermic motor is started, the warning light goes out.

L3

red warning light; if it goes on, there is an overload alarm; you must decrease the weight on the cage.

Display

The display on the joystick control shows:

- motor status
- machine status
- alarms

Motor status

The motor status is represented by 4 icons

Diesel or petrol endothermic motor running

Oil in the motors

- diesel motor: pressure is too high
- petrol motor: oil level is too low

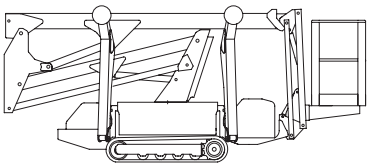
Alternator and starter battery status

- Off after starting: the alternator works.
- Lit up steady: the alternator is not working (only diesel motor version, on petrol motor no readout of the alternator).
- With the motor switched off, if it flashes it indicates that the starter battery is flat.

Oil filter clogging

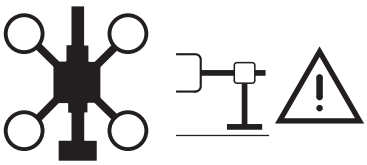
- The oil filter of the hydraulic circuit is clogged, it should be replaced as soon as possible. All the movements of the machine are slowed down by 40% of the maximum allowed.

Machine status



The machine is stowed

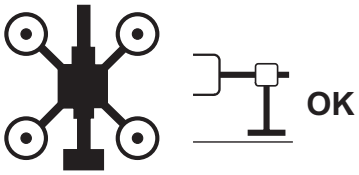
Drive at all speeds, tracks widening, movement of the levelling outriggers, boom lifting up to the angle of 5 °, cage rotation and levelling are possible.



Machine in safety drive

The machine does not have the levelling outriggers resting on the ground and is not stowed.

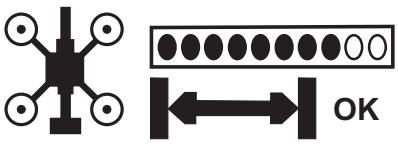
It is possible to perform: drive in safety speed, boom lowering, tracks widening, cage rotation and levelling.



Machine with 4 levelling outriggers feet rested

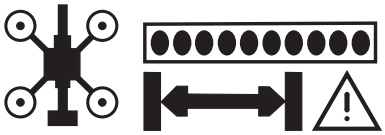
The machine is stowed and the 4 levelling outriggers feet are rested.

It is possible to perform: boom lifting, tracks widening, movement of the levelling outriggers, cage rotation and levelling.



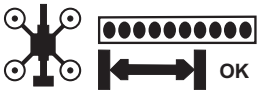
Machine aerial function

The machine is stabilized and is not stowed; the overturning moment control is active.
The full points indicate the percentage of the overturning moment currently reached.
If the boom is lifted below 5° it is possible: boom lifting and lowering, tracks widening, cage rotation and levelling;
If the boom is lifted over 5° all aerial movements are possible, except cage levelling and tracks widening.



Machine overturning moment alarm

It appears when the moment is equal to 100% of the allowed and a movement which increases it is performed (extension out, boom lowering, jib movement and pantograph lifting). The movement is locked and the alarm goes on.
It is possible to perform: tracks widening, boom lifting, extension in, pantograph lowernig, cage rotation and turret rotation. By decreasing the moment the following icon is displayed



Safety systems

The machine is provided with safety devices locking the normal operation in order to avoid injuries.

Knowledge of the characteristics and safety operations is crucial: do not operate the machine unless the following section has been read and understood.

Audible alarms

Fault condition: signalled by a high frequency intermittent sound. Machine movements are entirely or partly locked until the machine is again under safety operating conditions.

Normal operation: any machine movement is signalled by a high frequency intermittent sound.

Overturning moment limiter

The overturning moment limiter consists of a strain pivot placed on the pin of the boom lift cylinder and checks if:

- if the overturning moment has exceeded the max. use value

Maximum overturning moment means the maximum moment that the machine can support while remaining safely.

When you reach 75% of the maximum allowed moment he movements slow down and stop completely. Only the movements that reduce the moment itself remain active.

When the moment is equal to 100% of the allowed, if you are running a movement which determines the increase (extension out, boom lowering, jib movement and pantograph lifting), it is locked, the alarm sounds and the following icon is displayed:

Load sensor

The sensor consists of a load cell located between the cage and the jib and checks if there is an overload:

Overload means a load exceeding the max. working load.

If an overload is present:

With machine closed:

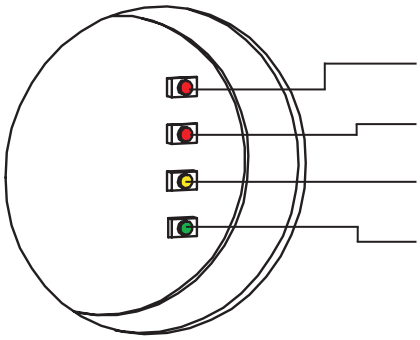
- warning light 2 on the ground control panel is lit up steady;
- warning light L3 on the push-button panel is lit up steady;
- the alarm sounds;
- only drive, tracks widening, cage levelling, levelling outriggers lifting and lowering are allowed.

With machine open:

- warning light 2 on the ground control panel is lit up steady;
- warning light L3 on the push-button panel is lit up steady;
- the alarm sounds;
- all the movements are locked.

To restore movements, remove the overload.

Load cell warning lights



ERROR LED	lights up if a system alarm is present.
ALARM LED	lights up if an overload is present.
ZERO/TARA LED	lights up if the load is between -15kg and +15kg.
POWER LED	lights up when the loading cell is powered.

Emergency stop

Press one or both the emergency stop buttons, placed on the ground control panel and on the push-button panel to lock all movements.

Faults

In the event of a malfunction detected by the self-diagnostic of the main control units of the machine, the display of the push-button panel will show an error code.

Safety belt attachments

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

Microswitches

Microswitch SQ1A-B (machine stowed)

It consists of two microswitches located in the stowing seat of the cage.

When they are activated: when the machine is completely closed, i.e. , with the two microswitches in the stowing seat of the cage both pressed.

What they activate:

- Drive at any speed
- Levelling outriggers lowering and/or lifting

Microswitch SQ8 (boom)

It consists of a micro positioned on the knee of the pantograph.

When it is activated: when the boom is lifted with an angle greater than 5°

What it activates:

- If the machine is not stabilized and in conditions of carriage it locks the boom lifting and allows the carriage in safety speed.
- If the machine is stabilized it enables all the movements in the aerial part by disabling the levelling.

Microswitch SQ9 (pantograph)

It consists of a microswitch located under the pantograph lifting cylinder

When it is activated: by lifting the the pantograph

What it activates:

- All the movements of the aerial part excluded the cage levelling.

Microswitch SQ10 (control panel on cage) (for radio versions)

When it is activated: by inserting the push-button panel in its own seat.

What it activates:

- All the movements of the aerial part can be performed from the cage only.

Microswitches SQ3-4-5-6

When they are activated: during the movement of the levelling outriggers.

What it activates:

- control of each levelling outrigger cylinder.
-

Clogged oil filter sensor

It consists of a sensor placed on the oil filter of the hydraulic circuit. If the filter is clogged all the movements are slowed down to 40% of the maximum allowed

Temperature sensor (optional)

It consists of a sensor placed on the front of the chassis that switches when temperature drops below -20° C by disabling all lifting movements while leaving the other movements unchanged.

Machine stop

It is required to stop the machine every time it is left unattended to avoid any undesired use.

- From the ground control panel, set key selector 10 to central position: warning light 1 will turn off.
- Turn off the push-button panel by pressing the emergency stop button or wait for the auto-off feature.
- Remove the key and keep it in a guarded place.

Use of the machine

To operate the lifting of persons, materials, and tools and allow work to be done at height you have to:

- Move the machine and set it into position (drive and steering)
- Stabilize it
- Move the aerial part until reaching the position

To perform these operations:

- Perform drive and stabilization from the ground
- Get onto the cage
- Move the aerial part

Or

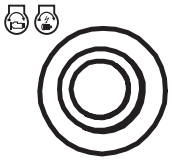
- Get onto the cage
- Perform drive and stabilization
- Move the aerial part

Make sure that the red emergency stop button is not pressed on ground control panel and push-button panel.

Starting the machine

- Insert the key in selector 1 of the ground panel.
- Turn it to the right, warning light 14 is lit (movements from push-button panel are activated).
- Get onto the cage or take the push-button panel to the ground.
- Turn on the push-button panel with L1.

Each time the machine is started up, audible alarms (buzzer) and warning lights turn on to verify their correct operation. Before using the machine, wait they are switched off.



Motor start-up

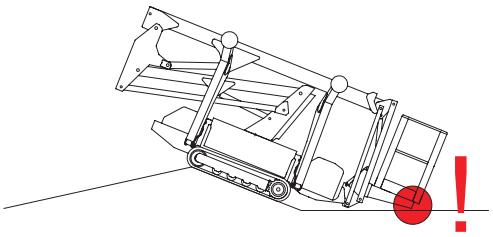
- Start the endothermic or electric motor by pressing I2

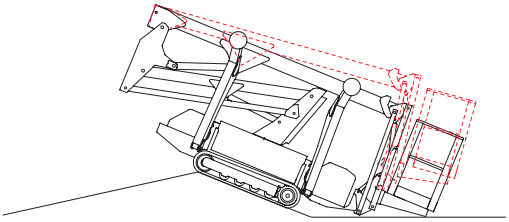
Drive and Steering

- If necessary, with selector S1 **widen the tracks**
- With selector S3 (hare tortoise) **set the speed of the drive motor**;
- With selector S2 **select the desired speed** (only if the machine is stowed)
- Move back S6 to **activate the ground movements.**
- Move forward the two tracks joystick controls M1 - M6

To perform the steering the speeds of the tracks should be different and **M1 and M6 have different inclinations**.

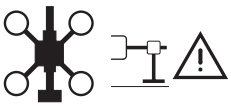
- **Steering to the right**: give greater inclination to **M6**
- **Steering to the left**: give greater inclination to **M1**





If during the transport you have to go beyond such gradients that it threatens to touch the ground with the cage you need to follow the following procedure:

- Move S6 forward (aerial part controls)
- Lift the boom by moving forward M2 up to the interruption of the movement (the boom will have made an excursion of approximately 5 °). The icon on the push-button panel display becomes



- Move S6 back (chassis part controls)
- Perform drive (in such conditions, the only permitted speed is the safety one) by moving forward the two tracks joystick controls M1 - M6

Passed the obstacle return the machine into carriage conditions.

After the drive stage, position the joystick control in the special space in the cage. In the presence of radio control be careful that the micromagnetic placed on the same adheres to the backing plate fixed on the base.

Stabilization

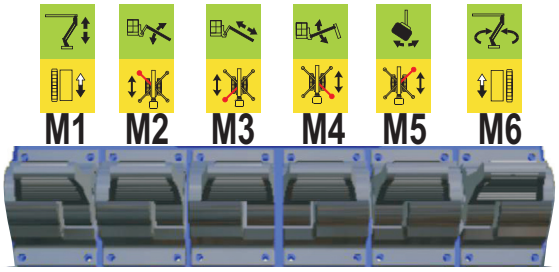
The extension of the levelling outriggers is only possible with stowed machine.

Before the stabilization operations make sure no persons are in the working area of the plates and stabilizer cylinders.

Before the stabilization operation make sure the ground is flat (without holes and depressions) with a good adhesion and being able to stand the maximum load transmitted to ground by the levelling outriggers, described on the rating plate placed on the machine.

If it is the case, position some strong weight distribution plates under the stabilizer small plates.

Check the levelling outriggers do not rest on pipes and road drain wells.

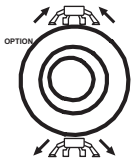


Using the 4 joystick controls **M2 - M3 - M4 - M5** push them back to lower the feet as long as they reach the ground.

Using the spirit level as a reference, act on the 4 joystick controls so as to level the machine. Keep in mind that a foot that rests on the ground can no longer be lowered until all four feet are rested.

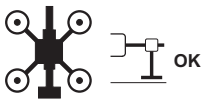
After the stabilization:

- check that the tracks are **lifted from the ground**;
- visually check the actual **resting of the cylinders**.
- visually check the **actual machine levelling** using the special spirit level.



If the automatic stabilization function available:

Move forward **S5** up to the interruption of the movement and to the appearance of the icon shown in the figure on the display of the push-button panel.



As automatic levelling is merely an electronic aid for notably sim-plifying machine use, great attention must also be paid to the instructions given below.

After the stabilization:

- check that the tracks are **lifted from the ground**;
- visually check the actual **resting of the cylinders**;
- visually check the **actual machine levelling** using the special spirit level.

Enabling the aerial part

After getting onto the cage make sure that:

- The push-button panel is placed in the appropriate basis.
- In the presence of radio control be careful that the micromagnetic placed on the push-button panel adheres to the backing plate fixed on the base.
- Make sure that the load respects the limits and is well distributed.
- Make sure that the platform gate is perfectly closed.
- Make sure that the red emergency stop button is not pressed on ground control panel and push-button panel.
- Always check the state of the emergency warning lights.

Spostare avanti **S6**

M1		Forward	PANTOGRAPH LIFTING
		Back	PANTOGRAPH LOWERING
M2		Forward	BOOM LIFTING
		Back	BOOM LOWERING
M3		Forward	TELESCOPIC BOOM EXTENSION
		Back	TELESCOPIC BOOM RETRACTION
M4		Forward	JIB LOWERING
		Back	JIB LIFTING
M5		Forward	BASKET ROTATION CLOCKWISE
		Back	BASKET ROTATION ANTICLOCKWISE
M6		Forward	TURRET ROTATION CLOCKWISE
		Back	TURRET ROTATION ANTICLOCKWISE

Return to stowed machine

After the works at height to return the machine into stowed machine condition:

- retract the extension completely by setting **M3** back;
- fully lower the jib by setting **M4** back;
- rotate the turret with **M6** as long as it is perfectly aligned with the chassis;
- close the pantograph completely by setting **M1** back;
- close the boom completely by setting **M2** back.

Levelling outriggers retraction

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

At this stage there is no check on the sequence of movement of the levelling outriggers, be very careful trying to lower the machine keeping it always as much as levelled as possible.

If the automatic stabilization function available:

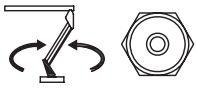
- Set back **S5** until the interruption of the movement.

Enabling the movements from ground panel

- Insert the key in selector 1 of the ground panel.
- Turn it to the left, warning light 14 is lit up.

Every movement from ground panel must be coordinated by button 3 with deadman function and by the lever depending to the type of movement you want to control.

Turret rotation



- Move selector **13** to the right to turn the turret anti-clockwise
- Move selector **13** to the left to turn the turret clockwise

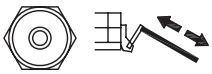
Pantograph lifting/lowering

- Move selector **10** upwards to lift the pantograph
- Move selector **10** downwards to lower the pantograph

Boom lifting/lowering

- Move selector **9** upwards to lift the boom
- Move selector **9** downwards to lower the boom

Telescopic boom extension/retraction



- Move selector **8** to the right to extend the telescopic boom
- Move selector **8** to the left to retract the telescopic boom

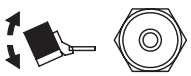
Jib lifting/lowering

- Move selector **7** upwards to lift the jib
- Move selector **7** downwards to lower the jib

Cage rotation

- Move selector **12** to the right to turn the cage anti-clockwise
- Move selector **12** to the left to turn the cage clockwise

Cage levelling



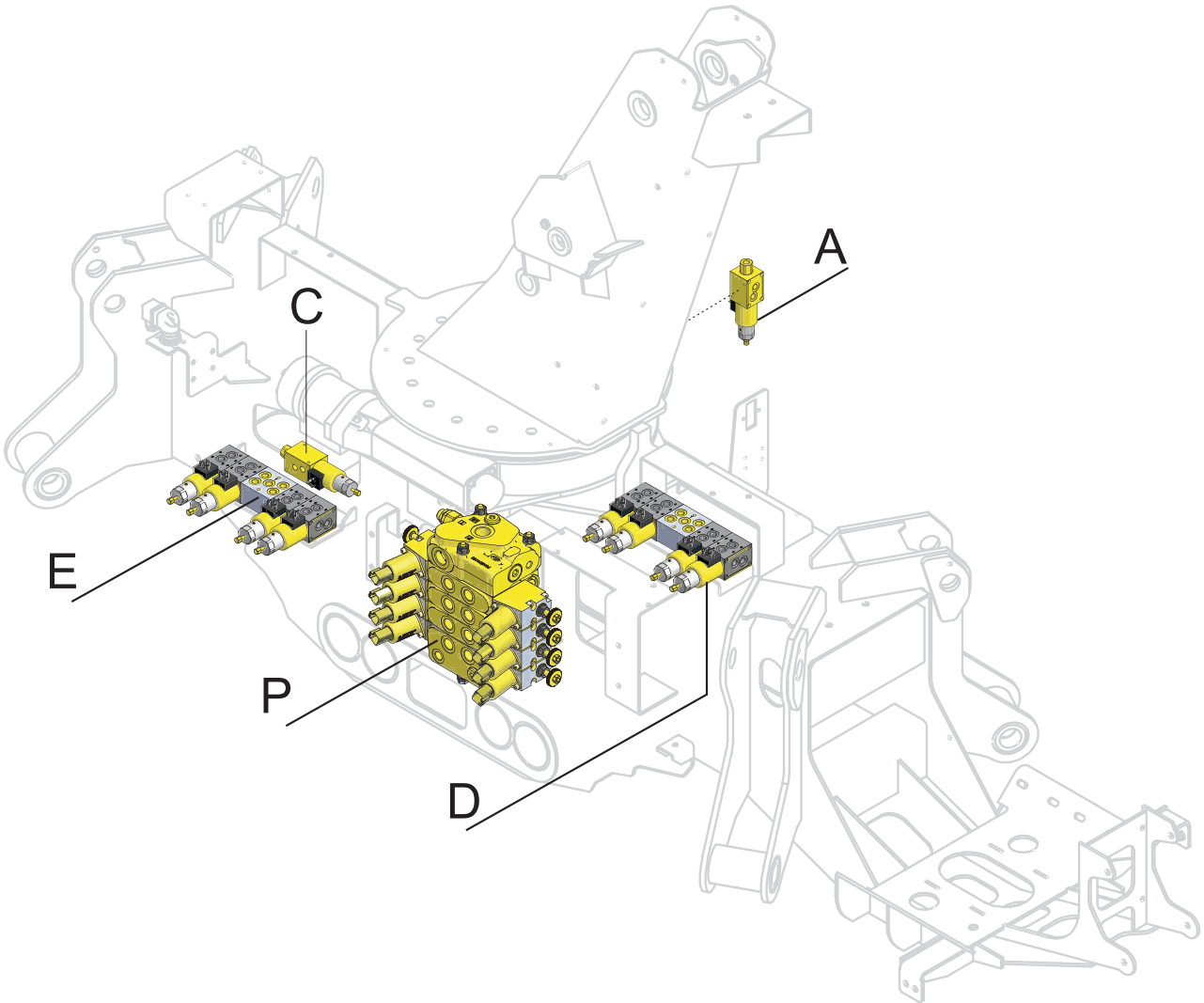
- Move selector **11** upwards to lift the cage.
- Move selector **11** downwards to lower the cage.

Emergency manual procedures

Manual emergency movements

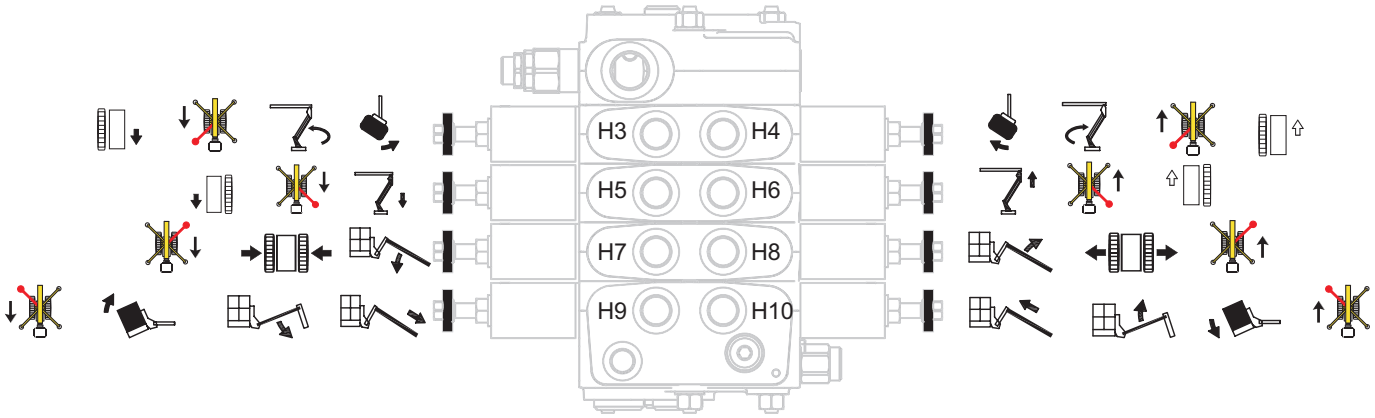
If the machine crashes due to a fault, it is possible to perform the movements by an operator on the ground, by means of the hydraulic blocks located in the left box (P - E - D - C), on the right side of the turret (A) and the manual pump on the left side of the tank.

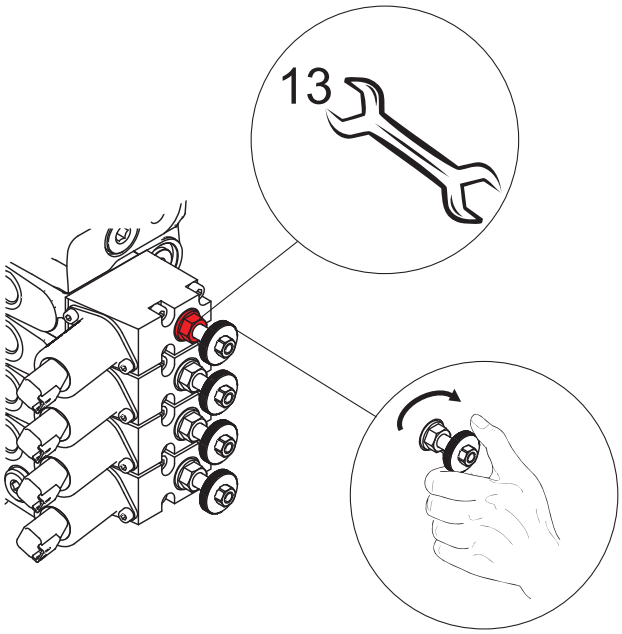
The manual movements may cause the machine to tip, be very careful while performing them.



Before carrying out the emergency movements, press the red emergency stop button.

Before carrying out the emergency movements, make sure that there are no obstacles





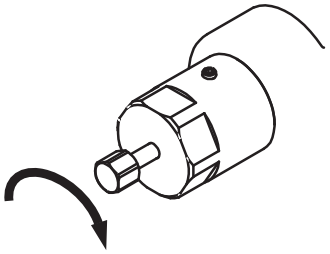
To select the emergency:

1. Identify the movement to be carried out;
2. Unscrew the protection nut of the emergency (by wrench No. 13);
3. Screw the emergency pawl up to the end stop;
4. Screw the protection nut of the emergency (by wrench No. 13);

To perform some movements the two main diverter blocks (D - E) and/or the two secondary diverter blocks (A - C) are also used.

To select an emergency:

1. Screw the emergency pawl.



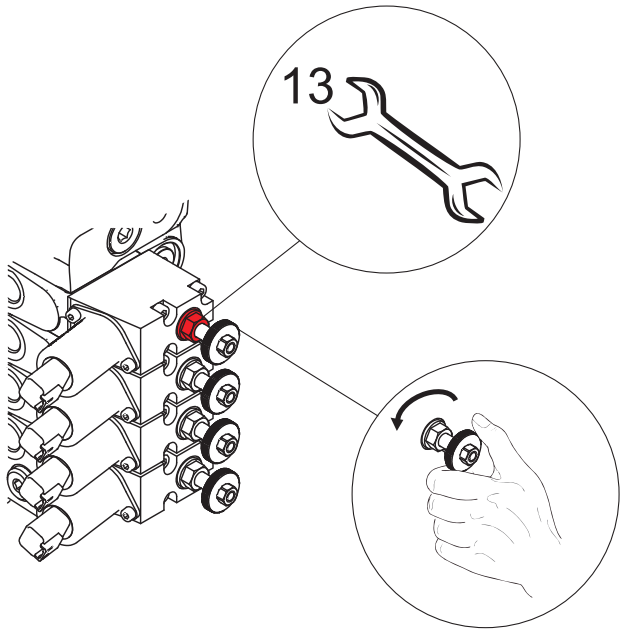
After setting up the hydraulic blocks operate the pump with the special lever.

In the following pages are the diagrams for the operation of the hydraulic blocks.

At the end of the operation make sure you have set back the emergency pawls at end stop (completely unscrewed)

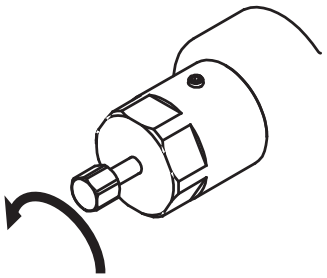
MAIN BLOCK

1. Unscrew the protection nut of the emergency (by wrench No. 13);
2. Unscrew the emergency pawl.
3. Screw the protection nut of the emergency (by wrench No. 13);

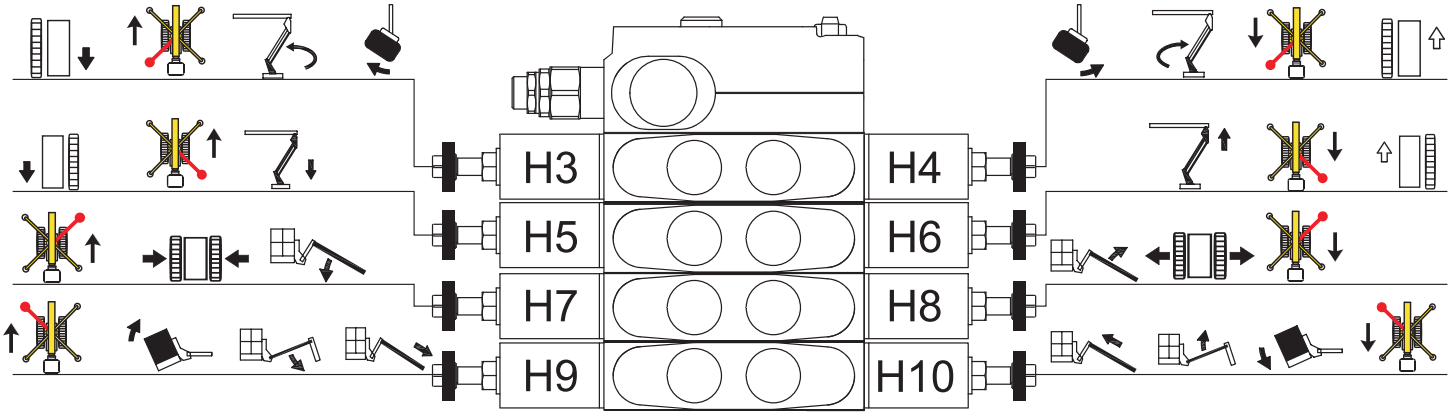


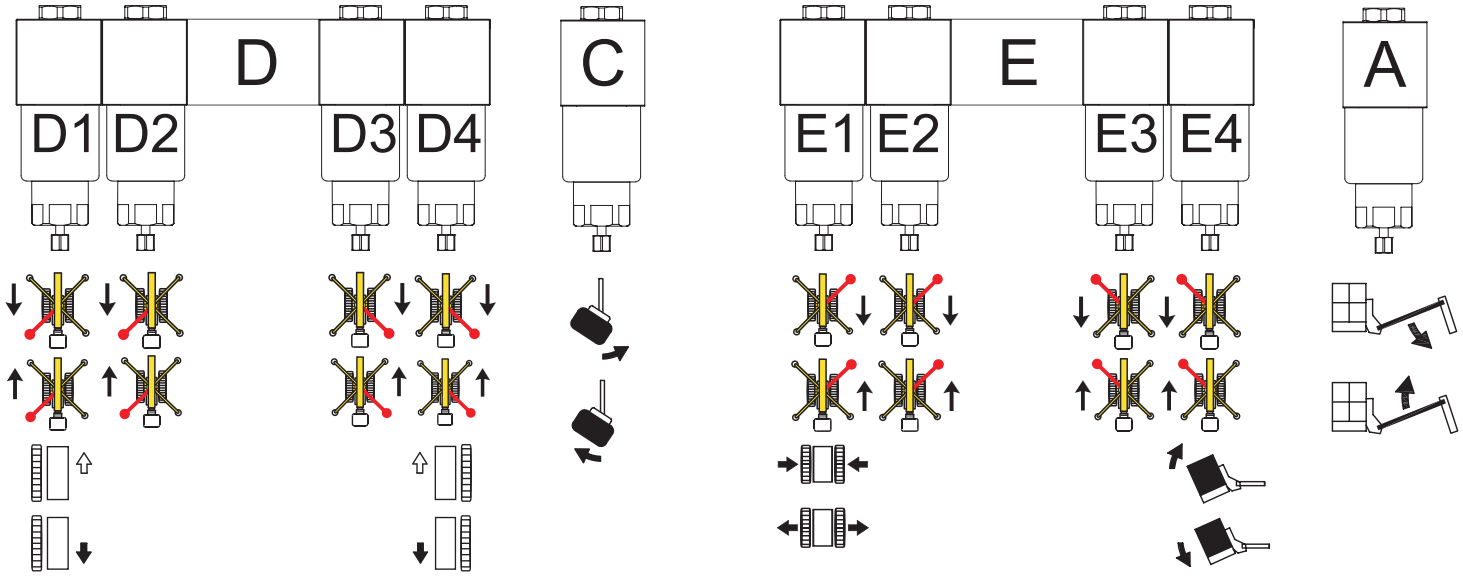
BLOCKS D - E - A - C

1. Unscrew the emergency pawl.

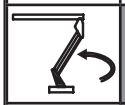
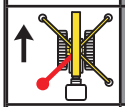
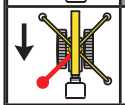
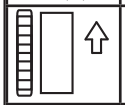
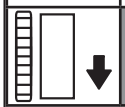
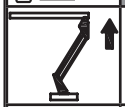
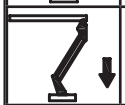
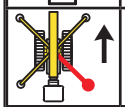
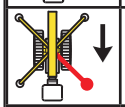
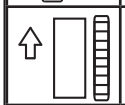
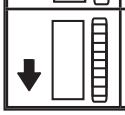


This page shows the hydraulic blocks allowing the emergency movements. Each block consists of valves; every movement is associated with a valve in the main block. Some movements are also associated with one or more valves of blocks D - E - C - A.





On this page and the next one are shown 2 tables: for each movement the associated valves are indicated.

	H3	H4	H5	H6	D1	D2	D3	D4	C
	■								■
		■							■
		■							
	■								
	■				■	■			
		■			■	■			
		■			■				
	■				■				
				■					
			■						
			■				■	■	
				■			■	■	
				■				■	
			■					■	

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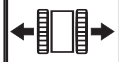		■			■				
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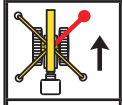
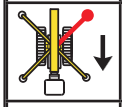
	■				■	■			
		■			■	■			
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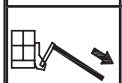
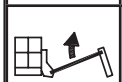
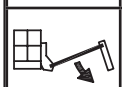
			■						
				■					
			■						
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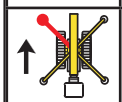
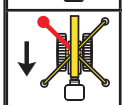
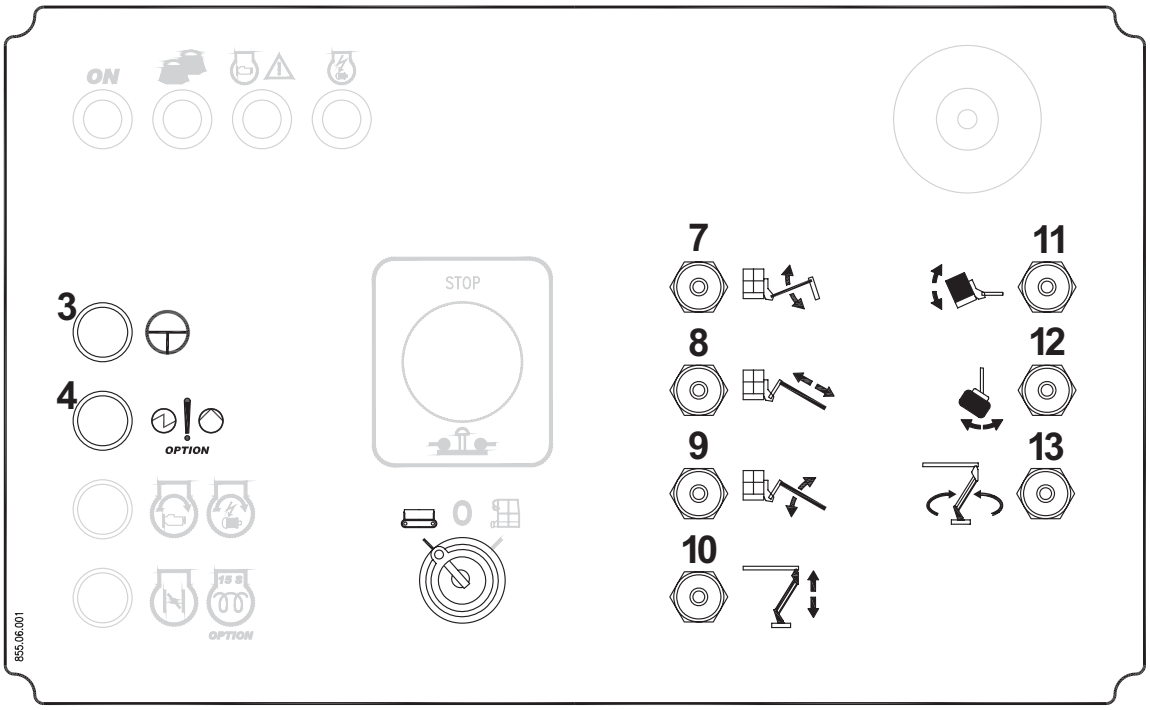
			■				■	■	
				■			■	■	

Emergency movements with 12V electric pump (optional)

If the machine blocks due to a failure, an operator on the ground can carry out the movements by means of the ground control panel and the 12V electric pump.



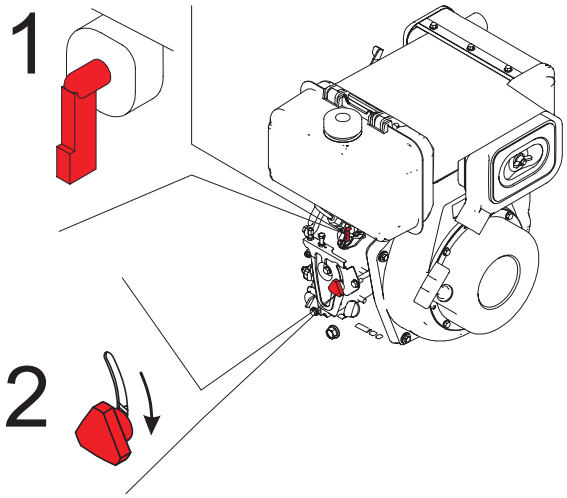
1. Turn the key in selector to the left;
2. Press button 4 to start the 12V electric pump;
3. Press and hold button 3 and simultaneously move the selector of the movement that you want to accomplish.

The manual movements may cause the machine to tip, be very careful while performing them.

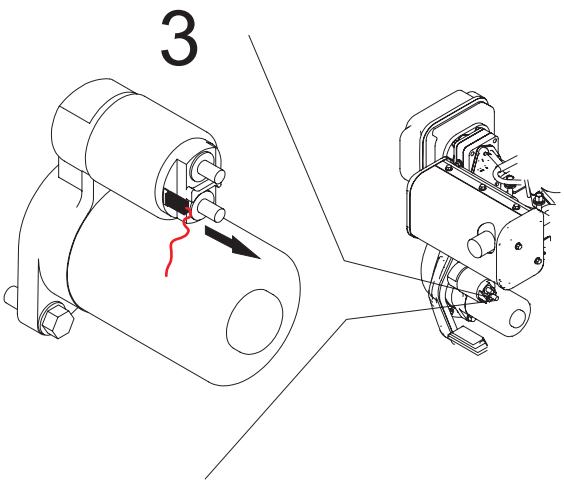
Before carrying out the emergency movements, make sure that there are no obstacles.

Manual start of endothermic motor

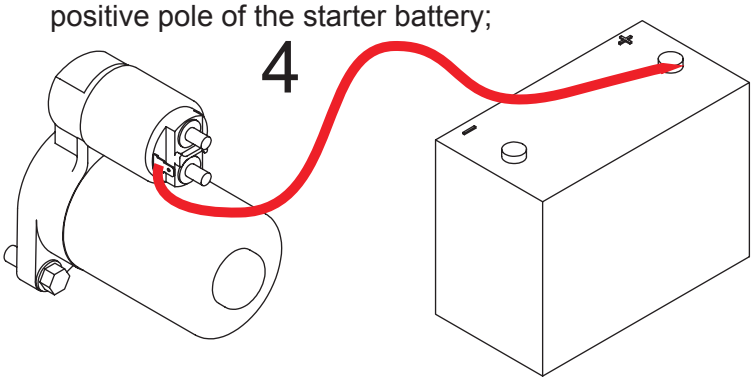
Diesel motor



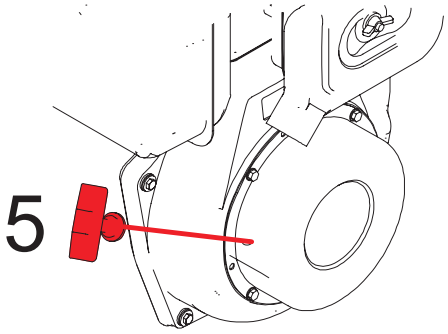
1. Move the lever of the fuel in a vertical position;
2. Set the accelerator to the maximum by moving down the appropriate pawl;
3. Remove connector 50 with the red wire from the starter;

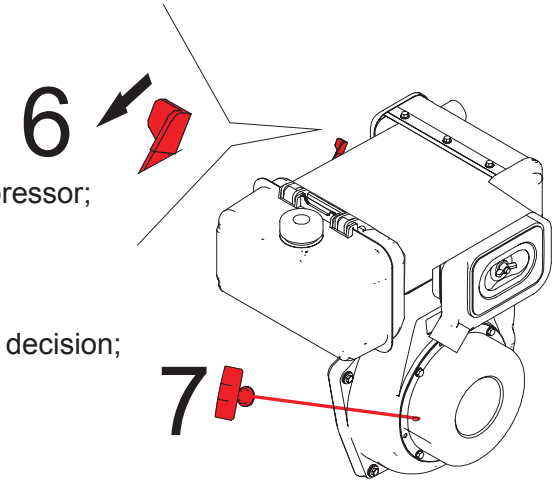


4. Connect by an electrical cable connector 50 with the positive pole of the starter battery;



5. Pull the motor start-up lever until it exerts resistance and then release.

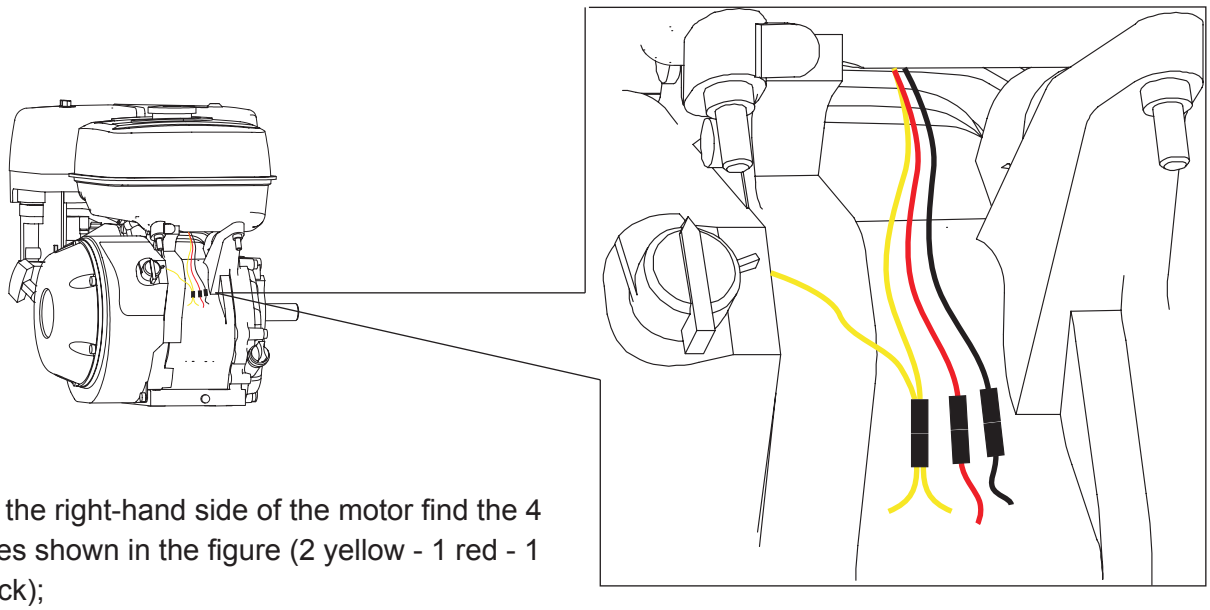




6. Press the decompressor;
7. Pull the lever with decision;

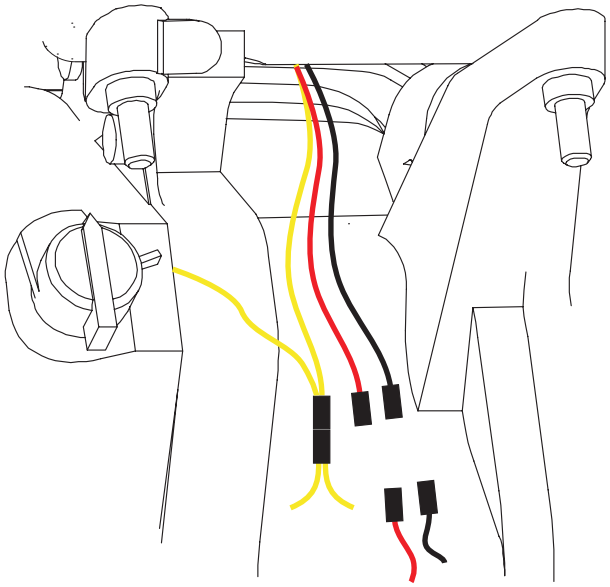
To turn off the motor: remove the cable from the battery.

Petrol motor

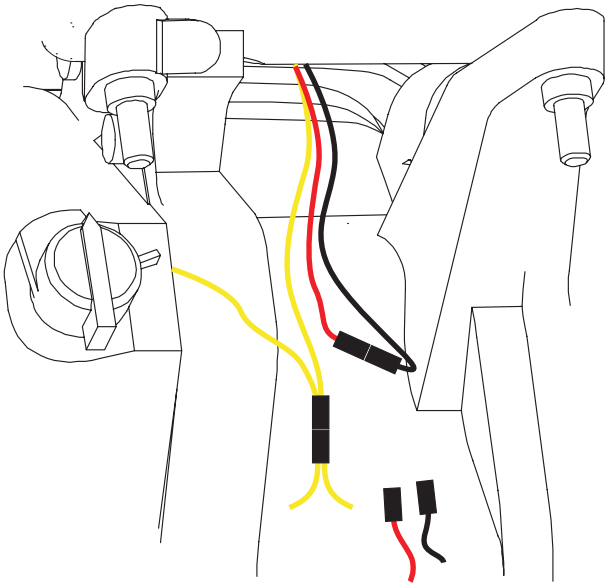


1. On the right-hand side of the motor find the 4 wires shown in the figure (2 yellow - 1 red - 1 black);

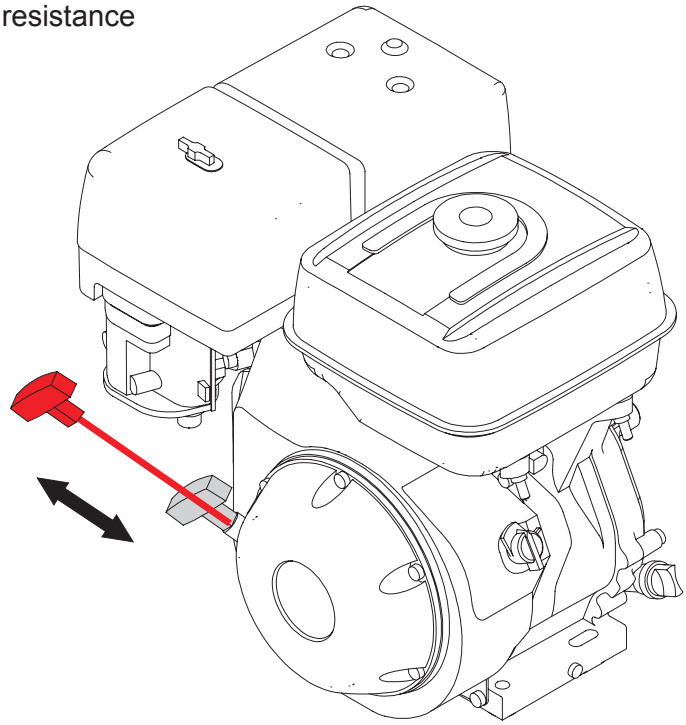
2. Remove from the respective connectors the red and black wires;



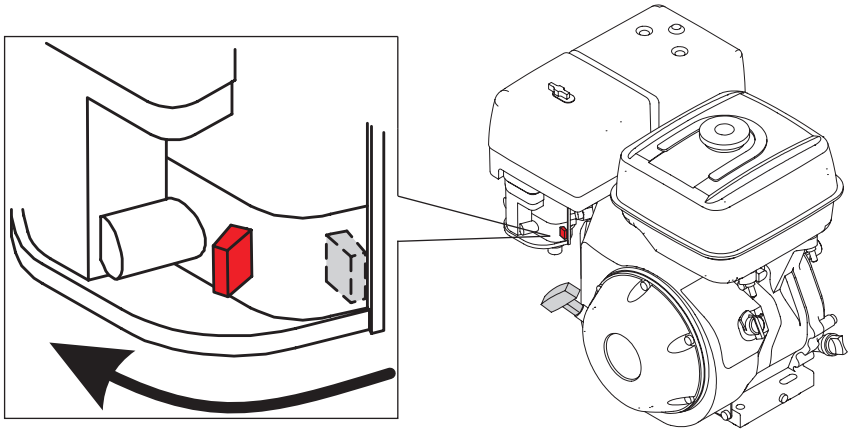
3. Connect the 2 terminals



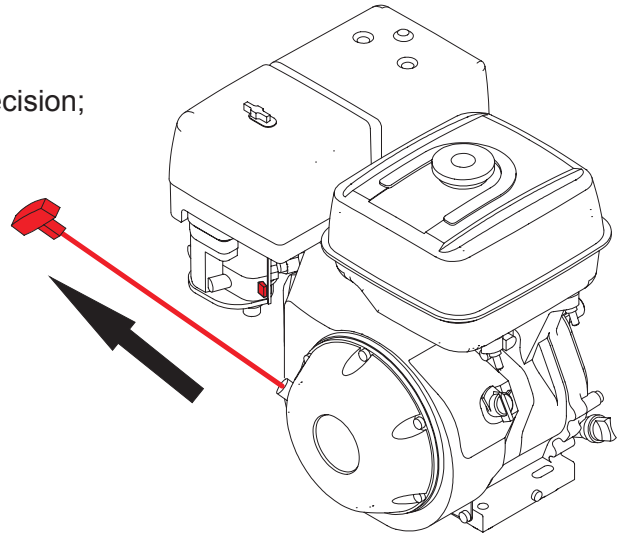
4. Pull the motor start-up lever until it exerts resistance and then release.



5. Pull the air lever to the outside;



7. Pull the lever with decision;



Battery recharge

The following icon on the display of the push-button panel, in addition to indicating the fault of the alternator (lit up steady), it indicates the status of the starter battery:

- Flashing: the starter battery is below the warning level and needs to be recharged.

To recharge you need to connect the machine to the mains 220V (or 110V) and activate the circuit breaker of the electric pump-battery charger.

The battery charger will turn on a green light while performing the charge of the batteries and a red light when it has reached full charge.

Battery charger features:

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

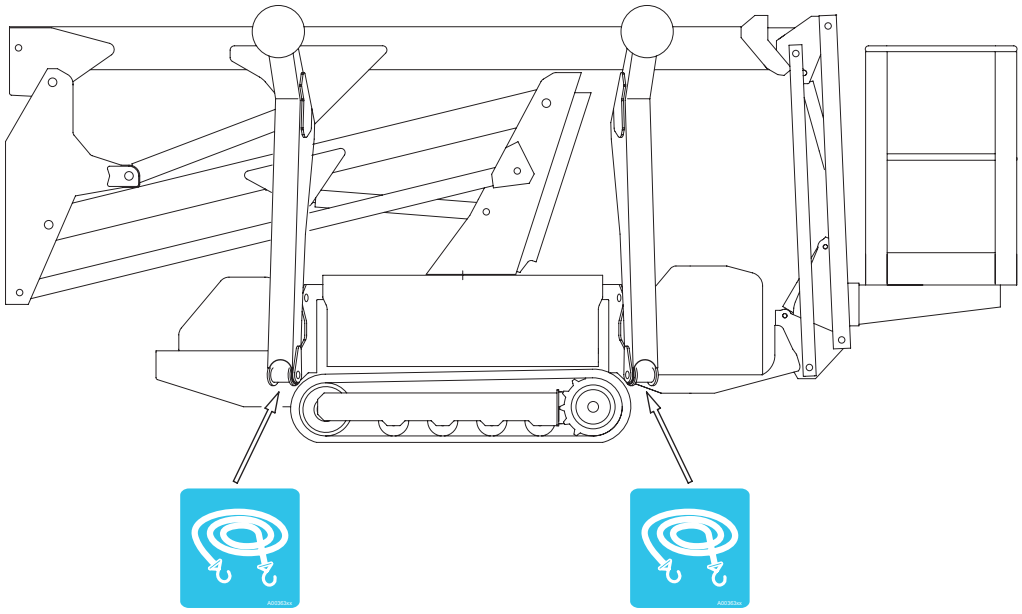
Transport and Lifting

Make sure that:

- The machine is in retracted position (minimum overall dimensions).
- The machine is off.
- The means used for lifting can support the machine mass equal.

Transport

During its transport, fasten the machine to the vehicle platform by means of bands passing through the 4 points of attachment indicated by the labels provided.



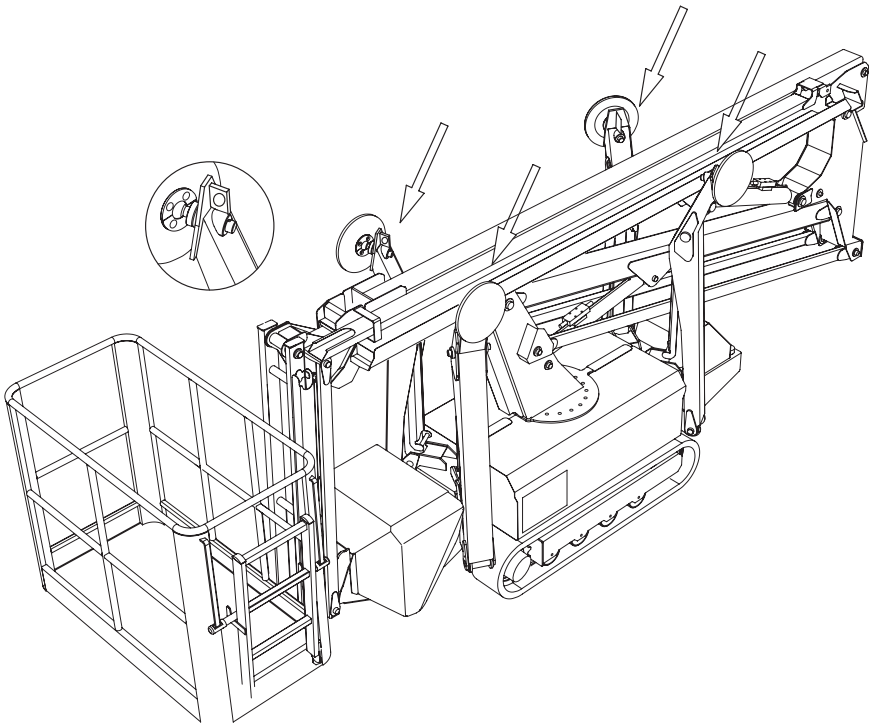
Fasten the basket to the truck flat-bed for preventing side movements of the rotary part.

It is forbidden to operate the machine in transport conditions (placed on the vehicle platform).

Lifting

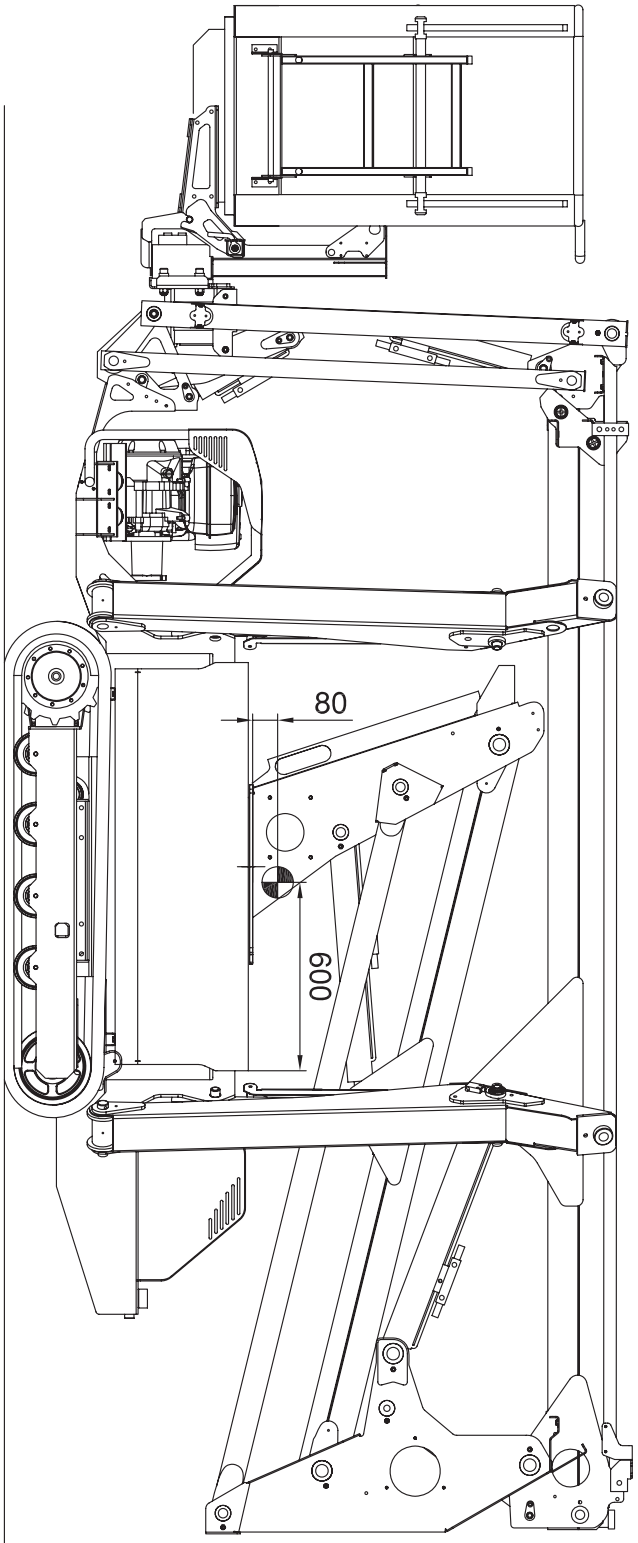
Lifting may be carried out with a fork chassis or a crane.

For forklift lifting, use the areas shown on the labels provided.



Determine the barycentre using the illustration and heights provided in the following page:

Make sure that the ropes do not come into contact with any machine parts that they might damage.


80
600

Storage

In case of long storage periods, shelter the machine in a dry and ventilated place, with completely loaded batteries. Reload batteries every 2 months regularly.

Storage temperature: -20/+50°C

Before using the machine after a storage period exceeding 30 days, carry out the inspections described in the Maintenance summary table, item "After long periods of inactivity of the machine".

Disposal and scrapping

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

Special attention must be paid to disposing of electric batteries (D.M. 633/72 art.8) and of the hydraulic oil contained in the tank and in the hydraulic circuit (DPR 691/82).

The main components of the machine are listed hereunder:

- Cast iron
- Steel
- Polycarbonate
- Polymar
- Teflon
- Embossed polystyrene B
- Polyester
- Copper
- Ertalyte

Maintenance

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

The schedule reported in the maintenance summary table refers to normal use conditions; in case of heavy working conditions (extreme temperature, polluting atmosphere, high humidity, elevation) intervals must be shorter.

Frequency and scope of periodical maintenance and inspections may depend on national rules.

Machine cleaning

Once each work-shift has been finished or when you think it is necessary, clean the machine:

- Clean all surfaces by means of an air compressed blow, avoiding the formation of dirt heaps.
- Spray a normal degreasing product and eliminate the residual dirt by means of cotton clothes.

Never use diluents, scrapers and steel brushes to avoid damages to the painted surfaces.

Do not clean the machine using a jet of high-pressure water. Humidity or water penetration inside electric elements could cause failures and/or damages to the electric/electronic control elements.

Maintenance summary table

OPERATION TO BE CARRIED OUT	AFTER THE FIRST 50 HOURS	EVERY DAY	EVERY MONTH	100 HOURS OR 6 MONTHS	250 HOURS OR YEARLY	500 HOURS OR YEARLY	EVERY YEAR	AFTER LONG PERIODS OF INACTIVITY (30 days)
Check oil level		X						X
Check electrolyte level		X						X
Check battery charge		X						X
Check of screw tightening	X			X				X
Grease the mechanisms			X					X
Safety devices check			X					X
Emergency manual Retraction check				X				X
Check brakes				X				X
Structure check	X				X			X
Check of wheel reduction gear oil						X		X
Check of hydraulic tubes							X	X
Checking performance							X	X
Control oil filter							X	
Wheel reduction gear oil change							X	

The above mentioned operations are described in the following pages.

Check oil level and change

The oil level checking and the possible topping up should be made when the platform is entirely lowered.

Check that the oil level is higher than minimum value of the level edge. Should it be necessary top up with oil of the same viscosity as indicated on the tank. To fill up remove the cap, insert the oil and fit the cap back on.

Electrolyte level check

- Open the right cowling
- Check the level and if necessary fill up with distilled water from the central connection.
- Dry if some fluid has poured out.

The sulphuric acid contained in the solution can cause serious injuries; if it is unintentionally poured, wash immediately the objects or the surfaces with abundant water.

If the acid comes into contact with the skin, wash immediately with abundant water and consult a doctor.

It is recommended to always wear gloves and protective glasses during the maintenance operations of batteries.

Check of battery charge

The battery charge level can be read on the push-button panel.

For the battery recharge eea section "Battery recharge".

Check of screw tightening

DESCRIPTION	TYPE	Q.Tà	Tightening	
			N x m	Kg x m
Screws for fastening thrust block to base-truck	VTCEI 16X120 UNI9327	18	280	28
Screws for fastening thrust block to turret	VTCEI 16X120 UNI9327	18	280	28
Screws for fastening turret rotation reduction gear	M12x50-8.8 UNI5739	10	50	5
Screws for fastening wheel reduction gear to base truck	TCCE 5/8”-11x1-1/2”	12	250	25
Screws for fastening wheel to hub	VTCE M16x45 UNI5931	18	180	18
Wheel locking nuts	DE 5/8”x18 ONF 10.9	18	250	25
Load cell fixing screw	VTCEI 16x1.5x50-8.8 UNI5931	8	210	21
Tie rod fixing screw	VTCEI UNI 5931-M12x25	4	50	5

Grease the mechanisms

Grease thrust block by means of a spatula and rotate turret for distributing grease over teeth.

Then grease also the thrust block rolling track by means of the special greaser located on it.

With the greaser ensure to grease the pins of all the cylinders (excluding the strain pivot of the moment control).

Safety devices check

The following test enables to check that all safety devices of the machine work properly.

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

Such systems do not relieve the operator of the responsibility of carrying out an informed and appropriate use of the machine.

Red emergency stop button

- Press emergency stop button on ground control panel and check that no operation is possible, either from ground or platform. Put button to ON position again.
- Press emergency stop button on push-button panel and check that no operation is possible, either from ground or platform. Put button to ON position again.

Safety speed

Make sure that there are no obstacles above or below platform before carrying out the check.

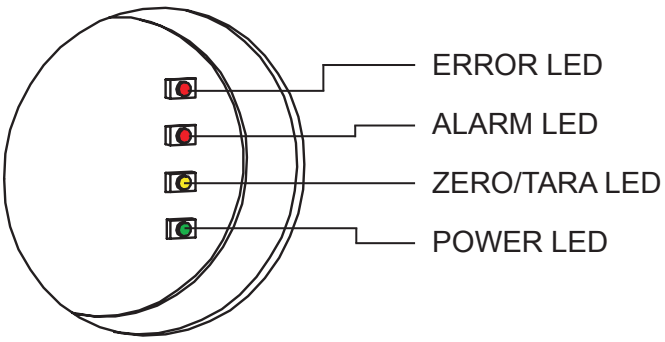
None of the 4 levelling outriggers should be rested and the endothermic motor (petrol or diesel) is to be selected.

- Switch on the motor from the push-button panel, carry out the boom lifting until it stops. Make sure that drive is carried out only at safety speed and the motor is not accelerated.
- Lower the boom until reaching the stowing condition and verify that all the speeds are enabled and the motor can be accelerated.

Load Limiter

- Load platform with a load equal to 110% the nominal load.
- Check that with machine closed:
  - the overload warning light on push-button panel switches on;
  - code 576 is displayed;
  - the overload warning light on ground control panel switches on;
  - no movement is disabled.
- Check that with machine open:
  - the overload warning light on push-button panel switches on;
  - code 576 is displayed;
  - the alarm from push-button panel sounds ;
  - the overload warning light on ground control panel switches on;
  - the alarm from ground control panel sounds;
  - all movements are locked:
  - remove overload;
  - check that all movements are restored.

Load sensor



Check that with machine powered on:

- green LED POWER lights up and that if there is no load yellow led ZERO/TARE lights up;
- load a weight of about 30-40 kg and check that the yellow led is extinguished.

Manual emergency movements check

See paragraph “Manual emergency movements”

Check brakes

Good grip

Parking brakes must be capable to stop the machine on max. slope indicated in the “Technical data” table.

Check that brakes stop on a slope indicated in the above mentioned table in both directions.

Braking spaces

All tests must be executed with the machine flat

FAST SPEED

- Select fast speed on push-button panel.
- Set the tracks joystick controls to max. forward position.
- Release the joystick controls and check that the braking space is lower than 60 cm.

SLOW SPEED

- Select slow speed on push-button panel.
- Set the tracks joystick controls to max. forward position.
- Release the joystick controls and check that the braking space is lower than 10 cm.

Structure check

General

- Check that mechanical structures are protected against oxidation and, if necessary, retouch oxidized area.

Chassis

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

Torretta

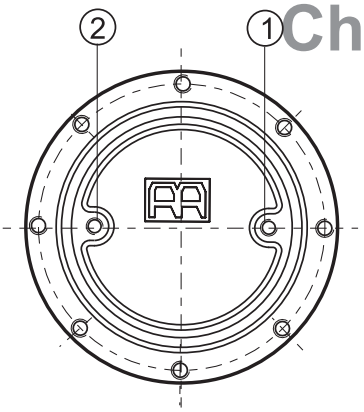
- Check the most important welds visually or by means of penetrating fluids (pantograph hinge support).
- Check the good positioning and fixing of various components (turntable, pantograph hinge pins, etc.).
- Check of the good positioning and fixing of ballasts.
- Check of the condition of the turntable and rotation pinion.

Pantograph and Booms

- Check the most important welds visually or by means of penetrating fluids (pantograph booms, intermediate support, boom, telescopic boom, hinge of various cylinders and jib boom).
- Check of the cage levelling system, weldings of the parts.
- Check the good positioning and fixing of the components (hinge pins, etc.).

Cage and Cage Support

- Check the most important welds visually or by means of penetrating fluids.
- Check of the good conditions of the sheet metal of the walking surface and side protections.
- Check of the tightening of the screws and nuts fixing the cage to its support.
- Check of the good positioning and fixing of the hinge pins of the cage support to the jib boom.



Check of wheel reduction gear oil

- Move the rear wheel on the horizontal surface having the two level caps aligned.
- Unscrew the cap 2: oil must be flush with the hole.
- If needed, top up.

Check of hydraulic tubes

Hydraulic oil is a polluting product.
Avoid fluid leakages by using collection tanks and take precautions against accidental leakages by resorting to oil-absorbing products.

- Visual control of all hydraulic joints and tighten junctions, if necessary.
- Check conditions of flexible hydraulic tubes; replace if necessary.

Checking performance

Use a chronometer for executing the following controls.

Run the tests with the machine on a flat surface, with endothermic motor running and motor speed on "hare".

Safety speed

- Select safety speed on push-button panel.
- Set the tracks joystick controls to max. forward position.
- Check that machine covers 10m in a time greater than 55 sec.

Pantograph lifting/lowering

- Select the pantograph lifting from the ground control panel and check that it takes 15 sec. approx. for a complete lifting.
- Lower the pantograph and check that it takes 17 sec. approx.

Boom lifting/lowering

- Select the boom lifting from the ground control panel and check that it takes 47 sec. approx. for a complete lifting.
- Lower the boom and check that it takes 51 sec. approx.

Telescopic boom extension/retraction

- Select the extension of the telescopic boom from the ground control panel and check that it takes 52 sec. approx. for a complete extension.
- Retract the boom and check that it takes 33 sec. approx.

Turret rotation

- Select the turret rotation from the ground control panel and check that it takes:

  - 113 sec. approx. for a complete rotation to the right.

  - 113 sec. approx. for a complete rotation to the left.

Jib lifting/lowering

- Select the jib lifting from the ground control panel and check that it takes 16 sec. approx. for a complete lifting.
- Lower the jib and check that it takes 12 sec. approx.

Basket rotation

- Select the basket rotation from the ground control panel and check that it takes:

  - 10 sec. approx. for a complete rotation to the right.

  - 10 sec. approx. for a complete rotation to the left.

Oil filter check

The machine indicates when the oil filter is clogged by error code 556 on the push-button panel; all movements are slowed down. It is necessary to replace the filter.

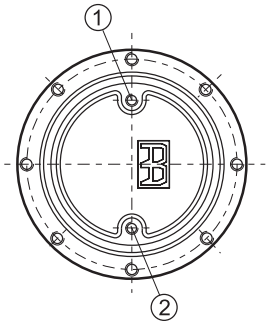
Hydraulic oil is a polluting product.

Avoid fluid leakages by using collection tanks and take precautions against accidental leakages by resorting to oil-absorbing products.

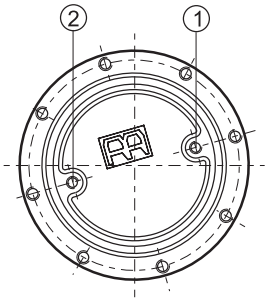
Exhausted oil must be collected and not disposed of into normal discharge lines; specialized firms attend to dispose of or possibly recycle industrial oils, under the laws prevailing in each individual state.

Wheel reduction gear oil change

A



B



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- Orientate the wheel reduction gear as shown in fig. A.
- Unscrew, then remove the caps, both filling and discharge, to make the oil discharge easier.
- Wash the inside of the wheel gear reduction with a suitable detergent.
- Orientate the wheel reduction gear as shown in fig. B.
- Charge the oil until the level reaches the discharge hole.
- Close the caps by changing the seals each time.

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Check register

Reference to legislation

This check register is issued for aerial work platform users, as envisaged by Enclosure I of 2006/42/EC guideline.

Instructions for keeping this register

This check register must be considered as an integral part of the work aerial platform and must be kept with the platform for its whole life, until it is finally dismantled.

Instructions for compilation

These instructions are supplied based on provisions that are already known at the date the aerial work platform is first marketed. New provisions might be issued which could change the user's obligations.

This register is prearranged for recording the following events related to the useful life of the aerial work platform, based on proposed diagrams:

- Delivery of aerial work platform to the first owner.
- Changes of ownership.
- Replacement of components in the hydraulic system.
- Replacement of components in the electric system.
- Replacement of mechanisms or structural elements.
- Replacement of safety devices and their components.
- Periodical maintenance verification except daily inspections indicated in the maintenance summary table.
- Remarkable failures and their repair.

The MONTHLY checks and controls may be recorded on the check Register every 6 months

PLATFORM DELIVERY TO THE FIRST OWNER

The aerial platform type _____ , with factory number: _____ and construction year _____ referred to in this check register has been delivered by _____ to Messrs:

_____

_____

on _____

according to the terms agreed upon in the contract, with the technical, size and functional characteristics specified in the Operating Handbook.

_____

SUBSEQUENT CHANGES OF OWNERSHIP

On _____

The ownership of the aerial platform mentioned above is transferred to the Firm/Company:

_____

_____

_____

It is hereby certified that on the date mentioned above the technical, dimensional and functional characteristics of this aerial platform are consistent with the originally envisaged ones and that changes, if any, have been reported in this Register.

The Seller — The Buyer

_____ _____

SUBSEQUENT CHANGES OF OWNERSHIP

On _____

The ownership of the aerial platform mentioned above is transferred to the Firm/Company:

_____

_____

_____

It is hereby certified that on the date mentioned above the technical, dimensional and functional characteristics of this aerial platform are consistent with the originally envisaged ones and that changes, if any, have been reported in this Register.

The Seller — The Buyer

_____ _____

REPLACEMENT OF COMPONENTS IN THE HYDRAULIC SYSTEM

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF COMPONENTS IN THE HYDRAULIC SYSTEM

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF COMPONENTS IN THE HYDRAULIC SYSTEM

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

_____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF COMPONENTS IN THE ELECTRIC SYSTEM

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF COMPONENTS IN THE ELECTRIC SYSTEM

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF COMPONENTS IN THE ELECTRIC SYSTEM

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

_____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF GEARS OR STRUCTURAL COMPONENTS

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF GEARS OR STRUCTURAL COMPONENTS

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF GEARS OR STRUCTURAL COMPONENTS

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

_____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF SAFETY DEVICES AND RELEVANT COMPONENTS

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF SAFETY DEVICES AND RELEVANT COMPONENTS

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

REPLACEMENT OF SAFETY DEVICES AND RELEVANT COMPONENTS

On the date _____

the piece _____

fabricated _____

HAS BEEN REPLACED

with _____

fabricated _____ factory Nr. _____

note _____

_____

Cause of replacement _____

_____

The officer of the firm entrusted with the replacement The user

_____ _____

VERIFICATION OF PERIODICAL MAINTENANCE

The user must comply with the maintenance and surveillance obligation described in this operating handbook.

NR.	Date	Description of intervention	GNATUR
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

NR.	Date	Description of intervention	GNATUR
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			

NR.	Date	Description of intervention	GNATUR
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			

IMPORTANT SAUNDRIES AND THEIR REPAIR

Description of failure_____

_____

_____

_____

Causes _____

_____

_____

_____

Repair carried out_____

_____

_____

_____

Signature of the official of servicing firm

_____

User's signature

_____

Place_____ Date_____

IMPORTANT SAUNDRIES AND THEIR REPAIR

Description of failure_____

_____

_____

_____

Causes _____

_____

_____

_____

Repair carried out_____

_____

_____

_____

Signature of the official of servicing firm

_____

User's signature

_____

Place_____ Date_____

IMPORTANT SAUNDRIES AND THEIR REPAIR

Description of failure_____

_____

_____

_____

Causes _____

_____

_____

_____

Repair carried out_____

_____

_____

_____

Signature of the official of servicing firm

_____

User's signature

_____

Place_____ Date_____

IMPORTANT SAUNDRIES AND THEIR REPAIR

Description of failure_____

_____

_____

_____

Causes _____

_____

_____

_____

Repair carried out_____

_____

_____

_____

Signature of the official of servicing firm

_____

User's signature

_____

Place_____ Date_____

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