alfasi hire

JIBBI 1890 PRIMO

Carrum Downs (HQ)
(03) 8795 2999
vic@alfasi.com.au

Derrimut, VIC
(03) 8795 2999
vic@alfasi.com.au

Hunter Valley, NSW
(02) 9589 6200
hv@alfasi.com.au

Sydney, NSW
(02) 9589 6200
nsw@alfasi.com.au

Brisbane, QLD
(07) 3370 2800
qld@alfasi.com.au

Gold Coast, QLD
(07) 3370 2800
gc@alfasi.com.au

Mackay, QLD
(07) 3370 2800
nq@alfasi.com.au

Karratha, WA
(08) 6187 3000
wa@alfasi.com.au

alfasi group
hire & property

alfasi hire

PRiMO

SELF-PROPELLED
SELF-LEVELLING
FULL ELECTRIC

PRiMO. The first full electric, self-levelling, tracked telescopic boom with electric drive and fully removable power pack.

Designed to eliminate jobsite obstacles, with an **18m working height**, it can **safely be driven up to 14m and 15° lateral and logitudinal inclination**, drastically enhancing efficiency and operator productivity.

Infinite battery autonomy with the innovative interchangeable, fully removable Power Pack that can be easily transported to allow recharge.

FULL ELECTRIC DRIVE

18m
working height

14m
travel height

Completely reimagined controller for a streamlined user experience based on industry accepted standards and rental sector needs. Two USB recharging stations available on each controller.

alfasi hire

FULL ELECTRIC

WITH COMPLETELY

REMOVABLE POWER PACK

IP67

EV Type 2

110 / 220 VAC *

*AUTOMATIC CHARGING POWER SETTING ACCORDING TO MAINS VOLTAGE

	BATTERY TYPE TIPO BATTERIA	WEIGHT PESO	RECHARGE RICARICA
ELC	**Lead acid** 420Ah 48V	720 Kg	6,5 h
LTH	**Lithium** 330Ah 48V	300 Kg	5,0 h
LTH	**Lithium** 440Ah 48V	350 Kg	6,5 h

Infinite autonomy with our fully removable Power Pack with integrated forklift pockets, a new and innovative power option. Each unit can be easily substituted and taken for recharge off-site. Choose between interchangeable AGM or Lithium battery packs!

ATS

AUTOMATIC TENSIONER SYSTEM

STANDARD

The ATS zero maintenance track tensioning system is directly connected to and controlled by the main hydraulic system.

AES

ANTI-ENTRAPMENT SYSTEM

STANDARD

The AES anti-entrapment system is designed to prevent serious injury by stopping the unit but

WORK LIGHTS

LUCI OPERATIVE

Work year-round in any condition

UAS

ULTRASONIC ANTI-COLLISION SYSTEM

The UAS sensors safeguard the aerial and travel operations by monitoring the area in front and behind the tracks, on the tail swing, and above and below the basket, preventing collisions with obstacles and offering pothole and drop-off protection.

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Technical data	JIBBI 1890 PRiMO			Dati tecnici
Max working height	17,90 m			Altezza massima di lavoro
Max height basket floor	15,90 m			Altezza piano calpestio
Max moving height	13,80 m			Altezza di traslazione
Max outreach (load 140 kg)	9,92 m			Sbraccio massimo (carico 140 Kg)
Max outreach (250 kg)	8,32 m			Sbraccio massimo (carico 250 Kg)
Rotation angle	+/- 190°			Angolo di rotazione torretta
Basket size	1,80 x 0,70 m			Dimensioni navicella
Basket rotation angle	+/- 70°			Angolo di rotazione navicella
Max basket capacity	250 Kg (2 p.)			Portata massima in navicella
Length in stowed position	5,86 m			Lunghezza richiusa
Width	2,20 m			Larghezza
Min height in stowed position	2,16 m			Altezza minima richiusa
Longitudinal leveling	+/-15,6°			Livellamento longitudinale
Lateral leveling	+/-15,6 °			Livellamento laterale
Max gradeability	25°			Pendenza massima superabile
Max side greadeability	25°			Pendenza laterale massima
Drive speed (fast)	4,50 Km/h			Velocità traslazione (veloce)
Drive speed while at high	0,60 Km/h			Velocità traslazione in quota
Anti-Entrapment System	Yes / Si			Sistema anti-intrappolamento
Weight	**ELC**	**LTH**		**Pesi**
Traffic load (Load in basket 140kg)	4,89 kN/m^2	4,56 kN/m^2	4,57 kN/m^2	Carico al suolo (Load in cesta 140kg)
Total weight	~6300 Kg	~5870 Kg	~5910 Kg	Peso totale
Power				**Potenza**
Main Power Source	Lead acid power pack 420Ah-48V	Lithium power pack 330Ah-48V	Lithium power pack 440Ah-48V	Alimentazione principale
Re-charging time - Output current 65A at 230V; 25A at 85V	6,5 h at 230V	5,0 h a 230V	6,5 h a 230V	Tempo di ricarica - Corrente in uscita 65A a 230V; 25A a 85V
N°1 battery charger 85-265V 50/60Hz 65Ah max - Automatic setting	Yes / Si			N°1 battery charger 85-265V 50/60Hz 65Ah max - Regolazione automatica
N°2 Electric Gearmotors 7.5 kW 48V each (IP67)	Yes / Si			N°2 Motoriduttori Elettrici 7,5 kW 48V ciascuno (IP67)
Eletric pump 4,5KW 48V	Yes / Si			Elettropompa 4,5KW 48V
Extras - On Demand				**Allestimenti a richiesta**
Non-marking tracks	Yes / Si			Cingoli antitraccia
Kit Works Lights	Yes / Si			Kit luci di lavoro
Arctic lubricant for cold climate	Yes / Si			Kit lubrificante per clima artico
Ultrasonic Anti-Collision System	Yes / Si			Sistema Anticollisione a Ultrasuoni

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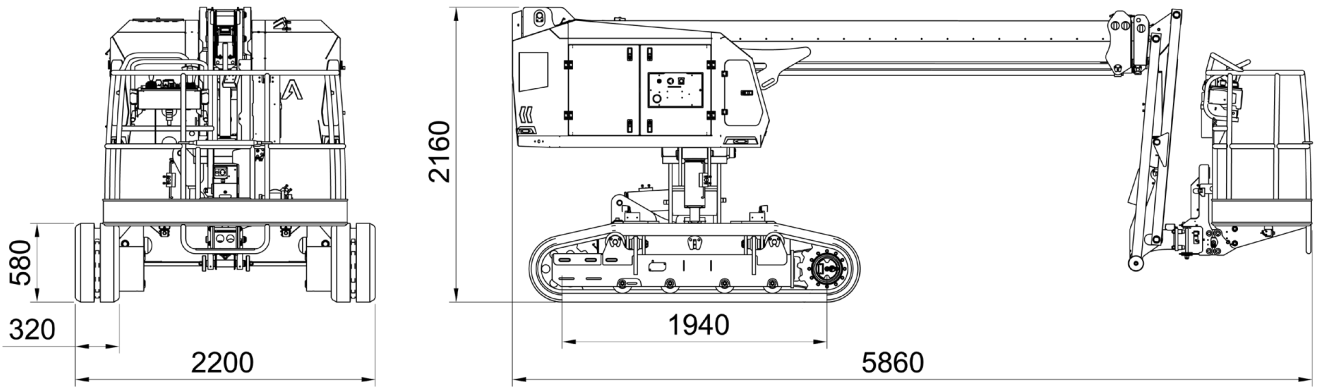
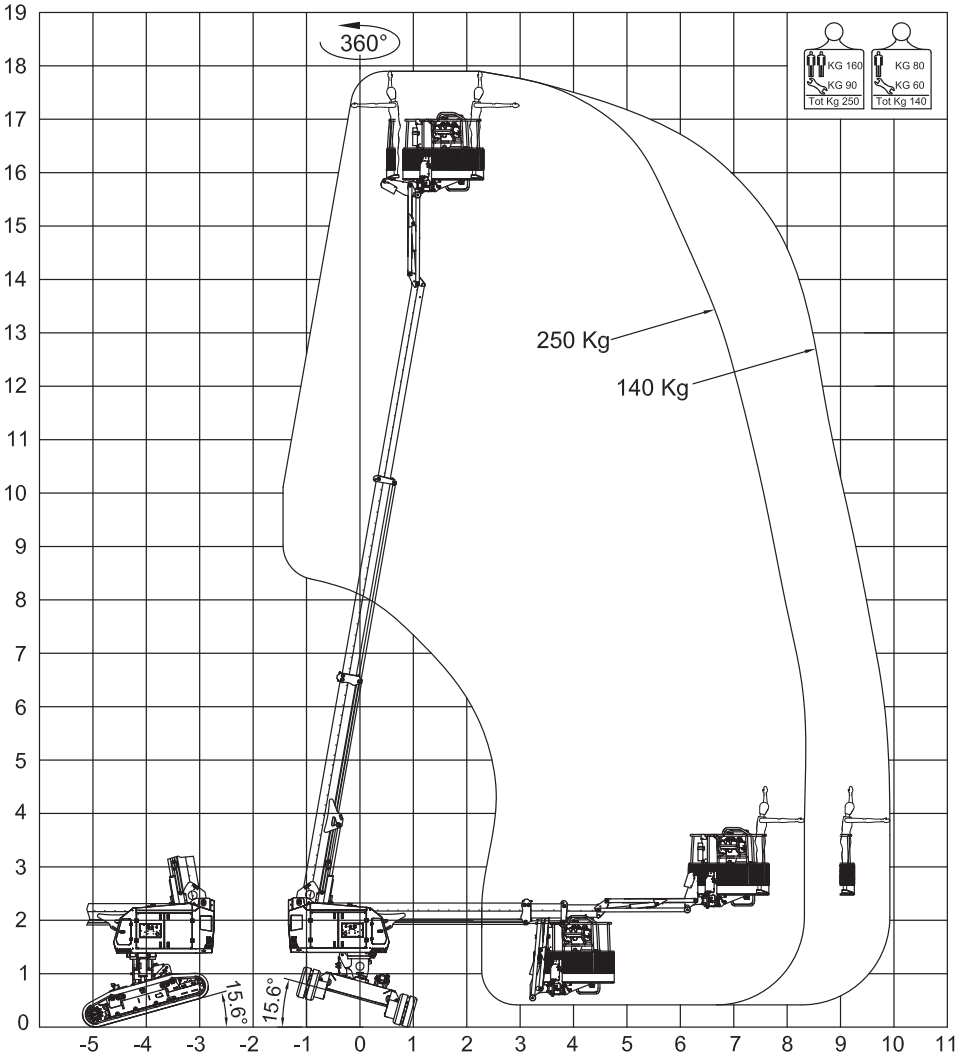


REMOVABLE POWER PACK


360°
KG 160
KG 90
Tot Kg 250
KG 80
KG 60
Tot Kg 140
250 Kg
140 Kg
15.6°
15.6°
19
18
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16
15
14
13
12
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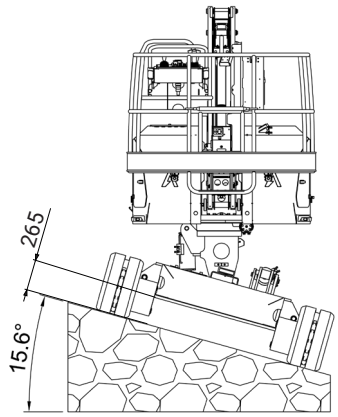
-5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11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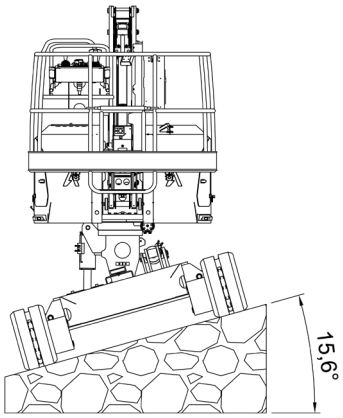
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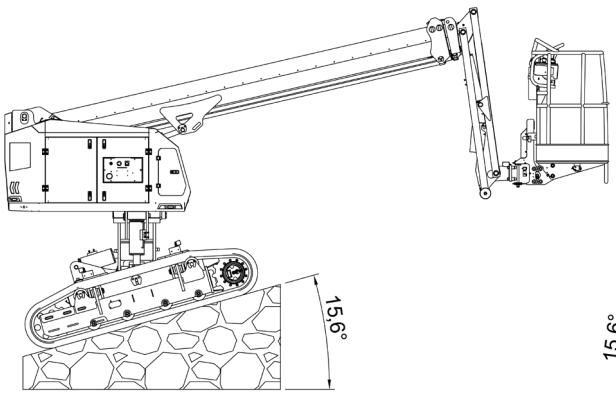
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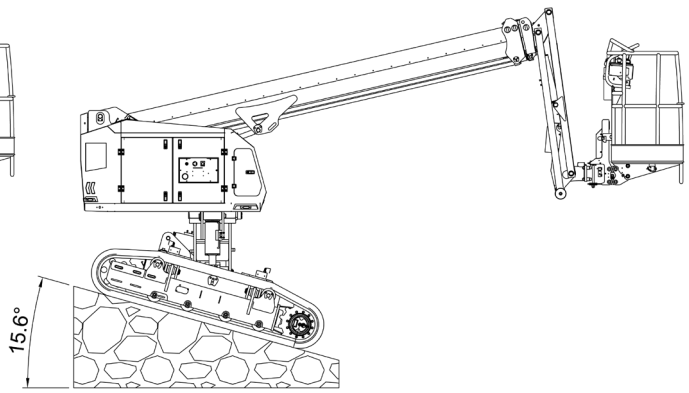

15.6°

ALMACRAWLER

JIBBI PRIMO SERIES:

JIBBI 1890 PRIMO

USE AND MAINTENANCE
ENGLISH
Original Instructions

ALMAC S.r.l.

e-mail: info@almac-italia.com
Phone +39 0375 83 35 27
Fax. +39 0375 78 43 50

Registered office
Viale Ruggeri 6 / A
42016 - Guastalla (RE) - Italy

Operational Headquarters
Via Caduti sul Lavoro 1
42012 - Viadana (MN) - Italy

EDITION: 02/2023

DATE	REVISION DESCRIPTION
2023/01/09	• First issue of the document.
2023/02/01	• Various updates.

SUMMARY

1 GENERAL INFORMATION.

The use of this document is permitted only to the customer to whom the manual was provided as a kit with the equipment, and only for purposes of use and maintenance of the equipment to which the manual refers.
ALMAC s.r.l. declares that the information contained in this manual is consistent with the technical and safety specifications of the equipment to which the manual refers. ALMAC s.r.l. assumes no responsibility for direct or indirect damage to people, things or animals resulting from the use of the equipment in conditions other than those provided.
ALMAC s.r.l. reserves the right to make changes or improvements without notice to this document and to the equipment, without any obligation to update equipment already sent.
The information contained in this manual refers to the various equipment mentioned on the cover; some images and / or information may not be specific to the set-up in the customer's possession because they are not available or available on request.

1.1 Regulatory and legal aspects.

1.1.1 Documentation supplied.

The machine is delivered complete with the following documentation:

- Instruction manual (this document) including the Control Register;
- Spare parts manual;
- EC mark applied to the machine;
- EC declaration of conformity;
- Hydraulic schematic;
- Wiring diagram.

The instruction manual and the attached documents are integral parts of the machine and a copy of these, together with the certificates of the mandatory periodic checks, must be kept on the machine in the appropriate box. The original documents must be kept in a dry and protected place; in case of change of ownership these documents must always accompany the machine.

In case of loss or damage, a new copy must be requested, specifying the model and serial number of the machine.

1.1.2 Notification of commissioning, first check, subsequent periodic checks and transfer of ownership.

The legal obligations of the owner of the machine differ according to the state in which the machine is put into service. It is advisable to inquire about the procedures envisaged in your area at the bodies for the protection of safety in the workplace. In order to improve the filing of documents and to record the modification / assistance work, a section has been provided at the end of this booklet called "Control Register".

1.1.2.1 Notification of commissioning and first check (only for Italy).

In Italy, the owner of the Elevating Work Platform (PLE) must report its commissioning to INAIL and submit it to mandatory periodic checks. The first check is carried out by INAIL within sixty days from the request, after which the employer can make use of the ASLs or authorized public or private entities.
Subsequent checks are carried out by the aforementioned subjects, who provide them within thirty days from the request, after which the employer can make use of authorized public or private subjects. The checks are expensive and the costs for their execution are borne by the owner of the machine. To carry out the checks, the territorial supervisory bodies (ASL / USL or ARPA) and INAIL may avail themselves of the support of authorized public or private entities. Authorized private entities acquire the qualification of public service officers and report directly to the public structure that holds the function.
To report commissioning in Italy, it is necessary to connect to the INAIL portal following the instructions on the portal itself.
INAIL will assign a serial number and during the First Inspection, will fill in the "technical identification sheet", reporting on it only the data detectable by the machine already in service or inferable from the instruction manual. This document will be an integral part of the machine documentation.

1.1.2.2 Periodic checks following the first check.

In Italy, compulsory periodic checks take place annually. For their performance, it is necessary that the owner of the PLE makes a request by registered letter to the supervisory body (ASL / USL or ARPA or other authorized public or private subjects) competent for the territory at least twenty days before the end of the year from the time of past verification.
It should be noted that, if a machine without a valid verification document is moved on the territory in an area outside the competence of the usual supervisory body, it is the owner's obligation to request the annual check from the supervisory body competent for the new territory. in which the machine is to operate.

1.1.2.3 Transfers of ownership of the PLE.

In Italy, in case of transfer of ownership, the previous owner of the PLE is required to communicate the unavailability of the machine by connecting to the INAIL portal.
The new owner will have to retrieve the registration data of the PLE on the same INAIL portal, in order to continue to subject the machine to the periodic checks required by law.
The new owner must in any case obtain from the previous owner the accompanying documentation already mentioned in the previous chapters (see SUPPLIED DOCUMENTATION).
To take advantage of the WARRANTY and to receive any updates and SERVICE BULLETINS, the new owner must report to ALMAC SRL that he has taken possession of the machine by means of written communication using the forms provided at the end of this manual.

1.1.3 Training, information and training of operators.

Training, information and training of operators are legal obligations for the employer. The employer must in fact ensure that the workers in charge of the use of the equipment receive adequate and specific training to allow their use in a suitable and safe way, also in relation to the damage that may be caused to other people and things. Remember that both the one who directly manoeuvres the machine and the one on the ground for any recovery and rescue operations are considered operators.
The operators in charge must be at least 18 years old and be recognized as suitable from a psycho-physical point of view for this task. In particular, before driving, it is necessary to check the following requirements:

- Sight and hearing in good condition;
- Absence of alterations induced by the use of alcohol or drugs;
- Psychological balance, absence of depression or stress.

1.1.4 Tests are carried out before delivery.

Before being placed on the market, each example of the ALMAC platform was subjected to the following tests:

- Braking test
- Overload test
- Function test

1.1.5 Warranty, Request for intervention under warranty and technical assistance.

1.1.5.1 Warranty and disclaimer.

ALMAC S.r.l. guarantees the devices of its own production and undertakes to replace, free of charge, in the shortest time possible, those parts that in its opinion are found to be defective.
Any intervention under warranty can only be carried out by ALMAC s.r.l or Almac s.r.l authorised personnel and on the condition that the Customer is up to date with the payments.
The warranty is not recognized if the customer does not deliver the appliance for repair within 30 days from the date of the first complaint to be made in writing.
With the exception of cases of wilful misconduct or gross negligence, any liability of ALMAC S.r.l. to the Customer is excluded. for any damage resulting from faults/defects in the devices sold.
ALMAC S.r.l. is relieved of any liability and the warranty is void in the following cases:

- Use not permitted or not intended by this manual;
- Improper use of the machine or its use by unauthorised and / or untrained personnel;
- Use that does not comply with specific regulations;
- Lack of maintenance and / or not on time;
- Removal of seals;
- Modifications have been made to the machine without the prior written authorisation of ALMAC S.r.l.;
- Non-genuine spare parts or spare parts not approved by ALMAC s.r.l. are used.

1.1.5.2 Request for intervention under warranty and technical assistance.

Any requests for spare parts or technical interventions under warranty must be reported to ALMAC S.r.l. as soon as a defect is found.
For any request for assistance, always contact the ALMAC technical assistance service as indicated below:

	REGISTERED OFFICE	OPERATIONAL HEADQUARTERS
	ALMAC S.r.l. Viale Ruggeri 6 / A 42016 Guastalla (RE) Italy	ALMAC S.r.l. Via Caduti sul lavoro 1 46019 Viadana (MN) Phone +39 0375 833527 Fax. +39 0375 784350 Email: info@almac-italia.com

Always indicate the type and the serial number of the machine when requesting spare parts under warranty or technical interventions. These data are indicated on the machine identification plate.

1.2 Description and intended use of the machine.

The machine described in this manual is a self-propelled Elevating Work Platform or, as described by the EN280 technical standard, a mobile machine designed to move people to work positions, in which they perform tasks while remaining on the work platform, with the understanding that persons enter and exit the work platform only through access positions at ground or chassis level, and which consists of at least a work platform with controls, an extendable structure (lift arms) and a frame.
The planned activities are:

- Green maintenance;
- Maintenance and installation of systems or devices at height;
- Cleaning;
- Stripping, sandblasting, painting, welding (carefully protecting the machine and its devices);
- All the activities to be carried out at height with the operator on the platform;

The maximum capacity allowed (different for each model; refer to the technical data in the tables later in this manual) consists of:

- For each person a load of 80 kg is considered;
- For the equipment, a minimum load of 40 kg is considered;
- The remaining load is represented by the material being processed.

The machine essentially consists of:

- A motorized undercarriage, with fixed track, equipped with crawlers.
- Hydraulically rotating turret;
- Extensible structure operated by hydraulic cylinders;
- Operator platform.

The base chassis is mainly composed of the following components:

- Fixed central frame on which the hydraulic control block for turret leveling and track tensioning, and the undercarriage inclination sensor are installed;
- Left track equipped with electric gearmotor for moving the machine;
- Right track equipped with electric gearmotor for moving the machine;
- Articulated fifth wheel support that is operated directly by a pair of hydraulic cylinders for the levelling control of the superstructure, on which the rotation fifth wheel is fixed.

The turret supports the power source (battery, inverters, electric pump) and all the components of the control circuits (oil tank, hydraulic block, electronic control units, ground control station). It rotates hydraulically and is fixed to the articulated support of the chassis. It allows rotation of the superstructure with respect to the vertical axis of the machine. The allowed rotation is limited, and this limitation varies from model to model (see the technical data table to understand the maximum rotation angle of each model).
The extensible structure consists of

- Telescopic main arm;
- Jib

The lifting / lowering movements of the arm and the jib are carried out by means of hydraulic cylinders equipped with over-centre valves directly flanged on them in order to keep the arms in position even in the event of accidental breakage of a supply pipe.
The telescopic extension is operated by a double-acting hydraulic cylinder with over-centre valve and by a Fleyer chain system.
The work platform is fixed to the end of the jib arm and can be rotated differently for each model (see the technical data table to understand the maximum rotation angle of each model) by means of a rotary actuator also provided of the over-centre valve to keep it in position in case of hydraulic failure. The platform is made of aluminium and is equipped with safety rails and toe-boards of regular height (Safety rails H = 1100 mm; toeboard H = 150 mm). Platforms of various sizes can be installed; see technical data.
The levelling of the platform is automatic and is provided by an electronic automatic leveling system.
For transport needs, it is possible to reduce the overall length of the machine by removing the platform. This operation is reserved to ALMAC authorized technicians and requires the use of tools.
The machine control system consists of several sensors that allow you to keep overall stability under control by keeping the turret and the extensible structure level and adjusting the height, outreach and working speed according to the various monitored parameters, i.e.:

- Ground inclination;
- Opening angle of the main arm;
- Position of the telescopic extension of the arm;
- Opening angle of the jib;
- Loading on the platform.

By means of the display at the ground control station and the LED indicators on the control panel in the platform, the operator on board is constantly informed of the operating limits reached and the movements allowed.

1.3 Operating positions.

The normal operating position is on the platform, whereas there is a control station on the ground for platform emergency recovery, emergency stop, maintenance, and machine on/off.

1.3.1 Foot-driven use (function reserved for ALMAC authorized technicians).

It is possible, by means of an additional control console (provided to ALMAC authorised technicians only) to drive the machine by walking operator, during loading/unloading operations of the machine from containers or closed means of transport where it is necessary to remove the platform beforehand.
A limited number of movements are allowed using the additional control console, for the only purpose of loading/unloading the machine.

This feature is not available to the operator for standard use.

1.4 Power.

The machine is equipped with an electrical and hydraulic system through which the movement is obtained. The drive is controlled by a pair of electric gearmotors.
The machines can be set up with different energy sources based on the following:

- ELC version = Machine powered by lead-acid battery and electric pump;
- LTH version = Machine powered by lithium battery and electric pump;

The battery pack is easily interchangeable, and either the lithium battery or the lead-acid battery can be installed, following the instructions in this manual.
In any case, both the hydraulic and electrical systems are equipped with all the necessary protections (see electrical and hydraulic diagrams supplied as attachments to this manual).

1.5 Uses not permitted and "Exiting the platform at height".

Normal and permitted use of the machine is described in the previous paragraphs. Anything not described as normal and permitted use is to be considered as not permitted use.

- It is forbidden to operate the work platform from the ground control station except for emergency recovery operations and maintenance activities.
- It is forbidden to operate the work platform by means of additional control console (optional) outside of loading/unloading operations.
- Since the MEWPs are designed to operate from the operating position on the platform, and the only permitted access position is the one that foresees the platform on the ground, any activity that involves accessing and / or exiting with the platform in a position other than that of access (the so-called "landing at height") is formally prohibited.

1.6 Identification.

In the event of a request for spare parts and for interventions, the data shown on the registration plate located on the turret or on the identification plate on the platform must always be mentioned. In case of loss or illegibility of the plates (as well as for the various adhesive plates located throughout the machine), it must be restored as quickly as possible.
For the location of the plates see the following figure. It is advisable to transcribe these data in the following table:

MODEL:_____	SERIAL NUMBER: _____	YEAR: _____

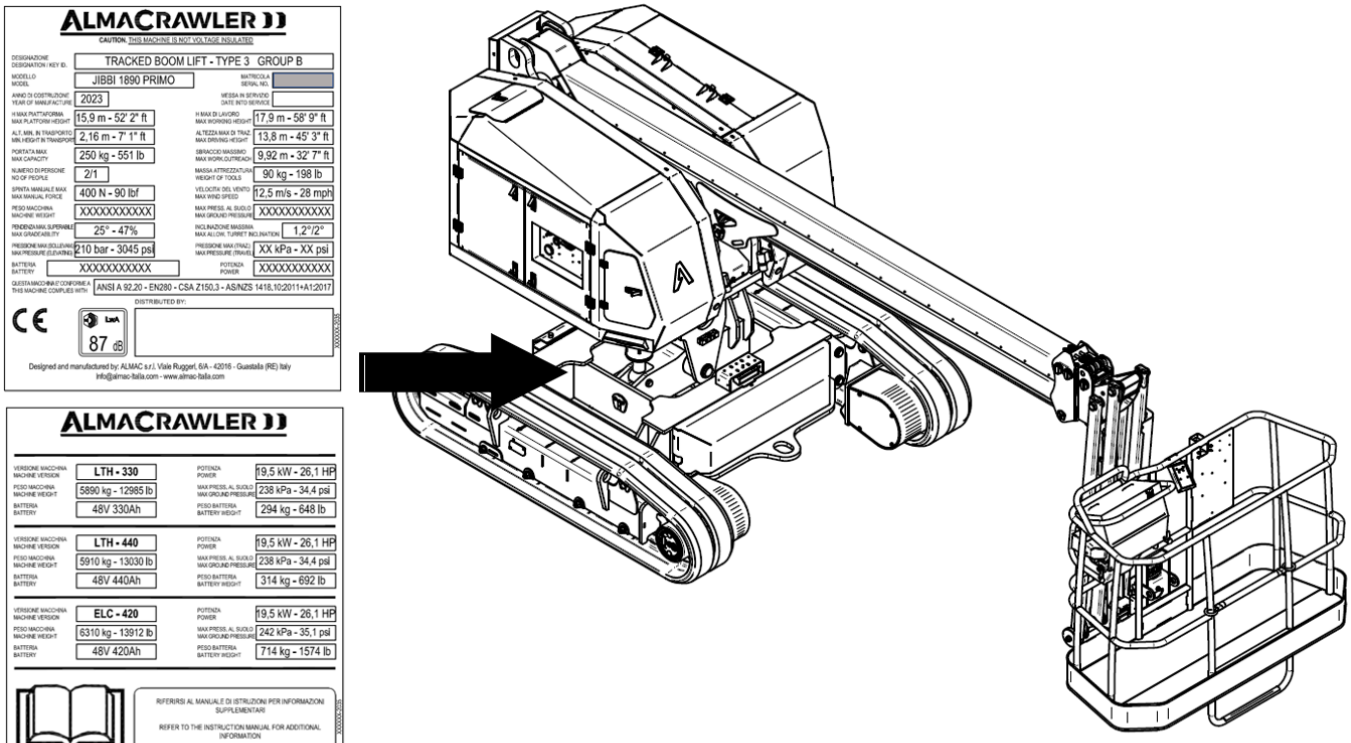


Figure1

1.7 Definitions and locations of the main components

The main components of the machine are shown in the following images. This manual deals with different models and equipment so some images may differ slightly from the model owned.

1. Lower frame
2. Left track
3. Right track
4. Turret
5. Main Boom
6. First extension
7. Second extension
8. JIB
9. Platform
10. Telescopic boom extension cylinder
11. Main Boom lifting cylinder
12. JIB lifting cylinder
13. Platform levelling cylinder
14. Traction gear motor
15. Slewing bearing and hydraulic motor
16. Controls on the platform.
17. Anti-entrapment system
18. Platform rotation actuator
19. 230V socket
20. Hydraulic Oil tank
21. Ground control electrical panel
22. 12V Battery
23. Battery pack (LTH / ELC)
24. Battery charger
25. Plug for charging battery from mains
26. Plug for charging battery by Type 2 charger (only with lithium battery - LTH)
27. Turret side levelling cylinder
28. Turret longitudinal levelling cylinder
29. Lower turret levelling joint
30. Upper turret levelling joint
31. Platform support and levelling joint
32. Electric pump
33. Aerial movement distributor
34. Hand pump
35. Hydraulic Delivery filters
36. Track levelling and tensioning control
37. Track tensioning valves

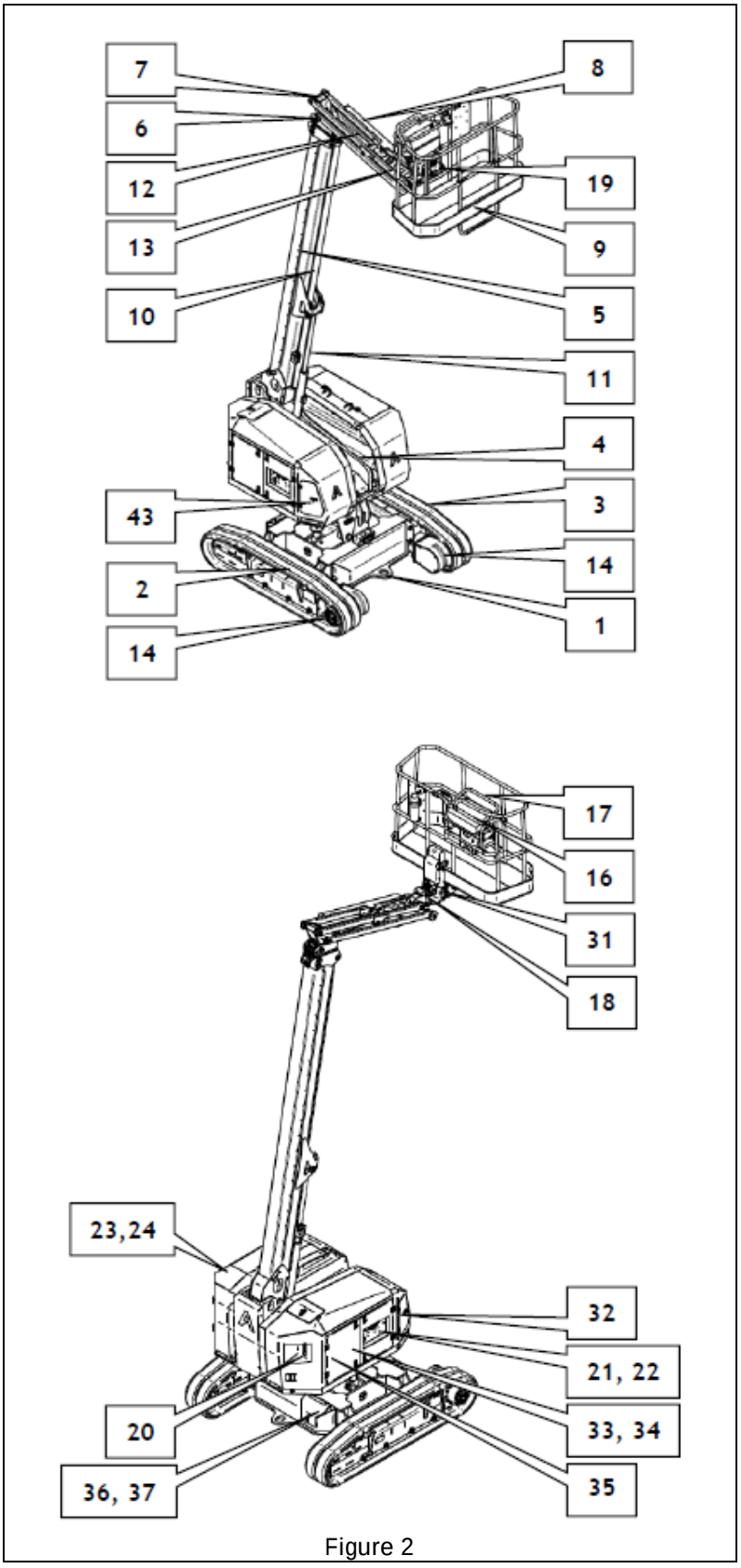


Figure 2

38. Headlights for driving path lighting (optional)
39. Pothole sensors (optional)
40. Working lights on platform (optional)
41. Anti-collision sensors on platform (optional)
42. Anti-crushing sensor on platform (optional)
43. Connector for additional console connection (optional for SERVICE) for loading/unloading

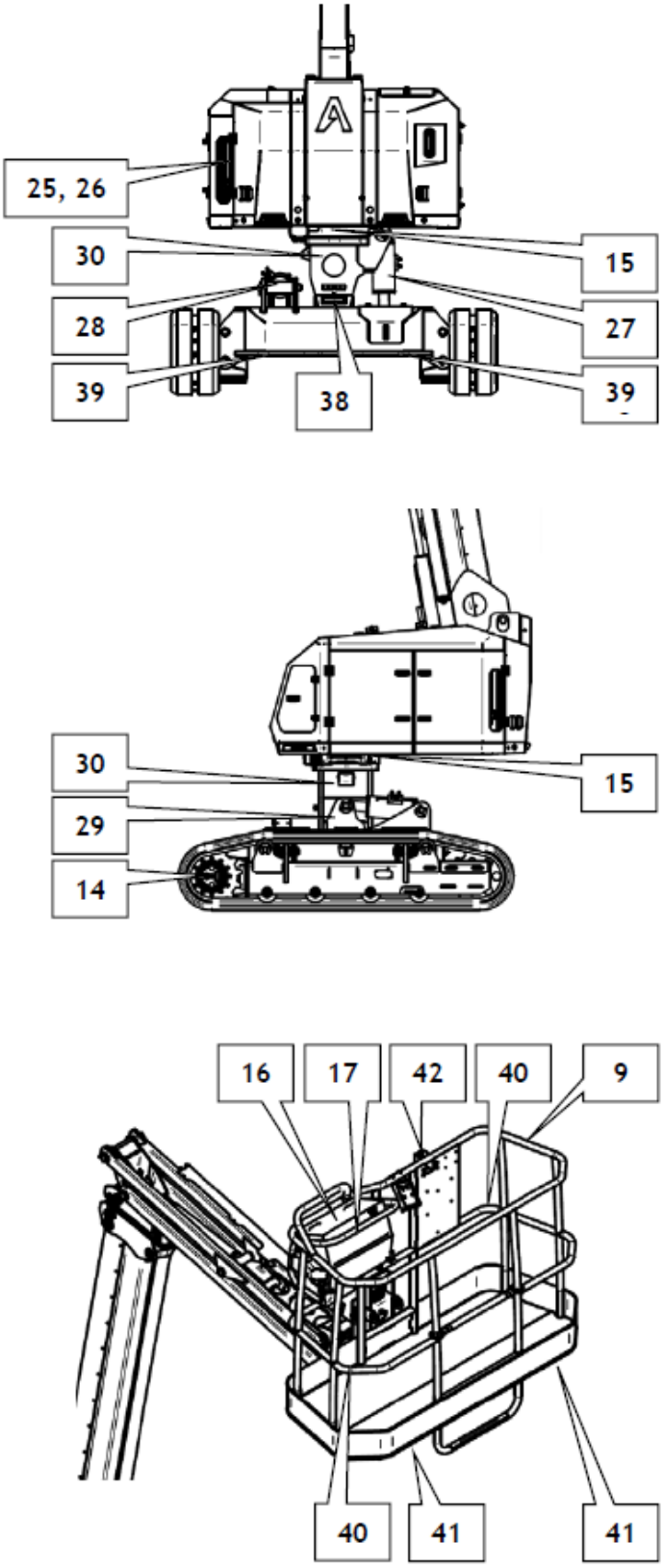


Figure 3

2 TECHNICAL DATA, DIMENSIONS AND WORKING DIAGRAMS.

2.1 JIBBI 1890 PRIMO.

2.1.1 General technical data JIBBI 1890 PRIMO.

Dimensions:	Metric		Imperial	
Maximum working height (1)	17.9	m	58’ 9”	ft
Maximum height of the platform surface (1)	15.9	m	52’ 2”	ft
Maximum working outreach from centre of slew ring – 250 kg (1)	8.3	m	27’ 3”	ft
Maximum working outreach from centre of slew ring – 140 kg (1)	9.9	m	32’ 6”	ft
Maximum platform capacity (m)	250	kg	550	lbs
Maximum number of people on the platform (n)	2		2	
Mass of equipment and materials on the platform (me)	90	kg	200	lbs
Ground clearance of the carriage	265	mm	10”	in
Turret rotation	380	°	380	°
Platform rotation	140	°	140	°
Max height of platform surface with full drive speed permitted (LOWERED TRAVEL POSITION)	≤2	m	≤6’ 7"	ft
Maximum platform size - Standard	1.80 x 0.74	m	5’11”x2’5”	ft
Maximum platform size - Optional	1.40 x 0.74	m	4'7"x2'5"	ft
Machine width	2.2	m	7’ 3”	ft
Maximum transport length with platform mounted	5.86	m	19’ 3”	ft
Maximum transport length with platform disassembled	5.16	m	16’ 1”	ft
Minimum transport height	2.16	m	7’ 1”	ft
Track dimensions (Height x Width) (2)	580 x 320	mm	23” x 13”	in
Hydraulic oil tank capacity	65	l	17	gal
Max. hydraulic pressure lifting / lowering / rotation circuit	210	bar	2900	psi
Max. hydraulic pressure telescopic extension / retraction circuit	160	bar	2320	psi
Maximum ford crossing depth (3)	500	mm	20”	in
Stability limits:				
Max lateral slope of the terrain with elevated platform	15	°	15	°
Max longitudinal terrain slope with elevated platform	15	°	15	°
Maximum manual force allowed for 2 people on the platform (1)	400	N	90	lbf
Maximum manual force allowed for 1 person on the platform (1)	200	N	45	lbf
Maximum wind speed	12.5	m / s	28	mph

(1) Always refer to the working diagrams to obtain these data according to the different machine configurations.
(2) Standard rubber tracks; Optional black rubber tracks.
(3) Ford crossing refers to rapid passage of the machine through a flooded area; it is forbidden to leave the machine parked or work with gear motors submerged in water.

2.1.2 Technical data JIBBI 1890 PRIMO version - LTH 330 battery.

Technical data	Metric		Imperial	
Lithium battery - LiFePO4				
Machine weight (1)	5890	kg	13000	lbs
Battery nominal voltage	48	V	48	V
Battery nominal capacity	330	Ah	330	Ah
Battery pack weight	294	kg	650	lbs
Battery pack size	1120 x 605 h=535	mm	44" x 24" h=21"	in
Battery Life (4)	≥2000	cycles	≥2000	cycles
Single-phase battery charger (included in the battery pack) – STANDARD 3300W	48 / 65	V / A	48 / 65	V / A
Mains voltage for single-phase battery charger	85-265 / 50-60	V / Hz	85-265 / 50-60	V / Hz
Maximum current absorbed by the charger @ 230V	16	A	16	A
Maximum current delivered by the charger @ 48V	65	A	65	A
Maximum current absorbed by the charger @ 115V	10	A	10	A
Maximum current delivered by the charger @ 48V	40	A	40	A
Single-phase battery charger (included in the battery pack) – OPTIONAL 1500W	48 / 30	V / A	48 / 30	V / A
Mains voltage for single-phase battery charger	85-270 / 50-60	V / Hz	85-270 / 50-60	V / Hz
Maximum current absorbed by the charger @ 230V	6.5	A	6.5	A
Maximum current delivered by the charger @ 48V	30	A	30	A
Maximum current absorbed by the charger @ 115V	10	A	10	A
Maximum current delivered by the charger @ 48V	30	A	30	A
Electric pump power	4.5	kW	6	HP
Max current absorbed by the electric pump	150	A	150	A
Traction motor power	7.5 + 7.5	kW	10 + 10	HP
Max current absorbed by traction motors	250 + 250	A	250 + 250	A
LWA sound power	87	dB A	87	dB A
Noise level of operator station Lp (internal industrial environment)	80	dB A	80	dB A
Noise level of operator station Lp (external environment on asphalt)	75	dB A	75	dB A
Hand / arm system vibrations (operator hands support)	<2.5	m/s^2	<8.2	ft/s^2
Whole Body Vibration (on platform - measured on level ground) (2)	0.52 ± 0.10	m/s^2	1.7 ± 0.32	ft/s^2
Hand / arm system vibrations (operator hands support) (3)	0.59 ± 0.10	m/s^2	1.9 ± 0.32	ft/s^2
Minimum operating temperature of the machine	-20	°C	-4	°F
Maximum operating temperature of the machine	+55	°C	+131	°F
Minimum temperature for recharging the lithium battery (5)	0	°C	+32	°F
Maximum temperature for recharging the lithium battery	+55	°C	+131	°F
Performance:				
Machine maximum gradeability in transport condition	25	°	25	°
Maximum transfer speed in transport position	4.5	km / h	2.8	mph
Maximum transfer speed with the platform in a high position	0.6	km / h	0.4	mph
Full platform rise time	50-55	s	50-55	s
Full platform descent time	50-55	s	50-55	s

(1) The weight of the machine may vary depending on the presence of optional accessories. Refer to the data on the machine plate.
(2) Values refer to the raised platform.
(3) Values refer to the platform in transport position
(4) Declared value @ 80% DOD and timely maintenance
(5) At lower temperatures, the charging current is significantly reduced resulting in an increase in the overall charging time.

2.1.3 Technical data JIBBI 1890 PRIMO version - LTH 440 battery.

Technical data	Metric		Imperial	
Lithium battery - LiFePO4				
Machine weight (1)	5910	kg	13000	lbs
Battery nominal voltage	48	V	48	V
Battery nominal capacity	440	Ah	440	Ah
Battery pack weight	317	kg	700	lbs
Battery pack size	1120 x 605 h=535	mm	44” x 24” h=21”	in
Battery Life (4)	≥2000	cycles	≥2000	cycles
Single-phase battery charger (included in the battery pack) – STANDARD 3300W	48 / 65	V / A	48 / 65	V / A
Mains voltage for single-phase battery charger	85-265 / 50-60	V / Hz	85-265 / 50-60	V / Hz
Maximum current absorbed by the charger @ 230V	16	A	16	A
Maximum current delivered by the charger @ 48V	65	A	65	A
Maximum current absorbed by the charger @ 115V	10	A	10	A
Maximum current delivered by the charger @ 48V	40	A	40	A
Single-phase battery charger (included in the battery pack) – OPTIONAL 1500W	48 / 30	V / A	48 / 30	V / A
Mains voltage for single-phase battery charger	85-270 / 50-60	V / Hz	85-270 / 50-60	V / Hz
Maximum current absorbed by the charger @ 230V	6.5	A	6.5	A
Maximum current delivered by the charger @ 48V	30	A	30	A
Maximum current absorbed by the charger @ 115V	10	A	10	A
Maximum current delivered by the charger @ 48V	30	A	30	A
Electric pump power	4.5	kW	6	HP
Max current absorbed by the electric pump	150	A	150	A
Traction motor power	7.5 + 7.5	kW	10 + 10	HP
Max current absorbed by traction motors	250 + 250	A	250 + 250	A
LWA sound power	87	dB A	87	dB A
Noise level of operator station Lp (internal industrial environment)	80	dB A	80	dB A
Noise level of operator station Lp (external environment on asphalt)	75	dB A	75	dB A
Hand / arm system vibrations (operator hands support)	<2.5	m/s²	<8.2	ft/s²
Whole Body Vibration (on platform - measured on level ground) (2)	0.52 ± 0.10	m/s²	1.7 ± 0.32	ft/s²
Hand / arm system vibrations (operator hands support) (3)	0.59 ± 0.10	m/s²	1.9 ± 0.32	ft/s²
Minimum operating temperature of the machine	-20	°C	-4	°F
Maximum operating temperature of the machine	+55	°C	+131	°F
Minimum temperature for recharging the lithium battery (5)	0	°C	+32	°F
Maximum temperature for recharging the lithium battery	+55	°C	+131	°F
Performance:				
Machine maximum gradeability in transport condition	25	°	25	°
Maximum transfer speed in transport position	4.5	km / h	2.8	mph
Maximum transfer speed with the platform in a high position	0.6	km / h	0.4	mph
Full platform rise time	50-55	s	50-55	s
Full platform descent time	50-55	s	50-55	s

(1) The weight of the machine may vary depending on the presence of optional accessories. Refer to the data on the machine plate.
(2) Values refer to the raised platform.
(3) Values refer to the platform in transport position
(4) Declared value @ 80% DOD and timely maintenance
(5) At lower temperatures, the charging current is significantly reduced resulting in an increase in the overall charging time.

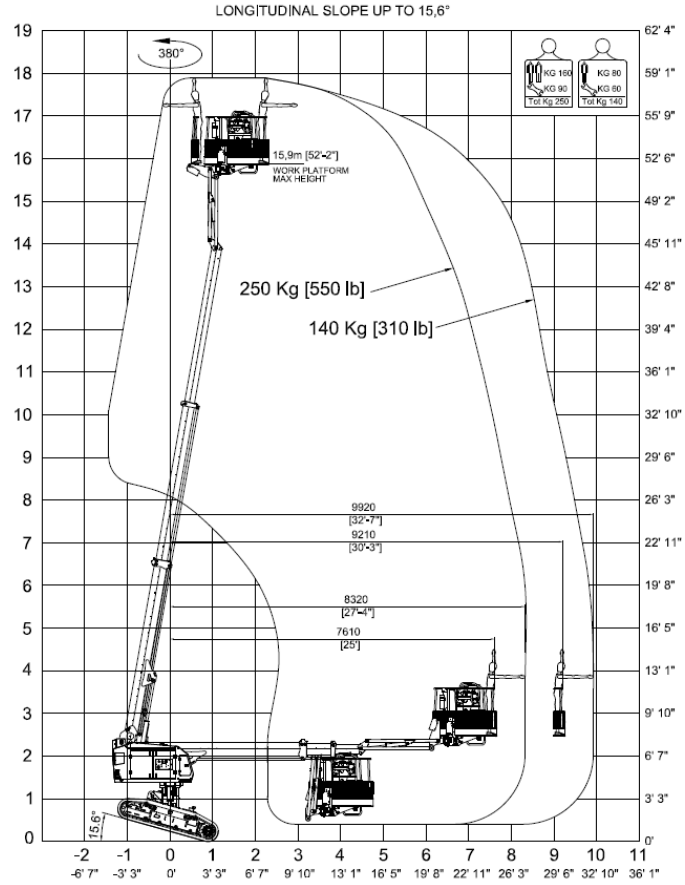
2.1.4 Technical data JIBBI 1890 PRIMO version - ELC 420 battery.

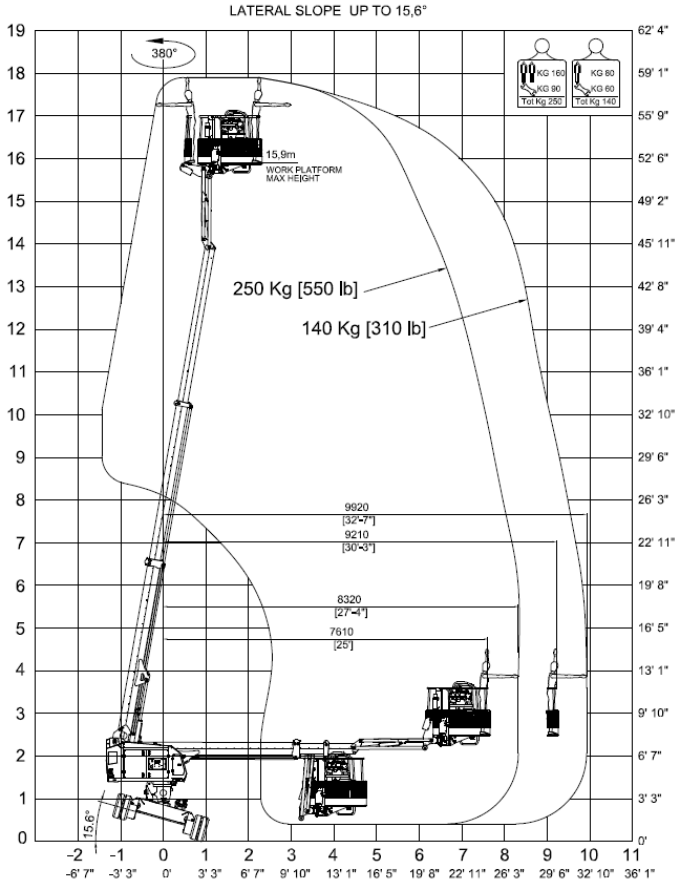
Technical data	Metric		Imperial	
Lithium battery - LiFePO4				
Machine weight (1)	6310	kg	13900	lbs
Battery nominal voltage	48	V	48	V
Battery nominal capacity (C5)	420	Ah	420	Ah
Battery pack weight	715	kg	1580	lbs
Battery pack size	1200 x 605 h=745	mm	47” x 24” h=29”	in
Battery Life (4)	≥1500	cycles	≥1500	cycles
Single-phase battery charger (included in the battery pack) – 2 x 1500W	48 / 30	V / A	48 / 30	V / A
Mains voltage for single-phase battery charger	85-270 / 50-60	V / Hz	85-270 / 50-60	V / Hz
Maximum current absorbed by the charger @ 230V	6.5	A	6.5	A
Maximum current delivered by the charger @ 48V	30	A	30	A
Maximum current absorbed by the charger @ 115V	10	A	10	A
Maximum current delivered by the charger @ 48V	30	A	30	A
Electric pump power	4.5	kW	6	HP
Max current absorbed by the electric pump	150	A	150	A
Traction motor power	7.5 + 7.5	kW	10 + 10	HP
Max current absorbed by traction motors	250 + 250	A	250 + 250	A
LWA sound power	87	dB A	87	dB A
Noise level of operator station Lp (internal industrial environment)	80	dB A	80	dB A
Noise level of operator station Lp (external environment on asphalt)	75	dB A	75	dB A
Hand / arm system vibrations (operator hands support)	<2.5	m/s²	<8.2	ft/s²
Whole Body Vibration (on platform - measured on level ground) (2)	0.52 ± 0.10	m/s²	1.7 ± 0.32	ft/s²
Hand / arm system vibrations (operator hands support) (3)	0.59 ± 0.10	m/s²	1.9 ± 0.32	ft/s²
Minimum operating temperature of the machine	-20	°C	-4	°F
Maximum operating temperature of the machine	+55	°C	+131	°F
Minimum temperature for recharging the lead/acid battery	0	°C	+32	°F
Maximum temperature for recharging the lead/acid battery	+45	°C	+113	°F
Performance:				
Machine maximum gradeability in transport condition	25	°	25	°
Maximum transfer speed in transport position	4.5	km / h	2.8	mph
Maximum transfer speed with the platform in a high position	0.6	km / h	0.4	mph
Full platform rise time	50-55	s	50-55	s
Full platform descent time	50-55	s	50-55	s

(1) The weight of the machine may vary depending on the presence of optional accessories. Refer to the data on the machine plate.
(2) Values refer to the raised platform.
(3) Values refer to the platform in transport position
(4) Declared value @ 80% DOD and timely maintenance

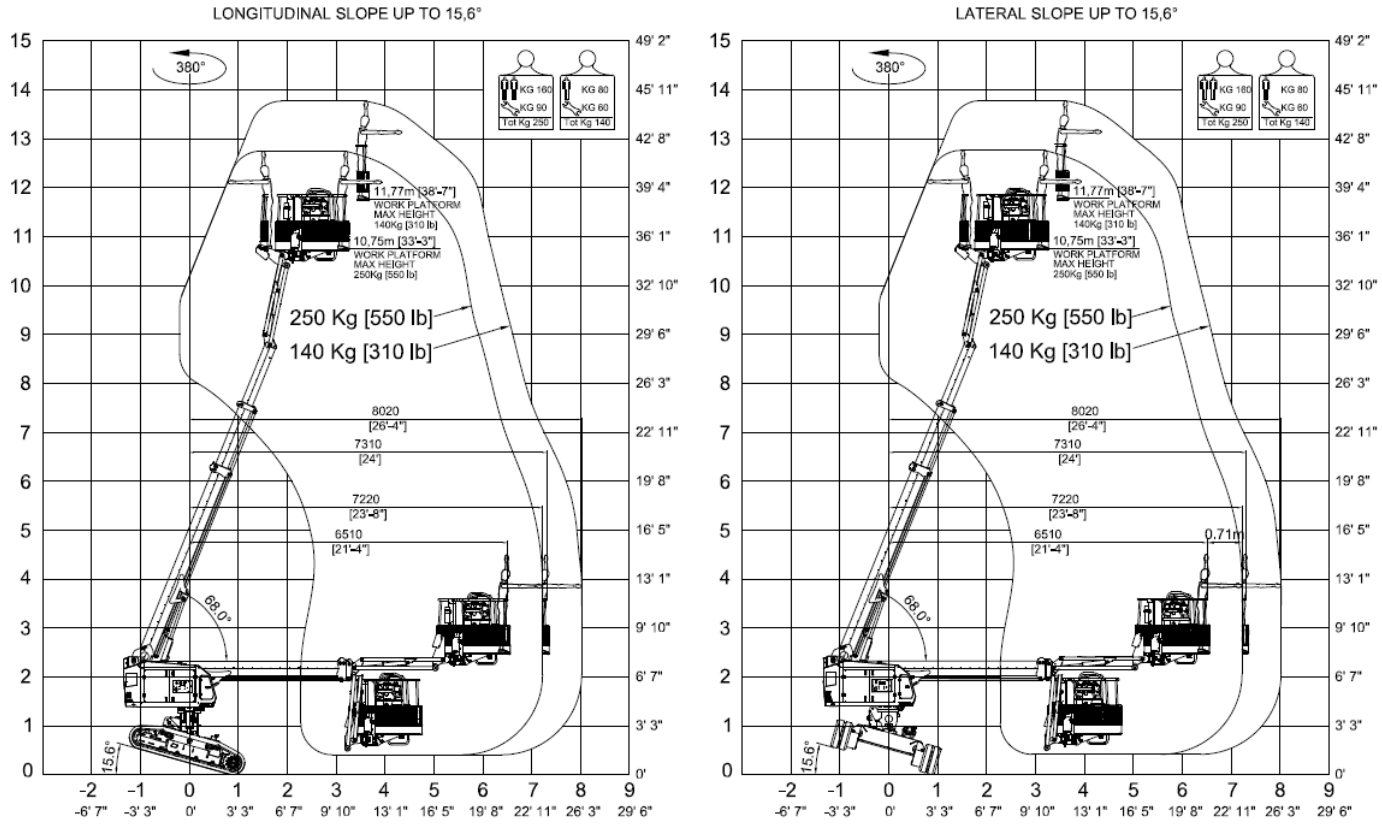
2.1.5 JIBBI 1890 PRIMO working diagrams (all versions).

2.1.5.1 Working diagrams. Maximum height and maximum outreach. Drive inhibited.

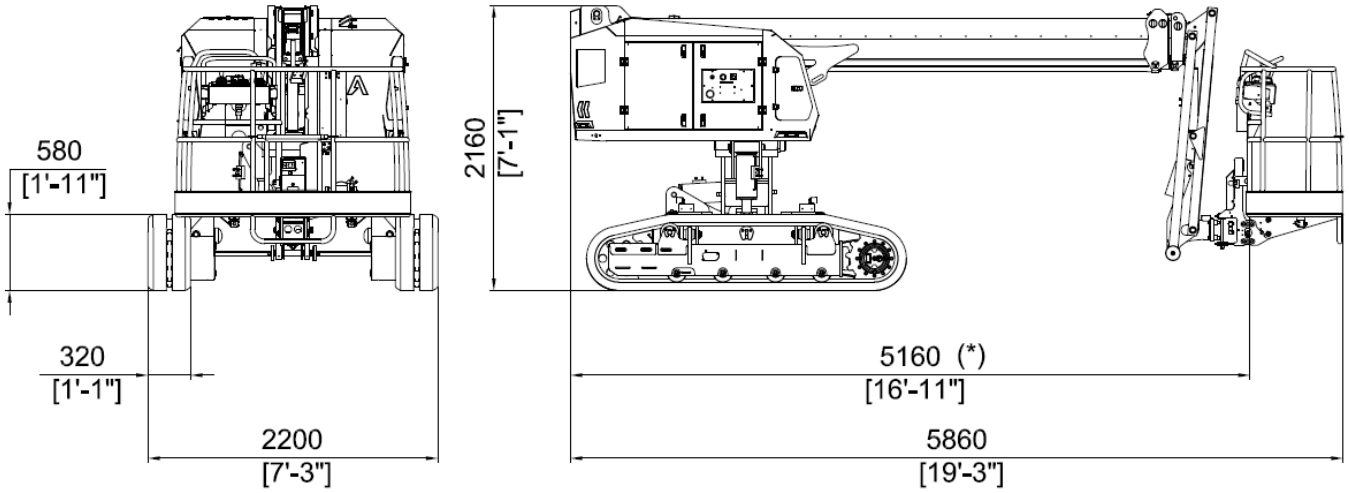




2.1.5.2 Working diagrams. Drive permitted.

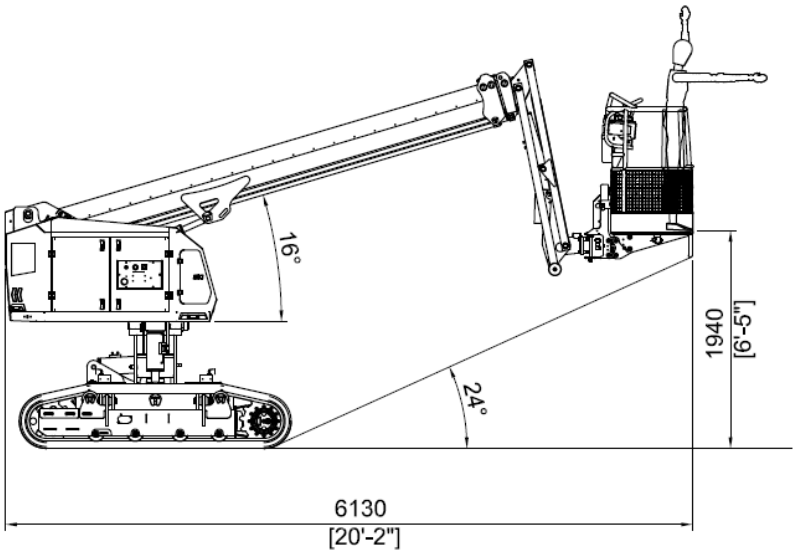


2.1.5.3 Access position and transport dimensions.



2.1.5.4 Max height of platform surface with full drive speed permitted (LOWERED TRAVEL POSITION).

The following pictures show the limit positions of the main boom and jib beyond which the decreased safety travel speed for elevated platform is automatically activated.



3 SAFETY INFORMATION, OBLIGATIONS AND PROHIBITIONS.

3.1 Personal Protective Equipment (PPE).

For completely safe use of the machine it is mandatory to wear the appropriate Personal Protective Equipment indicated below, in addition to any additional devices related to the risks connected to the activity carried out to be identified by the Employer (example: in cases of activities in a noisy environment, the use of hearing protectors, etc. will be prescribed).
The minimum PPE related to the prevailing risks during the use of the machine are:

- Restraint / fall arrest device (harness) complete with lanyard and connectors;
- Helmet;
- Safety footwear.

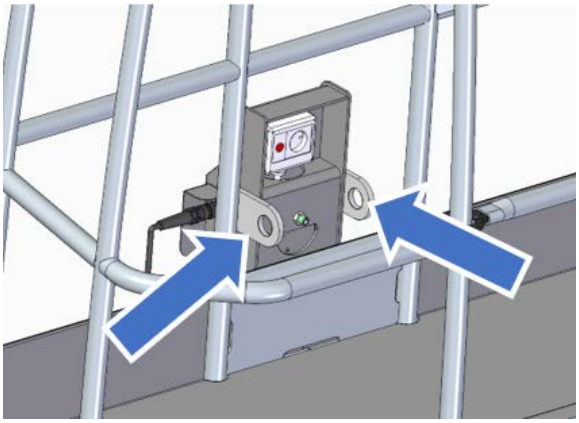
For the use and maintenance of the PPE in use, refer to the manuals of the respective manufacturers.

3.1.1 Restraint / fall arrest device and platform anchoring points.

Each anchoring point on the platform is specifically designed and suitable for anchoring a **fall arrest system** for one person.
The safety device consists of a full-body harness (1), with sternal and / or dorsal attachment equipped with an adjustable restraint or fall arrest lanyard (2), hooked to the attachment point in the prepared basket, by means of suitable shape and size connectors.

The operator and the personnel transported on the platform must wear the PPE described above and attach the connector (carabiner) to the anchor points indicated in the following image, by adjusting the lanyard so that it remains as short as possible.

The choice of whether to use a restraint or fall arrest device is the responsibility of the employer, and depends on the analysis of the risks associated with the actual use of the machine.



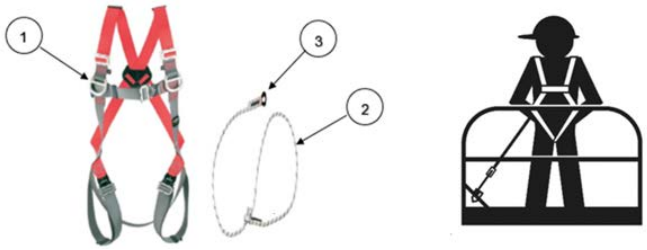


Figure 4

Attention: Only one person can be connected to each anchor point.

3.2 Safety rules.

3.2.1 General safety rules.

- Read this manual carefully before proceeding with start-up, use, maintenance or other interventions on the machine;
- The use of the machine is reserved for adults (18 years of age) and adequately instructed and trained;
- Inform yourself and comply with the regulations in force in the country of use relating to the use of machines for lifting people;
- The machine must be kept in perfect condition by following the maintenance schedule described in the *Maintenance Chapter*. It is the employer's responsibility to verify that maintenance operations are carried out by qualified personnel;
- Use the machine within the operating limits stated in the previous chapter and in the rest of this manual (temperature limits, wind speed, ground inclinations, etc.);
- Do not wear rings, wristwatches, jewellery, loose or untied clothing, such as ties, torn clothing, scarves, unbuttoned jackets or blouses with open zippers, which can get caught in moving parts. Use approved clothing for safety purposes, such as non-slip shoes and reflective vests;
- Keep the walkway, steps, handrails and grab bars always clean and free of any foreign object or traces of oil, mud or snow, to minimize the risk of slipping or tripping;
- Clean the soles of your shoes before getting on the PLE.;
- The use of the PLE requires the simultaneous presence of at least two operators, one of which remains on the ground and is able to carry out the emergency operations described in this manual;
- Use the machine at a minimum distance from high voltage lines as indicated in the following chapters;
- Never exceed the maximum permitted capacity on the platform, both in relation to the maximum permitted load and the number of people transported;
- It is forbidden to load and / or unload people and / or materials when the platform is not in the access position;
- It is forbidden to use structural elements of the machine for ground connections while carrying out welding work on the platform;
- Enter and exit the platform using the appropriate gate and ladder (when applicable);
- Do not use the controls or flexible pipes as holds;
- Do not lean over the perimeter railings of the basket;
- Notify your supervisor in the event of irregularities in operation or suspected unsafe operation of the machine; isolate the machine, turn it off and remove the keys to prevent unauthorised use;
- Make sure that all the guards and other protections and canopies are correctly positioned and that all the safety devices are present and efficient;
- Do not use the platform in environments where there is a risk of explosion or fire;
- Do not use water jets or high-pressure washers to wash the platform;
- All personnel on board the platform must wear, at a minimum, the PPE indicated in this manual. The operator on the ground must also wear a helmet;
- The platform cannot be used if the lighting conditions are not sufficient;
- In case of rain, take care to protect the control box in the basket using the appropriate cover;
- Maintain a distance of at least 2 m from strong differences in height (ditches, steep terrain, etc.);
- Make sure you have sufficient battery charge autonomy to avoid the forced stop of the machine;
- It is forbidden to use the platform to lift loads;
- Overloads, transverse stresses, impacts, abrupt and sudden movements of the platform are prohibited;
- When moving or working on the platform, both feet must be firmly placed on the walking surface;
- If the boom or platform is caught so that one of the tracks is off the ground, all personnel must be evacuated before releasing the machine. If necessary, use other equipment for the evacuation of personnel;
- It is forbidden to get on or off the platform when it is commanded from the ground;
- It is forbidden to operate the machine from the ground control position when the operators are present on the platform, except for emergency recovery operations;

- It is forbidden to transport large materials or panels, as they increase wind resistance, causing a strong risk of overturning.

3.2.2 Handling and displacements

- It is forbidden to drive on roads open to traffic. The machine is not approved for this purpose.
- Do not operate on soft ground to avoid the risk of instability and machine downtime. To avoid overturning, it is necessary to comply with the maximum permissible slopes indicated in the chapter relating to the technical characteristics of each model under the heading “Stability limits”;
- The machine is equipped with a self-levelling system, but in any case, it is necessary to move on inclined surfaces with the utmost caution;
- With the DYNAMIC LEVELLING function active, if the platform is elevated above the ground (platform surface height) less than about 2m (the machine is in "LOWERED TRAVEL POSITION" condition), upon activation of the travel control, the control system activates automatic dynamic levelling that keeps the turret level while moving on slopes. Before the driving motion is activated, the boom will automatically lift to reduce the risk of contact between the platform and the ground. Pay attention to this automatic function, deactivating it if you are operating in particularly low or restricted areas, under the threshold of a door, or when entering / exiting containers, trucks and the like. The DYNAMIC LEVELLING function must be deactivated in case of risk of collisions with aerial obstacles;
- Obstacles, curbs, bumps or changes in inclination (< 100mm) should always be completed at "LOWERED TRAVEL POSITION",
- Always keep the tracks perpendicular to the obstacle to be overcome, and travel at low speed when tackling curbs, bumps or slopes;
- With the platform out of the TRANSPORT position (platform elevated more than approximately 2 m above the ground), the reduced safety drive speed is automatically activated up to a variable working height (see working diagrams) beyond which drive function is automatically inhibited. During the lifting manoeuvre, the operators on board must not apply horizontal loads to the platform (it is forbidden to pull ropes, cables, etc.);
- The PROACTIVE LEVELLING function is always active and:
  a. If the machine is within a working diagram in which the movement is allowed ("ACCESS POSITION", "LOWERED TRAVEL POSITION", "ELEVATED TRAVEL POSITION"), upon activation of any command of the aerial part, the extensible structure self-levels before starting the given command.
  b. With the main boom raised, if the machine is within the working diagram in which elevated travel is allowed ("ELEVATED TRAVEL POSITION"), when operating the travel and the machine is on a slope, the movement will automatically stop. When the traction control is restarted, the extendable structure self-levels before starting traction.
- When moving, pay attention and avoid deep depressions in the ground and holes in the ground;
- While driving elevated, do not change direction on curbs or traverse over rocks or large gradients (> 100 mm);
- When driving uphill, do not steer when moving from flat terrain to slopes. If this is absolutely necessary, carry out the manoeuvre gradually;
- Always make sure that both tracks are resting on the same plane so as not to damage the tracks;
- When proceeding over an obstacle and the track is resting only on the supporting rollers, there is a risk that the track will come out of its seat. Command the movement with caution in these conditions;
- When changing direction in a situation where one of the tracks cannot move sideways due to obstacles, the track may come out of its seat. Command the movement with caution in these conditions;
- Command the movement with the platform raised only if the ground is consistent;
- The machine can cross a ford (see chap.2) for a short time. It is forbidden to leave the machine parked or to work with traction gear motors immersed in water.
- The electronic control during traction at height allows you to move safely on terrain where the slope changes gradually. However, the system cannot prevent the machine from overturning in the event of sudden changes in the slope of the ground or curbs;
- Before commanding the drive with both a low platform and a raised platform, check that all 4 ends of the tracks are resting on the ground. Otherwise, avoid commanding the drive and repositioning the machine. The following image shows only some (not all) of the dangerous conditions to avoid.

Figure5

3.2.3 Stages of work.

- The machine is equipped with numerous sensors on its moving parts (arms, turret rotation, telescopic extension, etc.) which constantly monitor the configuration of the machine and the loads carried on the platform. Any alarms or operation inhibitions are clearly indicated by the LED lights on the control station on the platform; operations dangerous for stability are automatically inhibited, and the operator on the platform is always aware of the situation;
- The machines are equipped with a device for checking the state of charge of the battery which, when the residual charge level reaches too low levels (<20%), signals the condition to the operator by means of a LED on the platform control station, and inhibits the traction high speed and the boom up and extension controls.
- Always check for the absence of people in the range of action of the machine. From the platform, pay particular attention when moving, descending and rotating.
- During work in areas open to the public, to prevent unauthorized personnel from dangerously approaching the machine, it is necessary to delimit the work area by means of barriers or other suitable means of signalling.
- Avoid operating the machine in harsh environmental conditions such as strong winds, and thunderstorms (see also the chapter dedicated to the action of the wind).
- Before lifting the platform, make sure that the tracks are completely resting on the ground; avoid extending the extendable structure if part of the tracks is off the ground. Danger of overturning. See the figure in the previous chapter which shows some situations to avoid.
- During the descent commands, pay attention to any obstacles present under the platform to avoid overturning and / or damage.
- Materials, equipment and tools must be positioned stably on the platform to prevent them from falling to the ground during manoeuvres.
- The machine automatically limits the movements of the extensible structure (ascents, extensions, rotations) based on the numerous monitored parameters (ground inclination, boom extension, load on the platform) always showing which manoeuvres are available to the operator through indications on the control console. In any case, to move the machine in complete safety, once the carriage has been positioned in a favourable position, orient the revolving turret towards the point to be reached at high altitude and:
  .1 Raise the main boom and jib;
  .2 Extend the telescopic extension to reach the operating point at height;
  .3 Carry out the work from a comfortable position, remaining inside the work platform.
- For the manoeuvres to return to the ground, the sequence to be performed is reversed with respect to the above. At the end of the work, after having completely lowered the booms and parked the machine in a safe place, to prevent unauthorized people from using the machine, remove the keys from the control panels and put them in a safe place not accessible to non-personnel.

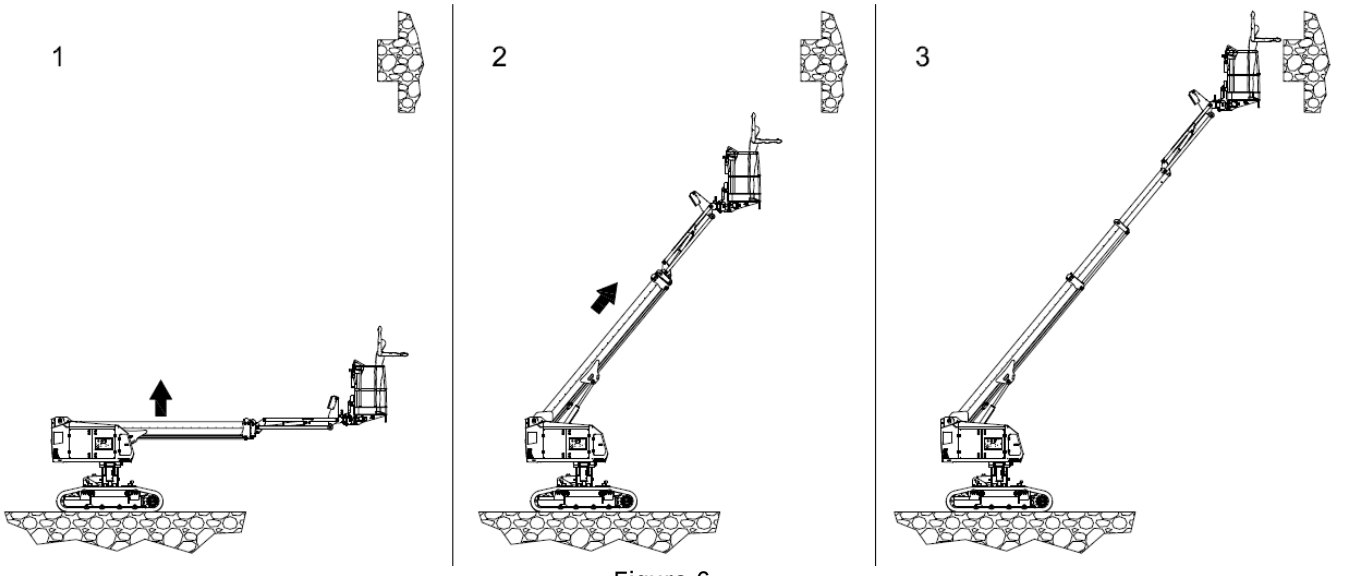


Figure 6

3.2.4 Wind action and Beaufort scale.

The wind is one of the possible causes of overturning. Use of the machine with winds exceeding 12.5 m / s (45 km / h - 28 mph) is prohibited. There is no anemometer on the standard machine; to monitor the wind speed, refer to the table below, where the operating wind limit is defined as N.6 according to the BEAUFORT INTERNATIONAL SCALE.

Beaufort number	**Wind speed (km / h)**	Wind description	Sea conditions	Ground conditions
0	0	Calm	Flat.	The smoke rises vertically.
1	1-6	Light wind	Slight ripples on the surface. No white crests are formed.	Wind movement is visible from the smoke.
2	7-11	Light breeze	Minute waves, still short but visible. Crests do not break, glassy appearance	You can feel the wind on your bare skin. The leaves rustle.
3	12-19	Brisk breeze	Waves with crests that break, foam with a glassy appearance. There are "sheep" with white crests.	Smaller leaves and branches in constant motion.
4	20-29	Moderate wind	Waves with a tendency to get longer. The "sheep" are more frequent	Lifting of dust and paper. The branches are shaken.
5	30-39	Nervous wind	Moderate waves with a shape that gets longer. The "sheep" are abundant, some splashes.	Shrubs with leaves sway. Small waves are formed in inland waters.
6	40-50	Fresh wind	Big waves (breakers) with white foam crests. Likely splashes.	Movement of large branches. Difficulty using the umbrella.
7	51-62	Strong wind	The breakers swell. The waves break and the foam is "blown" in the direction of the wind.	Whole shaken trees. Difficulty walking against the wind.
8	63-75	Storm	High waves. The crests break, forming swirling sprays sucked in by the wind.	Twigs torn from trees. Impossible to walk against the wind.
9	76-87	Strong storm	High waves with rolling crests. Denser foam strips.	Slight damage to structures (chimneys and tiles removed).
10	88-102	Thunderstorm	Very high waves topped by very long crests. The foam strips tend to compact and the sea has a whitish appearance. The breakers are much more intense and visibility is reduced.	Uprooting of trees. Considerable structural damages.
11	103-117	Violent storm	Huge waves could even hide medium-sized ships from view. Sea covered with foam banks. The wind nebulizes the tops of the crests. Reduced visibility.	Extensive structural damages.
12	>117	Hurricane	Very high waves; air full of foam and spray, completely white sea.	Massive and extensive damage to structures.

Danger: The platform must never be used when the wind strength corresponds to a value greater than 6 on the Beaufort scale. For values between 4 and 6 on the scale, pay the utmost attention in any case.

3.2.5 Ground suitability and ground pressure of the machine.

3.2.5.1 Bearing capacity of the ground.

Always, before using the machine, the operator must check that the floor or ground is suitable to withstand the load and pressures generated by the machine, and such as not to slide the machine due to high slope and / or poor grip.
The technical data tables of each machine indicate the pressure values and ground loads in order to help in the evaluation of the floor / ground on which the machines can operate. Consider special incremental coefficients to be sure of the suitability of the soil. The meaning of the various data and the method for calculating them is explained below.

SYMBOL	U.M.	DESCRIPTION	EXPLANATION	FORMULA
A1	cm²	Area occupied by the machine on the ground	The ground support area of the machine is determined by the result of TRACK x LENGTH.	A1 = c1 × i2
A2	cm²	The ground support area of a track	The ground support area of a track. The ground support area of a track was measured taking into account the support on the concrete floor.	A2 = c2 × i1
A3	cm²	The ground support area of the track section which bears the maximum load	It is the design estimate of the track area on which the maximum load generated by the machine under the worst load conditions insists	A3 = c2 × i3
c1	cm	Track width	The transverse width of the machine measured externally between the tracks or between the outermost parts of the machine	-
c2	cm	Crawler width	Represents the maximum width of a crawler.	
i1	cm	Wheelbase	Centre distance between the centre of the traction reducer and the idler wheel.	-
i2	cm	Machine length	It is the overall length of the machine.	-
i3	cm	Crawler length under maximum load	This is the design estimate of the length of the crawler area subjected to the maximum load generated by the machine in the worst load conditions	-
M	Kg	Nominal load	The maximum capacity allowed for the working platform	-
P1	Kg	Machine weight	Represents the weight of the machine, excluding the nominal load. Note: Always refer to the data indicated on the plates applied to the machine.	-
P2	Kg	Maximum load on crawler or stabilizer.	It represents the maximum load that can be unloaded to the ground by a crawler or stabilizer when the machine is in the worst condition of position and load. Note: Always refer to the data indicated on the plates applied to the machine.	-
p1a	Kg / cm²	Pressure to the ground	Average pressure that the machine exerts on the ground in rest conditions and supporting the nominal load.	p1 = (P1 + M) / A1
P1b	Kg / cm²	Pressure to the ground	Average pressure that the machine exerts on the ground in rest conditions and supporting a single operator.	p1 = (P1 + 80) / A1
p2	Kg / cm²	Average pressure on crawlers	Average pressure exerted on the ground by the crawlers by the machine in transport conditions at full load.	p2 = (P1 + M) / 2 / (A2
p3	Kg / cm²	Maximum punctual pressure	The maximum pressure that a portion of the crawler or stabilizer exerts on the ground when the machine is in the worst position and load conditions.	p3 = P2 / A3

See below for an example of calculation of the specific pressures “p1”, “p2”, “p3”.

		JIBBI 1890 PRIMO LTH330		JIBBI 1890 PRIMO LTH440		JIBBI 1890 PRIMO ELC420	
	Formula	Metric	Imperial	Metric	Imperial	Metric	Imperial
P1		5890 kg	13000 lbs	5910 kg	13000 lbs	6310 kg	13900 lbs
P2		3100 kg	6800 lbs	3100 kg	6800 lbs	3160 kg	6800 lbs
M		250 kg	550 lbs	250 kg	550 lbs	250 kg	550 lbs
i1		194 cm	76”	194 cm	76”	194 cm	76”
i2		586 cm	230”	586 cm	230”	586 cm	230”
i3		40 cm	16”	40 cm	16”	40 cm	16”
c1		220 cm	87”	220 cm	87”	220 cm	87”
c2		32 cm	13”	32 cm	13”	32 cm	13”
A1	= c1 × i2	128920 cm²	19983 in²	128920 cm²	19983 in²	128920 cm²	19983 in²
A2	= c2 × i1	6208 cm²	962 in²	6208 cm²	962 in²	6208 cm²	962 in²
A3	= c2 × i3	1280 cm²	198 in²	1280 cm²	198 in²	1280 cm²	198 in²
p1a	**= (P1 + M) / A1**	**477 kg/m²**	**0.68 psi**	**477 kg/m²**	**0.68 psi**	**508 kg/m²**	**0.72 psi**
P1b	**= (P1 + 80) / A1**	**464 kg/m²**	**0.66 psi**	**464 kg/m²**	**0.66 psi**	**495 kg/m²**	**0.7 psi**
p2	**= (P1 + M) / 2 / A2**	**0.49 kg/cm²**	**7 psi**	**0.49 kg/cm²**	**7 psi**	**0.53 kg/cm²**	**7.5 psi**
p3	**P2 / A3**	**2.42 kg/cm²**	**34.4 psi**	**2.42 kg/cm²**	**34.4 psi**	**2.47 kg/cm²**	**35.1 psi**

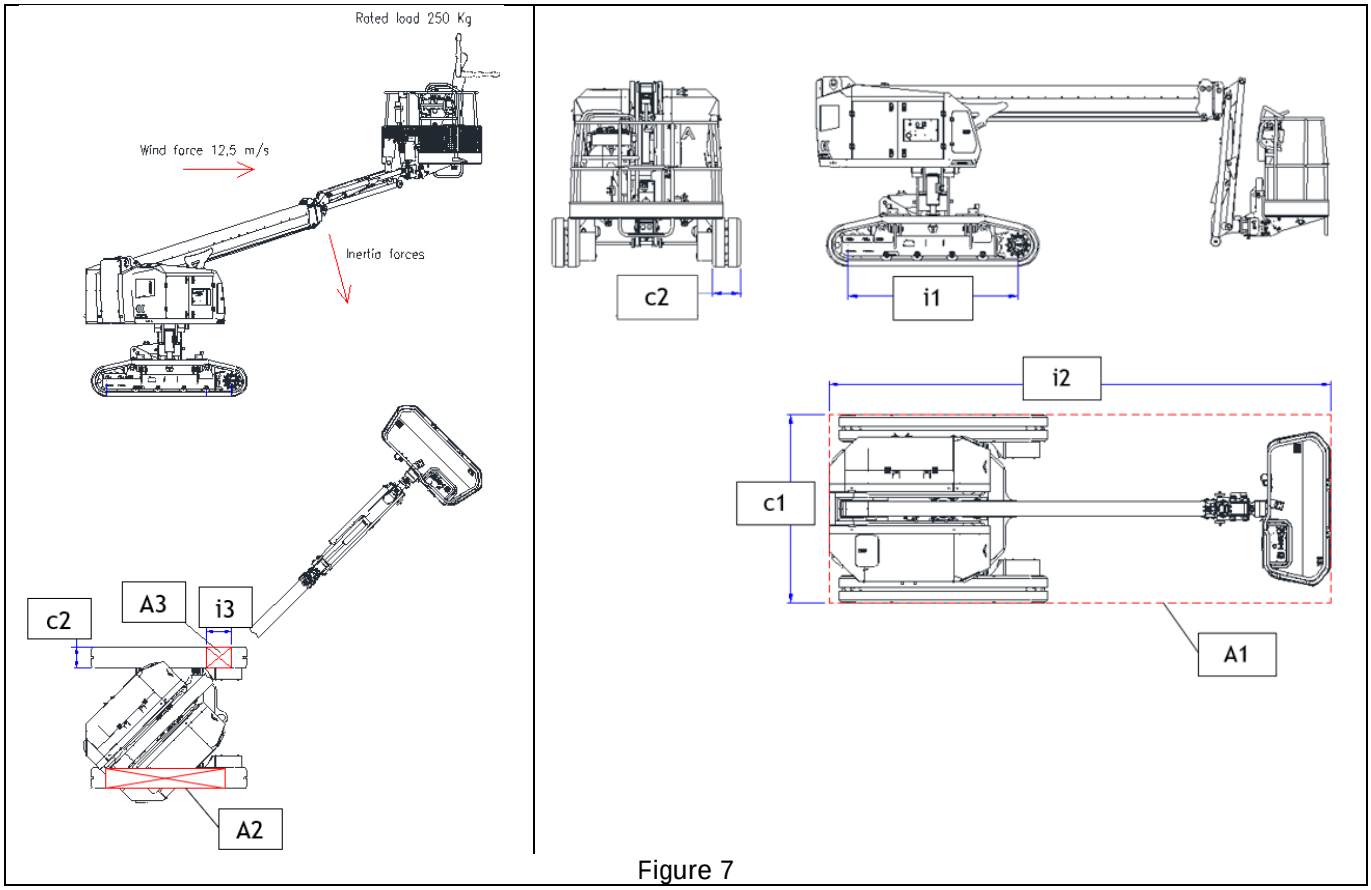


Figure 7

The following table shows the indicative bearing capacity of the soil according to the type of soil. Compare the bearing capacity of the ground with the specific pressure data calculated with the method just described, to understand if the ground is able to withstand the pressure generated by the machine. The values in the table are indicative, therefore in case of doubts the bearing capacity of the ground must be ascertained with specific tests.
In the case of artefacts (for example: concrete floors, bridges, etc.) the bearing capacity must be requested from the manufacturer of the artefact.

TYPES OF SOIL	LOAD BEARING VALUE	
	Kg / cm²	lb / in²
Non-compact filler earth	0 – 1	0 - 14
Mud, peat, etc.	0	0
Sand	1.5	21
Gravel	2	28
Crumbly earth	0	0
Soft earth	0.4	6
Stiff earth	1	14
Semi-solid earth	2	28
Solid earth	4	56
Rock	15 – 30	210 - 420

It is forbidden to use the machine if the maximum pressure generated on the ground is higher than the permitted bearing capacity value indicated in the table.

3.2.5.2 Ground inclination.

Always, before using the machine, the operator must check that the floor or ground is suitable so as not to have the machine slide due to high slope and / or poor grip. The maximum inclinations compensated by the automatic turret levelling system are represented in the image below. It is the operator's responsibility to evaluate whether the terrain in which the machine operates can hold the machine in place.

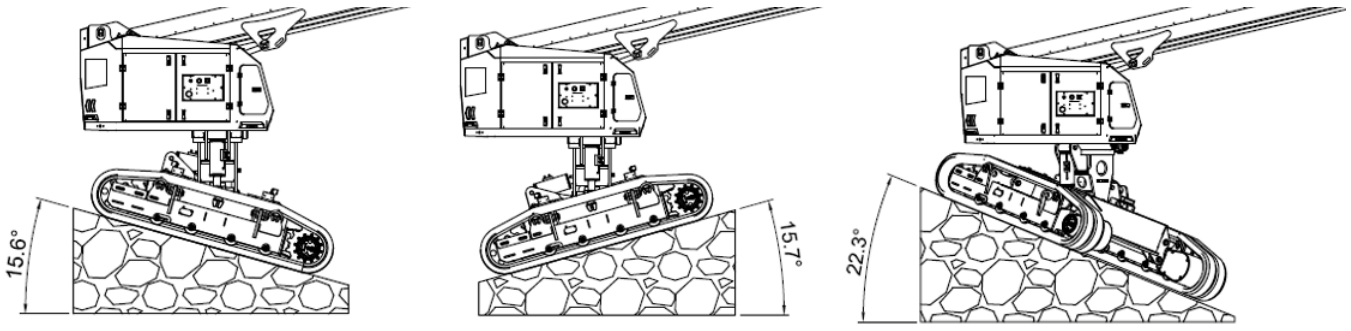


Figure 8

It is forbidden to operate on sloping ground if this does not guarantee the adherence of the tracks. Risk of machine slipping!!

3.2.6 Live power lines

The machine is not electrically isolated and does not provide protection from contact or proximity to electrical lines.
It is mandatory to maintain a minimum distance from the electrical lines in accordance with the local regulations in force and according to the following table.

Type of power lines	Voltage (KV)	Minimum distance	
		m	ft
Light poles	<1	3	10
	1 -10	3.5	12
	10 - 15	3.5	12
	15 - 132	5	17
	132 - 220	7	23
	220 - 380	7	23
High voltage pylons	>380	15	50

Keep away from other machinery that is operating near live power lines.
In Canada and USA, a minimum distance must be maintained in accordance with OSHA standard 1910.333 or national laws and regulations when working near live lines.

In Australia and New Zealand, a minimum distance or no-go zone (NGZ) must be maintained in accordance with local regulations and as stated in AS2550.10 (5.8 Working in proximity to aerial conductors).

3.3 In case of accident.

If an accident occurs during use, without injury to the operators, caused by manoeuvring errors (e.g. collisions) or structural failures, the machine must be placed in a safe condition (isolate it, apply a sign) and it is mandatory to report the anomaly to the employer.
In the event of an accident with injury to one or more operators, the operator on the ground (or on the platform not involved) must:

- Call for help immediately.
- Only carry out the manoeuvres to bring the platform to the ground **if you are sure they will not aggravate the situation.**
- When able, Put the machine in **safe condition** and report the situation to the employer.

4 INSTALLATION AND PRELIMINARY CHECKS.

The machine is generally delivered completely assembled, therefore it can perform all the functions provided by the manufacturer in complete safety. There is no need to perform any preliminary operations.
To unload the machine, follow the instructions in the "handling and transport" chapter.
Place the machine on a sufficiently consistent surface with a slope lower than the maximum allowed (see technical characteristics "**Stability limits**") before operating it.
On some machines the platform can be the removable type in order to allow crossing narrow passages. Follow the specific instructions.

4.1 Familiarization.

Anyone who intends to operate a machine with characteristics of weight, height, width, length or complexity that differ significantly from the training received, must be concerned with receiving a familiarization to cover the differences.
It is the employer's responsibility to ensure that all operators using work equipment are adequately instructed and trained to comply with current health and safety legislation.

4.2 Pre-use checks

Before starting to work with the machine, it is necessary to have read and understood the instructions for use and the prohibitions in this manual and, in summary, form, on an information panel on the platform. Check the perfect integrity of the machine (by visual inspection) and read the plates showing the limits of use of the same.

Always, before using the machine, the operator must check that:

- The battery is fully charged and / or the fuel tank is full.
- The hydraulic oil level in the tank is between the minimum and maximum value (with the platform lowered).
- There are no traces of oil or fuel leaks, or other fluids.
- The land on which you intend to operate is sufficiently horizontal and consistent.
- The trajectory that the elevated platform will have to follow is free from obstacles and power lines.
- The machine performs all manoeuvres safely.
- The gearmotors and the traction tracks are correctly fixed.
- The tracks are in good condition and properly tensioned.
- The railings are fixed to the platform and the gate (s) is self-closing.
- The structure has no obvious defects (also visually check the welds of the lifting structure, the frame and the turret) and there are no deformations (e.g. safety-rails and platform gates). More detailed instructions can be found in the MAINTENANCE chapter.
- The fastening and connection elements (seegers, ring nuts, nuts, screws) of the extensible structure are in position and leave no doubt about their effective tightening.
- Check that there is no rust on the load-bearing components of the structure and on the fastening elements.
- The extension and retraction chains of the telescopic boom are correctly tensioned.
- The instruction and control panel labels are perfectly legible.
- In the appropriate container there is at least one copy of the instruction manual in your own language, and the last valid periodic verification report.
- The controls are perfectly efficient both from the command position on the platform and from the emergency command position on the chassis, including the operator presence system and the emergency stops. For these checks, refer to what is indicated in the FUNCTIONAL CHECKS paragraph in the MAINTENANCE chapter.
- The red protection of the EMERGENCY OVERRIDE button is sealed.
- The anchor points of the harnesses are in perfect condition.

4.3 Defects found during pre-use checks.

If during the pre-use checks (or during the use of the machine), the operator finds a defect that can generate dangerous situations or suspects that there may be malfunctions, the machine must be placed in a safe condition (isolate the same, apply a defect sign) and report the anomaly to the employer and contact an authorised service centre.

5 METHOD OF USE.

5.1 Platform control station.

5.1.1 Document compartment on the platform.

There is a document compartment in the platform as shown in the image on the side. At least one copy of the following documents must always be kept in this compartment:

- Instruction manual in the operator's language;
- Documentation certifying the periodic checks required by law (inquire about national obligations)

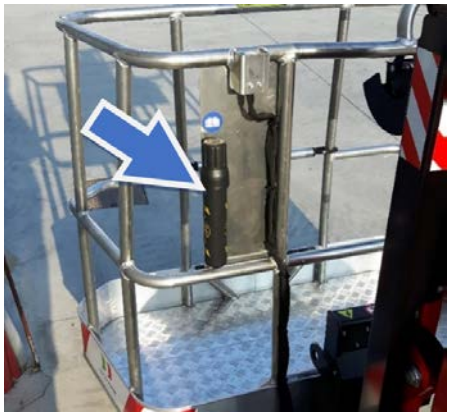


Figure 9

5.1.2 Platform push-button panel protection cap.

When parking or transporting the machine, or during activities which may dirty the push-button panel on the platform, it is necessary to insert the protection cap supplied with the machine to protect the control elements and the screen printing.

To protect the platform push-button panel, cover it completely with the protection cap “A”, and fix it in position using the automatic clips “B”.

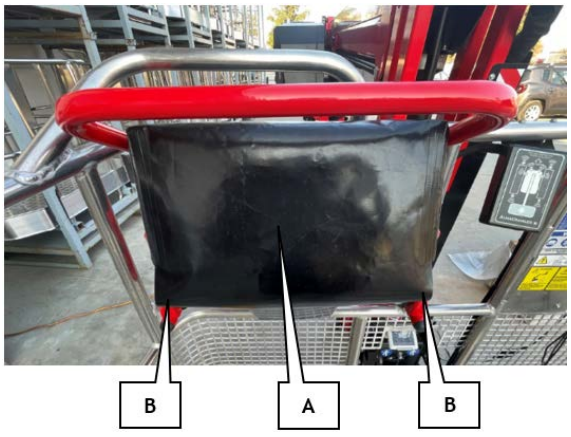


Figure 10

To operate with the push-button panel on the platform, remove the protective cap "A", slide it behind the push-button panel, and fix it in position using the automatic clips "B"

Figure 11

5.1.3 Push-button panel on the platform.

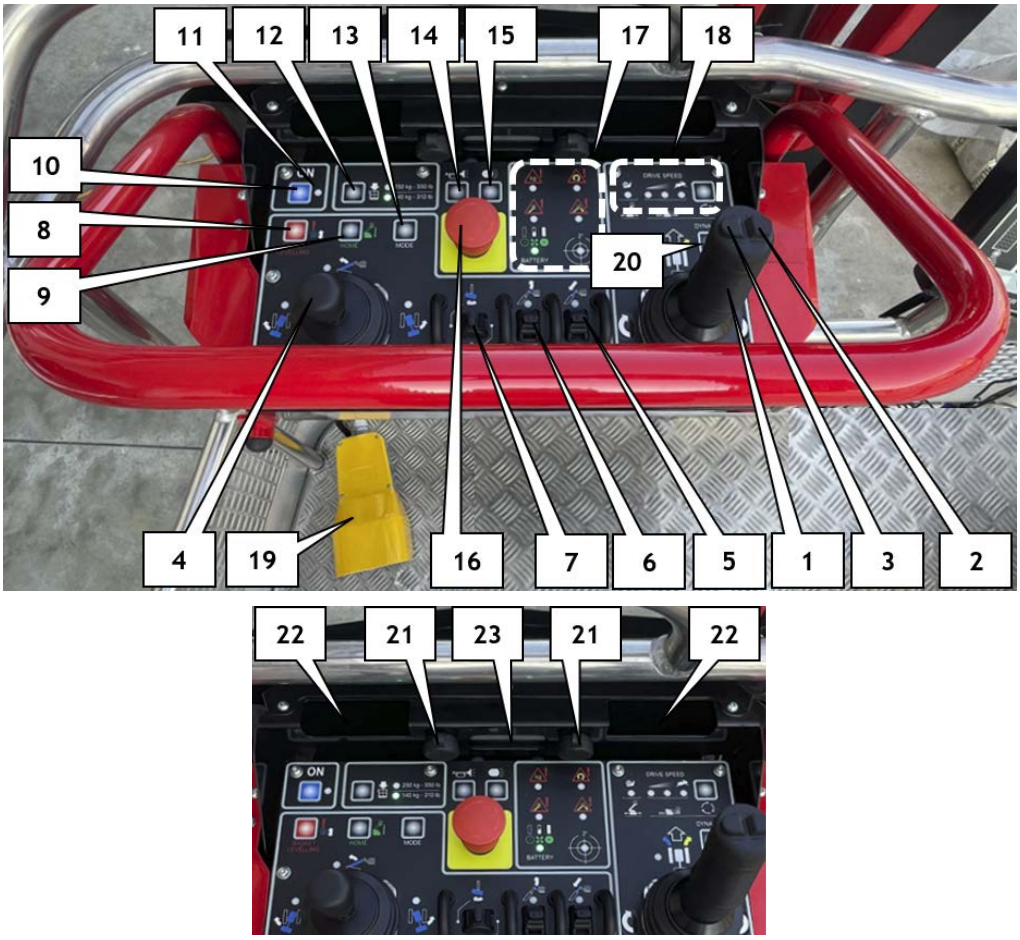


Figure 12

1. DRIVE CONTROL JOYSTICK
2. RIGHT STEERING BUTTON
3. LEFT STEERING BUTTON
4. MAIN BOOM AND TURRET ROTATION CONTROL JOYSTICK
5. TELESCOPIC BOOM PROPORTIONAL CONTROL LEVER
6. JIB PROPORTIONAL CONTROL LEVER
7. PLATFORM ROTATION PROPORTIONAL CONTROL LEVER
8. PLATFORM LEVELLING CONTROL BUTTON
9. "HOME" BUTTON
10. "ON" COMMAND ENABLE BUTTON (OPERATOR PRESENCE SYSTEM)
11. GREEN LED SIGNALING COMMANDS ENABLED
12. PLATFORM LOAD SELECTION BUTTON
13. "MODE" BUTTON
14. HORN BUTTON
15. LIGHTS BUTTON
16. EMERGENCY STOP BUTTON
17. WARNING LIGHTS
18. TRACTION SPEED SELECTION BUTTON AND SIGNAL LIGHTS
19. COMMAND ENABLE FOOT PEDAL (OPERATOR PRESENCE SYSTEM)- OPTIONAL
20. "DYNAMIC LEVELIING" BUTTON
21. USB SOCKET FOR CHARGING MOBILE DEVICES
22. TELEPHONE COMPARTMENT
23. COMMAND LIGHT IN PLATFORM (OPTIONAL)

5.1.3.1 "Operator presence" system.

With the machine on, if the platform control station has been selected, after activating the EMERGENCY STOP button (16) by turning it clockwise, the green LED (11) will flash. Flashing green LED (11) indicates that the controls are not enabled. To make the commands available, they must be enabled by first pressing the ON button (10) or pressing the enabling foot pedal (19 - optional).

5.1.3.1.1 Enabling commands by means of the ON button.

By pressing and releasing the ON button (10), the green LED (11) turns on with a fixed light and the commands are available for the next 20 seconds. If 20 seconds pass after pressing the ON button (10) or after releasing a command, the green LED (11) flashes again and it is necessary to press the ON button (10) again to continue operating with the machine.

5.1.3.1.2 Enabling commands by foot pedal (OPTIONAL)

By pressing and holding down the enabling foot pedal (19), the green LED (11) turns on with a fixed light and for the next 20 seconds, the commands are available. Releasing the foot pedal at any time will automatically halt the engaged movements of the machine.
If 20 seconds pass after pressing the foot pedal (19) or after releasing a command, the green LED (11) flashes again and it is necessary to release and press the foot pedal (19) again to continue operating with the machine.

5.1.3.2 Drive and steering controls.

Attention: Before carrying out any operation to move the machine, check that there are no people or obstacles in the vicinity or in the range of action of the machine. In any case, proceed with the utmost caution.
Before carrying out a drive movement with the platform raised, be sure that the ground on which you intend to move has the characteristics described in the previous paragraphs.
Observe all the indications and prohibitions indicated in the SAFETY RULES chapter of this manual.
Drive the machine at speeds suitable for the terrain on which you are operating, limiting the use of high speed to long journeys on flat terrain.
To operate the traction joystick (1) or the steering buttons (2, 3) it is necessary that the enabling lever integrated in the handle is kept pressed.

The operator should always check the position of the rotating turret referring to the coloured arrows applied on the base frame and push-button panel before moving the machine. See figure alongside.
Considering the turret rotated at 0°:

- BLACK ARROW: forward;
- WHITE ARROW: back.

Figure13

If you are in a condition in which the drive control is available, once the controls have been activated using the ON button (10) or using the foot pedal (19), it is possible to control forward/backward travel and steering by operating the drive joystick (1) forward to provide straight forward travel, and backward to provide straight backward travel. By operating the right (2) or left (3) steering buttons it is possible to obtain different steering modes as described further on.

If one of the green lights shown alongside is off, traction control is not enabled. The warning light (A) indicates that forward travel is enabled; the warning light (B) indicates that reverse travel is enabled according to the coloured arrows on the push-button panel.
It is the operator's responsibility to check the correspondence of the colours of the arrows indicated on the push-button panel and on the undercarriage of the machine, in order to correctly identify the travel direction controlled by the traction joystick (1).
The machine can travel with the platform raised, at automatically reduced speed, within the limits described in the working diagrams described in Chapter 2 of this manual.

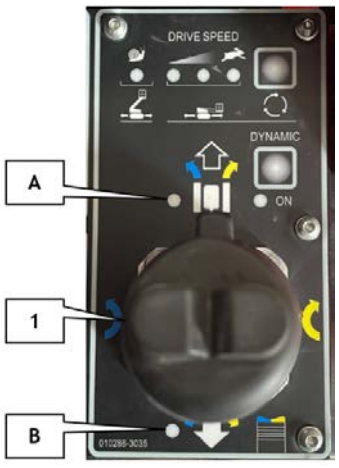


Figure 14

In low platform conditions (ACCESS POSITION and LOWERED TRAVEL POSITION) the drive and steering command can take place at the same time as the turret rotation command in order to facilitate machine movement in tight spaces.

5.1.3.2.1 Drive speed selector switch.

The green lights alongside indicate the following traction speeds:

A. LOW speed;
B. INTERMEDIATE speed;
C. HIGH speed;
D. SAFETY speed automatically reduced with platform at height.

Using the button (18) it is possible to control different traction speeds if the platform is in the low position (ACCESS POSITION and LOWERED TRAVEL POSITION).
By pressing the button (18) it is possible to vary the traction speeds in "loop" (A→B→C→A→B→C→etc.).
By pressing the button (18) for about one second, it is possible to reduce the traction speed (C→B→A).

If the platform is elevated, and within a working diagram in which traction is allowed, the maximum speed is automatically limited, and this condition is signalled by the switching on of the warning light "D". In this condition the button (18) is not active.

Figure 15

5.1.3.2.2 Steering while moving.

If one of the steering buttons (2,3) is pressed when the drive joystick (1) has already been activated, the machine performs "soft" steering by reducing the forward speed of one of the two tracks.
Releasing the steering button, the machine returns to forward in straight line.

5.1.3.2.3 Steering with single track control

By activating the drive joystick (1) only after having pressed one of the steering buttons (2,3), the machine steers keeping one of the tracks still, with an internal turning radius equal to 0.
Releasing the steering button, the machine returns to forward in straight line.

5.1.3.2.4 Countersteering.

By operating the drive joystick (1) horizontally, it is possible to control the tracks in opposition, getting the machine to rotate along its central axis.
Operating the joystick (1) to the right, the machine rotates clockwise; Operating the joystick (1) to the left, the machine rotates counter clockwise.

NOTE: The speed of the counter steer is set at the factory and does not depend on the speed selection button (18).

5.1.3.2.5 Drive and steering control with DYNAMIC LEVELLING and PROACTIVE LEVELLING functions.

The DYNAMIC LEVELLING function is activated by button (20) and is only available with a low platform (ACCESS POSITION and LOWERED TRAVEL POSITION).
This automatic function allows you to keep the turret and the extendable structure level while you are commanding drive and steering on sloping terrain where the slope gradually changes. The system is able to compensate for a maximum inclination of 15° both in the longitudinal and lateral directions.

Using the button (20) it is possible to activate/deactivate the DYNAMIC LEVELLING function if the platform is in the low position (ACCESS POSITION and LOWERED TRAVEL POSITION).

The green light (E) is on when the function is active, and it is off when the function is deactivated. When the DYNAMIC LEVELLING function is active, the traction speed is automatically reduced and the LOW speed warning light (A) comes on.

Conversely, by pressing the speed change button (18) the DYNAMIC LEVELLING function is automatically deactivated.

Figure 16

PROACTIVE LEVELLING is always active when the platform is elevated and the machine is in the working diagrams where drive is allowed. It does not depend on the button (20). This automatic function allows the turret and the extendable structure to be kept level while you are controlling drive and steering on sloping terrain whose slope changes gradually. The system is able to compensate for a maximum inclination of 15° both in the longitudinal and lateral directions.
In this condition, by commanding traction and steering:

- The drive stops automatically when the inclination of about 1° of the rotation plane of the fifth wheel is exceeded. The operator must release the traction joysticks;
- By reactivating the traction control, the machine first commands the leveling of the rotating plane of the fifth wheel, and when the extensible structure and platform are level less than 1°, the traction control returns to operate.

Attention: RISK OF OVERTURNING

The system cannot prevent the machine from overturning in the event of sudden changes in the slope of the ground or curbs.
It is strictly forbidden to face sudden changes in slope, curbs, dips, holes or bumps in translation.
It is the operator's full responsibility to check the suitability of the terrain on which the machine must move.

5.1.3.3 Manual control of turret levelling.

When the platform is lowered (ACCESS POSITION and LOWERED TRAVEL POSITION), it is possible to tilt the fifth wheel plane manually. To control manual levelling of the fifth wheel plane, it is necessary to press, and hold down, the MODE button (13) and at the same time operate the joystick (4).
By operating the joystick (4) in the longitudinal direction, the fifth wheel plane tilts forward or backwards in accordance with the joystick operation;
By operating the joystick (1) in a lateral direction, the fifth wheel plane tilts sideways to the right or left in accordance with the joystick operation.

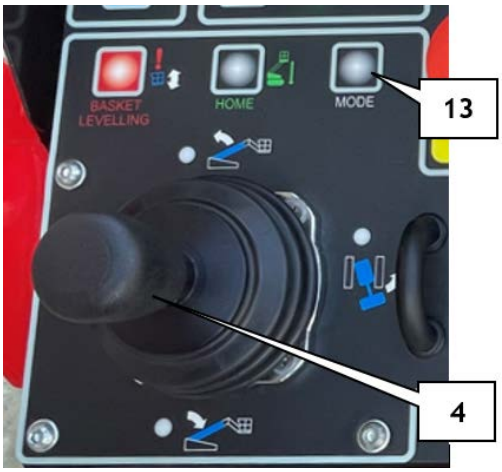


Figure 17

The operator should always check the position of the rotating turret referring to the coloured arrows applied on the base frame and push-button panel before moving the machine.
Considering the turret rotated at 0°:
- BLACK ARROW: Forward;
- WHITE ARROW: Backward.

5.1.3.4 Platform handling (ascents, descents, rotations).

The joystick (4), proportional levers (5,6,7) and pushbuttons (8, 9,12) are used to move the platform (ascending, descending, rotating).

If you are in a condition where platform movement commands are available, once you have enabled the controls through the "operator presence" system, you can move the platform as indicated in the following paragraphs.

Pay attention to the status of the green lights located next to each joystick/control lever. If the light is off, the command is disabled and it is necessary to implement one of the possible commands (green light on) to return to an operating condition in which the command becomes available again.

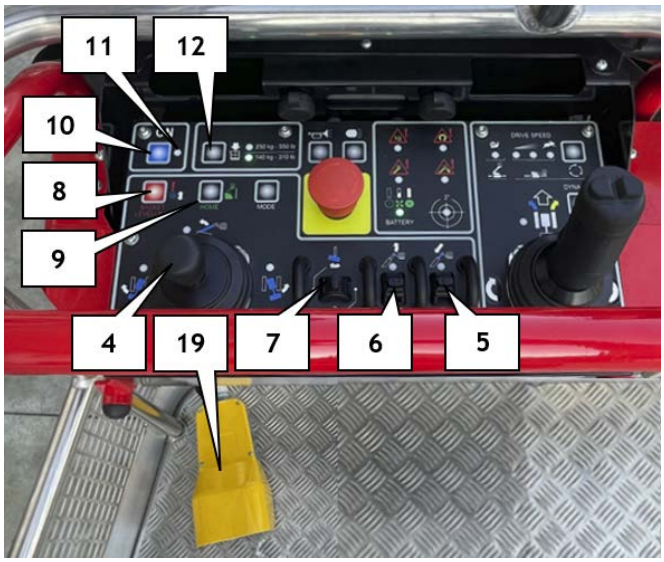


Figure 18

5.1.3.4.1 Platform load selection.

When the machine is turned on with controls enabled in the platform, the control system always selects the working load according to the load actually on the platform, and the machine is set to work in the respective working diagram (see Ch.2).
By pressing the button (12) it is possible to vary the maximum work load and, consequently, the working diagram of the machine:

- If there is a load of less than 140 kg on the platform, and the machine is in a working diagram where it is also possible to work with 250 kg, it is possible to choose which load to work with;
- If there is a load of more than 140 kg in the platform, the machine will operate only within the working diagram provided for 250 kg, and the lower load cannot be selected.
- If the platform is at height, in the working diagram provided for 140 kg, the greater load cannot be selected.

5.1.3.4.2 Platform movement controls with PROACTIVE LEVELLING function.

The PROACTIVE LEVELLING function is always active when the machine is in the working diagrams where travel is allowed i.e. with both low and raised platform. It does not depend on the button (20).
This automatic function allows the turret and the extensible structure to be kept level while a platform movement command is being activated (up/down/rotation). By operating any platform movement control:

- the machine automatically controls the levelling of the fifth wheel plane so that the extending structure and platform are always kept level;
- when the rotation plane of the fifth wheel is horizontal, the platform movement command is activated.

Attention: RISK OF OVERTURNING

The system is not able to level the rotating plane of the fifth wheel if the ground is inclined more than 15°. If the leveling system fails, the machine enters the tilt alarm, and the commands to return the platform to the ground are available. Perform the re-entry commands by modulating the speed, by performing the telescopic boom re-entry command as the first operation.

5.1.3.4.3 Ascent / Descent of the main boom.

To carry out the ascent / descent operations of the main boom, use the proportional joystick (4) by operating it forward to obtain the ascent, or backwards to obtain the descent. The command is proportional, so it is possible to modulate the manoeuvre speed by operating the joystick more or less in depth.
When activating the control, if the platform is not levelled, the control system will first activate the platform levelling command before proceeding with boom up/down.
The main boom up/down command can be performed at the same time as all other operations (except traction and steering). In particular, to control boom up/down at the same time as the turret rotation, it is necessary to operate the same joystick (4) diagonally.

5.1.3.4.4 Rotation of the turret.

To perform the turret rotation manoeuvre, use the proportional joystick (4) by operating it to the right to obtain counter clockwise rotation, or to the left to obtain clockwise rotation. The command is proportional, so it is possible to modulate the manoeuvre speed by operating the joystick more or less in depth.
The boom up/down command can be performed simultaneously with all other OPERATIONS (except drive and steering when the platform is at height). In particular, to control boom up/down at the same time as the turret rotation, it is necessary to operate the same joystick (4) diagonally.

In low platform conditions (ACCESS POSITION and LOWERED TRAVEL POSITION) the traction and steering command can take place at the same time as the turret rotation command in order to facilitate machine movement in tight spaces.

5.1.3.4.5 Extension / retraction of the telescopic boom.

To perform the telescopic boom extension/retraction operation, the proportional lever (5) is used by operating it forward to obtain boom retraction, or backward to obtain boom extension. The control is proportional so it is possible to modulate the operating speed by moving the lever more or less deeply.
The telescopic boom extension/retraction command can be performed at the same time as all other operations (except traction and steering).

5.1.3.4.6 Jib up/down.

To perform the jib up/down operation, the proportional lever (5) is used by operating it forward to obtain the ascent of the jib, or backwards to obtain the descent. The control is proportional so it is possible to modulate the operating speed by moving the lever more or less deeply.
The jib up/down command can be performed at the same time as all other operations (except traction and steering).

5.1.3.4.7 Rotation of the platform.

To carry out the platform rotation manoeuvre, use the proportional lever (7) by operating it to the right to obtain a counter clockwise rotation, or to the left to obtain a clockwise rotation. The control is proportional so it is possible to modulate the operating speed by moving the lever more or less deeply.
The platform rotation command can be performed at the same time as all other operations (except traction and steering).

5.1.3.4.8 Manual adjustment of platform levelling.

The machine control system is set to automatically keep the platform level while moving the main boom with a tolerance of ±2°approximately.
If no command is active, and the platform is inclined over 2° (approximately), by keeping the button (8) pressed, the command system activates platform levelling, restoring it to level.

5.1.3.4.9 HOME button (AUTOSTOWING).

The HOME button (9) allows you to return the platform to the access position. To perform the automatic return-to-ground operation, hold down the HOME button (9) until the command is completed.

Warning: the AUTOSTOWING control automatically commands the return operation by means of an automatic sequence that does not take into account the operator's previous operations. The operator must carefully check the progress of the movements to avoid collisions, interference, crushing.

5.1.3.5 Other functions and devices of the control panel.

5.1.3.5.1 Emergency stop.

Pressing the red emergency stop button (16) will stop the ongoing movements, but the control system will stay turned on. In order to restart normal functions from the platform control station after any operation of the emergency stop button, it is necessary:

- Rotate the button clockwise by a quarter of a turn (or pulling outwards, depending on the type of button);
- Wait for the control panel lights on the platform to reactivate.

5.1.3.5.2 HORN button.

The HORN button (14) must be activated when you intend to signal the movement of the machine by alerting personnel potentially within the range of action of the machine.

5.1.3.5.3 MODE button.

The MODE button (13) is used to enable additional functions:

1. Pressing and holding the MODE button (13) at the same time as the boom/rotation joystick (4) will activate the manual turret levelling control (already described in the relevant chapter - function active only with platform in ACCESS POSITION and LOWERED TRAVEL POSITION).
2. Pressing and holding the MODE button (13) at the same time as the traction joystick (1) will disable the automatic track tensioning control. Necessary operation during track replacement (see chapter MAINTENANCE).
3. Optional functions: pressing and holding the MODE button (13) at the same time as a command inhibited due to collision danger, will enable it.

5.1.3.5.4 LIGHTS button.

As an option, the machine can be equipped with a lighting system that includes work lights on the platform, lighting of the ground control panel and the platform control panel, lights to illuminate the drive path on the undercarriage.
The LIGHTS button (15) turns the lighting system on or off if the platform control station has been selected from the ground control panel. If the ground control station is selected, the lighting system switches on automatically, and button (15) is not active.

5.1.3.5.5 USB sockets and compartments for mobile phones.

The USB sockets (21) are used to recharge mobile phones and mobile devices in general. The device being charged can be housed in the special compartments (22).

Do not use the USB sockets if you are operating in rainy days.
Always close the caps for USB sockets when not in use.

5.1.3.5.6 Warning lights.

A. OVERLOAD INDICATOR LIGHT;
B. LIMIT REACH / ANTI-COLLISION INDICATOR LIGHT;
C. BATTERY LEVEL GREEN INDICATOR LIGHT;
D. TURRET TILT WARNING LIGHT;
E. PLATFORM TILT WARNING LIGHT;
F. LEVELLED TURRET GREEN LIGHT.

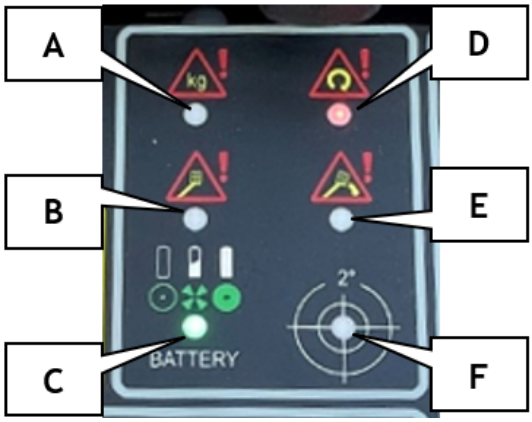


Figure 19

A **OVERLOAD INDICATOR (depends on workload selection):**
Turned on with steady red light: The overload indicator is active.

- If the platform is in transport position (ACCESS POSITION or LOWERED TRAVEL POSITION): travel at first speed is still possible but the DYNAMIC LEVELING and PROACTIVE LEVELLING functions, lifting of the main boom and telescopic extension are inhibited. JIB commands, turret rotation, platform rotation and platform levelling are available.
- If the platform is out of the TRANSPORT position (ELEVATED TRAVEL POSITION and ELEVATED STATIC POSITION) the ANTICRUSHING function is active, i.e. the telescopic retraction and jib descent commands are available for approximately 5 seconds in order to free the platform from any obstacle at height. Once this time has elapsed, if the overload condition remains, all the controls are disabled, and to continue working the overload must be removed, or an emergency recovery must be carried out with the procedure described in the ground controls chapter.

Turned on with flashing red light: The overload alarm is active due to the incorrect position of the platform with respect to the work diagrams. It is necessary to restore the correct selection of the platform workload, or to command the telescopic retraction.

Red light off: Platform load below the maximum limit.

B **REACH LIMIT (depends on workload selection) AND ANTI-COLLISION INDICATOR:**
Turned on with steady red light: the platform has reached the maximum outreach allowed for the specific machine condition (workload selection). Manoeuvres that increase the outreach are inhibited; manoeuvres that reduce the outreach are allowed.

Turned on with flashing red light (OPTIONAL): the ultrasonic sensors of the anti-crushing and anti-collision system (optional) have activated due to a potential risk of crushing/collision of the platform. See the following chapters.

Red light off: The platform is correctly within the limits of the working diagrams. There is no potential collision alert.

C BATTERY LEVEL GREEN INDICATOR LIGHT:

Turned on with steady green light: battery charge status is between 61%-100%.

Turned on with slow flashing green light: battery charge status is between 21%-60%.

Turned on with fast flashing red light: Low battery. The battery charge status is less than 20%. In this condition, the jib up and telescopic extension commands are inhibited. It is possible to raise the boom up to the LOWERED TRAVEL POSITION limit. Drive is possible with a low platform position, at automatically reduced speed.

NOTE: the actual battery charge status can be viewed from the circular indicator on the ground control station.

D TURRET TILT WARNING LIGHT:

Turned on with flashing red light for slightly tilted turret (green light "F" off):

- If the platform is in transport position (ACCESS POSITION or LOWERED TRAVEL POSITION): By activating any control of the extendable structure (up/down/rotation), the system automatically levels the turret before proceeding with the activated control. If the DYNAMIC LEVELLING function has been activated, by commanding traction the system automatically levels the turret as the machine moves forward;
- If the platform is beyond the transport position but at an elevation where it is still possible to command travel (ELEVATED TRAVEL POSITION), the sound warning is also active: By commanding traction, the system automatically levels the turret before proceeding with the command activated;

Turned on with steady red light for excessively tilted turret (green light "F" off):

- If the platform is in transport position (ACCESS POSITION or LOWERED TRAVEL POSITION): By activating any control of the extendable structure (up/down/rotation), the system automatically levels the turret before proceeding with the activated control. If the DYNAMIC LEVELLING function has been activated, by commanding traction the system automatically levels the turret as the machine moves forward;
- If the platform is beyond the transport position but at an elevation where it is still possible to command travel (ELEVATED TRAVEL POSITION), the sound warning is also active: Traction, boom up, jib up and telescopic extension controls are inhibited. Only return and rotation operations are allowed;
- If the platform is in an elevated position where drive is inhibited (ELEVATED STATIC POSITION), the sound warning is also active: All controls except those that allow the platform to return to the ground are inhibited.

Red light off: Turret is level; the green light “F” is on.

E PLATFORM TILT WARNING LIGHT:

Turned on with steady red light for excessively tilted platform:

- If the platform is inclined >5°<10° and is in any position: the command of the main boom is inhibited which would increase the inclination of the platform.
- If the platform is inclined over 10° and is in transport position (ACCESS POSITION or LOWERED TRAVEL POSITION): the ascent of the main boom and the telescopic extension are inhibited;
- If the platform is inclined over 10° and is beyond the transport position (ELEVATED TRAVEL POSITION or ELEVATED STATIC POSITION) the sound warning is also active: all boom operations are inhibited.

Red light off: The platform inclination is within the limits allowed for normal machine operation.

NOTE: if the platform is excessively inclined, if it is not possible to bring the platform back to the ground with the available controls (on the platform and on the ground), the procedure described in the EMERGENCY CONTROLS chapter must be activated.

F **LEVELLED TURRET GREEN LIGHT:**
Turned on with steady green light: The turret is correctly levelled.

Green light off: The turret is not correctly levelled. A turret tilt alarm is active as signalled by the red light “D”

5.1.4 Ultrasonic anti-crushing and anti-collision kits (OPTIONAL).

5.1.4.1 Operator anti-crushing kit (OPTIONAL).

As an option, it is possible to install an ultrasonic sensor in the upper part of the platform, as shown in the figure. This factory-adjusted accessory detects obstacles at a vertical distance of less than 1.5 m from the handrail and alerts the operator of the crushing hazard by means of a warning on the control panel.

In addition to the warning (red light and buzzer - see description of WARNING LIGHTS) it is possible to factory set a command inhibition function for:
- boom up;
- jib up;
- telescopic extension;
- turret rotation;
- platform rotation;
- traction.

Commands still available:
- boom down;
- boom down;
- telescopic retraction.

Figure 20

However, it is possible to activate one of the inhibited controls by activating it at the same time as the MODE button: the control is activated for a few seconds, after which, if the collision hazard condition remains, it stops again.

Warning: what is described is not a safety device, but an aid to the operator with the aim of reducing the risk of crushing. It remains the responsibility of the operator to monitor the surrounding environment by working with the machine.

5.1.4.2 Platform anti-collision kit (OPTIONAL).

As an option, it is possible to install a pair of ultrasonic sensors in the lower part of the platform, as shown in the figure. This accessory, adjusted in the factory, detects obstacles at a distance of fewer than 0.7 m from the platform and warns the operator of the danger of collision by means of an appropriate warning on the control push-button panel. The commands remain active.

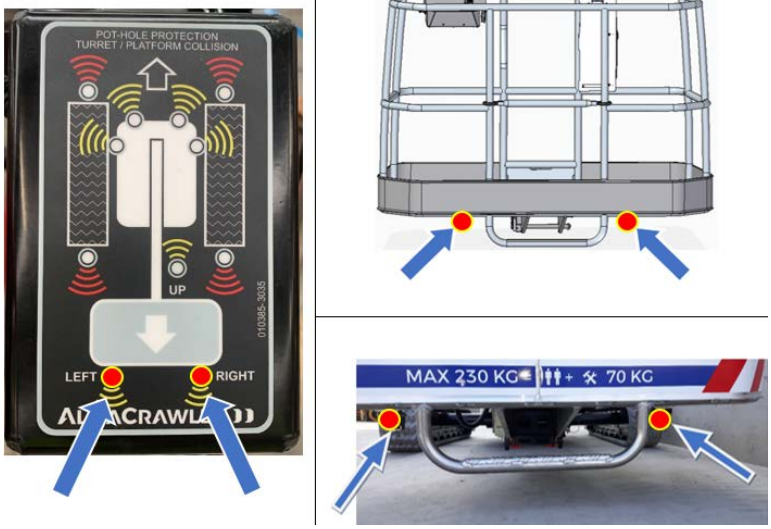


Figure 21

Attention: What is described is not a safety device, but an aid to the operator with the aim of reducing the risk of collision. It remains the responsibility of the operator to monitor the surrounding environment by working with the machine.

5.1.5 "AES" anti-entrapment operator kit.

On the platform control station there is a sensor monitored roll-bar, as shown in the figure, to reduce the dangers deriving from operator entrapment during work from the platform control station while operating at height.

The system is not active:

- When platform is low (ACCESS POSITION and LOWERED TRAVEL POSITION) for JIB and ROTATION commands.
- Operating from the ground control station for emergency recovery.

Figure 22

If, during any movement, the operator is pressed against the protective roll-bar due to an obstacle at height, the operation that was being operated will automatically stop (even in the case of simultaneous operations) and:

- The warning buzzer sounds intermittently (horn activation can also be requested as an option);
- All the lights in the platform flash;

The operations of elevated drive, boom up, telescopic extension, jib up, and turret rotation, if they were operated during the device activation, reverse their direction for a few seconds to free the operator.
After activation of the anti-entrapment function, the commands are not active (the green LED next to the ON button is flashing). To start operating the platform controls again, the roll-bar must be released and the enabling system reactivated.

Warning: it is not a safety device, but an aid to the operator with the purpose of reducing the risk of entrapment of the operator at the machine controls. It remains the responsibility of the operator to monitor the surrounding environment by working with the machine.

5.1.6 Pothole and anti-collision turret kit (OPTIONAL).

As an option it is possible to install a kit consisting of:

A. Pot-hole sensors on the undercarriage;
B. Turret anti-collision sensors;
C. Display panel in the platform;
D. Pot-hole indicator lights;
E. Turret collision indicator lights.

This factory-set kit detects depressions or potholes in the ground and any obstacles during turret rotation, which are signalled via the display panel in the platform.

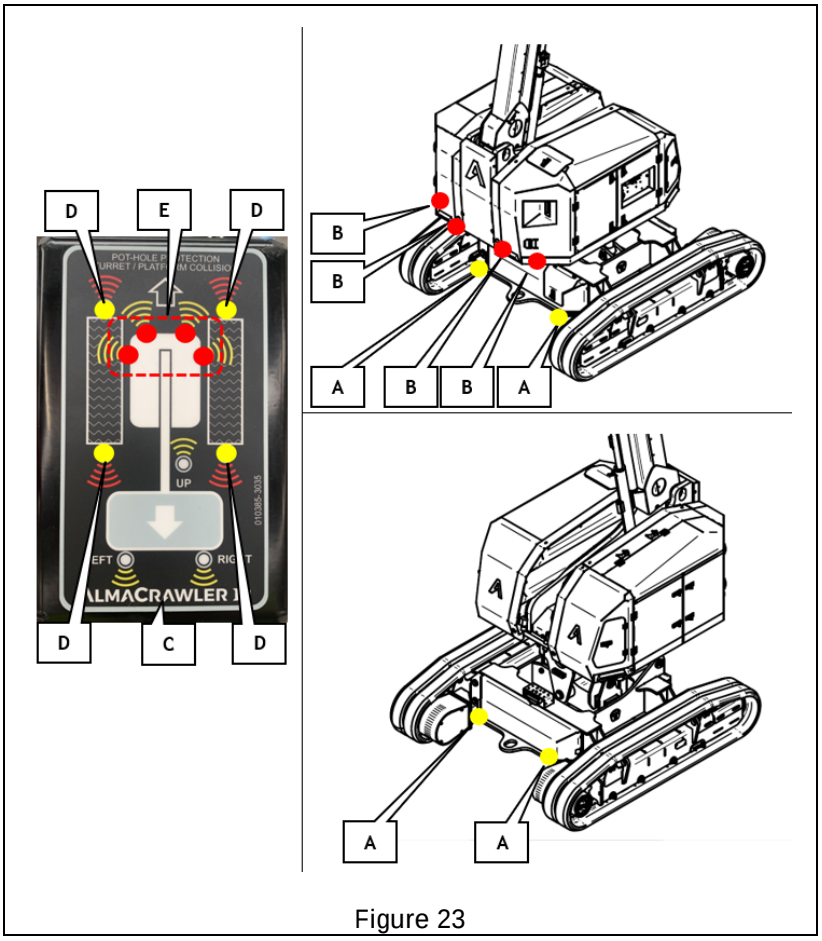


Figure 23

5.1.6.1 Pothole kit (OPTIONAL).

During drive, if one or more "A" sensors detect a depression/pot-hole dangerous for machine stability:

Basic function:

- On the display panel "C" the red warning light "D" relating to the danger zone turns on with a steady light;
- The danger warning buzzer sounds continuously as long as the joystick is operated in the direction of travel that activated the alarm;
- Releasing the traction joystick keeps the red light on while the warning buzzer turns off.

Advanced function (on request):

- If the platform is in the raised position (ELEVATED TRAVEL POSITION) the travel direction traction control that activated the alarm will stops;
- The green LED for platform command enabling returns to flashing (push-button panel disabled);
- By releasing the traction joystick, it is necessary to enable the controls again by foot pedal or ON button to activate the controls again;
- If you decide to continue moving in the direction in which the alarm is active, keep the MODE button pressed and operate the drive joystick;
- If the sensor is activated again 2 seconds after activating the control, the operation stops again and the procedure described must be repeated to continue in the direction in which the alarm is active.

Warning: What is described is not a safety device, but an aid to the operator with the aim of reducing the risk of tipping. It remains the responsibility of the operator to monitor the surrounding environment by working with the machine.

5.1.6.2 Turret anti-collision kit.

If during drive and/or turret rotation, one or more sensors "B" detect an obstacle along the trajectory of turret rotation:

Basic function:

- On the display panel "C" the red warning light "E" relating to the danger zone and the danger buzzer come on. At a distance of about 1 m, the warning light flashes, and the flashing frequency increases as the obstacle approaches, until it lights up steadily when the obstacle is at a distance of about 300 mm (distances of less than 300 mm do not are detected by the system);
- Releasing the drive and/or rotation joystick keeps the red light on while the warning buzzer turns off.

Advanced function (on request):

- The drive and/or turret rotation command in the direction that activated the alarm stop;
- The green LED for platform command enabling returns to flashing (push-button panel disabled);
- By releasing the control, it is necessary to enable the controls again by foot pedal or ON button to activate the controls again;
- If you decide to continue forward/rotate in the direction in which the alarm is active, keep the MODE key pressed and operate the traction joystick or the turret rotation lever;
- If the sensor is activated again 2 seconds after activating the control, the operation stops again and the procedure described must be repeated to continue in the direction in which the alarm is active.

Attention: What is described is not a safety device, but an aid to the operator with the aim of reducing the risk of collision. It remains the responsibility of the operator to monitor the surrounding environment by working with the machine.

5.2 Control station on the ground.

The ground control station is located in the turret. It contains the electronic control units that manages all the functions of the machine and has the function of:

- Turn the machine on and off;
- Select the enabled control station (on the ground or on the platform);
- Move the extensible structure to bring the platform back to the ground in case of emergency or for maintenance operations. The ground control station is available if it is activated when the emergency stop button has been previously pressed in the platform, in order to prioritize the emergency recovery of the platform. Reactivating and pressing the stop button on the platform again, while the machine is being controlled from the ground, the movements stop again.

Warning: It is forbidden to operate from the ground controls in normal working conditions with personnel on the platform. The ground control station is used exclusively for emergency recovery operations, maintenance, or for fairs or exhibitions (without operators on board the platform).

The master key must always be available to the recovery worker who remains on the ground during normal use of the machine, ready to intervene in an emergency.

At the end of the work, turn off the machine by turning the main key to position "OFF" and remove the key itself in order to avoid unauthorized use of the machine.

Access to the electronic control units is allowed by unscrewing the control panel and is restricted to trained personnel for maintenance and/or repair operations. Access the electronic control units only when the machine is disconnected from any external power supplies.

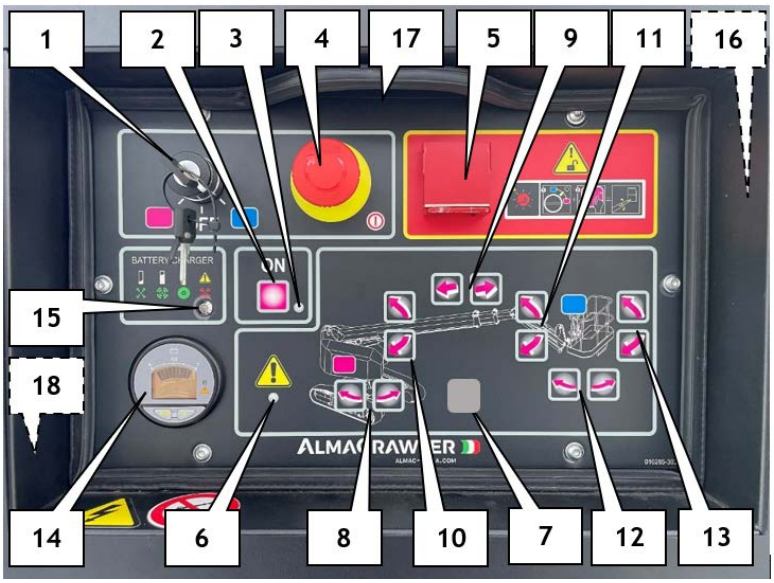


Figure 24

1. MAIN KEY SWITCH / CONTROL POSITION SELECTOR
2. "ON" COMMANDS ENABLE BUTTON
3. GREEN LIGHT SIGNALING COMMANDS ENABLED
4. EMERGENCY STOP BUTTON
5. EMERGENCY OVERRIDE BUTTON WITH LEAD PROTECTION
6. WARNING LIGHT
7. "MODE" BUTTON
8. TURRET ROTATION / TURRET LEVELLING BUTTONS

9. TELESCOPIC EXTENSION/RETRACTION BUTTONS
10. BOOM UP/DOWN/TURRET LEVELLING BUTTONS
11. JIB UP/DOWN BUTTONS
12. PLATFORM ROTATION BUTTONS
13. PLATFORM LEVELLING CORRECTION BUTTONS
14. CIRCULAR DISPLAY
15. BATTERY CHARGER INDICATOR LIGHT
16. MOVEMENT/ALARM BUZZER
17. GROUND CONTROL LIGHT (OPTIONAL)
18. PROGRAMMING AND DIAGNOSTICS CONNECTOR

5.2.1 Main key switch / control station selector.

The main key of the ground control station is used to:

- Switch on the machine by selecting one of the two control stations:
  - Control station on the platform with the key turned on the BLUE frame. Stable position with the possibility of extracting the key (for machines commissioned outside Europe it is possible that in this position the key cannot be removed);
  - Ground control station with the key turned to PURPLE box. Stable position with non-removable key.
- Switch off the control circuits by turning the key to position “OFF”. Stable position with the possibility of extracting the key.

Attention: The master key must always be available to the recovery worker who remains on the ground during normal use of the machine, ready to intervene in the event of an emergency.

At the end of the work, turn off the machine by turning the main key to position "OFF" and remove the key itself in order to avoid unauthorized use of the machine.

5.2.2 Command enable button "ON" and command enabled green indicator light.

With the machine on, if the ground control station has been selected, after releasing the EMERGENCY STOP button (4) by turning it clockwise, the green LED (3) will flash. Flashing green LED (3) indicates that the controls are not enabled. To make the commands available, they must be enabled by first pressing the ON button (2) and keeping it pressed while pressing one of the command buttons described below.

If you release the "ON" button, the movement active will stop. To restart operating the machine, it is necessary to press the "ON" button again before operating a control button.

5.2.3 Emergency stop button.

Press the button to completely stop the machine. To resume normal operation of the machine - depending on the position of the key selector - it is necessary to turn the button a quarter of a turn clockwise so that the button is completely extracted.

5.2.4 Emergency Override Button with leaded protection.

This button (5, lead-protected) is used for emergency recovery of an operator who is incapacitated, using the ground control station commands by temporarily disabling certain safety controls (e.g., operator incapacitated and machine locked due to overload) regardless of the position of the key switch (ground or platform controls).
To activate the button, break the seal, open the lid and press it. Please refer to the description of the manual emergency controls dealt with in the specific chapter of this manual.

Caution:
This button (5) is used only for the recovery of an incapacitated operator in the event that the ground control station is not enabled due to some active safety functions.

The use of this function requires the use of a tool to remove the protection. This removal represents an assumption of responsibility by a ground operator to move the platform in the absence of certain safety checks.

The activation of this function is timed in order to avoid abuse by the operator. Once the pre-set time has elapsed, the button must be pressed again.

Do not use a machine that does not have the button cover plumbing.

5.2.5 Warning light.

Each alarm condition that occurs on the machine, or when the reach limits are reached, the red warning light (6) which is normally off, turns on regardless of the position of the main key.

5.2.6 “MODE” button.

The MODE button (7) is used to enable additional functions. MODE button (7) held down simultaneously with the BOOM UP/DOWN buttons (10) or TURRET ROTATION (8) activates the manual turret levelling command (see description of the command buttons below).

Warning: Danger of crushing for the operator or other personnel in the vicinity of the machine.

5.2.7 TURRET ROTATION/LEVELING buttons.

To control the rotation of the turret from the ground control station, press the "ON" enable button (2) and one of the buttons (8) in the image on the right:
- 8-A: for clockwise rotation;
- 8-B: for counterclockwise rotation.

For maintenance/service needs, in low platform conditions (ACCESS POSITION and LOWERED TRAVEL POSITION) press the "ON" enable button (2), the "MODE" button (7) and one of the buttons (8) in the image to the right:
- 8-A: for levelling the turret on the left;
- 8-B: for leveling the turret on the right.

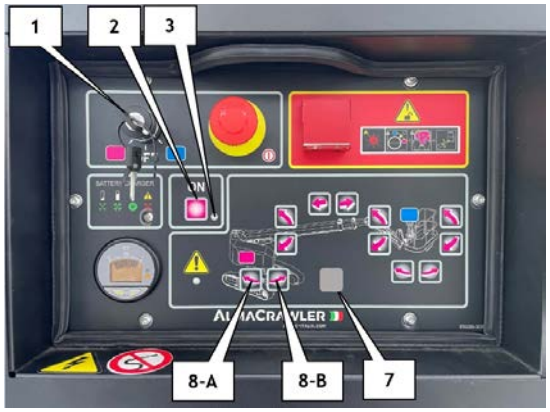


Figure 25

5.2.8 TELESCOPIC EXTENSION/RETRACTION buttons.

To control the extension/retraction of the telescopic boom from the ground control station, press the enabling button "ON" (2) and one of the buttons (9) in the image on the right:
- 9-A: for extension;
- 9-B: for retraction.

Warning: the TELESCOPIC EXTENSION command may not be available if the limits of the working diagrams are exceeded (chap. 2).

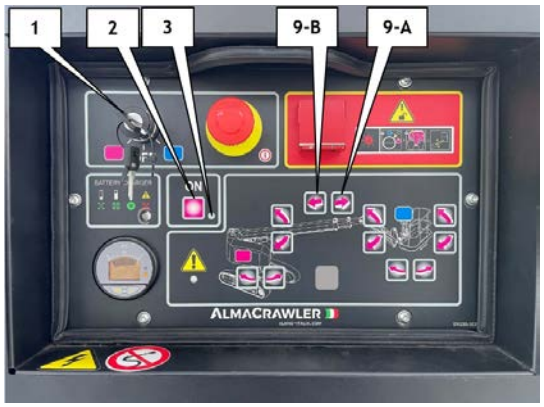


Figure 26

5.2.9 BOOM UP/DOWN /TURRET LEVELLING buttons.

To control the raising/lowering of the main boom from the ground control station, press the enabling button "ON" (2) and one of the buttons (10) in the image on the right:
- 10-A: for raising;
- 10-B: for lowering.

For maintenance/service needs, in low platform conditions (ACCESS POSITION and LOWERED TRAVEL POSITION) press the "ON" enable button (2), the "MODE" button (7) and one of the buttons (10) in the image to the right:
- 10-A: for forward turret levelling;
- 10-B: for backward turret levelling.

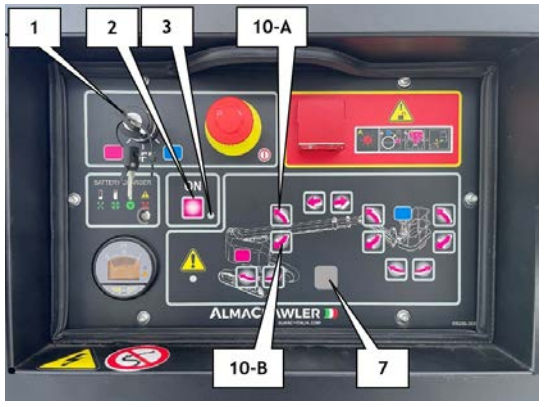


Figure 27

Warning: the BOOM UP/DOWN commands may not be available if the limits of the working diagrams are exceeded (chap. 2).

5.2.10 JIB UP/DOWN buttons.

To control the raising/lowering of the jib from the ground control station, press the enabling button "ON" (2) and one of the buttons (11) in the image on the right:

- 11-A: for raising;
- 11-B: for lowering.

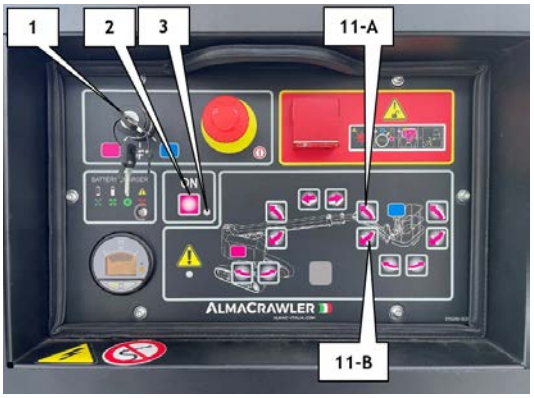


Figure 28

5.2.11 PLATFORM ROTATION buttons.

To control the rotation of the platform from the ground control station, press the "ON" enable button (2) and one of the buttons (12) in the image on the right:

- 12-A: for clockwise rotation;
- 12-B: for counterclockwise rotation.

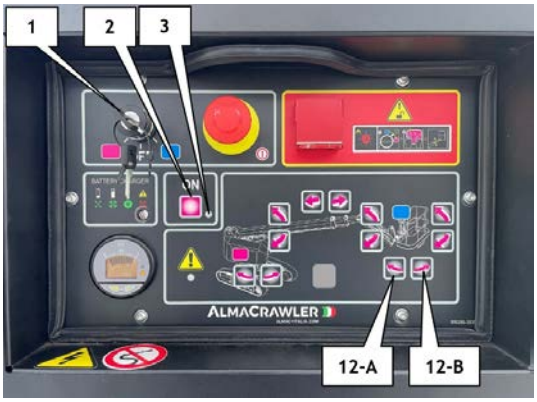


Figure 29

5.2.12 PLATFORM LEVELLING buttons.

To adjust platform leveling from the ground control station, press the "ON" enable button (2) and one of the buttons (13) in the image on the right:

- 13-A: for forward levelling;
- 13-B: for backwards leveling.

NOTE: in some countries the platform levelling command may not be active with the platform in elevation.

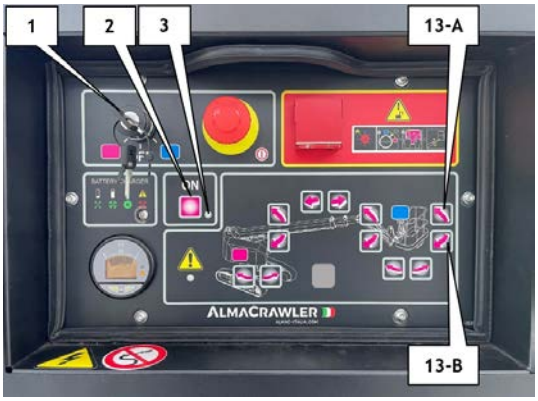


Figure 30

5.2.13 Circular display.

The circular display (14) represents the man-machine interface and contains the following indications:

a. Bars indicating remaining battery charge status;
b. Error messages from the command devices.
c. Working hours.

Using the "D" button it is possible to change the message page; use the "E" button to return to the main page.

Figure 31

5.2.13.1 Main error messages.

The main error messages shown on the circular display are listed below in the following form:

- ERR XXX = Error detected by the machine control system (see list below).
- RER XXX = Error detected by the command inverter of the right traction motor (see the inverter manufacturer's manual).
- LER XXX = Error detected by the command inverter of the left traction motor (see the inverter manufacturer's manual).
- PER XXX = Error detected by the electric pump command inverter (see the inverter manufacturer's manual).

Type	Number	Meaning
ERR	1	Telematic control unit not connected
ERR	2	SAFETY control unit channel A communication
ERR	3	SAFETY control unit channel B communication
ERR	4	LEVELLING control unit communication
ERR	5	Carriage tilt sensor channel A communication
ERR	6	Carriage tilt sensor channel B communication
ERR	7	Turret tilt sensor channel A communication
ERR	8	Turret tilt sensor channel B communication
ERR	9	Turret rotation encoder channel A communication
ERR	10	Turret rotation encoder channel B communication
ERR	11	Main boom angle sensor channel A communication
ERR	12	Main boom angle sensor channel B communication
ERR	13	Main boom telescopic extension sensor channel A communication
ERR	14	Main boom telescopic extension sensor channel B communication
ERR	15	Jib angle sensor channel A communication
ERR	16	Jib angle sensor channel B communication
ERR	17	Platform tilt sensor channel A communication
ERR	18	Platform tilt sensor channel B communication
ERR	19	Platform load cell channel A communication
ERR	20	Platform load cell channel B communication
ERR	21	MASTER traction inverter communication (Right)
ERR	22	SLAVE traction inverter communication (Left)
ERR	23	PUMP inverter communication

ERR	24	Boom telescopic extension sensor does not move during command
ERR	25	Boom telescopic retraction sensor does not move during command
ERR	26	Boom telescopic extension sensor moves without being commanded
ERR	27	Boom telescopic retraction sensor moves without being commanded
ERR	28	Main boom rising sensor does not move during command
ERR	29	Main boom lowering sensor does not move during command
ERR	30	Main boom up/down sensor moves without being commanded
ERR	31	Main boom up/down sensor moves in the opposite direction to the command
ERR	32	Jib rising sensor does not move during command
ERR	33	Jib lowering sensor does not move during command
ERR	34	Jib up/down sensor moves without being commanded
ERR	35	Jib up/down sensor moves in the opposite direction to the command
ERR	36	CW turret rotation sensor does not move during command
ERR	37	CCW turret rotation sensor does not move during command
ERR	38	Turret rotation sensor does not move during command
ERR	39	Turret rotation sensor moves in the opposite direction to the command
ERR	40	BY-PASS EV11 solenoid valve energized incorrectly
ERR	41	BY-PASS EV11 solenoid valve does not activate or is short-circuited
ERR	42	BY-PASS EV12 solenoid valve energized incorrectly
ERR	43	BY-PASS EV12 solenoid valve does not activate or is short-circuited
ERR	44	BY-PASS EV36 solenoid valve energized incorrectly
ERR	45	BY-PASS EV36 solenoid valve does not activate or is short-circuited
ERR	46	Platform overload
ERR	47	SAFETY control unit ground connection verification input not connected
ERR	48	Main relay stuck
ERR	49	FPR power supply (+5V) incorrect, inhibited operations: platform rotation, jib, telescopic
ERR	50	Excessive tilting of the platform
ERR	51	Control circuit voltage greater than 16V (converter incorrectly adjusted)
ERR	52	Control circuit voltage less than 10V (converter disconnected or incorrectly adjusted)
ERR	53	Incorrect reset of the turret rotation sensor. New reset required
ERR	54	N.A.
ERR	55	N.A.
ERR	56	Excessive deviation of turret rotation sensor signals
ERR	57	Incorrect reset of the boom angle sensor. New reset required
ERR	58	N.A.
ERR	59	N.A.
ERR	60	Excessive deviation of boom angle sensor signals
ERR	61	Incorrect reset of the telescopic extension sensor. New reset required
ERR	62	The telescopic extension sensor detects excessive retraction (e.g. disconnected cord)
ERR	63	N.A.
ERR	64	Excessive deviation of telescopic extension sensor signals
ERR	65	Incorrect reset of the jib angle sensor. New reset required
ERR	66	N.A.
ERR	67	N.A.
ERR	68	Excessive deviation of jib angle sensor signals
ERR	69	Incorrect reset of the carriage tilt sensor. New reset required
ERR	70	N.A.
ERR	71	N.A.

ERR	72	Excessive deviation of carriage tilt sensor signals
ERR	73	N.A.
ERR	74	N.A.
ERR	75	Excessive deviation of carriage tilt sensor signals
ERR	76	Incorrect reset of the turret tilt sensor. New reset required
ERR	77	N.A.
ERR	78	N.A.
ERR	79	Excessive deviation of turret tilt sensor signals
ERR	80	N.A.
ERR	81	N.A.
ERR	82	Excessive deviation of turret tilt sensor signals
ERR	83	Incorrect reset of the platform tilt sensor. New reset required
ERR	84	N.A.
ERR	85	N.A.
ERR	86	Excessive deviation of platform tilt sensor signals
ERR	87	Incorrect reset of load cell in platform. New reset required
ERR	88	The load cell detects a negative load (e.g. sensor disconnected or platform resting)
ERR	89	N.A.
ERR	90	Excessive deviation of load cell signals in platform
ERR	91	Control voltage of cell measurement channel A incorrect, weight detection unreliable
ERR	92	Control voltage of cell measurement channel B incorrect, weight detection unreliable
ERR	93	MY ALMAC: Forced maintenance
ERR	94	MY ALMAC: Forced Alarm
ERR	95	MY ALMAC: Use beyond the limits of the rental agreement
ERR	96	Faulty turret rotation joystick: open circuit
ERR	97	Faulty turret rotation joystick: short circuit
ERR	98	Faulty boom joystick: open circuit
ERR	99	Faulty boom joystick: short circuit
ERR	100	Faulty telescopic boom joystick: open circuit
ERR	101	Faulty telescopic boom joystick: short circuit
ERR	102	Faulty jib joystick: open circuit
ERR	103	Faulty jib joystick: short circuit
ERR	104	Faulty platform rotation joystick: open circuit
ERR	105	Faulty platform rotation joystick: short circuit
ERR	106	Faulty forward/backward traction joystick: open circuit
ERR	107	Faulty forward/backward traction joystick: short circuit
ERR	108	Faulty track counter-rotation traction joystick: open circuit
ERR	109	Faulty track counter-rotation traction joystick: short circuit
ERR	110	Short circuit error on proportional valves of turret rotation
ERR	111	Short circuit error on boom control proportional valves
ERR	112	Short circuit error on proportional valves for platform rotation/cross turret levelling
ERR	113	Short circuit error on proportional valves for platform levelling/longitudinal turret leveling
ERR	114	Inconsistency of turret collision sensor parameters of operation control unit. Restart
ERR	115	Inconsistency of pot-hole parameters of operation control unit. Restart
ERR	116	Incorrect settings of the control units. Restart
ERR	117	Inconsistency of LEVELLING control unit parameters. Restart
ERR	118	Turret anti-collision control unit: CAN communication error
ERR	119	Key selector in non-univocal position

ERR	120	EV14A - Telescopic extension error
ERR	121	EV14B - Telescopic retraction error
ERR	122	EV17A - Jib ascent error
ERR	123	EV17B - Jib descent error
ERR	124	EV18A - CW turret rotation error
ERR	125	EV18B - CCW turret rotation error
ERR	126	EV19A - Boom ascent error
ERR	127	EV19B - Boom descent error
ERR	128	EV3A - Left turret levelling error
ERR	129	EV3B - Right turret levelling error
ERR	130	EV4A - Forward turret levelling error
ERR	131	EV4B - Backward turret levelling error
ERR	132	EV15A - CW platform rotation error
ERR	133	EV15B - CCE platform rotation error
ERR	134	EV16A - Backward platform levelling error
ERR	135	EV16B - Forward platform levelling error
ERR	136	EV35 - Track tensioning error
ERR	137	UNDERLOAD alarm
ERR	138	Platform inclined beyond the allowed limit
ERR	139	Inconsistency of SAFETY control unit parameters. Machine stuck. Restart
ERR	140	Incorrect settings of the SAFETY control unit
ERR	141	Anti-entrapment bar activated (contact open)
ERR	142	Transport push-button panel connected and machine in ELEVATED STATIC POSITION: no operation allowed
ERR	143	Transport push-button panel connected and key switch in wrong position: no operation allowed

5.2.14 BATTERY CHARGER indicator light.

The BATTERY CHARGER indicator light (15) is active when the battery charger is powered. The indicator light indicates the progress of charging as follows:

- Fast flashing GREEN light: battery charging started;
- Slow flashing GREEN light: final stage of battery charging;
- Steady GREEN light: battery charging is completed.
- RED light: error during the charging phase.

See also chapter BATTERY CHARGING.

5.2.15 Movement and alarm buzzer.

The alarm buzzer (16) integrated in the ground control station:

- It sounds intermittently at slow frequency during machine movements:
    - Standard function: the buzzer is active during travel commands;
    - Optional function: the buzzer is active during the main boom travel and descent commands;
    - Optional function: the buzzer is active during all machine commands.
- It sounds continuously to signal an alarm condition.

5.2.16 Ground control station light.

Optionally, it is available a light for the ground control station to operate in low lighting conditions. The light is always on when the main key (1) is in the GROUND CONTROLS position.
If the main key (1) is in the PLATFORM CONTROL position, the LIGHT button on the platform control station must be pressed to turn on/off the lighting system.

5.2.17 Programming and diagnostic connector.

By means of the connector (18), a PC or diagnostic tool can be connected to query and calibrate the control system. It is only for Technical Service.

5.3 Access to the platform.

The access position is the only position allowed for people and materials loading and unloading from the platform.

Procedure to access the platform:

- Lift the inlet rod (1);
- Get on the platform using the uprights (2);
- Drop or lower the inlet rod (1);
- Hook the safety harness to the hooks on the platform (3).

Warning: Get on/off the platform always facing the machine.

IT IS FORBIDDEN to block the entrance rod (1) in order to keep access to the platform open. Correct use of the machine requires that the input rod is in the lowered position. It is absolutely forbidden to work at height with the drop bar (1) raised.

IT IS FORBIDDEN to leave or access the work platform if it is not in the access position.

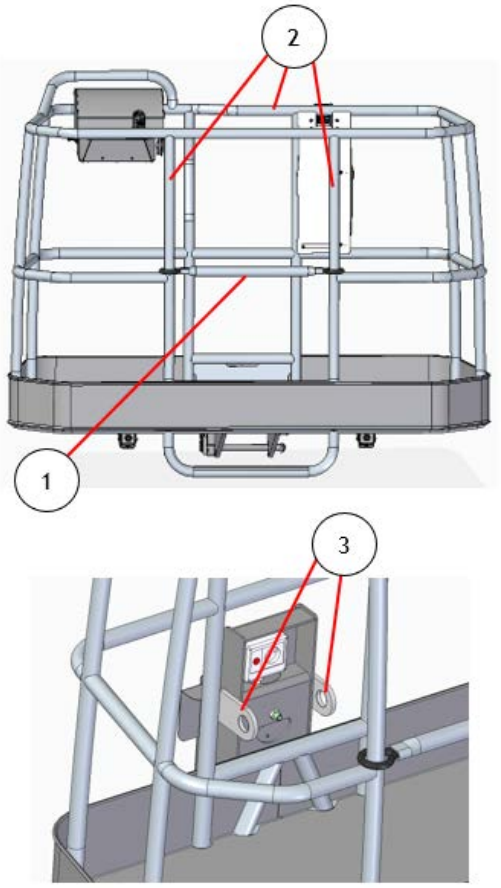


Figure 32

5.4 Starting the machine.

To start the machine, the operator must:

- Release the ground control station emergency stop button (2) by turning it clockwise by a quarter of a turn;
- Turn the key selector (1) of the ground control station, bringing it to the position represented by the blue box (platform controls);
- Remove the ignition key and deliver it to a responsible person trained in the use of the emergency recovery controls who remain on the ground (except for machines in AUSTRALIA and NEW ZEALAND where the key remains in the selector);
- Enter the platform and attach the safety harness to the anchor points;
- On the platform push-button panel, release the emergency stop button (3) by turning it clockwise by a quarter of a turn;
- Press the ON button (4) or the enabling foot pedal (5) to operate the push-button panel.

Figure 33

For ELC-LTH versions: It is now possible to operate the machine according to the instructions in the previous chapters.

5.5 Stopping the machine.

5.5.1 Normal shutdown.

During normal use of the machine, releasing the joysticks and switches stops the relative command.

5.5.2 Emergency stop.

In case of need, the operator can command the emergency stop of the machine both from the platform control panel and from the ground control station by pressing one of the red emergency buttons present (see image on the side).
By re-activating an emergency stop after having activated it, to resume working with the machine it is necessary to repeat the commands described in the STARTING THE MACHINE chapter.

NOTE: Pressing the platform emergency stop button will stop movement and deactivate the push-button panel; the ground control station will continue to operate if selected with the main key switch when the platform emergency stop has already been activated.

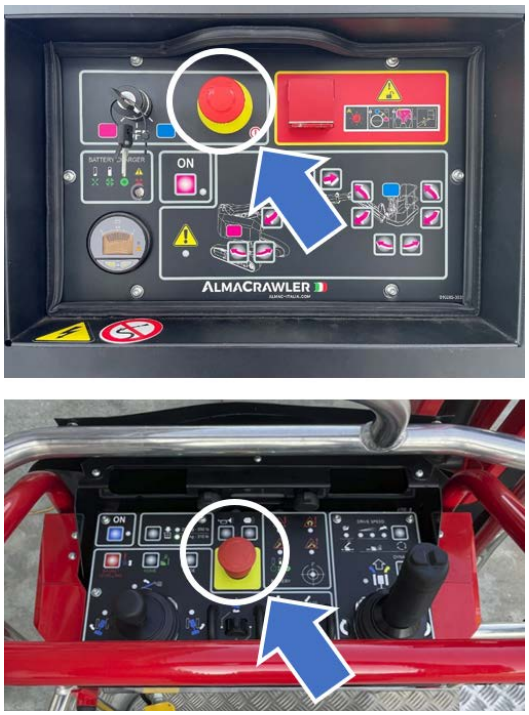


Figure 34

5.6 End of work.

Once you have finished using the machine or if you have to leave the machine unattended for significant periods (long work breaks, lunch breaks, end of the working day) after having stopped the machine according to the instructions in the previous paragraphs:

- Always bring the platform to access conditions (arms completely lowered and turret aligned with the direction of travel of the machine);
- Press the stop buttons on the platform control panel and on the ground control station;
- Turn the main key to the OFF position and remove the key to prevent unauthorized people from using the machine;
- Refuel or recharge the battery according to the type of machine.

It is the operator's responsibility to park the machine in a safe place protected against unauthorised use, leaving the machine completely off and removing the main key.

5.7 Quick replacement of the Battery Pack.

The battery pack (A) can be easily replaced to increase the machine's working autonomy. To remove the battery pack (A):

1. Level turret then turn the machine off;
2. Open the side doors (B);
3. Lift the top cover (C) using the lever (D);
4. Lock the lever (D) in its clip (E) as shown in the figure;
5. Disconnect the power connector (F) by pulling it downward;
6. Unlock the battery by pressing the button (G) and turning the lever (H). Make sure both levers are free.
7. Using a forklift, fork the battery (A) moving forward slowly with the forklift until it touches the bottom of the chocks (L);
8. Lift the battery a few millimetres while keeping it parallel to the turret support guides, then move back with the forklift to complete the battery removal.

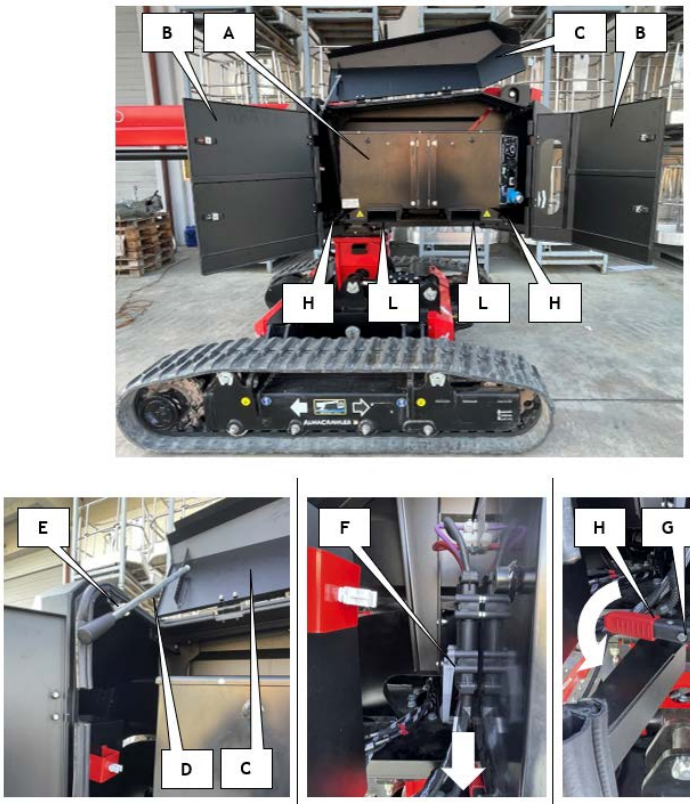


Figure 35

To install the new battery, carry out the operations described above, reversing the sequence, paying attention to place the battery on the support pads to fit the battery guides correctly.

When a full view of the operating range is not guaranteed from the forklift, a person on the ground should assist the forklift driver and suggest the correct operations to be performed.

It is the operator's responsibility to carry out the battery replacement operation correctly by following the steps described to avoid damaging the battery and/or the machine.

The battery removed from the machine must be charged following the instructions given in the MAINTENANCE chapter.

Make sure you have fully connected the power connector before starting to operate the machine again.

All batteries specified by the manufacturer can be installed on the machine, preserving the load capacity and working diagrams unchanged.

6 LOADING AND TRANSPORT.

Before transporting the machine between different workplaces with a means of transport, it is necessary to find out about the overall dimensions and the transportable mass limits, on the basis of the road traffic regulations in force.

6.1 Loading with loading ramp.

It is possible to load the machine on the platform of the means of transport by means of loading ramps, using the normal drive controls and driving the machine from the platform control station (see the chapter describing the controls).
When ramps are particularly steep pay close attention to the slope changing by properly reducing speed in order to minimize machine swinging.

During loading and unloading operations:
- To avoid touching the ground with the lower part of the platform, it is necessary to slightly raise the main boom, checking that the machine remains in TRANSPORT conditions (see traction green indicator lights). To reduce swinging (catapult effect, keep the jib lowered.
- Do not try to load / unload the machine when it is out of the TRANSPORT conditions (see indications on the control panel).
- Drive the machine at particularly low speed.
- If the DYNAMIC function is active (see chapter 5. HOW TO USE), pay attention to any obstacles above the structure.
- The operator on the platform must keep the restraint system (safety harness) connected.

6.2 Loading with a forklift.

It is not possible to lift the machine using a forklift.

6.3 Loading with a crane.

It is possible to load the machine on the platform of the means of transport using a crane. By means of four lifting bands of appropriate length and capacity (see the weight of the machine in the TECHNICAL DATA chapter), hooking to the lifting points indicated by the adhesive plates placed on the machine and shown alongside.

To avoid damaging the machine, it is necessary to use sufficiently long lifting bands, or use a sling bar with adequate capacity. **Do not use chains to lift the machine.**

Take into account the position of the centre of gravity as indicated below.

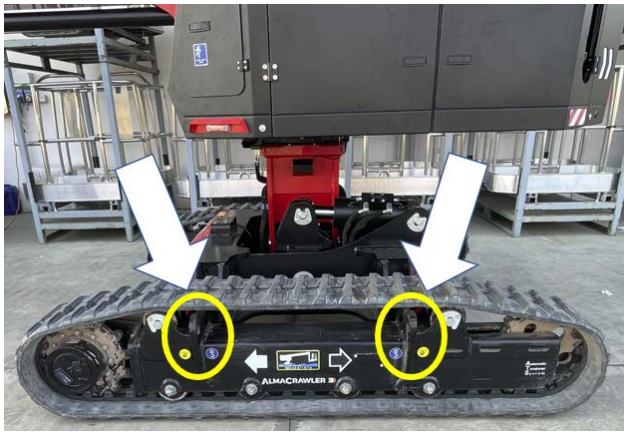


Figure 36

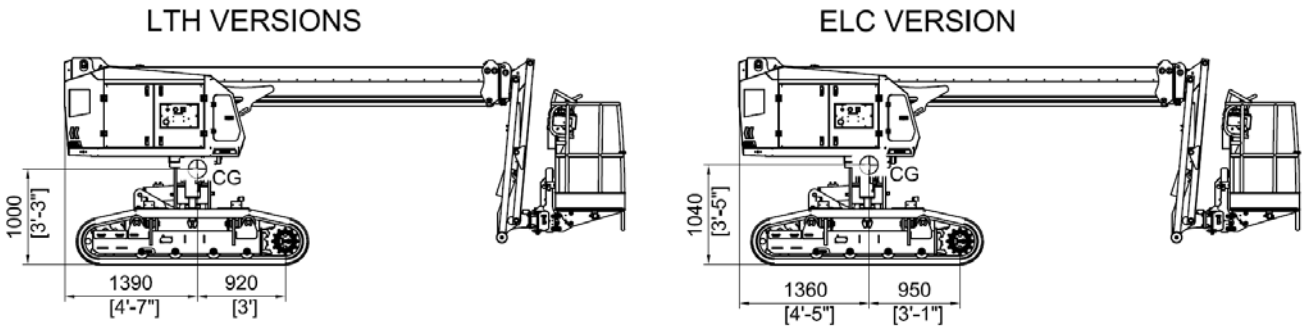


Figure 37

6.4 Securing the machine on the means of transport.

Before proceeding with transport, secure the machine to the means of transport as shown in the image on the side. Fixing must be done on both sides of the machine.

Figure 38

Warning: Do not over-tension the fastening straps to avoid damaging the machine structure.
Attention: Before transporting, make sure that the boom is COMPLETELY DOWN.

7 EMERGENCY COMMANDS.

While using the emergency controls, a qualified operator, who must always be present on the ground, assumes responsibility for moving the machine and the operator on board using the emergency modes described below.

The operator using the emergency controls must always check that the machine movements take place in accordance with the commands activated. In the event that non-controlled movements are activated, proceed directly with the emergency commands using the manual pump.

Contact the authorised service centre.

7.1.1 Emergency recovery of an incapacitated operator.

In the event that the operator on the platform is unable to return to the ground using the platform controls, a qualified operator in possession of the master key (for machines destined for AUSTRALIA and NEW ZEALAND the key is always present on the selector key), can activate the emergency controls of the ground control station.

Figure 39

To use the ground control station:

- Turn the key (1) to the GROUND CONTROLS position (purple box);
- Operate the ON button (2) beforehand and hold it down while pressing one of the control buttons on the extendable structure (8-9-10-11-12-13) as per the description of them in the chapter GROUND CONTROL STATION.

While using the ground controls described in this procedure, all safety functions are active.

7.1.2 Emergency recovery of an incapacitated operator in the presence of an overload alarm.

In the event that the operator on the platform is unable to return to the ground by using the platform controls and with the simultaneous presence of an overload alarm, the machine is blocked.
A qualified operator can operate the emergency controls on the ground control station.

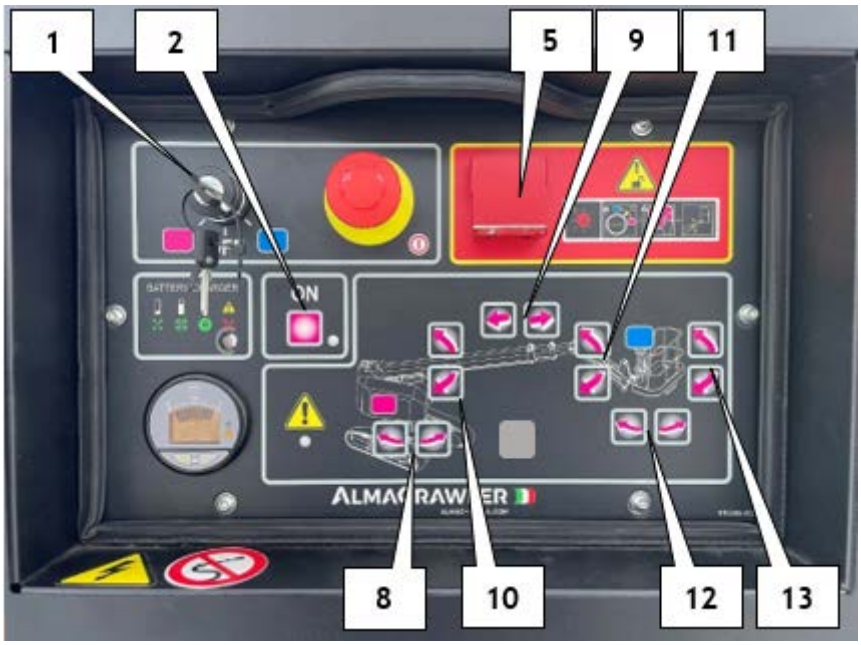


Figure 40

To use the ground control station in case of recovery of incapacitated operator:

- Remove the lead seal from the cover of the EMERGENCY OVERRIDE button (5), open the red cover and press the button, keeping it pressed. An acoustic signal with continuous sound is activated, and the safety functions are not active;
- Simultaneously with the activation of the button (5), activate the controls of the extensible structure (8-9-10-11-12-13) as per their description in the GROUND CONTROL STATION chapter. Each command activated has a maximum duration of 10 seconds, after which, it is necessary to repeat the procedure described above to continue moving the extensible structure.

RISK OF OVERTURNING!

To give priority to the emergency recovery of an incapacitated operator, the function is active regardless of the position of the main key (1).
While using the ground controls described in this procedure, the following safety functions are disabled: load control; outreach control; inclination control. The operator on the ground must therefore re-enter with the telescopic boom, then completely lower the jib before activating other movements.
The use of this function requires the use of a tool to remove the protection. This removal represents an assumption of responsibility by a ground operator to move the platform in the absence of certain safety checks.
The use of this procedure is registered in the machine control system.

7.1.3 Emergency recovery with a manual pump.

7.1.3.1 Operator emergency recovery.

In the event of a power failure, to recover a blocked operator, a qualified operator on the ground must use the manual controls activated by the manual pump in the manner described below.

The manual emergency controls are located on the rotating turret:

1. Manual diverter;
2. Manual pump;
3. Manual pump lever;
4. Hydraulic block closing door;
5. Hydraulic block;
6. Control enabling solenoid valve.

To activate a manual command:

a. Open the closing door (4) to access the hydraulic block (5) and hand pump (2);
b. Remove the lever (3) and insert it on the manual pump (2);
c. To activate the manual control of TELESCOPIC BOOM EXTENSION/RETRACTION: Unscrew the manual diverter (1) in position (A) and activate the solenoid valves shown alongside by pressing (to retract) or pulling (to extend), while at the same time operating the manual pump lever, and visually checking that the movement is correct;
d. To activate all other operations of the extensible structure, the manual switch must be fully screwed (pos. B – Normal machine operating position), then screw the control enabling solenoid valve (6). Activate the desired solenoid valves at the side in accordance with the symbols on the screen print and, at the same time, operate the hand pump lever, visually checking the correctness of the movement.

Figure 41

To understand the correspondence between the manual control and the corresponding movement, pay attention to the screen printing placed on the machine and represented in the following image.

Press the manual controls of the valves to activate the movements indicated with “A”, while activating the manual pump.

Pull the manual controls of the valves outward to activate the movements indicated with "B", while activating the manual pump.

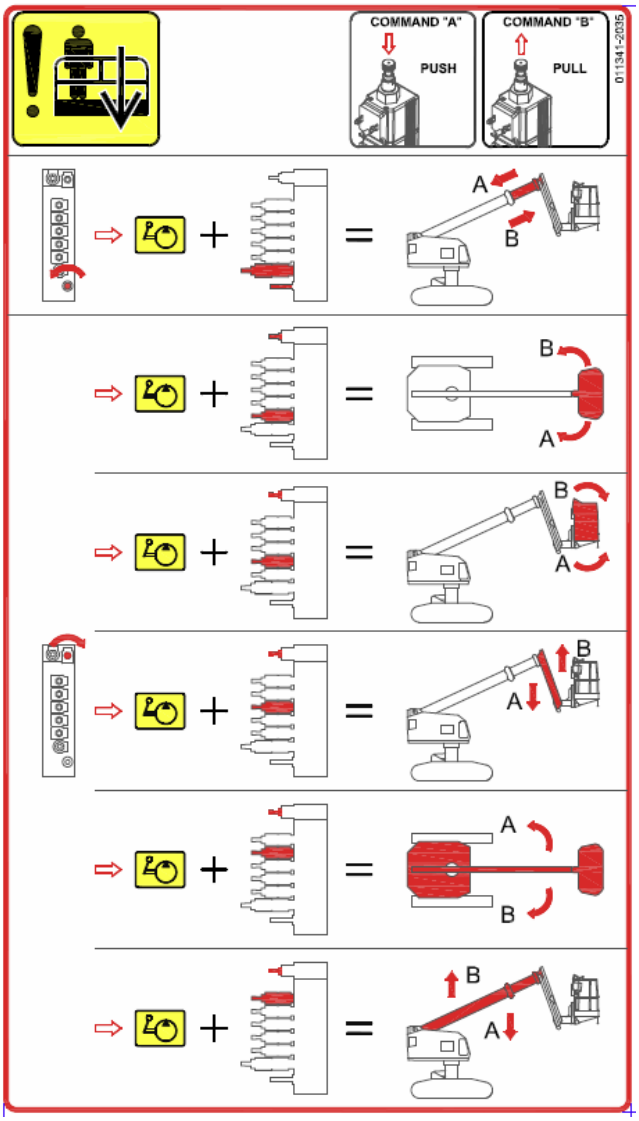


Figure 42

RISK OF OVERTURNING!

While using the emergency controls with a manual pump, all safety functions are disabled. The operator on the ground must therefore first retract the telescopic boom, then completely lower the jib before activating other movements.

Activate only one command at a time.

At the end of the operation, bring the machine back to its original condition.

8 MAINTENANCE.

8.1 Safety rules during maintenance.

- Always carry out maintenance operations in conditions of maximum safety, with the machine stopped and off, having extracted the key from the control panel on the ground, with the emergency buttons pressed and wearing the individual protection devices suitable for the operations to be performed.
- Only adequately trained personnel are authorised to carry out repairs and maintenance on the machine.
- The maintenance operations described refer to the machine used in "normal" conditions; if you believe that the conditions of use of the machine are extreme (extreme temperatures, corrosive environments, very long work cycles, etc.) or if the machine has been inactive for long periods, contact the ALMAC technical service to adjust the frequency of the interventions.
- In case of need to replace parts of the machine, use only original parts or those approved in writing by ALMAC; the use of non-original or unapproved spare parts leads to the forfeiture of the warranty and of any liability on the part of ALMAC.
- Changes or additions to the PLE are not permitted unless expressly authorized by ALMAC SRL.
- During maintenance or technical assistance, the machine must be completely blocked. Do not act on the valves installed directly on the hydraulic cylinders of the arms and stabilizers if these have not been immobilized / blocked: risk of uncontrolled movement of the structure.
- Do not insert the body, limbs, or fingers into the sharply articulated openings of parts of the machine which are not controlled and without suitable guards, unless they are securely locked;
- Disconnect the machine from all external energy sources (110-230V single-phase power line) before intervening.
- In the event of maintenance work on the electric traction motors and/or electric pump and on the inverters, always disconnect the battery beforehand.
- Before disassembling fittings or pipes, make sure there are no pressurized fluids: oil that escapes under pressure can cause serious injuries. In case of injury or accidental ingestion of fluids that come out of pipes etc…, consult a doctor immediately. In particular, remember that the fluid that leaks from a very small hole can be almost invisible and have sufficient strength to penetrate under the skin. Use cardboard or a piece of wood to find any leaks.
- Carry out maintenance operations when the fluids (hydraulic oil, lubricating oils) are sufficiently cooled.
- Hydraulic oil, lubricants, electrolytes and additives to radiator coolants must be handled with care and discharged safely in compliance with current regulations. Prolonged skin contact can cause irritation and dermatosis. Wash with soap and water, then rinse well if you come into contact with any of these items. Contact with eyes is also dangerous: wash abundantly with water and seek medical attention.
- Put the machine out of service, isolate and report the situation to your employer if there is an anomaly in a mechanical, or hydraulic element or in a control or safety device. NOTIFY AN ALMAC S.r.l. SERVICE CENTER IMMEDIATELY

It is absolutely forbidden to modify or tamper with the machine parts and sensors. ALMAC is relieved of any responsibility in case of modifications / tampering.

8.2 Ordinary maintenance.

Checks and maintenance must be carried out as indicated in the table below.

PERIODIC TABLE OF ORDINARY MAINTENANCE	Before each use	Daily or every 10 hours	Weekly or every 50 hours	Monthly or every 100 hours	Bimonthly or every 250 hours	Quarterly or every 500 hours	Yearly or every 1500 hours	After inactivity > 30 days
	A	B	C	D	E	F	G	H
Machine cleaning			X					
Cleaning of plates and warning lights	X							
Visual check of operational / warning DECALS are legible	X							
Functional and serviceability checks of operator controls	X						X	X
Functional checks of machine operation	X							
Confirmation of no fault codes present	X							
Visual check tightening of screws / Tightening of screws	X		X*				X	
Visual inspection of the structural elements of the machine	X						X	
Greasing joints, telescopic extensions and slewing ring				X			X	X
Check the hydraulic oil level	X							X
Hydraulic oil replacement							X	
Hydraulic oil filter replacement							X	X
Track reduction gear oil level check						X	X	X
Track reduction gear oil replacement							X	
Track wear and tension check	X						X	X
Telescopic element chains lubrication				X				X
Check wear and tensioning of the extension chains	X						X	
Check wear and register of sliding pads			X				X	
Control and charging of the control circuit battery	X							X
Checking and charging traction/LITHIUM batteries (if present)	X							X
Turret rotation clearance check						X	X	
Platform rotation clearance check						X	X	
Check overload control device						X	X	
Machine sensor check	X						X	X
Ultrasonic sensor system check (if present)	X						X	X
Operator anti-entrapment system check	X						X	X

PS: After the first 50 hours of operation of the machine, a torque wrench check of the tightening of fifth wheel screws, reduction gears and transmission crown wheels is required.

8.2.1 Cleaning the machine.

To clean the machine properly, you can use non-pressurized water jets, adequately protecting the following details:

- Electrical components;
- Ground control panel and console on platform;
- Electric motors and battery.

After cleaning the machine, dry all the details, check the integrity / legibility of the instructional and warning DECALS and grease the areas with grease nipples or the sliding pads of the telescopic appendages of the arms and stabilizers.

Warning: Never use gasoline, solvents or other flammable liquids as cleaning agents. Use non-flammable and non-toxic authorized commercial degreasers.

8.2.2 Functional checks.

According to the periodicity described in the maintenance table, and always before each use of the machine, it is necessary to check the correct operation of the controls and the emergency stops. In particular, the checks to be carried out are the following:

- Verify that the "operator presence" enabling systems (ON buttons, foot pedal) are functioning properly i.e., if the green enabling LED is flashing, no operation can be activated.
- With the platform in transport configuration, position the machine with the fifth wheel tilted with respect to the horizontal by a value greater than 1° laterally. Activate any command on the aerial part and make sure that the system automatically returns the fifth wheel plane to horizontal;
- With the platform in transport configuration, position the machine with the fifth wheel inclined with respect to the horizontal by a value greater than 1° longitudinally. Activate any command on the aerial part and make sure that the system automatically returns the fifth wheel plane to horizontal;
- With the platform in transport configuration, position the machine with the fifth wheel tilted with respect to the horizontal at the maximum angle both longitudinally and laterally. Activate any command on the aerial part and make sure that the system automatically returns the fifth wheel plane to horizontal;
- With perfectly stabilized machine:
    - Raise and lower the main boom and make sure that the machine works correctly (the levelling of the platform is an automatic movement, check the correct functioning). There must be no load on the platform.
    - Perform the extension and retraction manoeuvre and make sure that the machine works correctly. There must be no load on the platform;
    - Raise and lower the JIB and make sure the machine is working properly. There must be no load on the platform;
    - Carry out the basket rotation manoeuvre in both directions and make sure that the machine works correctly. There must be no load on the platform;
    - Carry out the column rotation manoeuvre in both directions and make sure that the machine works correctly. There must be no load on the platform;
- Lift the platform to a height higher than the TRANSPORT position but lower than the maximum translation position and move on uneven ground, check that the machine stops automatically when the inclination of the frame with respect to the horizontal exceeds 1°. Release the translation control, at the next translation or lifting command the system must automatically return the fifth wheel plane to horizontal. At the end of the levelling the machine carries out the selected movement;
- Raise the platform to a height higher than the TRANSPORT position and check that the manual levelling control of the fifth wheel plane is automatically inhibited.

- Operate the emergency button on the platform control station and verify that the platform control console is turned off. Release the emergency button at the end of this test.
- Activate the emergency button of the ground control station, and check that the machine is completely off and that no function is allowed. Release the emergency button at the end of this test.
- Activate the horn and check its operation.
- Verify that each command stops when the command is released.
- Verify that controls designed to do so, return to centre correctly.
- Verify all operators controls are secure and correctly aligned.
- Verify dust & water protection on all controls and components are present and serviceable.
- Verify LED control and warning lights are operational
- Verify movement/warning beeper is operational
- Using the ground control station, check that all the controls are functioning and conform to their operation.
- Check the correct operation of the manual emergency lowering device using a hand pump.

8.2.3 Visual inspection of the structural elements of the machine.

According to the periodicity described in the maintenance table, and always before each use of the machine, it is necessary to visually check the integrity of the main structural elements of the machine, with particular attention to the welds. The parts to be visually checked are the following:

1. Platform, access ladder, safety rails and locking rod of the access compartment;
2. The integrity of the platform support and the platform rotation actuator;
3. Jib arms, and welding of the pin seats;
4. Welded sections of the telescopic structure of the main boom;
5. Welding of the sides of the turret to the base connected to the fifth wheel;
6. Welding of the fifth wheel support base and of the connection to the frame structure;
7. Welded ears of hinging of the levelling cylinders of the joint of the fifth wheel plane;
8. Tracked spars and welding area to the supports that fit into the frame;
9. Integrity of all lifting and levelling cylinders, with special attention to welds with pin supports.

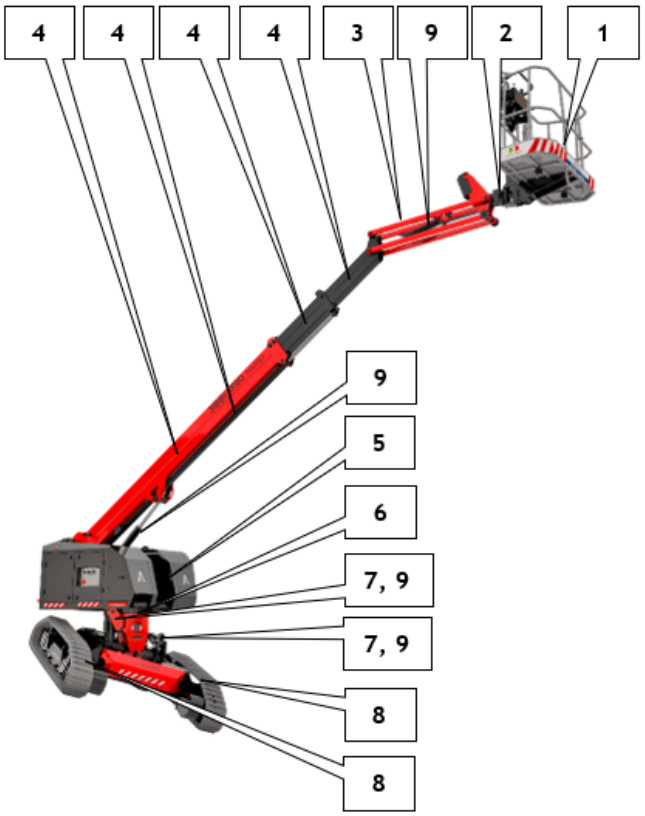


Figure 43

Any traces of rust in the correspondence of welds must suggest the presence of a crack and lead to the removal of machine from active service until a thorough technical inspection using penetrating liquids, magnetic particle or applicable non-destructive testing verification.
Do not use the machine with damaged or rusty pins and fastening systems.

To carry out a quick and correct visual check of the structural elements of the machine it is necessary that the machine is constantly washed / cleaned.
If you are unable to visually check due to a lack of cleanliness, do not use the machine.

8.2.4 Visual check screw tightness / Screw tightening.

According to the periodicity described in the maintenance table, and always before each use of the machine, it is necessary to visually check the tightening of the elements indicated alongside, i.e.:

1. Turntable rotation fifth wheel;
2. Traction reducers
3. Transmission gear;
4. Track guide rollers;
5. Tracks;
6. Ring nuts, seegers, nuts for fixing the pins of the extensible structure, the platform and the fifth wheel base levelling cylinders, the fastening pins of the tracked spars to the undercarriage;
7. Rotating actuator fixing screws.

In case of need or doubt, proceed with the tightening of the various elements in accordance with the following tightening table, checking the class of the screws directly from the stamping on them.

It is mandatory to tighten the fifth wheel, reduction drive and transmission gear on an annual basis.

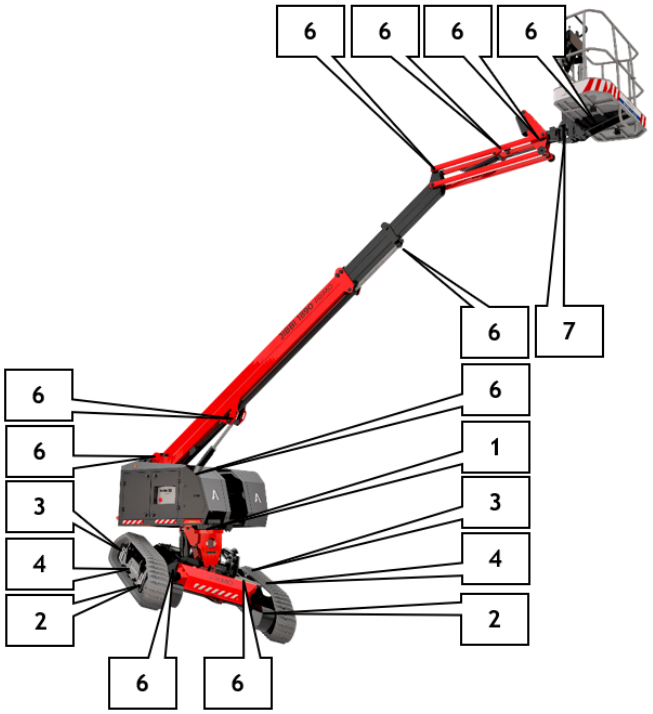


Figure 44

TORQUE OF SCREWS (Metric thread, normal pitch) lubricate the screws when installed (coefficient of friction K=0.18)						
Class	**8.8 (8G)**		**10.9 (10K)**		**12.9 (12K)**	
Diameter	**kgm**	**Nm**	**kgm**	**Nm**	**kgm**	**Nm**
M4	0.28	2.8	0.39	3.9	0.49	4.9
M5	0.55	5.5	0.78	7.8	0.93	9.3
M6	0.96	9.6	1.30	13.0	1.60	16.0
M8	2.30	23.0	3.30	33.0	3.90	39.0
M10	4.60	46.0	6.50	65.0	7.80	78.0
M12	8.0	80.0	11.0	110	14.0	140
M14	13.0	130	18.0	180	22.0	220
M16	19.0	190	27.0	270	33.0	330
M18	27.0	270	38.0	380	45.0	450
M20	38.0	380	53.0	530	64.0	640
M22	51.0	510	72.0	720	86.0	860

8.2.5 Greasing joints, telescopic extensions and slewing ring.

According to the periodicity described in the maintenance table, proceed with greasing the points equipped with grease nipples and the telescopic appendages indicated in the image alongside.

To grease the telescopic arms, fully extend the extensions (with the jib completely closed, and no load on the platform) by raising the boom slightly to avoid interference between the basket and the ground, and use a brush to lightly grease the surfaces of the telescopic extensions that they come into contact with the skates. Before greasing, remove any dirt accumulated on the parts. After greasing, retract the telescopic extensions and pull them out again, then remove the excess grease.

Remember to proceed with the greasing of the same points, always:

- After a machine wash;
- Before using the machine after long periods of inactivity;
- Malicious use of the machine in hostile environments (very humid, very dusty, coastal areas, etc.).

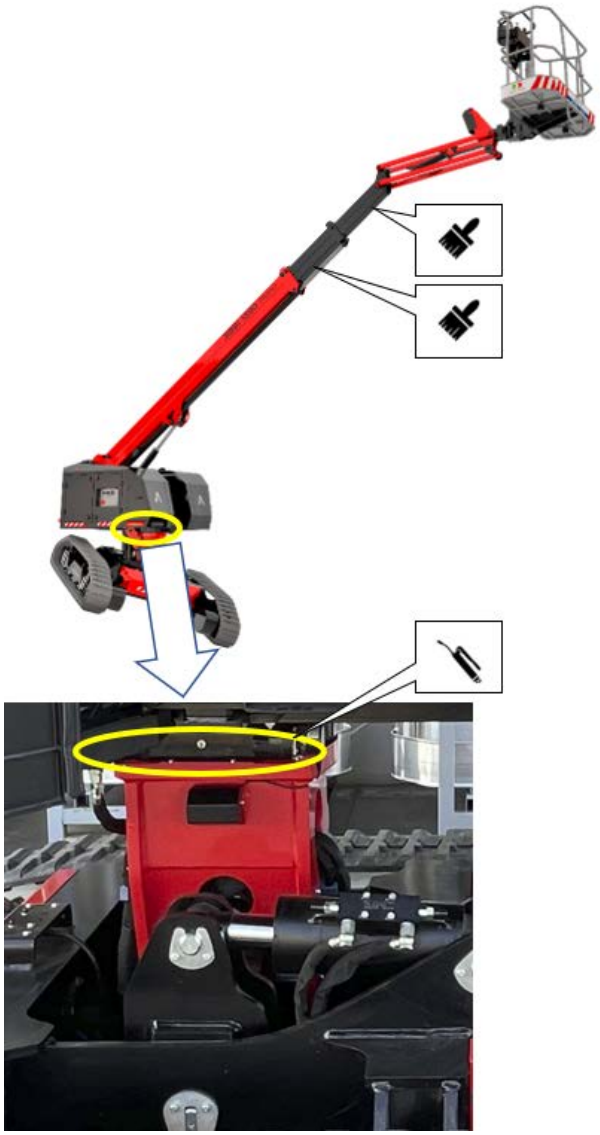


Figure 45

Warning: Use only lubricating grease with the same characteristics as those shown in the table below.

GREASE TABLE FOR GREASING POINTS	
PAKELO	**BEARING EP GREASE NLGI2**
BP	GREASE LTX2
CASTROL	LM2 - SPEEROL APT2
SHELL	ALVANIA GR.R.2
ESSO	BEACON 2
VALVOLINE	LITHIUM 20
ELF	TRANSLUBE LI GREASE 2

TABLE OF GREASE FOR TELESCOPIC EXTENSIONS	
ADDINOL	**ADDIFLON PTFE WHITE 3 PASTE**
NILS	WHITE STAR EP

8.2.6 Hydraulic oil level check / oil change.

According to the periodicity described in the maintenance table, and always before each use of the machine, it is necessary to check the level of hydraulic oil in the tank, through the visual indicator indicated alongside (A).

The level check must be performed with:

- Boom completely lowered;
- Fully retracted telescopic extension;
- Fully closed jib;
- The machine is completely off.

In this condition, the correct oil level is the one shown alongside (close to the MAX level). If necessary, top up with new and filtered oil through the cap (B) until the maximum level is reached. To reach the cap (B) it is necessary to open the casing (D).

Proceed with the complete replacement of the hydraulic oil - at the same time as replacing the filters - as indicated in the maintenance table. To empty the tank, place a container of suitable capacity (see TECHNICAL DATA) under the hydraulic oil tank and loosen the drain plug (C), or use a manual or electric pumping system not supplied with the machine. Then place the machine in the same conditions described above and suck the oil through the filler cap (B). Fill the tank through the cap (B) with new and filtered oil up to the levels indicated above. Refer to the TECHNICAL DATA tables to find out the quantities of oil required. Use only the types of oil indicated in the table below.

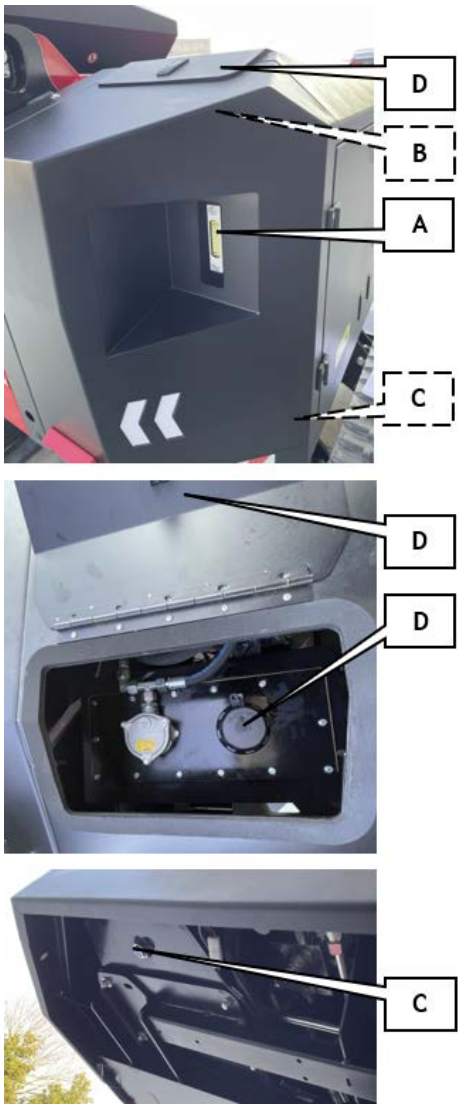


Figure 46

TEMPERATURES→	0°C +70°C	-20°C +50°C	-30°C +30°C
BRAND	**TYPE**	**TYPE**	**TYPE**
AGIP	Arnica 68	Arnica 46	Arnica 32
BP	Energol SHF6	Energol SHF46	Energol SHF32
ELF	Hydrelf DS68	Hydrelf DS46	Hydrelf DS32
ESSO	Invarol EP48	Invarol EP46	Invarol EP32
PETRONAS	Hydrobak 68 HV	Hydrobak 46 HV	Hydrobak 32 HV
SHELL	Tellus SX68	Tellus SX46	Tellus SX32
TEXACO	Rando NDZ68	Rando NDZ46	Rando NDZ32

Warning: do not dispose of used oil in the environment. Used oil must be collected and disposed of at authorised collection centres.

8.2.7 Hydraulic oil filter replacement.

According to the periodicity described in the maintenance table, it is necessary to replace the hydraulic oil filters at the same time as changing the hydraulic oil.

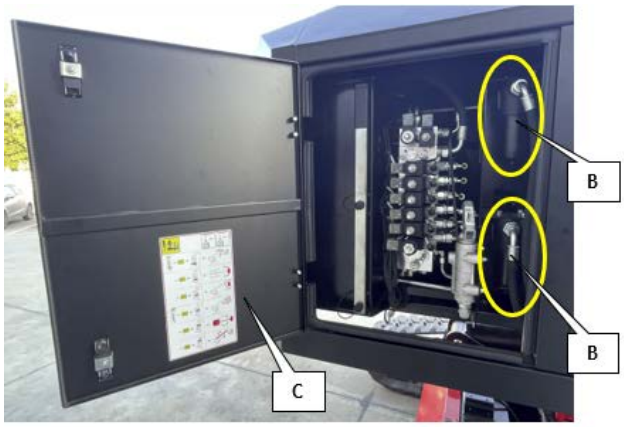
To replace the filters USE ORIGINAL SPARE PARTS ONLY. Contact ALMAC for assistance with the procurement of the material.

Do not reuse the recovered oil, do not dispose of it in the environment, but dispose of it in accordance with current regulations.

8.2.7.1 Delivery filters.

To replace the cartridges (A) of the delivery filters (B):

- Turn off the machine completely;
- Open the hatch (C) to access the filters (B);
- Unscrew the cups (D) and remove them from their seat;
- Replace the cartridges (A);
- Screw the cups (D) again and, if necessary, top up the tank;
- Thoroughly clean the area of operations from any oil residues.



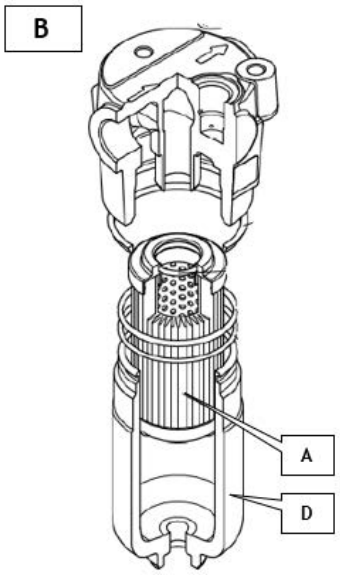


Figure 47

8.2.7.2 Suction and return filters.

To replace the suction filters (A) located inside the hydraulic tank and the filter cartridge (B) of the return filter (C) in the same operation:

- Turn off the machine completely;
- Empty the tank (see previous chapters);
- Unscrew all screws (D) of the tank cover (E) and remove the tank cover;
- Unscrew the filters (A) and remove them, then replace them with new components;
- Fill the tank (see previous chapters) and apply the lid (E) taking care to spread a layer of sealant in the area in contact with the tank;
- Unscrew the cover (F) of the return filter (C);
- Remove the filter cartridge (B) and replace it with a new one;
- Fasten the cover (F) again and, if necessary, top up the tank;
- Thoroughly clean the area of operations from any oil residues.

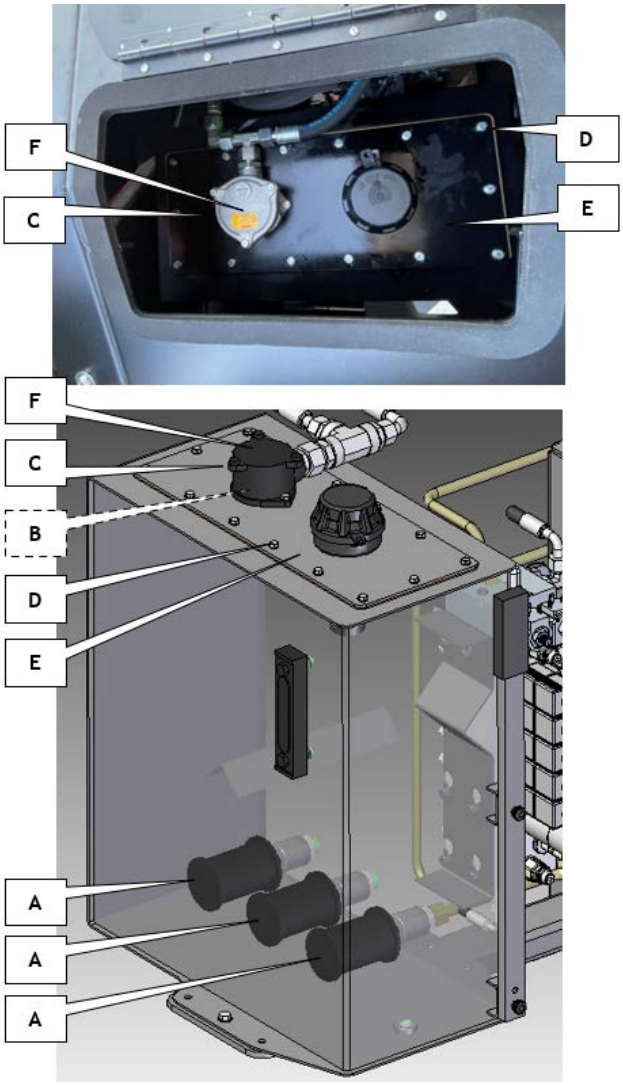


Figure 48

8.2.8 Drive reduction gear oil level check / oil change.

According to the periodicity described in the maintenance table, it is necessary to check the oil level in the traction reducers according to the following procedure.

To check the level:

- Command the travel until the plugs (A) and (B) are in the position shown alongside;
- Unscrew the cap (B);
- If you notice oil leaking, the level is correct. Otherwise, proceed to top up through the cap (A) until the oil comes out of (B).

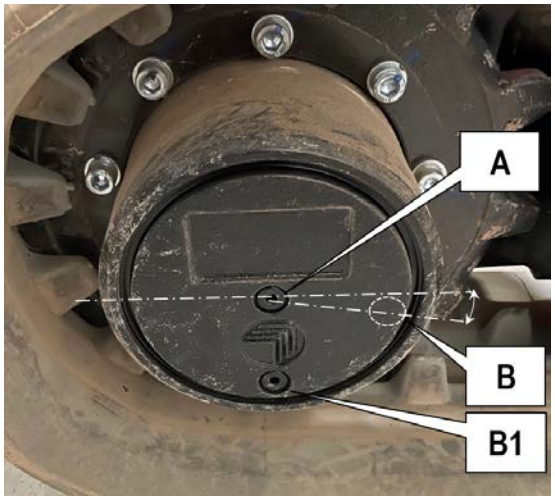


Figure 49

To replace the gearbox oil:

- Control the translation until the caps (A) and (B1) are in the position shown alongside;
- Place a container under the cap (B1) capable of collecting the gearbox oil;
- Unscrew the caps (B1) and (A) and completely empty the reducer;
- Close the cap (B1) and pour lubricating oil for gearboxes into the hole (A) until it comes out of the hole itself;
- Close the cap (A).

Use only the types of oil indicated in the table below.

BRAND	TYPE	QUANTITY
SHELL	SPIRAX S3 AX 80W / 90	1.3 litres per gear box

Warning: do not dispose of used oil in the environment. Used oil must be collected and disposed of at authorised collection centres.

8.2.9 Tracks: check for wear, tensioning and replacement.

According to the periodicity described in the maintenance table, and always before each use of the machine, it is necessary to check the state of wear and the correct tensioning of the tracks.

8.2.9.1 Track wear check.

Check the condition and wear of the tracks, replacing them when the tread is equal to or less than 10 mm. Proceed to replace the tracks even before this event, if dangerous cuts or tears occur.

8.2.9.2 Track tension control and adjustment.

To check its tension, when the tracks are resting on the ground, pull the track slightly upwards at the centre line. The maximum permissible deformation must be less than or equal to 20 mm (2 cm). Otherwise, or if the track is particularly noisy during translation due to excessive deformation, it is necessary to call the Technical Assistance Service.
The machine is equipped with an automatic track tensioning system powered by the hydraulic circuit of the machine during normal operation, which does not require interventions by the operator.

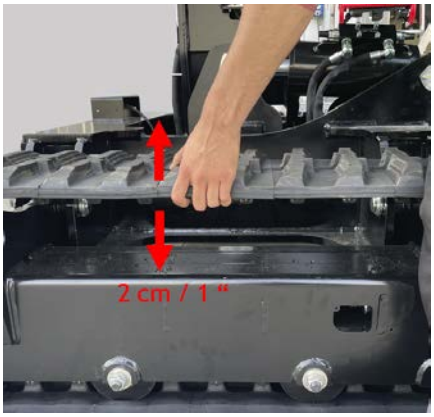


Figure50

8.2.9.3 Track replacement.

If necessary, to replace a track:

- Lift the machine using one of the lifting means provided in this manual (LOADING AND TRANSPORT chapter) in order to obtain a track height of about 15-20 cm from the ground
- Thoroughly clean all parts of the tracked undercarriage
- Open the front crankcase (A) on the undercarriage
- Locate the track tensioning valves (B=RIGHT TRACK, C=LEFT TRACK), and loosen the adjusting grub screw a few turns until you notice the tracks loosening.
- Compress the track tensioning cylinder by pressing on the idler wheel (D)

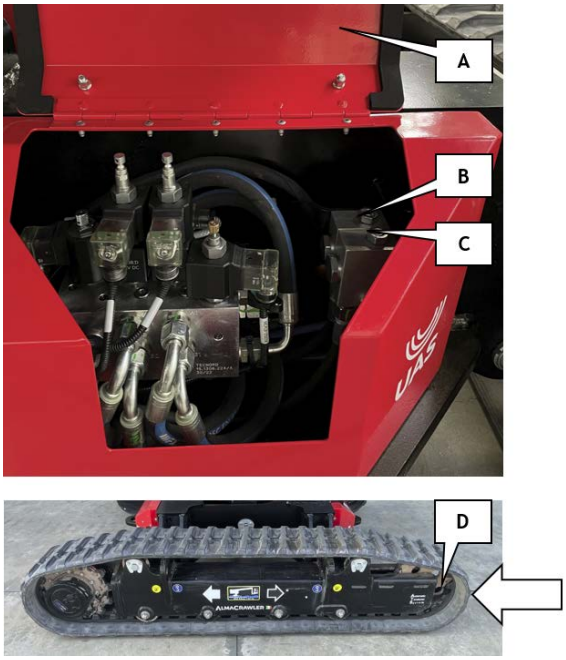


Figure 51

- Pull the track out of its seat by levering between the track and the idler wheel with a pry bar while an operator from the platform control station operates the traction control while holding down the mode button so as not to activate the automatic tensioning control;
- Install the new track following the reverse procedure, matching the toothed wheel to its seats, then inserting it on the idler wheel;
- To fully drive the track, operate the traction control while holding down the mode button so that the automatic tensioning control is not activated;
- Once the track is fully seated, tighten the track tensioning valves and operate the traction control to activate the automatic tensioning system.
- Check the tension as described above, and clean from grease residues.

Warning: The replacement of the tracks must be carried out by specialized and adequately trained personnel.

The operation must be carried out after making sure that the machine is perfectly stable, and wearing all the necessary PPE (professional footwear, gloves, helmet, etc.).

8.2.10 Extension chains: Wear control, Tensioning and Lubrication.

According to the periodicity described in the maintenance table, check the extension chains:

- Wear control;
- Tension control;
- Lubrication.

8.2.10.1 Chain wear check.

The wear control of the telescopic extension / retraction chains consists mainly of measuring a 10-step stretch and evaluating the percentage elongation. An elongation greater than 3% compared to the nominal size is a sign of excessive wear, for which it is necessary to replace the chains. Also, the presence of rust, or the lack of correct winding of the chain around its pulley, must lead to its replacement.

The type of chain used is FLEYER AL466 with a pitch of 12.7 mm. If the length of 10 chain steps is greater than 130.8 mm (or 127 + 3%) the chain must be replaced.

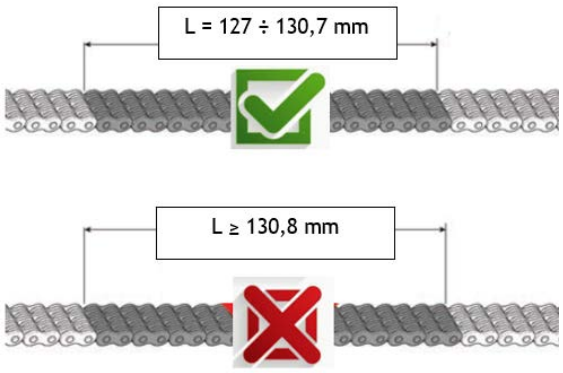


Figure 52

To check the chains, with the machine on flat ground and the arms completely lowered, extend the telescopic arm so as to uncover the chains, and measure them with a gauge.

Proceed with the complete replacement of the chains after 10 years. Entrust the operation to authorized technical assistance.

8.2.10.2 Chain tension control and adjustment.

Checking the tensioning of the telescopic extension / retraction chains consists in checking the position of the red washers (1) of the chain tensioners, with respect to the red reference line (2) placed on the arm.
If the red washers (1) are aligned with the red reference line (2), the tension of the chains is correct. Otherwise it is necessary to adjust the tension:

- Command 3-4 extensions / retractions of the telescopic arm;
- With the telescopic boom fully retracted, act on the nuts to restore the alignment of the references.

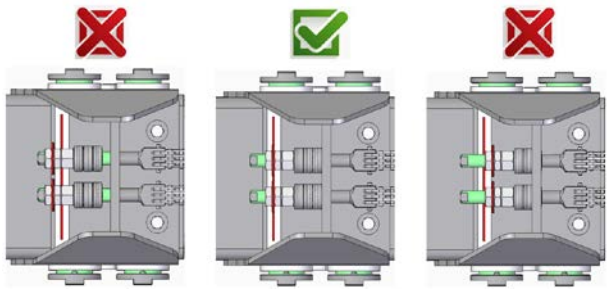


Figure 53

8.2.10.3 Chain lubrication.

The extension / return chains must always be kept lubricated. Lubricate the extension / return chains according to the frequency described in the maintenance table. For correct lubrication it is necessary:

- Remove the telescopic boom in safety conditions (machine on flat ground, in stable conditions, without load on the platform and with the jib completely retracted);
- Loosen the chains by reverse procedure with respect to tensioning;
- Remove any traces of dirt from the chains;
- With a brush, lubricate the chain along its entire length using a specific lubricant for chains.

8.2.11 Check wear and register of sliding pads.

According to the periodicity described in the maintenance table, check the wear of the shoes (lower and upper) of the telescopic extensions:

- Fully retract the telescopic extensions and check the vertical play;
- If there is a play greater than 3 mm between the arm and the first extension and / or the first extension and the second extension, the pads must be replaced.

Also, check the horizontal centring of the telescopic extensions and, if necessary, adjust the adjusters (1) shown alongside.

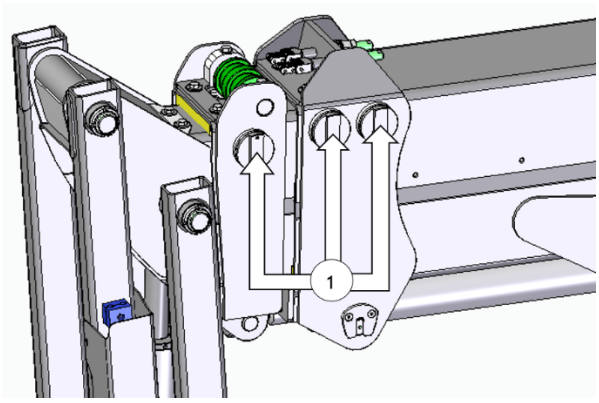


Figure 54

8.2.12 Turret rotation clearance check.

According to the periodicity described in the maintenance table, check the play of the turret rotation system. The turret rotation system used on ALMAC machines makes it possible to have no play at the base of the rotating turret by applying horizontal forces to the platform.
To check the correct horizontal play of the turret rotation, it is therefore sufficient, with the arm completely closed, to push horizontally on the platform to check that the base of the turret has no play in the horizontal direction.

To check the vertical play of the turret rotation it is necessary, with the arm completely closed, to swing the platform up / down and check that the base of the turret has no play in the vertical direction. Any vertical oscillations are a sign of internal wear of the fifth wheel.

If the operator finds a defect that can generate dangerous situations or suspects that there may be malfunctions, the machine must be placed in a safe condition (isolate it, apply a sign) and report the anomaly to the employer and to contact an authorized service centre.

8.2.13 Platform rotation clearance check.

According to the periodicity described in the maintenance table, check the clearance of the platform rotation system.

The platform rotation system used on the ALMAC machines allows for minimum clearance on the platform rotation. The rotation actuator or the cylinder is held in position by an over-centre valve directly flanged on the component or rigidly connected in the vicinity of the same.
If applying a horizontal force to the platform, the latter does not remain fixed in position, there may be air in the component; it is sufficient to command two / three platform rotations at the end of the stroke to eliminate the air present and restore the system to work properly. If the clearance remains even after this last operation, the component may be defective.

If the operator finds a defect that can generate dangerous situations or suspects that there may be malfunctions, the machine must be placed in a safe condition (isolate it, apply a sign) and report the anomaly to the employer and to contact an authorized service centre.

8.2.14 Overload control device check.

According to the periodicity described in the maintenance table, check the operation of the platform overload control system.

The work platform support incorporates a sensor that detects the load present on the platform. If the rated load is exceeded by 20% of the rated load, and the platform is not in the access position, the overload alarm is activated and the machine is completely blocked. To resume working with the machine, it is necessary to completely remove the overload.

To verify its operation:

- Apply the nominal load to the platform (see TECHNICAL DATA table) and check that the machine works normally;
- With the access position (all arms closed) load an overload of 20% and check that the overload alarm is activated and the boom up, and telescopic boom extension commands are inhibited;
- Remove the excess load and check that the machine comes out of the alarm condition and that the previously inhibited commands are available again.

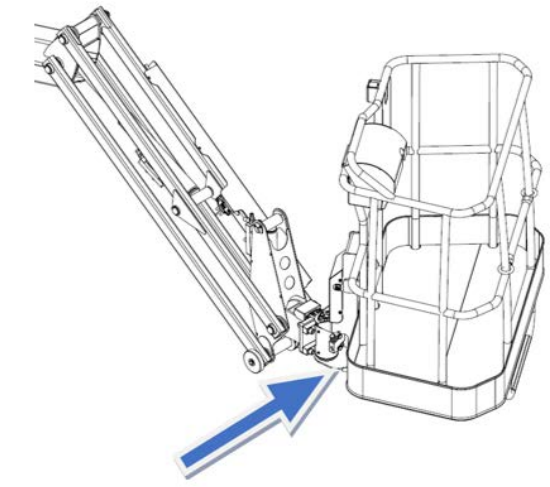


Figure 55

If the operator finds a defect that can generate dangerous situations or suspects that there may be malfunctions, the machine must be placed in a safe condition (isolate it, apply a sign) and report the anomaly to the employer and to contact an authorized service centre.

8.2.15 Machine sensor check.

All moving parts of the machine, except for the rotation of the platform, are monitored by sensors. Based on the information received from these sensors, the control system adapts the operation of the machine in relation to:

- Work diagrams;
- Speed limitation;
- Inhibition of commands.

According to the periodicity described in the maintenance table, check the operation of the various sensors of the machine. Their operation is monitored by the control system, which detects faults and highlights them on the display of the ground control station in addition to inhibiting connected controls.

It is believed that once the FUNCTIONAL CHECKS described in this manual have been completed if no malfunctions are highlighted, the sensors of the machine are efficient.

8.2.16 Ultrasonic sensor control of ANTI-COLLISION and ANTI-CRUSHING (optional).

If present, according to the frequency described in the maintenance table, checks the operation of the ANTI-COLLISION and / or ANTI-CRUSHING system installed on the platform. The operation of the system is described in the chapter HOW TO USE.

8.2.17 Ultrasonic sensor control of POTHOLE and anti-collision turret (optional).

If present, according to the periodicity described in the maintenance table, proceed to check the operation of the terrain pot-hole monitoring system (POT-HOLE system) on the undercarriage, and the anti-collision system installed on the turret. The operation of the system is described in the chapter HOW TO USE.

8.2.18 "AES" operator anti-entrapment system check.

If present, according to the frequency described in the maintenance table, checks the operation of the ANTI-ENTRAPMENT system installed on the platform. The operation of the system is described in the chapter HOW TO USE.

8.2.19 Battery.

The battery is a component of fundamental importance in the operation of the machine. Maintaining it over time is important to increase its life, but also to limit problems and reduce the operating costs of the machine itself.
In general, keep in mind the following warnings:

- Charge the lead-acid battery in a ventilated area;
- Do not approach the lead-acid battery with naked flames due to the possibility of deflagration with the formation of gas;
- Do not make temporary electrical connections;
- Do not use battery chargers external to the machine to recharge the batteries. Only battery chargers built into the machine are suitable for recharging the batteries;
- Do not place tools or any other metal object on the battery;
- Clean the battery terminal terminals from encrustations and always make correct tightening;
- Always keep the battery clean, dry and free from oxidation;
- In case of battery replacement, use an original composition with the same electrical and weight characteristics; on electric machines (ELC, LTH) the mass of the battery affects the stability of the machine.

8.2.19.1 Battery of the control circuit.

The small 12V battery is used to power the machine's control circuit.

8.2.19.1.1 Maintenance of the control circuit battery.

The batteries on the ALMAC machines are of the MAINTENANCE-FREE type, that is, equipped with a technology that significantly reduces water consumption and maintains the electrolyte for the entire life cycle of the battery. It is therefore sufficient:

- Clean the battery terminal terminals from encrustations and oxide;
- Check that the terminals are properly tightened.

8.2.19.1.2 Charging the battery of the control circuit.

Charging of the control circuit battery is automatic and is done through the main battery (when the machine is turned on) or by connecting the power line plug to the mains.

In case of long periods of inactivity of the machine, therefore, it is recommended to keep it connected to the power supply to avoid discharge.

Warning: during the charge gas is released which under certain conditions can form EXPLOSIVE ATMOSPHERES.
Recharge the battery in well-ventilated rooms that comply with EN 60079-10 (CEI 31-30) standards, where there is no fire hazard and in the presence of adequate extinguishing means.

8.2.19.2 LITHIUM battery (LTH versions).

The LITHIUM battery present on the LTH version machines feeds the power circuits of the machine and, through a DC-DC converter, also the control circuit battery.

- The battery consists of lithium-ion cells and an advanced electronic management system, integrated into the battery itself, called BMS (Battery Management System) which communicates directly with the machine control system and with the battery charger, managing the battery in the best way for efficiency and battery life itself.
- The chemistry of the lithium cells provides a high level of safety, and high performance and allows great flexibility of use in the charge / discharge cycles, not presenting any memory effect.
- The battery is maintenance-free and withstands incomplete discharges and charges (bottle feeding) without affecting its lifespan.
- The absence of emissions and the extended range of the working temperature make the machine perfectly suitable for any work environment.
- The terminal clamps must be well-tightened and free of encrustations. The cables must have the insulating parts in good condition.
- Keep the battery clean, dry and free from oxidation products by using antistatic cloths.
- Do not place tools or any other metal object on the battery.

8.2.19.2.1 Maintenance of the LITHIUM battery (LTH versions).

LITHIUM batteries are MAINTENANCE-FREE type. Consider the following:

- Clean the battery power connector to remove fouling and oxide;
- Check the proper tightening of the power connector cables.
- When it is necessary to disconnect/replace the battery from the machine, follow the instructions in Chapter 5.
- Although the LITHIUM battery accepts partial charges without consequences, it is recommended that the battery be fully charged to 100% at least once a week to ensure proper cell equalization.
- During periods of machine inactivity, the batteries discharge spontaneously (self-discharge). It is recommended to avoid periods of inactivity longer than 3 months. If the machine is to be put out of service for longer periods, it is mandatory to fully recharge it every 3 months using the battery charger connected to the 115-230V mains.
- To limit the self-discharge of the batteries during periods of inactivity, it is recommended to leave the battery charger connected to the 115-230V mains.
- If the battery does not charge using the installed charger, do not attempt to recharge it with external chargers.
- In the presence of operating anomalies attributable to the battery, avoid intervening directly and notify the Technical Assistance Service.

For transportation purposes, lithium batteries are classified as dangerous goods under the law. The battery is classified as follows:

UN Number: UN3480
A Description: Lithium Ion Batteries
ADR Class: Class 9
IMDG Code: UN3480
Marine pollutant: NA
Packing groups: II

8.2.19.2.2 LITHIUM battery charging (LTH versions)

To charge the LITHIUM battery, it is necessary to connect the charger to the mains or to a vehicle charging station.

The battery can be recharged both when the battery pack is correctly installed on the machine and when it is on the ground; in the latter case, the indications on the state of charge are displayed by the circular indicator (C) which shows the state of charge as a percentage (SOC=State Of Charge). Remember that the machine is powered by a removable battery pack.

8.2.19.2.2.1 Charging through mains.

The mains must be equipped with all protections according to current safety standards, and have the following characteristics (according to the nation of machine commissioning):

- Power supply voltage 115-230V AC ± 10% single phase;
- Frequency 50 ÷ 60 Hz;
- Ground line connected;
- Efficient magneto-thermal and differential switch device;

It is also necessary to keep in mind the following:

- Do not use cables or extensions longer than 5 meters;
- Do not use coiled cables or extensions;
- Use a cable with an appropriate section (minimum 3x2.5 mm²);

To proceed with recharging, select the power supply by means of a mains socket (pos.2 of selector switch D), connect the plug (A) to a cable connected to the mains as described above, checking that the built-in battery charger is turned on correctly, by the lighting of the green LEDs (B) on the ground control station. Flashing green LED indicates that charging is in progress. Full recharging is indicated by the steady green LED. The red LED lighting indicates a charging error or failure. Request technical intervention.

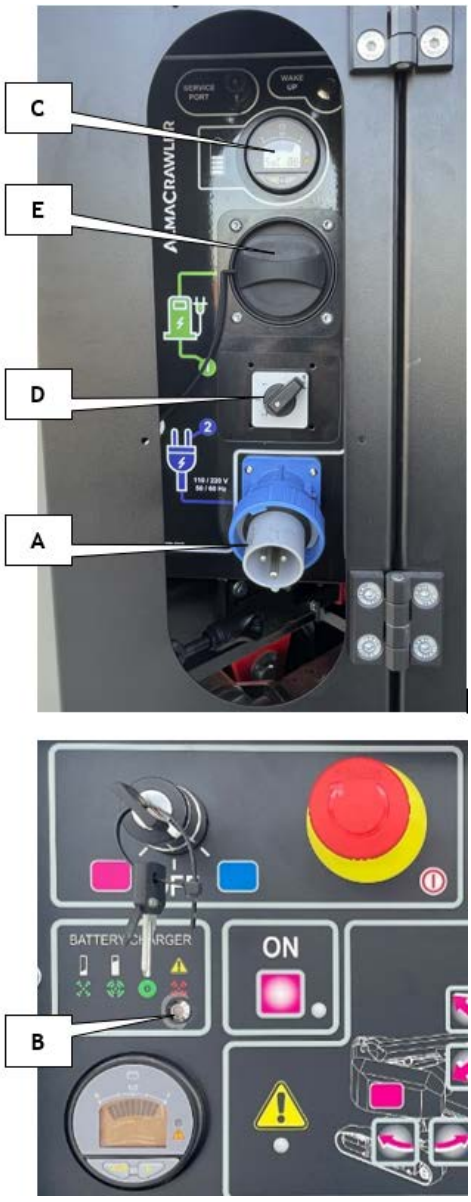


Figure 56

8.2.19.2.2.2 Recharging by means of a vehicle charging station.

The charging station must be of alternating current AC type 2, IEC 62196-2, 32A / 250V (AC).

It is also necessary to keep in mind the following:
- Use a specific cable;
- Do not use cables or extensions longer than 5 meters;
- Do not use coiled cables or extensions;

To proceed with recharging, select the power supply by means of mains socket (pos.1 of selector switch D), remove the cover from the socket (E) by pulling it outward, connect the plug (E) to a cable connected to the charging column as described above while checking that the built-in charger is turned on correctly, by the lighting of the green LED (B) on the ground control station. Flashing green LED indicates that charging is in progress. Full recharging is indicated by the steady green LED. The red LED lighting indicates a charging error or failure. Request technical intervention.

8.2.19.3 TRACTION battery (ELC versions).

The TRACTION battery present on the ELC version machines supplies the power circuits of the machine and, through a DC-DC converter, also the control circuits.

- The battery is made up of lead-acid elements combined in order to provide the correct voltage and capacity necessary for the operation of the machine.
- In the case of new batteries, do not wait for the low battery signal before recharging; recharge after 3-4 hours of use for the first 4-5 times.
- In the case of new batteries, the full performance of the same occurs after about 10 charge and discharge cycles.
- In case of prolonged storage, fully recharge before storage and before the next reuse.
- Do not use charge maintainers, battery tenders, fast chargers or other similar devices; the battery must be recharged only with the built-in battery charger.
- Battery discharge must stop when 80% of the nominal capacity has already been used. Excessive and prolonged discharge irreversibly damages the battery. The machine is equipped with a device which, once the 80% low battery condition is reached, inhibits lifting operations. It is necessary to recharge the battery. The condition is signalled on the platform control console as indicated in the previous paragraphs.
- The terminal clamps must be well-tightened and free of encrustations. The cables must have the insulating parts in good condition.
- Keep the battery clean, dry and free from oxidation products by using antistatic cloths.
- Do not place tools or any other metal object on the battery.

8.2.19.3.1 TRACTION battery maintenance (ELC versions).

The battery requires limited but correct maintenance in order not to jeopardize its duration. Consider the following:

- Clean the battery terminal terminals from encrustations and oxide.
- Check that the terminals are properly tightened.
- Do not proceed with partial recharging or discharging of the TRACTION battery to avoid the "bottle feeding" effect which reduces the operating life of the battery;
- During periods of machine inactivity, the batteries discharge spontaneously (self-discharge). It is recommended to avoid periods of inactivity longer than 3 months. If the machine is to be put out of service for longer periods, it is mandatory to fully recharge it every 3 months using the battery charger connected to the 115-230V mains.
- To limit the self-discharge of the batteries during periods of inactivity, it is recommended to leave the battery charger connected to the 115-230V mains.
- In the presence of operating anomalies attributable to the battery, avoid intervening directly and notify the Technical Assistance Service.
- Visually make sure that the electrolyte level exceeds the splash guards by about 5-7 mm, or for batteries with a visual level, check that the float is completely raised (1). If the float is not low (2), restore the level. For normal use, water consumption is such that the topping-up operation can be performed weekly.
- Topping up must be done after charging. Proceed to fill as per the following instructions

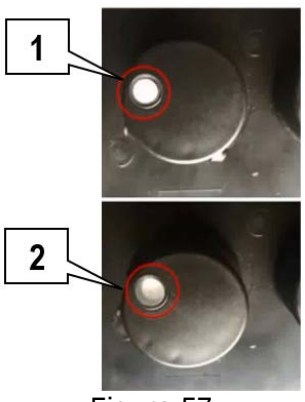


Figure 57

TOPPING UP THE BATTERY WATER USING A CENTRALIZED FILLING KIT.

a. Open the doors on the battery side (3) and locate the quick coupler (4) of the central filling system;
b. Connect the quick coupling to the external counterpart connected to a tank containing DISTILLED WATER and open the tap. Connectors, tanks and taps are not normally included in the supply.
c. When all the floats are raised, the system stops supplying water, and it is possible to disconnect the connector.

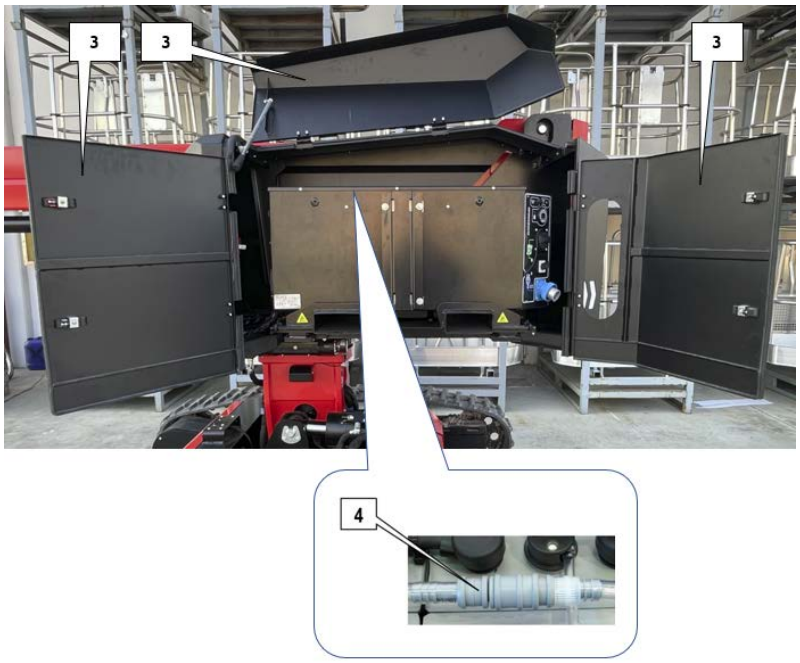


Figure 58

During maintenance operations on the TRACTION battery:
- Always wear a face shield or goggles;
- Wear plastic gloves, an apron or a lab coat to protect your clothes from the corrosive effects of any electrolyte splashes;
- Remove bracelets, watches, rings and other metal objects that could cause accidental short circuits and burns.

8.2.19.3.2 TRACTION battery charging (ELC versions).

To recharge the TRACTION battery, the battery charger must be connected to an electrical network equipped with all the protections in accordance with current safety standards, and which has the following characteristics (depending on the country in which the machine is put into service):

- Power supply voltage 115-230V AC ± 10% single phase;
- Frequency 50 ÷ 60 Hz;
- Ground line connected;
- Efficient magneto-thermal and differential switch device;

It is also necessary to keep in mind the following:

- Do not use cables or extensions longer than 5 meters;
- Do not use coiled cables or extensions;
- Use a cable with an appropriate section (minimum 3x2.5 mm²);

To proceed with recharging, connect the plug (A) to a mains-connected cable as described above, checking that the built-in battery charger turns on properly, by the lighting of the green LED (B) on the ground control station. Flashing green LED indicates that charging is in progress. Full recharging is indicated by the steady green LED. The red LED lighting indicates a charging error or failure. Request technical intervention.

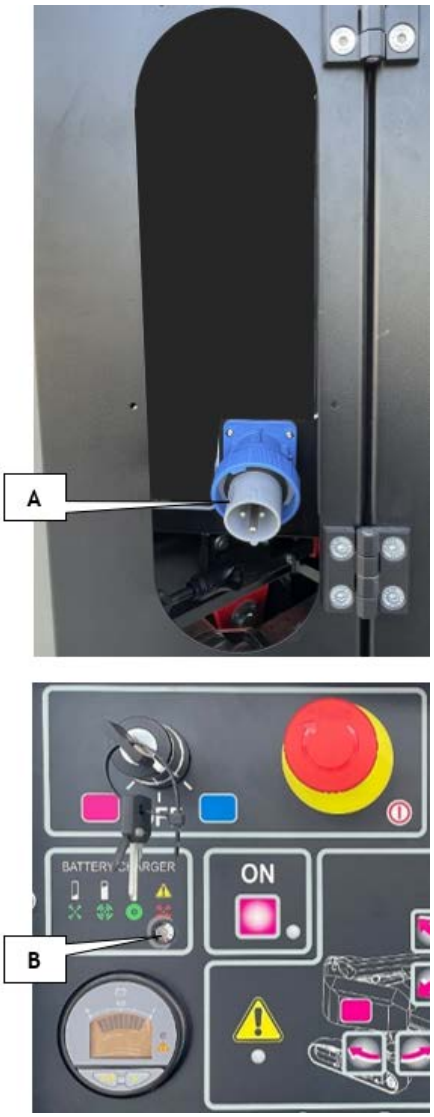


Figure 59

The battery can be recharged both when the battery pack is correctly installed on the machine and when it is on the ground; in the latter case there are no indications on the charging status. Remember that the machine is powered by a removable battery pack.

9 DEMOLITION.

9.1 Machine life.

The machine has been designed for a duration of 10 years in normal working environments, considering correct use and adequate maintenance.

9.2 Decommissioning and demolition.

Once the end of its technical and operational life has been reached, the machine must be subjected to a detailed and complete check / overhaul by the manufacturer or by specialized and qualified technicians. In the event that the verification is not considered passed, the equipment must be deactivated and then demolished. The decommissioning must place the equipment in conditions that it can no longer be used for the purposes for which it was designed and built at the time and must also make it possible to recover the raw materials that constitute it.
In case of demolition, comply with the regulations in force in the country where this operation is carried out.
In Italy, demolition / disposal must be reported to the local ASL / USL or territorial ARPA.
The machine is mainly made up of easily recognizable metal parts (steel for the most part and aluminium for the hydraulic blocks); it is, therefore, possible to say that the machine is 90% recyclable.
The demolition of the machine must be carried out by adopting safety measures that must take into account the logistical, environmental and wear conditions of the machine itself.
In any case, follow the following general rules:

- Wear protective clothing and accessories (helmet, safety shoes, gloves, possibly goggles and mask) approved in accordance with current accident prevention regulations;
- Disconnect the machine from any form of energy;
- Make the machine in-operative and impossible to use by breaking some vital parts of the machine and transporting it to another place where it is certainly not available to anyone;
- Use suitable lifting means;
- Disassemble the machine in small, easily transportable groups;
- To dispose of the machine, separate non-polluting materials from polluting ones (insulators, plastic materials, rubber, etc.).

The European regulations and those implemented by the member countries regarding respect for the environment and waste disposal provide for heavy administrative and criminal penalties in the event of inadequate compliance with them.
In case of demolition / disposal, therefore, strictly follow the rules imposed by the regulations in force, especially for materials such as hydraulic oil and batteries.

9.3 Battery disposal.

Recycling of batteries is mandatory and depends on various national regulations (in Europe: European Directive 2006/66 / EC). Find out about the legislation in your country.

- Cells and batteries, even if completely discharged, could still contain a considerable amount of energy, therefore it is always necessary to protect the terminals to avoid short circuits;
- Dispose of in accordance with local laws and regulations (contact your nearest dealer);
- Keep the material to be disposed of as indicated in the specific Section of the Battery Safety Data Sheet (request a copy);
- DO NOT discard into sewer system, on the ground or into waterways.

10 CE DECLARATION OF CONFORMITY (FAC-SIMILE).

ALMACRAWLER

DICHIARAZIONE CE DI CONFORMITA' (IT)	CE DECLARATION OF CONFORMITY (EN)	DECLARATION CE DE CONFORMITE' (FR)	EG KONFORMITÄTS ERKLÄRUNG (DE)	DECLARACION CE DE CONFORMIDAD (ES)
Dichiarazione originale	Original Declaration	Déclaration Originale	Originalerklärung	Declaración Original
Noi	We	Nous	Wir	Nosotros

ALMAC S.r.l. P.IVA e Cod.Fisc. 02559800350
Viale Ruggeri 6/a. 42016, Guastalla (RE) - Italia
Ph. +39 0375-833527
http: www.almac-italia.com; e-mail: info@almac-italia.com

Dichiariamo sotto la nostra esclusiva responsabilità che il prodotto PIATTAFORMA DI LAVORO ELEVABILE – MODELLO:	Declare under our exclusive responsibility that the product MOBILE ELEVATING WORK PLATFORM – MODEL:	Declarons sous notre responsabilité exclusive que le produit PLATEFORME ELEVATRICE MOBILE DE PERSONNEL – MODEL :	Erklären hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt HUBARBEITSBÜHNEN – TYP:	Declaramos bajo nuestra exclusiva responsabilidad que el producto PLATAFORMA ELEVADORA MÓVIL DE PERSONAL – MODELO:
JIBBI 1890 PRIMO				
MATRICOLA:	SERIAL NO:	N. DE SERIE:	SERIENNUMMER:	N. MATRICULA:
ALM-XXXXXX				
ANNO DI COSTRUZIONE:	MANUFACTURING YEAR:	ANNEE DE CONSTRUCTION:	BAUJAHR:	AÑO DE CONSTRUCCIÓN:
2023				
Al quale questa dichiarazione si riferisce è conforme alle direttive 2006/42/CE, 2014/30/CE, 2005/88/CE e al modello certificato da:	To which this declaration refers is in compliance with the directives 2006/42/CE, 2014/30/CE, 2005/88/CE and with the model certified by:	Faisant l'objet de la présente déclaration est conforme aux directives 2006/42/CE, 2014/30/CE, 2005/88/CE et au modèle certifié par	Auf das sich die vorliegende Erklärung bezieht, den 2006/42/CE, 2014/30/CE, 2005/88/CE Richtlinien und dem von:	Al cual esta declaración se refiere cumple las directivas 2006/42/CE, 2014/30/CE, 2005/88/CE y el modelo certificato por:

VERICERT srl
Via Luigi Masotti, 5 – 48124 Fornace Zarattini (RA) - Italia
Organismo Notificato N°1878

CERTIFICATO CE DI TIPO:	EC-TYPE EXAMINATION CERTIFICATE:	CERTIFICATE CE DE TYPE:	EG-BAUMUSTERPRÜF BESCHEINIGUNG:	CERTIFICADO DE EXAMEN CE DE TIPO:
1878M171866CT0223 of 20.02.2023				
e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguentes normas:

EN 280 : 2013+A1:2015 EN ISO 12100:2010 EN ISO 60204-1:2006
AS/NZS 1418.10: 2011 + A1: 2017; REG.NUMBER: WSV-0000000000 - of 00/00/2023; ISO 13849-1:2015 (PL:c, d - Table 2.10 AS/NZS 1418.10:2011)
ANSI A92.20-2020 : Report number 0000-0000 of 00/00/2023
CSA B354.6:17 : Report number 0000-0000 of 00/00/2023

Il firmatario di questa dichiarazione di conformità è autorizzato a costituire il Fascicolo Tecnico.	The signatory of this conformity declaration is authorized to set up the Technical File	Le signataire de cette déclaration de conformité est autorisé à constituer le Dossier Technique	Der Unterzeichner dieser Konformitätserklärung ist autorisiert, das technische Unterlagen abzufassen.	El firmante de esta declaración de conformidad está autorizado a crear el Expediente Técnico

Guastalla (RE) XX/YY/ZZZZ

Andrea Artoni
Legale Rappresentante / Legal representative
ALMAC Srl
Viale Ruggeri, 6/A
42016 Guastalla (RE)
P. IVA 02559800350

11 CONTROL REGISTER.

This CONTROL REGISTER is issued to the user of the machine in accordance with Annex 1 of the Machinery Directive 2006/42 / EC; It must always accompany the machine even following changes in ownership and is used to record events concerning the life of the machine in the appropriate spaces, and more precisely:

- Periodic checks by the control bodies (in Italy: ASL, ARPA or authorized private bodies);
- Maintenance and mandatory checks to check the integrity of the machine structure and protection and safety systems, under the responsibility of the Employer and with the minimum frequency required in the MAINTENANCE chapter.
- Transfers of ownership to be registered and:
    - Communicate to ALMAC SRL to continue enjoying the warranty, service bulletins and updates;
    - Report the passage to any competent bodies (in Italy: INAIL).
- Extraordinary maintenance or replacement of important elements of the machine (structural parts or control systems).

11.1 Register of PERIODIC INSPECTIONS AND CHECKS by the control bodies.

	Date	Remarks	Body; Name and surname; Signature and stamp
1st Verification			
2nd Verification			
3rd Verification			
4th Verification			
5th Verification			
6th Verification			
7th Verification			
8th Verification			
9th Verification			
10th Verification			

If the machine is kept in service for a period exceeding 10 years, after having subjected it to an extraordinary check, record the subsequent periodic checks below.

11th Verification			
12th Verification			
13th Verification			
14th Verification			
15th Verification			

11.2 Register of PERIODIC INSPECTIONS by the owner.

For the checks in this section, refer to the MAINTENANCE chapter.

FUNCTIONAL CHECKS			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

VISUAL CHECK TIGHTENING OF SCREWS / TIGHTENING OF SCREWS			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

VISUAL INSPECTION OF THE STRUCTURAL ELEMENTS OF THE MACHINE			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

GREASING JOINTS, TELESCOPIC EXTENSIONS AND SLEWING RING			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

HYDRAULIC OIL REPLACEMENT			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

HYDRAULIC OIL FILTER REPLACEMENT			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

TRACK REDUCTION GEAR OIL REPLACEMENT			
	Date	**Remarks**	**Name surname; Signature and stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

TRACK WEAR AND TENSION CHECK			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

CHECK FOR WEAR AND SLIDING SHOES REGISTER			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

TURRET ROTATION GAME CONTROL			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

PLATFORM ROTATION GAME CONTROL			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

CHECK OVERLOAD CONTROL DEVICE			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

MACHINE SENSOR CONTROL			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

ULTRASONIC SENSOR CHECK (IF PRESENT)			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

OPERATOR ANTI-ENTRAPMENT SYSTEM CHECK			
	Date	**Remarks**	**Name, Surname, Signature and Stamp**
1st year			
2nd year			
3rd year			
4th year			
5th year			
6th year			
7th year			
8th year			
9th year			
10th year			

11.3 Transfers of Ownership.

Copy to keep	
On:	
Ownership of the machine:	
Serial number	
Year of construction	
It is transferred to:	
We certify that, as of the date above, the technical, dimensional and functional characteristics of the machine in question comply with those originally envisaged and that any changes have been noted in this register.	
Company name of the seller:	
The seller	
The buyer	

Copy to be sent to ALMAC S.R.L.	
On:	
Ownership of the machine:	
Serial number	
Year of construction	
It is transferred to:	
We certify that, as of the date above, the technical, dimensional and functional characteristics of the machine in question comply with those originally envisaged and that any changes have been noted in this register.	
Company name of the seller:	
The seller	
The buyer	

12 FUNCTIONAL DIAGRAMS.

12.1 WIRING DIAGRAMS.

The wiring diagrams are delivered to the owner of the machine and attached to this instruction manual at the time of delivery of the machine.

12.2 HYDRAULIC DIAGRAMS.

The hydraulic diagrams are delivered to the owner of the machine and attached to this instruction manual at the time of delivery of the machine.

ALMAC S.r.l.

e-mail: info@almac-italia.com
Phone +39 0375 83 35 27
Fax. +39 0375 78 43 50

Registered office
Viale Ruggeri 6 / A
42016 - Guastalla (RE) - Italy

Operational Headquarters
Via Caduti sul Lavoro 1
42012 - Viadana (MN) - Italy