

ALMACRAWLER



BILLENNIUM SERIES:

B1570 ETS VISUAL - B1570 LTH VISUAL - B1570 EVO VISUAL

B1890 EVO Q-PRO - B1890 LTH Q-PRO

USE AND MAINTENANCE ENGLISH

Translation of the Original Instructions

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01/09/2021	<ul style="list-style-type: none">• First issue of the document
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1 GENERAL INFORMATION.

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This document may only be used by the customer to whom the manual has been supplied along with the machine, and only for the purpose of use and maintenance of the machine to which the manual refers. ALMAC s.r.l. hereby declares that the information in this manual was congruent with the technical and safety specifications of the machine to which the manual refers. ALMAC s.r.l. assumes no responsibility for direct or indirect damage to persons, property or animals resulting from use of the equipment in conditions other than those provided.

ALMAC s.r.l. reserves the right to make changes or improvements without prior notice to this document and to the equipment without any obligation to update the equipment already sent.

The information contained in this manual refers to the various pieces of equipment mentioned on the cover; some images and/or information may not be specific to the equipment in the possession of the customer because they are not available or are 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;
- CE marking applied to the machine;
- EC Declaration of Conformity;
- Hydraulic diagram;
- Wiring diagram.

The instruction manual and the annexed 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 board the machine in the appropriate container. The original documents must be kept in a dry and protected place; in the event of a 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 Report of commissioning, first verification, subsequent periodic checks and transfers of ownership.

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

1.1.2.1 Report of commissioning and first verification (only for Italy).

In Italy, the owner of the Mobile Elevating Work Platform (MEWP) must report its commissioning to INAIL and ensure it undergoes the mandatory periodic checks. The first verification is carried out by INAIL, which performs this within sixty days of the request, after which the employer can use the local health authorities or authorised public or private entities.

Subsequent verifications are carried out by the afore-mentioned subjects, who perform them within thirty days of the request, after which the employer can use public or private qualified subjects. The checks are intensive and costly and the costs of performing them are the responsibility of the owner of the machine. In order to perform the checks, the territorial supervisory bodies (ASL/USL or ARPA) and INAIL may use the support of authorised public or private entities. The qualified private entities acquire the qualification of public service representatives and respond directly to the public structure in charge of the function.

For the report of commissioning in Italy, it is necessary to connect to the INAIL portal by following the instructions on the portal itself.

INAIL will assign a serial number and, on the occasion of the First Verification, will complete the "identification data sheet", reporting only the data that can be ascertained from the machine already in service or that can be taken from the instruction manual. This document will be an integral part of the machine documentation.

1.1.2.2 Periodic checks after the first check.

In Italy, the mandatory periodic checks are carried out annually. For their performance, the owner of the MEWP must make a request by registered letter to the supervisory body (ASL/USL or ARPA or other public or private authorised entities) competent for the territory at least twenty days before the end of the year from the time of the last verification.

It should be noted that if a machine without a valid verification document is moved to the territory in an area outside of the competence of the usual supervisory body, it is the obligation of the owner to request the annual verification from the supervisory body that is competent for the new territory in which the machine is operating.

1.1.2.3 Transfers of ownership of the MEWP.

In Italy, in case of transfer of ownership, the previous owner of the MEWP is required to communicate the unavailability of the machine by connecting to the INAIL portal.

The new owner will need to retrieve the registration data of the MEWP 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 be issued, by the previous owner, with the accompanying documentation already mentioned in the previous chapters (see ACCOMPANYING DOCUMENTATION).

In order to take advantage of the WARRANTY and to receive any updates and SERVICE BULLETINS, the new owner must inform ALMAC SRL of the fact of having taken possession of the machine by written communication using the forms provided at the end of this manual.

1.1.3 Training, informing and instructing of operators.

Training, informing and instructing of operators are legal obligations for the employer. The employer must ensure that workers assigned to use of the equipment receive adequate and specific training to allow its use in a suitable and safe way, also in relation to the damage that can be caused to other persons and property. It should be remembered that both those who directly manoeuvre the machine and those who are on the ground for any recovery and rescue operations are considered operators. The designated operators must be at least 18 years of age and must be recognised as psychophysically suitable for this task. The following requirements must be ascertained before the operators are allowed to drive the machine:

- Sight and hearing in good conditions;
- Absence of changes induced by use of alcohol or drugs;
- Psychological equilibrium, absence of depression or stress.

1.1.4 Tests carried out before delivery.

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

- Braking test
- Overload test
- Functional 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 equipment of its own production and undertakes to replace free of charge, as soon as possible, those parts that in its opinion were defective.

Procedures under warranty must only be performed by workshops authorised by ALMAC S.r.l. and only when the Customer is up to date with the payments.

The warranty is not recognised if the customer does not deliver the equipment for repair within 30 days from the date of the first complaint, to be made in writing.

With the exception of fraud or gross negligence, ALMAC S.r.l. is relieved of all liability towards the Customer for damage deriving from flaws/defects in the traded equipment.


ALMAC S.r.l. is released from all liability and the warranty lapses in the following cases:

- Use not permitted or not provided for in this manual;
- Improper use of the machine or its use by untrained and/or non-instructed personnel;
- Use different from the specific regulations;
- Poor and/or non-punctual maintenance;
- Removal of seals;
- Changes have been made to the machine without prior written authorisation from ALMAC S.r.l.;
- Spare parts that are not original or 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 discovered.

For any intervention request, always contact ALMAC's 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) Tel. +39 0375 833527 Fax. +39 0375 784350 Email: info@almac-italia.com

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

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 technical standard EN280, a mobile machine designed to move persons to work positions, in which they perform tasks remaining in the work platform, with the understanding that persons access and exit the work platform only through access positions at ground or frame level, and that it consists of at least a work platform with controls, an extendible structure (lifting arms) and a frame with outriggers.

The envisaged activities are:

- Maintenance of greenery;
- Maintenance and installation of systems or devices at height;
- Cleaning;
- Paint stripping, sandblasting, painting, welding;
- All activities to be carried out at height with the operator on the platform;

The maximum permissible capacity (different for each model; refer to the technical specifications in the tables below in this manual) consists of:

- A load of 80 kg is considered for each person;
- A load of at least 40 kg is considered for the equipment;
- The remaining load is represented by the material being processed.

The machine consists essentially of:

- A motorised base carriage, with variable track, equipped with tracks and outriggers driven by hydraulic cylinders;
- Hydraulically rotating turret;
- Extendible structure driven by hydraulic cylinders;
- Operator support platform.

The base carriage supports the power source (thermal motor or battery) and mainly consists of the following components:

- Fixed lower frame on which the oil and fuel tanks are installed (if the machine is equipped with a thermal motor), the battery, the hydraulic and electrical systems and the emergency ground control station;
- Left track equipped with a gear motor to move the machine and telescopic supports to control the variable track;
- Right track equipped with a gear motor to move the machine and telescopic supports to control the variable track;
- Four outriggers driven by hydraulic cylinders that can be:
 - o Outriggers for fixed stabilisation area (VISUAL version);
 - o Outriggers for variable stabilisation area (Q-PRO version) with telescopic extensions with hydraulic control.

The outrigger cylinders and their possible telescopic extensions (only for the Q-PRO version) are kept in position by pilot check valves directly flanged on the drive cylinders. Appropriate sensors control the position of the outriggers and their effective support on the ground, and activate the various work areas reachable by the operator on the platform.

The carriage can be moved with the platform in the access position, but also with the operator at height with a wide track. The limits of the translation at height are indicated in the tables and diagrams shown in the TECHNICAL DATA chapter.

The turret that rotates hydraulically by means of a fifth wheel is attached to the carriage and allows rotation of the superstructure with respect to the vertical axis of the machine. The permitted 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 extendible structure consists of

- o Telescopic main boom;
- o Jib

The up/down movements of the boom and jib are carried out by means of hydraulic cylinders equipped with over-centre valves directly flanged on them in order to keep the booms in position even in the event of the accidental breakage of a supply pipe.

The telescopic boom is operated by a double-acting hydraulic cylinder with over-centre valve and by a fleyer chain system.

Appropriate sensors check the position of the platform at height verifying that the operator always remains within the expected operational safety limits (height, outreach).

The work platform is fixed to the end of the jib boom and can be rotated differently for each model (see the technical data table to understand the maximum angle of rotation of each model) by means of a rotary actuator also provided with an over-centre valve to keep it in position in the event of a hydraulic fault. The platform is made of aluminium and is equipped with railings and toe bands of regulated height (railings H=1100 mm; toe bands H=150 mm). Platforms of various sizes can be installed; see technical data.

Platform levelling is automatic and is guaranteed by an electronic levelling system monitored by an angular sensor on the platform, as well as by the jib mechanical parallelogram.

For some versions, on request it is possible to include:

- Rapid basket removal system;
- Lifting winch materials to be applied as an interchangeable accessory to replace the platform.

The machine control system consists of several sensors that are used to always keep the overall stability under control, adjusting the height, outreach and working speed according to the various parameters being monitored, namely:

- Ground inclination;
- Track of the machine;
- Position of the rotating turret;
- Angle of opening of the main boom;
- Position of the telescopic extension of the boom;
- Jib opening angle;
- Loading on the platform.

Through the display (or LED lights) on the platform control panel, the on-board operator is constantly informed of the operating limits reached and the movements permitted.

1.3 Manoeuvring stations.

There are two possible types of machine control system:

- Control system with console in wired platform (remote control - standard);
- Control system with console in radio-connected platform (radio control - optional).

In both cases, the normal operating position is on the platform while on the ground there is a control panel for the emergency recovery of the platform. However, it is possible to operate the machine with the operator on foot, during travel and for the stabilisation phase.

1.3.1 Use with driver on foot.

Regardless of the type of control system (remote control or radio control) it is possible to remove the control console from the platform and operate the machine on foot during positioning operations of the machine or for loading and unloading operations of the machine from means of transport.

- With a remote control outside its housing on the platform, all machine controls are permitted limited to the length of the connection cable;
- With radio control (optional) outside its housing on the platform, the following controls are permitted:
 - o If the load on the platform is less than 20 kg:
 - All the controls are permitted
 - o If the load on the platform is greater than 20 kg:
 - Variable track control, translation and stabilisation only if the boom is in the TRANSPORTATION POSITION;
 - Controls of the length of the extendible structure (ascents/descents/rotations) up to the limit of the TRANSPORTATION POSITION.

For machines equipped with the winch option, the operator operates the machine on foot in the following ways:

- With remote control connected to the connector available on the ground control station;
- With radio control.

1.4 Power supply.

The machines are equipped with a hydraulic system through which their movement is obtained. The machines can be equipped with different energy sources based on the following:

- ETS-EVO version = Machine powered by a thermal engine (diesel or petrol) and hydraulic pumps;
- LTH version = Lithium battery powered machine and electric pump;

As an option, for the ETS-EVO versions it is possible to have an electric pump powered by mains voltage. In any case, both the hydraulic and electrical systems are equipped with all the necessary protections (see the electrical and hydraulic diagrams provided as annexes to this manual).

1.5 Non-permitted uses and "Exiting at height".

The 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 unauthorised use.

- It is forbidden to manoeuvre the work platform from the ground control position except for emergency recovery operations.
- It is forbidden to operate the work platform with the control console outside the work platform if there are operators on the platform; the control system is already configured to prevent this use if there is a load greater than 20 kg on the platform.
- AS the MEWPs are designed to operate from the control position on the platform and the only access position permitted is that provided for the platform on the ground, any activity that provides for access and/or leaving of the same with the platform in a position other than that of access (the so-called "exit at height") is formally prohibited.

1.6 Identification.

In the event of a request for spare parts and for interventions, the data on the registration plate on the turret or on the platform identification plate must always be mentioned. In case of loss or illegibility of the plates (as well as for the various adhesive plates located on the various parts of the machine) it is necessary to restore it in the shortest possible time.

For the location of the plates see the figure below. It is advisable to transcribe this data in the following table:

MODEL: _____	SERIAL NUMBER: _____	YEAR _____
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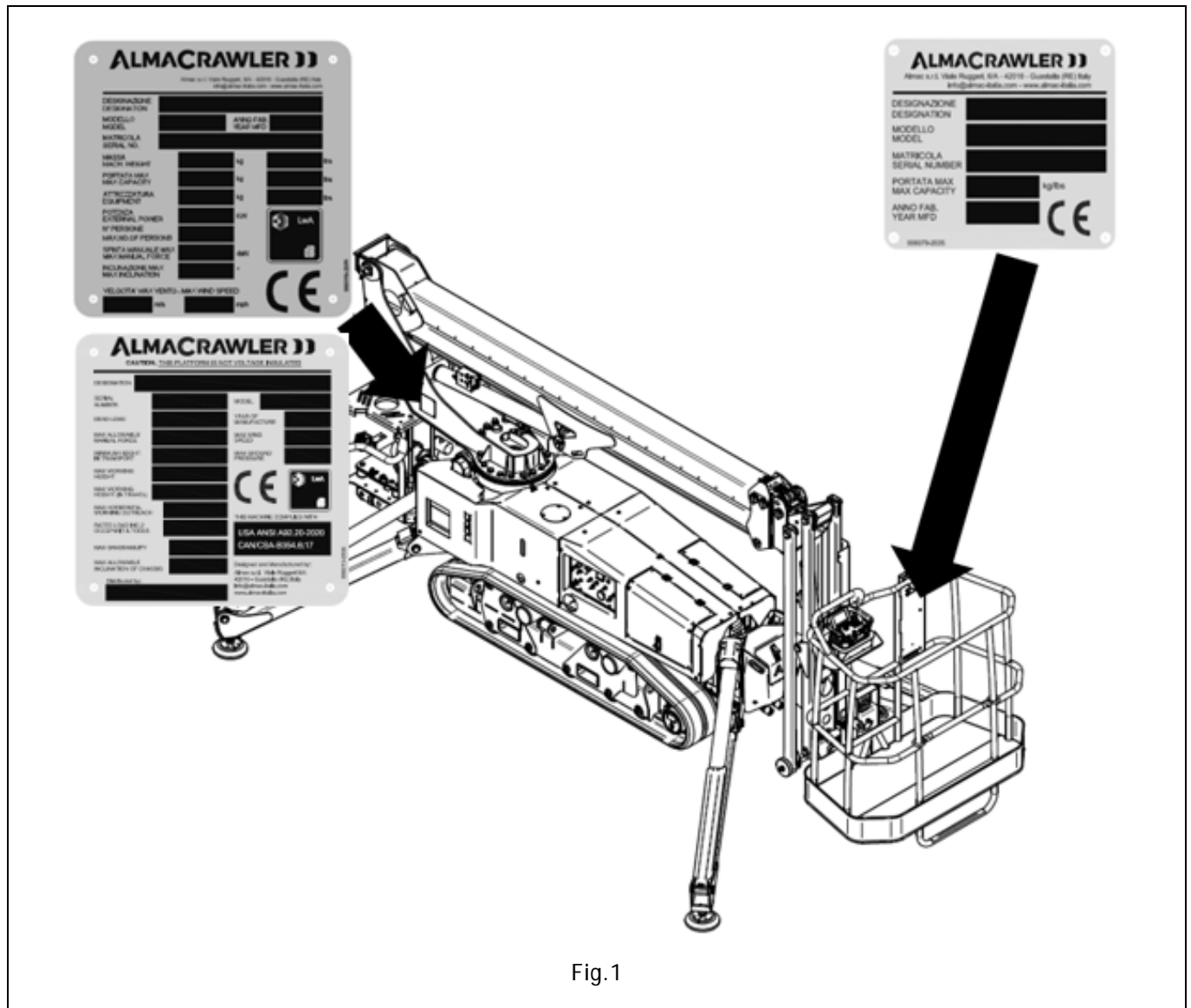


Fig.1

1.7 Definitions and locations of the main components.

The main components of the machine are shown in the images. This manual deals with various models and fittings so some images may differ slightly from the model in your possession.

1. Lower frame
2. Left track
3. Right track
4. Turret
5. Jib lifting cylinder
6. Boom
7. First telescopic boom
8. Second telescopic boom
9. JIB
10. Platform
11. Boom extension cylinder
12. Rotation slewing ring and hydraulic motor
13. Control console
14. 115-230V socket
15. Platform rotation actuator
16. JIB lifting cylinder
17. Platform levelling cylinder
18. Document container
19. Platform quick release lever
20. Differential magnetothermal switches electrical panel
21. Fuel tank (ETS and EVO models)
22. Oil tank
23. Ground control electrical panel
24. Electric motor (if present)
25. Left track widening cylinder
26. Front left outrigger
27. Rear left outrigger
28. Left front outrigger cylinder
29. Left rear outrigger cylinder
30. Left front outrigger extension cylinder (Q-PRO version)
31. Left rear outrigger extension cylinder (Q-PRO version)
32. Endothermic engine
33. Platform support and levelling joint
34. Overhead movements distributor

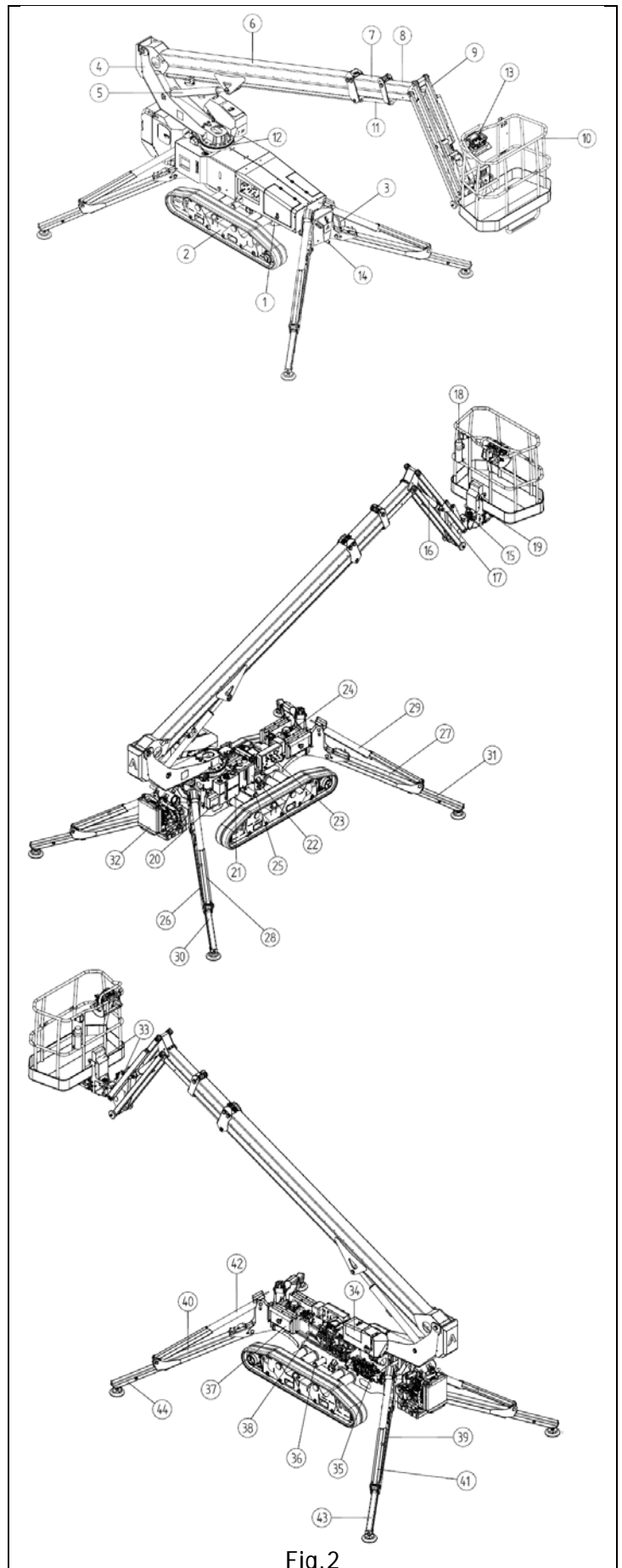


Fig.2

35. Ground movements distributor
36. Right track widening cylinder
37. Outriggers plate
38. 12V starter battery
39. Front right outrigger
40. Rear right outrigger
41. Right front outrigger cylinder
42. Right rear outrigger cylinder
43. Right front outrigger extension cylinder (Q-PRO version)
44. Right rear outrigger extension cylinder (Q-PRO version)

Specific components for LTH versions:

1. Lithium traction batteries (LTH)
2. Electric motor 48V
3. Battery charger
4. Electric switch box

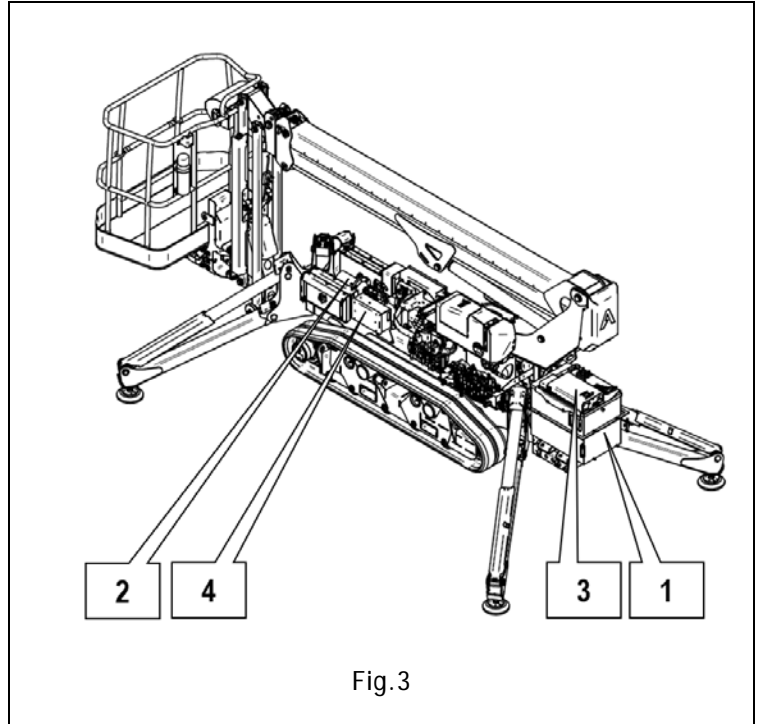


Fig.3

2 TECHNICAL DATA, DIMENSIONS AND WORK DIAGRAMS.

2.1 B1570 VISUAL.

2.1.1 General technical data B1570 VISUAL.

Dimensions:	Metric		Imperial	
Maximum work height (1)	14.8	m	48' 7"	ft
Maximum height of the tread surface (1)	12.8	m	45' 0"	ft
Maximum work outreach from the centre of the fifth wheel (1)	9.8	m	32' 2"	ft
Maximum capacity on the platform (m)	230	kg	500	lbs
Maximum number of persons on the platform (n)	2		2	
Weight of equipment and materials on the platform (me)	70	kg	150	lbs
Height clear from the floor of the carriage	210	mm	9	in
Turret rotation	220	°	220	°
Platform rotation	140	°	140	°
Max height of the tread surface for safety speed insertion	1.45	m	4' 9"	ft
Maximum platform size - Standard	1.4 x 0.74	m	4' 7" x 2' 5"	ft
Platform weight - Standard	40	kg	90	lbs
Maximum platform size - Optional	N.A.		N.A.	
Platform weight - Optional	N.A.	kg	N.A.	lbs
Extended track width	1.39	m	4' 7"	ft
Track width with retracted track	0.79	m	2' 7"	ft
Maximum transportation length with platform fitted	4.90	m	16' 1"	ft
Maximum transportation length with platform disassembled	4.20	m	13' 9"	ft
Minimum transportation height	1.98	m	6' 6"	ft
Maximum transportation width with platform fitted - Standard	1.40	m	4' 7"	ft
Maximum transportation width with platform fitted - Optional	N.A.	m	N.A.	ft
Maximum transportation width with platform disassembled	0.79	m	2' 7"	ft
Track dimensions (Height x Width) (2)	470 x 250	mm	19" x 10"	in
Hydraulic oil tank capacity	35	l	9.2	gal
Translation circuit max. hydraulic pressure	215	bar	3100	psi
Max. hydraulic pressure of the liftings/descents/rotations circuit	200	bar	2900	psi
Telescopic extension/retraction circuit ma. hydraulic pressure	160	bar	2300	psi
Stability limits:				
Maximum lateral slope of the terrain with platform raised - wide track	5	°	5	°
Maximum longitudinal slope of the terrain with platform raised - wide track	10	°	10	°
Maximum manual force permitted for 2 persons on the platform (1)	400	N	90	lbf
Maximum manual force permitted 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 work diagrams to obtain this data according to the various configurations of the machine.
 (2) Standard black rubber tracks; Optional non-marking rubber tracks.

2.1.2 Technical data version B1570 ETS VISUAL - HONDA IGX390.

Technical data	Metric		Imperial	
Petrol engine type: HONDA IGX390				
Certification	STAGE-V TIER 4F			
Machine weight (1)	2560	kg	5640	lbs
Dry weight of the engine	37	kg	80	lbs
Displacement	389	cm ³	24	in ³
Net power	8.7	kW	12	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	1.1	l	0.3	gal
Fuel tank capacity	6.1	l	1.6	gal
Starter battery voltage and capacity	12 / 54	V/Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB A	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.5	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (1) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (2) Values referring to the raised platform.
- (3) Values referring to the platform in the transportation position

2.1.3 Technical specifications version B1570 ETS VISUAL - HATZ 1B40 T.

Technical data	Metric		Imperial	
Diesel engine type: HATZ 1 B40				
Certification	STAGE-V			
Machine weight (1)	2580	kg	5690	lbs
Dry weight of the engine	53.3	kg	120	lbs
Displacement	462	cm ³	28	in ³
Net power	7.5	kW	10	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	1.5	l	0.4	gal
Fuel tank capacity	5	l	1.4	gal
Starter battery voltage and capacity	12 / 54	V / Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB A	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.5	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (1) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (2) Values referring to the raised platform.
- (3) Values referring to the platform in the transportation position

2.1.4 Technical specifications version B1570 ETS VISUAL - HATZ 1B50 E.

Technical data	Metric		Imperial	
Diesel engine type: HATZ 1 B40				
Certification	STAGE-V TIER 4F			
Machine weight (1)	2580	kg	5690	lbs
Dry weight of the engine	53.3	kg	120	lbs
Displacement	462	cm ³	28	in ³
Net power	7.5	kW	10	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	1.5	l	0.4	gal
Fuel tank capacity	5	l	1.4	gal
Starter battery voltage and capacity	12 / 54	V / Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB A	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.5	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (4) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (5) Values referring to the raised platform.
- (6) Values referring to the platform in the transportation position

2.1.5 Technical data version B1570 EVO VISUAL - YN 2TNV70.

Technical data	Metric		Imperial	
Diesel engine type: Yanmar 2TNV70				
Certification	STAGE-V			
Machine weight (1)	2620	kg	5780	lbs
Dry weight of the engine	104	kg	229	lbs
Displacement	570	cm ³	35	in ³
Net power	10.2	kW	13.7	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	1.7	l	0.4	gal
Fuel tank capacity	15	l	4	gal
Starter battery voltage and capacity	12 / 54	V / Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104.0	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB C	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.6	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (1) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (2) Values referring to the raised platform.
- (3) Values referring to the platform in the transportation position

2.1.6 Technical data version B1570 EVO VISUAL - KUBOTA Z602.

Technical data	Metric		Imperial	
Diesel engine type: Kubota Z602				
Certification	STAGE-V TIER 4F			
Machine weight (1)	2600	kg	5730	lbs
Dry weight of the engine	73	kg	160	lbs
Displacement	599	cm ³	37	in ³
Net power	12.5	kW	16.8	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	2.5	l	0.7	gal
Fuel tank capacity	15	l	4	gal
Starter battery voltage and capacity	12 / 54	V / Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104.0	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB C	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.5	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (1) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (2) Values referring to the raised platform.
- (3) Values referring to the platform in the transportation position

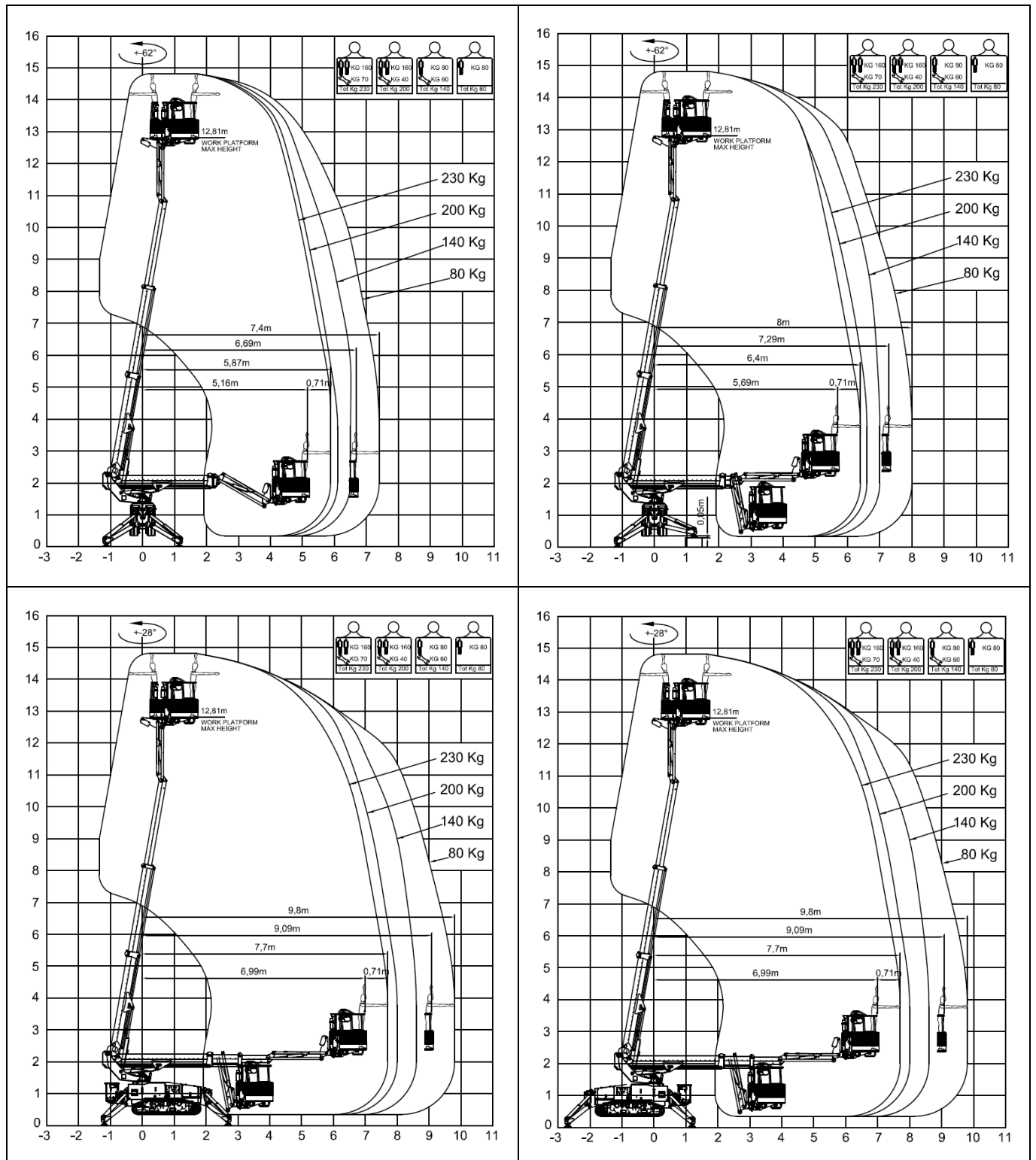
2.1.7 Technical data version B1570 LTH VISUAL.

Technical data	Metric		Imperial	
Lithium Battery - LiFePO4				
Machine weight (1)	2620	kg	5780	lbs
Rated battery voltage	48	V	48	V
Battery rated capacity	200	Ah	200	Ah
Battery weight	110	kg	240	lbs
Battery size	590 x 470 h=506	mm	23 x 19 h=20	in
Battery life (4)	≥2000	cycles	≥2000	cycles
Single-phase battery charger	48 / 50	V / A	48 / 50	V / A
Power supply mains voltage single-phase charger	230 / 50	V / Hz	230 / 50	V / Hz
Maximum current absorbed by the charger	14	A	14	A
Maximum current supplied by the charger	50	A	50	A
Electric pump power	4.0	kW	5.4	HP
Max current absorbed by the electric pump	160	A	160	A
Sound power LWA	87	dB A	87	dB A
Sound level at operator position Lp (indoor industrial environment)	80	dB A	80	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	75	dB A	75	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand 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 of the lithium battery (5)	0	°C	32	°F
Maximum temperature for recharging of the lithium battery	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.0	km/h	1.2	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

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

2.1.8 Work diagrams B1570 VISUAL.

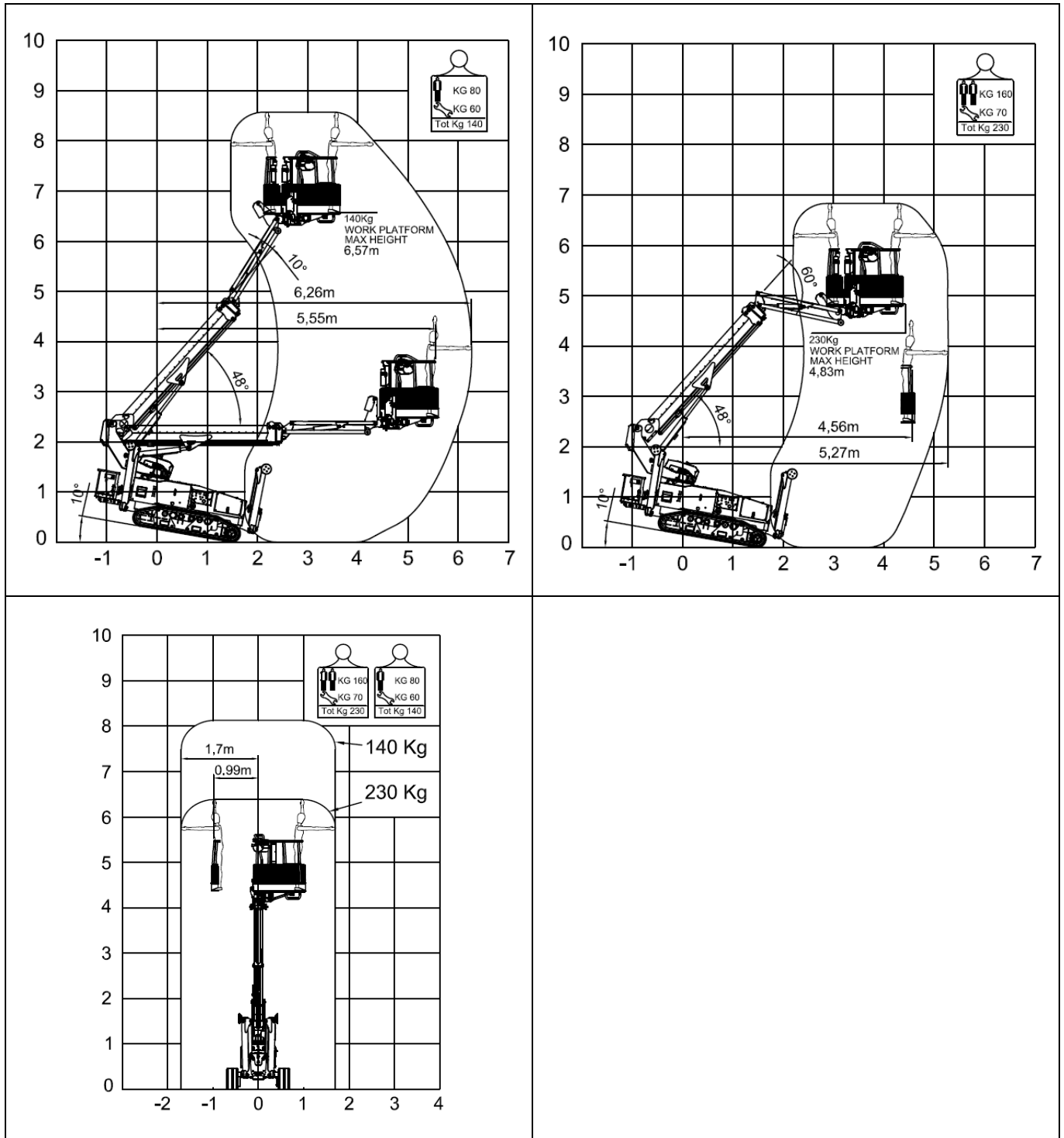
2.1.8.1 Work diagrams B1570 VISUAL - ON OUTRIGGERS.



2.1.8.2 Work diagrams B1570 VISUAL - SPS (TRANSLATION AT HEIGHT).

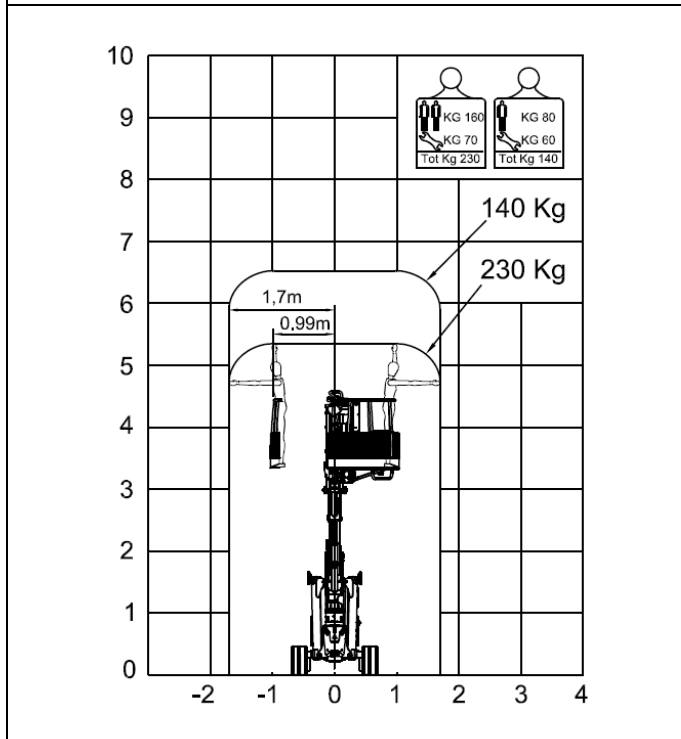
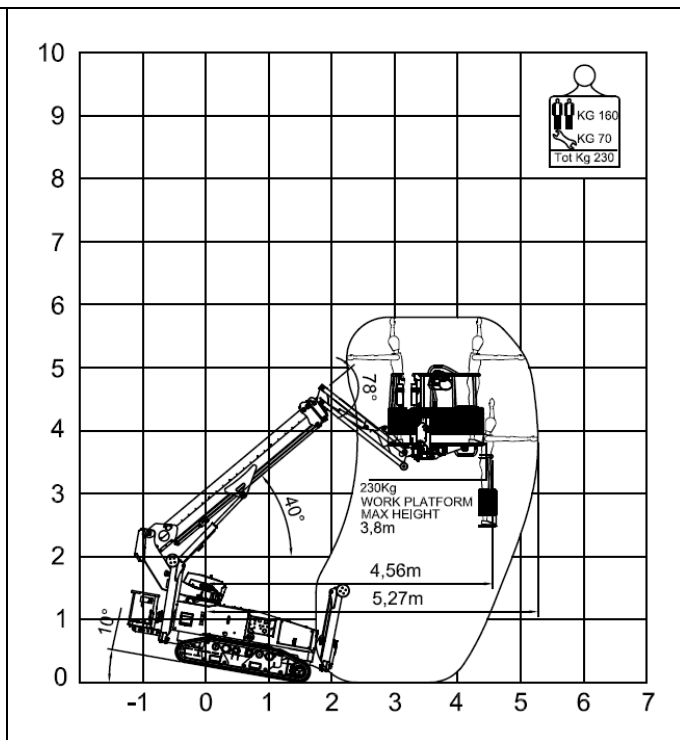
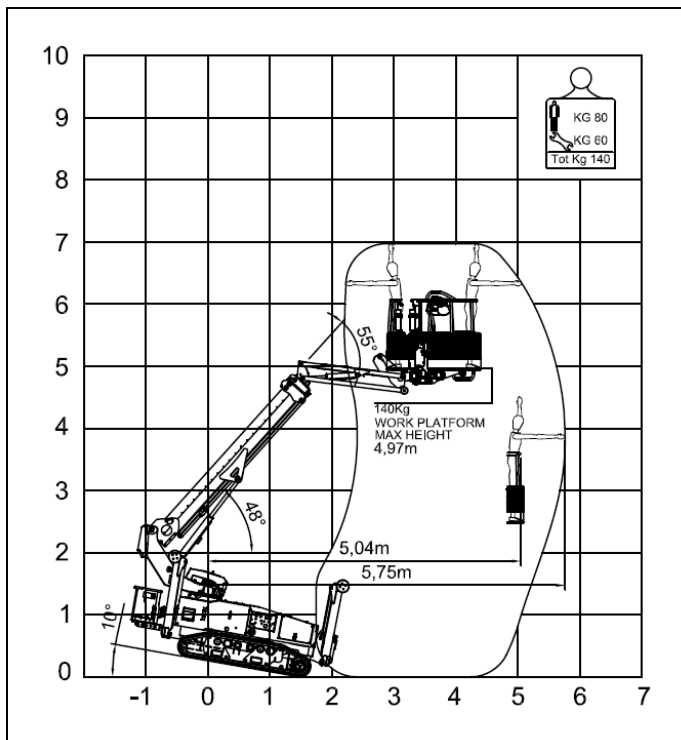
SPS function on inclined terrain:

- Lateral $\leq 3^\circ$
- Longitudinal $\leq 10^\circ$

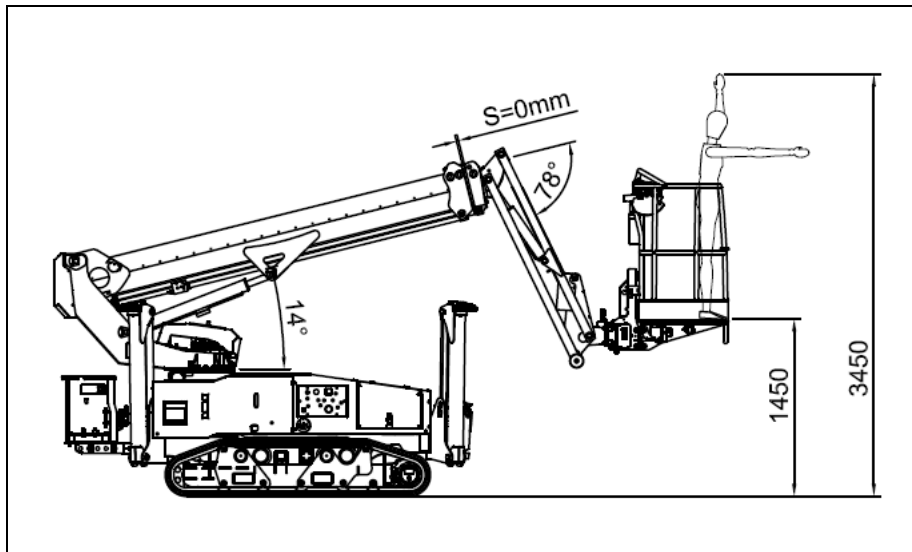


SPS function on inclined terrain:

- Lateral $3^\circ \leq 5.0^\circ$
- Longitudinal $\leq 10^\circ$



2.1.8.3 Work diagrams B1570 VISUAL - SPS function insertion.



2.2 B1890 Q-PRO.

2.2.1 General technical data B1890 Q-PRO.

Dimensions:	Metric		Imperial	
Maximum work height (1)	18.0	m	59' 0"	ft
Maximum height of the tread surface (1)	16.0	m	52' 6"	ft
Maximum work outreach from the centre of the fifth wheel (1)	10.76	m	35' 4"	ft
Maximum capacity on the platform (m)	250	kg	550	lbs
Maximum number of persons on the platform (n)	2		2	
Weight of equipment and materials on the platform (me)	90	kg	200	lbs
Height clear from the floor of the carriage	210	mm	9	in
Turret rotation	220	°	220	°
Platform rotation	140	°	140	°
Max height of the tread surface for safety speed insertion	1.57	m	5' 2"	ft
Maximum platform size - Standard	1.4 x 0.74	m	4' 7" x 2' 5"	ft
Platform weight - Standard	40	kg	90	lbs
Maximum platform size - Optional	1.8 x 0.74	m	5' 11" x 2' 5"	ft
Platform weight - Optional	56	kg	125	lbs
Extended track width	1.39	m	4' 7"	ft
Track width with retracted track	0.79	m	2' 7"	ft
Maximum transportation length with platform fitted	5.84	m	19' 2"	ft
Maximum transportation length with platform disassembled	5.14	m	16' 10"	ft
Minimum transportation height	1.98	m	6' 6"	ft
Maximum transportation width with platform fitted - Standard	1.40	m	4' 7"	ft
Maximum transportation width with platform fitted - Optional	1.80	m	5' 11"	ft
Maximum transportation width with platform disassembled	0.79	m	2' 7"	ft
Track dimensions (Height x Width) (2)	470 x 250	mm	19" x 10"	in
Hydraulic oil tank capacity	35	l	9.2	gal
Translation circuit max. hydraulic pressure	215	bar	3100	psi
Max. hydraulic pressure of the liftings/descents/rotations circuit	200	bar	2900	psi
Telescopic extension/retraction circuit ma. hydraulic pressure	160	bar	2300	psi
Stability limits:				
Maximum lateral slope of the terrain with platform raised - wide track	5	°	5	°
Maximum longitudinal slope of the terrain with platform raised - wide track	10	°	10	°
Maximum manual force permitted for 2 persons on the platform (1)	400	N	90	lbf
Maximum manual force permitted 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 work diagrams to obtain this data according to the various configurations of the machine.
(2) Standard black rubber tracks; Optional non-marking rubber tracks.

2.2.2 Technical data version B1890 EVO Q-PRO - YANMAR 2TNV70.

Technical data	Metric		Imperial	
Diesel engine type: Yanmar 2TNV70				
Certification	STAGE-V			
Machine weight (1)	2940	kg	6480	lbs
Dry weight of the engine	104	kg	229	lbs
Displacement	570	cm ³	35	in ³
Net power	10.2	kW	13.7	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	1.7	l	0.4	gal
Fuel tank capacity	15	l	4	gal
Starter battery voltage and capacity	12 / 54	V / Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104.0	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB C	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.5	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (1) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (2) Values referring to the raised platform.
- (3) Values referring to the platform in the transportation position

2.2.3 Technical data version B1890 EVO Q-PRO - KUBOTA Z602.

Technical data	Metric		Imperial	
Diesel engine type: Kubota Z602				
Certification	STAGE-V TIER 4F			
Machine weight (1)	2920	kg	6440	lbs
Dry weight of the engine	73	kg	160	lbs
Displacement	599	cm ³	37	in ³
Net power	12.5	kW	16.8	HP
Net power speed	3600	r/min	3600	rpm
Engine oil quantity	2.5	l	0.7	gal
Fuel tank capacity	15	l	4	gal
Starter battery voltage and capacity	12 / 54	V / Ah	12 / 54	V/Ah
Starter battery weight	12.1	kg	27	lbs
Sound power LWA	104.0	dB A	104	dB A
Sound level at operator position Lp (indoor industrial environment)	84.5 ± 2.6	dB A	84.5 ± 2.6	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	79.5 ± 2.6	dB A	79.5 ± 2.6	dB A
Maximum peak level Lp peak	106.0	dB C	106.0	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand support) (3)	0.59 ± 0.10	m/s ²	1.9 ± 0.32	ft/s ²
Minimum operating temperature	-20	°C	-4	°F
Maximum operating temperature	+55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.5	km/h	1.6	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	2.2	kW	3	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	14	A	14	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	30	kg	65	lbs
Electric pump power	1.85	kW	2.5	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	30	kg	65	lbs
Electric pump power	1.5	kW	2	HP
Speed	1400	r/min	1400	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

- (1) The machine weight may vary depending on the presence of optional accessories. Refer to the data on the plate of the machine.
- (2) Values referring to the raised platform.
- (3) Values referring to the platform in the transportation position

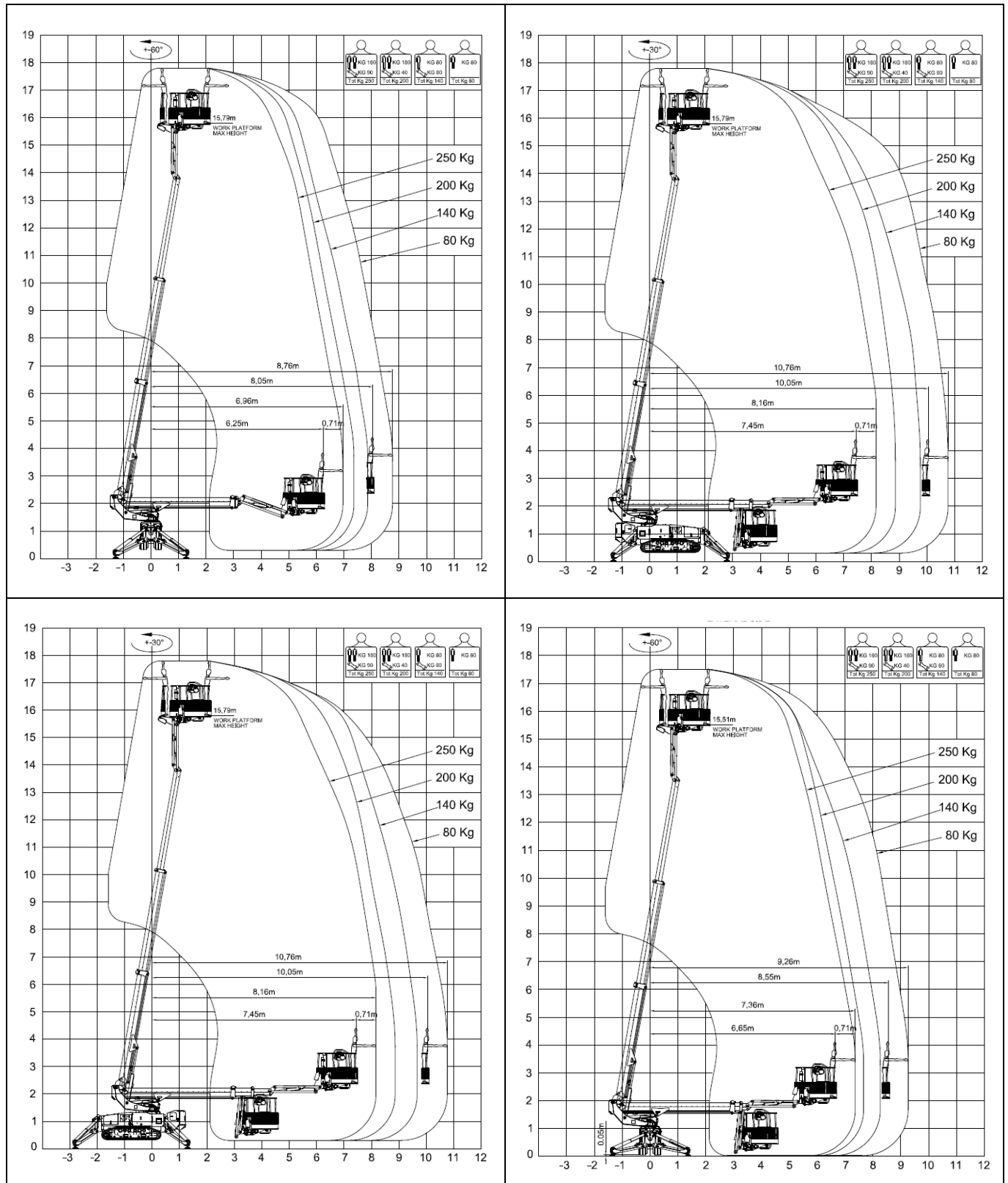
2.2.4 Technical data version B1890 LTH Q-PRO.

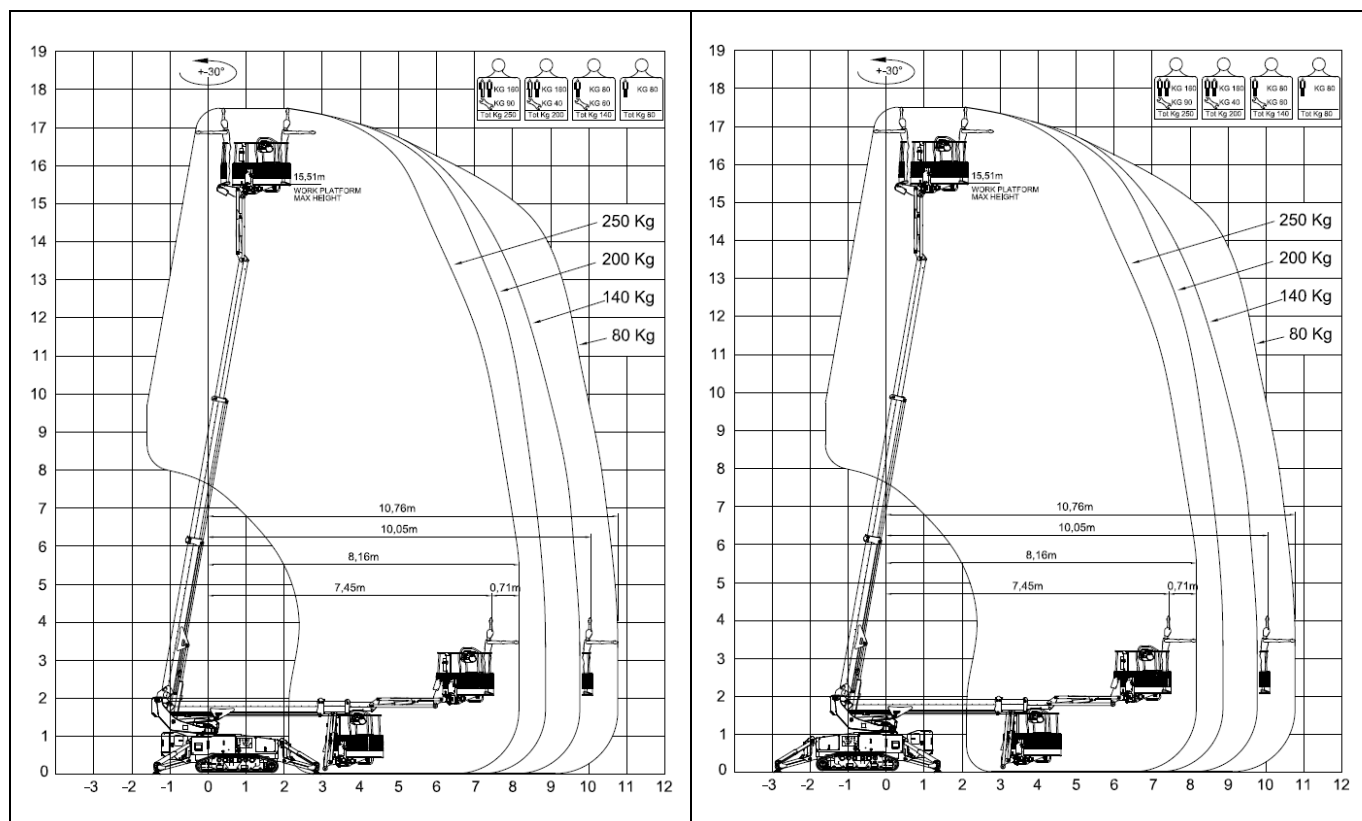
Technical data	Metric		Imperial	
Lithium Battery - LiFePO4				
Machine weight (1)	2940	kg	6480	lbs
Rated battery voltage	48	V	48	V
Battery rated capacity	200	Ah	200	Ah
Battery weight	110	kg	240	lbs
Battery size	590 x 470 h=506	mm	23 x 19 h=20	in
Battery life (4)	≥2000	cycles	≥2000	cycles
Single-phase battery charger	48 / 50	V / A	48 / 50	V / A
Power supply mains voltage single-phase charger	230 / 50	V / Hz	230 / 50	V / Hz
Maximum current absorbed by the charger	14	A	14	A
Maximum current supplied by the charger	50	A	50	A
Electric pump power	4.0	kW	5.4	HP
Max current absorbed by the electric pump	160	A	160	A
Sound power LWA	87	dB A	87	dB A
Sound level at operator position Lp (indoor industrial environment)	80	dB A	80	dB A
Sound level at operator position Lp (outdoor environment on asphalt)	75	dB A	75	dB A
Vibrations transmitted to hand/arm system (operator hand rest)	<2.5	m/s ²	<8.2	ft/s ²
Whole body vibrations (on platform - measured on flat ground) (2)	0.52 ± 0.10	m/s ²	1.7 ± 0.32	ft/s ²
Hand/arm system vibrations (operator hand 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 of the lithium battery (5)	0	°C	32	°F
Maximum temperature for recharging of the lithium battery	55	°C	+131	°F
Performance:				
Maximum gradient that can be exceeded in transportation conditions	30	°	30	°
Maximum travel speed in transportation position	2.0	km/h	1.2	mph
Maximum travel speed with platform in raised position	0.4	km/h	0.2	mph
Platform complete ascent time	50-55	s	50-55	s
Platform complete descent time	50-55	s	50-55	s
Optional 230V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 230V 60Hz single-phase electric pump				
Additional weight of the electric pump kit	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 50Hz single-phase electric pump				
Additional weight of the electric pump kit	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A
Optional 110V 60Hz single-phase electric pump				
Additional weight of electric pump	N.A.	kg	N.A.	lbs
Electric pump power	N.A.	kW	N.A.	HP
Speed	N.A.	r/min	N.A.	rpm
Maximum current absorbed by mains	N.A.	A	N.A.	A

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

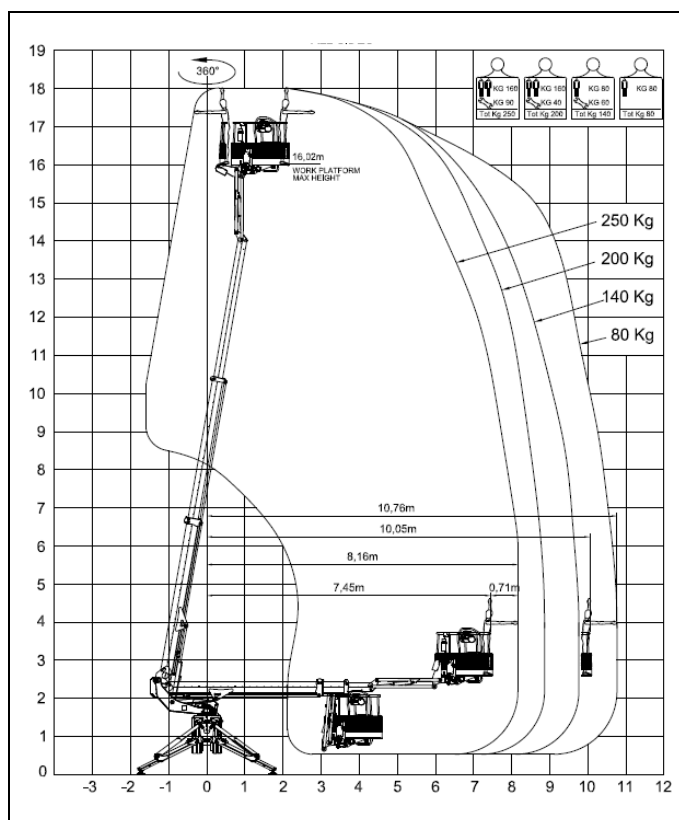
2.2.5 Work diagrams B1890 Q-PRO.

2.2.5.1 Work diagrams B1890 Q-PRO - STABILISATION AREA "1".

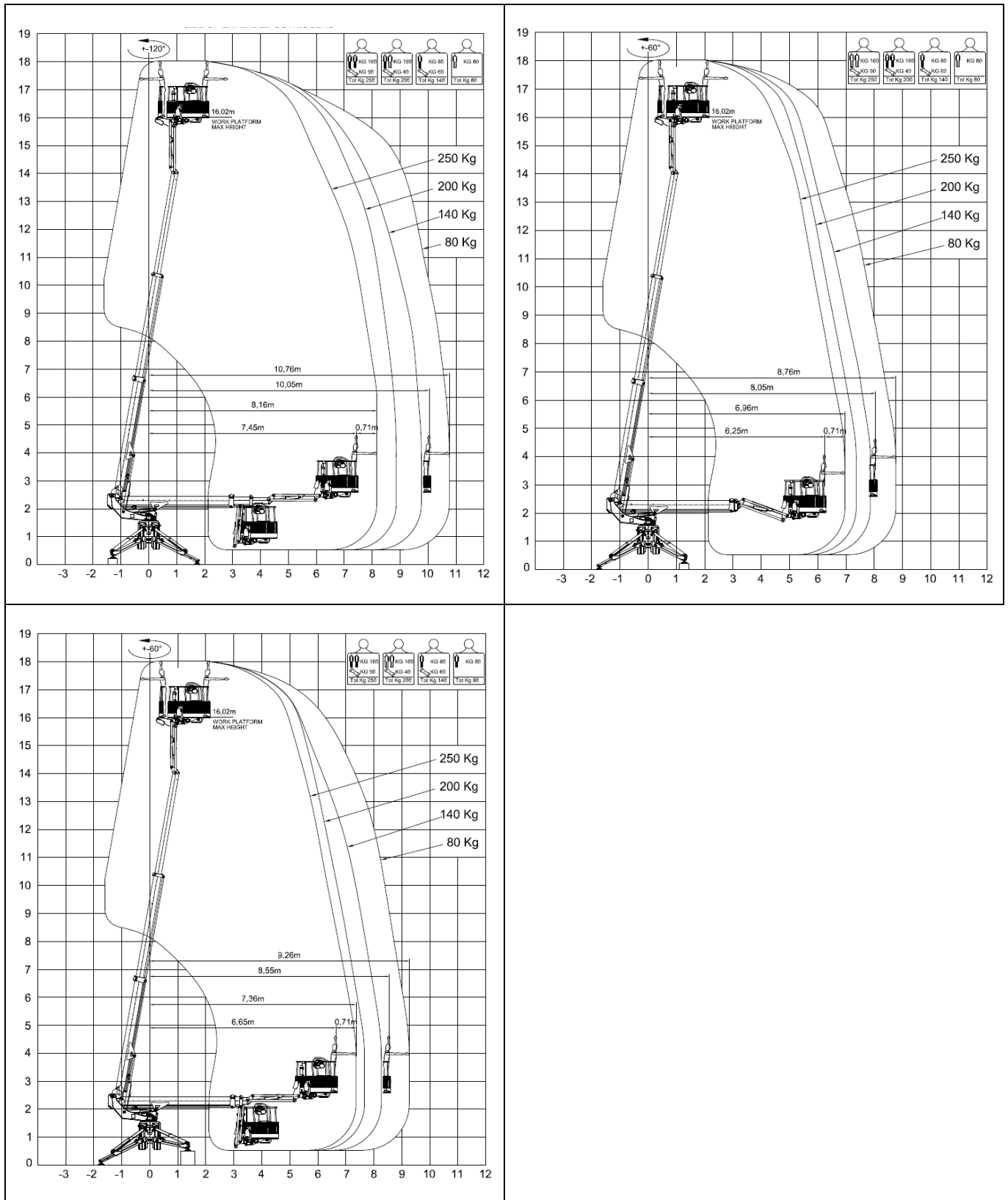




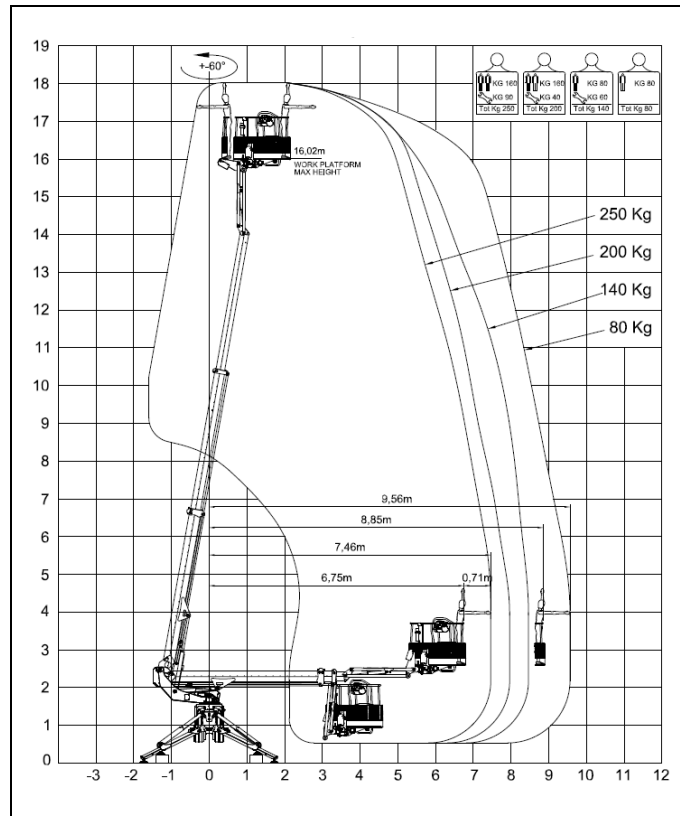
2.2.5.2 Work diagrams B1890 Q-PRO - STABILISATION AREA "2".



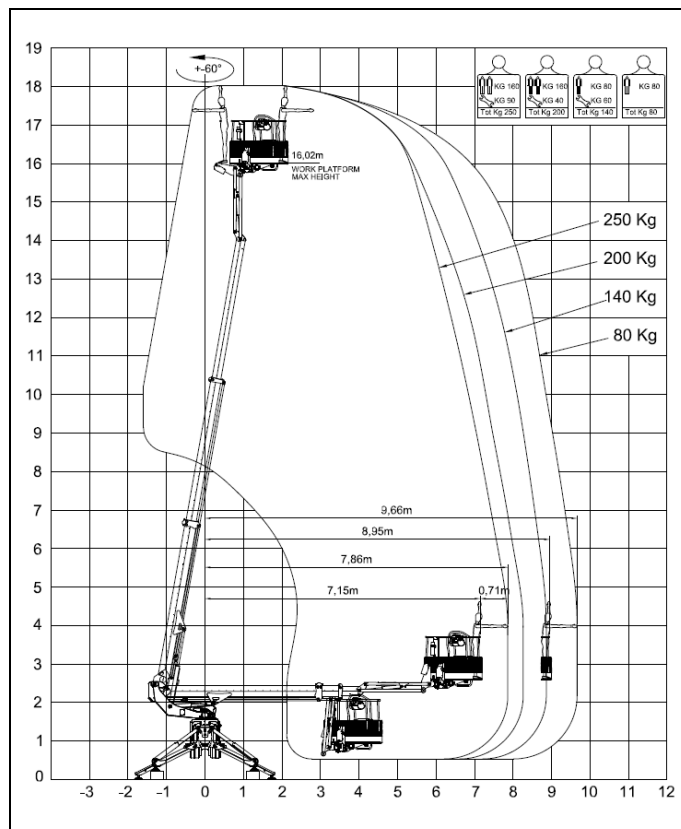
2.2.5.3 Work diagrams B1890 Q-PRO - STABILISATION AREA "3-4".



2.2.5.4 Work diagrams B1890 Q-PRO - STABILISATION AREA "5".



2.2.5.5 Work diagrams B1890 Q-PRO - STABILISATION AREA "6".

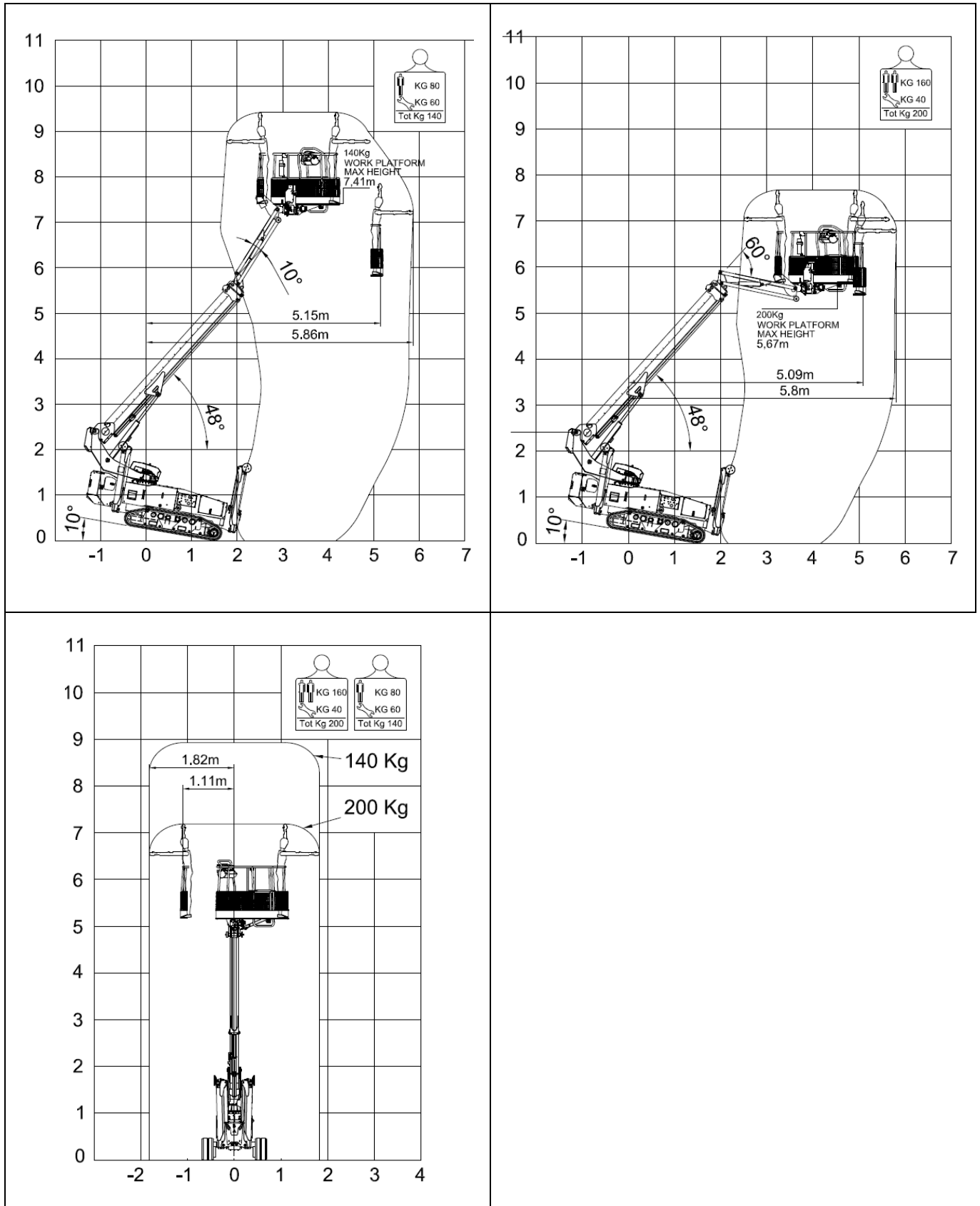


2.2.5.6 Work diagrams B1890 Q-PRO - SPS (TRANSLATION AT HEIGHT).

The SPS function is only active with a capacity ≤ 200 kg.

On sloping terrain:

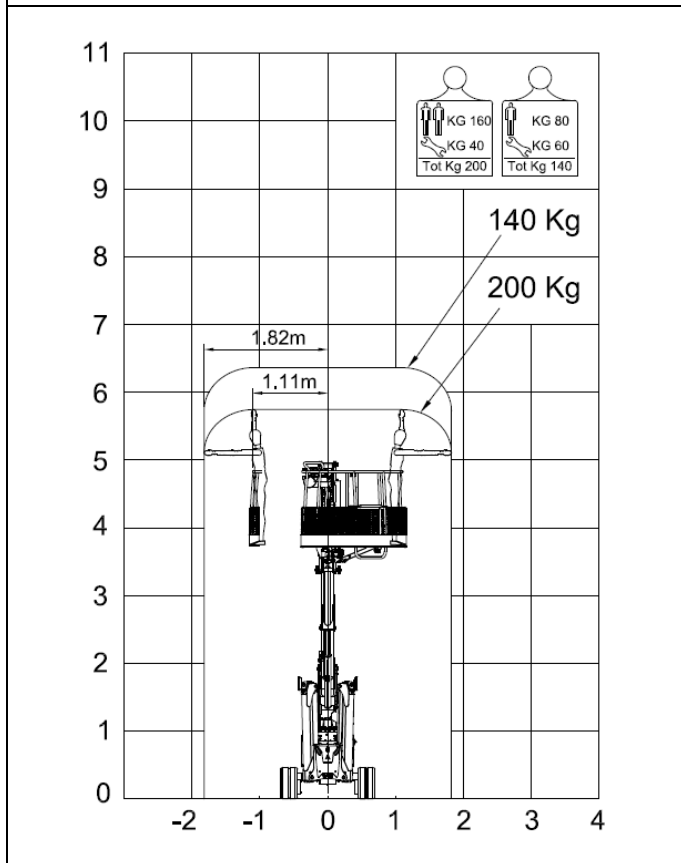
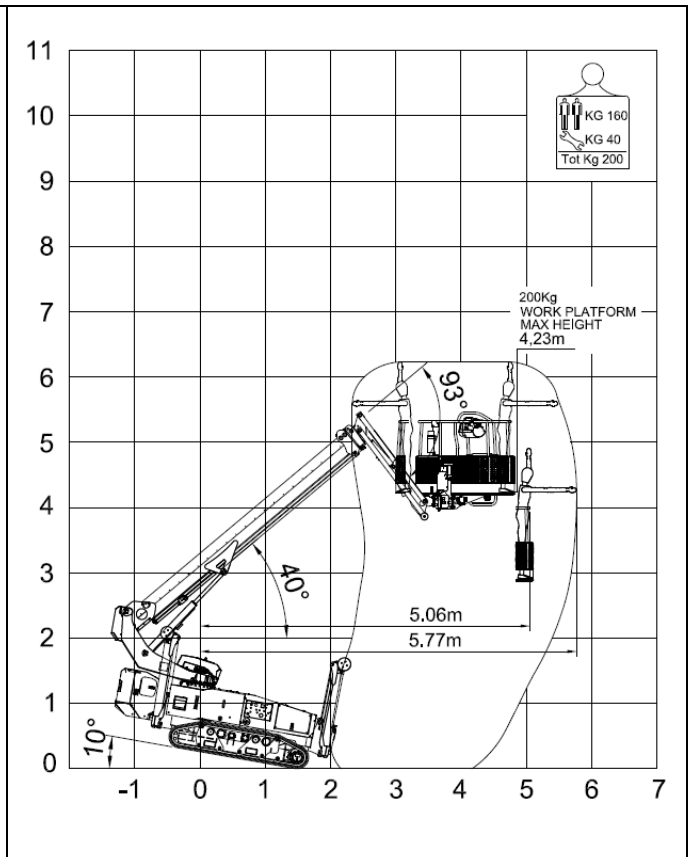
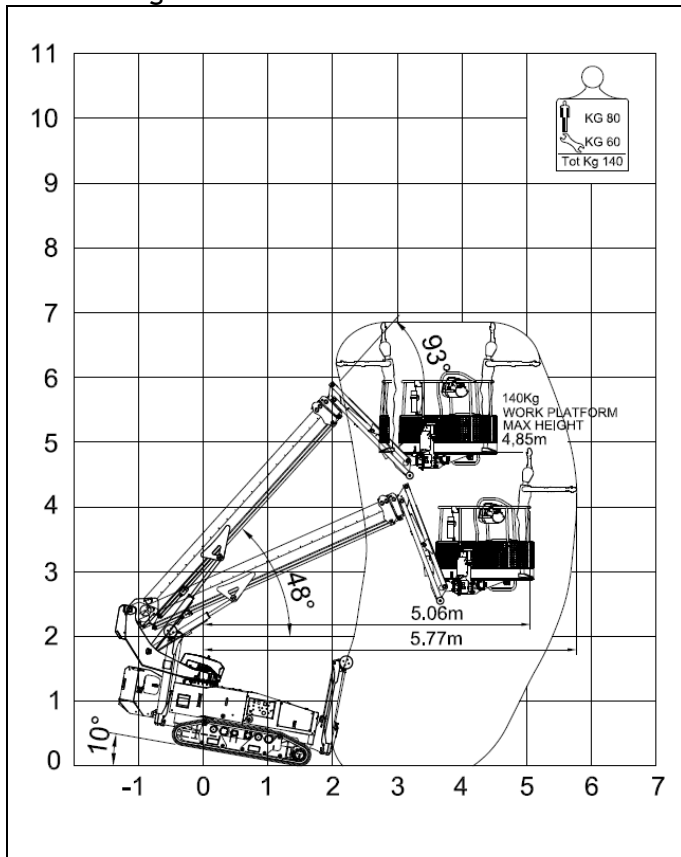
- Lateral $\leq 2.5^\circ$
- Longitudinal $\leq 10^\circ$



The SPS function is only active with a capacity ≤ 200 kg.

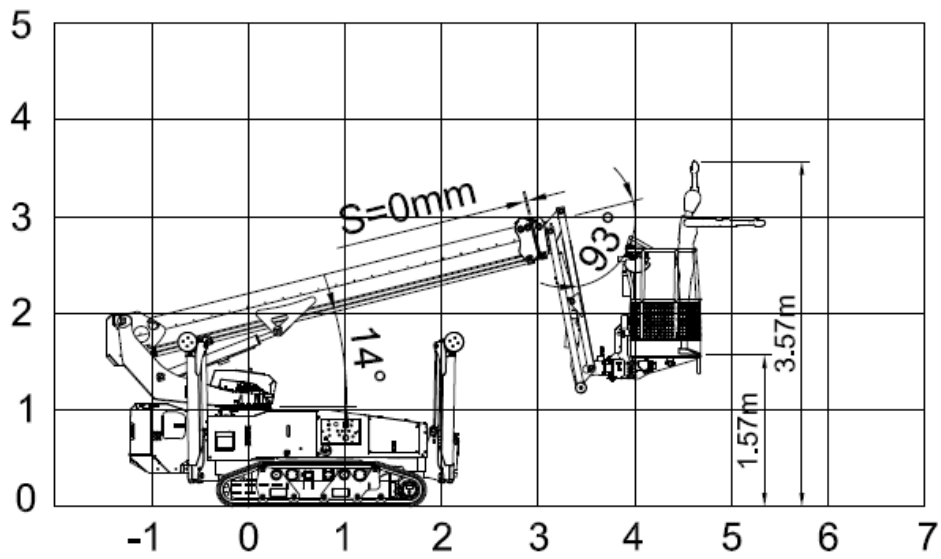
On sloping terrain:

- Lateral $2.5^\circ \leq 5.0^\circ$
- Longitudinal $\leq 10^\circ$



2.2.5.7 Work diagrams B1890 Q-PRO - SPS function insertion.

The SPS function is only active with a capacity ≤ 200 kg.



3 SAFETY INFORMATION, OBLIGATIONS AND PROHIBITIONS.

3.1 Personal protection equipment (PPE).

For safe use of the machine, it is mandatory to wear the appropriate Personal Protection Equipment indicated below, in addition to any additional devices related to the risks concerning the activity being carried out by the Employer (example: in cases of activity in a noisy environment, the use of hearing protectors will be prescribed, etc.).

The minimum PPE related to the risks prevalent during use of the machine are:

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

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

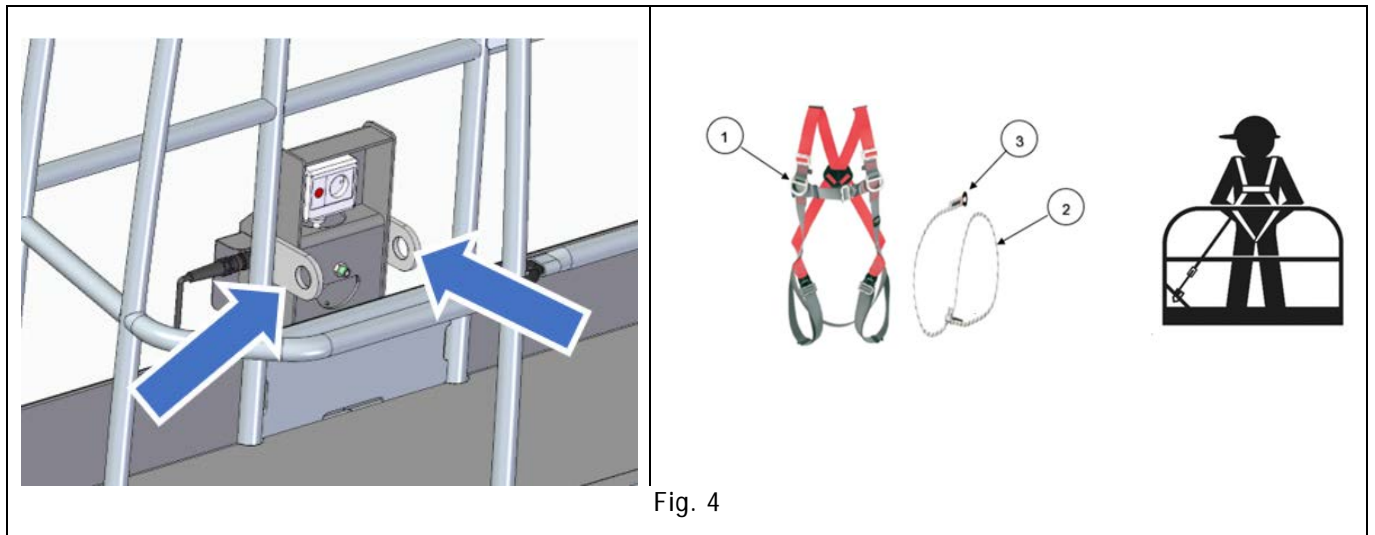
3.1.1 Restraint/fall arrest device and anchoring points on the platform.

Each anchor point on the platform is specifically designed and suitable to anchor a fall arrest system for one person.

The safety device consists of a full-body harness (1), with a sternal and/or dorsal attachment equipped with an adjustable lanyard (2) for restraint or fall arrest, attached to the connection point in the prepared basket, through connectors of suitable shape and size.

The operator and personnel being transported on the platform must wear the PPE described above and attach the connector (carabiner) to the anchor points indicated in the following image, 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.



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

3.2 Safety regulations.

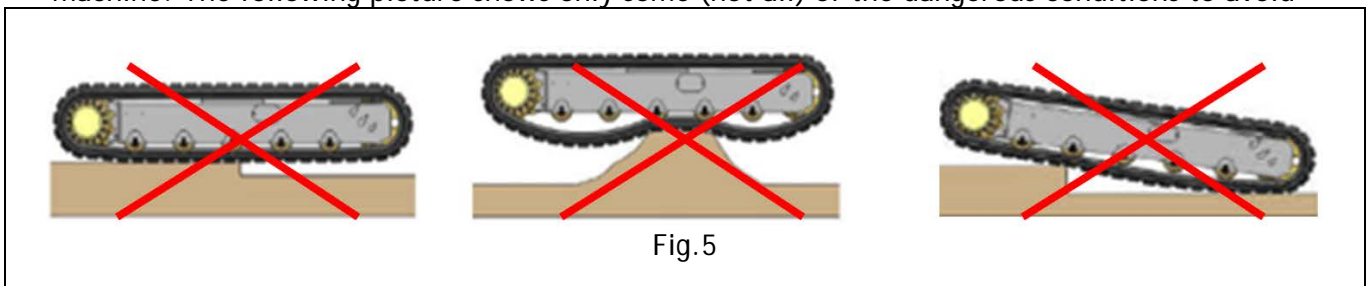
3.2.1 General safety regulations.

- Read this manual carefully before starting, using, servicing or performing other operations on the machine;
- Use of the machine is reserved for adults (18 years old) who are adequately trained and instructed;
- Ensure being informed and comply with the regulations in force in the country of use relating to the use of machines for the lifting of persons;
- The machine must be kept in a perfect condition following the maintenance program described in the *Maintenance Chapter*. It is the responsibility of the employer 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 following part of this manual (temperature limits, wind speed, ground inclinations, etc.);
- Do not wear rings, wrist watches, jewellery, unfastened or loose clothing such as neck ties, torn garments, scarves, unbuttoned jackets or garments with open zip fasteners that may become entangled in moving parts. Wear approved safety garments, such as non-slip footwear and a reflective vest;
- Always keep the tread surface, steps, handrails and grab bars clean and free from any foreign object or traces of oil, mud or snow to minimise the risk of slipping or tripping;
- Clean the soles of shoes before climbing onto the MEWP.;
- Use of the MEWP requires the concomitant presence of at least two operators, one of whom 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 capacity permitted on the platform both in relation to the maximum load permitted and the number of persons being transported;
- It is forbidden to load and/or unload persons and/or materials when the platform is not in the access position;
- It is forbidden to use structural elements of the machine for connections to the ground while welding works are being carried out on the platform;
- Enter and exit the platform using the appropriate gate and steps (when applicable);
- Do not use the controls or flexible hoses as hand grips;
- Do not lean over the perimeter railings of the basket;
- Warn your supervisor in case of operating irregularities 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 guards, other protections and covers are positioned correctly and that all the safety devices are installed and efficient;
- Do not use the platform in places where there is a risk of explosion or fire outbreaks;
- Do not use water jets or high pressure washers to wash the platform;
- All personnel on the platform must wear, as a minimum, the PPE indicated in this manual. The operator on the ground must also wear a hard-hat;
- The platform may not be used if the lighting conditions are not sufficient, as there are no on-board lighting devices;
- In case of rain, be certain to protect the control box in the basket using the dedicated cover;
- Keep a distance of at least 2 m from marked differences in height (ditches, steep terrain, etc.);
- Ensure there is sufficient autonomy to avoid the forced shut-down of the machine;
- It is forbidden to use the platform to lift loads;
- Overloads, transverse stresses, impacts, brusque and sudden movements of the platform are forbidden;
- When moving or working on the platform, both feet must be firmly resting on the tread surface;
- If the boom or platform remains entangled so that one of the tracks is lifted from 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 while it is being controlled from the ground;

- It is forbidden to manoeuvre the MEWP from the ground control position when the operators are present on the platform, unless emergency recovery operations are being carried out.
- It is forbidden to transport large materials or panels, as they increase wind resistance causing a high risk of tipping over.

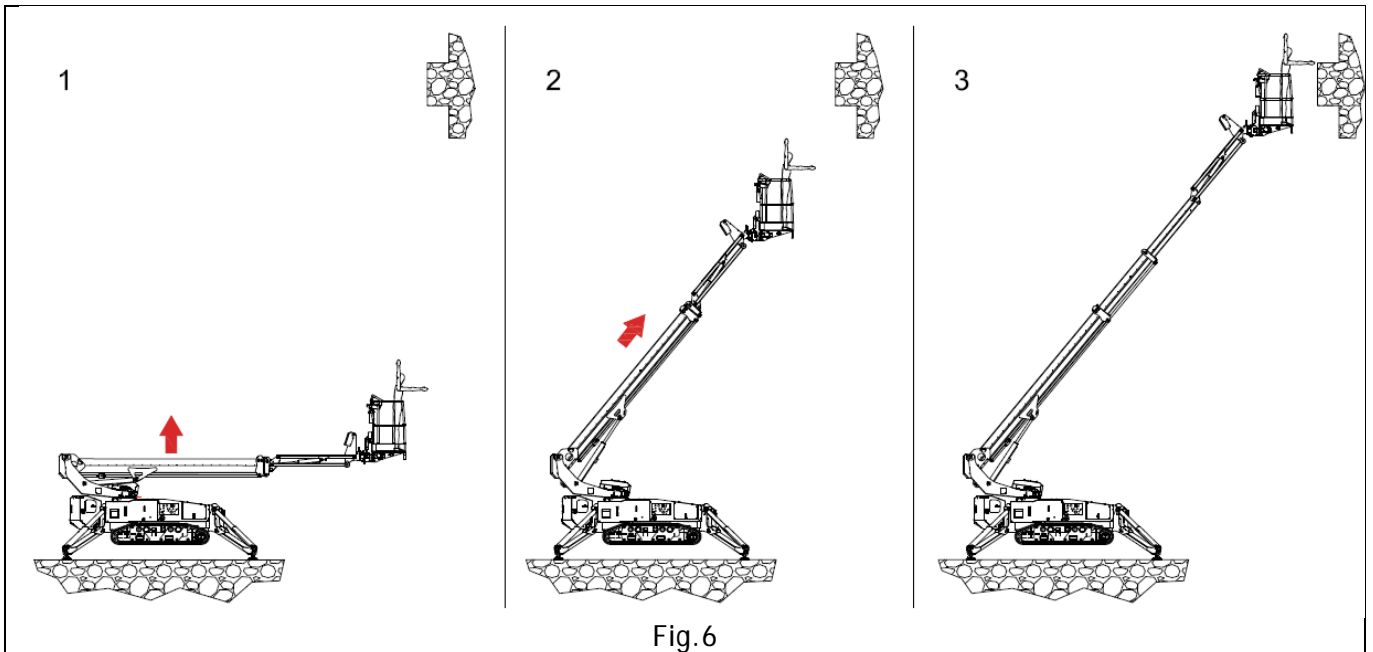
3.2.2 Handling and moving.

- It is forbidden to circulate on roads open to traffic. The machine is not approved for this purpose.
- Do not drive over loose soils to avoid risks of instability and downtime. To avoid overturning, the maximum permissible gradients indicated in the chapter on the technical characteristics of each model under the heading "Stability limits" must be observed;
- Carry out the movements on inclined planes with the utmost caution;
- As far as possible, on machines with variable track gauge, always use the maximum track gauge during movements to reduce the risk of tipping over;
- With the platform outside the TRANSPORTATION position (main boom raised to a given height - see technical data) the traction speed is automatically activated in safety speed up to a variable working height (see work diagrams) beyond which traction is automatically inhibited. During the pulling manoeuvre in elevation, the operators on board must not apply horizontal loads to the platform (it is forbidden to use ropes, cables, etc.);
- During movements, pay attention and avoid deep dips in the ground and holes in the ground;
- Do not change direction on kerbs, rocks or significant elevations (>100 mm) while driving;
- Always take kerbs or drive over any unevenness with the tracks perpendicular to the obstacle to be passed over;
- When moving uphill, do not steer in the passage from the flat ground to the slope. If this is absolutely necessary, perform the manoeuvre gradually;
- Always make sure that both tracks are resting on the same plane in order to avoid damaging the tracks;
- When proceeding on an obstacle and the track is resting only on the load-bearing rollers there is a risk that the track will come out of its seat. Control 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. Control the movement with caution in these conditions;
- Control the movement with the platform raised only if the ground is solid.
- Electronic system during traction at height (SPS function) allows safe travel on terrain where the slope changes gradually. However, the system cannot prevent the machine from tipping over in the event of sudden changes in slope or kerbs.
- Before driving with either the platform low or the platform raised (SPS function) check that all 4 ends of the tracks are resting on the ground. If this is not the case, do not drive and reposition the machine. The following picture shows only some (not all) of the dangerous conditions to avoid



3.2.3 Work phases.

- The machine is equipped with numerous sensors on the moving parts of the machine (expandable tracks, booms, rotations, telescopic boom, etc.) that constantly monitor the configuration of the machine and the loads being transported on the platform. Any alarms or inhibitions to manoeuvres are clearly indicated by the display of the control console on the platform (or by luminous LEDs for console without display); manoeuvres that are dangerous for stability are automatically inhibited, and the operator on the platform is always aware of the situation;
- The battery-powered machines (ELC and LTH versions) are equipped with a device to control the state of charge of the battery which, when the residual charge level reaches overly low levels, signals the condition to the operator by indicating it on the display (or by means of LEDs) and inhibits high speed in traction and the upstroke and extension commands of the boom.
- Always check the absence of persons within the range of the machine. Pay particular attention when moving, descending and rotating from the platform.
- During work in areas open to the public, in order to prevent unauthorised personnel from dangerously approaching the machine, it is necessary to delimit the work area by means of barriers or other appropriate signalling means.
- Avoid operating with the machine in harsh environmental conditions such as strong winds, storms (see also chapter dedicated to wind action).
- For use without outriggers, before lifting the platform make sure that the tracks are completely resting on the ground; avoid extending the extendible structure if part of the tracks is lifted from the ground. Danger of tipping. See figure in previous chapter showing some situations to avoid.
- For use with outriggers, before lifting the platform make sure that the tracks are lifted from the ground and that all four outrigger feet are resting on solid ground. In any case, the machine is equipped with sensors that monitor the actual ground support of the outriggers only allowing lifting in a safe condition. The status of the outriggers is shown on the control display.
- Operating on non-compact ground during stabilisation, use the increased size plates supplied with the machine and, if this is not sufficient, widen the support surface by means of boards of sufficiently hard and resistant material in order to reduce the specific pressure on the ground. Always check that the outriggers do not sink into the ground.
- During the descent commands pay attention to any obstacles under the platform to avoid tipping over and/or damage.
- Materials, equipment and tools must be stably positioned on the platform to prevent them from falling to the ground during manoeuvres;
- The machine automatically limits the movements of the extendible structure (ascents, extensions, rotations) based on the numerous monitored parameters (stabilisation area, ground inclination, track, turret rotation, platform load) always showing which manoeuvres remain available to the operator by means of indications on the control consoles. In any case, to move the machine in complete safety, once the carriage is positioned in a favourable position, orient the rotating turret towards the point to be reached at height and:
 - .1 Lift the main boom and the jib;
 - .2 Extend the telescopic boom to reach the operating point at height;
 - .3 Perform the work from a comfortable position, remaining inside the work platform.
- For the retraction manoeuvres to be carried out, the sequence to be performed is reversed with respect to the above. At the end of the work, after having completely lowered the arms and parked the machine in a safe place, to prevent unauthorised persons from using the machine, remove the keys from the control panels and store them in a safe place that is not accessible to unauthorised persons.



3.2.4 Wind action and Beaufort scale.

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

Beaufort Number	Wind speed (km/h)	Wind description	Sea conditions	Ground conditions
0	0	Calm	Flat.	Smoke rises vertically.
1	1-6	Gentle wind	Slight ripples on the surface. White crests do not form.	Wind movement visible from the smoke.
2	7-11	Light breeze	Minute waves, still short but evident. The crests do not break, glassy appearance	Wind felt on bare skin. The leaves rustle.
3	12-19	Strong breeze	Waves with breaking crests, foam of glassy appearance. "Sheep" visible with white crests.	Smaller leaves and branches in constant motion.
4	20-29	Moderate wind	Waves with a tendency to lengthen. The "Sheep" are more frequent	Lifting of dust and paper. Branches move.
5	30-39	Strong wind	Moderate waves with an elongating shape. Plentiful "sheep", some spray.	Shrubs with leaves sway. Small waves form in inland waters.
6	40-50	Fresh wind	Large waves (surf) with white foam crests. Probable spray.	Movement of large branches. Difficulty using an umbrella.
7	51-62	Strong wind	The surf increases. The waves break and the foam is "blown" in the direction of the wind.	Whole trees shaken. Difficulty walking against the wind.
8	63-75	Gusts	High waves. The crests break forming swirling spray sucked by the wind.	Branches ripped from trees. Impossible to walk against the wind.
9	76-87	Heavy gusts	High waves with rolling crests. Thicker foam strips.	Slight damage to structures (chimneys and tiles removed).
10	88-102	Storm	Very high waves surmounted by very long crests. Foam strips tend to compact and the sea looks whitish. The breakers are much more intense and visibility is reduced.	Tree uprooting. Considerable structural damage.
11	103-117	Violent storm	Huge waves that could also hide medium-sized ships from view. Sea covered with foam banks. The wind fogs the top of the crests. Reduced visibility.	Huge structural damage.
12	>117	Hurricane	Very high waves; air full of foam and spray, completely white sea.	Huge and extensive damage to structures.



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

3.2.5 Suitability of the ground and pressure on the ground of the machine.

3.2.5.1 Ground capacity.

Before using the machine, the operator must always verify that the floor or ground is suitable to withstand the load and pressures generated by the machine, and such as not to make the machine slip due to a steep slope and/or poor adhesion.

The tables of the technical data of each machine indicate the values of pressure and ground loads in order to help in the evaluation of the floor/ground on which the machines can operate. Consider appropriate additional coefficients to be sure of the suitability of the ground. The meaning of the various data and the method for calculating them is explained below.

SYMBOL	UoM	DESCRIPTION	EXPLANATION	FORMULA
A1	cm ²	Area occupied by the machine on the ground	Ground support area of the machine determined by the product of TRACK x LENGTH or AREA OF THE OUTRIGGERS.	$A1 = c1 \times i2$
A2	cm ²	Ground support area of a track	Ground support area of a track. The ground support area of a track was detected considering the support on the concrete floor.	$A2 = c2 \times i1$
A3	cm ²	Ground support area of the track section that supports the maximum load	It is the estimate at the design level of the track area on which the maximum load generated by the machine in the worst load conditions rests	$A3 = c2 \times i3$
A4	cm ²	Ground support area of a outrigger	Ground support area of a outrigger without a support plate	$A4 = c3^2 / 4$
A5	cm ²	Ground support area of a support plate	Support area on the ground of a support track.	$A5 = c4 \times c5$
c1	cm	Track	Transverse width of the machine measured externally between the tracks or between the outermost parts of the machine	-
c2	cm	Track width	Represents the maximum width of a track.	-
c3	cm	Outrigger diameter	Diameter of the outrigger plate that rests on the ground.	-
c4	cm	Base support plate	Base of the support plate positioned under the outrigger to reduce the pressure on the ground.	-
c5	cm	Height of the support plate	Height of the support plate positioned below the outrigger to reduce ground pressure.	-
i1	cm	Centre distance	Centre distance between the centre of the traction gear reducer and the idler wheel.	-
i2	cm	Machine length	It is the total length of the machine.	-
i3	cm	Track length under maximum load	It is the design estimate of the length of the track area subjected to the maximum load generated by the machine in the worst load conditions	-
M	kg	Nominal load	The maximum capacity permitted for the work platform	-
P1	kg	Machine weight	It 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 track.	It represents the maximum load that can be discharged to the ground from a track when the machine is in the worst position and load conditions. Note: always refer to the data indicated on the plates applied to the machine.	-
P3	kg	Maximum load on outrigger.	It represents the maximum load that can be discharged to the ground from a outrigger when the machine is in the worst position and load conditions. Note: always refer to the data indicated on the plates applied to the machine.	-
p1	Kg/cm ²	Ground pressure	Average pressure that the machine exerts on the ground in resting conditions and supporting the nominal load.	$p1 = (P1 + M) / A1$
p2	Kg/cm ²	Average pressure on tracks	Average pressure exerted on the ground by the tracks by the machine under full load transportation conditions.	$p2 = (P1 + M) / 2 / (A2$

p3	Kg/cm ²	Maximum pressure point	Maximum pressure that a portion of the track exerts on the ground when the machine is in the worst position and load conditions.	$p3 = P2 / A3$
p4	Kg/cm ²	Maximum pressure point	Maximum pressure that a outrigger exerts on the ground when the machine is in the worst position and load conditions and rests directly on the outrigger	$p4 = P3 / A4$
p5	Kg/cm ²	Maximum pressure point	Maximum pressure that a outrigger exerts on the ground when the machine is in the worst position and load conditions and rests on the support plate	$p5 = P3 / A5$

See below for an example of calculating the specific pressures "p1", "p2", "p3", "p4", "p5".

EXAMPLE: B 1570 (EVO-LTH-ETS) VISUAL

P1 = 2,630 kg
 P2 = 1,980 kg
 P3 = 2,039 kg
 M = 230 kg

i1 = 182 cm
 i2a = 490 cm
 i2b = 408 cm
 i3 = 40 cm
 c1a = 140 cm
 c1b = 249 cm
 c2 = 25 cm
 c3 = 20 cm
 c4 = 24 cm
 c5 = 45 cm

A1a = c1a × i2a = 140 × 490 = 68,600 cm²
 A1b = c1b × i2b = 249 × 408 = 101,592 cm²
 A2 = c2 × i1 = 25 × 182 = 4,550 cm²
 A3 = c2 × i3 = 25 × 40 = 1,000 cm²
 A4 = c3² / 4 = 20² / 4 = 314 cm²
 A5 = c4 × c5 = 24 × 45 = 1,080 cm²

p1a = (P1 + M) / A1a = (2,630 + 230) / 68,600 = 0.0416 kg/cm²
 = 416 kg/m²

p1b = (P1 + M) / A1b = (2,630 + 230) / 101,592 = 0.0281 kg/cm²
 = 281 kg/m²

p2 = (P1 + M) / 2 / A2 = (2,630 + 230) / 2 / 4,550 = 0.314 kg/cm²

p3 = P2 / A3 = 1,980 / 1,000 = 1.98 kg/cm²

p4 = P3 / A4 = 2,039 / 314 = 6.49 kg/cm²

p5 = P3 / A5 = 2,039 / 1,080 = 1.88 kg/cm²

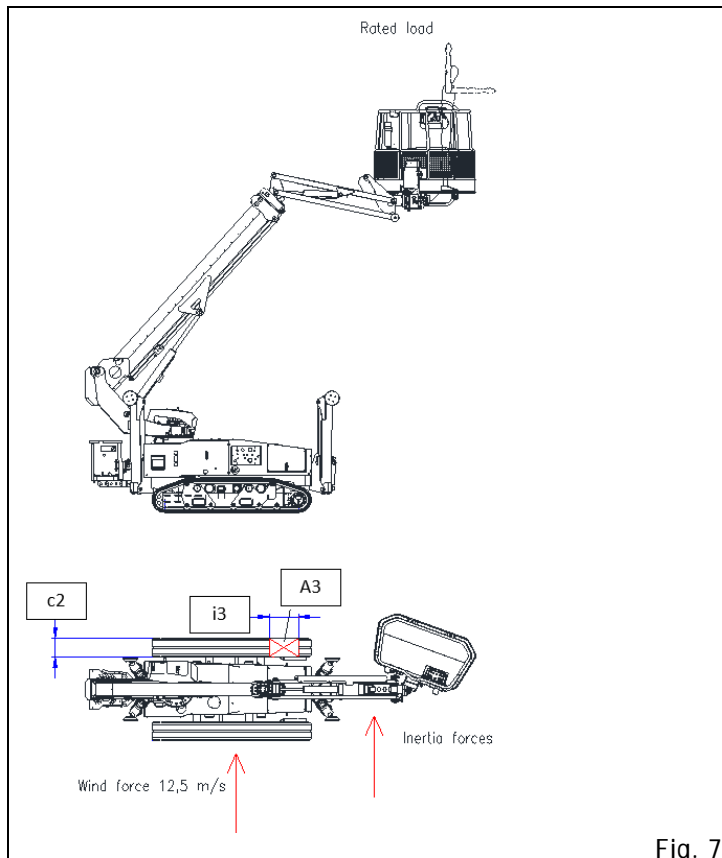
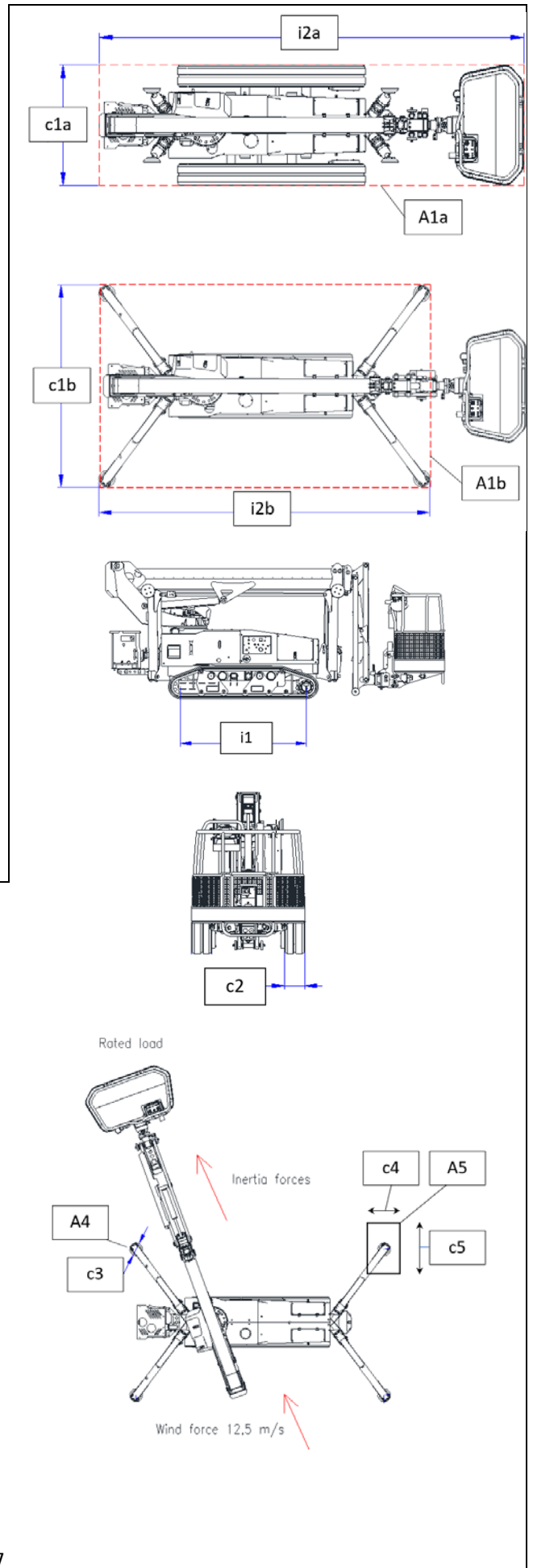


Fig. 7

EXAMPLE: B 1890 (EVO-LTH-ETS) Q-PRO

P1 = 2,940 kg
 P2 = 2,450 kg
 P3 = 2,242 kg
 M = 250 kg

i1 = 182 cm
 i2a = 584 cm
 i2b = AREA 1 = 429 cm; AREA 2 = 497 cm
 i3 = 40 cm
 c1a = 140 cm
 c1b = AREA 1 = 276 cm; AREA 2 = 366 cm
 c2 = 25 cm
 c3 = 20 cm
 c4 = 24 cm
 c5 = 45 cm

A1a = c1a × i2a = 140 × 584 = 81,760 cm²
 A1b AREA 1 = c1b × i2b = 276 × 429 = 118,404 cm²
 A1b AREA 2 = c1b × i2b = 366 × 497 = 181,902 cm²
 A2 = c2 × i1 = 25 × 182 = 4,550 cm²
 A3 = c3 × i3 = 25 × 40 = 1,000 cm²
 A4 = c3² / 4 = 20² / 4 = 314 cm²
 A5 = c4 × c5 = 24 × 45 = 1,080 cm²

p1a = (P1 + M) / A1a = (2,940 + 250) / 81,760 = 0.0390 kg/ cm²
 = 390 kg/m²

p1b AREA 1 = (P1 + M) / A1b AREA 1 = (2,940 + 250) / 118,404 = 0.0269 kg/ cm² = 269 kg/m²

p1b AREA 2 = (P1 + M) / A1b AREA 2 = (2,940 + 250) / 181,902 = 0.0175kg/ cm² = 175 kg/m²

p2 = (P1 + M) / 2 / A2 = (2,940 + 250) / 2 / 4,550 = 0.350 kg/cm²

p3 = P2 / A3 = 2,450 / 1,000 = 2.45 kg/cm²

p4 = P3 / A4 = 2,242/314 = 7.14 kg/cm²

p5 = P3 / A5 = 2,242 / 1,080 = 2.07 kg/cm²

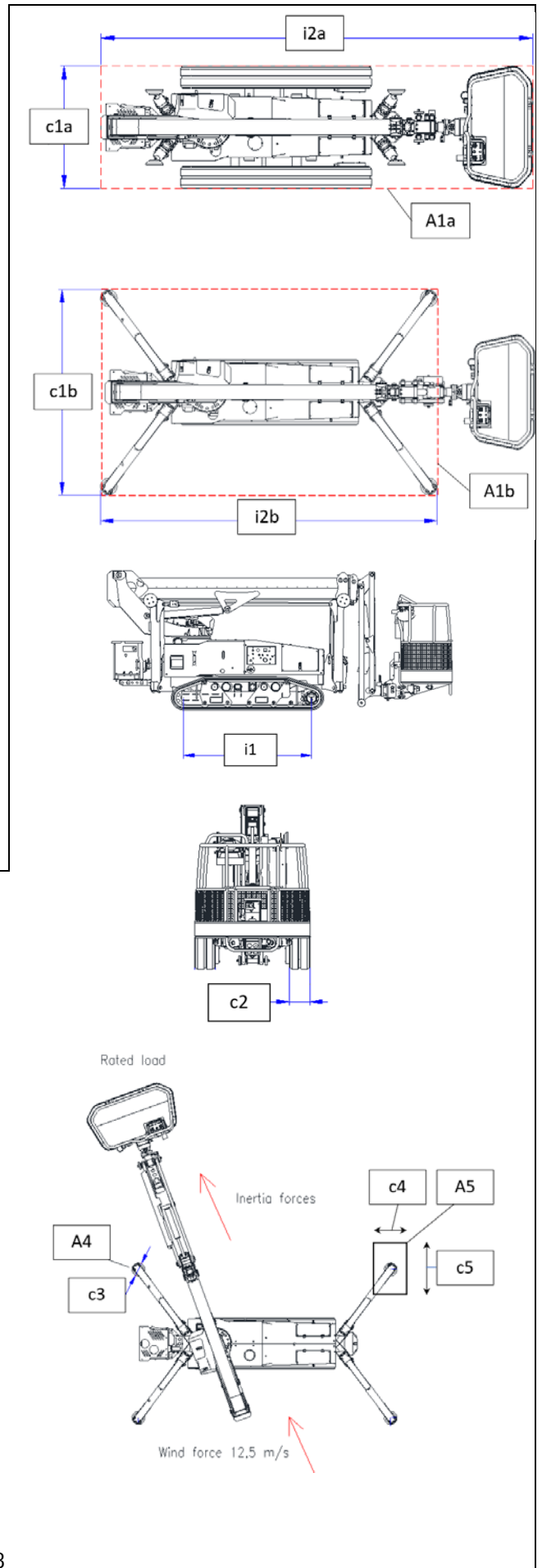


Fig. 8

The following table shows the indicative bearing capacity of the soil by type of ground. 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 uncertainty the bearing capacity of the ground must be ascertained with specific examinations.

In the case of structures (example: concrete floors, bridges, etc.) the lift must be requested from the manufacturer of the structure.

TYPES OF SOIL	CAPACITY VALUE	
	Kg/cm ²	lb/in ²
Non-compact excavated soil	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
Rigid 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 permissible lift value indicated in the table.

3.2.5.2 Ground inclination.

Before using the machine, the operator must always check that the floor or ground is suitable in order for the machine not to slide due to a steep slope and/or poor adhesion and to be able to support the machine. The overall performance of the machine is automatically reduced when operating on sloping terrain.

3.2.6 Live power lines.

The machine is not electrically insulated and does not provide protection from contact with or proximity to power lines.

It is necessary to maintain a minimum distance from the power lines according to the current regulations and 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 the USA, when working near live lines, a minimum distance must be maintained in accordance with the OSHA 1910.333 (c) standard or with national laws and regulations.

3.3 In case of an accident.

If during use an accident occurs, 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.
- Perform manoeuvres to bring the platform to the ground **only if it is certain that they will not aggravate the situation.**
- Put the machine in a **safe condition** and report the anomaly to the employer.

4 INSTALLATION AND PRELIMINARY CHECKS.

The machine is generally delivered fully assembled, therefore it can perform all the functions provided by the manufacturer in complete safety. It is not necessary to perform any preliminary operations. To unload the machine, follow the instructions in the chapter "handling and transportation".

Place the machine on a sufficiently compact surface with a slope lower than the maximum permitted (see technical specifications "Stability limits") before operating it.

On some machines the platform can be of the removable type such as to allow it to pass through narrow passages or to be replaced by a material lifting winch. Follow the specific instructions.

4.1 Familiarisation.

Anyone intending to operate with a machine with characteristics of weight, height, width, length or complexity that differ significantly from the training received must first ensure familiarisation with these aspects to cover the differences.

It is the responsibility of the employer to ensure that all operators using work equipment are adequately trained and instructed to comply with the 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 user instructions 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.

Before using the machine, the operator must always visually 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 terrain on which it is intended to operate is sufficiently horizontal and consistent.
- The machine performs all manoeuvres safely.
- The gearmotors and traction tracks are correctly secured.
- The tracks are in a good condition and tensioned correctly.
- The railings are fixed to the platform and the gate(s) is/are self-closing.
- The structure does not have obvious defects (also visually check the welds of the lifting structure, the frame and the turret) and there are no deformations (e.g. railings and gates of the platform). More detailed instructions can be found in the MAINTENANCE chapter.
- The fixing and connecting elements (seeger, rings, nuts, screws) of the extendible structure are in position and leave no doubt as to their actual tightening.
- Check that there is no rust on the supporting components of the structure and on the fixing elements.
- The extension and retraction chains of the telescopic boom are correctly tensioned.
- The instruction plates are perfectly legible.
- The appropriate container contains at least one copy of the instruction manual in your language, and the last valid periodic verification report.
- The controls are perfectly efficient both from the platform control position and from the emergency control position on the base carriage, including the "man present" system and the emergency stops. For these checks, refer to the FUNCTIONAL CHECKS section in the MAINTENANCE chapter.
- The red protection of the EMERGENCY OVERRIDE button is sealed.
- The anchor points of the harnesses are in a perfect condition.
- Check, when used as a platform, that the work platform (basket) is correctly interlocked and that the appropriate indicator light on the console signals the "work platform" mode.

- Check, when used as a Winch (optional), that the winch is correctly interlocked and that the appropriate indicator light on the console signals the "Winch" mode.

4.3 Defects found during pre-use checks.

If during the pre-use Checks (or during use of the machine), the operator finds a defect that can generate dangerous situations or suspicions that there may be malfunctions, the machine must be placed in a safe situation (isolate it, apply a sign). Report the anomaly to the employer and arrange for an authorised service centre to be contacted.

5 METHOD OF USE.

5.1 Control station on the platform.

The platform is equipped with a removable control panel (console) that can be of two types:

- Remote control
- Radio control

Regardless of the type of control system (remote control or radio control) it is possible to remove the control console from the platform and operate the machine on foot during positioning operations of the machine or for loading and unloading operations of the machine from means of transport.

- With a **remote control** outside its housing on the platform, all machine controls are permitted limited to the length of the connection cable;
- With **radio control** (optional) outside its platform housing, the following controls are only permitted if the load on the platform is less than 20 kg:
 - o variable track and translation only if the boom is in the TRANSPORTATION POSITION;
 - o length of the extensible structure (ascents/descents/rotations).

For machines equipped with the winch option, the operator operates the machine on foot in the following ways:

- With remote control connected to the connector available on the ground control station;
- With radio control.

5.1.1 Document compartment on the platform.

On the outside of the platform there is a cylindrical document holder with a screw cap. A copy of at least the following documents must always be kept in this compartment:

- Instruction manual in the language of the operator;
- Documentation attesting to the periodic checks required by law (seek information regarding the national obligations)

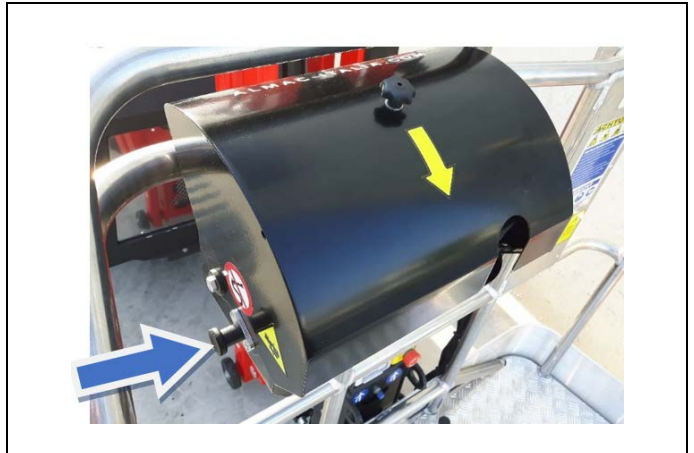


Fig.9

5.1.2 Fixing of the control panel on the platform.

When operating from the control position on the platform, or during transportation of the machine, it is necessary to secure the mobile control panel on the platform following the instructions below:

1. Open the cover by pulling out the side piston indicated by the arrow;



2. Insert the control panel into the support and take the cord with the hook indicated by the arrow;



3. Pass the cord in front of the display and attach the hook to the support as indicated by the arrow (image to the right). In this way the control panel is locked.

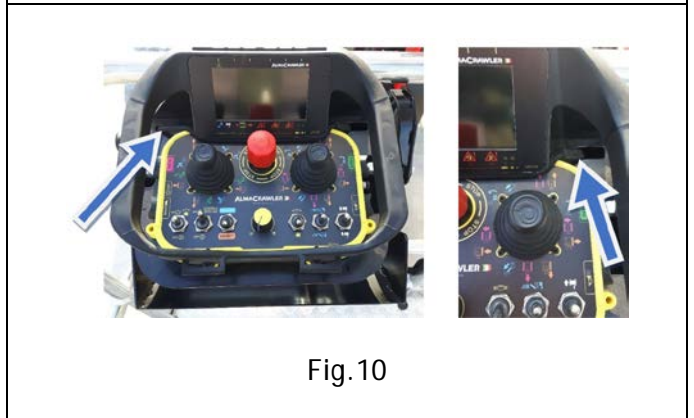


Fig.10

5.1.3 Platform control panel.

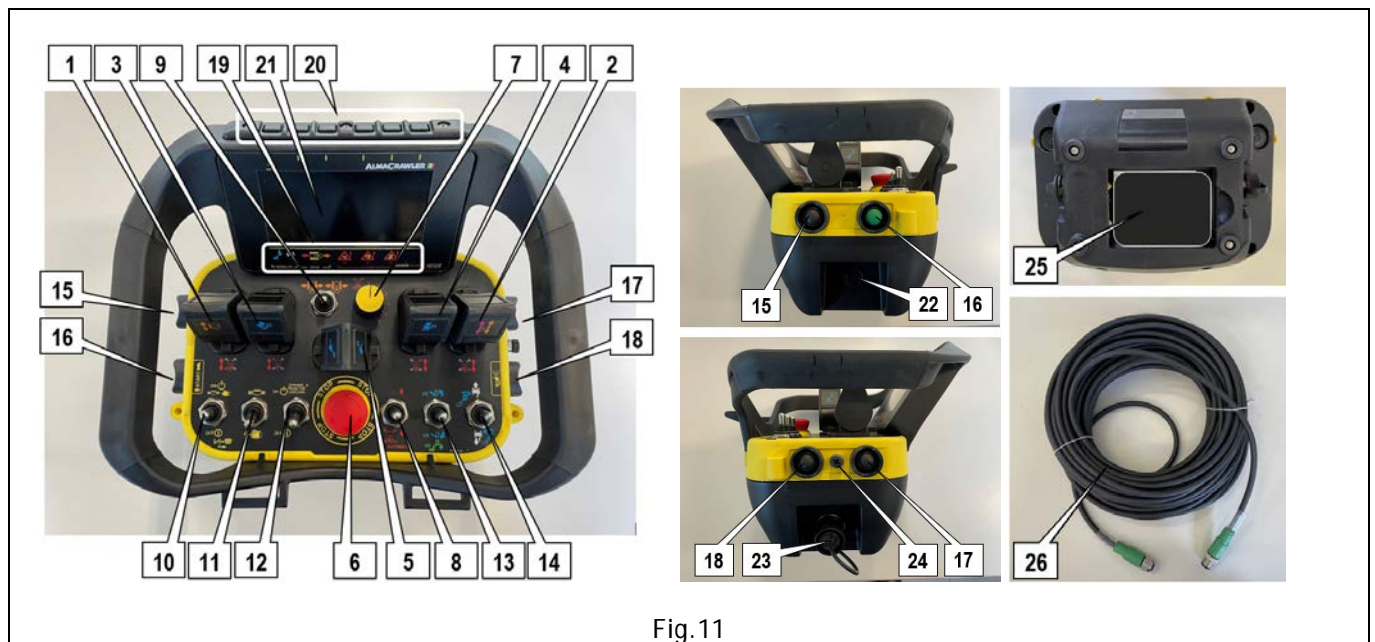


Fig.11

1. LEFT TRACK CONTROL JOYSTICK/LEFT REAR OUTRIGGER (1)
2. RIGHT TRACK CONTROL JOYSTICK /RIGHT REAR OUTRIGGER JOYSTICK (4)
3. BOOM CONTROL JOYSTICK / LEFT FRONT OUTRIGGER (2)
4. TELESCOPIC CONTROL JOYSTICK / RIGHT FRONT OUTRIGGER (3)
5. TURRET ROTATION CONTROL JOYSTICK
6. EMERGENCY STOP BUTTON
7. STABILISATION AREA SELECTOR (QUICK PRO MODELS ONLY)
8. AUTOMATIC STABILISATION CONTROL SWITCH
9. WIDE/NARROW TRACK CONTROL SWITCH
10. THERMAL AND ELECTRIC MOTORS ON/OFF/PREHEATING SELECTOR
11. THERMAL/ELECTRICAL POWER SUPPLY SELECTOR
12. DYNAMIC AND PROACTIVE LEVELLING SELECTOR
13. JIB /AUTOSTOWING CONTROL SWITCH
14. PLATFORM ROTATION CONTROL SWITCH/WINCH CONTROL (OPTIONAL)
15. "FAST DRIVE AND BOOSTER" ENABLING BUTTON
16. "START" BUTTON
17. OUTRIGGERS / AUTOSTOWING MANUAL CONTROLS ENABLING BUTTON
18. HORN BUTTON
19. INDICATOR LIGHTS (CONTROL PANEL WITH GRAPHIC DISPLAY)
20. SERVICE BUTTONS (CONTROL PANEL WITH GRAPHIC DISPLAY)
21. GRAPHIC DISPLAY / LED DISPLAY
22. SAFETY KEY - ONLY FOR RADIO CONTROL VERSION
23. CONNECTOR FOR CONTROL CABLE
24. PROGRAMMING CONNECTOR
25. BATTERY - ONLY FOR RADIO CONTROL VERSION
26. CABLE - ONLY FOR RADIO CONTROL VERSION

When the machine is switched on, after activating the EMERGENCY STOP button (6) by turning it clockwise, to have the controls available on the console, it is necessary to press the START button (16) to:

- Turn on the radio control and activate the data transmission (radio control version only);
- Activate the controls on the console.

5.1.3.1 Enable system.

For safety reasons, to operate any control of the machine it is necessary to press the START button (16) or the consent pedal (OPTIONAL) before operating any control.

To operate the controls using the START button (16):

- Press and release the START button (16);
- Within 5 seconds, activate one of the commands described below;
- When a command is released, within the next 5 seconds it remains possible to operate a new command without operating the START button (16) again.
- If more than 5 seconds elapse after the START button is pressed, or when a command is released without any command being pressed, it is necessary to press and release the START button (16) again.

To operate the controls using the consent pedal (OPTIONAL):

- Press and hold the consent button;
- Within 10 seconds, activate one of the commands described below;
- When a command is released, with the pedal still pressed, within the next 5 seconds it remains possible to operate a new command;
- If more than 10 seconds elapse after the consent pedal is activated, or when a command is released without activating any command, it is necessary to press the consent pedal again (OPTIONAL).

If the pedal is released during the execution of a manoeuvre, it stops instantly.

5.1.3.2 Traction, steering and widening of tracks.



Attention: before carrying out any movement of the machine, check that there are no persons near or in the operating range of the machine. In any case, proceed with the utmost caution.

Before performing a traction movement with the platform raised (SPS mode), make sure that the ground to be moved on has the characteristics described in the previous paragraphs.

Take into account all the indications and prohibitions indicated in the SAFETY RULES chapter of this manual.

If a condition exists in which the traction control is available (see DISPLAY/LEDS indications), once the controls are activated by means of the START button (16), it is possible to command **TRACTION FORWARD/BACKWARD** by means of simultaneous travel in the same direction and intensity of the two joysticks (1) (2) to obtain the rectilinear travel, or with different intensity to obtain steering of the machine remembering that the right joystick controls the right track and the left joystick controls the left track. By operating the two joysticks (1) (2) in the opposite direction to each other, counter-rotation of the traction tracks is obtained with consequent steering of the machine around its central axis.

The TRACTION controls are proportional; it is therefore possible to modulate the speeds of the movements according to the position of the proportional joysticks themselves.

5.1.3.2.1 Traction and steering with FAST DRIVE and BOOSTER function.

The FAST DRIVE and BOOSTER functions are controlled by the button (15). These automatic functions are used to move at high speed and/or in a straight direction of travel, activating only the right control joystick (2).

Pressing the button (15) activates the FAST DRIVE / BOOSTER driving mode.

If the machine is in TRANSPORTATION CONFIGURATION by controlling the traction with only the right joystick (2) at less than 50% of its stroke, the machine is in fast DRIVE mode:

- the traction command is activated in the direction of travel selected by the joystick;
- the machine moves straight ahead at a speed proportional to the movement of the joystick, with an accelerated thermal motor;
- steering is not possible;
- by reversing the gear suddenly, the FAST DRIVE command remains active in the reverse direction.

If the machine is in TRANSPORTATION CONFIGURATION, controlling the traction with only the right joystick (2) more than 50% of its stroke, the machine is in FAST DRIVE + BOOSTER mode:

- the traction command is activated in the direction of travel selected by the joystick;
- the machine moves straight ahead at a speed proportional to the movement of the joystick but with active BOOSTER function (high speed), with accelerated thermal motor;
- steering is not possible;
- by reversing the gear suddenly, the FAST DRIVE + BOOSTER command remains active in the reverse direction.

If the machine is in SPS mode (traction beyond the TRANSPORTATION condition) by controlling the traction with the right joystick only (2) the machine is in fast DRIVE mode:

- the traction command is activated in the direction of travel selected by the joystick;
- the machine moves straight ahead at the safety speed with an accelerated thermal motor;
- steering is not possible;
- by reversing the gear suddenly, the FAST DRIVE command remains active in the reverse direction.

Once the FAST DRIVE / BOOSTER function has been activated, the joystick (2) must be released to obtain steering; after approximately 1.5 seconds the function is deactivated and it is possible to resume control of the translation and steering using the joysticks (1) (2).

5.1.3.2.2 Traction and steering in SPS mode (translation at height).

If the machine is resting on the tracks, starting from a certain height from the ground (see work diagrams), the traction mode in SPS (translation at height) is active.

In this mode the maximum permitted speed is automatically reduced and the traction and steering controls operate as described in the previous paragraphs.

If during traction in SPS mode the longitudinal inclination of the platform exceeds 3° , the translation command stops. It is necessary to release and reactivate the translation command to first obtain automatic levelling of the platform and to then resume travel.

If during traction in SPS mode the carriage reaches the lateral or longitudinal limit values beyond the limits set at the factory (see work diagrams), travel is automatically inhibited in the direction that increases the inclination, while the opposite one remains permitted. If the carriage exceeds these limits by a further 3° , it is only permitted to return to the transport condition (to lower the jib and boom).

5.1.3.2.3 Widening and narrowing of tracks.

To control **TRACK WIDENING** and **NARROWING**, move the switch (9) to the left to obtain widening of the track or to the right to obtain narrowing. The control takes place at a fixed speed set at the factory.

The **TRACK WIDENING** and **NARROWING** command is only available if the platform is in **TRANSPORTATION CONFIGURATION** (see chapter 2 **TECHNICAL DATA**) and the rotating turret is in a centred position (see also description of the turret rotation command).



Attention: To ensure the stability of the machine, always widen the track before carrying out any movement operation.

Use the reduced track only to pass through narrow areas or during transportation of the machine to limit its overall dimensions.

SPS mode (translation at height) is only permitted with widened track.

5.1.3.2.4 DYNAMIC function.

The **DYNAMIC** function is active with switch (12) positioned forward (ON), while it is not active with switch (12) positioned backwards (off).

With the **DYNAMIC** function active, when commanding the traction, the control system first lifts the main boom slightly such as to increase the platform's ground clearance and to avoid shocks during movements.



Attention: Use the **DYNAMIC** function only in areas where the height of the environments is such as not to introduce the risk of crushing of the operator.

5.1.3.3 Stabilisation.



Attention: before carrying out any stabilisation or destabilisation operation of the machine, check that there are no persons near or within the operating range of the machine. In any case, proceed with the utmost caution.

Before controlling the stabilisation, make sure that the ground on which it is intended to operate has the characteristics described in the previous paragraphs. Be sure to place the large size plates supplied as standard under the stabilising feet or to further increase the ground support area in order to distribute the load over a wider surface.

It is possible to control the stabilisation by operating from the controls located on the platform, but for greater safety it is advisable to remove the control panel from the platform and control the stabilisation with the operator on the ground, who must operate positioning themselves upstream from the machine and in a safe position, away from the moving parts.

An inclination and load control system on the ground only allows development of the extendible structure if the frame is perfectly level and all the feet are correctly resting on the ground. The stabilisation system is automatic (it is not possible to stabilise manually) and performs a series of stabilisation/destabilisation attempts in order to bring the frame into a perfectly level position. A horn sound at the end of the stabilisation indicates the stabilisation and the consent to the development of the extensible structure.

The stabilisation/destabilisation command is only permitted if the extendible structure is in TRANSPORTATION condition and the boom is perfectly aligned with the direction of travel.

Take into account all the indications and prohibitions indicated in the SAFETY RULES chapter of this manual.

5.1.3.3.1 Automatic stabilisation and destabilisation, and AWP technology.

The only stabilisation and destabilisation mode permitted is the automatic one.

To control the automatic stabilisation and destabilisation, use the switch (8).

If in a condition in which the stabilisation/destabilisation command is available (see DISPLAY/LEDS indications), once the commands are activated using the START button (16), by means of the selector (8), it is possible to command the automatic stabilisation by operating it downwards or automatic destabilisation by pushing upwards.

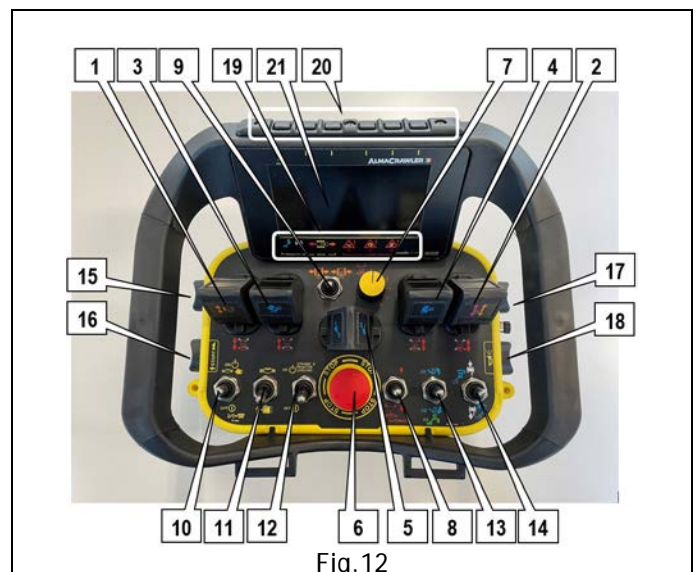


Fig.12

Controlling automatic stabilisation on inclined terrain, the control system performs a series of stabilisation/destabilisation attempts in order to bring the frame into a perfectly level position. Excessive ground inclinations may prevent a stabilisation condition from being achieved. In this case it is necessary to destabilise the machine and change its positioning. Subsequent automatic stabilisation commands are permitted.

AWP technology is used to increase the working outreach when the machine stabilises with the maximum possible stabilisation area. See work diagrams.

For Q-PRO versions , the stabilisation area and the consequent permitted work areas depend on the selection made with the selector (7). See to the side the six different stabilisation areas permitted by the Q-PRO system. By controlling the automatic stabilisation, depending on the selection made with the selector (7) the outriggers extend or retract according to the selection made.

Until the outriggers are completely on the ground it is possible to change the stabilisation area. When the outriggers are resting on the ground, any action on the selector (7) produces no effect.

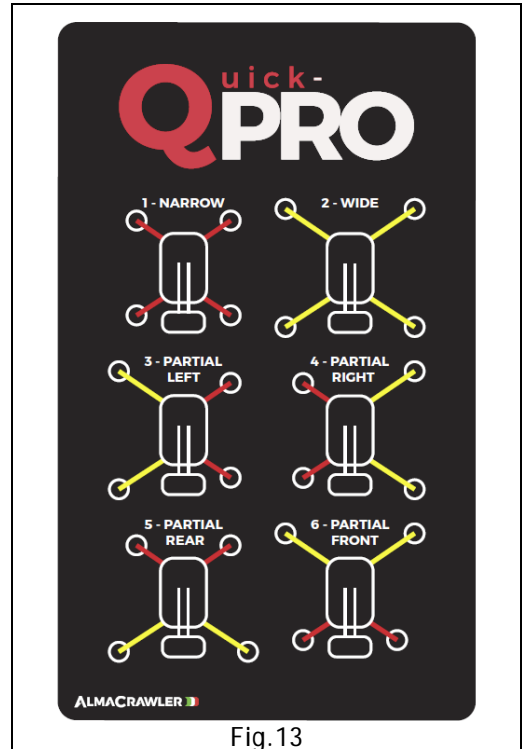


Fig.13

5.1.3.3.2 Manual control of the outriggers.

The only stabilisation and destabilisation mode permitted is the automatic one. It is only possible to manually operate the outriggers for any operational or maintenance needs (e.g. replacement of sensors).

Manual control of the outriggers is only possible when:

- The outriggers are all raised;
- One or more outriggers are resting on the ground, but the position has not been reached through an automatic stabilisation.

To control the manual stabilisation and destabilisation, the lateral enabling button (17) and one of the proportional levers (1, 2, 3, 4) must be activated simultaneously according to the symbols of the screen printing of the control panel.

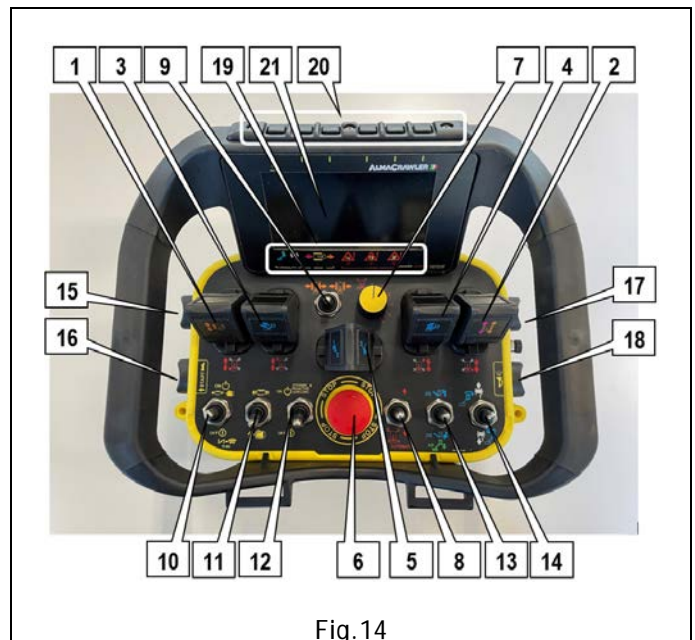


Fig.14

Pull down to lower the outrigger; push up to raise the outrigger.

5.1.3.4 Platform movement (liftings, lowerings, rotations).

Joysticks (3), (4), (5) and switches (13) and (14) are used to move the platform (ascents, descents, rotations).

If in a condition in which the platform movement commands are available (see DISPLAY/LEDS indications), once the commands are activated using the START button (16), it is possible to command the platform movement as indicated in the following paragraphs.

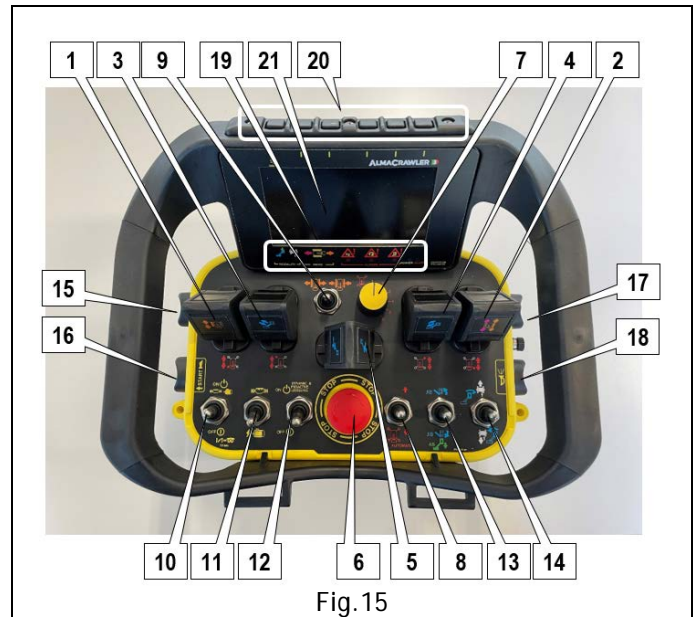


Fig.15

5.1.3.4.1 Lifting/Lowering of the main boom.

To perform the up/down manoeuvre of the main boom, use the proportional joystick (3), pushing it forward to obtain ascent, or backwards to obtain descent. The control is proportional so it is possible to modulate the manoeuvring speed by operating the joystick generally in depth.

The up/down control of the main boom can be controlled simultaneously with:

- Turret rotation (joystick 5);
- Removing or retracting the telescopic boom (joystick 4);
- Ascent or descent of the jib (switch 13).

5.1.3.4.2 Turret rotation.

To perform the turret rotation manoeuvre, use the proportional joystick (5) moving it to the right to obtain anti-clockwise rotation or to the left to obtain the clockwise rotation. The control is proportional so it is possible to modulate the manoeuvring speed by operating the joystick generally in depth.

The turret rotation control can be controlled simultaneously with:

- Ascent or descent of the main boom (joystick 3);
- Removing or retracting the telescopic boom (joystick 4);
- Ascent or descent of the jib (switch 9).

In the TRANSPORTATION position, the turret rotation command stops automatically when it reaches the central position ($0^\circ \pm 0.2^\circ$), in order to enable the controls for WIDENING and NARROWING OF THE TRACKS and OUTRIGGERS. To continue the manoeuvre, release and reactivate the proportional joystick (5).

5.1.3.4.3 Telescopic boom extension/retraction.

To perform the telescopic boom extension/retraction manoeuvre, use the proportional joystick (4), pushing it forward to obtain the boom extension or backwards to obtain the boom retraction. The control is proportional so it is possible to modulate the manoeuvring speed by operating the joystick generally in depth.

The extension/retraction control of the telescopic boom can be controlled simultaneously with:

- Ascent or descent of the main boom (joystick 3);
- Turret rotation (joystick 5);
- Ascent or descent of the jib (switch 13).

5.1.3.4.4 Platform rotation.

To perform the platform rotation manoeuvre, use the switch (14), pressing it forward to obtain rotation in a clockwise direction, or backward to obtain rotation in an anti-clockwise direction. The control is on-off so it is not possible to modulate the manoeuvring speed that takes place at a fixed speed regulated in the factory.

The platform rotation control cannot be carried out at the same time as other controls.

5.1.3.4.5 Lifting/Lowering of the jib.

To perform the jib ascent/descent manoeuvre, use the switch (13), pressing it forward to obtain jib ascent or backwards to obtain descent. The control is on-off so it is not possible to modulate the manoeuvring speed that takes place at a fixed speed regulated in the factory.

The jib up/down control can be commanded at the same time as:

- Ascent or descent of the main boom (joystick 3);
- Removing or retracting the telescopic boom (joystick 4);
- Turret rotation (joystick 5).

5.1.3.4.6 Autostowing (OPTIONAL).

The AUTOSTOWING manoeuvre allows the platform to be returned to the access position by activating a single switch.

To perform the AUTOSTOWING manoeuvre, the side button (17) and the switch (13) are used simultaneously, pressing the latter backwards and keeping them activated until the command is completed.



Attention: the AUTOSTOWING command automatically controls the return manoeuvres by means of an automatic sequence that does not take into account the manoeuvres carried out by the operator previously. The operator must carefully check the movements to avoid collisions, interference and crushing.

5.1.3.5 Winch control (OPTIONAL).

It is possible to install, as INTERCHANGEABLE EQUIPMENT, a winch to replace the platform, permitting use of the machine as a crane for loads up to 200 kg. See specific instructions for installation of the accessory.

Operate the switch (14) forward to lift the load or backward to lower the load. The control is on-off so it is not possible to modulate the manoeuvring speed that takes place at a fixed speed regulated in the factory.

The winch control cannot be carried out at the same time as other controls.

5.1.3.6 Other functions and devices of the control panel.

5.1.3.6.1 Emergency stop.

Pressing the red emergency stop button (6) will instantly stop all functions from the control position on the platform, but the control system remains on. To resume normal functions after an emergency stop button operation, it is necessary to:

- Rotate clockwise by a quarter of a turn (or by pulling outwards, depending on the type of button) the button itself;
- Wait for reactivation of the display and an acoustic alert;
- Press the "START" button (16).

5.1.3.6.2 THERMAL/ELECTRICAL power switch (EVO-ETS versions).

On machines powered by a thermal motor (Diesel or Petrol) and, at the same time with a single-phase electric pump, by means of the selector (11) it is possible to select which power supply to use, by moving the selector:

- Forward to use the thermal motor;
- Backward to use the electric motor.

Once the power supply has been selected, the selector (10) must be used. See description below. By operating the selector (11) while a motor is running, it is switched off.

5.1.3.6.3 Motors ON/OFF/PREHEATING switch (EVO-ETS versions).

On the EVO and ETS machines, the function of the selector (10) depends on the condition of the selector (11).

If the power supply has been selected by means of a thermal motor and the motor is switched off:

- Operate the selector (10) backwards for a few seconds for the preheating of the spark plugs (for Diesel engines equipped with this function);
- Move the selector (10) forward for a few seconds to start the thermal motor.

If the thermal motor is switched on:

- Operate the selector (4) backwards for a few seconds to turn it off.

If the power supply has been activated by an electric motor (and the machine is connected to the mains), or for the ELC-LTH version machines:

- Move the selector (10) forward for a few seconds to start the electric motor

If the electric motor is on:

- Operate the selector (10) backwards for a few seconds to turn it off.

5.1.3.6.4 START button.

The START button (16) is used to activate the controls of the control panel when the machine is switched on. When the message appears on the display, PRESS START, after the acoustic alert that signals that the control system has been switched on has been activated.

5.1.3.6.5 HORN button.

The HORN button (18) must be activated when it is intended to signal the movement of the machine, warning personnel potentially within the range of the machine.

5.1.3.6.6 Safety key (only for RADIO CONTROL version).

The safety key (22) is used to activate the control panel. Insert the key supplied to activate the keypad. If the key is not inserted, the keypad does not activate.

The key is encrypted, therefore use only the key supplied; it is not possible to activate the keypad with the key of another keypad.

5.1.3.6.7 Additional battery of the radio control (only for RADIO CONTROL version).

The battery (25) is used to operate the control panel (only radio control). A second battery is always available on the machine with its charger that keeps it charged if required. The spare battery is located in the compartment shown next to it.

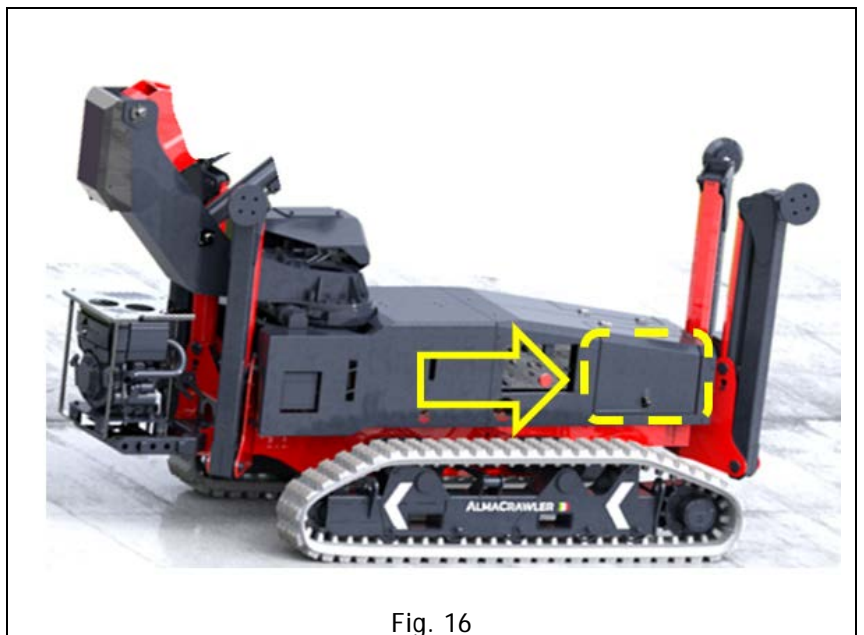


Fig. 16

5.1.3.6.8 Cable and connector (only for RADIO CONTROL version).

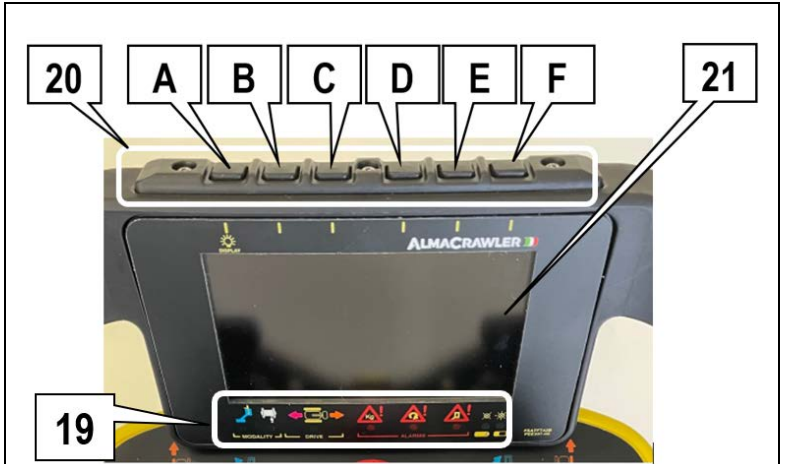
The cable (18) is supplied with the machines equipped with radio control. It is used to physically connect the control panel to the machine control system through the connector (16) in case of problems with the radio transmission and for all those occasions when, for specific regulations, the use of a radio control is not permitted.

5.1.3.6.9 Graphic display and service buttons (version with DISPLAY).

On the graphic display (21) there is information necessary during normal use of the machine on the graphic part of the display and in the area of the indicator lights (19).

There is also information necessary during service interventions, for information on errors and diagnostics, via the service buttons (20).

- A. Display brightness adjustment
- B. HOME key
- C. ERRORS key
- D. DIAGNOSTIC key
- E. SERVICE key
- F. LANGUAGES key



The image to the side shows the three main menus of the HOME screen, which adapts according to the status of the machine or of the active commands:

26A. Machine resting on the tracks.

26B. Machine during a stabilisation command.

26C. Machine resting on the outriggers.

See below for the meaning of the symbols and colours.

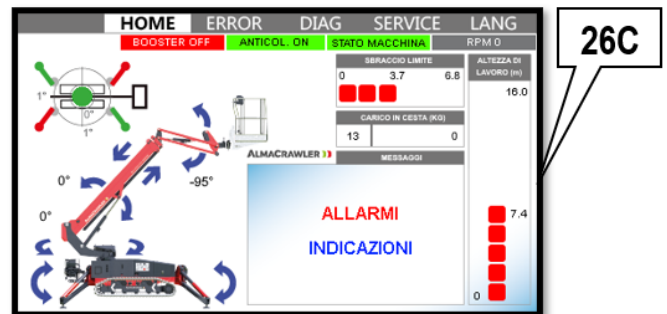
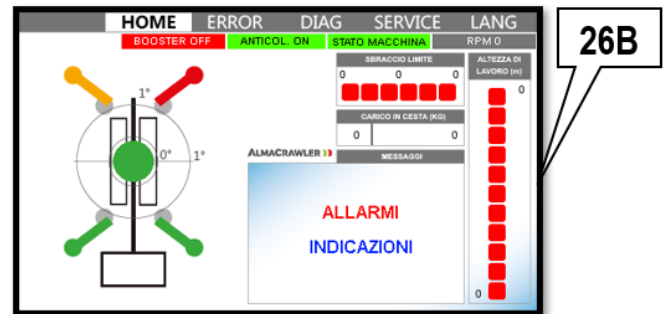
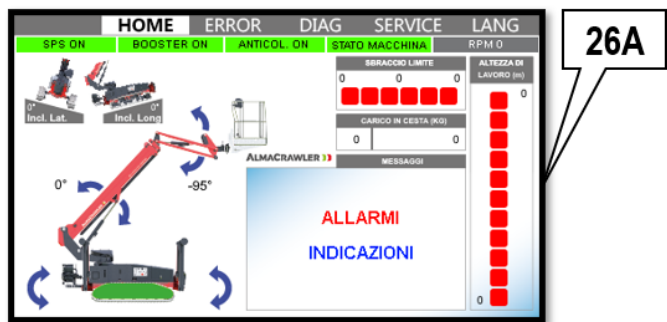















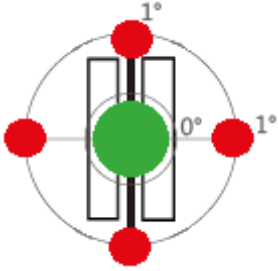
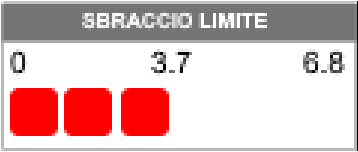








Fig.17

5.1.3.6.9.1 Main screen indications.

Symbol/Message	Function	Description
  	SPS indicator	<ul style="list-style-type: none"> - Green indicator (SPS ON): the SPS function is available, load in platform < 140 kg; - Yellow indicator (SPS LIM): the SPS function is available in a limited way, the load on the platform is between 140 kg and 200 kg (B1890) or between 140 kg and 230 kg (B1570) - Red indicator (SPS OFF): the SPS function is inhibited, platform weight > 200 kg (B1890) or >230 kg (B1570)
 	BOOSTER indicator	<ul style="list-style-type: none"> - Green indicator: "BOOSTER ON" Booster active; - Red indicator: "BOOSTER OFF" Booster not active.
 	Anti-Collision Indicator (optional)	<ul style="list-style-type: none"> - Green indicator: "ANTI-COLLISION ON" Anti-collision sensors active; - Red indicator: "ANTI-COLLISION OFF" Anti-collision sensors deactivated.
 	Machine status indicator	<ul style="list-style-type: none"> - Green indicator: "Machine Status" Machine enabled for work; - Red indicator: "Errors Status" Presence of errors in memory.
   	Thermal motor indicator/ Fuel level low	<ul style="list-style-type: none"> - Thermal motor off: the value is 0; - Machine running: the number of engine revolutions is shown. - In case of low fuel level the red indicator is shown
	Side inclination indicator	The inclination of the base carriage in the lateral direction is indicated in real time
	Longitudinal inclination indicator	The inclination of the base carriage in the longitudinal direction is indicated in real time.

	<p>Visual level</p>	<ul style="list-style-type: none"> - Green light: the levelling of the machine is within the permitted limits. There are no red lights; - Red light: If the machine is not level, a red indicator light will come on, positioned according to the machine's direction of inclination. If the machine is not levelled both laterally and longitudinally, there are two red lights at the same time. The green light is not present. <p>Note: These conditions, if they limit the movements, are highlighted in the alarm box.</p>
	<p>Limit outreach indicator</p>	<p>It updates in real time the maximum outreach obtainable by the operator with respect to the centre of the fifth wheel, depending on the work diagram.</p> <p>The example to the side shows that it is possible to obtain a working outreach of 6.8 [m]. The value of 3.7 [m] represents the outreach obtained by the operator.</p>
	<p>Indicator of the load on the platform and of the work diagram in progress</p>	<p>The example below shows:</p> <ul style="list-style-type: none"> - 13 = active work diagram; - 0 = platform load equal to 0 kg (empty platform).
	<p>Maximum work height indicator</p>	<p>It updates in real time the maximum work height that the operator can reach with respect to the ground, depending on the work diagram.</p> <p>The example to the side shows that it is possible to reach a work height of 16.0 [m]. The value of 7.4 [m] represents the work height reached by the operator.</p>
	<p>Outriggers movement enabling</p>	<p>It provides indications on the availability of the outrigger lowering/raising command</p> <ul style="list-style-type: none"> - BLUE arrow: the command is available; - If the arrow is not present, the command is inhibited; <p>N.B.: Under transport conditions it is possible to control the outriggers.</p>

	<p>Track extension (only in transport or sps mode)</p>	<ul style="list-style-type: none"> - Green tracks: the track is fully extended; - Yellow tracks: the track is not fully extended.
	<p>Outriggers status</p>	<ul style="list-style-type: none"> - Stable green: outrigger on ground, controlled with automatic stabilisation control; - Flashing green: the outrigger was resting on the ground and now it is no longer - Stable yellow: outrigger on the ground, controlled by manual control (it does not permit lifting of the platform); - Stable red: outrigger error; - Flashing red: when the condition of foot on the ground on a pair of nearby outriggers is lost.
	<p>Enabling of movements of the extendible structure</p>	<p>The arrows next to each structural part of the machine provide information on the availability of the various commands.</p> <ul style="list-style-type: none"> - BLUE arrow on steady: the movement is enabled; - Flashing BLUE arrow: indicates the first movement to be performed to restore the machine from a locked condition; - If the arrow is not present, the movement is inhibited.

5.1.3.6.9.2 Brightness adjustment key (A).

Press this key several times to adjust different brightnesses of the display.

5.1.3.6.9.3 HOME key (B).

Press this key to return to the main display screen.

5.1.3.6.9.4 ERRORS key (C).

Press this key to enter the ERROR LIST screen where any errors in progress are displayed.

Selecting the ERROR LOG page enters the memory of the recorded errors. It is possible to clear the ERROR LOG by pressing the key (A) for more than 5 seconds.

5.1.3.6.9.5 DIAGNOSTIC key (D).

Press this key to enter the DIAGNOSTIC screen to display various machine parameters (angles, pressures, loads, etc.).

Selecting the CONFIG page enters the configuration screen from which an authorised technician can check the activation status of certain optional functions and possibly activate/deactivate others.



Attention: The anti-collision sensors can only be deactivated temporarily. If the machine is switched off by means of an emergency key or mushroom button, when the machine is switched on again, the sensors will be reactivated automatically.

5.1.3.6.9.6 SERVICE key (E).

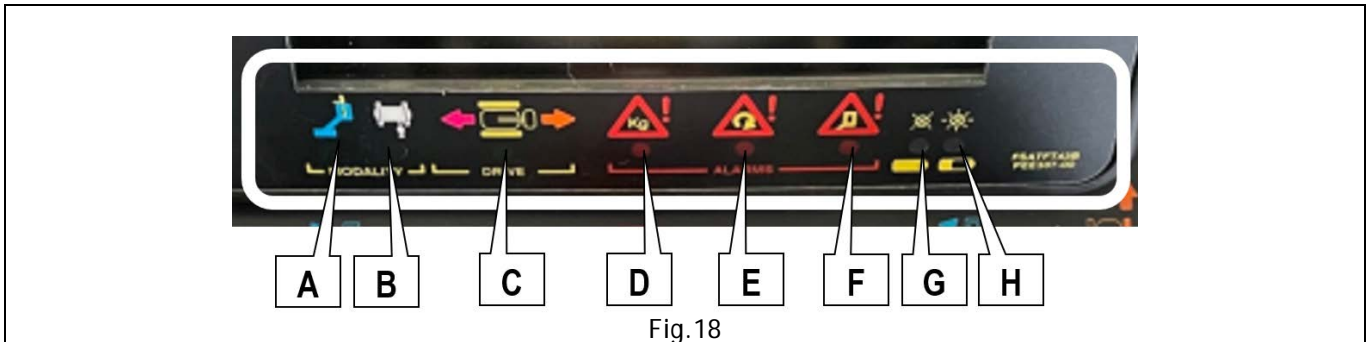
Press this key to enter the SERVICE screen to view data related to maintenance operations such as:

- Software release;
- Hours of work;
- Log of overload events;
- Register of the use of the EMERGENCY OVERRIDE system;
- Other.

5.1.3.6.9.7 LANGUAGES key (F).

Press this key to enter the LANGUAGES screen to change the language of the text messages shown on the display.

5.1.3.6.9.8 Indicator lights.



- A Steady green light on:** the platform is correctly installed on the machine. In the absence of other alarms, all the commands are enabled.

On with flashing green light (only for machines with radio control): the control panel (only for radio control) is not located in the platform control station. If there is a person on the platform, only commands in the TRANSPORTATION position are permitted; if the platform is completely empty, all the commands are permitted.

On with green light flashing at the same time as the light (B): neither the platform nor the winch are installed. If the load detection system detects a negative load (up to approximately 30 kg), all controls are still permitted; If the load on the platform is higher, the controls are only active with the platform in the TRANSPORTATION position.

- B Steady green light on:** the winch has been installed to replace the platform and the lifting and lowering movements of the load are enabled. See specifically the controls with the winch option.

On with green light flashing at the same time as the light (B): neither the platform nor the winch are installed. If the load detection system detects a negative load (approximately 30 kg), all controls are still permitted; If the load on the platform is higher, the controls are only active with the platform in the TRANSPORTATION position.

- C On with steady green light:** The machine is in transportation condition and translation is permitted.

Ignition with flashing green light: The machine is outside of the transportation condition and is enabled to move at the safety speed.

Green light off: Translation is inhibited.

- D On with steady red light:** The overload alarm is active. If the platform is out of the TRANSPORTATION position, all the controls are inhibited, and to continue working, the overload must be removed, or an emergency recovery must be carried out with the procedure described in the chapter on ground controls.

On with flashing red light: Load on the platform near the maximum limit. The controls are still possible.

Red light off: Load on the platform lower than the maximum limit.

- E On with steady red light:**
- **If the machine is on outriggers:** alarm for inclination of the fifth wheel surface plane greater than 1.5°. Only retraction manoeuvres are permitted.
 - **If the machine is in SPS mode:** alarm of carriage tilt beyond the limit established in the work diagram. Translation in the direction that increases the inclination is inhibited; translation in the opposite direction to the previous one remains enabled. The translation is completely blocked if the limit imposed by the diagram is exceeded by 3°. Only retraction manoeuvres in transport conditions are permitted.

On with flashing red light:

- **If the machine is on outriggers:** pre-alarm for inclination of the fifth wheel plane greater than 1° and less than 1.5°. There is no block to the operation of the machine.
- **If the machine is in SPS mode:** pre-alarm of carriage tilt beyond the limit established in the work diagram.

F On with steady red light: the platform has reached the maximum outreach permitted for the specific condition of the machine (track width, load on the platform, position of the rotating turret). Manoeuvres that increase the outreach are inhibited; manoeuvres that reduce the outreach are permitted.

On with flashing red light: the platform has reached the maximum outreach permitted for the specific condition of the machine (track width, load on the platform, position of the rotating turret). The movement in progress slows down.

G Green light (G) and red light (H) both off: The control panel (radio control) is off.

Green light (G) flashes quickly and red light (H) off: The control panel (radio control) does not communicate with the receiving unit on the base carriage.

Green light (G) flashes slowly: The control panel (radio control) is working correctly.

H When the red light (H) is activated, the acoustic alarm inside the control panel is active at the same time.

Functions of the red light (H) when the control panel starts:

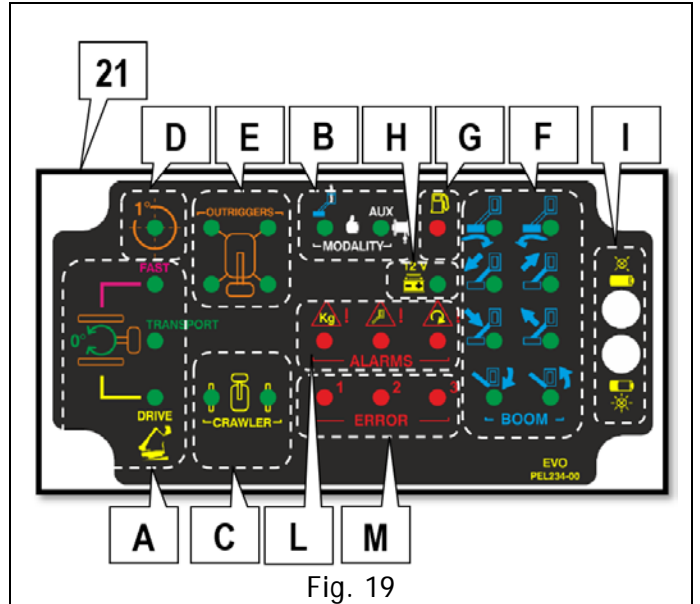
- **Red light (H) flashes for a long time:** the emergency stop button is pressed.
- **Red light (H) makes two long flashes:** one or more side controls of the control panel are active upon start-up.
- **Red light (H) makes three long flashes:** the battery of the radio control is very low.
- **Red light (H) flashes four times:** a joystick or control switch is active upon start-up.

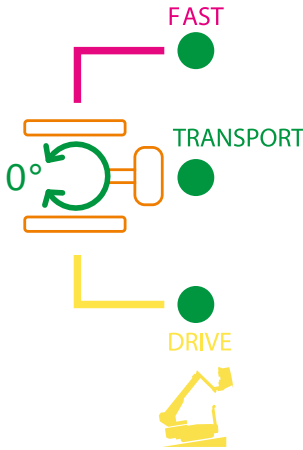
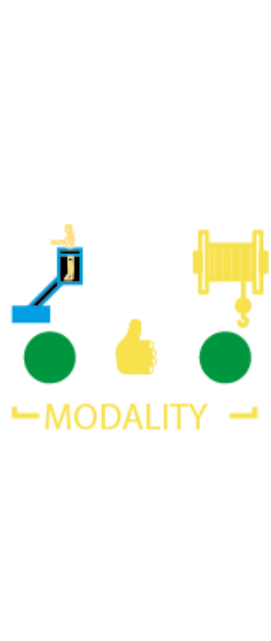




Other functions of the red light (H) with the control panel already on:


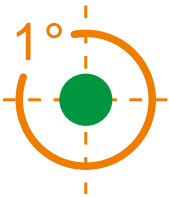
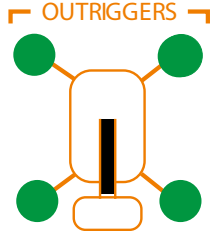
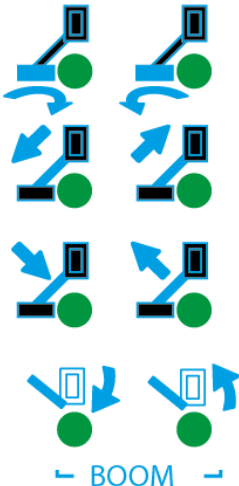
- **Red light (H) flashes for 3.5 minutes and the green light (G) flashes:** the radio control battery is not sufficiently charged or the control panel has been on for eight hours. The signal is followed by switching off of the control panel.
- **Red light (H) flashes for a long time:** generic malfunction of the control panel.












5.1.3.6.10 LED display (version with LED display).










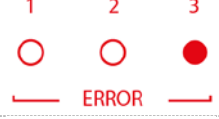
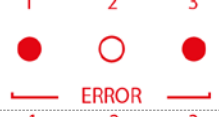



The LED display (21) shows the necessary information during normal use of the machine and information necessary during service interventions, for information on errors and diagnostics, by means of a combination of flashes of the ERROR LEDs.








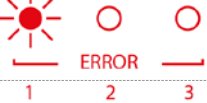










	Identification	Function and Status	Function description
A D R I V E		FAST	<ul style="list-style-type: none"> - Fixed green LED: Appears when the "FAST DRIVE" button is pressed; - LED off: The "FAST DRIVE" mode is deactivated.
		TRANSPORT	<ul style="list-style-type: none"> - Fixed green LED: The machine is in transport conditions; - LED off: The machine is not in transport conditions.
		DRIVE	<ul style="list-style-type: none"> - Fixed green LED: Translation with machine in transport configuration; - Green LED flashing: The machine is beyond the transport condition and translation at reduced speed is enabled; - LED off: The machine cannot move.
B M O D A L I T Y			<ul style="list-style-type: none"> - Fixed green LED: Platform presence detected
			<ul style="list-style-type: none"> - Fixed green LED: The presence of the winch has been detected.
			<ul style="list-style-type: none"> - Green LED flashing: Radio control detected outside the control station.
			<ul style="list-style-type: none"> - Flashing green LEDs: Neither the platform nor the winch is present. If the load on the platform is less than -30kg all overhead movements are permitted. If the weight is exceeded, the machine can only operate in transport conditions).

		Identification	Function and Status	Function description
C	C R A W L E R		Track extension lights	<ul style="list-style-type: none"> - Fixed green LED: Extended track; - Green LED flashing: Intermediate track; - LED off: Track closed. <p>Note: The work diagram is determined based on the extension position of both tracks.</p>
D	I N C L I N A T I O N		Fifth wheel surface level	<ul style="list-style-type: none"> - Fixed green LED: machine with inclination of the frame within the expected limits; - Flashing green LED: machine with frame inclination beyond the limits envisaged on a single axis; - LED off: machine with frame tilting beyond the limits envisaged.
E	O U T R I G G E R S		Outrigger lights	<p>Each light represents the foot of an outrigger, in relation to the position of the platform.</p> <ul style="list-style-type: none"> - Fixed green LED: the foot is correctly resting on the ground.
F	B O O M		Motion indication lights	<ul style="list-style-type: none"> - Fixed green LED: The movement represented is enabled; - LED off: The movement represented is disabled; - Green LED flashing: The movement is suggested.

		Identification	Function and Status	Function description
G	P O W E R S U P P L Y	 	Fuel Level	<ul style="list-style-type: none"> - Fixed red LED: Low fuel level, refuel; - LED off: Fuel level full.
		  FIXED LIGHT  100% FLASHING LIGHT  60% OFF  20%	Battery status level	<ul style="list-style-type: none"> - Fixed red LED: Battery level 100% and 61%; - Flashing red LED: Battery level between 60% and 21%; - LED off: Battery level below 20%.
H	1 2 V B A T T E R Y	12 V  	12V endothermic motor starter battery	<ul style="list-style-type: none"> - Fixed green LED: 12V battery voltage; - Green LED flashing: Battery voltage between 12V and 9V; - LED off: Battery voltage less than 9V.
I	B A T T E R Y	P O W E R   A L A R M	Lights relating to the operating status and battery of the radio control	Refer to the radio control manual.

	Identification	Function and Status	Function description
ALARMS		 Overload light	<ul style="list-style-type: none"> - Fixed red LED: Overload exceeded; - Flashing red LED: Overload to the maximum limit; - LED off: Load below the maximum limit.
		 Outreach indicator light	<ul style="list-style-type: none"> - Fixed red LED: If the maximum outreach is reached; - Flashing red LED: The pre-alarm threshold is entered; - LED off: The movements are enabled.
		 Inclination alarm light	<ul style="list-style-type: none"> - Fixed red LED: The machine is tilted beyond the permitted limits. Hazardous manoeuvres are inhibited; retraction manoeuvres are permitted; - Flashing red LED: The machine is close to reaching the permitted tilt limits. All manoeuvres are still permitted; - Red LED off: The machine is within the tilt limits.
ERROR		There are no errors.	
		Indicators flashing when the EMERGENCY OVERRIDE button is activated from the ground control position. The safety functions of the machine are not active.	
		CAN network communication error.	
		<ul style="list-style-type: none"> - Telescopic boom sensor redundancy error; - No signal from the telescopic boom sensor 1; - No signal from telescopic boom sensor 2. 	
		<ul style="list-style-type: none"> - Redundancy error on turret rotation encoder; - No signal from turret rotation encoder 1; - No signal from turret rotation encoder 2. 	
		<ul style="list-style-type: none"> - Redundancy error on left track widening sensor; - No signal from left track widening sensor 1; - No signal from sensor 2 left track widening. 	
		<ul style="list-style-type: none"> - Redundancy error on right track widening sensor; - No signal from right track widening sensor 1; - No signal from sensor 2 right track widening. 	
		<ul style="list-style-type: none"> - Carriage angle sensor redundancy error; - No signal from carriage angle sensor 1; - No signal from carriage angle sensor 2; 	
		<ul style="list-style-type: none"> - Redundancy error levelling angle sensor; - No signal from levelling angle sensor 1; - No signal from levelling angle sensor 2; 	
		<ul style="list-style-type: none"> - Jib angle sensor redundancy error; - No signal from Jib angle sensor 1; - No signal from sensor 2 Jib angle. 	

		Identification	Function and Status	Function description
M	E R R O R		<ul style="list-style-type: none"> - Basket angle sensor redundancy error; - No signal from the basket angle sensor 1; - No signal from basket angle sensor 2. 	
			<ul style="list-style-type: none"> - Basket load sensor redundancy error; - No signal from the basket load sensor 1; - No signal from the basket load sensor 2. 	
			<ul style="list-style-type: none"> - Boom angle sensor redundancy error; - No signal from boom angle sensor 1; - No signal from boom angle sensor 2. 	
			<ul style="list-style-type: none"> - Upper anti-collision sensor not operating. - Right anti-collision sensor not in operation; - Left anti-collision sensor not in operation. 	
			<p>No signal from the board on the platform</p>	
			<p>Low engine oil pressure.</p>	
			<p>Engine water temperature too high.</p>	
			<p>Ground control position selectors locked</p>	
			<p>Pedal Error, Pressed in start-up.</p>	
			<p>Internal error in main control unit EPROM memory.</p>	
			<p>Starter battery voltage less than 9V.</p>	
			<p>Starter battery voltage greater than 16V.</p>	
			<p>Turret or boom rotation valve error</p>	
			<p>Extension outreach/retraction valve error</p>	
			<p>Error exceeding of maximum rotation limit</p>	
			<p>Low battery charge percentage / Low fuel level</p>	



Attention: The errors are listed in order of danger; in the event that two errors occur, the one deemed most serious is displayed.

5.1.4 Operator anti-crushing kit (OPTIONAL).

Optionally, an ultrasonic sensor can be installed at the top of the platform as shown in the figure. This accessory, adjusted at the factory, detects obstacles at a vertical distance of less than 1.5 m from the handrail and warns the operator of the danger of crushing by means of an appropriate warning on the control panel in addition to inhibiting the ascent command active at that time. All the reverse manoeuvres are permitted.

Keeping the ascent command activated with the collision alarm active, the command is activated after approximately three seconds.



Attention: what is described does not represent 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 operating with the machine.



Fig. 20

5.1.5 Anti-collision kit (OPTIONAL).

Optionally, a pair of ultrasonic sensors can be installed at the bottom of the platform as shown in the figure. This accessory, adjusted in the factory, detects obstacles at a distance of less 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 panel. The commands remain active.



Attention: what is described does not represent 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 operating with the machine.



Fig. 21

5.2 Control panel on the ground.

The ground control panel is located on the chassis. It contains the electronic control unit that manages all the functions of the machine and has the function of:

- Switching the machine on and off;
- Selecting the enabled control position (on the ground or on the platform);
- Moving the extendible structure to return the platform to the ground in the event of an emergency or for maintenance operations;
- Connecting the cable control console to operate with the winch (optional)



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

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

At the end of work, switch off the machine by turning the main key to position "0" and remove the key itself in order to prevent the machine from being used in an unauthorised manner.

Access to the electronic control unit is reserved for specialist personnel for maintenance and/or repair operations. Only access the electronic control unit when the machine is disconnected from any external power supplies.

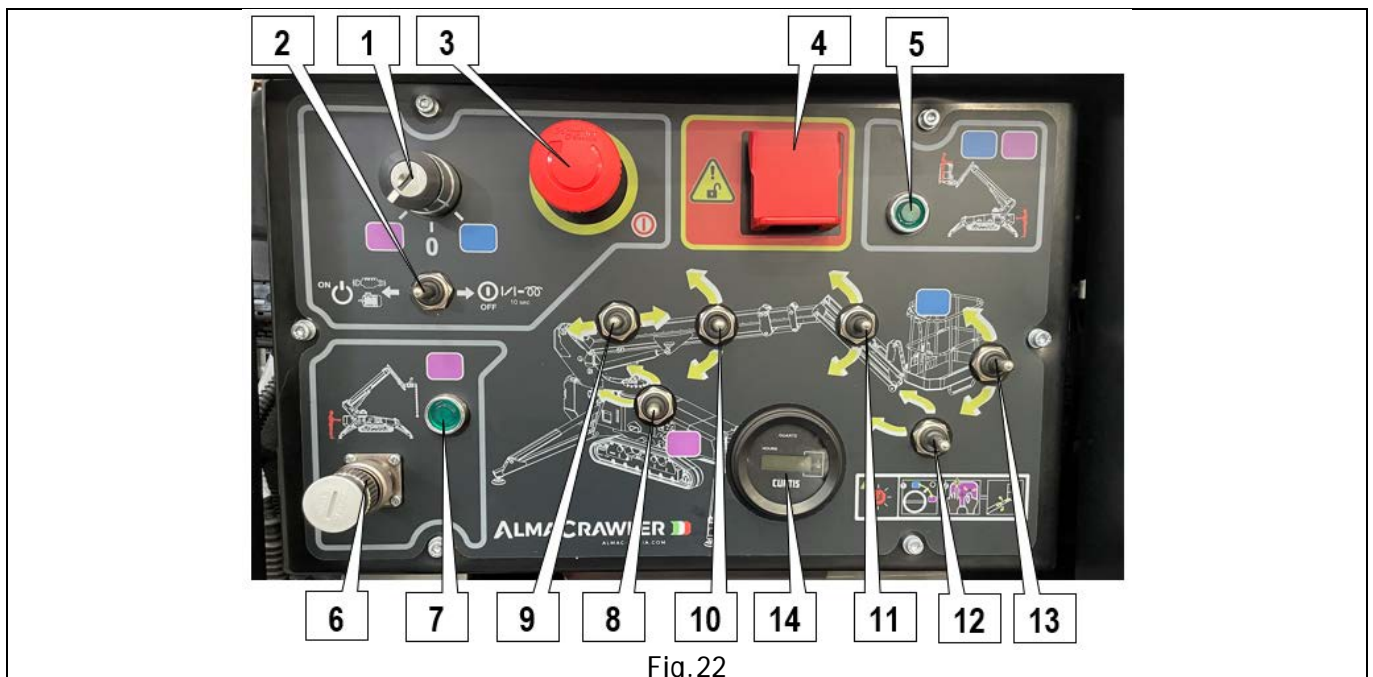


Fig.22

1. MAIN KEY SWITCH/CONTROL POINT SELECTOR
2. THERMAL AND ELECTRIC MOTORS ON/OFF/PREHEATING SELECTOR / ENABLE FUNCTION
3. EMERGENCY STOP BUTTON
4. EMERGENCY OVERRIDE BUTTON WITH SEALED PROTECTION
5. PLATFORM PRESENCE INDICATOR LIGHT
6. CONNECTOR FOR USE WITH WINCH KIT (OPTIONAL)
7. WINCH PRESENCE INDICATOR (OPTIONAL)
8. TURRET ROTATION SWITCH
9. TELESCOPIC EXTENSION/RETRACTION SWITCH

10. BOOM UP/DOWN SWITCH
11. JIB UP/DOWN SWITCH
12. PLATFORM ROTATION SWITCH
13. PLATFORM LEVELLING CORRECTION SWITCH
14. HOUR METER

5.2.1 Main key switch/control panel selector switch.

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

- Switch on the machine by selecting one of the two control stations:
 - Control panel on the platform with key rotated on the BLUE box. Stable position with the possibility of removing the key (for machines put into service outside Europe, the key may not be removable in this position);
 - Control panel on the ground with key turned on the PURPLE box. Stable position with non-removable key.
- Turn off the control circuits by turning the key to the "0" position. Stable position with possibility to extract the key.



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

At the end of work, switch off the machine by turning the main key to position "0" and remove the key itself in order to prevent the machine from being used in an unauthorised manner.

5.2.2 ON/OFF/Thermal and electric motor preheating selector/ENABLE function.

This selector switches on/activates the motor necessary to obtain the power supply of the hydraulic control circuits.

- To switch on the combustion/electric engine select ON;
- To switch off the combustion/electric engine select OFF;

Once the motor has been turned on, to enable the ground controls switches, the ENABLE switch must first be operated and held in the ON position for the duration of the movement. When the switch is released, the control stops.

NOTE:

- Selecting and keeping the selector off activates the pre-heating glow plugs of the endothermic motor (hold the command for approximately 10 seconds);
- If the machine is connected to the mains, the electric motor is activated (If present); otherwise the endothermic motor is started.
- When the machine is powered by an electric motor, if no signal is received after 5 minutes, the electric motor switches off.

5.2.3 Emergency stop button.

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

5.2.4 Emergency Override button with sealed protection.

This button (protected with a seal) is used for the emergency recovery of an incapacitated operator through the use of the controls of the ground control panel, temporarily disabling certain safety controls (e.g.: incapacitated operator and machine blocked due to overload).

To activate the button it is necessary to break the locked seal, open the lid and press it. Please refer to the description of the manual emergency controls addressed in the appropriate chapter of this manual.



Attention:

This button is only used to recover an incapacitated operator in the event that the ground control panel is not enabled due to certain active safety functions.

This function requires the use of a tool for the removal of the protection. This removal represents an assumption of responsibility by an operator on the ground to move the platform in the absence of certain safety controls.

Activation of this function is timed in such a way as to avoid abuse by the operator. After the pre-set time has elapsed, the button must be pressed again.

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

5.2.5 Platform presence light.

If this light is on steady, it means that the platform is correctly installed and the machine can only be used to lift persons.

If this light flashes, the platform is not installed correctly.

If this light flashes at the same time as the winch presence light, it means that neither the platform nor the winch is present on the machine.

5.2.6 Connector for use with winch kit (OPTIONAL).

It is only possible to connect to the ground control panel with the cable console when the WINCH KIT is installed (Optional) and the key selector is turned to the PURPLE position.

If the machine is supplied with a RADIO CONTROL (optional), the WINCH KIT can only be used if the key selector is in the BLUE position.

5.2.7 Winch presence indicator (OPTIONAL).

If this light is on with a fixed light, it means that the WINCH KIT is installed (OPTIONAL) and the machine can only be used for the lifting of materials

If this light flashes, it means that the winch is not installed.

If this light flashes at the same time as the platform presence light, it means that neither the platform nor the winch is present.

5.2.8 Hour meter.

An electronic meter that displays the operating hours of the endothermic motor (EVO version) and the 48V electric motor (ELC-LTH version).

5.2.9 Extendible structure movement switches.

The various switches positioned on the machine image are used to move the extendible structure (when the main key is in the PURPLE position) respecting the arrows shown on the image. Once the motor has been turned on, to enable the ground controls switches, the ENABLE switch must first be operated and held in the ON position for the duration of the movement. When the switch is released, the control stops.



Attention: The use of ground controls is reserved for emergency situations in order to recover the platform.

It IS FORBIDDEN to use the ground control panel as a workstation with personnel on board the platform.

5.3 Access to the platform.

The access position is the only position where persons and materials are allowed to board and disembark from the platform.

Procedure to access the platform:

- Raise the input rod (1);
- Using the uprights get on the platform (2);
- Drop or lower the inlet rod (1);
- Attach the safety harness to the hooks on the platform (3).



Attention: Get into/out of the basket with your eyes always facing the machine.

It **IS FORBIDDEN** to lock the entry bar (1) in order to keep access to the platform open. Correct use of the machine requires that the entry bar 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.

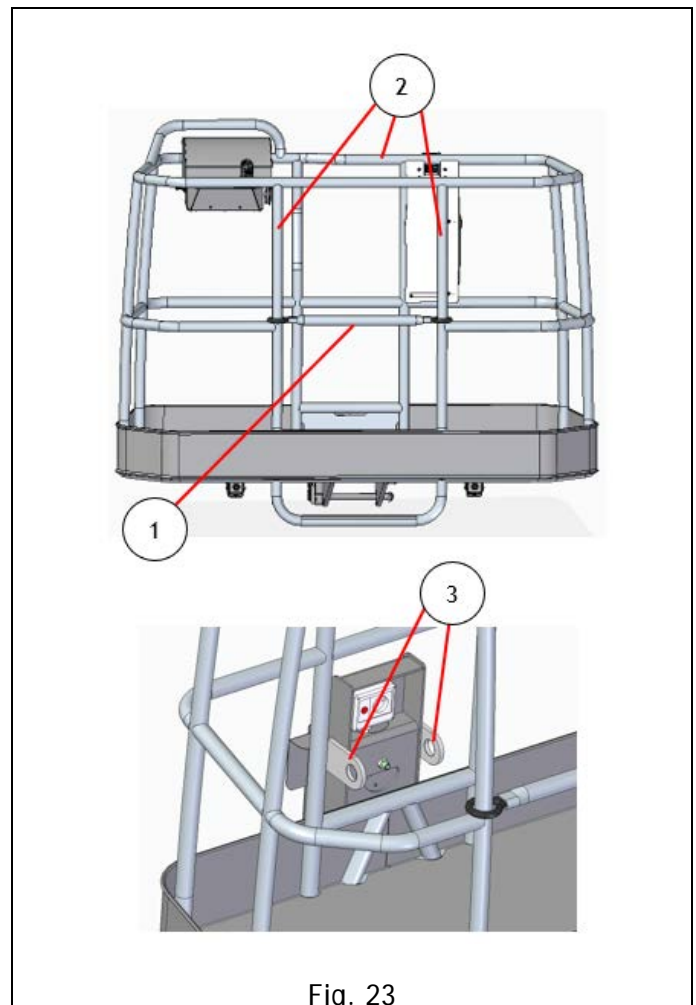


Fig. 23

5.4 Machine start-up.

To start the machine the operator must:

- Release the emergency stop button (3) of the ground control panel, turning it clockwise by a quarter of a turn;
- Turn the key selector (1) of the ground control panel to the position represented by the blue box (platform controls);
- Remove the ignition key and give it to a responsible person instructed on the use of emergency recovery commands who remains on the ground (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 control panel, release the emergency stop button (4) by turning it clockwise by a quarter of a turn;
- Press the START button (5) to operate the control panel



Fig. 24

5.4.1 Starting the single-phase electric or thermal motor (EVO-ETS versions).

For the EVO-ETS versions: It is now possible to operate with the machine using the thermal motor or the single-phase electric motor (if present) based on the instructions in the previous chapters. Check the fuel level before operating with the thermal engine.

To power the single-phase electric motor it is necessary to connect an electrical cable to the socket on the base carriage in the area indicated in the image to the side.

It should be noted that with a single-phase electric motor all movements are slower than normal speeds with a thermal motor.

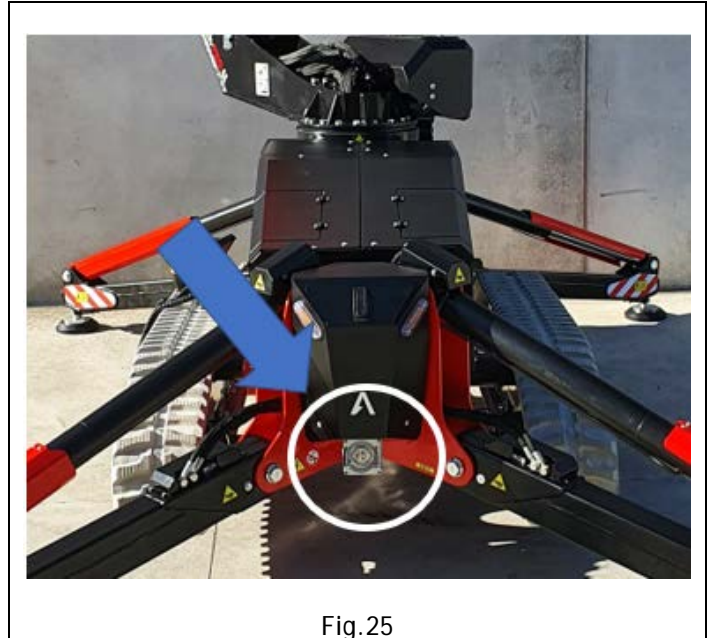


Fig.25



When the single-phase electric pump is connected to the mains, always check the position of the power cable during movements.

Connect to an electrical network equipped with all the protections according to the current safety regulations, and that has the following characteristics (depending on the country of commissioning of the machine):

- Supply voltage 115-230V AC $\pm 10\%$ single-phase;
- Frequency 50÷60 Hz;
- Earthing line connected;
- Efficient magneto-thermal and differential switch device;

The following should also be remembered:

- Do not use cables or extensions longer than 5 meters;
- Do not use rolled up cables or extensions;
- Use a cable of appropriate cross-section (minimum 3x2.5 mm²);

5.4.2 Starting the electric motor (LTH versions).

For the LTH versions: It is now possible to operate with the machine using the electric motor based on 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.

If necessary, the operator can control the emergency shutdown of the machine both from the control panel on the platform and from the ground control panel by pressing one of the red emergency buttons present (see image to the side).

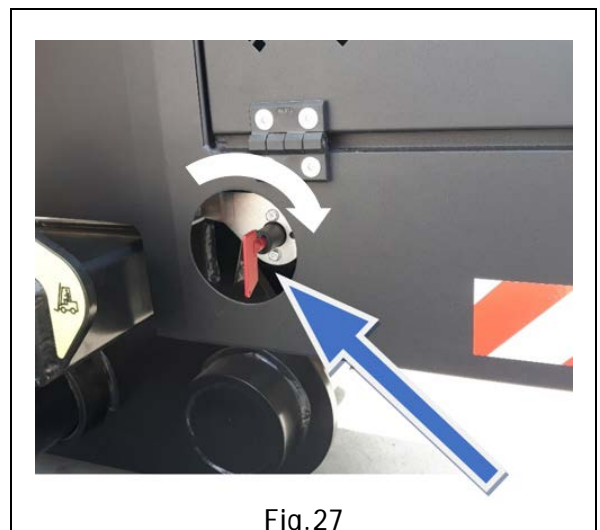
Reactivating an emergency stop after operating it, to resume working with the machine, repeat the commands described in the MACHINE START-UP chapter.



5.6 End of work.

Once use of the machine is completed or if the machine is left unattended for significant periods (long work breaks, lunch break, end of the working day) after stopping the machine according to the instructions in the previous paragraphs:

- Always bring the platform to the access conditions (booms completely lowered and turret aligned with the direction of travel of the machine);
- Press the stop buttons of the control panel on the platform and on the ground control panel);
- Turn the main key to the OFF position and remove the key to prevent unauthorised persons from using the machine;
- Disconnect the starter battery by turning the power switch shown on the side clockwise;
- Refuel or recharge the battery depending on 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 Removal and replacement of the platform/winch.

The machines can accommodate different types of platforms or a winch (only prepared machines) to be used to lift materials. It is also possible to quickly remove the platform to move the machine through confined spaces or for transportation requirements.

These accessories (interchangeable platforms and winch) are equipped with a quick release/coupling device and, for the platforms, the system is controlled by a sensor.

To disassemble the platform:

- Make sure that the platform is completely free from materials and persons, in a low position;
- Remove the control panel;
- Disconnect the connector (1) located under the platform;
- (*) Support the platform with a suitable lifting device in preparation for its removal;
- Remove the cotter pin (2) that retains the pin (4);
- Move the lever (3) upwards, then turn the pin knob (4) and remove the pin (4);
- Lift the platform and place it on the ground or on a raised surface.

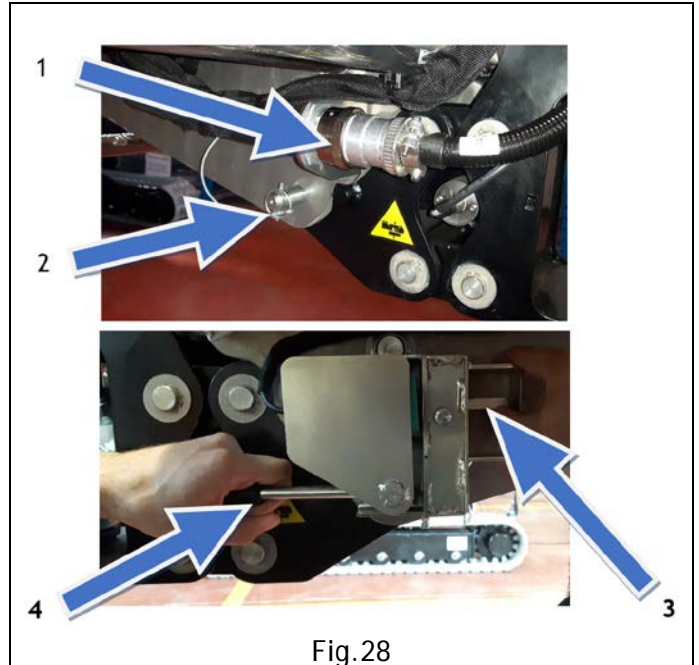


Fig.28

(*) It is only possible to remove the platform without the aid of a lifting device with the aid of two persons. The weight of the accessories is indicated in the TECHNICAL DATA chapter.

For machines where the winch can be installed, follow the instructions in the accessory installation manual.

6 LOADING AND TRANSPORTATION.

Before transporting the machine between different workplaces with a means of transport, it is necessary to ascertain the limits of space and transportable weight on the basis of the road traffic regulations in force. To reduce the transportation size of the machine it is possible to remove the platform (see instructions in the previous chapters).

6.1 Loading using ramp.

It is possible to load the machine on the platform of the means of transport by means of loading ramps, using the normal transfer commands and operating the machine from the control panel on the platform (see chapter describing the commands).

When the ramps are particularly steep, it is advisable to remove the control panel from the control panel on the platform and operate the machine on foot, placing yourself in a safe condition with respect to a possible overturning of the machine and paying attention to the moment of change of gradient, appropriately reducing the speed in order to minimise the oscillations of the machine.



During loading and unloading operations:

- To avoid touching the ground with the bottom of the platform, it is necessary to raise the main boom slightly, checking that the machine remains in TRANSPORTATION conditions. Do not lift the Jib!!
- Do not try to load/unload the machine when it is out of TRANSPORTATION conditions (see instructions on the control panel).
- Remain at a safe distance from the machine using the length of the spiral control cable.
- Operate the machine at a particularly low speed, also using the controls that allow a straight direction of travel (see chapter describing the controls).

6.2 Loading with forklift truck.

It is possible to load the machine on the platform of the means of transport using a forklift truck of appropriate capacity (see the weight of the machine in the TECHNICAL DATA chapter) by forking the machine in the points indicated by the adhesive plates located on the machine and represented to the side.

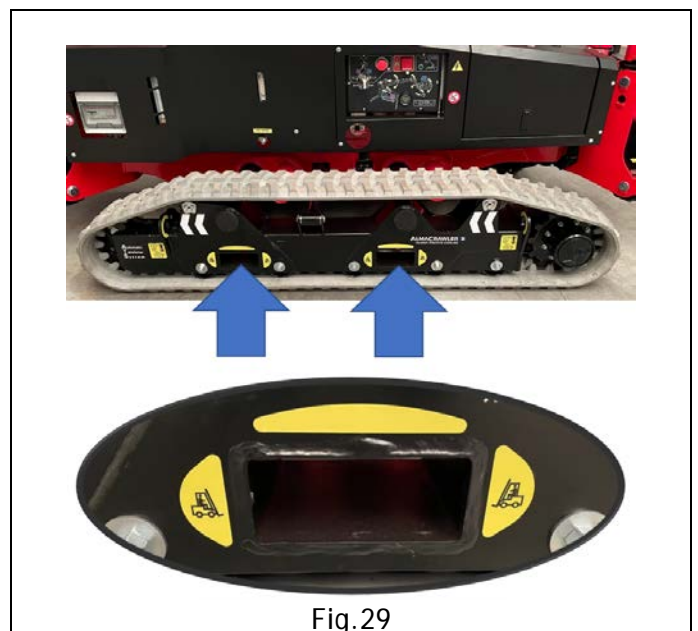


Fig.29

6.3 Loading with crane.

It is possible to load the machine on the platform of the means of transport using a crane. Use four lifting straps or chains 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 on the machine and represented to the side.

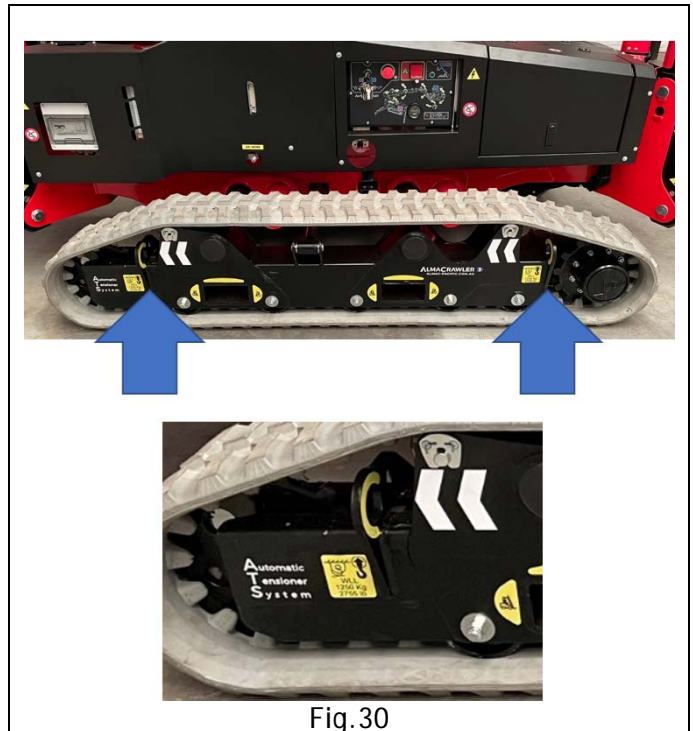


Fig.30

7 EMERGENCY CONTROLS.

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



The operator who uses the emergency controls must always check that the movements of the machine take place in accordance with the controls operated. In the event that uncontrolled movements are activated, proceed directly with the emergency controls by means of a 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 by using the controls on the platform, a qualified operator in possession of the main key (for machines intended for AUSTRALIA and NEW ZEALAND the key is always present on the key selector), can operate the emergency controls of the ground control panel.

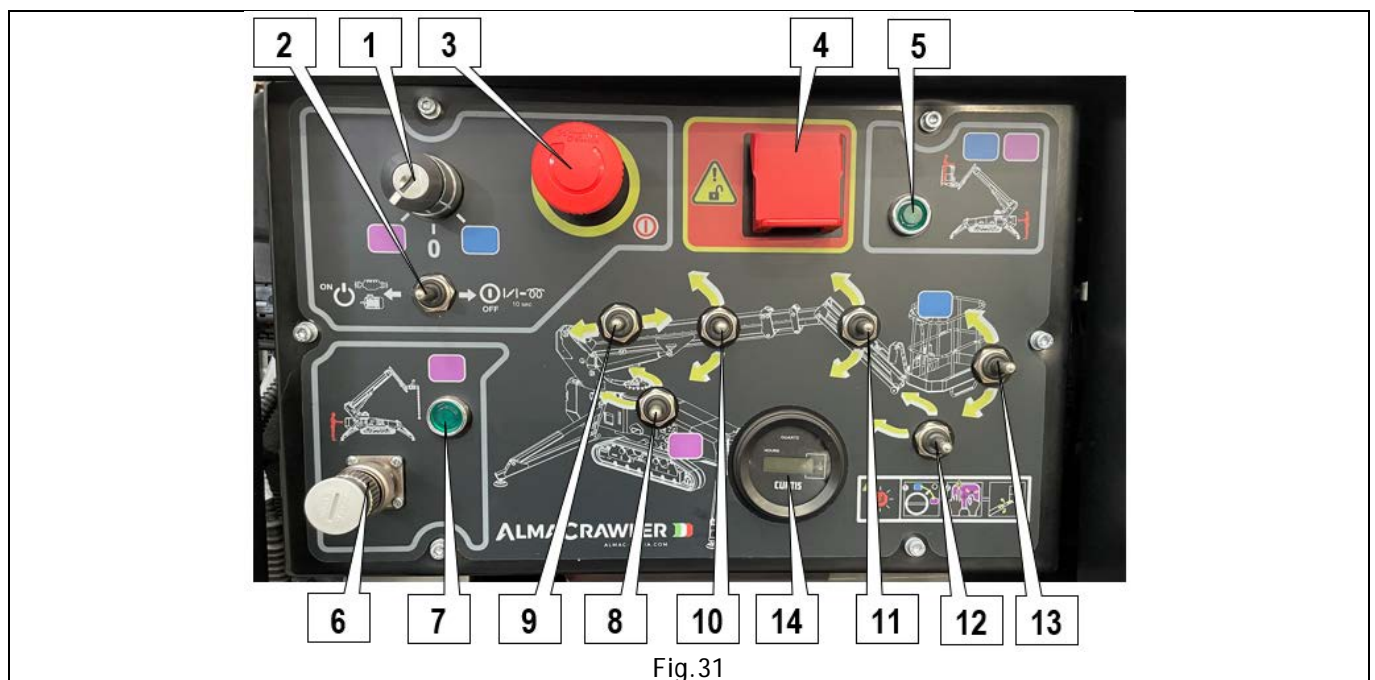


Fig.31

To use the ground control panel:

- Turn the key (1) to the GROUND CONTROL position (purple box);
- Activate the power supply (electrical or thermal depending on the type of machine) using the selector (2);
- Operate the controls of the extendible structure (8-9-10-11-12) as described in the chapter on the GROUND CONTROL PANEL.



During use of the ground controls described in this procedure all the safety functions are active

7.1.2 Emergency recovery of 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 controls on the platform and with the simultaneous presence of an overload alarm, the machine functions are locked.

A qualified operator in possession of the main key (for AUSTRALIA and NEW ZEALAND machines the key is always present on the key selector), can operate the emergency controls of the ground control panel.



To use the ground control panel:

- Turn the key (1) to the GROUND CONTROL position (purple box);
- Activate the power supply (electrical or thermal depending on the type of machine) using the selector (2);
- Remove the sealed lock of the EMERGENCY OVERRIDE button lid (4), open the protection and press the button, keeping it activated. An acoustic signal with continuous sound is activated and the safety functions are not active;
 - At the same time as operating the button (4), use the controls of the extendible structure (8-9-10-11-12) as described in the chapter on the GROUND CONTROL PANEL. Each command operated has a maximum duration of 5 seconds, after which it is necessary to repeat the procedure described above to continue moving the extendible structure.



DANGER OF TIPPING OVER!

During use of the ground controls described in this procedure the following safety functions are deactivated: load control; outreach control; tilt control. The operator on the ground must therefore retract with the telescopic boom, then lower the jib completely before activating other movements. The use of this procedure is recorded in the machine control system.

7.1.3 Emergency recovery with manual pump.

7.1.3.1 Emergency recovery of the operator.

In case of power failure, to recover a trapped operator a qualified operator who is on the ground must use the manual controls activated by means of a manual pump according to the mode described below.

The manual emergency controls are located on the rotating turret:

1. Manual diverter;
2. Manual pump;
3. Manual pump lever;
4. Hydraulic lock closing door;
5. Hydraulic lock;
6. Red solenoid valve activation fork

To activate a manual command:

- a. Remove the lever (3) and insert it on the manual pump (2);
- b. Open the closing door (4) to make the hydraulic lock (5) accessible;
- c. Turn the manual diverter (1) to position (A) to activate the manual EXTENSION/RETRACTION control, or to position (B) to activate the manual controls of all other boom movements.
- d. Activate the solenoid valves (see instructions below) and, at the same time, operate the lever of the manual pump, visually checking the correctness of the movement, always activating the RETRACTION of the telescopic boom as the first manoeuvre.

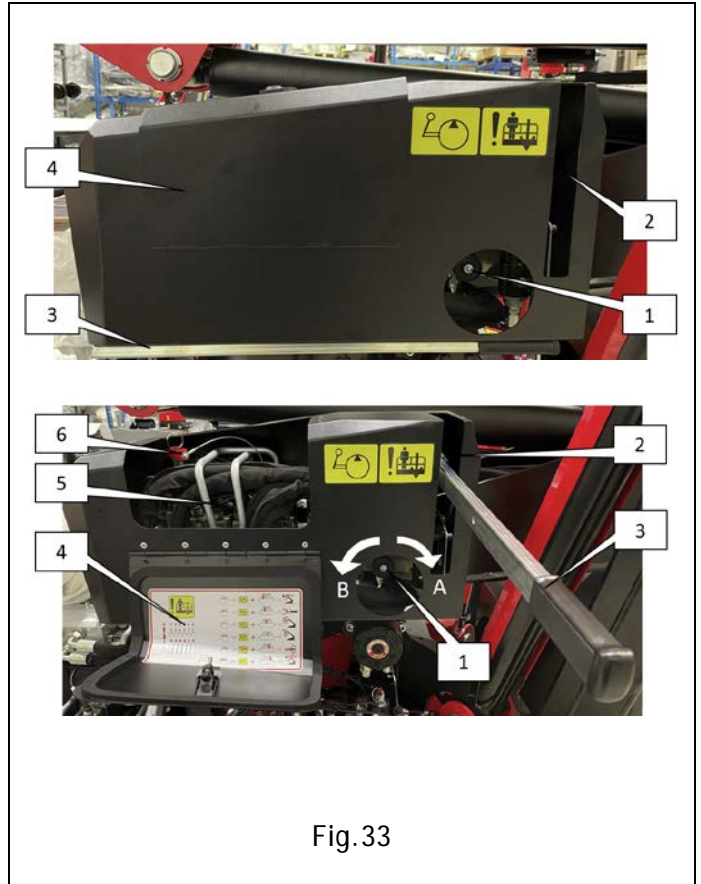


Fig.33

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

To activate the movements indicated with (A), simply press the manual controls of the valves while activating the manual pump.

To activate the movements indicated with (B) it is necessary to use the red fork (6): pull the manual control ring outwards with force, and insert the red fork (6) as shown in the image, then activate the manual pump.

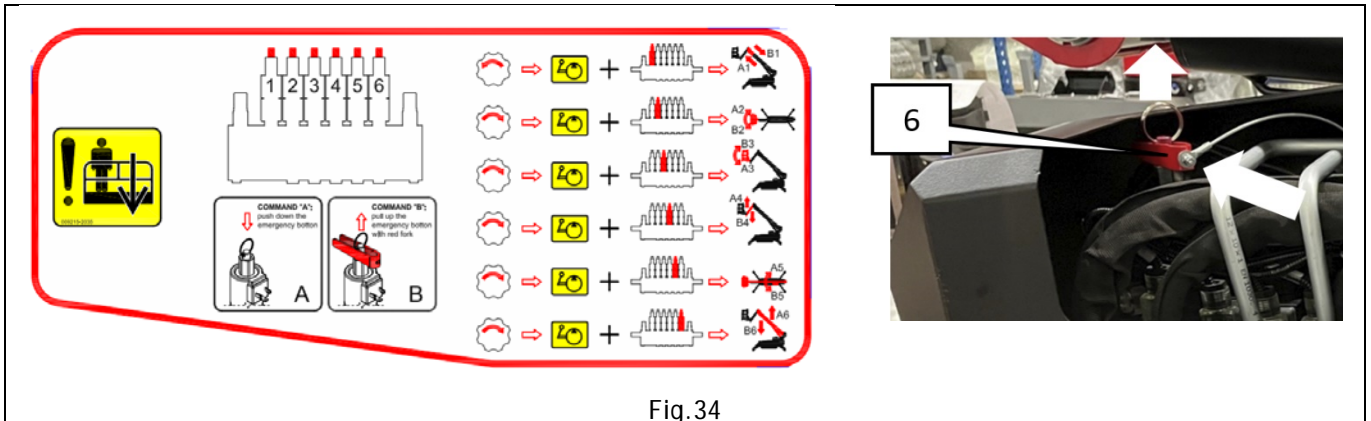


Fig. 34



DANGER OF TIPPING OVER!

During use of the emergency controls with manual pump, all the safety functions are deactivated. The operator on the ground must therefore retract with the telescopic boom, then lower the jib completely before activating other movements.

Activate only one command at a time.

Some manual operating devices are normally sealed and the seal must be broken before operating with manual emergency devices. At the end of the operation, return the machine to its original condition, also restoring the missing seals.

7.1.3.2 Emergency recovery of the outriggers.

In case of power failure, to return the outriggers to the raised position it is necessary for a qualified operator on the ground to use the manual controls activated by means of a manual pump according to the mode described below.

The manual emergency controls are located on the base carriage:

1. Manual diverter;
2. Manual pump;
3. Manual pump lever;
4. Hydraulic lock closing doors;
5. Main hydraulic lock
6. Hydraulic diverter locks;
7. Red solenoid valve activation fork.

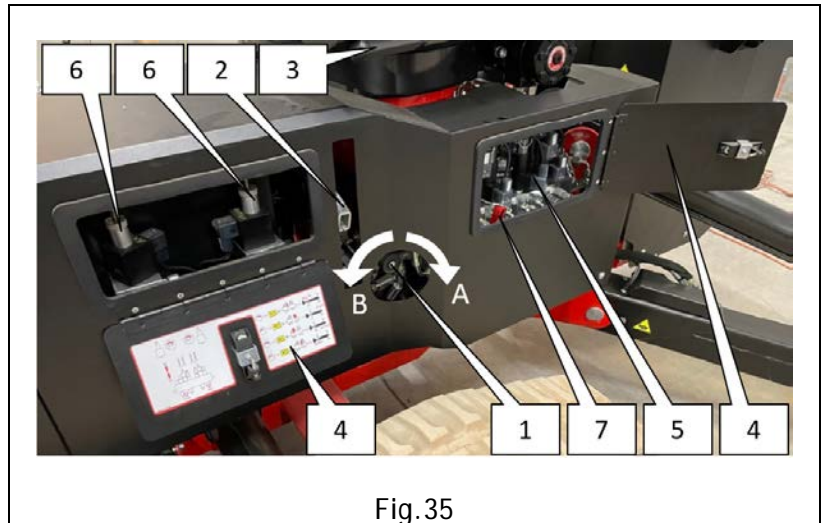


Fig.35

To activate the manual lifting of the outriggers:

- a. Remove the lever (3) and insert it on the manual pump (2);
- b. Open the closing doors (4) to make the hydraulic locks (5) accessible (6);
- c. Turn the manual diverter (1) to position (A) to activate the manual controls of the FRONT RIGHT and REAR LEFT outriggers, or to position (B) to activate the manual controls of the FRONT RIGHT and REAR LEFT outriggers
- d. Activate the solenoid valves (see instructions below) and, at the same time, operate the manual pump lever, visually checking the correctness of the movement.

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

To activate the solenoid valves EV10 and EV9 it is necessary to press and rotate the manual control clockwise; to activate the valves (6) it is necessary to tighten the upper threaded end completely; to activate the movements indicated with (A) simply press the manual controls of the valves while activating the manual pump.

To activate the movements indicated with (B) it is necessary to use the red fork (7): pull the manual control ring outwards with force, and insert the red fork (7) as shown in the image, then activate the manual pump.

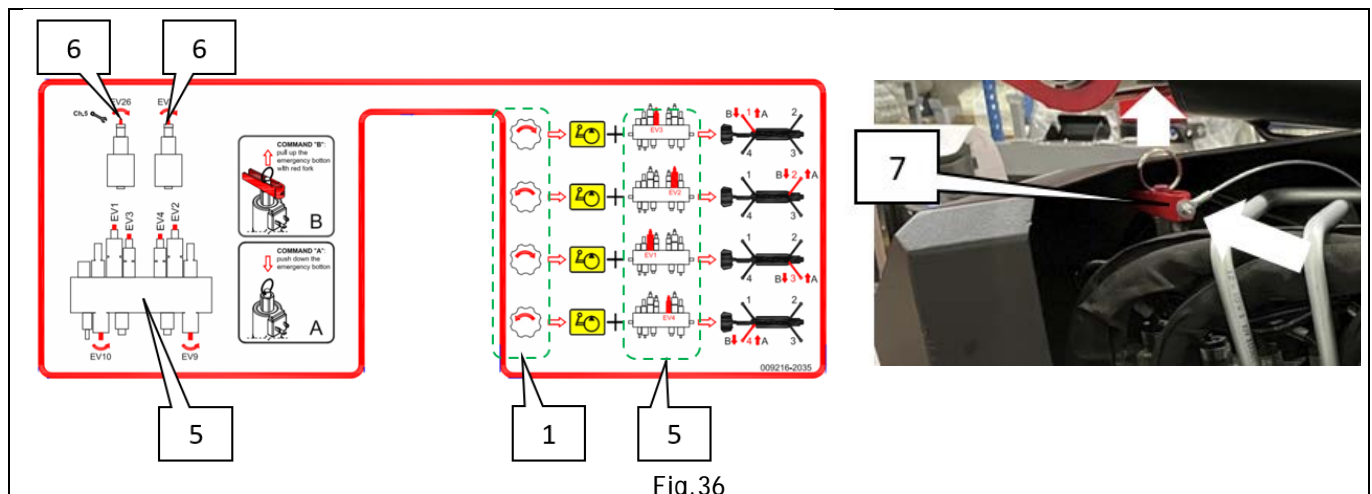


Fig.36

**DANGER OF TIPPING OVER!**

During use of the emergency controls with manual pump, all the safety functions are deactivated. The operator on the ground must keep the movement of the machine under control by checking its stability, alternating activation of the outriggers to ensure safe lifting of the machine.

Only activate the emergency controls of the outriggers when the boom is completely closed (boom down, telescopic boom retracted, jib lowered) and aligned with the direction of travel of the machine.

Activate only one command at a time.

Some manual operating devices are normally sealed and the seal must be broken before operating with manual emergency devices. At the end of the operation, return the machine to its original condition, also restoring the missing seals.

7.1.4 Emergency movement of the machine in case of failure of the controls.

7.1.4.1 Emergency destabilisation.

In case of failure of the control system, but with the thermal motor still running, it is possible in case of emergency to destabilise the machine in order to move it later. To command emergency destabilisation:

- Turn the key (1) to the GROUND PLATFORM CONTROLS position (blue box);
- Activate the power supply (electrical or thermal depending on the type of machine) using the selector (2);
- Remove the sealed lock of the EMERGENCY OVERRIDE button cover (4), open the protection and press the button;
- Within thirty seconds, from the platform control position, activate the power supply (thermal motor or electric pump) and operate the automatic destabilisation command as described in the controls chapter in order to bring the tracks to the ground;
- If necessary, the operation can be repeated.

To exit the emergency condition, activated by pressing the EMERGENCY OVERRIDE button (4), turn the machine off and on again using the ground control panel.

7.1.4.2 Emergency driving.

In the event of a failure of the control system, but with the thermal motor still running, it is possible in the event of an emergency to make short movements of the machine (track control) by manual operation of the translation control solenoid valves.

The manual emergency controls are located on the base carriage:

1. Rear hood;
2. Red solenoid valve activation fork;
3. Main hydraulic lock.

To manually activate the tracks:

- a. Completely remove the rear hood (1) to freely access the hydraulic lock;
- b. Press and turn the manual operating devices of the solenoid valves (A) and (B) clockwise;
- c. Fully tighten the manual operating devices (C) and (D);
- d. Activate the solenoid valves (E) to control the left track and (F) to control the right track.

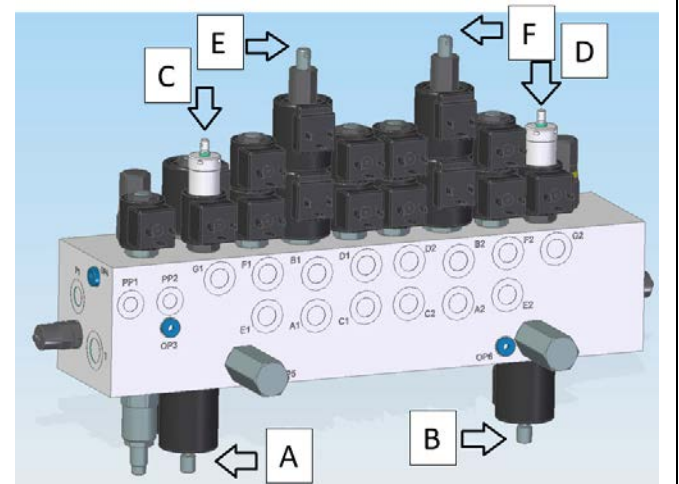
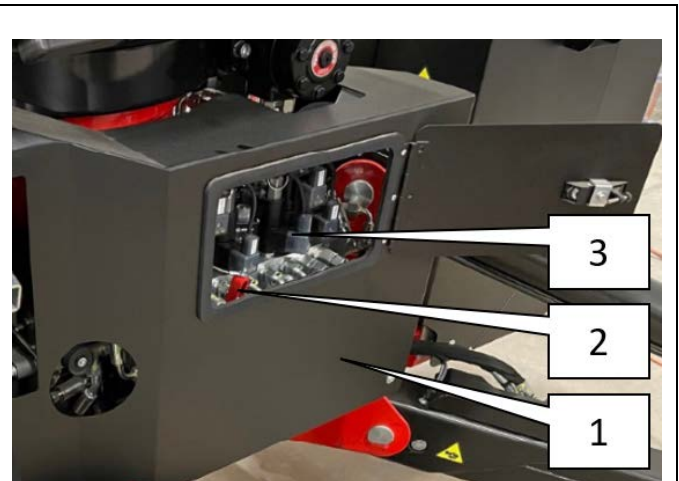


Fig.37

By pulling out the manual operating device of one of the two solenoid valves (E) and (F) by means of the red activation fork (2) as described in the previous paragraphs, the machine is moved BACKWARDS (the machine moves towards the platform).

Press the manual operating device of one of the two solenoid valves (E) and (F) to move the machine FORWARD (the machine moves in the opposite direction to the platform position).



DANGER OF TIPPING OVER!

The operations described can only be performed by authorised technicians and are only permitted with the booms lowered and no operator on the platform.

Danger of overturning and/or crushing.

Some manual operating devices are normally sealed and the seal must be broken before operating with manual emergency devices. At the end of the operation, return the machine to its original condition, also restoring the missing seals.

8 MAINTENANCE.

8.1 Safety rules during maintenance.



- Always perform maintenance operations in maximum safety conditions, with the machine stopped and switched off, having removed the key from the ground control panel, with the emergency buttons pressed and wearing the personal protection equipment suitable for the operations to be carried out.
- Only suitably trained personnel are authorised to perform repairs and maintenance on the machine.
- The maintenance operations described refer to a machine used under "normal" conditions; if it is believed that the machine's operating conditions are extreme (extreme temperatures, corrosive environments, very long work cycles, etc.) or if the machine has been idle for long periods, contact the ALMAC technical service to adjust the frequency of interventions.
- If it is necessary to replace parts of the machine, use only original parts or parts approved in writing by ALMAC; the use of non-original or non-approved spare parts will result in the forfeiture of the warranty and of any ALMAC liability.
- Changes or additions to the MEWP are not permitted unless expressly authorised by ALMAC SRL.
- During maintenance or technical assistance, the machine must be completely shut down. Do not act on the valves installed directly on the hydraulic cylinders of booms and outriggers if they have not been immobilised/locked in place: risk of uncontrolled movement of the structure.
- Do not insert the body, limbs or fingers in sharp, jointed openings on the machine that are not controlled or without proper guards unless securely held in place;
- Disconnect the machine from all external energy sources (110-230V single-phase power line) before intervening.
- Make sure there are no fluids under pressure before disassembling unions or pipes: oil spattering out under pressure can cause serious injuries. Immediately call a physician if injuries occur or the fluid from pipes is accidentally ingested. Remember that fluid seeping from a very tiny hole can be almost invisible but possess sufficient force to penetrate beneath the skin. To search for leaks, use a piece of cardboard or wood
- For maintenance operations on the thermal motor consult the manual provided by the manufacturer, and annexed to the machine documentation at the time of delivery.
- Perform 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 the current regulations. Prolonged skin contact may cause irritation and dermatosis. Wash with soap and water, then rinse thoroughly following contact with any of these elements. Eye contact is also dangerous: wash thoroughly with water and seek medical attention.
- Place the machine out of service, isolate it and report the situation to your employer in the event that there is an anomaly in a mechanical or hydraulic element or in a control or safety device. IMMEDIATELY NOTIFY AN ALMAC S.r.l. SERVICE CENTRE.



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

8.2 Routine maintenance.

The checks and maintenance operations must be performed as indicated in the table below.

ORDINARY MAINTENANCE SCHEDULE TABLE	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
Cleaning the machine			X					
Cleaning of the plates and indicator lights	X							
Functional checks	X						X	X
Visual inspection of tightening of screws / Tightening of screws	X		X*				X	
Visual inspection of the structural elements of the machine	X						X	
Greasing of joints, telescopic slides and rotating fifth wheel				X			X	X
Check the hydraulic oil level	X							X
Change the hydraulic oil							X	
Replacement of hydraulic oil filters							X	X
Track reduction gear oil level inspection						X	X	X
Replace oil in the track reduction gear							X	
Check track wear and tension	X						X	X
Lubrication of telescopic element chains				X				X
Check for wear and tension of the extension chains	X						X	
Check the wear and adjustment device of the sliding blocks			X				X	
Check the engine starter battery	X							X
Check the traction / LITHIUM batteries (if present)	X							X
Check turret rotation gap						X	X	
Platform rotation gap control						X	X	
Check the overload monitoring device						X	X	
Check the efficiency of the 115-220V socket differential switch						X	X	X
Check the machine sensors	X						X	X
Checking of ultrasound sensors (if any)	X						X	X

PS*: After the first 50 hours of operation of the machine, a check is required with a torque wrench of the tightening of the fifth wheel screws, reducers and toothed drive crown gears.



The machines can be equipped with various types of thermal motor. For routine maintenance operations and for the frequency of intervention on the thermal motors always refer to the USE and MAINTENANCE manual of the motor manufacturer, provided at the time of delivery of the machine

8.2.1 Cleaning the machine and the adhesive plates.

To clean the machine correctly it is possible to use jets of water that are not pressurised, adequately protecting the following parts:

- Electrical components;
- Ground control panel and console;
- Electric motor (if present).

After cleaning the machine, dry all the parts, check the integrity of the adhesive plates and grease the areas equipped with a grease nipple or the sliding blocks of the telescopic appendages of the booms and outriggers.



Attention: Never use petrol, solvents or other flammable liquids as detergents. Use authorised commercial, non-flammable and non-toxic degreasers.

8.2.2 Functional checks.

According to the frequency 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 emergency stops. In particular, the checks to be carried out are as follows:

- With the platform in transport position, operate the carriage widening control to check correct functioning of the system;
- With the platform in the transport position, check the correct operation of the automatic stabilisation and destabilisation system. With the machine perfectly stabilised (four feet on the ground and lightened frame), it must be possible to lift/lower the boom and jib, and rotate the turret. Check that with incomplete stabilisation, the movements of the extendible structure are automatically inhibited.
- With the platform in transport configuration, position the machine with the fifth wheel level inclined to the horizontal with a value greater than 0.5° on the side. Operate any control of the aerial part, make sure that the system automatically restores the horizontal frame;
- On flat ground, with the outriggers raised, lift the boom taking the platform out of the TRANSPORT position (on the display the word TRANSPORT disappears), and verify that the SPS function comes into operation or permitted translation at an automatically reduced speed.
- With the machine perfectly stabilised:
 - o Lift and lower the main boom and make sure that the machine works correctly (platform levelling is an automatic movement, check the correct operation). There must be no load on the platform.
 - o Execute the outreach extension and outreach return manoeuvre and make sure that the machine works correctly. No load must be present on the platform;
 - o Lift and lower the JIB and make sure the machine is working properly. No load must be present on the platform;
 - o Perform rotation of the basket in both directions and make sure that the machine works . No load must be present on the platform;
 - o Perform rotation of the column in both directions and make sure that the machine works correctly. No load must be present on the platform;
- Lift the platform to a height greater than the TRANSPORT position and check that the outrigger controls are automatically inhibited. In the same situation, widening/narrowing of the track command must also be inhibited.
- Operate the emergency button on the remote control (or radio control), check that the platform control console and the thermal motor (EVO, ETS versions) are switched off. The ground control panel remains active. Release the emergency button at the end of this test.
- Operate the emergency button of the ground control panel, check that the machine is completely off and that no function is permitted. Release the emergency button at the end of this test.
- Operate the warning buzzer and make sure it works.

- Verify that each command stops when the command is released.
- Using the ground control panel, check that all the controls are working and respecting their expected operation.
- Check correct operation of the manual emergency descent device by means of a hand pump.
- Check, when used as a platform, that with the work platform correctly interlocked, the appropriate indicator light on the console signals the "WORK PLATFORM" mode.
- Check, when used as a winch (optional), that with the winch correctly interlocked, the appropriate indicator light on the console signals the "WINCH" mode.

8.2.3 Visual inspection of the structural elements of the machine.

According to the frequency 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 welding. The parts to be visually checked are as follows:

1. Platform, access ladder, railings and access shaft closing bar;
2. Integrity of the platform support and platform rotation actuator;
3. Jib arms, and welding of the pin seats;
4. Welded sections of the main boom telescopic structure;
5. Welding of the sides of the turret to the base connected to the fifth wheel;
6. Welding of the bearing base of the fifth wheel and on the connection to the frame structure;
7. Connection areas between the hinging ears of the outriggers and the frame;
8. Stabilising feet and related welds;
9. Tracked side members and area welded to the telescopic supports that fit into the frame;
10. Integrity of all lifting cylinders and outriggers, with particular attention to the welding with pin supports.

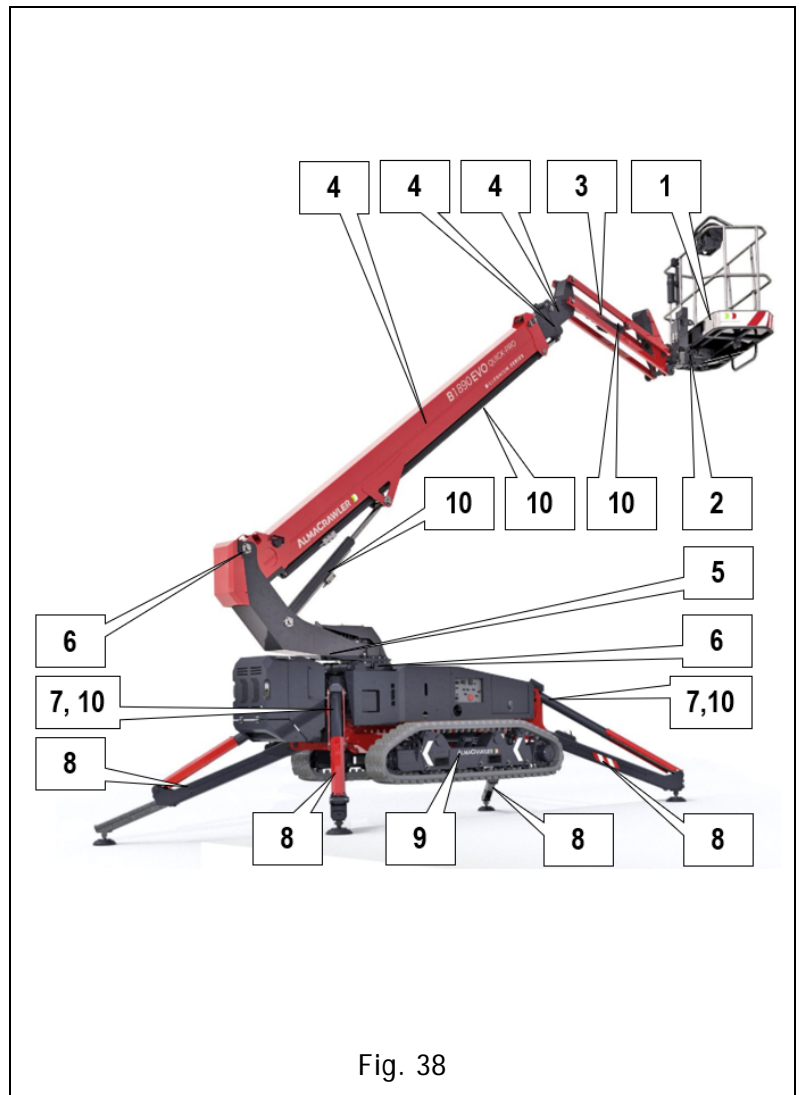


Fig. 38

Any traces of rust on the welds must suggest the presence of a crack and result in placing the machine out of service until a thorough technical inspection by penetrating liquids or magnetoscopic verification is performed.

Do not use the machine in the presence of pins and fixing systems that are not intact or that are rusty.



To carry out a quick and correct visual inspection of the structural elements of the machine, the machine must be constantly washed/cleaned.

If it is not possible to perform the visual inspection due to dirt being present, do not use the machine.

8.2.4 Visual inspection of screw tightening / Screw tightening.

According to the frequency 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 to the side, namely:

11. Turret rotation washer;
12. Traction reducers
13. Transmission crown gear;
14. Track guide rollers;
15. Tracks;
16. Ring nuts, seeger, fixing nuts of the pins of the extendible structure, of the platform and of the outriggers;
17. Rotary actuator retaining screws

If necessary or in doubt, tighten the various elements in accordance with the tightening table below, verifying the class of the screws directly from the stamping on them.

It is necessary to tighten the fifth wheel, traction reducers and drive crown gears on an annual basis.

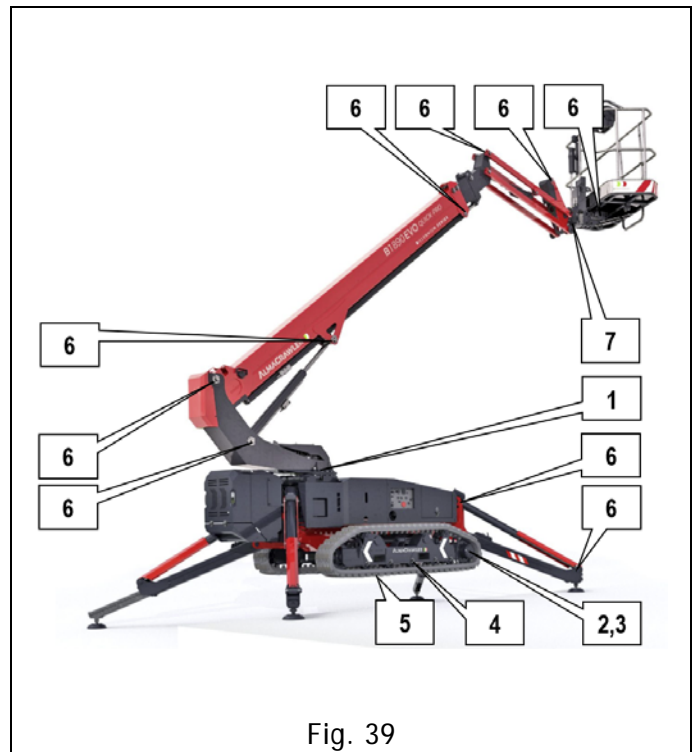


Fig. 39

SCREW TIGHTENING TORQUE (metric thread, normal pitch)						
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 of joints, telescopic slides and rotating fifth wheel.

According to the frequency described in the maintenance table, grease the points equipped with a grease nipple and the telescopic appendages indicated in the image to the side.

For the greasing of the telescopic booms, fully extend the booms (with jib completely closed, and no load on the platform) lifting the boom slightly to avoid interference between the basket and the tern, and use a brush to slightly grease the surfaces of the telescopic booms that come into contact with the blocks. Before greasing, remove any dirt that has accumulated on the parts. After greasing, retract the telescopic booms and extend them again, then remove the excess grease.

Remember to always grease the same points:

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



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

GREASE TABLE FOR GREASE POINTS	
PAKELO	BEARING EP GREASE NLGI2
BP	GREASE LTX2
CASTROL	LM2 - SPEEROL APT2
SHELL	ALVANIA GR.R.2
ESSO	BEACON 2
SMALL VALVES	LITHIUM 20
ELF	TRASLUBE LI GREASE 2

GREASE TABLE FOR TELESCOPIC BOOMS (QUICK PRO BOOMS AND OUTRIGGERS)	
ADDINOL	ADDIFLON PTFE WHITE 3 PASTE
NILS	WHITE STAR EP

8.2.6 Check hydraulic oil level / Oil change.

According to the frequency 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 to the side (A).

The level check must be performed with:

- Minimum track (narrow wagon);
- Fully raised outriggers with telescopic appendages retracted (Quick Pro)
- Boom fully lowered;
- Telescopic boom completely retracted;
- Jib completely closed;
- The machine completely switched off.

In this condition the correct oil level is the one shown to the side (close to the MAX level). If necessary, top up with new oil and filter through the cap (B) until the maximum level is reached. To reach the cap (B) it is necessary to remove the casings.

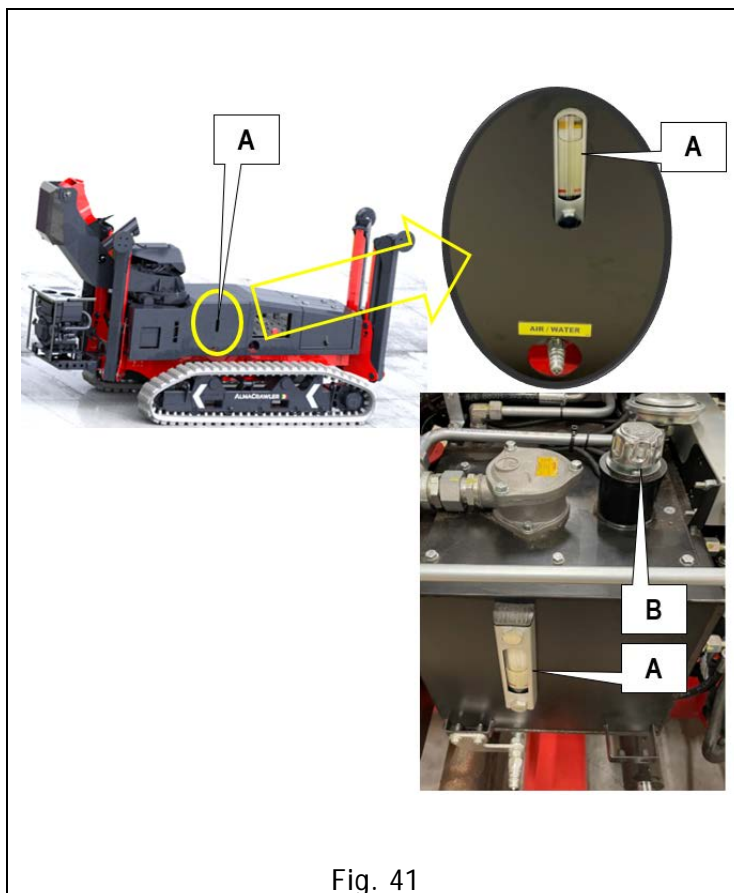


Fig. 41

Completely replace the hydraulic oil - at the same time as replacing the filters - as indicated in the maintenance table. To empty the tank, it is necessary to use a manual or electrical pumping system, not supplied with the machine, then put the machine in the same conditions described above and suction out the oil through the filler cap (B). Fill the tank through the cap (B) with new and filtered oil to the level indicated above. Refer to the TECHNICAL DATA tables to ascertain the necessary quantities of oil. Use only the types of oil indicated in the table below.

TEMPERATURE →	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	Hidrobak 68 HV	Hidrobak 46 HV	Hidrobak 32 HV
SHELL	Tellus SX68	Tellus SX46	Tellus SX32
TEXACO	Rando NDZ68	Rando NDZ46	Rando NDZ32



ATTENTION: do not disperse the used oil in the environment but use the relevant collection centres.

8.2.7 Replacement of hydraulic oil filters.

According to the frequency described in the maintenance table, it is necessary to replace the hydraulic oil filters of the suction and return circuit, at the same time as replacing the hydraulic oil.

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;
- Remove the side casings to access the hydraulic oil tank (D);
- Empty the tank (see previous chapters);
- Loosen the cap screws (E) of the tank and remove the cap itself;
- Unscrew the filters (A) and remove them, then replace them with new components;
- Fill the tank (see previous chapters) and apply the cover (C) being sure to spread a layer of sealant in the area of 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;
- Screw the cover (F) back on and, if necessary, top up the tank;
- Clean the operation area thoroughly of any oil residues.

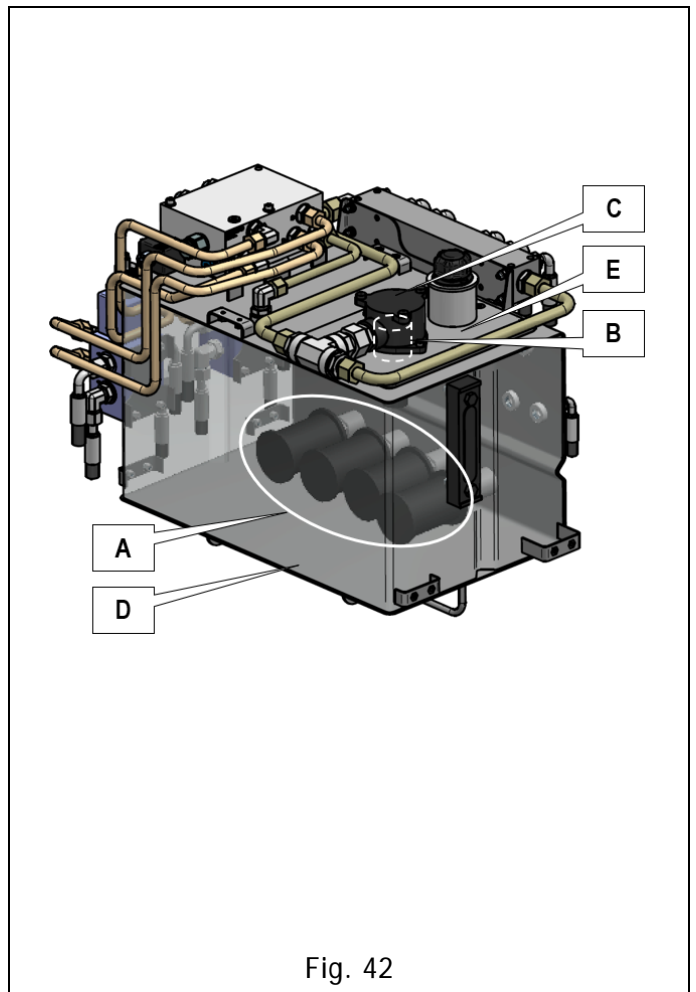


Fig. 42



To replace the filters **ONLY USE ORIGINAL SPARE PARTS**. Contact ALMAC support to procure the relevant material.

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

8.2.8 Check the oil level of the traction reducers / Oil replacement.

According to the frequency described in the maintenance table, the oil level in the traction reducers must be checked according to the following procedure.

To check the level:

- command the translation until the caps (A) and (B) are in the position shown to the side;
- Unscrew the cap (B);
- If oil is seen leaking out, the level is correct. If not, top up through the cap (A) until the oil comes out of (B).

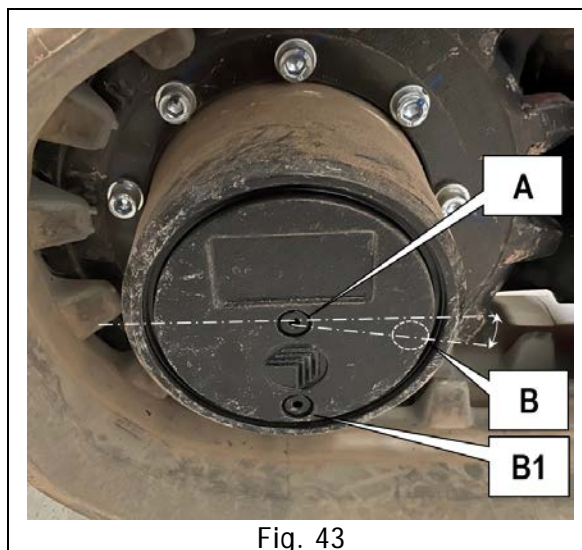


Fig. 43

To replace the reducer oil:

- Command the translation until the caps (A) and (B1) are in the position shown to the side;
- Place under the cap (B1) a container capable of collecting the reducer oil;
- Unscrew the caps (B1) and (A) and completely empty the reducer;
- Close the cap (B1) and insert lubricating oil for reducers 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	0.4 litres per reducer



ATTENTION: do not disperse the used oil in the environment but use the relevant collection centres.

8.2.9 Tracks: checking of wear, tensioning and replacement.

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

8.2.9.1 Track wear check.

Check the wear and condition of the tracks, replacing them when the tread is equal to or less than 10 mm.

Replace the tracks even before this event, if there are dangerous cuts or lacerations.

8.2.9.2 Checking and adjusting track tension.

To check the tension, when the tracks are resting on the ground, pull the track slightly upwards at the centre line. The maximum permissible deflection 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, contact the Technical Assistance Service.

The machine is in fact equipped with an automatic belt tensioning system powered by the machine's hydraulic circuit during normal operation that inhibits operator intervention.

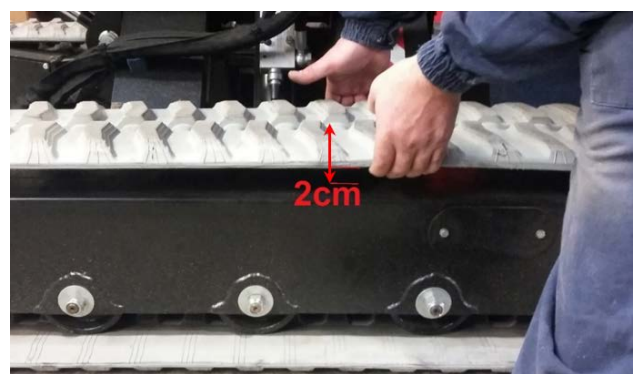


Fig. 44

8.2.9.3 Replacing the tracks.

If necessary, to replace a track:

- Widen the track using the commands described above;
- Lift the machine by means of a lifting device from those indicated in this manual (LOADING and TRANSPORTATION chapter) or by means of the outriggers command, in order to obtain a height from the ground of the track of approximately 15-20 cm;
- Thoroughly clean all parts of the tracked undercarriage;
- Remove the protective cover (1);
- Locate the track tensioner valve (2), then loosen the locknut (3) by half a turn, and loosen the adjustment screw (4) by inserting the Allen key in the hole provided on the side member;
- Compress the track tensioning cylinder by pressing on the idler wheel (5);

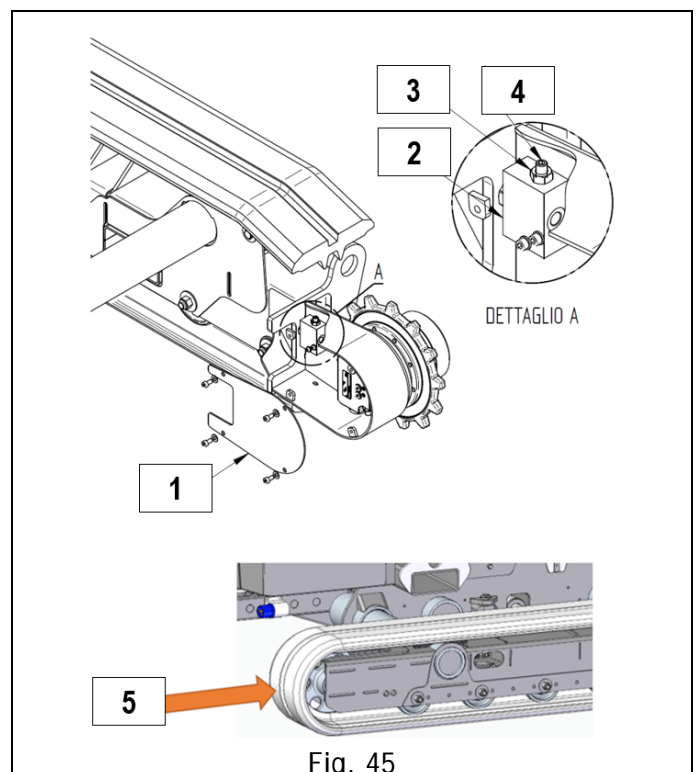


Fig. 45

- Remove the track from its seat by levering between the track and the idler wheel with a crowbar;
- Tighten the grub screw (4) fully and tighten the locknut (3);
- Install the new track using the reverse procedure, ensuring the toothed wheel is aligned with its seats, then inserting it on the idler wheel.
- Control the narrowing of the track, holding the command for a few seconds in order to tension the new track;
- Check the tension as described above, and clean away any residual oil.



Attention: Tracks must only be replaced by specialized, properly trained personnel.

The operation must be carried out after ensuring the perfect stability of the machine, wearing all the necessary PPE (professional footwear, gloves, helmet, etc.)

8.2.10 Extension chains: Check for wear, tension and lubrication.

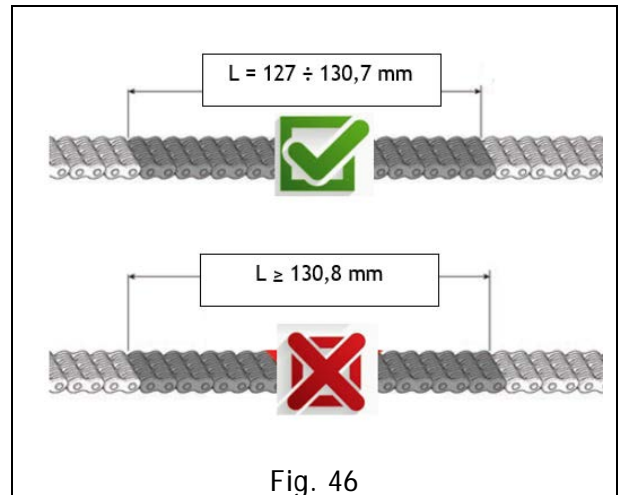
According to the frequency described in the maintenance table, check the extension chains:

- Wear control;
- Tensioning control;
- Lubrication.

8.2.10.1 Check chains for wear.

The wear control of the telescopic extension/retraction chains mainly consists of measuring a 10-step section and evaluating the percentage elongation. An elongation greater than 3% with respect to the nominal measurement is a sign of excessive wear, for which it is necessary to replace the chains. The presence of rust, or the failure to wind the chain correctly around its own pulley, must also 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 (i.e. $127 + 3\%$) the chain must be replaced.



To check the chains, with the machine on flat ground and booms completely lowered, remove the telescopic boom to reveal the chains, and measure them with a gauge.



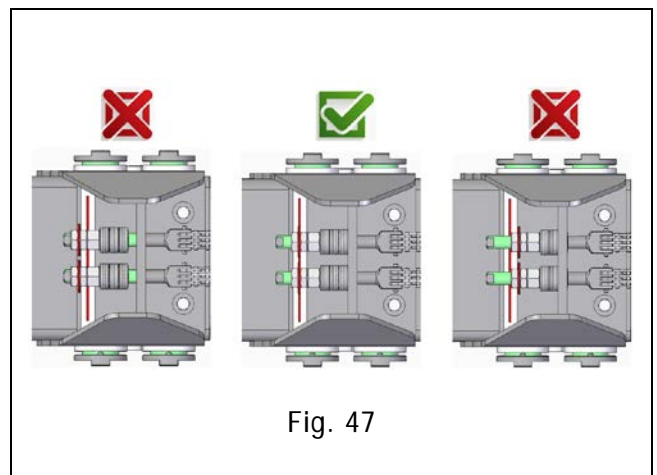
Complete replacement of the chains after 10 years is mandatory. Entrust the operation to authorised technical assistance.

8.2.10.2 Checking and adjusting chain tension.

Checking of the tension of the telescopic extension/retraction chains consists of checking the position of the red washers (1) of the chain tensioners, with respect to the red reference line (2) located on the boom.

If the red washers (1) are aligned with the red reference line (2), the chain tension is correct. Otherwise, the tension must be adjusted:

- Control 3-4 extensions/retractions of the telescopic boom;
- With the telescopic boom fully retracted, use the nuts to restore the alignment of the references.



8.2.10.3 Lubrication of the chains.

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

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

8.2.11 Check the wear and adjustment device of the sliding blocks.

According to the frequency described in the maintenance table, check the wear of the blocks (lower and upper) of the telescopic booms:

- Completely retract the telescopic booms and check the vertical clearance;
- If there is more than 3 mm play between the boom and the first extension and/or the first extension and the second extension, the blocks must be replaced.

Also check the horizontal centring of the telescopic booms and, if necessary, intervene on the adjustment devices (1) shown to the side.

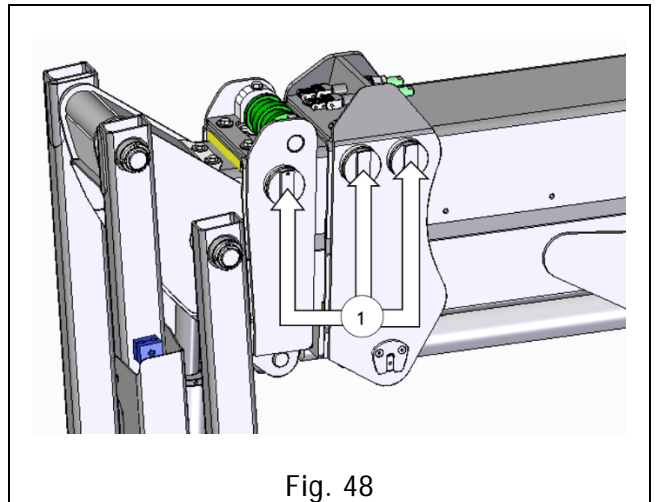


Fig. 48

8.2.12 Check turret rotation gap.

According to the frequency described in the maintenance table, check the turret rotation system clearance. The turret rotation system used on ALMAC machines allows the complete absence of gapping at the base of the rotating turret by applying horizontal forces to the platform.

To check the correct horizontal gapping of the turret rotation, it is therefore sufficient, in the condition of a completely closed boom, to push horizontally on the platform to check that the base of the turret does not have horizontal play.

To check the vertical gapping of the turret rotation it is necessary, in the condition of completely closed boom, to rock the platform up/down and check that the base of the turret does not have vertical play. 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 suspicions that there may be malfunctions, the machine must be placed in a safe situation (isolate it, apply a sign) then report the anomaly to the employer and contact an authorised service centre.

8.2.13 Platform rotation gap control.

According to the frequency described in the maintenance table, check the platform rotation system clearance. The platform rotation system used on ALMAC machines allows the presence of only minimal play on the platform rotation. The rotation actuator is held in place by an over-centre valve directly flanged on the component.

If applying a horizontal force to the platform, the latter does not remain fixed in position, there may be air in the component; simply command two/three platform rotations at the end of the stroke to eliminate the air present and return the system to working properly. If the play remains even after this latter operation, the component may be defective.



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

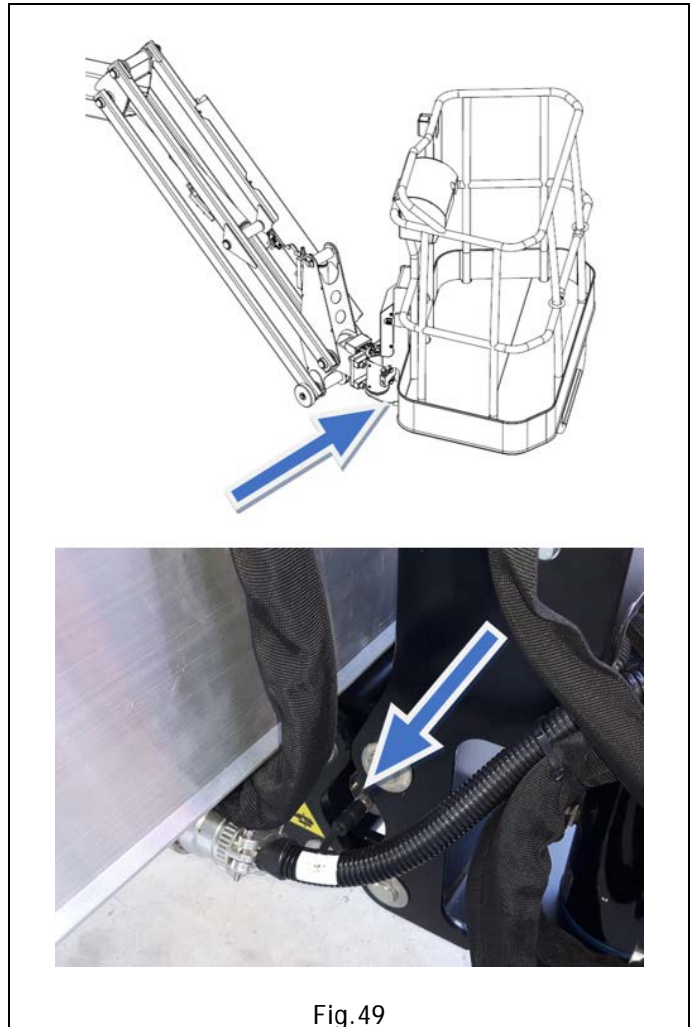
8.2.14 Overload control device control.

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

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

To check its operation:

- Apply the nominal load on the platform (see TECHNICAL DATA table) and check that the machine is operating normally;
- With the position in the access position (booms all closed) load an overload of 20% and check that the overload alarm is activated and the boom up, jib up and extension commands of the telescopic boom are inhibited;
- Remove the excess load and check that the machine exits the alarm condition and the previously inhibited controls are once again available.



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

8.2.15 Check the efficiency of the 115-220V socket differential switch.

According to the frequency described in the maintenance table, check the operation of the differential switch of the power line on the platform

To check its operation:

- Connect the plug on the base carriage to a cable connected to the mains in accordance with the current regulations;
- Press the button shown in the figure to check that the circuit breaker trips, opening the electrical circuit.

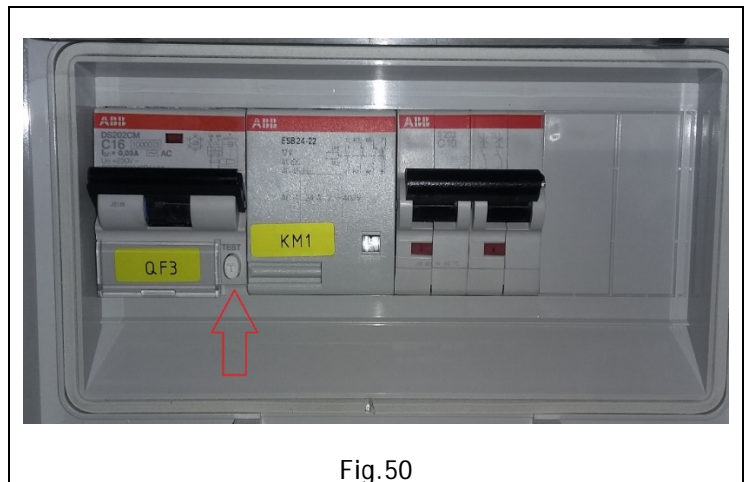


Fig.50

8.2.16 Check machine sensors.

All moving parts of the machine, with the exception of platform rotation, 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;
- The inhibition of commands.

According to the frequency described in the maintenance table, check the operation of the various machine sensors. Their operation is monitored by the control system which detects the faults and highlights them on the control console on the platform as well as inhibiting the connected commands.

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

8.2.17 Control of ANTI-COLLISION and ANTI-CRUSHING sensors (optional).

If present, according to the frequency described in the maintenance table, check 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 METHOD OF USE.

8.2.18 Battery.

The battery is a fundamental component in the operation of the machine. It is important to ensure that it remains in a good condition over time since this will lengthen its working life, limit any problems that may arise and reduce the running costs of the machine.

In general, bear in mind the following warnings:

- Charge the battery in ventilated areas;
- Keep naked flames well away from the battery since explosive gases may form;
- Do not make temporary electrical connections;
- Do not place tools or any other metal object on the battery;
- Clean any encrustations from the battery terminals and always tighten them;
- Always keep the battery clean, dry and free from rust;
- When replacing the battery, use an original component with the same electrical and weight characteristics; on electrical machines (ELC, LTH) the mass of the battery influences the stability of the machine.

8.2.18.1 Starter battery (EVO-ETS versions).

The starter coil is used to:

- Power the machine control circuit;
- Start the thermal engine (Diesel or Petrol);
- Power the emergency 12V electric pump (if present)

8.2.18.1.1 Maintenance of the starter battery (EVO-ETS versions).

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

- Clean the terminal terminals of the battery from scale and oxide;
- Check that the terminals are tightened correctly.

8.2.18.1.2 Charging the starter battery (EVO-ETS versions)

The alternator on the thermal motor charges the starter battery. It therefore means that the battery always recharges when the thermal motor is running.

For machines equipped with a single-phase electric pump, battery charging is guaranteed by an AC-DC converter which, when the machine is connected to the mains, keeps the battery charged.

If charging with an external charger is required, remember to disconnect the battery from the machine's electrical system, and proceed with charging in ventilated environments.



Attention: when charging, gas develops that in certain conditions can create EXPLOSIVE ATMOSPHERES. Always recharge batteries in well ventilated places that conform to standards EN 60079-10 (IEC 31-30), where there is no risk of fire outbreaks and where suitable extinguishers are ready to hand.

8.2.18.2 Lithium BATTERY (LTH version)

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

- The battery consists of lithium-ion cells and an advanced electronic management system, integrated into the same battery, called BMS (Battery Management System) that communicates directly with the machine control system and with the battery charger, optimally managing the battery for the efficiency and duration of the battery itself.
- The chemistry of lithium cells provides a high level of safety, high performance and allows a high degree of flexibility of use in charge/discharge cycles without having any memory effect.
- The battery is maintenance-free and can withstand discharges and incomplete charges (opportunity charging) without affecting its life span.
- The absence of emissions and the extended working temperature range make the machine perfectly suitable for any working environment.
- The terminal clamps must be tight and dirt-free. The insulating parts of the cables must be in a good condition.
- Keep the battery clean, dry and free from oxidation products using antistatic cloths.
- Do not place tools or any other metal object on the battery.

8.2.18.2.1 LITHIUM battery maintenance (LTH version)

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

- Clean the terminal terminals of the battery from scale and oxide;
- Check that the terminals are tightened correctly.
- If the need arises to disconnect the battery from the machine, the communication cables must be disconnected as a priority and the power connections must be disconnected only later.
- Although the LITHIUM battery accepts partial charges without consequences, a 100% full battery charge is recommended at least once a week to ensure correct equalisation of the cells.
- During periods of inactivity of the machine, the batteries spontaneously discharge (self-discharge). It is recommended to avoid periods of inactivity longer than 3 months. If it is expected to put the machine out of service for longer periods, it is necessary to provide a full charge every 3 months by means of the charger connected to the 115-230V mains or in UNATTENDED CHARGING mode.
- To limit self-discharge of the batteries during periods of inactivity, it is advisable to leave the charger connected to the 115-230V mains.
- In the presence of malfunctions attributable to the battery, avoid intervening directly and notify the Technical Assistance Service.



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

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

8.2.18.2.2 LITHIUM battery charging (LTH versions)

To recharge the TRACTION battery, the charger must be connected to an electrical network equipped with all the protections according to the current safety regulations, and which has the following characteristics (depending on the country of commissioning of the machine):

- Supply voltage 115-230V AC \pm 10% single-phase;
- Frequency 50÷60 Hz;
- Earthing line connected;
- Efficient magneto-thermal and differential switch device;

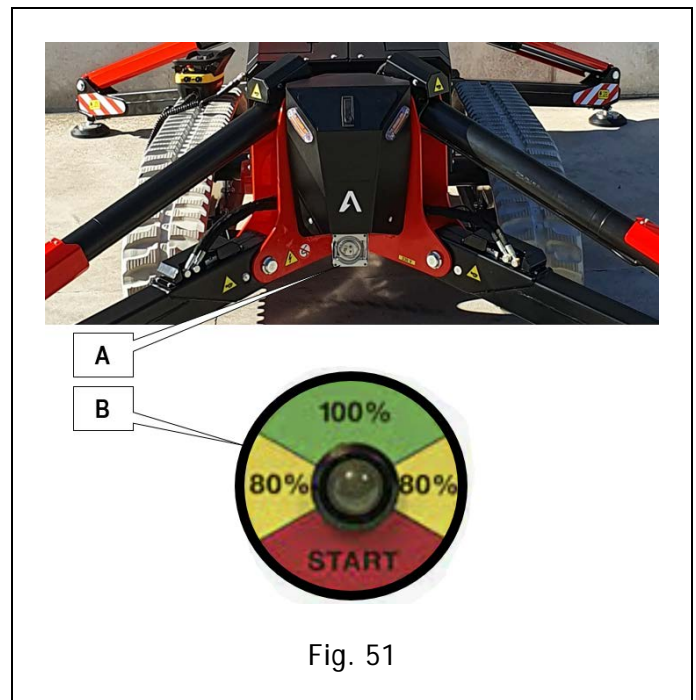
The following should also be remembered:

- Do not use cables or extensions longer than 5 meters;
- Do not use rolled up cables or extensions;
- Use a cable of appropriate cross-section (minimum 3x2.5 mm²);

To proceed with charging, connect the plug (A) to a cable connected to the mains as described above, checking that charging starts, confirmed by coming on of the red LED (B).

When the LED (B) turns yellow, the charging has reached 80%.

Coming on of the LED (B) with a green steady light indicates full charging.



9 DEMOLITION.

9.1 Life of the machine.

The machine has been designed to work for 10 years in normal operating environments considering proper use and correct maintenance.

9.2 Deactivation and demolition.

Once the end of the technical and operational life is reached, the machine must be subject to a detailed and complete verification/service by the manufacturer or by specialist and qualified technicians.

If the test does not have a positive outcome, the equipment must be deactivated and demolished. The machine must be reduced to conditions in which it can no longer be used for the purposes for which it was designed and built. In addition, the raw materials used to make it must be recovered for recycling purposes where possible.

In case of demolition, follow the regulations in force in the country where this operation is carried out. In Italy, demolition / disposal must be reported to ASL / USL or to the territorial ARPA.

The machine mainly consists of easily recognisable metal parts (mostly steel and aluminium for the hydraulic blocks); it is therefore possible to affirm that the machine is 90% recyclable.

The machine must be demolished following the adoption of safety measures that must take account of the logistic, environmental and wear conditions of the machine itself.

Comply with the following general rules:

- Wear approved protective clothing and accessories (hard-hat, safety footwear, gloves, goggles and face mask if necessary) in accordance with the accident-prevention laws in force;
- Disconnect the machine from all power sources;
- Ensure that the machine is unable to operate and that it cannot be used, by breaking some of its vital components and take it to a place where you are certain that it cannot be accessed by anyone;
- Use appropriate lifting devices;
- Disassemble the machine into small, easily transportable units;
- To dispose of the machine, separate the non-polluting materials from the polluting ones (insulation, plastic materials, rubber, etc.).



The European regulations and those transposed by the Member States on environmental compliance and waste disposal provide for heavy administrative and criminal sanctions in the event of inadequate compliance.

Therefore, in the event of demolition / decommissioning, strictly comply with the rules imposed by the regulations in force, especially for materials such as hydraulic oil and batteries.

9.3 Battery disposal.

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

- Cells and batteries, even if fully discharged, may still contain a considerable amount of energy. It is therefore necessary to always protect the terminals to prevent short circuits;
- Dispose of in accordance with the local laws and regulations (contact your nearest dealer);
- Store the material to be disposed of as indicated in the specific Section of the Battery Safety Data Sheet (request a copy);
- DO NOT throw into sewers, on the ground or in water courses.

10 EC DECLARATION OF CONFORMITY (FACSIMILE).

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

Dichiaro 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 (MEWP) – MODEL:

Declarons sous notre responsabilité exclusive que le produit PLATEFORME ELEVATRICE MOBILE DE PERSONNEL – MODEL :

Erkläre hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt HUBARBEITSBÜHNEN – TYP:

Declaramos bajo nuestra exclusiva responsabilidad que el producto PLATAFORMA ELEVADORA MOVIL DE PERSONAL – MODELO:

B 1570 EVO VISUAL

B 1570 LTH VISUAL

B 1570 ETS VISUAL

MATRICOLA:

SERIAL NO:

N. DE SERIE:

SERIENNUMMER:

N.MATRICULA:

ALM-XXXXXX

ANNO DI COSTRUZIONE:

MANUFACTURING YEAR:

ANNEE DE CONSTRUCTION:

BAUJAHR:

AÑO DE CONSTRUCCIÓN:

2021

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 vor:

Al cual esta declaración se refiere cumple las directivas 2006/42/CE, 2014/30/CE, 2005/88/CE y el modelo certificado 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:

XXXXXXXXXXXXXXXXXX of XX.YY.ZZZZ - Rev.00

e alle norme seguenti:

and with the following standards:

et aux normes suivantes:

die Erklärung entspricht den folgenden Normen:

y a las siguientes normas:

EN 280:2013+A1:2015 EN ISO 12100:2010 EN ISO 60204-1:2006
ASINZS 1418.10:2011 + A1:2017 (WORKSAFE REGISTRATION NO.: XXXYYYZZZ of XX/YY/ZZZZ)

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/ZZZ

Pietro Agosta Del Forte
Legale Rappresentante / Legal Representative

ALMAC S.r.l.
Viale Ruggeri, 6/A
42016 Guastalla (RE)
P.IVA 02559800350

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

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Dichiaro sotto la nostra esclusiva responsabilità che il prodotto PIATTAFORMA DI LAVORO ELEVABILE – MODELLO:

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Declarons sous notre responsabilité exclusive que le produit PLATEFORME ELEVATRICE MOBILE DE PERSONNEL – MODEL :

Erkläre hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt HUBARBEITSBÜHNEN – TYP:

Declaro bajo nuestra exclusiva responsabilidad que el producto PLATAFORMA ELEVADORA MOVIL DE PERSONAL – MODELO:

B 1890 EVO Q-PRO
B 1890 LTH Q-PRO

MATRICOLA:	SERIAL NO:	N. DE SERIE:	SERIENNUMMER:	N.MATRICULA:
ALM-XXXXXX				
ANNO DI COSTRUZIONE:	MANUFACTURING YEAR:	ANNEE DE CONSTRUCTION:	BAUJAHR:	AÑO DE CONSTRUCCIÓN:
2021				

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 vor:

Al cual esta declaración se refiere cumple las directivas 2006/42/CE, 2014/30/CE, 2005/88/CE y el modelo certificado 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:
XXXXXXXXXXXXXXXXXX of XX.YY.ZZZZ - Rev.00				

e alle norme seguenti:

and with the following standards:

et aux normes suivantes:

die Erklärung entspricht den folgenden Normen:

y a las siguientes normas:

EN 280:2013+A1:2015 EN ISO 12100:2010 EN ISO 60204-1:2006
ASINZS 1418.10:2011 + A1:2017 (WORKSAFE REGISTRATION NO.: XXXYYYZZZ of XX/YY/ZZZZ)

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/ZZZ

Pietro Agosta Del Forte
Legale Rappresentante / Legal Representative

ALMAC S.r.l.
Viale Ruggeri, 6/a
42016 Guastalla (RE)
P.IVA 02559800350

11 INSPECTION REGISTER.

This INSPECTION 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 after changes of ownership and is used to record in the appropriate spaces the events that concern the life of the machine, and more precisely:

- Periodic checks by the control bodies (in Italy: ASLE, ARPA or authorised private bodies);
- Mandatory maintenance and checks to verify the integrity, the structure of the machine and the 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 recorded and:
 - To communicate to ALMAC SRL to continue to make use of the warranty, service bulletins and updates;
 - Report the transfer to any competent bodies (in Italy: INAIL).
- Extraordinary maintenance or the replacement of important machine elements (structural parts or control systems).

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

	Date	Observations	Body; First Name and Surname; Signature and Stamp
1st Check			
2nd Check			
3rd Check			
4th Check			
5th Check			
6th Check			
7th Check			
8th Check			
9th Check			
10th Check			

If the machine is kept in service for a period of more than 10 years, after having undergone an extraordinary check, record the subsequent periodic checks below.

11th Check			
12th Check			
13th Check			
14th Check			
15th Check			

11.2 Register of PERIODIC INSPECTIONS by the owner.

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

FUNCTIONAL CHECKS			
	Date	Observations	First 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 OF TIGHTENING OF SCREWS / TIGHTENING OF SCREWS			
	Date	Observations	First 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	Observations	First 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 OF JOINTS, TELESCOPIC BOOMS AND ROTATING FIFTH WHEEL			
	Date	Observations	First 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			

REPLACING THE HYDRAULIC OIL			
	Date	Observations	First 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			

REPLACING THE HYDRAULIC OIL FILTERS			
	Date	Observations	First 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			

REPLACING THE OIL IN THE TRACK REDUCERS			
	Date	Observations	First 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			

CHECKING OF TRACK WEAR AND TENSION			
	Date	Observations	First 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			

CHECKING OF WEAR AND ADJUSTMENT OF SLIDING BLOCKS

	Date	Observations	First 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			

CHECKING OF TURRET ROTATION CLEARANCE

	Date	Observations	First 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			

CHECKING OF PLATFORM ROTATION CLEARANCE			
	Date	Observations	First 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			

OVERLOAD CONTROL DEVICE CHECK			
	Date	Observations	First 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			

CHECKING OF THE EFFICIENCY OF THE 115-230V SOCKET DIFFERENTIAL SWITCH

	Date	Observations	First 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			

CHECKING OF THE MACHINE SENSORS

	Date	Observations	First 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			

CHECKING OF ULTRASONIC SENSORS (IF PRESENT)			
	Date	Observations	First 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 be kept	
on:	
Ownership of the machine:	
Serial no.	
Year of manufacture	
Is transferred to:	
It is hereby certified that, as of the date above, the technical, dimensional and functional characteristics of the aforementioned machine conformed to the original characteristics and that variations, if any, have been placed in the record.	
Seller's business name:	
Seller	
Purchaser	

Copy to be spent to ALMAC S.R.L.	
on:	
Ownership of the machine:	
Serial no.	
Year of manufacture	
Is transferred to:	
It is hereby certified that, as of the date above, the technical, dimensional and functional characteristics of the aforementioned machine conformed to the original characteristics and that variations, if any, have been placed in the record.	
Seller's business name:	
Seller	
Purchaser	

12 FUNCTIONAL DIAGRAMS.

12.1 WIRING DIAGRAMS.

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

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