Spyder DT82 E

OPERATING AND MAINTENANCE MANUAL
AERIAL WORK PLATFORM

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OPERATING AND MAINTENANCE BOOKLET AERIAL WORK PLATFORMS

AUTOMATIC PLATFORM	**Telescopic**
MODEL	**SPYDER DT82 E**
CONTROL FUNCTION	**Electro-hydraulic**
FACTORY SERIAL NUMBER	**CL 6821**
YEAR OF MANUFACTURE	**2021**
CARRIER VEHICLE	**SELF-PROPELLED**

OPERATING AND MAINTENANCE MANUAL
AERIAL WORK PLATFORMS

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1 INTRODUCTION

Adequate work safety is essential to prevent serious damage to yourself and to other people.

Therefore, it is essential to follow the WARNINGS and to carefully read this manual presenting accurate and fundamental instructions on routine and periodic maintenance procedures.

1.1 PURPOSE AND LIMITS OF THIS INSTRUCTION MANUAL

This instruction manual is intended for, in particular, the owner of the MOBILE AERIAL WORK PLATFORM and, in general, all those who are involved in any capacity in its transfer on road or otherwise, use, monitoring and maintenance, until its final dismantling.

The purpose of this instruction manual is to:

- describe the use of the platform based on its design;
- illustrate the main technical characteristics of the machine;
- provide the characteristic data for completion of the "TEST LOG" by the appointed Department;
- provide instructions for positioning and operating the platform;
- describe the safety devices;
- provide routine maintenance and repair instructions;
- be an aide for training personnel;
- provide instructions for completing the inspection register.

This manual, however, cannot in any way be a substitute for adequate previous experience of personnel on similar machines or experience acquired on this machine under the supervision of personnel trained in accordance with the following chapters.

In addition to observing the instructions contained in this instruction manual, platform operation is subject to the observance of all safety regulations set forth by the specific legislation of the country where the machine is used.

1.2 WHERE AND HOW TO STORE THE INSTRUCTION MANUAL

The instruction manual is considered a part of the machine and must, therefore, always be kept for consultation or reference on board the platform, in the relevant container in the basket, in the vehicle cab or, in any event, in a protected and dry place away from direct sunlight.

If the instruction manual is accidentally damaged, request another copy from **CELA SRL**.

1.3 MODIFICATIONS AND INTEGRATIONS TO THE INSTRUCTION MANUAL

The manual reflects the state of technology at the time of marketing the platform; therefore, it cannot be considered inadequate or lacking due to subsequent modifications or integrations made/added due to new laws, updated harmonised standards and/or newly acquired know-how.

CELA SRL reserves the right to update its production and related instruction manuals on the basis of developments in technology, newly acquired know-how and/or changes in laws, without being obliged to make any changes to previously sold machines and their manuals.

Nevertheless, **CELA SRL** will be entitled to modify and/or integrate the instruction and maintenance manuals of previously sold products if it deems this appropriate for justified reasons.

In this case, updated or amended documents will be transmitted to the original owners of the machines. These documents must be considered as an integral part of the instruction manual and carefully stored together with the present manual or transmitted to the new owners in the event that platform has been sold.

1.4 EXCLUSION OF LIABILITY

As the manufacturer of the platform, **CELA SRL** does not accept any liability arising from damage due to:

- improper use of the platform;
- operation of the platform by untrained personnel;
- operation in violation of the safety regulations specified by EU and/or national regulations in force;
- unsuitable ground features;
- total or partial failure to observe the provisions of this manual;
- failure to observe the maintenance instructions provided in this manual;
- modifications or repairs not authorized by the manufacturer;
- installation of non-original spare parts other than those indicated in the "SPARE PARTS MANUAL";
- exceptional events.

ATTENTION: READ AND KEEP THIS MANUAL!

• Study the user instructions.
• The operator shall be trained on the use of this machine. They must be aware of its lifting capacity and utilisation limits, and must know and carefully follow safety standards.
• The instruction manual is a fundamental element for the proper use and maintenance of this equipment.

For repair and overhaul assistance please call the company, which has highly skilled workers and suitable equipment available.

The TECHNICAL ASSISTANCE SERVICE is at your disposal for explanations, advice and for interventions with its own personnel, if necessary.

Correct operation and a long service life are only ensured by the use of original spare parts. Refer to the “SPARE PARTS CATALOGUE” in this regard.

At the end of this manual, there are some sheets on which every intervention, update and change made over time must be recorded. By doing this, you and we will always have an updated statistical memorandum of the machine.

THE INSTRUCTIONS IN THIS MANUAL DO NOT TAKE THE PLACE OF, BUT RATHER COMPLETE THE OBLIGATIONS ON SAFETY AND ACCIDENT LEGISLATION IN FORCE

NOTES FOR USING THE PLATFORM

EXCEEDING THE LOAD VALUE ALLOWED FOR THE WORKING AREA CAN LEAD TO STRUCTURAL DAMAGE AND TO THE EQUIPMENT OVERTURNING

2 PRELIMINARY INFORMATION

2.1 UPDATES TO THIS DOCUMENT

2.1.1 Validity

This manual reflects the state of the art at the time of the machine's release onto the market. It is an integral part of the machine and complies with all binding regulations, laws and directives at that time; this manual cannot be considered inadequate if subsequently updated because of more recent experiences.
Changes, adaptations, etc. (if any) made on machines sold afterwards do not oblige the manufacturer to modify the equipment sold before nor to consider it and the relative manual insufficient and unsuited.
Any possible supplement to this manual that the manufacturer judges important to send to the user should be kept together with the manual of which it is an integral part.

2.2 REFERENCE REGULATIONS

The aerial platform described in this manual is manufactured in compliance with the CSA B354.6 standard

Furthermore, CELA platforms are manufactured in compliance with the following regulatory framework.

DIRECTIVES:

- 2006/42/EC (Machinery Directive).
- 2006/95/EC (low-voltage electrical equipment)
- 2014/30/EU (electromagnetic compatibility).
- 2000/14/EC (noise emission)

STANDARDS:

- EN 12100-1 Safety of machinery (basic methodology);
- EN 12100-2 Safety of machinery (technical principles);
- EN 13857 Safety distances of upper limbs;
- EN 13850 Emergency stop devices;
- EN 349 Minimum gaps to avoid crushing of parts of the human body;
- IEC/EN 60204-1 Electrical equipment of machines;
- DIN 15018 sheet 3 Calculations of steel structures;
- PD 303/56 General regulations for hygiene at work
- It. Leg. Decree 81/2008 Regulations for health and safety at the work place;
- EN 954-1 Safety-related parts of control systems
- EN 13849-2 Safety-related parts of control systems
- EN 280 Mobile aerial work platforms
- EN 12999;A2 Cranes safety- Loaders Cranes
- EN 13001;Cranes – General design
- EN 982 Safety requirements for fluid systems and their components

2.3 NUMBER OF ESTIMATED LOADING CYCLES ACCORDING TO EN 280

100,000 (E.g. 10 Years, 50 weeks per year, 40 hours per week, 5 cycles per hour)

Within this number of cycles a complete overhaul and an extensive structural inspection of the machine should be carried out.

If working conditions are particularly severe (e.g. always fully loaded, long outreach, etc.) the inspection must be carried out sooner (ask the manufacturer for an inspection of the machine).

Every 1500 - 4500 hours, we suggest a complete inspection by the manufacturer

2.4 CYCLE REDUCTION FOR AUTHORIZED MACHINES AT INCREASED LOAD CAPACITY

66,000 (e.g. 6 Years, 48 weeks per year, 40 hours per week, 5 cycles per hour)
Within this number of cycles a complete overhaul and an extensive structural inspection of the machine should be carried out.

If working conditions are particularly severe (e.g. always fully loaded, long outreach, etc.) the inspection must be carried out sooner (ask the manufacturer for an inspection of the machine).

Every 1000 - 3000 hours, we suggest a complete inspection conducted by the manufacturer

See “MAINTENANCE PROGRAMME”

2.5 USE AND STORAGE CONDITIONS

CELA platforms are manufactured to function under these environmental conditions:

- operating temperature min. 14°F (-10°C) - max. 104°F (+40°C)
- humidity 30% - 95% without condensation
- storage temperature min. -22°F (-30°C) - max. 140°F (+60°C).

When the machine needs to be used in environmental conditions other than the standard ones, special solutions are available on request.

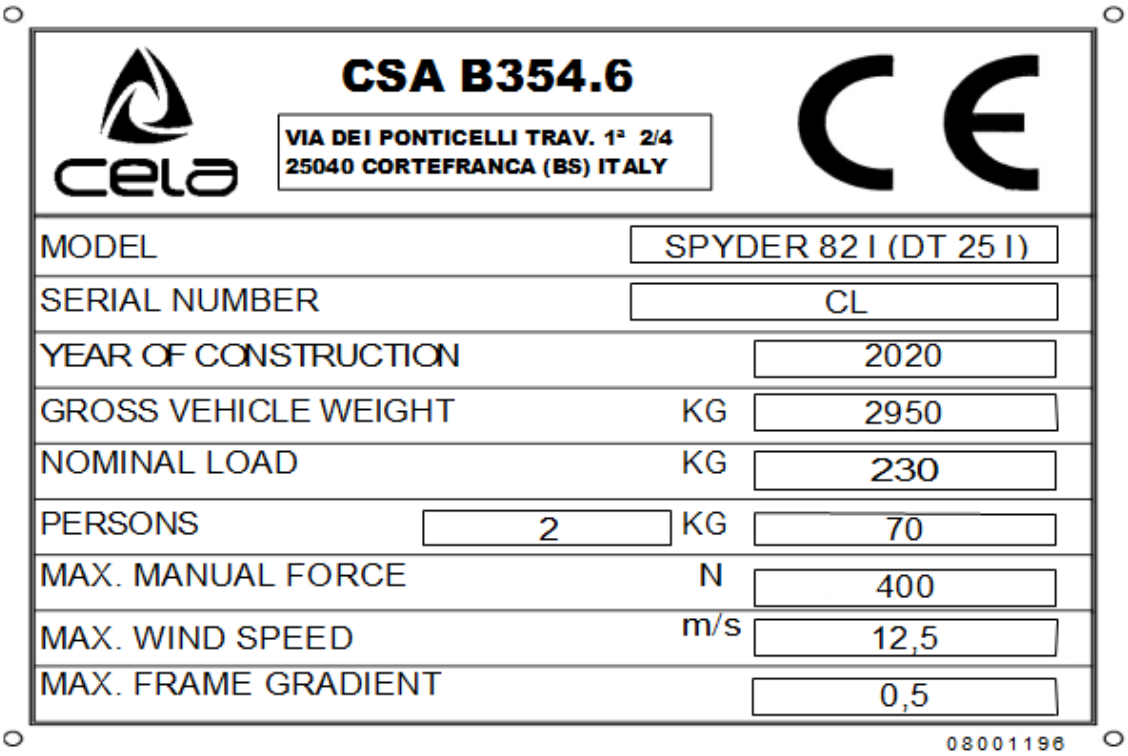
IMPORTANT : do not use in aggressive environments (e.g.: for many hours near sea areas).

If the oil temperature tends to exceed 176°F (80°C), a heat exchanger must be installed.

2.6 IDENTIFICATION DATA

All the information for the identification of the machine is carved on a plate on the rotary turret.

N.B. For every request specify type and serial number.



CSA B354.6			
VIA DEI PONTICELLI TRAV. 1ª 2/4 25040 CORTEFRANCA (BS) ITALY			CE
MODEL			SPYDER 82 I (DT 25 I)
SERIAL NUMBER			CL
YEAR OF CONSTRUCTION			2020
GROSS VEHICLE WEIGHT		KG	2950
NOMINAL LOAD		KG	230
PERSONS	2	KG	70
MAX. MANUAL FORCE		N	400
MAX. WIND SPEED		m/s	12,5
MAX. FRAME GRADIENT			0,5

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2.7 STATIC TEST

The machine PASSED THE STATIC TEST SUCCESSFULLY (in compliance with EN280), in the two possible operating conditions, with outriggers fully open and outriggers closed, according to the following modes:

1) working conditions with outriggers open

- Machine stabilized with outriggers open in wide position
- Machine stabilized at max allowed horizontal inclination (+/-1°), increased by 0.5°
- Telescopic boom fully raised and jib parallel to the ground
- Jib totally extended and basket turned at +/- 45°
- Applied test load equivalent to rated load that increments are added to as provided for by EN280 (wind effects, operator thrust and dynamic effects)
- Slow rotation of the machine over the whole working area (at least 360°), always keeping the position of the outriggers opposite the boom under control and verifying the residual load.

2) working conditions with outriggers closed

- Machine stabilized with outriggers closed in narrow position
- Machine stabilized at max allowed horizontal inclination (+/-1°), increased by 0.5°
- Telescopic boom fully raised and jib parallel to the ground
- Jib totally retracted and basket turned at +/- 45°
- Applied test load equivalent to rated load that increments are added to as set forth in EN280 (wind, operator thrust and dynamic effects). In this case the wind effects are minor.
- Slow rotation of the machine over the whole working area (at least 360°), always keeping the position of the outriggers opposite the boom under control and verifying the residual load.

The test is considered passed only if, in the whole working area, two outriggers never lift at the same time (so only one outrigger lifts at most, according to the position of the boom).

2.8 OVERLOAD TEST

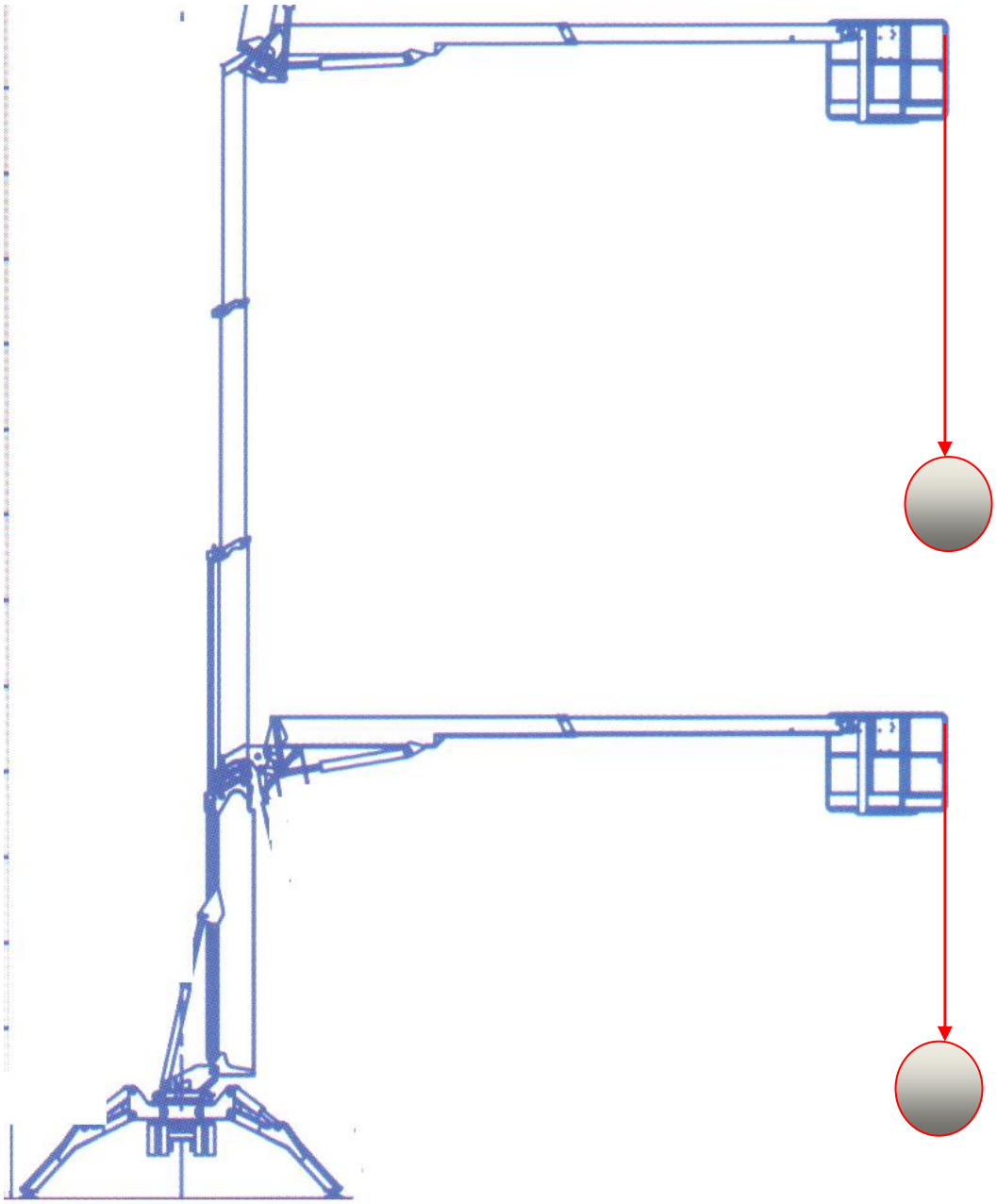
The machine SUCCESSFULLY PASSED the overload test (in compliance with EN280), in the two possible operating conditions, with outriggers fully open and outriggers closed.
The test load used for testing was equal to the nominal load increased by 25%.
The machine was stabilized in the maximum allowed horizontal inclination conditions (+/- 1°) increased by 0.5°, the man basket was turned by +/- 45° and the tests were carried out by slowly rotating the turret the whole working range (at least 360°) always keeping the position of the outriggers opposite the boom controlled, and verifying the residual load.
The tests were carried out in the following configurations:

- with the telescopic boom completely raised, jib parallel to the ground and extended according to the work area permitted by the configuration of the load being used.
- with the telescopic boom completely raised and extended, the jib parallel to the ground and extended according to the work area permitted by the configuration of the load being used.
- with the boom completely raised, the jib completely raised and extended according to the work area permitted by the configuration of the load being used.
- with the boom completely raised, the jib raised and completely extended at the minimum angle permitted for the configuration of the load being used.

The test can only be considered passed if, at the end of the test and after thorough examination of all the parts making up the structure, there are no signs of permanent deformation.

2.9 FUNCTIONING TEST

The machine SUCCESSFULLY PASSED the functioning test (in compliance with EN280), in the two possible operating conditions, with outriggers fully open and outriggers closed.
The test load that the tests were carried out with is equal to the nominal load increased by 10%.
The machine was tested in every movement and condition, checking the correct operation of all safety devices, the maximum operating speed and accelerations.



3 DIMENSIONS AND PERFORMANCES

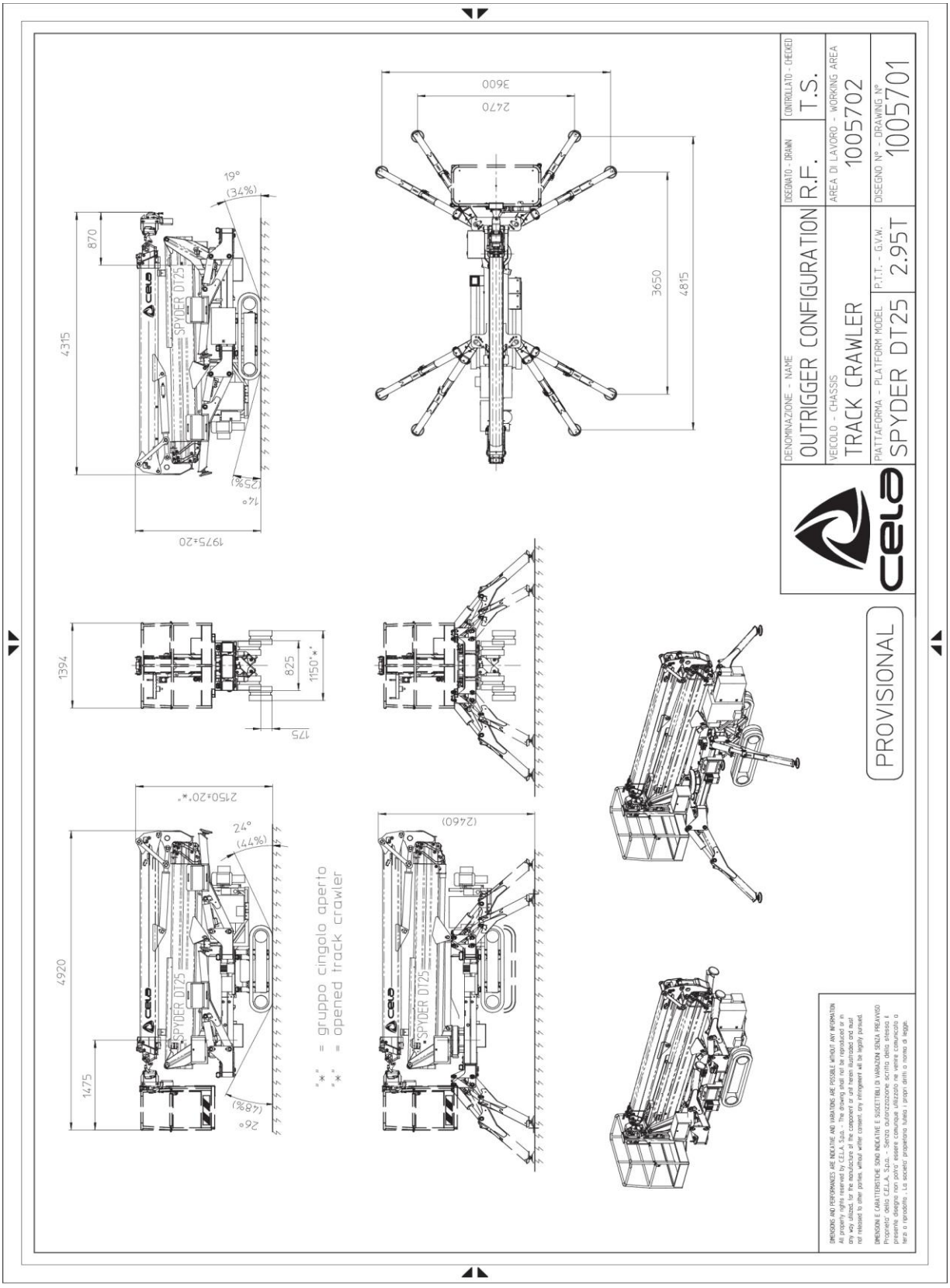
3.1 VEHICLE IN OPERATING POSITION

Height with track closed	6,496 ft	(1,980 m)
Height with track open	7.053 ft	(2,150 m)
Length with basket	16,059 ft	(4,895 m
Length without basket	14.107 ft	(4,300 m)
Width (tracks)	2.690/3.772 ft	(0,820/1,150 m)
Total weight on the ground	6503 lb	(2950 kg)

3.2 VEHICLE IN OPERATING POSITION

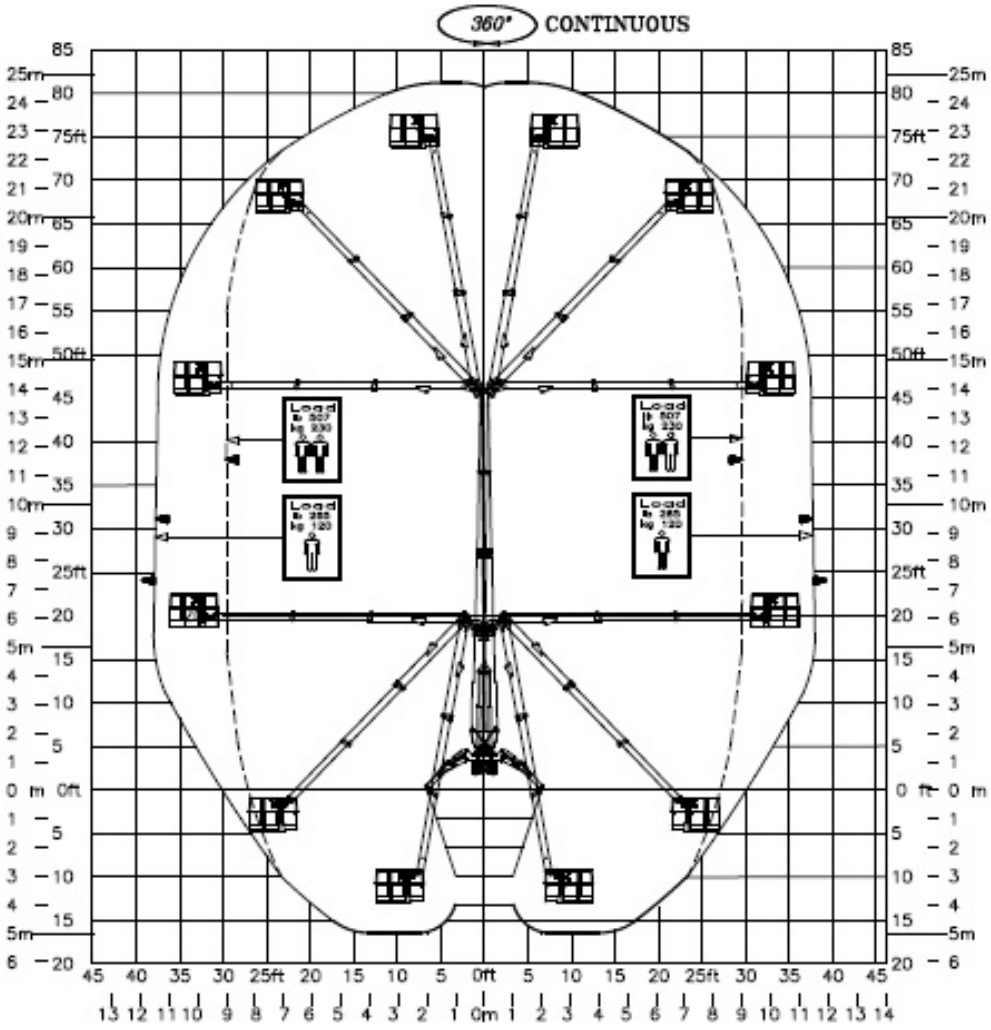
Max. height of operating platform walking floor	75.45 ft	(23 m)
1st max platform range of action 230 kg	29.52 ft	(9 m)
2nd max platform range of action 120 kg	37.72 ft	(11.5 m)
3rd Operating max range of action 100 kg/220lbs	39.37 FT	(m 12)
1st range max capacity in basket	507 lb	(230 kg)
Max specific pressure transmitted to ground by outrigger feet	116 lbf/in^2	(8 daN/cm^2)
Hydraulic circuit pressure	2900 psi	(200 bar)
1st boom complete ascent time	60 sec	
Jib ascent time	95 sec	
360° rotation time	160 sec	
Full extension time	70 sec	
Full retraction time	35 sec	
Jib descent time	90 sec	
1st boom full descent time	50 sec	

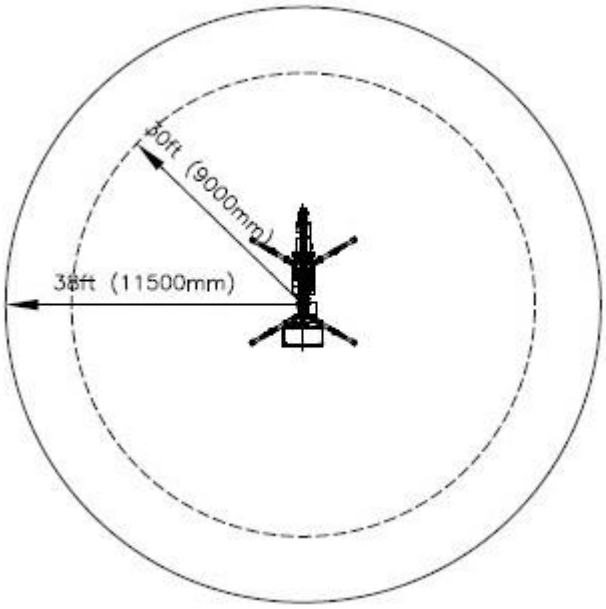
3.3 DIMENSIONAL DRAWING



3.4 WORK AREA LAYOUT

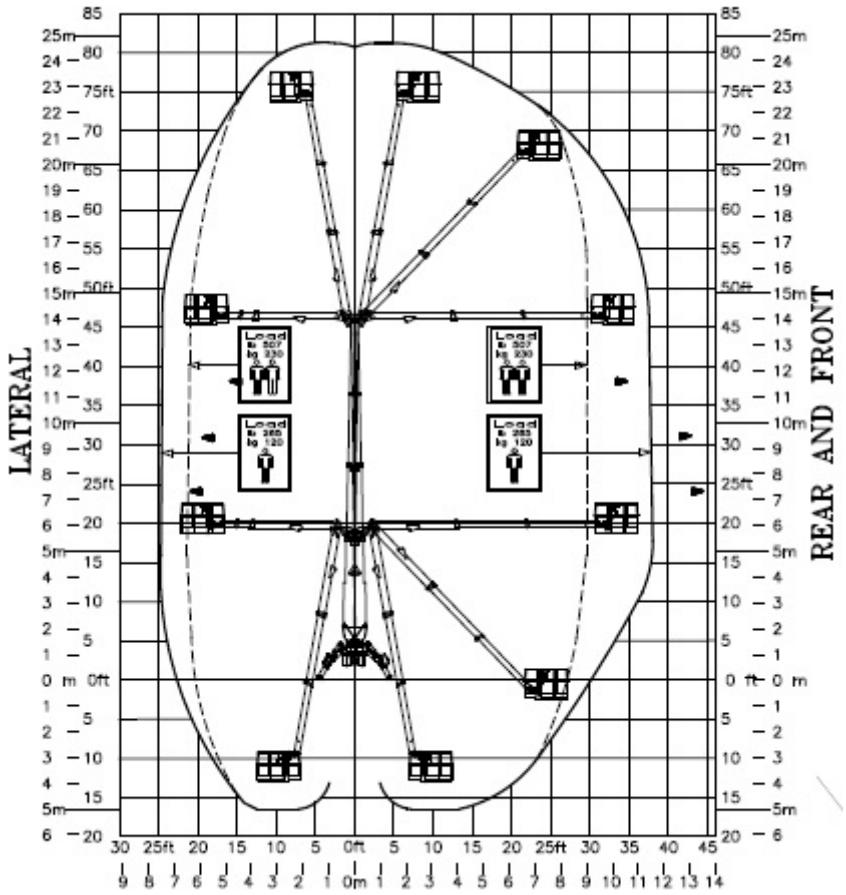
WORK AREA WITH OUTRIGGERS, OPEN CONFIGURATION

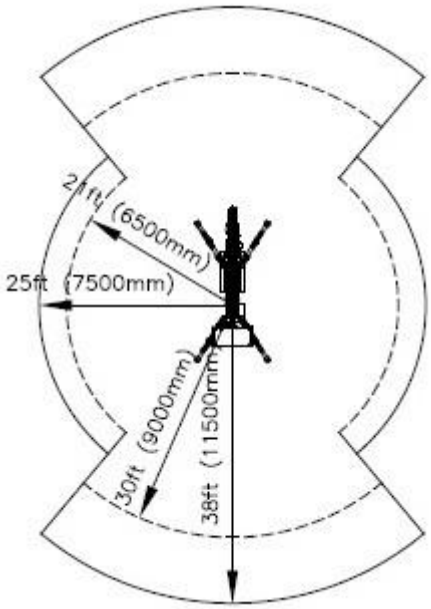




Load
---- = 507 lb (230 kg)
—— = 265 lb (120 kg)

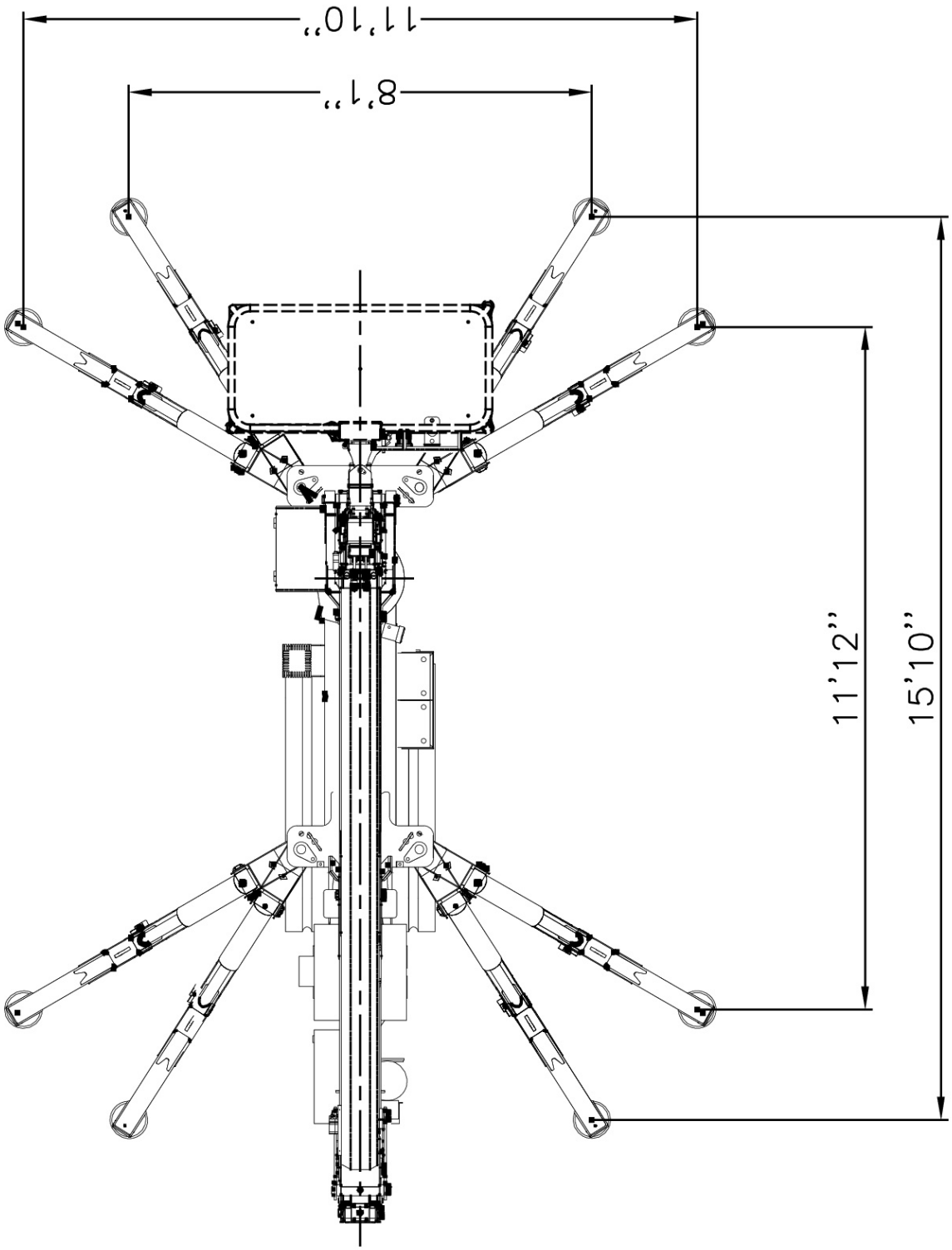
3.5 WORK AREA DIAGRAM





Load
---- = 507 lb (230 kg)
—— = 265 lb (120 kg)

3.6 EQUIPMENT PLACEMENT VIEW



3.7 TECHNICAL FEATURES

CARRIER VEHICLE	CELA SELF-PROPELLED
SERVICE PUMP	KOHLER + PLP 20.8
MANUAL EMERGENCY PUMP	Displacement 1.22 in^3/rev (20 cm^3/rev
ELECTRIC SERVICE PUMP 110V. a.c.	Motor pump HP 1,5
	Capacity 0.18 in^3/rev (3 cm^3/rev)
CONTROLS	Electro-hydraulic
MAX. OPERATING PRESSURE	2900 psi (220 bar)
ELECTRICAL SYSTEM	12V powered by the self-propelled carrier batteries

3.8 SUPPLIES

PART TO BE SUPPLIED	QUANTITY	TYPE OF SUPPLY
Hydraulic oil tank	220 lb (100 Kg)	SHELL TELLUS OIL 32
Rotation gear	0.44 lb (0.2 Kg)	MOBIL HD 90
Parts lubricated with grease	As needed	MOBIL GREASE or MOBILUX EP2
Boom lubrication on sliding block guides	As needed	MASTER PLATE

3.9 ENGINE

The equipment is powered by a Kohler three-cylinder, water-cooled diesel cycle endothermic engine.
For engine lubrication use only synthetic lubricants.
Kohler engines are built to operate under the following environmental conditions:

- operating temperature min. -4°F (-10°C) max. +104°F (+40°C)
- humidity 30% - 95% without condensation
- storage temperature -22°F (-30°C) max. +140°F (+60°C).

Failure to comply with the provisions indicated in the use and maintenance manual of the endothermic engine shall void the warranty.

If the engine does not start at the first start-up command, wait and do not repeat the command. In case of start-up at low temperature, the engine performs a very short first ignition attempt and then preheats the combustion chamber for approximately 15 seconds and then repeats the ignition.

3.10 LUBRICATION TABLE

	CODICE	DESCRIZIONE	NOTE	UTILIZZO
		GRASSI, LUBRIFICANTI, OLIO E ALTRO		
	Z47200077	NILS WHITE STAR EP	latta 18 Kg	ingrassaggio interno bracci e traverse
	Z47200065	MASTER PLATE CNC 2710199 (/2)	latta 5Kg(*)	ingrassaggio superiore e inferiore bracci
	Z47200070	MASTER PLATE CNC 2710200 (/2)	latta 1 Kg	ingrassaggio superiore e inferiore bracci
	Z47200040	REOLUBE 365 RHE (CNC 27101999)	latta 18Kg.	ingrassaggio boccole alveolari
	Z46100015	OLIO TUTELA 80W90	latta 20lt	lubrificazione cambio
	Z46100010	OLIO URANIA SAE 30 PER MOTORE DIESEL	latta 20lt	olio motore Diesel
	Z46100090	OLIO SHELL HELIX ULTRA 5W40	Latta 1 lt.	olio motore Benzina
	Z46100090	SYNTIUM 3000 SAE 5W40	Cartone 20 x 1lt	olio motore Benzina
	Z46100025	ANTIGELO IP ECOBLU 100		antigelo
	Z47200080	MOLYKOTE D-321R SPRAY	bomboletta 400ml	ingrassaggio secco fasce scorrimento
	Z47200085	NILS KETTOLUB 12 SPRAY	bomboletta 400ml	lubrificazione e protezione catene
	Z47200090	WURTH HSW 100 SPRAY (FUORI PRODUZIONE)	bomboletta 300ml	lubrificazione e protezione catene
(!)	Z46100110	OLIO IDRAULICO VISCOSITA 32 MM2/S	cisternetta	impianti idraulico standard (nuovo)
(!)	Z46100030	OLIO IDRAULICO SHELL TELLUS T32	cisternetta	impianto idraulico standard (vecchio)
	Z46100035	OLIO IDRAULICO SHELL TELLUS T22	cisternetta	impianto idraulico climi freddi
	Z47200105	WURTH HHS 2000	bomboletta 500ml	tubazioni e cavi in catenaria
	Z47200107	WURTH HHS GREASE CON PTFE	bomboletta 400ml	Pattini Scale,Movimento Scale,Cerniere,Giunti
	Z47200235	WURTH 0893 223 -S	bomboletta 500ml	protezione contatti connettori
	Z47200075	NILS GR 7000	latta 18 Kg	NON PIU IN USO (ingrass. Interno bracci)

Rev. 4 del 23/06/11

(*) N.B.: A seguito delle Nuove Normative di sicurezza dei trasporti, le Confezioni da 18 KG di Masterplate non sono più ammesse. Risultano idonee al Trasporto Non Speciale solo Confezioni fino a 5 Kg.

(!) Olii idraulici equivalenti in viscosità 32, per noi intercambiabili:
SELENIA 4416HIDROBAK 32 HV/UF
ENI ARNICA 32
SHELL TELLUS T32

3.11 COMPARATIVE LUBRICATION TABLE

BRAND	MODEL
Shell	Tellus 32
Shell	Hydraulic 32
Acca	Idroil HD 600/32
Agip	Oso 32
Api	Cis 32
Barelli	Tia/ro 32
Bellini	Sprinter ADPV 32
Bergoline	Parater C 32
BP	Energol HLP-HM 32
BP	Energol HLP-D 32
Castrol	Hyspin AWS 32
Comlube	Oleon HM 32
Ergoline	Arundo 32
Ergoline	Hydraulic KNT 32
Esso	Nuto H 32
Eural	Hyder 32
Fina	Fina Hydran TS 32
FL Italia	Hidrobak 32
Fox Petroli	YE 32
Hangsterfer's	Antiwear 32
Klüber	Lamora 32
Levenit	Hydrolube 30/32
Mobil	Mobil DTE 24
Mobil	Mobil DTE EXCEL 32
Oleoblitz	Idraulic fluid 32
Oleotecna	Movo H32
Orlube	Laser 32
Orlube	Laser HVI 32
Q8	Q8 Haydn 32
Reinach	Olio EHT 13
Roloil	LI 32
Sinclair	Commander oil AW 32
Sinol	Sinydro 32
Speedoil	Com. Idraulici Iso 32
Stilmoil	Abacus 32
Syneco	Pacemaker 32
Tamoil	Hydraulic oil 32
Tamoil	Tamhydro oil 32

BRAND	MODEL
Tennex	Ecton 32
Tennex	Ecton X 32
Texaco	Rando HD 32
Total	Azolla ZS 32
Ultralube	Oleodin 32
Ultralube	Olneo HLP 32
Vabriol	Gamma X 32
Valvoline	Hydraulic HLP 32
Vanguard	Hydraulic 32
Viscol	Signal CO 32
Wladoil	W. Engine HY SY 32 B
Wynn's oil	Wynoil H 32
Wynn's oil	Pol 32 N
Zeller+Gmelin	Divinol HLP 32

It is possible to use Biodegradable Oil: Fuchs Plantohyd 46S

When using biodegradable oil, please pay particular attention to the maintenance of the hydraulic system.

4 SAFETY STANDARDS, OPERATING INSTRUCTIONS

NOTE: For the use of the platform, the operators have to:

- be in perfect psycho-physical conditions
- be trained on the use of platform
- have read and understood all the instructions and information in this manual and on the machine

IMPORTANT WARNINGS

ALL THE PROVISIONS ON USE AND MAINTENANCE CONTAINED IN THIS MANUAL ARE MANDATORY. THEREFORE WE RECOMMEND READING THEM CAREFULLY AND FREQUENTLY AND ALWAYS PUT THEM INTO PRACTICE.

WITHOUT PREJUDICE TO THE FACT THAT CELA WILL NOT BE HELD LIABLE OUTSIDE OF THE GRANTED WARRANTY, AFTER INSPECTION AND DELIVERY OF THE MACHINE, CELA SRL RECOMMENDS TO CAREFULLY AND REGULARLY FOLLOW ALL THE PROVISIONS CONTAINED IN THIS MANUAL AND TO CORRECTLY PUT INTO PRACTICE THE REGULATIONS IN FORCE. THE NON-ENFORCEMENT OF THAT INDICATED ABOVE IS ANOTHER REASON OF NON-LIABILITY FOR DAMAGE TO THE MACHINE, THINGS, PERSONS AND THIRD PARTIES.

IN THE ABOVE INDICATED CASES THE 12-MONTH WARRANTY DOES NOT APPLY. THE TECHNICAL DATA CONTAINED IN THIS MANUAL CAN UNDERGO CHANGES DUE TO THE DIFFERENT TYPES OF TRUCKS, TO TECHNICAL CHANGES, OR TO THE ENTERING INTO FORCE OF MODIFIED REGULATIONS.
THEREFORE, THE USER SHOULD CAREFULLY STUDY THE ABOVE-MENTIONED TECHNICAL DATA.
FOR SPECIAL WORKING CONDITIONS NOT INDICATED IN THIS DOCUMENT, ASK FOR THE MANUFACTURER'S WRITTEN APPROVAL.

EXCEEDING THE LOAD VALUE ALLOWED FOR THE WORKING AREA CAN LEAD TO STRUCTURAL DAMAGE AND TO THE EQUIPMENT OVERTURNING

FOR SAFETY PURPOSES, IT IS ABSOLUTELY ESSENTIAL TO ALWAYS CARRY OUT THE FOLLOWING OPERATIONS:

a. Carefully follow the user's instructions (in chronological order).
b. It is absolutely forbidden to use the equipment with weights exceeding the ones indicated on the machine and in this document and in a different way than stated on the machine and in this document.
c. Read the content of all the plates attached to the equipment and in the operating and maintenance manuals of the components of said equipment.
d. In addition to the operator qualified to use the equipment, a ground operator must be available in a reasonable time who must have full knowledge on how to use the machine and be trained in the recovery of the equipment in emergency mode. If there is temporarily no supervision from the ground, the ground control board must be locked/disabled so that unauthorized people cannot have access to it.
e. Before installing this equipment, stabilize it with the help of outriggers equipped with increased baseplates; these outriggers must necessarily sit on a solid ground. If necessary, use boards to arrange the thrusts on a large enough area compared to the characteristics of the ground. These boards must be of a material suitable to the outriggers' thrust, they must be thick enough and tried before use without workers on the machine, which must be at the maximum outreach, with the basket near the ground, and with a weight equal to the maximum allowed loading capacity.
f. With sloping ground, always implement effective measures to prevent the equipment from sliding and it is required to use steel plates. With sloping ground, stabilize the aerial platform, paying special attention to the following:
   The maximum offset of the thrust bearing plane from the horizontal line must not exceed 1°.
   - Make sure that the platform never rests on other structures, whether fixed or mobile.
   - Keep in mind that operations to reach the work spot must be carried out by the operator on the platform. Indeed, GROUND OPERATION IS ALLOWED IN CASE OF EMERGENCY ONLY since, from the ground it is impossible to correctly estimate any interference, obstacle, real dynamic of basket movements, etc.
   - Make sure there are no electric lines.
   - If the platform is used on busy roads, it is compulsory to signal the presence of said platform by both the appropriate ground marking and the blinking light and to follow traffic regulations in force. When entering into the basket, safety belts must be immediately fastened to the special connections and entry protections must be closed; make sure they are properly locked.
   - When envisioned in the Safety Operational Plan or by the Risk Analysis, all workers should wear the protective hard hat, in accordance with the law. Do not allow materials to fall from the basket, or anyhow from heights. For particular tasks (pruning, painting, etc) provide the protections and warnings necessary for the safety of people, the machine and the surrounding property. It is forbidden to use work tools that are not in compliance with the regulations in force
   - It is absolutely forbidden to insert tools, hands, fingers, etc. into the holes on the telescopic booms and in places where there are dangers arising from interference, cutting and crushing, etc.

4.1.1 While moving

- Check whether the chosen road is suitable for the overall dimensions of the equipment.
- When driving on public roads, request permission from competent authorities and block traffic so as to eliminate any type of danger.
- Check that the cross slope of the chosen road is not such that it risks overturning the vehicle.
- It is forbidden to travel or to move the truck with people or loads/materials in the basket or in the turret or on the frame walk-on floor

4.1.2 Before elevating

- Carry out daily inspections as indicated in the maintenance chapter.
- Use the protective helmets and the approved accident-prevention clothing.
- Outrig the aerial platform so that the inclination of the thrust bearing plane is less than +/- 1°.
- Make sure the man basket is horizontal.
- Hook the safety belts onto the designated points on the basket.
- Close access-way protections.
- Once again, make sure that all controls and safety devices are in working order and secure the work material properly, so that it cannot move or create dangers.
- Make sure that all operators are aware of the use and maintenance provisions.

4.1.3 In elevation

- While moving, pay attention to boom travels; during rotation, lifting, lowering, extension, etc., evaluate any possible obstacle.
- In the presence of power lines or pylons, keep a minimum distance from them as provided by the CSA standard, observing the minimum distances according to the current regulations.

Voltage	Distance
From 0 to 50 kV	10 ft – 3.05 m
From 50 to 200 kV	15 ft – 4.60 m
From 200 to 350 kV	20 ft – 6.10 m
From 350 to 500 kV	25 ft – 7.62 m
From 500 to 750 kV	35 ft – 10.67 m
From 750 to 1000 kV	45 ft – 13.72 m

- Avoid any collision of the basket or booms with outriggers or with other parts of the machine, with fixed obstacles (buildings) or moving obstacles (vehicles, cranes, etc.).
- Do not stand in the operating area of the equipment, and particularly under the booms and basket.
- Use the equipment for vertical movements only, never perform any pulling or thrusting in any direction.
- Keep your hands far from joints or openings.
- When performing automatic maneuvers (auto closing, rotation centring, automatic opening assistance, etc.) always make sure the maneuver is being carried out correctly: CELA Srl will not be held liable for any damage generated during automatic maneuvers.

4.1.4 At the end of work

Make sure that the structure and the operator-carrier basket are in non-working position and that outriggers have completely retracted.

4.2 SAFETY STANDARDS

FOR SAFETY PURPOSES, IT IS ESSENTIAL TO NEVER USE THE MACHINE UNDER THE FOLLOWING CONDITIONS:

- With loads and in ways other than the ones it has been designed, tested and delivered for, which are indicated on the machine itself;
- On soft, unstable or cluttered ground;
- With the basket automatic levelling not reset (basket horizontal);
- With wind exceeding 27.96 mp/h (12.5 m/s);
- Near electric lines (the machine is not insulated);
- Without the basket access-way protection bar;
- With material or objects hanging from the machine booms or sides (in any way outside the basket);
- Using ladders or similar tools within the basket;
- Performing any throwing or horizontal/inclined thrusting exceeding lbf 44.96 (20 daN) for 1 person or lbf 89.92 (40 daN) for 2 persons (load vertically only);
- In areas presenting exploding hazard;
- If there are cracks, flaws, hydraulic leaks, cut wires or any other anomaly in functioning;
- At a temperature lower than 14°F(-10°C);
- As a lifting device for materials; if used with the basket mounted (AWP);
- With safety devices out of order or not inspected;
- Under dangerous weather conditions (poor visibility, thunderstorms, lightning, etc.);
- With posters, banners, etc. hanging from the basket, booms or other parts of the machine.

IMPORTANT

It is absolutely forbidden to insert tools, hands, fingers, etc. into the holes on telescopic booms, cable pulleys and on joints.

DURING WASHING WITH HIGH-PRESSURE JET, DO NOT AIM IT AT ELECTRIC BOXES, CABINETS AND COMPONENTS. DO NOT
WASH WITH DETERGENTS, AGGRESSIVE CHEMICALS, PETROL OR SIMILAR SUBSTANCES, THAT CAN DAMAGE RUBBER PARTS, PLASTIC COMPONENTS AND PAINT.

ATTENTION!!! PAUSES/WORKING BREAKS

Never leave the machine unattended if the engine has not been turned off, the ground control board locked and the cabin compartment of the truck locked.
We advise you, in case of pauses or working breaks, to always bring the platform to the ground (in transport position).
It is strictly forbidden to leave the machine open for too long without carrying out daily checks on the tightness of the different components (valves, outriggers, levelling, etc...)

ATTENTION!!! WORKING NEAR ELECTRIC POWER LINES

Operating with an aerial platform near electric lines is always very dangerous because of the mobility of the machine's structure.

We remind you that there can be electric discharges even without contact between the two parts, but it can be sufficient that between them there is a smaller distance than the minimum safety distance (see the standards in force in the country of destination of the machine).

For example, in the USA, the current standard CSA requires a minimum distance depending on the voltage that the cable is subjected to. The distances indicated in the table are considered strictly minimum and the operator must ensure that no body parts exceed the safety distances during various movements with the platform. In any case we advise you to request, in advance, the interruption of the electrical power supply for the time you will be working with the platform.

4.3 RESIDUAL RISKS AND APPROPRIATE PRECAUTIONS

- *Violent handling of control levers: risk of shocks and oscillations.*
  GENTLY MOVE THE CONTROLS TO REGULATE SPEED AND ACCELERATION
- *Overloading and horizontal or inclined thrusts: risk of overturning.*
  DO NOT EXCEED WORKING LOADING CAPACITY
- *Ground collapsing: risk of overturning*
  CHECK GROUND PRESSURE AND GROUND SOLIDITY
  (see ground pressure under outriggers) (pay attention to winter thawing).
- *Wind gusts: risk of overturning.*
  DO NOT WORK IN DANGEROUS WEATHER CONDITIONS
- *Impact against ground or aerial obstacles: risk of collision or overturning.*
  BE EXTREMELY CAREFUL DURING OPERATION
- *Impact against a power line: electrical risk.*
  KEEP AT A SAFE DISTANCE FROM ELECTRICAL POWER LINES
- *Work on shoulders, pavements, etc.: risk of overturning.*
  PAY ATTENTION TO THE GROUND AND TO THE POSITION OF THE OUTRIGGERS
- *Working in explosive environments: risk of explosion.*
  PREVIOUSLY OBTAIN INFORMATION ABOUT EXPLOSION OR FIRE HAZARDS IN THE PLACE OF INTERVENTION
- *Persons within machine range of action: risk of crushing.*
  KEEP WORKING AREA CLEAR AND FORBID ADMITTANCE TO UNAUTHORIZED WORKERS. DURING WORKING HOURS, CHECK IF WORKERS RESPECT THIS PROHIBITION
- *Thermal engine + exhaust: risk of burns and intoxication.*
  DO NOT STAND NEAR EXHAUST PIPES, WHEN WORKING INDOORS, DIRECT EXHAUST OUTSIDE.
- *Pay attention to overloads from above or caused by contact with other structures.*
  BEFORE STARTING ANY WORK, PAY ATTENTION TO WORK AREA CONDITIONS, TO THE GROUND, TO OBSTACLES, TO LIGHTING AND NOISE AND TO TRAINING WORKERS IN CHARGE OF USING THE MACHINE.
- *Toxic materials*
  IN THE EQUIPMENT THERE ARE TOXIC MATERIALS, POISONOUS IF SWALLOWED OR INHALED (QUICK SILVER, OILS, PLASTICS ,ETC.) THE MAINTENANCE AND REPAIR OF THE SYSTEM MUST ONLY BE CARRIED OUT BY TRAINED AND EXPERT PERSONNEL.

NB. IF THE MACHINE IS EQUIPPED WITH HOSES FOR EXHAUST GAS DEVIATION IT IS MANDATORY TO USE THEM

4.4 OPERATING LIMIT

DO NOT USE THE MACHINE:

- With loads exceeding the work load capacity.
- On ground that cannot withstand the pressure and weight of the outriggers.
- On ground with excessive slope.
- With the side stress in the basket exceeding 44.96 lbf (20daN) for each person (max. 89.92 lbf (40daN) for 2 persons).
- With wind exceeding 27.96 mp/h (12.5 m/s).
- Inside cold rooms.
- In explosive and dangerous atmospheres.
- During thunderstorms.
- With poor visibility.
- In poorly ventilated areas. Toxic exhaust gas of thermal engines.

4.5 INFORMATION ABOUT WIND SPEED

WIND STRENGTH Beaufort scale	WIND SPEED M/s	DESIGNATION	FEATURE
0	0.0 - 0.2	Calm	Calm winds, smoke rises vertically or almost vertically.
1 **2**	0.3 - 1.5 1.6 - 3.3	Light breeze	The smoke indicates the direction of the wind, you can feel wind on your face, leaves start moving, the deflector starts moving.
3 **4**	3.4 - 5.4 5.5 - 7.9	Moderate breeze	Leaves and branches move continuously. Small branches begin to move. Dust and paper move on the ground.
5	8.0 - 10.7	Fresh breeze	Small branches with leaves move; waves form on canals and lakes.
6	10.8 - 13.8	Strong breeze	Big branches swing, wind whistles when passing through the electric line cables; it is difficult to walk with an open umbrella.
7	13.9 - 17.1	High wind	Trees swing; it is difficult to walk.
8	17.2 - 20.7	Gale	Branches break; it is hardly possible to walk.
9	20.8 - 24.4	Strong gale	The wind damages houses (antennas and roofing-tiles are swept away).

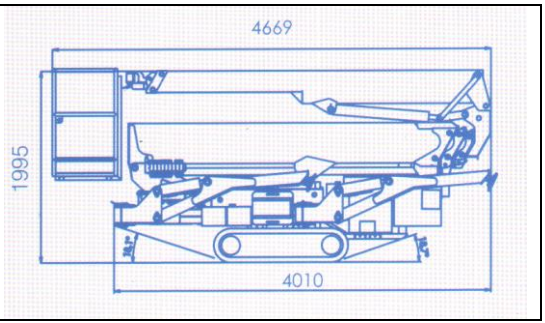
WIND SPEED IS MEASURED ON AVERAGE FOR APPROXIMATELY 10 MINUTES AT A 10-METER HEIGHT ON A LEVEL GROUND

4.6 SUMMARY OF MAJOR WARNINGS

MOVEMENT POSITION
Make sure it is placed perfectly in the resting position

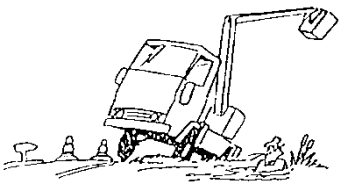
MOVEMENT

Pay attention to the machine's overall dimensions

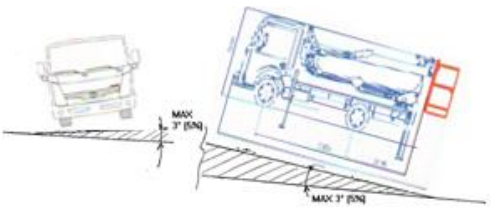


OUTRIGGING

Pay attention to ground solidity.

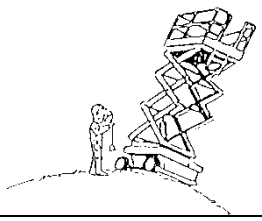


OUTRIGGING
Maximum ground inclination.



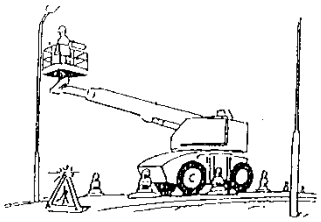
LEVELLING

Check maximum allowed inclination.



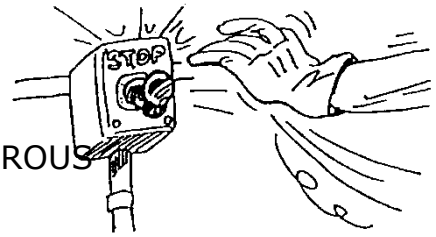
WORK AREA

Set up barriers around the work area.



EMERGENCY STOP

If there is any anomaly, stop the machine. BEFORE SWITCHING ON THE MACHINERY CHECK THAT THE DANGEROUS CONDITIONS HAVE CEASED

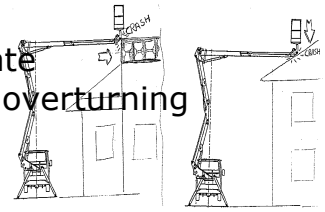


OBSTACLES AND ELECTRIC LINES

Make sure that there are no electric lines and obstacles of any kind.

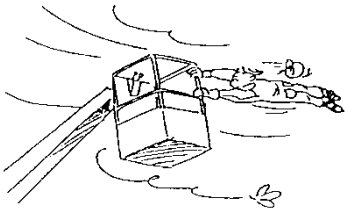
IMPACT AND THRUSTING AGAINST OBSTACLES

Impact and/or thrusting against an obstacle (extension/retraction and/or lifting/lowering) may create structural damage to the machine and serious risks of overturning the equipment. Before and during the movements, always verify visually the encumbrance of the machine structure in all the directions (with special attention to hidden areas, such as the lower part of the basket).



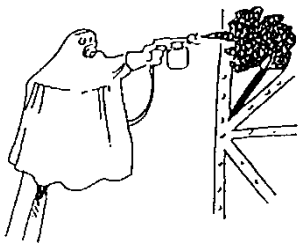
SAFETY BELTS

Pay attention to maximum operating wind. ALWAYS AND CORRECTLY use the safety belts.



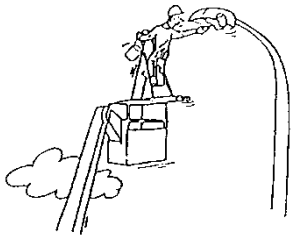
PROTECTIONS

When performing special jobs
safeguard yourself and the machine.



IN THE BASKET

Never use ladders, boards, or other objects,
IT IS FORBIDDEN to climb onto the railing.

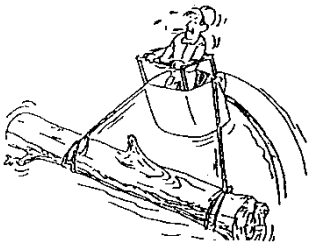


IN THE BASKET

Never exceed the load capacity allowed
in the basket.

LIFTING

Never use the platform as a lifting device,
not even for small loads.

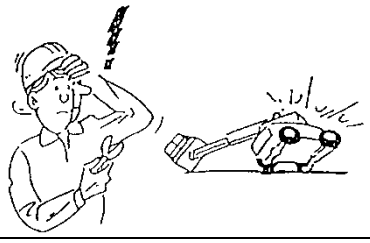


SAFETY BELTS AND HELMET

Always use safety belts and a
helmet. Do not fasten belts to structures
outside the basket BUT ONLY TO THE
SPECIALLY MARKED CONNECTIONS.

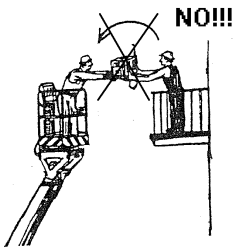
REPAIRS AND MODIFICATIONS

Do not carry out any repair or modification unless at authorized repair shops.



ATTENTION!!! LOADS AT A HEIGHT

Do not load the basket while it is high up with materials or persons. This operation can cause the platform to tip over or serious damage to the structure.



4.7 GROUND CONSISTENCY

During the manoeuvres for installation of the outriggers pay special attention to the ground where you will put the outrigger plates. Always verify the consistency and the solidity of the ground and, if necessary, place larger baseplates in between outrigger and ground to better distribute the load to the ground (if in doubt, ask the worksite manager or a civil engineer experienced on ground consistency for information). For the values of the load transmitted to the ground by the machine outriggers, see chapter “Characteristics and performance”, and for the ground consistency values, attached below is a purely indicative chart of the allowable pressures for certain types of ground.
For the calculation of the specific pressure loaded on the ground from the outriggers use this formula:

P= F/A
where:
P= specific pressure loaded on the ground by the outrigger (lbf/in^2)
F= maximum load of the outrigger (lb - see chap. 3)
A= area/bearing surface of the outrigger (in^2)

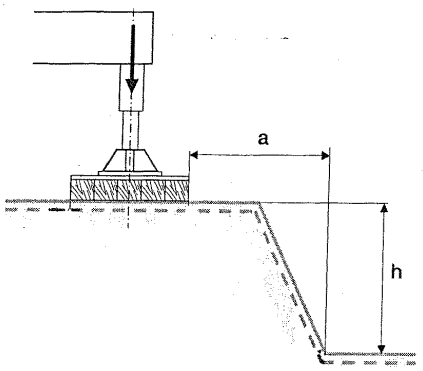
Example: for a platform with F= 7121 lb and the baseplates with surface A= 62 sq in (dimensions 8x8 in)
P= 7121 / 62 = 114.8 lbf/in^2
With increased baseplates with surface A’= 248 in^2 (dimensions 16x16 in)
P’ = 7121 / 248 = 28.7 lbf/in^2

Chart with indicative ground consistency values

Type of ground	Specific pressure allowable (lbf/in^2)
Soft, non-compact ground	14.5 - 29
Compact and granular ground (sand)	29 - 87
Compact ground (sand+gravel)	58 - 145
Rocks of medium consistency (limestone-sandstone) - road paving suitable for the transit of heavy vehicles	145 - 217
Rocks of considerable consistency (strong limestone - strong sandstone)	217 - 435
Compact rocks (porphyry - basalt - granite)	435 - 725

4.7.1 Safety distance from ditches/slopes

During the installation of the outriggers, always maintain a sufficient safety distance from ditches and slopes. This distance depends on the kind of ditch/slope (propped and not propped) and on the kind of ground (we advise you to ask the worksite manager or a civil engineer experienced on ground consistency for information). Below is the theoretical/scheme rule



- In case of sliding or loose terrain - a = 2 x h
- In case of compact terrain, not sliding or loose - a = 1 x h

4.8 GENERAL SAFETY STANDARDS FOR PLATFORM USE

The following safety standards must be complied with when using the platform:

1. Use of the platform is reserved to authorized and suitably trained personnel

2. The platform has been designed to operate in the following environmental conditions:

   temperature -4°F (-20°C) – 140°F (+ 60°)
   humidity 30-95% without condensation
   work cycles 100,000

3. The instructions concerning "activation of the platform" and "return to start position" must be carried out meticulously and chronologically.

4. The platform must be placed on firm ground and with the base positioned horizontally.

5. Should you need to operate on poorly consistent ground, unable to withstand the specific pressure exerted by the outrigger with the standard plate, appropriate boards/plates must be set up to divide the load in reference to the specific pressure indicated on the plates near each outrigger.

NOTE: BEFORE STARTING THE PLATFORM, MAKE SURE THAT THE VEHICLE HAS BEEN STABILISED BY THE OUTRIGGERS AND THAT THE TRACKS ARE LIFTED UP AT LEAST 3.93 in (100 mm) FROM THE GROUND.

6. The operator on the platform must use the safety belt latched to specific hooks positioned on the platform itself and, if foreseen, he must wear a helmet.

7. Never exceed the maximum allowed load indicated on the capacity plates.

8. When working near power lines keep a minimum distance from them as, for example, stated in standard CSA, observing the minimum distances according to the current regulations.

Voltage	Distance
From 0 to 50 kV	10 ft (3.05 m)
From 50 to 200 kV	15 ft (4.60 m)
From 200 to 350 kV	20 ft (6.10 m)
From 350 to 500 kV	25 ft (7.62 m)
From 500 to 750 kV	35 ft (10.67 m)
From 750 to 1000 kV	45 ft (13.72 m)

9. The platform has been built to perform vertical loading manoeuvres. Therefore, it cannot be used to perform horizontal pushing or pulling.

10. It is forbidden to use the work platform (AWP) as a crane.

11. It is forbidden to increase the wind load by applying signs, guards or structures.

12. It is forbidden to throw tools or objects up or down.

13. The platform must never lean on other structures whether fixed or mobile. All operations to reach the work spot must be carried out by the operator on the platform. Conducting the manoeuvres from the ground is only allowed in case of an emergency. It is forbidden to climb onto the beams of the aerial platform during all work and manoeuvre phases or take other measures to gain elevation, by placing shims on the floor. A correct position must be maintained with feet firmly on the floor of the platform.

14. Position the vehicle so that the platform is as close to the work spot as possible.

15. Check for the presence of fixed or movable obstacles in the work area which could cause dangerous situations during the work phases.

16. While manoeuvring, always look in the direction of movement of the platform.

17. It is forbidden to stand near the chassis of the vehicle while the platform is being manoeuvred; always visually make sure no one is there before starting to operate the equipment.

18. Approach the work spot using short movements with the control levers.

19. Do not perform abrupt reverse manoeuvres to avoid creating kickbacks for the platform or structure posing dangerous situations for operators.

20. Always manoeuvre cautiously and slowly. Quick manoeuvres can cause accidents.

21. It is forbidden to tamper with the hydraulic check valve on the cylinders and the maximum pressure valve.

22. It is forbidden to tamper with or modify any safety device.

23. Check the efficiency of the work area limiting device daily.

24. It is forbidden to place ladders or structures of any type to increase the platform's work area.

25. Check the hydraulic oil level in the tank daily.

26. Perform the required periodic maintenance.

27. Check the indicator lights equipping the platform and carrier vehicle daily.

28. It is forbidden to use the platform with wind speed exceeding 27.96 mp/h (12.5m/s).

29. Should the platform be used along roads open to traffic, it is mandatory to signal its presence with appropriate signs on the ground.

30. Use the platform in sufficiently illuminated areas.

4.9 ROAD SIGNS

A. Before starting any work, the area involved in the work, or that could become dangerous, must be cleared of vehicle and pedestrian traffic.

B. For areas where only pedestrians pass, install the specific barriers and keep an eye out during work that unauthorized persons do not enter the protected area; if needed, set up an alternative pedestrian walkway.

In case of interference with vehicle traffic (to the side of roads or on the road itself) use the signs required by the Highway Code. Remember that it is essential to arrange the signs in the exact sequence, and namely in the following order:

- Signs pre-signalling "Work ahead" to be placed on the two sides of the road affected by the work, at the most convenient distance depending on the characteristics of the road and, therefore, the speed of the vehicles (at least 164 ft (50m) before curves or bumps).

- Warning signs ("Oncoming traffic has alternating right of way"): to be placed at the sides of the road.

- Signs to be placed on the roadway ("Mandatory direction, cones"): start from the side of the road and from the side where the vehicles come from so the traffic moves over gradually.

- Road barriers at the front and sides of the worksite. Extendable barriers can only be used to delimit the worksite lengthwise, parallel to traffic.

C. When changing road lamps, a job requiring frequent stops along the roadway, entailing both of the following conditions:

- intervention in residential area on roads with 30 mp/h (50km/h) speed limit in ideal visibility conditions,
- aerial platform regularly operating so that the man basket with the relative boom are kept in position as to avoid interfering with other vehicles.

The following road signs must be used for the situations indicated below:

- with the AWP stopped on the side of the road, when the remaining part of the roadway allows the simultaneous transit of two vehicles with limited clearances (8.20 ft (2.5m)) in both directions, the sign "Mandatory direction" with the arrow

facing downwards by 45° must be applied to the left rear side of the vehicle, with the square 1.64x1.64 ft (50x50 cm) sign with diagonal white and red stripes in the middle; the obstacle (AWP and operators) must be marked before and after with "Work ahead" signs;

- with the AWP stopped on the side of the road, when the remaining part of the roadway does not allow the simultaneous transit of two vehicles with limited gauges (8.20 ft (2.5m)) in both directions, the above-mentioned signs must be applied, where the lane with the deviation must have the sign "Oncoming traffic has alternating right of way" and the other lane has the sign "Alternating right of way";

- with the AWP stopped in the middle of the road, when the remaining part of the roadway allows simultaneous transit on the right and on the left, of two vehicles with limited gauges (8.20 ft (2.5m)) in both directions, two "Mandatory direction" signs with the arrow facing downwards at 45° must be applied to the right rear side and left front side of the vehicle, with the square sign with white and red stripes on the rear; the obstacle (AWP and operators) must be marked before and after with "Work ahead" signs;

D. When work is finished, remove the signs in the exact reverse sequence as indicated in the previous points.

N.B. at night or when visibility is low, integrate these signs with lanterns with a fixed red light and possibly with naked flame torches; it is advisable for operators wear a phosphorescent vest.

Optional use of a red flag can integrate the signs in the work area; the flag, either placed in a fixed manner or waved by an operator, must be used near the "Work ahead" sign.

4.10 OPERATIONAL PRECAUTIONS (RESIDUAL RISKS)

4.10.1 Electric power lines

This machine is not electrically insulated and offers no protection against contact with live power lines or in proximity to them.

It is extremely dangerous to work near an electric power line.
Remember that electrical discharges occur even if two bodies do not touch. Indeed, a distance between them of less than the minimum safety value is sufficient, as stated by standard CSA and, in any case, observe the minimum distances according to current regulations.

Voltage	Distance
From 0 to 50 kV	10 ft (3.05 m)
From 50 to 200 kV	15 ft (4.60 m)
From 200 to 350 kV	20 ft (6.10 m)
From 350 to 500 kV	25 ft (7.62 m)
From 500 to 750 kV	35 ft (10.67 m)
From 750 to 1000 kV	45 ft (13.72 m)

Note: some Countries can have Laws with different limitations to which the operator must comply.

Together with the mandatory observance of the minimum distance prescribed by Law, a series of precautions to be taken to reduce the risk of accidents is recommended:

- ask the Electric Power Company to interrupt the power supply and to earth the line;
- when it is not possible to interrupt electricity, keep all parts of the machine further than the mandatory distance, considering that wind can sway the lines;
- persons not involved in the work must remain as far from the work zone as possible;
- always operate with caution and care;
- when possible, use protective devices such as: line proximity indicator or transversal and height delimitations. Keep in mind that precautions such as earthing the machine or protections on the work surface or on the extension structure offer little or no protection against electric discharges.

When working in the vicinity of radio, television or radar stations, the machine can receive a high induced voltage which can cause painful shocks and burns due to overheating of the metallic structure of the platform.
Take appropriate measures before operating, consulting technicians of the concerned station.

What to do in case of accidental contact of any part of the machine with live electric power lines:

A. Do not act impulsively and do not panic; if you are not in direct contact you are reasonably insulated. Do not jump from the platform; apart from getting injured due to the fall, the electrical risk still subsists as the ground surrounding the machine is also electrified to various degrees.
B. If the height allows for it, jump as far as possible and move away by jumping with your feet together.
C. Rescue workers can only approach the vehicle when a dry wooden catwalk has been set up.
D. Immediately have everyone move away from the area around the machine.
E. If the machine is capable of operating, try to move away from the contact by moving in the opposite direction from what created the contact.
F. If you are not able to detach yourself from the line, remain where you are until the electric line is disconnected.
G. When you have returned to a safe place, stop the machine and check for any damage.

It is forbidden to use the machine as earth for welding!

4.10.2 Risk of burns

The batteries contain acid.
It is mandatory to wear protective clothing, gloves and goggles when working on batteries.
In case of accidental contact with acid, immediately neutralise the part and rinse with plenty of water.

5 COMMAND DESCRIPTIONS, CHARACTERISTICS, SETTINGS, PROCEDURE FOR OPERATING THE MACHINE AND FOR EMERGENCIES

5.1 GENERAL CHARACTERISTICS

The equipment in question is essentially composed of a base carriage driven by tracks that a boom unit is applied on, supporting a man basket on its end.
The chassis is made of electro-welded sheet metal that is secured to four hydraulically driven independent outriggers.
A set of holes in the frame indicate the position of the outriggers, turning the fixing supports of the outriggers on the frame.
The outriggers are held in position with stopping pins.

A rotary turret, driven by a rotary table equipped with hydraulic gear motor and negative brake allowing for 360-degree rotation, is fixed to the chassis by a ball slewing ring.

The boom unit is composed of a lifting boom inside of which 3 telescopic extensions slide by means of a hydraulic cylinder system and chain transmissions. A jib is articulated at the end of the extension driven by an articulation with a hydraulic cylinder.
The jib is composed of a lifting boom with 2 telescopic extensions inside of it which slide by means of a hydraulic cylinder system and chain transmissions.
There is a man basket on the end of the last jib extension.

The walk-on floor of the man basket is kept horizontal by an electro-hydraulic system.

This device keeps the walk-on floor of the basket horizontal in real time regardless of movement speed of the booms.

The equipment is fitted with a remote control to be positioned on the man basket for movement of the aerial platform. From the ground, only stabilisation and carriage traversing manoeuvres are allowed.

The controls are proportionally driven to make it possible to adjust movement speed as needed.

Two red mushroom-shaped buttons with rotating release stop all platform functions if pressed.

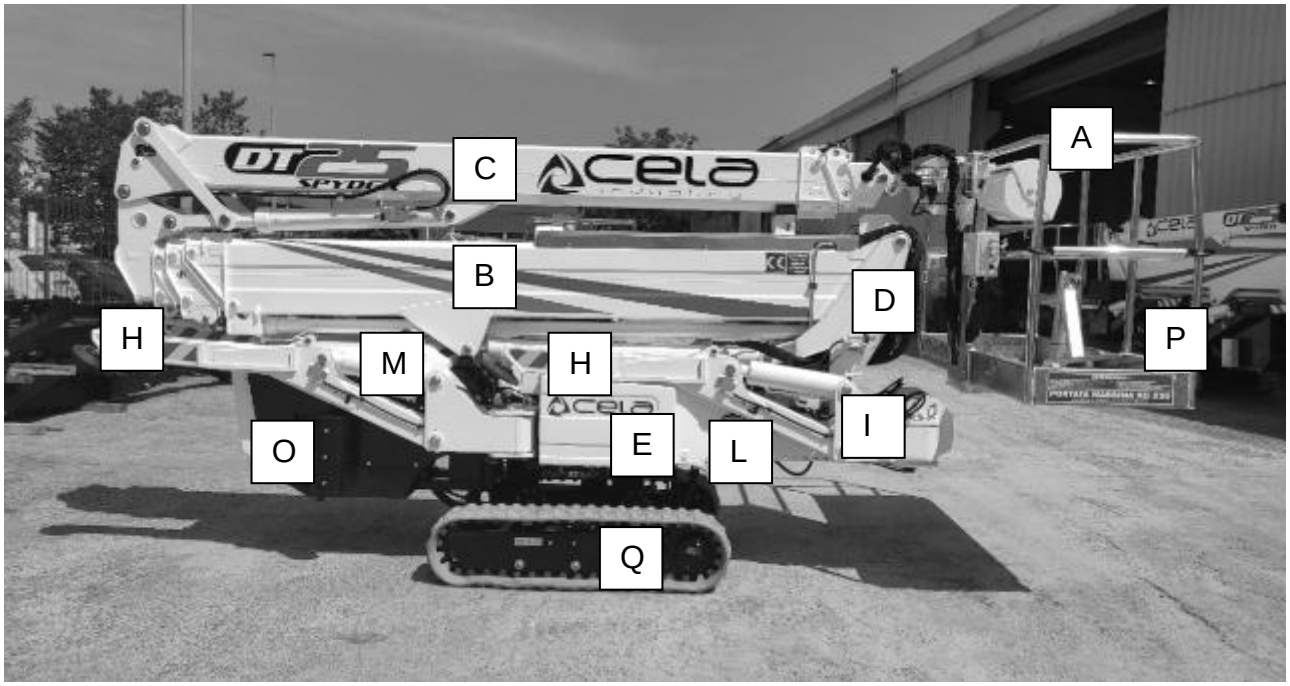
A geometric limiting device automatically delimits the allowed work areas.

5.2 DESCRIPTION OF THE MACHINE

5.2.1 Declared use of the machine

The CELA aerial work platform is designed and built to lift and move people housed inside a levelled basket, in all ranges of movement that can be performed.
The platform lifts the staff vertically, allows horizontal movement by means of the joints and extensions and allows angular movements via the rotary turret.
The machine works with the outriggers pressed to the ground, the chassis levelled and the track detached at least 3.93 (100 mm) from the ground.
Staff can take tools into the basket up to the maximum capacity indicated

5.3 MAIN COMPONENTS



A - Remote control
Waist belt for aerial platform control.
B – Main telescopic boom
Telescopic boom with 3 extensions and swivelling realised with two hydraulic cylinders.
C – Jib
Telescopic boom with 2 extensions and swivelling created with two hydraulic cylinders.
D - Turret
Built with top quality sheet steel, it is composed of a main press-bent body and electro-welded reinforcements. It is installed on the support slewing ring of the superstructure; rotation is driven by a hydraulic motor with worm screws and automatic brake in the work position. Turret rotation is allowed for a maximum of approximately 720° (2 turns). A hydraulic directional valve allows the machine to be handled in case of electrical faults
E – Oil tank

This is the tank that contains the oil for feeding the machine's hydraulic plant, complete with level indicator. The oil tank is an integral part of the platform chassis.

H - Outriggers

With individual, simultaneous or automatic descent, they are fastened to the chassis.

I – Base frame

This is the steel load bearing structure.

L – Emergency hand pump

Hydraulic hand pump for emergency descents.

M – Emergency controls

To control the movements of the machine from the ground during descent in emergency conditions.

O - Thermal engine/electric pump

To produce the hydraulic energy necessary for machine movement. Made up of a pump coupled to a Kohler 3 cylinders water-cooled three-cylinder thermal engine or, alternatively, of an electric gear pump coupled to a 220v inverter (110V where applicable).

P- Man basket

This is the basket that carries the operator/s and the tools. It is made built with tubular aluminium, measuring: 45,9x2.29x36.0 in (1400x700x1100 mm). It is equipped with 2 hooking points to the boom. An aluminium basket of increased size measuring 59.0x2.29x36.0 in (1800x700x1100 cm), a one-man aluminium basket measuring 22.9x22.9x36.0 in (700x700x1100 cm), an 1000V insulated basket measuring 42.6x26.2x36.0 in (1300x800x1100 cm) and a 1000V insulated basket measuring 23.6x27,5x43.3 in (600x700x1100 cm) for a single person are also available (optional).

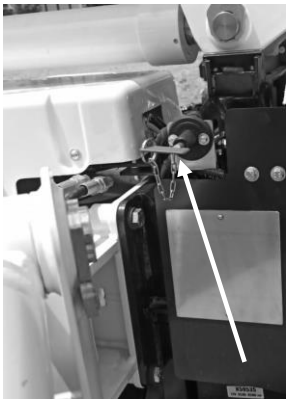
Q- Track unit

For aerial platform traversing thanks to 2 hydraulic motors which drive the tracks. The tracks can have 2 positions: the first, low and narrow, to make access to narrow spaces easier, and the second, high and wide, to ensure better stability and a better attachment angle during traversing.

5.4 COMMISSIONING THE PLATFORM

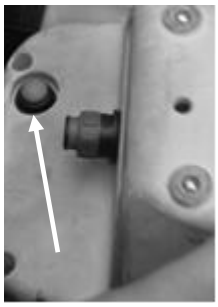
5.4.1 Switch on

Connect the spider battery using the specific battery disconnector.
Turn ON the key in the main electric board and wait for the audible signal. Pick up the remote control, first making sure that the emergency button is not pressed and, if so, resetting it. Press the GREEN button on the bottom left to turn on the remote control.



5.4.2 Using with internal combustion engine

Press the green button a second time to establish the connection with the ground unit. Check that the K selector is set to endothermic engine and then press the engine switch on button. The engine autonomously manages the glow plugs: if required, following an ignition attempt it preheats for approximately 15 seconds and then repeats the ignition. Once switched on, wait about 30 sec. for the number of revolutions to stabilize. Press the switch on button once again to turn the engine off.



5.4.3 Operation with electric pump

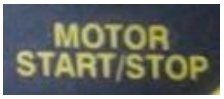
Press the green button a second time to establish the connection with the ground unit. Connect the electric power supply to the main board and position selector K on ELECTRIC PUMP

5.5 REMOTE CONTROL

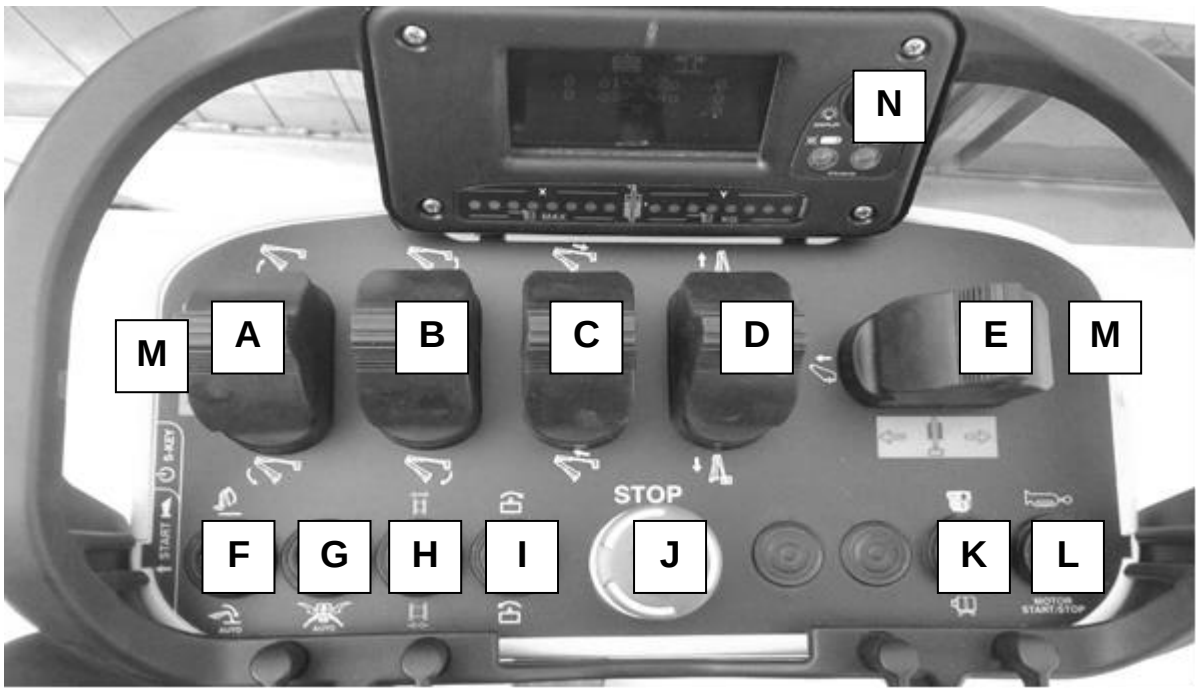
The remote control is the panel that the machine can be controlled from. As already highlighted, there is a button, on the lower right side, that is used to activate the control unit. Pressing this button once activates the remote control. Pressing it a second time the connection between the remote control and the receiving unit is activated, making it operational.

Lastly, on the lower left side there is a quick connector to supply energy to the remote control in case of low battery.
To use the remote control in this configuration, the specific cable must be used. After connecting the cable to the remote control and to the plug on the electric box below, turn off and restart the unit to make this configuration operational.
For operations in the presence of “electronic smog” (e.g. near aerials) power the remote control with the cable because, by operating this way, data transmission also takes place via cable.
In order for the remote control to be effectively operational, you must use the mechanical lever located in the lower area of the remote control housing.
When using the remote control from the emergency ground position, insert the remote control into its housing and push it firmly into place.
If you attempt to use the remote control from the man basket without using the designated mechanical lever located on the bottom or without pressing it firmly into its seat located on the emergency ground station, the control will not work and *STOP 31* will appear on the remote control LCD screen.
There is a bayonet fitting on the opposite side of the cable power socket, on the remote control: this is the hardware key of the remote control. If this key is not properly connected, the remote control behaves as though the emergency button were pressed or as though there were no power (flat batteries).
The machine is equipped with a battery charger and a battery for the remote control. Both are housed inside the access door to the emergency controls on the carriage.

5.6 DESCRIPTION OF REMOTE CONTROL PICTOGRAMS

POS	Pictogram	Description and operation	Pictogram	Description and operation
A		Lower boom up		Lower boom down
B		Jib boom up		Jib boom down
C		Jib boom out		Jib boom in
D		Lower boom out		Lower boom in
E		Right rotation		Left rotation
F		Auto-stabilisation		Descent by outriggers
G		Auto-closing		
H		Narrow tracks		Wide tracks
I		Right basket rotation		Left basket rotation
J		Emergency button		
K		Thermal engine		Electric motor
L		Audible signal		Start/stop thermal engine
M		Dead man (option)		
A bis		Forward/reverse movement		
E bis		Steering/rotation on rh/lh side		

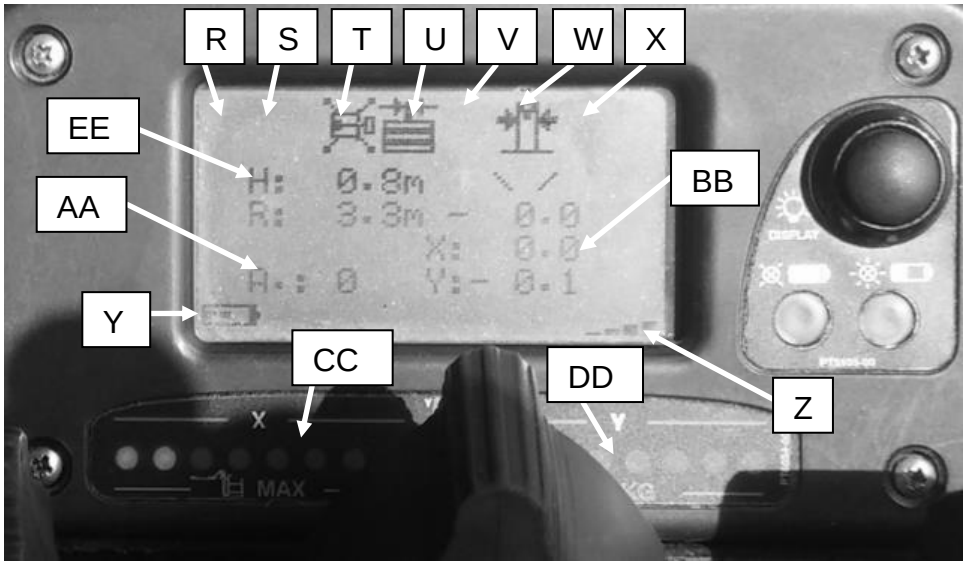
5.7 DESCRIPTION OF REMOTE CONTROL FUNCTIONS:



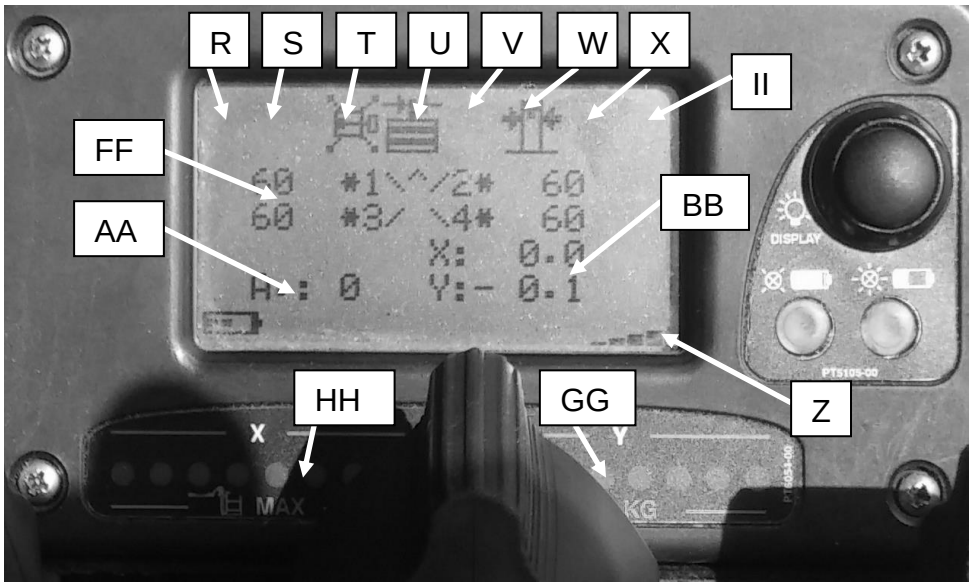
A- Main boom forward-reverse/up-down movement control.
B- Jib boom opening-closing movement control.
C- Jib boom extension-retraction movement control.
D- Main boom extension-retraction movement control.
E- Carriage right-left travel/rotation in place/rh and lh turret rotation movement control.
F- Automatic levelling/destabilisation.
G- Automatic closing (hold down during entire manoeuvre).
H- Tracks widening/closing.
I- Basket rotation to right and left.
J- Emergency button.
K- Main motor-electric pump selector
L- Audible signal/thermal engine start-stop.
M- “Dead man” button (optional, right and left side).
N- Display over lighting button.

5.7.1 Description of remote control display

The remote control display provides the user with all the useful and sufficient information to operate the machine safely. Depending on the operating mode selected by the user, the information displayed is different as shown below:



"Aerial" Mode



"Traversing" and "Outrigging" mode

R- Pictogram indicating reaching the limiting device (aerial mode) - Pictogram indicating boom on support (Traversing and Outrigging mode).
S- Pictogram indicating basket overload (all modes).
T- Pictogram indicating stabilized and levelled machine (all modes).
U- Pictogram indicating basket centred (all modes).
V- Pictogram indicating extant generic alarm (all modes) - Pictogram indicating an emergency pushbutton has been pressed (all modes).
W- Pictogram indicating turret centred (all modes).
X- Pictogram indicating active STOP signal (all modes) - Pictogram indicating remote control inserted in its seat and operative (all modes).
Y- Pictogram indicating the charge level of the battery (all modes).
Z- Pictogram indicating the level of the radio signal (all modes).
AA- Table used by the limiting device (all modes).

BB- Area indicating the actual inclination of the carrier on X and Y axes (all modes) and turret rotation angle (aerial mode only).

CC- LED indicating the distance of the basket respect to the maximum performance allowed by the limiting device (all LEDs on = limiting device active) (Aerial mode).

DD- LEDs that indicate the weight in the basket in relation to the maximum permitted capacity (LEDs all lit up = 507 lbs or 230 kg) (Aerial mode).

EE- Area indicating the current height (H) and outreach (R) of the basket. It also indicates the current pressure of the machine's hydraulic circuit (P) (Aerial mode).

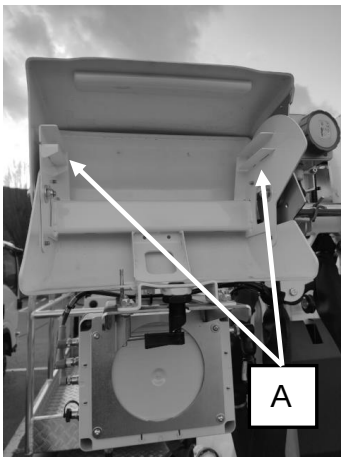
FF- Area indicating the position of the outriggers (30° / 60°) and pressure (indicated with "*") or lack of pressure (indicated with "o") of outriggers on ground. Each outrigger is marked with a number which is also physically applied on a sticker placed on the outrigger (Stabilisation and Traversing mode).

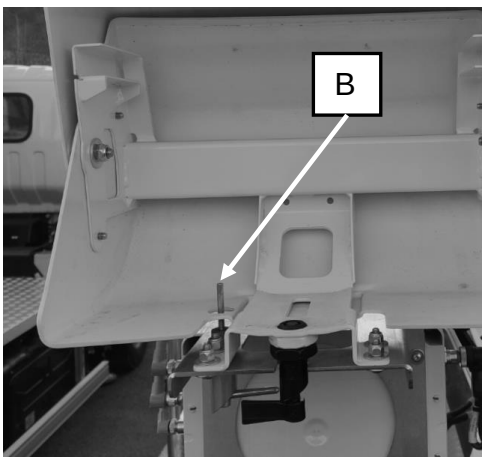
GG- LEDs indicating the actual carrier inclination on Y axis (Traversing and Stabilisation mode).

HH- LEDs indicating the actual carrier inclination on X axis (Traversing and Stabilisation mode).

5.7.2 Remote control placement.

- ATTENTION the remote control permits operation of the aerial part only when pressed into its seat in the work platform (A) and the "remote control present" stop (B) has been turned.

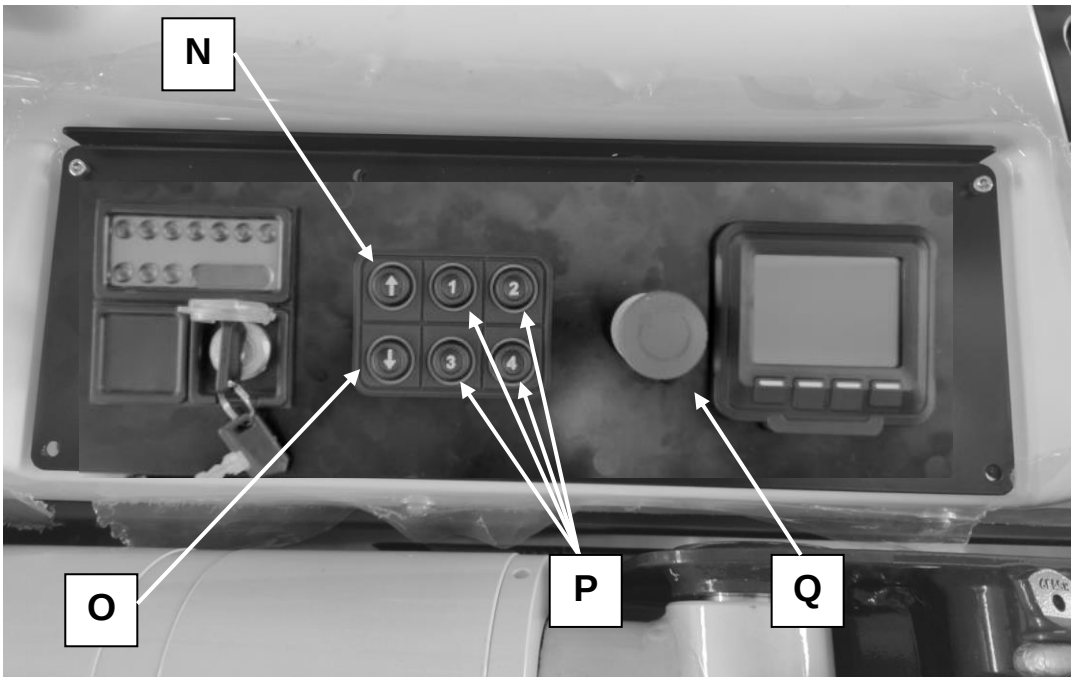




- ATTENTION it is possible to move the aerial part in emergency mode by putting and pressing the remote control into its cradle (C) on the right side of the carriage.

- ATTENTION: it is only possible to move the aerial part in normal mode from the man basket.

5.8 DESCRIPTION OF STABILISATION KEYPAD FUNCTIONS:



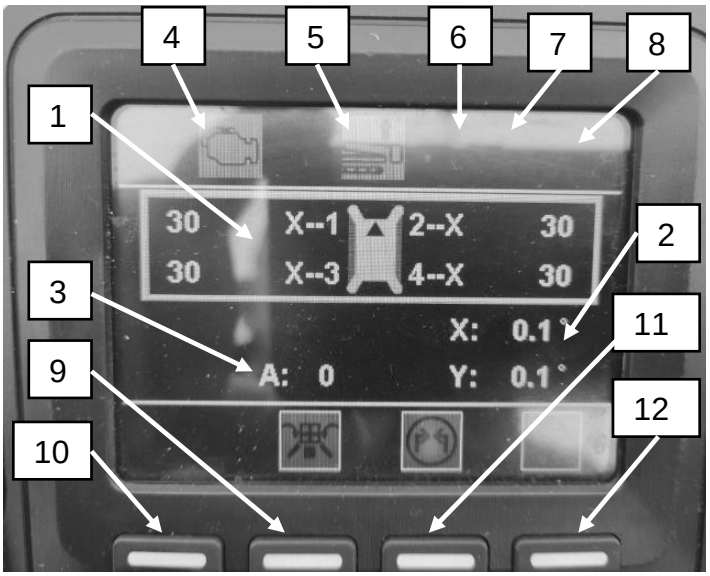
N- Outriggers ascent button.
O- Outriggers descent button (automatic stabilisation if button P is pressed)
P- Outrigger selection button.
Q- Emergency button.

5.9 DESCRIPTION OF MACHINE LCD DISPLAY FUNCTIONS (OPTIONAL):

An LCD panel can be installed on the carriage of the machine to simplify operations from the ground and have all the information shown on the remote control also on the ground. The panel is also equipped with 4 keys used to select some operational functions.

5.9.1 Aerial mode screen

The first screen displays information useful for aerial work.



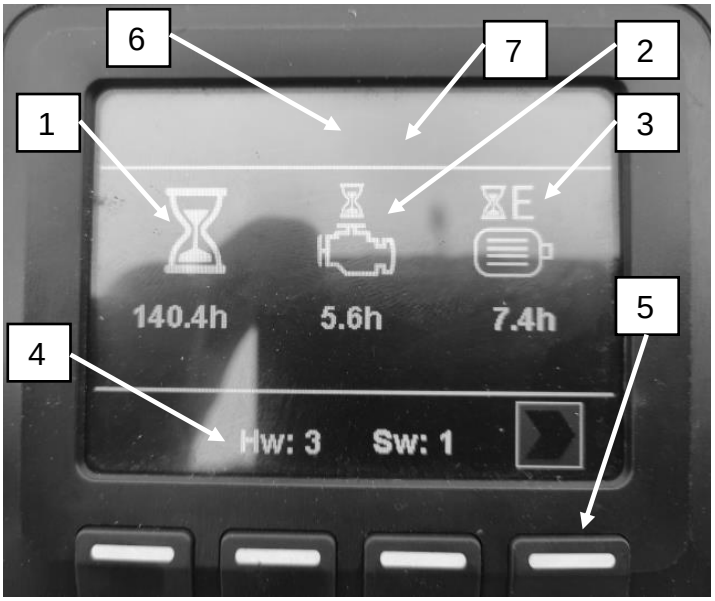
Specifically the following is displayed:

1. Area indicating the position of the outriggers (30°/60°) and pressure (indicated with "*") or lack of pressure (indicated with "o") of outriggers on ground. Each outrigger is marked with a number which is also physically applied on a sticker placed on the outrigger (Stabilisation and Traversing mode).

2. Area indicating the real inclination of the carriage on axes X and Y.
3. Table used by the limiting device.
4. Pictogram indicating engine on (green) or off (red)
5. Pictogram indicating machine stabilized/in transport position
6. Pictogram indicating excessive carriage inclination
7. Pictogram indicating presence of an alarm or stop
8. Pictogram indicating tripping of the “dead man” safety device
9. Key disabled
10. Key to perform auto-closing
11. Key to lift the outriggers
12. Key to change mode (cyclic)

5.9.2 Engine mode screen

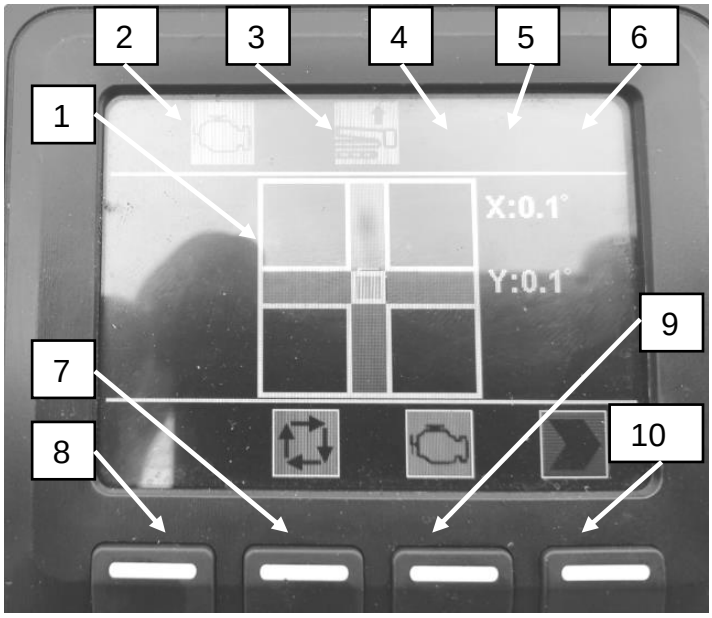
The second screen displays information on the running hours of the machine.



1. Area indicating the working hours of the machine.
2. Area indicating the working hours of the diesel engine
3. Area indicating the working hours of the electric pump
4. Area indicating the version of the command and control software
5. Key to change mode (cyclic)
6. Pictogram indicating raised boom
7. Pictogram indicating outriggers not in transport position

5.9.3 Stabilisation mode screen

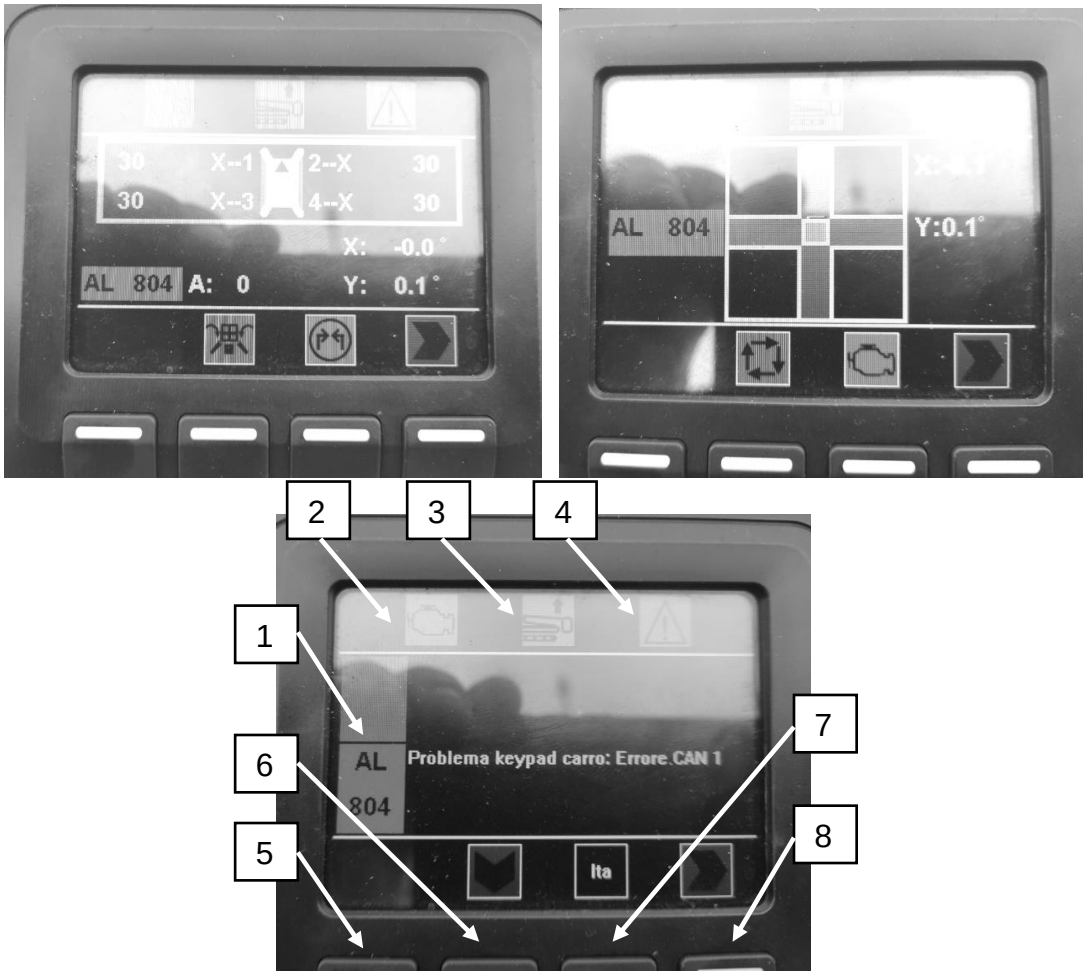
The third screen displays useful information for stabilising the aerial platform.



1. Area in which an electronic level is displayed.
2. Pictogram indicating engine on (green) or off (red)
3. Pictogram indicating machine stabilized/in transport position
4. Pictogram indicating an excessive inclination
5. Pictogram indicating presence of an alarm or stop
6. Pictogram indicating tripping of the “dead man” safety device
7. Key to perform automatic stabilisation
8. Key disabled
9. Key to turn the diesel engine on/off
10. Key to change mode (cyclic)

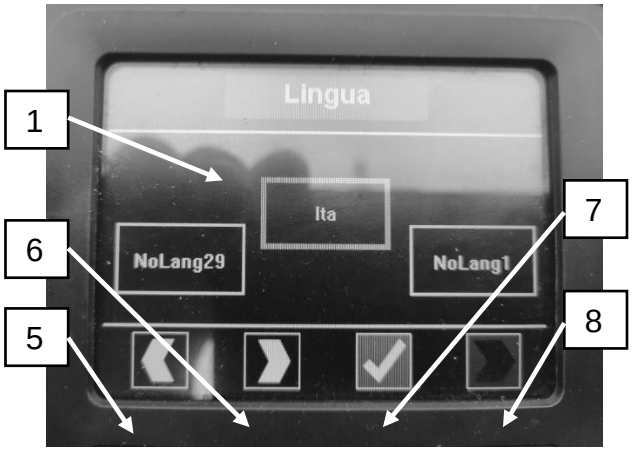
5.9.4 Screens in case of alarms

In case of machine alarm conditions, the engine mode screen is replaced by an alarm screen and the other two screens highlight the presence of the alarm in red.



1. Area displaying a description of the active alarm.
2. Pictogram indicating engine on (green) or off (red)
3. Pictogram indicating stabilized machine
4. Pictogram indicating presence of an alarm or stop
5. Key disabled
6. Key to display any additional alarm
7. Key to select the language
8. Key to change mode (cyclic)

Should you wish to change the language of the alarm descriptions, pressing the relative key will grant access to the selection screen:



9. Key to scroll to the previous language
10. Key to scroll to the next language
11. Key to select the language at the centre of the screen
12. Key to change mode (cyclic)

5.10 TRAVERSING

To perform traversing manoeuvres, do the following:

a) Make sure the outriggers are all lifted (not pressed to the ground)
b) The joystick A controls forward and reverse movement of the tracks and the joystick E, when used simultaneously with joystick A, controls steering to the right and left. When used alone, it rotates the carriage in place to the right or to the left.
c) SPYDER DT 80 E is equipped with a widening track. To widen the tracks and thus to achieve safer and more stable traversing, the vehicle must be stabilized until both tracks lift (see chapter STABILISATION). Then press the key H upwards, keeping it pressed until the track opens completely, then bring the vehicle to the movement position.
d) To close the tracks and thus achieve a reduced traversing width, the vehicle must be stabilized until both tracks lift (see chapter STABILISATION). Then press key H downwards, keeping it pressed until the track closes completely, then bring the vehicle back to the operating position
e) SPYDER DT 80 E is equipped with an automatic anti-tipping control which, by means of an acoustic signal and ***ST 32*** or ***ST112*** indication on the display, indicates when the critical angle for overturning is reached.

- ATTENTION, the signal does not inhibit traversing. Therefore if you insist with the manoeuvre, the vehicle could overturn anyway.
- ATTENTION: The presence of the tipping danger signal does not exempt the operator in any way from controlling stability of the vehicle while traversing, because in some particular cases and/or control malfunctioning, the platform could still overturn.
- During traversing manoeuvres, the operator should stay outside of the machine's range of action.

5.11 STABILISATION

Stabilisation manoeuvres can be carried out in automatic or manual mode. To stabilize automatically, use the remote control. To stabilize in manual mode, use the stabilisation panel located on the right-hand side of the carriage.

In some configurations, the basket might collide with the outriggers. To avoid this problem, use the controls to lift the jib about 5° or extend the jib by approximately 15,7 in (40cm).

5.11.1 Automatic outrigging

To stabilize the aerial platform automatically, proceed as follows:

a. Remove the stops of the four outriggers.
b. Widen the outriggers to the stabilisation holes. If they are not widened all the way, corresponding ***P*** keys on the stabilisation keypad flash red.
c. In any case, the position of the front and rear outriggers must be the same on the same side. The following configurations are possible:

- Front and rear outriggers fully open on right and left sides;
- Front and rear outriggers fully closed on right and left sides;
- Front and rear outriggers fully closed on right side and fully open on left side;
- Front and rear outriggers fully open on right side and fully closed on left side;
- No other configurations are permitted.

d. Put the stops of the four outriggers back in.

- ATTENTION: it is strictly forbidden to operate with the outriggers in their start position (fully closed towards the front).
- ATTENTION: it is strictly forbidden to operate with the stops of the outriggers not fully inserted.
- ATTENTION: it is strictly forbidden to operate with the outriggers in any configuration that is not permitted.

e. Push the selector ***F*** of the remote control towards the operator and keep it pressed: the outriggers will descend simultaneously or press ***O*** on the stabilisation keypad and keep it pressed. After all four outriggers are on the ground, the four ***P*** keys on the stabilisation keypad flash green and the machine will start an automatic stabilisation cycle that ends when the thermal engine returns to idle and the four ***P*** keys on the stabilisation keypad light up in green. Should you wish to lift the carriage further, repeat the manoeuvre by pressing the selector F once again.

f. Stabilize the machine so that the minimum height of the tracks is at least 3,93 in (100 mm).

- ATTENTION: Make sure that the minimum height of both tracks above the ground is greater than 3.93 in (100 mm).
- ATTENTION: The presence of the automatic stabilisation system does not exempt the operator from controlling the planarity of the vehicle, which must not exceed 1°.

5.11.2 Manual stabilisation

To perform manual stabilisation of the aerial platform, proceed as follows:

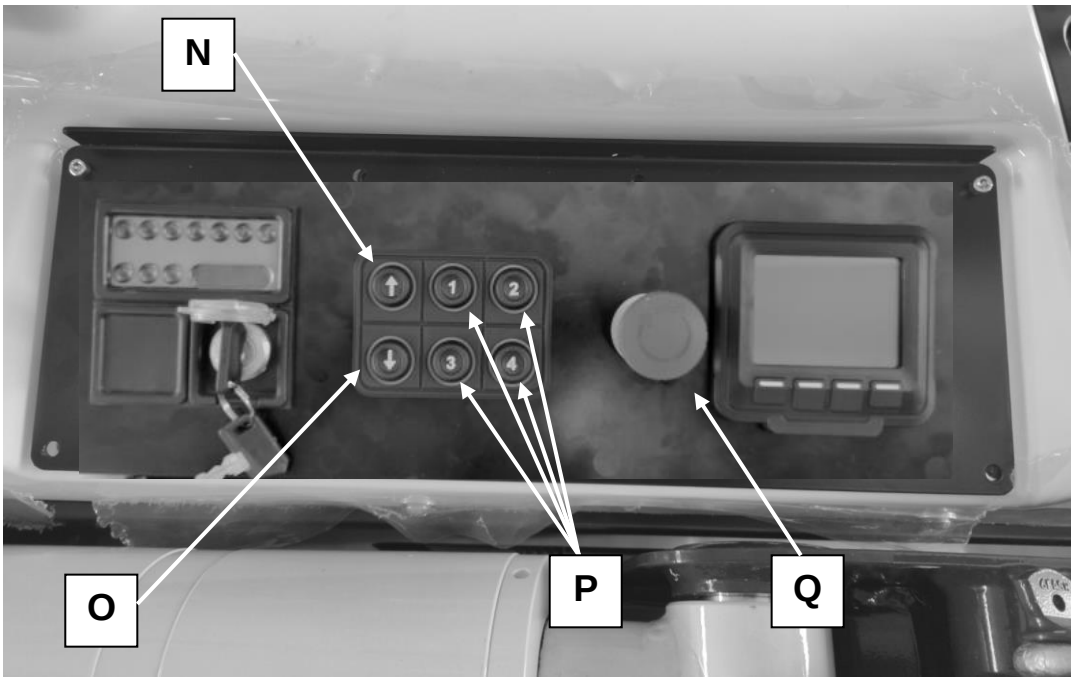
a. Remove the stops of the four outriggers (the relative stabilisation keypad keys flash red).
b. Widen the outriggers to the stabilisation holes.
c. In any case, the position of the front and rear outriggers must be the same on the same side. The following configurations are possible:

- Front and rear outriggers fully open on right and left sides;
- Front and rear outriggers fully closed on right and left sides;
- Front and rear outriggers fully closed on right side and fully open on left side;
- Front and rear outriggers fully open on right side and fully closed on left side;
- No other configurations are permitted.

d. Put the stops of the four outriggers back in.

- ATTENTION: it is strictly forbidden to operate with the outriggers in their start position (fully closed towards the front).
- ATTENTION: it is strictly forbidden to operate with the stops of the outriggers not fully inserted.
- ATTENTION: it is strictly forbidden to operate with the outriggers in any configuration that is not permitted.

e. Access the stabilisation keypad on the right-hand side of the carriage.



f. To lower all four outriggers performing an automatic stabilisation cycle press ***O***, and press ***N*** to lift them.
g. To move the outriggers individually, select the outriggers you wish to move by pressing the corresponding ***P*** key and then press ***O*** / ***N*** according to the desired movement.
h. Perform the stabilisation manoeuvre by acting on the individual outriggers in order to level the aerial platform, checking planarity thanks to the levels placed near the slewing ring, by verifying that the inclination of the carriage on both the X and Y axes does not exceed one degree (1°), below this value the four ***P*** keys on the stabilisation keypad light up in green.
i. If a ***P*** key flashes green it means the corresponding outrigger is pressed to the ground.

j. When all four ***P*** keys light up in green, it means the machine is levelled and stabilized and, therefore, the consent for aerial manoeuvres has been obtained.
k. Stabilize the machine so that the minimum height of the tracks is at least 3.93 in (100 mm).

- ATTENTION: Make sure that the minimum height of both tracks above the ground is greater than 3.93 in (100 mm).
- ATTENTION: The presence of the automatic stabilisation system does not exempt the operator from controlling the planarity of the vehicle, which must not exceed 1°.

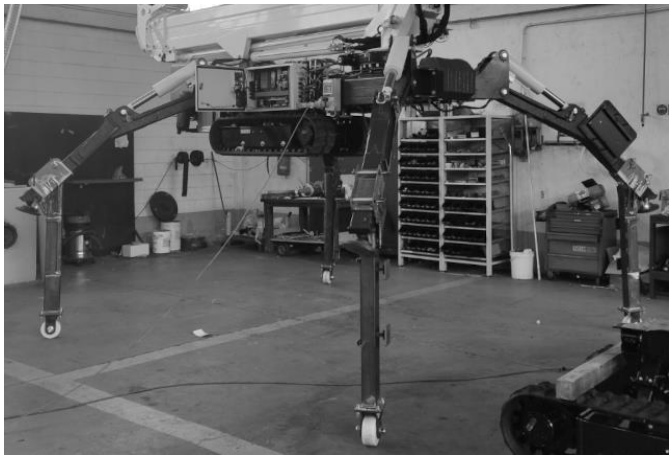
5.11.3 Returning to movement position

a. To go back to the movement position, close the aerial part of the platform completely making sure the main boom rests on its support. Leave the jib open by about 5° (it will close by itself when manoeuvring automatically) or extend the jib by approximately 15.7 in (40 cm) to prevent the basket from colliding with the outriggers.
b. Press selector ***F*** on the remote control upwards and keep it pressed until all the outriggers return to the transport position (maximum elevation). Otherwise press the ***O*** key on the stabilisation keypad and keep it pressed until all the outriggers return to the transport position (maximum elevation).
c. To move the outriggers individually, select the outrigger/s you wish to move by pressing the corresponding ***P*** keys and then press the ***N*** / ***O*** keys in the desired direction of movement.
d. Remove the stops of the four outriggers.
e. Close the outriggers in their transport position, putting the stopping pins in their respective holes.
f. Lower the jib into its transport position, placing it on its support.

In some configurations, the basket might collide with the outriggers. To avoid this problem, use the control to lift the jib about 5° or extend it by approximately 15.7 in.

5.11.4 Using the self-loading extensions (optional)

The Spyder can be loaded / unloaded from normal trucks even without the aid of ramps thanks to the self-loading extension accessories. Thanks to this feature it is no longer necessary to use a lowered truck for transport and, above all, the loading / unloading operation may be performed in utter safety and simplicity.

a. Identify an area that may be easily reached by the truck in question that has good specific bearing capacity (at least very compact beaten soil, even better surfaced) and also level (inclination below 1.5° or 2.6%).

It is forbidden to carry out self-loading manoeuvres on poorly compacted or sloping ground (1.5° or 2.6% max).

b. Select the thermal engine

c. Widen the outriggers **positioning them at 60°** and match the respective stabilisation holes.

d. Stabilize the machine and, after raising the tracks, close them by using the following command.

e. Lower the machine by bringing the outriggers up to the end of stroke.
f. Take the self-loading extensions and bring them to the individual outriggers.
g. Remove the elastic pins from the stop pins of the self-loading extensions, remove the pins and the upper plate.

h. Align the extension with the outrigger, lift it by placing the plate in its housing.

Do not carry out the assembly operations of the self-loading extension on your own: request assistance from another operator.

i. Place the upper plate at the holes and insert the two pins and then the respective elastic pins.

j. Repeat the operation for all four outriggers
k. Switch on the thermal engine

l. Press the stabilisation control F of the remote control downwards twice and keep it pressed until the desired height is reached.

m. Manoeuvre the truck so that the loading area is underneath the aerial platform.
n. After placing the truck in the correct loading position with respect to the aerial platform, press the control F of the remote control upwards and hold it until all the outriggers return to the transport position (maximum elevation).

o. Disassemble the self-loading extensions by proceeding in reverse order to the above.
p. Properly lift the Spyder on the truck

Use the self-loading extensions only and exclusively to perform the self-loading operation.

It is forbidden to lift the booms of the platform from their support with self-loading extensions in extended position.

It is forbidden to use the self-loading function by means of the electric pump: its low power might cause significant oscillation of

the vehicle during the descent.

Place all four outriggers at 60° to perform the self-loading manoeuvre.

5.12 AERIAL PART HANDLING

After the aerial platform has been stabilized, you are able to operate with the aerial part of the vehicle. To enable this mode, you must have stabilized the vehicle and therefore the four ***P*** keys of the stabilisation keypad must be lit up in green, the tracks must be lifted from the ground by at least 3.93 in (100 mm) and all four outriggers must be pressed to the ground.

The automatic manoeuvre to access the basket can be activated to climb into the basket. In this mode, if the machine is correctly stabilized and in transport conditions, when pressing and holding the ***A*** key an automatic procedure is activated which opens the booms and brings the man basket close to the ground. The procedure initially opens the jib by about 10°, then raises the main boom to the end of its stroke and finally extends the jib until the basket (mounted in its high flange) is close to the ground.

To stop the automatic basket access manoeuvre, simply release key ***A*** after the main boom has started its ascent.

The machine does not recognise the height of the ground, it simply considers the ground as if it were at the same height as the track: if this is not the case, the basket may collide with the ground.

The presence of the automatic basket access manoeuvre does not in any way relieve the operator of the need to make sure the movements being performed are correct.

When operating in automatic basket access mode, the operator must continuously make sure that there are no obstacles along the way.

If the automatic basket access manoeuvre is not used, the basket must still be brought close to the ground in order to facilitate operator access. Raise the main boom and/or extend the jib until moving the basket close to the ground. The machine automatically stops the movement of the booms when the basket approaches the ground. To further lower the basket towards the ground, simply release the control of the blocked movement and then repeat it.

The presence of the safety system preventing the basket from hitting the ground does not in any way absolve the operator of any checks for the correct movements carried out.

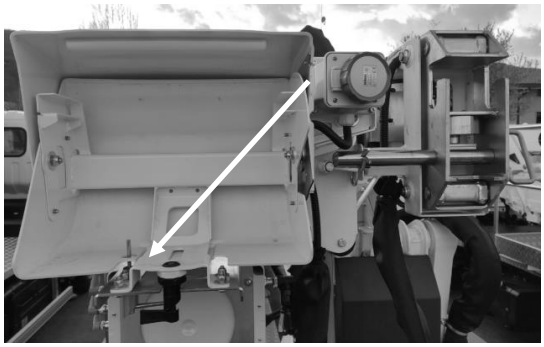
The machine does not recognise the height of the ground, it simply considers the ground as if it were at the same height as the track: if this is not the case, the basket may collide with the ground.

Pay attention - In case of sloping ground the command and control system may not stop the movement in time, thus allowing the basket to hit the ground.

When the basket is not near the ground it is therefore required to get into the man basket taking care to check the gravity closure of the access openings. Lastly, fasten the safety belts to the shown hooking points.

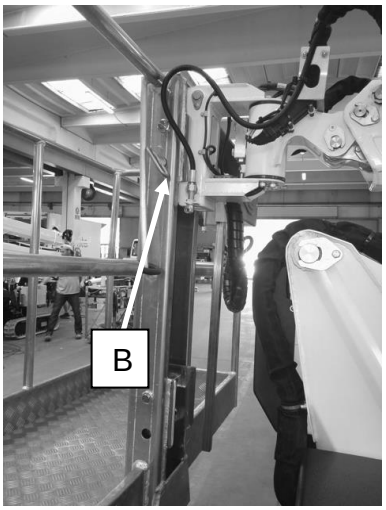
The man basket is calibrated for a maximum weight of 507 lbs (230 kg) (462 lbs (210 kg) with insulated basket). Including tools, transportation of 3 or more persons is not allowed.

Insert the remote control in its seat and turn the control activation stop.

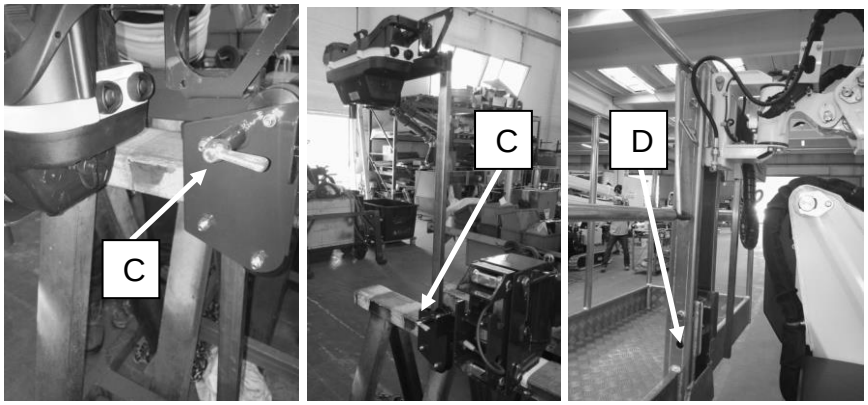


Then, make sure the assembled man basket is compatible with the maximum height to reach: for heights over 78 ft (24 m), you must use a second coupling flange situated in the lower part of the man basket.

To use the second coupling flange in the lower part of the man basket, you must first remove safety pin “A” and then remove pin “B”.



Lift the basket slightly and pull it towards you.
After placing the basket on the ground, which is released from the jib boom, by pulling knob “C”, lift the control panel until engaging knob “C” again.

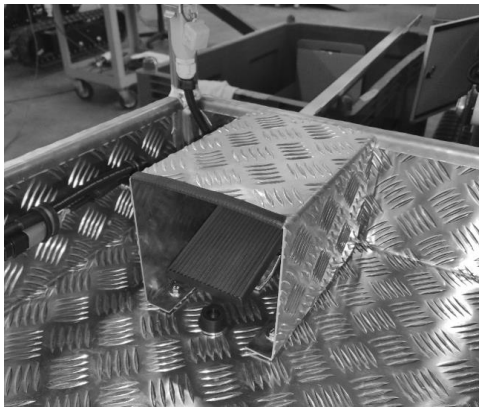


Then reposition the basket, this time using the second coupling flange located in the lower part of the man basket (D).

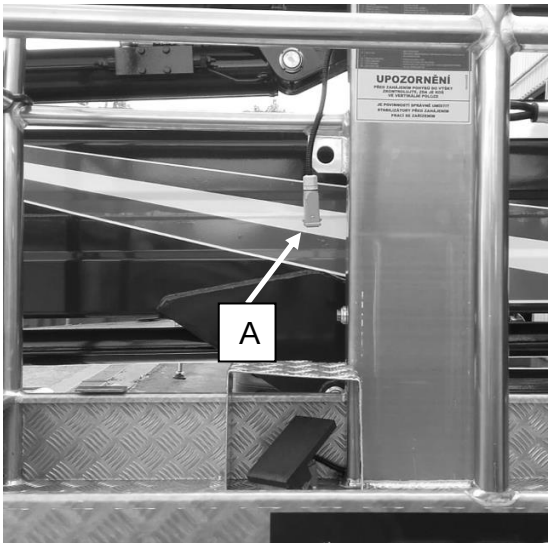
If you have positioned the man basket using the second coupling flange situated in the lower part, remember to position it by using the first coupling flange situated in the upper part. If this is not done, the man basket will move outside of the clearance of the vehicle.

5.12.1 Dead man pedal

In some countries the presence of a device capable of freezing all aerial manoeuvres is mandatory if the presence of the operator at the remote control is not detected at the same time. This type of requirement is commonly known as “dead man” indication. In this case there is a pedal installed on the man basket floor, near the control station.



To operate, press and hold the “dead man” pedal on the basket and then activate the selected command. If the pedal is not pressed correctly, the LCD display shows the message STOP 61.



If the pedal is released while a manoeuvre is being performed, this will stop and the LCD display will show ST 61.

It is necessary to first press the pedal and then activate the command. If the command is activated before the pedal, no movement occurs and the LCD display shows ST 61.

Before disassembling the basket, disconnect the dead man pedal using the appropriate connection (B) in the basket articulation area with pin (A) connected to the pedal.

If the pedal is disconnected, AL90 and AL91 will appear on the LCD display and the machine will start ringing.

5.12.2 Diesel engine / Electric pump

As the platform features both a diesel engine and an electric pump, it is possible to choose which energy source you wish to use to move the platform.
Select the required energy source from the relative switch:

- Diesel

- Electric pump

If there is no connection to the electrical mains, the diesel engine will not start if the switch is set on "electric pump"

If you move the switch from electric pump to Diesel, you must wait approx. 30 seconds before the diesel engine starts up.
The diesel engine switches off if the selector is moved to the electric pump.

5.12.3 Operating speed selection

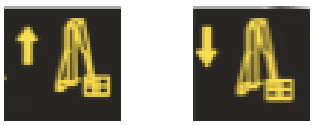
In order to simplify the use of the aerial part of the platform, it is also possible to operate at low speed (about half the normal speed).
Select the required speed from the relative switch:

- Normal speed 
- Low speed 

All automatic manoeuvres are carried out at low speed, regardless of the position of the selector.

5.12.4 Main Boom

The main boom can perform two types of movements:

- *Up / Down* 
- *Extend / Retract* 

In order to be able to *extend* the boom, it needs to be in a vertical position; in order for the *lower the boom* operation to be enabled it needs to be **completely** retracted.

If you try to extend the main boom when it is not fully raised and practically vertical, extension is disabled and ***ST 13*** will appear on the LCD screen of the remote control panel.

In order to protect the jib support, to extend the main boom it is necessary for the jib to be open by at least 10°, otherwise ST 17 will appear on the LCD screen of the remote control panel.

It is not possible to perform any movement (except for rotation) unless the main boom is raised at least 20°. If you try to perform any other movement, *ST 13* will appear on the LCD screen of the remote control panel.

5.12.5 Turret Rotation

The turret and booms can turn clockwise or anticlockwise, continuously, for up to 1 rotation per side.

Movement is carried out by moving the lever in the direction of the side that you wish to turn in:

- *Turn clockwise* 
- *Turn anticlockwise* 

The speed is proportional to movement of the lever.

The centred turret position will appear on the LCD screen of the remote control panel.

If you try to carry out a greater number of revolutions than allowed, *ST 39* will appear on the LCD screen of the remote control panel.

5.12.6 Jib

The jib can perform two types of movements:

- *Jib up / Jib down*  
- *Jib extension / Jib retraction*  

The speeds of both movements are proportional to the movement of the levers.
If you try to lift the jib when the main boom is fully retracted and not vertical, the upwards movement will stop at an angle of 65°, and *ST 9* will appear on the LCD screen of the remote control panel.

Obviously the maximum possible jib length depends on the weight currently being carried by the basket, on the selected stabilisation configuration and on the angle that the jib is in. In order to know the maximum possible jib length, refer to the work areas stated on the basket column or in this operating and maintenance manual.

As the jib reaches its maximum possible length, the extension speed automatically slows down, and the row of LED lights installed under the LCD screen on the left side of the remote control lights up proportionally to the distance from the limit (limit = all LEDs on).
When it reaches the limit, it automatically stops, and *ST 27* appears on the LCD screen of the remote control panel.

The same happens when the jib reaches its maximum possible angle at a given length (maximum extension), the descent speed automatically slows down, and the row of LED lights installed under the LCD screen on the left side of the remote control lights up proportionally to the distance from the limit (limit = all LEDs on).
When it reaches the limit, it automatically stops, and *ST 27* appears on the LCD screen of the remote control panel.

5.12.7 Basket Rotation

The man basket is able to rotate 90° to the left and to the right.
Its movement is controlled by moving the switch in the direction you wish to turn in:

- *Turn Right*

- *Turn left*

This movement is On/Off, meaning that it is not proportional to the movement of the lever.
The centred basket position is displayed on the LCD screen of the remote control panel.
The man basket can be centred automatically by performing the automatic closing manoeuvre releasing the control when the centring procedure is complete.

5.12.8 Automatic Closing

In order to make it easier to perform the machine closing manoeuvre at the end of the work cycle, it is possible to turn on an automatic mechanism that places the aerial platform in its transport configuration simply by pressing and holding the *Auto-close* control down:

The automatic manoeuvre performs the following operations in this order:

- Centring the man basket
- Jib boom in
- Main boom retraction
- Turret centring on shortest side
- Main boom down
- Jib down

The presence of the automatic closing system does not in any way relieve the operator of the responsibility to make sure the movements being performed are correct.

While operating in auto-close mode the operator must continuously ensure there are no obstacles throughout the operation.

The manoeuvre stops when the machine stops, even if the control is pressed. Boom configuration is roughly as follows:

To stop the manoeuvre simply release the control.
If there are problems during the man basket centring manoeuvre while attempting the *Auto-closing* manoeuvre and the man basket is not in a centred position, the manoeuvre will not be completed and ST 37 is displayed on the LCD screen of the remote control panel. In this case centre the man basket manually and repeat the auto-closing manoeuvre.

5.13 RESTORING THE PLANARITY OF THE MAN BASKET

The equipment maintains the level of the man basket automatically with a deviation of less than 5° compared to the horizon.

If, during normal aerial operations, the man basket were to lose its horizontal position beyond the normal ±5°, the command and control system automatically reduces the speed of the booms so as to facilitate the movement of the basket, restoring the horizontal position.

In any case, if the man basket were to reach an inclination of ±10°, the machine monitoring and control system stops all movements and drains the oil, while code AL 398 and ST 105 is shown on the remote control display to inform the user.
To get out of this condition, do the following:

a. Switch the diesel engine off by pressing key ***K***

b. Switch the diesel engine back on by pressing the same key ***K***

c. Operate any of the controls ***A*** - ***B*** - ***C*** - ***D*** – ***E*** - ***F***. Within the first ten seconds from activation: all of the controls mentioned above, when activated, operate the level of the man basket at low speed to put it back in the horizontal position.

If you wish to stop the movement of the man basket, simply release the control you are using.

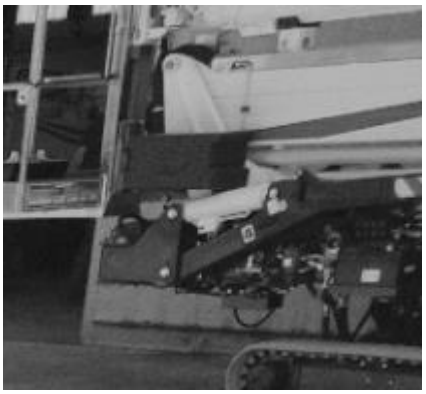
d. In any case, after reaching the horizontal position, you must release the control which resumes its normal function after 10 seconds.

If the man basket levelling system is faulty, upon reaching an inclination of 20°, the basket blocks all movement, drains oil and displays code AL 399 on the remote control to inform the user.

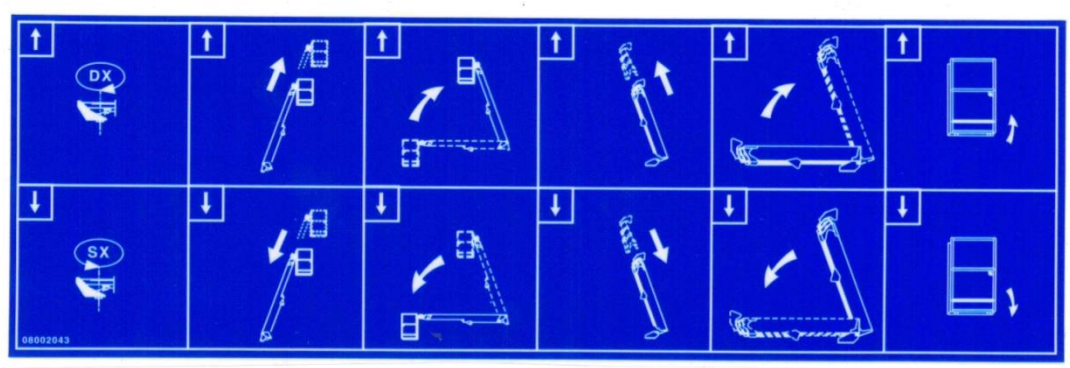
5.14 ACCESS TO THE MACHINE COMPONENTS

5.14.1 Turret oil distributor

To access the turret oil distributor, go to the right side of the turret near the black plastic container.



Unscrew the 4 knobs and remove them then extract the black plastic casing. Inside the casing there is a sticker that highlights the function of each valve of the turret distributor.



5.14.2 Right carriage casing

To access the emergency pump, the oil filter and the inverter, the casing of the right carriage must be removed by unscrewing the six screws using a coin.

5.14.3 Left and central side carriage casings

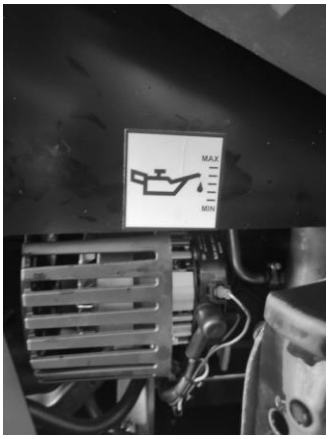
To access the ground distributor required to carry out manual operations on the outriggers and tracks, the carriage left and central casings must be removed.
To remove the left carriage casing, unscrew the six highlighted screws

After having removed the casing of the left carriage, the central casing can be removed by unscrewing the remaining screws located on the right and left side of the casing.

5.14.4 Other access points

Diesel


Engine water



Engine oil


Power fuses

Hydraulic oil


Remote control battery charger

5.15 MACHINE CLOSING IN EMERGENCY CONDITIONS (MANUAL EMERGENCY CONTROLS)

In the case of a fault or an interruption of the hydraulic or electric power supply during use and/or in the event of machine alarms, the operator on the ground can return to the ground and close the machine in transport position by performing manual emergency manoeuvres from the ground.

ATTENTION:. The manual emergency manoeuvres are only active following activation of the emergency key with the engine off and ALXXX alarm signal present.

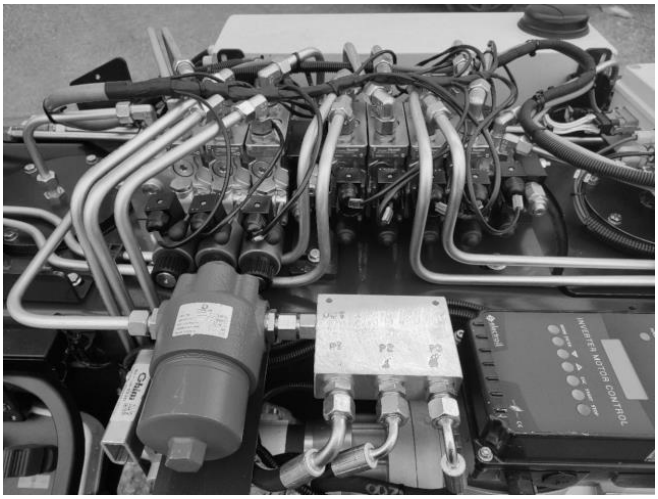
At the end of the manoeuvres, contact an authorized CELA dealer to check the fault.

Should manual emergency controls be used, preventively use the emergency enabling key, located on the electric board on the right side of the vehicle. Manual emergency controls are active and effective only if AL396 and ST 111 are shown on the LCD screen.

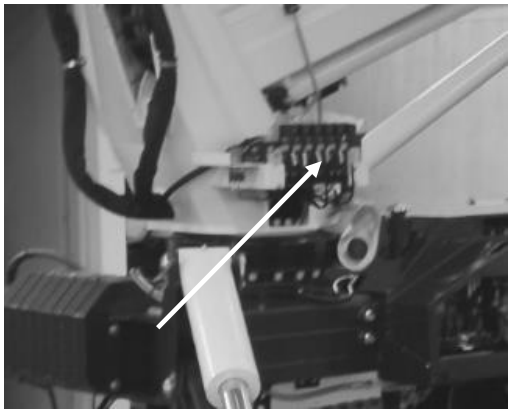
When using the machine in manual emergency mode <u>all electronic safety devices are bypassed</u>. Therefore, continue with the manoeuvres only if suitably trained

The parts of the machine that can intervene in the emergency manoeuvre are:

- Earth distributor located under the central casing which must be removed beforehand using the special screwable knobs. Lift the cover to access the valve required to carry out the emergency operations of the mobile part



- Turret hydraulic distributor located on the right hand side of the turret below the black plastic casing.



Once you have identified the parts of the machine that can intervene in the emergency manoeuvres, you will know which procedures need to be carried out, based on the type of fault that needs to be repaired.

5.16 TYPE OF BREAKDOWN

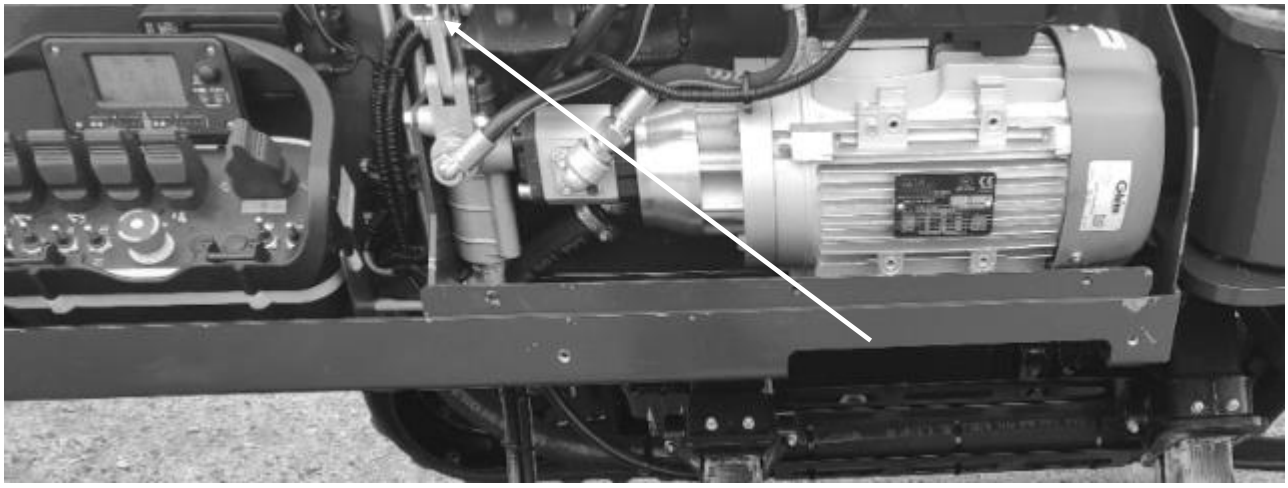
5.16.1 Main hydraulic power failure

This type of fault occurs when the motor is off (possibly no more diesel fuel/electric power outage for 220/110 VAC electric pump)

In the case of just hydraulic power supply failure, the machine can be moved with the aid of the manual pump proceeding as follows:

1. Remove the casing on the right side of the machine using the special knobs in order to have access to the manual emergency pump.

2. Take the lever of the manual pump and insert it into the specific seat, located under the slewing ring on the right-hand side of the carriage.



3. Work normally on the platform controls while activating the manual hydraulic pump.

5.16.2 Main power failure and in the presence of machine alarm

This type of fault occurs when the engine is off (no more diesel/electric power missing for 220/110 VAC electric pump) and simultaneous machine alarm.

In the case of a main power failure during a machine alarm, the machine can be moved with the aid of the manual pump by proceeding as follows:

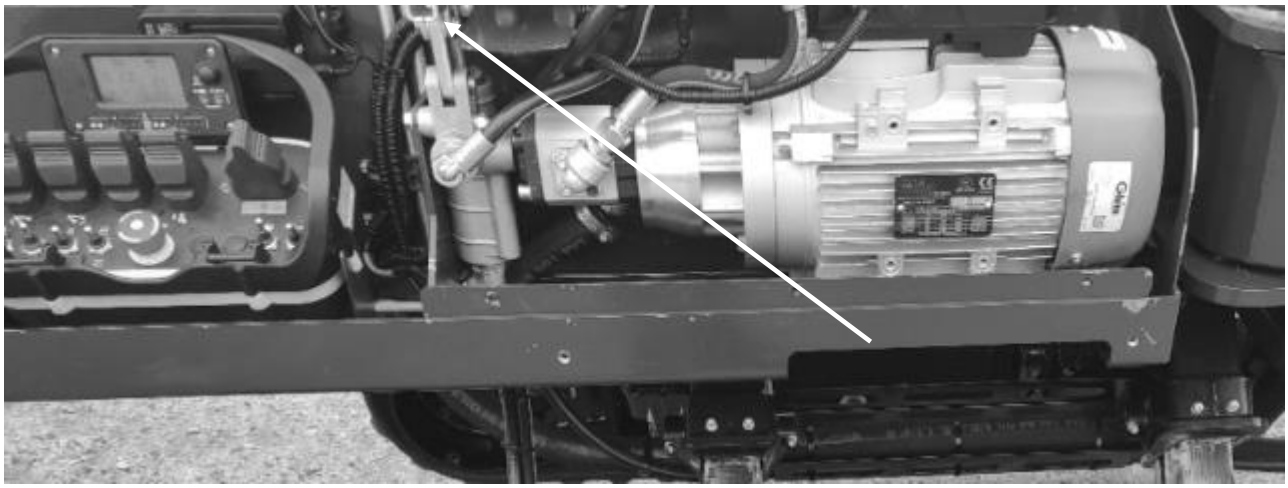
2. Check for an active alarm on the remote control panel and carriage LCD display (if any).
3. Switch off the vehicle engine.
4. Use the emergency-enabling key inside the electric panel, located on the left hand side of the vehicle. In order for the manual emergency manoeuvres to be active and effective, the control panel display must read: AL 396 and ST 111.

If only AL396 appears on the control panel display, the manual emergency manoeuvre is not active.

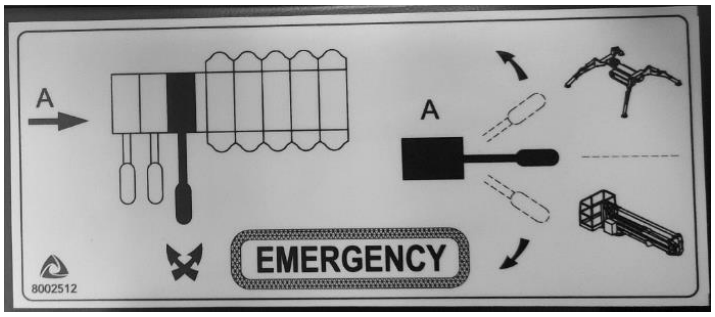
If the emergency key is turned in the absence of an alarm signal (AL XXX) and/or engine running, the manual emergency manoeuvre will not be active.

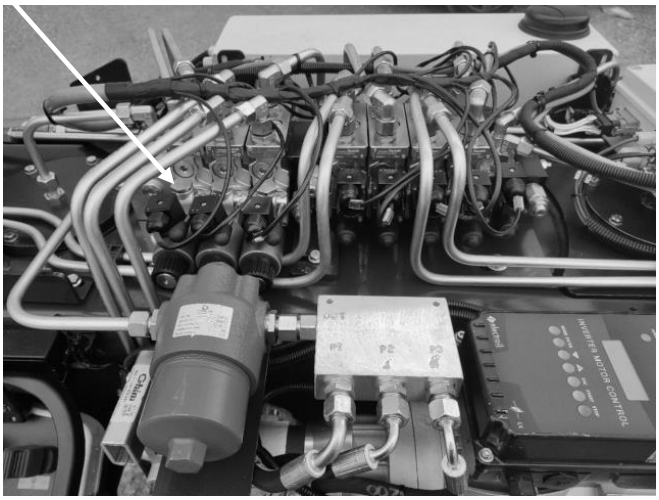
5. Remove the right casing of the machine in such a way as to have access to the manual emergency pump and open the upper door to access the earthing distributor.

6. Take the lever of the manual pump and insert it into the specific seat, located under the right side next to the remote control housing.



7. Locate the sequence valve on the earthing distributor. The valve in question is the third from the left. Press it down and keep it pressed: this feeds the tower hydraulic distributor.





8. Remove the tower distributor casing, turn it over and position it so you can see the instructions inside. It consists of a label that indicates the manoeuvre associated with each valve
9. Tighten one of the levers of the distributor inside the machine's main electrical panel in the lower part of the element that governs the movement that you wish to perform to proceed with closing the equipment at rest

a. 1st valve from the RH - basket orientation (automatic in some cases)

b. 2nd valve from the RH - up/down of main boom
c. 3rd valve from the RH - extension/retraction of main boom
d. 4th valve from the RH - up/down of Jib boom
e. 5th valve from the RH - extension/retraction of Jib boom
f. 6th valve from the RH - boom rotation

10. Activate the manual pump

11. Use the hydraulic controls in the turret, moving the levers for the movements that you intend to perform.

    Always carry out the movements in the following order:

    a. Tighten the lever on the 1st valve on the right and keep it engaged
    b. Lower the lever on the 5th valve from the right - Jib retraction
    c. Lower the lever on the 3rd valve from the right - main boom retraction
    d. Use the lever on the 6th valve from the right - rotation (bring the basket towards the rear of the vehicle.
    e. Lower the lever on the 4th valve from the right - jib down, and at the same time lift the lever on the 1st valve from the right to keep the basket level (automatic when there are no alarms relating to components connected with the basket planarity safety chain).
    f. Lower the lever on the 2nd valve from the right - main jib down, and at the same time lift the lever on the 1st valve from the right to keep the basket level (automatic when there are no alarms relating to components connected with the basket planarity safety chain).

Identify the correct valve for the desired movement, from the label pasted on the inside of the protective casing of the turret's hydraulic electric distributor.

Contact an authorized CELA service shop to check the fault.

5.16.3 Only machine alarm present

This type of fault occurs when there is a machine alarm (possible breakage of control unit, equipment and/or cables of system logic)

In case of a command and control system failure, the machine can be moved in the following way:

a. The operations to be carried out are the same as those in the previous case except that point 6 must be omitted and instead of point 10, the diesel engine must be started using the appropriate remote control command.

b. If the machine is connected to the 220/110 VAC mains, the electric pump is automatically activated when the emergency key is turned. In this case, you can proceed as in the previous case without starting the diesel engine as the oil flow is generated by the electric pump.

Pay attention to avoid the simultaneous movement of the diesel engine and the electric pump.

Contact an authorized CELA service shop to check the fault.

When recovery operations have been completed, restore the following:

- Remove the lever of the manual hydraulic pump.
- Mount the casings again.

5.17 OUTRIGGERS RETRACTION IN EMERGENCY OPERATION

5.17.1 Main hydraulic power failure

When it is a hydraulic power supply failure alone, the movements of the outriggers can be controlled in emergency as follows:

1. Insert the lever in the manual hydraulic pump (see previous paragraphs)

2. Activate the manual pump and work normally with the remote controls until the outriggers close completely

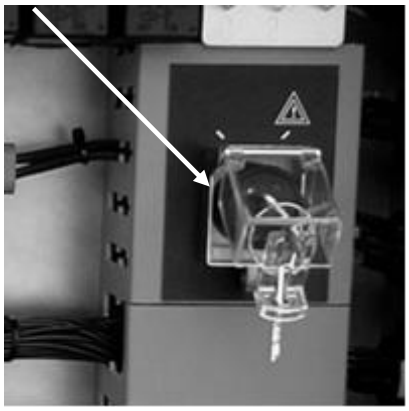
5.17.2 Main power failure and in the presence of machine alarm

In case of a main power failure during a machine alarm, the outriggers can be moved under an emergency with the aid of the manual pump by proceeding as follows:

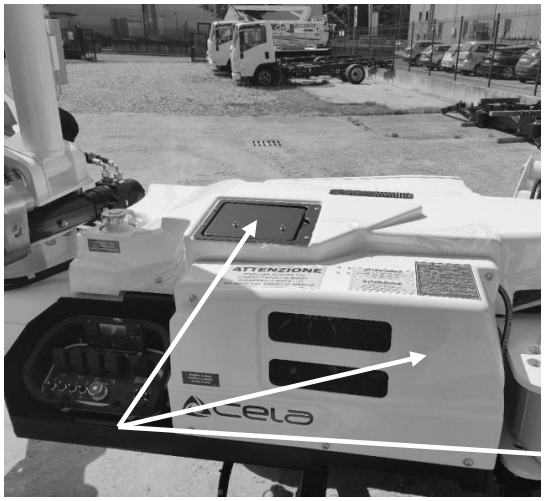
1. Check for an active alarm on the control panel display.
2. Switch off the vehicle engine.
3. Use the emergency-enabling key inside the electric panel, located behind the cab on the left hand side of the vehicle. In order for the manual emergency manoeuvres to be active and effective, the control panel display must read: AL 396 and ST 111.

If only AL396 appears on the control panel display, the manual emergency manoeuvre is not active.

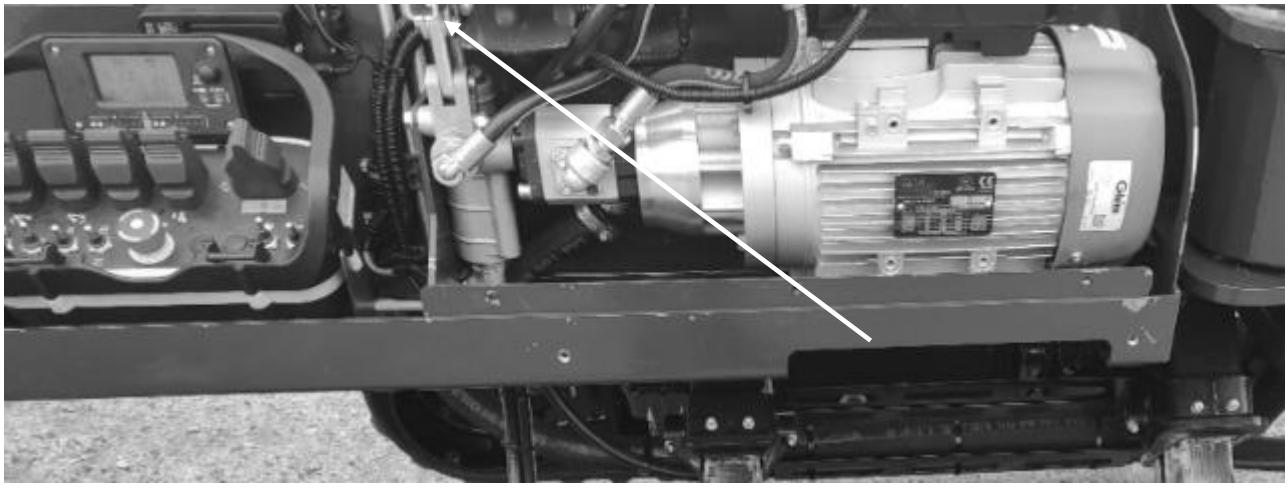
If the emergency key is turned in the absence of an alarm signal (AL XXX) and/or engine running, the manual emergency manoeuvre will not be active.



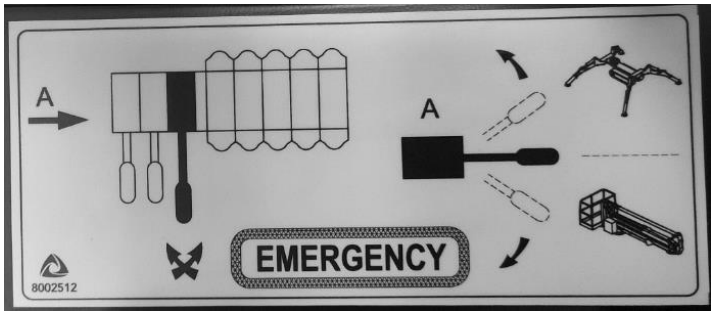
3. Remove the right, left and upper casing of the machine in such a way as to have access to the manual emergency pump and open the upper door to access the earthing distributor.

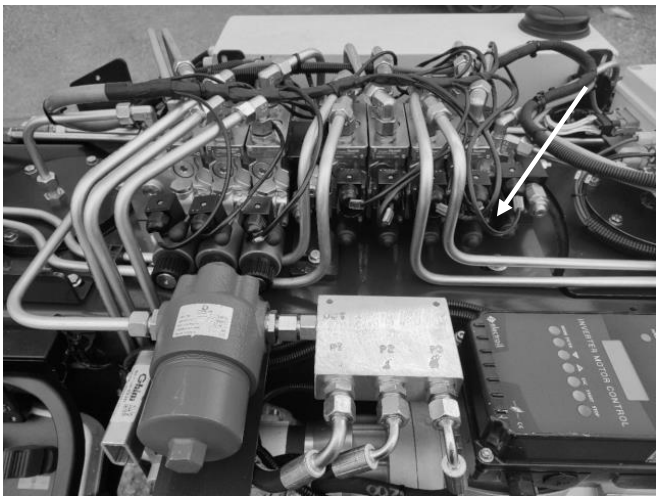


4. Take the lever of the manual pump and insert it into the specific seat, located under the right side next to the remote control housing.

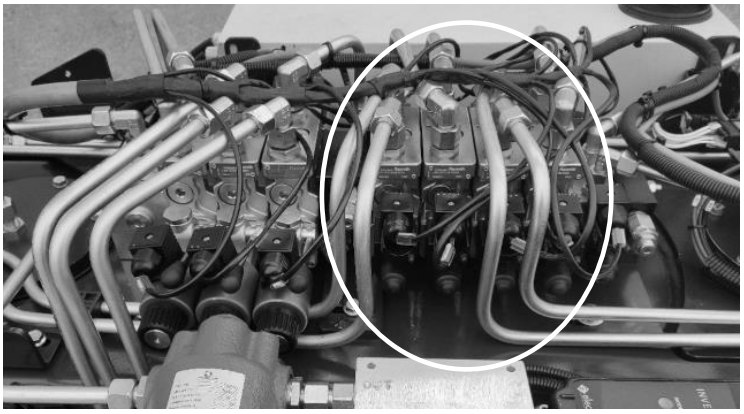


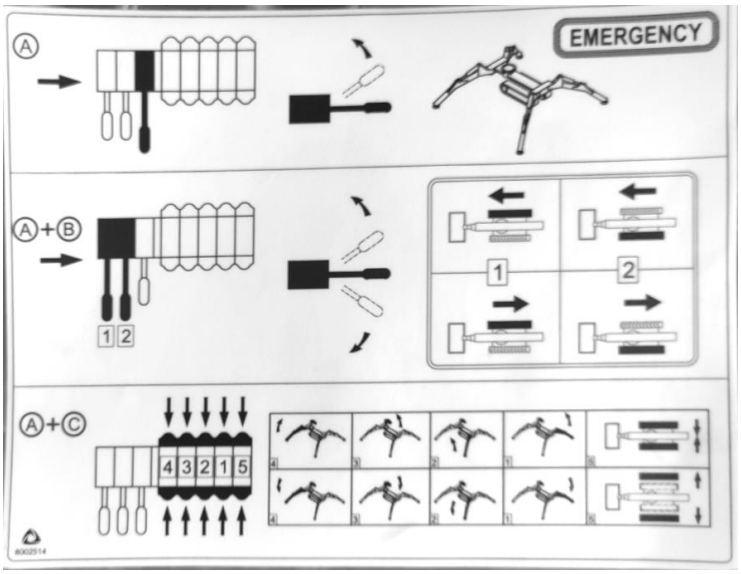
5. Locate the sequence valve on the earthing distributor. The valve in question is the third from the left. Press it upwards and keep it pressed: this feeds the part of the hydraulic distributor responsible for moving the outriggers.





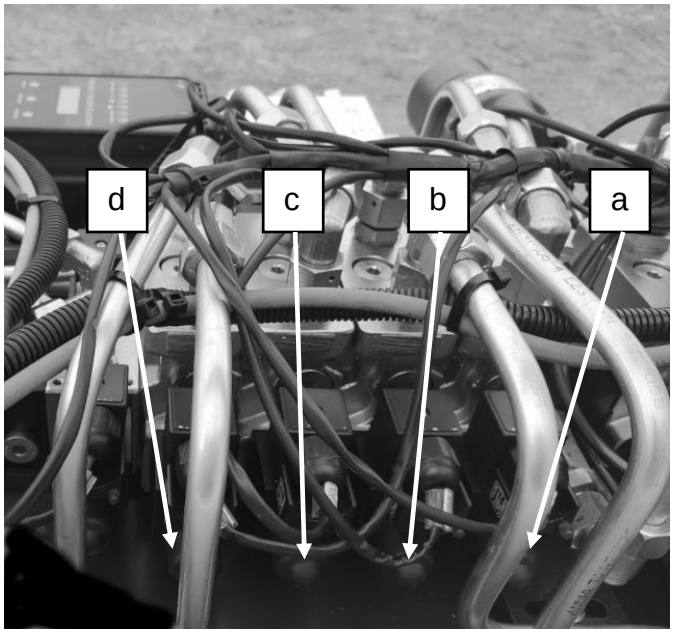
6. To move the outriggers, it is required to operate on the 4th, 5th, 6th and 7th valve from the left of the earthing distributor.





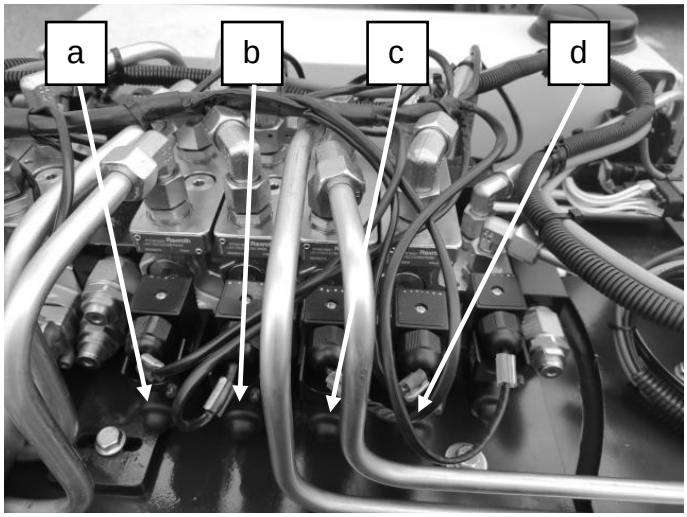
7. Activate the manual pump

8. The upward movement of the outriggers (return to transport condition) takes place by acting on the distributor operating from the left side of the unit (the one where the electrical box is located). Each valve operates on an outrigger according to the following table:



a. 5th valve from LH right rear outrigger closure
b. 4th valve from LH left rear outrigger closure
c. 3rd valve from LH right front outrigger closure
d. 2nd valve from LH left front outrigger closure

9. The downward movement of the outriggers (stabilization operations) takes place by acting on the distributor operating from the right side of the unit (where the electric pump is located). Each valve operates on an outrigger according to the following table:



a. 4th valve from LH right rear outrigger closure
b. 5th valve from LH left rear outrigger closure
c. 6th valve from LH right front outrigger closure
d. 7th valve from LH left front outrigger closure

5.17.3 Only machine alarm present

In case of a command and control system failure, the machine can be moved in the following way:

c. The operations to be carried out are the same as those in the previous case except that point 4 must be omitted and instead of point 7, the diesel engine must be started using the appropriate remote control command.
d. If the machine is connected to the 220VAC mains, the electric pump is automatically activated when the emergency key is turned. In this case, you can proceed as in the previous case without starting the diesel engine as the oil flow is generated by the electric pump.

Pay attention to avoid the simultaneous movement of the diesel engine and the electric pump.

Contact an authorized CELA service shop to check the fault.

When recovery operations have been completed, restore the following:

- Remove the lever of the manual hydraulic pump.
- Mount the casings again.

5.18 OPERATION WITH THE TRACKS IN AN EMERGENCY

5.18.1 Main hydraulic power failure

In the event of hydraulic power fault the tracks cannot be moved in case of an emergency.

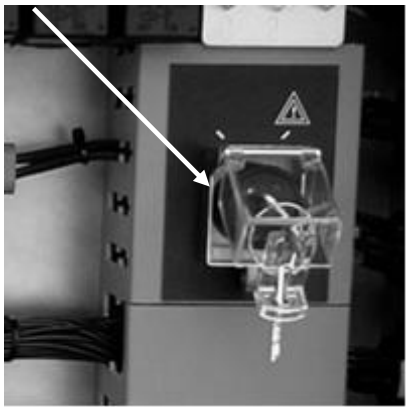
5.18.2 Only machine alarm present

In case of a fault with the machine alarm only, it is possible to move the tracks in an emergency by proceeding as follows:

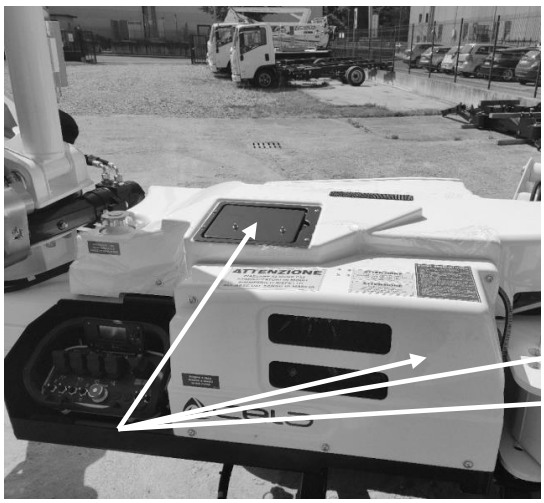
1. Check for an active alarm on the control panel display.
2. Switch off the vehicle engine.
3. Use the emergency-enabling key inside the electric panel, located behind the cab on the left hand side of the vehicle. In order for the manual emergency manoeuvres to be active and effective, the control panel display must read: AL 396 and ST 111.

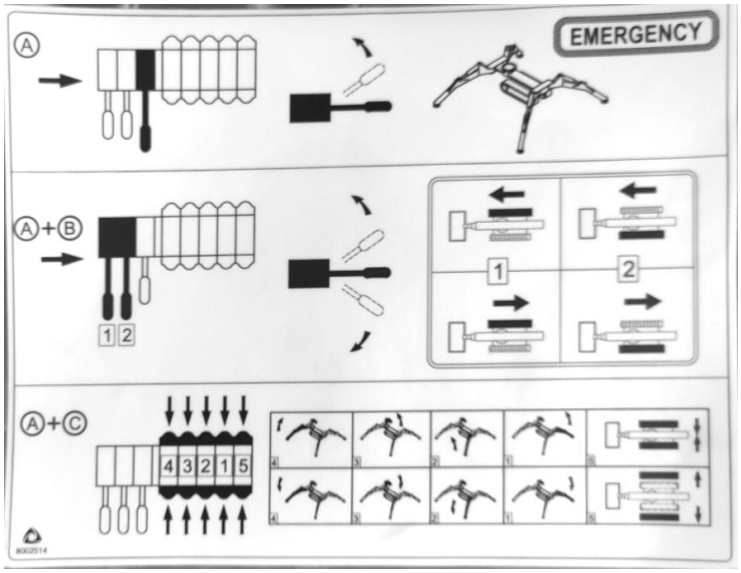
If only AL396 appears on the control panel display, the manual emergency manoeuvre is not active.

If the emergency key is turned in the absence of an alarm signal (AL XXX) and/or engine running, the manual emergency manoeuvre will not be active.

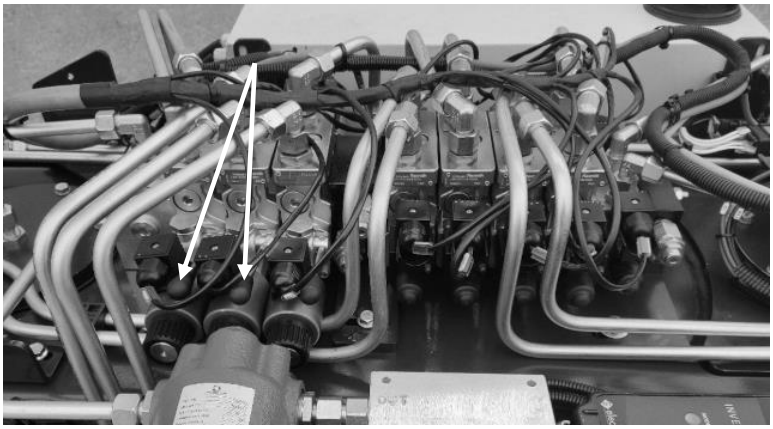


4. Remove the right casing of the machine in such a way as to have access to the manual emergency pump and open the upper door to access the earthing distributor.



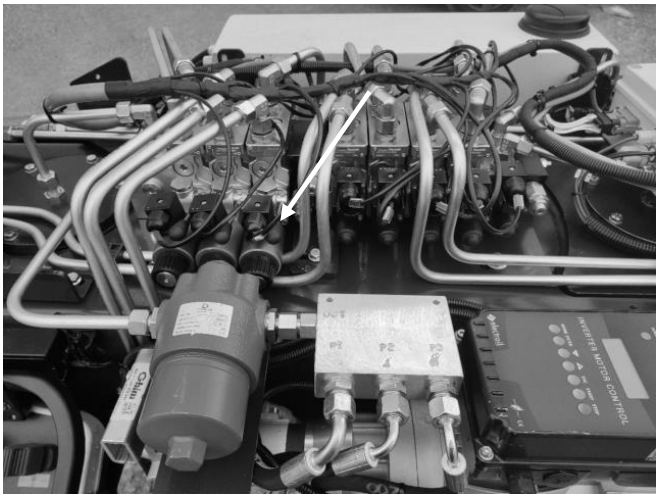


5. start the diesel engine using the appropriate remote control command.
6. To move the tracks forwards and backwards it is required to act on the first and second valve from the left of the earthing distributor



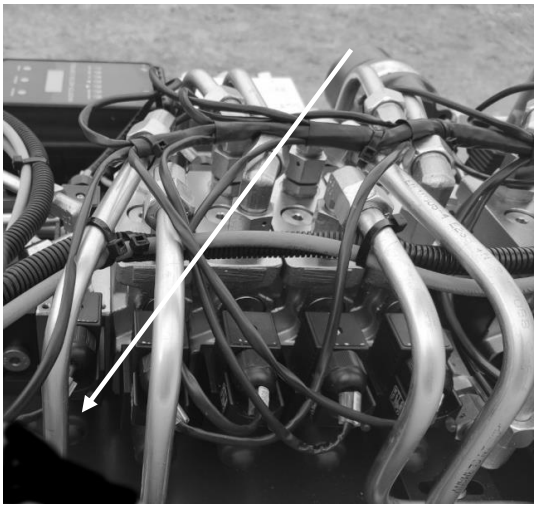
   a. The first valve acts on the left track
   b. The second valve acts on the right track

7. To widen/tighten the tracks it is required to remove the right, left and upper casing of the machine in order to have access to the earthing distributor, then act in advance on the sequence valve of the earthing distributor. The valve in question is the third from the left. Press it upwards and keep it pressed: this feeds the part of the hydraulic distributor responsible for moving the outriggers.



8. To tighten the tracks it is therefore required to operate on the first valve from the right, again on the right side of the earthing distributor.

9. To widen the tracks it is required to operate on the first valve from the left, always on the left side of the earthing distributor.:



10. If the machine is connected to the 220/110 VAC mains, the electric pump is automatically activated when the emergency key is turned. In this case, you can proceed as in the previous case without starting the diesel engine as the oil flow is generated by the electric pump.

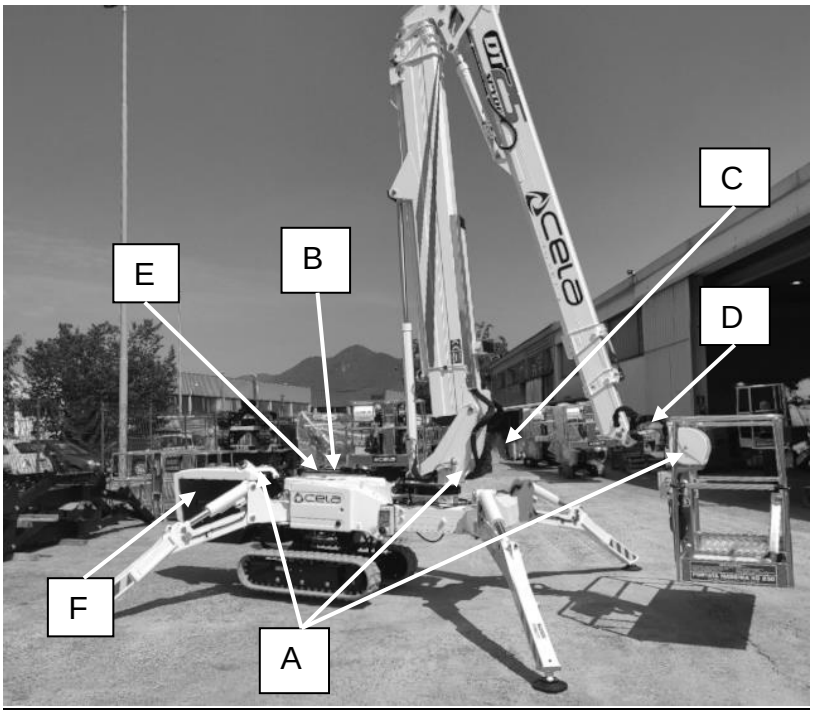
Pay attention to avoid the simultaneous movement of the diesel engine and the electric pump.

Contact an authorized CELA service shop to check the fault.

When recovery operations have been completed, restore the following:

- Mount all casings again.

5.19 SAFETY DEVICES



A - Emergency stop buttons

They are located on the emergency controls in the turret, on the emergency ground controls and on the remote control. They stop any platform function in the case of an emergency.

B – Hand pump for emergency descent

This moves the platform and takes it back to travel configuration in the case of breakdown. Depending on the set-up, there may be an emergency electric pump, available as an optional feature and powered by the machine battery.

C – Hydraulic emergency controls
These are located on the rotary turret and are used to direct the movements of the platform in emergency condition and without electric energy.

D – Load limiting device on the basket
This device blocks all platform movements if the basket is loaded beyond the maximum capacity.

E - Electric pump
Electro pump 240V 16A (110 V where required) controlled by an inverter that makes it possible to operate indoors.

F - Endothermic engine
Diesel/petrol-fuelled engine driving both the platform and the carriage.

Flanged check valves on all cylinders
Cylinder movement stops if a hydraulic pipe breaks or there is a pressure drop.

Protections on the electric and hydraulic plant
All flexible hoses and cables are equipped with wear-proof and burst-proof protections.

Outrigger/boom interlock (sequence valve)
The outrigger controls are only activated if the booms are in the resting position and if the appropriate control has been selected on the turret panel. If this is not the case, they cannot be used.
With the boom open it is no longer possible to activate the outriggers even by selecting the control in turret.

Maximum pressure valves
These prevent exceeding the maximum pressure in the hydraulic plant that the platform is calibrated to.

Safety belt attachments
Positioned on the basket, these are used to attach the operator's safety belts during use of the platform.

Inclinometer
This automatically stabilizes the aerial platform. The inclinometer also informs the operator if the machine is close to the limit tipping angle during traversing.

Other possible platform accessories

- Pneumatic socket in the basket
- Device for automatic repositioning of the equipment in rest position
- Self-loading extensions

5.20 CONTROL PANEL DISPLAY ALARM KEY

CODE	KEY	ACTION TO BE UNDERTAKEN
1	Open boom	Boom not in transport conditions
2	Outriggers not on the ground	Stabilize the platform
6	Emergency button pressed	Find and reset the pressed emergency button
7	Machine not stabilized	perform a further stabilisation cycle
8	Extension out	Fully retract the extension
10	Cab collision	Pay attention: potential collision with the cab
12	Outrigger collision	Pay attention: potential collision with the outriggers
13	Low boom	Lift the main boom further
14	Basket tilted	Perform the realignment manoeuvre
16	Boom on support	The boom is on the support
17	Jib closed	Lift the jib in relation to the main boom
19	Ground RH Front Outr	Right front outrigger that touches the ground
20	Ground LH Front Outr	Left front outrigger that touches the ground
21	Ground RH Rear Outr	Right rear outrigger that touches the ground
22	Ground LH Rear Outr	Left rear outrigger that touches the ground
23	Machine not levelled	Perform a levelling cycle
24	Select. Pos. Incorrect	The control selector is in the incorrect position
27	Limiting device	Retract with the basket towards the slewing ring
29	Outrigger pin	At least one outrigger pin is in incorrect position
31	Remote control not inserted	Remote control not inserted in its housing
32	Track inclination	Attention: RISK OF OVERTURNING
33	Basket levell. in progress	Wait for the end of the basket rotation
34	Basket overload	Attention: Reduce the load
35	Exclusion key inserted	Emergency manoeuvres in progress
36	Jib up	Lower the jib
37	Basket not centred	Centre the basket manually
38	Basket pin	Attention: the basket pin is not fitted in
39	Turret Rotation	Turn by 2 revolutions in the allowed direction
44	Selector on	Stop for active manoeuvre during engine ignition
45	High Pressure	Release the controls and try again
46	Basket Extra Block	Attention: level the basket with the manual emergency manoeuvre
53	Jib2 Vertical	Lower the jib
54	Basket pressed to the ground	Lift the basket using the emergency procedure
55	T Low	Attention: unhealthy work environment
59	Hoist	Attention: the hoist is in use
60	Basket obstacle	The basket anti-crash system has detected an obstacle
61	Press pedal	Preventively press the “dead man” pedal
63	Extra block	Descend using the manual emergency manoeuvres
64	Hydraulic socket	Attention: the hydraulic socket is in use
71	RH Collision	Lift the main boom beyond the obstacle on the right
72	LH Collision	Lift the main boom beyond the obstacle on the left
73	Height limiting device	The machine has been limited via software to the current height
76	No enable from panel	The manoeuvres were not enabled in electric mode
97	Incorrect hoist stability	Incorrect hoist stabilisation
98	Hoist not available	Hoist conditions not met
99	Hoist overload	Hoist overloaded
100	Basket on the ground	Attention: the basket is near the ground
101	Self-loading sector	Position all outriggers at 60°
102	Self-loading angle	Ground inclination too high for self-loading (3°)
105	Basket levelling block	Descend using the manual emergency manoeuvres
107	Auto-closing Exclusion	Make sure that the basket is centred
110	Levelling bypass	The levelling system bypass manoeuvre is in progress
111	Active emergency	Attention: the manual emergency controls are activated
112	Long. track inclination	Attention: RISK OF OVERTURNING
200	Rotation count	Attention: wrong turret rotation count

5.21 LOAD DETECTION SYSTEM

A load detection system is installed on the aerial platform with maximum intervention threshold within 120% of the nominal capacity. Such a system operates with a block of all machine movements and generates an intermittent acoustic warning to indicate that the admitted load has been exceeded. When there is an overload, the remote control panel displays *ST 34*. To switch the machine from this disabled condition to its operating condition, the excess weight must be unloaded until it falls within the allowed limit.
NB: The platform's maximum load control system does not exempt the operator from controlling that the weight of the tools or the material to be loaded necessary for work or maintenance is not greater than the maximum load accepted for the various declared uses of the platform

5.22 INCLINOMETER

An alarm device is installed in the aerial platform that continuously checks the maximum angle that the main boom works at. If this angle is anything other than 90°, the device can only perform manoeuvres that reduce this angle, at the same time showing an error code *(ST 13)* on the display screen of the control board/remote control.
N.B. This device does not exempt the operator from diligently carrying out the stabilisation manoeuvres.

5.23 CRANE ACCESSORY

All lifting accessories are identified by the serial number of the machine itself. They can be assembled as indicated by the following procedures and, of course, can be disassembled by performing the assembly procedure in reverse.

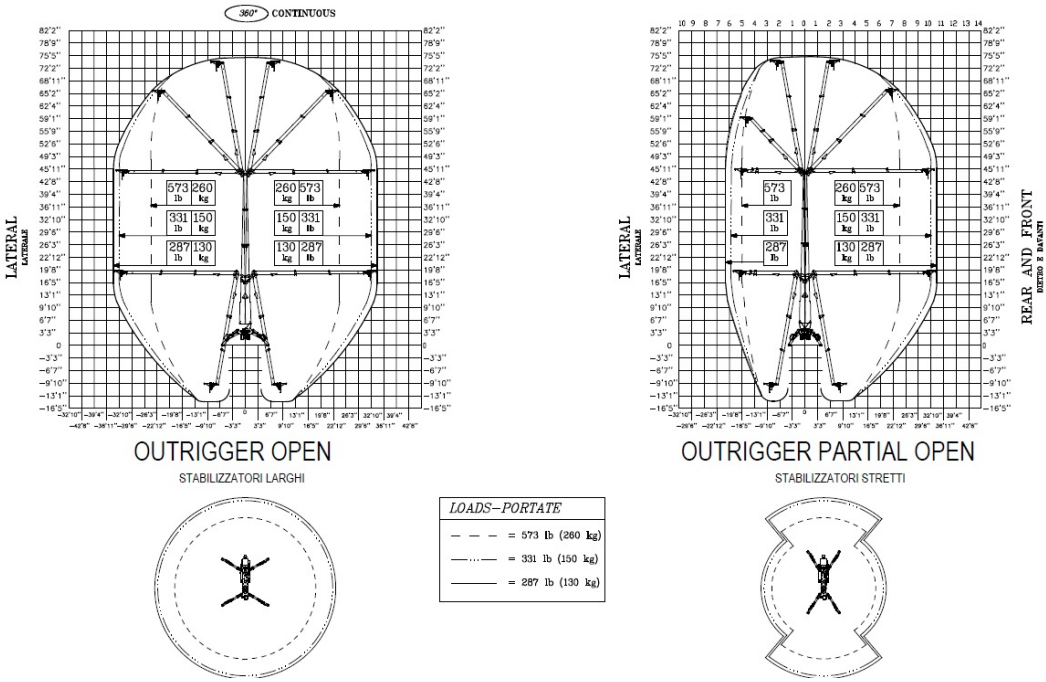
Before assembling / disassembling an accessory (even the personnel basket), always turn off the machine by disengaging the power take-off and / or turning the main ignition key of the Spyder or of the truck-mounted to zero position.

Warning: if an accessory is removed with the machine switched on and stabilized, it goes into alarm AL 666. This condition can only be overcome by returning the machine into transport conditions using the manual emergency maneuver.

Danger of falling: it is absolutely forbidden to use accessories to lift people.

5.23.1 Hook

This is an actual lifting accessory. It is equipped with an eyebolt to anchor the load. The load is hoisted by the movement of booms forming the extensible structure.



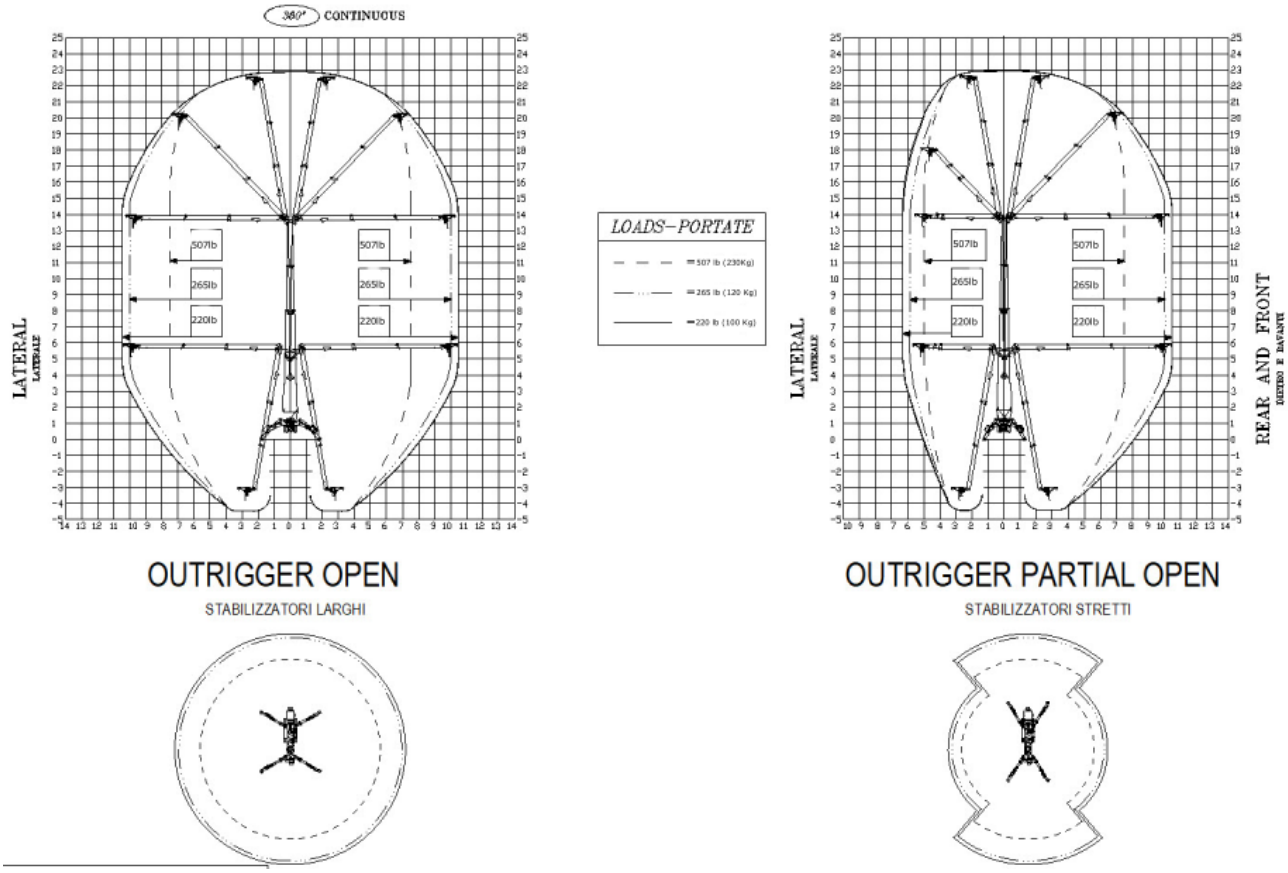
Danger: Only lift the load vertically.

Danger: do not load objects with an area greater than 21.5 ft2 (2 m2) on the hook.

Danger of falling: it is absolutely forbidden to use the hook to lift people.

5.23.2 Winch

Lifting unit complete with electric motor, drum, rope, lifting hook and command and control devices. The lifting of the load can take place through the movement of booms constituting the extensible structure or by rolling the rope on the drum controlled by the electric motor. The movement of the booms cannot be simultaneous with the lifting of the rope. The unit is supplied complete with a trolley for handling.



Danger: Lift the load off the ground using the winch. Do not use the telescopic arms to lift the load off the ground.

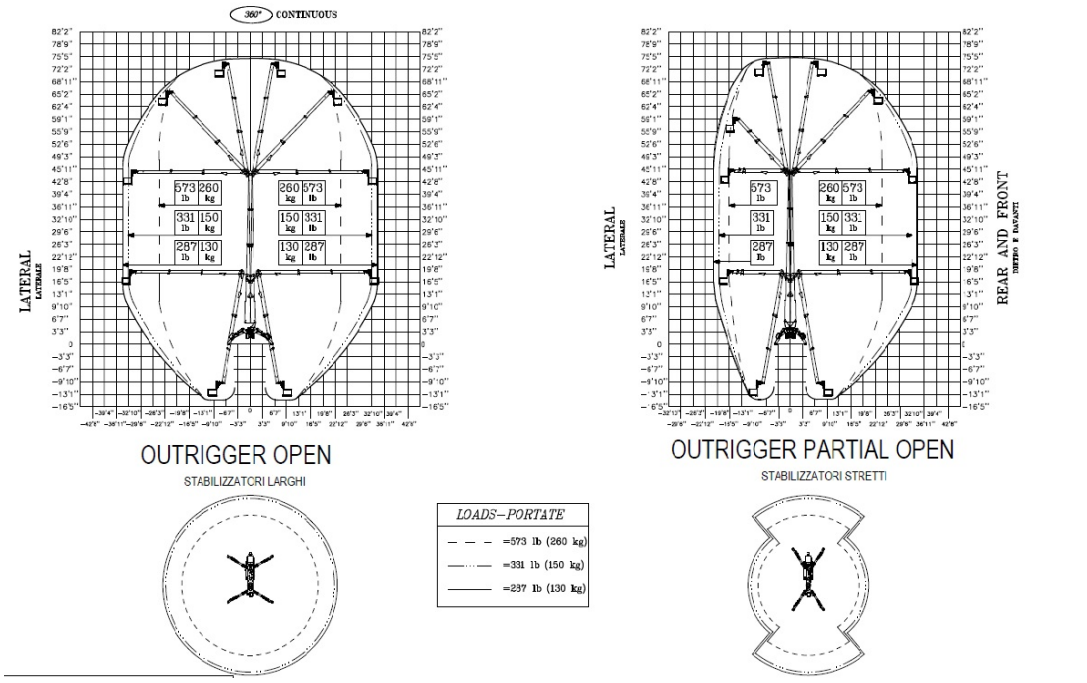
Danger: Only lift the load vertically.

Danger: Do not load objects larger than 21.5 ft2 (2 m2) onto the winch.

Danger of falling: it is absolutely forbidden to use the winch to lift people.

5.23.3 Material handling cage

Expandable platform expressly dedicated to the transport of objects, with a maximum capacity of 441 lb (200 Kg).

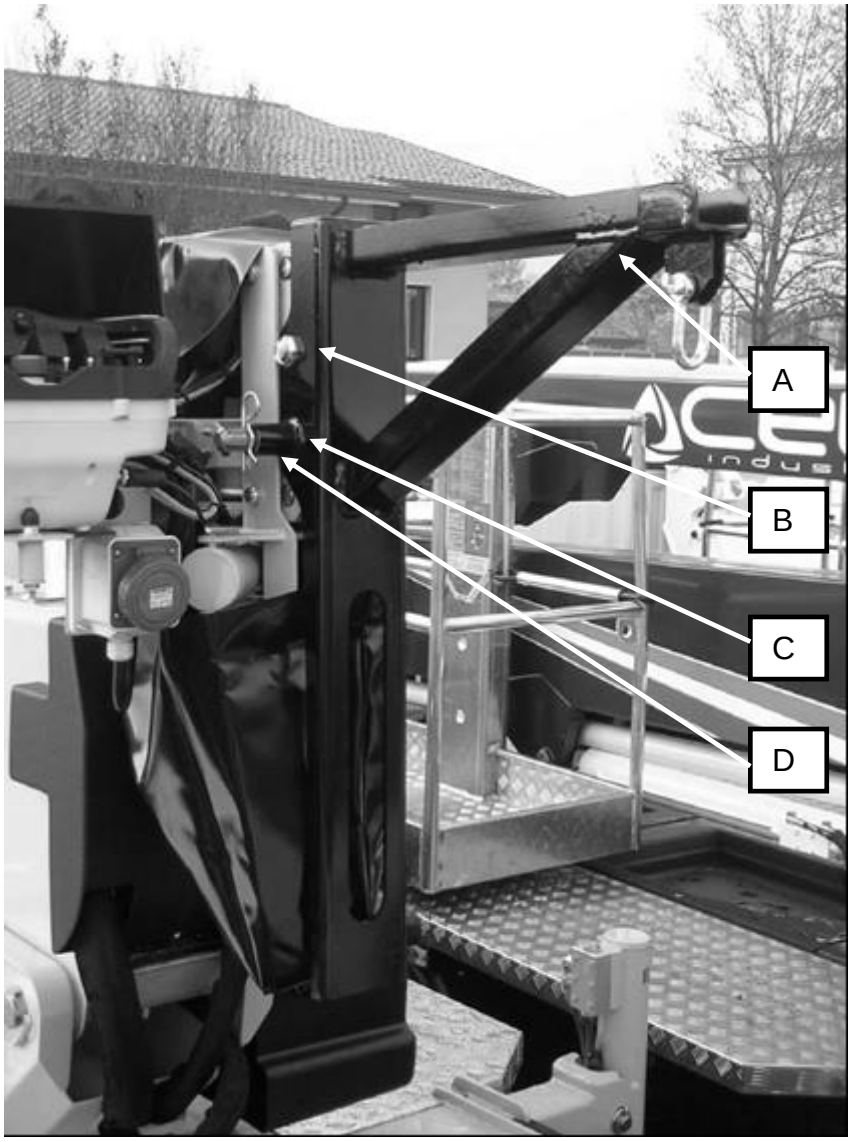



Tip-over Hazard: Do not load objects larger than 21.5 ft2 (2 m2) onto the material handling platform

Danger of falling: it is strictly forbidden to use the moving platform to lift or carry people.

5.23.4 ASSEMBLY PROCEDURE FOR THE REMOVAL OF HOOK / MATERIAL HANDLING PLATFORM

The following procedure must be followed to assemble the hook or the material handling platform.
Description of the parts involved in assembly / disassembly:



A– Hook

B– Fixed pin

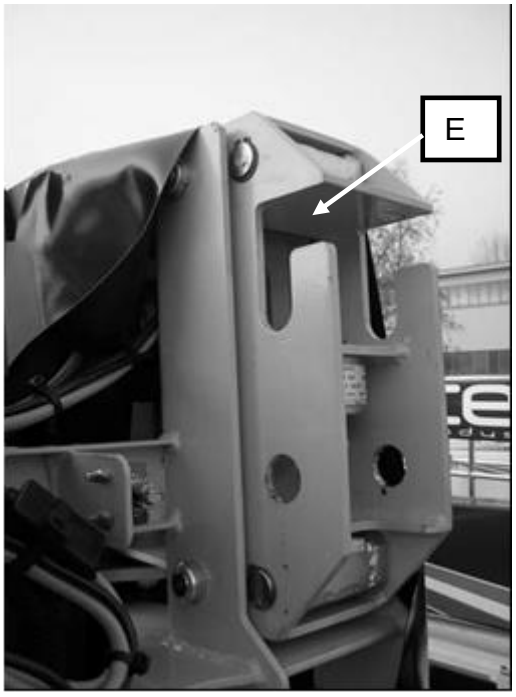
C – Removable pin

D– "C" pin fixing safety spring

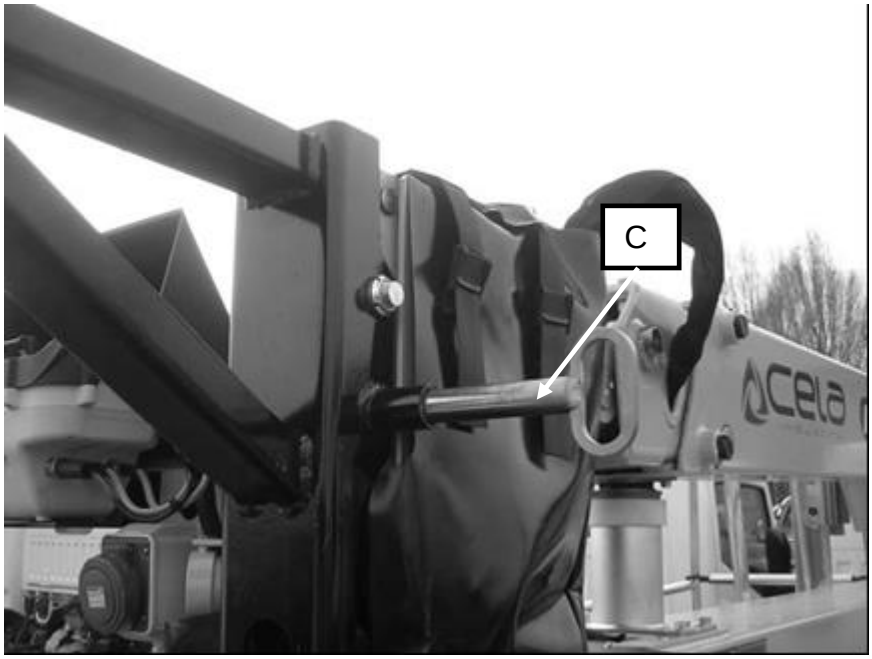
Assembly procedure:

1) Turn off the machine by disengaging the power take-off or by turning the general ignition key

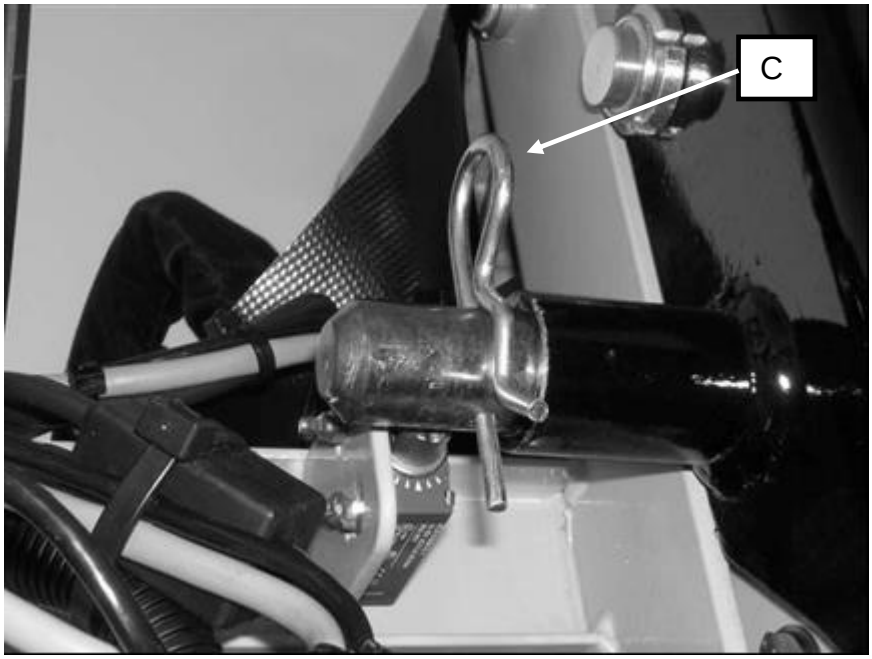
2) Hook the fixed pin "B" of the hook into the fixed support "E"



3) Insert the removable pin "C"



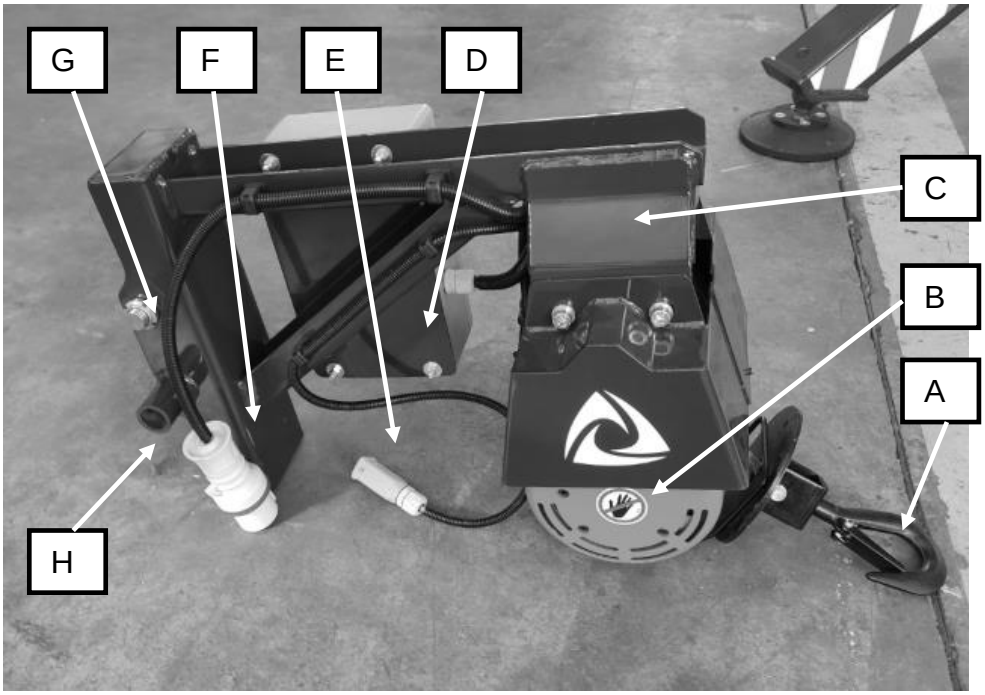
4) Secure the removable pin "C" with the safety spring "D



At this point the hook / winch / material handling platform is ready to be used through its ground controls.

5.23.5 ASSEMBLY PROCEDURE OF THE WINCH

The following procedure must be followed to assemble the winch.
Description of the parts involved in assembly / disassembly:



A– Hook

B– Winch

C – Mounting

D– Electric control panel

E – Data plug Spina dati

F – Electric power plug

G – Fixed pin

H – Removable pin with its safety spring

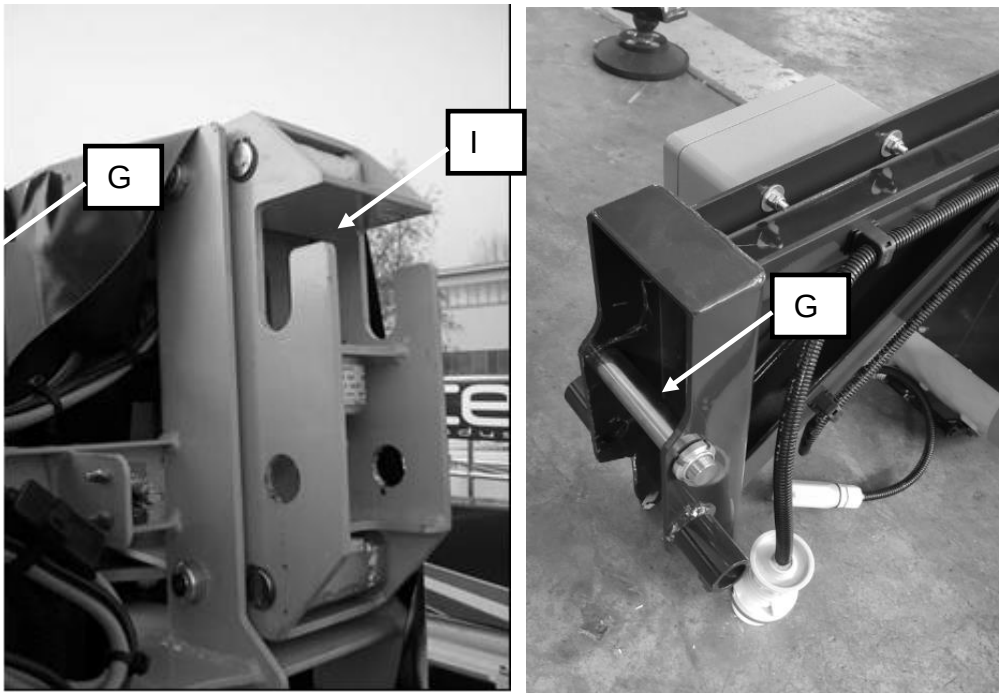
Assembly procedure:

1) Center the hook beforehand.

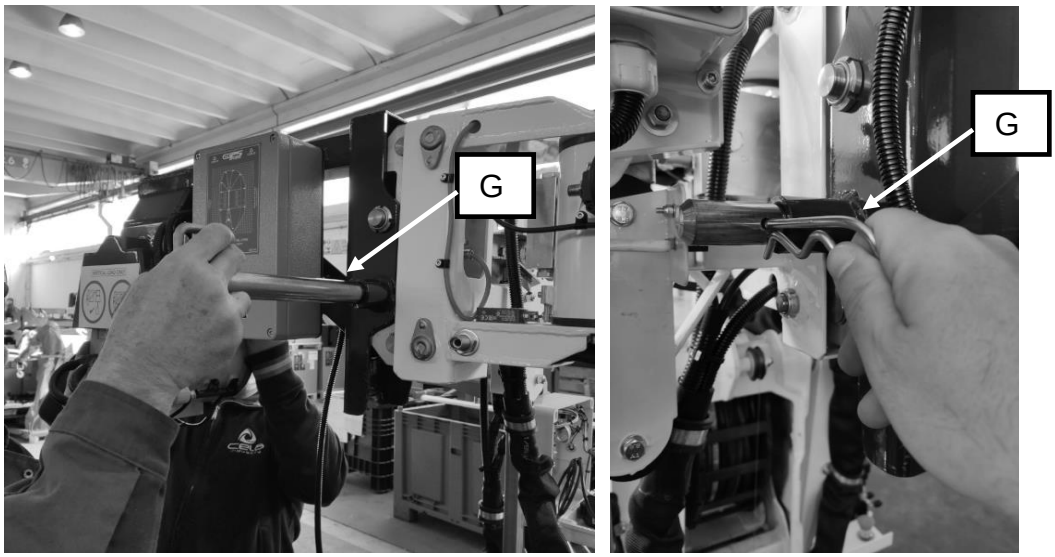
Attention, if the hook is not centered, the winch will not work and STOP 98 will be indicated on the LCD display of the remote control.

2) Turn off the machine by disengaging the power take-off or by turning the main ignition key

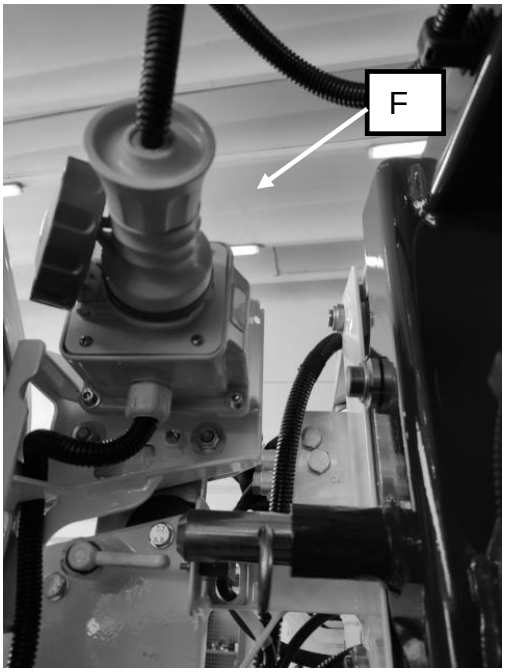
3) Hook the fixed pin "G" of the winch into the fixed support "I"

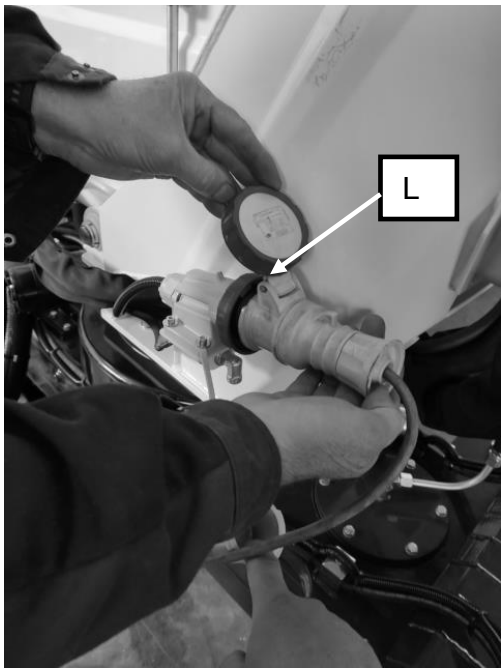


4) Insert the removable pin “H” and its safety spring

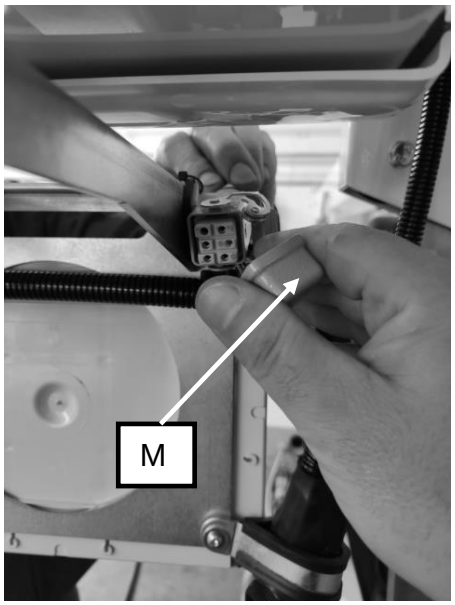


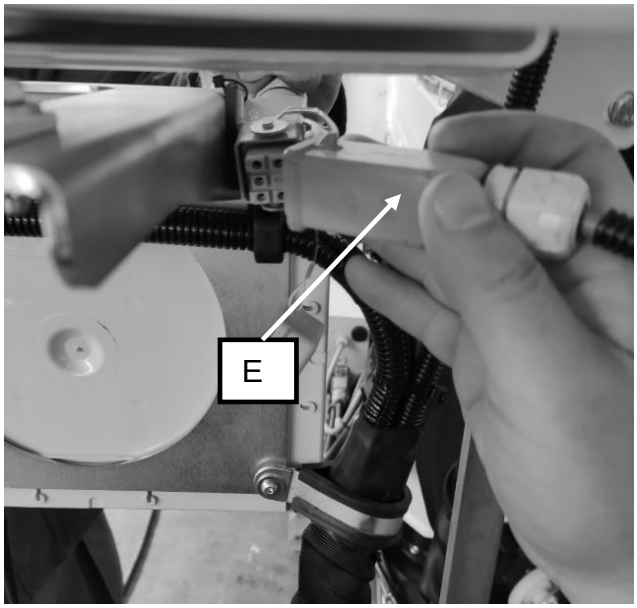
5) Connect the electric power plug “F” to the basket socket and then connect the machine plug “L” located on the left side of the tower to the 220V or 110V mains.





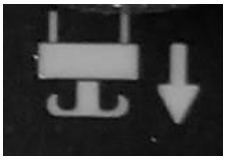
6) Remove the cap of the fixed data socket "M" located under the control panel and connect the data plug "E", paying attention to lock it in place using the special locking clip.

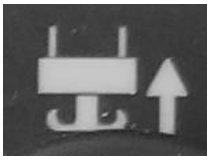




7) At this point the winch is ready to operate using the remote control.

8) The two rope ascent and rope descent commands are identified by a blue icon depicting a pulley system placed on the remote control:





If the assembly of the winch is incomplete in the LCD screen of the remote control, ST 98 will be indicated..

Upon reaching 90% of the maximum load allowed by the machine configuration (stabilization and / or position of the booms), the command and control system alerts the operator by activating an acoustic alarm and intermittently turning on the red LEDs at the base of the LCD display.

Upon reaching the maximum load allowed by the machine configuration (stabilization and / or position of the booms), the command and control system stops the lifting movements of the rope and / or booms. In this case, STOP 99 will be indicated on the remote control LCD screen.

To get out of the machine block due to overload it is sufficient to carry out a rope descent movement. In this case, the rope will descend for a maximum of 5 seconds and then stop for the next 30 seconds before allowing any further descent of the rope.

Attention do not exceed the maximum capacity indicated on the hook / winch / material handling platform. **Attenzione gancio/verri**

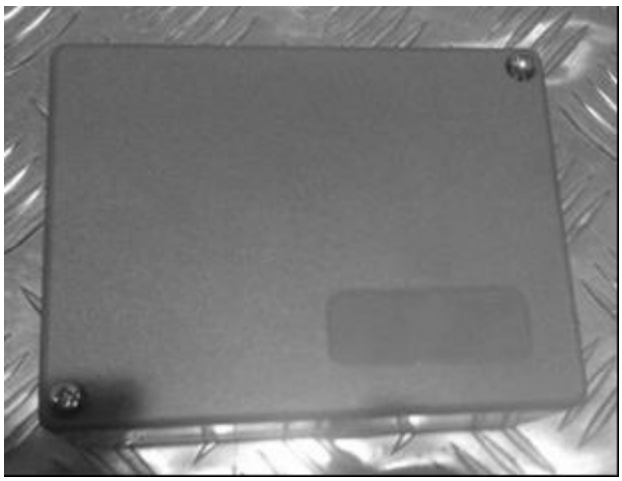
Attention, exceeding the loads expected from the machine can lead to structural damage and overturning of the equipment.

5.24 REMOTE ASSISTANCE

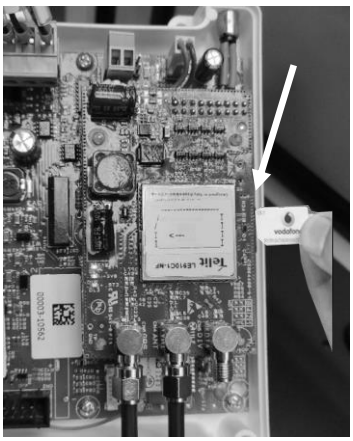
The aerial platform is equipped with the CRSS Cela Remote Service System, a modem that can be controlled by CELA assistance.
Thanks to such equipment, CELA customer service has the possibility of verifying, in remote connection and in real time, all the operational parameters and all the alarms triggered by the machine. Thanks to this system it is also possible to intervene on most of the machine operational parameters allowing for fast and effective assistance.

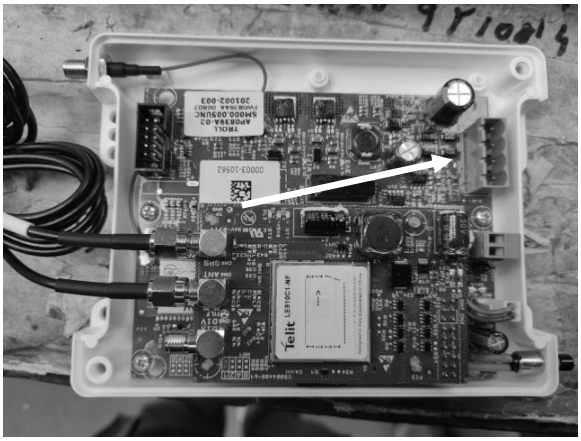
In case of necessity, proceed as follows:

1. Open the ground electric board.
2. The modem is installed inside the door of the electric panel installed in your machine and physically appears to be a black or white box.



3. Unscrew the two screws closing the cover of this box to be able to inspect the inside.





4. Disconnect the modem by disconnecting the green board power connector
5. Insert the SIM in the point indicated by the arrows
6. Power the modem again by reconnecting the green board power connector
7. Then close the cover of the CRSS, taking care not to crush any cables.

ATTENTION For the CRSS to operate, you should get a "voice and data" SIM 2G 3G or 4G card with a phone plan optimized for data transfer. Insert the SIM card in a mobile phone and disable both voice mail and the access pin. Then communicate the name of the operator that appears on the phone display to CELA (regarding the operator name, we must know exactly what is written including upper-case, lower-case, symbols etc.).

8. The CRSS is already ready to work! To be able to view the characteristic data of the machine, simply leave it on with the main key set to “ON”.

6 MAINTENANCE

6.1 INTRODUCTION

It is of the utmost importance that this equipment be washed with a pressure washer to remove all polluting elements, which can damage materials and impair proper operation.
After washing, lubricate all components to properly restore the sliding conditions and check if any elements are out of shape or show wear. If so, it is mandatory to contact an authorized service workshop to replace these elements.
For lubricating material refer to the recommendations in this manual.
It is essential to take into account that even safety devices are prone to wear and they always need to be checked if they are clean, lubricated and intact. Under normal working conditions cleaning and lubricating operations as described above must follow the intervals indicated in the maintenance schedule. These intervals have to be reduced if there is a situation of use or an environment more severe than normal.
It is impossible to describe all these situations, therefore, below are some examples.

- Resuming machine operation after a long period of stoppage.
- Extremely high or extremely low environmental temperatures with subsequent fast lubricant deterioration or extreme hardening.
- Painting and sand blasting operations that tend to make material get into the friction sliding guides combining with the grease thus creating a mixture that is no longer a lubricant but an abrasive substance wearing out the components of the machine and jamming the sliding guides.

We rely on your conscientiousness in noting down, in relation to the ways in which the machine is used, when and how to perform control and maintenance interventions absolutely necessary for the perfect operation and good state of preservation of safety devices and of the machine in general.

WARNING

FOR THE SAFETY OF THE MACHINE AND OF THE OPERATORS IT IS MANDATORY TO USE ORIGINAL SPARE PARTS. TO KNOW WHICH IS THE CLOSEST AUTHORIZED SERVICE SHOP IN YOUR AREA CONTACT THE CELA ASSISTANCE SERVICE

DURING WASHING WITH HIGH-PRESSURE JET DO NOT AIM AT ELECTRIC BOXES AND CABINETS. DO NOT USE DETERGENTS, CHEMICALS, PETROL OR SIMILAR SUBSTANCES, WHICH CAN DAMAGE RUBBER PARTS, PLASTIC COMPONENTS AND FILMS.

DO NOT PERFORM MAINTENANCE ON THE MACHINE WHEN THIS IS MOVING. TURN ALL MOTORS OFF AND REMOVE THE KEYS FROM THE CONTROL PANEL AND FROM THE DASHBOARD OF THE TRUCK. FOR BALL JOINTS WE SUGGEST GREASING AGAIN WITH THE MACHINE IN DIFFERENT POSITIONS. HOWEVER, MAINTENANCE HAS TO BE CARRIED OUT WHEN THE MACHINE IS TURNED OFF AND AFTER THE KEYS HAVE BEEN REMOVED FROM THE CONTROL PANELS

FOR SPYDER AERIAL PLATFORMS, ALWAYS REFER TO THE MAINTENANCE SCHEDULE PREPARED BY THE MANUFACTURER OF THE INSTALLED ENDOTHERMIC ENGINE.

FOR TRUCK-MOUNTED AERIAL PLATFORMS, ALWAYS REFER TO THE MAINTENANCE SCHEDULE PREPARED BY THE MANUFACTURER OF THE CARRIER VEHICLE.

NEVER REMOVE THE MAIN BOOM FOR WHATEVER REASON IF IT HAS NOT BEEN PLACED IN A VERTICAL POSITION: THIS MAY DAMAGE SAID BOOM IRREPARABLY

Inspections, maintenance and other interventions on the machine must be carried out according to specific skills. As far as the maintenance schedule is concerned, what follows is a list of workers in charge of each operation:

a. Operator of the platform and/or the service shop of the company which owns the machine
b. Authorized CELA assistance shop
c. CELA service shop

Before carrying out any modifications you must be authorized by the manufacturer.

Note: After any type of inspection/maintenance, report the results and the operations carried out in the relative inspection register at the end of this manual.

IF THE MACHINE HAS TO REMAIN IDLE FOR A LONG TIME

- Store it in a dry and well-aired place.
- Remove the ignition keys from the machine.
- Replace the filter of the hydraulic system.
- Protect contacts and contactors with special anti-oxidising products.
- Grease sliding guides, chains, transmission cables and the surfaces that are not protected by paint.
- Do not cover the machine with plastic material since it would create harmful condensation.
- As far as the carrier is concerned, follow the indications of the manufacturer

Before putting the machine into operation again, carry out inspection and maintenance procedures at the requested intervals: every day....., every 50 hours....., once a month.

IN CASE OF DISMANTLING AND SCRAPPING

In case of scrapping, it is necessary to dismantle the machine and break it down into uniform parts which must be sent to the relevant collection centres and disposed of according to the current laws.
These types of materials are part of the machine:

- Ferrous materials: framework and mechanical components.
- Plastic materials: gaskets, belts, and guards.
- Electric materials: windings, controls, solenoid valves and similar components.
- Oils and lubricants: hydraulic oil, reduction gear lubricants, lubricating grease.
- As far as the carrier is concerned, follow the indications of the manufacturer
- Other materials: MERCURY (basket balancing sensor)

EQUIPMENT LIFTING

To lift the complete equipment (truck + platform), follow the truck operating instructions. Never lift by hooking onto the platform unless there are specific indications on the vehicle and/or on the operating and maintenance manual.
With Spyder, hook onto the specifically provided points.
The platform parts (if not indicated inside this manual) can only be disassembled by authorized workshops, and handled using means and in accordance with the rules in force.

6.2 PRODUCTS FOR USE

GRASSI, LUBRIFICANTI, OLIO E ALTRO

	CODICE	DESCRIZIONE	NOTE	UTILIZZO
	Z47200077	NILS WHITE STAR EP	latta 18 Kg	ingrassaggio interno bracci e traverse
	Z47200065	MASTER PLATE CNC 2710199 (/2)	latta 5Kg(*)	ingrassaggio superiore e inferiore bracci
	Z47200070	MASTER PLATE CNC 2710200 (/2)	latta 1 Kg	ingrassaggio superiore e inferiore bracci
	Z47200237	MACONPLEX SC2	latta 20 Kg	ingrassaggio superiore e inferiore bracci
	Z47200040	REOLUBE 365 RHE (CNC 27101999)	latta 18Kg.	ingrassaggio boccole alveolari
	Z46100015	OLIO TUTELA 80W90	latta 20lt	lubrificazione cambio
	Z46100010	OLIO URANIA SAE 30 PER MOTORE DIESEL	latta 20lt	olio motore Diesel
	Z46100090	OLIO SHELL HELIX ULTRA 5W40	Latta 1 lt.	olio motore Benzina
	Z46100090	SYNTIUM 3000 SAE 5W40	Cartone 20 x 1lt	olio motore Benzina
	Z46100025	ANTIGELO IP ECOBLU 100		antigelo
	Z47200080	MOLYKOTE D-321R SPRAY	bomboletta 400ml	ingrassaggio secco fasce scorrimento
	Z47200085	NILS KETTOLUB 12 SPRAY	bomboletta 400ml	lubrificazione e protezione catene
	Z47200090	WURTH HSW 100 SPRAY (FUORI PRODUZIONE)	bomboletta 300ml	lubrificazione e protezione catene
(!)	Z46100110	PETRONAS HIDROBAK 32 HV/UF COD.4416	cisternetta	impianti idraulico standard (nuovo)
(!)	Z46100030	PETRONAS HIDROBAK 32 HV/UF COD.4416	cisternetta	impianto idraulico standard (vecchio)
	Z46100035	OLIO IDRAULICO SHELL TELLUS T22	cisternetta	impianto idraulico climi freddi
	Z47200105	WURTH HHS 2000	bomboletta 500ml	tubazioni e cavi in catenaria
	Z47200107	WURTH HHS GREASE CON PTFE	bomboletta 400ml	Pattini Scale,Movimento Scale,Cerniere,Giunti
	Z47200235	WURTH 0893 223 -S	bomboletta 500ml	protezione contatti connettori
	Z47200075	NILS GR 7000	latta 18 Kg	NON PIU IN USO (ingrass. Interno bracci)

Rev. 5 del 02/05/15

(*) N.B.: A seguito delle Nuove Normative di sicurezza dei trasporti, le Confezioni da 18 KG di Masterplate non sono più ammesse. Risultano idonee al Trasporto Non Speciale solo Confezioni fino a 5 Kg.

(!) Olii idraulici equivalenti in viscosità 32, per noi intercambiabili:

PETRONAS 4416HIDROBAK 32 HV/UF (PRODOTTO IDEALE TECNICAMENTE, NO PROBLEMI ALLERGIE)
ENI ARNICA 32
SHELL TELLUS T32

REOLUBE 365 RHE grease or equivalent for pocket bushings

MACONPLEX SC2 grease or equivalent for the booms extensions and any outrigger supporting beams

PETRONAS HiDROBAK 32 HV/UF Code 4416 type oil for hydraulic system - Hydraulic system capacity 26.41 gal (100 l)

Equivalent: ROL LI 32 HIV
TOTAL EQUIVIS ZS 32
ESSO INVALOR EP 32
SCHELL TELLUS SX 32
AGIP ARNICA 32

Grease for slewing ring rotation unit with worm screw:
NILS NILEX EP1: for worm screw/bearings/balls and for cogging

Grease for chain lubrication:
NILS – KETTOLUBE 12 SPRAY or equivalent

IT IS ABSOLUTELY FORBIDDEN TO INTRODUCE TOOLS, HANDS, FINGERS, ETC., IN THE HOLES OF THE TELESCOPIC BOOM.

ALL THE MAINTENANCE OPERATIONS MUST BE CARRIED OUT USING THE NORMAL EQUIPMENT THAT CONFORMS WITH THE SAFETY REGULATIONS

IMPORTANT

CAREFULLY CHECK THE CONDITIONS OF THE ELECTRICAL CONDUCTORS AND THE CONNECTIONS OF THE BASKET AND TURRET, GIVEN THE IMPORTANCE FOR THE PURPOSES OF OPERATION AND SAFETY, WE ADVISE YOU TO CHECK THE INTEGRITY (LIMITED TO THE NECESSARY REPLACEMENTS) OF SAID CONDUCTORS EVERY 2000 WORKING HOURS.

6.3 SET-UP MAINTENANCE SCHEDULE

Important: After completing any kind of control/maintenance, and before putting the machine back into service, please carry out the control and maintenance operations required “every day”.

FREQUENCY	OPERATIONS	NOTES	BY
Every day before starting it up	Through repeated tests, without any person in the basket, check the good functioning of all safety and emergency devices; in particular, be extremely mindful of: - outreach limiting device (if present) - emergency stop buttons - outrigger/boom interlocking systems - controls and warning lights - battery charge - hydraulic oil and fuel tank levels - interlock rotation for outrigging in home position MOREOVER, MAKE SURE THAT: - the pin locking systems (plugs, ring nuts, etc.) are working perfectly and in good condition - instruction and safety plates are perfectly legible - there are no hydraulic leaks, loose electric connections, collision signs, friction, etc. - Check the structure for cracks or other undesired phenomena		A - Platform operator
Every 50 hours of work	Check motor oil levels (Spyders). Make sure that the following components are sufficiently clean: - diesel pre-filter (Spyders) - motor air filter (Spyders) - machine (in particular, inspect tightness of connections and hoses); take advantage to inspect the condition of tyres, cables, all accessories and tools. Check for any rusty spots that may indicate impact, cracks or other undesired phenomena		A – Platform operator

FREQUENCY	OPERATIONS	NOTES	BY
Every month (~ 120 hours)	Perform a complete cycle of cleaning and greasing as indicated in the INTRODUCTION to this MAINTENANCE paragraph. Perform inspection and lubrication as indicated in this manual. Check the lubrication conditions of the extension chains/cables of the booms and proceed with greasing the chains/ cables idler rollers (if any).	After the first 150 hours, replace the hydraulic system oil filter cartridges	A – Platform operator
Every three months (~ 360 hours)	Inspect the tightness of the main fixing parts: □ slewing ring bolts and nuts □ reduction gear bolts and nuts □ chassis bolts and nuts (Truck-mounted) □ ring nuts on pins. Perform inspection and lubrication as indicated in this manual. Replace hydraulic system oil filter cartridges and inspect check valves. N.B. If the slewing ring screws are not tightened correctly, it is necessary to replace the screws at our authorized service shops	See the relative tightening torques in this manual In this regard, see “INSTRUCTIONS FOR HYDRAULIC SYSTEM MAINTENANCE”	A - Platform operator and/or person in charge of safety at the company which owns the machine + B - service shops CELA service shops
Every 6 months (~ 750 hours)	Perform a complete inspection of the machine and write down your findings in the special sheets herewith attached in the “INSPECTION REGISTER”.		A - Platform operator and/or person in charge of safety at the company which owns the machine
Every year (~ 1500 hours)	Replace all the oil in the hydraulic system. Replace the hydraulic oil filter cartridges	In this regard, see “INSTRUCTIONS FOR HYDRAULIC SYSTEM MAINTENANCE”	operator and/or person in charge of safety at the company which owns the machine + B - service shops CELA service

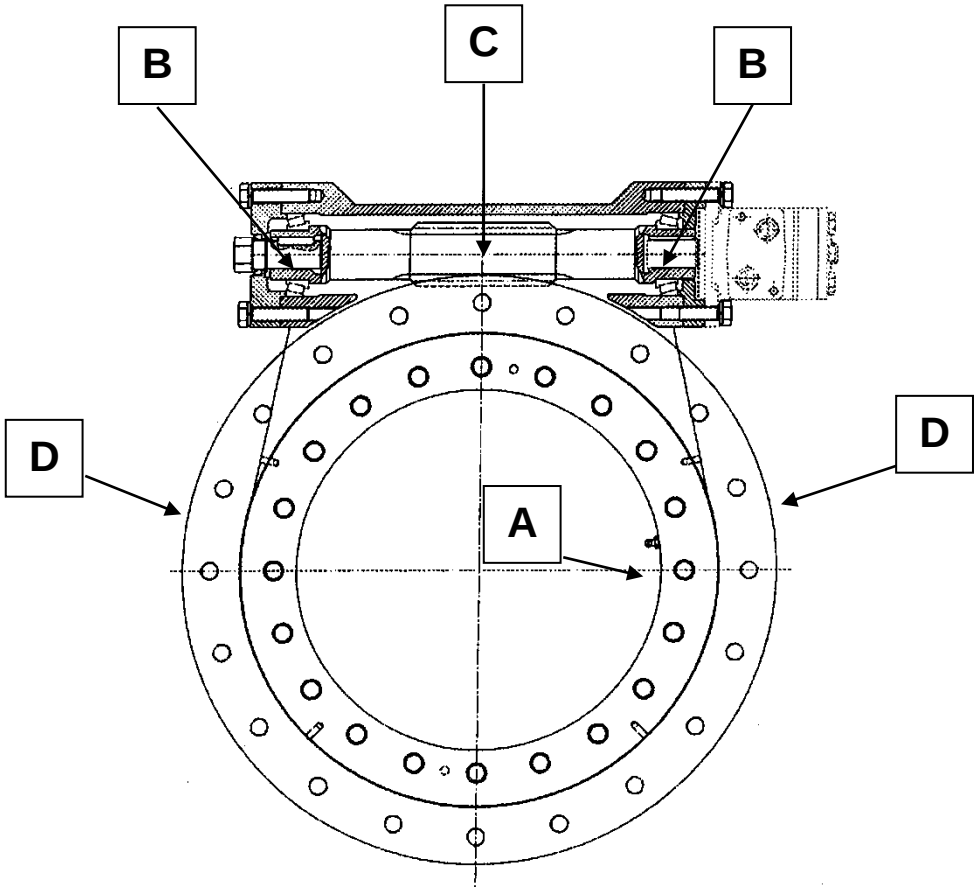
FREQUENCY	OPERATIONS	NOTES	BY
Every 1-3 years (1500-4500 hours)	COMPLETE INSPECTION (perform all the inspections indicated in this manual)	N.B. With platforms authorized for increased load capacity the period is reduced to every 1-2 years (1000-3000 h) and the complete overhaul every 6-7 years (9000-10000 h)	B - Authorized service shops or CELA company
Every 15000 hours or 10 years	COMPLETE OVERHAUL		B - Authorized service shops or CELA
As required by the vehicle manufacturer	Follow the maintenance schedule provided by the vehicle manufacturer and clearly indicated in the operating and maintenance manual of the vehicle		Vehicle manufacturer-authorized service shops

Failure to apply the required scheduled maintenance entails the suspension of the warranty both for the aerial part and for any carrier vehicle (truck-mounted).

In case of truck-mounted aerial platforms, failure to apply the scheduled maintenance required by the carrier vehicle manufacturer entails the suspension of the warranty both for the aerial part and for any carrier vehicle (truck-mounted).

6.4 LUBRICATION

6.4.1 Greasing/lubrication of the bearing rotation unit with worm screw.



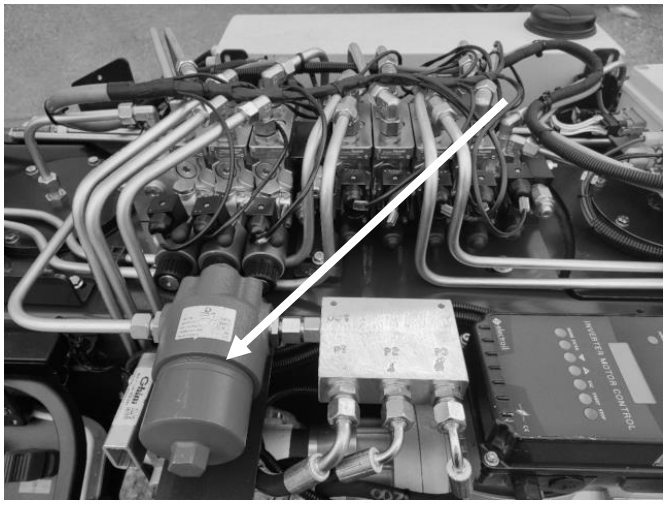
A – BALL BEARINGS – NILS NILEX EP1 (THROUGH GREASE NIPPLES)
B – BEARINGS - NILS NILEX EP1 (THROUGH GREASE NIPPLES)
C – WORM SCREW - NILS NILEX EP1 (THROUGH GREASE NIPPLES)
D – EXTERNAL COGGING – NILS NILEX EP1 (USING BRUSH)

6.4.2 Hydraulic oil level verification

Check at least once a month that the hydraulic oil level in the tank is above the minimum level: with the machine closed in the transport position (including outriggers) and with the vehicle on level ground, check that the oil is visible from the upper inspection window. If the oil is not visible from the inspection window, top up with oil having specifications as indicated in this manual.

6.4.3 Delivery oil filter cartridge replacement

The oil flow filter is located near the outrigger control unit.



To clean the filter properly replace the filter cartridge. Do not just wash the filter cartridge as it is not washable.
For the replacement operation you have to proceed as follows:
- clean the external body of the filter
- unscrew the lower part of the filter and extract the inside cartridge (before this operation put a container under the filter to gather the oil from the inside of the filter)
- put in the new cartridge and re-tighten the lower part of the filter

6.4.4 Greasing of hinged pins

At least monthly, the hinged pins have to be lubricated with the specific grease nipples.
For the kind of grease see paragraph - Products to use.

6.4.5 Greasing of sliding blocks

The sliding blocks must be greased at least once a month. If the boom does move smoothly, greasing is certainly the first remedial measure to use.

To lubricate the sliding blocks you have to drizzle the sliding parts of the different booms with a right lubricant/grease (see paragraph – Products to use) in the contact zone of the sliding blocks.

Perform some empty extensions/retractions after having finished the greasing operation, so you can obtain the correct distribution of the lubrication on the sliding parts.

Never extend the main boom out for whatever reason if it has not been placed in a vertical position: this may damage said boom irreparably.

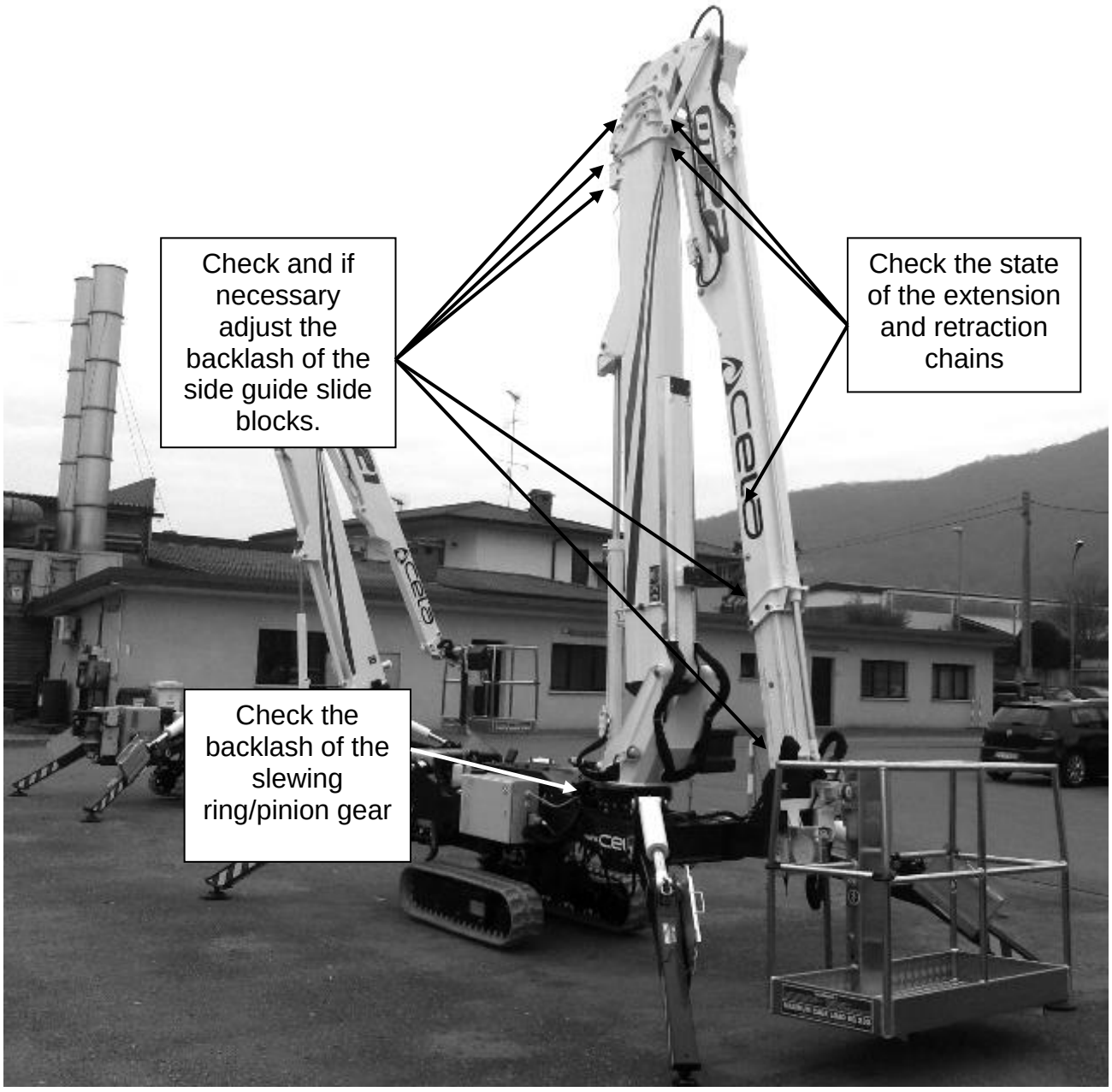
6.5 STRUCTURE INSPECTION

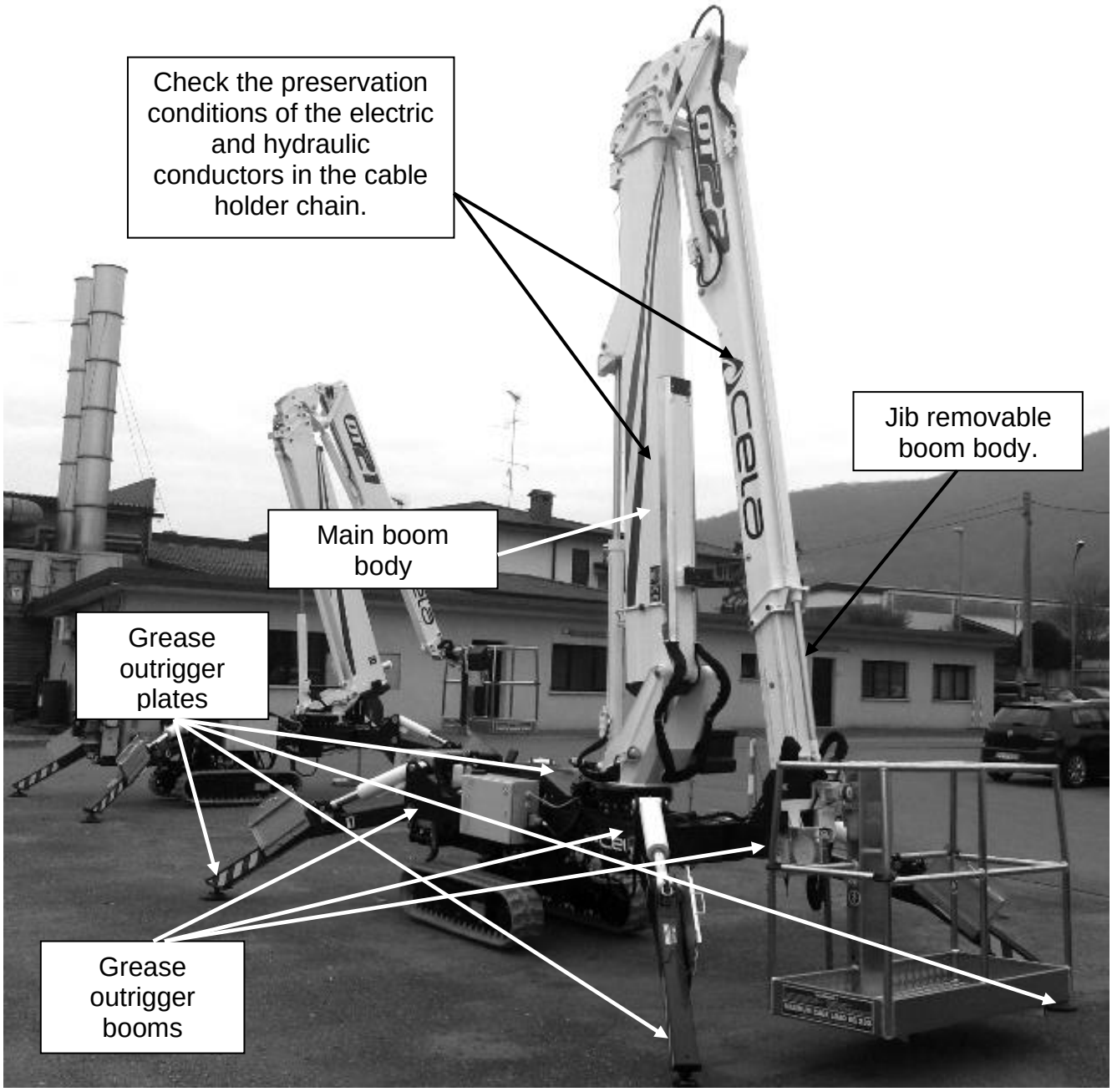
At least every 50 hours of work, the operator must inspect the structure of the platform, as follows:

- accurately wash/clean the entire machine
- visually inspect the entire structure of the machine (including the connection frame to the vehicle) paying particular attention to the welding and to the points of rust/oxidation to find signs of weakening
- if you find flaws/cracks or if in doubt, immediately contact an authorized service shop for more extensive checks and to find solutions.

A complete and thorough inspection of the structure of the platform has to be made every 1500/2000 working hours by expert personnel and authorized by the manufacturer to check the general condition of the machine.

6.5.1 Verify the presence of rust that might signify impact, cracks or other phenomena requiring intervention





WELDING/RESTORING
Different parts of the machine are made with high elastic limit steel; never perform welding or restoring without the authorisation and the preventive instructions of the manufacturer

6.6 CHAIN INSPECTION

The chains must be inspected if the machine is equipped with extension and retraction chains (all except Spyder DT50 and DT32).

A complete check and inspection of the main boom and jib extension and retraction chains (the boom and jib do not apply to the DT68 or DT72 Spyder and truck-mounted) must be carried out, at least every month or 120 hours of effective operation, by expert manufacturer-authorized staff, with the purpose of checking the general state of wear.

All chains are visible and can therefore be inspected with the boom/s fully extended.

The following checks need to be carried out along the entire length of the chains:

- Plate profile wear: make sure that the height of the plates does not wear by more than 2.5% of the original height, if only on one side, and 4% if on both sides.
- Chain profile wear: make sure that the chain pinhead is no more than 25% worn compared to its original state
- Chain profile wear: make sure that outer side of the chain is no more than 20% worn compared to its original thickness.

6.7 BOLTS AND NUTS TORQUE CHECK

The correct clamping of the bolts and nuts used on the platform has to be checked every 350 working hours (or quarterly), if possible, by the expert personnel to check for yielding or loosening.

You have to control the clamping of all the bolts and nuts that are on the machine (with a torque wrench with the aid of the tightening torque chart below). Pay attention to the follow critical points:

- clamping to the vehicle chassis;
- basket clamping;
- clamping of flanged valves on cylinders;
- clamping slewing ring/turret/frame;
- clamping systems for pin locking;
- outrigger clamping;

During the checks/when tightening, do not use the screws that are already worn/elongated because they no longer ensure the correct mechanical seal characteristics.
If you find a loose fastening, especially in critical fastening points, replace the screw (always use original spare parts supplied by the manufacturer).

NUTS AND BOLTS TIGHTENING TORQUE TABLE Nm

RATED DIAMETER (mm)	BOLT CLASS		
	8.8	10.9	12.9
5	5	7	8
6	8	12	14
8	20	29	35
10	40	60	70
12	70	100	120
14	110	160	190
16	170	250	300
18	240	350	410
20	340	500	580
22	460	680	800
24	580	860	1000
27	860	1270	1490
30	1170	1720	2010
33	1590	2340	2740
36	2040	3000	3520
39	2660	3900	4570

Torque precision C μ= 0.15 Standard E25-030 Afnor 84162

(10Nm $\cong$ 1 Kgm)

TABLE OF FITTING/PIPE TIGHTENING TORQUE

PIPE FITTINGS 24° - DIN3861

T ØEXT PIPE		F THREAD	TIGHTENING TORQUE
SERIES	TH		N.m
LIGHT (L)	6	12 x 1.5	13 - 15
	8	14 x 1.5	15 – 18
	10	16 x 1.5	25 – 28
	12	18 x 1.5	27 – 30
	15	22 x 1.5	50 - 60
	18	26 x 1.5	60 – 75
	22	30 x 2	85 – 105
	28	36 x 2	120 - 140
HEAVY (S)	6	14 x 1.5	14 – 16
	8	16 x 1.5	25 – 28
	10	18 x 1.5	27 – 30
	12	20 x 1.5	43 – 54
	14	22 x 1.5	50 – 62
	16	24 x 1.5	60 – 75
	20	30 x 2	90 – 110
	25	36 x 2	125 - 145

FITTINGS/PIPES 60°-BSP

T ØEXT PIPE		F THREAD	TIGHTENING TORQUE
mm	IN.		N.m
5	3/16	1/8	12 - 14
6	1/4	1/4	14 - 16
10	3/8	3/8	25 – 28
12	1/2	1/2	45 – 60
16	5/8	5/8	55 – 70
20	3/4	3/4	90 – 110
25	1”	1”	120 – 140
32	1”1/4	1”1/4	170 – 190
38	1”1/2	1”1/2	200 - 245

6.8 CONTROL/ADJUSTMENT OF THE SLIDING BLOCKS ON THE TELESCOPIC BOOMS

Regularly check the wear condition (and make the adjustment when necessary) of the sliding blocks of the telescopic booms.

The lateral sliding blocks are generally adjustable from the outside through a system with adjustment screw/register. The correct adjustment must not be too tight (to avoid early damage) or too loose (to avoid excessive side backlash). We advise you to maintain a maximum allowance between sliding block and boom of 0.02 in (0.5mm).

The upper and lower sliding blocks are not adjustable from the outside. To control the wear condition and a new adjustment you have to go to an authorized service shop as it is necessary to remove the parts.

In any case you can check their wear by controlling the thickness. The head of the screws or of the backstops must not protrude from the upper surface of the sliding block. We advise you to maintain a minimum projection of the sliding block of 0.12 in (3mm) compared to the clamping systems.

6.9 PROCEDURE TO BE FOLLOWED IN CASE OF ANY BREAKDOWN/SEIZURE OF THE PUMP

Under these conditions there is a risk of polluting the whole system. In fact, any failure of this equipment is always characterized by abrasive dust, which can cause serious damage to the remaining equipment. Oil must be drained from the tank and valves, utilities, pipes and the tank washed and cleaned.
It is also necessary to check that the cylinders do not show signs of wear.
Replace all the filters and fit provisional 25 micron filters on each return hose.
Let the equipment work for 40/50 hours approx. before removing provisional filters and refilling the tank with new oil.

6.10 SYSTEM EMPTYING AND TANK FILLING

If it is necessary to empty the system, you have to completely remove used oil so as not to mix it with new oil. The oil should be suctioned starting from the system's lowest part; the operation should be carried out when the oil is hot.
The oil for refilling the equipment should be added into the tank through a 25 micron filter.
Oil must be clean and devoid of any foreign substance, which could cause anomalies and early wear to the equipment; moreover, the oil must match the indicated specifications.

6.11 CONTROLLING THE SEAL ON THE CYLINDER CHECK VALVES

Every three months check the seal of the check valves on the cylinders in this way:

6.11.1 Operating control of pilot operated check valves of the outriggers

1) Stabilize the equipment making sure that the outriggers press against the ground
2) Switch the equipment off, making sure that it is not powered electrically.
3) Wait a few minutes for it to settle and mark the extension position of the outriggers
4) After approximately 2 hours, check that there has been no yielding (retraction of the outriggers).
5) Run the same test/control for the completely retracted outrigger seal

If you find any yielding promptly go to an authorized workshop to run more checks and, if necessary, solutions.

6.11.2 Control check valve operation on the cylinders of the superstructure

1) Partially lift the booms with the maximum allowed load in the basket (use only a load of material, do not perform the test with people in the basket)
2) Switch the equipment off, making sure that it is not powered electrically.
3) Wait a few minutes for settling and mark the extension position of the various cylinders
4) After approximately 2 hours, check that there has been no yielding (retraction of the cylinders).

If you find any yielding promptly go to an authorized workshop to run more checks and, if necessary, solutions.

6.12 CONTROLLING FITTINGS AND FLEXIBLE/RIGID PIPES

During normal maintenance and, always at least every 15 days, you must check all the fittings and various hydraulic connections of the machine in order to find any leaks and/or anomalies.
The control of the pipe fittings has to be made by checking there are no oil leaks and also checking correct clamping (if there is a seal on the pipe fitting, replace if necessary).
For flexible pipes carefully check the pressed pipe-fitting union and the general condition of the flexible pipe (it must not have signs of early ageing, cracks, swelling or abrasion that can compromise the seal).
To replace any pipes follow these instructions:

1) Switch the equipment motor off.
2) Operate the emergency control levers several times by hand (with motor turned off) in order to eliminate pressure from inside the circuits.
3) If the piping is under the tank, this may result in intake from the exhaust; therefore, if necessary, close the return valves.
4) When replacing a tank intake pipe, close the oil intake valves at the bottom of the tank.
5) Always proceed very carefully when removing the part being replaced.
6) Always use original pipes/spare parts

After making the replacement, release the air from the circuit by performing several complete manoeuvres of the various hydraulic cylinders.

PIPES - ELECTRIC CABLES

The flexible pipes and the electric cables that slide on the inside of the cable carrier chains are components that can be subject to wear and must accordingly be frequently checked to avoid damage risks thus stopping the machine.

You have to check that they are clamped correctly to the extremities of the cable carrier chain, their external wear condition and their correct position and tension (on the inside of the cable carrier chain there cannot be crossed or protruding pipes and cables) at least every six months.

***Note**: If the cable holder chain is inside the boom, a visual control can be conducted with a portable light from the rear boom opening (remove the cover casing and check the cable holder chain during boom extension).*

6.13 ELECTRICAL SYSTEMS / COMPONENTS

Periodically (at least every six months) check the condition of the components and electrical wiring (carefully check the cables and the various plugs/connection socket). Check the cables for signs of impact/friction or surface wear and that they are still securely fastened in their original locations.

You must also check the integrity of the various electrical boxes and verify the correct tightness of the covers and of the pipe-fittings for the entry of the electric cables (to avoid dangerous water infiltrations).

For the machines having the electro-hydraulic joint on the inside of the turret (machines with a continuous rotation of the turret) verify the integrity of its inside electric connections (brushes and sliding links) and lubricate them every month with a right antioxidant product (antioxidant spray for electric contacts).

6.14 CONTROLS

Before each use, check the correct operation of all controls (hydraulic and electric), that the lever returns correctly to zero, that the manoeuvres and relative operating speeds run gradually. If operation is faulty, contact an authorized assistance point as soon as possible.

6.15 TROUBLESHOOTING

In case of irregular operation, verify what is indicated on the control/remote control unit display. This display indicates errors or irregularities utilising an alphanumeric code:

- St xxx ==> Unintended use
- Al xxx ==> Fault

The list of "Stops" ***St*** is provided below; if an "Alarm" ***Al*** appears contact CELA maintenance indicating the code that appears on the control panel/remote control display.

CODE	KEY	ACTION TO BE UNDERTAKEN
1	Open boom	Boom not in transport conditions
2	Outriggers not on the ground	Stabilize the platform
6	Emergency button pressed	Find and reset the pressed emergency button
7	Machine not stabilized	perform a further stabilisation cycle
8	Extension out	Fully retract the extension
10	Cab collision	Pay attention: potential collision with the cab
12	Outrigger collision	Pay attention: potential collision with the outriggers
13	Low boom	Lift the main boom further
14	Basket tilted	Perform the realignment manoeuvre
16	Boom on support	The boom is on the support
17	Jib closed	Lift the jib in relation to the main boom
19	Ground RH Front Outr	Right front outrigger that touches the ground
20	Ground LH Front Outr	Left front outrigger that touches the ground
21	Ground RH Rear Outr	Right rear outrigger that touches the ground
22	Ground LH Rear Outr	Left rear outrigger that touches the ground
23	Machine not levelled	Perform a levelling cycle
24	Select. Pos. Incorrect	The control selector is in the incorrect position
27	Limiting device	Retract with the basket towards the slewing ring
29	Outrigger pin	At least one outrigger pin is in incorrect position
31	Remote control not inserted	Remote control not inserted in its housing
32	Track inclination	Attention: RISK OF OVERTURNING
33	Basket levell. in progress	Wait for the end of the basket rotation
34	Basket overload	Attention: Reduce the load
35	Exclusion key inserted	Emergency manoeuvres in progress
36	Jib up	Lower the jib
37	Basket not centred	Centre the basket manually
38	Basket pin	Attention: the basket pin is not fitted in
39	Turret Rotation	Turn by 2 revolutions in the allowed direction
44	Selector on	Stop for active manoeuvre during engine ignition
45	High Pressure	Release the controls and try again
46	Basket Extra Block	Attention: level the basket with the manual emergency manoeuvre
53	Jib2 Vertical	Lower the jib
54	Basket pressed to the ground	Lift the basket using the emergency procedure
55	T Low	Attention: unhealthy work environment
59	Hoist	Attention: the hoist is in use
60	Basket obstacle	The basket anti-crash system has detected an obstacle
61	Press pedal	Preventively press the “dead man” pedal
63	Extra block	Descend using the manual emergency manoeuvres
64	Hydraulic socket	Attention: the hydraulic socket is in use
71	RH Collision	Lift the main boom beyond the obstacle on the right
72	LH Collision	Lift the main boom beyond the obstacle on the left
73	Height limiting device	The machine has been limited via software to the current height
76	No enable from panel	The manoeuvres were not enabled in electric mode
97	Incorrect hoist stability	Incorrect hoist stabilisation
98	Hoist not available	Hoist conditions not met
99	Hoist overload	Hoist overloaded
100	Basket on the ground	Attention: the basket is near the ground
101	Self-loading sector	Position all outriggers at 60°
102	Self-loading angle	Ground inclination too high for self-loading (3°)
105	Basket levelling block	Descend using the manual emergency manoeuvres
107	Auto-closing Exclusion	Make sure that the basket is centred
110	Levelling bypass	The levelling system bypass manoeuvre is in progress
111	Active emergency	Attention: the manual emergency controls are activated
112	Long. track inclination	Attention: RISK OF OVERTURNING
200	Rotation count	Attention: wrong turret rotation count

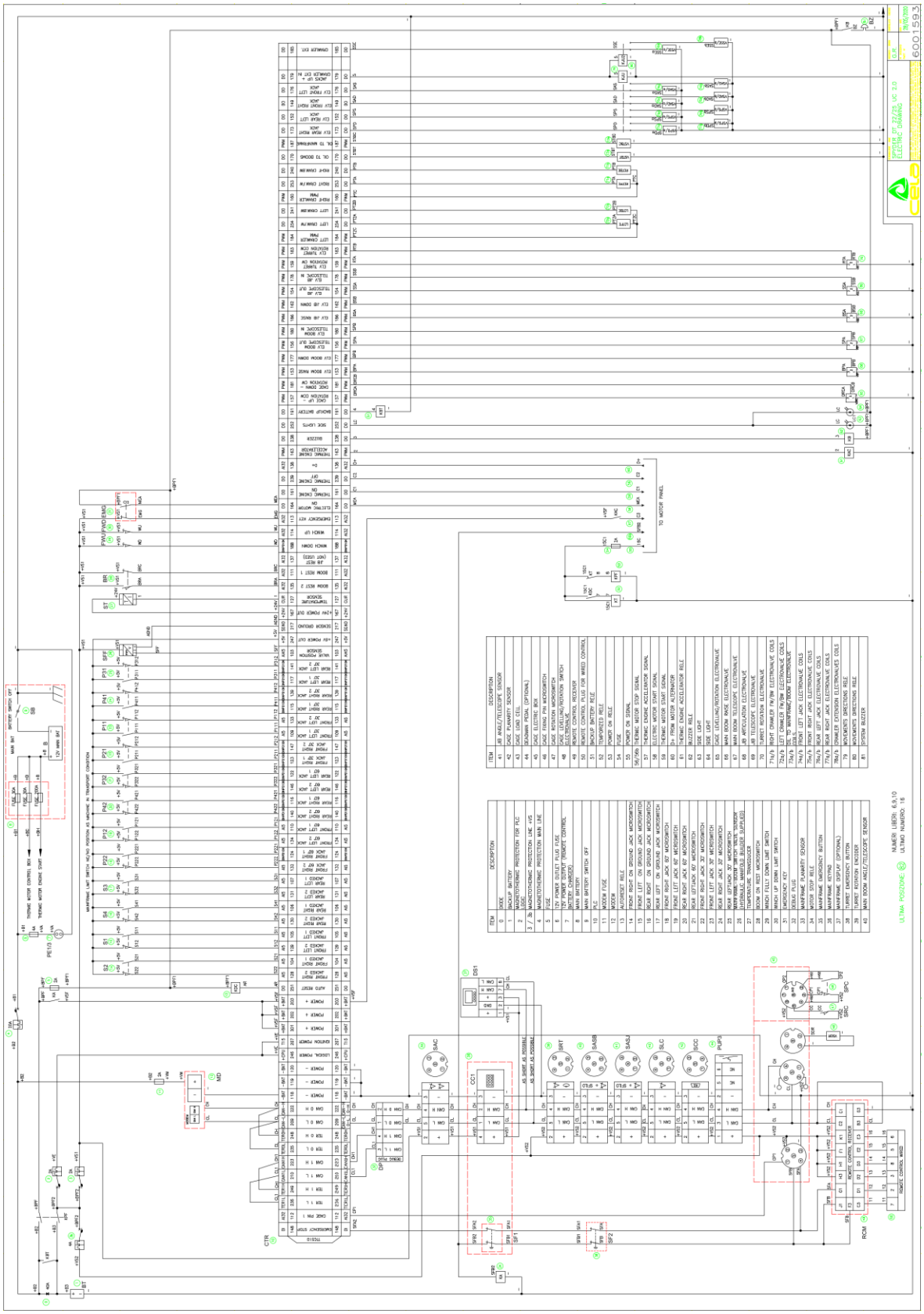
Problems	Possible causes	Hypothesis for solution
INSUFFICIENT PRESSURE or pressure drop in comparison to the level required in the circuit	1. max pressure valve half-open 2. pump defect 3. excessive inner leaks 4. excessive pressure drops	1. a) due to excessively low calibration pressure b) due to wearing out of tightening seats c) due to dirt under seats d) due to spring breakdown 2. see points 5 - 11 3. a) worn seals in the cylinders or in the hydraulic motors b) worn valves and distributors c) excessively low oil viscosity 4. a) excessive oil viscosity b) oil flow paths not adequately sized c) oil flow paths partially obstructed
PUMP DEFECT no flow rate or below normal values	5. throttled intake 6. air inlets 7. hermetically sealed tank 8. defective operation 9. excessive oil viscosity 10. faults inside in the pump 11. pump excessively worn	5. a) intake filter too small or obstructed b) obstructed intake hose c) too little or crooked intake hose 6. a) in the tank intake port b) in the intake connections c) in the seal on the pump shaft d) due to intake of foamy oil 7. air vent in the tank obstructed 8. a) check coupling b) speed too high or too low 9. see instructions for the pump 10. a) broken inner gaskets b) stuck blades, plates or pistons c) loose pump head d) broken inner parts which should be replaced 11. pump to be replaced
NOISY PUMP more than usual (for instance some gear pumps are always a little noisy)	12. cavitation 13. air inlets 14 internal wear 15. system vibrations	12. a) throttled intake: see point 5 b) high viscosity: see point 9 13. see point 6 14. excessive backlash in supports and plates 15. defective installation, resonance, etc.

Problems	Possible causes	Hypothesis for solution
OVERHEATING oil temperature beyond prudential limit of 60°-70°	16. excessively high maximum pressure 17. power is uselessly engaged 18. excessive internal leaks 19. excessive pressure drops 20. insufficient oil capacity 21. insufficient cooling 22. excessive friction	16. excessive valve calibration 17. a) insufficient exclusion valve b) malfunctioning short-circuit at end of cycle c) hydraulic circuit to be modified 18. see point 3 19. see point 4 20. increase oil tank capacity 21. a) add artificial cooling b) refrigerants, if any, not effective 22. a) defective internal pump assembly b) lack of lubrication where required c) too little lubricating oil
INCORRECT MOVEMENTS of hydraulically operated elements in comparison to the required cycle	23. air in the circuit 24. valves blocked 25. cylinders blocked 26. excessive pressure drops 27. varying accumulator pressure	23. a) vent air bubbles out at the top b) eliminate air intakes: see point 6 24. a) valves blocked, while closing, by rubber or other materials b) valves half-open because of dirt 25. a) faulty internal cylinder assembly b) normal axle loads not permitted c) meshing of connecting pins 26. see point 4 27. a) insufficient accumulator capacity b) greater circuit demand because of internal leaks
EXTREME WEAR i.e. excessively fast in comparison to the operating time	28. oil containing abrasives 29. insufficient lubrication 30. high operating pressure 31. faulty couplings	28. a) oil too old b) filters not efficient 29. a) poor quality oil b) oil too fluid at working temperature 30. in comparison to the allowed max. pressure for pump and valves 31. abnormal strain on shafts and rods

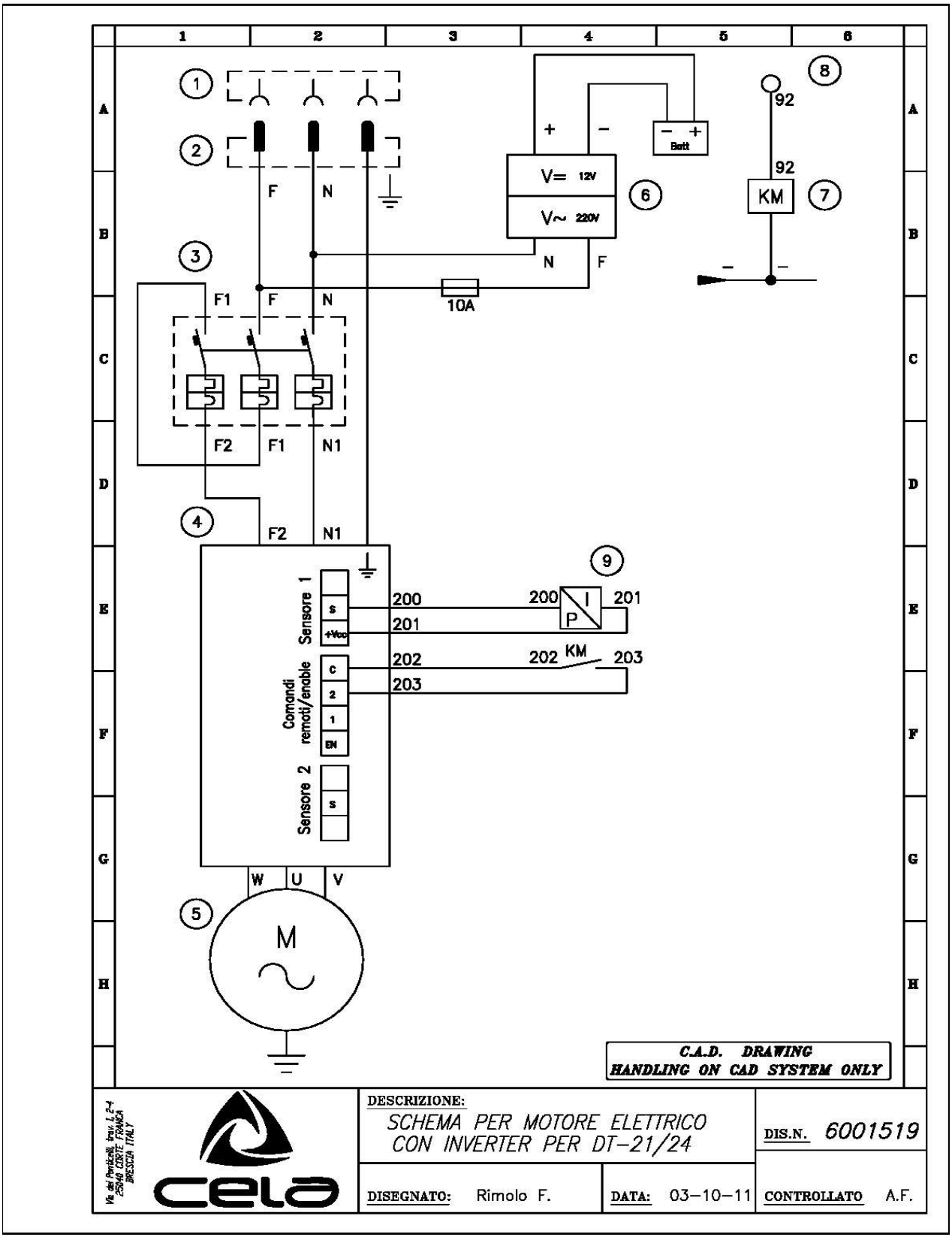
6.16 COMPONENTS

Parts/fault	Cause	Solution
Noisy PTO	Driving with PTO engaged. Operational wear.	Overhaul or total replacement.
Free power take off	Cable released or damaged	Replacement
Noisy truck pump	No oil or breakage of key or of take off connecting joint	Oil refilling or replacing
Stab. insufficient oil pressure	Make sure that the boom is in resting position and the micro-switch is pressed. Exchanger not stimulated Power failure Hand brake not engaged Broken truck pump Pressed emergency Non-return valve open Dirty max. exchanger valve, outrigging distributor.	Check every single part Clean or replace, if necessary
Turret controls out of order	Stabilisation did not occur Ground-basket control exchange not switched on (See electric system manual	Inspection of 4 stabilisation micro switches, electronic level and axle micro-switch.
Basket controls out of order	See electric system manual	
Insufficient oil pressure in turret distributor	Dirty distribution max. valve Exchanger not stimulated Faulty boom holder microswitch	Inspection of turret panel fuses Replacing of parts (See electric system manual)
Insufficient 230 Volt oil pump pressure	Broken pump or dirty non-return truck pump valve	Clean and/or replace
Emergency stoppage for Edi System	No current Coil blown	Check cable from frame to truck cabin Replacement
Potentiometer lever: does not go back to normal position	Wear of the spring	Replacement
Basket rotation out of order	Dirty solenoid valve or faulty control button	Replacement
Basket rotation and levelling out of order	Blocked solenoid valve or out of order	Cleaning or replacement
Excessive rotation backlash with machine still	Slack fixing screws	Adjust fixing plate of the gearbox and tighten screws.

7 WIRING DIAGRAM NO. 6001593



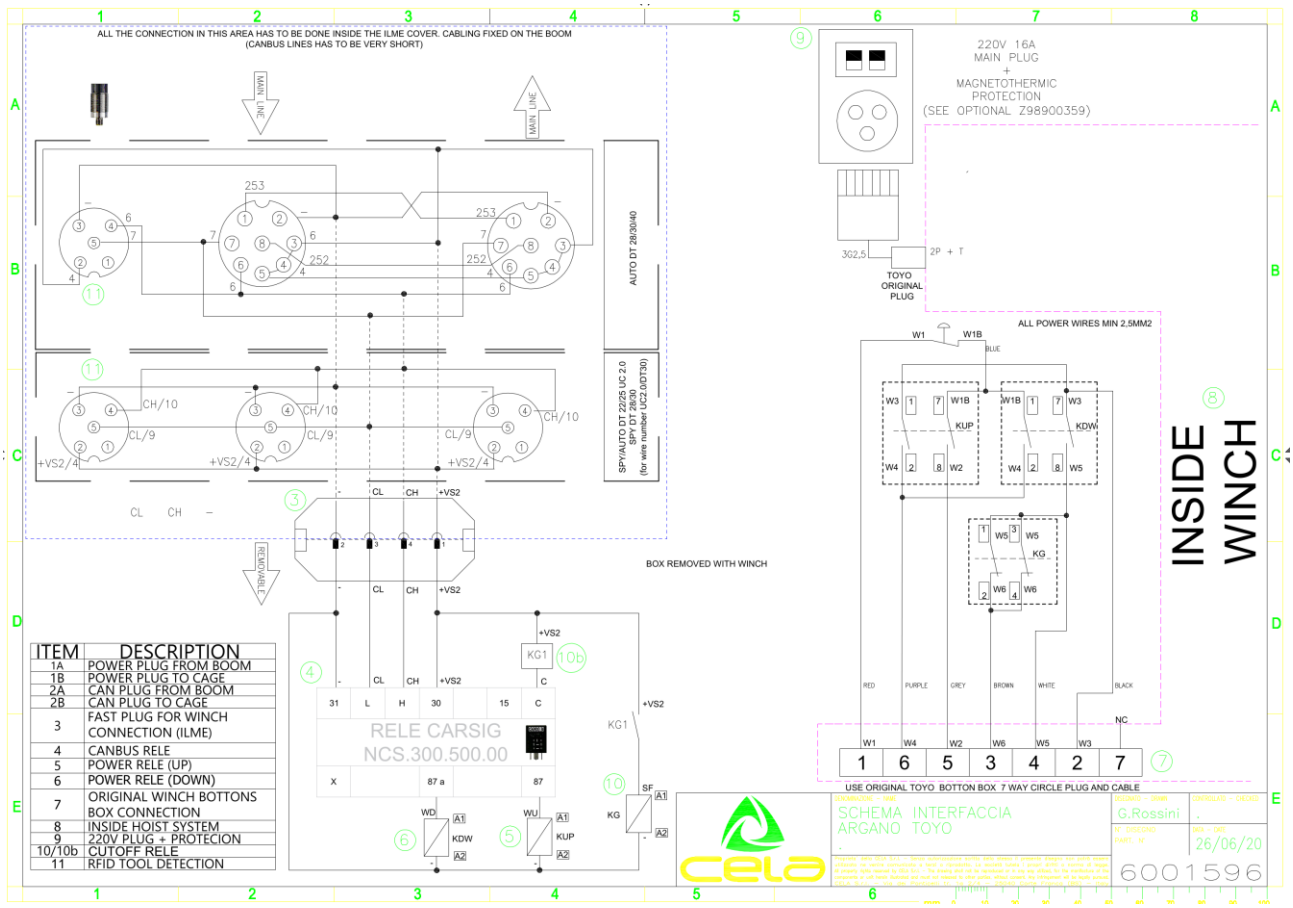
7.1 WIRING DIAGRAM DRAW. 6001519



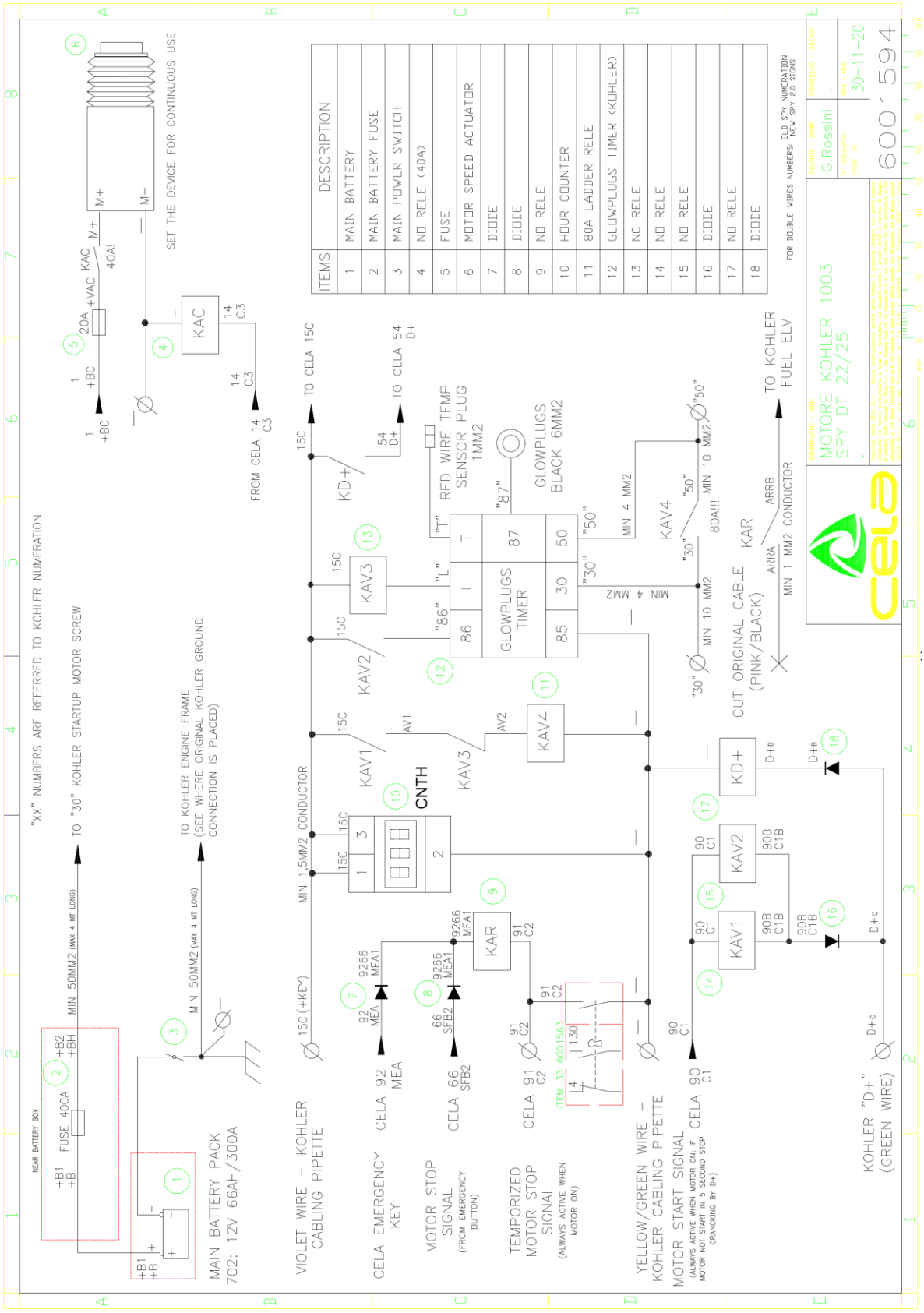
7.2 DESCRIPTION OF WIRING DIAGRAM DRAW. 6001519

No.	DESCRIPTION	CODE
1	220 V socket	
2	220 V plug	
3	16A motor protection switch	
4	Electric pump inverter	
5	Electric pump motor	
6	Battery charger	
7	Electric pump starter relay	
8	Electric pump power supply line	
9	Electric pump pressure switch	

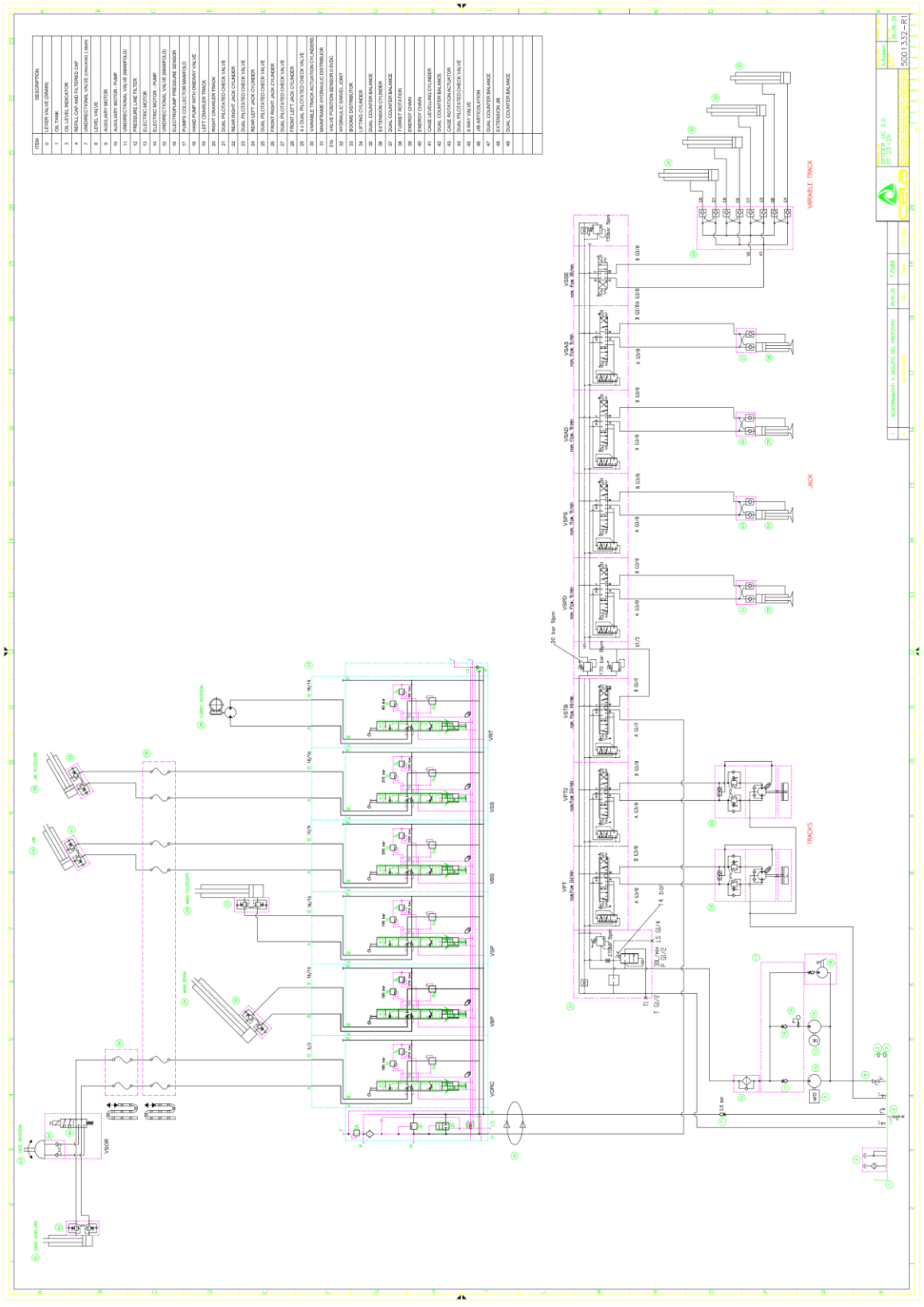
7.3 HOIST WIRING DIAGRAM DWG. 6001596



7.4 KOHLER ENGINE WIRING DIAGRAM DWG. 6001594



8 HYDRAULIC DIAGRAM N° 5001295-R1



9 MARKING

THIS CHAPTER CONTAINS THE MACHINE IDENTIFICATION, SAFETY AND UTILISATION INSTRUCTION PLATES. SAID PLATES ARE OBLIGATORY AND MUST BE CHECKED FOR PERFECT LEGIBILITY. Following updates, some drawings, colours or text expressions could be modified; however, message of the meaning remains unchanged.

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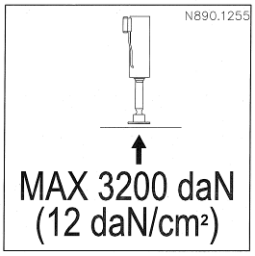
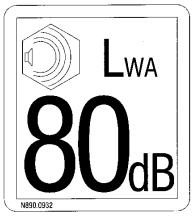
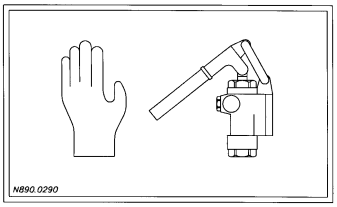
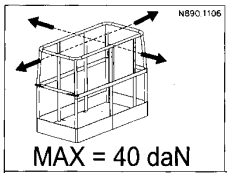
8	
9	
10	
11	
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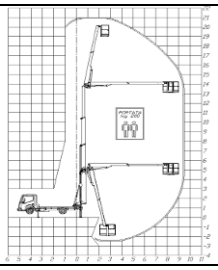
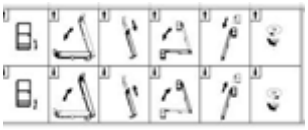
14	
15	
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10 INSPECTIONS REGISTER

NORMATIVE REFERENCES

This inspections register is issued by CELA to the user of the platform, in accordance with Directive 2006/42/EC.

PRESERVATION INSTRUCTIONS

This register must be considered an integral part of the platform and should accompany this equipment throughout its entire service life up to final scrapping.

ATTENTION!!!!!!
According to the regulation 2006/42/EC together with this register also the certificates of the replaced components must be recorded (motor, mechanisms, structural elements, safety devices and the dedicated components) as well as the reports of important repairs.

COMPILATION INSTRUCTIONS

The following instructions are provided based on provisions known at the date the lifter was marketed. New provisions could modify the user's obligations.

IMP.: THE FREQUENCY AND IMPORTANCE OF THE TESTS MAY ALSO DEPEND ON NATIONAL REGULATIONS.

This register has been conceived to write down, according to proposed charts, the following events related to the useful life of the machine:

- periodic inspections (every six months max) to be carried out by the safety manager at the company that owns the platform
- transfer of ownership
- replacement of engine, mechanisms, structural components, safety devices and relevant components
- breakdowns of some importance and appropriate repairs

10.1 PERIODIC INSPECTIONS

Date of the inspection	Date of next inspection	Name of the inspector	Comments	Signature

DELIVERY OF ..... TO THE FIRST OWNER

This platform, serial number....., manufactured in .....
as indicated in this inspection register, was delivered by CELA, on.....
to: .....
.....
.....
according to the conditions set forth by the agreement, with the technical, dimensional and functional specifications indicated in the instruction manual and in the summary contained in this Register.

COMPANY

SUBSEQUENT TRANSFERS OF TITLE

On ..... title of the platform in question was transferred to:
.....
.....
.....
We certify that, on the above-mentioned date, the technical, dimensional and functional specifications of the lifter in question are compliant with the original specifications and that any changes have been noted in this Register.

The Vendor The Buyer

....

SUBSEQUENT TRANSFERS OF TITLE

On ..... title of the platform in question was transferred to:
.....
.....
.....
We certify that, on the above-mentioned date, the technical, dimensional and functional specifications of the lifter in question are compliant with the original specifications and that any changes have been noted in this Register.

The Vendor The Buyer

....

REPLACEMENT OF STRUCTURAL ELEMENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF STRUCTURAL ELEMENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF STRUCTURAL ELEMENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF MECHANISMS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF MECHANISMS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENTS OF MECHANISMS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF SAFETY DEVICES AND RELATIVE COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF SAFETY DEVICES AND RELATIVE COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

REPLACEMENT OF SAFETY DEVICES AND RELATIVE COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for replacement:
.....
.....
.....

The person in charge of replacement The user
....

11 PERSONNEL TRAINING SHEET

(TO BE COMPILED AFTER EVERY SINGLE CHANGE OF USE)

DATE	TRAINING PERSONNEL			TRAINED PERSONNEL			NOTES
	NAME	FUNCTION	SIGNATURE	NAME	FUNCTION	SIGNATURE	