PIATTAFORME AEREE SEMOVENTI
SELF-PROPELLED WORK-PLATFORMS
PLATES-FORMES DE TRAVAIL AUTOMOTRICES
SELBSTFAHRENDE HUBARBEITSBÜHNEN
PLATAFORMAS ELEVADORAS AUTOPROPULSADAS
ZELFRIJDENDE HOOGWERKERS
SJÄLVGÅENDE ARBETSPLATTFORMAR
SAMOKRETNE RADNE PLATFORME

"R" SERIES
R13 S R13 DC R17 S R17 DC

USE AND MAINTENANCE MANUAL
- ENGLISH - ORIGINAL INSTRUCTIONS

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2010-01	▪ Update due to new machine directive 2006/42/EC. ▪ Model names updated.
2010-11	▪ Added instructions for biodegradable oil kit. ▪ Temperatures and oil list updated.
2011-02	▪ Updated description for load control
2011-05	• Amended information on “Commissioning and first inspection, subsequent inspections and title transfer report”. • Added “Total quantity of battery electrolyte” in Technical Data. • Corrected "Max. power" diesel engine and inserted "Adjusted Power"
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2013-10	• Specified instructions for harness anchoring points.
2014-03	• Specified instructions for drive on uneven surfaces and/or slopes.
2014-08	• Inserted instructions for optional kit "extending tracks". • Inserted information on maximum limits of manual forces.
2015-00	• CE Conformity Declaration Updated. • Added position of hands instruction.
2015-10	• Type of usable hydraulic oil updated. • Added indication for spare parts. They must be original or approved by the manufacturer of the machine in any way. • Added "Leaving at height”.
2018-05	• Data sheets were added with units of measurement of the international system and US unit of measurement. • Changed Name and Surname of CEO. • Unified First and Second Part.
2019-07	• Updated procedure description of commissioning declaration in Italy.
2020-01	• Updated normative references and certifying body.
2020-06	• Specified that the ”automatic levelling“ of the outriggers is a standard feature, not an optional feature. • Updated nomenclature and technical data of the heat engine. • Corrected the technical data converted to the US measuring system. • Inserted image for checking and calibrating the pressure relief valve (¶ 7.2.8).

Tigieffe thanks you for purchasing a product of its range, and invites you to read this manual. Here you can find all the necessary information for a correct use of the purchased machine; therefore, you are advised to follow the instructions carefully and to read the manual thoroughly. The manual should be kept in a suitable place where no damage can occur to it. The content of this manual may be modified without prior notice and further obligations in order to add changes and improvements to the units already delivered. No reproduction or translation may take place without the written permission of the owner.

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1. INTRODUCTION

This Use and Maintenance Manual provides general instructions concerning the complete range of machines indicated on the cover. Therefore, the description of their components, as well as control and safety systems, may include parts not present on Your machine since supplied on request or not available. In order to keep pace with the technical development ***AIRO-Tigieffe s.r.l.*** reserves the right to modify the product and/or the use and maintenance manual at any time without updating the units already delivered.

1.1. Legal aspects

1.1.1. Delivery of the machine

Within EU (European Union) member countries the machine is delivered complete with:
- Use and Maintenance manual in your language
- CE mark applied on the machine
- CE conformity declaration
- Guarantee certificate
- Declaration of internal testing

Only for Italy:
- Instructions on commissioning declaration with INAIL and on the application for the first periodic check on the INAIL portal.

It is to be noted that the Use and Maintenance Manual is an integral part of the machine and a copy of this, together with copies of the documents certifying that the periodical checks have been carried out, must be kept on board in its suitable container. In the event of a transfer of ownership the machine must always be provided with its use and maintenance manual.

1.1.2. Declaration of commissioning, first check, further periodical checks and transfers of ownership

The legal obligations of the owner of the machine vary according to the country of commissioning. It is therefore recommended to inquiry about the procedures in force in your country from the boards responsible for industrial safety. This manual contains a final section called "Check register" for a better filing of documents and recording of any modifications.

1.1.2.1. Declaration of commissioning and first check

In ITALY the owner of the Aerial Platform must notify the use of the machine to the local competent INAIL and submit it to periodical compulsory checks. The first of such checks is performed by the INAIL within sixty days from a request being made. In the event of such time passing without the inspection being made, the employer can call in the ASL (Local Health Unit) or qualified public or private services. Subsequent checks are made by the already-mentioned parties within thirty days from a request being made. In the event of such time passing without these checks being made, the employer can call in qualified public or private services. The checks are on a payment basis and the employer (machine owner) will be charged for them. For these checks, the territorial inspection boards (ASL/USL or ARPA) and INAIL can be supported by qualified public or private services. The qualified private institutes acquire the qualification of responsible for the public service and refer directly to the public structure that controls this function.

For the commissioning declaration in Italy it is necessary to login to the INAIL portal. Follow the instructions delivered together with other documents during the machine delivery, as well as the information about the portal.

The INAIL will assign a serial number and when the First Check is performed the “technical identification sheet” will be completed indicating only the details obtained from the already-operating machine or from the instruction manual. Such document shall form an integral part of the machine documentation.

1.1.2.2. Further periodical checks

Yearly checks are compulsory. In Italy the Aerial Platform owner must apply for a periodical check - by registered letter - to the local competent inspection board (ASL/USL or other qualified public or private services) at least twenty days before the expiry of the year from the last check.

NB: If a machine without a valid control document should be moved in an area outside the competence of the usual inspection board, the owner of the machine must ask the inspection board, competent for the new territory where the machine is to be used, for the annual check.

1.1.2.3. Transfers of ownership

In case of transfer of ownership (in Italy) the new owner of the Aerial Platform must notify the ownership of the machine to the local competent inspection board (ASL/USL or ARPA or other qualified public or private services) by enclosing a copy of:

- Declaration of conformity issued by the manufacturer.
- Declaration of commissioning carried out by the first owner.

1.1.3. Operator training and information

The employer must ensure that the workers appointed to use the equipment are adequately and specifically trained so they are able to use the Elevating Work Platform in a proper and safe way and also avoid the risks caused by other people.

1.2. Tests performed before delivery

Before being placed on the market, each MEWP undergoes the following tests:

- Braking test
- Overload test
- Operating test

1.3. Intended use

The machine described in this use and maintenance manual is a self-propelled elevating work platform intended for lifting persons and materials (equipment and work materials) in order to carry out maintenance, installation, cleaning, painting, de-painting, sand-blasting, welding operations, etc.
The max. capacity allowed (which varies according to the model – see paragraph “Technical features”) is divided as follows:

- 80 Kg for each person on board.
- 40 Kg for equipment.
- The remaining load is represented by the material being worked.

In any case NEVER exceed the maximum capacity allowed as indicated in paragraph "Technical features”. Persons, tools and work materials can be loaded on the platform only from the access position (platform lowered). It is absolutely forbidden to load persons, tools and work materials on the platform when it is not in access position.
All loads must be positioned inside the cage; do not lift loads (even if complying with the maximum capacity allowed) hanging from the platform or from the lifting structure.
Do not carry large-sized panels since they increase the resistance to wind force thus causing the machine to overturn.
The machine is not equipped with an overload controller as in the design phase we considered stability and overload criteria increased as reported by the EN280 in paragraphs 5.4.1.5 and 5.4.1.6.
The machine cannot be used in areas where road vehicles operate. Always surround the working area by means of suitable signs when the machine is used in public areas.
Do not use the machine to tow trucks or other vehicles.

All types of machine use other than those for which it was designed must be approved in writing by the machine manufacturer following a specific request on the part of the user.

⚠ **Do not use the machine for purposes other than those for which it was designed, except after making a request and having obtained written permission in this sense from the manufacturer**

1.3.1. Leaving at height

The mobile elevating work platforms are not designed by taking into account the risks of the “leaving at height” because the only access position considered is when the platform is completely lowered. For this reason, this activity is formally forbidden.
However, there are exceptional conditions in which the operator needs to access or leave the work platform not in the access position. This activity is normally defined as “leaving at height”.

The risks connected to the “leaving at height” do not depend exclusively on the PLE (work elevating platform) characteristics; a specific risk analysis carried out by the employer can authorize this specific use by taking into account:

- The working environment characteristics;
- The absolute prohibition to consider the work platform as an anchoring point for people working outdoors;
- The use of the machine at xx% of its performances to avoid that additional forces created by a specific operation or bending of the structure move away the access zone from the unloading zone. Provide for some tests in order to define these limitations;
- Provide for a specific evacuation procedure in case of emergency (for example: an operator always on the platform, one at the ground control panel while a third operator leaves the lifted platform);
- Provide for a specific training of the staff both as operator and transported staff;
- Equip the unloading zone with all the devices that are necessary to avoid the risk of fall of the staff that accesses/leaves the platform.

What said above is not a formal authorization of the manufacturer for the “leaving at height”, but it wants to supply information to the employer - who is fully responsible for that - which can be useful for the planning of this exceptional activity.

1.4. Description of the machine

The machine described in this use and maintenance manual is a self-propelled aerial platform equipped with:

- motorized chassis equipped with rubber tracks and outriggers;
- hydraulically driven rotating turret;
- Articulated boom operated by hydraulic cylinders (the number of articulations and cylinders varies according to machine model).
- operator platform (the max. capacity varies according to the model - see chapter "Technical features”).

The chassis consists of sheeting, box-type structures and electrically welded structural forms of different thickness. It is motorised to allow the machine to move (see "Use instructions"). The 2 tracks are controlled by independent motors and equipped with hydraulic parking brake, positive logic type (when drive controls are released brakes are automatically activated).
On the chassis there are four outriggers operated by hydraulic double acting cylinders that are controlled by solenoid valves directly flanged on the same. The outriggers are held in position by non-return valves directly piloted and flanged on the same.
Upon request, the machine can be equipped with a track widening system to extend the track width and increase stability in the event of use on rough terrain.
The turret rests on a turntable fixed to the chassis and can be oriented (rotated) by 320° non-continuous around the central axle of the machine by means of irreversible endless screw.
The lifting system, with articulated boom, can be divided into three main structures:

- The first one, consists of a "simple parallelogram" system (R13) or a "double parallelogram" (R17) and named "pantograph".
- The second, consists of a lifting boom with telescopic extension.
- The third, consists of the terminal boom named “Jib”.

Such lifting structures are driven by 4 double-acting hydraulic cylinders:

- One cylinder for the “pantograph” extension.
- One cylinder for the boom extension.
- One cylinder for the extension/retraction of the telescopic boom.
- One cylinder for the “jib” extension.

The hydraulic cylinders which move the articulated structure are provided with over-center valves directly flanged on the same. These devices allow the booms to remain in position even if one of the supply tubes accidentally breaks.
The platform, hinged to the end of the "jib", can be rotated by 120° totally (60° on the right and 60° on the left) by means of an electric actuator fitted with over-centre valve. It is fitted with guardrails and toe boards of prescribed height (the guardrails height ≥ 1100 mm; the toe boards height ≥150 mm). The platform levelling is automatic and is ensured by mechanical ties and two cylinders in closed circuit. The manual level compensation is possible by acting on the relevant control only with completely lowered booms ("Jib" inclination excluded).

1.5. Control panels

The machine is equipped with two control panels:

- on the platform for normal use of the machine.
- On the turret (or on the ground) you can find the emergency controls to lower or stop the machine in emergency situations, a key-selector to select the control panel and to start the machine.

1.6. Drive power

The machines are powered by a dual powered system:

- heat engine (standard petrol motor; optional diesel engine);
- electric pump (standard 230V single-phase; optional 380 three-phase).

In any case both the hydraulic and the electric systems are equipped with all necessary protections (see wiring and hydraulic circuit diagrams attached to this manual).

1.7. Machine life, demolition and decommissioning

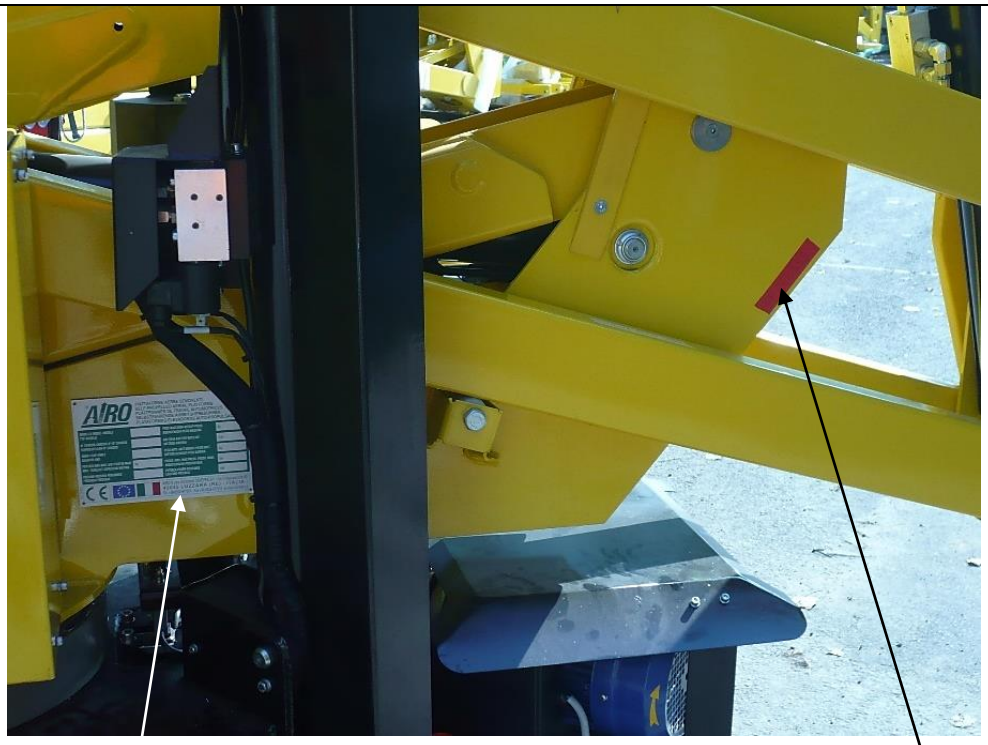
The machine has been designed to last for 10 years in normal operating environments, if properly used and serviced. Within this period, the manufacturer must carry out a complete inspection/overhaul.
If disposal of the unit is necessary, comply with current local regulations.
In Italy, the demolition/decommissioning must be notified to the local ASL / USL or ARPA.
The machine consists mainly of metal parts which are easy to be identified (steel for the most parts, and aluminium for the hydraulic blocks); thus, we can state that the machine can be recycled at 90%.

European standards and those transposed by the member countries relating to respect for the environment and the disposal of wastes envisage heavy administrative and penal fines in case of infringement.
In case of demolition/decommissioning, carefully keep to the provisions of applicable regulations, especially as regards materials such as hydraulic oil and batteries.

1.8. Identification

In order to identify the machine, when spare parts and service are required, always mention the information given in the serial number plate. Should this plate (as well as the various stickers applied on the machine) be lost or illegible, it is to be replaced as soon as possible. In order to identify the machine when no plate is available the serial number is also stamped on the chassis. To locate the plate and the stamp of the serial number, see the following picture. It is recommended to copy such data in the following boxes.

MODEL: _____	**CHASSIS: _____**	**YEAR: _____**



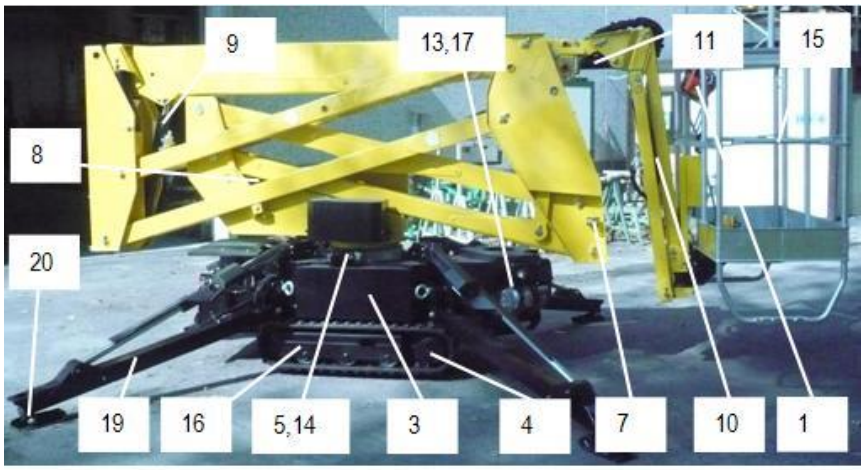
SC XXXXXX

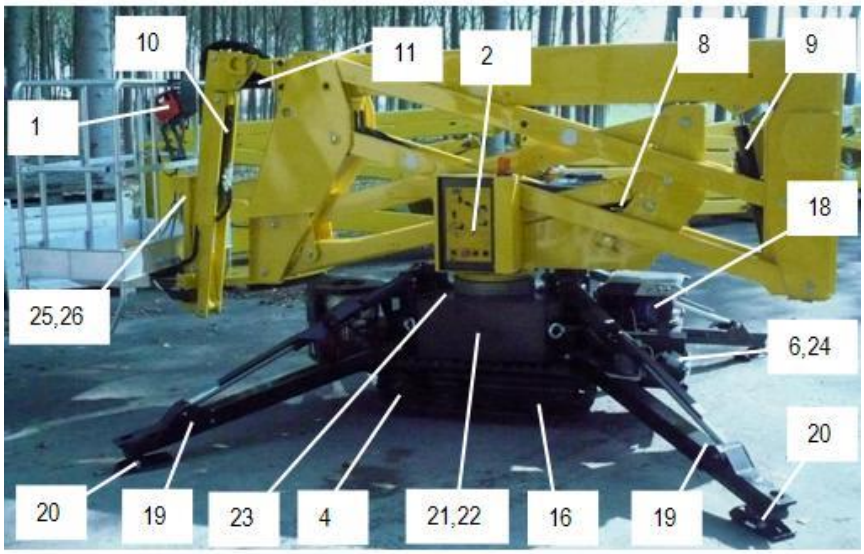
Fig. 1

1.9. Location of main components

The picture shows the machine and its own components.

1) Control panel;
2) Electric control unit;
3) Hydraulic control unit;
4) Drive gear motors;
5) Turret rotation hydraulic motor;
6) (optional) 230V single-phase power plug;
7) Spirit level for visual check of machine levelling;
8) First boom lifting cylinder;
9) Second boom lifting cylinder;
10) Jib lifting cylinder;
11) Cage lifting cylinder;
12) -
13) Heat engine fuel tank;
14) Turntable;
15) Cage;
16) Tracks;
17) Heat engine;
18) Electric pump;
19) Outriggers;
20) Outrigger articulated feet;
21) Battery;
22) Inclinometer;
23) Battery key;
24) Ground air inlet;
25) Platform air inlet;
26) Platform electric socket.





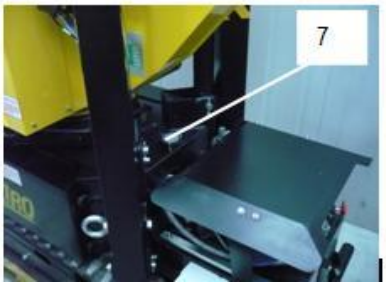


Fig. 2

2. TECHNICAL FEATURES OF STANDARD MACHINES

THE TECHNICAL FEATURES OF THE PRODUCTS IN THE FOLLOWING PAGES CAN BE MODIFIED WITHOUT PRIOR NOTICE

2.1. Model R13 S.

Dimensions:	**R13 S**			
Maximum working height	13.3	m	*43' 7"*	*ft*
Max. platform height	11.3	m	*37' 1"*	*ft*
Max. outreach from turntable centre	6.7	m	*21' 11"*	*ft*
Turret rotation (not continuous)	320	°	*320*	°
Platform rotation	120	°	*120*	°
Maximum capacity (m)	120	Kg	*265*	*lbs*
Max. number of people on the platform (n) – indoors	1		*1*	
Tool and material weight (me) (**) – indoors	40	Kg	*88*	*lbs*
Max. number of people on the platform (n) – outdoors	1		*1*	
Tool and material weight (me) ** – outdoors	40	Kg	*88*	*lbs*
Maximum drive height	0	m	*0*	*ft*
Maximum dimensions of platform	0.69 x 0.64	m	*2' 3" x 2' 1"*	*ft*
Max. hydraulic pressure	210	bar	*3045.8*	*psi*
Max. pressure of lifting circuit	210	bar	*3045.8*	*psi*
Tracks dimensions (****)	Ø 300 x 180	mm	*Ø11.8" x 7.1"*	*in*
Transport dimensions	4.48 x 0.82 x 2	m	*14' 8" x 2' 8" x 6' 6"*	*ft*
Transport dimensions with retracted jib	N.A.	m	N.A.	*ft*
Machine weight (unloaded) (*)	N.A.	Kg	N.A.	*lb*
Stability limit:				
Longitudinal slope	0.5	°	*0.5*	°
Transversal slope	0.5	°	*0.5*	°
Maximum wind speed (***)	12.5	m/s	*27.96*	*mph*
Maximum manual force:	200	N	*45*	*lbf*
Stabilization area (between the support centres)	2.95 x 2.95	m	*9' 8" x 9' 8"*	*ft*
Max. slope compensated by outriggers	6	°	*6*	°
Max. load per outrigger	N.A.	Kg	N.A.	*lbs*
Performance:				
Max. drive speed	1.12	km/h	*0.7*	*mph*
Oil tank capacity	28	Lt.	*7.4*	*gal*
Gradeability	30	%	*30*	*%*
Gradeability for loading/unloading	22	%	*22*	*%*
Max. operating temperature	+50	°C	*122*	*°F*
Min. operating temperature	-20	°C	*-4*	*°F*
Gasoline motor				
Motor type	Honda GX390		*Honda GX390*	
Type	four-stroke petrol		*4-stroke, petrol*	
Max. motor power	8.2	kW	*11*	*hp*
Adjusted Power	6.6	kW	*8.9*	*hp*
Starter battery	12 / 55	V / Ah	*12 / 55*	*V / Ah*
Total electrolyte quantity	3	Lt.	*0.8*	*gal*
Fuel tank capacity	6.1	Lt.	*1.6*	*gal*
Max. drive speed	1.12	km/h	*0.7*	*mph*
Fuel type	Unleaded petrol, octane >86		*unleaded petrol; octane >86*	
Fuel consumption at rated power	3.7	L/h @ 3600 rpm	*1*	*gal/h @ 3600 rpm*
Lubricant oil capacity	1.1	Lt.	*0.29*	*gal*
Lubricant oil capacity	SAE 10W-30		*SAE 10W-30*	

Diesel engine					
	Motor type	N.A.		*N.A.*	
	Type	N.A.		*N.A.*	
	Motor power	N.A.	kW	*N.A.*	*hp*
	Starter battery	N.A.	V / Ah	*N.A.*	*V / Ah*
	Fuel tank capacity	N.A.	Lt.	*N.A.*	*gal*
	Max. drive speed	N.A.	km/h	*N.A.*	*mph*
	Fuel type	N.A.		*N.A.*	
	Fuel consumption at rated power	N.A.		*N.A.*	
	Lubricant oil capacity	N.A.	Lt.	*N.A.*	*gal*
	Lubricant oil capacity	N.A.		*N.A.*	
230V single-phase electric pump					
	Motor type	Single-phase 230V 50Hz		*single-phase 230V 50Hz*	
	Motor power	2.2	kW	*3*	*hp*
	Max. absorbed current	14	A	*14*	*A*
	Max. drive speed	0.72	km/h	*0.44*	*mph*

(*) In some cases, different limits can be fixed. It is recommended to comply with the data shown on the machine plate.

(**) me = m – (n x 80)

(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.

(****) Standard black rubber tracks; Optional non-marking rubber tracks.

2.2. Model R13 DC.

Dimensions:	R13 DC			
Maximum working height	13.3	m	*43' 7"*	*ft*
Max. platform height	11.3	m	*37' 1"*	*ft*
Max. outreach from turntable centre	6.7	m	*21' 11"*	*ft*
Turret rotation (not continuous)	320	°	*320*	°
Platform rotation	120	°	*120*	°
Maximum capacity (m)	200	Kg	*441*	*lbs*
Max. number of people on the platform (n) – indoors	2		*2*	
Tool and material weight (me) (**) – indoors	40	Kg	*88*	*lbs*
Max. number of people on the platform (n) – outdoors	2		*2*	
Tool and material weight (me) ** – outdoors	40	Kg	*88*	*lbs*
Maximum drive height	0	m	*0*	*ft*
Maximum dimensions of platform	1.39 x 0.71	m	*4' 7" x 2' 4"*	*ft*
Max. hydraulic pressure	210	bar	*3045.8*	*psi*
Max. pressure of lifting circuit	210	bar	*3045.8*	*psi*
Tracks dimensions (****)	Ø 300 x 180	mm	*Ø11.8" x 7.1"*	*in*
Transport dimensions	4.55 x 1.39 x 2	m	*14' 11"x4' 7"x6' 7"*	*ft*
Transport dimensions (cage removed)	4.55 x 0.82 x 2	m	*14 '11"x2 '8"x6 '7"*	*ft*
Transport dimensions with retracted jib	N.A.	m	*N.A.*	*N.A.*
Machine weight (unloaded) (*)	2150	Kg	*4740*	*lbs*
Stability limit:				
Longitudinal slope	0.5	°	*0.5*	°
Transversal slope	0.5	°	*0.5*	°
Maximum wind speed (***)	12.5	m/s	*27.96*	*mph*
Maximum manual force:	400	N	*90*	*lbf*
Stabilization area (between the support centres)	2.95 x 2.95	m	*9' 8" x 9' 8"*	*ft*
Max. slope compensated by outriggers	6	°	*6*	°
Max. load per outrigger	900	Kg	1984	*lb*
Performance:				
Max. drive speed	1.12	km/h	*0.7*	*mph*
Oil tank capacity	28	Lt.	*7.4*	*gal*
Gradeability	30	%	*30*	*%*
Gradeability for loading/unloading	22	%	*22*	*%*
Max. operating temperature	+50	°C	*122*	*°F*
Min. operating temperature	-20	°C	*-4*	*°F*
Gasoline motor				
Motor type	Honda GX390		*Honda GX390*	
Type	four-stroke petrol		*4-stroke, petrol*	
Max. motor power	8.2	kW	*11*	*hp*
Adjusted Power	6.6	kW	*8.9*	*hp*
Starter battery	12 / 55	V / Ah	*12 / 55*	*V / Ah*
Total electrolyte quantity	3	Lt.	*0.8*	*gal*
Fuel tank capacity	6.1	Lt.	*1.6*	*gal*
Max. drive speed	1.12	km/h	*0.7*	*mph*
Fuel type	Unleaded petrol, octane >86		*unleaded petrol; octane >86*	
Fuel consumption at rated power	3.7	L/h @ 3600 rpm	*1*	*gal/h @ 3600 rpm*
Lubricant oil capacity	1.1	Lt.	*0.29*	*gal*
Lubricant oil capacity	SAE 10W-30		*SAE 10W-30*	

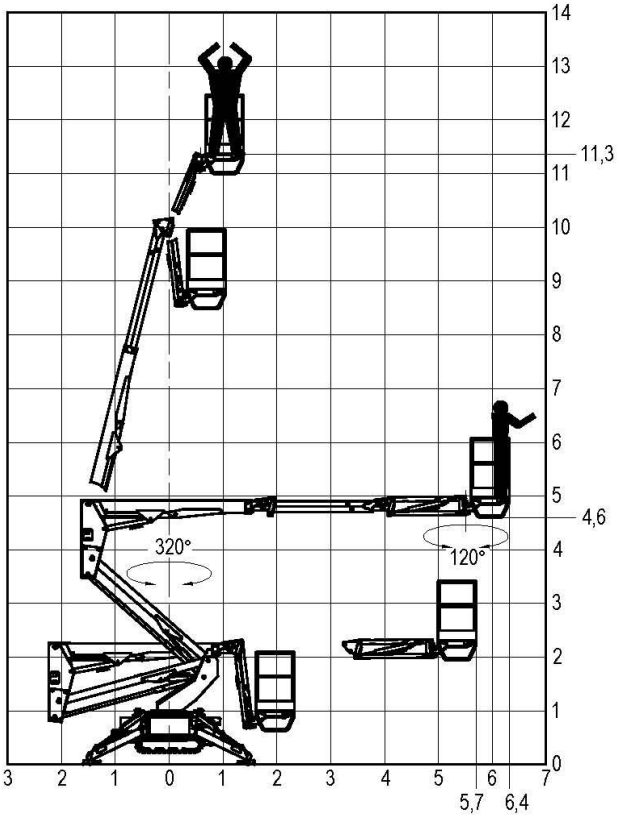
Diesel engine					
	Motor type	N.A.		*N.A.*	
	Type	N.A.		*N.A.*	
	Motor power	N.A.	kW	*N.A.*	*hp*
	Starter battery	N.A.	V / Ah	*N.A.*	*V / Ah*
	Fuel tank capacity	N.A.	Lt.	*N.A.*	*gal*
	Max. drive speed	N.A.	km/h	*N.A.*	*mph*
	Fuel type	N.A.		*N.A.*	
	Fuel consumption at rated power	N.A.		*N.A.*	
	Lubricant oil capacity	N.A.	Lt.	*N.A.*	*gal*
	Lubricant oil capacity	N.A.		*N.A.*	
230V single-phase electric pump					
	Motor type	Single-phase 230V 50Hz		*single-phase 230V 50Hz*	
	Motor power	2.2	kW	*2.9*	*hp*
	Max. absorbed current	14	A	*14*	*A*
	Max. drive speed	0.72	km/h	*0.44*	*mph*

(*) In some cases, different limits can be fixed. It is recommended to comply with the data shown on the machine plate.

(**) me = m – (n x 80)

(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.

(****) Standard black rubber tracks; Optional non-marking rubber tracks.



R13 DC
PORTATA 200 Kg (2 PERSONE) - 440 lbs
PESO MACCHINA 2150 Kg - 4740 lbs

R13 S
PORTATA 120 Kg (1 PERSONA) - 265 lbs
PESO MACCHINA XXX Kg

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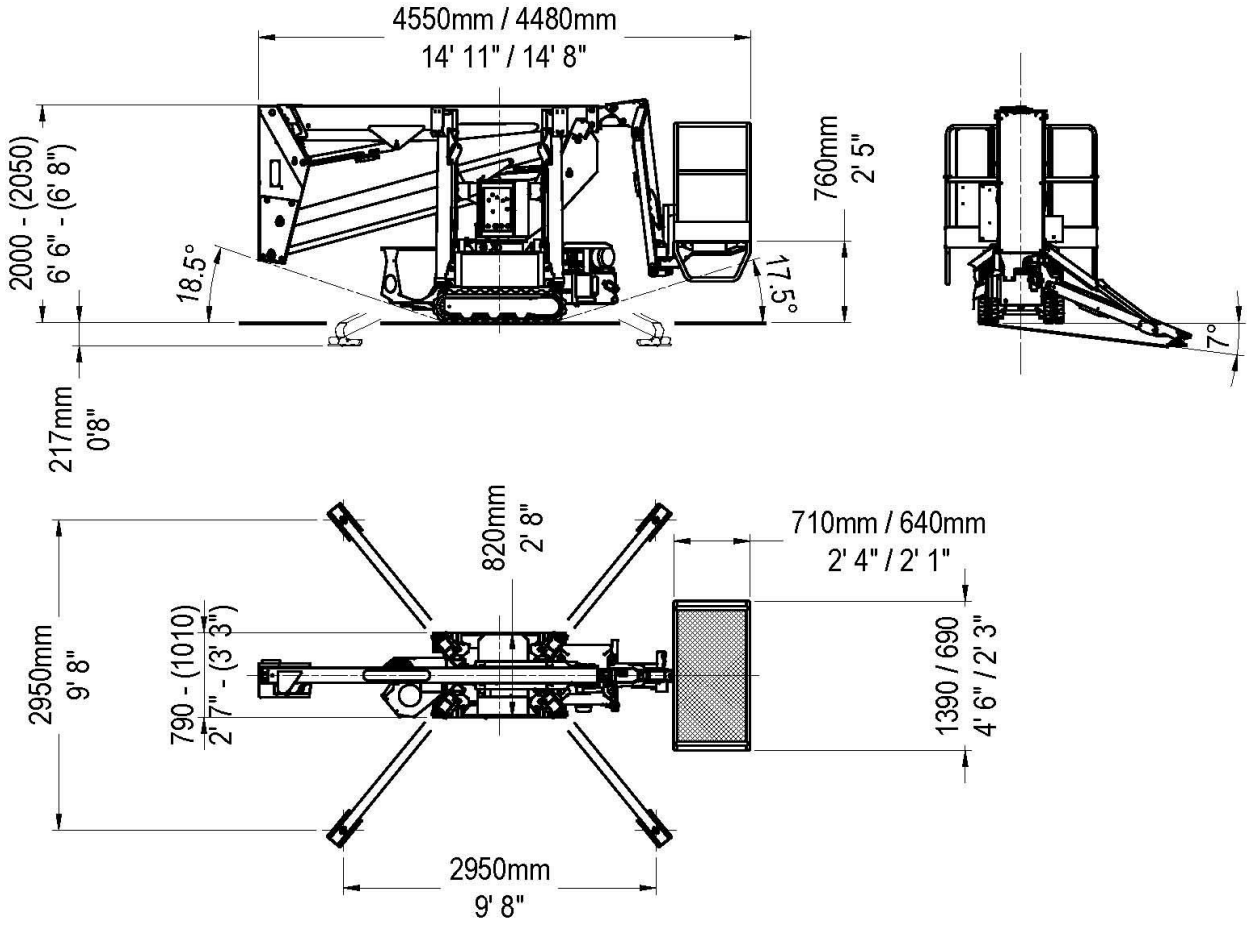


Fig. 3

2.3. Model R17 S.

Dimensions:	R17 S			
Maximum working height	16.5	m	*54' 1"*	*ft*
Max. platform height	14.5	m	*47' 7"*	*ft*
Max. outreach from turntable centre	6.5	m	*21' 4"*	*ft*
Turret rotation (not continuous)	320	°	*320*	°
Platform rotation	120	°	*120*	°
Maximum capacity (m)	120	Kg	*264*	*lbs*
Max. number of people on the platform (n) – indoors	1		*1*	
Tool and material weight (me) (**) – indoors	40	Kg	*88*	*lbs*
Max. number of people on the platform (n) – outdoors	1		*1*	
Tool and material weight (me) ** – outdoors	40	Kg	*88*	*lbs*
Maximum drive height	0		*0*	
Maximum dimensions of platform	0.69 x 0.64	m	*2' 3" x 2' 1"*	*ft*
Max. hydraulic pressure	210	bar	*3045.8*	*psi*
Max. pressure of lifting circuit	210	bar	*3045.8*	*psi*
Tracks dimensions (****)	Ø 300 x 180	mm	*Ø11.8" x 7.1"*	*in*
Transport dimensions	4.45 x 0.82 x 2	m	*14' 7"x2' 8"x6' 7"*	*ft*
Transport dimensions with retracted jib	N.A.	m	N.A.	*ft*
Machine weight (unloaded) (*)	N.A.	Kg	N.A.	*lbs*
Stability limit:				
Longitudinal slope	0.5	°	*0.5*	°
Transversal slope	0.5	°	*0.5*	°
Maximum wind speed (***)	12.5	m/s	*27.96*	*mph*
Maximum manual force:	200	N	*45*	*lbf*
Stabilization area (between the support centres)	2.95 x 2.95	m	*9' 8" x 9' 8"*	*ft*
Max. slope compensated by outriggers	6	°	*6*	°
Max. load per outrigger	N.A.	Kg	N.A.	*lbs*
Performance:				
Max. drive speed	1.12	km/h	*0.7*	*mph*
Oil tank capacity	28	Lt.	*7.4*	*gal*
Gradeability	30	%	30	*%*
Gradeability for loading/unloading	22	%	*22*	*%*
Max. operating temperature	+50	°C	*122*	*°F*
Min. operating temperature	-20	°C	*-4*	*°F*
Gasoline motor				
Motor type	Honda GX390		*Honda GX390*	
Type	four-stroke petrol		*4-stroke petrol*	
Max. motor power	8.2	kW	*11*	*hp*
Adjusted Power	6.6	kW	*8.9*	*hp*
Starter battery	12 / 55	V / Ah	12 / 55	*V / Ah*
Total electrolyte quantity	3	Lt.	*0.8*	*gal*
Fuel tank capacity	6.1	Lt.	*1.6*	*gal*
Max. drive speed	1.12	km/h	*0.7*	*mph*
Fuel type	Unleaded petrol, octane >86		*unleaded petrol; octane >86*	
Fuel consumption at rated power	3.7	L/h @ 3600 rpm	*1*	*gal/h @ 3600 rpm*
Lubricant oil capacity	1.1	Lt.	*0.29*	*gal*
Lubricant oil capacity	SAE 10W-30		*SAE 10W-30*	

Diesel engine					
	Motor type	N.A.		*N.A.*	
	Type	N.A.		*N.A.*	
	Motor power	N.A.	kW	*N.A.*	*hp*
	Starter battery	N.A.	V / Ah	*N.A.*	*V / Ah*
	Fuel tank capacity	N.A.	Lt.	*N.A.*	*gal*
	Max. drive speed	N.A.	km/h	*N.A.*	*mph*
	Fuel type	N.A.		*N.A.*	
	Fuel consumption at rated power	N.A.		*N.A.*	
	Lubricant oil capacity	N.A.	Lt.	*N.A.*	*gal*
	Lubricant oil capacity	N.A.		*N.A.*	
230V single-phase electric pump					
	Motor type	Single-phase 230V 50Hz		*single-phase 230V 50Hz*	
	Motor power	2.2	kW	*2.9*	*hp*
	Max. absorbed current	14	A	*14*	*A*
	Max. drive speed	0.72	km/h	*0.44*	*mph*

(*) In some cases, different limits can be fixed. It is recommended to comply with the data shown on the machine plate.

(**) me = m – (n x 80)

(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.

(****) Standard black rubber tracks; Optional non-marking rubber tracks.

2.4. Model R17 DC.

Dimensions:	R17 DC			
Maximum working height	16.5	m	*54' 1"*	*ft*
Max. platform height	14.5	m	*47' 7"*	*ft*
Max. outreach from turntable centre	6.5	m	*21' 4"*	*ft*
Turret rotation (not continuous)	320	°	*320*	°
Platform rotation	120	°	*120*	°
Maximum capacity (m)	200	Kg	*441*	*lbs*
Max. number of people on the platform (n) – indoors	2		*2*	
Tool and material weight (me) (**) – indoors	40	Kg	*88*	*lbs*
Max. number of people on the platform (n) – outdoors	2		*2*	
Tool and material weight (me) ** – outdoors	40	Kg	*88*	*lbs*
Maximum drive height	0		*0*	
Maximum dimensions of platform	1.39 x 0.71	m	*4' 7" x 2' 4"*	*ft*
Max. hydraulic pressure	210	Bar	*3045.8*	*psi*
Max. pressure of lifting circuit	210	Bar	*3045.8*	*psi*
Tracks dimensions (****)	Ø 300 x 180	mm	*Ø11.8" x 7.1"*	*in*
Transport dimensions	4.52 x 1.39 x 2	m	*14' 10"x4' 7"x6' 7"*	*ft*
Transport dimensions (cage removed)	4.52 x 0.82 x 2	m	*14' 10"x2' 8"x6' 7"*	*ft*
Transport dimensions with retracted jib	N.A.	m	N.A.	*ft*
Machine weight (unloaded) (*)	2200	Kg	*4850*	*lbs*
Stability limit:				
Longitudinal slope	0.5	°	0.5	°
Transversal slope	0.5	°	0.5	°
Maximum wind speed (***)	12.5	m/s	*27.96*	*mph*
Maximum manual force:	400	N	*90*	*lbf*
Stabilization area (between the support centres)	2.95 x 2.95	m	*9' 8" x 9' 8"*	*ft*
Max. slope compensated by outriggers	6	°	*6*	°
Max. load per outrigger	920	Kg	*2028*	*lbs*
Performance:				
Max. drive speed	1.12	km/h	*0.7*	*mph*
Oil tank capacity	28	Lt.	*7.4*	*gal*
Gradeability	30	%	30	%
Gradeability for loading/unloading	22	%	22	%
Max. operating temperature	+50	°C	*122*	*°F*
Min. operating temperature	-20	°C	*-4*	*°F*
Gasoline motor				
Motor type	Honda GX390		*Honda GX390*	
Type	four-stroke petrol		*4-stroke, petrol*	
Max. motor power	8.2	kW	*11*	*hp*
Adjusted Power	6.6	kW	*8.9*	*hp*
Starter battery	12 / 55	V / Ah	*12 / 55*	*V / Ah*
Total electrolyte quantity	3	Lt.	*0.8*	*gal*
Fuel tank capacity	6.1	Lt.	*1.6*	*gal*
Max. drive speed	1.12	km/h	*0.7*	*mph*
Fuel type	Unleaded petrol, octane >86		*unleaded petrol; octane >86*	
Fuel consumption at rated power	3.7	L/h @ 3600 rpm	*1*	*gal/h @ 3600 rpm*
Lubricant oil capacity	1.1	Lt.	*0.29*	*gal*
Lubricant oil capacity	SAE 10W-30		*SAE 10W-30*	

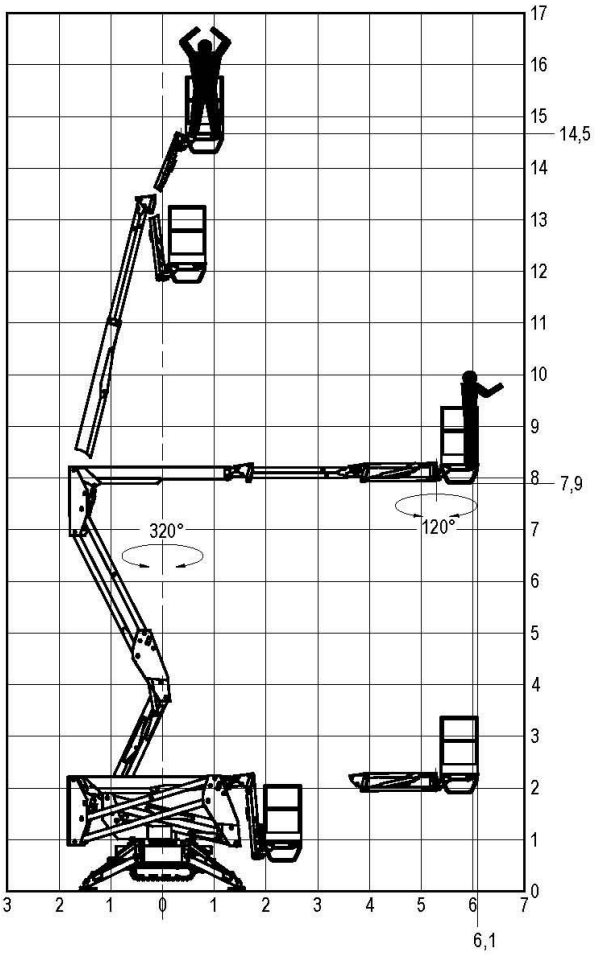
Diesel engine					
	Motor type	N.A.		*N.A.*	
	Type	N.A.		*N.A.*	
	Motor power	N.A.	kW	*N.A.*	*hp*
	Starter battery	N.A.	V / Ah	*N.A.*	*V / Ah*
	Fuel tank capacity	N.A.	Lt.	*N.A.*	*gal*
	Max. drive speed	N.A.	km/h	*N.A.*	*mph*
	Fuel type	N.A.		*N.A.*	
	Fuel consumption at rated power	N.A.		*N.A.*	
	Lubricant oil capacity	N.A.	Lt.	*N.A.*	*gal*
	Lubricant oil capacity	N.A.		*N.A.*	
230V single-phase electric pump					
	Motor type	Single-phase 230V 50Hz		*single-phase 230V 50Hz*	
	Motor power	2.2	kW	*2.9*	*hp*
	Max. absorbed current	14	A	*14*	*A*
	Max. drive speed	0.72	km/h	*0.44*	*mph*

(*) In some cases, different limits can be fixed. It is recommended to comply with the data shown on the machine plate.

(**) me = m – (n x 80)

(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.

(****) Standard black rubber tracks; Optional non-marking rubber tracks.



R17 DC
PORTATA 200 Kg (2 PERSONE) - 440 lbs
PESO MACCHINA 2220 Kg - 4850 lbs

R17 S
PORTATA 120 Kg (1 PERSONA) - 265 lbs
PESO MACCHINA XXX Kg

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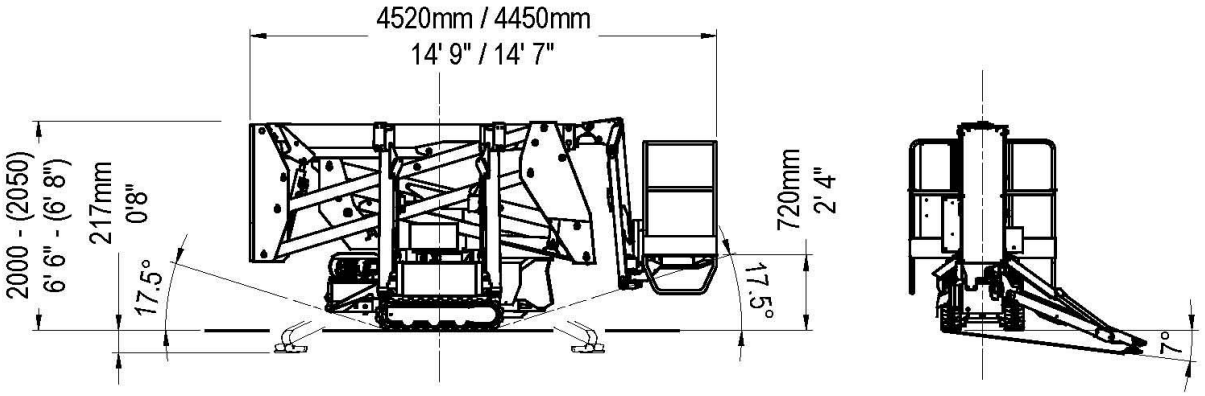


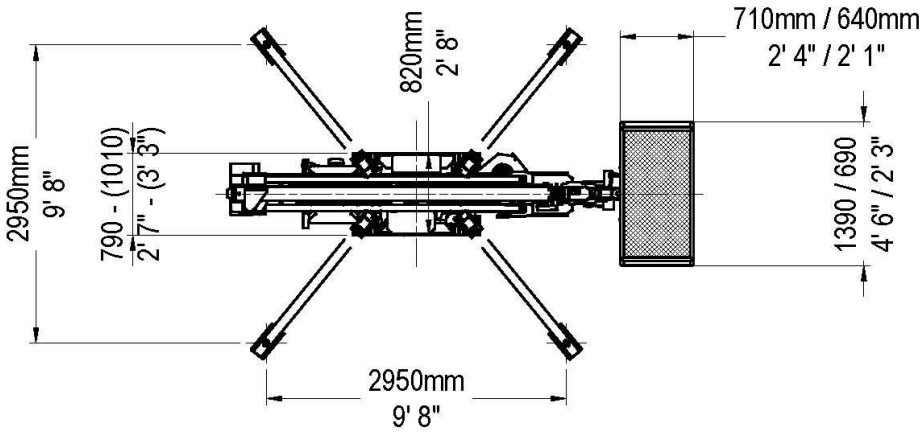


Fig. 4

2.5. Vibrations and noise

Noise tests have been carried out under the most unfavourable conditions to study the effects on the operator. The level of acoustic pressure weighed (A) at work places does not exceed 100dB(A).

As to vibrations in ordinary working conditions:

- The average weighted quadratic value in frequency of the acceleration which the upper members have to withstand is below **2.5 m/sec²** for each of the models to which this Use and Maintenance manual refers.
- The average weighted quadratic value in frequency of the acceleration which the body has to withstand is below **0.5 m/sec²** for each of the models to which this Use and Maintenance manual refers.

3. SAFETY PRECAUTIONS.

3.1. Personal protective equipment (PPE)

Always wear personal protective equipment according to current regulations concerning industrial health and safety (in particular, hard hat and safety shoes are **COMPULSORY)**.
It is the operator or safety manager's responsibility to choose the personal protective equipment (PPE) depending on the activity to be carried out. For their correct use and maintenance, refer to the equipment manuals themselves.
The use of safety harness is not compulsory except in certain countries with specific regulations. In Italy, the consolidation act on safety, **Law Decree 81/08,** has made the use of a safety harness mandatory.
The harness is attached to one of the anchorages reported by labels, as in the following picture.

Fig.5

3.2. General safety norms

- Only adults (18 years old), after carefully reading this manual, are allowed to use the machine. The employer is responsible for training.
- The platform is intended for people carriage; therefore, it is necessary to comply with the current local regulations relevant to this class of machines (see paragraphs 1).
- At least two users must operate the machine, one of them on the ground, able to carry out the emergency operations described in this handbook.
- Always keep the machine at a safety distance from power lines as indicated in the next chapters.
- Use the machine according to the capacity values indicated in the technical features section. The identification plate shows the maximum number of people allowed on the platform at any one time, the maximum capacity and the tool and material weight. Never exceed the indicated figures.
- Do NOT use the framework of the platform or any of its elements for grounding connections while welding on the platform.
- It is absolutely forbidden to load and/or unload persons and/or material with platform not in the access position.
- It is the machine owner and/or safety manager's responsibility to check that the maintenance and repair operations are carried out by skilled personnel.
- If the machine is equipped with the option "extending tracks" we recommend to use the narrow track width only when required to cross reduced spaces.

3.3. Use instructions

3.3.1. General

The electric and hydraulic circuits are provided with safety devices, calibrated and sealed by the manufacturer:

DO NOT TAMPER WITH AND MODIFY THE CALIBRATION OF ANY COMPONENT OF THE ELECTRIC AND HYDRAULIC SYSTEMS.

- The machine must be used only in areas well lit up, checking that the ground is flat and firm. The machine may not be used if the lighting conditions are not sufficient. The machine is not equipped with any lightening system.
- Before using the machine check its integrity and conservation state.
- It is forbidden to use the machine if the tracks are not fully extended or completely retracted depending on the type of work is being done (only machines equipped with "extending tracks" option).
- During maintenance operations do not dispose of any waste materials in the environment, but comply with current regulations.
- Do not carry out any service or maintenance operations when the machine is connected to the mains supply. Follow the instructions given in the following paragraphs.
- Do not approach the electric and hydraulic system components with sources of heat or flames.
- Do not increase the max. allowed height by means of scaffolds, ladders or other.
- With the machine lifted, do not fasten the platform to any structure (beams, pillars or wall).
- Do not use the machine as a crane, hoist or lift.
- Protect the machine (in particular the platform control panel by means of the specially provided cover- if any - or a waterproof tarpaulin) and the operator when working in adverse environmental conditions (painting, de-painting, sand-blasting, washing, etc.).
- Using the machine in bad weather conditions is forbidden; in particular, wind speeds must not exceed the limits indicated in the Technical specifications (to measure speeds, see the following chapters).
- Machines with a wind speed limit of 0 m/s are to be used indoors only.
- In the event of rain or in parking condition always protect the platform control panel (with the specially provided cap - if any - or a waterproof tarpaulin).
- Do not use the machine in areas where risks of fire or explosion exist.
- Do not use pressurized water jets (high-pressure cleaners) to wash the machine.
- Overloading the work platform is forbidden.
- Avoid knocks and/or contacts with other vehicles and fixed structures.
- Leaving or accessing the work platform is forbidden unless this is in the position required for access or leaving (see the “Accessing the platform” chapter).

3.3.2. Handling

- Before handling the machine check that the connection plugs are disconnected from the power supply source. Always check the cable position during handling if the machine is powered with a 230V electrical pump.
- In order to avoid any instability, use the machine on regular and firm grounds. To prevent the machine from overturning, comply with the max. gradeability values indicated in the Technical data section under paragraph "Stability limits". However, movements on inclined grounds are to be carried out with the utmost caution.
- If the machine is equipped with the option "extending tracks" we recommend to use the narrow track width only when required to cross reduced spaces.
- While driving the machine with lifted platform the operators are not allowed to place horizontal loads onto the platform (operators on board must not pull ropes, wires, etc.).
- The machine must not be used directly for road transport. Do not use it for material transport (see paragraph “Intended use”).
- Check that in the operating area there are not obstacles or other dangerous elements.
- Pay particular attention to the area above the machine during lifting to avoid any crushing and collisions.
- During operation keep your hands in safety position: the driver has to place them as shown in picture A or B, while the transported operator has to keep them as shown in picture C.

Fig. 6

3.3.3. Operating procedures

- Before starting to work, when the heat engine is not running and sufficiently cool, visually check the fuel level in the tank. If necessary, add fuel (lead-free Petrol O.N.>87 for petrol models; Diesel oil for Diesel models) avoiding to fill the tank completely and to dirty the unit. Should small quantities of fuel leak out, clean immediately using a clean cloth.
- In case of fault in the heat engine, refer to the User Manual provided by the manufacturer of the motor.
- The machine is equipped with a chassis inclination control system disabling lifting operations in case of unstable positioning. Working operations can be resumed only after placing the machine in a steady position. If the audible alarm and the red light on the platform control panel turn on, the machine is not correctly positioned (see paragraphs relevant to “Use instructions”). It is necessary to bring it to safety rest position before starting operations again. If the tilt alarm trips with the platform elevated, the only possible operations are those that allow lowering the platform.
- The machine is not equipped with an overload controller as in the design phase we considered stability and overload criteria increased as reported by the EN280 in paragraphs 5.4.1.5 and 5.4.1.6.
- The machine is equipped with a control system of the outriggers feet resting on the ground. When all feet are resting on the ground, the warning lights are lit and, unless other alarms, all movements are allowed except for tracks control. When the platform is lifted if one of the feet loses contact with the ground, the relevant warning light turns off and all lifting movements are inhibited. Cage lowering on the ground is still possible (lowering and turret rotation in both directions) at automatically reduced speed.
- To avoid improper use, a special microswitch checks the platform position; when the first and second boom are not completely lowered and extension not fully retracted, the outriggers cannot be operated.
- The machine is equipped with a control system of the rotating turret position. When the turret is in central position, the green light is lit. If the boom is completely lowered, translation and stabilization controls are possible while the turret rotation is inhibited.
- Do not lean over the platform guard rails.
- Make sure that no people, apart from the operator, are in the area where the machine is operating. While moving the platform, the operator on board should pay particular attention to avoid any contact with the personnel on the ground.
- During operations in public areas, in order to prevent people other than the personnel from approaching the machine and being endangered, surround the working area by means of barriers or other suitable signs.
- Avoid severe weather conditions and, in particular, windy days.
- Lift the platform only if the machine is resting on solid and horizontal surfaces (following chapters). If you operate on grounds which are not solid enough, place some boards of tough and resistant material under the pads of the outriggers so as to increase the support surface and reduce the specific ground pressure.
- Do not use the thermic drive power (diesel or petrol engine) indoors or in insufficiently ventilated areas.
- After each work session, always take the keys out of the control panels and keep them in a safe place to prevent unauthorized people from using the machine.
- Always place working tools in a steady position to prevent them from falling and hurting the operators on the ground.

When choosing the positioning point of the chassis, to prevent unexpected possible contacts with obstacles, always observe the figures carefully as these make it possible to identify the range of action of the platform (chap. 2).

3.3.4. Wind speed according to Beaufort scale

You can use the table below for a simple assessment of the wind speed. We remember that the max. limit for each machine model is indicated in the table TECHNICAL FEATURES OF STANDARD MACHINES.

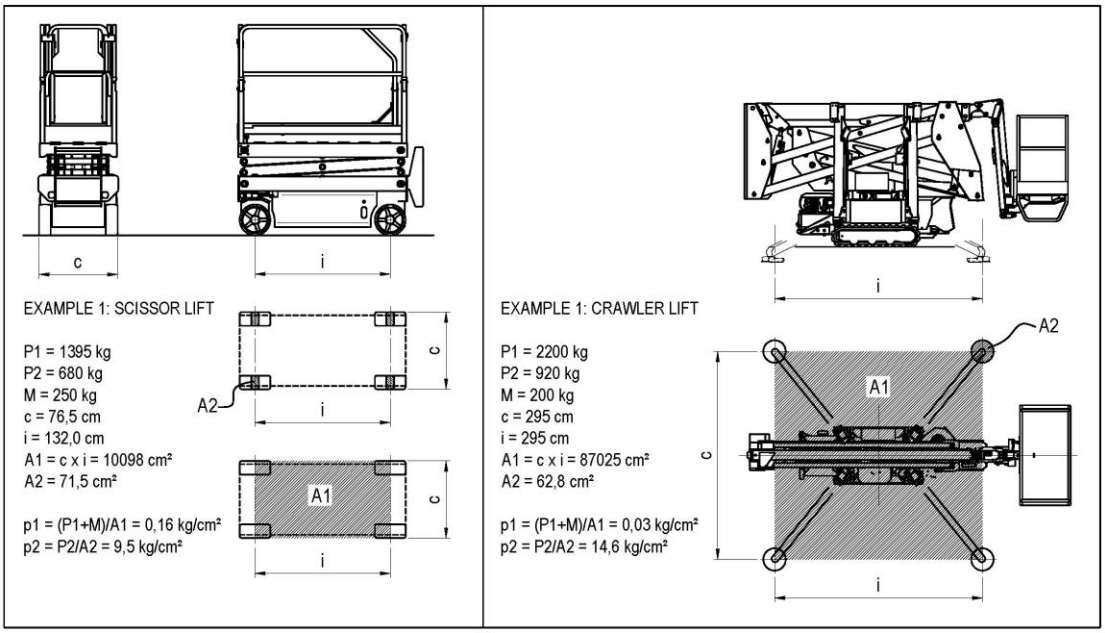
The machines for which the max. wind limit is 0 m/s must be used indoors only. These machines cannot be used outdoors even with no wind.

Beaufort Number	Wind speed (km/h)	Wind speed (m/s)	Description	Sea conditions	Land conditions
0	0	<0.28	Calm	Flat	Calm. Smoke rises vertically.
1	1-6	0.28–1.7	Light air	Ripples without crests.	Wind motion visible in smoke.
2	7-11	1.7–3	Light Breeze	Small wavelets. Crests of glassy appearance, not breaking.	Wind felt on exposed skin. Leaves rustle.
3	12-19	3–5.3	Gentle breeze	Large wavelets. Crests begin to break; scattered whitecaps.	Leaves and smaller twigs in constant motion.
4	20-29	5.3–8	Moderate breeze	Small waves.	Dust and loose paper raised. Small branches begin to move.
5	30-39	8.3-10.8	Fresh breeze	Moderate (1.2 m) longer waves. Some foam and spray.	Smaller trees sway.
6	40-50	10.8-13.9	Strong breeze	Large waves with foam crests and some spray.	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	51-62	13.9-17.2	Near gale / moderate gale	Sea heaps up and foam begins to streak.	Whole trees in motion. Effort needed to walk against the wind.
8	63-75	17.2-20.9	Fresh gale	Moderately high waves with breaking crests forming spindrift. Streaks of foam.	Twigs broken from trees. Cars veer on road.
9	76-87	20.9-24.2	Strong gale	High waves (6-7 m) with dense foam. Wave crests start to roll over. Considerable spray.	Larger branches break off trees, construction/temporary signs and barricades blown over, damage to circus tents and canopies.
10	88-102	24.2-28.4	Whole gale / Storm	Very high waves. The sea surface is white and there is considerable tumbling. Visibility is reduced.	Trees broken off or uprooted, saplings bent and/or deformed, poorly attached asphalt shingles and shingles in poor condition peel off roofs.
11	103-117	28.4-32.5	Violent storm	Exceptionally high waves.	Widespread vegetation damage, minor damage to most roof shingles/surfaces, gravel may be blown from flat roofs.
12	>117	>32.5	Hurricane	Huge waves. Air filled with foam and spray. Sea completely white with driving spray. Visibility greatly reduced.	Considerable and widespread damage to vegetation, a few windows broken, structural damage to mobile homes and poorly constructed sheds and barns.

3.3.5. Pressure of the machine on ground and load-bearing capacity of ground

Before using the machine, the operator must make sure the floor is suitable for withstanding the specific loads and pressures on the ground with a certain safety margin.
The following chart provides the parameters in play and two examples of calculation of the average pressure on the ground below the machine and max pressure underneath the wheels or outriggers (p1 and p2).

SYMBOL	U.M.	DESCRIPTION	EXPLANATION	FORMULA
P1	Kg	Total machine weight	It represents the machine weight, nominal load excluded. Note: always refer to the details indicated on the plates affixed to the machine.	-
M	Kg	Nominal Load	The max. load allowed for the work platform.	-
A1	cm²	Area occupied on the ground	Machine supporting area on the ground determined by the result of TRACK x WHEEL BASE.	A1 = c × i
c	cm	Track	Cross width of machine measured outside the wheels. or: Cross width of machine measured between levelling outrigger centres.	-
i	cm	Wheel base	Longitudinal length of machine measured between wheel centres. or: Longitudinal length of machine measured between levelling outrigger centres.	-
A2	cm²	Wheel or levelling outrigger area	Wheel or levelling outrigger ground support area. The wheel support area on the ground must be verified empirically by the operator; the levelling outrigger support area depends on the shape of the support foot.	-
P2	Kg	Max. load on wheel or levelling outrigger	This represents the max. load that can be discharged onto the ground by a wheel or by a levelling outrigger when the machine is in the worst position and load conditions. Note: always refer to the details indicated on the plates affixed to the machine.	-
p1	Kg/cm²	Pressure on ground	Average pressure placed on the ground in idle conditions and supporting the nominal load.	p1 = (P1 + M) / A1
p2	Kg/cm²	Max specific pressure	Max. pressure which a wheel or a levelling outrigger can place on the ground when the machine is in the worst position and load conditions.	p2 = P2 / A2



The table below shows the load-bearing capacity of the ground split up by ground type.
Refer to the data contained in the specific tables of each model (chapter 2, TECHNICAL FEATURES OF STANDARD MACHINES) to obtain the figure relating to the max pressure on the ground caused by the single wheel.

Using the machine is forbidden if the max ground pressure per wheel is higher than the bearing capacity of the specific type of ground on which the machine is to be used.

TYPE OF GROUND	BEARING CAPACITY IN Kg/ cm²
Non compact filling earth	**0 – 1**
Mud, peat, etc.	**0**
Sand	**1.5**
Gravel	**2**
Friable earth	**0**
Soft earth	**0.4**
Rigid earth	**1**
Semi-solid earth	**2**
Solid earth	**4**
Rock	**15 – 30**

Should you have any doubts, verify the load-bearing capacity with specific tests.
In case of constructed surfaces (concrete floors, bridges, etc.) the load-bearing capacity must be provided by the builder.

3.3.6. High-voltage lines

The machine is not electrically insulated and is not protected in case of contact with or vicinity to power lines.
According to the applicable laws and the following table a minimum distance from the power lines must be kept

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

3.4. Dangerous situations and/or accidents

- If, during Preliminary Operation Checks or when using the machine, the operator discovers a defect that could produce a hazardous situation, the machine must be placed in **safety condition** (isolate it and affix a notice) and the employer must be notified about the fault.
- If, during use, an accident occurs, with injury to the operators, caused by operating errors (e.g., collisions) or any structural yielding, the machine must be placed in **safety condition** (isolate it and affix a notice) and the employer must be notified about the fault.
- In case of an accident with injuries to one or more operators, the operator on the ground (or on a platform not involved in the accident) must:
    - **Seek help immediately**
    - Perform the operation to return the platform to the ground **only if he is certain this will not make the situation worse.**
    - Place the machine in **safety condition** and notify the fault to the employer.

4. INSTALLATION AND PRELIMINARY CHECKS

The machine is supplied completely assembled, therefore it can perform all functions in full safety as provided for by the manufacturer. No preliminary operation is required. To unload the machine, follow the instructions in chapter “Handling and carrying”.
Place the machine on a sturdy enough surface (see paragraph **3.3.5**) and with a gradient below max. allowed gradient (see technical features “**Stability limits**”).

4.1. Becoming acquainted with the machine

Anyone wishing to use a machine with weight, height, width and length characteristics or which generally differs significantly from the training received must be updated in order to cover the differences.
The employer shall be responsible for ensuring all the operators who use work equipment are adequately trained and in compliance with applicable health and safety legislation.

4.2. Preliminary operation checks

Before using the machine read the instructions given in this manual and the concise instructions indicated on the platform plate.
Check the perfect integrity of the machine (by sight check) and read the plates showing machine operating limits.
Before using the machine the operator must always check visually that:

- Make sure the battery is fully charged and the fuel tank is full.
- The oil level ranges between the min. and max. value (with platform lowered and outriggers lifted).
- The ground is sufficiently horizontal and solid.
- if the machine is equipped with the option "extending tracks", check that the tracks are completely extracted or fully retracted depending on the type of work to do.
- The machine carries out all operations in safety.
- the outriggers and articulated pads are in good condition;
- the tracks are in good condition;
- make sure the guard rails are fastened to the platform and the gate/s are in automatic reclosing mode.
- The structure does not show clear faults (visually check welding of lifting structure).
- The instructions plates are perfectly readable.
- The platform control panel and the ground emergency control panel, dead-man system included, are perfectly efficient.
- The anchoring points for the harness are in perfect state of conservation.

Do not use the machine for purposes different from those it was intended for.

5. USE INSTRUCTIONS

Before using the machine read this chapter thoroughly.

WARNING!

Follow exclusively the instructions given in the next paragraphs and the safety rules described both hereafter and in the previous paragraphs. Read the next paragraphs carefully in order to properly understand the on/off procedures as well as all operations and their correct use.

5.1. Platform control panel/wire control

The control panel is located on the platform. The control panel is fixed to the front guard rail and is used to:

- Turn the machine ON/OFF.
- Move the platform during ordinary working procedures.
- Display some parameters (alarms, dead-man's working, etc…).

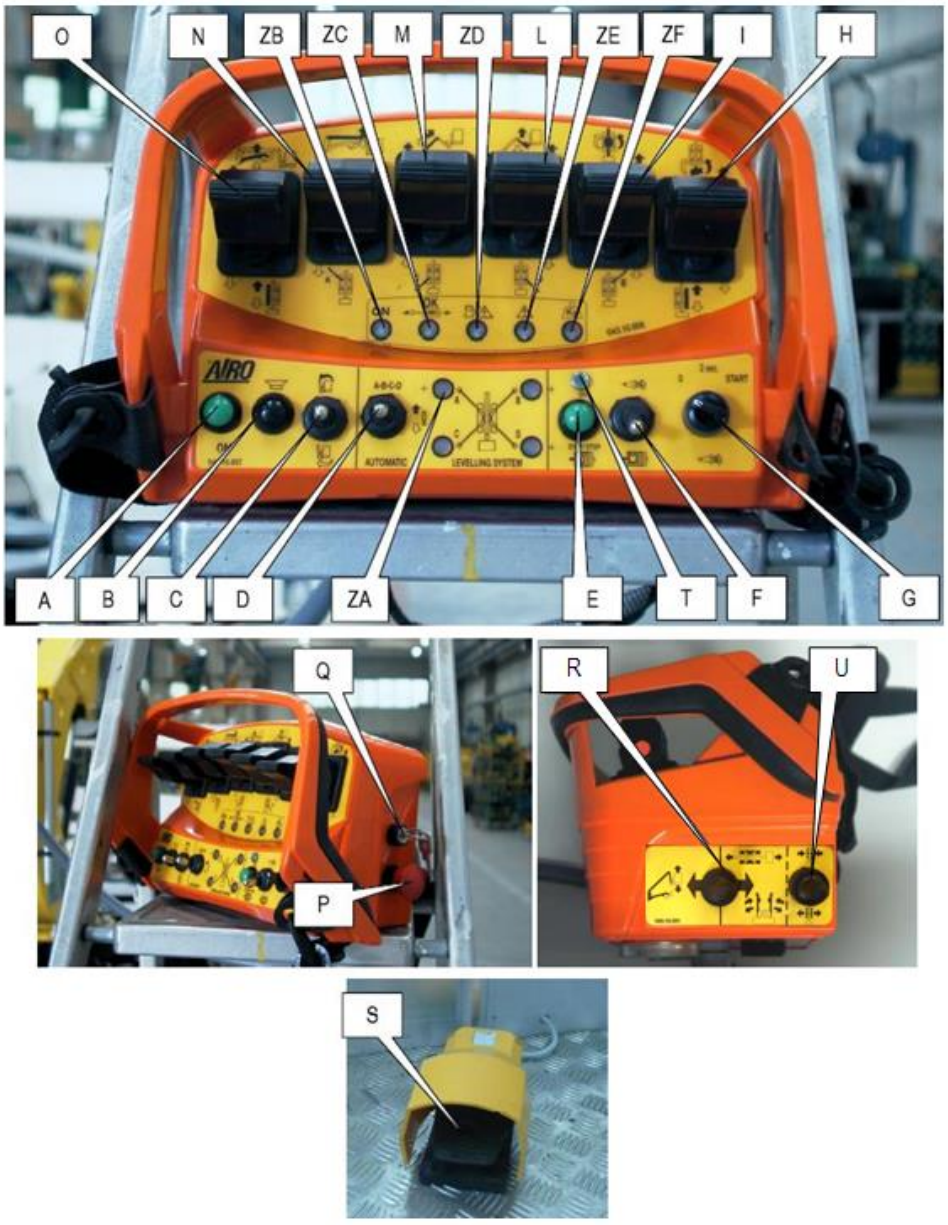


Fig. 7

A) Dead-man button
B) Horn button
C) Platform level compensation switch
D) Automatic stabilization control switch
E) Electric motor start / stop button (optional)
F) Electric / thermic power selector (petrol motor)
G) Heat engine start button
H) Platform rotation control proportional lever (optional) / RIGHT track drive
I) Turret rotation control proportional lever / front RIGHT outrigger (B)
L) JIB up-down control proportional lever / back RIGHT outrigger (D)
M Telescopic boom in-out control proportional lever / back LEFT outrigger (C)
N) Boom up-down control proportional lever / front LEFT outrigger (A)
O) Scissors up/down control proportional lever / LEFT track drive
P) Emergency STOP button
Q) No function
R) Controls mode selector: platform movement / wire control (translation and stabilization)
S) Dead-man pedal
T) Enabled electric pump warning light (optional)
U) Tracks widening control switch (optional)
ZA) Outriggers position warning lights
ZB) Enabled control panel warning light
ZC) In-centre turret warning light
ZD) Low fuel / diesel engine anomaly warning light – Not active for machines with petrol motor
ZE) Danger warning light (unsteady position and faults indicator)
ZF) No function, the machine is not equipped with a platform load control system as in the design phase we considered stability and overload criteria increased as reported by the EN280 in paragraphs 5.4.1.5 and 5.4.1.6.

All movements (except for platform rotation and platform level compensation) are controlled by proportional joystick /levers; it is therefore possible to adjust movement speed by means of the relative controls. To avoid sudden shakes during movements, it is advisable to operate the proportional joystick controls gradually.

For safety reasons, to operate the machine, it is necessary to press “dead-man” pedal **S** or “dead-man” button **A** at platform before operating the controls. If the dead-man pedal is accidentally released while the machine is operating, the movement is immediately stopped.

During platform positioning with operator on board, the controls can be enabled using the “dead-man” pedal; during translation and stabilization movements with operator on the ground, controls must be enabled using the “dead-man” button.

WARNING!

Holding down the “dead-man” pedal for over 10 seconds without carrying out any operation will disable the control panel. Once the dead-man button is pressed, you have 2 seconds to activate the controls. If no operation is performed after 2 seconds, the control panel is disabled.
The disabled control panel condition is indicated by the flashing green led (ZB). To operate the machine again it is necessary to release the "dead man" pedal and press it again; the green led (ZB) will light up steady and for the next 10 seconds all controls will be enabled.

5.1.1. "Wire control" Mode: Translation, Stabilization and track Widening (optional)

To use the controls of the operating mode "Wire control" (Translation, Stabilization and Widening tracks - optional) carry out the following preliminary operations in the sequence below:

1) Remove the control panel from the magnetic support on the platform and remove the cable from the supports;
2) Get off the platform and carry the control panel on your shoulder;
3) Select the operating mode "**Wire control**" by setting selector **R** to position **1**;
4) Place yourself at safety distance from the machine in lateral position compared to platform and control the desired movement following the instructions in the next paragraphs.

In "Wire control" mode, the proportional control levers have the following functions:

H) RIGHT track Drive proportional control lever
I) Front RIGHT outrigger proportional control lever (B)
L) RIGHT rear outrigger proportional control lever (D)
M) LEFT rear outrigger proportional control lever (C)
N) LEFT front outrigger proportional control lever (A)
O) LEFT track Drive proportional control lever.

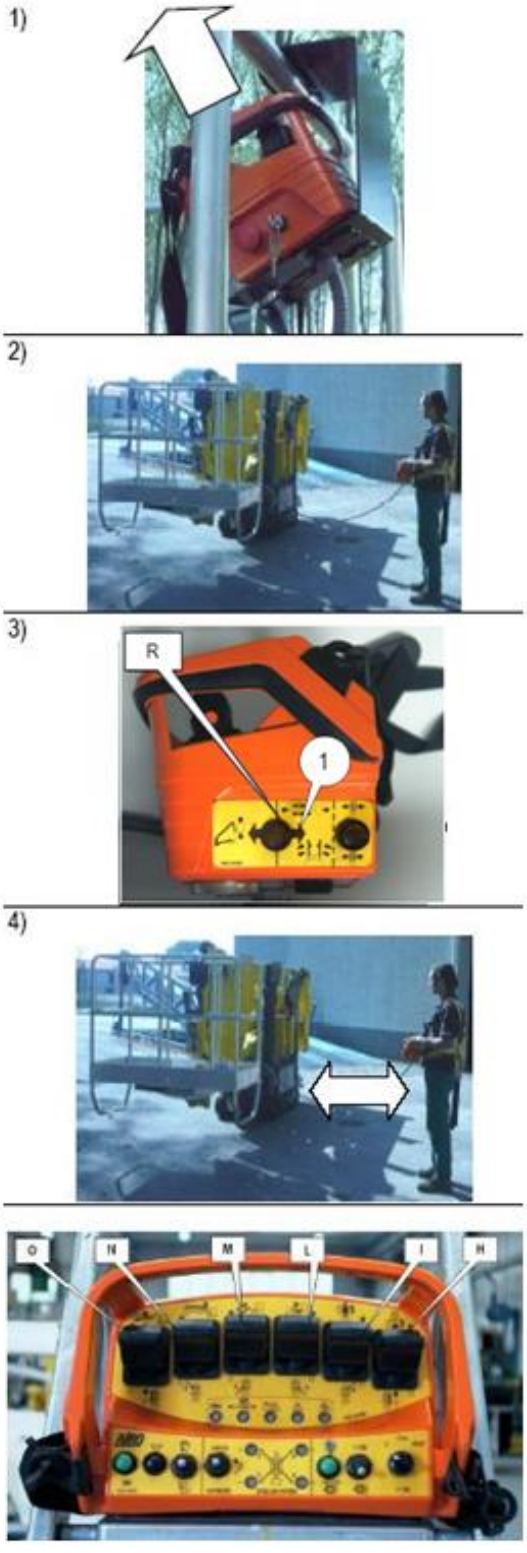


Fig. 8

5.1.1.1. Drive

Once the operations in paragraph 5.1.1 have been carried out, to achieve the drive movement (track control), perform the following operations in sequence:

1) Press “dead-man” button **A** on the control panel. The green led **ZB** will light up steady;
2) Within 2 seconds, operate the proportional levers **H** and **O** simultaneously in the same direction and with the same intensity to get the straightforward direction or with different intensity to steer the machine as shown in figure.

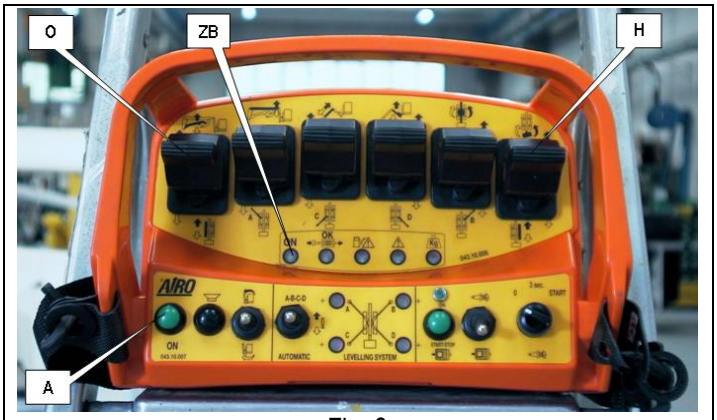


Fig. 9

Drive controls are of proportional type; it is therefore possible to adjust movement speed by means of the relative proportional levers. To avoid sudden shakes during movements, it is advisable to operate the proportional levers gradually.

WARNING!!
The operator on the cage is not allowed to carry out translation and stabilization operations. For these operations the operator has to get on the ground and control the machine at a safety distance.
The translation operation is active only if green warning light ZC is on (turret is in central position) and green warning lights ZA are off (no outriggers resting on the ground).

WARNING!!
Due to the limited width of the machine, to go up and down the steps, KEEP the machine perpendicular compared to the obstacle. RISK OF OVERTURN.
DO NOT overcome steps higher than 10 cm. Reduce the obstacle height by using strong wooden boards and pieces.
In case of drive on uneven surfaces and/or slopes a good practice is to open the outriggers by placing the pads at about 20 cm from the ground to prevent the machine from overturning.

Fig. 10

5.1.1.2. Stabilization

Once the operations in paragraph 5.1.1 have been carried out, to achieve the stabilization movement, perform the following operations in sequence:

1) Press “dead-man” button **A** on the control panel. The green led **ZB** will light up steady;
2) Within 2 seconds operate proportional levers **I, L, M, N** to control the outriggers individually or use switch **D** for automatic stabilization.

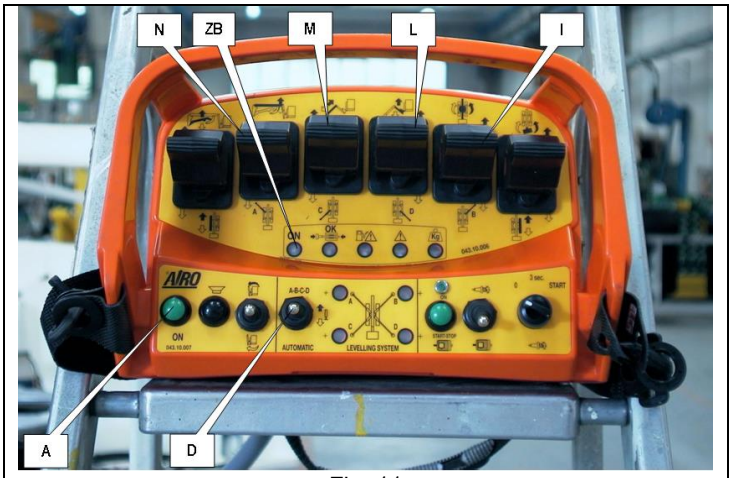


Fig. 11

WARNING!!

The operator on the cage is not allowed to carry out translation and stabilization operations. For these operations the operator has to get on the ground and control the machine at a safety distance.

Always check the firmness of the ground before lifting the platform. Place strong wooden boards under the outriggers pads so as to spread the load on a wider surface.

A spirit level on the boom or on the chassis allows the operator to control the machine levelling while stabilizing. However, the machine is equipped with a chassis inclination control system disabling lifting operations in case of unstable positioning. Work is possible only after placing the machine in a steady position. If the audible alarm and red warning light ZE on the control panel turn on, the machine is not correctly positioned; stabilization is necessary to operate the machine again.

⚠

While using the outriggers, an automatic system stops platform lifting in the event that one of the pads does not rest perfectly on the ground. The levelling outrigger pads are resting on the ground when all warning lights ZA are ON.
When the platform is lifted if one of the feet looses contact with the ground, the corresponding warning light ZA turns off, danger red light ZE turns on and all lifting movements are inhibited. Cage lowering on the ground is still possible (lowering and turret rotation in both directions) at automatically reduced speed.

Specially provided microswitches located on the levelling outriggers control their position. With one or more pads resting on the ground (one or more ZA warning lights are ON) drive is inhibited. To carry out drive movement, it is necessary to lift the pads from the ground. When warning lights ZA turn off, pads are lifted.

To avoid improper use, a special microswitch checks the position of the lifting boom. With a second boom not completely resting on the fixed structure, the outriggers and tracks control is inhibited.

An automatic system checks the position of the rotating turret. When green warning light ZC is lit steady, the turret is correctly positioned and stabilization control is allowed. If the green light ZC turns off, the turret position is not correct and stabilization is inhibited.

5.1.1.2.1. Manual stabilization control

To lift/lower the outriggers it is necessary to operate one or more of the four control levers **I, L, M, N.**
If you set levers **I, L, M, N** downwards, the levelling pads extract; vice versa, if you set the levers upwards, they retract.
The location of the control levers **I, L, M, N** and relevant warning lights **ZA** corresponds to the arrangement of the outriggers:

- Lever **N**; Warning light **A** = Front left outrigger;
- Lever **I**; Warning light **B** = Front right outrigger;
- Lever **M**; Warning light **C** = Rear left outrigger;
- Lever **L**; Warning light **D** = Rear right outrigger.

For a correct manual stabilization:

- control all the outriggers simultaneously until the support pads are close to the ground;
- set the support pads near the ground by controlling a pair of outriggers at a time until the tracks raise slightly from the ground;
- correct stabilization by controlling one or two outriggers at a time until the machine is levelled and displayed by the spirit level.

5.1.1.2.2. Automatic stabilization control

For **AUTOMATIC STABILIZATION,** set control lever **D** down. The control system will independently control the outriggers until the machine is levelled.
Levelling is correct when:

- all four warning lights **ZA** are on;
- inclination alarm warning light **ZE** is off (if an alarm condition due to instability before the levelling control is present);
- enabled control station green warning light **ZB** from steady to flashing.

For a quick automatic stabilization:

- control all outriggers simultaneously with the manual controls (levers **I, L, M, N**) until support pads are close to the ground;
- activate automatic stabilization control lever **D**.

For **AUTOMATIC RETRACTION** of all pads, set the control lever **D** upwards. The control system will retract all pads up to the upper stop.

⚠ **During automatic levelling, the system aims to level the machine within an allowance of 0.4° both longitudinally and transversally. The system continues the pad control until levelling within this tolerance is reached. If the automatic system is unable to obtain levelling within the expected allowance, yet the four pads are firmly resting on the ground and the machine is within the stability limits controlled by the inclinometer, lifting can be still carried out.**
Excessive longitudinal and/or transversal slopes may prevent the automatic levelling from being reached.

5.1.1.3. Widening or narrowing the tracks (optional)

Once the operations in paragraph 5.1.1 have been carried out, to achieve Widening or narrowing movement of the roadway, perform the following operations in sequence:

- Press “dead-man” button **A** on the control panel. The green led **ZB** will light up steady;
- Within 2 seconds act on the switch **U** in position:

  1 - To reduce the track width by retracting the outriggers;

  2 - To increase the track width by retracting the outriggers.

It is necessary to keep enabled switch **U** until the tracks are at their mechanical stop (completely extracted or fully retracted).
If the movement is stopped, you can resume it by repeating the sequence described above within 10 seconds.

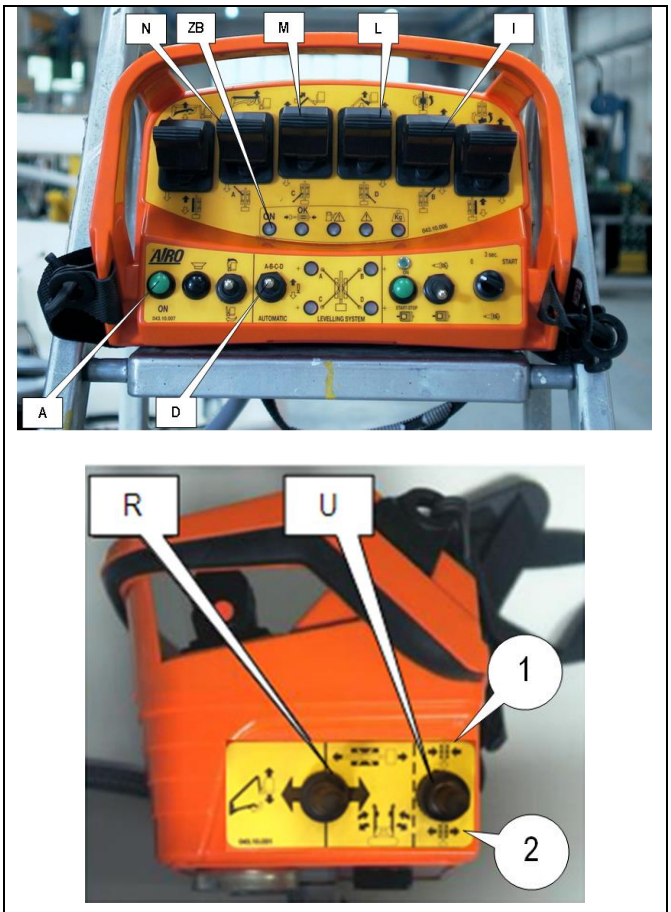


Fig. 12

WARNING!!
The operator on the cage is not allowed to carry out widening or narrowing operations of the tracks. For these operations the operator has to get on the ground and control the machine at a safety distance.
The widening and narrowing operations of the tracks is active only if:

- **The machine is in a stationary position (no other controls are under way);**
- **The green warning light ZC is lit (the turret is in the central position);**
- **The boom is fully lowered.**
- **The machine is placed on a flat surface resting on the tracks, or resting on the outriggers (there is no inclination alarm - see light ZE).**

WARNING!!
A spirit level on the boom or on the chassis allows the operator to control the machine levelling while stabilizing. However, the machine is equipped with a chassis inclination control system disabling lifting operations in case of unstable positioning. Work is possible only after placing the machine in a steady position. If the audible alarm and red warning light ZE on the control panel turn on, the machine is not correctly positioned; stabilization is necessary to operate the machine again.
With a second boom not completely resting on the fixed structure, the outriggers and tracks control is inhibited.
An automatic system checks the position of the rotating turret. When green warning light ZC is lit steady, the turret is correctly positioned and the widening and narrowing operations of the tracks is allowed. If the green light ZC turns off, the turret position is not correct and the control is inhibited.

- **ALWAYS check that the tracks are completely slipped off or fully retracted, according to the type of work to do. Do not use the machine if the tracks are at intermediate positions (machine unlevelled).**
- **It is recommended to use the narrow track width only when required to cross reduced spaces. For all other movements, including loading/unloading by other means, it is recommended to use the widened track width. In any case always proceed with the utmost caution to avoid instability. See also previous instructions/notices.**

5.1.2. "Platform movement" mode: Lifting/Lowering/Rotations

To use the controls of the operating mode "Platform movement" (Lifting/Lowering/Rotations) carry out the following preliminary operations in the sequence below:

1. Once the machine has been correctly positioned according to the previous paragraphs, reposition the control panel on the magnetic support on the platform and lock the cable on the supports.
2. Get on the platform;
3. Select the operating mode "**Platform movement**" by setting selector **R** to position **2**; Control the desired movement by following the instructions in the following paragraphs.

In "Platform movement" mode, the proportional control levers have the following functions:
H) Platform Rotation proportional control lever (Optional)
I) Turret Rotation proportional control lever
L) Jib up/down proportional control lever
M) Telescopic extension/retraction proportional control lever
N) Second boom lifting/lowering proportional control lever
O) First boom lifting/lowering proportional control lever.

When the booms are resting on the turret (low platform), platform level compensation control **C** is active.

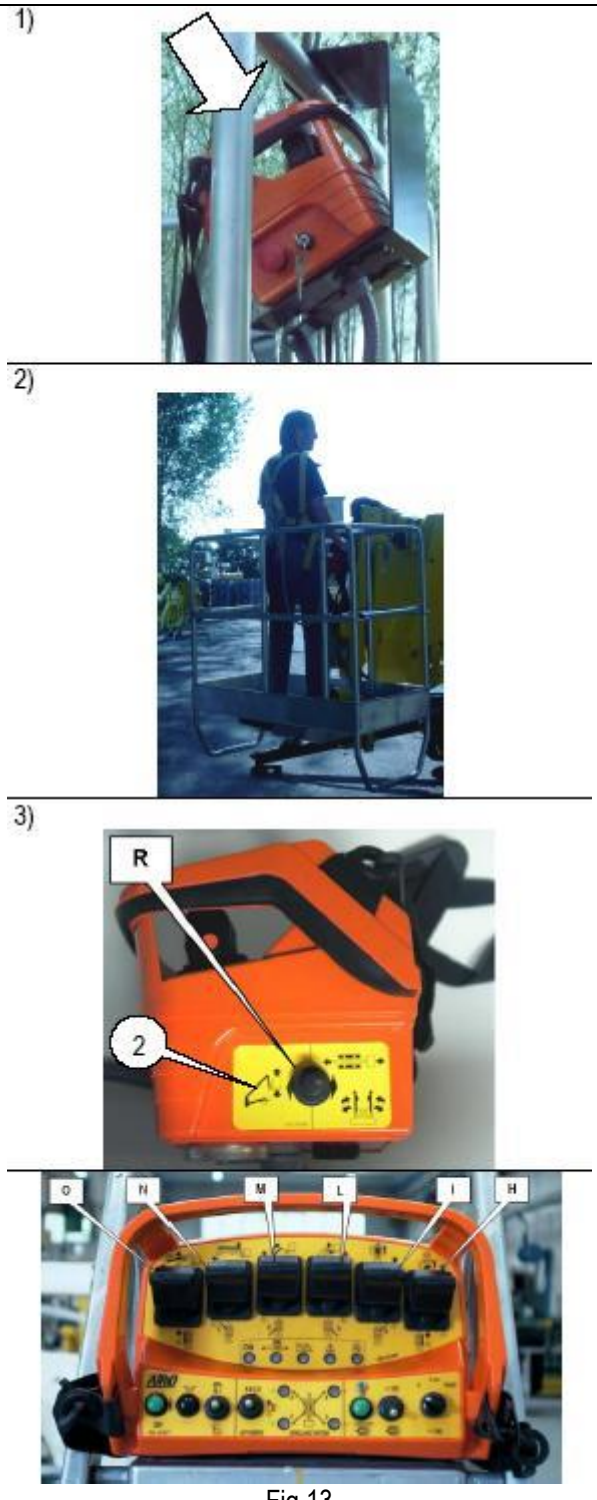


Fig.13

WARNING!!
If the audible alarm and red warning light ZE on the control panel turn on, the machine is not correctly positioned; stabilization is necessary to operate the machine again.
When the platform is lifted if one of the feet looses contact with the ground, the corresponding warning light ZA turns off, danger red light ZE turns on and all lifting movements are inhibited. Cage lowering on the ground is still possible (lowering and turret rotation in both directions) at automatically reduced speed.
To avoid improper use, a special microswitch checks the position of the lifting boom. When the second boom is not completely resting on the fixed structure, the platform level compensation control is inhibited.
To avoid any collision risks between the lifting structure and the outriggers, platform can be lowered completely only if turret is in central position (green warning light ZC is ON).

5.1.2.1. First boom lifting/lowering

Once the operations in paragraph 5.1.2 have been carried out, to achieve the lifting/lowering movement of the first boom, perform the following operations in sequence:

- Press “dead-man” pedal **S** on the platform; The green led **ZB** will light up steady;
- Within 10 seconds set gradually the proportional lever **O** upwards to lift or downwards to lower.

5.1.2.2. Second boom lifting/lowering

Once the operations in paragraph 5.1.2 have been carried out, to achieve the lifting/lowering movement of the second boom, perform the following operations in sequence:

- Press “dead-man” pedal **S** on the platform; The green led **ZB** will light up steady;
- Within 10 seconds set gradually the proportional lever **N** upwards to lift or downwards to lower.

5.1.2.3. Telescopic boom extension/retraction

Once the operations in paragraph 5.1.2 have been carried out, to extend/retract the telescopic boom, perform the following operations in sequence:

- Press “dead-man” pedal **S** on the platform; The green led **ZB** will light up steady;
- Within 10 seconds set gradually the proportional lever **M** upwards to lift or downwards to lower.

5.1.2.4. Jib lifting/lowering

Once the operations in paragraph 5.1.2 have been carried out, to lift/lower the Jib, perform the following operations in sequence:

- Press “dead-man” pedal **S** on the platform; The green led **ZB** will light up steady;
- Within 10 seconds set gradually the proportional lever **L** upwards to lift or downwards to lower.

5.1.2.5. Turret orientation (rotation)

Once the operations in paragraph 5.1.2 have been carried out, to orientate the turret, perform the following operations in sequence:

- Press “dead-man” pedal **S** on the platform; The green led **ZB** will light up steady;
- Within 10 seconds set gradually the proportional lever **I** upwards for anticlockwise rotation or downwards for clockwise rotation.

5.1.2.6. Platform rotation (OPTIONAL)

Once the operations in paragraph 5.1.2 have been carried out, to rotate the platform (OPTIONAL), perform the following operations in sequence:

- Press “dead-man” pedal **S** on the platform; The green led **ZB** will light up steady;
- Within 10 seconds set gradually the proportional lever **H** upwards for anticlockwise rotation or downwards for clockwise rotation.

5.1.2.7. Platform level compensation

The platform is automatically levelled. it may be necessary to reset the correct level, use switch **C**.
Set switch **C** upwards for forward levelling or downward for backward levelling.

5.1.3. Other functions of the platform control panel.

5.1.3.1. Electric / thermic power selector (F) (OPTIONAL)

The propulsion type can be selected using the selector **F**.
Setting the selector forward (sparking plug symbol) the thermic propulsion is selected (Petrol or diesel engine); setting the selector backward (electric motor symbol) the electric propulsion is selected (230V single-phase pump or 380V three-phase pump).

5.1.3.2. Electric motor start / stop button (E) (OPTIONAL)

Once the electric power has been selected by means of selector **F**, if the ground control panel is connected to the mains, press button **E** to turn on the pump (if off) or to turn it off (if on), to press the electric pump press button **E**.

See next paragraphs for operations modes of the starting button of the electric pump.

5.1.3.3. Enabled electric pump warning light (T) (OPTIONAL)

When green warning light **T** is on, the electric pump is enabled, if selector F is in “Electric” position and ground control connected to the mains.

5.1.3.4. Heat engine start button (G)

After selecting the thermic power by means of selector **F**, use switch **G** to start/stop the heat engine (Petrol or Diesel):

- In **START** position it enables starting.
- In position **3 sec** it pre-heats the plugs (diesel engines with plugs only);
- In position **0** it stops the heat engine.

5.1.3.5. Horn (B)

It warns that the machine is moving. It is operated by means of button **B**.

5.1.3.6. Emergency STOP button (P)

By pressing button **P** all machine control functions are stopped. Normal functions are enabled by rotating the button of 1/4 turn clockwise.

5.1.3.7. Warning lights

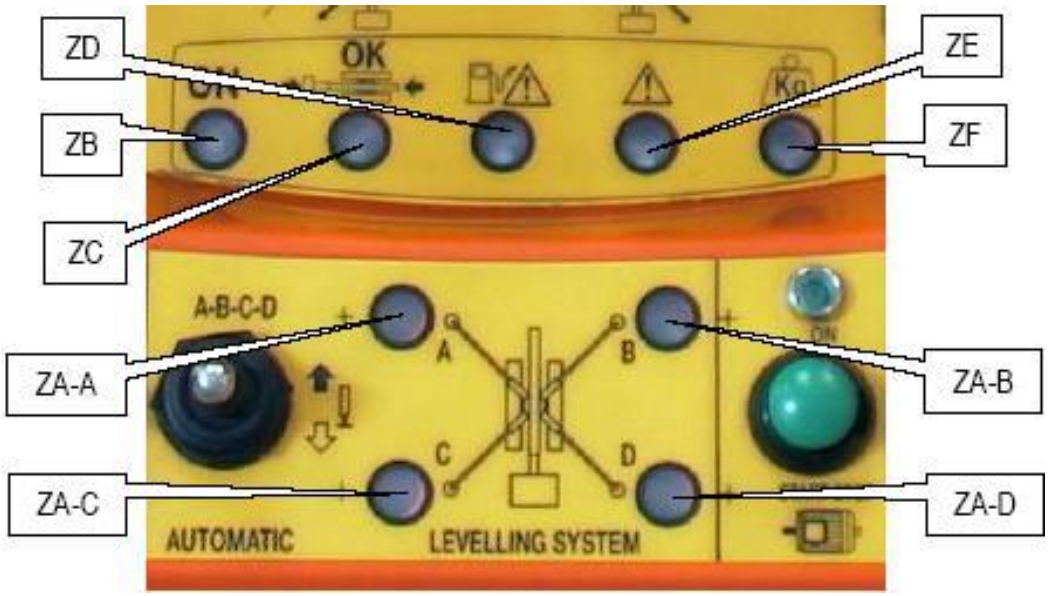


Fig. 14

5.1.3.7.1. Enabled control panel warning light (ZB)

Lit up flashing If platform control station has been selected and this light is flashing, controls are not enabled because:

- Dead-man pedal is not pressed or it was pressed for more than 10 seconds and no operation was performed.
- Or dead-man button was not pressed or more than 2 seconds went by since it was pressed for the last movement.

On steady. If platform control station has been selected, controls are enabled because:

- Dead-man pedal has been pressed for less than 10 seconds;
- Or dead-man button was pressed for less than 2 seconds.

5.1.3.7.2. Central turret warning light (ZC)

This light is on when turret is in central position. When light is off and boom lifted, all boom movements are possible. When light is off and boom completely lowered, turret orientation controls are active to allow the turret to be set to central position, but stabilization and translation are disabled. When light is on and boom lifted, turret orientation control is inhibited but stabilization and translation controls are active.

WARNING!!
To avoid any collision risks between the lifting structure and the outriggers, platform can be lowered completely only if turret is in central position (green warning light ZC is ON).

5.1.3.7.3. Enabled warning light diesel engine fault / low fuel level (ZD) (diesel engine only)

This warning light indicates malfunctioning of diesel engine or low fuel.
On steady with machine on; platform control panel; heat engine power selected. Diesel engine off ready for start-up. Insufficient motor oil pressure.
Slow flashing in the event of the motor head overheating. If on, it stops the diesel engine; if off, it prevents the Diesel engine from starting.
Fast flashing in the event of low fuel. This warning is active only when the motor is running.

5.1.3.7.4. Danger warning light (unsteady position and faults indicator) (ZE)

It flashes quickly for 4 seconds together with the audible alarm at the machine start-up in case of fault during safety test on controls (levers, joystick control, buttons, etc).
It is lit up steady together with the audible alarm when the chassis inclination exceeds the allowed value. All types of lifting and telescopic extension are blocked. Retraction movements (lowering and rotations) are possible at reduced speed. It is necessary to lower the booms completely and then place the machine onto a horizontal surface.
On steady with activation of audible alarm when one of the outriggers looses contact with the ground with lifted platform. All types of lifting and telescopic extension are blocked. Retraction movements (lowering and rotations) are possible at reduced speed. Booms must be lowered completely and outriggers positioned on a firm ground.

WARNING! The activation of this indicator warns of a dangerous situation since the machine has reached a dangerous inclination level for the machine stability.
When the chassis inclination exceeds the allowed value, to prevent increasing the overturn risk, the operator on the platform is recommended to retract the telescopic boom first and to lower it as the last operation.

5.1.3.7.5. Overload alarm warning light (ZF)

This light is not active on the a.m. models the machine is not equipped with a platform load control system as in the design phase we considered stability and overload criteria increased as reported by the EN280 in paragraphs 5.4.1.5 and 5.4.1.6.

5.1.3.7.6. Outriggers position warning lights (ZA)

When all warning lights are ON steady, all outrigger pads are resting on the ground.
When all warning lights are off, none of the outrigger pads is in contact with the ground.
Platform can be lifted only when all warning lights are on with no other alarms (see description other warning lights).

WARNING!
When the platform is lifted if one of the feet looses contact with the ground, the corresponding warning light ZA turns off, danger red light ZE turns on and all lifting movements are inhibited. Cage lowering on the ground is still possible (lowering and turret rotation in both directions) at automatically reduced speed.
With one or more pads resting on the ground (one or more ZA warning lights are ON) drive is inhibited. To carry out drive movement, it is necessary to lift the pads from the ground.

5.2. Ground control panel (electric control unit)

The ground control panel (or electric control unit) contains the main electronic boards necessary to operate the machine and to carry out safety checks.

The ground control panel is located on the rotating turret (see paragraph "Location of main components") and is used to:
- Turn the machine ON/OFF.
- Select the control panel (ground or platform).
- Operate the platform in emergency cases.
- Display some operation parameters (working hours; diesel engine operational faults; battery charger operation; etc.).

IT IS FORBIDDEN
To use the ground control panel as a workstation when personnel is on the platform.

Use the ground control panel only to start/stop the machine, to select the control panel or in emergency situations to allow the platform to be recovered.

Give the key to authorized persons and keep a duplicate in a safe place.
Always remove the on/off key at the end of work shifts.

Access to the electric control unit is allowed to specialized personnel only for maintenance and/or repair purposes. Access the electric control unit only after the machine has been disconnected from any 230V or 380V power sources.

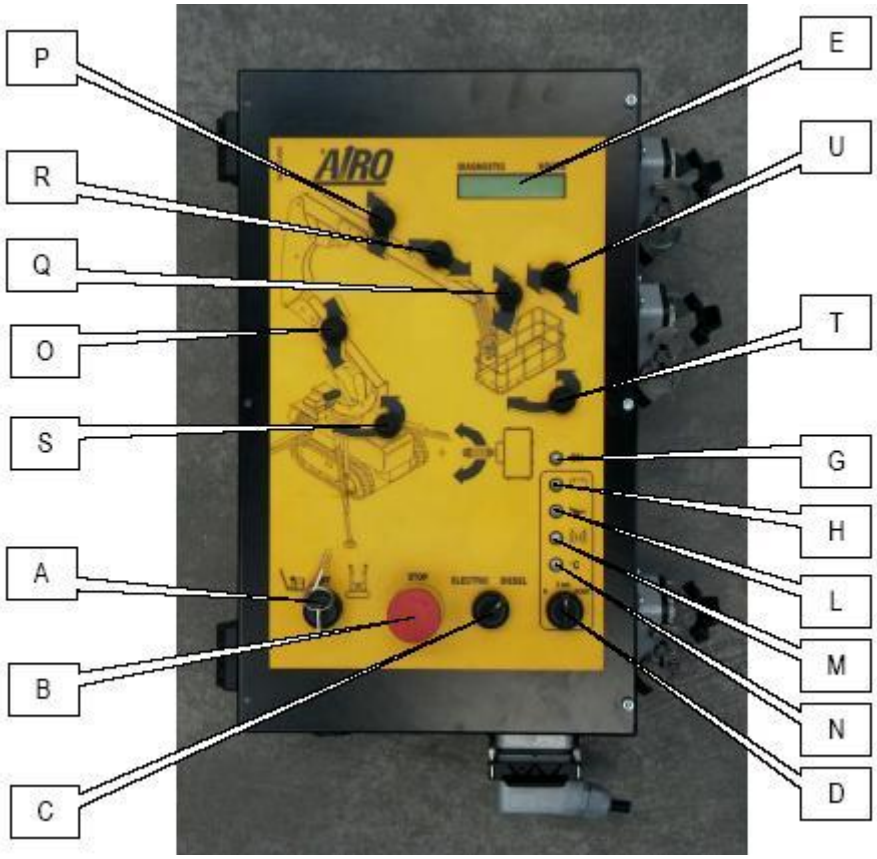


Fig.15

A) ON-OFF key and control panel selector (ground/platform)
B) Emergency STOP button
C) Electric or thermic power selector (OPTIONAL)
D) Heat engine start button
E) User interface display
G) Powered-on machine warning light
H) Alternator warning light (Diesel models only)
L) Oil warning light (Diesel models only)
M Air filter warning light (Diesel models only)
N) Motor head temperature warning light (Diesel models only)
O) FIRST BOOM LIFTING/LOWERING lever
P) SECOND BOOM LIFTING/LOWERING lever
Q) JIB LIFTING/LOWERING lever
R) TELESCOPIC BOOM OUT/IN lever
S) TURRET ORIENTATION lever
T) PLATFORM ROTATION lever
U) PLATFORM LEVEL compensation lever

The ground controls for operating the structure, except for Jib lifting/lowering, are active only if machine is levelled and resting on outriggers.
The Jib lifting/lowering control from the ground is always active to enable Jib lifting before loading/unloading operations of the machine by means of ramps.

5.2.1. On-off key / control panel selector (A)

The on-off key located on the ground control panel is used to:
- turn ON the machine by selecting one of the two control panels:
  - Platform controls enabled with locking key switch set to “platform” symbol. Stable key position with possibility to extract the key.
  - Ground control panel enabled (for emergency operations) with locking key switch set to "turret" symbol. Position with action to be kept. When the key is released the machine is turned off.
- Turn OFF the control circuits by turning it to OFF.

5.2.2. Emergency stop button (B)

By pressing this button the machine (as well as the heat engine) is completely stopped; by rotating it of 1/4 turn (clockwise) the machine can be turned ON by means of the ON-OFF key.

5.2.3. Thermic or electric work power selector (C) (OPTIONAL)

Holding the ON-OFF key in position “ground control panel” it is possible to select the type of power for the ground controls:
- If ELECTRIC is selected and the ON-OFF key is kept active in position “ground controls” the 220V single-phase pump is started;
- If THERMIC is selected and the ON-OFF key is kept active in position “ground controls” the heat engine can be started.

5.2.4. Heat engine start button (D)

Holding the ON-OFF key in position “ground controls” after selecting the THERMIC power, the heat engine can be started by means of the relevant switch.

- In “0” position the heat engine is off;
- In “3 sec” position the plugs pre-heating takes place (only for diesel engine);
- In “Start” position the motor starts.

5.2.5. User interface display (E)

The multifunction display for machine/user interface is used to display:

- the operation parameters of the machine during normal functioning or in the event of a fault;
- working hours of heat engine (when thermic power is selected the working hours are displayed in the format HOURS:MINUTES and final letter D);
- Working hours of the single-phase or three-phase work pump (when 220V or 380V electric power is selected –at platform- the working hours are displayed in the format HOURS:MINUTES and final letter E) –OPTIONAL-;

The user interface display is also used during any interventions by specialized personnel to calibrate/adjust the working parameters of the machine. This function is not available to the user.

5.2.6. Machine warning light on (G)

The green light is ON when the machine is turned ON and the ground control panel is enabled (the on/off key should be kept in “turret” position).

5.2.7. heat engine warning lights (H, L, M and N) (diesel engine only)

These warning lights warn the user of any Diesel engine operational faults (models D and ED). One of these warning lights turns ON when the motor is stopped. A “fault” message is sent to the operator on the platform (see paragraph “Platform control panel”)
Once the Diesel engine has stopped due to a problem signalled by one of these warning lights, the motor can no longer be re-started until such problem has been solved.

5.2.8. Levers of movement of the platform (O, P, Q, R, S, T, U)

The various levers shown in the figure allow the platform to be operated. According to the various signs the corresponding movements are activated. These controls can be operated only if the on-off key is set to ON down (ground control panel selected). We shall also remind you that the ground controls - except for JIB LIFTING/LOWERING - are to be used to operate the platform only in emergency situations and must not be used for any other purposes.

Use the ground controls only in emergency situations to allow the platform to be lowered.
IT IS FORBIDDEN to use the ground control panel as a workstation when personnel is on the platform.

5.3. Platform access

The “access position” is the only one from which loading or unloading of persons and materials is allowed. The “access position” to the work platform is the **completely lowered** configuration.

To get on the platform:

- Get on the platform hanging on to the entry side rails.
- Raise the bar and get on board.

Check that, once you are on the platform, the bar falls down closing the access. Fasten the safety harness to the provided hooks.

To get on the platform use only the access equipment the platform is provided with.
When moving up or down, always keep your eyes on the machine and hold onto the entry stringers.

IT IS FORBIDDEN
Lock the closing bar so as to keep the platform access door open.

IT IS FORBIDDEN
To leave or access the work platform if it is not in the position required for accessing or leaving.

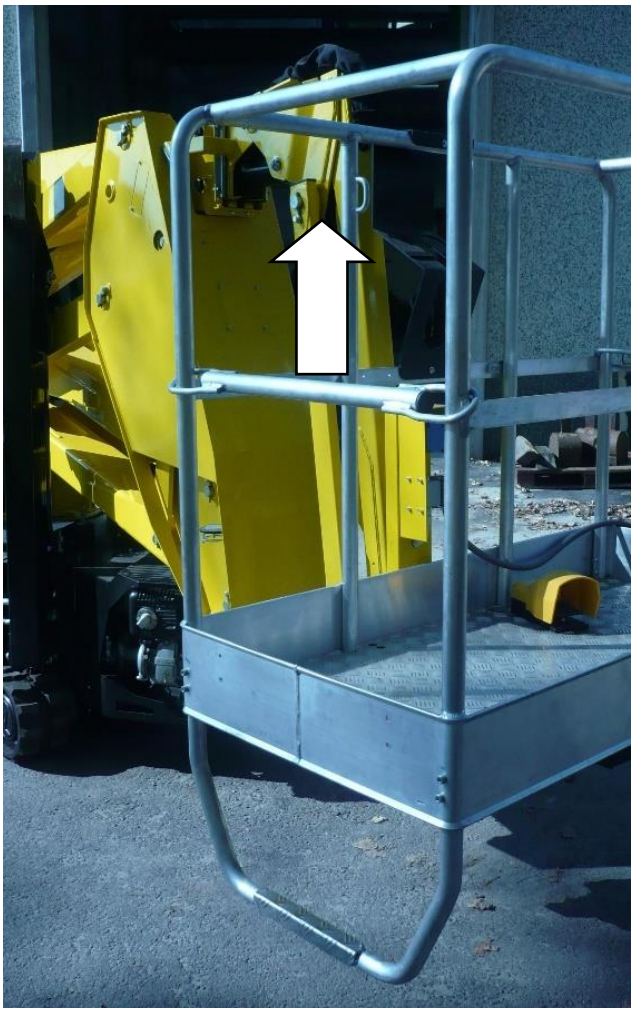


Fig.16

5.4. Machine start-up

To start the machine the operator shall:

- Release the stop button **B** located on the ground control by rotating it of 1/4 turn clockwise;
- turn on-off key **A** on the ground control station to Platform position;
- remove the starting key and hand it over to a person in charge on ground, properly informed of the use of the emergency controls
- get onto the platform
- Release the stop button **P** on the platform control panel (see previous paragraphs).

If you want to use the thermic propulsion, select the thermic power by the selector **F** on the control panel and start the heat engine using switch **G** (see instructions in next paragraph).

If you want to use the electric propulsion, select the electric power by the selector **F** on the control panel and start the motor using button **E** (see instructions in next paragraphs).

Before using the thermic power (Diesel or Petrol engine) check the fuel level in the tank.
For those machines that are not equipped with a level gauge on the platform control panel, this operation should be carried out by visually checking the fuel level after unscrewing the filler cap; for the other machines it is possible to check the level directly through the level gauge on the platform control panel.

- Before starting the working session, when the motor is off and sufficiently cool, visually check the fuel level.
- Keep the fuel tank and the motor clean.

For petrol motors (models “EB”) use only **Unleaded Petrol with Octane No. >87.**

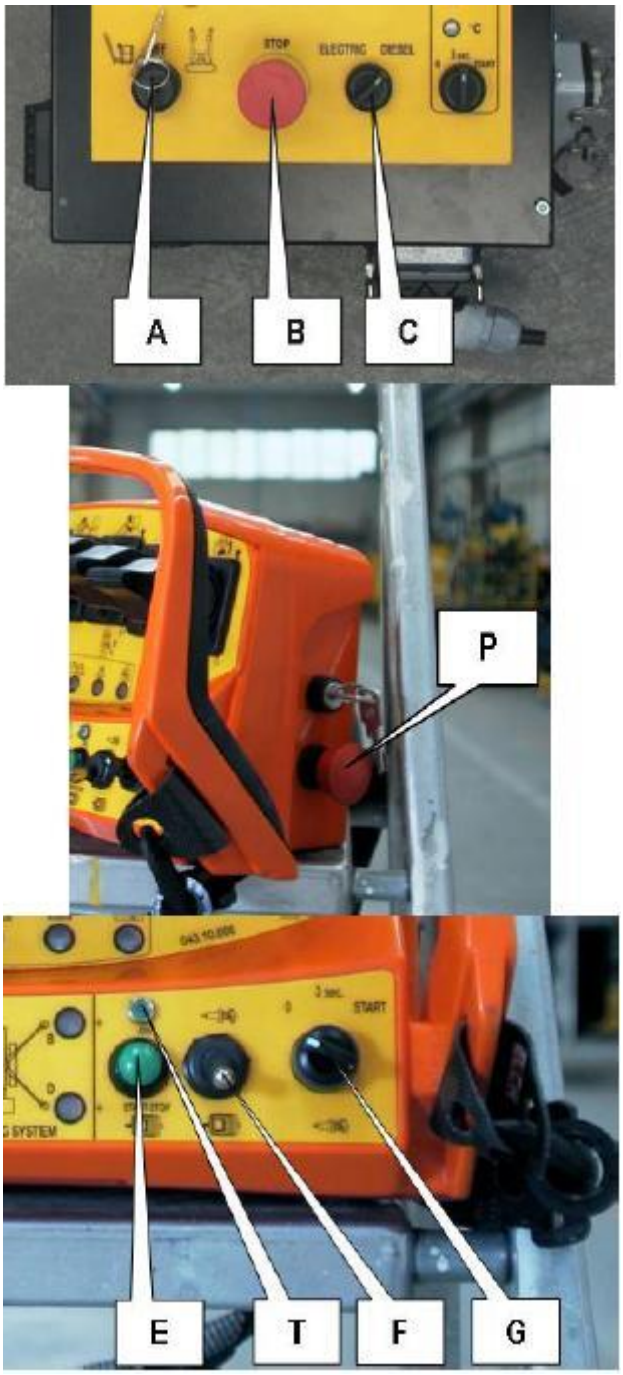


Fig. 17

5.4.1. Heat engine start-up

By turning starting switch **G** on the platform control panel:
- In “0” position the heat engine is off;
- In “3 sec” position the plugs pre-heating takes place (only for diesel engine);
- In “Start” position the motor starts.

Do not insist on the starting position for longer than 3 seconds. In case of failed start, check the fuel level and read the use and maintenance manual of the motor.

Do not try to start the motor if it is already running. This operation may cause the pinion of the starter to break (under normal conditions the control system blocks this operation).
In the event of operational faults, check the motor warning lights and read the Use and Maintenance manual of the motor.

NOTE: The heat engine can be started only if the dead-man pedal or dead-man button are not pressed. This means that the motor can be started only if the platform green warning light ON is flashing.

5.4.2. Starting the 230V electric pump (OPTIONAL)

Diesel-powered models can be equipped, on request, with a 230V electric pump.

To start the electric pump:
- Insert plug **X** into the 230V socket of a power cord connected to a mains socket complying with all standards in force;
- Set switch **Y** shown in figure to ON position;
- To start the electric pump using the platform controls, press green button **E**. The engine is started when green warning light **T** is on.

When the electric pump is on, a battery charger starts automatically to keep the battery charge level.

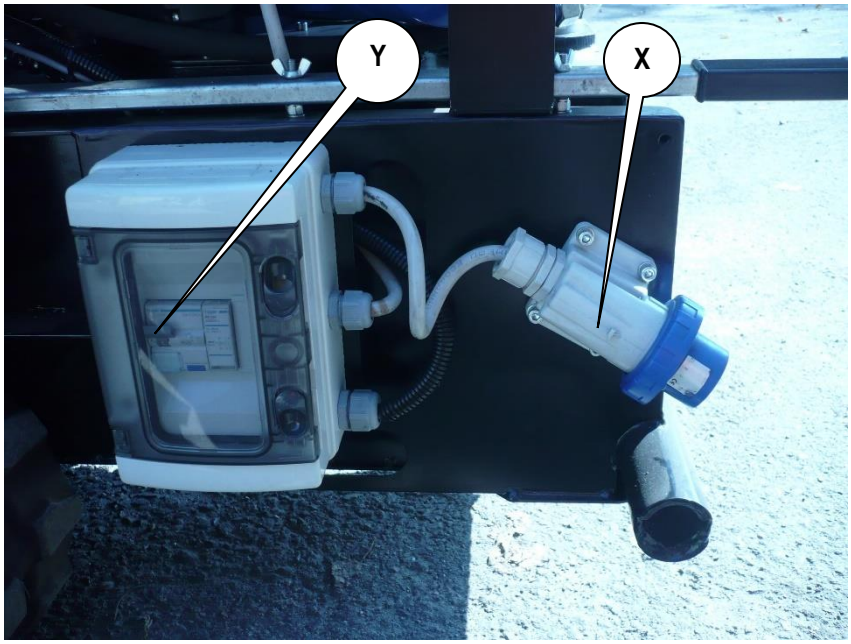


Fig. 18

NOTE: The operations carried out with 230V electric pump are slightly slower than those with heat engine.

WARNING!!
Always check the position of the power cord during the movements.
Disconnect all electric power supplies before opening the boxes.

Connect the battery charger to the power mains having all protections according to the current standards in force and with the following features:

- **Power voltage 230V ± 10%**
- **Frequency 50÷60 Hz**
- **Activated grounding line.**
- **Magneto-thermic switch and residual current device ("circuit breaker")**

Moreover:

- **Do not use extension leads exceeding 5 metres to connect the battery charger to the mains.**
- **Use a cable of suitable section (min 3x2.5 mm^2).**
- **Do not use rolled-up cables.**

5.5. Machine stop

5.5.1. Normal stop

In normal operating conditions:

- By releasing the controls the operation is stopped. Stop occurs within a time limit set in the factory, which guarantees smooth braking.
- By releasing the dead-man pedal located on the platform, the operation is immediately stopped. In the event of an immediate stop, braking is sudden.

5.5.2. Emergency stop button

Should it be necessary, the operator may immediately stop all machine functions from both platform and ground control station.

From the platform control station/wire control:

- press the emergency stop button on the control panel and the machine is turned off.
- By releasing the dead-man pedal, the operation is immediately stopped. In the event of an immediate stop, braking is sudden.

On the ground control panel:

- press the emergency stop button on the ground control panel and the machine and the heat engine will be turned off.

To resume the operations:

From the platform control station/wire control:

- turn the emergency stop button of 1/4 turn clockwise;

On the ground control panel:

- turn the emergency stop button of 1/4 turn clockwise;

5.5.3. Heat engine stop

In order to stop the heat engine:

From the platform control station/wire control:

- Turn the starter key anticlockwise to position “0”.
- Otherwise, press the emergency stop button.

On the ground control panel:

- Turn the starter key anticlockwise to position “0”.
- Otherwise, press the emergency stop button.

Do not stop the motor when the r.p.m. is high. Before stopping the motor wait until the r.p.m. is at the lowest.

5.5.4. Stopping the 230V single-phase electric pump (OPTIONAL)

To stop the electrical pump (optional):

From the platform control station/wire control:

- Press the green start/stop button
- Otherwise, press the emergency stop button.

On the ground control panel:

- ON-OFF locking key selector
- Otherwise, press the emergency stop button.

5.6. Emergency manual controls

This function is to be used only in emergency situations, when no motive power is available.

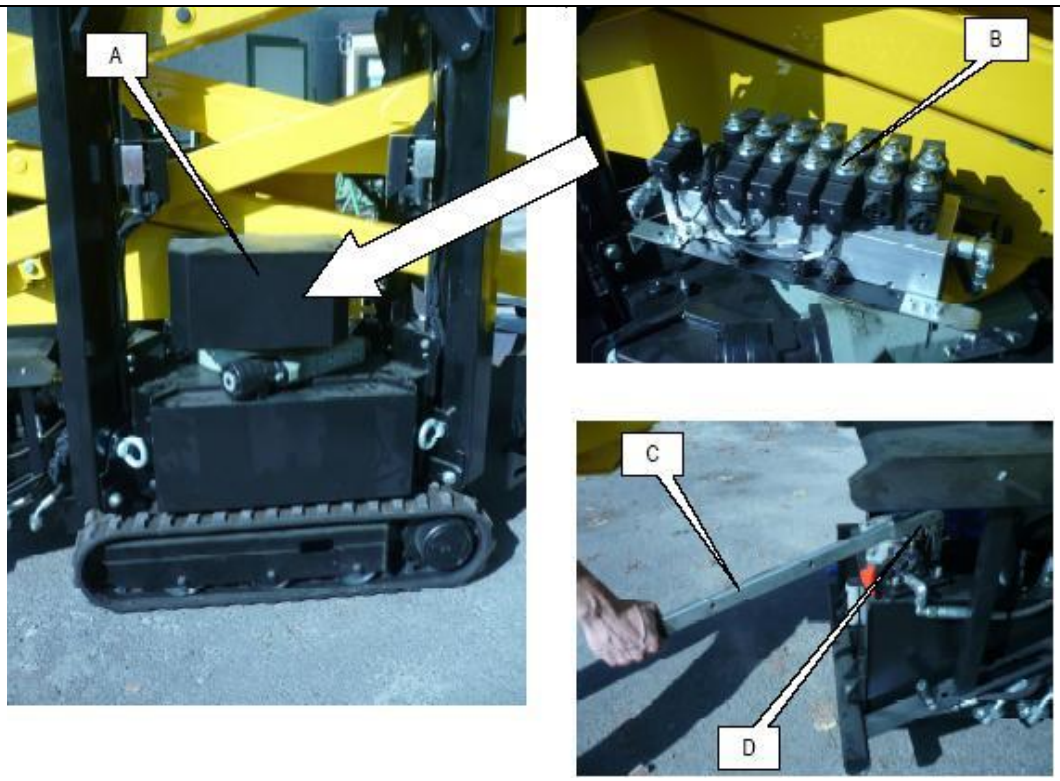


Fig. 19

In case of fault in the electric or hydraulic system, carry out the following emergency procedures:

1. Open casing **A** by unscrewing the knobs on the sides;
2. Completely unscrew knurled knob of the solenoid valve (example **B**) relevant to the movement you wish to achieve (see below correspondence between name of solenoid valves and achieved movements);
3. Remove lever **C** from its housing on the structure and insert it on manual pump **D**;
4. Activate the emergency pump.
5. Check the correct execution of this procedure.

Solenoid valves and relevant movements:

- EV4 = Pantograph lifting/lowering (lower boom)
- EV5 = Pantograph lifting/lowering (upper boom)
- EV6 = Telescopic boom extension
- EV7 = Telescopic boom retraction
- EV12 = Turret right rotation
- EV13 = Turret left rotation
- EV14 = Lifting upper boom
- EV15 = Lowering upper boom
- EV16 = Levelling cage forward
- EV17 = Levelling cage backward
- EV18 = Lifting Jib
- EV19 = Lowering Jib
- EV23/25/27/29 = Outriggers up
- EV24/26/28/30 = Outriggers down
- EV42 =Closing tracks (optional)
- EV43 =Opening tracks (optional)

WARNING: The emergency control can be stopped at any moment by releasing the knob or by stopping the pump.

Once the emergency manoeuvre has been carried out, the knurled knobs must be set to their initial position again in order to resume the operations (in normal position the knobs are completely screwed).
The knurled knobs operating the outriggers are sealed; to carry out the emergency movement of the outriggers, remove the seal.

WARNING!
It is absolutely forbidden to operate the outriggers by means of emergency controls if any operators are on the platform. The emergency control of the outriggers is allowed only with platform at ground and nobody and nothing on the platform. Risk of overturn.

WARNING!
It is absolutely forbidden to operate the widening and narrowing operations of the tracks (optional) by emergency controls if any operators are on the platform. The emergency control of the outriggers is allowed only with platform at ground and nobody and nothing on the platform. Risk of overturn.

5.7. Socket (OPTIONAL) for electric tool connection and single-phase electric pump powering (OPTIONAL)

The platform is equipped with a socket (**A - optional**) (220230V AC) enabling the operator to connect the electric tools necessary to carry out his operations and to power the (OPTIONAL) single-phase electric pump and with a compressed air inlet (**D**)".

To activate the electric line (see pictures above) introduce a cable into the plug (**A**) connected to the 230V AC 50 Hz mains, with all protections according to the current standards in force. If there is the circuit breaker switch (optional), to activate the electric line set the switch (**B**) to ON position. It is advisable to check the earth-leakage circuit breaker by means of the specially provided TEST button. Now socket (**C**) is powered and can be used.

To activate the compressed air line, insert a tube connected to the air system into the inlet (**D**). Now compressed air is available in the platform inlet (**E**).

The plugs and sockets equipped on standard machines comply with EEC standards and can therefore be used in EU member countries.
On request the machine can be equipped with plugs and sockets in compliance with local standards or with particular needs.

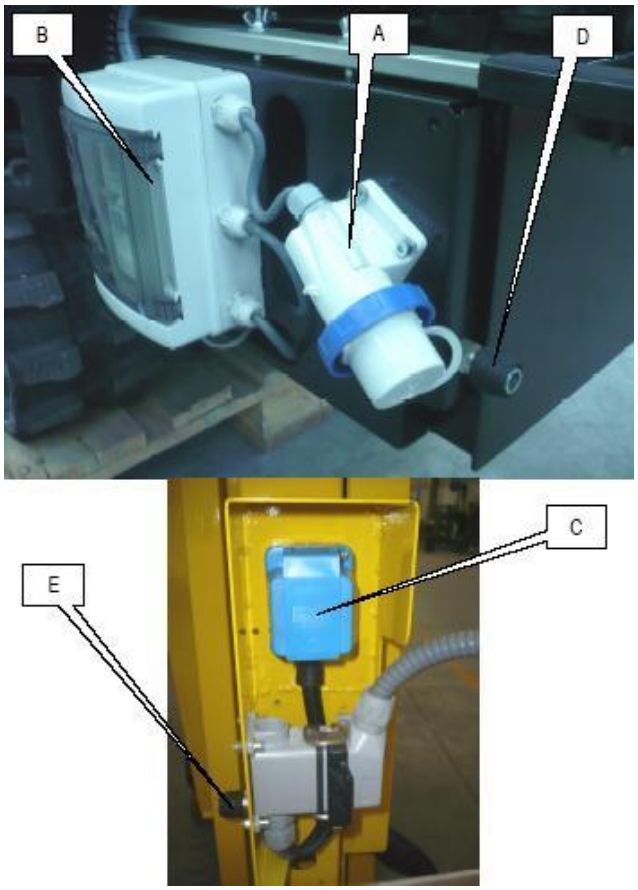


Fig. 20

Connect to the power mains having the following features:

- **Power voltage 230V ± 10%**
- **Frequency 50÷60 Hz**
- **Activated grounding line.**
- **Working protection devices according to current standards in force.**
- **Do not use extension leads exceeding 5 metres to connect to the mains.**
- **Use a cable of suitable section (min 3x2.5 mm^2).**
- **Do not use rolled-up cables.**

5.8. Fuel level and re-fuelling

Before using the thermic propulsion check the fuel level in the tank.

This operation is to be carried out by visually checking the fuel level after unscrewing the filler cap.

- Visually check the fuel level before starting to work.
- Keep the fuel tank and the motor clean.

5.9. End of work

After stopping the machine according to the instructions given in the previous paragraphs:

- Always set the machine to rest position (platform completely lowered).
- Press the emergency Stop button on the ground control panel.
- Remove the keys from the control panel to prevent unauthorized people from using the machine.
- re-fuelling.

6. HANDLING AND CARRYING

6.1. Handling

To handle the machine in normal operating conditions, follow the instructions given in chapter "USE INSTRUCTIONS" under paragraph "Drive".

When platform is completely lowered (regardless of JIB position, even raised) you can operate the machine (carry out drive) using the drive controls.
With one or more outriggers resting on the ground, drive is inhibited.

WARNING!
Before carrying out any displacement operation, verify that no people are in proximity of the machine and in any case proceed with the utmost caution.

Before handling the machine check that the connection plugs are disconnected from the power supply source. On machines with AC electric pump (optional) always check the position of the power cord during the movements.

Check that there are no holes or steps on the floor and bear in mind machine overall dimensions.

Do not use the machine to tow other vehicles.

if the machine is equipped with the option "extending tracks", check that the tracks are completely extracted or fully retracted depending on the type of work to do. It is recommended to use the narrow track width only when required to cross reduced spaces.

6.2. Carrying

In order to carry the machine to the various working sites, follow the instructions given below. Considering the large dimensions of some models, before carrying, it is recommended to inquire about the overall dimension limits for road transport in force in your country.

Before carrying the machine, turn it off and remove the keys from the control panels. No people are allowed in proximity to or on the machine to avoid any risks deriving from sudden movements.
For safety reasons never lift or tow the machine by means of its booms or platform.
Loading operations are to be carried out on a flat surface with a suitable capacity, after setting the platform to rest position.

To carry the machine the operator shall load it onto a vehicle either:

- **By means of loading ramps and translation controls** to load it directly onto the vehicle (if ramp slope is within the gradeability described in paragraph “TECHNICAL FEATURES” and capacity is adequate to machine weight) according to the instructions given in paragraph “USE INSTRUCTION” under paragraph “Translation” for correct operation of drive controls.
  Block the vehicle using the parking brake. Make sure there are no people nearby. Position the pair of ramps of suitable dimensions and set them in line with the machine tracks (check capacity). Make sure the ramps slope is not exceeding the machine gradeability and ramps are perfectly free from grease, mud, snow or ice.

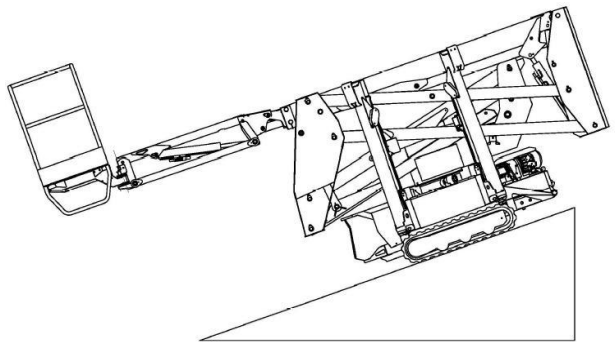
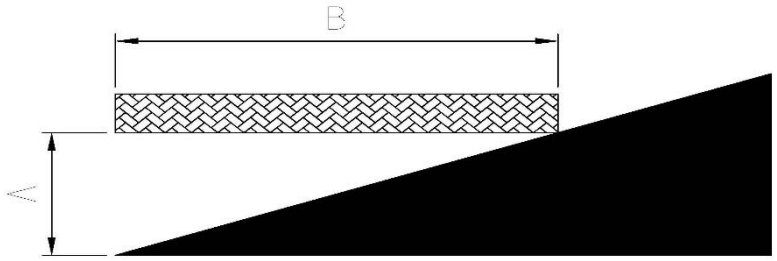
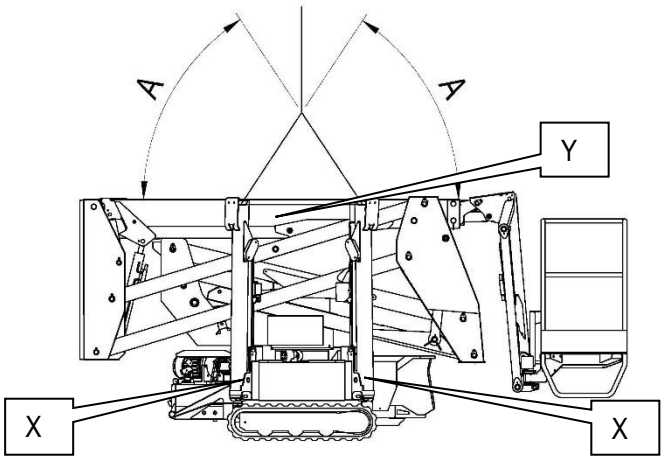


Fig. 21

Using the ground controls lift the Jib so as to avoid any accidental collisions with the ground (see paragraph “GROUND CONTROL STATION”).
Control the drive operations **very slowly**.
We recommend you to secure the machine parts indicated by arrow **X** using suitably dimensioned bands after loading the machine on vehicles for transport.
The gradient can be determined using an electronic level or empirically as described below: position a wood board of known length on the gradient to be measured. Position a spirit level on the wood board and lift the downstream extremity of the latter until it is level. Now measure the distance between the board and the ground (**A**), divide this by the length of the board (**B**) and multiply by 100. The following image sums up the method.



- **By means of crane:**
  Make sure the lifting capacity of the device is suitable to lift the machine weight.
  Use intact bands, ropes or chains suitable to lift the machine considering the opening angle “A” which must be HIGHER OR EQUAL to 60° (angle included between the diagonal rope and horizontal line of the machine).
  Lift the outriggers completely and hook the ropes to them near the pads using the four eyebolts (**G**).



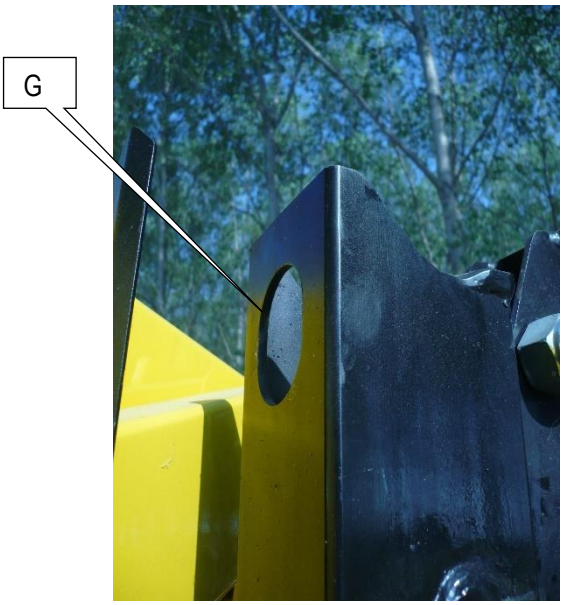


Fig.22

IT IS FORBIDDEN to lift the machine using different systems from those indicated in the previous paragraphs.
Once the machine has been placed on the vehicle platform, secure it with bands over the second boom as indicated in X, and protect painting by inserting a protection element between the band and the boom.

Before carrying the machine check the stability grade.

During the operations of loading/unloading of the machine by means of ramps, if the machine is equipped with the EXTENDING TRACKS option, always use the larger track width.

7. MAINTENANCE

- **Always carry out maintenance operations with machine at a standstill position and after having removed the key from the control panel with the platform in rest position.**
- **The maintenance operations described below refer to a machine with ordinary working use. In case of difficult conditions of use (extreme temperatures, corrosive environments, etc.) or following long machine inactivity, it will be necessary to contact the AIRO assistance service to change the intervention schedule.**
- **Repairs and maintenance operations are to be carried out by trained and authorised personnel only. All maintenance operations should be carried out in compliance with the current work safety regulations (work places, personal protection equipment, etc...).**
- **Carry out only the maintenance and adjustment operations described in this user manual. In emergency situations (e.g. breakdown, wheels replacement) contact Our Technical Support.**
- **During interventions, check that the machine is completely locked. Before carrying out maintenance operations inside the lifting structure, check that this is off-line in order to avoid accidental lowering of the booms.**
- **Remove the battery cables and provide batteries with a suitable protection during welding operations.**
- **Carry out maintenance operations on the heat engine only when it is not running and sufficiently cool (except for those operations, such as oil change, which must be performed when the motor is hot). Risk of burns in contact with hot parts.**
- **Do not use petrol or other flammable materials to clean the heat engine.**
- **For maintenance operations on the heat engine, read the manufacturer's manual of the motor supplied on machine purchase.**
- **In case of replacement, use original spare parts only or spare parts approved by the manufacturer.**
- **Disconnect the 230V AC and/or 380V AC sockets, if any.**
- **The lubricants, hydraulic oils, electrolytes and all detergent products should be handled with care and disposed of in safety according to the current regulations. A prolonged contact with the skin may cause irritations and dermatosis; wash with water and soap and rinse thoroughly. Contact with eyes, especially with electrolytes, is also dangerous; rinse with water thoroughly and call the doctor.**

WARNING!
NEVER MODIFY OR TAMPER WITH MACHINE PARTS TO IMPROVE THE MACHINE PERFORMANCE AS THIS MAY AFFECT ITS SAFE OPERATION.

7.1. Machine cleaning

To clean the machine, use non-pressurized water jets after properly protecting the following parts:

- the control panel (both platform and ground).
- the electric ground control unit and all electric boxes in general;
- The electric motors.

Do not use pressurized water jets (high-pressure cleaners) to clean the machine.

After washing the machine, always:

- Dry the machine.
- Check integrity of plates and stickers.
- Lubricate the articulated joints equipped with greaser.

7.2. General maintenance

Below are listed the main maintenance jobs to be done and the relevant schedule (the machine features an hour meter).

Operation	Frequency
Screw tightening (see paragraph "Various adjustments")	After the first 10 working hours
Oil level check in hydraulic tank	After the first 10 working hours
Check of the battery state (charge and liquid level)	Every day
Check of deformation of tubes and cables	Every week
Check of stickers and code plates	Every month
Articulated joints and sliding blocks greasing	Every month
Check of heat engine fixing on elastic supports	Every month
Emergency devices efficiency check	Every month
Electric connections check	Every year
Hydraulic connections check	Every year
Periodic operation check and structure visual check	Every year
Screw tightening (see paragraph "Various adjustments")	Every year
Check of drive reduction gear oil change	Every year
Telescopic boom sliding blocks adjustments	Every year
Tracks condition and tension check	Every year
Pressure relief valve operation check	Every year
Brake system operation check	Every year
Inclinometer operation check and adjustment	Every year
Operation check of Microswitch M1A	Every year
MRT Microswitch operation check	Every year
M2A-M2B Microswitches operation check	Every year
STP1÷STP4 Microswitches operation check	Every year
“Dead-man” pedal and button safety system operation check.	Every year
Hydraulic filter replacement	Every two years
Drive reduction gear oil change	Every two years
Total oil change in hydraulic tank	Every two years

As it is possible to install different types of heat engines, refer to the instructions manual of the motor manufacturer for all maintenance operations.

TO SEND THE MACHINE TO THE MANUFACTURER WITHIN 10 YEARS OF WORK FOR A COMPLETE CHECK

BIODEGRADABLE OIL KIT
PANOLIN BIOMOT 10W40

7.2.1. Various adjustments

Check the conditions of the following components and, if necessary, tighten:

1) Securing rings of the structure pins;
2) drive geared motor fixing screws;
3) Fixing nuts rolls and tracks pinions and extending track support fixing pins (optional);
4) cage fixing screws;
5) Hydraulic fittings
6) Elastic supports of heat engine
7) turntable fixing screws

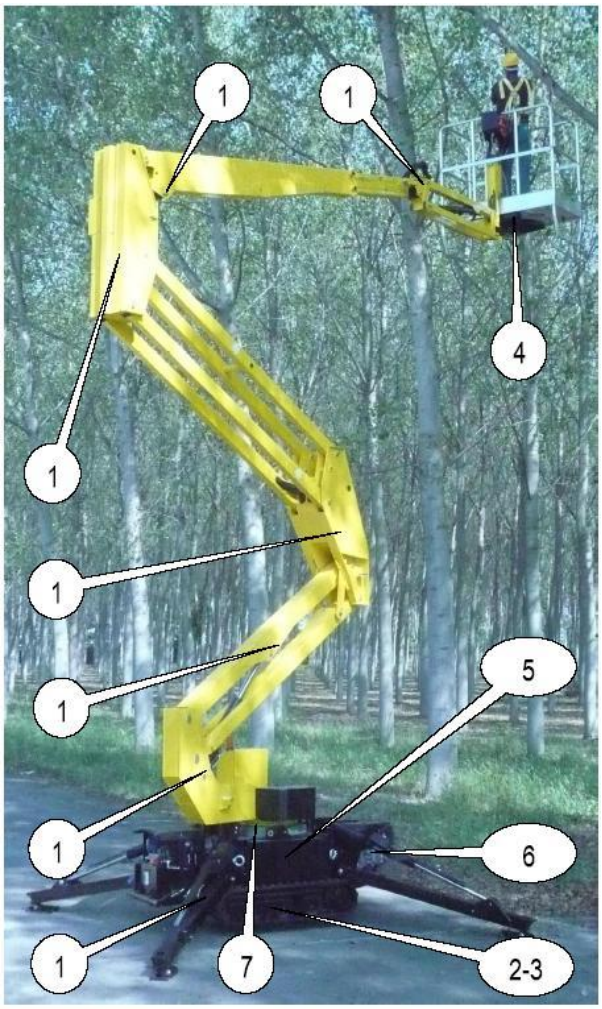


Fig. 23

TORQUE WRENCH SETTING (S.I. thread, normal pitch)						
Class	**8.8 (8G)**		**10.9 (10K)**		**12.9 (12K)**	
Diameter	**kgm**	**Nm**	**kgm**	**Nm**	**kgm**	**Nm**
M4	0.28	2.8	0.39	3.9	0.49	4.9
M5	0.55	5.5	0.78	7.8	0.93	9.3
M6	0.96	9.6	1.30	13.0	1.60	16.0
M8	2.30	23.0	3.30	33.0	3.90	39.0
M10	4.60	46.0	6.50	65.0	7.80	78.0
M12	8.0	80.0	11.0	110	14.0	140
M14	13.0	130	18.0	180	22.0	220
M16	19.0	190	27.0	270	33.0	330
M18	27.0	270	38.0	380	45.0	450
M20	38.0	380	53.0	530	64.0	640
M22	51.0	510	72.0	720	86.0	860
M24	65.0	650	92.0	920	110	1100

7.2.2. Greasing

Grease all articulated joints equipped with greaser (or predisposition for greaser) at least every month.

At least once a month, using a spatula or a brush, lubricate the telescopic extension.

Moreover, remember to grease the articulated joints in the following cases:

- After washing the machine.
- Before using the machine again after a long time-interval.
- After using the machine in adverse environmental conditions (high humidity levels; presence of dust; coastal areas, etc).

Grease all points indicated in the picture aside (and all articulated joints equipped with greaser) with grease type

ESSO BEACON-EP2 or similar.

(OPTIONAL BIODEGRADABLE OIL KIT)
PANOLIN BIOGREASE 2

Fig.24

7.2.3. Hydraulic circuit oil level check and change

Check after the first 10 working hours and, afterwards, at least once a month, the level in the tank by means of transparent cap **A** and make sure the level is visible.
Check when boom is completely lowered and outriggers completely lifted.
If necessary, top up until max. level is reached.

Completely change the hydraulic oil at least every two years.

To empty the tank:

- lower the platform completely, retract the telescopic boom extension and lift the levelling outriggers;
- stop the machine by pressing the emergency stop button of the ground control panel.
- Place a container under cap (**B**), under the tank, and unscrew it.

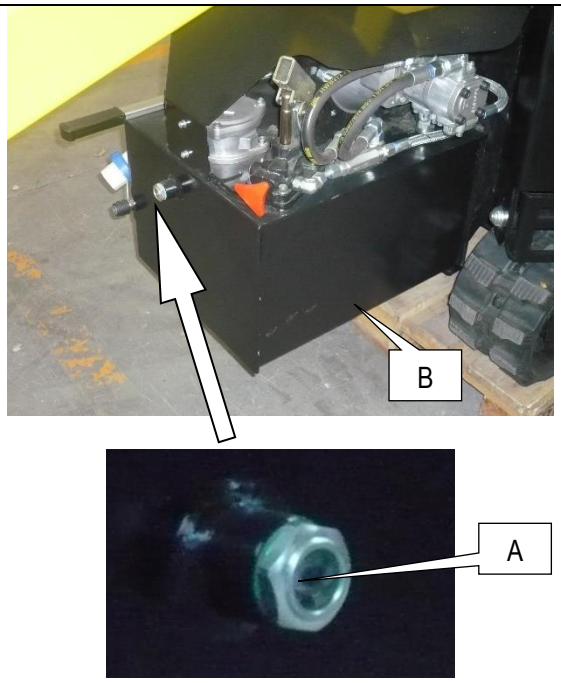


Fig. 25

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

HYDRAULIC SYSTEM OIL			
BRAND	**TYPE** -20°C +79°C	**TYPE** -30°C +48°C	**REQUIRED QUANTITY**
SYNTHETIC OILS			28 Litres
ESSO	Invarol EP46	Invarol EP22	
AGIP	Arnica 46	Arnica 22	
ELF	Hydrelf DS46	Hydrelf DS22	
SHELL	Tellus SX46	Tellus SX22	
BP	Energol SHF46	Energol SHF22	
TEXACO	Rando NDZ46	Rando NDZ22	
Q8	LI HVI 46	LI HVI 22	
PETRONAS	HIDROBAK 46 HV	HIDROBAK 22 HV	
BIODEGRADABLE OILS - OPTIONAL			
PANOLIN	HLP SINTH E46	HLP SINTH E22	

Do not dispose of used oil in the environment. Comply with the current local standards.

The lubricants, hydraulic oils, electrolytes and all detergent products should be handled with care and disposed of in safety according to the current regulations. A prolonged contact with the skin may cause irritations and dermatosis; wash with water and soap and rinse thoroughly. Contact with eyes, especially with electrolytes, is also dangerous; rinse with water thoroughly and call the doctor.

7.2.3.1. Biodegradable hydraulic oil (Optional)

At the request of the customer, the machines can be supplied with biodegradable hydraulic oil compatible with the environment. Biodegradable hydraulic oil is completely synthetic, without zinc, non-polluting and highly efficient with saturated ester base, combined with special additives. The machines with biodegradable oil use the same component parts as standard machines, but the use of such type of oil is best taken into account from machine construction.
In case of wanting to change from mineral-oil based hydraulic oil to "bio" oil, the following procedure must be followed.

7.2.3.2. Emptying

Empty the hot hydraulic oil for entire system operation (oil tank, cylinders, large-volume pipes).

7.2.3.3. Filters

Change the filtering inserts. Use standard filters as indicated by the manufacturer.

7.2.3.4. Washing

After completely emptying the machine, fill with a nominal quantity of "bio" hydraulic oil.
Start the machine and perform all work movements at low revs for at least 30 minutes.
Drain the liquid from the system as indicated at 7.2.3.
Warning: During the entire washing procedure, avoid air entering the system.

7.2.3.5. Filling

After washing, fill the hydraulic circuit, bleed and check the level.
Bear in mind that contact of fluid with the hydraulic pipes can cause swelling.
Also remember that contact of fluid with the skin can cause reddening or irritation.
Also use suitable PPE during these operations (e.g., protective eyewear and gloves).

7.2.3.6. Commissioning / check

"Bio" oil behaves regularly, but it must be checked by taking a sample at set intervals according to the indications provided below:

CHECK FREQUENCY	NORMAL DUTY	HEAVY DUTY
1st CHECK AFTER	50 OPERATING HOURS	50 OPERATING HOURS
2nd CHECK AFTER	500 OPERATING HOURS	250 OPERATING HOURS
3rd CHECK AFTER	1000 OPERATING HOURS	500 OPERATING HOURS
FOLLOWING CHECKS	1000 HOURS OR 1 OPERATION YEAR	500 HOURS OR 1 OPERATION YEAR

The fluid state is therefore constantly monitored, thus allowing its use until its features decay. Normally, in the absence of contaminating agents, the oil is never completely changed, but only occasionally topped-up.

The oil samples (at least 500ml) must be taken with the system at operating temperature.
It is recommended to use new and clean containers.

The samples must be sent to the "bio" oil supplier.
For more dispatch details, contact Your nearest distributor.

Copies of the analysis report must be kept in the check register. This is mandatory.

7.2.3.7. Mix

Mixtures with other biodegradable oils are not allowed.
The remaining amount of mineral oil must not exceed 5% of total filling quantity as long as the mineral oil is suitable for the same use.

7.2.3.8. Micro-filtration

When making the conversion on second-hand machines, always take into account the high dirt dissolution power of biodegradable oil.
After conversion, the dissolution of fault-causing deposits in the hydraulic system could occur. In extreme cases, washing the seal housings can cause greater leaks.
To prevent faults as well as avoid any negative effect on oil quality, after the conversion, it is best to filter the hydraulic system using a micro-filtration system.

7.2.3.9. Disposal

The biodegradable oil, inasmuch as saturated ester, is suitable for both thermal and material re-use.
It therefore provides the same disposal / re-use options as mineral based old oil.
Such oil can be incinerated whenever local laws allow.
Recycling the oil is preferable to disposal on dumps or incineration.

7.2.3.10. Topping up

The oil must **ONLY EVER** be topped up with the same product.

Note: Max water contamination is 0.1%.

During oil change or topping up, do not discard the hydraulic oil in the environment.

7.2.4. Hydraulic filter replacement

7.2.4.1. Suction filters

All models are equipped with suction filters (see picture aside) installed inside the tank at the base of the suction tubes, which have to be replaced at least every two years.

To replace the suction filters installed inside the tank (see figure):

- Stop the machine by pressing the emergency stop button of the ground control unit.
- Unscrew the cover from the tank;
- extract the cover from the tank.
- Unscrew filter from the suction tube and replace.
- to restore the initial condition, carry out the above-mentioned operation in reverse order.

During these operations a quantity of oil may leak out. In this case remove the oil by means of cloths or let the oil flow by placing a suitable container under it.

Fig. 26

7.2.4.2. Return filter

The return filter directly flanged on the tank is equipped with a visual clogging indicator. During normal operation, the visual indicator is in the green zone. When the indicator is in the red zone, the filtering cartridge is to be replaced.
However, the filtering cartridge should be replaced at least every two years. To replace the filtering cartridge:

- Stop the machine by pressing the emergency stop button on the ground control unit.
- Remove the filter cover.
- Remove the cartridge.
- Fit the new cartridge paying attention to the correct position of the retaining spring and place the cover again.

Fig. 27

During these operations a quantity of oil may leak out. In this case remove the oil by means of cloths or let the oil flow by placing a suitable container under it.

⚠ **IT IS FORBIDDEN to start the machine when the filter cover is missing or not properly tightened.**

Replace the filters using only original accessories available at our Technical Support.
Do not re-use used oil and do not leave it in the environment, but dispose of in compliance with local standards in force.
Once the filters have been replaced, check the hydraulic oil level in the tank.

7.2.5. Drive reduction gear oil level check and change

The oil level should be checked at least once a year. Position the machine until the two caps (**A** and **B**) reach the position indicated in the picture aside. Check the level by means of cap (**A**). Oil check must be carried out when the oil is hot. The level is correct when the reduction gear body is full of oil up to the cap limit (**B**). Should a lubricant volume higher than 10% be topped up, check that there is no oil leakage in the system. Do not mix different types of oil, of the same or of different brands. Do not mix mineral oils and synthetic oils. The oil must be changed the first time after 50-100 working hours, and afterwards after every 2500 working hours or at least every two years. Depending on the actual operating conditions, these intervals may be varied for each single case. While changing the oil it is advisable to wash the internal part of the cover with a fluid recommended by the lubricant producer. To avoid sludge deposits, the oil must be changed when the reduction gear is hot.

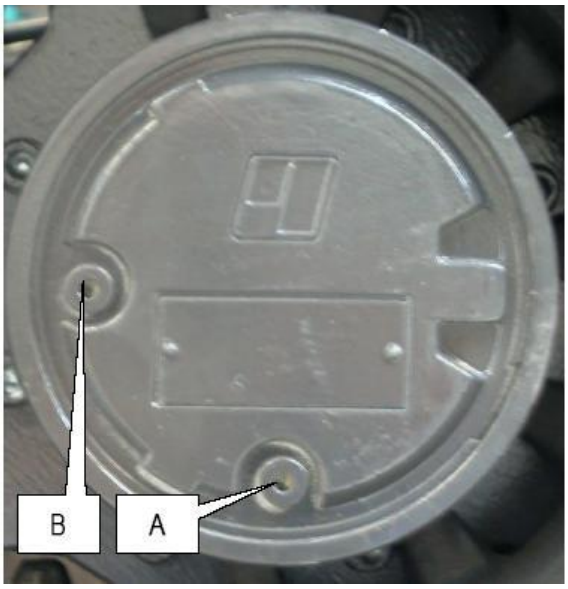


Fig. 28

To change the oil unscrew cap **A**, and place a container of a 2-litre capacity under it. Empty the reduction gear body completely, clean it as described above and then fill it up to the limit level of cap **B**.

LUBRICATING OIL FOR DRIVE REDUCTION GEARS		
BRAND	**TYPE**	**QUANTITY**
SYNTHETIC OILS		0.4 litre for each reduction gear
ESSO	Compressor Oil LG 150	
AGIP	Blasia S 220	
CASTROL	Alpha SN 6	
IP	Telesia Oil 150	
BIODEGRADABLE OILS - OPTIONAL		
PANOLIN	Biogear 80W90	

7.2.5.1 Checks in the use of synthetic biodegradable oil in drive reduction gears

Quarterly or every 500 hours check the oil level. In case of need top up. If you notice that more than 10% of oil lacks in the reduction gear, check if there are any leaks.
Change the oil in the rotation reduction gear after the first 100 hours of operation and then every 6000 hours or every 3 years. Depending on the actual operating conditions, these intervals may change.
When changing the oil, it is recommended that you run a wash cycle inside the cover.
Change the oil when the reduction gear is hot.
Mixtures of different oils (either biodegradable or mineral) even of the same brand are not allowed.

During oil change or topping up, do not discard the hydraulic oil in the environment.

7.2.6. Telescopic boom sliding blocks clearance adjustment

Check the wear of the telescopic boom sliding blocks every year.
The correct clearance between the blocks of the boom is 0,5-1 mm; in case of higher clearance tighten the sliding blocks as follows:

- Remove locking pin **A**;
- Screw the sliding block **B** with a screwdriver for single-slot screws until the above mentioned clearance is reached.
- Insert locking pin **A**;

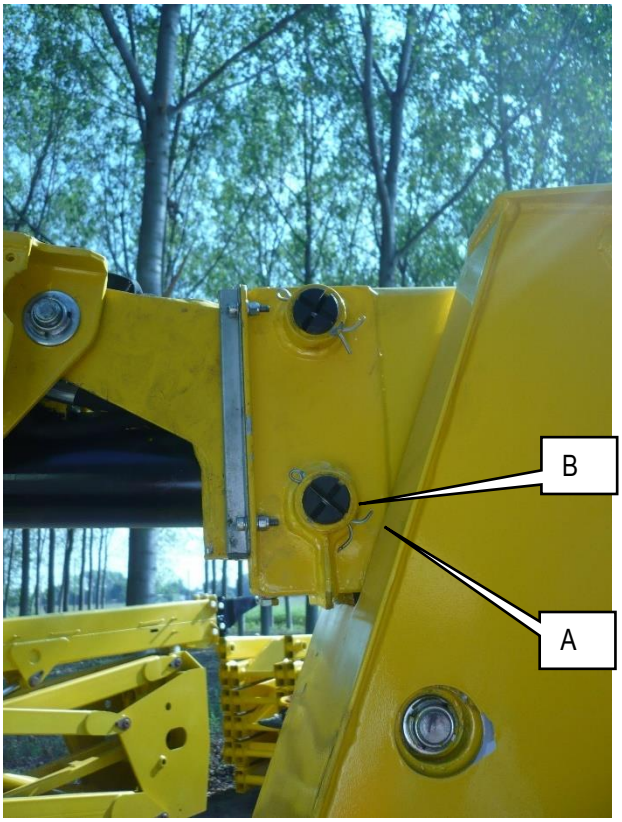


Fig. 29

WARNING!
AS THIS OPERATION IS VERY IMPORTANT IT IS TO BE CARRIED OUT BY SKILLED TECHNICIANS ONLY.

7.2.7. Track condition and tension check

The life of the rubber tracks depends on the ground on which the machine is used. The tracks must be replaced when the tread ribs reach a height lower or equal to 10-12 mm, or if evident cuts and/or tears are visible.

For a longer life of the tracks, check their tensioning at least once a month. To check the track tensioning:

- lift the chassis from the ground using the stabilization control;
- visually check the clearance of the tracks;
- in case of extremely high clearance, tension the tracks by pumping lubricating grease (type ESSO BEACON EP2 or equivalent) in the special valve (**A**) which can be accessed through slot (**B**) using a pneumatic pumping system.

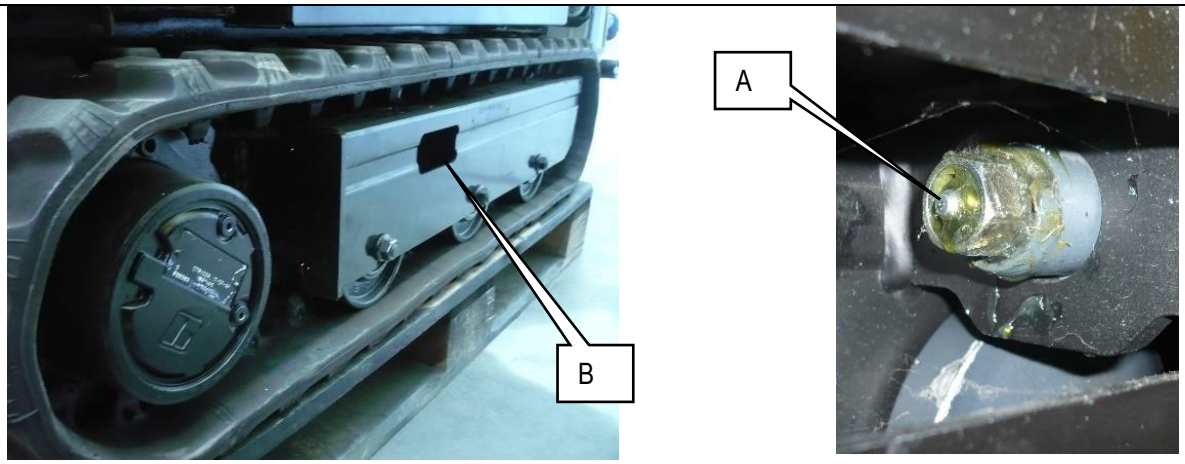


Fig. 30

⚠ **AS THIS OPERATION IS VERY IMPORTANT IT IS TO BE CARRIED OUT BY SKILLED TECHNICIANS ONLY**

7.2.8. Pressure relief valve adjustment and operation check

The pressure relief valve described controls the maximum pressure. Normally, this valve does not require any adjustment, since it is calibrated at the factory before the machine is delivered.

Calibration is required:
- in case of replacement of the hydraulic block
- In case of replacement of the pressure relief valve only

Check operation at least once a year.

To check the operation of the pressure relief valve:
- Introduce a pressure gauge with full scale of at least 250 bar in the special quick coupling (1/4" BSP) **A** on the movement hydraulic block;
- Using the ground control panel, lift the machine up to the end stop.

Check the pressure value. The correct value is indicated in the chapter "Technical features"**.**

To calibrate the pressure relief valve:
- Introduce a pressure gauge with full scale of at least 250 bar in the special quick coupling (1/4" BSP) **A** on the movement hydraulic block;
- Locate the main pressure relief valve (**B**).
- Unscrew the adjusting dowel lock-nut.
- Using the ground control panel, lift the machine up to the end stop.
- Adjust the pressure relief valve by means of the adjusting dowel so as to reach the pressure value indicated in chapter "Technical Features".

Once calibration has been carried out, lock the adjusting dowel by means of the lock-nut.

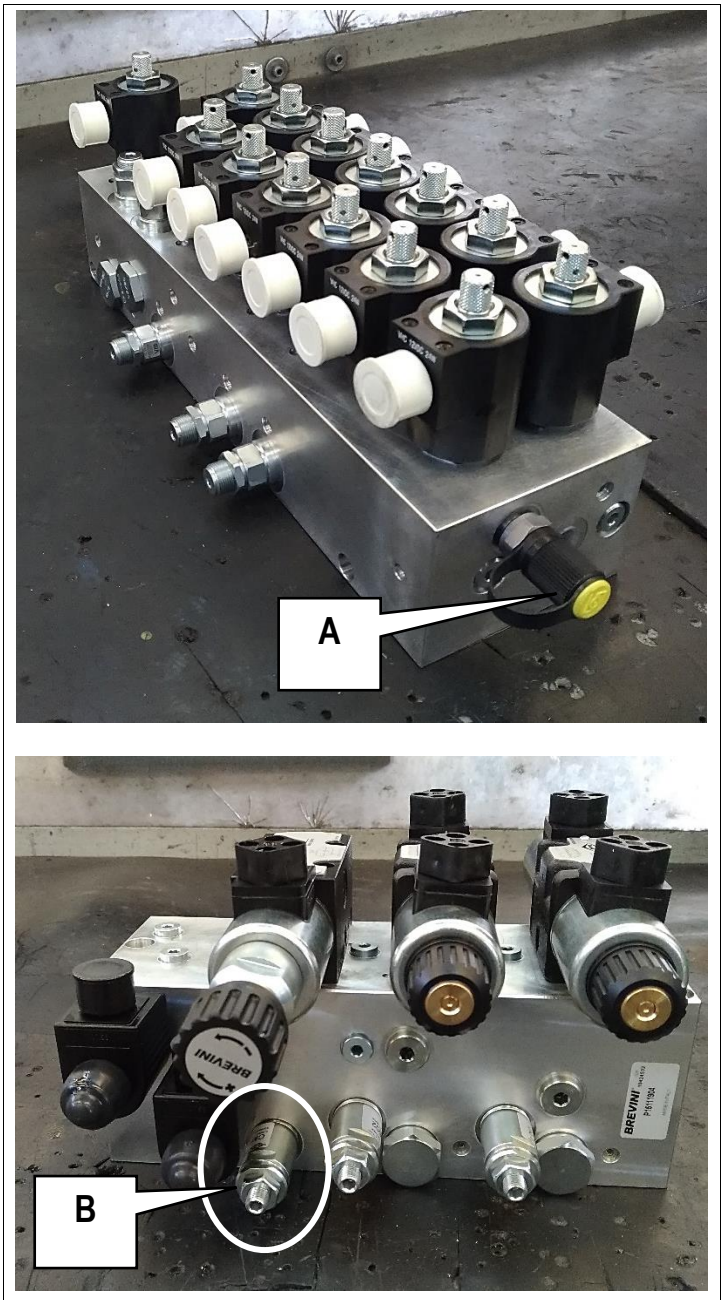


Fig. 31

WARNING!
AS THIS OPERATION IS VERY IMPORTANT IT IS TO BE CARRIED OUT BY SKILLED TECHNICIANS ONLY.

7.2.9. Inclinometer operation check

WARNING!

Usually the inclinometer does not need to be adjusted unless the electronic control unit is replaced. The equipment necessary for the replacement and adjustment of this component is such that these operations should be carried out by skilled personnel.

AS THIS OPERATION IS VERY IMPORTANT IT IS TO BE CARRIED OUT BY SKILLED TECHNICIANS ONLY.

The inclinometer does not require any adjustment since it is calibrated in the factory before the machine is delivered.
This device controls the chassis slope and when inclined over the allowed value:

- it inhibits lifting and telescopic extension;
- It warns of the instability condition by means of an audible alarm and a warning light located on the platform (see "General use instructions").
- lowering, telescopic retraction, turret rotations are possible. All at an automatically reduced speed.

The inclinometer checks the inclination with respect to the two axes (X; Y). On machine models that have the same transversal and longitudinal inclination limits, the control is carried out with reference to one axis only (X-axis).

Check operation at least once a year.

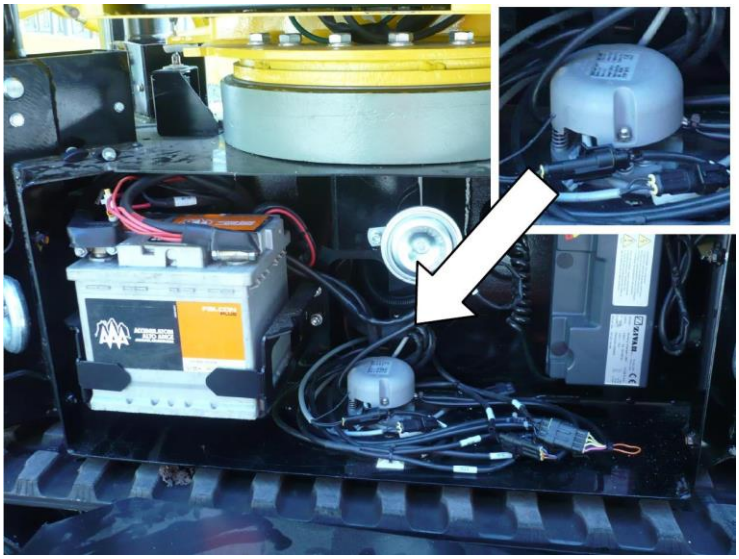


Fig. 32

To check the inclinometer operation according to the longitudinal axis (generally X-axis):

- place 2 shims (**A+10mm**, see following table) under the 2 front or rear outriggers.
- Wait three seconds (operation delay set at factory) until the danger red light and the platform audible alarm turn on.
- make sure the lifting and telescopic boom extension controls are inhibited;
- if platform is lifted make sure the lowering and cage rotation controls are available; all at an automatically reduced speed.

To check the inclinometer according to the transversal axis (normally Y-axis):

- place 2 shims (**B+10mm**, see following table) under the 2 right or left outriggers.
- Wait three seconds (operation delay set at factory) until the danger red light and the platform audible alarm turn on.
- make sure the lifting and telescopic boom extension controls are inhibited;
- if platform is lifted make sure the lowering and cage rotation controls are available; all at an automatically reduced speed.

	MODELS	
SHIMS	R13	R17
A [mm]	26	26
B [mm]	26	26

WARNING! The dimensions of shims A and B refer to max. allowed inclination as indicated in table "TECHNICAL FEATURES". To be used during the inclinometer calibration.

7.2.10. Operation check of M1 microswitches

Lifting booms are controlled by microswitch M1A placed on the first lifting boom near where the second lifting boom rests.

Check operation at least once a year.

The functions of microswitch M1A are the following:
With platform outside the rest position (M1A activated):
- If the chassis is inclined over the max. allowed inclination, lifting/extension and drive controls are inhibited;
- the outriggers and drive controls are inhibited.

In case of contact loss of one of the outriggers pads (microswitches STP…) with M1A activated:
- the stability danger alarm on the control panel on the platform/cable control lights up;
- lifting/extensions are inhibited;
- only retraction is possible but at an automatically reduced speed;

With lowered booms (M1A closed) and turret in central position (microswitch MRT closed):
- the central turret green warning light is on;
- turret rotation is inhibited;
- wire control mode controls (translation and stabilization) are available.

7.2.11. MRT microswitch operation check

The rotating turret position is controlled by microswitch MRT.

Check operation at least once a year.

With turret outside position “0” microswitch MRT is open and:
- the central turret green warning light is off;
- If the boom is lifted all movements are possible;
- If the boom is lowered, wire control mode controls (translation and stabilization) are inhibited.

With turret in “0” (MRT closed):
- The central turret green warning light is on;
- If the boom is lifted all movements are possible;
- If the boom is lowered, turret rotation is inhibited;
- If the boom is lowered, wire control mode controls (translation and stabilization) are available.

7.2.12. M2A-M2B microswitch operation check

M2A and M2B are the turret rotation microswitches in both directions. When activated, they allow the turret to rotate only in the opposite direction to which the microswitch has been activated.

Check operation at least once a year.

7.2.13. STP1-STP2-STP3-STP4 microswitches operation check.

The outriggers pads are controlled by microswitches STP1-STP2-STP3-STP4.

Check operation at least once a year.

When all pads are resting on the ground:
- all the outriggers position green warning lights are on;
- “wire control” mode controls (translation and stabilization) are inhibited;
- if no other alarms are on, the boom can be lifted.

When no pads are resting on the ground:
- all the outriggers position green warning lights are off;
- the controls of “Platform movement” mode (lifting/lowering/rotation) are inhibited;
- the controls of “Wire control” mode are available.

With one or more pads not resting on the ground:
- the outriggers position green warning lights relevant to lifted pads are off;
- “wire control” mode controls (translation and stabilization) are inhibited;
- if the boom is lifted, lifting and telescopic boom extension are inhibited; lowering and turret rotation at an automatically reduced speed are available.

7.2.14. “Dead-man” safety system operation check

The dead-man pedal and button at platform are for enabling the operation controls of the machine from the platform control panel. The operator can choose to use the most convenient enable device depending on the real position of the platform control panel.

Check operation at least once a year.

WARNING!
IN CASE OF NO OPERATION, CONTACT THE AFTER-SALES SERVICE

7.2.14.1. "Dead-man" pedal

To check the dead-man PEDAL:

- Move the drive joystick forward and backward in sequence, WITHOUT PRESSING THE “DEAD-MAN” PEDAL.
- check that the machine does not perform any movement.

- hold down the dead-man pedal for more than 10 seconds
- With the pedal pressed, move the joystick forward and backward in sequence.
- check that the machine does not perform any movement.

If the device works properly, no machine movement is possible on the platform control panel unless you press the “dead-man” pedal beforehand. If this is pressed for more than 10 seconds and no operation is performed, all movements are disabled; to operate the machine again, release the dead-man pedal and press it again.
The condition of the switch is indicated by the green led in the platform:

- Steady green led lit up — enabled control panel
- Flashing green led lit up — disabled control panel

7.2.14.2. "Dead-man" button

To check the dead-man BUTTON:

- move the drive joystick forward and backward in sequence, WITHOUT PRESSING THE DEAD-MAN BUTTON
- check that the machine does not perform any movement

- press “dead-man” button, release it and wait more than 3 seconds
- move the joystick forward and backward in sequence
- check that the machine does not perform any movement

If the device works properly, no machine manoeuvre is possible from the platform control panel unless you press the dead-man button beforehand. If this is pressed for more than 3 seconds and no operation is performed, all movements are stopped; to operate the machine again, release the “dead-man” button and press it again.
The condition of the switch is indicated by the green led in the platform:

- Steady green led lit up enabled control panel
- Flashing green led lit up disabled control panel

7.3. Starter battery

The battery is one of the most important elements of the machine. It is recommended to keep it in an efficient condition to increase its useful life, to avoid faults and to reduce the management costs of the machine.

The starter battery is for:

- Powering the machine control circuits.
- Starting the heat engine.

WARNING!
Do not approach the battery with flames. Risk of deflagration due to the formation of explosive gases.
Do not carry out temporary or irregular electric connections.
The terminals must be tightened and without deposits. The cables must be provided with a good insulation.
Keep the battery cleaned, dry and free of oxidation products by using antistatic cloths.
Do not place tools or any other metal object on the battery.

7.3.1. Starter battery maintenance

The starter battery does not require any special maintenance:

- Keep terminals clean by removing any oxidation residues.
- Check correct terminal tightening.

In case of faulty operations due to the battery, avoid any direct intervention and call the Customer Service.
To limit automatic battery discharge during periods of inactivity store the machine in environments with temperatures lower than a 30°C.

7.3.2. Starter battery recharge

Starter batteries do not require any recharge. Battery is charged by:

- the heat engine alternator during its normal working;
- an automatic battery charger which is activated along with the activation of the 230V single-phase pump (Optional).

WARNING!
Properly check the charge level of the starting battery.
The battery recharges automatically only if the heat engine or electric pump are activated. Leaving the control panels active for a long time with the motor off may cause the battery to discharge.

7.3.3. Battery block

You can cut off the battery voltage by releasing the key (**A**). With no key you cannot:

- Start the heat engine.
- Recharge the battery
- Start the 220V electric pump

To restore the initial conditions, insert the key (**A)** again.

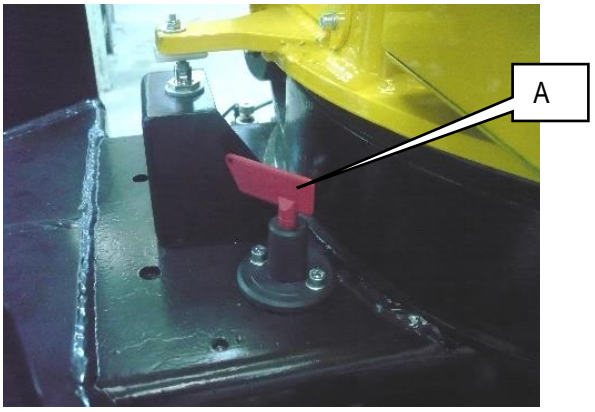


Fig.33

7.3.4. Battery charger: fault report

The automatic battery charger (**A**) is located on the chassis close to the battery (**B**) and protected by a cover.
On the battery charger a LED indicator (**C**) provides information concerning its working. During the normal working of the battery charger, the led is on steady and can be:
RED: initial charging process;
YELLOW: the charge of the battery is at 80%;
GREEN: the charge of the battery is at 100%.

To access the battery charger and indicator it is necessary to remove the cover.

The flashing LED on the battery charger indicator described in the previous paragraph indicates that a warning situation has occurred:

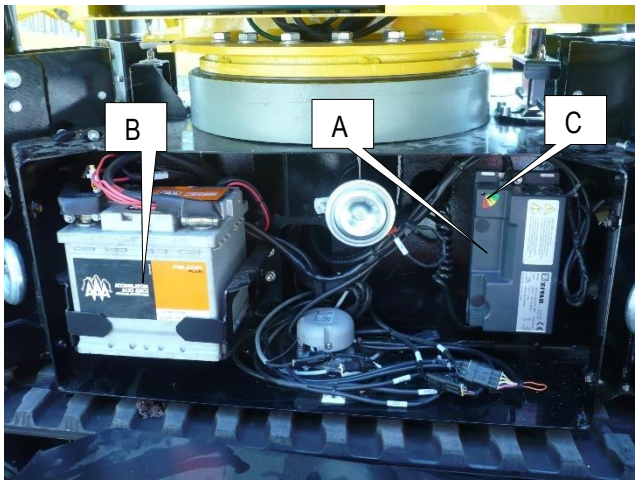


Fig.34

Signalling	Alarm type	Problem description and troubleshooting
Flashing GREEN	Time-out	Phase 1 of duration higher than the max. allowed value (check battery capacity).
Flashing RED-YELLOW	Battery Current	Loss of output current control (fault in control logic).
Flashing RED-GREEN	Battery Voltage	Not compliant battery (check nominal voltage) or loss of output voltage control (battery disconnected or fault in the control logic).
Flashing RED-YELLOW-GREEN	Thermal	Over temperature of semiconductors (check the fan operation).

⚠

WARNING!

In presence of alarm the battery charger stops the current delivery.

7.3.5. Battery replacement

Replace the old batteries only with models of the same voltage, capacity, dimensions and mass. Batteries must be approved by the manufacturer.

Do not dispose of batteries in the environment after replacement. Comply with the current local standards.

AS THIS OPERATION IS VERY IMPORTANT IT IS TO BE CARRIED OUT BY SKILLED TECHNICIANS ONLY.

CALL THE TECHNICAL SUPPORT

8 . MARKS AND CERTIFICATIONS

The models of self-propelled aerial platform described in this manual were subject to the CE type test according to the Directive 2006/42/EC. The certification was issued by:

Eurofins Product Testing Italy Srl - 0477 **Via Cuorgné, 21** **10156 – Torino – TO (Italy)**	CE

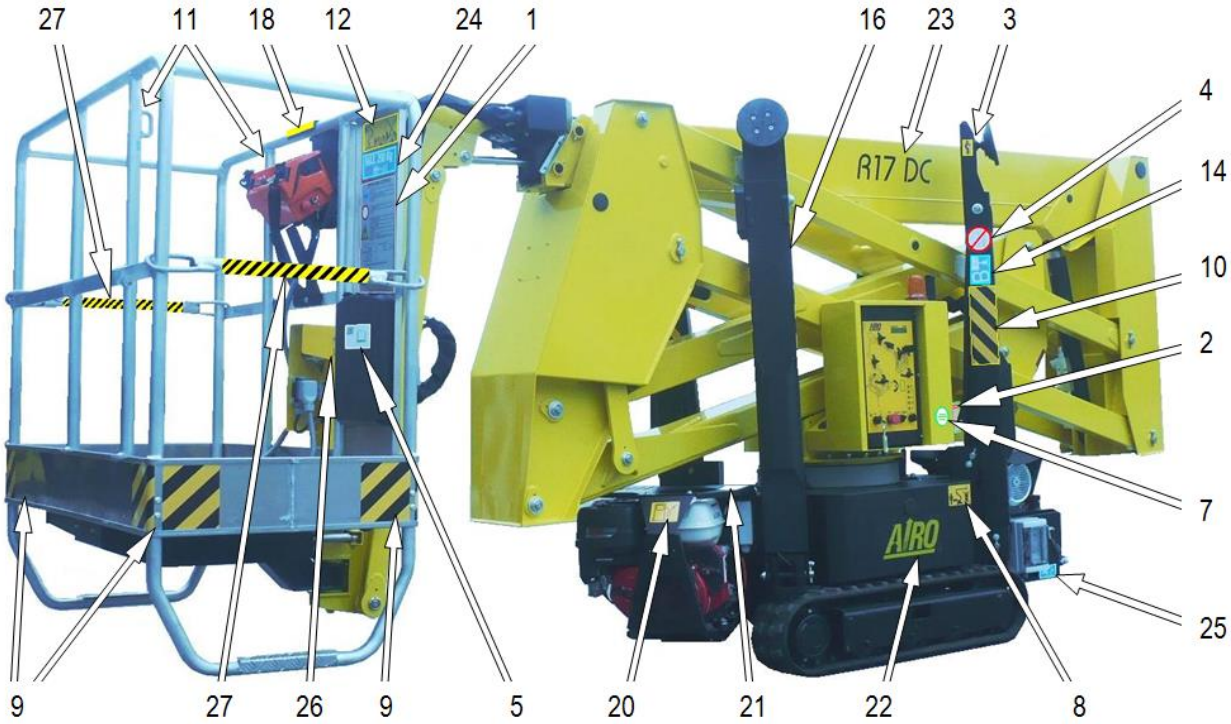
Test carrying out is shown by the above plate with CE mark applied on the machine and by the declaration of conformity enclosed in this user manual.

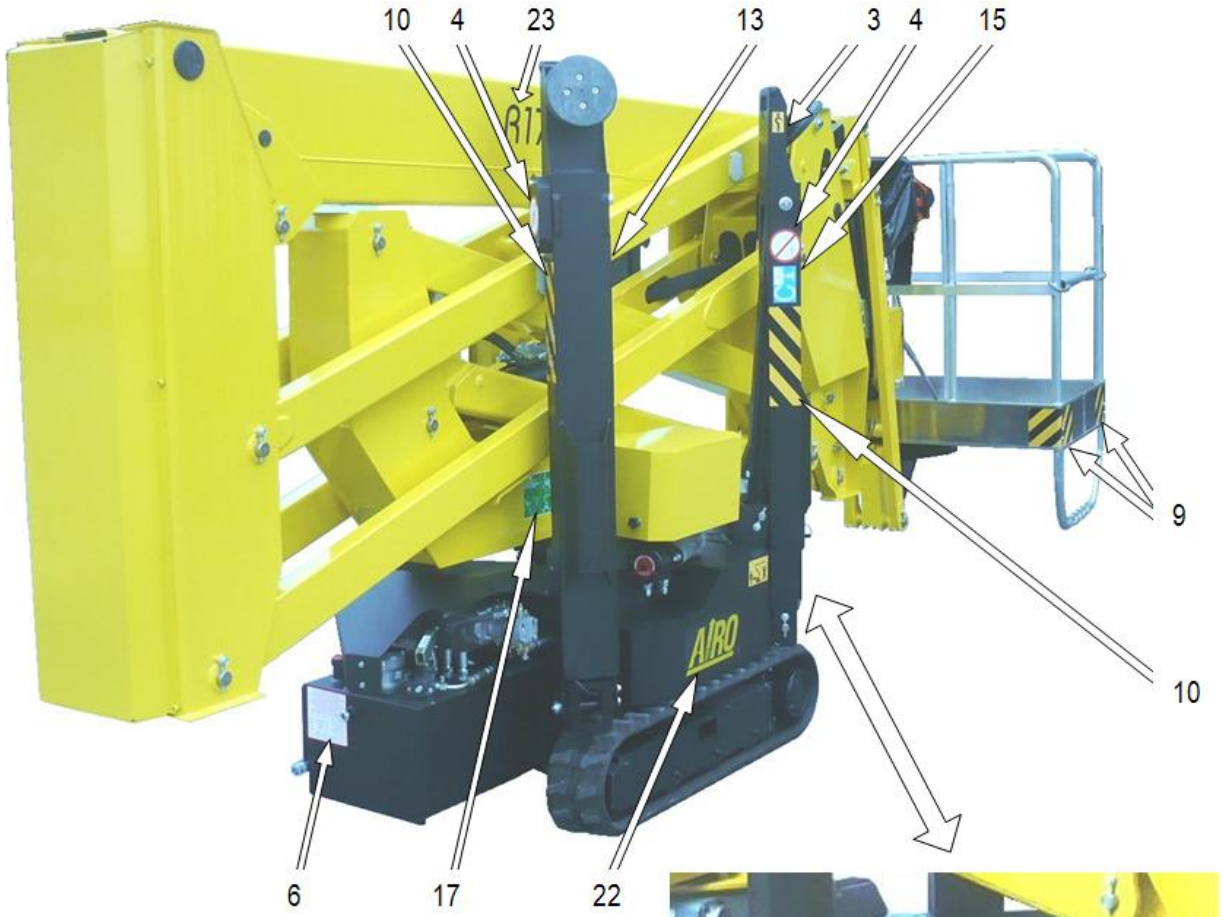
9. PLATES AND STICKERS

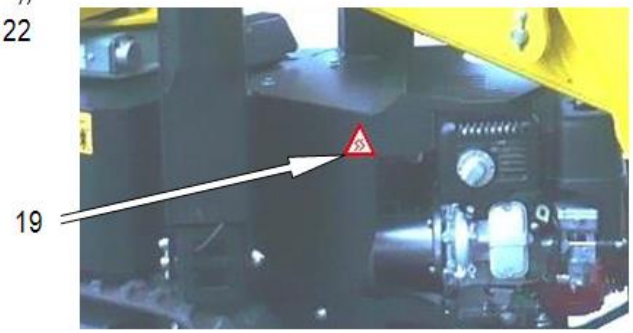
STANDARD STICKERS CODES

	CODE	DESCRIPTION	QUANTITY
1	001.10.001	AIRO warnings plate	1
2	001.10.024	AIRO serial number plate	1
3	001.10.031	Towing hook sticker	4
4	001.10.076	Feet danger sticker	8
5	001.10.088	Document holder sticker	1
6	001.10.150	"46" oil type sticker I-D-F-NL-B-G-PL	1
7	001.10.180	First check sticker	1
8	001.10.260	Symbol articulated no stopping sticker	2
9	010.10.010	Yellow-black line sticker <150x300>	4
10	012.10.005	Yellow-black line sticker<100X300>	8
11	035.10.007	Safety belts coupling sticker	2
12	043.10.009	Control panel sticker	1
13	043.10.013	“A” levelling outrigger retraction	2
14	043.10.014	“B” levelling outrigger retraction	2
15	043.10.015	“C” levelling outrigger retraction	2
16	043.10.016	“D” levelling outrigger retraction	2
17	059.10.001	Emergency manual sticker R13/R17	1
18	059.10.004	Platform control panel	1
19	008.10.020	Triangle hot parts sticker	1
20	029.10.005	Fuel tank sticker	1
21	024.10.018	Sound power level sticker 100 dB	1
22	001.10.173	AIRO pre-spaced yellow sticker <300x140>	2
23	059.10.006	Pre-spaced sticker R13 black	2
	059.10.007	Pre-spaced sticker R17 black	2
24	008.10.003	Capacity sticker 200 kg	1
25*	045.10.010	(Optional) electric line plug sticker	1*
26*	001.10.021	(Optional) ground symbol sticker	1*
27*	001.10.244	(Optional) entrance bar black-yellow line sticker	3*

* optional features


27
11
18
12
24
1
16
23
3
4
14
10
2
7
25
R17 DC
AIRO
9
27
26
9
5
20
21
22
8


10
4
23
13
3
4
15
9
10
AIRO
6
17
22


19

1 0 . CHECK REGISTER

The check register is released to the user of the platform in conformance with Attachment 1 of Directive 2006/42/EC.
This register is to be considered an integral part of the equipment and must accompany the machine for its entire life until its final disposal.

The register is provided for the notation, according to the proposed format, of the following events that regard the life of the machine:

- Periodic obligatory inspections under the care of the agency responsible for checking it (in Italy, ASL or ARPA).
- Obligatory periodic inspections to verify the structure, proper machine functioning and the protection and safety systems. Such inspections are the responsibility of the safety manager of the company that owns the machine and must occur with **frequency indicated.**
- Transfers of ownership. In Italy, the purchaser must notify the INAIL department responsible that the installation of the machine has occurred.
- Extraordinary maintenance work and replacement of important elements of the machine.

NOTE: On the check register only the events with annual frequency should be recorded. For events with weekly, monthly and semi-annual frequency, the yearly record is enough.

REQUIRED PERIODIC INSPECTIONS BY THE REGULATORY AGENCY		
Date	**Observations**	**Signature + Stamp**

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

STRUCTURAL CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
VISUAL CHECK	Check the integrity of the guardrails; the harness anchoring points; state of the lifting structure; any access ladders; rust; state of the tyres; oil leaks; locking pins on the structure.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

DEFORMATION OF TUBES AND CABLES	Most of all, check at junction points that tubes and cables do not show any evident defects. Monthly operation. It is not necessary to indicate its execution every month, but at least every year when the other operations are carried out.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

STRUCTURAL CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
VARIOUS ADJUSTMENTS	See chapter 7.2.1

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

GREASING	See chapter 7.2.2 Monthly operation. It is not necessary to indicate its execution every month, but at least every year when the other operations are carried out.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
HYDRAULIC TANK OIL LEVEL CHECK	See chapter 7.2.3. Monthly operation. It is not necessary to indicate its execution every month, but at least every year when the other operations are carried out.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

DRIVE REDUCTION GEARS OIL LEVEL CHECK	See chapter 7.2.5.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
CALIBRATION CHECK OF PRESSURE RELIEF VALVE	See chapter 7.2.8.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

BATTERY STATE	See chapter 7.3 Daily operation. It is not necessary to indicate its execution every day, but at least every year when the other operations are carried out.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
TELESCOPIC BOOM SLIDING BLOCKS CLEARANCE ADJUSTMENT	See chapter 7.2.6.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

TRACKS CONDITION AND TENSION CHECK	See chapter 7.2.7.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
TOTAL OIL CHANGE IN HYDRAULIC TANK AND DRIVE REDUCTION GEARS (EVERY TWO YEARS)	See chapter 7.2.3 and 7.2.5

	DATE	REMARKS	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			

HYDRAULIC FILTER REPLACING (EVERY TWO YEARS)	See chapter 7.2.4.

	DATE	REMARKS	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
INCLINOMETER OPERATION CHECK	See chapter 7.2.9.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

BRAKING SYSTEM EFFICIENCY CHECK	Going down a ramp with max. slope indicated in chapter "Technical features", at the lowest speed, the machine should be able to stop, upon release of the joystick, in a space of less than 0.3 meters.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
OPERATION CHECK MICROSWITCHES M1A, MRT, M2A/M2B, STP1/2/3/4.	See chapter 7.2.10, 7.2.11, 7.2.12, 7.2.13.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

STICKERS AND PLATES CHECK	See Chapter 9. Check the legibility of the aluminium plate on the platform where the main instructions are summarised; that the capacity stickers are on the platform and that they are legible; that the stickers on the ground and platform controls are legible.

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
DEAD-MAN SYSTEM CHECK	See chapter 7.2.14

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

CHECK OF EMERGENCY DEVICES	DESCRIPTION OF OPERATIONS TO BE PERFORMED
MANUAL EMERGENCY LOWERING CHECK	See chapter 5.6

	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

TRANSFERS OF OWNERSHIP

FIRST OWNER

COMPANY	DATE	MODEL	SERIAL NUMBER	DELIVERY DATE

AIRO / Tigieffe S.r.l.

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

We affirm that, as of the date quoted above, the technical, dimensional and functional features of this machine were in conformance with what was originally required and that any changes have been recorded in this Register.

THE SELLER **THE PURCHASER**

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

We affirm that, as of the date quoted above, the technical, dimensional and functional features of this machine were in conformance with what was originally required and that any changes have been recorded in this Register.

THE SELLER **THE PURCHASER**

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

We affirm that, as of the date quoted above, the technical, dimensional and functional features of this machine were in conformance with what was originally required and that any changes have been recorded in this Register.

THE SELLER **THE PURCHASER**

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

We affirm that, as of the date quoted above, the technical, dimensional and functional features of this machine were in conformance with what was originally required and that any changes have been recorded in this Register.

THE SELLER **THE PURCHASER**

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

We affirm that, as of the date quoted above, the technical, dimensional and functional features of this machine were in conformance with what was originally required and that any changes have been recorded in this Register.

THE SELLER **THE PURCHASER**

IMPORTANT BREAKDOWNS

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE **SAFETY MANAGER**

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE **SAFETY MANAGER**

IMPORTANT BREAKDOWNS

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE **SAFETY MANAGER**

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

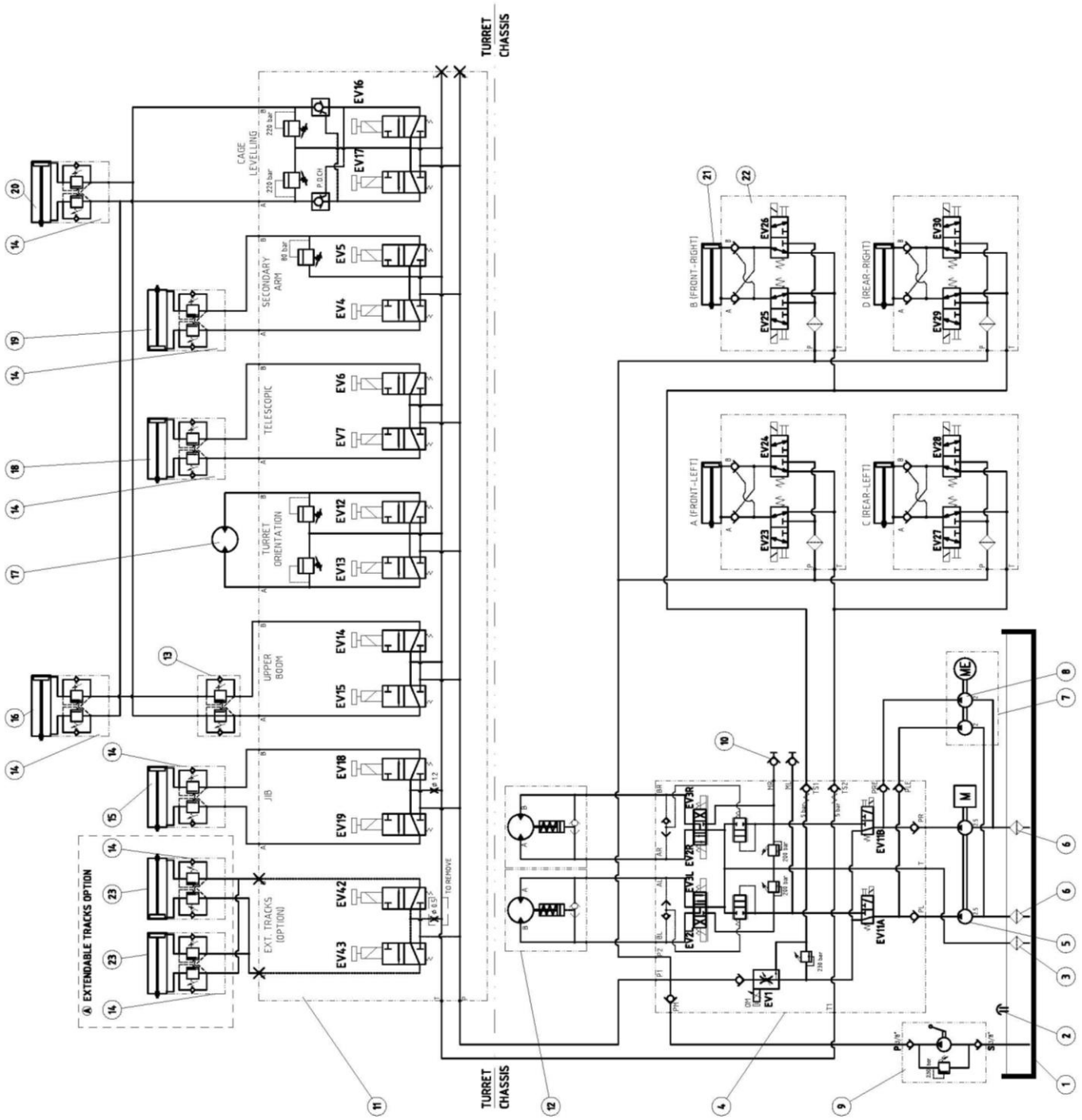
SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE **SAFETY MANAGER**

11. HYDRAULIC DIAGRAM

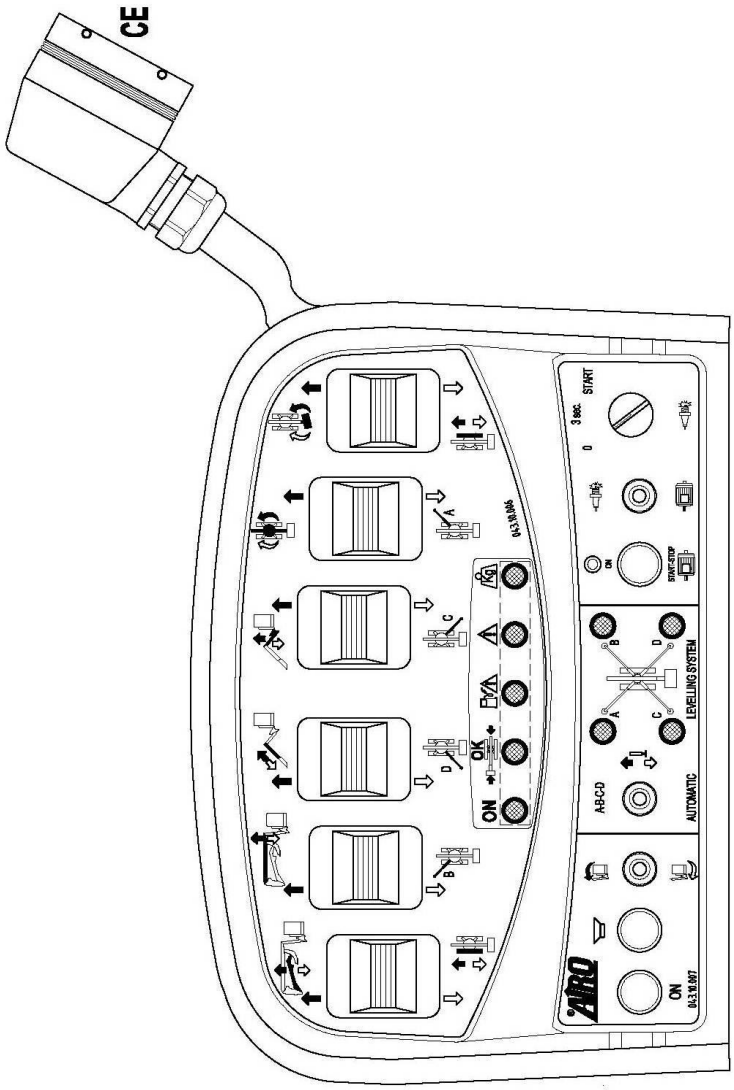
R13S R13DC R17S R17DC N° 059.07.086

EV1	MOVEMENT PROPORTIONAL JOYSTICK CONTROL
EV2L	LEFT TRACK FORWARD DRIVE SOLENOID VALVE
EV2R	RIGHT TRACK FORWARD DRIVE SOLENOID VALVE
EV3L	LEFT TRACK BACKWARD DRIVE SOLENOID VALVE
EV3R	RIGHT TRACK BACKWARD DRIVE SOLENOID VALVE
EV4	FIRST BOOM LIFTING SOLENOID VALVE
EV5	FIRST BOOM LOWERING SOLENOID VALVE
EV6	TELESCOPIC BOOM EXTENSION SOLENOID VALVE
EV7	TELESCOPIC BOOM RETRACTION SOLENOID VALVE
EV12	TURRET RIGHT ROTATION SOLENOID VALVE
EV13	TURRET LEFT ROTATION SOLENOID VALVE
EV14	SECOND BOOM LIFTING SOLENOID VALVE
EV15	SECOND BOOM LOWERING SOLENOID VALVE
EV16	CAGE FORWARD LEVELLING SOLENOID VALVE
EV17	CAGE BACKWARD LEVELLING SOLENOID VALVE
EV18	JIB LIFTING SOLENOID VALVE
EV19	JIB LOWERING SOLENOID VALVE
EV23	A OUTRIGGER LIFTING SOLENOID VALVE
EV24	A OUTRIGGER LOWERING SOLENOID VALVE
EV25	B OUTRIGGER LIFTING SOLENOID VALVE
EV26	B OUTRIGGER LOWERING SOLENOID VALVE
EV27	C OUTRIGGER LIFTING SOLENOID VALVE
EV28	C OUTRIGGER LOWERING SOLENOID VALVE
EV29	D OUTRIGGER LIFTING SOLENOID VALVE
EV30	D OUTRIGGER LOWERING SOLENOID VALVE
EV42	TRACKS IN SOLENOID VALVE (OPTIONAL)
EV43	TRACKS OUT SOLENOID VALVE (OPTIONAL)
ME	ELECTRIC MOTOR
M	DIESEL ENGINE
1	TANK
2	AIR BLEED AND OIL DRAIN PLUG
3	RETURN FILTER
4	DRIVE HYDRAULIC BLOCK
5	PETROL MOTOR DOUBLE PUMP
6	SUCTION FILTER
7	ELECTRIC PUMP KIT
8	ELECTRIC MOTOR DOUBLE PUMP
9	MANUAL PUMP
10	PRESSURE GAGE SOCKET
11	MOVEMENT HYDRAULIC BLOCK
12	DRIVE GEARED MOTOR
13-14	OVER-CENTER VALVE
15	JIB CYLINDER
16	SECOND BOOM CYLINDER
17	TURRET ROTATION MOTOR
18	TELESCOPIC BOOM CYLINDER
19	FIRST BOOM CYLINDER
20	CAGE LEVELLING CYLINDER
21	OUTRIGGER CYLINDER
22	OUTRIGGER CONTROL INTEGRATED ASSEMBLY
23	TRACKS WIDENING CYLINDER (OPTIONAL)

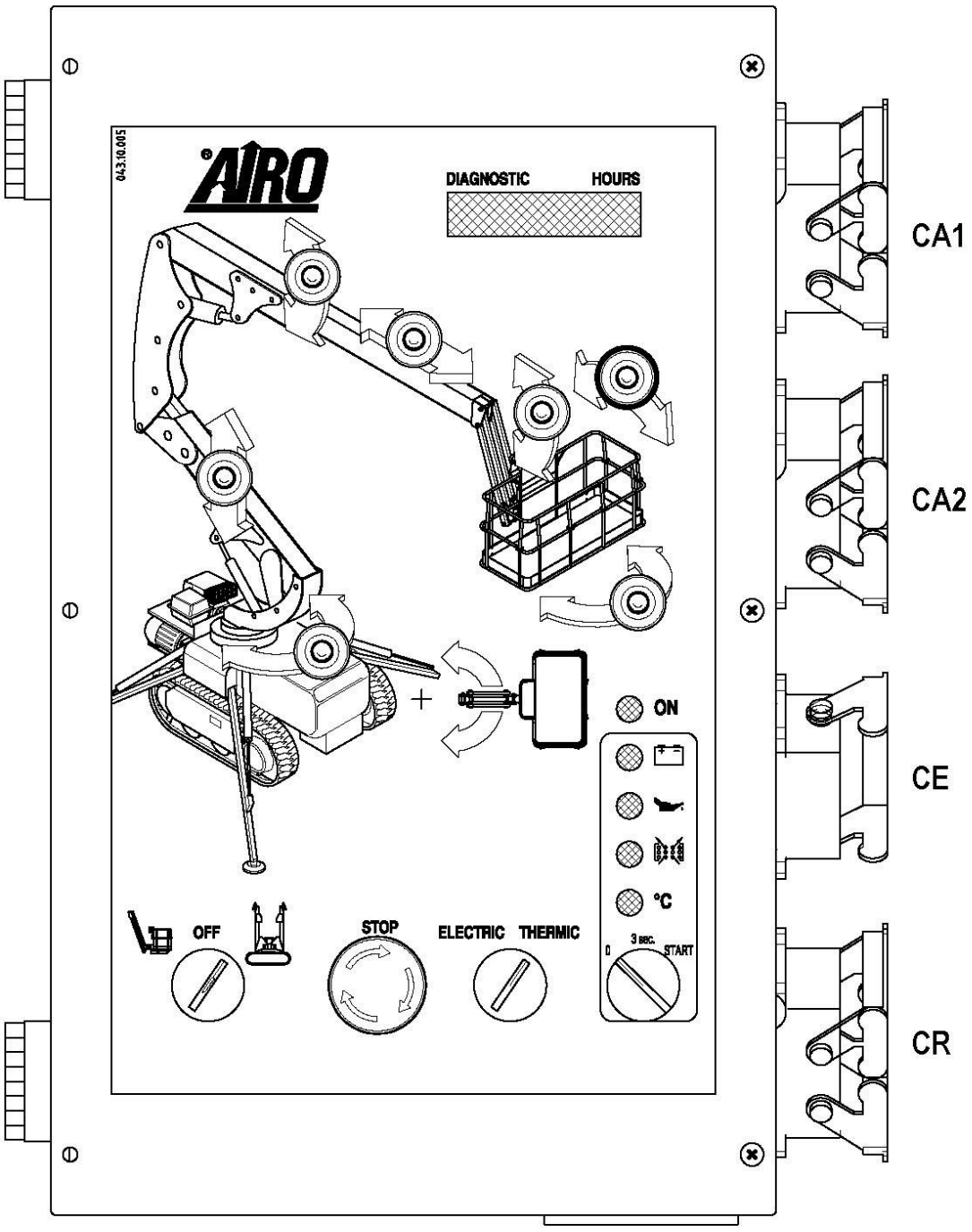

TURRET
CHASSIS
CAGE LEVELLING
SECONDARY ARM
TELESCOPIC
TURRET ORIENTATION
UPPER BOOM
JIB
EXT. TRACKS (OPTION)
EXTENDABLE TRACKS OPTION
TO REMOVE
B (FRONT-RIGHT)
D (REAR-RIGHT)
A (FRONT-LEFT)
C (REAR-LEFT)
EV1
EV4
EV5
EV6
EV7
EV11A
EV11B
EV12
EV13
EV14
EV15
EV16
EV17
EV18
EV19
EV23
EV24
EV25
EV26
EV27
EV28
EV29
EV30
EV42
EV43
M
ME

12. WIRING DIAGRAM

043.08.001



043.08.002


043.10.005
DIAGNOSTIC
HOURS
ON
°C
OFF
STOP
ELECTRIC
THERMIC
0
3 SEC.
START
CA1
CA2
CE
CR

CA1 (collegamento valvole)				CA1 (connection valve)			
1	EV1 (+)	22	EV1 (-)	1	EV1 (+)	22	EV1 (-)
2	EVP DX (+)	23	EVP DX (-)	2	EVP DX (+)	23	EVP DX (-)
3	EVP SX (+)	24	EVP SX (-)	3	EVP SX (+)	24	EVP SX (-)
4	EVINV DX (+)	25	EVINV DX (-)	4	EVINV DX (+)	25	EVINV DX (-)
5	EVINV SX (+)	26	EVINV SX (-)	5	EVINV SX (+)	26	EVINV SX (-)
6	/	27	/	6	/	27	/
7	/	28	/	7	/	28	/
8	EV4 (+)	29	EV4 (-)	8	EV4 (+)	29	EV4 (-)
9	EV5 (+)	30	EV5 (-)	9	EV5 (+)	30	EV5 (-)
10	EV6 (+)	31	EV6 (-)	10	EV6 (+)	31	EV6 (-)
11	EV7 (+)	32	EV7 (+)	11	EV7 (+)	32	EV7 (+)
12	EV12 (+)	33	EV12 (+)	12	EV12 (+)	33	EV12 (+)
13	EV13 (+)	34	EV13 (+)	13	EV13 (+)	34	EV13 (+)
14	EV14 (+)	35	EV14 (+)	14	EV14 (+)	35	EV14 (+)
15	EV15 (+)	36	EV15 (+)	15	EV15 (+)	36	EV15 (+)
16	EV16 (+)	37	EV16 (+)	16	EV16 (+)	37	EV16 (+)
17	EV17 (+)	38	EV17 (+)	17	EV17 (+)	38	EV17 (+)
18	EV18 (+)	39	EV18 (+)	18	EV18 (+)	39	EV18 (+)
19	EV19 (+)	40	EV19 (+)	19	EV19 (+)	40	EV19 (+)
20	EV21 (+)	41	EV21 (+)	20	EV21 (+)	41	EV21 (+)
21	EV22 (+)	42	EV22 (+)	21	EV22 (+)	42	EV22 (+)

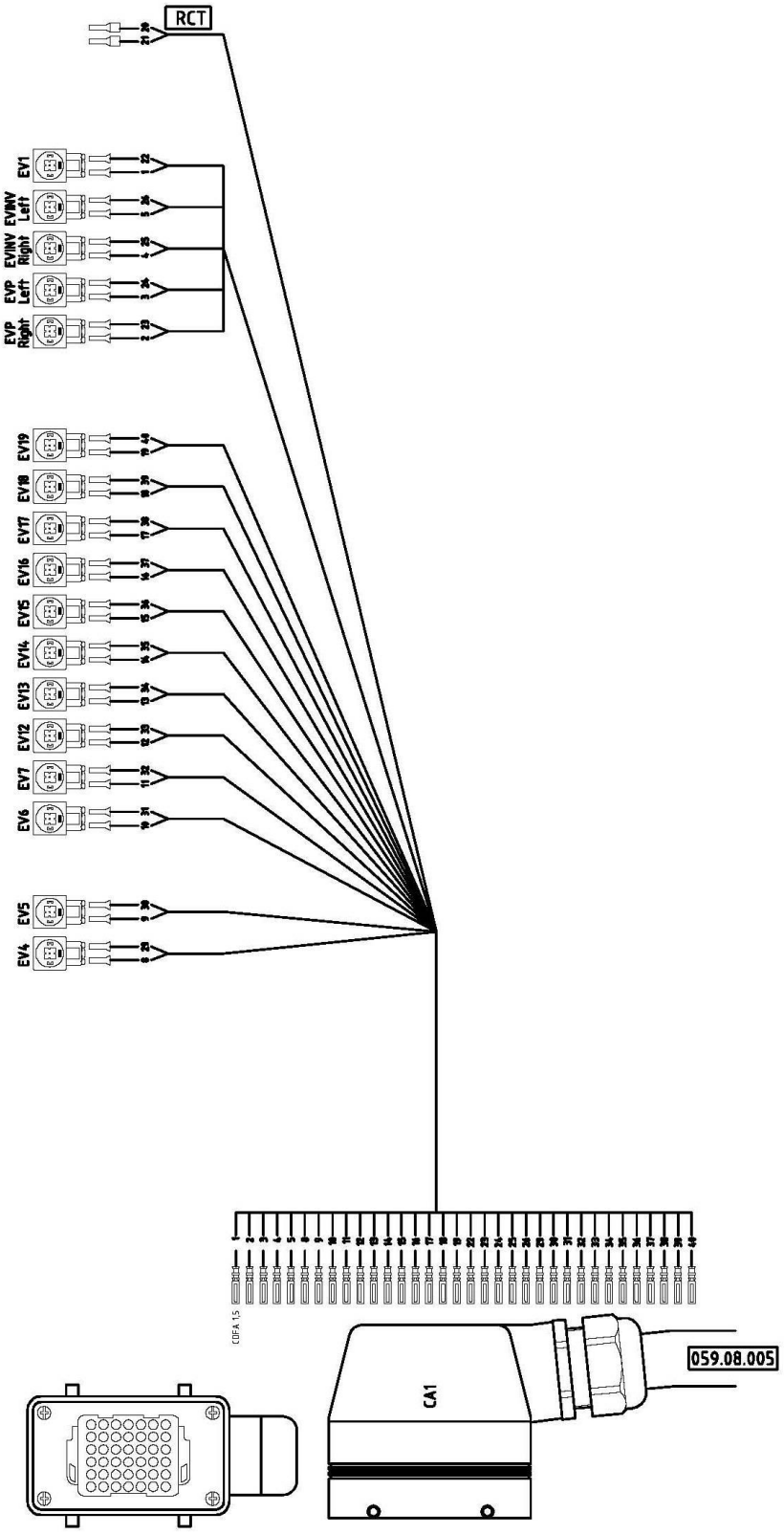
CA2 (alimentazione e ausiliari)				CA2 (alimentation and auxiliary)			
1	Girofaro (+)	22	Allarme pressione olio	1	Rotatin beacon (+)	22	Oil pressure alarm
2	Elettropompa manof./trif.	23	Allarme filtro aria	2	Electropump manof./trif.	23	air filter alarm
3	Clacson (+)	24	Allarme surrisc. testata	3	Clacson (+)	24	Allarme surrisc. testata
4	M1A (Segnale)	25	Allarme ris. carburante	4	M1A (Signal)	25	fuel reserv alarm
5	M1B (Segnale)	26	Elettrostart motore	5	M1B (Signal)	26	Engine electrostart
6	M1C (Segnale)	27	Elettrostop motore	6	M1C (Signal)	27	engine electrostop
7	MRT (Segnale)	28	Preriscaldo motore	7	MRT (Signal)	28	Engine pre-heat
8	PQ (segnale)	29	Elettroacceleratore motore	8	PQ (Signal)	29	Engine electroaccelerator
9	M2A (Segnale)	30	Abilitazione elettropompa	9	M2A (Signal)	30	electropump abilitation
10	M2B (Segnale)	31	/	10	M2B (Signal)	31	/
11	Clacson (-)	32	/	11	Clacson (-)	32	/
12	M1A (+)	33	/	12	M1A (+)	33	/
13	M1B (+)	34	/	13	M1B (+)	34	/
14	M1C (+)	35	/	14	M1C (+)	35	/
15	MRT (+)	36	/	15	MRT (+)	36	/
16	M2A (+)	37	Batteria (+)	16	M2A (+)	37	Battery (+)
17	M2B (+)	38	Batteria (+)	17	M2B (+)	38	Battery (+)
18	PQ (+)	39	Batteria (+)	18	PQ (+)	39	Battery (+)
19	PQ (-)	40	Batteria (-)	19	PQ (-)	40	Battery (-)
20	Girofaro (-)	41	Batteria (-)	20	Rotating beacon (-)	41	Battery (-)
21	Allarme alternatore	42	Batteria (-)	21	Alternator alarm	42	Battery (-)

CE (ingressi/uscite scat. comandi)				CE (control box input-output)			
1	Trasmissione seriale A	13	Pedale U.P. (+)	1	Serial trasmission A	13	Dead man pedal (+)
2	Trasmissione seriale B	14	Pedale U.P. (segnale)	2	Serial trasmission B	14	Dead man pedal (signal)
3	Tensione batteria da fusibile (+)	15	/	3	Battery tension from fuse (+)	15	/
4	Massa principale (-)	16	/	4	Main negativ (-)	16	/
5	Fungo emergenza	17	/	5	Emergency stop buffon	17	/
6	Fungo emergenza	18	Pulsantiera in cesta (+)	6	Emergency stop buffon	18	Platform command (+)
7	/	19	/	7	/	19	/
8	/	20	/	8	/	20	/
9	Alim. celle di carico (+12V)	21	/	9	Load cell alim. (+12V)	21	/
10	Segnale celle	22	/	10	Cell signal	22	/
11	Segnale celle	23	/	11	Cell signal	23	/
12	Alim. celle di carico (-)	24	/	12	Load cell alim. (-)	24	/

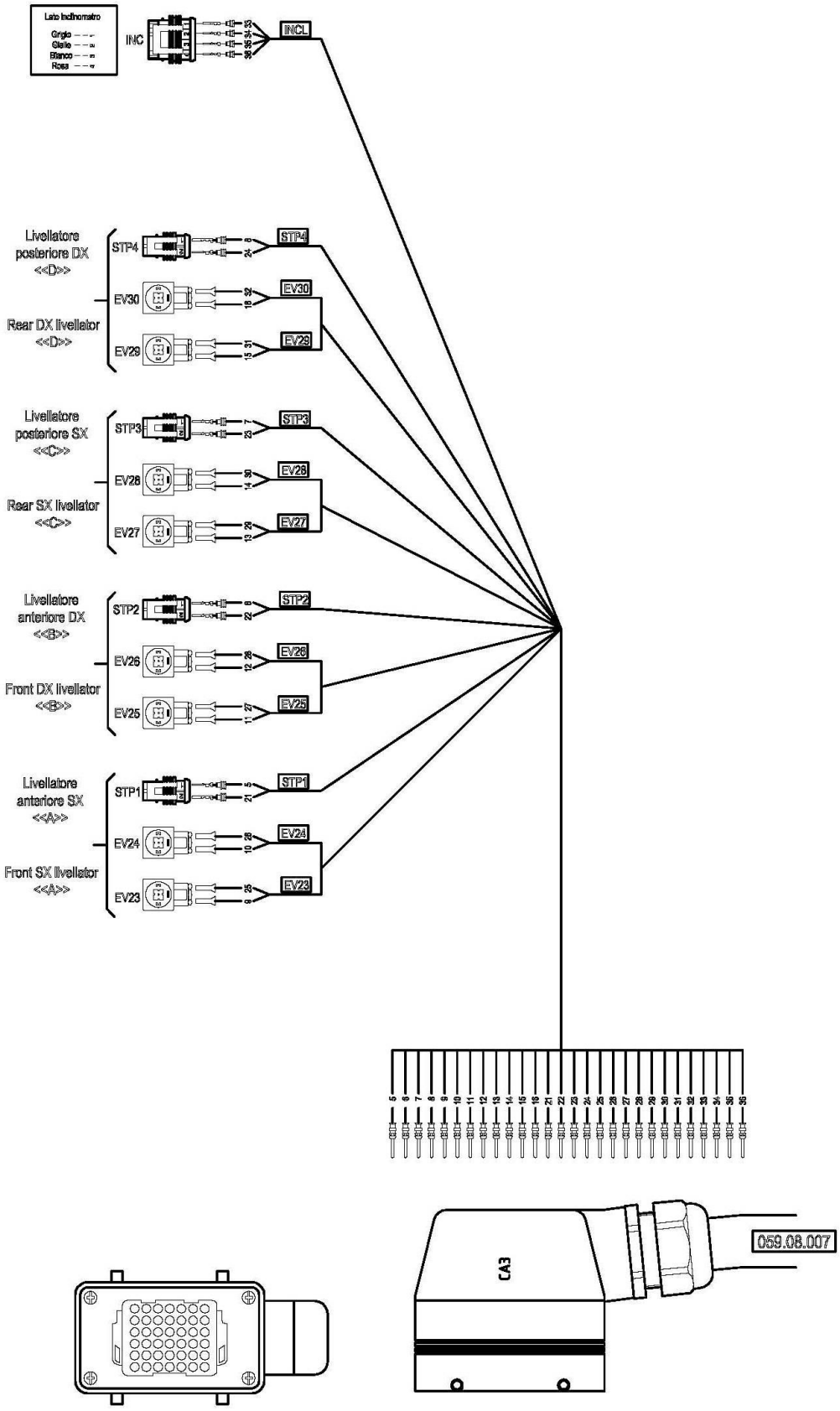
CR (circuito stabilizzatori)				CR (stabilizer circuit)			
1	/	22	STP2 (+)	1	/	22	STP2 (+)
2	/	23	STP3 (+)	2	/	23	STP3 (+)
3	/	24	STP4 (+)	3	/	24	STP4 (+)
4	/	25	EV23 (-)	4	/	25	EV23 (-)
5	STP1 (Segnale)	26	EV24 (-)	5	STP1 (Signal)	26	EV24 (-)
6	STP2 (Segnale)	27	EV25 (-)	6	STP2 (Signal)	27	EV25 (-)
7	STP3 (Segnale)	28	EV26 (-)	7	STP3 (Signal)	28	EV26 (-)
8	STP4 (Segnale)	29	EV27 (-)	8	STP4 (Signal)	29	EV27 (-)
9	EV23 (+)	30	EV28 (-)	9	EV23 (+)	30	EV28 (-)
10	EV24 (+)	31	EV29 (-)	10	EV24 (+)	31	EV29 (-)
11	EV25 (+)	32	EV30 (-)	11	EV25 (+)	32	EV30 (-)
12	EV26 (+)	33	INCLINOMETRO Y+	12	EV26 (+)	33	INCLINOMETER Y+
13	EV27 (+)	34	INCLINOMETRO Y-	13	EV27 (+)	34	INCLINOMETER Y-
14	EV28 (+)	35	INCLINOMETRO X+	14	EV28 (+)	35	INCLINOMETER X+
15	EV29 (+)	36	INCLINOMETRO X-	15	EV29 (+)	36	INCLINOMETER X-
16	EV30 (+)	37	/	16	EV30 (+)	37	/
17	/	38	/	17	/	38	/
18	/	39	/	18	/	39	/
19	/	40	/	19	/	40	/
20	/	41	/	20	/	41	/
21	STP1 (+)	42	/	21	STP1 (+)	42	/

CE Connector: 9,10,11 and 12 free
CE connector: 9,10,11 and 12 free.

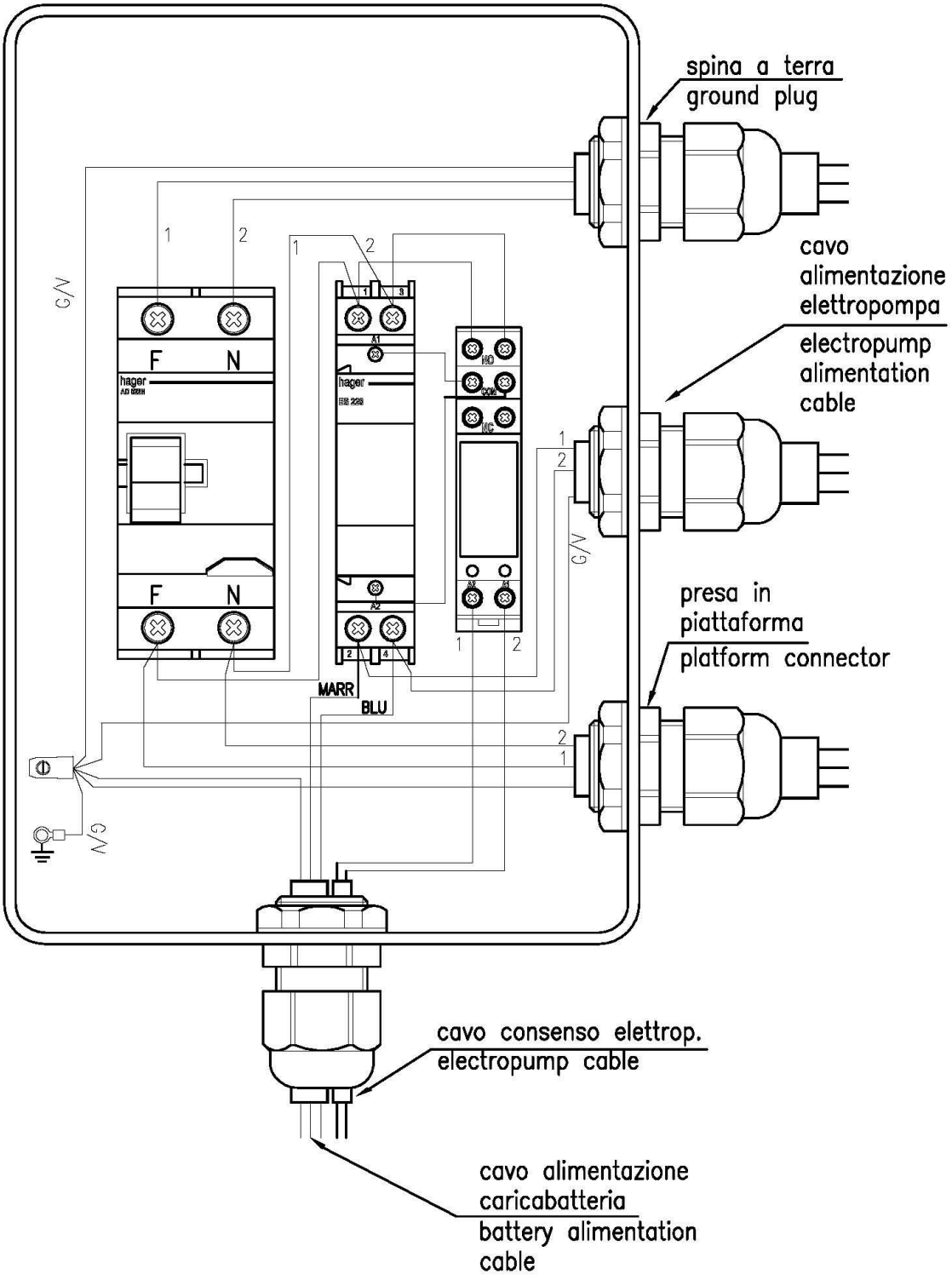
059.08.005 (CA1)



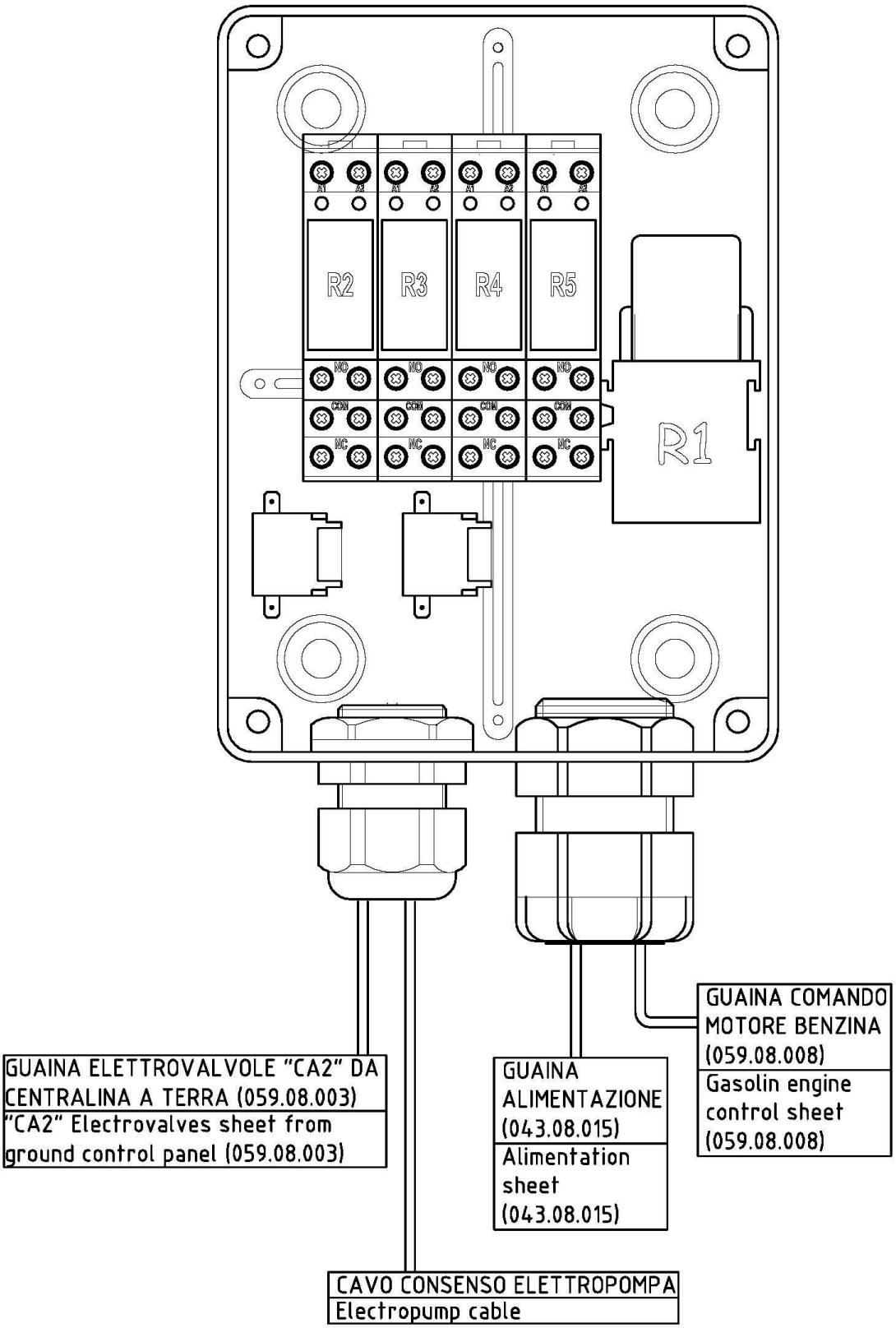
059.08.007 (CR)

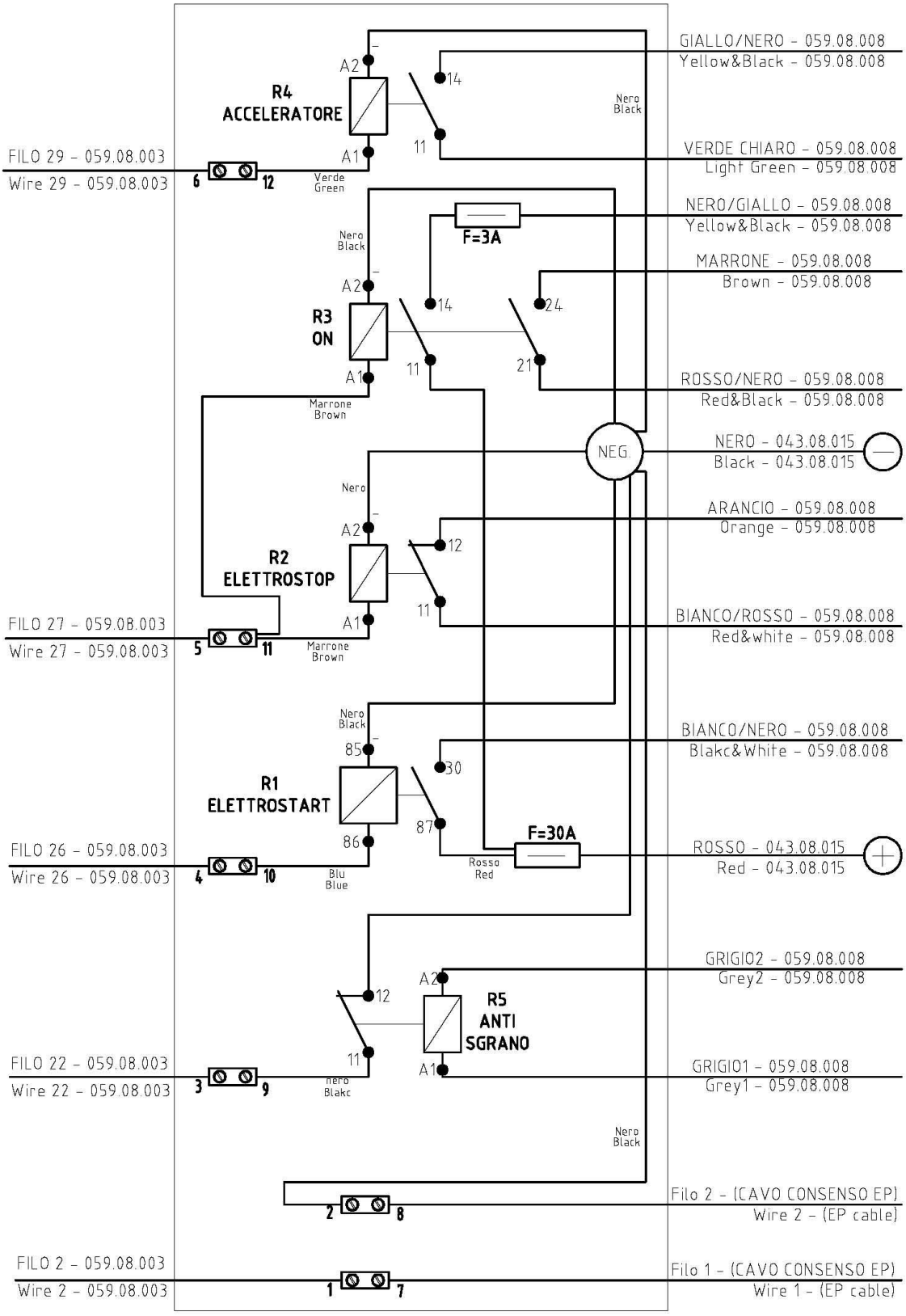

Lato inclinometro
Grigio
Giallo
Bianco
Rosa
INC
INCL
Livellatore posteriore DX <<D>>
STP4
EV30
EV29
Rear DX livellator <<D>>
Livellatore posteriore SX <<C>>
STP3
EV28
EV27
Rear SX livellator <<C>>
Livellatore anteriore DX <<B>>
STP2
EV26
EV25
Front DX livellator <<B>>
Livellatore anteriore SX <<A>>
STP1
EV24
EV23
Front SX livellator <<A>>
CA3
059.08.007

059.08.001


spina a terra
ground plug
cavo
alimentazione
elettropompa
electropump
alimentation
cable
presa in
piattaforma
platform connector
cavo consenso elettrop.
electropump cable
cavo alimentazione
caricabatteria
battery alimentation
cable
F
N
F
N
hager
hager
A1
A2
NO
COM
NC
MARR
BLU
G/V
G/V
G/V

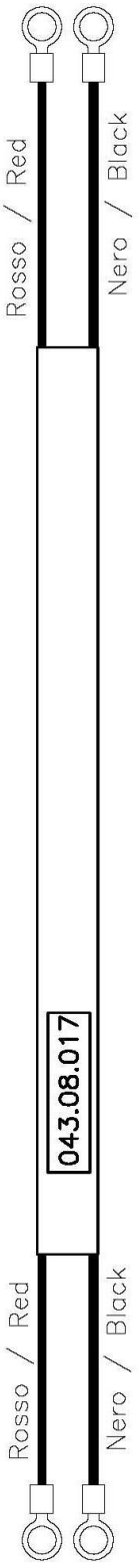
059.08.006


R2
R3
R4
R5
R1
NO
COM
NC
GUAINA ELETTROVALVOLE "CA2" DA CENTRALINA A TERRA (059.08.003)
"CA2" Electrovalves sheet from ground control panel (059.08.003)
GUAINA ALIMENTAZIONE (043.08.015)
Alimentation sheet (043.08.015)
GUAINA COMANDO MOTORE BENZINA (059.08.008)
Gasolin engine control sheet (059.08.008)
CAVO CONSENSO ELETTROPOMPA
Electropump cable


R4
ACCELERATORE
A2
A1
14
11
Nero
Black
GIALLO/NERO - 059.08.008
Yellow&Black - 059.08.008
FILO 29 - 059.08.003
Wire 29 - 059.08.003
6
12
Verde
Green
VERDE CHIARO - 059.08.008
Light Green - 059.08.008
F=3A
NERO/GIALLO - 059.08.008
Yellow&Black - 059.08.008
R3
ON
24
21
MARRONE - 059.08.008
Brown - 059.08.008
ROSSO/NERO - 059.08.008
Red&Black - 059.08.008
Marrone
Brown
NEG.
NERO - 043.08.015
Black - 043.08.015
Nero
R2
ELETTROSTOP
ARANCIO - 059.08.008
Orange - 059.08.008
12
FILO 27 - 059.08.003
Wire 27 - 059.08.003
5
11
BIANCO/ROSSO - 059.08.008
Red&white - 059.08.008
R1
ELETTROSTART
85
30
87
86
F=30A
BIANCO/NERO - 059.08.008
Blakc&White - 059.08.008
FILO 26 - 059.08.003
Wire 26 - 059.08.003
4
10
Blu
Blue
Rosso
Red
ROSSO - 043.08.015
Red - 043.08.015
GRIGIO2 - 059.08.008
Grey2 - 059.08.008
R5
ANTI
SGRANO
FILO 22 - 059.08.003
Wire 22 - 059.08.003
3
9
nero
Blakc
GRIGIO1 - 059.08.008
Grey1 - 059.08.008
2
8
Filo 2 - (CAVO CONSENSO EP)
Wire 2 - (EP cable)
FILO 2 - 059.08.003
Wire 2 - 059.08.003
1
7
Filo 1 - (CAVO CONSENSO EP)
Wire 1 - (EP cable)

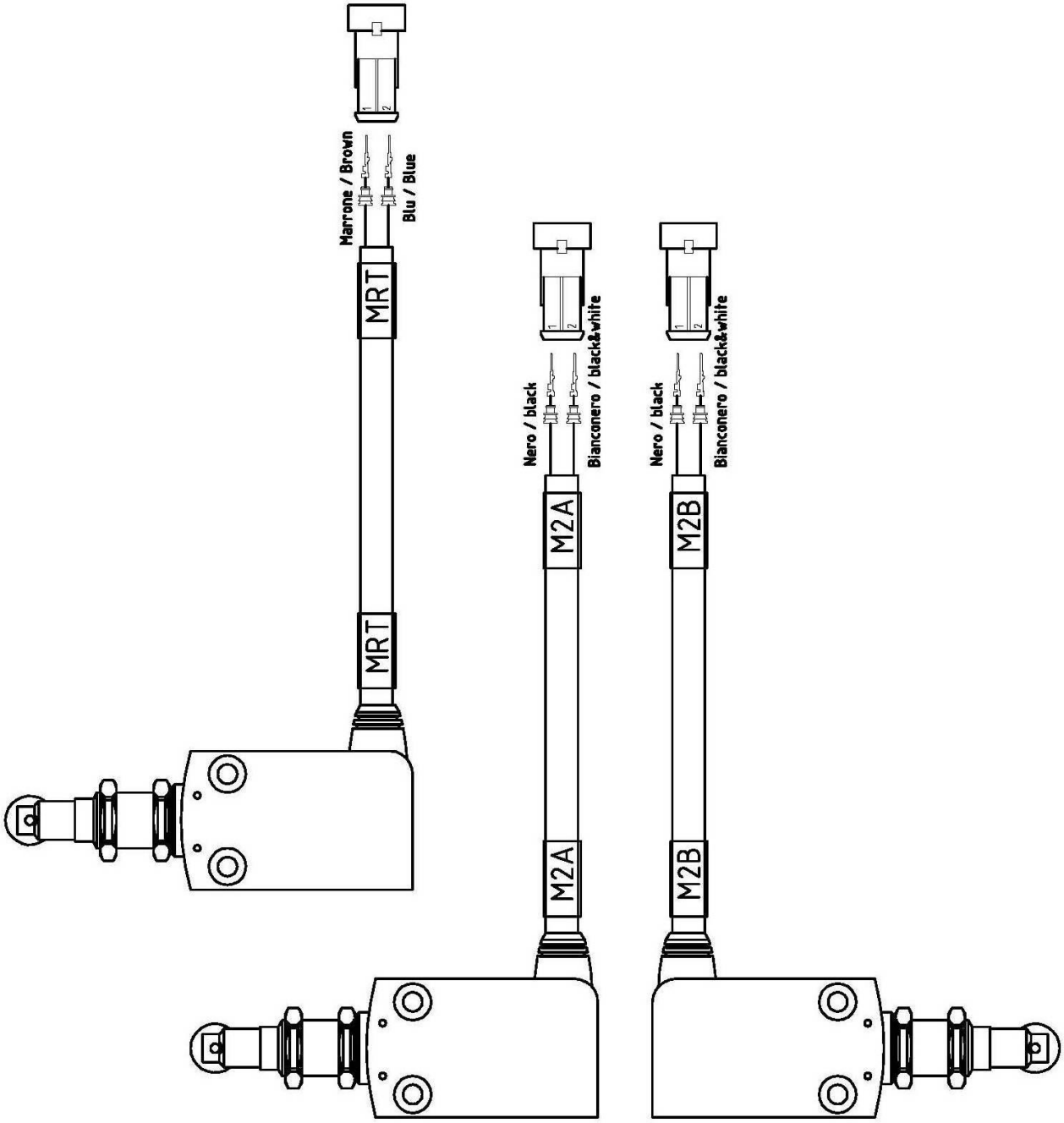
043.08.017

BATTERIA / BATTERY



MOTORE BENZINA / DIESEL ENGINE

059.08.012


Marrone / Brown
Blu / Blue
MRT
MRT
Nero / black
Bianconero / black&white
M2A
M2A
Nero / black
Bianconero / black&white
M2B
M2B

13. DECLARATION OF CONFORMITY EC FACSIMILE.

AIRO È UNA DIVISIONE TIGIEFFE SRL - VIA VILLA SUPERIORE, 82 -42045 LUZZARA (RE)
TEL. +39 0522 977365 FAX +39 0522 977015

DICHIARAZIONE *CE* DI CONFORMITA' - *CE* DECLARATION OF CONFORMITY - DECLARATION *CE* DE CONFORMITE' - *EG* KONFORMITÄTSERKLÄRUNG - DECLARACION *CE* DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ *ЕС*

2006/42/CE

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Noi - We - Nous - Wir – Nosotros- мы

Tigieffe S.r.l. - Via Villa Superiore N.° 82 - Luzzara (Reggio Emilia) - ITALIA

Dichiariamo sotto la nostra esclusiva responsabilità che il prodotto:	Declare under our exclusive responsibility that the product:	Declarons sous notre responsabilitè exclusive que le produit:	Erklaren hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt:	Declaramos bajo nuestra exclusiva responsabilidad que el producto:	Под нашу исключительную ответственность заявляем, что изделие:

Piattaforma di Lavoro Elevabile
Mobile Elevating Work Platform
Plates-forme Elévatrice Mobiles de Personnel
Fahrbare Hubarbeitsbühnen
Plataforma Elevadora Móvil de Personal
Платформа для высотного работ

Modello - Model - Modèle Typ – Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Рама	Anno - Year - Année Baujahr – Ano -Год
R13 S	***XXXXXXXXXX***	***XXXXXXXXXX***

Al quale questa dichiarazione si riferisce è conforme alle direttive 2006/42/CE, 2014/30/CE, 2005/88/CE e al modello certificato da:	To which this declaration refers is in compliance with the directives 2006/42/CE, 2014/30/CE, 2005/88/CE and with the model certified by:	Faisant l'objet de la présente déclaration est conforme aux directives 2006/42/CE, 2014/30/CE, 2005/88/CE et au modéle certifié par:	Auf das sich die vorliegende Erklärung bezieht, den 2006/42/CE, 2014/30/CE, 2005/88/CE Richtlinien und dem von:	Al cual esta declaración se refiere cumple las directivas 2006/42/CE, 2014/30/CE, 2005/88/CE y el modelo certificato por:	К которой это заявление относится, соответствует директивами 2006/42/CE, 2014/30/CE, 2005/88/CE и сертифицированной модели из:

Eurofins Product Testing Italy Srl - Via Cuorgné, 21 10156 – Torino – TO (Italy)
Identification No. 0477

con il seguente numero di certificazione:	with the following certification number:	avec le numèro de certification suivant:	Zertifizierten Modell mit folgender Zertifizierungsnummer:	con el siguiente número de certificación:	со следующим сертифицированным номером:

N.Certificato - Certificate No. - N° du certificat - Bestätigungnummer - N° de certificado – Номер Сертификата

XYZ

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguentes normas:	и со следующими нормами:

EN 280:2013+A1:2015 EN ISO 12100:2010 EN ISO 60204-1:2018

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Luzzara (RE), data-date-date-Datum-fecha-Дата

.....
Pignatti Simone
(General Manager)

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2006/42/CE

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XYZ

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(General Manager)

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(General Manager)

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Luzzara (RE), data-date-date-Datum-fecha-Дата

.....
Pignatti Simone
(General Manager)

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