



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

## "A" SERIES

**A18 JRTD PLUS    A18 JRTH PLUS    A18 JRTE PLUS**



## USE AND MAINTENANCE MANUAL - ENGLISH - ORIGINAL INSTRUCTIONS

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**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 or further obligations in order to add changes and improvements to the units already sent. 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. Receiving 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. Authorized private entities acquire the status of public service representatives and respond directly to the public structure that owns the 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. This document will form an integral part of the machine documentation.

### 1.1.2.2. Subsequent periodic 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 ARPA 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 previous owner of the MEWP must notify the unavailability of the machine by connecting to the INAIL portal.

The new owner will have to retrieve the registration data of the MEWP from the same INAIL portal in order to continue to subject the machine to the periodic inspections required by law.

The new owner must in any case have the following documentation released by the previous owner:

- Declaration of conformity issued by the manufacturer.
- Declaration of commissioning carried out by the first owner.
- Last periodic check result.
- Instructions manual.

### 1.1.3. Education, information and operators training

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

## 1.2. Tests carried out prior to delivery by the manufacturer

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 aerial 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 platform. Do not lift loads (even if complying with the maximum capacity allowed) hanging from the platform or lifting structure.

Do not carry large-sized panels since they increase the resistance to wind force thus causing the machine to overturn.

While the machine is being displaced with lifted platform, no horizontal loads can be loaded onto the platform (operators on board are not allowed to pull wires or ropes, etc.).

An overload controller stops the operation of the machine if the load on the platform exceeds by 20% approx. the nominal load (see chapter "General use rules") and platform is lifted.

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 prohibited.**

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 commonly referred to as 'leaving at height'.

The risks connected to the "leaving at height" do not depend exclusively on the MEWP (mobile elevating work 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 a anchoring point for people working outdoors.
- The use of the machine at xx% of its performance 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 prior testing in order to define these limitations.
- Provide for a specific evacuation procedure in case of emergency (for example: an operator always on the work 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 mobile elevating work platform equipped with:

- Motorized chassis equipped with wheels.
- 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** is motorized to allow the machine to move even when the platform is lifted (see "Use instructions"). The machines can be delivered with the following drive and steering features:

- Four drive wheels, of which two steering and two fixed.
- Four steering and drive wheels.

Furthermore, to all the above combinations, it is possible to associate, optionally, a self-locking oscillating axle.

All drive wheels are equipped with hydraulic parking brakes, positive logic type (when drive controls are released brakes are automatically activated).

**The turret** rests on a turntable fixed to the chassis and can be oriented (rotated) by 355° 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, with vertical extension, consists of a “double parallelogram” system named “pantograph”.
- The second, consists of a lifting boom with telescopic extension.
- The third, consists of a terminal boom called “Jib” (the Jib is fixed on the standard machine, and swivels 180° on the machines with platform size 800x1400 mm).

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 that move the articulated structure are provided with over-center valves directly flanged on them. 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 180° totally (90° on the right and 90° on the left) by means of a rotary actuator fitted with over-centre valve. It is fitted with rails and kickplates of prescribed height (the rails height  $\geq$  1100 mm; the kickplate height  $\geq$  150 mm; in the access area the kickplate height is  $\geq$  100 mm). There is a ladder hinged to the platform that can be lifted by the operator during normal platform work to limit the size of the platform.

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 (and with “Jib” inclination ranging between +10° and -70° with respect to the horizontal axis).

## 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 in any case on the ground) are the emergency controls for platform recovery, emergency stop, a key selector for selecting the control panel, turning on the machine and activating the motor generator for recharging the battery (A18 JRTH model only).

## 1.6. Power supply

The machines can be powered by:

- Diesel engine (model A18 JRTE).
- An electro-hydraulic system consisting of accumulators rechargeable via battery charger or diesel motor generator (A18 JRTH model).
- An electro-hydraulic system consisting of accumulators rechargeable via battery charger (A18 JRTE model).

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 write these data in the appropriate boxes below.

<b>MODEL:</b> _____	<b>CHASSIS:</b> _____	<b>YEAR:</b> _____
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Fig. 1-1

## 1.9. Location of main components

The picture shows the machine and its own components.

- 1) Platform controls.
- 2) Ground controls.
- 3) Electric control units (all models); battery charger (A18 JRTE); electric pump control inverter (A18 JRTE)
- 4) Hydraulic oil tank.
- 5) Diesel tank (A18 JRTE and A18 JRTH models).
- 6) Diesel engine (A18 JRTE) or Diesel motor generator (A18 JRTH) or drive battery (A18 JRTE).
- 7) Electric pump (A18 JRTH and A18 JRTE models).
- 8) Transmission pump (A18 JRTE only).
- 9) Movement pump (A18 JRTH and A18 JRTE models).
- 10) Hydraulic drive motor (A18 JRTE only).
- 11) Hydraulic motor for turret rotation.
- 12) 230V plug (PLATFORM ELECTRIC LINE option).
- 13) Spirit level (optional) for visual check of machine levelling.
- 14) Pantograph cylinder.
- 15) Upper boom cylinder.
- 16) Telescopic boom extension cylinder.
- 17) Master cylinder.
- 18) Slave cylinder.
- 19) Starter battery/controls (A18 JRTE and A18 JRTH models).
- 20) Battery (A18 JRTH only).
- 21) Battery charger (A18 JRTH only).
- 22) Drive control inverter (A18 JRTH only).
- 23) Electric pump control inverter (A18 JRTH only).
- 24) Front axle.
- 25) Rear axle.
- 26) Oscillating axle cylinders.
- 27) Inclinometer.
- 28) Overload controller sensor (load cell).
- 29) Turntable.
- 30) Power line plug (optional for A18 JRTE and A18 JRTE, standard for A18 JRTH).
- 31) Battery charger power supply plug (A18 JRTH and A18 JRTE models).
- 32) Microswitch M1A.
- 33) Microswitch M1B.
- 34) Microswitch M1C.
- 35) Microswitch M1E, M1F, M1G.
- 36) Anti-trapping system "AIRO SENTINEL" (optional).
- 37) Electric drive motor (A18 JRTH and A18 JRTE models).

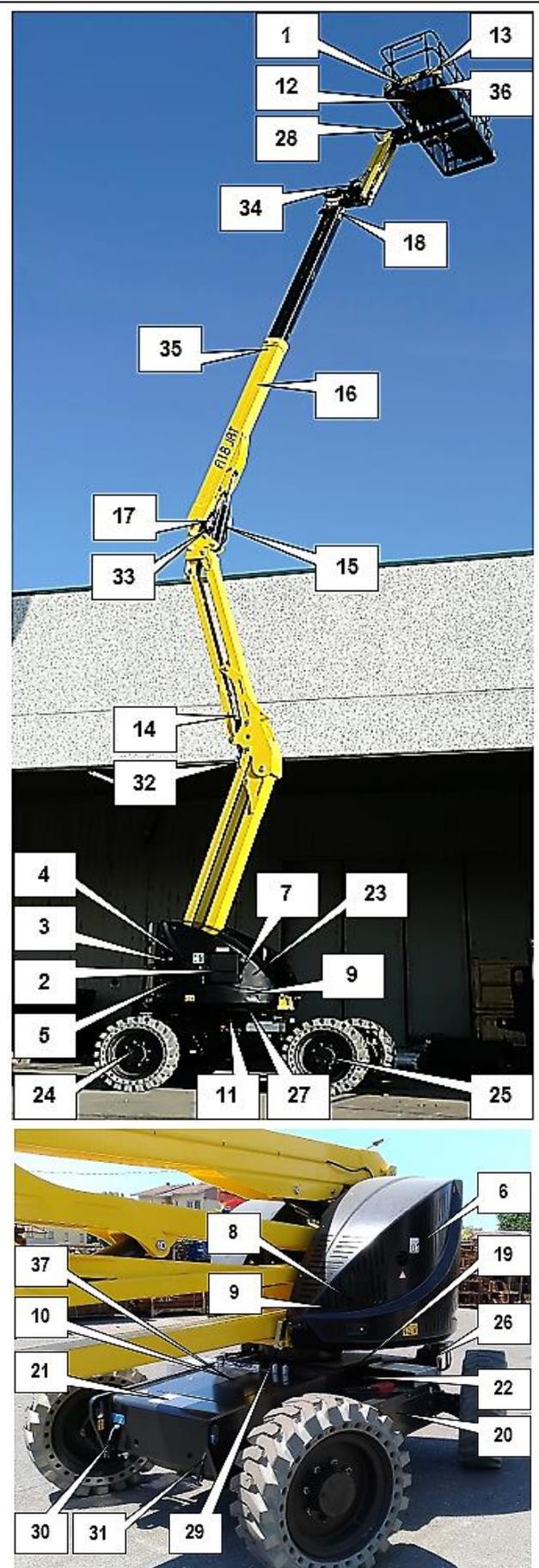


Fig.1-2

## 2. TECHNICAL FEATURES OF STANDARD MACHINES



THE TECHNICAL SPECIFICATIONS OF THE PRODUCTS SHOWN ON THE FOLLOWING PAGES ARE SUBJECT TO CHANGE WITHOUT NOTICE

### 2.1. A18 JRTD PLUS model

Dimensions:		A18 JRTD PLUS			
		Metric system		Imperial system	
Maximum working height		18.5	m	60' 8"	ft
Max. platform height		16.5	m	54' 2"	ft
Ground clearance		400	mm	15,75"	in
Max. outreach from turntable centre		9.8	m	30' 2"	ft
Max. tailswing		150	mm	5.9"	in
Turret rotation (not continuous)		355	°	355	°
Platform rotation		180	°	180	°
Jib rotation (optional) (6)		130	°	130	°
Platform height for safety speed activation		< 3	m	< 9' 10"	ft
Internal steering radius - 4WS		2.1	m	6' 11"	ft
External steering radius - 4WS		3.8	m	12' 6"	ft
Internal steering radius - 2WS		3.7	m	12' 2"	ft
External steering radius - 2WS		5.9	m	19' 4"	ft
Maximum capacity (m) - Limited working area		400	kg	881.8	lbs
Maximum amount of people on platform (n)		3		3	
Mass weight of tool and material (me) (2)		160	kg	352.7	lbs
Maximum capacity (m) - No limited the working area		300	kg	661.3	lbs
Maximum amount of people on platform (n)		3		3	
Mass weight of tool and material (me) (2)		60	kg	132.2	lbs
Maximum drive height		Max		Max	
Maximum platform dimensions (5)		0.9 x 1.8	m	2' 11" x 5' 11"	ft
Max. hydraulic pressure		350	bar	5076	psi
Max. proportional movement lifting circuit pressure		230	bar	3336	psi
Max. movement pressure ON/OFF		180	bar	2611	psi
Tyre dimensions (4)		Ø 900 x 330	mm	Ø35.4" x 13"	in
Tire type (4)		36 x 14 - 20		36 x 14 - 20	
Transport dimensions		7.0 x 2.2; h = 2.4	m	22' 12" x 7' 3" h = 7' 11"	ft
Transport dimensions with retracted jib		5.7 x 2.2; h = 2.8	m	18' 9" x 7' 3" h = 9' 2"	ft
Machine weight (unloaded) (1)		8530	kg	18805	lbs
<b>Stability limits:</b>					
Longitudinal slope		5	°	5	°
Transversal slope		5	°	5	°
Maximum wind speed (3)		12.5	m/s	27.96	mph
Maximum manual force		400	N	90	lbf
Max. load per wheel		3650	kg	8047	lbs
<b>Performance:</b>					
Drive wheels		4		4	
Max. drive speed		5	km/h	3.1	mph
Safety drive speed		0.6	km/h	0.4	mph
Oil tank capacity		90	Lt.	23.8	gal
Gradeability		40	%	40	%
Max. operating temperature		+50	°C	122	°F
Min. operating temperature		-15	°C	5	°F

<b>YANMAR Diesel Power (STAGE V – TIER4F)</b>					
	Diesel engine type	3TNV-80		3TNV-80	
	Max. motor power	18.8	kW	25.2	hp
	Adjusted Power	18.8	kW	25.2	hp
	Starter battery	12 / 135	V/Ah	12 / 132	V/Ah
	Total electrolyte quantity of battery	7	Lt.	1.85	gal
	Diesel tank capacity	70	Lt.	18.5	gal
<b>Emergency electric pump 12VDC</b>					
	Electric pump power	NA	kW	NA	hp
	Max. absorbed current	NA	A	NA	A

(1) Different limits may apply in some cases. It is recommended to comply with the data shown on the machine plate.

(2)  $me = m - (n \times 80)$ .

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

(4) Standard black rubber tyres for rough ground "SOLID AIR"; Optional non-marking tyres for rough ground "SOLID AIR".

(5) Standard steel platform 900x1800 mm; Optional increased steel platform 900x2400 mm; Optional reduced steel platform 800x1400 mm.

(6) Optional only available with reduced platform 800x1400 mm (26x46 ft).

## 2.2. Model A18 JRTH PLUS

Dimensions:		A18 JRTH PLUS:			
		Metric system		Imperial system	
Maximum working height		18.5	m	60' 8"	ft
Max. platform height		16.5	m	54' 2"	ft
Ground clearance		400	mm	15,75"	in
Max. outreach from turntable centre		9.8	m	30' 2"	ft
Max. tailswing		150	mm	5,9"	in
Turret rotation (not continuous)		355	°	355	°
Platform rotation		180	°	180	°
Jib rotation (optional) (6)		130	°	130	°
Platform height for safety speed activation		< 3	m	< 9' 10"	ft
Internal steering radius - 4WS		2.1	m	6' 11"	ft
External steering radius - 4WS		3.8	m	12' 6"	ft
Internal steering radius - 2WS		3.7	m	12' 2"	ft
External steering radius - 2WS		5.9	m	19' 4"	ft
Maximum capacity (m) - Limited working area		400	kg	881.8	lbs
Maximum amount of people on platform (n)		3		3	
Mass weight of tool and material (me) (2)		160	kg	352.7	lbs
Maximum capacity (m) - No limited working area		300	kg	661.3	lbs
Maximum amount of people on platform (n)		3		3	
Mass weight of tool and material (me) (2)		60	kg	132.2	lbs
Maximum drive height		Max		Max	
Maximum platform dimensions (5)		0.9 x 1.8	m	2' 11" x 5' 11"	ft
Max. proportional movement lifting circuit pressure		230	bar	3336	psi
Max. movement pressure ON/OFF		180	bar	2611	psi
Tyre dimensions (4)		Ø 900 x 330	mm	Ø35.4" x 13"	in
Tire type (4)		36 x 14 - 20		36 x 14 - 20	
Transport dimensions		7.0 x 2.2; h = 2.4	m	22' 12" x 7' 3" h = 7' 11"	ft
Transport dimensions with retracted jib		5.7 x 2.2; h = 2.8	m	18' 9" x 7' 3" h = 9' 2"	ft
Machine weight (unloaded) (1)		8930	Kg	19687	lbs
<b>Stability limits:</b>					
Longitudinal slope		5	°	5	°
Transversal slope		5	°	5	°
Maximum wind speed (3)		12.5	m/s	27.96	mph
Maximum manual force:		400	N	90	lbf
Max. load per wheel		3700	Kg	8157	lbs
<b>Performance:</b>					
Drive wheels		4		4	
Max. drive speed		5	km/h	3.1	mph
Safety drive speed		0.6	km/h	0.4	mph
Oil tank capacity		90	Lt.	23.8	gal
Gradeability		40	%	40	%
Max. operating temperature		+50	°C	122	°F
Min. operating temperature		-15	°C	5	°F

<b>Battery power – LITHIUM TECHNOLOGY</b>					
	Standard battery capacity and voltage	48 / 300	V/Ah	48 / 300	V/Ah
	Standard battery weight	240	Kg	529	lbs
	Single-phase battery charge (HF) - STANDARD	48 / 50	V/A	48 / 50	V/A
	Battery charger power supply mains voltage - single phase	95-265	V AC	95-265	V AC
	Power frequency	50-60	Hz	50-60	Hz
	Max. current absorbed by battery charger	15	A	15	A
	Max. current provided during charging	50	A	50	A
	Max. installed power	17.5	kW	23.5	hp
	AC electric pump power	9	kW	12	hp
	Max. absorbed current	210	A	210	A
	AC drive motor power	8.5	kW	11.4	hp
	Max. absorbed current	600	A	600	A
	YANMAR motor generator (STAGE V – TIER4F)	3TNV-74		3TNV-74	
	Max. motor power	14.2	kW	19	hp
	Adjusted Power	14.2	kW	19	hp
	Rotation speed	3000	g/min	3000	rpm
	Electric generator power	10	kVA	10	kVA
	Starter battery	12 / 135	V/Ah	12 / 135	V/Ah
	Total electrolyte quantity of battery	7	Lt.	1.85	gal
	Diesel tank capacity	70	Lt.	18.5	gal
	Charger system SUPERCHARGER (HF) - OPTIONAL				
	Max. current provided during charging	100	A	100	A
<b>Battery power – AGM TECHNOLOGY</b>					
	Standard battery capacity and voltage	48 / 340	V/Ah	48 / 340	V/Ah
	Standard battery weight	8 x 57	Kg	8 x 126	lbs
	Single-phase battery charger (HF)	48 / 50	V/A	48 / 50	V/A
	Battery charger power supply mains voltage - single phase	95-265	V AC	95-265	V AC
	Power frequency	50-60	Hz	50-60	Hz
	Max. current absorbed by battery charger	15	A	15	A
	Max. current provided during charging operations	50	A	50	A
	Max. installed power	17.5	kW	23.5	hp
	AC electric pump power	9	kW	12	hp
	Max. absorbed current	210	A	210	A
	AC drive motor power	8.5	kW	11.4	hp
	Max. absorbed current	600	A	600	A
	YANMAR motor generator (STAGE V – TIER4F)	3TNV-74		3TNV-74	
	Max. motor power	14.2	kW	19	hp
	Adjusted Power	14.2	kW	19	hp
	Rotation speed	3000	g/min	3000	rpm
	Electric generator power	10	kVA	10	kVA
	Starter battery	12 / 135	V/Ah	12 / 135	V/Ah
	Total electrolyte quantity of battery	7	Lt.	1.85	gal
	Diesel tank capacity	70	Lt.	18.5	gal
<b>Emergency electric pump 12VDC</b>					
	Power	NA	kW	NA	hp
	Max. absorbed current	NA	A	NA	A

- (1) Different limits may apply in some cases. It is recommended to comply with the data shown on the machine plate.
- (2)  $m_e = m - (n \times 80)$ .
- (3) Wind speeds higher or equal to 12.5 m/s indicate that the machines can be also used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.
- (4) Standard black rubber tyres for rough ground "SOLID AIR"; Optional non-marking tyres for rough ground "SOLID AIR".
- (5) Standard steel platform 900x1800 mm; Optional increased steel platform 900x2400 mm; Optional reduced steel platform 800x1400 mm.
- (6) Optional only available with reduced platform 800x1400 mm (26x46 ft).

### 2.3. A18 JRTE PLUS model

Dimensions:		A18 JRTE PLUS:			
		Metric system		Imperial system	
Maximum working height		18.5	m	60' 8"	ft
Max. platform height		16.5	m	54' 2"	ft
Ground clearance		400	mm	15,75"	in
Max. outreach from turntable centre		9.8	m	30' 2"	ft
Max. tailswing		150	mm	5,9"	in
Turret rotation (not continuous)		355	°	355	°
Platform rotation		180	°	180	°
Jib rotation (optional) (6)		130	°	130	°
Platform height for safety speed activation		< 3	m	< 9' 10"	ft
Internal steering radius - 4WS		2.1	m	6' 11"	ft
External steering radius - 4WS		3.8	m	12' 6"	ft
Internal steering radius - 2WS		3.7	m	12' 2"	ft
External steering radius - 2WS		5.9	m	19' 4"	ft
Maximum capacity (m) - Limited working area		400	kg	881.8	lbs
Maximum amount of people on platform (n)		3		3	
Mass weight of tool and material (me) (2)		160	kg	352.7	lbs
Maximum capacity (m) - No limited working area		300	kg	661.3	lbs
Maximum amount of people on platform (n)		3		3	
Mass weight of tool and material (me) (2)		60	kg	132.2	lbs
Maximum drive height		Max		Max	
Maximum platform dimensions (5)		0.9 x 1.8	m	2' 11" x 5' 11"	ft
Max. proportional movement lifting circuit pressure		230	bar	3336	psi
Max. movement pressure ON/OFF		180	bar	2611	psi
Tyre dimensions (4)		Ø 900 x 330	mm	Ø35.4" x 13"	in
Tire type (4)		36 x 14 - 20		36 x 14 - 20	
Transport dimensions		7.0 x 2.2; h = 2.4	m	22' 12" x 7' 3" h = 7' 11"	ft
Transport dimensions with retracted jib		5.7 x 2.2; h = 2.8	m	18' 9" x 7' 3" h = 9' 2"	ft
Machine weight (unloaded) (1)		8950	Kg	19730	lbs
<b>Stability limits:</b>					
Longitudinal slope		5	°	5	°
Transversal slope		5	°	5	°
Maximum wind speed (3)		12.5	m/s	27.96	mph
Maximum manual force		400	N	90	lbf
Max. load per wheel		3700	Kg	8157	lbs
<b>Performance:</b>					
Drive wheels		4		4	
Max. drive speed		5	km/h	3.1	mph
Safety drive speed		0.6	km/h	0.4	mph
Oil tank capacity		90	Lt.	23.8	gal
Gradeability		40	%	40	%
Max. operating temperature		+50	°C	122	°F
Min. operating temperature		-15	°C	5	°F

<b>Battery power – AGM TECHNOLOGY</b>					
	Standard battery voltage and capacity - Drive Battery	48 / 460	V/Ah	48 / 460	V/Ah
	Total electrolyte quantity of standard battery	115	Lt.	30.4	gal
	Standard battery weight	680	Kg	1500	lbs
	Single-phase battery charge (HF) - STANDARD	48 / 50	V/A	48 / 50	V/A
	Battery charger power supply mains voltage - single phase	95-265	V AC	95-265	V AC
	Power frequency	50-60	Hz	50-60	Hz
	Max. current absorbed by battery charger	15	A	15	A
	Max. current provided during charging operations	50	A	50	A
	Max. installed power	17.5	kW	23.5	hp
	AC electric pump power	9	kW	12	hp
	Max. absorbed current	210	A	210	A
	AC drive motor power	8.5	kW	11.4	hp
	Max. absorbed current	600	A	600	A

(1) Different limits may apply in some cases. It is recommended to comply with the data shown on the machine plate.

(2)  $m_e = m - (n \times 80)$ .

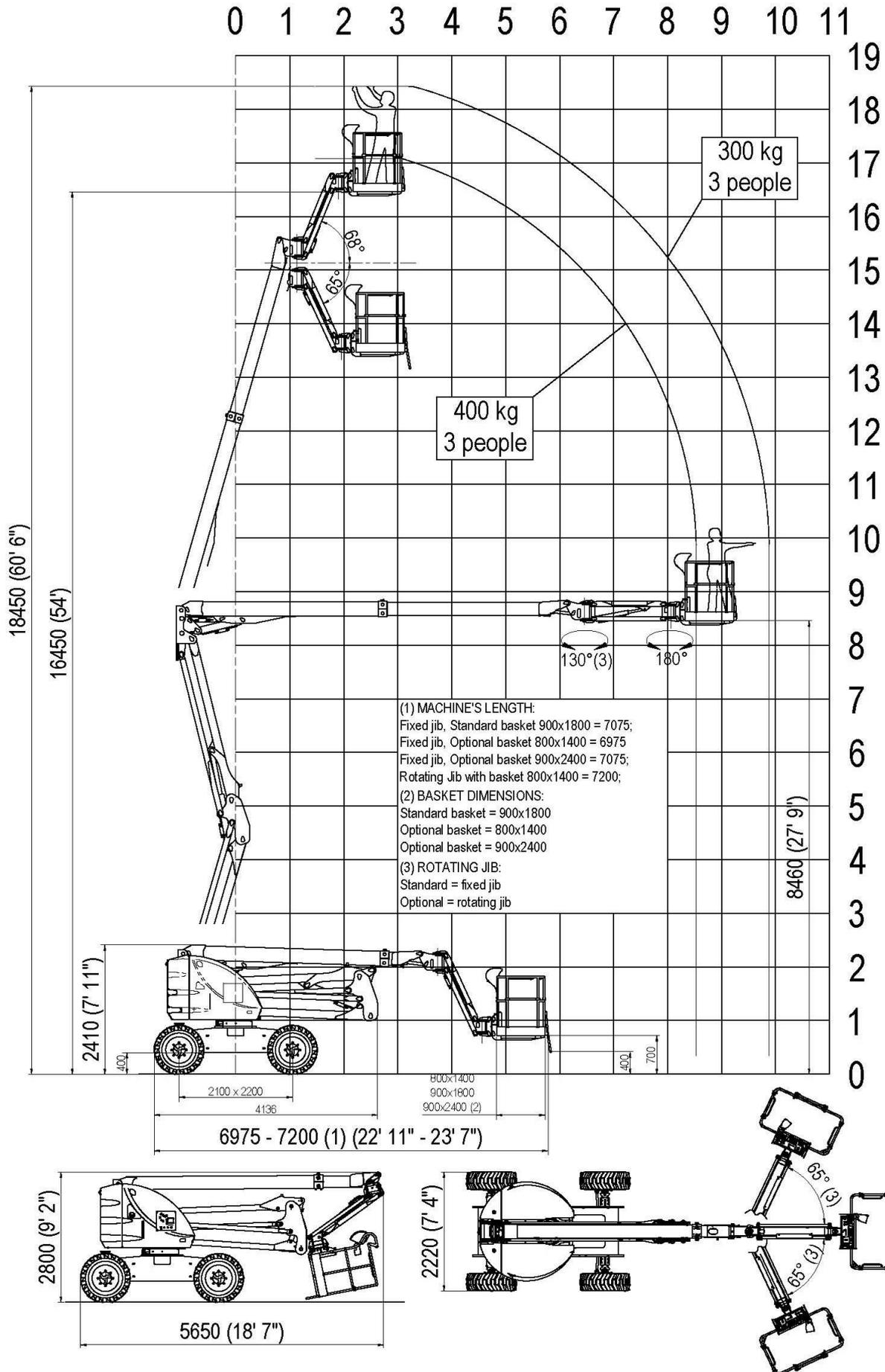
(3) Wind speeds higher or equal to 12.5 m/s indicate that the machines can be also used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.

(4) Standard black rubber tyres for rough ground "SOLID AIR"; Optional non-marking tyres for rough ground "SOLID AIR".

(5) Standard steel platform 900x1800 mm; Optional increased steel platform 900x2400 mm; Optional reduced steel platform 800x1400 mm.

(6) Optional only available with reduced platform 800x1400 mm (26x46 ft).

# A18 JRTD – JRTH - JRTE



## 2.4. Vibrations and noise

Noise tests have been carried out under the most unfavourable conditions to study the effects on the operator. Sound power level guaranteed (A), according to the directive 2005/88/CE, is **104 dB(A)**; the level of audible pressure at the platform control panel is **76,5 dB(A)**.

As to vibrations in ordinary working conditions:

- The average weighted quadratic value in frequency of the acceleration which the upper members must withstand is below **2.5 m/sec<sup>2</sup>** 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 upper members must withstand is less than **0.5 m/sec<sup>2</sup>** for each of the models to which this 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.3-1

#### 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.

### 3.3. Use instructions

#### 3.3.1. General

The electrical and hydraulic circuits are equipped 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 lightning system.
- Before using the machine check its integrity and conservation state.
- 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 power 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 moving the machine, ensure that any connecting plugs are disconnected from the power supply point. Always check the position of the cable during the movements.
- To avoid any instability, strictly 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.
- As soon as the platform is lifted (the tolerance varies from model to model) the safety drive speed is automatically activated (all models of this handbook have passed the stability tests in compliance with standard EN280).
- Drive the machine with lifted platform only on flat grounds, verifying the absence of holes or steps on the floor and bearing in mind the overall dimensions of the machine.
- 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 must place them as shown in picture A or B while the transported operator must keep them as shown in picture C.



Fig.3-2

### 3.3.3. Operating procedures

- 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 red warning light and the audible alarm (the latter is only activated if the platform is raised) on the platform control panel are triggered, the machine is not correctly positioned (see section "Operating instructions"), and it is necessary to return the platform to the low position to resume working. If the tilt alarm trips with the platform elevated, the only possible operations are those that allow lowering the platform.
- The machine is equipped with an overload controller which stops the platform in case of overloading. In case of platform overloading when lifted, also drive is disabled. Platform operation can be resumed only after removing the overload. Should the audible alarm and the red light located on the platform control panel turn on, then the platform is overloaded (see chapter "Red warning light overload"). Remove the exceeding load before starting operations again.
- Electric-powered machines feature a device for checking the state of battery charge (battery protection): when the battery charge reaches the low battery level (10% residual charge for the A18 JRTH model; 20% residual charge for the A18 JRTE model) the condition is signalled to the operator on the platform by the flashing red light. In this condition lifting is disabled. Battery should be immediately charged.
- Do not lean over the platform edge 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 cohesive and horizontal soil (following chapters).
- Drive the machine with lifted platform only if the soil is cohesive and horizontal.
- Do not use the thermic drive power (A18 JRTD and A18 JRTH models) 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.**

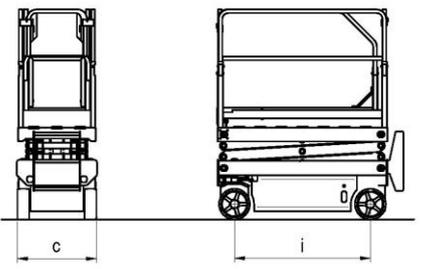
Beaufort Number	Wind speed (km/h)	Wind speed (m/s)	Description	Sea conditions	Land conditions
0	0	<0.28	Calm	Flat	Calm. Smoke rises vertically.
1	1-6	0.28-1.7	Light air	Ripples without crests.	Wind motion visible in smoke.
2	7-11	1.7-3	Light Breeze	Small wavelets. Crests of glassy appearance, not breaking.	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. Ground pressure and load-bearing capacity

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 stabilizers (p1 and p2).

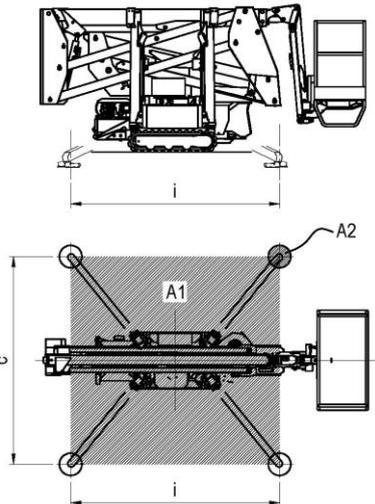
SYMBOL	U.M.	DESCRIPTION	EXPLANATION	FORMULA
<b>P1</b>	Kg	Total machine weight	It represents the machine weight, nominal load excluded. Note: always refer to the details indicated on the plates affixed to the machine.	-
<b>M</b>	Kg	Nominal load	The max. load allowed for the work platform.	-
<b>A1</b>	cm <sup>2</sup>	Area occupied on the ground	Machine supporting area on the ground determined by the result of TRACK x WHEEL BASE.	$A1 = c \times i$
<b>c</b>	cm	Track	Cross width of machine measured outside the wheels. Or: Cross width of machine measured between levelling outrigger centres.	-
<b>i</b>	cm	Wheel base	Longitudinal length of machine measured between wheel centres. Or: Longitudinal length of machine measured between levelling outrigger centres.	-
<b>A2</b>	cm <sup>2</sup>	Wheel or levelling stabilizer area	Wheel or levelling stabilizer ground support area. The wheel support area on the ground must be verified empirically by the operator; the levelling stabilizer support area depends on the shape of the support foot.	-
<b>P2</b>	Kg	Max. load on wheel or levelling stabilizer	This represents the max. load that can be discharged onto the ground by a wheel or by a levelling stabilizer 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.	-
<b>p1</b>	Kg/cm <sup>2</sup>	Pressure on ground	Average pressure placed on the ground in idle conditions and supporting the nominal load.	$p1 = (P1 + M) / A1$
<b>p2</b>	Kg/cm <sup>2</sup>	Max specific pressure	Max. pressure which a wheel or a levelling stabilizer can place on the ground when the machine is in the worst position and load conditions.	$p2 = P2 / A2$



**EXAMPLE 1: SCISSOR LIFT**

P1 = 1395 kg  
P2 = 680 kg  
M = 250 kg  
c = 76,5 cm  
i = 132,0 cm  
A1 = c x i = 10098 cm<sup>2</sup>  
A2 = 71,5 cm<sup>2</sup>

$p1 = (P1+M)/A1 = 0,16 \text{ kg/cm}^2$   
 $p2 = P2/A2 = 9,5 \text{ kg/cm}^2$



**EXAMPLE 1: CRAWLER LIFT**

P1 = 2200 kg  
P2 = 920 kg  
M = 200 kg  
c = 295 cm  
i = 295 cm  
A1 = c x i = 87025 cm<sup>2</sup>  
A2 = 62,8 cm<sup>2</sup>

$p1 = (P1+M)/A1 = 0,03 \text{ kg/cm}^2$   
 $p2 = P2/A2 = 14,6 \text{ kg/cm}^2$

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/ cm <sup>2</sup>
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 power 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, without injuries 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 except for preliminary operation checks by the operator. 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. Familiarisation

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 that:

- Make sure the battery is fully charged and the fuel tank is full.
- The oil level lies between the min. and max. value (with lowered platform).
- The ground is sufficiently horizontal and solid.
- The machine carries out all operations in safety
- The wheels and drive motors are properly fixed.
- The wheels are in good conditions.
- Make sure the 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 controls are perfectly efficient both on the platform and on the chassis, including the dead-man system.
- 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

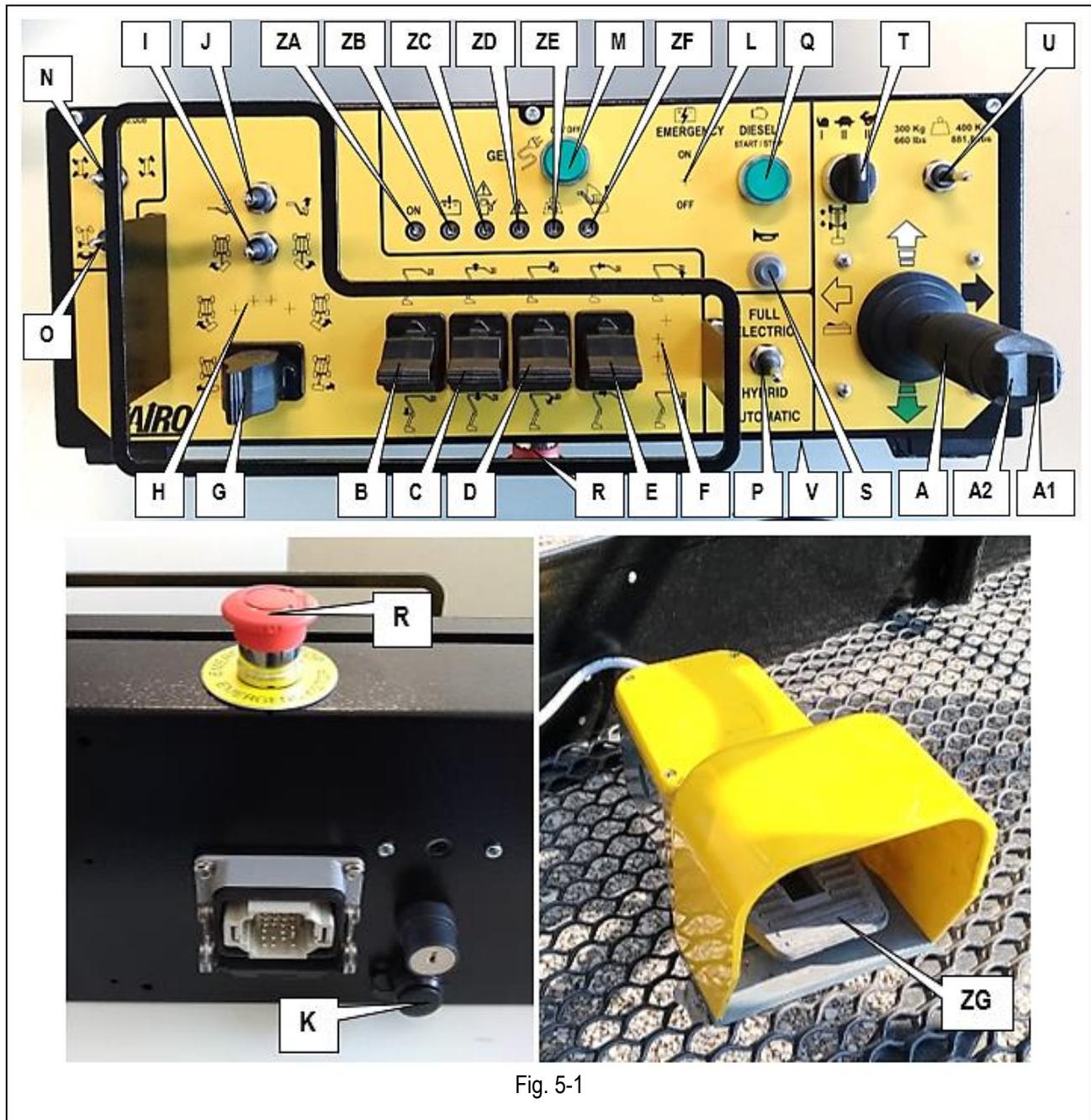


Fig. 5-1

- A) Drive proportional joystick control
- A1) Right-steering switch – front axle
- A2) Left-steering switch – front axle
- B) Proportional lever control pantograph up/down
- C) Proportional lever control boom up/down
- D) Proportional lever control jib up/down
- E) Proportional lever control telescopic boom in/out
- F) Proportional lever control QUICK UP/QUICK DOWN (OPTIONAL)
- G) Proportional lever control turret rotation
- H) Proportional control lever - JIB rotation (OPTIONAL– only platform 800x1400/26x46 ft)
- I) Platform rotation switch
- J) Platform level switch
- K) ETHERNET RJ45 plug for diagnostics and calibration
- L) Emergency electric pumps button (OPTIONAL)
- M) Current generator START/STOP button for power line on the platform (OPTIONAL)
- N) Steering mode selector
- O) Rear axle steering switch
- P) Select operating mode FULL ELECTRIC / HYBRID AUTOMATIC (A18 JRTH model)
- Q) Diesel engine START/STOP button (A18 JRTD and A18 JRTH models)
- R) Emergency STOP button
- S) Manual horn
- T) Drive speed selector
- U) Work capacity selector
- V) USB plug mobile devices charger (OPTIONAL)
- ZA) Enabled control panel warning light
- ZB) Low battery warning light (not active for Diesel models)
- ZC) Diesel engine fault / low fuel level warning light (OPTIONAL)
- ZD) Danger warning light
- ZE) Overload warning light
- ZF) Reached outreach limit warning light
- ZG) Dead-man pedal

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 the dead-man pedal **ZG** on the platform. If the dead-man pedal is accidentally released while the machine is operating, the movement is immediately stopped.



**WARNING!**

**Holding down the dead-man pedal for over 10 seconds without carrying out any operation will disable the control panel. The disabled control panel condition is indicated by the flashing green led (ZA). To operate the machine again it is necessary to release the dead-man pedal and press it again; the green led (ZA) will light up steady and for the next 10 seconds all controls will be enabled.**

### 5.1.1. Drive



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.



**IT IS FORBIDDEN** to drive the machine when the platform is lifted unless the chassis is flat and steady with no holes and steps.

To drive the machine, carry out the following operations in sequence:

- a) Press dead-man pedal **ZG** on the platform; its activation is signalled by the steady light of the green LED **ZA**;
- b) Within 10 seconds from the green steady led lighting up, set the proportional joystick control **A** forward for forward drive or backward for reverse drive.



**WARNING!!**

Drive and steering controls can take place at the same time, but they are interlocked with the platform movement controls (lifting/lowering/rotation). With platform lowered (booms down, telescopic boom in, jib at a height between +10° and -70°) simultaneous steering-drive-turret rotation is possible to facilitate the machine positioning in narrow spaces.

With platform lowered (booms down, telescopic boom in, jib at a height between +10° and -70°) it is possible to select different drive speeds by means of the speed selector **T**.

**NOTES:**

- To achieve the maximum drive speed, set the speed selector (**T**) to position "III", and press the proportional joystick **A** down.
- To operate on high ascending slopes (e.g., while loading the machine onto a truck) set speed selector **T** to position "I".
- When travelling on a considerable downhill gradient (e.g., while unloading the machine from a truck) and set the minimum speed with the lowered platform, the speed selector **T** must be in "I".

With platform lifted the safety drive speed is automatically activated.

## 5.1.2. Steering

The machine is equipped with three different steering mode, depending on the position of speed selector **N**:

- Left position: **4 DISCONCORDANT steering wheels (minor steering radius)**. To steer, press the **A1 / A2** buttons located on the proportional joystick for drive control (press the right button for steering to the right and vice versa). **O** switch is **DISABLED**.
- Central position: **2 steering wheels**. To steer, **front axle** press the buttons **A1 / A2** located on the proportional joystick for drive control (press the right button for steering to the right and vice versa). To steer **rear axle**, press switch **O**. If the machine is equipped with the "**Smart Steering**" option during rear axle steering when the wheels reach the straight-ahead position, the steering control stops. To continue steering, release and operate switch '**O**' again.
- Right position: **4 CONCORDANT steering wheels (crab steering)**. To steer, press the **A1 / A2** buttons located on the proportional joystick for drive control (press the right button for steering to the right and vice versa). **O** switch is **DISABLED**.



Fig. 5-2

Also, the steering control is enabled by the dead-man pedal and it is possible only if the green led **ZA** is lit up steady.



**NOTE FOR MACHINES WITH 4 STEERING WHEELS:**

**When selected 4 DISCONCORDANT steering wheels mode, (minor steering radius) the III drive speed is automatically limited.**

### 5.1.3. Platform Positioning Movements

To carry out all movements other than drive, use proportional levers **B, C, D, E, F, G, H** and switches **I** and **J**.

To achieve the movement, it is necessary to carry out the following operations in sequence:

- Press the dead-man pedal located on the platform; the green led **ZA** will light up steady indicating its enabling.
- Within 10 seconds from the green steady led lighting up set the proportional joystick control or the desired switch in the direction shown by the serigraphy on the control panel.

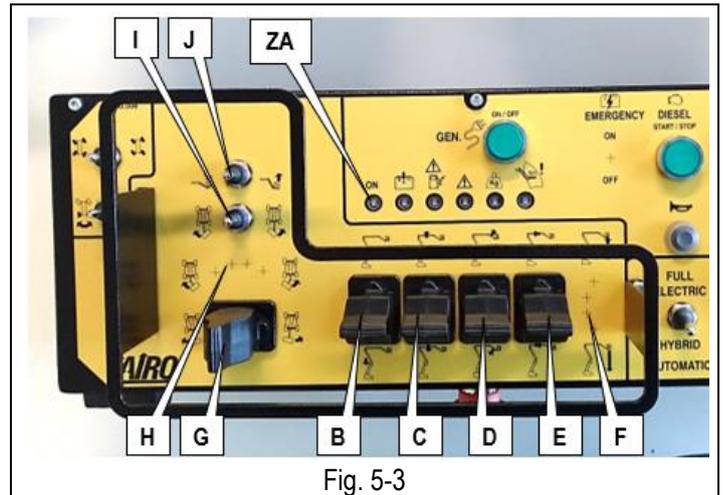


Fig. 5-3

**NOTE:** before activating the proportional joystick control or the desired switch, the dead-man pedal must be pressed.

Release the dead-man pedal and the manoeuvre will be immediately stopped.



The platform positioning controls can be used simultaneously (unless otherwise indicated). Furthermore, the turret orientation can be operated at the same time as the drive and steering controls in lowered platform conditions (booms lowered, telescopic boom in, jib at a height between +10° and -70°).

#### 5.1.3.1. Pantograph (lower boom) up/down

To lift/lower the pantograph (lower boom), use the proportional joystick **B**.  
Set the proportional lever **B** forwards for lifting or backward for lowering.

#### 5.1.3.2. Upper boom up/down

To lift / lower the upper boom, use the proportional joystick **C**.  
Set the proportional joystick **C** forwards or backwards respectively to lift/lower the boom.

#### 5.1.3.3. Jib up/down

To lift/lower the jib, use the proportional joystick **D**.  
Set the proportional joystick **D** forwards or backwards respectively to lift/lower the boom.

#### 5.1.3.4. Telescopic boom in/out

To extend/retract the telescopic boom, use the proportional lever **E**.  
Operate the proportional lever **E** by moving it backwards to perform the extension, or forwards to perform the retraction.

### 5.1.3.5. QUICK UP/QUICK DOWN (OPTIONAL)

This lever controls the quick lifting/lowering of the platform, while simultaneously controlling the following manoeuvres:

- Pantograph UP/DOWN.
- Upper boom UP/DOWN.
- Jib UP/DOWN.
- Telescopic boom extension/retraction.

To carry out the QUICK UP/QUICK DOWN manoeuvre, use the proportional lever **F**.  
Set the proportional joystick **F** forwards or backwards respectively to lift/lower the boom.

### 5.1.3.6. Turret orientation (rotation)

To carry out the turret orientation (rotation), use the proportional lever **G**.  
Set the proportional joystick **G** to the right for right rotation or to the left for left rotation.



**Before carrying out this operation make sure that the mechanical lock device of the turret - if any - be deactivated (see chapter 6 “Handling and carrying”).**

**With platform lowered (booms down, telescopic boom in, jib at a height between +10° and -70°) simultaneous steering-drive-turret rotation is possible to facilitate the machine positioning in narrow spaces.**

### 5.1.3.7. JIB rotation (optional)

To rotate the JIB, use the proportional lever **H**.  
Set the proportional joystick **H** to the right for right rotation or to the left for left rotation.

### 5.1.3.8. Platform rotation

To rotate the platform, use switch **I**.  
Set switch **I** to the right for right rotation or to the left for left rotation.

### 5.1.3.9. Platform levelling

The platform is automatically levelled. Should it be necessary to reset the correct level, use the switch **J**.  
Set switch **J** to the left for backward levelling, or to the right for forward levelling.



**WARNING!! For machines in STANDARD configuration, this operation can be carried out only when booms are completely lowered. No result is achieved if these operations are carried out when the platform is lifted.**

**This manoeuvre cannot be carried out when other operations are taking place.**

## 5.1.4. Other functions of the platform control panel

### 5.1.4.1. Working capacity selector

By means of selector **U** it is possible to operate with two different capacities:

- 300 kg including 3 people without limited the working area.
- 400 kg including 3 people within limited working area.

Depending on the selected capacity, the work diagram is automatically activated as shown in Chapter 2.

### 5.1.4.2. FULL ELECTRIC / HYBRID AUTOMATIC mode selector (A18 JRTH model)

Using selector **P**, it is possible to choose to operate in the following two modes:

- FULL ELECTRIC.
- HYBRID AUTOMATIC.

In FULL ELECTRIC mode, the machine runs on battery power until the maximum permitted discharge level is reached, after which the battery must be recharged using mains power (115-230VAC) or HYBRID AUTOMATIC mode must be activated.

In HYBRID AUTOMATIC mode, the machine runs on battery power up to a residual charge of 40%, beyond which the Diesel motor generator is automatically activated to keep the battery charged. In this mode, the Diesel motor generator automatically switches off when the battery reaches 95% charge.



**WARNING! Do not activate the HYBRID AUTOMATIC mode while working indoors**

### 5.1.4.3. Diesel engine START/STOP button

#### 5.1.4.3.1. DIESEL engine START/STOP for DIESEL machines (A18 JRTD)

Press the backlit button **Q** to start or stop the Diesel engine. The backlit button is on when the Diesel engine is running and off when the Diesel engine is not running.

#### 5.1.4.3.2. DIESEL motor generator START/STOP for HYBRID machines (A18 JRTH)

The backlit button **Q** is only available if the HYBRID AUTOMATIC mode has been selected beforehand (see previous paragraphs).

If the remaining battery charge level is between 40% and 95%, the motor generator can be started by pressing backlight button **Q**. The backlit button is on when the Diesel motor generator is running and off when the Diesel engine is not running.

If the battery is completely charged, the backlit button **Q** is not available.

If the Diesel motor generator is automatically switched on, the backlit button **Q** is on. By pressing the backlit button **Q**, the Diesel motor-generator switches off, if the battery charge is between 10% and 40%, the motor-generator automatically switches on after few seconds and button **Q** switches on again.

In order to avoid automatic start-up of the motor generator, it is necessary to operate in FULL ELECTRIC mode.

#### 5.1.4.4. Current generator START/STOP button for power line on the platform

##### 5.1.4.4.1. Current generator START/STOP for DIESEL machines (OPTIONAL for A18 JRTD)

Press the backlit button **M** to switch the power generator ON or OFF and enable/disable 115-230V power supply to the platform.

- The backlit button **M** is lit when the current generator is on. In this case all machine controls are disabled.
- Backlit button **M** is off when the generator is switched off and normal operation of the machine is possible.

##### 5.1.4.4.2. Current generator START/STOP for HYBRID machines (standard for A18 JRTH)

Pressing the backlit button **M** activates or deactivates the 115-230V socket on the platform and switches the Diesel motor generator on or off, if it is not already in battery charging mode

- The backlit button **M** is lit when the socket on the platform is active and the Diesel motor generator is working (see backlit button **Q**).
- The backlit button **M** is working when the current generator is working. In this case the Diesel motor generator could be on during battery charging operations.

The backlit button **M** is active regardless of the selected working mode (FULL ELECTRIC or HYBRID AUTOMATIC).

#### 5.1.4.5. Emergency electric pump START/STOP button (OPTIONAL)

Press the backlit button **L** to switch the emergency electric pump ON and operate the boom controls just for bringing the platform down in case of emergency.



**WARNING! The power by the 12V emergency electrical pump is only for platform lowering in case of faults in the main powers. Do not use it during normal work operations. After using the 12V emergency electric pump the battery may require charging by means of an external battery charger, before using the machine again.**

#### 5.1.4.6. Manual horn

Horn to warn that the machine is moving. The horn is manually operated by means of button **S**.

#### 5.1.4.7. Emergency stop

By pressing the red emergency STOP button **R** all control functions are stopped. Normal functions are retrieved by rotating the button 1/4 turn clockwise.

#### 5.1.4.8. ETHERNET RJ45 plug for diagnostics and calibration

ETHERNET RJ45 plug **K** is available to the customer service run diagnostics and calibrating the machine.

#### 5.1.4.9. USB plug for mobile devices charging (OPTIONAL)

The USB V plug (OPTIONAL) can be used to recharge mobile devices (e.g. smartphones) used by the operator on the platform.

#### 5.1.4.10. Warning lights

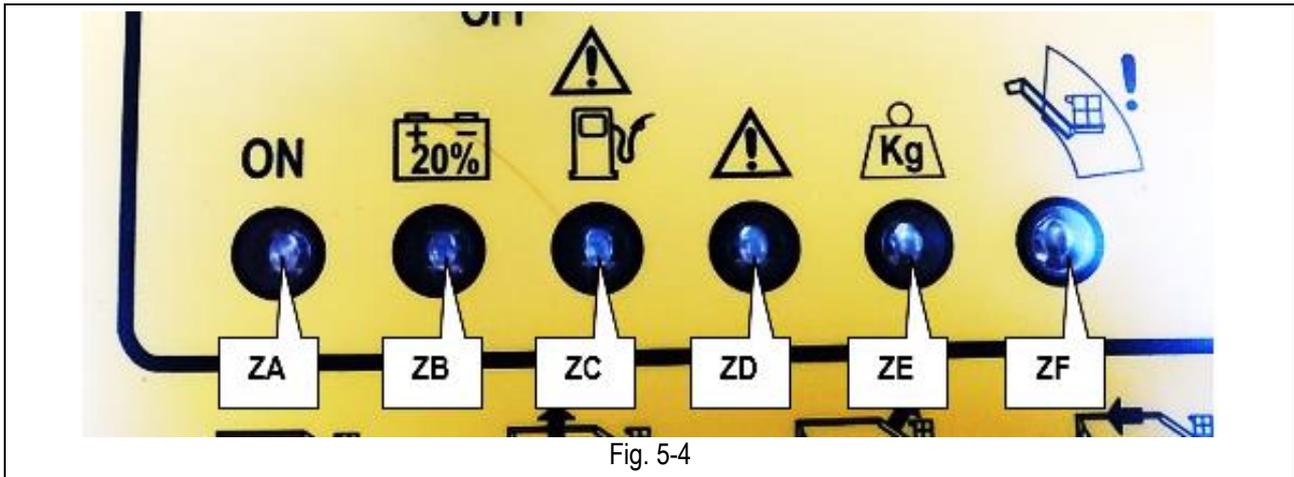


Fig. 5-4

Each warning light indicates a specific alarm, as indicated in follow paragraphs. The simultaneous slashing of all the warning lights indicates a fault in the machine control system, or the activation of the EMERGENCY OVERRIDE (see below).

##### 5.1.4.10.1. Enabled control panel green warning light (ZA)

Lit up flashing when the machine is turned on. If the platform control panel has been selected and this light is flashing, the controls are not enabled because the present man pedal is not pressed or has been pressed for more than 10 seconds without any manoeuvre having been carried out.

On steady with machine on and dead-man pedal pressed for less than 10 seconds. With platform controls all controls are enabled (unless other types of warning show up – see next paragraphs).

##### 5.1.4.10.2. Low battery red warning light (ZB) – (A18 JRTH)

Flashing when the battery has insufficient remaining charge (10% for A18 JRTH; 20% for A18 JRTE). In this condition lifting and telescopic boom extension are disabled. The batteries must be recharged immediately.

##### 5.1.4.10.3. Diesel engine fault / low fuel red warning light (ZC)

This warning light indicates malfunctioning of diesel engine or low fuel.

On steady with machine on; platform controls; Diesel drive power selected. Diesel Engine off ready for start-up. Insufficient motor oil pressure.

Slow flashing in the event of the engine 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 (approx. 10 litres of fuel left). This warning is active only when the motor is running. This function is OPTIONAL.

Slow flashing with simultaneous activation of audible alarm in case of request for regeneration of the DPF filter of the diesel engine. This function is only available on machine equipped with a DPF Diesel engine.

#### 5.1.4.10.4. Danger red warning light (ZD)

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 (pedal, joystick control, switches, etc).

Lit up steady with activation of an audible alarm (only if the platform is up) in case of:

- Excessive ground inclination.
- Excessive wind speed (optional)
- Ambient temperature < -20°C (optional)

All lifting operations and telescopic boom extension are disabled (except JIB lifting). If platform is lifted, drive is also disabled. It is necessary to lower the booms completely and then place the machine onto a flat surface or wait for correct climatic conditions.



**WARNING!** The activation of this indicator warns of a dangerous situation since the machine has reached a dangerous inclination level for the machine stability, or in the event of adverse weather conditions.

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.

#### 5.1.4.10.5. Overload red warning light (ZE)

Lit up flashing with activation of audible alarm with a platform overload exceeding 20% the nominal load. If platform is lifted, the machine is completely locked. If the platform is lowered all drive/steering operations are still possible but lifting/rotation are disabled. Remove the overload before using the machine again.

Fast flashing in case of fault in the platform overload controller. With lifted platform the machine is completely locked. After reading the manual instructions, trained staff can carry out an emergency operation for platform lowering.

Lit up steady with activation of an audible alarm in case of overload controller by-pass on the platform obtained with a key-selector.



The machine can work according to a working diagram in which the maximum load lifted depends on the U selector. Refer to the loads in Chapter 2.



**WARNING!** The activation of this indicator is a synonym of danger since the load at platform is exceeding or no overload controller is active upon signalling.  
For adjustment or activation in emergency situations read the MAINTENANCE chapter.

#### 5.1.4.10.6. Reached outreach limit red warning light (ZF)

Warning light lit up flashing when the platform is at the limit of the working area and a disable control is activated due to this limit.

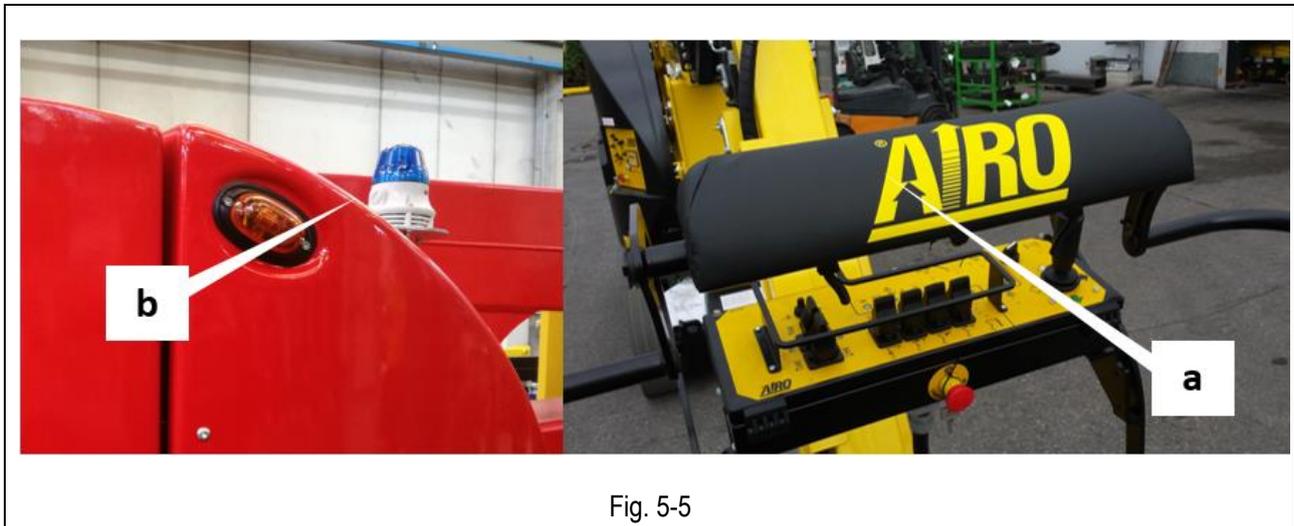
Warning light lit up steady when the platform is located outside the allowed working area. In this condition all movements are disabled.

### 5.1.5. Anti-trapping system “AIRO SENTINEL” – OPTIONAL

AIRO SENTINEL secondary safety system (OPTIONAL) is used to reduce the risk for the operator of being crushed against obstacles and external structures during the operations from the platform control panel.

The system is equipped with:

- a. Bumper or sensitive rollbar.
- b. Blue flashing light with integrated audible alarm.



The overall system with all functions is only available from the platform control panel.

If an operator is accidentally trapped between the BUMPER / SENSITIVE ROLLBAR (a) and an external obstacle, the following safety procedure is automatically started and will take at least 3 seconds:

- The movement alarm (integrated in the standard control system) and the platform audible alarm go automatically off at the same time and last for 3 seconds, or for the whole time during which the operator remains trapped and/or the dead-man pedal is down.
- A red warning light is switched on the platform control panel for 3 seconds or for the entire time during which the operator remains trapped and/or the dead-man safety pedal is down.
- When operating from the platform, the manoeuvre (or simultaneous manoeuvres) that caused the operator to be crushed stops immediately and/or reverses automatically as described below in the "SENTINEL movement logic" section.
- The display on the ground shows "**OPERATOR TRAPPED**", which remains for 3 seconds or as long as the operator remains trapped and/or the dead-man pedal is pressed.
- If the operator remains trapped over 3 seconds, the additional blue flashing light and the integrated audible alarm (b) are activated until the operator is released. For particularly noisy environments, it is possible to configure the activation of the claxon when the operator is trapped for more than 3 seconds.

### 5.1.5.1. SENTINEL control logic

When the operator is crushed against the BUMPER / SENSITIVE ROLLBAR (a), in addition to what described in the previous paragraph, all the current operations automatically react as follows:

- **Drive with lifted platform (safety speed):** the current operation is immediately stopped and reversed;
- **Drive with lowered platform (at any speed):** the current operation stops slowly.
- **All manoeuvres of the extensible structure (lifting, lowering, rotations) operated individually or simultaneously, with the exception of pantograph lowering and telescopic retraction:** the manoeuvre in progress stops immediately and is reversed;
- **Pantograph lowering, Telescopic retraction and Cage levelling correction:** the current operation is immediately stopped.

3 seconds after the operator is pressed against the BUMPER / SENSIBLE ROLLBAR (a) the enable pedal is automatically deactivated regardless of the position of the joystick; the green enable light on the platform control panel flashes and the enable pedal must be released and activated again to allow further manoeuvres from the platform control panel.

The ground control panel remains available at all times for the emergency recovery of any trapped operator, whatever the condition of the SENTINEL system.

## 5.2. Ground control panel and electric control unit

The ground control panel contains the main electronic boards needed to operate the machine and carry out safety checks.

The electric control unit is under the turret hood (controls side) and on the oil tank.

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.
- Recharge the battery using the motor generator (A18 JRTH model only).
- Display some operation parameters (working hours; Diesel engine operational faults; battery charger operation; etc.).
- Set some optional functions (movement alarm, display language).



### IT IS FORBIDDEN

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



Use the ground controls 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 electric control units 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. 5-6

- A) On/off key; control panel selector (ground/platform); charge battery with generator (A18 JRTH only).
- B) Emergency STOP button.
- C) User interface display.
- D) EMERGENCY OVERRIDE key.

### **5.2.1. On/off key and control panel selector (A)**

The on/off key located on the ground control panel is used to:

- Start 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 controls 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 the control circuits off by switching the key to OFF.
- A18 JRTH model only: start the charging battery mode using the UNATTENDED RECHARGING (see chapter BATTERY for a detailed description of this function)

### **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. User interface display (C)

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

- Turn the Diesel engine ON/OFF (A18 JRTD model).
- Turn the Diesel motor generator ON/OFF to activate the charge battery function (A18 JRTH).
- Operate the machine in emergency cases.
- Display the operation parameters of the machine during normal functioning or in the event of a fault.
- Display the Diesel engine alarms.
- Display the battery charge level (A18 JRTH and A18 JRTE models).
- Display the number of the operating hours of Diesel engine (the working hours are displayed in the format HOURS:MINUTES followed by the letter D).
- Display the working hours of the emergency DC electric pump - optional - (when electric power is selected the working hours are displayed in the format HOURS:MINUTES and final letter M).
- Set the language on the display.
- Set the operation mode of the movement alarm.
- Check the on-board diagnostic.



**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.**

#### 5.2.3.1. Display functions

The ground display is active when both the ground and platform emergency stops are active (not pressed). The user interface changes according to the position of the on/off key on the ground control panel. Here are described the available functions on the display depending on the on/off key position:

### 5.2.3.1.1. Key set on PLATFORM CONTROLS

During normal use of the machine, the operator selects the platform control panel, removes the key from the ground control panel, hands the key to another operator trained in the use of the ground controls and settles down on the platform to carry out his task..

In this case, the display shows:

- General information (A) with hour, date, machine model and factory number.
- Alarm icons (B) with description of active alarm type (C). Some diesel engine alarms may lead to automatic engine shutdown (see description of the warning lights on the platform control panel).
- Battery charge level (D) (A18 JRTH and A18 JRTE models only).
- SETTINGS menu button (E) with ACCESS LEVEL submenus (enter a password) (F), DIAGNOSTICS (G), SERVICE (H), GENERAL SETTINGS (I), MACHINE SETTINGS (L).

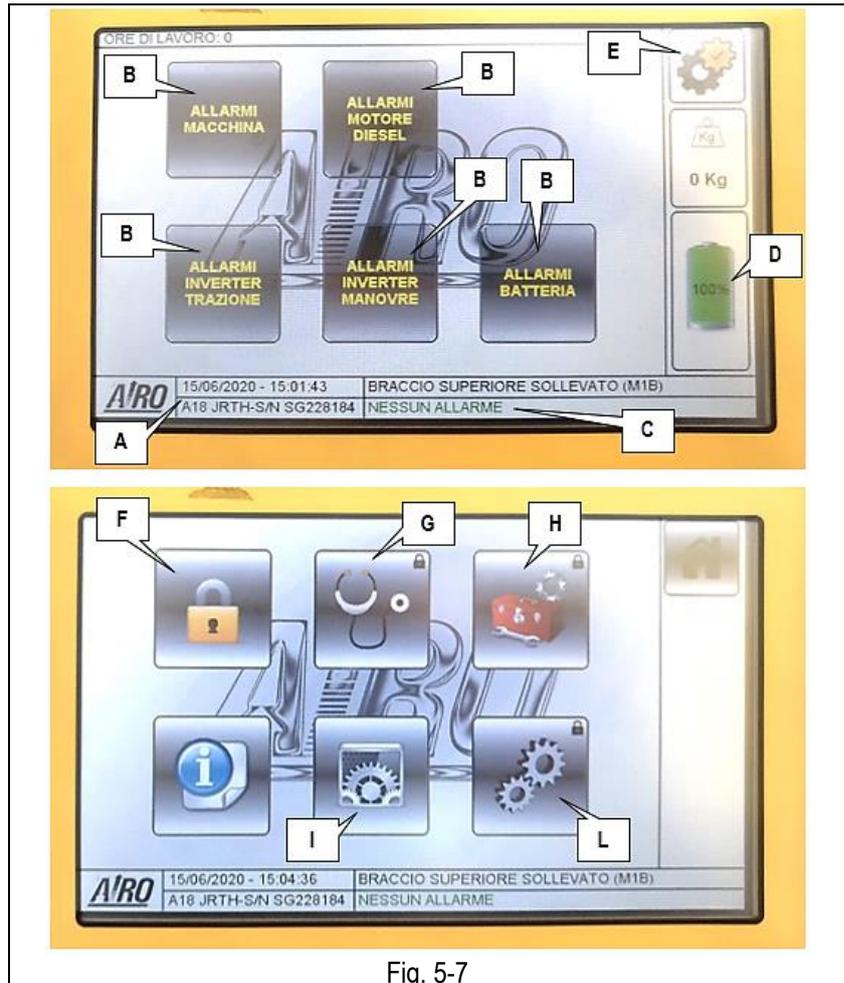


Fig. 5-7

The GENERAL SETTINGS menu button (I) can be used by the operator to change the language of the menu and messages and to configure the operation of the movement alarm. The other functions available in the SETTINGS menu are password-protected and only available to authorised technical service.

To **SET THE DISPLAY LANGUAGE**, after pressing the button (E) you will reach the page shown opposite.

Press button (M) to enter the page where you can select one of the available languages shown in box (N).

Confirm your choice with the button (O) and exit with the HOME button (P).

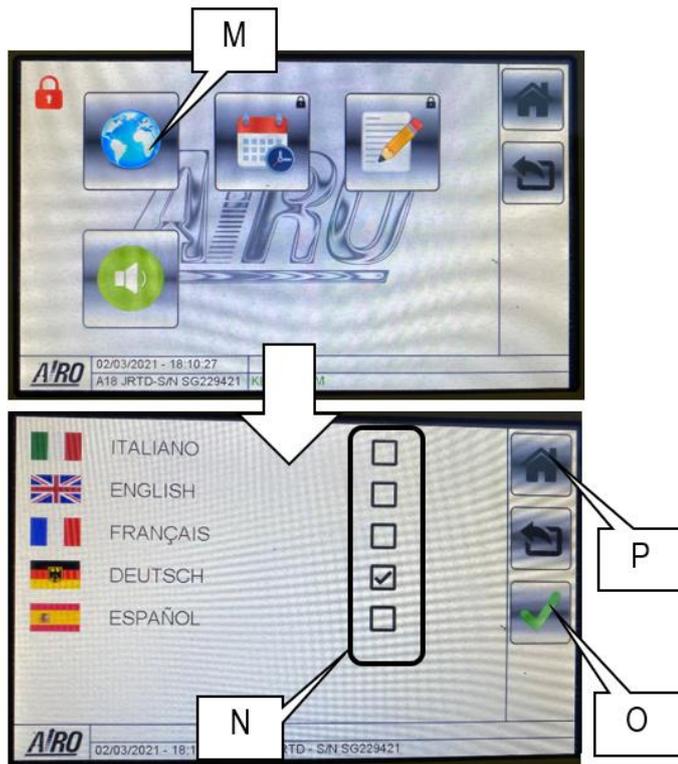


Fig. 5-8

The **MOVEMENT ALARM** is normally factory set to emit an intermittent sound that is always active during all movements (**STANDARD** operation).

It is possible to change its operation so that it is activated only for the first few seconds of a movement and then switches off automatically (**OPTIONAL** operation).

To **SET THE OPERATION OF THE AUDIBLE ALARM**, after pressing the button (E) you will reach the page shown opposite.

Press button (Q) to change the operation mode of the movement alarm.

The icon (Q-1) represents **STANDARD** operation.

The icon (Q-2) represents **OPTIONAL** operation.

Confirm your choice and exit with the HOME button (P).

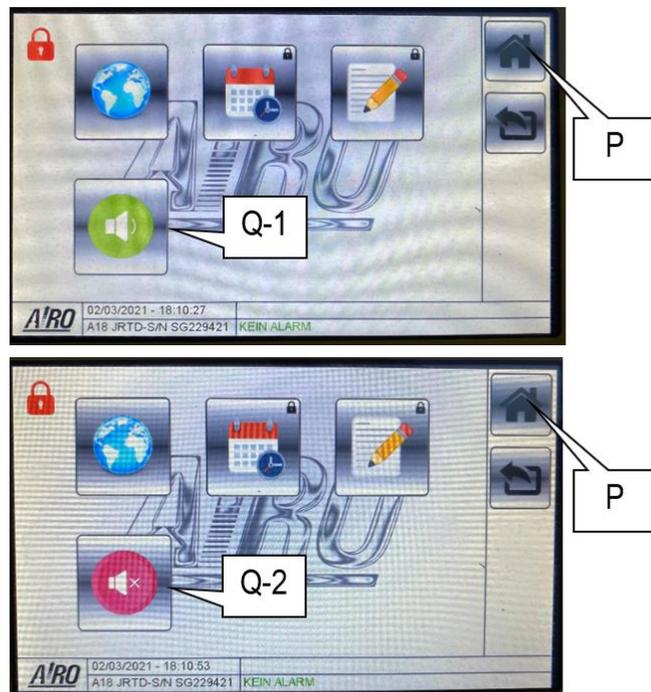


Fig. 5-9

### 5.2.3.1.2. Key set on GROUND CONTROLS

In the event of an emergency, an operator trained in the use of the ground controls can operate from the ground control panel by inserting the on/off key into the selector, turning it and keeping it operated, in the GROUND CONTROLS position. In this case, the display shows:

- START/STOP button of the Diesel engine (F) (A18 JRTD model only).
- START/STOP button of the emergency electric pump (E) (Optional for A18 JRTD).
- Control buttons (lifting/lowering/rotation) (G) for emergency use.
- General information (A) with hour, date, machine model and factory number.
- Alarm icons (B) with description of active alarm type (C). Some diesel engine alarms may lead to automatic engine shutdown (see description of the warning lights on the platform control panel).
- Charge battery level (D) (A18 JRTH and A18 JRTE models only).

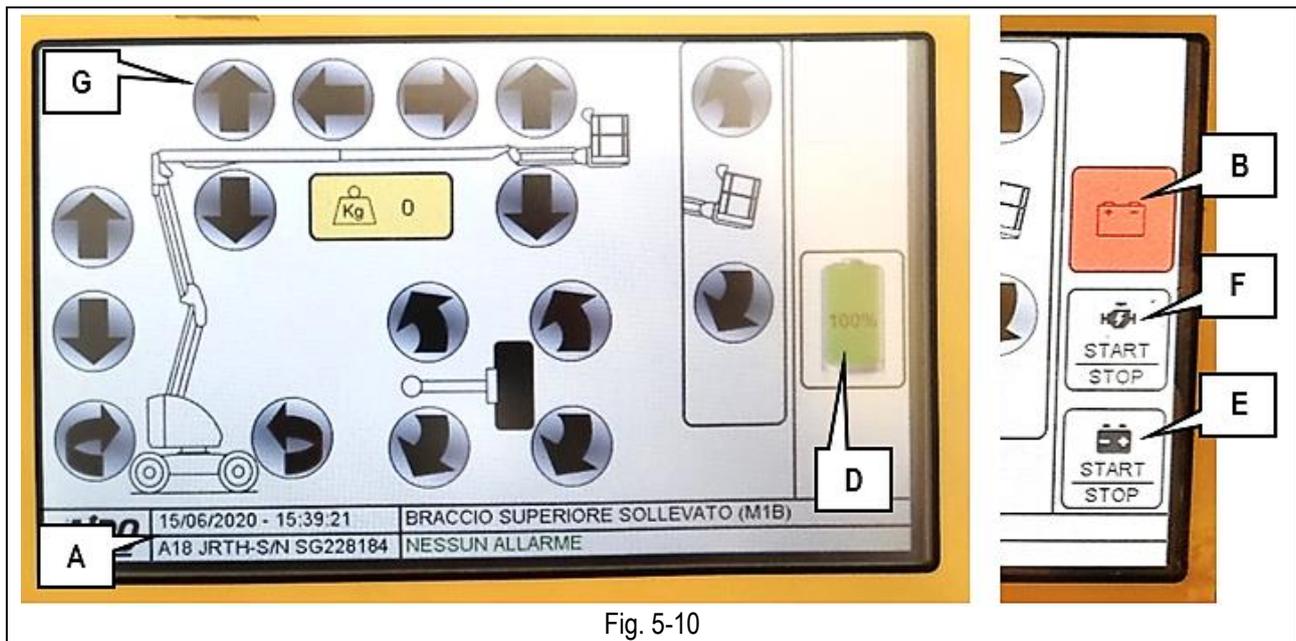


Fig. 5-10

To operate the ground controls on A18 JRTD models:

- Switch the Diesel engine on using the START/STOP button (F).
- Enable the required controls by pressing the corresponding arrow buttons.

To operate the ground controls on A18 JRTH and A18 JRTE models:

- Enable the required controls by pressing the corresponding arrow buttons. Controls are operated by automatic activation of the electric pump.



**Please be reminded that the ground controls are to be used to operate the platform only in emergency situations and should not be used for any other purpose.**

### 5.2.3.1.3. Key set on OFF with MAINS POWERED BATTERY CHARGER (A18 JRTH and A18 JRTE models):

With the key set on OFF and the battery charger disconnected from the power, the Display is off. By connecting the battery charger to any 115-230V AC power source, the battery charger switches on automatically.

In this case, the display shows:

- Battery charging icon (A) for A18 JRTH model.
- Charging percentage achieved (B) for A18 JRTH model; Charging stage achieved (B) for A18 JRTE model.
- A message request to remove the on/off key (C).
- General information (D) with date, hour, machine model and production number.

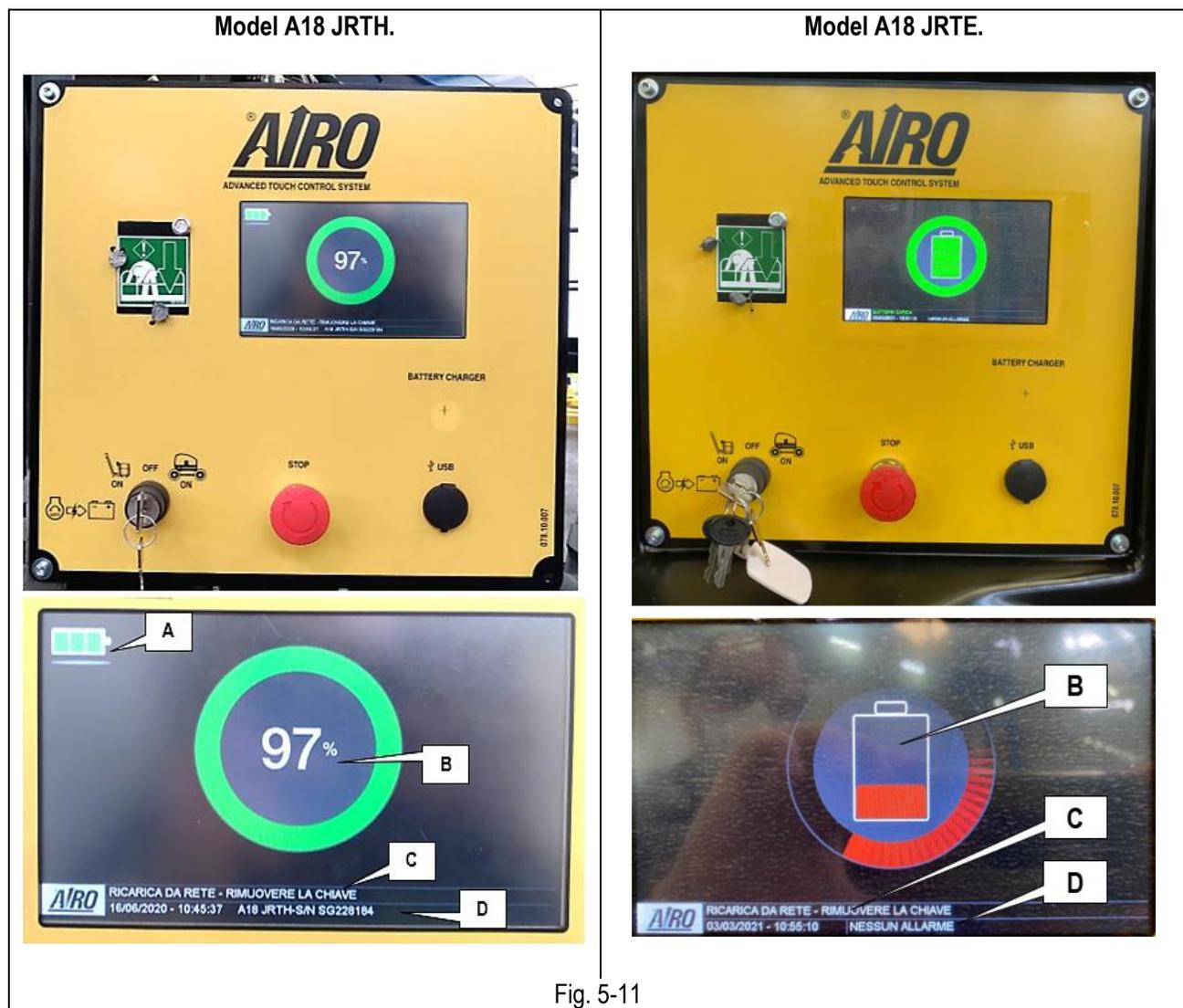


Fig. 5-11



**Remove the key before leaving the machine unmanned and unsupervised.**

#### 5.2.3.1.4. Key set on UNATTENDED CHARGING by motor generator (A18 JRTH models only)

With the key on UNATTENDED CHARGING the battery is charged directly by the motor generator built in the machine. In this case, the display shows:

- The START/STOP button of the Diesel motor generator (E).
- The icon (A) of a battery being charged.
- The status of the battery charge (B).
- A message request to remove the on/off key (C).
- General information (D) with date, hour, machine model and production number.



Fig. 5-12



**WARNING!**

Do not activate the UNATTENDED CHARGING mode while working indoors.



Remove the key before leaving the machine unmanned and unsupervised. As soon as the battery is recharged, the motor generator switches off automatically.

## 5.2.4. EMERGENCY OVERRIDE activation key (D)

It is a key selector that disables certain safety controls for emergency recovery of an incapacitated operator through the use of ground controls. For more details on the functions of this key selector see chapter 5.6: “Emergency manual controls”.



This function is used to recover an incapacitated operator in the event that the ground control panel is not enabled due to certain active safety functions.  
The use of this function requires the use of a tool to remove the protection. This removal represents the precise intention of an operator on the ground to move the platform in the absence of certain safety controls.



The operation of this function is timed in such a way as to prevent any abuse by the operator. Expired the set time, the machine is completely locked and requires the intervention of specialized personnel to restore normal operation.



Using the EMERGENCY OVERRIDE function for normal operations IS STRICTLY PROHIBITED.

### 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:

- Flip the ladder down as shown by the picture on the side.
- Climb on board the platform holding the posts of the entry gate and lifting the entrance bar up. Then settle on board.
- When on board lift the ladder up and secure it to avoid protrusion and hitting against obstacles during operation.

Check that, once you are on the platform, the bar falls down closing the access. Once on board fasten the safety harness to the special hooks provided for this purpose. Look for the pictograms identifying the hook location on the platform.



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**  
to lock the gravity bar to keep access to the platform open.



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

With the ground controls (see paragraph 5.2 “Ground control panel...”) it is possible, operating the boom, to lower the platform and board it safely from any of the sides without ladder.

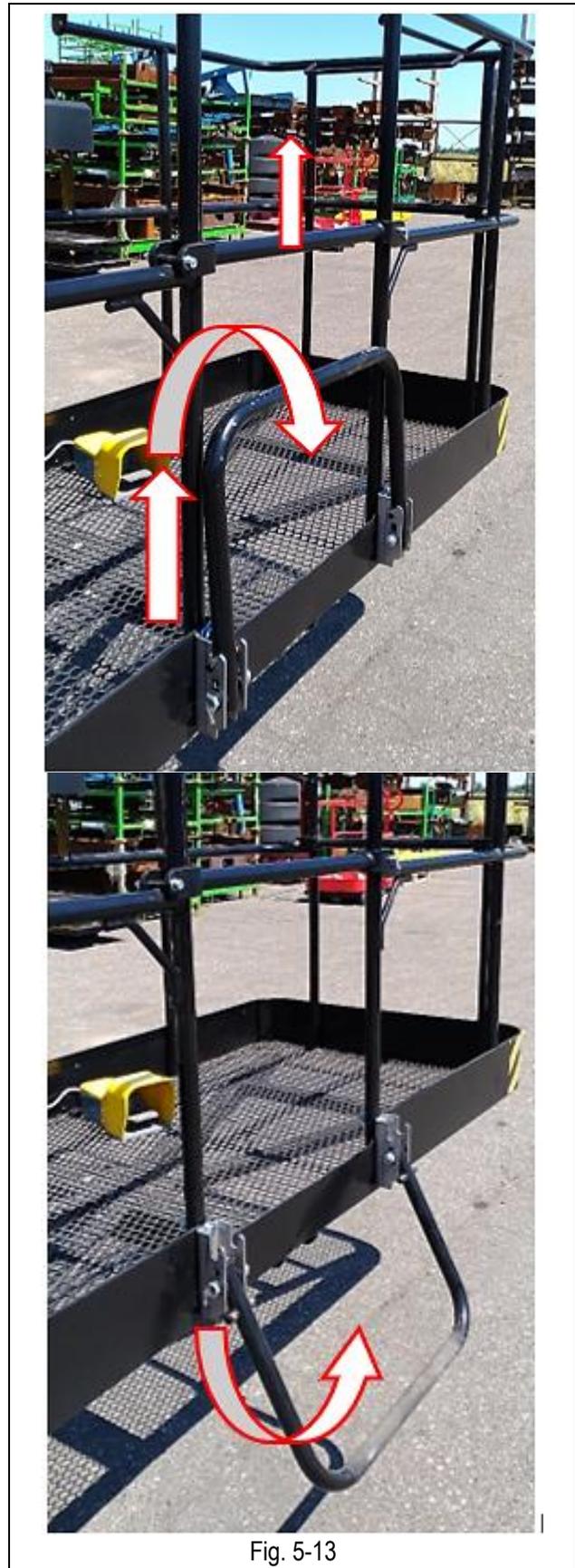


Fig. 5-13

## 5.4. Machine start-up

To start the machine the operator shall:

- Release the emergency stop button on the ground control panel by rotating it 1/4 of a turn clockwise.
- Turn the on-off key on the ground control panel 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
- Settle on the platform.
- Release the emergency stop button on the platform control panel by rotating it by 1/4 clockwise (see previous paragraphs).

At this point, for the A18 JRTH and A18 JRTE machines, it is already possible to start carrying out the various functions by carefully following the instructions given in the previous paragraphs.

For the A18 JRTH model equipped with lithium batteries, the machine can operate while the battery charger is active. Any inhibition of this possibility is possible in OPTION via factory settings.

For the A18 JRTE model if the battery charger is working, the machine is off and cannot be turned on.

Before using the thermic drive power (Diesel or petrol engine) check the fuel level in the tank through the visual level that can be seen next to the ground controls.

### 5.4.1. Diesel motor generator start-up (A18 JRTH model)

For the A18 JRTH model, it is not necessary to start up the Diesel motor generator to use the machine, as it is now possible to start performing the various functions by carefully following the instructions given in the previous paragraphs. To turn on the machine, the battery charger must be disconnected from the mains. If the battery charger is working, the machine is off and cannot be turned on.

If you chose to select the HYBRID AUTOMATIC mode, you can start the Diesel motor generator manually or let the machine control logic activate it automatically when needed. If you wish to intentional operate the Diesel motor generator, press START/STOP on the platform control panel and wait for the following to occur:

- A pre-heating phase will be triggered to warm up the motor plugs (only for motors with plugs)
- A few seconds later, the engine starts.

### 5.4.2. Diesel engine start-up (A18 JRTD model)

Pressing the START/STOP button of the platform control panel:

- A pre-heating phase will be triggered to warm up the motor plugs (only for motors with plugs)
- A few seconds later, the engine starts.



**Do not insist on the starting position for longer than 3 seconds. In the event of failed start, check the fuel level by means of the relevant indicator and read the Use and maintenance manual of the Engine.**

**In the event of operational faults, check the motor warning lights and read the Use and Maintenance manual of the engine.**

**NOTE: The Diesel engine can be started only if the dead-man pedal is neither pressed nor enabled. This means that the motor can be started only if the platform green warning light ON is flashing.**

## 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

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

On the platform control panel:

- 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:

- By pressing the emergency stop button on the ground control panel (if available) the machine (all models) and the heat engine are stopped.
- By pressing the power emergency stop button, thus cutting out machine power (power circuit cut-out).

**To resume the operations is necessary:**

On the platform control panel:

- 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;
- Turn clockwise the red knob of the power circuit a 1/4 turn up to the complete engagement to restore the power supply to the machine.

### 5.5.3. Diesel motor generator stop (A18 JRTH model)

In order to stop the Diesel motor generator:

On the platform control panel:

- Press the START/STOP motor generator button.
- Otherwise, press the emergency stop button.
- Or select the FULL ELECTRIC mode.
- Or press the START/STOP platform electric socket button (if activated).

On the ground control panel:

- Turn the main key OFF.
- Otherwise, press the emergency stop button.

### 5.5.4. Diesel engine stop (A18 JRTD)

In order to stop the Diesel engine:

On the platform control panel:

- Press the START / STOP engine button.
- Otherwise, press the emergency stop button.

On the ground control panel:

- Press the START / STOP engine button.
- Or turn the main key on the OFF position.
- Otherwise, press the emergency stop button.



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

## 5.6. Emergency manual controls

In the event of a need, to bring back the work platform to the ground, there are three modes of emergency control:

- Using the normal ground control panel to activate the drive power of the machine (battery for Model A18 JRTH and A18 JRTE; and Diesel engine for A18 JRTD model).
- EMERGENCY OVERRIDE function by means of the ground control panel using the machine motive power (battery for the A18 JRTH and A18 JRTE models; diesel engine for the A18 JRTD model) but bypassing certain safety functions.
- Using the manual pump and by operating the control valves, if no drive power is available.

### 5.6.1. Emergency manual control: Use of the ground control panel



**Do not use this function other than for serious emergency situations, if the operator on the platform is not able to use the platform controls and if no machine power is available.**

See further instructions on the chapter 5.2: “Ground control panel and electric control unit”.

### 5.6.2. Emergency manual control: EMERGENCY OVERRIDE



**Do not use this function other than for serious emergency situations the following conditions must be met:**

- **The operator on the platform is incapable (injured or unconscious) i.e he is not able to use either the normal platform controls or the platform emergency controls.**
- **The emergency stop button (R) of the platform control post is pressed and / or the overload alarm is active (in the case of an operator trapped against an obstacle at height and / or the tilt alarm).**

The EMERGENCY OVERRIDE function can only be activated by the ground control panel by means of the following procedure:

1. Remove the fixing screw of the door (L) by means of a 10 mm hexagonal wrench. The 10 mm wrench is not supplied with the machine.
2. Remove the door L removing the two lead seals.
3. Set the key of the ON/OFF selector into the selector key EMERGENCY OVERRIDE H and rotate it clockwise, keeping it active, until the audible alarms of the machine reporting the activation of the function are activated.

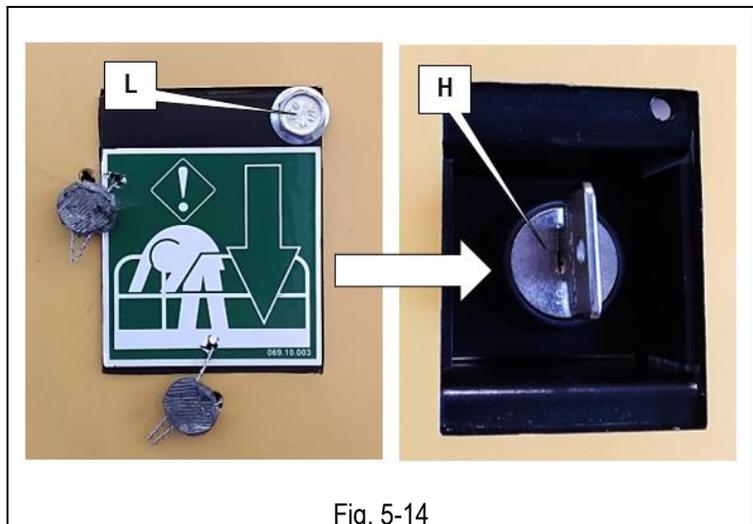


Fig. 5-14

4. A18 JRTD model only: Turn the Diesel engine ON as shown on chapter 5.2: “Ground control panel and electric control unit”.
5. Operate with the platform movement controls, bringing it to the ground in the shortest possible time.
6. Once the booms are completely lowered, it will no longer be possible to use the normal working controls, but only those that allow the machine to be moved and transported in order to remove it from the accident area.



**WARNING!** The **EMERGENCY OVERRIDE** function is only for the quick recovery of an operator blocked at height because trapped and/or unconscious. During the activation of the **EMERGENCY OVERRIDE** function, the tilt and overload controller functions are not active, nor is the platform emergency stop. It is **FORBIDDEN** to use the function for different purposes.

A timer limits the use of the function to a maximum time of 30 minutes, beyond which the machine is automatically locked.

Do not use the machine if the protection door of the emergency of the system **FACTORY OVERRIDE** is absent, or if it's missing the leaded seal.

**CALL FOR TECHNICAL ASSISTANCE TO RESET THE LEADED SEAL AND ENTER A PASSWORD TO START-UP THE MACHINE.**

### 5.6.3. Emergency manual controls: manual pump activation



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

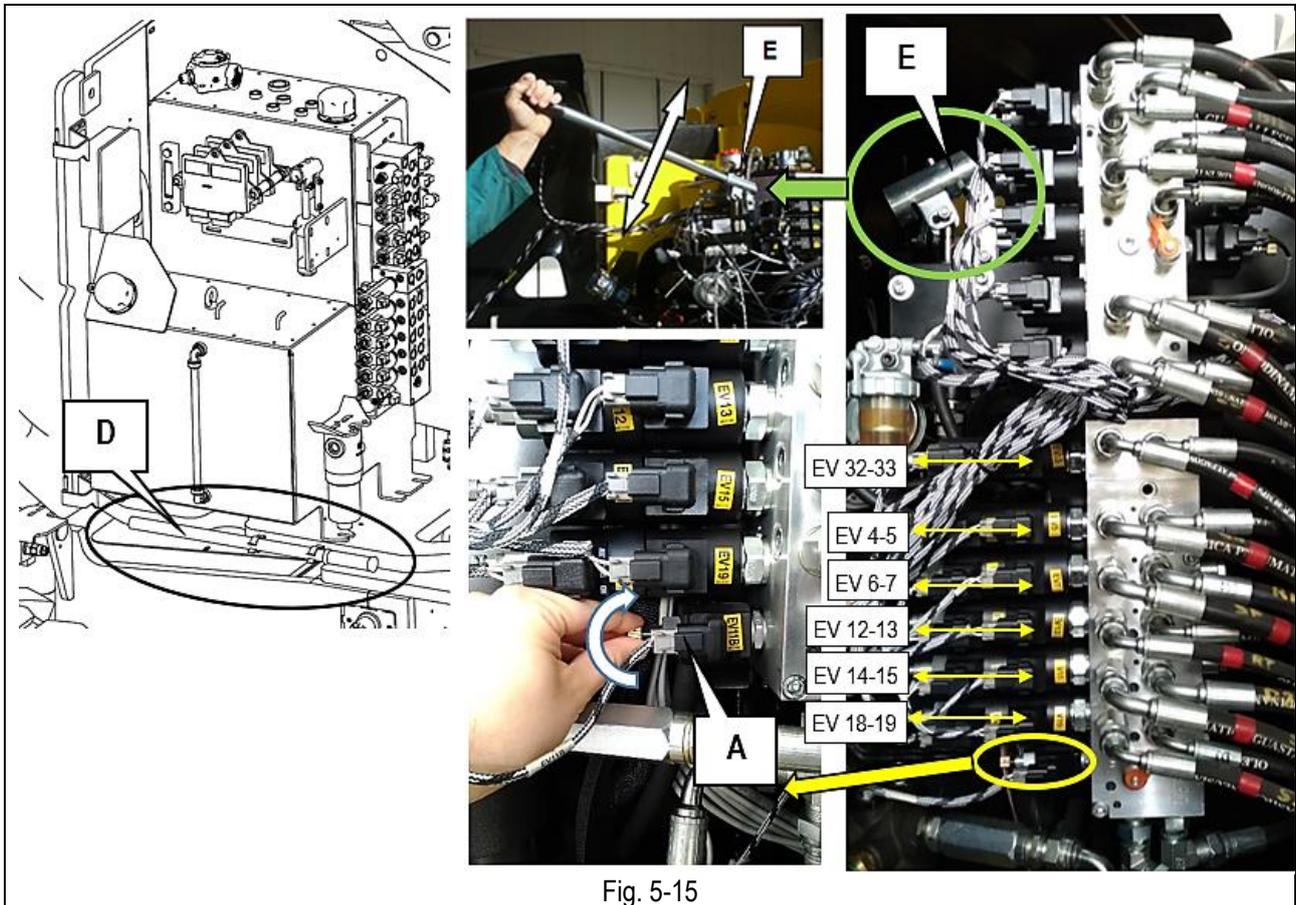


Fig. 5-15

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

- 1) Screw tight the actuator on the EV11B solenoid valve (**A**).
- 2) Remove the operating lever of the manual pump (**D**) and insert it on the pump.
- 3) Operate the emergency pump (**E**) by simultaneously operating the joystick of the control valve in the desired direction, considering the manoeuvre you wish to perform.
- 4) Check the correct execution of this procedure.

Correspondence of the solenoid valves and manual operator.

Solenoid valve name	Movement	Manual operator operation
EV4	Pantograph lifting	Pull
EV5	Pantograph lowering	Push
EV6	Telescopic boom extension	Pull
EV7	Telescopic boom retraction	Push
EV12	Turret anticlockwise rotation	Pull
EV13	Turret clockwise rotation	Push
EV14	Upper boom up	Pull
EV15	Upper boom lowering	Push
EV18	Jib lifting	Pull
EV19	Jib lowering	Push
EV32	Jib anticlockwise rotation (optional)	Pull
EV33	Jib clockwise rotation (optional)	Push



**WARNING:** The emergency control can be stopped at any moment by releasing the lever on the solenoid valve or by stopping the pump.



Once you have completed the manual emergency procedure, return everything to the initial conditions and have the lever sealed by an authorized service centre.

## 5.7. Socket for electric tool connection (Optional)

To enable the operator to use tools from the working platform to carry out the intended operations, a socket may be provided to connect them to the 115-230V AC line. The following options are possible.

### 5.7.1. 115-230V power line from Diesel generator (A18 JRTH only)

To activate the socket on the platform simply press the backlit button **M** on the platform control panel.

The backlit button **M** is lit when the power socket on the platform is active and the Diesel motor generator is on.

The backlit button **M** is not lit when the power socket on the platform is not active; in this case the Diesel motor generator could be switched on to charge the battery.

In order to activate the power line, the circuit breaker **A** located next to the generator must be set to the ON position.

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.

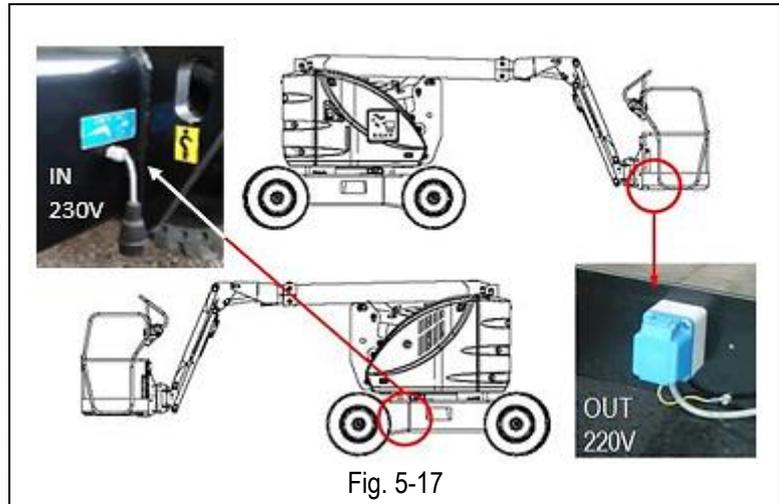


Fig. 5-16

### 5.7.2. 115-230V power line from the mains (optional for A18 JRTH and A18 JRTE; standard for A18 JRTH)

To activate the power line (see figure opposite), insert a cable into the plug connected to the 115-230V AC 50 Hz mains, equipped with all the protections required by current regulations. If there is the circuit breaker switch (optional), to activate the power line set the switch to ON position. It is advisable to check the earth-leakage circuit breaker by means of the specially provided TEST button.

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.



**Connect to the power mains having the following features:**

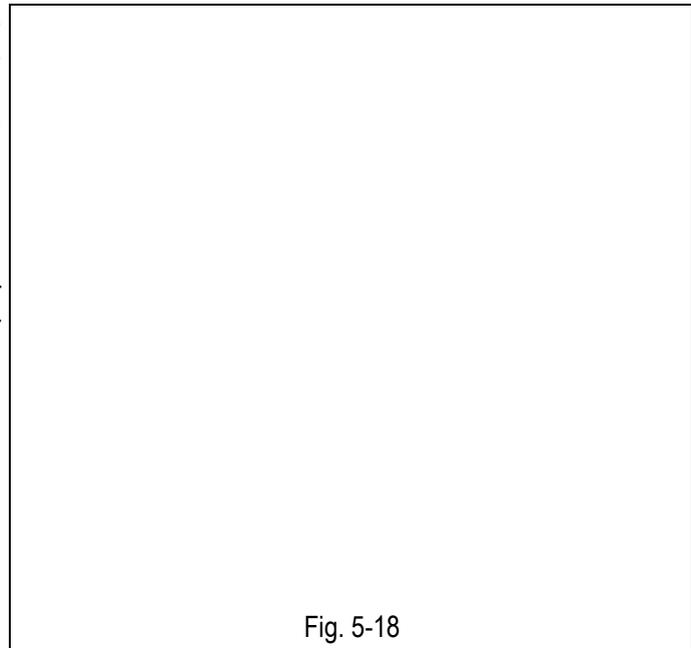
- Power voltage 115-230V  $\pm$  10%
- Frequency 50÷60 Hz
- Activated grounding line.
- Personal protective equipment according to current standards in force.
- Do not use extension leads exceeding 5 metres to connect to the mains.
- Use a cable of suitable section (min 3x2.5 mm<sup>2</sup>).
- Do not use rolled-up cables.

### 5.7.3. 115-230V power line from hydraulic generator (Optional for A18 JRTH)

For the A18 JRTH model, in addition or as an alternative to the 115-230V POWER LINE described in the previous paragraph, a HYDRAULIC CURRENT GENERATOR (A) can be installed on the machine to supply the 115-230V electrical line on the platform.

As described in the relative paragraph, pressing button (V) gives:

- In the "ON" position the generator (OPTIONAL) is turned on and the other machine controls are automatically disabled.
- In the "OFF" position the generator is off.



## 5.8. Fuel level and re-fuelling

Before using the thermic drive power (diesel engine), check the fuel level in the tank.

This operation is to be carried out by visually checking the fuel level via the indicator on the tank visible next to the ground controls. Visually check the fuel level before starting 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.
- Recharge the battery according to the instructions given in section "MAINTENANCE" (A18 JRTH and A18 JRTE).
- Fill the tank (if it applies).

## 6. HANDLING AND CARRYING

### 6.1. Handling

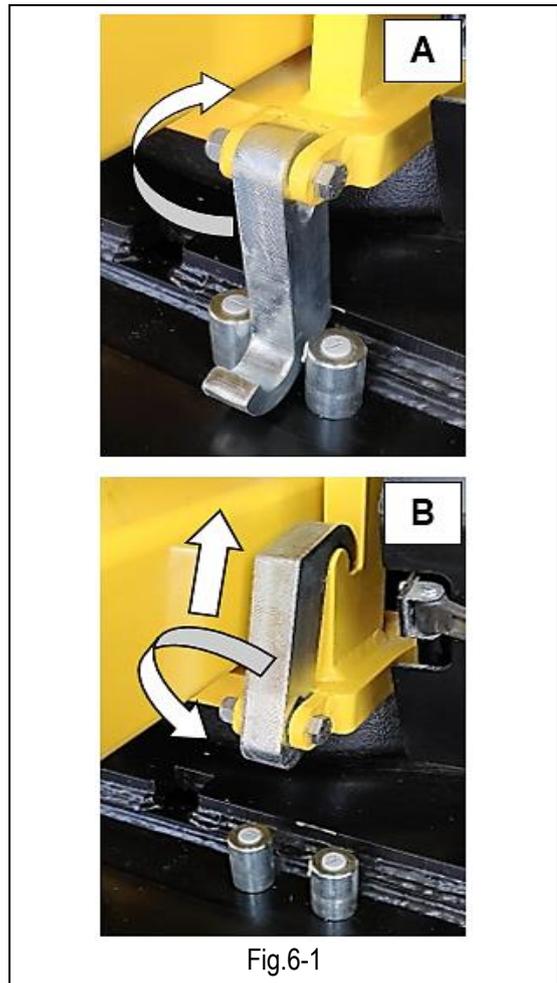
During transport on other means (e.g. on trucks) lock the turret rotation by the mechanical lock (see figure aside: picture A shows the mechanical lock in the LOCKED position).

Before using the machine, make sure that the mechanical lock device of the turret is disabled (see figure aside: picture B shows the mechanical lock in FREE position).

To handle the machine in normal operating conditions, follow the instructions given in chapter "OPERATING INSTRUCTIONS" under paragraphs 5.1.1 "Drive" and 5.1.2 "Steering".

When the platform is completely lowered (boom down  $<10^\circ$ , telescopic boom completely in and jib at a height between  $+10^\circ$  and  $-70^\circ$  with respect to horizontal axis) the machine can be handled (i.e. drive can be performed) at different speeds to be freely selected by the user.

When the platform is lifted and exceeds a given height, the enabled machines (see chapter "Technical Features") can be driven at a reduced speed (automatically) up to the height specified in chapter "Technical Features".



#### **WARNING!**

Drive with lifted platform may be subject to different restrictions according to the country where the machine is used. Information on the legislative limits relating to this manoeuvre should be made available to the health protection bodies of workers in the workplace.

It is absolutely forbidden to drive the machine when platform is lifted unless the ground is horizontal, flat and steady.

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 moving the machine, ensure that any electrical connection plugs are disconnected from the power supply point.

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.

Before steering and driving the machine, check the actual position of the turret (see the relevant stickers on the chassis) so as to travel in the correct direction.

While the machine is being displaced with lifted platform, no horizontal loads can be loaded onto the platform (operators on board are not allowed to pull wires or ropes, etc.).

## 6.2. Transportation

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 the rest position.**

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

- **By means of loading ramps and translation controls** located on the platform, load the machine on the transport vehicle (if ramp slope is within the gradient described in paragraph “TECHNICAL FEATURES” and ramp capacity is adequate to weight) following the instructions given in paragraph “OPERATING INSTRUCTION” under paragraph “Drive and steering”. During this loading operation, it is best to raise the Jib (not over +10° against the horizontal plane) to prevent engaging of the safety speed and knocking of the platform against the ground. Pay attention not to load other booms during this operation to prevent the emergency microswitches from being activated, which in case of inclined machine disable all the operations except the lowering ones.  
If the slope exceeds the gradeability, the machine is to be towed by means of a windlass only if the operator on the platform simultaneously activates the drive control to release the parking brakes. Position a spirit level on the wood board and lift the downstream extremity of the latter until it is level;
  - 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.

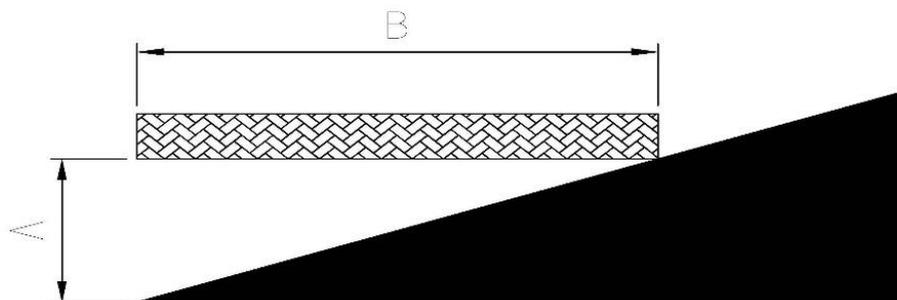


Fig. 6-2

- **By means of hooks and steel ropes** (with a safety coefficient equal to or greater than 5 - see the technical characteristics for the weight of the machine) hooked to the holes indicated by the plates as shown in the figure below, considering the position of the centre of gravity of the machine indicated by **G**. Use suitable lifting accessories (e.g. lifting beam) to prevent damage to the machine and to keep it level during lifting.

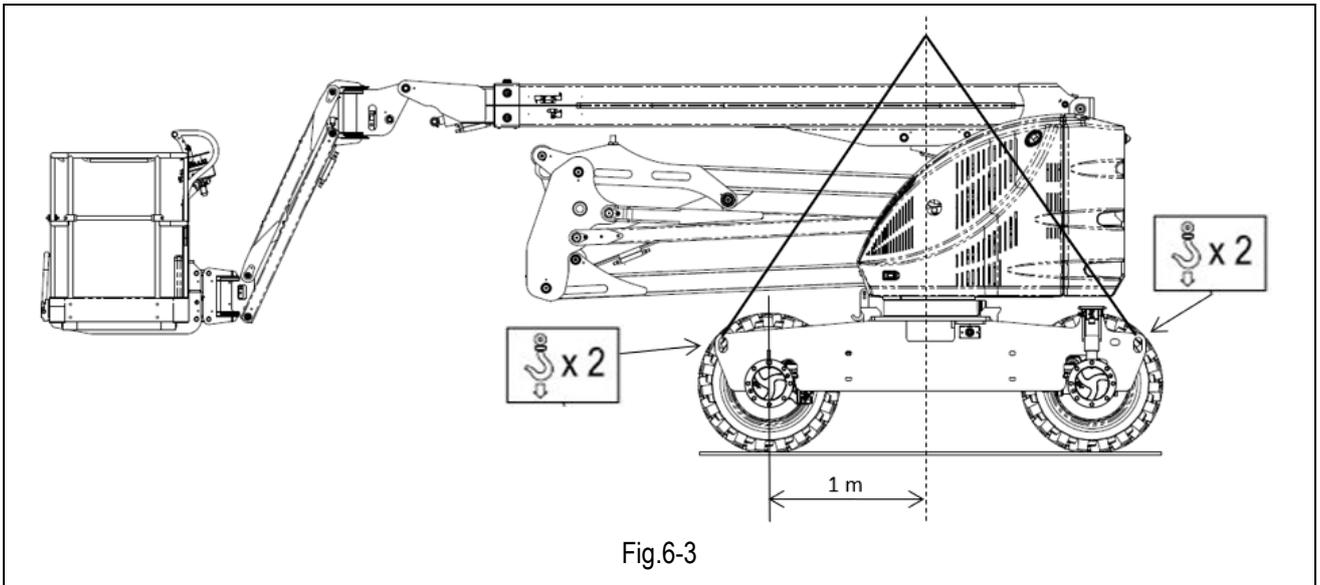


Fig.6-3

- **Through a lift truck** of a suitable capacity (see machine weight in table “Technical features” at the beginning of this manual) equipped with forks having at least the same length as the machine width. Insert the forks as indicated by the stickers on the machine (see figure 6-4). **Should these stickers be not available, DO NOT lift the machine by means of a lift truck.**  
**Lifting the machine by means of a lift truck is a dangerous operation, which must be carried out by qualified operators only.**

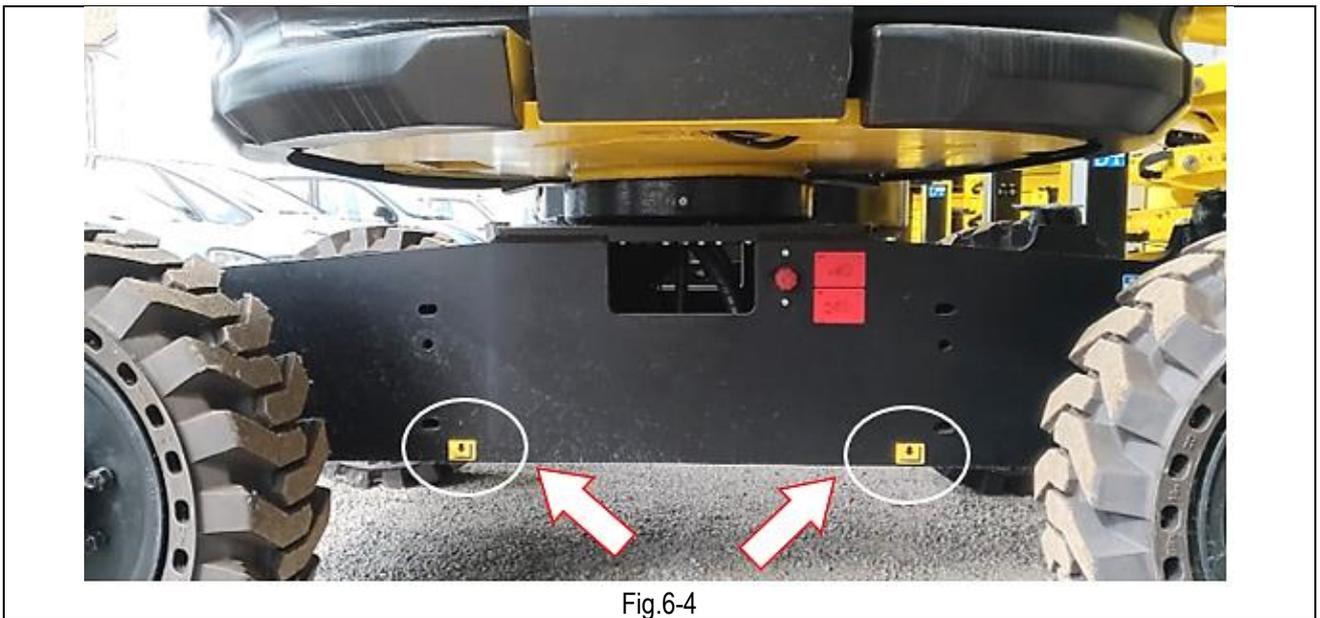


Fig.6-4



After placing the machine onto the carrying vehicle, fasten it by means of the same holes used for lifting. To avoid breaking the platform overload controller, thus causing the machine to stop, **DO NOT** fix the machine to the vehicle base by tying the platform (any model) or the last lifting boom.



Lock the turret by means of the mechanical safety lock device as specified in the previous chapters.



Before carrying the machine check the stability grade. The platform must be fully lowered and the platform extension in the retracted position to ensure adequate stability throughout the manoeuvre.

### 6.3. Emergency towing of the machine

In case of fault, to emergency-tow the machine is necessary release the parking brakes to avoid breaking the transmission drive.

In the event of a fault, carry out the following operations to tow the machine:

- Remove the protection casing (A).
- Press the manual operator, on the hydraulic block (B).
- Activate the manual pump (C) until the control is bound.
- Tow at a very slow speed (**never exceed 3 Km/h**) and a distance of **maximum 50 meter**, then activate the manual pump (C) as described above and repeat the towing operation for the following 50 m and so on.

To restart normal operation, set the machine back to the initial conditions.

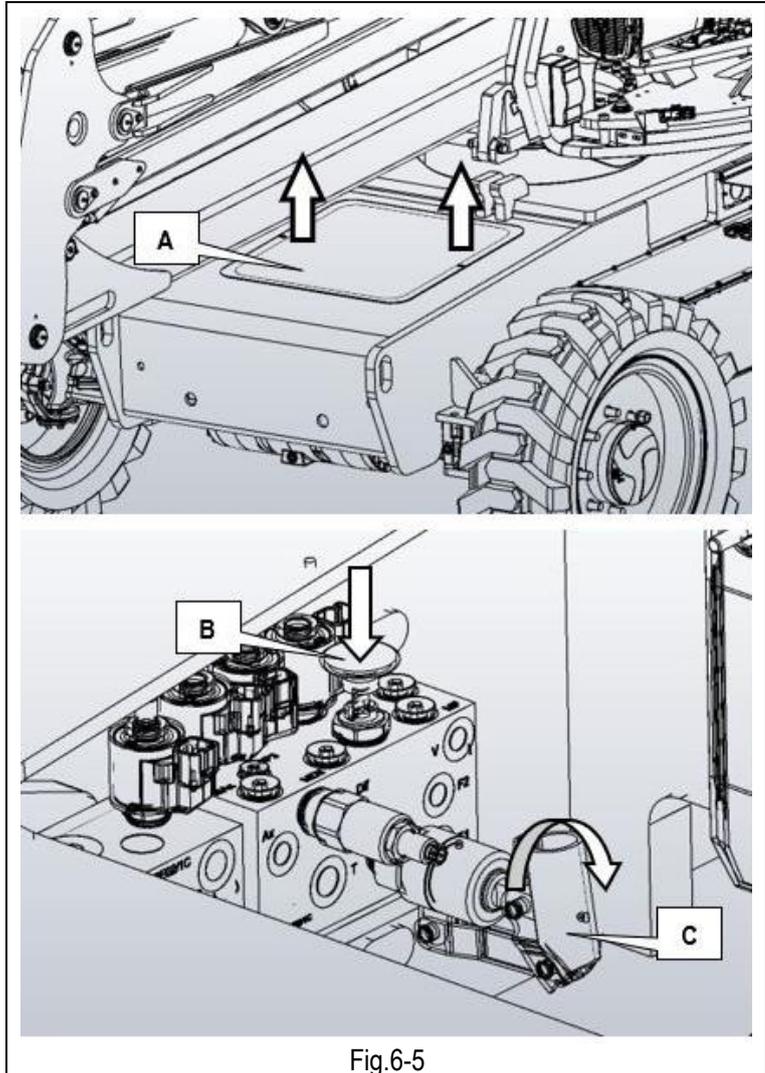


Fig.6-5



**Tow at a very slow speed (remember that when the machine is being towed, brakes are out of order).**

**Tow only on a flat ground.**

**Do not park the machine without brakes on.**

**With the brakes off, put wedges under the wheels to prevent the machine from moving accidentally.**

## 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 (workplaces, 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 any maintenance operation inside the lifting structure, make sure that it is secured against 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 115/230V 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 the integrity of the plates and stickers.
- Lubricate the articulated joints equipped with greaser.

## 7.2. General maintenance

The main scheduled maintenance actions are listed below, indicating the periodicity required in the table below. The machine is equipped with an hour meter.

Operation	Frequency
Tightening of the screws mentioned in the "Various settings" paragraph	After the first 10 working hours
Oil level check in hydraulic tank	After the first 10 working hours
Check oil level in drive axles	After the first 10 working hours
Starter/control battery status check (charge, liquid level and connections)	Every day
Checking the status of the battery (charge and connections) - A18 JRTH and A18 JRTE	Every day
Check of deformation of tubes and cables	Every month
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
Turntable greasing	Every year
Oil level check in hydraulic tank	Every year
Emergency device check	Every year
Checking the condition of electrical connections	Every year
Checking the condition of hydraulic connections	Every year
Periodic functional and visual check of the structure	Every year
Tightening of the screws mentioned in the "Various settings" paragraph	Every year
Drive axle oil level check	Every year
Hydraulic system pressure relief valve operation check	Every year
Brake system operation check	Every year
Oscillating axle locking system efficiency check	Every year
Operation check of the turret inclinometer	Every year
Platform operation overload control device check	Every year
Check operation of microswitches M1A+M1B+M1C+M1E+M1F+M1G	Every year
Proximity sensor operation check M2A+M2B	Every year
Operation check of dead-man pedal safety system	Every year
Adjusting the sliding blocks of the telescopic boom	Every year
Replacement of hydraulic filters	Every two years
Total replacement of the oil from the drive axles	Every two years
Total oil change in hydraulic tank	Every two years



**Diesel engines (A18 JRTE and A18 JRTH):** As it is possible to install different types of engine/DIESEL motor generator, refer to the instruction's manual of the engine manufacturer for all maintenance operations.



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

## 7.2.1. Various settings

Check the conditions of the following components and, if necessary, tighten after the first 10 working hours and, afterwards, at least once a year:

- 1) Wheel screws.
- 2) Drive motor fixing screws.
- 3) Drive axles fixing screws.
- 4) Steering hub pin fixing screws.
- 5) Cage fixing screws.
- 6) Hydraulic fittings.
- 7) Screws and safety dowels of boom pins.
- 8) Turntable fixing screws.
- 9) Elastic supports of heat engine.

For torque wrench setting refer to the table below.

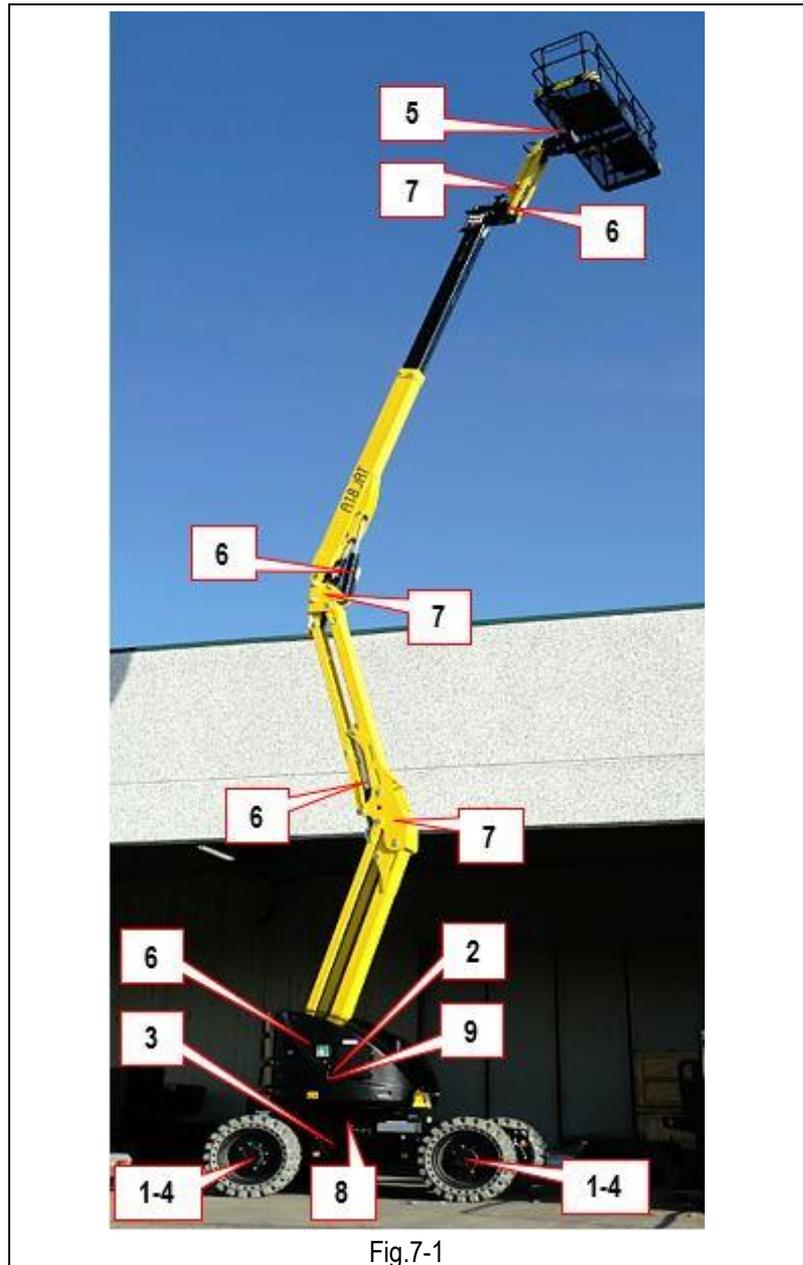


Fig.7-1

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 boom extension.

Moreover, always remember to grease the articulated joints:

- 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 equivalent.

**(OPTIONAL BIODEGRADABLE OIL KIT)  
PANOLIN BIOGREASE 2**

**N.B:** to grease the turret rotation turntable refer to the specific instructions described later in this manual.

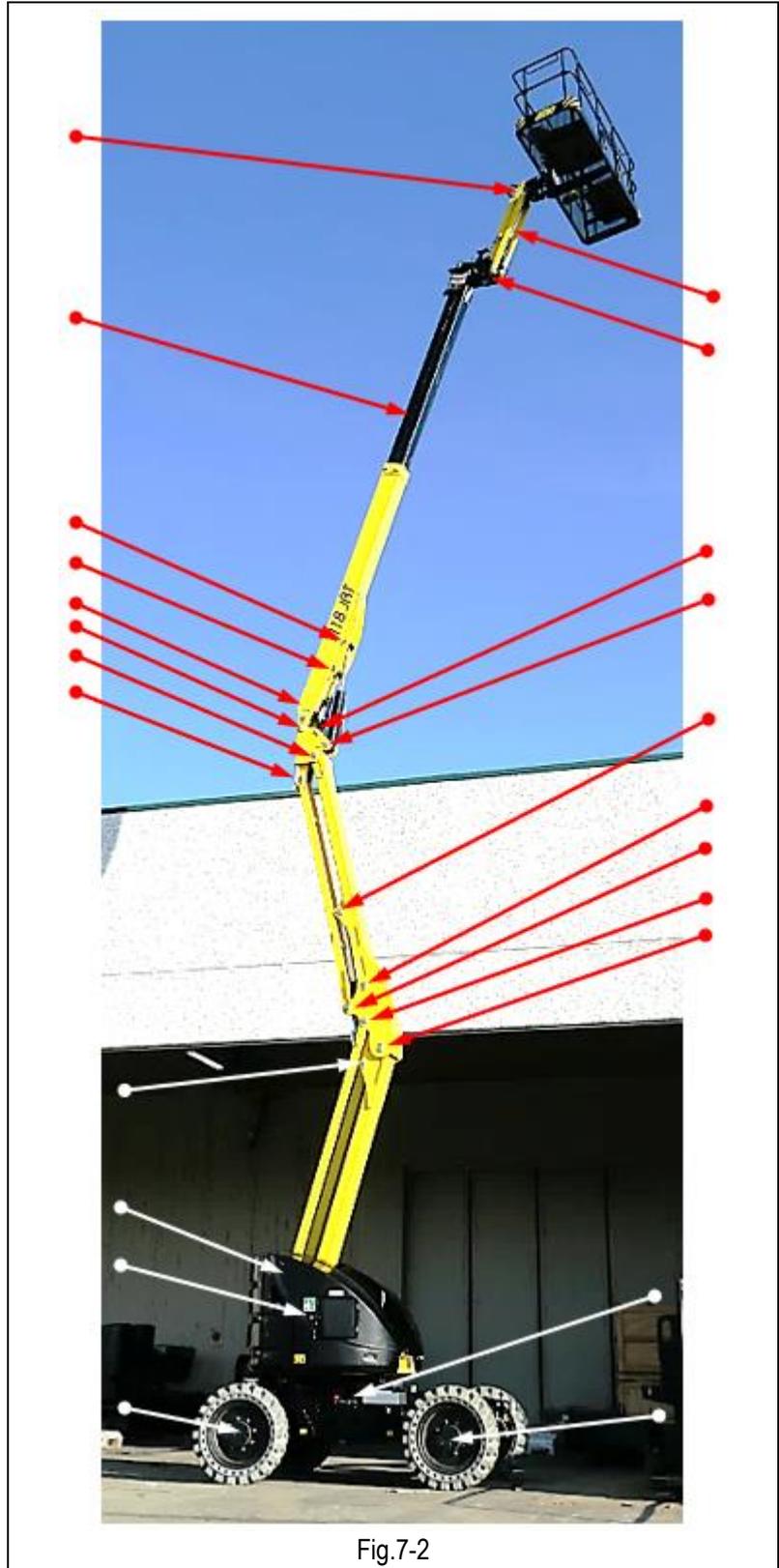


Fig.7-2

### 7.2.3. Hydraulic circuit oil level check and change

After the first 10 working hours and, afterwards, once a month check the oil level in the tank by means of the provided indicator (detail **A** in the picture aside) and make sure that the level always lies between the max. and min. values. If necessary, top up until max. level is reached. The oil check should be carried out when platform is completely lowered and telescopic boom in.

Completely change the hydraulic oil at least every two years.

To empty the tank:

- Lower the platform completely and retract the telescopic boom extension.
- 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.

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

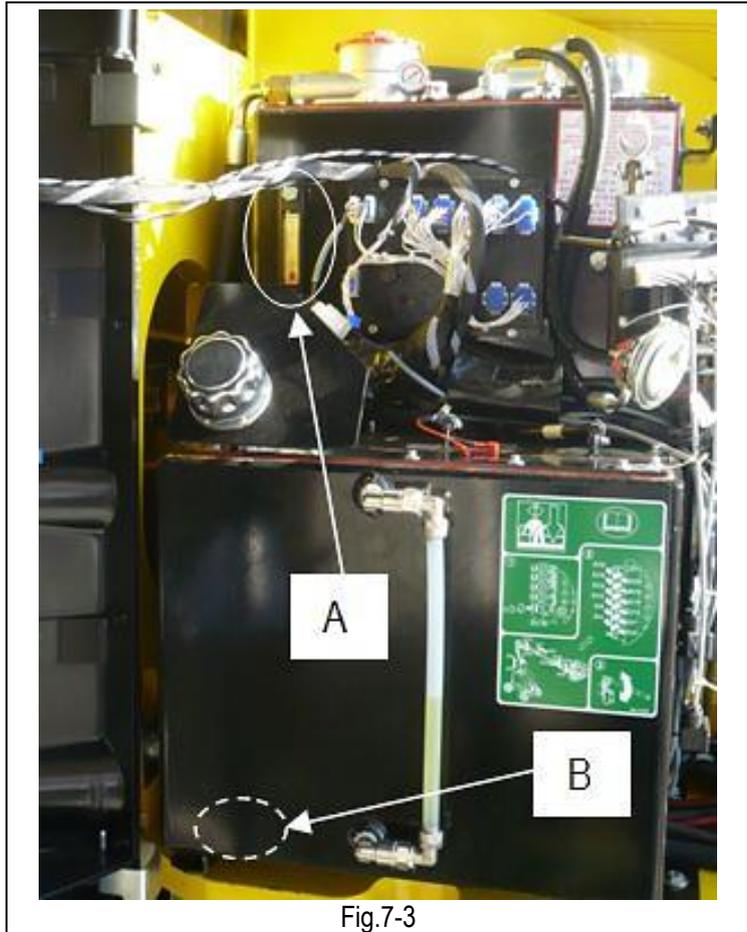


Fig.7-3

HYDRAULIC SYSTEM OIL			
BRAND	TYPE		REQUIRED QUANTITY
	-20°C -4°F	+50°C +122°F	
SYNTHETIC OILS			90 Litres
MOBIL	UNIVIS HVI 26 or equivalent		
BIODEGRADABLE OILS - OPTIONAL			
PANOLIN	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. If a conversion from mineral oil-based hydraulic oil to "bio" oil is necessary, the following procedure must be followed.

#### 7.2.3.1.1. Emptying

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

#### 7.2.3.1.2. Filters

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

#### 7.2.3.1.3. Washing

After completely emptying the machine, fill the recommended type and quantity of "bio" 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.

#### 7.2.3.1.4. Filling

After flushing, 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).

#### 7.2.3.1.5. Commissioning / check

"Bio" oil has a regular behaviour, however it must be checked by taking a sample at fixed intervals according to the following:

CHECK FREQUENCY	NORMAL DUTY	HEAVY DUTY
1 <sup>st</sup> CHECK AFTER	50 OPERATION HOURS	50 OPERATION HOURS
2 <sup>nd</sup> CHECK AFTER	500 OPERATION HOURS	250 OPERATION HOURS
3 <sup>rd</sup> CHECK AFTER	1000 OPERATION HOURS	500 OPERATION 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.**

#### 7.2.3.1.6. Mixing

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.

#### 7.2.3.1.7. Microfiltration

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.

#### 7.2.3.1.8. 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.

#### 7.2.3.1.9. Topping up

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

**Note:** Max water contamination is 0.1%.

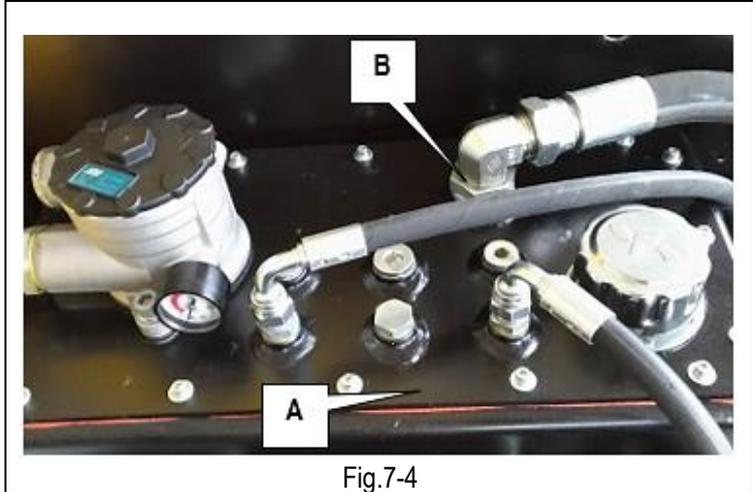
## 7.2.4. Replacement of hydraulic filters

### 7.2.4.1. Suction filters

All models are equipped with a suction filter installed inside the tank at the base of the suction tube, which must 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 plug on the tank (A) with the metal suction tubes.
- Remove the tank plug (A);
- unscrew the filter from the rigid suction tube and replace the filter (B);
- To restore the initial condition, carry out the above-mentioned operation in reverse order.



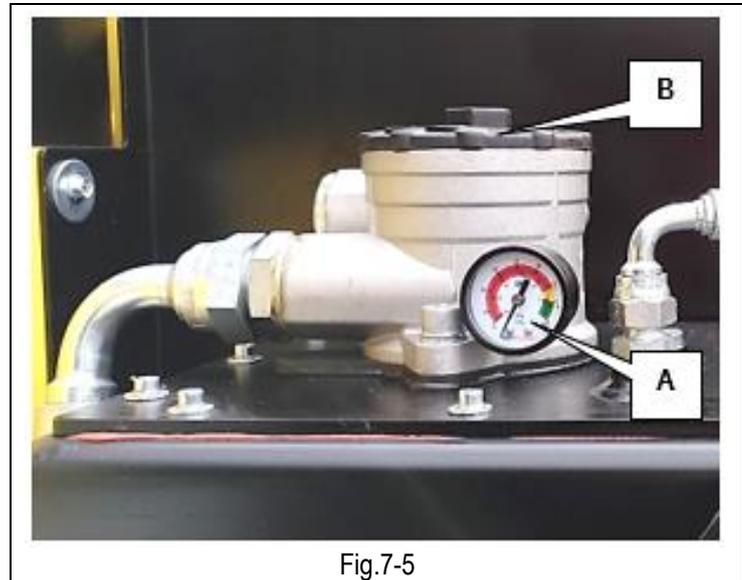
During these operations a quantity of oil may leak out. In this case remove the oil by means of cloths and by pouring it into a specific container.

### 7.2.4.2. Return filter

The return filter is flanged on the tank and is equipped with a clogging indicator (A). 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. In any case, the filter cartridge must 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 (B).
- Remove the cartridge.
- Fit the new cartridge paying attention to the correct position of the retaining spring and place the cover again.



During these operations a quantity of oil may leak out. In this case remove the oil by means of cloths and by pouring it into a specific container.



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

### 7.2.4.3. Discharge filter

The discharge filter is represented in the picture to the side. The filter cartridge must 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 bowl of the filter (A) by unscrewing it using a 30 mm wrench.
- Remove the cartridge.

Fit the new cartridge paying attention to the correct position of the retaining spring and place the cover again.

The filter can be equipped with a clogging indicator (B). During normal operation, the indicator is green; if the indicator is red, the filter cartridge must be changed, as described above.

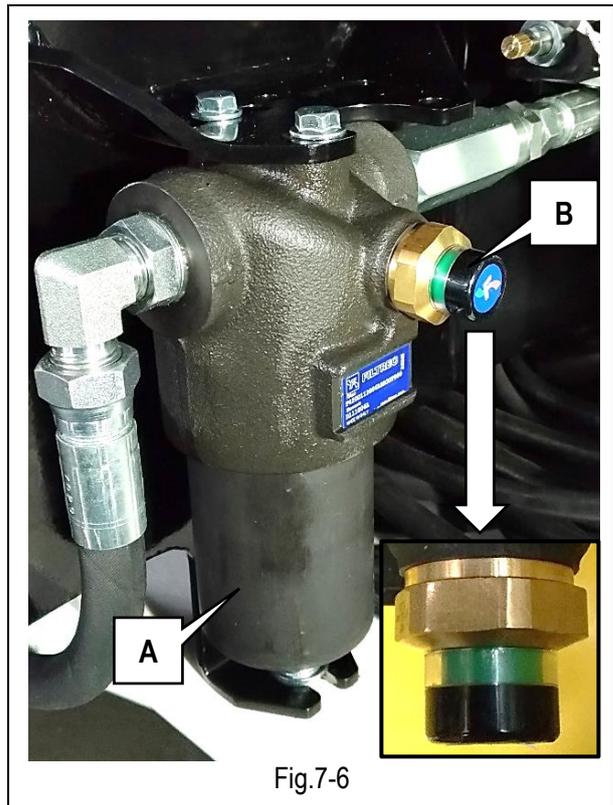


Fig.7-6



**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. Greasing the turntable for turret rotation

It is advisable to grease the turntable at least annually.

The turntable must always work completely full of fat; if you notice grease leaking from the sealing rings, check their integrity and approximate the greasing operations.

To grease the turntable, lift the machine boom to access the central greasing points, then identify the greasing points **A** of the ring gear and the greasing points **B** of the nut.

Using a manual or pneumatic greasing equipment, grease points **A** and **B**, alternating greasing with turret rotation movements by means of the ground controls, in order to distribute the grease throughout the turntable housing.

When you notice small spills of fat through the sealing rings, the greasing is complete.

After greasing, clean the entire turntable thoroughly.

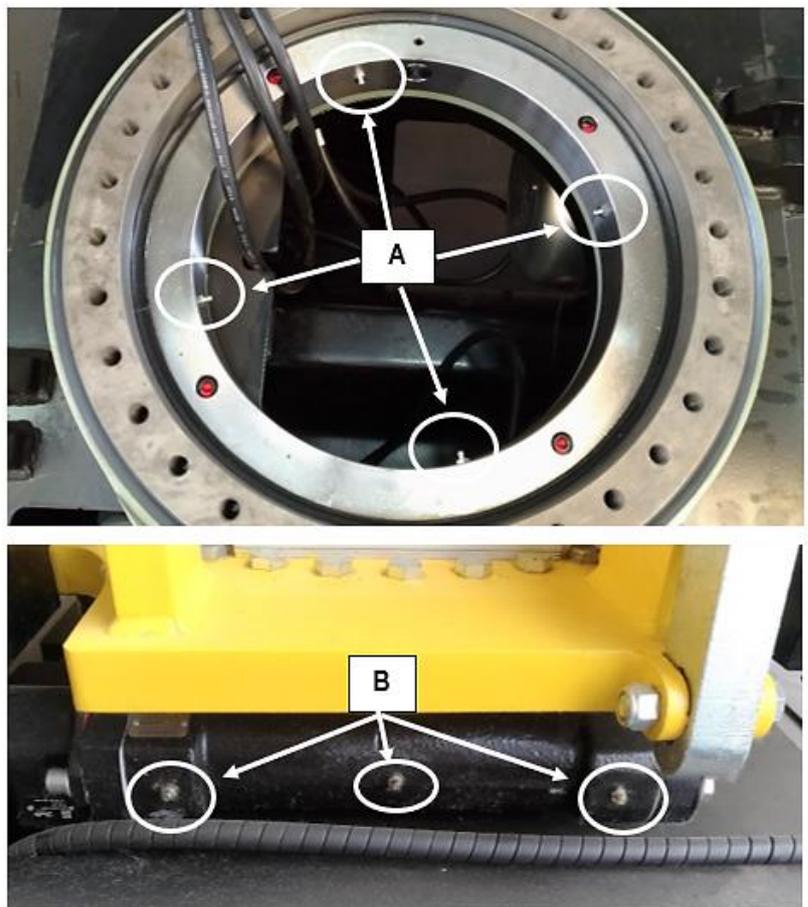


Fig.7-7

## 7.2.6. Check level and replacement of drive axle oil

It is advisable to check the oil level **after the first 10** working hours and subsequently **annually**. 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 (A). 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 100-250** working hours, and afterwards after **every 1000 working hours or at least every two years**.

Depending on the actual operating conditions, these periods may be varied on a case-by-case basis.

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. To change the oil unscrew cap B, and place a container of a **10-litre** capacity under it. Drain the reduction gear completely, clean it as described above and then fill it up to the limit level of plug A through the same hole (for max. capacity see following table).

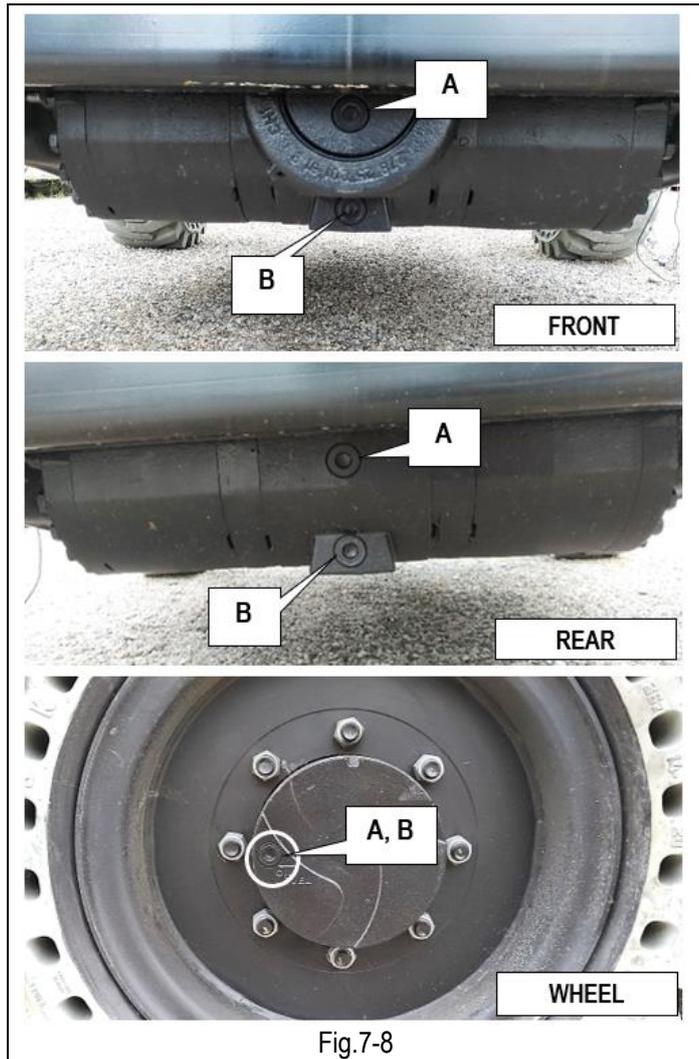


Fig.7-8



**AXLE BODY:** Before draining the oil, it is mandatory to loosen the oil filler cap or the breather (if present) and wait for the accumulated internal pressure to completely escape. Remove the drain plug and drain the oil.

**FINAL WHEEL REDUCTION GEARS:** Before draining the oil, it is mandatory to rotate the reduction gear bringing the oil cap to the filling position, then loosen and wait for the accumulated internal pressure to be completely released. Remove the drain plug and drain the oil

LUBRICANT OIL FOR DRIVE AXLES		
BRAND	TYPE	REQUIRED QUANTITY
SYNTHETIC OILS		
SHELL	LS 90	Central body: 4.2 litres Rear axle change (A18 JRTD): 0.75 litres Final wheel reduction gears: 0.9 litres
FUCHS	TITAN GEAR 85w90 LS	
CASTROL	LSC SAE 90	
MOBIL	SAE 75W90 LS (E.P.)	
BIODEGRADABLE OILS - OPTIONAL		
PANOLIN	PANOLIN	



**WARNING!** During use, the axle oil can get very hot (40-50°C / 104-122°F). Hot oil and hot components can cause personal injury. Avoid contact with skin. Wear protective gloves and goggles.

### 7.2.6.1. Level check and oil change from electric motor reduction gear (A18 JRTH PLUS and A18 JRTE PLUS only)

It is advisable to check the oil level **after the first 10** working hours and subsequently **annually**. 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 (A). 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 100-250** working hours, and afterwards after **every 1000 working hours or at least every two years**.

Depending on the actual operating conditions, these periods may be varied on a case-by-case basis.

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. To change the oil unscrew cap B, and place a container of a **3-litre** capacity under it. Drain the reduction gear completely, clean it as described above and then fill it up to the limit level of plug A through the same hole (for max. capacity see following table).

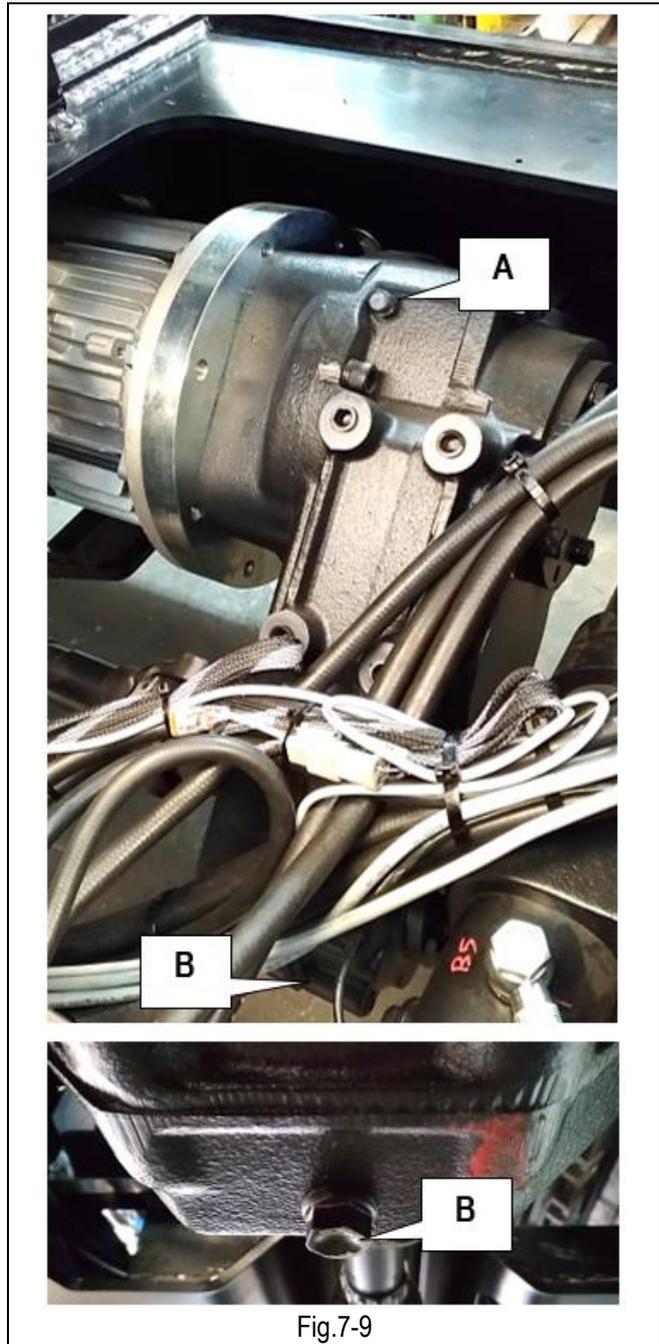


Fig.7-9

LUBRICANT OIL FOR ELECTRIC MOTOR REDUCTION GEAR (A18 JRTH and A18 JRTE)		
BRAND	TYPE	REQUIRED QUANTITY
SYNTHETIC OILS		
MOBIL	ATF 320	2,5 litres
ELF	ELFMATIC G3	
BIODEGRADABLE OILS - OPTIONAL		
PANOLIN	PANOLIN	



**WARNING!** During use, the axle oil can get very hot (40-50°C / 104-122°F). Hot oil and hot components can cause personal injury. Avoid contact with skin. Wear protective gloves and goggles.

### 7.2.6.2. Checks in the use of synthetic biodegradable oil in drive reduction gears

On machines equipped with biodegradable oil, quarterly or every 500 hours, the oil level must be checked. If necessary, 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 slewing 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.

## 7.2.7. Oscillating axle locking system efficiency check

Once drive has been stopped and with raised platform, the axle locking cylinders are locked in position thus increasing the machine stability.

Check the efficiency of the oscillating axle locking system annually.

To check for perfect operation, proceed as follows:

- Load the maximum allowed load on the platform.
- From the platform control station, completely withdraw the telescopic arm, taking care to keep the work platform at a height from the ground <1 m.
- Oscillate the structure vertically by acting on the cage manually.
- Check that, during the oscillations of the structure, the cylinders of the oscillating axle remain in the locked position.

In the event of need, if you notice a sinking of the cylinders of the oscillating axle, it is necessary to remove the air inside the same:

- Undo the cap (A) of one of the two cylinders of the oscillating axle.
- Operate the drive control so that the two cylinders of the oscillating axle are brought to the end of their travel range several times, until only oil can be seen leaking from the lock valve cap.
- As soon as all air has been purged out, tighten the plug (A) back in place and check the oil level in the tank.

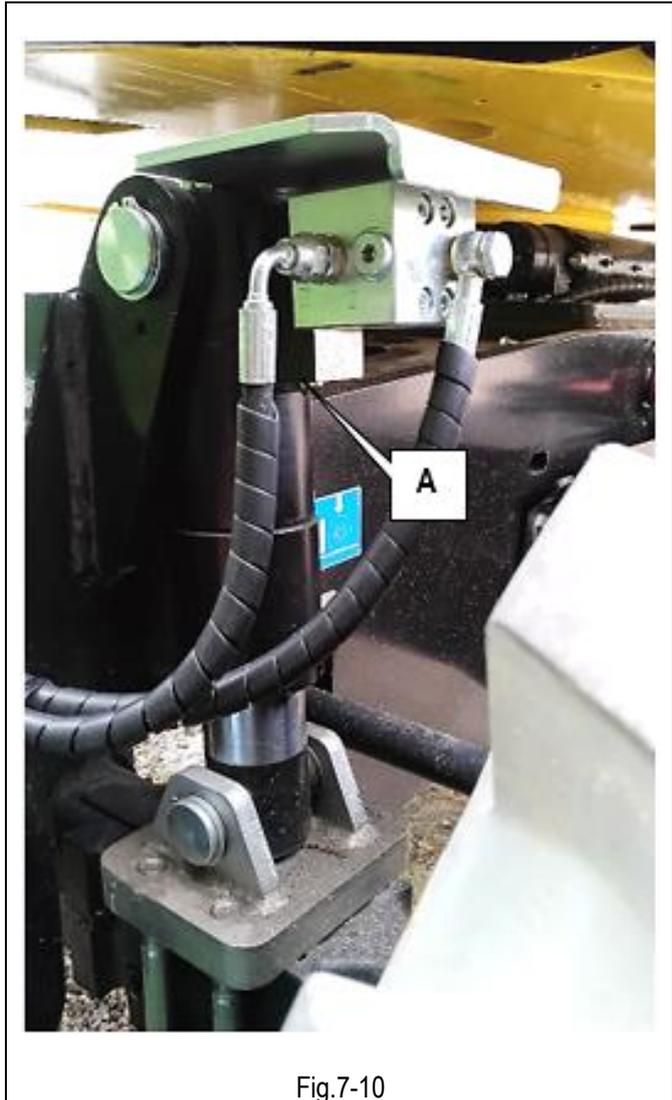


Fig.7-10

### WARNING!



**THIS OPERATION MUST BE CARRIED OUT BY TWO OPERATORS AT THE SAME TIME: ONE AT THE GUIDE OF THE MACHINE, THE OTHER THAT VERIFIES THE OPERATION AND COLLECT THE OIL THAT LEAKS.**

**THIS OPERATION SHOULD BE CARRIED OUT IN ROOMS THAT ALLOW THE OIL LEAKING FROM THE CYLINDERS TO BE RECOVERED.**

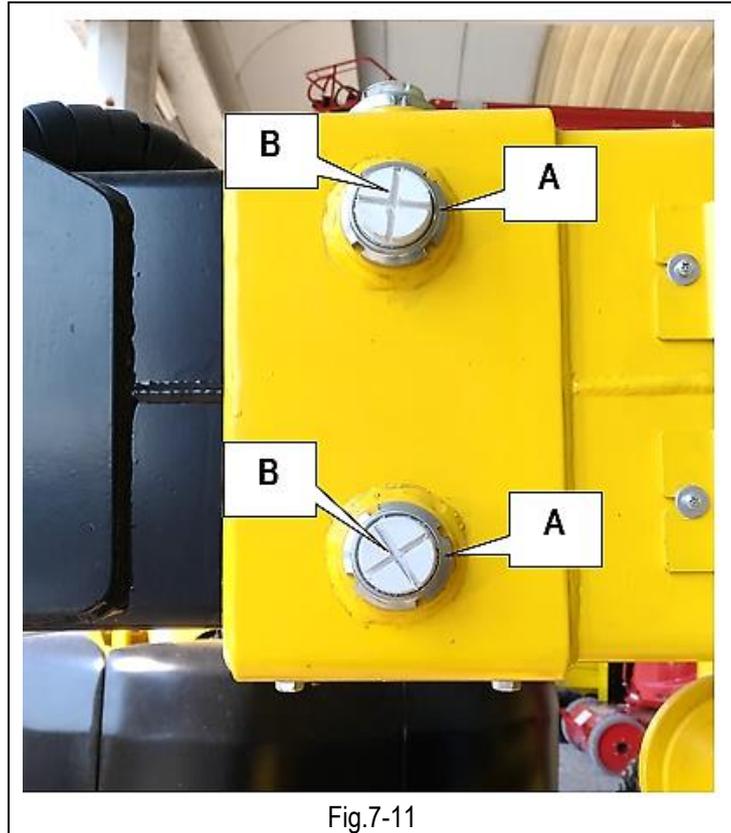
**GIVEN THE IMPORTANCE OF THE OPERATION, IN CASE OF NEED FOR THE CALIBRATION OF THE DEVICE, THE INTERVENTION OF SPECIALIZED TECHNICAL PERSONNEL IS NECESSARY.**

## 7.2.8. 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 ring **A**.
- Proceed to screw in sliding block **B** until the above clearance is obtained.
- Remove locking ring **A**.



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

## 7.2.9. Circuit movements pressure relief valve operation check

### 7.2.9.1. Proportional movement circuit pressure relief valve

The pressure relief valve described controls the maximum pressure on the circuit of proportional movements (pantograph, upper boom, telescopic boom, jib, turret rotation, jib rotation). The valve does not usually require any adjustment since it is calibrated in 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**;
- Using the ground control panel lift the pantograph (lower boom) up to the end stop.
- Check the detected pressure value. The correct value is indicated in the chapter "**Technical features**".

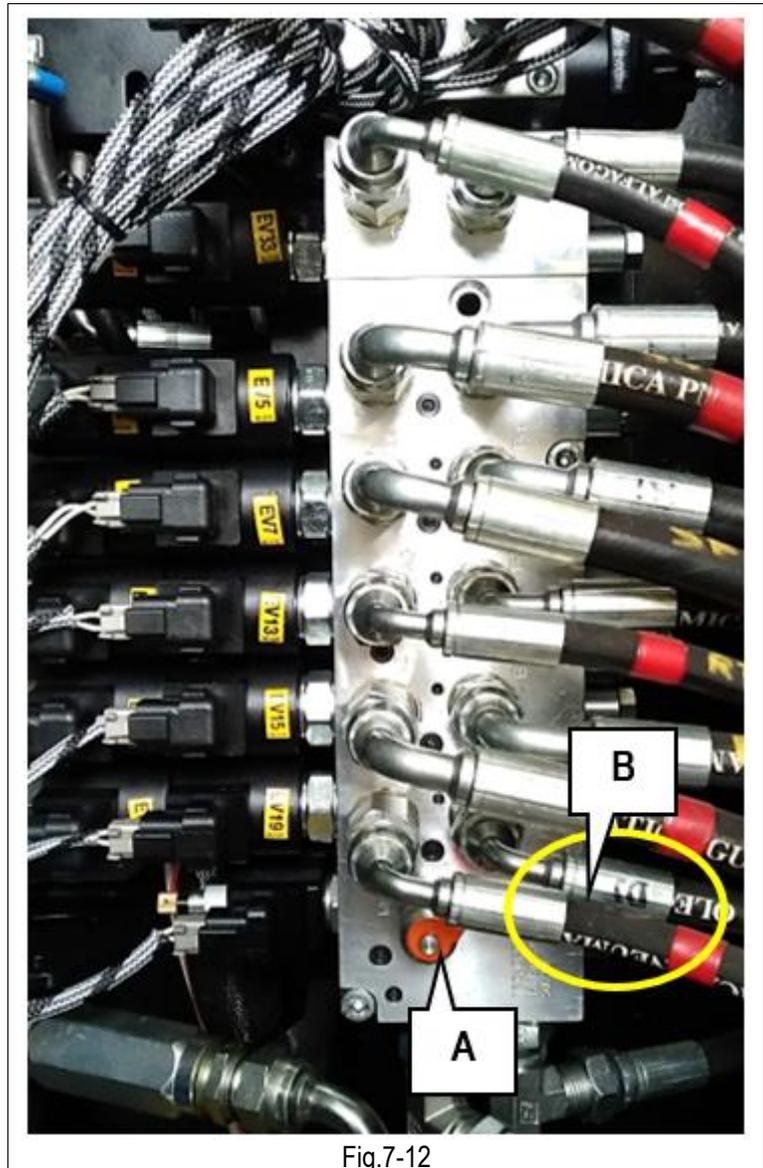


Fig.7-12

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**;
- Locate the pressure relief valve of lifting circuit **B**;
- Unscrew the adjusting dowel lock-nut;
- Using the ground control panel, lift the pantograph (lower boom) 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.



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

### 7.2.9.2. Pressure relief valve of the circuit of ON-OFF movements

The described pressure relief valve controls the maximum pressure of the ON-OFF movement circuit (steering, cage rotation, cage levelling). The valve does not usually require any adjustment since it is calibrated in 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**.
- Using the on-ground control panel, rotate the cage up to the end stop.
- Check the detected pressure value. The correct value is indicated in the chapter "**Technical features**".

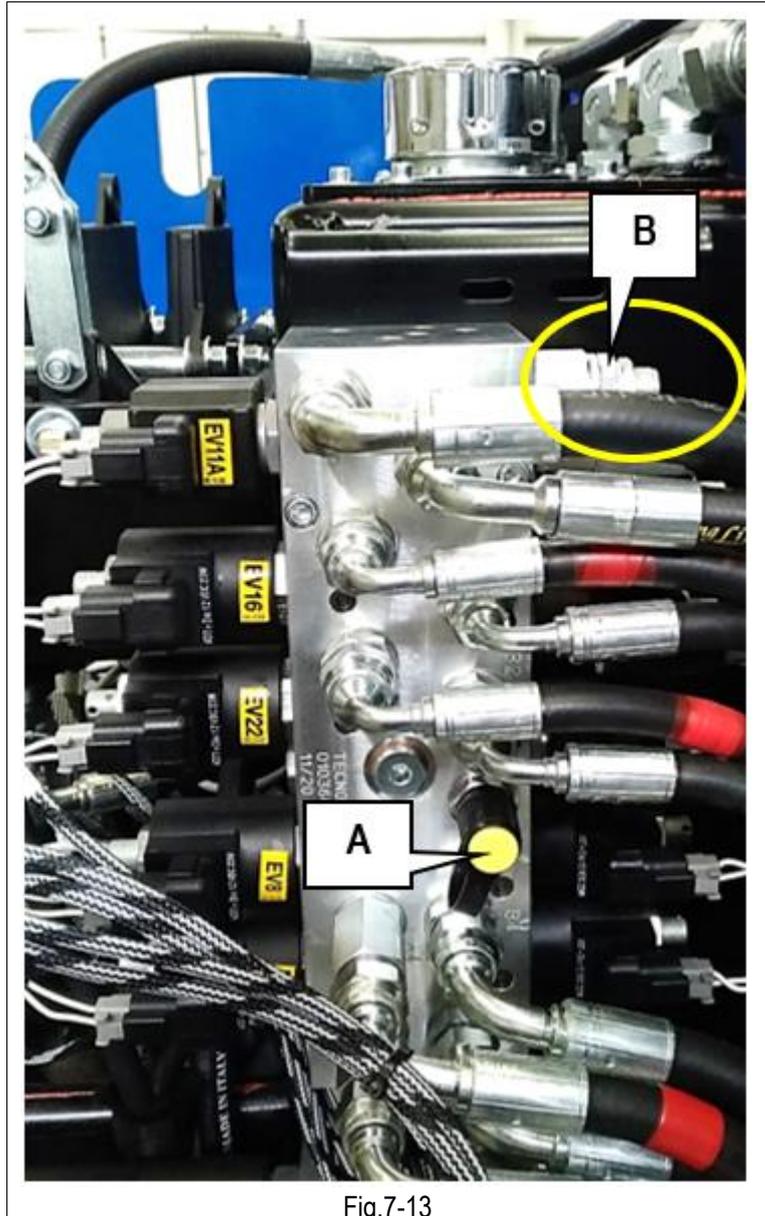


Fig.7-13

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**;
- Locate the pressure relief valve of lifting circuit **B**;
- Unscrew the adjusting dowl lock-nut;
- Using the on-ground control panel, rotate the cage up to the end stop.
- Adjust the pressure relief valve by means of the adjusting dowl so as to reach the pressure value indicated in chapter "**Technical Features**".
- Once calibration has been carried out, lock the adjusting dowl by means of the lock-nut.



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

## 7.2.10. Operation check of the turret inclinometer



### WARNING!

Generally, the inclinometer does not require adjusting except in the event of the device itself being 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 **C** 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 disables lifting.
- It disables drive when platform exceeds a given height (varying according to model).
- It warns of an instability condition by means of an audible alarm and a warning light located on the platform (see "General use instructions"). The activation of the audible alarm in case of excessive inclination occurs only with raised booms.

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.

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

- using the platform controls set the machine so as to place a shim of dimension (**A+10 mm**) under the two rear or front wheels (see following table).
- Wait three seconds (intervention delay set at factory) until the danger red light and the platform audible alarm turn on. With platform lowered (booms down, telescopic boom in and jib at a height between  $+10^\circ$  and  $-70^\circ$ ) all manoeuvres are still possible. By lifting one of the booms (excepting the Jib) and/or extending the telescopic boom with respect to the horizontal, the machine control system disables lifting and drive controls.
- If the alarm is not activated CALL THE TECHNICAL ASSISTANCE.

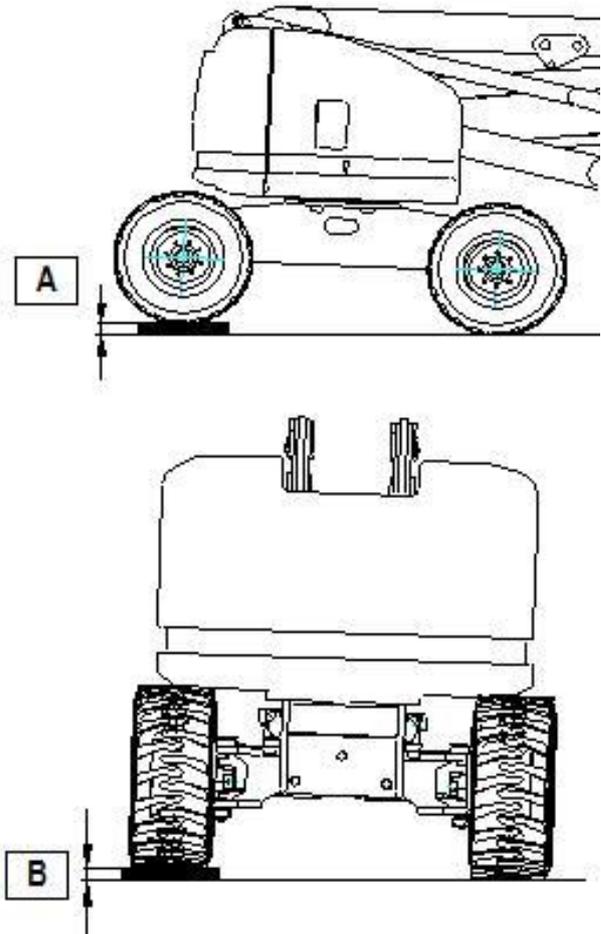
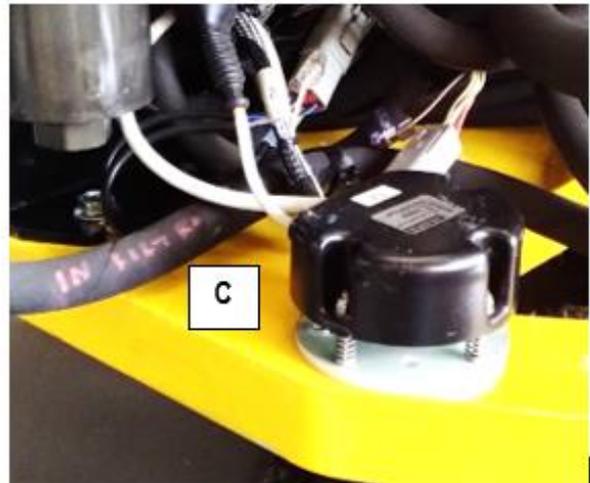


Fig.7-14

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

- Using the platform controls set the machine so as to place a shim of dimension (**B+10 mm**) under the two side right or left wheels (see following table).
- Wait three seconds (intervention delay set at factory) until the danger red light and the platform audible alarm turn on. With platform lowered (booms down, telescopic boom in and jib at a height between +10° and -70°) all manoeuvres are still possible. By lifting one of the booms (excepting the Jib) and/or extending the telescopic boom with respect to the horizontal, the machine control system disables lifting and drive controls.
- If the alarm is not activated CALL THE TECHNICAL ASSISTANCE.

SHIMS	A18 JRTE – A18 JRTH – A18 JRTE
A [mm]	185
B [mm]	190



**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.

## 7.2.11. Adjustment of the overload controller (load cell)



### WARNING!

This device does not need to be adjusted unless the device itself 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 AIRO self-propelled articulated boom aerial platforms are equipped with a sophisticated overload controller.

Normally the overload controller does not require any adjustments, since it is calibrated in the factory before the machine is delivered.

This device checks the load on the platform and:

- Disables all movements if platform is overloaded by 20% compared to the nominal load (drive and steering disabled with platform lifted).
- With platform in transport position and overloaded by 20% compared to the nominal load, it disables telescopic boom lifting and extension.
- It warns the user of the overload condition by means of the platform audible alarm and warning light.
- By removing the overload, the machine can be operated again.

Check operation at least once a year

The overload controller consists of:

- Deformation transducer (**A**).
- Display (**B**) for system calibration placed on the ground control panel.

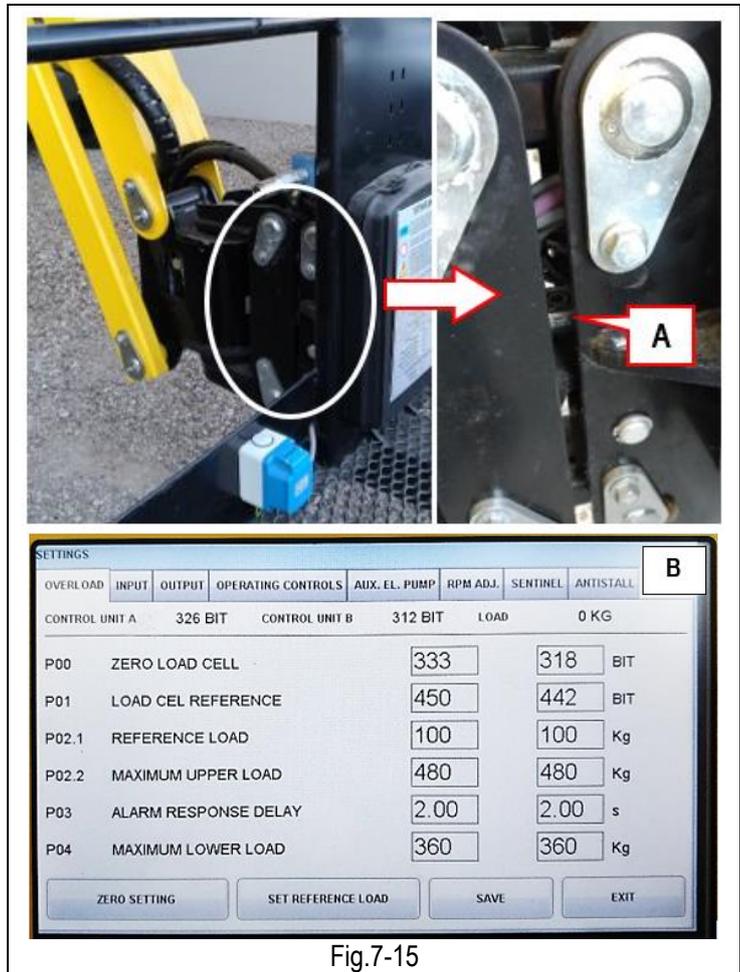


Fig.7-15

Operation check of the overload controller:

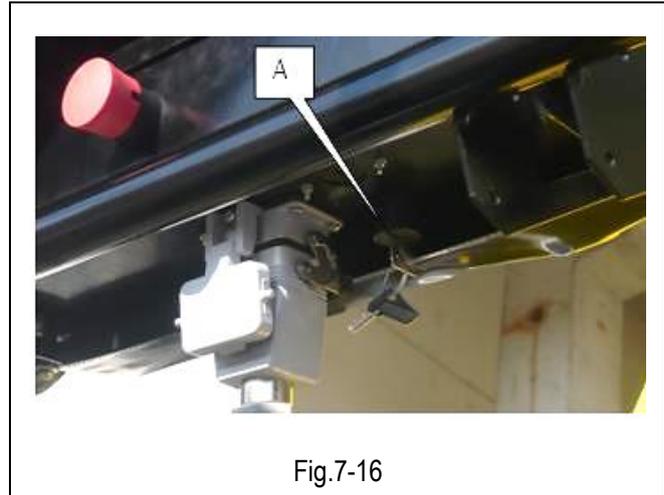
- With platform completely lowered and slide-out extension deck retracted, load a uniformly distributed load equal to the nominal load supported by the platform on the platform (see paragraph "**Technical characteristics**" - pay attention to the selector position for selecting the work load). In this condition all operations should be possible both on platform control panel and ground control panel.
- When platform is completely lowered add to the rated load an overload of 25% of the nominal load. In this condition the red alarm light and the audible alarm turn on.
- If the platform is at a height from the ground higher than that indicated in chapter "Technical features", the alarm condition locks the machine completely (the jib activates its microswitch after exceeding a height of 10° according to the horizontal axis) the alarm condition blocks the machine completely. To operate the machine again, remove the overload.

The system needs calibration:

- In case of replacement of one of the items composing the system.
- When, following an excessive overload or a collision, without the excessive load the danger condition is signalled anyway.

## 7.2.12. Overload controller by-pass – ONLY FOR EMERGENCY OPERATIONS

In case of fault and impossibility to calibrate the device, a by-pass of the system is possible by means of locking key switch (A) under the control panel. Keep the locking key switch active for 5 seconds and release to get the BY-PASS condition.



**WARNING!!** IN THIS CONDITION THE MACHINE CAN CARRY OUT ANY OPERATION, THOUGH THE RED FLASHING LED AND THE AUDIBLE ALARM SIGNAL THE DANGER CONDITION. TURNING OFF THE MACHINE WILL RESET THE SYSTEM, AND UPON STARTING, THE OVERLOAD CONTROLLER OPERATES AGAIN SIGNALLING THE PREVIOUS OVERLOAD CONDITION.

THIS OPERATION IS ONLY PERMITTED FOR EMERGENCY MOVEMENT. DO NOT USE THE MACHINE IF THE OVERLOAD CONTROLLER IS NOT EFFICIENT.



### **WARNING!**

**THIS OPERATION IS ALLOWED ONLY FOR EMERGENCY HANDLING OF THE MACHINE OR IN THE EVENT OF A FAULT OR IMPOSSIBILITY TO CALIBRATE THE SYSTEM.  
DO NOT USE THE MACHINE IF THE OVERLOAD CONTROLLER IS NOT EFFICIENT.**

### 7.2.13. Operation check of M1 microswitches

The lifting booms are controlled by microswitches:

- M1A on the pantograph.
- M1B on the boom.
- M1C on the Jib.
- M1E+M1G+M1G telescopic boom extension.

Once a year check the working conditions of the microswitches M1.

The functions of the microswitches M1A- M1B- M1E are the following:

- With platform not in rest position (at least one of the microswitches M1A-M1B-M1E is activated):
- the safety drive speed is automatically activated.
- If the chassis inclination exceeds the max. allowed value, the lifting and drive controls are disabled.
- The compensation control for platform levelling is disabled.
- When the platform is overloaded ALL operations until removal of overload are disabled.

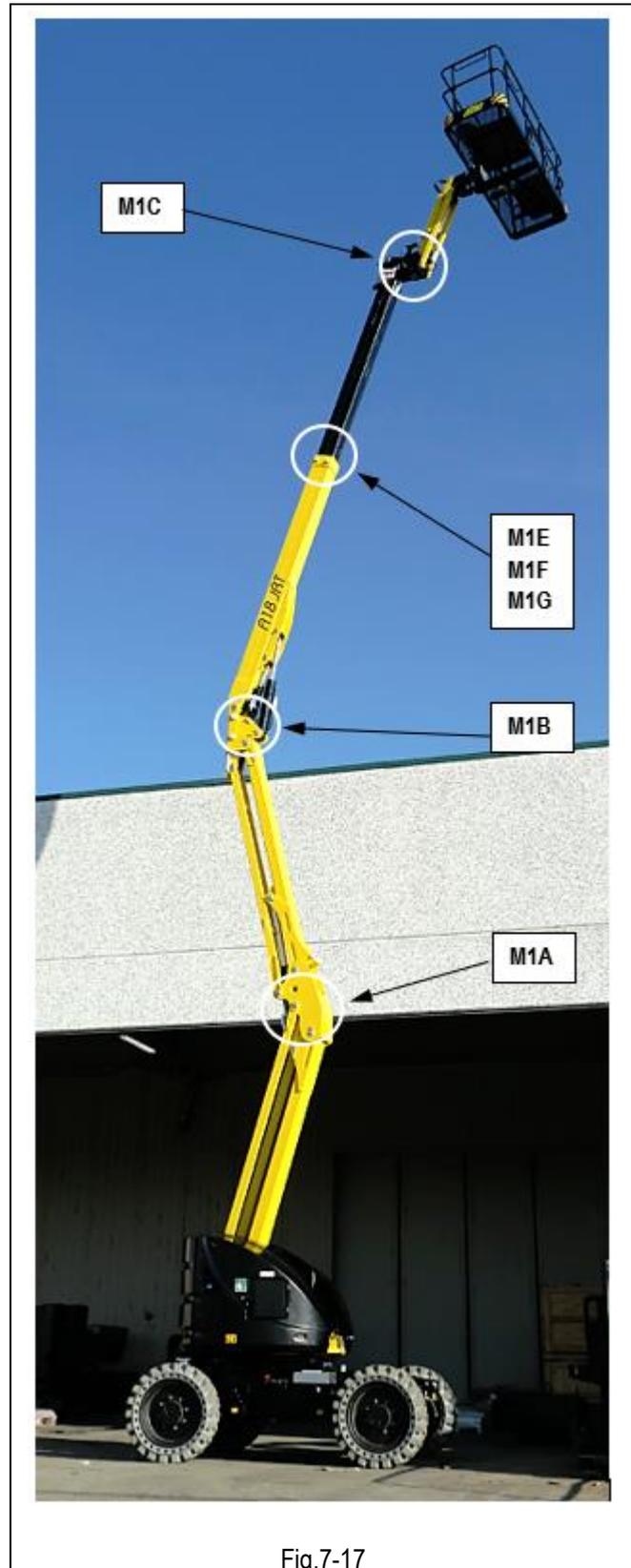
The following functions of the microswitch M1C on the Jib were designed to support loading/unloading from the ramps of a vehicle:

- With booms in rest position (microswitches M1A-M1B-M1E not activated), and Jib with inclination higher than +10° according to the horizontal axis (M1C activated):
- The third drive speed is automatically disabled.
- If the chassis is inclined over the max. allowed inclination, Jib lifting and drive controls remain allowed.

The M1F microswitch is the movement limit switch of the telescopic boom extension when the working capacity of 400 kg has been selected on the platform.

The M1G microswitch controls the work area for the reduced capacity of 300 kg.

If both microswitches M1F and M1G are activated by the cams on the telescopic boom extension, the machine is within the permissible working range for 300kg; trying to select 400kg capacity with the platform control selector activates the overload alarm.



#### 7.2.14. Check operation of proximity sensors M2A + M2B - turret rotation limit switch

The position of the revolving turret is controlled by the proximity sensors M2A and M2B which have the function of movement limit switch:

- M2A = anticlockwise turret rotation limit switch
- M2B = clockwise turret rotation limit switch

Check the operation of the M2A + M2B microswitches annually.

To test its operation, activate the turret rotation from the ground controls both clockwise and anticlockwise and check that, with the turret oriented by about 180 ° with respect to the normal position, the turret orientation movement stops automatically and the display reads the limit switch activation message.



Fig.7-18

### 7.2.15. Operation check of dead-man pedal safety system

The platform dead-man pedal is for enabling the operation controls of the machine on the platform control panel.

Check operation at least once a year.

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

## 7.3. Battery

### 7.3.1. Starter battery (A18 JRTD PLUS and A18 JRTH PLUS models)

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. On machines with a heat engine the starter battery is for:

- Powering the machine control circuits.
- Starting the heat engine.
- Powering the 12V electrical pump for emergency operations (if any).

#### 7.3.1.1. Starter battery maintenance

The starter battery does not require any special maintenance:

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

#### 7.3.1.2. Normal charging of the starter battery

It is not normally necessary to recharge starter batteries.

During normal operation of the Diesel engine an alternator recharges the battery (machines "D", "ED"). On machines equipped with a 230V single-phase or 380V three-phase electric pump, the electric pump control system keeps the starter battery charged while working in "electric mode". On battery-powered machines a DC-DC converter keeps the starter battery charged



#### **WARNING!**

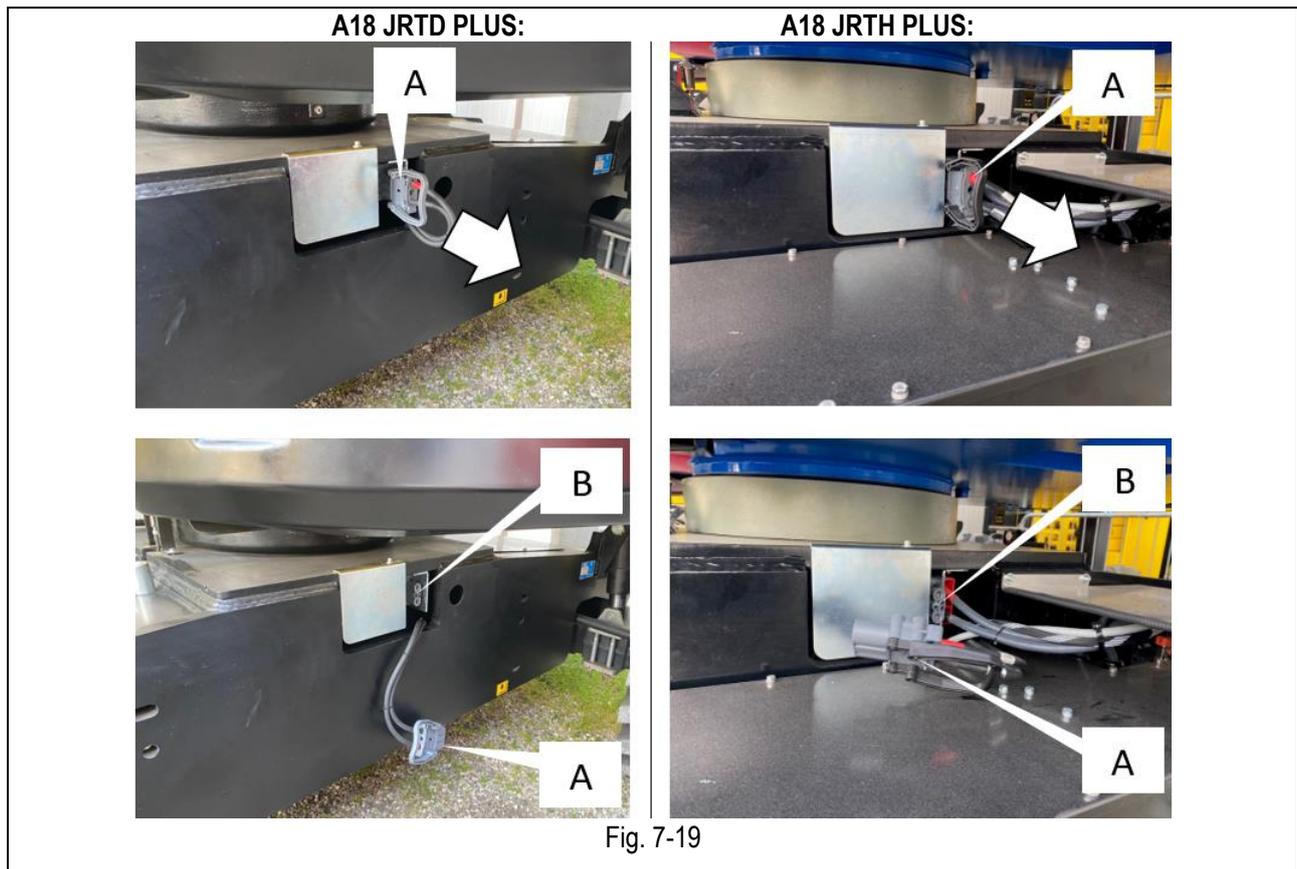
**Check the charge level of the starter battery after an emergency platform recovery with a 12V emergency electric pump (OPTIONAL).**

### 7.3.1.3. Emergency charging of starter battery (A18 JRTD PLUS and A18 JRTH PLUS models)

In an emergency, the starter battery can be charged by following the procedure described in the image below:

- Switch the machine off by turning the on/off key to OFF.
- Disconnect the mobile connector **(A)** by pulling it outwards.
- Connect the fixed connector **(B)** to an external 12VDC battery charger fitted with a suitable mobile connector.
- Proceed with charging.

Once charging is complete, fully reinsert the flying connector **(A)**.



### 7.3.1.4. Starter 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 FOR TECHNICAL ASSISTANCE.**

## 7.3.2. Lithium battery (A18 JRTH PLUS model)

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.

### 7.3.2.1. Lithium battery general warnings

- The battery consists of lithium-ion cells and an advanced electronic management system, integrated in the same battery, called the BBS (Battery Balancing System).
- The BBS management system communicates directly with the machine control system and with the battery charger, managing the battery in the best way for the efficiency and duration of the battery itself.
- The chemistry of lithium iron phosphate cells (LiFePO<sub>4</sub>) provides a high level of safety, high performances and allows great flexibility of use in the charge / discharge cycles without presenting any memory effect.
- The battery is maintenance-free and withstands incomplete discharges and charges (bottle feeding) without affecting its duration.
- The absence of emissions and the extended working temperature range make the machine perfectly suitable for any working environment in use. FULL ELECTRIC.
- A heating system integrated in the battery, and managed by the BBS, keeps the cells at the ideal temperature both during work and during charging.
- Charge the battery with the DIESEL motor generator only in ventilated areas or outdoors.
- 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<sup>2</sup>).
- Do not use rolled-up cables.
- Do not approach the battery with flames.
- 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.

### 7.3.2.2. Maintenance of the lithium battery

- The lithium battery does not require maintenance since the lithium cells are hermetically sealed and locked inside the metal body. No maintenance or repair work is allowed to personnel not authorized by the manufacturer.
- Should the need arise to disconnect the battery from the machine, the communication cables must be disconnected first and the power connections only later.
- When the machine is not being used the batteries will run down automatically (automatic discharge). It is recommended to avoid periods of inactivity longer than 3 months. If it is expected that the machine will have to be taken out of service for longer periods, it is compulsory to recharge it completely every 3 months using the battery charger connected to the 115-230V power supply or in UNATTENDED CHARGING mode.
- To limit the self-discharge of the batteries during periods of inactivity, it is recommended to leave the battery charger connected to the 115-230V mains.
- For transport, lithium batteries are classified as dangerous goods according to the law. The battery is classified as follows:

**UN Number: UN3480**

**UN Description: Lithium Ion Batteries**

**ADR Class: Class 9**

**IMDG Code: UN3480**

**Marine pollutant: NA**

**Packing group: II**

- In FULL ELECTRIC mode, once the residual battery charge of 10% is reached, the lifting operations are disabled. The battery must be recharged. This condition is signalled by a flashing light of the relevant led on the platform control panel.
- In HYBRID AUTOMATIC mode the machine works powered by the battery up to a residual charge of 40%, beyond which the DIESEL motor generator is automatically activated which keeps the battery charged. In this mode, the Diesel motor generator automatically switches off when the battery reaches 95% charge.
- In UNATTENDED CHARGING mode, from the ground controls it is possible to recharge the battery using the motor generator. In this condition the machine is turned off, and the motor generator recharges the battery up to 100%.
- During normal use of the machine, a full 100% recharge of the battery is recommended at least once a week by recharging with mains power or by UNATTENDED CHARGING.
- The battery must be recharged according to the instructions in the following paragraphs. Do not use external battery chargers not approved by AIRO.
- In case of faulty operations due to the battery, avoid any direct intervention and call the Customer Service.

### 7.3.2.3. Recharging the lithium battery (A18 JRTH PLUS)

#### 7.3.2.3.1. Charging by 115-230V mains current

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 115-230V  $\pm$  10%.
- Frequency 50÷60 Hz.
- Activated grounding line.
- Magneto-thermic switch and residual current device ("circuit breaker").

In addition, take care of:

- 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<sup>2</sup>).
- Do not use rolled-up cables.



**DO NOT**  
Connect to mains that do not comply with the above-mentioned features.  
Failure to comply with the a.m. instructions may cause incorrect functioning of the battery charger with consequent damages not covered by the warranty.

To use the battery charger, follow this procedure:

- Connect the battery charger by means of plug **A** to a current socket with the a.m. features.
- Check the connection status of the battery charger using the display **B** of the ground control panel which begins to indicate the progress of the charge as a percentage.
- The battery is fully charged when the indicator indicates **100%**.
- The maximum charging time required is approximately 4 hours. Charging time may vary depending on the ambient temperature.
- Any anomalies or problems during charging are indicated by text **C**.
- While the battery is charging, the machine is automatically turned off.

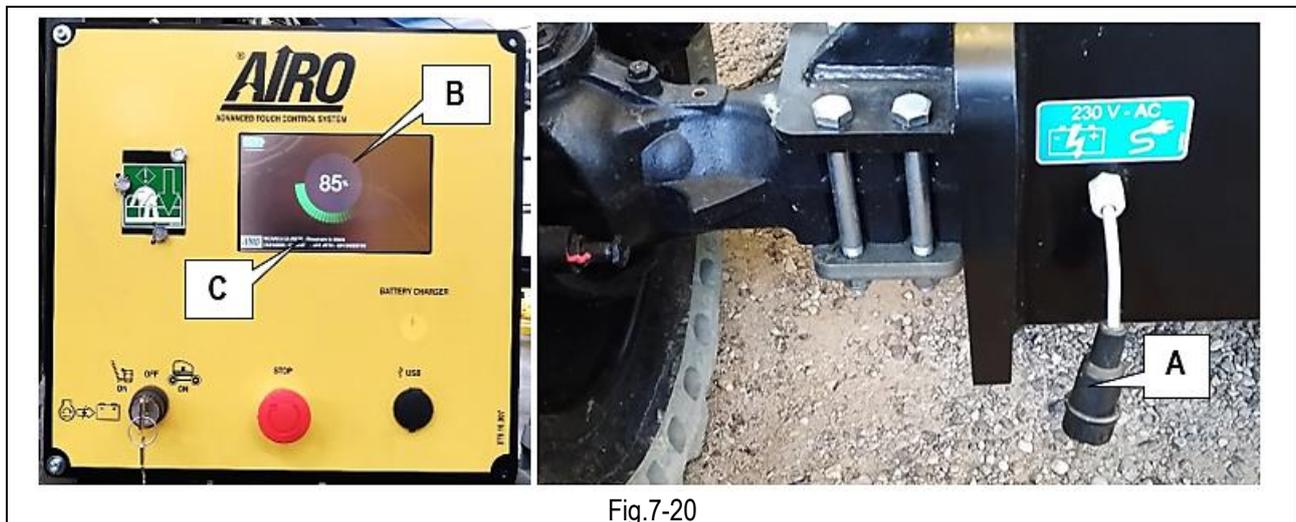


Fig.7-20

To stop charging simply disconnect the machine from the power line.



**WARNING!**  
The A18 JRTH PLUS is configured at the factory so that the machine can be operated even when charging via mains power. Pay attention to the handling of the machine when the mains cable is connected.

On request, it is possible to disable the operation of the machine during charging from the mains.

### 7.3.2.3.2. Recharging by UNATTENDED CHARGING

UNATTENDED CHARGING is a recharging mode via the on-board motor generator and can be used as an alternative to the recharging from the network described in the previous paragraph.

UNATTENDED CHARGING has the same effectiveness as recharging from the mains and allows 100% recharging of the battery.



**DO NOT**  
Use UNATTENDED CHARGING in closed or insufficiently ventilated areas.

To start the UNATTENDED CHARGING:

- The machine must be in an open or sufficiently ventilated area.
- Check the oil level in the tank. If necessary, top up.
- On the ground control panel, select the UNATTENDED CHARGING position using the main key **A**.
- On the ground control panel, press the START/STOP button **B** to start the diesel generator and consequently recharge the battery.
- Check the connection status of the charger using the display on the ground control panel, which starts to indicate the progress of the battery charge in percentage.
- Remove the main key **A** to avoid unauthorized use of the machine.
- The battery is fully charged when the indicator indicates **100%**.
- The maximum charging time required is approximately 4 hours for the standard machine, while it is reduced to 2 hours for the "Supercharger" option. Charging time may vary depending on the ambient temperature.
- Any anomalies or problems during charging are indicated by text **C**.
- While the battery is charging, the machine is automatically turned off.



Fig.7-21

To switch off the Diesel motor generator and consequently stop charging, you can proceed in one of the following ways:

- Press the START / STOP **B** button again.
- Turn the main key **A** to a position other than CHARGING UNATTENDED.
- Press the emergency stop **D**.

### 7.3.3. Lead acid drive battery (A18 JRTE PLUS model)

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.

#### 7.3.3.1. Lead acid battery general warnings

- In case of new batteries do not wait for the flat battery warning before recharging; recharge batteries after 3 or 4 working hours for the first 4/5 times.
- In case of new batteries full performance is achieved after approx. ten cycles of discharge and charge.
- Charge the battery in airy rooms and open the caps to allow the outflow of gas.
- 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<sup>2</sup>).
- Do not use rolled-up cables.
- 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.
- Check that the electrolyte level is 5-7 mm higher than the splash guard level.
- During charging operations check that the electrolyte temperature is not higher than 45°C max.
- If the machine is equipped with an automatic topping up device, follow the instructions described in the battery user manual carefully.

### 7.3.3.2. Lead acid battery maintenance

The Lead Acid drive battery is located on the right side of the turntable.

- For normal water operating conditions, water topping up is to be carried out every week.
- Topping up must be carried out using distilled or demineralised water.
- Top up after battery charging. The electrolyte level must be 5-7 mm higher than the splash guard level.
- For machines equipped with automatic topping up device, follow the instructions given in the battery user manual.
- Battery discharge must be stopped when 80% of the battery rated capacity has been used. An excessive and prolonged discharge irreversibly damages the battery. The machine is equipped with a device that, when the battery is discharged by 80%, lifting operations are disabled. The battery must be recharged. This condition is signalled by a flashing light of the relevant led on the platform control panel.
- The battery must be recharged according to the instructions in the following paragraphs.
- Keep caps and connections covered and dry. A careful cleaning allows electric insulation protection, good operation and useful life of the battery.
- In case of faulty operations due to the battery, avoid any direct intervention and call the Customer Service.
- When the machine is not being used the batteries will run down automatically (automatic discharge). To avoid the battery operation from being compromised, charge it at least once a month. This must be done even if the density values of the electrolyte are high.
- To limit the discharge of the battery during periods of inactivity, store the machine in environments where the temperature is below 30°C and press all the emergency buttons, including the main power button.

### 7.3.3.3. Lead acid battery charging



**WARNING!**  
**EXPLOSIVE gas is originated during battery charging process. Therefore, charging must take place in airy rooms where no risks of fire and explosion exist and in the presence of fire extinguishers.**

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 115-230V  $\pm$  10%.
- Frequency 50÷60 Hz.
- Activated grounding line.
- Magneto-thermic switch and residual current device ("circuit breaker").

In addition, take care of:

- 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<sup>2</sup>).
- Do not use rolled-up cables.



**IT IS FORBIDDEN**  
**to connect to mains that do not comply with the above-mentioned features.**  
**Failure to comply with the a.m. instructions may cause incorrect functioning of the battery chargers with consequent damage not covered by the warranty.**



**WARNING!**  
**After charging, when the battery charger is still connected, the electrolyte density values should range from 1.260 g/l to 1.270 g/l (at 25thC).**

To use the battery charger, follow these procedures:

- connect the battery charger by means of plug **A** to a current socket with the a.m. features
- Check the connection state of the battery charger through led **B**. If it is on, connection has taken place and charging has started. The colour and enable mode indicate the battery charging phase (refer to table below).

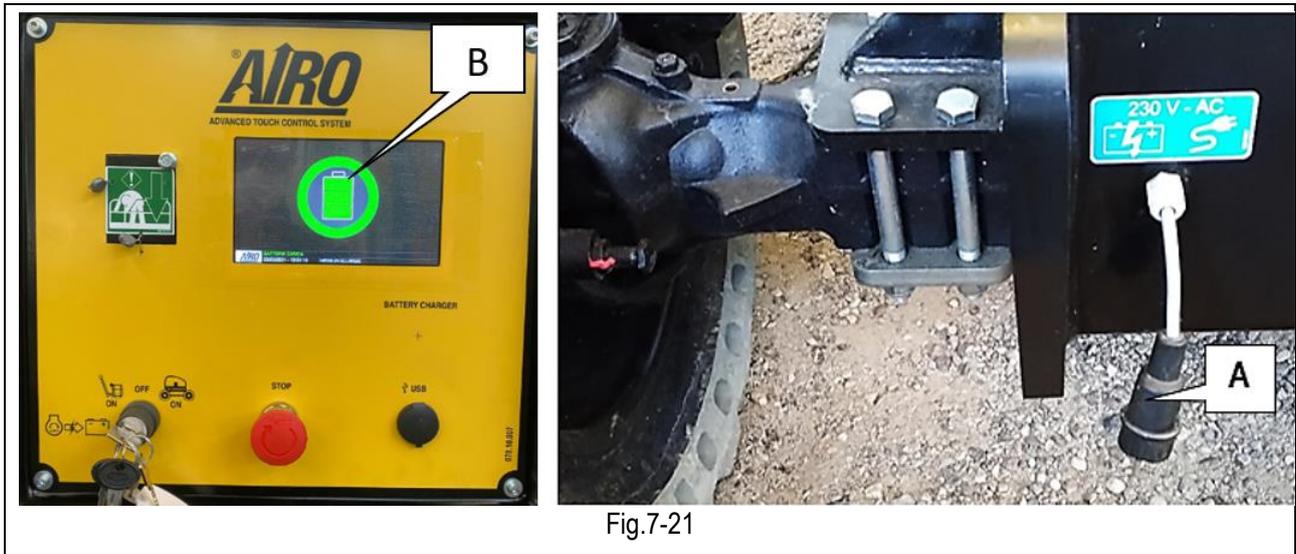


Fig.7-21

REPORT	DESCRIPTION
RED flashing for a few seconds	Battery charger self-diagnostic phase
RED on	Indicates that the battery charging has started
YELLOW on	Indicates that the battery charging has reached 80%
GREEN on	Indicates that the battery charging has reached 100%



With the battery charger ON, the machine is automatically off.

To disconnect the battery charger from the power source, disconnect the machine from the power line.



**WARNING!**

Before using the machine check that the power cord of the battery charger is disconnected.

#### 7.3.4. Battery replacement (all models)



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 FOR TECHNICAL ASSISTANCE.**

## 8. MARKS AND CERTIFICATIONS

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

<p><b>Eurofins Product Testing Italy Srl – 0477</b> <b>Via Cuorné, 21</b> <b>10156 – Torino (Italia)</b></p>	
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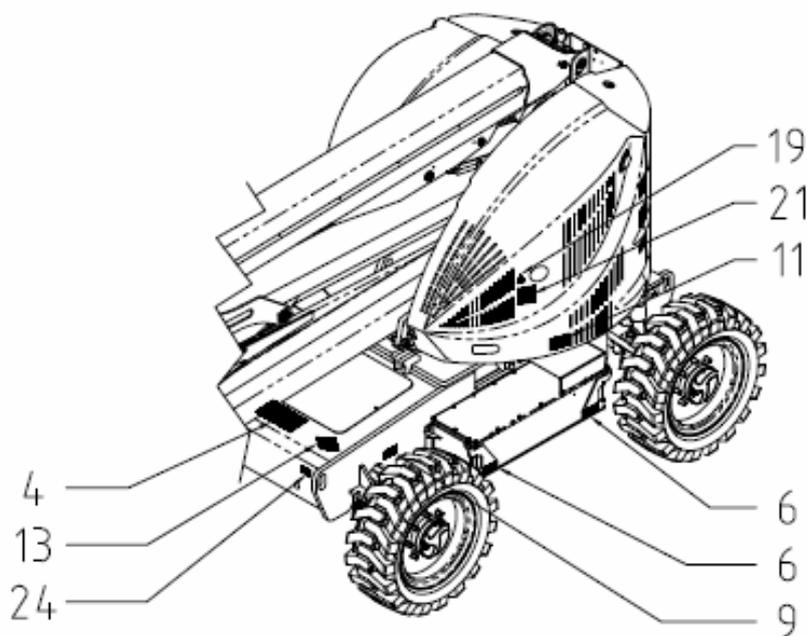
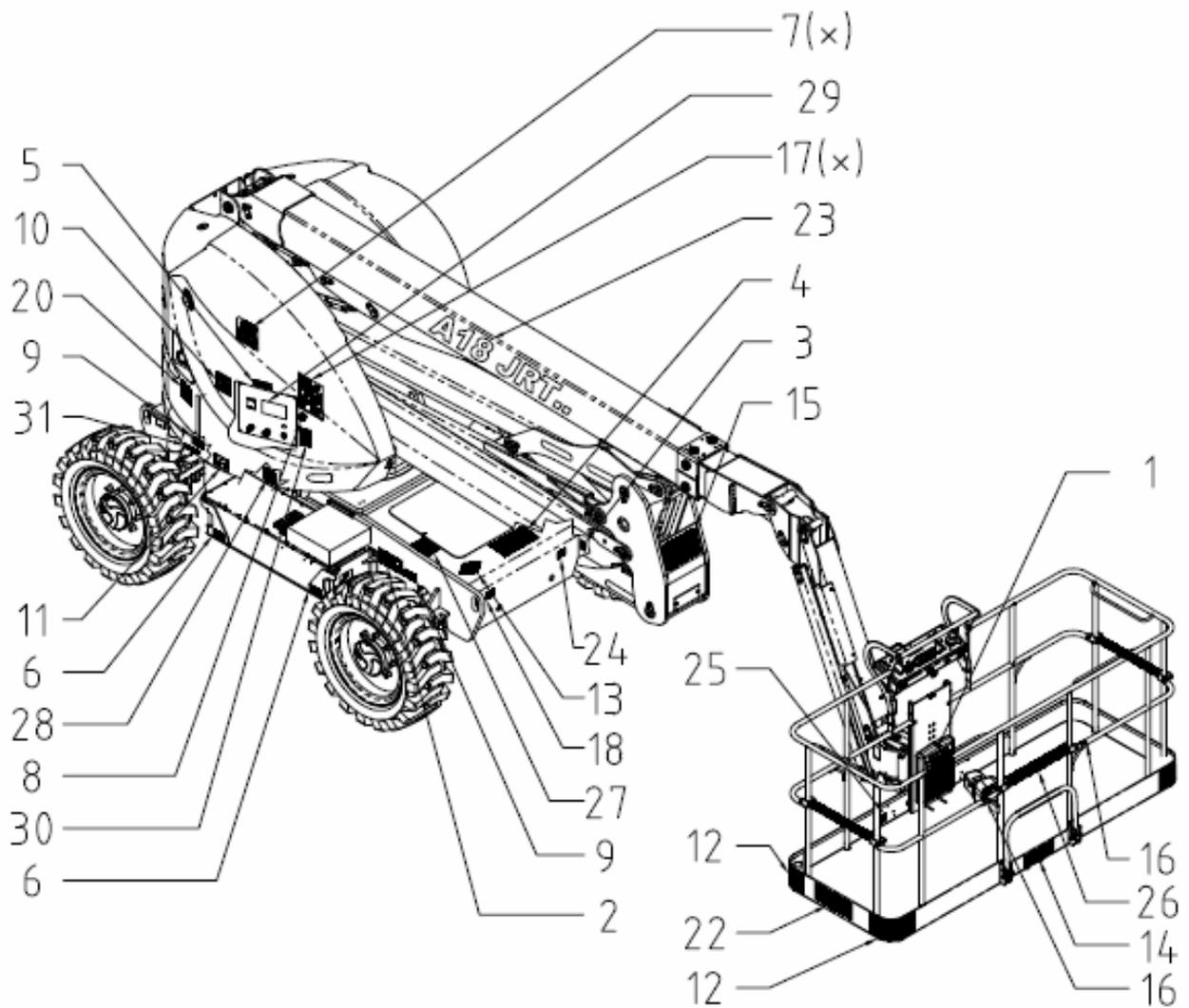
Test carrying out is shown by the above plate with CE mark applied on the machine and by the declaration of conformity enclosed in this user manual.

## 9. PLATES AND STICKERS

### STANDARD STICKER CODES

	CODE	DESCRIPTION	QUANTITY
1	001.10.001	AIRO warnings plate	1
2	001.10.011	AIRO serial number plate	1
3	001.10.031	Towing hook sticker	4
4	001.10.057	General warnings sticker	1
5	001.10.059	Wheels tightening sticker	1
6	001.10.060	Lifting point sticker	4
7	078.10.017	Oil type adhesive "HVI 26" I-D-F-NL-B-G-PL – under the cowling	1
8	001.10.180	Next check sticker	1
9	001.10.243	"Max. Load per wheel" sticker	4
10	001.10.259	IPAF emergency sticker	1
11	001.10.260	Symbol articulated no stopping sticker	2
12	010.10.010	Yellow-black line sticker <150x300>	4
13	023.10.003	Directions sticker	2
14	078.10.005	400/300 KG capacity adhesive	1
15	029.10.011	No fasten cage sticker	1
16	035.10.007	Safety belts coupling sticker	2
17	078.10.012	Manual emergency sticker Series "A PLUS" - under the cowling	1
18	045.10.011	Battery charger plug sticker – A18 JRTH / A18 JRTE	1
19	008.10.020	Triangle hot parts sticker	1
20	029.10.005	Fuel tank sticker	1
21	029.10.016	Sound power level sticker 103 dB – A18 JRTD / A18 JRTH	1
22	001.10.173	AIRO pre-spaced yellow sticker <300x140>	2
23	078.10.003	Pre-spaced sticker Black A18 JRTD	1
	078.10.004	Pre-spaced sticker Black A18 JRTH	1
	078.10.015	Pre-spaced sticker Black A18 JRTH	1
24*	045.10.010	(Optional) power line plug sticker	1
25*	001.10.021	(Optional) ground symbol sticker	1
26*	001.10.244	Entrance bar black-yellow line sticker (optional)	3
27	078.10.013	Emergency towing sticker	1
28	053.10.004	Power cut sticker	1
29	078.10.010	Transparent display protection	1
30	078.10.009	Work diagram sticker	1
31	001.10.315	Punching plate factory No.	1

\* optionals



## 10. 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.



## REQUIRED PERIODIC INSPECTIONS BY THE OWNER

STRUCTURAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
VISUAL INSPECTION OF THE ENTIRE STRUCTURE		Check the integrity of the rails; 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	REPORT	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 monthly, but at least annually with other transactions.	
	DATE	REPORT	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 SETTINGS		See chapter 7.2.1	
	DATE	REPORT	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 monthly, but at least annually on the occasion of other transactions.	
	DATE	REPORT	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

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
HYDRAULIC TANK OIL LEVEL CHECK		See chapter 7.2.3. Daily operation. It is not necessary to indicate this on a daily basis, but at least annually on the occasion of other operations.	
	DATE	REPORT	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

DRIVE AXLE OIL LEVEL CHECK		See chapter 7.2.6.	
	DATE	REPORT	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

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
CALIBRATION CHECK OF MOVEMENT CIRCUIT RELIEF PRESSURE VALVE		See chapter 7.2.9.	
	DATE	REPORT	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

TURNTABLE GREASING		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
		See chapter 7.2.5.	
	DATE	REPORT	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

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
<b>BATTERY STATUS:</b> STARTER BATTERY and LITHIUM BATTERY (A18 JRTH ONLY); LEAD ACID BATTERY (A 18 JRTE ONLY)		Daily operation. It is not necessary to indicate this on a daily basis, but at least annually on the occasion of other operations.	
	DATE	REPORT	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
<b>ADJUSTING THE SLIDING BLOCKS OF THE TELESCOPIC BOOM.</b>		See chapter 7.2.8.	
	DATE	REPORT	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

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
TOTAL OIL CHANGE IN HYDRAULIC TANK (EVERY TWO YEARS)		See chapter 7.2.3.	
	DATE	REPORT	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			
HYDRAULIC FILTER REPLACING (EVERY TWO YEARS)		See chapter 7.2.4.	
	DATE	REPORT	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			

## REQUIRED PERIODIC INSPECTIONS BY THE OWNER

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
TOTAL OIL CHANGE IN HYDRAULIC TANK (EVERY TWO YEARS)		See chapter 7.2.6.	
	DATE	REPORT	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			
SAFETY SYSTEM CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
CHECK THE EFFICIENCY OF THE OSCILLATING AXLE LOCKING SYSTEM.		See chapter 7.2.7.	
	DATE	REPORT	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 OF THE TURRET INCLINOMETER		See chapter 7.2.10.	
	DATE	REPORT	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
EFFICIENCY CHECK OF PLATFORM OVERLOAD CONTROLLER.		See chapter 7.2.11.	
	DATE	REPORT	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	
<b>M1 MICROSWITCH OPERATION CHECK</b>		See chapter 7.2.13.	
	DATE	REPORT	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
<b>OPERATION CHECK PROXIMITY SENSOR M2A+M2B</b>		See chapter 7.2.14.	
	DATE	REPORT	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 OF DEAD-MAN PEDAL		See chapter 7.2.15.	
	DATE	REPORT	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	REPORT	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	
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 1.5 METERS.	
	DATE	REPORT	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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER			
EMERGENCY DEVICES CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
MANUAL EMERGENCY LOWERING CHECK		See chapters 5.6 (5.6.1 – 5.6.3)	
	DATE	REPORT	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

### 1st OWNER

COMPANY	DATA	MODEL	SERIAL NUMBER	DELIVERY DATE

AIRO – Tigieffe S.r.l.

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### SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATA

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

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### SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATA

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	DATA

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**

\_\_\_\_\_

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**SUBSEQUENT TRANSFERS OF OWNERSHIP**

COMPANY	DATA

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**

\_\_\_\_\_

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**SUBSEQUENT TRANSFERS OF OWNERSHIP**

COMPANY	DATA

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

DATA	BREAKDOWN DESCRIPTION	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

ASSISTANCE

SAFETY MANAGER

DATA	BREAKDOWN DESCRIPTION	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

ASSISTANCE

SAFETY MANAGER

## IMPORTANT BREAKDOWNS

DATA	BREAKDOWN DESCRIPTION	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

ASSISTANCE

SAFETY MANAGER

DATA	BREAKDOWN DESCRIPTION	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

ASSISTANCE

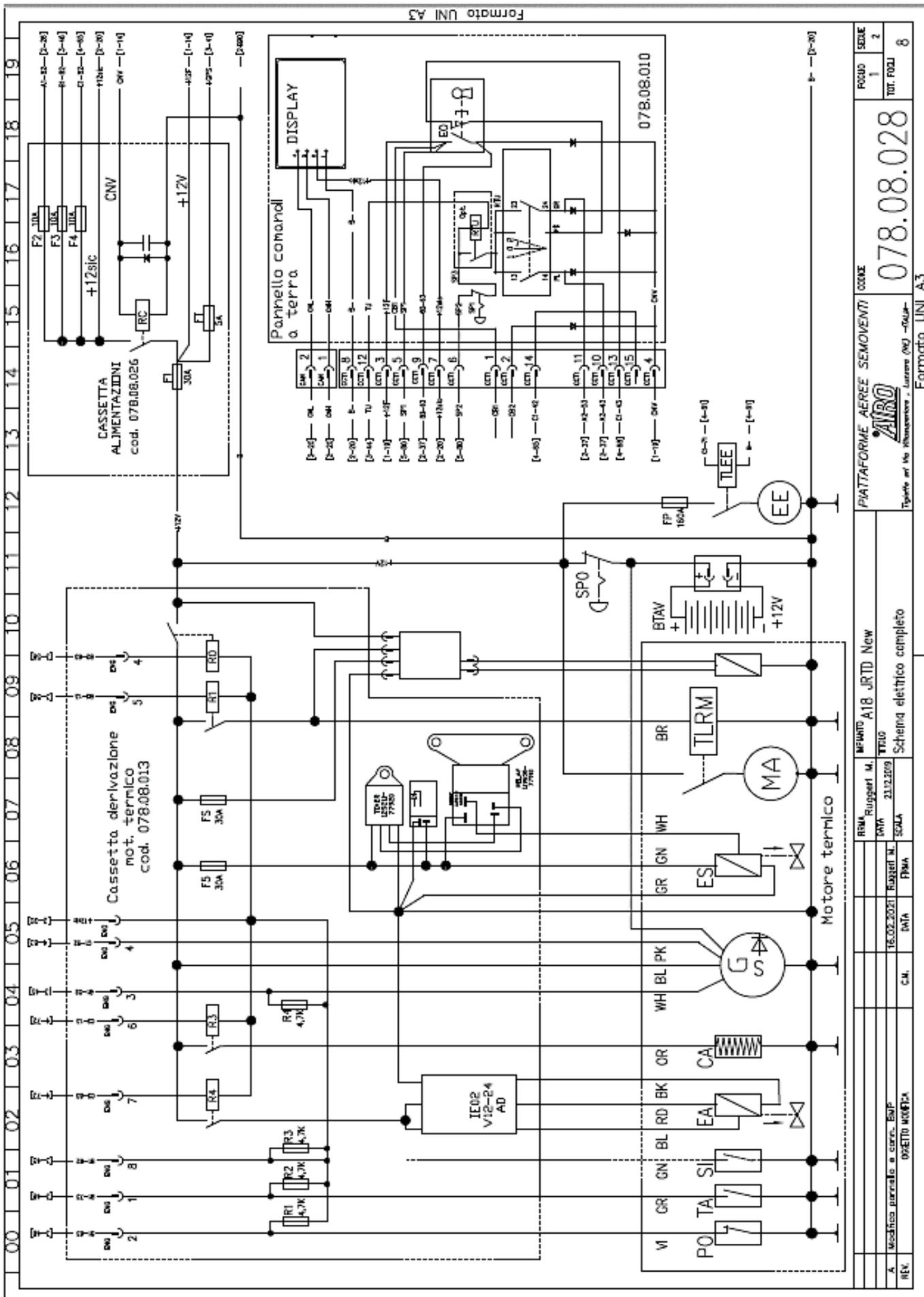
SAFETY MANAGER

## 11. WIRING DIAGRAMS

### 11.1. Wiring diagram A18 JRTD PLUS – 078.08.028

SYMB.	DESCRIPTION	Pag-Col.
ABMP	AUDIBLE ALARM AIRO SENTINEL SYSTEM	2 - 34/35
AV1	GROUND AUDIBLE ALARM	3 - 48/49
AV2	PLATFORM AUDIBLE ALARM	7-132
BMP	ANTI-CRUSHING SENSOR AIRO SENTINEL	5-87/88
BTAV	STARTER BATTERY	1-11/12
BY	OVERLOAD CONTROLLER BY-PASS SELECTOR	7-121
CA	PLUGS	1-03
EA	ELECTRIC ACCELERATOR	1-02/03
EE	OPTIONAL EMERGENCY ELECTRIC PUMP	1-17/18
EO	EMERGENCY OVERRIDE	1-18/19
EP	ELECTRIC PUMP SELECTOR	7-123
ES	ELECTRIC STOP	1-06/07
E/D2	PLATFORM ELECTRO / DIESEL SELECTOR	7-123/124
EV2	FORWARD DRIVE SOLENOID VALVE	3-52
EV3	BACKWARD DRIVE SOLENOID VALVE	3-52
EV4	LOWER BOOM LIFTING SOLENOID VALVE (PANTOGRAPH)	3-51/52
EV5	LOWER BOOM LIFTING SOLENOID VALVE (PANTOGRAPH)	3-51
EV6	TELESCOPIC BOOM EXTENSION SOLENOID VALVE	2-31/32
EV7	TELESCOPIC BOOM RETRACTION SOLENOID VALVE	2-31
EV8	RIGHT STEERING SOLENOID VALVE - FRONT AXLE	3-49/50
EV9	LEFT STEERING SOLENOID VALVE - FRONT AXLE	3-49
EV10	DIFFERENTIAL LOCK SOLENOID VALVE - OPTIONAL	4-62
EV11A	ON-OFF CIRCUIT ENABLE SOLENOID VALVE	3-50
EV11B	PROPORTIONAL CIRCUIT ENABLE SOLENOID VALVE	3-47
EV11D	STEERING CIRCUIT ENABLE SOLENOID VALVE	2-22/23
EV12	TURRET ROTATION SOLENOID VALVE - ANTI-CLOCKWISE	4-70
EV13	TURRET ROTATION SOLENOID VALVE - CLOCKWISE	4-69/70
EV14	UPPER BOOM LIFTING SOLENOID VALVE	3-51
EV15	UPPER BOOM LOWERING SOLENOID VALVE	3-50/51
EV16	HIGH CAGE LEVELLING SOLENOID VALVE	2-31
EV17	LOW CAGE LEVELLING SOLENOID VALVE	2-30/31
EV18	JIB LIFTING SOLENOID VALVE	2-32
EV19	JIB LOWERING SOLENOID VALVE	2-32
EV20	HIGH DRIVE SPEED CONTROL SOLENOID VALVE	2-21/22
EV21	SOLENOID VALVE CAGE ROTATION - ANTI-CLOCKWISE	4-68/69
EV22	SOLENOID VALVE CAGE ROTATION - CLOCKWISE	4-68
EV32	SOLENOID VALVE JIB ROTATION - ANTI-CLOCKWISE	4-69
EV33	SOLENOID VALVE JIB ROTATION - CLOCKWISE	4-69
EV38	RIGHT STEERING SOLENOID VALVE - REAR AXLE	4-68
EV39	LEFT STEERING SOLENOID VALVE - REAR AXLE	4-67/68
EV40	BRAKE RELEASE SOLENOID VALVE	4-66
EV41	OSCILLATING AXLE UNLOCK SOLENOID VALVE	4-62/63
F1	CONTROL CIRCUIT FUSE	1-14
F2	FUSE CONTROL UNIT "A"	1-16/17
F3	FUSE CONTROL UNIT "B"	1-16/17
F4	FUSE CONTROL UNIT "C"	1-16/17
F5	DIESEL ENGINE AUXILIARY SYSTEM FUSE	1-06
FL	FUEL RESERVE METER – OPTIONAL	3-58
FP	FUSE EMERGENCY ELECTRIC PUMP - OPTIONAL	1-13

<b>FS</b>	ANTI POLLUTION CIRCUIT FUSE - OPTIONAL	1-07
<b>FT</b>	REMOTE CONNECTION PROTECTION FUSE	1-15
<b>G</b>	CURRENT GENERATOR / ALTERNATOR	1-04/05
<b>GRF1</b>	ROTATING BEACON 1	2-36
<b>GRF2</b>	ROTATING BEACON 2	2-36
<b>GRF3</b>	ROTATING BEACON 3	2-37
<b>KL</b>	HORN	2-38/39
<b>Load</b>	LOAD CONTROL SELECTOR	7-128/129
<b>LC</b>	LOAD CELL	5-88
<b>M1A</b>	LOWER BOOM POSITION LIMIT SWITCH (PANTOGRAPH)	2-21/22
<b>M1B</b>	UPPER BOOM POSITION LIMIT SWITCH	2-22/23
<b>M1C</b>	JIB POSITION LIMIT SWITCH	2-24
<b>M1E</b>	TELESCOPIC BOOM POSITION LIMIT SWITCH	2-25
<b>M1F</b>	LIMIT SWITCH WORKING AREA 1	3-56/57
<b>M1G</b>	LIMIT SWITCH WORKING AREA 2	3-57/58
<b>M1S</b>	DRIVE STOP LIMIT SWITCH - OPTIONAL	2-26
<b>M17</b>	CENTRED ROTATING JIB LIMIT SWITCH - OPTIONAL	5-85/86
<b>M2A</b>	CLOCKWISE TURRET ROTATION STOP LIMIT SWITCH	2-27/28
<b>M2B</b>	ANTICLOCKWISE TURRET ROTATION STOP LIMIT SWITCH	2-28/29
<b>MA</b>	DIESEL ENGINE STARTER	1-07/08
<b>PO</b>	OIL PRESSURE SENSOR	1-00
<b>R0</b>	DIESEL ENGINE ON RELAY	1-09/10
<b>R1</b>	START RELAY	1-09
<b>R3</b>	PLUG RELAY	1-03/04
<b>R4</b>	ELECTRO-ACCELERATOR RELAY	1-02/03
<b>RC</b>	POWER ENABLE RELAY	1-14/15
<b>RT1</b>	CAN-BUS TERMINATION RESISTOR	2-20/21
<b>RT2</b>	CAN-BUS TERMINATION RESISTOR	5-98/99
<b>RTU</b>	TRACKUNIT ENABLING RELAY - OPTIONAL	1-17/18
<b>SAVP</b>	LED BUTTON FOR ENGINE START-STOP CONTROL ON PLATFORM	7-122/123
<b>SI</b>	FILTER CLOGGING SELECTOR	1-01
<b>SP0</b>	POWER CIRCUIT EMERGENCY SWITCH	1-11
<b>SP1</b>	GROUND EMERGENCY SWITCH - GROUND CONTROLS	1-17
<b>SP2</b>	GROUND EMERGENCY SWITCH - PLATFORM CONTROLS	5-96
<b>SP3</b>	HORN BUTTON	7-128
<b>SSP</b>	REAR AXLE SENSOR FOR STRAIGHT WHEELS	4-62/63
<b>SW1</b>	CONTROL SELECTORS	1-15/17
<b>SW3</b>	DRIVE SPEED SELECTOR	7-127
<b>TA</b>	WATER TEMPERATURE SENSOR	1-01
<b>TLRM</b>	DIESEL ENGINE STARTER CONTACTOR	1-08/09
<b>TLRP</b>	EMERGENCY ELECTRIC PUMP CONTACTOR - OPTIONAL	1-13/14
<b>UM</b>	DEAD-MAN PEDAL CONTACT	5-85/86

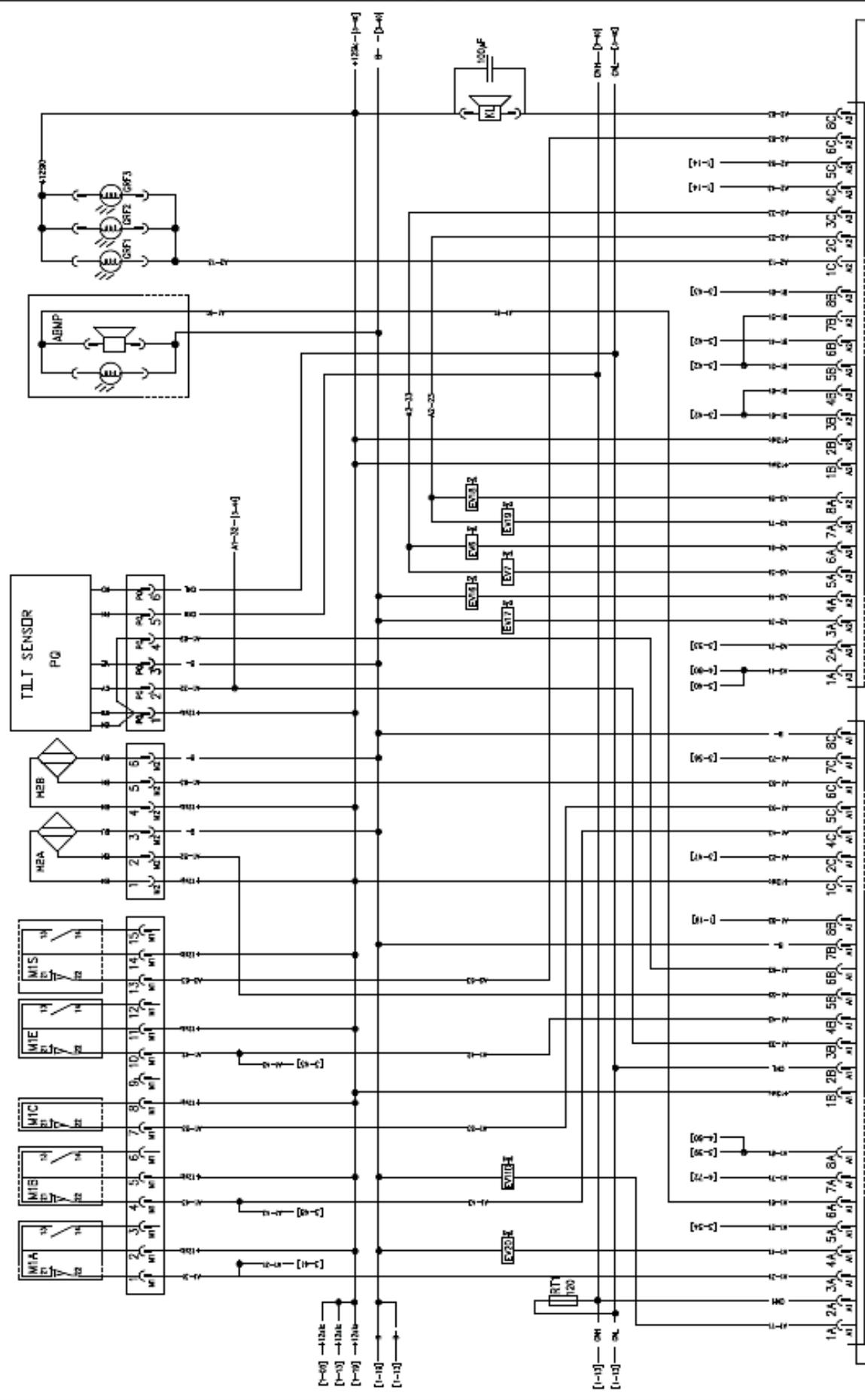


Formato UNI A3

REVISIONI	DATA	REVISIONI	DATA	REVISIONI	DATA	REVISIONI	DATA
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A. Modifica parziale a corr. BNF		Ruggieri M. SCALA		Ruggieri M. SCALA		Ruggieri M. SCALA	
092870 WCF1A		CM.		CM.		CM.	
PIATTAFORME AEREE SEMOVENTI (COCOME)				PIATTAFORME AEREE SEMOVENTI (COCOME)			
INFIORATO A18 JRTD New				INFIORATO A18 JRTD New			
TRUO				TRUO			
Schema elettrico completo				Schema elettrico completo			
Tegolo per Via Villanovese - Lussino (PD) - (0498)				Tegolo per Via Villanovese - Lussino (PD) - (0498)			
AIRO				AIRO			
078.08.028				078.08.028			
FOGLIO 1				FOGLIO 1			
TOT. FOGLI 8				TOT. FOGLI 8			
Formato UNI A3				Formato UNI A3			

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

Formato UNI A3



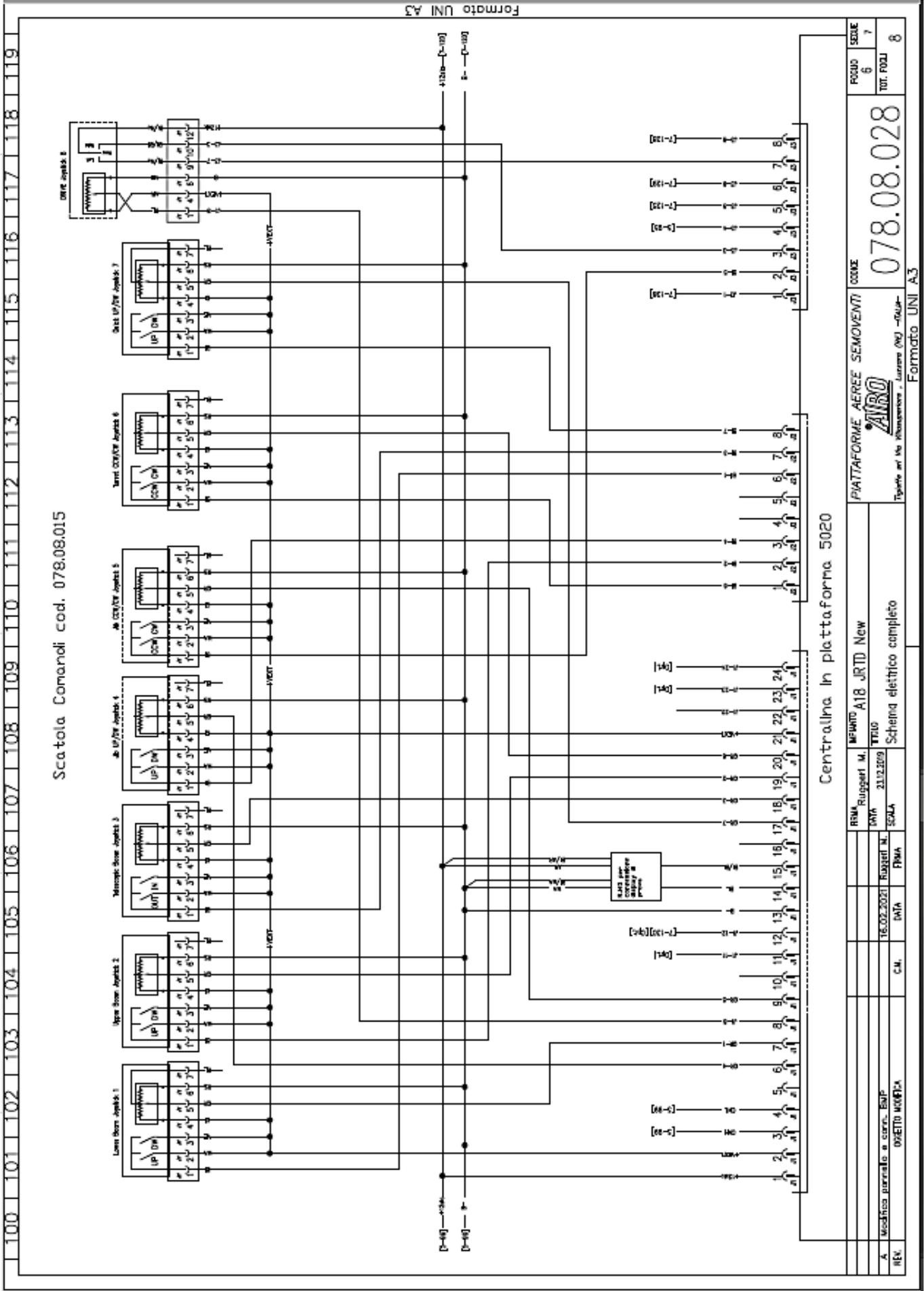
Centralina a terra 'A'

REV	A	Modifica puntale a corr. EMP	09/2010 MOD/PA	CM	IMA	FMA	SCAL	23.12.2019	TRIO	MEUNO A18 JRTE New	PIATTAFORME AEREE SEMOVENTI	0000E	FOCUS	2	SEDE	3	TOT. FOGLI	8
												078.08.028						
												Tipo di file: <i>Illustrazione</i> - <i>Lavoro (NO)</i> - <i>Realiz-</i>						
												Formato UNI A3						



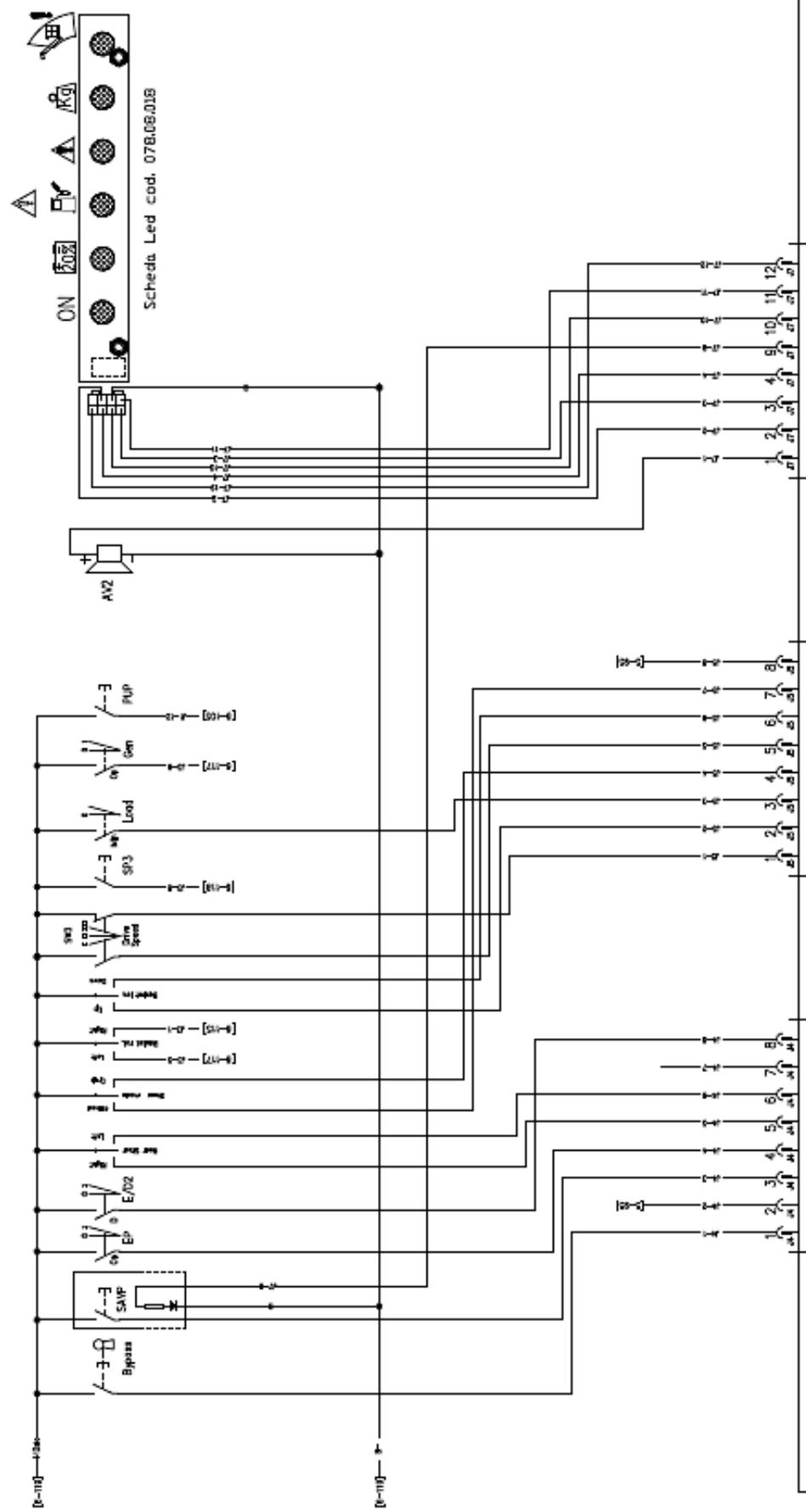






120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139

Scatola Comandi cod. 078.08.015



Centralina in piattaforma 5020

PIATTAFORME AEREE SEMOVENTI (CONE)		FOCUS	7	SEDE	8
Tighele ar la transportare, Lucarne (NG) -Tighele-		078.08.028		TOT. FOGLI	8
Scheda Led cod. 078.08.018					
AV2					
E/01					
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## 11.2. Wiring diagram A18 JRTH PLUS – 078.08.029

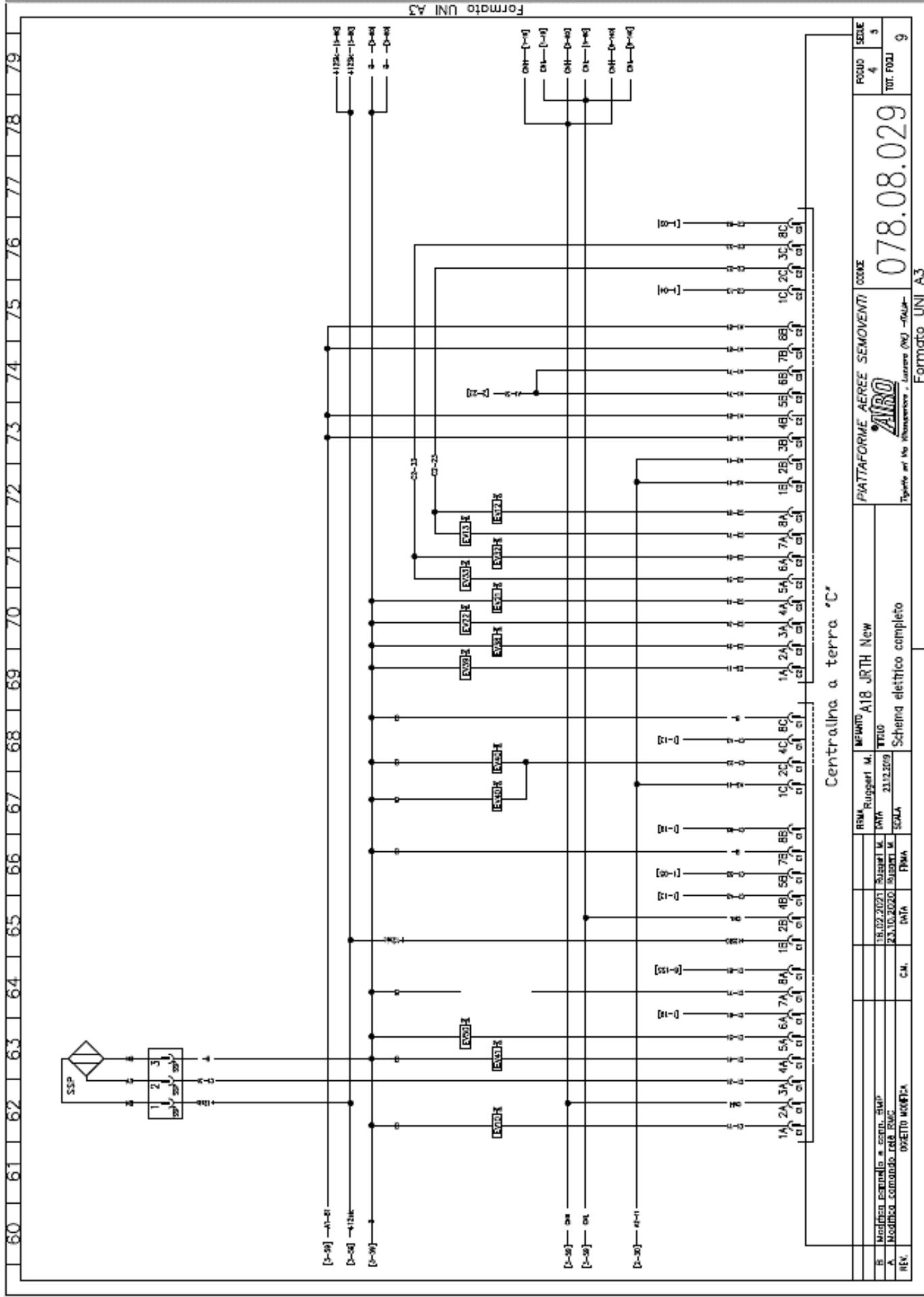
SYMB.	DESCRIPTION	Pag-Col.
ABMP	AUDIBLE ALARM AIRO SENTINEL SYSTEM	2-34/35
AV1	GROUND AUDIBLE ALARM	3 – 48/49
AV2	PLATFORM AUDIBLE ALARM	7-132
BC1	BATTERY CHARGER 1	8-152/153
BC2	BATTERY CHARGER 2 - OPTIONAL	8-154/155
BL1	LITHIUM BATTERY - Box 1	8-155/158
BL2	LITHIUM BATTERY - Box 2	8-155/158
BMP	ANTI-CRUSHING SENSOR AIRO SENTINEL	5-87/88
BTAV	STARTER BATTERY	1-11/12
BY	OVERLOAD CONTROLLER BY-PASS SELECTOR	7-121
CA	PLUGS	1-03
CNV	CONVERTER 48V – 12V	8-148/149
EA	ELECTRIC ACCELERATOR	1-02/03
EE	OPTIONAL EMERGENCY ELECTRIC PUMP	1-17/18
EO	EMERGENCY OVERRIDE	1-18
EP	ELECTRIC PUMP SELECTOR	7-123
ES	ELECTRIC STOP	1-06/07
E/D2	PLATFORM ELECTRO / DIESEL SELECTOR	7-123/124
EV2	FORWARD DRIVE SOLENOID VALVE	3-52
EV3	BACKWARD DRIVE SOLENOID VALVE	3-52
EV4	LOWER BOOM LIFTING SOLENOID VALVE (PANTOGRAPH)	3-51/52
EV5	LOWER BOOM LIFTING SOLENOID VALVE (PANTOGRAPH)	3-51
EV6	TELESCOPIC BOOM EXTENSION SOLENOID VALVE	2-31/32
EV7	TELESCOPIC BOOM RETRACTION SOLENOID VALVE	2-31
EV8	RIGHT STEERING SOLENOID VALVE - FRONT AXLE	3-49/50
EV9	LEFT STEERING SOLENOID VALVE - FRONT AXLE	3-49
EV10	DIFFERENTIAL LOCK SOLENOID VALVE	4-62
EV11A	ON-OFF CIRCUIT ENABLE SOLENOID VALVE	3-50
EV11B	PROPORTIONAL CIRCUIT ENABLE SOLENOID VALVE	3-47
EV11D	STEERING CIRCUIT ENABLE SOLENOID VALVE	2-22/23
EV12	TURRET ROTATION SOLENOID VALVE - ANTI-CLOCKWISE	4-72
EV13	TURRET ROTATION SOLENOID VALVE - CLOCKWISE	4-71/72
EV14	UPPER BOOM LIFTING SOLENOID VALVE	3-51
EV15	UPPER BOOM LOWERING SOLENOID VALVE	3-50/51
EV16	HIGH CAGE LEVELLING SOLENOID VALVE	2-31
EV17	LOW CAGE LEVELLING SOLENOID VALVE	2-30/31
EV18	JIB LIFTING SOLENOID VALVE	2-32
EV19	JIB LOWERING SOLENOID VALVE	2-32
EV20	HIGH DRIVE SPEED CONTROL SOLENOID VALVE	2-21/22
EV21	SOLENOID VALVE CAGE ROTATION - ANTI-CLOCKWISE	4-70/71
EV22	SOLENOID VALVE CAGE ROTATION - CLOCKWISE	4-70
EV32	SOLENOID VALVE JIB ROTATION - ANTI-CLOCKWISE	4-71
EV33	SOLENOID VALVE JIB ROTATION - CLOCKWISE	4-70/71
EV38	RIGHT STEERING SOLENOID VALVE - REAR AXLE	4-69/70
EV39	LEFT STEERING SOLENOID VALVE - REAR AXLE	4-69
EV40	BRAKE RELEASE SOLENOID VALVE	4-67/68
EV41	OSCILLATING AXLE UNLOCK SOLENOID VALVE	4-62/63
F1	CONTROL CIRCUIT FUSE	1-14
F2	FUSE CONTROL UNIT "A"	1-16/17
F3	FUSE CONTROL UNIT "B"	1-16/17
F4	FUSE CONTROL UNIT "C"	1-16/17
F5	DIESEL ENGINE AUXILIARY SYSTEM FUSE	1-06

<b>FE/HY</b>	FULL ELECTRIC/HYBRID SELECTOR MODE	7-131
<b>FL</b>	FUEL RESERVE METER – OPTIONAL	3-58
<b>FP</b>	FUSE EMERGENCY ELECTRIC PUMP - OPTIONAL	1-13
<b>FS</b>	ANTI POLLUTION CIRCUIT FUSE - OPTIONAL	1-07
<b>FT</b>	REMOTE CONNECTION PROTECTION FUSE	1-16
<b>G</b>	CURRENT GENERATOR / ALTERNATOR	1-04/05
<b>GEN</b>	GENERATOR 230VAC	8-153/154
<b>GRF1</b>	ROTATING BEACON 1	2-36
<b>GRF2</b>	ROTATING BEACON 2	2-36
<b>GRF3</b>	ROTATING BEACON 3	2-37
<b>KL</b>	HORN	2-38/39
<b>Load</b>	LOAD CONTROL SELECTOR	7-128/129
<b>LC</b>	LOAD CELL	5-88
<b>M1A</b>	LOWER BOOM POSITION END STOP (PANTOGRAPH)	2-21/22
<b>M1B</b>	UPPER BOOM POSITION LIMIT SWITCH	2-22/23
<b>M1C</b>	JIB POSITION LIMIT SWITCH	2-24
<b>M1E</b>	TELESCOPIC BOOM POSITION LIMIT SWITCH	2-25
<b>M1F</b>	LIMIT SWITCH WORKING AREA 1	3-56/57
<b>M1G</b>	LIMIT SWITCH WORKING AREA 2	3-57/58
<b>M1S</b>	DRIVE STOP LIMIT SWITCH - OPTIONAL	2-26
<b>M17</b>	CENTRED ROTATING JIB LIMIT SWITCH - OPTIONAL	5-85/86
<b>M2A</b>	CLOCKWISE TURRET ROTATION STOP LIMIT SWITCH	2-27/28
<b>M2B</b>	ANTICLOCKWISE TURRET ROTATION STOP LIMIT SWITCH	2-28/29
<b>MA</b>	DIESEL ENGINE STARTER	1-07/08
<b>PO</b>	OIL PRESSURE SENSOR	1-00
<b>R0</b>	DIESEL ENGINE ON RELAY	1-09/10
<b>R1</b>	START RELAY	1-09
<b>R3</b>	PLUG RELAY	1-03/04
<b>R4</b>	ELECTRO-ACCELERATOR RELAY	1-02/03
<b>RAL</b>	AC POWER LINE RELAY	8-151
<b>RC</b>	POWER ENABLE RELAY	1-16
<b>REC</b>	CONVERTER OUT RELAY	8-150
<b>RMC</b>	BATTERY CHARGER MODE RELAY	8-152
<b>RPL</b>	230VAC POWER RELAY	8-152
<b>RPP</b>	PLATFORM POWER RELAY	8-152
<b>RZ</b>	CONTROLLER CONSENT RELAY	1-16/17
<b>RT</b>	CAN-BUS TERMINATION RESISTOR	5-98/99
<b>RTU</b>	TRACKUNIT ENABLING RELAY - OPTIONAL	1-16/17
<b>SAVP</b>	LED BUTTON FOR ENGINE START-STOP CONTROL ON PLATFORM	7-122/123
<b>SGP</b>	230VAC SELECTOR FROM GENERATOR – ON PLATFORM	7-129/130
<b>SI</b>	FILTER CLOGGING SELECTOR	1-01
<b>SP0</b>	POWER CIRCUIT EMERGENCY SWITCH	1-11
<b>SP1</b>	GROUND EMERGENCY SWITCH - GROUND CONTROLS	1-15
<b>SP2</b>	GROUND EMERGENCY SWITCH - PLATFORM CONTROLS	5-96
<b>SP3</b>	HORN BUTTON	7-128
<b>SSP</b>	REAR AXLE SENSOR FOR STRAIGHT WHEELS	4-62/63
<b>SW1</b>	CONTROL SELECTORS	1-15/17
<b>SW3</b>	DRIVE SPEED SELECTOR	7-127
<b>TA</b>	WATER TEMPERATURE SENSOR	1-01
<b>TLR</b>	48V LINE CONTACTOR	8-146/147
<b>TLRM</b>	DIESEL ENGINE STARTER CONTACTOR	1-08/09
<b>TLRP</b>	EMERGENCY ELECTRIC PUMP CONTACTOR - OPTIONAL	1-13/14
<b>UM</b>	DEAD-MAN PEDAL CONTACT	5-85/86









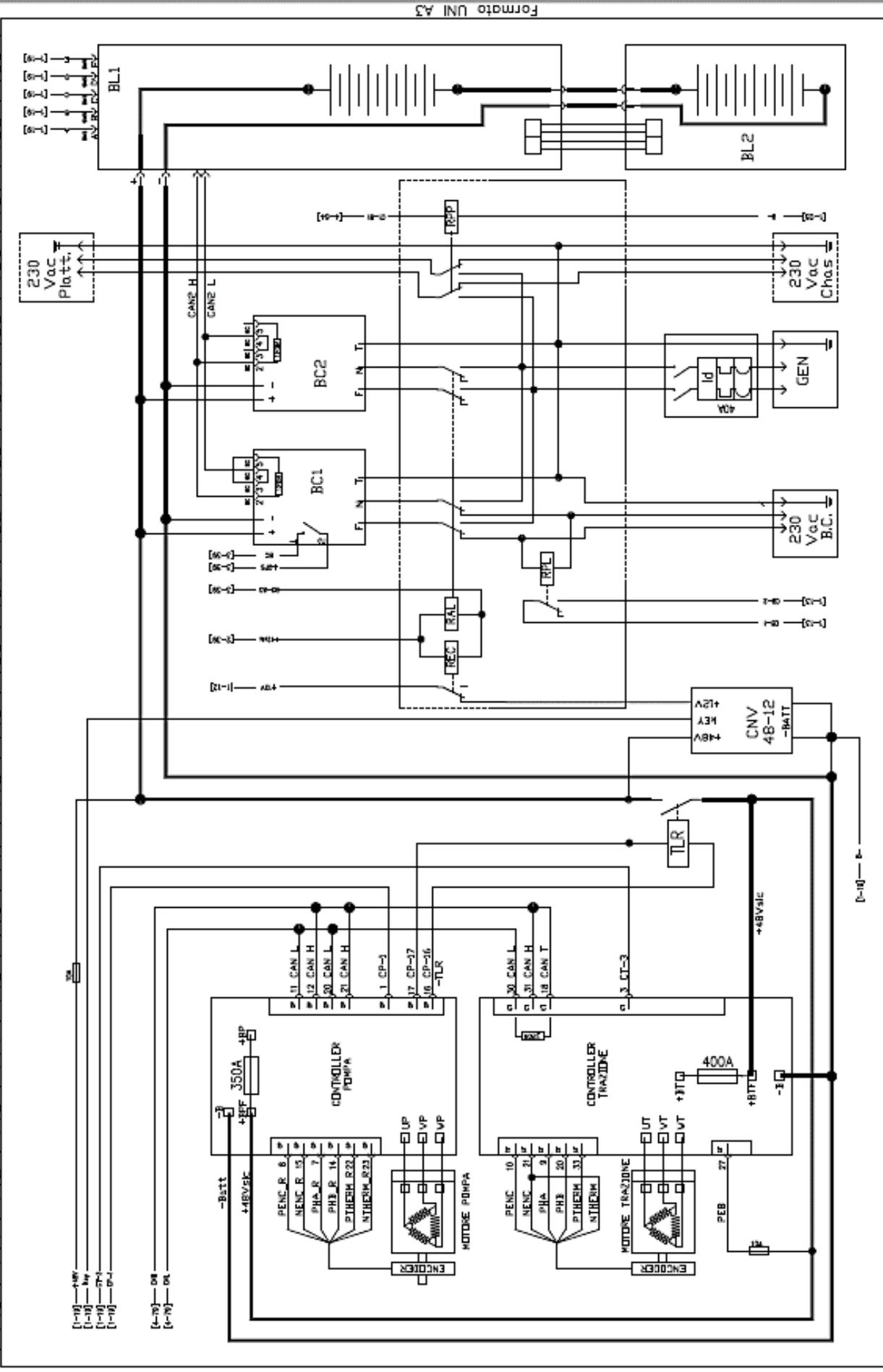
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A		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
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F		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
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J		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
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O		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
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S		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
T		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
U		Modifica comando cab RMG		DATA		23.12.2019		TTUO		Schema elettrico completo		TOT. FOGLI		9					
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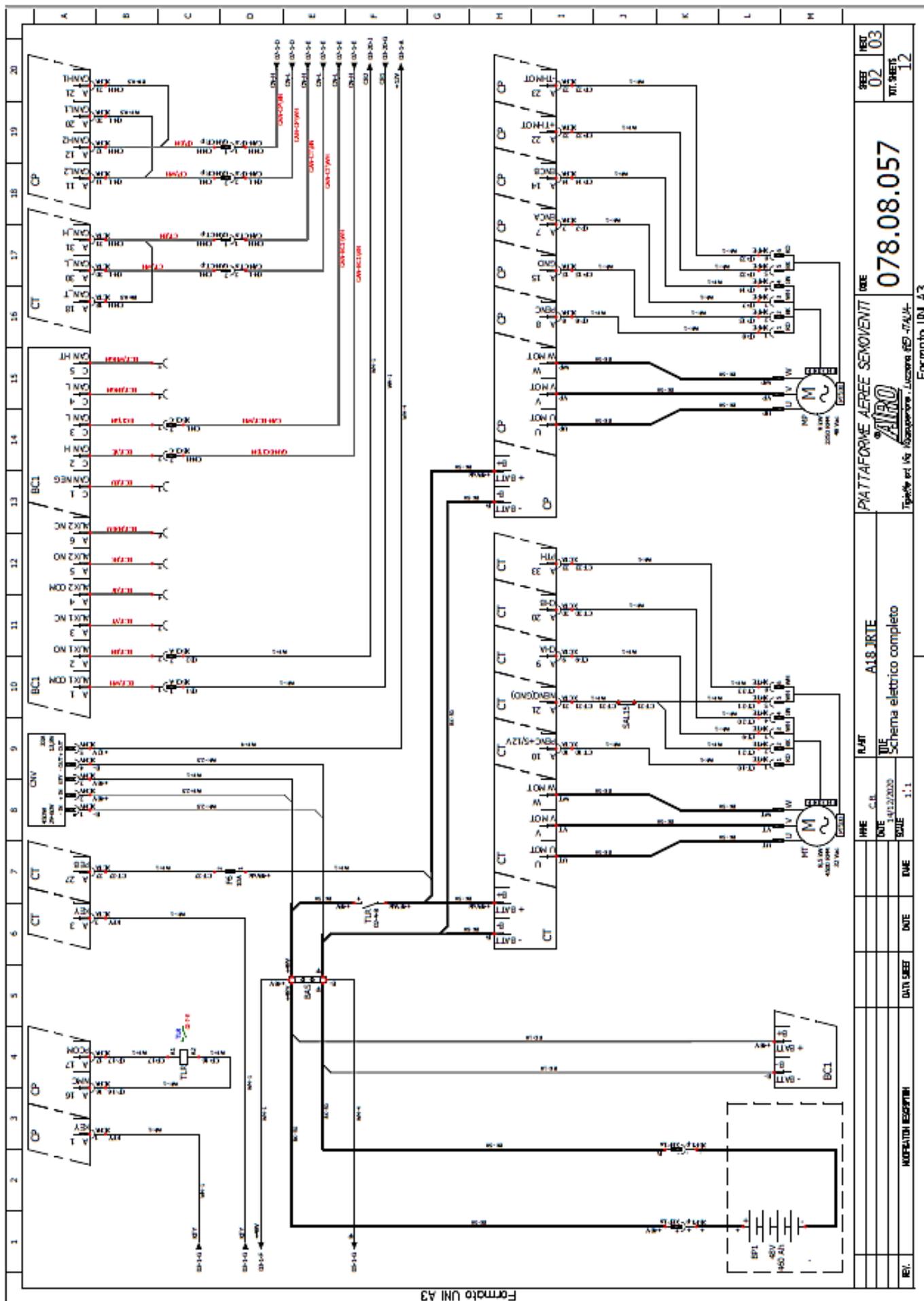


### 11.3. Wiring diagram A18 JRTE PLUS – 078.08.057

SYMB.	DESCRIPTION	PAG-COL.
A1	MASTER A1 CONTROL UNIT	
ABMP	AIRO SENTINEL ALARM	
AV1	GROUND AUDIBLE ALARM	
AV2	PLATFORM AUDIBLE ALARM	
B1	SLAVE B1 CONTROL UNIT	
BC1	BATTERY CHARGER 1	
BMP	ANTI-CRUSHING SENSOR	
BP1	LEAD BATTERY	
BY	OVERLOAD CONTROLLER BY-PASS SELECTOR	
C1	SLAVE C1 CONTROL UNIT	
CNV	CONVERTER 48V- 12V	
CP	PUMP CONTROLLER	
CT	DRIVE CONTROL	
DISPLAY	DISPLAY	
EO	EMERGENCY OVERRIDE	
EV4	SECONDARY BOOM LIFTING SOLENOID VALVE	
EV5	SECONDARY BOOM LOWERING SOLENOID VALVE	
EV6	TELESCOPIC BOOM EXTENSION SOLENOID VALVE	
EV7	TELESCOPIC BOOM RETRACTION SOLENOID VALVE	
EV8	RIGHT FORWARD STEERING SOLENOID VALVE	
EV9	LEFT BACKWARD STEERING SOLENOID VALVE	
EV10	DIFFERENTIAL LOCK SOLENOID VALVES (OPT.)	
EV11A	ON-OFF LOCK ENABLE SOLENOID VALVE	
EV11B	PROPORTIONAL LOCK ENABLE SOLENOID VALVE	
EV11D	STEERING BY-PASS SOLENOID VALVE	
EV12	RIGHT TURRET ROTATION SOLENOID VALVE	
EV13	LEFT TURRET ROTATION SOLENOID VALVE	
EV14	PRIMARY BOOM LIFTING SOLENOID VALVE	
EV15	PRIMARY BOOM LOWERING SOLENOID VALVE	
EV16	HIGH CAGE LEVELLING SOLENOID VALVE	
EV17	LOW CAGE LEVELLING SOLENOID VALVE	
EV18	JIB LIFTING SOLENOID VALVE	
EV19	JIB LOWERING SOLENOID VALVE	
EV21	RIGHT CAGE ROTATION SOLENOID VALVE	
EV22	LEFT CAGE ROTATION SOLENOID VALVE	
EV32	RIGHT JIB ROTATION SOLENOID VALVE	
EV33	LEFT JIB ROTATION SOLENOID VALVE	
EV38	RIGHT REAR STEERING SOLENOID VALVE	
EV39	LEFT REAR STEERING SOLENOID VALVE	
EV40A	FRONT BRAKE RELEASE SOLENOID VALVE	
EV40B	REAR BRAKE RELEASE SOLENOID VALVE	
EV41	OSCILLATING AXLE UNLOCK SOLENOID VALVE	
F1	CONTROL CIRCUIT FUSE	
F2	CONTROL UNIT FUSE "A"	

F3	CONTROL UNIT FUSE "B"	
F4	CONTROL UNIT FUSE "C"	
F6	FUSE +48V DRIVE CONTROLLER	
FT	REMOTE CONNECTION PROTECTION FUSE	
GRF1	ROTATING BEACON 1	
GRF2	ROTATING BEACON 2	
GRF3	ROTATING BEACON 3	
ID1	230V LINE DIFFERENTIAL SWITCH	
J1	SECONDARY BOOM JOYSTICK 1	
J2	PRIMARY BOOM JOYSTICK 2	
J3	TELESCOPIC BOOM JOYSTICK 3	
J4	JIB UP/DW JOYSTICK 4	
J5	JIB ROTATION CCW/CW JOYSTICK 5	
J6	TURRET ROTATION CCW/CW JOYSTICK 6	
J7	JIB UP/DW JOYSTICK 7	
J8	DRIVE JOYSTICK 8	
KL	HORN	
LC1	LOAD CELL	
M1A	LOWER BOOM POSITION LIMIT SWITCH	
M1B	UPPER BOOM POSITION LIMIT SWITCH	
M1C	JIB POSITION LIMIT SWITCH	
M1E	TELESCOPIC BOOM POSITION LIMIT SWITCH	
M1F	LIMIT SWITCH WORKING AREA 1	
M1G	LIMIT SWITCH WORKING AREA 2	
M1S	DRIVE STOP LIMIT SWITCH	
M2A	RIGHT TURRET ROTATION SENSOR	
M2B	LEFT TURRET ROTATION SENSOR	
M17	CENTRED JIB LIMIT SWITCH	
MP	PUMP MOTOR	
MT	DRIVE MOTOR	
P1	SLAVE CONTROLLER IN CAGE P1	
RC	POWER ENABLE RELAY	
RT1	CAN BUS TERMINATION RESISTANCE	
RTU	TRACKUNIT ENABLING RELAY	
RZ	RELAY POWER	
SBL	CAGE LEVELLING SELECTOR	
SBR	CAGE ROTATION SELECTOR	
SDS	SPEED SELECTOR	
SL	LOAD SELECTOR	
SLC	LED CAGE BOARD	
SP1	GROUND EMERGENCY SWITCH	
SP2	PLATFORM EMERGENCY SWITCH	
SP3	HORN CONTROL BUTTON	
SRS	REAR STEERING SELECTOR	
SSM	STEERING MODE SELECTOR	
SSP	REAR AXLE SENSOR	

SW1	CONTROL SELECTORS	
TLR	48V LINE CONTACTOR	
TS1	INCLINOMETER	
TU	TRACKUNIT GPS	
UM	DEAD-MAN PEDAL	



REV. \_\_\_\_\_  
 DATA SHEET \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 MODIFICATION DESCRIPTION \_\_\_\_\_

PIATTAFORME ALEREE SENSIVIT  
**078.08.057**

AI8 JRTE  
 Schema elettrico completo

DATE 14/12/2020  
 SCALE 1:1

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 MODELLO  
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PRODOTTORE  
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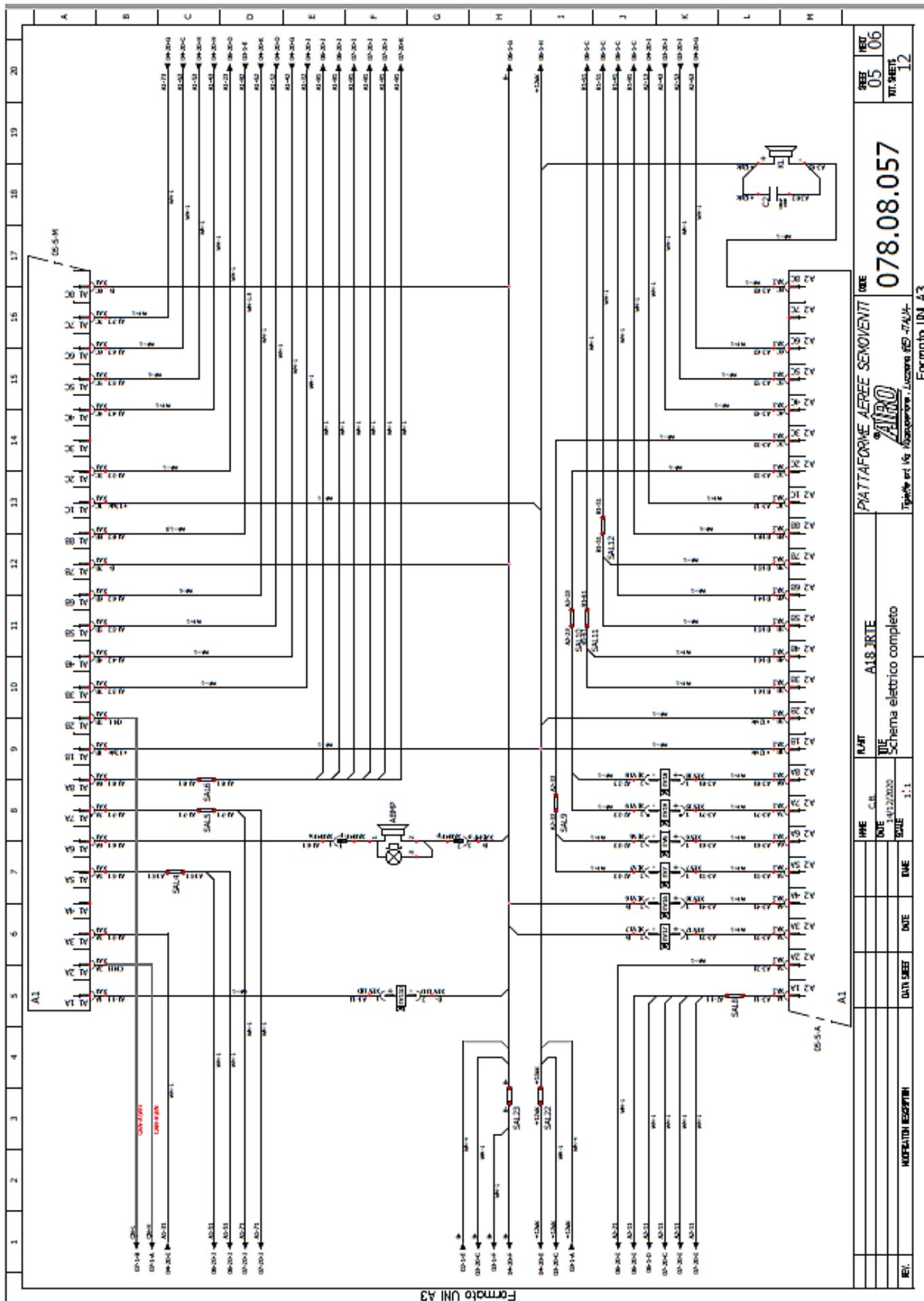
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PIATTAFORME AEREE SENOVENTI  
**AIRO**  
 Tipiche ed. Ing. Misurazione - Lucerna 65-77/04-

Formato UNI A3

ALB. JRTD  
 Schema elettrico completo

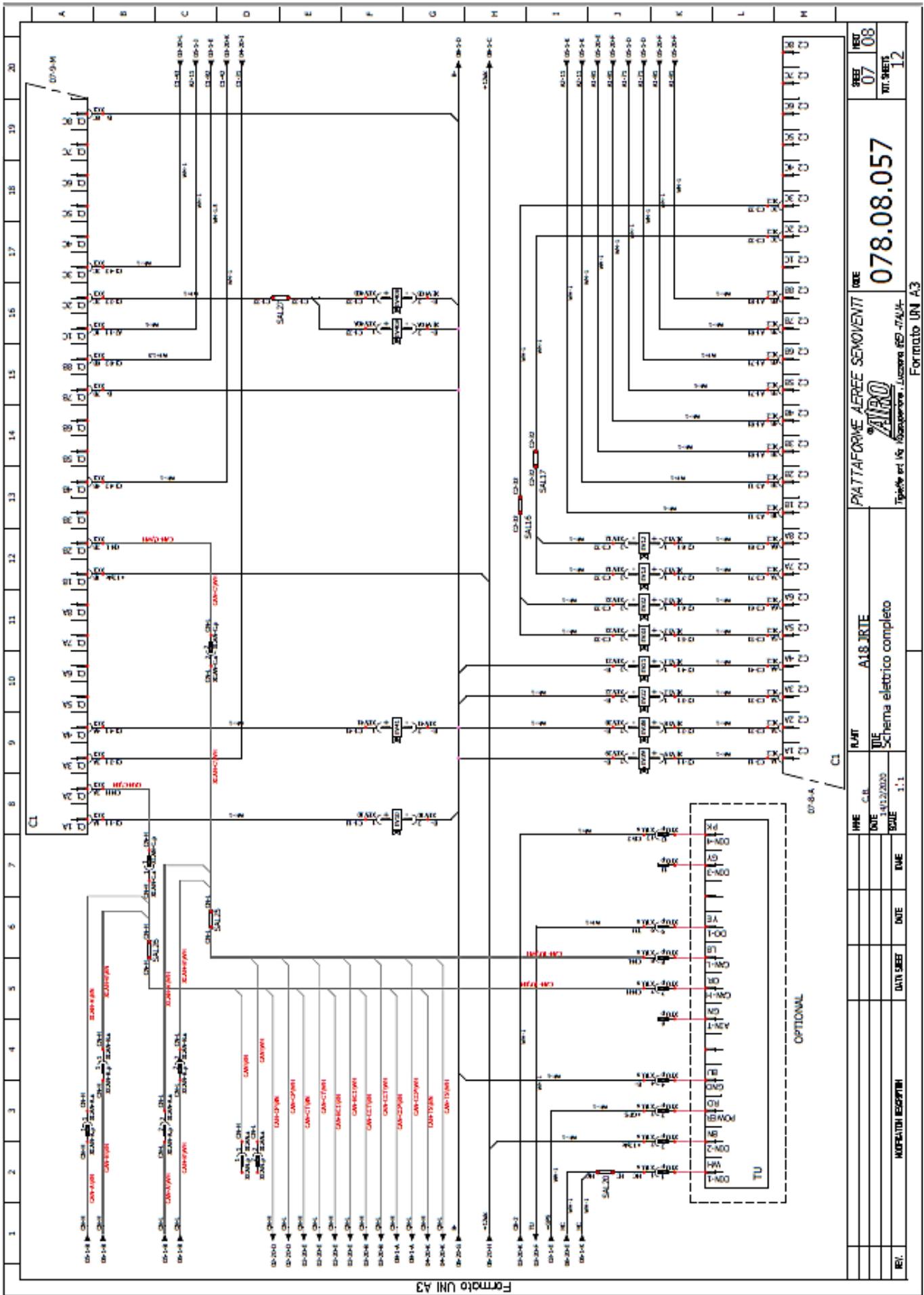
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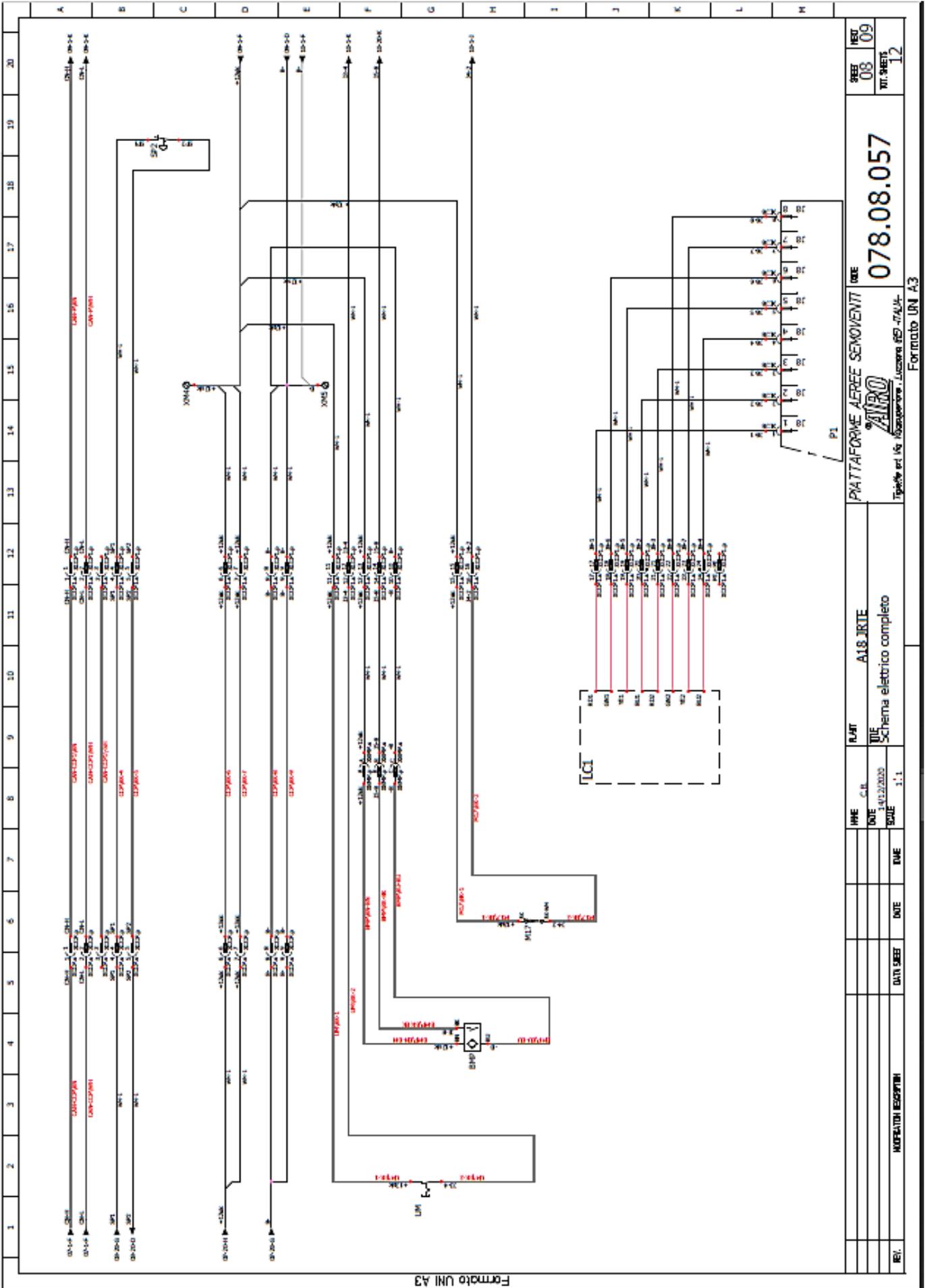
DATE DATE DATE

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MODIFICHE ESISTENTI







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PIATTAFORME AEREE SENOVENTI  
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Tipologia Vg Montepiave - Lucente RES -7ALU-

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ALB IRTE  
Schema elettrico completo

DATE 14/12/2020  
SCALE 1:1

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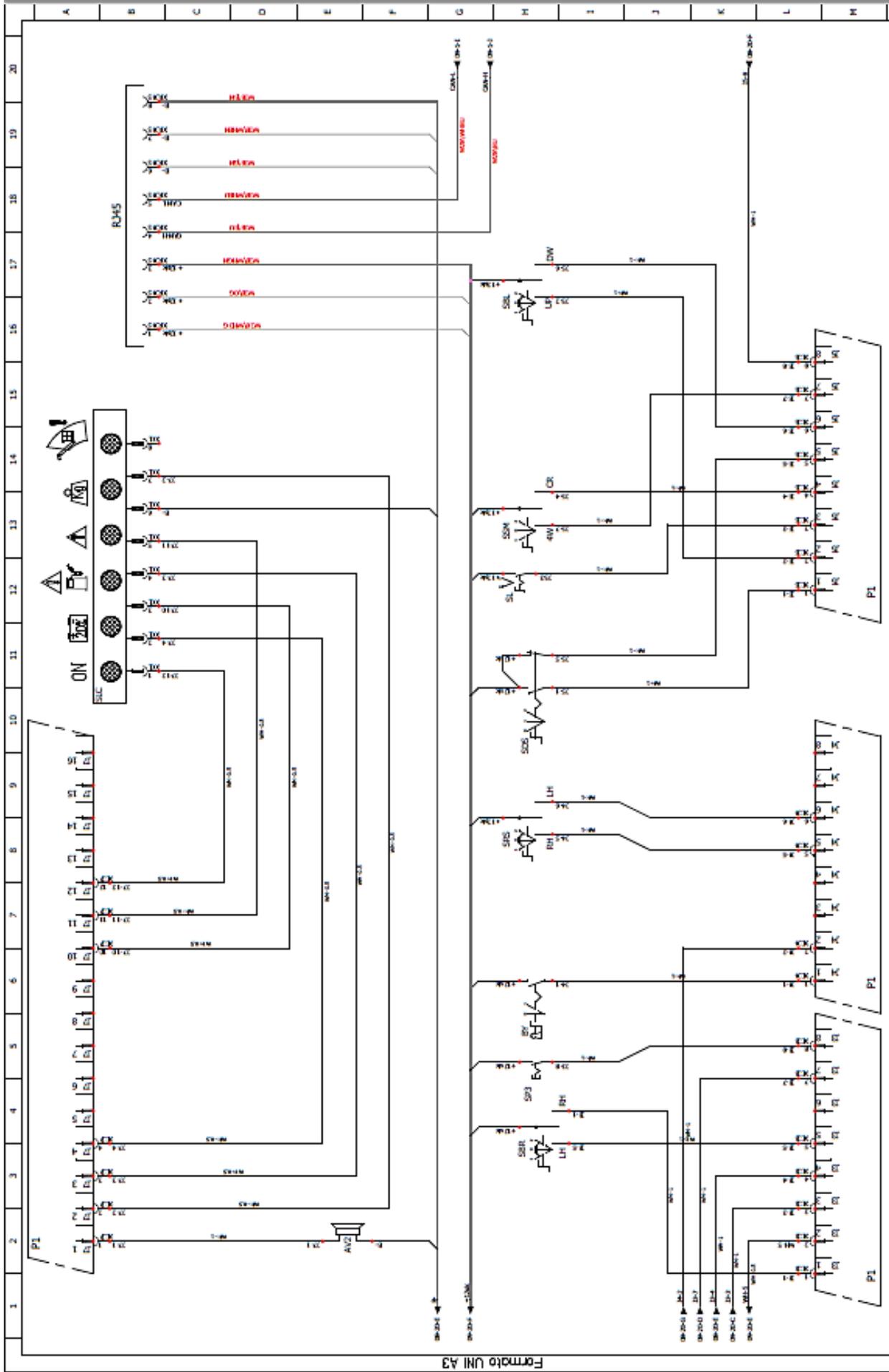
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DATE DATE

MODIFICAZIONE DESCRIZIONE







REF.	MODIFICAZIONI DESCRIZIONI	DATA DEBIT	NOTE	DAE	SCALE	1:1	DATE	14/12/2020	14122020	UIE	A18 JRTE	Schema elettrico completo	078.08.057	078.08.057	10	11	12
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PIATTAFORME AEREE SMOVENTI  
**AIRO**  
 Tipiche ed. 04/2018 - Lucerna 052-77414-  
 Formato UNI A3





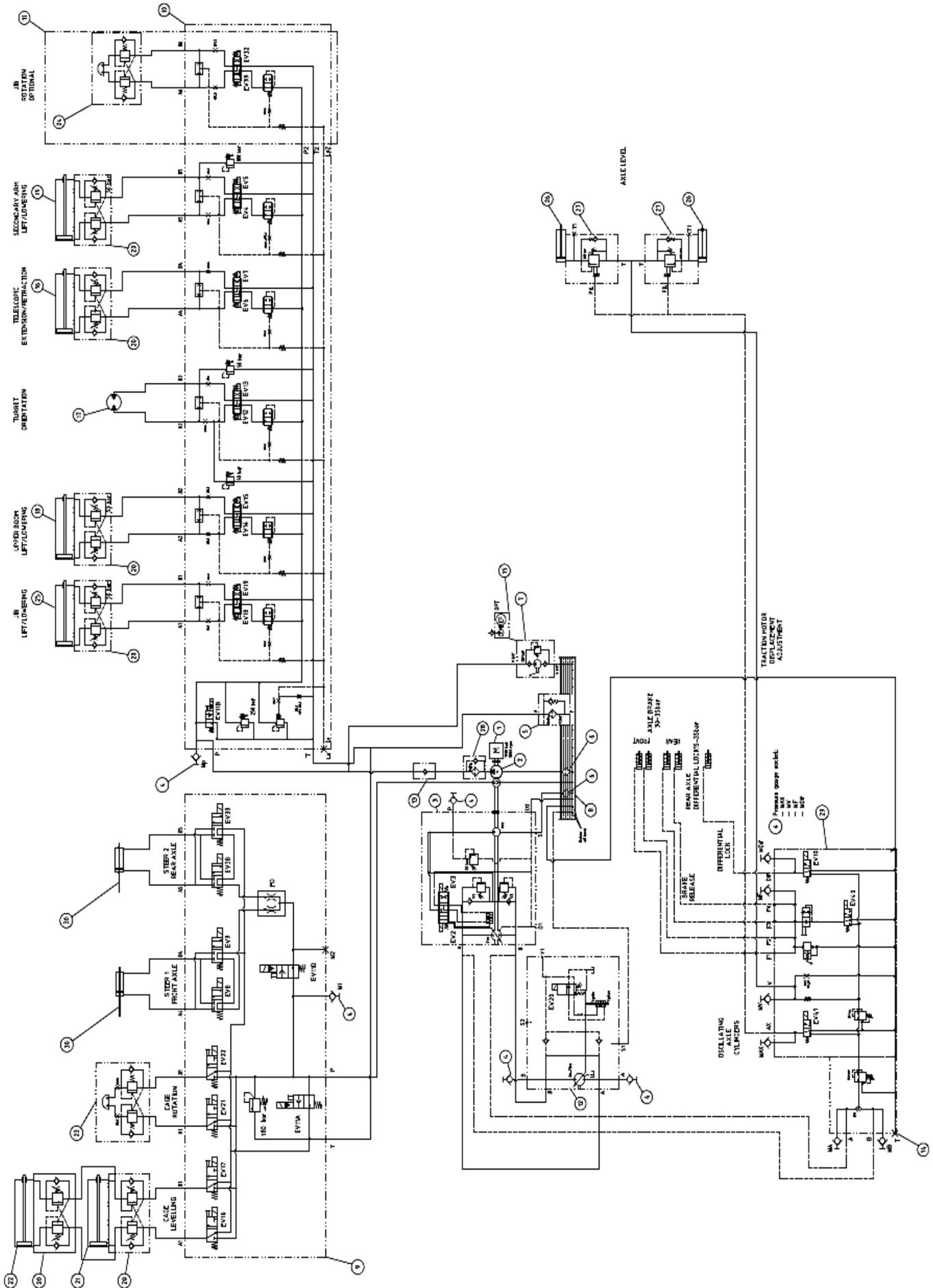


## 12. HYDRAULIC DIAGRAM

### 12.1. Hydraulic diagram A18 JRTD PLUS – 078.07.001

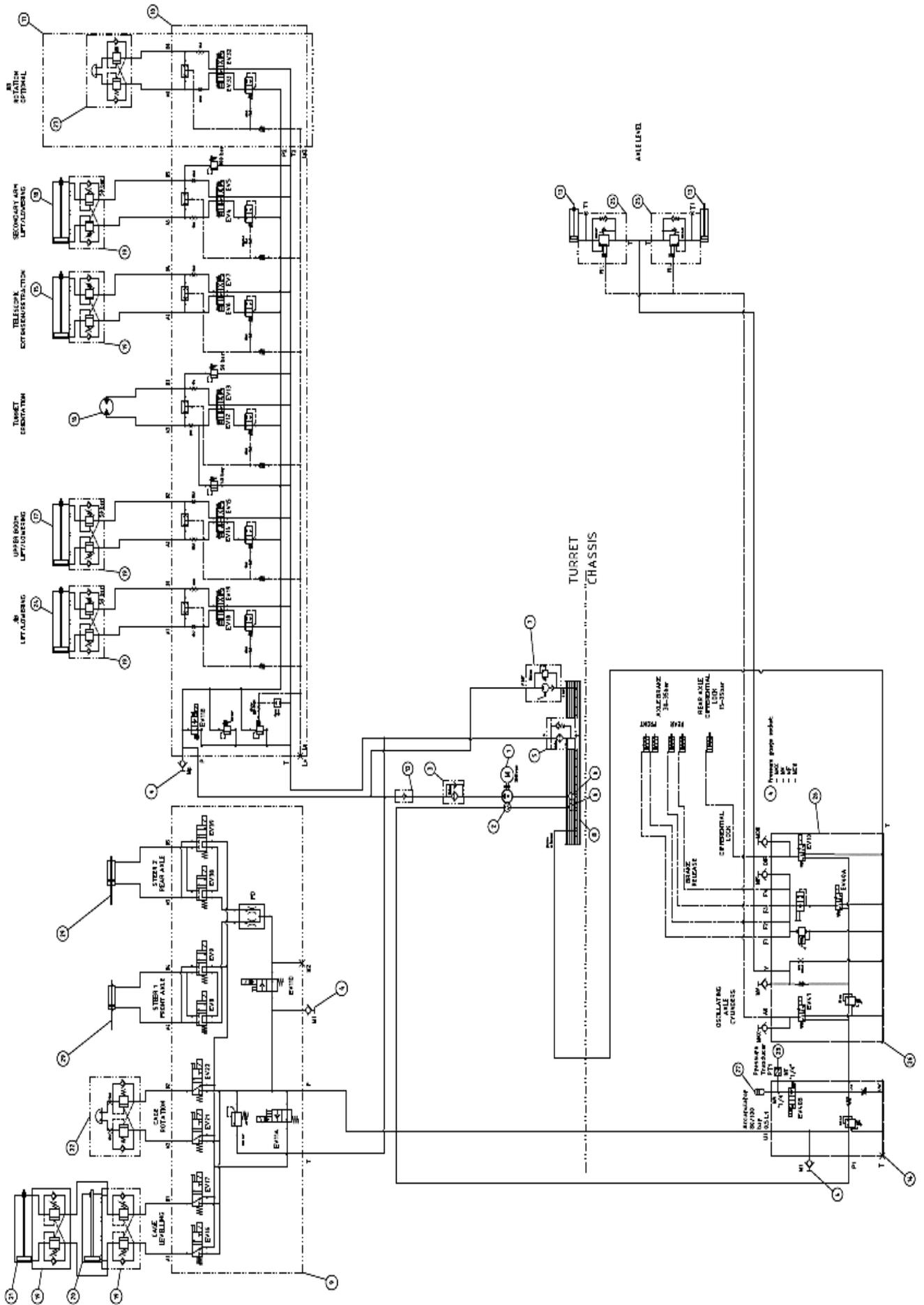
1	DIESEL ENGINE
2	GEAR PUMP (MOVEMENTS)
3	(DRIVE) PISTON PUMP
4	QUICK COUPLING
5	RETURN FILTER
6	SUCTION FILTER
7	EMERGENCY OPERATION HAND PUMP
8	OIL TANK
9	ON-OFF MOVEMENTS HYDRAULIC BLOCK
10	PROPORTIONAL MOVEMENTS HYDRAULIC BLOCK
11	HYDRAULIC LOCK CONTROL JIB ROTATION - OPTIONAL
12	HYDRAULIC MOTOR
13	UNIDIRECTIONAL VALVE
14	HYDRAULIC BLOCK REDUCING VALVE 30 BAR
15	EMERGENCY ELECTRIC PUMP - OPTIONAL
16	TELESCOPIC BOOM EXTENSION CYLINDER
17	TURRET ROTATION HYDRAULIC MOTOR
18	UPPER BOOM CYLINDER
19	PANTOGRAPH CYLINDER (LOWER BOOM)
20	OVER-CENTER VALVE
21	SENSOR CYLINDER (MASTER)
22	CAGE LEVELLING CYLINDER (SLAVE)
23	PLATFORM ROTATION ACTUATOR
24	JIB ROTATION ACTUATOR (OPTIONAL)
25	JIB CYLINDER
26	OSCILLATING AXLE CYLINDER
27	OVER-CENTER VALVE
28	FILTER
29	HYDRAULIC BLOCK SERVICE CONTROL 30 BAR
30	STEERING CYLINDER
EV2	FORWARD DRIVE SOLENOID VALVE
EV3	BACKWARD DRIVE SOLENOID VALVE
EV4	PANTOGRAPH LIFTING SOLENOID VALVE (LOWER BOOM)
EV5	PANTOGRAPH LOWERING SOLENOID VALVE (LOWER BOOM)
EV6	BOOM EXTENSION SOLENOID VALVE
EV7	BOOM RETRACTION SOLENOID VALVE
EV8	LEFT STEERING SOLENOID VALVE - FRONT AXLE
EV9	RIGHT STEERING SOLENOID VALVE - FRONT AXLE
EV10	DIFFERENTIAL LOCK SOLENOID VALVE
EV11A	BY-PASS SOLENOID VALVE
EV11B	BY-PASS SOLENOID VALVE
EV11D	BY-PASS SOLENOID VALVE
EV12	ANTICLOCKWISE TURRET ROTATION SOLENOID VALVE
EV13	CLOCKWISE TURRET ROTATION SOLENOID VALVE
EV14	UPPER BOOM LIFTING SOLENOID VALVE
EV15	UPPER BOOM LOWERING SOLENOID VALVE
EV16	FORWARD CAGE LEVELLING SOLENOID VALVE
EV17	REVERSE CAGE LEVELLING SOLENOID VALVE
EV18	JIB LIFTING SOLENOID VALVE
EV19	JIB LOWERING SOLENOID VALVE
EV20	HYDRAULIC MOTOR DISPLACEMENT CHANGE SOLENOID VALVE
EV21	ANTICLOCKWISE CAGE ROTATION SOLENOID VALVE
EV22	HOURLY CAGE ROTATION SOLENOID VALVE

- EV32** ANTICLOCKWISE JIB ROTATION SOLENOID VALVE (OPTIONAL)
- EV33** CLOCKWISE JIB ROTATION SOLENOID VALVE (OPTIONAL)
- EV38** LEFT STEERING SOLENOID VALVE - REAR AXLE
- EV39** RIGHT STEERING SOLENOID VALVE - REAR AXLE
- EV40** BRAKE OPENING CONTROL SOLENOID VALVE
- EV41** OSCILLATING AXLE UNLOCK SOLENOID VALVE (OPTIONAL)



## 12.2. Hydraulic diagram A18 JRTH PLUS – A18 JRTE PLUS – 078.07.003

1	ELECTRIC AC MOTOR (ELECTRIC PUMP)
2	GEAR PUMP (MOVEMENTS)
3	FILTER
4	QUICK COUPLING
5	RETURN FILTER
6	SUCTION FILTER
7	EMERGENCY OPERATION HAND PUMP
8	OIL TANK
9	ON-OFF MOVEMENTS HYDRAULIC BLOCK
10	PROPORTIONAL MOVEMENTS HYDRAULIC BLOCK
11	HYDRAULIC LOCK CONTROL JIB ROTATION - OPTIONAL
12	UNIDIRECTIONAL VALVE
13	OSCILLATING AXLE CYLINDER
14	HYDRAULIC BLOCK REDUCING VALVE 30 BAR
15	TELESCOPIC BOOM EXTENSION CYLINDER
16	TURRET ROTATION HYDRAULIC MOTOR
17	UPPER BOOM CYLINDER
18	PANTOGRAPH CYLINDER (LOWER BOOM)
19	OVER-CENTER VALVE
20	SENSOR CYLINDER (MASTER)
21	CAGE LEVELLING CYLINDER (SLAVE)
22	PLATFORM ROTATION ACTUATOR
23	JIB ROTATION ACTUATOR (OPTIONAL)
24	JIB CYLINDER
25	OVER-CENTER VALVE
26	HYDRAULIC BLOCK SERVICE CONTROL 30 BAR
27	HYDROPNEUMATIC ACCUMULATOR
28	PRESSURE SWITCH
29	STEERING CYLINDER
EV4	PANTOGRAPH LIFTING SOLENOID VALVE (LOWER BOOM)
EV5	PANTOGRAPH LOWERING SOLENOID VALVE (LOWER BOOM)
EV6	BOOM EXTENSION SOLENOID VALVE
EV7	BOOM RETRACTION SOLENOID VALVE
EV8	LEFT STEERING SOLENOID VALVE - FRONT AXLE
EV9	RIGHT STEERING SOLENOID VALVE - FRONT AXLE
EV10	DIFFERENTIAL LOCK SOLENOID VALVE
EV11A	BY-PASS SOLENOID VALVE
EV11B	BY-PASS SOLENOID VALVE
EV11D	BY-PASS SOLENOID VALVE
EV12	ANTICLOCKWISE TURRET ROTATION SOLENOID VALVE
EV13	CLOCKWISE TURRET ROTATION SOLENOID VALVE
EV14	UPPER BOOM LIFTING SOLENOID VALVE
EV15	UPPER BOOM LOWERING SOLENOID VALVE
EV16	FORWARD CAGE LEVELLING SOLENOID VALVE
EV17	REVERSE CAGE LEVELLING SOLENOID VALVE
EV18	JIB LIFTING SOLENOID VALVE
EV19	JIB LOWERING SOLENOID VALVE
EV21	ANTICLOCKWISE CAGE ROTATION SOLENOID VALVE
EV22	HOURLY CAGE ROTATION SOLENOID VALVE
EV32	ANTICLOCKWISE JIB ROTATION SOLENOID VALVE (OPTIONAL)
EV33	CLOCKWISE JIB ROTATION SOLENOID VALVE (OPTIONAL)
EV38	LEFT STEERING SOLENOID VALVE - REAR AXLE
EV39	RIGHT STEERING SOLENOID VALVE - REAR AXLE
EV40A-B	BRAKE OPENING CONTROL SOLENOID VALVE
EV41	OSCILLATING AXLE UNLOCK SOLENOID VALVE (OPTIONAL)



### 13. DECLARATION OF CONFORMITY EC FACSIMILE

## ORIGINAL EC DECLARATION OF CONFORMITY 2006/42/CE

We

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

Declare under our sole responsibility that the product:

#### Mobile Elevating work platform

Model	Chassis No.	Year
<b>A18 JRTD PLUS</b>	<b>XXXXXXXXXX</b>	<b>XXXXXXXXXX</b>

To which this declaration refers is in conformity with directives 2006/42/CE, 2014/30/CE, 2005/88/CE and the model certified by:

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

With the following certification number:

Certificate No.

**EPT 0477.MAC.20/3773**

Moreover, it is compliant with the following standards:

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

The signatory of this declaration of conformity is authorised to compile the Technical Dossier.

Luzzara (RE), date

.....  
Pignatti Simone  
(General Manager)

C/O TIGIEFFE SRL - VIA VILLA SUPERIORE,82 - 42045 LUZZARA (RE) - ITALY

**ORIGINAL EC DECLARATION OF CONFORMITY  
2006/42/CE**

We

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

Declare under our sole responsibility that the product:

**Mobile Elevating work platform**

Model	Chassis No.	Year
<b>A18 JRTH PLUS</b>	<b>XXXXXXXXXX</b>	<b>XXXXXXXXXX</b>

To which this declaration refers is in conformity with directives 2006/42/CE, 2014/30/CE, 2005/88/CE and the model certified by:

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

With the following certification number:

Certificate No.

**EPT 0477.MAC.20/3774**

Moreover, it is compliant with the following standards:

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

The signatory of this declaration of conformity is authorised to compile the Technical Dossier.

Luzzara (RE), date

.....  
Pignatti Simone  
(General Manager)

C/O TIGIEFFE SRL - VIA VILLA SUPERIORE,82 - 42045 LUZZARA (RE) - ITALY

**ORIGINAL EC DECLARATION OF CONFORMITY  
2006/42/CE**

We

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

Declare under our sole responsibility that the product:

**Mobile Elevating work platform**

Model	Chassis No.	Year
<b>A18 JRTE PLUS</b>	<b>XXXXXXXXXX</b>	<b>XXXXXXXXXX</b>

To which this declaration refers is in conformity with directives 2006/42/CE, 2014/30/CE, 2005/88/CE and the model certified by:

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

With the following certification number:

Certificate No.

**EPT 0477.MAC.21/4239**

Moreover, it is compliant with the following standards:

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

The signatory of this declaration of conformity is authorised to compile the Technical Dossier.

Luzzara (RE), date

.....  
Pignatti Simone  
(General Manager)

C/O TIGIEFFE SRL - VIA VILLA SUPERIORE,82 - 42045 LUZZARA (RE) - ITALY



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WEB: [www.airo.com](http://www.airo.com) – e-mail: [info@airo.com](mailto:info@airo.com)