



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

SERIES „A“
A16 J A18 J



USER'S MANUAL
ENGLISH TRANSLATION OF THE ORIGINAL USER MANUAL IN ITALIAN

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Review date	Modifications Log
2010-01	<ul style="list-style-type: none"> Update to the new Machine Directive 2006/42/EC. Model name <u>updated</u>.
2010-11	<ul style="list-style-type: none"> Instructions for use of bio oil <u>added</u>. Oil temperature and oil list <u>updated</u>.
05-2011	<ul style="list-style-type: none"> Information on "Commissioning and first inspection, subsequent inspections and property transfer" <u>amended</u>. Additions to the Technical Data: "Total quantity of battery electrolyte" (optional batteries for ED <u>added</u>) "Max. power" diesel engine <u>changed</u> and "Regulated Power" <u>added</u>.
2011-08	<ul style="list-style-type: none"> Further to replacement of the 48V-12V converter on JE-JED installations, some wiring diagrams have been upgraded and added to the second part of the manual.
2012-09	<ul style="list-style-type: none"> Parking brakes removed for electric and diesel/electric versions: the descriptions and hydraulic diagrams have been changed.
2013-10	<ul style="list-style-type: none"> Instruction details have been added relative to the harness anchoring points.
2014-09	<ul style="list-style-type: none"> Information added on the maximum manual forces. CEO name <u>changed</u>.
2015-01	<ul style="list-style-type: none"> CE Statement of Compliance <u>updated</u>. Additional instructions on hands position <u>added</u>.
2015-10	<ul style="list-style-type: none"> List of recommended hydraulic oils <u>updated</u>. A paragraph was added stating strictly original spare parts should be used or alternatively the approval of the manufacturer should priory obtained. The whole paragraph "Deboarding with the basket off the ground" is new. The instructions for use of the battery charger and the description of overload alarms have been updated.
2017-01	<ul style="list-style-type: none"> Description of the new load control system <u>added</u>.

Tigieffe thanks you for purchasing a product of its range and reminds you to read this manual and familiarize with its contents before using the machine. The information in this manual is crucial for the correct use of your aerial work platform and you should be familiar and comply with these instructions for your own safety. Please store this manual in a safe place, but at quick-reach in case of need. The contents of this manual may be modified as a result of any change or improvement done by the manufacturer. This will involve no prior notice and no other obligations of the manufacturer to make any upgrade, change, or improvement of the units already in the market.

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1. INTRODUCTION

This is a general manual applicable to all models stated on the cover page. Therefore, the description of the machine and its components, as well as control and safety systems, may include parts that are not actually available on your machine depending on model and date of purchase. In order to keep pace with the technical development, **AIRO-Tigieffe s.r.l.** reserves itself the right to modify the product and/or the user's manuals as needed and without any obligation to prior updates of already existing manuals.

1.1. Legal mentions

1.1.1. Delivery of the machine

Deliveries to any member country of the EC (European Union) are always accompanied by the following documents:

- User's Manual in the native language of the country of use.
- CE-plate attached to the machine
- EC Statement of Compliance
- Warranty certificate

Only for Italy:

- Declaration of commissioning to INAIL
- List of the competent local INAIL departments
- Statement of in-house testing

Please note: this manual is an integral part of the machine. The original manual or copy thereof must be available on board of the machine along with the original reports (or copies thereof) of all periodical tests conducted by the user. Should you sell, lease or elsehow transfer the ownership the machine, make sure that a copy of the manual is handed over with the machine.

1.1.2. Statements of successful commissioning, first installation test, periodical functional tests and property transfers.

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 "Test Records" for a better filing of documents and recording of any modifications.

1.1.2.1. Statements of successful commissioning carried out by the first owner.

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 tests. 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 tests are carried out by the already-mentioned parties within thirty days from a request being made. In the event of such time passing without these tests being made, the employer can call in qualified public or private services. The employer (machine owner) is to bear all costs of the afore mentioned check-ups and tests. The local inspection Authorities (ASL/USL, ARPA and INAIL) may appoint any other qualified public or private service to carry out the test. In this case, the appointed private Authorities will act on behalf of Inail (State Authority) by the same powers and qualification of the latter.

Italian Customers using the machine in Italy: please notify successful commissioning of the machine to the competent INAIL department using the special form found with the other delivery documents and send it by registered letter with bill of receipt.

INAIL will assign the machine a serial number and fill out a "Technical Data Sheet" on the day of the first installation test. The Data Sheet will exclusively contain the main details of the equipment as-is that will be checked off against the information contained in the instruction manual. The "Technical Data Sheet" will form an integral part of the machine.

1.1.2.2. Periodical Functional Tests.

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

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

1.1.2.3. Transfers of ownership.

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

- Statement of compliance issued by the manufacturer.
- Statements of successful commissioning carried out by the first owner.

1.1.3. Operators training and information.

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

1.2. Tests of the manufacturer performed before the delivery.

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

- Braking test
- Overload test
- Functional test

1.3. Application field

The machine described in this user's 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. (load) capacity varies according to the model (see paragraph "Technical features") and would be normally assigned as follows:

- 80 Kg for each person on board
- 40 Kg for tools and equipment
- The remaining load is represented by the materials to be handled.

NEVER exceed the maximum capacity as indicated in paragraph "Technical features". Persons, tools and work materials can be loaded on the platform only from the initial boarding position (platform all-down). It is absolutely forbidden to load persons, tools and work materials on the platform when it is not in the boarding position.

Any load must be put inside the cage. Do not lift any load (even if within the maximum capacity) hanging off the platform or lifting structure.

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

Do not load anything on the platform while the platform is UP and the machine travels (operators on board are not allowed to pull wires or ropes, etc...)

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

The machine cannot be used in areas where road vehicles operate. Make sure to alert the presence of the platform by means of suitable signs when the machine is used in public areas.

Do not use the machine to tow trucks or other vehicles.

Any other use different than those for which it was designed must be approved in writing by the 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. Deboarding the platform off the ground

The risk of deboarding the Aerial Work Platform when the platform is off the ground has not been accounted in our design safety because the only possible deboarding configuration is the one with the platform completely lowered on ground. For this reason, boarding or leaving a raised platform is absolutely prohibited.

However, operators do happen to incur certain situations where they need to leave or access the platform in different positions than the initial boarding one. These situations are commonly referred to as “Boarding the platform off the ground”.

The risks relative to “boarding a platform off the ground” depend on the configuration of the platform, but also from the risk assessment analysis carried out by the employer before authorizing any such condition. However, the following circumstances should always be taken in due account:

- Site/area characteristics;
- Use of the machine as an anchoring point for other operators and other applications, which should be prevented and never be possible for no reasons;
- Use of the machine at xx% of the its performance to prevent additional stress resulting from specific operations, or flexural bending of the chassis which may force the platform away from the boarding area. In this case, it is recommendable to perform a few trials and define these limit conditions;
- Implementation of a special emergency evacuation procedure (for instance having a man on the platform; another one at the control station on ground, while a third one leaves a raised platform);
- Administration of extensive training of the persons involved (both operators and passengers);
- Installation of all implements needed at the point of boarding/deboarding to prevent falling of the persons leaving the platform.

This paragraph should not be interpreted as a formal approval by the manufacturer to deboard the platform off-the-ground, which remains a strictly prohibited action. The Employer is the ultimate person responsible for making any such decision and this paragraph is merely meant to supply additional information and help.

1.4. Description of the machine

The machine described in this user's manual is a Mobile Elevating Work Platform equipped with:

- A motorized wheeled chassis;
- A rotating, hydraulic turret;
- A lifting system operated by means of hydraulic cylinders and joints whose number will change based on machine type;
- An operator platform (the max. capacity of which varies based on machine type - see chapter "Technical features").

The chassis is motorised to allow the machine to move (see "General use instructions"). All machines are available with any of the following drive options:

- Two driving wheels and two idle steering wheels; or
- Four driving wheels, out of which two are steering and two are fixed.

Moreover, all the above variants can be equipped with an optional full floating axle with locking differential.

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

The turret is assembled on a turntable mounted to the chassis and can be stepwise rotated by 360° around the central axle of the machine by means of irreversible endless screw.

The lifting system, with articulated boom, is composed of three main assemblies:

- The first is a vertical assembly made of two “parallel four-bar linkages” called “crank arm” or “pantograph”.
- The second is an articulated boom lift with telescopic extension.
- The third is the jib which is the tip of the boom that extends out or telescopes.

The above three lifting assemblies are operated by 4 hydraulic double-acting cylinders as follows:

- One for “arm” operation;
- One for “boom” operation;
- One for sliding the telescopic boom in and out;
- One for “jib” operations.

The hydraulic cylinders controlling all the crank arm operations (except boom incline sensor) are provided with face-mounted over-centre valves. This special design allows the keeping of the booms in the same position even in the unlikely case of a hydraulic line failure.

The platform is hinged to the end of the “jib” and can be swivelled 140° (70° to the right and 70° to the left) by means of a rotary actuator fitted with over centre valve. The platform has also got guard rails and toe boards of a predefined height (1100 mm /433 in for the guard rails and ≥ 150 mm /59 in for the toe boards). The levelling of the platform is automatic and is ensured by mechanical ties and two cylinders in closed circuit. A manual adjustment is strictly possible by means of a special control on condition that the boom is fully DOWN (closed) and the “Jib” inclination against the plane ranges between +10° and -70°.

1.5. Operator's stations

The machine is equipped with two operator's stations, respectively located:

- on the platform for normal operations; and
- and on the tower (or on ground). The latter contains the emergency controls (to lower or stop the machine in case of emergencies), a key-selector to select the active control panel and to start the machine.

1.6. Power supply

The machines can be powered by:

- an electric-hydraulic system composed of rechargeable batteries and electrical pump;
- an engine (diesel engine models are identified by the abbreviation “D”; gasoline engine models are identified by the abbreviation “B”);
- a combination-power system (Electric/Diesel models are identified by the abbreviation “ED”; Combi models with electric/gasoline power are identified by the abbreviation “EB”).

Both hydraulic and electric systems are equipped with all the necessary protections and safeties (see wiring and hydraulic circuit diagrams).

1.7. Machine life, demolition and decommissioning

The machine has been designed to last for 10 years in normal operating conditions, 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 is made from 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 is 90% recyclable.



The European standards and those transposed by the member countries relating to environmental safety and waste disposal 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 without a plate or a label, please check the production number punched underneath the chassis. The exact location of the plate and the number punched on the chassis is shown on the following label. Please check and copy them here below for your easier convenience in future.

MODEL: _____	CHASSIS: _____	YEAR: _____
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Fig. 1

1.9. Location of the main components

The following picture shows an overall view of the machine and its main groups and subgroups.

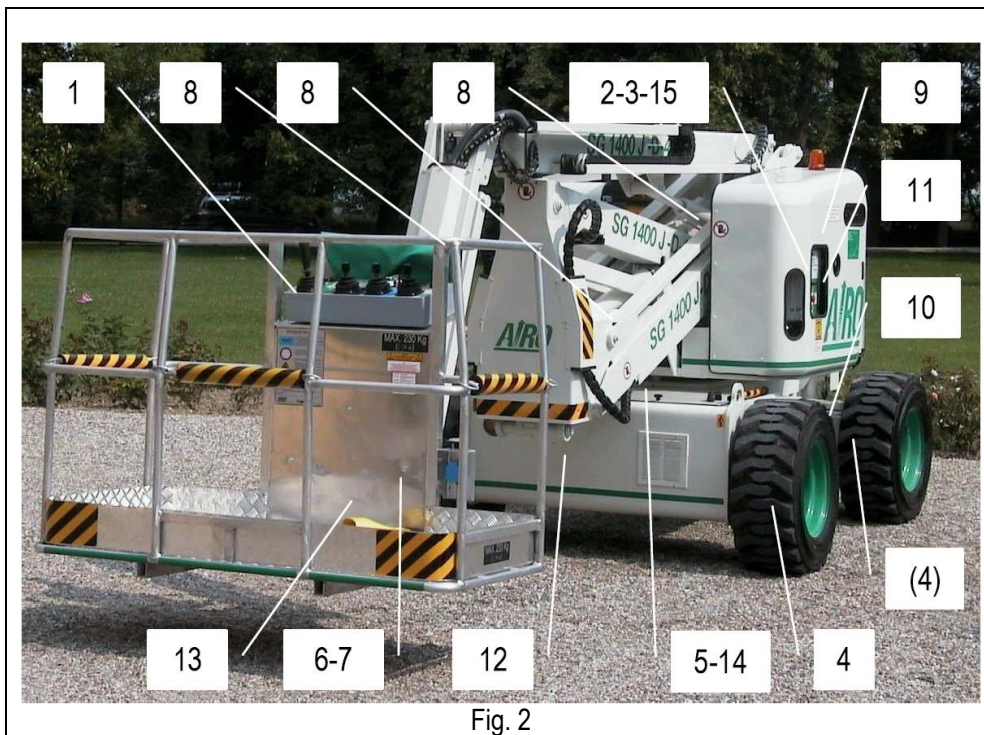


Fig. 2

- 1) Control board;
- 2) Electric control unit
- 3) Hydraulic power unit
- 4) Hydraulic drive engines
- 5) Hydraulic motor for turret rotation;
- 6) (Optional) 230V outlet;
- 7) (Optional) Spirit level for the visual control of the machine levelling;
- 8) Lifting cylinders
- 9) Battery;
- 10) Power steering
- 11) Inclinometer
- 12) Fuel tank
- 13) Load limiter sensor (load cell);
- 14) Turntable;
- 15) Control device for electric system isolation (electric machines E)

2. TECHNICAL FEATURES OF THE STANDARD MACHINE



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

2.1. Model A16 JE

		A16 JE	
Dimensions			
	Maximum lifting height	16	m
	Max. height of the platform floor	14	m
	Ground clearance	290	mm
	Max. outreach from turntable centre	8.1	m
	Turret rotation (stepwise)	360	°
	Platform rotation	140	°
	Basket floor height for safety speed activation	< 3	m
	Internal steering radius	1.15	m
	External steering radius	3.6	m
	Maximum capacity (m)	230	Kg
	Max. number (n) of people on the platform – indoors	2	
	Mass weight of tool and material (me) (**) – indoors	70	Kg
	Max. number of people on the platform (n) – outdoors	2	
	Tool and material mass weight (me) (**) – outdoors	70	Kg
	Maximum height during drive	Max	
	Maximum platform dimensions (****)	0.8 x 1,7	m
	Maximum hydraulic pressure	230	Bar
	Max. pressure in the lifting circuit	230	Bar
	Min. pressure in the braking circuit	50 ÷ 60	Bar
	Tire dimensions (****)	Ø 730 x 230	mm
	Tire type (****)	250 - 15	
	Transport dimensions	5,5 x 1,765 x 1,985	m
	Transport dimensions with retracted jib	N.A.	m
	Machine weight w. no load (*)	7300	Kg
Stability limits:			
	Longitudinal inclination	3	°
	Lateral inclination	3	°
	Maximum wind speed (***)	12.5	m/s
	Maximum manual force	400	N
	Max. load per wheel	3200	Kg
Specifications:			
	Drive wheels	2	N
	Max. drive speed	4	km/h
	Safety drive speed	0.7	km/h
	Oil tank capacity	104	l
	Max admissible gradient	25	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-15	°C

Battery power:			
	Battery capacity and voltage	2 x 24 / 450	V/Ah
	Total quantity of electrolyte	2 x 84	l
	Battery weight	2 x 400	Kg
	Single phase battery charger (HF)	48 / 45	V/A
	Max. current absorbed by the battery charger	15	A
	Maximum installed power	9	kW
	Power electrical pump 1	4.5	kW
	Max. absorbed current	160	A
	Power electrical pump 2	4.5	kW
	Max. absorbed current	160	A
	Power electric pump 3	NA	kW
	Max. absorbed current	NA	A
Diesel Power			
	Diesel engine type	NA	
	Diesel engine power	NA	kW
	Starter battery	NA	V/Ah
	Diesel tank capacity	NA	l
	Max. drive speed	NA	km/h
380V three-phase electrical pump (optional)			
	Diesel engine power	NA	kW
	Max. absorbed current	NA	A
	Max. drive speed	NA	km/h
230V single-phase electric pump (Optional)			
	Diesel engine power	NA	kW
	Max. absorbed current	NA	A
	Max. drive speed	NA	km/h

(*) In some cases, different limitations may apply Please comply with the data and instructions given on the machine plate.

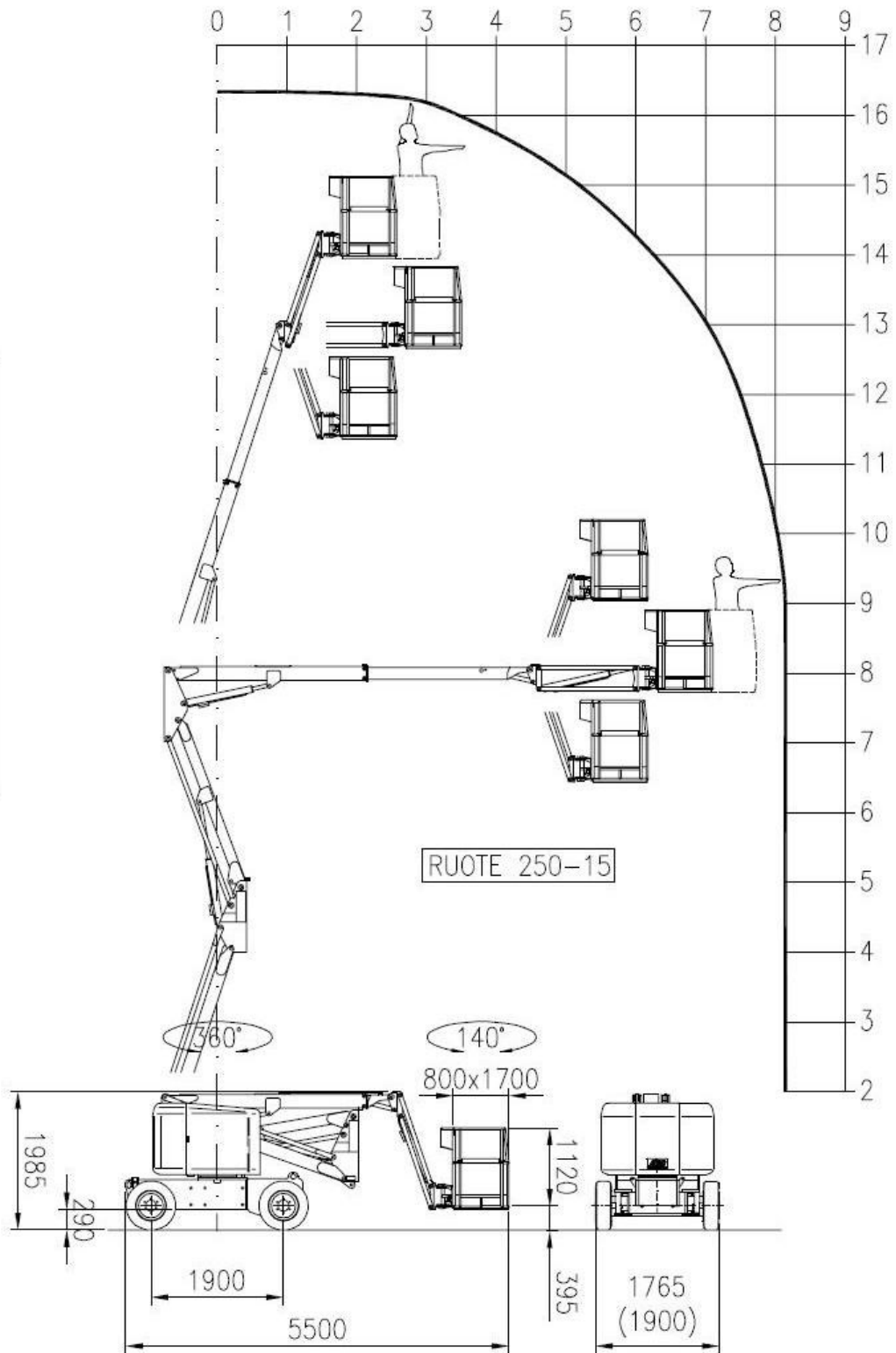
(**) $me = m - (n \times 80)$

(***) 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.

(****) Standard extra flexible tyres 250-15; Standard off-road tires 10x116.5 filled with polyurethane foam. 10x16.5 filled with polyurethane foam; Standard off-road tires 12x16.5 filled with polyurethane foam.



A16 JE



2.2. Model A16 JED

		A16 JED	
Dimensions			
	Maximum lifting height	16	m
	Max. height of the platform floor	14	m
	Ground clearance	290	mm
	Max. outreach from turntable centre	8.1	m
	Turret rotation (stepwise)	360	°
	Platform rotation	140	°
	Basket floor height for safety speed activation	< 3	m
	Internal steering radius	1.15	m
	External steering radius	3.6	m
	Maximum Capacity (m)	230	Kg
	Max. number (n) of people on the platform – indoors	2	
	Mass weight of tool and material (me) (**) – indoors	70	Kg
	Max. number of people on the platform (n) – outdoors	2	
	Tool and material mass weight (me) (**) – outdoors	70	Kg
	Maximum height during drive	Max	
	Maximum platform dimensions (****)	0.8 x 1.7	m
	Maximum hydraulic pressure	230	Bar
	Max. pressure in the lifting circuit	230	Bar
	Min. pressure in the braking circuit	50 ÷ 60	Bar
	Tire dimensions (****)	Ø 730 x 230	mm
	Tire type (****)	250 - 15	
	Transport dimensions	5.5 x 1.765 x 1.985	m
	Transport dimensions with retracted jib	N.A.	m
	Machine weight w. no load (*)	7600	Kg
Stability limits:			
	Longitudinal inclination	3	°
	Lateral inclination	3	°
	Maximum wind speed (***)	12.5	m/s
	Maximum manual force	400	N
	Max. load per wheel	3200	Kg
Specifications:			
	Drive wheels	2	N
	Max. drive speed	4	km/h
	Safety drive speed	0.7	km/h
	Oil tank capacity	104	l
	Max admissible gradient	25	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-15	°C
Battery power:			
	Voltage/capacity of the standard battery	2 x 24 / 350	V/Ah
	Total electrolyte quantity in the standard battery	2 x 70	l
	Weight of the standard batteries	2 x 350	Kg
	Voltage/capacity of the optional battery	2 x 24 / 420	V/Ah
	Total electrolyte quantity in the optional battery	2 x 95	l
	Weight of the optional battery	2 x 355	Kg
	Single phase battery charger (HF)	48 / 45	V/A
	Max. current absorbed by the battery charger	15	A
	Maximum installed power	9	kW
	Power of the electrical pump 1	4.5	kW
	Max. absorbed current	160	A
	Power of the electrical pump 2	4.5	kW
	Max. absorbed current	160	A
	Power of the electrical pump 3	NA	kW
	Max. absorbed current	NA	A

Diesel Power			
	Diesel engine type	HATZ 1D81C	
	Max. engine power	9.6	kW
	Rated Power	9.6	kW
	Starter battery	12 / 132	V/Ah
	Total quantity of electrolyte	7	l
	Diesel tank capacity	20	l
	Max. drive speed	4	km/h
380V three-phase electrical pump (optional)			
	Diesel engine power	NA	kW
	Max. absorbed current	NA	A
	Max. drive speed	NA	km/h
230V single-phase electric pump (Optional)			
	Diesel engine power	NA	kW
	Max. absorbed current	NA	A
	Max. drive speed	NA	km/h

(*) In some cases, different limitations may apply Please comply with the data and instructions given on the machine plate.

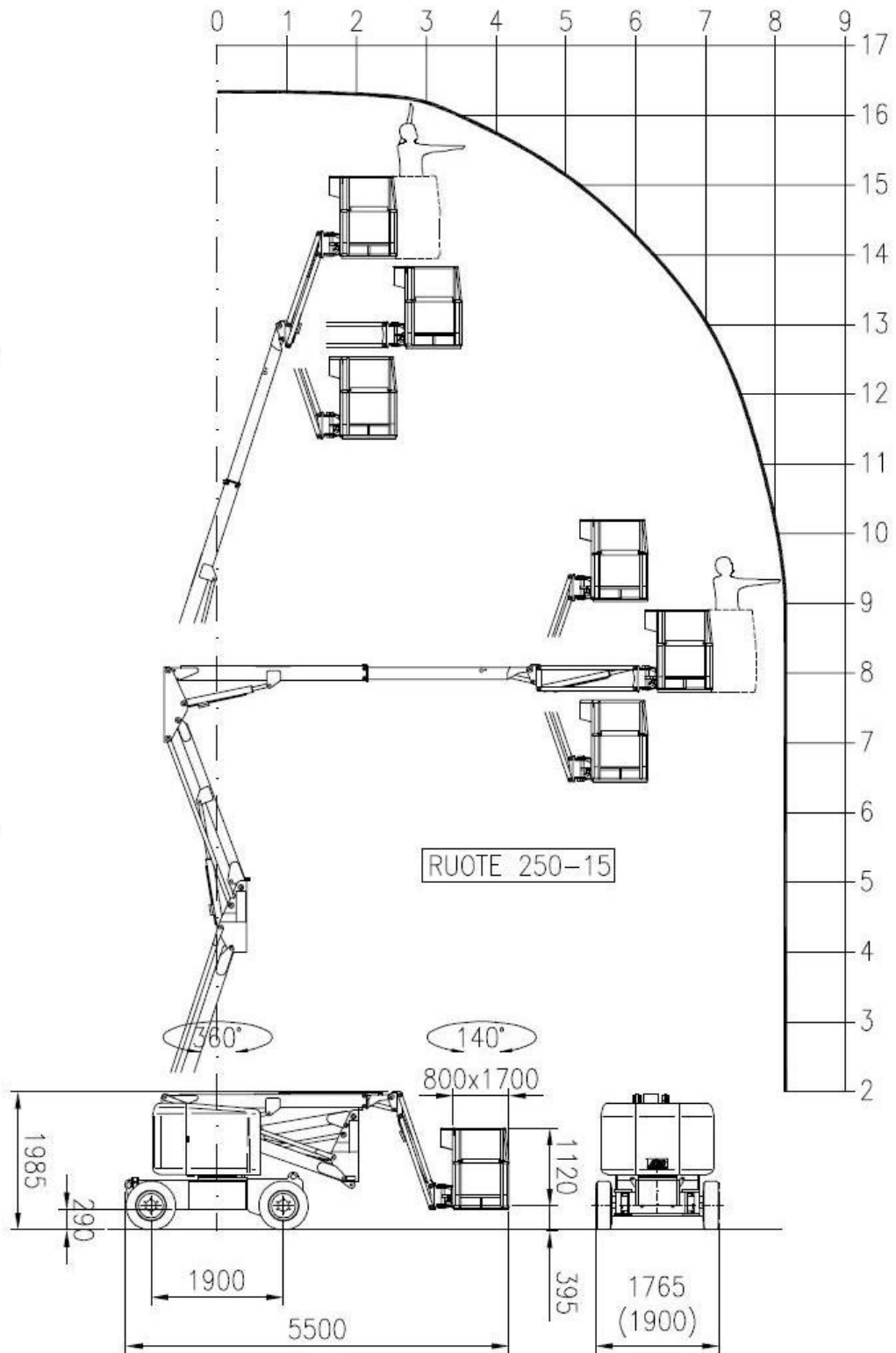
(**) $me = m - (n \times 80)$

(***) 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.

(****) Standard extra flexible tyres 250-15; Standard off-road tires 10x16.5 filled with polyurethane foam.10x16.5 filled with polyurethane foam; Standard off-road tires 12x16.5 filled with polyurethane foam.



A16 JED



2.3. Model A16 JRTD

		A16 JRTD	
Dimensions			
	Maximum lifting height	16	m
	Max. height of the platform floor	14	m
	Ground clearance	350	mm
	Max. outreach from turntable centre	8.1	m
	Turret rotation (stepwise)	360	°
	Platform rotation	140	°
	Basket floor height for safety speed activation	< 3	m
	Internal steering radius	1.15	m
	External steering radius	3.6	m
	Maximum capacity (m)	230	Kg
	Max. number (n) of people on the platform – indoors	2	
	Mass weight of tool and material (me) (**) – indoors	70	Kg
	Max. number of people on the platform (n) – outdoors	2	
	Tool and material mass weight (me) (**) – outdoors	70	Kg
	Maximum height during drive	Max	
	Maximum platform dimensions	0.8 x 1.7	m
	Maximum hydraulic pressure	230	Bar
	Max. pressure in the lifting circuit	230	Bar
	Min. pressure in the braking circuit	50 ÷ 60	Bar
	Tyre dimensions	Ø 800 x 320	mm
	Type of tyres	12 x 16.5	
	Transport dimensions	5.5 x 2 x 2.05	m
	Transport dimensions with retracted jib	N.A.	m
	Machine weight with no load (*)	7160	Kg
Stability limits:			
	Longitudinal inclination	4	°
	Lateral inclination	4	°
	Maximum wind speed (***)	12.5	m/s
	Maximum manual force	400	N
	Max. load per wheel	3200	Kg
Specifications:			
	Drive wheels	4	N
	Max. drive speed	4.7	km/h
	Safety drive speed	0.7	km/h
	Oil tank capacity	104	l
	Max admissible gradient	40	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-15	°C
Battery power:			
	Battery capacity and voltage	NA	V/Ah
	Battery weight	NA	Kg
	Single phase battery charger (HF)	NA	V/A
	Max. current absorbed by the battery charger	NA	A
	Maximum installed power	NA	kW
	Power of the electrical pump 1	NA	kW
	Max. absorbed current	NA	A
	Power of the electrical pump 2	NA	kW
	Max. absorbed current	NA	A
	Power of the electrical pump 3	NA	kW
	Max. absorbed current	NA	A

HATZ Diesel engine			
	Diesel engine type	HATZ 3L41C	
	Max. engine power	38.8	kW
	Rated Power	35.5	kW
	Starter battery	12 / 132	V/Ah
	Total quantity of electrolyte	7	l
	Diesel tank capacity	45	l
ISIZU Diesel engine			
	Diesel engine type	ISUZU 4LE1	
	Max. engine power	39	kW
	Rated Power	35	kW
	Starter battery	12 / 132	V/Ah
	Total quantity of electrolyte	7	l
	Diesel tank capacity	45	l
380V three-phase electrical pump (optional)			
	Motor power	NA	kW
	Max. absorbed current	NA	A
	Max. drive speed	NA	km/h
230V single-phase electric pump (Optional)			
	Motor power	2.2	kW
	Max. absorbed current	13.9	A
	Max. drive speed	NA	km/h

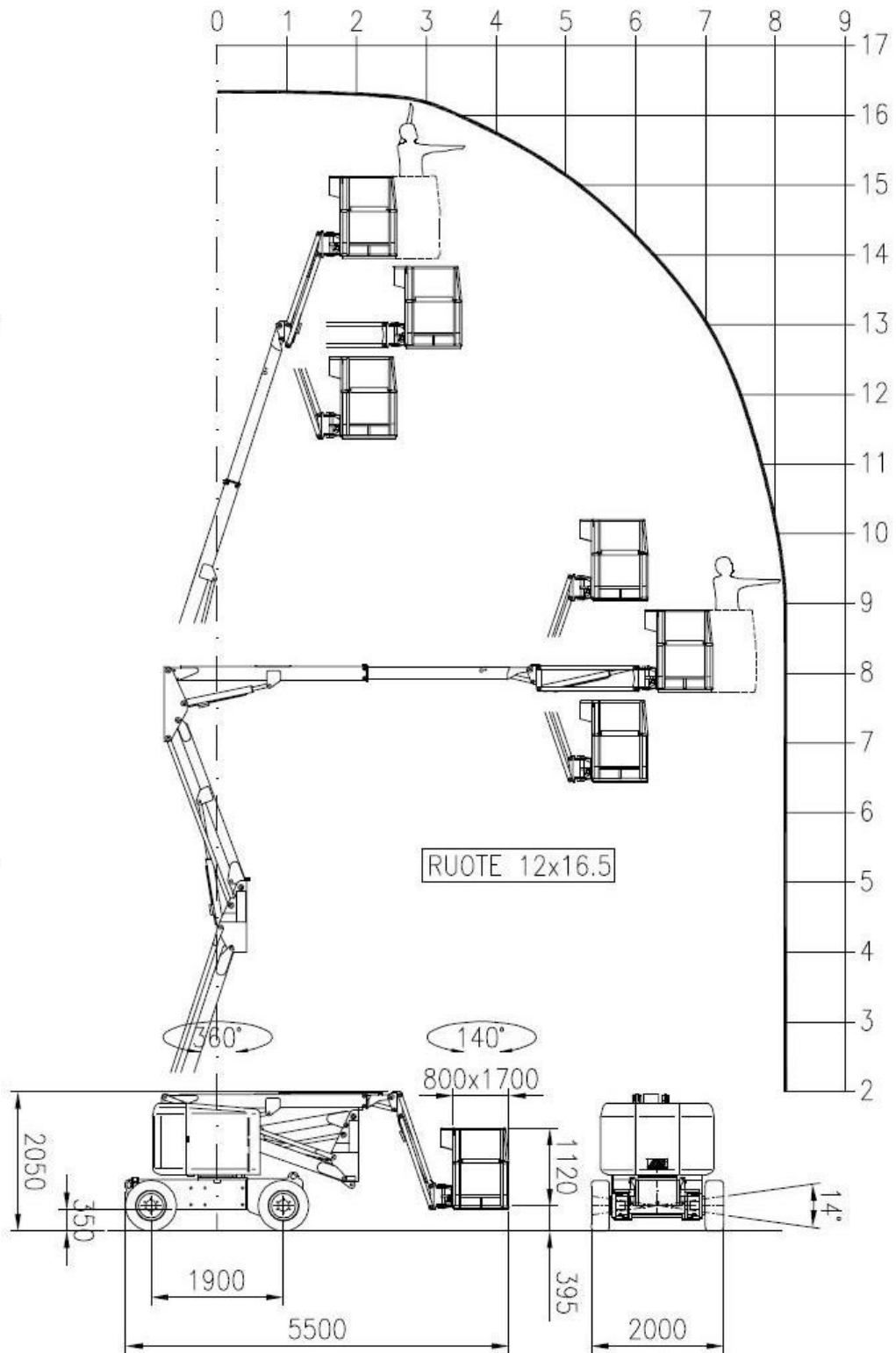
(*) In some cases, different limitations may apply Please comply with the data and instructions given on the machine plate.

(**) $m_e = m - (n \times 80)$

(***) 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.



A16 JRTD



2.4. Model A18 JE

		A18 JE	
Dimensions			
	Maximum lifting height	17.8	m
	Max. height of the platform floor	15.8	m
	Ground clearance	290	mm
	Max. outreach from turntable centre	9.9	m
	Turret rotation (stepwise)	360	°
	Platform rotation	140	°
	Basket floor height for safety speed activation	< 3	m
	Internal steering radius	1.15	m
	External steering radius	3.6	m
	Maximum capacity (m)	230	Kg
	Max. number (n) of people on the platform – indoors	2	
	Mass weight of tool and material (me) (**) – indoors	70	Kg
	Max. number of people on the platform (n) – outdoors	2	
	Tool and material mass weight (me) (**) – outdoors	70	Kg
	Maximum height during drive	Max	
	Maximum platform dimensions	0.8 x 1.7	m
	Maximum hydraulic pressure	230	Bar
	Max. pressure in the lifting circuit	230	Bar
	Min. pressure in the braking circuit	50 ÷ 60	Bar
	Tire dimensions (****)	Ø 730 x 230	mm
	Tire type (****)	250 - 15	
	Transport dimensions	6.47 x 1.765 x 1.985	m
	Transport dimensions with retracted jib	N.A.	m
	Machine weight w. no load (*)	8250	Kg
Stability limits:			
	Longitudinal inclination	3	°
	Lateral inclination	3	°
	Maximum wind speed (***)	12.5	m/s
	Maximum manual force	400	N
	Max. load per wheel	3500	Kg
Specifications:			
	Drive wheels	2	N
	Max. drive speed	4	km/h
	Safety drive speed	0.7	km/h
	Oil tank capacity	104	l
	Max admissible gradient	25	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-15	°C
Battery power:			
	Battery capacity and voltage	2 x 24 / 450	V/Ah
	Total quantity of electrolyte	2 x 84	l
	Battery weight	2 x 400	Kg
	Single-phase battery charger (HF)	48 / 45	V/A
	Max. current absorbed by the battery charger	15	A
	Maximum installed power	9	kW
	Power of the electric pump 1	4.5	kW
	Max. absorbed current	160	A
	Power of the electric pump 2	4.5	kW
	Max. absorbed current	160	A
	Power of the electric pump 3	NA	kW
	Max. absorbed current	NA	A

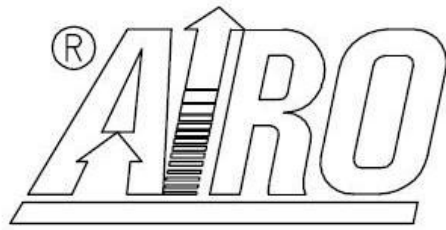
Diesel Power		
	Diesel engine type	NA
	Motor power	NA
	Battery starter	NA
	Diesel tank capacity	NA
	Max. drive speed	NA
380V three-phase electric pump (optional)		
	Motor power	NA
	Max. absorbed current	NA
	Max. drive speed	NA
230V single-phase electric pump (optional)		
	Motor power	NA
	Max. absorbed current	NA
	Max. drive speed	NA

(*) In some cases, different limitations may apply. Please comply with the data and instructions given on the machine plate.

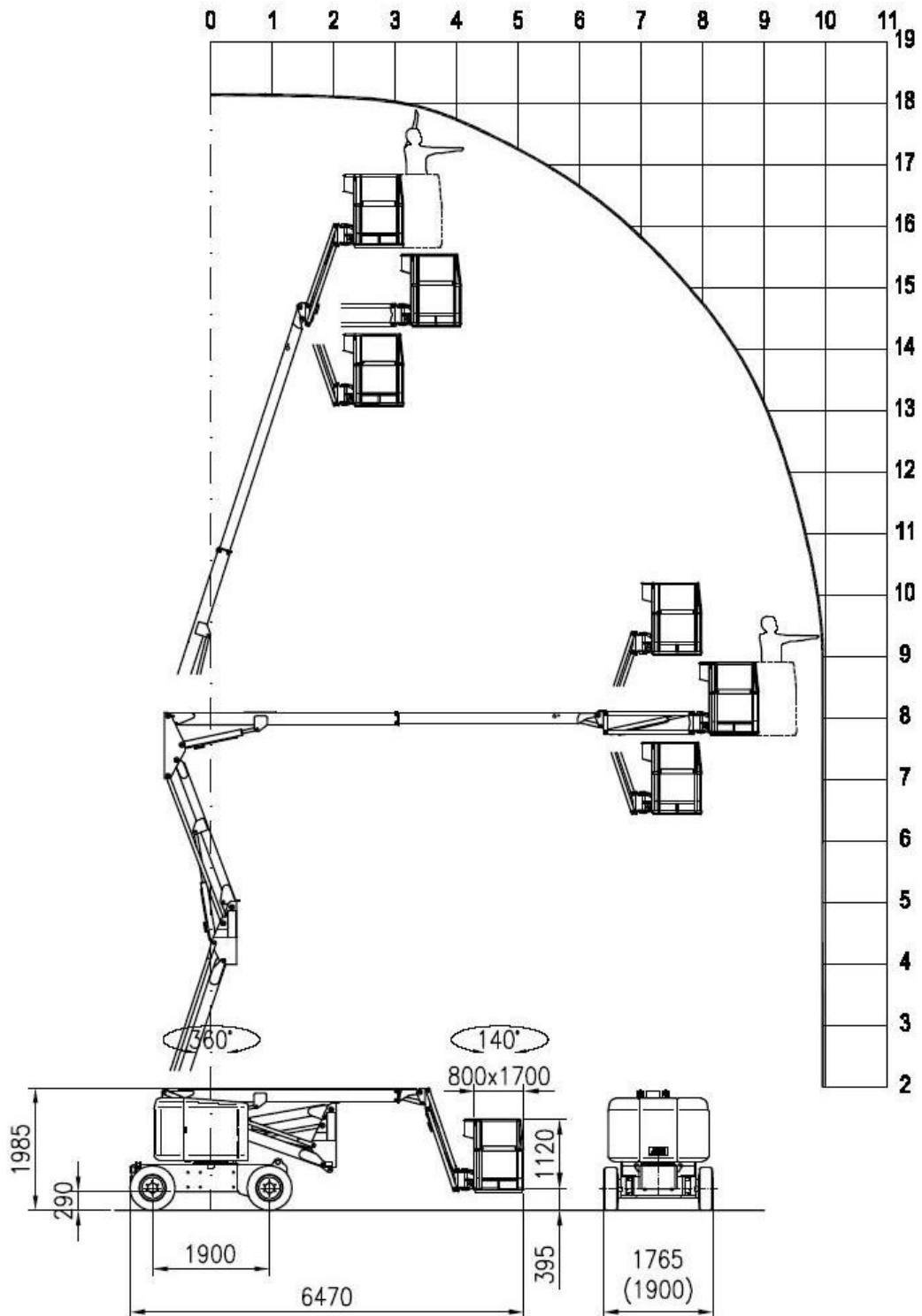
(**) $me = m - (n \times 80)$

(***) 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.

(****) Standard extra flexible tyres 250-15; Standard off-road tyres 10x16.5 filled with polyurethane foam. 10x16.5 filled with polyurethane foam; Standard off-road tyres 12x16.5 filled with polyurethane foam.



A18 JE



2.5. Model A18 JED

		A18 JED	
Dimensions			
	Maximum lifting height	17.8	m
	Max. height of the platform floor	15.8	m
	Ground clearance	290	mm
	Max. outreach from turntable centre	9.9	m
	Turret rotation (stepwise)	360	°
	Platform rotation	140	°
	Basket floor height for safety speed activation	< 3	m
	Internal steering radius	1.15	m
	External steering radius	3.6	m
	Maximum capacity (m)	230	Kg
	Max. number (n) of people on the platform – indoors	2	
	Mass weight of tool and material (me) (**) – indoors	70	Kg
	Max. number of people on the platform (n) – outdoors	2	
	Tool and material mass weight (me) (**) – outdoors	70	Kg
	Maximum height during drive	Max	
	Maximum platform dimensions	0.8 x 1.7	m
	Maximum hydraulic pressure	230	Bar
	Max. pressure in the lifting circuit	230	Bar
	Min. pressure in the braking circuit	50 ÷ 60	Bar
	Tire dimensions (****)	Ø 730 x 230	mm
	Tire type (****)	250 - 15	
	Transport dimensions	6.47 x 1.765 x 1.985	m
	Transport dimensions with retracted jib	N.A.	m
	Machine weight with no load (*)	8140	Kg
Stability limits:			
	Longitudinal inclination	3	°
	Lateral inclination	3	°
	Maximum wind speed (***)	12.5	m/s
	Maximum manual force	400	N
	Max. load per wheel	3500	Kg
Specifications:			
	Drive wheels	2	N
	Max. drive speed	4	km/h
	Safety drive speed	0.7	km/h
	Oil tank capacity	104	l
	Max admissible gradient	25	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-15	°C
Battery power:			
	Voltage/capacity of the standard battery	2 x 24 / 350	V/Ah
	Total electrolyte quantity in the standard battery	2 x 70	l
	Weight of the standard batteries	2 x 350	Kg
	Voltage/capacity of the optional battery	2 x 24 / 420	V/Ah
	Total electrolyte quantity in the optional battery	2 x 95	l
	Weight of the optional battery	2 x 355	Kg
	Single-phase battery charger (HF)	48 / 45	V/A
	Max. current absorbed by the battery charger	15	A
	Maximum installed power	9	kW
	Power of the electric pump 1	4.5	kW
	Max. absorbed current	160	A
	Power of the electric pump 2	4.5	kW
	Max. absorbed current	160	A
	Power of the electric pump 3	NA	kW
	Max. absorbed current	NA	A

Diesel Power		
Diesel engine type	ISUZU 1D81C	
Max. engine power	9.6	kW
Rated Power	9.6	kW
Battery starter	12 / 132	V/Ah
Total quantity of electrolyte	7	l
Diesel tank capacity	20	l
Max. drive speed	4	km/h
380V three-phase electric pump (optional)		
Motor power	NA	kW
Max. absorbed current	NA	A
Max. drive speed	NA	km/h
230V single-phase electric pump (optional)		
Motor power	NA	kW
Max. absorbed current	NA	A
Max. drive speed	NA	km/h

(*) In some cases, different limitations may apply. Please comply with the data and instructions given on the machine plate.

(**) $me = m - (n \times 80)$

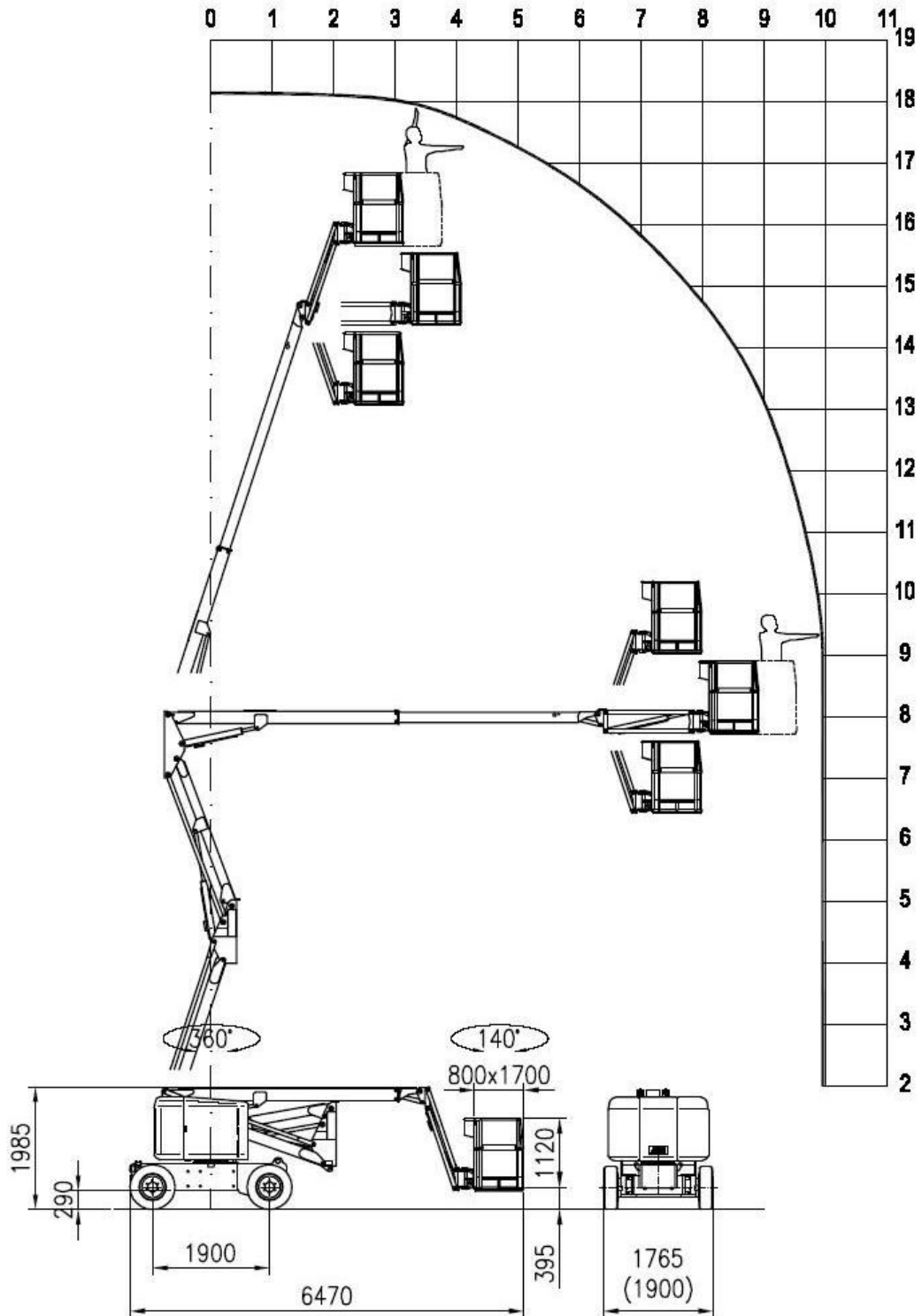
(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can be also used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.

(****) Standard extra flexible tyres 250-15; Standard off-road tires 10x16.5 filled with polyurethane foam. 10x16.5 filled with polyurethane foam; Standard off-road tires 12x16.5 filled with polyurethane foam.

(*****) Standard batteries: 48V 350Ah; Optional batteries: 48V 455Ah.



A18 JED



2.6. Model A18 JRTD

		A18 JRTD	
Dimensions			
	Maximum lifting height	17.8	m
	Max. height of the platform floor	15.8	m
	Ground clearance	350	mm
	Max. outreach from turntable centre	9.9	m
	Turret rotation (stepwise)	360	°
	Platform rotation	140	°
	Platform floor height for safety speed activation	< 3	m
	Internal steering radius	1.15	m
	External steering radius	3.6	m
	Maximum capacity (m)	230	Kg
	Max. number (n) of people on the platform – indoors	2	
	Mass weight of tool and material (me) (**) – indoors	70	Kg
	Max. number of people on the platform (n) – outdoors	2	
	Tool and material mass weight (me) (**) – outdoors	70	Kg
	Maximum height during drive	Max	
	Maximum platform dimensions	0.8 x 1.7	m
	Maximum hydraulic pressure	230	Bar
	Max. pressure in the lifting circuit	230	Bar
	Min. pressure in the braking circuit	50 ÷ 60	Bar
	Tyre dimensions	Ø 800 x 320	mm
	Type of tyres	12 x 16.5	
	Transport dimensions	6.74 x 2 x 2.05	m
	Transport dimensions with retracted jib	N.A.	m
	Machine weight with no load (*)	8100	Kg
Stability limits:			
	Longitudinal inclination	4	°
	Lateral inclination	4	°
	Maximum wind speed (***)	12.5	m/s
	Maximum manual force	400	N
	Max. load per wheel	3500	Kg
Specifications:			
	Drive wheels	4	N
	Max. drive speed	4.7	km/h
	Safety drive speed	0.7	km/h
	Oil tank capacity	104	l
	Max admissible gradient	40	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-15	°C
Battery power:			
	Battery capacity and voltage	NA	V/Ah
	Battery weight	NA	Kg
	Single-phase battery charger (HF)	NA	V/A
	Max. current absorbed by the battery charger	NA	A
	Maximum installed power	NA	kW
	Power of the electric pump 1	NA	kW
	Max. absorbed current	NA	A
	Power of the electric pump 2	NA	kW
	Max. absorbed current	NA	A
	Power of the electric pump 3	NA	kW
	Max. absorbed current	NA	A

HATZ Diesel engine			
	Diesel engine type	Hatz 3L41C	
	Max. engine power	38.8	kW
	Rated Power	35.5	kW
	Battery starter	12 / 132	V/Ah
	Total quantity of electrolyte	7	l
	Diesel tank capacity	45	l
ISIZU Diesel engine			
	Diesel engine type	ISUZU 4LE1	
	Max. engine power	39	kW
	Rated Power	35	kW
	Battery starter	12 / 132	V/Ah
	Total quantity of electrolyte	7	l
	Diesel tank capacity	45	l
380V three-phase electric pump (optional)			
	Motor power	NA	kW
	Max. absorbed current	NA	A
	Max. drive speed	NA	km/h
230V single-phase electric pump (optional)			
	Motor power	2.2	kW
	Max. absorbed current	13.9	A
	Max. drive speed	NA	km/h

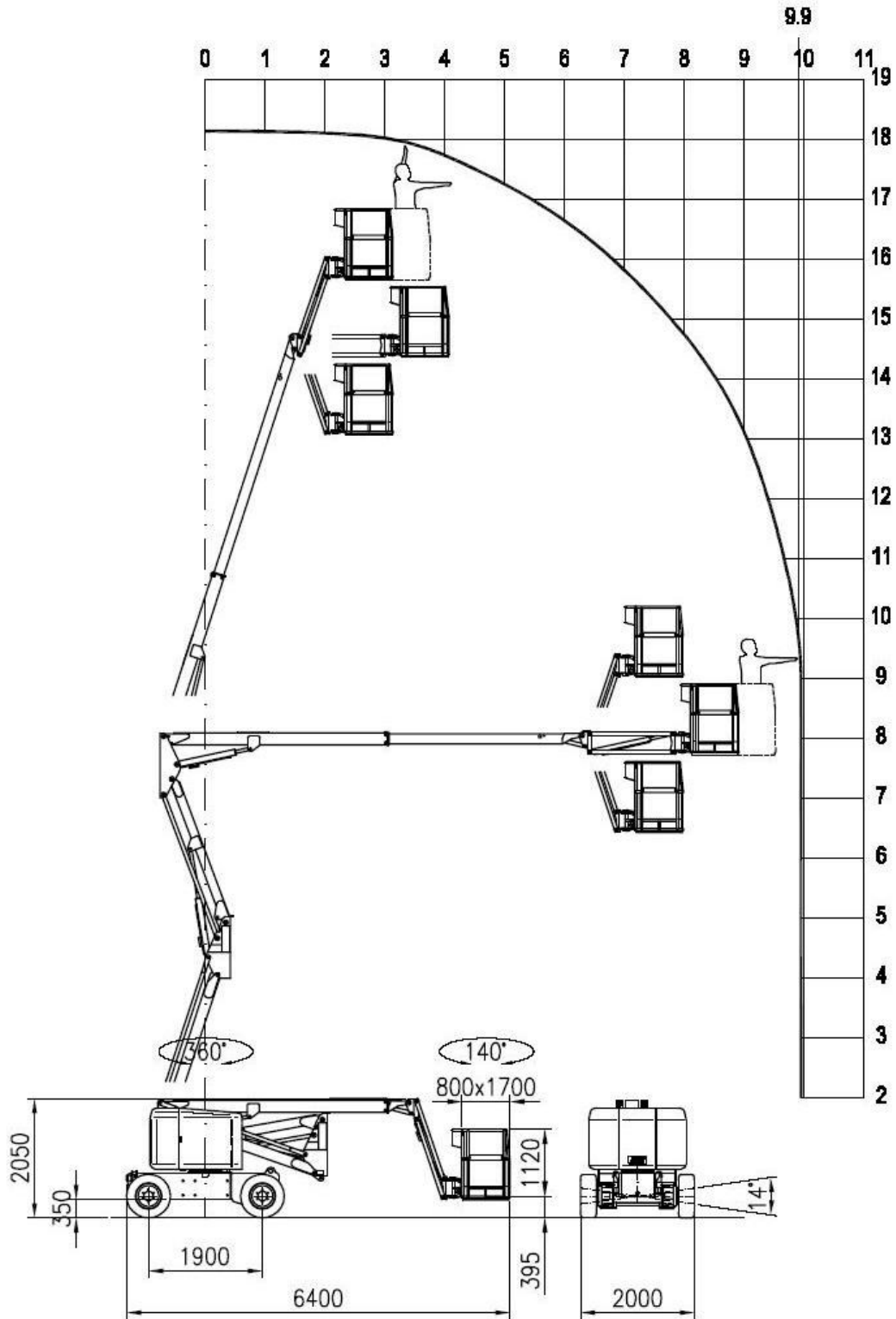
(*) In some cases, different limitations may apply. Please comply with the data and instructions given on the machine plate.

(**) $me = m - (n \times 80)$

(***) 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.



A18 JRTD



2.7. Vibrations and noise

Noise tests have been carried out under the most unfavourable conditions to study the effects on the operator. The level of acoustic pressure weighed (A) at work places does not exceed 70dB(A) for each electric model.

For models with Diesel engine the level of acoustic pressure weighed (A) at work places does not exceed 106dB(A), the level of acoustic pressure at ground control station does not exceed 85dB(A), whilst the level of acoustic pressure at the control panel on the platform does not exceed 78bD(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 less than **2.5 m/sec²** for each of the models to which this manual refers.
- The average weighted quadratic value in frequency of the acceleration which the upper members must withstand is less than **0.5 m/sec²** for each of the models to which this manual refers.

3. SAFETY SIGNS

3.1. Personal protection devices (PPE).

Always wear personal protective equipment according to current regulations concerning industrial health and safety (safety hat and shoes **MUST** be worn).

It is the operator's 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 wearing of safety harness is mandatory in accordance with the Italian Consolidated Law on worker safety No. **Dlgs 81/08**.

The harness attaches to one of the anchors shown by the labels, as in the following picture.



Fig. 3

3.2. General safety.



- Only adults (18 years old) are allowed to use the machine providing they have carefully read this manual. The employer is responsible for training.
- The platform is designed to carry persons on board; therefore, compliance with the current local regulations relevant to this class of machines (see paragraphs 1) must be ensured.
- The machine is a two-men operation unit. This means at least one man must be on the ground and assigned to all emergency operations as described in this handbook.
- Always keep the machine at safety distance from the power lines as indicated in the following 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, the maximum capacity and the mass weight of tools and ancillary materials. Never exceed these figures.
- Do NOT use the platform steelwork or any of its parts for grounding applications while welding on platform.
- NEVER board/deboard passengers and NEVER load/unload any materials if the platform is not in the initial boarding position.
- The owner and/or safety manager are liable and responsible for due maintenance and repair operations to be carried out strictly by skilled and qualified labours.

3.3. General

3.3.1. Use and Operating instructions.

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



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

- The machine must be used only in areas well lit up, checking that the ground is flat and firm. The machine may not be used if the lighting conditions are not enough. REMEMBER: the machine has no built-in lightning system.
- Before using the machine check its integrity and good, functional preservation 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 while the machine is connected to the mains supply. Follow the instructions given in the following paragraphs.
- Do not near any part of the electric and hydraulic systems to heat or flame sources.
- Do not try to reach higher than the max. admissible height, especially using scaffolding, ladders, or other tools.
- 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 and the control panel on the basket by means of the special (optional) cover. Make sure the operator is safe when working in adverse conditions (painting, de-painting, sand-blasting, washing, etc.).
- Using the machine in bad weather conditions is forbidden; Wind speeds must not exceed the limits indicated under "Technical Features" (to measure speeds, see following chapters).
- Machines with a wind speed limit of 0 m/s are to be used indoors only.
- In the event of rain or when the machine is parked, always cover the control panel on the basket by means of the special hood or guard (optional).
- Do not use the machine in any room or place at deflagration or fire risk.
- 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 basket is forbidden unless this is in the position required for access or leaving (see the chapter "Accessing the Basket").



3.3.2. Handling

- Before moving the machine make sure that it has been disconnected from the power supply source. Always check the position of the cable during handling, if the machine is powered with a 230V electric pump.
- 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 section "Technical Features" under paragraph "Stability limits". However, movements on inclined grounds are to be carried out with the utmost caution.
- As soon as the basket is up high, (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 EN280:2001).
- Drive the machine with a lifted basket only on flat grounds, verifying the absence of holes or steps on the floor and bearing in mind the overall dimensions of the machine.
- No horizontal loads should be in the basket, while the machine travels with a lifted basket (operators on board are not allowed to pull wires or ropes, etc.).
- Do not use the machine for road transportation. Do not use the machine for transporting any materials (see chapter "Application Field").
- Make sure that there are no obstacles or impairment to travelling and operating within the site area.
- Pay attention to the area above the machine during lifting to avoid any crushing and collisions.
- While handling or operating, make sure your hands never infringe a dangerous area. Drivers should keep their hands as shown in picture A or B, whilst passengers should hold their hands as in C.





Fig. 4

3.3.3. Operating procedure



- The machine is equipped an inclination sensor detecting the rake angle of the basket and disabling lifting operations in case of instability. Working operations can be only resumed after setting the machine back into stability. When the acoustic alarm and the red light on the control board go off, it means the machine is not correctly positioned (see section “Operating instructions”). Therefore, you need to set the machine back into safety before you can restart working. When the rake-angle alarm trips and the platform is raised, the operator may still perform the operations needed to bring the platform down.
- The machine is equipped with an overload controller stopping the operation in case of overload. If overloading occurs with the basket raised, driving and travelling functions will be disabled. Operation can be resumed only after removing the exceeding load. The audible alarm and the red light located on the control board on the basket warn the operators whenever an overload occurs (see chapter "Red pilot: Overload"). In this case, remove the excess load to reset the alarm and retrieve all working functions.
- Electrically-powered machines are equipped with a device controlling the electric system isolation. In case of isolation loss or remote switch fault, the latter (located on the chassis – see paragraph “Location of main components”) brings the machine to a complete stop and signals the fault by means of a continuous hissing sound.
- Electric power machines are fitted with a device for checking the status of battery charge (battery protection). When the battery charge is as low as 20%, a red flashing light goes on to alert the operator on the platform of the low-battery status. In this condition, lifting is disabled, and the battery should be immediately recharged.
- Do not lean over the platform hand rails.
- Make sure that no people other than the operator, are standing in the operation area of the machine. While moving, the operator should pay attention to the travel direction in order to avoid impacting personnel on the ground.
- When working in public areas, make sure to prevent other unskilled or unauthorized people from approaching the machine and getting trapped with its various mechanisms. Always prevent access to the site by means of effective all-round barriers or other suitable signage.
- Avoid working in bad weather conditions and, in particular, very windy days.
- Do not drive the basket UP, unless the machine is resting on a solid and horizontal surface (following chapters).
- Do not perform any self-propelled travelling with the basket raised up unless the ground is very solid and flat.
- Do not use diesel or gasoline powered engines 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.
- Make sure to load ancillary working tools and hardware in a safe position to prevent them from falling and hurting people on the ground.

When deciding where to stop, make sure to account for each and every possible obstacle and keep well in mind the clearance as shown in the pictures of this manual (Chapter 2).

3.3.4. Wind speed according to the 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 scale	Wind speed (km/h)	Wind speed (m/s)	Wind Rating	Sea/ocean conditions	Land conditions
0	0	<0.28	Flat	Calm.	Smoke rises vertically.
1	1-6	0.28–1.7	Light air	Ripples without crests. No white crest generation.	Wind direction detected by smoke direction
2	7-11	1.7-3	Light breeze	Tiny, short but visible wavelets. No breaking water waves, crests foam with glassy appearance.	Wind perception on bare skin. The leaves rustle.
3	12-19	3-5.3	Gentle breeze	Water waves start to break: the crest foam looks glassy. "Whitecaps" of bubbles and streaks on breaking crests.	Leaves and small twigs constantly moving.
4	20-29	5.3-8	Moderate breeze	Small waves becoming longer. Numerous whitecaps.	Dust, leaves, and loose paper lifted. Small tree branches move.
5	30-39	8.3-10.8	Fresh breeze	Moderate waves taking longer form. many whitecaps, some spray.	Small trees in leaf begin to sway, small waves start to form on inland waters.
6	40-50	10.8-13.9	Strong breeze	Long waves begin to form. White foam crests are very frequent. Some sprays.	Whole trees in motion. Difficulties in keeping an umbrella.
7	51-62	13.9-17.2	High wind	Sea heaps up with moderately high waves of greater length. The edges of crests begin to break into spindrift, foam blown in streaks in the same wind direction.	Larger tree branches moving, whistling in wires Strong resistance felt walking against wind.
8	63-75	17.2-20.9	Gale	High waves, Sea begins to roll, dense streaks of foam, spray may reduce visibility	Twigs breaking off trees, generally impedes progress Walking against the wind is impossible.
9	76-87	20.9-24.2	Whole gale	Very high, heavy rolling waves. Foam blown into thicker streaks.	Slight structural damage occurs (slate blows off roofs).
10	88-102	24.2-28.4	Storm	Very high waves with overhanging crests, Sea white with densely blown foam, the water has a white appearance. Heavy rolling, and reduced visibility.	Trees broken or uprooted. Considerable structural damage.
11	103-117	28.4-32.5	Strong storm	Exceptionally high waves hiding average size vessels from the sight. Foam patches cover sea, Air filled with foam, completely white with driving spray, visibility greatly reduced.	Heavy structural damage.
12	>117	>32.5	Hurricane	Exceptionally high waves, sea completely white with driving spray.	Heavy structural damage.

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 and two examples of calculation of the average pressure on the ground and the max pressure underneath the wheels or stabiliser (p1 and p2).

SYMBOL	U.M.	DESCRIPTION	EXPLANATION	FORMULA
P1	Kg	Total machine weight	Represents the weight of the machine, not including nominal load. Note: Always refer to the details indicated on the plates affixed to the machine.	-
M	Kg	Rated Load	The max. load allowed for the work platform.	-
A1	cm ²	Ground area occupied by the machine	Surface area under the machine determined by multiplying TRACK x WHEEL BASE	$A1 = c \times i$
c	cm	Track	Out-to-out width of machine measured outside the wheels. or: Out-to-out width of machine measured between outrigger centres.	-
i	cm	Wheel base	Front-to-back length of machine measured between wheel centres. or: Front-to-back length of machine measured between outrigger middle lines.	-
A2	cm ²	Wheel or outrigger surface	Wheel or outrigger foundation. The operator is to check the foundation area under each wheel; the outrigger foundation will depend on the shape of the floor plate.	-
P2	Kg	Max. load on wheels or outriggers	This is the max. load transferred to the ground by a wheel or by an outrigger with the machine in the worst position and load condition. Please Note: always refer to the details indicated on the plates affixed to the machine.	-
p1	Kg/cm ²	Pressure on ground	Average pressure placed on the ground in idle conditions and supporting the nominal load.	$p1 = (P1 + M) / A1$
p2	Kg/cm ²	Max specific pressure	Max. pressure which a wheel or a levelling outrigger can apply to 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 cm²
A2 = 71,5 cm²

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

EXAMPLE 1: CRAWLER LIFT

P1 = 2200 kg
P2 = 920 kg
M = 200 kg
c = 295 cm
i = 295 cm
A1 = c x i = 87025 cm²
A2 = 62,8 cm²

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

The table below shows the load-bearing capacity of different types of ground.
For the max pressure on the ground by the single wheel, please refer to the data contained in the specific tables of each model (chapter 2, TECHNICAL FEATURES OF STANDARD MACHINES).



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

TYPES OF GROUND	BEARING CAPACITY IN Kg/ cm ²
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
Rocks	15 - 30

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

3.3.6. High-voltage lines.

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

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. Hazardous situations and/or accidents

- If, during preliminary control operations or use, the operator discovers a defect that could turn to a hazardous situation, the machine must be placed in safety conditions (confined with warning signs) and the employer must be notified immediately.
- If, during use, an accident occurs, with injury to the operators, caused by operating errors (e.g., collisions) or any structural yielding, the machine must be placed in **safety conditions** (confined and identified by effective warnings) and the employer must be notified about the fault.
- In case of an accident with injuries to one of more operators, the operator on the ground (or on a platform not involved in the accident) must:
 - Seek help immediately.
 - Perform the operation to return the platform to the ground only if he is certain this will not make the situation worse.
 - Place the machine in safety condition and notify the fault to the employer.

4. INSTALLATION AND PRELIMINARY CHECKS

The machine is supplied completely assembled, therefore it can perform all functions in full safety as provided for by the manufacturer. No preliminary operation is required. To unload the machine, follow the instructions in chapter "handling and carrying".

Place the machine on a sturdy enough surface (see paragraph 3.3.5) and with a gradient below max. allowed gradient (see technical features "Stability limits").

4.1. Familiarizing with the machine

Anyone wishing to use a machine with weight, height, width and length characteristics that significantly differ from the training received must be updated in order to cover the differences.

The employer shall be responsible for ensuring that all operators working with the equipment are adequately trained and aware of the applicable health and safety legislation.

4.2. Preliminary controls.

Before using the machine read the instructions in this manual and the short instructions reported on the manufacturer's plate on the platform.

Visually check for perfect integrity of the machine and read the plates showing machine operating limits.

Before using the machine, the operator is to carry out a visual inspection to ensure 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 flat and solid.
- The machine carries out all operations safely.
- The wheels and drive motors are properly installed on the machine.
- The wheels are in good conditions.
- The guard railing is fastened to the basket and the gate/s are in automatic closing mode.
- The structure does not show any visible faults (visually check the welding beams of lifting structure).
- The instructions plates are perfectly readable.
- The control panel on the basket, the emergency control panel on-ground, and the deadman pedal, are perfectly efficient.
- The anchoring points for the harness are in perfect state of conservation.

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

5. OPERATING 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 starting/stopping procedures as well as all other functionalities of the machine and their correct use.

5.1. Control panel on the basket

The operator's control station is in the basket. The control panel is fixed to the front rail and is used to:

- Start/stop the machine
- Handle the machine in all normal operating steps
- Display some of the operating data and modes (alarms, "dead-man", control etc...)

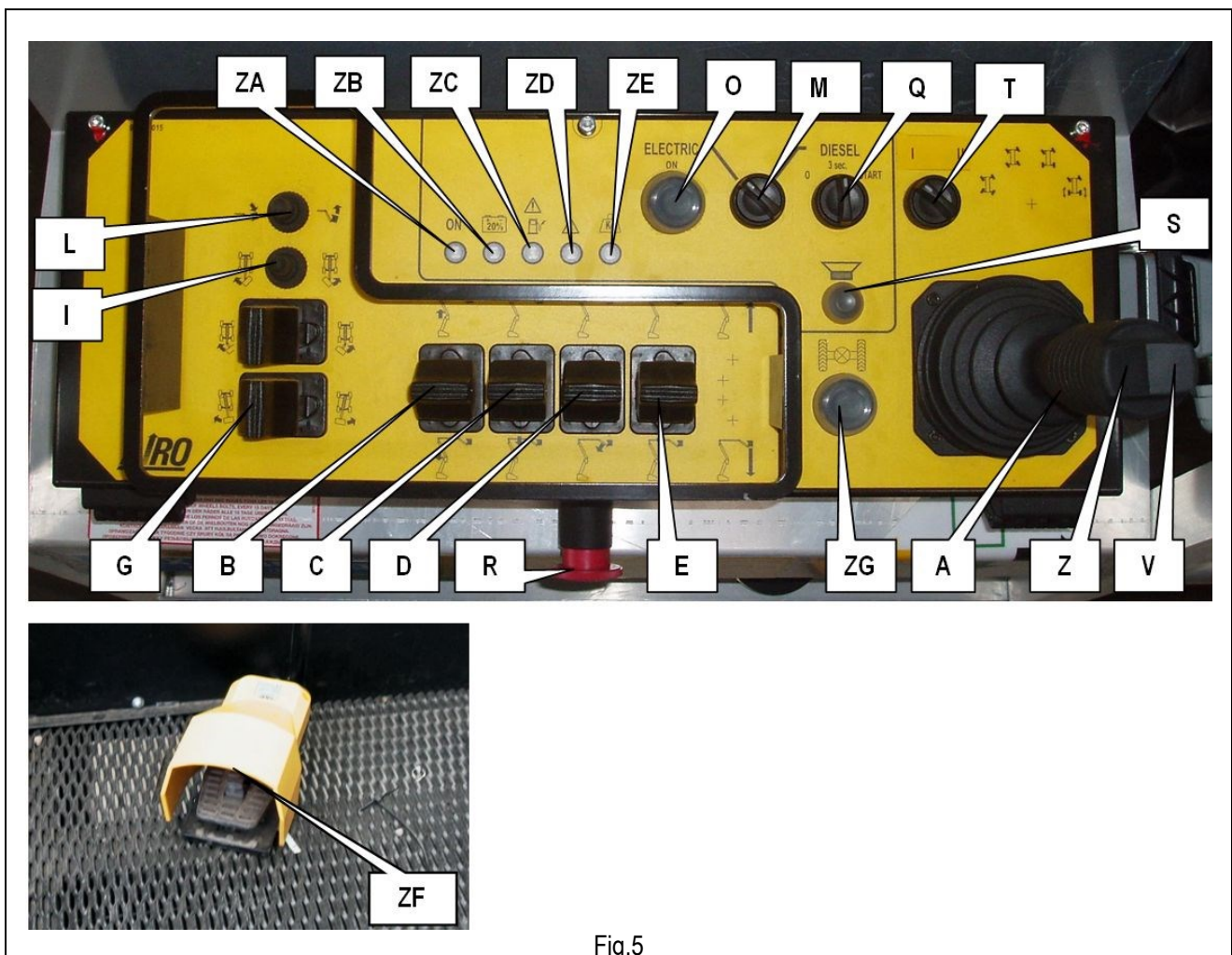


Fig.5

- A) Proportional joystick for travel control
- B) Proportional lever to control the arm UP/DOWN
- C) Proportional lever to control the boom up/down
- D) Proportional lever to control the jib up/down
- E) Proportional control lever for telescopic boom extension/retraction
- G) Proportional control joystick for turret rotation
- I) Basket rotation switch
- L) Basket level, recovery switch

- M) Diesel/electric drive power selector (optional)
- O) Electric pump 12V DC (Battery) or electric pump (220V or 380V AC) - Start up push-button – OPTIONAL
- Q) Diesel engine starter-switch
- R) Emergency STOP button
- S) Manual horn
- T) Drive speed selector
- V) Right-steering switch
- Z) Left-steering switch
- ZA) Pilot light, operator's station enabled
- ZB) Flat battery warning light – Electric E-models
- ZC) Pilot light, diesel engine operation fault / low fuel - only D-models
- ZD) Pilot light: Danger Alert !
- ZE) Overload pilot light
- ZF) Dead-man pedal
- ZG) "Differential Lock" push-button (OPTIONAL)

All movements (except for basket rotation and level adjustment) are controlled by means of proportional joystick /levers; Therefore, all functions can be performed at adjustable speed. To avoid sudden shakes or jerky movements, make sure to operate the proportional joystick smoothly.

For safety reasons, the ZF dead-man pedal must be held down in order to active the machine functions. If the dead-man pedal is released, the machine is halted, and all running operations are stopped.



WARNING!

Holding the dead-man pedal down for over 10 seconds without carrying out any operation will disable the control panel.
When the control panel is disabled the green led (ZA) starts to flash. To activate the machine again, you must release the circuit-breaker and press it again; the green pilot lamp (ZA) will light up steady and for the next 10 seconds all controls will be enabled.

5.1.1. Travelling and steering.



Before carrying out any travel, make sure that no people are in the proximity of the machine and in any case proceed with the utmost caution.



IT IS FORBIDDEN to drive the machine when the basket is lifted unless the chassis is on a flat and steady surface with no holes and steps.

The travel procedure is the following:

- a) Press the **ZF** dead-man pedal down and hold it; the green pilot-lamp **ZA** will light up steady indicating that the pedal is enabled.
- b) Within 10 seconds from the green pilot lamp lighting up, push the proportional joystick **A** forwards for forward drive or backward for reverse drive.



CAUTION!

If you are using a standard machine version, driving and steering controls can be operated at the same time. However, due to the interlocking facility, the basket controls (lifting/lowering/ slewing) will command their stopping too. This does not apply to Diesel versions with four driving wheels (RTD). In this case, when the platform is DOWN (booms down, telescopic boom in, jib between +10° and -70°) simultaneous steering-drive-rotation of the turret are possible to facilitate the handling of machine also within narrow and confined spaces.

If you are using a machine equipped with (OPTIONAL) concurrent-controls, driving and steering can be at the same time. However, due to the interlocking facility, the basket controls (lifting/lowering/ slewing) will command their stopping too. Concurrent driving, steering, and slewing (of the turret) with the platform DOWN (booms down, telescopic boom in, jib between +10° and -70°) is possible for all three machine variants (Electric, Electric+Diesel, Diesel+4 driving wheels).

With the basket DOWN (booms down, telescopic boom in, jib between +10° and -70°) it is possible to select different drive speeds by means of the speed selector **T** and/or you can use the differential lock **ZG** to select different speeds. Due to the rigid frame of the machine, when driving on uneven grounds, one of the two driving wheels may be lifted thus absorbing all oil capacity and idling. In this condition the machine cannot move. To overcome this condition, press the **differential lock ZG**.

PLEASE NOTE: To achieve the maximum drive speed, set the speed selector (T) to position (III), press the proportional joystick (A) down, and hold the (OPTIONAL) differential lock ZG down.

When travelling on a considerable uphill gradient (e.g. while loading the machine onto a truck), the speed selector (T) must be in (II).

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 the basket high, safety drive speed is automatically enabled, therefore neither the speed selector **F** nor the (optional) differential lock **ZG** are active.

To steer, press the **V / Z** buttons located on the proportional joystick for drive control (press the right button for steering to the right and vice versa). The steering control is also enabled by the deadman pedal. Therefore, steering is only possible if the green **ZA** pilot lamp lights up steadily.

5.1.2. Basket positioning/ operation.

To carry out any operation other than drive, use the proportional joysticks **B, C, D, E, G** and the switches **I** and **L**.

To achieve any movement, the following operation must be performed exactly in this sequence:

- a) Press the deadman pedal located in the basket; the green pilot lamp **ZA** will light up steady indicating that the deadman safety is activated;
- b) Within 10 seconds from the green pilot lamp lighting up, set the proportional joystick or the desired switch in the direction shown by the label screen-printed on the control panel.

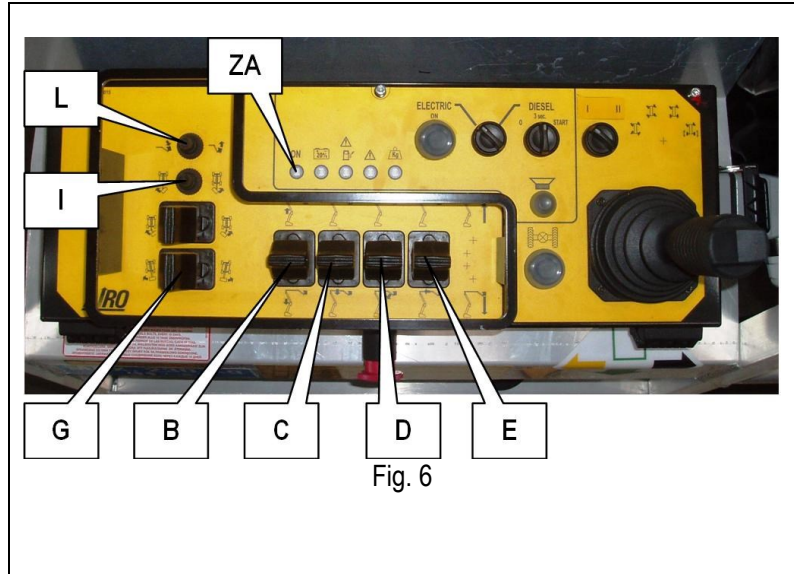


Fig. 6

PLEASE NOTE: before activating the proportional joystick or the desired switch, you must press the deadman safety pedal down. If the deadman safety pedal is released all operations will stop at once.



Standard electric versions (E) and electric+diesel versions (ED): basket manoeuvres can be only carried out one by one and stop when driving/steering are active (safety interlock).

Standard Diesel versions with 4 driving wheels (RTD): basket manoeuvres can be only carried out one by one, whilst slewing of the turret can be concurrent to driving and steering when the basket is DOWN (booms down, telescopic boom in, jib between +10° and -70°).

Machine versions with (optional) concurrent control system (electric versions (E) - electric+diesel versions (ED) and Diesel+4 driving wheels RTD): the basket controls can be used simultaneously (unless otherwise indicated). Furthermore, slewing of the turret can be performed at the same time as driving and steering when the basket is DOWN (booms lowered, telescopic boom in, jib at a height between +10° and -70°).

5.1.2.1. Lifting/lowering of the first crank arm (pantograph)

To lift/lower the first arm, use the proportional joystick **B**.

Set the proportional joystick **B** forwards for lifting or backward for lifting or lowering the crank arm.

5.1.2.2. Second arm UP/DOWN

To lift / lower the second arm, use the proportional joystick **C**.

Set the proportional joystick **C** forwards or backwards respectively to lift/lower the jib.

5.1.2.3. Jib lifting/lowering

To lift/lower the JIB, use the proportional joystick **D**.

Set the proportional joystick **D** forwards for lifting or backwards for lowering.

5.1.2.4. Extension/retraction of the telescopic boom

To extend / retract the telescopic boom, use the proportional joystick **E**.
Set the proportional joystick **E** forwards for extension or backwards for retraction.



If you are using a machine with (OPTIONAL) concurrent controls, this operation is deactivated while slewing the turret.

5.1.2.5. Turret slewing (rotation)

To slew the turret, use the proportional joystick **G**.
Set the proportional joystick **G** to the right for right rotation or to the left for left rotation.



Before carrying out this manoeuvre make sure to deactivate the mechanical lock device of the turret, if any (see chapter 6 "handling and transport").

If you are using a machine with (OPTIONAL) concurrent controls, this operation is deactivated while extending/retracting the telescopic boom.

If you are using a standard machine version, driving and steering controls can be operated at the same time. However, due to the interlocking facility, the basket controls (lifting/lowering/ slewing) will command their stopping too. This does not apply to Diesel versions with four driving wheels (RTD). In this case, when the basket is DOWN (booms down, telescopic boom in, jib between +10° and -70°) simultaneous steering-drive-rotation of the turret are possible to facilitate the handling of machine also within narrow and confined spaces.

If you are using a machine equipped with (OPTIONAL) concurrent-controls, driving and steering can be at the same time. However, due to the interlocking facility, the basket controls (lifting/lowering/ slewing) will command their stopping too. Concurrent driving, steering, and slewing (of the turret) with the basket DOWN (booms down, telescopic boom in, jib between +10° and -70°) is possible for all three machine variants (Electric, Electric+Diesel, Diesel+4 driving wheels).

5.1.2.6. Basket rotation

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

5.1.2.7. Basket levelling

The basket position levels out automatically. Should it be necessary to reset the correct level, use the switch **L**.
Set the switch **L** to the left for levelling to the back, or to the right for levelling to the front.



Warning!! This operation can be carried out only when booms are completely lowered. No result is achieved if these operations are carried out when the basket is lifted.

Both on standard machines and machines with (OPTIONAL) concurrent controls, basket level adjustment cannot be done while performing any other operation.

5.1.3. Other functions of the control panel on the basket

5.1.3.1. Selection of the (OPTIONAL) electric or gasoline/diesel power

For some models, it is possible to select the type of power using the **M**-switch. Turn the switch to **Electric** to select the electric-mode (12V battery or 48V for ED models, for emergency boom operations or 380V three-phase / 220V single-phase for boom operation - OPTIONAL) or **Diesel** to select the engine-mode.

5.1.3.2. OPTIONAL electric pump starter 12V (Battery) or 230V/ 380V (in-house power)

The **O**-button is used to start:

- The 12V electric pump for emergency operations (no driving and no steering);
- The 220V pump for any manoeuvres (except driving and steering), providing that the electric panel on ground is connected to your in-house power supply.
- The 380V pump for any manoeuvres (except driving and steering) providing that the electric panel on ground is connected to your three-phase power supply.

See next paragraphs for instructions on use of the starter of all electric pumps.



CAUTION! The 12V emergency electric pump is only for supplying enough power for recovering the platform in case of a fault in the main power system. Do not use it during normal operations.

5.1.3.3. Engine Starter Button (models “D” and “ED”)

It starts the (Diesel) engine of all combination-power models (ED) and just diesel models (D).

With the **O-selector** set on **Diesel**, if you activate the **Q**-switch

- Use **START** to start the machine;
- Use **3 sec** to warm up the plugs (motors with plugs only);
- Use **0** to stop the engine.

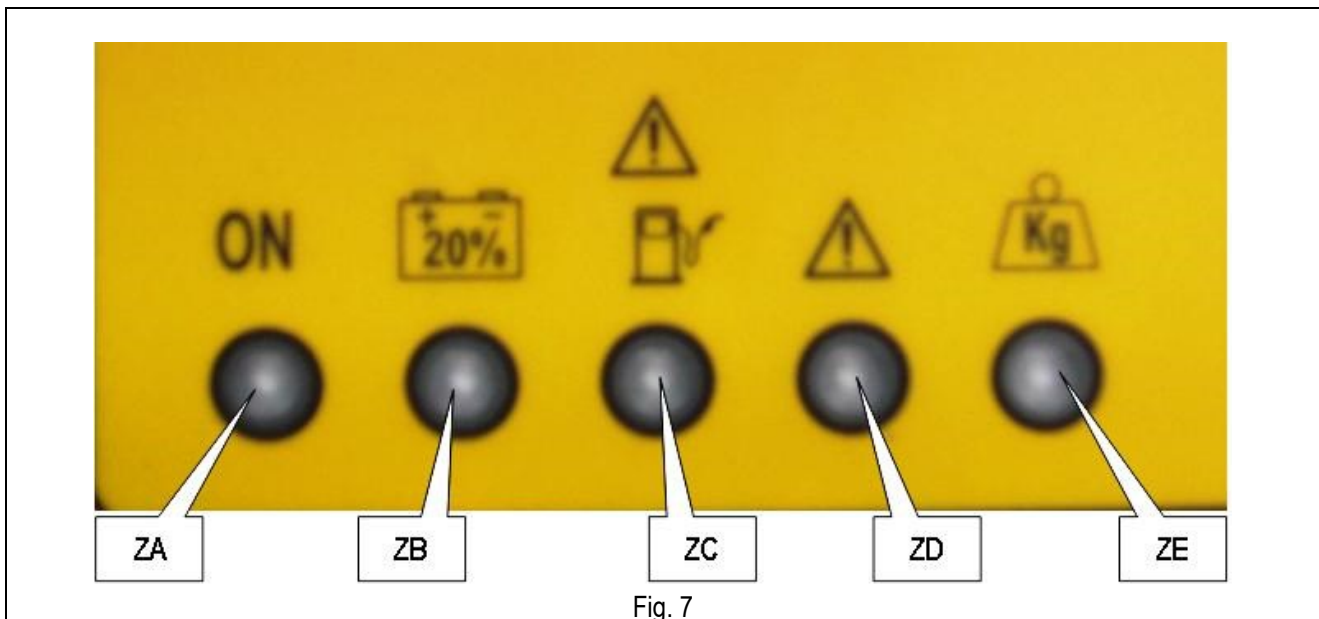
5.1.3.4. Manual horn

Horn to warn when the machine is moving. To horn press the **S-button**.

5.1.3.5. Emergency stop button

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

5.1.3.6. Warning lights



5.1.3.6.1 Green pilot lamp (ZA), operator's station enabled.

The pilot is ON with flashing light when the machine is switched on. If you enabled the control panel on the basket, and this pilot flashes it means that the controls are not active because the dead-man pedal has not been pressed, or it was pressed for over 10 seconds without performing any operation.

The pilot is ON with steady light while the machine is running and the dead-man pedal has been pressed for less than 10 seconds. If the control panel in the basket is enabled, all controls are activated (unless triggering of other alarms – see next paragraphs).

5.1.3.6.2 Red pilot lamp (ZB): warns when the battery is out of charge. (only available on electrical models)

This pilot starts flashing when battery is charged at 20% only flashing when the battery charge is down to 20% (only models "E" or "ED" with DC electric pump). In this condition lifting operations and extension of the telescopic boom are disabled. In this case, recharge the batteries immediately.

5.1.3.6.3 Red pilot light (ZC): diesel engine fault or low fuel

This pilot indicates a malfunction of diesel engine or low fuel.

It lights up with steady light when the machine is on; the platform controls are activated; and Diesel power is selected. Diesel Engine off ready for start-up. Insufficient engine oil pressure.

Slow flashing when: the engine head is overheated. If on, it stops the diesel engine; if off, it prevents the diesel engine from starting.

Quickly flashing when the fuel is running low (only approx. 10 l fuel left in the tank). This warning is active only when the engine is running.

Very fast flashing when the fuse on the electric fan of the air/oil exchanger (if present) is burnt out. CAUTION! Change the fuse. Danger of overheating of hydraulic oil.

5.1.3.6.4 Danger warning - red pilot light (ZD)

Quickly flashing for 4 seconds together with the acoustic alarm at start-up in case of fault during safety test on controls (pedal, joystick control, switches, etc).

It is lit up steady together with an acoustic alarm when the chassis inclination exceeds the allowed angle. All lifting operations and telescopic extension are disabled (except JIB lifting). If the machine is UP, driving is disabled. It is necessary to lower the booms completely and then place the machine onto a flat surface.



CAUTION! The activation of this indicator warns of a dangerous situation since the machine has reached a dangerous inclination level for the machine stability.
When the chassis exceeds the admissible inclination value, the operator on the platform should retract the telescopic boom first and then lower it down in order to reduce the risk of tipping over.

5.1.3.6.5 Red pilot: Overload (ZE)

Slow flashing with activation of an acoustic alarm with a basket overload exceeding the nominal load by 20% . When the basket is UP, the machine is completely locked. When the basket is DOWN, all driving/steering operations are still possible, but lifting/slewing are disabled. Remove the excess load before retrieving work again.

Fast flashing in case of fault in the overload control system. When the basket is UP, the machine is completely locked. A trained operator who is familiar with these instructions, can perform emergency manoeuvres and safely bring the basket down.



CAUTION! The activation of this indicator is an alert of a possible danger due to excess platform load or no active load control is at the time of the activation.
For adjustment or activation in emergency situations read the MAINTENANCE chapter.

5.2. On-Ground control panel and electric control unit.

The on-ground control panel (or electric control unit - fig. 6) contains the main electronic boards needed to operate the machine and carry out safety checks.

The on-ground control panel is located on the rotating turret (see paragraph "Location of main components") and should be used to:

- Turn the machine ON/OFF.
- Select the control panel (ground or platform).
- Operate the platform in emergency cases.
- Display some operation parameters (working hours; diesel engine operational faults; battery charger operation; etc.).



DO NOT

use the on-ground control panel as a workstation when personnel are on the platform.



Strictly use the on-ground control panel to start/stop the machine, to select the control panel or in emergency situations to allow the platform to be recovered.



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



Only allow access to the controllers to specialized personnel 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.

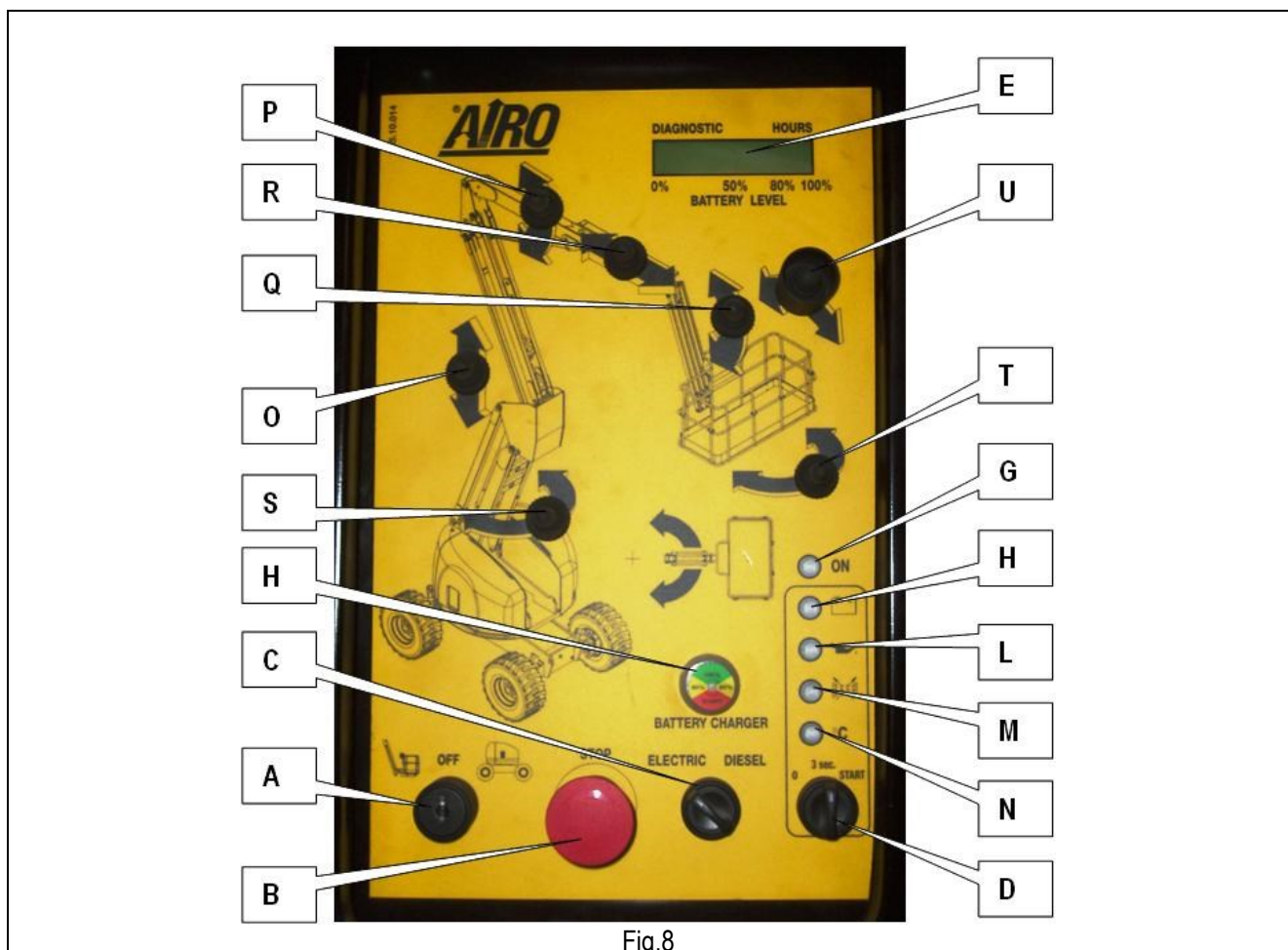


Fig.8

- A) ON-OFF key and control panel selector (ground/platform)
- B) Emergency STOP button
- C) Diesel /electric power switch.
- D) Engine start-button (models “D” and “ED”)
- E) User interface display.
- F) Battery charger pilot-light (models “E” and “ED”)
- G) Pilot light: machine ON and running.
- H) Alternator pilot light (models “D” and “ED”)
- L) Oil level indicator (models “D” and “ED”)
- M) Air-filter-clogging indicator (models “D” and “ED”)
- N) Engine head temperature pilot (models “D” and “ED”)
- O) PANTOGRAPH (first boom) UD/DOWN joystick
- P) BOOM UP/DOWN joystick
- Q) JIB UP/DOWN joystick
- R) TELESCOPIC BOOM OUT/IN joystick
- S) TURRET SLEWING joystick
- T) PLATFORM ROTATION joystick
- U) PLATFORM LEVEL adjustment joystick

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:
 - Enable the on-basket controls by setting the key switch to them basket symbol. Key position with possibility to pull it out;
 - Enable the on-ground controls (for emergency operations) by setting the key switch on the "turret" symbol. Press-and-hold function When the key is released the machine is off.
- Turn the control circuits OFF by switching the key to OFF.

5.2.2. Emergency stop button (B)

Remove the starting key and hand it over to a person in charge on ground, properly informed of the use of the emergency controls.

5.2.3. Diesel/electric power selector (C)

Holding the ON-OFF key in position “ground controls” it is possible to select the type of power for the ground controls:

- Select ELECTRIC and keep the ON-OFF key set on “ground controls” to start the 12V or the 48V (for ED models) electric pump.
- Select DIESEL and keep the ON-OFF key set on “ground controls” to start the Diesel engine.

5.2.4. Engine starter switch (D)

If you selected DIESEL power, hold the ON-OFF key set on “ground controls” to start the diesel engine by means of the starter switch.

- In “0” the Diesel engine is OFF.
- In “3 sec” the plugs are warmed up (only for engines with plugs).
- In “Start” the engine starts.

5.2.5. User interface display (E)

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

- The operation parameters of the machine during normal functioning or in the event of a fault;
- The working hours of the Diesel engine (when Diesel power is selected the working hours are displayed in the format HOURS:MINUTES followed by a D at the end);
- The working hours of the DC emergency pump (when 12V electrical power is selected the working hours are displayed in the format HOURS:MINUTES followed by an M at the end);
- The working hours of the single or three-phase pump (when 220V or 380V electric power is selected, the number of working hours are displayed on the platform in the format HOURS:MINUTES followed by an E at the end). This is an OPTIONAL feature;
- The battery charge level (only electrical models E).



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

5.2.6. Battery charger warning light (F)

Electric and combination power models (“E”, “ED” and “EB”) equipped with a built-in high frequency battery charger, are provided with this pilot light indicating the operation of the battery charger (for more detailed information read the paragraph “Battery charge”).

5.2.7. Enabled control panel warning light (G)

When this green pilot light is ON, it indicates that the machine is ON and the ground control panel is enabled (main key C should be set on “turret”).

5.2.8. Engine pilot lights (H-L-M-N)

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

5.2.9. Basket control levers (O P Q R S T U).

The various joysticks shown in the figure allow the basket to be operated. The various movements are performed in accordance with the pictograms on the machine. These controls can be operated only if the on-off key is set to ON (downwards) (ground control panel selected). Don't forget: the controls on the ground panel are to be only used for emergency operations. It should not be used for any other any purpose.



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

5.3. Boarding the platform

The “boarding position” is the only position from which loading or unloading of persons and materials is allowed. The “boarding position” is with the basket completely lowered.

To board the platform:

- Get on the platform holding on to the entry guard rail.
- Raise the bar and get on board.

Once you are on the platform, make sure the bar falls down closing the access. Fasten the safety harness to the special hooks provided for this purpose.



To board the platform strictly use the special facilities installed on the platform.

When moving up or down, always keep your eyes on the machine and hold onto the entry stringers.



DO NOT

lock the closing bar to keep the platform boarding gate open.



DO NOT

leave or board the work platform if this is not in the position required for boarding or leaving.

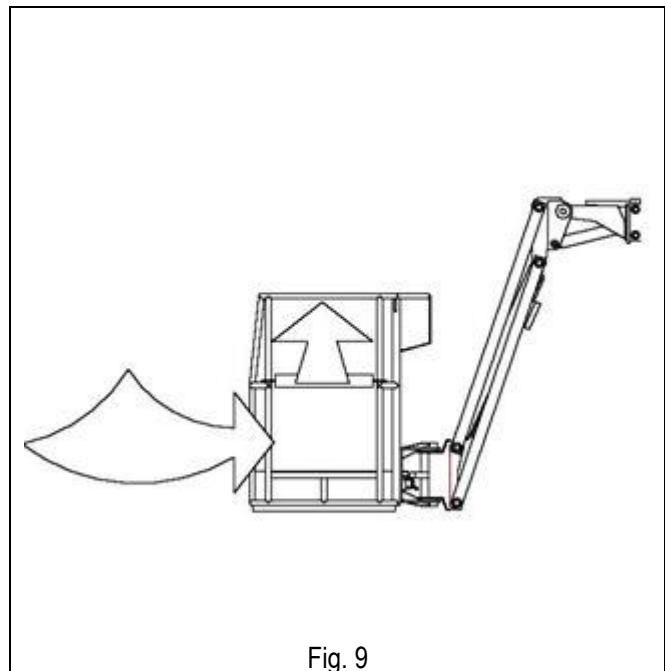


Fig. 9

With the ground control panel (see paragraph “Ground control panel”), you can operate the boom and drive the basket down to facilitate boarding.

5.4. Machine start

To start the machine the operator shall:

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

For ELECTRIC versions (models “E”), it is now possible to perform various operations in strict compliance with the above instructions. The machine won't start until the battery charger is disconnected from the power supply. While the battery is being charged, the machine is off and cannot be operated.

For combination power variants (Electric/Diesel models “ED” or “EB”), you need to select the required power mode by means of the selector. If the machine is set on electric power, it is now possible to perform various operations in strict compliance with the above instructions. If the machine is set on diesel power, read the next paragraphs to start the engine.

For Diesel machines (models "D"):

- In order to use Diesel power, select "Diesel" with the switch and follow the next paragraphs to start the engine;
- In order to use the 220V or 380V electric power, select "Electric" with the switch and (if available) 220V or "380V" (read the next paragraphs to start the three-phase electric motor);
- In order to use the 12V electric power (only for emergency controls), select "Electric" with the switch and (if available) "12V" and then read the next paragraphs to start the 12V motor;

Before using the diesel/gasoline engine, check the fuel level in the tank.

If your machine has no fuel level indicator on the control panel on the basket, you need to visually check the fuel level by undoing the fill plug. For all other versions, check the fuel level straight off the gauge located on the control panel on the basket.

- Visually check the fuel level before starting to work, WHEN THE ENGINE IS OFF and cold.
- Keep the fuel tank and the engine clean.

For gasoline engines ("EB" models) strictly use **green gasoline or gasoline with an octane rating of >87**.

5.4.1. Starting of the diesel engine

The starter key of the control panel on the platform is used:

- To stop the engine (models "D" and "ED"), if set on "0".
- To warm the plugs up (only engines with plugs - models "D" and "ED"), if set on "3 sec".
- To start the engine, if set on "Start".



Never hold the starting position longer than 3 seconds. In the event of a failed start, check the fuel level by means of the relevant indicator and read the user's manual of the Engine.

Do not try to start the engine if it is already running. This operation may cause the pinion of the starter to break (under normal conditions the control system blocks this operation). In the event of a malfunction, check the pilot lamps and read the user manual of the engine.

PLEASE NOTE: The Diesel engine can be started only if the dead-man pedal is neither pressed nor enabled. This means that the engine can be started only if the green pilot lamp ON of the control panel on the basket is flashing.

5.4.2. Starting the 230V single-phase electric pump (OPTIONAL)

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

To start the electrical pump:

- 1) Insert the 230 V plug of the power cable into the socket (A).
- 2) Set the switch (B) shown in figure on ON.
- 3) To start the electrical pump from the control panel on the platform, you must:
 - Select the control panel on-the-basket by means of the key-switch located on the electric control unit of the chassis.;
 - Unlock the push-button turning by a ¼ of turn clockwise.
 - Set the power selector on the platform on "Electric".
 - Set the power selector on the platform (if any) on "230V".
 - Operate the machine.

Please note: The manoeuvres powered by a 230V pump are considerably slower than those powered by the diesel engine.

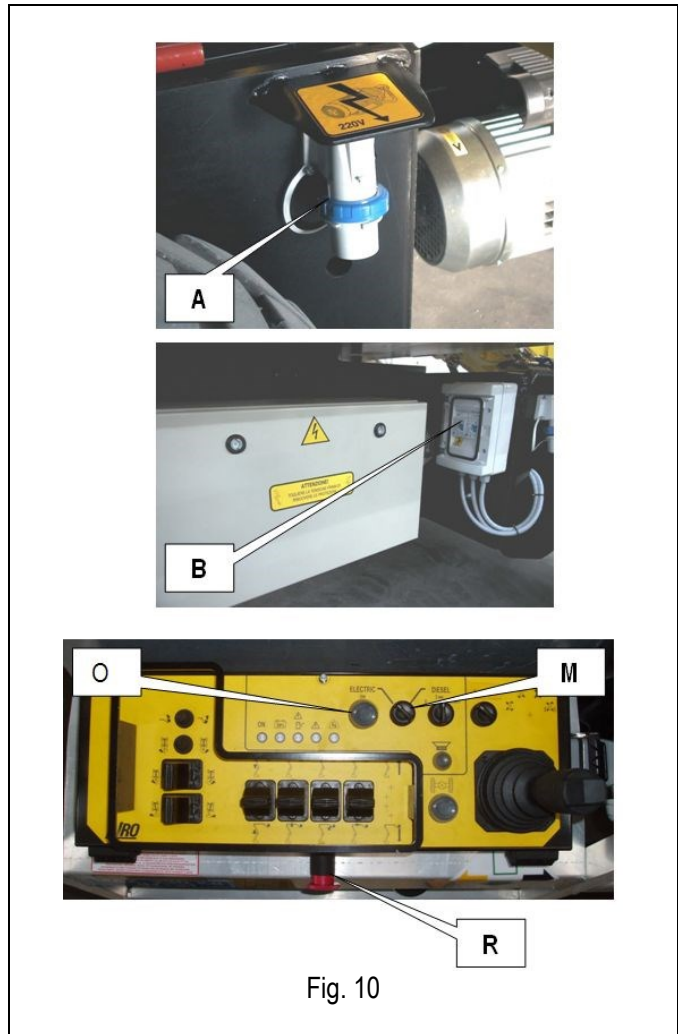


Fig. 10



CAUTION! Always check the position of the power cable during transfers and operating motions. Operating the platform with 230V three-phase pump, is only possible from the platform. Disconnect all power ports before you open any box.

5.4.3. Starting the 3-phase electric pump (OPTIONAL).

Diesel powered models can be equipped, on request, with a 380V three-phase electrical pump.

To start the three-phase electrical pump:

- Insert the 380 V plug of the power cable into socket (A) on the chassis.
- Set the switches (C) pictured here to ON.
- Set the red switch (F) to ON turning it downwards or upwards. If the connection has been successfully carried out it is possible to start the electrical pump as indicated in next paragraphs. On the contrary, in the event of a phase fault in the electric power the alarm is automatically enabled, and the electrical pump cannot be started. In this case, it is possible to optimise the power phases by turning the angular red switch (F) on the electric case by 90°.
- To start the electrical pump from the control panel on the platform, you must:
 - Select the control panel on the basket by means of the key-switch located on the electric control unit on ground;
 - Unlock the push-button turning by a ¼ of turn clockwise.
 - Set the power selector to "Electric".
 - Select 380V.
 - Press the push-button (O). When ON, the green pilot indicates that the three-phase electrical pump is turned on.
 - Wait 5 seconds before moving the machine.
- To stop the electric pump press button (O) again.

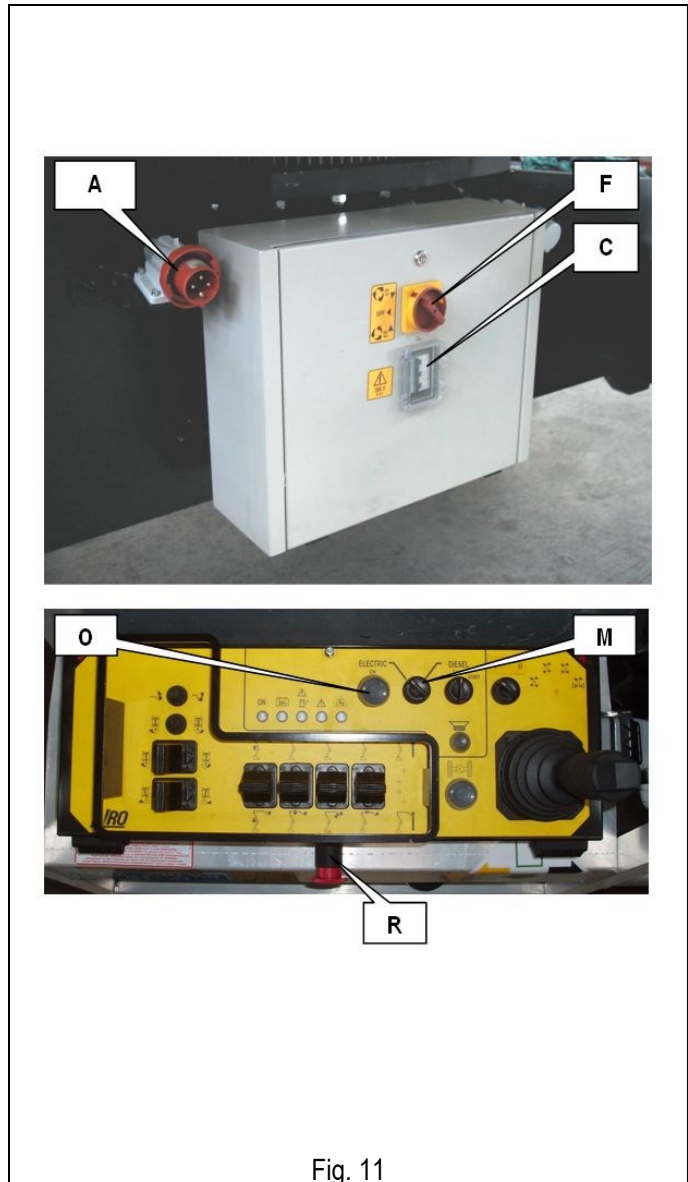


Fig. 11

Please note: m powered by 380V electric power can be operated only from the platform.

The manoeuvres powered by a 380V pump are considerably slower than those powered by the diesel engine.



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



CAUTION! Always check the position of the power cable during transfers and operating motions. Disconnect all power ports before you open any box.

5.4.4. Starting of the 12V emergency pump (OPTIONAL for D-models).

All Diesel models can be equipped with a 12V pump to perform arm/boom/jib operation (lift, descent, slewing) in case of any emergency situation.

The emergency electric pumps must be operated from the **control panel on the basket** as following:

- Select the control panel on the basket by means of the key-switch located on the electric control unit on ground;
- Unlock the push-button turning by a $\frac{1}{4}$ of turn clockwise.
- Set the power switch (**M**) to "Electric".
- Press and hold the green button (**O**) down throughout the required manoeuvre;
- Press and hold the deadman pedal down throughout the required manoeuvre;
- Operate the machine controls as described in the previous chapters.

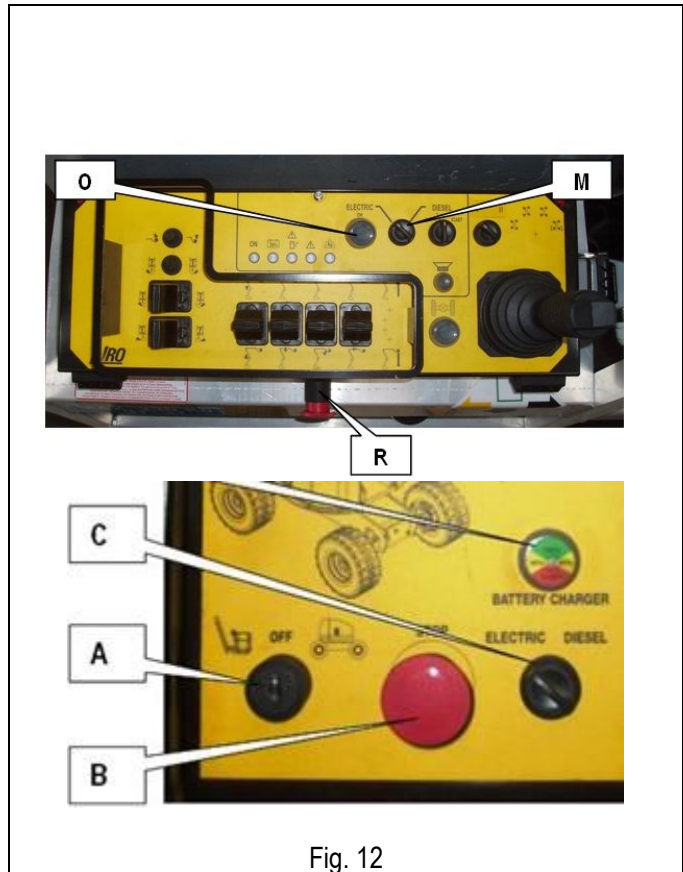


Fig. 12



CAUTION! Strictly start the 12V emergency pump in the sequence described above!

The emergency electric pumps can be started from the **control panel on-ground** as following:

- Select and hold the on-ground control panel by means of the key-switch (**A**) located on the electric control unit on ground;
- Set the power selector (**C**) to "Electric".
- Now you can start the 12V emergency electric pumps and operate the machine controls as described in the previous chapters.



CAUTION! The 12V emergency electric pump is only for supplying enough power for recovering the platform in case of a fault in the main power system. Do not use it during normal operations.

5.5. Stopping the machine

5.5.1. Normal stop

In normal operating conditions:

- Release the controls to discontinue the operation and stop the machine. The machine will come to a complete stop occurs within a default time set by the factory in order to ensure smooth braking.
- By releasing the deadman pedal located on the platform, the operation is immediately stopped. Because of the emergency character of this stop, the standstill of the machine can be quite sudden.

5.5.2. Emergency stop button

If needed, the operator may stop all machine functions at once using either the controls on the platform or those on-ground (control panel).

From the control panel on the basket,

- Press the emergency stop button on the control panel to turn machine off;
- By releasing the deadman pedal, the operation is immediately stopped. Braking may cause some sudden and jerky motion in case of safety immediate stops.

From the control panel on ground:

- By pressing the stop button on the ground control panel (if available), the machine (all models) and the engine (models “D”, “ED”; “EB”) stop.
- By pressing the power-discontinuance button (if available – “E” models), power is cut off (power circuit cut-out).

To retrieve normal operation:

From the control panel on the basket,

- Turn the emergency stop button by 1/4 of a turn clockwise.

From the control panel on ground:

- Turn the emergency stop button by 1/4 of a turn clockwise.
- Pull out the mushroom button of the power circuit (if available) until it locks in position to power the unit again.

5.5.3. Stopping the diesel engine

To stop the diesel engine:

From the control panel on the basket,

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

From the control panel on ground:

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



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.

5.5.4. Optional stopper of the 380V or 230V electrical pump

To stop the electrical pump (optional):

From the control panel on the basket,

- Press the switch-off button;
- Otherwise, press the emergency stop button (mushroom).

From the control panel on ground:

- Press the emergency stop button (mushroom).

5.6. Emergency manual controls



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

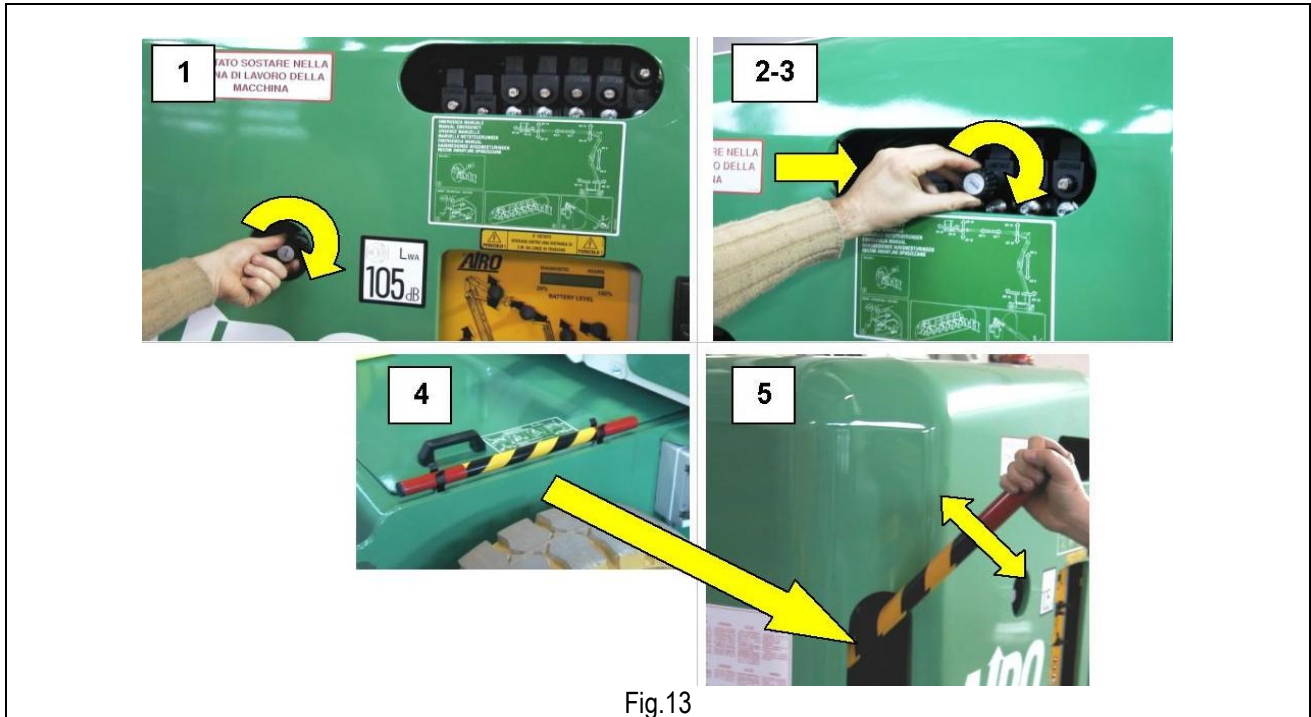


Fig.13

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

1. Screw tight the indicated tap (solenoid valve EV1);
2. Insert and screw the emergency actuator on the solenoid valve corresponding to the desired movement (see below correspondence between solenoid valves names and obtained movements);
3. Completely screw the knurled knob of the previously positioned actuator;
4. Remove the operating lever of the manual pump and insert it on the pump itself;
5. Activate the emergency pump;
6. Check the correct execution of this procedure.

PLEASE NOTE: In case of machines with simultaneous movements (OPTIONAL) the procedures for platform recovery are the same but the operations are to be carried out starting from point 2 above.

Check the operation of all solenoids and relevant functions:

- EV4 = First arm (pantograph) UP;
- EV5 = First arm (pantograph) DOWN;
- EV6 = Telescopic boom out
- EV7= Telescopic boom retraction
- EV12= Turret rotation to the right
- EV13= Turret rotation to the left
- EV14= Second Arm UP;
- EV15= Second Arm DOWN;
- EV18= Jib UP;
- EV19= Jib DOWN;
- EV21=Platform rotation to the right;
- EV22=Platform rotation to the left.



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



Once the emergency manoeuvre has been carried out, the knurled knobs and the tap must be set to their initial position again in order to resume the operations (in normal position the knobs are completely undone).

5.7. Optional socket for electric attachments (OPTIONAL)

The basket is equipped with a socket (230V AC) enabling the operator to power possible electric tools as it may be needed to complete any special task.

To activate this power line (see picture aside) fit a cable into the socket (220-230V Ac. 50 Hz) that is provided with all due safeties. If an earth-leakage circuit breaker switch is available, set it on ON in order to enable power from the system. Always check the efficacy of the earth-leakage circuit breaker by means of the special TEST button.

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

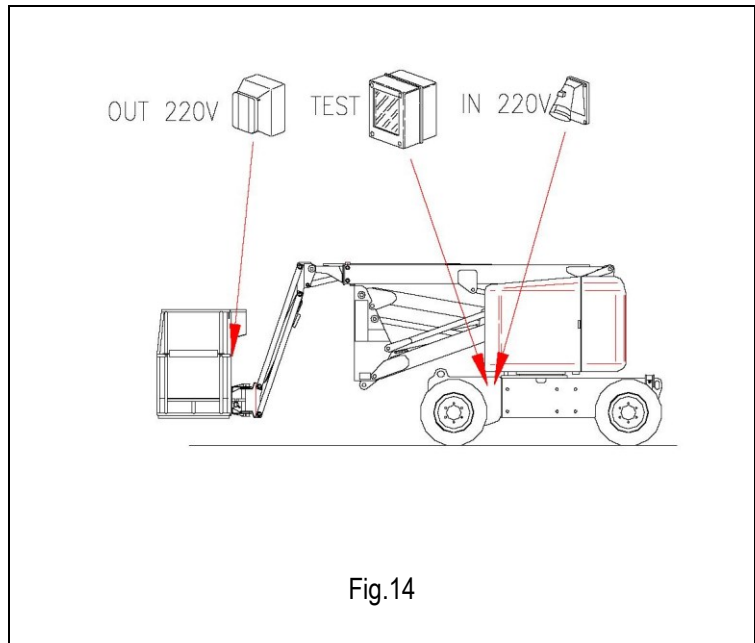


Fig.14



Connect to a power network having the following specs:

- Supply voltage 230V \pm 10%
- Frequency 50÷60 Hz
- Earthing
- Safety and protection devices according to current standards in force.
- Do not use extension cables exceeding 5 m length.
- Use a cable of a suitable section (min 3x2.5 mm²).
- Do not use rolled-up cables.

5.8. Fuel level and re-fuelling (models "ED", "D")

Before using the diesel engine, check the fuel level in the tank.

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

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

5.9. End of a work day

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

- Always set the machine to rest position (basket completely lowered).
- Press the emergency Stop button on the on-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" (models "E" and "ED" only).
- Fill the tank (if it applies).

6. HANDLING AND TRANSPORTATION

6.1. Handling

Before start-up, make sure that the turret mechanical safety has been unlocked (see picture aside).

To handle the machine in normal operating conditions follow the instructions given in chapter "OPERATING INSTRUCTIONS" under paragraph "Drive and steering".

When the platform is completely DOWN (or at any other safe position based on your application and trials), start handling (i.e. driving) at the speed you wish to travel.

With platform at a given height, the drive speed is automatically limited, and cannot be changed.

The section TECHNICAL FEATURES indicate the limits concerning driving/handling for each model.

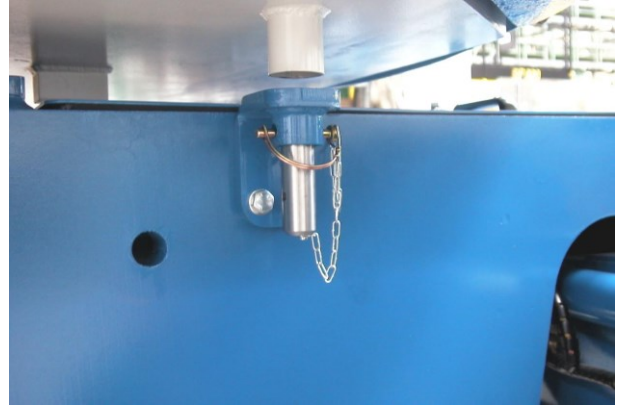


Fig.15



WARNING!

Driving with the lifted platform may be subject to different restrictions according to the country where the machine is used. Find out about the legislative limits concerning this operation from Health and Safety Authorities at your place.

It is absolutely forbidden to travel with the machine when the basket is lifted unless the ground is horizontal, flat and solid.

Before carrying out any travel, make sure that no people are in the proximity of the machine and in any case proceed with the utmost caution.

Before moving the machine make sure that all connections are disconnected from the power supply source.

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

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 labels and signs on the chassis) so as to travel in the correct direction.

Do not load anything on the basket while the basket is UP and the machine travels (operators on board are not allowed to pull wires or ropes, etc...)

6.2. Transportation

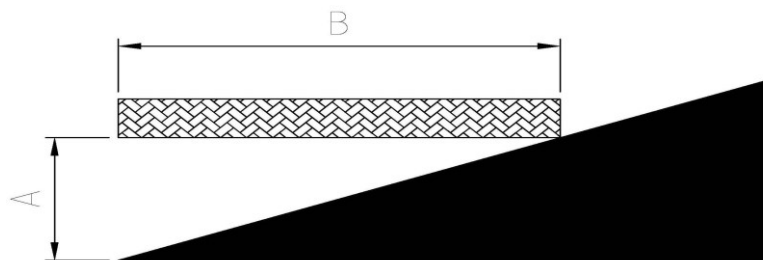
In order to move the machine to a different working site, follow the instructions given below. Because of the considerable size and dimensions of this machine, please make sure to consult your local road traffic authorities before transporting on any carrier.



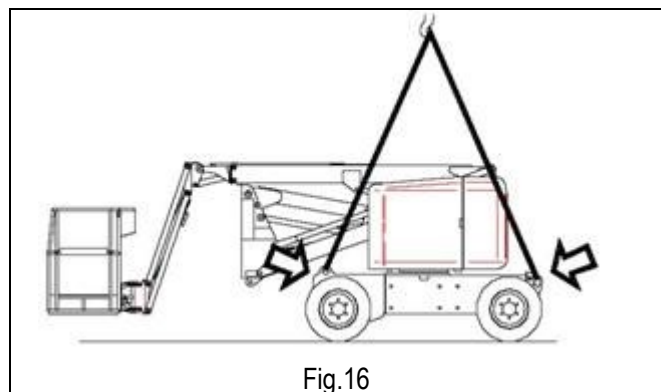
Before transporting the machine, turn it off and remove the keys from the control panels. No people are allowed in proximity to or on the machine to avoid any risks resulting from sudden movements. For safety reasons never lift or tow the machine by its booms or platform. Loading operations are to be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

To transport the machine, load it on a vehicle of a suitable size as following:

- **By means of loading ramps and handling controls** located on the basket, 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 (if available - see picture aside) to prevent knocking the basket against the ground. Avoid loading other booms during this operation to prevent the emergency micros from being activated, which in case of inclined machine would disable all the manoeuvres except the descent. If the slope exceeds the maximum admissible one, the machine must be winched and in this case the operator in the basket needs to activate the drive controls and release the parking brakes. The slope can be determined using an electronic level or empirically as described below: position a wood board of known length on the gradient to be measured. Position a spirit level on the wood board and lift the downstream extremity of the latter until it is level. Measure the distance (A) between the axle and the ground, divide it by the axle length (B) and multiply by 100. The following image recaps the above procedure.



- **By means of hooks and steel ropes** (with safety factor = 5, see machine weight in Technical Features): perform hooking to the special holes as shown in the picture on the side.



- **By means of fork lift** 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. 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.



After placing the machine onto the carrying vehicle, fasten it by means of the same holes used for lifting. To avoid damages to overload controller that may cause the machine to stop, **DO NOT tie up the machine to the vehicle platform or the jib. PLEASE MIND THIS INSTRUCTION FOR ALL MODELS**



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

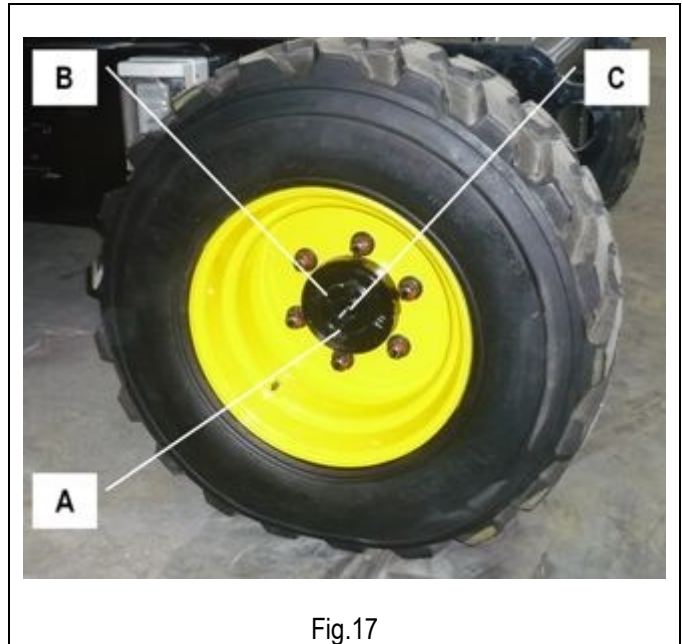


Before transporting the machine, check for stability on the vehicle. The platform must be fully lowered and the platform extension must be in retracted position to ensure adequate stability during the entire operation.

6.3. Emergency tow-away

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

- Hook the machine to the provided holes.
- Unscrew the two bolts **(A)** at the centre of the reduction gears by means of a 10 mm wrench for hexagonal head (the machines with 2 drive wheels have 2 drive reduction gears; the 4 drive wheel machines have 4 drive reduction gears) and slide the cover **(B)** of the reduction gears away; then, remove the pin **(C)** from the reduction gears.
- Reposition the pin in their seats on the reduction gears.
- Place the cover again and tighten the bolts.
- Tow at a very slow speed (remember that when the machine is being towed, brakes are completely disengaged).



CAUTION! THIS OPERATION MAY CAUSE OIL LEAKAGE FROM THE REDUCTION GEARS.

To restart normal operation, set the machine back to the initial conditions and, if necessary, top up the oil level inside the drive reduction gears.



Tow at a very slow speed (remember that when the machine is being towed, brakes are completely disengaged).

Only perform towing on flat ground.

Do not park the machine without brakes on. Should the brakes be completely out of order put wedges under the wheels to prevent the machine from moving accidentally.

7. MAINTENANCE



- Always carry out maintenance operations with machine at standstill, after having removed the key from the control panel, and with the platform in rest position.
- The maintenance operations described here below refer to a machine in ordinary working conditions. In case of harsh operating conditions (extreme temperatures, corrosive environments, etc.) or following a long non-use period, contact AIRO customer service to adjust the maintenance 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 actual work safety regulations (safety at work places, personal protection equipment, etc...).
- Carry out only the maintenance and adjustment operations described in this user manual. In emergency situations (e.g. breakdown, wheels replacement) contact our Technical Service
- During maintenance interventions, the machine must be 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 engine 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 engine supplied on machine purchase.
- In case of replacement, use original spare parts only. For parts that are not original please ask the manufacturer for prior approval.
- Disconnect the 230V AC and/or 380V AC sockets, if any.
- The lubricants, hydraulic oils, electrolytes and all detergent products should be handled with care and disposed of in safety according to the current regulations. Prolonged contact with the skin may cause forms of irritation and skin diseases; wash with water and soap and rinse well. Also contact with the eyes, especially with the electrolytes, is dangerous; wash with water and see a doctor.



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

7.1. Cleaning

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

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



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

After washing the machine, always:

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

7.2. General maintenance

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

Operation	Frequency
Screw tightening (see paragraph "Various adjustments")	after the first 10 operation hours
Checking the oil level in the hydraulic tank	after the first 10 operation hours
Check of the battery state (charge and liquid level)	Every day
Check of deformation of tubes and cables	Every week
Checking stickers and code plates	Every month
Greasing joints and sliding pads	Every month
Checking the oil level in the hydraulic tank	Every month
Checking the fixation of the engine on the elastic supports	Every month
Checking the efficiency of the emergency devices	Every year
Checking all electric junctions	Every year
Checking all hydraulic couplers	Every year
Periodic functional check and structure visual check	Every year
Screw tightening (see paragraph "Various adjustments")	Every year
Check of drive reduction gear oil change	Every year
Efficiency check, and adjustment of the pressure relief valve (machine travel)	Every year
Efficiency check-up of the pressure relief valves (machine operations)	Every year
Checking the efficiency of the brake system	Every year
Air purging from the floating axle cylinders	Every year
Functional check of inclinometer	Every year
Functional check-up of the platform overload controller	Every year
Functional check-up of the M1 micro switches	Every year
Operation check of the dead-man pedal	Every year
Adjusting the sliding pads of the telescopic boom	Every year
Replacement of the hydraulic filters	Every two years
Drive reduction gear oil change	Every two years
Total oil change in hydraulic tank	Every two years



DIESEL (D) AND ELECTRIC-DIESEL MODELS (E/D): As it is possible to install different types of diesel engines, refer to the manual of the engine manufacturer for all maintenance operations.



**BIO-OIL KIT
PANOLIN BIOMOT 10W40**



AFTER 10 YEARS IN USE SEND THE MACHINE BACK TO THE MANUFACTURER FOR COMPLETE OVERHAULING.

7.2.1. Adjustments

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 engine, fixation screws
- 3) Steering cylinder fixing screws
- 4) Fixing screws of steering hub pins
- 5) Basket fixing screws
- 6) Hydraulic fittings
- 7) Screws and safety dowels of boom pins
- 8) Fixation screws on gear reducer (machine travel)
- 9) Engine elastic couplings

For torque wrench settings, please refer to the table below.

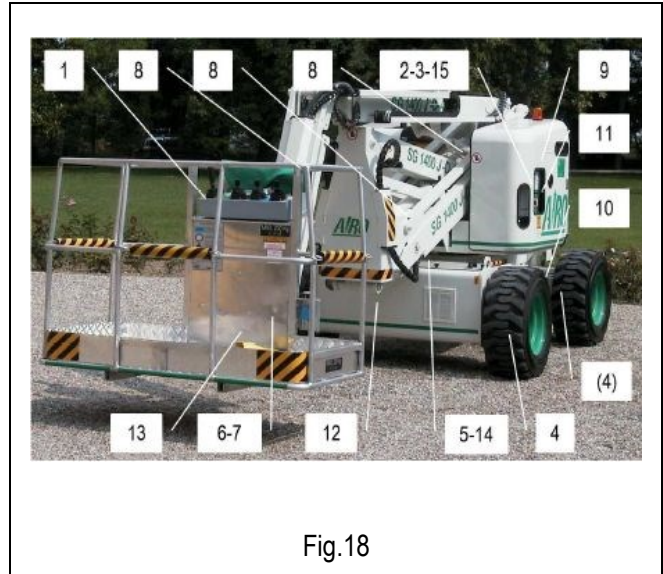


Fig.18

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

7.2.2. Greasing

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

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

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

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

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

ESSO BEACON-EP2 or similar.

**(OPTIONAL BIO-OIL KIT)
PANOLIN BIOGREASE 2**



Fig.19

7.2.3. Checking and changing the hydraulic oil

Check the oil level after the first 10 working hours and, afterwards, at least once a month by means of the dipstick plug **(A)**; always make sure that the level is 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.

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 the tank beneath the plug **(B)** and unscrew it.

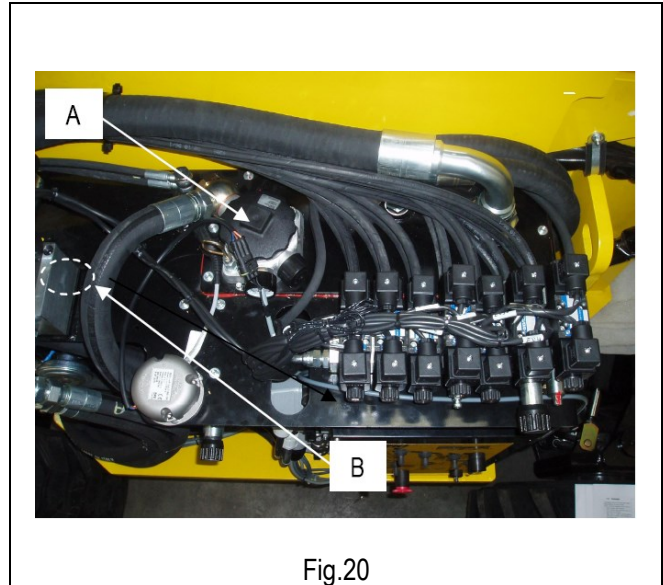


Fig.20

Only use the oil type and quantity indicated in the table below:

HYDRAULIC SYSTEM OIL								
OIL PRODUCER	OIL TYPE		FILLING QUANTITY					
	-20°C	+79°C	-30°C	+48°C	A16 JRTD	A16 JED	A16 JE	
			A18 JRTD				A18 JED	A18 JE
							QUANTITY	
SYNTHETIC OILS								
ESSO	Invarol EP46	Invarol EP22						
AGIP	Arnica 46	Arnica 22						
ELF	Hydrelf DS46	Hydrelf DS22						
SHELL	Tellus SX46	Tellus SX22						
BP	Energol SHF46	Energol SHF22					105 l	
TEXACO	Rando NDZ46	Rando NDZ22						
Q8	LI HVI 46	LI HVI 22						
PETRONAS	HIDROBAK 46 HV	HIDROBAK 22 HV						
BIO OILS - OPTIONAL								
PANOLIN	HLP SINTH E46	HLP SINTH E22						



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

The lubricants, hydraulic oils, electrolytes and all detergent products should be handled with care and disposed of in safety according to the current regulations. Prolonged contact with the skin may cause forms of irritation and skin diseases; wash with water and soap and rinse well. Also contact with the eyes, especially with the electrolytes, is dangerous; wash with water and see a doctor.

7.2.3.1 Hydraulic bio-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 parts and components as the standard machines. However, the type of oil should be considered in the design phase already. If you wish to change from mineral-oil based over to hydraulic “bio” oil, the following procedure must be followed.

7.2.3.2 Draining

Drain the tank and the system lines (oil tank, cylinders, large-volume pipes) while the hydraulic oil is still hot.

7.2.3.3 Filters

Replace filter cartridges. Use standard filters as indicated by the manufacturer.

7.2.3.4 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 out of the system as explained under 7.2.3.1.1.

Warning: During the entire washing procedure, avoid air entering the system.

7.2.3.5 Filling

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

7.2.3.6 Start-up test

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

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

This schedule allows consistent monitoring of the oil grade so that it can be reused as much as possible before its properties are lost. 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 details, contact your nearest distributor.

Copies of the test reports must be kept in the Test Records. This is mandatory.

7.2.3.7 Mixing

Mixtures with other biodegradable oils are not allowed.

The remaining amount of mineral oil must not exceed 5% of total filling quantity if the mineral oil is suitable for the same use.

7.2.3.8 Micro-filtration

When making the conversion on second-hand machines, always consider the high dirt dissolution power of biodegradable oil.

After conversion from one oil to another, a certain amount of deposits may be dissolved in the hydraulic system. In extreme cases, washing the seal housings can cause greater leaks.

To prevent faults as well as avoid any negative effect on the oil quality, clean the hydraulic system using a micro-filtration system after each system conversion to a new oil type.

7.2.3.9 Disposal

The biodegradable oil, inasmuch as saturated ester, is suitable for both thermal and material re-use.

It therefore provides the same disposal / re-use options as mineral based old oil.

Such oil can be incinerated whenever local laws allow.

Recycling the oil is preferable to disposal on dumps or incineration.

7.2.3.10 Topping up

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

Note: Max water contamination is 0.1%.



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

7.2.4. Hydraulic filter replacement

7.2.4.1. Suction filters

All models are equipped with a suction filter installed inside the tank at the base of the suction tube. The filter must be cleaned (or replaced) at least every two years.

To avoid improper use, a special microswitch checks the position of the lifting boom.

- Stop the machine by pressing the push-button of the ground central unit;
- Unscrew the plug on the tank with the metal suction tubes;
- Remove the plug;
- Undo the filter from the suction tube and replace it;
- To retrieve the initial condition, repeat the above instruction in the reverse order.

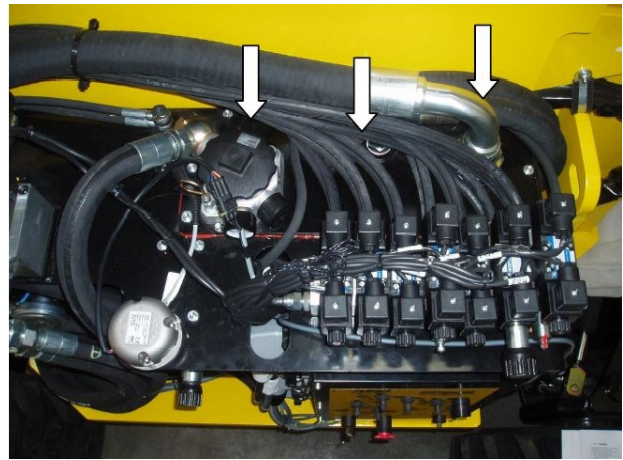


Fig.21

During these operations some oil may leak out. If so, clean it using textile cloths to be disposed of inside a special container.

7.2.4.2. Return filter

The return filter flanged on the tank is equipped with a visual clogging indicator. During normal operation, this indicator is in the green zone. When the indicator is in the red zone, the filtering cartridge is to be replaced.

The filtering cartridge be replaced at least every two years. To replace the filter cartridge:

- Stop the machine by pressing the mushroom button on the ground power unit;
- Undo and remove the filter cover;
- Remove the cartridge;
- Fit the new cartridge paying attention to the correct position of the retaining spring and place the cover back on again.

During these operations some oil may leak out. If so, clean it using textile cloths to be disposed of inside a special container.

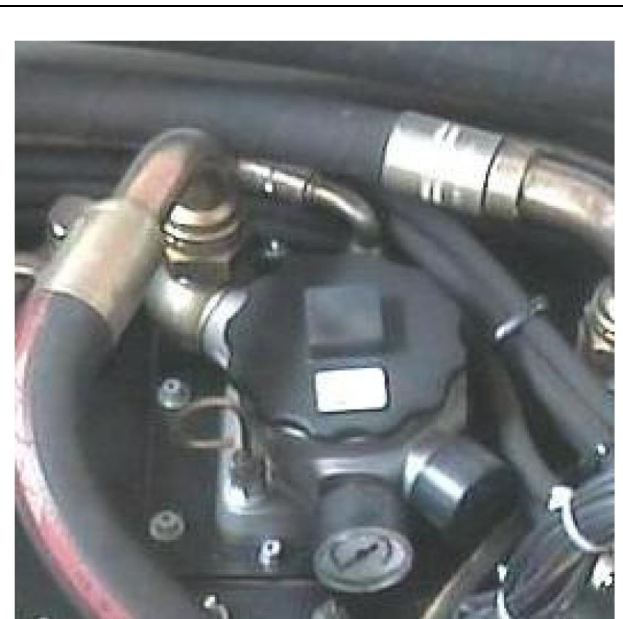


Fig.22



DO NOT start the machine if the filter cover is missing or not properly tightened.

Replace the filters using only original accessories available at our Technical Service.

Do not re-use used oil and do not leave it in the environment but dispose of it in accordance with local standards in force. After the filters have been replaced, check the hydraulic oil level in the tank.

7.2.5. Check the oil level in the main reduction gear (for travel) and change it, if needed.

The oil level should be checked at least once a year. Place the machine to have the two plugs (A and B) in the position shown in the picture aside (in some cases you must remove the driving wheels to reach out for these plugs). Check the level by means of plug (A). Always check the oil level when the oil is hot. The level is correct when the reduction gear is full of oil up to the A-plug rim. Should more than 10% oil be missing, before topping-up check for a possible 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.

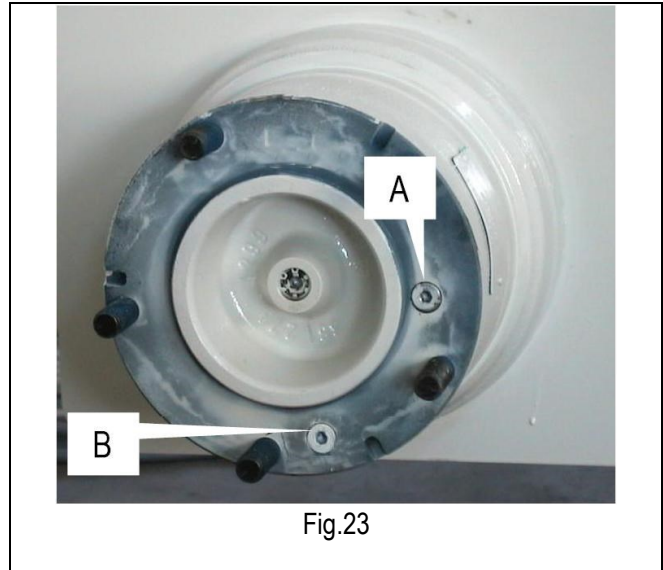


Fig.23

The oil must be changed the first time after 50-100 working hours, and afterwards after every two years. Depending on the actual operating conditions, these intervals may be varied for each single case. While changing the oil, wash the internal parts of the casing with the 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, undo the plug B, and place a container of a 2 l. capacity beneath 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).

SYNTHETIC OILS		0.5 l per motor
ESSO	Compressor Oil LG 150	
AGIP	Blasia S 220	
4° Year	Alpha SN 6	
IP	Telesia Oil 150	
BIO OILS - OPTIONAL		
PANOLIN	PANOLIN	

7.2.5.1 Periodical check-ups of synthetic biooil in the main (travel) reduction gears

Quarterly or every 500 hours check the oil level. If needed, top it up. If you see more than 10% of oil lacks from the gear, check for 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, run a wash cycle inside the casing.

Change the oil when the reduction gear is hot.

Mixtures of different oils (either biodegradable or mineral) even of the same brand are not allowed.



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

7.2.6. Air purging from the locking cylinder of the floating axles.

Stop the machine and wait for it coming to a complete standstill. While the basket is UP, let the cylinders lock the axle lock in their actual position, so that machine stability is assured.

Once a year, make sure that there is no air trapped inside the cylinders of the floating axle.

To check this, proceed as follows:

- Remove the casing (A) from the cylinders of the floating axle.
- Undo the cap (B) of one of the two cylinders of the floating axle.
- Let the machine perform some travelling until the cylinder of the floating axle cylinders reaches against end stop several times, and until you see oil flowing out of the plug of the check valve.
- As soon as all air has been purged out, tighten the plug (B) back in place and check the oil level in the tank.

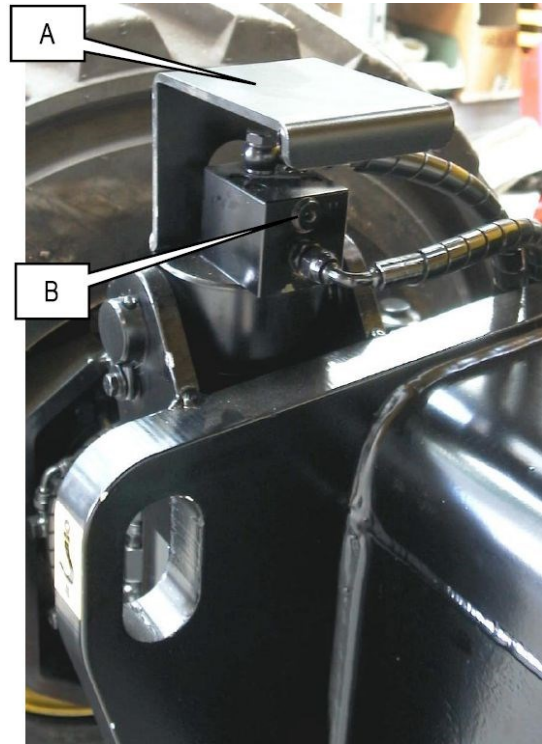


Fig.24

ATTENTION!

THIS OPERATION MUST BE CARRIED OUT SIMULTANEOUSLY BY TWO OPERATORS: ONE IS TO DRIVE THE MACHINE, THE OTHER IS TO CHECK THE OPERATION AND COLLECT THE LEAKING OIL.



THIS OPERATION MUST BE CARRIED OUT IN ROOMS WHERE IT IS POSSIBLE TO SAFELY COLLECT THE LEAKING OIL FROM THE CYLINDERS.

THIS OPERATION IS VERY IMPORTANT AND MUST BE CARRIED OUT BY SPECIALIZED TECHNICIANS ONLY.

7.2.7. Adjustment of the clearance of the sliding pads under the telescopic boom

Check for pads wear at least once a year.

The correct clearance between the blocks of the boom is 0,5-1 mm; if more tighten the sliding pads as follows:

- Remove the dowel **A**.
- Screw the sliding pad **B** (you can use a Seeger wrench) until you reach the required clearance.
- Fit the dowel **A** back in.

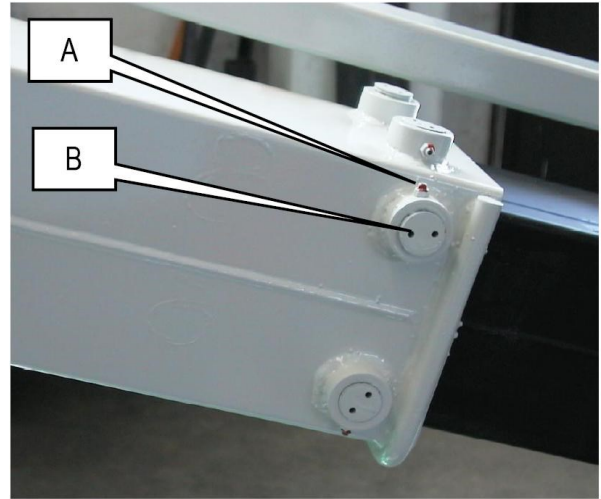


Fig.25



ATTENTION!
THIS OPERATION IS A CRUCIAL MAINTENANCE TASK AND SHOULD BE STRICTLY CARRIED OUT BY SPECIALIZED TECHNICIANS.

7.2.8. Efficiency check, and adjustment of the pressure relief valve (in the main travel system).

The pressure relief valve controls the maximum pressure of the main (travel) hydraulic circuit. Normally, this valve does not require any adjustment, since it is calibrated at the factory before the machine is delivered.

Calibration is strictly required:

- After replacement of the hydraulics
- After replacement of the pressure relief valve

Perform one functional check a year.

To check the operation of the main pressure relief valve (see figure aside):

Disconnect power from the electrical pumps **EV2** and **EV3 (H and I)**.

- Introduce a pressure gauge with a full scale of at least 250 bar in the special quick coupling (1/4" BSP) **D**.
- Using the control panel on the basket let the machine travel forwards and backwards. Initially perform just a soft travel to make sure that the valves have been disconnected properly (the machine should not move when you activate the controls).
- Check the detected pressure value. The correct value should be as stated in the "**Technical Features**".

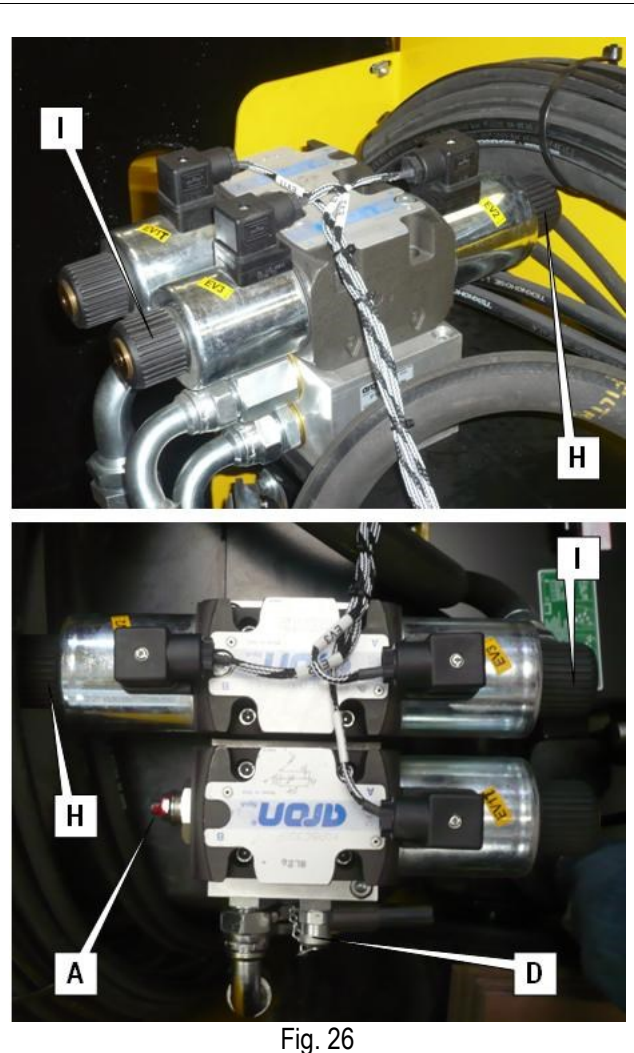


Fig. 26

To calibrate the pressure relief valve:

- Disconnect power from the electrical pumps **EV2** and **EV3 (H and I)**.
- Introduce a pressure gauge with a full scale of at least 250 bar in the special quick coupling (1/4" BSP) **D**.
- Locate the main pressure relief valve **A**.
- Unscrew the dowel of the lock-nut;
- Use the control panel on the basket and let the machine travel forwards and backwards; Adjust the pressure relief valve by means of the adjusting dowel so as to reach the pressure value indicated in chapter "**Technical Features**". Initially perform just a soft travel to make sure that the valves have been disconnected properly (the machine should not move).
- Once calibration has been carried out, lock the adjusting dowel by means of the lock-nut.



ATTENTION!
THIS OPERATION IS A CRUCIAL MAINTENANCE TASK AND SHOULD BE STRICTLY CARRIED OUT BY SPECIALIZED TECHNICIANS.

7.2.9. Efficiency check of the pressure relief valve in the operating line.

The pressure relief valve controls the maximum operating pressure (controlling lifting, descents and slewing). Normally, this valve does not require any adjustment, since it is calibrated at the factory before the machine is delivered.

Calibration is strictly required:

- After replacement of the hydraulics
- After replacement of the pressure relief valve.

Perform a functional control of this valve at least once a year.

To check the operation of the pressure relief valve:

- Introduce a pressure gauge with a full scale of at least 250 bar in the special quick coupling (1/4" BSP) **D**.
- Using the ground control panel lift the pantograph (lower boom) up to the end stop.
- Check the detected pressure value. The correct value should be as stated in the "**Technical Features**".

To calibrate the pressure relief valve:

- Introduce a pressure gauge with full scale of at least 250 bar in the special quick coupling (1/4" BSP) **D**.
- Locate the pressure relief valve of lifting circuit **B**.
- Unscrew the dowel of the lock-nut;
- Perform lifting from the control panel on ground. Keep on lifting to stroke-end and force a bit.
- Adjust the pressure relief valve by means of the adjustment dowel to reach the pressure value indicated in "**Technical Features**";
- Once calibration has been carried out, lock the adjusting dowel by means of the lock-nut.

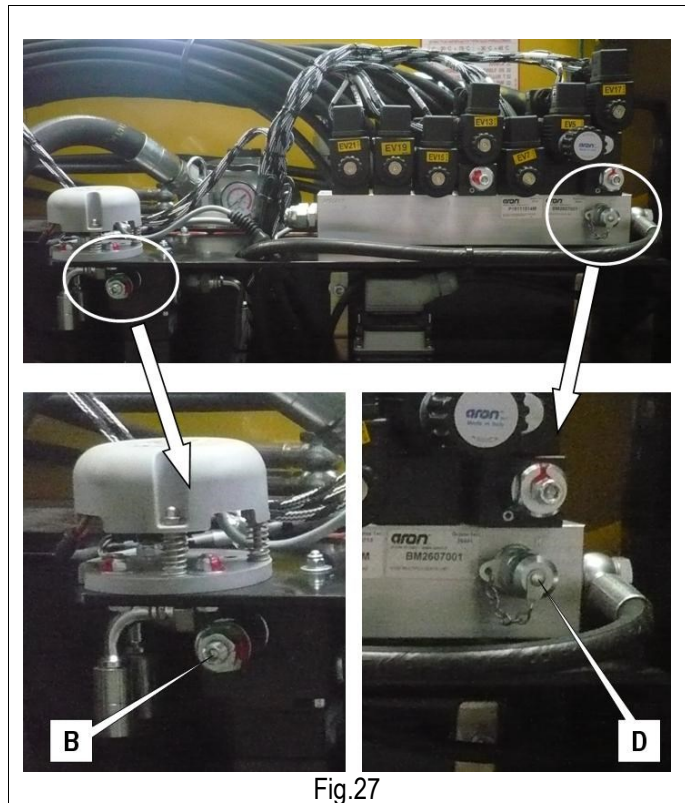


Fig.27



ATTENTION!

THIS OPERATION IS A CRUCIAL MAINTENANCE TASK AND SHOULD BE STRICTLY CARRIED OUT BY SPECIALIZED TECHNICIANS.

7.2.10. Checking the efficiency and calibration of the brake valves.

These valves check the minimum operating pressure during drive (in both running directions) and affect the dynamic braking and the drive speed. Normally, this valve does not require any adjustment, since it is calibrated at the factory before the machine is delivered.

The braking systems stop the machine when the drive controls are released. Once the machine has stopped, the parking brakes are automatically engaged to keep the machine in position.

Perform a functional control at least once a year.

To check the operation of the braking system:

- With platform completely lowered place the machine on a flat ground, free of obstacles, operate the drive control and when the max. speed is reached, release the control immediately.
- The correct operation of the braking system allows the machine to stop in a space lower than 70 cm;
- However, the braking system can stop and hold the machine on the slopes indicated in chapter “**Technical Features**” (the braking space on descents is obviously longer; descend at minimum drive speed).

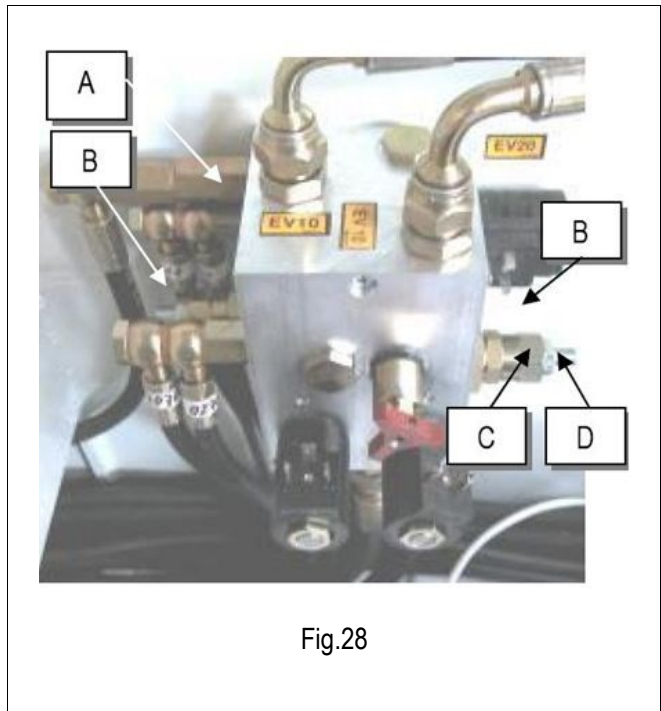


Fig.28

The calibration of both braking valves is required:

- If the hydraulic unit **A** is replaced;
- If one or both braking valves (in some cases only one valve is needed) are replaced.

To adjust the brake valve:

- Locate the hydraulic unit(s) **A** called "drive plate".
- Locate the braking valves **B** (one for each running direction).
- Introduce a pressure gauge with full scale of at least 250 bar in the special quick coupling (1/4" BSP)
- Select the minimum drive speed from the control box on the platform;
- Unscrew the lock-nuts **C** of the adjusting dowels.
- Using the control panel on the basket, let the machine travel (in the direction controlled by the valve) on a flat ground down a straight path. Perform the calibration of the braking valve (for the actual travel direction) using the adjustment screw and until the pressure value sets at the required position (call the nearest Customer Service to request this information)
- When the required pressure value has been obtained make sure that the calibration of the valve controlling braking in the opposite direction (if any - in some cases only one valve may be required) has remained unaltered;
- After completing all calibration works (the pressure values in the two directions should not vary from each other by ± 5 bar), lock the adjusting dowel by means of the lock nut.



ATTENTION!
THIS OPERATION IS A CRUCIAL MAINTENANCE TASK AND SHOULD BE STRICTLY CARRIED OUT BY SPECIALIZED TECHNICIANS.

7.2.11. Checking the efficiency of the inclinometer



CAUTION!

Usually the inclinometer does not need to be adjusted unless the electronic control unit has been replaced. The equipment needed for the replacement and adjustment of this component requires skilled personnel.

THIS OPERATION IS A CRUCIAL MAINTENANCE TASK AND SHOULD BE STRICTLY CARRIED OUT BY SPECIALIZED TECHNICIANS.

The inclinometer does not require any adjustment since it is calibrated in the factory before the machine is delivered. The inclinometer controls the chassis inclination and if the latter exceeds the maximum admissible slope:

- Stops platform ascent.
- Disables travel with the platform raised above a given height (depending on the model).
- Sets off an acoustic alarm and a pilot light (on the platform) to warn the operator that the machine is not standing safe (see "General Use and Operation").

The inclinometer monitors the inclination of the chassis against two axes (X; Y). On machine models that have the same lateral and longitudinal inclination limits, the control is carried out against one axis only (X-axis).

Perform a functional control of the inclinometer at least once a year.

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

- Use the control panel on the platform to place a n (A+10 mm) thick shim under the front and rear wheels (see table below).
- Wait three seconds (lag time set at factory) till the red pilot light and the acoustic alarm on the platform go off. With the platform DOWN (booms down, telescopic boom in and jib between +10° and -70°) all manoeuvres are still possible. By lifting one of the booms (excepting the Jib) and/or extending the telescopic boom, the control system of the machine disables all lifting and drive controls.
- If no alarm is triggered ASK FOR TECHNICAL SERVICE.

To check the inclinometer against the **lateral axis** (normally **Y-axis**):

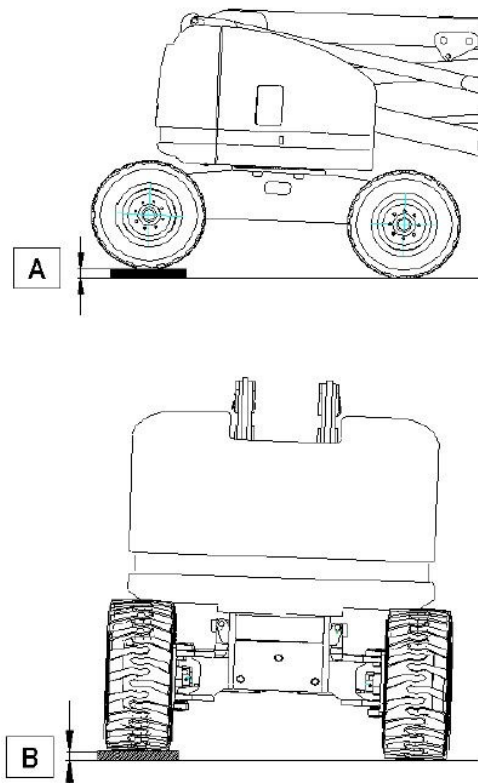


Fig.29

- Use the control panel on the platform to place a (B+10 mm) thick shim under the two out-wheels on right or on the left wheels (see table below).
- Wait three seconds (lag time set at factory) till the red pilot light and the acoustic alarm on the platform go off. With the platform DOWN (booms down, telescopic boom in and jib between +10° and -70°) all manoeuvres are still possible. By lifting one of the booms (excepting the Jib) and/or extending the telescopic boom, the control system of the machine disables all lifting and drive controls.
- If no alarm is triggered ASK FOR TECHNICAL SERVICE.

MODELS			
SHIMS	A16 JRTD	A16 JE	A16 JED
	A18 JRTD	A18 JE	A18 JED
A [mm]	135	100	
B [mm]	135	95	



CAUTION! The thickness of A and B shims refers to the max. inclination as indicated in table "TECHNICAL FEATURES". To be used during the calibration of the inclinometer.

7.2.12. Operation check and adjustment of the load controller on the platform.

AIRO self-propelled aerial platforms with articulated boom are equipped with a sophisticated overload controller.

Normally the overload controllers do not require any adjustments, since they are 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 rated load (drive and steering disabled with platform lifted).
- With platform in transport position and overloaded by 20% compared to the rated load, it disables lifting and telescopic boom extension.
- Warns the user of the overload condition by means of the audible alarm and the platform warning light.
- By removing the exceeding load, the machine can be operated again.

Perform a functional control of the inclinometer at least once a year.

The overload controller consists of:

- A deformation transducer or load cell (A);
- A board electronics (B) located on the control panel of the platform inside a watertight case (C).

Functional check of the overload controller:

- When the platform is completely lowered and with extension retracted, load a charge evenly distributed equal to the max. rated load allowed by the platform (paragraph "Technical features"). In this condition, all manoeuvres shall be possible both from the control panel on the basket and on ground.
- When platform is completely DOWN, add to the rated load an overload of 25% of the rated load. In this condition, the red pilot light and the acoustic alarm must turn on.

- If the platform is at a height from the ground higher than indicated under "Technical features", the alarm shall trigger the immediate stop of the machine (the jib enables its microswitch after exceeding a height of 10° against the plane). In order to retrieve perfect operating conditions, the excess load must be first removed.

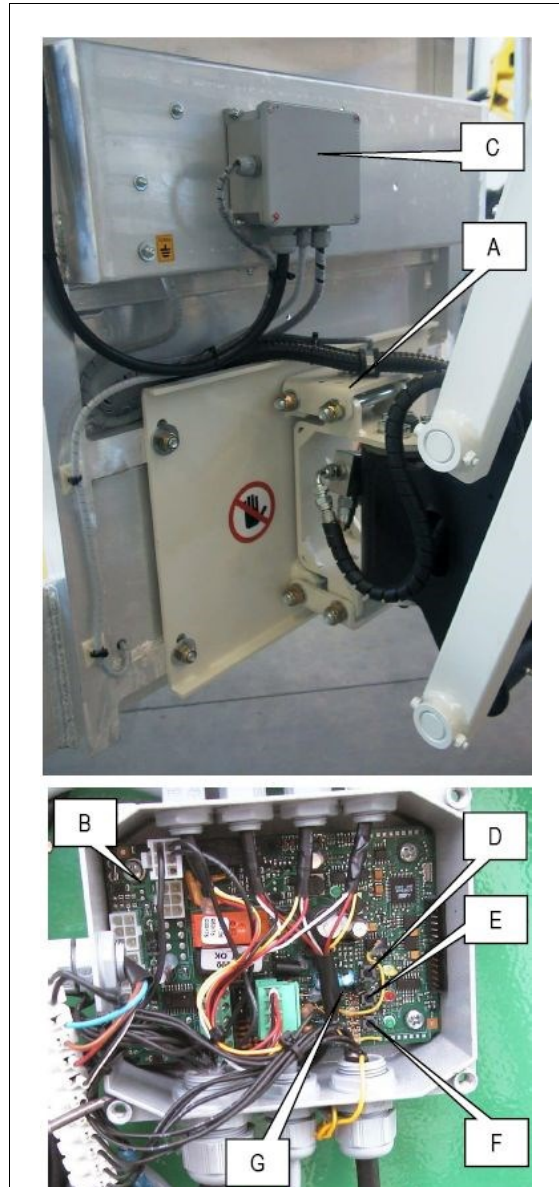


Fig.30a

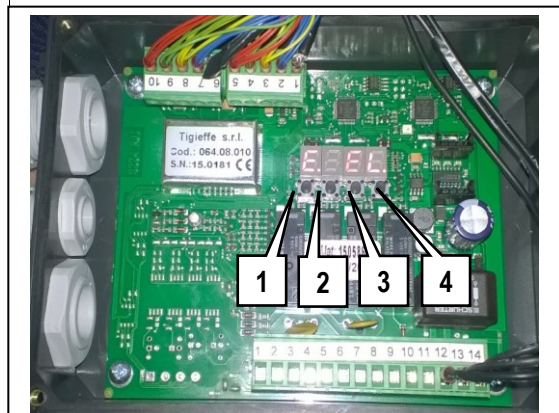


Fig.30b

This system needs calibration when:

- One of the components has been replaced;
- Following an excessive overload or a collision, the alarm keeps on signalling a danger even if the excess load has been removed.

The settings depend on the type of controller used.

If your electronic board is the same as in **Fig. 30a**:

- Switch off the machine;
- Open the case **C** containing the electronic board;
- Without load on the platform, fit a jumper between the two pins of the connector **G**;
- Switch the machine on.
- Press the button **D** (the yellow and red pilot lights turn on).
- Press the button **E** (the luminosity of the red pilot increases a few seconds), and the overload controller will be reset.;
- Place a load at the centre of the platform equal to the rated load + 20%.
- Press button **F** (the green light turns on a few seconds) to store the overload condition;
- press the button **D** again to exit the calibration procedure (the yellow light turns off and if the procedure has been carried out correctly, the red light stays on signalling the overload);
- Switch off the machine;
- Open the jumper on connector **G**;
- Switch the machine on;
- Removing 20% overload (only the nominal load stays on the platform) and make sure that no alarm occurs for any of the platform positions (platform lowered, lifted, during drive, with platform extended);
- Once the adjustment has been completed, close the box which contains the board.

If your electronic board is the same as in **Fig. 30b**:

- Switch off the machine;
- Open the case containing the electronic board;
- Switch the machine on;
- without load on the platform, press and hold buttons **1** and **4** until the **CONS** is displayed;
- Press **4** to enter **CAP** and **4** again to display the value;
- Enter the right value = 1000 using the keys **1**, **2** and **3**. Press **4** to save and exit.
- Press **2** and **2** again to move to **J01J**, and press **4** to display the value;
- Enter the right value = 1 using the keys **1**, **2**. Press **4** to save and exit.
- Press **3** and then **2** to move to **CALB**. Press **4** to move to **CAL**;
- Check that no load is on the platform, and press **1** to perform zero-setting;
- Place a load same as the design load and check the reading on the display. If the value is ok, press **4** to save and exit; otherwise press **2** and then use the numeric keys **1**, **2** and **3** to enter the new correct figure. Press **4** and then **4** again to move to **CALB**;
- Press **2** and then **2** again to move to **ALAR**, then press **4** and **2** again to move to **BLOC**;
- press **4** to enter and then enter the alarm settings using the numeric figures **1**, **2** and **3**. The right alarm settings is same as the design load +20% safety factor. Press **4** to save;
- Press **2** to move to **DIFF** and then **4** to enter. Set the figure = **0045** using the keys **1**, **2** and **3**; then press **4** to save;
- Press **2** to move to **TEST** and then **4** to run the test. When **PASS** is displayed, press **3** for three time and exit the setting function.
- Check the reading on the display and make sure it shows the amount of the actual load on the platform;
- Try a load \geq the design load + 20% safety factor and make sure that the alarm goes off; then remove the extra 20% safety load and make sure that the alarm goes off.
- Once the adjustment has been completed, close the box which contains the board.



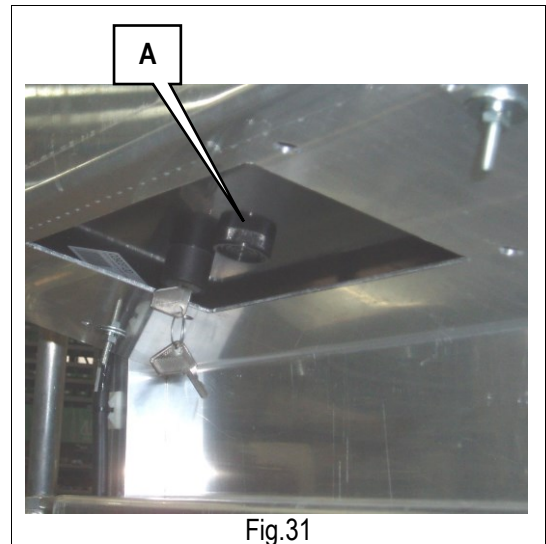
THIS OPERATION IS VERY IMPORTANT AND MUST BE CARRIED OUT BY SPECIALIZED TECHNICIANS ONLY.

7.2.13. Overload controller by-pass – ONLY FOR EMERGENCY OPERATIONS

In case of fault and impossibility to calibrate the device, by-pass the system by means of key switch (A) under the control panel. Keep the key switch active for 5 seconds and release it to shift to the BY-PASSING condition.

CAUTION! IN THIS CONDITION THE MACHINE CAN CARRY OUT ANY OPERATION, EVEN THOUGH A DANGER ALERT IS ACTIVE (RED FLASHING PILOT LAMP AND THE ACOUSTIC ALARM SIGNAL). TURNING OFF THE MACHINE WILL RESET THE SYSTEM, AND WHEN RESTARTING, THE OVERLOAD CONTROLLER OPERATES AGAIN SIGNALLING THE PREVIOUS OVERLOAD CONDITION.

THIS OPERATION IS ONLY ALLOWED FOR EMERGENCY TRANSFERS OF THE MACHINE. DO NOT USE THE MACHINE IF THE OVERLOAD CONTROLLER IS NOT EFFICIENTLY OPERATING.



CAUTION!
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 EFFICIENTLY OPERATING.

7.2.14. Functional control of the microswitches M1

The lifting booms are controlled by micro switches:

- M1A on the first arm (pantograph);
- M1B on Second Arm;
- M1C on the Jib.
- M1E on the telescopic boom (OPTIONAL for A16 J – STANDARD for A18 J).

The working conditions of the micro switches M1 must be checked once a year.

The functions of the microswitches M1A- M1B- M1E are the following: with the platform not in rest position (at least one of the microswitches M1A-M1B-M1E must be activated):

- The safety drive speed is automatically activated.
- The lifting and drive controls are disabled when the chassis is inclined more than the max. allowed inclination.
- The adjustment control for platform levelling is disabled.
- With the platform overloaded, ALL operations will be disabled until removal of the overload.

The following functions of the microswitch M1C of the Jib are designed to support loading/unloading from the ramps of a vehicle. with the booms in the rest position (microswitches M1A-M1B-M1E not activated), and jib inclined by more than +10° against the plane (M1C activated):

- The first speed is automatically enabled;
- If the inclination of the chassis exceeds the max. one, the only active controls are jib lifting and drive.

7.2.15. Dead-man safety system, functional check

The platform deadman pedal enables the controls of the machine on the control panel installed on the basket.

Perform a functional control 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.
- make sure that the machine does not perform any movement.
- Hold the DEADMAN pedal down for more than 10 seconds.
- With the pedal pressed, move the joystick forward and backward in sequence.
- Make sure that the machine does not perform any movement.

If this safety works properly, no machine movement is possible on the control panel on the basket 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:

- green led lit up steady function enabled
- green led lit up flashing position disabled

7.3. Starter battery

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

7.3.1. Starter battery models “D” “ED”

On machines with a gasoline/diesel engine the starter battery is for:

- Powering the machine control circuits.
- Starting the engine.
- Powering the 12V electric pump for safety operations (if available).

7.3.2. Starter type battery for models “E”

On machines with batteries the starter battery is for:

- Powering the machine control circuits.

7.3.3. Starter battery maintenance

The starter battery does not require any special maintenance:

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

7.3.4. Starter battery recharge

Starter batteries do not require any recharge.

During normal operation of the Diesel engine an alternator recharges the battery (machines “D”, “ED”). On the 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 the electric power mode. On machines with battery a DC-DC converter keeps the starter battery charged.



CAUTION!

Accurately check the battery charge after each emergency recovery operation, especially after rescuing the platform with the (OPTIONAL) 12 V electric pump.

7.4. Battery-operated "TRAVEL" system for models "E" and "ED"

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.

7.4.1. General instructions for the MAIN TRAVEL BATTERY

- In case of new batteries do not wait for the flat battery warning before recharging; recharge the 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 discharge/charge cycles.
- Charge the battery in airy rooms and open the caps to allow the outflow of gas.
- Do not use extensions exceeding 5 metres to connect the battery charger to the power supply.
- Use a cable of a suitable section (min 3x2.5 mm²).
- Do not use rolled-up cables.
- Do not approach the battery with flames. Risk of explosion 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.

7.4.2. Maintenance of the battery-operated travel system

- Under normal operating conditions, water topping up is to be carried out every week.
- Top up using distilled or demineralized 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 needs to be recharged. This condition is signalled by a flashing light of the relevant led on the platform control panel.
- Battery charge is to be carried out according to the instructions given in the next 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 battery self-discharge 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.

7.4.3. TRAVEL battery recharge.



ATTENTION!
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 a power supply having all protections according to the current standards and with the following features:

- Supply voltage $230V \pm 10\%$
- Frequency $50\div 60$ Hz
- Activated grounding line
- Magneto-thermal protection switch and residual current device ("circuit breaker")

Moreover:

- Do not use extension leads exceeding 5 metres to connect the battery charger to the power supply.
- Use a cable of a suitable section (min 3×2.5 mm²).
- Do not use rolled-up cables.



DO NOT
connect the machine to power networks that do not comply with the above-mentioned features. Failure to observe the above-mentioned instructions may result in malfunctioning of the battery charger with consequent damage not covered by the guarantee.



ATTENTION!
After charging and with the battery charger is still connected to power supply, the electrolyte density values should range from 1.260 g/l to 1.270 g/l (at 25°C).

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 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 of the led indicate the charging phase (refer to table below).

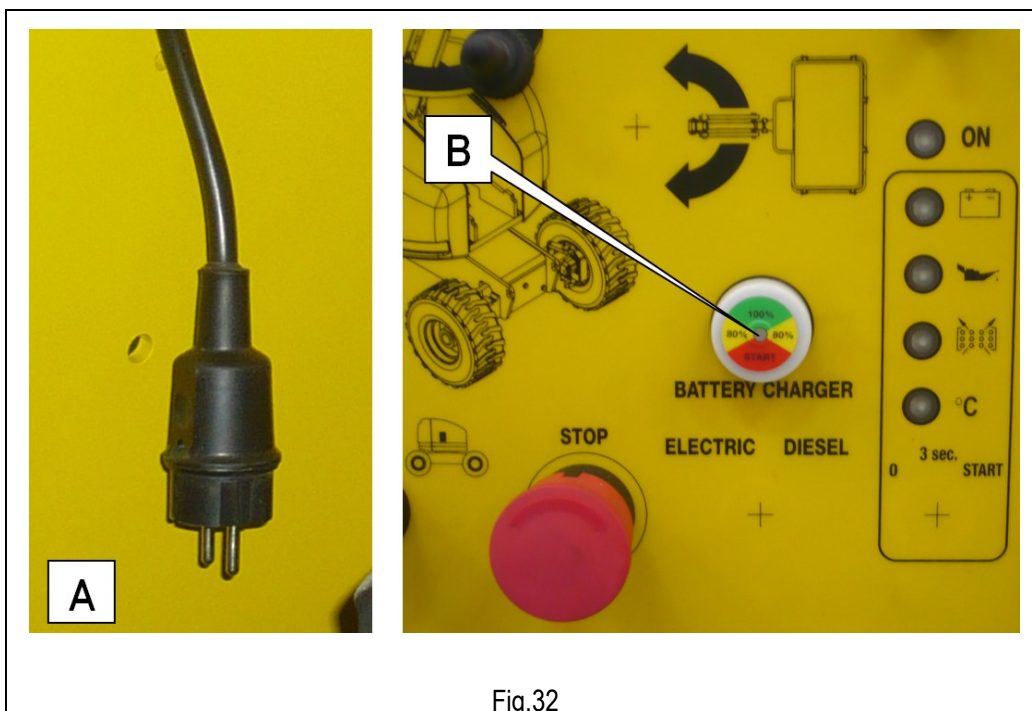


Fig.32

WARNING	DESCRIPTION
Red Led flashing for a few seconds.	Self-diagnostic of the battery charger.
Red led ON	Shows that the first and second charging phases are accomplished
Yellow led ON	Shows that charge equalization is in progress
Green led ON	Shows that charging is over; buffer charge active.



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

To disconnect the battery chargers from the power source, disconnect the machine from the electric line.



ATTENTION!

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

7.4.4. Battery charger trouble-shooting

An intermittent alarm and the flashing LED on the battery charger indicator described in the previous paragraph indicate that a warning situation has occurred:

Alarm	Type of alarm	Description and troubleshooting
Acoustic alarm+ flashing RED	Battery presence	Battery is disconnected or faulty (check connection and the rated voltage of the battery).
Alarm+ flashing YELLOW	Thermal probe	Thermal probe is disconnected during charging or outside working range (check probe connection and measure battery temperature).
Alarm+ flashing GREEN	Timeout	Phase 1 and/or Phase 2 of duration higher than the max. allowed value (check battery capacity).
Acoustic alarm+ flashing RED	Battery Current	Loss of output current control (fault in control logic).
Alarm+ flashing RED-GREEN	Battery Voltage	Loss of output voltage control (battery disconnected or fault in the control logic).
Alarm+ flashing RED-YELLOW-GREEN	Thermal	Over temperature of semiconductors (check the fan operation).



ATTENTION!

If an alarm goes off the battery charger stops the current delivery.

7.4.5. Battery replacement



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



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



THIS OPERATION IS A CRUCIAL MAINTENANCE TASK AND SHOULD BE STRICTLY CARRIED OUT BY SPECIALIZED TECHNICIANS.

CALL FOR TECHNICAL SERVICE

8. MARKS AND CERTIFICATIONS

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

<p>ICE Spa Via Garibaldi, 20 40011 Anzola Emilia – BO (Italia)</p>	
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The successful certification is proven by the EC-plate affixed on the machine and by the declaration of conformity in this user manual.

9. PLATES AND LABELS

DATE

	CODE	DESCRIPTION	QUANTITY
1	001.10.001	AIRO instruction plate	1
2	001.10.024	AIRO serial number plate	1
3	001.10.031	Towing hook sticker	4
4	001.10.057	General warning sticker	1
5	001.10.059	Wheel torque label	1
6	001.10.060	Lifting point sticker	4
7	001.10.088	Label: Document holder	1
8	001.10.150	Label: "46" oil type I-D-F-NL-B-G-PL	1
9	001.10.180	Label: "Next check"	1
10	001.10.243	Label: "Max. Load per wheel"	4
11	001.10.260	Label: "No standing by/under the joints/moving parts"	2
12	010.10.010	Black-yellow line sticker <150X300>	4
13	021.10.017	Label: Emergency tow	4 * - 2***
14	023.10.003	Label: Direction arrows	3
15	029.10.006	Capacity Label: 230 KG	1
16	029.10.011	Label: "Do Not fasten the basket"	1
17	029.10.013	Label: "Turret lock device"	1
18	029.10.030	Label: Manual Emergency Descent - STANDARD MACHINES	1
	029.10.022	Label: Manual Emergency Descent - MACHINES w. CONCURRENT CONTROLS	1
19	035.10.007	Label: "Safety belts hooking"	2
20****	008.10.020	Label: "Hot parts Danger"	1
21****	029.10.005	Label: Fuel tank	1
22*	029.10.016	Label: "103 dB sound power"	1
22**	030.10.008	Label: "105 dB sound power"	1
23***	001.10.098	Label: STOP I-D-F-NL-B-GB	1
24***	001.10.242	Yellow sticker: Emergency stop button	1
25***	045.10.011	Label: Battery charger plug	1
26	001.10.175	AIRO pre-spaced yellow sticker <530x265>	2
27	029.10.023	Pre-spaced BLACK sticker "A16 JE"	2
	029.10.025	Pre-spaced BLACK sticker "A16 JED"	2
	029.10.026	Pre-spaced BLACK sticker "A16 JRTD"	2
	040.10.010	Pre-spaced BLACK sticker "A18 JE"	2
	040.10.012	Pre-spaced BLACK sticker "A18 JED"	2
	040.10.013	Pre-spaced BLACK sticker "A18 JRTD"	2
28****	045.10.010	Label: (Optional) electric line plug	1
29****	001.10.021	Label: (Optional) EARTH symbol	1
30****	001.10.244	Label: (Optional) entrance bar black-yellow stripes	1

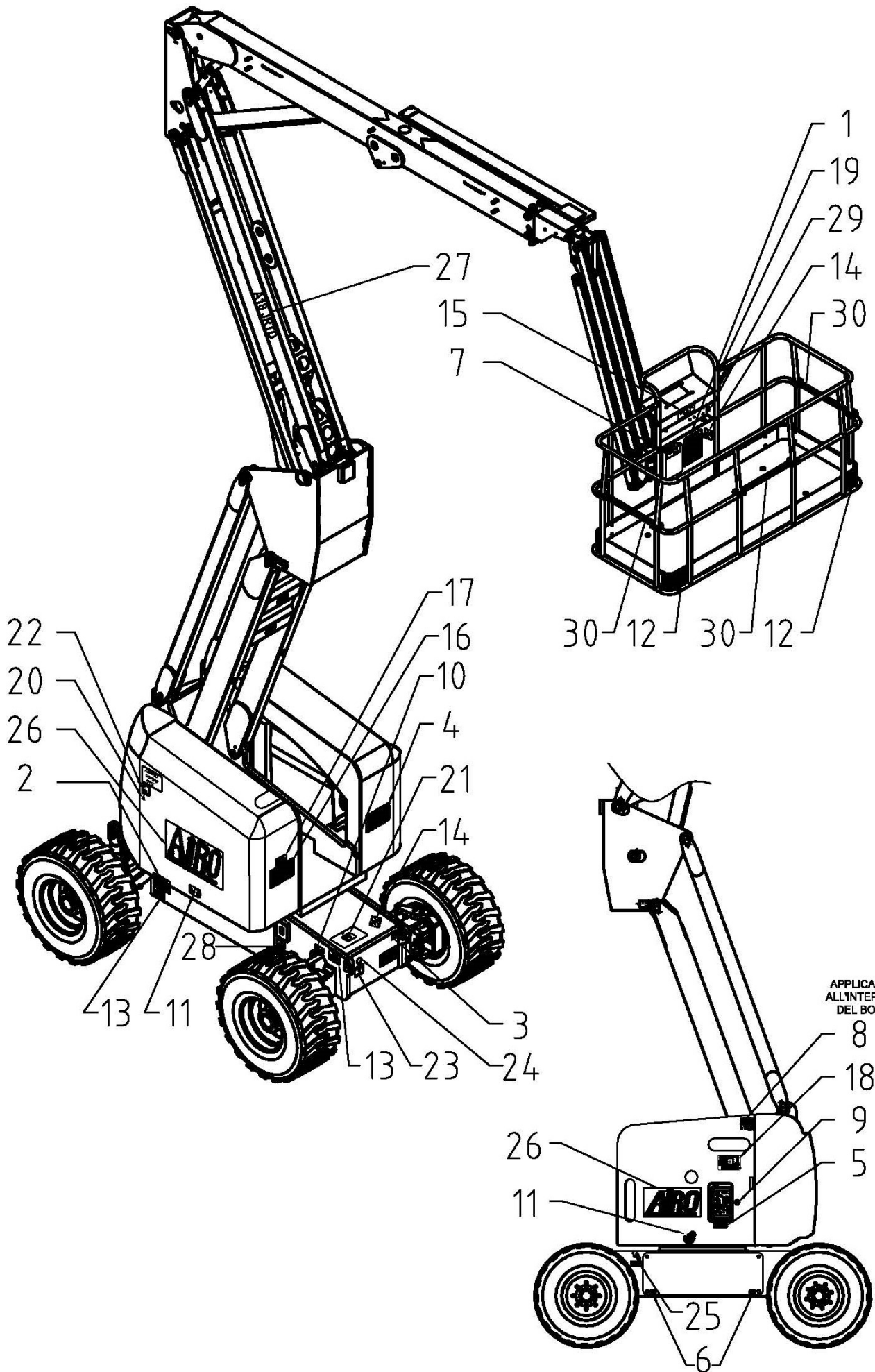
* Just DIESEL models

** Just ELECTRIC+DIESEL models

*** Just ELECTRIC and ELECTRIC+DIESEL models

**** Just DIESEL and ELECTRIC+DIESEL models

* optional



10 . TEST RECORDS

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

The ledger 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 REGULATORY AGENCY

Date	Remarks	Signature + Stamp

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

STRUCTURAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
VISUAL CHECK		Check the integrity of the guardrails; the harness anchoring points; the status of the lifting structure; access ladders; rust; state of the tyres; oil leaks; locking pins on the structure.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
DEFORMED HOSES AND CABLES		Most of all, check that tubes and cables do not show any evident defects at the joints. Monthly operation. Daily entries are not needed. Enter details once a year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

STRUCTURAL CHECK ADJUSTMENTS		DESCRIPTION OF OPERATIONS TO BE PERFORMED See chapter 7.2.1	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

GREASING		See chapter 7.2.2 Monthly operation. Daily entries are not needed. Enter details once a year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
HYDRAULIC TANK OIL LEVEL CHECK		See chapter 7.2.3 Monthly operation. Daily entries are not needed. Enter details once a year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
OIL LEVEL CHECK IN THE MAIN DRIVE GEARS		See chapter 7.2.5	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
CALIBRATION CHECK OF PRESSURE RELIEF VALVE IN THE OPERATION LINE		See chapter 7.2.8	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
CALIBRATION CHECK OF PRESSURE RELIEF VALVE IN THE OPERATION LINE		See chapter 7.2.9	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
BATTERY STATUS		See chapter 7.4 Daily operation. Daily entries are not needed. Enter details once a year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
ADJUSTMENT OF THE SLIDING PADS OF THE TELESCOPIC BOOM		See chapter 7.2.7	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

REQUIRED PERIODIC INSPECTIONS BY THE OWNER			
FUNCTIONAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
TOTAL OIL CHANGE IN HYDRAULIC TANK AND DRIVE REDUCTION GEARS (EVERY TWO YEARS)		See chapters 7.2.3 and 7.2.5	
	DATE	REMARKS	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			
REPLACEMENT OF THE HYDRAULIC FILTERS (EVERY TWO YEARS)		See chapter 7.2.4	
	DATE	REMARKS	SIGNATURE + STAMP
2nd YEAR			
4th YEAR			
6th YEAR			
8th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

FUNCTIONAL TEST		DESCRIPTION OF THE OPERATIONS TO BE PERFORMED	
AIR PURGING FROM THE CYLINDERS OF THE OSCILLATING AXLES		See chapter 7.2.6	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECKS		DESCRIPTION OF THE OPERATIONS TO BE PERFORMED	
INCLINOMETER EFFICIENCY CHECK		See chapter 07/02/2011	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
CONTROLLING THE EFFICIENCY OF THE OVERLOAD CONTROLLER		See chapter 07/02/2012	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECKS		DESCRIPTION OF THE OPERATIONS TO BE PERFORMED	
CONTROLLING THE EFFICIENCY OF THE BRAKING SYSTEM		See chapter 07/02/2010	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
FUNCTIONAL TEST - MICROSWITCHES MICROSWITCH M1		See chapter 07/02/2014	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECKS		DESCRIPTION OF THE OPERATIONS TO BE PERFORMED	
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 labels are on the platform and that they are legible; that the labels on the ground and platform controls are legible.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

SAFETY SYSTEM CHECKS		DESCRIPTION OF THE OPERATIONS TO BE PERFORMED	
DEAD-MAN CONTROL		See chapter 07/02/2015	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK OF EMERGENCY DEVICES	DESCRIPTION OF THE OPERATIONS TO BE PERFORMED		
CHECKUP OF THE MANUAL EMERGENCY DESCENT	See chapter 5.6		
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

TRANSFERS OF OWNERSHIP

FIRST OWNER

COMPANY NAME	DATE	MODEL	SERIAL NUMBER	DELIVERY DATE

AIRO – Tigieffe S.r.l.

FOLLOWING OWNERSHIP TRANSFERS

COMPANY NAME	DATE

We attest 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 Ledger.

THE SELLER

THE BUYER

FOLLOWING OWNERSHIP TRANSFERS

COMPANY NAME	DATE

We attest 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 Ledger.

THE SELLER

THE BUYER

FOLLOWING OWNERSHIP TRANSFERS

COMPANY NAME	DATE

We attest 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 Ledger.

THE SELLER

THE BUYER

FOLLOWING OWNERSHIP TRANSFERS

COMPANY NAME	DATE

We attest 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 Ledger.

THE SELLER

THE BUYER

FOLLOWING OWNERSHIP TRANSFERS

COMPANY NAME	DATE

We attest 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 Ledger.

THE SELLER

THE BUYER

MAJOR FAILURES

DATE	FAILURE DESCRIPTION	HOW TO FIX IT

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

DATE	FAILURE DESCRIPTION	HOW TO FIX IT

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

MAJOR BREAKDOWNS

DATE	FAILURE DESCRIPTION	HOW TO FIX IT

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

DATE	FAILURE DESCRIPTION	HOW TO FIX IT

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

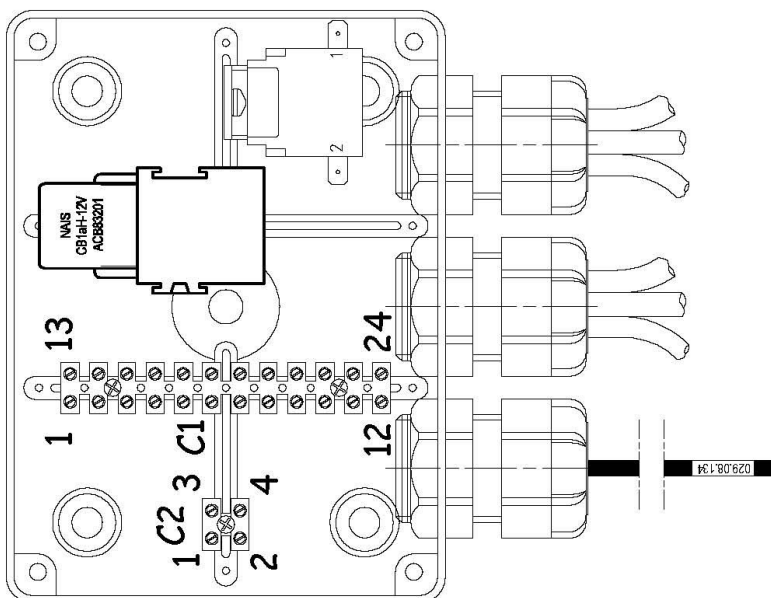
SAFETY MANAGER

11. WIRING DIAGRAMS

Nome macchina Machine name →		A16 JRTD	A16 JE	A16 JED	A18 JRTD	A18 JE	A18 JED
Kit Code Kit description	Descrizione Kit Kit description						
029.08.144	Cassetta di derivazione carro Electric/shunting - Chassis	X			X		
029.08.149	Guaina CR CR sheath		X			X	
029.08.161	Guaina CR CR sheath			X			X
029.08.171	Guaina CNV CNV sheath		X	X		X	X
029.08.128	Guaina elettrovalvole – CA1 CA1 – electrovalve sheath	X	X	X	X	X	X
029.08.129	Guaina microinterruttori – CA2 CA2 – micro sheath	X			X		
029.08.150	Guaina microinterruttori – CA2 CA2 - micro sheath		X	X		X	X
029.08.132	Cassetta di derivazione motore HATZ Electric/shunting - HATZ engine	X			X		
029.08.158	Cassetta derivazione motore termico Electric/shunting - Diesel/gasoline engine			X			X
029.08.148	Guaina alimentazione – MO MO – Power hose		X			X	
029.08.147	Cassetta derivazione piattaforma Electric/shunting - Basket	X	X	X	X	X	X
029.08.170	Overall wiring diagram		X			X	

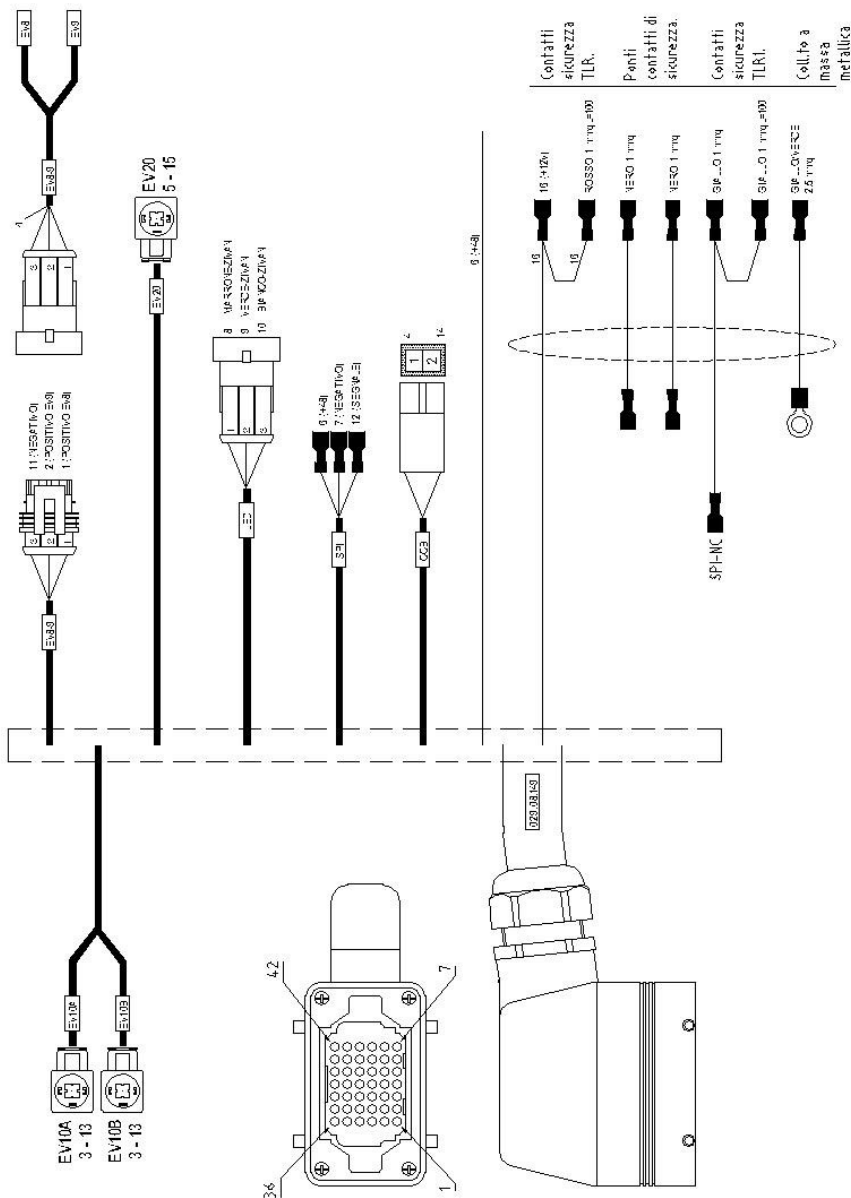
"C1" CONNECTOR			
N. PIN PIN #	N. FILO / GUAINA WIRE / SHEATH #	NOTE	NOTE
1	1 - 029.08.134	POSITIVO EV8	EV8 POSITIVE
2	2 - 029.08.134	POSITIVO EV9	EV9 POSITIVE
3	3 - 029.08.134	POSITIVO EV0A/B	EV0A/B POSITIVE
4	4 - 029.08.134	POSITIVO EV0C/D	EV0C/D POSITIVE
5	11 - 029.08.134	NEGATIVO EV8	EV8 NEGATIVE
6	12 - 029.08.134	NEGATIVO EV9	EV9 NEGATIVE
7	13 - 029.08.134	NEGATIVO EV0A/B	EV0A/B NEGATIVE
8	14 - 029.08.134	NEGATIVO EV0C/D	EV0C/D NEGATIVE
9	8 - 029.08.134	POSITIVO DA CHIAVE	POSITIVO FROM KEY
10	9 - 029.08.134	ALLARME FUSIBILE ELETTRONICOLA ALARMI	ALETTROFAN FUSE ALARMI
11	10 - 029.08.134	ALLARME RISERVA GASOLIO	DIESEL RESERVE ALARMI
12		LIBERO	FREE

"C2" CONNECTOR			
N. PIN PIN #	N. FILO / GUAINA WIRE / SHEATH #	NOTE	NOTE
1	7 - 029.08.134	POSITIVO EV41 ISG1600-J	EV41 POSITIVE ISG1600-J
2	15 - 029.08.134	NEGATIVO EV41 ISG1600-J	EV41 NEGATIVE ISG1600-J

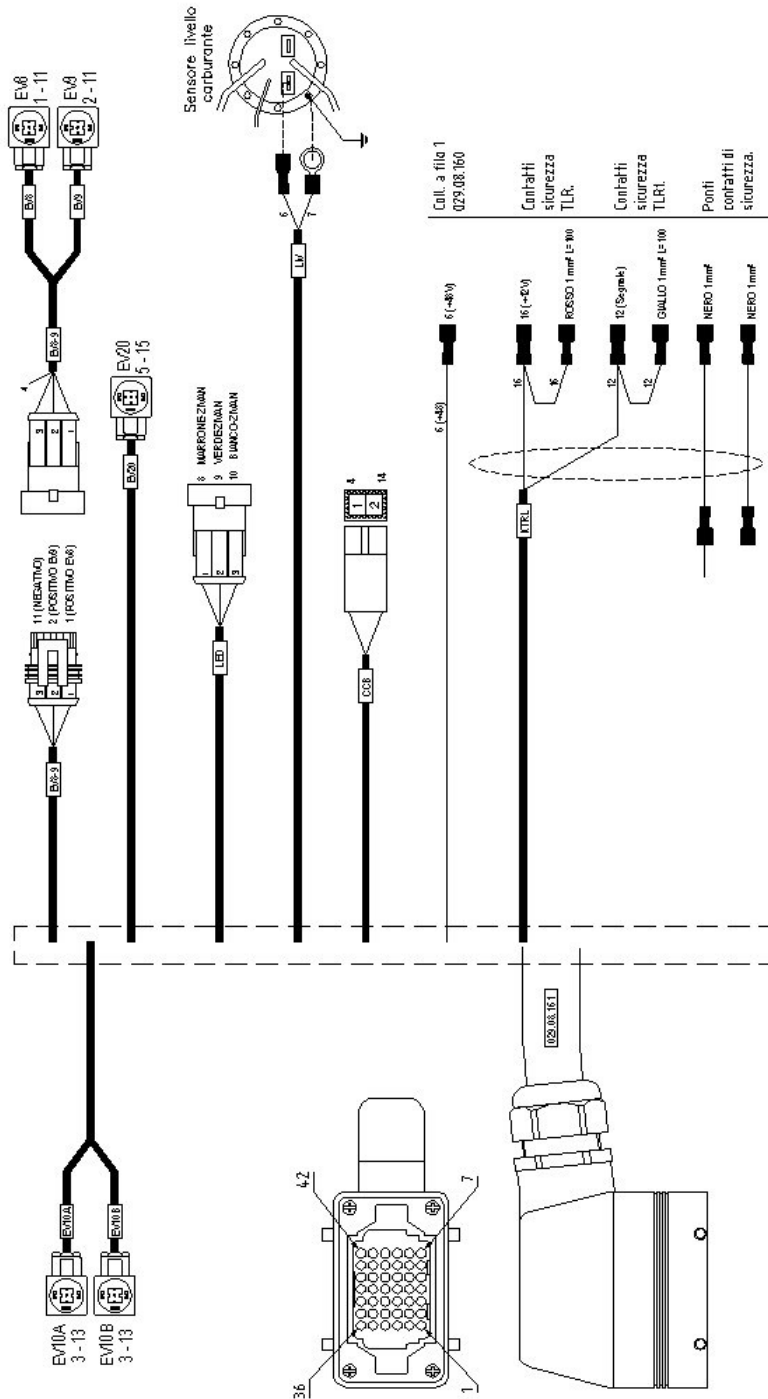


GUAINA CR - CR SHEATH 029.08.134			
N. FILO WIRE #	PIN / CONNETT.	NOTE	NOTE
1	1 - C1	POSITIVO EV8	EV8 POSITIVE
2	2 - C1	POSITIVO EV9	EV9 POSITIVE
3	3 - C1	POSITIVO EV0A-B	EV0A-B POSITIVE
4	4 - C1	POSITIVO EV0C-D	EV0C-D POSITIVE
5		LIBERO	FREE
6		LIBERO	FREE
7	1 - C2	POSITIVO EV41 ISG1600-J	EV41 POSITIVE ISG1600-J
8	9 - C1	POSITIVO DA CHIAVE	POSITIVO FROM KEY
9	10 - C1	ALLARME FUSIBILE ELETTRONICOLA ALARMI	ELETTROFAN FUSE ALARMI
10	11 - C1	ALLARME RISERVA GASOLIO	GASOLINE RESERVE ALARMI
11	5 - C1	NEGATIVO EV8	EV8 NEGATIVE
12	6 - C1	NEGATIVO EV9	EV9 NEGATIVE
13	7 - C1	NEGATIVO EV0A-B	EV0A-B NEGATIVE
14	8 - C1	NEGATIVO EV0C-D	EV0C-D NEGATIVE
15	2 - C2	NEGATIVO EV41 ISG1600-J	EV41 NEGATIVE ISG1600-J
16		LIBERO	FREE

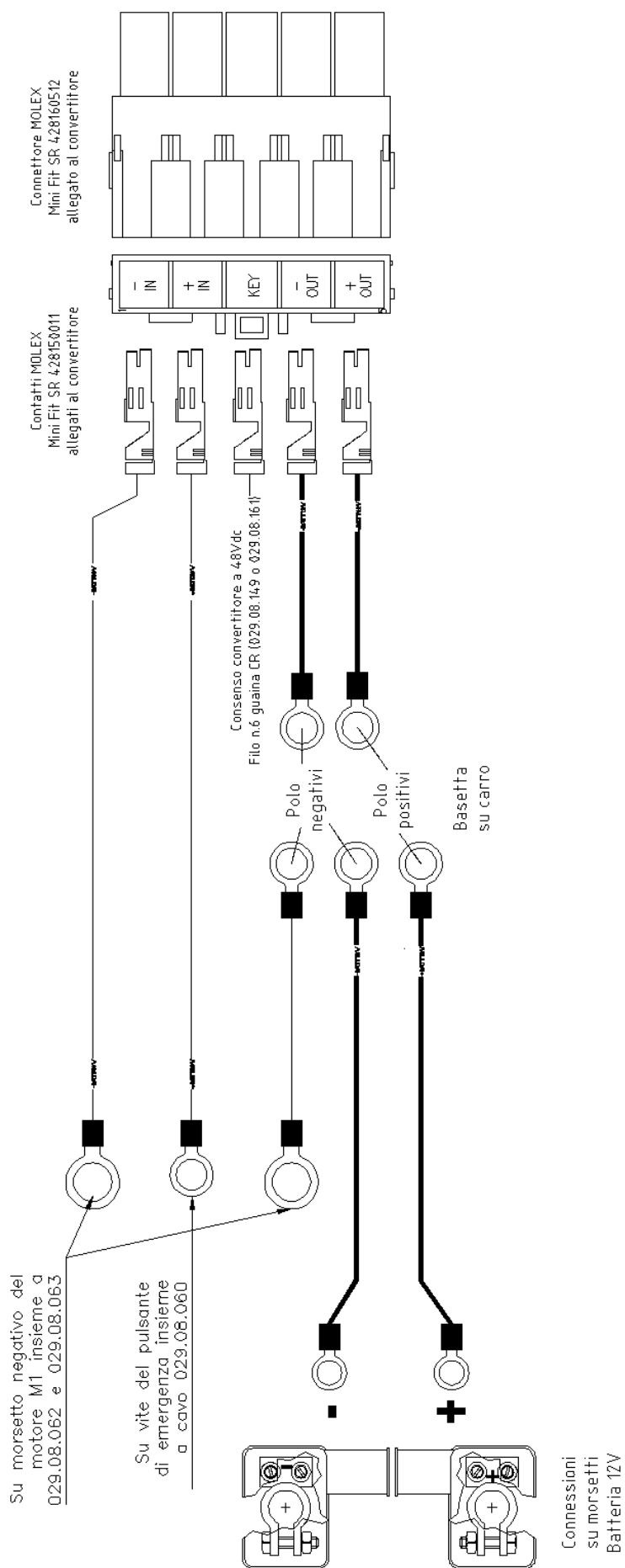
CABLAGGIO CONNETTORE GUAINA - CR						
PIN	FIL0	NOTE	PIN	FIL0	NOTE	
1	1 - CR	EV4	22		FIL0 UBER0 SEGNAL0 MS	
2	2 - CR	EV7	23		FIL0 UBER0 NEGATIVO MS	
3	3 - CR	EV14-1	24		Positive TERMINATI0	
4		FIL0 UBER0 EV100	25		ALL0NGARE LUNGHEZZA CABMINIALE	
5	5 - CR	EV14	26		ALL0NGARE LUNGHEZZA CABMINIALE	
6		FIL0 UBER0 EV11-8	27		FIL0 UBER0 ELETTR0 ERR00	
7		FIL0 UBER0 EV22	28		FIL0 UBER0 NEGATIVO EP ENER0	
8		FIL0 UBER0 EV1	29		FIL0 UBER0 EP ENER0	
9		FIL0 UBER0 EV41	30		FIL0 UBER0 AULL0 EP NEG0V/TIF	
10		FIL0 UBER0 EV41	31	8 - CR	LED SPA CARIC0 ATTERIA	
11	11 - CR	NEGATIVO EV29	32	9 - CR	LED SPA CARIC0 ATTERIA	
12		FIL0 UBER0 EV14-2	33	10 - CR	LED SPA CARIC0 ATTERIA	
13	13 - CR	NEGATIVO EV14-1	34	4 - CR	CONTATT0 MKC0 - OFF ON	
14		FIL0 UBER0 NEGATIVO EV10-0	35	14 - CR	CONTATT0 MKC0 - OFF ON	
15	15 - CR	NEGATIVO EV14	36	6 - CR	Positive Final LED	
16		FIL0 UBER0 EV18	37	7 - CR	Positive Final LED	
17		FIL0 UBER0 NEGATIVO EV14	38	12 - CR	NEGATIVO Final LED	
18		FIL0 UBER0 NEGATIVO EV19	39	16 - CR	SEGNAL0 Final LED	
19		FIL0 UBER0 NEGATIVO EV41	40		FIL0 UBER0	
20		FIL0 UBER0 NEGATIVO EV41	41		FIL0 UBER0	
21		Positive MS	42		FIL0 UBER0	



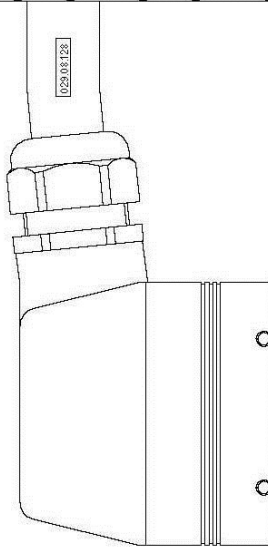
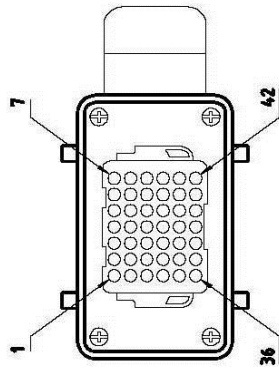
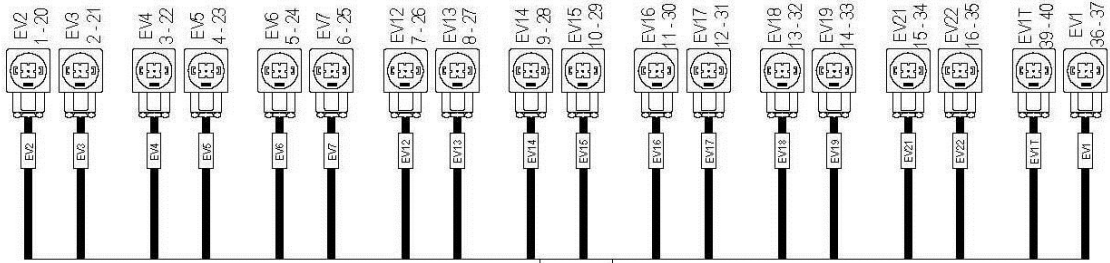
CABLAGGIO CONNETTORE GUAINA - CR						
PIN	FILO	NOTE	PIN	FILO	NOTE	
1	1 - CR	EV8	22		FILO LIBERO SEGNALE FID	
2	2 - CR	EPF	23		FILO LIBERO NEGATIVO MS	
3	3 - CR	EVMA-A	24	Pontello sul LINE tra i pin 24 e 25	POSITIVO TRONCO CABLAGGIO SEGNALANTE	
4		EVMA-B	25		ALIMENTAZIONE CABLAGGIO	
5	5 - CR	EVMA	26	6 - CR	ALLARME RISERVA CARBURANTE	
6		EV20-S	27		FILO LIBERO ELETTR. DRUG.	
7		EV20-B	28		POSITIVO NEGATIVO EP DERE	
8		EV20-P	29		FILO LIBERO EP NINE/PRFE	
9		EV20-T	30		FILO LIBERO ABIL EP PERFE/PRFE	
10		EV20-E	31	8 - CR	FILO LIBERO CABLAGGIO CARRABATTERIA	
11	11 - CR	EV20-V	32	9 - CR	LED SPA CARRABATTERIA	
12		EV20-F	33	10 - CR	LED SPA CARRABATTERIA	
13	13 - CR	EV20-R	34	4 - CR	LED SPA CARRABATTERIA	
14		EV20-C	35	14 - CR	CONTATTO INCL. OFF CR	
15	15 - CR	EV20-A	36	6 - CR	CONTATTO INCL. ONI SFI	
16		EV20-L	37	7 - CR	POSITIVO FURIBUSOL SFI	
17		EV20-N	38	12 - CR	NEGATIVO SFI TRONCO	
18		EV20-M	39	16 - CR	SEGNALE SICUREZZA 40PK	
19		EV20-O	40		FILO LIBERO	
20		EV20-I	41		FILO LIBERO	
21		EV20-J	42		FILO LIBERO	



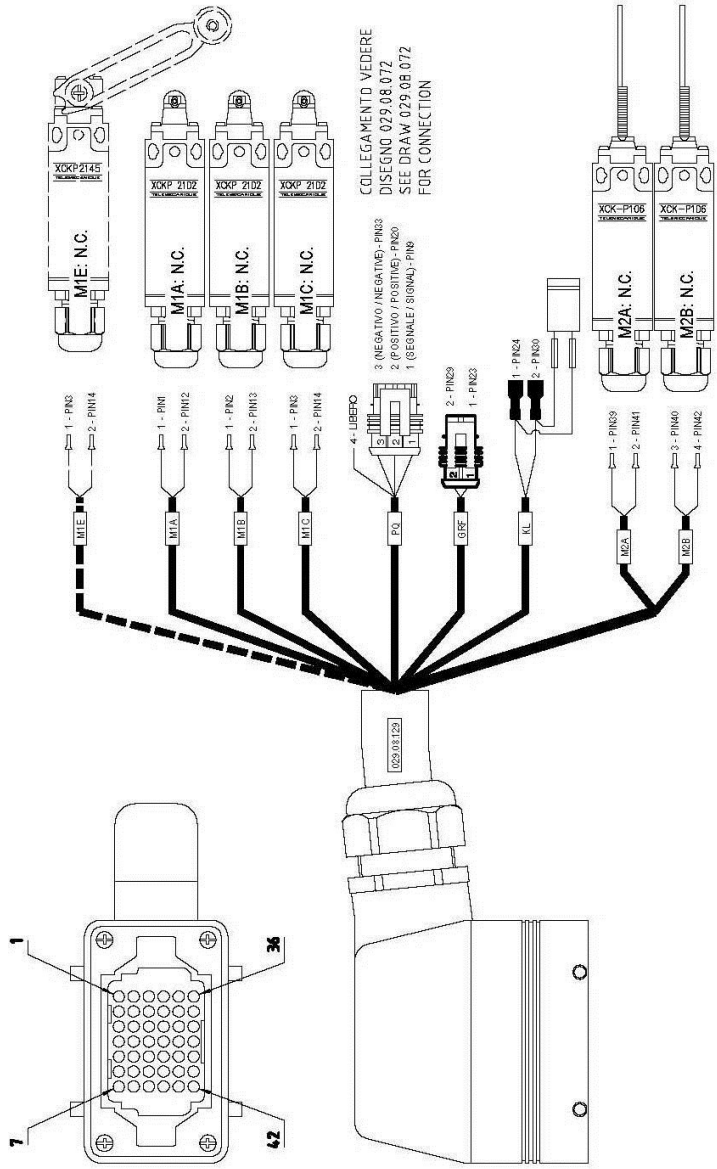
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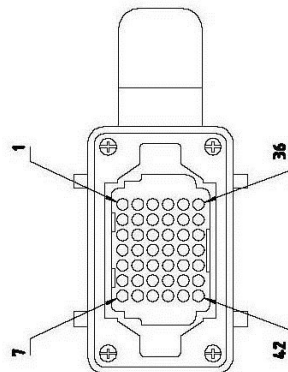
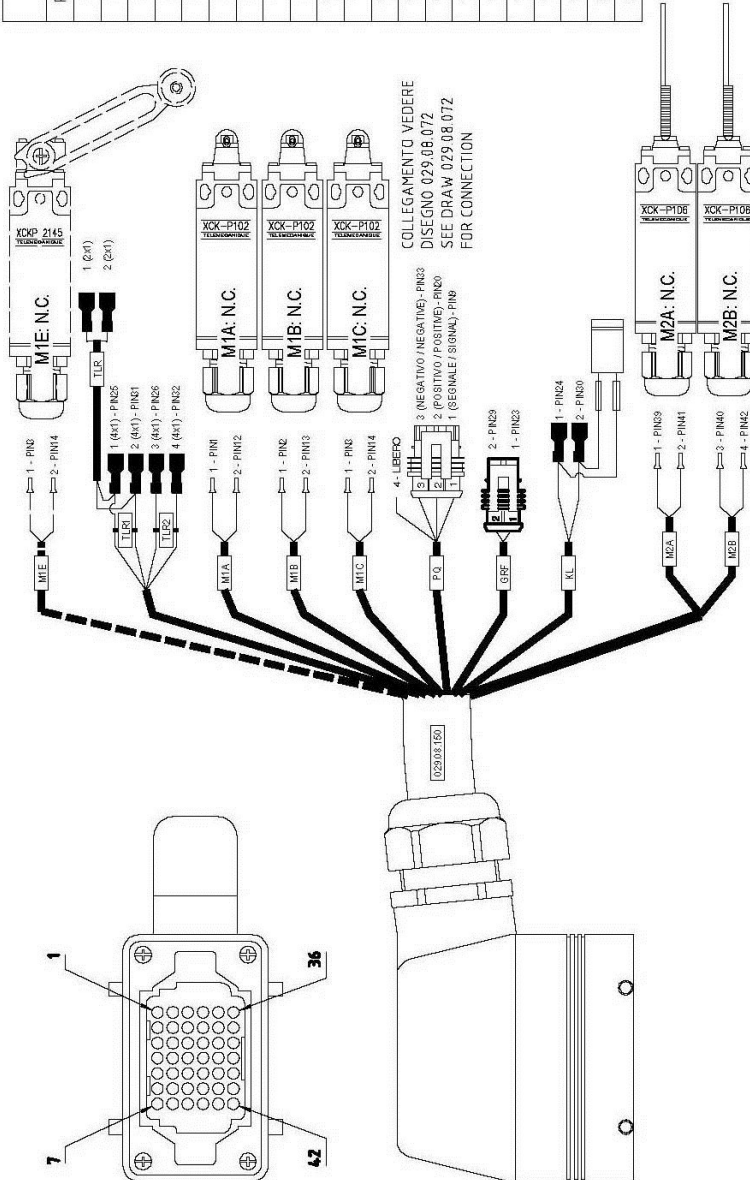
GUAINA - CAT			
PIN	FILLO / GUAINA WIRE / SHEATH	NOTE	NOTE
1	1	POSITIVO EV2	EV2 POSITIVE
2	2	POSITIVO EV3	EV3 POSITIVE
3	3	POSITIVO EV4	EV4 POSITIVE
4	4	POSITIVO EV5	EV5 POSITIVE
5	5	POSITIVO EV6	EV6 POSITIVE
6	6	POSITIVO EV7	EV7 POSITIVE
7	7	POSITIVO EV8	EV8 POSITIVE
8	8	POSITIVO EV9	EV9 POSITIVE
9	9	POSITIVO EV10	EV10 POSITIVE
10	10	POSITIVO EV11	EV11 POSITIVE
11	11	POSITIVO EV12	EV12 POSITIVE
12	12	POSITIVO EV13	EV13 POSITIVE
13	13	POSITIVO EV14	EV14 POSITIVE
14	14	POSITIVO EV15	EV15 POSITIVE
15	15	POSITIVO EV16	EV16 POSITIVE
16	16	POSITIVO EV17	EV17 POSITIVE
17	17	FILLO LIBERO	FREE WIRE
18	18	FILLO LIBERO	FREE WIRE
19	19	FILLO LIBERO	FREE WIRE
20	20	NEGATIVO EV18	EV18 NEGATIVE
21	21	NEGATIVO EV19	EV19 NEGATIVE
22	22	NEGATIVO EV20	EV20 NEGATIVE
23	23	NEGATIVO EV21	EV21 NEGATIVE
24	24	NEGATIVO EV22	EV22 NEGATIVE
25	25	NEGATIVO EV23	EV23 NEGATIVE
26	26	NEGATIVO EV24	EV24 NEGATIVE
27	27	NEGATIVO EV25	EV25 NEGATIVE
28	28	NEGATIVO EV26	EV26 NEGATIVE
29	29	NEGATIVO EV27	EV27 NEGATIVE
30	30	NEGATIVO EV28	EV28 NEGATIVE
31	31	NEGATIVO EV29	EV29 NEGATIVE
32	32	NEGATIVO EV30	EV30 NEGATIVE
33	33	NEGATIVO EV31	EV31 NEGATIVE
34	34	NEGATIVO EV32	EV32 NEGATIVE
35	35	NEGATIVO EV33	EV33 NEGATIVE
36	36	FILLO LIBERO	FREE WIRE
37	37	FILLO LIBERO	FREE WIRE
38	38	FILLO LIBERO	FREE WIRE
39	39	EV34	EV34
40	40	EV35	EV35
41	41	EV36	EV36
42	42	EV37	EV37



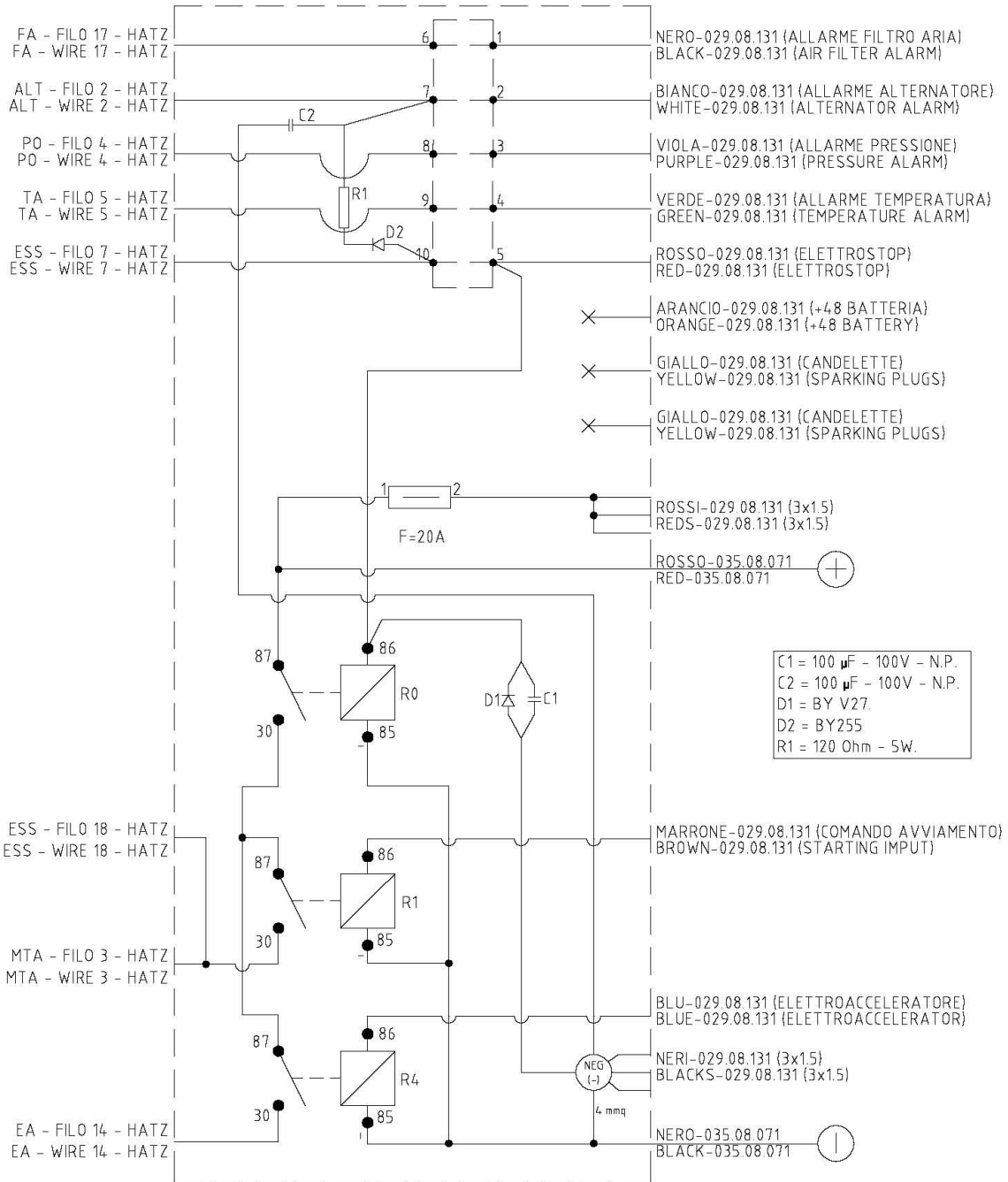
GUANA CAZ CAZ SHEATH						
PIN	FILD / WIRE	NOTE	NOTE	PIN	FILD / WIRE	NOTE
1	1 - M1A	RITORNO DA M1A	BACK FROM M1A	22	FIL. LIBRO	FREE WIRE
2	1 - M1B	RITORNO DA M1B	BACK FROM M1B	23	1 - GRF	GRF POSITIVE
3	1 - M1C	RITORNO DA M1C	BACK FROM M1C	24	1 - KL	KL POSITIVE
4		FIL. LIBRO (OPZIONE RITORNO DA M1E)	FREE WIRE OR BACK FROM M1E	25		FIL. LIBRO (OPZIONE FREE WIRE OR FILT POSITIVE)
5		FIL. LIBRO (OPZIONE RITORNO DA M1E)	FREE WIRE OR BACK FROM M1E	26		FREE WIRE OR FLRZ POSITIVE
6	1 - M1E	RITORNO DA M1E (SG900-J)	BACK FROM M1E (SG900-J)	27		FREE WIRE
7		FIL. LIBRO (OPZIONE RITORNO DA M1I)	FREE WIRE OR BACK FROM M1I	28		FREE WIRE
8		FIL. LIBRO (OPZIONE RITORNO DA M1D)	FREE WIRE OR BACK FROM M1D	29	2 - GRF	GRF NEGATIVE
9	1 - P-Q	INCLINOMETRO "PQ"	INCLINOMETER "PQ"	30	2 - KL	KL NEGATIVE
10		FIL. LIBRO	FREE WIRE	31		FIL. LIBRO (OPZIONE FREE WIRE OR FLRT NEGATIVE)
11		FIL. LIBRO	FREE WIRE	32		FIL. LIBRO (OPZIONE FREE WIRE OR FLRZ NEGATIVE)
12	2 - M1A	POSITIVO	M1A POSITIVE	33	3 - P-Q	INCLINOMETRO "PQ" NEGATIVE
13	2 - M1B	POSITIVO	M1B POSITIVE	34		FREE WIRE
14	2 - M1C	POSITIVO	M1C POSITIVE	35		FREE WIRE
15		FIL. LIBRO (OPZIONE RITORNO DA M1E)	FREE WIRE OR M1E POSITIVE	36		FREE WIRE
16		FIL. LIBRO (OPZIONE RITORNO DA M1I)	FREE WIRE OR M1I POSITIVE	37		FREE WIRE
17	2 - M1E	POSITIVO M1E (SG900-J)	M1E POSITIVE (SG900-J)	38		FREE WIRE
18		FIL. LIBRO (OPZIONE RITORNO DA M1E)	FREE WIRE OR M1E POSITIVE	39	1 - MZA/B	RITORNO DA MZA
19		FIL. LIBRO (OPZIONE RITORNO DA M1I)	FREE WIRE OR M1I POSITIVE	40	3 - MZA/B	RITORNO DA M1B
20	2 - P-Q	POSITIVO INCLINOMETRO "PQ"	INCLINOMETER "PQ" POSITIVE	41	2 - MZA/B	POSITIVO MZA
21		FIL. LIBRO (OPZIONE RITORNO DA M1I)	FREE WIRE OR M1I POSITIVE	42	4 - MZA/B	POSITIVO M1B



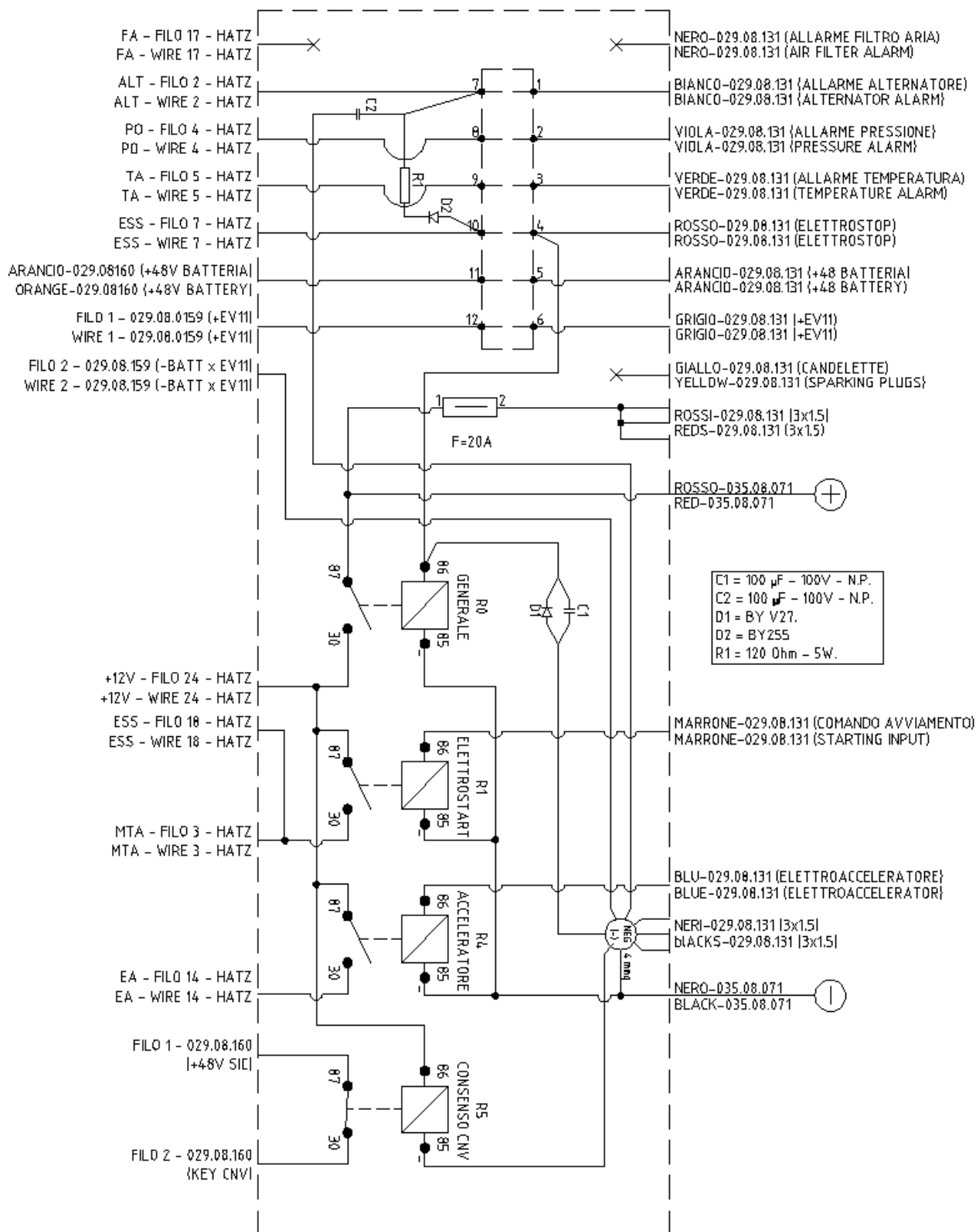
GUAINA CAZ CAZ SHEATH						
PIN	FILO / WIRE	NOTE	NOTE	PIN	FILO / WIRE	NOTE
1	1 - M1A	RIORNO DA M1A	BACK FROM M1A	22		FIL. LIBERO
2	1 - M1B	RIORNO DA M1B	BACK FROM M1B	23	1 - GRF	POSITIVO GRF
3	1 - M1C	RIORNO DA M1C	BACK FROM M1C	24	1 - KL	POSITIVO KL
4		FIL. LIBERO OPZIONE RIORNO DA M1D	FREE WIRE OR BACK FROM M1D	25	1 - TLR1	POSITIVO TLR1
5		FIL. LIBERO OPZIONE RIORNO DA M1E	FREE WIRE OR BACK FROM M1E	26	3 - TLR2	POSITIVO TLR2
6	1 - M1E	RIORNO DA M1E (SCHEMA J)	BACK FROM M1E (SCHEMA J)	27		FIL. LIBERO
7		FIL. LIBERO OPZIONE RIORNO DA M1H	FREE WIRE OR BACK FROM M1H	28		FIL. LIBERO
8		FIL. LIBERO OPZIONE RIORNO DA M1I	FREE WIRE OR BACK FROM M1I	29	2 - GRF	POSITIVO GRF
9	1 - P.Q.	RIORNO DA M1J (SCHEMA K) INCLINOMETRI "PQ"	BACK FROM M1J (SCHEMA K) INCLINOMETRI "PQ"	30	2 - KL	POSITIVO KL
10		FIL. LIBERO	FREE WIRE	31	2 - TLR1	POSITIVO TLR1
11		FIL. LIBERO	FREE WIRE	32	4 - TLR2	POSITIVO TLR2
12	2 - M1A	POSITIVO M1A	M1A POSITIVE	33	3 - P.Q.	FIL. LIBERO
13	2 - M1B	POSITIVO M1B	M1B POSITIVE	34		FIL. LIBERO
14	2 - M1C	POSITIVO M1C	M1C POSITIVE	35		FIL. LIBERO
15		FIL. LIBERO OPZIONE RIORNO DA M1K	FREE WIRE OR BACK FROM M1K	36		FIL. LIBERO
16		FIL. LIBERO OPZIONE RIORNO DA M1L	FREE WIRE OR BACK FROM M1L	37		FIL. LIBERO
17	2 - M1E	POSITIVO M1E (SCHEMA J)	M1E POSITIVE (SCHEMA J)	38		FIL. LIBERO
18		FIL. LIBERO OPZIONE RIORNO DA M1M	FREE WIRE OR BACK FROM M1M	39	1 - M2A/B	RIORNO DA M2A
19		FIL. LIBERO OPZIONE RIORNO DA M1N	FREE WIRE OR BACK FROM M1N	40	3 - M2A/B	RIORNO DA M2B
20	2 - P.Q.	POSITIVO INCLINOMETRI "PQ"	M1 POSITIVE INCLINOMETRI "PQ"	41	2 - M2A/B	POSITIVO M2A
21		FIL. LIBERO OPZIONE RIORNO DA M1O	FREE WIRE OR BACK FROM M1O	42	4 - M2A/B	POSITIVO M2B

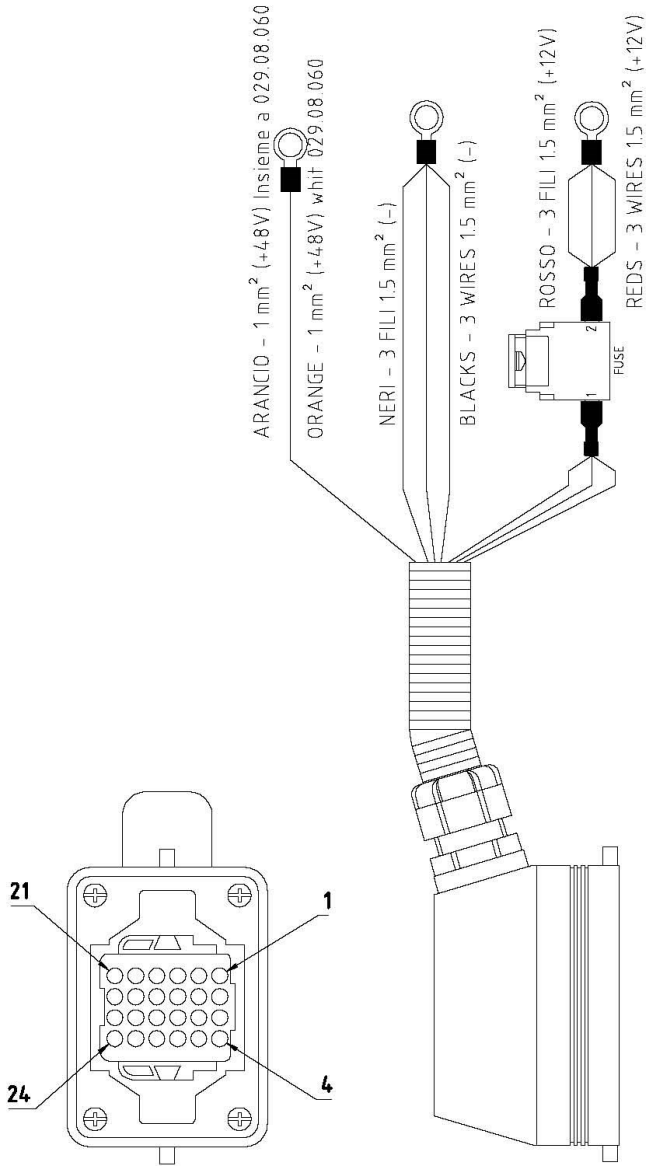


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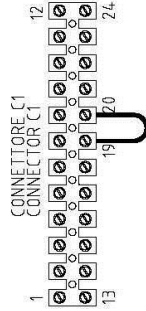
CONNETTORE "MO"
"MO" CONNECTOR

PIN	FILO WIRE	NOTE	PIN	FILO WIRE	NOTE	PIN	FILO WIRE	NOTE	PIN	FILO WIRE	NOTE
1		LIBERO	9		LIBERO	17		LIBERO	17		FREE
2		LIBERO	10		LIBERO	18		LIBERO	18		FREE
3		LIBERO	11		LIBERO	19	ROSSO/RED	POSITIVO (+12) DA BATTERIA	19	ROSSO/RED	POSITIVO (+12) FROM BATTERY
4		LIBERO	12		LIBERO	20	ROSSO/RED	POSITIVO (+12) DA BATTERIA	20	ROSSO/RED	POSITIVO (+12) FROM BATTERY
5		LIBERO	13		LIBERO	21	NERO/BLACK	NEGATIVO DA BATTERIA	21	NERO/BLACK	NEGATIVE FROM BATTERY
6		LIBERO	14	ARANCIO/ORANGE	POSITIVO (+48) BATTERIA	22	NERO/BLACK	NEGATIVO DA BATTERIA (I+4,8)	22	NERO/BLACK	NEGATIVE FROM BATTERY
7		LIBERO	15		LIBERO	23	NERO/BLACK	NEGATIVO DA BATTERIA	23	NERO/BLACK	NEGATIVE FROM BATTERY
8		LIBERO	16		LIBERO	24	ROSSO/RED	POSITIVO (+12) DA BATTERIA	24	ROSSO/RED	POSITIVO (+12) FROM BATTERY

CAVO CELLA DI CARICO LOAD CELL CABLE			
N. FILO WIRE #	PIN / CONNECT. PIN / CONNECT.	NOTE	NOTE
ROSSO	R - J7		
BIANCO	B - J7	LIBERO	FREE
GIALLO	G - J7		
NERO	N - J7	LIBERO	FREE

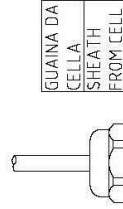
CONNETTORE "C1" "C1" CONNECTOR			
N. PIN PIN #	N. FILO / GUAINA WIRE/SHEATH #	NOTE	NOTE
1	1 - 035.08.033	TRASMISSIONE SERIALE (A)	SERIAL TRANSMISSION (A)
2	2 - 035.08.033	TRASMISSIONE SERIALE (B)	SERIAL TRANSMISSION (B)
3	3 - 035.08.033	TENSIONE BATTERIA DA FUSIBILE "F2"	BATTERY VOLTAGE FROM FUSE "F2"
4	4 - 035.08.033	NEGATIVO PRINCIPALE	MAIN NEGATIVE
5	5 - 035.08.033	PULSANTE A FUNGO	EMERGENCY BUTTON
6	6 - 035.08.033	PULSANTE A FUNGO	EMERGENCY BUTTON
7	7 - 035.08.033	USCITA POSITIVO PER "PQC"	POSITIVE OUTPUT FOR "PQC"
8	8 - 035.08.033	SEGNALE "PQC"	"PQC" SIGNAL
9	15 - 035.08.033	POSITIVO "PQC"	"PQC" POSITIVE
10	16 - 035.08.033	NEGATIVO "PQC"	"PQC" NEGATIVE
11	13 - 035.08.033	POSITIVO PEDALE "UOMO PRESENTE"	"DEAD MAN PEDAL" POSITIVE
12	14 - 035.08.033	SEGNALE PEDALE "UOMO PRESENTE"	"DEAD MAN PEDAL" SIGNAL
13	1 - 035.08.004	TRASMISSIONE SERIALE (A)	SERIAL TRANSMISSION (A)
14	2 - 035.08.004	TRASMISSIONE SERIALE (B)	SERIAL TRANSMISSION (B)
15	3 - 035.08.004	TENSIONE BATTERIA DA FUSIBILE "F2"	BATTERY VOLTAGE FROM FUSE "F2"
16	4 - 035.08.004	NEGATIVO PRINCIPALE	MAIN NEGATIVE
17	5 - 035.08.004	PULSANTE A FUNGO	EMERGENCY BUTTON
18	6 - 035.08.004	PULSANTE A FUNGO	EMERGENCY BUTTON
19	PONTE-ROSSO 1MMQ BRIDGE-RED 1MMS	POSITIVO SEGNALE "PQC"	POSITIVE SIGNAL "PQC"
20		POSITIVO "PQC" NON PRESENTE	"PQC" POSITIVE ABSENT
21		NEGATIVO "PQC" NON PRESENTE	"PQC" NEGATIVE ABSENT
22		POSITIVO	POSITIVE
23	2 - PEDALE / PEDAL	SEGNALE PEDALE	PEDAL SIGNAL
24	1 - PEDALE / PEDAL		

CAVO COMANDI DA TERRA COMMAND CABLE FROM GROUND COD. 035.08.004.			
N. FILO WIRE #	PIN / CONNECT. PIN / CONNECT.	NOTE	NOTE
1	13 - C1	TRASMISSIONE SERIALE (A)	SERIAL TRANSMISSION (A)
2	14 - C1	TRASMISSIONE SERIALE (B)	SERIAL TRANSMISSION (B)
3	15 - C1	TENSIONE BATTERIA DA FUSIBILE "F2"	BATTERY VOLTAGE FROM FUSE "F2"
4	16 - C1	NEGATIVO PRINCIPALE	MAIN NEGATIVE
5	17 - C1	PULSANTE A FUNGO	EMERGENCY BUTTON
6	18 - C1	PULSANTE A FUNGO	EMERGENCY BUTTON



PONTE ROSSO 1 MMQ IN SOSTITUZIONE DI "PQC"
1 MMQ RED WIRE AS BRIDGE TO SUBSTITUTE "PQC".

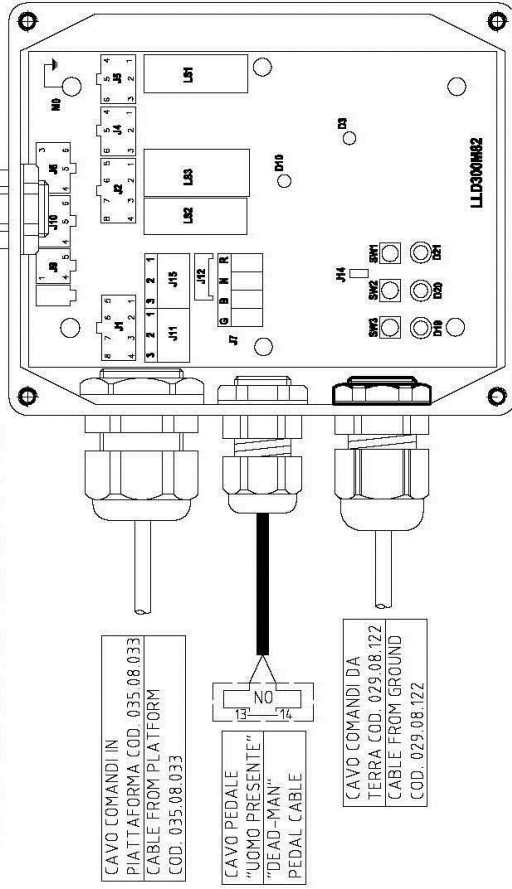
CONNETTORE "J5" SU SCHEDA COD. 021614 CONNECTOR "J5" ON CARD (021614)			
N. PIN PIN #	N. FILO / GUAINA WIRE/SHEATH #	NOTE	NOTE
1	9 - 035.08.033	ALIME POSITIVO SCHEDE CELLE	POSITIVE SUPPLY CELL CARD
2	12 - 035.08.033	ALIME NEGATIVO SCHEDE CELLE	NEGATIVE SUPPLY CELL CARD
3		LIBERO	FREE
4	10 - 035.08.033	SEGNALE CELLE	CELL SIGNAL
5	11 - 035.08.033	SEGNALE CELLE	CELL SIGNAL
6		LIBERO	FREE

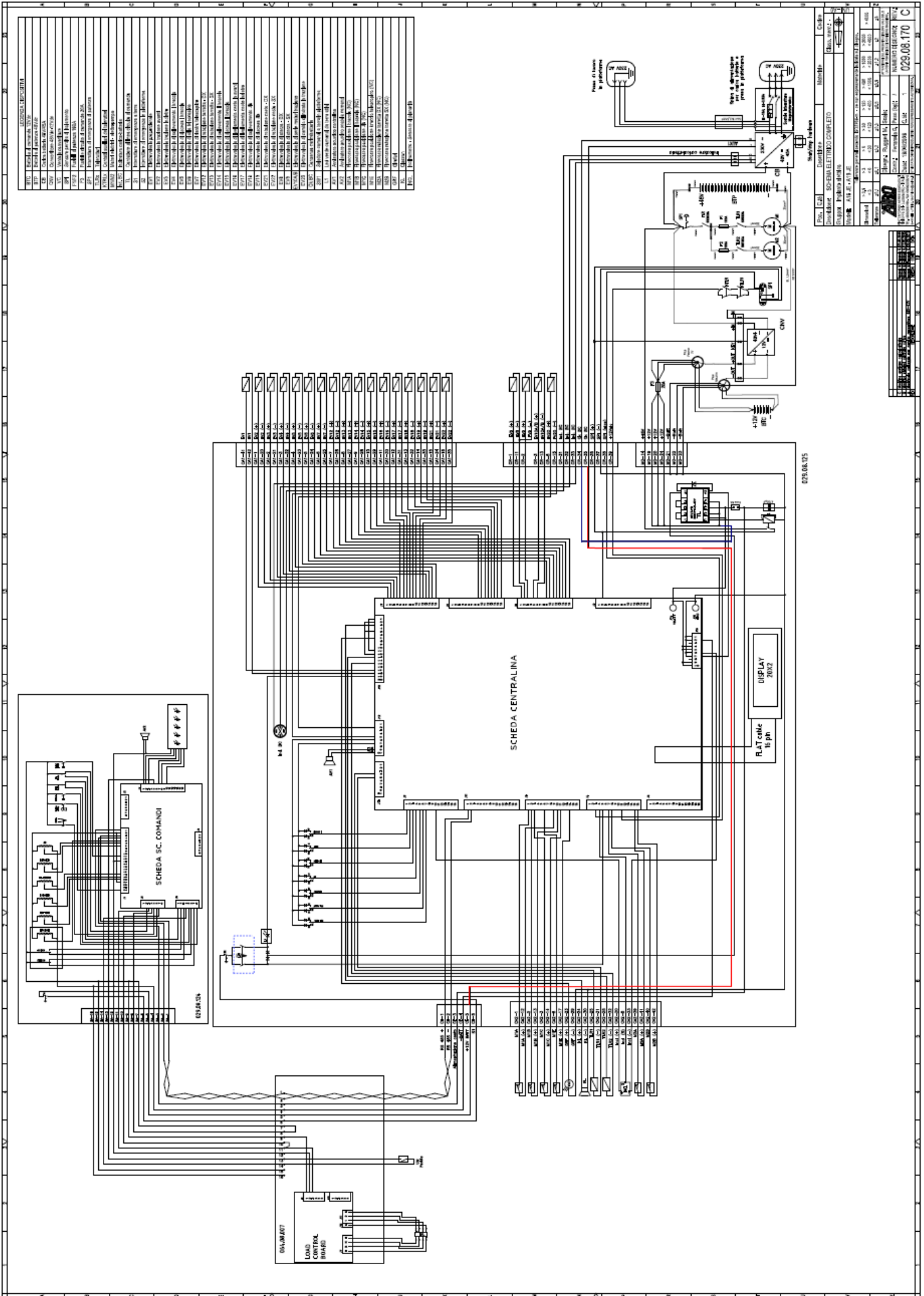


CAVO PEDALE "UOMO PRESENTE" "DEAD-MAN" PEDAL CABLE			
N. FILO WIRE #	PIN / CONNECT. PIN / CONNECT.	NOTE	NOTE
1	24 - C1	POSITIVO	POSITIVE
2	23 - C1	SEGNALE PEDALE	PEDAL SIGNAL

CONNETTORE "J7" SU SCHEDA COD. 021614 CONNECTOR "J7" ON CARD (021614)			
N. PIN PIN #	N. FILO / GUAINA WIRE / SHEATH #	NOTE	NOTE
G	GIALLO-CELLA/YELLOW-CELL		
B	BIANCO-CELLA / WHITE-CELL		
N	NERO-CELLA / BLACK-CELL		
R	ROSSO-CELLA / RED-CELL		

CAVO COMANDI IN PIATTAFORMA PLATFORM COMMAND CABLE COD. 035.08.033			
N. FILO WIRE #	PIN / CONNECT. PIN / CONNECT.	NOTE	NOTE
1	1 - C1	TRASMISSIONE SERIALE (A)	SERIAL TRANSMISSION (A)
2	2 - C1	TRASMISSIONE SERIALE (B)	SERIAL TRANSMISSION (B)
3	3 - C1	TENSIONE BATTERIA DA FUSIBILE "F2"	BATTERY VOLTAGE FROM FUSE "F2"
4	4 - C1	NEGATIVO PRINCIPALE	MAIN NEGATIVE
5	5 - C1	PULSANTE A FUNGO	EMERGENCY BUTTON
6	6 - C1	PULSANTE A FUNGO	EMERGENCY BUTTON
7	7 - C1	USCITA POSITIVO PER "PQC"	POSITIVE OUTPUT FOR "PQC"
8	8 - C1	SEGNALE "PQC"	"PQC" SIGNAL
9	1 - J5	ALIM. POSITIVO SCHEDE CELLE	POSITIVE SUPPLY FOR LOAD-CELL CARD
10	4 - J5	SEGNALE CELLE	LOAD-CELLS SIGNAL
11	4 - J5	SEGNALE CELLE	LOAD-CELLS SIGNAL
12	2 - J5	ALIM. NEGATIVO SCHEDE CELLE	NEGATIVE SUPPLY FOR LOAD-CELL CARD
13	11 - C1	POSITIVO PEDALE "UOMO PRESENTE"	"DEAD MAN PEDAL" POSITIVE
14	12 - C1	SEGNALE PEDALE "UOMO PRESENTE"	"DEAD MAN PEDAL" SIGNAL
15	9 - C1	POSITIVO "PQC"	"PQC" POSITIVE
16	10 - C1	NEGATIVO "PQC"	"PQC" NEGATIVE

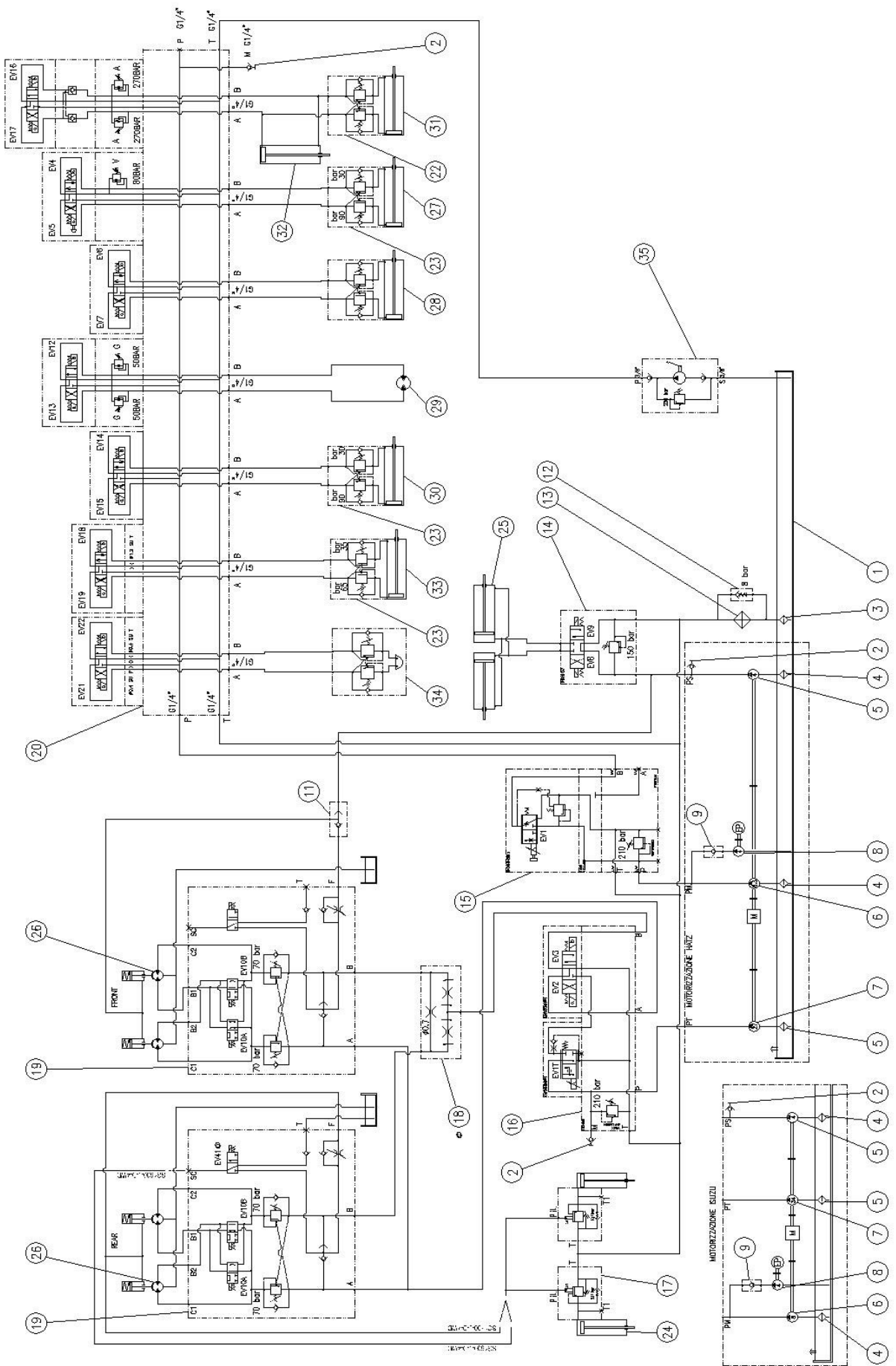




12. HYDRAULIC DIAGRAM

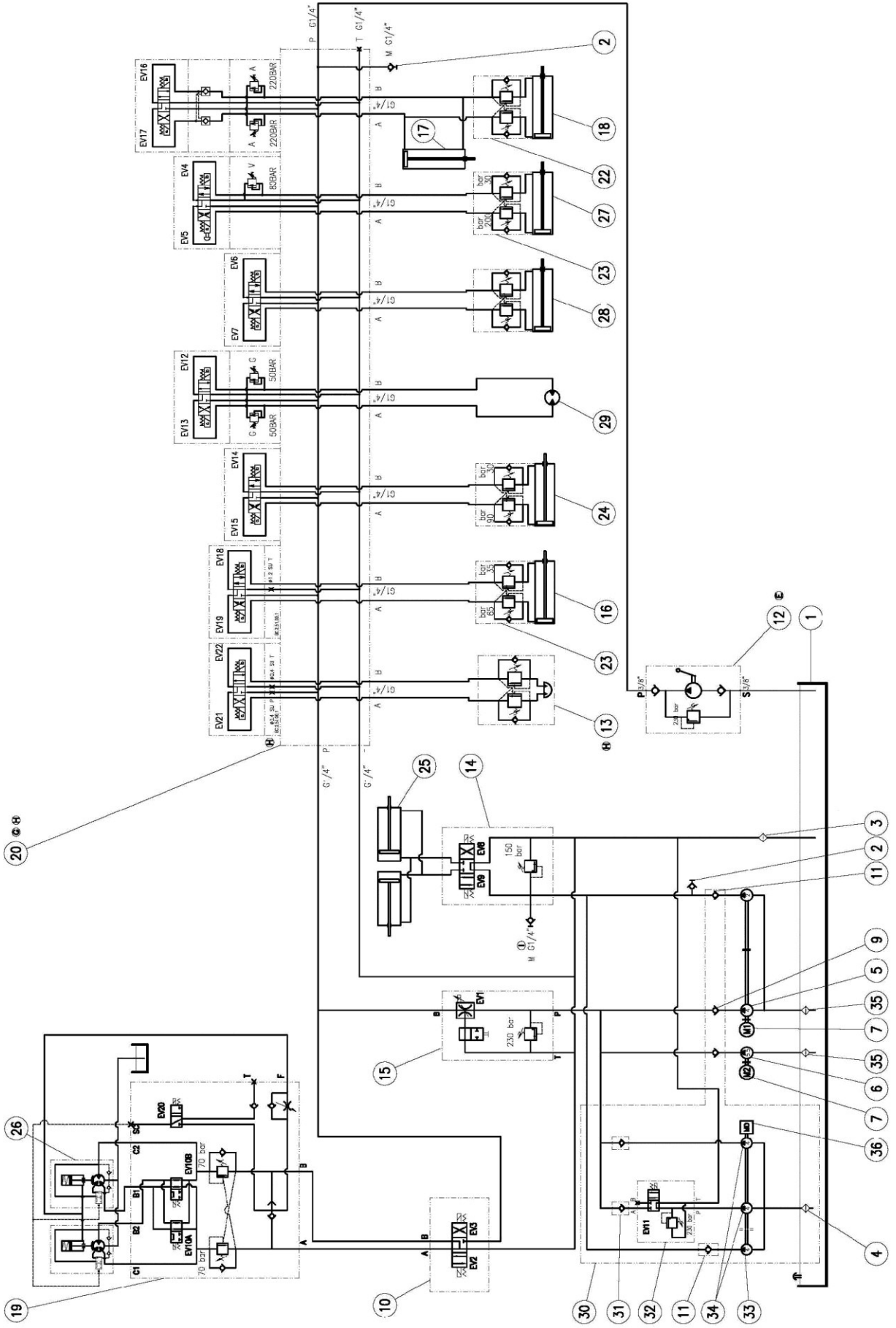
A16 JRTD A18 JRTD
N°029.07.039

1	OIL TANK
2	QUICK COUPLING
3	RETURN FILTER
4	SUCTION FILTER
5	STEERING PUMP
6	MOVEMENT PUMP
7	DRIVE PUMP
8	EMERGENCY OPERATION PUMP
9-11	UNIDIRECTIONAL VALVE
12	BY-PASS VALVE
13	AIR/OIL EXCHANGER
14	HYDRAULIC STEERING BLOCK
15	MOVEMENT PROPORTIONAL CONTROL BLOCK
16	DRIVE PROPORTIONAL CONTROL BLOCK
17	BLOCK VALVE
18	FLOW DIVIDER
19	DRIVE PLATE
20	MOVEMENT SOLENOID VALVE BLOCK
22-23	OVER-CENTER VALVE
24	SWING AXLE CYLINDER
25	STEERING CYLINDER
26	DRIVE MOTOR REDUCER
27	SCISSOR CYLINDER
28	TELESCOPIC BOOM EXTENTION CYLINDER
29	TURRET ROTATION MOTOR REDUCER
30	BOOM CYLINDER
31	PLATFORM LEVELLING CYLINDER
32	SENSOR CYLINDER
33	JIB CYLINDER
34	PLATFORM ROTATION ACTUATOR
35	MANUAL PUMP
36	UNIDIRECTIONAL RELIEF VALVE
M	DIESEL MOTOR
EP	EPEMERGENCY ELECTROPUMP
EV1	MOVEMENT PROPORTIONAL JOYSTICK CONTROL
EV1T	DRIVE PROPORTIONAL JOYSTICK CONTROL
EV2	FORWARD DRIVE SOLENOID VALVE
EV3	BACKWARD DRIVE SOLENOID VALVE
EV4	SCISSOR LIFTING SOLENOID VALVE
EV5	FIRST SCISSOR LOWERING SOLENOID VALVE
EV6	BOOM EXTENSION SOLENOID VALVE
EV7	BOOM RETRACTION SOLENOID VALVE
EV8	RIGHT STEERING SOLENOID VALVE
EV9	LEFT STEERING SOLENOID VALVE
EV10	SERIES-PARALLEL DRIVE SOLENOID VALVE
EV12	RIGHT TURRET ROTATION SOLENOID VALVE
EV13	LEFT TURRET ROTATION SOLENOID VALVE
EV14	BOOM LIFTING SOLENOID VALVE
EV15	BOOM LOWERING SOLENOID VALVE
EV16	FORWARD CAGE LEVELLING SOLENOID VALVE
EV17	BACKWARD 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
EV41	OSCILLATING AXLE UNLOCK SOLENOID VALVE (ONLY A18 JRTD)



A16 JE A16 JED A18 JE A18 JED
N°029.07.045

1	OIL TANK
2	QUICK COUPLING
3	RETURN FILTER
4-35	SUCTION FILTER
5	DOUBLE PUMP
6-33-34	MOVEMENT PUMP
7	ELECTRIC MOTOR
9-11-31	UNIDIRECTIONAL VALVE
10	DRIVE SOLENOID VALVE
11	UNIDIRECTIONAL VALVE
12	MANUAL PUMP
13	PLATFORM ROTATION ACTUATOR
14	HYDRAULIC STEERING BLOCK
15	MOVEMENT PROPORTIONAL CONTROL BLOCK
16	JIB CYLINDER
17	SENSOR CYLINDER
18	PLATFORM LEVELLING CYLINDER
19	DRIVE PLATE
20	MOVEMENT SOLENOID VALVE BLOCK
22-23	OVER-CENTER VALVE
24	SECOND BOOM CYLINDER
25	STEERING CYLINDER
26	DRIVE MOTOR REDUCER
27	SCISSOR CYLINDER
28	TELESCOPIC BOOM EXTENTION CYLINDER
29	TURRET ROTATION MOTOR REDUCER
30	ELECTRO-DIESEL APPLICATION
32	BY-PASS SOLENOID VALVE
36	DIESEL ENGINE
EV1	MOVEMENT PROPORTIONAL JOYSTICK CONTROL
EV2	FORWARD DRIVE SOLENOID VALVE
EV3	BACKWARD DRIVE SOLENOID VALVE
EV4	SCISSOR LIFTING SOLENOID VALVE
EV5	FIRST SCISSOR LOWERING SOLENOID VALVE
EV6	BOOM EXTENSION SOLENOID VALVE
EV7	BOOM RETRACTION SOLENOID VALVE
EV8	LEFT STEERING SOLENOID VALVE
EV9	RIGHT STEERING SOLENOID VALVE
EV10	SERIES-PARALLEL DRIVE SOLENOID VALVE
EV12	LEFT TURRET ROTATION SOLENOID VALVE
EV13	RIGHT TURRET ROTATION SOLENOID VALVE
EV14	BOOM LIFTING SOLENOID VALVE
EV15	BOOM LOWERING SOLENOID VALVE
EV16	FORWARD CAGE LEVELLING SOLENOID VALVE
EV17	BACKWARD CAGE LEVELLING SOLENOID VALVE
EV18	JIB LIFTING SOLENOID VALVE
EV19	JIB LOWERING SOLENOID VALVE
EV20	HYDRAULIC MOTOR DISPLACEMENT CHANGE SOLENOID VALVE
EV21	LEFT CAGE ROTATION SOLENOID VALVE
EV22	RIGHT CAGE ROTATION SOLENOID VALVE



13. CERTIFICATE CEE



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

EC STATEMENT OF COMPLIANCE - הצהרה על תאימות CE - DECLARATION CE DE CONFORMITE' - EG KONFORMITÄTSEKTLÄRUNG - DECLARACION CE DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ EC 2006/42/CE

Dichiarazione originale	Original Statement of Compliance	Déclaration Originale	Originalerklärung	Declaración Original	Оригинальная декларация
-------------------------	----------------------------------	-----------------------	-------------------	----------------------	-------------------------

Noi - We - Nous - Wir - Nosotros- мы

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

Dichiaro sotto la nostra esclusiva responsabilità che il prodotto:	We attest that the following product:	Declarons sous notre responsabilité exclusive que le produit:	Erklären hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt:	Declaramos bajo nuestra exclusiva responsabilidad que el producto:	Под нашу исключительную ответственность заявляем, что изделие:
--	---------------------------------------	---	---	--	--

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

Modello - Model - Modèle Typ - Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - Chassis No. - Номер Рама	Anno - Year - Année Baujahr - Año - Год
A16 JE	XXXXXXXXXX	XXXXXXXXXX

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

**ICE Spa Via Garibaldi, 20 40011 Anzola Emilia - BO (Italia)
 License no. 0303**

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

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

M.0303.15.5824

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguientes normas:	и со следующими нормами:
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EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

Il firmatario di questa dichiarazione di conformità è autorizzato a costituire il Fascicolo Tecnico.	The person signing this declaration is also the person responsible of the technical file.	Le signataire de cette déclaration de conformité est autorisé à constituer le Dossier Technique.	Der Unterzeichner dieser Konformitätserklärung ist autorisiert, das technische Unterlagen abzufassen.	El firmante de esta declaración de conformidad está autorizado a crear el Expediente Técnico.	Лицо, подписавшее это заявление о соответствии, уполномочено составить техническую документацию оборудования.
--	---	--	---	---	---

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

.....
Pignatti Simone

(Il legale rappresentante - The legal representative)



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

EC STATEMENT OF COMPLIANCE - תצהיר על התאמה CE - DECLARATION CE DE CONFORMITE' - EG KONFORMITÄTSERLÄRUNG - DECLARACION CE DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ EC EC2006/42

Original declaration	Original Statement of Compliance	Déclaration Originale	Originalerklärung	Declaración Original	Оригинальная декларация
Noi - We - Nous - Wir - Nosotros - мы					

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

We declare that the following product:	We attest that the following product:	Declarons sous notre responsabilité exclusive que le produit:	Erklären hiermit unter Übernahme der vollen Verantwortung für diese Erklärung , daß das Produkt:	Declaramos bajo nuestra exclusiva responsabilidad que el producto:	Под нашу исключительную ответственность заявляем, что изделие:
--	---------------------------------------	---	--	--	--

Self-propelled lifting platform
 Piattaforma di Lavoro Elevabile
 Plates-forme Elévatrice Mobiles de Personnel
 Fahrbare Hubarbeitsbühnen
 Plataforma Elevadora Móvil de Personal
 Платформа для высотного работ

Modello - Model - Modèle Typ – Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - Chassis No. - Номер Памы	Anno - Year - Année Baujahr – Ano -Год
A16 JED	XXXXXXXXXX	XXXXXXXXXX

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

ICE Spa Via Garibaldi, 20 40011 Anzola Emilia - BO (Italia)

License no. 0303

con il seguente numero di certificazione:	with the following certification number:	avec le numéro de certification suivant:	Zertifizierten Modell mit folgender Zertifizierungsnummer:	con el siguiente número de certificación:	со следующим сертифицированным номером:
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N.Certificato - Certificate No. - N° du certificat - Bestätigungnummer - N° de certificado – Номер Сертификата

M.0303.15.5825

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguientes normas:	и со следующими нормами:
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EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

Il firmatario di questa dichiarazione di conformità è autorizzato a costituire il Fascicolo Tecnico.	The person signing this declaration is also the person responsible of the technical file.	Le signataire de cette déclaration de conformité est autorisé à constituer le Dossier Technique.	Der Unterzeichner dieser Konformitätserklärung ist autorisiert, das technische Unterlagen abzufassen.	El firmante de esta declaración de conformidad está autorizado a crear el Expediente Técnico.	Лицо, подписавшее это заявление о соответствии, уполномочено составить техническую документацию оборудования.
--	---	--	---	---	---

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

Pignatti Simone

(Il legale rappresentante - The legal representative)



AIRO È UNA DIVISIONE TIGIEFFE SRL - VIA VILLA SUPERIORE, 82 -42045 LUZZARA (RE)

TEL. +39 0522 977365 FAX +39 0522 977015

EC STATEMENT OF COMPLIANCE - תצהיר על התאמה CE - DECLARATION CE DE CONFORMITE' - EG KONFORMITÄTSEKLRÄRUNG - DECLARACION CE DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ EC EC2006/42

Dichiarazione originale	Original Statement of Compliance	Déclaration Originale	Originalerklärung	Déclaration Originale	Оригинальная декларация
-------------------------	----------------------------------	-----------------------	-------------------	-----------------------	-------------------------

Noi - We - Nous - Wir - Nosotros - мы

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

Dichiaro sotto la nostra esclusiva responsabilità che il prodotto:	We attest that the following product:	Declarons sous notre responsabilité exclusive que le produit:	Erkläre hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt:	Declaramos bajo nuestra exclusiva responsabilidad que el producto:	Под нашу исключительную ответственность заявляем, что изделие:
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Self-propelled lifting platform
 Piattaforma di Lavoro Elevabile
 Plates-forme Elévatrice Mobiles de Personnel
 Fahrbare Hubarbeitsbühnen
 Plataforma Elevadora Móvil de Personal
 Платформа для высотного работ

Modello - Model - Modèle Typ - Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Рама	Anno - Year - Année Vaujahr - Ano - Год
A16 JRTD	XXXXXXXXXX	XXXXXXXXXX

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

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con il seguente numero di certificazione:	with the following certification number:	avec le numéro de certification suivant:	Zertifizierten Modell mit folgender Zertifizierungsnummer:	con el siguiente número de certificación:	со следующим сертифицированным номером:
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N.Certificato - Certificate No. - N° du certificat - Bestätigungnummer - N° de certificado - Номер Сертификата

M.0303.15.5826

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguientes normas:	и со следующими нормами:
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EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

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--	---	--	---	---	---

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

Pignatti Simone

(Il legale rappresentante - The legal representative)



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

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

EC2006/42

Dichiarazione originale	Original Statement of Compliance	Déclaration Originale	Originalerklärung	Déclaration Originale	Оригинальная декларация
-------------------------	----------------------------------	-----------------------	-------------------	-----------------------	-------------------------

Noi - We - Nous - Wir - Nosotros - мы

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--	---------------------------------------	---	--	--	--

Piattaforma di Lavoro Elevabile
 Self-propelled lifting platform
 Plates-forme Elévatrice Mobiles de Personnel
 Fahrbare Hubarbeitsbühnen
 Plataforma Elevadora Móvil de Personal
 Платформа для высотного работ

Modello - Model - Modèle Typ - Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Памы	Anno - Year - Année Baujahr - Ano - Год
A18 JE	XXXXXXXXXX	XXXXXXXXXX

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

ICE Spa Via Garibaldi, 20 40011 Anzola Emilia - BO (Italia)

License no. 0303

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

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

M.0303.15.5827

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguientes normas:	и со следующими нормами:
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EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

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--	---	--	---	---	---

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

Pignatti Simone

(Il legale rappresentante - The legal representative)



AIRO È UNA DIVISIONE TIGIEFFE SRL - VIA VILLA SUPERIORE, 82 -42045 LUZZARA (RE)
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DICHIARAZIONE CE DI CONFORMITA' - CE DECLARATION OF CONFORMITY - DECLARATION CE DE CONFORMITE' - EG KONFORMITÄTSEKLRÄRUNG - DECLARACION CE DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ ЕС

EC2006/42

Dichiarazione originale	Original Statement of Compliance	Déclaration Originale	Originalerklärung	Déclaration Originale	Оригинальная декларация
-------------------------	----------------------------------	-----------------------	-------------------	-----------------------	-------------------------

Noi - We - Nous - Wir - Nosotros - мы

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

Dichiaro sotto la nostra esclusiva responsabilità che il prodotto:	We attest that the following product:	Declarons sous notre responsabilité exclusive que le produit:	Erklären hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt:	Declaramos bajo nuestra exclusiva responsabilidad que el producto:	Под нашу исключительную ответственность заявляем, что изделие:
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Piattaforma di Lavoro Elevabile
 Mobile Elevating Work Platform
 Plates-forme Elévatrice Mobiles de Personnel
 Fahrbare Hubarbeitsbühnen
 Plataforma Elevadora Móvil de Personal
 Платформа для высотного работ

Modello - Model - Modèle Typ - Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Памы	Anno - Year - Année Baujahr - Ano - Год
A18 JED	XXXXXXXXXX	XXXXXXXXXX

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

ICE Spa Via Garibaldi, 20 40011 Anzola Emilia - BO (Italia)

License no. 0303

con il seguente numero di certificazione:	with the following certification number:	avec le numéro de certification suivant:	Zertifizierten Modell mit folgender Zertifizierungsnummer:	con el siguiente número de certificación:	со следующим сертифицированным номером:
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N.Certificato - Certificate No. - N° du certificat - Bestätigungnummer - N° de certificado - Номер Сертификата

M.0303.15.5828

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguientes normas:	и со следующими нормами:
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EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

Il firmatario di questa dichiarazione di conformità è autorizzato a costituire il Fascicolo Tecnico.	The person signing this declaration is also the person responsible of the technical file.	Le signataire de cette déclaration de conformité est autorisé à constituer le Dossier Technique.	Der Unterzeichner dieser Konformitätserklärung ist autorisiert, das technische Unterlagen abzufassen.	El firmante de esta declaración de conformidad está autorizado a crear el Expediente Técnico.	Лицо, подписавшее это заявление о соответствии, уполномочено составить техническую документацию оборудования.
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Luzzara (RE), data-date-date-Datum-fecha-Дата

Pignatti Simone

(Il legale rappresentante - The legal representative)



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

EC STATEMENT OF COMPLIANCE - הצהרה על התאמה CE - DECLARATION CE DE CONFORMITE' - EG KONFORMITÄTSEKTLÄRUNG - DECLARACION CE DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ EC EC2006/42

Dichiarazione originale	Original Statement of Compliance	Déclaration Originale	Originalerklärung	Déclaration Originale	Оригинальная декларация
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Noi - We - Nous - Wir - Nosotros - мы

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

Dichiaro sotto la nostra esclusiva responsabilità che il prodotto:	We attest that the following product:	Declarons sous notre responsabilité exclusive que le produit:	Erklaren hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt:	Declaro bajo nuestra exclusiva responsabilidad que el producto:	Под нашу исключительную ответственность заявляем, что изделие:
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Piattaforma di Lavoro Elevabile
 Self-propelled lifting platform
 Plates-forme Elévatrice Mobiles de Personnel
 Fahrbare Hubarbeitsbühnen
 Plataforma Elevadora Móvil de Personal
 Платформа для высотного работ

Modello - Model - Modèle Typ - Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Рама	Anno - Year - Année Waujahr - Ano - Год
A18 JRTD	XXXXXXXXXX	XXXXXXXXXX

Al quale questa dichiarazione si riferisce è conforme alle direttive 2006/42/CE, 2014/30/CE, 2005/88/CE e al modello certificato da:	is compliant with the directives 2006/42/CE, 2014/30/CE, 2005/88/CE and with the model certified by:	Faisant l'objet de la présente déclaration est conforme aux directives 2006/42/CE, 2014/30/CE, 2005/88/CE et au modèle certifié par	Auf das sich die vorliegende Erklärung bezieht, den 2006/42/CE, 2014/30/CE, 2005/88/CE Richtlinien und dem von:	Al cual esta declaración se refiere cumple las directivas 2006/42/CE, 2014/30/CE, 2005/88/CE y el modelo certificado por:	К которой это заявление относится, соответствует директивами 2006/42/CE, 2014/30/CE, 2005/88/CE и сертифицированной модели из:
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**ICE Spa Via Garibaldi, 20 40011 Anzola Emilia - BO (Italia)
 License no. 0303**

con il seguente numero di certificazione:	with the following certification number:	avec le numéro de certification suivant:	Zertifizierten Modell mit folgender Zertifizierungsnummer:	con el siguiente número de certificación:	со следующим сертифицированным номером:
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N.Certificato - Certificate No. - N° du certificat - Bestätigungnummer - N° de certificado - Номер Сертификата

M.0303.15.5829

e alle norme seguenti:	and with the following standards:	et aux normes suivantes:	die Erklärung entspricht den folgenden Normen:	y a las siguientes normas:	и со следующими нормами:
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EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

Il firmatario di questa dichiarazione di conformità è autorizzato a costituire il Fascicolo Tecnico.	The person signing this declaration is also the person responsible of the technical file.	Le signataire de cette déclaration de conformité est autorisé à constituer le Dossier Technique.	Der Unterzeichner dieser Konformitätserklärung ist autorisiert, das technische Unterlagen abzufassen.	El firmante de esta declaración de conformidad está autorizado a crear el Expediente Técnico.	Лицо, подписавшее это заявление о соответствии, уполномочено составить техническую документацию оборудования.
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Luzzara (RE), data-date-date-Datum-fecha-Дата

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Pignatti Simone
 (Il legale rappresentante - The legal representative)



AIRO is a division of **TIGIEFFE SRL**

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