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

V SERIES
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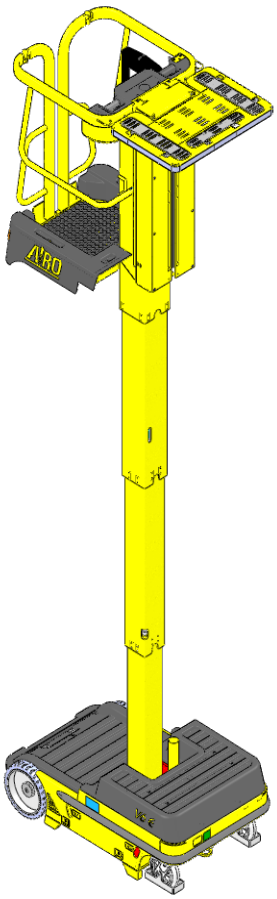

USER'S MANUAL

ENGLISH TRANSLATION OF THE ORIGINAL USER MANUAL IN ITALIAN

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Review date	Modification Log
2013-06	• First release.
2013-10	• Detailed instructions have been added relative to the harness anchoring points.
2014-07	• Label position updated; Description of the new PGT-like (remote) controls added.
2014-09	• Added information on the maximum manual forces. • CEO name changed.
2015-01	• CE Statement of Compliance updated.
2015-04	• Labels, Logo and PLE Model Code updated.
2015-10	• List of recommended hydraulic oils updated. • 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 the lift off the ground” is new. • Reference to EN280:2013 removed from the second part of the manual.
2016-06	• Description of the steering while driving back or forth amended.
2016-06A	• Description of the load control system and its operation amended. • EC-Statement of compliance formats and schemes added.

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 don't throw this manual, take some time to read it through. It's for your own sake and for a better use of your new asset. 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. The reproduction or translation of the whole manual or parts thereof is strictly forbidden without prior written approval of the owner.

CONTENTS

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 the right to modify the product and/or the use and maintenance manual at any time without updating the units already delivered.

1.1. Legal 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
- Original 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. Therefore, customers are recommended to check on the safety procedures applicable in their countries and the Authorities having jurisdiction in their countries for all work-place-safety-related issues. 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. Additional Periodical 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 to 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 in charge of 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 performed before 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 manual is a self-propelled elevating work platform (EWP) designed for lifting /handling loads:

- Material (either on the LIFTING TABLE and/or in the ON-CHASSIS STOWAGE)
- Operator (on the elevating work platform) (EWP)

Therefore, the machine is designed for picking, loading, and unloading of materials that are either packed or of similar shape, small and light. The machine is also designed for aerial works.
The maximum allowed capacity is allocated as follows:

- Materials on the lifting table: 90 kg
- Materials on the ground floor: 130 kg
- Operator stand (work platform): 120 kg

It is absolutely forbidden to exceed the maximum capacity indicated by the plate on the work platform The work platform can be accessed only from the access position, i.e. with the platform completely lowered. It is absolutely forbidden to board the work platform when it is not in the boarding position.
The load must be placed within the perimeter of the LIFTING TABLE and/or GROUND FLOOR. Occasionally, loads of bigger dimensions can be handled provided the maximum capacity is suitably reduced, and the load is secured as indicated in the following chapters. No hanging loads can be handled on the machine, even the maximum capacity is not exceeded.
The machine is not designed for outdoor operations and withstands no wind force. Strictly use indoors on a flat floor, without obstacles, holes and steps, and with sufficient lighting conditions.
No horizontal loads should be placed on the work platform while the machine moves (ropes, cables, and other fixations etc. are not allowed on the machine).

An overload controller stops the machine if the load on the platform exceeds the nominal load by approx. 30% (see chapter "General Use and Operation") and the platform is UP.
The machine cannot be used in areas where road vehicles operate. Make sure to alert the presence of the machine by means of suitable signs when it is used in public areas.
The machine is not intended for towing trucks or other vehicles.

⚠ **Do not use the machine for any other purposes and applications than the design ones, unless you priory asked for and obtained the manufacturer's written permission.**
If disposal of the unit is necessary, comply with current local regulations.

1.3.1. Deboarding Off-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 lift 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 panel on ground, while a third one leaves the platform above ground);
- 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 work platform.

This paragraph should not be interpreted as a formal approval by the manufacturer to deboard the lift when 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 vertical telescopic column operated by one hydraulic cylinder.
- A work platform (operator's stand).
- A loading plate for material lifting/handling.

The chassis is motorised to allow the machine to move (see "Use instructions") and has two driving wheels in the back, and two idle pivoting wheels in the front. Steering is possible thanks to different controls between the gear reducers on the right and the gear reducers on the left. Automatic braking is guaranteed by the presence of parking brakes, which automatically activate when drive controls are released.
The hydraulic lifting cylinder of the telescopic extension is single-acting, therefore the lift performs its descent by gravity. The cylinder has a safety solenoid tightly connected to the same. This features allows the loads to be kept in position (elevating operator position and lifting table) even if the flexible supply tube accidentally breaks.
The work platform is equipped with rails and toe-boards of a prescribed height (the height of the rails is $\geq$1100 mm; the height of the toe-boards is $\geq$150 mm).
The front lifting table is available in two variants:
- Manual: the operator decides beforehand the level to be reached by the lifting table, and secures it there using a spring-activated safety pin.

- Electric: the lifting table can be driven UP/DOWN electrically using the controls located in the work platform. In this case, a electro-mechanical jack equipped with automatic parking brakes is engaged.

1.5. Operator's control stations

The machine is equipped with the following operator's stations

- On the work platform (normal operation controls) On the chassis (control panel equipped with a key-selector to select the desired control panel and to start the machine).
- The ground chassis accommodates: The emergency controls to lower or stop the work platform in emergency situations, and a switch to deactivate the parking brakes in case of emergency towing.

1.6. Power supply

The machine is powered by an electro-hydraulic system consisting of rechargeable accumulators, electric geared motors and electric pump. Both the hydraulic and the electric systems are equipped with all necessary safeties and protections (see electric and hydraulic circuit diagrams annexed to this manual).

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.
Discarding of an obsolete unit must be organized in accordance with the 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 a 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. The main data of the machine to which this book refers are indicated in the following boxes:

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

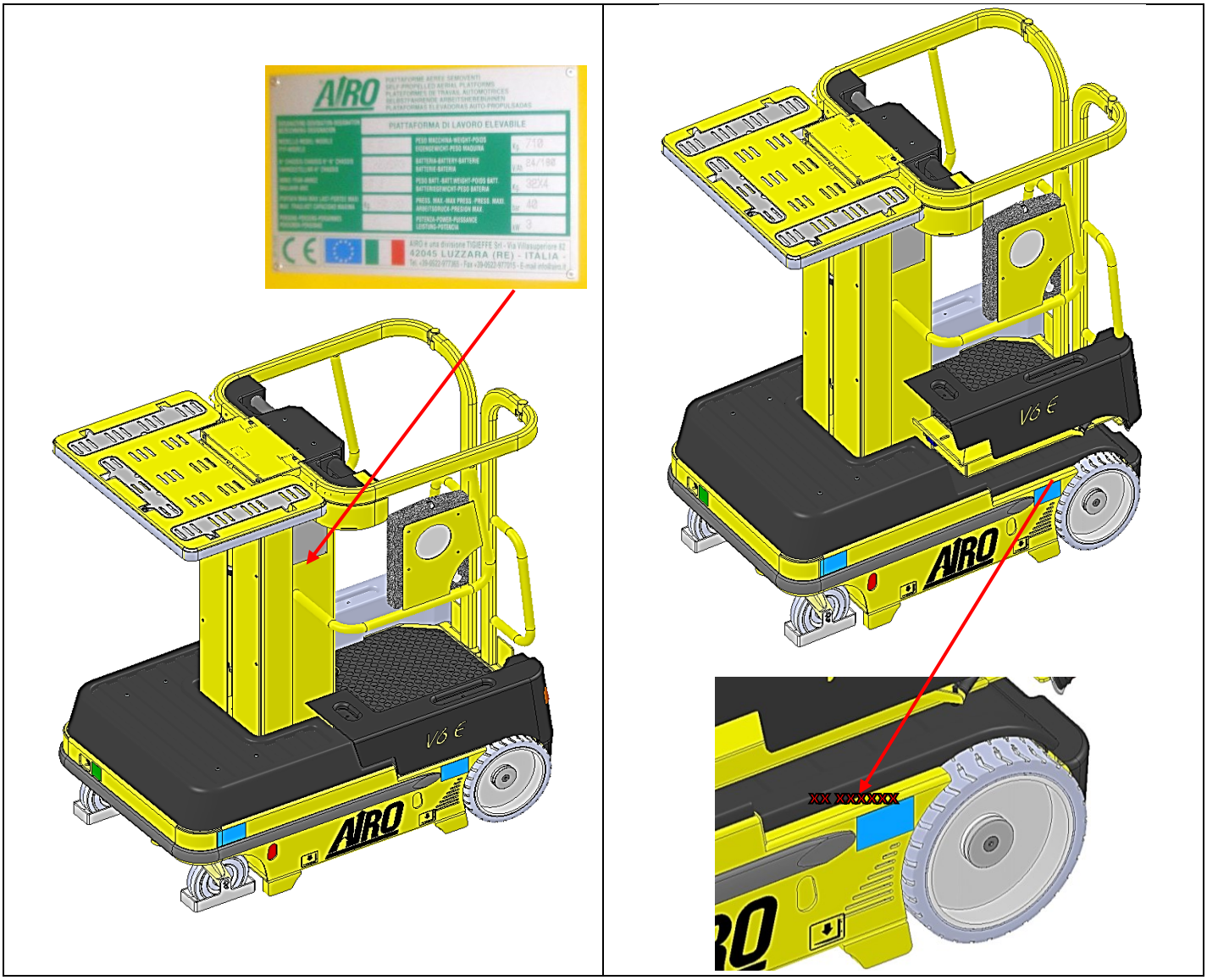


Fig. 1

1.9. Location of the main components

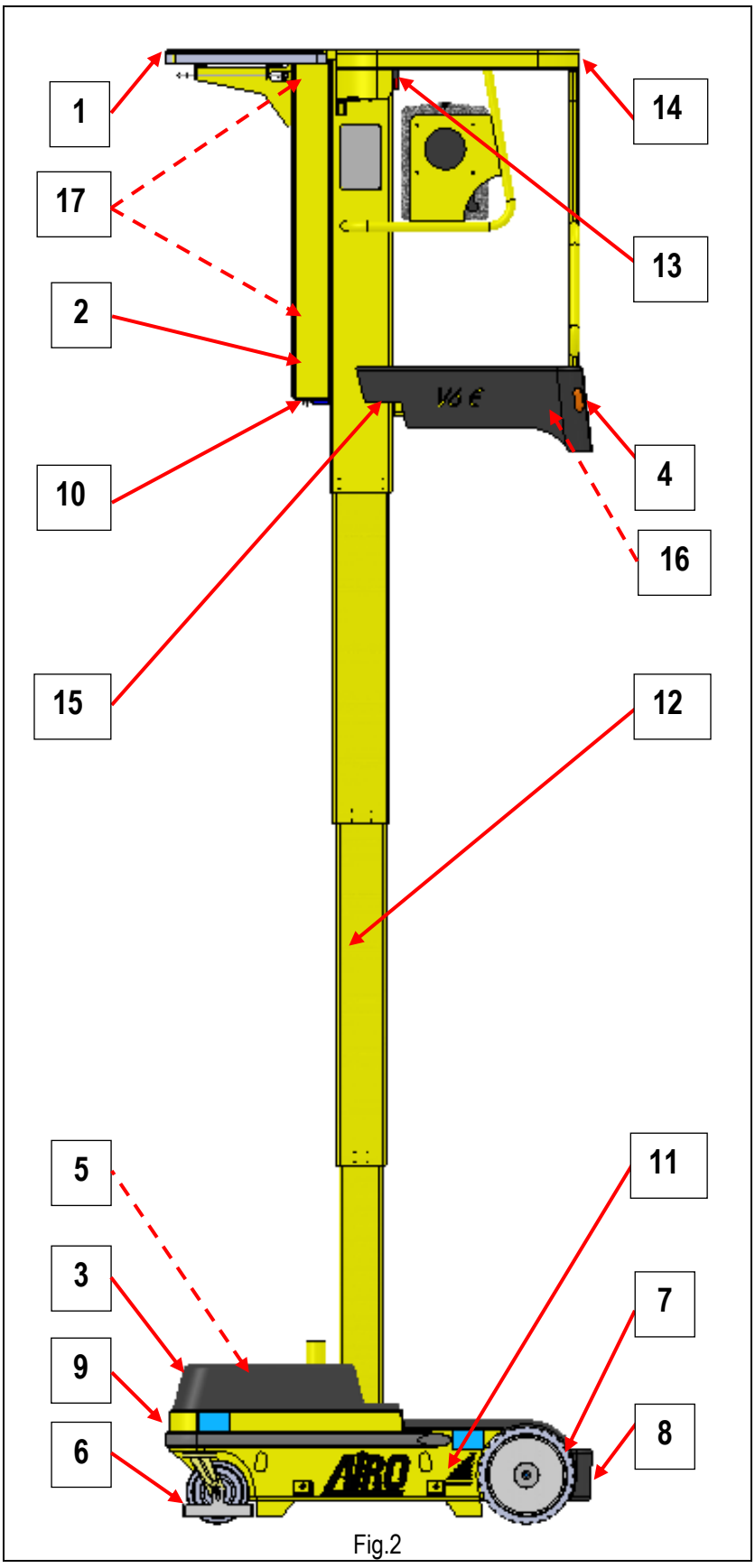


Fig.2

1) Lifting table (manual or motorized)
2) Mechanical jack (optional for motorized lifting tables)
3) On-chassis material storage
4) Flashing lights (optional)
5) Acoustic start alert
6) Pivoting wheels
7) Driving wheels and drive geared motors
8) 230V battery-charger power socket
9) Emergency descent control
10) Microswitch M1
11) Ground chassis with:
    - Electric pump;
    - Overcentre
    - Battery
    - Inclinometer
    - Battery charger
    - Electric control unit
12) Telescopic lifting column and cylinder
13) Controls on the work platform
14) Work platform
15) Microswitch M3 (lifting limit switch)
16) Microswitches M14-M15 (gates control)
17) Microswitches M16-M1 (limit switch for motorized lifting tables)

2. TECHNICAL FEATURES OF STANDARD MACHINES (DIMENSIONS AND PERFORMANCE)

Dimensions		**V6 E**	
	Maximum lifting height	5.50	m
	Max. height of the work platform floor	3.50	m
	Max. height of the lifting table	4.65	m
	Ground clearance (at the centre of the chassis)	75	mm
	Ground clearance (under the pot-hole guards)	20	mm
	Max. height of the platform floor, safety valve activation	0.5	m
	Internal steering radius	0	m
	External steering radius	1.35	m
	Max. capacities		kg
	Max. work platform capacity	120	kg
	Max. number of people on the work platform	1	
	Max. capacity of the lifting table	90	kg
	Max. stowage capacity on the chassis	130	kg
	Maximum height during travel	Max. (A)	
	Maximum hydraulic pressure	50	bar
	Rear driving wheels dimensions	Ø305 x 100	mm
	Front steering wheels dimensions	Ø200 x 50	mm
	Types of puncture-proof tyres	Non-marking	
	Transport dimensions	0,81 x 1,37 x 1,51	m
	Machine weight w. no load	780	kg
Stability limits:			
	Longitudinal inclination	2	°
	Lateral inclination	2	°
	Admissible wind speed	0 (B) (indoor use)	m/s
	Maximum manual force	200	N
	Max. load per wheel	420	Kg
Specifications:			
	Battery type	Gel / AGM (C)	
	Voltage/capacity of the standard battery	4 x 6 / 180	V/Ah
	Weight of the standard batteries	4 x 32	kg
	Single phase battery charger	24/25 HF	V/A
	Max. current absorbed by the battery charger	12	A
	Electrical pump power	3	kW
	Max. absorbed current	160	A
	Power of the electric motors used for travel	2 x 0.7	kW
	Max. absorbed current	2 x 30	A
	Power of electric motor of the lifting table (optional)	0.125	kW
	Max. absorbed current	10	A
	Max. travel speed	6	km/h
	Safety travel speed	0.8	km/h
	Max. work platform UP-speed (with one person on board)	0.1	m/s
	Max. work platform DOWN-speed (with one person on board)	0.1	m/s
	Max. up-speed of the lifting table (optional)	28	mm/s
	Max. down-speed of the lifting table (optional)	35	mm/s
	Oil tank capacity	18	l
	Max admissible gradient	25	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-20	°C

(A) Possible drive with operator position and lifting table completely lifted.
(B) Machine to be used indoors (with no wind whatsoever).
(C) Gel or AGM = batteries with no need of operator maintenance.

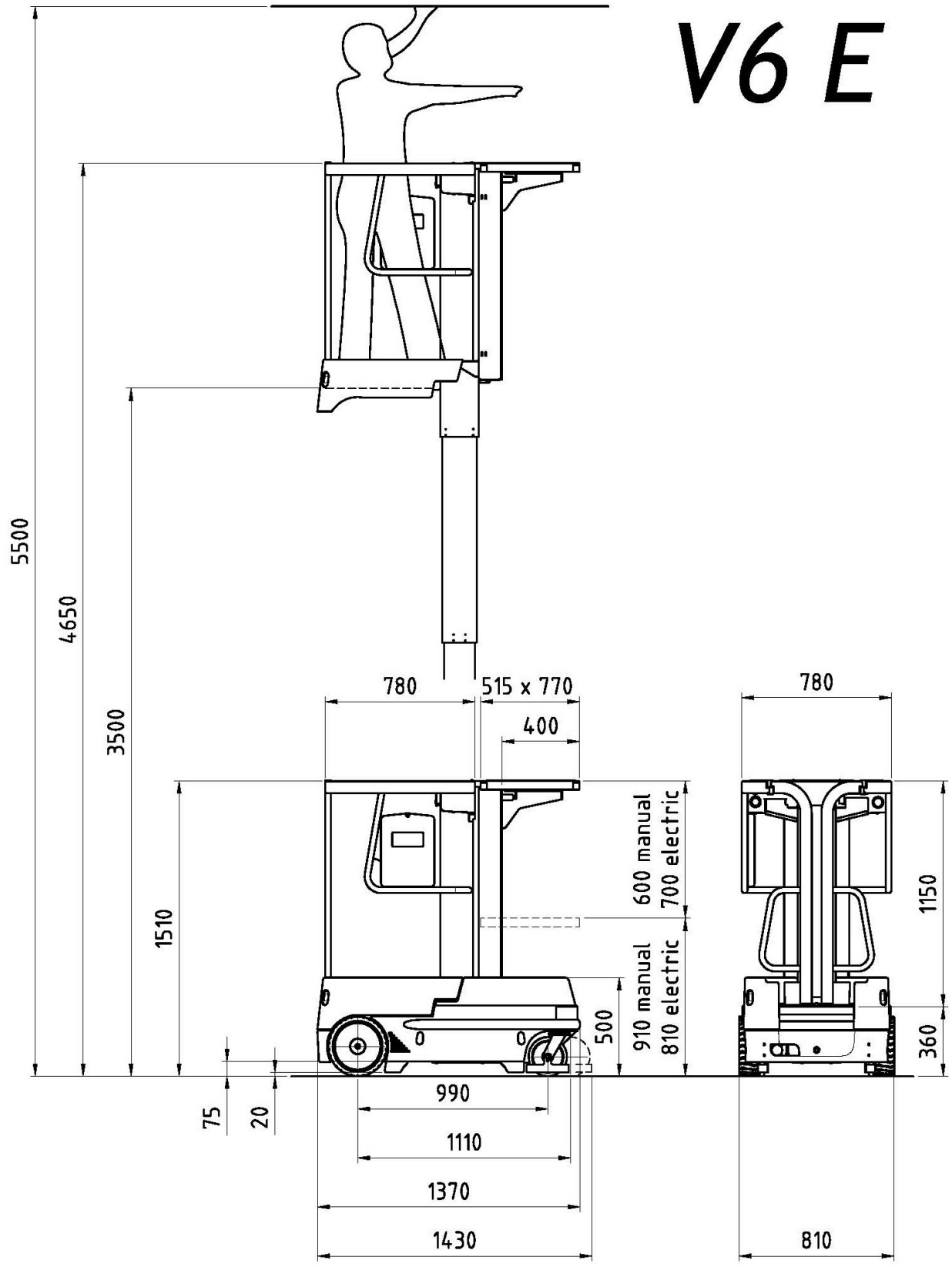

V6 E
5500
4650
3500
1510
780
515 x 770
400
780
600 manual
700 electric
910 manual
810 electric
500
1150
360
75
20
990
1110
1370
1430
810

Fig.3

2.1. 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).

As to vibrations in ordinary working conditions:

- - the rms value weighed according to acceleration frequency relevant to the upper limbs is lower than 2.5 m/sec2 ;
- The rms value weighed according to acceleration frequency relevant to the body is lower than 0.5 m/sec2 .

3. SAFETY SIGNS

3.1. Personal protection devices (PPE).

Always wear personal protective equipment according to current regulations concerning industrial health and safety (in particular, hard hat and safety shoes are **COMPULSORY**).
It is the operator'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 Consolidated Law on worker safety Nr. **Dlgs 81/08.**
The harness attaches to one of the anchors shown by the labels, as in the following picture.

Fig.4

3.2. General Safety Rules.

- 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 work 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 machine or any of its elements for grounding connection while welding on the work platform.
- NEVER board/deboard passengers and NEVER load/unload any materials if the work 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. Operating Tips and 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 sufficient. The machine is not equipped with any lightening system.
- The machine must be used indoors only (with no wind whatsoever).
- 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 when the machine is connected to the power 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 increase the max. allowed height of the work platform by means of scaffolds, ladders or other.
- With the machine lifted, do not fasten the work platform to any structure (beams, pillars or wall).
- Do not use the machine as a crane.
- Do not use the machine as a lift.
- Protect the machine (in particular the platform control panel by means of the specially provided cover - optional), and the operator (especially when working in adverse environmental conditions like painting, de-painting, sand-blasting, washing, etc...).
- The machine must be stocked or parked indoors only, protected against atmospheric agents.
- 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 and the loading surfaces is forbidden.
- Avoid knocks and/or contacts with other vehicles and fixed structures.
- The machine can be used in warehouses with limited height only, so that the operator can keep the stability of the stocked material under control.
- Do not leave, or board the platform, unless it is in the proper boarding/deboarding position (see chapter “Accessing the platform”).

3.3.2. Handling

- Before moving the machine make sure that it is fully disconnected from power supply.
- Avoid working at instability, and strictly use the machine on regular and firm grounds. To prevent the machine from tipping over, never exceed the max. slopesunder “Technical Features” and "Stability limits". However, travel and operation on a sloped ground always required utmost caution.
- As soon as the work platform is UP (the tolerance varies from model to model) the safety speed is automatically activated (all models of this handbook are approved to the EN Standards 280:2001).
- Travelling with lifted work platform should be strictly limited to very flat grounds, without any holes or steps. In this case, mind the overall dimensions of the machine to avoid hitting against nearby obstacles.
- While the machine travels with lifted work platform, make sure there are no loads on the work platform floor (operators on board are not allowed to pull wires or ropes etc...).
- Do not travel on roads.
- Do not use the machine for transporting people (see paragraph 1.2 “Application field”). The only person allowed on board is the operator in the driver's seat.
- When travelling up and down a ramp floor, make sure the max. slope does not exceed the one indicated at chapter “2 TECHNICAL FEATURES", and that the work platform is DOWN.
- Do not use the machine as a towing vehicle.
- Make sure that there are no obstacles or impairment within the site area.
- Mind the overhead area before lifting any machine part to avoid dangerous crushing and collisions.

3.3.3. Operating procedures

- The machine is equipped with a slope sensor that disables all lifting operations if the machine stand outside of the stability limits. Working operations can be resumed only after regaining a safe position. If the acoustic alarm goes off and the red pilot light on the platform control panel turn on, it means that the machine is not in the right position (see paragraphs relevant to “Use instructions”). Bring it to a safe position before retrieving service/operation. If the slope sensor triggers the alarm while the work platform is UP, the operator may still perform the operations needed to bring it down.
- The machine is equipped with an overload controller stopping all platform operations in case of an overload. Platform operation can be resumed only after removing the excess load. If the acoustic alarm on the platform control panel goes off, it means that the machine is overloaded. Remove the excess load before retrieving service/operation.
- The machine can be equipped alternatively or simultaneously with two hand-safety devices to avoid the risks of shearing and crushing between the chassis and the platform during lowering.

⚠

1. The descent of the platform automatically stops when its floor is about 0.5 m above ground. In this condition, the acoustic start alert beeps faster to warn you of a possible danger. The operator on the platform must release the descent controls and wait for the acoustic alarm to go off (about 3 sec.), before continuing the descent. The procedure is the following: the acoustic alarm, and motion detector (if available) immediately start beeping faster, and movement is delayed by about 1.5 seconds. The above procedure is triggered every time when you try to descend the platform below the automatic stop position. (see "Lifting and lowering").

2 The plastic casing on the chassis under the work platform is installed on springs and controlled by micro-switches. Any pressure whatsoever on this casing (for example a resting foot) causes the activation of the red pilot light and of the acoustic alarm, and stops the descent of the work platform.

- The entry gates of the work platform are fitted with micro-switches for controlling the closed position. If one or both gates are not perfectly closed:
  a) and the platform is DOWN, lifting will not be possible (just travelling).
  b) And the platform is UP, all functions will be disabled.
- The machine is equipped with a battery status detector (battery protection device). When battery is left with 20% charge, a red light warns the operator on board. In this condition, no lifting is possible, and the battery should be recharged immediately.
- Do not lean over the hand rails of the work platform.
- Do not wear baggy or hanging clothes.
- Make sure that no people other than the operator, are standing in the operation area of the machine. The operator on the work platform should watch out to avoid hitting other people/ workers or vehicles on the ground.
- When working in public areas, make sure to prevent other unauthorized people from approaching the machine and its various groups and components. Confine your site by means of effective all-round barriers or other suitable signage.

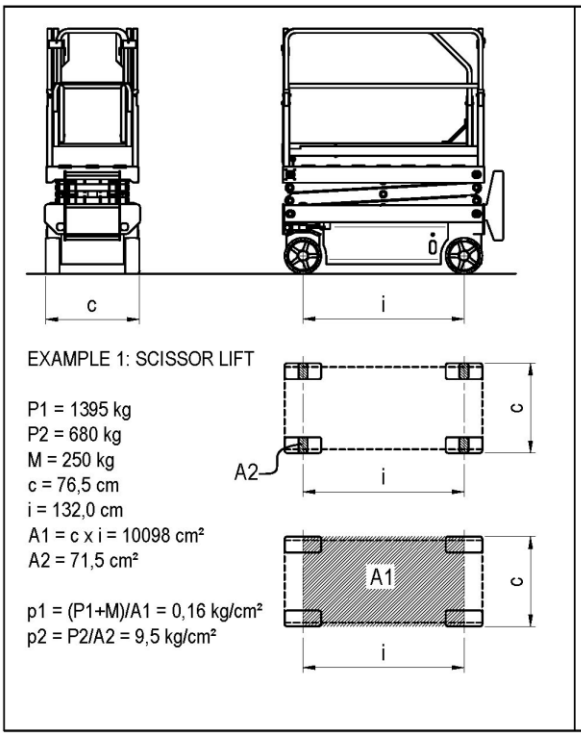
- Do not operate the work platform UP unless the machine is on a solid and flat surface. Strictly perform travel with lifted work platform, if the ground is flat and solid.
- At the end of work, always remove the keys from the control panel and keep them in a safe place to prevent unauthorized people from using the machine.
- The loads handled on the lifting table should be fitting will within its perimeter. Occasionally, loads of bigger dimensions can be handled provided the maximum capacity is suitably reduced, and the load is secured as indicated in the following chapters.
- Only lift packed goods of homogeneous shape and mass making sure that they do not exceed the maximum weight capacity.
- Do not lift persons other than on the work platform.

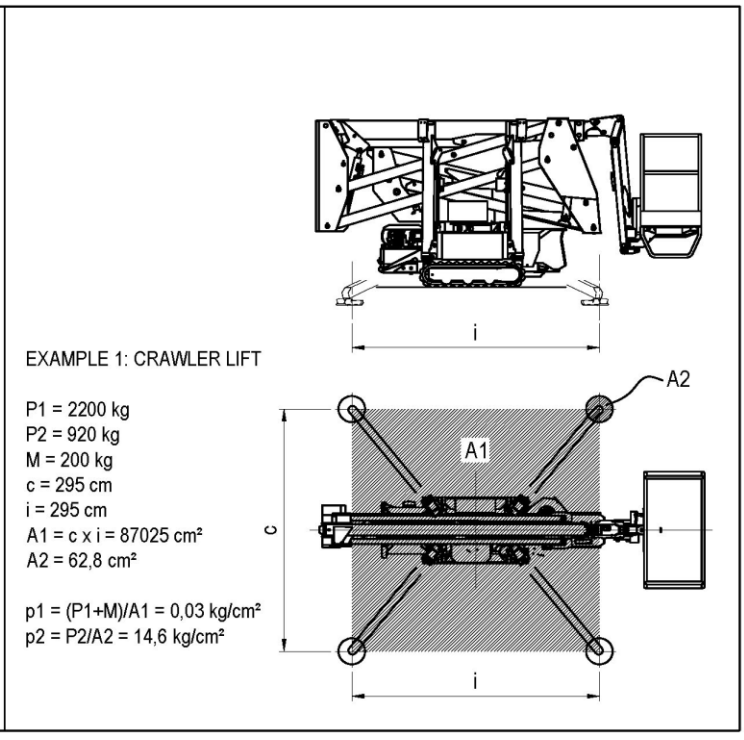
When deciding where to place the machine, make sure to account for each and every possible obstacle and mind the clearance requirements set forth in this manual (Chapter 2).

3.3.4. 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 with a certain safety margin.
The following chart provides the parameters and two examples of calculation of the average pressure on the ground below the machine and max pressure underneath the wheels or stabiliser outriggers (p1 and p2).

SYMBOL	U.M.	DESCRIPTION	EXPLANATION	FORMULA
P1	Kg	Total machine weight	This is the weight of the machine, not including nominal load. Please Note: Always check the plates/labels on the machine for reference.	-
M	Kg	Nominal Load	This is the max. weight allowed on the work platform.	-
A1	cm²	Ground area occupied by the machine	Surface area under the machine determined by multiplying TRACK x WHEEL BASE	A1 = c × 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	cm²	Wheel/ outrigger square	Square of the surface under a wheel/ outrigger. The wheel square is an estimate figure calculated by the operator approximately. The outrigger square depends on the shape of the floor plate.	-
P2	Kg	Max. load on a wheel or outrigger.	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 check the plates/labels on the machine for reference.	-
p1	Kg/cm²	Pressure on ground	Average pressure placed on the ground by the idled machine with full rated load on it.	p1 = (P1 + M) / A1
p2	Kg/cm²	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





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).

⚠ **DO NOT utilize the machine 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/ cm²
Non compact filling earth	**0 – 1**
Mud, peat, etc.	**0**
Sand	**1.5**
Gravel	**2**
Friable earth	**0**
Soft earth	**0.4**
Rigid earth	**1**
Semi-solid earth	**2**
Solid earth	**4**
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.

3.3.5. 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 any preliminary control or use, the operator discovers a defect that could turn into an 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.**
    - Slide the work platform DOWN **only if there is no risk of any greater danger.**
    - Place the **machine in safety conditions** 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 paragraph “Handling and carrying”.
Place the machine onto a firm ground and with a gradeability lower than the max. allowed (see “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 the machine for perfect integrity and read the plates showing machine operating limits.
Before using the machine the operator is to carry out a visual inspection to ensure that:

- The battery is completely charged
- The oil level lies between the min. and max. value (with work platform DOWN)
- The ground is sufficiently flat and solid
- All machine functions are performed safely
- The wheels and drive motors are properly installed on the machine
- The wheels are in good conditions
- The hand-rails are well fastened to the platform and the gate/s are correctly monitored by microswitches
- The structure does not show any visible faults (visually check the welding beams of the lifting column)
- The instructions plates are all perfectly readable
- The controls are perfectly efficient both on the work platform and at emergency ground control panel, including dead-man system.

Do not use the machine for any other purpose than the design ones.

5. OPERATING INSTRUCTIONS

Before using the machine read this chapter thoroughly.

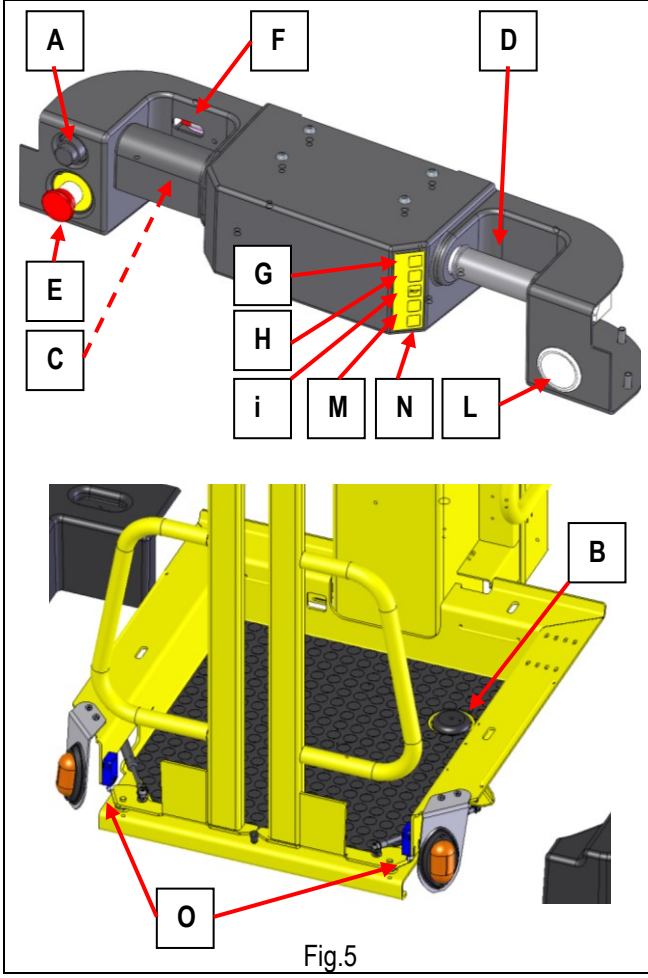
ATTENTION!

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. Platform control panel

The control panel is located on the work platform and is used to:

- Turn the machine ON/OFF, and select the desired control panel.
- Handle the platform in all normal operating steps
- Display some of the operating data and modes (alarms, "dead-man", control etc...)



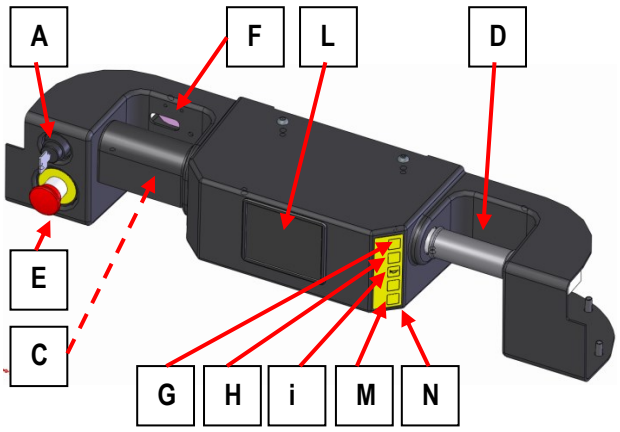


Fig.5

(A) ON-OFF key selector
(B) Dead-man pedal
(C) Steering switch
(D) Drive control handle (forward/reverse drive)
(E) Emergency stop button
(F) Movement enable sensor
(G) Platform UP control button
(H) Platform DOWN control button
(I) Horn
(L) Battery indicator / Hour meter/ Display
(M) Lifting table UP: push-button (optional)
(N) Lifting table DOWN: push-button (optional)
(O) Gates position control microswitches

For safety reasons, before using the controls, press the Dead-man pedal **B** down, and keep your left hand on sensor **F**.
If Pedal **B** or sensor **F** are accidentally released while the machine is operating, the actual movement shall stop immediately.

GATES POSITION
The gate position is controlled by two microswitches. If the platform is DOWN and one or both gates are open, platform lifting is disabled, while travelling is still possible.
If the platform is lifted, having one or both gates open causes all movements to be disabled.

CAUTION!
Keeping the sensor (F) active for over 10 seconds without carrying out any operation will disable the control panel. To operate the machine again, remove and reposition your left hand on the movement enable sensor (F).

5.1.1. ON-OFF main key-selector

The ON/OFF key located on the platform control panel is used to:

- start the machine by selecting one of the two control panels:
  - platform control panel enabled with locking key switch set to the "platform" icon. Stable position with possibility to extract the key.
  - Ground panel enabled (for emergency operations) with key switch set to the chassis symbol. Stable position with possibility to extract the key.
- turn the control circuits OFF by switching the key to OFF. Stable position with possibility to extract the key.

Fig.6

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.

At the end of the working session, press the emergency stop button and always remove the ON-OFF key.

5.1.2. Travelling and steering

The following controls are to be used to move the machine:

- Dead-man pedal **B**
- Movement enable sensor **F**
- Travel control handle **D**
- Steering switch **C**

To steer the unit, activate the steering switch **C**. The steering switch is of proportional type; the extent of steering can be adjusted according to the pressure exerted on the switch.

- Steering with the machine still: By completely activating the steering switch without engaging the travel control-handle (steering from still position), the machine turns around by a revolving movement thus performing a rapid drive reversal in narrow spaces.
- Steering while travelling forwards: While travelling forwards, press the steering switch to the left for left steering or to the right for right steering.
- Steering while travelling backwards: While travelling backwards, press the steering switch to the left for steering to the right or to the right for steering to the left.

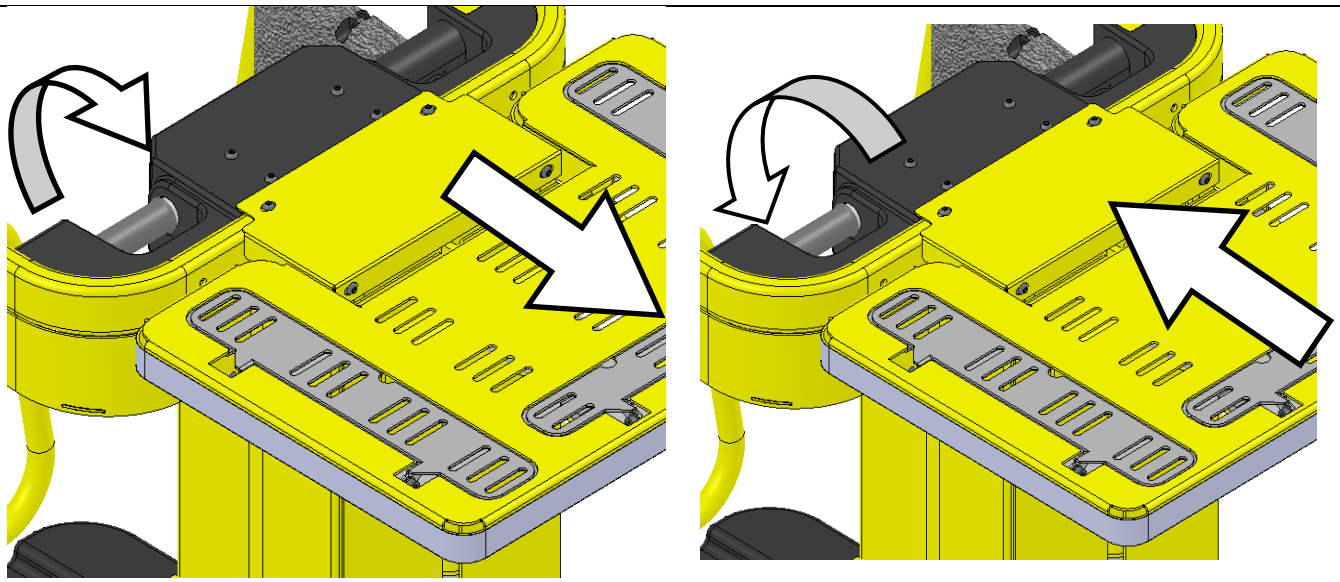


Fig.7

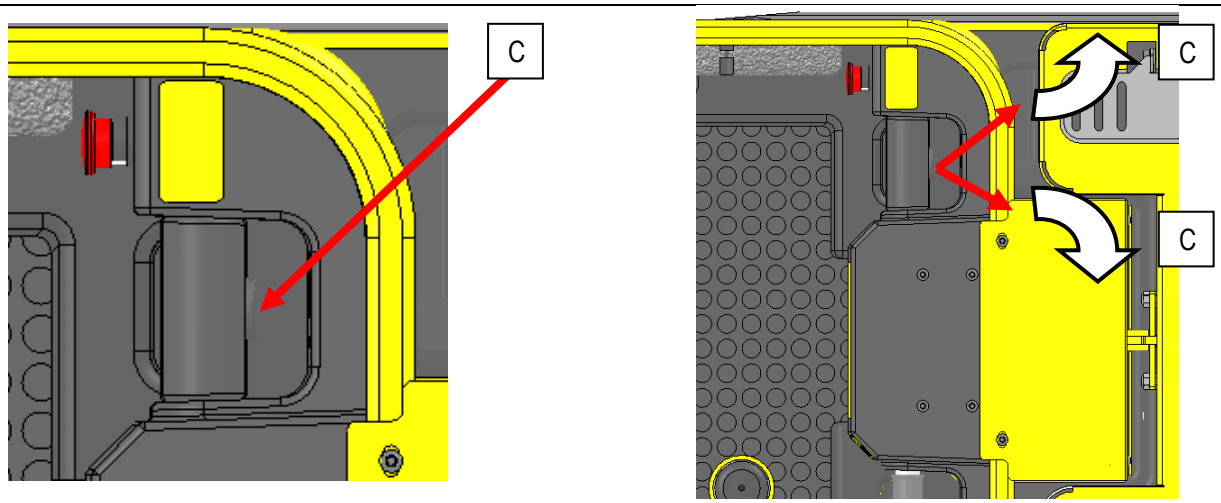


Fig.8

With the work platform completely lowered, you can adjust the speed up to the maximum one. When the work platform is lifted UP, the safety speed is automatically activated.

Do not perform travel with the work platform lifted UP unless the ground is flat and steady.
Performing travel with the work platform UP and loads on the loading table is strictly forbidden. Travelling with load on the lifting table is only possible if the operator position completely DOWN.
Before any movement, verify the presence of people and/or other equipment in close proximity to the machine and, in any case, proceed with the utmost caution.
Drive the machine with lifted platform only on flat grounds, verifying the absence of holes or steps on the floor and bearing in mind the overall dimensions of the machine.
While driving the unit with lifted platform the operator is not allowed to place horizontal loads (the operator on board must not pull ropes, wires, etc.).

5.1.3. Platform Lifting / Lowering

The following controls are to be used to lift and lower the platform:

- Dead-man pedal **B**
- Movement enable sensor **F**
- Platform UP control button **H**
- Platform DOWN control button **I**

To lift the platform press the deadman pedal **B** first, position your left hand on the enable sensor **F** and press the UP control button **H.**

To descend the platform press the deadman pedal **B** first, position your left hand on the enable sensor **F** and press the UP control button **I.**

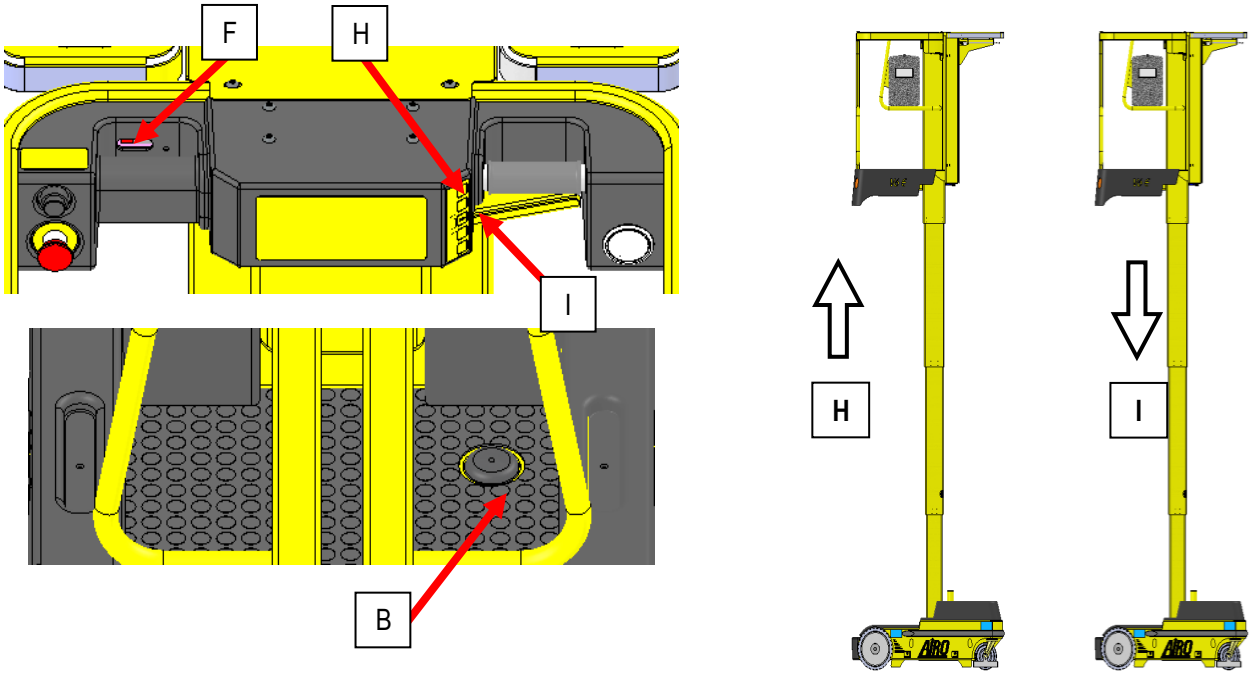


Fig.9

5.1.4. (OPTIONAL) Electrically UP/DOWN controls for the lifting table.

The following controls are to be used to control the lifting table UP/DOWN:

- Dead-man pedal **B**
- Movement enable sensor **F**
- Lifting table UP, control button **N**;
- Lifting table DOWN, control button **O;**

Before operating the lifting table UP, press the deadman pedal **B** then lay your left hand on the sensor **F** and press the UP-control button **N**.
Before operating the lifting table DOWN, press the deadman pedal **B** then lay your left hand on the sensor **F** and press the DOWN-control button **O**.

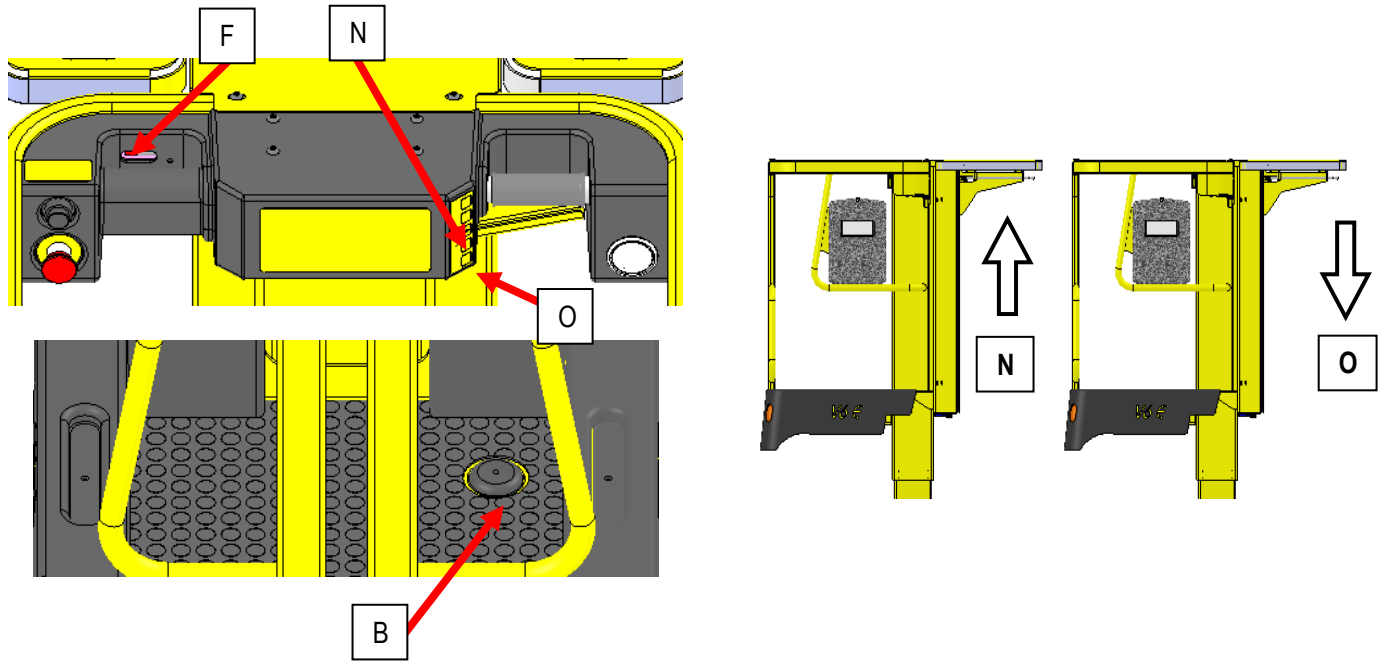


Fig.10

For further instructions on how to lift and hande loads see chapter "5.5 Lifting and Handling loads".
Do not drive the lifting table DOWN while the work platform is DOWN if you still have any load/material on the chassis storage.

5.1.5. Manual table loading mechanism (STANDARD)

The standard front lifting table can be manually positioned at different levels, as needed.
To move the lifting table, pull the handle **P** shown in the figure to the outside and move it to the desired position (upward or downward). Release the handle **P** checking that the lifting table is locked in the chosen position.

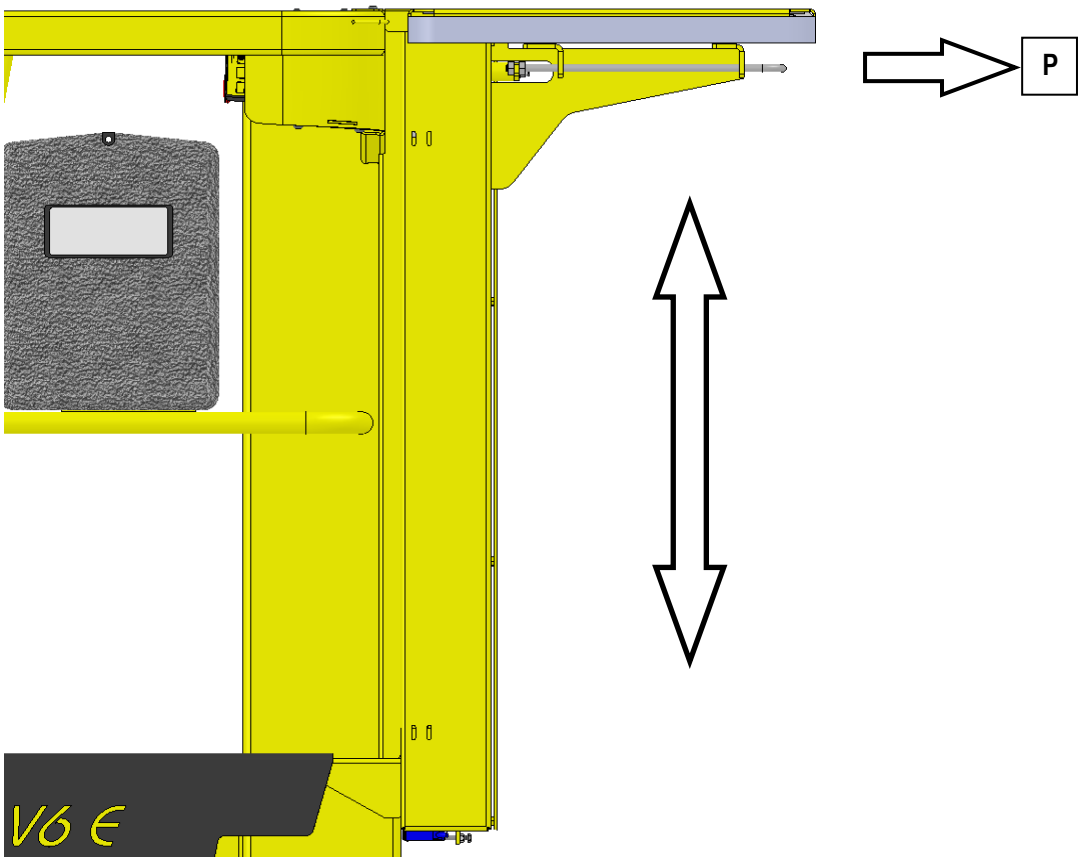


Fig.11

For further instructions on how to lift and hande loads see chapter "5.5 Lifting and Handling loads".

5.1.6. More functions of the control panel on the work platform

5.1.6.1. Emergency STOP button (E)

By pressing the red emergency STOP button, all machine control functions are stopped. Normal functions are enabled by rotating the button of 1/4 turn clockwise (as indicated in position B).
In case of fault, press the red stop button to RESET the system.

The control system is automatically disabled after a few minutes without performing any operation.
To resume the operations press the STOP button once again.

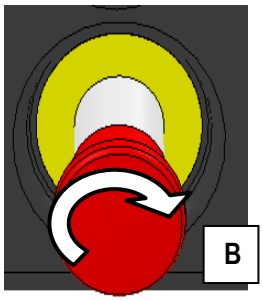


Fig.12

5.1.6.2. Horn (J)

Horn to warn when the machine is moving. Manual horning is possible by pressing the **I-** button.

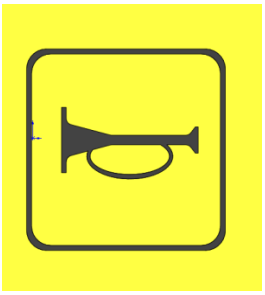


Fig.13

5.1.6.1. Battery indicator / Hour meter / Display (L) - Round display

It shows the actual battery charge, the operating hours of the machine (hour meter), the error messages in the control system (alarms + alarm led), and any maintenance requirements (maintenance plan). It is also equipped with a red led that turns on when an alarm and / or error message shows up.

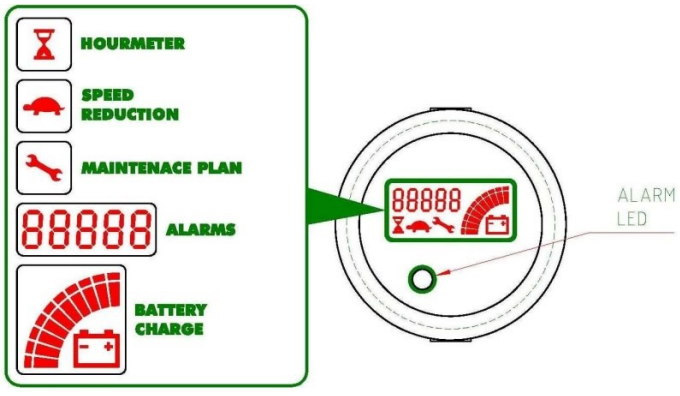


Fig.14

Battery indicator: if the status bar is completely full, it means that the battery is charged 100%. If only one segment is on, and the battery icon is flashing, it means that the battery is down to minimum 20%.
In this condition, the work platform cannot lift. Batteries should be immediately recharged. Recharge the battery daily , during the night and long breaks.
Hour meter: the system is programmed to count the operating hours of the machine devices in order to schedule the maintenance works. If the machine is ON but does not operate, the system doesn't keep track of operating hours. During counting, the hour meter icon flashes.
Main error / alarm messages:

- …11 = excessive inclination
- ...14 = one/two open gates
- ...51 = anti-crushing procedure
- …79 = pedal and/or hand sensor not activated
- …87 = platform overload

5.1.6.2. Battery indicator / Hour meter / Display (L) - AIRO DIAGNOSTIC SYSTEM

It shows the actual battery charge (BCI + percent), the operating hours of the machine (hour+ hours:minutes), the error messages in the control system (alarms + alarm led), and eventual maintenance requirements. Moreover, AIRO DIAGNOSTIC SYSTEM is used by service personnel to run an accurate diagnostics, as well as calibrate the various machine functions.

Fig.15

BCI battery indicator: The battery status is shown by a percentage figure. 100% means that the battery is at full charge. When the BCI display shows 20%, the battery charge is down to minimum.

In this condition, the work platform cannot lift. Batteries should be immediately recharged. Recharge the battery daily , during the night and long breaks.

HOURS **hour-meter**: the system is programmed to count the operating hours of the machine devices in order to schedule the maintenance works. If the machine is ON but does not operate, the system doesn't keep track of operating hours. The operating hours are displayed in the format HOURS:MINUTES.

Main error / alarm messages:

- …TILTED = excessive inclination
- ...GATES = one/two open gates
- ...ARMGUARD = anti-crushing hand safety
- … CEL or OVERLOAD = work platform overloaded
- … UPPER LIMIT SWITCH = lifting-stroke-end switch

5.2. Control panel on ground

On the ground, the following control devices have been located in different positions (see following figure):

A. Emergency STOP button (power circuit)
B. Emergency STOP button (control circuit)
C. Platform lifting/lowering switch
D. Brake release switch for emergency towing
E. Fuses
F. Motion detector w. acoustic alarm

To access the controls/devices B-C-D-E-F, manually move the lifting table away from the chassis.

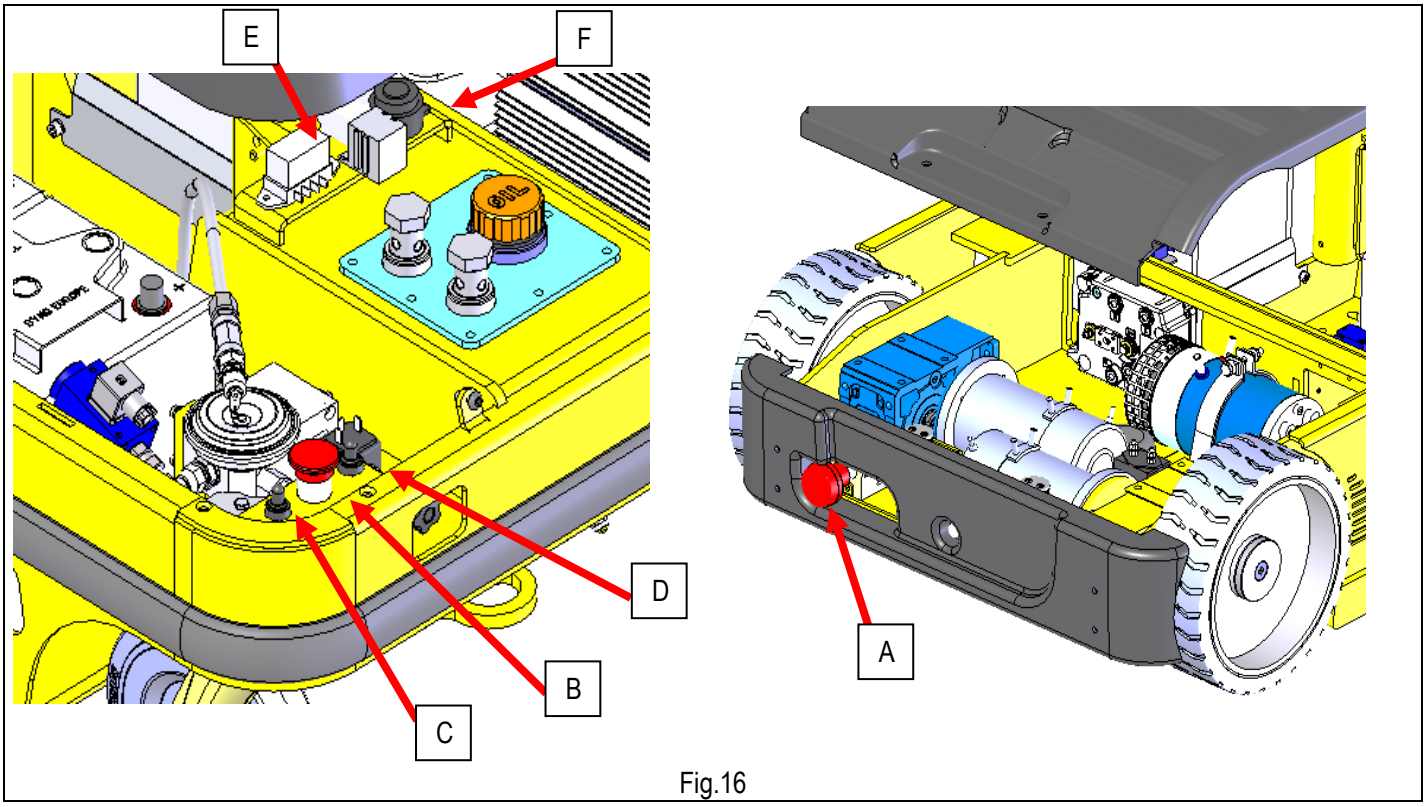


Fig.16

Use the ground controls only in emergency situations to allow the platform to be recovered or for maintenance operations.

At the end of the working session, press the power emergency stop button on the ground and always remove the ON-OFF key on the platform.

DO NOT
use the on-ground control panel as a workstation when personnel is on the platform.

DO NOT
To use the parking brakes unlock switch when personnel is on the platform and/or on a not flat ground.

5.2.1. Emergency STOP button (power circuit) (A)

By pressing the red emergency STOP button the machine immediately turns off. By pulling to the outside, the red emergency STOP button is released and the power circuit of the machine is accordingly started.

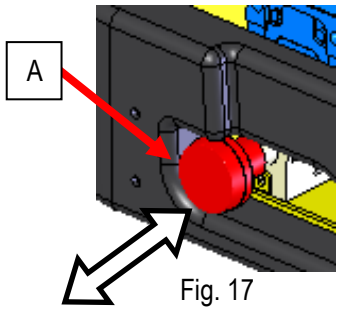


Fig. 17

5.2.1. Emergency STOP button (control circuit) (B)

If you press this button, the machine is completely switched off. By rotating it of 1/4 turn (clockwise) the machine can be turned ON.

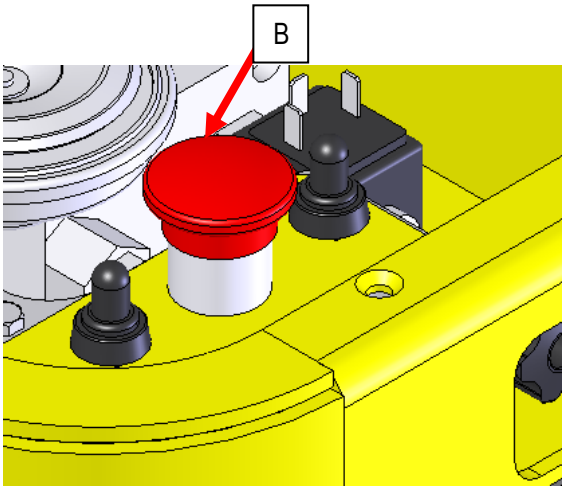


Fig. 18

5.2.2. Platform lifting/lowering lever (C)

This control lever is used to slide the platform UP/DOWN. This control can be operated only if the on-off key on the platform is set to ON downwards (ground control panel selected). Please note that the ground controls can only be used only to operate the platform in emergency situations or during maintenance operations.

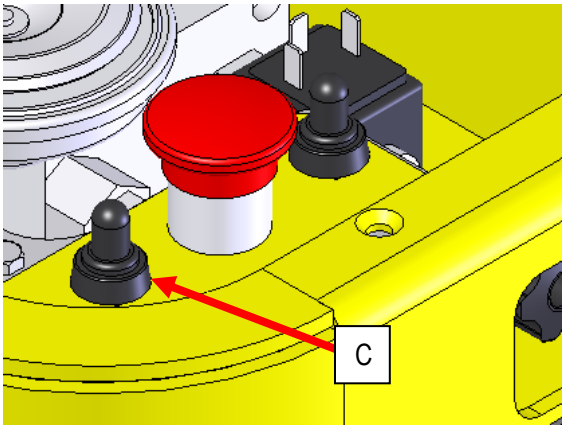


Fig. 19

5.2.3. Brake release switch for emergency towing (D)

This switch allows the disconnection of the machine parking brakes (electrically-operated) in emergency situations to carry out its towing.
Different uses for this switch are not allowed.
Also see chapter EMERGENCY TOWING.

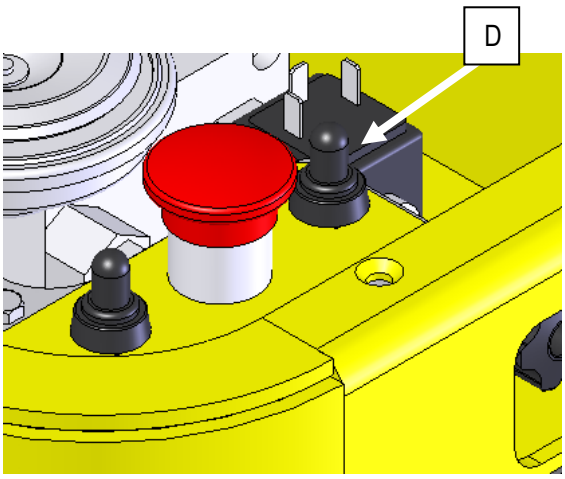


Fig. 20

5.2.4. Fuses (E)

Fuses for protection of different parts of the control electric circuit.

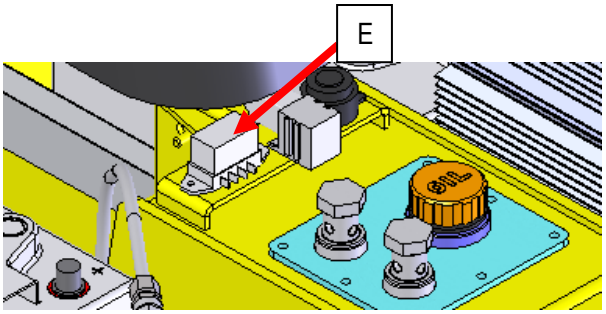


Fig. 21

5.2.5. Motion detector w. acoustic alarm (F).

The acoustic alarm of the machine is active in the following modes:

- always with intermittent sound, every 2 seconds approx., to indicate any movement of the machine.
- with intermittent sound every 0.5 seconds to indicate the danger of being trapped in the lifting structure during the last section of the lowering movement (see par. "Platform lifting/lowering").

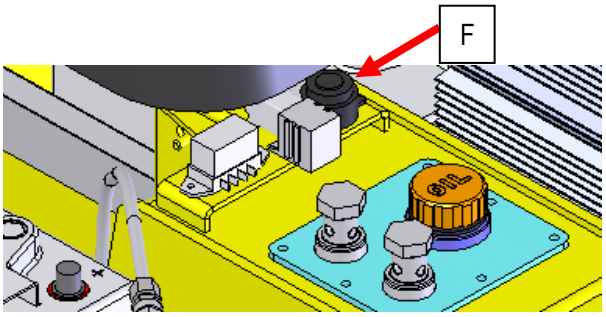


Fig. 22

5.3. Access to the work platform

The “boarding position” is the only possible one for getting on and off the platform. The “boarding position” is with the platform completely lowered.

To access the platform, open gates **A** and get on board.

Check that once on the operator position, the gates are perfectly closed.

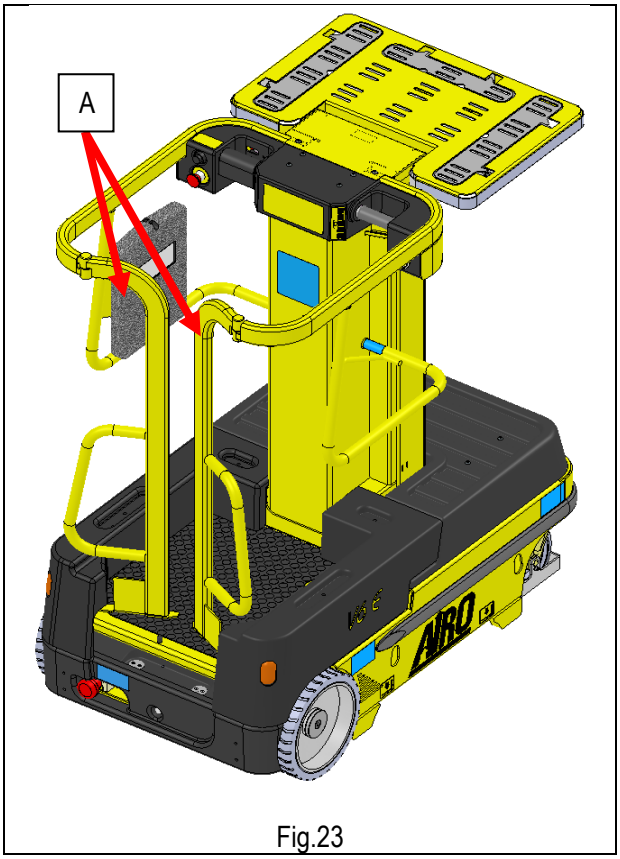


Fig.23

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

CAUTION!
The gates position conditions the operation of the machine: only when the gates are perfectly closed all machine functions are active.
If the platform is DOWN and one or both gates are open, platform lifting is disabled, while travelling is still possible.
If the platform is lifted, having one or both gates open causes all controls to be disabled.

DO NOT
Leave or board the platform if it is not in the position required for accessing or leaving.

5.4. Machine start

To allow the machine to be turned on, the 230V power plug must be disconnected so that battery charger is off (see paragraph concerning battery charge).
If the electric line is connected (battery charger on), the machine is off and cannot be turned on.

To start the machine, you must:

- Pull to the outside the red emergency STOP button located on the ground.
- Get onto the platform.
- Turn the on-off key selecting the platform control panel.
- Release the emergency stop button on the platform (see previous paragraphs).
- Perform the various functions by thoroughly following the instructions given in the previous paragraphs.

5.5. Lifting and handling loads

CAUTION! Follow the instructions of this chapter to avoid any instability risks and material fall.
The machine can be also used for collecting, loading, unloading of packed materials and/or materials of homogeneous shape with reduced dimensions and weight. The maximum allowed capacity is allocated as follows:

- **90 kg on the lifting table**
- **Materials on the ground floor: 130 kg**
- **Operator stand (work platform): 120 kg**

It is absolutely forbidden to exceed the maximum allowed capacities indicated by the plate on the elevating operator position.

The load must be within the perimeter of the LOADING TABLE and/or the GROUND LOADING SPACE. Occasionally, loads of bigger dimensions can be handled provided the maximum capacity is suitably reduced, and the load is secured as indicated in the following chapters.

No hanging loads can be handled on the machine, even the maximum capacity is not exceeded.

IT IS FORBIDDEN to lift/carry unstable loads.

IT IS ABSOLUTELY FORBIDDEN to lift or carry people on the machine parts designed for lifting/handling materials.

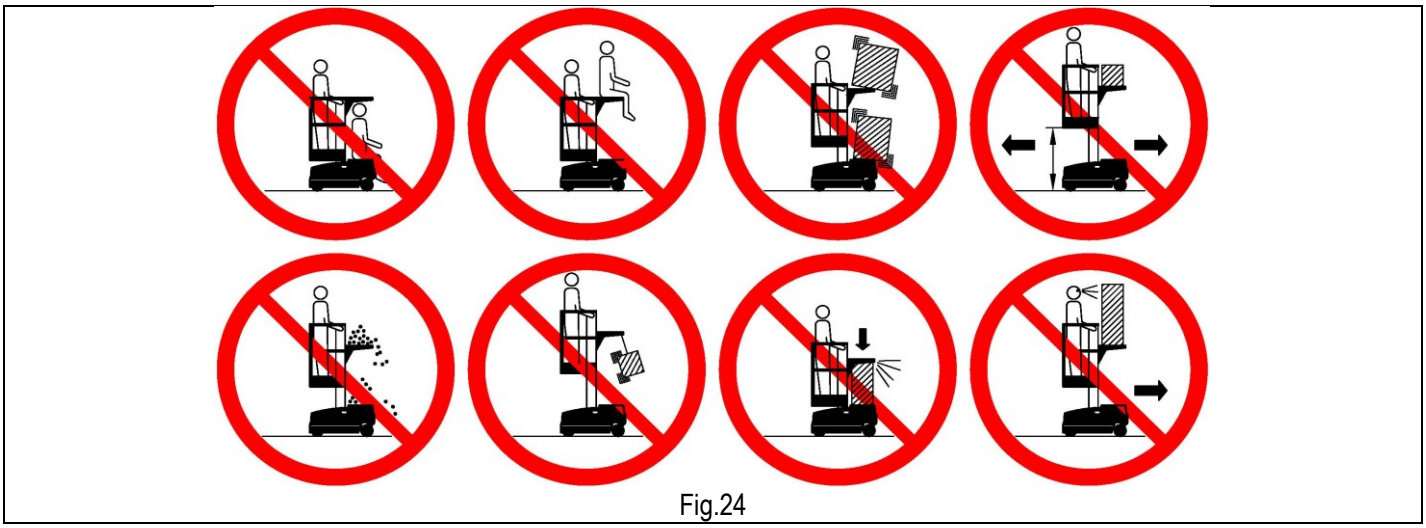


Fig.24

5.5.1. Lifting table and on-chassis stowage

The picture aside shows the main components of the LIFTING TABLE and the ON-CHASSIS STOWAGE.
A – On-chassis stowage
B – Lifting table
C – Folding side boards to hold the loads

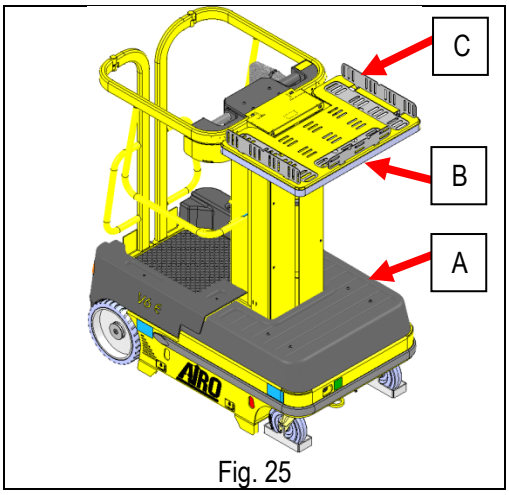


Fig. 25

5.5.2. Lifting and handling loads on the lifting table

It is absolutely forbidden to exceed the maximum allowed capacities indicated by the plate on the elevating operator position.
Loads must be placed within the perimeter of the lifting table. Occasionally, loads of bigger dimensions are allowed to be lifted provided the maximum capacity is suitably reduced and the load is secured as indicated below.
Only lift/carry packed materials and/or materials with homogeneous shape and reduced dimensions and weight.
Drive is forbidden with raised work platform while carrying loads on the lifting table. Only perform travel with loaded lifted table if the platform is completely DOWN.
Do not lower the lifting table (optional) if there are other materials on the ground loading space.

To lift/handle loads on the LIFTING TABLE:

- Approach the material to be collected using the controls as indicated in the previous chapters.
- To pull the material off shelf and on the lifting table, flip side board down close close to the shelf and adjust the work platform up and down (or activate the optional lifting table) to the same level as the shelf. Fold the other two side boards up to minimize the risk of the material falling down.
- Drag/pull the load on the lifting table and make sure it is safely placed on it (loads that are very bulky can be secured by tying them up through the holes **A**).
- Let the work platform descend.
- Let the lifting table down to obtain best visibility ahead.
- Move the machine where the material is to be unloaded.
- Unload the material repeating the loading procedure in the reverse order.

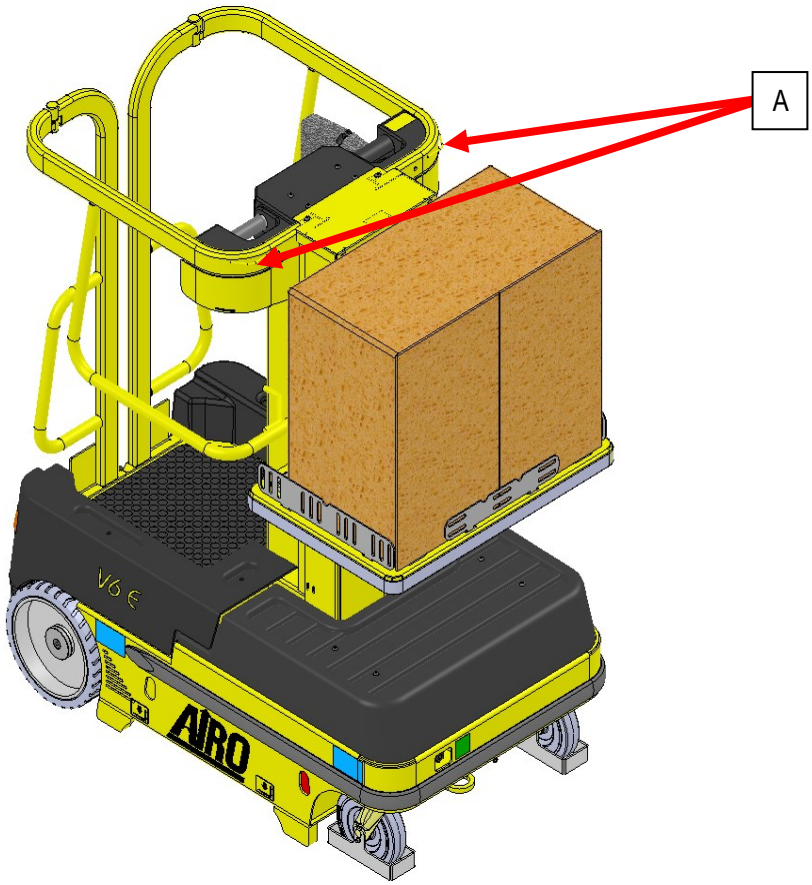


Fig.26

5.5.3. Handling loads in the stowage on the chassis

It is absolutely forbidden to exceed the maximum allowed capacities indicated by the plate on the elevating operator position.

Only handle packed materials and/or materials with homogeneous shape and reduced dimensions and weight.

Loads must fit within the perimeter of the stowage space. Occasionally, loads of bigger dimensions are allowed provided the maximum capacity is suitably reduced and the load is secured as indicated below.

Do not lower the lifting table (optional) if there are other materials on the ground loading space.

Strictly use the ON-CHASSIS STOWAGE to accommodate packed materials and/or materials with homogeneous shape and reduced dimensions can be carried, checking the stability before any machine movement.

Any bulky loads of large dimensions are to be secured by tying them through holes A.

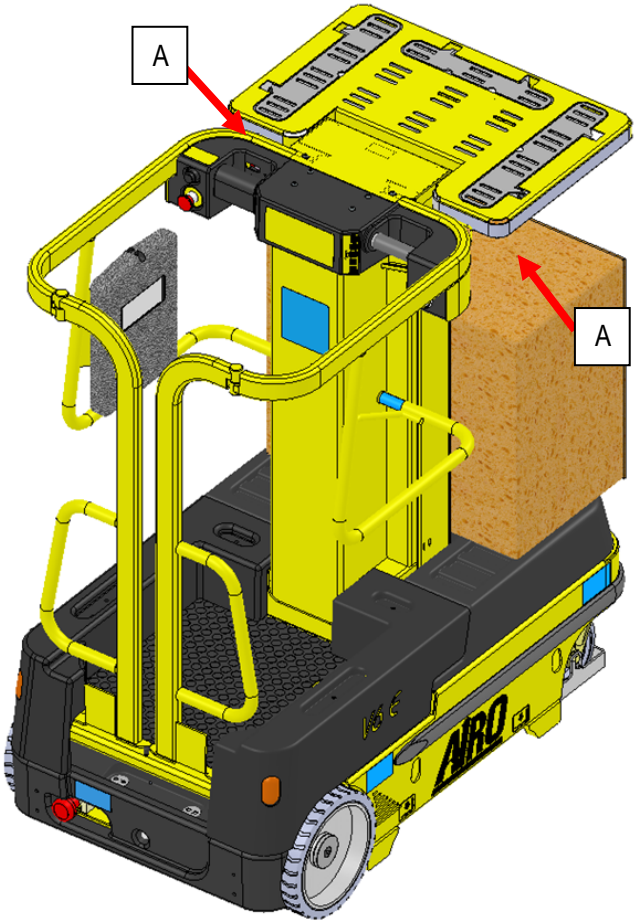


Fig. 27

5.6. Stopping the machine

5.6.1. Normal stop

During normal operation, simply release the controls to stop the machine. The stopping time is a default value set by the manufacturer before the delivery in order to produce a soft slowing uo to complete stop.

5.6.2. 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).

On the platform control panel press the emergency stop button and the machine is turned off.

From the control board on ground:

- Press the emergency stop button on the ground control panel and the machine will be turned off.
- Press the emergency stop button of the power circuit and the machine will be turned off.

To retrieve normal operation:

- From the platform: turn the stop button on the control panel by ¼ of a clockwise turn.
- From the control board on ground:
    - Turn the emergency stop button on the ground control panel of ¼ turn.
    - Pull to the outside the red emergency stop button of the power circuit.

5.7. Manual emergency lowering

DO NOT
use the manual emergency control to lower an overloaded platform.

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

- Pull the emergency lever **A** to the outside.
- Check the correct execution of the lowering movement and make sure nothing and nobody is within the lowering trajectory

WARNING: THE EMERGENCY LOWERING CONTROL CAN BE STOPPED AT ANY TIME BY RELEASING LEVER “A”.

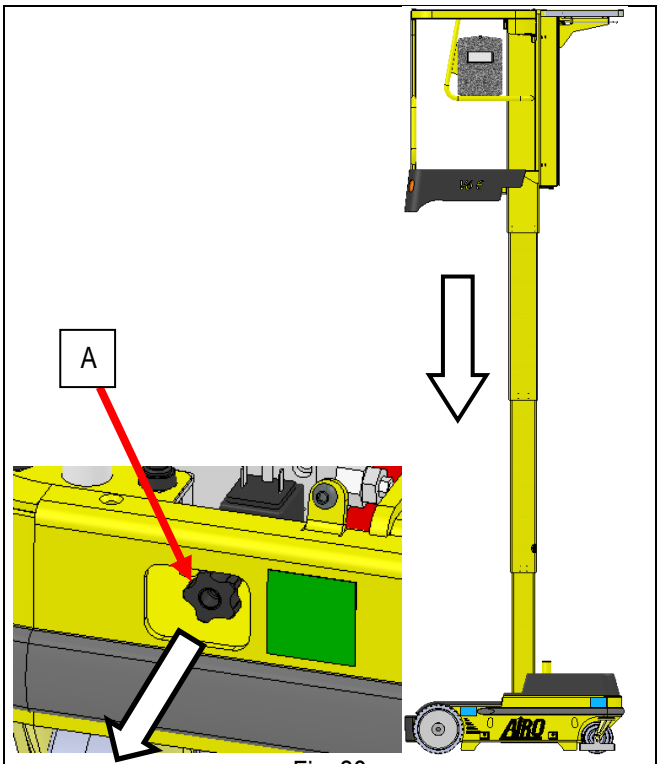


Fig. 28

This function is to be used only in emergency situations when no drive power is available to lower the operator position.

5.8. 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 (platform completely lowered).
- Position the machine in a safe place, on flat and strong enough ground.
- Remove the keys from the control panel to prevent unauthorized people from using the machine.
- Press the emergency Stop button on the platform control panel.
- Recharge the battery according to the instructions given in section "Maintenance".

6. HANDLING AND TRANSPORTATION

6.1. Handling

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

When the platform is completely lowered, the machine can be handled (i.e. drive can be performed) at different speeds to be freely selected by the user.
When the platform lifts and exceeds a given height, the safety drive speed is automatically activated.

ATTENTION!
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 drive the unit when the operator position is lifted unless the ground is horizontal, flat and steady.

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 it is fully disconnected from power supply.**

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

If the machine with platform lifted travels into a hump or a hole, one or both pot-hole guards will be engaged saving the operator from any danger.
Now, if you lower the platform completely, and both driving wheels are lifted from the ground, the machine might not be able to quit the jamming condition with its own means. In this case, towing away will be needed (see Emergency towing)

Do not use the machine to tow other vehicles.

When the unit travels and the work platform is UP, there should be no loads on it (the operator on board must not pull ropes, cables, etc.).

6.2. Transportation.

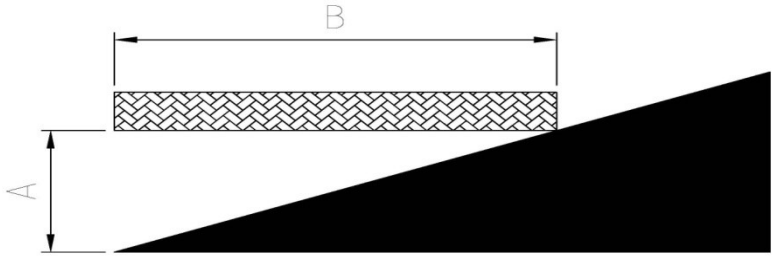
In order to move the machine to a different working site, follow the instructions given below. Because of the considerable size and dimensions of this machine, please make sure to consult your local road traffic authorities before transporting on any carrier.

⚠ **Before transporting the machine, turn it off and remove the keys from the control panels.**
No people are allowed in proximity of 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 platform to the rest position.

To load the machine onto a vehicle you can:

- Use **loading ramps and the travel controls** located on the work platform to load it directly on whatever vehicle (if ramp slope is within the slopes described in paragraph “TECHNICAL FEATURES” and ramp capacity is adequate) as described under paragraph “USE INSTRUCTION” and “Drive and steering” . Avoid loading the platform during this operation to prevent the emergency microswitch from being activated, which in case of inclined machine disables all the manoeuvres except the lowering one. 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. Now, measure the distance between the wooden board and the ground (**A**), divide this by the length of the wooden board (**B**) and multiply by 100. The following image sums up the method.



- **Through the 4 fastening holes** located on the sides of the machine, it can be lifted by means of hooks and steel ropes (with safety factor = 5, see machine weight in Technical Features) connected to the provided holes as indicated in the Fig. 27.

- **Through a lift truck of a suitable capacity** (see machine weight in table "Technical features") equipped with forks having at least the same length as the machine width. Insert the forks as indicated by the stickers on the machine (Fig.29) Should these stickers be not available, DO NOT lift the machine by means of a lift truck. Lifting the unit by means of a lift truck must be carried out by qualified operators.

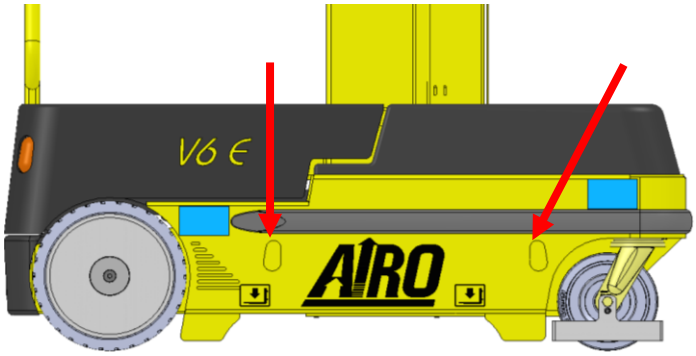


Fig.29

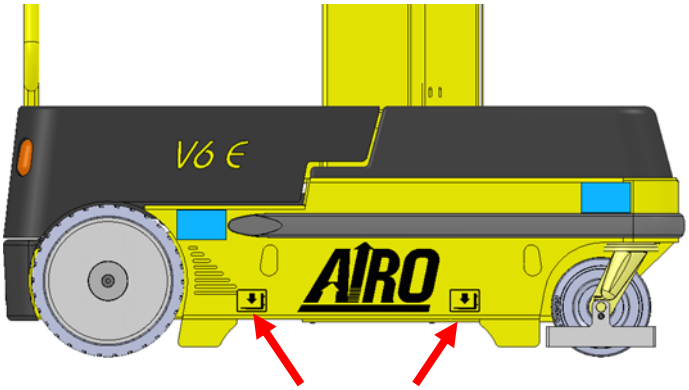


Fig.30

After placing the machine on the vehicle, fasten it with ropes/bands tied to the handrail of the work platform.

Before starting the transportation make sure the machine is firmly secured.

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 hole **A**.
- From the platform select the ground control panel using locking key selector **B**.
- Remove the ground loading space **C** lifting it.
- On the ground control panel activate the brake release switch **D** setting it to the position as shown in the figure.
- Tow at a very slow speed (remember that when the machine is being towed, brakes are completely disengaged).

Remember that, thanks to the limited weight of the machine, with brakes released it is possible to push it away from the obstructed location manually.

At the end of towing operation, resume initial conditions.

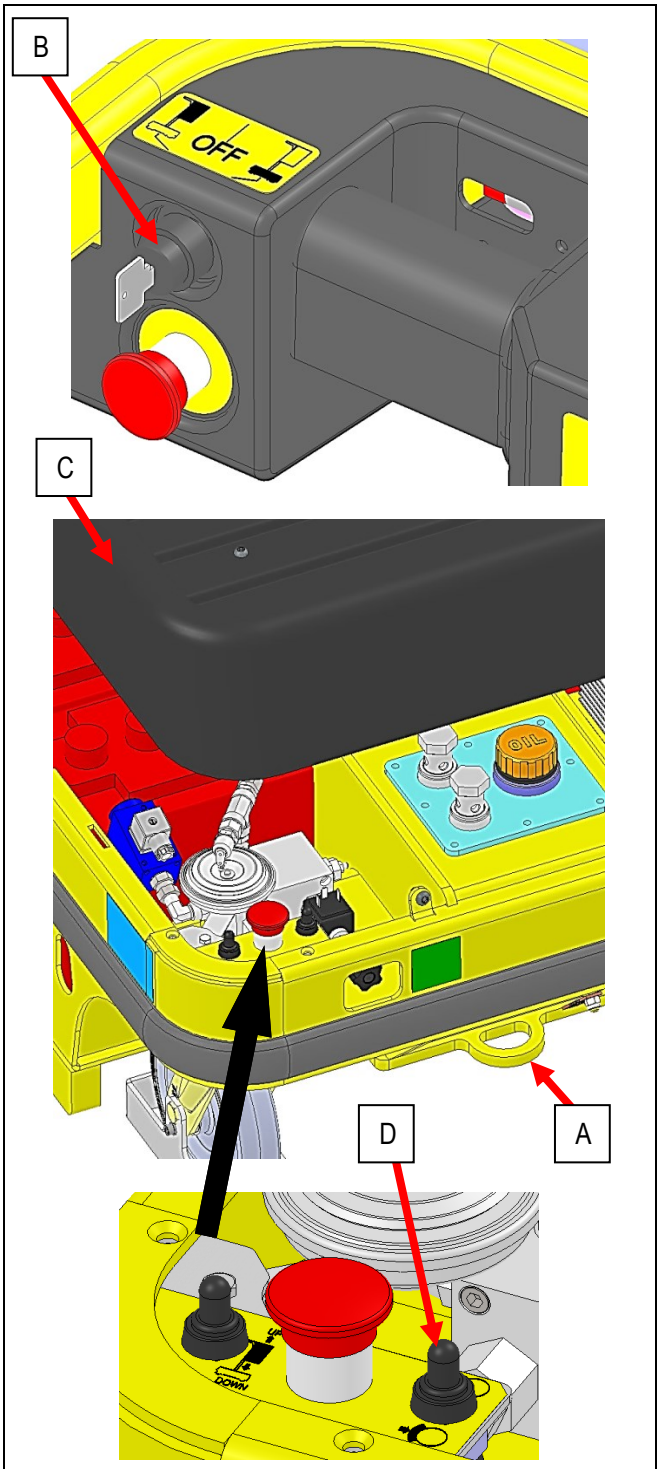


Fig.31

This operation should be carried out only on a flat ground and at a very low speed checking that no objects or people are present in the operating area of the lift truck.

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 the machine at a standstill position, after removing the key, and with the work 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 period of non-use, 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 carrying out maintenance operations inside the lifting structure, check that this is off-line in order to avoid accidental lowering of the platform.**
- **Remove the battery cables and provide batteries with a suitable protection during welding operations.**
- **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 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. Machine cleaning

To clean the machine use a moist cloth paying attention not to wet:

- The control actuators at ground and at operation position (handles, switches, buttons, etc.)
- The electric components
- The electric motors
- The battery chargers

Do not use pressurized water jets (high-pressure cleaners) to clean the machine. Faults caused by water seepage will not be covered by the warranty.

After cleaning the machine, always:

- Dry the machine.
- Check integrity of plates and stickers.
- Lubricate the articulated joints equipped with greaser.
- Lubricate the sliding ways and the nut screw of the lifting table (optional).

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	Intervals
Tightening of the hardware (see "Various adjustments")	After the first 10 working hours
Checking the oil level in the hydraulic tank	After the first 10 working hours
Battery status	Every day
Check of deformation of tubes and cables	Every week
Checking stickers and code plates	Every month
Greasing of sliding elements	Every month
Checking the oil level in the hydraulic tank	Every month
Checking the efficiency of the emergency devices	Every year
Checking all electric junctions	Every year
Checking all hydraulic couplers	Every year
Periodic operation check and structure visual check	Every year
Tightening of the hardware (see "Various adjustments")	Every year
Checking the efficiency of the brake system	Every year
Inclinometer calibration and functional check	Every year
Functional check and adjustment of overload controller	Every year
Microswitch M1	Every year
Microswitch M3	Every year
Gates microswitches M14-M15	Every year
microswitches of lifting table limit switch M16-M17 (optional)	Every year
Anti-shearing (safe hands) microswitches on the chassis M18-M19-M20-M21 (optional)	Every year
Dead-man system efficiency check	Every year
Hydraulic filter replacement	Every two years
Total oil change in hydraulic tank	Every two years

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. Travel motor fixing screws
3. Platform fixing seeger
4. lifting table fixing screws
5. Lifting structure fixing screws
6. Mechanical jack fixing screws
7. Hydraulic fittings

For torque, please refer to the table below.

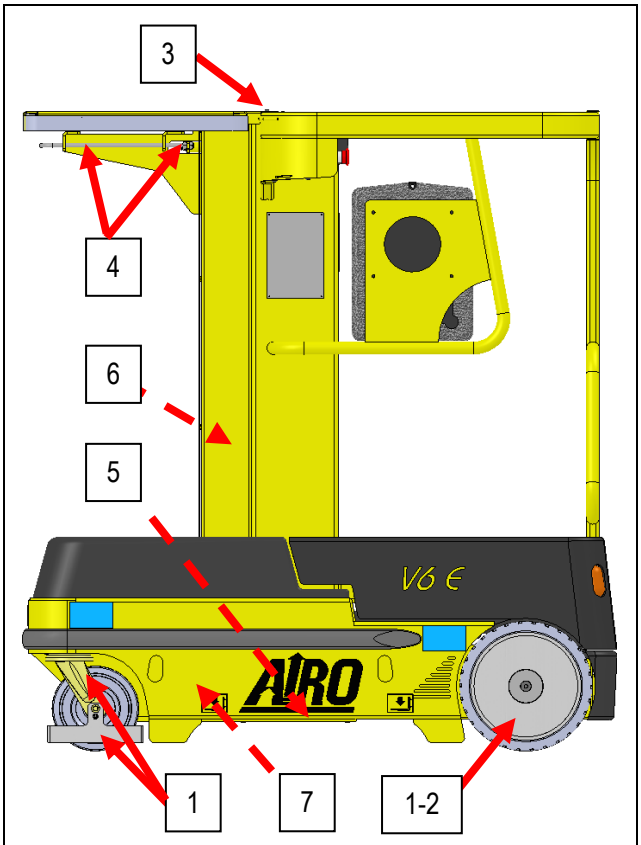


Fig.32

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 joint in the following cases:

- After cleaning 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.

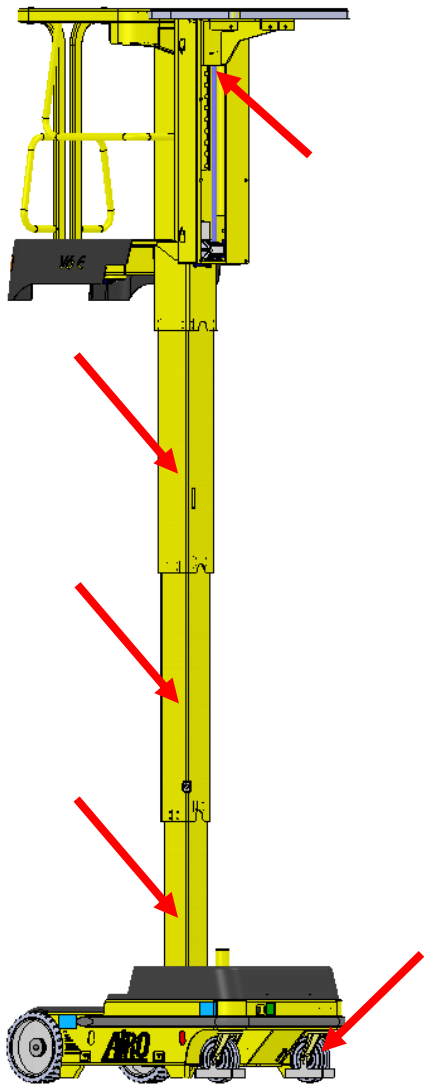


Fig.33

7.2.3. Checking and changing the hydraulic oil

Visually check the oil level in the tank after the first 10 working hours and, afterwards, at least once a month, through the dipstick plug **A** in the picture aside. Make sure that the level always lies between the max. and min. values.
Oil check is to be carried out with machine on flat ground and platform completely lowered.

Completely change the hydraulic oil at least every two years.

Should the hydraulic oil be replaced, you can empty the tank through filler **B**, and collecting the oil drained in a suitable container.

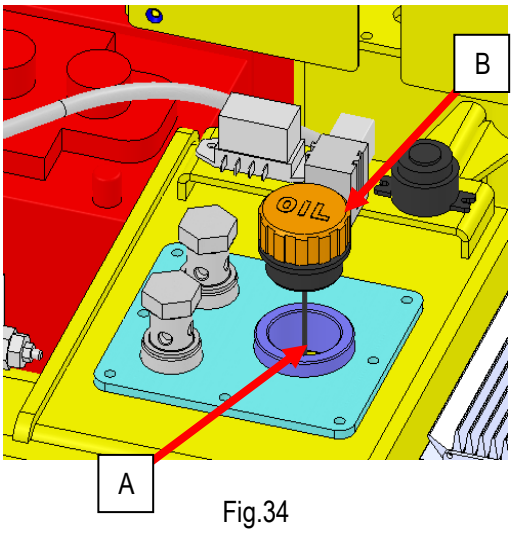


Fig.34

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

HYDRAULIC SYSTEM OIL			
OIL PRODUCER	**OIL TYPE** -20°C +79°C	**OIL TYPE** -30°C +48°C	**FILLING QUANTITY**
SYNTHETIC OILS - STANDARD			25 Litres
ESSO	Invarol EP46	Invarol EP22	
AGIP	Arnica 46	Arnica 22	
ELF	Hydrelf DS46	Hydrelf DS22	
SHELL	Tellus SX46	Tellus SX22	
BP	Energol SHF46	Energol SHF22	
TEXACO	Rando NDZ46	Rando NDZ22	
Q8	LI HVI 46	LI HVI 22	
PETRONAS	HIDROBAK 46 HV	HIDROBAK 22 HV	
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. Bio-oils (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.

7.2.3.1.1. Draining

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

7.2.3.1.2. Filters

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

7.2.3.1.3. Washing

After completely emptying the machine, fill the recommended type and quantity of "bio" oil.
Start the machine and perform all work movements at low revs for at least 30 minutes.
Empty the liquid inside the systems as indicated at 7.2.3.1.1.
Warning: During the entire washing procedure, avoid air entering the system.

7.2.3.1.4. 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).

7.2.3.1.5. Commissioning / check

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

MAINTENANCE CHART	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 analysis report must be kept in the check register. This is mandatory.

7.2.3.1.6. Mixing

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

7.2.3.1.7. Micro-filtration

When making the conversion on second-hand machines, always take into account 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.

7.2.3.1.8. Disposal

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

7.2.3.1.9. Topping up

The oil must **STRICTLY** 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

The unit is equipped with suction filter inside the tank. It is best to replace it at least every two years.

To replace the suction filter inside the tank:

- Stop the machine by pressing the emergency stop button of the platform control panel.
- Disconnect the tubes from the tank.
- Unscrew flange A;
- unscrew filter **B** from the suction tube and clean it with a detergent and a compressed air jet by blowing from the connection or replace the filtering element

To restore the initial condition, repeat the above operation in the reverse order.

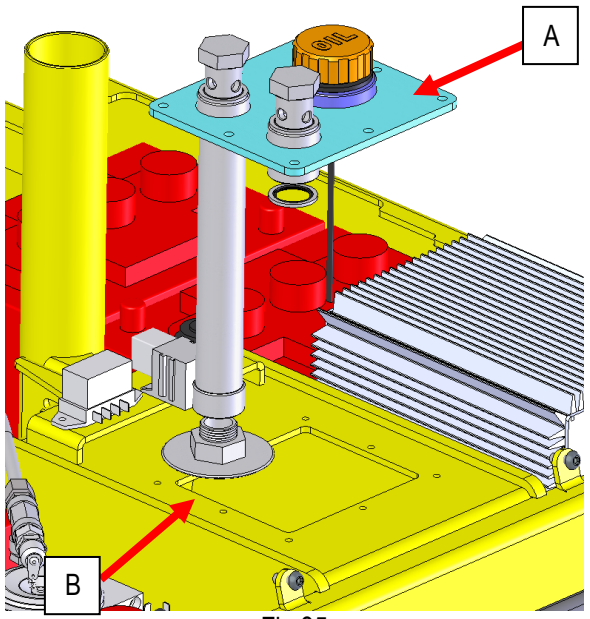


Fig.35

Replace the filter using only original accessories available from 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.
Once the filter has been replaced (or cleaned), check the hydraulic oil level in the tank.

7.2.5. Inclinometer: functional check and calibration

CAUTION!

Usually the inclinometer needs no calibration, unless the electronic control unit is replaced. The equipment needed for the replacement and adjustment of this component requires skilled personnel.

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

Depending on the control system installed on the machine, you can have two different types of inclinometer:

- Type **C** to be installed separately from the control system;
- Or built in the control system and, therefore, not visible from the outside.

Neither of the two requires calibration by the users since they are calibrated by the factory before the delivery.
The inclinometer measures and detects the angle of the chassis, and if maximum admissible slope is exceeded:

- It stops all elevation controls
- It disables travels if the work platform exceeds a predetermined level
- It triggers an acoustic alarm and switches a warning pilot light to alert the user of possible instability

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).

<u>Perform a functional control at least once a year.</u>

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

- Use the platform control panel and set the machine so as to place a shim of dimension (**A+10 mm**) under the two rear or front wheels (see following table).
- Wait three seconds (intervention delay set at factory) until the danger red light turns on.
- With platform down, you can still perform travel but no lifting;

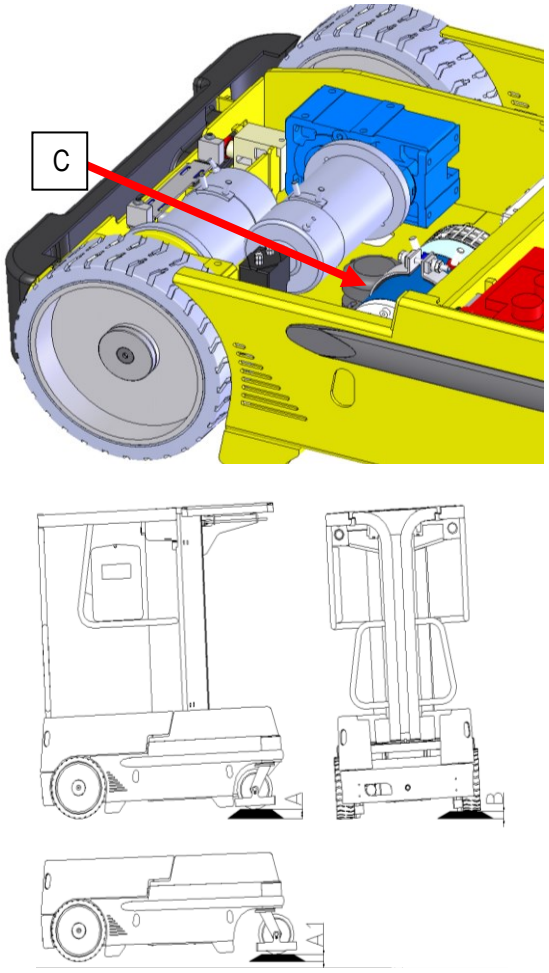


Fig.36

- With platform up, both drive and lifting are disabled; lowering is still possible; the acoustic alarm also activates.

To adjust the inclinometer according to the transversal axis (normally X-axis):

- Using the controls of the operator position set the machine so as to place a shim of dimension (**B+10 mm**) under the two side right or left wheels (see following table).
- Wait three seconds (intervention delay set at factory) until the danger red light turns on.
- With platform down, you can still perform travel but no lifting;
  With platform up, both drive and lifting are disabled; lowering is still possible; the acoustic alarm also activates.

SHIMS	V6 E
A [mm]	35
A1 [mm]	40
B [mm]	25

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.

7.2.6. Operation check and adjustment of platform 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 controls the amount of loads on the platform and lifting table and

- disables lifting of the work platform if the total load exceeds the rated load by 30% and the work platform is lifted.
- It triggers an acoustic alarm if an overload is detected.
- By removing the exceeding load, the machine can be operated again.

Perform a functional control at least once a year.

Inclinometer functional check:

- With platform completely down, place on the platform and on the lifting table two loads evenly distributed equal to the nominal loads allowed by the platform and lifting table(see paragraph "Technical features"). In this conditions you can carry out any machine movements.
- With the work platform completely down, add an extra 35% load to the rated loads and lift the work platform. In this condition, after a possible brief initial lifting, the main audible alarm turns on (see "Use instructions").
- When the work platform is DOWN (platform floor approximately ≤700 mm high), all machine controls, including lifting/elevation controls, remain available until the work platform rises (floor ≥700 mm approx).
- If the work platform is lifted, the triggering of the alarm disables all machine controls. In order to retrieve perfect operating conditions, the excess load must be first removed.

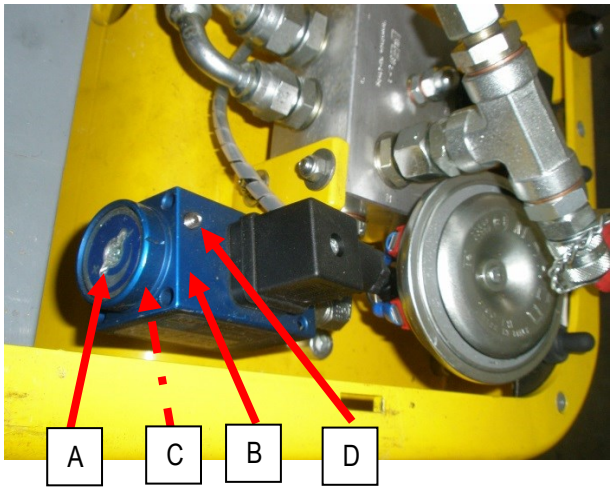


Fig.37

The system needs calibration:

- In case of replacement of one of the items composing the system.
- If the alert (pilot or acoustic alarm) remains even though the excess 35% load has been removed.

To calibrate the device:

- Remove the front loading surface on the chassis and locate the pressure switch**B**.
- On the pressure switch **B** remove (if present) the plug **C** and loosen the dowel **D**.
- Place a load equal to the nominal capacities plus 30% on the operator position and on the lifting table.
- Turn adjusting handle **A** so that during lifting of the operator position, the overload alarm is activated (by screwing the allowed load is increased; by unscrewing the allowed load is decreased).
- Check that after removing the overloads of 30% (on the operator position and on the lifting table the nominal capacities remain) the alarm condition while lifting the operator position, does not occur.
- Once adjustment is over, reposition plastic cap **C** and lock the adjustment by tightening dowel **D.**

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

7.2.7. Safety micro: functional check

All micros are identified by an ID plate.

Microswitch functions:

- **M1:**
  Activates safety speed with lifted work platform.
  Activates the hand-safety function during platform lowering to a floor height of about 50 cm above ground (optional).
- **M3:** Disables lifting at the lifting cylinder end stop.
- **M14-M15**: Control the position of the two access gates (M14=right gate; M15=left gate).
  In lowered platform condition, with one or both gates open, platform lifting is disabled and drive control is still possible.
  In lifted platform condition, with one or both gates open, all controls are disabled.
- **M16-M17**: (optional) end-switches of the work platform. They are located in the sliding ways of the lifting table, stop lifting (M16) and lowering (M17).
- **M18-M19-M20-M21:** (Optional) hand-safety device installed on the chassis to disable the descent of platform all the way down on the plastic casing.

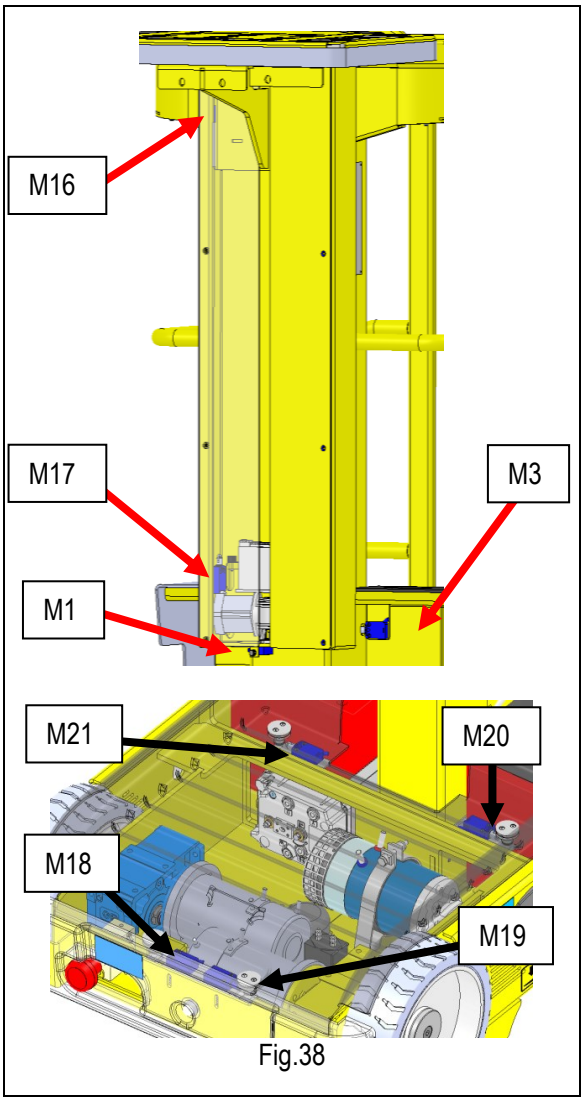
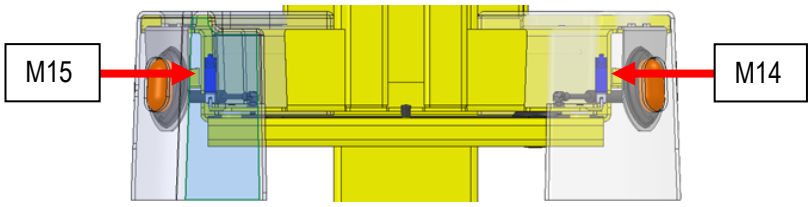


Fig.38

Perform a functional control at least once a year.



7.2.8. Dead-man system efficiency check

The deadman system is used to activate the platform controls and consists of:

- Activation pedal (engaged with pressure by the right foot).
- Photo-electric sensor (engaged when the left hand is detected).

If the system works properly, no machine movement is possible, from the platform, unless you activate both devices beforehand. If the photo-electric device is activated for more than 10 seconds and no operation is performed, all movements are disabled; to operate the machine again, remove your hand from the sensor and place it there again.
Perform a functional control at least once a year.

To check dead-man system:

- Press the activation pedal;
- Place your hand on the photo-electric sensor.
- Within 10 seconds, operate any control: all control must be working.
- Do not activate any control for 10-12 seconds: all controls must be disabled.
- After restoring the photo-electric sensor (uncovering and covering it) check that all movements are enabled again.

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

7.3. Battery

The battery is one of the most important components of this machine. We recommend to keep it in top efficiency conditions to increase its useful life, avoid faults and reduce management costs.

7.3.1. Battery general instructions

- 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 (sealed GEL/AGM batteries excluded) to allow the outflow of gas.
- 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 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 (not for sealed GEL/AGM batteries).
- During charging operations check that the electrolyte temperature is not higher than 45°C max (sealed GEL/AGM batteries excluded).
- If the machine is equipped with an automatic topping up device, follow the instructions described in the battery user manual carefully (sealed GEL/AGM batteries excluded).

7.3.2. Battery maintenance

- In normal operating conditions, water topping up is to be carried out every week (sealed GEL/AGM batteries excluded).
- Top up using distilled or demineralised water (sealed GEL/AGM batteries excluded). .
- Top up after battery charging. The electrolyte level must be 5-7 mm higher than the splash guard level (sealed GEL/AGM batteries excluded).
- For machines equipped with automatic topping up device, follow the instructions given in the battery user manual (sealed GEL/AGM batteries excluded).
- 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. The condition is signalled by the indicator on the platform.
- 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 has to be done even if the density values of the electrolyte are high.
- To limit automatic battery discharge during periods of inactivity store the machine in environments with temperatures lower than a 30°C and press the emergency buttons.

7.3.3. 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:

- Power voltage 230V ± 10%
- Frequency 50÷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 suitable section (min 3x2.5 mm2).
- Do not use rolled-up cables.

DO NOT
to connect 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).

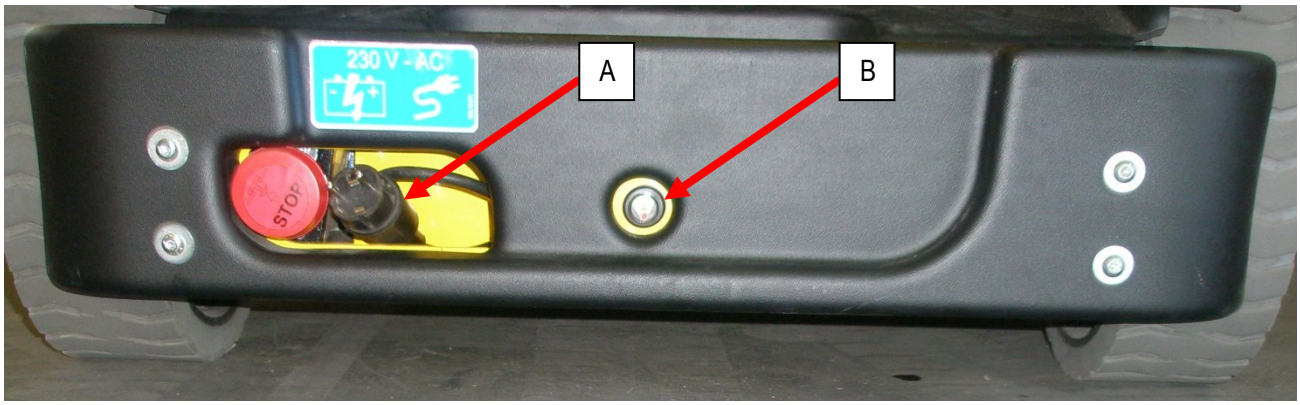


Fig.39

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 the way the LEDs turn on, show that charging is in progress (refer to table below).

WARNING	DESCRIPTION
Red LED flashing for a few seconds	Battery charger self-diagnostic phase
Red led ON	Show that the first and second charging phase 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.

7.3.4. safety devices and fault reports.

The flashing LED on the battery charger shows that an a problem has occurred and has been detected:

WARNING	PROBLEM	HOW TO FIX IT
Red LED blinking steady	No connection with the battery	Check the connection with the battery
	Invert the connection with the battery	
Red and **yellow** LEDs blinking	Connection problems	Check all connections
		Check that battery was not disconnected during charging phase
	Battery problems	Check the battery
		Check the fluid level (for pb-acid batteries only)

7.3.5. Battery replacement

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

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

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

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:

ICE Spa **Via Garibaldi, 20** **40011 Anzola Emilia – BO (Italia)**	CE

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

9. PLATES AND STICKERS

DATE

	CODE	DESCRIPTION	QUANTITY
1	001.10.024	AIRO serial number plate	1
2	001.10.060	Label: Lifting points	4
3	069.10.010	AIRO pre-spaced yellow sticker 435x145 (in parts)	2
4	001.10.243	Label: max. load per wheel	2
5	069.10.008	Black-yellow label: sliding platform	1
6	042.10.001	Label: capacity and prohibitions	1
7	045.10.011	Label: battery charger plug	1
8	001.10.031	Label: towing hook	5
9	069.10.002	Label: on-ground controls	1
10	069.10.004	Label: steering-travel control	1
11	069.10.005	Label: key switch	1
12	069.10.006	Label: stop	1
13	069.10.003	Label: IPAF manual descent	1
14	001.10.088	Label: document holder	1
15	035.10.007	Label: "Safety belts hooking"	1
16	069.08.001	Control membrane-keyboard	1

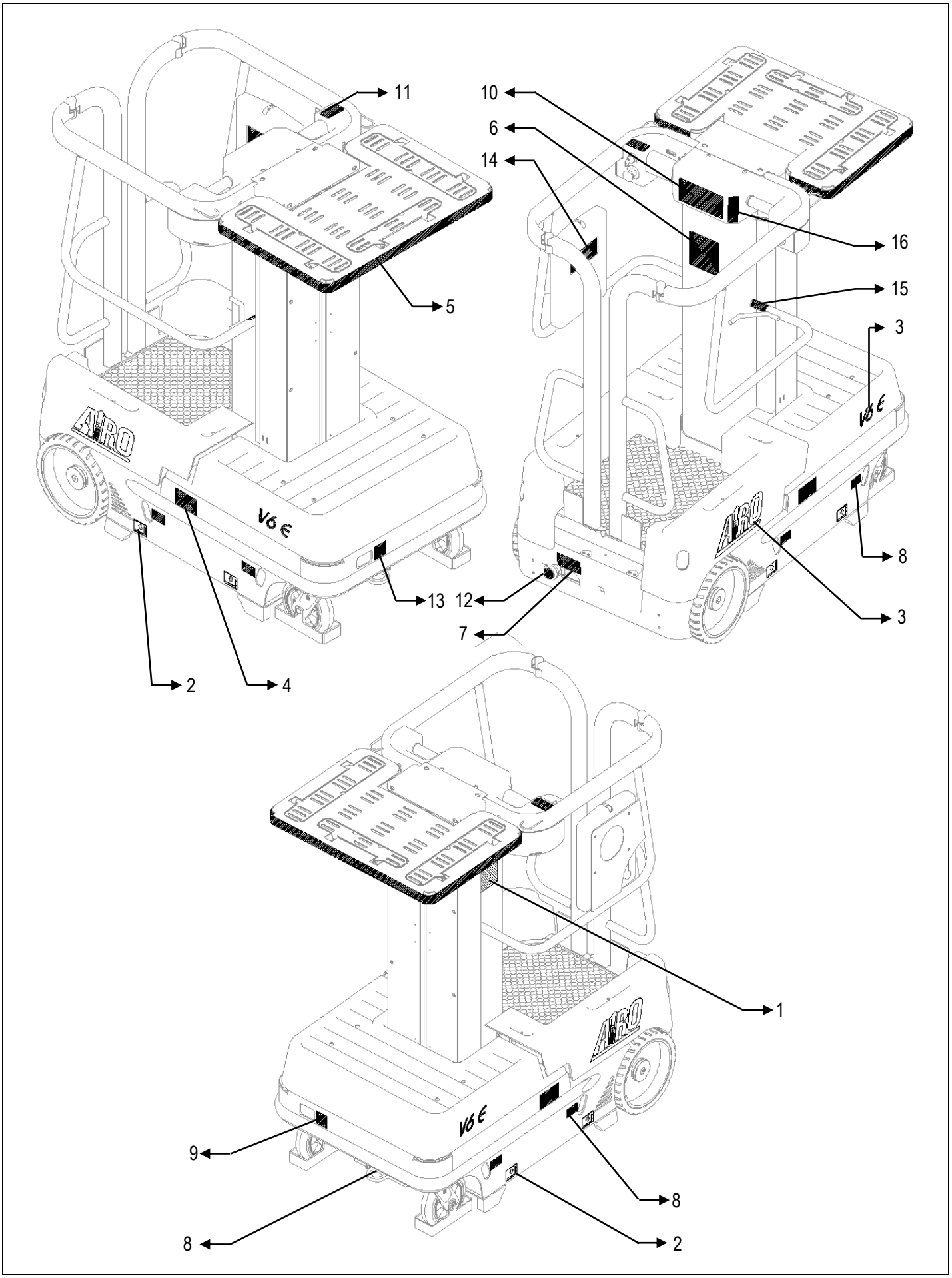


Fig. 39

10. CONTROL LEDGER

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			

DEFORMATION OF TUBES AND CABLES	Most of all, check that tubes and cables do not show any evident defects at the joints. Monthly 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	DESCRIPTION OF OPERATIONS TO BE PERFORMED
ADJUSTMENTS	See Chapter 7.2.1

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

GREASING	See Chapter 7.2.2 Monthly 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 THE OPERATIONS TO BE PERFORMED
HYDRAULIC TANK OIL LEVEL CHECK	See chapter 7.2.3 Monthly 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			

BATTERY STATUS	See chapter 7.3 Daily 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 THE OPERATIONS TO BE PERFORMED
TOTAL OIL CHANGE IN HYDRAULIC TANK (EVERY TWO YEARS)	See chapter 7.2.3.

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

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

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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

SAFETY SYSTEM CHECKS	DESCRIPTION OF THE OPERATIONS TO BE PERFORMED
INCLINOMETER FUNCTIONAL CHECK	See chapter 7.2.5.

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

OVERLOAD CONTROLLER, FUNCTIONAL CHECK	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
CONTROLLING THE EFFICIENCY OF THE BRAKING SYSTEM	The machine at maximum speed should be able to stop, upon release of the joystick, in a space of less than 0.5 on a flat ground.

	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 CHECK - MICROSWITCHES M1, M3, M14-M15, M16-M17 (OPZIONAL), M18-M19-M20-M21 (OPZIONAL).	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

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 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			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER			
CHECKING THE EMERGENCY AND SAFETY DEVICES		**DESCRIPTION OF THE OPERATIONS TO BE PERFORMED**	
MANUAL EMERGENCY LOWERING CHECK		**See chapter 5.7**	
	DATE	**REMARKS**	**SIGNATURE + STAMP**
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

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 FAILURES

DATE	FAILURE DESCRIPTION	HOW TO FIX IT

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE **SAFETY MANAGER**

DATE	FAILURE DESCRIPTION	HOW TO FIX IT

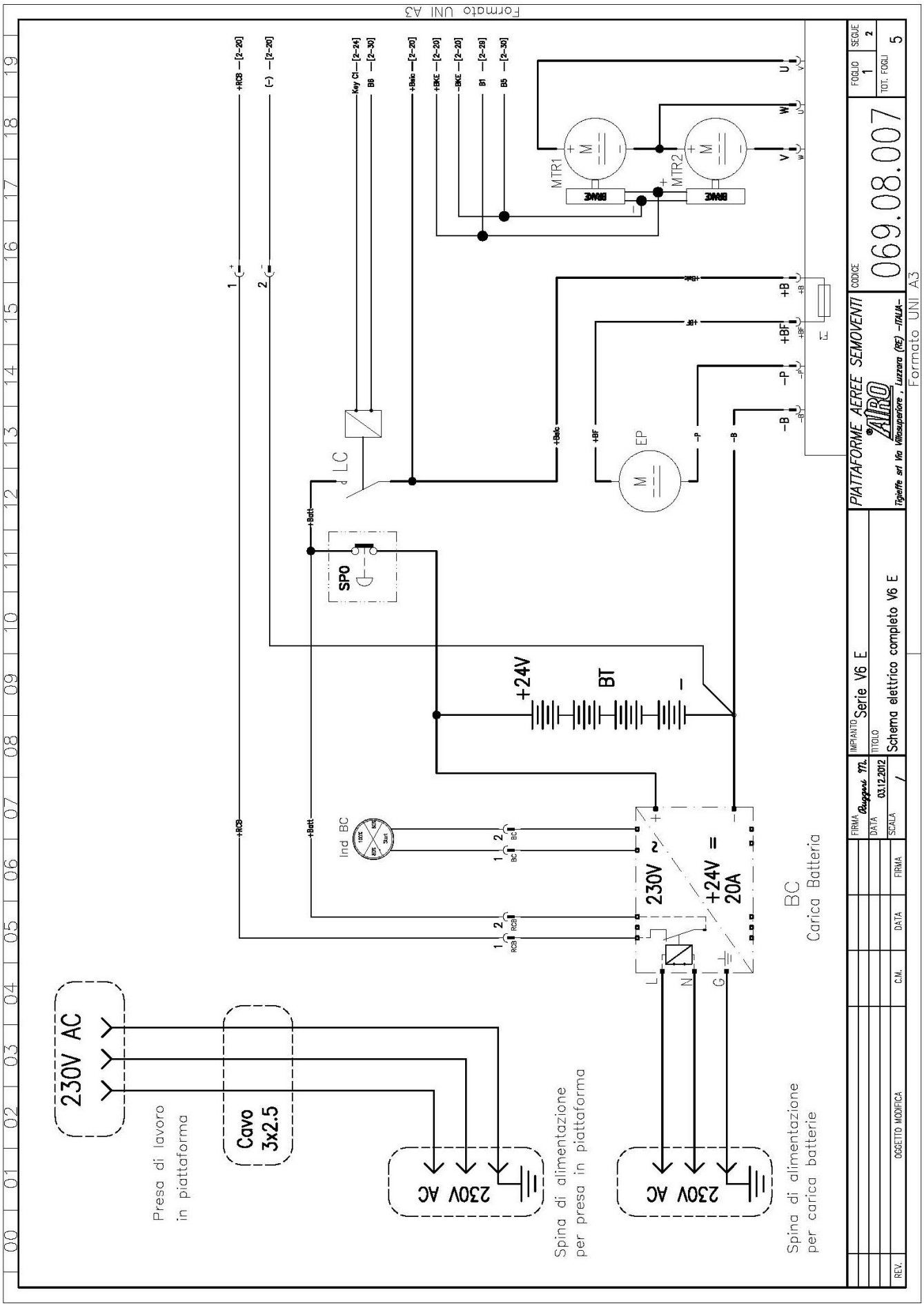
SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE **SAFETY MANAGER**

11. ELECTRIC WIRING ON STANDARD MACHINES

ZAPI DIAGRAM: 069.08.007
PGT DIAGRAM: 069.08.017

AV1	ON-GROUND ACOUSTIC ALARM
AV2	ON-PLATFORM ACOUSTIC ALARM
BC	BATTERY CHARGER
BT	BATTERY
EP	ELECTRIC PUMP
EV5	DESCENT, ELECTROVALVE
F1	POWER LINE FUSE
FU1	CONTROL LINE FUSE
FU2	CONTROL ACTUATOR FUSE
FU3	LIFTING TABLE FUSE
FU4	NEGATIVE FUSE
GRF1-2	FLASHING LIGHTS
INCL	INCLINOMETER
ind BC	BATTERY CHARGER INDICATOR
KL	HORN
LC	POWER LINE BREAKER SWITCH
M1	PLATFORM DOWN MICRO
M3	PLATFORM ELECTRIC END-SWITCH (ELEVATION)
M14	RIGHTHAND GATE MICRO
M15	LEFTHAND GATE MICRO
M16	LIFTING TABLE END-SWITCH (UP-STROKE) (optional)
M17	LIFTING TABLE END-SWITCH (DOWN-STROKE) (optional)
MDI CAN / DIAGNOSTIC CENTER	MULTIFUNCTIONAL DISPLAY ON THE WORK PLATFORM
MTR1-2	MAIN TRAVEL ENGINE
PR1	PRESSURE GAUGE
RP	LIFTING TABLE POWER RELAY (optional)
RPH	LIFTING TABLE UP-STROKE RELAY (optional)
RPH	LIFTING TABLE DOWN-STROKE RELAY (optional)
SP0	EMERGENCY STOP BUTTON ON THE POWER LINE
SP1	EMERGENCY STOP BUTTON ON THE (ON-GROUND) CONTROL LINE
SP2	EMERGENCY STOP BUTTON ON THE (ON-PLATFORM) CONTROL LINE
SW1	ON-GROUND/ON-PLAFTFORM CONTROL SELECTOR SWITCH
SW3	BRAKE RELEASE SWITCH FOR EMERGENCY TOWING
SW4	UP/DOWN SWITCH ON GROUND
UM	DEADMAN PEDAL


Formato UNI A3
PIATTAFORME AEREE SEMOVENTI
AIRO
Tigieffe srl Via Villasuperiore , Luzzara (RE) -ITALIA-
CODICE
069.08.007
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SEGUE 2
TOT. FOGLI 5
IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E
FIRMA
DATA 03.12.2012
SCALA /
REV.
OGGETTO MODIFICA
C.M.
DATA
FIRMA
Formato UNI A3
230V AC
Presa di lavoro in piattaforma
Cavo 3x2.5
230V AC
Spina di alimentazione per presa in piattaforma
230V AC
Spina di alimentazione per carica batterie
BC
Carica Batteria
230V ~
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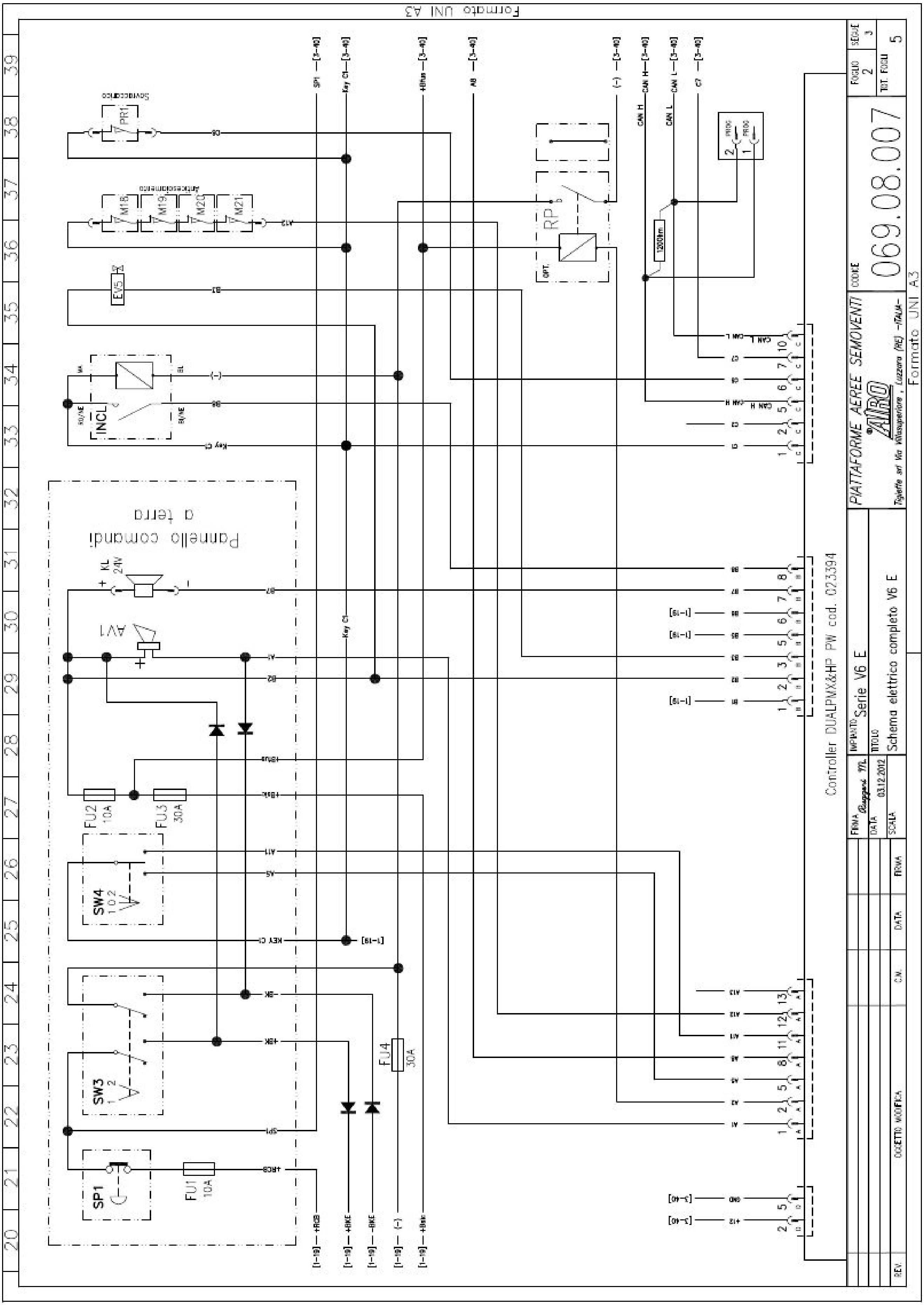
20A
+24V
BT
LC
SPO
EP
MTR1
MTR2
Ind BC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Pannello comandi a terra
Controller DUALPMX&HP PW cod. 023394
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AIRO
069.08.007
Serie V6 E
Schema elettrico completo V6 E
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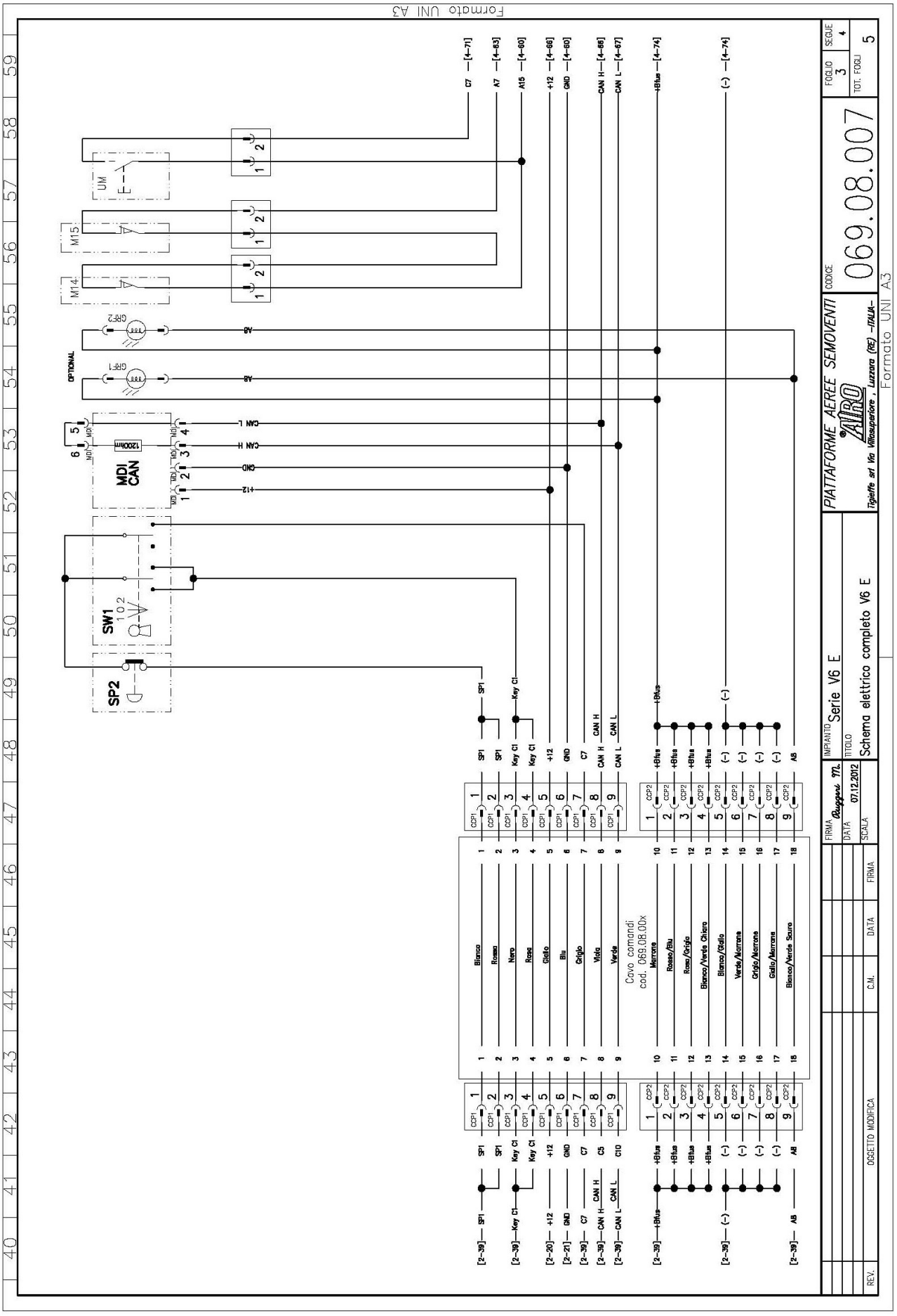
SEGUE 3
TOT. FOGLI 5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SP2
SW1
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OPTIONAL
M14
M15
UM
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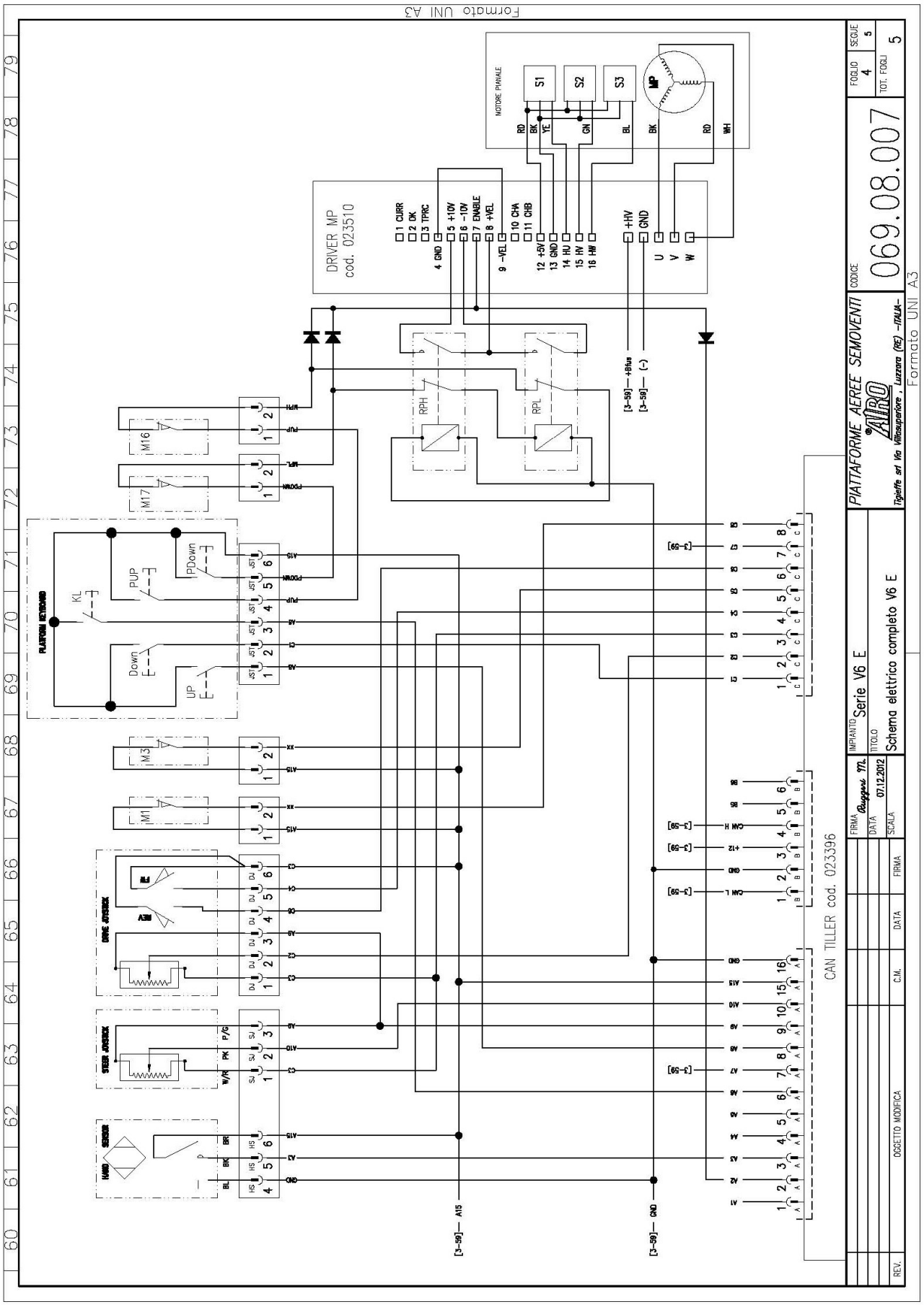
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DRIVER MP
cod. 023510
MOTORE PIANALE
S1
S2
S3
RPH
RPL
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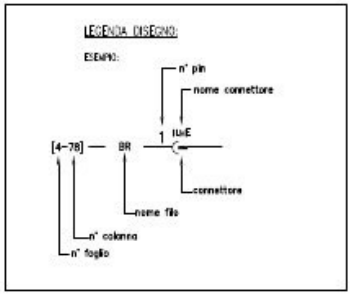
AIRO
Tiglieffe srl Via Villaseppiore , Luzzara (RE) -ITALIA-
CODICE
069.08.007
FOGLIO 4 SEGUE 5
TOT. FOGLI 5
IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E
DATA 07.12.2012
SCALA
FIRMA
CAN TILLER cod. 023396
Formato UNI A3

SIMB.	DESCRIZIONE	Pag.–Col.
AV1	Avvisatore acustico a terra	2–29/30
AV2	Avvisatore acustico in piattaforma	4–77
BC	Caricabatteria	1–4/7
BT	Batteria Trazione	1–8/9
EP	Elettropompa	1–14/15
EV5	Elettrovalvola di discesa	2–35/36
F1	Fusibile circuito di potenza	1–15
FU1	Fusibile circuito di comando	2–21
FU2	Fusibile attuatori di comando	2–27
FU3	Fusibile pianale carico	2–27
FU4	Fusibile negativo	2–23
GRF1	Girofaro 1	3–54
GRF2	Girofaro 2	3–55
INCL	Sensore di inclinazione	2–33/34
Ind BC	Indicatore Carica Batteria	1–06/07
KL	Clacson 24Vdc	2–30/31
LC	Teleruttore di linea	1–12/14
M1	Finecorsa piattaforma bassa	4–67
M3	Finecorsa sollevamento piattaforma	4–68
M14	Finecorsa cancello destro	3–55/56
M15	Finecorsa cancello sinistro	3–56
M16	Finecorsa pianale alto (opzionale)	4–73
M17	Finecorsa pianale basso	4–72
M18	Finecorsa pianale anticesoiamento	2–36/37
M19	Finecorsa pianale anticesoiamento	2–36/37
M20	Finecorsa pianale anticesoiamento	2–36/37
M21	Finecorsa pianale anticesoiamento	2–36/37
MDI CAN	Display multifunzione	3–52/53
MTR1	Motore trazione 1	1–17/18
MTR2	Motore trazione 2	1–17/18

SIMB.	DESCRIZIONE	Pag.–Col.
PR1	Pressostato per sovraccarico	2–38
RP	Relè alimentazione pianale	2–36/37
RPH	Relè sollevamento pianale	4–73/75
RPL	Relè discesa pianale	4–73/75
SP0	Interruttore di emergenza circuito di potenza	2–20/21
SP1	Interruttore di emergenza a fungo a terra	2–20/21
SP2	Interruttore di emergenza a fungo in piattaforma	3–49
SW1	Selettori comandi piattaforma/terra	3–50/52
SW3	Selettore sblocco freno	2–22/24
SW4	Selettori Salita/Discesa da terra	2–25/26
UM	Contatto pedale "Uomo presente"	3–57/58



REV.	OGGETTO MODIFICA	C.N.	DATA	FIRMA

FIRMA Ruggeri M.
DATA 07.12.2012
SCALA

IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E

PIATTAFORME AEREE SEMOVENTI
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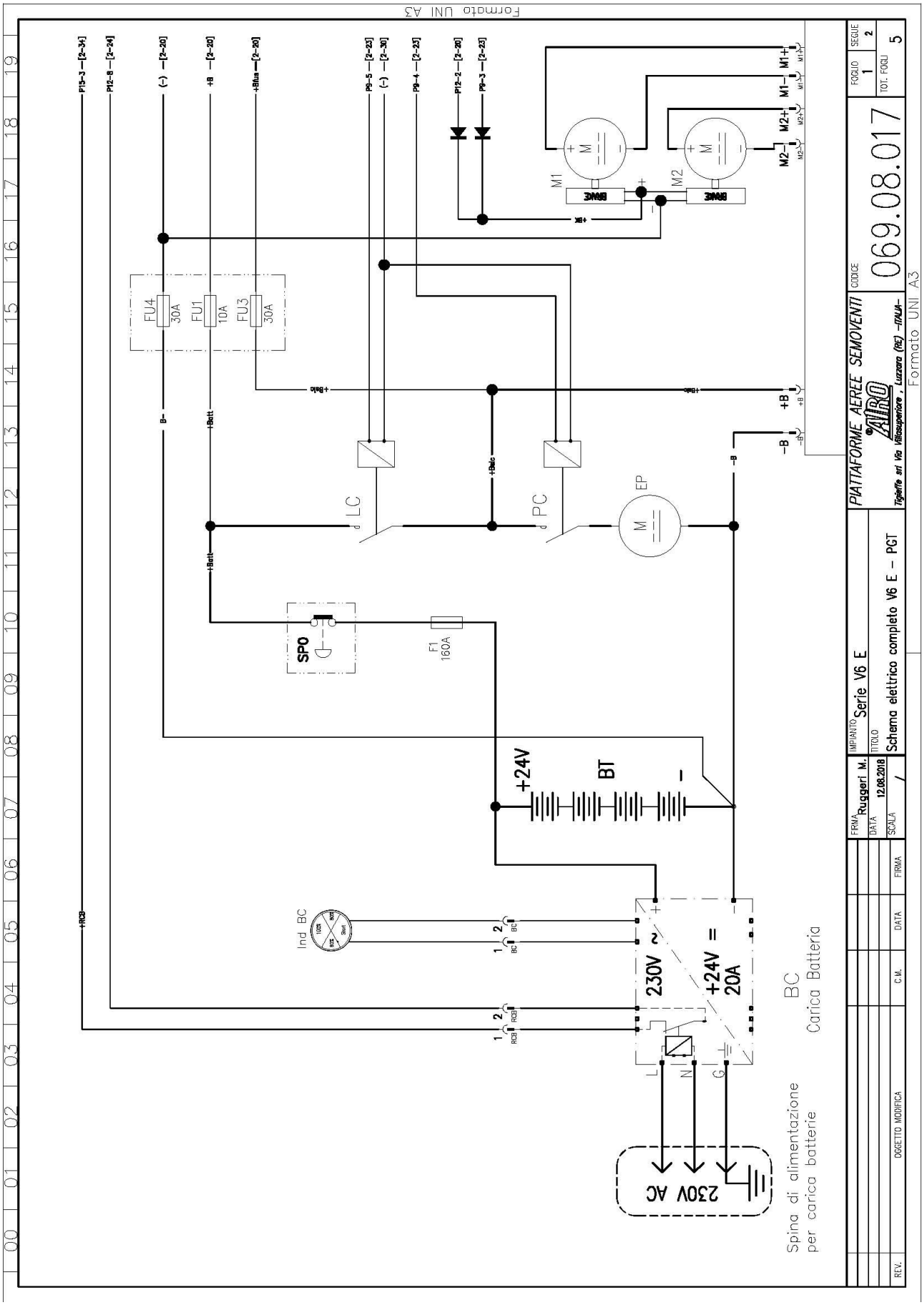
CODICE 069.08.007

FOGLIO 5 | SEGUE –
TOT. FOGLI 5

Formato UNI A3

Formato UNI A3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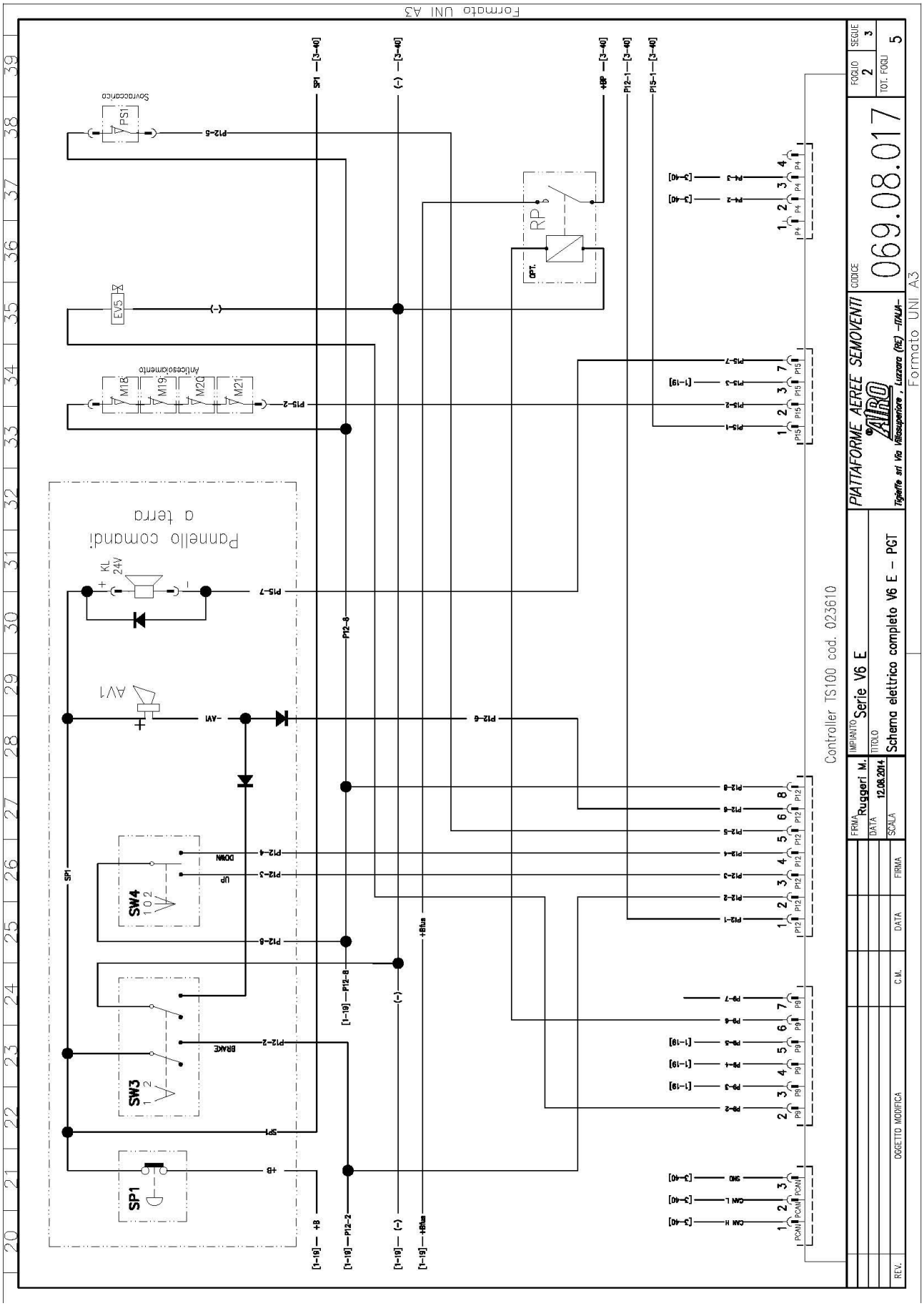
PIATTAFORME AEREE SEMOVENTI
AIRO
Tigieffe srl Via Villasuperiore - Luzzara (RE) -ITALIA-
CODICE
069.08.017
FOGLIO 1
SEGUE 2
TOT. FOGLI 5
IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E – PGT
FIRMA Ruggeri M.
DATA 12.08.2018
SCALA /
REV.
OGGETTO MODIFICA
C.M.
DATA
FIRMA
FU4 30A
FU1 10A
FU3 30A
F1 160A
SPO
LC
PC
EP
M1
M2
BRMF
+24V
BT
-
230V ~
+24V =
20A
Ind BC
BC
Carica Batteria
230V AC
Spina di alimentazione
per carica batterie
Formato UNI A3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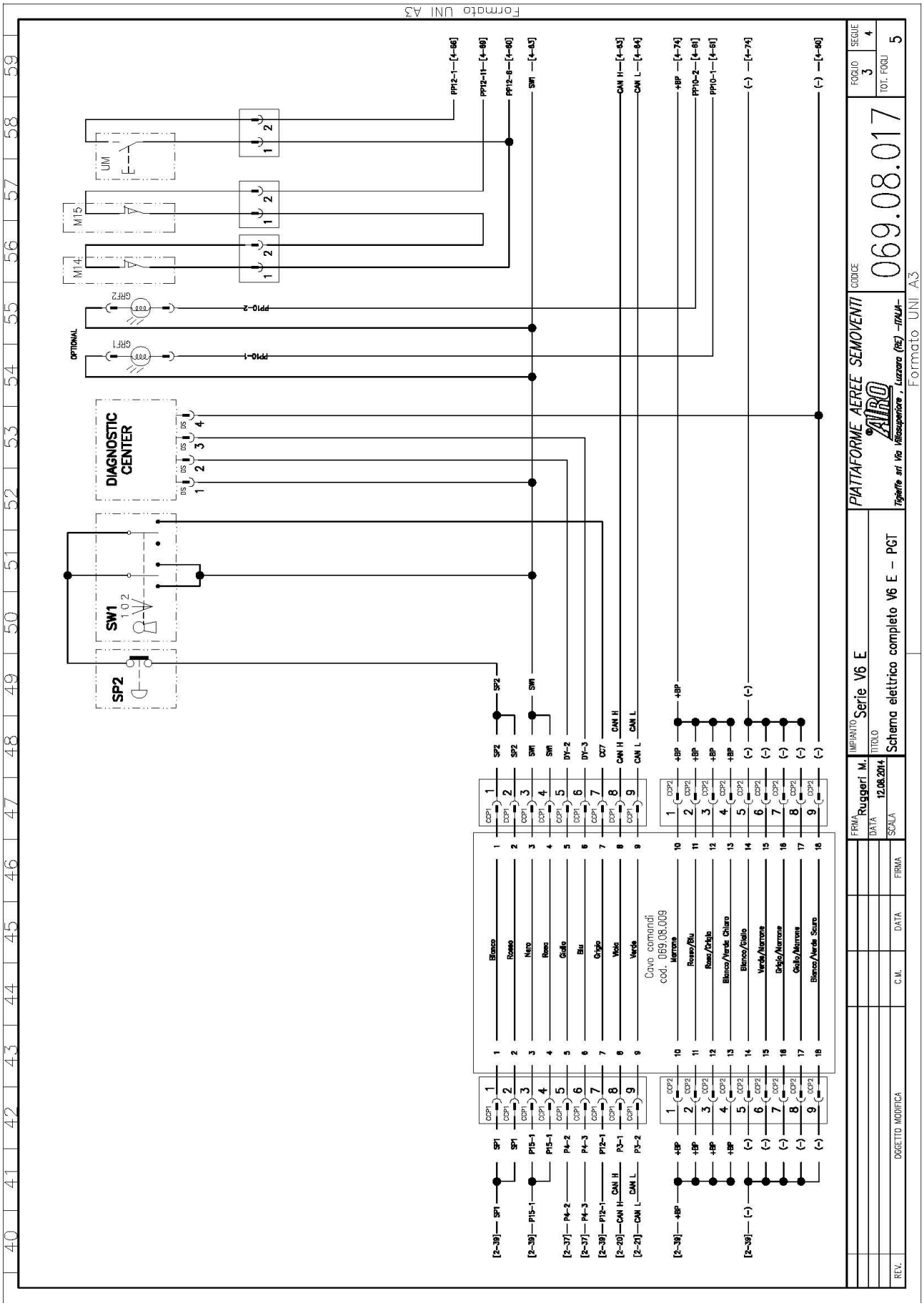
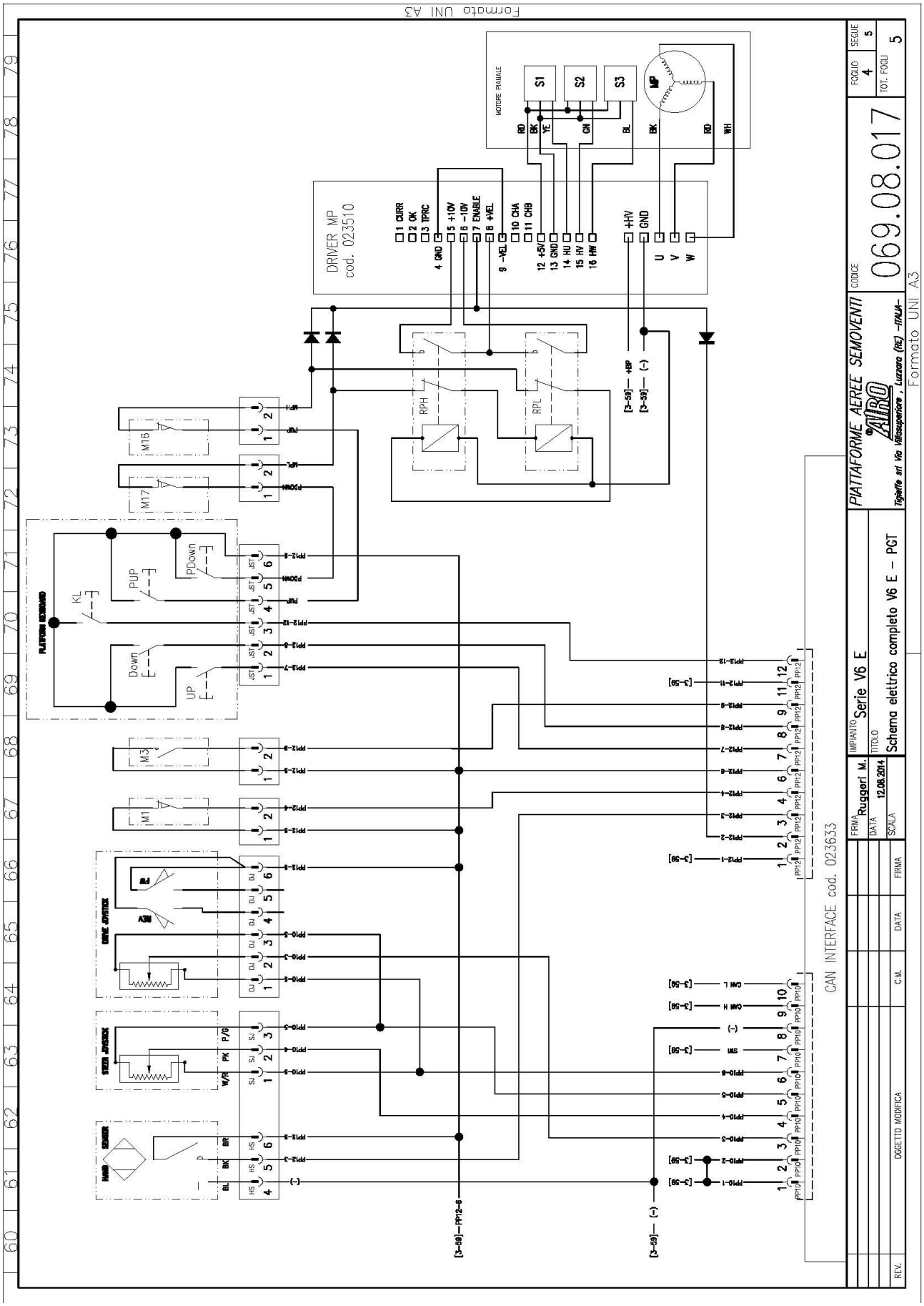
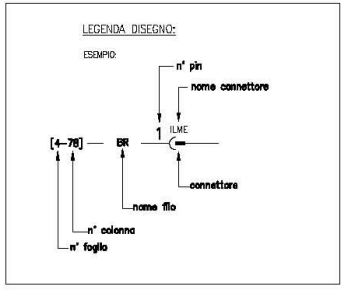
Pannello comandi a terra
Controller TS100 cod. 023610
PIATTAFORME AEREE SEMOVENTI
AIRO
Tigliaffo srl Via Villasuperiore - Luzzara (RE) -ITALIA-
069.08.017
Serie V6 E
Schema elettrico completo V6 E - PGT
12.08.2014
Ruggeri M.
SP1
SW4
SW3
EV5
EV1
RP
PS1
M18
M19
M20
M21
KL
24V
UP
DOWN
BRAKE
Formato UNI A3


Formato UNI A3
DIAGNOSTIC CENTER
SW1
SP2
OPTIONAL
GRF1
GRF2
M14
M15
UM
Cavo comandi
cod. 069.08.009
PIATTAFORME AEREE SEMOVENTI
AIRO
Tigieffe srl Via Villasuperiore, Luzzara (RE) -ITALIA-
IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E – PGT
CODICE 069.08.017
FOGLIO 3
SEGUE 4
TOT. FOGLI 5
FIRMA Ruggeri M.
DATA 12.06.2014
SCALA
REV.
OGGETTO MODIFICA
C.M.
DATA
FIRMA
Formato UNI A3


Formato UNI A3
DRIVER MP
cod. 023510
MOTORE PIANALE
S1
S2
S3
MP
RPH
RPL
PIATTAFORME AEREE SEMOVENTI
AIRO
Tiglieffe srl Via Villasuperiore , Luzzara (RE) -ITALIA-
CODICE
069.08.017
FOGLIO 4
TOT. FOGLI 5
SEGUE 5
IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E – PGT
FIRMA Ruggeri M.
DATA 12.08.2014
SCALA
CAN INTERFACE cod. 023633
OGGETTO MODIFICA
C.M.
DATA
FIRMA
REV.
Formato UNI A3

SIMB.	DESCRIZIONE	Pag.–Col.
AV1	Avvisatore acustico a terra	2–29/30
AV2	Avvisatore acustico in piattaforma	4–77
BC	Caricabatteria	1–4/7
BT	Batteria Trazione	1–8/9
EP	Elettropompa	1–14/15
EV5	Elettrovalvola di discesa	2–35/36
F1	Fusibile circuito di potenza	1–15
FU1	Fusibile circuito di comando	1–11
FU2	Fusibile attuatori di comando	2–22/23
FU3	Fusibile pianale carico	2–22/23
FU4	Fusibile negativo	2–23
GRF1	Girofaro 1	3–54
GRF2	Girofaro 2	3–55
INCL	Sensore di inclinazione	2–33/34
Ind BC	Indicatore Carica Batteria	1–06/07
KL	Clacson 24Vdc	2–30/31
LC	Teleruttore di linea	1–12/14
M1	Finecorsa piattaforma bassa	4–67
M3	Finecorsa sollevamento piattaforma	4–68
M14	Finecorsa cancello destro	3–55/56
M15	Finecorsa cancello sinistro	3–56
M16	Finecorsa pianale alto (opzionale)	4–73
M17	Finecorsa pianale basso	4–72
M18	Finecorsa pianale anticesoiamento	2–36/37
M19	Finecorsa pianale anticesoiamento	2–36/37
M20	Finecorsa pianale anticesoiamento	2–36/37
M21	Finecorsa pianale anticesoiamento	2–36/37
DIAGNOSTIC CENTER	Display multifunzione	3–52/54
MTR1	Motore trazione 1	1–17/18
MTR2	Motore trazione 2	1–17/18

SIMB.	DESCRIZIONE	Pag.–Col.
PS1	Sensore di pressione 1	2–38
RP	Relè alimentazione pianale	2–36/37
RPH	Relè sollevamento pianale	4–73/75
RPL	Relè discesa pianale	4–73/75
SP0	Interrutore di emergenza circuito di potenza	1–11
SP1	Interrutore di emergenza a fungo a terra	2–20/21
SP2	Interruttore di emergenza a fungo in piattaforma	3–49
SW1	Selettori comandi piattaforma/terra	3–50/52
SW3	Selettore sblocco freno	2–22/24
SW4	Selettori Salita/Discesa da terra	2–25/26
UM	Contatto pedale "Uomo presente"	3–57/58



REV.	OGGETTO MODIFICA	C.M.	DATA	FIRMA

FIRMA Ruggeri M.
DATA 12.08.2014
SCALA

IMPIANTO Serie V6 E
TITOLO Schema elettrico completo V6 E – PGT

PIATTAFORME AEREE SEMOVENTI
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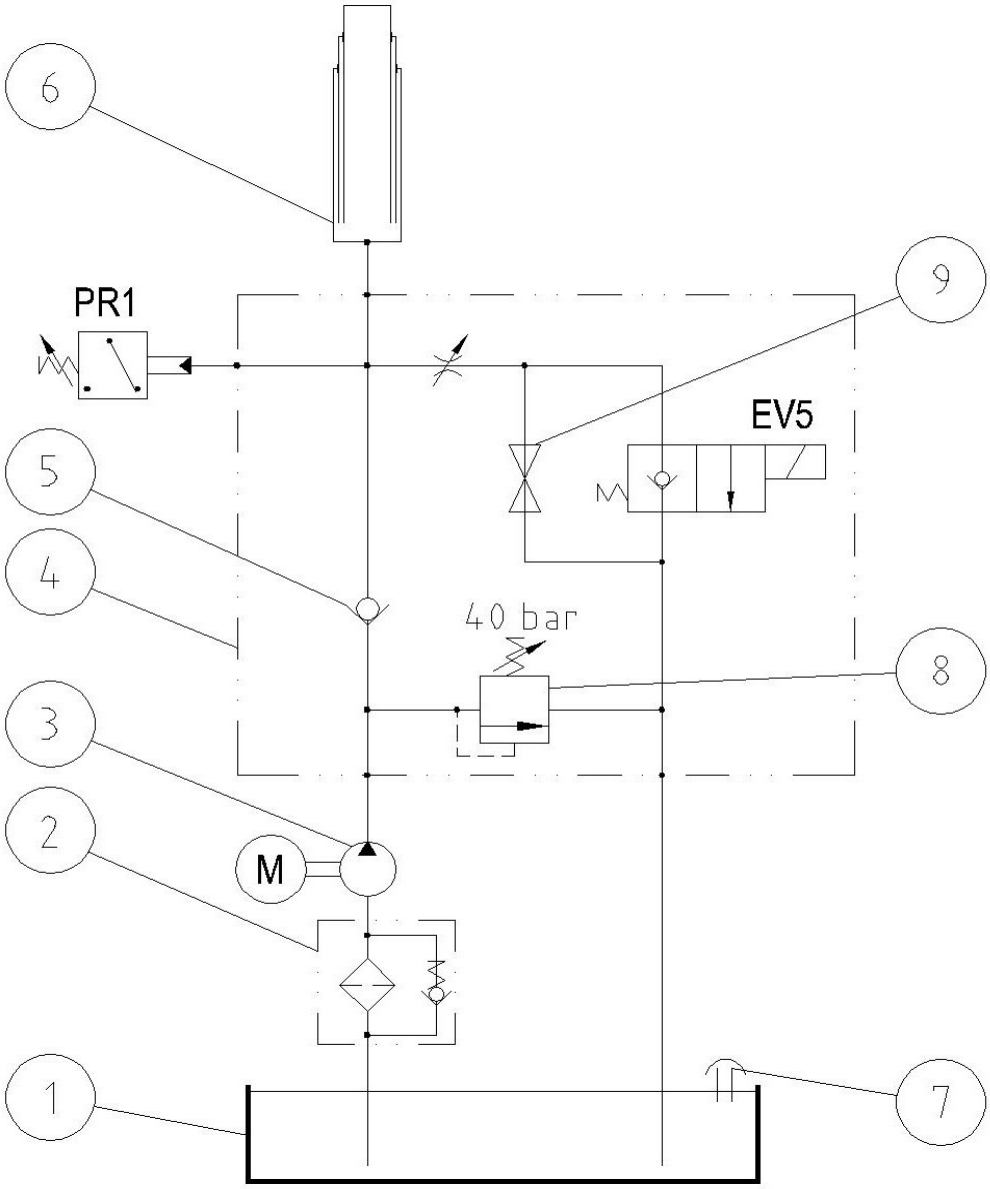
FOGLIO 5 | SEGUE -
TOT. FOGLI 5

Formato UNI A3

Formato UNI A3

12. HYDRALIC DIAGRAM FOR STANDARD MACHINES

1	OIL TANK
2	FILTER
3	GEAR PUMP
4	INTEGRATED UNIT
5	CHECK VALVE
6	LIFTING CYLINDER
7	FILL AND DRAIN PLUG
8	PRESSURE RELIEF VALVE
9	MANUAL CONTROL FOR EMERGENCY DESCENT
EV5	DESCENT, ELECTROVALVE
M	ELECTRIC MOTOR
PR1	PRESSURE GAUGE



13. FORMAT OF THE EC STATEMENT OF COMPLIANCE

Piattaforme Aeree Semoventi / Self-Propelled Aerial Platforms

DICHIARAZIONE *CE* DI CONFORMITA' - *CE* DECLARATION OF CONFORMITY - DECLARATION *CE* DE CONFORMITE' - *EG* KONFORMITÄTSERKLÄRUNG - DECLARACION *CE* DE CONFORMIDAD- ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ *ЕС*
2006/42/CE

Dichiarazione originale	Original Declaration	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

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

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

Modello - Model - Modèle Typ – Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Рама	Anno - Year - Année Baujahr – Ano -Год
V6 E	*XXXXXXXXXX*	*XXXXXXXXXX*

Al quale questa dichiarazione si riferisce è conforme alle direttive 2006/42/CE, 2014/30/CE, 2005/88/CE e al modello certificato da:	To which this declaration refers is in compliance with the directives 2006/42/CE, 2014/30/CE, 2005/88/CE and with the model certified by:	Faisant l'objet de la présente déclaration est conforme aux directives 2006/42/CE, 2014/30/CE, 2005/88/CE et au 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 certificato 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)
N. di identificazione 0303

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

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

M.0303.15.5856

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

EN ISO 12100:2010 EN ISO 60204-1:2006

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

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

.....
Wang Kai
(Direttore Generale – General Manager)
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42045 LUZZARA (RE) - ITALIA

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Codice Meccanografico: RE016050

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