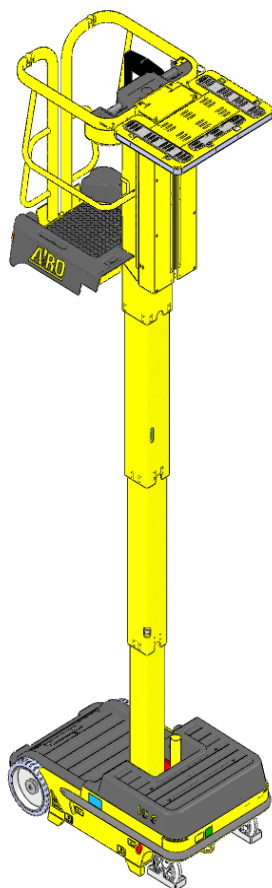




PIATTAFORME AEREE SEMOVENTI  
SELF-PROPELLED WORK-PLATFORMS  
PLATES-FORMES DE TRAVAIL AUTOMOTRICES  
SELBSTFAHRENDE HUBARBEITSBÜHNEN  
PLATAFORMAS ELEVADORAS AUTOPROPULSADAS  
ZELFRIJDENDE HOOGWERKERS  
SJÄLVGÅENDE ARBETSPLATTFORMAR  
SAMOKRETNE RADNE PLATFORME

## "V" SERIES V6 E



## USE AND MAINTENANCE MANUAL - ENGLISH - ORIGINAL INSTRUCTIONS

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

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# 1. INTRODUCTION

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

## 1.1. Legal aspects

### 1.1.1. Delivery of the machine

Within EU (European Union) member countries the machine is delivered complete with:

- Use and Maintenance manual in your language
- CE mark applied on the machine
- CE conformity declaration
- Guarantee certificate
- Declaration of internal testing

Only for Italy:

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

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

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

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

#### 1.1.2.1. Declaration of commissioning and first check

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

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

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

### 1.1.2.2. Further periodical checks

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

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

### 1.1.2.3. Transfers of ownership

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

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

### 1.1.3. Operators training and information

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

## 1.2. Tests performed before delivery

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

- Braking test
- Overload test
- Operating test

## 1.3. Intended use

The machine described in this manual is a Mobile elevating Work Platform, and has been designed for lifting / carrying:

- Material (in the areas named MOBILE LOADING SURFACE and GROUND LOADING SPACE)
- Operator (in the work platform)

Therefore, the machine is intended both for manual operations of collection, loading, unloading of packed materials and/or materials of homogeneous shape with reduced dimensions and weight., and for high-up work operations.

The maximum allowed capacity is divided as follows:

- 90 kg of material on the mobile loading surface
- 130 kg of material on the ground loading surface
- 120 kg on the operator position

It is absolutely forbidden to exceed the maximum allowed capacities indicated by the plate on the platform. The work platform can be accessed only from the access position, i.e. with the platform completely lowered. It is absolutely forbidden to access the work platform not in access position.

The loads must be placed within the perimeter of the MOBILE LOADING SURFACE and/or within the perimeter of the GROUND LOADING SPACE. Occasionally, loads of bigger dimensions are allowed to be lifted provided the maximum capacity is suitably reduced and the load is secured as indicated in the following chapters. It is not allowed to lift loads hanging from the lifting structures, even if the maximum capacity is observed.

The truck can be used indoors only (with no wind whatsoever) on horizontal and flat floor, without obstacles, holes and steps and in sufficient lighting conditions.

When the unit is moving with lifted platform, do not load horizontal loads (the operator on board must not pull ropes, cables, etc.).

An overload controller interrupts the normal operation of the unit if the lifted load exceeds by 30% approx. the nominal load with lifted platform (see chapter "General use rules").

The machine cannot be used in areas where road vehicles operate. Always surround the working area by means of suitable signs when the machine is used in public areas.

The machine is not intended for towing trucks or other vehicles.



**Do not use the machine for purposes other than those for which it was designed, except after making a request and having obtained written permission in this sense from the manufacturer**  
**If disposal of the unit is necessary, comply with current local regulations.**

### 1.3.1. Leaving at height

The mobile elevating work platforms are not designed by taking into account the risks of the "leaving at height" because the only access position considered is when the platform is completely lowered. For this reason, this activity is formally forbidden.

However, there are exceptional conditions in which the operator needs to access or leave the work platform not in the access position. This activity is normally defined as "leaving at height".

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

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

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

## 1.4. Description of the machine

The machine described in this use and maintenance manual is a Mobile Elevating Work Platform consisting of:

- motorized chassis equipped with wheels;
- Vertical telescopic lifting structure operated by one hydraulic cylinder.
- Work platform (operator position).
- Loading surface for material lifting/handling.

The chassis is motorised to allow the machine to move (see "Use instructions") and has two rear drive wheels and two front idle pivoting wheels. Steering is possible thanks to a differentiated control between the right drive geared motor and left drive geared motor. 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 structure is single-acting, therefore the lowering movement of the operator position occurs by gravity. The cylinder has a solenoid safety valve tightly connected to the same. This feature allows the loads to be kept in position (elevating operator position and loading surface) even if the flexible supply tube accidentally breaks.

The 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 loading surface can be of two types:

- Manually-operated: the operator decides beforehand the height of the loading surface, and then he fixes it there using a spring-activated safety pin.
- Electrically-activated: the loading surface can be handled electrically using a lifting/lowering control located on the platform, which activates a mechanical jack equipped with automatic parking brake.

## 1.5. Control panels

The machine is equipped with two control panels:

- On the platform for normal use of the machine. It is also equipped with a key-selector to select the control panel and to start the unit.
- the chassis is equipped with: the emergency controls to lower or stop the unit in emergency situations, 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 wiring diagrams are equipped with all necessary 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 environments, if properly used and serviced. Within this period, the manufacturer must carry out a complete inspection/overhaul.

If disposal of the unit is necessary, comply with current local regulations.

In Italy, the demolition/decommissioning must be notified to the local ASL / USL or ARPA.

The machine consists mainly of metal parts which are easy to be identified (steel for the most parts, and aluminium for the hydraulic blocks); thus, we can state that the machine can be recycled at 90%.



**European standards and those transposed by the member countries relating to respect for the environment and the disposal of wastes envisage heavy administrative and penal fines in case of infringement.**

**In case of demolition/decommissioning, carefully keep to the provisions of applicable regulations, especially as regards materials such as hydraulic oil and batteries.**



## 1.8. Identification

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

MODEL: _____	CHASSIS: _____	YEAR: _____
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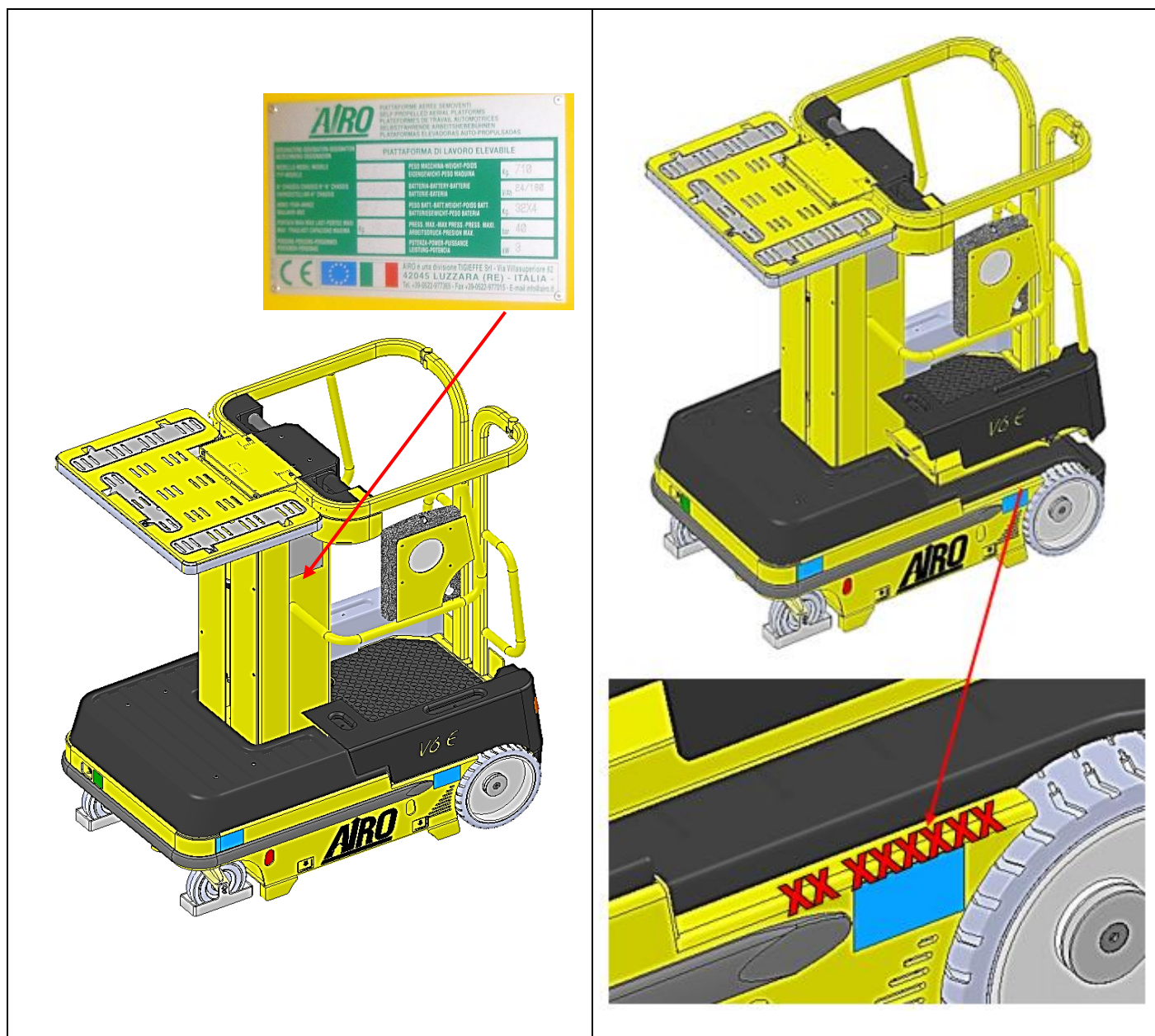


Fig. 1

## 1.9. Location of main components

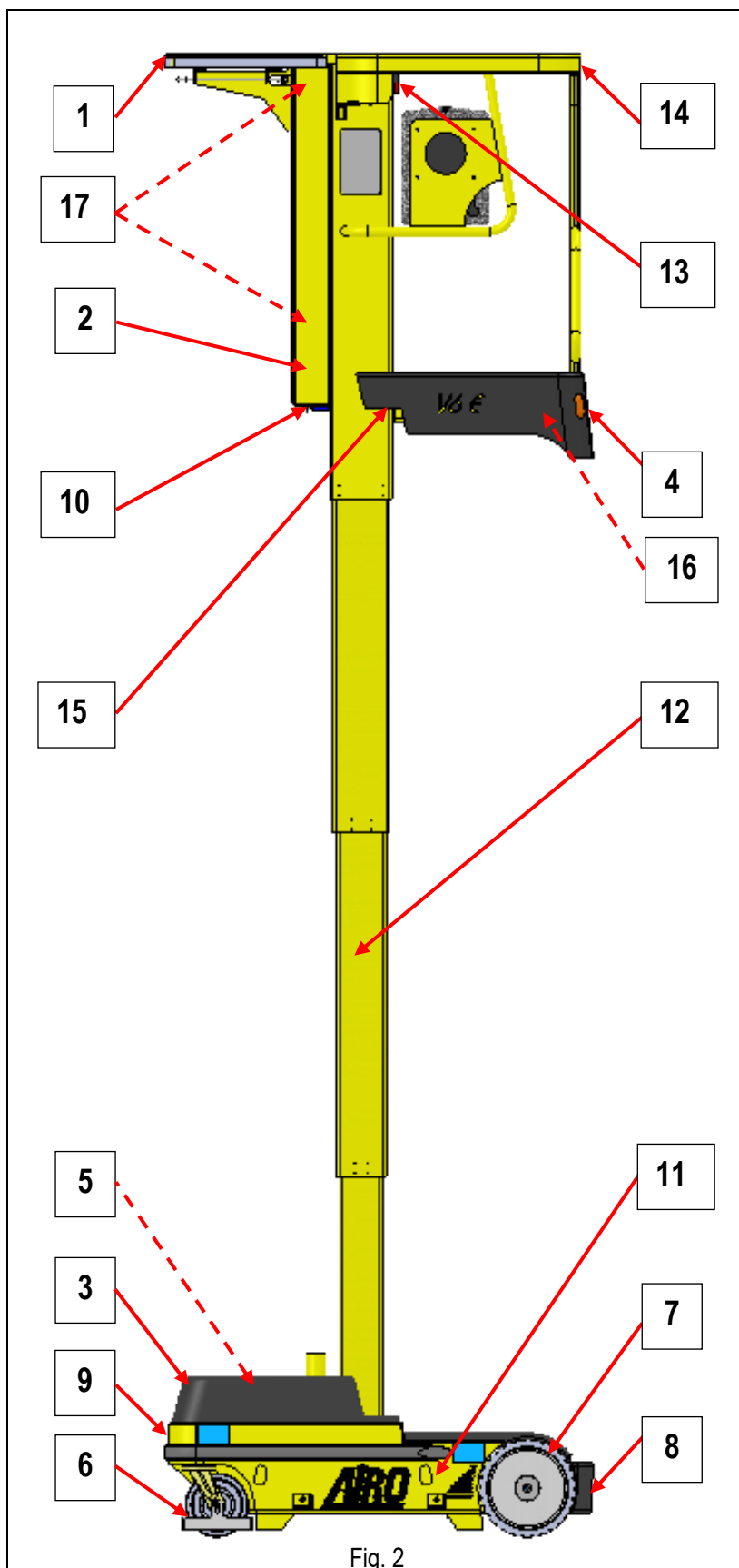


Fig. 2

- 1) Loading surface (manual or motorized)
- 2) Mechanical jack (optional for motorized loading surface control)
- 3) Ground-loading space
- 4) Flashing lights (optional)
- 5) Movement alarm
- 6) Pivoting wheels
- 7) Drive wheels and drive geared motors
- 8) 230V battery-charger power socket
- 9) Emergency lowering control lever
- 10) Microswitch M1
- 11) Ground chassis with
  - Electric pump
  - Lower control solenoid valve
  - Battery
  - Inclinometer
  - Battery charger
  - Electric control unit
- 12) Telescopic lifting structure and lifting cylinder
- 13) Platform control panel
- 14) Work platform
- 15) Microswitch M3 (lifting limit switch)
- 16) Microswitches M14-M15 (gates control)
- 17) Microswitches M16-M1 (motorized loading surface limit switch)

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

Dimensions:		V6 E	
	Maximum working height	5.50	m
	Max. platform height	3.50	m
	Max. loading surface height at platform	4.65	m
	Ground clearance (at the centre of the chassis)	75	mm
	Ground clearance (under the pot-hole guards)	20	mm
	Platform height for safety speed activation	0.5	m
	Internal steering radius	0	m
	External steering radius	1.35	m
	Maximum capacities		kg
	Maximum capacity on platform	120	kg
	Maximum amount of people on platform	1	
	Maximum loading surface capacity on platform	90	kg
	Maximum capacity of ground-loading compartment	130	kg
	Maximum drive height	Max. (A)	
	Max. hydraulic pressure	50	bar
	Rear drive 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 (unloaded)	780	kg
Stability limit:			
	Longitudinal slope	2	°
	Transversal slope	2	°
	Maximum wind speed	0 (B)	m/s
	Maximum manual force:	200	N
	Max. load per wheel	420	Kg
Performance:			
	Battery type	Gel / AGM (C)	
	Standard battery capacity and voltage	4 x 6 / 180	V/Ah
	Standard battery weight	4 x 32	kg
	Single-phase battery charger	24/25 HF	V/A
	Max. current absorbed by the battery charger	12	A
	Electric pump power	3	kW
	Max. absorbed current	160	A
	Power of electric drive motors	2 x 0.7	kW
	Max. absorbed current	2 x 30	A
	Power of electric loading surface motor (optional)	0.125	kW
	Max. absorbed current	10	A
	Max. drive speed	6	km/h
	Safety drive speed	0.8	km/h
	Max. platform lifting speed (with one person on board)	0.1	m/s
	Max. platform lowering speed (with one person on board)	0.1	m/s
	Max. lifting speed of mobile loading surface (optional)	28	mm/s
	Max. lowering speed of mobile loading surface (optional)	35	mm/s
	Oil tank capacity	18	Lt.
	Gradeability	25	%
	Max. operating temperature	+50	°C
	Min. operating temperature	-20	°C

(A) Possible translation with operator position and mobile loading surface completely lifted.

(B) Machine to be used indoors (with no wind whatsoever).

(C) Gel or AGM = batteries with no need of operator maintenance.

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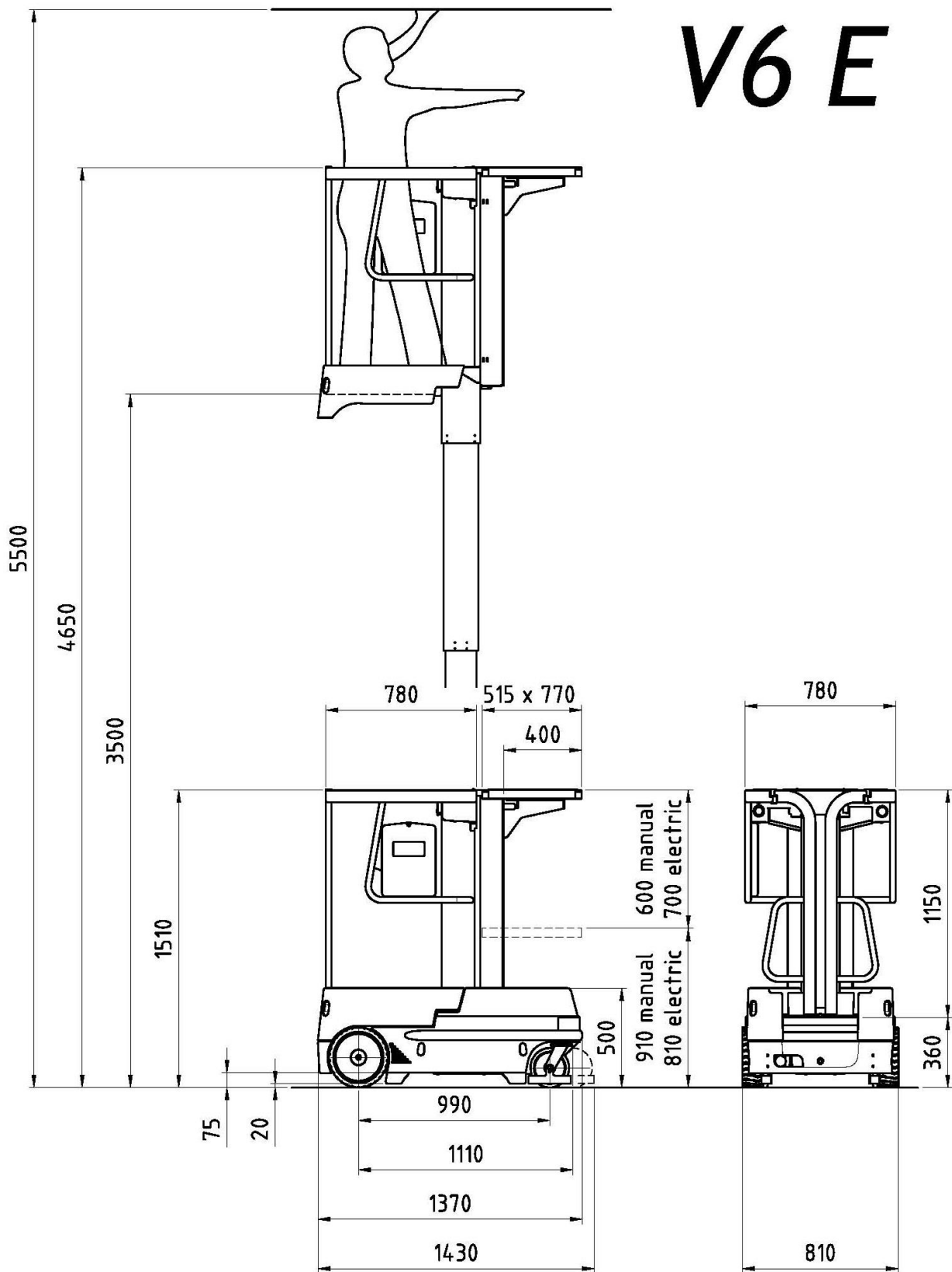


Fig.3

## 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/sec<sup>2</sup>.
- The rms. value weighed according to acceleration frequency relevant to the body is lower than 0.5 m/sec<sup>2</sup>.

### 3. SAFETY PRECAUTIONS

#### 3.1. Personal protective equipment (PPE)

Always wear personal protective equipment according to current regulations concerning industrial health and safety (in particular, hard hat and safety shoes are **COMPULSORY**).

It is the operator or safety manager's responsibility to choose the personal protective equipment (PPE) depending on the activity to be carried out. For their correct use and maintenance, refer to the equipment manuals themselves.

The use of safety harness is not compulsory except in certain countries with specific regulations.

In Italy, the consolidation act on safety, **Law Decree 81/08**, has made the use of a safety harness mandatory.

The harness is attached to one of the anchorages reported by labels, as in the following picture.



Fig. 4

#### 3.2. General safety norms



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

### 3.3. Use instructions

#### 3.3.1. General

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



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



- The machine must be used only in areas well lit up, checking that the ground is flat and cohesive. The machine may not be used if the lighting conditions are not sufficient. The machine is not equipped with any lightning system.
- The machine must be used indoors only (with no wind whatsoever).
- Before using the machine check its integrity and conservation state.
- During maintenance operations do not dispose of any waste materials in the environment, but comply with current regulations.
- Do not carry out any service or maintenance operations when the machine is connected to the mains supply. Follow the instructions given in the following paragraphs.
- Do not approach the electric and hydraulic system components with sources of heat or flames.
- Do not increase the max. allowed height of the platform by means of scaffolds, ladders or other.
- With the machine lifted, do not fasten the platform to any structure (beams, pillars or wall).
- Do not use the machine as a crane.
- 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 when working in adverse environmental conditions (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 areas where risks of fire or explosion exist.
- Do not use pressurized water jets (high-pressure cleaners) to wash the machine.
- Overloading the work platform 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.
- Leaving or accessing the work platform is forbidden unless this is in the position required for access or leaving (see the "Accessing the platform" chapter).

#### 3.3.2. Handling



- Before handling the machine check that the connection plugs are disconnected from the power supply source.
- In order to avoid any instability, use the machine on regular and firm grounds. To prevent the machine from overturning, comply with the max. gradeability values indicated in the Technical data section under paragraph "Stability limits". However, movements on inclined grounds are to be carried out with the utmost caution.
- As soon as the platform is lifted (the tolerance varies from model to model) the safety drive speed is automatically activated (all models of this handbook have passed the stability Tests in compliance with standard EN280).
- Drive the unit with lifted operator position only on flat grounds, verifying the absence of holes or steps on the floor and bearing in mind the overall dimensions of the unit.
- While driving the machine with lifted platform the operators are not allowed to place horizontal loads onto the platform (operators on board must not pull ropes, wires, etc.).
- The machine must not be used directly on roads.
- Do not use the machine for people carriage (see paragraph 1.2 "Intended use"). The only person on board is the operator at the operator position.
- Carry out movements on ramps with max. slope not exceeding the one indicated at chapter "2 TECHNICAL FEATURES", both upward and downward only with lowered operator position.

- It is forbidden to use the machine as a towing device.
- Check that in the operating area there are not obstacles or other dangerous elements.
- Pay particular attention to the area above the machine during lifting to avoid any crushing and collisions.

### 3.3.3. Operating procedures

- The machine is equipped with an inclination control system disabling lifting in case of unstable positioning. Working operations can be resumed only after placing the machine in a steady position. Should the audible alarm and the red light on the platform control panel turn on, the machine is not correctly positioned (see paragraphs relevant to "Use instructions"). Bring it to safety rest position before starting operations again. If the tilt alarm is activated with platform lifted, the only possible platform operation is lowering.
- The machine is equipped with an overload controller stopping all machine movements in case of overloading when platform is raised. Machine operation can be resumed only after removing the overload. Should the audible alarm on the platform control panel turn on, then the machine is overloaded. Remove the exceeding load before starting operations again.
- The machine can be equipped alternatively or simultaneously with two devices to avoid the risks of shearing and crushing between the chassis and the platform during lowering:



1. The lowering movement of the platform is automatically stopped when the walking surface is at about 0,5 m from the ground. In this condition the movement alarm warns about the danger condition by increasing its frequency. The operator on board the platform must release the lowering control and wait for the audible alarm to go off (about 3 sec.), before continuing lowering movement, performed as follows: the audible alarm and warning device (where fitted) immediately trip, at a higher frequency than normal, while movement is delayed by about 1.5 seconds. The above procedure also starts every time the lowering control is given at a platform height below that of automatic stop. (see "Lifting and lowering" chapter).

2. The plastic crankcase located on the chassis under the work platform is installed on springs and controlled by microswitches. Any pressure whatsoever on this crankcase (for example a resting foot) causes the activation of the red alarm light and of the audible alarm, and disables the lowering control of the work platform.

- The entry gates of the operator position are fitted with microswitches for controlling the closed position. With one or both gates not perfectly closed:
  - a) If platform is fully lowered, platform lifting is disabled but drive is still allowed.
  - b) If platform is lifted, all movements are disabled.
- The machine features a device for checking the state of battery charge (battery protection device): when battery charge is at 20% the operator on the platform is informed of this condition by means of the present indicator. In this condition lifting is disabled. Battery should be immediately charged.
- Do not lean over the platform guard rails.
- Do not wear baggy or hanging clothes.
- Make sure that no people, apart from the operator, are in the area where the machine is operating. While moving the platform, the operator on board should pay particular attention to avoid any contact with the personnel on the ground or other vehicles.
- During operations in public areas, in order to prevent people other than the personnel from approaching the machine and being endangered, surround the working area by means of barriers or other suitable signs.





- Lift the operator position only if the machine is resting on cohesive and horizontal surfaces. Drive the machine with lifted operator position only if the ground is cohesive and horizontal.
- After each work session, always take the keys out of the control panel and keep them in a safe place to prevent unauthorized people from using the machine.
- The lifted loads on the loading surface should be held within the surrounding edges of its surface. Occasionally, loads of bigger dimensions are allowed to be lifted provided the maximum capacity is suitably reduced and the load is secured as indicated in the following chapters.
- Only lift packed loads of homogeneous shape and composition and of weight not exceeding the max. allowed load.
- It is forbidden to lift persons who are outside the operator position.

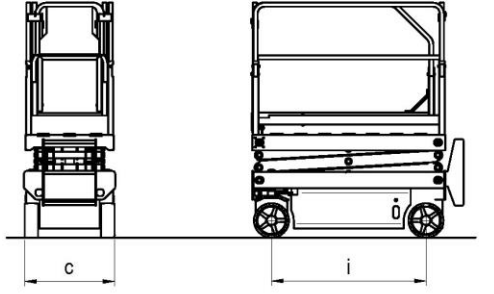
When choosing the positioning point of the chassis, to prevent unexpected possible contacts with obstacles, always observe the figures carefully as these make it possible to identify the range of action of the platform (chap. 2).

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

Before using the machine, the operator must make sure the floor is suitable for withstanding the specific loads and pressures on the ground with a certain safety margin.

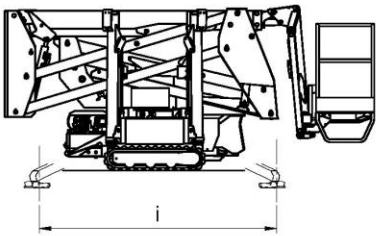
The following chart provides the parameters in play and two examples of calculation of the average pressure on the ground below the machine and max pressure underneath the wheels or stabilizers (p1 and p2).

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



**EXAMPLE 1: SCISSOR LIFT**

$P1 = 1395 \text{ kg}$   
 $P2 = 680 \text{ kg}$   
 $M = 250 \text{ kg}$   
 $c = 76,5 \text{ cm}$   
 $i = 132,0 \text{ cm}$   
 $A1 = c \times i = 10098 \text{ cm}^2$   
 $A2 = 71,5 \text{ cm}^2$   
 $p1 = (P1+M)/A1 = 0,16 \text{ kg/cm}^2$   
 $p2 = P2/A2 = 9,5 \text{ kg/cm}^2$



**EXAMPLE 1: CRAWLER LIFT**

$P1 = 2200 \text{ kg}$   
 $P2 = 920 \text{ kg}$   
 $M = 200 \text{ kg}$   
 $c = 295 \text{ cm}$   
 $i = 295 \text{ cm}$   
 $A1 = c \times i = 87025 \text{ cm}^2$   
 $A2 = 62,8 \text{ cm}^2$   
 $p1 = (P1+M)/A1 = 0,03 \text{ kg/cm}^2$   
 $p2 = P2/A2 = 14,6 \text{ kg/cm}^2$

The table below shows the load-bearing capacity of the ground split up by ground type.

Refer to the data contained in the specific tables of each model (chapter 2, TECHNICAL FEATURES OF STANDARD MACHINES) to obtain the figure relating to the max pressure on the ground caused by the single wheel.



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

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

Should you have any doubts, verify the load-bearing capacity with specific tests.

In case of constructed surfaces (concrete floors, bridges, etc.) the load-bearing capacity must be provided by the builder.

### 3.3.5. High-tension lines

The machine is not electrically insulated and is not protected in case of contact with or vicinity to power lines.

According to the applicable laws and the following table a minimum distance from the power lines must be kept

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

### 3.4. Hazardous situations and/or accidents

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

## 4. INSTALLATION AND PRELIMINARY CHECKS

The machine is supplied completely assembled, therefore it can perform all functions in full safety as provided for by the manufacturer. No preliminary operation is required. To unload the machine, follow the instructions in 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. Becoming acquainted with the machine

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

The employer shall be responsible for ensuring all the operators who use work equipment are adequately trained and in compliance with applicable health and safety legislation.

### 4.2. Preliminary operation checks

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

Before using the machine, the operator must always check visually that:

- The battery is completely charged.
- The oil level lies between the min. and max. value (with lowered platform).
- The ground is sufficiently horizontal and solid.
- The machine carries out all operations in safety.
- The wheels and drive motors are properly fixed.
- The wheels are in good conditions.
- The rails are well fastened to the platform and the gate/s are correctly monitored by microswitches.
- The structure does not show clear faults (visually check welding of lifting structure).
- The instructions plates are perfectly readable.
- The controls are perfectly efficient both at operator position and at emergency ground control panel, including dead-man system.

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

## 5. USE INSTRUCTIONS

Before using the machine read this chapter thoroughly.



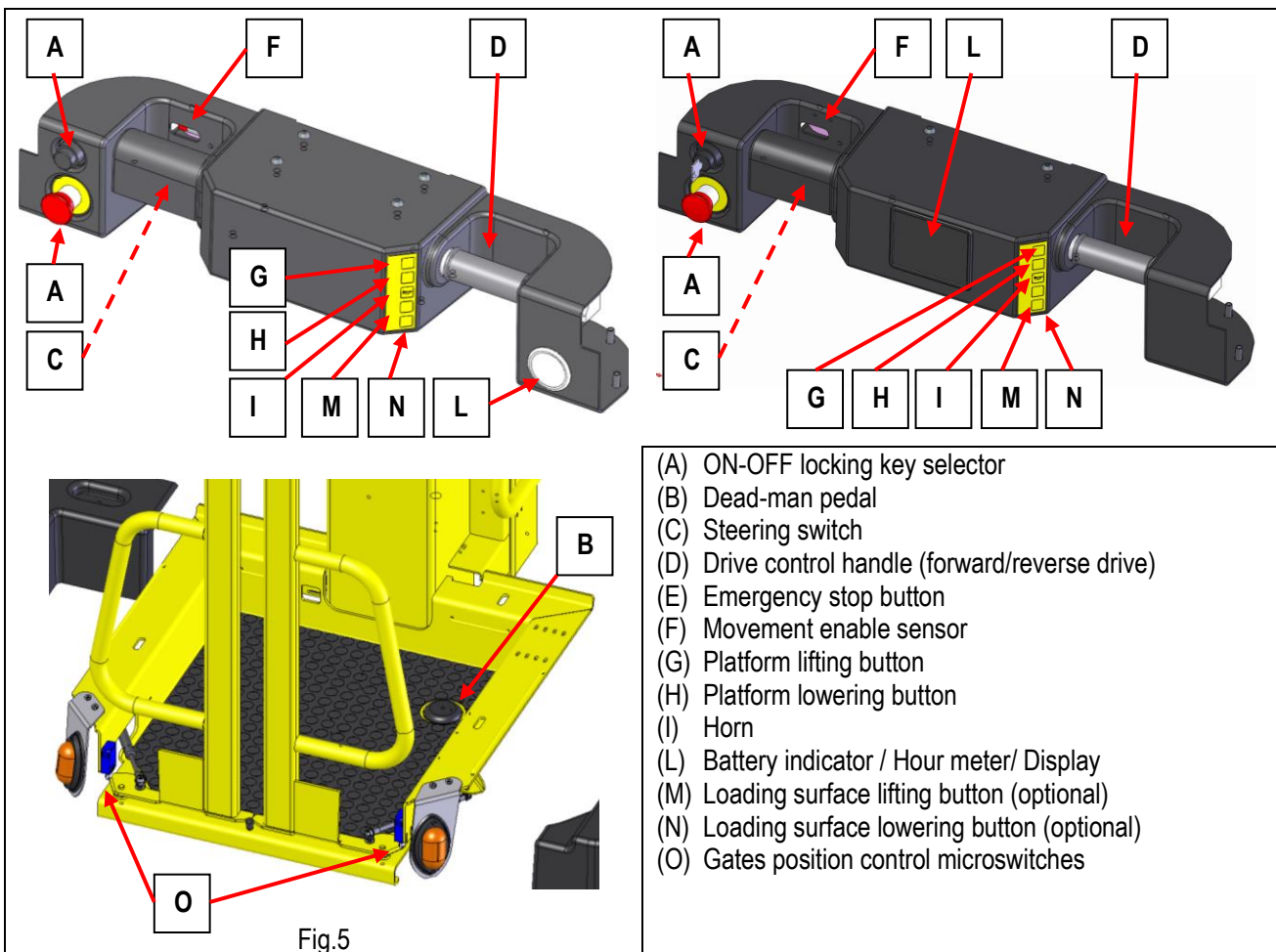
### WARNING!

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

### 5.1. Platform control panel

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

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



For safety reasons, before using all the controls, press dead-man pedal **B** and keep your left hand on sensor **F**. If pedal **B** or sensor **F** are accidentally released while the machine is operating, the movement is immediately stopped.



#### **GATE POSITION**

Gate position is controlled by two microswitches. If the platform is fully lowered and one or both gates are open, platform lifting is disabled, while drive is still active.

If the platform is lifted, having one or both gates open causes all movements to be disabled.



#### **WARNING!**

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 locking key selector**

The on-off key located on the platform control panel is used to:

- Turn ON the machine by selecting one of the two control panels:
  - Platform control panel enabled with locking key switch set to platform symbol. Stable position with possibility to extract the key.
  - Ground control panel enabled (for emergency operations) with locking key switch set to chassis symbol. Stable position with possibility to extract the key.
- Turn OFF the control circuits by turning it to OFF. Stable position with possibility to extract the key.



Fig. 6



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



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

### 5.1.2. Drive and steering

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

- Dead-man pedal **B**
- Movement enable sensor **F**
- Drive handle **D**
- Steering switch **C**.

To steer, activate 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 when stationary: By completely activating the steering switch without activating the drive handle (steering from still position), the machine rotates on itself allowing a rapid drive reversal in narrow spaces.
- Steering with forward drive: Activate the steering switch with forward drive, by pressing it to the left for left steering or on the right for right steering.
- Steering with reverse drive: Activate the steering switch with reverse drive, press it on the left for right steering; press it on the right for left steering.

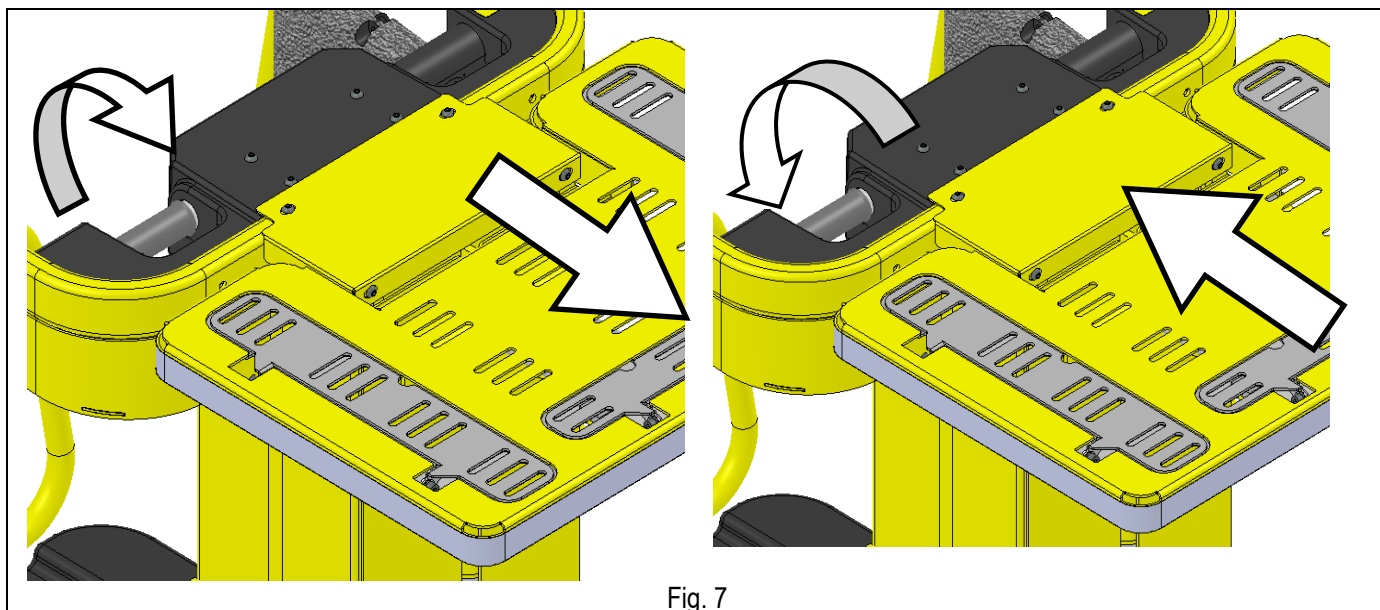


Fig. 7

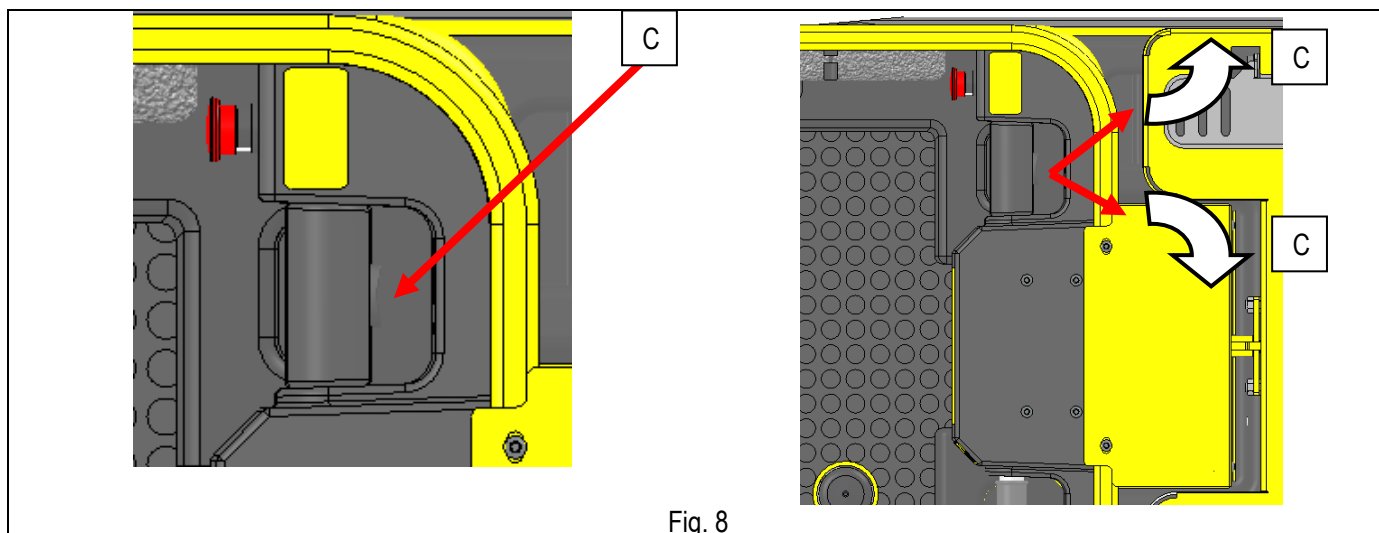


Fig. 8

With operator position completely lowered, drive speed can be adjusted up to max. speed.  
With operator position lifted the safety drive speed is automatically activated.



It is forbidden to drive the unit when the platform is lifted unless the ground is flat and steady.  
Drive is forbidden with raised platform while carrying loads on the loading surface. Drive with loads on the loading surface is possible only with operator position completely lowered.  
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 lifting button **H**
- Platform lowering button **I**

To lift the platform press dead-man pedal **B** first, position your left hand on the enable sensor **F** and press the lifting button **H**.  
To lower the platform press dead-man pedal **B** first, position your left hand on the enable sensor **F** and press the lowering button **I**.

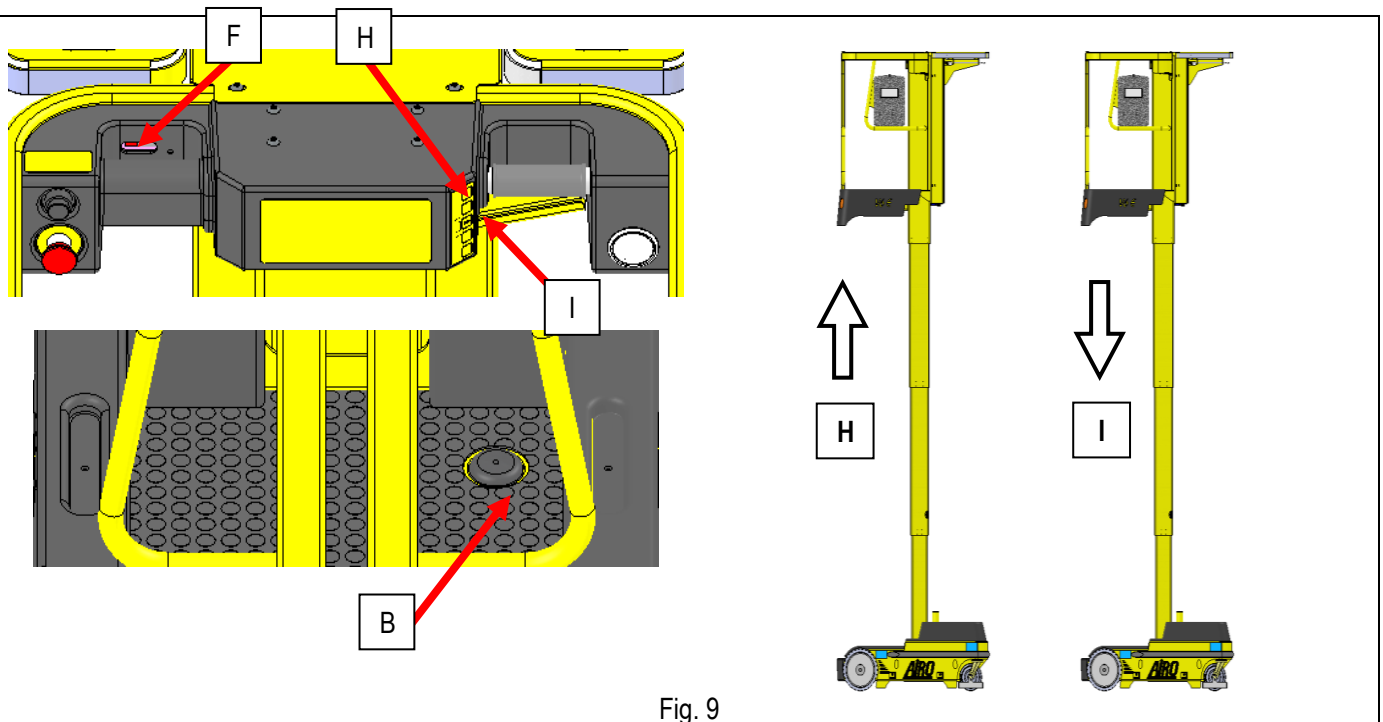


Fig. 9



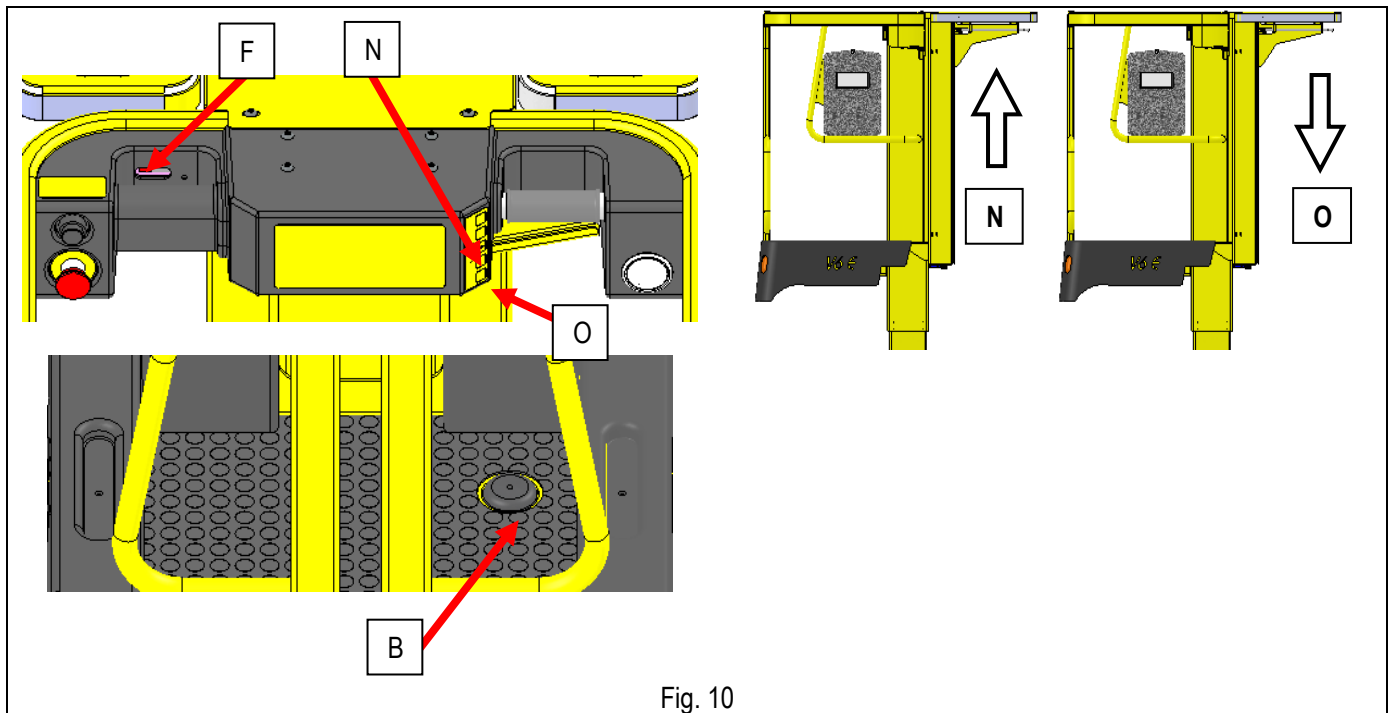
#### 5.1.4. Electrically-controlled lowering/lifting of the mobile loading surface (OPTIONAL)

The following controls are to be used to lift and lower the mobile loading surface:

- Dead-man pedal **B**
- Movement enable sensor **F**
- Loading surface lifting button **N**
- Loading surface lowering button **O**

To lift the loading surface press dead-man pedal **B** first, position your left hand on the enable sensor **F** and press the lifting button **N**.

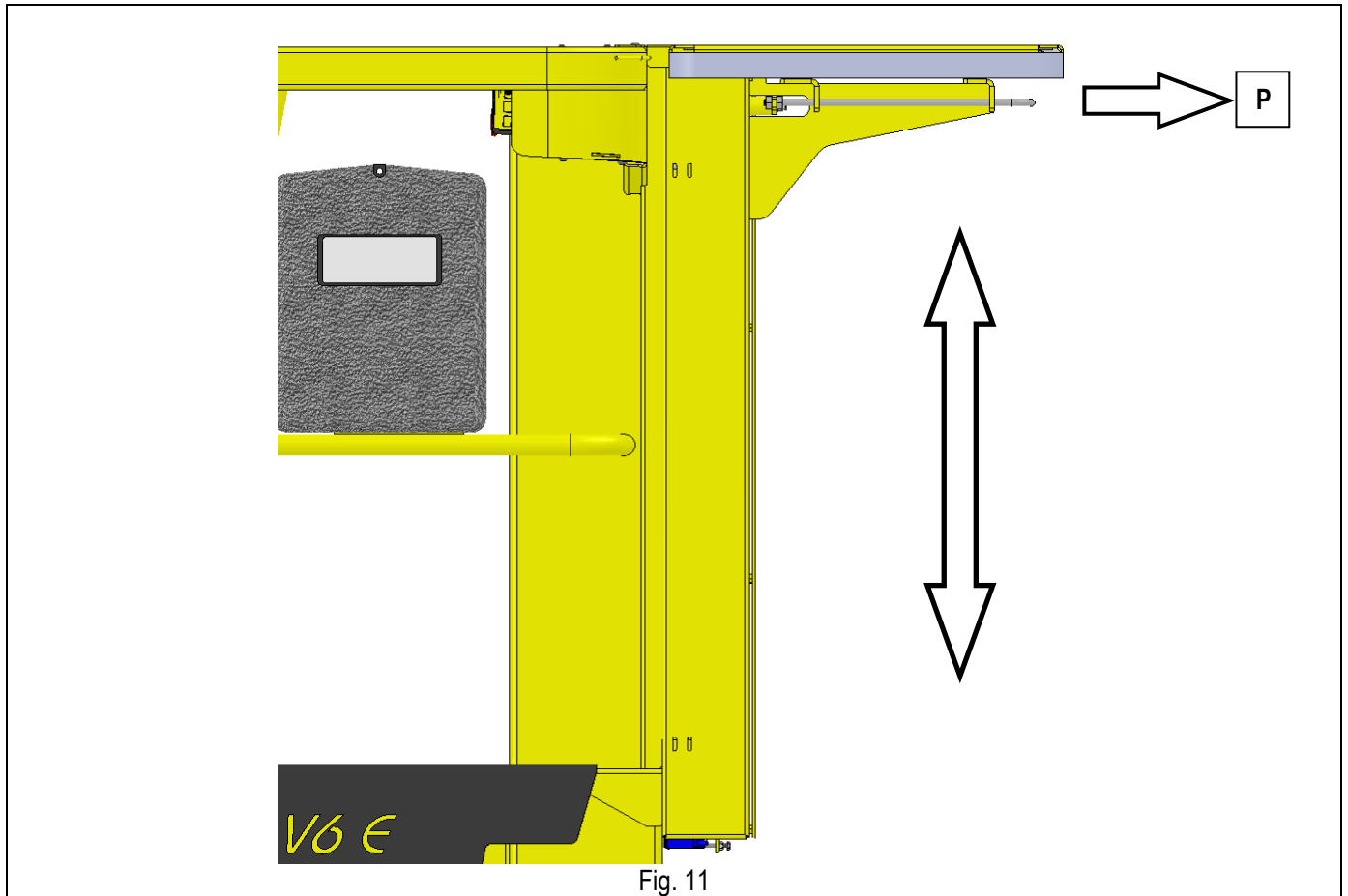
To lower the loading surface press dead-man pedal **B** first, position your left hand on the enable sensor **F** and press the lowering button **O**.



For further instructions on how to lift and carry loads see chapter “5.5 Lifting and carrying loads”.  
Do not lower the mobile loading surface with lowered operator position if other material is present on the ground loading space.

### 5.1.5. Loading surface manual positioning (STANDARD)

The standard front loading surface can be manually positioned at different heights, according to the operator's needs. To move the loading surface, pull the handle **P** shown in the figure to the outside and move the surface to the desired position (upward or downward). Release the handle **P** checking that the loading surface is locked in the chosen position.



For further instructions on how to lift and carry loads see chapter “5.5 Lifting and carrying loads”.

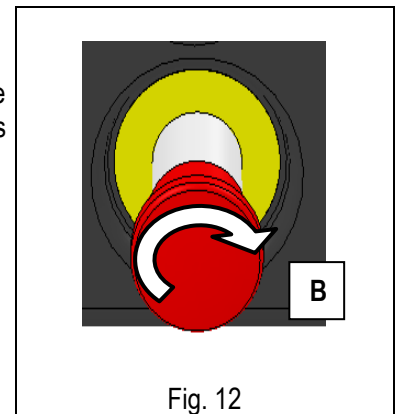
## 5.1.6. Further platform control panel functions

### 5.1.6.1. Emergency STOP button (E)

By pressing the red emergency STOP button all control functions of the machine are stopped. Normal functions are enabled by rotating the button of 1/4 turn clockwise (as indicated in position **B**).

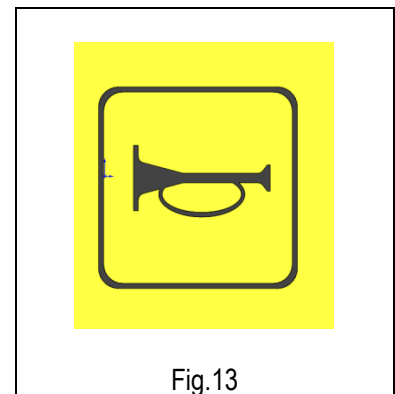
In case of fault, press the red stop button to RESET the system.

If the machine is inactive for a few minutes, the control system disables automatically. To resume the operations press and activate the STOP button once again.



### 5.1.6.2. Horn (J)

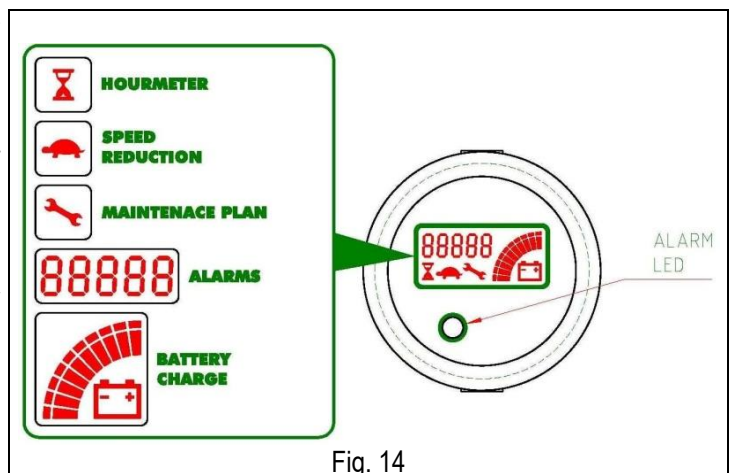
The horn warns that the machine is moving. It is operated by means of key I.



### 5.1.6.3. Battery / hour-meter / display indicator (L) - circular indicator

It indicates the charge level of the battery (Battery charge), the working hours of the machine (hourmeter), the error messages of the control system (alarms + alarm led), any need of maintenance (maintenance plan). It is also equipped with a red led that lights up in case of alarms and/or error messages.

**Battery indicator:** If the full bar is lit up, it means that the battery is 100% charged. When only a segment of the bar is lit up, and the battery icon flashes, it means that the battery charge has reached its 20% minimum level.



In this condition platform lifting is automatically disabled. The battery must be immediately recharged. However, battery should be recharged daily, either at night or during long work intervals.

**Hour meter:** the system has been set up to count the working hours of the devices fitted on the machine, in order to carry out the indicated maintenance operations. When the machine is ON but not moving, the system does not count the working hours. While counting the hours, 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

#### 5.1.6.4. Battery / hour-meter / display indicator (L) - AIRO DIAGNOSTIC SYSTEM

It indicates the charge level of the battery (BCI + percentage), the working hours of the machine (HOURS + HOURS:MINUTES), the error messages of the control system, any need for maintenance. Through AIRO DIAGNOSTIC SYSTEM it is also possible for the Authorized Technical Assistance, to perform a thorough diagnostics of the machine as well as carry out adjustments to the various functions.

**BCI battery indicator:** The level of the battery charge is indicated by a percentage value. 100% means that the battery is fully charged. When the BCI display indicates 20%, it has reached the minimum charge threshold.



Fig.15

In this condition platform lifting is automatically disabled. The battery must be immediately recharged. However, battery should be recharged daily, either at night or during long work intervals.

**Hour-meter HOURS:** the system has been set up to count the working hours of the devices fitted on the machine, in order to carry out the indicated maintenance operations. When the machine is ON but not moving, the system does not count the working hours. The hours are represented in the form of HOURS:MINUTES.

##### Main error/alarm messages:

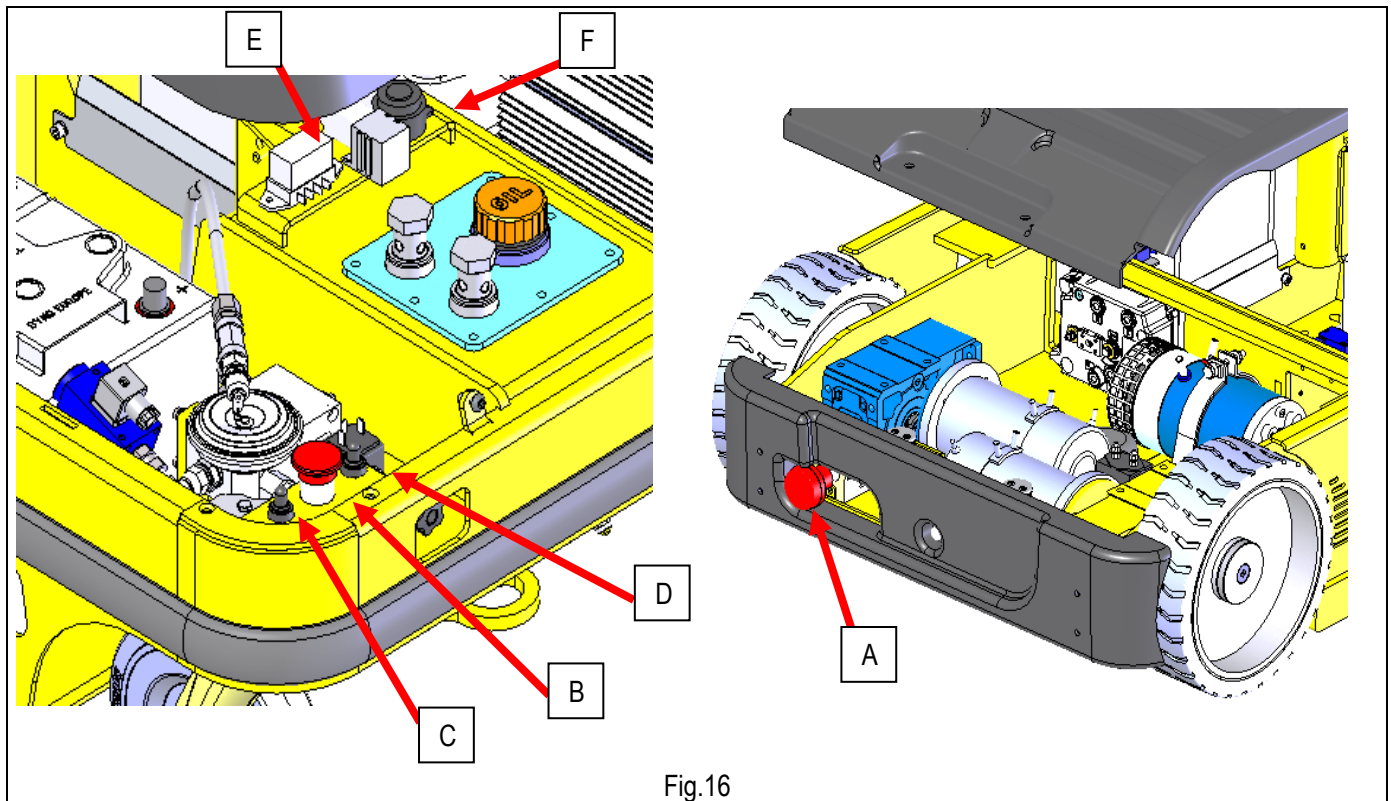
- ... TILTED = excessive inclination
- ... GATES = one/two open gates
- ... ARMGUARD = anti-crushing procedure
- ... CEL or OVERLOAD = platform overload
- ... UPPER LIMIT SWITCHES = raise limit.

## 5.2. Ground control panel

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. Movement alarm

To access the controls/devices B-C-D-E-F, remove the loading surface located under the chassis lifting it manually.



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.



### IT IS FORBIDDEN

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

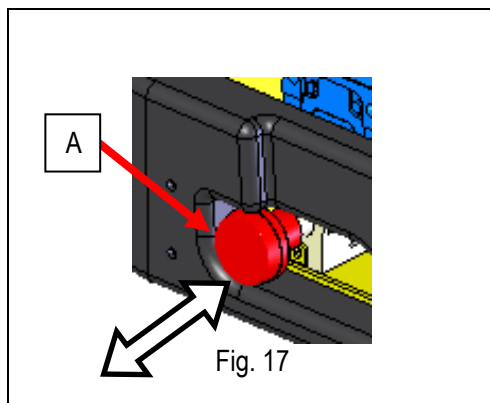


### IT IS FORBIDDEN

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

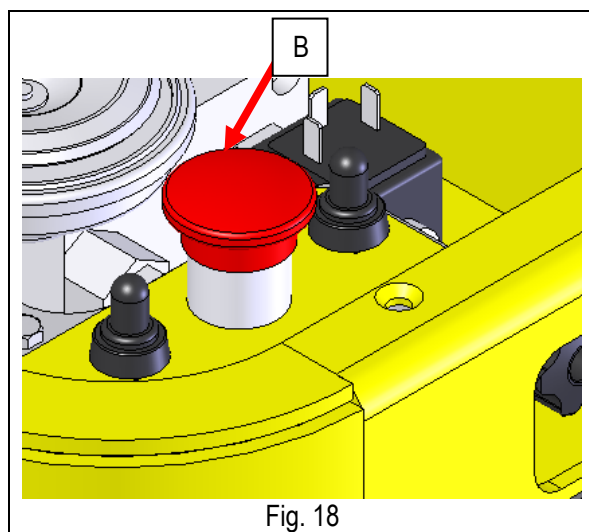
### 5.2.1. Emergency STOP button (power circuit) (A)

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.



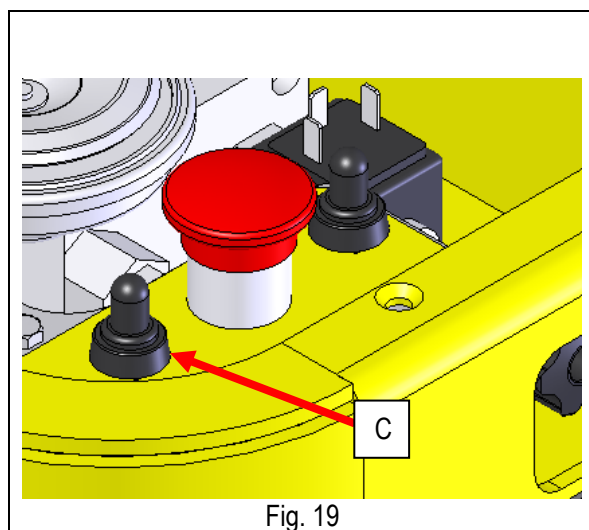
### 5.2.2. Emergency STOP button (control circuit) (B)

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.



### 5.2.3. Platform lifting/lowering lever (C)

This lever is to be used to lift or lower the platform. This control can be operated only if the on-off key on the platform is set to ON downwards (ground control panel selected). We shall also remind you that the ground controls are to be used only to operate the platform in emergency situations or during maintenance operations and must not be used for any other purposes.

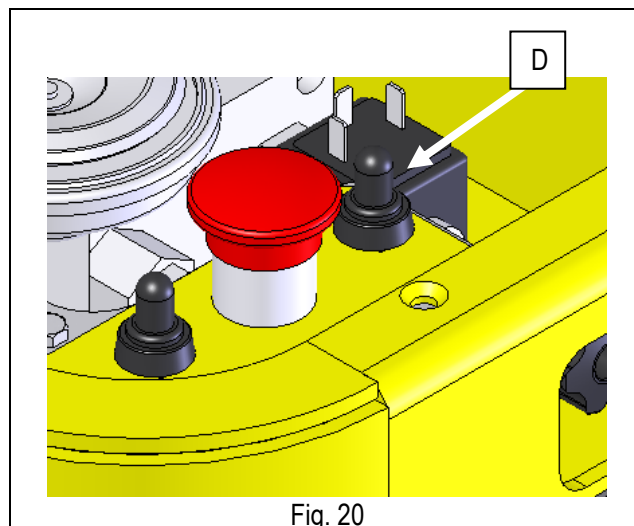


#### 5.2.4. Brake release switch for emergency towing (D)

This switch allows the disconnection of the machine parking brakes (electrically-operated) in emergency situations to carry out its towing.

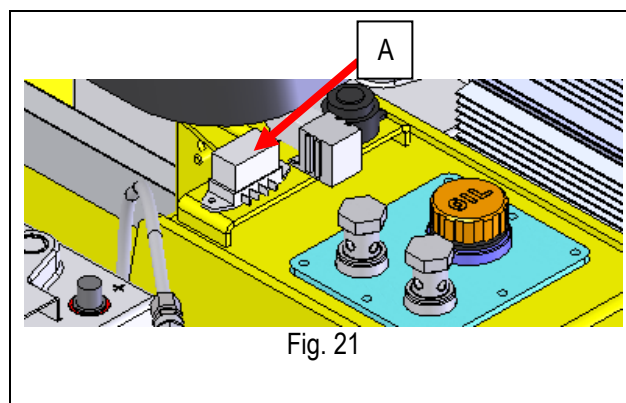
Different uses for this switch are not allowed.

Also see chapter EMERGENCY TOWING.



#### 5.2.5. Fuses (E)

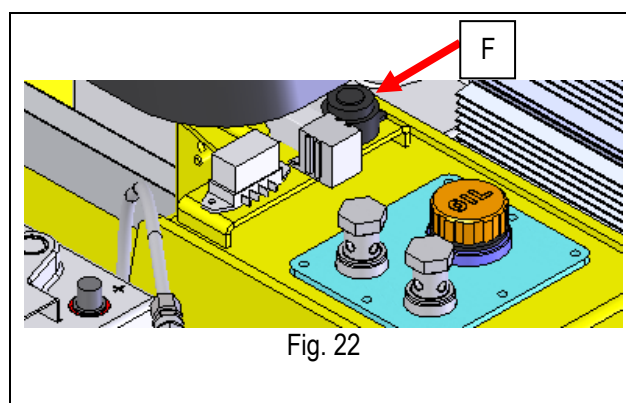
Fuses for protection of different parts of the control electric circuit.



#### 5.2.6. Movement audible alarm (F)

The machine has an audible alarm that is activated as follows:

- 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").





### 5.3. Access to operator position

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

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

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



To access the operator position 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.



#### **WARNING!**

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 fully lowered and one or both gates are open, platform lifting is disabled, while drive is still active.

If the platform is lifted, having one or both gates open causes all controls to be disabled.



#### **IT IS FORBIDDEN**

Leaving or accessing the platform if this is not in the position required for accessing or leaving is forbidden.

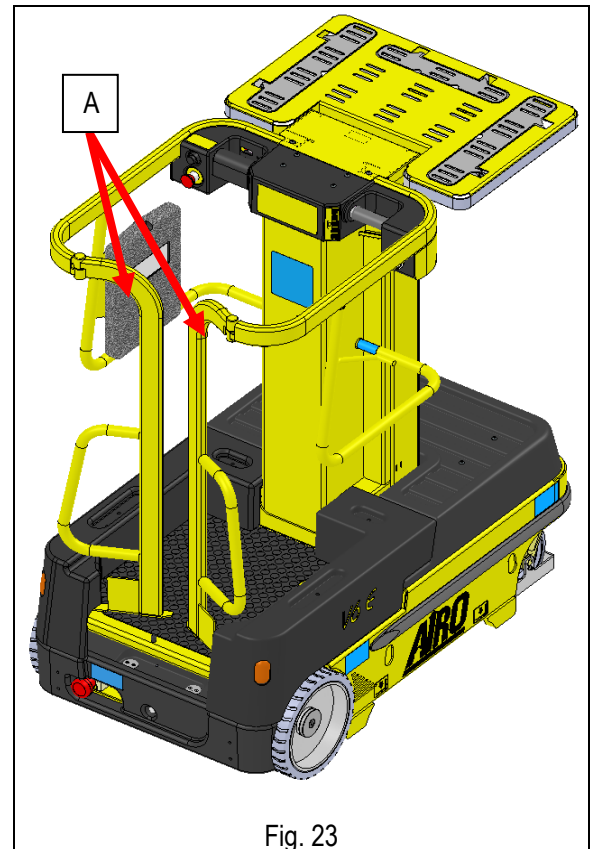


Fig. 23

### 5.4. Machine start-up



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 the operator shall:

- 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 carrying loads

**WARNING!** Follow the instructions of this chapter to avoid any instability risks and material fall.

The platform is intended also for manual operations of collection, loading, unloading of packed materials and/or materials of homogeneous shape with reduced dimensions and weight. The maximum allowed capacity is divided as follows:

- 90 kg of material on the platform loading surface
- 130 kg of material on the ground loading surface
- 120 kg on the operator position

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



The loads must be placed within the perimeter of the PLATFORM LOADING SURFACE and/or within the perimeter of the GROUND LOADING SPACE. Occasionally, loads of bigger dimensions are allowed to be lifted provided the maximum capacity is suitably reduced and the load is secured as indicated in the following chapters.

IT IS FORBIDDEN to lift/carry loads hanging from the lifting structures, even if the maximum capacity is observed.

IT IS FORBIDDEN to lift/carry unstable loads.

IT IS ABSOLUTELY FORBIDDEN to lift or carry people on those machine parts intended for lifting/carrying materials.



Fig.24

### 5.5.1. Platform loading surface and ground loading space

The picture aside shows the main components of the MOBILE LOADING SURFACE and the GROUND LOADING SPACE.

A – Ground loading space

B – Mobile loading surface

C – Folding side boards to hold the loads

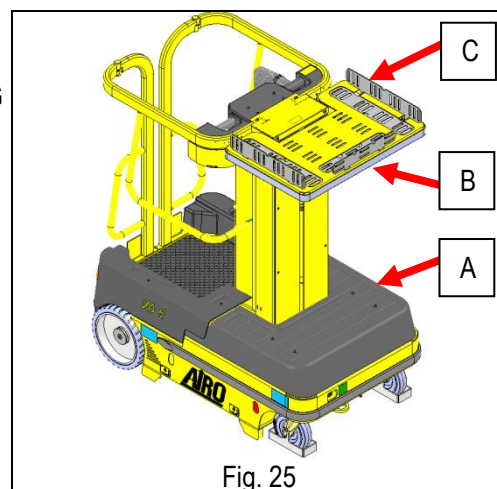


Fig. 25

### 5.5.2. Lifting and carrying loads on the platform loading surface

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 loading surface. 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 operator position while carrying loads on the mobile loading surface. Drive with loads on the loading surface is possible only with platform completely lowered.

Do not lower the mobile loading surface (optional) if other material is present on the ground loading space.

To lift/carry loads on the LOADING SURFACE:

- Approach the shelves/exhibitor where the material to be collected is placed, using the controls as indicated in the previous chapters.
- To drag the loads from the shelves/exhibitor to the loading surface, lower the folding side board close to the shelf and lift or lower the work platform (or activate the mobile loading surface - optional), bringing the loading surface up to the same level of the shelf/exhibitor; lift the other two side boards to minimize the risk of load fall.
- Drag/place the load onto the loading surface checking the perfect stability (if necessary, loads of large dimensions can be secured by tying them through holes **A**).
- Lower the work platform.
- Lower the operator position for a safe view of the path to be covered by the machine.
- Position the machine near the new spot where the material has been previously collected.
- Unload the previously loaded material to the new spot by following the above instructions in the reverse order.

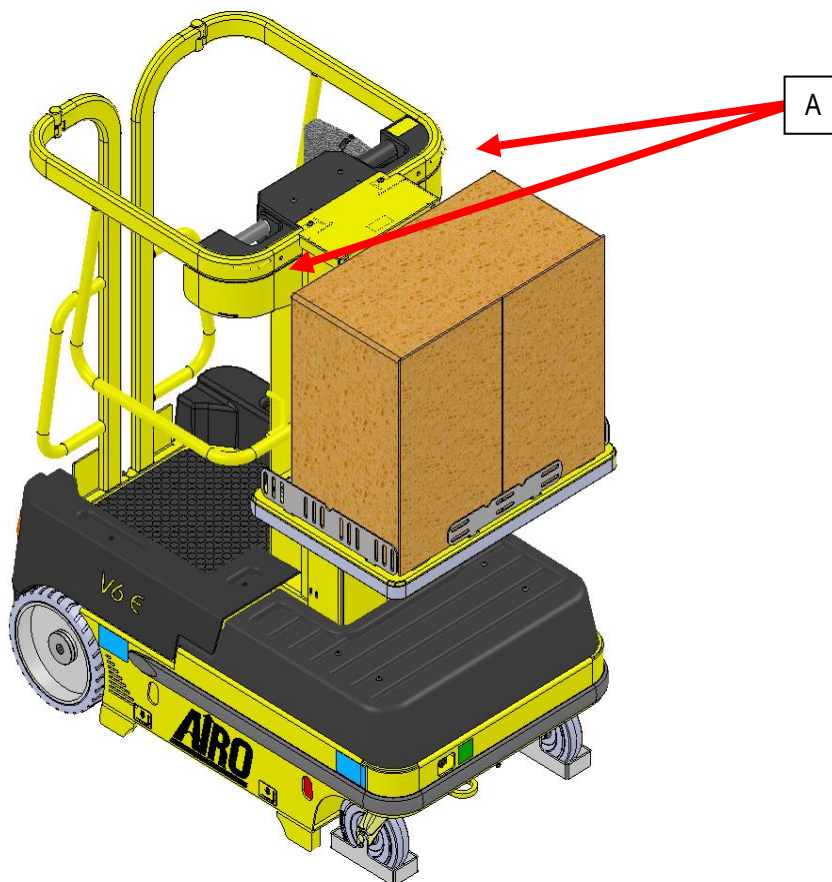


Fig. 26

### 5.5.3. Carrying the loads on the ground loading space

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

Carry only packed materials and/or materials with homogeneous shape and reduced dimensions and weight.



Loads must be placed within the perimeter of the ground loading space. 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.

Do not lower the mobile loading surface (optional) if other material is present on the ground loading space.

On the GROUND LOADING SPACE only packed materials and/or materials with homogeneous shape and reduced dimensions can be carried, checking the stability before any machine movement. Any loads of large dimensions are to be secured by tying them through holes **A**.

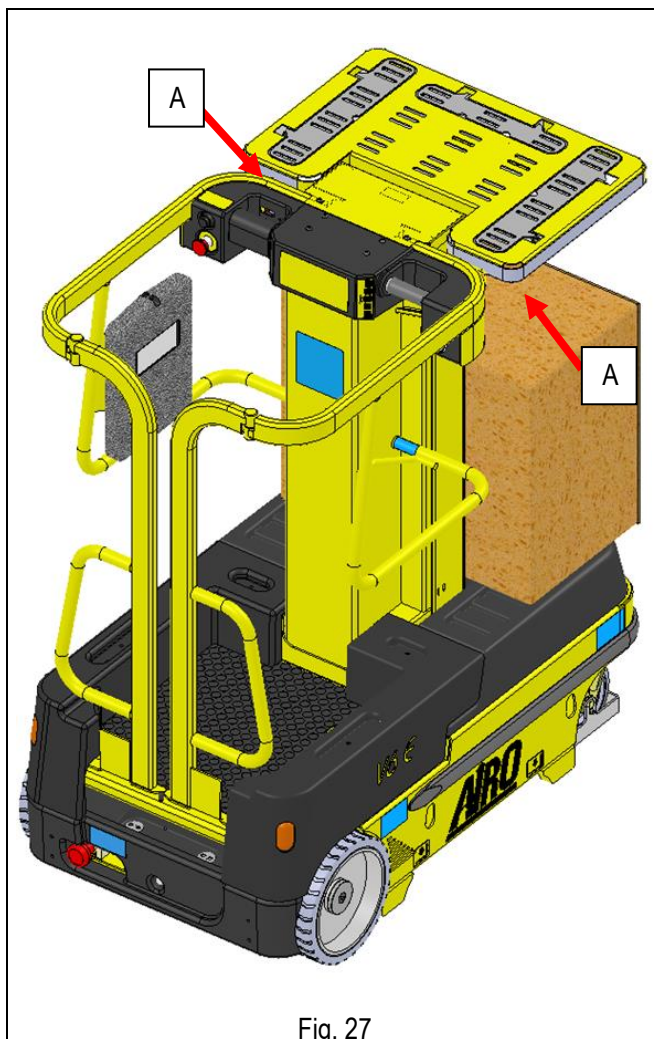


Fig. 27

## 5.6. Machine stop.

### 5.6.1. Normal stop

During the normal stop of the machine, if you release the controls, the operation is stopped. Stop occurs within a time limit set in the factory, which guarantees smooth braking.

### 5.6.2. Emergency stop

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

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

On the ground control panel:

- 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 resume the operations is necessary:**

- On the platform control panel turn the emergency stop button by a  $\frac{1}{4}$  of turn clockwise.
- On the ground control panel:
  - Turn the emergency stop button on the ground control panel of  $\frac{1}{4}$  turn.
  - Pull to the outside the red emergency stop button of the power circuit.

## 5.7. Manual emergency lowering



**IT IS FORBIDDEN**  
to use the manual emergency lowering control to lower the platform with overloads.

In case of 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".**

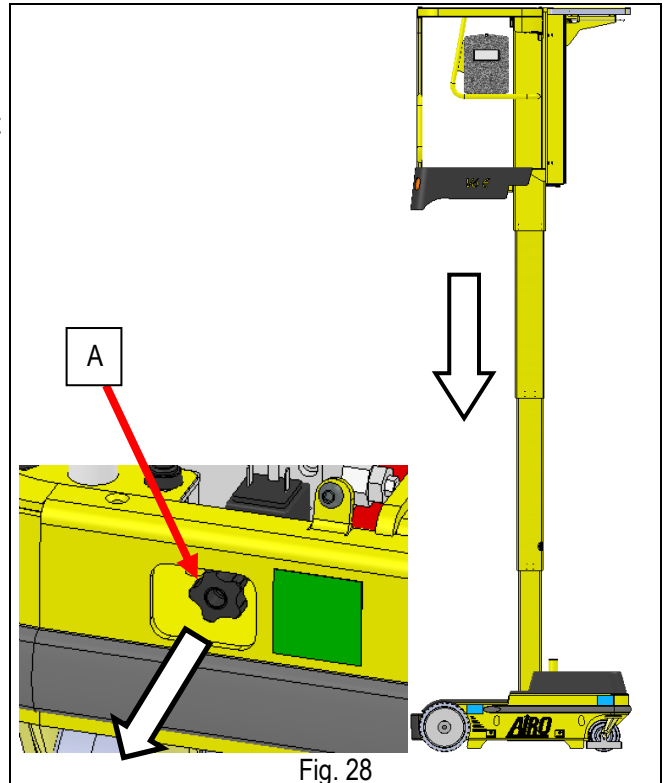


Fig. 28



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

## 5.8. End of work

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

- Always set the machine to rest position (platform completely lowered).
- 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 CARRYING

### 6.1. Handling

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

#### **WARNING!**

Drive with 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 the bodies of Health and Safety at work.

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

Before handling the machine check that the connection plugs are disconnected from the power supply source.

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

If the machine while travelling hits a hump or a hole with platform lifted, the machine will rest on one or both pot-hole guards with no danger to the operator.

Now, if you lower the platform completely, and both drive wheels are lifted from the ground, the machine might not be able to quit the lock condition with its own means. Emergency towing is necessary (see par. "Emergency towing").

Do not use the machine to tow other vehicles.

When the unit is moving with lifted operator position do not load horizontal loads (the operator on board must not pull ropes, cables, etc.).



### 6.2. Transportation

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

Before carrying the machine, turn it off and remove the keys from the control panels.

No people are allowed in proximity to or on the machine to avoid any risks deriving from sudden movements.

For safety reasons never lift or tow the machine by means of its booms or platform.

Loading operations are to be carried out on a flat surface with a suitable capacity, after setting the platform to rest position.

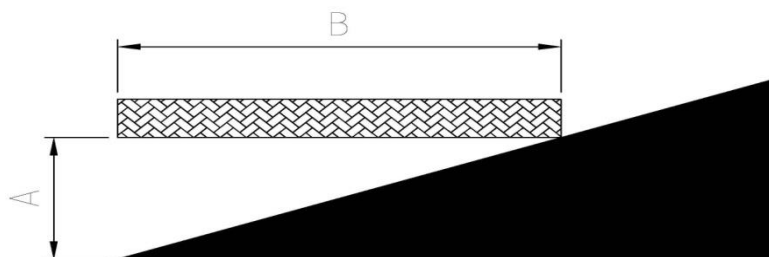


To load the machine onto a vehicle it is possible to use:

- **Loading ramps and translation controls** located on the operator position to load it directly onto the means of transport (if ramp slope is within the gradeability described in paragraph "TECHNICAL FEATURES" and ramp capacity is adequate to weight) according to the instructions given in paragraph "USE INSTRUCTION" under paragraph "Drive and steering" for correct operation of drive controls. Pay attention not to load 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 gradient can be determined using an electronic level or empirically as described below: position a wood board of known length on the gradient to be measured. Position a spirit level on the wood board and lift the downstream extremity of the latter until it is level. Now measure the distance between the board and the ground (**A**), divide this by the length of the board (**B**) and multiply by 100. The following image sums up the method.



- **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. 29.
- **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. 30. 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.

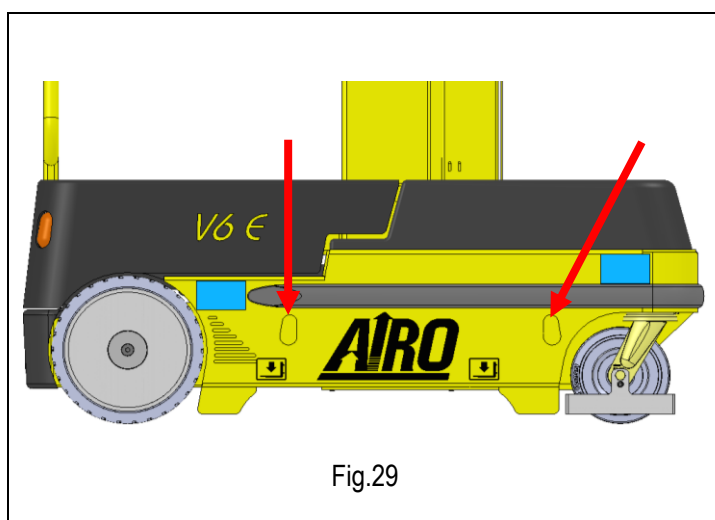


Fig.29

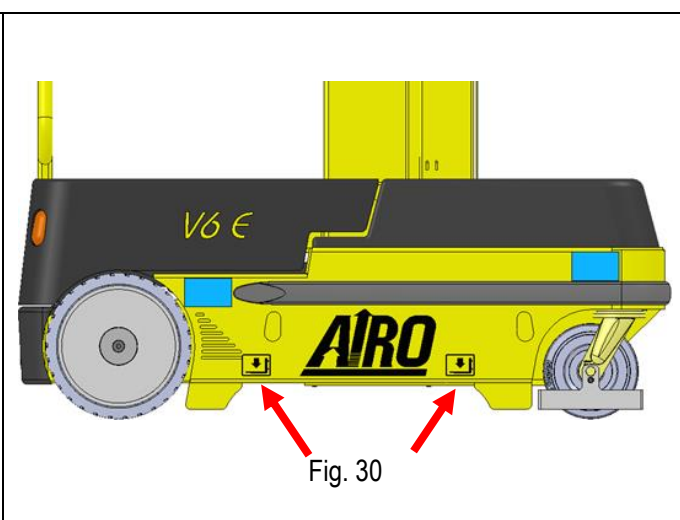


Fig. 30



**After placing the machine onto the carrying vehicle, fasten it with ropes/bands tied to the operator position handrail.**

**Before carrying the unit check the stability grade.**

### 6.3. Emergency towing of the machine

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 out of order).

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.

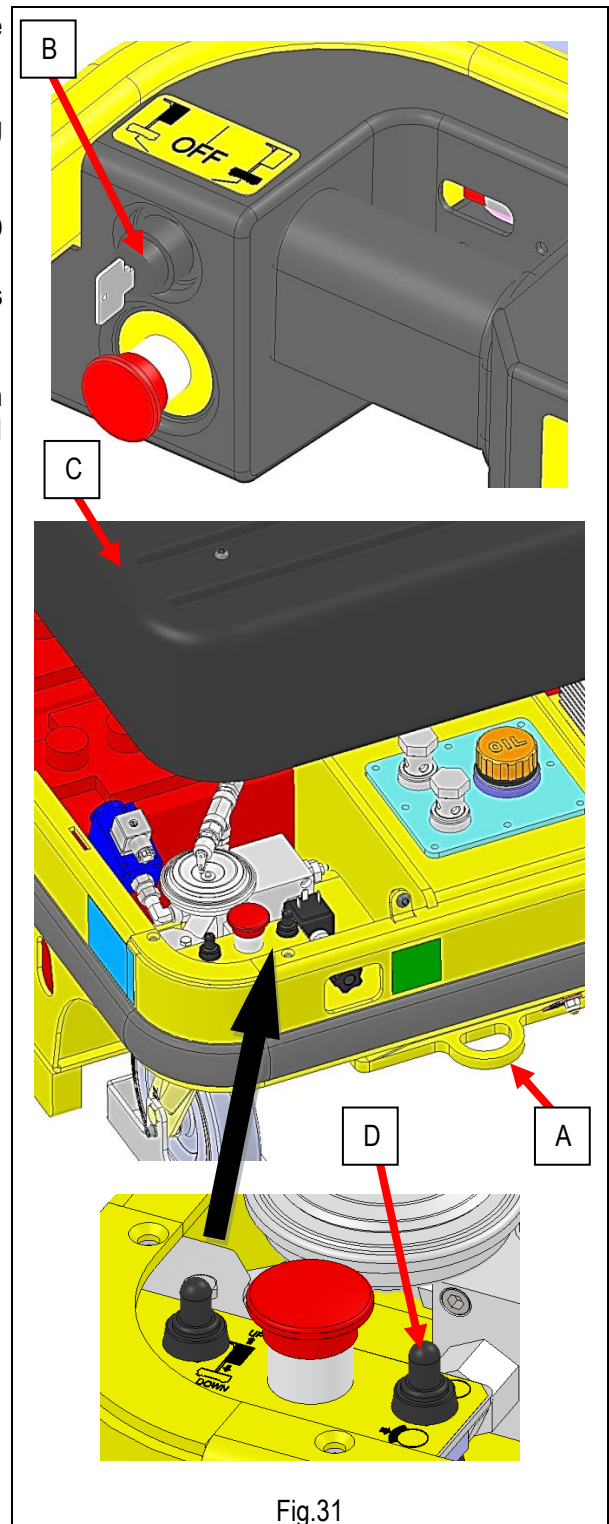


Fig.31



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 below refer to a machine with ordinary working use. In case of difficult conditions of use (extreme temperatures, corrosive environments, etc.) or following long machine inactivity, it will be necessary to contact the AIRO assistance service to change the intervention schedule.
- Repairs and maintenance operations are to be carried out by trained and authorised personnel only. All maintenance operations should be carried out in compliance with the current work safety regulations (work places, personal protection equipment, etc...).
- Carry out only the maintenance and adjustment operations described in this user manual. In emergency situations (e.g. breakdown, wheels replacement) contact Our Technical Support.
- During interventions, check that the machine is completely locked. Before carrying out maintenance operations inside the lifting structure, check that this is off-line in order to avoid accidental lowering of the platform.
- Remove the battery cables and provide batteries with a suitable protection during welding operations.
- In case of replacement, use original spare parts only or spare parts approved by the manufacturer.
- 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. A prolonged contact with the skin may cause irritations and dermatosis; wash with water and soap and rinse thoroughly. Contact with eyes, especially with electrolytes, is also dangerous; rinse with water thoroughly and call the doctor.



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

### 7.1. Machine cleaning

To clean the machine, use 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 charger



**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 mobile loading surface (optional).

## 7.2. General maintenance

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

Operation	Frequency
Screw tightening (see paragraph "Various adjustments")	After the first 10 working hours
Oil level check in hydraulic tank	After the first 10 working hours
Battery state	Every day
Check of deformation of tubes and cables	Every week
Check of stickers and code plates	Every month
Greasing of sliding elements	Every month
Oil level check in hydraulic tank	Every month
Emergency devices efficiency check	Every year
Electric connections check	Every year
Hydraulic connections check	Every year
Periodic operation check and structure visual check	Every year
Screw tightening (see paragraph "Various adjustments")	Every year
Brake system operation check	Every year
Inclinometer calibration and operation check	Every year
Operation check and adjustment of overload controller	Every year
M1 microswitch check	Every year
M3 microswitch check	Every year
M14-M15 gates microswitches check	Every year
Check of M16-M17 microswitches of mobile loading surface limit switch (optional)	Every year
Check of M18-M19-M20-M21 anti-shearing microswitches on the chassis (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



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

### 7.2.1. Various adjustments

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

1. Wheel screws
2. Drive geared motor fixing screws
3. Platform fixing seeger
4. Loading surface fixing screws
5. Lifting structure fixing screws
6. Mechanical jack fixing screws
7. Hydraulic fittings

For torque wrench setting refer to the table below.

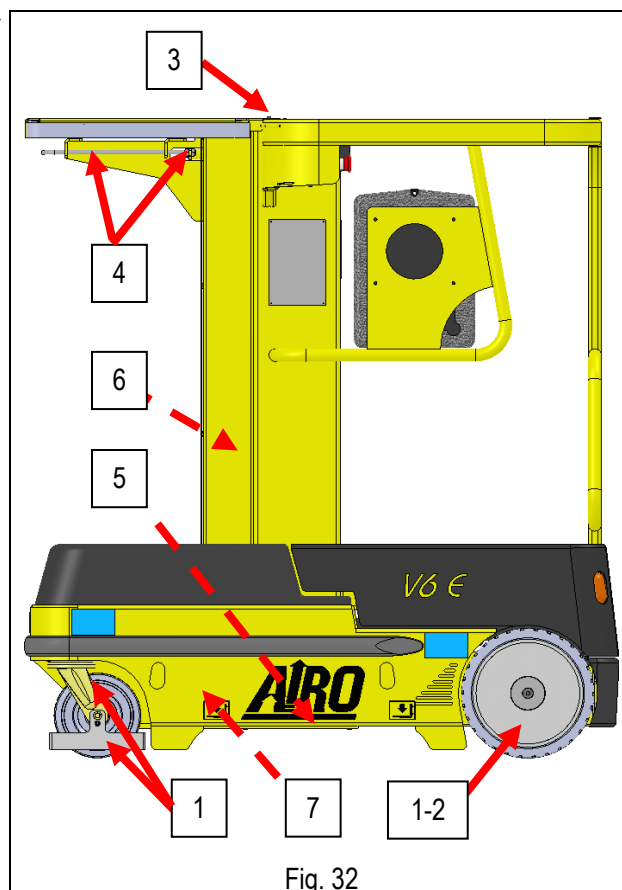


Fig. 32

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

### 7.2.2. Greasing

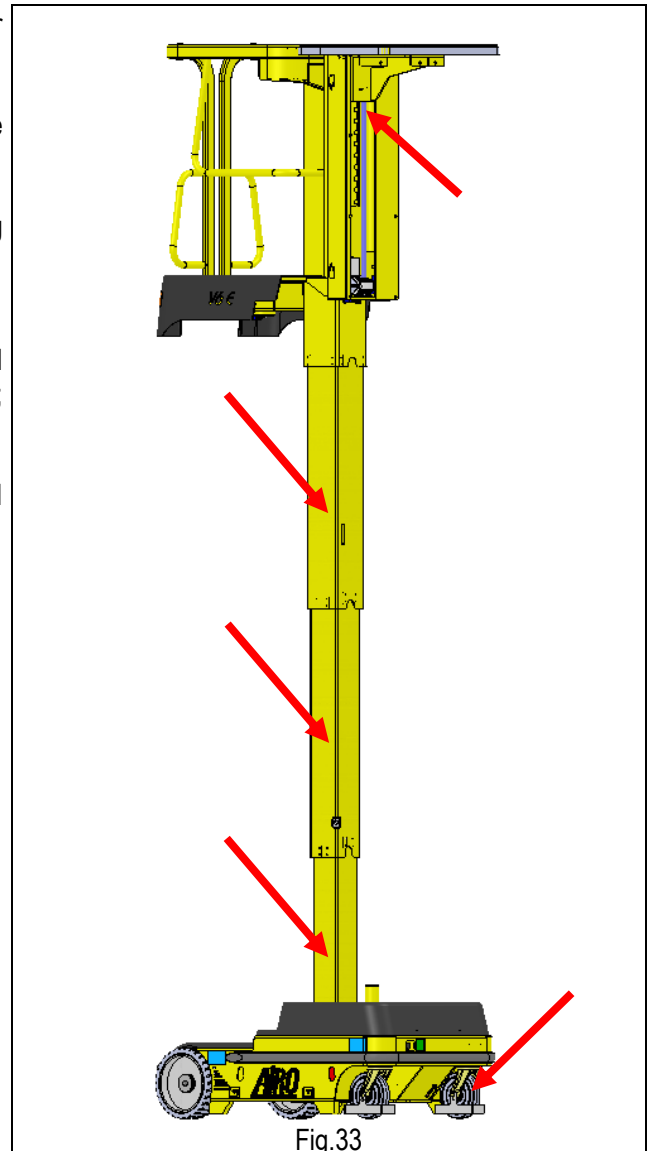
Grease all articulated joints equipped with greaser (or predisposition for greaser) at least every month.

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

Moreover, remember to grease the articulated 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 type **ESSO BEACON-EP2** or similar.



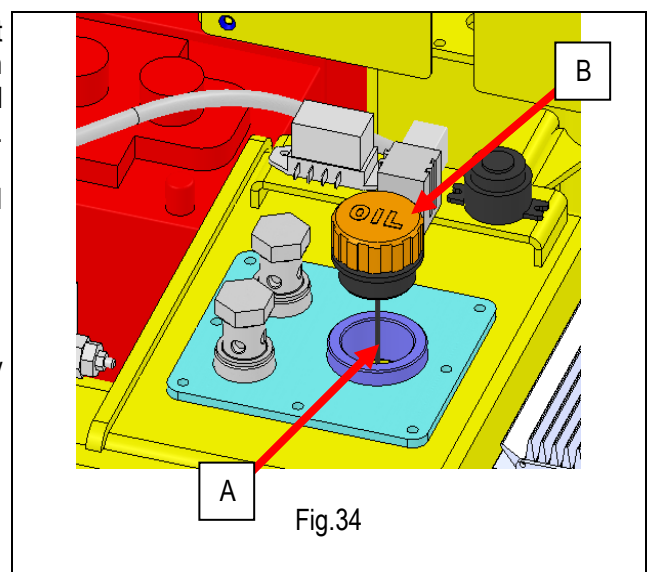
### 7.2.3. Hydraulic circuit oil level check and change

Check after the first 10 working hours and, afterwards, at least once a month, the level in the tank by means of visual check from the provided cap using a dipstick (detail **A** in the picture aside) and 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 by sucking oil through filler **B**, and collecting it in a suitable container.



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

HYDRAULIC SYSTEM OIL			
BRAND	TYPE -20°C +79°C	TYPE -30°C +48°C	REQUIRED QUANTITY
SYNTHETIC OILS - 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	
BIODEGRADABLE OILS - OPTIONAL			
PANOLIN	HLP SINTH E46	HLP SINTH E22	



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

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

### 7.2.3.1. Biodegradable hydraulic oil (Optional)

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

#### 7.2.3.1.1. Emptying

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

#### 7.2.3.1.2. Filters

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

#### 7.2.3.1.3. Washing

After completely emptying the machine, fill with a nominal quantity of “bio” hydraulic 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:

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

The fluid state is therefore constantly monitored, thus allowing its use until its features decay. Normally, in the absence of contaminating agents, the oil is never completely changed, but only occasionally topped-up. The oil samples (at least 500ml) must be taken with the system at operating temperature. It is recommended to use new and clean containers. The samples must be sent to the “bio” oil supplier. For more dispatch details, contact Your nearest distributor.

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

#### 7.2.3.1.6. Mix

Mixtures with other biodegradable oils are not allowed.

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

#### 7.2.3.1.7. Micro-filtration

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

After conversion, the dissolution of fault-causing deposits in the hydraulic system could occur. In extreme cases, washing the seal housings can cause greater leaks.

To prevent faults as well as avoid any negative effect on oil quality, after the conversion, it is best to filter the hydraulic system using a micro-filtration system.

#### 7.2.3.1.8. Disposal

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

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

Such oil can be incinerated whenever local laws allow.

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

#### 7.2.3.1.9. Topping up

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

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



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

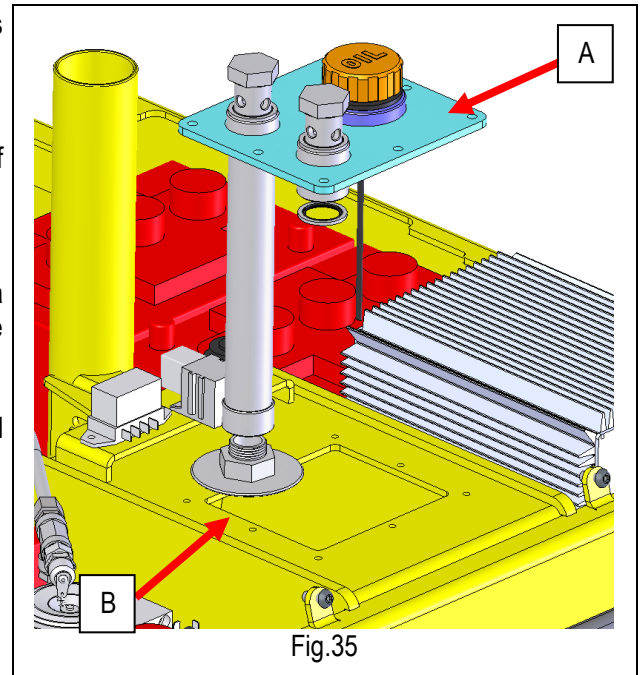
#### 7.2.4. Hydraulic filter replacement

The unit is equipped with suction filter inside the tank. It is advisable 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, carry out the above-mentioned operation in reverse order.



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



### 7.2.5. Inclinometer operation check and adjustment



#### WARNING!

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

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

Depending on the type of control system two different types of inclinometer may be installed:

- Type **C** in case of the external device to the control system;
- Integrated in the control system and therefore not identified from the outside.

Anyway, no adjustments are generally required, since it was calibrated at the factory before machine delivery.

This device controls the chassis slope and when inclined over the allowed value:

- It disables lifting.
- It disables drive when platform exceeds a given height.
- It warns the user of the instability condition by means of the audible alarm and alarm message on the platform.

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

#### Check operation at least once a year.

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

- Using the platform control panel 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 (operation delay set at factory) until the danger red light turns on.
- With platform down, drive can still be controlled but lifting is disabled;

- With platform up, both drive and lifting are disabled; lowering is still possible; the audible 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 (operation delay set at factory) until the danger red light turns on.
- With platform down, drive can still be controlled but lifting is disabled;
- With platform up, both drive and lifting are disabled; lowering is still possible; the audible alarm also activates.

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

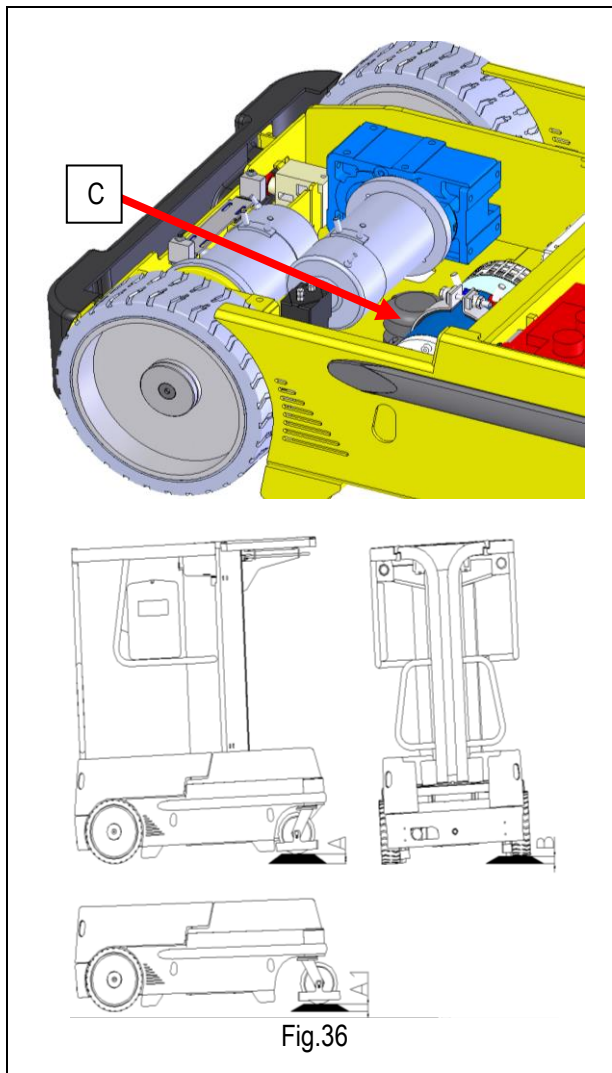


Fig.36



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

### 7.2.6. Operation check and adjustment of platform overload controller

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

This device controls the amount of loads on the platform and loading surface and:

- disables the machine controls if the loads lifted exceed the nominal loads by 30% with operator position lifted.
- signals the overload condition through the audible alarm.
- By removing the overload, the machine can be operated again.

Check operation at least once a year.

Device operation check:

- With platform completely down, place on the platform and on the loading surface two loads evenly distributed equal to the nominal loads allowed by the operator position and loading surface (see paragraph "Technical features"). In this condition you can carry out any machine movements.
- With operator position completely down, add to the nominal loads an overload of 35% of the nominal loads and lift the operator position. In this condition, after a possible brief initial lifting, the audible alarm turns on (see "Use instructions").
- If the operator position is lowered (floor surface at  $H \leq 700$  mm approximately), in overload conditions all the machine controls are possible including lifting until the operator position is raised (floor surface at  $H \geq 700$  mm approximately).
- If the operator position is raised, the alarm condition disables all machine controls. To operate the machine again, remove the overload.

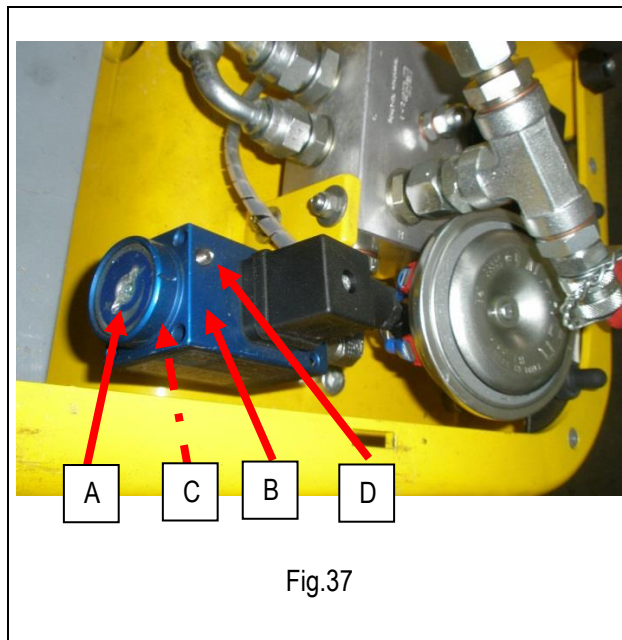


Fig.37

The system needs calibration:

- In case of replacement of one of the items composing the system.
- When, following an excessive overload, even after removing the excessive load, the danger condition is signalled anyway.

To calibrate the device:

- Remove the front loading surface on the chassis and locate the pressure switch **B**.
- On the pressure switch **B** remove plastic cap (if present) **C** and loosen dowel **D**.
- Place a load equal to the nominal capacities plus 30% on the operator position and on the mobile loading surface.
- 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 loading surface 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**.



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

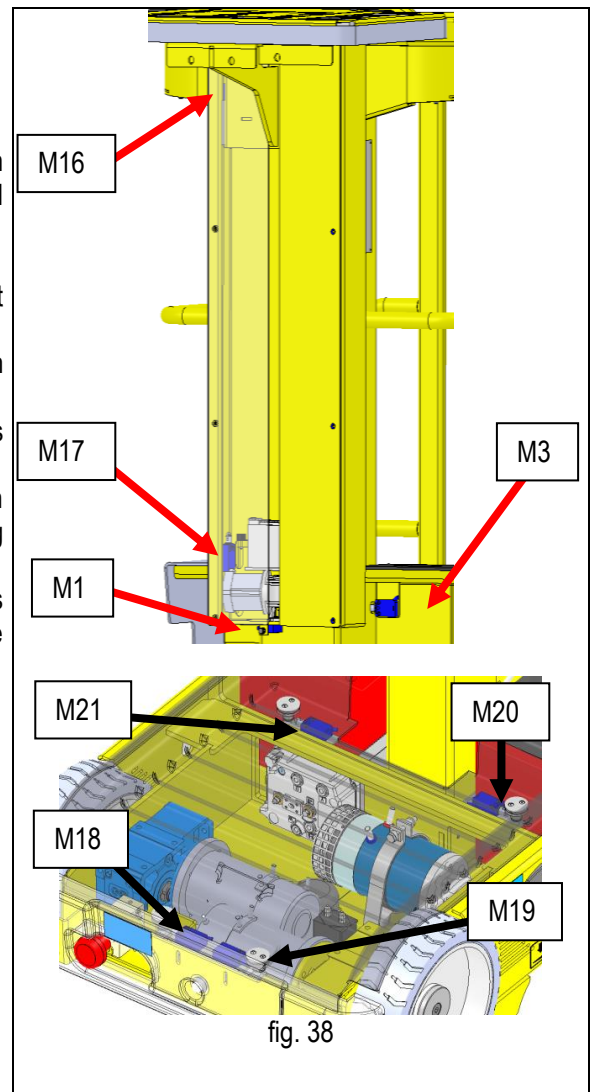
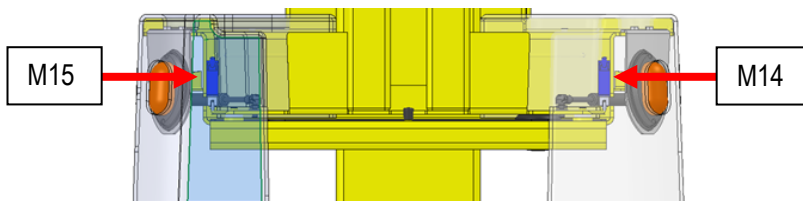
### 7.2.7. Safety microswitches operation check

All microswitches are identified by identification stickers.

Microswitch functions:

- **M1:** activates safety drive speed with lifted operator position; Inserts the anti-shearing/anti-crushing function during the platform lowering with walking surface at about 50 cm from the 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:** mobile loading surface limit switch (optional): located in the sliding ways of the mobile loading surface, they stop the loading surface lifting (M16) and lowering (M17).
- **M18-M19-M20-M21:** anti-shearing / anti-crushing on the chassis (optional) that disable the platform lowering if the plastic crankcase rests on the ground.

Check operation at least once a year.



### 7.2.8. Dead-man system efficiency check

Dead-man system is used to activate the platform controls and consists of:

- Enable pedal (activated by the pressure of the right foot).
- Photo-electric sensor (activated by the presence of the left hand).

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.

Check operation at least once a year.

To check dead-man system:

- Press the enable pedal.
- Place your hand on the photo-electric sensor.
- Within 10 seconds, operate any movements: the movement works.
- Don not activate any movements for 10-12 seconds: all movements are disabled.
- After restoring the photo-electric sensor (uncovering and covering it) check that all movements are enabled again.



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

### 7.3. Battery

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

#### 7.3.1. General warning instructions

- In case of new batteries do not wait for the flat battery warning before recharging; recharge batteries after 3 or 4 working hours for the first 4/5 times.
- In case of new batteries full performance is achieved after approx. ten cycles of discharge and charge.
- Charge the battery in airy rooms and open the caps (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 mains.
- Use a cable of suitable section (min 3x2.5 mm<sup>2</sup>).
- Do not use rolled-up cables.
- Do not approach the battery with flames. Risk of deflagration due to the formation of explosive gases.
- Do not carry out temporary or irregular electric connections.
- The terminals must be tightened and without deposits. The cables must be provided with a good insulation.
- Keep the battery cleaned, dry and free of oxidation products by using antistatic cloths.
- Do not place tools or any other metal object on the battery.
- Check that the electrolyte level is 5-7 mm higher than the splash guard level (sealed GEL/AGM batteries excluded).
- 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 battery self-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



#### WARNING!

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

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

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

Moreover:

- Do not use extension leads exceeding 5 metres to connect the battery charger to the mains.
- Use a cable of suitable section (min  $3 \times 2.5$  mm<sup>2</sup>).
- Do not use rolled-up cables.



#### IT IS FORBIDDEN

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



#### WARNING!

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

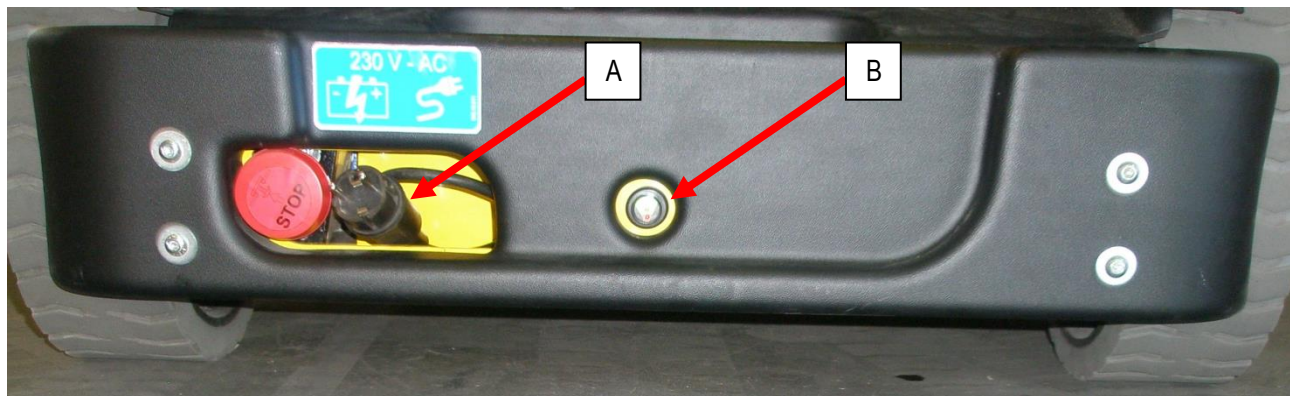


Fig. 39

To use the battery charger, follow these procedures:

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

WARNING	DESCRIPTION
Red led flashing for a few seconds	Battery charger self-diagnostic phase
Red led on	Indicates the first and second charging phase
Yellow led on	Indicates the equalization of the charging phase
Green led on	Indicates that charging is over; buffer charge active



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

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



**WARNING!**

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

#### 7.3.4. Battery charger: safety devices and fault reports

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

WARNING	PROBLEM	SOLUTION
Red led constantly flashing	No connection with the battery	Check the connections with the battery
	Connections with the battery inverted	
Red and yellow led 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 batteries in the environment after replacement. Comply with the current local standards.**



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

**CALL THE TECHNICAL SUPPORT**



## 8. MARKS AND CERTIFICATIONS

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

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

## 9. PLATES AND STICKERS

### STANDARD STICKER CODES

	CODE	DESCRIPTION	QUANTITY
1	001.10.024	AIRO serial number plate	1
2	001.10.060	Lifting point sticker	4
3	069.10.010	AIRO pre-spaced yellow sticker 435x145 (divisible)	2
4	001.10.243	Max. load per wheel sticker	2
5	069.10.008	Sliding platform black-yellow line sticker	1
6	042.10.001	Capacity and prohibitions sticker	1
7	045.10.011	Battery charger plug sticker	1
8	001.10.031	Towing hook sticker	5
9	069.10.002	Ground controls sticker	1
10	069.10.004	Steering-drive control sticker	1
11	069.10.005	Locking key switch sticker	1
12	069.10.006	Stop sticker	1
13	069.10.003	IPAF Manual lowering sticker	1
14	001.10.088	Document holder sticker	1
15	035.10.007	Safety belts coupling sticker	1
16	069.08.001	Control membrane keyboard	1



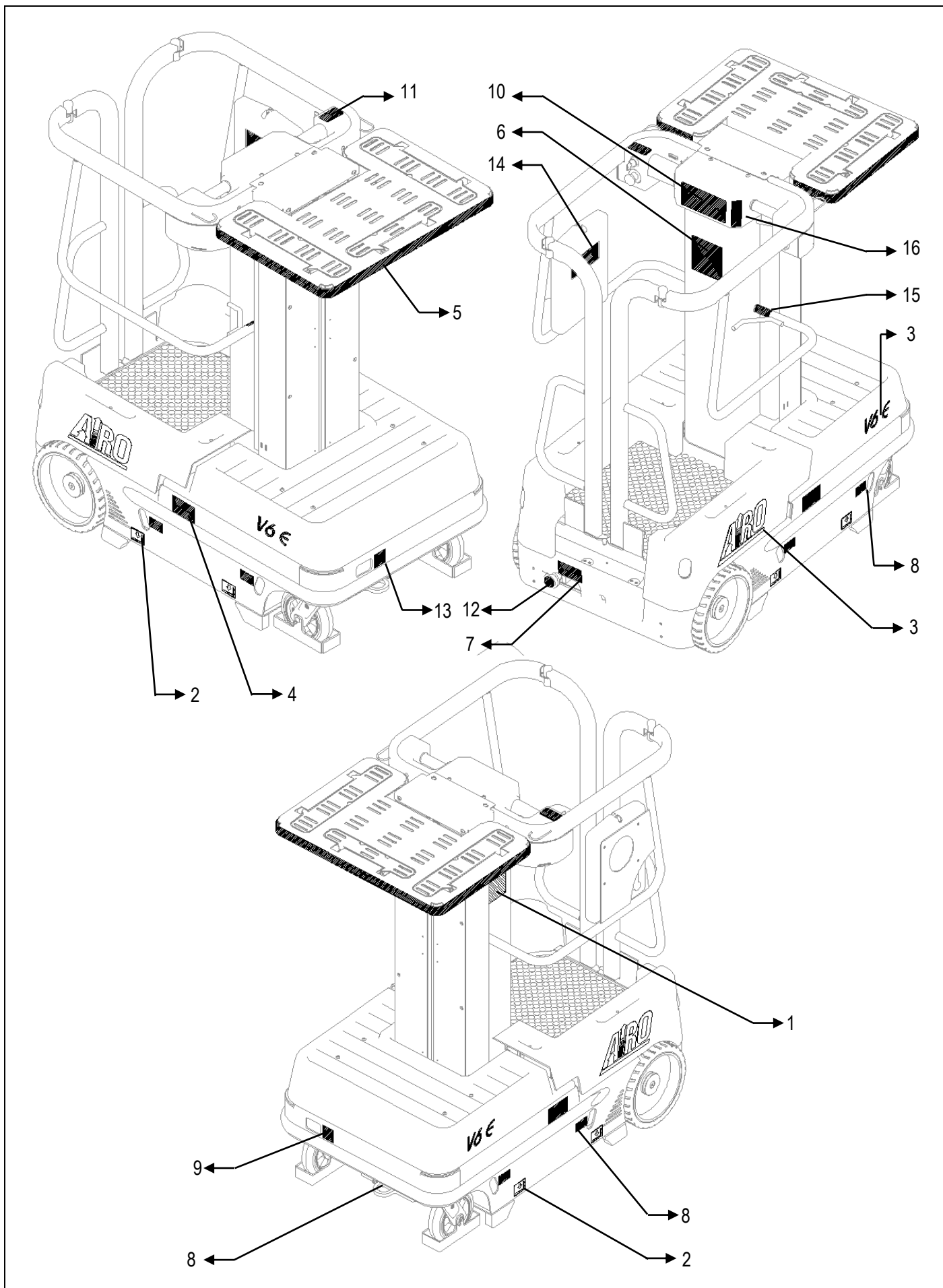


Fig. 39

## 10. CHECK REGISTER

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

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

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

### REQUIRED PERIODIC INSPECTIONS BY THE REGULATORY AGENCY

[illegible]

REQUIRED PERIODIC INSPECTIONS BY THE OWNER			
STRUCTURAL CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
VISUAL CHECK		Check the integrity of the rails; the harness anchoring points; state of the lifting structure; any access ladders; rust; state of the tyres; oil leaks; locking pins on the structure.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
DEFORMATION OF TUBES AND CABLES		Most of all, check at junction points that tubes and cables do not show any evident defects. Monthly operation. It is not necessary to indicate its execution every month, but at least every year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

## REQUIRED PERIODIC INSPECTIONS BY THE OWNER

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

GREASING		See chapter 7.2.2 Monthly operation. It is not necessary to indicate its execution every month, but at least every year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

## REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
HYDRAULIC TANK OIL LEVEL CHECK		See chapter 7.2.3. Monthly operation. It is not necessary to indicate its execution every month, but at least every year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			
BATTERY STATE		See chapter 7.3 Daily operation. It is not necessary to indicate its execution every day, but at least every year when the other operations are carried out.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

REQUIRED PERIODIC INSPECTIONS BY THE OWNER			
CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
TOTAL OIL REPLACEMENT 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 CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
INCLINOMETER OPERATION 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			
EFFICIENCY CHECK OF PLATFORM OVERLOAD CONTROLLER		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 CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
BRAKING SYSTEM EFFICIENCY CHECK		The machine at maximum speed should be able to stop, upon release of the joystick, in a space of less than 0.5 metres 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			

OPERATION CHECK MICROSWITCHES M1, M3, M14-M15, M16-M17 (OPTIONAL), M18-M19- M20-M21 (OPTIONAL)		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 CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
STICKERS AND PLATES CHECK		See Chapter 9. Check the legibility of the warnings plate on the platform where the main instructions are summarised; that the capacity stickers are on the platform and that they are legible; that the stickers on the ground and platform controls are legible.	
	DATE	REMARKS	SIGNATURE + STAMP
1st YEAR			
2nd YEAR			
3rd YEAR			
4th YEAR			
5th YEAR			
6th YEAR			
7th YEAR			
8th YEAR			
9th YEAR			
10th YEAR			

SAFETY SYSTEM CHECK		DESCRIPTION OF OPERATIONS TO BE PERFORMED	
DEAD-MAN SYSTEM CHECK		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			
CHECK OF EMERGENCY DEVICES		DESCRIPTION OF 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			

## IMPORTANT BREAKDOWNS

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

## **IMPORTANT BREAKDOWNS**

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

DATE	DESCRIPTION OF BREAKDOWN	SOLUTION

SPARE PARTS USED		DESCRIPTION
CODE	QUANTITY	

SERVICE

SAFETY MANAGER

## 11. WIRING DIAGRAM - STANDARD MACHINES

**ZAPI DIAGRAM: 069.08.007**

**PGT DIAGRAM: 069.08.017**

<b>AV1</b>	GROUND AUDIBLE ALARM
<b>AV2</b>	PLATFORM AUDIBLE ALARM
<b>BC</b>	BATTERY CHARGER
<b>BT</b>	BATTERY
<b>EP</b>	ELECTRIC PUMP
<b>EV5</b>	LOWERING SOLENOID VALVE
<b>F1</b>	POWER CIRCUIT FUSE
<b>FU1</b>	CONTROL CIRCUIT FUSE
<b>FU2</b>	CONTROL ACTUATOR FUSE
<b>FU3</b>	LOADING SURFACE FUSE
<b>FU4</b>	NEGATIVE FUSE
<b>GRF1-2</b>	DIRECTION INDICATORS
<b>INCL</b>	INCLINOMETER
<b>ind BC</b>	BATTERY CHARGER INDICATOR
<b>KL</b>	HORN
<b>LC</b>	LINE CONTACTOR
<b>M1</b>	LOW PLATFORM MICROSWITCH
<b>M3</b>	PLATFORM LIFTING LIMIT SWITCH
<b>M14</b>	RIGHT GATE MICROSWITCH
<b>M15</b>	LEFT GATE MICROSWITCH
<b>M16</b>	LOADING SURFACE LIFTING LIMIT SWITCH (OPTIONAL)
<b>M17</b>	LOADING SURFACE LOWERING LIMIT SWITCH (OPTIONAL)
<b>MDI CAN / DIAGNOSTIC CENTER</b>	MULTIFUNCTION DISPLAY ON PLATFORM
<b>MTR1-2</b>	DRIVE MOTORS
<b>PR1</b>	PRESSURE SWITCH
<b>RP</b>	LOADING SURFACE POWER RELAY (OPTIONAL)
<b>RPH</b>	LOADING SURFACE LIFTING RELAY (OPTIONAL)
<b>RPH</b>	LOADING SURFACE LOWERING RELAY (OPTIONAL)
<b>SP0</b>	POWER CIRCUIT EMERGENCY SWITCH
<b>SP1</b>	CONTROL CIRCUIT EMERGENCY SWITCH - ON THE GROUND
<b>SP2</b>	CONTROL CIRCUIT EMERGENCY SWITCH - ON THE PLATFORM
<b>SW1</b>	GROUND/PLATFORM CONTROL SELECTOR
<b>SW3</b>	BRAKE RELEASE SWITCH FOR EMERGENCY TOWING
<b>SW4</b>	GROUND LIFTING/LOWERING SWITCH
<b>UM</b>	DEAD-MAN PEDAL CONTACT

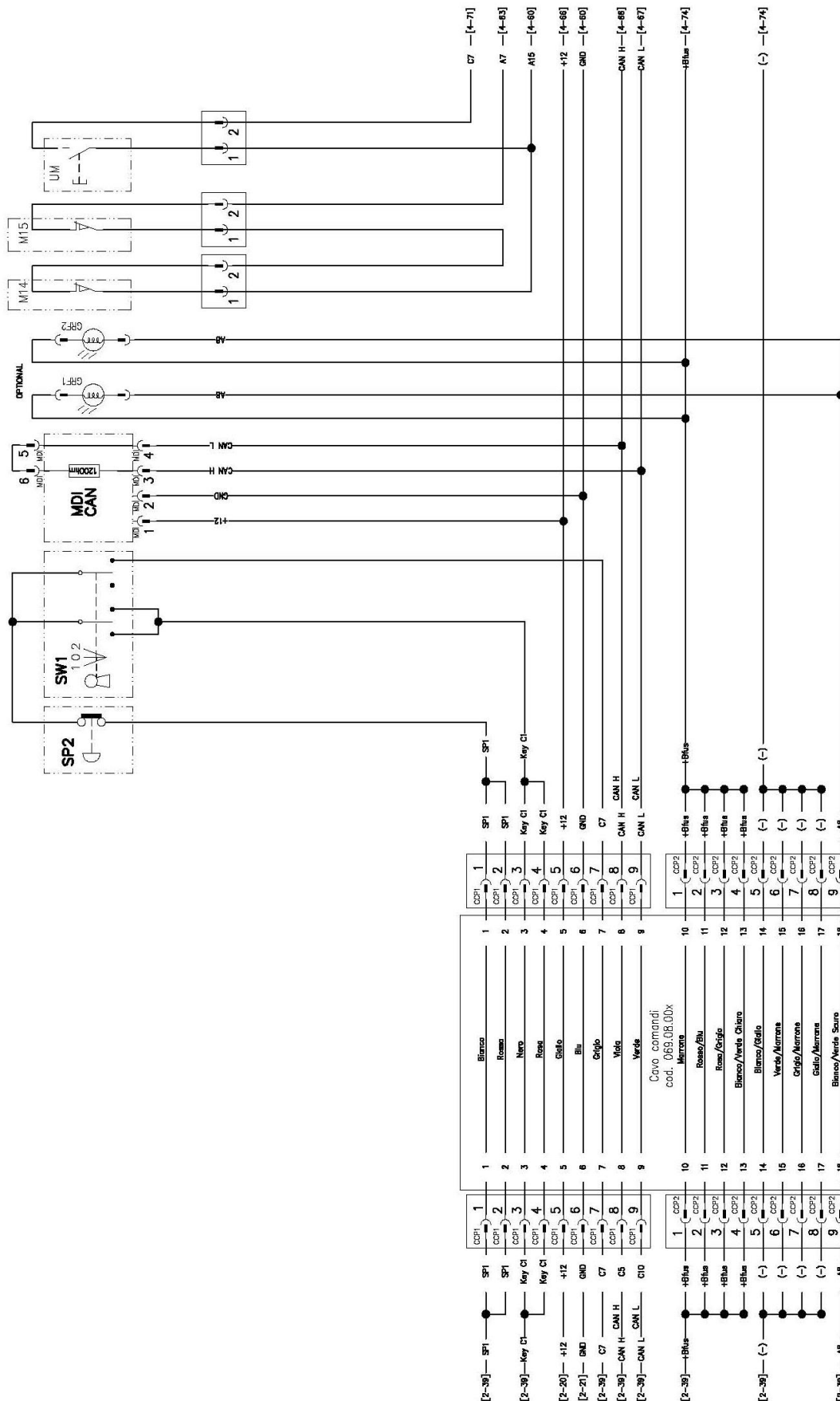






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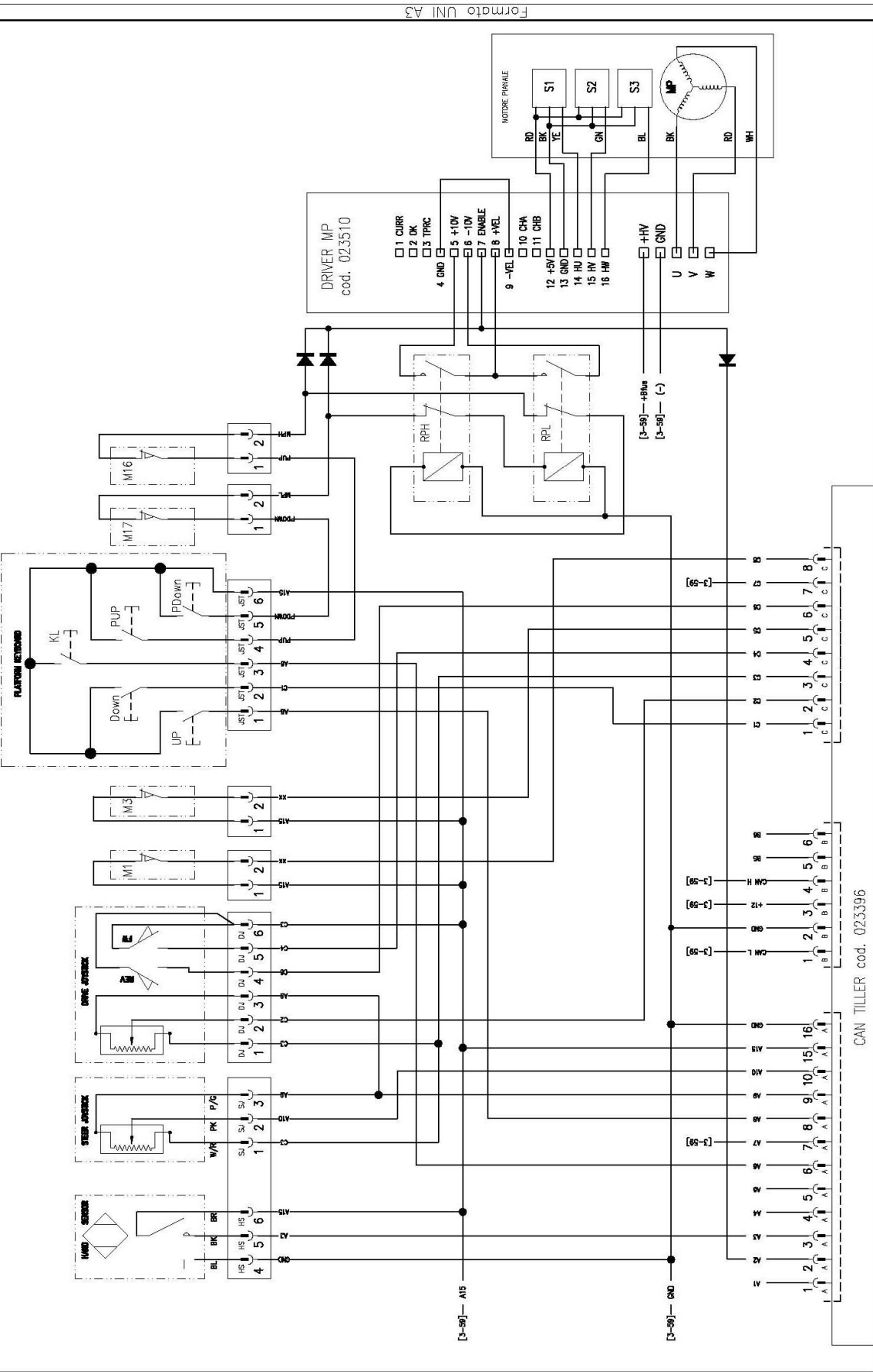
[2-38]—SP1	1	CDP1	Bianco	1	CDP1	SP1	SP1
[2-38]—SP1	2	CDP1	Rosso	2	CDP1	SP1	SP1
[2-38]—Key C1	3	CDP1	Nero	3	CDP1	Key C1	Key C1
[2-38]—Key C1	4	CDP1	Rosa	4	CDP1	Key C1	Key C1
[2-20]—+12	5	CDP1	Giallo	5	CDP1	+12	+12
[2-21]—GND	6	CDP1	Blu	6	CDP1	GND	GND
[2-38]—C7	7	CDP1	Grigio	7	CDP1	C7	C7
[2-38]—CAN H	8	CDP1	Viola	8	CDP1	CAN H	CAN H
[2-38]—CAN L	9	CDP1	Verde	9	CDP1	CAN L	CAN L

Cavo comandi  
cod. 069.08.00x

[2-38]—+8Vus	1	CDP2	Marzotto	1	CDP2	+8Vus	+8Vus
[2-38]—+8Vus	2	CDP2	Rosso/Blu	2	CDP2	+8Vus	+8Vus
[2-38]—+8Vus	3	CDP2	Rosa/Grigio	3	CDP2	+8Vus	+8Vus
[2-38]—+8Vus	4	CDP2	Bianco/Verde Chiaro	4	CDP2	+8Vus	+8Vus
[2-38]—(-)	5	CDP2	Bianco/Giallo	5	CDP2	(-)	(-)
[2-38]—(-)	6	CDP2	Verde/Marzotto	6	CDP2	(-)	(-)
[2-38]—(-)	7	CDP2	Grigio/Marzotto	7	CDP2	(-)	(-)
[2-38]—(-)	8	CDP2	Giallo/Marzotto	8	CDP2	(-)	(-)
[2-38]—(-)	9	CDP2	Bianco/Verde Scuro	9	CDP2	(-)	(-)

FIRMA <i>Augusto M.</i>		IMPIANTO <b>Serie V6 E</b>		CODICE <b>069.08.007</b>		FOGLIO <b>3</b>		SCHEMA <b>4</b>	
DATA <b>07.12.2012</b>		TITOLO <b>Schema elettrico completo V6 E</b>		Teglie srt Na Villesse - Luzana (RE) - ITALIA		TOT. FOGLI <b>5</b>			
C.M.		DATA		SCALA					
OBSERVO MODIFICA									

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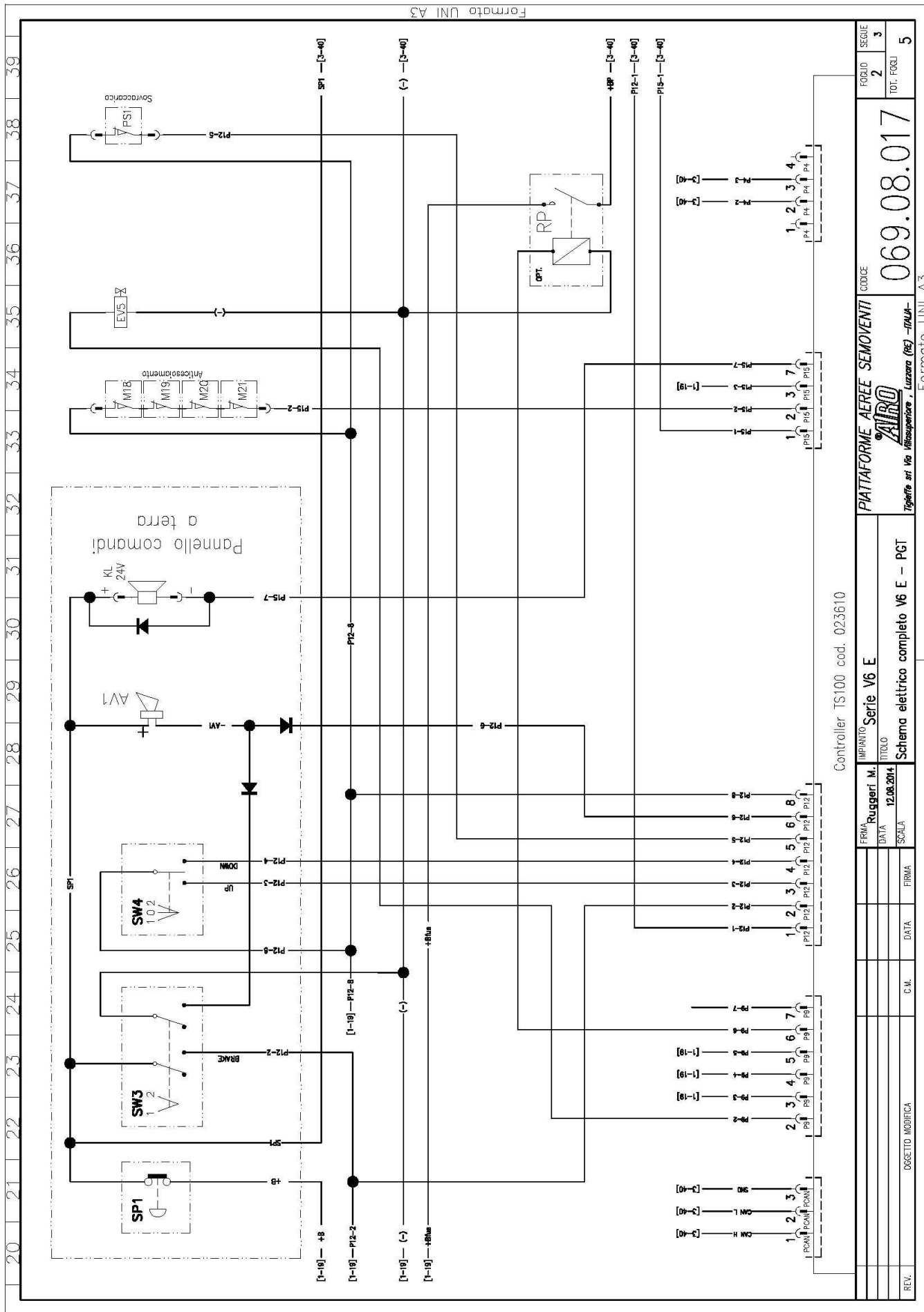


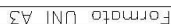
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				IMPIANTO Serie V6 E				FOGLIO 4 5	
				FIRMA <i>Diagnosi 97L</i>					
				DATA 07/12/2012					
				TITOLO					
				Schema elettrico completo V6 E					
				FIRMA		SCALA			

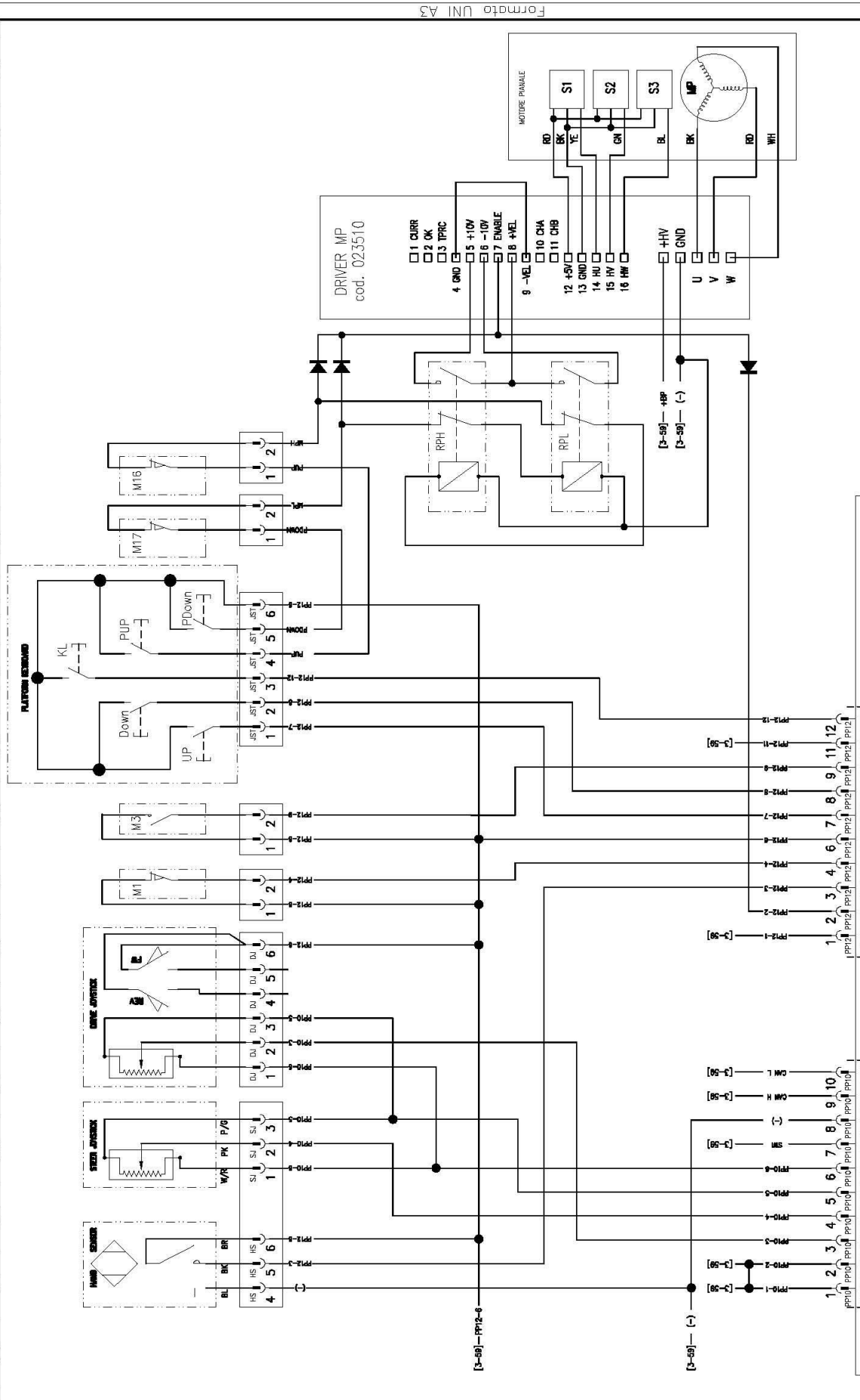
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CAN INTERFACE cod. 023633

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Serie V6 E		IMPIANTO		Foglio	
Ruggeri M.		TITOLO		4	
12.08.2014		SCHEMA		5	
Schema elettrico completo V6 E - PGT		Tegolo		TOT. Fogli	
OGGETTO MODIFICA		C.M.		5	
REV.		DATA		Foglio	
				4	
				5	

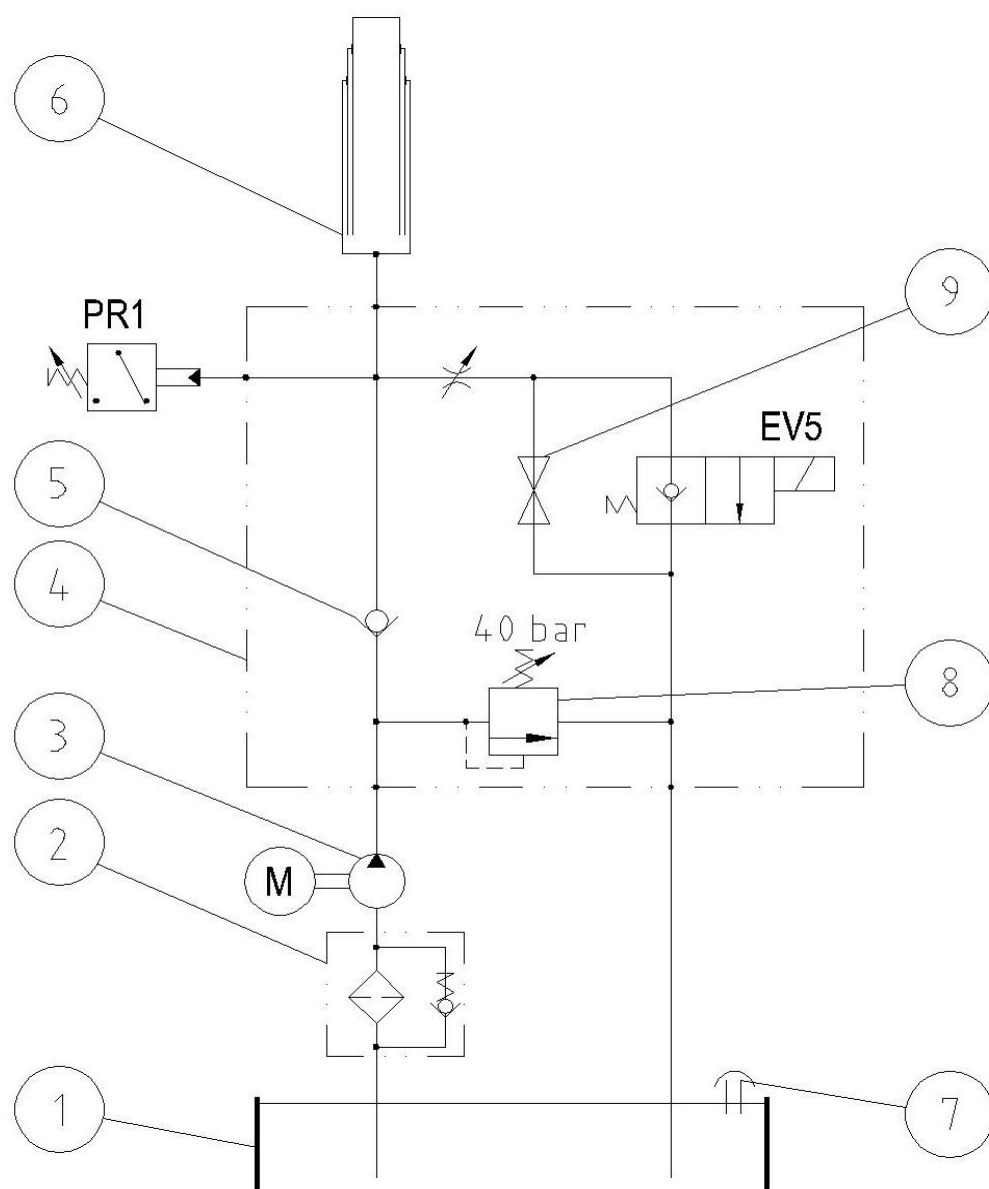
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## 12. HYDRAULIC DIAGRAM - STANDARD MACHINES

- 1 OIL TANK
- 2 FILTER
- 3 GEAR PUMP
- 4 INTEGRATED ASSEMBLY
- 5 UNIDIRECTIONAL VALVE
- 6 LIFTING CYLINDER
- 7 FILLER AND RELIEF CAP
- 8 PRESSURE RELIEF VALVE
- 9 EMERGENCY LOWERING MANUAL OPERATOR
- EV5 LOWERING SOLENOID VALVE
- M ELECTRIC MOTOR
- PR1 PRESSURE SWITCH



# 13. DECLARATION OF CONFORMITY EC FACSIMILE



AIRO È UNA DIVISIONE TIGIEFFE SRL - VIA VILLA SUPERIORE, 82 -42045 LUZZARA (RE)  
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## DICHIARAZIONE CE DI CONFORMITÀ - CE DECLARATION OF CONFORMITY - DECLARATION CE DE CONFORMITE' - EG KONFORMITÄTS-ERKLÄRUNG 2006/42/CE

Dichiarazione Originale

Original Declaration

Déclaration Originale

Originalerklärung

Noi - We - Nous - Wir - Nosotros

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

Dichiariamo sotto la nostra esclusiva responsabilità che il prodotto:

Declare under our exclusive responsibility that the product:

Declarons sous notre responsabilité exclusive que le produit:

Erklären hiermit unter Übernahme der vollen Verantwortung für diese Erklärung, daß das Produkt:

Piattaforma di Lavoro Elevabile - Mobile Elevating Work Platform - Plates-forms Elévatrice Mobiles de Personnel - Fahrbare Hubarbeitsbühnen

Modello - Model - Modèle - Typ	N° Chassis - Chassis No. - No. Chassis - Fahrgestellnr	Anno - Year - Année - Baujahr
<b>V6 E</b>	<b>XXXXXXXXXX</b>	<b>XXXXXXXXXX</b>
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:

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

con il seguente numero di certificazione:

with the following certification number:

Avec le numéro de certification suivant:

Zertifizierten Modell mit folgender Zertifizierungsnummer:

N.Certificato - Certificate No. - N° du certificat - Bestätigungnummer

**XYZ**

e alle norme seguenti:

and with the following standards:

Et aux normes suivantes :

die Erklärung entspricht den folgenden Normen:

EN ISO 12100:2010 EN ISO 60204-1:2018

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.

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

.....  
Pignatti Simone  
(Legale rappresentante – Legal representative)



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**DECLARACION CE DE CONFORMIDAD - DECLARAÇÃO CE DE CONFORMIDADE - ЗАЯВЛЕНИЕ О КОНФОРМНОСТИ ЕС - ES PROHLÁŠENÍ O SHODĚ 2006/42/CE**

Declaración Original

Declaração original

Оригинальная декларация

Originál Prohlášení

Nosotros – Nós - Мы - A mou Osobou

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

Declaramos bajo nuestra exclusiva responsabilidad que el producto:

Declaramos sob a nossa exclusiva responsabilidade que o produto:

Под нашу исключительную ответственность заявляем, что изделие:

Prohlasujeme na svou vlastní zodpovednost, že:

Plataforma Elevadora Móvil de Personal - Plataforma de trabalho elevável - Платформа для высотного работ - Pracovní plošinky

Modelo- Modelo - МОДЕЛЬ - Model	N° Chassis - N° Chassi - Номер Рама - Pořadové číslo rámu	Ano - Ano - Год - Rok
<b>V6 E</b>	<b>XXXXXXXXXX</b>	<b>XXXXXXXXXX</b>
Al cual esta declaración se refiere cumple las directivas 2006/42/CE, 2014/30/CE, 2005/88/CE y el modelo certificado por:	À qual esta declaração se refere, está conforme as diretrizes 2006/42/CE, 2014/30/CE, 2005/88/CE e ao modelo certificado por :	К которой это заявление относится, соответствует директивами 2006/42/CE, 2014/30/CE, 2005/88/CE и сертифицированной модели из:
		Na které se toto prohlášení vztahuje, splňuje požadavky 2006/42 / EC, 2014/30 / ES, 2005/88 / ES a vzorů veterinárních osvědčení:

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

con el siguiente número de certificación:

com o seguinte número de certificação:

со следующим сертифицированным номером:

s tímto certifikačným číslom:

N° de certificado – N° do certificado – Номер Сертификата - Certifikačného číslom

**XYZ**

Y a las siguientes normas :

E às normas seguintes :

и со следующими нормами:

a tyto normy:

EN ISO 12100:2010 EN ISO 60204-1:2018

El firmante de esta declaración de conformidad está autorizado a crear el Expediente Técnico

O signatário desta declaração de conformidade está autorizado a criar o Manual Técnico.

Лицо, подписавшее это заявление о соответствии, уполномочено составить техническую документацию оборудования.

Signatářem tohoto tvrzení je oprávněna tvořit technické dokumentace.

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

.....  
Pignatti Simone  
(Legale rappresentante – Legal representative)



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