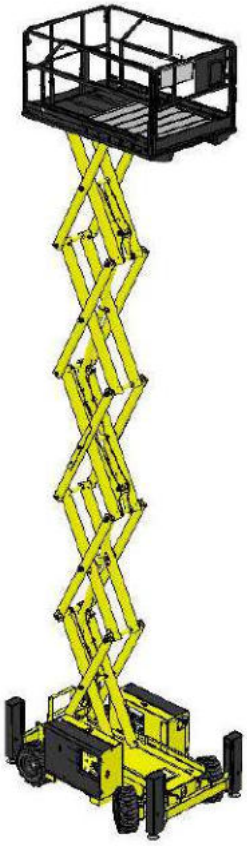
PIATTAFORME AEREE SEMOVENTI
SELF-PROPELLED WORK-PLATFORMS
PLATES-FORMES DE TRAVAIL AUTOMOTRICES
SELBSTFAHRENDE HUBARBEITSBÜHNEN
PLATAFORMAS ELEVADORAS AUTOPROPULSADAS
ZELFRIJDENDE HOOGWERKERS
SJÄLVGÅENDE ARBETSPLATTFORMAR
SAMOKRETNE RADNE PLATFORME
ÖNHAJTÁSÚ MUNKAÁLLVÁNYOK

„X_RT“ SERIES
X12 RTD X12 RTE X14 RTD X14 RTE



USE AND MAINTENANCE MANUAL
- ENGLISH - ORIGINAL INSTRUCTIONS

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Revision date	Description of revision
10-2016	• First issue
12-2016	• Updated hydraulic diagram: eliminated solenoid valve EV11C • Added final data model X14 RTD
03-2017	• Updated images instructions emergency towing
11-2017	• Updated technical data for models X12 RTE and X14 RTE
2018-05	• Added / inserted on technical data sheets international system unit of measurement and US unit of measurement. • Changed Name and Surname of CEO.
2019-07	• Updated procedure description of commissioning declaration in Italy. • Updated images and procedure relating to the operation check and adjusting of the hydraulic block (hydraulic block MOVECO) - ¶ 7.3.7 - 7.3.8 ¶ - ¶ 7.3.9

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.

Contents:

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
- Original EC Declaration of conformity
- Guarantee certificate

Only for Italy:
- Declaration of commissioning to INAIL
- List of local INAIL departments
- Declaration of internal testing

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 responsibles of the public service and refer directly to the public structure that controls this function.

To declare the commissioning of the machine in Italy, send the form that is supplied together with other documents upon machine delivery, by registered letter with advice of receipt.

The INAIL will assign a serial number when the First Check is performed before completing the “technical identification sheet” on which it indicates only the details obtained from the already-operating machine or obtainable 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 carried out prior to delivery by the manufacturer

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

- Braking test
- Overload test
- Operating test

1.3 Intended use

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

- 80 Kg for each person on board.
- 40 Kg for equipment.
- Any remaining load is represented by the work materials.

In any case NEVER exceed the maximum capacity allowed as indicated in paragraph "Technical features”. Persons, tools and work materials can be loaded on the platform only from the access position (platform lowered). It is absolutely forbidden to load persons, tools and work materials on the platform when it is not in access position.
All loads must be positioned inside the platform. Do not lift loads (even if complying with the maximum capacity allowed) hanging from the platform or lifting structure.
Do not carry large-sized panels since they increase the resistance to wind force thus causing the machine to overturn.
While the machine is being displaced with lifted platform, no horizontal loads can be loaded onto the platform (operators on board are not allowed to pull wires or ropes, etc.).
An overload controller stops the operation of the machine if the load on the platform exceeds by 30% approx. the nominal load (see chapter "General use rules”) and platform is lifted.
The machine cannot be used in areas where road vehicles operate. Always surround the working area by means of suitable signs when the machine is used in public areas.
Do not use the machine to tow trucks or other vehicles.
All types of machine use other than those for which it was designed must be approved in writing by the machine manufacturer following a specific request on the part of the user.

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

1.3.1 Leaving at height

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

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

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

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

1.4 Description of the machine

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

- Motorised chassis equipped with wheels and, on request, with levelling outriggers (optional).
- Vertical scissor lifting structure operated by one or more hydraulic cylinders (the number of cylinders varies according to machine model)
- Operator platform with manual slide-out extension deck (the max. capacity varies according to the model - see chapter "**Technical features**")

The chassis is motorised to allow the machine to move (see "General use instructions"). On 2 wheel drive models the chassis is equipped with two rear driving wheels and two front idle steering wheels. On 4 wheel drive models the chassis is equipped with two rear driving wheels and two front driving and steering wheels. All driving wheels are equipped with hydraulic parking brakes, positive logic type (when drive controls are released brakes are automatically activated). On request the machine may be equipped with levelling outriggers to operate on inclined grounds (but sufficiently firm). Even in this case the machine is enough steady to operate on horizontal and sufficiently firm grounds and the platform can be lifted with the chassis resting on the four puncture-proof tires without using the levelling outriggers. These must be used when operating on uneven but sufficiently firm grounds. The levelling outriggers are controlled from the platform control panel, where machine levelling and operations in progress can be checked by means of a spirit level. There is also a device (inclinometer) that disables the platform lifting and lowering in case of imperfect levelling.
The hydraulic cylinders which move the articulated structure and the outriggers are provided with solenoid valves or safety valves directly flanged on the same. This enables the machine to be held in position also in the event of an accidental breaking of the supply pipe.
The platform, which can be manually extended from the front side, is equipped with rails and toe-boards of a prescribed height (the height of the rails is ≥1100 mm; the height of the toe-boards is ≥150 mm, the entrance area has a toe-board of at least ≥100 mm).
When no motive power is available, the manual emergency lowering can be controlled manually by means of the knob indicated by the instructions plates.
The capacity on the platform does not change depending on the position of the extension deck.

1.5 Control panels

The machine is equipped with two control panels:

- On the platform for normal use of the machine.
- On the chassis is fitted with the emergency controls to lower or stop the platform and the emergency stop button, a key-selector to select the control panel and to start the machine.

1.6 Drive power

The machines can be powered by:

- An electric-hydraulic system composed of rechargeable accumulators and electrical pump (models “RTE”).
- Diesel Engine (models "RTD").

In any case both the hydraulic and the electric systems 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. It is recommended to copy such data in the following boxes.

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

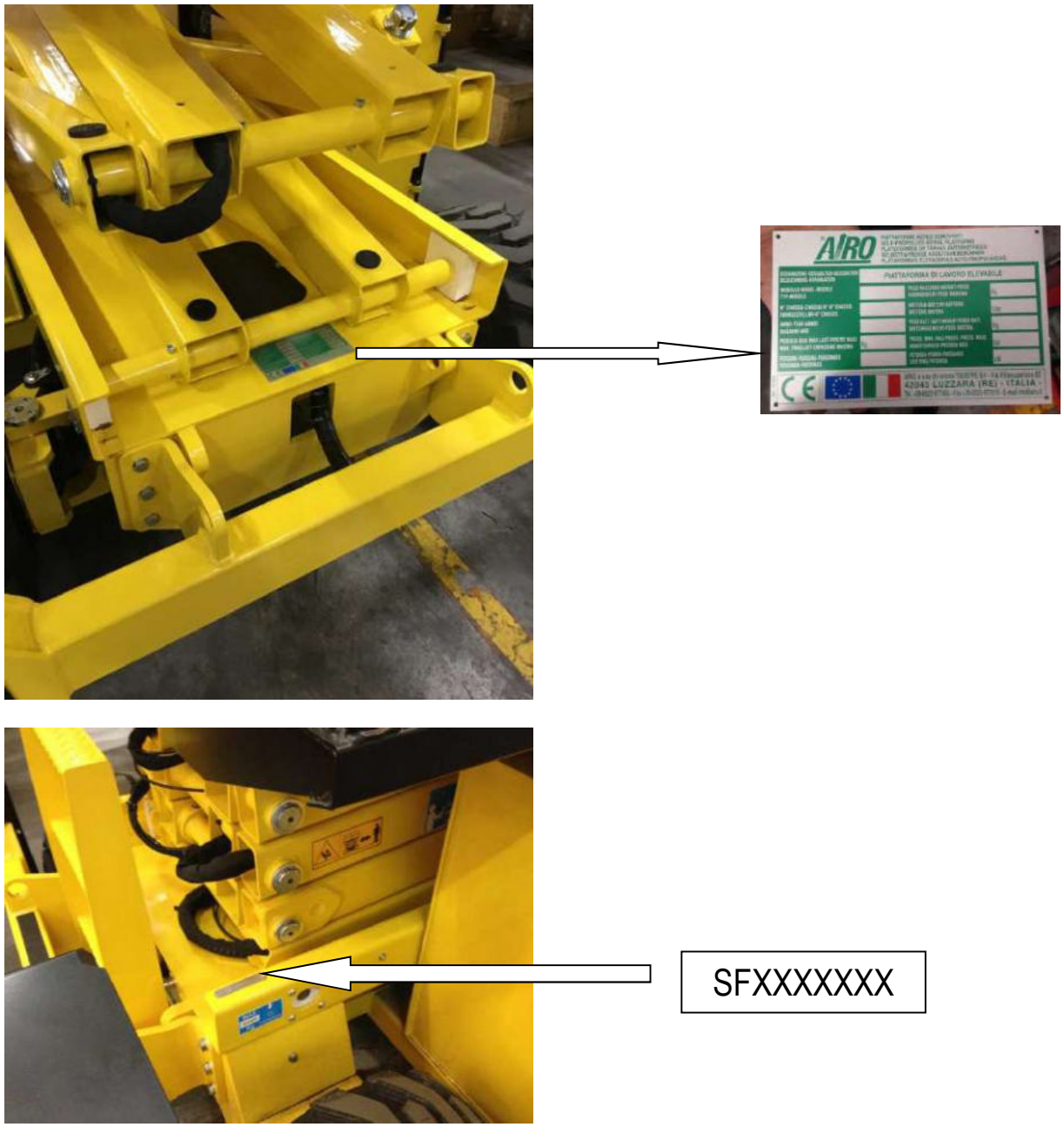


Fig. 1

1.9 Location of main components

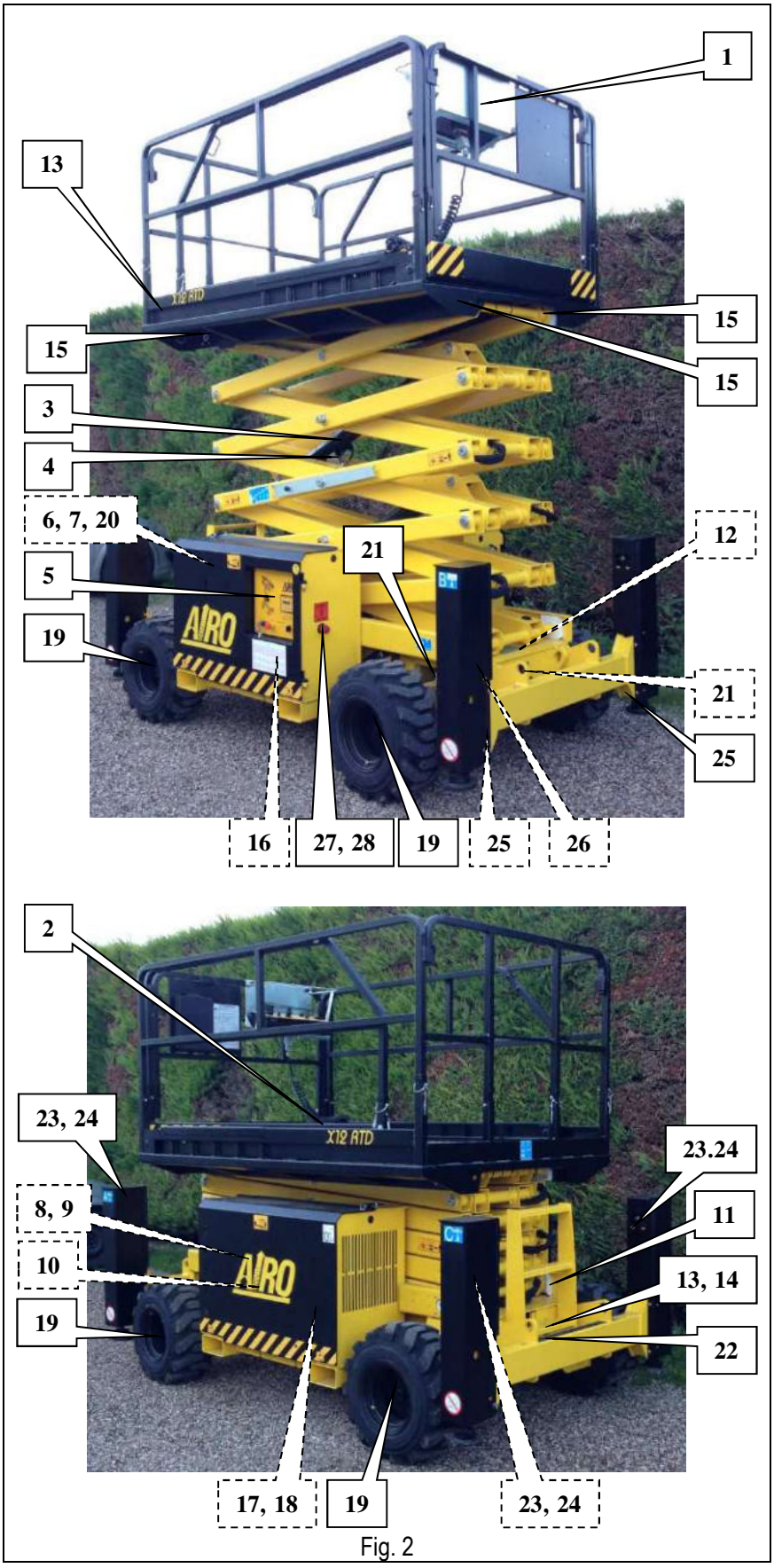


Fig. 2

The picture shows the machine and its own components.

1) Platform control panel
2) Spirit level (standard for models with levelling outriggers; optional for the other models) for visual check of machine levelling
3) Lifting cylinders
4) Lowering control valve
5) Ground control station
6) Electric control unit and inclinometer
7) Hydraulic oil tank
8) Diesel tank (models "RTD")
9) Electric Pump (models “RTE”)
10) Diesel Engine (models "RTD")
11) Platform height control M1 microswitch
12) Oscillating axle control M13 microswitch
13) 230V electric line plug (Optional)
14) Circuit breaker (optional)
15) Overload controller sensors
16) Starter battery (models “RTD”)
17) Electric Pump (models “RTE”)
18) Electric Pump (models “RTE”)
19) Hydraulic drive motors
20) Hydraulic control unit
21) Steering cylinder
22) Manual device for emergency lowering
23) Levelling outriggers (optional)
24) Levelling outrigger control solenoid valves (optional)
25) High position levelling outrigger control sensor (optional)
26) Low position levelling outrigger control microswitch (optional)
27) Power Switch (models “RTD”)
28) Battery isolator connector (models “RTE”).

2. TECHNICAL FEATURES OF STANDARD MACHINES

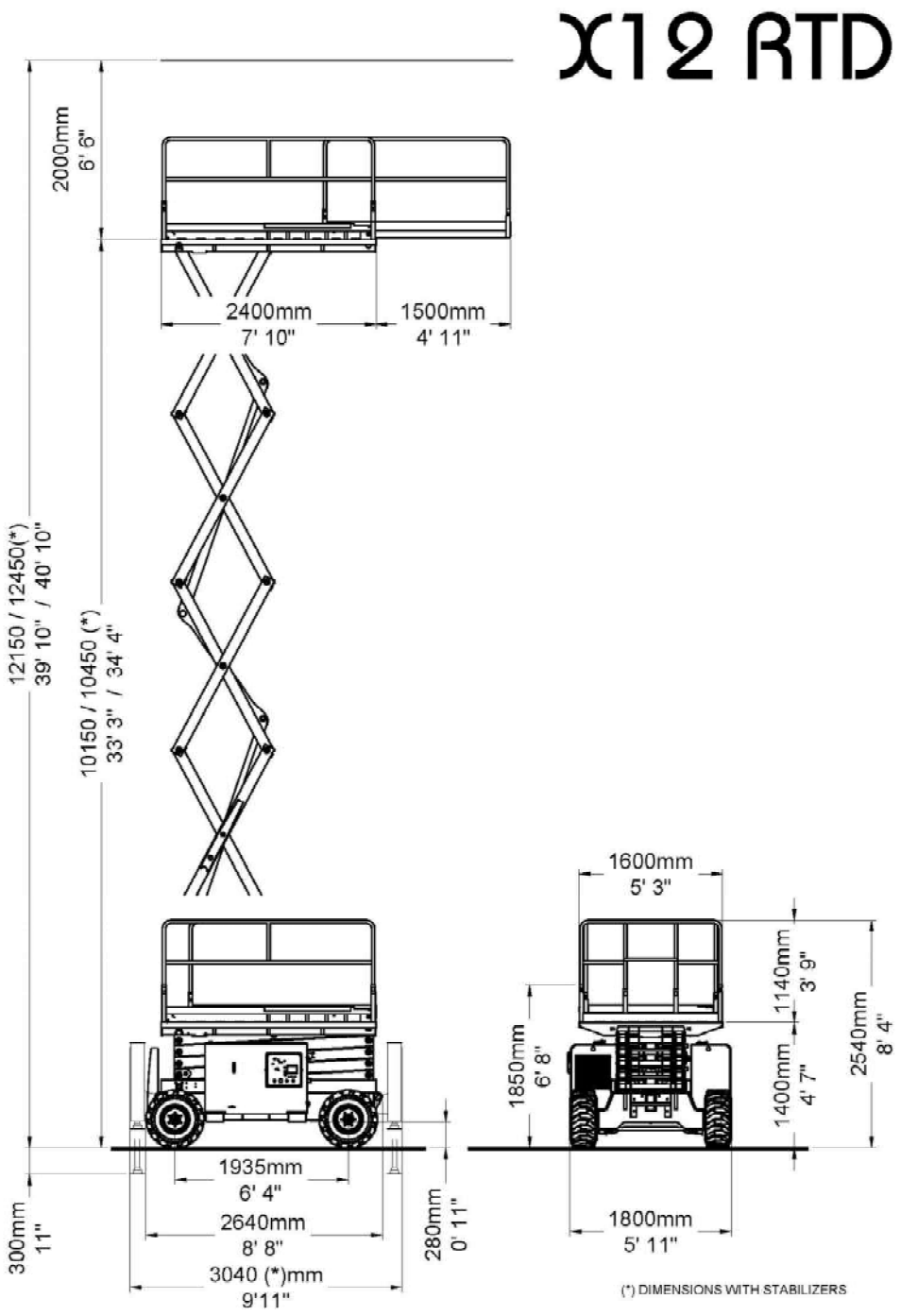
THE TECHNICAL FEATURES OF THE PRODUCTS IN THE FOLLOWING PAGES CAN BE MODIFIED WITHOUT PRIOR NOTICE

2.1 Model X12 RTD

Dimensions:		**X12 RTD**			
	Maximum working height - STANDARD	12.15	m	*39 '8"*	*ft*
	Maximum working height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	12.45	m	*40 '8"*	*ft*
	Max. platform height - STANDARD	10.15	m	*33 '3"*	*ft*
	Max. platform height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	10.45	m	*34 '2"*	*ft*
	Ground clearance	280	mm	*11"*	*in*
	Platform height for safety speed activation	2.5	m	*8 '2"*	*ft*
	Internal steering radius	2.4	m	*7 '8"*	*ft*
	External steering radius	4.7	m	*15 '4"*	*ft*
	Maximum capacity (m)	450	Kg	*990*	*lbs*
	Maximum amount of people on platform (n)	3		*3*	
	Tool and material weight (me)	210	Kg	*463*	*lbs*
	Maximum slide-out extension deck	1.5	m	*4 '9"*	*ft*
	Maximum capacity with platform extended	450	Kg	*990*	*lbs*
	Max. No. of people with platform extended	3		*3*	
	Maximum drive height	Max		*Max*	
	Maximum platform dimensions (extended)	1.6 x 3.9	m	*4 '9" x 12 '7"*	*ft*
	Max. hydraulic pressure	240	Bar	*3480*	*psi*
	Max. pressure of lifting circuit	180	Bar	*2610*	*psi*
	Min. pressure of braking circuit	50 ÷ 60	Bar	*725 ÷ 870*	*psi*
	Tyre dimensions (****)	Ø 650 x 300	mm	*25.5" x 11.8"*	*in*
	Tyre type (****)	26 x 12 – 12		*26 x 12 – 12*	
	Transport dimensions with rails installed - STANDARD	2,64 x 1,8 H=2,54	m	*8 '5"x 5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails installed - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=2,54	M	*9 '9"x5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails folded down - STANDARD	2,64 x 1,8 H=1,85	M	*8 '5"x 5 '9"x5 '9"*	*ft*
	Transport dimensions with rails folded down - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=1,85	M	*9 '9"x5 '9"x5 '9"*	*ft*
	Machine weight (unloaded) - STANDARD (*)	3980	Kg	*8700*	*lbs*
	Machine weight (unloaded) - WITH LEVELLING OUTRIGGERS (optional) (*)	4330	Kg	*9500*	*lbs*
Stability limit:					
	Longitudinal inclination	3	°	*3*	°
	Transversal inclination	2.5	°	*2.5*	°
	Maximum wind speed (***)	12.5	m/s	*28*	*mph*
	Maximum manual force:	400	N	*90*	*lbf*
	Max. load per wheel - STANDARD (*)	2215	Kg	*4880*	*lbs*
	Max. load per wheel - WITH LEVELLING OUTRIGGERS (OPTIONAL) (*)	2390	Kg	*5200*	*lbs*
Performance:					
	Drive wheels	4	N	*4*	*No*
	Max. drive speed	4.5	km/h	*2.8*	*mph*
	Safety drive speed	0.4	km/h	*0.3*	*mph*
	Lowering/lifting time (unloaded)	40-45 / 55-60	Sec.	*40-45 / 55-60*	*Sec*
	Oil tank capacity	80	Lt.	*21*	*gal*
	Gradeability	35	%	*35*	*%*
	Max. operating temperature	+50	°C	*122*	*°F*
	Min. operating temperature	-15	°C	*5*	*°F*

Diesel drive power					
	Diesel engine type	YANMAR 3TNV76		YANMAR 3TNV76	
	Motor power	17 kW	kW	*23*	*hp*
	Starter battery	12V / 100Ah	V/Ah	*12V / 100Ah*	*V/Ah*
	Diesel oil tank capacity	30	Lt.	*8*	*gal*

(*) In some cases different limits can be fixed. It is recommended to comply with the data shown on the machine plate.
(**) me = m – (n x 80)
(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.
(****) Standard Tyres filled with puncture-proof polyurethane foam.

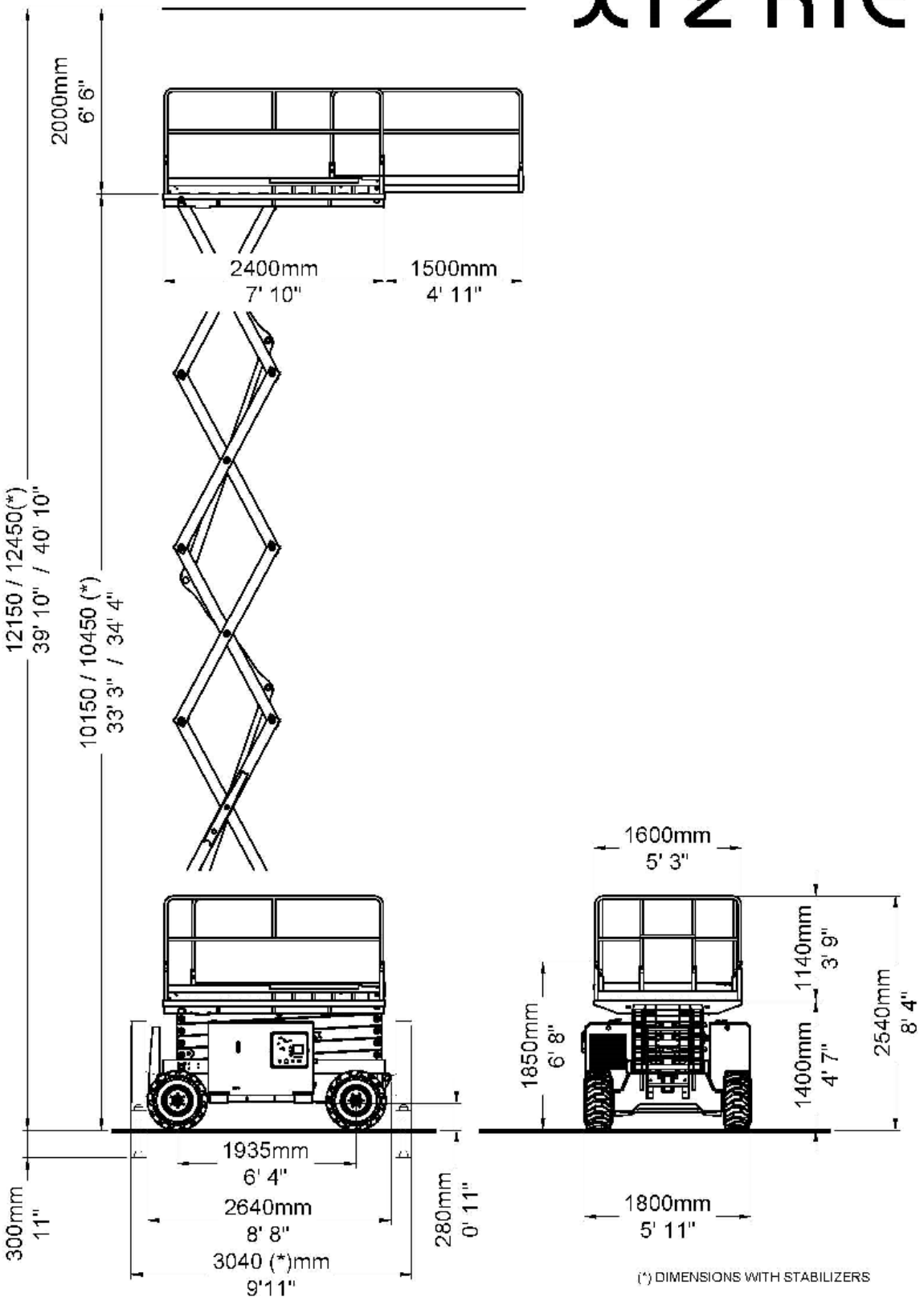


2.2 Model X12 RTE

Dimensions:		X12 RTE			
	Maximum working height - STANDARD	12.15	m	*39 '8"*	*ft*
	Maximum working height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	12.45	m	*40 '8"*	*ft*
	Max. platform height - STANDARD	10.15	m	*33 '3"*	*ft*
	Max. platform height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	10.45	m	*34 '2"*	*ft*
	Ground clearance	280	mm	*11 '0"*	*in*
	Platform height for safety speed activation	2.5	m	*8 '2"*	*ft*
	Internal steering radius	2.4	m	*7 '8"*	*ft*
	External steering radius	4.7	m	*15 '4"*	*ft*
	Maximum capacity (m)	450	Kg	*990*	*lbs*
	Maximum amount of people on platform (n)	3		*3*	
	Tool and material weight (me)	210	Kg	*463*	*lbs*
	Maximum slide-out extension deck	1.5	m	*4 '9"*	*ft*
	Maximum capacity with platform extended	450	Kg	*990*	*lbs*
	Max. No. of people with platform extended	3		*3*	
	Maximum drive height	Max		*Max*	
	Maximum platform dimensions (extended)	1.6 x 3.9	m	*4 '9" x 12 '7"*	*ft*
	Max. hydraulic pressure	240	Bar	*3480*	*psi*
	Max. pressure of lifting circuit	180	Bar	*2611*	*psi*
	Min. pressure of braking circuit	50 ÷ 60	Bar	*725 ÷ 870*	*psi*
	Tyre dimensions (****)	Ø 650 x 300	mm	*25.5" x 11.8"*	*in*
	Tyre type (****)	26 x 12 – 12		*26 x 12 – 12*	
	Transport dimensions with rails installed - STANDARD	2,64 x 1,8 H=2,54	m	*8 '5"x 5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails installed - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=2,54	m	*9 '9"x5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails folded down - STANDARD	2,64 x 1,8 H=1,85	m	*8 '5"x 5 '9"x5 '9"*	*ft*
	Transport dimensions with rails folded down - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=1,85	m	*9 '9"x5 '9"x5 '9"*	*ft*
	Machine weight (unloaded) - STANDARD (*)	4230	Kg	*9300*	*lbs*
	Machine weight (unloaded) - WITH LEVELLING OUTRIGGERS (optional) (*)	4580	Kg	*10000*	*lbs*
Stability limit:					
	Longitudinal inclination	3	°	*3*	°
	Transversal inclination	2.5	°	*2.5*	°
	Maximum wind speed (***)	12.5	m/s	*28*	*mph*
	Maximum manual force:	400	N	*90*	*lbf*
	Max. load per wheel - STANDARD (*)	2215	Kg	*4880*	*lbs*
	Max. load per wheel - WITH LEVELLING OUTRIGGERS (OPTIONAL) (*)	2390	Kg	*5200*	*lbs*
Performance:					
	Drive wheels	4	N	*4*	*N*
	Max. drive speed	4.5	km/h	*2.8*	*mph*
	Safety drive speed	0.4	km/h	*0.3*	*mph*
	Lowering/lifting time (unloaded)	40-45 / 55-60	Sec.	*40-45 / 55-60*	*Sec*
	Oil tank capacity	80	Lt.	*21*	*gal*
	Gradeability	35	%	*35*	*%*
	Max. operating temperature	+50	°C	*122*	*°F*
	Min. operating temperature	-15	°C	*5*	*°F*
Battery power					
	Standard battery capacity and voltage	48 / 315 (c5)	V/Ah	*48 / 315 (c5)*	*V/Ah*
	Total electrolyte quantity of standard battery	24 x 5,4	Litri	*6.3 x 1.4*	*gal*
	Standard battery weight	528	Kg	*1164*	*lbs*
	Single-phase battery charger (HF)	48 / 45	V/A	*48 / 45*	*V/A*
	Battery charger mains voltage - single phase	230 – 50	V-Hz	*230 - 50*	*V-Hz*
	Max. current absorbed by the battery charger	15	A	*15*	*A*
	Max. installed power	12	kW	*16*	*hp*
	AC electric pump power	12	kW	*16*	*hp*
	Max. absorbed current	300	A	*300*	*A*

(*) In some cases different limits can be fixed. It is recommended to comply with the data shown on the machine plate.
(**) me = m – (n x 80)
(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.
(****) Standard non marking tyres filled with puncture-proof polyurethane foam.

X12 RTE

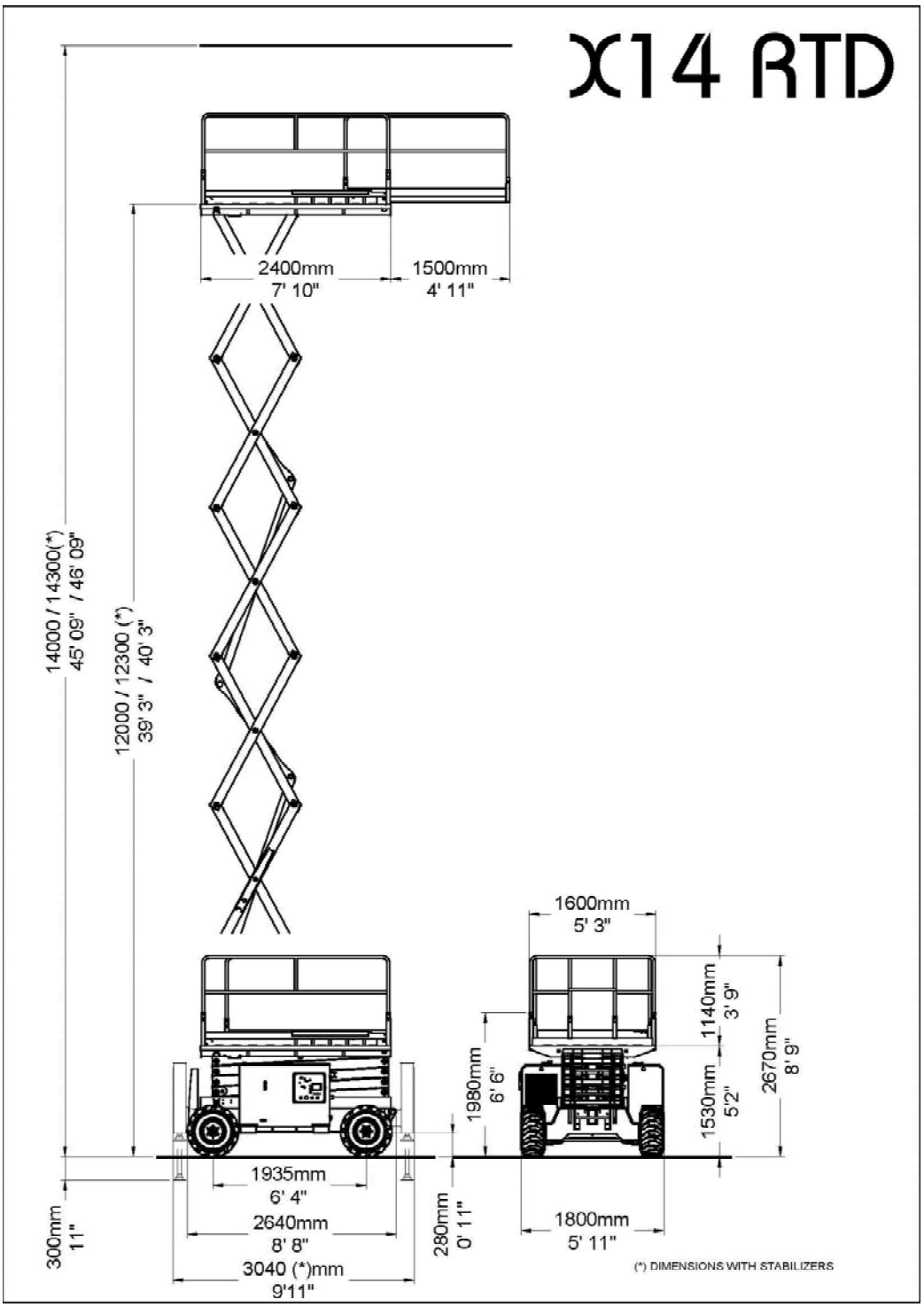


2.3 Model X14 RTD

Dimensions:		X14 RTD			
	Maximum working height - STANDARD	14	m	*45 '9"*	*ft*
	Maximum working height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	14.3	m	*46.9"*	*ft*
	Max. platform height - STANDARD	12	m	*39 '3"*	*ft*
	Max. platform height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	12.3	m	*40 '3"*	*ft*
	Ground clearance	280	mm	*11"*	*in*
	Platform height for safety speed activation	2.5	m	*8 '2"*	*ft*
	Internal steering radius	2.4	m	*7 '8"*	*ft*
	External steering radius	4.7	m	*15 '4"*	*ft*
	Maximum capacity (m)	400	Kg	*880*	*lbs*
	Maximum amount of people on platform (n)	3		*3*	
	Tool and material weight (me)	160	Kg	*462.9*	*lbs*
	Maximum slide-out extension deck	1.5	m	*4 '9"*	*ft*
	Maximum capacity with platform extended	400	Kg	*880*	*lbs*
	Max. No. of people with platform extended	3		*3*	
	Maximum drive height	10	m	*32' 9"*	*ft*
	Maximum platform dimensions (extended)	1.6 x 3.9	m	*4 '9" x 12 '7"*	*ft*
	Max. hydraulic pressure	240	Bar	*3480*	*psi*
	Max. pressure of lifting circuit	210	Bar	*3480.9*	*psi*
	Min. pressure of braking circuit	50 ÷ 60	Bar	*725 ÷ 870*	*psi*
	Tyre dimensions (****)	Ø 650 x 300	mm	*25.5" x 11.8"*	*in*
	Tyre type (****)	26 x 12 – 12		*26 x 12 – 12*	
	Transport dimensions with rails installed - STANDARD	2,64 x 1,8 H=2,67	m	*8 '5"x 5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails installed - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=2,67	m	*9 '9"x5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails folded down - STANDARD	2,64 x 1,8 H=1,98	m	*8 '5"x 5 '9"x 6 '4"*	*ft*
	Transport dimensions with rails folded down - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=1,98	m	*9 '9"x5 '9"x 6 '4"*	*ft*
	Machine weight (unloaded) - STANDARD (*)	4180	Kg	*9200*	*lbs*
	Machine weight (unloaded) - WITH LEVELLING OUTRIGGERS (optional) (*)	4530	Kg	*9900*	*lbs*
Stability limit:					
	Longitudinal inclination	2	°	2	°
	Transversal inclination	1	°	1	°
	Maximum wind speed (***)	12.5	m/s	*28*	*mph*
	Maximum manual force:	400	N	*90*	*lbf*
	Max. load per wheel - STANDARD (*)	2290	Kg	*5000*	*lbs*
	Max. load per wheel - WITH LEVELLING OUTRIGGERS (OPTIONAL) (*)	2450	Kg	*5400*	*lbs*
Performance:					
	Drive wheels	4	N	*4*	*No*
	Max. drive speed	4.5	km/h	*2.8*	*mph*
	Safety drive speed	0.4	km/h	*0.3*	*mph*
	Lowering/lifting time (unloaded)	40-45 / 55-60	Sec.	*40-45 / 55-60*	*Sec*
	Oil tank capacity	80	Lt.	*21*	*gal*
	Gradeability	30	%	*35*	*%*
	Max. operating temperature	+50	°C	*122*	*°F*
	Min. operating temperature	-15	°C	*5*	*°F*

Diesel drive power					
	Diesel engine type	YANMAR 3TNV76		YANMAR 3TNV76	
	Motor power	17 Kw	kW	*23*	*hp*
	Starter battery	12V / 100Ah	V/Ah	*12V / 100Ah*	*V/Ah*
	Diesel oil tank capacity	30	Lt.	*8*	*gal*

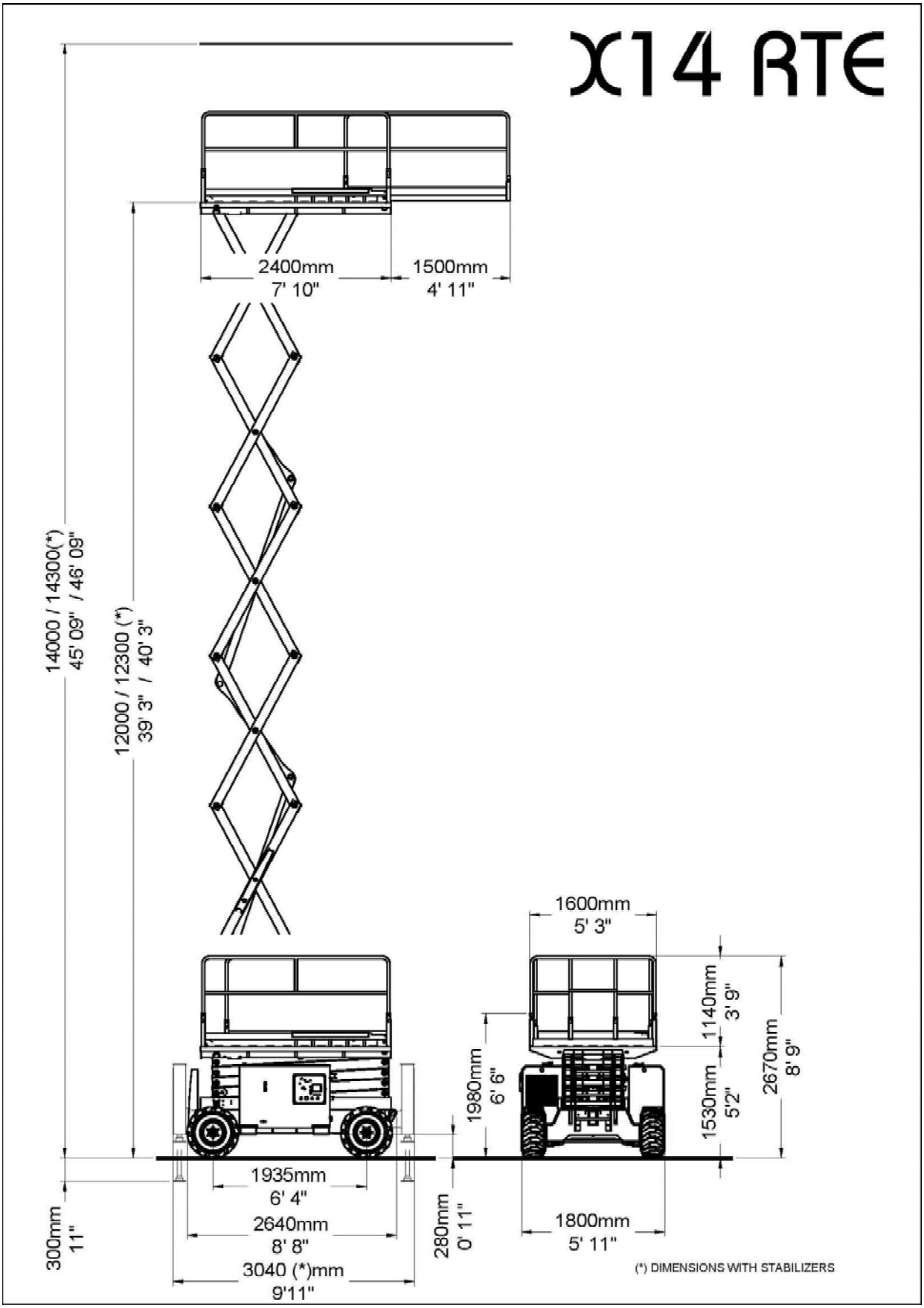
(*) In some cases different limits can be fixed. It is recommended to comply with the data shown on the machine plate.
(**) me = m – (n x 80)
(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.
(****) Standard Tyres filled with puncture-proof polyurethane foam.



2.4 Model X14 RTE

Dimensions:		X14 RTE			
	Maximum working height - STANDARD	14	m	*45 '9"*	*ft*
	Maximum working height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	14.3	m	*46.9"*	*ft*
	Max. platform height - STANDARD	12	m	*39 '3"*	*ft*
	Max. platform height - WITH LEVELLING OUTRIGGERS (OPTIONAL)	12.3	m	*40 '3"*	*ft*
	Ground clearance	280	mm	*11"*	*in*
	Platform height for safety speed activation	2.5	m	*8 '2"*	*ft*
	Internal steering radius	2.4	m	*7 '8"*	*ft*
	External steering radius	4.7	m	*15 '4"*	*ft*
	Maximum capacity (m)	400	Kg	*880*	*lbs*
	Maximum amount of people on platform (n)	3		*3*	
	Tool and material weight (me)	160	Kg	*463*	*lbs*
	Maximum slide-out extension deck	1.5	m	*4 '9"*	*ft*
	Maximum capacity with platform extended	400	Kg	*880*	*lbs*
	Max. No. of people with platform extended	3		*3*	
	Maximum drive height	10	m	*32' 9"*	*ft*
	Maximum platform dimensions (extended)	1.6 x 3.9	m	*4 '9" x 12 '7"*	*ft*
	Max. hydraulic pressure	240	Bar	*3481*	*psi*
	Max. pressure of lifting circuit	210	Bar	*3481*	*psi*
	Min. pressure of braking circuit	50 ÷ 60	Bar	*725 ÷ 870*	*psi*
	Tyre dimensions (****)	Ø 650 x 300	mm	*25.5" x 11.8"*	*in*
	Tyre type (****)	26 x 12 – 12		*26 x 12 – 12*	
	Transport dimensions with rails installed - STANDARD	2,64 x 1,8 H=2,67	m	*8 '5"x 5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails installed - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=2,67	m	*9 '9"x5 '9"x 8 '3"*	*ft*
	Transport dimensions with rails folded down - STANDARD	2,64 x 1,8 H=1,98	m	*8 '5"x 5 '9"x 6 '4"*	*ft*
	Transport dimensions with rails folded down - WITH LEVELLING OUTRIGGERS (OPTIONAL)	3,04 x 1,8 H=1,98	m	*9 '9"x5 '9"x 6 '4"*	*ft*
	Machine weight (unloaded) - STANDARD (*)	4430	Kg	*9700*	*lbs*
	Machine weight (unloaded) - WITH LEVELLING OUTRIGGERS (optional) (*)	4780	Kg	*10500*	*lbs*
Stability limit:					
	Longitudinal inclination	2	°	2	°
	Transversal inclination	1	°	1	°
	Maximum wind speed (***)	12.5	m/s	*28*	*mph*
	Maximum manual force:	400	N	*90*	*lbf*
	Max. load per wheel - STANDARD (*)	2290	Kg	*5000*	*lbs*
	Max. load per wheel - WITH LEVELLING OUTRIGGERS (OPTIONAL) (*)	2450	Kg	*5400*	*lbs*
Performance:					
	Drive wheels	4	N	*4*	*No*
	Max. drive speed	4.5	km/h	*2.8*	*mph*
	Safety drive speed	0.4	km/h	*0.3*	*mph*
	Lowering/lifting time (unloaded)	40-45 / 55-60	Sec.	*40-45 / 55-60*	*Sec*
	Oil tank capacity	80	Lt.	*21*	*gal*
	Gradeability	30	%	*35*	*%*
	Max. operating temperature	+50	°C	*122*	*°F*
	Min. operating temperature	-15	°C	*5*	*°F*
Battery power					
	Standard battery capacity and voltage	48 / 315 (c5)	V/Ah	*48 / 315 (c5)*	*V/Ah*
	Total electrolyte quantity of standard battery	24 x 5,4	Litri	*6.3 x 1.4*	*gal*
	Standard battery weight	528	Kg	*1164*	*lbs*
	Single-phase battery charger (HF)	48 / 45	V/A	*48 / 45*	*V/A*
	Battery charger mains voltage - single phase	230 – 50	V-Hz	*230 - 50*	*V-Hz*
	Max. current absorbed by the battery charger	15	A	*15*	*A*
	Max. installed power	12	kW	*16*	*hp*
	AC electric pump power	12	kW	*16*	*hp*
	Max. absorbed current	300	A	*300*	*A*

(*) In some cases different limits can be fixed. It is recommended to comply with the data shown on the machine plate.
(**) me = m – (n x 80)
(***) Wind speeds higher or equal to 12.5 m/s indicate that the machines can also be used outdoors; Wind speeds equal to 0 m/s indicate that the machines can be used INDOORS ONLY.
(****) Standard non marking tyres filled with puncture-proof polyurethane foam.



2.5 Vibrations and noise

Noise tests have been carried out under the most unfavourable conditions to study the effects on the operator. The level of acoustic pressure weighed (A) at work places does not exceed 82dB(A) for each electrical models.

For all diesel engine models, the level of acoustic pressure weighed (A) at work places does not exceed 110dB(A).

As to vibrations in ordinary working conditions:

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

3. SAFETY PRECAUTIONS

3.1 Personal protective equipment (PPE)

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

Fig. 3

3.2 General safety norms

- Only adults (18 years old), after carefully reading this manual, are allowed to use the machine. The employer is responsible for training.
- The platform is intended for people carriage; therefore, it is necessary to comply with the current local regulations relevant to this class of machines (see paragraphs 1).
- At least two users must operate the machine, one of them on the ground, able to carry out the emergency operations described in this handbook.
- Always keep the machine at a safety distance from power lines as indicated in the next chapters.
- Use the machine according to the capacity values indicated in the technical features section. The identification plate shows the maximum number of people allowed on the platform at any one time, the maximum capacity and the tool and material weight. **Never exceed the indicated figures.**
- Do NOT use the framework of the platform or any of its elements for grounding 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 firm. The machine may not be used if the lighting conditions are not sufficient. The machine is not equipped with any lightening system.
- Before using the machine check its integrity and conservation state.
- During maintenance operations do not dispose of any waste materials in the environment, but comply with current regulations.
- Do not carry out any service or maintenance operations when the machine is connected to the mains supply. Follow the instructions given in the following paragraphs.
- Do not approach the electric and hydraulic system components with sources of heat or flames.
- Do not increase the max. allowed height by means of scaffolds, ladders or other.
- With the machine lifted, do not fasten the platform to any structure (beams, pillars or wall).
- Do not use the machine as a crane, hoist or lift.
- Protect the machine (in particular the platform control panel by means of the specially provided cover- optional) and the operator when working in adverse environmental conditions (painting, de-painting, sand-blasting, washing, etc.).
- Using the machine in bad weather conditions is forbidden; in particular, wind speeds must not exceed the limits indicated in the technical specifications (to measure speeds, see following chapters).
- Machines with a wind speed limit of 0 m/s are to be used indoors only.
- In the event of rain or in parking condition always protect the platform control panel by means of the specially provided cap (optional).
- Do not use the machine in areas where risks of fire or explosion exist.
- Do not use pressurized water jets (high-pressure cleaners) to wash the machine.
- Overloading the work platform is forbidden.
- Avoid knocks and/or contacts with other vehicles and fixed structures.
- Leaving or accessing the work platform is forbidden unless this is in the position required for access or leaving (see the “Accessing the platform” chapter).

3.3.2 Handling

- Before handling the machine check that the connection plugs are disconnected from the power supply source.
- 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 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.
- Backward drive (in the direction of the fixed wheels) does not allow the operator a complete visibility from the control position. This operation shall be carried out with the utmost care.
- While driving the machine with lifted platform the operators are not allowed to place horizontal loads onto the platform (operators on board must not pull ropes, wires, etc.).
- The machine must not be used directly for road transport. Do not use it for material transport (see chapter “Intended use”).
- Do not operate the machine if components boxes are not properly closed.

- Check that in the operating area there are not obstacles or other dangerous elements.
- Pay particular attention to the area above the machine during lifting to avoid any crushing and collisions.
- During operation keep your hands in safety position, the driver has to place them as shown in picture A or B while the transported operator has to keep them as shown in picture C.

Fig. 4

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 device and the red light on the platform control panel turn on, the machine is not correctly positioned (see paragraphs relevant to “General 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 a platform overload controller disabling the platform lifting and lowering in case of overloading. In case of platform overloading when lifted, also drive is disabled. Platform operation can be resumed only after removing the exceeding load. Should the audible alarm and the red light located on the platform control panel turn on, then the platform is overloaded (see chapter "Red warning light overload"). Remove the exceeding load before starting operations again.
- The machine is equipped with a device to avoid the risk of shearing and crushing in the lifting structure in compliance with EN280:2001: the lowering movement is automatically stopped in a position where the vertical distance between the scissor ends is over 50 mm. In this condition the movement alarm warns about the danger condition by increasing its frequency. The operator on the platform must release the lowering control and wait until the alarm stops (about 3 sec.), then he can resume the lowering control (see chapter "Lifting and lowering").
- Electric-powered machines feature a device for checking the state of battery charge (battery protection): when battery charge is at 20% the operator on the platform is informed of this condition through a flashing red light. In this condition lifting is disabled, battery should be immediately charged.
- Do not lean over the platform rails.
- During operations in public areas surround the working area by means of barriers or other suitable signs.
- Do not use the thermic drive power (Diesel or Petrol motor) indoors or in insufficiently ventilated areas.
- Make sure that no people, apart from the operator, are in the area where the machine is operating. While moving the platform or operating the outriggers, the operator should pay particular attention to avoid any contact with the personnel on the ground.
- Specially provided microswitches located on the (optional) levelling outriggers control their position. When the cylinders are lowered, drive is disabled. In order to carry out the drive, lift the pads completely.
- To avoid any improper use, machines with (optional) levelling outriggers are equipped with a suitable microswitch that checks the position of the platform. When the platform is at a height above 3 meters from the ground the levelling outriggers cannot be operated.
- Lift the platform only if the machine is resting on solid and horizontal surfaces.
- Drive the machine with lifted platform only if the ground is solid and horizontal.
- A sensor controls the swinging of the oscillating axle. With platform raised if the wheels of the oscillating axle are not on the same ideal plane as those of the fixed axle (with some tolerance) drive is prevented and a red light will turn on to warn of this condition. In order to be able to drive the machine it is necessary to lower the platform.
- Always place working tools in a steady position to prevent them from falling and hurting the operators on the ground.
- After each work session, always take the keys out of the control panels and keep them in a safe place to prevent unauthorized people from using the machine.

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

3.3.4 Wind speed according to BEAUFORT SCALE

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

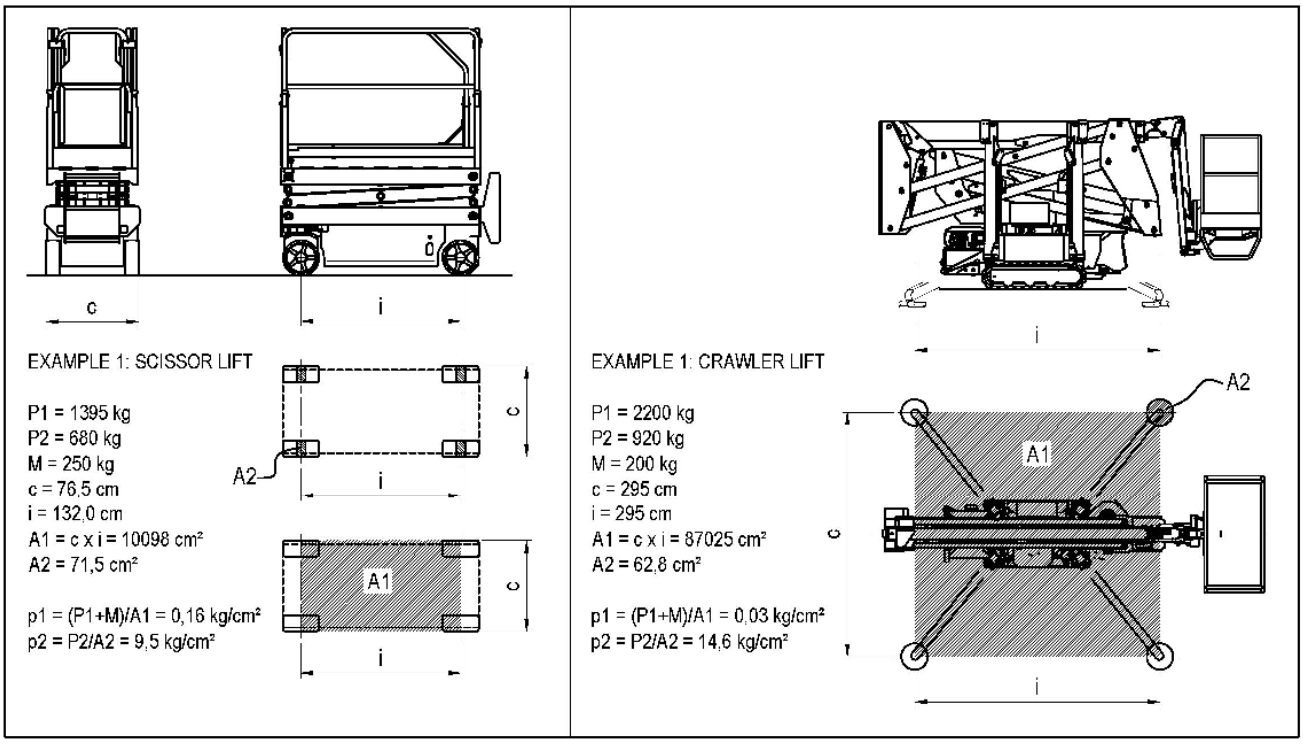
The machines for which the max. wind limit is 0 m/s must be used indoors only. These machines cannot be used outdoors even with no wind.

Beaufort Number	Wind speed (km/h)	Wind speed (m/s)	Wind description	Sea conditions	Land conditions
0	0	<0.28	Calm	Flat	Smoke rises vertically.
1	1-6	0.28–1.7	Light air	Ripples without crests. No whitecaps.	Wind motion visible in smoke.
2	7-11	1.7-3	Light breeze	Small wavelets. Crests of glassy appearance, not breaking.	Wind felt on exposed skin. Leaves rustle.
3	12-19	3-5.3	Gentle breeze	Large wavelets. Scattered white caps.	Leaves and small twigs constantly moving.
4	20-29	5.3-8	Moderate breeze	Small waves with breaking crests. Fairly frequent whitecaps.	Dust and loose paper raise. Small branches begin to move.
5	30-39	8.3-10.8	Fresh breeze	Moderate longer waves. Many whitecaps. Small amounts of spray.	Small trees in leaf begin to sway. Strong breeze
6	40-50	10.8-13.9	Strong breeze	Large waves with foam crests and some spray. Some airborne spray is present.	Large branches in motion. Umbrella use becomes difficult.
7	51-62	13.9-17.2	Near gale / Moderate gale	Sea heaps up and foam begins to streak. Some foam from breaking waves is blown into streaks along wind direction.	Whole trees in motion. Effort needed to walk against the wind.
8	63-75	17.2-20.9	Fresh gale	Moderately high waves with breaking crests forming spindrift. Streaks of foam. Breaking crests forming spindrift.	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	76-87	20.9-24.2	Strong gale	High waves whose crests sometimes roll over. Dense foam is blown along wind direction.	Larger branches break off trees, construction/temporary signs and barricades blown over, damage to circus tents and canopies.
10	88-102	24.2-28.4	Whole gale / Storm	Very high waves with overhanging crests. Large patches of foam from wave crests give the sea a white appearance. Large amounts of airborne spray reduce visibility.	Trees are broken off or uprooted. Considerable damage to structures.
11	103-117	28.4-32.5	Violent storm	Exceptionally high waves. Very large patches of foam cover much of the sea surface. Very large amounts of airborne spray severely reduce visibility.	Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.
12	>117	>32.5	Hurricane	Huge waves. Air is filled with driving spray, sea is completely white with foam and spray.	Some windows may break; mobile homes and poorly constructed sheds and barns are damaged.

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

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

SYMBOL	U.M.	DESCRIPTION	EXPLANATION	FORMULA
P1	Kg	Total machine weight	It represents the weight of the machine, not including nominal load. Note: always refer to the details indicated on the plates affixed to the machine.	-
M	Kg	Nominal Load	The max. load allowed for the work platform.	-
A1	cm²	Area occupied on the ground	Machine supporting area on the ground determined by the result of TRACK x WHEEL BASE.	A1 = c × i
c	cm	Track	Cross width of machine measured outside the wheels. or: Cross width of machine measured between levelling outrigger centres.	-
i	cm	Wheel base	Longitudinal length of machine measured between wheel centres. or: Longitudinal length of machine measured between levelling outrigger centres.	-
A2	cm²	Wheel or levelling outrigger area	Wheel or levelling outrigger ground support area. The wheel support area on the ground must be verified empirically by the operator; the levelling outrigger support area depends on the shape of the support foot.	-
P2	Kg	Max. load on wheel or levelling outrigger	This represents the max. load that can be discharged onto the ground by a wheel or by a levelling outrigger when the machine is in the worst position and load conditions. Note: always refer to the details indicated on the plates affixed to the machine.	-
p1	Kg/cm²	Pressure on ground	Average pressure placed on the ground in idle conditions and supporting the nominal load.	p1 = (P1 + M) / A1
p2	Kg/cm²	Max specific pressure	Max. pressure which a wheel or a levelling outrigger can place on the ground when the machine is in the worst position and load conditions.	p2 = P2 / A2



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

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

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

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

3.3.6 High-tension lines

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

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

3.4 Hazardous situations and/or accidents

- If, during Preliminary 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 safety as provided for by the manufacturer. No preliminary operation is required. To unload the machine, follow the instructions in chapter “Handling and carrying”.
Place the machine on a sturdy enough surface (see paragraph **3.3.5**) and with a gradient below max allowed gradient (see technical characteristics “**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 order with applicable health and safety legislation.

4.2 Preliminary operation checks

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

- Make sure the battery is fully charged and the fuel tank is full.
- The oil level ranges between the min. and max. value (with platform lowered and outriggers lifted).
- The coolant level in the radiator is between the min. and max. value.
- The ground is sufficiently horizontal and solid.
- The machine carries out all operations in safety.
- The wheels and drive engines are properly fixed.
- The wheels are in good condition.
- The rails are fastened to the platform and the gate/s are in automatic reclosing mode.
- The structure does not show clear faults (visually check welding of lifting structure).
- The instructions plates are perfectly readable.
- The platform control panel and the ground emergency control panel, dead-man system included, are perfectly efficient.
- The anchoring points for the harness are in perfect state of conservation.

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

5. USE INSTRUCTIONS

Before using the machine read this chapter thoroughly.

WARNING!

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

5.1 Platform control panel

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

- Turn the machine on/off.
- Move the platform during ordinary working procedures.
- Display some operation parameters (alarms, deadman's working, etc…).

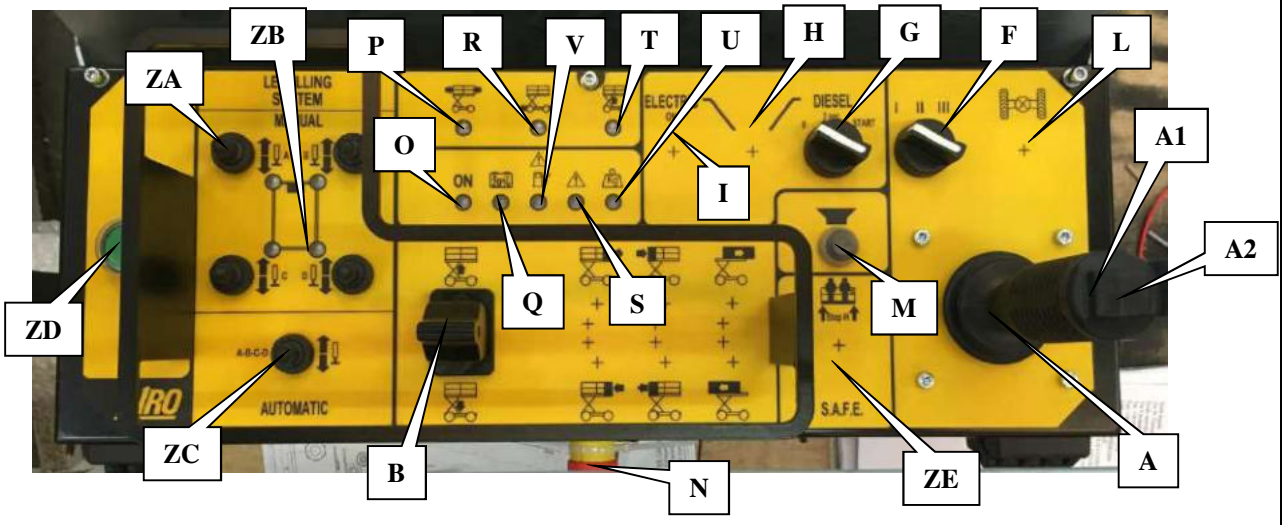


Fig.5

A) Drive and steering proportional joystick control
A1) Left steering control switch
A2) Right steering control switch
B) Lifting/lowering control proportional lever
F) Drive speed selector
G) Diesel engine start button
H) Diesel/electric drive power selector (optional)
I) Single-phase/three-phase electric pump start/stop button (optional)
L) Differential lock button (series/parallel connection drive motors)
M Manual horn
N) Emergency STOP button
O) Enabled control panel warning light
P) Sliding platform position warning light (only for machines with sliding platform)
Q) Flat battery warning light – Electric models
R) Drive enable warning light
S) Danger warning light (unsteady position and faults indicator)
T) Lifting enable warning light
U) Overload alarm warning light
V) Diesel engine fault / low fuel level warning light – Thermic models
ZA) Manual levelling outriggers control switches (optional)
ZB) Levelling outriggers position warning lights (optional)
ZC) Automatic levelling control switch (optional)

ZD) Dead-man button
ZE) Secondary safety system “S.A.F.E.” button (optional)

Drive, lifting and (optional) platform extension/retraction operations are controlled by the proportional joystick controls **A-B-C-D-E**; it is therefore possible to adjust movement speed by means of the relative controls. To avoid sudden shakes during movements, it is advisable to operate the proportional joystick controls gradually.

For safety reasons, to operate the machine, it is necessary to press “dead-man” button **ZD** at platform before operating the controls.

WARNING!

Once the dead-man button is pressed, you have 5 seconds to activate the controls. If no operation is performed after 5 seconds, the control panel is disabled.
The condition of disabled control panel is reported by the green flashing led (see paragraph “Warning lights”). To operate the machine again press the dead-man button.

5.1.1 Drive and steering

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

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

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

a) Press and release "dead-man" button **ZD** located on the platform; the green led O will light up steady indicating its enabling.
b) Within 5 seconds from the green steady led **O** lighting up, set the proportional joystick control **A** forward for forward drive or backward for reverse drive.

WARNING!!
Drive and steering controls can take place at the same time but they are interlocked with other platform movement controls (lifting/lowering/extension/retraction/levelling outriggers).

Drive control is active only if drive enable green warning light (R) is ON. If it is OFF, drive control is disabled. See paragraph "Warning lights".

With platform completely lowered, operating the drive speed selector **F**, and/or differential lock button **L**, different drive speeds can be selected. Due to the rigid frame of the machine, when driving on uneven grounds, one of the two driving wheels may be lifted thus absorbing all oil capacity and idling. In this condition the machine cannot move. To overcome this condition, press the differential lock button **L**.

NOTE: To achieve **maximum drive speed**, set speed selector **F** to position **III**, hold down the differential lock button **L** and press down the proportional joystick **A**.
To operate on high ascending slopes (e.g. while loading the machine onto a truck) set the speed selector F to position I.
To operate on high descending slopes (e.g. while unloading the machine from a truck) set the speed selector F to position I.

With lifted platform, safety drive speed is automatically enabled, therefore neither speed selector F nor differential locking button L are active.

WARNING!! The differential lock button (L) is to be used by the operator to drive the machine on uneven grounds, if one of the driving wheels is lifted and absorbs the whole drive power and to perform rapid straightforward movements. Do not hold down this press-button while steering.

To steer, press buttons **A1** or **A2** located on the drive proportional joystick control (press the right button for right steering and vice versa). Also the steering control is enabled by the dead-man pedal or dead-man button and is possible only if:

- enabled control station green warning led **O** is ON;
- drive enable green warning led **R** is ON.

5.1.2 Drive with operator on the ground

If drive operations are to be carried out not from the preset control panel on the platform (e.g. transit through doors where the machine height is too high) you can proceed as follows:

- Lower the machine completely.
- Remove the platform control panel.
- If necessary, remove or fold down the rails to further reduce the overall height.
- Select the slow drive speed I
- Carry out the movements at a safety distance from the machine of at least 1 metre
- Pay attention to the directions of drive and steering, keeping in mind that the indications on the "platform control panel" refer to its preset position (fixed to the rails).

IT IS FORBIDDEN
To lift/lower the machine using the ground control panel

5.1.3 Platform lifting/lowering

To lift/lower the platform carry out the following operations in sequence:

a) Press and release "dead-man" button **ZD** located on the platform; the green led O will light up steady indicating its enabling.
b) Within 5 seconds from the green steady led **O** lighting up, set the proportional joystick control **B** forward for forward drive or backward for reverse drive.

By operating the joystick control gradually smooth accelerations and decelerations can be achieved during platform lifting. Platform lowering is performed at one speed only.

WARNING!!
Control the platform lifting movement only on sufficiently solid and flat surfaces.

Lifting control is active only if lifting enable green warning light (T) is ON. If it is OFF, lifting control is stopped. See paragraph "Warning lights".

NOTE:
The machine is equipped with a device to avoid the risk of shearing and crushing in the lifting structure in compliance with "EN280". The lowering movement is automatically stopped in a position where the vertical distance between the scissor ends is over 50 mm. In this condition the movement alarm warns about the danger condition by increasing its frequency. The operator on the platform must release the lowering control and wait until the alarm stops (about 3 sec.), then he can resume the lowering control.

5.1.4 Manual extension of the platform

The extension of the mobile platform is carried out manually.
To extend the mobile platform (Figure 6):

- Press lock pedal A.
- Manually push the platform from the inclined part of the rails while holding down pedal A.
- Release pedal A close to one of the provided slots depending on the extension you wish to achieve.
- Make sure that lock pedal A is actually inserted into the slot to be sure that the mobile platform is locked.

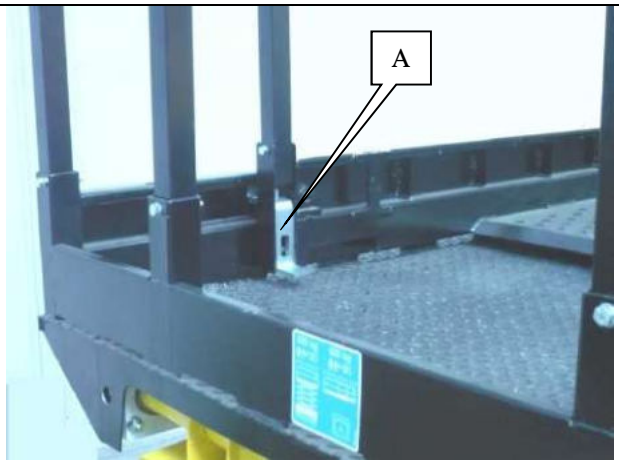


Fig. 6

5.1.5 Levelling outriggers control (OPTIONAL)

Some models are fitted with four levelling outriggers to allow the machine to be positioned on inclined grounds. To activate the levelling outriggers it is necessary to:

a) Press and release "dead-man" button **ZD** located on the platform; the green led O will light up steady indicating its enabling;
b) Within 5 seconds from the green steady led **O** lighting up set the desired switch.

WARNING!!
Always check the firmness of the ground before lifting the platform. Place strong wooden boards under the outriggers pads so as to spread the load on a wider surface.
While using the outriggers, an automatic system stops platform lifting in the event that one of the pads does not rest perfectly on the ground. The levelling outrigger pads are resting on the ground when all warning lights ZB are ON.
Specially provided microswitches located on the levelling outriggers control their position. With lowered outriggers – even if not resting on the ground – drive is disabled. If the pads are neither resting on the ground nor completely lifted, the warning lights ZB are flashing. In order to carry out the drive, lift the pads completely. When warning lights ZB turn off, pads are completely lifted.
To avoid any improper use, machines with levelling outriggers are equipped with a suitable microswitch that checks the position of the platform. When the platform is at a height above 3 meters (approx.) from the ground the levelling outriggers cannot be operated.
The levelling outriggers operation is signalled by warning lights ZB. See paragraph "Warning lights".

5.1.5.1 Levelling outriggers manual control (OPTIONAL)

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

- Lever/Warning light **A** = Front left levelling jack
- Lever/Warning light **B** = Front right levelling jack
- Lever/Warning light **C** = Rear left levelling jack
- Lever/Warning light **D** = Rear right levelling jack

5.1.5.2 Levelling outriggers manual control(OPTIONAL)

The machine can be supplied with an optional automatic levelling system. The system has two operating modes:
- **manual mode** (see previous paragraph)
- **automatic mode**

For **AUTOMATIC LEVELLING** set the control lever **ZC** downwards. The control system will independently control the levelling outriggers until the machine is levelled.
Levelling is correct when:
- All four warning lights **ZB** turn on.
- Inclination alarm warning light S turns off (if an alarm condition due to instability was present before levelling control) and lifting enable warning light T turns on at the same time and the audible alarm is activated.

- For **AUTOMATIC RETRACTION** of all pads, set the control lever ZC upwards. The control system will retract all pads up to the upper end stop. Retraction is complete when all warning lights ZB turn off and audible alarm is activated.

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

5.1.6 Other functions of the platform control panel.

5.1.6.1 Selection of electric/thermic propulsion (OPTIONAL)

On a few models the drive power type can be selected using the selector **H** Set it to position ELECTRIC to use the electric power drive (battery or mains power); set it to position **THERMIC** to use the thermic drive power (Diesel engine for models ED; petrol engine for models EB).

5.1.6.2 Electric pump start/stop button (OPTIONAL)

Diesel-powered models can be equipped, on request, with an electric pump (230V single-phase or 380V three-phase) as an alternative to thermic drive power for short works indoors.
If the machine is correctly connected to the mains power (230 V or 380V depending on the available function), and selector **H** is in position **ELECTRIC**, by pressing button **I** – before operating the "dead-man" pedal ZE or "dead-man" button ZD – the pump is turned on (if off) or turned off (if on).
The electric pump is ON when the green led close to button I is lighting up.

In the event of a 380V three-phase electric pump, the machine controls are enabled only after 3 sec. after pump starting.

WARNING!
Always check the position of the cable during the movements.

5.1.6.3 Heat engine start button (models" D", "ED", "B", EB")

It starts the heat engine (Diesel or Petrol) on dual-powered models (ED or EB) and on thermal-powered models (D or B). With selector **H** in position THERMIC operating the switch G:

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

5.1.6.4 Manual horn

It warns that the machine is moving. It is manually operated by means of the press-button M.

5.1.6.5 Emergency stop button

By pressing the red STOP button **N** all control functions are interrupted. Normal functions are enabled by rotating the button of 1/4 turn clockwise.

5.1.6.6 Secondary safety system "S.A.F.E." (OPTIONAL)

S.A.F.E. (Self Adjustment From Entrapment) is a secondary safety system that reduces to a minimum the risk of the operators being crushed while working in narrow spaces and limited by height. With the S.A.F.E. system the operator on the platform can limit the maximum working height by avoiding as far as possible any impacts while the platform is lifting.

To limit the maximum working height the operator must lift the platform up to the desired height and, after making sure he is safe from any risks, with machine ON and at a standstill, he has to save this height by pressing button **ZE** for at least 5 seconds, until the warning light built-in the button turns on and an audible double beep is produced by the platform. The acquired position becomes the maximum lifting limit and the platform will limit its maximum height up to the limit set even after the machine is turned on and off several times.
To disable the system and return to use the machine up to the maximum possible height, press button again ZE for at least 5 seconds until the warning light built-in the button turns off.

WARNING!

The S.A.F.E. system is not a safety system, but an aid to the platform operator who should be in any case trained in the use of the machine and able to recognize any residual risks related to the working environment.

5.1.6.7 Warning lights

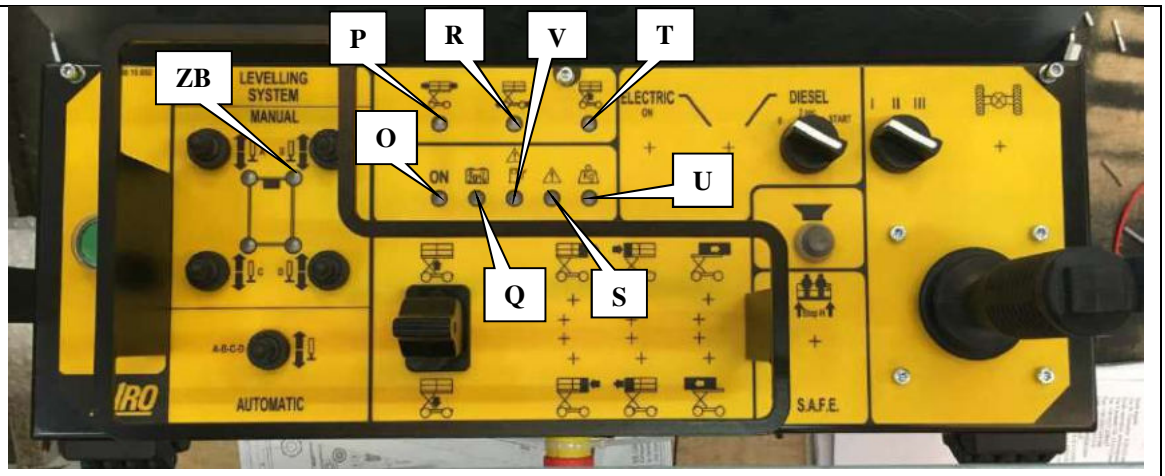


Fig. 7

5.1.6.8 Enabled control panel green warning light (O)

On with flashing light when the machine is turned on. If the platform control panel has been selected and this light flashes the controls are not enabled because the dead-man button was not pressed or more than 5 seconds went by since its release and no operation was performed.
On steady with machine on and dead-man button pressed for less than 5 seconds. With platform control panel all controls are enabled (unless other types of warning show up – see next paragraphs).

5.1.6.9 Sliding platform position green warning light (P - only for machines with sliding platform - NOT AVAILABLE)

This light is present on machines fitted with sliding platform (the whole platform can slide longitudinally).
When sliding platform is not in central position, the warning light is OFF, and only platform extension/retraction is possible.
When it is ON, the sliding platform is in central position, and the machine operation can be resumed (unless other warnings – see next/previous paragraphs).

5.1.6.10 Flat battery red warning light (Q – only Electric and Electro/diesel models)

Flashing when the battery charge is at 20% (only models "E" or "ED" with current continuous electric pump). In this condition, platform lifting is disabled. Batteries should be immediately recharged.

5.1.6.11 Drive enable green warning light (R)

This light is ON when drive can be carried out. **Drive movement is inhibited** (**green light OFF**) when:

a) One or more levelling outriggers are not completely retracted (did not reach the upper end stop). See also warning lights ZB – only machines with levelling outriggers.
b) Platform is above the maximum drive height (see paragraph “Technical features”).
c) Sliding platform is “out of center”. See also green warning light P – only machines with sliding platform.
d) With lifted platform the machine is on a ground inclined over the max. allowed inclination. See warning lights **S** and **T**.
e) With lifted platform, the platform is overloaded. See warning lights **U** and **T**.
f) With the platform raised, the oscillating axle is locked in an inclined position. See also warning light S.

5.1.6.12Danger red warning light (S)

It flashes quickly for 4 seconds together with the audible alarm at the machine start-up in case of fault during safety test on controls (pedal, joystick control, switches, etc.) during machine start-up.
It is lit up steady together with the audible alarm (just in case of lifted platform) when the chassis inclination exceeds the allowed value. Lifting and platform extractions are disabled (in case of electric control). If platform is lifted, drive is also disabled. It is necessary to lower the platform completely and then place the machine onto a flat surface.
On with fixed light without activation of audible alarm when, with the platform raised, the oscillating axle is locked in an inclined position and drive is prevented.

WARNING!

The activation of this indicator warns of a dangerous situation since the machine has reached a dangerous inclination level for the machine stability.

5.1.6.13Lifting enable green warning light (T)

This light is ON when lifting can be carried out, i.e. when:

a) All or none of the pads are resting on the ground (no pads resting means that the machine rests on its wheels). See also warning lights ZB – only machines with levelling outriggers.
b) Machine is in levelled position. See also warning light **S**.
c) Overload alarm is not present. See also warning light **U**.
d) Flat battery alarm is not present. See also warning light **Q** – only models "E" and "ED".

5.1.6.14Overload red warning light (U)

Lit up steady with activation of audible alarm with a platform overload exceeding 30% the nominal load. If platform is lifted, the machine is completely locked. If platform is completely lowered all driving/steering operations are still possible but lifting is disabled. Remove the overload before using the machine again.
Fast flashing in case of fault in the overload controller. With lifted platform the machine is completely locked.

WARNING!

The activation of this indicator is a synonym of danger since the load at platform is exceeding or no overload controller is active upon signalling.

For adjustment or activation in emergency situations read the MAINTENANCE chapter.

5.1.6.15Diesel engine fault / low fuel red warning light (V)

This warning light indicates malfunctioning of diesel engine or low fuel.
On steady with machine on; platform control panel; Diesel power selected. Diesel Engine off ready for start-up. Insufficient motor oil pressure.
Slow flashing in the event of the motor head overheating. If on, it stops the Diesel motor; if off, it prevents the Diesel motor from starting.
Fast flashing in the event of low fuel. This warning is active only when the motor is running. OPTIONAL
Double fast flashing when the fuse on the solenoid valve of the air/oil exchanger (if present) is burnt out. WARNING! Change the fuse. Danger of overheating of hydraulic oil. OPTIONAL

5.2 Ground control panel

The ground control panel is located on the chassis (see paragraph "Location of main components") and is used to:

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

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

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

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

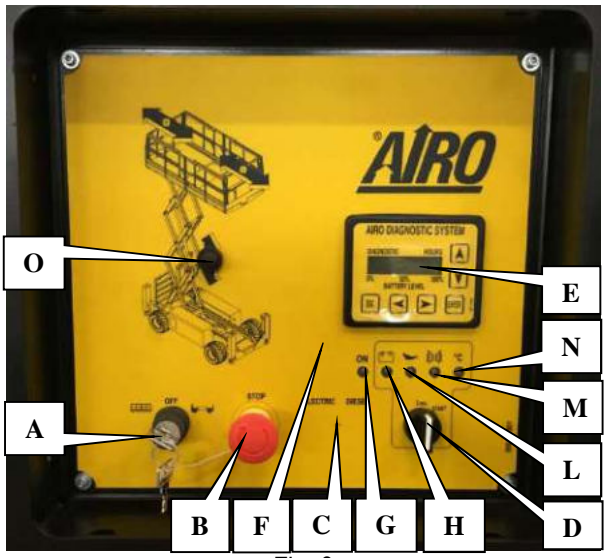


Fig. 8

A) ON-OFF key and control panel selector (ground/platform)
B) Emergency STOP button
C) DIESEL/ELECTRIC drive power selector (optional)
D) Heat engine starting button (models “D” and “ED”)
E) User interface display
F) Battery charger warning light (models “E” and “ED”)
G) Enabled control panel warning light
H) Alternator warning light (models “D” and “ED”)
L) Oil warning light (models “D” and “ED”)
M Air filter warning light (models “D” and “ED”) (OPTIONAL)
N) Motor head temperature warning light (models “D” and “ED”) (OPTIONAL)
O) Lifting/lowering lever

5.2.1 On-off key and control panel selector (A)

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

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

5.2.2 Emergency STOP button (B)

By pressing this button the machine (as well as the heat engine on models "D", "ED" and "EB") is completely stopped. By rotating it of 1/4 turn (clockwise) the machine can be turned ON by means of the ON-OFF key.

5.2.3 Diesel/electric drive power selector (C)

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

- If ELECTRIC is selected and the ON-OFF key is kept active in position “ground controls” the electric pump is started while operating the ground controls.
- If DIESEL is selected and the ON-OFF key is kept active in position “ground controls” the Diesel engine can be started.

5.2.4 Heat motor start button (D)

Holding the ON-OFF key in position “ground control panel” after selecting the DIESEL power, the diesel engine can be started by means of the relevant switch.

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

5.2.5 User interface display (E)

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

- Display the operation parameters of the machine during normal functioning or in the event of a fault;
- Working hours of Diesel engine (when Diesel power is selected the working hours are displayed in the format HOURS: MINUTES and final letter D).
- Working hours of the electric pump (when electric power is selected the working hours are displayed in the format HOURS:MINUTES and final letter E).
- Charge level of the battery (only electrical models E).

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

5.2.6 Battery charger warning light (F)

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

5.2.7 Enabled control panel warning light (G)

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

5.2.8 Diesel engine warning lights (H-L-M-N)

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

5.2.9 Platform lifting/lowering lever (O)

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

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

5.2.10 Movement alarm

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 Platform access

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

To get on the platform:

- Get on the ladder hanging on to the rungs, the ladder side rails or the entry guard rails.
- Raise the bar and get on board.

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

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

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

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

Fig. 9

5.4 Machine start-up

To start the machine the operator shall:

- Release the stop button on the ground control panel by rotating it of 1/4 turn clockwise.
- Turn the on-off key on the ground control panel to "Platform" position.
- Remove the starting key and hand it over to a person in charge on ground, properly informed of the use of the emergency controls.
- Get onto the platform.
- Release the stop button on the platform control panel (see previous paragraphs).

For ELECTRIC-POWERED machines (models “E”), at this point the various functions can be performed by thoroughly following the instructions given in the previous paragraphs. To turn on the machine, the battery charger must be disconnected from the mains. If the battery charger is working, the machine is off and cannot be turned on.

On dual-powered models Electric/Diesel or Electric Petrol (models “ED” or “EB”), it is necessary to select the drive power type by means of the selector. To use the electric drive power once this option has been selected the operator can start performing the various functions by following the instructions given in the previous paragraphs. To use the thermic drive power read the next paragraphs to start the heat engine.

For DIESEL-powered machines (models “D”), read the following paragraphs concerning the heat engine start-up procedure.

5.4.1 Heat engine start-up

By turning the starter key on the platform control panel:

- To “0” position the Diesel engine stops (models “D” and “ED”).
- To “3 sec” position the plugs pre-heating takes place (only engines with plugs) (models “D” and “ED”).
- To “Start” position the motor starts.

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

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

NOTE: The Diesel engine can be started only if the platform green warning light ON is flashing.

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

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

To start the electric pump:

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

NOTE The operations carried out with 230V electric pump are slightly slower than those with diesel motor.

Fig. 10

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

5.4.3 Starting the 380V three-phase electric pump (OPTIONAL)

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

To start the three-phase electrical pump:

1) Insert the 380 V plug of the power cable into socket (**A**) on the chassis.
2) Set the switches (**C**) shown in figure to ON position.
3) Set the angular red switch (**F**) to ON position turning it downwards or upwards. If the connection has been successfully carried out it is possible to start the electrical pump as indicated in next paragraphs. On the contrary, in the event of a phase fault in the electric power the audible alarm is automatically enabled, and the electrical pump cannot be started. In this case it is possible to compensate the power phases by turning the angular red switch (F) on the electric case by 90°.
4) To start the electric pump with the platform controls:
   - Select the platform control panel with the locking key switch on the ground control unit.
   - Unlock the push-button turning by a ¼ of turn clockwise.
   - Set the power selector to "Electric" position.
   - Select the 380V power with selector.
   - Press the button (**H**) When on, the green warning light indicates that the three-phase electric pump is turned on.
   - Wait 5 seconds before moving the machine.
5) To stop the electric pump press button (H) again.

Fig. 11

NOTE The platform with 380V three-phase power can be operated only from the platform.
The operations carried out with 380V electrical pump are slightly slower than those with diesel engine.

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

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

5.5 Machine stop

5.5.1 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.

5.5.2 Emergency stop button

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

On the platform control panel:

- Press the emergency stop button on the control panel and the machine is turned off.

On the ground control panel:

- Press the emergency stop button and the machine (all models) and the heat engine (models “D”, “ED”, “EB”) are stopped.
- By pressing the power emergency stop button, thus cutting out machine power (power circuit cut-out).

To resume the operations:

On the platform control panel:

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

On the ground control panel:

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

5.5.3 Diesel engine stop

In order to stop the Diesel engine:

On the platform control panel:

- Turn the starting key anticlockwise to "0" position.
- Otherwise, press the emergency stop button.

On the ground control panel:

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

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

5.5.4 Stopping the 380V three-phase or 230V single-phase electrical pump (optional)

To stop the electrical pump (optional):

On the platform control panel:
- Press the stop button.
- Otherwise, press the emergency stop button.

On the ground control panel:
- Press the emergency stop button.

5.6 Manual emergency lowering

This function is to be used only in emergency situations, when no motive power is available.
IT IS FORBIDDEN to use the manual emergency lowering control to lower the platform with overloads.

5.6.1 Manual emergency lowering: Standard control

Fig. 12

In case of fault in the electric or hydraulic system, to carry out the emergency manual lowering pull the knobs indicated in (Figure) to the outside.
To operate the manual lowering it is necessary to pull both handles with the sequence indicated on the instruction plate on the machine.
Caution, the emergency control can be stopped at any time by releasing the knobs.

5.6.1 Manual emergency lowering: Optional control with manual pump

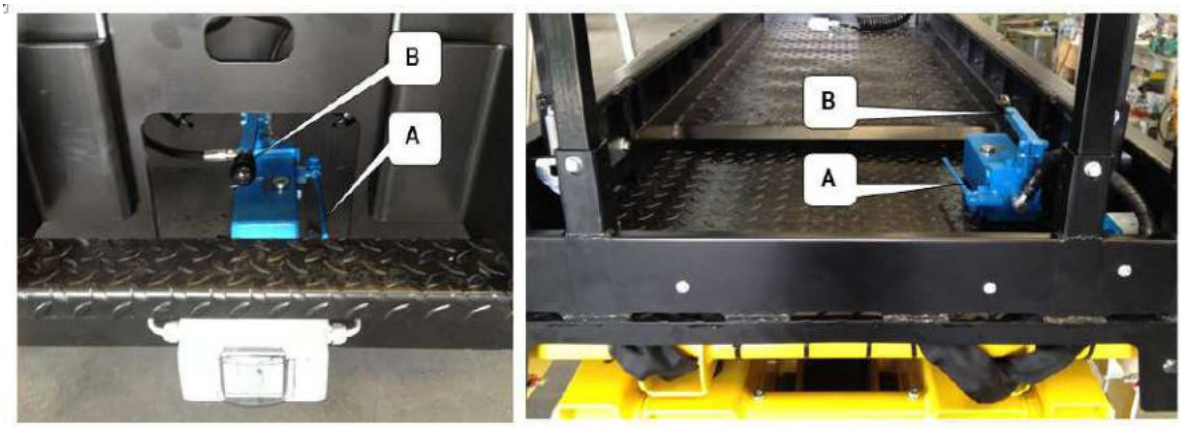


Fig. 13

On request the machines can be equipped with double emergency lowering from the ground and the platform, as shown in the pictures above. The manual pump on the platform is protected by a metal protection fixed to the platform deck through two threaded knobs. So it is necessary to remove the protection in advance in order to operate it.

In case of fault in the electric or hydraulic system, to carry out the manual emergency lowering procedure hold down the lateral lever A and operate the superior lever **B**. Lever **B** can be operated many times before obtaining the lowering movement.

Caution, the emergency control can be stopped at any time by releasing the lateral lever **A**.

5.7 Socket for electric tool connection (optional)

The work platform can be equipped with a socket (230V Ac) enabling the operator to connect the electric tools necessary to carry out his operations.

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

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

Fig. 14

⚠ Connect to the power mains having the following features:

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

5.8 Fuel level and re-fuelling (models “ED”, “D”)

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

This operation is to be carried out by visually checking the fuel level through the visual level on the **A** tank.

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

Refuel through filler **B**.

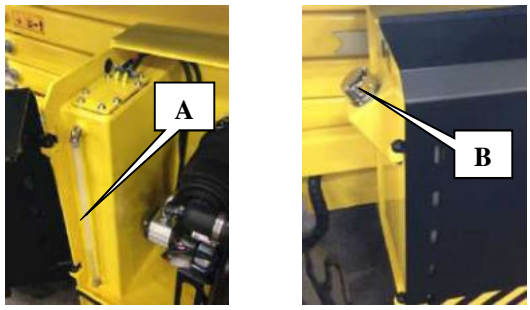


Fig.15

5.9 End of work

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

- Always set the machine to rest position (platform completely lowered).
- Press the emergency Stop button on the ground control panel.
- Remove the keys from the control panel to prevent unauthorized people from using the machine.
- Recharge the battery according to the instructions given in section "Maintenance" (models “E” and “ED” only).
- To fill the tank (if it applies).

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 platform is completely lowered (or within a given height according to specific needs and further to checks) the machine can be handled (i.e. drive can be performed) at different speeds to be freely selected by the user.
With platform at a given height, the drive speed is automatically limited, and cannot be changed.
The section TECHNICAL FEATURES indicates the limits concerning drive for each model.

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 machine when platform is lifted unless the ground is horizontal, flat and steady.

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

Backward drive (in the direction of the fixed wheels) does not allow the operator a complete visibility from the control position. This operation shall be carried out with the utmost care.

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

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

Do not use the machine to tow other vehicles.

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

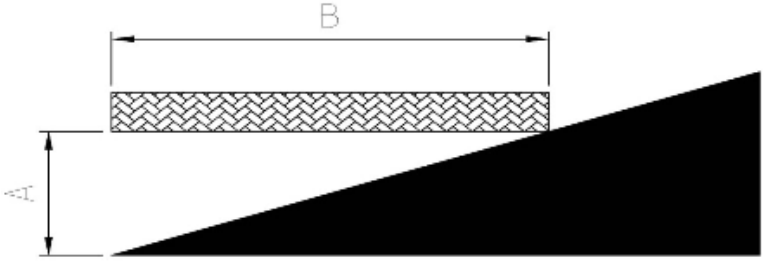
6.2 Carrying

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

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

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

- **By means of loading ramps and translation controls** located on the platform to load it directly onto the vehicle (if ramp slope is within the gradeability described in paragraph "TECHNICAL FEATURES" and the 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. If the slope exceeds the gradeability, the machine is to be towed by means of a windlass only if the operator on the platform simultaneously activates the drive control to release the parking brakes. 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 4 angles of the machine, it can be lifted by means of **hooks and steel ropes** (with safety factor = 5, see machine weight in Technical Data) connected to the provided holes as indicated in the picture.

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

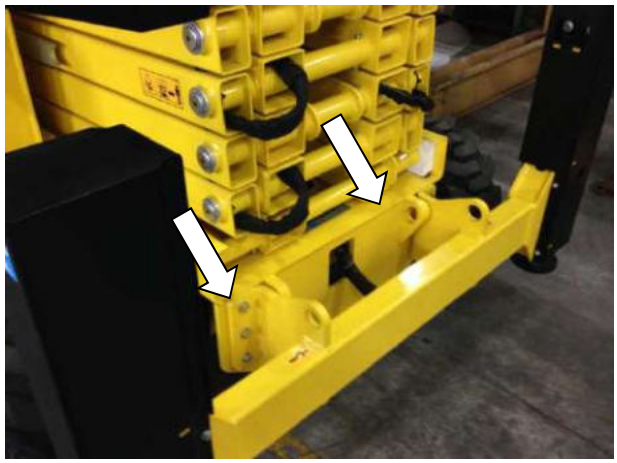


Fig.16

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

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

6.2.1 Fold-down rails

The machines is fitted with rails folding down to the inside of the platform. Folding down the rails it is possible to reduce the height of the machine for:

- Transport.
- Passage through lowered areas (e.g. doors)

To fold down the rails follow this procedure:

1) Extend the mobile platform and lock it in the indicated position.
2) Remove the control panel.
3) Raise and turn the front rail to the inside.
4) Remove the locking pins of the two side sliding rails.
5) Turn to the inside and press downwards the side sliding rails.
6) Remove the locking pins of the entrance rail.
7) Raise and turn the entrance rail to the inside.
8) Remove the locking pins of the two fixed side rails.
9) Lift and turn the two side fixed rails to the inside.

WARNING!!
This operation is only for reducing the height of the stowed machine to facilitate carrying operations.
IT IS ABSOLUTELY FORBIDDEN to lift the platform when personnel is on board if rails are not raised and locked by their relevant latches.

RAILS FOLDING-DOWN SEQUENCE

1

2

3

4

5

6

7

8

9

10

6.3 Emergency towing of the machine

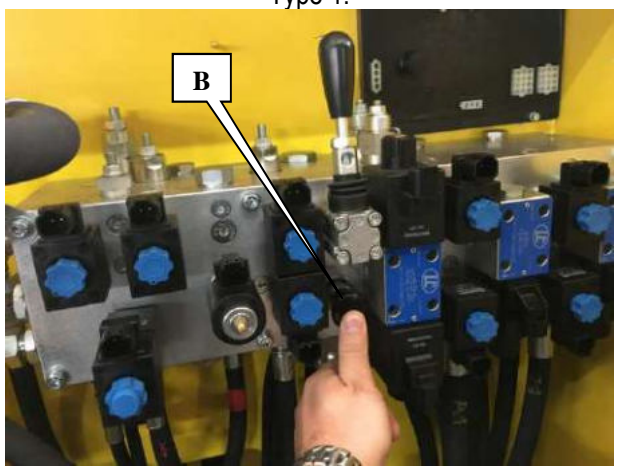
In the event of a fault, carry out the following operations to tow the machine:

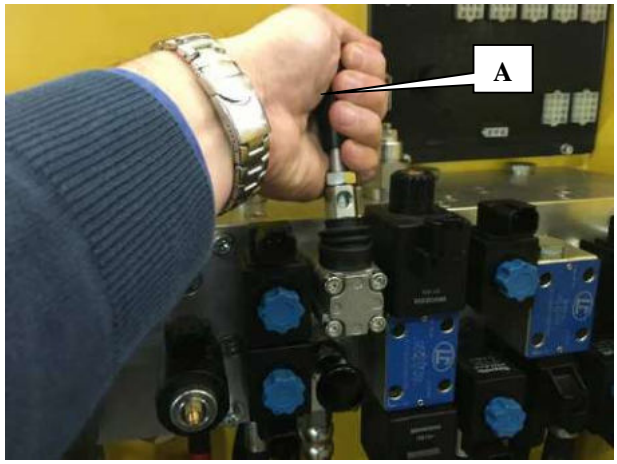
- Hook the machine to the provided holes (the same used for lifting – see previous pictures).
- Screw knob B completely on the hydraulic block.
- Activate the manual pump until the control is bound; by doing so the parking brakes are unlocked.
- Tow at a very slow speed (remember that when the machine is being towed, brakes are out of order).

At the end of towing operation, resume initial conditions:

- Pull out knob B.

Type 1:





Type 2:

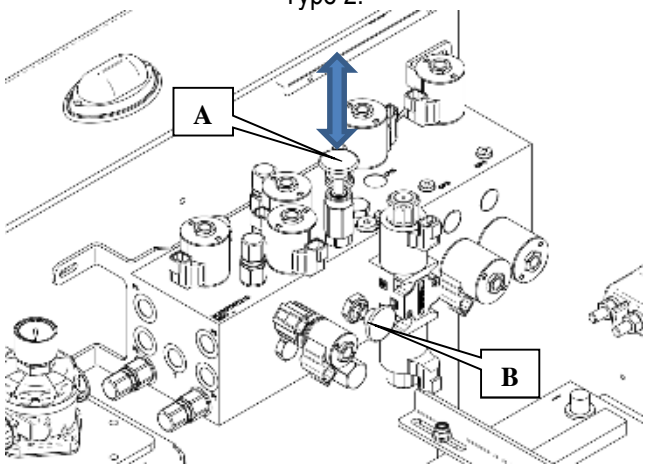


Fig. 17

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

Tow only on a flat ground.

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

7. MAINTENANCE

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

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

Many of the maintenance operations require access to the side compartments situated on the chassis. **To open** the side doors (A):

- Release the rubber quick-release fastener (B) as shown in the figure;
- Insert the provided key in the hole (C) and rotate as shown in the figure.
- Pull the side door (A) toward the outside.

To close the side doors to perform the above operations in reverse order.

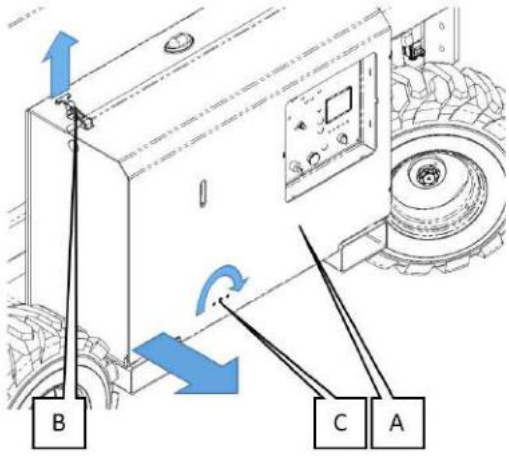


Fig. 18

7.1 Safety lock for maintenance operations

Before carrying out any maintenance or repairs to it, activate the lifting structure locking system.

Watch the pictures aside to understand how the lifting locking structure works before carrying out any maintenance or repairs to it.

- Unscrew knobs **B** completely (on both sides of the lifting structure).
- Rotate safety bars A by setting them in vertical position.
- Lower the structure until it rests on bars A firmly.
- Check the correct positioning of bars A.

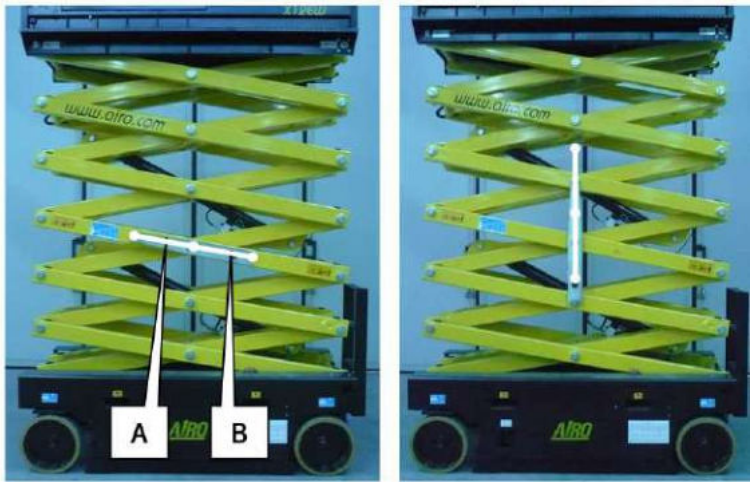


Fig. 19

7.2 Machine cleaning

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

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

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

After washing the machine, always:

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

7.3 General maintenance

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

Operation	Frequency
Screw tightening (see paragraph "Various adjustments")	After the first 10 working hours
Oil level check in hydraulic tank	After the first 10 working hours
Check of the battery state (charge and liquid level)	Every day
Coolant level check in the radiator (models “RTD”)	Every day
Check of deformation of tubes and cables	Every week
Check of stickers and code plates	Every month
Articulated joints and sliding blocks greasing	Every month
Oil level check in hydraulic tank	Every month
Check of heat engine fixing on elastic supports	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
Pressure relief valve calibration check	Every year
Lifting circuit pressure relief valve calibration check	Every year
Brake system operation check	Every year
Air purging from oscillating axe cylinders	Every year
Inclinometer operation check	Every year
Platform overload controller operation check and adjustment	Every year
M1 microswitch operation check	Every year
Operation check of Microswitch M1S (if available)	Every year
Operation check of Microswitches ST1A÷ST4A and STP1÷STP4 (machines with levelling outriggers)	Every year
Operation check of Microswitch M13 on oscillating axle	Every year
Dead-man switch check efficiency	Every year
Platform extraction clearance adjustment	Every year
Hydraulic filter replacement	Every two years
Total oil change in hydraulic tank	Every two years

⚠ **DIESEL (D) AND ELECTRIC-DIESEL (ED) MODELS. As it is possible to install different types of Diesel engines, refer to the instructions manual of the engine manufacturer for all maintenance operations.**

⚠ **IT IS NECESSARY**

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

7.3.1 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) Wheels nuts and wheels nuts blocking pins
2) Traction motor fixing screws
3) Steering cylinder fixing screws
4) Platform and guard rails fixing screws
5) Hydraulic fittings
6) Booms pins locking nuts and rings
7) Elastic supports of heat motor
8) Mobile platform mechanical end stops

For torque wrench setting refer to the table below.

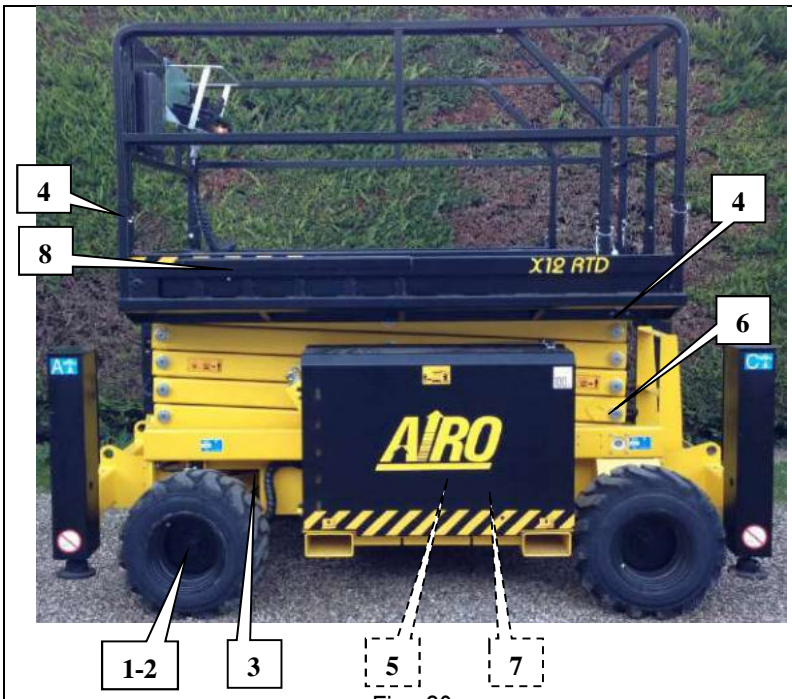


Fig. 20

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

7.3.2 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 sliding guides of the:

a) Sliding blocks/rolls of the extensible structure on the chassis.
b) Sliding blocks/rolls of the extensible structure under the platform.
c) Counter-pressure sliding blocks/rolls of the mobile platform.

At least once a month lubricate:

d) The support pins of the steering wheels equipped with greaser.
e) The pivots of the oscillating axle.
f) The supports of the levelling jack cylinders.

Fig. 21

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

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

Before greasing, clean thoroughly using a wet cloth. Grease all points indicated in the picture aside (and all articulated joints equipped with greaser) with grease type:

ESSO BEACON-EP2

or similar.

(OPTIONAL BIODEGRADABLE OIL KIT)
PANOLIN BIOGREASE 2

7.3.3 Diesel Motor

For all maintenance operations relating to the Diesel engine refer to the manual of instructions of the manufacturer of the engine that is supplied with the machine.

The diesel engine (A) is housed on a removable support (B) to facilitate access to accessories/devices located in the rear area.

To extract the diesel engine, unlock the lever (C) as shown in the figure and release it from the housing and then use the handle (D) and pull outward.

To reposition the engine in its housing repeat the above operations in reverse.

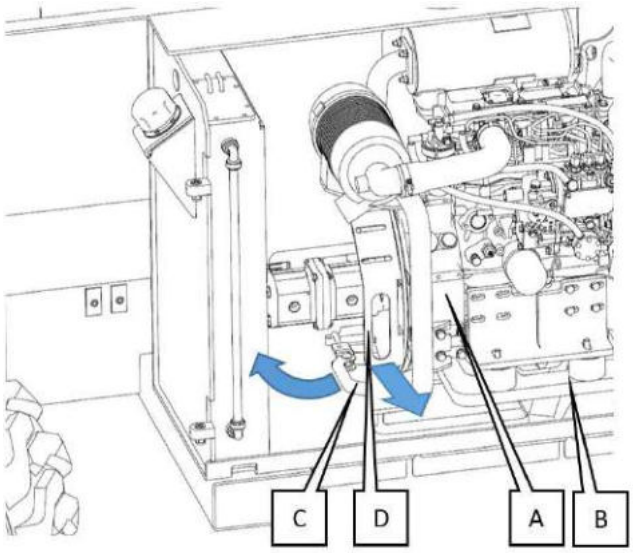


Fig. 22

WARNING: The only safe way to remove and reposition the engine is using handle (D).

Danger of burns and crushing of the hands.

7.3.4 Hydraulic circuit oil level check and change

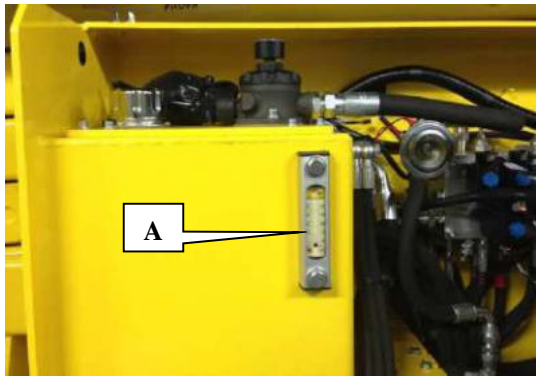
Check the level periodically by means of the provided indicator (detail **A** in the picture aside) and make sure that the level always lies between the max. and min. values. If necessary top up until max. level is reached. The oil check should be carried out when platform is completely lowered and levelling outriggers fully raised (if any).

Completely change the hydraulic oil at least every two years.

To empty the tank:

- Lower the platform completely.
- Retract the outriggers completely (if present).
- Stop the machine by pressing the emergency stop button of the ground control panel.
- Place a container under cap (**B**), under the tank, and unscrew it.

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



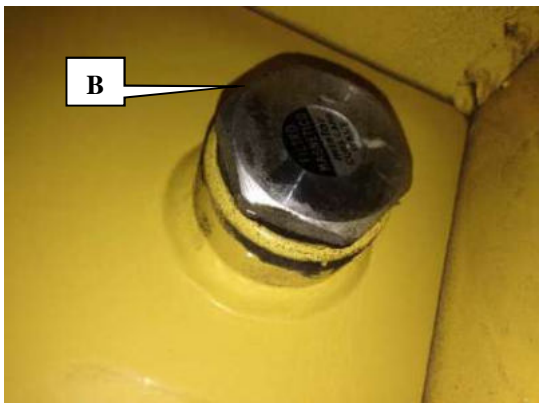


Fig. 23

HYDRAULIC SYSTEM OIL			
BRAND	**TYPE** -20°C +79°C	**TYPE** -30°C +48°C	**REQUIRED QUANTITY**
SYNTHETIC OILS			**See chapter "Technical features".**
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.

7.3.4.1 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.

7.3.4.2 Emptying

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

7.3.4.3 Filters

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

7.3.4.4 Washing

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

7.3.4.5 Filling

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

7.3.4.6 Commissioning / check

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

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

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

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

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

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

7.3.4.7 Mix

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

7.3.4.8 Micro-filtration

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

7.3.4.9 Disposal

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

7.3.4.10 Topping up

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

Note: Max water contamination is 0.1%.

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

7.3.5 Hydraulic filter replacement

7.3.5.1 DISCHARGE FILTER

The discharge filters (N.2) are represented in the picture to the side. The filtering cartridge should be replaced at least every two years. To replace the filtering cartridge:

- Stop the machine by pressing the emergency stop button on the ground control unit.
- Remove the bowl of the filter by unscrewing it using a 30 mm wrench.
- Remove the cartridge.

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

Fig. 24

7.3.5.2 Return filter

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

- Stop the machine by pressing the emergency stop button on the ground control unit.
- Remove the cover of the filter unscrewing the two hexagonal screws (10mm wrench).
- Remove the cartridge.

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

Fig. 25

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

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

7.3.6 Air purging from oscillating axle locking cylinders

Once drive has been stopped, the axle locking cylinders are locked in position thus increasing the machine stability.
Check that no air is present inside the oscillating axle cylinders every year. In order to carry out this check it is necessary to raise the front wheels off the ground (for machines equipped with levelling outriggers is sufficient to lower the levelling outriggers) and verify that the axle remains in position when stressed.
If you notice a movement of the axle, it is necessary to proceed to the elimination of the air present in the cylinders in the following manner:

- Unscrew cap (A) one of the two cylinders of the oscillating axle or, in the absence of the cap, loosen the four captive screws valve (B).
- Carry out the drive operation by bringing the two oscillating axle cylinders to end stop several times, until there is only oil leaking out of the cap of the locking valve.
- Once purging has been completed, screw cap **(A)** or tighten the screws (**B**) and check the oil level in the tank.

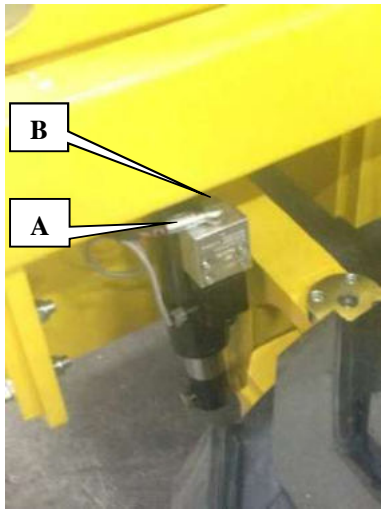


Fig. 26

WARNING!

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

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

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

7.3.7 Pressure relief valve adjustment and operation check

The pressure relief valves (**A -B**) control the maximum pressure of the hydraulic circuit. Normally, this valve does not require any adjustment, since it is calibrated at the factory before the machine is delivered.

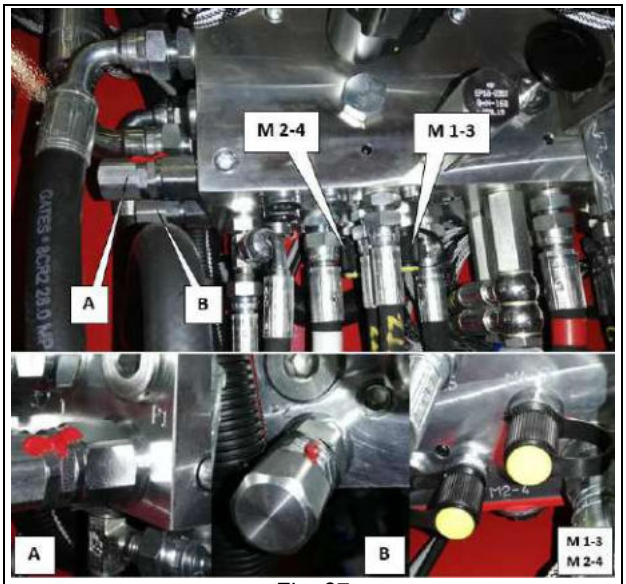


Fig. 27

The pressure relief valve must be calibrated in the following cases:
- in case of replacement of the hydraulic block
- In case of replacement of the pressure relief valve only

Check operation at least once a year.

To check the operation of the main pressure relief valve (see figure aside) – For Valve **A**:
- Introduce a pressure gauge with full scale of at least 300 bar in the special quick coupling (1/4" BSP) marked **M1-3**.
- Locate the pressure relief valve **A.**
- Disconnect the power cord of the traction solenoid valves EV2 and EV3;
- Using the platform control panel set to drive with the machine forwards or backwards at first speed at the start of the driving operation in order to accelerate the Diesel engine but with the machine in a stationary position and operating the steering up to the end stop at the same time.

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

In case of need, to calibrate Valve **A**:
- Unscrew the adjusting dowel lock-nut.
- Work on the adjusting dowel while executing the commands previously described.
- Once calibration has been carried out, lock the adjusting dowel by means of the lock-nut.

To check the operation of the main pressure relief valve (see figure aside) - For Valve **B**:
- Introduce a pressure gauge with full scale of at least 300 bar in the special quick coupling (1/4" BSP) marked **M2-4**.
- Locate the pressure relief valve **B.**
- Disconnect the power cord of the traction solenoid valves EV2 and EV3;
- Using the platform control panel set to forward or backward drive at second speed control the traction (the platform will remain locked) with joystick to maximum.
- Check the pressure value. The correct value is indicated in the chapter "**Technical features".**

In case of need, to calibrate Valve **B**:
- Unscrew the adjusting dowel lock-nut.
- Work on the adjusting dowel while executing the commands previously described.
- Once calibration has been carried out, lock the adjusting dowel by means of the lock-nut.

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

7.3.8 Lifting circuit pressure relief valve adjustment

The self-propelled aerial platforms, X_RT series have a pressure relief valve on the lifting circuit **C** to avoid dangerous overpressure values. Normally, this valve does not require any adjustment, since it is calibrated at the factory before the machine is delivered.

Fig. 28

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

Check operation at least once a year.

To check the pressure relief valve on the lifting circuit :
- Introduce a pressure gauge with full scale of at least 300 bar in the special quick coupling (1/4" BSP) marked **M1-3**.
- Using the ground control panel lift the machine up to the end stop.
- Check the pressure value. The correct value is indicated in the chapter "**Technical features**".

To calibrate the pressure relief valve on the lifting circuit:
- Locate the pressure relief valve of the lifting circuit **C**.
- Unscrew the adjusting dowel lock-nut.
- Using the ground control panel lift the machine up to the end stop.
- Adjust the pressure relief valve by means of the adjusting dowel so as to reach the pressure value indicated in chapter "**Technical Features**".
- Once calibration has been carried out, lock the adjusting dowel by means of the lock-nut.

⚠

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

7.3.9 Braking system efficiency check

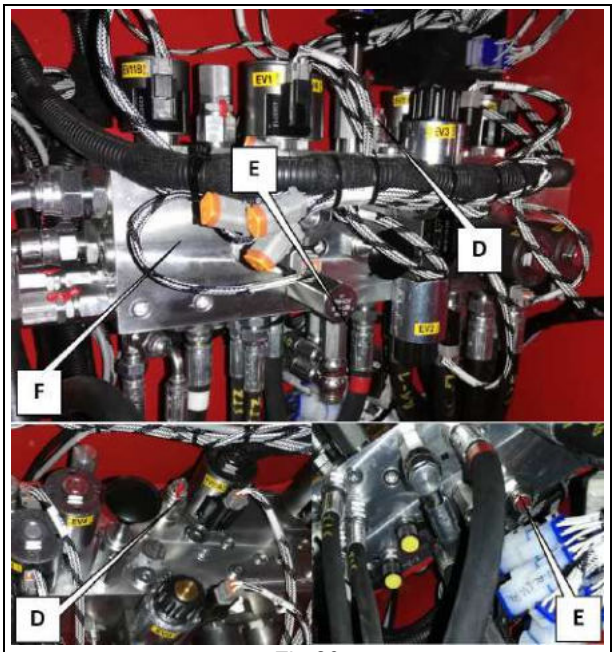


Fig.29

These valves check the minimum operating pressure during drive (in both running directions) and affect the dynamic braking and the drive speed. Normally, these valves do not require any adjustment, since they are calibrated at the factory before the machine is delivered. The braking valves stop the machine when the drive controls are released. Once the machine has stopped, the parking brakes automatically come on, thus keeping the machine in position.

Check operation at least once a year.

To check the operation of the braking system:

- With platform completely lowered place the machine on a flat ground, free of obstacles, operate the drive control and when the max. speed is reached, release the control immediately.
- The correct operation of the braking system allows the machine to stop within a distance lower than 130 cm at third speed..
- In any case the braking system can stop and keep the machine on slopes as indicated in "Technical features" (the braking distance on descents is longer; drive downwards at the min. drive speed).

Calibration of both braking valves is required:

- in case of replacement of the hydraulic block **F**
- If one or both braking valves are to be replaced (**D – E**).

To calibrate the braking valves:

- Locate the hydraulic block **F.**
- Locate the braking valves **D – E** (one for each running direction).
- Introduce a manometer with max. scale at least up to 300 bars in the special quick coupling **A** (1/4" BSP) marked **M1-3**.
- On the platform control panel select the minimum drive speed.
- Unscrew the adjusting dowel lock-nut.
- Using the platform control panel drive the machine (in the direction controlled by the valve) on a flat ground in straightforward direction and adjust the braking valve (relevant to that running direction) by means of adjusting dowel **D** so as to achieve the required pressure value (call the nearest Service Centre to ask for the exact value).
- Once the required pressure value has been achieved, check that the valve controlling the braking in the opposite direction has maintained its adjustment.
- Once adjustments are complete (pressure values in the two directions must not vary by more than ±5 bar), lock the adjusting dowel by means of the lock-nut.

⚠

WARNING!

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

7.3.10 Extendable platform clearance adjustment

Every year check the clearance of the nylon counter-pressure rolls of the slide-out extension deck.

To adjust:

- Unscrew dowel **A**.
- Screw in the adjusting dowel **B** unscrewing or screwing depending on the case.
- Once the desired clearance is achieved, reposition dowel **A**.

WARNING!! SOME CLEARANCE IS NECESSARY FOR THE GOOD OPERATION OF THE MECHANISM. DO NOT TIGHTEN THE ADJUSTING DOWEL COMPLETELY.
BEFORE USING THE MACHINE, TEST THE PLATFORMS BY MEANS OF THE GROUND CONTROLS AND WITH UNLOADED PLATFORM.

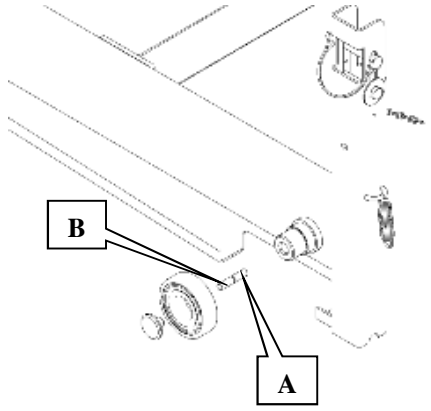


Fig. 30

WARNING!

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

7.3.11 Inclinometer operation check

WARNING!

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

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

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

- It disables lifting.
- It disables drive when platform exceeds a given height (varying according to model).
- Warns the user of the instability condition by means of the audible alarm and the platform warning light.

The inclinometer controls the inclination with respect to two axes (X;Y).

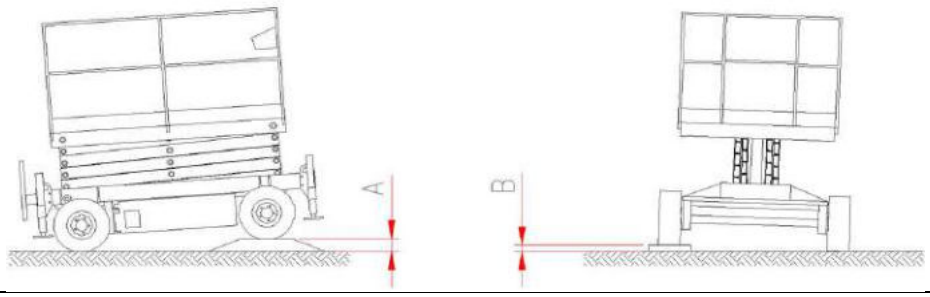
To check the inclinometer operation according to the **longitudinal axis** (generally **X-axis**):

- Using the controls of the 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 and the platform audible alarm turn on (this one only if the platform is lifted).
- If the alarm is not activated CALL THE TECHNICAL ASSISTANCE.

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

- Using the controls of the control panel 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 and the platform audible alarm turn on (this one only if the platform is lifted).
- If the alarm is not activated CALL THE TECHNICAL ASSISTANCE.

Check operation at least once a year.



	MODELS			
SHIMS	**X12 RTD**	**X14 RTD**	**X12 RTE**	**X14 RTE**
A [mm]	105	70	--	--
B [mm]	70	30	--	--

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.

7.3.12 Operation check and adjustment of platform overload controller

The AIRO self-propelled aerial platforms, X_RT series, are equipped with a sophisticated 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 checks the load on the platform and:

- Stops all movements if platform is overloaded by 20% compared to the rated load (drive and steering stopped with platform lifted).
- With platform in transport position and overloaded by 20% compared to the nominal load, only lifting is disabled.
- Warns the user of the overload condition by means of the audible alarm and the platform warning light.
- By removing the exceeding load, the machine can be operated again.

Check operation at least once a year.

The overload controller consists of:

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

Fig. 31

Operation check of the overload controller:

- When platform is completely lowered and with slide-out extension deck retracted, load a charge evenly distributed equal to the max. nominal load allowed by the platform (paragraph “Technical features”). In this condition all operations should be possible both from platform and ground control panel.
- With platform completely lowered, add to the nominal load an overload of 25% of the rated load and carry out the lifting operation. In this condition the red alarm light and the audible alarm turn on.

If the platform is at a height from the ground higher than that indicated in chapter “Technical features”, the alarm condition blocks the machine completely. To operate the machine again, remove the excessive load.

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.

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

7.3.13 Overload controller by-pass – ONLY FOR EMERGENCY OPERATIONS

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

WARNING!! IN THIS CONDITION THE MACHINE CAN CARRY OUT ANY OPERATION, THOUGH THE RED FLASHING LED AND THE AUDIBLE ALARM SIGNAL THE DANGER CONDITION. TURNING OFF THE MACHINE WILL RESET THE SYSTEM, AND UPON STARTING, THE OVERLOAD CONTROLLER OPERATES AGAIN SIGNALLING THE PREVIOUS OVERLOAD CONDITION.
THIS OPERATION IS ALLOWED ONLY FOR EMERGENCY HANDLING OF THE MACHINE. DO NOT USE THE MACHINE IF THE OVERLOAD CONTROLLER IS NOT EFFICIENT.

Fig. 32

⚠

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

7.3.14 Operation check of safety microswitches

Some microswitches are placed in strategic positions to check the different configurations of the machine and activate safety functions. Their activation implies visual indication through the warning lights located on the platform control panel (see relevant chapter).
The check of the actual operation of the microswitches should be carried out at least every year.

7.3.14.1 Microswitch M1

The microswitch M1 on the chassis checks the position of the lifting structure. With platform completely lowered the microswitch M1A is not activated.
With lifted platform (with some tolerance due to the type of activation of the microswitch), the microswitch M1 is activated and:

- The safety drive speed is automatically activated.
- The levelling outriggers control is disabled (if available).
- If the chassis is inclined over the max. allowed inclination the lifting and drive controls are disabled and:
  - The danger warning light and danger audible alarm turn on.
  - The drive enable warning light turns off.
  - The lifting enable warning light turns off.
- When platform is overloaded ALL operations until removal of overload are disabled and:
  - The overload warning light and danger audible alarm turn on.
  - The drive enable warning light turns off.
  - The lifting enable warning light turns off.

7.3.14.2 Microswitch M3 (OPTIONAL)

The microswitch M3 (OPTIONAL) on the chassis checks the position of the lifting structure. The activation of the microswitch M1S stops the drive control at a given platform height from the ground and turns off the drive enable warning light.
Not all machines mentioned in this manual have a microswitch M1S; check in the chapter “TECHNICAL FEATURES” if the maximum drive height is different from the maximum height that the platform can reach.

7.3.14.3 Microswitch M3 (OPTIONAL)

The microswitch M3 (OPTIONAL) on the chassis checks the position of the lifting structure. The activation of the microswitch M3 stops the lifting movement (lifting microswitch) before reaching the lifting cylinder end stop and turns off the lifting enable warning light.

7.3.14.4 Sensors ST1A-ST1B-ST1C-ST1D (machines with levelling outriggers)

The sensors ST1A-ST1B-ST1C-ST1D on the chassis near the levelling outriggers check the position of the pads of the levelling outriggers.
With pads completely lifted all sensors ST1…are activated and:

- Drive can be controlled – drive enabled warning light is on.
- All levelling outriggers position warning lights are off.

With at least one pad not completely lifted one or more sensors ST1…is activated and:

- Drive is disabled – drive enable warning light is off.
- The levelling outriggers position warning light concerning the levelling outrigger that has not retracted is flashing.

7.3.14.5 STP1-STP2-STP3-STP4 Microswitches (machines with levelling outriggers)

The STP1-STP2-STP3-STP4 microswitches on the chassis near the levelling outriggers check the position of the pads of the levelling outriggers.
With all pads not resting on the ground (the machine rests on its wheels) all STP… microswitches are not activated and:

- Lifting can be controlled (unless other alarms) – the lifting enable warning light is on.

With all pads resting on the ground (the machine rests on the levelling outriggers) all microswitches STP… are activated and:

- Lifting can be controlled (unless other alarms) – the lifting enable warning light is on.
- Drive is disabled – drive enable warning light is off.

When the machine is resting on both pads/ wheels:

- Lifting is disabled – lifting enable warning light is off.
- Drive is disabled – drive enable warning light is off.
- The levelling outriggers position warning lights concerning the levelling outriggers that have not retracted are flashing.

7.3.14.6 M13 microswitch (oscillating axle)

The M13 microswitch checks the position of the oscillating axle and is located on the chassis, above the oscillating axle.
Its function is:

- When the platform is lifted (the oscillating axle locks in the position it was before lifting) if the two wheels of the oscillating axle are not on the same ideal plane as those of the fixed axle (within an allowance of about 50mm), drive is prevented (this condition is signalled by the danger red light at platform - the alarm is not activated).

7.3.15 Dead-man button efficiency check

The platform dead-man button is for enabling the operation controls of the machine from the platform control station.

Check operation at least once a year.

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

To check the dead-man BUTTON:

- Move the drive joystick forward and backward in sequence, WITHOUT PRESSING THE DEAD-MAN BUTTON
- Check that the machine does not perform any movement
- Press dead-man button, release it and wait more than 5 seconds
- move the joystick forward and backward in sequence
- Check that the machine does not perform any movement

If the device works properly, no machine manoeuvre is possible from the platform control panel unless you press the dead-man button beforehand. If this is pressed for more than 5 seconds and no operation is performed, all movements are disabled; to operate the machine again, release the dead-man button and press it again.
The condition of the switch is indicated by the green led in the platform:

- green led lit up steady — control panel enabled
- green led lit up flashing — control panel disabled

7.4 Starter battery

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

The starter battery is for:

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

7.4.1 Starter battery maintenance

The starter battery does not require any special maintenance:

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

7.4.2 Starter battery recharge

Starter batteries do not require any recharge.
During normal operation of the Diesel engine an alternator recharges the battery (machines “RTD”, “RTED”). On those machines equipped with a 380V three-phase electric pump, the electric pump control system keeps the starter battery charged. On machines with battery a DC-DC converter keeps the starter battery charged.

7.5 "DRIVE" battery for models "RTE" and "RTED"

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.

7.5.1 General instructions for DRIVE battery

- In case of new batteries do not wait for the flat battery warning before recharging; recharge batteries after 3 or 4 working hours for the first 4/5 times.
- In case of new batteries full performance is achieved after approx. ten cycles of discharge and charge.
- Charge the battery in airy rooms and open the caps to allow the outflow of gas.
- Do not use extension leads exceeding 5 metres to connect the battery charger to the mains.
- Use a cable of suitable section (min 3x2.5 mm^2).
- Do not use rolled-up cables.
- Do not approach the battery with flames. Risk of deflagration due to the formation of explosive gases.
- Do not carry out temporary or irregular electric connections.
- The terminals must be tightened and without deposits. The cables must be provided with a good insulation.
- Keep the battery cleaned, dry and free of oxidation products by using antistatic cloths.
- Do not place tools or any other metal object on the battery.
- Check that the electrolyte level is 5-7 mm higher than the splash guard level.
- During charging operations check that the electrolyte temperature is not higher than 45°C max.
- If the machine is equipped with an automatic topping up device, follow the instructions described in the battery user manual carefully.

7.5.2 DRIVE battery maintenance

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

7.5.3 DRIVE 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 ± 10%
- Frequency 50÷60 Hz
- Activated grounding line.
- Magneto-thermic switch and residual current device (“circuit breaker”)

Moreover:

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

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).

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

Fig.33

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.

7.5.4 Battery charger: fault report

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

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

WARNING!

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

7.5.5 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 SPECIALIZED TECHNICIANS ONLY.

CALL THE TECHNICAL SUPPORT

8 . MARKS AND CERTIFICATIONS

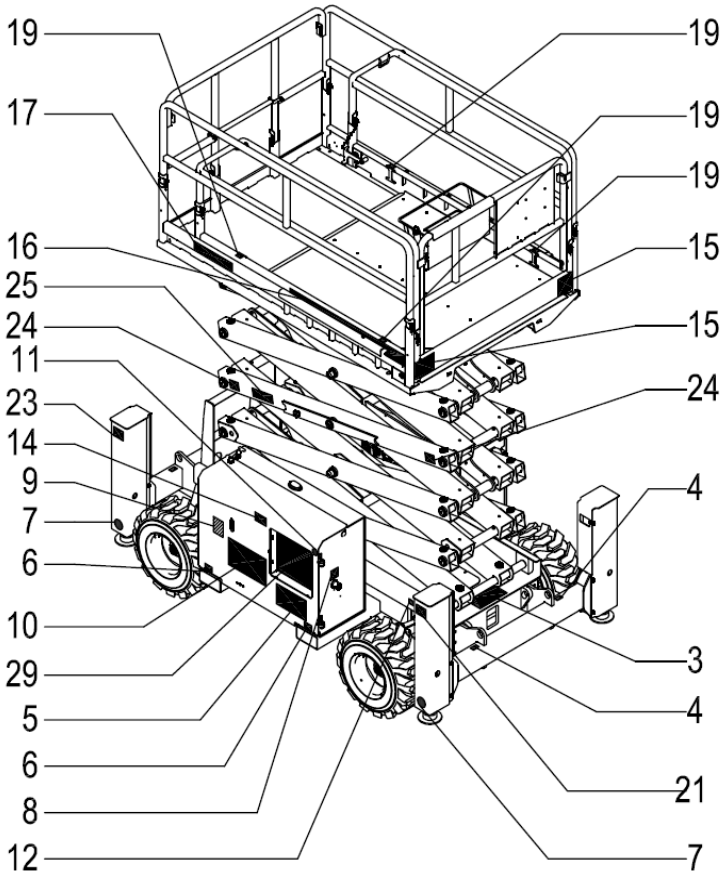
The models of self-propelled aerial platform described in this manual were subject to the CE type test according to the Directive 2006/42/EC. The certification was issued by:

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

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

9. PLATES AND STICKERS

POS.	CODE	DESCRIPTION	Q.TY
1	023250	3M SAFETY-WALK TAPE MM. 100	0.6
2	001.10.001	NOTICE PLATE - ITA	1
	001.10.022	NOTICE PLATE - UK	
	001.10.029	NOTICE PLATE - FRA	
	001.10.035	NOTICE PLATE - NED	
	001.10.040	NOTICE PLATE - DEU	
	001.10.041	NOTICE PLATE - ESP	
	001.10.055	NOTICE PLATE - RUS	
	001.10.083	NOTICE PLATE - SWE	
	001.10.093	NOTICE PLATE - HUN	
	001.10.188	NOTICE PLATE - POL	
	001.10.206	NOTICE PLATE - HRV	
	001.10.235	NOTICE PLATE - ROM	
	001.10.236	NOTICE PLATE - NOR	
	001.10.246	NOTICE PLATE - POR	
	001.10.305	NOTICE PLATE - CHN	
	001.10.314	NOTICE PLATE - TUR	
3	001.10.024	AIRO SERIAL NUMBER PLATE	1
4	001.10.031	TOWING HOOK STICKER	4
5	001.10.057	GENERAL WARNINGS STICKER	1
6	001.10.060	LIFTING POINT STICKER	4
7	001.10.076	FEET DANGER STICKER	4
8	001.10.098	STOP STICKER I-D-F-NL-B-GB	1
9	001.10.150	OIL TYPE STICKER “46” I_D_F_NL_B_G_PL	1
10	001.10.175	AIRO PRE-SPACED YELLOW STICKER .530X265	2
11	001.10.180	NEXT CHECK STICKER	1
12	001.10.243	“MAX. LOAD PER WHEEL" STICKER	4
13	001.10.261	NO STOPPING STICKER SCISSORS SIMBOL	2
15	010.10.010	YELLOW-BLACK LINE STICKER >150X300	2
16	012.10.007	BLACK-YELLOW LINE STICKER >L=800	2
17	015.10.037	PRE-SPACED STICKER “X12 RTD” YELLOW	2
	076.10.001	PRE-SPACED STICKER “X14 RTD” YELLOW	
	076.10.005	PRE-SPACED STICKER “X12 RTE” YELLOW	
	076.10.007	PRE-SPACED STICKER “X14 RTE” YELLOW	
18	024.10.008	SOUND POWER LEVEL STICKER 100 DB	1
19	035.10.007	SAFETY BELTS ATTACHMENT STICKER	4
20	043.10.013	“A” LEVELLING OUTRIGGER STICKER	1
21	043.10.014	“B” LEVELLING OUTRIGGER STICKER	1
22	043.10.015	“C” LEVELLING OUTRIGGER STICKER	1
23	043.10.016	“D” LEVELLING OUTRIGGER STICKER	1
24	045.10.003	HANDS DANGER STICKER+NO STOPPING (SYMB.)	4
25	045.10.006	SAFETY BAR STICKER (SYMBOLS)	2
26	045.10.013	MANUAL LOWERING STICKER (SYMBOLS)	1
27	046.10.002	400 KG CAPACITY (3 PERS.) STICKER - X14 RT	1
	049.10.002	450 KG CAPACITY (3 PERS.) STICKER - X12 RT	
28	057.10.011	DIESEL CAP STICKER	1
29	060.10.001	GROUND CONTROL PANEL STICKER “X_RT SERIES	1
30	060.10.002	CONTROL PANEL STICKER “X_RT SERIES	1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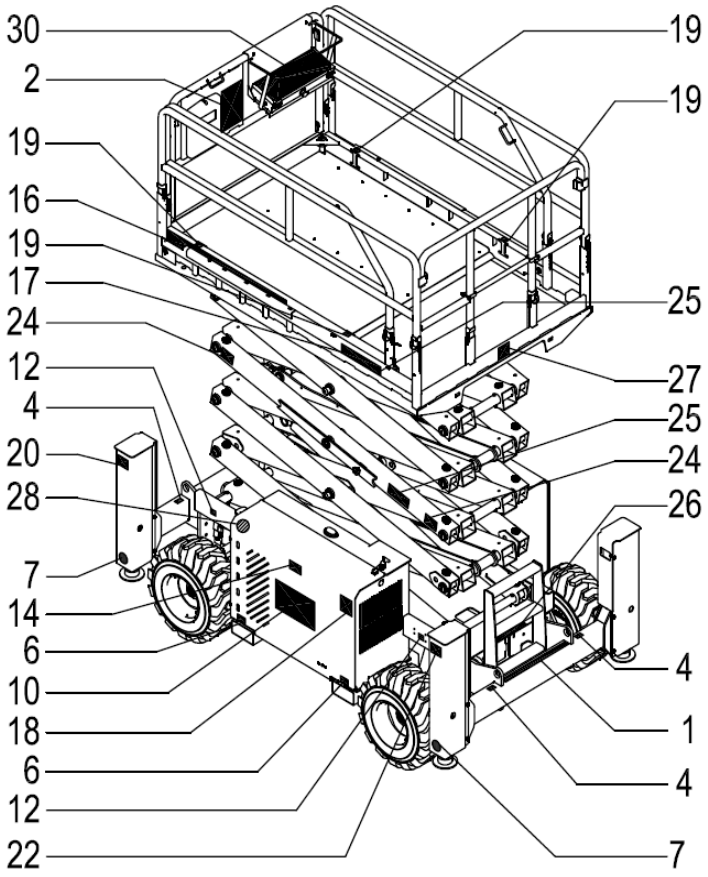
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10. CHECK REGISTER

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		
Date	**Observations**	**Signature + Stamp**

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

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

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

DEFORMATIONS 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 7.3.1

	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 7.3.2 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 7.3.4 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			

HYDRAULIC FILTER REPLACING (EVERY TWO YEARS)	See chapter 7.3.5

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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
AIR PURGING FROM OSCILLATING AXLE CYLINDERS	See chapter 7.3.6.

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

CALIBRATION CHECK OF PRESSURE RELIEF VALVE	See chapter 7.3.7

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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
CALIBRATION CHECK OF LIFTING CIRCUIT PRESSURE RELIEF VALVE	See chapter 7.3.8

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

BRAKING SYSTEM EFFICIENCY CHECK	See chapter 7.3.9

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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
PLATFORM EXTRACTION CLEARANCE ADJUSTMENT	See chapter 7.3.10

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

INCLINOMETER OPERATION CHECK	See chapter 7.3.11

	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
EFFICIENCY CHECK OF PLATFORM OVERLOAD CONTROLLER	See chapter 7.3.12

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

MICROSWITCH OPERATION CHECK	See chapter 7.3.14

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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

CHECK	DESCRIPTION OF OPERATIONS TO BE PERFORMED
DEAD MAN SYSTEM CHECK	See chapter 7.3.15

	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 7.4 and 7.5. 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 CHANGE IN HYDRAULIC TANK	See chapter 7.3.4.

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

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

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

REQUIRED PERIODIC INSPECTIONS BY THE OWNER

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

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

TRANSFERS OF OWNERSHIP

FIRST OWNER

COMPANY	DATE	MODEL	SERIAL NUMBER	DELIVERY DATE

AIRO / Tigieffe S.r.l.

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

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

THE SELLER **THE PURCHASER**

SUBSEQUENT TRANSFERS OF OWNERSHIP

COMPANY	DATE

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

THE SELLER **THE PURCHASER**

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. DECLARATION OF CONFORMITY EC FACSIMILE

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

2006/42/CE

Dichiarazione originale	Original Declaration	Déclaration Originale	Originalerklärung	Declaración Original	Оригинальная декларация

Noi - We - Nous - Wir – Nosotros- мы

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

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

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

Modello - Model - Modèle Typ – Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Рама	Anno - Year - Année Baujahr – Ano -Год
X12 RTD	***XXXXXXXXXX***	***XXXXXXXXXX***

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

ICE SPA – VIA GARIBALDI, 20 – 40011 ANZOLA EMILIA (BO) - ITALIA

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

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

M.0303.16.5949

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

EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

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

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

.....

Pignatti Simone

(Il legale rappresentante - The legal representative)

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

2006/42/CE

Dichiarazione originale	Original Declaration	Déclaration Originale	Originalerklärung	Declaración Original	Оригинальная декларация

Noi - We - Nous - Wir – Nosotros- мы

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X12 RTE	***XXXXXXXXXX***	***XXXXXXXXXX***

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ICE SPA – VIA GARIBALDI, 20 – 40011 ANZOLA EMILIA (BO) - ITALIA

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

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

X.XXXX.XX.XXXX

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

EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

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

.....
Pignatti Simone
(Il legale rappresentante - The legal representative)

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2006/42/CE

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X14 RTD	***XXXXXXXXXX***	***XXXXXXXXXX***

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

M.0303.16.5957

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

EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

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

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

.....
Pignatti Simone
(Il legale rappresentante - The legal representative)

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2006/42/CE

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Modello - Model - Modèle Typ – Modelo-МОДЕЛЬ	N° Chassis - Chassis No. N° Chassis - Fahrgestellnr - N° Chassis - Номер Рама	Anno - Year - Année Baujahr – Ano -Год
X14 RTE	***XXXXXXXXXX***	***XXXXXXXXXX***

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

ICE SPA – VIA GARIBALDI, 20 – 40011 ANZOLA EMILIA (BO) - ITALIA

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

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

X.XXXX.XX.XXXX

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

EN 280:2013 EN ISO 12100:2010 EN ISO 60204-1:2006

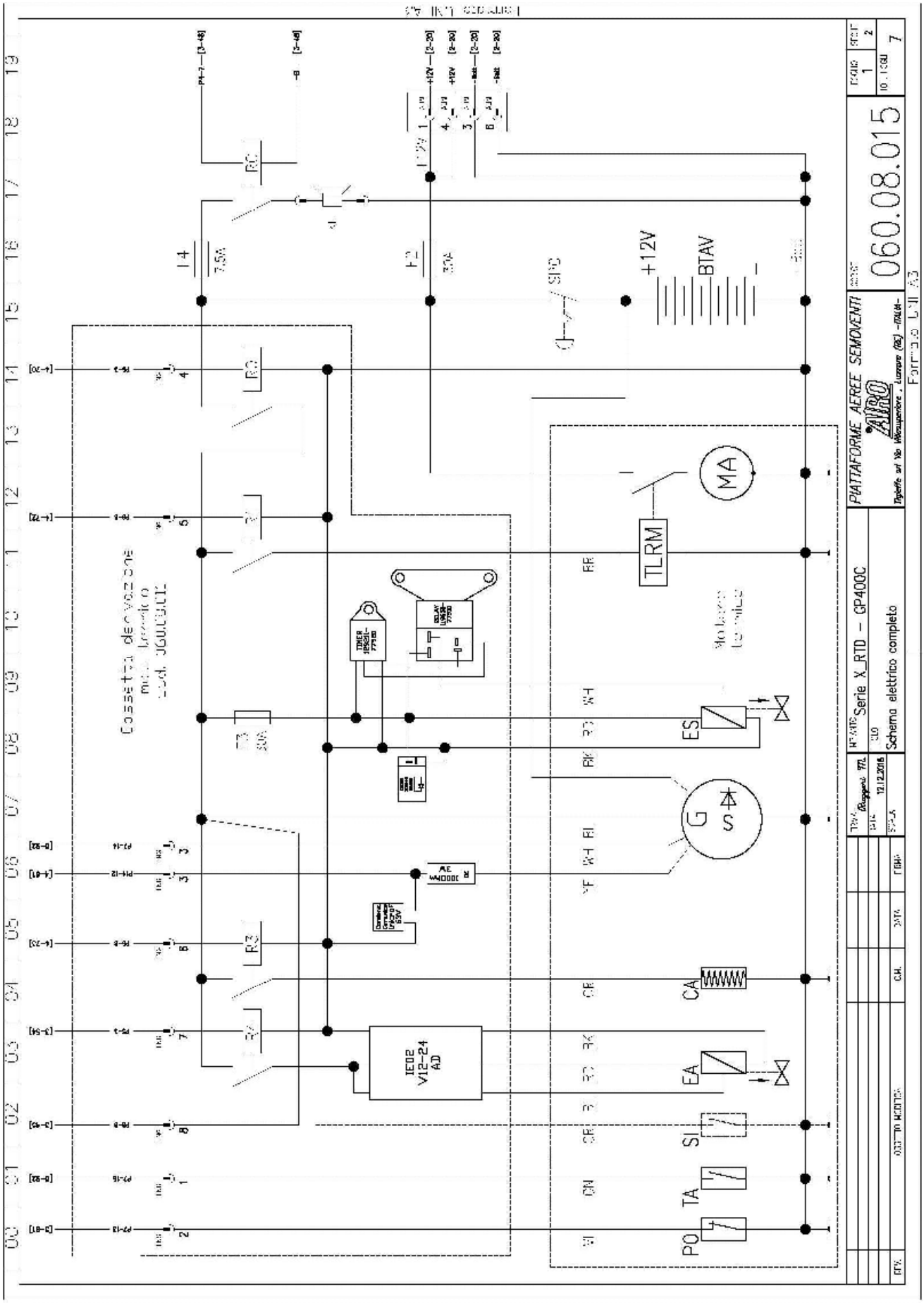
Il firmatario di questa dichiarazione di conformità è autorizzato a costituire il Fascicolo Tecnico.	The signatory of this conformity declaration is authorized to set up the Technical File.	Le signataire de cette déclaration de conformité est autorisé à constituer le Dossier Technique.	Der Unterzeichner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

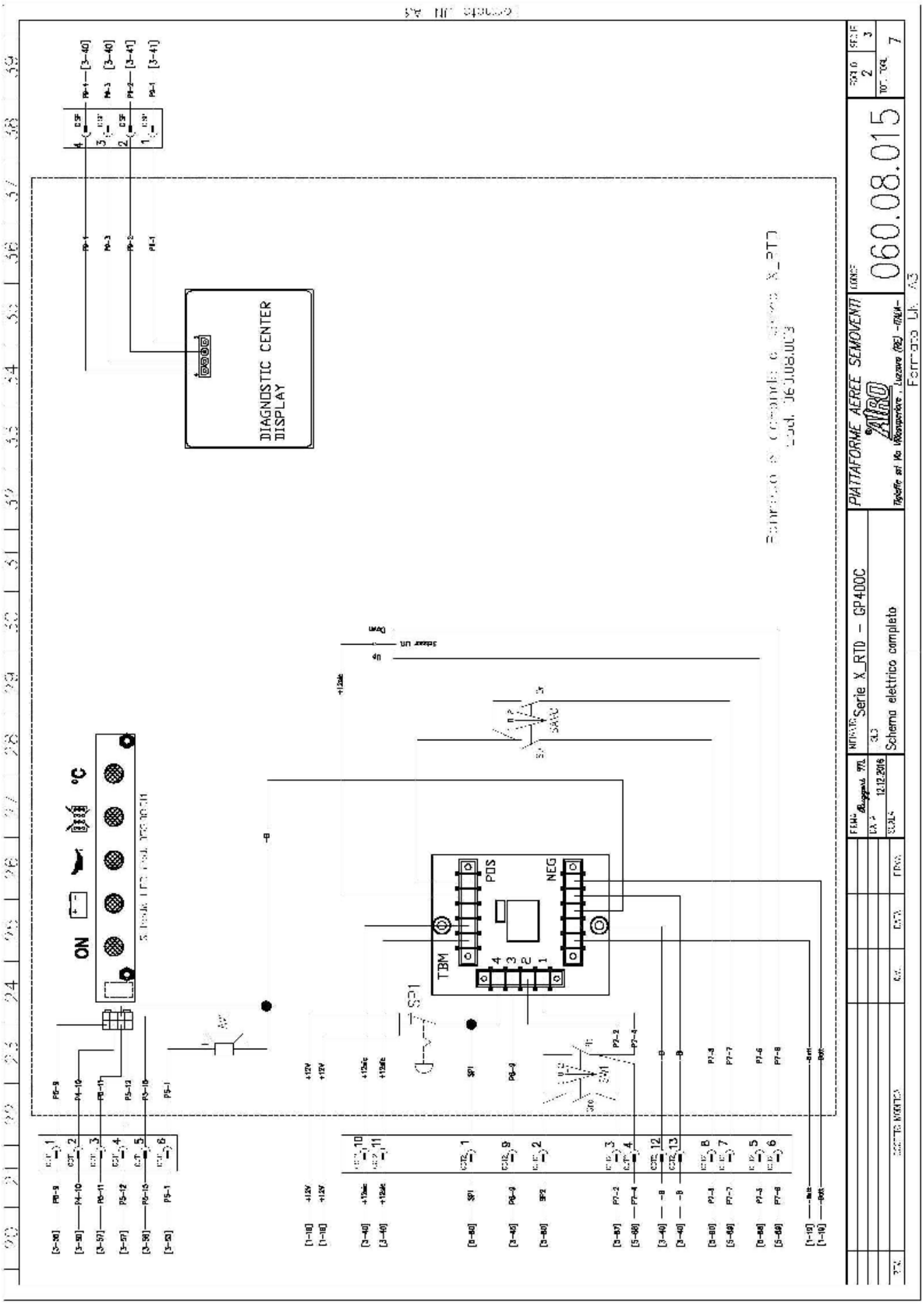
Luzzara (RE), data-date-date-Datum-fecha-Дата

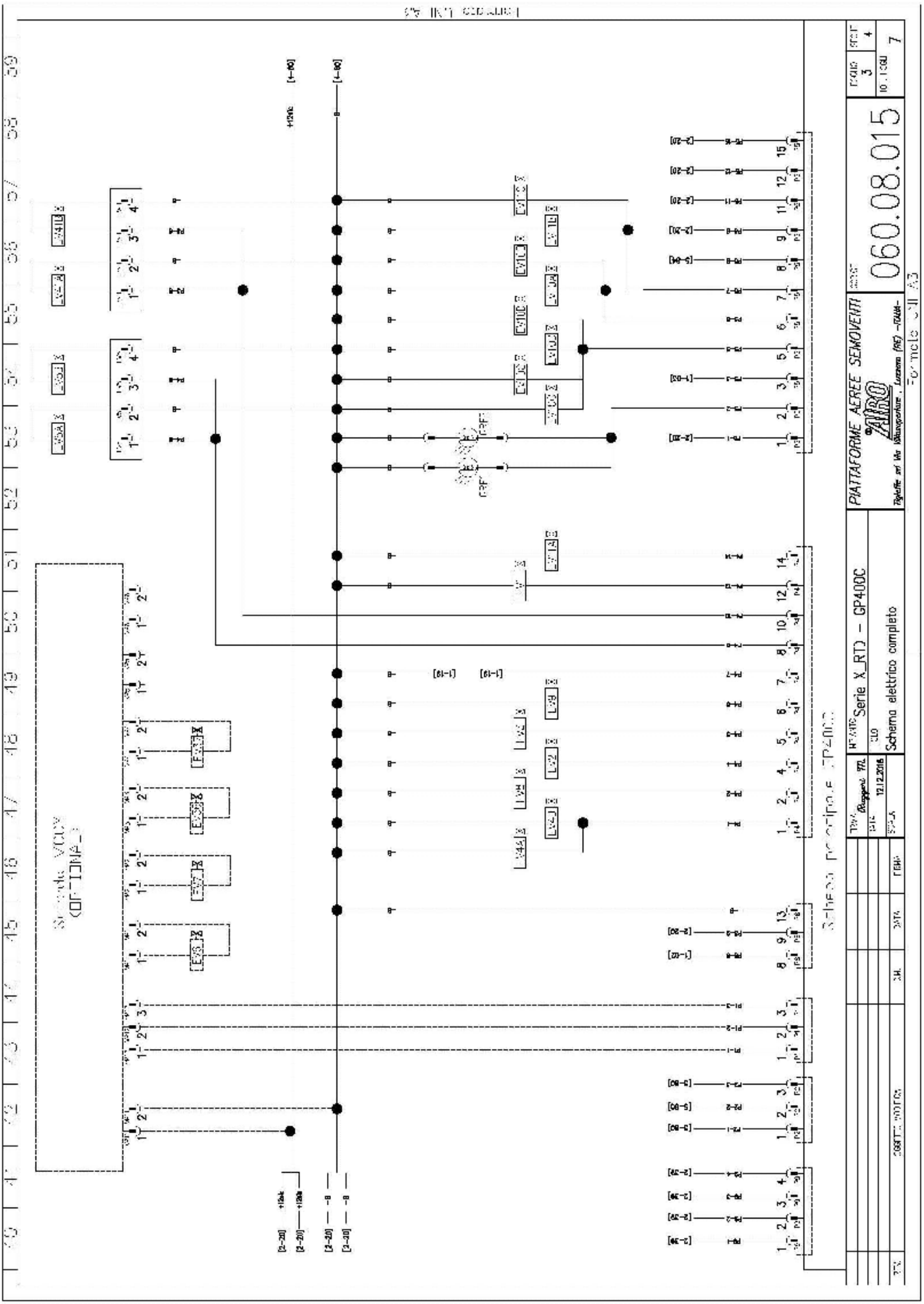
.....
Pignatti Simone
(Il legale rappresentante - The legal representative)

12. ELECTRIC DIAGRAM

12.1 ELECTRIC DIAGRAM X12 RTD – X14 RTD




DIAGNOSTIC CENTER
DISPLAY
ON
TBM
POS
NEG
SP1
PIATTAFORME AEREE SEMOVENTI
Serie X_RTD – GP400C
Schema elettrico completo
060.08.015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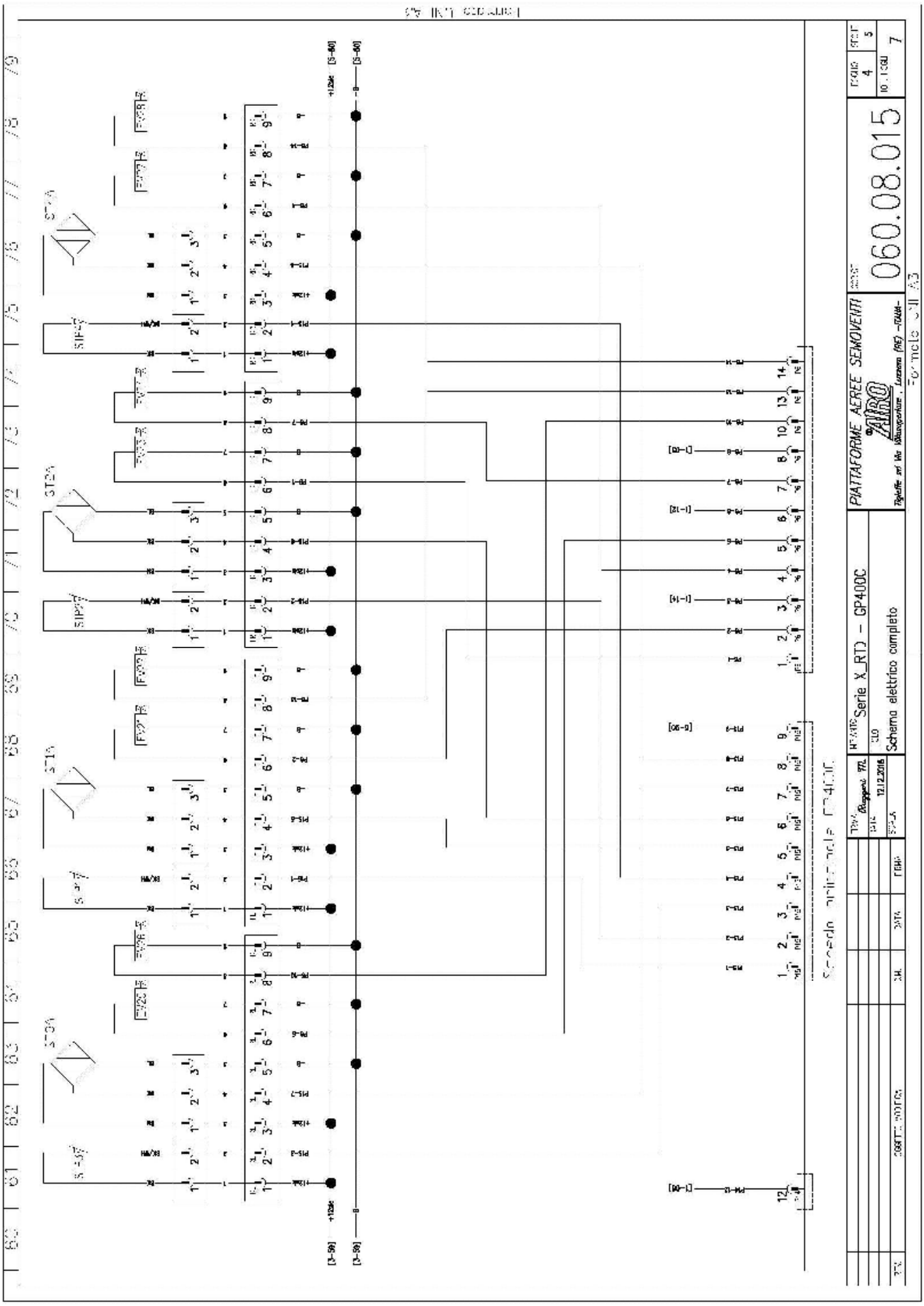
060.08.015
Serie X_RT - GP400C
Schema elettrico completo
12/12/2016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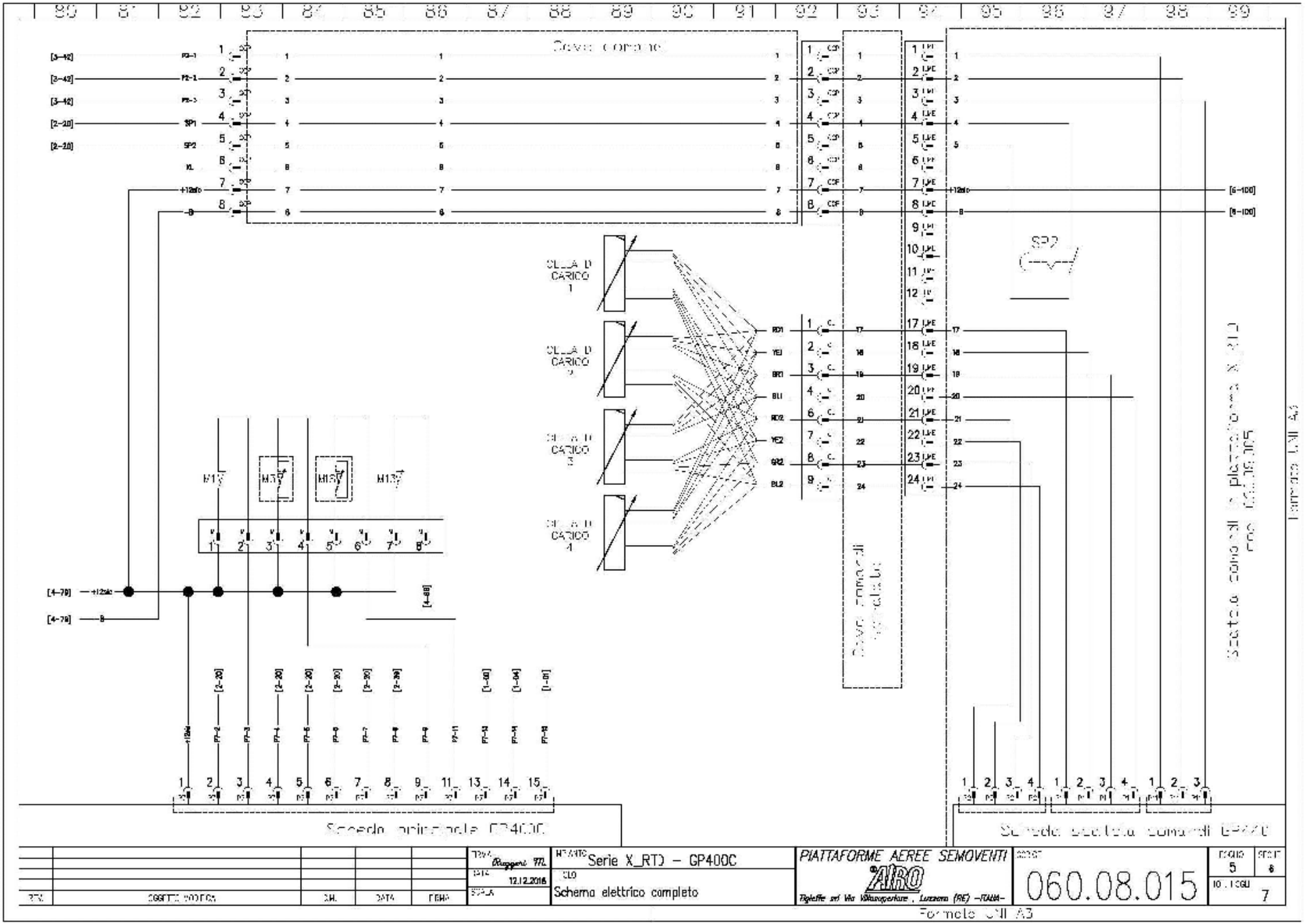
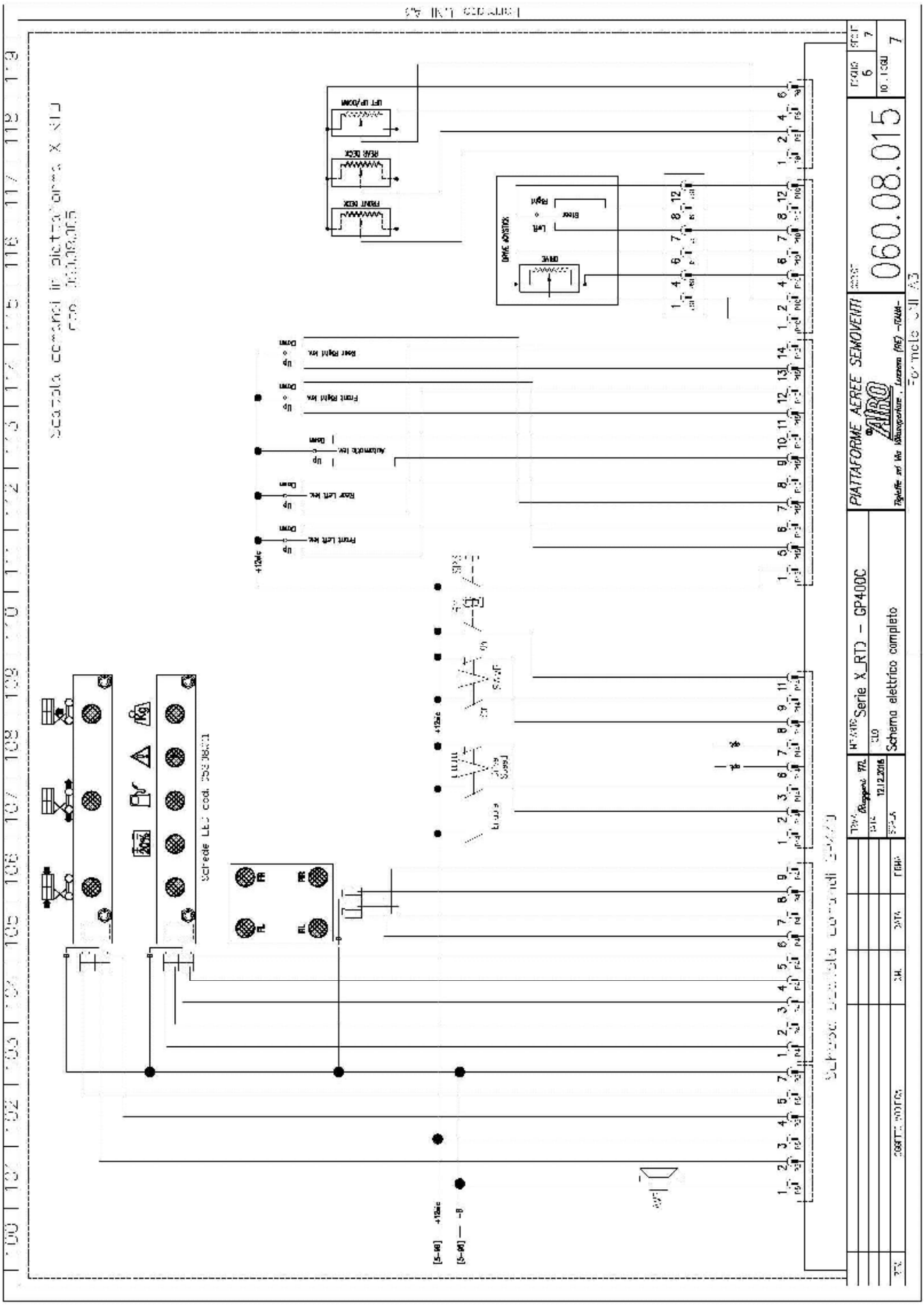
060.08.015
Serie X_RT - GP400C
Schema elettrico completo

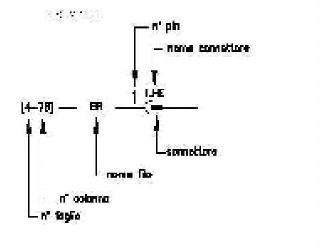

Serie X_RT3 - GP400C
Schema elettrico completo
PIATTAFORME AEREE SEMOVENTI
060.08.015
12.12.2016
Formato UNI A3


PIATTAFORME AEREE SEMOVENTI
AIRO
060.08.015
Serie X_RT - GP400C
Schema elettrico completo
12.12.2016

SIMB.	DESCRIZIONE	Pag.-Col.
AV1	Avvisatore acustico a terra	2-23
AV2	Avvisatore acustico in piattaforma	6-101
BTAV	Batteria	1-15
BY	Selettore di By pass controllo del carico	6-110
CA	Candelette	1-31
EA	Elettro acceleratore	1-33
ES	Elettrostop	1-28
EV1	Elettrovalvola Proporzionale comandi	3-50/51
EV2	Elettrovalvola trazione Avanti	3-17/18
EV3	Elettrovalvola trazione indietro	3-48
EV4A	Elettrovalvola A di sollevamento piattaforma	3-46
EV4B	Elettrovalvola B di sollevamento piattaforma	3-47
EV5A	Elettrovalvola di discesa piattaforma	3-53
EV5B	Elettrovalvola B di discesa piattaforma	3-54
EV6	Elettrovalvola di sfilo piattaforma avanti (OPT.)	3-44/45
EV7	Elettrovalvola di rientro piattaforma avanti (OPT.)	3-46
EV8	Elettrovalvola di sterzo a destra	3-47
EV9	Elettrovalvola di sterzo a sinistra	3-48/49
EV10A	Elettrovalvola di comando mocolità 2WD	3-55/56
EV10B	Elettrovalvola di comando mocolità 2WD	3-56
EV10C	Elettrovalvola di comando blocco differenziale	3-53/54
EV10D	Elettrovalvola di comando blocco differenziale	3-54/55
EV11A	Elettrovalvola di By-Pass generale	3-51
EV11B	Elettrovalvola di comando alta/bassa velocità	3-56/57
EV11C	Elettrovalvola di comando alta/bassa velocità	3-57
EV21	Elettrovalv. di sollevamento livellatore Anteriore sinistro FL	4-68
EV22	Elettrovalv. di discesa livellatore Anteriore sinistro FL	4-69
EV23	Elettrovalv. di sollevamento livellatore Anteriore destro FR	4-73
EV24	Elettrovalv. di discesa livellatore Anteriore destro FR	4-74
EV25	Elettrovalv. di sollevamento livellatore Posteriore sinistro RL	4-84
EV26	Elettrovalv. di discesa livellatore Posteriore sinistro RL	4-85
EV27	Elettrovalv. di sollevamento livellatore Posteriore destro RR	4-74
EV28	Elettrovalv. di discesa livellatore Posteriore destro RR	4-75
EV36	Elettrovalvola di sfilo piattaforma posteriore (OPT.)	3-47
EV37	Elettrovalvola di rientro piattaforma posteriore (OPT.)	3-48
EV41A	Elettrovalvola di sblocco assale oscillante	5-55
EV41B	Elettrovalvola di sblocco assale oscillante	5-56
F2	Fusibile circuito di comando	1-18
F3	Fusibile ausiliari motore	1-28
F4	Fusibile claxon	1-18
G	Generatore di corrente / Alternatore	1-36/37
GRF1	Girofaro 1	3-52/54
GRF2	Girofaro 2	3-53
KL	Claxon	1-17

SIMB.	DESCRIZIONE	Pag.-Col.
V1	Finecorsa posizione piattaforma bassa	5-62/63
V1B	Finecorsa stop trazione (OPT.)	5-54/55
V3	Finecorsa stop sovraccarico (OPT.)	5-53/54
V13	Finecorsa posizione assale oscillante	5-55
MA	Motorino di avviamento	1-13/13
PO	Sensore Pressione Olio	1-03
RP	Relè principale	1-14
R1	Relè Start	1-11/12
R3	Relè candelette	1-05
R4	Relè elettro acceleratore	1-03/04
RC	Relè comando claxon	1-17/18
SAVG	Selettore start motore a terra	2-28/29
SAVP	Selettore di start motore in piattaforma	6-109
SI	Sensore Intasamento filtro	1-02
SP0	Interruttore di emergenza circuito di potenza	1-15
SP1	Interruttore di emergenza a fungo	2-23/24
SP2	Interruttore di emergenza a fungo	5-86
SP3	Pulsante claxon	6-111
ST1A	Sensore Rientro Livellatore Anteriore Sinistro FL	4-67/68
ST2A	Sensore Rientro Livellatore Anteriore Destro FR	4-72/73
ST3A	Sensore Rientro Livellatore Posteriore Sinistro RL	4-82/83
ST4A	Sensore Rientro Livellatore Posteriore Destro RR	4-76/77
STP1	Finecorsa Appoggio Livellatore Anteriore Sinistro FL	4-66
STP2	Finecorsa Appoggio Livellatore Anteriore Destro FR	4-70
STP3	Finecorsa Appoggio Livellatore Posteriore Sinistro RL	4-81
STP4	Finecorsa Appoggio Livellatore Posteriore Destro RR	4-75
SW1	Selettori comandi	2-22/23
TA	Sensore Temperatura Acqua	1-01
TEM	Modulo alimentazione	2-24/26
TLSV	Teleruttore Starter	1-11

LEGENDA SIGLE



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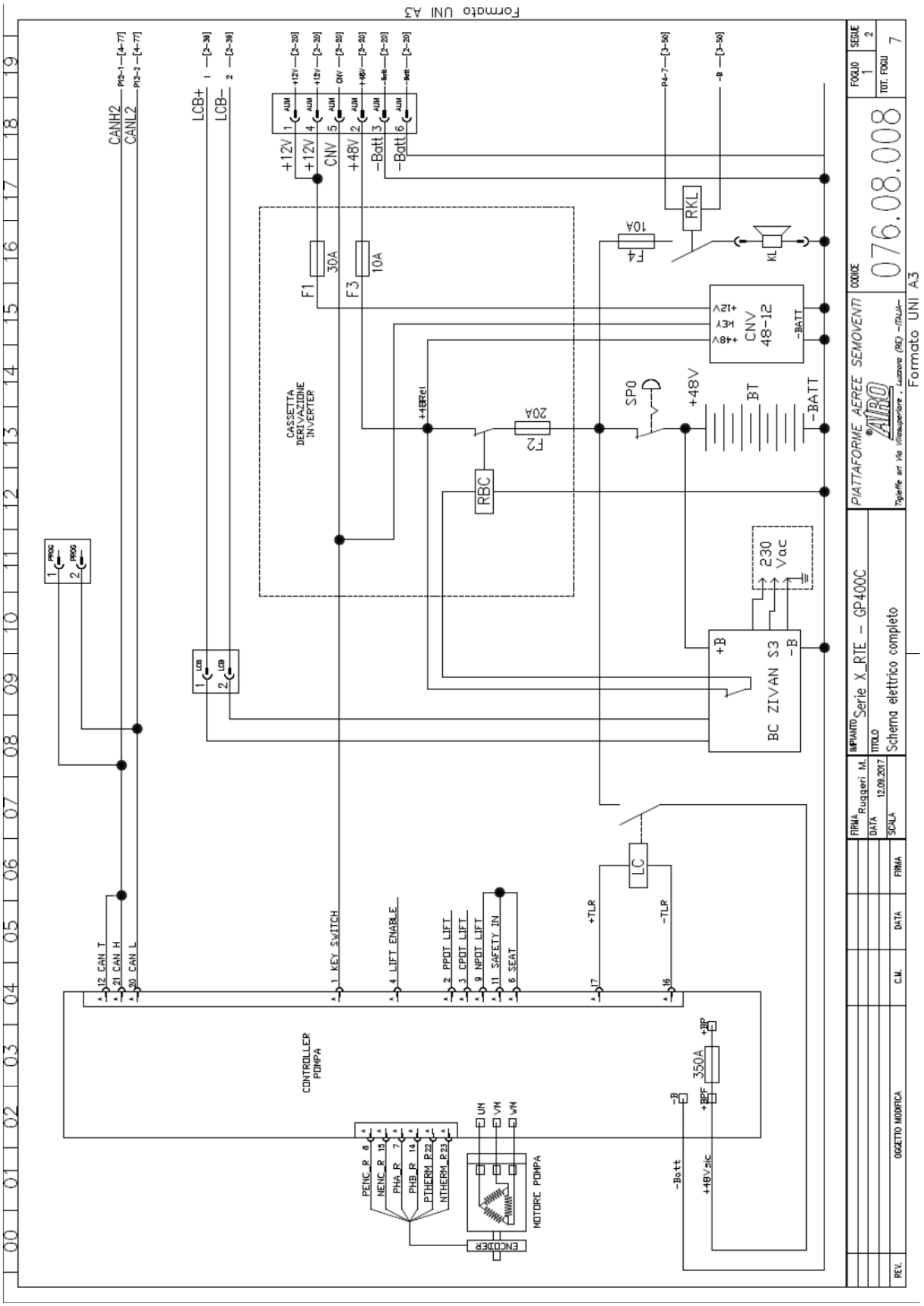
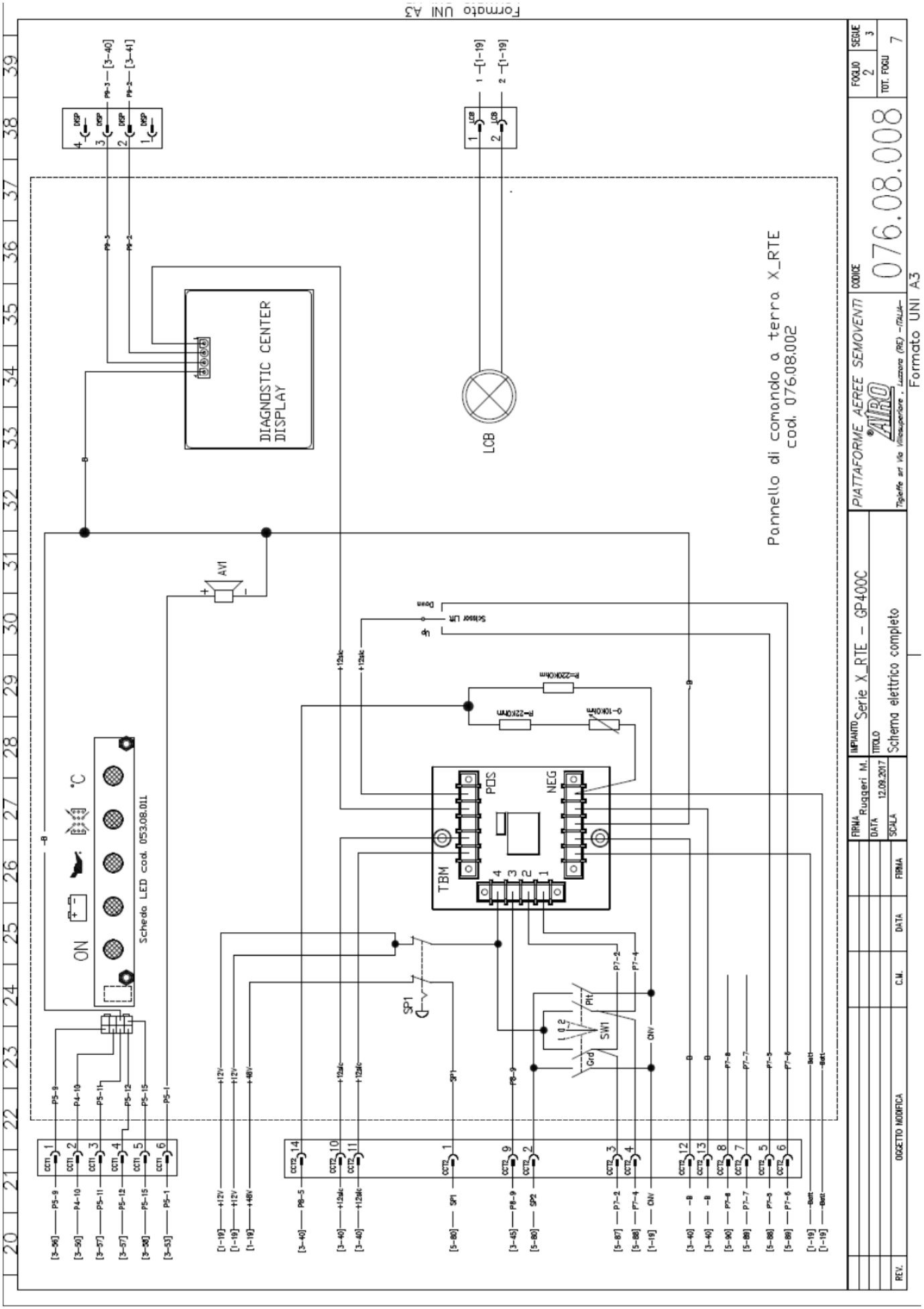
					DATA 12.12.2016	TITOLO Schema elettrico completo	Tigieffe srl Via Villasuperiore, Luzzara (RE) -ITALIA-		TOT. FOGLI 7	
REV.	OGGETTO MODIFICA	DIS.	DATA	FIRMA	SCALA					

Formato UNI A3

12.2 ELECTRIC DIAGRAM X12 RTE – X14 RTE

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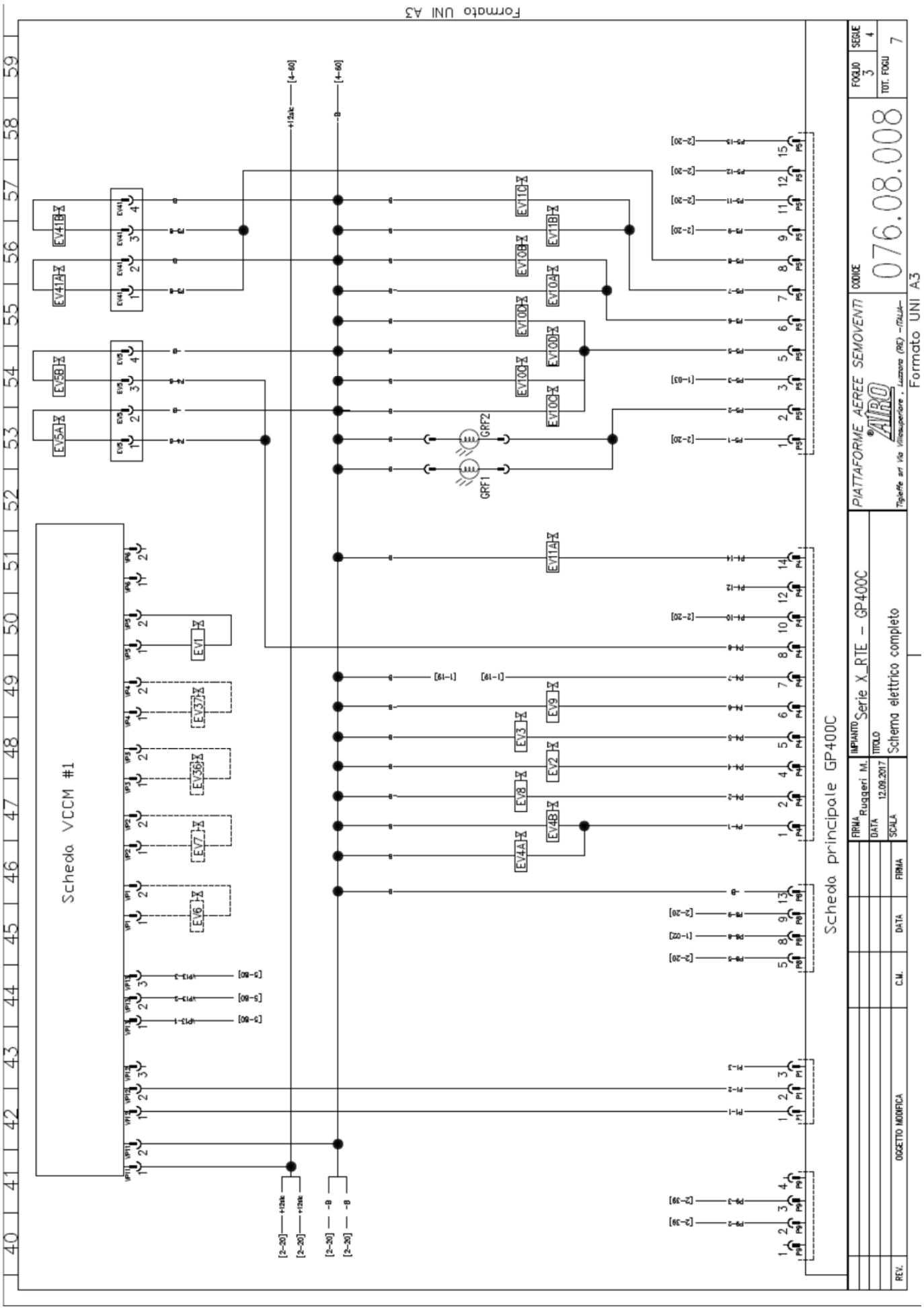
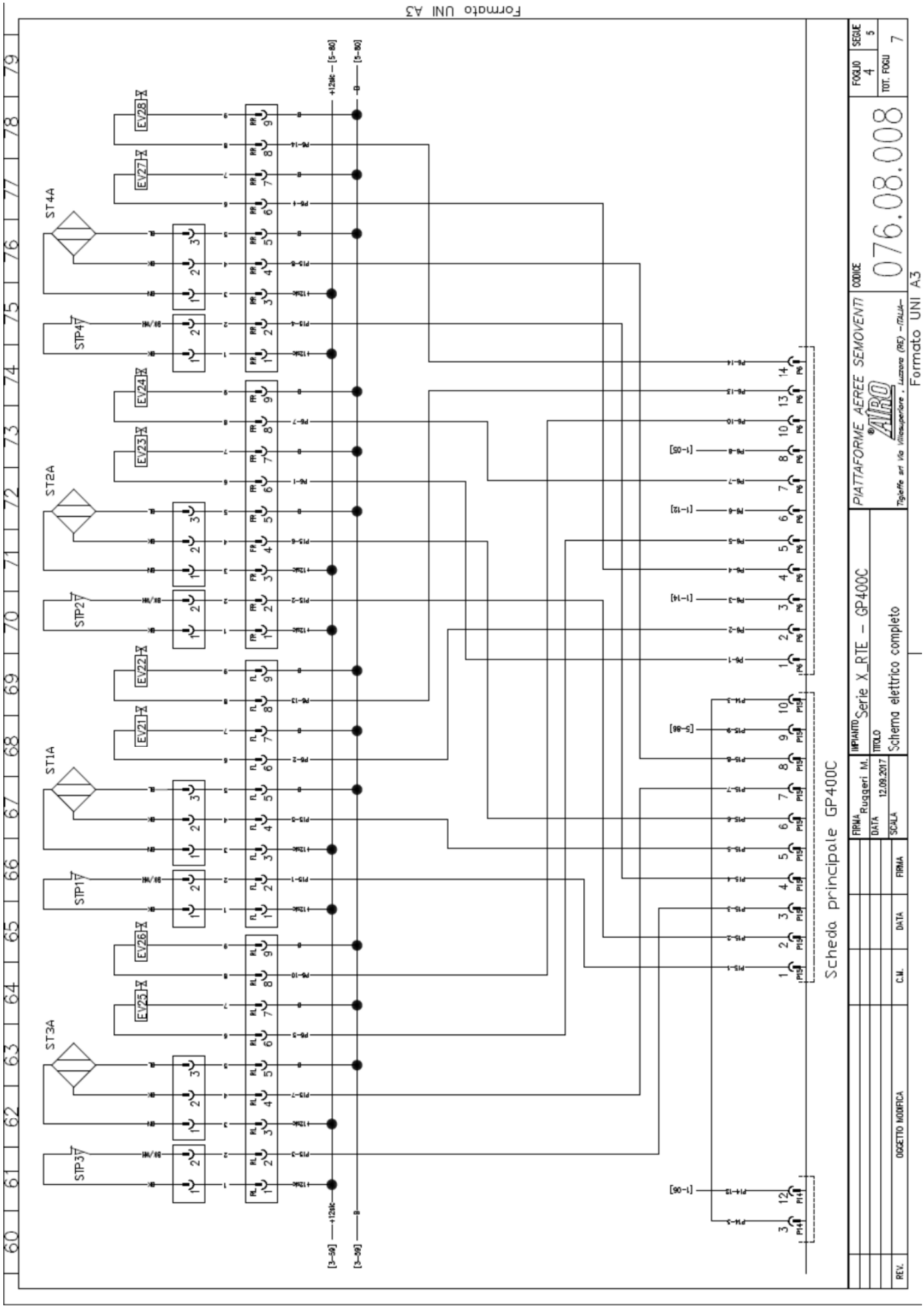
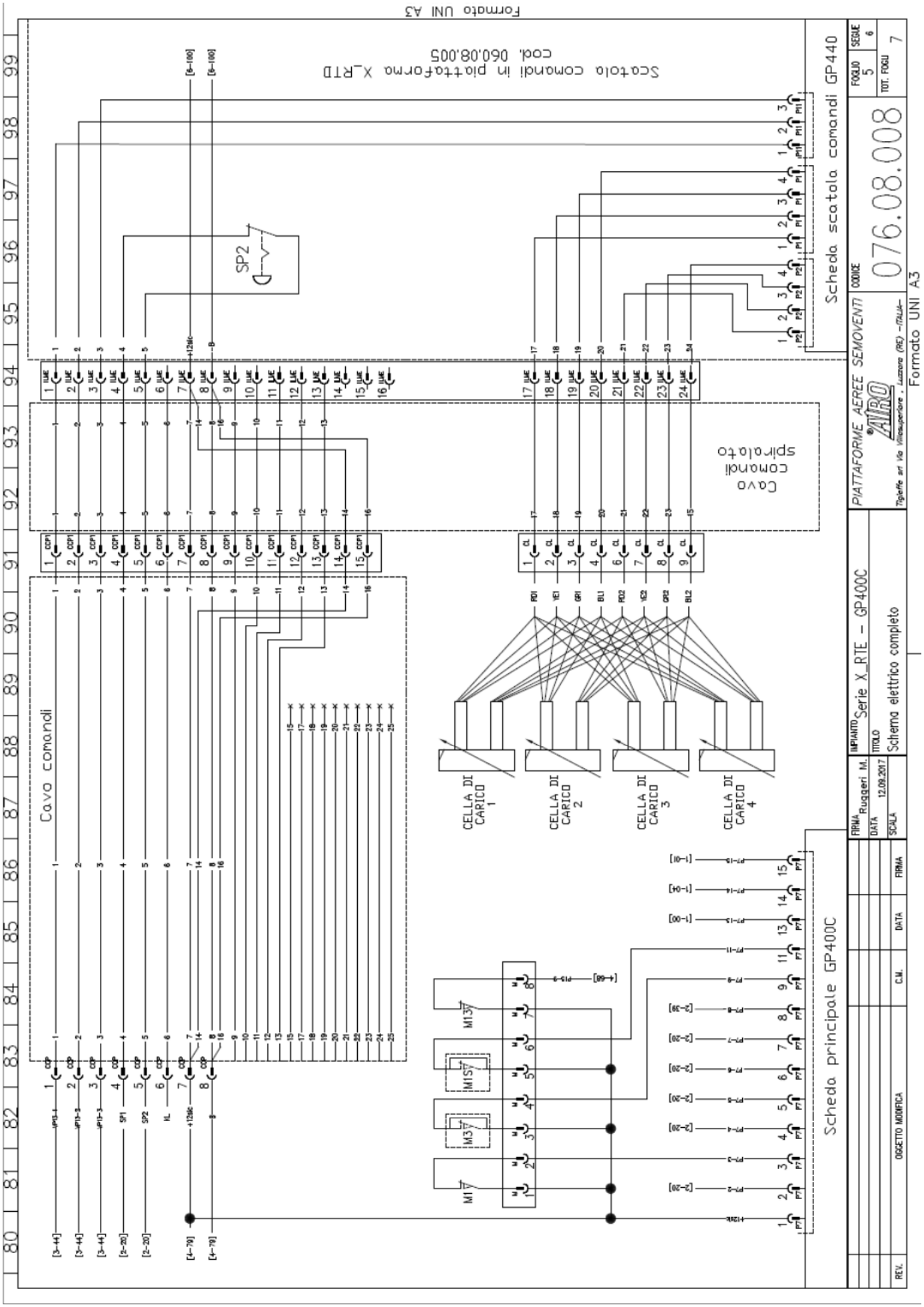
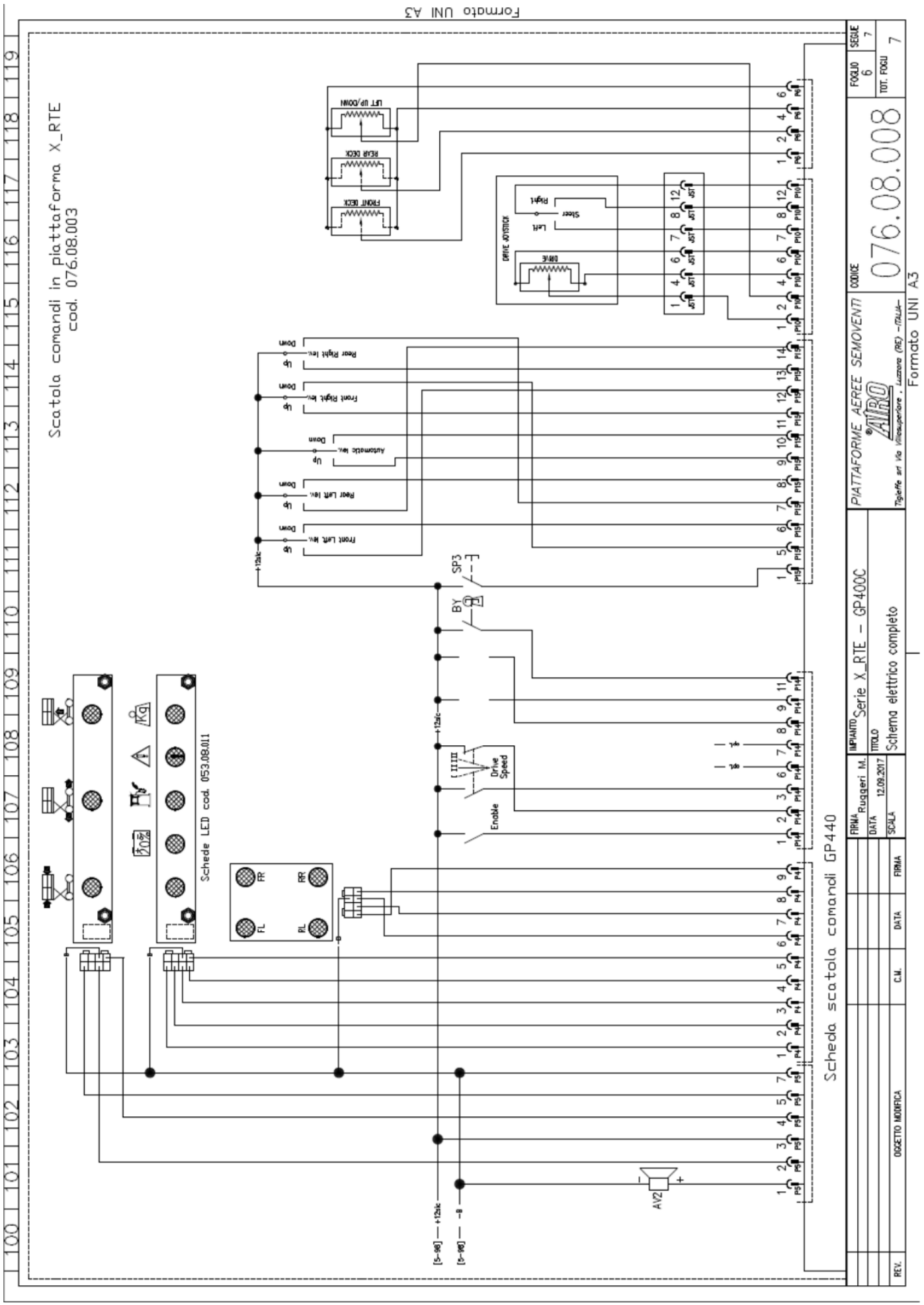
Pannello di comando a terra X_RTE
cod. 076.08.002
DIAGNOSTIC CENTER
DISPLAY
LCB
Scheda LED cod. 053.08.011
ON
°C
TBM
POS
NEG
SP1
SW1
AV1
PIATTAFORME AEREE SEMOVENTI
AIRO
076.08.008
Serie X_RTE - GP400C
Schema elettrico completo
Rugeri M.
12.09.2017
FOGLIO 2
SEGUE 3
TOT. FOGLI 7
Formato UNI A3


Formato UNI A3
Schede principale GP400C
Scheda VCCM #1
PIATTAFORME AEREE SEMOVENTI
AIRO
076.08.008
Schema elettrico completo
Serie X_RTE - GP400C
Ruggeri M.
12.09.2017
FOGLIO 3
TOT. FOGLI 7
SEGUE 4
Formato UNI A3


Formato UNI A3
Schede principale GP400C
PIATTAFORME AEREE SEMOVENTI
AIRO
Tagliaferro srl Via Villasuperiore - Luzzara (RE) -ITALIA-
CODICE
076.08.008
FOGLIO 4
SEGUE 5
TOT. FOGLI 7
IMPIANTO Serie X_RTE - GP400C
TITOLO Schema elettrico completo
FIRMA Ruggeri M.
DATA 12.09.2017
SCALA
OGGETTO MODIFICA
C.M.
DATA
FIRMA
REV.
Formato UNI A3


Formato UNI A3
Scatola comandi in piattaforma X_RTD
cod. 060.08.005
SP2
Cavo comandi spiralato
Cavo comandi
Scheda scatola comandi GP440
Scheda principale GP400C
CELLA DI CARICO 1
CELLA DI CARICO 2
CELLA DI CARICO 3
CELLA DI CARICO 4
M1
M3
M15
M13
PIATTAFORME AEREE SEMOVENTI
AIRO
Tagliaferri srl Via Villasuperiore - Luzzara (RE) -ITALIA-
CODICE
076.08.008
FOGLIO 5
SEGUE 6
TOT. FOGLI 7
IMPIANTO Serie X_RTE - GP400C
TITOLO Schema elettrico completo
FIRMA Ruggeri M.
DATA 12.09.2017
SCALA
Formato UNI A3


Formato UNI A3
Scatola comandi in piattaforma X_RTE
cod. 076.08.003
Scheda scatola comandi GP440
Schede LED cod. 053.08.011
SP3
BY
Drive Speed
Enable
AV2
FR
RR
FL
RL
PIATTAFORME AEREE SEMOVENTI
AIRO
CODICE
076.08.008
FOGLIO 6
SEGUE 7
TOT. FOGLI 7
IMPIANTO Serie X_RTE – GP400C
TITOLO Schema elettrico completo
FIRMA Ruggeri M.
DATA 12.09.2017
SCALA
Formato UNI A3

SIMB.	DESCRIZIONE	Pag.–Col.
AV1	Avvisatore acustico a terra	2–23
AV2	Avvisatore acustico in piattaforma	6–101
BC	CaricaBatteria	1–08/10
BT	Batteria	1–13/14
BY	Selettore di By–pass controllo del carico	6–110
EV1	Elettrovalvola Proporzionale comandi	3–50/51
EV2	Elettrovalvola trazione Avanti	3–47/48
EV3	Elettrovalvola trazione indietro	3–48
EV4A	Elettrovalvola A di sollevamento piattaforma	3–46
EV4B	Elettrovalvola B di sollevamento piattaforma	3–47
EV5A	Elettrovalvola di discesa piattaforma	3–53
EV5B	Elettrovalvola B di discesa piattaforma	3–54
EV6	Elettrovalvola di sfilo piattaforma avanti (OPT.)	3–44/45
EV7	Elettrovalvola di rientro piattaforma avanti (OPT.)	3–46
EV8	Elettrovalvola di sterzo a destra	3–47
EV9	Elettrovalvola di sterzo a sinistra	3–48/49
EV10A	Elettrovalvola di comando modalità 2WD	3–55/56
EV10B	Elettrovalvola di comando modalità 2WD	3–56
EV10C	Elettrovalvola di comando blocco differenziale	3–53/54
EV10D	Elettrovalvola di comando blocco differenziale	3–54/55
EV11A	Elettrovalvola di By–Pass generale	3–51
EV11B	Elettrovalvola di comando alta/bassa velocità	3–56/57
EV11C	Elettrovalvola di comando alta/bassa velocità	3–57
EV21	Elettrovalv. di sollevamento livellatore Anteriore sinistro FL	4–68
EV22	Elettrovalv. di discesa livellatore Anteriore sinistro FL	4–69
EV23	Elettrovalv. di sollevamento livellatore Anteriore destro FR	4–73
EV24	Elettrovalv. di discesa livellatore Anteriore destra FR	4–74
EV25	Elettrovalv. di sollevamento livellatore Posteriore sinistro RL	4–64
EV26	Elettrovalv. di discesa livellatore Posteriore sinistro RL	4–65
EV27	Elettrovalv. di sollevamento livellatore Posteriore destro RR	4–74
EV28	Elettrovalv. di discesa livellatore Posteriore destro RR	4–75
EV36	Elettrovalvola di sfilo piattaforma posteriore (OPT.)	3–47
EV37	Elettrovalvola di rientro piattaforma posteriore (OPT.)	3–48
EV41A	Elettrovalvola di sblocco assale oscillante	5–85
EV41B	Elettrovalvola di sblocco assale oscillante	5–86
F2	Fusibile circuito di comando	1–16
F3	Fusibile ausiliari motore	1–08
F4	Fusibile clacson	1–16
GRF1	Girofaro 1	3–52/53
GRF2	Girofaro 2	3–53
KL	Clacson	1–17
LC	Teleruttore di linea	1–06
LCB	Led Carica Batteria	2–33/34

SIMB.	DESCRIZIONE	Pag.–Col.
M1	Finecorsa posizione piattaforma bassa	5–81
M1S	Finecorsa stop trazione (OPT.)	5–83
M3	Finecorsa stop sollevamento (OPT.)	5–82
M13	Finecorsa posizione assale oscillante	5–84
RBC	Relè caricabatteria	1–12
RKL	Relè comando clacson	1–17/18
SP0	Interrttore di emergenza circuito di potenza	1–15
SP1	Interrutore di emergenza a fungo	2–23/24
SP2	Interruttore di emergenza a fungo	5–96
SP3	Pulsante clacson	6–111
ST1A	Sensore Rientro Livellatore Anteriore Sinistro FL	4–67/68
ST2A	Sensore Rientro Livellatore Anteriore Destro FR	4–71/72
ST3A	Sensore Rientro Livellatore Posteriore Sinistro RL	4–62/63
ST4A	Sensore Rientro Livellatore Posteriore Destro RR	4–76/77
STP1	Finecorsa Appoggio Livellatore Anteriore Sinistro FL	4–66
STP2	Finecorsa Appoggio Livellatore Anteriore Destro FR	4–70
STP3	Finecorsa Appoggio Livellatore Posteriore Sinistro RL	4–61
STP4	Finecorsa Appoggio Livellatore Posteriore Destro RR	4–75
SW1	Selettori comandi	2–22/23
TBM	Modulo alimentazione	2–24/26

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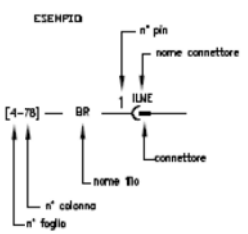


REV.	OGGETTO MODIFICA	C.M.	DATA	FIRMA

FIRMA Ruggeri M.
DATA 12.09.2017
SCALA

IMPIANTO Serie X_RTE – GP400C
TITOLO Schema elettrico completo

PIATTAFORME AEREE SEMOVENTI
AIRO
Tigieffe srl Via Villasuperiore , Luzzara (RE) –ITALIA–

CODICE 076.08.008

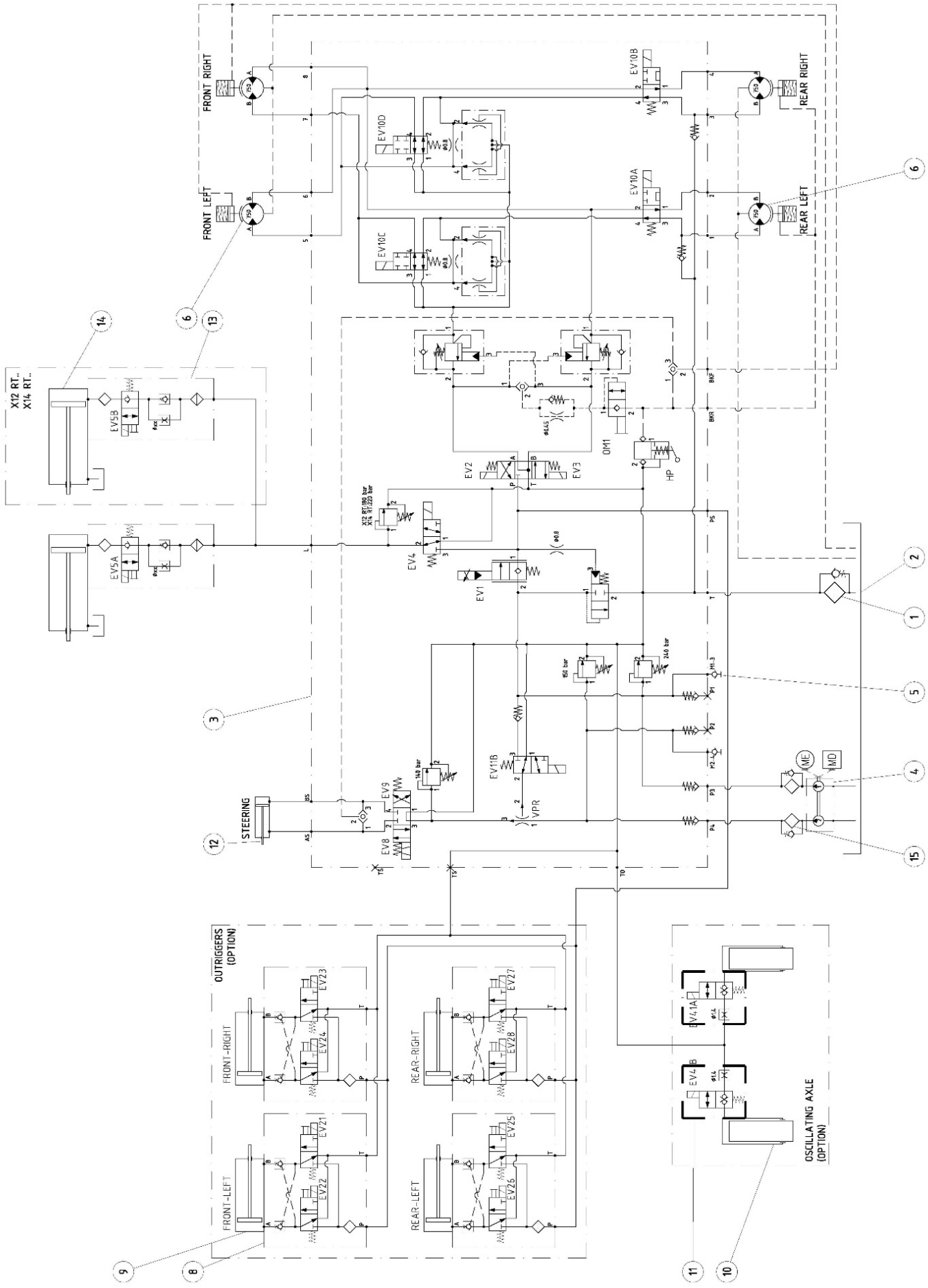
FOGLIO 7 | SEGUE –
TOT. FOGLI 7

Formato UNI A3

Formato UNI A3

13. HYDRAULIC DIAGRAM X12 RTD – X14 RTD – X12 RTE – X14 RTE

1	DISCHARGE FILTER
2	TANK
3	HYDRAULIC BLOCK
4	DOUBLE PUMP
5	PRESSURE GAGE CONNECTION
6.7	DRIVE HYDRAULIC MOTOR
8	LEVELLING JACK HYDRAULIC BLOCK
9	LEVELLING JACK CYLINDER
10	SWING AXLE CYLINDER
11	OSCILLATING AXLE HYDRAULIC BLOCK
12	STEERING CYLINDER
13	LOWERING CONTROL INTEGRATED ASSEMBLY
14	LIFTING CYLINDER
15	SUCTION FILTER
16	HIGH/LOW SPEED HYDRAULIC BLOCK
EV1	PROPORTIONAL SOLENOID VALVE
EV2	FORWARD DRIVE SOLENOID VALVE
EV3	BACKWARD DRIVE SOLENOID VALVE
EV4	LIFTING SOLENOID VALVE
EV5A/B	LOWERING SOLENOID VALVE
EV8	LEFT STEERING SOLENOID VALVE
EV9	RIGHT STEERING SOLENOID VALVE
EV10A/B	2WD/4WD DRIVE SOLENOID VALVE
EV10C/D	DIFFERENTIAL LOCK SOLENOID VALVE
EV11A	BY-PASS SOLENOID VALVE
EV11B	HIGH/LOW SPEED SOLENOID VALVE
EV21÷28	LEVELLING JACK CYLINDER SOLENOID VALVES
EV41A/B	SWING AXLE SOLENOID VALVE
FD1/2	FLOW DIVIDER
MD	DIESEL MOTOR
ME	ELECTRIC MOTOR
HP	EMERGENCY MANUAL DRIVE PUMP
OM1	EMERGENCY MANUAL DRIVE OPERATOR
VPR	STEERING PRIORITY VALVE.


FRONT RIGHT
FRONT LEFT
REAR RIGHT
REAR LEFT
EV10B
EV10D
EV10A
EV10C
X12 RT..
X14 RT..
EV5B
EV5A
EV2
EV3
OM1
HP
EV4
EV1
EV9
EV8
EV11B
VPR
STEERING
OUTRIGGERS
(OPTION)
FRONT-RIGHT
REAR-RIGHT
FRONT-LEFT
REAR-LEFT
EV23
EV24
EV27
EV28
EV21
EV22
EV25
EV26
EV41A
EV41B
OSCILLATING AXLE
(OPTION)
ME
MD