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USE AND MAINTENANCE HANDBOOK

Quality Management System Certified UNI EN ISO 9001 – 2015 N° 3966

AW 139 HELICOPTER HANDLING TROLLEY SUITABLE FOR ALL CONFIGURATION (STANDARD AND FLIR)

TYPE M.E. 139 FLIR – OMAR P/N 04005

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APPROVAL

Title	: Use and Maintenance Handbook
Document Number	: ME 139 B 97 01 03 B
Issue	: 7.0
Date	: July 04th, 2022
Contents and distribution approved by	: **General Manager** Matteo Oldani

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DICHIARAZIONE CE DI CONFORMITÀ
ai sensi dell'Allegato II A della Direttiva 2006/42/CE

La sottoscritta ditta **O.M.A.R. TECHNOLOGY** S.R.L. Via Civesio, 14 - 20097 S. DONATO MILANESE (MI) – ITALIA – Cap. Soc. € 46.800,00 i.v. Iscr. Trib. Milano n. 350801/8593/1 Iscr. C.C.I.A.A. – C.F. IT 11396870153

DICHIARA

sotto la propria esclusiva responsabilità che il carrello multiuso tipo ME 139 P/N 04005, per la movimentazione di elicotteri (nelle configurazioni standard e flir), identificato con il s/n _____ anno di costruzione _____, al quale questa dichiarazione si riferisce, è conforme alle seguenti disposizioni:

- DIRETTIVA 2006/42/CE;
- DIRETTIVA 2014/35/CE;
- DIRETTIVA 2014/30/CE;

Inoltre sono state applicate le seguenti norme armonizzate:

EN ISO 12100:2010, EN ISO13857:2020, EN ISO13854:2020, EN ISO13850:2015

e che il fascicolo tecnico è costituito da O.M.A.R. TECHNOLOGY S.R.L. ed è disponibile presso la Sede Operativa in San Donato Milanese (MI) Via Civesio, 14 – ITALIA.

S. DONATO MILANESE, _____

O.M.A.R. TECHNOLOGY S.R.L.

Matteo Oldani

CERTIFICATION FOR EU COMPLIANCE
According to enclosed II A of Directive 2006/42/CE

The undersigned company:

O.M.A.R. TECHNOLOGY S.R.L. Via Civesio, 14 - 20097 S. DONATO MILANESE (MI) – ITALY – Company's Capital € 46.800,00 fully paid-up. Reg. Court Milano n. 350801/8593/1 Reg. C.C.I.A.A. – P.IVA e C.F. IT 11396870153

CERTIFIES

herewith on its own responsibility that:

the trolley for the ground movement of helicopters (with configuration standard and flir), type ME 139 P/N 04005, with s/n _____ year of construction _____, which the present certification refers to, complies with the following provisions:

- REGULATION 2006/42/EU;
- REGULATION 2014/35/EU;
- REGULATION 2014/30/EU;

The following harmonized standards have been applied:

EN ISO 12100:2010, EN ISO13857:2020, EN ISO13854:2020, EN ISO13850:2015

and the technical dossier has been made by O.M.A.R. TECHNOLOGY S.R.L. and it is available at the headquarter in San Donato Milanese (MI) Via Civesio, 14 - ITALY

S. DONATO MILANESE, _____

O.M.A.R. TECHNOLOGY S.R.L.
Matteo Oldani

1. INSPECTIONS AND ACCEPTANCE TESTS

On _____**O.M.A.R. Technology S.r.l.** has carried out inspections and acceptance tests on M.E. 139 P/N 04005 trolley S/N _____.

1.1 PRODUCTION CONTROL

Tests carried out:
a) manufacturing drawing
b) construction compliance with requirements
c) components compliance with drawing requirements

1.2 TESTS

a) Dynamic overload test

The test was performed applying a 10% overload to the trolley nominal capacity as provided by relevant provisions.
All operations were performed separately applying adequate acceleration and deceleration and after vibrations caused by the previous operation had subsided. The trolley was tested in the most adverse conditions that imply max. stress for the different trolley components.

Following the above tests the trolley did not show any permanent deformation and/ or significant malfunctions.

b) Acceptance tests

Acceptance tests proved that:

a) the trolley provide a smooth operation at a 110% nominal load
b) all safety devices performed flawless
c) max speed allowed are not exceeded
d) max acceleration and deceleration allowed are not exceeded.

O.M.A.R. Technology S.r.l. - Il tecnico incaricato: _____

2. RECURRING INSPECTIONS AND TESTS BY THE ENDUSER

Frequency and range of recurring inspections and tests are related to local provisions, operating and environment conditions and degree of utilization.

Recurring inspections and tests must basically consist in:

a) a visual inspection of the structure especially looking for wear and tear and other damages to the carrying parts
b) a visual inspection of the welded parts
c) an inspection of mechanic, electric and hydraulic components with particular regard to safety devices
d) an acceptance test as described in the previous page.

The results of the above mentioned inspections and tests are to be recorded in the relevant file and kept at all times.

ATTENTION:
INSTRUCTION TO KEEP EFFICIENT THE BATTERIES

If the Trolley remains inactive or stored for a long period it's absolutely necessary to recharge the battery at least every 3 months.

PART 1

DESCRIPTION AND FEATURES

3. INTRODUCTION

3.1 PURPOSE

The purpose of this handbook is to provide detailed instructions for use, maintenance and routine repairs of helicopter handling trolley. Complete break down of sub-assemblies for spare parts identification and maintenance are also included.

3.2 OBJECTIVE

The data in this handbook refer to trolleys of the same family and with part number shown in the first page.

3.3 ABBREVIATIONS

Number	- No.
Reference number	- Ref. No.
Quantity	- Qty
Code	- P/N
Figure	- Fig.

3.4 USE OF SPARE PARTS CATALOG

A. To identify a component if P/N is unknown.

A.1 Refer to the table of content (Page 67).
A.2 Look for the relevant page and identify the component shown in the picture.
A.3 Once a component has been identified, look for the relevant S/N referring to the figure list.

B. To identify a component if P/N is known (Page 68).

B.1 Look for P/N in the numeric index
B.2 Look for the picture and identify the P/N.
B.3 Check P/N, quantity and reference number in the component list.

4. HANDBOOK MODIFICATIONS

O.M.A.R Technology S.r.l. reserves the right to change any information and description herein contained and carry out all technical modifications necessary to improve the product concerned without notice.

5. MAIN FEATURES AND PERFORMANCES

5.1 GENERAL DESCRIPTION

Handling trolley for LEONARDO HELICOPTERS AW – 139 helicopters. This trolley is suitable also to handle AW 139 standard and flir installed version. In case the helicopter is provided with snow or slump pads, the towing of the helicopter is still possible with the trolley by using the pintle hooks assembled on the front part of trolley (see fig.1).

5.2 FRAME

a) The chassis consists of a shaped steel structure. The front part is designed to connect with the undercarriage suspension system, complete with driving wheel and control head, electro/hydraulic control unit, electronic control unit and battery charger.
b) The rear part of the chassis contains the rollers that enable the trolley to be connected to the helicopter.
c) The trolley is also equipped with infrared camera, which monitors the helicopter wheel hook up area and displays on a monitor on the control head, allowing the operator a detailed view of the operation.
d) The trolley is also equipped with a pintle hooks which is used **only** when the snow skids or slump pads are installed on helicopter. In this case the furnished tow bar is attached between the helicopter and the pintle hooks on the trolley.

5.3 ELECTRIC SYSTEM

a) The trolley's electrical system is powered by a Lead/Gel 24 Volt battery, feeding the electro-hydraulic control unit and drive system. All operations are controlled from the control head and an electronic control unit that enables the user to:
   - Attach the front wheel of the helicopter to the trolley, by activating the hydraulic jacks that control the roller devices fitting around the wheel
   - Move the helicopter either forwards or backwards, regulating the speed
   - Disconnect the trolley from the helicopter once the desired position has been reached.
b) The driving wheel enables the helicopter to be towed at a speed of about 3.5 Km/h, forwards or backwards. The driving wheel has an electromagnetic brake which is permanently applied, except when the trolley drive levers are activated on the control head.
c) Batteries charge is approx. 3/4 hour. The charge indicator is located on the control head.
d) Batteries will be recharged only by means of the relevant battery charger supplied.

5.4 HYDRAULIC SYSTEM

The trolley is equipped with an hydraulic system and electro-hydraulic gear that by means of the relevant actuator located on the control head, open and close the rollers latching the wheel of the helicopter or aircraft nose landing gear in order to move it forward and backward.

5.5 STEERING

The trolley has a manual steering handle with the control head at the top and the monitor for display of the wheel attachment mechanism in the middle.

5.6 DATI TECNICI – TECHNICAL DATA

Lunghezza max. in condizione operativa Max. operating length	4100	mm	161,42	inches
Lunghezza max. a riposo Storage length	3550	mm	139,77	inches
Lunghezza timone completamente esteso Length of extended control-bar	800	mm	31,50	inches
Larghezza max. Max width	1500	mm	59,06	inches
Altezza max. Max height	1350	mm	53,15	inches
Altezza dal suolo max. Max. ground clearance	90	mm	3,55	inches
Altezza dal suolo min. Min. ground clearance	60	mm	2,36	inches
Passo Axles distance	3000	mm	118,11	inches
Peso a vuoto Weight empty	1250	Kg	2755	Lbs
Capacità di traino Towing capacity	7500	Kg	16500	Lbs
Velocità a pieno carico Speed at full load	3,5	Km/h	2,18	Mph
Batterie d'alimentazione Power battery pack	24	V	24	V
Autonomia (servizio intermittente) Work-range (no continuous)	3/4	H	3/4	H

5.7 MANDATORY PROVISIONS

BEFORE OPERATE THE TROLLEY TO HELICOPTER CONNECTION MAKE SURE THAT HELICOPTER NOSE LANDING GEAR IS UNLOCKED (FREE TO ROTATE)
(Refer to Helicopter Manufacturer's Technical Publication)

MAX TOWING CAPACITY
6500 kg (14330 Lbs.)

DO NOT USE TROLLEY FOR ANY OTHER PURPOSE THAN HELICOPTER HANDLING

DO NOT STAND NEAR OR PASS CLOSE TO TROLLEY WHEN IN MOTION

5.8 SERIAL/MODEL NUMBER NAMEPLATE

Every trolley is identified with a metallic nameplate, shown below, with details of the data specific to the product and traceability.

On request, OMAR Technology can affix alongside this nameplate another supplied by the client.

PART 2

USE

6. REQUIREMENTS FOR USE

6.1 DESCRIPTION OF TROLLEY

The M.E. 139 P/N 04005 trolley shall be used only to handle LEONARDO HELICOPTERS AW 139 helicopters in standard and FLIR installed version (even with snow skids or slump pads installed).

From the control head the operator can activate all necessary steps to latch and handle helicopters, such as:

- ❖ Open the hook up rollers that will enclose the helicopter wheel by clicking the forward and rear **GREEN** button.
- ❖ Close the rollers by clicking the **ORANGE** button and at the same time activating the **RED** safety button on the right of the trolley
- ❖ Move the trolley in the direction desired, either forwards or backwards

6.1.1 USE OF THE TROLLEY

Before hooking up the trolley top the helicopter, proceed as follows:

- **Verify that the front wheel of the helicopter is free to rotate, releasing it using the electronic control or by entering the PIN provided (See the Manufacturer's Manual).**
- Press the **GREEN** button which opens the front and rear rollers that surround the helicopter wheel.
- Gently pull the lever on the steering head, moving the trolley close to the helicopter until it comes in contact with the lower rear rollers.
- Carry out the hook up operation, using the monitor display to ensure the operation does not interfere with the FLIR mounting;
- Close the trolley connector device, activating simultaneously the **ORANGE** button on the steering handle and the **RED** button on the right hand side of the trolley, first making sure that the front wheel of the helicopter is free to rotate.
- Begin to tow the helicopter using the levers on the steering head.

It is recommended that the butterfly levers should be activated gently, in order to prevent brusque helicopter movements.
Note that when the butterfly levers are used, movements both forwards and backwards are effected with a delay of 3 ÷ 5 seconds, in order to avoid brusque changes of direction or speed.

- If the snow skids or slump pads are installed on the helicopter, tow the helicopter with the trolley in the way that follows:

a) Connect the tow bar with related adaptor snow skid or slump pad to the helicopter
b) Connect the tow bar to the pintle hooks (on the front trolley) making sure that the tow bar eye was locked (insert the security pin) . See fig. 1.
c) Drive normally the trolley using the control head. It's possible use the control head either in normal position (operator in front of trolley) or in the opposite size (with rotation 180° see fig. 1) with the operator on the trolley plain.

<u>Attention</u>:
In this case the control of trolley gear (forwards/backwards) was inverted to operator.

Figure 1

It is recommended that the butterfly levers should be activated gently, in order to prevent brusque helicopter movements.
Note that when the butterfly levers are used, movements both forwards and backwards are effected with a delay of 3 ÷ 5 seconds, in order to avoid brusque changes of direction or speed.

6.2 FOREWORD

This user manual must be kept at all times with the trolley and within operator's reach for reference and to keep records of any repair or maintenance activity.

This manual was compiled to provide operators and authorized personnel any information related to the trolley features and operation, information and safety provisions concerning standard trolley functions, as well as recommendations to avoid or reduce the danger connected with material lifting and handling equipment.

Thorough and careful reading of this manual is strongly recommended; any warning and danger indications must be thoroughly comprehended and kept well in mind. Should any section not be clear or complete, please do not hesitate to ask for clarification before using the trolley; our technical staff is always at your disposal.

Failure to comply with operating instructions and safety provisions included in this manual as well as regulations concerning accident prevention, may result in injuries.

This manual is meant to provide operating personnel with important product information. It is therefore necessary to read this manual thoroughly and make sure that operators have a clear understanding of it before operating the trolley .

This manual is an integral part of the trolley and must be kept in good condition for future references, and updated as far as register entries are concerned until the trolley is dismantled.

Should this manual get damaged or lost, please request another copy directly to **O.M.A.R. Technology S.r.l.**

6.3 OPERATOR'S RISKS AND MANUFACTURER'S LIABILITY

Dangerous conditions for operators and anybody working in the operating area of the trolley, in particular when it is latched to the helicopter, may arise when trolleys are employed on uneven ground, next to embankment or slope or holes which are not suitable to support their load. Failure to observe precautions indicated will immediately invalidate any warranty and manufacturer's liability.

O.M.A.R. Technology S.r.l. will disclaim all responsibility for any damage or consequence due to:

- failure to comply with any provision set out in this manual
- wrongful use of the trolley or use by unqualified personnel
- use not compliant with regulations in force in the country where the trolley operates
- unauthorized modification or repair
- total or partial non-observance of instructions
- any use of the trolley different from its original use
- out-of-the ordinary event

6.4 SERVICE

Only original spare parts guaranteed by the manufacturer must be used to repair trolleys.

Service carried out by the manufacturer is the best guarantee of reliability and performance.

6.5 DISMANTLING

Trolleys must be disposed of according to procedures set out by public authorities.
Before disposal, trolleys must be kept out of reach.
Dismantling must be carried out by qualified personnel and companies authorized to dispose of polluting and noxious substances and liquids as well as plastic and batteries.

6.6 OPERATOR PROVISIONS

Only helicopter skilled and trained personnel, knowledgeable of safety devices and regulations are allowed to operate trolleys.

Operators, who do not how to use the trolley properly and safely and did not read and understand the relevant operating instructions, maintenance and safety provisions and

have no knowledge of accident prevention regulations concerning material lifting and handling equipment are forbidden to operate trolleys.

Before operating trolleys, max. capacity load must be displayed and carefully checked. Personnel must only operate trolleys after making sure that it is safe and their capacity load values do not exceed those permitted.

Operators must always be alert and physically fit. They do not have to be under the influence of alcohol or drugs or having taken medicaments that could affect their hearing, sight, attention and reflexes.

Operators must avoid wearing loose-fitting clothes and jewellery, such as bracelets or necklaces, which might entangle in trolley components. Long hair is to be worn into a pony-tail or a coil to avoid any risk of entangling or tearing off.

Before operating trolleys, operators must check controls and safety devices daily and make sure they work properly and effectively. In the event of any breakdown, malfunction or failure of safety devices, trolleys shall not be employed under any circumstance.

Operators priority must always be safety; operators must refuse to operate trolleys when safety requirements are not fulfilled. In such instances they have to take advice from their supervisors.

Operators and anyone working with trolleys must use the adequate personal protective guards (overalls, gloves, shoes, helmet, etc.) to reduce any risk connected with trolley activity. The personal protections do not have to create hazardous situation during the tow ing manoeuvres (i.e. ear plugs).

Operators must also watch over that no person, animal, equipment or materials approach dangerous areas or obstruct the operation area of trolleys.

During helicopter handling, operators shall never leave the control head assembly unattended; should this happen, they have to activate the safety switch in order to prevent any unintentional starting by unauthorized persons.

WARNING:
During opening and closing of latching device to helicopter/aircraft wheel nobody must get close to trolley in order to prevent any risk of being crushed in between.

Operators must be aware of specific standard warnings related to latching and unlatching; they have to operate trolleys according to the instructions provided by their supervisors. They always have to observe any stop or halt command given by anyone who is operating in the working area.

Trolleys must not be modified or employed differently from what provided by this manual.

Trolleys shall be used only to handle helicopters.

It is forbidden to tow helicopters whose max gross weight exceed the max. capacity load of the trolley.

It is strictly forbidden to use trolleys to transport people.

Safety devices must not be altered or removed.

In the event of a problem, the operator must immediately stop the trolley and have it checked before putting it back in operation.

6.7 OPERATING PRECAUTIONS

6.7.1 ELECTRIC LINES

Trolleys are neither electrically insulated nor protected against live electric lines.
Electric discharges may occur even without contact between two bodies, if safety ranges, i.e. 5 m up to 50,000 Volts and 10 m over 50,000 Volts are not observed.

When operating a trolley near radio, television or radar stations, both trolley and operator are exposed to induced high voltage that might result in painful and dangerous shocks. Proper measures should be taken in advance based on advices obtained from the station technical staff.

6.7.2 WIND

Trolleys can be operated with a wind blowing up to 18 m/sec. or 65 km/h or 40 mph.

Look out for wind-tunnel effects due to strong wind gusts that might originate when operating trolleys between nearby buildings.

Always be careful when operating trolleys near buildings or fixed obstacles: sudden wind blasts might make trolleys swing and unstable thus jeopardizing operators and the helicopter safety.

Should trolleys be employed in airports, watch out for air stream produced by aircraft motors during taxiing, taking off and landing.

Should detected wind speed exceed values provided or the max. speed allowed (65 km/h), trolley operation shall be stopped immediately.

6.7.3 STABILITY

Trolleys are to be operated only on concrete paving marked by a stable, solid, non-sinking, flat and quite horizontal surface.

Trolleys must not be used to hoist or move any helicopter on areas where underground piping, manholes and drains are located nor on extremely deformed surfaces or on steps.
Trolleys must not be operated next to slopes or banks; if the ground is stable and solid, a minimum safety distance from the ditch bottom equal to the ditch depth must be observed.

Should trolleys be operated on a slope, the max. ground gradient allowed is 5°.

6.8 HOISTING - DANGER OF IMPACT

Before operating trolleys, remove any snow, ice or mud deposits.

Before operating trolleys, make sure no unauthorized personnel, animals or obstacles are to be found in the relevant operating area.

During hosting or handling it is forbidden to stop by or get close to trolleys.

Do not operate a trolley when there are cables, ropes, etc. hanging down from helicopter.

Make sure that no helicopter component when lifted or lowered comes in contact with fixed or mobile obstacles.

Check that no fixed or mobile obstacles are located in the trolley operating area (aerial cables, electric mains, piping, etc.).

In the event that the operator's field of vision is not entirely visible within the trolley operating area, the operator has to require some staff assistance to watch over the hidden zone.

Trolleys are equipped with an electromagnetic brake that engages automatically. For safety reasons, it is however forbidden to park them downhill when hoisting a helicopter.

6.9 PRECAUTIONS IN CASE OF A FAILURE

Trolleys must not be operated unless all controls and safety devices have been inspected and are in good working order.

It is forbidden to use a defective or out of order trolley.

Trolleys maintenance must be carried out in compliance with schedules and procedures set out in the user instruction section.

Make sure that all plates and labels are clear and well legible. End user or owner of trolleys must replace any plate or label which has become illegible and re-order it from the manufacturer.

Make sure that the user manual is always available and in a good condition.

a) Safety provisions before operating trolleys

Should the operating procedures not be clear enough, safety conditions to operate trolleys are not guaranteed, therefore they must not be used.

Each time trolleys are operated a visual inspection as well as a functioning test of the relevant controls and safety devices must be carried out first.

Operators must immediately notify any malfunction and restore trolley original working conditions before operating it.

Make sure that plates and signs are legible and clean.

Make sure that trolley outfit includes the relevant user manual that must be available at all times.

Before operating trolleys, operators must ensure that this will not cause any danger. Check hydraulic components and oil gauge.

Check that all clamping devices (bolts, pins, screws and nuts) are well fastened and locked.

Carry out a visual inspection of welding and structure.

Before operating trolleys, operators must check their working order (if cleaned, lubricated, etc.).

Keep trolleys clean from soiling, grease, oil, snow and ice.
No items or tools may be left on trolleys.

If during the above mentioned inspections any malfunction of the controls is detected, they must be repaired or replaced before operating the trolley.

The operator must notify the person in charge of repair and maintenance work of any malfunction detected.

Any malfunction detected must be repaired before operating a trolley to avoid injuries or accidents.

In the event that a trolley cannot be repaired immediately, it must be taken out of service.

b) Safety precautions during operation

Trolleys must be operated by helicopter skilled personnel who thoroughly read and understood this manual.

Personnel wearing long hair loose, loose-fitting clothes or bracelets, necklaces, rings, etc. are forbidden to operate trolleys in order to avoid injuries and accidents due to entangling or tearing off.

Be extremely careful to avoid that a trolley or hoisted helicopter bumps into fixed obstacles.

Check always that trolley operating area is clear of persons activity not involved in towing, animals or objects that might jeopardize general safety.

Do not operate trolleys under dangerous circumstances (during thunderstorms, in toxic or explosive environment, etc.)

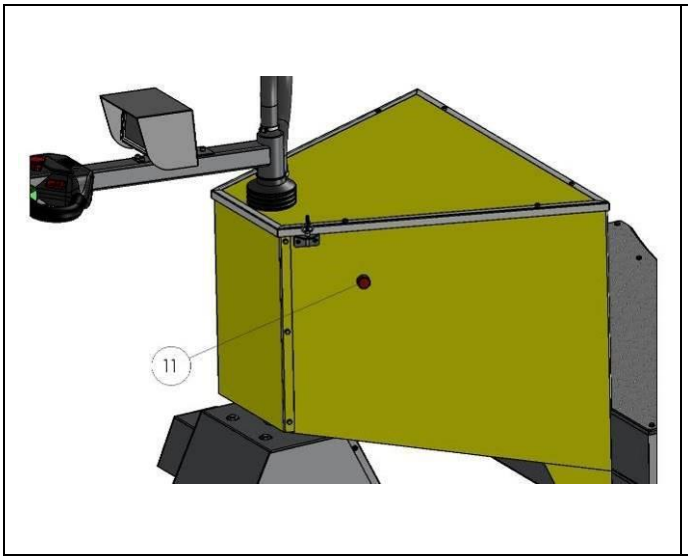
Do not operate trolleys at night (or in dark surroundings) unless the working area is adequately lighted up.

Adequate personal safety equipment (safety helmet, gloves, shoes, etc.) must be worn at all times.

INSTRUCTIONS FOR USE

7. INSTRUCTIONS FOR USE

FIGURE – 2



The M.E. 139 FLIR trolley shall be used only to handle LEONARDO HELICOPTERS AW 139 helicopters in standard and flir installed version.

For a correct use stick to the following instructions:

a) Trolleys are to be employed on solid, even and horizontal surfaces inside and outside featuring an adequate lighting to ensure a good visibility for operators.

b) MAKE SURE THAT THE HELICOPTER FRONT CARRIAGE IS FREE TO ROTATE (Refer to the Manufacturer's Technical Publications)

c) Release if it is found depressed the emerge push button **RED** (**Fig. 2, rif. 4**)

d) Press button **GREEN** (**Fig. 2, rif. 3**) to open rear roller holder of helicopter nose landing gear and make sure it is completely open. **TO ENSURE THE TROLLEY IS ATTACHED WITHOUT INTERFERING WITH THE FLIR MOUNTING**

e) Push the trolley near to the helicopter nose landing gear operating the throttle lever (**Fig. 2, rif. 5**) (forward and backward control) so that carriage rear rollers stick to the helicopter wheels.

f) Press the **ORANGE** button (**Fig. 2, rif. 9**) and the **RED** button (**Fig. 2, rif. 11**) located on the trolley's right side at the same time to close the rear roller holder.

g) Control the trolley-helicopter unit in the travel direction requested while operating the throttle lever progressively and gently. Should the throttle lever open completely at once, this will result in sharp movements that can jeopardize helicopter and trolley safety.

h) The trolley is equipped with a timed LED light (120 sec) activated by the button (**Fig. 2, ref. 8**)

8. SAFETY DURING MAINTENANCE

Maintenance works must be carried out by helicopter qualified and trained personnel only.

O.M.A.R. Technology S.r.l. will provide all information concerning maintenance and spare parts, as well as additional assistance such as:

A) training for operators and maintenance personnel
B) spare parts
C) service.

Trolley components must be disassembled in accordance with this hand book, following a proper sequence; personnel in charge shall perform any maintenance work under the best safety conditions.

When carrying out maintenance work on latching device, hydraulic cylinders and front wheel suspension assembly, make sure that trolley rests on proper support and a stable base to prevent any squashing and slashing risk.

Always look out for any fortuitous displacement of a component with respect to another: this might result in slashing and squashing injuries.

A deep knowledge of the trolley operating standards and a careful behavior help reducing any potential risk.

8.1 BATTERY CHECK AND RECHARGE

a) The trolley is equipped with a gelatine/lead battery pack that does not require maintenance.
b) Check daily that the battery charge on the relevant indicator located on the control head is correct (ref.1, fig. 2); if not, recharge the battery pack by means of the relevant battery charger, ref. 14, fig. 9 permanently installed on the trolley.

NOTE: Completed charging of the batteries is shown when the 10 LEDs light up. The display is updated automatically to show real values, after one minute of towing operation.

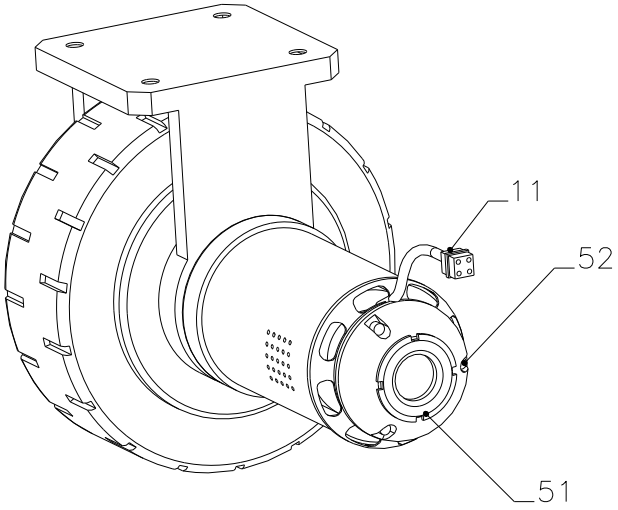
c) Such a check should be performed in the evening as to allow the battery charger to operate during the night.
d) To charge battery pack insert plug **15 fig .9** in a 110/220V socket. When charge is completed, the relevant indicator **rif. 16 fig. 9** turns green.

NOTE: During charging of the batteries, for safety reasons the forward and backward movement functions of the trolley are disabled, while it is still possible to close and open the hook up rollers.

e) Note that battery indicator located on the control head shows the actual charge and the relevant input applied during trolley operation.

8.2 ELECTROMAGNETIC BRAKE

FIGURA – 4



The electromagnetic brake acts on the drive wheel and is always engaged, it is disengaged whenever the throttle valve **ref. 2 Fig. 2**.
Braking adjustment or calibration is obtained by screwing or unscrewing the ring nut **51**, of fig. 4.
If the trolley has to be moved manually, without the aid of the drive wheel, it is necessary to remove the brake assembly by unscrewing the screws **52**.

8.3 TROLLEY CLEANING

To clean trolley do not use:
a) jets of water
b) corrosive liquids
c) substances that could damage hydraulic and electric components
d) do not wash aircraft with trolley fitted underneath

8.4 HYDRAULIC OIL REFILL

If no oil leakage is detected, refill of the electro-hydraulic gear cases is not necessary.
If an oil refill is required, observe the following procedure:

a) close the latching device;
b) Put the trolley in a safe condition (Push button 6 Fig. 2 pressed)
c) take off cover of electro-hydraulic gear case;
d) unscrew tank cap and top up with oil paying attention that it slightly submerges (5 mm approx.) the hydraulic pump body to be seen in the tank.
e) oil features are listed in the table on figure **5**.

ATTENTION
DO NOT USE OIL FOR HELICOPTER HYDRAULIC CIRCUITS

FIGURE - 5

CARATTERISTICHE OLIO TAMOIL ATF
TAMOIL ATF FLUID FEATURES

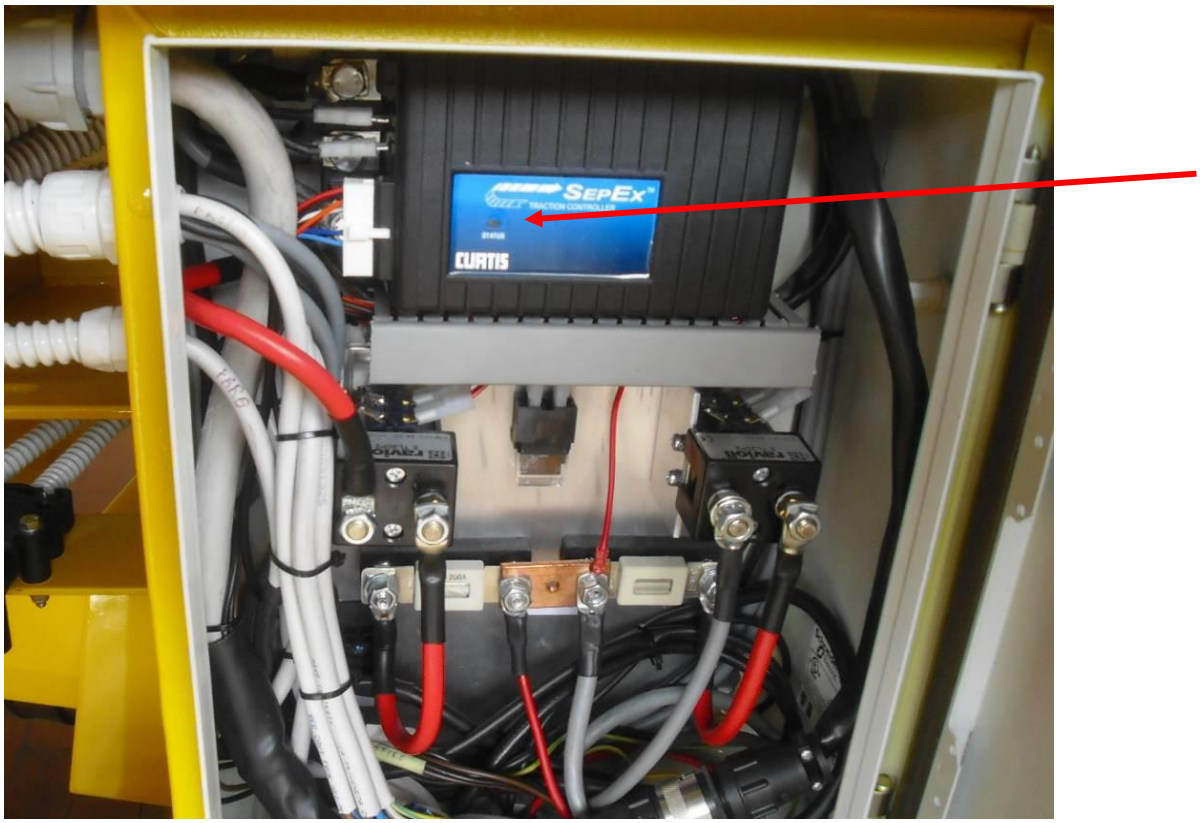
N° N°	DESCRIZIONE DESCRIPTION	VALORI VALUES
1	Colore ASTM D 1500 Colour ASTM D 1500	ROSSO RED
2	Densità a 20° C. ASTM D 4052 Density at 20°C. ASTM D 4052	871
3	Viscosità a 40° C. ASTM D 445 Viscosity at 40° C. ASTM D 445 Viscosità a 100° C. ASTM D 445 Viscosità at 100° C. ASTM D 445	37,6
4	Punto di infiammabilità ASTM D 92° C. Flash point ASTM D 92° C.	195

CORRISPONDENZA OLI
EQUIVALENT OILS

MARCA BRAND	SIGLA OLIO OIL TYPE
AGIP	ATF DEXRON
ESSO	ATF DEXRON 11
FINA	DEXRON 11 D
SHELL	ATF DEXRON 11

9. TROUBLE SHOOTING AND CHARGE INDICATOR

FIGURE - 6



The electronic control unit is equipped with an internal system to "troubleshooting", which displays on the indicator (fig. 6) the cause of the fault; depending on the number of pulses that are flashing (fig. 6). In the matrix below shows the most common types of faults that may possibly occur during normal use of the trolley.
A Status LED is built into the controller. It is visible through a window in the label on top of the controller. This Status LED displays fault codes when there is a problem with the controller or with the inputs to the controller. During normal operation, with no faults present, the Status LED flashes steadily on and off. If the controller detects a fault, a 2-digit fault identification code is flashed continuously until the fault is corrected.

For example, code “3,2”—main contactor welded—appears as:

¤¤¤ ¤¤	¤¤¤ ¤¤	¤¤¤ ¤¤
(3 , 2)	(3 , 2)	(3 , 2)

The codes are listed in figure 6A.

FIGURE – 6B

STATUS LED FAULT CODES

LED CODES		EXPLANATION
LED off	▬▬▬	no power or defective controller
solid on	▭	controller or microprocessor fault
0,1	■ ¤	controller operational; no faults
1,1	¤ ¤	current sensor error
1,2	¤ ¤¤	hardware failsafe fault
1,3	¤ ¤¤¤	M- fault or motor output short
1,4	¤ ¤¤¤¤	static return to off (SRO)
2,1	¤¤ ¤	throttle wiper high
2,2	¤¤ ¤¤	emergency reverse circuit check fault
2,3	¤¤ ¤¤¤	high pedal disable (HPD), or expired timer
2,4	¤¤ ¤¤¤¤	throttle wiper low
3,1	¤¤¤ ¤	contactor driver overcurrent or field winding short
3,2	¤¤¤ ¤¤	main contactor welded
3,3	¤¤¤ ¤¤¤	field winding open
3,4	¤¤¤ ¤¤¤¤	missing contactor
4,1	¤¤¤¤ ¤	low battery voltage
4,2	¤¤¤¤ ¤¤	overvoltage
4,3	¤¤¤¤ ¤¤¤	thermal cutback, due to over/under temp
4,4	¤¤¤¤ ¤¤¤¤	anti-tiedown fault, or overheated motor

Only one fault is indicated at a time, and faults are not queued up. Refer to the trouble-shooting chart paragraph 21 for suggestions about possible causes of the various faults. Operational faults—such as a fault in SRO sequencing—are cleared by cycling the inter-lock switch or key-switch.

10. TROUBLE SHOOTING CHART

REF	FAILURE	LIKELY CAUSE	SOLUTION	FIG.	PAGE
1	Pilot lamp on control head does not light .	a. Burnt fuses. b. Wrong electric connection	- Check fuses (6-7-8) and replace. - Check connector (9 - 3).	14 14 - 15	57 57-59
2	Trolley does not operate either forward or backward.	a. Battery inefficient. b. Potentiometer out of order. c. Motor brushes worn out. d. Fuses out of order.	- Check or replace battery - Replace potentiometer (4) - Replace brushes (3) - Replace fuses 6-7-8	9-14-2 7-7A 12 14	45-57-25 32 51 57
3	Latching device does not open	a. Wrong electric connections b. Electro-hydraulic gear case is out of order c. Electrovalve assy is inefficient.	- Check electric connectors (3-9-15) - Replace gear case (1) - Check and replace assembly (2), if necessary	14 9-10 10	57 46-47 47
4	Latching device does not close	a. Wrong electric connections b. Electro-hydraulic gear case is out of order c. Electrovalve assy is inefficient.	- Check electric connectors (3-9-15) - Replace gear case (4) - Check and replace assembly (2), if necessary	14 9-10 10	57 46-47 47
5	Trolley has no power	a. Battery is inefficient.	- Check any single battery cell (2).	14	57

REF	FAILURE	LIKELY CAUSE	SOLUTION	FIG.	PAGE
6	Latching device closes/opens/ discontinuously	a. Air in the hydraulic circuit	- Extend and pull back fork by pressing (8) and (9) buttons and have cylinders go to the end of stroke so that hydraulic circuit can bleed.	2	24
7	Hydraulic system inefficient	a. Wrong electric connections.	- Check connectors (9-15)	14	57
		b. Electro-hydraulic gear case out of order.	- Check and replace gear case. (11)	14	57
		c. Distribution valve assembly out of order.	- Check and replace valve assy (2), if necessary.	10	47
		d. Oil level low	- Top up oil.	5	28

11. REPLACE POTENTIOMETER

FIGURE – 7

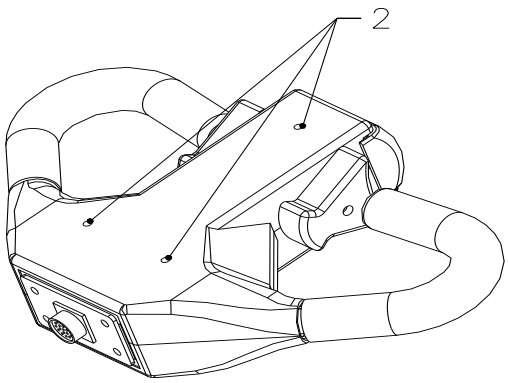
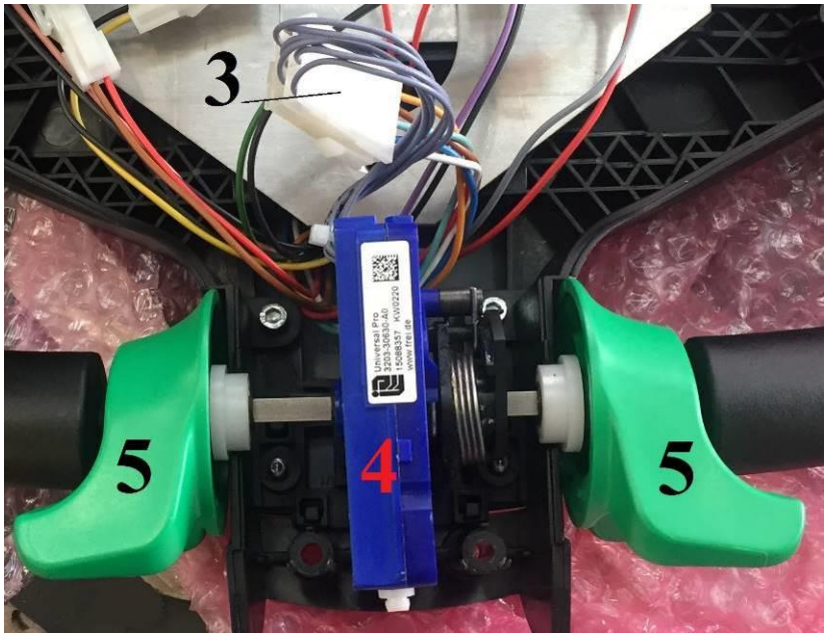


FIGURE – 7A



Should be necessary to replace potentiometer located in the control head, observe the following procedure:

a) To Put trolley in safe condition push button (**Fig. 2, rif. 4**)
b) unloose ring nuts in the lower part securing control head cover (**Fig. 7, rif. 2**)
c) disconnect connector (**Fig. 7A, rif. 3**)
d) release the electronic assy (**Fig. 7A, rif. 4**) acting on throttle lever (**Fig. 2, rif. 5**)
e) replace the electronic assy with the new
f) reassemble unit following the above steps in reverse.

12. PLANNING OF INSPECTIONS/CONTROLS

12.1 INFORMATION ON TECHNICAL ASSISTANCE

To keep the truck in perfect working conditions it is necessary to carry out periodic inspection and maintenance operations, which must be carried out by specialized technicians.

The checks to be carried out periodically on the trolley to carry out correct maintenance are summarized below; the intervals refer to normal use of the trolley.

Type of control	Frequency of control
Safety devices	Annual
Braking devices	Annual
Battery charger	Annual
Lubrication	Annual
Visual examination of structure	Annual
Visual and physical examination of welds	Annual
Complete general inspection	Annual

All checks may be carried out by the manufacturer during the annual periodic check in accordance with current legislation.
At the end of the checks, a report will be issued.

12.2 SHELF LIFE

The component replacement cycle based on the months elapsed during the life of the trolley.

FIGURE – 8

Products	P/N	Shelf Life (MOS)	
		storage	use
Battery	00536	**120**	**60**
O-rings / Sealing System	N.A.	**120**	**96**
Hydraulic oil	N.A.	**120**	**96**
Flexible hoses	01968 01969	**180**	**120**
Rear Wheels	01677	**120**	**60**
Rubber ring of wheel	00476	**120**	**60**
Control Head	01247	**240**	**180**
Motor controller	01465-C	**240**	**180**

PART 3

MANAGEMENT OF DOCUMENTATION

13. INSPECTION REGISTER LOG BOOK

13.1 REFERENCE TO DIRECTIVE

This inspection log book is issued to the user by O.M.A.R. Technology S.r.l. in compliance with Exhibit I of 2006/42/CE Directive.

13.2 KEEPING OF REGISTER

This register is an integral part of the trolley and must be kept until the trolley is dismantled.

13.3 COMPILATION OF REGISTER

The following instructions comply with the provisions in force during the first market-release of trolley. New provisions may come into force and modify user's obligations.
This register is designed to record the following cases related to trolley life according to the patterns herewith suggested:

a) Delivery of trolley
b) Transfer of property
c) Replacement of hydraulic components
d) Replacement of safety devices and components
e) Recurring maintenance inspections
f) Major breakdowns and repairs

14. DELIVERY OF TROLLEY

This trolley model M.E.139 manufactured by **O.M.A.R. Technology S.r.l.**
with serial no _____ Year of manufacture _____
as per this inspection log book was delivered on_____ by **O.M.A.R. Technology S.r.l.**
to (Company's name) _____

_____

in compliance with the agreed terms and conditions, with technical, dimensional and operating specifications set out in the user manual.

O.M.A.R. Technology S.r.l.

15. SUBSEQUENT TRANSFER OF PROPERTY

On _____
The property of the above mentioned trolley was transferred to the Company:

_____

We herewith certify that technical, dimensional and operating specifications of the trolley comply with those originally provided by the manufacturer; modifications to the trolley, if any, were recorded in this register.

The Seller **The Buyer**

_____ _____

16. SUBSEQUENT TRANSFER OF PROPERTY

On _____

The property of the above mentioned trolley was transferred to the Company:

_____

We herewith certify that technical, dimensional and operating specifications of the trolley comply with those originally provided by the manufacturer; modifications to the trolley, if any, were recorded in this register.

The Seller **The Buyer**

_____ _____

17. SUBSEQUENT TRANSFER OF PROPERTY

On _____

The property of the above mentioned trolley was transferred to the Company:

_____

We herewith certify that technical, dimensional and operating specifications of the trolley comply with those originally provided by the manufacturer; modifications to the trolley, if any, were recorded in this register.

The Seller **The Buyer**

_____ _____

18. REPLACEMENT OF HYDRAULIC COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement _____

The user _____

19. REPLACEMENT OF HYDRAULIC COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement _____

The user _____

20. REPLACEMENT OF SAFETY COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement The user

_____ _____

21. REPLACEMENT OF SAFETY COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement The user

_____ _____

22. REPLACEMENT OF SIGNIFICANT COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement The user

_____ _____

23. REPLACEMENT OF SIGNIFICANT COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement The user

_____ _____

24. REPLACEMENT OF SIGNIFICANT COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement The user

_____ _____

25. REPLACEMENT OF SIGNIFICANT COMPONENTS

On _____the following component:_____

Made by_____

HAS BEEN REPLACED

by _____

made by_____ serial no. _____

Remarks: _____

Replacement due to: _____

The service responsible for replacement The user

_____ _____

26. RECURRING MAINTENANCE INSPECTIONS

The user must observe trolley maintenance and inspection schedule.

N° No	Data Date	Descrizione dell'intervento Description of service	FIRMA SIGNATURE
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25			

27. MAJOR FAILURE AND REPAIRS

Description of failure _____

_____

Causes_____

_____

Repair carried out _____

_____

Signature of the responsible for repair User signature

_____ _____

Place _____ Date _____

28. MAJOR FAILURE AND REPAIRS

Description of failure _____

_____

Causes_____

_____

Repair carried out _____

_____

Signature of the responsible for repair User signature

_____ _____

Place _____ Date _____

PART 4

CATALOGUE OF SPARE PARTS

29. STRUCTURE OF THE TROLLEY

FIGURE – 9

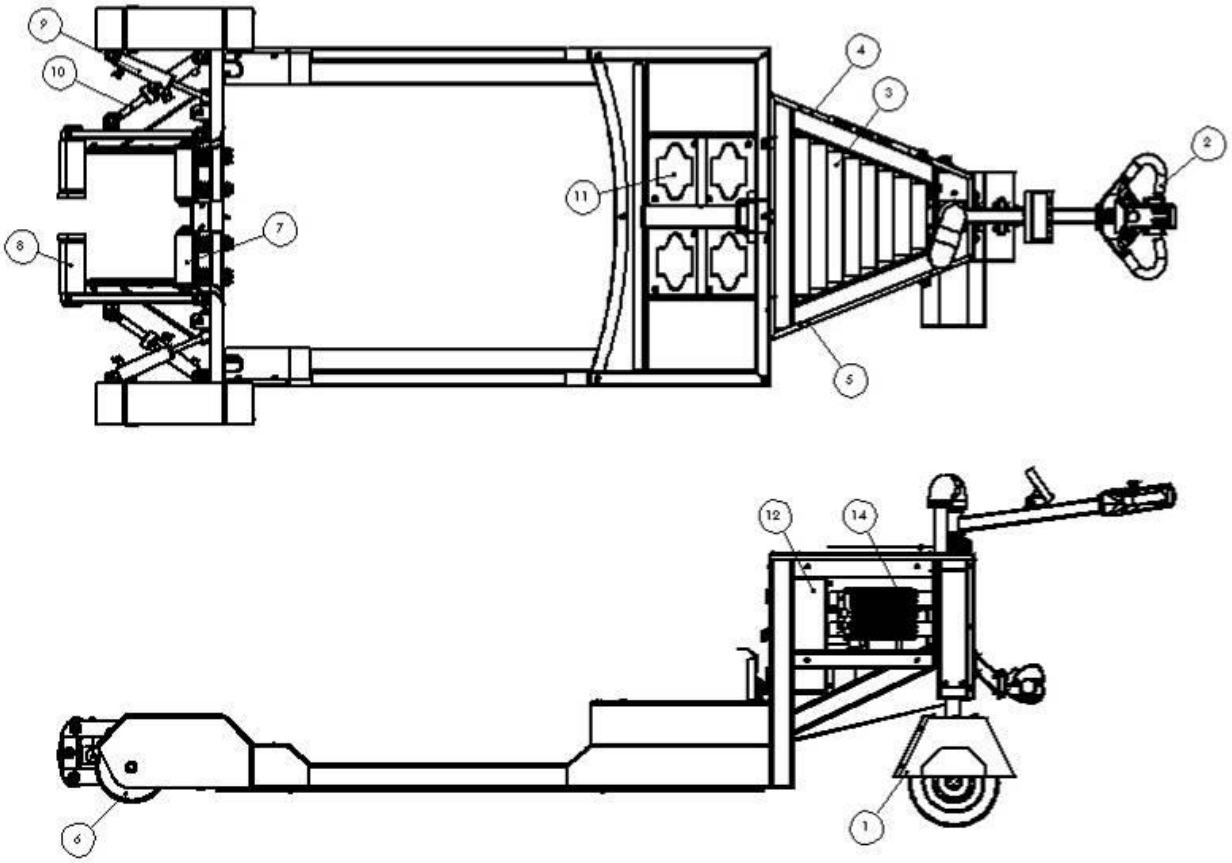

FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
9	1	Complessivo sospensione anteriore Front spring suspension assy	01670	1
9	2	Testata di comando completa CE Control head assy CE type	01247	1
9	3	Coperchio accumulatori Battery box cover	01671	1
9	4	Fianchetto destro Lateral assy, RH	01672	1
9	5	Fianchetto sinistro Lateral assy, LH	01673	1
9	6	Ruote posteriori Rear wheels	01677	2
9	7	Rulli anteriori Front rollers	01679	4
9	8	Rulli posteriori Rear rollers	01679	6
9	9	Martinetti per rulli anteriori Cylinders for front rollers	01775	2
9	10	Martinetti per rulli posteriori Cylinders for rear rollers	00355	2
9	11	Cassonetti batterie Battery boxes	00536	2
9	12	Centralina elettronica X30 X30 electronic gear	01721	1
9	13	Centralina elettro-idraulica Oleodinamic gear	01749	1
9	14	Carica batterie 2UI 2UI battery charger	01686	1
9	15	Spina con cavo 3x1,5 Plug with wire 3x1,5	01688	1
9	16	Indicatore carica batterie Battery charge indicator	01668	1

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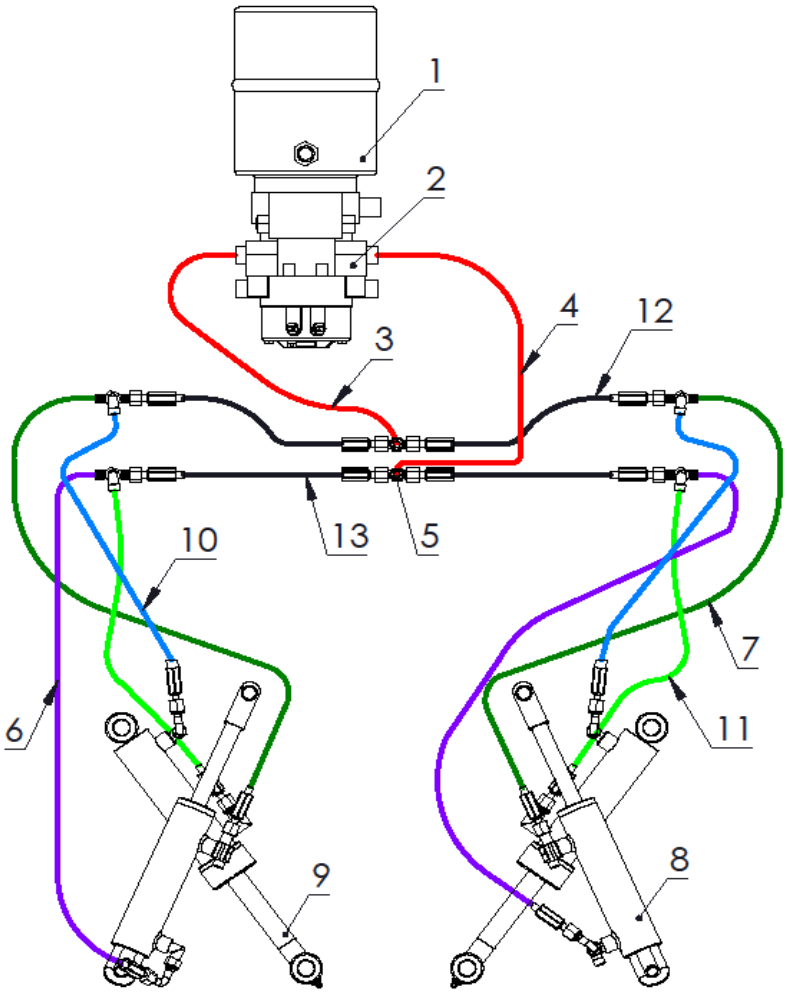
FIGURE - 10



30. HYDRAULIC SYSTEM

FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
10	1	Complessivo centralina elettro-idraulica Electro-hydraulic gear case	01749	1
10	2	Gruppo elettrovalvole Electric valves assy	00305	1
10	3	Tubo mandata flex Ø 8 – GD – L 1540 mm Delivery flex hose Ø 8 – GD – L 1540 mm	01681	1
10	4	Tubo ritorno flex Ø 8 – GD – L 1430 mm Backflow flex hose Ø 8 – GD – L 1430 mm	01682	1
10	5	Raccordo 3 vie Ø 8 Pipe fitting, 3 ways	00392	6
10	6	Tubo mandata flex Ø 8 – GD – L 660 mm Delivery flex hose Ø 8 – GD – L 660 mm	01664	2
10	7	Tubo ritorno flex Ø 8 – OD – L 780 mm Backflow flex hose Ø 8 – OD – L 780 mm	01665	2
10	8	Martinetto posteriore Rear cylinders	00355	2
10	9	Martinetto anteriore Front cylinders	01775	2
10	10	Tubo mandata flex Ø 8 – GD – L 360 mm Delivery flex hose Ø 8 – GD – L 360 mm	01663	2
10	11	Tubo ritorno flex Ø 8 – GD – L 490 mm Backflow flex hose Ø 8 – GD – L 490 mm	01664	2
10	12	Tubo mandata flex Ø 8 – DD – L 1700 mm Delivery flex hose Ø 8 – DD – L 1700 mm	01662	2
10	13	Tubo ritorno flex Ø 8 – DD – L 1700 mm Backflow flex hose Ø 8 – DD – L 1700 mm	01662	2
10	---	Kit tubi mandata olio idraulico Kit oil feeding hoses, hydraulic circuit	01968	1
10	---	Kit tubi ritorno olio idraulico Kit back flow hoses, hydraulic circuit	01969	1

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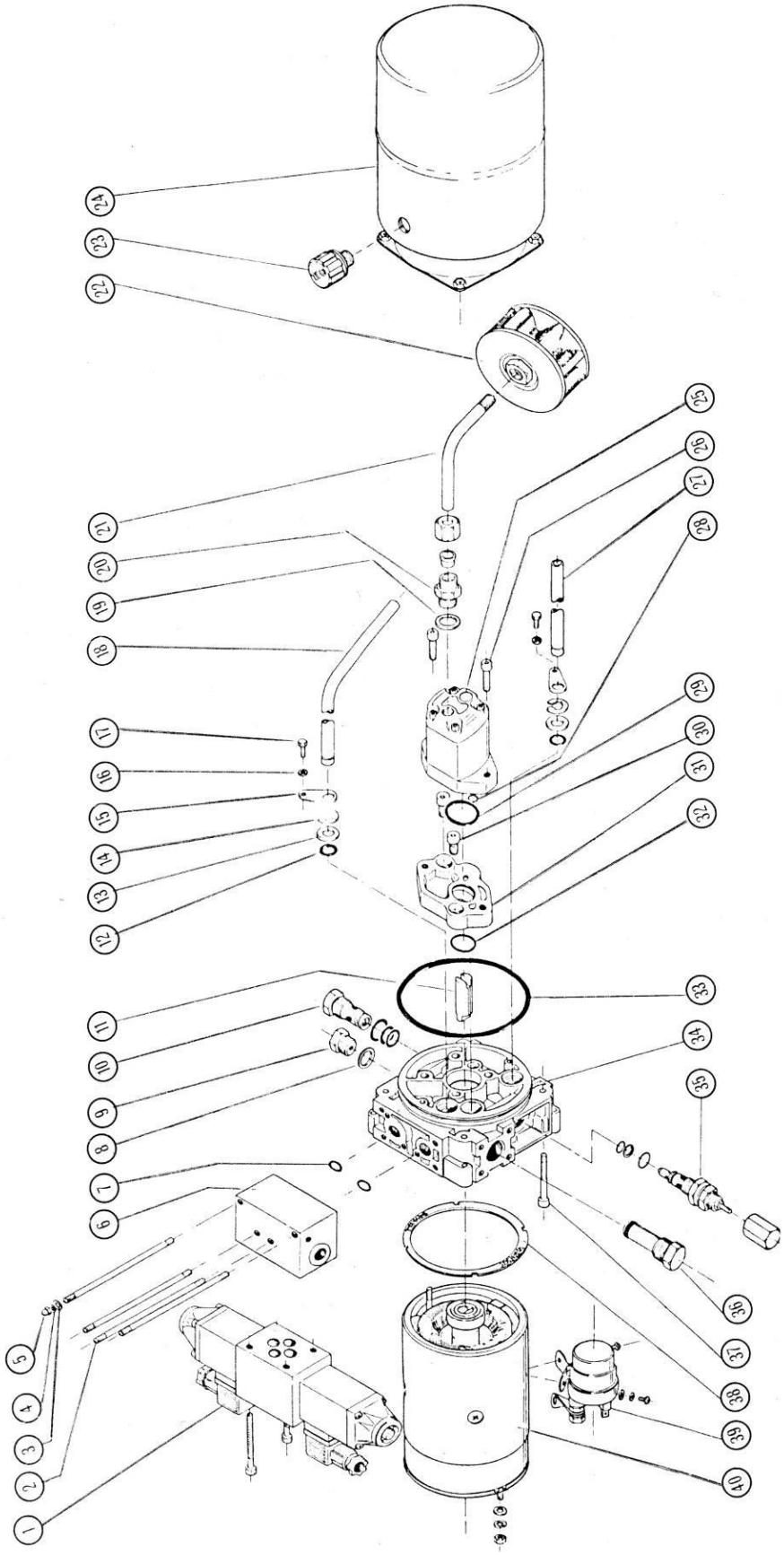
FIGURE - 11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31. ELECTRO-HYDRAULIC GEAR CASE

FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
11	1	Gruppo elettrovalvola Electro valve assy	00305	1 *
11	2	Vite Screw	00070	4 *
11	3	Rondella Washer	00071	4 *
11	4	Rosetta elastica Spring washer	00072	4 *
11	5	Dado Nut	00073	4 *
11	6	Blocchetto Box	00074	1 *
11	7	O ring O ring	00075	2 *
11	8	O ring O ring	00076	1 *
11	9	Tappo Cap	00077	1 *
11	10	Valvola ritegno Check valve	00078	1 *
11	11	Albero Shaft	00079	1 *
11	12	O ring O ring	00080	1 *
11	13	Rondella Washer	00081	1 *
11	14	Anello sicurezza Lock washer	00082	1 *
11	15	Fermo Lock	00083	1 *
11	16	Rondella Washer	00084	1 *
11	17	Vite Screw	00085	1 *
11	18	Tubo Hose	00086	1 *
11	19	Guarnizione Gasket	00087	1 *
11	20	Raccordo Pipe fitting	00088	1 *

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FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
11	21	Tubo Hose	00089	1 *
11	22	Filtro Filter	00090	1 *
11	23	Tappo Cap	00091	1 *
11	24	Serbatoio Tank	00092	1 *
11	25	Pompa 0.5 Pump 0.5	00093	1 *
11	26	Vite Screw	00094	2 *
11	27	Tubo Hose	00095	1 *
11	28	O ring O ring	00096	1 *
11	29	O ring O ring	00097	1 *
11	30	Vite Screw	00098	1 *
11	31	Supporto Support assy	00099	1 *
11	32	O ring O ring	00100	1 *
11	33	O ring O ring	00101	1 *
11	34	Gruppo distributore Distributor assy	00102	1 *
11	35	Valvola Valve	00103	1 *
11	36	Valvola Valve	00104	1 *
11	37	Vite Screw	00105	4 *
11	38	Guarnizione Gasket	00106	1 *
11	39	Teleruttore Remote control switch	00107	1 *
11	40	Motore Motor	00108	1 *

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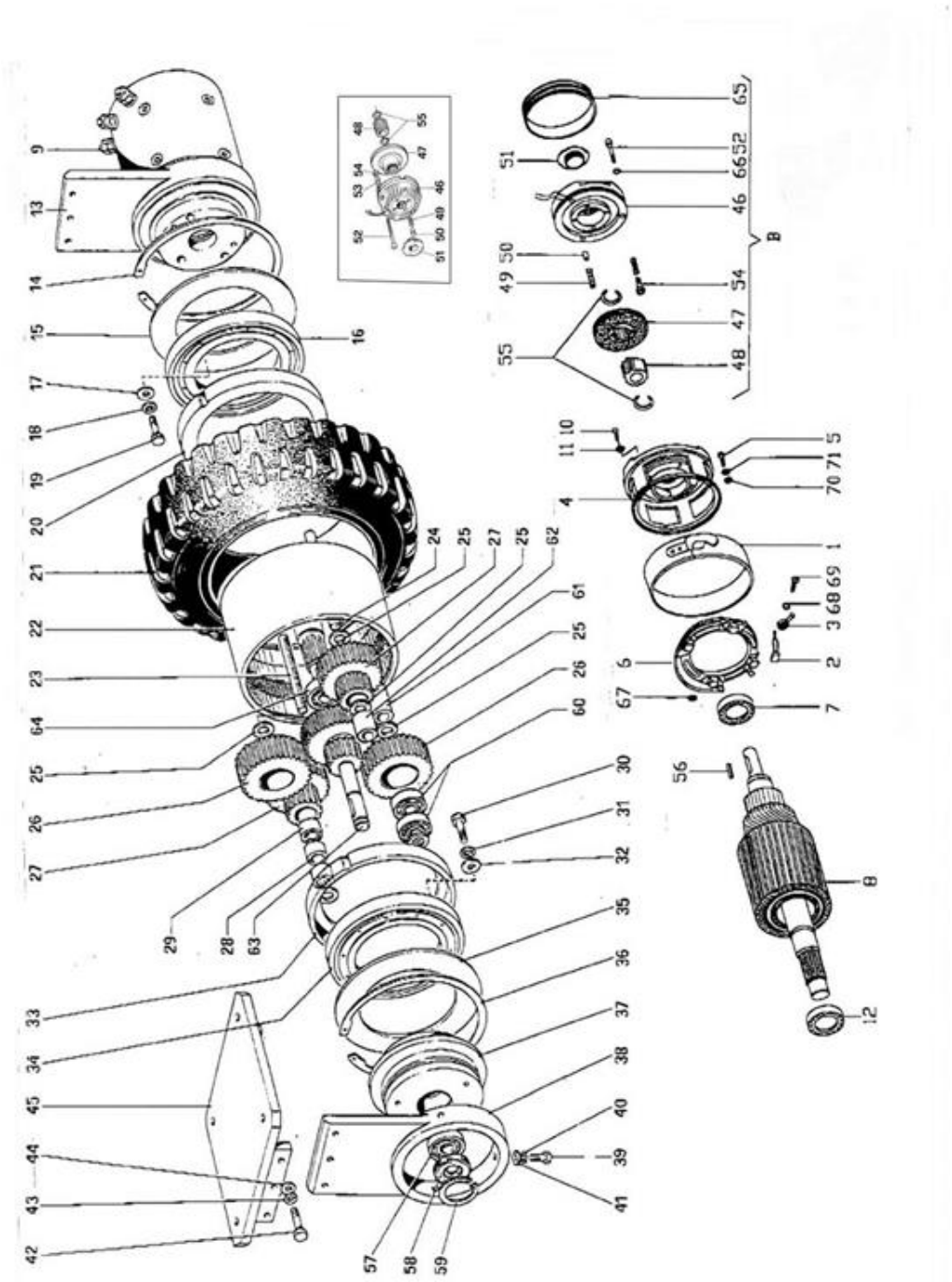
FIGURE – 12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32. DRIVING WHEEL ASSEMBLY

FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
12	------	Gruppo completo elettroruota T 110/FM – E.S Electric wheel drive assy T 110/FM – E.S	00702	1
12	1	Protezione spazzola Brush cap	00110	1 *
12	2	Spazzola Brush	00111	4
12	3	Molla pressione spazzola Brush spring	00112	4 *
12	4	Calotta porta spazzola Brush set screw	00360	1
12	5	Vite a brugola Socket head screw	00114	4 *
12	6	Porta spazzola Brush holder	00115	1 *
12	7	Cuscinetto Bearing	00116	1 *
12	8	Indotto completo Armature	00117	1 *
12	9	Morsetto di allacciamento Connecting terminal	00118	3 *
12	10	Vite a brugola Socket head screw	00119	4 *
12	11	Seeger Snap ring	00120	1 *
12	12	Cuscinetto Bearing	00121	1 *
12	13	Campo completo induttore testata Armature and winding, complete	00122	1*
12	14	Seeger Snap ring	00123	1 *
12	15	Disco parapolvere Dust cover	00124	1 *
12	16	Cuscinetto Bearing	00125	1 *
12	17	Rondella bisellata Washer	00126	4 *
12	18	Rondella dentellata Tab washer	00127	4 *
12	19	Vite Screw	00128	4 *
12	20	Busta porta cuscinetti Bearing holder	00129	1*
12	21	Anello gommato Rubber ring	00130	1 *
12	22	Anello dentato Toothed ring	00131	1 *

FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
12	23	Spina Bearing pin	00132	1 *
12	24	Spina Bearing pin	00133	1 *
12	25	Ralla CP 12 26 Washer CP 12 26	00134	3 *
12	26	Ingranaggio Z 56 Gear Z 56	00135	2 *
12	27	Ingranaggio Z 48 20 Gear Z 48 20	00136	2 *
12	28	Distanziale Spacer	00137	1 *
12	29	Cuscinetto a rulli Roller bearing	00138	1 *
12	30	Vite Screw	00139	4 *
12	31	Rondella dentellata Tab washer	00140	4 *
12	32	Rondella bisellata Washer	00141	4 *
12	33	Busta porta cuscinetto Bearing holder	00142	4 *
12	34	Cuscinetto Bearing	00143	1 *
12	35	Disco parapolvere Dust cover	00144	1 *
12	36	Seeger Snap ring	00145	1 *
12	37	Contro testata Bearing shell	00146	1 *
12	38	Staffa di supporto Support assy	00147	1 *
12	39	Vite Screw	00148	3 *
12	40	Rondella dentellata Tab washer	00149	3 *
12	41	Rondella bisellata Washer	00150	3 *
12	42	Vite Screw	00151	6 *
12	43	Piastra di base Base plate	00154	1 *
12	44	Freno elettromagnetico con bobina Electro-magnetic brake	00155	1
12	45	Ferodo Brake shoe	00156	1

FIG. **FIG.**	**POSIZ.** **ITEM**	**DESCRIZIONE** **DESCRIPTION**	**P/N** **P/N**	**Q.TÀ** **Q.TY**
12	46	Mozzo di trascinamento Stock	00157	1 *
12	47	Molla Spring	00158	4 *
12	48	Perno Pin	00159	4 *
12	49	Ghiera Ring nut	00160	1 *
12	50	Vite a brugola Socket head screw	00161	4 *
12	51	Molla Spring	00162	4 *
12	52	Dado Nut	00163	4 *
12	53	Seeger Snap ring	00164	2 *
12	54	Chiavetta Sunk key	00165	1 *
12	55	Cuscinetto Bearing	00166	1 *
12	56	Corteco Oil seal	00167	1 *
12	57	Seeger Snap ring	00168	1 *
12	58	Cuscinetto Bearing	00169	2 *
12	59	Distanziale Spacer	00170	1 *
12	60	Distanziale Spacer	00171	1 *
12	61	Ingranaggio Z 44 21 Gear Z 44 21	00172	1 *
12	62	Distanziale Spacer	00171	1 *

FIG. FIG.	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
12	63	Ingranaggio Z 44 21 Gear Z 44 21	00172	1 *
12	64	Cuscinetto Bearing	00180	1 *
12	65	Coperchio alluminio Cover in aluminum	00174	1 *
12	66	Rondella bisellata Washer	00186	1 *
12	67	Distanziale Spacer	00179	1 *
12	68	Rondella bisellata Washer	00186	1 *
12	69	Vite a brugola Socket head screw	00175	1 *
12	70	Rondella bisellata Washer	00186	1 *
12	71	Rondella dentellata Tab washer	00185	1 *

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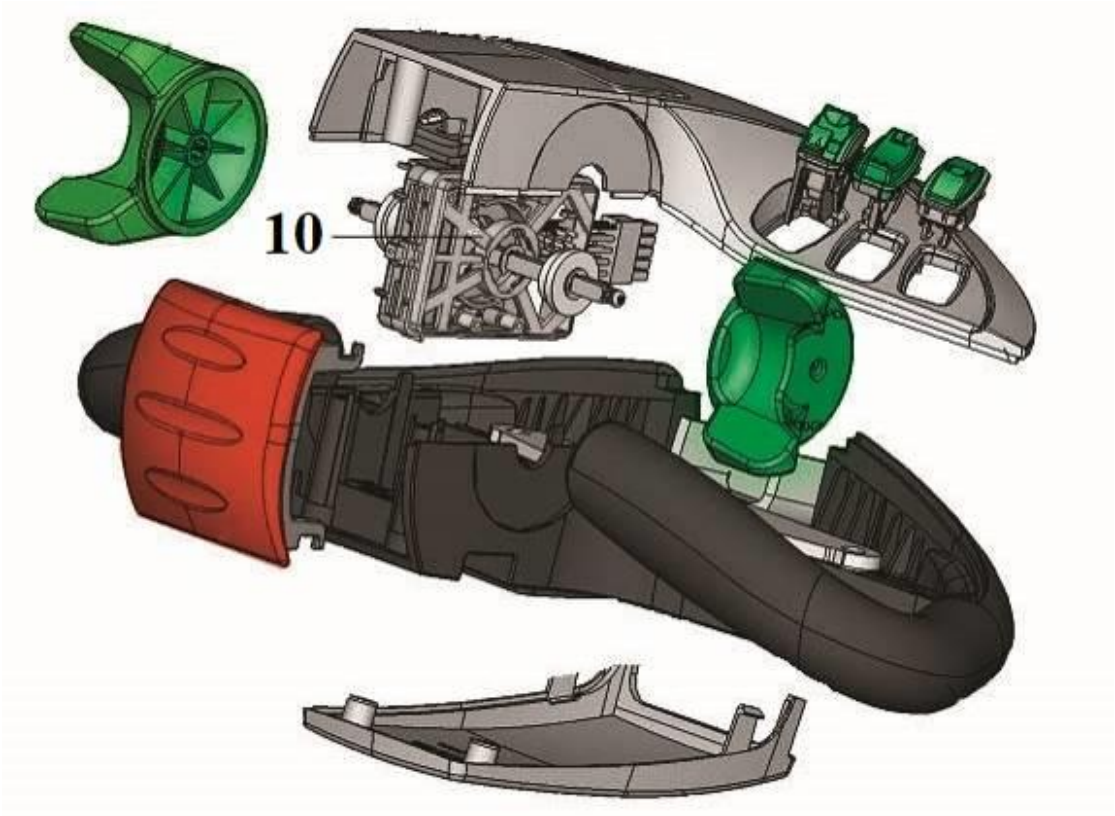
FIGURE – 13



33. CE CONTROL HEAD ASSY

FIGURA FIGURE	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
13	1	Testata di comando completa CE Control head assy CE type	01247	1
13	2	Segnalatore carica batterie Battery charge indicator	01246	1
13	3	Pulsante comando VERDE GREEN push button	01240	1
13	4	Interruttore generale a pulsante Master push button	00513	1
13	5	Farfalla comando movimento Throttle lever	01249	2 *
13	6	Pulsante di sicurezza Security switch	00511	1
13	7	Connettore testata Head connector	00176	1
13	8	Pulsante accensione LUCE LIGHT power button	01245	1
13	9	Pulsante comando ARANCIONE ORANGE push button	01242	1
13	10	Potenziometro regolatore velocità Speed regulator potentiometer	01249	1

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34. ELECTRONIC BOX AND ELECTRIC SCHEME OF THE TROLLEY

FIGURE 14 a (ELECTRIC SCHEME POWER)

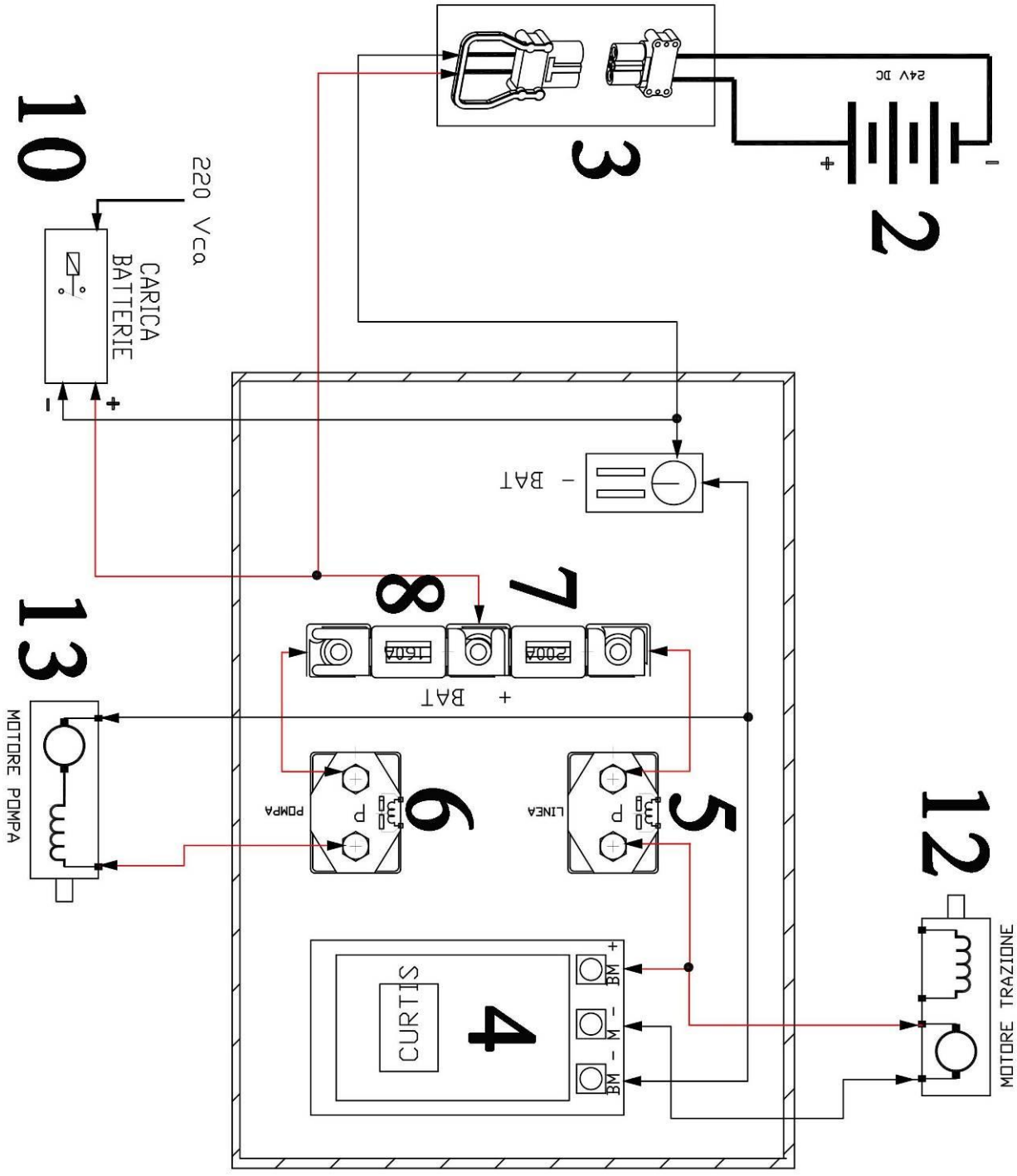
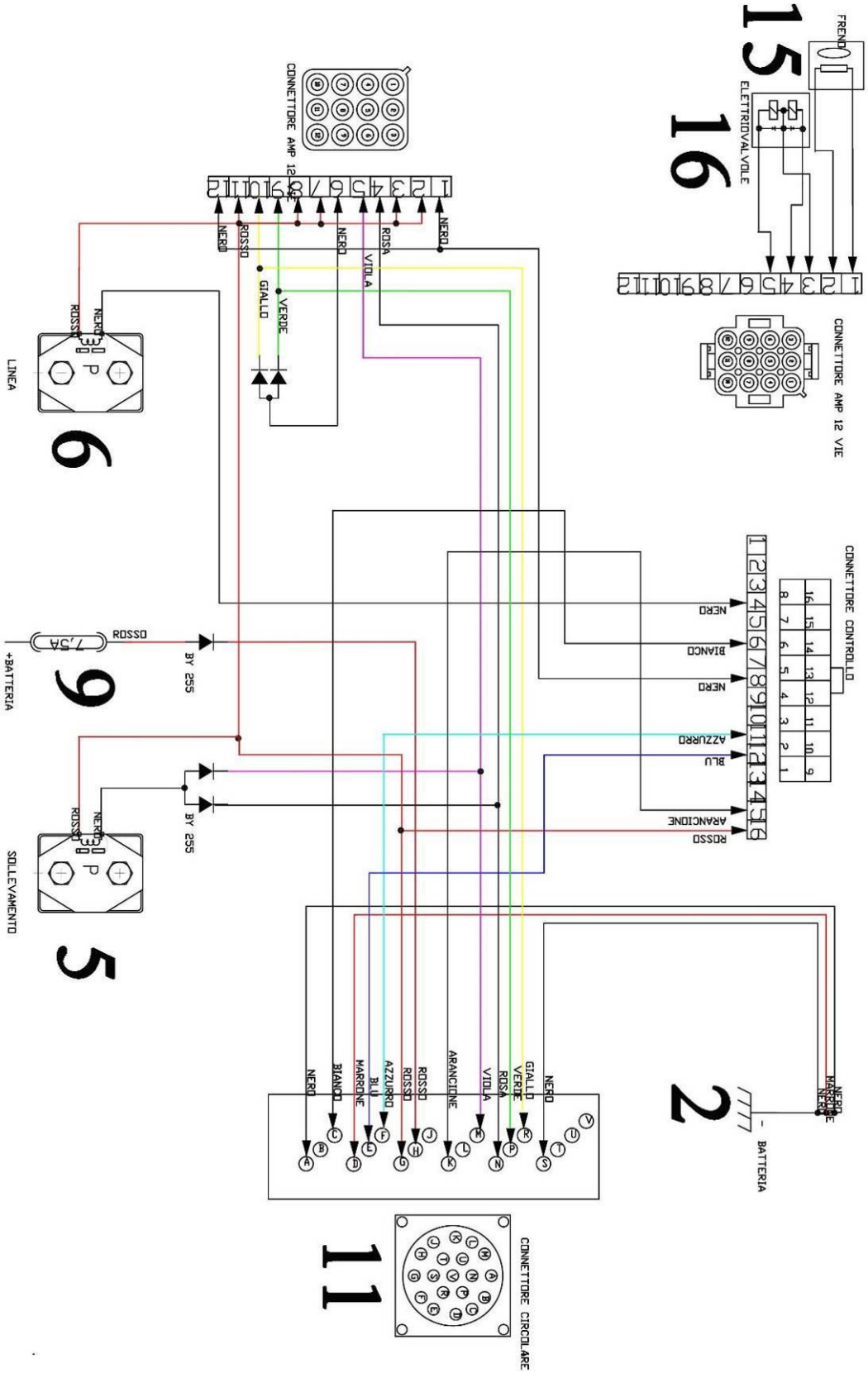


FIGURE 14 b (ELECTRIC SCHEME AUXILIARY SERVICE)



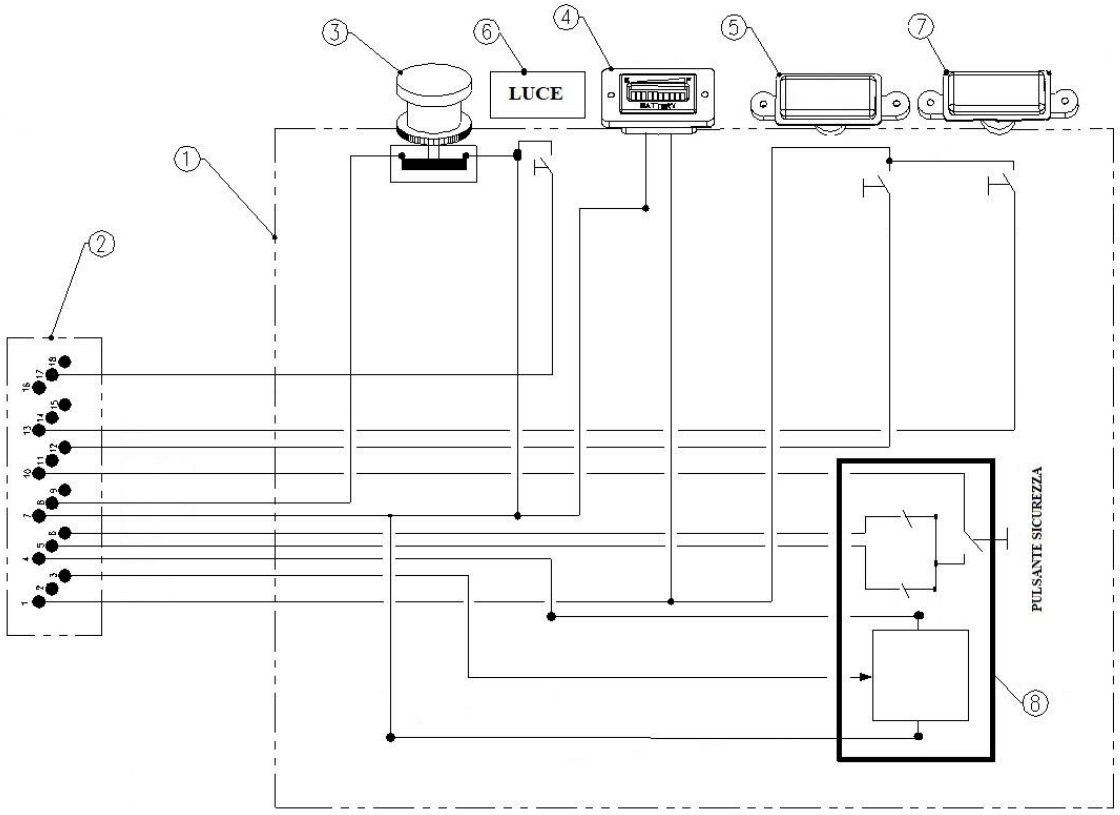
ELECTRONIC BOX AND ELECTRIC SCHEME OF THE TROLLEY

(Ref. to fig. 14 a & b)

FIGURA FIGURE	POSIZ. ITEM	DESCRIZIONE DESCRIPTION	P/N P/N	Q.TÀ Q.TY
14 a	---	Complessivo centralina elettronica Curtis Electronic gear case content Curtis	04045	1
14 a	4	Unità di controllo logica Curtis Logic control unit Curtis	01465-C	1
14 a, b	2	Cassonetto batterie Battery box	00536	2
14 a	3	Gruppo spina batterie Connector assy	00214	1
14 a, b	5	Teleruttore linea Remote control line	01235	1
14 a, b	6	Teleruttore sollevamento Remote control, lifting	01243	1
14 a	7	Fusibile 200 A Fuse 200 A	01239	1
14 a	8	Fusibile 160 A Fuse 160 A	01237	1
14 b	9	Fusibile 7,5 A Fuse 7,5 A	01723	1
14 a	10	Carica Batterie Battery Charger	01686	1
14 b	11	Connettore per testata Control head connector	00333	1 *
14 a	12	Ruota motrice Driving wheel	00109	1
14 a	13	Centralina elettro-idraulica Hydraulic pump	01663	1
14 b	15	Gruppo freno elettromagnetico Electro magnetic brake assy	00226	1
14 b	15	Feredo Brake shoe	00228	1
14 b	16	Gruppo elettrovalvole Electro valves assy	00305	2 *

35. CONTROL HEAD SCHEME

FIGURA - 15



CONTROL HEAD SCHEME (figure 15)

FIGURA **FIGURE**	**POSIZ.** **ITEM**	**DESCRIZIONE** **DESCRIPTION**	**P/N** **P/N**	**Q.TÀ** **Q.TY**
15	1	Assieme testata di comando Assy head control scheme	01247	1
15	2	Connettore testata Head connector	00176	1*
15	3	Interruttore generale a pulsante Push button master switch	00513	1
15	4	Indicatore carica batterie Battery charge indicator	01246	1
15	5	Pulsante comando ARANCIONE Lifting push button ORANGE	01242	1
15	6	Pulsante accensione LUCE LIGHT power button	01245	1
15	7	Pulsante comando abbassamento VERDE Lifting push button GREEN	01240	1
15	8	Potenziometro regolatore velocità Speed regulator potentiometer	01234	1

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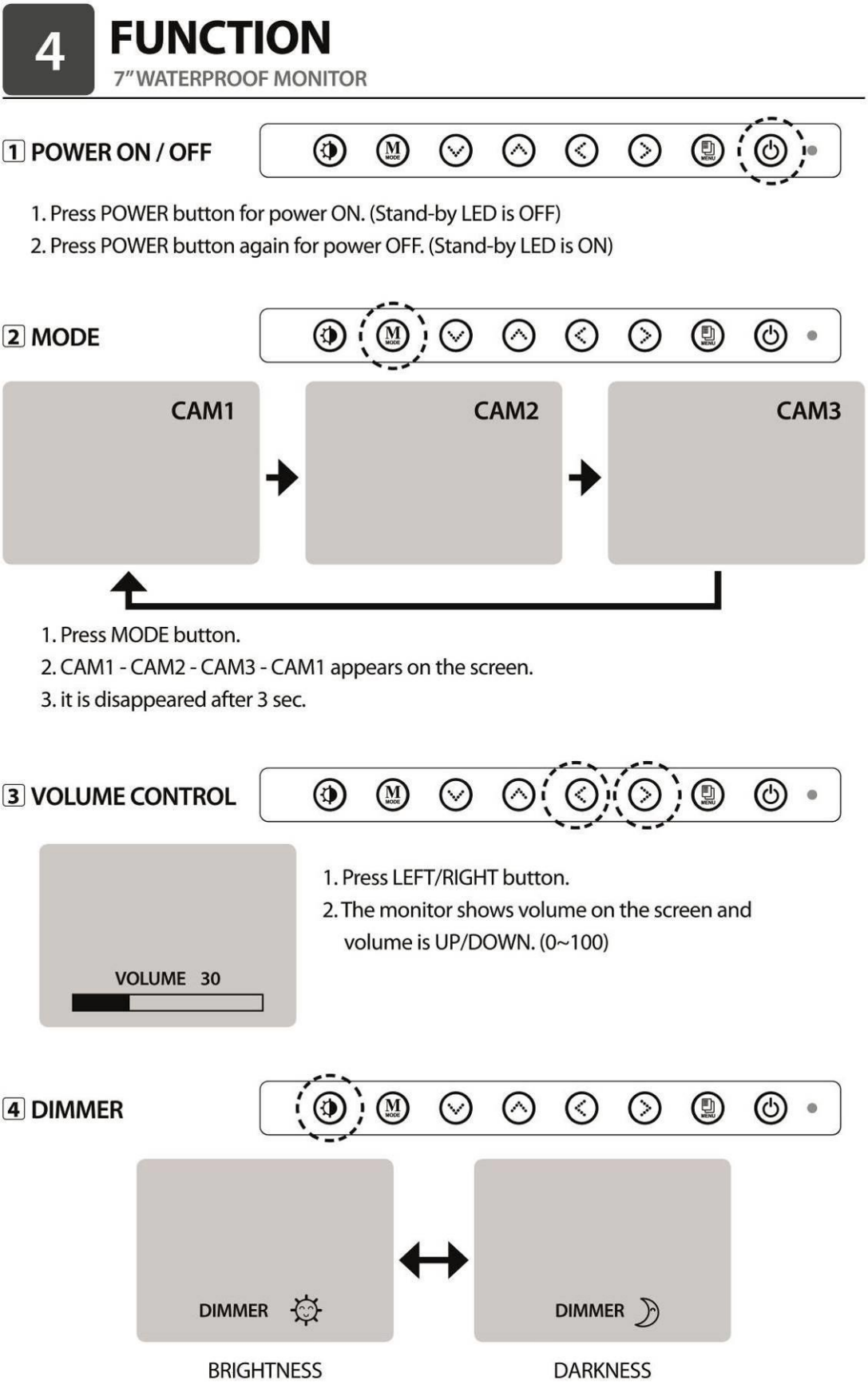
36. MONITOR


4
FUNCTION
7" WATERPROOF MONITOR
1 POWER ON / OFF
1. Press POWER button for power ON. (Stand-by LED is OFF)
2. Press POWER button again for power OFF. (Stand-by LED is ON)
2 MODE
CAM1
CAM2
CAM3
1. Press MODE button.
2. CAM1 - CAM2 - CAM3 - CAM1 appears on the screen.
3. it is disappeared after 3 sec.
3 VOLUME CONTROL
VOLUME 30
1. Press LEFT/RIGHT button.
2. The monitor shows volume on the screen and volume is UP/DOWN. (0~100)
4 DIMMER
DIMMER
DIMMER
BRIGHTNESS
DARKNESS

37. ATTACHEMENTS

37.1 TABLE OF CONTENTS

Fig. N° Fig. No	Pag. N° Page No	Descrizione Description
1	17	Gancio Frontale / Monitor Front hook / Monitor
2	26	Assieme testata di comando Assembly head control
4	28	Freno elettromagnetico ruota motrice Electromagnetic Brake
5	29	Caratteristiche ed equivalenza dei diversi tipi di olio Features and equivalent oils
6	30	Segnalatore carica Batterie e guasti Battery charger dispay – diagnostic led
6B	31	Tabella guasti Fault table
7/7A	34	Sostituzione potenziometro Control head internal view
8	35	Shelf Life
9	47	Assieme struttura del carrello Trolley frame assembly
10	49	Schema circuito idraulico Hydraulic circuit diagram
11	51	Esploso centralina elettro-idraulica Hydraulic gear exploded assembly
12	54	Assieme esploso della ruota motrice Driving wheel assy
13	59	Assieme esploso della testata di comando Control head exploded assy
14 a	61	Centralina elettronica e schema elettrico principale Main electric circuit diagram
14 b	62	Schema elettrico servizi ausiliari Auxiliary services electric scheme
15	64	Schema elettrico testata di comando Head control diagram

37.2 COMPONENTS INDEX

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00082	14	11
00083	15	11
00084	16	11
00085	17	11
00086	18	11
00087	19	11
00088	20	11
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00090	22	11
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00103	35	11
00104	36	11
00105	37	11
00106	38	11
00107	39	11
00108	40	11
00702	12	14
00110	1	12
00111	2	12
00112	3	12
00114	5	12
00115	6	12
00116	7	12
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00119	10	12
00120	11	12
00121	12	12
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00127	18	12
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P/N	POSIZ.	FIG.
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00150	41	12
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00154	43	12
00155	44	12
00156	45	12
00157	46	12
00158	47	12
00159	48	12
00160	49	12
00161	50	12
00162	51	12
00163	52	12
00164	53	12
00165	54	12
00166	55	12
00167	56	12
00168	57	12
00169	58	12
00170	59	12
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00172	61	12
00173	63	12
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P/N	POSIZ.	FIG.
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00228	15	14
00305	2	10
00305	1	11
00355	8	10
00360	4	12
00392	5	10
00511	6	13
00513	4	13
00513	3	15
00536	11	9
00536	2	14
00702	----	12
01234	8	15
01235	5	14
01237	8	14
01239	7	14
01240	3	13
01240	7	15
01242	9	13
01242	5	15
01243	6	14
01245	8	13
01245	6	15
01246	2	13
01246	4	15
01247	2	9
01247	1	13
01247	1	15
01249	5	13
01249	10	13

P/N	POSIZ.	FIG.
01662	12	10
01662	13	10
01663	10	10
01663	13	14
01664	6	10
01665	7	10
01666	11	10
01670	1	9
01671	3	9
01672	4	9
01673	5	9
01677	6	9
01679	7	9
01679	8	9
01681	3	10
01682	4	10
01686	14	9
01686	10	14
01688	15	9
01723	9	14
01741	17	9
01749	13	9
01749	1	10
01753	9	9
01753	9	10
01968	----	10
01969	----	10
02624	16	9
04045	12	9
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