

EMIE[®]
ITALY



POLYTER VET



USER MANUAL

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INFORMATION ON THIS MANUAL

This manual is addressed to:

- user of the machine;
- owner;
- responsible;
- people in charge of moving;
- installers;
- users;
- people in charge of maintenance.

This document provides information for the installation and proper use of the apparatus for combined therapy POLYTER VET, bringing together in a single container one or more modules of electrotherapy, ultrasound therapy, LLLT, high power laser therapy (HL), magnetotherapy and tecar-therapy.

All indicated therapies available in the POLYTER VET device are for veterinary purposes.

It is a fundamental reference for the user: read the contents of the manual carefully before installing the equipment and keep it on hand at all times for future reference.

It is of vital importance that you strictly adhere to the recommendations contained within the manual in order to avoid malfunction, which may cause damage to the equipment and consequent annulment of the validity of the warranty.

Furthermore, in order to obtain the highly efficient technical service available from the manufacturer, it is essential that any handling of the equipment be in accordance with the instructions provided.

The limits of this manual are:

- the user guide cannot ever replace the adequate experience of the operator;
- the user guide, as far as complicated operations are concerned, can only represent a reminder of the main operations.

The manual is to be considered part of the equipment and must be preserved for future reference until the decommissioning of equipment. The operating instructions must be available for consultation in the vicinity of the machine and properly stored.

This manual reflects the state of the art at the time of sale and cannot be considered inadequate because later updated based on new information. The manufacturer has the right to update products and manuals without necessarily updating preceding products or manuals, unless these have implications for the safety of the device.

The company will not assume any responsibility for any major cases:

- improper use of the machine;
- use against to specific national regulations;
- incorrect installation;
- defects in power;
- serious shortcomings in maintenance;
- changes and unauthorized interventions;
- use of parts or materials not specific to the model;
- total or partial non-observance of the instructions;
- exceptional events.

If you would like any further information, please get directly in touch with the company EME srl, to stay up to date on the best ways to use these machines and to receive the necessary assistance.

NOTE: The Therapy Application Manual is available upon request.

WRITING CONVENTIONS

Underlining is used to highlight sections of the document.

NOTE

Notes highlight important information contained in the text.

CAUTION

The CAUTION message appears before operations, which, if not correctly performed, may cause damage to the machine and/or its accessories.

! WARNING !

The ATTENTION message highlights operations or situations, which, if unknown to the operator or incorrectly carried out, may harm the operator.

WARRANTY

EME srl guarantees the quality of its products for a period of 24 months from the date of purchase, when information contained in this manual regarding installation, use and maintenance is strictly adhered to.

During the warranty period the company can provide for the replacement or substitution of faulty parts.

The warranty does not, however, include the replacement of the equipment.

The warranty does not cover any malfunction or damage caused by:

- incorrect connection and installation;
- incorrect use due to non-compliance with instructions contained in this manual;
- incorrect or improper user maintenance;
- non compliant use with the environmental specifications provided for the product;
- improper or inadequate maintenance;
- unauthorized opening of the outer casing;
- tampering or unauthorized modifications;
- use on people.

use of non-original accessories. EME srl registered offices provide the warranty.

Should you need to return the goods then please note the packing instructions as follows. Enclose a copy of the purchasing receipt.

You should insure the postal package.

Before sending the machine back for suspected malfunction, we recommend that first you carefully consult sections regarding MAINTENANCE and TROUBLESHOOTING of the manual, as a large part of the problems and faults are usually due to inadequate maintenance or small technical problems which can often be easily solved by the user himself.

A simple call to EME srl technical department may prove to be the solution to the problem.

When re-packing the equipment for return to the manufacturer, proceed as follows:

1. disconnect power cables and all connectors to the handpieces, applicators, etc;

2. carefully clean and disinfect all parts of the machine and accessories which have been in contact with patients.

Due to sanitary reasons, in order to safeguard our technicians' health (Work Safety guideline, T.U.S. 81/2008), all equipment deemed unsanitary and therefore unsafe for the receiving personnel will not be inspected;

3. disassemble the accessories and any mechanical support;
4. use the original box and packing material for packaging;
5. Attach the Assistance Request Form to the delivery in which there will be the causes of the revision request, the type of failure: there are useful indications that will facilitate technical operations and will shorten the repairing time.

PRELIMINARY NOTES

PRELIMINARY NOTES

- Installing the device does not require particular attention and it is easy and straightforward.

USE

- Each time you click the START button or the STOP button the machine will emit a long confirmation beep.
- The selection of the USB memory is possible only if the USB key is previously inserted into the slot.
- To prevent erasure or formatting of USB, confirmation is required.
- YOU MUST ENTER A SECURITY CODE TO START THE MACHINE. The default security code is **12345**: to ensure the security of access to the machine it is advisable to change the code and to mark it as a reminder in a safe place to avoid losing it or make it available to unauthorized personnel. The new code must be made of 5 numeric characters.
- The keys shown on the display are touch.
- The enable the supply activate the pedal. Once the pedal has been pressed, the machine will emit a short confirmation tone.MAINTENANCE;
- In HL module, the pedal must be pressed and held during the whole treatment.
- In HL module, removing the foot from the pedal, the treatment will be suspended until the pedal will be pressed again.
- In HL module, when you remove the foot from the pedal, the machine will emit another short tone, indicating the interruption of the supply and the TIMER.
- For an optimal use of the device and to guarantee its maximum performance, it is recommended to perform maintenance at the correct time and suggested ways.
- It is advisable to switch periodically the polarity according to the way it is connected to the applicator plates: the switch allows increasing their duration.

CAUTIONS

PRELIMINARY NOTES

- The customer is liable for all damage caused by inadequate packaging of the material. Do not throw away the original package of the machine: it must be used in case of return to the company.
- Do not use the equipment in places where it might get wet.
- Before operating the machine carefully check the correctness of the connections according to the instructions.
- To avoid the risk of electric shock, this device must only be connected to power supply networks with protective earth.
- Do not use any accessory other than those provided to avoid damaging the device and therefore terminating the warranty benefits. In case you have any problems or difficulties with installation, contact EME srl technical support.
- If using the same extension for the unit and other units, make sure that the total current being absorbed by the connected units, does not exceed the max current allowed for that type of cable and that, however, it does not exceed 15 A.
- The therapeutic suggestions are stored in the permanent memory of the machine. These protocols can be edited but not possible to save any changes.
- The protocols of therapeutic suggestion preloaded on the machine cannot be deleted.
- It is not possible to define a number of sessions suggested to evaluate the effectiveness of the treatment, since they are related to the power delivered to the patient undergoing treatment. It is task of the veterinary staff to decide the number of therapy sessions which subject the patient according to the specific requirements of the case, in order to ensure to the patient himself the execution of an effective treatment in time and place in conditions of absolute safety.
- The values of the treatment parameters recommended in Appendix C may vary based on the size and thickness of the animal's skin. It is the duty of the veterinary staff to decide the treatment parameters according to the patient undergoing therapy.
- Periodically check the integrity of the electric power cable and the connection cable: they must not be damaged or worn out.
- The laser radiation that outgoings from the device is dangerous: always use the appropriate glasses, always avoid the exposition of the eyes to the direct or reflected laser beam.
- Before starting any treatment with LASER module, both the operator and the other individuals involved in the use of the machine, including those who accompany and / or keep the animal during the treatment, must wear PROTECTIVE GLASSES.
- Before starting up the machine to perform treatment with LASER module (LL e HL), make sure it is inserted the key INTERLOCK that allows it to start.
- IN CASE OF TREATMENT WITH HIGH POWER LASER MODULE (HL), DURING THE TREATMENT IN CONTINUOUS MODE IT IS FORBIDDEN TO KEEP THE HANDPIECE STEADY IN POINT IT IS ABSOLUTELY NECESSARY TO MOVE THE HANDPIECE SO AS TO CARRY OUT A SORT OF SCANNING ON THE TREATED AREA.

- Once the laser module (HL) has been inserted into the slot, check that the EMERGENCY STOP button is not lowered. If the device has been switched on with the EMERGENCY STOP button lowered, it is necessary to follow the instructions provided in SETTINGS - NEW DISCOVERY SCHEDE or start the device again by checking that the button is raised.
- It is a class A device in terms of emission. The machine may be used in hospital and clinic premises, provided that the machine might disturb the action of electronic devices in its immediate vicinity.
- Do not use the machine near HF SURGERY DEVICES and rooms with an RF shield of an EM system for magnetic resonance, in which the intensity of the EM DISORDERS is high
- No modification of this device is allowed.
- The use of accessories, transducers and cables, other than those specified or supplied by EME srl, could lead to higher electromagnetic emissions or a decrease in the level of electromagnetic immunity of the appliance, with consequent incorrect operation.

USE

- On request we can provide the user manual in electronic form.
- Because of security reasons, the **only** specific software must be loaded into each machine. In case of exchange of software, the machine may immediately stop all its functions, requiring the intervention of EME srl technical assistance.
- USB option is visible (and therefore selectable) only if the USB key is properly inserted in its slot. In case of lacked insertion of the USB key in its slot or improper insertion, the option button USB is not visible, for which a possible selection does not involve any action.
- The selection of programs to be loaded takes place by default in the user memory, that in cases of non-presence of the USB key (due to its lack or to an improper insertion in its slot) is the only support of available memory to load customized programs.
- Never swap ultrasound handpieces of the same or different devices, because each handpiece emits at specific frequencies that are different from any other handpiece. These frequencies are previously set in the channel where the handpiece shall be used.
- The POLYTER VET device in the module for ultrasound therapy automatically recognizes the handpiece plugged to the output connector. For the handpieces supplied with the device, this operation is **not executed** because the frequencies specific of the supplied handpiece are set in the factory, during the testing phase of the device.
- Avoid application across or through the head, directly on the eyes, covering the mouth, on the front of the neck, (especially the carotid sinus), or from electrodes placed on the chest and the upper back or crossing over the heart.
- In case of treatment with LASER HL module, to change the spot area in the handpiece, it is necessary to slide the spacer and then turn it slightly clockwise to lock it in the desired position.
- In order to ensure successful treatment with the ultrasound module, it is very important that the transmitting head adheres perfectly to the treatment area, in order to avoid the temporary or permanent appearance of air bubbles as much as possible. Bubbles would reflect part of the radiated Energy and cause overheating of the skin in the areas of poor contact.
- **When treating in the ULTRASOUND module and in the CONTINUOUS modality, the power must be set at a lower level in order to avoid the painful feeling due to the**

administration of energy concentrated in a single spot. The negative phenomena, connected to an excessive thermal effect, can be eliminated using a pulsed emission treatment, which delivers adequate peak power without provoking overheating in the treated area.

- During electrotherapy module treatments, avoid the application of stimulation above or through the head, directly on the eyes, including the mouth, on the front of the neck, (especially the carotid glomus), or by electrodes positioned so that they cross than the heart.
- Tighten the nut of the HPLS laser handpiece otherwise the device will not detect the connection of the handpiece and it will not be possible to deliver the treatment;
- During the delivery of a treatment by using a standard protocol of treatment or more than one treatment, the modified parameters will be saved directly by creating a personalized treatment.
- The appliance or the system must not be used near other equipment and, if it is necessary to use it near other equipment, the medical electrical equipment must be observed to check normal operation in the configuration in which it is used.
- If the electro-medical device, interacting with another device, causes or receives detectable interferences, the user is invited to limit the interference by adopting one or more of the following measures:
 - o Reorient or reposition the receiving device;
 - o Increase the distance between the devices;
 - o Connect the equipment to a scale of a circuit different from or to devices that cause interference;
 - o Contact the manufacturer or local technician for assistance.
- Portable and mobile radiocommunication devices can affect the operation of the device.
- Transportable RF communication equipment (including peripherals such as antenna cables and external antennas) should be used at a distance not less than 30 cm (12 inches) from any part of the device, including the specified cables. Otherwise, the performance of this device may be degraded.

MAINTENANCE

- Handpieces-applicators must be handled with care: a rough handling can affect their performance and characteristics.
- It is forbidden to technical personnel not authorized by EME srl to open and/or disassemble the handpiece/applicator: such mishandling may not only damage the characteristics of the KIT POINT but shall also immediately nullify all warranty rights.
- The device should not be disassembled for cleaning or control purposes: there is no need to clean the device internally and in any event this operation may only be carried out by specialized technical personnel authorized by EME srl.
- Do not use thinners, detergents, acid solutions, aggressive solutions or flammable liquids to clean the external parts of the unit and accessories. Using these substances, or misusing the accessories, will cause the immediate voiding of all warranty rights, as well as irreparably damaging the unit and the accessories.

- For optimal use of the apparatus and to ensure its optimum performances it is recommended to perform properly within the time and in the manner recommended maintenance actions.
- For a correct replacement of the installed fuses, observe the following indications:
 1. disconnect the power supply and open the fuse box using a screwdriver, making sure you insert the screwdriver in the slot on the fuse box and levering it up outwards;
 2. insert a screwdriver into the two side holes for fuse expulsion
 3. remove the old fuses
 4. insert a new fuse at a time by using a slight pressure to the left, with a finger
 5. push the box back to fit into the slot.
- It is recommended to perform **every two years** periodic maintenance in order to check:
 - o the emission levels;
 - o the intensity of any leakage currents;
 - o the continuity and thus the integrity, of the ground conductor;
 - o the correctness of the value of insulation resistance;

In order to ensure the electrical safety of the device, ensure that it is operating in a safe guaranteed. For this kind of operations, it is advisable to contact EME srl or one of its authorized centers.

TECHNICAL PROBLEMS

- Only personnel authorized by the manufacturer may access the internal components.
- For repairs and further information please contact EME srl or its authorized service centers.
- When electromagnetic disturbances such as electrostatic discharge (ESD) occur, the LED on the panel of the Tecar module may continue to flash despite the energy supply has been interrupted. In this case it is necessary to disconnect battery power supply of the device.

! ATTENTION !

PRELIMINARY NOTES

- Being a portable device equipped with wheels, the correct position of the machine is that the appliance POLYTER VET is moved along the X-direction by taking on the telescopic handle or simply relieved through the use of side handle.
- The perfect functionality of the device is guaranteed in accordance with the rules of installation and of use included, only with original accessories and spare parts.
- Contact authorized dealers EME srl for problems or difficult installation.
- Before connecting the cable to the mains plug, check that the equipment wasn't damaged during transport. Ensure that the power supply specifications on the mains socket correspond with the information on the label attached to the back of the unit.
- The electric current that powers the unit is VERY DANGEROUS. Before connecting or disconnecting the power cable from the connector on the unit, make sure it is plugged out from the mains socket.
- The power cable has an earthed plug for safety reasons.
- Only use with a mains socket suitable for use with earthed systems.
- **The equipment should only be connected to electrical systems that fully comply with regulations.**

- When using an extension lead, make sure that it has been earthed
- Connect the equipment directly to the wall socket without using extensions. Failure to comply with the above instructions may lead to dangerous electrical discharge causing machine damage and harm to persons.
- Do not use the equipment with power if the apparent condition of the protective conductor of the power cord is considered questionable integrity. In this case, it is strongly advised to use the internal power source (if any) using the internal battery for operating the machine.
- If the internal battery, it is recommended that you do not hold the internal battery discharged for long periods of time: it could irreparably be damaged.
- Patients with implanted electronic devices (e.g. pacemakers) should not undergo electrotherapy without the consent of the competent veterinarian.
- The application of electrodes near the cardiac area can increase the risk of cardiac fibrillation..
- Avoid use in areas where there are ongoing inflammatory processes.
- The simultaneous connection of a patient to a unit of high frequency electro-surgery can lead to burns and damage the unit supplied with electrotherapy module.
- Operate in close proximity to shortwave or microwave devices can produce instability in output for use with electrotherapy and ultrasound module.
- If you want to install an extern Interlock circuit, contact exclusively qualified technicians and supply them the scheme correspondent to the room used for the emission of the treatment. A bad installation of the device can to generate serious ocular lesions.
- The device of target pointing of the handpiece supplied to the device is characterized by two drive-lights (led diodes), what they have a driving function, in conformity to the EN 60601-2-22 standard.
- The manufacturer is held responsible for the fundamental safety, reliability and performance of the device only if:
 - o The electrical system of the premises complies with the appropriate regulations;
 - o The device is used in accordance with the instructions for use.

USE

- In order to ensure the functioning of the machine in conditions of absolute safety for the patient, the operator must pay attention to the necessity of a periodic maintenance (at least every 2 years) of the equipment. EME srl authorized personnel should carry out such operations.
- It absolutely forbidden the use of the device in the presence of a flammable anesthetic mixture and oxygen-rich environments. In the event of non-compliance to the designation given, EME srl shall not be responsible for any accidents.
- It is absolutely forbidden to cover the air slots: such an action may not allow the machine to work in safe conditions. In the event of non-compliance to the designation given, EME srl shall not be responsible for any accidents.
- It's important to pay the attention of the operator to the necessity to verify the correctness of the electric installation of device before activating the supply switch.
- It is advisable to suspend the therapeutic treatment if it were to appear some disturbances during its emission.
- It's strongly advised not to hold the device on in state of start without using the handpiece, it could overheat.
- If you want to proceed with the software update and upgrade of the application but do not have to connect the USB port with the source that contains the updates, the machine quit anyway from the main program and enters the update procedure remaining pending USB connection. Displays a screen that indicates the non-realization of the connection.
- In order to avoid the contamination of the environment where the machines are working and/or the animals involved in its use , do not apply to patients electrodes already used in other appliances.
- In order to avoid increases in the level of current delivered out of control, the software monitors the current circulation, the patient circuit is then monitored and in the event of removal from the electrodes' connection, the therapeutic treatment is interrupted.
- Some electro-therapy treatments have a high average value current, which make the treatment inherently dangerous as it may occur temporary redness and muscle blocks.
- The advanced termination of a therapy session should be done only by the key STOP. Do not remove the plug from the wall outlet 230V, do not unplug the power cord or using the bipolar switch ON/OFF.
- Moreover it is necessary to remove first the electrodes from the patient's body and then you can proceed with the turning off.
- Use special care in the arrangement of electrodes and in the delivered current when associated to a continuous component (Ionophoresis).
- Use particular attention in the arrangement of electrodes with a current density superior to 2mA/cm² (right value for efficacy. When using galvanic currents (Ionophoresis) do not exceeded for any electrode current density of 0,2mA/cm².
- Do not use electrodes in direct contact with the skin, use special moistened sponges.
- It is strongly advisable to switch off the device when it is not needed, namely when the handpiece is not being used, because it could overheat excessively.
- In order for the ultrasound handpiece to be perfectly recognized by the device, make sure you connect/disconnect it while there is no treatment emission going on.
- Application of ultrasound therapy performed in the vicinity of a device for shortwave or microwave treatment can produce instability in the transmission of the ultrasound.
- The use of the controls or regulations or the execution of different procedures from those specified in this user manual can cause the exposition to dangerous radiation
- The veterinary operator has the responsibility to verify that the issuing head of laser handpiece remains well in contact to the zone of treatment, to avoid the emission of the laser in different zones from those to be treated.
- As the laser radiation that escapes from the laser-handpieces for the emission of the laser-therapy treatments is invisible, the handpieces foresee on board the assemblage of two diodes led, of red color.
- The two pointer LED diodes, of red color, delimit the action area of the spot relative to the laser emission. Use the spots of the pointer-diodes as reference drive for the revealing of the position of the spot of the laser beam.
- The red led-diodes light on with the activation of the laser emission from the operator, and everyone of them they emits a pointer beam.

- The pointer-beams produce some red spot on the point of impact, and they delimit the region where the spot of the laser beam will be reverted, which is invisible to human eye.
- The laser beam is always found to the centre of the axis of symmetry of the two red spots.
- The laser radiation that outgoings from the device is dangerous: always use the appropriate glasses. Always avoid the exposition of the eyes to the direct or reflected laser beam.
- It is important that the operator ensures the machine's correct electrical installation before turning on the device. It is recommended not to start the emission of treatment if the device isn't in perfect mechanical conditions.
- **THE HANDPIECE MUST NEVER BE DIRECTED TO AREAS OF BODY SENSITIVE TO THE LASER RADIATION, FOR EXAMPLE THE EYES.**
- **ALWAYS AVOID THE EXPOSITION OF THE EYE TO THE DIRECT OR REFLECTED LASER BEAM.**
- Not to leave the device on and unattended, it always has to be switched off after the use.
- To avoid contamination of the use environment for POLYTER VET unit and/or animals involved in its use, do not apply to contact with patients laser handpieces that have not been thoroughly cleaned and disinfected at the end of the previous treatment.
- Before starting the delivery of the tecar-therapy treatment, the operator must make sure that the patient does not have metal objects, in order to avoid the trigger of dangerous radio-frequency coupling phenomena.
- While tecar-therapy is performing, the RF energy transmission (generated by the device) on the touch panel of the display can make the software use unreliable. To avoid this situation, we require the operator to:
 - o once the therapy is started, avoid touching the resistive/capacitive electrode simultaneously with one hand, and the touch panel with the other hand to modify the parameters;
 - o once the therapy is started, avoid touching the body of the patient undergoing treatment with one hand at the same time the touch panel with the other hand to modify the parameters.
- It is recommended never to dispense the following combinations simultaneously:
 - o Iontophoresis treatments and ultrasound treatments
 - o Currents with a non-zero average value (for example diadynamic) and ultrasound treatments

As they do not guarantee the maintenance of the patient's safety conditions during the delivery of the treatment to which the patient is subjected.

MAINTENANCE

- For safety reasons before carrying out any maintenance or cleaning the unit, YOU MUST turn off the equipment with the power switch at the back and unplug the socket connected to the mains.
- The cleaning and disinfection must be done systematically before the therapeutic treatment which subject the patient.
- It is useful to recall the need for periodic maintenance of the handpieces/applicators. In particular, it is necessary to:

- o **every two years** submit to calibration/adjustment all the programmable accessories, such as handpieces/applicators, supplied with the device. For this kind of intervention please contact EME srl technical support service.
- o check **every week** the treatment head of the handpieces, in particular of the ultrasound-therapy handpieces and tecar-therapy in order to reveal eventual cracks which could lead to the entrance of conductor liquid;
- o check **before every treatment therapy** the integrity of the cable and connector of handpieces/applicators.
- Before every treatment, it is recommended to clean with caution all of the accessories and the parts of the equipment that have been to contact with the patient.
- Do not use thinners, detergents, acid solutions, harsh solutions or flammable liquids to clean the outside of the unit and its accessories. The use of these substances, with the improper use of accessories, irreparably damages the equipment and the warranty will lapse.
- Check **before any treatment therapy** the integrity of the electric power cable and the applicators/accessories connection cables applied on the patient: they must not be damaged or worn out.
- Before delivering the ultrasonic treatment, check the integrity of the emitting head by carefully checking the absence of cracks that could allow the entry of conductive fluids.
- It is advised that personnel with technical preparation substitute the fuses, to perform the operation in safety conditions.
- In case of replacement or insertion of the whole battery, do not open your POLYTER VET but contact qualified and authorized personnel, who will carry out the usual maintenance tasks safely and avoid damage to the equipment; or please contact EME srl or its authorized service centers.
- Do not open the device; it houses high voltage electricity, which can be dangerous.
- Only personnel authorized by the manufacturer may access the internal components. For repairs and further information please contact EME srl or its authorized service centers.
- The electrode is considered a consumer good. It is necessary to replace electrodes periodically every 2-3 months in conditions of normal use: an electrode has duration of hundreds of milliampères/hour.
- The use of depleted electrodes reduces the performance of the machine and can cause burns.
- As the emission of ultrasound in the CONTINUOUS operating mode is continuous, the operator is responsible for checking that the emitting handpiece head is adhering well to the treatment area in all its parts, in order to avoid that air bubbles form or stay in area, thus causing the partial reflection of emitted energy and consequently causing an overheating effect.

WORKING PROBLEMS

- Do NOT OPEN the unity, as HIGH VOLTAGE ELECTRICITY is present and may prove VERY DANGEROUS.

INTRODUCTION OF THE TECNOLOGY

ELECTROTHERAPY

Electrotherapy, in the veterinary field, is used as an alternative or to support traditional therapies if these are not effective, used in order to stimulate denervated muscle, to reduce the hypotrophy due to the non-use of the muscle normal-innervated, to maintain the muscular trophism of the denervated muscle or partially innervated, to strengthen the innervated muscle.

Electrotherapy uses the biological effects obtained by electrical Energy for therapeutic purposes and consists of electric currents which are passed through the part of the animal's body concerned, taking care to choose them with certain characteristics suitable to the aims to be achieved. The electric currents can be continuous or variable.

The continuous electric current (or Galvanic current) is generated by the uniform movement of electric charges in the same direction. Therefore it has constant intensity over time.

Any action produced on an organism by this type of current is effectively linked to the electrochemical effect. If you immerse the electrodes of a galvanic current generator into an electrolyte solution, the ions will flow towards the poles of the opposite sign.

From the electric point of view, body works like an electrolyte solution: under the influence of the electric field, ions that are normally inside the organism 'migrate'.

Their distribution in cellular and extracellular spaces is variable, and so the potential and permeability of cell walls change.

These phenomena give rise to a series of effects that can be summarized as follows:

- vasomotor: strong hyperthermia may be felt in the area where the current is applied, even after a brief treatment session;
- trophic: improvement in cellular 'breathing' due to greater blood flow that stimulates the metabolic processes;
- anti-oedematigenous and anti-inflammatory: linked to the reabsorption of exudatives and inflammatory substances;
- nervous: the excitability is increased near the negative pole, and lessened near the positive pole ('polar' effect of the current).

This phenomenon regards the resting electric potential of the membrane that surrounds the nervous fiber. The external surface of the membrane is positively charged with respect to the internal surface.

Contact with the negative pole leads to depolarization of the membrane, while the positive pole is hyperpolarized.

Even the conductivity of the nerve is changed during passage of the direct current. Temporary neuropraxia may occur at the positive pole.

It is quite difficult to correctly interpret the effects caused by the direct current however since the mechanisms that determine them are not fully understood.

This kind of current serves best as a transcutaneous carrier of medicines or cosmetically active substances.

Variable currents are generally meant to denote all those currents where the intensity is not constant over time.

Alternating current belongs to this category: it varies in intensity, and also periodically alternates in direction: the classic sinusoidal current belongs to this category and the time the current takes to generate a complete sinusoid is called *period*. The space covered during the period is the *wavelength*.

The number of periods made by the current in one second defines the frequency and its unit of measurement is the Hertz [Hz]. We can distinguish between low (0 - 800Hz), medium (800 - 60.000Hz), and high frequency currents (above the 100.000Hz), and for physiotherapy purposes.

All the variable electrical currents described share certain features in terms of consequences of application: the most important biological effect is the excito-motor effect.

In order to avoid the risk of possible muscular adjustment during contraction, some equipment can supply currents that automatically vary their frequency at regular intervals.

The rectangular currents that operate at 50 Hz frequency with 1msec pulse duration are of special importance as they produce analgesic effects.

The so called "ionic acceleration" is also beneficial as it involves an overlapping of galvanic current with a rectangular current. This device allows us to obtain parallel muscular stimulation during the iontophoretic delivery (normally done by applying the current with constant intensity). Treatment time is markedly reduced when this method is used.

The different types of currents can be summarized according to their specific actions (or biological effects):

- Currents at IONTOPHORETIC action = continuous current (at constant intensity);
- Currents at EXCITO-MOTOR action = sinusoidal currents, rectangular exponential currents, pulse train, triangular
- Currents at ANTALGIC action = rectangular pulses of low frequency (50Hz) and pulse time 1msec.
- Currents at TROFIC and VASCULARISING = continuous currents; straightened currents.

IONTOPHORESIS

Current thinking confirms that iontophoresis is an effective way of administering different substances when localized action is required.

Actually, the percutaneous application of medicinal substances is notably affected by the barrier function of the skin. Methods generally used to neutralize this effect are not always effective.

Overcoming the cutaneous 'barrier' stratum is not easy even when direct current is used, since substances generally prefer to enter via the glandular ducts and hair channels.

In addition, the substances can only reach a few millimeters depth.

Excluding the cases where a localized surface effect only is required, the effectiveness and distinctiveness of ionophoresis lies in the fact that the substances introduced in this fashion seem to bind more stably with proteins that normally form part of surface tissue. The substance is therefore reabsorbed into the general cycle more slowly than it would have been if administered hypodermically.

The general effect is however linked with the type of substance used: direct current only functions as a means.

Therefore medicinal ionophoresis refers to substances introduced that have pharmacological effects.

The substances that can be used are all those with the following properties: a constant percentage of ionic disassociation in water, stability in solution and in contact with electric currents.

However, it is important to highlight certain basic rules:

any water used to put the substance into solution must be distilled to avoid preferential transport of parasite ions;

- sponges and electrodes must always be kept perfectly clean and they must be washed well in distilled water;

- if an active substance solution is prepared on the spot, the concentration of solution must be correctly chosen and measured (remember that it is unnecessary to use high concentrations: generally a weight of 1% is enough for the majority of the substances);

- if products contained in vials are used (for parenteral use) ensure that there are no products incompatible with the technique among the excipients. In case of a freeze-dried product, ensure that the solvent is not a physiological solution: in that case use distilled water if possible;

- avoid to associate different substance if you are not sure about their compatibility: if you consider the substance to be essential, ensure that it has the same polarity;

- the correct electrode arrangement is essential for diffusion of the substance, especially if the molecular weight is low;

If you have to introduce a positive ion, it must be put with a positive electrode and vice versa for negative ions (in the case of complex molecules on the other hand, it seems that electro-osmosis (and also electrophoresis) takes priority: therefore the concept of polarity loses meaning, and penetration is more effective if done at anode level; the polarities of the most commonly used medicinal substances are described in another section).

Even though the dosage of medicine to introduce is significant from a theoretical point of view, it is actually related to too many factors (skin resistance, ion size, electrode placement) to make even an approximate calculation.

The use of galvanic current to the introduction of substances, when the parameters of current intensity and duration of application are respected ,does not give rise to undesirable effects on the skin.

Localized redness may occur occasionally, and even burns, but only when these parameters are not met, or there is a lack of maintenance or improvement of electrodes.

Chemical burns at the points of contact of the skin with the electrodes, due to concentrations of chlorine ions and/or sodium (for formation of caustics substances with water) may occur when using water source.

There is the possibility of local allergic reactions, although relatively uncommon: in any case, events are mild.

Systemic allergic reaction are to be excluded.

ULTRASOUND-THERAPY

THE PHYSICS OF ULTRASOUNDS

Ultrasounds are elevated frequency sound waves (of more than 16,000 cycles/sec), not perceptible to the human ear, that exist within nature (for example in the cries of bats, diapasons, etc.). Such waves can also be artificially produced in numerous different ways, although in the medical field this is done by means of the inverse "Curie" effect.

They are propagated under the form of longitudinal compression waves in the presence of a means capable of being compressed; the movement of the particles in the compressed means takes place parallelly to the wave or propagation, meaning that the sound cannot be transmitted through empty space.

The fundamental characteristics of sound waves are:

- the length of the wave,
- the speed of propagation,
- the frequency measured in cycles (the cycle or period measures the number of sound oscillations in 1 second).

In the medical field ultrasonic vibrations are obtained through maniples that take advantage of the piezoelectricity and the reciprocal piezoelectric effect of quartz. This effect lies in the characteristic property of quartz crystals that produce electrical charges when subject to depression and traction forces.

The simplest piezoelectric generator consists of a plate made of quartz (or other piezoelectric material) onto whose surfaces an alternate potential difference, with a frequency that can the crystal into resonance, is applied.

Ultrasonic vibrations propagate in different ways according to the means through which they travel and in relation to the ease and speed with which the means itself can be deformed.

This depends on a physical characteristic, which is also known as **acoustic impedance**, of each material. The greater the difference of acoustic impedance between two materials, the greater the quantity of rays that will be reflected, that is to say, not transmitted.

The sound waves travel quicker in materials with greater specific acoustic impedance; therefore, they propagate easily in metals, quite easily in water and yet with great difficulty in air where acoustic impedance is very low.

In the body ultrasound beams are diffused in all directions thanks to small reflectors, such as, for example, erythrocytes, that behave like elastic points of diffusion and vibrate at the incident sound frequency diffusing energy in all directions.

There is, however, a certain difference between propagation in water and that through the different organism tissues, to the disadvantage of the latter. Therefore, in order for ultrasounds to have the same biological effect in water treatments it is necessary to decrease the frequency and length of application, with the biological effect of the ultrasounds being slightly quicker.

It is, however, obvious that applications in water should only be carried out on suitable parts of the body (such as hands and feet) as it is not easy to carry out ultrasound treatment on curved areas in water!

Substance	Propagation speed cm/sec	Specific acoustic impedance*** gr/cm ² /sec.
Air	331	43
Carbon dioxide	260	51.5
Hydrogen	1260	11.5
Distilled water 19°	1461	146,100
Ice	2100	190,000
Iron	5000	3,900,000
Glass	5400	1,350,000

Table 1: Values of propagation and specific acoustic impedance of ultrasounds in given substances.
*** the specific acoustic impedance derives from the relationship between the density of the fluid times its propagation speed ($I = D \times V$) and is specific to individual substances.

Ultrasound intensity is expressed in Watt/cm², it refers to the average intensity of the field, and is got by measuring the total output of the treatment (Watts) from the handpiece and dividing by the radiating surface area of the applicator.

$$I = Wu / s$$

Where:

Wu = output in watts,
s= applicator surface.

The ultrasonic devices used in physical therapy are manufactured on the basis of the above outlined principles and are made of:

- an alternate current generator with a frequency of between 500 KHz and 3 MHz; this should be aligned with the quartz frequency to ensure maximum power dissipation. More advanced units, such as those in our Ultrasonic range, operate in both continuous and pulsated (100-120 Hz pulsation frequency) modes; some units have, however, been designed to work in pulsated mode at a frequency of 16-48 Hz. This frequency is important as a number of studies seem to suggest that the kick start system, which plays an important role in the regeneration of bone tissue, is activated and stimulated by ultrasounds at a frequency of 16Hz and multiples of the same;
- a high tension shielded cable that connects the generator to the head and which supplies it with the high frequency produced by the generator;
- an emitting head housing the quartz (nowadays replaced by various materials such as barium titanite) onto whose surfaces an alternative potential difference with a frequency able to take the crystal into resonance is applied. The size of the emitting head can vary between 1cm² and 10 cm². The irradiation properties of each head depend on its diameter and the length of the wave, with the sound irradiation produced by the transducer penetrating the tissues with a conical form. In order to have a therapeutic effect on in-depth tissues, the emitting head must be able to produce an average intensity of 3watt/cm². A head with a radiating surface of 10 cm² should have a maximum total output of between 30 watts. The heads of our ultrasound units feature a non-contact luminous indicator that informs the user as to incorrect contact between tissues and the emitting head, and these heads are self-calibrating meaning that they do not need to be reset at any time.

The units POLYTER VET, supplying both continuous and pulsated ultrasounds, have a duty cycle adjustment feature that significantly decreases the diathermic effect as heat is dispersed in the interval between one impulse and the next.

In addition, pulsated emissions offer the technical advantage of reducing the probability of transducer overheating and allow for the use of greater intensities.

PHYSIOLOGY AND EFFECTS ON TISSUES

The application of ultrasounds on the tissues of the animal results into a high frequency cellular and intercellular massage action. The tissues irradiated with ultrasounds start vibrating as well, with a resulting waste of energy and production of heat.

The biological effects of ultrasounds, that is to say, the mechanical and diathermic effects, can be seen in these manifestations.

The MECHANICAL effect develops by means of rhythmic tissue compression and decompression. The particles of a tissue subjected to the vibrating beam are all alternately excited at the same level of speed and acceleration.

The ultrasonic radiation by penetrating into the tissues undergoes a progressive weakening in terms of intensity. In the crossing point from the transducer to the skin there is the first limit layer effect, that is to say, the first phenomenon of energy dispersion and re-absorption. The effects of the limit layer become more noticeable at greater depths, particularly at the crossing point between the soft tissues and the bones, where the difference in resistance between the two means in contact causes particularly high reflection.

However, the bone tissue does not completely reflect the ultrasonic beam but rather absorbs a fraction of it, while a more significant fraction is absorbed by the periosteum which notably overheats with a consequent pain that may be provoked by excessively long or high-powered application.

The DIATHERMIC mechanism with assumable biological effects starts to become possible at energies of 1 watt/cm². As the sound propagates through the tissues, it is absorbed and converted into heat.

The distribution of the temperature produced by ultrasounds in the tissues is unique among the deep heating forms: in fact, it causes a relatively small increase of temperature in the tissue surfaces and has a greater probability of penetrating into the musculature and soft tissues compared to the diathermia produced with microwaves or short waves.

The temperature of articulations covered with heavy masses of soft tissue can be increased to therapeutic and tolerance levels without deleterious effects on other tissues.

Endotissular hyperthermia occurs quite rapidly and is followed by the establishment of a state of thermic balance determined by the dispersion provoked by the blood flow.

Further effects, in addition to these two main effects, are chemical and neural effects.

The CHEMICAL effect seems to be linked to a characteristic phenomenon induced by ultrasounds, known as "cavitation", that can be seen when the small gaseous bubbles

in the liquid components of tissues increase in size translating into oxidization, polymerization and macro-molecule destruction processes, etc.

Therefore, ultrasounds, at non-detrimental doses, increase exchange favoring diffusion processes and humeral exchanges through the cellular walls.

The NEURAL effect is linked to the influence of ultrasounds on the neuro-vegetative system. Different tissues absorb the ultrasounds in a different way: the soft tissues at a frequency of 1 MHz attenuate radiation of 1 db/cm, that is to say that in between 15 and 30 mm of tissue only half the energy will be absorbed and the intensity will be reduced to approximately 1/2 of the initial value.

The penetration depth of ultrasonic energy in the muscle is particularly marked: at a depth of approximately 3 cm the intensity is still approximately half that measured at the muscle surface.

A number of scientific experiments have shown how the absorption of ultrasound energy greatly increases the extensibility of connective tissues leading to significant applications in the treatment of scar tissue, superficial articular capsules and cases of tendinitis.

APPLICATIONS TECHNIQUES

Correct ultrasound application requires perfect contact between the emitting head and the tissue in so far as the interposition of layers of air reduces the penetration capacity of the radiation.

Sometimes the area to be treated has an uneven surface making correct direct contact application impossible,

although this can be remedied by placing a synthetic rubber pad (filled with oil, anhydrous petrol, degassed water or conductive gel) slightly larger in size than the emitting head, between the transducer and the skin.

A range of different application methods can be used.

The DIRECT and MOBILE CONTACT treatment is the most widely used form of treatment. A greasy cream, Vaseline or conductive gel is spread over the area to be treated in order to allow for better skin ultrasonic wave transmission. The emitter head is directed using circular or up and down movements.

In the DIRECT and FIXED CONTACT treatment, the head can also be held in a fixed position on the part to be treated, spread with a transmitting substance, for the whole length of the session, although in this case it is necessary to lower the power

emitted in order to avoid creating patient discomfort (pain is caused by the excessive absorption of ultrasonic energy, for example, in articular and periosteum treatments) or to carry out the treatment using the pulsed mode.

The INDIRECT SUBAQUEOUS CONTACT treatment involves immersing the body part to be treated in a water bath; the emitter head is immersed in the water a short distance from the part to be treated and is moved parallel to the latter. The emitting maniples of POLYTER VET unit are specially designed for this type of treatment. The part to be treated is immersed in a recipient (better in metal because it is more reflective) containing water together with the emitting head which is positioned at a maximum distance of 2-3 cm from the body surface in order to avoid an excessive dispersion of the ultrasonic beam with a related decrease in therapeutic effects. The ultrasonic vibration is transmitted in a relatively uniform manner in the liquid and homogeneously enters the immersed segment of the body. This method is recommended when it is necessary to treat irregularly-shaped parts of the body, ulcerated areas or hyperesthetic skin zones that cannot withstand pressure. It is a useful method to employ when the surfaces to be treated are particularly small or irregular, or when the area is too painful to permit direct contact.

The SONOPHORESIS involves the localized administration of pharmacologically active substances applied, in place of the gel, in the form of products designed for local use.

LASERTHERAPY LLLT

In veterinary medicine, the laser is an alternative or supportive tool to common drug therapies, or the specific treatment for pathologies that do not respond to traditional treatments. This is possible thanks to the biological properties and the anti-edema, anti-inflammatory, antiseptic, pain-relieving and biostimulant effects of the laser beam on the tissues.

We will start by explaining the physical properties of laser in order to provide a better understanding of how it works in a medical context.

Basically, laser is a system whereby energy contained in some substances is transformed into electromagnetic radiation when stimulated electrically.

The laser radiation has some properties that do not exist in other types of electromagnetic radiation:

1) Mono-chromaticity: the laser has only one wavelength, and therefore only one vibration frequency. It also has only one color defined by the active medium that produces it.

2) Coherence: it is the property whereby all the photons emitted vibrate in phase concordance. Laser radiation is composed of waves with the same wavelength that leave at the same time and keep their phases constant in the direction of propagation.

3) Collimation: radiation is emitted from the laser in one direction only, and is diffused with a definite angle of divergence. The angular diffusion of a laser beam is very small if compared to other sources of electromagnetic radiation, since the divergence is in the order of milli-radians. The beam is practically always parallel and laser radiation can propagate for very long distances.

4) Brilliance: it is the power emitted per surface unit. This equipment gives the highest intensity possible per space unit. The space can be as small as a few microns.

COMPONENTS OF LASER SYSTEM

In general, lasers comprise four structural units:

1. an active laser medium,
2. an excitation mechanism (source of energy, called "pump" source), an energy source, called pumping system,
3. an optical cavity, comprising two mirrors and the space in between them;
4. an output mechanism

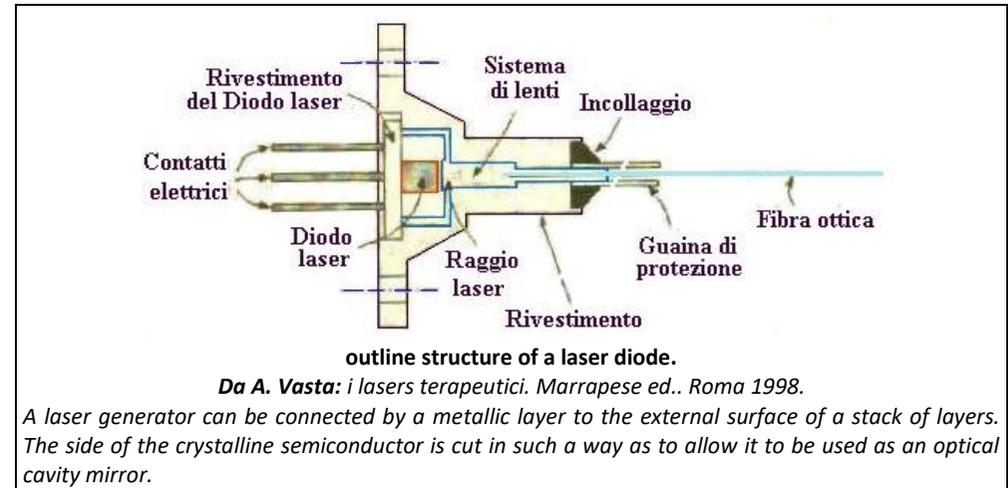
and obviously a mechanical support structure.

Diode lasers are all made of semiconductor material and have the typical electrical properties of electric diodes.

They include pumping with other optical sources (photo-pumping), pumping with an electron beam, or pumping with a pn junction. The most common technique is by the p-n junction.

The p-n junction refers to a p type semiconductor attached to an n type. This junction conducts electricity in a preferred direction. When the positive pole of the generator is connected to the p side of the p-n junction, and the negative pole of the generator is connected to the n side, a current runs through the p-n junction changing the population of the energy band. The layers of semiconductor material are placed in such a way so as to create an active region in the p-n junction where photons are generated by a recombination process.

The base structure of a simple laser diode is shown in the following figure:



The voltage is applied to the metal on the external layers of the semiconductor.

Since the laser diode is so small, it has a special covering that means it can be easily handled. There are different types of covering, but the standard one is similar to transistor containers. It incorporates a collimated lens that is essential for the creation of a usable beam (see figure a).

Special types of laser diodes have been developed to get high power laser diodes. These special diodes emit synchronized radiation: an output power of a few Watts can therefore be obtained.

Diode lasers have numerous advantages:

- highly effective (more than 20 % of the input energy is emitted as laser radiation)
- high reliability and safety
- long lasting (about 100 years estimated in continuous operation)
- low cost (laser diodes are manufactured using mass production techniques in the electronics industry)
- ability to carry out direct modulation of the emitted radiation, and control the electric current that passes through the p-n junction.

FEATURES OF THE LASER RADIATION

Parameters of the laser beam

1. Frequency: this determines the average power of the laser and therefore the capacity of therapeutic lasers to penetrate tissue.

The higher the frequency, is obtained a greater penetration energy density. Clearly therefore, choosing low frequencies for analgesic purposes and high frequencies for anti-inflammatory purposes does not make scientific sense.

2. Pulse duration: the laser emission can take place in two modes:

- continuous: radiation produced by lasers is emitted without any pauses between the pulses;
- pulsed.

3. Average power (P_m): this is a function that varies according to the size, the duration and the frequency of the pulse.

The evolution towards pulse lasers is very favorable from the therapeutic point of view and for the average power, since laser penetration into the body is improved.

4. Peak power: it is the maximum power that a single laser pulse can reach.

Above a certain value of between 10 and 20 W, the increase in peak power exceeds the critical energy threshold, saturates the superficial layer of the epidermal tissue, and causes burning of the skin (thermal effect), see fig.b.

The power of laser beams (both therapeutic and surgical) is higher at the centre of the beam and falls off towards the edges in a bell shaped curve (Gaussian showed in fig.c).The power weakens towards the edges of the beam with lesser effects on the tissue hit. This phenomenon is called the alfa effect. Therefore, the low power part of the beam is the reason that there is less pain and inflammation in the injuries.

5. Irradiation dose (energy density): This is the most important parameter for the low level lasertherapy. It is even more important than the kind of laser used (visible or invisible, pulsed or continuous).

The irradiation dose represents the amount of energy that is transported into the tissue. It is very important to know whether this energy is conducted through a small point or through areas covering many square centimeters of tissue.

For an optimal therapeutic result, these concepts are fundamental:

1. For best bio-stimulation effects (in treatment of sores, burns, bruises, etc.) the radiation dose has minimum and maximum limits. If the amount is too low, the treatment may not be effective, if the amount is too high the treatment may be either ineffective, or provoke negative effects.
2. the bio-stimulating effect is cumulative: suitable, repeated amounts given at relatively frequent intervals give a cumulative effect. Small repeated doses in 1-7 days intervals produce effects as strong as the total dose irradiated in a single treatment.

EFFECTS OF DIODE LASER ON TISSUES

1. Anti-inflammatory effect

Numerous studies have shown that laser treatment, acting on a number of different cellular and biochemical components of an inflammation, can have a significant effect on the histological, biological and clinical inflammation parameters in patients with such reactions.

2. Effects on peripheral nervous system (antalgic and regenerative effect)

Numerous studies carried out both on patients and in test tubes have shown that low energy laser irradiation can have biological effects on the central and peripheral nervous system and on its functions: increasing neuronal metabolism, re-establishing normal neuro-physiological activity, preventing neuronal degeneration and stimulating the repairing and functioning capacity of the spinal cord and peripheral nerves.

3. Biostimulating and tissue regeneration effect

Recent studies have shown significant effects on the stimulation of the connective tissue and on the general mechanisms that regulate tissue regeneration. The main biological effect of lasers on the connective tissue is the quick proliferation of fibroblasts in cellular cultures.

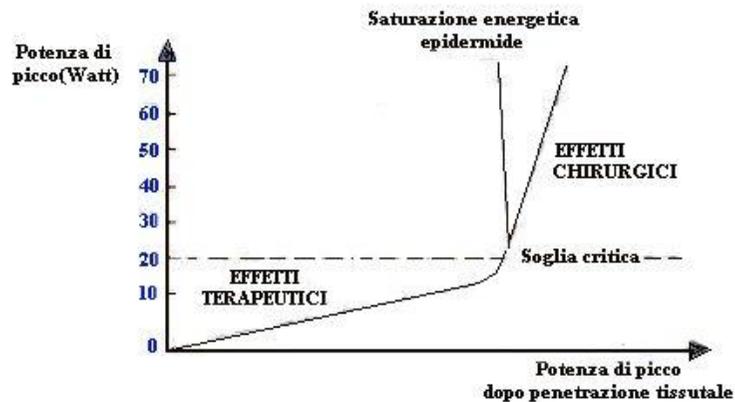


Image b: peak power and critical threshold of the therapeutic effects of lasers.

Da A. Vasta: *I lasers terapeutici*. Marrapese ed.. Roma, 1998.

Above the critical threshold, the skin becomes saturated of energy and it will be permeable only with a lower peak power. Above 20 Watt, photothermic effects might cause skin burn.

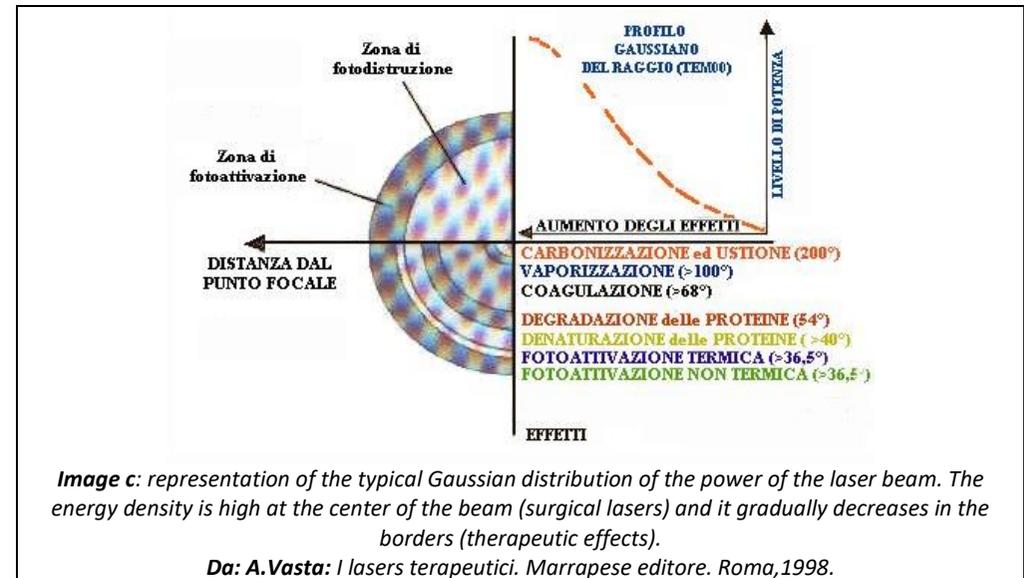


Image c: representation of the typical Gaussian distribution of the power of the laser beam. The energy density is high at the center of the beam (surgical lasers) and it gradually decreases in the borders (therapeutic effects).

Da: A.Vasta: *I lasers terapeutici*. Marrapese editore. Roma, 1998.

4. Effect on microcirculation and blood vessels

Lasers induce improvements in local microcirculation that include relief from local spasms of the arteriolar and venular vessels (that occur, for example, after a trauma or inflammation), the intensification of blood flow in the nutritional capillaries, the opening of anastomoses and the activation of neo-angiogenesis processes.

5. Immuno-modulating effect

The immune system activates a defense mechanism against exogenous or endogenous, such as bacteria and viruses, which are potentially dangerous for the body.

6. Enzymatic photo-activation effect

A photon can activate an enzymatic molecule that, in turn, can activate a biological process.

7. Placebo effect

It should be underlined that a number of studies have concluded that the use of infrared lasers in pain treatment may produce a significant placebo response that is worth taking into consideration.

MAGNETOTHERAPY

PHYSICS AND EFFECTS OF MAGNETIC FIELDS

The applied magnetic fields, which are used for veterinary use, are either low frequency or very low frequency fields (0-100 Hz) with variable intensities of between 5 and 100 gauss.

These are “*variable*” magnetic fields, that is to say, they are produced by inputting a variable current into the circuit (the solenoid), which can be modified to generate different types of waveforms and therefore create different types of magnetic fields.

The great number of studies carried out on the biological action of magnetic fields demonstrates that these can have a range of different effects on living matter, on one hand in relation to the characteristics of the field (orientation, intensity and frequency), and on the other in relation to the state of receptivity of each individual, that is to say, his/her dielectric properties.

The most important phenomenon evident in biological tissue exposed to a pulsated magnetic field is the contextual rise of induced micro-currents.

But how do these micro-currents interact with the body? Provide an example, let's start by stating that a great part of protein macro-molecules, called biopolymers, have piezoelectric properties and these behave as transducers, in the sense that every mechanical, thermal or electro-magnetic variation applied to them leads to a modification in their electric state. An injurious event, a trauma for example, determines a de-polarization of these protein structures with a reduction in the transmembraneous electric potential of the cell.

The micro-currents induced by magneto-therapy re-polarize the biopolymers and therefore re-establish the correct electric potential, accelerate ionic movements, reactivate enzymatic kinetics and, in short, reintegrating the tissue function.

A classification of the general biological effects of low frequency static and variable magnetic fields employed in the veterinary field is shown in the chart below.

PRIMARY	SECONDARY
<p>1. Magneto-mechanical Cellular:</p> <ul style="list-style-type: none"> - cellular membrane - orientation of the sub-cellular organelles and macromolecules (magnetosomes Fe3O4) - gradients of concentration, rotation, 	<p>1. 1. Chemical</p> <p>2. Physical-chemical:</p> <ul style="list-style-type: none"> - modification of the diffusion coefficients in the cellular membrane - modification of the moving speed of the biological liquids in the vessels and

<p>translation of the paramagnetic molecules (metalloprotein, cytochromes, molecular oxygen and free radicals)</p> <ul style="list-style-type: none"> - orientation and electric dipoles and diamagnetic substances (retina rod cells, nucleic acids end enzymatic reactions) <p>2. Magneto-electrical:</p> <ul style="list-style-type: none"> - induction of currents in cellular membrane junction systems - induction of micro-currents(μA/ cm²) <ul style="list-style-type: none"> a) in conducting tissues b) in endovessel blood exposed to magnetic fields orthogonal to vessel - Gauss effect (modification of the electric resistance of electrical charges in movement) 	<p>intercellular spaces</p> <ul style="list-style-type: none"> - modifying effect on osmotic pressure. <p>2. Physical:</p> <p>on nucleic acids, water and acid mucopolysaccharidosis; electro-magnetic effects (Hall, Etinghausen and Nernst effect)</p> <p>3. Thermic:</p> <p>negligible for field intensities of less than 1000G and for frequencies of less than MHz.</p> <p>4. Athermic effects:</p> <p>resonance and coherence linked to the biological substrate receiving the incident impulses.</p>
<p>Biological effects on apparatuses and systems</p> <ol style="list-style-type: none"> 1. Immune system 2. Bone tissue 3. Central Nervous System 4. Endocrine glands 5. Blood 	

Charts I: Classification of the biological effects of the application of magnetic fields on cellular tissues (by F.Bistolfi: Magnetic fields in medicine, Ed. Minerva Medica-Turin. Modified).

Therefore, there is no doubt that the influence of low intensity and low frequency pulsated magnetic fields causes numerous bio-physical effects in the body at different organizational levels of the living matter (cellular, tissular, organ-related and system-related), dependent on primary interactions of a magneto-mechanical and magneto-electrical nature. These fields act primarily:

- **on the plasmatic membrane:**
 - o generating a modification of membrane *permeability* and therefore of the ionic balance on its two sides (improvement of ionic exchanges and an increase in the supply of oxygen and its utilization);
 - o influencing on the *flow of ions* (especially calcium) through the membrane itself in a specific manner for each frequency used (greater supply of oxygen,

- and therefore of energy, to the mechanisms that are at the basis of the ionic pumps);
- influencing many *intracellular enzymatic systems* and membrane systems;
- influencing the *relationships between antigens and anti-bodies*;
- influencing the *disposition and orientation of molecules* found at the sides of the membrane that possess their own magnetic momentum and that are involved in those biological processes that require precise steric orientation of the molecules (active transport, hormone-receptor complexes, receptor-transmitter enzymatic reactions, antigen-antibody reactions, etc.) in order to manifest themselves.
- **on the blood:** a positive effect on the calibre of the vessels and on the viscosity of the blood with improvements in local circulatory conditions and oxygen pressure (hypervascularization) which would also explain the acceleration of the healing processes of soft tissue and bone lesions, and trophic lesions of peripheral circulatory origin, as well as the beneficial effect on biological structures conditioned by the diffusion of oxygen such as, for example, cartilage;
- **on the immune system:** an increase of immunoglobulin-G and circulating leukocytes reinforcing the immune system; in the regulation of the production of steroid substances and endogenous opioids (and therefore modulating on the algic system);
- **on the endocrine system:** inhibition of some hormonal functions (parathyroid) and stimulation of others;
- **on the central and peripheral nervous system:** a reduction of the activity of the sympathetic system (for hyper-polarization of the pre and post-synaptic membranes, or modulating the frequency of the stimuli in case of the vasodilatation); alterations of the activity of cerebral cells;
- **on the metabolism;**
- **on cellular reproduction;**
- **on tissue regeneration:** genesis of collagen on the part of fibroblasts and on angiogenesis with vascular neo-formation (which would explain the favorable effects of magnetic fields on the healing processes of injuries, ulcers and torpid sores);

- **on bones:** the start of the osteogenesis is stimulated, where this does not happen naturally (pseudo-arthrosis, delayed consolidation), providing opportune signals of cell reactivation (mesenchimal of the periostosis, monocytes, fibroblasts, osteoblasts that act on the formation of the internal callus), improving the hematic supply, inhibiting the parathormone and therefore favouring the activity of the osteoblasts.

On the basis of these admissible effects the **biological action** of magnetic fields can be summarized principally in:

- **an anti-inflammatory and anti-edemigene action:** with a decrease in VES, an increase in gamma globulins and a decrease in alpha globulins as part of a generic anti-inflammatory action of the magnetic fields used;
- **anti-inflammatory effect:** able to alleviate pain in the treatment area
- **a tissue-repairing stimulating action.**

TECAR-THERAPY

The system of endothermic therapy is a therapeutic method that has been recently introduced in physical therapy. It allows it to stimulate from inside the biological structures and the natural anti-inflammatory and reparative processes by the application of energy, taking advantage of a form of interaction between the electromagnetic energy and the tissue that refers to the concept of the electric condenser.

The device consists of 2 facing elements (known as armors) and separated by an insulating material, connected to an electrical generator that creates a potential difference (d.d.p.) between the 2 plates. This causes the attraction and then the repulsion of the electric charges which then concentrate in the vicinity of the 2 elements. In this way, there will be an increase of positive charge density in one plate and an increase of the negative one in the other plate.

If we want to transfer this electric principle in the biological field we will have a handpiece or a mobile electrode used by the operator to treat the affected part by the disease, while the second armor is constituted by the biological tissue to be treated which behaves as a conductor of the second type.

The mobile electrode is connected to an electric generator (the machine body), which creates the d.d.p., to which is also connected the fixed return plate, which is placed in contact with the patient's skin more or less near the area to be treated to close the circuit.

The current generator works in the field of long-wave radiofrequencies ranging between 0.4 and 0.5 MHz with a variable power up to a maximum of 200W.

In this way there is not external emission energy, but there is only a development of endogenous energy or at the level of internal biological tissues produced by the movement of ions and electrolytes, induced by the forces of attraction and repulsion that are generated between the plates 2 of the capacitor.

APPLICATIONS TECHNIQUES

The capacitive/resistive Tecartherapy (acronym of Transfer Electrical Capacitive And Resistive) is a therapy that stimulates the body's natural repair processes, shortening the motor recovery time.

Diatermia through the electromagnetic energy/tissue interaction produces a temperature increase that occurs within the tissues in a uniform and controlled way. Such electromagnetic interaction causes to the appearance of an ion flow with a micro-hyperemia which enhances the release of endogenous "substances" (mainly cortisone and endorphins) that serve to reduce the pain, edema and inflammation.

It is, therefore, stimulated the increase of blood flow in a direct way, thanks to the increase of temperature, and indirectly through the oxygen demand by the treated tissues; the blood increase allows the increase of the normal immune defenses and stimulates the regeneration of tissues.

The tecar-therapy works in two modes:

- if it works in capacitive mode there will be an increase of the charge density near the area below the mobile electrode and in particular at the level of the soft tissues like the muscle masses.

- if it works in resistive mode, the concentration of charges and therefore the biological effect occurs in the tissues with the highest resistance which are interposed between the mobile electrode and the return plate, namely bone, ligaments, etc.

HOW IT WORKS

In order to cause the phenomenon of the increase of the charge density it is necessary that the two armors of the capacitor are connected to an electric generator that has the task of supplying the armors with charges.

In this way, a real current is established, which in the accumulation phase goes from the generator to the capacitor. As the capacitor accumulates charges, the flow is reduced to zero when the capacitor is fully charged.

After this initial phase of the generator if the polarity is reversed, there will be a current in the opposite direction that the capacitor will charge with polarity opposite to the previous. If the generator reverses polarity cyclically there will be a two-way flow, that is, an alternating current.

The transfer by capacitive contact is made through a capacitive shield electrode covered with insulating ceramic material (of different sizes depending on the treated area) that mobilizes the ionic charges in the subcutaneous tissues.

The resistive one takes place by means of a non-isolated resistive electrode that mobilizes the charges by ensuring that they are concentrated in the areas of greater depth and resistivity (bone matrix and deep muscles).

The capacitive mode acts specifically on soft tissues (muscles, vascular and lymphatic circulatory system, adipose tissue), whereas the resistive mode acts on the tissues with greater resistance (bone tissue, cartilage, tendons, serous bands).

A neutral plate (return pole) is placed in the vicinity of the treated structures to close the circuit and it is applied according to a geometric disposition that allows the position of the most resistive or capacitive point with respect to the therapeutic interest area.

For a better transfer of energy to the tissues on the part to be treated it is used a coupling saline gel or in any case a transmissive gel that prevents the interposition of air between the electrode and the body surface allows the best "adherence" between the radiator and the epidermis.

LASER-THERAPY (HL)

The evolution of light

The new high power laser module has been made using optical fiber to transmit high laser powers (4 W) directly on the skin, without any dispersion.

In this way it is possible to apply real peak powers up to 4W max and let the laser performing its therapeutic action as an impressive regenerative stimulation in chronic pathologies, in the acceleration of the inflammation resolution and of the edema in acute pathologies, and in the rapid resolution of painful articular, muscular, neurogenal and soft tissues syndromes, both acute and chronic.

High power laser allows an immediate improvement in the symptoms of inflammatory and degenerative pathologies and a reduction of recovery times and presents itself as an indispensable therapy.

Lasertherapy benefits

Laser therapy is not based on heat development but on photochemical and photobiological effects in cells and tissues. It has been noted that if Laser light is distributed in moderation a stimulation of certain cellular functions is obtained, in particular in the case of cells with functional deficits. The biological action in the use of Laser in therapies produces a series of effects on cells through a "stimulating" action on the mitochondrial functions with a higher production of ATP.

High power laser applications produce in the treated tissues several effects:

1. increase of blood flow: vasodilatation of capillaries and arteries;
2. bio-stimulation: tissues regeneration, stimulation of protein synthesis, stimulation of the ATP production, stimulation for the fibroblasts mitosis, increase of collagen and elastin;
3. anti-inflammatory effect;
4. anti-edematous effect, with stimulation of the lymphatic system;
5. analgesic effect: increase of the threshold of perception of nerve endings.

Laser HL module is therefore a laser with the following characteristics:

- thanks to the high power supplied, it allows the stimulation of the deep layers of the tissue, thus facilitating a quick and widespread cellular regeneration.

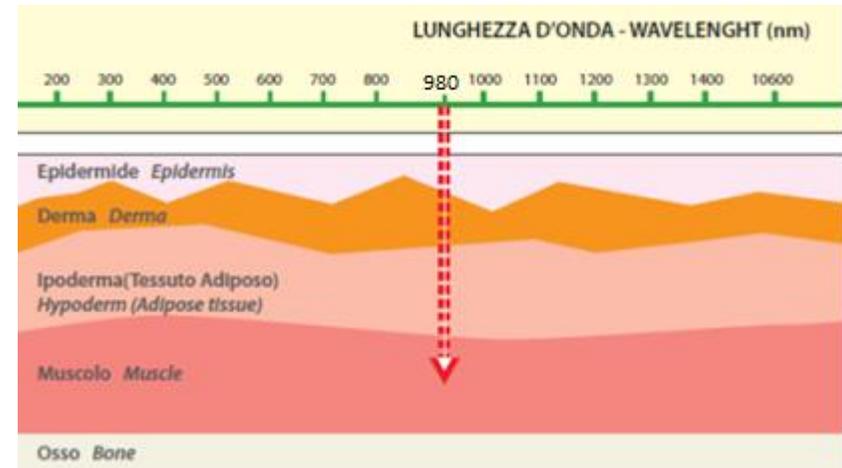
With HL module it is possible to obtain a deep tissue stimulation and this makes possible to treat the most internal tissues and structures and chronic pathologies such as arthrosis;

- crucial in acute, chronic and degenerative inflammations,

- automatically calculates the quantity of energy (fluence in joules) supplied in function of the different application modes, contact or through the 3 positions of the spacer included.

The HL module is a laser power, which works with a single wavelength: 980nm.

Using its peak power (4W) it is possible to supply up to 4W power and performing a therapeutic action as an impressive regenerative stimulation in chronic pathologies, in the acceleration of the inflammation resolution and of the edema in acute pathologies, and in the rapid resolution of painful articular, muscular, neurogenal and soft tissues syndromes.



The effectiveness of the preset protocol is strongly conditioned by the type of patient treated. For this reason there is the possibility, for veterinary staff qualified, to modify the parameters according to individual needs.

IN GENERAL

With the POLYTER VET device, EME srl wants to extend its experience, now consolidated in human medicine, to the veterinary sector.

Particular attention has been paid to the design, easy operation, function and safety of the equipment. The result is a compact unit, easily transportable, equipped with a modern line, which offers an extremely logical operative sequence supported by a clearly legible monitor.

Simple and intuitive software is designed using all graphic and functional capabilities of the latest operating systems.

The new expandable modular design allows you to group in a single container one or more modules depending on the technology of interest.

A wide range of therapeutic applications, and guaranteed patient and therapist safety ensure that POLYTER VET is an equipment of the highest quality.

The equipment were planned and built in manner that their use, if it happens at the conditions indicated, doesn't compromise the health and safety of the patients, of the users and of third, taking into consideration the benefit to the patient.

Such equipment are not bound to diagnosis, prevention, monitoring, compensation of injury or handicap, substitution or modification of the anatomy, control of the conception, support/vital support of functions but allow to treat special pathologies and to reduce the illness.

A special intervention is not required in the event of failure of the medical device, but just a normal maintenance/repair.

INTENDED USE

POLYTER VET is a combined therapy device intended for use on animals.

POLYTER VET is able to deliver physical therapy treatments according to the modules that make up the device itself.

In particular, the device may:

- provide electrotherapy treatments by applying conductive electrodes to the patient, regarding the electro-therapy module;
- deliver ultrasound energy through the use of probe/applicators with integrated contact sensors, regarding the ultrasound-therapy module;
- generate, using applicators, a low frequency (1-100Hz) and 1-100 Gauss power magnetic field, regarding the magnetotherapy module;
- supply Laser energy through mono-diodic and multi-diodic probes, as for the lasertherapy module;
- deliver therapeutic treatments with a power laser (4W), using a defocused laser probe, for the HL laser module.
- provide tecar-therapy treatments by using conductive electrodes mounted on handpieces/applicators, regarding the tecar-therapy module.

The new concept of modularity, therefore expandable POLYTER VET widely versatile equipment in which the operator can build the device according to their own needs.

The goal is to effectively treat the diseases that frequently affect small and medium-sized pets (dogs and cats) and horses quickly, and reducing the risk of side effects.

This device has been designed for use by qualified veterinary staff and / or individuals trained in the care of animal health, who by virtue of their professional training offer the guarantee of adequate use and total safety for the animal.

This machine can be used in an outpatient setting or at veterinary clinics, provided it is used by qualified personnel in this regard and in accordance with what is stated in the user manual.

It is a portable battery-operated device or via the mains.

INDICATIONS

All the therapies available in the POLYTER VET device can be used to treat the following diseases:

- **Acute traumatic pathology:**
 - o Distortions in the acute phase;
 - o Muscle injuries, muscle strains in the acute phase;
 - o Elongations, muscle strain in the acute phase;
 - o Fractures (Treatment indicated for all types of treatment with the exception of ultrasound for which fractures are a contraindication);
 - o Hip dysplasia, elbow in the acute phase;
 - o Shoulder dislocations, acute patella;
 - o ACL rupture in the acute phase;

- **Acute inflammatory pathology:**
 - o Spine pain, low back pain, neck pain;
 - o Herniated disc in acute phase;
 - o Arthritis;
 - o Osteochondritis;

- **Sub-acute pathology:**
 - o Distortions in sub-acute phase;
 - o Muscle injuries in the sub-acute phase;
 - o Elongations in sub-acute phase;
 - o Digestive problems;
 - o Fractures (Treatment indicated for all types of treatment with the exception of ultrasound for which fractures are a contraindication);
 - o Hip dysplasia, elbow in sub-acute phase;
 - o Shoulder dislocations, patella in sub-acute phase;
 - o ACL break in sub-acute phase;
 - o Spinal pain, low back pain, sub-acute cervicalgia;
 - o Herniated disc in sub-acute phase;

- **Chronic pathology:**
 - o Osteoarthritis of the joints: gonarthrosis legs, coxarthrosis;
 - o Osteoarthritis of the vertebrae: lumbarthrosis, cervicoarthrosis;

- o Joint stiffness in the limbs;
- o Joint calcifications;
- o Fibrosis and muscle calcifications;
- o Chronic phase herniated disc;
- o Chronic dysplasia;
- o Aseptic necrosis of the femoral head;

CONTRA-INDICATIONS

ELECTROTHERAPY:

1. Application near the heart area on patients with: arrhythmia, congestive heart failure, recent myocardial heart attack or other cardiac abnormalities
2. Application in any region of the body in animals with active implantable devices;
3. Application on the area of carotid glomus, as it may interfere with the normal regulation of the pressure blood flow and cardiac contractility;
4. Trans brain applications, because it can affect neural function;
5. Application on pregnant uterus;
6. Application on cancer tissues (malignant);
7. High width application directly above areas where it is localized the bone tissue on surface , a sit can cause periosteal pain;
8. Application in damaged area or irritated skin because the current preferentially penetrates through the irritated area causing discomfort (however some types of E-stim are used to promote the healing of wounds);
9. Application with electrodes near or touching protruding metal, such as surgical staples or sutures;
10. Application on patient who reacts negatively to the procedure;

Relative contra-indications:

11. On areas of excessive fatty tissue when the high level of stimulation, required to activate the deep structures can cause pain or independent reactions;
12. on the phrenic nerve region or on urinary bladder as the stimulus can interfere with the normal function of there structures;

13. on scars because the scar tissue has an increased electrical resistance ;
14. The current acts preferencely around the scar causing an increase of current density at the scars' edges with possible creation of burnings.

ULTRASOUND-THERAPY:

The ultrasound treatment cannot be provided in the event of:

1. Tumors (Peripheral expansive proliferative stimulation);
2. Osteoporosis (may worsen decalcification phenomena). While this is not an absolute contra-indication, it is advisable to use low frequency pulsed modes (16-48 Hz);
3. Hematomas, risk of re-bleeding;
4. Articulations with epiphysis in the bone-growing phase;
5. Venous vascular affections with thrombosis or thrombophlebitis in the area to be treated in the acute phase;
6. Avoid irradiating near to glands and the cardiac aia, even in healthy patients, (modification of action potentials and contractile proprieties);
7. Avoid using on or close to the eyes (as the fluid means cavitation effect may lead to irreversible damage) due to a risk of hemorrhages and retinal detachment;
8. Avoid carrying out treatments on abdominal area in females during pregnancy;
9. Avoid carrying out treatments in cases of cutaneous lesions and alterations of sensitiveness.
10. Animals with active implantable devices or metal implants;
11. Bone fractures.

Collateral effects:

The therapeutic treatment with ultrasound has not generally contra-indications if it is made in compliance to the normal modalities.

It is pointed out that after the first-second session of treatment is possible to have an increase of the pain, that will disappear after 5-6 hours.

At maximum dosages of 2-3 W and in case of continuous emission for a duration greater than 12 minutes, it will appear a focused pain in the treatment's area that could disappear reducing the power .

However, these phenomena are temporary.

LASERTHERAPY:

1. Direct eye radiation: class 3B lasers are potentially harmful to the retina, although retina damage is extremely improbable. The special safety goggles (supplied) must always be worn by both the operator and by the person accompanying the animal and it is necessary to prevent the animal from looking directly at the laser.
2. Pregnancy: the laser should not be used over a pregnant woman's uterus. However, it can be used on pregnant female on condition that there is no radiation over the abdomen.
3. Neoplasias: the laser should not be used on a diagnosed or suspected primary or secondary lesion. Laser treatment can be granted to relieve pain during the terminal stage of the disease, it is recommended that this is performed only with the full consent of the person responsible for the animal being treated, and in any case in areas far from the tumor area.
4. Thyroid: laser must never be used over the thyroid.
5. Haemorrhagies: indirect laser vaso-dilatation may worsen the haemorrhaging.
6. Immunosuppressive therapy: laser therapy is contraindicated in patients who undergo this type of drug therapy, as no effect would be found. It is recommended that laser therapy is started at least 7 days after the end of the immune suppressive therapy.
7. Treatment over the sympathetic nervous system, the vagus nerve and the heart area in patients with heart disease: laser therapy can significantly modify neural functions and should not be used over these areas of the body in patients with heart disease heart susceptible to electromagnetic emissions.
8. Pacemaker wearers.
9. DO NOT USE near, or in the area of the skull, in case of epilepsy.
10. In case of very serious infections, DO NOT APPLY directly on the contaminated wound.
11. Photosensitization reactions: in some patients taking drugs having side effects of photosensitization, laser therapy produces unknown effects. It is unclear how the combination of lasers and drugs triggers this response. It is recommended that

patients at risk of allergy, or patients with a history of such reactions, be "tested" with a minimum treatment time.

12. Coloring substances: due to the characteristic chromophore of the laser light, do not carry out the laser therapy treatment on marker or colored skin using substances such as iodine, chlorhexidine, etc.
13. Means of fixation, metal plates, plastic DO NOT constitute a contraindication to the use of the laser which can be used safely above
14. Coagulation problems;
15. Epilepsies.

MAGNETOTHERAPY:

The magnetic therapy treatments cannot be applied in case of:

1. patients with cardiac rhythm disorders: continuous magnetic fields used in RMN units have determined a number of bradycardia-related phenomena and other arrhythmias. However, such reasonably rare effects can be reversed by decreasing the intensity of the field or suspending the treatment;
2. presence of metal prostheses (screws, cramps, pins) or clips (that are ferromagnetic);
3. patients with pacemaker (absolute contraindication): under no circumstances should such patients be exposed to more than 0.5 mT (0.5 millitesla = 5 gauss) (CERN studies 1995) as there is an elevated risk of applied static and pulsated magnetic fields causing pacemaker malfunctioning.
4. patients with active implantable devices;
5. dermatology,
6. epileptic patients even when undergoing pharmacological treatment;
7. neuro-vegetative system pathologies;
8. pregnancy;
9. females in the fertile period: the vasodilating effect of magneto-therapy may further increase an already heavy flow.
10. vascular lesions in general: for the same reasons as the previous point;
11. patients with mycotic infections;

12. manifest hypersensitivity to electro-magnetic fields,
13. fever or thermoregulation disorders
14. cancer and tuberculosis;
15. Take particular care when treating patients taking medicines that affect the calcium pump as such drugs are rendered less effective by pulsated magnetic fields;
16. in cases of arthrotomy postpone the use of magnetic fields for at least 15 days;
17. in cases of nerve root compression syndromes it is first necessary to remove the cause;
18. in presence of cardiac valve prostheses.

TECAR-THERAPY:

The tecar-therapy treatments cannot be applied in case of:

1. patients with active implantable devices;
2. pregnant female;
3. patients with venous insufficiency of the limbs;
4. bone neoplasms;
5. osteoporosis (at a medium and high capacitive and resistive transfer);
6. articular edema of any nature;
7. recent muscular hematoma (less than 15 days); it is useful in the resorption phase at medium capacitive level.
8. skin lesions (open wounds or recent burns)
9. thrombophlebitis

HIGH POWER LASER THERAPY (HL):

- Direct irradiation in the eyes: Class IV lasers are potentially harmful to the retina - although damage to the retina is extremely unlikely. The special specific safety glasses (supplied) must, however, by both the operator and by the person accompanying the animal and it is necessary to prevent the animal from looking directly at the laser.

- Pregnancy: the laser is contraindicated for use over the pregnant uterus. It can however be used in pregnant females with the foresight not to radiate above the abdomen.
- Neoplasms: the laser should not be used on a diagnosed or suspected primary or secondary lesion. Laser treatment can be granted to relieve pain during the terminal stage of the disease, it is recommended that this is performed only with the full consent of the person responsible for the animal being treated, and in any case in areas far from the tumor area.
- Thyroid: the laser should under no circumstances be used over this gland.
- Hemorrhages: it is conceivable how laser-mediated vasodilation can worsen the hemorrhage.
- Immuno-suppressive therapy: laser therapy is contraindicated in patients who undergo this type of drug therapy, as no effect would be found. It is recommended that laser therapy is started at least 7 days after the end of the immune suppressive therapy.
- Suspicious injury and skin irritation;
- Treatments over the sympathetic ganglia, vagus nerve and cardiac region in patients with heart disease: laser therapy can significantly alter neural function, and is therefore contraindicated on this body region in patients with heart disease susceptible to electromagnetic emissions .
- Coloring substances: due to the characteristic chromophore of the laser light, do not carry out the laser therapy treatment on marker or colored skin using substances such as iodine, chlorhexidine, etc.

Other contra-indications:

- Atopic dermatitis and eczemas in acute phase
- Inflammations in the treated area
- Bruising
- Photoallergy
- Photodermatitis
- surgical operations or cryogenic therapy on the area of the skin to be treated.
- Photosensitivity reactions: in certain patients who take known drugs these ones cause photosensitivity reactions. It is not fully understood how the combination

of laser and medicine trigger these reactions. Patients who may be at risks for allergies, or who have a history of these reactions, should first be “tested” by applying treatment for a minimal time period.

PRELIMINARY NOTES

UNPACKING

The equipment POLYTER VET is specially packaged for transport in a single pack complete with filling which has been specifically studied for safe transportation and storage.

To remove the equipment from the pack, place the box on a smooth, flat surface. Open the top of the box and remove the polystyrene filling. Be very careful when removing the contents of the pack.

The device and accessories, located inside the battery compartment in the upper body, wrapped in a protective sheet of transparent polyethylene.

In the package are included:

- the User Manual;
 - n.1 mains power supply cable;
 - n.2 spare fuses (see technical specifications);
 - n.1 key to close the trolley;
- Moreover, according yo the modules present in the device:
- n.1 electrotherapy cable complete circular connector and pin (ET module);
 - n.4 conductive rubber electrodes 6x8.5 cm (ET module);
 - n.4 conductive rubber electrodes 5x5 cm (ET module);
 - n.4 sponge for medium electrodes 6x8.5 cm (ET module);
 - n.4 sponge for small electrodes 5x5 cm (ET module);
 - n.2 elastic bands 1000x50mm (ET module);
 - n.2 elastic bands 600x50mm (ET module);
 - n.2 elastic bands 1000x50mm (MG module);
 - n.1 magnetic ring to test the emission of magnetic field (MG module);

- n.1 pair of magnetic applicators (MG module);
- n.1 multi-frequency handpiece 1/3MHz, 5cm² (US module);
- n.1 laser handpiece 100mW, 905nm (module LL);
- n.1 pair of safety goggles, OLV model (LL module);
- n.1 Interlock (module LL);
- n.1 handpiece holding capacitive electrodes (module TC);
- n.1 kit with three insertions for capacitive treatments: diameters 30, 50, 70 mm (module TC);
- n.1 handpiece holding resistive electrode (module TC);
- n.1 kit with three insertions for resistive treatments: diameters 30, 50, 70 mm (module TC);
- n.1 steel plate (module TC);
- n.1 laser probe defocused in optical fiber (Module HL);
- n.1 footswitch (HL);
- n.1 Safety glasses for operator, model YG3 (Module HL).
- n.1 Safety glasses for the person who is with the animal, model OLV (Module HL).

Always check the contents of the box. Should any of the components not be included, immediately contact the EME srl authorized dealer.

SETUP

The installation of the apparatus for combined therapy POLYTER VET does not require special care, so simple and immediate.

The following environmental conditions are ideal when installing the equipment:

- Environment temperature: between +10° and +40°C;
- relative humidity: between 10% and 80% without condensation;
- avoid direct exposure to sunlight, chemical products and vibrations;
- avoid using RF wireless communication devices in proximity (<0.30m)

ACCESSORIES

The POLYTER VET is equipped with power cable, and is compatible with the following accessory kit supplied in accordance with the form for your device:

POLYTER VET description	Supplied	Optional
Power cable plug shuko	1	
Spare FUSES (see technical specifications)	1	
User manual	1	
Key to close the trolley	1	
ELECTROTHERAPY MODULE description	Supplied	Optional
Output cables for electrotherapy with banana cables of 2mm	1	
Small conductive rubber electrodes 50x50mm	4	
Big conductive rubber electrodes 60x85mm	4	
Sponge for electrodes 50x50mm	4	
Sponge for electrodes 60x85mm	4	
Short elastic bands (60x5cm)	2	
Long elastic bands (100x5cm)	2	
Output cables for electrotherapy ET module		X
Conductive rubber electrodes 50x50mm (2mm)		X
Conductive rubber electrodes 60x85mm (2mm)		X
Conductive rubber electrodes 80x120mm (2mm)		X
Sponge for electrodes 50x50mm		X
Sponge for electrodes 60x85mm		X
Sponge for electrodes 80x120mm		X
Short elastic bands (60x5cm)		X
Long elastic bands (100x5cm)		X
Kit of n.4 disposable electrodes 45x35mm (2mm)		X
Kit of n.4 disposable electrodes 46x47mm (2mm)		X
Kit of n.4 disposable electrodes 45x80mm (2mm)		X
Kit of n.4 disposable electrodes 45x98mm (2mm)		X
Kit of n.4 disposable electrodes of diameter 75mm (2mm)		X
Kit of n.4 disposable electrodes of diameter 32mm (2mm)		X
Kit of n.4 disposable electrodes of diameter 50mm (2mm)		X

ULTRASOUNDS MODULE description	Supplied	Optional
TV5 ultrasound handpiece 1/3 MHz with a 5 cm2 emitting surface	1	
TV1 ultrasound handpiece 1/3 MHz with a 1 cm2 emitting surface		X
TV3 ultrasound handpiece 1/3 MHz with a 3 cm2 emitting surface		X
TV8 ultrasound handpiece 1/3 MHz with a 8 cm2 emitting surface		X
Ultrasound gel bottle 260ml		X
Ultrasound gel bottle 1000ml		X
Ultrasound gel soft pack 5000MI		X
MAGNETOTHERAPY MODULE description	Supplied	Optional
Magnetic ring for testing the emission of magnetic field	1	
Pair of magnetic applicators	1	
Long elastic bands (100x5cm)	1	
Short elastic bands (60x5cm)	1	
Pair of magnetic applicators (16x10x3,5cm)		X
LASER MODULE description	Supplied	Optional
Laser handpiece 905nm with touch sensor. guide light +1 diode 100 mW	1	
Safety laser goggles, OLV model	1	
Interlock	1	
Laser handpiece 905nm with touch sensor. guide light +1 diode 25 mW		X
Laser handpiece 905nm with touch sensor. guide light +1 diode 100 mW		X
Laser handpiece 905nm with touch sensor. guide light+ 3 diode 25 mW (75mW total)		X
Laser handpiece 905nm with touch sensor. guide light+ 3 diode 100mW (300 mW total)		X
Laser handpiece 905nm with touch sensor. guide light+ +5 diode 25mW (125 mW total)		X
Laser handpiece 905nm with touch sensor. guide light+ +5 diode 100mW (500 mW total)		X
Safety laser goggles, OLV model		X
TECAR MODULE description	Supplied	Optional
Resistive massaging hand-probe	1	
Resistive electrode (diameters 30,50,70 mm)	3	
Capacitive massaging hand-probe	1	

Capacitive electrode (diameters 30,50,70 mm)	3	
Steel plate	1	
Bottle conductive cream 1000 ml		X
Capacitive probe		X
Capacitive treatment insert diameter 30mm		X
Capacitive treatment insert diameter 50mm		X
Capacitive treatment insert diameter 70mm		X
Resistive probe		X
Resistive treatment insert diameter 30mm		X
Resistive treatment insert diameter 50mm		X
Resistive treatment insert diameter 70mm		X
Bipolar massaging hand-probe diameter 45 mm		X
Bipolar massaging hand-probe diameter 70 mm		X
Adhesive plates for moving applications		X
Return electrode in steel + cable		X
Kit for moving applications (cable + 10 adhesive plates)		X
LASER MODULE HL description	Supplied	Optional
Laser handpiece defocused in 4 spot optical fiber	1	
Footswitch	1	
Interlock		
Safety glasses for operator, model YG3	1	
Safety glasses for the person who is with the animal, model OLV	1	
Laser glasses YG3		X
Laser glasses OLV		X

The ACCESSORIES that can be replaced by the RESPONSIBLE ORGANIZATION and that can influence the conformity of the EM EQUIPMENT:

Two poles cable for connecting electrodes. The cable length must be less than 3m.

Shielded cable for the connection with the ultrasonic handpiece. The cable length must be less than 3m.

Shielded cable for connection of low power laser handpiece. The cable length must be less than 3m.

Fiber optic cable with two electric cables covered by a shielded steel sheath coated with a double layer of thermo-shrinking, for the connection of the high power laser handpiece. The length of the cables must be less than 3m.

Two-pole cable for connecting applicators and cylinders. The cable length must be less than 3m.

Shielded single wire for handpiece connection. The cable length must be less than 3m.

The main features that the safety glasses must possess are the following:

For the person who is with the animal or for module LL

- Wavelength: 808-905 nm
- Gradation number: 5
- Optical class: 1
- Densità ottica ($\lambda=808\text{nm}$): 3.523
- Densità ottica ($\lambda=905\text{nm}$): 4.456
- CE marking

HL MODULE operator glasses

- CE marking
- 840-950 DI LB5

The accessory assembling is simple and intuitive: each cable for the electrotherapy ET, that allows the connection of two output channels, is equipped with a multi-polar connector to be inserted in the plug on the front panel of the device and with two pairs of pins (red for the positive electrode and black for the negative one) for connection to the plates of conductive rubber of each channel.

The plate holder sponge's pockets have different sizes, each suitable to accommodate the corresponding conductive rubber electrode.

Be sure of the proper insertion of the electrode into the sponge's pocket.

Along the side of each conductive rubber electrode, there is a coupling plug in which the banana cable for electrotherapy coming from the equipment must be connected.

For mounting of electromagnets-applicators (MG module) you must connect the cable attached to each electromagnet-applicator-generator unit by inserting the plug jack into two connectors located on the front panel.

For the connection of any ultrasound handpiece and laser handpiece, insert the multipolar connector into the corresponding sockets on the front panel of the corresponding modules.

If one of the two LASER modules is present, the device is supplied with a security key (interlock) that consists of a special DIN pin to be inserted in the appropriate DIN

socket on the frontal panel of LL module device and in the appropriate connector on the HL module.

The laser modules DOES NOT WORK WITHOUT THE INTERLOCK SAFETY KEY.

The presence of such socket allows also to remote the safety contacts; particularly the safety key works by cutting off both the invisible laser emission, and the power of the leds pointing red.

In order to connect the capacitive or resistive handpiece and the return plate (module TC) you must insert the connector in the corresponding sockets placed on the frontal panel of the TECAR module.

Contact authorized dealers EME srl for problems or difficult installation.

CONNECTIONS

The power entry module can be found on the back of the unit, with the USB connector, and consists of a three-pole socket for the cable set, an extractible fuse box with two fuses (see technical specifications) and the main switch.

Plug the power supply cable three-pin plug into the integrated board and ensure that it is correctly plugged into the connector.

When using an extension lead, make sure that it has been earthed

Failure to comply with the above instructions may lead to dangerous electrical discharge causing machine damage and harm to persons.

After the successful installation and assembly, actuate the power switch and press the power button on the front panel by checking the correct switching on the monitor.

In the presence of an internal battery charge, it is not necessary to operate the power switch but simply press the power button on the front panel to check the correct monitor lights up and the device itself.

It is a rechargeable battery with an autonomy of 3-4 hours of work.

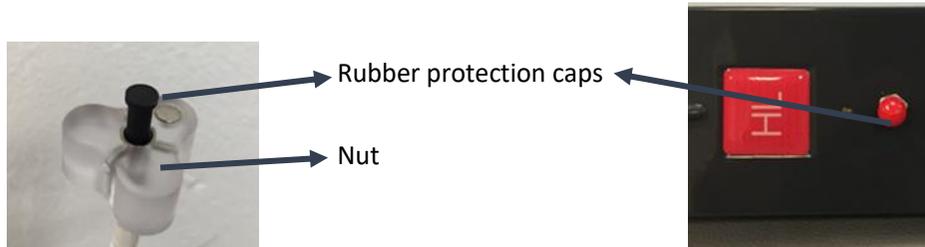
Using internal battery alone causes a gradual discharge, then the machine will switch off automatically.

To recharge the battery, simply keep POLYTER VET constantly plugged into 220 Vac mains with the on/off switch on.

The maximum battery power is restored after a period of about 10 hours.

IMPORTANT: The MAGNETOTHERAPY module (MG module) and TECARTHERAPY module (TC module) are functioning ONLY with the device connected to the mains.

For the connection of the defocused laser probe it is necessary to remove the rubber protection caps present on the connectors of the module (red) and of the probe (black). Once the protections have been removed, the nut on the laser probe connector must be fully tightened. If this is not screwed correctly, the laser probe is not recognized by the device and it will not be possible to proceed with the delivery of the treatment.



If the client requires an external safety interlock is necessary to expect a twisted pair cabling of diameter 0.6mm minimum and 20mm maximum, with screen connected to ground.

At the side safety circuit it necessary to plan the creation of a micro-switch to a via normally closed .

Such circuit is an external safety accessory: it allows to interrupt the laser therapy treatments if the door of the treatment room has been opened .

If the treatment room has only one door, the referring diagram is the following one :

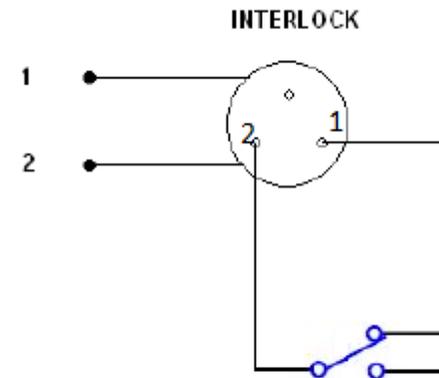


Figure d

If the treatment room has more than one door, the referring diagram is the following one :

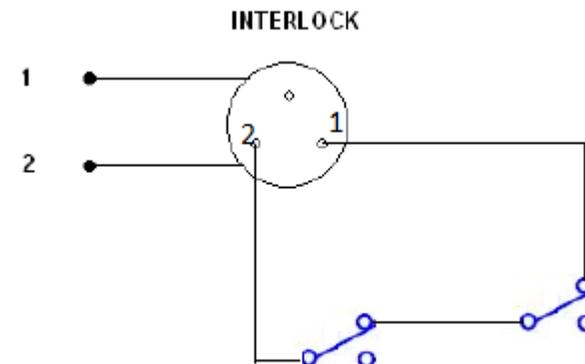
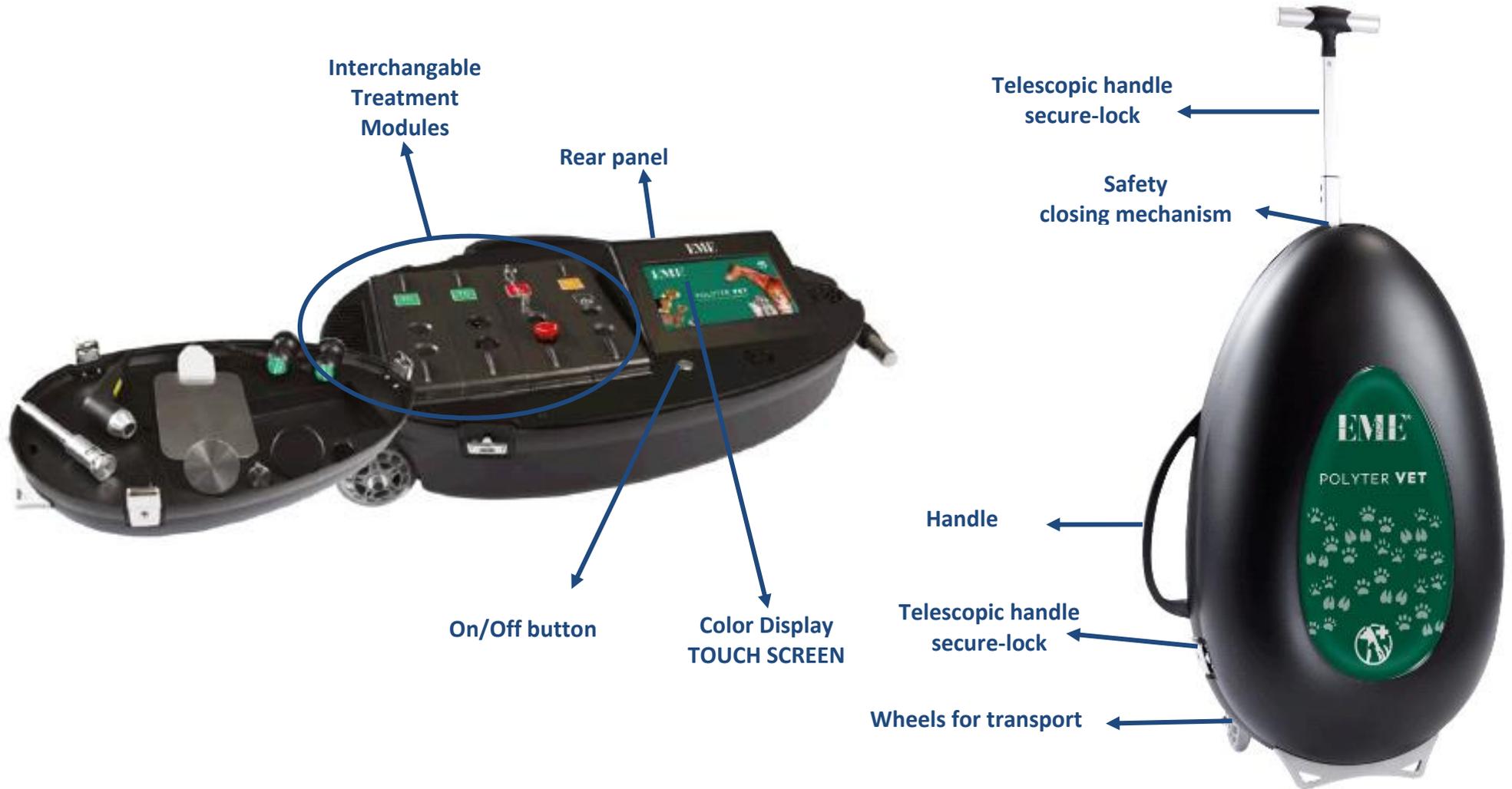
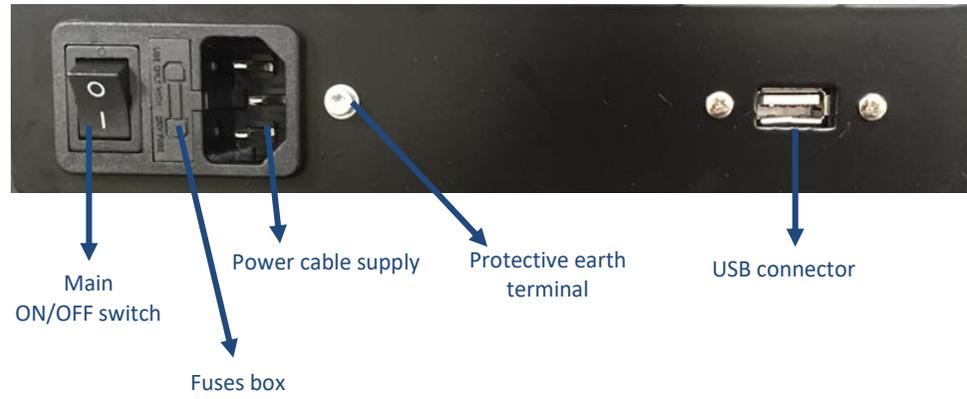


Figure e

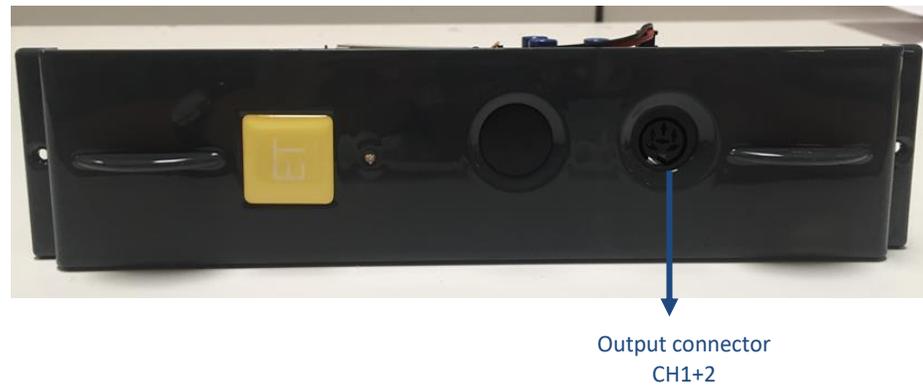
DEVICE DESCRIPTION



REAR PANEL



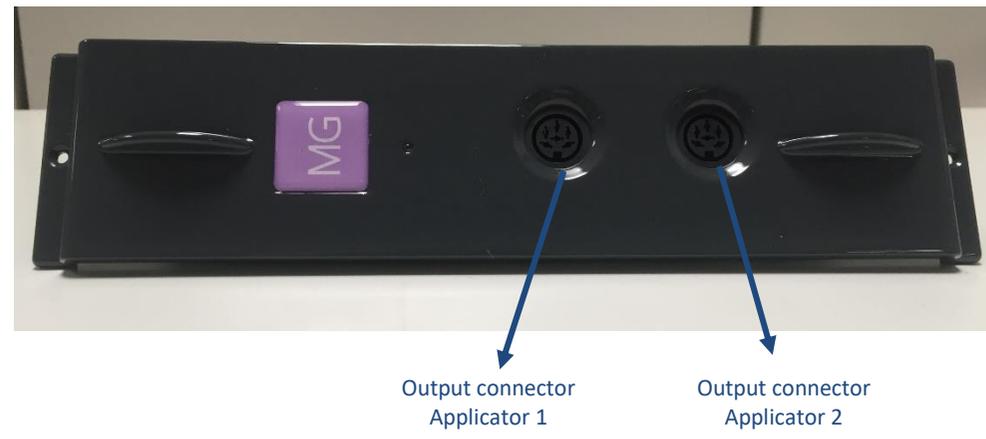
ELECTROTHERAPY MODULE



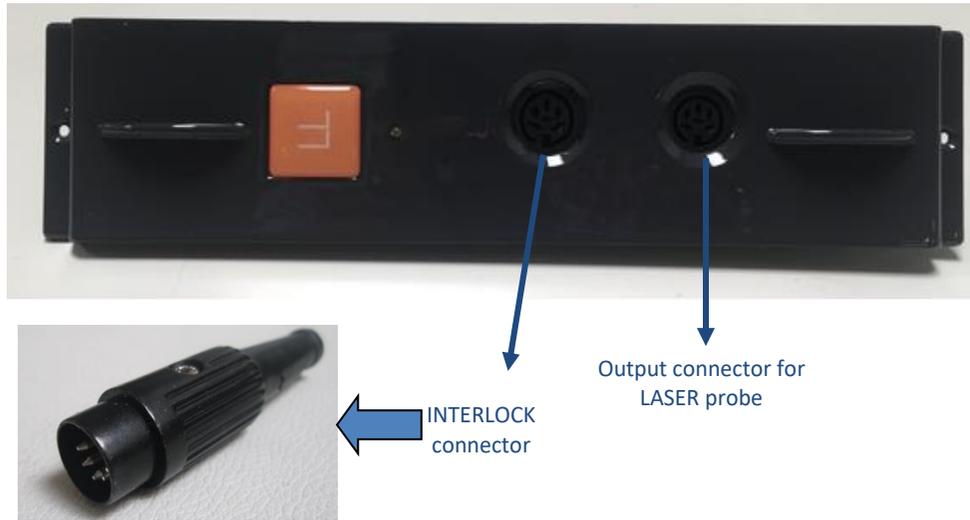
ULTRASOUND MODULE



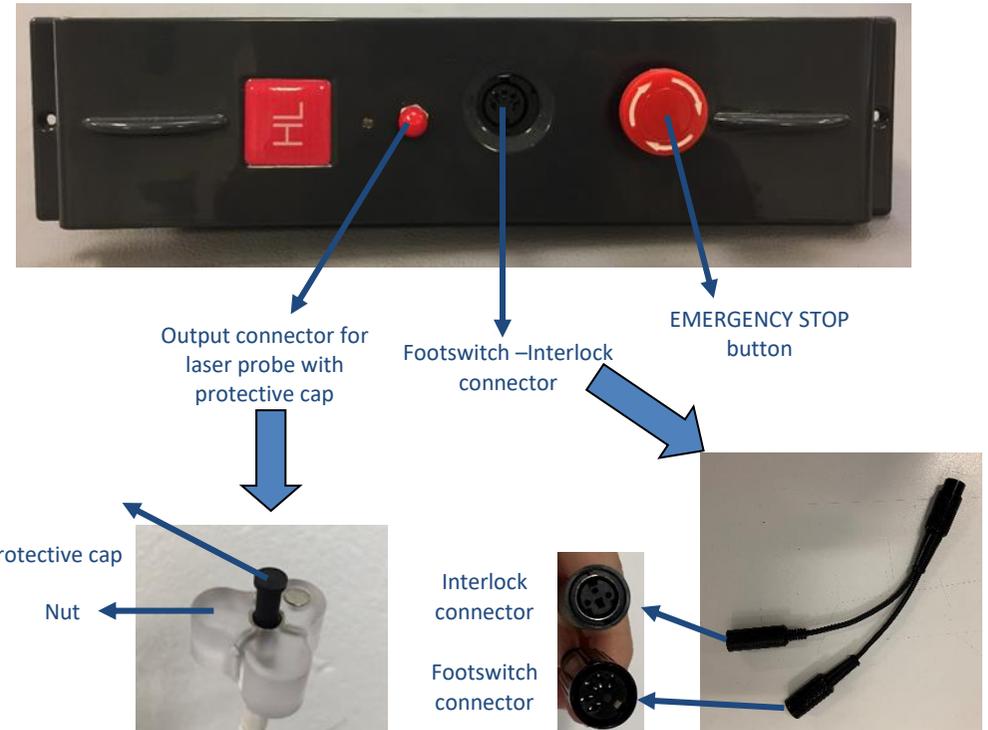
MAGNETOTHERAPY MODULE



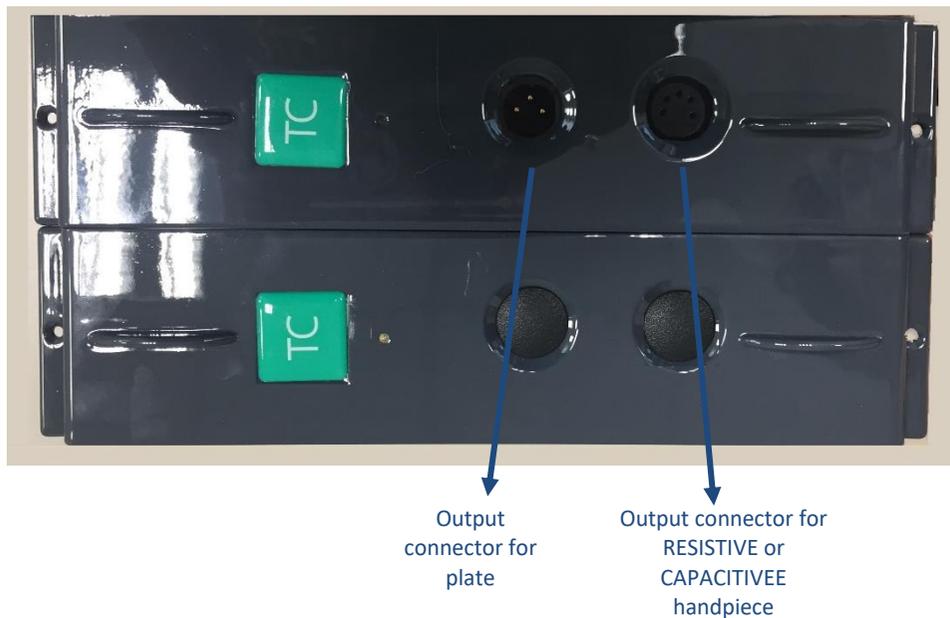
LASER MODULE



HP LASER MODULE



TECAR MODULE



To remove a module from the container, unscrew the screws, hold with both hands on the handles provided for each module and pull up.

On the other hand to insert a module you must place it in the guide, force with both hands on the handles provided for each module and make sure that the module is firmly connected to the MAIN BOARD. Finally, screw on the module with the screws.

POLYTER VET has 4 slots, where it is possible to place the therapy modules, such as electro-therapy, ultrasound-therapy, laser-therapy LLLT, magneto-therapy and tecar-therapy. Each therapy module requires the use of one slot, with the exception of the TECAR module.

In fact, the tecar-therapy treatment requires the use of two slots of the device, by making possible the use of other two therapy modules. In this case the technologies present in the machine can be maximum 3 and not 4.

ACCESSORIES

ULTRASOUNDS HANDPIECE



LASER HANDPIECE



APPLICATOR FOR MAGNETOTHERAPY



ACCESORIES FOR TECAR-THERAPY



CAPACITIVE HANDPIECE

RESISTIVE HANDPIECE



RESISTIVE ELECTRODES



CAPACITIVE ELECTRODES



STEEL PLATE

HIGH POWER THERAPY LASER ACCESSORIES



QUADRIFOCAL DEFOCAL LASER PROBE
IN FIBER OPTIC (4 positions)



FOOTSWITCH

HOW TO USE THE DEVICE

This chapter provides important information about the right uses of the device for combined therapy POLYTER VET, that groups in a single container one or more modules between electro-therapy, ultrasound-therapy, laser-therapy LLLT, magneto-therapy and tecar-therapy, high power laser therapy.

All control functions and the entire functional structure of the machine are managed and coordinated by a micro-processor (or MAIN BOARD): in addition to the task of making available application programs already stored, it allows an optimal, safe and personalized use of the device.

The user dialogue interface is conducted by a large and clear graphic LCD display where there are displayed all operational messages interesting to the Operator, the functional state of the machine during the normal therapeutic activity and any error message.

The following sections will explain how the operator should use the equipment for best performance, in addition to illustrating the capacity and the technical features of POLYTER VET.

Both the selection of a pre-stored program to apply specific treatments and the evaluation of the correct work parameters needed for a 'customized' application are treated.

OPTIMAL USE

After installing and positioning the device according to the instructions provided in the previous chapters, and having applied the cable(s) to connect the handpieces / applicators into the connector, insert the plug into the wall outlet (230 Vac) and power the device switching "ON" with the power switch on the rear panel.

The button on the front panel starts flashing: it means that the device is powered and the battery (if provided) is charging.

The next press of the button on the front panel causes the power of the device. The steady red light on the button indicates that the device is turned ON.

PLEASE NOTE: if the battery is loaded, turn the device on by pressing button in front panel without connecting the net switch. The device can work 3-4 hours with the rechargeable battery.

With the first start up of the device it is possible to set and choose the language of the six available. Then click directly on the flag representing the language of interest. Selected language will be maintained for all subsequent switching of the device.

PLEASE NOTE: to change the language it is necessary to RESTORE THE FACTORY SETTINGS (see part RESTORE THE FACTORY SETTINGS of user manual).

For the first 20 times when device is switched on a REMINDER is displayed for EME PREMIUM SERVICE where we remember the operator the possibility to extend 6-month warranty completely free of charge, only by registering at the site www.eme-srl.com/premium-service.

After some seconds the display will show the logo and a screen to INSERT THE PASSWORD:

1. Enter the PASSWORD
 - in case of wrong password will appear warning information for user to enter password again
2. once you enter correct password it leads to the main screen where you can select the desired operating mode between the four available.

The password has been set by default and is **12345**: to insert it is necessary to press the 5 numeric buttons and then OK. By entering the correct code prepares POLYTER VET for the operation.

This code can be changed by the operator (see section SETTINGS – GENERAL SETTINGS – PASSWORD MANAGEMENT).

On main screen you can enter sections:

- **FREE PROCEDURE**
- **PATHOLOGIES** (wizard)
- **PATIENT'S CARD**
- **SETTINGS**

By pressing the button on screen. Here below there is the detailed description of each button.

POLYTER VET gives you the ability to save custom programs and patients cards in two different storage media:

- one internal called INTERNAL MEMORY

- one external called USB MEMORY

where can be managed custom protocols and patients cards.

The both memories can be FORMATTED at any time to be usable with new patients or other compatible devices.

It is possible to use these units to save custom protocols and patients cards, to load and run these programs or to eliminate treatments no longer in use.

Standard protocols are stored in another internal memory of the machine. This memory cannot be handled by the operator: the data cannot be deleted nor formatted. To turn the device off press the button on front panel.

To turn it again it is necessary to wait approx. 10 seconds.

FREE PROCEDURE

By pressing the button FREE PROCEDURE in main menu you can enter the screen to select the therapy module.

The buttons that can be edited in the display FREE PROCEDURE correspond to the therapy modules present in the device:

- ✓ ELECTROTHERAPY
- ✓ ULTRASOUNDS
- ✓ MAGNETOTHERAPY
- ✓ LASER
- ✓ TECAR
- ✓ HIGH POWER LASER THERAPY

If one or more modules are not installed on device, the buttons of these therapies will not be editable.

After selecting the desired therapy module, a screen will appear to:

Modify the data of treatment, by acting as described in section MODIFY;

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the new parameters as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- Load a program by choosing one of the customized ones, created by the operator, as described in **LOAD**;

- Open the screen to select the module by pressing the button **BACK**;
- Go back to the main menu by pressing **HOME**.

Remember that before starting the treatment it is necessary to shave and thoroughly clean the area to be treated for all types of therapy and check that the animal is calm.

ELECTROTHERAPY

In main menu of ELECTROTHERAPY module, it is also necessary to select the channel of treatment, that can be: **CH1** e **CH2**.

To enable the synchronization of output channels, that is to allow the emission of same treatment on both channels, press on button **CH1+2**.

MODIFY

In this section it is possible to modify quickly and arbitrarily the selected wave forms and the values of therapy parameters of wave forms to use them for a customized program.

To change the wave form:

1. Press the button on the name of wave form;
2. Scroll the list of all wave forms by using the selection arrows on screen;
3. After choosing the desired wave form, press on **CONFIRM** to enter the main screen of the selected wave form with its parameters;
 - Otherwise, to cancel the operation to cancel the modification of the wave form press on **BACK**; the main screen will appear.

Once the wave form has been selected it is possible to modify the values of its parameters, as described here below:

1. If necessary scroll the list of parameters up or down (as shown by the arrow on right side of screen);
2. Press on parameter to modify;
3. As for parameters **TIME**, **RISE TIME**, **DECAY TIME**, **ACTION TIME**, **PAUSE TIME**, **PHASE DURATION**, **DIPHASE DURATION**, **MIN. HOLD TIME**, **MAX. HOLD TIME** (in seconds), **ROTATION TIME** increase or decrease the time with the buttons + or – or scrolling the cursor to the desired value;

4. As for parameters **FREQUENCY, MIN. MODULATED FREQUENCY, MAX MODULATED FREQUENCY, MODULATION FREQUENCY, CARRIER FREQUENCY, BURST FREQUENCY** (in Hz) increase or decrease the frequency with the buttons + or – or scrolling the cursor to the desired value;
5. As for parameters **POLARITY, ½ TIME INVERSION, WORK MODE, DENSITY CONTROL, ROTATION (A/M)** press the buttons R+/R-, ON/OFF, CV/CC, ON/OFF and AUTO/MAN in the middle of screen;
6. As for parameters **PULSE DURATION, PULSE PAUSE, INTERVAL** it is necessary to choose the unit of measurement by pressing the button μ s or ms or sec (where necessary), then increase or decrease the duration by using the buttons + or – or scrolling the cursor to the desired value;
7. As for parameter **ELECTRODES SURFACE** (in cmq) increase or decrease the surface of electrodes by using the buttons + or – or scrolling the cursor to the desired value;
8. For the parameter **ROTATION ANGLE** (expressed in °) increase or decrease the rotation angle using the + or - buttons or by scrolling the cursor to the right or to the left until the desired value is assigned to the parameter in question;
9. Press on **CONFIRM** to confirm the modification of parameter; the main screen will appear;
 - Otherwise, to cancel the operation press on **BACK**; the main screen will appear.

SAVE

To save the modification of parameters and save the customized therapeutic program:

1. Press on **SAVE**;
2. A window will appear to select the memory to save the customized program (INTERNAL MEMORY or USB MEMORY);
3. Insert the name of the created program with the virtual keyboard;
4. Press on **OK** to save the program;
 - Otherwise press on **CANCEL**, the program will not be saved and the screen with the modified parameters will appear;

5. A window will appear to inform the operator that the program has been saved;
6. To start the customized program proceed as described in section START.

When a new customized program is saved, the software controls the programs of database.

If the program has a name already created for another program it will not be possible to save the data with the same name, unless the operator wants to overwrite the therapy:

- Press on **YES** to overwrite the therapy ;
- Press on **NO** to cancel the procedure and insert a new name for the just created program.

A long press of the SAVE button allows you to quickly save the parameters set in free procedure as default parameters. Confirmation will be asked to proceed:

- Click YES to proceed with saving the default parameters;
- Click NO to cancel.

START

To start the emission of an electrotherapy treatment:

1. Position the electrodes on the area to be treated ;
2. Select the channel (**CH1, CH2 or CH1+2**);
 - In screen on the left the name of selected channel appears.
3. Press on **START**, a beep will confirm that the treatment has been started ;
4. The led on electrotherapy module turns on to show that the treatment has been started;
5. A window appears and it shows:
 - the timer with the time left to the end of treatment, with the animation of wave form;
 - The used channel in red color;
 - The emission intensity (mA or V) is on zero as default.

6. Then press on **INTENSITY** and increase or decrease the values by using buttons + or – or scrolling the cursor on right or left;
 - If the selected channel is **CH1+2** and in section ELECTROTHERAPY SETTINGS the synchronization of both channels is on, it will be necessary to set only one **INTENSITY** parameter;
 - If the selected channel is **CH1+2** and in section ELECTROTHERAPY SETTINGS the synchronization of both channels is on, it will be necessary to set **INTENSITY 1** and **INTENSITY 2** parameters;
 - Other parameters that can be personalized during the treatment are in yellow color and on the right of the screen. To change them follow the instructions as per section MODIFY;
7. To stop temporarily the emission of treatment on selected channel press on button **PAUSE**;
 - It is possible to pause the treatment in one channel and start the emission on another channel by pressing on button **CH1** or **CH2**.
 - This option is not possible if the selected channel is **CH1+2**.
8. The led on electrotherapy module turns off;
9. The timer stops and a window showing the PAUSE appears, in this window:
 - The channel used for the emission in yellow color;
 - The intensity of emission (mA or V) is on zero.
10. To start again emission of treatment press on button **START** and set the value of parameter **INTENSITY**;
 - If the selected channel is **CH1+2** and in section ELECTROTHERAPY SETTINGS the synchronization of both channels is on, it will be necessary to set only one **INTENSITY** parameter;
 - If the selected channel is **CH1+2** and in section ELECTROTHERAPY SETTINGS the synchronization of both channels is on, it will be necessary to set **INTENSITY 1** and **INTENSITY 2** parameters;
11. To stop definitively the emission of electrotherapy treatment press on button **STOP**;
12. The led on electrotherapy module turns off;

13. A window will appear, then select:

- **YES** to stop the treatment
- **NO** to continue the treatment.

14. To confirm the stop of treatment on selected channel press on **OK**.

The countdown and the emission go on until:

- The selected time ends: in this case, the device will emit a tone.
- The button STOP is not pressed and the end of therapy is confirmed: the device will emit a tone.

Now it is possible to:

- Press on button **BACK** to go to main screen of ELECTROTHERAPY module;
- Press **HOME** to enter the main screen.

LOAD

In this section it is possible to load a PROGRAM by choosing one of the customized ones following the instructions here below:

1. Select **LOAD**;
2. Press on **INTERNAL** or **USB** depending on the memory to load the customized program;
3. If necessary, scroll the list of therapies;
4. Select the desired customized program from the list of therapies to open its screen;
 - Otherwise press on button **BACK** to go back to the main screen of ELECTROTHERAPY menu.

Now it is possible to:

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the new parameters as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- press on button **BACK** to go to main screen of ELECTROTHERAPY module;
- press **HOME** to enter the main screen.

○

ULTRASOUNDS

MODIFY

In this section it is possible to modify the values of default parameters to create customized programs.

1. Press on parameter to modify;
2. As for parameters **TIME(min)**, **POWER (W/cm²)**, **DUTY-CYCLE (%)** and **PULSE FREQUENCY (Hz)** increase or decrease the value with buttons + or – scrolling the cursor to the desired value;
 - If the value of DUTY-CYCLE is between 10%-60% the POWER can be modified from 0.1W/cm² to 3W/cm²;
 - If the value of DUTY-CYCLE is between 0%-60% the POWER can be modified from 0.1W/cm² to 2W/cm²;
3. As for parameter **FREQUENCY (MHz)** press on button 1MHz/3MHz in the middle of screen;
4. For the parameter **WORK MODE** press on button AUTO/CONTINUOUS in the middle of screen
 - Differently from the continuous mode, the automatic work mode starts when the handpiece, that has a contact sensor, detects that the area to be treated is near or in contact, through the gel, with the handpiece.
5. Press on **CONFIRM** to confirm the modification of the parameter; in this way the main screen of ULTRASOUND with the modified parameter appears;
 - Otherwise press on **BACK** to delete the modification of the parameter, in this case the main screen of ULTRASOUND and the parameter will not be modified.

PLEASE NOTE: the % value that defines the DUTY-CYCLE represents the percentage of time of action in respect of the entire duration of the operative cycle (1/100 seconds). The 100% means continuous action, 50% gives equal time value to the action phase and to the following pause.

SAVE

To save the modification of parameters and save the customized therapeutic program:

1. Press on **SAVE**;
2. A window will appear to select the memory to save the customized program (INTERNAL MEMORY or USB MEMORY);
3. Insert the name of the created program with the virtual keyboard;
4. Press on **OK** to save the program;
 - Otherwise press on **CANCEL**, the program will not be saved and the screen with the modified parameters will appear;
5. A window will appear to inform the operator that the program has been saved;
6. To start the customized program proceed as described in section START.

When a new customized program is saved, the software controls the programs of database.

If the program has a name already created for another program it will not be possible to save the data with the same name, unless the operator wants to overwrite the therapy:

- Press on **YES** to overwrite the therapy ;
- Press on **NO** to cancel the procedure and insert a new name for the just created program.

A long press of the SAVE button allows you to quickly save the parameters set in free procedure as default parameters. Confirmation will be asked to proceed:

- Click YES to proceed with saving the default parameters;
- Click NO to cancel.

START

To start the emission of a treatment for ultrasound therapy:

1. Connect the ultrasound handpiece to the connector on front panel of device;
2. Press on **START**, a beep confirms that the treatment has been started;

3. The led on ultrasound module turns on showing that the treatment is going on ;
4. If work mode is CONTINUOUS the us handpiece connected is working immediately, that means that emission starts immediately even if there is no contact with the skin; the led on handpiece turns on (red color);
 - Otherwise if work mode is AUTOMATIC the handpiece starts emission only when contact sensor is in contact with the area; in this moment the led on handpiece (red color) turns on.
5. A window appears that shows the ongoing treatment in which:
 - The timer with time left to the end of treatment;
 - The parameters **POWER, DUTY-CYCLE and PULSE FREQUENCY**, it will be possible to change them during the treatment as described in section MODIFY.
6. To stop temporarily the emission in continuous mode press on button **PAUSE** and the handpiece will be in pause;
 - Otherwise, in AUTOMATIC work mode, to stop temporarily the emission it is necessary to distance the handpiece from the treated area and it will be in CONTACT PAUSE.
7. The led on handpiece and on ultrasound module turns off;
8. The timer stops and a PAUSE screen appears;
9. To start the treatment again press on **START** button and follow instructions as from point 2;
10. To stop the emission of ultrasound treatment press on **STOP**;
11. The led on handpiece and on ultrasound module turns off;
12. A window will appear, then select:
 - **YES** to stop the treatment
 - **NO** to continue the treatment.
13. To confirm the end of therapy press on **OK**.

The countdown and the emission go on until:

- The selected time ends: in this case, the device will emit a tone.

- The button STOP is not pressed and the end of therapy is confirmed: the device will emit a tone.

LOAD

In this section it is possible to load a PROGRAM by choosing one of the customized ones following the instructions here below:

1. Select **LOAD**;
2. Press on **INTERNAL** or **USB** depending on the memory to load the customized program;
3. If necessary, scroll the list of therapies;
4. Select the desired customized program from the list of therapies to open its screen;
 - Otherwise press on button **BACK** to enter the main screen of ULTRASOUND menu.

Now it is possible to:

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the new parameters as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- press the button **BACK** to enter the main screen of ULTRASOUND module;
- press **HOME** to enter the main screen.

MAGNETOTHERAPY

MODIFY

In this section it is possible to modify the values of default parameters to create customized programs.

1. Press on parameter to modify;
2. As for parameters **TIME** (s), **POWER** (W/cm²), **DUTY-CYCLE** (%) and **FREQUENCY** (Hz), increase or decrease their value using the keys + or -, or scrolling the cursor left or right to set the desired value;

3. Press on **CONFIRM** to confirm the modification of the parameter; in this way, the machine will go back to the main screen of MAGNETOTHERAPY module;
 - otherwise press on **BACK** to delete the modification of the parameter, in this case the main screen of MAGNETOTHERAPY and the parameter will not be modified.

SAVE

To save the modification of parameters and save the customized therapeutic program:

1. Press on **SAVE**;
2. A window will appear to select the memory to save the customized program (INTERNAL MEMORY or USB MEMORY);
3. Insert the name of the created program with the virtual keyboard;
4. Press on **OK** to save the program;
 - Otherwise press on **CANCEL**, the program will not be saved and the screen with the modified parameters will appear;
5. A window will appear to inform the operator that the program has been saved;
6. To start the customized program proceed as described in section START.

When a new customized program is saved, the software controls the programs of database.

If the program has a name already created for another program it will not be possible to save the data with the same name, unless the operator wants to overwrite the therapy:

- Press on **YES** to overwrite the therapy ;
- Press on **NO** to cancel the procedure and insert a new name for the just created program.

A long press of the SAVE button allows you to quickly save the parameters set in free procedure as default parameters. Confirmation will be asked to proceed:

- Click YES to proceed with saving the default parameters;
- or Click NO to cancel.

START

In order to start a magnetotherapy treatment:

1. Plug in the handpieces in the correspondent connectors in the front panel of the device;
2. Press on **START** and the device will emit a start tone;
3. The led on the electrotherapy module will be turned on to indicate the emission of the treatment;
4. A window appears that shows the ongoing treatment in which:
 - The timer with time left to the end of treatment;
 - The applicator/applicators connected are OPERATIVE;
5. The user may vary the **POWER**, **FREQUENCY** and **DUTY-CYCLE** parameters during the treatment:
 - Press on parameter to modify and increase or decrease the value by using buttons + or – or scrolling the cursor until the desired value.
6. To stop the emission of the treatment press on **PAUSE**;
7. The led of the magnetotherapy is switched off;
8. The timer stops and a PAUSE window appears:
 - handpieces are in PAUSE;
9. To resume the treatment from the the moment in which it has been interrupted, press **START**;
10. To stop definitively the magnetotherapy treatment, press **STOP**;
11. The led of the magnetotherapy is switched off;
12. A window will appear, then select:
 - **YES** to confirm the interruption of the magnetotherapy treatment
 - **NO** to continue the treatment.
13. To confirm the end of therapy press on **OK**.

The countdown and the emission go on until:

- The selected time ends: in this case, the device will emit a tone.

- The button **STOP** is not pressed and the end of therapy is confirmed: the device will emit a tone.

Now it is possible to:

- press the button **BACK** to enter the main screen of MAGNETOTHERAPY module;
- Press **HOME** to enter the main screen.

In this section it is possible to load a **PROGRAM** by choosing one of the customized ones following the instructions here below:

1. Select **LOAD**;
2. Press on **INTERNAL** or **USB** depending on the memory to load the customized program;
3. If necessary, scroll the list of therapies;
4. Select the desired customized program from the list of therapies to open its screen;
 - Otherwise press on button **BACK** to enter the main screen of MAGNETOTHERAPY menu.

Now it is possible to:

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the new parameters as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- press the button **BACK** to enter the main screen of MAGNETOTHERAPY module;
- press **HOME** to enter the main screen.

LASER

When LASER module is selected, a window to visualize/modify the treatment area.

After modifying/confirming the dimension of treated area (cm²), as described in section **MODIFY**, it will be possible to proceed as described in **FREE PROCEDURE**.

MODIFY

In this section it is possible to modify the values of default parameters to create customized programs.

1. Press on parameter to modify;
2. As for parameters **TREATED AREA (cm²)**, **TIME (s)**, **FREQUENCY (Hz)** and **DUTY-CYCLE (%)** increase or decrease the value by using buttons + or – or scrolling the cursor until the required value;
 - When **TIME** is changed (this parameter can be modified) from the default value the values **ENERGY DENSITY (J/cm²)** and **ENERGY TO BE EMITTED (J)** vary;
 - When **FREQUENCY** (this parameter can be modified) is changed, the **POWER (mW)** is automatically modified;
 - When **TIME**, **TREATED AREA** and **DUTY-CYCLE** (these parameters can be modified) also **ENERGY DENSITY (J/cm²)** and **ENERGY TO BE EMITTED (J)** are modified;
 - When **TIME**, **TREATED AREA** and **DUTY-CYCLE** and **FREQUENCY** (these parameters can be modified) **POWER (mW)**, **ENERGY DENSITY (J/cm²)** and **ENERGY TO BE EMITTED (J)** are modified;

The parameters are connected each other.

PLEASE NOTE: the 2 parameters **EMITTED ENERGY (J)** and **REMAINING ENERGY (J)**, can be modified only after having connected the handpiece and started the program.

3. For the parameter **WORK MODE** press on button **AUTO/CONTINUOUS** in the middle of screen
 - Differently from the continuous mode, the automatic work mode starts when the handpiece, that has a contact sensor, detects that

the area to be treated is near or in contact, through the gel, with the handpiece.

4. Press on **CONFIRM** to confirm that the parameter has to be modified; the main screen of LASER appears;
 - otherwise press on **BACK** to delete the modification of the parameter, in this case the main screen of LASER and the parameter will not be modified.

SAVE

To save the modification of parameters and save the customized therapeutic program:

1. Press on **SAVE**;
2. A window will appear to select the memory to save the customized program (INTERNAL MEMORY or USB MEMORY);
3. Insert the name of the created program with the virtual keyboard;
4. Press on **OK** to save the program;
 - Otherwise press on **CANCEL**, the program will not be saved and the screen with the modified parameters will appear;
5. A window will appear to inform the operator that the program has been saved;
6. To start the customized program proceed as described in section START.

When a new customized program is saved, the software controls the programs of database.

If the program has a name already created for another program it will not be possible to save the data with the same name, unless the operator wants to overwrite the therapy:

- Press on **YES** to overwrite the therapy ;
- Press on **NO** to cancel the procedure and insert a new name for the just created program.

A long press of the SAVE button allows you to quickly save the parameters set in free procedure as default parameters. Confirmation will be asked to proceed:

- Click YES to proceed with saving the default parameters;
- Click NO to cancel.

START

To start the treatment:

1. Connect the applicator/applicators in connectors on front panel of device;
2. Select the dimension of the area to treat by using the parameter **TREATED AREA** (cm²) as described in FREE PROCEDURE– LASER - MODIFY;
3. Press on **START**, a beep confirms that the treatment has been started;
4. The led on laser module turns on to show that the treatment has been started;
5. If work mode is CONTINUOUS the us handpiece connected is working immediately, that means that emission starts immediately even if there is no contact with the skin; the led on handpiece turns on (red color);
 - Otherwise if work mode is AUTOMATIC the handpiece starts emission only when contact sensor is in contact with the area; in this moment the led on handpiece (red color) turns on.
6. A window appears that shows the ongoing treatment in which:
 - The timer with time left to the end of treatment;
 - The parameters **EMITTED ENERGY** (J) and **REMAINING ENERGY** (J) start to vary:
 - The EMITTED ENERGY increases until it reaches the value of ENERGY TO BE EMITTED;
 - The Remaining ENERGY decreases until it reaches 0,0 J.
7. If necessary vary the value of parameters **FREQUENCY** and **DUTY-CYCLE** during the treatment:
 - Press on parameter to modify and increase or decrease the value by using buttons + or – or scrolling the cursor until the desired value.
8. To stop temporarily the emission in continuous mode press on button **PAUSE** and the handpiece will be in pause;

- Otherwise, in AUTOMATIC work mode, to stop temporarily the emission it is necessary to distance the handpiece from the treated area and it will be in CONTACT PAUSE.
9. The led on module and on handpiece turn off;
 10. The timer stops and a PAUSE window appears:
 - The counter of parameters EMITTED ENERGY and REMAINING ENERGY is stopped ;
 11. To start the treatment again press on **START** button and follow instructions as from point 2;
 12. To stop the emission of laser treatment press on **STOP**;
 13. The led on module and on handpiece turn off;
 14. A window will appear, then select:
 - **YES** to stop the treatment
 - **NO** to continue the treatment.
 15. To confirm the end of therapy press on **OK**.

The countdown and the emission go on until:

- The selected time ends: in this case, the device will emit a tone.
- The button STOP is not pressed and the end of therapy is confirmed: the device will emit a tone.

Now it is possible to:

- press the button **BACK** to enter the main screen of LASER module;
- Press **HOME** to enter the main screen.

LOAD

In this section it is possible to load a PROGRAM by choosing one of the customized ones following the instructions here below:

1. Select **LOAD**;
2. Press on **INTERNAL** or **USB** depending on the memory to load the customized program;
3. If necessary, scroll the list of therapies;

4. Select the desired customized program from the list of therapies to open its screen;
 - Otherwise press on button **BACK** to enter the main screen of LASER menu.

Now it is possible to:

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the new parameters as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- press the button **BACK** to enter the main screen of LASER module;
- press **HOME** to enter the main screen.

TECAR

MODIFY

In this section it is possible to modify the values of default parameters to create customized programs.

1. Press on parameter to modify;
2. For the parameter **TIME** (min) increase or decrease the value by using buttons + or – or scrolling the cursor to the right or to the left until reaching the desired value. It is possible to vary the parameter TIME between 1 and 30 minutes.
 - Press **CONFIRM** to save the parameter set value and to go back to the main screen of the TECAR module;
 - Press **BACK** to delete the modification of the parameter, in this case you go back to the main screen of TECAR module without any modification.
3. For the parameter **WORK MODE** (CAPACITIVE or RESISTIVE) press on the button CAPACITIVE/RESISITVE in the middle of screen.
 - Press **CONFIRM** to save the set mode and to go back to the main screen of the TECAR module;

- Press **BACK** to delete the modification of the parameter, in this case you go back to the main screen of TECAR module without any modification.
4. For the parameter **HEATING MODE** the 3 available modes appear on the screen: ATHERMY, HOMEOTHERMY, HYPERTHERMY.
 - Press on the heating mode that you want to set, then you go automatically to the main screen of the TECAR module with the new set mode.
 - Press on **BACK** to go back to the main screen of the TECAR module without any modification of the parameter.
 5. For the parameter **POWER** 3 available power levels appear on the screen: LOW, MEDIUM, HIGH. The **POWER** parameter allows setting the percentage of emitted power at the beginning of the treatment, in particular:
 - By choosing the **LOW** level the initial power percentage is 0%;
 - By choosing the **MEDIUM** level the initial power percentage is 33 %;
 - By choosing the **HIGH** level the initial power percentage is 66 %;
 - Press on the power level that you want to set, then you go automatically to the main screen of the TECAR module with the new set power.
 - Press on **BACK** to go back to the main screen of the TECAR module without any modification of the parameter.
 6. For the parameter **ELECTRODES DIMENSION** 3 typologies of electrodes appear on the screen, which can be connected to the handpiece applicator and differentiate themselves for their diameter: 30 mm, 50 mm, 70 mm. The electrodes that are currently selected are green highlighted.
 - Press on the electrode type that you want to set, then you go automatically to the main screen of the TECAR module with the new set mode. The chosen electrodes are displayed in a little image in the left-upper part of the screen, together with the connected handpiece.
 - Press on **BACK** to go back to the main screen of the TECAR module without any modification of the parameter.

The electrodes dimension does not affect the supply mode of the treatment; it is a simple suggestion for the operator.

7. For the parameter **WORK MODE** (AUTO, CONTINUOUS), press on the button **AUTO/CONTINUOUS** in the middle of screen.
 - If work mode is **CONTINUOUS** the handpiece connected is working immediately, that means that emission starts immediately even if there is no contact with the skin;
 - If work mode is **AUTO** the handpiece connected is working immediately, that means that emission starts immediately, only in the moment in which the contact sensor reveals a contact with the skin. When there is no contact with the skin anymore, the treatment stops.
 - Press **CONFIRM** to save the set mode and to go back to the main screen of the TECAR module;
 - Press **BACK** to delete the modification of the parameter, in this case you go back to the main screen of TECAR module without any modification.

SAVE

To save the modification of parameters and save the customized therapeutic program:

1. Press the button **SAVE**;
2. A window will appear to select the memory to save the customized program (INTERNAL MEMORY or USB MEMORY);
3. Insert the name of the created program with the virtual keyboard;
4. Press **OK** to save the program;
 - Otherwise press on **CANCEL** to cancel the saving operation of the therapeutic and the screen with the modified parameters will appear;
5. To start the customized program proceed as described in section **START**.

When a new customized program is saved, the software controls the programs of database.

If the program has a name already created for another program it will not be possible to save the data with the same name, unless the operator wants to overwrite the therapy:

- Press **YES** to overwrite the therapy;
- Press **NO** to cancel the procedure and insert a new name for the just created program.

A long press of the SAVE button allows you to quickly save the parameters set in free procedure as default parameters. Confirmation will be asked to proceed:

- Click YES to proceed with saving the default parameters;
- Click NO to cancel.

START

To start the emission of an TECAR-THERAPY treatment:

1. Connect the handpiece applicator in proper connector in front panel of the machine;
 - If a treatment starts without having connected the handpiece, an error message "HANDPIECE ERROR" appears on the screen, which does not allow the emission of the treatment.
2. Place the handpiece applicator on the body part to be treated;
3. Check the recognition of the handpiece connected to the device.
 - In the left part of the main screen of the TECAR module the status of the handpiece is displayed: CONNECTED or NOT CONNECTED. If the handpiece is correctly connected the type of connected handpiece (capacitive or resistive) is indicated). Otherwise, the status of not connected handpiece is indicated.
4. Set the parameter **MODE** (see the MODIFICATION section) according to the connected handpiece.
 - If the capacitive handpiece is connected, set the CAPACITIVE mode;
 - If the resistive handpiece is connected, set the RESISTIVE mode;
 - If you connect the BIPOLAR handpiece (optional accessory), set RESISTIVE mode. During treatments with BIPOLAR handpiece (unlike

capacitive and resistive handpieces) it is not necessary to use the return plate.

- If a treatment starts and you have selected in MODE a handpiece that is different from the one that is actually connected, an error message "HANDPIECE ERROR" appears on the screen, which does not allow the emission of the treatment.
5. Press on **START**, and a beep will confirm that the treatment has been started;
 6. The led on TECAR module turns on showing that the treatment is going on ;
 7. A window appears and it shows:
 - The timer with time left to the end of program.
 - An animation accompanies the supply of the therapy.
 - The FEEDBACK bar fills in proportional manner to the actual transfer of energy to the patient.
 - The value of the emitted power can be adjusted during the treatment.
 - Press on the parameter **POWER** to gradually increase and decrease the value using the + and - buttons. The starting value is the same one that is set in the general screen of the TECAR module (see section MODIFY - parameter POWER).
 - The heating mode indicated is the one set in the general screen of the TECAR module (see section MODIFY - parameter HEATING MODE).
 8. To stop temporarily the emission of the treatment press on **PAUSE**;
To stop temporarily the emission of the treatment in CONTINUOUS mode press on **PAUSE** and the handpiece connected will be IN PAUSE;
 - Otherwise, in AUTOMATIC work mode, to stop temporarily the emission it is necessary to distance the handpiece from the treated area and it will be in CONTACT PAUSE.
 9. The led on TECAR module turns off;
 10. The timer stops and an intermittent PAUSE window appears:

11. To resume the treatment from the the moment in which it has been interrupted, press **START**
12. To stop definitely the emission of tecar-therapy treatment press on **STOP**;
13. A window will appear, then select:
 - **YES** to confirm the stop of the tecar-therapy treatment in progress
 - **NO** to cancel the interruption of the treatment.

The countdown and the emission go on until:

- The selected time ends: in this case, the device will emit a tone.
- the button **STOP** is not pressed and the end of therapy is confirmed: the device will emit a beep.

At this point a message appears on the screen signaling the completing of the program.

By pressig OK you go back to the screen of the supply of the treatment.

- Press the button **BACK** to go back the main screen of TECAR module;
- Press **HOME** to enter the main screen.

!ATTENTION! While tecar-therapy is performing, the RF energy transmission (generated by the device) on the touch panel of the display can make the software use unreliable. To avoid this situation, we require the operator to:

- once the therapy is started, avoid touching the resistive/capacitive electrode simultaneously with one hand, and the touch panel with the other hand to modify the parameters;
- once the therapy is started, avoid touching the body of the patient undergoing treatment with one hand at the same time the touch panel with the other hand to modify the parameters.

LOAD

In this section it is possible to load a PROGRAM by choosing one of the customized ones following the instructions here below:

1. Select **LOAD**;
2. Press on **INTERNAL** or **USB** depending on the memory where you want to load the customized program;

3. If necessary, scroll the list of therapies;
4. Select the desired customized program from the list of therapies to open its screen;
6. Otherwise press on button **BACK** to go back to the main screen of the TECAR module.

Now it is possible to:

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the parameters that have been modified as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- press the button **BACK** to go back the main screen of TECAR module;
- press on **HOME** to enter the main menu screen.

If any customized program has been previously saved, a signal message appears on the screen.

- Press the button **BACK** to go back the main screen of TECAR module;

LASER HL

When selecting the LASER HL module, the display / modification of the treatment area appears as the first screen.

Only after modifying or confirming the size of the TREATED AREA (cm²), as described below in the MODIFICATION section, it is possible to proceed with the operations foreseen in the FREE PROCEDURE.

MODIFY

In this section it is possible to modify the values of default parameters to create customized programs.

1. Press on parameter to modify;
2. As for parameters **TREATED AREA (cm²)**, **TIME (s)**, **POWER (W)** and **DUTY-CYCLE (%)** increase or decrease the value by using buttons + or – or scrolling the cursor until the required value;
 - When TIME, TREATED AREA, DUTY-CYCLE and POWER (modifiable parameters) are changed, the value of the **ENERGY TO BE EMITTED (J)** automatically vary;
 - When POWER (this parameter can be modified) is changed, the **FREQUENCY (Hz)** is automatically modified;

The parameters are connected each other.

PLEASE NOTE: the 2 parameters **EMITTED ENERGY (J)** and **REMAINING ENERGY (J)**, can be modified only after having connected the handpiece and started the program.

3. Click on the image of the laser probe to select the spot area: POS1 - 0.78 cm², POS2 - 1.76 cm², POS3 - 3.14 cm², POS4 - 4.90 cm². Clicking on the desired position automatically returns to the parameter setting screen and the abbreviation in the image indicates the position just selected.
 - Check that the area of the set spot is the same as that set in the laser probe.

4. Press on **CONFIRM** to confirm that the parameter has to be modified; the main screen of LASER appears;
 - otherwise press on **BACK** to delete the modification of the parameter, in this case the main screen of LASER and the parameter will not be modified.

SAVE

To save the modification of parameters and save the customized therapeutic program:

1. Press on **SAVE**;
2. A window will appear to select the memory to save the customized program (INTERNAL MEMORY or USB MEMORY);
3. Insert the name of the created program with the virtual keyboard;
4. Press on **OK** to save the program;
 - Otherwise press on **CANCEL**, the program will not be saved and the screen with the modified parameters will appear;
5. A window will appear to inform the operator that the program has been saved;
6. To start the customized program proceed as described in section START.

When a new customized program is saved, the software controls the programs of database.

If the program has a name already created for another program it will not be possible to save the data with the same name, unless the operator wants to overwrite the therapy:

- Press on **YES** to overwrite the therapy ;
- Press on **NO** to cancel the procedure and insert a new name for the just created program.

A long press of the SAVE button allows you to quickly save the parameters set in free procedure as default parameters. Confirmation will be asked to proceed:

- Click YES to proceed with saving the default parameters;
- Click NO to cancel.

START

To start the treatment:

1. Connect the laser probe and the footswitch in connectors on front panel of device;
 - Insert the laser probe in the appropriate connector after removing the protective caps (red the one in the module and black the one on the laser probe);
 - Screw the nut in the connector to fix the laser probe. If the connector is not completely tightened, the laser probe will not be recognized;
2. Position the laser probe on the part to be treated, keeping the spacer in contact with the skin;
3. Click the **START** button, a warning will appear to remind the operator to verify that the area of the spot set in the software corresponds to that chosen in the probe and to wear protective glasses. Press OK to proceed. In the screen that appears you can view:
 - the writing "PAUSED PEDAL" indicates that the program is waiting for the pedal to be pressed;
 - in the screen the **POWER** and **DUTY CYCLE** parameters can be modified during the treatment.
4. to proceed with the emission, operate the footswitch by applying pressure through the foot and move the applicator in such a way as to scan all the affected area:
 - the start of the dispensation is signaled by a beep and in the timer the countdown of the dispensing time starts;
 - The led on laser module turns on to show that the treatment has been started;
 - the rectangle on the right turns red indicating the emission status and the image of the laser probe shows the delivery of the laser beam;
 - with the start of the delivery the number of **EMITTED ENERGY** will be increased and the number of **ENERGY LEFT** will be decreased;
5. if the pressure on the footswitch is suspended, the treatment stops until the pedal is pressed again;
6. to put the device in **PAUSE** press the **PAUSE** button; if there is any pressure on the pedal, there is no emission;
7. To start the treatment again press on **START** button and follow instructions as from point 3;
8. To stop the emission of laser treatment press on **STOP**;
9. The end of the treatment is signaled by an acoustic warning and a video message. Press OK to continue and the **HOME** or **BACK** key will return to the main screen or modify the parameters as described in the **MODIFY**;

The countdown and the emission go on until:

- The selected time ends: in this case, the device will emit a tone;
- the footswitch is kept pressed;
- The button **STOP** is pressed and the end of therapy is confirmed.

If any critical problems arise during the treatment or there is a need to **IMMEDIATELY STOP** delivery for any reason, it is possible to use the **EMERGENCY STOP BUTTON**.

EMERGENCY STOP BUTTON allows instantaneous interruption of laser delivery.

LOAD

In this section it is possible to load a PROGRAM by choosing one of the customized ones following the instructions here below:

5. Select **LOAD**;
6. Press on **INTERNAL** or **USB** depending on the memory to load the customized program;
7. If necessary, scroll the list of therapies;
8. Select the desired customized program from the list of therapies to open its screen;
 - Otherwise press on button **BACK** to enter the main screen of LASER menu.

Now it is possible to:

- Modify the data of treatment, as per instructions in **MODIFY**;
- save the new parameters as indicated in section **SAVE**;
- start the treatment, as per instructions in **START**;
- press the button **BACK** to enter the main screen of LASER module;
- press **HOME** to enter the main screen.

PATHOLOGIES

By pressing the button **PATHOLOGIES** in main screen you can enter the menu to select the size of the animal:

- Dog: medium-sized animals;
- Cat: small pets;
- Horse: large animals;

You can select one of four anatomical regions (delimited by horizontal lines) of the animal body shown in display.

The anatomical regions are:

- ✓ HEAD
- ✓ FRONT LEGS
- ✓ BACK and ABDOMEN
- ✓ REAR LEGS

By selecting an anatomical region the list of possible pathologies for the selected region is shown and you can load the therapeutic suggested protocol.

This is a list of pathologies with **preloaded programs** on the internal memory of the device and **customized programs** created by the operator and saved on the internal memory.

To select an anatomical region and load its list of pathologies, proceed as follows:

1. Select the button **PATHOLOGIES**;
2. Select the size of the animal of interest to visualize all suggested therapeutic protocols for each anatomical region, divided by therapy module (that is ET,US, MT, LASER, TECAR, LASER HL). The keys (ET, US, LL, MG, TC, HL) at the top left allow to filter the treatments by technology.
3. Select the anatomical region to treat in picture of body shown on display;
4. On display a window with the zoom of the selected area to be treated appears and the list of therapeutic protocols available for that area appears. Protocols are divided by therapy module (that is ET,US, MT, LASER, TECAR, LASER HL). The keys (ET, US, LL, MG, TC, HL) at the top left allow to filter the treatments by technology.

- Each therapeutic protocol of the list is shown in different color depending on the module of treatment.
- 5. Scroll the list of pathologies up or down (as shown by the arrow on the right of display);
- 6. Select the desired pathology;
- 7. The screen of the selected pathology appears with all the data of treatment.

At this point it's possible to:

- MODIFY the data of treatment, as described in section MODIFY of each therapy module;
- SAVE the modified parameters, as described in section SAVE of each therapy module;
- LOAD customized programs, as described in section LOAD of each therapy module;
- START the treatment as described in section START of each therapy module.

PATIENT'S CARD

By pressing the button **PATIENT'S CARD** in the main screen it is possible to enter a screen with the list of patient's cards.

When the device is turned on for the first time there is no list of patient's cards, it is possible to create new patient's cards following the procedure described in section "CREATE A CARD".

Then, to search a patient's card it is necessary to select the memory, **INTERNAL** or **USB**, to visualize the correct list of patient's card where to search the required patient's card.

Select the desired patient's card and then it is possible to:

- OPEN the PATIENT'S CARD that has been previously saved in the memory;
- MODIFY the PATIENT'S CARD;
- CANCEL the patient's card.

CREATE A CARD

1. Select the button **PATIENT'S CARD** on the main menu;
2. Press the buttons **INTERNAL** or **USB** to choose the memory in which the patient's card will be saved;
3. Select the button **NEW CARD**;
4. In the screen complete the following fields:
 - SURNAME (requested field)
 - NAME (requested field)
 - ADDRESS
 - PHONE
 - DATE OF BIRTH
 - PATIENT'S ANAMNESIS
 - TREATMENT from list of pathologies
 - Date of BEGINNING OF THERAPY
 - N. SESSIONS IN TOTAL
 - N. SESSIONS CARRIED OUT
 - RESULTS
5. Press on the field to complete;
6. Operate the corresponding controls to introduce data:
 - Selecting the fields SURNAME, NAME, ADDRESS, PHONE, ANAMNESIS PATIENT, N. SESSIONS IN TOTAL, N. SESSIONS CARRIED OUT and RESULTS, type on the virtual keyboard to insert the requested information;
 - To hide / show the virtual keyboard, press on the keyboard symbol.
 - Selecting the fields DATE OF BIRTH and BEGINNING OF THERAPY, set the day, month and year operating on the corresponding selection arrows and confirm by pressing **SET**;

- Select the field TREATMENT by using the button **SEL** and proceed as described in section PATHOLOGIES;
7. Press the button **SAVE** to save the new patient's card in selected memory ;
 - By pressing **CANCEL** the new patient's card is not saved.
 8. A screen with the name of card and data of treatments will appear.
 - The patient's card is identified tank NAME and SURNAME, if a new card is inserted with name and surname already used it will not be possible to save the data and the existing card will be shown. To save the new card it will be necessary to change one of two parameters.
 9. Press on **BACK** to go the screen with the list of patient's cards.

Now it is possible to:

- Modify the patient's card and treatment data as described in section CHANGE A CARD;
- Start the treatment by selecting **GO TO TREATMENT** and proceeding as described in FREE PROCEDURE, section START depending on the therapy module;
- Cancel the patient's card by using the button **CARD DELETION**; it will be possible to select:
 - **YES** to confirm the definitive deletion of patient's card
 - **NO** to cancel the request of deletion.

At the end of the treatment of the selected card, the number of MADE SESSIONS used for the patient will be automatically increased.

Once you reached the indicated sessions number in the patient's card you will see a window that will show COMPLETED TREATMENTS for "patients's name".

Close the window by the OK button and continue selecting the desired function.

The card that has completed the number of sessions can no longer perform treatments.

In order to continue to use it you need to change the number of SESSIONS following the procedure for CHANGE the card's data.

OPEN A CARD

1. Select the button **PATIENT'S CARD** on the main menu;
2. Press the buttons **INTERNAL** or **USB** to choose the memory to load the patient's card;
3. Depending on the selected memory, a screen will appear displaying the list of all cards stored in the memories;
4. Touch the patient's card to open it, the words will be highlighted in yellow color;
5. Select **OPEN** to open the patient's card;

Now it is possible to:

- Modify the parameters of the patient's card before starting the treatment proceeding as described in CHANGE A CARD ;
- Start the treatment by selecting **GO TO TREATMENT** and proceeding as described in FREE PROCEDURE, section START depending on the therapy module;
- Delete the patient's card by using the button **CARD DELETION**; it will be possible to select:
 - **YES** to confirm the definitive deletion of patient's card
 - **NO** to cancel the request of deletion.

MODIFY a CARD

1. Select the button **PATIENT'S CARD** on the main menu;
2. Press the buttons **INTERNAL** or **USB** to choose the memory in which the patient's card will be saved;
3. Depending on the selected memory, a screen will appear displaying the list of all cards stored in the memories;
4. Select the card you want to open;
5. Select **OPEN** to open the patient's card;
6. Select **EDIT**
 - The following data can be modified:

- SURNAME
- NAME
- ADDRESS
- PHONE
- DATE OF BIRTH
- PATIENT'S ANAMNESIS
- TREATMENT from list of pathologies
- Date of BEGINNING OF THERAPY
- N. SESSIONS IN TOTAL
- N. SESSIONS CARRIED OUT
- RESULTS

7. Press on the field to modify;

8. Use the keys to modify:

- When modifying the fields SURNAME, NAME, ADDRESS, PHONE, ANAMNESIS PATIENT, N. SESSIONS IN TOTAL, N. SESSIONS CARRIED OUT and RESULTS, type on the virtual keyboard to perform the modifications;
- To modify the field DATE OF BIRTH and TREATMENT START, press the correspondent arrows to change day, month and year and press SET to confirm;
- To modify the field TREATMENT press the button SEL and select a new therapeutic treatment as described in section; PATHOLOGIES;

9. Press the button on SAVE to save the modified parameters (the old ones will be overwritten) :

10. After some seconds on screen will appear the patient's card with the name of card and the data of treatment.

Now it is possible to:

- Start the treatment by selecting **GO TO TREATMENT** and proceeding as described in FREE PROCEDURE, section START depending on the therapy module;

- Cancel the patient's card by using the button **CARD DELETION**; it will be possible to select:
 - **YES** to confirm the definitive deletion of patient's card
 - **NO** to cancel the request of deletion.
- Press on **BACK** to go the screen with the list of patient's cards.
- Press **HOME** to enter the main screen.

SETTINGS

By pressing **SETTINGS** in the main screen you can go to the information of each therapy module present in the device, by pressing the corresponding buttons:

- ELECTROTHERAPY
- ULTRASOUNDS
- MAGNETOTHERAPY
- LASER
- TECAR
- HIGH POWER LASER

and to the general settings by pressing the button:

- GENERAL SETTINGS

ELECTROTHERAPY SETTINGS

In this section it is possible to:

- Enable or disable the synchronization of the currents of the output channels:
 - **SYNCHRONIZATION OUT1-OUT2** in position **ON** means the synchronization of the currents of both output channels if treatment is emitted on channel **CH1+2**;
 - **SYNCHRONIZATION OUT1-OUT2** in position **OFF** means that the currents of output channels are not synchronized, because of this if the treatment is emitted on channel **CH1+2** there will be different **INTENSITY** values.

- Enable / disable the contact control functions of the electrodes:
 - **ELECTRODES CONTACT CONTROL** set on **ON**: in case of a lack of connection, an error message will be displayed on the screen;
 - **ELECTRODES CONTACT CONTROL** set on **OFF**: in case of a lack of connection, an error message will not be displayed on the screen;
- Visualize, modify and save in internal memory the basic settings of ELECTROTHERAPY module, these settings will be automatically recalled each time the device is turned on;
- Have info on chronology of executed treatments;
- Have general info on electrotherapy module.

DEFAULT PROGRAM

By pressing the button DEFAULT PROGRAM it is possible to see the default parameters of channels CH1, CH2 and CH1+2 displayed in the section FREE PROCEDURE of the ELECTROTHERAPY module.

To change the default parameters and set new ones proceed as below:

1. Select the supply channel among **CH1, CH2, CH1+2**;
2. Depending on the selected channel, a screen will appear in which default data can be modified;
3. Select the parameter to modify and proceed as described in FREE PROCEDURE – ELECTROTHERAPY - section MODIFY:
 - The default parameters to be changed depend on the selected wave form.
4. Press on **SAVE**;
5. Select **OK** to save the new data as new default values
 - Otherwise press **CANCEL**, in this case the default program will not be modified .

In DEFAULT PROGRAM menu it is possible to load a PROGRAM saved in INTERNAL MEMORY or USB by proceeding as described in FREE PROCEDURE –ELECTROTHERAPY –section.

TREATMENT CHRONOLOGY

To have the complete chronology of treatments carried out with the ELECTROTHERAPY module:

1. Select **TREATMENT CHRONOLOGY**;
2. Enable the chronology by pressing **DEACTIVATED** button:
 - The DEACTIVATED button will be replaced by **ACTIVATED** button;
 - A window will appear, then select:
 - **YES** to enable the chronology of treatments
 - **NO** to disable the chronology of treatments
3. Once the chronology of treatments is, it will be possible to save:
 - The date of therapy;
 - The hour of beginning (START) and finishing (STOP) of the therapy;
 - The duration (min) of therapy;
 - The set time (min);
 - The therapy module used for the therapeutic treatment.
4. Press the **ACTIVATED** button to disable the chronology of treatments:
 - The ACTIVATED button will be replaced by DEACTIVATED button;
 - The automatic saving will be deleted but the saved data won't be deleted;
 - A window will appear, then select:
 - **YES** to disable the chronology of treatments
 - **NO** to not disable the chronology of treatments

Proceed as follows to delete some records from the list of treatment chronology of ELECTROTHERAPY module:

1. Select one or more records to delete: they will be highlighted in blue;
2. Press on **DELETE**;
3. A window will appear, then select:

- **YES** to confirm the definitive elimination of selected data
- **NO** to delete the elimination of selected data

Proceed as follows to delete all chronology of treatments of ELECTROTHERAPY module:

1. Press the button **DELETE CHRONOLOGY**;
2. A window will appear, it will be possible to select
 - **YES** to confirm the definitive elimination of all data of saved chronology
 - **NO** to cancel the elimination of all data of saved chronology

Proceed as follows to save the chronology of treatments of ELECTROTHERAPY module in USB key:

1. Insert the USB key into the connector;
2. A window will appear, then select:
 - **YES** to save
 - **NO** to cancel the saving
3. Press on button **OK** to confirm that saving of chronology was successful.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main screen.

INFORMATION

To visualize the diagnostic information of the ELECTROTHERAPY module press the button **INFORMATION**:

- The most used therapy;
- The total treatment time in minutes ;
- The number of slot of electrotherapy module ;
- The HARDWARE version;
- the SOFTWARE version.

The authorized personnel can update the software of the ELECTROTHERAPY module only with the necessary application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the **SW UPDATE** button;
4. A window will appear, then select:
 - **YES** to proceed with software update of the electrotherapy module
 - **NO** to cancel the software updating procedure
5. Select the file to load;
6. A window will appear, then select:
 - **OK** to proceed with software update of the electrotherapy module
 - **CANCEL** to cancel the software updating procedure
7. Now follow the instructions on screen .

After some seconds POLYTER VET will have the updated software version for ELECTROTHERAPY module.

In case of any problem during software update please contact EME's after sales service.

ULTRASOUNDS SETTINGS

In this section it is possible to:

- Visualize, modify and save in internal memory the basic settings of ULTRASOUND module, these settings will be automatically recalled each time the device is turned on;
- Have info on chronology of executed treatments;
- Have general info on ultrasound module.

DEFAULT PROGRAM

By pressing the button **DEFAULT PROGRAM** it is possible to see the default parameters that appear in section FREE PROCEDURE of ULTRASOUND module .

The default parameters that can be modified are:

TIME (min)

FREQUENCY (MHz)

POWER (W/cm²)

DUTY-CYCLE (%)

PULSED FREQUENCY (HZ)

WORK MODE (CONTINUOUS/AUTO)

To change the default parameters and set new ones proceed as below:

1. Select the parameter to change and proceed as described in FREE PROCEDURE – ULTRASOUND
2. Press on **SAVE**;
3. Select **OK** to save the new data as new default values
 - Otherwise press **CANCEL**, in this case the default program will not be modified .

In DEFAULT PROGRAM menu it is possible to load a PROGRAM saved in INTERNAL MEMORY or USB by proceeding as described in FREE PROCEDURE –ELECTROTHERAPY –section LOAD.

TREATMENT CHRONOLOGY

To have the complete chronology of treatments carried out with the ULTRASOUND module:

1. Select **TREATMENT CHRONOLOGY**;
2. Enable the chronology by pressing **DEACTIVATED** button:
 - The DEACTIVATED button will be replaced by **ACTIVATED** button;
 - A window will appear, then select:
 - **YES** to enable the chronology of treatments

- **NO** to disable the chronology of treatments

3. Once the chronology of treatments is, it will be possible to save:
 - The date of therapy;
 - The hour of beginning (START) and finishing (STOP) of the therapy;
 - The duration (min) of therapy;
 - The set time (min);
 - The therapy module used for the therapeutic treatment.
4. Press the **ACTIVATED** button to disable the chronology of treatments:
 - The ACTIVATED button will be replaced by DEACTIVATED button;
 - The automatic saving will be deleted but the saved data won't be deleted;
 - A window will appear, then select:
 - **YES** to disable the chronology of treatments
 - **NO** to not disable the chronology of treatments

Proceed as follows to delete some records from the list of treatment chronology of ULTRASOUND module:

1. Select one or more records to delete: they will be highlighted in blue;
2. Press on **DELETE**;
3. A window will appear, then select:
 - **YES** to confirm the definitive elimination of selected data
 - **NO** to delete the elimination of selected data

Proceed as follows to delete all chronology of treatments of ULTRASOUNDS module:

1. Press the button **DELETE CHRONOLOGY**;
2. A window will appear, it will be possible to select
 - **YES** to confirm the definitive elimination of all data of saved chronology
 - **NO** to cancel the elimination of all data of saved chronology

Proceed as follows to save the chronology of treatments of ULTRASOUNDS module in USB key:

1. Insert the USB key into the connector;
2. A window will appear, then select:
 - **YES** to save
 - **NO** to cancel the saving
3. Press on button **OK** to confirm that saving of chronology was successful.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main screen.

INFORMATION

To visualize the diagnostic information of the ULTRASOUNDS module press the button **INFORMATION**:

- The most used therapy;
- The total treatment time in minutes ;
- The number of slot of electrotherapy module ;
- The HARDWARE version;
- the SOFTWARE version.

The authorized personnel can update the software of the ULTRASOUNDS module only with the necessary application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the **SW UPDATE** button;
4. A window will appear, then select:
 - **YES** to proceed with software update of the ultrasounds module
 - **NO** to cancel the software updating procedure

5. Select the file to load;
6. A window will appear, then select:
 - **OK** to proceed with software update of the ultrasounds module
 - **CANCEL** to cancel the software updating procedure
7. Now follow the instructions on screen .

After some seconds POLYTER VET will have the updated software version for ULTRASOUNDS module.

In case of any problem during software update please contact EME's after sales service.

MAGNETOTHERAPY SETTINGS

In this section it is possible to:

- Visualize, modify and save in internal memory the basic settings of MAGNETOTHERAPY module, these settings will be automatically recalled each time the device is turned on;
- Have info on chronology of executed treatments;
- Have general info on ultrasound module.

DEFAULT PROGRAM

By pressing the button **DEFAULT PROGRAM** it is possible to see the default parameters of section FREE PROCEDURE of MAGNETOTHERAPY module.

The default parameters that can be modified are:

TIME (min)

POWER (Gauss)

FREQUENCY (Hz)

DUTY-CYCLE (%)

To change the default parameters and set new ones proceed as below:

1. Select the parameter to change and proceed as described in FREE PROCEDURE – MAGNETO THERAPY –SECTION MODIFY

2. Press on **SAVE**;
3. Select **OK** to save the new data as new default values
 - Otherwise press **CANCEL**, in this case the default program will not be modified .

In DEFAULT PROGRAM menu it is possible to load a PROGRAM saved in INTERNAL MEMORY or USB by proceeding as described in FREE PROCEDURE –MAGNETO THERAPY –section LOAD .

TREATMENT CHRONOLOGY

To have the complete chronology of treatments carried out with the MAGNETOTHERAPY module:

1. Select **TREATMENT CHRONOLOGY**;
2. Enable the chronology by pressing **DEACTIVATED** button:
 - The DEACTIVATED button will be replaced by **ACTIVATED** button;
 - A window will appear, then select:
 - **YES** to enable the chronology of treatments
 - **NO** to disable the chronology of treatments
3. Once the chronology of treatments is, it will be possible to save:
 - The date of therapy;
 - The hour of beginning (START) and finishing (STOP) of the therapy;
 - The duration (min) of therapy;
 - The set time (min);
 - The therapy module used for the therapeutic treatment.
4. Press the **ACTIVATED** button to disable the chronology of treatments:
 - The ACTIVATED button will be replaced by DEACTIVATED button;
 - The automatic saving will be deleted but the saved data won't be deleted;
 - A window will appear, then select:
 - **YES** to disable the chronology of treatments

- **NO** to not disable the chronology of treatments

Proceed as follows to delete some records from the list of treatment chronology of MAGNETOTHERAPY module:

1. Select one or more records to delete: they will be highlighted in blue;
2. Press on **DELETE**;
3. A window will appear, then select:
 - **YES** to confirm the definitive elimination of selected data
 - **NO** to delete the elimination of selected data

Proceed as follows to delete all chronology of treatments of MAGNETOTHERAPY module:

1. Press the button **DELETE CHRONOLOGY**;
2. A window will appear, it will be possible to select
 - **YES** to confirm the definitive elimination of all data of saved chronology
 - **NO** to cancel the elimination of all data of saved chronology

Proceed as follows to save the chronology of treatments of MAGNETOTHERAPY module in USB key:

1. Insert the USB key into the connector;
2. A window will appear, then select:
 - **YES** to save
 - **NO** to cancel the saving
3. Press on button **OK** to confirm that saving of chronology was successful.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main screen.

INFORMATION

To visualize the diagnostic information of the MAGNETOTHERAPY module press the button **INFORMATION**:

- The most used therapy;
- The total treatment time in minutes ;
- The number of slot of electrotherapy module ;
- The HARDWARE version;
- The SOFTWARE version.

The authorized personnel can update the software of the MAGNETOTHERAPY module only with the necessary application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the **SW UPDATE** button;
4. A window will appear, then select:
 - o **YES** to proceed with software update of the magnetotherapy module
 - o **NO** to cancel the software updating procedure
5. Select the file to load;
6. A window will appear, then select:
 - o **OK** to proceed with software update of the magnetotherapy module
 - o **CANCEL** to cancel the software updating procedure
7. Now follow the instructions on screen .

After some seconds POLYTER VET will have the updated software version for MAGNETOTHERAPY module.

In case of any problem during software update please contact EME's after sales service.

LASER SETTINGS

In this section it is possible to:

- Visualize, modify and save in internal memory the basic settings of LASER module, these settings will be automatically recalled each time the device is turned on;
- Have info on chronology of executed treatments;
- Have general info on laser module.

DEFAULT PROGRAM

By pressing the button **DEFAULT PROGRAM** it is possible to see the default parameters of FREE PROCEDURE of LASER module .

The first screen that appears is the screen where is possible to visualize/modify the area of treatment :

1. Increase or decrease the value of the **TREATED AREA** (cm²) by using the buttons + or – or scrolling the cursor to right or left until reaching the desired value to attribute to the parameter in question;
2. Press on **CONFIRM** to confirm the modification of the parameter; the LASER default screen will appear and the changed parameter will be in orange color;
 - o otherwise, to cancel the modification of the parameter press on **BACK**; the LASER default screen will appear and the parameter will not be changed.
3. In LASER default screen it is possible to modify the other default parameters.

The default parameters that can be modified are:

TIME (min)

FREQUENCY (Hz)

DUTY-CYCLE (%)

WORK MODE (CONTINUOUS / AUTO)

To change the default parameters and set new ones proceed as below:

1. Select the parameter to change and proceed as described in FREE PROCEDURE – LASER – section MODIFY
2. Press on **SAVE**;
3. Select **OK** to save the new data as new default values
 - Otherwise press **CANCEL**, in this case the default program will not be modified .

In screen DEFAULT PROGRAM it is possible to load a PROGRAM by choosing one of the INTERNAL MEMORY or USB MEMORY; proceed as described in FREE PROCEDURE – LASER –section LOAD.

TREATMENT CHRONOLOGY

To have the complete chronology of treatments carried out with the LASER module:

1. Select **TREATMENT CHRONOLOGY**;
2. Enable the chronology by pressing **DEACTIVATED** button:
 - The DEACTIVATED button will be replaced by **ACTIVATED** button;
 - A window will appear, then select:
 - **YES** to enable the chronology of treatments
 - **NO** to disable the chronology of treatments
3. Once the chronology of treatments is, it will be possible to save:
 - The date of therapy;
 - The hour of beginning (START) and finishing (STOP) of the therapy;
 - The duration (min) of therapy;
 - The set time (min);
 - The therapy module used for the therapeutic treatment.
4. Press the **ACTIVATED** button to disable the chronology of treatments:
 - The ACTIVATED button will be replaced by DEACTIVATED button;
 - The automatic saving will be deleted but the saved data won't be deleted;
 - A window will appear, then select:

- **YES** to disable the chronology of treatments
- **NO** to not disable the chronology of treatments

Proceed as follows to delete some records from the list of treatment chronology of LASER module:

1. Select one or more records to delete: they will be highlighted in blue;
2. Press on **DELETE**;
3. A window will appear, then select:
 - **YES** to confirm the definitive elimination of selected data
 - **NO** to delete the elimination of selected data

Proceed as follows to delete all chronology of treatments of LASER module:

1. Press the button **DELETE CHRONOLOGY**;
2. A window will appear, it will be possible to select
 - **YES** to confirm the definitive elimination of all data of saved chronology
 - **NO** to cancel the elimination of all data of saved chronology

Proceed as follows to save the chronology of treatments of LASER module in USB key:

1. Insert the USB key into the connector;
2. A window will appear, then select:
 - **YES** to save
 - **NO** to cancel the saving
3. Press on button **OK** to confirm that saving of chronology was successful.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main screen.

INFORMATION

To visualize the diagnostic information of the LASER module press the button **INFORMATION**:

- The most used therapy;
- The total treatment time in minutes ;
- The number of slot of electrotherapy module ;
- The HARDWARE version;
- The SOFTWARE version.

The authorized personnel can update the software of the LASER module only with the necessary application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the **SW UPDATE** button;
4. A window will appear, then select:
 - o **YES** to proceed with software update of the laser module
 - o **NO** to cancel the software updating procedure
5. Select the file to load;
6. A window will appear, then select:
 - o **OK** to proceed with software update of the laser module
 - o **CANCEL** to cancel the software updating procedure
7. Now follow the instructions on screen .

After some seconds POLYTER VET will have the updated software version for LASER module.

In case of any problem during software update please contact EME's after sales service.

TECAR-THERAPY SETTINGS

DEFAULT PROGRAM

By pressing the button **DEFAULT PROGRAM** it is possible to visualize the default parameters that appear in section FREE PROCEDURE of ULTRASOUND module.

The default parameters that can be modified are:

TIME (min)

(CAPACITIVE, RESISITVE) MODE

HEATING MODE (ATHERMY, HOMEOTHERMY, HYPERTHERMY)

POWER LEVEL (LOW, MEDIUM, HIGH)

ELECTRODES DIMENSIONS (30 mm, 50 mm, 70 mm)

WORK MODE (CONTINUOUS, AUTO)

To change the default parameters and set new ones proceed as below:

1. select the parameter to be modified and proceed as described in FREE PROCEDURE – TECAR– section MODIFY
2. Press on **SAVE**;
3. In the appearing window select **OK** to save the new data set as new default values
 - o Otherwise **CANCEL** to cancel the modifications of the default program.

In screen DEFAULT PROGRAM it is possible to load a PROGRAM by choosing one of the INTERNAL MEMORY or USB MEMORY; proceed as described in FREE PROCEDURE – TECAR–section LOAD.

TREATMENT CHRONOLOGY

To have the complete chronology of treatments carried out with the TECAR module:

1. Select **TREATMENT CHRONOLOGY**;
2. Enable the chronology by pressing **DEACTIVATED**:
 - o The DEACTIVATED button will be replaced by **the ACTIVATED button**;

- A window will appear, then select:
 - **YES** to enable the treatment chronology
 - **NO** to disable the treatment chronology
- 3. Once the chronology of treatments is, it will be possible to save:
 - The date of therapy;
 - The hour of beginning (START) and finishing (STOP) of the therapy;
 - The duration (min) of therapy;
 - The set time (min);
 - The therapy module used for the therapeutic treatment.
- 4. To disable the treatments chronology press **ACTIVATED**:
 - The ACTIVATED button will be replaced by DEACTIVATED button;
 - The automatic saving will be deleted but the saved data won't be deleted;
 - A window will appear, then select:
 - **YES** to disable the chronology treatments
 - **NO** to not disable the chronology treatments

Proceed as follows to delete some records from the list of treatment chronology of TECAR module:

1. Select one or more records to delete: they will be highlighted in blue;
2. Press on the button **DELETE**;
3. A window will appear, then select:
 - **YES** to confirm the definitive elimination of selected data
 - **NO** to delete the elimination of selected data

To delete the complete chronology of treatments carried out with the TECAR module:

1. Press the button **DELETE CHRONOLOGY**;
2. A window will appear, it will be possible to select

- **YES** to confirm the definitive elimination of all data of saved chronology
- **NO** to cancel the elimination of all data of saved chronology

Proceed as follows to save the chronology of treatments of TECAR module in USB key:

1. Insert the USB key into the connector;
2. A window will appear, then select:
 - **YES** to save
 - **NO** to cancel the saving
3. Press the button **OK** to confirm that the saving of chronology was successful.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main menu screen.

INFORMATION

By pressing the button **INFORMATION** you can visualize the diagnostic information of the TECAR module about:

- The most used therapy;
- The total treatment time in minutes ;
- The number of slot of TECAR module ;
- The HARDWARE version;
- The SOFTWARE version.

The authorized personnel can update the software of the TECAR module only using the available and specific application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the button **SW UPDATE**;
4. A window will appear, then select:

- **YES** to proceed with software update of the TECAR module
 - **NO** to cancel the software updating procedure
5. Select the file to load;
 6. A window will appear, then select:
 - **OK** to proceed with software update of the HR TEK module
 - **CANCEL** to cancel the software updating procedure
 7. Now follow the instructions on screen .

After some seconds POLYTER VET will have the updated software version for TECAR module.

In case of any problem during software update please contact EME's after sales service.

HIGH POWER LASER THERAPY SETTINGS

In this section it is possible to:

- Visualize, modify and save in internal memory the basic settings of LASER HL module, these settings will be automatically recalled each time the device is turned on;
- Have info on chronology of executed treatments;
- Have general info on laser module.

DEFAULT PROGRAM

By pressing the button **DEFAULT PROGRAM** it is possible to see the default parameters of FREE PROCEDURE of LASER HL module.

The first screen that appears is the screen where is possible to visualize/modify the area of treatment:

4. Increase or decrease the value of the **TREATED AREA** (cm²) by using the buttons + or – or scrolling the cursor to right or left until reaching the desired value to attribute to the parameter in question;
5. Press on **CONFIRM** to confirm the modification of the parameter; the LASER HL default screen will appear;

- otherwise, to cancel the modification of the parameter press on **BACK**; the LASER HL default screen will appear and the parameter will not be changed.

6. In LASER default screen it is possible to modify the other default parameters.

The default parameters that can be modified are:

TIME (min)

POTENZA (W)

DUTY-CYCLE (%)

To change the default parameters and set new ones proceed as below:

7. Select the parameter to change and proceed as described in FREE PROCEDURE – LASER HL– section MODIFY
8. Press on **SAVE**;
9. Select **OK** to save the new data as new default values
 - Otherwise press **CANCEL**, in this case the default program will not be modified .

In screen DEFAULT PROGRAM it is possible to load a PROGRAM by choosing one of the INTERNAL MEMORY or USB MEMORY; proceed as described in FREE PROCEDURE – LASER HL–section LOAD.

TREATMENT CHRONOLOGY

To have the complete chronology of treatments carried out with the LASER HL module:

1. Select **TREATMENT CHRONOLOGY**;
2. Enable the chronology by pressing **DEACTIVATED** button:
 - The DEACTIVATED button will be replaced by **ACTIVATED** button;
 - A window will appear, then select:
 - **YES** to enable the chronology of treatments
 - **NO** to disable the chronology of treatments
3. Once the chronology of treatments is, it will be possible to save:

- The date of therapy;
 - The hour of beginning (START) and finishing (STOP) of the therapy;
 - The duration (min) of therapy;
 - The set time (min);
 - The therapy module used for the therapeutic treatment.
4. Press the **ACTIVATED** button to disable the chronology of treatments:
- The ACTIVATED button will be replaced by DEACTIVATED button;
 - The automatic saving will be deleted but the saved data won't be deleted;
 - A window will appear, then select:
 - **YES** to disable the chronology of treatments
 - **NO** to not disable the chronology of treatments

Proceed as follows to delete some records from the list of treatment chronology of LASER module:

1. Select one or more records to delete: they will be highlighted in blue;
2. Press on **DELETE**;
3. A window will appear, then select:
 - **YES** to confirm the definitive elimination of selected data
 - **NO** to delete the elimination of selected data

Proceed as follows to delete all chronology of treatments of LASER module:

1. Press the button **DELETE CHRONOLOGY**;
2. A window will appear, it will be possible to select
 - **YES** to confirm the definitive elimination of all data of saved chronology
 - **NO** to cancel the elimination of all data of saved chronology

Proceed as follows to save the chronology of treatments of LASER module in USB key:

1. Insert the USB key into the connector;

2. A window will appear, then select:
 - **YES** to save
 - **NO** to cancel the saving
3. Press on button **OK** to confirm that saving of chronology was successful.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main screen.

INFORMATION

To visualize the diagnostic information of the LASER module press the button **INFORMATION**:

- The most used therapy;
- The total treatment time in minutes ;
- The number of slot of laser module ;
- The HARDWARE version;
- The SOFTWARE version.

The authorized personnel can update the software of the LASER module only with the necessary application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the **SW UPDATE** button;
4. A window will appear, then select:
 - **YES** to proceed with software update of the laser module
 - **NO** to cancel the software updating procedure
5. Select the file to load;
6. A window will appear, then select:
 - **OK** to proceed with software update of the laser module

- **CANCEL** to cancel the software updating procedure

7. Now follow the instructions on screen.

After some seconds POLYTER VET will have the updated software version for LASER module.

In case of any problem during software update please contact EME's after sales service.

GENERAL SETTINGS

It is possible to modify and save in the internal memory the general settings that will be automatically loaded when the device is turned on.

A screen will appear by pressing the button **GENERAL SETTINGS** and it will be possible to select:

- SOUND MANAGEMENT
- MEMORIES MANAGEMENT
- PASSWORD MANAGEMENT
- SYSTEM MANAGEMENT

It is also possible to see on screen the **DAYS LEFT FOR SERVICE**.

By pressing the button **RESET COUNTDOWN** it is possible to reset the number of days left for service.

To reset the countdown it is necessary to insert a password and only EME authorized service personnel technical can reset the number of days left for service.

SOUND MANAGEMENT

In this section it is possible to:

- Select the acoustic setting of the device to confirm the activation of the following functions START TREATMENT, END TREATMENT, ERROR, TREATMENT EMISSION;
- Set the GENERAL VOLUME of the device;
- Enable/disable the KEYBOARD SOUND.

Proceed as described here below:

1. Press the button **SOUND SETTING**;
2. Enable the **TREATMENT START SOUND** by selecting the desired sound of the list to associate to this function
 - Disable the TREATMENT START SOUND select "No sound" in list;
3. Enable the **TREATMENT END SOUND** by selecting the desired sound of the list to associate to this function
 - Disable the TREATMENT END SOUND select "No sound" in list;
4. Enable the **ERROR SOUND** by selecting the desired sound of the list to associate to this function
 - Disable the ERROR SOUND select "No sound" in list;
5. Enable the **WARNING SOUND** by selecting the desired sound of the list to associate to this function
 - Disable the WARNING SOUND select "No sound" in list;
6. Enable the **SOUND DURING TREATMENT** by selecting the desired sound of the list to associate to this function
 - Set the intermittent beep of the acoustic sound during treatment using the buttons + and – or scrolling the cursor to right or left until the desired value;
 - Disable the SOUND DURING TREATMENT select "No sound" in list;
7. Increase or decrease the **GENERAL VOLUME** of the device using the buttons + and – or scrolling the cursor to right or left until the desired value;
8. Enable / disable the **KEYBOARD SOUND** by pressing alternatively the button **ON / OFF** on display.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;
- Press **HOME** to enter the main menu screen.

MEMORIES MANAGEMENT

By pressing the button **MEMORIES MANAGEMENT** it is possible to format the memories: INTERNAL MEMORY and USB MEMORY. The memories can contain two kinds of data, the PATIENT'S CARDS and the customized PROGRAMS.

To format the INTERNAL MEMORY:

1. Select the button **FORMAT INTERNAL MEMORY**
2. A window will appear, then select:
 - **YES** to format the internal memory
 - **NO** to cancel the formatting of internal memory
3. Press **OK** to confirm the successful INTERNAL MEMORY formatting.

To format the USB MEMORY:

1. Insert the USB key into the connector;
 - If the USB key is not properly inserted, it is not possible to format it.
2. Select the button **FORMAT USB MEMORY;**
3. A window will appear, then select:
 - **YES** to format the USB memory
 - **NO** to cancel the formatting of USB memory
4. Press **OK** to confirm the successful USB MEMORY formatting.

It is necessary to format the USB MEMORY when a NEW USB is inserted or if the USB was never used on this device.

It is also possible to use the function FORMAT USB MEMORY to empty the USB key, so that it can be used on another device.

PASSWORD MANAGEMENT

By pressing the button **PASSWORD MANAGEMENT** it is possible to change the access code.

To set the new password proceed as follows:

1. Insert the used password by using the numeric keyboard on screen and press OK;
2. Insert the new access password by using the numeric keyboard on screen and press OK;
3. To confirm the new password type it a second time and press OK;
4. A window will appear to inform the operator that the new password has been properly set;
5. Press the button **BACK** to go the GENERAL SETTING screen.

SYSTEM MANAGEMENT

By pressing the button **SYSTEM MANAGEMENT** a window will appear, and it will be possible:

- See the version of the operational application;
- Update the operational application;
- Recognize the therapy modules;
- Set DATE /TIME;
- Restore factory settings ;
- Enter the section of MAIN BOARD settings.

APPLICATION UPDATE

The authorized personnel can update the operational application only with the specific application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the button **APPLICATION UPDATE;**

4. A window will appear, then select:
 - **YES** to update the operational application
 - **NO** to cancel the updating procedure
5. Select the file to load;
6. A window will appear, then select:
 - **OK** to update the operational application
 - **CANCEL** to cancel the updating procedure
7. Now follow the instructions on screen .

After a few seconds POLYTER VET will have loaded the updated operational application version.

In the case of any problem while update contact the EME technical service.

NEW CARDS DISCOVERY

By pressing the button **NEW CARDS DISCOVERY** the therapy modules of POLYTER VET are recognized.

After finishing the recognition of the modules the device restarts.

DATE AND TIME SETTINGS

To set DATE and TIME on each screen:

1. Press the button **DATE / TIME SETTING**;
2. Select the time zone by scrolling the menu;
3. Select / clear the automatic date and time setting by pressing alternatively the button **ON / OFF**;
4. If the setting is not automatic:
 - Change month, day and year by using the selection arrows
 - Change hour, minutes, AM / PM by using the selection arrows
5. Press the button **NEXT** to confirm the setting and go to screen POLYTER VET APPLICATION SETTING.

Now it is possible to:

- Press the button **BACK** to go to the previous screen;

- Press **HOME** to enter the main menu screen.

RESET DEFAULT SETTINGS

RESTORE FACTORY SETTINGS This function allows to reset all values to the default as at the beginning . This allows you to choose different language from the previously set when start the device .

Will be cancelled all customizations including customized protocols and patient's cards.

To enter this section insert the password .

The password has been set by default and is 12345: to insert it is necessary to press the 5 numeric buttons and then OK.

This code can be changed by the operator (see section SETTINGS – GENERAL SETTINGS – PASSWORD MANAGEMENT).

MAINBOARD SETTING

By pressing the button **MAINBOARD SETTING**, it is possible to see the diagnostic info of the MAIN BOARD concerning:

- The temperature;
- The HARDWARE version;
- The SOFTWARE version.

The authorized personnel can update the MAIN BOARD software only with the specific application.

1. Copy the file, supplied from manufacturer, in USB key without changing the name of file and without inserting it into a directory;
2. Insert the USB key into the connector;
3. Press the button **SW UPDATE**;
4. A window will appear, then select:
 - **YES** to update MAIN BOARD software
 - **NO** to cancel the software updating procedure
5. Select the file to load;
6. A window will appear, then select:

- **OK** to update MAIN BOARD software
- **CANCEL** to cancel the software updating procedure

7. Now follow the instructions on screen .

After a few seconds POLYTER VET will have loaded the MAIN BOARD updated software application version.

In the case of any problem while update contact the EME technical service.

MAINTENANCE

The equipment for combined therapy POLYTER VET do not require any particular maintenance operations , but only a periodic maintenance and cleanliness of the handpieces, in order to ensure the better operating conditions, guarantee the effectiveness of the treatment and the safety of the patient.

It is recommended to perform **every two years** periodic maintenance in order to check:

- the emission levels;
- the intensity of any leakage currents;
- the continuity and thus the integrity, of the ground conductor;
- the correctness of the value of insulation resistance;

in order to ensure the electrical safety of the device, ensure that it is operating in a safe guaranteed. For this kind of operations, it is advisable to contact EME srl or one of its authorized centers.

Furthermore, it is necessary to perform a period maintenance of the handpieces/applicators. In particular, it is necessary to:

- **every two years** submit to calibration/adjustment all the programmable accessories, such as handpieces/applicators, supplied with the device. For this kind of intervention please contact EME srl technical support service.
- check **every week** the treatment head of the handpieces, in particular of the ultrasound-therapy handpieces in order to reveal eventual cracks which could lead to the entrance of conductor liquid;

- check **before every treatment therapy** the integrity of the cable and connector of handpieces/applicators.

When cleaning the outer part of the equipment, make sure to use a soft, clean cloth dampened with luke-warm water or very mild non inflammable detergents.

The front panel can be cleaned in the same way.

The handpieces, particularly the head of treatment, periodically should be cleaned with water and denatured alcohol.

Clean every day with water and denatured alcohol the conductive rubber electrodes , the sponges have to be washed.

Replace the handpieces / applicators, cables and electrodes with care at the end of each treatment session.

The electrodes in conductive rubber must be periodically replaced as they lose their conductivity with use.

Contact authorised dealers of EME srl for information regarding original spare parts or components

Do not spray or pour liquid onto the external parts of the equipment and onto the handpieces.

Do not immerse the unit in water.

After cleaning the external part of the equipment, make sure to dry it perfectly before turning on the unit.

The unit must under no circumstances be opened or dismantled in order to clean or check inner parts of equipment does not require cleaning of inner parts and in all cases, only specialised technicians or EME srl authorised personnel should carry out such operations.

In case of replacement or insertion of the internal battery, do not open the device POLYTER VET but contact authorized and specialized personnel, to perform the maintenance operations in safety and to avoid damages on device; or contact EME or its authorized service centre.

The life of the device is approximately 10 years.

TECHNICAL PROBLEMS

The equipment for combined therapy POLYTER VET has been designed and manufactured using highly advanced technology and first class components for reliable and efficient performance.

However, should you have any operational problems, we recommended that you consult the following manual before contacting any of our authorized service centers.

If any of the following situations occur, disconnect the machine and contact EME srl authorised service centres:

- the cable set or rear supply panel show signs of wear and tear or are damaged;
- the liquid has entered the equipment
- the equipment has been exposed to rain.

ELECTROMAGNETIC INTERFERENCES

The equipment for combined therapy POLYTER VET has been designed and manufactured according to the ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2014/30/UE with the aim of providing adequate protection from harmful interference when installed in homes and health establishments.

All required measurements and tests have been carried out in EME's internal Testing, Measurement and Inspection laboratory (LPMC), in addition to other external specialised institutes. The customer, upon prior request, may view the reports relative to EMC measures within the company.

On the basis of their functioning principle, the POLYTER VET devices generate an acceptable amount of radiofrequency energy and present an adequate level of immunity from irradiating electromagnetic fields. In these conditions damaging interference cannot occur to radioelectric communications, to the functioning of electro-medical devices used for monitoring, diagnosis, treatment and surgery, to the functioning of electronic office equipment such as computers, printers, photocopiers, faxes, etc. nor to any electrical or electronic device used in the same environment, provided that these meet the requirements of the directive on ELECTROMAGNETIC COMPATIBILITY.

In any case, in order to avoid any interference problems, we recommend that you operate the therapy equipment far enough away from critical equipment for monitoring vital patient functions, and that you be careful when applying therapy to patients with pacemakers.

TROUBLESHOOTING CHART

FUNCTIONING WITH POWER CABLE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The LCD display on the front panel does not switch on: the device does not work.	Network socket incorrectly inserted into the power outlet.	Check that the socket is working correctly.
	Power cable incorrectly inserted into the connector of the unit.	Correctly insert the plug and the cable into the connector of the unit.
	Cable is worn or blocked.	Replace the power cable.
	The switch on the rear of the unit is turned off.	Turn on the switch.
	Start button not pressed.	Press start button.
	Fuses faulty or blocked.	Replace any missing, faulty or blocked fuses.
The monitor on front panel does not light up	Failure of the electronic control circuit.	Contact EME srl Service centre.
	Defective parts on electronic control board.	Contact EME srl Service centre.

INTERNAL BATTERY FUNCTIONING		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The LCD display on the front panel does not switch on: the device does not work.	Low battery.	Recharge battery.
	Start button not pressed.	Press start button.
	Charging circuit not working.	Check FUNCTIONING WITH MAIN CABLE.
	Failure of the electronic control circuit.	Contact EME srl Service centre.
The monitor on front panel does not light up	Defective parts on electronic control board.	Contact EME srl Service centre.

POLYTER VET		
PROBLEM	POSSIBLE CAUSE	SOLUTION
Some commands on the front control panel are not working properly.	Not aligned or not working touch screen.	Contact EME srl Service centre.
	Electronic control circuit does not work.	

ELECTROTHERAPY MODULE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The display indicates that the unit is unable to supply the required output current.	Defective connections in the patient application output circuit.	Check that the output connection is made properly.
	Output cables damaged, bad connected or connected on wrong module.	
	Output cables worn and/or with problems in contact.	
	Connectors badly inserted, defective or not connected to the equipment and/or the electrodes.	Check that the output connection is made properly. Replace the cables and/or the defective connectors that show clear signs of wear.
	Electrodes in conductive rubber worn that need to be replaced.	Ensure that the electrodes properly adhere to the patient, replace defective and/or worn electrodes.
	Insufficient, faulty, and/or uncertain contact with the patientt.	Contact EME srl Service centre.
Fault in the electric circuit of the current generator.		
The unit works properly but there is a notable fall in treatment efficiency.	The output circuit of the patient is not properly connected.	Carry out maintenance operations as described. Install and place the unit as described.
	Uncertain or defective electrodes in conductive rubber contacts (including the electrode-holder sponge pockets) with the surface to be treated.	Check the integrity of the cables, the connectors and the output circuit of electrodes.
		Check that the electrodes perfectly adhere to the treated area. Moisten the electrode-holder sponge pockets.
	Possible current generator circuit fault in the equipment.	Contact EME srl Service centre.

ULTRASOUND MODULE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The unit doesn't supply any ultrasound.	Defective connections in the patient application output circuit.	Check that the output connection is made properly.
	Handpiece cable damaged or incorrectly inserted or connected to wrong module.	Replace any handpiece handpiece-applicator that shows evident signs of wear in the supply head or cable.
	Output cables worn and/or with problems in contact.	
	Fault in the electric circuit of the current generator.	Contact EME srl Service centre.
The unit works properly but there is a notable fall in treatment efficiency.	Handpiece handpiece-applicator output circuit not connected properly.	Carry out maintenance operations as described.
	Handpiece handpiece-applicator piezoelectric transducer damaged.	Check the condition of the cable and the handpiece handpiece/applicator connector.
	Mechanical damage (following a fall or violent impact) of the handpiece handpiece-applicator, especially on the radiating head.	Ensure that the radiating head adheres perfectly to the treatment surface.
	Loss of electric insulation of the piezoelectric transducer inside the handpiece handpiece following non authorized opening of the radiating head.	Use the acoustic conductor gel.
	Electronic circuit of the ultrasound generator not perfectly calibrated.	Contact EME srl Service centre.
	Possible current generator circuit fault in the equipment.	

MAGNETOTHERAPY MODULE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The equipment turns on, but there is no magnetic field emission.	Faulty connections in the output circuit of the cylinders/applicators	Check the correct application of the output and the condition of the connections.
	Connection cables damaged or incorrectly inserted or connected to wrong module.	Replace the faulty cylinder/applicator or those that show evident signs of wear and tear on the covering or on the cable.
	Output cables worn and/or with problems in contact.	
	Fault in the electric circuit of the current generator.	Contact EME srl Service centre.
The unit works properly but there is a notable fall in treatment efficiency.	Connection of applicators not perfectly efficient.	Contact EME srl Service centre.
	Applicators damaged (due to a fall or hit), especially in the connection point.	
	Interruption of the internal conductors of the cylinder.	
	Electronic circuit current generator not properly calibrated or defective.	

LASER MODULE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The unit lights up but does not emit energy	Parameters not set correctly	Make sure that operating parameters have been set correctly.
	Laser source does not function or has run out.	Check laser source emission is operating.
	Faulty components on electronic control circuit	Contact EME srl Service centre.
	Faulty supply on laser circuit	
The unit works properly but there is a notable fall in treatment efficiency.	The front lens of handpiece is dirty.	Carefully clean the front lens of handpiece.
	Faulty or depleted laser source.	Contact EME srl Service centre.
	Possible break down in power generator circuit of the unit	
The emission does not start.	No safety key or the interlock circuit is open.	Insert the DIN safety key into the back socket or reset the safety conditions.

TECAR MODULE		
PROBLEM	POSSIBLE CAUSE	SOLUTION
The unit doesn't supply any ultrasound.	Defective connections in the patient application output circuit.	Check that the output connection is made properly.
	The cable of the handle-applicator has been cut off or connected improperly	Replace any handpiece handpiece-applicator that shows evident signs of wear in the supply head or cable.
	Output cables worn and/or with problems in contact.	
	Fault in the electric circuit of the current generator.	Contact EME srl Service centre.
The unit works properly but there is a notable fall in treatment efficiency.	Connection of the output circuit of the handle-applicator is not perfectly efficient.	Carry out maintenance operations as described. Install and place the unit as described. Check the condition of the cable and the handpiece handpiece/applicator connector.
	Mechanical damage (following a fall or violent impact) of the handpiece handpiece-applicator, especially on the radiating head.	Ensure that the radiating head adheres perfectly to the treatment surface.
	Electronic circuit of the ultrasound generator not perfectly calibrated.	Contact EME srl Service centre.
	Possible current generator circuit fault in the equipment.	
The touch control panel does not work properly.	Energy transmission on the touch panel	Make sure there is no RF energy transmission on the touch panel. See the Attention-Use section.

TECHNICAL FEATURES

POLYTER VET			
Power	supply:	230 Vac, 50-60Hz, ±10%	115 Vac, 50-60Hz, ±10% *
	Internal battery	Nominal Voltage: 24V	Nominal Capacity: 4500mAh
Double protection fuse on power supply (T):		1,6 A-T	3,15 A-T
Max power absorption:		215 VA	
Display		Color TOUCH SCREEN, 7"	
Emission		N°01 technology / module at a time	
Class of isolation / parts applied according to the rule EN 60601-1		I / BF	
Degree of protection against input of liquids according to EN 60601-1 standard		IPX0	
Trolley of polyurethane, external dimensions (width. x depth x height.):		61x37x23H cm	
Weight of the device body:		depending on the basis of included modules	
<u>Use conditions</u>	<u>Room temperature</u>	<u>(+10 : +40) °C</u>	
	<u>Relative humidity</u>	<u>(10 : 80) % without condensation</u>	
<u>Stocking/transport conditions</u>	<u>Room temperature</u>	<u>(-40 : +70) °C</u>	
	<u>Relative humidity</u>	<u>(10 : 100) % without condensation</u>	
	<u>Atmospheric pressure</u>	<u>(500 : 1060) hPa</u>	

*upon request

ELECTROTHERAPY MODULE

Programmable treatment time		Up to 99 minutes
Emission frequency		25 kinds of wave Low and medium frequency currents
Functioning		Constant Voltage (CV) Constant Current (CC)
Peak current (Load resistance 1KOhm)	Impulsive currents	100 mA
	Diadynamic currents	70 mA
	Continuous currents	50 mA
Peak voltage (Load resistance 1KOhm)	Impulsive currents	100 V
	Diadynamic currents	70 V
	Continuous currents	50V
Output channels		2 independent
Storable protocols in the user memory:		---
Storable patient's cards in the user memory:		---
Storable protocols in the USB key:		---
Storable patient's cards in the USB key:		---

ULTRASOUND MODULE		
Programmable treatment time	Up to 30 minutes	
Emission	Continuous / Pulsed	
Emission frequency	1 MHz and 3 MHz \pm 15%	
Adjustable Duty Cycle:	(10 \div 100) %	
Adjustable Frequency Duty Cycle	(10 \div 100)Hz	
Continuous peak power	2 W / cm ² \pm 20%	
Pulsed peak power	3 W / cm ² \pm 20%	
Output channels	1	
ERA (Effective Radiating Area)	TV1	1.0 cm ²
	TV3	3.0 cm ²
	TV5	5.0 cm ²
	TV8	8.0 cm ²
BNR (Beam Non-Uniformity Ratio)	TV1	Max 5:1
	TV3	Max 5:1
	TV5	Max 5:1
	TV8	Max 5:1
Storable protocols in the user memory:	---	
Storable patient's cards in the user memory:	---	
Storable protocols in the USB key:	---	
Storable patient's cards in the USB key:	---	

MAGNETOTHERAPY MODULE	
Programmable treatment time	Up to 99 minutes
Adjustable Duty Cycle:	(10 \div 100) %
Programmable treatment frequency:	(1 - 100)Hz
Maximum induction:	100 Gauss \pm 20%
Output channels	1
Storable protocols in the user memory:	---
Storable patient's cards in the user memory:	---
Storable protocols in the USB key:	---
Storable patient's cards in the USB key:	---

LASER MODULE		
Programmable treatment time	Up to 99 minutes	
Interlock socket/Safety key (contacts normally closed)	3 contact DIN socket	
Diode Laser wave length emission	905 nm	
<u>Laser classification according to EN 60825-1</u>	<u>3B</u>	
OD (Optic density) 25 mW	0.1	
OD (Optic density) 100 mW	0.7	
Programmable pulse frequency	(100 - 10.000) Hz	
Pulse duration	100 nsec	
Pulsed mode	(10 ÷ 100) %	
Peak power for single diode	100 W	
Total peak power: depending on the handpiece (See Accessories)		
Target pointing device characteristics	<u>Target pointing device in conformity with the UNI EN 60601-2-22 standard</u>	<u>Light-drive</u>
	<u>Light-drive device</u>	<u>Led-diode</u>
	<u>Light-drive color</u>	<u>Red</u>
	<u>Light-drive representation on the impact point</u>	<u>Spot with red as colour</u>
Typology for emission of the treatment	Automatic emission	
	Continuous emission	
Output channels	1	
Storable protocols in the user memory:	---	
Storable patient's cards in the user memory:	---	
Storable protocols in the USB key:	---	
Storable patient's cards in the USB key:	---	

LASER PROBES SPECIFICATION	
MLA1 (25) – pulsed laser diode	
Number of laser diodes	1
Wavelength	905nm
Divergence of the beam	192x436mrad
Duration of the impulse	100ns
Programmable pulse frequency	100 – 10.000 Hz
Peak power	25 W
EMP (Maximum allowed exposure) single pulse	5,14 mJ/m ²
EMP (Maximum allowed exposure) pulse train	2,06 mJ/m ²
EMP (Maximum allowed exposure) average	2,57 mJ/m ²
DNRO (Nominal eye-hazard distance) direct light	116.3 mm
MLA1 (100) – pulsed laser diode	
Number of laser diodes	1
Wavelength	905nm
Divergence of the beam	192x436mrad
Duration of the impulse	100 ns
Programmable pulse frequency	100 – 10.000 Hz
Peak power	100W
EMP (Maximum allowed exposure) single pulse	5,14 mJ/m ²
EMP (Maximum allowed exposure) pulse train	2,06 mJ/m ²
EMP (Maximum allowed exposure) average	2,57 mJ/m ²
DNRO (Nominal eye-hazard distance) direct light	251 mm

MLA3 (75) – pulsed laser diode	
Number of laser diodes	3
Wavelength	905nm
Divergence of the beam	192x436mrad
Duration of the impulse	100ns
Programmable pulse frequency	100 – 10.000 Hz
Peak power	75 W
EMP (Maximum allowed exposure) single pulse	5,14 mJ/m ²
EMP (Maximum allowed exposure) pulse train	2,06 mJ/m ²
EMP (Maximum allowed exposure) average	2,57 mJ/m ²
DNRO (Nominal eye-hazard distance) direct light	116.3 mm
MLA3 (300) – pulsed laser diode	
Number of laser diodes	3
Wavelength	905nm
Divergence of the beam	192x436mrad
Duration of the impulse	100 ns
Programmable pulse frequency	100 – 10.000 Hz
Peak power	300 W
EMP (Maximum allowed exposure) single pulse	5,14 mJ/m ²
EMP (Maximum allowed exposure) pulse train	2,06 mJ/m ²
EMP (Maximum allowed exposure) average	2,57 mJ/m ²
DNRO (Nominal eye-hazard distance) direct light	251 mm

MLA5 (125) – pulsed laser diode	
Number of laser diodes	5
Wavelength	905nm
Divergence of the beam	192x436mrad
Duration of the impulse	100ns
Programmable pulse frequency	100 – 10.000 Hz
Peak power	125 W
EMP (Maximum allowed exposure) single pulse	5,14 mJ/m ²
EMP (Maximum allowed exposure) pulse train	2,06 mJ/m ²
EMP (Maximum allowed exposure) average	2,57 mJ/m ²
DNRO (Nominal eye-hazard distance) direct light	116.3 mm
MLA5 (500)– diodo laser pulsato	
Number of laser diodes	5
Wavelength	905nm
Divergence of the beam	192x436mrad
Duration of the impulse	100 ns
Programmable pulse frequency	100 – 10.000 Hz
Peak power	500 W
EMP (Maximum allowed exposure) single pulse	5,14 mJ/m ²
EMP (Maximum allowed exposure) pulse train	2,06 mJ/m ²
EMP (Maximum allowed exposure) average	2,57 mJ/m ²
DNRO (Nominal eye-hazard distance) direct light	251 mm

TECAR MODULE	
Programmable treatment time	Up to 60 minutes
Peak Power	200 Wpk max
Adjustable power	0 - 100%
Supplied handpieces	Handpieces holding-electrodes resistive electrodes
	Handpieces holding-electrodes capacitive electrodes
Output channels	1 single connector for resistive and capacitive handpiece
	1 connector for the return plate
Emission frequency of the handle	445 kHz
Type of used electrodes	Resistive, made of stainless steel
	Capacitive, made of stainless steel and covered with nylon
Diameter of the capacitive and resistive electrodes	Diameter 30 mm
	Diameter 50 mm
	Diameter 70 mm
Storable protocols in the user memory:	---
Storable patient's cards in the user memory:	---
Storable protocols in the USB key:	---
Storable patient's cards in the USB key:	---

HIGH POWER LASER MODULE		
Programmable treatment time	Fino a 99 minuti	
Interlock socket / security key (normally closed contacts)	Pres a DIN a 3 Contatti	
Maximum power	4W \pm 20%	
Emission wavelength Laser Diode	980 nm	
Laser classification	4	
DNRO (m)	1.445 m	
Divergence of the beam	443,3 mrad	
MPE	36,3 W/m ²	
Laser emission mode	PW e CW	
Percentage of emitted power selectable	0% - 100%	
Frequency of issue	100 Hz – 10000 Hz	
Percentage of emitted power selectable	10% - 100%	
Laser source type	Diode laser	
	Source installed on the module	
Laser probe pointing device	Contact treatment	
Treatment implementation command	Via footswitch	
Output channels	1	
Minimum optical density (protection factors for goggles required for the minimum distance indicated)	2.3 (0.1 m of distance)	
Configuration of the laser probe	Made of optical fiber	
	Defocused	
	Non-integral laser probe with module, SMA connector for laser probe connection	
Security checks	Current laser source feedback	
	Laser probe connection to module	
	Interlock presence	
Distance of the laser emission point from the skin	POSITION 1 (on contact)	6 mm

	POSITION 2	13 mm
	POSITION 3	21 mm
	POSITION 4	28 mm
Diametro dello spot incidente sulla pelle del paziente trattato	POSITION 1 (on contact)	10 mm
	POSITION 2	15 mm
	POSITION 3	20 mm
	POSITION 4	25 mm
Area of the incident spot on the treated patient's skin	POSITION 1 (on contact)	0.78 cm ²
	POSITION 2	1.76 cm ²
	POSITION 3	3.14 cm ²
	POSITION 4	4.90 cm ²
Protocols that can be stored on the user memory		--
Protocols that can be stored on USB		--

APPENDICES

Annex A - ENVIRONMENTAL CONSIDERATIONS

The equipment for combined therapy POLYTER VET, has been designed and manufactured to have minimal negative environmental impact, in line with its operational and safety requirements.

Rigorous standards were followed in order to minimize the amount of waste, use of toxic materials, noise, non-required radiation and energy consumption.

In accordance with careful research, the unit has been designed to optimize power consumption in keeping with energy saving principles.



This symbol means that the product should not be disposed of as domestic waste, because it may also contain an internal battery.

The user must dispose of scrap equipment by taking it to a recognized electrical and electronic recycling center.

Annex B – LABELS

Symbol	Meaning
	Product certification
	Applied part BF
	Manufacturer
	Date of manufacture
	Consult instructions for use
	Attention, check the accompanying documents of the product
	The product must be disposed of as “electronic waste”, not as “domestic waste”, because it may also contain an internal battery.
	Input characteristics
	Network power supply
	Fuses : 2xT1.6AL250V / 2xT3.15AL250V
	Absorbed power
	Network emission frequency
	Device model
	Serial number
	Output characteristics
	Output voltage of the device
	Output current of the device

Symbol	Meaning
	Output frequency of the device
	Output power supply
	Duty-cycle step
	Temperature range
	Atmospheric pressure range
	Humidity range

Table 1

Labels	Meaning
	Label showing devices sensitivity to electrostatic charges, placed near the USB connector used to program the equipment.

Table 2

Labels for US module	Meaning
 Model: TV5 1-3 Ref: TV5POE Frequency: 1/3 MHz BNR: Max 5:1 ERA: 5.0cmq Output Power Cont / Puls: 10W/15W (+/-20%) Beam Type: Divergent	Labels on the handpiece of ultrasounds module, with properties.
 Model: TV1 1-3 Ref: TV1POE Frequency: 1/3 MHz BNR: Max 5:1 ERA: 1.0cmq Output Power Cont / Puls: 2W/3W (+/-20%) Beam Type: Divergent	
 Model: TV3 1-3 Ref: TV3POE Frequency: 1/3 MHz BNR: Max 5:1 ERA: 3.0cmq Output Power Cont / Puls: 6W/9W (+/-20%) Beam Type: Divergent	

 Model: TV8 1-3 Ref: TV8POE Frequency: 1/3 MHz BNR: Max 5:1 ERA: 8.0cmq Output Power Cont / Puls: 16W/24W (+/-20%) Beam Type: Divergent	
---	--

Table 3

Labels for TC module	Meaning
	Label indicating the presence of output RadioFrequency signal, placed near the connector for tecar-therapy handpieces.

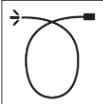
Table 4

Labels for LASER LL module	Meaning										
	"INTERLOCK" label , situated on the front panel of the device near the interlock connector.										
	Label indicating "laser emission" placed near the connector of the laser probe.										
 MAXIMUM OUTPUT LASER RADIATION (MLA1-25): 25W I.R. MAXIMUM OUTPUT LASER RADIATION (MLA1-100): 100W I.R. MAXIMUM OUTPUT LASER RADIATION (MLA3-75): 3x25W I.R. MAXIMUM OUTPUT LASER RADIATION (MLA3-300): 3x100W I.R. MAXIMUM OUTPUT LASER RADIATION (MLA5-125): 5x25W I.R. MAXIMUM OUTPUT LASER RADIATION (MLA5-500): 5x100W I.R. PULSE DURATION (ALL PROBES): 100ns EMITTED WAVELENGTH (ALL PROBES): 905nm STANDARD IEC EN 60825-1:2014	Label on the rear panel of the display, showing the characteristics of the laser probe: <table border="1"> <thead> <tr> <th>Texts on the label</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Maximum output laser radiation (MLA1 – 25): 25W I.R</td> <td>Maximum output laser radiation (MLA1 – 25): 25W I.R</td> </tr> <tr> <td>Maximum output laser radiation (MLA1 – 100): 100W I.R</td> <td>Maximum output laser radiation (MLA1 – 25): 25W I.R</td> </tr> <tr> <td>Maximum output laser radiation (MLA3 – 75): 3x25W I.R</td> <td>Maximum output laser radiation (MLA3 – 75): 3x25W I.R</td> </tr> <tr> <td>Maximum output laser radiation (MLA3 – 300): 3x100 W I.R</td> <td>Maximum output laser radiation (MLA3 – 300): 3x100 W I.R</td> </tr> </tbody> </table>	Texts on the label	Meaning	Maximum output laser radiation (MLA1 – 25): 25W I.R	Maximum output laser radiation (MLA1 – 25): 25W I.R	Maximum output laser radiation (MLA1 – 100): 100W I.R	Maximum output laser radiation (MLA1 – 25): 25W I.R	Maximum output laser radiation (MLA3 – 75): 3x25W I.R	Maximum output laser radiation (MLA3 – 75): 3x25W I.R	Maximum output laser radiation (MLA3 – 300): 3x100 W I.R	Maximum output laser radiation (MLA3 – 300): 3x100 W I.R
Texts on the label	Meaning										
Maximum output laser radiation (MLA1 – 25): 25W I.R	Maximum output laser radiation (MLA1 – 25): 25W I.R										
Maximum output laser radiation (MLA1 – 100): 100W I.R	Maximum output laser radiation (MLA1 – 25): 25W I.R										
Maximum output laser radiation (MLA3 – 75): 3x25W I.R	Maximum output laser radiation (MLA3 – 75): 3x25W I.R										
Maximum output laser radiation (MLA3 – 300): 3x100 W I.R	Maximum output laser radiation (MLA3 – 300): 3x100 W I.R										

	Maximum output laser radiation (MLA5 – 125): 5x25 W I.R	Maximum output laser radiation (MLA5 – 125): 5x25 W I.R									
	Maximum output laser radiation (MLA5 – 500): 5x100 W I.R	Maximum output laser radiation (MLA5 – 500): 5x100 W I.R									
	PULSE DURATION (ALL PROBES): 100 ns	PULSE DURATION (ALL PROBES): 100 ns									
	EMITTED WAVE LENGTH (ALL PROBES): 905 nm	EMITTED WAVE LENGTH (ALL PROBES): 905 nm									
	STANDARD IEC EN 60825-1:2014	Reference standard									
	Label on the rear panel of the display, showing the characteristics of the laser probe:										
	<table border="1"> <thead> <tr> <th>Texts on the label</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Warning</td> <td>Warning</td> </tr> <tr> <td>Invisible laser radiation</td> <td>Presence of invisible laser radiation</td> </tr> <tr> <td>Avoid unnecessary exposure</td> <td>Avoid a direct exposure to laser beam</td> </tr> <tr> <td>Class 3B laser product</td> <td>Product with 3B as laser class</td> </tr> </tbody> </table>	Texts on the label	Meaning	Warning	Warning	Invisible laser radiation	Presence of invisible laser radiation	Avoid unnecessary exposure	Avoid a direct exposure to laser beam	Class 3B laser product	Product with 3B as laser class
Texts on the label	Meaning										
Warning	Warning										
Invisible laser radiation	Presence of invisible laser radiation										
Avoid unnecessary exposure	Avoid a direct exposure to laser beam										
Class 3B laser product	Product with 3B as laser class										
	Label indicating "LASER OPENING", placed near the firing part of the laser probe.										
	Label indicating mandatory reading of instructions, located on the front panel of the device or near the output connectors.										

Table 5

Labels for LASER LL module	Meaning
	"INTERLOCK" label , situated on the interlock connector.
	Label indicating "laser emission" placed near the connector of the laser probe.

	<table border="1"> <thead> <tr> <th>Texts on the label</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Warning</td> <td>Warning</td> </tr> <tr> <td>Invisible laser radiation</td> <td>Presence of invisible laser radiation</td> </tr> <tr> <td>Avoid unnecessary exposure</td> <td>Avoid a direct exposure to laser beam</td> </tr> <tr> <td>Class 3B laser product</td> <td>Class 4 laser product</td> </tr> </tbody> </table>	Texts on the label	Meaning	Warning	Warning	Invisible laser radiation	Presence of invisible laser radiation	Avoid unnecessary exposure	Avoid a direct exposure to laser beam	Class 3B laser product	Class 4 laser product
Texts on the label	Meaning										
Warning	Warning										
Invisible laser radiation	Presence of invisible laser radiation										
Avoid unnecessary exposure	Avoid a direct exposure to laser beam										
Class 3B laser product	Class 4 laser product										
	Label indicating "LASER OPENING", placed near the firing part of the laser probe.										
	Label "Emergency STOP".										
	FIBER OPTIC label.										
	"FOOTSWITCH" label located on the front panel of the machine near the connector for the pedal.										
	Label indicating mandatory reading of instructions, located on the front panel of the device or near the output connectors.										
	Label on the right side panel of the display showing the laser characteristics (IR).										

Appendix C – LIST OF TREATMENTS

LEGEND:

ANIMAL DIMENSIONS:

- SMALL SIZE (s)
- MEDIUM SIZE (m)
- LARGE SIZE (L)

PATHOLOGIES PROTOCOLS

1. ACUTE TRAUMATIC PATHOLOGY (AT)
2. ACUTE INFLAMMATORY PATHOLOGY (AI)
3. SUB-ACUTE PATHOLOGY (SA)
4. CHRONIC PATHOLOGY (CRO)

ELECTROTHERAPY TREATMENTS

To carry out the electrotherapy treatment correctly, it is necessary to moisten the sponges before applying them to the animal. It is also recommended to put ultrasound gel in the application area to increase conduction.

	AT s	AT m	AT L	AI s	AI m	AI L	SA s	SA m	SA L	CRO s	CRO m	CRO L
Waveform	interf	interf	interf	Tens burst	Tens burst	Tens burst	tens	tens	tens	Cp *	Cp*	Cp*
Time (min)	15	15	50	20	20	20	20	20	20	15	15	20
Polarity	P	P	P	P	P	P	P	P	P	P	P	P
½ t inversion	no	no	no	no	no	no	no	no	no	no	no	no
Work mode	cont	cont	cont	cont	cont	cont	cont	cont	cont	cont	cont	cont

* Cp = short period

ULTRASOUND TREATMENTS

For better ultrasound conduction, it is necessary to interpose a layer of conductive ultrasound gel between the applicator handpiece and the area to be treated.

	AT s	AT m	AT L	AI s	AI m	AI L	SA s	SA m	SA L	CRO s	CRO m	CRO L
Frequency (Hz)	20	25	30	15	16	20	50	50	65	80	100	100
W /cm²	1,0	1,2	1,6	0,6	0,8	1,00	1,2	1,4	1,6	1,4	1,6	2,00
1-3 MHZ	3	3	3	3	3	3	1	1	1	1	1	1
Time (min)	8	10	12	6	8	10	8	10	12	10	12	15
Duty Cycle %	30	30	30	40	40	40	70	70	70	100	100	100

LOW POWER LASER TREATMENTS (MLA1 / 100 handpiece)

The laser therapy treatment must be carried out keeping the laser handpiece perpendicular to the area to be treated.

	AT s	AT m	AT L	AI s	AI m	AI L	SA s	SA m	SA L	CRO s	CRO m	CRO L
Area cm²	9	36	80	9	36	80	9	36	80	16	50	90
Frequency Hz	2000	2000	2000	5000	5000	5000	7000	7000	7000	10000	10000	10000
Time min	7	8	10	7	8	10	8	10	12	8	10	12
Duty cycle%	30	30	30	20	20	20	70	70	70	100	100	100
Work mode	cont	cont	cont	cont	cont	cont	cont	cont	cont	cont	cont	cont
Power* mW	20	20	20	50	50	50	70	70	70	100	100	100
Density* J/cm²	0,28	0,08	0,045	0,467	0,133	0,075	2,613	0,817	0,441	3,0	1,2	0,8
Energy* J	2,52	2,88	3,60	4.20	4,80	6	23,52	29,4	35,28	48,0	60,0	72,0

* values calculated by polyter with MLA1 / 100 handpiece.

MAGNETOTHERAPY TREATMENTS

While delivering the magnetotherapy treatment, keep the animal which is being treated away from man. Since the treatment sessions are relatively long, it is necessary to make sure that the animal is calm and relaxed.

	AT s	AT m	AT L	AI s	AI m	AI L	SA s	SA m	SA L	CRO s	CRO m	CRO L
Power G. 0-100	40	50	60	20	30	40	50	60	70	80	100	100
Frequency 0-200 Hz	70	70	70	50	50	50	120	120	120	200	200	200
Time min	15	20	25	6	10	15	15	20	25	20	25	30
Duty cycle %	50	50	50	30	30	30	70	70	70	100	100	100

TECAR TREATMENTS

For the correct and effective execution of the tecar therapy treatment it is necessary to use the specific conductive cream by applying it both on the handpiece and on the return plate. The preferable area where to apply the neutral return plate is under the belly. Before applying this plate, cover it with the specific conductive cream and then block it with an elastic band.

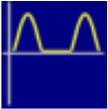
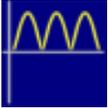
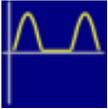
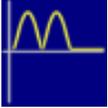
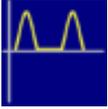
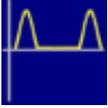
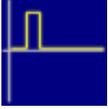
	AT s	AT m	AT L	AI s	AI m	AI L	SA s	SA m	SA L	CRO s	CRO m	CRO L
CAP-RES	C	C	C	C	C	C	C	C	C	R	R	R
Time min	10	15	20	10	15	20	12	18	25	12	18	25
Power (l-m-h)	L-20%	L-20%	L-20%	L-20%	L-20%	M-45%	M-45%	M-45%	M-45%	M-45%	M-45%	H-70%
Athermy-Omeot-Hypert	O	O	O	A	A	A	O	O	H	H	H	H
Work mode	cont											

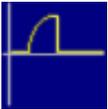
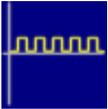
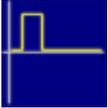
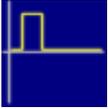
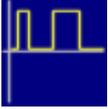
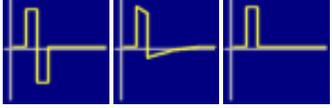
HIGH POWER LASER TREATMENTS

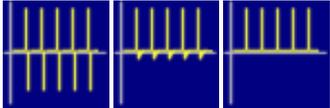
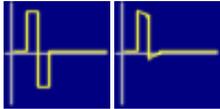
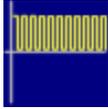
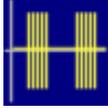
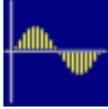
The laser therapy treatment must be carried out keeping the laser handpiece perpendicular to the area to be treated.

	AT s	AT m	AT L	AI s	AI m	AI L	SA s	SA m	SA L	CRO s	CRO m	CRO L
Power	3	3	3	2	2	2	3	3	3	4	4	4
Duty cycle %	30%	30%	30%	50%	50%	50%	70%	70%	70%	100%	100%	100%
Time min	5	7	10	5	7	10	7	10	12	5	8	12
Area cm²	9	36	80	9	36	80	9	36	80	16	50	90
Frequency *	7500	7500	7500	5000	5000	5000	7500	7500	7500	10000	10000	10000
Energy J*	270	378	540	300	420	600	882	1260	1512	1200	1920	2880

Appendix D – WAVEFORMS

N°	Name of the current waveform		Output time [sec]	Decay time[sec]	Action time [sec]	Pause time [sec]	Pulse duration	Frequency [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
			Min time [sec]	Max time [sec]	Monophase duration [sec]	Diphase duration [sec]	Frequency A [Hz]	Frequency B [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
1	MONOPHASE*		/	/	/	/	20ms	50
			/	/	/	/	/	/
2	DIPHASE*		/	/	/	/	10ms	100
			/	/	/	/	/	/
3	SYNCHOPED MONOPHASE*		1 (0 ÷ 30)	1 (0 ÷ 30)	6 (1 ÷ 120)	5 (0 ÷ 120)	20ms	50
			/	/	/	/	/	/
4	SYNCHOPED DIPHASE*		1 (0 ÷ 30)	1 (0 ÷ 30)	6 (1 ÷ 120)	5 (0 ÷ 120)	10ms	100
			/	/	/	/	/	/
5	SHORT PERIOD*		/	/	/	2 (0 ÷ 120)	20ms MONOPHASE 10ms DIPHASE	50 MONOPHASE 100 DIPHASE
			/	/	1 (1 ÷ 60)	1 (1 ÷ 60)	/	/
6	LONG PERIOD*		/	/	/	6 (0 ÷ 30)	20ms MONOPHASE 10ms DIPHASE	50 MONOPHASE 100 DIPHASE
			/	/	6 (1 ÷ 60)	6 (1 ÷ 60)	/	/
7	RECTANGULAR*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	5 (0 ÷ 120)	500 us (100us ÷ 9.0ms)	/
			1 (0 ÷ 120)	3 (1 ÷ 120)	/	/	50 (1 ÷ freq.B) *2	100 (freq.A ÷ 250) *2

N°	Name of the current waveform		Output time [sec]	Decay time[sec]	Action time [sec]	Pause time [sec]	Pulse duration	Frequency [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
			Min time [sec]	Max time [sec]	Monophase duration [sec]	Diphase duration [sec]	Frequency A [Hz]	Frequency B [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
8	ESPONENTIAL*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	5 (0 ÷ 120)	500 us (100us ÷ 9.0ms)	/
			1 (0 ÷ 120)	3 (1 ÷ 120)	/	/	50 (1 ÷ freq.B) *2	100 (freq.A ÷ 250) *2
9	TRIANGULAR*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	5 (0 ÷ 120)	500 us (100us ÷ 9.0ms)	/
			1 (0 ÷ 120)	3 (1 ÷ 120)	/	/	50 (1 ÷ freq.B) *2	100 (freq.A ÷ 250) *2
10	TRAEBERT*		/	/	/	Pulse pause :5.0 ms (100 us - 2 s)	2.0ms (100us ÷ 2s)	140
			/	/	/	/	/	/
11	RECTANGULAR PHARADIC*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	5 (0 ÷ 120)	500 us (100us ÷ 9.0ms)	/
			1 (0 ÷ 120)	3 (1 ÷ 120)	/	/	50 (1 ÷ freq.B) *2	100 (freq.A ÷ 250) *2
12	MODULATED PHARADIC*		1 (0 ÷ 30)	1 (0 ÷ 30)	6 (1 ÷ 120)	5 (0 ÷ 120)	1.0ms (100us ÷ 9.0ms)	100 (1 ÷ 250)
			/	/	/	/	/	/
13	TRIANGULAR NEODYNAMIC*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	0 (0 ÷ 120)	/	/
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	200 (1 ÷ freq.B) *2	200 (freq.A ÷ 250) *2
14	NEODYNAMIC*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	0 (0 ÷ 120)	/	/
			3 (0 ÷ 120)	3 (1 ÷ 120)	/	/	200 (1 ÷ freq.B) *2	200 (freq.A ÷ 250) *2
15	TENS S/A/R*		1 (1 ÷ 30)	1 (1 ÷ 30)	/	3 (0 ÷ 120)	100us (50us ÷ 1ms)	/
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	100 (1 ÷ freq.B) *2	100 (freq.A ÷ 250) *2

N°	Name of the current waveform		Output time [sec]	Decay time[sec]	Action time [sec]	Pause time [sec]	Pulse duration	Frequency [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
			Min time [sec]	Max time [sec]	Monophase duration [sec]	Diphase duration [sec]	Frequency A [Hz]	Frequency B [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
16	TENS RANDOM S/A/R*		/	/	1 (1 ÷ 120)	1 (0 ÷ 120)	50us (50us ÷ 1s)	100 (1 ÷ 200)
			/	/	/	/	/	/
17	TENS BURST S/A/R*		/	/	1 (1 ÷ 120)	1 (0 ÷ 120)	50us (50us ÷ 1s)	/
			/	/	/	/	100 (1 ÷ 200) *3	2 (1 ÷ 10) *3
18	BIPHASIC S/A*		1 (1 ÷ 30)	1 (1 ÷ 30)	/	3 (0 ÷ 120)	250us (50us ÷ 2ms)	/
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	100 (1 ÷ freq.B) *2	100 (freq.A ÷ 250) *2
19	GALVANIC (IONOPHORESIS)*		/	/	1 (1 ÷ 120)	0 (0 ÷ 120)	/	/
			/	/	/	/	/	/
20	INTERRUPTED GALVANIC (IONTOPHORESIS)*		/	/	1 (1 ÷ 120)	0 (0 ÷ 120)	/	8000 (2000 ÷ 8000)
			/	/	/	/	/	/
21	KOTZ RUSSIAN CURRENT		/	/	1 (1 ÷ 120)	0 (0 ÷ 120)	/	/
			/	/	/	/	2500 (1000 ÷ 5000) *4	50 (1 ÷ 250) *4
22	INTERPHERENTIAL		1 (0 ÷ 30)	1 (0 ÷ 30)	/	2 (0 ÷ 30)	/	2500 (2500 o 4000) *5
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	1 (0 ÷ freq.B) *2	2 (freq.A ÷ 250) *2
23	CLASSIC INTERPHERENTIAL*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	2 (0 ÷ 120)	/	2500 (2500 o 4000) *5
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	50 (0 ÷ freq.B) *2	120 (freq.A ÷ 250) *2

N°	Name of the current waveform		Output time [sec]	Decay time[sec]	Action time [sec]	Pause time [sec]	Pulse duration	Frequency [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
			Min time [sec]	Max time [sec]	Monophase duration [sec]	Diphase duration [sec]	Frequency A [Hz]	Frequency B [Hz]
			Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)	Default (Range)
24	ISOPLANAR INTERPHERENTIAL*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	2 (0 ÷ 120)	/	2500 (2500 o 4000) *5
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	50 (0 ÷ freq.B) *2	120 (freq.A ÷ 250) *2
25	VECTORIAL INTERPHERENTIAL*		1 (0 ÷ 30)	1 (0 ÷ 30)	/	2 (0 ÷ 120)	/	2500 (2500 o 4000) *5
			0 (0 ÷ 120)	1 (1 ÷ 120)	/	/	50 (0 ÷ freq.B) *2	120 (freq.A ÷ 250) *2

Note: S -> simmetric, A -> asimmetric, R -> rectangular.

*Non-zero average value currents;

*2 the general range of variation of frequency is (0 Hz ÷ 250 Hz).

*3 in the waveform TENS BURST S/A/R the Frequency A and the Frequency B represent, respectively, the frequency TENS and the frequency BURST with their range of variation.

*4 in the waveform KOTZ RUSSIAN CURRENT the Frequency A and the Frequency B represent, respectively, the CARRIER frequency and the MODULATION frequency with their range of variation.

*5 in the waveforms INTERPHERENTIAL, INTERPHERENTIAL CLASSIC, INTERPHERENTIAL ISOPLANAR, INTERPHERENTIAL VECTORIAL the Frequency represents the CARRIER Frequency.

IMPORTANT: the following waveforms INTERPHERENTIAL CLASSIC, INTERPHERENTIAL ISOPLANAR and INTERPHERENTIAL VECTORIAL can only be used on channels CH1+CH2.

APPNEDIX E - ELECTROMAGNETIC COMPATIBILITY TABLES

Guidance and manufacturer's declaration – electromagnetic emissions		
The ME EQUIPMENT is intended for use in the electromagnetic environment specified below. The customer or the user of the EM EQUIPMENT should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF Emissions CISPR 11	Group 1	The EM EQUIPMENT uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	The ME EQUIPMENT is suitable for use in all establishments, other than domestic establishments and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes .
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and MANUFACTURER'S declaration – electromagnetic IMMUNITY			
The ME EQUIPMENT is intended for use in the electromagnetic environment specified below. The customer or the user of the ME EQUIPMENT should assure that it is used in such an environment.			
Immunity test	Test level IEC 60601	Test level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8kV contact	± 8kV contact	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
	± 2; 4; 8; 15 kV air	± 2; 4; 8; 15 kV air	
Electrical fast transient/burst IEC 61000-4-4	± 2kV per powersupply lines	± 2kV per powersupply lines	Mains power quality should be that of a typical commercial or hospital environment.
	± 8kV for input / output lines	NOT APPLICABLE	
Surge IEC 61000-4-5	± 1kV line(s) to line(s)	± 1kV line(s) to line(s)	Mains power quality should be that of a typical commercial or hospital environment.
	± 2kV line(s) to earth	± 2kV line(s) to earth	
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% U _T for 0,5 cycles	0% U _T for 0,5 cycles	The quality of the mains voltage must be that of a typical commercial or hospital premises. If the user of the ME EQUIPMENT requires continued operation during power mains interruptions, it is recommended that the ME EQUIPMENT be powered from an uninterruptible power supply or a battery.
	0% U _T for 1 cycles	0% U _T for 1 cycles	
	70% U _T for 25 cycles	70% U _T for 25 cycles	
	0% U _T for 250 cycles	0% U _T for 250 cycles	
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3 A / m	Not applicable, the device does not contain components susceptible to magnetic fields	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment
NOTE: U _T is the AC mains voltage before the application of the test level			

Guide and declaration of the manufacturer - electromagnetic immunity			
The ME EQUIPMENT is designed to work in the electromagnetic environment specified below. The client or user of the ME EQUIPMENT should ensure that it is used in this environment Portable and mobile RF communications equipment should not be used closer to any part of, including cables, than the recommended separation distance calculated with the equation applicable to the transmitter frequency.			
Immunity test	Trial level of the IEC 60601	Level of compliance	Recommended separation distance d:
Conducted RF IEC 61000-4-6	3 V _{eff} from 150kHz to 80 MHz	3 V _{eff}	d= 30 cm
Radiated RF IEC 61000-4-3	3 V/m from 80 MHz to 2,7 GHz	3 V/m	d= 30 cm
Immunity to proximity fields from wireless RF communication devices IEC 61000-4-3*	TETRA 400 380 – 390 MHz	27 V/m	27 V/m
	GMRS 460 FRS 460 430 – 170 MHz	28 V/m	28 V/m
	LTE Band 13, 17 704 – 787 MHz	9 V/m	9 V/m
	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5 800 960 MHz	28 V/m	28 V/m
	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 5 1700 – 1990 MHz	28 V/m	28 V/m
	Bluetooth, WLAN, 802.11 b/g/n, RIFD 2450, LTE Band 70 2400 – 2570 MHz	28 V/m	28 V/m
	WLAN 802.11 a/n 5100 – 5800 MHz	9 V/m	9 V/m
			d= 30 cm

*For these devices, Proximity Field Immunity tests from wireless RF communication devices are not applied.



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