

# MAGNETO 2 - 4



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## USER'S MANUAL

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## INTRODUCTION

### PHYSICS AND EFFECTS OF MAGNETIC FIELDS

The magnetic fields used in medical applications are low and very low frequency fields (0-100 Hz) with intensity that varies from 5 to 100 Gauss (**ELF=extremely low frequency**).

They are *variable* magnetic fields, i.e. products that send a current into the circuit (the solenoid).

If the current is varied, different wave forms can be created, and therefore, different types of magnetic fields.

The vast number of studies made on the biological action of magnetic fields demonstrate that they can cause different effects on living material in accordance with the field attributes on the one hand (orientation, intensity, frequency), and the susceptibility of the individual on the other hand, i.e. in his/her dielectric properties.

The most important phenomenon that occurs in biological tissue exposed to a pulsed magnetic field is the onset of induced micro-currents.

But how do these micro-currents interact with the organism?

As an example, we'll start by saying that most of the protein macromolecules, called biopolymers, have piezoelectric properties and behave as transducers, so that any mechanical variation applied, be it thermal or electromagnetic, will cause a variation in their electric states.

A harmful event like a trauma, can cause a depolarisation of these protein structures and reduce the trans-membranous electric potential of the cell.

The micro-currents induced by the magnetic therapy repolarise the biopolymers, re-establishing the correct electric potential, accelerating ionic movement, and resuming enzymatic kinetics: re-integrating tissue functions.

A classification of the general biological effects of the low frequency, static, and variable magnetic fields used in medicine is shown in the following table .

PRIMARY	SECONDARY
<ul style="list-style-type: none"> <li>• <b>Magnetic-mechanical Cellular:</b> <ul style="list-style-type: none"> <li>• cellular membrane</li> <li>• orientation of the subcellular organelles and macromolecules (magnetosomes Fe<sub>3</sub>O<sub>4</sub>)</li> <li>• concentration of gradients, rotation, transfer of paramagnetic molecules (metalloprotein, cytochromes, molecular oxygen, free radicals)</li> <li>• orientation and interaction on electric dipoles and diamagnetic substances (retinal rods, nucleic acids, enzymatic reactions)</li> </ul> </li> <li>2. <b>Magnetic-electric</b> <ul style="list-style-type: none"> <li>• induction of currents in the junction systems of cellular membranes</li> <li>• induction of micro-currents (<math>\mu\text{A}/\text{cm}^2</math>)</li> <li>• In conductive tissues</li> <li>• in endovasal blood where the vessels are exposed to orthogonal magnetic fields</li> <li>• Gaussian effect (modification of the electric resistance of the electric charges in movement)</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>1. <b>Chemical:</b></li> <li>2. <b>Physio-chemical:</b> <ul style="list-style-type: none"> <li>• modification of the diffusion coefficients of the cellular membranes</li> <li>• modification of the speed of movement of the biological liquids in the vessels and intercellular spaces</li> <li>• modification action on osmotic pressure</li> </ul> </li> <li>3. <b>Physical:</b> <ul style="list-style-type: none"> <li>on nucleic acids, water, mucopolysaccharide acids; Electromagnetic effects (Hall, Etinghausen and Nernst effect)</li> </ul> </li> <li>4 <b>Thermic:</b> <ul style="list-style-type: none"> <li>negligible for field intensities less than 1000 G and frequencies less than MHz</li> </ul> </li> <li>5. <b>Athermic effects:</b> resonance and coherency linked to the biological substratum that receives incident impulses.</li> </ol>
<p><b>Biological effects on apparatuses and systems</b></p> <pre> graph TD     A[Biological effects on apparatuses and systems] --&gt; B[1. IMMUNE SYSTEM]     A --&gt; C[2. BONE TISSUE]     A --&gt; D[3. S.N.C.]     A --&gt; E[4. ENDOCRINE GLANDS]     A --&gt; F[5. BLOOD]             </pre>	

**Table 1:** Classification of the biological effects of application of magnetic fields on cellular tissues.  
(by F. Bistolfi: magnetic fields in medicine. Pub. Minerva Medica-Torino. **Updated**).

It is clear that under the influence of pulsed, low intensity and low frequency magnetic fields, numerous biophysical effects are produced in our bodies at various compositional levels of the living matter (cellular, tissue, parts of the organism and the system) depending on the primary magnetic-mechanical and magnetic-electrical interactions :

1) basic general action by magnetic fields on **the plasmatic membrane** as shown by the more significant experimental data studied by us:

- modification of the membrane *permeability* and therefore the ionic equilibrium on both its sides (improvement in ionic exchange and increase in oxygen uptake and use);
- influence on the *flow of ions* (especially calcium) through the membrane itself with its action dependant on the frequency used (greater oxygen uptake and therefore energy for the mechanisms that drive the ionic pumps);
- influence on many *enzymatic intracellular systems* and on the membrane;
- influence on the *relationship between antigens and antibodies*;
- influence *on the layout and orientation of the molecules* that are on the sides of the membrane and that have their own magnetic moments and are involved in those biological processes that need steric positions imposed by the molecules in order to develop (active transport, hormone-receptor complexes, transmitter-receptor enzymatic reactions, antigen-antibody reactions, etc.)

2) **on the blood**: beneficial action on the *vessel diameter* and on the *viscosity of blood* with improvement of local circulatory conditions and oxygen pressure (hypervascularization). This also explains the acceleration in the healing process of soft tissue and bone injuries and trophic injuries with a peripheral circulatory origin and the beneficial effect on biological structures that depend on the diffusion of oxygen, like cartilage for example ;

3) **on the immune system**: increase in immunoglobulin-G and circulating leucocytes strengthening the immune system; regulation of steroid substance and endogenous opioid production (therefore modulating the pain system);

4) **on the endocrine system**: inhibition of some hormonal functions (parathyroid) and stimulation of others (Pineal: melatonin?)

5) **on the central and peripheral nervous system**: reduction in sympathetic system activity (for probable hyperpolarisation of the pre and post-synaptic membranes, or

modulating the stimuli frequencies -->vasodilation); alteration of cerebral cellular activity;

6) **on metabolism**;

7) **on cell reproduction**;

8) **on tissue regeneration**: for the magnetic field action on collagen genesis by fibroblasts, on the angiopoiesis with neof ormation of blood vessels (that explains the beneficial effects of magnetic fields on healing wounds, sores, and numb sores)

9) **on bone tissue**: osteogenesis is stimulated where it doesn't happen by itself (pseudoarthrosis, consolidation delays) providing the necessary reactivation signals to the cells (mesenchymal periosteum, monocytes, fibroblasts, osteoblasts that encourage the formation of internal callus), improving blood uptake, inhibiting the parathormones and therefore encouraging osteoblast activity.

On the basis of these proven effects, the **biological action** of magnetic fields can be generally summarised as follows :

1) **anti-oedematigenous and anti-inflammatory action**: (a decrease in VES, increase in gamma globulin, and decrease in alpha globulin has been noted. This can be classified as a generic anti-inflammatory effect of the magnetic fields used);

2) **antalgic action**

3) **action that stimulates tissue repair**: most of the possible mutagenic effects and damage to biologic function as referred to in many studies (EPA 1990, CERN 1995, Delgado, etc.: leukaemia, cerebral tumours, malignant lymphoma, embryonic malformations, etc.) are probably due to exposure to excessive doses and high intensities (VLF=very low frequency), (in any case chronic) of magnetic fields (electricity lines, video terminals, televisions, etc.), that are not comparable to the use of the equipment for magnetic therapy for physiotherapy purposes.

## INFORMATION ON THIS MANUAL

This manual provides information on how to install and correctly use the MAGNETO-series magnetic therapy equipment.

It is an indispensable reference guide for the operator .

Operators must carefully read it before installing and using the unit, and should always keep it near at hand for reference.

Even partial failure to fully comply with the instructions contained herein may lead to malfunction or damage to the equipment and the consequent lapse of the warranty.

Rigorously follow the instructions and advice provided by the manufacturer in order to gain best performance from the equipment, and to avail of fast and efficient technical assistance if necessary.

N.B. The Therapy Application Manual is available upon request.

## WRITING CONVENTION

Some sections of the manual are underlined to highlight their importance.

### NOTE

Notes highlight important information in the text.

### CAUTION

Caution notices are shown before procedures that must be fully observed to avoid damaging the unit and/or its accessories.

### ! WARNING !

WARNING notices signal operations or events that can create difficulties if the operator is not aware of them or does not carry them out properly.

### WARRANTY

CHINESPORT SpA warrants the quality of its equipment when it is used in compliance with the instructions provided by this manual for 24 months from the date of purchase.

Any defective parts will be repaired or replaced at the sole discretion of the company during the warranty period.

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

1. unsuitable positioning, installation or set-up;
2. incorrect use or failure to comply with the instructions set out in this manual;
3. inaccurate or unsuitable maintenance by the operator;
4. use that does not comply with the environmental conditions specified for the product;

5. unauthorised opening of the external housing;
6. tampering and/or unauthorised adjusting;
7. use of non-original accessories

The warranty is valid ex works from the CHINESPORT SpA premises.

- Before contacting technical service, detect the "SERIAL NUMBER" on the product label, or the number of the DDT / invoice. His identification saves time and improves the quality of the intervention.
- The equipment in need of repair in the Chinesport must expose on the shipping packing the "AUTHORIZATION NUMBER" to require to Technical Assistance, its identification saves time and improves the quality of the service.

We recommend that you insure the shipment.

Before sending back the product, please refer first to the sections on MAINTENANCE and TECHNICAL PROBLEMS if you believe the product has a malfunction: faults are generally due to poor maintenance or to minor technical problems that can be easily resolved by the operator.

A mail to mail address [assistenza@chinesport.it](mailto:assistenza@chinesport.it) or a simple telephone call to the CHINESPORT Technical Service department 0432.621699 can often solve any difficulties you may encounter.

### CAUTION

The customer is liable for all damage caused by inadequate packaging of the material.

If possible, please use the original packaging material

Instructions for packaging and return of the equipment :

1. disconnect the power and connection cables to the probes, applicator devices, etc;
2. carefully clean and disinfect all accessories and components of the unit that have been in contact with the patient.  
In order to safeguard the health of the technicians, (directive on safety in the workplace, Law T.U.S. 81/2008 ) , for hygiene reasons no equipment considered hygienically unsafe will be examined by the competent personnel;
3. disassemble the accessories and any mechanical supports;
4. use the original packaging material and box to repack it;

5. attach the to the pack the documents that will be supplied by CHINESPORT Technical Assistance.

Please note the reasons for the assistance request, and the type of fault or malfunction: this information will greatly assist us in our technical inspection and notably reduce repair times.

## GENERAL INFORMATION

CHINESPORT SpA has recently developed a full series of equipment, accessories, and tools.

They have been designed and manufactured in accordance with the highest standards of quality and incorporate state of the art technology that comply fully with regulations and standards in effect.

In creating this unit, we focused on the design, ease of use, functionality and safety.

The result is a compact, user-friendly unit with a modern design and clearly legible display.

MAGNETO-series is a high quality device that assures complete patient and operator safety (the unit complies with international regulations) in addition to offering numerous types of therapeutic applications.

The equipment MAGNETO 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.

## GETTING STARTED

### UNPACKING

The MAGNETO-series unit is packed and readied for delivery in a box with filling material, designed for safe storage and delivery.

Place the box on a solid, flat surface in order to unpack the unit.

Remove the upper part in Styrofoam.

Carefully remove the equipment.

The unit and accessories are wrapped in a protective layer of transparent polyethylene .

The box should contain the following items :

1. User's manual;
2. n.1 mains power supply cable;
3. n.2 spare fuses (see technical specifications);
4. n.1 ring magnet;
5. n.1 smart-card.

Check the contents of the box. Please contact immediately the Authorized Dealer if any of these items are missing .

### CAUTION

Please keep the original packaging of the unit: it will be needed if the unit is shipped back to Chinesport spa.

### SETTING UP

The magnetic therapy unit can be set up very quickly and easily.

MAGNETO-series should be set up in a room with the following conditions:

- room temperature: from +10° to 40°C
- relative humidity: from 10% to 80% without condensation
- avoid direct exposure to the sun, chemical products on vibrations

### CAUTION

Do not use MAGNETO-series equipment in places that can get wet.

## ACCESSORIES

The device can be used with the following accessories that are **all optional**:

**LC 60** Couch with ELECTRIC sliding. Couch in light-weight aluminium alloy with 1 sliding tracks, 1 solenoids diam. 60cm and 36 cm large and 1 telecontrol (electric sliding)

**LC 60** Couch with manual sliding. Couch in light-weight aluminium alloy with 1 sliding track, 1 solenoid diam., 60cm and 36 cm large (manual sliding)

**LC 60/2** Couch in light-weight aluminium alloy with 2 sliding track, 2 solenoids, diam. 60 cm, largeness 36, for total body treatment

**L** High-tech couch in light-weight aluminium

**CP30** Portable cylinder D = 30 cm

**CP50** Portable cylinder D = 50 cm

**CP** Applicator pair 20 x 13 x 3 cm

It is easy to assemble the cylinders/applicators that generate the magnetic field: once you have securely positioned the cylinder on the bed or on the support, you must connect the power cable of the cylinder/applicator to the unit/generator by inserting it into one of the connectors (the number of channels that can be used depends on the model) on the back panel.

Be sure to plug it in fully .

### CAUTION

Before starting up the unit, ensure that the connections have been made in accordance with the instructions provided.

### **! WARNING !**

The output connector contains mains power: **only connect or disconnect the cylinders/applicators when the unit is turned off !**

### CAUTION

Do not use different accessories from those provided : they could damage the unit and cause the warranty to lapse.

If there are problems or installation difficulties, please contact the CHINESPORT SpA technical assistance department.

## CONNECTIONS

The integrated mains power supply board is on the back part of the unit.

It includes the three-pin connector for the power supply cable, the removable fuse block with two fuses (see technical features), and the bipolar power switch.

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

### **! WARNING !**

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.

### **! WARNING !**

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.

### **! WARNING !**

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.**

If you use extensions, ensure that the earthed conductor is present and working.

Failure to comply with these warnings may result in dangerous electrical discharges that could cause injury and compromise the functioning of the unit.

### CAUTION

If the MAGNETO-series unit and other equipment share the same extension, ensure that the total current absorption of the connected equipment does not exceed the maximum current permitted for that type of cable.

In any case it should not exceed 15 A.

Once you have ensured that the unit has been set up and assembled correctly, switch on the power switch, and ensure that the display panel lights up correctly.

### DESCRIPTION OF THE UNIT

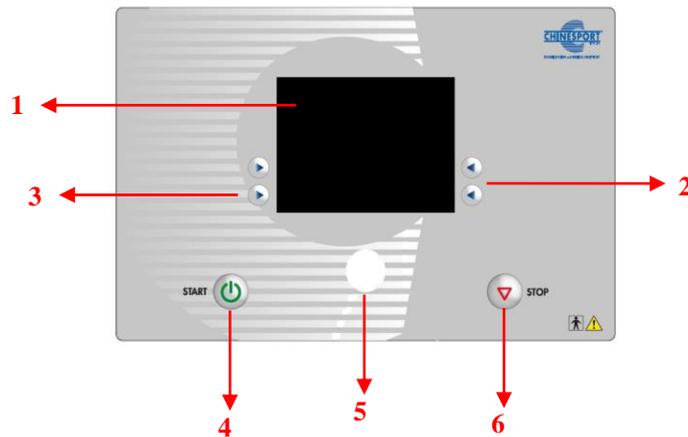
The MAGNETO-series magnetic therapy equipment features a control panel that is optimised in accordance with the specific field of application.

All operating parameters are managed and controlled in real time by a sophisticated microprocessor electronic circuit.

This layout is very clear and the various functions are indicated with a graphic LCD display and signal tones.

### CONTROL PANEL

The front panel of the equipment with command and signal features is shown in Pict.1 with a key.



**Fig. 1:** Front control panel

#### Key:

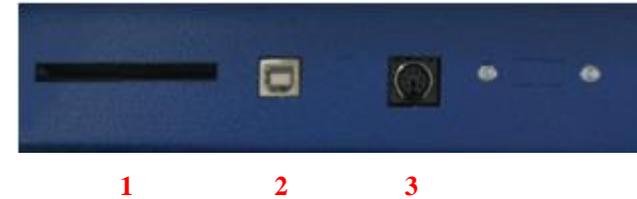
- 1) Graphic LCD display
- 2) Right hand side function buttons
- 3) Left hand side function buttons
- 4) START button for output start up

- 5) Encoder control knob with following functions : selection / confirmation button
- 6) STOP /PAUSE button

The 2) and 3) buttons operate according to the function that appears on the screen .

### PROGRAMMING PANEL

The programming panel is shown in Pict. 2 with its key.



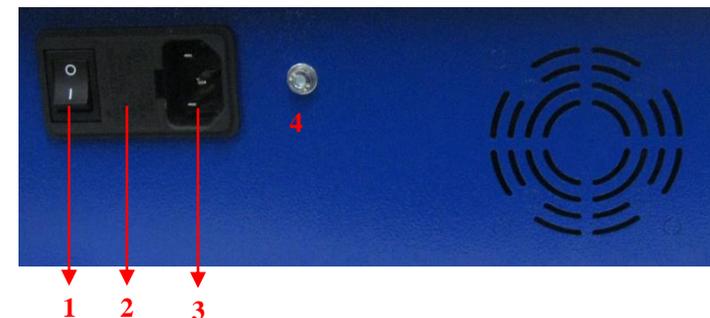
**Fig. 2:** Programming panel

#### Key :

1. *Smart Card* insertion slot
2. USB connector, used to program the processor
3. Connector for serial connections (not used)

### POWER SUPPLY BOARD AND OUTPUTS

The power panel that houses the integrated power board (power switch, the fuse block, and the connector for the mains power cable plug) is shown in Pict. 3a with its key.

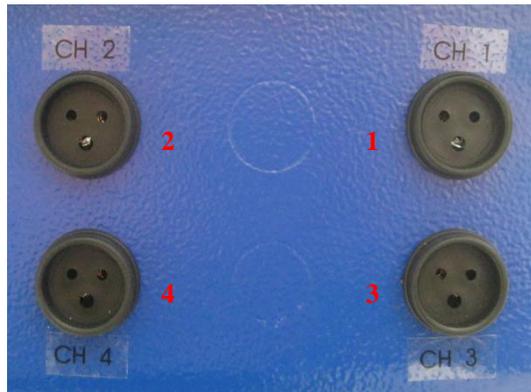


**Fig. 3:** Power supply board panel

**Key:**

- 1) Bipolar ON/OFF power switch
- 2) Fuse box
- 3) Three-pin plug for mains power cable
- 4) Earthing terminal

The output connectors, located in the rear panel of the device, are shown in the Pict.3b, with its key.



**Fig. 3b:** Outputs

- 1) Output connector n° 1
- 2) Output connector n° 2
- 3) Output connector n° 3 (MAGNETO 4)
- 4) Output connector n° 4 (MAGNETO 4)

**N.B.** MAGNETO 2 have 2 independent output channels.

MAGNETO 4 has 4 output channels , 2 by 2 independents

<b>CONTRA-INDICATION</b>
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1. **Patients with cardiac rhythm disturbances:** continuous magnetic fields used in RMN equipment caused an increase in the wave amplitude T in the electrocardiogram and some bradycardia and other arrhythmia effects. These effects are quite rare and in any case can be reversed by reducing the intensity of the field or suspending treatment.

2. **Presence of metallic prostheses (screws, connections, nails) or clips (that are ferromagnetic).**
3. **Pacemaker wearers:** (absolute contraindication) in these people the exposure limit of 0.5 mT (0.5 milliTesla=5 Gauss) must be strictly observed (CERN studies 1995) due to the specific risk of compromising the function of the **pacemaker**, both with application of static and pulsed magnetic fields. In fact, atrial system alterations and secondary inhibition of ventricular signals have been noted. If this inhibition is prolonged for a few seconds it can be clinically very significant.
4. light rosacea .
5. **Epileptic patients:** even if they are being treated with medicine.
6. **Neurovegetative system disorders.**
7. **Patients with hysteria or hysterical syndrome.**
8. **Pregnancy:** potential retardation or modification of foetal growth especially in the first two months of life of the embryo.
9. Patients with **heavy menstrual cycles:** the vasodilatory action of the magnetic therapy could make the already heavy flow even heavier.
10. **Open haemorrhoids and vascular lesions in general:** for the same reasons as before..
11. Patients that wear **intrauterine devices** (coil).
12. Patients with **mycotic infections.**
13. Other secondary effects can be due to hypersensitivity to electromagnetic fields. Many people suffer from this and symptoms can vary and include lesser or greater asthenia (loss of strength), nervousness, metallic taste, insomnia.
14. **Fever or thermo-regulatory disturbances.**
15. **Cancer and Tuberculosis**

**Other contraindications**

1. Bring to the attention of patients being treated with Verapamil or medicines that act on the calcium pump as pulsed magnetic fields counteracts the action of these medicines.
2. If the patient has arthrotomy postpone using magnetic fields for at least 15 days.

3. If there is any nerve root compression syndrome, the cause must first be removed (e.g. carpal tunnel syndrome).
4. Presence of cardiac valve prostheses.

### OPERATION OF THE UNIT

This section provides important information on the correct use of the MAGNETO-series magnetic therapy equipment.

All control functions and the whole operational lay out of the unit are controlled and co-ordinated by a microprocessor: this allows access to the stored application programs, and ensures optimal and safe use of the equipment as decided by the operator.

The user interface is a large, backlit, clear liquid crystal graphic display (LCD): the display shows all operational messages, the state of the unit during normal therapeutic operation, and any error messages .

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 MAGNETO-series device.

The different choices available are explained; from the selection of a pre-stored program to apply specific treatment, to the evaluation of the parameters needed to apply “customised” therapy”.

#### ! WARNING !

It is recommended to clean with caution the equipment and the relevant accessories before their use in contact with the patient.

The cleaning and the relevant disinfection of the equipment should be carried on periodically before every treatment.

### INTENDEND USE

The MAGNETO-series equipment is a medical device , that emits magneto-therapy traetments with the auxilium of specific applicators , that allow the treatment emission .

Only qualified personnel should operate with MAGNETO-series device .

This is to ensure proper use and complete safety for the patient

The operator, in fact, should be qualified to be able to use such equipment, and he should have passed an adapted training, or should operate under the control of a medical adequately qualified to the use of the equipment, in order to guarantee safety conditions to the patient.

Such equipment can be used in hospital environment outpatient, but also at home; nevertheless, it is important to know that the user follow the medical instructions to use the equipment or that he follow the indications present in the user’s manual.

On the basis of clinical studies, it is possible to affirms that the biological action of the magnetic fields is :

- anti inflammatory and anti edemigena
- analgesic action
- stimulating action for tissue reparation
- and combinations of such actions

### BEST USE

#### ! WARNING !

In order to guarantee an absolutely safe operation of the unit on the patient, it is advisable to carry out periodical inspections (at 2 years intervals).

#### ! WARNING !

Do not use your MAGNETO-series unit in the presence of flammable anesthetic mixture or in the presence of oxygen-rich environments; in the event of default , CHINESPORT SpA shall not be consider responsible for any accidents

#### ! WARNING !

The operator should make sure that the equipment has been wired correctly before switching on the mains switch.

#### ! WARNING !

It is recommended to clean with caution the equipment and the relevant accessories before their use in contact with the patient.

The cleaning and the relevant disinfection of the equipment should be carried on periodically before every treatment.

**! WARNING !**

**The output connector contains mains power!**

**Only connect or disconnect the cylinders/applicators when the unit is turned off.**

**! WARNING !**

If the applicators are used continuously (more than 15 minutes) they may overheat, in this event the magnetic induction flux should be reduced (the GAUSS).

**CAUTION**

**The unit will not work properly with cylinders/applicators that are not specifically intended for use with MAGNETO, and they may create potential compatibility problems with the connectors.**

If you attempt to use different kinds of cylinders/applicators, the warranty will lapse and you may damage the unit.

**CAUTION**

A protective measure has been built in to protect against excessive overcharge and will block the unit in that event.

If this happens, disconnect the power cable for about 10 minutes.

The protection circuit will automatically reset after this time.

**CAUTION**

A minimum distance of about 1 metre must be kept between the unit and the applicator in order to ensure correct functioning and so that the magnetic field produced will not influence the operations.

**! WARNING !**

It is advisable to suspend the therapeutic treatment if it were to appear some disturbances during its emission.

Once the unit has been set up in a suitable place as described in the previous sections, and the cylinder/applicator connection cable (or cables) has been connected to the right connectors, plug the power plug into the mains socket (230 Vac) and turn on the equipment by switching the ON/OFF switch on the back panel to “ON”.

The MAGNETO is now in operating mode.

The LCD display will turn on and will indicate when the equipment is ready to be used.

The LCD display will light up, showing the following logo:



**Fig. 4**

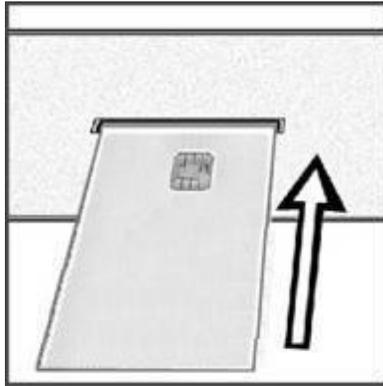
The first page will appear by pressing any button (see Pict.5).

You can choose from one of the four operating modes by pressing the appropriate function key.



**Fig. 5**

If you want to use the Smart-Card to create new customised programs or to run those already stored, insert it as shown in the following figure (see fig. 6):



**Fig. 6**

#### CAUTION

A new *Smart-Card* must be formatted with the “**Format smart-card**” function before it can be used.

In the MAGNETO-series devices is possible to store the personalised programs on the SMART CARD and also in the user memory, present in the device.

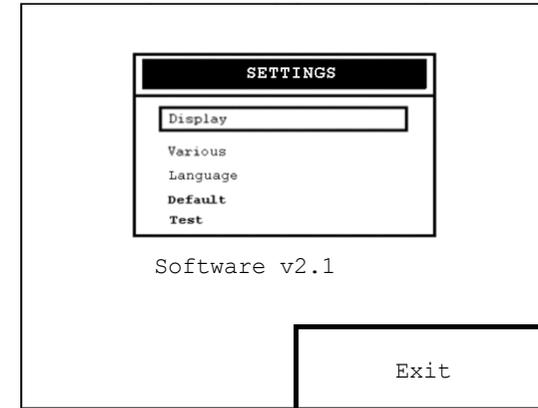
The programs stored in the SMART CARD or in the user memory can be overwritten, but cannot be singularly cancelled.

#### ! WARNING !

It is advisable to suspend the therapeutic treatment if it were to appear some disturbances during its emission .

#### SETTINGS

The basic settings can be modified and stored in the internal memory and will be called up automatically when the unit is switched on.



**Fig. 7**

If you turn the Encoder control knob (see no.6 in Pict.1) you can choose the function. The choice is confirmed by pressing the knob.

The software version being used also appears on this page.

Pushing the function-taste relative to the EXIT button, you return to the screen of pict. 5 .

#### DISPLAY

1. Press the encoder knob in correspondence of the DISPLAY menu (see pict. 7); it appear to video the principal screen of the DISPLAY menu
2. in correspondence of this screen , you can adjust the visibility settings of the device , intervening on the brightness and the contrast ; rotating the encoder knob you can select the function , pushing the encoder knob you confirm the choice
3. for to modify one of the parameters (brightness , contrast), rotate the encoder knob until to position the cursor on the menu that you want to modify
4. press the encoder knob for to enable the modification routine
5. rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter
6. press the encoder knob for to confirm the value assignation

7. In order to store the settings that best suit the visibility conditions of room, press the SAVE button ; it will appear to video the “Settings saved !” message , then you return to the screen of pict. 7
8. otherwise, press the function taste relative to the EXIT button; you return to the screen of pict.7 without that is applied any modification.

### **DEFAULT**

1. This allows you to set standard therapy settings, i.e. those most commonly used, and which can be called up immediately by using the “Free Procedure” method.
2. Press the encoder knob in correspondence of the DEFAULT menu ( see pict. 7 ) ; it appear to video the principal screen of the DEFAULT menu
3. in correspondence of this screen is possible to set the default program , used in “free procedure” modality , intervening on duration , power , frequency and duty-cycle as parameters ; rotating the Encoder knob you select the function , pushing the encoder knob you confirm the choice.
4. for to modify one of the parameters (duration , power , frequency and duty-cycle ) , rotate the encoder knob until to position the cursor on the menu of the function that you want to modify
5. press the encoder knob for to enable the modification routine
6. rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter push the encoder knob for to confirm the assignation of the value

The percentage value with which is defined the PULSED modality represents the action of time of percentage with regard to the whole length of the operating cycle (1/100 second).

So 100% means in continuous emission, while 50% refers to the equal value of action time and successive pause.

1. To memorize the combination of parameters of the standard program, press the SAVE button ; on the video will be displayed the message "Settings saved!" , then you will come back to the screen of fig. 7
2. otherwise , press the function taste relative to the EXIT button ; you return to the screen of pict.7 without that is applied any modification.

### **VARIOUS**

Customise or turn off the acoustic warning sound to adjust it according to the preference of the operator ; it allows to format the secondary supports of memory available (user’s memory, smart-card) .

1. Press the encoder knob in correspondence of the VARIOUS menu (see pict.7); it appear to video the principal screen of the VARIOUS menu
2. in correspondence of the main screen of the menu VARIOUS, is possible to enable/disable the click tone following the pressure of the virtual buttons, by pressing the corresponding control box BUZZER ON ; this action alternates the abilitation and the disabilitation of the buzzer , through the appearance / disappearance of a check sign respectively
3. for to format one of the secondary memory area available ( user memory , smart-card ) , rotate the encoder knob until to position the cursor on the menu of the secondary memory that you want to format
4. push the encoder knob for to enable the format routine ; it will appear to video the “Proceed to format ?” message
5. pushing the function taste relative to the EXIT button in correspondence of the step 1.3.4 , the formatting is stopped and you return to the main screen of VARIOUS menu
6. pushing the function taste relative to the FORMAT button in correspondence of the step 1.3.4 , the formatting is confirmed ; it appear to video the “Please wait !” message during the formatting progression , and at the end it appears the “Format completed !” message ; you return to the main screen of VARIOUS menu

### **! WARNING !**

In case of wrong insertion of the smart-card in its slot , with the pression of the function taste relative to the FORMAT button in correspondence of the step 1.3.4 it appears to video the “Warning ! smart-card not inserted !” message .

All new Cards that have never been previously used must be formatted.

You can also use the “Format smart-card” function to delete it completely .

If you do this it can be used on a different unit .

7. Fort o store the acoustic combination desired , press the function taste relative to the SAVE button ; it will appear to video the “Settings saved !” message , the you return at the screen of pict. 7

8. otherwise , press the function taste relative to the EXIT button ; you return to the screen of pict. 7 without that is applied any modification .

### **TEST MAGNETO**

Allows you to check that the cylinders/applicators are connected correctly and to ensure that there are no interruptions in the cable or the coil.

1. Press the encoder knob in correspondence of the TEST menu (see pict. 7) ; it appear to video the principal screen of the TEST menu
2. After a short wait during which the equipment makes the control, on the screen will appear the situation of the outputs: the ones not connected indicate a defective connection or the absence of the cylinder

If the connection is correctly established, the screen will show “connected” for every channel, otherwise it will show “Not Connected”.

3. Pushing the function taste relative to the EXIT button , you return to the screen of the pict.7.

**NOTE:** In the MAGNETO 4 the outputs 1-2 and 3-4 are connected in couple.

In the MAGNETO 2 only output channels 1 and 2 are present.

### **LANGUAGE**

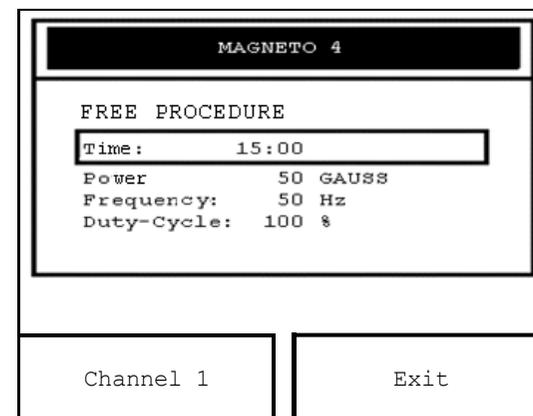
1. Press the encoder knob in correspondence of the LANGUAGE menu (see pict.7) ; it appear to video the principal screen of the LANGUAGE menu
2. In correspondence of this screen it is possible to choose the language to load on the equipment ; to choose the language where all of the messages and the command device are are written , rotate the Encoder and select the one to confirm (Italian, English, French, Spanish, German and Russian)
3. press the encoder knob on the selection box relative to the language that you wants to load in the device
4. push the function taste relative to the SAVE button in correspondence of the step 1.5.3 for to save the new setting ; it will appear to the “settings saved !” message , then you return to the screen of pict. 7
5. otherwise , press the function taste relative to the EXIT button ; you return to the screen of pict. 7 without that is applied any modification

You can repeat the procedure at any time to change the language .

### **FREE PROCEDURE**

This DEFAULT function means you can access the stored therapy parameters quickly and easily.

1. Pushing the function taste relative to the FREE PROCEDURE button in correspondence of the screen of pict. 5 , it appear the main screen of the FREE PROCEDURE menu
2. In correspondence of this screen , it appear the default program with its characteristic parameters
3. Pushing the function taste relative to the “Channel 1” button you select the output channel ; as default , the output channel selected is channel 1 .



**Fig. 8**

4. repeating the step 2.3 , you alternate some possibilities :
  - Channel 1
  - Channel 2
  - Channel 3 ( only in MAGNETO 4 )
  - Channel 4 ( only in MAGNETO 4 )
  - Channel SYNC.
5. for to modify one of the parameters (duration , power , frequency and duty-cycle ) , rotate the encoder knob until to position the cursor on the menu of the function that you want to modify
6. press the encoder knob for to enable the modification routine

7. rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter
8. push the encoder knob for to confirm the assignation of the value

The program changed is not storable; to run the execution of the program, to press the START button .

The devices MAGNETO inform the user about the correct supply of the magneto-therapy treatment .

In fact, in case the operator runs the treatment without the connection of the applicator to its output, it will be not possible to make the treatment and a segnalation message appears to the video ("Load absent") .

The symbol Channel 1 that appears on the left indicates that the program showed is relative to the Channel 1.

If a channel is in use, you obviously cannot set a new program on it until it finishes .

**NOTE:** In the MAGNETO 4 the outputs 1-2 and 3-4 are connected in couple.

In the MAGNETO 2 has only output channels 1 and 2 are present .

### CREATE PROGRAMS

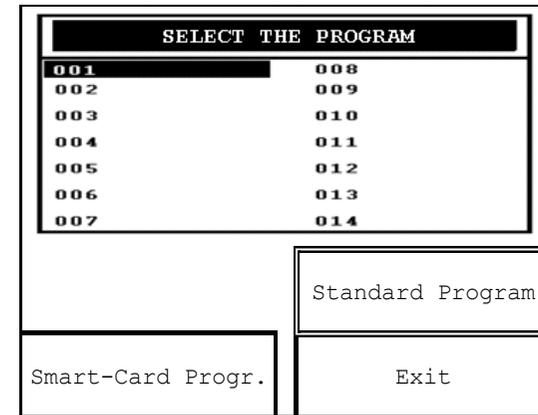
It allows the creation of customized programs .

This function can only be used :

- With the user memory or
- With the smart card (only if it is inserted)

that they are the only memories available for storing new programs .

1. Pushing the function taste relative to the CREATE PROGRAM button in correspondence of the screen of pict.5, it appear the main screen of the CREATE PROGRAM menu (see pict.9):



**Fig. 9**

2. In correspondence of this screen is possible to visualize as default the list of the programs eventually customized stored in the user memory (in fact the <PROGR. UTENTE> text results surrounded by a rectangular frame )
3. Pushing the function taste relative to the EXIT button in correspondence of the step 3.2 , you return to the screen of pict. 5 .
4. Otherwise , pushing the function taste relative to the PROGR. SMART-CARD button in correspondence of the step 3.2 , is possible to visualize as default the list of the programs eventually customized stored in the smart-card ( in fact the <PROGR. SMART-CARD> text results surrounded by a rectangular frame )

### ! WARNING !

In case of wrong insertion of the smart-card in its slot , with the pression of the function taste relative to the PROGR. SMART-CARD button in correspondence of the step 3.4 it appears to video the “Warning ! smart-card not inserted !” message .

5. once you have selected the secondary memory for to store the customized program , rotate the encoder knob until to position the cursor in correspondence of the position where you desire to save the program
6. press the encoder knob ; you enter in the screen for the customization of the program
7. in correspondence of the main screen of the selected program is possible to modify its characteristic parameters ( duration , power , frequency and duty-cycle ) , and to assign too at the selected program the name desired

8. for to modify one of the parameters (duration , power , frequency and duty-cycle ) in correspondence of the step 3.7 , rotate the encoder knob until to position the cursor on the menu of the function that you want to modify
9. press the encoder knob for to enable the modification routine
10. rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter
11. push the encoder knob for to confirm the assignation of the value
12. otherwise , for to rename the program in correspondence of the step 3.7 , rotate the encoder knob until to position the cursor on the menu with a numeric prefix ( this prefix indicates the position chosen in the memory where to store the customized program )
13. press the encoder knob for to enable the modification routine
14. rotate the position cursor ( in clockwise way for to shift by right , in counter-clockwise way for to shift by left ) until to position the cursor in correspondence of the position where you want to modify the character
15. press the encoder knob ; the position cursor is substituted by the selection cursor
16. rotate the position cursor ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the character desired
17. push the encoder knob for to confirm the assignation of the selected character ; the position cursor is substituted by the position cursor
18. repeat the step from 3.14 to 3.17 until to complete the name that you want to assign at the customized program
19. push the function taste relative to the OK button for to assign the name at the customized program ; you return at the main screen of the customized program
20. push the function taste relative to the SAVE button for to save the customized program on the secondary memory selected ; it appears to video the “Saving completed !” message , then you return at the main screen of the CREATE PROGRAM button
21. otherwise , push the function taste relative to the EXIT button ; the creation of the customized program is stopped , and you return to the main screen of the CREATE PROGRAM button without that is applied any modification

## LOADING PROGRAMS

1. Pushing the function taste relative to the LOAD PROGRAM button in correspondence of the screen of pict. 5 , it appear the main screen of the LOAD PROGRAM menu
2. in correspondence of this screen is possible to visualize the list of the programs pre-set , contained in the main memory , these programs are no modifiable or erasable.
3. the pre-set programs , stored in the main memory of the device , are accessible pushing the function taste relative to the PROGR. STANDARD button
4. for to visualize the list of programs stored in the user memory , push the function taste relative to the PROGR. UTENTE button in correspondence of the step 3.2
5. for to visualize the list of programs stored in the smart-card , push the function taste relative to the PROGR. SMART-CARD button in correspondence of the step 3.2

### ! WARNING !

In case of wrong insertion of the smart-card in its slot , with the pression of the function taste relative to the PROGR. SMART-CARD button in correspondence of the step 4.5 it appears to video the “Warning ! smart-card not inserted !” message .

6. otherwise, pushing the function taste relative to the EXIT button in correspondence of the step 3.2 , you return to the main screen of the device (see pict.5)

#### **4.1 Loading a program by smart-card**

1. Pushing the function taste relative to the PROGR. SMART-CARD button in correspondence of the main screen of the LOAD PROGRAM button , you enter in the memory area where there are the programs eventually customized , created with “Create Program” function , stored in the Smart-Card.

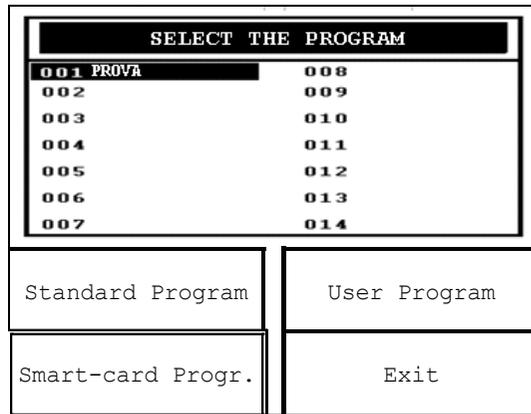


Fig. 10

**! WARNING !**

In case of wrong insertion of the smart-card in its slot , with the pression of the function taste relative to the PROGR. SMART-CARD button in correspondence of the step 4.1.1 it appears to video the “Warning ! smart-card not inserted !” message .

- rotate the encoder knob until to position the cursor in correspondence of the menu relative to the program that you want to load
- push the encoder knob; it will be loaded the main screen of the selected program
- pushing the function taste relative to the EXIT button in correspondence of the step 4.1.3 , the loading operation of the selected program is stopped and you return to the screen of pict. 5
- pushing the function taste relative to the CHANNEL 1 button in correspondence of the step 4.1.3 , you select the output channel where will be emitted the selected program
- for to modify one of the parameters (duration , power , frequency and duty-cycle ) in correspondence of the step 4.1.3 , rotate the encoder knob until to position the cursor on the menu of the function that you want to modify
- press the encoder knob for to enable the modification routine
- rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter

- push the encoder knob for to confirm the assignation of the value
- once you have brought the desired customizations at the selected program , following the indications in the steps from 4.1.6 to 4.1.9 , push the START button for to run the treatment emission.

**4.2 Loading a program by user memory**

- Pushing the function taste relative to the PROG.UTENTE button in correspondence of the main screen of the LOAD PROGRAM button , you enter in the memory area where there are the programs eventually customized , created with “Create Program” function , stored in the user memory .

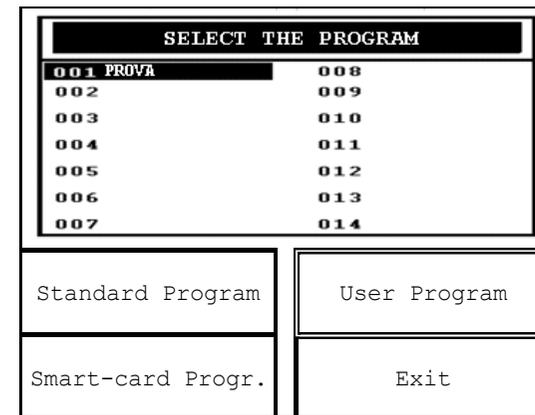


Fig. 11

- rotate the encoder knob until to position the cursor in correspondence of the menu relative to the program that you want to load
- push the encoder knob; it will be loaded the main screen of the selected program
- pushing the function taste relative to the EXIT button in correspondence of the step 4.2.3 , the loading operation of the selected program is stopped and you return to the screen of pict. 5
- pushing the function taste relative to the CHANNEL 1 button in correspondence of the step 4.1.3 , you select the output channel where will be emitted the selected program
- for to modify one of the parameters (duration , power , frequency and duty-cycle ) in correspondence of the step 4.2.3 , rotate the encoder knob until to position the cursor on the menu of the function that you want to modify
- press the encoder knob for to enable the modification routine

8. rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter
9. push the encoder knob for to confirm the assignation of the value
10. once you have brought the desired customizations at the selected program , following the indications in the steps from 4.2.6 to 4.2.9 , push the START button for to run the treatment emission

### 4.3 Loading a program by main memory

1. Pushing the function taste relative to the LOAD PROGRAM button in correspondence of the main screen of the device ( see pict. 5 ) , you enter in the main screen of the LOAD PROGRAM button , where there are the pre-set programs , contained in the main memory of the device
2. in correspondence of this screen , rotate the encoder knob until to position the cursor on the menu of the program that you want to load
3. push the encoder knob ; it appear the main screen of the selected program
4. pushing the function taste relative to the EXIT button in correspondence of the step 4.3.3 , the loading operation of the selected program is stopped and you return to the screen of pict. 5
5. pushing the function taste relative to the CHANNEL 1 button in correspondence of the step 4.3.3 , you select the output channel where will be emitted the selected program
6. for to modify one of the parameters (duration , power , frequency and duty-cycle ) in correspondence of the step 4.3.3 , rotate the encoder knob until to position the cursor on the menu of the function that you want to modify
7. press the encoder knob for to enable the modification routine
8. rotate the encoder knob ( in clockwise way for increasing values , in counter-clockwise way for decreasing values ) until to reach the desired value to assign at the selected parameter
9. press the encoder knob for to confirm the value assignation
10. once you have brought the desired customizations at the selected program , following the indications in the steps from 4.3.6 to 4.3.9 , push the START button for to run the treatment emission

The stored programs reflect the fruit of many years experience supporting expert professional operators. Appendix C shows a list of the programs available .

Once you have selected the program , pushing the encoder knob it demands to define the output channel with the pression of the function taste relative to the “Channel” button.

**NOTE:** In the MAGNETO 4 the outputs 1-2 and 3-4 are connected in couple.

In the MAGNETO 2 has only output channels 1 and 2 are present .

If a channel is in use, you obviously cannot set a new program on it until it finishes.

#### NOTE

In the user memory the stored programs can be renamed from the “loading programs” section.

You can change the output channel and modify any parameter, as already seen in “Free Procedure”.

#### ! WARNING !

It is advisable to suspend the therapeutic treatment if it were to appear some disturbances during its emission.

The modified program can be stored in the Smart-Card card (if it is inserted) or in the user memory .

#### NOTE

In the smart-card the stored programs can be renamed from the “loading programs” section

Once the chosen treatment program appears on the display, press the START button to start it up .

### APPLICATION OF THE THERAPY

#### ! WARNING !

Do not use your MAGNETO-series unit in the presence of flammable anesthetic mixture or in the presence of oxygen-rich environments.  
In the event of default, CHINESPORT SpA shall not be consider responsible for any accidents

#### ! WARNING !

It is advised to always interpose between the patient and the portable cylinders/applicators a medical ecological sheet for each treatment, in order to guarantee the hygienic conditions and the safety of the patient to treat , and to the patients too for the next treatments .

**! WARNING !**

It is recommended to clean with caution the equipment and the relevant accessories before their use in contact with the patient.

The cleaning and the relevant disinfection of the equipment should be carried on periodically before every treatment.

1. Once you have selected the program to load by one of the memory areas available , select the output channel for the emission of the treatment and press START
2. When you have pressed START, it starts the reverse count of the TIMER, that is also indicated by the motion of the hourglass and by the appearance of the narrow icon relative to the selected channel .

**! WARNING !**

It is advisable to suspend the therapeutic treatment if it were to appear some disturbances during its emission .

3. The count-down and the emission continue until:
  - the set time finishes: when this happens the system will make intermittent beeps for about 15 seconds at the end of which you return to the main screen of the selected program. Press any button to turn off the BEEPS .
    - when the STOP button is pressed: the emission cycle is Paused ; it appear to video the “Pause” message (fig.13)
4. The unit will take up again from the point where it was interrupted when you press the START button.
5. otherwise , if you press the STOP button again, the emission will be stopped completely and you return to the main screen of the selected program

**NOTE**

For an optimal use of the equipment and in order to guarantee the best performance, is recommended to treat carefully the portable cylinders / applicators used to make the treatment of magneto-therapy, because the insulation of the copper contained in the accessories can be modified during the use.

A bad use could damage the copper and generate short circuit phenomenon, damaging also the electric safety of the equipment.

**EMERGENCY STOP**

If you press the STOP button, the channel displayed on the unit will be paused.

If you keep the STOP button pressed for more than a second, you can **stop supply from ALL the operating channels at any stage** (even in the “Direct procedure” stage, without the channel being displayed).

The emergency stop ends with the end therapy screen and final whistle .

**MAINTENANCE**

The MAGNETO-series device for magnetic therapy do not require any particular maintenance operations.

**! WARNING !**

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 before carrying out any maintenance or cleaning.

Clean the device externally using a soft cloth only, moistened with hot water, or with non-flammable liquid cleaning fluids.

The front control panel can be cleaned in the same way.

The cylinders/applicators must be cleaned with water and denaturated alcohol only.

All parts must be completely dry before re-using them.

Replace the cylinders/applicators with care at the end of each treatment session.

Please contact authorised CHINESPORT SpA centres for information on original accessories and spare parts.

### CAUTION

The operator should be reminded to perform regular checks on the functioning of the cylinders/applicators, and especially :

- check the cylinder surface for any cracks that could affect the insulation of the internal conductors;
- check the condition of the cable and the cylinder / applicator connector.

### NOTE

For best use of the unit and in order to ensure its best performance, we advise you to carry out regular maintenance as described.

### NOTE

For an optimal use of the equipment and in order to guarantee the best performance, is recommended to treat carefully the portable cylinders / applicators used to make the treatment of magneto-therapy, because the insulation of the copper contained in the accessories can be modified during the use.

A bad use could damage the copper and generate short circuit phenomenon, damaging also the electric safety of the equipment.

### CAUTION

In no circumstances should anybody that is not authorised by CHINESPORT SpA open or disassemble the cylinders/applicators: in addition to damaging the accessory, this tampering will cause the warranty to immediately lapse.

### CAUTION

In no circumstances should anybody that is not authorised by CHINESPORT SpA open or disassemble the cylinders/applicators: in addition to damaging the accessory, this tampering will cause the warranty to immediately lapse.

Do not spray, neither pour liquids on the external container of the MAGNETO-series unit, nor on the aeration loopholes , nor on the LCD touch-screen display, nor close to it , for not to compromise its regular functioning .

Do not immerse the unit in water.

After cleaning the outside housing, make sure that it is perfectly dry before starting it up again.

The equipment should never be disassembled for cleaning or inspection purposes : the MAGNETO-series unit does not have to be cleaned internally, and if the unit must be opened for any reason, it should only be done by specialised technicians authorised by CHINESPORT SpA.

### **! WARNING !**

In order to guarantee an absolutely safe operation of the unit on the patient, it is advisable to carry out periodical inspections (at 2 years intervals).

### NOTE

For best use of the unit and in order to ensure its best performance, we advise you to carry out regular maintenance as described.

### CAUTION

In order to make a correct substitution of the fuses housed in the device , please follow these instructions:

- Open the bowl housing the fuses using a screwdriver, taking care to insert the screwdriver into the slot of the bowl and leveraging outward
- Extract the fuses-box running along the guide
- Extract the fuses inserted and substitute them with new fuses
- Insert the fuses-box into the bowl housing the fuses , running along the guide
- Close the plastic door of the bowl housing the fuses

### **! WARNING !**

We recommend that the fuses substitution is performed by qualified technical personnel, in order to execute this operation in safety conditions .

### CAUTION

It is advisable to carry out periodic maintenance (for example , annually), making sure:

- the intensity of any leakage currents
- continuity / integrity ground wire
- the correctness of the value of insulation resistance

perform such audits ensures electrical safety, ensuring that the unit operates under security conditions guaranteed.

For this kind of interventions we suggest to contact a technical and qualified service, or in alternative contact CHINESPORT SpA or its authorized service center .

### **TECHNICAL PROBLEMS**

MAGNETO-series magnetic therapy units have been designed and manufactured using advanced technology and high quality components for continuous efficient and reliable use.

If for some reason there should be a technical difficulty, we advise you to consult the following table before contacting an authorised centre of assistance.

#### **! WARNING !**

DO NOT OPEN the MAGNETO unit: it is a HIGH VOLTAGE POWER unit that could be DANGEROUS.

#### **CAUTION**

Only technicians authorised by the manufacturer may access the interior of the unit.

You should contact CHINESPORT SpA ,or its authorised service centres for any repair work or further information.

Once you have unplugged the unit, please contact the CHINESPORT SpA technical assistance department if any of the situations described below should occur :

1. the cable or the integrated power board on the back show signs of wear or damage;
2. liquid has entered the unit;
3. the unit has been left out under the rain

### **ELECTROMAGNETIC INTERFERENCE**

The MAGNETO magnetic therapy equipment has been designed and built in compliance with current DIRECTIVES on ELECTROMAGNETIC COMPATIBILITY 2004/108/CE with the aim of providing reasonable protection from damaging interference in residential and health related installations.

Due to its operating principle, the MAGNETO-series magnetic therapy equipment does not generate significant radiofrequency energy and it has a sufficient immunity level to radiating electromagnetic fields: therefore it does not detrimentally interfere with radioelectric communications; electromedical equipment for monitoring, diagnosis, therapy and surgery; office electronic devices such as computers, printers, photocopiers, fax machines, etc; or any electric or electronic equipment used in these environments, as long as said equipment complies with the ELECTROMAGNETIC COMPATIBILITY directive.

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

PROBLEM	POSSIBLE CAUSE	SOLUTION
Front panel LCD display doesn't come on. The equipment doesn't work.	Mains plug not plugged in properly.	Check that the mains socket is working.
	Mains cable not properly connected to the back connector on the equipment	Plug in properly and connect cable to the back connector of the equipment
	Mains cable worn or blocked.	Replace the mains cable.
	Back switch off.	Switch on the mains switch
	Fuse or fuses defective or blown	Substitute the missing, defective or blown fuses.
	Electronic control circuit malfunction.	Contact the CHINESPORT SpA assistance centre.
	No mains voltage.	
Front panel display doesn't come on.	Defective components in the electronic control board.	Contact the CHINESPORT SpA assistance centre.
Some commands on the front control panel are not working properly.	Defective keys or buttons	Contact the CHINESPORT SpA assistance centre.
	Electronic control system malfunction	
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.
	Cylinder/applicator cable blocked or badly connected.	Replace the faulty cylinder/applicator or

PROBLEM	POSSIBLE CAUSE	SOLUTION
	Output cable worn and/or faulty connections.	those that show evident signs of wear and tear on
	Current generator electronic circuit fault.	Contact the CHINESPORT SpA assistance centre.
The equipment works properly but there is a notable fall in treatment efficiency.	Cylinder/applicator connection not perfectly effective.	Contact the CHINESPORT SpA assistance centre.
	Cylinder/applicator damage (following a fall or violent impact), especially in the point of connection of the power cable.	
	Interruption of the internal conductors of the cylinder.	
	Electronic circuit current generator not properly calibrated or defective.	

## TECHNICAL SPECIFICATIONS

<b>MAGNETO 4/MAGNETO 2</b>		
Power supply	230 Vac, 50-60 Hz, ±10%	
	115 Vac, 50-60 Hz, ±10% *	
Maximum Absorbed power	MAGNETO 4	900 VA
	MAGNETO 2	450 VA
Double fuse protection	MAGNETO 4	6.3 A - T - 5 x 20 mm for 230Vac supply , 10 A - T - 5 x 20 mm for 115Vac supply
	MAGNETO 2	3.15 A - T - 5 x 20 mm for 230Vac supply , 6.3 A - T - 5 x 20 mm for 230Vac supply
Backlit LCD display to view and check the operating parameters	w/b graphic 320 x 240 pixel, 5,7"	
Programmable treatment time	up to 60 minutes	
Duty Cycle adjustable	(10÷100) %	
Programmable treatment frequency	(1÷100) Hz	
<u>Electrical insulation class / applied parts in compliance with the UNI EN 60601-1 standard</u>	<u>I / BF</u>	
<u>Device class in compliance with the 93/42/CEE directive</u>	<u>II A</u>	
<u>Degree of protection against the input of liquids according to the UNI EN 60601-1 standard</u>	<u>IPX0</u>	
Maximum induction	100 Gauss ± 20%	
Output channels	MAGNETO 4	4 , 2 by 2 independents

	MAGNETO 2	2 independents
Stored protocols		50
Storable protocols in the smart-card		200
Storable protocols in the user memory		200
plastic desktop container , external size (width x height x depth)	<b>MAGNETO 4</b>	39 x 13 x 32 cm
	<b>MAGNETO 2</b>	
Unit body weight	<b>MAGNETO 4</b>	3,9 Kg
	<b>MAGNETO 2</b>	
<u>Conditions for use</u>	<u>Room temperature</u>	<u>(+10 ÷ +40) °C</u>
	<u>Relative humidity</u>	<u>(10 ÷ 80) % without condensation</u>
<u>Conditions for stocking / transport</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>

\* on demand

## APPENDICES

### Appendix A - ENVIROMENT PROTECTION

MAGNETO-series magnetic therapy equipment 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 minimise 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 optimise power consumption in keeping with energy saving principles.



This symbol means that the product should not be disposed of as domestic waste.

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

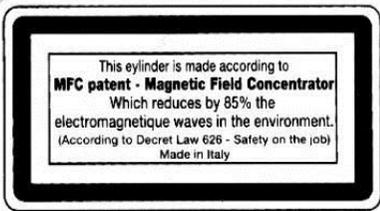
### Appendix B - LABEL

Here are the table containing the symbols on the label plate and their meanings.

SYMBOL	SIGNIFICATION
	The product must be dispose of as “electronic waste”, not as “domestic waste”
	Input characteristics
	Input voltage to the device (mains)
	Fuses
	Input power of the device (absorbed power)
	Input frequency of the device
<b>REF</b>	Device model
<b>SN</b>	Serial number
	Output characteristics of the device
	Output voltage of the device
	Output power of the device
	Output frequency of the device

**Table 1**

SYMBOL	SIGNIFICATION
	This product complies with regulations issued under the certification from a Notified Body
	Type BF equipment
	<b>Manufacturer</b>
	<b>Date of manufacture</b>
	<b>Consult instructions for use</b>
	Attention

Lables and signification	
 <p>Label showing devices sensitive to electrostatic charges, placed near the serial connection connector.</p>	 <p>Label near the equipotential connection.</p>
 <p>Turn-on symbol, serigraphed on the START button of the keyboard, which indicates that its pression will start the execution of the treatment.</p>	 <p>Turn-off symbol, serigraphed on the STOP button of the keyboard, which indicates that its pression will stop the execution of the treatment.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p><b>CH 1</b></p> </div> <p>Label located near the connector of the output channel 1. Similar labels are also present in the connectors of the output channel 2,3 (only for MAGNETO 4) and 4 (only for MAGNETO 4).</p>	
 <p>Label located on the solenoids; the arrow indicates the direction of the Magnetic Field.</p>	 <p>Label located on the solenoids where is</p>

Lables and signification	
	<p>described the patent regarding the concentration of the Field inside.</p> <p>This cylinder is made according to <b>MFC patent – Magnetic Field Concentrator</b> which reduces by 85% the electromagnetic waves in the environment. (According to Decret Law 8108 – safety on the job).</p>

**Table 2**

**Appendix C - LIST OF THE PROGRAMS**

<i>PROGRAM NAME</i>	<i>TYPE OF SOLENOID TO USE</i>	<i>DURATION (min.)</i>	<i>POWER (Gauss)</i>	<i>FREQUENCY (Hz)</i>	<i>DUTY CYCLE (%)</i>	<i>SESSIONSUGG. (N*)</i>
<b>DESCRIPTION</b>						
DIFFUSE ARTICULAR PAIN	SCC , SI	20	20	15	100	8-12
DIFFUSE ARTICULAR PAIN (POLIARTHRALGIA)						
ARTROPATHY	SC , SI	30	25	50	100	15
ARTROPATIE						
ARTHROSIS	SCC , SI	20	40	15	100	10-15
ARTROSI						
NECK-FOOT ARTHRITIS	SCP 3	30	25-50	80-100	100	15
ARTHROSIS OF THE ARTICULATION OF THE NECK OF THE FOOT						
CERVICAL ARTHROSIS	SCC , SCP 50	20	20	15	100	8-12
CERVICAL ARTHROSIS						
MUSCULAR ATROPHIES	SI	20	50	50	100	10-15
MUSCULAR ATROPHIES						
BORSITIS	SPC , SCC	15	30	10	100	8-10
BORSITIS						
MUSCLE CONTRACTIONS	SI	20	35	50	100	10-15
MUSCLE CONTRACTIONS						
BRUISES	SI	30	80	50	100	8-10
BRUISES						
COXARTROSI	SCC	20	40	25	100	10-15
COXARTROSI						
SPRAINS	SI	30	40	50-100	40	10
SPRAINS						
OEDEMAS	SI	25	80	50	100	8-12
OEDEMAS						
ILIIZAROV BONE ELONG.	SCC , SCP 50	15	80	50	100	10-15
ILIIZAROV BONE ELONGATIONS						
EPYCOND. WITHOUT CALC.	SPC , SCP3	20	50	50	100	12
EPYCONDILITIS WITHOUT CALCIFICATION						
EPICONDYLITIS	SCP 3 , SCP 5	25	60	30	100	10-15

<i>PROGRAM NAME</i>	<i>TYPE OF SOLENOID TO USE</i>	<i>DURATION (min.)</i>	<i>POWER (Gauss)</i>	<i>FREQUENCY (Hz)</i>	<i>DUTY CYCLE (%)</i>	<i>SESSIONSUGG. (N*)</i>	
<b>DESCRIPTION</b>							
	EPICONDYLITIS						
	EPITROCLEITE	SCC , SCP 50	60	30	50	100	20
	EPITROCLEITE						
	BULLOUS ERYTHEMA	SI	30	45	50	100	20
	BULLOUS ERYTHEMA						
	OUTCOME FRACTURE FEMUR	SCC	15	80	50	100	10-15
	OUTCOME FRACTURE FEMUR						
	PLANTAR FYBROSIS	SCP 30	15	30	50	100	15
	PLANTAR FYBROSIS						
	FIBROMYALGIA	SCC	20	50	30	100	20
	FIBROMYALGIA						
	FASTENING ENDOPROTHESYS	SCC , SPC , SI	15	80	50	100	10-15
	FASTENING ENDOPROTHESYS						
	FRACTURES	SPC , SCP 30 , SCP 50	25	80	50	100	10-15
	FRACTURES						
	GONARTRSI	SCP 50	25	60	30	100	10-15
	GONARTRSI						
	JOINTS INFLAMMATION	SCC , SCP 30 , SCP 50	10	30	10	100	8-12
	JOINTS INFLAMMATION						
	MUSCLE HYPERTONIA	SI	10	30	10	100	10-15
	MUSCLE HYPERTONIA						
	SENILE HYPOTONIA	SCC	10	80	50	100	8-12
	SENILE HYPOTONIA						
	ISCHIALGIA	SCC	10	60	20	100	10-15
	ISCHIALGIA						
	LUMBOSCIATICA	SCC	25	80	20	100	10-15
	LUMBOSCIATICA						
	DISPLACEMENTS	SI	25	80	50	100	10-15
	DISPLACEMENTS						
	REUMATIC DISEASES	SI	25	40	30	100	10-15

<i>PROGRAM NAME</i>	<i>TYPE OF SOLENOID TO USE</i>	<i>DURATION (min.)</i>	<i>POWER (Gauss)</i>	<i>FREQUENCY (Hz)</i>	<i>DUTY CYCLE (%)</i>	<i>SESSIONSUGG. (N*)</i>
<b>DESCRIPTION</b>						
REUMATIC DISEASES						
MYOSITIS	SI	15	30	10	100	8-10
MYOSITIS						
SUDECK'S DISEASE	SCP 3 , SCP 5	15	80	50	100	10-15
SUDECK'S DISEASE						
SUDECK'S DISEASE 2	SCC , SCP 30	15	50	30	100	15-20
SUDECK'S DISEASE						
OSTEOCHONDROSIS	SI	20	50	50	100	10-15
OSTEOCHONDROSIS						
OSTEOPOROSIS	SCC	30	80	50	100	10-15
OSTEOPOROSIS						
OSTEORADIONECROSIS	SI	30	50	24	100	3 MESI
OSTEORADIONECROSIS						
ARTICULAR PARESIS	SCP 30 , SCP 50	30	80	50	100	10-15
ARTICULAR PARESIS						
SPASTIC PARESIS	SCP 30 , SCP 50	30	30	15	100	8-12
SPASTIC PARESIS						
SCAPULAR-HUMERAL PERIA.	SCC	15	40	10	100	10-15
PERIARTHRITIS SCAPULAR-HUMERAL (ALSO CALCIFIC)						
POLYARTRITIS	SI	30	80	25	100	10-15
POLYARTRITIS						
PESUDOARTHROSIS	SPC	60	60	50	100	20-25
PESUDOARTHROSIS						
PUBALGIA	SCC , SCP 50	20	50	25	100	12
PUBALGIA						
DELAYED OSTEOCH. CALLUS	SPC	60	60	50	100	10-15
DELAYED FORMATION OF THE BONE CALLUS						
TARSAL TUNNEL SYNDROME	SCC , SCP 30	20	60	25	100	15
TARSAL TUNNEL SYNDROME						
CALCANEAL SPURE SYNDROME	SCP 30	15	30	50	100	15

<i>PROGRAM NAME</i>	<i>TYPE OF SOLENOID TO USE</i>	<i>DURATION (min.)</i>	<i>POWER (Gauss)</i>	<i>FREQUENCY (Hz)</i>	<i>DUTY CYCLE (%)</i>	<i>SESSIONSUGG. (N*)</i>
<b>DESCRIPTION</b>						
	CALCANEAL SPURE SYNDROME ( ALGIC PHASE)					
	ANKILOSING SPONDYLITIS	SCC , SS	20	50	6	100
	ANKILOSING SPONDYLITIS					
	ANKILOSING SPONDYLITIS 2	SCC , SS , SSM	30	60	6	100
	ANKILOSING SPONDYLITIS					
	SPONDYLOSIS DEFORMANS	SC, SS	20	40	15	100
	SPONDYLOSIS DEFORMANS					
	MUSCLE TEARS	SI	30	80	25	100
	MUSCLE TEARS					
	TENDINITIS	SCP 30 , SCP 50	30	80	25	100
	TENDINITIS					

Key :

SCC	Trolley-mounted cylindrical solenoid
SCP30	Portable cylindrical solenoid of 30 cm
SCP50	Portable cylindrical solenoid of 50 cm
SI	Indifferent solenoid
SPC	portable contact solenoid
SS	stative solenoid
SSM	Crescent stative solenoid

\* The number of sessions is absolutely indicative, as depends on the pathology to treat and on the patient to treat with a specific treatment ; for this reason the number of the sessions is defined by the medical with reference to the clinical conditions of the patient and to the characteristic of the area to treat

## Appendix D - ELECTROMAGNETIC COMPATIBILITY TABLES

Guidance and manufacturer's declaration – electromagnetic emissions FOR ALL ME EQUIPMENT		
The MAGNETO-series ME EQUIPMENT is intended for use in the electromagnetic environment specified below. The customer or the user of the MAGNETO-series ME EQUIPMENT should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF Emissions CISPR 11	Group 2	The MAGNETO-series ME EQUIPMENT must emit electromagnetic energy in order to perform its intended function. Nearby electronic equipment may be affected.
RF Emissions CISPR 11	Class A	The MAGNETO-series ME EQUIPMENT is suitable for use in all establishments other than domestic 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	

13.4.1 Guidance and manufacturer's declaration – electromagnetic immunity FOR ALL ME EQUIPMENT			
The MAGNETO-series ME EQUIPMENT is intended for use in the electromagnetic environment specified below. The customer or the user of the MAGNETO-series ME EQUIPMENT should assure that it is used in such an environment.			
Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6kV contact	Complies	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
	± 8kV air	Complies	
Electrical fast transient/burst IEC 61000-4-4	± 2kV per power supply lines	Complies	Mains power quality should be that of a typical commercial or hospital environment
	± 1kV for input / output lines	Complies	
Surge IEC 61000-4-5	± 1kV line(s) to line(s)	Complies	Mains power quality should be that of a typical commercial or hospital environment
	± 2kV line(s) to earth	Complies	
Voltage dips, short interruptions and voltage variations on power supply input lines  IEC 61000-4-11	<5% UT (>95% dip in UT) for 0.5 cycles	Complies	Mains power quality should be that of a typical commercial or hospital environment. If the user of the MAGNETO-series ME EQUIPMENT requires continued operation during power mains interruptions, it is recommended that the MAGNETO-series ME EQUIPMENT be powered from an uninterruptible power supply or a battery
	40% UT (60% dip in UT) for 5 cycles	Complies	
	70% UT (30% dip in UT) for 25 cycles	Complies	
	<5% UT (>95% dip in UT) for 5 sec	Complies	
Power frequency (50/60 Hz) magnetic field  IEC 61000-4-8	3 A / m	Complies	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment
NOTE : UT is the a.c. mains voltage prior to application of the test level.			

### 13.4.2 Guidance and MANUFACTURER'S declaration

#### - electromagnetic IMMUNITY -

#### FOR ME EQUIPMENT THAT ARE NOT LIFE-SUPPORTING

The MAGNETO-series ME EQUIPMENT is intended for use in the electromagnetic environment specified below. The customer or the user of the MAGNETO-series ME EQUIPMENT should assure that it is used in such an environment.

Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment – guidance
---------------	----------------------	------------------	--

Portable and mobile RF communications equipment should be used no closer to any part of the MAGNETO-series ME EQUIPMENT, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

			Recommended separation distance
Conducted RF IEC 61000-4-6	3Vrms 150kHz to 80MHz	3V (V <sub>1</sub> )	$d = \left[ \frac{3,5}{V_1} \right] \sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80MHz to 2,5GHz	3 V / m (E <sub>1</sub> )	80MHz to 800 MHz $d = \left[ \frac{3,5}{E_1} \right] \sqrt{P}$
			800MHz to 2,5 GHz $d = \left[ \frac{7}{E_1} \right] \sqrt{P}$

where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,<sup>\*1</sup> should be less than the compliance level in each frequency range<sup>\*2</sup>

Interference may occur in the vicinity of equipment marked with the following symbol:



NOTE 1 : At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 : These guidelines may not apply in all situations.

Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

\*1: Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy.

To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the MAGNETO-series ME EQUIPMENT is used exceeds the applicable RF compliance level above, the MAGNETO-series ME EQUIPMENT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the MAGNETO-series ME EQUIPMENT .

\*2: Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V/m.

### 13.4.3 Recommended separation distances between portable and mobile RF communications equipment and the MAGNETO-series ME EQUIPMENT

The MAGNETO-series ME EQUIPMENT is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled.

The customer or the user of the MAGNETO-series ME EQUIPMENT can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the MAGNETO-series ME EQUIPMENT as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz ÷ 80 MHz	80 MHz ÷ 800 MHz	800 MHz ÷ 2.5 GHz
	$d = \left[ \frac{3,5}{V_1} \right] \sqrt{P}$	$d = \left[ \frac{3,5}{E_1} \right] \sqrt{P}$	$d = \left[ \frac{7}{E_1} \right] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.69	3.69	7.38
100	11.67	11.67	23.33

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be determined using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE:1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2:These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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