



# Centurion

## “GPC” SYSTEM

### *Magnetic Field Therapy*

*for use as an aid in the management of musculoskeletal disorders*



## Operation Manual



# Centurion

■GPC■ SYSTEM

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# 1. SYSTEM INFORMATION

## 1.1 INTRODUCTION

The CENTURION MEDICAL CORPORATION has designed and manufactured Pulsating Magnetic Field Therapy (or “PMF”)<sup>1</sup> equipment for over 25 years. As an industry leader, Centurion’s equipment has been designed to fill the markets needs of clinics and hospitals, as well as the ever-expanding home market.

Centurion builds rugged equipment, incorporating solid-state electronics, which will be a valuable addition to any practice. To ensure customer safety and equipment reliability, great care has been taken to design all of the Centurion equipment to the highest available standards. Full quality control and complete product testing are standard in our manufacturing process. Every unit produced is calibrated precisely, and tested to meet exact criteria to guarantee trouble free operation.

Magnetic Field Therapy is a modality that has been evolving for nearly 100 years. Over the last thirty years, serious research has been carried out to investigate and substantiate the claims that have been made regarding the therapy. Now, through research being conducted worldwide by colleges, clinics, and technicians, as well as thousands of anecdotal studies, we have arrived at what we feel to be the optimum frequency, time and intensity levels for this modality.

The practical application of pulsating magnetic fields is achieved through the basic principles of electromagnetism. That is, if a current is passed through a conductor, a magnetic field will be set up in that conductor that is perpendicular to the conductor and, if combined with other conductors, as is found in a coil structure, these fields are additive. By controlling the amount of current that is directed toward a particular coil structure, we can effectively control the field that will be induced onto the coil. By further controlling the frequency of the current directed to the coil, we can create a pulsing action that will continuously turn the field on and off. The pulse frequencies that may be selected range from 1-50 Hertz on 230 Volt generators.

The GPC system is intended to be used for aiding in reduction of swelling and the stimulation of healing tissues. It is particularly beneficial as an aid in control of chronic pain and the management of musculoskeletal conditions.

The magnetic field is measured in Gauss (1 Gauss = 1 milli Tesla). The field strength magnitude available from Centurion systems range from 1 to 80 percent. Time length of the session is selectable from a range of 1-99 minutes. The normal maximum time per session is 30 minutes.

This manual will give you a much better understanding of the Centurion GPC System, how to properly use the therapy to achieve maximum benefits, and how to take care of the equipment so that you can continue to enjoy the benefits for years to come.

**NOTE:** The settings suggested are intended to be a guide to help you achieve the best possible results. Consult your physician for assistance in determining the proper settings for your indications.

This manual provides operating instructions for the Centurion GPC System, as well as routine maintenance, safety and trouble-shooting instructions. Please read carefully before using your Centurion system. Keep the manual for future reference and refer to it as often as needed for safe and efficient use.

**If you have purchased the Centurion Bed Coil (GBPC) product, assembly and full usage instructions will be located in the coil box.**

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<sup>1</sup> Also commonly referred to as *PEMF* (Pulsed Electro-Magnetic Field) Therapy

## **1.2 SYSTEM DEFINITONS, SYMBOLS, WARNINGS, CAUTIONS AND NOTES**

Please read this section thoroughly before operating your Centurion System. Included below are definitions of terminology and symbols used in this manual and/or used on equipment markings, operational warnings, cautions and notes for the safe operation of the Centurion “GPC” system.

### **DEFINITIONS**



#### **SAFETY**

- Operator needs to read manual before product use.



#### **WARNING**

- Specific Information provided to the user to advice of situations where the misuse or unlabelled use of the device could present potential harm to the user or patient and/or could result in irreparable damage to the device or property.



#### **CAUTION**

- Specific information provided to the user to prevent misuse of the device that may cause it to malfunction.

### **NOTES**

- General information provided to the user to further explain or clarify the proper operation of the device and/or its accessories or applied parts.

### **APPLIED PARTS**

- “Applied Part” is the term used to refer to any of the applicators that are used to provide the actual session to the patient. (i.e.: “Portable Coil”)

### **SYMBOLS**

Symbols are contained in the documentation and on the markings on the equipment to alert you to cautions and permit easier comprehension of a marking or indication in a restricted space. The following symbols are used with Centurion Systems.

<b>Symbol</b>	<b>Definition</b>
---------------	-------------------



\* Protective Earth (Ground)



- \* On Equipment -Attention, consult accompanying documents
- \* In Manual - Alerts you to a Warning or Caution that you need to read.



- \* Type BF Applied Part



## **WARNINGS - GENERAL**

- Please read the operation manual carefully before using the system. Always use the system according to the instructions. Keep this manual handy during the usage.
- Do not splash or expose electric parts of the system to water or moisture. Doing so may permanently damage it.
- The Centurion GPC System is not suitable for use in the presence of a **FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OXYGEN or NITROUS OXIDE** or other explosive gases. Failure to heed this warning may result in fire or explosion.

**NOTE:** Pulsating Magnetic Fields are used as an aid in the management of chronic pain and musculoskeletal conditions.

### **1.3 CONTRAINDICATIONS**



**WARNING** - Magnetic fields are produced when the modality is operational and may interfere with Pacemakers and Electronic Stimulators.



**WARNING** - During the last trimester of Pregnancy, the therapy should not be used.

**NOTE:** Although the system is very simple and safe to use, it is always wise to consult with a physician about any new indication.

## 2. INSTALLATION INSTRUCTIONS

### 2.1 SYSTEM CONTENTS

Your Centurion GPC System comes packaged in two boxes. You will have the following components included in your system:

#### Box 1

- 1 - "G" Generator Assembly
- 1 - Operating Manual
- 1 - Power Cord
- 1 - Magnet

#### Box 2

- 1 - Portable Coil
- 1 - Applied Part Cable

### 2.2 SYSTEM ASSEMBLY

The Centurion GPC System is completely portable and can be moved wherever required. You may also decide to set up a specific area for your patients to use the therapy.

#### 2.2.1 CONNECTION OF POWER AND APPLIED PARTS

Referring to Figure #6, the "G" generator is connected as follows:

**POWER CORD** - Insert the power cord into the POWER INLET FILTER (#3). The power cord can then be plugged into the power receptacle. Refer to the SERIAL PLATE LABEL (#6) at the rear of the case to determine the power requirements of your unit. .



**CAUTION** - To ensure the safe installation of the equipment, you should place the generator on a level support table away from main traffic areas. Ensure that there is a power source nearby. Where possible, do not use extension cords to power the system.

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**WARNING** - Please ensure this equipment is energized from an electrical circuit that is not shared with other devices. Failure to do so may introduce high frequency interference causing the other devices not to work as intended.

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**WARNING** - The safety of this equipment relies on a properly installed Earth connection. Do not connect to an unearthed mains plug or socket. It is the responsibility of the customer to ensure the mains supply in the installation location is correctly earthed.

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**WARNING** - Do not remove the ground pin from the power cord or bend it over or use an extension cord that will allow the cord not to be connected to ground. Failure to maintain a proper ground while operating the equipment may result in injury to the operator and/or patient.

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**WARNING** - Check the serial plate for voltage and cycle requirements. These requirements vary between countries.

**APPLIED PARTS** - The PORTABLE COIL (see Figures 1-5) is the applied part available with the system. Connect one end of the supplied cable to the base of the portable coil and the other end to the OUTPUT CONNECTOR (#4). Insert the connector fully, and then turn clockwise. An audible “click” sound indicates the connector is locked into place. To release the connector, use your thumb to pull out the metal tab on the connector while twisting the connector counter-clockwise. The cord may then be separated from the generator by pulling back while grasping the connector.

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**WARNING:** Connect only Centurion manufactured applied parts recommended for your equipment model. Failure to comply could result in damage to the equipment and/or injury to the operator or patient.

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**WARNING** - Route all power and applied parts cables so that they are not located in traffic areas or on top of a heating source.

## 2.2.2 POSITIONING OF THE APPLIED PARTS FOR THE PATIENT



**WARNING:** The applied part (*ie: the portable coil*) weighs 10.4 Kg. Use appropriate care and caution when positioning or moving the applied part. While positioning or moving the applied part, assistance from another person may be required. The person using the equipment can also place the coil flat on the floor, step into the coil, pick it up and sit down. Note: During treatment, users do not need to touch the coil. A towel or a pillow can be used to keep the users comfortable.

Please ensure that the cables are routed so that they are not in an area where they can be walked on or damaged. While there are numerous potential positions for the portable coil, please ensure that the SERIAL PLATE LABEL (#6) is positioned closest to the patient's head.

Figures #1 through #3 show examples of the potential positioning of the portable coil:

Figure #1: Head

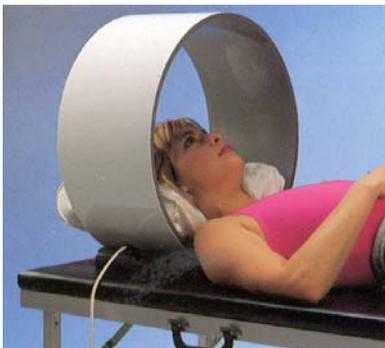
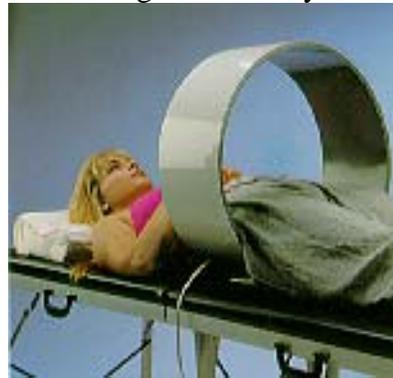


Figure #2: Feet



Figure #3: Body



### 3. OPERATING INSTRUCTIONS

#### 3.1 "G" GENERATOR FEATURES

The GPC System is a full line generator that offers the user the choice of ten (10) different frequencies and nine (9) different intensity settings. The settings are adjusted with selection switches that are conveniently located on the front of the unit. Session time can be varied from one to ninety nine (1-99) minutes using a push wheel timer switch also located on the front of the unit for easy access. The selected settings and the session time remaining can be monitored on the full digital display. Session conclusion is signaled by a buzzer, freeing the user from continuous monitoring of the session. When TIME, INTENSITY and FREQUENCY selections have been made, the session can easily be started or stopped with the START and STOP switches. LED lights built into these switches indicate their current status. The Portable Coil is the applied part applicator for the GPC System.

All the controls of the system are on the front panel of the generator unit as per Figure #6:

Figure #6: "G" Generator Front Panel Features



- |                        |                              |
|------------------------|------------------------------|
| 1) Pulse Indicator LED | 5) Intensity Selector Switch |
| 2) Start Switch        | 6) Frequency Selector Switch |
| 3) Stop Switch         | 7) Timer Selector Switch     |
| 4) LED Readout         | 8) Line Power Switch         |

At the rear of the unit, four (4) fuse holders contain the input and output fuses (two each), the applied parts connector and the power inlet filter (see Figure #7).

Figure #7: Rear Panel Features.



- |                                  |                             |
|----------------------------------|-----------------------------|
| 1) Input Fuse Holders            | 5) Output Fuse Holders      |
| 2) Input/Output Fuses Label      | 6) Serial Plate Label       |
| 3) Power Inlet Filter            | 7) Sales and Service Label  |
| 4) Applied Part Connector Outlet | 8) Anesthetic Warning Label |

Note: The first two digits of the serial number indicate the year of manufacture.

### **3.2 LABELING AND MARKING**

The markings for the basic operation of the G generator are printed directly on the faceplate. In addition, there are seven (7) labels attached to the rear of the equipment as per Figure #7. These labels contain important information about the equipment and should be reviewed by the user.

### **3.3 EQUIPMENT OPERATION (See Figure #6 for control location)**

- Place the PORTABLE COIL around the approximate area of the patient that is indicated (refer to examples in Figures 1-5), taking care to ensure the serial plate label located on the coil is oriented closest to the head of the patient.
- Depress the POWER SWITCH (#8) to initiate power to the generator. An audible buzzer will indicate the equipment is ready for use, and the power switch will illuminate.

- Select the intensity required with the INTENSITY SELECTOR SWITCH (#5) - turn clockwise to increase and counter clockwise to decrease. The values selected for the intensity will be shown on the LED READOUT (#4) directly above the selector switch. Available settings are:

**5, 10, 15, 20, 30, 40, 50, 60 and 80 percent (%)**

- Select the frequency required with the FREQUENCY SELECTOR SWITCH (#6) - turn clockwise to increase and counter clockwise to decrease. The values selected for frequency will be shown on the LED READOUT (#4) directly above the selector switch. The PULSE INDICATOR LED (#1) will also pulse at the frequency selected. Available settings are:

**For 50 Hz Mains Power Supply:                    1, 2, 4, 5, 8, 10, 12, 16, 25 and 50**

**For 60 Hz Mains Power Supply:                    1, 2, 4, 5, 8, 10, 12, 15, 30 and 60**

- Select the duration of the session by dialing in the minutes with the TIMER SELECTOR SWITCH (#7). A Ninety Nine (99) minute session is possible although it is generally **not recommended to exceed a 30-minute session limit**.
- Depress the START SWITCH (#2) to initiate the session. The green LED in the start switch will illuminate and the time selected will appear in the LED READOUT (#4) directly above the switch. As the session progresses, the time display will count down to "0" at which time the light in the start switch will go out, the output of the generator will stop, and a buzzer will sound signaling the end of the session.
- At any time, the session can be terminated by simply depressing the STOP SWITCH (#3). The light in the stop switch will illuminate while the stop switch is engaged. The light in the START SWITCH (#2) will go out, the output of the generator will stop, and a buzzer will sound signaling the end of the session.
- At the completion of all daily sessions, the generator can be turned off by depressing the POWER SWITCH (#8).

**NOTE:** The start switch will not start the session if the timer is set to "00".



**CAUTION** – Unplug the power cord from mains power supply when the equipment is not scheduled to be used for an extensive period of time.

## 4. USING MAGNETIC FIELD THERAPY

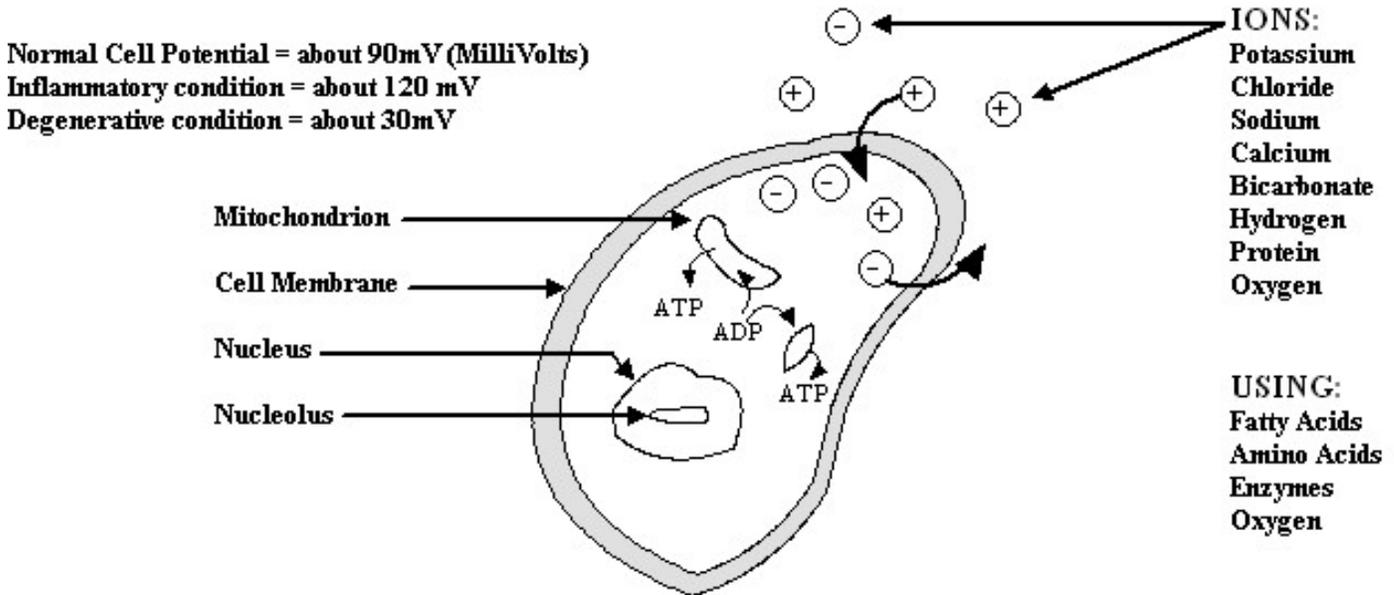
### 4.1 EXPLAINING MAGNETIC FIELD THERAPY

Centurion Pulsating Magnetic Fields (PMF) therapy is very efficient and simple to use. From field experience, it has been found that pulsating magnetic fields can aid in the reduction of swelling and the stimulation of tissue. It is particularly beneficial as an aid in control of chronic pain and the management of musculoskeletal conditions.

Centurion PMF works by influencing the body either generally or locally with a magnetic field packed in paramagnetic impulse bundles.<sup>2</sup> Magnetic fields cannot be absorbed, and simultaneously permeate all target cells when delivered in the Centurion PMF format.

Human and animal organisms consist of a large number of cells which function electrically (See Figure #8). Electric potential has a strong relationship to cellular viability. Our cells have a basic (or rest) potential that is necessary for normal cellular metabolism. The oxygen utilization of the cell, key to cellular rest potential, is proportional to the ion exchange occurring at the cell membrane. The ion exchange can be positively influenced by pulsating magnetic fields.

**Figure # 8 - Ionization in a Cell**



<sup>2</sup> We often differentiate between paramagnetic substances, in which a bundling or a concentration of magnetic field lines occur, and diamagnetic substances, in which a decentralization of the field lines results. The only magnetic therapy with a proven, clinical track record uses pulsating, paramagnetic energy. Static magnetic sessions using diamagnetic substances, commonly found in an ordinary fridge magnet, have minimal or no proven effectiveness in controlling chronic pain or treating musculoskeletal conditions.

## 4.2 ABC's OF MAGNETOTHERAPY

Magnetotherapy can be more effective when the practitioner understands the anticipated effects that each setting will have upon the patient.

To effectively apply the therapy to most conditions, and to enhance the success rate, please follow these priorities (See also Figure #9 - *Priority Settings Graph*):

### **PRIORITIES:**

#### **I Reduce Pain and Inflammation**

#### **II Stimulation**

#### **III Increase Circulation**

#### **IV Rehabilitation**

The priorities are most effectively treated by adjusting the following three user controlled settings:

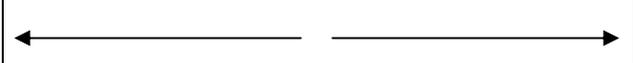
#### **A. FREQUENCY**

#### **B. INTENSITY**

#### **C. TIME**

Frequency, intensity and time are controlled as represented in Figure #9.

Figure #9: Priority Settings Graph

<b>PRIORITIES</b>	1. Reduce Pain & Inflammation	Normal Magnetic Energy	2. Stimulation	3. Increase Circulation	4. Rehabilitation
<b>INTENSITY</b>	5 – 30 %		40 – 50 %	50 – 60 %.	80 %
<b>FREQUENCY</b>	1 – 2 – 4 – 5 Hz.	8 – 10 Hz.	12 – 16 Hz.	25 Hz.	50 Hz.
	 Capillaries Constrict		 Capillaries Expand		

## A. FREQUENCY:

Frequency is a measurement of the number of pulses per second, and is measured in units known as Hertz (Hz). **The frequency has the most impact on the result and is, therefore, the most important setting.**

The frequency settings of the Centurion G generator range from 1 to 50Hz. (50Hz. Mains). As seen in Figure # 9, normal Earth magnetic energy varies between 8 and 10 Hz. In the Centurion GPC System, there are four (4) settings below normal Earth energy and four (4) settings above normal Earth energy. This allows sessions to progress through the different priority stages of the healing process.

**NOTE:** After 8:00 in the evening, it is not recommended to use a setting higher than 15 Hz. The stimulating effects of the higher settings may interfere with normal sleep functions. By contrast, the lower settings (2 Hz) may be very beneficial to relax the body for sleep.

## B. INTENSITY:

The intensity of a magnetic field can be adjusted in term of percentage (%). As the frequency level is increased, the intensity should also be increased, and is shown in Figure #9.



**CAUTION:** Head Area - Only a low setting (20 %. and 2Hz) is directly used around the head area for the first priority stage and will be increased to a maximum level of 30 % and 5 Hz.

## C. TIME:

The “G” generator features One to Ninety Nine (1–99) minute time increments.

FRESH INJURIES - 60 MINUTES FOR DAYS 1 AND 2 (two separate 30 minute sessions)

CHRONIC INDICATIONS - 60 MINUTES (two separate 30 minute sessions)

**Recommended session time - 30 minutes for all other indications.**

## **PRIORITIES**

### **I. PAIN AND INFLAMMATION**

It is extremely important to always start at the frequency setting of 2 Hz for the following reasons:

1. It has a calming, relaxing effect on the body and will help precondition the patient to the therapy.
2. Inflammation, swelling and chronic pain may reduce quickly.
3. Vassal constriction of the capillaries is enhanced.

It is suggested the patient stay on 2 Hz for a minimum of three (3) days after which the therapist can either do a subjective or objective evaluation of the problem area prior to moving to the next priority. In most chronic conditions, where there is still discomfort in the area of concern, the patient will likely remain at 2 Hz. Acute conditions may subside quicker.

### **II. STIMULATION**

After completion of the first priority, stimulation is encouraged by increasing the frequency to 12-16 Hz for 2-4 days. As this setting is above the normal Earth magnetic field frequency, it will cause the capillaries to expand. The resulting increased blood flow will stimulate glands, tissue and muscles. This stage is recommended for musculoskeletal conditions associated with most sports injuries.

**NOTE:** If a new injury should occur, or discomfort returns, the frequency must be reduced immediately to 2 Hz.

### **III. INCREASE CIRCULATION**

At this priority setting, vassal dilatation is enhanced. Stay on 25Hz. for 7 - 21 days until the indication is resolved. Normally, this will be the highest priority frequency setting you will use (except in the case of bone injuries).

### **IV. REHABILITATION**

The last priority setting of rehabilitation is used on serious and chronic conditions. On this highest priority setting, circulation is further enhanced. The frequency is raised to 50 Hz.

**Note:** It is extremely important to be on the right setting at the right time. The setting may be adjusted each day depending on what is required. Move the settings up slowly – do not be in a hurry. If swelling or soreness returns, place the settings back to the lowest priority (*Pain and Inflammation*).

## **SOME THINGS TO WATCH FOR WHEN STARTING THIS THERAPY:**

1. Patients may feel more relaxed - especially important for those who have sleeping disorders.
2. Patients will normally experience increased voiding during the first week. This is due to the fact that all cells in the cleansing organs are being exposed to the magnetic field and the metabolic rate is enhanced.
3. Fingernails and toenails may grow quicker and become suppler.
4. Hair growth may accelerate.
5. Improved concentration may result.

Finally, it is important to understand a part of the process that may occur with chronic injuries known as the "REACTIVE PHASE". Often, when working with a chronic injury, increasing the settings too quickly may result in discomfort. This is normal and happens at the higher priority stages due to the increased blood circulation through a part of the body where, due the original indication, a previous loss of circulation had occurred. The Reactive Phase can easily be recognized by a dramatic increase in heat or swelling in the area. If this happens, there is no need for alarm. Simply discontinue the therapy for one (1) day to allow that part of the body to adjust to the increase of blood in the area. Following this rest period, you may continue the therapy at 2 Hz. for three (3) days and then return immediately to Priority 3 - 25Hz. This reactive phase normally only occurs once with any particular injury.



**CAUTION** – It is advisable to consult a physician when any new condition occurs and prior to beginning sessions with a PMF device.

### **4.3 PROTOCOL INFORMATION**

The following is an example of a typical program for an average patient:

Any specific settings referred to are always expressed as Intensity - Frequency – Time. (ex: “20 - 2 –30” where Intensity is 20 %, Frequency is 2 Hertz and the Session Time is 30 minutes).

<b>%</b>	<b>HZ</b>	<b>TIME</b>	
<b>20</b>	<b>2</b>	<b>30</b>	<b>3 - 5 DAYS</b>
<b>20</b>	<b>4</b>	<b>30</b>	<b>1 - 2 DAYS</b>
<b>30</b>	<b>5</b>	<b>30</b>	<b>2 DAYS</b>
<b>40</b>	<b>12/16</b>	<b>30</b>	<b>2 - 4 DAYS</b>
<b>50</b>	<b>30</b>	<b>30</b>	<b>7 - 21 DAYS</b>

When first starting the therapy, the patient might experience some tingling in the body. This will show the therapist/practitioner where inflammation might be localized. When moving up to a higher setting, if the level of discomfort increases, lower the setting back to the frequency of 2 Hz.

## 5. MAINTENANCE

### **5.1 CLEANING AND INSPECTION**

A schedule of routine maintenance will greatly extend the life of your equipment and ensure that the equipment remains safe to use for both the patient and operator.

#### **CLEANING**

The generator and all power and applied parts cords may be wiped down with a damp cloth that has been rinsed in a light detergent solution.

The applied parts (i.e.: Portable Coil) may be wiped clean with a damp cloth that has been rinsed in a light detergent solution.

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 **WARNING:** Do not clean when equipment is energized. Disconnect power cord from generator and from outlet before cleaning. When cleaning generator faceplate area, do not use excess cleaning liquid on cleaning cloth so that fluid drips into equipment. Failure to comply may cause permanent damage.

#### **INSPECTION**

Before each use, the system should be inspected to ensure that all parts are in good working order. Inspect all cords for damage to the outer insulation. If there is any damage to the cords or any other parts of the system, have them serviced before using.

0454  
 **CAUTION** - Inspect all cables and applied parts daily for any signs of deterioration or damage. Do not use damaged cables as they may present an electrical shock hazard. If damage is observed, arrange to have cables serviced by the manufacturer or authorized service personnel.

## **5.2 SERVICE INSTRUCTIONS**

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**CAUTION:** To prevent the risk of electrical shock, do not open the generator. There are no user serviceable parts inside. All repairs must be referred to an authorized qualified technician. Never attempt maintenance operations beyond those described in the operating instructions. Refer to manufacturer or their authorized distributor for any additional required service. Opening of the unit by non-qualified personnel will void the warranty. Always comply with all warnings that appear on the equipment and in servicing instructions.

Consult the *Troubleshooting* section of this manual to help determine the possible source of your service problem.

If service is required, refer to the *Sales and Service* contact information located on the outside of the generator case and at the end of this manual.

## **5.3 WARRANTY**

Your Centurion system has a FIVE (5) Year Warranty from the date of purchase or first day of rental. This unconditional warranty covers any and all problems including labor and replacement parts (inbound freight excluded).

**NOTE:** Any repairs or service work performed by an unauthorized person or company will void the Warranty immediately.

An extended warranty package is available to cover any problems that may arise after the fifth year. This very affordable plan covers all parts and labor (inbound freight excluded). Your Centurion Dealer will keep you informed about the Centurion Warranty extension program.

The Warranty is honored at any of the Service Centers in North America or at any of our Service Centers around the world.

## **5.4 SERVICE POLICY**

It is Centurion Medical Corporation's and its Dealers' Policy to, whenever possible, provide service on Centurion systems within 48 hours of the receipt of the equipment. Return shipments will be done by the best available normal shipping method. If a customer wishes to have a higher level of shipping service, they may arrange to have the equipment picked up by their own shipping service or pay the additional cost above normal shipping costs for overnight or the best service available. When sending in equipment for servicing, please allow for shipping time.

**NOTE:** Unless instructed otherwise, always return all of the parts of the system when sending equipment into the Service Depot. This allows Centurion the opportunity to check over the entire system to determine if there are additional problems that require service attention.

## **5.5 SERVICE INFORMATION**

### **TO OBTAIN WARRANTY SERVICE:**

- Follow the *Operating Instructions* first to try and determine the problem. If the problem remains unresolved, refer to the *Troubleshooting* section for further guidance to determine what the problem may be.
  
- Phone your nearest Service Depot and provide the following information:
  - Model/Type of equipment. (i.e.: “G Generator” and “Portable Coil”)
  - Serial number of equipment.
  - Complete description of problem.
  - Name, address and contact number of the owner of the system.
  - Shipping name, address and contact number if different than owners.
  
- Once authorization for repairs has been received, package the system in its original packing, if available, or package in accordance with good commercial practices. Shipment to the Service Depot will be done at the Owner or Renter’s expense.

### **TO OBTAIN OUT OF WARRANTY SERVICE**

- Follow the *Operating Instructions* first to try and determine the problem. If the problem remains unresolved, refer to the *Troubleshooting* section for further guidance to determine what the problem may be.
  
- Phone your nearest Service Depot and provide the following information:
  - Model/Type of equipment. (i.e.: “G Generator” and “Portable Coil”)
  - Serial number of equipment.
  - Complete description of problem.
  - Name, address and contact number of the owner of the system.
  - Shipping name, address and contact number if different than owners.
  - Credit card number for payment.
  
- Once authorization for repairs has been received, package the system in its original packing, if available, or package in accordance with good commercial practices. Shipment to and from the Service Depot will be done at the Owner’s expense.
  
- Notify the Service Depot if you wish to receive a quote for service prior to work being performed. If the service required to repair the equipment is not authorized by the customer, there will be an estimate charge based on the time spent to evaluate the service problem.
  
- All out of Warranty repairs will be warranted for 30 Days from the date of shipment to the owner.

## END OF LIFE INSTRUCTION

Centurion Systems are designed to last for many years as long as the equipment is kept maintained as per the *Maintenance Instructions*. If, however, the unit becomes irreparable or is no longer required, disposal of the equipment could be made by either returning the equipment to the distributor or manufacturer for disposal, or by complying with your local regulations for the disposal of equipment containing basic electronic parts. This equipment may contain small amounts of materials recognized and regulated as hazardous within the European Union under the *WEEE DIRECTIVE*. EEC consumers are encouraged to contact their European distributor for instructions in proper end of life disposal.

## 6. TROUBLESHOOTING

If problems occur with the operation of your equipment, the following steps will help determine the cause of the problem. Please perform the following operation checkup and then refer to the *General Troubleshooting* section for assistance in determining the potential problem. This will allow you to provide specific information on the problem when phoning for warranty service.

### 6.1 GENERAL OPERATION CHECKUP

- Plug the equipment under test to the correct voltage source as indicated on the SERIAL NUMBER LABEL.
- Plug the applied part (i.e.: Portable Coil) into the generator OUTPUT CONNECTOR.
- Depress the LINE POWER SWITCH. The buzzer should sound and the LED READOUT (digital display) will initiate. On the left side of the faceplate, the PULSE INDICATOR LED will pulse at the frequency selected.
- Set the TIMER SELECTOR SWITCH on the faceplate to 10 minutes. Turn the INTENSITY and the FREQUENCY controls all the way counter clockwise. The digital display should read:

<b>5</b>	<b>1.0</b>	<b>0</b>
<b>Intensity</b>	<b>Frequency</b>	<b>Minutes</b>

- Depress the START SWITCH. The light in the start switch will glow to indicate the unit is operating and the minutes display will change to "10".

- Test the output to the portable coil as follows:

- Place the magnet supplied with the equipment over the portable coil to feel the pulse. Turn the INTENSITY SELECTOR SWITCH control clockwise and check each intensity setting. As the intensity knob is turned up, you should see the digital display change to each new setting and the pulse strength felt through the magnet should also increase in intensity. Repeat this check for each applied part under test. Leave the generator at the highest intensity setting (80 %) for the next step.
- With the magnet still over the portable coil, feel the pulse at the frequency selected. Turn the FREQUENCY SELECTOR SWITCH clockwise and check each frequency setting. As the frequency knob is turned up, you should see the digital display change to each new setting and the pace of the pulse frequency felt through the magnet should increase noticeably. Note that, as the frequency is increased, the PULSE INDICATOR LED lamp at the left side of the faceplate will pulse at an increased rate. Repeat check for each applied part under test.
- Once the previous two steps have been completed, confirm that the time display continues to count down from the original set time. Next, while holding the start button down, depress the "+" or "-" button on the TIMER SELECTOR SWITCH to each number available from "0" to "9". Test both sides of the switch. Confirm that the number appearing on the digital display matches the switch settings.

**NOTE:** As you are cycling through the TIMER SELECTOR SWITCH settings, the buzzer will sound if the switch is set to "00". The start switch will not start the session if the timer is set to "00".

- Next, depress the STOP SWITCH. The buzzer should sound off and the minutes setting on the digital display should return to "0". There should be no pulse felt in the applied part under test after the stop switch is pressed.

- Test sequence is complete. Turn off the power to the unit by depressing the LINE POWER SWITCH.

- If a problem becomes evident, proceed to the *General Troubleshooting* section.

## **6.2 GENERAL TROUBLESHOOTING:**

**PROBLEM:** Machine won't turn on - No display, No lamp lit in power switch

**SOLUTION:** Check to confirm that the power cord is plugged into the power supply outlet and to the POWER INLET FILTER on the generator. Check to confirm that the power cord is in good condition with no obvious signs of damage. Check power outlet to make sure there is power at the outlet. If there is power there, check the top two INPUT FUSES at the rear of the generator above the power inlet filter. If they are burnt out, replace with fuses of the same rating. See INPUT FUSES LABEL beside fuse holders at the rear of the generator or consult the *Electrical Specifications* section of this manual for correct fuse size.

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**CAUTION** - Disconnect power from the system before checking fuses. Replace faulty fuses only with fuses of the correct type and ratings as per the *Electrical Specifications* section.

**PROBLEM:** No output on one or more of the applied parts

**SOLUTION 1:** Plug a known working applied part directly into the machine to test the APPLIED PART CONNECTOR OULET. If the known working applied part works, then the faulty applied part may need servicing.

**SOLUTION 2:** If there is no output at the APPLIED PART CONNECTOR OUTLET, check the two OUTPUT FUSES at the rear of the machine below the POWER INLET FILTER. Replace, if necessary, with fuses of the same rating. See INPUT FUSES LABEL beside fuse holders at the rear of the generator or consult the *Electrical Specifications* section of this manual for correct fuse size.

**PROBLEM:** Applied parts don't lock into the connectors

**SOLUTION:** Check the APPLIED PART CONNECTOR OUTLET for dirt and debris.  
Blow the connector outlet clean with compressed air.

## 7. TECHNICAL SPECIFICATIONS

### 7.1 REGULATORY COMPLIANCES

The Manufacturer declares that this product has been designed and tested in conformity with the requirements of the following reference standards:

#### *Guideline Electrical Standards*

*Europe* IEC 60601-1:2005, 3<sup>rd</sup> edition

#### *Electromagnetic Compatibility*

Meets EN 60601-1-2:2007, 3<sup>rd</sup> edition requirements for electromagnetic compatibility.

Additionally, the equipment is designed and manufactured in a facility operating in accordance with the following guideline standards:

#### *Quality Assurance and Risk Management*

ISO 13485:2003

ISO 14971:2012

This equipment has been issued a Class 2 Medical Device License by the Therapeutic Products Directorate of Health Canada.

### 7.2 EQUIPMENT CLASSIFICATIONS

Class	Class I Electrical Equipment (CSA 601.1)
Degree of protection against Electrical shock	Type BF Applied Part
Protection against the harmful ingress of liquids	IPX0 - (Non-Protected) Ordinary Equipment
Protection against Explosion	Equipment not suitable for use in the presence of a <b>“FLAMMABLE ANAESTHETIC MIXTURE WITH AIR OR WITH OXYGEN OR NITROUS OXIDE”</b>
Mode of Operation	Continuous

### 7.3 ELECTRICAL SPECIFICATIONS

Electrical:

Power supply ----- Voltage/Current ----- Fuse Type and Rating

115V/60Hz	Input	- 115V/60Hz - 2.5A	3.0A/250V (Type AGC3)
	Output	- 115V - 1.65A	3.0A/250V (Type AGC3)

230V/50 Hz.	Input	- 230V/50Hz. - 1.75A	3.0A/250V (Type AGC3)
	Output	- 100V . - 0.42A	3.0A/250V (Type AGC3)

INTENSITIES (Adjustable): 5, 10, 15, 20, 30, 40, 50, 60, 80 %

FREQUENCIES (Adjustable): 1, 2, 4, 5, 8, 10, 12, 16, 25, 50 Hertz (50 Hertz mains)  
1, 2, 4, 5, 8, 10, 12, 15, 30, 60 Hertz (60 Hertz mains)

SESSION DURATION (Adjustable): One to Ninety Nine (1-99) minutes

CONTROL IMPULSE BUNDLE: One to fifty (1-50) Hertz (50 Hertz mains)  
One to sixty (1-60) Hertz (60 Hertz mains)

OUTPUT JACKS: One locking "Powercon" female receptacle

### 7.4 PHYSICAL SPECIFICATIONS

<b>Dimensions:</b>	G Generator	20.5" X 16" X 6.5"	520mm X 305mm x 165mm
	boxed	24" X 18" X 10"	610mm X 457mm X 254mm
	Portable Coil	20" X 9 1/8"	510mm x 230mm
	boxed	24" X 24" X 11"	610mm X 610mm X 280mm

<b>Weight:</b>	G Generator only (115V/60Hz)	12 Kg./26.5 lb
	boxed	13.1 Kg./28.9 lb
	G Generator only (230V/50Hz)	16.7Kg./36.75 lb.
	boxed	17.9 Kg./39.5 lb.
	Portable Coil only	10.4 Kg./23 lb.
	boxed	13 Kg./29 lb.

## 8. ACCESSORIES AND REPLACEMENT PARTS

### DESCRIPTION

G/M9 Applied Part Cord	#R180A
Power Cord - North American	#W58
Power Cord - German (Standard with Euro Equipment)	#W25
Power Cord - British	#W26
Power Cord - Old British	#W59
Power Cord - Italian	#W49
Power Cord - Swiss	#W32
GPC Manual - English	#W109
GPC Manual - French	#W110
GPC Manual - Spanish	#W111
GPC Manual - German	#W112
Magnet	#M01

## 9. STORAGE & ENVIRONMENTAL CONDITIONS

Temperature:	10°C to 30°C
Humidity:	30 to 75% RH (Relative Humidity), no condensation.
Atmospheric Pressure:	70.0 kPa to 106.0 kPa.

## 10. SHIPPING AND TRANSPORTATION

The equipment can be easily carried or shipped by putting the equipment into the shipping boxes provided or other shipping boxes suitable for commercial transportation and the product dimensions and weights.

Typical environment conditions:

Temperature: -20°C to +50°C, Relative Humidity: 15 to 90%, Altitude: 0 to 2,000 meter

## 11. THREE MONTH RENTAL PROGRAM

You may not be sure if this is the type of therapy you need at home or wish to practice for a lifetime. But, you have probably heard a lot of positive things being said about the **Centurion Systems** and you might wonder if the therapy will work for you.

Our three (3) month rental program will allow you to use the therapy at home or practice on a trial basis. This program is long enough to enable you to experience the benefits of magnetic field therapy first hand, and short enough that you are not bound to a long-term agreement.

At the end of the three-month rental period, there are a number of programs available to help you acquire the Centurion System for your practice on a lifetime basis.

## 12. COMMONLY ASKED QUESTIONS

**Q1.** Is it normal for a person to feel very relaxed during or after a session, especially on a low frequency setting?

**ANS:** Yes - the low frequency setting has an extremely relaxing effect on the body and it is common for the patient to feel extremely relaxed.

**Q2.** Can Magnetic Field Therapy be used in conjunction with other therapy?

**ANS:** Yes - the therapy can be used by itself or in combination with other therapies.

**Q3.** Will I have guaranteed results from using Magnetic Field Therapy?

**ANS:** No! No therapy or drug will ever be 100% successful in treating all conditions. As each person is different, the results can vary from one to another. The three-month rental program allows you to find out if this therapy will benefit you with the particular problems you experience.

## 13. CONTACT INFORMATION

### SALES AND SERVICE

#### CANADA

Elec Western Medical Devices Ltd.  
1015 Matheson Blvd. E. # 8  
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**Centurion**  
**MAGNETIC FIELD THERAPY SYSTEMS**  
**are**  
**Designed and Manufactured by:**  
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**#2, 2616, 16th Street NE**  
**Calgary, Alberta, Canada T2E 7J8**  
**Registered ISO Quality System**