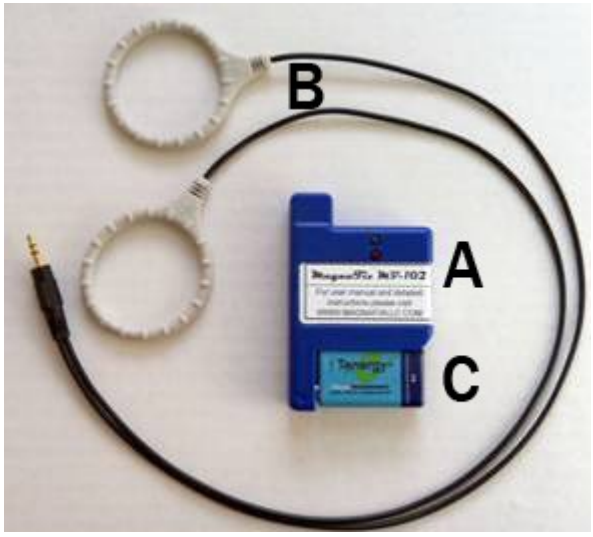
MagnaVet
A Pulsed Electro-Magnetic Field Device

For clinical veterinary use only
NOT FOR USE ON HUMANS

The purpose of this kit is to provide clinical veterinarians with an alternative scientifically-based treatment for animals with chronic osteoarthritis problems, repair of broken bones and other refractory injuries to the musculoskeletal tissues using MagnaFix patented technology to accelerate tissue healing. With this kit clinicians may employ this technology on any cases for which accelerated musculoskeletal tissue healing is desired. We seek a brief clinical evaluation for each use. To improve future designs we need all system components returned so that we can analyze any damage or failures that may occur. MagnaFix will refund $25 for each evaluation submitted to MagnaFix after use of an MV-102 device through June 30, 2011.



KIT CONTENTS:
(A) MV102 Pulse Generator
(B) Coils and cable
(C) Two rechargeable batteries
(D) Battery recharger (not shown)
(E) Silicone jacket or rubber bands to secure the 9V battery (not shown)
(F) Instruction Sheet (this document)
(G) Clinical Report Form (following pages)

GENERAL INSTRUCTIONS FOR USE:
This system is simple to use. First step is to place the coils over the injured tissue and then to plug the coils into the MV102 pulse generator unit. Then snap in the 9V battery and secure the system to the animal with bandages or using one of our animal vest accessories.

USING THE VEST ACCESSORY

Mount the magnetic pulse generator in a convenient location or if you are using one of the mounting vests (suggested best practice), put the coil wire through the button hole on the underside of the garment and then attach to the pulse generator. and wrap or otherwise protect the coils, cable and pulse generator to minimize damage from chewing or abrasion. The cloth mounting vest is available that has a pocket for the pulse generator and Velcro pockets to attach the coils to the vest. If the vest Velcro is not located strategically, then the coils may be taped into place with surgical tape. When the coils are plugged in, the system will turn ON automatically. There is no power switch, the system detects the coils and battery and responds automatically The most important points are to center the injury between the coils, make sure the coils are oriented so that the smooth side is always to the skin with bumps facing away from skin, and place the coils as close together as is practical. The generated pulse will travel over 5-7 times the circular diameter of the coils or about 10-12 linear inches effectively.

RECHARGING THE BATTERIES

The MV102 system can use any type of 9V battery that is commercially available. Generally either Alkaline (non-rechargeable) or NiMH (rechargeable) batteries are used. Alkaline batteries should NEVER BE RECHARGED. If you choose to use rechargeable NiMH batteries, these batteries will only last for approximately **4 to 5 hours** before they need to be recharged. Alkaline 9V batteries will last longer but should be replaced after every **24-36 hours of use**. During battery changes you may leave the coils plugged into the pulse generator (coils can be left in place on the animal), just remove bandages or dressing to gain access to the MV102 Pulse Generator Unit, and change the spent battery for a fully recharged one from the recharger or a new Alkaline battery. Then check to be sure the cables are still fully connected. As soon as the battery is replaced, the unit will automatically reset itself, the red LED will blink 3 times, then it will begin to generate the magnetic pulse protocols that it is programmed to automatically apply. Recharge time for the batteries is typically less than 2 hours on a quick charger, but may take overnight if a different charger is used. Typical NiMH batteries can be recharged 300 to 500 times before they lose their ability to store energy. While using one rechargeable battery you can charge and keep the other spare batteries fully charged and ready to use.

STORAGE

The system can be stored but it is suggested to remove the battery to prevent corrosion. Recharge batteries before use if it has been in storage longer than 1 month.

REPLACEMENT PARTS

Additional kits and replacement parts are available for purchase upon request. Order via MagnaFix web site at MagnaFixLLC.com or contact Sean@MagnaFixllc.com or Helen@MagnaFixLLC.com.

Please keep all Kit materials together. MagnaFix requests that they be returned for manufacturer for analysis of function, failures (if any), and damage during use. MagnaFix will pay $25.00 for any returned kit.

If you have any questions about the MagnaVet device, please feel free to contact MagnaFix LLC: Robert Dennis, Ph. D. e-mail: Bob@MagnaFixllc.com or cell (919) 730-0221

USING THE DEVICE

This system may be used experimentally ON ANIMALS with any injury to bone, muscle, tendon, ligament, cartilage, skin, or nerve tissue. Clinicians may use this device at their discretion. Researchers must have IRB approval from their institution to use this device.

1. Start with a fresh set of batteries.
2. Place the two coils across the injury (see figures on following pages), and wrap bandages over the coils to hold them in place. Always remember these ***Three Rules of Thumb*** when placing the coils:
    1. ALWAYS place the bumpy side out, facing away from the skin
    2. Place the coils as close together as possible
    3. Position the coils so that the injured tissue is between the two coils
3. Protect the cables from damage caused by the animal by wrapping or bandaging appropriately. The system operates on very low power so **animals will not harm themselves if they do chew through the cables**, but they can destroy the cables.
4. Secure the MV102 Pulse Generator to the animal in such a fashion that it can be easily removed daily for inspection and to change the batteries.

5. Use wide rubber bands or the available silicone jacket accessory to secure the 9V battery in place if you feel that the system will be subjected to excessive vibration, impact, or other forces that could dislodge the battery. Having the battery on the outside of the MV102 allows the overall unit to be much thinner and smaller, and for the battery to be changed more easily, but this also creates a problem of unintentional battery disconnection. With large or very active animals added stabilization is generally a good idea. See picture at right for an illustration of battery stabilization.
6. After each battery change the MV102 will automatically reset and restart itself. You can check to see if the MV102 starts up correctly. On power-up, the red LED will blink 3 times, and then the green LED will turn on and flicker continuously. The green LED indicates power flowing to the coils, so as long as the green LED is ON, the system has power and is providing stimulation. To reset the device,

simply unplug and re-plug the battery or press the red reset button (available on some units).

7. The device will run for approximately 24-36 hours with Alkaline batteries, or 4 to 5 hours using NiMH rechargeable batteries before the batteries require recharging. During normal operation the device will periodically cycle through three different stimulation modes, and then it will go into SLEEP mode to allow the tissue to recover from the stimulation. So, the pattern of LEDs flashing will change with time as the device cycles through the stimulation and SLEEP modes. When the LEDs grow dim or no longer flash, the device requires a fresh battery.
8. During stimulation you may hear a high-frequency clicking noise. This is because the magnetic field between the coils is changing rapidly with very narrow pulses or current, several times per second. This is normal, in fact, this is the best way to assure the system is working properly. Bandages can be used to muffle the sound if it causes a problem, but there is no physical way to eliminate this clicking sound. It is part of the physical operation of the device.
9. It is OK to run the system until the batteries are completely drained. Just fully recharge the batteries before each use, or replace with a new battery if you use disposable Alkaline batteries.

SYSTEM OPERATION - THE 50-MINUTE CYCLE

Periods of rest are just as important as periods of stimulation to allow tissues to heal. This is why the system is designed with a rest cycle that lasts 20 minutes, at the end of every 50 minute cycle. The device will go through the following cycles continuously until the batteries run out of energy or until the battery is unplugged:

1. 10 Hz alternating pulses (green LED is on, flickers slightly, clicking sound, 10 minutes)
2. Rapid series of five unipolar pulses (green LED is on, "zipping" sound, 10 minutes)
3. Reversed series of five unipolar pulses (green LED is on, "zipping" sound, 10 minutes)
4. Sleep mode (no stimulation, red LED blinks once each second, no sound, 20 minutes)
5. The cycle repeats automatically every 50 minutes beginning with #1 above.

MV102 SYSTEM CONFIGURATION

The MV102 system is designed to be as easy to use as possible, but we are always very happy to work with our users and customers to improve the system or to develop a special system for a specific application in research or clinical practice. We welcome your input and your requests for new and different system configurations, new accessories, etc. Please feel free to contact us at the contact information provided at the end of this document.

Placing the Coils

The MV102 system comes with a pair of specially-designed coils. We use two coils to allow you to control how the magnetic field is shaped so that you can focus the field on

the injury site. This maximizes the stimulation to the injured tissue while minimizing unnecessary stimulation to surrounding tissues. This is one of the unique advantages of our system. Each coil is also flexible, so this allows you to bend and shape the coils to conform them to the surface of the body or limbs, neck, face, jaw, tail or digits. Basically there are two ways to set up the coils: side-by-side or opposite sides. The most effective treatment will usually result from using the coils on opposite sides of the injury, but for very thick tissue, such as at the base of the spine, it may be necessary to place toe coils side-by-side. Examples of coil placement are shown below. Bandages are not shown so that you can see the coils clearly. The coils can be placed directly on the fur or skin, or you may decide to put one or more layers of bandages between the coils and the injury. The magnetic field will penetrate bandages and other non-metallic items without any problems. Then wrap the coils with more bandages to hold them in place.

Always remember these ***Three Rules of Thumb*** when placing the coils:

1. ALWAYS place the bumpy side out, facing away from the skin
2. Place the coils as close together as possible
3. Position the coils so that the injured tissue is between the two coils

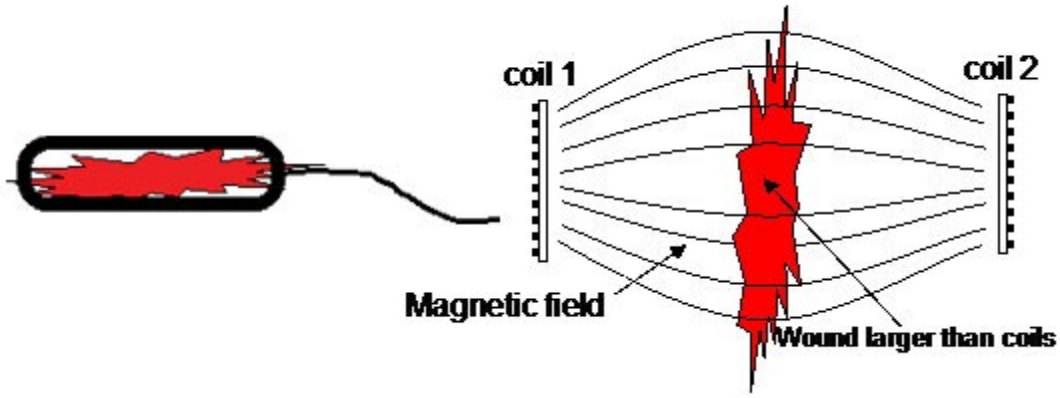
OPPOSITE SIDES with the injured tissue directly between the two coils is the most effective coil arrangement, as shown below. At left the coils are placed on opposite sides of a rabbit knee. On the right the coils are bent to make each coil long and narrow to cover the injury site between the coils. In this case only the top coil is visible because the other coil is below the rabbit foot. You can bend the coils to shape them for the best fit to cover the injury, just be sure to follow the ***Three Rules of Thumb***.

It is OK if the coils move around a bit, and it is also good to try different coil placement from time to time to determine what works best, since each animal and each injury will be different. Try to keep the coils no farther apart than 3 coil diameters (about 6 inches). Optimal separation distance is 4 inches or less.

SIDE-BY-SIDE is an alternative arrangement that can also be effective for large, thick parts of the body when the injury is relatively close to the surface, within an inch or two

of the skin. In the side-by-side arrangement you place the coils as close as possible to form a figure "8" from the two coils. Position the coils so that the injured tissue is directly underneath the point where the two coils touch. This is shown below, on the left where the two coils are just placed side-by-side on the flank of the rabbit, and on the right where the two coils are bent into "D" shapes so that they can be placed even more closely together to fit across the lower spine of the rabbit. When placing coils side-by-side, you should try rotating the coil pair from time to time to see if the results are better for a particular orientation of the coils. But always follow the ***Three Rules of Thumb***, remembering to place the coils "bumps out" and as close together as possible.

VISUALIZING THE MAGNETIC FIELD can be helpful when considering how to place the coils. When the coils are placed on opposite sides, they will generate a magnetic field that fills the space between the two coils. On the left is shown an injury (red jagged shape) between two coils, one above, one below so that only the top coil is visible. On the right is shown the injury, again a red jagged shape, between two coils. The closer together you place the coils, the stronger the field will be, and the more stimulation you will be able to focus onto the injured tissue. As always, place the bumpy side of each coil away from the skin. This ensures that the magnetic fields are lined up properly and not opposed to one another, which would cancel out the magnetic field at the injury site and render the system ineffective. Also note that it is OK if the wound is larger than can be completely covered by the coils. The stimulation has a beneficial effect on tissues in the general area of stimulation, so coil size and placement do not need to be precise.



It may also helpful to move and reposition the coils occasionally, especially if the exact site of the injury is not clear. This will change the orientation of the magnetic field, which may also be beneficial. Uninjured tissues do not seem to react to the magnetic fields, so it is OK to reposition the coils so that they envelop the injury from different directions. For example, on the first day or two you might place the coils on a limb on the lateral and medial surfaces. Then for the following day or two you might choose to reposition the coils on the dorsal and ventral surfaces around the injury. You might later decide to place them obliquely. To the extent possible it is best to try several options to determine what seems to work best. The preferred placement of the coils might ultimately be driven mainly by practical concerns such as ease of securing or bandaging the coils or placement of the magnetic pulse generator.

LED INDICATORS
The working state of the device is indicated by the state of the two LEDs (red and green):

Normal Operation (with coils attached):
Power-on sequence: each time you attach a battery, the red LED should first flash 3 times. Then:

- Green LED on continuously or flickering slightly: normal operation during stimulation This will last for 30 minutes
- Red LED flashing slowly: SLEEP mode. This lasts for 20 minutes, but you can reset by unplugging and reattaching the battery or pressing the red RESET button available on some models
- No LED activity or dim LEDs: batteries are dead: recharge or replace.

GENERAL PRECAUTIONS

This device by design emits electromagnetic radiation. This type of radiation goes by various names, including RF energy, radio frequency energy, EMF, EMP PEMF, and various other designations. The emission of pulsed electro-magnetic radiation is how it works. There is no valid scientific reason to believe it is harmful to use this device, but if

you have concerns about exposure to electromagnetic radiation you must not use this device.

IF YOU HAVE ANY CONCERNS please return this system for a full refund.

The FDA CVM expresses no concerns regarding the use of this device for veterinary clinical and research applications. It is a very low power radiation-emitting device. The average power output is approximately 1/3 Watt (330 mW), which is about half the power output of a cellular telephone. All of this energy first passes through the green LED, which then charges the system for each pulse. So the total system generates only as much power as you can visually see illuminating the green LED.

For more information, please contact:

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