PULSE MATIC 9000™ FULL DIGITAL
New professional metal detector

IMPORTANT NOTE:

- **The battery charger of your *PULSE MATIC* is 110v-240v at 12v. Consequently this battery charger can be plugged in any (AC) household from 110v to 220v-240v.**
- **The Pulse Matic 9000™ full digital is just ready to be used.**
- **The Pulse Matic 9000™ full digital produces magnetic fields. For security reasons, people with pacemaker will not be near the coil during the operation.**

You have purchased one of the most powerful metal detectors available. The metal detector PULSE MATIC 9000 ™ FULL DIGITAL is the result of the consistent development of the principles of pulse induction.

Here you can find a piece of advice to maintain your battery (Lithium polymer):

- **The lithium polymer's battery that works in the PULSE MATIC 9000™ FULL DIGITAL is an updated generation. It requires smart chargers; do not try to use other which is not the one of this equipment.**
- **Do not expose your battery to extreme temperatures. Excessive heat or cold could be fatal to the battery.**
- **Do not try to charge the batteries more time than the recommended. When they are not being used, load your batteries once every two months. By doing this you extend the battery's life.**
- **Full charge of the battery requires between five and seven hours.**

DESCRIPTION

Electromagnetic pulse

It is the emission of electromagnetic energy of high intensity in a short period of time. On a practical level, it consists of providing a high voltage through an induction of a frequency or pulse time of short duration.

The PULSE MATIC 9000™ FULL DIGITAL is the result of the consistent development of the principles of pulse induction. Components and circuits have been designed with the highest levels of technology to be used to reach superior functionality levels and to introduce important improvements. You can locate metal objects of different size (all kind of metals, ferrous and non-ferrous) deeply buried. Your equipment includes a detection coil of 1 m X 1 m.
The PULSE MATIC 9000 ™ FULL DIGITAL can operate efficiently in highly mineralized grounds, beaches, salt water and areas where the conditions are normally unfavorable for other metal detectors. The unit's metal discrimination characteristic is of great aid during a search and makes it possible to discriminate objects of low conductivity (iron, foil or small metal particles) and objects of high conductivity (gold, silver, copper, bronze, aluminum, etc). The discrimination requires objects of a minimum size and works in a discrimination range of 60 to 80% of the normal range.
The PULSE MATIC 9000™ FULL DIGITAL is an induction pulse instrument (IP) which incorporates a detector coil with the purpose of finding big or small objects at different depth. These depth detectors can be almost compared with the magnetometers that only detect ferromagnetic objects.

Advantages
Digital lector

Digital reading facilitates its process and generates its resultant signal (digital signal) more immune to noise and other interference to which the analogical signals are more sensitive.

Induction principle

The induction pulse principle offers some great advantages. Firstly, the coil is not part of a resonant circuit. It could be from different size and shape. This is absolutely necessary to increase the depth. Secondly, there is an appropriate decoupling between the transmission phase and the reception phase which enables you to work with more transmission power. Another advantage is that small objects such as cans, paper, aluminum and also coins (alone) are rejected while the large coil is being used.

SEARCH COIL 1M X 1M

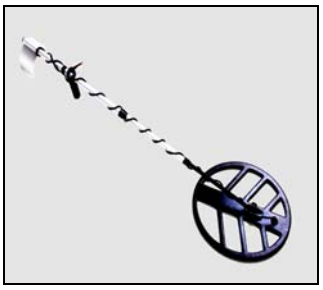
The PULSE MATIC 9000™ FULL DIGITAL has the advantage of having a big coil (1m X1m) which helps covering a bigger area without taking so much time. The current detector coil is provided with a plastic frame (PVC Tube) and can be carried by a single person.

Bobina de 1 mt x 1mt. PVC

You can follow these simple steps so that your coil search is ready to use:

- Expand all the four sections of the PVC tubes.
- Place 4 corners on a square.
- Make sure that the cable is being pushed in the interior of the tube.
- Introduce each of the tubes making a square.

Coil 45'



This coil is functional and easy to carry. Its ergonomic design helps covering different types of ground and surface. The height for prospecting will be as low as possible.
The audio response has a wide frequency grade to avoid the signal saturation when the coil is near the object. This facilitates the target.
The functioning is divided in two intervals of time:

Transmission phase: Fig. 4

Transmission Phase:

A current is sent through the coil at approximately 600 times per second. The progressive linear current forms a primary magnetic field which is transmitted as it is shown in fig.4. The current is abruptly halted after a certain time so that the primary magnetic field quickly collapses causing eddy currents in the metal objects. The force and duration of the eddy currents depend on the electric conductivity of the object as while as its size and shape.

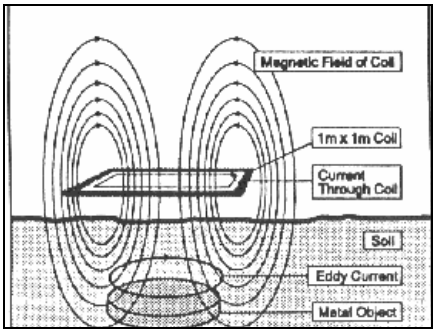


Figure 4 – Transmission Phase.

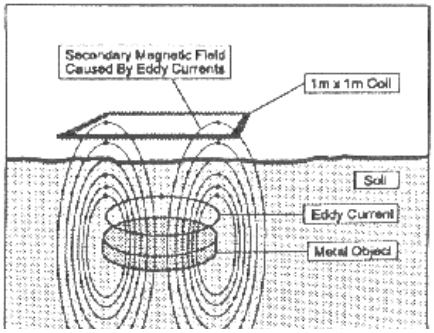


Figure 5. Receptive Phase

Receptive Phase (Fig 5):

The delay of the eddy currents in the objects produces a secondary magnetic field which is emitted by the object. See Fig.5. This secondary magnetic field also has its effects on the coil; low voltages are induced and amplified through a measuring meter and audio signal. Obviously the range of the detector has physical limits because these voltages are extremely weak and can be destroyed via external magnetic fields.
In general the possible range of detection will increase rapidly when the object's size increases. This is especially true due to the principle of pulse induction. The electric conductivity and the shape of the object are also important factors.
Ferrous-magnetic metals have their own special mention. If these metals are exposed to the magnetic fields of the PI detector, they will be momentarily magnetized even when the electric conductivity of these metals is very poor. The eddy current is short and the slow fall of the magnetization causes a strong signal. For this reason, PI metal detectors are very sensitive even to small ferrous objects.

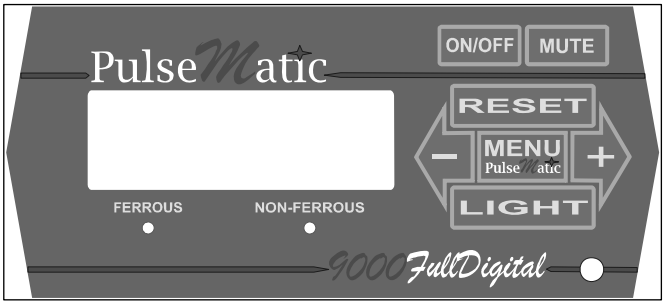
The ***PULSE MATIC 9000™ FULL DIGITAL*** offers you the possibility of real sensitivity towards these objects (some small ferrous objects can be completely rejected) without losing sensitivity towards non ferrous metals.
With a more complex electrical analysis of the decline of the magnetic fields of these objects, we were capable of providing the ***PULSE MATIC 9000 TM FULL DIGITAL*** with a metal discriminator. Since the signals that will be analyzed are even smaller than the signals that are normally detected, the discrimination range is limited to approximately 60 to 80% of the normal range of detection.
Additionally, movement from the search coil is required to receive a ferrous or non-ferrous indication. Also, the discriminator works with objects of a minimum size of 10cm in diameter. The influence of shape and position is very important when detecting small objects.

It is because all of these that…

- PULSE MATIC 9000™ FULL DIGITAL offers you the possibility of real sensitivity to these objects (some small ferrous objects can be completely rejected) without loosing its sensitivity to the non ferrous objects.

Functions of the control panel:

Fig. 6



- Turn ON/OFF the equipment.
- RESET: It returns settings to “Zero” automatically. Press this button to begin searching. Then you can go out to look for the objects with the settings that were made or you can make your own. Take notice that if the metal detector identifies a small target/ object, the automatic RESET will stop working and you will have to do it manually.
- MENU: It unfolds the options of the different settings. (They are described in Menu functions)
- Ferrous/ Non ferrous: target indicator.

MENU FUNCTION (unfolded in the LCD display)

- VOLUME: It selects the volume level (1/30). 1: Lower- 21: Higher.
- DISCRIMINATION: It selects the discrimination level (1/10). 1= all metals/ 10: Higher level of discrimination.
- FREQUENCY: It selects the pulse frequency level (1/40). By default, PULSE MATIC 9000™ FULL DIGITAL has assigned 1p/s.
- SENSITIVITY: It selects the sensitivity level (1/21). In places with high concentration of metals you will have to select it to low/mid-level.

BATTERY: battery indicator is on the right, down the LCD panel (front part), express in %.

Control panel: (Rear part)

Fig. 7

- Input coils and charger battery (1).
- GREEN: indicates battery is charged.
- RED: indicates battery is being charged.

OPERATING PROCEDURE

Once your equipment is on, and before doing any setting or going searching, press RESET button so your equipment can take the new ground and environment space reading where you can find the automatic ground balance.
From these initial settings the operator can use different ones or make their own settings.
After doing this, operator and equipment are ready to go out.
Take into account these considerations:

- The coil must be between 10 and 20 cm of the ground during the search.
- Do not allow one size of the coil to be higher than the other one.
- Be sure you are not near big metal objects while you are doing the initial setting.
- Check your shoes and boots do not contain metal parts.
- Walk slowly.

OPERATING YOUR EQUIPMENT

- Before starting searching, check your battery charge.
- Set frequency between 1 and 5 p/s. Once, the speed has been selected it is automatically recorded every time the PULSE MATIC 9000 ™ is turned on. The speed may be used again and again until the operator makes a new setting.
- Select the volume you want to apply.

SEARCH PROCEDURE

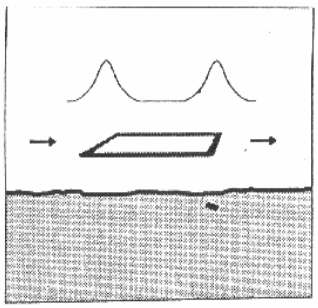
Search coil (1 X 1m)

- In areas where ground is steep or uneven it is recommended to look systematically in marked square with poles or wires, it is important that the marked areas overlap because the large coil's sensitivity is on the centre.
- Hold the coil at a constant height between 15 and 20 cm. from the ground. (Fig 2).
- The speed frequency can vary because of a high concentration of iron oxide.
- When receiving the first signals it is advisable to obtain more information about the detected object. You will learn by experience if the buried object is either big or small and also how to calculate its depth.
- The strength and the signal length will give you that information. A small object will make a lower sound in the moment you begin to run or raise the coil. A bigger size object will allow you to withdraw sensitively from the coil.
- In order to obtain the target, move the coil slowly where the louder sound comes. When you think that you are above it, make a mark on the ground.

SEARCH PROCEDURES

When you receive the first signals, we advise you to obtain more information regarding the detected object. With experience, you will learn if the buried object is large and possibly, how deeply it is buried.
The strength and duration of the signal will offer this information. For example, a small object buried at only a few centimeters will give you two signals at each extreme of the coil when it passes over the object. Raising the coil higher, the signal will disappear. (See Fig.8).

Fig.8



An object the size of a can buried at 50cm will, for example, give you a clear signal (see Fig.9).
When it is a larger object deeply buried, you will receive a longer signal (see Fig. 10).
To determine the exact location of buried object, walk slowly in the direction of strongest signal. When you think you are in the exact spot, make a mark on the ground and change direction. Close in on the buried object in a right angle (90o to the right and to the left) from the original trajectory to obtain an optimal signal.
You can also determine the class of metal (ferrous or non ferrous) of any object larger than 10cm in diameter, as long as its within the metal discriminator range (approximately 60 to 80% of the normal detection range). See Chapter 1 for details regarding the characteristics of discrimination.
To identify the object, the coil must be in movement. You need to walk above the buried object and observe the lights. If you receive a weak signal, it's advisable to repeat the measurements many times to obtain a clear location of the object (ferrous or non ferrous) that has been located.

Fig.9

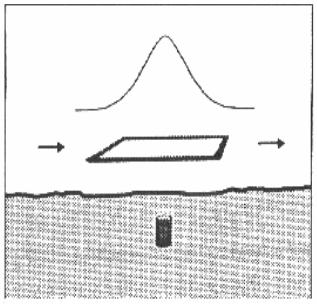
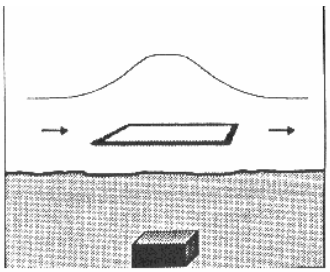


Fig.10



Tips for assembling the 1m x 1m coil

The cable inside the 1m x 1m coil is quite long so that the coil can be assemble and disassembled on an easy way.
This results in a cable surplus (Fig. 1) when assembling the coil. This cable surplus must be folded to form a loop (Fig. 2) which can then be inserted into one of the tubes. Finally, the last two tubes can be connected. Take notice that on the opposite side of the plug there is a label that indicates you where the extra cable is located.
Of course, the loop must be pulled out of the tube while disassembling the coil.

INTERFERENCES

The ***PULSE MATIC 9000™ FULL DIGITAL*** has been developed to eliminate a large portion of electromagnetic interferences. Wire fencing, train tracks, electric motors, water heaters, etc. can all produce magnetic fields so strong that they can interfere with the ***PULSE MATIC 9000™ DIGITAL***. All The interferences of mineralization may be eliminated with more discrimination and/or holding the coil over the ground.

TAKING CARE OF THE EQUIPMENT

- The PULSE MATIC 9000 ™ FULL DIGITAL requires little care. To assemble or disassemble this coil the first thing you will have to pay attention to is to screw and unscrew its connector , the same that the anchoring of the pipe to the telescope , both must receive a great care during the assemble and its use because they are in the most exposed zone.
- Occasionally clean the dust and the dirt with a soft cloth.
- Always clean the coil before putting it in your rucksack.
- Never keep a humid part.
- All the connections must be clean and dry.
- Always check the batteries before starting your search, if this one goes down you will feel a particular sound.
- PULSE MATIC 9000™ FULL DIGITAL is water proof. However, the electronic unit must not be wet.

IMPORTANT INFORMATION

With the ***PULSE MATIC 9000 ™ FULL DIGITAL*** you have acquired an efficient metal detector which will assist you in detecting any type of buried metallic object. Please be aware that you may find war objects which are still dangerous. The munitions commonly have projectiles of bronze casings and this is why they can be identified as non-ferrous metals. If the object is large, we recommend you to take special precautions: it is possible you may find a bomb. In principle, if you have any doubts, do not unbury the object. If you insist, do not dig directly above the object but on the sides. If you have any suspicions that the object may be a bomb or munitions, call the police or anti-bomb squad immediately.
The excavated site or dangerous objects that you have unburied must not be left without supervision as they may be discovered by children. The excavation and the objects that are found are entirely your responsibility. The manufacturer and salesperson are not responsible for any damage. In any case, the use of a metal detector by children should be supervised by adults. Only adult people are authorized to excavate.

The PULSE MATIC 9000 FULL DIGITAL produces intense pulses in magnetic fields. For security reasons, people with bypass surgery should NOT be near the search coil during a search.

IMPORTANT NOTE: THE EXISTENCE OF EACH OF THE CONTENTS IN THIS BOX HAS BEEN CONFIRMED BY TWO PEOPLE WHO VERIFY EACH ARTICLE BY PLACING THEIR PERSONAL INITIALS BESIDE THE NAME OF THE PRODUCT. A COPY OF THIS VERIFICATION HAS BEEN SENT TO THE RECEPTOR VIA EMAIL.

LIST OF CONTENTS PULSE MATIC 9000 ™ FULL DIGITAL

- **RUCKSACK**
- **CONTROL BOX**
- **LEATHER CASE**
- **BATTERY CHARGER**
- **SEARCH COIL 1 M. X 1 M.**
- **COIL 45`**
- **INSTRUCTIONS MANUAL**

Initial of person in charge of first content check ☐

Initial of person in charge of second content check ☐