RAYfinder©

digital frequency synthesis distant locator

Issue 1 - 06/11

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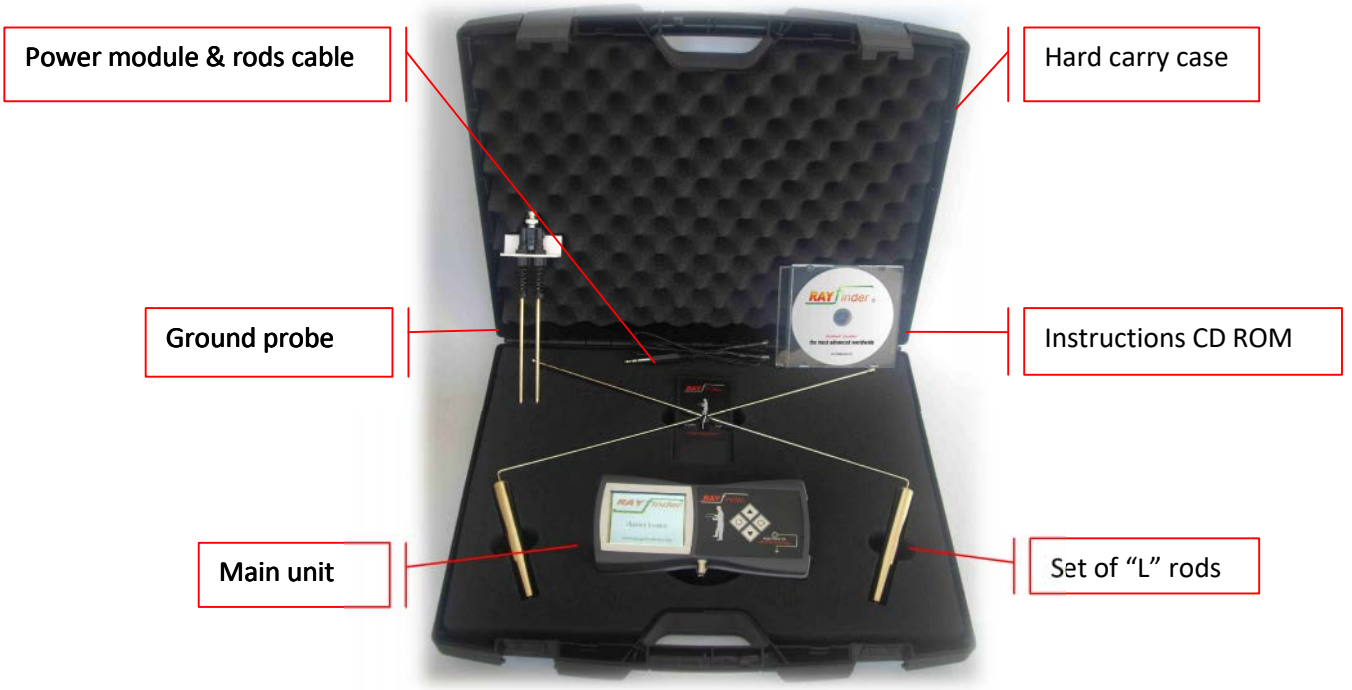
SCOPE OF DELIVERY



SPECIFICATIONS

* 16 bit processor 40 MIPS speed – 160 Mhz clock
* 32 bit DDS synthesizer chip to output waveforms
* Digital frequency synthesis x 20 PLL automatic frequency stabilizer at 0.1 Hz
* Programmes for gold, silver, copper, bronze, lead, iron, aluminum, diamonds, water, void & free mode
* Manual frequency selections at 1 Hz increments for every mode
* User frequency selections are automatically stored in memory
* Power output up to 24 Volts Pk – Pk
* Color LCD, resolution 320 x 240 pixels & 8 backlight levels
* 70 mA battery consumption / 170 mA at full backlight. Constant battery condition indication
* "APO" - Automatic power on to conductive ground
* "DGB" – Digital ground balance to cancel interference of ground minerals
* Soil mineral content indication scale 000 – 999 & icon
* "RAY track" – Variable waveform according to the ground type
* "RAY graph" – Real time waveform animation
* On screen counter for signal inductance, alerts to start scanning when the energy field is strong enough
* BNC ground probe and main unit in one piece – no cables - compact design
* Unit rotates 360 degrees for easy viewing of screen
* Tactile keys & sound indication
* "WCC" - Signal receiver with target Weight Check Control, power amplifier & gold plated "L" rods
* Receiver antennas do not suffer from oxidation due to human skin PH
* Distances adjustable from 300 to 2100 meters range, depth 8 meters

QUICK STARTING UP

1. In hard and dry ground dig a small hole and then water slightly to prevent any damage to probe legs due to excess force when probing

2. Holding each leg with your hands (not pushing from the connector!) inject carefully into the ground about 10 cm, ensuring to make a good stable fit.
   Note: NEVER allow probe legs to touch a metallic object. Doing so may destroy the **Auto Power On** system (A.P.O)

3. Connect main unit to the ground probe and rotate the BNC plug until it locks. Remove your hands slowly to check that the system has a good contact with the ground that supports its own weight. The unit will power on automatically if **Auto Power On** is selected at **SETUP** menu (page 22). Otherwise press to power on manually.

4. At SELECT MODE screen select using the key the metal mode. Then press to confirm your selection.
   Wait for the counter to stop and the message START SCANNING before start searching.

5. Connect the power module with each rod using the connecting cable.
   Having practiced balance in holding and walking with the L rods, (pages 11-13) walk circles 3 m. away from the probe. If there is a target within the range of the locator, rods will cross as the user steps at the energy line between the target and the probe. See Example 2. Follow the target signal by walking in an “S” pattern away from the probe. Rods cross when intersect the target line. Some users also experience the weak electric target signal at their hands.
   When the target has been passed away rods cross no more. Target lies at the area between this spot and the last indication.

GENERAL NOTES

Dear customer, thank you for your purchase of the RAYFINDER distant locator by Gold Detectors.
As manufacturer we have invest a long time in research and development and have taken all efforts to produce a quality locator of this type, that has not an equal to the treasure hunting market.
This is a scientific instrument and every detail in the instruction manual has to be followed. It is strongly suggested to study the instruction manual carefully in order to understand the operation of your unit and then to field practice with sample targets in order to gain a level of experience. We wish to you the best in your surveys.

Like an electronic device the RAYFINDER must be handled with care necessary when operating such devices.
Special care has to be taken with the bronze legs, these must be handled gently, avoid bending, avoid any excessive force on the connectors. Clean the ground probe with steel wool regularly.

Health injury :
The RAYFINDER cannot make health injury when operated normally,
The frequency signals of the RAYFINDER spectrum do not pose threat to human body, mainly because of their low power.
Like an electronic device the RAYFINDER must be handled away from children.
Extreme care must be taken when holding the rods, the rods may be responsible to damage the user eyes, therefore concentration is needed when transporting or holding them.

Surrounding environment :
If you have transport the instrument from a cold to a warm environment, it is not suggested to operate it right after.
Any contention that may occur may result to failure.

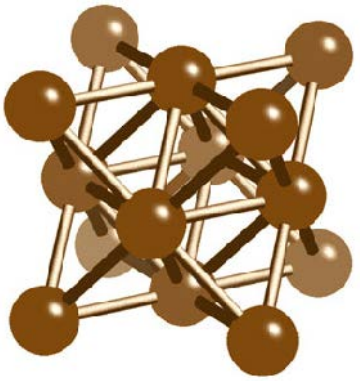
Power supply :
4 x AA cells power the RAYFINDER. Use only DURACELL or other alkaline batteries of a known brand.
Ensure they fit the correct way at the battery holder.

Always remove the batteries when the RAYFINDER Is not in use.

Repairs :
All repairs come free of charge within 2 years of your purchase. Contact your dealer when the instrument needs service or for questions or problems. A qualified technician will inspect the unit and will initiate any repair if necessary.
After the first year you will receive a calculation of repair charges.

If the unit is destroyed , or opened to attempt a repair, the warranty expires.

INTRODUCTION TO MOLECULAR FREQUENCY LOCATION



The gold molecule.

Each element has a unique molecular structure which vibrates on a different molecular frequency

All the Elements of nature produce a phenomenon called "resonance". One classic example to that phenomenon is that of a clear, loud and high frequency sound that can break glass. If the physical frequency of glass is similar to the playing note, then the glass will start to tune to these vibration pulses. If the vibration becomes very intense for the crystals structure, it will break. Resonance occurs when an element absorbs energy same to its physical frequency. This resonance by attraction will happen when a source transmits a frequency that is immediately absorbed by a specific object.

Molecules are the smallest particle of an element that can exist in the free state and still retain the characteristics of the element which is unique. The molecules vibrate forming the frequency that we know as molecular frequency and others call energy field of the matter or phenomenon of nuclear resonance. Somme people can see this energy field with the naked eye like in the case of human aura. In dowsing or radioesthesia there are facts to back up it's existence

HOW IT WORKS

Many years have been spent experimenting with various devices to develop this small, but powerful RAYFINDER transmitter capable of transmitting Radio Frequency (RF) signals accurate to 0,1Hz stability, enough to stimulate only the desired elements. That accuracy in signal stability is produced by a technologically advanced DSP microchip running at 40 MIPS inside the RAYFINDER. Signal is channeled through the soil over a considerable distance at varying waveforms that filter out the interference caused by the soil minerals.

The emitted signal is induced into the soil in a directional pattern of 360°. And because of that induced signal the targets become "visible". Targets can be located to all directions, and the user is not limited to search from a specific direction. Now that the signal is transmitted from the RAYFINDER, the expected target responds with a solid and identical signal. This solid signal can be traced by the operator using the "L" antenna rods , and therefore all non desirable targets are eliminated. That signal between the RAYFINDER and the target becomes "a path" for the operator to trace the target.

The whole procedure lasts few minutes to realize if there are any specific targets within the location range of the RAYFINDER.

DETECTION RANGE

Range of the RAYFINDER can vary for many reasons. The first and most important variable is size of target. The larger the target the range is extended. That is followed by soil conditions (presence of electrolytes) and length of time in the ground. Another factor that enhances the operational performance of the RAYFINDER, is the chemical change of the soil immediately surrounding the target. Those targets that have a tendency to oxidize, whether it be the object itself or its container, will present a stronger signal. Because of that oxidation factor, the target will offer a stronger potential for amplifying the RAYFINDER transmitted signal, therefore an object that is buried for a long time in the ground absorbs the signal in a larger percentage that a freshly buried target, in fact some fresh targets have poor or even no reaction at all. Intense solar storm activity can result to minimizing the range in a small degree. Maximum range 2100 meters adjustable in 7 levels.

SETTING UP THE LOCATOR

ⓘ Note: If selected, Auto Power On ("A.P.O" system-page 22) RAYFINDER makes a check to the ground conditions, only in good conductive ground, that absorbs the signal, RAYFINDER will turn on. If it fails to turn on, set the probe on another spot or water the soil slightly.

Everything is automated with compact computer technology on the RAYFINDER - no controls to alter and no switches to alter. Stick the bronze probe to the ground, ensure that it makes a good stable contact with the soil, if not wet slightly to ensure a better electric contact. Plug in the RAYFINDER main unit, turn gently the BNC connector until it locks, RAYFINDER turns on and the opening screen verify that the operation is initiated

ⓘ Note: press and hold the  **as a shortcut to bypass "A.P.O" to the ground. RAYFINDER will power on manually without the ground.**

During the next moments the message **"Ground Balance"** appears. During that time RAYFINDER analyses both the soil mineral content & level of wetness, the result appears as "GROUND=" value on a scale 00 to 99.

This digital ground balancing feature (DGB) was developed for RAYFINDER to maintain maximum range and stable operation regardless of the ground type. Ground Balance works in conjunction with the *RAYFINDER track* system, which completes the ground balancing accurately, by selecting variable waveforms on the transmit frequency to match the soil type.

KEY

RAYFINDER emits an audible signal each time the **key is pressed successfully.**

By a single press on this key the RAYFINDER will roll over between the following element programs on its memory:

M1: GOLD 5000 Hz

(Low frequencies on the gold spectrum attract natural gold minerals between 4900 –5100 Hz, at 5200 – 5300 Hz rods respond at man-made gold objects of karats 18 - 22, frequencies of 5400 – 5500 Hz tend to attract low karat jewelry. Therefore multiple checks in different frequencies are advised. When double check, set RAYFINDER at 5000 Hz, wait 5 minutes and scan again, if the rods indicate it, it is a mineral.)

M2: LEAD 4000 Hz

M3: ALUMINUM 7000 Hz

M4: SILVER 8700 Hz

M5: BRONZE 11300 Hz

M6: COPPER 11700 Hz

M7: DIAMONDS 12700 Hz

M8: IRON 16800 Hz

M9: WATER 10000 Hz

M10: VOID 700 Hz

M11: FREE 0 – 20000 Hz

(a mode where the user can input - using the arrow keys - the desirable frequency manually to experiment)

Along with the name of any element its molecular frequency in Hz is presented, for setting the RAYFINDER, as will be described. One should experiment on the above frequencies, as human factor has a great effect. Remember that operator is the one to hold the receiver rods, and forms the receiving circuit. Therefore body capacitance of the individual presents small variations to the above frequencies. Only practice by experiment with sample targets in fine tuning the frequency using the arrow keys will deliver accuracy in conjunction to every operator.

KEY

RAYFINDER emits an audible signal each time the **key is pressed successfully.**

Press this key to power on, enter a program or a range level .

To power off the locator press continuously until the software version screen appears. RAYFINDER will power off after a few seconds.

The shut down screen.

RANGE LEVELS

The input range screen appears after selecting mode.
Range is the locator sensitivity for a given target size and the distance it can detect it. RAYFINDER ability to locate very small or distant targets is considerably enhanced when increasing the range level.
To ignore small targets use the minimum range.

To obtain the maximum distance use the highest range, however small objects will be detected with a stronger indication when doing so and the battery life will be reduced to less than an hour.
The default range level 3, is satisfactory for a wide variety of applications, for small and large targets while maintains stable operation without false indications.

RANGE LEVEL	RADIUS IN METERS
0	300
1	600
2	900
3	1200
4	1500
5	1800
6	2100+

START SCANNING

ⓘ **To select a program press the**  **key**

Then wait, an on screen counter alerts the operator when the RAYFINDER signal has put enough energy to the ground to start scanning. When the counter stops the electromagnetic field is strong enough. The message **"START SCANNING"** alerts the operator to start the detection. All other metallic objects in the area are eliminated by the RAYFINDER, and the desired element if any within the distance range of the RAYFINDER, absorbed enough energy to make it visible.

NOTE: The operator must wait the counter to stop and the "START SCANNING" message to appear, if the operator starts detecting before the message appears, then other non- desirable metal targets will be detected also and the metal discrimination of the RAYFINDER will not be reliable.

ⓘ **To return at previous screens press** 

The message **"START SCANNING"** prompts the operator to start receiving the target signal. The receiver consists of the indicator rods and the power module. The rods are powered by the Power Module, they are 45cm in length. The purpose of the Rods is to indicate to the operator that he has walked into the transmission line between the RAYFINDER and the target. The rods are normally held steady and balanced at waist level, and slightly in front of the operator.

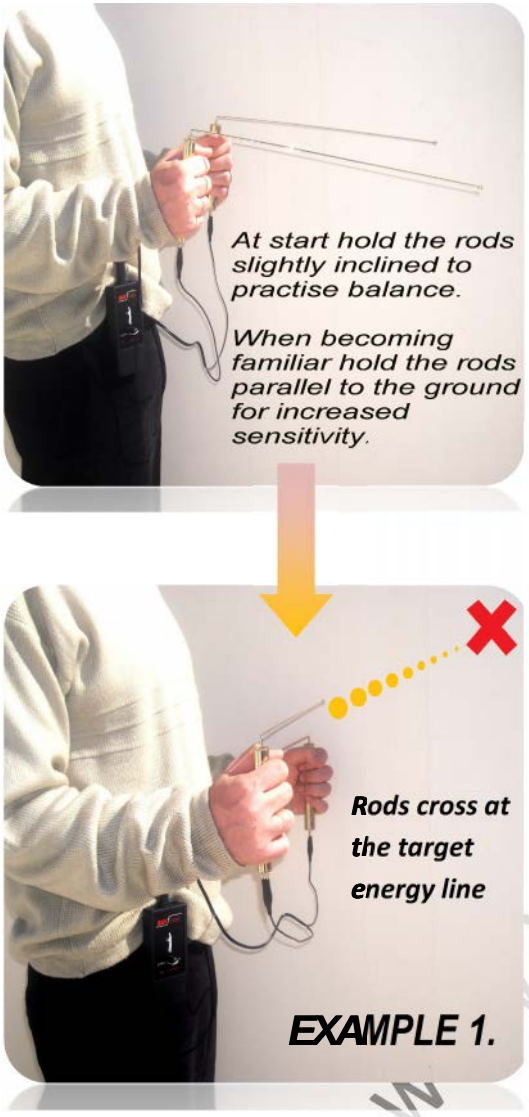
They are held pointed in a forward direction parallel to each other, and at a distance of 8 to 18 inches apart. What each individual needs to discover is just what distance best relates to themselves.
This decision will be by trial and error. Please remember that an individual who is relaxed and calm will operate the equipment more successfully than one who is tense and rigid. See example 1. The indicator Rods are plugged into the Power Module so as to complete the necessary tuned receiver circuit. This circuit is formed through the combination of the operator's body capacitance and the inductive components of the Power Module.

ⓘ Note: The power module purpose is to power the antenna rods. The unit contains a 9VDC battery for a power supply. The battery condition is displayed when you short circuit the rods together, if no sound is heard it's time to change the battery. To replace the 9 volt battery, simply open the module by rotating the bottom cap off. The power module is turned on when the receiving antenna rods are plugged in the power module's receptacle. When not in use, unplug the rods from the power module. Storing the power module with the rods plugged in will drain the 9 volt battery. Do not allow the rods to touch each other while attached to the module as this will short out the battery also!

This circuit will act passively until the operator actually walks through the transmission line between the RAYFINDER and the target. This induced RF (Radio Frequency) energy from the transmission line interacts with the LC (Inductive-Capacitance) of the operator's circuit. The normal response at that point is that the rods will be attracted to each other, will in other words align completely to each other when the operator steps on the signal line between the RAYFINDER and the target. See example 2. This process actually conveys to the operator that the desired target is within range of the RAYFINDER.

Power module features a new Weight Check Control (W.C.C). The power module can determine a target's weight after a target indication has been verified. The weight check is controlled by a rotary knob on the power module. Set low amplification rotating the knob fully clockwise, and only large quantities in kilograms are located. Select high amplification with the knob counter clockwise and smaller quantities corresponding to grammars also are realized.

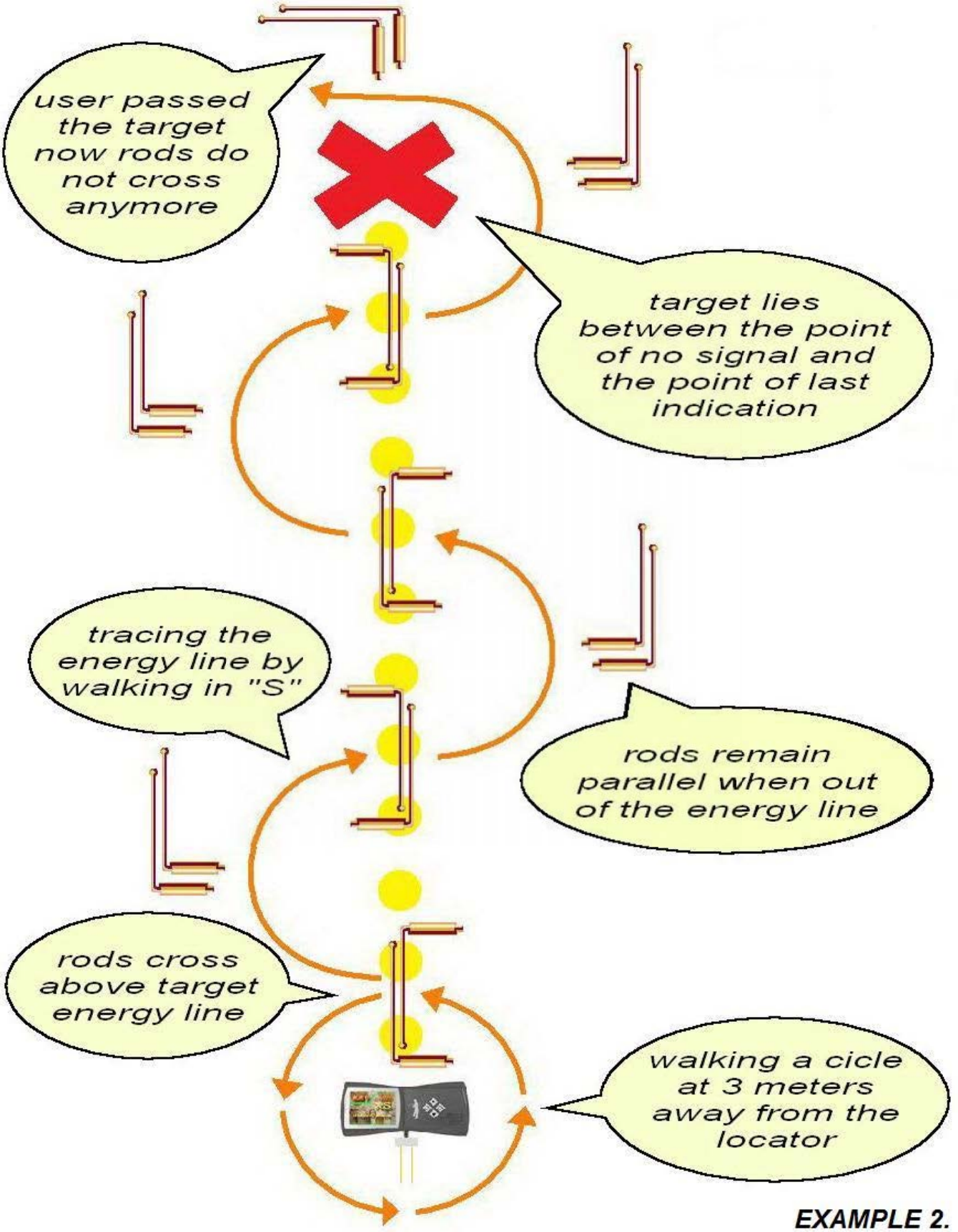
OPERATION



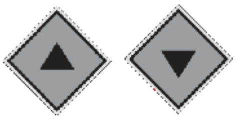
The critical point of a molecular frequency locator, is how to hold the receiver rods, along with physical body position and walking method.

The user must be standing relaxed, foots slightly apart, arms close to body but not tight. Do not put excess force in holding the rods from palms and wrists. Let them balance free in your hands. Always parallel to each other. Hold the rods parallel to the ground for increased sensitivity, or slightly downwards for better balance if you are new to the molecular frequency detection.
The most important factor is to practice holding the rods, until they no longer "moving around" apart to each other.
After accomplishing rods balance the operator should learn to walk, step by step and again holding them balanced. This is also another trial and error method: steps must be in normal speed, firm and equal.
Covering the same distance at every step, or rods will loose their balance.
That can happen when dropping shoulders.
Hold shoulders at an equal height.
Try practicing and take great notice to keep these conditions.

Rods holding, body position and walking practicing will follow experiments with test targets, which the operator places on the ground to notice the rod responses.
As soon the message **"START SCANNING"** appears start walking circularly and 3 meters away from the RAYFINDER, with rods well balanced and plugged in the power module.
If there is a target, when we walk into the transmission line between the target and the RAYFINDER ground probe, rods will completely cross.
This transmission line is usually 15 cm wide for a single target.
We can determine that this is a stable signal, by double-checking it.
The operator for that reason has to go back, relax, and move again to the transmission line several times. If this results in rods crossing every time then we can follow target signal as seen in the signal tracing example 2.
When the operator passes the buried object, will find no indication.
Object lies between last crossing and the point where no indication happened. A metal detector can be used to pinpoint the target with accuracy. However the RAYFINDER can provide useful information regarding target center, shape and target depth, see our examples and continue practicing to obtain better results.

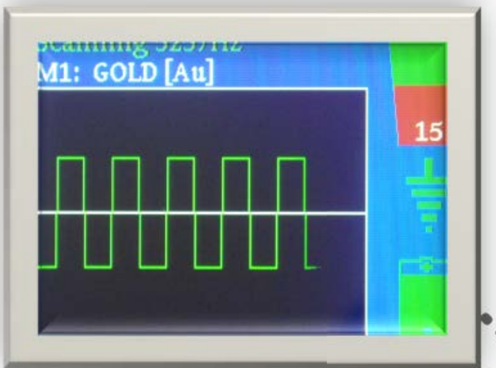

user passed the target now rods do not cross anymore
target lies between the point of no signal and the point of last indication
tracing the energy line by walking in "S"
rods remain parallel when out of the energy line
rods cross above target energy line
walking a cicle at 3 meters away from the locator

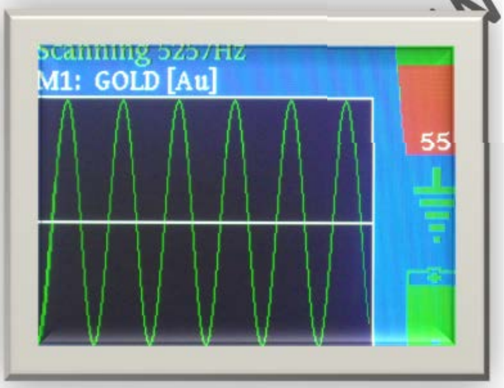
EXAMPLE 2.

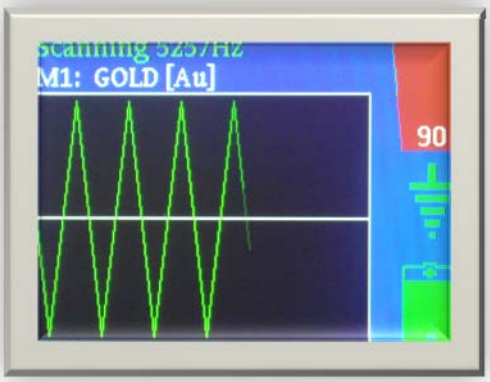


ARROW KEYS

RAYFINDER emits an audible signal each time an arrow key is pressed successfully.







At SELECT MODE- screen by a single press of an arrow key the element frequency can be fine adjusted in steps of 1 Hz each.

It is worth to fine tune the frequency slight positive or negative, to calibrate with the operator body capacitance, soil conditions and metal type. It is possible that different users notice small changes to the frequencies they respond better. For that purpose move the frequency setting to a point more satisfactory to you.
That can vary from operator to operator, and specially due to soil types and object metal composition (karats for gold).
Correct frequency tuning results at intense rods intersection prior to target detection (rods intersect fully and align to each other completely, even before or stay closed a bit after target line).
Experiment with your own samples and soil types.
Put your own target sample on the ground, take care it makes a good contact alternatively wet with salt water. Alter the frequency and scan again. Repeat as many times needed until the best response is received.
Note that some fresh targets have a weak or no response at all.
Correct frequency tuning presents an intense rods alignment, starting before the supposed line between the target and transducer.
Rods remain closed (aligned to each other) for a relatively large width.

Press and hold an arrow key at search screen, to alter the output frequency waveform (select between square wave > sine > triangle waveforms and cancel the RAYFINDER track system for automatic waveform selection .

By a single press of an arrow key at search screen, adjust LCD brightness in 8 levels

BATTERIES

RAYFINDER operates on 4 alkaline batteries. To access the battery compartment unscrew the 2 battery cover screws and fit DURACELL batteries the correct way around as indicated with the + and – polarity marks.
When fresh new batteries have been fitted correctly RAYFINDER will power on automatically to confirm the battery status.
During operation battery condition is been monitored continuously on the lcd.
Rechargeable batteries and battery charger are optional. Use only the original recharge system.
For details contact your dealer.

ⓘ **Alkaline batteries operate the locator for 5 hours with low backlight and range level 1. Always remove batteries when the RAYFINDER is not in use.**

To save battery life use minimum backlight. The backlight is adjustable from the search screen using the arrow keys.

MAINTENANCE AND STORING

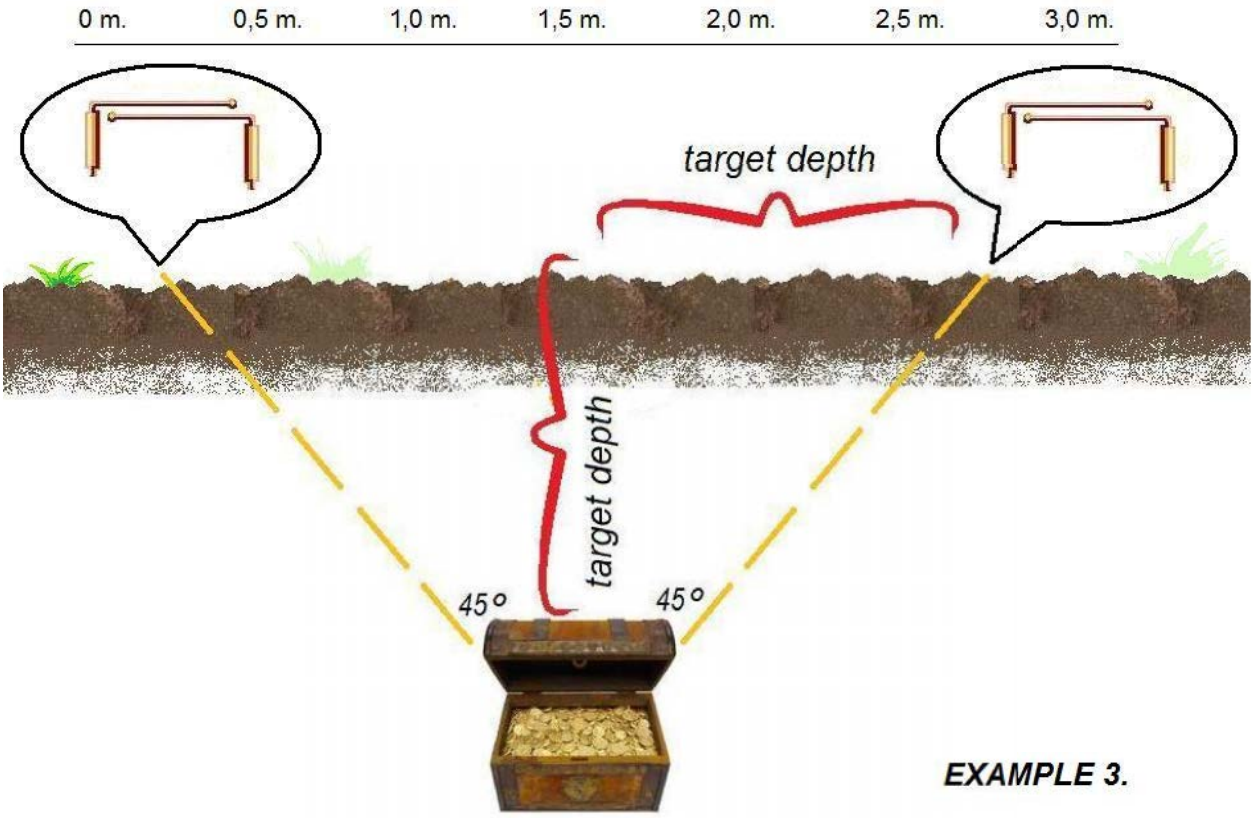
While in "power off" RAYFINDER senses the movement of main unit, for the purpose of a more effective operation when unit is grounded, in a vertical position. This position verification system drains out the battery when unit remains for a long period of time on a vibration environment. For example while it is transported inside a vehicle or an airplane, RAYFINDER enters "stand by" mode.

ⓘ **Note: Please be advised when storing RAYFINDER for a long period of time, to preserve it in a flat position, on a non vibration environment - for extending battery life. When vibrations are expected remove batteries**

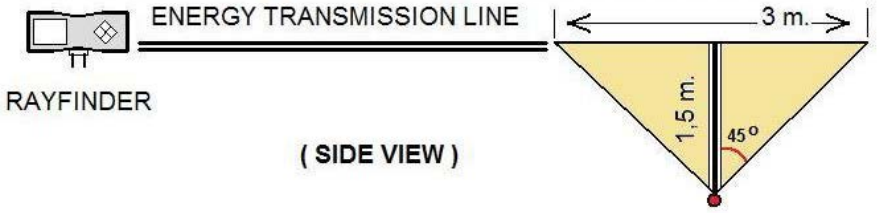
When storing RAYFINDER , rechargeable batteries must be recharged at least every 3 months.

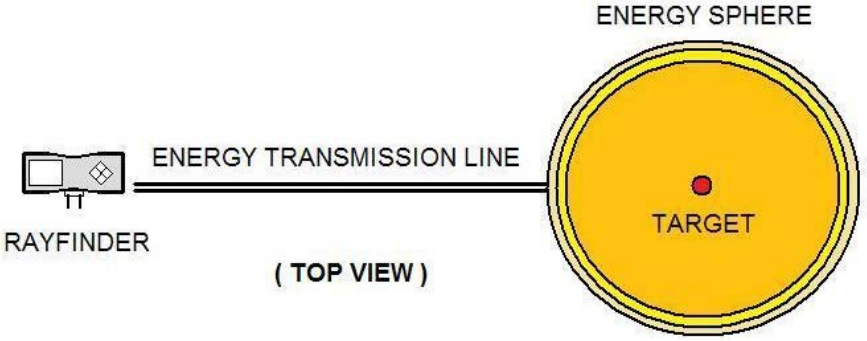
DETERMINING DEPTH

For determining the approximate target depth, with RAYFINDER turned Off, approach the suspected target from at least 4 opposite directions for example North / South & East / West and mark the spots where rods cross, as soon they reach the limits of target energy aura or “sphere”.
Half the distance between the 2 opposite indications (or the sphere’s range) is approximately target depth,
in our Example 3 depth is 1,5 meters. This method however do not apply for shallow targets. Note that the target energy “sphere” is been generated from a 45 degree cone from the target. For depth determination there is not a necessity of operating the main RAYFINDER unit, this is only necessary for making the target visible from a distance,
by creating the transmission line which acts like a path to the operator.



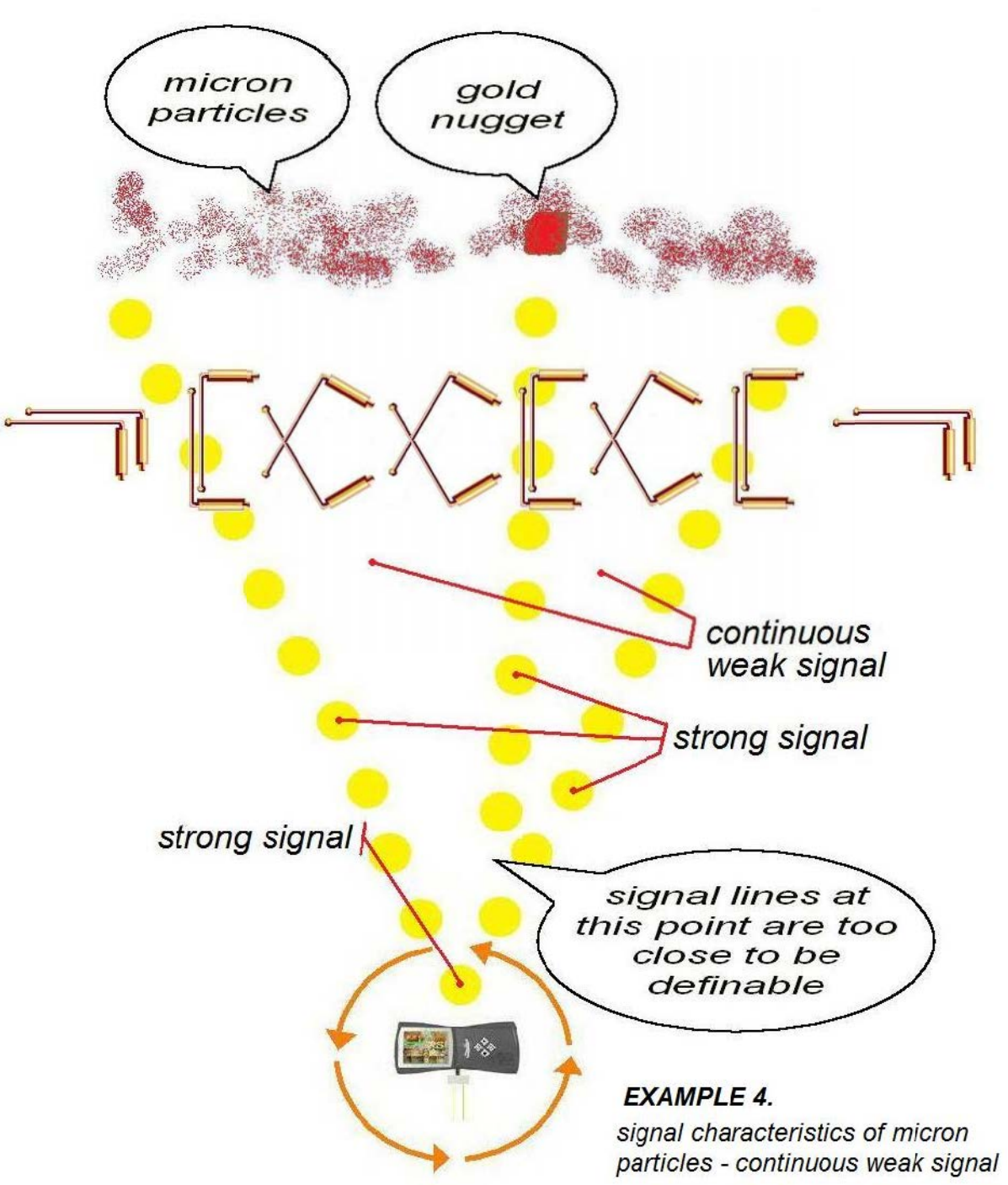
EXAMPLE 3.



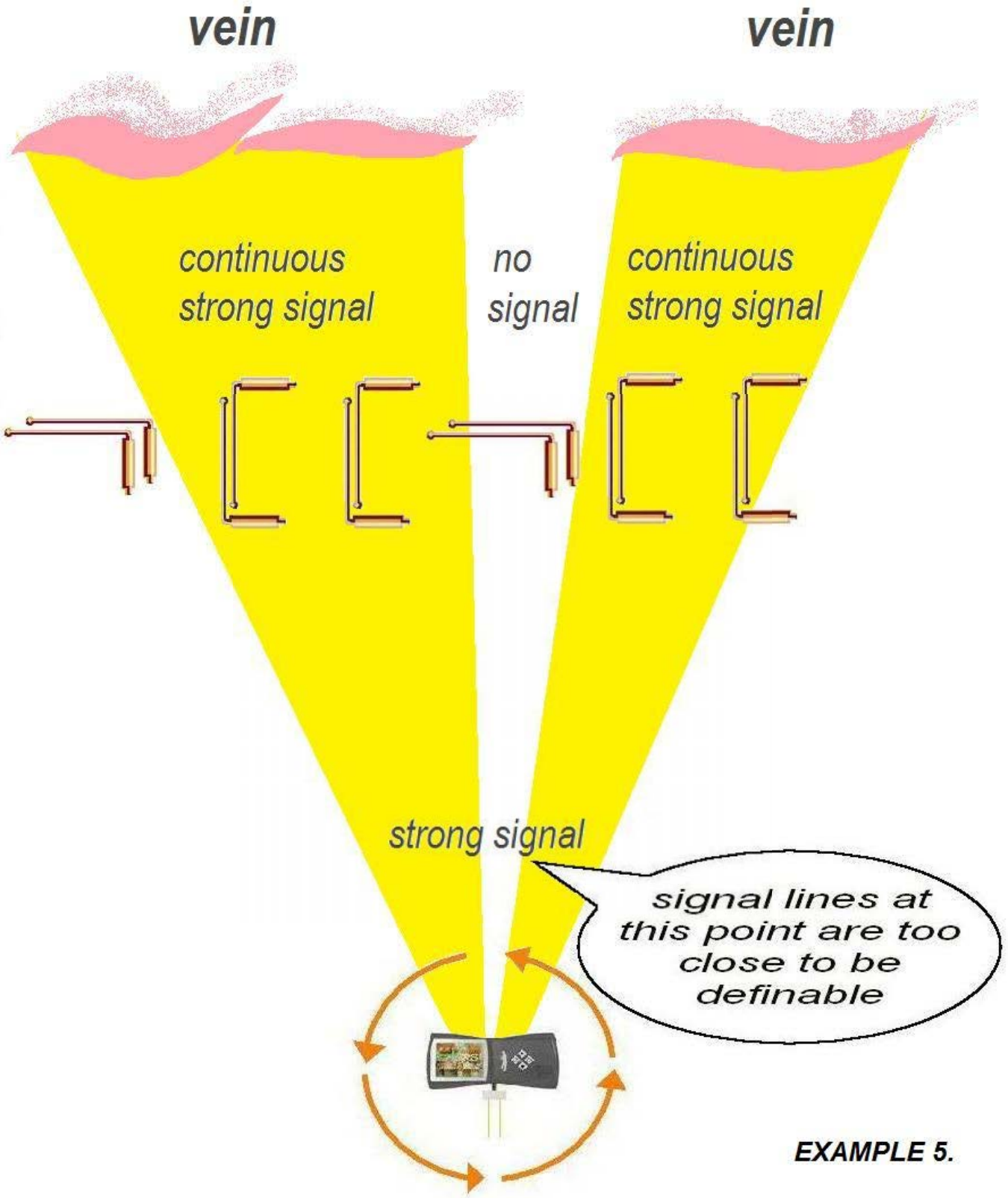


GHOST TARGETS

To avoid detection of small gold mineral particles, place a good amount of gold in a 10 meter distance sideways to the target indicated by the rods. If after 5 minutes a transmission line is created to your metal samples, then we assume that the buried target is less in quantity, therefore is to be ignored.
Targets that have a larger mass, tend to absorb a larger percentage the RAYFINDER energy, of course another critical factor is a good connection between our sample and the ground itself. It is advised to water the sample target slightly.
Remember that in an area reach with gold minerals you will get an increasingly number of signals by the time RAYFINDER is operating. Also gold in whatever form has the same molecular structure and signal characteristics, no matter if it is a man made object or natural mineral. RAYFINDER is a scientific instrument, which through the ground balancing procedure ignores the small gold particles "gold powder" that may be scattered in the survey field – Example 4.
Larger sized minerals may be detected – Example 5.



EXAMPLE 4.
signal characteristics of micron particles - continuous weak signal


vein
vein
continuous
strong signal
no
signal
continuous
strong signal
strong signal
signal lines at
this point are too
close to be
definable

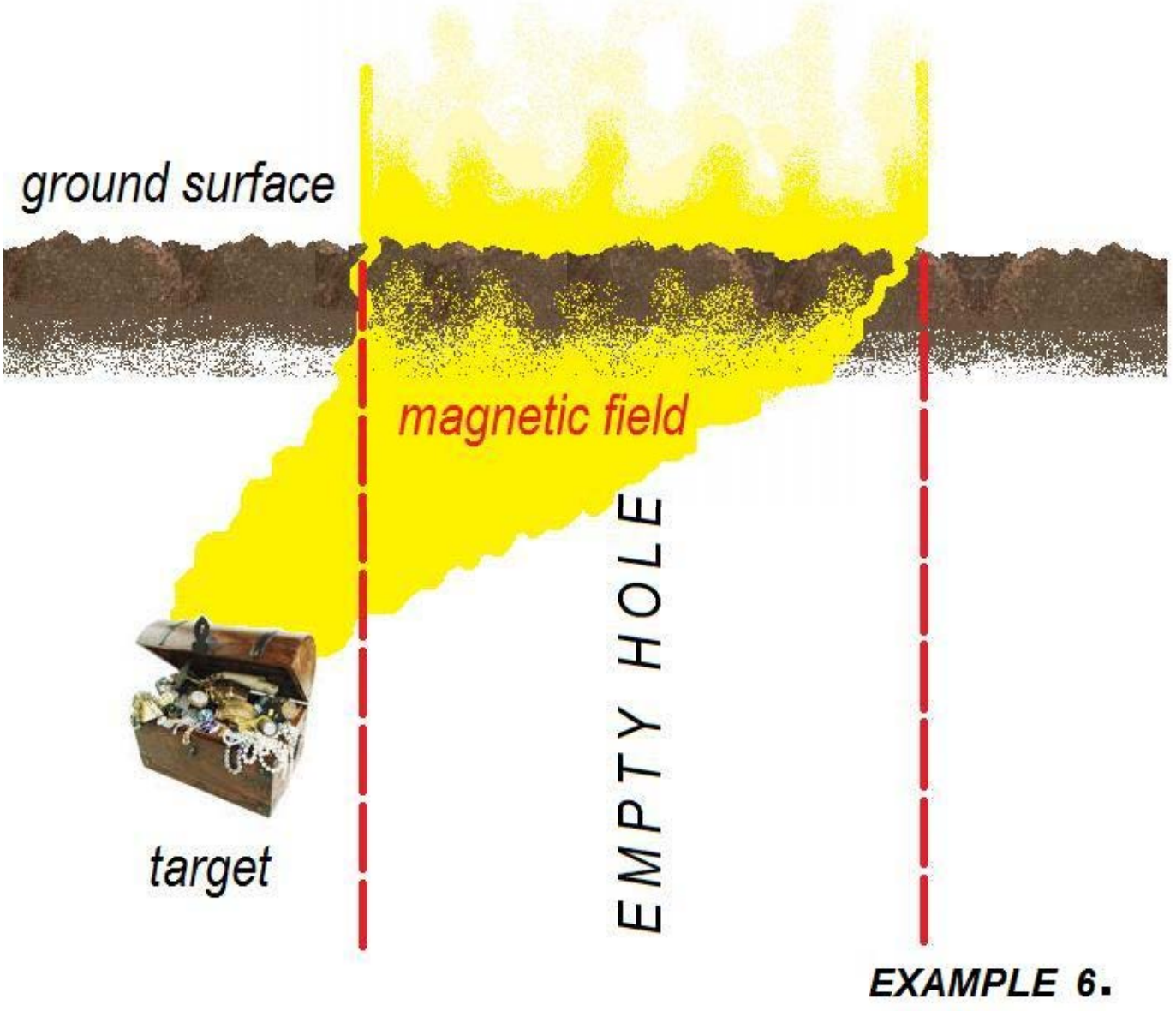
EXAMPLE 5.

EXCAVATION

The magnetic field emanating from the target detected on the surface of the ground does not necessarily rise absolutely vertical from the target up thru the ground to the surface. Due to solar storms or other magnetic field interference the magnetic field of the target may rise thru the ground at an angle. The degree of angle, or direction of the angle is not always consistent therefore at this time the pinpoint location of the target cannot be calibrated within the diameter of the sphere surrounding your surface location. Therefore the deeper the target, the farther away from the target your location on the surface can be. Digging vertically straight down from your location on the surface can result in an empty hole.

When the magnetic field of the target enters the air above the surface of the ground it does begin to rise vertical. Example 6.

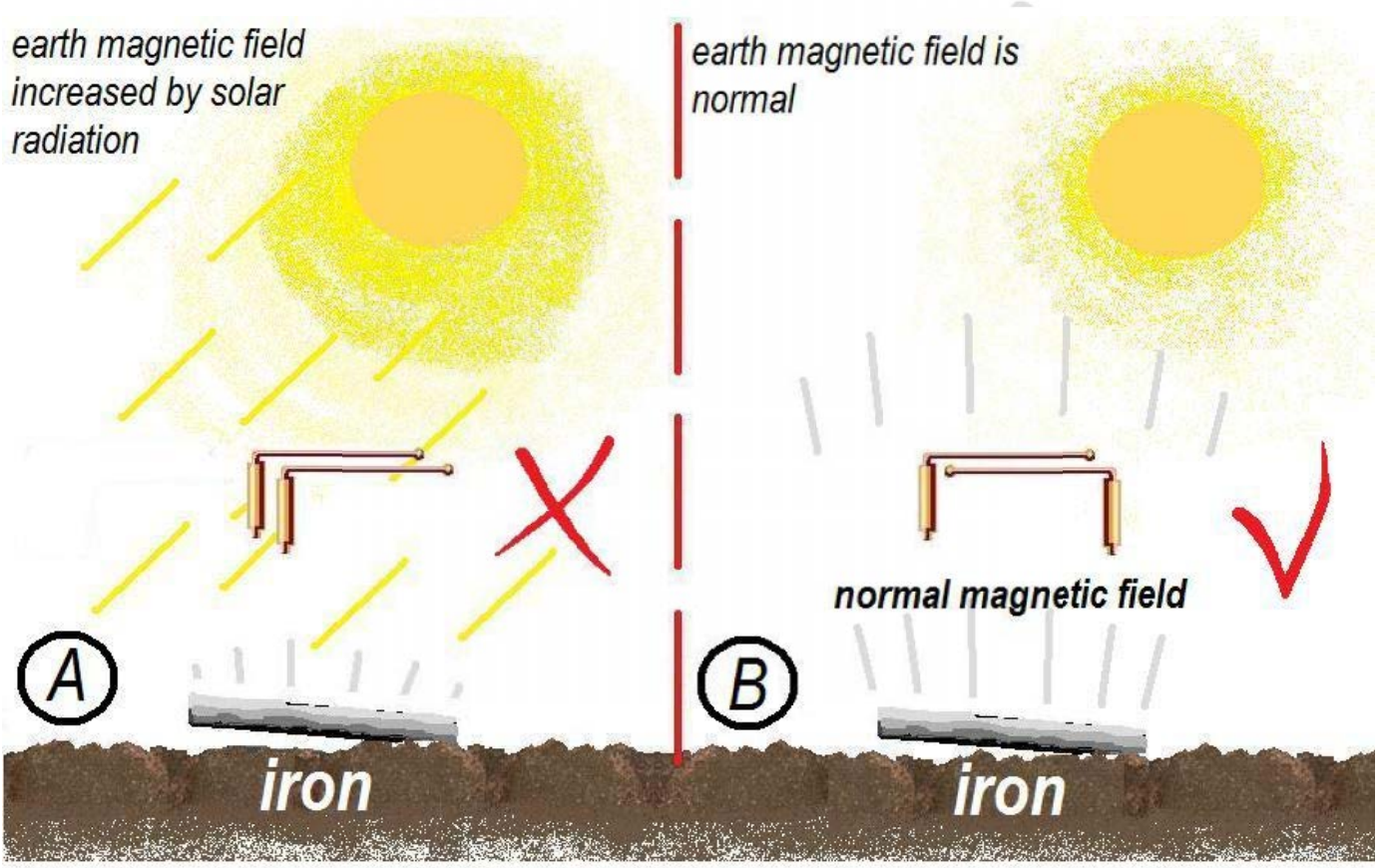
When begin to excavate set the RAYFINDER at 15 – 20 meters from your location and let it run. After you have excavated to about 1 meter you will notice the signal line at your location may have moved one direction or another within the excavation. If not, reposition the RAYFINDER 90 degrees and see if there is a movement in that direction. When your signal line moves merely follow your excavation in the direction the signal moves. The magnetic field and signal line moves closer to the target as the excavation gets deeper.



DETERMINING MAGNETIC FIELDS AND INTERFERENCE

Magnetic fields due to solar storms and other magnetic interference are responsible of reducing the range of the RAYFINDER and in difficulties when target locating. A simple method to determine strength of the earth's magnetic field is by placing a stainless steel stake of 45cm length in the ground, and move towards it with the rods balanced.
(only with the rods and without the RAYFINDER or the power module working)
If the rods cross fully the earth magnetic field is normal and the RAYFINDER will operate satisfactory.
If rods do not cross or they cross partially, earth magnetic field is strong, possibly due to solar activity, therefore the RAYFINDER will not operate satisfactory at that specific site and time. As on Example 7.

A. There is no signal from the iron piece, it is reduced by a stronger magnetic field of the earth, therefore the iron object cannot be detected by the rods
B . There is a signal by the iron piece, it is detected by the rods because it is stronger than the earth magnetic field.



EXAMPLE 7.

THE SETUP CONFIGURATION MENU

The professional settings of the locator can be configured or reset back to the default values from this menu.
To enter the SETUP, on the start screen , as soon as the "**distant locator**" title appears,
push rapidly 5 times and then the key. Roll over through the settings using the arrow keys.

Select a setting using the .

Right Key to Exit Setup: Push to exit the SETUP screen without making any changes.

Reload All Default Values: Press the right key to reset the user settings (manual frequency adjustments on metal modes, **Ground Balance Offset** and **Auto Power On**) back to the default values, which are:

- For metal modes see the frequency values on page 9,
- **Ground Balance Offset 136 / GB 000** (with new batteries),
- **Auto Power On** set to OFF.

Set Ground Balance Offset: Can increase or decrease the ground value (or **GB**) identification number using the arrow keys. The best setting is to offset enough, until the **Ground Balance** reads a stable **000** value with the locator not grounded, do not offset any more from this point.
Use the arrow keys to change offset and the right key to save the new offset value.
The left key will **Auto Offset** the current **Ground Balance** value to **000**.
If **GB** value is not a stable **000**, and occasionally reads **001** or higher, the user will experience false power ups, when the **Auto Power On** setting has been switched to **ON**. To store the new **Ground Balance Offset** setting press

Show Accelerometer test: For testing purposes. A proper functioning Rayfinder should show **X 63, Y 243, Z 10 to 20**, when held vertically, on it's grounding position.

Auto Power On: This feature permits Rayfinder to power on automatically when there is a good ground that absorbs it's signal (**GB 001** and higher). **Ground Balance Offset** must be set so that **GB** shows a stable **000** BEFORE setting **Auto Power On** to ON. Otherwise false power ups will occur when the Rayfinder is held vertically on it's grounding position. **Auto Power On** consumes the batteries when the main unit is left to be lying / or stored, vertically. The main unit must always be left to be lying horizontally when **Auto Power On** is to **ON**.
Or to be stored without batteries.
Use the arrow keys to change between **ON / OFF,** and the To confirm your selection.

GENERAL PRECAUTIONS

 Carefully read the owner's manual and attend all details

 Do not allow ground probe legs to touch a metallic object. Doing so may destroy the A.P.O.
Be careful when storing to remove probe

 Avoid connecting to inappropriate power supply or 110 / 220 volt socket! That will destroy the unit!
Use only the original battery charger when operating rechargeable batteries

 When storing for a long time, keep it in a horizontal position, screen to face "up", for extending battery life

 There are no user serviceable parts inside - any attempt to open the case will void warranty

 "L" rods when rotate can damage the eyes, carefully hold them below the eye level

 Inspect for dirt in the ground legs and the BNC probe connector - should be removed immediately

 Do not operate at rainy days, the unit is not fully waterproof and may cease to operate

 Do not keep unit in direct sunlight or operate at temperatures above 40 C

 The exterior parts should be wiped clean with a damp cloth, paying particular attention to rods,
then carefully wipe dry. DO NOT use solvents or detergents on any part of the detector specially the rods

 Remove batteries when not in use. Rechargeable batteries should be charged at least every 3 months