

ASSEMBLING YOUR DETECTOR

Your detector is equipped with an entirely new type telescopic shaft. It consists of three parts: upper, middle and lower shaft. The lower shaft is made of fiber glass enforced polymer. And the middle and upper shafts are of alluminium alloy, which makes them extremely strong, and very light at the same time. The shaft is designed in a way, that even very tall operators to be conveniently working with it in its full length position, and in maximum shorten position allows convenient operation even by children.

More data of the sizes you could find in the specifications chart.

The three parts of the handling are locked by two num-lock rings. These are made of enforced polymer. They tighten very well the three parts of the shaft and make the telescopic handling very stable while sweeping the coil.

The handle of the shaft is ergonomic, with continuously various regulation of the distance to the arm-rest, very well fitting to the hand. The arm-rest is padded with genuine leather and creates the sensation of pleasant touch, and limits hand's sweating. To the arm-rest there is an arm-rest strap for better tightening the arm-rest to the operator's hand.

The detector is extremely well balanced. It is easy for assembling and disassembling. Convenient for operation, and in folded position very convenient for transportation. In the next few steps we'll explain you how to assemble your detector in the easiest way.

1. Unscrew the num-lock ring of the upper shaft and pull out the middle shaft (it will move together with the lower shaft). Look for the coincidence of the white lines of the upper and the middle shaft. We recommend to pull out until the snap button clicks into the second(recommended) adjustment hole of the upper shaft. If the detector will be operated by a low height person the snap button could click into the first adjustment hole of the upper shaft (the nearest to the control box adjustment hole). After you have chosen the length of the handling you could tighten the locking ring of the upper shaft.

2. Unscrew the num-lock ring of the middle shaft and pull out the lower shaft. When pooling out the lower shaft its snap button will click into one of the six holes of the middle shaft. After you choose the necessary length tighten the num-lock ring of the middle shaft. Connect the coil and slightly tighten the thumb nut on the mounting screw. Adjust the coil in working position toward the ground and tighten by hand the thumb nut on the mounting screw.

3. Check whether the cable is wrapped well, but not too tightly, around the shaft. Do not allow the cable to flop loosely over the searchcoil. Since the detector is sensitive enough a floppy cable can cause false signals, as the coil senses the moving wires of the cable. To secure the coil cable you should fix it to the lower and upper end of the handling with the two cable retainers.

ASSEMBLING YOUR DETECTOR

The length of the handling should be adjusted so that the detector does not become tiring or uncomfortable after long use. The detector grip should rest in your hand with your arm relaxed, with the shaft extending out in front of you. You should be able to swing the detector back and forth in front of you, using relaxed shoulder movement. The search coil should not touch the ground during your sweep. The angle of the search coil should allow its bottom to be parallel to the ground, as shown on Figure 1.



Figure 1

Swing the detector from side to side in about three foot arc, overlapping succeeding strokes well. The detector is designed to get maximum depth without the requirement for speed of sweeps, so go at a pace that is comfortable for you. In fact, trying to hunt too fast may even cause a loss of depth in heavily mineralized locations. Regardless of which mode you are using, try to keep



Figure 2

your search coil height constant and at about an inch over the ground surface. Most people tend to raise the coil at the end of the sweeps, much like a pendulum, especially if they are in a hurry (Figure 2) Try to avoid this as any increase in height from the ground will cause a corresponding loss of detection depth. This is easy in lawns, where you just allow the coil to rest on the grass as you sweep from side to side. In rough and rocky areas it is not so easy. Hitting the ground or rocks may cause false signals. The sharp lowering, pressing the coil to the ground, especially in wet and heavily mineralized grounds, could also cause false signals.

AUTO MODE OF OPERATION

First we'll introduce the easiest mode of operation of the detector. Further in the instructions we'll call it AUTO mode. The important thing for this mode is that there would not be necessary to make manual ground adjustments to the different ground conditions.

Turn all the controls and switches to the red marked positions (Figure 3).

GND adjust and **threshold** (on the rear panel of the control box) do not have red markers, as they do not take part in this mode of operation. **Freq.1/Freq.2** switch has no red marker too. The frequency 1 or 2 is chosen depending on which of these

two frequencies the detector is less noisy. The choice is made with one and the same sensitivity level. When turning the detector on (**on/off** button on the rear panel) it congratulates you with alternating green and red lights. Then for a second the LED indicator will light in green, if the batteries are charged, and in red- if the

batteries are discharged and need to be recharged.

The **disc** control has two red zones. For nugget hunting is the most counterclockwise red zone. In this zone you won't have audio discrimination. For coin shooting use the **coins** zone. If you want to dig the bigger sized ferrous targets like knives, arrows and spears, rifles, guns, turn back this control to the **relic** position. In this position the detector will reject only the tiny pieces of wire. Do not increase the discrimination beyond the **foil** mark, the detector will start rejecting some thin jewelry and low conductivity coins or other targets. More detailed description of the functions of this control will be given in the instructions further on. After you have got accustomed with the detector's operation with these settings, you could turn the **low/high** switch to the **high** position. This will make your detector significantly more sensitive and deep. You could add more sensitivity by further rotating clockwise the **sens.** control, until you hear rare interrupted noises. The coil should be static while you change the sensitivity level, and the interrupted noises will fade when you start sweeping the coil.

We recommend in this mode to use the **one tone** position (marked in red) of the **mixed/one tone** switch.



Figure 3

IMPORTANT NOTE: When operating on very heavy and wet grounds, especially if using the bigger sized coils while passing the coil over an open hole in the ground, even if there is no metal in it, is possible to hear false signal, as if in the hole there was a metal target. In such case switch the **M/A ground** to the **M ground** position and press the **GND adjust** control to "sink" into the panel (the led indicator will light in green). In most cases this will eliminate that negative affect and will result in more stable operation of the detector, of course, slightly decreasing its depth parameters. If the affect of the hole does not disappear, you should assemble the smaller sized coil.

MANUAL MODE OF OPERATION

The AUTO mode of operation is the easiest one, but it does not give you the best performance as sensitivity and depth of the detector. In the chapter below we'll introduce the Manual mode of operation. This mode of operation is recommended for very experienced detector operators. In this mode is always made a manual ground balance.

Please, raise and hold your search coil about 10 inches off the ground and parallel to the ground surface, as shown on Figure 4. You should be away from metal objects. Then turn the switches **all metal/disc to all metal**, **A ground/M ground to M ground** (manual ground balance), see Figure 5. The engagement of **M ground** and **all metal** positions activates the **GND adjust** (ground adjust) and **threshold** controls on the rear panel.



Figure 4

The **disc.** control becomes non-active, the detector won't have audio discrimination and will register with one and the same tone all the metal targets, no matter the rotation of the control in one or other direction. Now turn on the detector and set the **sens.** control to the red marked position.

Then rotate the **threshold** control until you start hearing a very weak, faint hum.

Now slightly press the **GND adjust** control until it "sinks" into the panel. At the moment of pressing the control you'll hear a slight click, and the indicator in the centrum of the panel will light green. Then release **GND adjust** control. The indicator will turn off and you are ready for manual adjustment of the ground balance. Lower the coil to about 1 inch off the ground - the threshold tone will get louder. Turn the **GND adjust** control clockwise. Then pick up the coil and push down again. The threshold hum gets louder again. and you'll have to rotate the **GND adjust** control further clockwise.



Figure 5

MANUAL MODE OF OPERATION

Continue with this, and on normal grounds at the 7th -8th clockwise turn towards the “-” position of the **GND adjust** control (Figure 6 - rear panel) the threshold tone won’t change while lowering the coil to the ground. At this point the detector is balanced for the area and ready to hunt. If you rotate the **GND adjust** control further to the “-” position you’ll pass this point of balance. Then the detector will get quiet while lowering the coil to the grounds surface, and it will increase the threshold tone when raising the coil. This means that you should return the **GND adjust** control slightly to the “+” position until you get a constant threshold hum while pumping the coil. Lets note, that from the sinking into the panel the clockwise rotating of the **GND adjust** control in continuation of 20 turns there will be a change in the ground balance. If you continue to rotate the knob after these 20 turns you won’t get any more change in the balance. If you are confused for some reason, press again the **GND adjust** control, this will return you to the initial point, and you could start the procedure again.

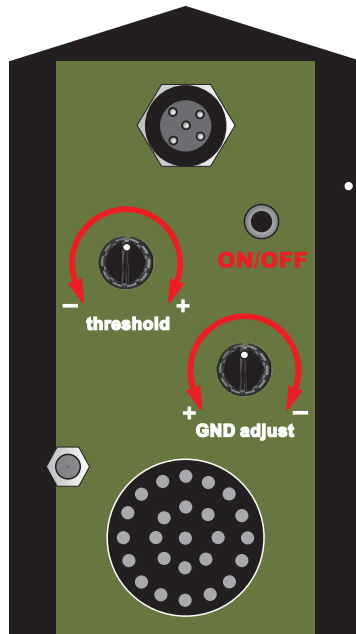


Figure 6

When you ground balance on very heavy grounds it is possible to have cases when you hear increasing tone while lowering, and while raising your coil. If this increased tone is with one and the same volume you have a correct ground adjustment. This is a normal affect for the very heavy grounds. To decrease or make this unpleasant affect disappear you could decrease the sensitivity level of the detector or the threshold level. Then the detector will become less sensitive and deep, but will operate normally regardless the heavy ground.

Remember that the coil must be lifted straight off the ground. Swinging the coil in an arc will cause false readings and will result in not proper ground balance.

If the **all metal/disc**. control is in **all metal**, and the switch **A ground/M ground** to **A ground** position the detector won’t operate correctly and won’t allow you to make a correct ground balance adjustment.

We would recommend the use of this mode of operation for nugget hunting and when smaller sized coils are assembled to the detector.

MANUAL MODE OF OPERATION

The affect of the hole

When you operate the detector on heavy and wet soils conditions, especially when you use bigger sized coil, while passing over an open hole you'll hear audio signal from the detector, even if in the hole there is no any metal object. To avoid this unpleasant effect while sweeping the coil over the hole rotate **GND adjust** knob counterclockwise, a turn or two, until this effect disappears.

If you have made a good adjustment of the ground balance for a certain ground, and it is rich of hot rocks, these hot rocks will give a quite specific negative response. To overcome this problem take some of these hot rocks and place them together at a clear of metals place. Sweep the coil at about 2 inches over the rocks and rotate **GND adjust** control 1-2 turns counterclockwise, until the negative response disappears.

While operating on normal grounds some professional TH-ers to increase the sensitivity and depth, especially for smaller targets, after finding the exact ground balance point they rotate slightly clockwise the **GND adjust** control until they receive an increase of the threshold volume when raising the coil. This is a difficult way of operation, because it is possible to appear false signals caused by the curved ground balance.

If during the operation you start hearing parasitic signals and feel that your detector has lost its stability most probably the soils conditions have changed significantly. You should ground balance the detector again for these changed ground conditions.

In some specific ground conditions the ground balance point would not be found. When this happens it is best to switch to the AUTO mode of operation. The same you could do in any case when you meet difficulty with the ground balance adjustment on some grounds.

You should know that the processor of the detector does not remember the last adjustment of the ground balance which you had used. So that if you have turned off the detector and turn it on again even on the same ground you'll have to make a new ground balance adjustment.

Ground balancing is a learned skill that you should practice often.

DISCRIMINATION

The **disc** control is enabled when you switch the **all metal/disc.** to the **disc.** position. The fully counterclockwise position is marked in red - **nugget.** In this position you won't have any audio discrimination of metallic objects. You should know, that in heavily mineralized ground tiny pieces of gold can sometimes look like iron to the metal detector, and small iron pieces can look like gold. So we recommend this mode of operation for nugget hunting.

The next zone is the **AMD** (all metal disc) zone. The professional TH-ers use this mode of operation to study the new sites they are working on.

The advantage of the **AMD** adjustment is that you won't miss any metal target in the ground. The bad thing is that you'll have to lose time for digging too many unwanted ferrous targets like pieces of wire, nails, etc.



Figure 7

The next zone of this control is **relic.** As we earlier mentioned in this position the detector will eliminate only the tiny pieces of wire. All the bigger sized targets will be accepted. Most professionals prefer working with this adjustment of the **disc.** control, because the detector is really deep with such a low discrimination level.

The next zone is **coins.** Here you'll have good rejection of the ferrous targets, and you'll accept all the non-ferrous targets. We recommend this position of the **disc.** control for searching areas littered with iron trash. If you have too many pieces of foils rotate the **disc.** control after the **foil** zone. Have in mind that the categorical foil rejection will bring to the rejection of some thin golden jewelry.

If you decide to use even higher level of discrimination, for example the last zone or the one before it you'll reject the foil, more of the pull tabs, screw caps, but you'll lose some coins like the nickel 5 cents. The detector will keep its good response to more of the coins, like 1 cent, dime, quarter. Even the lower conductivity ancient coins like the Greek obols, diobols, the Roman asses, follises, sestertii, the Byzantine follises will produce nice, smooth response. A big part of the jewelry will be rejected, as well as the thin small gold coins. We do not recommend such high levels of discrimination.

Even if you are with the highest discrimination level the big oxidized irons will not be discriminated. Though they produce a clear response, the more experienced detectorists manage to discern them and avoid their digging.

NUGGET HUNTING

The easiest mode of operation for nugget hunting is the Auto mode (see the AUTO MODE of operation chapter). Have in mind that the **disc.** control should be in the **nugget** red zone (Figure 8).

In this position, as in the **AMD** zone you won't have audio discrimination of the metallic objects in the ground. Lets remind you again that in heavily mineralized grounds the tiny pieces of gold can sometimes look like iron to the metal detector, and small iron pieces can look like gold, so we recommend this mode of operation for nugget hunting. The advantage is that you won't miss any metal target in the ground. Move the coil just over the grounds surface and with a mean speed of movement. Probably you'll need time to determine the proper search speed and technique. Do not go too fast. Try to overlap your sweep paths so that you won't miss the small and deeper metal targets.



Figure 8

For maximum sensitivity and deeper searching with the detector we would recommend to turn the detector to MANUAL MODE of operation. This mode of operation will require more patience and very good knowledge of your detector's operation and control.

BEACH HUNTING

For beach hunting we recommend the operation of the detector in its AUTO mode of operation and the use of smaller sized coils. Lets start with the beach hunting on normal dry beaches.

These beaches are the easiest for searching, and allow the highest increase of sensitivity level, even switching to **high** of the **high/low** switch. Of course, if there are no strong electromagnetic fields nearby. On the beaches the most valuable finds are the golden rings, golden earrings, golden chains. May be you know, but the thin golden jewelry is low conductivity, so not to miss them we recommend the position of the **disc.** control between **relic** and **coins**. If you go further clockwise, beyond **coins**, the detector will start rejecting the tiniest golden chains. If you want to ignore the thin jewelry, and emphasize on coin shooting and search of higher conductivity jewelry you could increase the **disc.** control level, so that you start rejecting the most of the foils. This will save you the scooping of unnecessary trash, but you'll loose the thin golden jewelry.

Searching on salt wet sand beaches. In such conditions to have a smooth operation of the detector, with no false signals, first turn the **high/low** switch to **low**. Then do not choose too high levels of the **sens.** control. And the most important - while sweeping over the wet sand rotate the **disc.** control clockwise until the parasitic signals, caused by the conductivity of the wet sand, disappear. This rejection of the parasitic signals will be active after the **coins** zone. To keep a good sensitivity to the targets in the wet sand it is very important to stop rotating the **disc.** control exactly at the point where the parasitic signals are rejected. If you pass this point you won't hear any more parasitic signals, but will reject some good targets.

Searching on black sands. These sands contain high percentage of magnetic negative iron oxides. In such conditions many of the low conductivity non-ferrous targets will look like ferrous for the detectors. That is why we recommend you for black sand hunting to decrease the **disc.** control level. Remember that it is best to search in the AUTO mode of operation. It is advisable also to switch to **low** the **high/low** switch, and not to increase too much the sensitivity level. Do not worry about the decrease of the level of discrimination - on the beaches the ferrous targets are rarely met.

CONTROLS

The **sens** control is often thought of as a depth control and it is, but it can also be used to make the detector more stable if interference caused by ground mineralization or electrical fields are experienced. The **sens** control works in conjunction with the adjustments of the **high/low** switch. The **low** position of that switch is for maximum stable operation, while the **high** position is for maximum sensitivity and detection depth.

For mass searching we recommend to use the **low** position of the switch. The beginners could use it and increase the sensitivity level to the boundary where the detector remains quiet and stable. For the very experienced TH-ers we would recommend the position **high** of the switch.

For maximum depth and sensitivity the professionals should then rotate **sens** control clockwise until they hear rare, interrupted tones from the speaker. When they start sweeping the coil these tones will be oppressed by the ground, and the operator will hear only the useful responses from targets in the ground. Of course, all this is valid if the detector is operated in its Discrimination Mode.

The switching to **high** should be made if the ground and atmosphere interferences are normal. If the grounds are heavily mineralized, or if there are too many electromagnetic disturbances, the **low** position of the same switch should be used.

When testing the detector in built-up places, where there are many electromagnetic interferences, you won't be able to increase too much the sensitivity level. That is why for the tests of the real parameters and qualities of the detector we would recommend the field testing. If the detector is slightly noisy, before decreasing the **sens.** level try with a change of the operation frequency (from **freq.1** to **freq.2** or vice versa) and check whether the detector has become less noisy.

The normal position of the **freq.1/freq.2** switch is the **freq.1**, and it is for 4.79 kHz operating frequency (**freq.2** is for 4.86 kHz) If there are interferences received you could choose the frequency, where the detector is less noisy. The frequency switch positions are designed to eliminate the radio-frequency interferences mainly in competition hunting or when searching in close proximity to another detector with a similar operating frequency.

If there is another detector with the same frequency, to operate both detectors normally they should be operated on different frequencies.



Figure 9



Figure 10

CONTROLS

The detector has two sound modes - one tone and mixed. When the relevant switch is on its **one tone** position, when the detector registers a target, no matter its conductivity, you'll hear it with one and the same tone. When the switch is on its **mixed** position, the detector separates the metals by sound-ferrous - which will be registered with a low pitched tone, and non-ferrous- which will be registered with higher pitched tone.

To have such a tone identification of the targets the **disc** control should be in its nugget position (the **disc** control turned fully counterclockwise). If you place the **disc** control in **coins** position the detector will reject the ferrous targets and you won't hear them. All the non-ferrous targets will be registered with the higher pitch tone.

We recommend the operator start his training using the **one tone** position of the switch.

The experienced hunters use the mixed mode when they study a certain unknown terrain. In this way they "hear" the ferrous targets too, receiving better information about the degree of pollution of the area with ferrous junk.

Please, have in mind that on heavy grounds the small deep nuggets will be registered by all detectors as ferrous targets. If in such a case you use a mixed mode of tone identification, the detector will register these small deep nuggets as ferrous targets, i.e. with a low pitch tone. Or the detector will hesitate between low pitch and high pitch tone.



Figure11

FALSE SIGNALS AND SOLUTIONS

A false signal occurs when something sounds like a good target, but it is not. These signals are produced by undesirable or discriminated targets like large pieces of iron, hot rocks or by electrical pulse-type electromagnetic interference. Your detector has a very good discrimination, but some bad “targets” with similar electrical characteristics could fool it. Some items very close to the search-coil could sound good, as well as large pieces of trash. The experience is the best teacher. With more practice with your detector you’ll soon learn how to distinguish the false signals. At first, when you get a good response you’ll find that crossing over the target once or twice more the signal would break up or completely disappear.

The sources of false signals could be:

- **Electrical interference**, caused by high voltage power lines, TV and radio towers, electricity transformers, cells of mobile phone operators or other detectors. Move farther away from the source, lower the sensitivity level. Switch the *high/low* switch to the *low* position. The use of a smaller sized coil is also a good solution.

- **Highly mineralized soils** (with high iron or salt content). In such conditions reduce the sensitivity, increase the level of discrimination. If searching in the *all metal* mode and with *M ground* position of the *M ground/A ground* switch update the ground balance setting. The smaller coils are possible solution.

- **Extremely trashy areas** may cause a lot of “chatter”. Increase the discrimination level or reduce the sensitivity, switch the *high/low* switch to the *low* position. In some trashy areas the smaller sized coil would be beneficial for target separation.

- **Metal Interference**. The detector picks up metals above and on the side of the search-coil, as well as beneath it. Be careful for your digging tool, metals in shoes, and your coil cable hanging loose above the coil. Pay attention to be away from railings, ferro-concrete poles, etc.

SEARCHCOILS

Your detector is equipped with 18 x 15"SEF searchcoil .It is useful for deep search of coins and relics. Very light for its size - 800 g.

It has very good ground balance, stable operation, excellent depth of penetration, very good pinpointing, accurate target identification, excellent sensitivity, high temperature stability. Waterproof, comes standardly with coil cover.

Optional searchcoils are 9" and 13" Ultimate coils. They are designed for best all-around performance, in all types of detecting - for search of jewelry, coins relics. Coming standardly with coil covers they are super light, super strong, and have very stable operation.

No one search coil is better than all the rest. Selecting the right searchcoil depends on the factors such as what are you searching for and search site conditions.

All the search coils are light for their sizes, very well electrostatic shielded, resistant to shocks and shakes, perfectly balanced and waterproof.

They are all compatible and interchangeable, easy to mount and require no special tools.

Coil covers

Your searchcoils come standardly with coil covers. They are very useful to protect your searchcoil at any time, and we would warmly recommend their constant use.

BATTERIES

Your detector is standardly powered by 6 Ni-MH batteries, size AA (R6), 2200 mAh, which allow you to use the detector for 20-30 hours. The time of use depends on how many signals your detector will locate and process and whether you use headphones. The use of headphones will increase the time of battery use.

As we have already mentioned, when turning the detector on the led indicator will light in alternating green and red lights for a while, and then for a second with green light, if your batteries are charged. If this light is red, you should take out and recharge (if the batteries are Ni-MH) or replace (if the batteries are alkaline) the batteries.

If in the process of operation of the detector the batteries are discharged on every 20 seconds the low battery indicator will blink in red, and you'll hear warning audio signal. If you do not turn off the detector, this will continue until the batteries are fully discharged (not too long time), which is not desirable, because is extremely harmful for the batteries themselves.

To remove the batteries, make the following:

Remove the lid of the battery compartment on the bottom of the control box. You'll see the batteries. In the bottom of the compartment are described schematically 6 batteries and the direction of their location.

If the batteries are rechargeable, put them into the charger, of course, keeping in mind the direction of their position in the charger. For a full charge of your 2200 mAh batteries you'll need about 15 hours. After the batteries are recharged, or if you are going to use new alkaline batteries, put them into the battery compartment, making certain to match the battery polarity with the markings indicated on the bottom of the compartment.

WARNING: Be very careful to install correctly the batteries in the battery compartment.

SPECIFICATIONS

Operating Frequency	Freq.1 - 4.79 kHz; Freq.2 - 4.86 kHz	
Audio Frequency	simple tone - 570 Hz low pitch tone - 250 Hz high pitch tone - 1100 Hz	
Weight (with batteries included).....	1600 g	
Length (extended)	57"(1450 mm)	
(unextended).....	29" (740 mm)	
Standard Searchcoil	18 x 15"SEF Searchcoil	
Optional Searchcoils:	9" (230mm) Ultimate coil 13" (330mm) Ultimate coil	
Optional Headphones	Impedance	8 - 32 Ohms
	Mono / Stereo Jack	3.5mm
	Wireless Headphones	
Batteries	Standard	6 Ni-MH , 2200 mAh
Ni-MH battery Life		20 - 30 hours
Low Battery Alert		Automatic LED and Audio
Ground Rejection		AUTO
		Manual Ground Adjust
Search Modes	Adjustable Discrimination	
	All Metals/Ground Adjust Enable	
	Target identification by dual tone (high/low pitch tone)	
Controls	sens., disc., GND adjust, threshold	
Switches	high/low, freq.1/freq.2, M ground/A ground, all metal/disc., one tone/mixed	
Warranty	Control Box	2 years
	Searchcoils	2 years
Patents		BG 817 Y4

MAINTENANCE

Your detector is a high quality electronic instrument. Though ruggedly constructed and designed to withstand the normal treasure hunting demands proper care is essential.

Operate your detector as recommended in this instruction manual.

Remove the batteries from the detector if you are not going to use it for extended period of time. This will prevent the detector from batteries leakage and damage.

Sweep the searchcoil carefully and avoid hitting it against rocks, trees and other hard surfaces.

The use of coil cover is highly recommended to protect the searchcoil from abrasion.

The searchcoil is waterproof, but the electronics are not. Always prevent any moisture or water from entering the control box of the detector.

Protect your detector from dust, moisture, and extreme temperatures. Keep it clean and dry and avoid getting sand and grit into the shafts or the tightening nuts.

Do not use solvents to clean the detector.

Keep the coil cable properly wound around the shaft and protect it. Floppy, pinched cable may short, causing erratic noises or unnecessary replacement of the searchcoil.

Do not attempt to modify or repair the detector's electronics as this will void your detector's warranty.