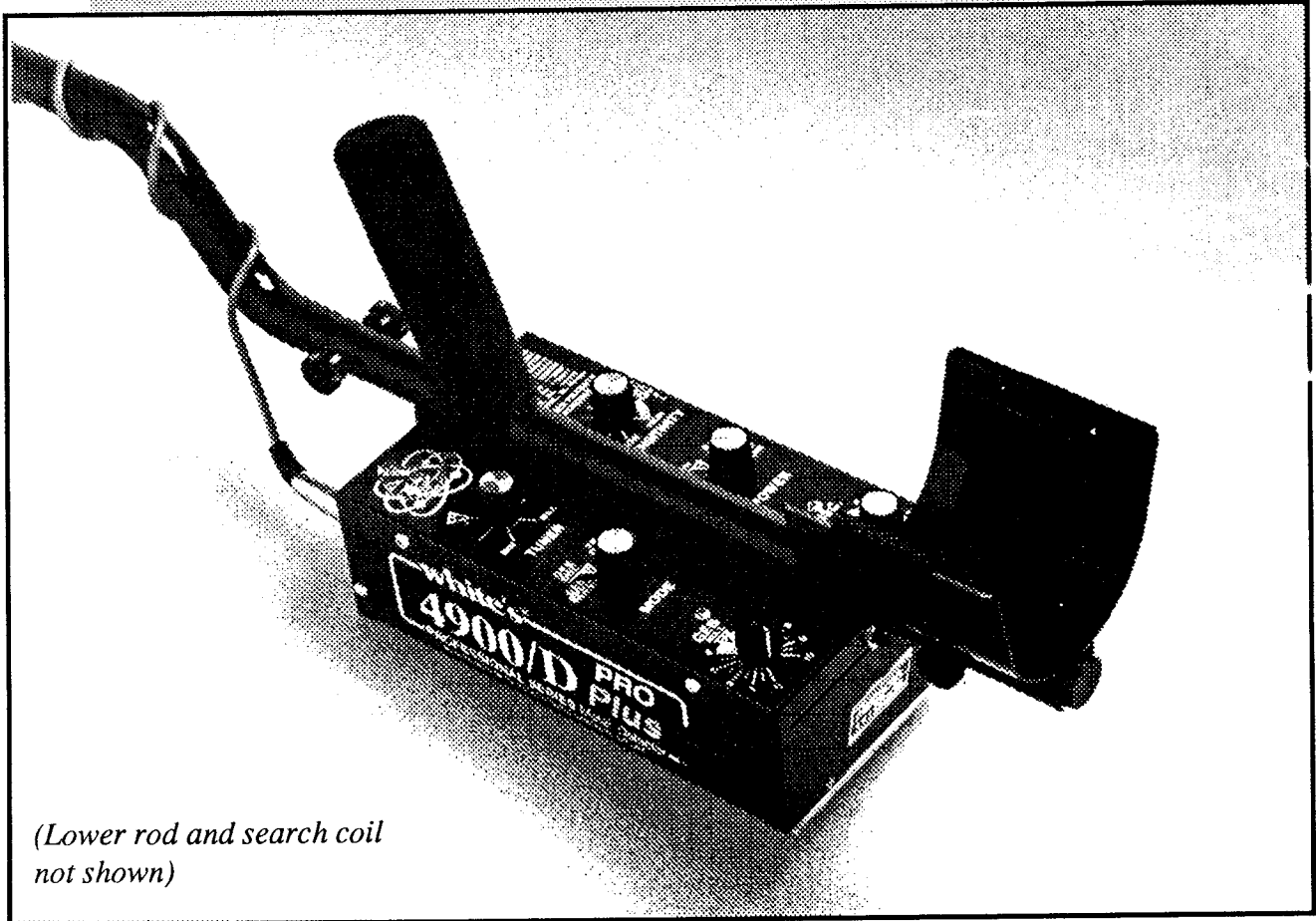


OPERATOR'S MANUAL

white's 4900/DL PRO

Manufactured by WHITE'S ELECTRONICS, Sweet Home, OR USA



*(Lower rod and search coil
not shown)*

ATTENTION: To use your metal detector in normal conditions, set all controls to their ∇ position. To fine tune the detector to operate in other conditions, refer to the information inside the manual.

A Message from Mr. Kenneth White, Jr.

Congratulations! You are now the proud owner of one of the world's finest detectors. You'll enjoy the many relaxing hours you'll spend with your new detector.

Ahead of you lie exciting experiences you'll never forget. For years to come, you'll have yarns to spin about the places you'll visit, the people you'll meet, the history you'll learn, and the treasures and relics you'll uncover. We envy your journey and wish you every success.

Before we tell you how to assemble and operate your instrument, there are two important points to leave you with:

1. Your new detector is precision made and has been carefully tested at our factory. Properly cared for, it will last for years and years. Treat it like a good friend and it should never let you down.
2. Any piece of fine equipment is only as good as the person operating it. Become very familiar with your instrument. Practice as much as you can. Soon it will become a part of you.

You and your metal detector will make an outstanding team. We've known many "shooters" who could follow in the tracks of others and find buried coins and rings the others had missed. You've got the equipment to out-shoot most anyone. Now all you need is the practice.

Good Hunting,

A handwritten signature in black ink, appearing to read "Kenneth R. White, Jr.", with a stylized flourish at the end.

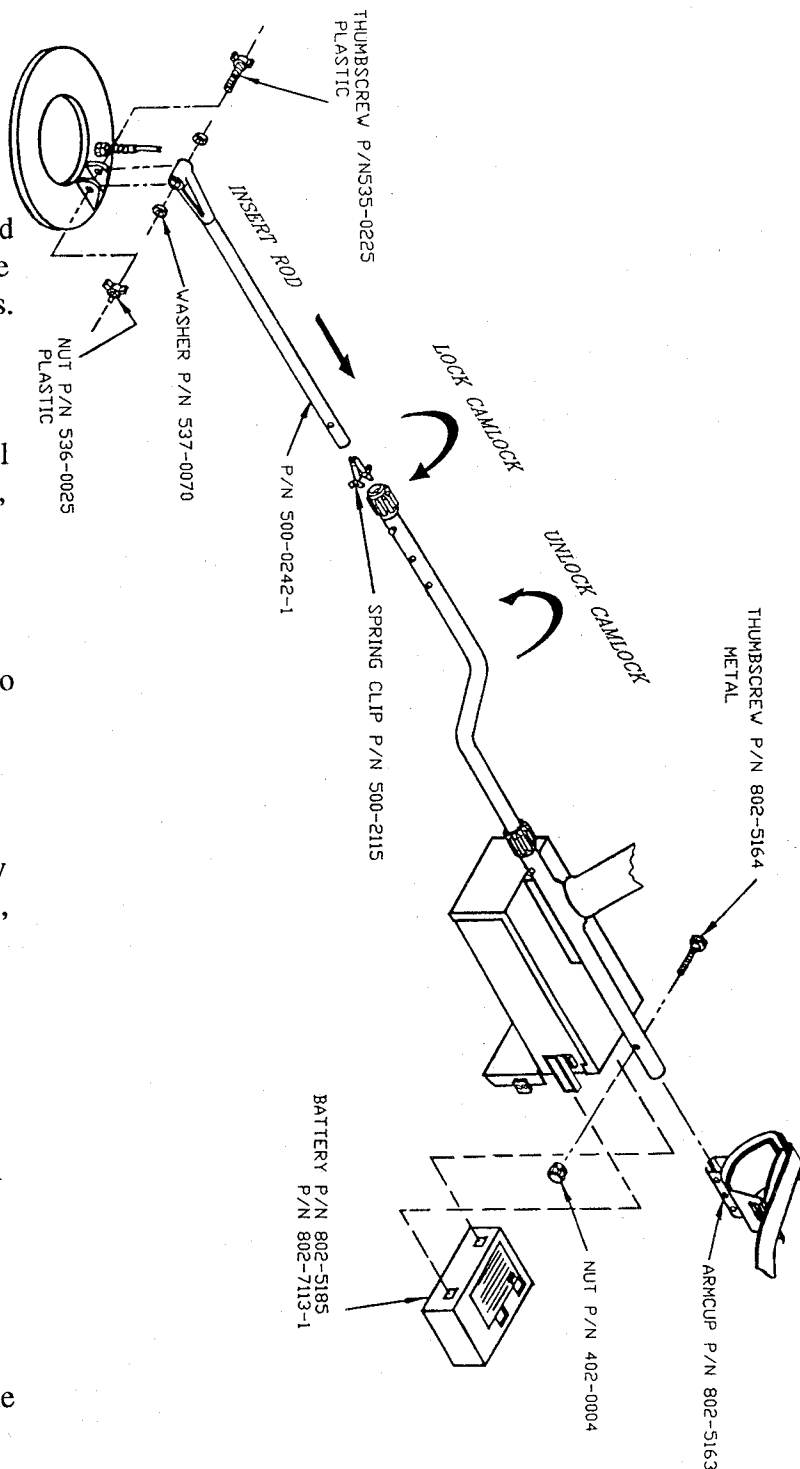
Kenneth R. White, Jr.

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PARTS IDENTIFICATION AND ASSEMBLY

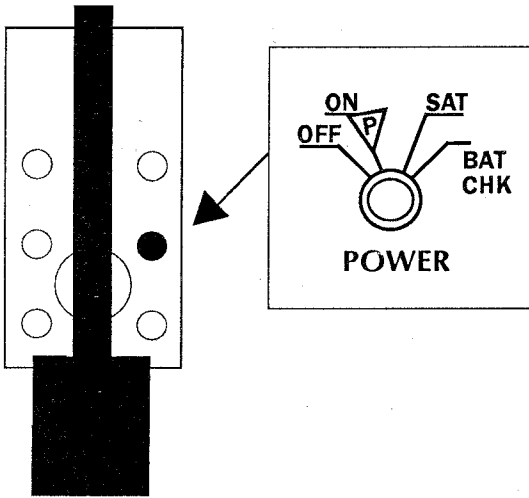
1. Remove all parts from the shipping carton.
2. Place loop washers on clevis/lower rod, one on each side, and slide clevis onto loop ears. Use fiber bolt and thumbnut to secure.
3. Insert clevis/lower rod into curved "S" rod so that stainless steel spring clip buttons line up and lock into one of the adjustment holes. Turn cam lock to secure.
4. Remove cable twist from the loop and wind loop cable around the rods, first revolution over the top of the rod. Wind cable all the way to the top, use black cable retainers, one near the loop and one near the curved "S" rod to hold the cable in place.
5. Insert the "S" rod assembly into the rod on top the control box so that the stainless steel spring clip buttons line up and lock into the adjustment holes. Turn camlock to secure.
6. Grip the instrument by the handle, with your arm in the elbow cup, and sweep the loop over the floor. Adjust the elbow cup by removing the nut and bolt and repositioning, so as to fit your arm length.
7. Apply optional arm cup foam pad to inside of arm cup.
8. Adjust arm cup strap so that it is loose enough for you to slide your arm in and out when you set the detector down to dig.
9. Install battery pack, decal facing up, steel contacts toward the loop.
10. It should be noted at this point, the detector may not work as expected indoors due to the high degree of metals used in modern construction. It is best to tune and use out-of-doors to ensure stable, predictable results.



SIMPLIFIED INSTRUCTIONS

1. Assemble instrument as described under PARTS IDENTIFICATION AND ASSEMBLY.
2. Install the STANDARD BATTERIES in the instrument, sticker facing up.
3. Turn the POWER control to the BAT CHK (BATTERY CHECK) position and make sure the light glows brightly for at least thirty seconds.
4. Turn all controls to their PRESET  position, except MODE. Turn MODE control to GEB/NORM and squeeze and release the push-button on the handle. You should hear a slight tone (threshold), if not adjust the TUNER control so that you hear a slight tone or hum.
5. Lower the loop to the ground. If the tone does not change, the unit is ground balanced and ready to operate.
6. If the slight tone (threshold) changes, raise the loop waist high and turn the GEB control slightly counterclockwise if the tone increased or slightly clockwise if the tone decreased. Squeeze and release the pushbutton on the handle and again lower the loop to the ground.
7. Repeat above steps 5-6 until there is little or no change in tone as the loop is lowered to the ground.
8. You are now ready to search.
9. MODES GEB/NORM or GEB/MAX will detect all types of metals. These modes are recommended for prospecting, relic hunting, or when the detection of all metals is desired.
10. Over inconsistent ground turn POWER control to S.A.T. when using GEB/NORM or GEB/MAX MODES. When using S.A.T. the loop must be in motion (swept) to respond to metals.
11. If you wish to reject junk targets (like nails, foil, etc.) and detect coins, relics, etc. turn mode control to GEB/DISC. In the GEB/DISC MODE the loop must be in motion (swept) to respond to metals. Solid smooth tones are good targets, broken tones are junk targets.
12. If when ground balancing (above steps 5-7) the GEB control has little or no effect (always no change in tone as the loop is lowered to the ground) we would suggest the TR/DISC MODE. Lower the loop to approximately one inch from the ground, squeeze and release the push button on the handle and search. The TR/DISC mode doesn't require loop motion to detect metals.
13. Always keep the loop as close to the ground as possible and sweep it from side to side in smooth even passes overlapping each sweep.
14. Pinpoint on objects precise location by "X"-ing the target. The strongest response indicates target center.
15. The following instructions provide a more detailed explanation of each control and their proper use.

EXPLANATION OF CONTROLS: POWER switch



1. The POWER control turns the detector on and off, selects the SELF ADJUSTING THRESHOLD (S.A.T.) and tests the battery strength.
2. The S.A.T. position automatically performs a reset function to maintain an optimum threshold tone.

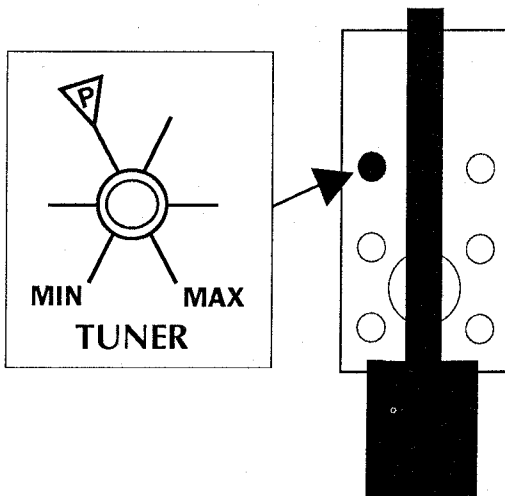
Ground Balance the instrument as described in this manual before selecting the S.A.T. position.

The S.A.T. setting is recommended when searching in GEB/NORM or GEB/MAX in areas where ground mineralization changes rapidly, such as on wet saltwater beaches or in mining areas.

NOTE: S.A.T. is not recommended for use in TR/DISC unless this MODE is tuned for extended ground balance (See TR/DISC explanation) and is not needed in the GEB/DISC MODE.

3. In the BAT. CK. position the red L.E.D. will glow brightly if the battery strength is GOOD.

EXPLANATION OF CONTROLS: TUNER dial



1. The TUNER sets the detector's THRESHOLD.
2. The THRESHOLD is indicated by an audio tone that is barely heard. It represents the detector's maximum operating sensitivity.

3. To set the THRESHOLD:

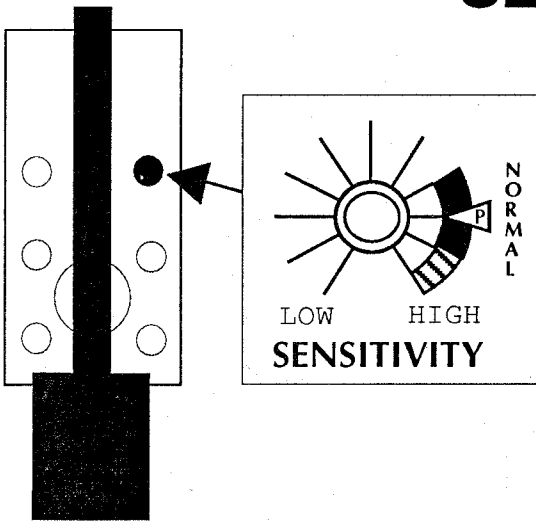
Set the TUNER to MIN, and set the MODE switch to GEB/NORM.

Hold the detector so that the loop is in the air, straight out in front of you, waist high.

Press and hold in the TUNER BUTTON on the end of the handle, and at the same time turn the TUNER dial clockwise to the right until the tone is barely heard. Release the button.

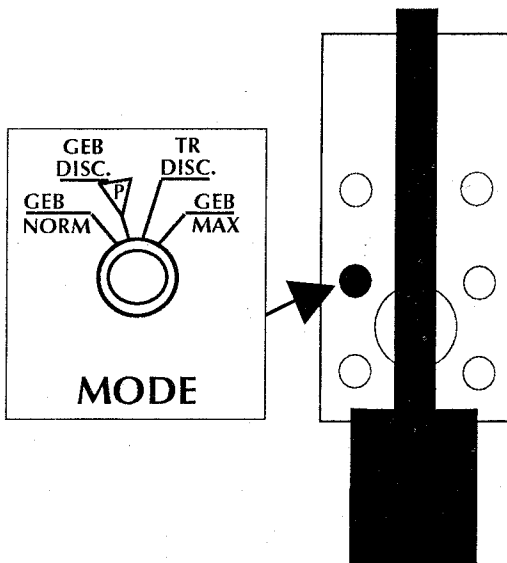
4. **The THRESHOLD needs to be reset whenever any of the other controls are adjusted.** To reset the THRESHOLD, raise the loop waist high and press and release the tuner button.

EXPLANATION OF CONTROLS: SENSITIVITY dial



1. This control replaces a volume control normally found in this position on most White's detectors. The volume is preset at the factory at the proper level and the control removed.
2. This SENSITIVITY control is used to increase or decrease the amount of sensitivity the detector has. The detector should always be used at the maximum sensitivity allowable by the ground mineralization. A setting to the right edge of the solid band would provide a sensitivity workable in most areas and give depth capabilities equivalent to other GEB COINMASTER's. The dial scale beyond this point is used to provide additional sensitivity for reaching smaller or deeper targets. This increased sensitivity is available if the ground mineralization will allow. Use the highest setting available on the SENSITIVITY dial which allows a smooth or workable threshold tone. Erratic behavior of the detector could indicate excessive mineralization in the ground; and would indicate that the SENSITIVITY control be reduced by turning the dial to the left (counterclockwise) until the detector operates smoothly. Press and release the TUNER BUTTON each time the SENSITIVITY dial is corrected.

EXPLANATION OF CONTROLS: MODE switch



1. The MODE switch selects one of 4 operating modes.
2. Each MODE is designed for specific search conditions. These conditions include soil mineralization; amount of junk cluttering the area; and the targets to be located.
3. The GEB/NORM or GEB/MAX modes are recommended for Relic Hunting, Prospecting and Beach Hunting (where excessive junk targets are not a problem).
4. The GEB/DISC mode is used to search for coins, jewelry, etc. In areas where junk items and ground mineralization are a problem.
5. The TR/DISC mode is used for searching only in areas where there is little or no bothersome mineralization. It does not cancel out ground conditions. The main function of this mode on the 4900/D is to help identify Hot Rocks or other mineralized rocks which can give false signals when Prospecting or Relic Hunting.

Mode: GEB/NORM

The GEB/NORM Mode locates All Metals while neutralizing the effects of ground mineralization.

1. This mode may best be used for prospecting, relic hunting and coin hunting in areas where there is little junk.

With the POWER Switch set at S.A.T., this mode will automatically keep a constant threshold hum and is effective in certain saltwater beach conditions.

2. To use the detector in the GEB/NORM mode, it must be ground balanced using the GEB control.
3. In GEB/NORM, the loop DOES NOT have to be in motion.

Mode: GEB/DISC

The GEB/DISC mode will distinguish between desirable and undesirable objects while neutralizing the effects of mineralization in the ground.

1. This mode may best be used for coin hunting in areas where there is a great deal of junk such as pulltabs, nails, and bottle caps.
2. When using this mode, the DISC control must be adjusted in order to audibly distinguish between desirable and undesirable targets.
3. In GEB/DISC, the loop MUST be in motion. THIS IS A SLOW SWEEP MODE.
4. When using this mode, the detector must always be ground balanced in GEB/NORM first. Holding in the TUNER button will automatically switch this mode to GEB/NORM.

Mode: TR/DISC

The TR/DISC mode has three functions:

1. It provides audio discrimination between desirable and undesirable targets, but will not neutralize the effects of ground mineralization at the same time. It should NOT be used as a primary search mode in heavily mineralized areas. It should be reserved for low mineralized areas and in areas where there is no room to swing the loop (as is necessary with the GEB/DISC mode).

In this function, the DISC control is adjusted to distinguish between desirable and undesirable targets.

To tune the detector in this mode, proceed as follows:

Tune to THRESHOLD with the TUNER dial.

Lower the loop to approximately 1/2" above the ground.

Press and release the TUNER button to reset the THRESHOLD.

Search with the loop level to the ground and as close to the ground as possible. NOTE: If the loop is tilted or lifted, the tone may change or get louder (false signal) due to variation of the ground.

When searching in TR/DISC, the loop does not have to be in motion.

This mode gets excellent depth penetration wherever it can be used. However, if the ground is mineralized, the detector will frequently give false signals. In mineralized ground, it is best to hunt in one of the 3 G.E.B. modes.

2. TR/DISC provides extended Ground Balance for extreme conditions such as saltwater beaches, unusually mineralized ground, and other conditions beyond the range of the G.E.B. control. Use the DISC control to balance out the ground in the same manner as the G.E.B. control was used in GEB/NORM. The DISC control, however, operates in the opposite rotation from the G.E.B. control. For example, if the tone gets louder as the loop is lowered, increase (turn clockwise) the DISC control.
3. It provides a means of identifying Hot Rocks particularly in the Prospecting function of the "49er". This use will be covered completely in the section on Hot Rocks.

Mode: GEB/MAX

1. The GEB/MAX mode locates all metals while neutralizing the effects of ground mineralization.

This mode may best be used for Prospecting and Relic Hunting where maximum depths are desired and junk items are not a major problem. This is an All Metal mode and detects any metal target.

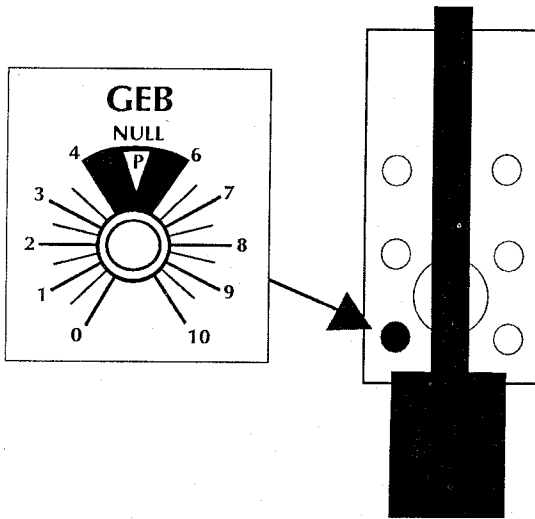
Ground Balancing the detector in the GEB/MAX mode instead of the GEB/NORM mode will give the most exact tuning and this provides the detector with its greatest sensitivity.

In GEB/MAX, the detector must be ground balanced using the G.E.B. control just as in GEB/NORM.

In GEB MAX, the loop does not have to be in motion.

GEB/MAX has approximately 30% greater depth penetration than GEB/NORM. NOTE: Due to the increased sensitivity of GEB/MAX, it may have a somewhat rougher tone than GEB/NORM.

EXPLANATION OF CONTROLS: G.E.B. dial



1. The G.E.B. (Ground Exclusion Balance) control is used with all 3 GEB modes to neutralize the effects of ground mineralization. When using the detector on either of the All Metal modes (GEB/NORM and GEB/MAX) the detector must be adjusted to the ground with the GEB dial. After this is done, the mode can be changed to the GEB/DISC mode and not require additional balancing.

2. The detector needs to be ground balanced every time you begin searching an area. To Ground Balance the detector, set the controls as follows:

TUNER - Set to threshold, see TUNER Dial explanation.

MODE - GEB/NORM or GEB/MAX

G.E.B. - Middle of "Null" band.

SENSITIVITY - Right hand edge of solid band.

POWER - ON

DISC - "5"

TUNER BUTTON - Press and release.

Lower the loop to the ground. If the tone does not change, the unit is Ground Balanced already.

If the THRESHOLD tone changes, raise the loop waist high and turn the G.E.B. dial slightly counterclockwise if the tone had increased, or slightly clockwise if the tone had decreased.

Press and release the TUNER button on the end of the handle.

Lower the loop back down to the ground and note any change in tone again. Adjust the G.E.B. control as explained above.

Continue to raise and lower the loop to the ground and make the appropriate corrections until there is no change in the tone between air and ground.

If you have any trouble adjusting the G.E.B. control to a constant threshold, you may be over some metal. Move to another spot and repeat the above steps.

Note: Press and release the TUNER button after each adjustment to the G.E.B. control.

3. When you want to search using the GEB/DISC mode, do the following:

Ground balance the detector in either GEB/NORM or GEB/MAX as described.

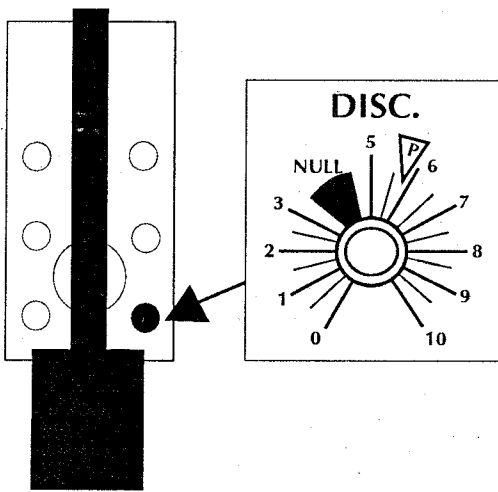
Turn the MODE switch to GEB/DISC.

Press and release the TUNER button. The detector is now Ground Balanced in GEB/DISC.

For your information: If Ferric Oxide (iron) or the magnetic content of the soil is not neutralized with the GEB control, the detector will react to it. This mineralization may "hide" metal objects from the detector.

4. Note that the TUNER dial on the GEB control is a double stacked tuner. This has been put on the "49er" so that this detector can be ground balanced more easily in extreme mineral conditions which are often present in Prospecting areas, Beaches, and Relic Hunting sites. When ground balancing, first set the outer portion of the tuner (rough tune) and as the balancing procedure gets more delicate, use the inner (fine tune) portion of the tuner.
5. Another unique feature of the "49er" is the appearance of a marker indicating the NULL point of the GEB portion of the detector. This is merely a reference point used to predict how the detector will react to certain ground mineralizations, such as Hot Rocks and Black Sand deposits. This NULL point is indicated as a band. Since each detector is slightly different, the exact spot for the NULL point must be determined on each detector for maximum accuracy. This procedure will be fully explained in the section on Prospecting and Hot Rocks .

EXPLANATION OF CONTROLS: **DISC. dial**



The DISC (Discrimination) control works with the GEB/DISC and TR/DISC modes to help audibly distinguish between desirable and undesirable targets. The DISC control allows the user to selectively interpret targets within the range of the dial from "1" to "10". The further clockwise the dial is set, the greater number of targets will be eliminated. Every target falling to the left of the point will be eliminated and thus produce either no audible sound at all, or a broken up sound. The degree of discrimination starts around "1" or "2" where the ground mineralization itself is eliminated, and progresses through Beach Salt (around "3") to Nails (around "4") Foil (around "5" or "6") and then Nickels and so on. You may calibrate your own detector to find where those items you wish to eliminate would appear on the scale. I recommend finding the place where you hear a Nickel in the GEB/DISC mode when it is placed on the ground you are searching. Increase the Discrimination level of the DISC dial slowly, while passing the loop over the nickel. Remember to press and release the TUNER button each time you correct the setting on the DISC dial. When you reach the setting where the Nickel produces no sound, correct the setting slightly to the left until the Nickel gives a strong signal. At this point, all coins and 80% of all gold jewelry will produce an audible signal. Most junk items, such as foil, nails and bottle caps will be eliminated at this setting. Aluminum junk, such as pull tabs and screw caps will still produce a signal. If you wish to eliminate these junk items, merely determine the point at which they are eliminated and detect with the dial set at that point. You will, of course, get most coins, but risk the chance of losing most gold jewelry.

The DISC dial also contains another unique feature, a Null Marking Band. This band marks the area at which a mineral sample (such as is provided with the detector) will make the threshold sound fade when such a sample is brought close to the loop when the MODE switch is set at TR/DISC. This feature is helpful when the detector is used for Prospecting and will be covered in that section of the manual. Since each detector has its own "fingerprint", the exact Null Point should be determined for each detector by the user. This point, as also the GEB Null Point are constant and need only be determined one time and marked on the detector. The method for this exact determination will follow in the section on Prospecting.

EXPLANATION OF CONTROLS:

TUNER button



The TUNER button on the end of the handle is a control that changes the detector's operating systems.

Pressing the button in will switch the mode of operation of the detector. If the detector is in GEB/NORM, GEB/MAX, or TR/DISC, holding in the button will switch the mode to GEB/DISC. If the detector is operating in GEB/DISC holding in the button will switch modes to GEB/NORM. This mode change will continue as long as the button is held depressed.

Pressing and releasing the button will retune the detector and regain the threshold sound. This is done whenever any control has been adjusted.

Pressing and releasing the pushbutton when the detector is operating in either GEB/NORM OR GEB/MAX allows the maintenance of a steady threshold sound, regardless of changes in the ground conditions.

EXPLANATION OF CONTROLS:

S.A.T.

S.A.T. stands for Self-Adjusting Threshold. This is a very helpful feature to use if the primary search mode is either GEB/NORM or GEB/MAX. It allows the maintenance of a steady threshold regardless of changes in the ground conditions.

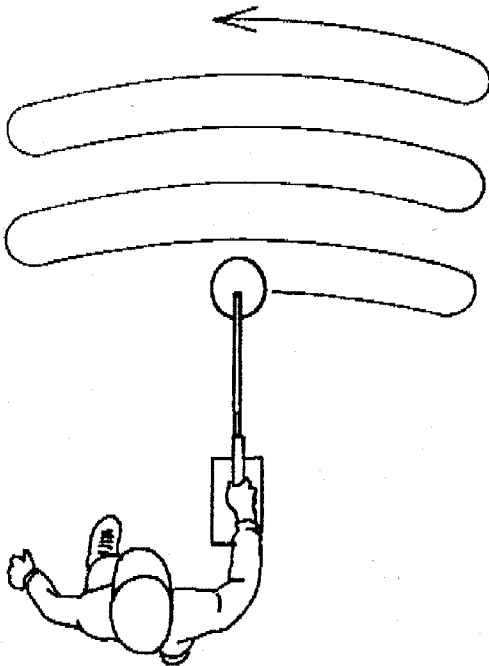
It is not necessary to use S.A.T. in the GEB/DISC mode. The threshold maintains itself regardless of the ground conditions.

S.A.T. can also be called Electronic Pinpointing. If the loop is slowed down over the target, the target signal will be reduced in its intensity and seem to disappear. A slight motion of the loop from side to side will regain the signal in a much diminished intensity, allowing accurate pinpointing.

One of the primary advantages of S.A.T. is for Beach Hunting on Saltwater beaches. The combination of salt and water in different degrees of concentration change the threshold sound. For example, after tuning the detector on dry sand with the MODE set at GEB/NORM or GEB/MAX, move toward the water. As the moisture and salt content of the sand increase, the sound of the detector will get louder or blare. This loud threshold sound will mask signals created by a coin or piece of jewelry. If the POWER switch was set on S.A.T. instead of in the "ON" position, the threshold hum would have adjusted and remained steady, thus making searching possible. An alternative would be to search in GEB/DISC, but many prefer to use the All Metal GEB modes on beaches. They feel it is easier to dig any targets, hence avoiding overlooking good targets. Another alternative would be to work parallel to the water line to maintain a steady concentration of water and salt. This is a tedious method and is not necessary when S.A.T. is available.

Ground mineralization does not change as dramatically when working prospecting or relic hunting areas, so S.A.T. would be the second choice in maintaining the threshold. The primary method in these cases would be to merely ground balance the detector to the changed ground condition. This provides the most sensitivity for detection.

GENERAL SEARCH METHODS



1. Always keep the loop flat and parallel to the ground. When raised, the depth penetration is decreased.
2. Swing the loop in front while searching. Each swing may cover an area from 4 - 6 feet in width.
3. The loop should be passed along the ground in smooth, even swings. It does not have to be swung quickly.
4. The loop must be kept in motion in GEB/DISC, but a slow sweep is needed to properly identify the target. When a target is detected, sweep from several directions noting its audio characteristics.
5. The other three modes will still signal a target when the loop is stopped over it. Motion is not necessary. To find the target after it is located in GEB/DISC, switch the mode to either GEB/NORM (by holding in the TUNER button) or actually switching the MODE switch. Switching the MODE to GEB/MAX will also help pinpoint deeper or smaller targets.
6. To pinpoint, move the loop towards the target until the tone reaches its maximum level. At this point, move the loop across the target at a right angle until again the tone reaches its maximum level.
7. Press and release the TUNER button several times as you move the loop over the target area. You will try to narrow the detector's response to the target so it will be easier to know when the center of the loop is directly over the target. The target will be at the center of the "X".

RELIC HUNTING

Relic Hunting is done in the All Metal modes of GEB/NORM and GEB/MAX. These modes give the greatest depth, and targets are not restricted to precious metals. The amount of mineralization will determine if GEB/MAX will be the mode of choice. If the signal is stable enough to operate, then by all means, go for the greater depth of GEB/MAX.

If GEB/MAX is the operating mode, then ground balance the detector in that mode. This will result in a finer tuned instrument, and thus greater depth.

Relic Hunting should be done slowly and carefully. Deeper targets require more careful searching, and a much tighter search pattern. Overlap all sweeps and cover areas from different directions. Dig all targets and do not use the discrimination modes. If too many small pieces of iron junk are present, you may wish to detune the detector as in pinpointing above, and go for the larger relics, or use S.A.T. and slow down your sweep speed, allowing the self-adjusting threshold to eliminate the smaller targets.

In some instances, if mineralization is minimal, the TR/DISC mode can be used. It will ignore very small iron junk items, such as small

nails, but will signal larger iron objects and other metals like lead, copper, brass, silver, gold, etc.

If Hot Rocks present a problem while searching for relics, they can be identified just as in Prospecting. They are covered in the following section.

PROSPECTING WITH THE 49er

We can prospect or hunt for gold with any of the GEB COINMASTERS as long as we have some ability to cancel out the ground mineralization. This is done most readily by true GEB detectors such as the 4900. These detectors will detect gold in its natural form as nuggets, hard-rock specimens or rich ore samples or locate black sand deposits.

The "49er" is used in the GEB/NORM or GEB/MAX modes for prospecting. Before entering the field, the detector must be bench tested to locate the exact point on the GEB control where a ferrous mineral sample will give a negative audio response, and gold or metal sample will give a positive audio response. This point is somewhat different on every detector, but White's has marked a Null band on the GEB dial to show the margins of this location. You may use this average marking, but it is best if you determine the exact point on your own. This Null Point is merely used as a reference point to predict what Hot Rocks and mineralized areas will do to your audio signal.

LOCATING THE NULL POINT

To properly locate the Null point on the GEB dial, it is necessary to have a known mineral sample. One has been included with the "49er" for this use.

The detector is now placed on a table or object which contains no detectable metals or minerals. Remove all watches, rings and jewelry. It is necessary to find the most sensitive area of the loop to calibrate the detector. (This will be the electrical center of the coil.) On most COINMASTERS, this will be very near the physical center of the coil or loop. The exact spot can be located by passing a small coin over the coil, about 1 or 2 inches away from the coil, and marking the point of loudest response with a felt tip pen. It is important to use this most sensitive area to obtain accurate results with the mineral sample provided. The sample will be moved toward and away from the coil, and never across the coil. Faster movement produces more easily heard sound.

Set up the dials as if the detector was going to be tuned in GEB/NORM. In fact, this is exactly what will be done, except the detector will not be balanced to any ground. Instead, the detector will be balanced to the mineral sample provided. At this point, we will have determined the exact Null Point, or physical center of the GEB control. This should be somewhere within the Null Point band preset by the factory. Make a mental note of where this point is on the band, or mark it. We will need to know this point of reference.

Set the GEB dial at the center of the Null Band, and the TUNER all the way to the left or counterclockwise to MIN. The rest of the dials and switches are set up just as if you were going to ground balance your detector. The SENSITIVITY dial is set to the end of the solid band or to the normal sensitivity. The DISC dial is set at "5" to start. The MODE switch is set at GEB/NORM or GEB/MAX and the POWER switch is set to ON. Press and hold in the TUNER button while at the same time turn the TUNER dial to the right or clockwise until a faint hum or threshold sound is heard. Release the TUNER button. Now move the mineral sample provided toward the electrical center of the coil in order to get a positive response (an increase in sound above the threshold sound). Do not touch the coil with the sample - one or two inches away is fine. If the mineral sample provided does not produce a positive sound, move the GEB dial slightly clockwise and press and release the button. Try again. Keep trying a clockwise correction on the dial until a positive sound is heard. You have now gone a bit too far, so back off the GEB dial. Remember to always press and release the button after each correction on the GEB dial. Stop at a point just to the left of where a positive sound occurs. If the sound had increased when you brought the mineral sample to the loop, you would have corrected counterclockwise. If the sound had decreased, you would have corrected clockwise or to the right. Always stop at the point where there is a definite decrease in the threshold or a "nulling of the signal".

The second Null Point that must be predetermined is the one on the DISC dial, which will be used to eliminate or identify Hot Rocks. The factory has also put a Preset band on the DISC dial to indicate the average range of this Null Point. Each detector is slightly different, so for the most accurate results, you should determine the exact spot this nulling occurs. You will determine this Null Point in much the same fashion as you did on the GEB dial. First, set all the dials and switches just as you did to determine the GEB Null. Air tune the detector to the threshold sound. Now switch the MODE switch to TR/DISC and press and release the TUNER button. Bring the mineral sample provided toward the loop just as you did when determining the GEB Null and note whether the threshold sound increased or decreased. If the sound decreased, correct the DISC dial as before, and do it in the opposite fashion. (If the sound decreased, move the dial slightly to the left or counterclockwise.) Don't forget to press and release the TUNER button after each correction. Continue to bring the mineral sample provided toward the loop and note the change in threshold. If the sound increases, correct toward the right. If the sound decreases, correct toward the left. The point where the mineral sample makes the threshold sound fade is called the TR/DISC Null Point and will probably be in the factory preset band. The DISC dial will always be set at this point while Prospecting and when Hot Rocks need to be identified.

PREDICTING RESPONSES BASED ON THE NULL POINTS

The Null Point on the GEB dial is only a reference point to predict the response of the detector in certain operating modes. The detector is never set at the Null Point for searching, unless, by chance that is the exact spot where the ground is cancelled out. Always ground balance the detector on the area to be searched and then note where that point is in reference to the Null Point. We can then predict the following:

1. If the detector is ground balanced at a point to the left of Null and the detector is operating in GEB/DISC or TR/DISC, a Hot Rock will make a positive sound.
2. If the detector is ground balanced at a point to the left of Null and the detector is operating in GEB/NORM or GEB/MAX, a Hot Rock will not be heard.
3. If the detector is ground balanced at a point to the right of Null and the detector is operating on GEB/DISC or TR/DISC a Hot Rock will not be heard.
4. If the detector is ground balanced at a point to the right of Null and the detector is operating on GEB/NORM or GEB/MAX, a Hot Rock will be heard.

The situation in "4" will present a problem for Prospecting and Hot Rocks, since we Prospect in GEB/NORM or GEB/MAX by choice and gold is usually found in heavily mineralized areas, which normally tune to the right of Null. "1" might also be a problem in parks and beaches where we would be searching in GEB/DISC or TR/DISC and the area may have low mineralization.

Dealing with Hot Rocks is much the same whether you are Prospecting, hunting in a park, or searching a beach. As long as you understand the problem and know where your Null points are, you can deal with them.

DEALING WITH THE HOT ROCK

In situation #1, it is easy to identify the Hot Rock. You are searching in the Discriminate mode and must go to an All Metal mode to pinpoint or locate the target anyway. When you have switched modes, usually by pressing and holding the TUNER button, the detector will be operating in GEB/NORM and the Hot Rock causes the threshold sound to Null. Set the DISC dial to the Null point which you have predetermined. If you have not determined the exact Null point, be certain to set the DISC dial slightly to the right of the Null band. Continue to search in either of the GEB modes. When a signal is heard, it could be a metal target or a Hot Rock. When you hear this positive response, center the target and switch the MODE switch to TR/DISC with the loop flat on the ground or just above it if needed. Press and release the TUNER button. Now slide the loop across the target area. If the signal increases in intensity or remains the same, dig the target; it may be good. If the

signal definitely fades or drops off, the target is probably a Hot Rock. Switch back to one of the GEB All Metal modes (GEB/NORM or GEB/MAX) and continue to search.

ORE SAMPLING

With the detector tuned as we did when we bench tested to determine the Null points, it will correctly analyze ore samples. Support it with the loop away from the ground (an old tree stump works nicely) and bring samples within 1 - 2" of the loop. Any ore sample containing more metal than mineral will respond positive (increase in audio signal) on the detector. If there is more mineral than metal, the response will be negative (the signal will fade). During this testing, the GEB dial is set at the predetermined Null point. Always remember to touch the TUNER button after each ore sample is tested.

This ore sampling technique is very useful around the tailings of old mines. The miners often only saved ore which contained visible gold and tossed the rest aside. This technique allows the modern prospector to look inside the tailing sample and correctly analyze its content. Do not scan the tailing pile, but instead lay the detector on an old tree stump and bring each ore sample toward the loop in the same manner used when bench testing the homemade samples.

NUGGET HUNTING

When nugget hunting, balance the detector as you would normally do for coin hunting. Remember, most gold is found in mineralized areas and careful ground balancing will guarantee the greatest depth of detection. Use GEB/MAX if possible. A novice will prefer to use the more stable GEB/NORM until he gains experience. The double stacked tuner found on the "49er" will allow the detector to be balanced much more easily on heavily mineralized soil. Also, extra depth can be achieved by increasing the sensitivity on the SENSITIVITY dial. If the signal becomes too erratic to operate, back off the sensitivity.

FINDING BLACK SAND DEPOSITS

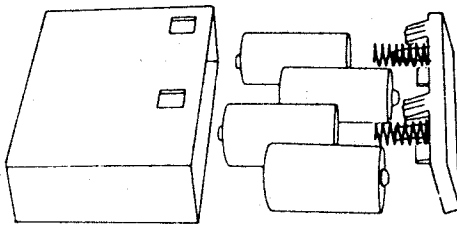
Nuggets of small size are often missed when nugget shooting, and flour gold is hard to detect even when in large amounts. Black sand deposit pockets often contain small nuggets and "flour" or flake gold. The "49er" finds black sand pockets easily and it is left to the prospector to pan out the contents of the pocket to determine its worth. This method is valuable to determine areas to dredge, dry wash or hydraulic sluice.

Tune the detector to balance out the ground mineralization just as you would for nugget hunting, using the GEB/NORM or GEB/MAX modes. Check several spots in the area being searched to be sure a pocket was not under the loop when tuning.

Since areas where black sand pockets are likely to be found will probably require tuning of the GEB dial to a point to the right of Null, we can predict a black sand deposit will produce a positive response like a piece of metal or gold nugget. However, in contrast to a Hot Rock, a pocket of black sand would be fairly large and give a positive response over a much larger area. Do not expect a sharp sound like that of a coin or small target. As these pockets might be deep, earphones must be used at all times. If the GEB dial had been set at a point to the left of Null, then black sand deposit would have produced a negative signal or a fading of the threshold sound.

If the Null point set on your DISC dial does not make the Hot Rocks you are finding in the field fade upon testing, then use one of these Hot Rocks to set your DISC Null point instead of the sample from the factory.

STANDARD BATTERIES



The standard battery pack holds four ALKALINE batteries. ALKALINE BATTERIES ARE THE ONLY DISPOSABLE BATTERIES RECOMMENDED FOR THIS INSTRUMENT. To insert these batteries, proceed as follows:

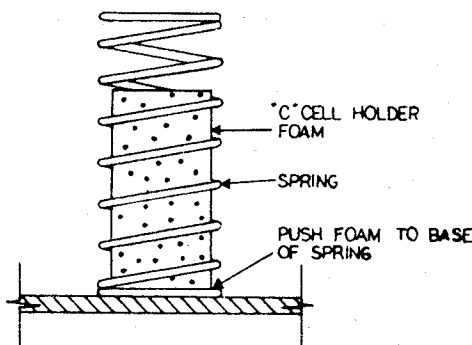
1. Remove the battery pack from instrument.
2. Remove the battery pack lid gently pulling the top sides of the pack apart until the lid springs up, or apply gentle pressure down on the four locking tab openings, two on each side.
3. Note the position of each cell. (The flat side of each cell fits against one of the 4 springs.)
4. Remove the dead batteries and replace them with new ones. (If the cells are put in backwards, the detector will not work.)
5. Line up the locking tabs on the lid with the holes on the battery pack. Snap them together.
6. Insert the battery pack into the detector. The two terminal points must touch the pointed contacts inside the instrument.

"C" Cell Holder Instructions

"C" SIZE ALKALINE BATTERIES ARE THE ONLY BATTERIES RECOMMENDED FOR THIS HOLDER

Installation instructions:

1. Push foam into the four springs.
2. Install 4 batteries (not included) with the flat side of each cell against one of the four springs. (If the cells are in backward, the detector will not work.)



PROPER CARE OF YOUR DETECTOR

The following are precautions you should take to protect your instrument from harm, ensure its long life and avoid nullifying the warranty.

CLEANING: The loop and rod are waterproof. They can be cleaned with fresh water and a mild cleanser. After cleaning, however, dry the instrument thoroughly. **CAUTION:** The instrument case is not waterproof, and water—if allowed to enter it will damage electronic components.

WEATHER CONDITIONS: Protect your detector from excessively cold weather. Freezing can damage the electronic components, the case and/or the batteries. Excessive heat can also damage the instrument. Never leave it in the sun. If it's left in a car on a hot day, cover it to protect it from the direct rays of the sun, and then leave the windows slightly open to permit ventilation. Protect your detector if you operate it in the rain, as water may get into the instrument case.

SALTWATER: Salt water is very corrosive! Immediately after your detector has been exposed to salt water, rinse it thoroughly with fresh water, being careful not to allow water to enter the instrument case. Then wipe it with a cloth dampened with fresh water and dry it thoroughly.

ADDITIONAL PRECAUTIONS:

- a. Avoid dropping your detector
- b. Do not use any lubricants on any part of your metal detector.
- c. Avoid sharp jars to the loop.
- d. Do not allow batteries to corrode inside the instrument
- e. Do not alter or modify your instrument during its warranty period.
Alterations will void the warranty.

SEARCHING

WHERE TO SEARCH

Start with your own yard. Valuables can be found anywhere people have congregated, gathered, lived, sat, walked, played, camped, picnicked, traveled, or fought. The following list of locations have produced a great deal of coins, rings, relics, and treasure in the past:

Amusement Parks	Swimming Holes	Boardwalk areas
Circus Grounds	Bridges	Trails
Racetracks	Historical Location	Parking Strips
Parks	Old Building	Roadside points of interest
Schools	Forts	Storm Cellars
Trading Posts	Carnivals	Beaches
Hitching Posts	Fairgrounds	Old River Crossings
Clotheslines	Rodeo Grounds	Past Disaster Areas
Sidewalks	Playgrounds	Cabins
Around Old Trees	Ghost Towns	Clubhouses
Old Homesteads	Stage Stops	Basements

HOW TO SEARCH

You must have permission to search private property from the owner or person in charge of managing the property. In most cases, you can locate the owner through City Hall or the county seat. If the area is city property, contact the Parks and Recreation Department for a permit and any restrictions. If it is a state or federal park, contact the superintendent or groundskeeper. In most cases permission to search is not a problem, given a few restrictions.

DIGGING

Practice pinpointing and digging in your own yard before searching well manicured lawns. Try pinpointing a coin on top of the ground, then bury it and practice pinpointing.

Always fill in the holes you dig. Cut a plug or horseshoe shape about two square inches maximum, which can be easily replaced once the target is recovered. Many digging tools are available. Contact your dealer.

Always remove all items you recover, and never leave a mess. Holes are both unsightly and dangerous.

We strongly urge you to follow these steps, which will preserve the environment and also the rights of detector operators with as few restrictions as possible.

RESPECT

Respect the right of property owner, as well as laws, ordinances, or regulations about searching publicly owned sites. Public officials and private property owners will be more likely to allow continued searching if you do no environmental damage. Consider the scar you may leave before you start digging. This will vary a lot from one part of the country to another depending on soil and climatic conditions. Always keep in mind that other detector operators may be judged by your example.

GLOSSARY

AIR TEST: Testing or experimenting the response of a metal detector to various objects with the loop positioned away from the ground.

ALKALINE BATTERY: Type of non-rechargeable battery that has the ability to sustain longer periods of current drain and greater storage life than standard carbon-zinc type.

ALL METAL: Mode or function that responds to all types of metal, iron, foil, nickel, copper, silver, gold, etc.

AUDIBLE THRESHOLD: A slight and continuous tone or hum that makes it easy to hear changes in audio, (adjust the TUNER CONTROL for a slight hum or threshold).

AUDIO MODE: A condition of operation selected by the detector operator for specific conditions, operating characteristics and or features.

AUDIO: Volume or tone produced by a speaker or other sound emitting device.

AUDIO RESPONSE: See AUDIO

BAD TARGETS: See JUNK TARGETS

BAT: Battery, (Power Source)

BENCH TEST: (See AIR TEST)

COIN-SIZE: The approximate size of a coin (penny, dime, etc.).

CONDUCTIVITY: The readiness with which a metal transmits an electrical current.

CONTROL BOX: Black aluminum body of instrument, (case).

DETECT: Respond by audio (speaker volume) and/or meter indication.

DIAL: Control Knob

DISCRIMINATION: The ability to accept or reject signals or targets of different characteristics, nails, bottle caps, coins, etc.

DISTINGUISH: (Discern) to perceive as being different.

FALSE SIGNALS: Erratic tones, beeps and/or meter indications that are not caused by the detection of metal.

FERRIC OXIDE: Iron or the magnetic content of the soil.

FERRITE: Mineral sample consisting essentially of an iron oxide.

FERROUS: Of iron.

FREQUENCY: The number of complete alternating current cycles produced by the transmit oscillator per second.

GEB: Ground Exclusion Balance (See GROUND BALANCE)

GOOD TARGETS: Metals determined by the position of the DISC control to be acceptable. Desirable targets.

GROUND: Dirt or the surface of the earth.

GROUND BALANCE: The cancellation of ground mineralization to ignore the masking effect ground minerals have over metal.

HOT ROCK: A rock or other ground sample that is higher in mineral content than the ground around it.

INTERFERENCE: Confusion of received signals due to external sources such as radio or ground conditions.

JUNK TARGETS: Metals determined to be trash or rejects; iron, foil, pull tabs etc.

LOOP: (Search Coil) Circular housing containing multiple windings (DISK).

METAL: Metallic substances iron, foil, nickel, aluminum, gold, brass, lead, zinc, copper, silver, etc.

MINERAL: Ferric oxide (iron) or other such non-organic substances, naturally occurring in the ground.

MINERALIZED GROUND: Any soil, sand, gravel etc. that contains conductive or non-conductive components (MINERALS).

MIN: Minimum, the least possible.

MODE: See AUDIO MODE

MOTION MODE: An AUDIO MODE that requires loop motion, movement or sweep, to respond to metal targets.

NEUTRALIZE: To counteract the effect of.

NON-FERROUS: Not of iron; metals of the precious class (copper, silver, gold, etc.).

NON-MOTION: Mode that doesn't require loop motion, movement or sweep to respond to metal.

OVERLAP: Refers to the amount of loop sweep advance not being greater than the loops physical diameter.

PENETRATION: Extend, pierce, or pass through, or into something.

PINPOINT: Finding the targets exact location with respect to the loops physical center.

PRESET:  Control position or setting determined to be ideal for average search conditions.

PROBABLE IDENTIFICATION: Most likely identification.

RECHARGEABLE BATTERY: Battery that is designed to be recharged or restore anew the active materials within.

REJECT: Discriminate, cancel response or effect.

RETUNE: (RESET) or clear by use of TRIGGER SWITCH.

S.A.T.: (Self Adjusting Threshold) feature which maintains stable operation over varied conditions.

SELECT: Choose between two or more options.

SENSITIVITY: (SENS) Capacity or degree to which an instrument responds.

SET: Tune or adjust.

SHALLOWEST: Closest to surface.

SIGNAL: Response (See DETECT).

SLOW SWEEP: A description of loop speed required to operate a motion mode, such as GEB/DISC. A pass of the loop from right to left and back should take approximately four seconds.

STABLE: Ability of a metal detector to maintain smooth operation without false signals, interference.

SWEEP: Loop movement from side to side.

SWEPT: (See SWEEP).

TARGET: Any object buried in the ground or used in an AIR TEST that causes a metal detector to respond.

THRESHOLD: (See AUDIBLE THRESHOLD).

TUNING: Setting of an instruments controls.

TR/DISC: Transmit Receive Discrimination.

TUNING: Setting of an instruments controls.

UNDESIRABLE TARGETS: Targets not wanted; Junk.

V.D.I. (Visual Discrimination Indication): Meter that indicates probable target identity or conductivity, visual discrimination.

V.D.I. LEVEL: Meter Sensitivity.

WAIST LEVEL: Height or distance from an operators waist or hips to the ground.

"X": Cross the target from two different sides, 90 degrees from each other.

White's Electronics, Inc. Limited Warranty

If within two years (24 months) from the original date of purchase, your White's detector fails due to defects in either material or workmanship, White's Electronics will repair or replace at its option, all necessary parts without charge for parts or labor.

Simply return the complete detector to the dealer where you purchased it, or to your nearest Authorized Service Center. The unit must be accompanied by a detailed explanation of the symptoms of the failure. You must provide proof of date-of-purchase before the unit is serviced.

Items excluded from this warranty are non-rechargeable batteries, and other accessories.

The warranty is not transferable. Nor is it registered unless the Warranty Registration Card is returned to the factory address below within ten (10) days of original purchase for the purpose of recording that date.

The warranty does not cover damage caused by accident, misuse, neglect, alterations, modifications, unauthorized service, or prolonged exposure to corrosive compounds, including saltwater.

Duration of any implied warranties (e.g., merchantability and fitness for a particular purpose) shall not be longer than the stated warranty. Neither the manufacturer or retailer shall be liable for any incidental or consequential damages. Some states, however, do not allow limitations on length of implied warranties, or the exclusion of incidental or consequential damages. Therefore, the above limitations and exclusions may not apply to you.

In addition, the stated warranty gives you specific legal rights, and you may also have other rights which vary from state-to-state.

THE FOREGOING IS THE ONLY WARRANTY PROVIDED BY WHITE'S AS THE MANUFACTURER OF YOUR METAL DETECTOR. ANY "EXTENDED WARRANTY" PERIOD BEYOND TWO YEARS, WHICH MAY BE PROVIDED BY A DEALER OR OTHER THIRD PARTY, ON YOUR DETECTOR, IS WITHOUT WHITE'S AUTHORITY INVOLVEMENT AND CONSENT AND WILL NOT BE HONORED BY WHITE'S.



**WHITE'S ELECTRONICS, INC.
1011 PLEASANT VALLEY ROAD
SWEET HOME, OREGON 97386**

Treasure Hunter's CODE OF ETHICS

1. Respect the rights and property of others.
2. Observe all laws, whether national, state or local.
3. Aid law enforcement officials whenever possible.
4. Never destroy priceless, historical or archeological treasures.
5. Leave the land and vegetation as it was. Fill in all the holes.
6. Remove all trash and litter when you leave.
7. All treasure hunters may be judged by the example you set. Always conduct yourself with courtesy and consideration.



white's electronics, inc.

1011 Pleasant Valley Rd.
Sweet Home, OR 97386

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