

OPERATOR'S MANUAL

white's
5900/Di *PRO Plus*

PROFESSIONAL SERIES Metal Detector

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



ATTENTION:

To use your instrument under average conditions, set each of the controls to their  position.

If you need to fine tune the instrument to operate in other than average conditions, please refer to the operator's manual for more detailed information.

**A Message from
Mr. Kenneth White, Sr.
President, White's Electronics**

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, however, 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. Right now your detector is "smarter" than you, so you've got some catching up to do. 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 that reads "Kenneth White". The script is cursive and fluid, with the first name and last name clearly distinguishable.

Kenneth White, Sr.



NOTICE

The Blue Max 950 Loop is standard equipment on this unit. The Blue Max 950 loop and the additional internal circuitry allow this unit to operate at much higher sensitivity levels.

Due to this increase in sensitivity the GEB/NORM and GEB/MAX modes are equipped with "Automatic Self Adjusting Threshold" (S.A.T.).

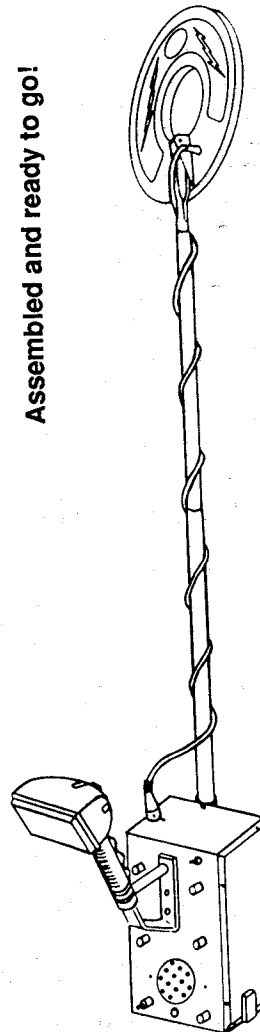
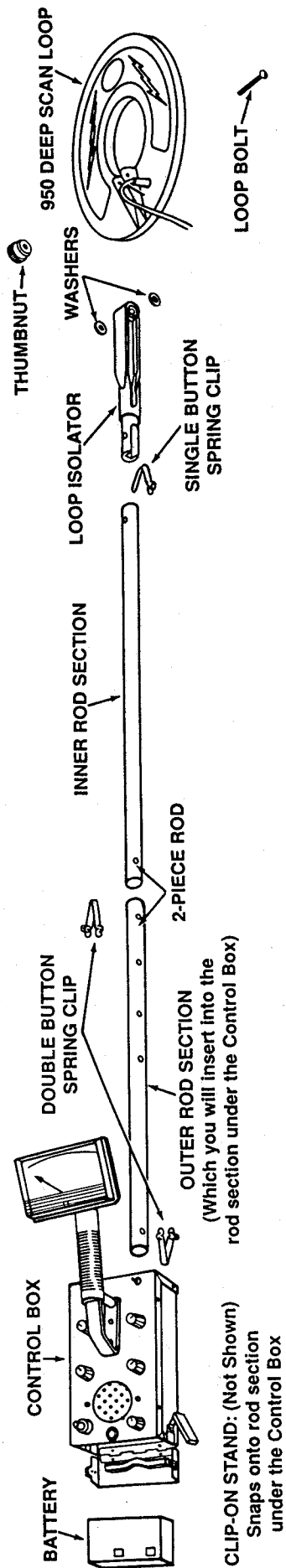
The following precautions assure proper performance in the field.

1. Be decisive when lowering the loop to the ground during ground balancing. It should take about two seconds to lower the loop from waist level.
2. Keep in mind that a properly ground balanced detector has as little change in tone as possible when lowering the loop to the ground, as well as when lifting the loop back to waist level.
3. When using the GEB/NORM or GEB/MAX modes, reset by squeezing and releasing the TRIGGER SWITCH with the loop at waist level after large targets are detected.
4. When searching in the GEB/NORM or GEB/MAX modes an extremely slow sweep speed may be used. However, avoid stopping over targets for more than a few seconds, as this will result in the target being tuned out. If this occurs, simply move the loop to one side then "X" the area and the target will reappear.
5. Squeeze and hold the TRIGGER SWITCH if you wish to stop over the target for a prolonged period of time.

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PARTS IDENTIFICATION AND ASSEMBLY

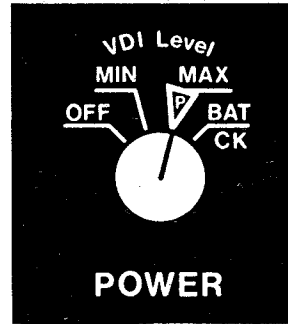
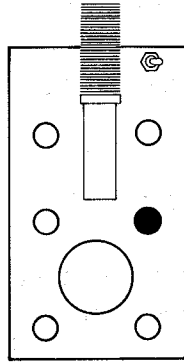


Assembled and ready to go!

Simplified Instructions

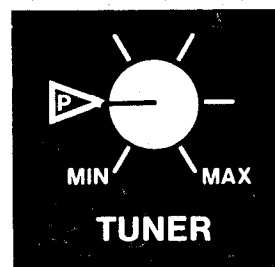
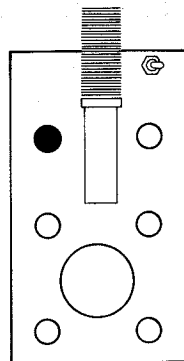
1. To use your 5900/D Professional Plus under average conditions procede as follows;
2. Assemble your instrument as shown under "Parts Identification and Assembly".
3. Install either four "C" cell alkaline batteries in the "C" cell holder or the rechargeable battery into the instrument sticker facing up and close battery compartment door.
4. Turn POWER control to the BAT CK position making sure the batteries check within the BAT GOOD area of the METER. If they don't, replace or recharge the batteries.
5. Turn POWER and all other controls to their  PRESET position.
6. Holding the loop at waist level, squeeze and release the TRIGGER SWITCH located under the meter handle assembly.
7. Now lower the loop to the ground and search by sweeping the loop from side to side overlapping each pass. Each sweep of the loop from left to right and back again should take approximately four seconds.
8. Good targets will sound smooth and solid and the meter will lock onto one indications.
9. Bad targets will sound rough or broken and the meter may jump between several indications.
10. Once a good target has been located squeeze and hold in the TRIGGER SWITCH (located under the meter handle assembly) and "X" the target. The loudest sound and shallowest depth indication (furthest meter movement to the right) indicates the center of the target.
11. For optimum performance study the following description of each control and follow the procedure described under ADVANCED TUNING.

EXPLANATION OF CONTROLS: POWER



- I. The POWER control turns the detector ON and OFF, selects V.D.I. Level (Meter Sensitivity), and tests battery strength.
 - A. The battery strength should always be checked before attempting to tune or use the detector.
 1. To test battery strength turn POWER control to BAT CK and make sure meter indicates within BAT GOOD area.
 2. Often battery strength tests good momentarily only to drop off rapidly. Leave the POWER control in BAT CK position for a minute. If the meter continues to show BAT GOOD you may continue. If the meter drops below BAT GOOD replace or recharge your batteries before continuing.
 - B. V.D.I. Level MIN + MAX selects the meter sensitivity.
 1. The ∇ MAX position should be used under most conditions.
 2. If the V.D.I. meter becomes unstable (jumps around for no reason) reduce SENS control (counter clockwise) or turn POWER control to MIN position. (SEE SENSITIVITY CONTROL FOR MORE ON SENSITIVITY).
 - C. Turn the POWER control to the OFF position when the detector is not in use.

EXPLANATION OF CONTROLS: TUNER



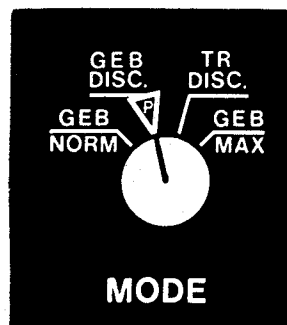
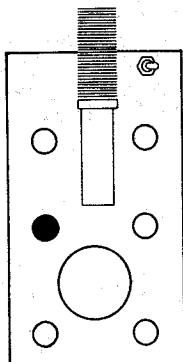
- II. The TUNER sets the detector's THRESHOLD.

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

- A. To set the THRESHOLD:
 1. Set all controls at ∇ .
 2. Hold the detector so that its loop is in the air, straight out in front of you, waist high.

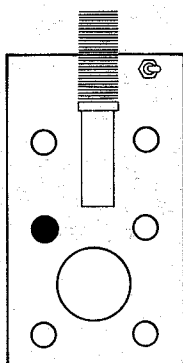
3. Squeeze and release the TRIGGER SWITCH and turn the TUNER to the right until the tone is barely heard.
- B. THE THRESHOLD NEEDS TO BE RESET (TRIGGER) WHENEVER ANY OF THE OTHER CONTROLS ARE ADJUSTED. To reset the THRESHOLD, raise the loop waist high and squeeze and release the TRIGGER.

EXPLANATION OF CONTROLS: MODE



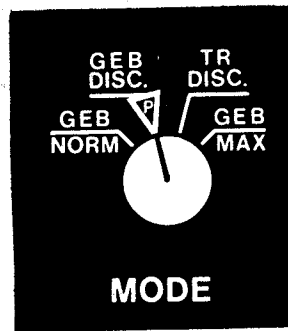
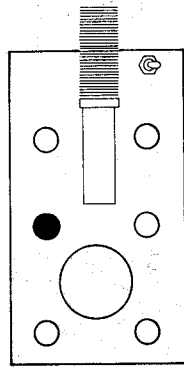
- III. The MODE control selects one of the detector's four modes of audio detection.
 - A. Each MODE is designed for specific search conditions.
 1. These conditions include soil mineralization; amount of junk, (such as nails, bottle caps, pull tabs etc.) and the specific targets to be located.
 - B. Each mode produces different audio response characteristics. It does NOT effect the meter.
 - C. Each mode is explained in detail on the following pages.

EXPLANATION OF CONTROLS: MODE: GEB/NORM



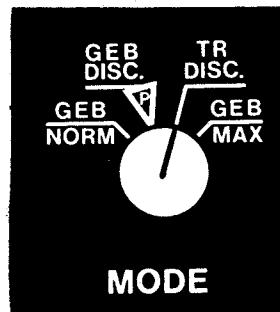
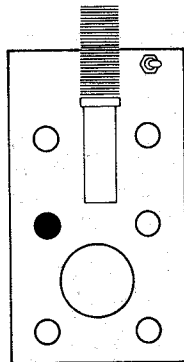
- IV. The GEB/NORM MODE locates all metals while neutralizing the effects of ground mineralization.
 - A. This MODE may best be used for prospecting, relic hunting, or coin hunting in areas where there is little junk (like nails, bottle caps, pull tabs etc.)
 - B. When used in the GEB/NORM MODE the detector must be ground balanced using the GEB control, (See GEB CONTROL EXPLANATION).
 - C. In the GEB/NORM MODE the loop does not have to be in motion to detect metal.

EXPLANATION OF CONTROLS: MODE: GEB/DISC



- V. The GEB/DISC MODE will distinguish between desirable and undesirable targets (Discriminate) while neutralizing the effects of ground mineralization.
- A. This mode may best be used for coin hunting in areas where there is a great deal of junk, (like nails, bottle caps, pull tabs, etc.).
 - B. The DISC control must be adjusted in order for you to audibly distinguish between desirable and undesirable targets (SEE DISC CONTROL EXPLANATION).
 - C. When using the GEB/DISC mode the loop MUST be in continuous motion to detect metals. This is a slow sweep from side to side.
 - D. If switching modes, the detector should be ground balanced, (SEE GEB CONTROL EXPLANATION).

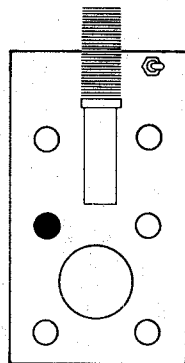
EXPLANATION OF CONTROLS: MODE: TR/DISC



- VI. The TR/DISC MODE provides two different options; #1 provides audio discrimination between desirable and undesirable targets without neutralizing the effects of ground mineralization or #2 can be tuned to produce an all metal extended ground balance mode.
- A. The first option may best be used for searching areas where there is low amounts of ground mineralization or in areas where there is no room to sweep the loop as is necessary with the GEB/DISC mode.
 - B. This first option requires that the DISC control be adjusted to distinguish between desirable and undesirable targets, (SEE DISC CONTROL EXPLANATION).

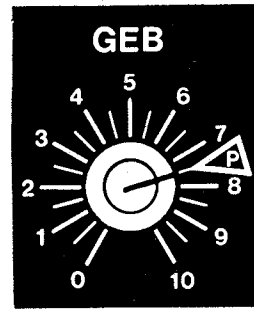
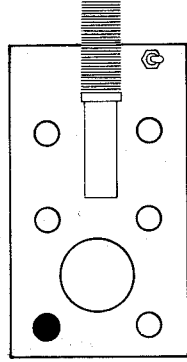
- C. To tune the detector for operation in this MODE proceed as follows:
1. Set TUNER CONTROL TO THRESHOLD. (SEE TUNER CONTROL EXPLANATION)
 2. Lower the loop to approximately one inch above the ground.
 3. Squeeze and release the TRIGGER SWITCH to reset THRESHOLD.
 4. Search with the loop level to the ground and as close to the ground as possible. If the loop is tilted or lifted, the tone may change due to variations of ground mineralization.
 5. When searching in TR/DISC, the loop does not have to be in motion.
 6. The TR/DISC mode gets excellent depth penetration in low mineralized areas. However, if the ground is very mineralized, the detector frequently will give false signals and poor depth penetration. In mineralized ground it is best to hunt in one of the three GEB MODES, or use the #2 TR/DISC option.
- D. The second option is when using the TR/DISC mode, the DISC control can be used as an extended ground balance control. This is useful in areas where the ground mineralization is beyond the range of the GEB control. The DISC control can be used to cancel ground as follows:
1. Set the MODE control to TR/DISC mode.
 2. Set the DISC control to the center of the GND REJ. zone.
 3. Set all other controls to PRESET ∇ .
 4. Holding the loop waist high, squeeze and release the trigger. Then adjust the TUNER control for a slight tone. The threshold is now set.
 5. Lower the loop to the ground and listen for a change in threshold tone. If the tone doesn't change, the instrument is balanced.
 6. If the tone increases, turn the DISC control slightly clockwise. Hold the loop waist high, squeeze and release the trigger, and repeat step 5.
 7. If the tone decreases, turn the DISC control slightly counterclockwise. Then hold the loop waist high, squeeze and release the trigger, and repeat step 5.
 8. If you have any difficulty, or if the ground balances well outside the GND REJ. range, you have probably balanced over a target. In this case, move over and try again.

EXPLANATION OF CONTROLS: MODE: GEB/MAX



- II. The GEB/MAX MODE locates all metals while neutralizing the effects of ground mineralization.
- A. This MODE may best be used for relic hunting, and for locating very deep targets in areas where there is little junk, (such as nails, bottle caps, pull tabs, etc.)
 - B. In the GEB/MAX MODE, it must be ground balanced using the GEB control. (SEE GEB CONTROL EXPLANATION).
 - C. In GEB/MAX, the loop does NOT have to be in motion.
 - D. 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: GEB

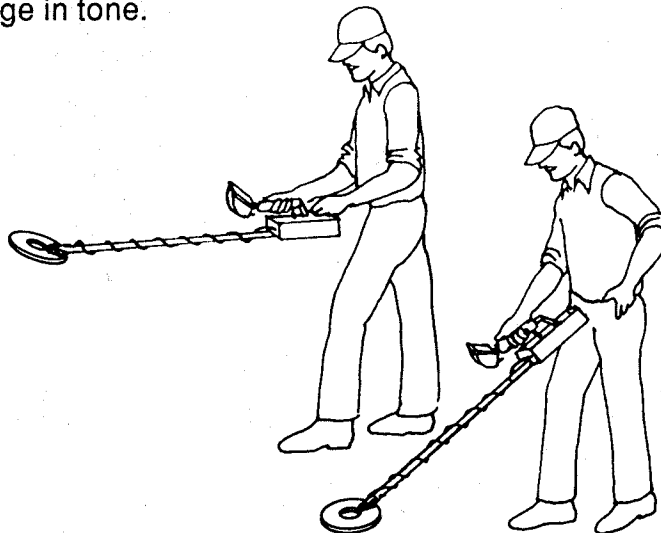


VIII. The GEB (Ground Exclusion Balance) control is used with all 3 GEB MODES to neutralize the effects of ground mineralization. This ground balances the detector to ignore the ground.

A. 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	MODE	GEB	VOLUME	POWER	DISC
THRESHOLD See Tuner Explanation	GEB/NORM or GEB/MAX				

1. Lower the loop to the ground. If the tone does not change, the unit is Ground Balanced.
2. If the THRESHOLD tone changes, raise the loop waist high and turn the GEB control SLIGHTLY LEFT IF THE TONE INCREASED OR SLIGHTLY RIGHT IF THE TONE DECREASED.
3. This control has a fine adjustment (small top section) and a coarse adjustment (larger lower section). Use coarse adjustment until setting comes close to being correct then use fine adjustment.
4. Squeeze and release the TRIGGER SWITCH. Lower the loop back down to the ground and note any change in tone.



5. Adjust the GEB control as explained in (2) until there is no change in the tone between air and ground, (loop waist level and flat on ground).

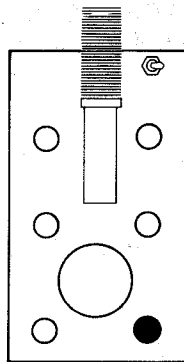
6. If you have any trouble adjusting the GEB control you may be over some metal. Move to another spot and repeat the above steps.

NOTE: Squeeze and release the TRIGGER SWITCH after each adjustment to the GEB control.

- B. When you want to search using the GEB/DISC mode, do the following:
 1. Ground Balance the detector in either GEB/NORM or GEB/MAX, as described above.
 2. Turn the MODE switch to GEB/DISC.
 3. Squeeze and release the TRIGGER SWITCH. The detector is now Ground Balanced in GEB/DISC.

FOR YOUR INFORMATION: Mineralization is the ferric oxide (iron) or magnetic content of the soil. If it is not neutralized with the GEB control, the detector will react to it and this mineralization may "hide" metal objects from the detector.

EXPLANATION OF CONTROLS: DISC



1 ← DISC KNOB RANGE (AUDIO) → 9			METER VDI RANGE			
GROUND	SALT (Beach)	NAILS	RINGS			PENNIES ← → DOLLAR
			FOIL	NICKEL	TABS	

Comparison chart to illustrate the effective ranges of the VDI METER and the DISC knob.

- IX. 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 above chart. The user sets the discriminate point with the knob, slightly below the desired target (see above chart).
 - A. The audio response of targets ABOVE the DISC set point produce louder tones. Targets below the set point produce softer or broken tones.

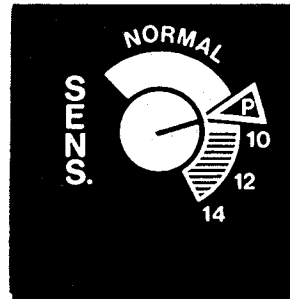
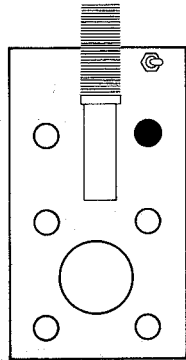
EXAMPLE: With the DISC control set at ∇ , nickels and all other U.S. coins will produce a louder solid tone, nails and other iron junk will produce a broken, softer tone.

 - B. The DISC control effects the Audio Discriminator. It does not effect the Visual Discrimination readings.

Explanation of Controls - DISC continued. . .

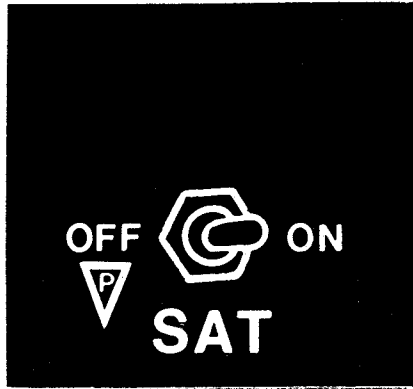
- C. Discrimination should be used only as necessary to avoid passing over desirable targets.
EXAMPLE: When the DISC control is set to reject Pull Tabs the U.S. nickel, some thin rings and other valuable items may also be rejected.

**EXPLANATION OF CONTROLS:
SENSITIVITY DIAL**



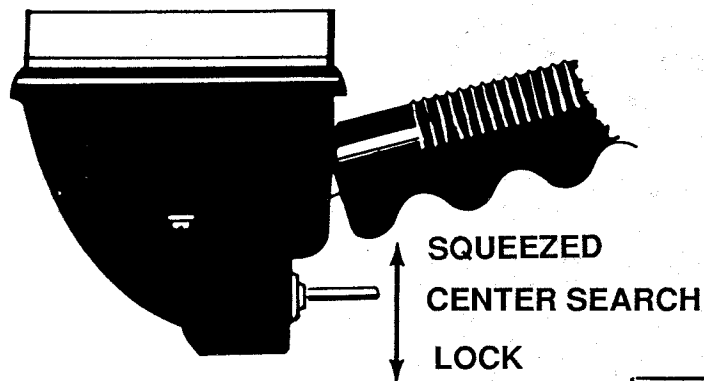
- X. The SENSITIVITY control is used to either increase or decrease the sensitivity of the detector.
- A. If interference from external sources such as highly mineralized ground conditions or radio interference causes erratic behavior of the detector, the reduction (counter clockwise) of the sensitivity control will insure smooth, effective operation.
- B. If an area has no interference from external sources increasing the SENSITIVITY CONTROL (clockwise) will increase the detectors sensitivity therefore improve depth of detection.
- C. Use the highest setting available on the SENSITIVITY CONTROL which allows a smooth THRESHOLD and stable METER indications. Erratic behavior of the detector could indicate excessive ground mineralization or radio interference and would indicate that the SENSITIVITY CONTROL should be reduced (counter clockwise) until the detector operates smoothly.
- D. When the POWER CONTROL is in the V.D.I. Level MIN position the sensitivity of the meter is fixed (non adjustable) at a predetermined setting and the SENSITIVITY control will effect only the audio (speaker sound) in the GEB/DISC MODE.
- E. When the POWER CONTROL is in the V.D.I. Level MAX position the SENSITIVITY control effects the METER in all four audio MODES and effects the audio (speaker sound) only in the GEB/DISC MODE.

**EXPLANATION OF CONTROLS:
S.A.T. (SELF ADJUSTING THRESHOLD)**



- XI. The S.A.T. (SELF ADJUSTING THRESHOLD) provides smooth, drift free operation, in the GEB/NORM and GEB/MAX modes.
- A. S.A.T. May best be used when operating in the GEB/NORM or GEB/MAX modes over inconsistent ground mineralization.
 - B. To use S.A.T. first ground balance as described under GEB CONTROL EXPLANATION then turn S.A.T. switch to ON position.
 - C. S.A.T. is not recommended for use in the GEB/DISC Mode.
 - D. It is acceptable to use S.A.T. in TR/DISC only if this mode is tuned to provide extended ground balance, (See TR/DISC MODE EXPLANATION 2nd OPTION).
 - E. When switching modes with the TRIGGER SWITCH S.A.T. is automatically turned off and will return to ON position when TRIGGER is returned to center search position. (NOTE there is a possibility for drift when using the TRIGGER SWITCH to change modes with S.A.T. in the ON position.) TRIGGER SWITCH mode changing when S.A.T. is on should be momentary, not a standard operating procedure.
 - F. When S.A.T. is ON the GEB/NORM and GEB/MAX modes will require loop motion for the detection of metals.
 - G. When S.A.T. is on there are three different ways a targets precise location can be pinpointed.
 - 1. "X" the target slowly noting the strongest response as the targets center.
 - 2. Squeeze and hold the TRIGGER SWITCH and "X" the target noting the shallowest depth reading (meter movement furthest to the right) indicates target center.
 - 3. Turn off S.A.T. and pinpoint as described under SEARCH METHODS.

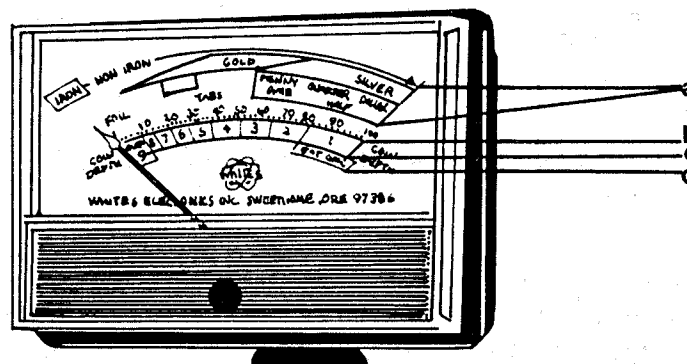
EXPLANATION OF CONTROLS: TRIGGER SWITCH



MODE SWITCH	TRIGGER NORMAL		SQUEEZED TRIGGER IN	
	OPR MODE	METER	OPR MODE	METER
GEB NORM	GEB NORM	VDI	GEB DISC	DEPTH
GEB DISC	GEB DISC	VDI	GEB NORM	DEPTH
TR DISC	TR DISC	VDI	GEB MAX	DEPTH
GEB MAX	GEB MAX	VDI	GEB DISC	DEPTH

- XII. The TRIGGER SWITCH performs three separate functions changing the detector's operating systems. The above chart shows these changes;
- A. RETUNING: Regain THRESHOLD by squeezing and releasing the TRIGGER SWITCH. THIS MUST BE DONE AFTER ANY CONTROL HAS BEEN ADJUSTED.
 - B. MODE CHANGING: Whenever the TRIGGER SWITCH is squeezed, the operating mode will change from that selected by the MODE CONTROL, (See the above chart).
 - C. METER SWITCHING: When the TRIGGER SWITCH is squeezed, the Meter Reading changes from Visual Discrimination to Depth Reading.
- NOTE:** When the TRIGGER SWITCH is pushed down it locks into place the mode and meter changes normally activated by squeezing the TRIGGER.

METER

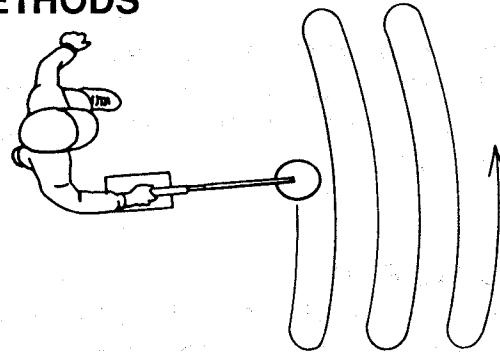


- XIII. The METER indicates the following information:
- A. VDI (Visual Discrimination Indicator) scale shows the probable identity of various targets and is calibrated on the lower portion to indicate U.S. coins ONLY. THE LOOP MUST BE IN MOTION FOR VDI TO FUNCTION.
 - B. Reference Scale indicates the target's response in terms of numbers between 0-100. Most objects will register at the same number on the 0-100 Reference Scale. This allows an item to be logged and recognized whenever the METER needle indicates that reference number.

METER continued. . .

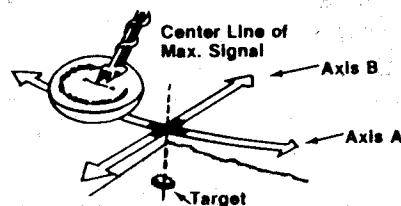
- C. The Depth Reading scale indicates the depth of COINSIZED targets in all MODES, from surface to 9 inches when the TRIGGER SWITCH is squeezed and held or pushed forward to lock.
- D. Battery Good scale indicates the battery pack level is high enough to operate the unit. (Power Switch in BAT. CK.).
- E. The unit may audibly detect targets more deeply than the METER will indicate, or the METER may indicate more deeply than the unit audibly detects. These two features function separately.
- F. When the TRIGGER SWITCH is in the normal position, the METER indicates Visual Discrimination scale (a). When the TRIGGER SWITCH is squeezed, the METER indicates the Depth scale (c). **(See chart on page 12)**
- G. The METER usually indicates a target's probable identity after one or two sweeps with the loop.
 - 1. The METER will continue showing this indication until another target is detected or the TRIGGER SWITCH is squeezed.
 - 2. Squeezing the TRIGGER will reset the needle to near "0".

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. When a target is detected, sweep it from several directions, noting its Audio and Visual characteristics.
- 5. Before recovering an item, note its depth on the Meter. This will help avoid hitting and marring the object during removal.

PINPOINTING



It is possible to pinpoint a target in two ways: **DE-TUNING**, using the loudest volume in the GEB/NORM mode, or, using **DEPTH READING** with the TRIGGER held in.

DE-TUNING METHOD

- 1. Switch to GEB/NORM mode. (This method also works in the GEB/MAX mode.)

SEARCH METHODS. . .Continued

2. 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.
 3. Squeeze and release the TRIGGER several times as you move the loop over the target area. You will be trying 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.
 4. When the target is pinpointed, move the loop off to one side.
 5. Squeeze and hold in the TRIGGER (establishing DEPTH READING on the METER). Move the loop back over the target. Read the depth on the target and recover the object.
- NOTE: DEPTH READING is most accurate on coinsized objects.

DEPTH READING METHOD

1. Once you have determined a target is worth digging, squeeze and hold in the TRIGGER. This activates DEPTH READING on the METER.
2. Watch the METER as the loop is moved over the target area.
3. When the METER needle reaches its farthest position to the right, (the shallowest depth), the target is directly below the center of the loop. Read the DEPTH and recover.

Accurate pinpointing makes recovering objects easier; it minimizes the possibility of damaging the object; and, it minimizes damage to the area. Pinpointing is an important part of successful treasure hunting. Experience will help you develop personal techniques.

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 Locations | • Parking Strips |
| • Parks | • Old Buildings | • Roadside Point of Interest |
| • Schools | • Forts and Old Military Installations | • 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.

SEARCHING. . .Continued

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.

ADVANCED TUNING

1. Assemble your instrument as shown under PARTS IDENTIFICATION AND ASSEMBLY.
2. Install either four "C" cell alkaline batteries or the rechargeable battery into the instrument, sticker facing up, and close battery door. Refer to sections under STANDARD BATTERY and RECHARGEABLE BATTERY.
3. Turn POWER control to the BATTERY CHECK position making sure the batteries check within the BATTERY GOOD area of the meter for thirty seconds. If not, replace or recharge the batteries.
4. Turn POWER and all other controls to ∇P except MODE. Turn MODE control to GEB/NORM.
5. Holding loop at waist level, squeeze and release the TRIGGER SWITCH located under the meter handle assembly. You should hear the instrument hum slightly. If not, adjust the TUNER control so that you hear a slight hum, (threshold).
6. Now, lower the loop to the ground to be searched. The slight hum may either decrease, increase, or stay the same, as the loop is lowered. Ideally you want the same slight hum both with loop at waist level and with the loop flat on the ground.
7. If as the loop is lowered the slight hum decreases or fades, bring the loop back to waist level, increase the GEB control clockwise slightly, squeeze and release the TRIGGER switch and again lower the loop to the ground.
8. If as the loop is lowered the slight hum increases, bring the loop back to waist level, decrease the GEB control counter clockwise slightly, squeeze and release the TRIGGER switch and again lower the loop to the ground.
9. Use the GEB CONTROL coarse adjustment (bottom section of control) until this setting comes close to being correct then use the fine adjustment (top section of control) to fine tune.
10. Once the slight hum or threshold is the same with the loop at waist level as it is with the loop flat on the ground, the ground mineral is being ignored and you are ready to search.
11. If you are having difficulties with this setting move to another spot on the ground to assure you are not attempting to balance on top of a metal.
12. It may not be possible to achieve a perfect balance between holding the loop waist level as opposed to flat on the ground in all areas. It is important to achieve, as close as possible, the same slight hum or threshold with the loop held at waist level as you hear with the loop flat on the ground and is O.K. to have a difference in sound in between the two positions.
13. Make sure after each adjustment of any control the loop is lifted to waist level and the TRIGGER SWITCH is squeezed and released.

14. You are now ready to search.
15. If you wish to detect all types of metal or are searching for natural gold nuggets leave the MODE CONTROL in GEB/NORM position or switch to GEB/MAX MODE and squeeze and release the TRIGGER SWITCH with the loop at waist level.
16. It is advisable to re-ground balance (ADVANCED TUNING steps 5-12) after switching to the GEB/MAX MODE.
17. Another useful option when using the GEB/NORM or GEB/MAX MODES is to turn on S.A.T. after ground balancing. (**Advanced Tuning** steps 5-12)
18. S.A.T. will produce smooth operation over varied ground conditions. When using this option the loop must always be in motion (swept) to detect metals. When using S.A.T. three different methods to pinpoint can be used, either A. "X" the target and note the loudest sound as target center B. Squeeze and hold the TRIGGER SWITCH, "X" the target and note the shallowest depth reading indicates target center or C. Turn off S.A.T. and pinpoint as normally done.
19. If you wish to reject or discriminate against junk targets like nails, bottle caps, tin foil, etc. and are searching for coins, relics, etc. we would suggest switching to the GEB/DISC MODE and squeezing and releasing the TRIGGER SWITCH with the loop at waist level. GEB/DISC is the most commonly used MODE.
20. In the GEB/DISC MODE the loop must always be in motion (swept) in order to detect metals. Squeeze and hold the TRIGGER and "X" the target to pinpoint.
21. The GEB/DISC MODE produces a wide variety of different sounds depending on the target and the DISC CONTROL setting. Basically smooth solid sounds are good targets and ratty broken sounds are junk targets.
22. If you wish to reject or discriminate against junk targets and when attempting to ground balance (ADVANCED TUNING steps 5-12) the GEB CONTROL seems to have no effect (always no change in slight hum between loop at waist level and flat on the ground) we would suggest using the TR/DISC MODE. To use the TR/DISC MODE hold the loop approximately one inch from the ground and squeeze and release the TRIGGER SWITCH lower the loop to the ground and search. In the TR/DISC mode the loop doesn't have to be in motion.
23. If having difficulties ground balancing the TR/DISC mode may be used to extend ground balance abilities. (See TR/DISC MODE EXPLANATION 2nd option).
24. When rejecting or discriminating in the GEB/DISC or TR/DISC mode ideally the DISC control should remain at $\nabla_{\text{P}}^{\text{P}}$ and the meter should be used to identify junk targets like tin foil and pull tabs. If this setting is not acceptable you may either increase or decrease the DISC control and squeeze and release the TRIGGER SWITCH with the loop at waist level. **Caution:** If the DISC control is set much higher than $\nabla_{\text{P}}^{\text{P}}$, nickels and some gold will be rejected.

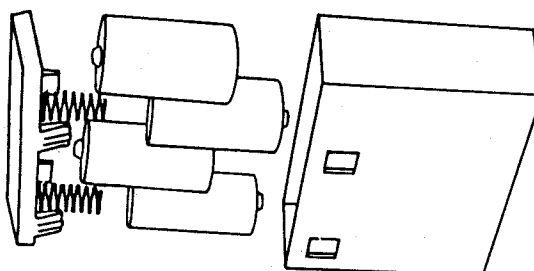
ADVANCED TUNING. . .Continued

25. The SENSITIVITY control effects the audio (speaker sound) in GEB/DISC MODE and the meter indications in all MODES so long as the POWER CONTROL V.D.I. Level is in the MAX position. Use the highest setting that produces smooth stable audio (speaker sound) and meter indications.
26. When the POWER control is in the V.D.I. Level MIN position SENSITIVITY CONTROL effects only the audio (speaker sound) of the GEB/DISC MODE.
27. Under normal search conditions the V.D.I. meter will lock on (read one indication consistently). If the V.D.I. meter doesn't lock on one indication (jumps around) the target is generally an alloy such as a bottle cap. If however, the target gives a smooth solid sound and the meter doesn't lock on, check the depth by squeezing and holding the TRIGGER switch and "X" the target. If the target is very deep (six inches or over) the target should be dug.
28. Some very old or deep junk targets will fool both the audio (speaker sound) and meter discrimination therefore do not be too concerned if an occasional junk target reads like a good target. These circuits are designed to eliminate the majority of junk targets while accepting the majority of good targets.
29. The V.D.I. meter indications are a science themselves. By measuring the conductive properties of a target the meter gives a probable identification based on known targets. Therefore if a target reads nickel it is either a nickel or a target with the same conductive properties as a nickel. Ground mineralization and corrosion factors can have an effect on a targets conductive properties.
30. When the TRIGGER SWITCH is squeezed and held the METER reads the probable target depth. This calibration is based on use with the eight inch loop and coin sized targets. If the target is larger or smaller than coin size, or if the loop being used is larger or smaller than the standard eight inch size the depth meter will be consistently incorrect. However, will be predictable with experience. These factors will not effect the V.D.I. METER target indications.
31. The way the loop is swept both speed and relationship to the ground will have a major impact on how this instrument performs. A sweep of the loop from left to right and back should take approximately four seconds. Practice with coins and junk targets placed on top of the ground to see how this unit responds.
32. There is no substitute for field experience. After reading this manual use your instrument in the field then again read this manual and we are sure these operating procedures will become second nature.

STANDARD BATTERIES

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

1. Remove the battery pack from the instrument.
2. Remove the battery pack lid by gently pulling the top sides of the pack apart until the lid springs up.
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. (sticker should face up)



RECHARGEABLE BATTERIES #512-0016

Rechargeable NICKEL CADMIUM batteries and the charger are optional items for the 5900/Di. These can be recharged up to 1000 times and should last between 8 and 12 hours after a full charge. Charge the Rechargeable Batteries before their first use.

RECHARGE THE BATTERIES:

1. If the batteries have not been recharged for more than two months. (Batteries slowly lose their charge when stored.)
2. NOTE: Charge the batteries only as necessary. Unnecessary recharging shortens the life of the battery pack.

NOTE: Batteries will last longer when headphones are used.

OPERATING THE CHARGER #509-0017

1. Insert the charge plug into the battery pack. NOTE: The battery pack may be charged either in, or out of, the detector.
2. Plug the charger into an electrical outlet
3. The pack will be fully charged within 10 hours

CAUTIONS ABOUT THE BATTERIES

1. The battery pack should not be left on the charger more than 24 hours.
2. Do not dispose of batteries in a fire.
3. Protect the battery pack from being shorted. Burns may result and the battery pack may be damaged.
4. The rechargeable battery system, (charger and pack), has a specific charge current. Do not attempt to mix other chargers or packs with this system. Batteries may explode if a charge current is too high.
5. Non-rechargeable batteries may explode if they are recharged.
6. Store batteries in a cool, dry place.
7. THE RECHARGEABLE BATTERY PACK IS A SEALED UNIT WITH NO CUSTOMER SERVICEABLE PARTS. OPENING IT MAY DAMAGE THE UNIT AND WILL VOID THE WARRANTY.

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 or probe 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.

SALT WATER: 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.

A NATIONAL SERVICE PROGRAM

THE SERIAL NUMBER IS ON THE SILVER TAG INSIDE THE BATTERY COMPARTMENT.

THE CODE NUMBER IS ON THE WHITE TAG.

White's Electronics has always been concerned with the absolute quality of its mineral/metal detectors. Service after-the-sale is also of equal importance. In an effort to further the quality of service to our customers, White's reorganized its warranty service program significantly. Since January 1982, there have been ten factory authorized National Warranty Service Centers located regionally around the continental U.S.. These Service Centers are identical to the Factory Service Center in Sweet Home, Oregon. In order to ensure you will get the finest service possible for your detector, the technicians in each National Warranty Service Center are Factory trained and given on-going training for new products and improved service techniques. They can also repair your out of warranty instruments with efficiency and timeliness.

Simply return the detector to the dealer where you purchased the unit. The unit must be accompanied by a completed service coupon provided by your dealer. You must provide proof of date of purchase before the unit is shipped.

If the unit has failed within the first 90 days of purchase, shipping will be prepaid.

If the unit fails after the first 90-day period, the customer is responsible for shipping costs. Please also include \$5.00 for return postage, handling and insurance.

Any repair work performed by other than a White's National Warranty Service Center will automatically void the warranty.

If a problem occurs with your metal detector, first contact the White's dealer who sold it to you. In many cases your dealer can solve the problem. If not, the dealer will have your detector repaired under the Warranty Program. All of White's National Service Centers, located throughout the country, are owned and operated by factory trained technicians. These centers are fully equipped and the personnel fully trained with on-going programs at White's in order to service your mineral/metal detector. With this program, the average repair time has actually been reduced from weeks to days!

AUTHORIZED WHITE'S SERVICE CENTERS



1. White's Electronics, Inc.
1011 Pleasant Valley Rd.
Sweet Home, OR 97386
(503) 367-6121

3. Electronic Exploration
575 W. Harrison Rd.
Lombard, IL 60148
(312) 620-0618

5. United Metal Detectors
13821 Lee Hwy.
Centreville, VA 22020
(703) 631-0202

2. KOCI Detector Sales/Service
1917 N. Kansas St.
Hastings, NE 68901
(402) 463-4705

4. Geo-Quest
106 U.S. Hwy. 46
Saddlebrook, NJ 07662
(201) 772-7443

GLOSSARY OF TERMS

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.

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

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.

CONTINUES: Uninterrupted, continued

CONTROL BOX: Blue aluminum body of instrument, (case)

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

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.

FERRITE: Mineral sample consisting essentially of an iron oxide.

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.

INDICATE: Advise, proclaim, or point out

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)

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

OPTIMUM: Peak or maximum possible results

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

PERFORMANCE: Efficiency, the manner in which an instrument performs

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

PROCEDURE: A series of steps followed in a definite order

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 MOTION: A description of loop speed required to operate a motion mode

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

UNDESIRABLE: Not wanted

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 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, Whites Electronics will repair or replace, at its option, all necessary parts without charge for parts or labor.

Simply return the detector to the dealer where you purchased it. The unit must be accompanied by a completed service coupon provided by your dealer. You must provide proof of date of purchase before the unit is shipped.

If the unit has failed within the first 90 days of purchase, shipping will be prepaid.

If the unit fails after the first 90-day period, the customer is responsible for shipping costs. Please also include \$5.00 for return postage, handling and insurance.

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

The warranty is not transferable. Nor is it valid 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, which is the actual commencement date of the warranty.

The warranty does not cover damage caused by accident, misuse, neglect, alterations, modifications, or unauthorized service.

Duration of any implied warranties (e.g., merchantability and fitness for a particular purpose) shall not be longer than the stated warranty.

Neither the manufacture nor the retailer shall be liable for any incidental or consequential damages resulting from defects or failures to perform.

Some states, however, do not allow limitations on the 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.

White's Electronics, Inc.
1011 Pleasant Valley Rd.
Sweet Home, OR 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 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 for others.

WHITE'S ELECTRONICS, INC.

White's Electronics, Inc. 1011 Pleasant Valley Road • Sweet Home, Oregon 97386