

EAGLE ® II SL - U.S.A.



To use your EAGLE in normal conditions, follow the simplified instructions on the control box.

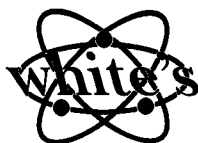
To understand assembly of your EAGLE and to learn the basics of operation, refer to the **Basic Operation Manual**.

Once the basics are mastered, to learn how to customize programs, refer to the **Advanced Programming Manual**.

To refresh your memory in the field, refer to the **Pocket Manual**.

Basic Operation Manual

EAGLE ® II SL - U.S.A.



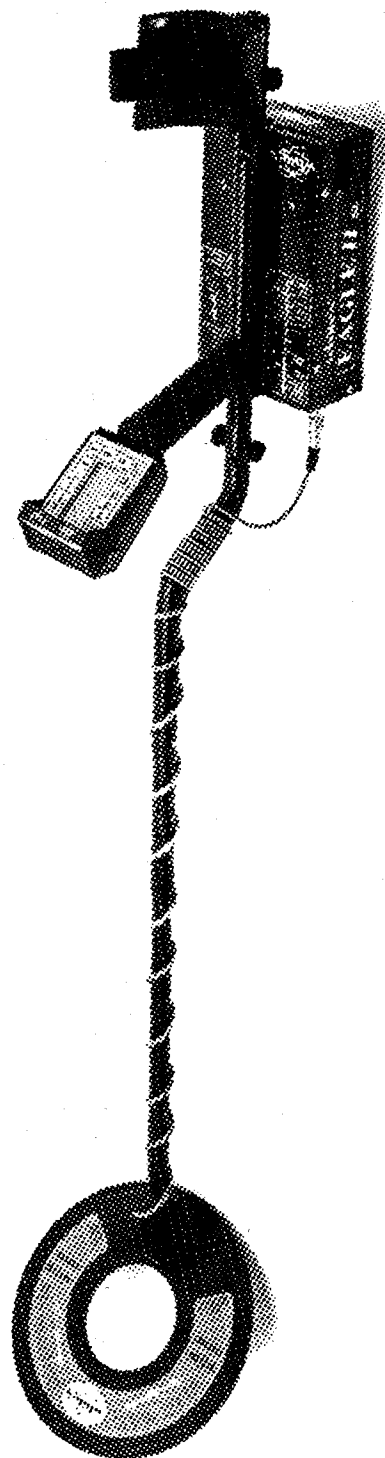
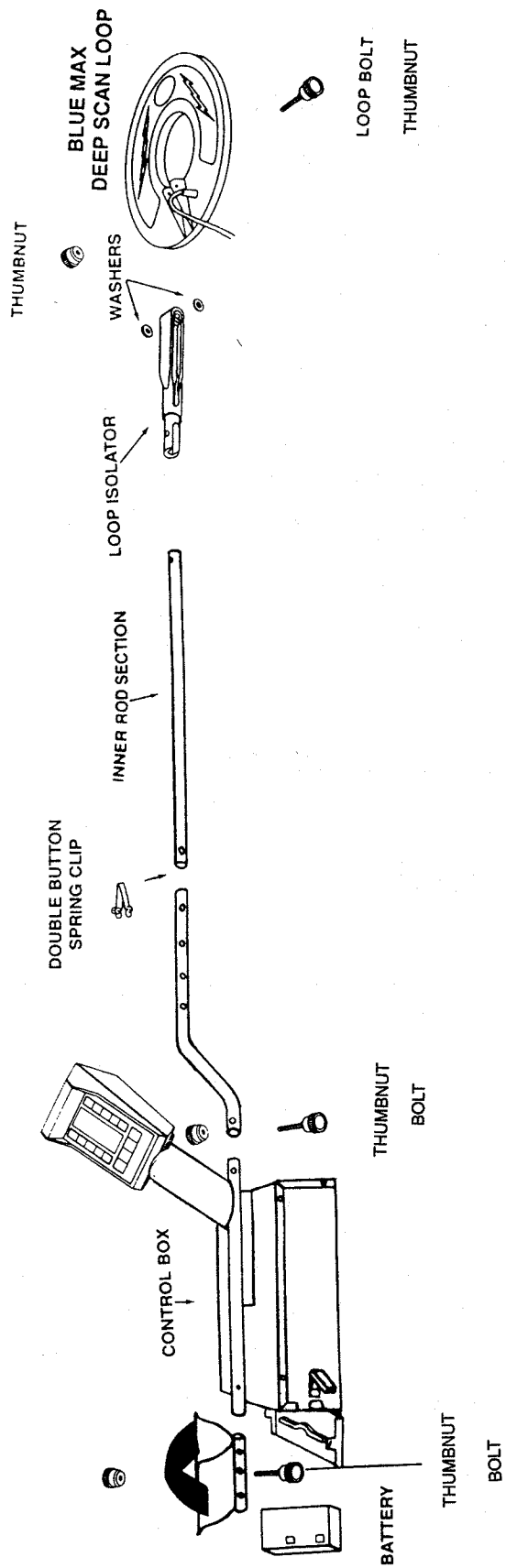
— Forward —

The EAGLE II SL represents the leading edge of metal detector technology. To master this instrument, you will need patience and practice in the field. Don't worry about options you do not fully understand. The factory settings available with the starting programs are well suited to most conditions. This model can be very simple and fun to operate. Once the following basics are reviewed, and you have spent some time using this model in the field, refer to the Advanced Programming Manual to learn more about customizing the factory settings.

Basic Operation Manual

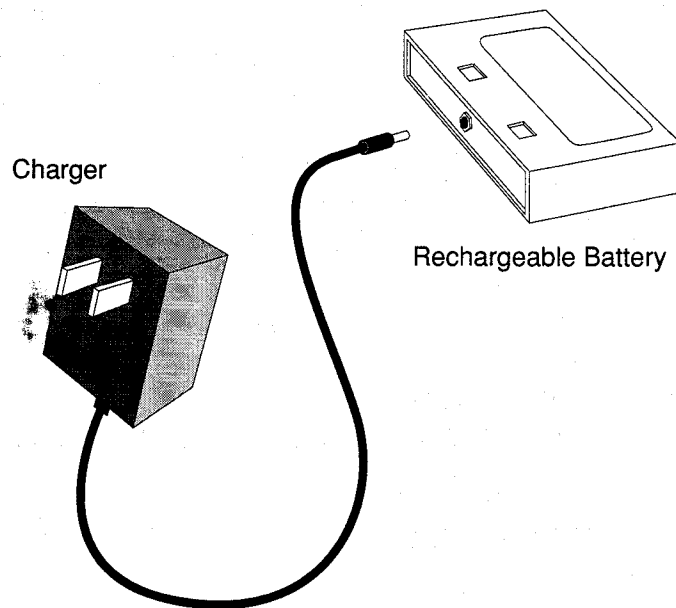
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Parts Identification and Assembly

1. Remove all parts from shipping carton and check against the assembly page to make sure all parts are present.
2. Remove the Loop Isolator from its bag. Install the washers on Loop Isolator. Slide Isolator onto Loop so that holes line up, and use stainless steel loop bolt and thumbnut to secure.
3. Loop Isolator then connects to Inner Rod (end with one hole) through the button on the Isolator, lining up with the hole on the Inner Rod Section.
4. Insert Double Button Spring Clip into opposite end of the Inner Rod section (end with two holes) so that buttons line up with the holes in the rod.
5. Insert Inner Rod section into curved "S" rod so that double-button spring clip locks into one of the adjustment holes in the curved rod. The second or third holes are suitable for average size adults.
6. Remove the cable retainer from the loop cable and wind the cable around the rods (first revolution over top of loop isolator) all the way up to the curved rod. Use the two black removable cable retainers, one near the isolator, and one near the curve in the "S" rod to hold the cable in place.
7. Use a bolt and thumbnut to attach the assembly to the control box.
8. Hold the instrument with the loop on the floor. If uncomfortable, readjust the inner rod section to curved rod adjustment and the elbow support adjustment.
9. Install foam pad inside elbow support.
10. Adjust elbow support strap so that it is loose enough for you to slide your arm in and out without loosening it each time you want to put the detector down.
11. Install one of the battery packs — decal facing up, steel contacts toward the inside.



Batteries

Standard Batteries

The standard battery pack holds four ALKALINE batteries. Alkaline batteries are the only disposable batteries recommended for this instrument. To insert the batteries, proceed as follows:

1. Remove the battery pack from the 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 four springs.)
4. Remove the dead batteries and replace them with new ones. (If the cells are put in backward, 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.

Rechargeable Batteries

Rechargeable NICKEL CADMIUM batteries are included with this instrument. These can be recharged up to 1,000 times if the batteries have not been stored for extended periods of time (several years). Charge will last approximately 8 hours after a full charge. Charge the rechargeable batteries before their first use.

Recharging 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 when necessary. Unnecessary recharging shortens the life of the battery pack.

Operating the Charger:

1. Insert the charger 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. The light on the charger will glow if connected properly.

Cautions about the Batteries:

1. The battery pack should not be left on the charger for more than 10 hours.
2. Do not dispose of the 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 & pack) have a specific charge current. Do not attempt to use other chargers of packs with this system. Batteries may explode if a charger current is too high.
5. Non-rechargeable batteries may explode if they are recharged.
6. Store batteries in cool, dry place.
7. Avoid an absolute discharge; eliminating all voltage within these batteries will damage them.
8. The rechargeable battery pack is a sealed unit with no customer serviceable parts. Opening it may damage the unit and will void the warranty.
9. Store rechargeable batteries with a full charge. When storing rechargeable batteries for extended periods of time, always recharge them about once every three months. Batteries stored without a charge may become defective. In many cases, the discharge-recharge cycle to erase the memory will also work to revive batteries that have been in storage.

CAUTION: "Memory" of Rechargeable Batteries

Nickel Cadmium (rechargeable batteries) are long lasting powerful batteries that are excellent for operating your metal detector. These batteries can be recharged many times thereby saving you hundreds of dollars over the hours of their life. But this very rechargeable advantage can have limitations. If these batteries are not discharged proper (no longer test good) they may develop a "MEMORY". This shortens the battery life.

The most common cause for the MEMORY characteristic is repeated booster charges. In other words, if you recharge your batteries over and over again after only three hours of use, the batteries will eventually only hold a three hour charge.

To avoid the occurrence of this characteristic, it is best to wait until LOW BAT appears on the display before recharging. You may then recharge the batteries for 8-10 hours. This should result in a maximum charge. If your batteries develop a "MEMORY" the following method can be used to erase it:

1. Discharge the rechargeable battery through normal use.
2. Charge the batteries for 8-10 hours.
3. Repeat steps #1 and #2 three to five times or until the "MEMORY" situation is corrected.

If the batteries still have the "MEMORY" characteristic after five discharge-recharge cycles, new batteries are needed. Rechargeable "MEMORY" is not covered by the warranty as it is considered the result of misuse and/or neglect.

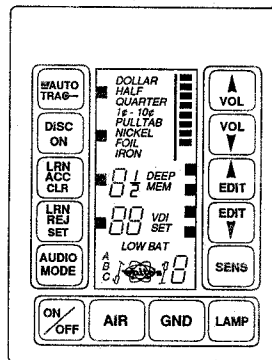
New batteries or batteries that have been in storage may require three to five discharge-recharge cycles to reach their full output potential.

In many cases, the charger is the cause of the rechargeable battery problems. When sending in the rechargeable battery for testing, always include the charger and a letter describing the problem you are experiencing.

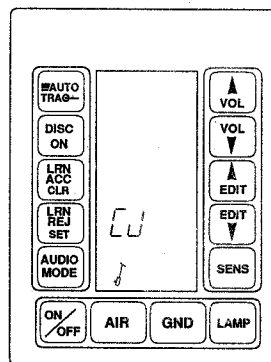
Rechargeable battery life and longevity will vary with climactic conditions, model, tuning, and operating procedures as well as individual difference between batteries and instruments of the same type.

Your first time out

1. With the TRIGGER on the handle in the center position, push ON/OFF. Everything should appear on the display for a moment:



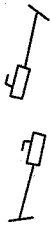
The detector will then beep and show some initials on the display. If nothing happens or if the full display does not appear, you will need to charge or replace your batteries.



2. At this point you will have to choose between the starting programs. Each starting program acts and performs differently. Each starting program is best suited to its purpose. *Push the AUDIO MODE control to select a starting program* (for now, do not use U1 or U2). Note that starting programs are listed on the top right hand side of your control box.

- CJ** Coin & Jewelry
- PP** Prospecting & Relic
- bh** Beach Hunting
- ch** Competition Hunting
- U1** User 1 (for storing your custom starting program)
- U2** User 2 (for storing your custom starting program)

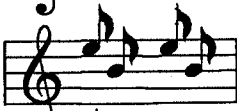
3. Now that you have chosen a starting program, you will need to show the metal detector the conditions it will be operating in. This is completed through the use of the AIR and GND (ground) controls. Note that this may be difficult or impossible indoors due to the metal always present in the walls, floors, furniture, etc. It is best completed outdoors in the area you want to search.



- A. Hold the loop waist level away from the ground and away from metals such as cars, fences, other metal detectors, etc. There is a prompt on the display above the AIR control to remind you. Push AIR. You should hear a beep and a different prompt should appear above the GND control. If not, reposition the loop and push AIR again.
- B. Hold the loop on the ground and push GND. The prompt is to remind you to hold the loop on the ground. The following beeps mean:



"beep" "beep" AIR/GND balance was successful.

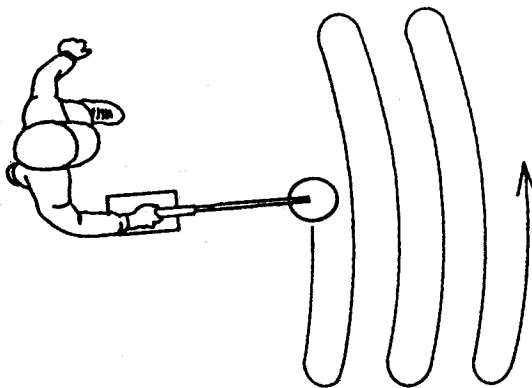


"beep" "beep" "beep" "beep" AIR/GND balance unsuccessful, step forward and AIR/GND again.



"beep" "beep" "beep" "beep" Unusually low ground mineralization. A good area to utilize SIG BAL control.

4. Now that your detector knows to ignore the environment, you are ready to search. The loop of the detector has to be swept or moving from side to side for metal to respond (beep). Practice a nice, smooth sweep of the loop from side to side. Each pass of the loop from right to left should take approximately two seconds.



One Thousand One -
One Thousand Two

One Thousand One -
One Thousand Two

Walk forward slowly while sweeping the loop. Make sure each pass of the loop slightly overlaps the last. Keep the loop close to the ground. Do not lift it at the end of each sweep. To become comfortable with a sweep pattern takes practice. Loosen up and find a comfortable grip on the handle. Some common bad habits that cause premature fatigue are:

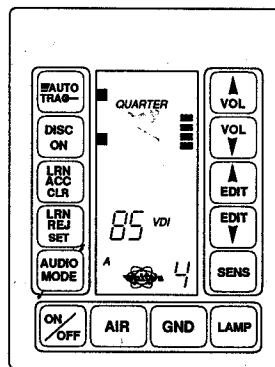
- a. Gripping the handle too tightly. (Hold it loosely.)
- b. Adjusting the rod, elbow support, and elbow strap incorrectly for an operators size. (Adjust for comfort, and keep the elbow strap loose enough to slide your arm in and out without readjusting it each time you want to set the detector down.)
- c. Limited body movement. (Use your arm, shoulder, and even your back a little. Loosen up and move smoothly.)

5. Now that you're sweeping the loop smoothly over the ground, you are going to start noticing several things the detector does. The detector has two types of indications. First the speaker beeps, and second the display provides additional information about the metal being detected.
- A. (Speaker beeps) When the loop passes over a good metal, the detector sounds off with a smooth, solid beep. Whether a metal is considered "good" or "bad" is defined by the starting program and any custom adjustments you have made.

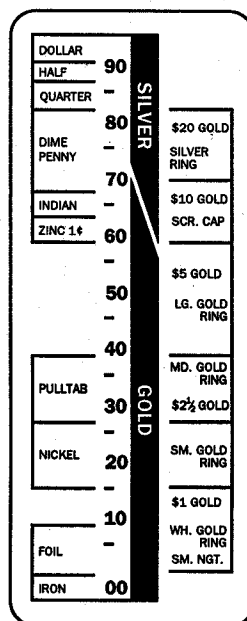
When the loop passes over a bad metal such as nails, bottle caps, or pulltabs, while in the **CJ Coin & Jewelry** starting program, the beep is different. In most cases it's cut short, flutters, or is broken in sound.

An operator will soon learn to ignore these beeping sounds made by junk or bad metals. Don't look at the display until you can hear a smooth solid beep. Sweep the loop over the target several times and listen to the sound it makes.

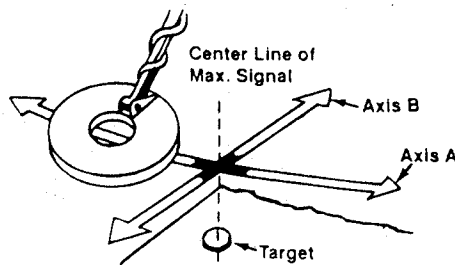
- B. Once a good solid beep has been located sweep the loop over the target several times and look at the display.



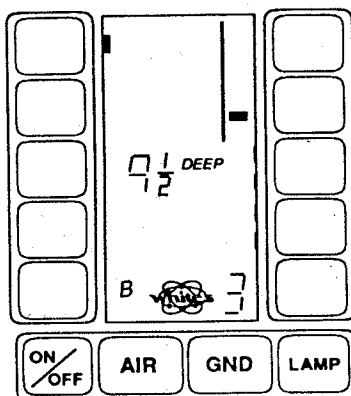
The display indication is in two parts, for example the **QUARTER** indicates the metal being detected is most likely a quarter. The **85 VDI** is used with the reference chart on the top left hand side of the control box. You will note that **85 VDI** could be something other than a quarter such as a silver spoon or watch.



6. Now that you have located a solid beep, sweep the loop over it several times, and note the display indication; if you now want to dig up the target, squeeze and hold in the TRIGGER on the handle and "X" the area.



Watch the display as you "X" the area.



The number beside "DEEP" will indicate how deep the target is in inches. It will read the shallowest depth when the loop is directly over the center of the target. The bar chart in the upper right beside the VOL(▲) VOL(▼) controls will be tallest when the loop is directly over the center of the target. Watch for these three indications as the loop is "X'd" over the area: loudest beep, shallowest DEEP number, and tallest bar graph indicated when the target is directly under the center of the loop. Keeping an eye on the spot to dig, set your detector down and dig up the target. Before you start searching again, squeeze and release the TRIGGER with the loop at waist level. Pinpointing exactly where to dig for a metal takes practice. Don't be too discouraged if you cannot pinpoint well at first, you will get better. The DEEP number will only be accurate on metals the same size as coins.

7. Each starting program acts different. Here is what you can expect from each:

(CJ) Coin & Jewelry

This starting program rejects most junk such as nails, light foil, and pulltabs, and responds to most valuables such as nickels, many jewelry items, 1 cent, 10 cents, quarter, half dollars and dollars.

(PP) Prospecting & Relic

This starting program responds to all metals with the speaker "beep", only non-ferrous metals such as gold, brass, silver, etc. produce VDI numbers on the display. The EDIT controls manually adjust ground rejection.

(bh) Beach Hunting

This starting program rejects only iron such as nails. Jewelry produces highly unpredictable responses. It is also easy to dig at the beach, thus it is a good idea to dig more questionable target responses.

(ch) Competition Hunting

This starting program can be used when several metal detectors are operating close together. If your detector starts beep, beep, beep, beeping, push one of the EDIT controls to change your operating frequency. This will avoid interference from other models. This starting program rejects iron and light foil only.

(U1) (U2) User 1 & User 2

These two starting programs are for storing your custom programs for future use as a starting program. Wait until you're more familiar with programming before attempting to develop and store custom starting programs in U1 & U2.

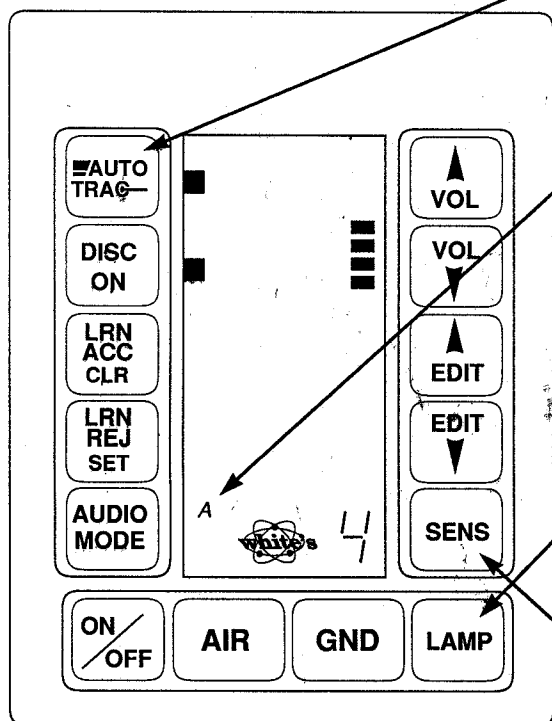
8. At this point, you should use your detector and thoroughly familiarize yourself with:

- a. Turning your instrument on and off (ON/OFF control)
- b. Selecting a starting program (AUDIO MODE Control)
- c. AIR and GND balancing for the environment (AIR/GND Controls)
- d. Comfortably sweeping the loop
- e. Listening for solid smooth beeps ignoring cut shorts, flutter, or broken beeps
- f. Once a solid smooth beep is located, sweeping the loop over the target several times watching the display indication and using the VDI number and reference chart.
- g. Once a good beep and display indication are found, squeezing and holding the TRIGGER and "X'ing" the area, pinpointing where and how deep to dig by watching the DEEP number and bar chart.

Basic Programing

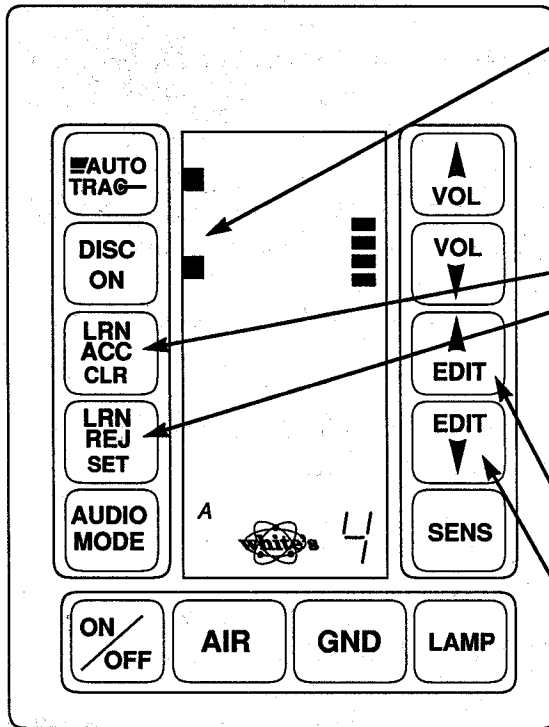
- l. Now that you know how to use your Eagle, you may want to change some of its settings to suit yourself or to suit unusual conditions. Before you start making changes keep in mind:
 - A. The starting program you select decides what each setting is going to start out at.
 - B. Each starting program is different.
 - C. Each of the controls start out at settings determined to be ideal for the average operator using the Eagle in average conditions — for the purpose described by the selected starting program.
 - D. Changes are in effect only in the starting program you are using. If you make a change to the volume for example, then switch to a different starting program, the new starting program uses its own preset volume level. You will have to change the volume level again for the new starting program.
 - E. If you make changes to a program and turn the instrument off for any reason, you can turn the instrument back on and immediately squeeze and release the TRIGGER — the instrument will then be exactly as it was prior to turning it off. If you do not squeeze and release the TRIGGER when you turn the detector back on, your changes will be lost and the instrument will go to the default starting program.
 - F. Once you have selected a starting program, and are using the instrument, you can go back and select a different starting program by squeezing and holding the TRIGGER, pushing AIR, and releasing the TRIGGER. You are now back at the starting programs. Push the AUDIO MODE control to select a new starting program, then push either LRN REJ SET or AIR/GND balance to return to operate.
 - G. The TRIGGER switch on the handle has three positions, center, squeezed and held, and locked forward. The squeezed and held and the locked forward do the same thing. The center position is used for searching and adjusting basic options. The squeezed and held or locked forward positions are used for pinpointing and or adjusting additional options. For example the VOL(▲) VOL(▼) controls adjust threshold or background tone when the TRIGGER is in the center position. When the TRIGGER is squeezed and held or locked forward, the VOL(▲) VOL(▼) controls adjust the volume of the beep made over metal targets. The other controls adjust one option when the TRIGGER is in the center position and a different option when the TRIGGER is either squeezed and held or locked forward.
 - H. The following basic programing doesn't explain the reasons for every option or when and why an operator would use them. It simply describes where they are and how to turn them ON/OFF. For a complete understanding of each option refer to the **Advanced Programming Manual**.

2. The display indicates most control settings.
 - A. When the trigger on the handle is in the center position the 1) AUTO TRAC, 2) AUDIO MODE, 3) LAMP, 4) SENS, and 5) VOL(▲) VOL(▼) controls do the following:



1. AUTO TRAC automatically senses changes in the ground and corrects the original GND setting. It starts out turned **On** indicated by the square prompt on the display. Push once to turn **Off** (no prompt). Push again to turn back on.
2. After a starting program has been selected and the AIR/GND controls have been pushed, the AUDIO MODE control changes function and now selects between audio modes indicated on the display as A, B, or C (A = Threshold; B = Silent Search; C = Tone I.D.—Disc ON = Full Tone ID, Disc OFF = Two-Tone Tone I.D.)
Each of these audio modes sound different. Select the one you like.
3. The LAMP control turns On/Off the night light. When pressed and held, the battery voltage is shown on the display. A '49' would indicate 4.9 volts. LOW BAT automatically appears on the display when the batteries are getting too low.
4. The SENS control adjusts the sensitivity level of the instrument. The current level is indicated as a number on the display next to the SENS control. Levels 1–7 are available with 7 being the most sensitive. Use the highest level which works smoothly, (without false signals). AC SENS.
5. The VOL(▲) VOL(▼) controls adjust the threshold level, (background tone). The current level is indicated by the height of the bar graph on the display.

- B. When the TRIGGER on the handle is in the center position the 1) DISC ON, 2) LRN ACC CLR and LRN REJ SET and 3) EDIT(▲) EDIT(▼) controls do the following:

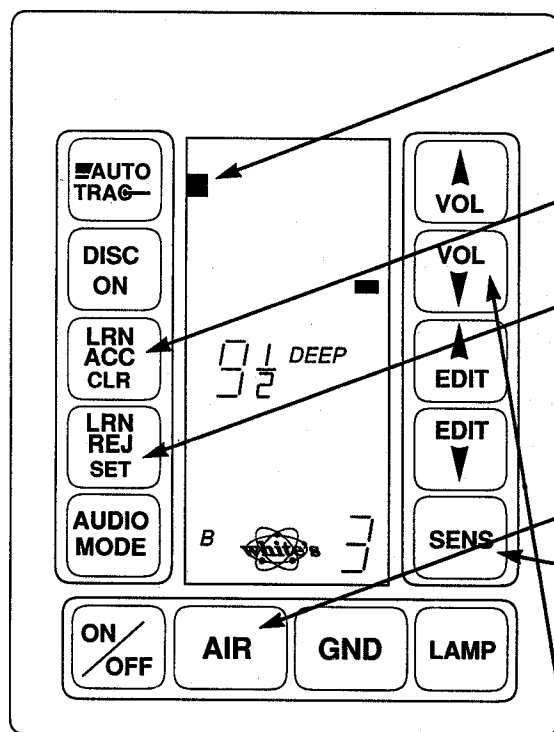


1. When DISC is **On**, it's indicated by a small square prompt on the display; metals are accepted or rejected based on the program. When **Off** (no prompt), all metals respond with a beep.

2. If you have a sample of a metal target you want to program to be either accepted (LRN ACC CLR), or rejected (LRN REJ SET), push LRN ACC CLR if you want to accept it or LRN REJ SET if you want to reject it; pass it by the loop until desired tone is heard, then push the same control LRN ACC CLR or LRN REJ SET again, and it's programmed. Do not attempt to program alloys such as the bottle cap in this manner.

3. Pushing either EDIT control when using the (CJ) Coin & Jewelry and the (bh) beach hunting, starting programs switches the detector to the DISC options mode. Use the EDIT(▲) EDIT(▼) controls to view the VDI numbers which are SET in the DISC program. SET means that VDI number is SET to be rejected. No SET means that VDI number is clear to respond. Push either LRN ACC CLR if you want to CLEAR a VDI number to respond, or push LRN REJ SET if you want to SET a VDI number to be rejected. Once in the DISC Option Mode; AUTO TRAC then turns **On/Off** TWO QUADRANT VDI which is a second set of VDI numbers below 00 — mostly for iron. When TWO QUADRANT VDI is **On**, there is a prompt; when **Off**, no prompt. The DISC ON control turns **On/Off** visual discrimination which determines whether or not rejected VDI numbers appear on the display. When DISC ON is **On**, there is a prompt; when **Off**, no prompt. Squeeze and release the TRIGGER to return to normal operation. When using the PP Prospecting and Relic program, the EDIT(▲) EDIT(▼) controls manually adjust ground rejection. Manual adjustments will be temporary unless AUTO TRAC is turned off. When using the ch Competition Hunting starting program, the EDIT(▲) EDIT(▼) controls manually adjust operating frequency to avoid interference from other detectors. When using either PP or ch starting programs, squeeze and hold the TRIGGER and push EDIT(▼) to go to DISC options.

- C. When the TRIGGER on the handle is in the squeezed and held or pushed forward to lock position the 1) AUTO TRAC, 2) LRN ACC CLR, 3) LRN REJ SET, 4) AUDIO MODE, 5) AIR, 6) SENS, 7) EDIT 8) VOL(▲) VOL(▼) controls do the following:



On indicated by prompt; Off indicated by no prompt — SAT activated. Smooths all metal modes (DISC off) after SAT activated.

Selects normal (indicated by no prompt) or high mineral (indicated by prompt) transmit power.

Selects VCO On indicated by a prompt or Off no prompt.

AUDIO MODE selects audio frequencies (pitch)
A = Low, B = Normal, C = High

Returns to starting programs.

SENS selects pinpoint mode and non-motion mode sensitivity levels 1-5 D.C. SENS.

The EDIT(▼) control always switches to the DISC Options mode.

When the trigger is either squeezed and held or locked forward, pressing and holding the EDIT(▲) control switches to the Advanced Options mode.

VOL(▲) and VOL(▼) adjust the volume level of the beep metals produce.

3. Once you have made some changes, if you like them, and want to save them for future use as a starting program, squeeze and hold the TRIGGER, push AIR, and release the TRIGGER. Press AUDIO MODE to select either U1 or U2, whichever one you want to store your program in. Now push LRN ACC CLR "S" for save. You can then either:

- Push LRN REJ SET to continue operating with the same program.
- After you push LRN ACC CLR "S" your program has been saved. You could push AUDIO MODE to select a different program, then push LRN REJ SET to use it.
- Turn off the detector. When you go to use it again your custom program will be the U1 or U2 starting program.

You can save two custom programs; one in U1, and one in U2. These custom programs will stay there forever unless you save different ones in their place. To save a different one in its place, complete the same procedure as you did to save the first. The original program is automatically erased when you save another in its U1 or U2 slot.

Preset Starting Programs

(CJ) COIN & JEWELRY

A. Secondary Controls

Audio Mode.....	A
Auto Trac.....	ON
Minimum Volume (Threshold)	60 dB
SENS A.C. (Sensitivity Motion)	4

B. Discriminate Controls

Disc On.....	ON
Disc Accept (Clear)	9-27 50-94
Disc Reject (Set)	Low 96-0-8, 28-49, 95
Two Quadrant VDI	OFF
Visual Disc	ON

C. Audio Options (Trigger squeezed or locked)

1. SAT (Self Adjusting Threshold)	ON
2. Transmit Power	NORMAL
3. VCO (Voltage Controlled Oscillator)	OFF
4. Audio Frequency	B
5. Maximum Volume (Target)	103 dB
6. SENS D.C. (Sensitivity Non-Motion)	3

D. Advanced Options

1. SAT Delay.....	6
2. BC REJ.....	0
3. Search Speed	0
4. Track Level.....	4
5. VDI Sens Level.....	15
6. Operating Frequency	4
7. User AC Sens	0
8. Prospecting	0
9. Auto Trac	0
a. Expanded Audio frequency.....	50
b. Auto Trac Offset	0

E. Options (suggested)

1. Increase SENS (AC) to the highest number which performs smoothly.
2. Increase DISC ACCEPT (clear) VDI numbers between 29-49 which will increase the number of both rings and pulltabs dug.
3. Select AUDIO MODE B — Silent Search, or C — Tone ID.

Preset Starting Programs

(PP) PROSPECTING & RELIC

A. Secondary Controls

Audio Mode.....	A
Auto Trac.....	ON
Minimum Volume Threshold)	60 dB
Sens AC (Sensitivity Motion)	4

B. Discriminate Controls

Disc On	OFF
Disc Accept (Clear).....	Low 19–0–95
Disc Reject (set)	Low 96–Low 20
Two Quadrant VDI	ON
Visual Disc	ON

C. Audio Options (Trigger squeezed or locked)

1. SAT (Self Adjusting Threshold)	ON
2. Transmit Power	Normal
3. VCO (Voltage Controlled Oscillator)	OFF
4. Audio frequency	A
5. Maximum volume (target)	103 dB
6. SENS DC (Sensitivity Non-Motion)	4

D. Advanced Options

1. SAT Delay.....	0
2. BC REJ.....	0
3. Search Speed	0
4. Track Level.....	1
5. VDI Sens Level.....	15
6. Operating Frequency	4
7. User AC Sens	0
8. Prospecting.....	2
9. Auto Trac	3
a. Expanded Audio Frequency	35
b. Auto Trac Offset	0

E. Options (suggested)

1. Prospectors may wish to turn off AUTO TRAC then use EDIT(▲) EDIT(▼) to manually adjust ground rejection.
2. Prospectors may need to switch TRANSMIT POWER to the HIGH MINERAL position in extreme conditions.
3. Relic hunters may wish to use a slower SAT Delay.
4. Relic hunters may wish to turn off VISUAL DISC and/or DISC ACCEPT (Clear) VDI numbers between Low 96–Low 20 to accept more iron targets.
5. Some relic hunters turn **On** DISC and program for specific relics.

Preset Starting Programs

(bh) BEACH HUNTING

A. Secondary Controls

Audio Mode.....	A
Auto Trac.....	ON
Minimum Volume (Threshold)	60 dB
Sens AC (Sensitivity Motion)	4

B. Discriminate Controls

Disc On.....	ON
Disc Accept (Clear)	1-94
Disc Reject (Set)	Low 96-0, 95
Two Quadrant VDI	ON
Visual Disc.....	ON

C. Audio Options (Trigger squeezed or locked)

1. SAT (Self Adjusting Threshold)	ON
2. Transmit Power	Normal
3. VCO (Voltage Controlled Oscillator)	OFF
4. Audio Frequency.....	B
5. Maximum Volume (Target)	103 dB
6. Sens DC (Sensitivity Non-Motion)	3

D. Advanced Options

1. SAT Delay.....	0
2. BC REJ.....	0
3. Search Speed	0
4. Track Level.....	1
5. VDI Sens Level.....	15
6. Operating Frequency	4
7. User AC Sens	0
8. Prospecting	0
9. Auto Trac	0
a. Expanded Audio Frequency	50
b. Auto Trac Offset	0

E. Options (suggested)

1. Select AUDIO MODE "C" — TONE ID.
2. Increase SENS (AC) to the highest level which performs smoothly.
3. If searching the dry part of the beach, utilize SIG BAL control.
4. **If searching in black sand, switch TRANSMIT POWER to the HIGH MINERAL position.**

Preset Starting Programs

(ch) COMPETITION HUNTING

A. Secondary Controls

Audio Mode.....	A
Auto Trac.....	ON
Minimum Volume (Threshold)	60 dB
Sens AC (Sensitivity Motion)	3

B. Discriminate Controls

Disc On.....	ON
Disc Accept (Clear)	16-94
Disc Reject (Set)	Low 96-15
Two Quadrant VDI	OFF
Visual Disc.....	ON

C. Audio Options (Trigger squeezed or locked)

1. SAT (Self Adjusting Threshold)	ON
2. Transmit Power	Normal
3. VCO (Voltage Controlled Oscillator)	OFF
4. Audio Frequency.....	B
5. Maximum Volume (Target)	103 dB
6. Sens DC (Sensitivity Non-Motion)	2

D. Advanced Options

1. SAT Delay.....	4
2. BC REJ.....	0
3. Search Speed	1
4. Track Level.....	4
5. VDI Sens Level.....	15
6. Operating Frequency	4
7. User AC Sens	0
8. Prospecting	0
9. Auto Trac	0
a. Expanded Audio Frequency	50
b. Auto Trac Offset	0

E. Options (suggested)

1. Push EDIT(▲) EDIT(▼) to shift operating frequency thus avoiding interference.
2. Program to accept specific token samples.

Proper Care of Your Detector

The following are precautions you should take to protect your instrument from harm, ensure its long life, and void 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 is left in a car on a hot day, cover it to protect 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:

- Avoid dropping your detector.
- Do not use any lubricants.
- Avoid sharp jars to the loop.
- Do not allow batteries to corrode inside the instrument.
- Do not alter or modify your instrument during its warranty period. Alterations will void the warranty.

Key Specifications

Approximate Battery Life: Rechargeable 8 hours
Alkaline 10 hours

Environment: Optimum Humidity Range 0–75%
Optimum Temperature Range 33–100° F (0–38° C)

Frequencies:

Operating	6.59 KHz Normal (6.0–7.2 KHz Optional)
Audio Normal	412 Hz
Audio High	1,648 Hz
Audio Low	4 Hz (pulse)
“C” Mode	52–1,648 Hz
Control Buttons	1,648 Hz
Multitone	412–1,648 Hz
Inadequate GND	1,648–1,014 Hz

Accessories

- Headphones:** Headphones are available from your dealer. They plug into the 1/4 inch jack located under the elbow support above the battery compartment. This is a mono type jack; headphones need to be mono or have mono capabilities to work correctly. Eight to sixteen ohm headphones are recommended.
Using headphones will: increase battery life; provide privacy to the operator; keep the beeping noises from annoying less enthusiastic bystanders.
- Loops:** The size and shape of the loop has a dramatic effect on the way the metal detector responds. The BM (Blue Max) 950 standard loop is a great multipurpose size. However, if you are trying to metal detect in an area where there are a lot of metals close together, the BM 950 can be too large. Switching to the BM 600 accessory loop will allow better separation between metals close together. The BM 600 is also better when an operator primarily wants to search for metal targets smaller than coins — such as small gold nuggets.
There are after-market loops available for our models, each with a specific purpose and its accompanying advantage/disadvantage. Long, narrow designs cover more ground with each pass. Sizes larger than the BM 950 will detect deeper with a wider field. A twelve inch loop is as large as is recommended for the detection of individual coins, bullets, and buttons. Sizes larger than twelve inches are recommended for better depth on larger metals such as jars of coins, cannon balls, guns, and other relics. The instrument's depth meter and VDI are calibrated with the BM 950 loop; thus depth and I.D. accuracy will vary with accessory and after-market loops.
- Carry Cases:** White's produces different carry cases. Some require the loop, rods, and elbow support disassembled, and some require only that the rods be fully collapsed and turned so that the loop is positioned vertically. Either case provides protection during storage and travel.
- Digging Kits:** There are many different types of digging tools, pouches, and kits available to dig with and put your finds in. The type that is best for you depends a lot on the type of ground you will be searching and your personal tastes. Trowels and knives are good for dirt; sand scoops are good for sand; and in some areas, rock picks may be needed. Use a tool that works good for you and most importantly, don't make a mess which will hurt future metal detector operators. With some practice in your own yard, you can learn to dig without destroying vegetation. You may want to save those delicate areas for the wet season when vegetation recovers easier and more quickly. Improper digging has caused some areas to be closed from metal detecting. Use discretion.
- Apparel:** White's has a line of jackets, hats, etc. Contact your dealer for more information or call toll-free 1-800-547-6911.

Glossary of Terms

Accept:	To detect. Discrimination is clear so as to respond to a target.
Advanced Options:	Mode or tuning procedure where advanced features may be adjusted. (See 'Layer').
Air Balance:	Tuning procedure that prepares for GND (ground) balancing.
Air Control:	Control that performs "AIR BALANCE" (Hold loop in air, away from known metals or ground and press AIR control.)
Air Prompt:	Display indication that appears when AIR BALANCE is required.
Air Test:	Testing the response of a metal detector to various objects with the loop positioned away from the ground.
Alkaline Battery:	Type of non-rechargeable 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 hum that makes it easy to hear changes in audio.
Audio:	Volume or tone produced by speaker or other sound emitting device.
Audio Mode:	A condition of operation selected by the detector operator for specific conditions, operating characteristics and/or features.
Audio Options:	MODE or tuning procedure where options directly related to audio may be adjusted. (See Layer)
Audio frequency:	The tone or pitch of the audio, bass, treble, etc.
Auto Trac:	A feature that monitors GND (ground) balance and makes corrections to it as ground mineralization changes.
Bar Graph:	Graphic means of indicating level (Bar Chart).
BAT:	Battery, "Power Source".
Bench Test:	"Air Test" testing of the response of a metal detector to various objects with the loop positioned away from the ground.
Block Edit:	EDITING large sections of the VDI target numbers simultaneously to ACCEPT or REJECT status.
Bottle Cap Rejection:	Special feature that produces more broken or ratty tones on bottle caps or other iron alloys.
Center:	Middle position considering the outside edges.
CLR:	(Clear) Learn Accept; to detect, (SEE ACCEPT). To fix or prepare a VDI number for accept. Also see LRN ACC CLR, PROGRAM.
Clevis:	Loop isolator, short plastic section between rod assembly and loop.
Control Box:	Black aluminum body of instrument.
Control Cluster:	Panel where all controls are located.
Discriminate Memory:	Low 96-0-95 VDI numbers, CLEAR ACCEPT or SET REJECT status.
Discriminate Options:	MODE or tuning procedure where the discriminator may be adjusted (SEE LAYER)

Discriminator:	A circuit that can be adjusted to accept or reject signals or targets of different characteristics.
Display:	Liquid Crystal exhibit of information located on control clusters, used as graphic visual indicator.
Edit:	To alter or rearrange to suit a particular purpose (See Program)
False Signals:	Erratic or unstable tones, beeps, and/or display indications that are not caused by the detection of metal.
Ferrite Sample:	Mineral sample consisting essentially of an iron oxide.
Filter:	Electrical circuit which processes signals, suppressing or minimizing waves or oscillations of certain frequencies.
Fourth Layer:	Advanced layer accessed by holding in TRIGGER SWITCH and pushing EDIT(▲) control, exit by squeezing and releasing TRIGGER SWITCH.
Frequency:	The number of complete alternating current cycles per second produced by the transmit oscillator.
Fringe Targets:	Targets too deep or weak to produce an accurate discrimination indication.
GND:	(Ground) Dirt on the surface of the earth
Ground Balance:	The cancellations of ground mineralization to ignore the masking effect ground minerals have over metal.
GND Control:	Control that performs ground balance, the cancellation of ground mineralization.
GND Prompt:	Display indication that appears when GND BALANCE is required.
Immediately:	At once, without delay.
Indicate:	Advise, proclaim, or point out.
Intensity Graph:	Bar graph or chart that indicates in segments the signal strength.
Interference:	Something which hinders, impedes or confuses normal metal detector operations.
Junk Targets:	Metals determined to be trash or rejects; iron, foil, pulltabs, etc.
Layer:	The functions of the control and display can be changed. Each change in control or display function is considered a LAYER. DISCRIMINATE OPTIONS, AUDIO OPTIONS, ADVANCED OPTIONS.
LCD:	(Liquid Crystal Display) Used as a graphic visual indicator. See DISPLAY.
Loop:	(Search Coil) Circular plastic housing containing multiple windings.
LRN ACC CLR:	(Learn Accept Clear) Control used to teach or learn accept and/or to clear for acceptance in EDIT (CLEAR ACCEPT).
LRN REJ SET:	(Learn Reject Set) Control used to teach or learn reject and/or SET targets for reject in the EDIT mode. (See REJECT).
MEM:	(Memory) Recall, reproducing what has been learned, set and retained.
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 that contains conductive or non-conductive components. MINERALS.
MODE:	SEE AUDIO MODE.
Motion Mode:	An AUDIO MODE that requires loop motion to respond to metal targets.
Multinote Beep:	More than two beeps or audio responses of varied frequencies, tones or pitch.
Multiple Functions:	A control which performs more than one adjustment.
Non-ferrous:	Not of iron; metals of the precious class copper, silver, gold, etc.
Non-motion:	Mode that does not require loop motion to respond to metal.
Notch:	Slot or category representing a specific point on the discriminate range. Each individual VDI target number LOW 96–0–95 represents a NOTCH. Each notch can be CLEAR for accept or SET for reject.
Optionally Adjustable:	Controls that utilize preselected settings for average conditions — therefore, do not have to be set each time you operate.
Options:	Adjustments or selections.
Overlap:	Refers to the amount of loop sweep advance, not being greater than the loop's physical diameter.
Overload:	(Saturation) Condition where White's logo disappears from the display indicating the instrument is not capable of responding to additional metal until the logo returns. Caused by highly magnetic ground or very large intense targets which cause the instrument to exceed its maximum response capability.
Persist:	Continue to occur.
Pinpoint:	Finding the target's exact location with respect to the loop's physical center.
Preselected:	Controls that start out at settings or levels determined by the factory to be ideal for average conditions.
Preset:	Preselected.
Preset Starting Program:	When the instrument is first turned ON, the AUDIO MODE control can be used to select between six complete starting programs: "CJ" Coins & Jewelry, "PP" Prospecting & Relic, "bh" Beach Hunting, "ch" Competition Hunting, "U1" User 1, and "U2" User 2. These six starting programs affect all settings including discrimination AUDIO and ADVANCED LAYER options.
Primary Controls:	Controls that require setting each time you operate (TRIGGER SWITCH, ON/OFF, AIR, GND, LAMP).
Probable I.D.:	Most likely identification.
Program:	To work out a sequence of operation to be performed by electronic equipment. Prepare, instruct, or set for a particular result.
Program Edit:	Setting the discriminate memory (LOW 96–0–95 VDI numbers) to CLEAR accept or SET reject status manually through use of the EDIT mode.
Program Learn:	Adjusting the discriminate memory by example, teach by example, learn accept or learn reject.
Programmable:	Ability to be programmed.
Prompt:	Reminder; display indication that tells either the tuning step required, control level or setting, mode or function.

Range:	The class of admissible value of a variable.
Ratchet Pinpointing:	Automatic feature (activated by squeezing and hold the TRIGGER SWITCH) which will aid in centering the target's precise location.
Receive:	The portion of a metal detector that converts the electrical currents or waves into visible and audible signals.
Rechargeable Battery:	Battery that is designed to be recharged, or restore to new the active material within.
Reject:	Discriminate or cancel response to a metal.
Reset:	Clear for further searching. Counter or clear the effect of Ratchet Pinpointing so as to be prepared for the next target.
Retune:	(Reset) Clear for further searching. TRIGGER SWITCH squeezed and released.
Revert:	Turn back to, return to.
SAT:	(Self Adjusting Threshold) Feature for use in all metal modes, (DISC OFF) that maintains stable operation over varied ground conditions.
Saturation:	See OVERLOAD.
Secondary Controls:	Controls that start out at settings or levels determined to be ideal for average conditions, AUDIO MODE, SENS, AUTO TRAC, & VOL.
Self Test:	Automatic test conducted by the instrument when first turned on.
Sens:	(Sensitivity) Capacity or degree to which an instrument responds.
Sens A.C.:	Sensitivity Alternating Current effects the motion modes.
Sens D.C.:	Sensitivity Direct Current effects the non-motion modes only.
Set:	"SET" (Learn Reject). To reject, (See REJECT) to fix or prepare a VDI number for reject. Also see DISCRIMINATE, LRN REJECT SET, PROGRAM.
Signal:	Response or indication from audio or display indicating the presence of metal.
Silent Search:	Mode or option that is completely quiet until a metal is detected. NO AUDIBLE THRESHOLD.
Slow Motion:	A description of loop speed required to operate.
Status:	Condition, position.
Target:	Any object buried in the ground or used in an AIR TEST that causes a metal detector to respond.
Target Masking:	When high concentrations of mineral or trash metal cause other valuable targets to be rejected.
Target Numbers:	VDI numbers LOW 96–0–95 that appear on the display indicating target's probable identity.
Target Range:	See TARGET NUMBERS
Threshold:	See AUDIBLE THRESHOLD.
Third Layer Options:	Accessed by squeezing and holding TRIGGER SWITCH, controls take on new options; exit by releasing TRIGGER SWITCH.

Tone ID:	(TONE IDENTIFICATION) Feature or mode that produces a high frequency tone for targets accepted by discriminate memory and a lower or medium frequency tone for targets rejected by the discriminate memory.
Transmit:	To send out a signal, emit.
Two Quadrant VDI:	Feature that allows viewing of the complete target range LOW 96–0–95.
VDI:	Visual Discriminator Indication. Display that indicates probable target identity or conductivity. Visual Discrimination.
Visual Disc:	Feature which makes VDI target numbers programmed for reject no longer appear on the display.
VOL:	(Volume) Loudness, sound or audio level.
Voltage Regulator:	Circuitry that controls the amount of voltage/current that enters the circuit board.
Weigh:	To measure as if on scales, define quantity.
White's Logo:	White's emblem.
Window:	With each of the four layers of options, the display shows different information. This different display information is considered different windows of information. (SEE LAYER).

Custom Starting Programs

U1 Keep a record of your custom program.

A. Secondary Controls

Audio Mode
Auto Trac.....
Minimum Volume (Threshold)
SENS A.C. (Sensitivity Motion)

B. Discriminate Controls

Disc On.....
Disc Accept (Clear)
Disc Reject (Set)
Two Quadrant VDI
Visual Disc.....

C. Audio Options (Trigger squeezed or locked)

1. SAT (Self Adjusting Threshold)
2. Transmit Power.....
3. VCO (Voltage Controlled Oscillator)
4. Audio Frequency
5. Maximum Volume (Target)
6. SENS D.C. (Sensitivity Non-Motion)

D. Advanced Options

1. SAT Delay.....
2. BC REJ
3. Search Speed
4. Track Level
5. VDI Sens Level.....
6. Operating Frequency
7. User AC Sens
8. Prospecting.....
9. Auto Trac
a. Expanded Audio frequency.....
b. Auto Trac Offset.....

E. Options

Custom Starting Programs

U2 Keep a record of your custom program.

A. Secondary Controls

Audio Mode
Auto Trac.....
Minimum Volume (Threshold)
SENS A.C. (Sensitivity Motion)

B. Discriminate Controls

Disc On.....
Disc Accept (Clear)
Disc Reject (Set)
Two Quadrant VDI
Visual Disc.....

C. Audio Options (Trigger squeezed or locked)

1. SAT (Self Adjusting Threshold)
2. Transmit Power.....
3. VCO (Voltage Controlled Oscillator)
4. Audio Frequency
5. Maximum Volume (Target)
6. SENS D.C. (Sensitivity Non-Motion)

D. Advanced Options

1. SAT Delay.....
2. BC REJ
3. Search Speed
4. Track Level
5. VDI Sens Level.....
6. Operating Frequency
7. User AC Sens
8. Prospecting
9. Auto Trac
 a. Expanded Audio frequency.....
 b. Auto Trac Offset.....

E. Options

Treasure Hunter's Code of Ethics



1. Respect the rights and property of others.
2. Observe all laws.
3. Aid law enforcement officials whenever possible.
4. Never destroy priceless, historical, or archeological treasures.
5. Leave the land and vegetation as it was.
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.

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