



INSTRUCTION MANUAL



Manufactured by White's Electronics Inc. Sweet Home, OR U.S.A.

ATTENTION: To use the SIERRA MADRE in normal conditions; set the MODE to BAT. ✓, check meter. Set MODE to high, squeeze and release TRIGGER on handle. Set TUNER for slight hum. Hold loop waist level, press AUTO GEB to AIR, wait for "beep". Lower loop to ground, press AUTO GEB to GND AUTO TRAC, wait for "beep". Sweep loop over ground, "beep" and positive meter movement (to the right) indicate a metal.



White's Electronics Inc.
A Message from...
Kenneth R. White, C. E. O.

Congratulations, and thank you for choosing the SIERRA MADRE.

The following instructions are intended to familiarize you with this fine metal detector, and give you a good understanding of the basics. Obviously, there is no substitute for field experience. Practice using your detector in the field, and study this manual carefully. Before long you may be able to teach the experts a thing or two!

Your new SIERRA MADRE has been hand built and carefully tested at our factory in Sweet Home, Oregon. Properly cared for, it will last for years.

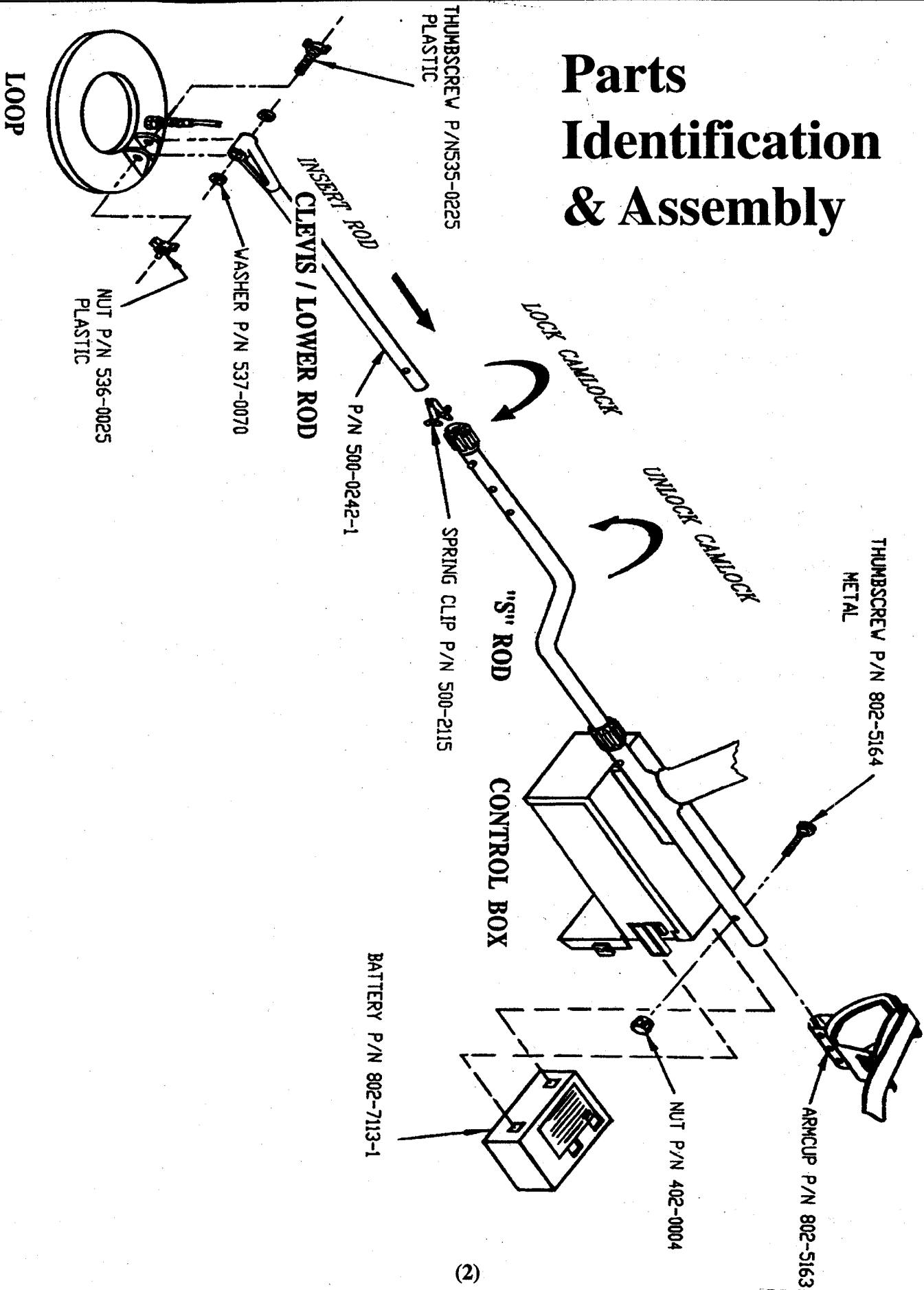
People use our metal detectors to find valuables every day. Regardless of a metal detectors performance, it is the operator who makes the critical decisions that result in great recoveries. A metal detector is simply a tool which greatly increases the capabilities of the user to find such valuables. Knowing your detector, and researching good places to use it, are key elements to successful metal detecting.

We know in a very short time you will be using the SIERRA MADRE to help you find items of value. We are proud to continue White's tradition of high performance and reliability with the Sierra Madre.

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Parts Identification & Assembly



Parts Identification & Assembly, Continued

1. Remove all parts from shipping carton. Check the assembly page to make sure all parts are present.
2. Place loop washers on clevis/lower rod, one on each side, and slide clevis onto loop ears. Use fiber bolt and thumbnut to secure.
3. Insert clevis/lower rod into curved "S" rod so that stainless steel spring clip buttons line up and lock into one of the adjustment holes in the curved "S" rod. Turn camlock to secure. (The second or third adjustment holes are suitable for average size adults. Individuals 6' or taller should consider the fully extended position. Individuals well over 6' tall should purchase the optional Tall Man Rod for a more comfortable fit.)
4. Remove the cable twist from the loop cable and wind the cable around the clevis rod with first revolution over the top of the rod. Leave a small section of slack in the cable near the loop to allow for loop tilting. Wind cable all the way to the top of the curved "S" rod. Use the black cable retainers, one near the loop, and one near the curve in the "S" rod, to hold the cable in place.
5. Insert curved "S" rod so that stainless steel spring clip buttons line up, and lock into the rod on top of the control box. Turn camlock to secure. Plug loop connector into control box, turn lock ring clockwise to secure.
6. Grip the instrument by the handle, with your arm in the armcup, and sweep the loop over the floor. If the instrument fit feels uncomfortable, adjust the armcup by removing and repositioning the bolt/thumbnut and installing in one of the optional positions. If necessary, readjust clevis/lower rod position.
7. Remove protective paper from the black armcup foam pad, carefully align it in the armcup (elbow support), and press firmly into place.
8. Adjust the armcup strap so that it is loose enough to slide your arm in and out without loosening each time you want to set the detector down.
9. Install the battery pack (described in the next section) decal facing up, steel contacts facing toward the loop.

NOTE: Your detector may not work as expected indoors due to the high degree of metals used in modern construction. It is best to tune and practice out-of-doors to ensure stable, predictable results.

Batteries

Standard Batteries:

The standard battery holder supplied with your instrument holds four "C" size batteries. Alkalines are recommended as they supply more consistent power for longer time periods. Rechargeable "C" size batteries may also be used in this holder, although they will need to be removed from the holder for recharging.

Using The Standard Battery Holder:

1. Remove the battery holder lid by applying gentle pressure down on the four locking tab openings, two on each side, so that they unlock. Remove lid.

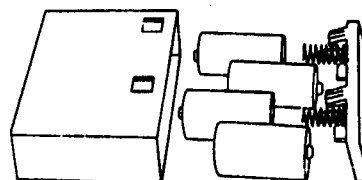
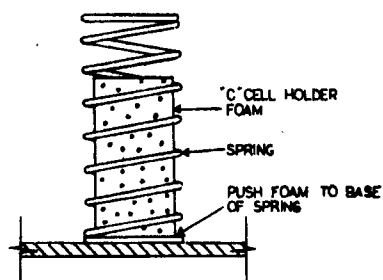
2. Note the position of each cell. The flat side of each battery cell fits against one of the four springs. There are two springs on the lid, and two in the case. The batteries fit alternating +, -, +, -.

3. Remove any weak cells and replace them with new "C" cells.

Caution: If the cells are put in backwards the detector may blow a fuse. Fuses can only be replaced by authorized service centers.

4. Line up the locking tabs on the lid with the locking tab openings on the battery holder. Snap the lid and holder together.

5. Insert the battery holder into the detector so that the decal is facing up, and the steel contacts are facing toward the insides of the detector.



Rechargeable Batteries:

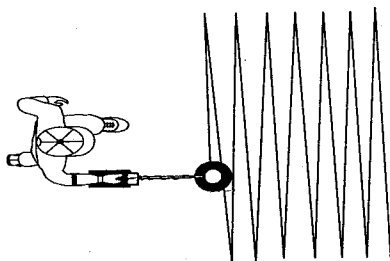
Although the SIERRA MADRE doesn't normally come with a rechargeable battery system, high quality systems are available for this model. White's rechargeable battery #802-5185 and charger #509-0020-1 are recommended. Please contact your dealer or telephone toll free, 1-800-547-6911, for more information.

Tuning & General Use

Preset: ▽P

Placing the TUNER to ▽P (Preset), AUTO GEB (automatic ground exclusion balance) to GND AUTO TRAC (ground automatic tracking), and the MODE to the HIGH, good results will be achieved in average conditions. However, it may be necessary to fine tune the detector for use in other than average ground, or simply to maximize performance for a specific type of searching. These preset positions are intended to offer generally acceptable settings. Most anxious detectorists prefer to venture out and use their new detector for the first time before they have carefully read this manual. The ▽P allows such use with surprising success. After use, the SIERRA MADRE will eventually fine tune its own ground rejection through tracking, thus improve its performance automatically. It has also been found that becoming proficient using the detector at the ▽P settings eases the learning curve, making further study a smoother and more enjoyable experience.

Keep the loop sweeping from side to side very close to the ground, always moving. Those using a detector for the first time often sweep the loop too slowly; a brisk sweep of about two seconds for each pass is desirable.

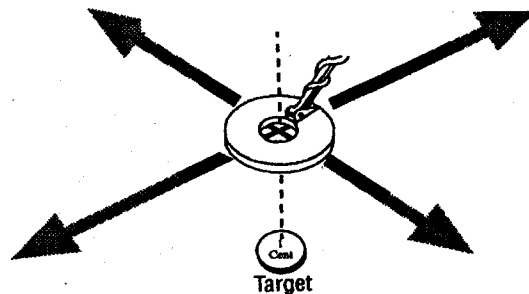


Overlap each pass by at least 50%.

Keep loop flat to the ground.



Metals produce a solid abrupt "beep". The meter deflects positive (to the right) in unison with the sound "beep". Sweep the loop over the area several times. Once the decision has been made to dig, slowly "X" the loop over the area to pinpoint its exact location. The strongest sound and furthest meter movement to the right indicate target center.



Fine Tuning:

Fine tuning the SIERRA MADRE results in an immediate improvement in performance. The keys to fine tuning are the AUTO GEB switch and the MODE control.

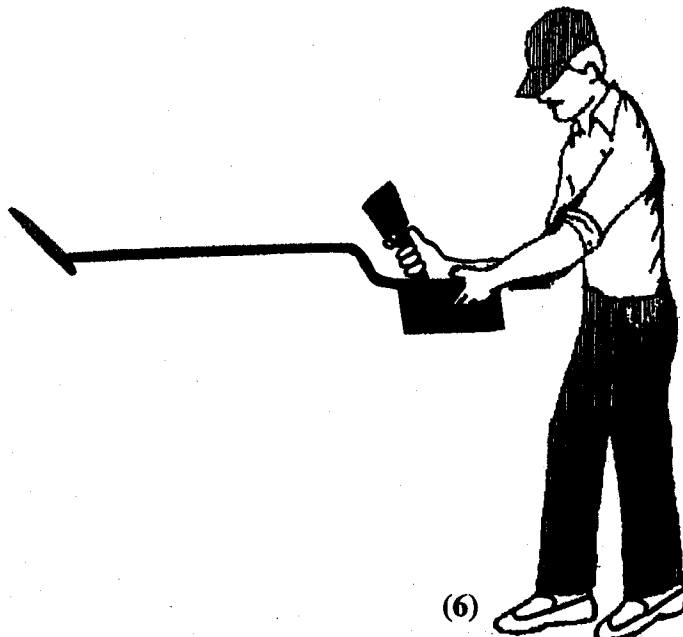
The AUTO GEB (automatic ground exclusion balance) switch sets the ground rejection. When the ground is rejected the detector can see deeper targets, and is less susceptible to ground interference.

The MODE control is used to regulate the amount of ground signal the detector's electronic circuitry can handle. The HIGH setting allows for typical high mineral ground. There are some rare areas of low ground minerals. These areas are best searched with the MODE control set to LOW. If you are unfamiliar with ground mineralization always start with the HIGH setting, reserving the LOW setting for a time when you have more experience. Each time the MODE control is changed to a different position it is best to squeeze and release the TRIGGER on the handle with the loop at waist level.

When a new area is to be searched, the following steps should be followed to maximize performance. When changing to another area, or when dramatic changes in the ground are visible, these steps should be repeated.

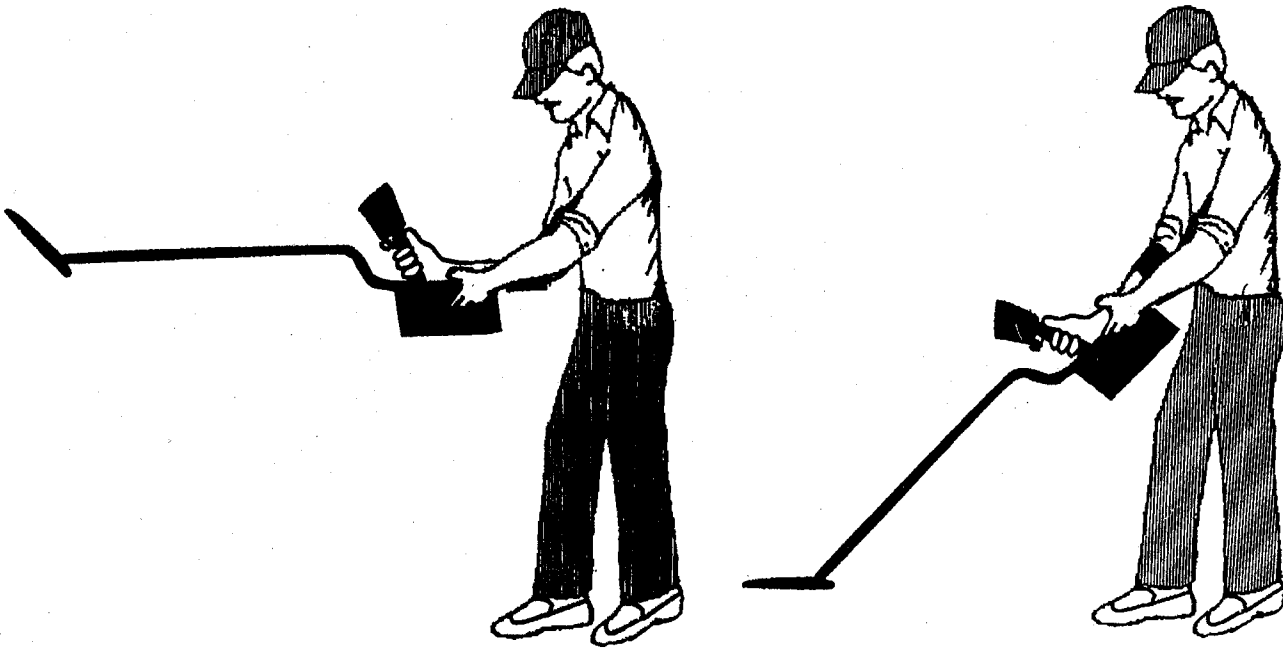
Fine Tuning Steps:

1. Set MODE to BAT. ✓, and look at the meter to assure the batteries test good.
2. Set MODE to HIGH, squeeze and release the TRIGGER on the handle.
3. Hold the loop at waist level and adjust the TUNER for a slight hum.



Fine Tuning & General Use, Continued

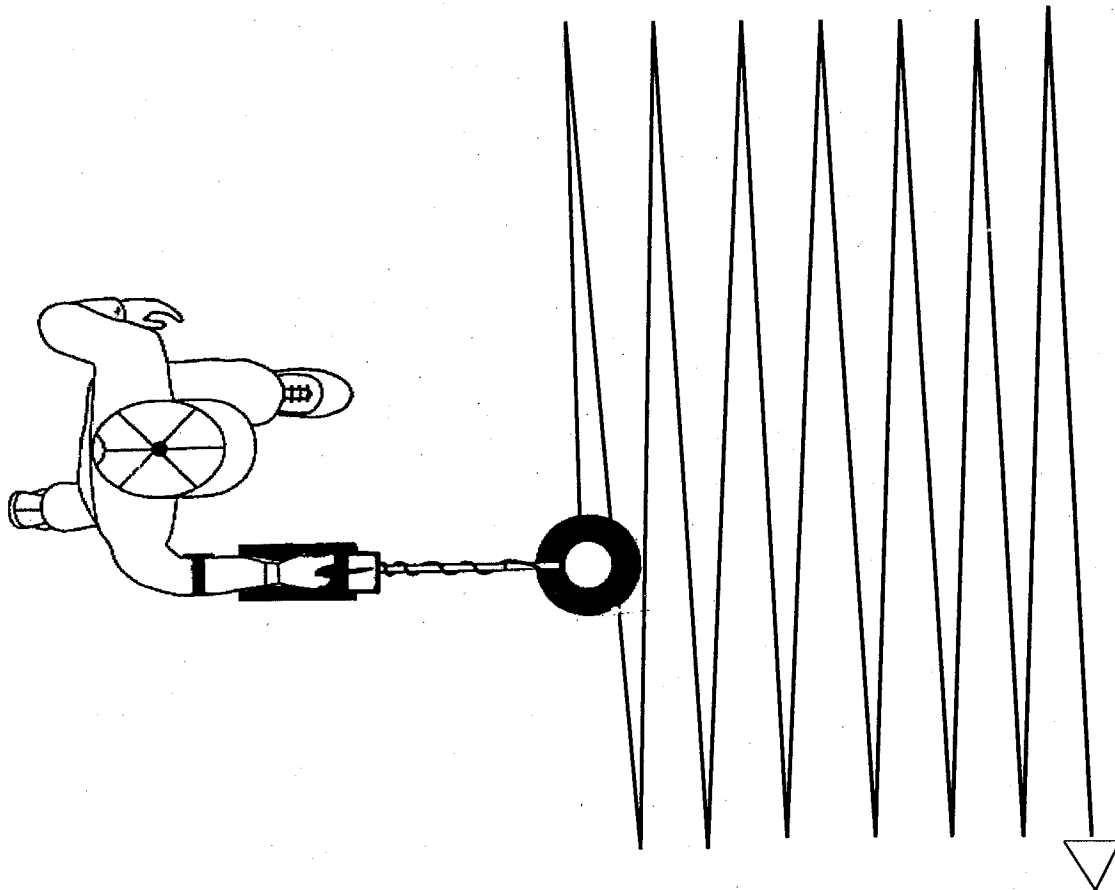
4. Push the AUTO GEB switch to the AIR position and hold it there until the detector beeps. Immediately lower the loop to the ground and pull the AUTO GEB switch to the GND AUTO TRAC position (ground auto tracking). Hold the loop steady until the detector again beeps.



5. If the ground is low in mineralization (rare) you may want to set the MODE to the LOW position, squeeze and release the TRIGGER on the handle and repeat step 4 (AUTO GEB). If you were mistaken about the ground being low in mineralization, the detector will respond to the ground (false signal) and otherwise act unstable and unpredictable. If this occurs you should switch back to the HIGH position, squeeze and release the TRIGGER on the handle, and repeat step 4 (AUTO GEB). You can then resume searching. If the SIERRA MADRE works smooth, stable, and predictably at the LOW setting, then continue to use the LOW position in that type of ground.

Fine Tuning & General Use, Continued

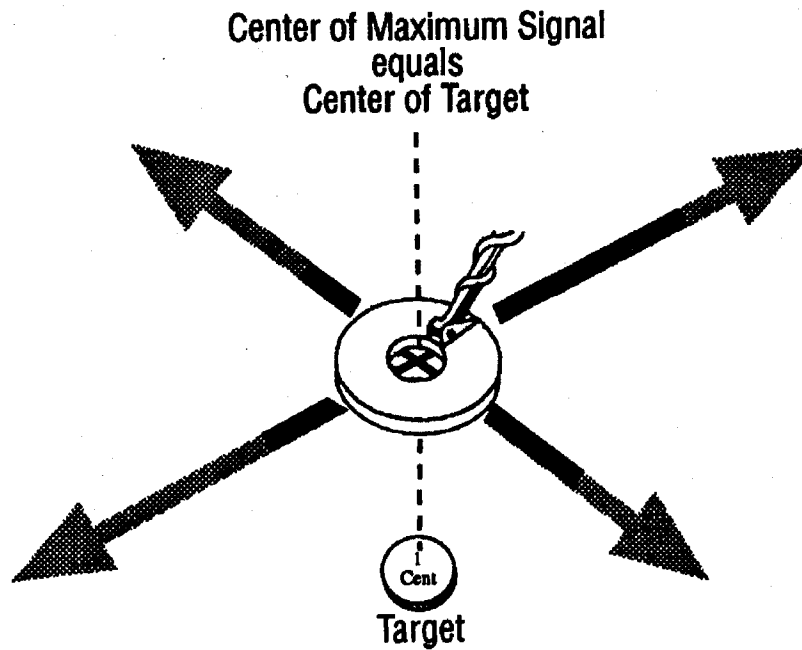
6. As searching begins, the sweep of the loop plays a critical role in how well the detector works. Sweep the loop close to the ground, from side to side, overlapping each pass. One pass from left to right should take one and a half to two seconds. Moving from right back to left, where the sweep first started, should take another one and a half to two seconds. The maximum detection depth will be in the center of the loop, thus if loop passes are not overlapped by at least 50%, some deep targets may be missed. Do not arc the sweep at each end. Keep the loop close to the ground throughout the sweep.



7. Once a solid abrupt "beep" is heard, (indicating a metal), sweep the loop over the area several times so as to roughly find the center. Consult the meter indication which will indicate the furthest positive (to the right) when the loop is directly over the metals center. Further pinpointing assistance may be achieved by squeezing and holding the TRIGGER on the handle. Squeeze and hold the TRIGGER on the handle, and "X" the loop over the area. Note the loudest sound and furthest meter movement to the right. This pinpoints the metals precise location and by sweeping the loop over the general area gives some idea as to it's size and shape. Shallow targets may be difficult to pinpoint. Lifting the loop a few inches higher and again sweeping over the area will improve accuracy in such cases.

Fine Tuning & General Use, Continued

8. Pinpointing and digging take some time and practice. Many different types of digging tools are available to help you. If you don't yet have a digging tool, contact your dealer. The type of digging tool best for your area, your type of searching, and best for you personally, is a matter of opinion. The important thing to remember is consideration. Fill in all holes you dig. Be thoughtful regarding where and when you dig. Obviously midday on a beach crowded with sun bathers, is not a good place to search. Early morning or late evening is more appropriate. If someone cares for a lawn (keeps it looking nice) and yet gives you permission to search, be equally thoughtful by taking extra steps to minimize any damage digging may do to the vegetation. The use of a small drop cloth (to place dug soil onto) is suggested in such areas. This minimizes soil smearing around the hole, making such diggings less noticeable.



9. A location to search, and getting permission, is a major part of successful metal detecting. Research always pays off. It may mean digging through old newspapers at the local library, documents at city hall, or just talking to a lot of longtime citizens. You will be surprised what you can find out, and research can be half the fun! Do not be discouraged if someone has already searched an area, that just makes for a little more challenge. No one finds all the valuables in an area even with multiple searches. Take a little more time and dig a few more targets. Often areas replenish themselves either through use, such as a beach where jewelry is continually lost, or through naturally occurring shifts in the soil, frost heave, erosion, etc., which bring previously undetected targets within reach. Sand and soil movement in many areas makes each season a new ball game.

Explanation Of Controls

1. MODE: The MODE control turns the instrument ON/OFF, tests the battery strength (BAT. √), and selects either HIGH (MINERAL) or LOW (MINERAL) ground. Special attention must be used when changing MODEs. Each time the MODE is changed the TRIGGER on the handle should be squeezed and released.

A. OFF position is selected when the detector is not in use. (Batteries should be removed when the detector is stored.)

B. BAT. CHK. Battery Check is used to check the condition of the batteries. When placed in this position, the current battery condition is shown on the meter. An indication anywhere in the BATTERY GOOD area will operate the detector. Once the battery no longer indicates in the BATTERY GOOD area, new batteries should be installed. Usually batteries last between eight and fifteen hours of use. (Battery life varies with type, temperature, mode, and volume). The use of headphones will significantly improve battery life.

C. HIGH MINERAL is the primary MODE used for general searching. It minimizes common high mineral ground effects (large ground signal). High ground mineralization typically will cause more receive signal than the electronic circuitry can handle. Such conditions result in overload of the receiver, which will cause poor detection depth. The HIGH setting compensates for such ground conditions.

D. LOW MINERAL is used in those rare areas that have little or no mineralization. It maximizes performance in such low mineral ground (minimal ground signal). Low ground mineralization typically has little or no effect on the receive signal, the LOW setting compensates for this lack of ground signal thus improving performance in such ground types.

CAUTION: If the LOW setting is used in high ground mineralization the detector will become unstable and unpredictable. Switching back to the HIGH setting, squeezing and releasing the TRIGGER on the handle, and repeating the AUTO GEB sequence will regain the stability necessary for good detection results.

Explanation Of Controls, Continued

2. TUNER: The TUNER selects the steady hum or threshold which should be heard continually during use. The TUNER should be set to a slight steady hum (threshold) each time the instrument is to be operated. Changes in temperature will change the particular area of the control needed to achieve a threshold hum.

A. To set the TUNER hold the loop at waist level away from metal and the ground, turn the TUNER control until a very slight faint hum (threshold) is heard. The TUNER control should end up near .

B. Silent Search once the threshold has been set, the TUNER can be turned very slightly toward (-) to produce silent searching until a target is detected. Doing so, some detection depth may be lost.

3. AUTO GEB: The AUTO GEB switch is used to select the actual ground rejection setting, so that ground minerals can be ignored. When ground minerals are ignored, increased detection depth and smoother operating stability are achieved. The AUTO GEB also selects whether the ground rejection setting stays as originally set (LOCK), or whether the instrument automatically updates this original setting to accommodate naturally occurring changes in the soils mineralization, (AUTO TRAC). Setting the AUTO GEB is recommended each time you use your instrument.

A. To set the AUTO GEB place MODE to HIGH, squeeze and release TRIGGER on handle. Hold the loop at waist level away from all types of metals and ground minerals and adjust the TUNER for a slight back-ground hum. Press the AUTO GEB switch to the air position and hold it there until a "beep" is heard. Immediately lower the loop to the ground to be searched and pull the AUTO GEB switch down to the GND AUTO TRAC position. Hold the loop steady until another "beep" is heard.

B. GND AUTO TRAC is recommended for most searching conditions as it automatically tracks (adjusts) to any changes in the ground. This continual updating of the ground rejection setting improves performance.

C. LOCK may be desired in areas which contain a lot of man-made decomposed iron, such as rusty iron which will tend to trick the AUTO TRAC feature (recognizing it as a mineral rather than a metal).

Explanation Of Controls, Continued

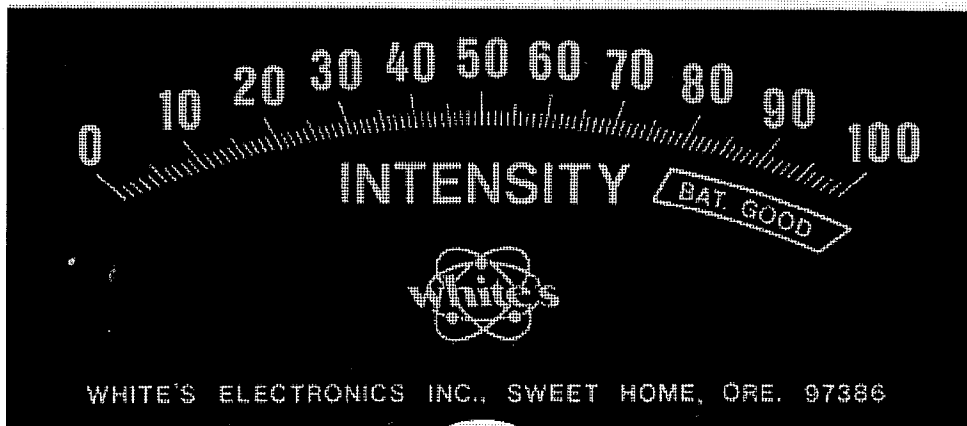
4. TRIGGER SWITCH: The TRIGGER switch located on the handle is used for several different purposes. The TRIGGER has three possible positions; "center" which is used for normal searching, "squeezed and held" which activates a temporary change in the mode, and "locked forward" which is the same as squeezing and holding except mode change is locked in.

A. Reset, clear, or retune after control adjustments or pinpointing. Most control adjustments will cause sections of the electronic circuitry to become out of sequence. Squeezing and releasing the TRIGGER will reset or clear so that all the electronic circuitry works in unison. Manual pinpointing (when the TRIGGER is squeezed and released while the loop is near a metal) will narrow the loop's detection field. This is called de-tuning. The loop's detection field will remain narrow until the TRIGGER is squeezed and released (while holding the loop away from any metal). This resets the loop's detection field allowing it to detect its widest possible search pattern.

B. Changes Mode Squeezing and holding the TRIGGER or pushing it forward locking it in place will temporarily activate the all-metal non-motion mode. This is ideal for pinpointing as the search mode requires some movement of the loop to respond to metal targets, making pinpointing difficult for some individuals. Holding the TRIGGER disengages the stabilizing motion feature. This mode can only be accessed by squeezing and holding the TRIGGER or pushing it forward to lock. Because it lacks the stability of the standard search mode it is not recommended to continually search with this mode accessed. The standard search mode is designed for general searching. This pinpoint mode is best reserved for pinpointing. Releasing the TRIGGER returns the instrument to the original mode.

The Meter

The Meter is used to test the battery strength, and provides a visual indication of a metal by deflecting positively (to the right). The meter and the sound "beep" work simultaneously to provide an indication of metal.



Fifteen Inch Loop

The optional (accessory) fifteen inch loop increases detection depth regarding physically large targets. Little or no increase in detection depth may be noted on small (coin sized) targets. The increase in detection depth applies only to physically large metal items, or a large group of small targets (jar of coins). Tuning and use of the fifteen inch loop is identical to use of the smaller loop size. Sweeping the loop a little slower is suggested when the larger loop is used. If you have trouble with the added weight of the fifteen inch loop you may consider White's Hipmount Conversion Kit, or contact your Dealer for other handle support options.

Headphones

The optional (accessory) headphones are recommended for use with the Sierra Madre. Headphones will increase battery life, reduce distractions, and allow better hearing of the signals produced by metals. Most often headphones have separate volume controls for each ear, and a stereo/mono switch. Check that each is in the correct position so that sound is heard from both ears.

Trouble Shooting

When trouble occurs with the use of a metal detector, often a person can avoid unnecessary inconvenience by reviewing the following tips.

1. False Signals or Instability can often be caused by situations outside of the detector. For example electrical interference from power lines, or other high power transmitting devices. Often these devices can be identified, sometimes they can not.

A. Try the HIGH MINERAL MODE setting, squeeze and release the TRIGGER and repeat the AUTO GEB sequence.

B. Persistent false signals may require that you try searching a different area, at least several miles away. If you really want to search a high interference area, try different times of the day or week. Often such interference is only present at scheduled times.

C. If not area related, start checking the components of the detector. The battery pack should be removed from the instrument and the contacts inside the "C" cell battery holder should be scratched clean of any corrosion buildup, and the springs should be stretched a little to assure a firm contact. The contacts on the outside of the battery holder should also be scratched clean of any corrosion. The battery contacts inside the instrument battery compartment should be pulled slightly outward toward the battery door so that they make a firm contact with the battery. The instrument control box should be checked with a different loop, either an accessory, or a friend's loop off a similar model. Your Dealer may also be able to assist you in checking the instrument. Loop problems are most often due to damaged cable, from snags on brush or blackberry vines, or simple cable wear. Inspect the cable for any visible signs of damage.

2. Moisture and Humidity, when extreme, can cause problems with all electrical circuits. Most electronics are only guaranteed to operate in up to 75% humidity, which is minimal humidity in some areas. Although the electrical circuitry of your instrument has been sealed with a plastic coating, wetness can still cause failure, particularly when the dampness is combined with salt, as occurs in many beach environments.

A. Damp Environment Use should always be followed by placing the detector in a warm dry place to dry out when not in use. Remove the batteries and leave the battery door open.

Trouble Shooting, Continued

B. Dampness Failure can often be cured simply by drying the instrument out in the above manner. Dampness failure can cause varied symptoms, everything from complete non-responsiveness to instability or false-targeting.

3. Meter Indications can be affected by static electricity. This static can get on the meter face and housing and cause improper meter indications, inaccuracy, and even total lock-up of the meter needle. Such static electricity usually comes from household or automobile carpet, or clothing. When passing your finger past the meter needle causes significant meter movement, static electricity is the problem.

A. Meter Failure should be remedied by discharging any electrical field built up in the meter housing and meter face cover. Anti-static clothes dryer sheets work well for this purpose, and can be purchased inexpensively from the grocery store. Computer stores have an antistatic spray which also works well. With the clothes dryer sheets simply wipe the black meter housing and meter face cover thoroughly. Use several of the individual sheets. With the antistatic spray, spray the meter housing and face cover, wipe dry with a cotton cloth.

B. Once Static is Removed the meter should return to normal. Removing meter static electricity may be necessary from time to time.

4. Repairs in the unlikely event your instrument requires servicing should be referred to a trained professional at an Authorized White's Service Center. Today's models require specialized equipment and training to service properly. All White's Authorized Service Centers have years of experience and their work is guaranteed by the factory.

5. The Location of the White's Authorized Service Center for your area is enclosed in the Accessories catalog. If misplaced, telephone toll free 1-800-547-6911 for their name and address. Please send the complete unit with an explanation of the trouble.

Caring For Your Instrument

Precautions:

1. Water can damage your instrument. The loop is waterproof and submersible, however the loop-to-control box connector and the control box itself are not waterproof. Light rain or drizzle will not cause a problem. However, the instrument control box must be protected from heavy rain or submersion in water.

A. The loop can be cleaned with a mild soap and water. A damp cloth can be used to wipe clean the control box. The control box can be polished with automotive or furniture wax. Use only cotton cloth to clean and wax. The instrument should be cleaned after heavy use in or around a saltwater beach. Salt is very corrosive. (The warranty does not cover cosmetic imperfections due to wear, or exposure to sun and salt.)

B. When searching with the loop in the water or wading, be careful. The rod will fill with water, and if lifted above the height of the control box, will run into the rod on top of the control box. Although sealed, some seepage can occur into and on top of the circuitry, causing malfunction. Again, drying the detector in a warm area with battery removed and compartment open will most often cure any malfunction. If for any reason the control box is dunked in saltwater, flush the entire instrument with fresh water immediately prior to letting the detector dry out.

2. Loop Covers, a protective plastic shield for the loop bottom, are highly advised accessories when searching sand or rocky terrain on a regular basis. They are available from Dealers and have no effect on detection depth. Loop covers should be removed periodically to remove any sand which can affect detector performance.

3. Heat and Cold can have an adverse effect on your detector. When not searching, rest your detector in the shade. When left in a car on a hot day, cover it to protect it from the direct sun. Extreme sub-zero temperatures can also cause problems. Store your detector indoors in a heated area during the winter months, with the batteries removed from the instrument and from the battery holder.

4. Common Sense should be used. Avoid impacts, stacking heavy objects on top, and unnecessary roughhousing. When not in use, the detector should be treated like any other sophisticated electronic device.

Owner Information

Serial Number: _____ (6 digits on inside of battery compartment door)

Date Code: _____ (6 digits on inside of battery compartment door)

Purchase Date: _____ (date on the sales receipt or invoice)

Dealer Name: _____

Dealer's Address: _____

Telephone Number: _____

Payment Method: _____

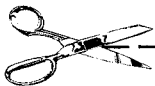
Personal Markings: _____

Warranty Information

Should you for any reason sell your metal detector prior to the warranty described on the following page expiring, the remaining warranty is transferable. This transfer is authorized by calling toll free 1-800-547-6911, and getting an authorization number.

Fill out the following information, including the authorization number obtained from the toll free number, seal it in a stamped envelope, and send it to White's Electronics, 1011 Pleasant Valley Road, Sweet Home, Oregon 97386. The remaining warranty will then be available to the new owner.

The warranty statement on the following page applies to both the original owner as well as the second owner.



Original Owner:

Name: _____

Address which appeared on original warranty card: _____

Instrument Serial Number: _____

Date Code: _____

New Owner:

Name: _____

Address: _____

Comments: _____

Authorization Code: _____

White's Electronics, Inc.

Limited Warranty

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

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

Items excluded from the warranty are non-rechargeable batteries, accessories that are not standard equipment, shipping / handling costs outside the continental USA, and shipping / handling costs inside the continental USA 90 days after purchase.

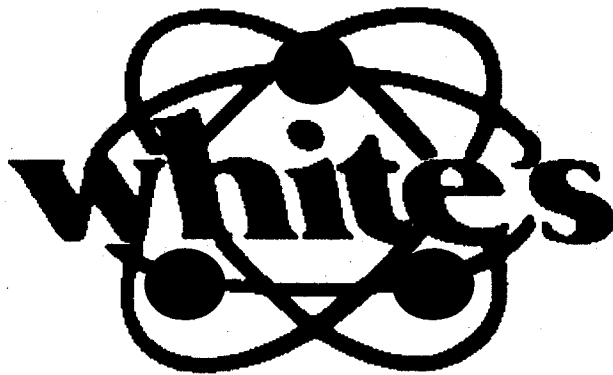
The warranty is not registered unless the Warranty Registration Card is filled out and returned to the factory address soon after original purchase for the purpose of recording this information.

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

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

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

The foregoing is the only warranty provided by White's as the manufacturer of your metal detector. Any "extended warranty" period beyond two years, which may be provided by a Dealer or other third party on your detector, may be without White's authority involvement and consent, and might not be honored by White's.



**White's Electronics, Inc.
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Sweet Home, OR. 97386 USA**

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E-Mail: whites@halcyon.com**