

# **OPERATING INSTRUCTIONS: SEA HUNTERS XL500 AND XS500 (VLF)**

## **MODEL DESCRIPTIONS**

Two Sea Hunter underwater metal detector models are produced by Garrett Electronics. These two models, XS500 and XL500, are basically the same electronically. They differ in searchcoil type, mechanical configuration, and in the manner in which they are used.

## **CAPABILITIES**

The capabilities of the Sea Hunter are many. In fact, no other underwater detector can perform all the tasks the Sea Hunter is capable of performing. The Sea Hunter can be operated both in water and over dry land. The XL500 is especially suited for this dual role, as it is equipped with both long and short stems. The XS500 is designed primarily for underwater work. Both detectors are identical except for searchcoil design and stem configuration. The Sea Hunter can be used in fresh, brackish, or high salinity water. The detector can be used over ground that has iron or salt minerals or over ground that has no minerals. The Sea Hunter can be used by prospectors in high iron mineralized areas. Gold and silver nuggets, veins, pockets, and black sand concentrations, on land and under water, can be readily detected. The operator may choose either MANUAL or AUTOMATIC operation, depending upon his/her particular operating requirements.

Garrett Sea Hunter instruments are professionally built to perform most every underwater/land task required of them. The Sea Hunter instruments use VLF/TR (Very Low Frequency Transmitter-Receiver) circuitry. With simple adjustments of the TEN TURN ELIMINATOR control, the full capabilities of the Sea Hunter circuitry can be achieved. A brief discussion of the earth's ground and water minerals will tell why the ELIMINATOR control is needed.

Many of the minerals found on the earth's surface and in the oceans are quite common and occur with great frequency. Two of these can interfere with metal detector operation: iron and salt. Natural iron is similar in appearance to iron rust and in a certain form is often referred to as "black magnetic sand" because of its dark color. Salt is a problem when it is wet. It becomes conductive and a metal detector responds to it the same as it would to metal. These two minerals, in most cases, create undesirable detector responses and operating problems.

The ELIMINATOR control on the Garrett Sea Hunter has an extremely wide adjustment range that lets the operator dial out or ELIMINATE troublesome ground and water minerals. This same control allows the operator to discriminate against or ELIMINATE detection of iron rust and trash metals. The ten-turn feature of the ELIMINATOR control extends the adjustment range and gives the operator extremely fine and accurate adjustment capability. Operation of the ELIMINATOR control is explained later in these instructions.

**SEA HUNTER XS500:** Designed basically for underwater operation. While it can be used on land, there are no provisions for long stem operation since the short stem is permanently

attached to the control housing. The short stem of the Sea Hunter XS500 allows the operator to dig and retrieve detected objects by simply extending his or her free arm ahead to a point where the searchcoil indicates the presence of an object.

The XS500 can be used with or without the arm guide and the headphones. When the headphones are not used, the operator can rely upon the meter and indicator lights and need not worry about protecting the headphone/recharge connector from water.

**SEA HUNTER XL500:** Designed for both land and underwater operation. The capability of mounting the control housing on the hip or on the upper body greatly reduces weight fatigue while searching on land. When the XL500 is used in the long stem configuration, the detector may also be conveniently used when wading. The XL500 can be used to any depth up to 200 feet (65 meters) maximum depth. Should the operator prefer short stem configuration, the control housing is preferably attached to the waist or upper body by the straps which are provided. Care should be taken to insure that the straps are attached so as not to interfere with other equipment, weight belts, etc.

## **CONTROL FUNCTIONS**

In addition to the HEADPHONES/RECHARGE CONNECTOR which will be explained later, there are three CONTROL PANEL knobs (left to right): TUNING CONTROL; OFF/SEARCH MODE/BATTERY CHECK SELECTOR; and TEN-TURN ELIMINATOR.

**ELIMINATOR CONTROL:** Permits the operator to adjust the detector to ELIMINATE detection of GROUND MINERALS, SALT WATER, and TRASH. When the ELIMINATOR control is adjusted, the following operating characteristics will be noted.

- ◆ **Ground Mineral Elimination:** When the detector is adjusted to eliminate natural iron mineral which is found in most of the earth's soil, especially in areas that contain gold, silver, and other precious metals, the detector will detect almost all metals, including gold, silver, platinum, copper, bronze, foil, and refined iron. Salt water will be detected slightly.
- ◆ **Fresh Water Elimination:** The detector will be operated in fresh water with the ELIMINATOR control set at the GROUND MINERAL, SALT WATER, or TRASH setting. Operation will be the same at all three settings, but often the bottom and beach areas of fresh water lakes and streams contain natural iron mineral. Consequently, if the operator notices that the ground or stream bottom "disturbs" the detector slightly (difficult to maintain steady threshold tuning), then the ELIMINATOR control can be adjusted to reduce or eliminate detection of these natural iron minerals.
- ◆ **Salt Water Elimination:** When the detector is adjusted to eliminate salt water, the detector will detect almost all solid (refined) metals, including gold, silver, platinum, copper, bronze, and large pieces of iron. Natural iron ground minerals also will be detected slightly. Small iron nails, rusty iron, and small pieces of iron will be eliminated. If the operator is searching in the ocean and wishes to detect all metals, INCLUDING small iron nails, rusty iron, and small pieces of iron, it will be necessary to rotate the ELIMINATOR control perhaps FULLY COUNTERCLOCKWISE. At this setting, salt water will be detected slightly. To insure the

control is rotated FULLY COUNTERCLOCKWISE, rotate the control ten turns COUNTERCLOCKWISE. (see also **SPECIFICATIONS**, **IMPORTANT TUNING NOTE**.)

- ◆ **Trash Elimination:** When the detector is adjusted to eliminate detection of trash, the detector will detect almost all solid (refined) metals, such as gold, silver, platinum, copper, bronze, and large pieces of iron. The detector may detect natural iron mineral and salt water slightly.
- ◆ **Note:** The Sea Hunter contains sophisticated, state-of-the-art electronic circuits which give the operator an extremely wide range of operating characteristics and capabilities. The operator should learn the above ELIMINATOR control settings to achieve maximum performance from the Sea Hunter.

**OFF/SEARCH MODE/BATTERY CHECK SELECTOR:** This is the main power/mode/battery check control. The operator can select either Manual or Automatic search mode or check the batteries.

**TUNING CONTROL:** This control allows the operator to “tune” the detector by adjusting the audio or meter to the desired level.

## **OPERATING INSTRUCTIONS**

**SIMPLIFIED OPERATING INSTRUCTIONS:** So that the operator may learn to adjust the Sea Hunter for most operating conditions quickly, the following simplified operating instructions are given. These are the same instructions printed on the Sea Hunter top label. (Make adjustments and check batteries before diving.) Slight readjustments may be required when submerged.

ROTATE:

- 1) CENTER KNOB TO AUTOMATIC
- 2) LEFT KNOB FOR FAINT SOUND
- 3) RIGHT KNOB TEN TURNS COUNTERCLOCKWISE, THEN ADJUST FOR ONE OF THE FOLLOWING:
  - a) GROUND ELIMINATION or FRESH WATER OPERATION: Rotate ONE TURN CLOCKWISE, then small plus/minus (+ or -) adjustments as needed to achieve no audio sound change as searchcoil is quickly lowered to two inches above ground.
  - b) SALT WATER ELIMINATION: Rotate SIX TURNS CLOCKWISE, then small plus/minus (+ or -) adjustments as needed to achieve no audio change as searchcoil is quickly lowered to the bottom. Start with the searchcoil below the surface of the water.
  - c) TRASH ELIMINATION: No trash eliminations, NO TURNS; rusty iron, THREE TURNS; small iron trash, TEN TURNS CLOCKWISE.

Search in AUTOMATIC or set to MANUAL and retune (step 2) as needed.

**EXPANDED OPERATING INSTRUCTIONS:** These expanded instructions are given so that the operator will have a better understanding of the detector controls and capabilities.

**Tuning Control:** Permits the operator to adjust the level of tuning. THE OPTIMUM, MOST SENSITIVE TUNING POINT (CALLED THRESHOLD) IS WHEN THE SOUND, AS HEARD THROUGH THE HEADPHONES, IS BARELY AUDIBLE. The Tuning Control should not be adjusted for a loud sound. It should be adjusted so that when the detector is not detecting metal, the audio sound is barely discernable.

**Off/Search Mode/Battery Check Selector:** The five positions of this control are described as follows:

- ◆ **OFF:** All battery power is turned OFF in this position
- ◆ **MANUAL:** All battery power is turned ON in this position. The detector is operating in the MANUAL MODE. When any environmental or detector changes (temperature, battery voltage change, etc.) cause the detector TUNING LEVEL to change, it is necessary to adjust the TUNING CONTROL to achieve FAINT THRESHOLD SOUND as explained in the preceding Tuning Control paragraph. To set or reset the THRESHOLD, simply turn the TUNING CONTROL to the desired position.
- ◆ **AUTOMATIC:** All battery power is turned ON. The detector is operating in the AUTOMATIC MODE. The detector's circuit AUTOMATICALLY RETUNES THE DETECTOR TO THE OPERATOR'S PRE-SET THRESHOLD when any environmental or detector changes occur. Should the TUNING CONTROL be bumped or accidentally turned, the THRESHOLD must again be reset according to the instructions given in the TUNING CONTROL paragraph.
- ◆ **BATTERY CHECK 1:** In this position, the batteries for the detection circuit are checked. The detector should be operated for at least one minute before the batteries are checked. When the meter pointer drops to the left of the BATTERY ZONE or when detector operation becomes erratic, batteries should be recharged. (See following paragraphs on NiCad rechargeable batteries.)
- ◆ **BATTERY CHECK 2:** In this position, the battery for the audio circuit is checked.

**Eliminator Control:** This TEN TURN control gives the operator sufficiently wide range tuning to set the detector to perform any task and operate under all environmental and ground/water conditions. Depending upon whether the operator wants to operate over the earth's iron mineralized ground, in or over salt water, or to eliminate detection of trash items, the ELIMINATOR control should be adjusted as described below. (See **SPECIFICATIONS, IMPORTANT TUNING NOTE.**)

- 1) Turn the center control to MANUAL or AUTOMATIC. AUTOMATIC is easier because the detector's circuit keeps the audio THRESHOLD set automatically.
- 2) Adjust the left knob for faint THRESHOLD sound.
- 3) Rotate the ELIMINATOR control ten turns COUNTERCLOCKWISE, then adjust for one of the following:
  - a) **GROUND ELIMINATION OR FRESH WATER OPERATION:** Rotate the control one turn CLOCKWISE. Lower the searchcoil quickly to two inches above the ground or bottom. If no audio or meter change is observed, the detector is correctly tuned for the ground or water. (A small audio or meter change may be acceptable.) If there is an INCREASE in the audio or meter indication, rotate the ELIMINATOR control about one-half turn CLOCKWISE (toward "+"). If the detector is operating in MANUAL, a slight adjustment of the TUNING CONTROL may be necessary to bring the detector back to the AUDIO THRESHOLD.

Quickly lower the searchcoil to two inches above the ground or bottom. If no audio or meter change is noted, the detector is correctly tuned. If, however, the audio or meter indicates a DECREASE, the ELIMINATOR CONTROL has been rotate CLOCKWISE too far. Rotate the control one-quarter turn COUNTERCLOCKWISE (toward “-“) and again test by quickly lowering the searchcoil to two inches above the ground or bottom.

Continue this procedure until no (or slight) change is noted in the audio and meter.

- b) SALT WATER ELIMINATION: Rotate the control six turns CLOCKWISE. Begin with the searchcoil well below the surface of the water and lower it quickly to the bottom. If there is not (or small) audio and meter change, the detector is correctly tuned for salt water operation. If and INCREASE or a DECREASE in the audio or meter is noted, follow the same procedure given under section “a” until there is no (or slight) change in the audio or meter.
- c) TRASH ELIMINATION: Rotate the control:

NO TURNS for NO TRASH ELIMINATION (detect all metals);  
THREE TURNS for RUSTY IRON ELIMINATION;  
TEN TURNS for SMALL IRON TRASH ELIMINATION.

Test “ELIMINATION” by quickly bringing the chosen trash target sample to within one inch of the bottom of the searchcoil. If the trash target produces an increase in the audio and meter, rotate the control one-half turn further CLOCKWISE and test again. Continue slight adjustments until the trash target you want to eliminate causes no increase in audio or meter. **NOTE:** Small aluminum trash, such as pulltabs and screw caps, and large pieces of most metals cannot be eliminated.

### **Important Notes:**

- 1) If your Sea Hunter is equipped with a CO-PLANAR searchcoil (standard on XL500), an INCREASE in audio and meter will be noted when your selected TRASH TARGET is brought closer than one inch to the bottom of the searchcoil. This “back reading” effect does not occur with CO-AXIAL searchcoils which are standard on the XS500.
- 2) When any type detector is operated in AUTOMATIC MODE and the detector is adjusted to eliminate (discriminate against) trashy iron objects, an “overshoot” phenomenon occurs. You can observe this for yourself. Set your detector to AUTOMATIC and adjust ELIMINATION until the detector produces no audio or meter change when, for example, a small nail is brought up to within one inch of the bottom of the searchcoil.

At a moderate or normal speed, move the nail past the searchcoil, keeping the nail at least one inch away from the bottom of the searchcoil. You will note that as the nail approaches the bottom of the searchcoil, the audio and meter will DECREASE slightly. Then, as the nail reaches the trailing edge of the searchcoil and passes beyond, the audio and meter will INCREASE momentarily. The audio will sound exactly as if metal has been detected. This phenomenon is a function of automatic operation and cannot be eliminated. Notice,

however, that once you become familiar with this phenomenon, you will no longer be bothered by it.

**Scanning Speed and Characteristics:** Whether the Sea Hunter is used on land or under water, a slow methodical scanning speed pattern is recommended. Keep the searchcoil about one to two inches above the surface to be scanned. Scan at a speed of about two feet per second or slower, moving the searchcoil side to side in front of you. At the end of each sweep, advance the searchcoil approximately five inches. Since the searchcoils are approximately eight inches in diameter, the five-inch advancement will give a desirable overlapping that will insure that no buried or concealed metal objects are missed.

**Batteries:** Your Sea Hunter comes equipped with Ni-Cad rechargeable batteries. Listed below are some tips that will help you achieve maximum battery life:

- ◆ When possible, keep the batteries fully charged,
- ◆ Do not leave the batteries for long periods of time in a discharged or partially discharged condition.
- ◆ Do not discharge the batteries the same amount between charges. For example, on one day, use the batteries one hour; the next day, two hours, or even only one-half hour; etc. This irregular use before each charging will prevent the batteries from acquiring an undesirable "set" battery life.
- ◆ Do not use any rechargers other than the 110v or 12v that are supplied with this equipment.
- ◆ While battery manufacturers say that you cannot over-charge batteries, it is best not to let them recharge longer than about one day. Fifteen hours insures full charge. (The detector's two charging lights will come on when the batteries are being recharged. The lights will not come on when there is no charging source or if the batteries are not charging for some other reason.)

## **SPECIFICATIONS**

**Circuit Type:** VLF/TR (Very low frequency ground canceling/transmitter-receiver discrimination.)

**Frequency of Operation:** 15 kHz.

**Searchcoil Type:** XS500: 8 inch (20 cm) co-axial. XL500: 7.5 inch (19cm) co-planar

**Detection Outputs:** Headphones, meter and LED lamps.

**Depth Capability:** Factory tested and certified to 200 feet (65 meters), or seven atmospheres.

**Buoyancy:** XS500: Near Neutral. XL500: Slightly negative.

**Maintenance:** No periodic maintenance required aside from washing sand and salt residue off the detector. To avoid causing high internal temperatures, keep equipment in a cool location, out of the sun when not in use.

**Batteries:** Three Ni-Cad 9v. rechargeables.

**Detector Circuit Power (Current) Drain:** Operating quiescent at threshold sound (no detection of metal): 12 MA Battery 1, 2 MA Battery 2. Operation while detecting large metallic object: 14 MA Battery 1, 30 MA Battery 2. Operating life per charge is approximately 10 hours.

**Weight in Air:** Sea Hunter XS500 w/arm guide and headphones: 9.5 lbs; 4.3 kgs.  
Sea Hunter XL500 w/long stem, arm guide and headphones: 8.6 lbs; 3.9 kgs.  
Sea Hunter XL500 w/short stem, and headphones: 7.5 lbs; 3.4 kgs.  
Sea Hunter control housing: 3.8 lbs; 1.7 kgs.  
Headphones: 1.4 lbs; .62 kgs.

**Notes:** The headphones, 110v recharger and 12v recharger all use the same type of connector. They all plug into the control panel HEADPHONES/RECHARGE connector.

Plastic certification tags are installed at the factory to indicate the unit has been tested at pressures equivalent to those at a 200-foot depth. The factory warranty does not cover water damage done to any components mounted inside the Sea Hunter control housing if the Garrett certification seal is removed.

The headphones use liquid-filled ear cushions. Use caution when utilizing the headphones so as not to puncture cushions.

Before diving, make the following checks:

- ◆ Test batteries according to BATTERY CHECK paragraph.
- ◆ Test detector to insure it is detecting metal properly.
- ◆ Visually check the detector, earphones, and all seals.

**Important Tuning Note:** The Sea Hunter circuitry is designed so that the operator, by adjusting the TEN-TURN ELIMINATOR, can eliminate the disturbing effects of salt water and the earth's natural iron (black magnetic sand). The detector can be adjusted to eliminate one or the other, NOT BOTH simultaneously. For example: In a few ocean areas, black sand is present on the beach and/or the ocean bottom. When the detector is adjusted to eliminate salt water, then black sand, if present, will be detected. The greater the amount of black sand or the more non-uniform its consistency, the greater will be the problem. To help alleviate this problem, the operator can try: 1). Different adjustment settings of the TEN TURN ELIMINATOR control, 2). Operating the detector in AUTOMATIC SEARCH mode, 3). Scanning the detector with the searchcoil held several inches above the surface being searched, or 4). Various combinations of the above suggested procedures.

## **MAINTENANCE**

- ❖ Always remember that your Sea Hunter is a sensitive electronic instrument. It is built to withstand rugged treatment in the outdoors. Use your Garrett detector to the fullest extent possible, and never feel that you have to *baby* it. Yet, always protect the detector and handle it with reasonable care.
- ❖ Try to avoid temperature extremes as much as possible, such as storing the detector in an automobile trunk during hot summer months or outdoors in sub-freezing weather.

- ❖ Keep your detector clean. Wash sand and salt residue off the detector immediately after each use.

## **REPAIR SERVICE**

In case of difficulty, read this Owner's Manual again thoroughly to make certain your detector is not inoperable needlessly. Your dealer may also be able to offer advice.

When your Sea Hunter must be returned to the factory for service, always include a letter that describes its problem as fully as possible. Before you return your detector to the Garrett factory, make certain:

- ❖ You have read this Owner's Manual carefully.
- ❖ You have checked batteries, switches and connectors. (Check *batteries* especially closely. They are the most common cause of detector "failure".)
- ❖ You have checked with your dealer, particularly if you are not familiar with an underwater detector or NiCad batteries.
- ❖ You have included a note with the detector describing the problems you are encountering with this detector and conditions under which they occur. Make certain to include your name, address and a phone number where you can be contacted between 8:30 a.m. and 4 p.m., Central Time.
- ❖ You have carefully packed the Sea Hunter in its original shipping carton or other suitable box. Make certain that proper insulation or packing material is used to keep all parts secure. Do *not* ship stems or headphones unless they are part of the problem. Be certain to return all coils, unless the problem is mechanical.
- ❖ Ship to Garrett Metal Detectors, 1881 W. State St., Garland, TX 75042.
- ❖ You can call Garrett's Customer Service Department (972-494-6151) if you have further questions.
- ❖ Please allow approximately one week for Garrett technicians to examine and repair your detector after they receive it, plus another week for return shipping to you. All equipment will be returned UPS or parcel post unless written authorization is given by you to ship collect by air parcel post, UPS Blue (air) or air freight.

## **MIND YOUR MANNERS**

When searching on land, filling holes is but one requirements of a dedicated metal detector hobbyist. A sincere request that Charles Garrett makes to every user of one of his detectors is that each place searched – on land or in the water - be left in a better condition than it was found. Thousands of individuals and organizations have adopted this formal Metal Detector Operators Code of Ethics:



- ❖ I will respect private and public property, all historical and archaeological sites and will do no metal detecting on these lands without proper permission.
- ❖ I will keep informed on and obey all laws, regulations and rules governing federal, state and local public lands.
- ❖ I will aid law enforcement officials whenever possible.
- ❖ I will cause no willful damage to property of any kind, including fence, signs and buildings and will always fill holes I dig.
- ❖ I will not destroy property, buildings or the remains of ghost towns and other deserted structures.
- ❖ I will not leave litter or uncovered items lying around. I will carry all trash and dug targets with me when I leave each search area.
- ❖ I will observe the Golden Rule, using good outdoor manners and conducting myself at all times in a manner which will add to the stature and public image of all people engaged in the field of metal detection.

## **WARNING!**

Any metal detector may discover underground power lines, explosives or other items which when struck could cause personal injury. When searching for treasure with your Sea Hunter, observing these precautions:

- ❖ Do not hunt in an area where you believe there may be shallowly buried underground electric lines or pipes.
- ❖ Do not hunt in a military zone where bombs or other explosives may be buried.
- ❖ Avoid striking any line known to be or suspected to be carrying electrical power.
- ❖ Do not disturb any pipeline, particularly if it could be carrying flammable gas or liquid.
- ❖ Use reasonable caution in digging toward *any* target, particularly in areas where you are uncertain of underground conditions.

**PATENT PROTECTION:** Proof of Garrett's excellence is the recognition given them by the following United States patents: 4,709,213; 4,488,115; 4,700,139; 4,398,104; 4,423,377; 4,303,879; 4,334,191; 3,662,255; 4,162,969; 4,334,192; 5,148,151; 5,138,262; 5,721,489; 5,786,696; 5,969,528; Design 274,704 and 297,221; Design 333,990; G.B. Design 2,011,852; Australia Design 111,674 and other patents pending.