OPERATING INSTRUCTIONS:

INFINIUM LS

The Infinium LS is an extremely versatile detector, offering five (5) mounting/stem arrangements to suit your search needs.

- Long stem with the housing mounted above or below the stem.
- Long stem with the housing mounted below the cuff assembly.
- Short stem with mounting as above for diving.
- Belt mounting leaving the stem free of housing. This may be used with either stem configuration.

ASSEMBLY INSTRUCTIONS

Choose the desired operating stem/housing configuration and assemble the stem.

1. Compress the button ends of the spring clip and insert, button end first, into the lower stem of the detector so that the button ends pop out of the holes. This will enable the lower stem assembly to be attached to the upper stem and the over all length of the detector adjusted for a comfortable operating length.
2. Attach the lower stem to the searchcoil by inserting the two rubber washers into the stem and slipping the searchcoil onto the stem. Insert the threaded bolt through the holes and hand-tighten the two knobs.
3. Install the upper stem to the lower and adjust for the most comfortable operating length. At this time adjust the cuff positioning as desired for your comfort in the field.
4. Wrap the searchcoil cable snugly about the stem with the first turn of the cable over the stem.
5. Insert the cable connector into the connector on the detector housing and hand-tighten securely. Do not over tighten. Ensure that the searchcoil connector is clean and the o-ring is lubricated. If necessary use a very small amount of silicon grease or petroleum jelly. Do not coat the connector pins with lubricant.
6. Perform a battery test by turning the detector on. Note the number of audio tones that occur. Pass a metal target such as a coin beneath the searchcoil to confirm metal detection.

CONTROL FUNCTIONS

Familiarize yourself with the detectors controls. Their basic functions are given here. How they can help you find treasure is explained in the Operating Instructions of this Manual.

Power:

- Turns the detector on. The batteries are checked automatically and audibly each time the detector is turned on.
- Turns the detector off.

- Selects one of the three (3) Automatic Ground Track positions; *Slow, Lock*, or *Fast*.

Raise searchcoil approximately two feet above the ground. Rotate this knob to turn the detector on and the detector begins operating. Each time the detector is turned on the battery condition is reported audibly. Three or more tones and the batteries are very good, two tones and the batteries are adequate. One tone or no tone and the batteries need to be replaced or recharged.

Threshold:
This control on the lower left of the detector panel allows the operator to adjust precisely the level of sound generated by the detector. It is suggested that this sound level be adjusted to a threshold level where it is barely audible when searching.

Discrimination Adjustment:
Located on the upper left of the detector faceplate panel. Use the Discrimination knob to choose the level of trash rejection appropriate to your search needs. As the control knob is rotated clockwise more items are eliminated from detection.

Headphone Jack:
Located on the upper right of the detector panel. Land Headphones are included with the Infinium LS. Underwater headphones are an Optional Accessory for the detector.

OPERATING INSTRUCTIONS

The following procedure shows just how easy it is to operate the Infinium LS detector.

Turn On/Battery Test:
- Turn on the detector and note the results of the automatic battery check represented by number of audio tones. Three or four tones and the batteries are good, two tones indicate they are adequate. When one tone or no tone is sounded, replace or recharge the batteries.
- Scan a metal object to confirm detection.

Selecting Automatic Ground Track settings:
- Know the conditions of the area to be searched.
- Initially select the *Lock* position. Operating in the Lock position is recommended for maximum detection depth unless:
  The detector is not properly ground balanced, or
  You are hunting in changing ground conditions that require continuous ground tracking.
- Improper ground balance or changing ground minerals are identified by erratic audio signals caused by the ground. If you experience these signals, you will need to switch to either *Fast* or *Slow*. It is recommended that the detector be ground balanced before continuing.
- To ground balance the detector, turn the Automatic Ground Track control to either *fast* or *slow*, and bounce the coil about two to six inches above the ground. When the detector's audio signal becomes smooth turn the control to *lock* and the unit will lock the ground track setting at this value.

- If erratic signals continue, you may need to turn the Automatic Ground Track Control to *slow* or *fast* and hunt in one of those modes.
  Use Slow when:
  - Operating over slowly changing ground mineralization, or
  - When small ground balancing adjustments are needed.

  Use Fast When:
  - Hunting over extreme or quickly changing ground mineralization, or
  - When large ground balancing adjustments are needed.

  Improper ground balance will degrade detection depth and audio stability. It should not be necessary to re-ground balance every time you turn the detector on. It will continue to operate with the same ground balance level as before the detector was turned off.

  In the rare event that extreme ground conditions continue to produce audio signals, increase the discrimination control setting in small increments until the detector becomes stable. To insure the maximum possible detection depth, only increase discrimination enough to achieve detector stability. This adjustment should never exceed the number three (3) setting on the dial.

- Adjust the audio threshold level to the desired setting. Typically this level is set to the point that the threshold sound is just audible, barely above being silent.
- Set the Discrimination Control to zero or at least a very low level until you can determine the types and amount of trash metal is present. Discriminate only the minimum amount of items to insure that all acceptable targets are located to maximize your search goals.

Bench Testing and Understanding Audio Signals:

- Bench testing is recommended to familiarize yourself with the detection capabilities and audio responses of the detector. This will help determine if a target is treasure or trash. Since Pulse Induction detectors only give audible clues to the identity of detected targets, it is important to learn these different signals. The Infinium LS produces "All-Metal" type audio and you will therefore hear every target. The audio response may vary in volume or sharpness unlike the hard, sharp report of a VLF motion-mode detector.
- Tests should be performed with the searchcoil perpendicular to a bench, floor, or other non-metallic surface and several feet away from any large metallic object. Pass various metallic targets across the bottom of the searchcoil at a distance of about three inches. Listen carefully to the audio tones, noting which targets produce high and low tones and how the target response changes with discrimination. Due to the extreme sensitivity of the Infinium LS, when testing the detector in the house or near any electrical device expect the audio threshold to be less stable than you will find it to be in the field.
- As a general rule, poor conductors(small nuggets, most rings, pull-tabs, nickels, etc.) should produce a high tone followed by a low tone echo. Good conductors such as large nuggets and coins, other than the nickel, should produce a low tone followed by a high tone echo. In addition most iron will produce a low tone followed by a high tone echo, since to a PI detector iron behaves like a good conductor.

Searching:

- Scan the searchcoil at a speed of about one-half to two feet per second at a constant height above the ground of about one to two inches. An audio increase will indicate the presence of metal beneath the coil.

Reverse Discrimination Technique:
When a target has been discovered while operating a minimum discrimination, you may use the reverse discrimination technique to help determine the possible target identification.

- Once a target is located, increase the discrimination to the maximum level (Iron Check).
- If the target still produces a substantial audio signal there is a good chance it is an iron target. If the target audio disappears or produces only a faint signal, then it is probably a desirable target and not iron. Be aware that some small rusted iron may respond as a desirable target and some desirable targets such as large nuggets and coins may respond as an iron target.
- As with all PI detectors, eliminating the detection of iron is difficult if not impossible; however, the reverse discrimination technique is effective in identifying most iron.
- Additionally, using a magnet to separate bits of iron and other debris from you treasure finds.
- Finally, it is important to remember that any detection signal, no matter how loud or faint, represents the presence of metal and the source should always be identified.

Pinpointing Tips:
Whenever your detector locates a target, locating it precisely will enable its recovery by digging the smallest hole possible. This is accomplished by pinpointing. Pinpointing techniques with a DD Searchcoil and a Mono Searchcoil are different and are explained below.

Pinpointing with a the Power DD Searchcoil

- The power DD coil has a narrow detection field that runs front to back through the center of the coil lengthwise. Therefore it is important that your scan path be flat, level, and side to side.
- First scan over the target area noting the location where the loudest signal occurs. Once that area is located, turn 90 degrees from the target area and re-scan the target to pinpoint the exact location. For targets on or close to the surface, start behind the targets suspected location and scan the area using short sweeps while moving forward until the target is pinpointed beneath the tip of the coil.

Pinpointing with Mono Searchcoils

- Scan the target area slowly, noting the location where the loudest signal occurs. Then draw the imaginary “X” on the ground by scanning the searchcoil front to back. The center of the “X” is the location of the target.
- Note: The Infinium is a motion mode only detector; the searchcoil must be moving slightly in order to maintain a detection sound.

Adjusting Frequency
You may subtly adjust the operating frequency to reduce interference caused by other detectors or power lines if necessary. To adjust the frequency:

- Turn the Threshold dial beyond “MAX” to “Freq. Adjust” and you will notice that the audio threshold was increasing, then abruptly dropped to a lower level. The detector is now in a “Frequency Adjustment Mode”.
- You can now adjust the operating frequency using the Discrimination control knob. Incrementally adjust the Discrimination knob, pausing after each adjustment to listen, until

you obtain minimum interference. Note that there are 32 different frequency settings to choose from so turn the dial in very small steps.

- Once you obtain the quietest frequency, return the Threshold knob to your normal setting and the frequency will lock at the chosen value.
- Return the Discrimination knob to your normal setting.
- When the detector is turned OFF/ON, it will always return to the factory default operating frequency.

Batteries:
The Infinium LS requires eight (8) AA batteries. When replacements are required use only high quality carbon, alkaline or rechargeable batteries. Each time the detector is turned on the batteries are checked automatically and audibly. Four or three tones indicate the batteries are very good, two tones indicate the batteries are adequate. One tone or no tone indicates that the batteries should be replaced or recharged.

Battery Replacement:
The batteries are located inside the electronic housing with access at the rear of the housing. To access the batteries, unscrew the battery cap at the rear of the detector housing by hand; DO NOT use tools. The o-ring should remain in the control housing while the battery pack slides out. When installing batteries ensure that the correct polarity is observed. Re-install the battery pack by placing the contact end of the pack in the housing with the contacts down. Verify that the o-ring is well lubricated and free from debris. Add a little silicone grease or petroleum jelly if necessary. Re-install the battery cap, hand tightening it until it is flush with the housing and the two index marks are aligned.

Note: Always use high quality batteries such as Alkaline or nickel metal hydride in this detector. And, always remove them from the detector and the battery holder when storing the detector for long periods.

SEARCHCOILS: The Infinium LS has three searchcoils available for its use. Chose your searchcoil for underwater searches based upon the same criteria used for land searching. Generally one will wish to use a smaller coil for smaller targets. Likewise in fresh water environments, the Mono coils may prove to be the coils of choice due to the presence of less ground minerals. In salt water and areas of high ground minerals, the Power DD is the coil of choice.

The 8” Mono searchcoil, which provides excellent depth and good scanning width is the most popular size used for general searching in areas of light to moderately mineralized soil.

The 10 x 14” Mono searchcoil provides the ability to cover more area and search at a greater depth in light to moderately mineralized soil. This coil is ideal for searching deeper particularly for larger targets both on land or underwater.

The 10 x 14” Power DD searchcoil is the coil supplied with the detector. This coil when coupled with the API –Advanced Pulse Technology—of the Infinium LS make it the most powerful detector in mineralized soil.

Cautions:

1. If the battery compartment becomes flooded, remove the batteries immediately, rinse the compartment with fresh water and allow it air dry. The electronic compartment is factory sealed and should never be opened.
2. Before diving always examine the searchcoil and headphone connectors and the battery cap. Verify the battery strength by operating the detector for a few moments prior to field use.
3. Dive with extreme caution. Observe diving practices to lessen the risks of becoming entangled with the headphone or searchcoil cables. Ensure that the headphone vent holes are open prior to diving.
4. When using the hip mount configuration while diving, ensure that the belt will not interfere with equipment removal in the event of an emergency.

OPERATING RECOMMENDATIONS

The Garrett Infinium LS has been designed to hunt everywhere, especially in mineralized areas, where the performance of conventional detectors suffers. Some of those areas are:

- Prospecting—gold is usually found in highly mineralized soil
- Relic Hunting—most Civil War battle sites took place in areas of high ground minerals
- Beach hunting and diving—any salt water is considered a mineralized environment
- Mine detecting–environmental—proof package is rugged and will operate anywhere.

As you operate and use your Garrett detector, you will quickly grow more proficient in its use. It is recommended that you build your own test plot. Bury several items, including a nail, a piece of foil, a pulltab, a bottlecap and several coins at depths of about two to eight inches and a foot apart. Clearly mark the location where each article is buried. Practice scanning the targets while listening to and studying the detection signals.

Remember that newly buried objects, especially coins, will be somewhat more difficult to detect than items that have been buried for some time. This is primarily a metallurgical phenomenon. Experiment with the various operating modes to see how your detector responds. Practice trying to pinpoint and locate targets precisely.

When scanning, **do not hurry**. Scan the searchcoil at a speed of about one to two feet per second. Keep the searchcoil flat and level to the ground. Move it back and forth slowly and steadily while you walk at a pace that is comfortable. Be methodical. Do not skip any areas. Wear headphones for greater sound perception and concentrate on your scanning.

After you have operated your Infinium LS for only a short time, you will be surprised at how proficient you have become it its use. Do not expect to achieve the greatest accuracy and success, however, until you have operated the detector for at least 100 hours or more.

Good hunting!

MAINTENANCE

- Always remember that your Garrett detector is a sensitive electronic instrument. It is built to withstand rugged treatment in the outdoors, but you should always handle the detector as carefully as possible.

- 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. Always wipe the housing after use, and wash the coil when necessary. Protect your instrument from dust and sand as much as possible.

- Disassemble the stem and wipe it clean after use in sandy areas.

- When storing longer that about one month, remove batteries from the detector.

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 detector 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 this type of metal detector.

- 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 detector 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

Filling holes and obeying *no trespassing* signs are but two 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 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 Infinium LS, observe 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.