

**FISHER** RESEARCH  
LABS

# **GOLD BUG<sup>®</sup>** *Tracker*

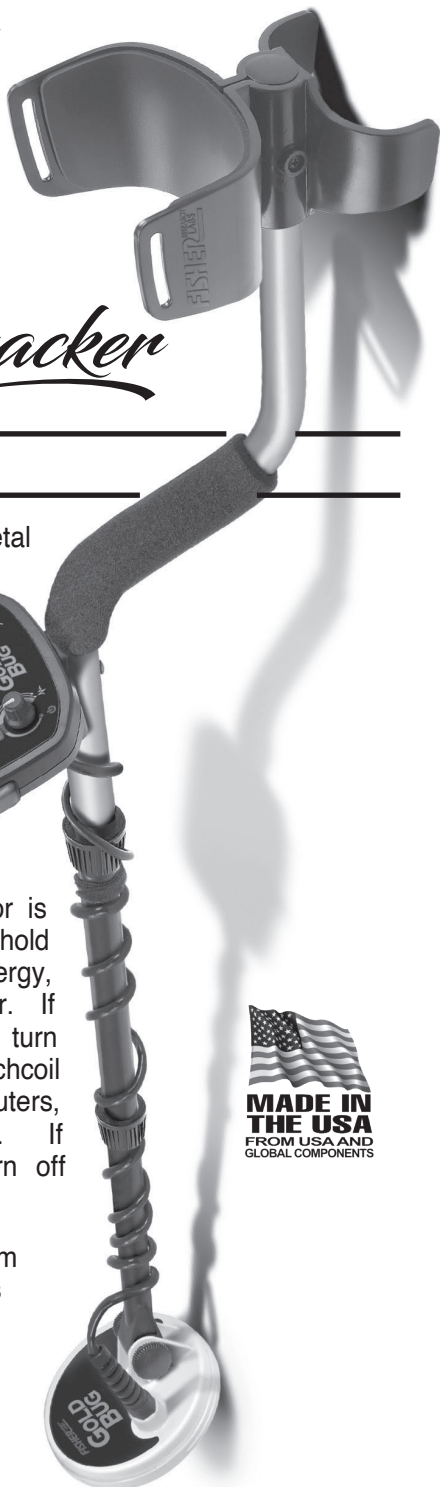
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## **OWNER'S MANUAL**

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If you do not have prior experience with a metal detector, we strongly recommend that you:

- 1) **Adjust the Gain to a low setting in the event of false signals.** Always begin use at a reduced Gain level; increase Gain only after you have become familiar with the detector.
- 2) **Do not use indoors.** This detector is for outdoor use only. Many household appliances emit electromagnetic energy, which can interfere with the detector. If conducting an indoor demonstration, turn the Gain down and keep the searchcoil away from appliances such as computers, televisions and microwave ovens. If your detector beeps erratically, turn off appliances and lights.  
  
Also keep the searchcoil away from objects containing metal, such as floors and walls.
- 3) Use a 9-volt **ALKALINE** battery.  
Do not use Heavy Duty Batteries.





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# ***Congratulations!***

Congratulations on your purchase of the new Gold Bug® Tracker metal detector. The newly designed Gold Bug® Tracker has been custom designed to find the smallest gold nuggets, but unlike other specialized gold prospecting detectors, it can also be used for relic-hunting and coin-shooting.

Whether you use your Detector in the backyard, at the shoreline, in the mountains or fields afar, your investment will let you experience the excitement of searching for yet uncovered treasures and give you hours and years of outdoor enjoyment. Out on your own or with a group, places to use your Gold Bug® Tracker are unlimited as buried treasures can be as near as your doorstep or as far as you wish to travel.

This manual has been written to help you get optimal use of your detector, so we hope you will read it thoroughly before your first outing and will also refer back to this manual from time to time to reinforce features and methods as you become more proficient in the field.

***Happy Hunting from Fisher Research Labs!***

## ***Introduction to the Gold Bug® Tracker***

The new Gold Bug® Tracker is unique among gold prospecting metal detectors for its combination of high sensitivity to small gold nuggets and its versatile function as an all-purpose treasure detector.

The controls and features are tailored to gold prospecting, including a sophisticated ground balancing system, separate control over signal gain and threshold, and a unique discrimination control system. These features also make for a great relic-hunting detector, especially when the Gold Bug® Tracker is outfitted with the optional 11" DD searchcoil. While the Gold Bug® Tracker makes for a highly competent coin-shooting detector, its user interface and features are not specifically designed for this purpose. As a coin-shooter, you will notice that the Gold Bug® Tracker exhibits slightly lower sensitivity to high-conductivity coins, like a U.S. quarter; this is a result of its specialized design to emphasize sensitivity to small, low conductivity metals like gold nuggets.

The Gold Bug® Tracker is outfitted with a small 5" searchcoil as standard equipment since this searchcoil construction is best-suited to finding gold nuggets. You may be familiar with other metal detectors which have larger searchcoils, generally in the range of 8 to 10 inches in diameter. Large coils are designed to cover the maximum amount of ground efficiently and for the deepest ground penetration. Small searchcoils, intended for gold prospecting, are designed for precision. The Gold Bug® Tracker's small DD searchcoil makes pinpointing easier, fits into small spaces where gold is often hidden, is better suited to penetrate highly mineralized soils where gold is frequently found, and has the highest possible sensitivity to tiny gold nuggets.

# TERMINOLOGY

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The following terms are used throughout the manual, and are standard terminology among treasure hunters.

**ELIMINATION** Reference to a metal being “eliminated” means that the detector will not emit a tone, nor light up an indicator, when a specified object passes through the searchcoil’s detection field.

**DISCRIMINATION** When the detector emits different tones for different types of metals, and when the detector “eliminates” certain metals, we refer to this as the detector “discriminating” among different types of metals. Discrimination is an essential feature of professional metal detectors. Discrimination allows the user to ignore trash and other undesirable objects.

**RELIC** A relic is an object of interest by reason of its age or its association with the past. Many relics are made of iron, but can also be made of bronze or precious metals.

**IRON** Iron is a common, low-grade metal that is an undesirable target in certain metal detecting applications. Examples of undesirable iron objects are old cans, pipes, bolts and nails.

Sometimes, the desired target is made of iron. Property markers, for instance, contain iron. Valuable relics can also be composed of iron; cannon balls, old armaments, and parts of old structures and vehicles can also be composed of iron.

**FERROUS** Metals which are made of, or contain, iron.

**PINPOINTING** Pinpointing is the process of finding the exact location of a buried object. Long-buried metals can appear to the eye exactly like the surrounding soil, and can therefore be very hard to isolate from the soil.

**V.C.O.** Meaning “voltage controlled oscillator”, the V.C.O. audio method causes both the *audio pitch* and the *volume* to rise as signal strength increases. V.C.O. improves the user’s ability to interpret a target’s size and depth. Very weak signals (for small or very deeply buried objects) have the faintest volume and the lowest pitch. Larger objects, and those closer to the searchcoil, will induce a higher volume and higher pitch sound.

**GROUND BALANCE** Ground Balancing is the ability of the detector to ignore, or “see through” the earth’s naturally occurring minerals, and only sound a tone when a metal object is detected. The Gold Bug® Tracker incorporates proprietary circuitry and programming to eliminate false signals from severe ground conditions.

**AUTOMATIC GROUND TRACKING** Ground Balancing is the ability of the detector to ignore, or “see through” the earth’s naturally occurring minerals, and only sound a tone when a metal object is detected. The [NAME] incorporates proprietary circuitry and programming to automatically balance the detector’s signals so that the detector ignores naturally occurring ground minerals. No user intervention is required.

# ASSEMBLY

## Adjusting the Armrest

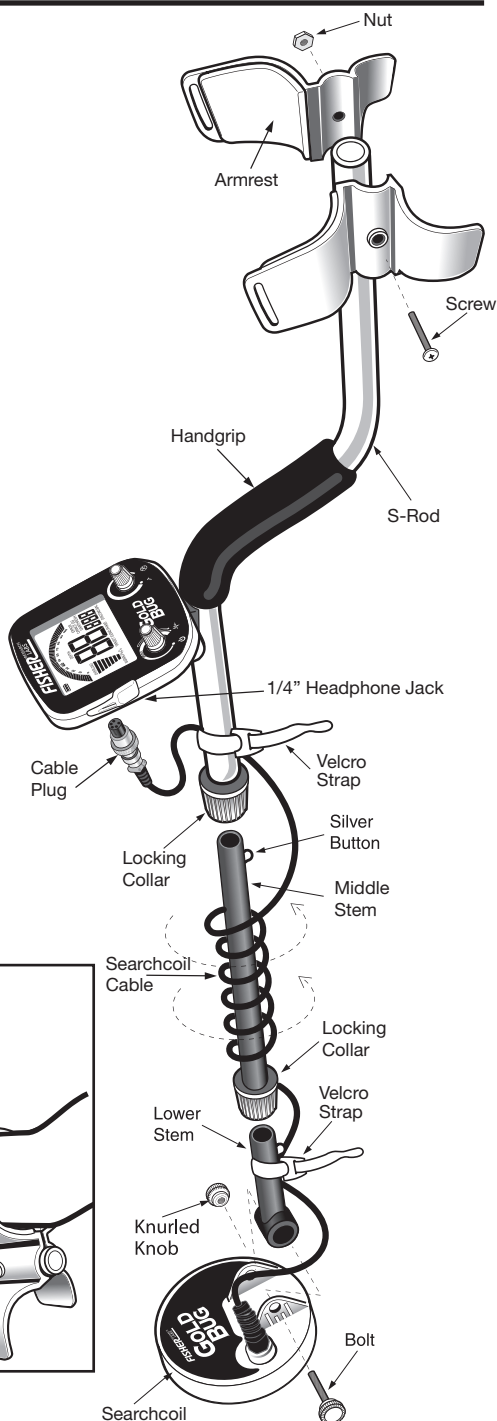
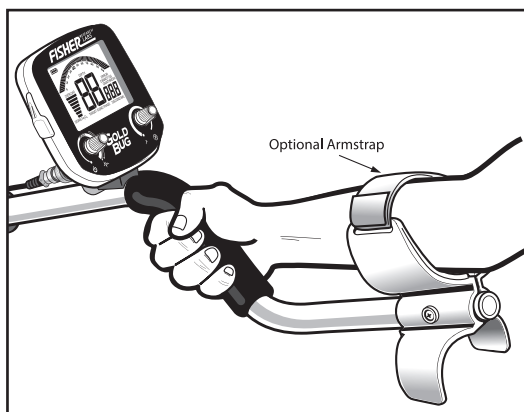
The armrest may be moved forward or backward by removing the single screw and nut, and then repositioning the 2-piece armrest. Users with shorter arms may find the armrest more comfortable in the forward position. In order to move the armrest backward, the plastic plug must be removed from the aluminum tube.

## Armrest Strap

*(optional accessory)*

The armrest Strap accessory can be purchased separately. Some users prefer to use the strap when swinging the detector vigorously, in order to hold the detector securely against the arm.

The detector can always be used without the strap, with no compromise to detector balance and stability under most conditions.



## ASSEMBLY

**Caution:** Forcing in MIDDLE STEM with CAM LOCK raised may form a burr on camlock. If this happens, remove burr with knife to allow insertion.

**Assembly is easy and requires no tools.**

1 Position S-Rod upright.

2 Rotate the LOCKING COLLAR fully in the counterclockwise direction.

3 Insert your finger inside the tube and make sure the INTERNAL CAM LOCK is flush with the inside of the tube.

4 Insert the MIDDLE STEM into the S-ROD, with the SILVER BUTTON pointed upward

5 Rotate the MIDDLE STEM until the SILVER BUTTON locates in the hole.

6 Twist the LOCKING COLLAR fully in the clockwise direction until it locks.

7 Repeat this process on the LOWER STEM.

8 Using the BOLT and KNURLED KNOB, attach the SEARCHCOIL to the LOWER STEM.

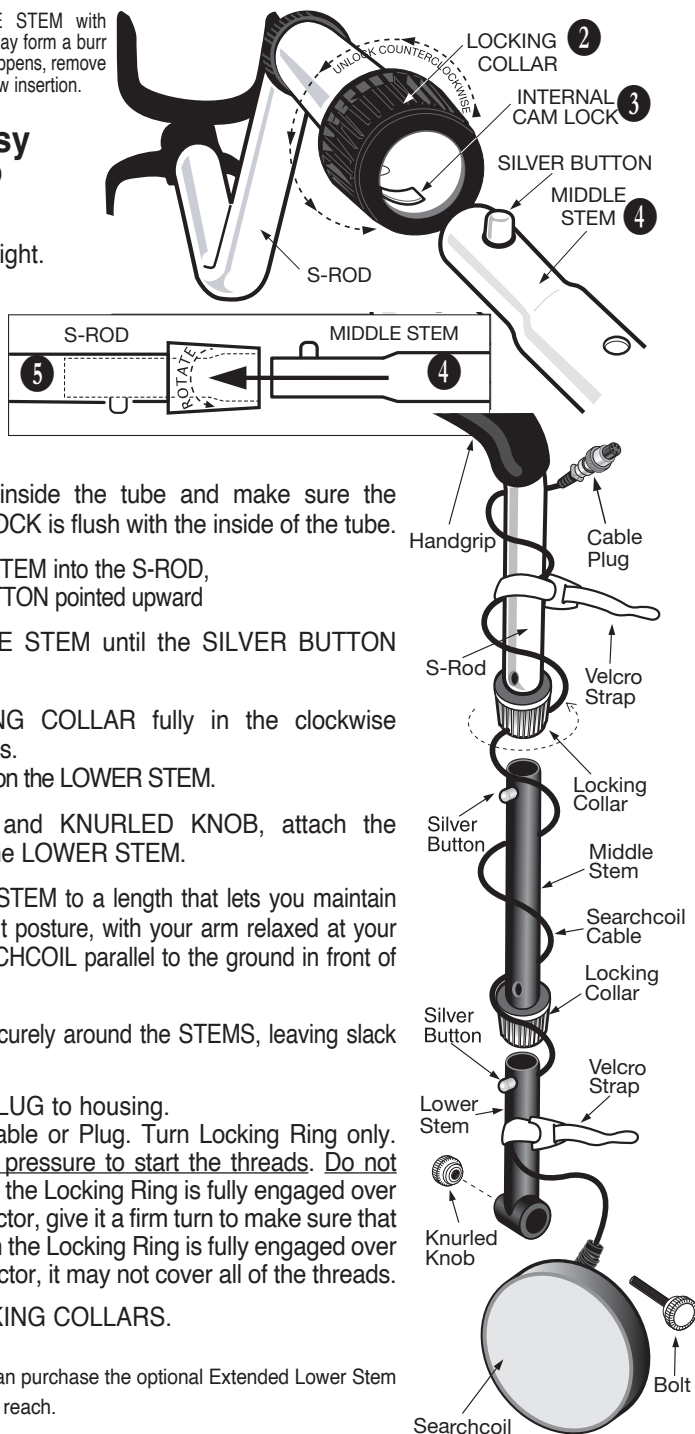
9 Adjust the LOWER STEM to a length that lets you maintain a comfortable upright posture, with your arm relaxed at your side, and the SEARCHCOIL parallel to the ground in front of you.

10 Wind the CABLE securely around the STEMS, leaving slack at the bottom.

11 Connect CABLE PLUG to housing. Do not twist the Cable or Plug. Turn Locking Ring only. Use minimal finger pressure to start the threads. Do not cross-thread. When the Locking Ring is fully engaged over the threaded connector, give it a firm turn to make sure that it is very tight. When the Locking Ring is fully engaged over the threaded connector, it may not cover all of the threads.

12 Tighten both LOCKING COLLARS.

\* Note: Very tall users can purchase the optional Extended Lower Stem (TUBE5X), for extended reach.



# BATTERIES

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A 3-segment battery indicator at the bottom of the display indicates the battery condition.

The detector requires a single 9-volt **ALKALINE** battery.

**Do not use ordinary zinc carbon batteries.**

**Do not use “Heavy Duty” batteries.**

Rechargeable batteries can also be used.

If you wish to use rechargeable batteries, we recommend using a Nickel Metal Hydride rechargeable battery.

The battery compartment is located on the back side of the housing. Slide the battery door to the side and remove it to expose the battery compartment.

## BATTERY LIFE

Expect about 15 to 20 hours of life from a 9-volt alkaline battery.

Rechargeable batteries can provide up to 8 hours of usage per charge.

## SPEAKER VOLUME AND BATTERY CHARGE

You may notice the speaker volume drop when only one battery segment is illuminated.

With one segment flashing, low speaker volume will be very apparent.

## BATTERY INDICATOR

The 3-segment battery indicator has 4 stages of indication.

These indications are accurate for a 9-volt alkaline battery.

### Segments Illuminated

3 -segments

2 -segments

1 -segment

1 -segment flashing

### Battery Voltage

more than 7.6 volts

more than 7.2 volts

more than 6.8 volts

less than 6.8 volts

After the 1st segment begins flashing, expect the detector to shut off within 10 minutes.

A rechargeable battery will usually illuminate two to three segments throughout most of its useful charge. But as soon as it drains to the 1-segment level, it will then lose its charge very rapidly.

## BATTERY DISPOSAL & RECYCLING

Alkaline batteries may be disposed of in a normal waste receptacle or recycled. Non-Alkaline batteries should be recycled. In the state of California all battery types must be recycled. Please refer to local municipalities for detailed disposal and recycling requirements.



# QUICK-START DEMONSTRATION

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## I. Supplies Needed

- a Nail
- a Zinc Penny (dated after 1982)
- a Nickel
- a Quarter

## II. Position the Detector

- a. Place the detector on a table, with the searchcoil hanging over the edge.

Or better, have a friend hold the detector, with the searchcoil off the ground.

- b. Keep the searchcoil away from walls, floors and metal objects.
- c. Remove watches, rings and jewelry.
- d. Turn off lights or appliances, whose electromagnetic emissions may cause interference.
- e. Pivot the searchcoil back.



- III. Click on detector with the left knob. Set the Gain at the 12:00 position for this demonstration.

- IV. Click the right knob clockwise to enter DISC mode.

## V. Wave each object over the searchcoil.

Sweep coin flat and parallel to the searchcoil. This is how

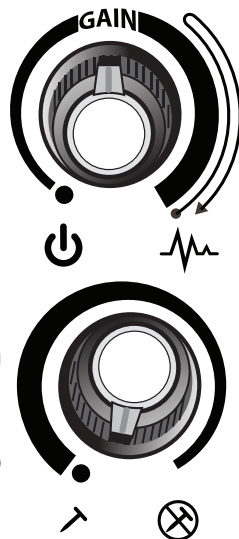
you will usually find them buried.

- a. Notice the tones and 2-digit Target-IDs for each object.

- b. Motion is required.

Objects must be in motion over the searchcoil to be

detected in this mode.



## VI. Click the right knob to left.

The detector is now in the ALL METAL Mode

- a. Wave each object over the searchcoil.

- b. Notice the tones are different in this mode compared to the DISCRIMINATION mode.

# ***THE BASICS OF METAL DETECTING***

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A hobby metal detector is intended for locating buried metal objects. When searching for metals, underground or on the surface, you have the following challenges and objectives:

1. Ignoring signals caused by ground minerals.
2. Ignoring signals caused by metal objects that you do not want to find, like pull-tabs.
3. Identifying a buried metal object before you dig it up.
4. Estimating the size and depth of objects to facilitate digging them up.
5. Eliminating the effects of electromagnetic interference from other electronic devices.

Your Gold Bug® Tracker metal detector is designed with these things in mind.

## **1. Ground Minerals**

All soils contain minerals. Signals from ground minerals can interfere with the signals from metal objects you want to find. All soils differ, and can differ greatly, in the type and amount of ground minerals present. The detector incorporates automated ground balancing features which will eliminate false signals from most types of soils.

## **2. Trash**

If searching for coins, you want to ignore items like aluminum foil, nails and pull-tabs. These undesirable items are generally identified toward the lower end of the 0-100 scale. You can listen to the sounds of all objects detected, and decide on what you want to dig up. Or you can eliminate unwanted metals from detection by using the DISCRIMINATION feature.

## **3. Identifying Buried Objects**

Different types of metals are classified along the arc at the top of the screen on a 0-100 scale from left to right. A 2-digit numerical reading is also provided in the middle of the display for more precise target identification.

## **4. Size and Depth of Buried Objects**

When using the detector in the motion DISC Mode, the relative depth of an object is displayed to the left of the display over the SIGNAL strength indicator.

*The Basics continued on next page*

### 5. Electromagnetic Interference (EMI)

Electromagnetic interference, (EMI), can cause a metal detector to chatter spontaneously, to lose sensitivity for no apparent reason, or to cause a periodic wobbly audio sound. Common sources of EMI include power lines, electronic communication equipment such as cell phones, fluorescent lamps, military electronics such as radar, other metal detectors and computer equipment.

Your first line of defense against EMI is to reduce the Gain. In areas with heavy EMI, operating at reduced sensitivity levels will result in the loss of some depth, but at least the metal detector will be usable.

See the 2-page section on ELECTROMAGNETIC INTERFERENCE for a more thorough explanation of EMI and how to manage it.

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## ***Use with headphones (not included)***

The Gold Bug® Tracker is equipped with a 1/4" headphone jack. Any headphones with a stereo plug will work; headphones with a mono plug will not work. Using headphones extends battery life, and also prevents the sounds from bothering bystanders. It also allows you to hear subtle changes in the sound more clearly, particularly if searching in a noisy location. Gold nuggets are often very small, so closely monitoring changes in sound using headphones will improve your gold prospecting results. For safety reasons, do not use headphones near traffic or where other dangers, like rattlesnakes, are present. This device is to be used with interconnecting cables/headphone cables shorter than three meters.

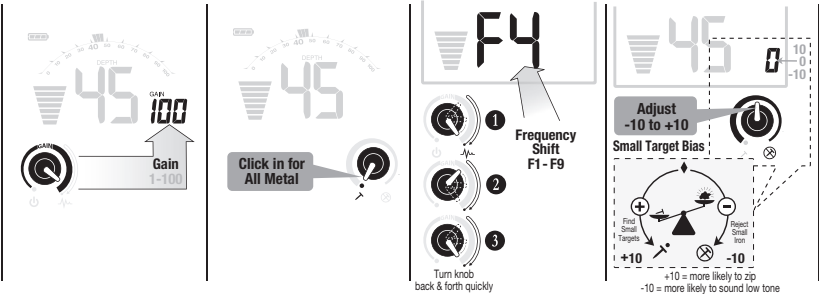
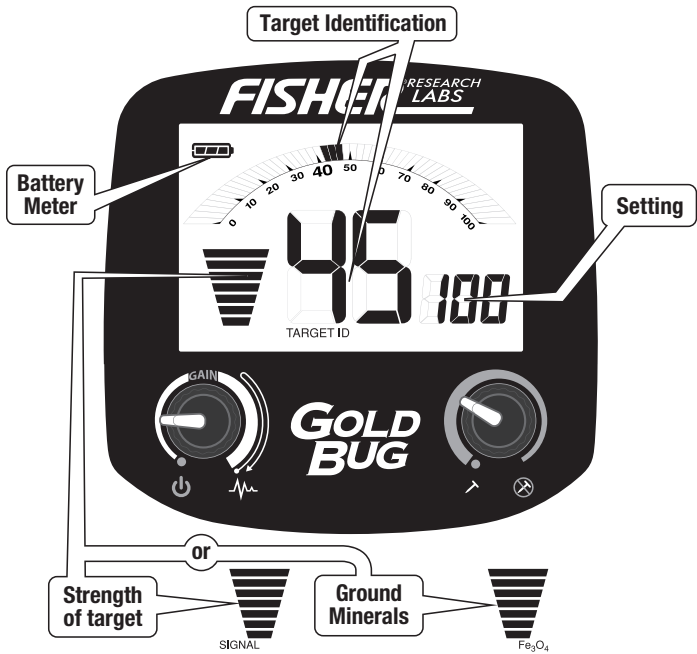
# OPERATION & CONTROLS

## POWERING UP

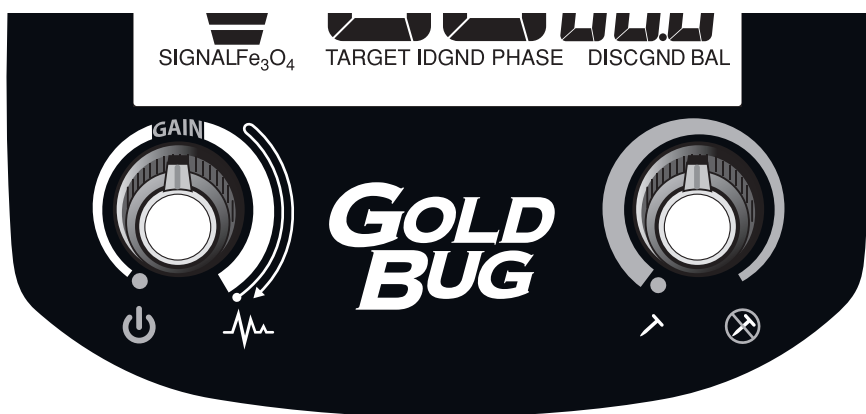
**NOTE:** Immediately after powering on, your detector's unique 10-digit serial number is displayed once on the LCD. Two digits are displayed at a time; five 2-digit numbers are displayed in sequence. This 10-digit serial number is the same serial number imprinted on the label inside the battery compartment.

- Click the left knob to turn the detector ON.
- After clicking the knob on, continued clockwise rotation will increase the GAIN setting.
- We suggest keeping the GAIN below 70 until you become familiar with the detector's operation.

## HOW TO WORK THE CONTROLS



# CONTROL PANEL



## CONTROL KNOBS:

### 1. OFF/ON/GAIN

- Click right to turn on. Click left to turn off.
- Turning the knob clockwise increases the detector's gain; the higher the gain, the deeper targets will be detected, and the more likely the detector will be to detect very small targets.
- As you turn the knob, notice that the GAIN value at the bottom-right of the screen displays your current sensitivity setting.

### Frequency Shift

- Set the knob all the way clockwise to 100.
- Very quickly**, twist the knob counterclockwise to 60 and then back to 100.
- If done successfully, a setting will display on the LCD (F1 to F9).

### 2. DISC / ALL METAL / THRESHOLD

- Click knob to the far-left position and the detector enters ALL METAL Mode.
- Click on clockwise to operate in DISCRIMINATION Mode. The DISCRIMINATION mode will eliminate most ferrous targets from detection.
- In DISCRIMINATION mode, rotate knob to adjust the small target bias. The values range from -50 to +50.  
Positive values will find more small targets, even if they might be iron.  
Negative values will make it more likely to reject small iron targets.  
Only the audio and detection status is affected, not the visual 2-digit ID.  
Larger targets are not affected.

*Control knobs continued on next page*

# OPERATING IN ALL METAL MODE

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The All Metal Mode is more sensitive than the Discrimination Mode, and is used to find all types of metal objects in the ground. The searchcoil must be in motion for objects to be detected.

## AUTOMATIC GROUND TRACKING

Naturally occurring minerals in soil can look like metal to a metal detector; the detector will automatically cancel out these mineral signals coming from the ground and only detect signals from metal objects.

## Setting the Controls

As you adjust any of the controls, notice that the values on the bottom-right of the display indicate the settings of the value you are changing.

If you are new to metal detecting, start with the GAIN control at a low enough setting that you do not hear too many unwanted sounds. Set the GAIN at the 12:00 position, or less.

## Unwanted Noise

Read the section on Electromagnetic Interference.

The Gold Bug® Tracker is a highly sensitive device.

It is intended for use outdoors. Indoor operation will subject it to interference from a wide variety of devices in the home or office.

## Sweeping the Searchcoil

As you sweep the searchcoil over the ground, try to keep the searchcoil parallel to the ground.

Avoid lifting the searchcoil at the end of your sweeps.

## Reading the Display

Most gold prospecting and relic hunting is done by ear. Listen for the louder sounds, riding on top of the constant background hum.

As you sweep the searchcoil, notice the **Fe<sub>3</sub>O<sub>4</sub>** (iron oxide) scale to the left of the display.

This indicates the *amount* of ground mineralization.

Most black sand is made of magnetite.

Gold nuggets are often found in concentrated black sand deposits.

For the best depth detection in highly mineralized soils, use the All Metal Mode.

For the most accurate Fe<sub>3</sub>O<sub>4</sub> reading, pump the searchcoil over the ground.

*Operating in All Metal Mode continued on next page*

### **Target-ID**

Each time you pass the searchcoil over a metal object, a 2-digit value will appear in the center of the display. See the manual section on Target Identification for a better understand of these values.

Three segments will simultaneously appear above the arc at the top of the screen.

This represents the same Target Identification, but displayed graphically within the scale.

### **Target Scale**

The arc across the top classifies metal objects.

Each time a target is detected, three segments will illuminate above the arc.

The segments will remain illuminated for three seconds.

This indication shows the approximate classification of the buried metal object.

See the section on Target Display for a more detailed explanation.

Iron is on the left. U.S. dimes and quarters are to the far right.

In an air test, gold indicates right of center – the larger the gold piece, the farther to the right.

In the ground, the ID of gold may jump around with each pass of the searchcoil.

# ***OPERATING IN DISCRIMINATION MODE***

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Discrimination is used to eliminate ferrous metal objects (e.g., nails, scrap iron, etc.) from detection. The searchcoil must be in motion to detect metal. The Discrimination Mode is less sensitive to small and deep objects than the All Metal Mode.

## **Setting the Controls**

As you adjust any of the controls, notice that the values on the bottom-right of the display indicate the settings of the value you are changing.

## **GAIN**

If you are new to metal detecting, start with the GAIN at a low enough setting that you do not hear any sounds when the searchcoil is sweeping across the ground, with no metal present. Start with GAIN at the 12:00 position, or less.

In this mode, Gain refers to the detector's sensitivity. The higher the setting, the deeper objects can be found, and the more sensitive the detector is to very small metal objects.

## **Small Target Bias**

The right knob controls a setting that allows you to reject or accept small targets that may be ferrous or non-ferrous. Targets that are closer to detection boundary will emit a low tone. Larger targets are not affected by this setting.

Turning counterclockwise will accept more targets and show a positive number on the display. Turning clockwise will reject more targets and show a negative number on the display.

## **Unwanted Noise**

Read the section on Electromagnetic Interference.

This is a highly sensitive device.

It is intended for use outdoors. Indoor operation will subject it to electrical interference from a wide variety of devices in the home or office.

In Discrimination Mode, when you sweep the coil over the ground it will usually be quieter than when holding the detector still.

## **Sweeping the Searchcoil**

As you sweep the searchcoil over the ground, try to keep the coil parallel to the ground. Avoid lifting the searchcoil at the end of your sweeps.

## **READING THE DISPLAY**

### **TARGET-ID**

Each time you pass the searchcoil over a metal object, a 2-digit value will appear in the center of the display. See the manual section on Target Identification for a better understand of these values.

Three segments will simultaneously appear above the arc at the top of the screen.

This represents the same Target Identification, but displayed graphically within the scale.



### **Target Scale**

This display works as in the All Metal Mode.

The arc across the top classifies metal objects.

Each time a target is detected three segments will illuminate above the arc.

The segments will remain illuminated for three seconds.

This indication shows the approximate classification of the buried metal object.

See the section on Target Display for a more detailed explanation.

Iron is on the left. U.S. dimes and quarters are to the far right.

In an air test, gold indicates right of center – the larger the gold piece, the farther to the right.

In the ground, the ID of gold may jump around with each pass of the coil.

### **SIGNAL**

Each time a target is detected, bars will illuminate on the bottom left showing the strength of the target's signal.

If all 7 bars illuminate, the target signal is strong.

This may be a large metal object.

Or it may be a coin-sized metal object close to the surface.

If only a few bars illuminate, the target signal is weak.

This may be a deeply buried object, even a big one.

Or it may be a very, very small metal object, close to the surface.

The depth of a coin-sized object can be confirmed using Pinpoint.

# **GROUND BALANCING -Technical Info**

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## **Fe<sub>3</sub>O<sub>4</sub> BARGRAPH**

The Fe<sub>3</sub>O<sub>4</sub> 7-segment bar graph indicates the *amount* of ground mineralization, independent of type, expressed as an equivalent volume concentration of magnetite (Fe<sub>3</sub>O<sub>4</sub>). It updates every second. It is sensitive to motion and will give the most accurate readings if you *pump* the searchcoil up and down several times over the ground. The presence of metal or “hot rocks” will cause the readings to be inaccurate. If you stop moving the searchcoil, the bar graph will go blank.

| INDICATION  | RELATIVE MINERALIZATION | % Fe <sub>3</sub> O <sub>4</sub> | SUSCEPTIBILITY |
|-------------|-------------------------|----------------------------------|----------------|
| 7 Bars      | High                    | over 1                           | over 2500      |
| 2 to 6 Bars | Medium                  | .026 - 1.0                       | 61 - 2,500     |
| 1 Bar       | Very Low                | 0.006 - .025                     | 15 - 60        |
| None        | --                      | less than .006                   | less than 15   |

Magnetic susceptibility is expressed in micro-cgs units. In a saltwater environment in the absence of iron minerals, the bar graph indicates relative electrical conductivity.

In soils with greater than 10,000 micro-cgs units magnetic susceptibility, the signal from the soil may saturate, or overload, the circuitry. This will not harm the detector but the machine will not be usable in that condition. The solution is to hold the searchcoil several inches above the soil surface so it is not “seeing as much dirt.” By listening and watching you will know how high you need to hold the searchcoil in order to avoid overload.

The highest magnetic susceptibilities are usually found in soils developed over igneous rocks, in alluvial black sand streaks on beaches, and in red clay soils of humid climates.

The lowest magnetic susceptibilities are usually found in white beach sands of tropical and subtropical regions, and soils developed over limestone.

# TARGET DISPLAY and AUDIO

## SIGNAL Indicator

The lower-left bargraph designates SIGNAL strength only when operating in Discrimination Mode.

The signal strength indicator at the bottom-left of the screen indicates how large or close the buried metal target is.

If all bars are illuminated, the target is large or close to the searchcoil.

If one or two bars are illuminated, the target is far away or small, or both.

## AUDIO FEEDBACK

When a target is detected, the Gold Bug® Tracker will respond with two types of sound:

1. V.C.O. (Voltage Controlled Oscillator) is an audio response with variable pitch and volume.
2. A LOW tone beep for targets that may be ferrous.

All targets' audio responses in All Metal Mode will be V.C.O.

**V.C.O.** (Voltage Controlled Oscillator) is an audio response which provides a good feel for the target.

The stronger the target signal, the higher the volume and the higher the audio pitch.

Very weak signals will have the faintest volume and lowest pitch.

For this reason, the use of headphones is always recommended for detecting the smaller and deeper targets.

## 2-DIGIT TARGET INDICATOR

The 2-digit target indicator, in the middle of the screen, provides a specific target value to help identify buried targets more accurately. With practice in the field, you will learn to associate target values with the probable identification of buried

objects. The target value can vary each time the searchcoil passes over the target, depending upon the orientation of the object and its distance from the searchcoil.

As a starting point, refer to the table below.

## TARGET Readout

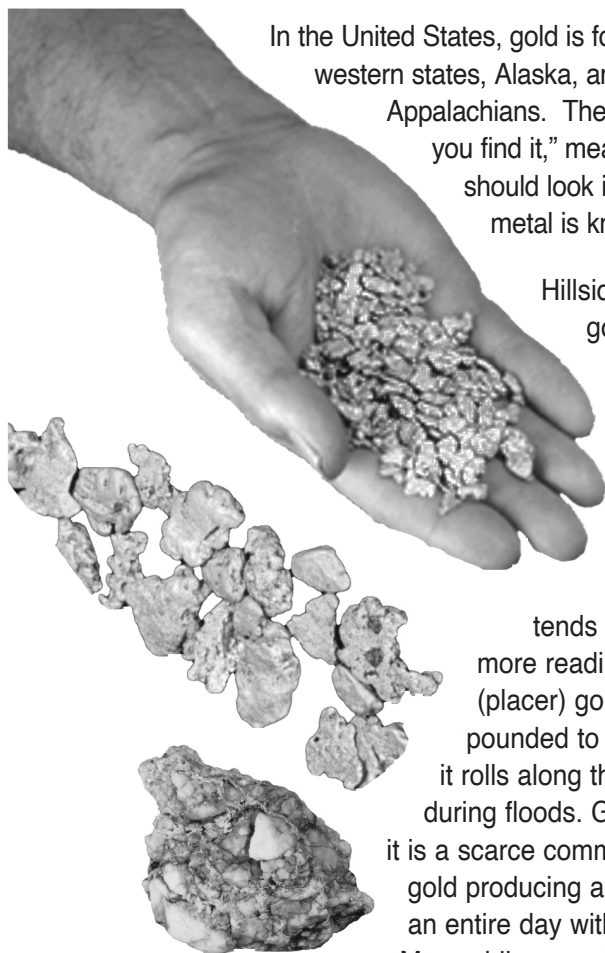
The table below lists some common approximate target values. With experience in the field, you will recognize many types of metal objects by their numeric value.

| OBJECT                        | TARGET-ID    |
|-------------------------------|--------------|
| foil from gum wrapper         | 47 - 48      |
| U.S. nickel (5¢ coin)         | typically 58 |
| aluminum pull-tab             | 60 - 75      |
| aluminum screw cap            | 70 - 80      |
| zinc penny (dated after 1982) | typically 78 |
| aluminum soda pop can         | 75 - 85      |
| copper penny, clad dime       | typically 83 |
| U.S. quarter (25¢ coin), clad | typically 85 |
| 50¢ coin, modern clad         | typically 87 |
| old silver dollar coin        | typically 89 |
| US silver Eagle \$1 coin      | typically 91 |

**Caution:** The target indications are visual references. Many other types of metal can also be represented by a given Target-ID

# GOLD PROSPECTING

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In the United States, gold is found in many places in the western states, Alaska, and in a few localities in the Appalachians. The old saying "Gold is where you find it," means that to find gold, you should look in areas where the yellow metal is known to be present.

Hillsides are the best areas for gold prospecting using a metal detector, because hillsides cannot be cleaned out by panning and dredging the way streams can. Also, gold on hillsides, not far from its source vein, tends to be larger, and hence more readily detected, than alluvial (placer) gold which tends to get pounded to pieces and worn away as it rolls along the streambed with gravel during floods. Gold is valuable because it is a scarce commodity. Even in a good gold producing area, you will often spend an entire day without finding any gold.

Meanwhile you will dig bits and pieces of other metal-- birdshot, shells and bullets from hunting and target practice, bits of rusted barbed wire, chips off shovels and other mining tools, rusted tin cans, etc. Hot rocks -- rocks containing concentrations of iron oxides that sound like metal when you pass over them -- are also a nuisance in many gold areas. Discrimination is usually ineffective because the loss of sensitivity resulting from discrimination is enough to cause those little nuggets to vanish. If you have gone many hours without finding gold and are wondering if there is something wrong with your metal detector or how you are using it, the most important clue is this: if you are digging *tiny* pieces of trash metal, then if gold were present you would have found small gold pieces too!

***Gold Prospecting continued on next page***

## GOLD PROSPECTING

Because most gold nuggets are tiny, and are usually found in soil which is high in iron oxide minerals, serious gold prospecting requires a detector with high sensitivity and true ground balanced All Metal operation. Run the machine with the sensitivity high enough to hear some noise from ground minerals, and *learn the language* of the sounds you hear. Headphones are recommended unless consideration for safety (for instance rattlesnakes) rules them out. Move the searchcoil slowly and deliberately, carefully controlling its height above the ground to minimize noise from iron minerals in the soil. As you walk even a very short distance, ground conditions can change. The ground geology typically associated with gold will tend to change over very short distances.

The  $\text{Fe}_3\text{O}_4$  bar graph indicates the amount of iron mineralization in the soil. In most gold fields, especially alluvial (placer) deposits, gold tends to be associated with iron minerals, especially magnetite *black sand*. If you know this to be the case in the area you're working, you can maximize your gold recovery by concentrating your effort on areas where the bar graph indicates higher amounts of iron mineralization.

Gold prospectors are mostly a friendly bunch, and willing to spend some time showing a beginner how to increase his odds of finding the yellow stuff. Many will invite you to search on their claims (if they have any) once they get to know you. In some gold areas, a lot of the terrain is under claim, so you need to learn how to recognize posted claims and stay off of them unless you have the claim owner's permission. Prospecting clubs such as the Gold Prospector Association of America (GPAA) often own claims which are open to its members and sponsor group outings to productive gold prospecting areas.

It's a thrilling experience to dig into the ground and pull out a precious piece of yellow metal that you are the first person on earth to see. If you love being outdoors, have patience, and can stay motivated by the prospect of finding that next nugget, then *beeping for gold* may be the hobby for you. While only a few get rich prospecting, if you are not among them, think of it as outdoor recreation where your finds defray the expense of having fun!

# HOT ROCKS

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A *hot rock* is a rock which causes the metal detector to sound off because the rock contains iron minerals. They come in two basic types.

*Negative hot rocks* (also called cold rocks) are usually magnetite or contain magnetite, and give a negative response. They tend to be dark in color, usually black, and usually heavy. In some cases they will have rust stains. They are usually attracted to a magnet, and for this reason gold prospectors always carry a magnet -- the ultimate ferrous/nonferrous discriminator. In All Metal Mode, negative hot rocks produce a *boing* sound rather than the *zip* sound of a metallic target; recognize the difference and you will learn to ignore them. As the searchcoil passes over a hot rock, this *boing* sound, or negative response, is quite distinctive. First, as the center of the searchcoil passes over the negative hot rock, the detector will go quite; the threshold hum momentarily silences. Then, passing beyond the negative hot rock, you hear the *boing* sound. As you pass the searchcoil back and forth over a negative hot rock, it will be impossible to pinpoint and will seem as if it *moves around*.

*Positive hot rocks* are iron-bearing rocks which have been oxidized by natural weathering processes. They are often small, right on the surface, sound just like a gold nugget, and are common in many gold prospecting areas. They are usually, but not always, drawn to a magnet. They are most often reddish in color but are often black, brown, or yellow. On relic hunting sites, red clay bricks and rocks which have lined a fireplace or a campfire will often be *hot rocks*. The discriminator will usually eliminate them without difficulty if widely scattered, but if there is a large concentration of them, the discriminator may not quiet them all. In that case, you can revert to the rule of thumb -- "don't dig non-repeatable signals."

Remember to always carry a magnet to help discriminate gold from hot rocks and iron.

- Gold will not be attracted to a magnet.
- Pieces of iron will always be attracted to a magnet.
- Negative hot rocks will almost always be attracted to a magnet.
- Positive hot rocks will usually be attracted to a magnet.

# ***ELECTROMAGNETIC INTERFERENCE (EMI)***

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You are likely to encounter electromagnetic interference (EMI) when using your Gold Bug® Tracker metal detector. It is important that you recognize EMI and take appropriate measures to deal with it. This will prevent you from giving up on a worthwhile search site, or from returning a properly functioning detector for repair.

## **Symptoms of Electromagnetic Interference**

EMI can cause a metal detector to *chatter* spontaneously, to lose sensitivity for no apparent reason, or to cause a periodic *wobbly* audio sound. What you hear will depend on what operating mode you are using, the detector's settings, and the source of the electrical interference. The most common manifestation is spontaneous chatter. All metal detectors are susceptible to EMI, but they vary in what kinds of interference affect them. In a given environment some metal detectors may be affected by EMI whereas others may not.

## **Common sources of Electromagnetic Interference**

Common sources of EMI include: overhead electric power lines, underground power lines, other metal detectors, telephone lines carrying electronic data, computer systems, electric fences, old CRT-based televisions, **cell phones**, CB and emergency communication radios, thunderstorms, fluorescent lights, metal vapor lamps, military aircraft with electronic warfare countermeasures turned on, electric motors, VLF military communications systems and automobile ignition systems. At home, in a store, or in an urban environment, there may be several different sources of interference present simultaneously.

All metal detectors generate a certain amount of internal electronic noise. The Gold Bug® Tracker is specifically designed to enable you to *work into the noise*. Experienced users, striving for maximum depth, often adjust the machine to search with a constant audible background sound, and then listen through that noise for the sound of real targets.

Stricter regulations in recent years have cut down on interference from electric light dimmers and auto ignition systems. However there has also been a proliferation of VLF-UHF wireless communication systems (cell phones, Bluetooth, Wi-Fi, etc.), which often affect metal detectors. Overall, the potential for electromagnetic interference is greater than it was just a few years ago.

Modern high-end metal detectors are a lot more sensitive than older units; this also increases your detector's vulnerability to EMI beyond what you may be accustomed to with an older detector. Metal detectors are by their nature designed to detect magnetic fields, and electric current always produces magnetic fields.

### **Coping with Electromagnetic Interference**

*The primary reason metal detectors provide a sensitivity (gain and/or threshold) control, is so that users can reduce sensitivity in order to eliminate response to electrical interference. Some users are reluctant to reduce sensitivity out of fear of losing depth. At reduced sensitivity settings, you may lose some depth, but at least you can still search. **The Gain knob control the sensitivity and are your first line of defense against EMI.** The Threshold control only applies to the All Metal Mode.* EMI is usually easier to control in the All Metals Mode than in the Discrimination Mode.

If you are conducting an indoor demonstration, you may find that changing the orientation of the searchcoil will reduce the pickup of EMI.

If you carry a cell phone or other high-tech electronic equipment while metal detecting and you encounter EMI, try turning the device off and see if that solves the problem. Turn such devices completely off, not just into standby mode.

When working near overhead power lines, you may get the best results right under the power line and the worst results when standing at a 30° to 45° angle to the power line.

Many sources of EMI are intermittent. You may find that an area which is difficult to search at one time of day may be easier after 5 PM, or on weekends. Power lines are usually quietest late at night, and on weekend mornings.

Small searchcoils usually pick up less EMI than larger searchcoils. On a site with severe electrical interference, a small searchcoil is often a better choice than a large one.

### **Distinguishing Electromagnetic Interference from other problems**

EMI will often vary as you walk around from place to place, and it will also vary with changes in the orientation of the searchcoil. This is almost never the case if there is a functional problem with the metal detector itself.

The most common cause of a noisy metal detector, where the problem is not EMI, is a defective searchcoil. If striking the searchcoil with your hand causes the noise to start or stop, the problem could be a defective searchcoil. Also, a defective searchcoil often causes noise of a more intermittent nature than electrical interference.

The second most common cause is a loose searchcoil connector. The noise from a loose connector will usually be very erratic or intermittent in nature. Try unplugging the searchcoil and then reconnecting it to ensure the connector is firmly installed.

If you use a searchcoil cover, dirt or water can accumulate inside it, and movement of those materials can cause false signals while sweeping the searchcoil. Searchcoil covers must be periodically removed and cleaned.



# SEARCH TECHNIQUES

## Target Verification

After detecting a target, do the following:

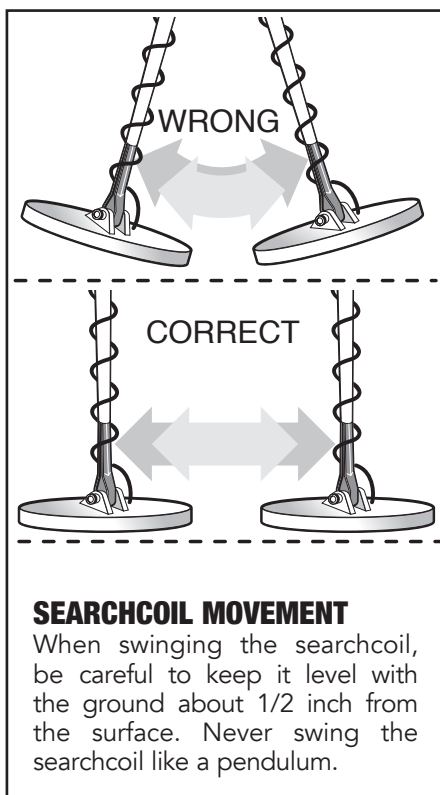
1. Walk around the target in a circle.
2. While circling the target, continue sweeping the searchcoil across the target.
3. Sweep once every 30° or 40° of the circle.

If the tone does not change and the Target-ID value is consistent as you circle the target, you can be highly confident of the target's identification.

If the tone or Target-ID changes as you circle the target, you may have multiple targets or an irregularly shaped object.

If the tone completely disappears at different angles, the target may be trash or a low-value metal.

If you are new to the hobby, dig all targets. With practice in the field, you will soon be able to correlate audible and visual target feedback with certain types of metal objects.



## Pinpointing in Discrimination Mode:

1. Sweep over target in narrowing side-to-side pattern.
2. Take visual note of spot on ground where “beep” occurs.
3. Step 90° to the side of the target.
4. Sweep searchcoil over same area, at 90° to 1st sweep pattern.
5. This pinpoints the target location with an “X.”

# ***Relic-Hunting and Coin-Shooting with the Optional 11" DD Searchcoil***

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While the Gold Bug® Tracker is a high performance, specialized gold prospecting metal detector, it is also a good multi-purpose detector. With the purchase of an 11" DD searchcoil, you can bring more power to your coin-shooting and relic-hunting searches.

The standard 5" Gold Bug® Tracker searchcoil is engineered for precision and is best at finding the smallest gold nuggets that most other gold prospecting detectors would miss.

If you want a larger sweep area and deeper detection, the 11" DD should be considered.

Advantages of the 11" DD searchcoil over the standard 5" searchcoil are:

1. Deeper detection
2. Broader sweep (cover more area in less time)

Disadvantages of the 11" DD searchcoil are:

1. Less separation between adjacent buried targets.  
Not as good at extremely trashy sites.
2. Loss of sensitivity to the tiniest gold pieces.
3. Does not fit into tight spaces as well.

For information about the  
11"DD searchcoil  
(Part# 11COIL-GB,  
MSRP=\$199.95),  
Please call 800-685-5050.



## ***DEVICE SPECIFICATIONS***

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**Mechanical:** S-rod with electronics housing on rod, 3-piece breakdown construction, nonmetallic telescoping lower rod, adjustable position Armrest

**Weight:** 2 lbs. 8 oz. with battery installed

**Standard searchcoil:** 5 inch (12.7 cm) closed-frame round biaxial, waterproof

**Batteries:** Single 9 volt rectangular alkaline or Li-ion

**Operating principle:** VLF induction balance

**Operating frequency:** 19 kHz, crystal controlled

**Reactive overload:** 10,000 micro-cgs (with standard searchcoil)

**Resistive overload:** 1,200 micro-cgs (with standard searchcoil)

**Discrimination ground suppression:** Combination of 2<sup>nd</sup> and 3<sup>rd</sup> order methods

**Target-ID ground suppression:** 3<sup>rd</sup> order

**Battery life:** 15+ hours on good quality alkaline

**Operating temp range:** 14 to 122 degrees F (-10 to +50 C)

**Operating humidity range:** 0 - 90% noncondensing

## ***TREASURE HUNTER'S CODE OF ETHICS***

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- Always check Federal, State, County and local laws before searching.
- Respect private property and do not enter private property without the owner's permission.
- Take care to refill all holes and leave no damage.
- Remove and dispose of any and all trash and litter found.
- Appreciate and protect our inheritance of natural resources, wildlife and private property.
- Act as an ambassador for the hobby; use thoughtfulness, consideration and courtesy at all times.
- Never destroy historical or archaeological treasures.
- All detectorists may be judged by the example you set; always conduct yourself with courtesy and consideration of others.

## **2-YEAR LIMITED WARRANTY**

The **Gold Bug® Tracker** metal detector is warranted against defects in materials and workmanship under normal use for 2 years from the date of purchase to the original owner.

Damage due to neglect, accidental damage, or misuse of this product is not covered under this Warranty. Decisions regarding abuse or misuse of the detector are made solely at the discretion of the manufacturer.

**Proof of Purchase is required to make a claim under this warranty.**

Liability under this Warranty is limited to replacing or repairing, at our option, the metal detector returned, shipping cost prepaid to Fisher Labs. Shipping cost to Fisher Labs is the responsibility of the consumer.

To return your detector for service, please first contact Fisher Labs for a Return Authorization (RA) Number. Reference the RA number on your package and return the detector within 15 days of calling to:

**Fisher Research Labs, Inc.  
1120 Alza Drive  
El Paso, TX 79907  
Phone: 915-225-0333 ext.118**

### **NOTICE TO CUSTOMERS OUTSIDE THE U.S.A.**

This Warranty may vary in other countries; check with your distributor for details.

Warranty does not cover shipping costs.

Warranty coverage does not include the cost of transporting the detector back to an owner who is located outside of the United States of America.

MADE IN U.S.A.

**According to FCC part 15.21 Changes or Modifications made to this device not expressly approved by the party responsible for compliance could void the users authority to operate this equipment.  
This device complies with FCC Part 15 Subpart B Section 15.109 Class B.**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This radio transmitter 8188A-GB has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antennas:

1. 5" DD Coil, Part Number 5COIL-GBUG
2. 11" DD Coil, Part Number 11COIL-GB

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

*Le présent émetteur radio 8188A-GB a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.*

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.



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[www.fisherlab.com](http://www.fisherlab.com)

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GOLD PROSPECTING ORGANIZATIONS

[www.goldprospectors.org](http://www.goldprospectors.org)

[www.fmdac.org](http://www.fmdac.org)

[www.igu-net.org](http://www.igu-net.org)

[www.agu.org](http://www.agu.org)





# ACCESSORIES

## Fisher® Padded Carry Bag

Rugged double stitched construction. Includes handy exterior pocket for extra batteries or small accessories. — *103693000C*

## Fisher® Camo Backpack

Large camouflage and black with Fisher® logo. — *FCBACKPACK*

## Fisher® Camo Pouch

Camo pouch with two inside pockets, belt included. — *PCH-F*

## Stereo Deluxe Headphones

Adjustable single-volume control, 1/4 jack" jack, aluminum cones and coiled cord. *9720971000*

## Stereo Headphones

Use with Fisher® metal detectors. Lightweight and adjustable with true stereo sound, adjustable volume, 1/4 jack with 1/8 adaptor, 4' cable. — *9720950000*

## Metal Sand Scoop

Large galvanized metal scoop with filtering holes. Strong Rubberized grip. — *SAND SCOOP*

## Gold Pick

Tempered steel head is 10" long, edge is 3-1/4" wide, overall length 19". Durable fiberglass handle, rubberized grip and super magnet attached to the head. — *GOLDPICK*

## Lesche Knife

Made from high quality heat-treated tempered steel. The ultimate digging tool. Comes with a durable sheath. 12" in length with a 7" serrated blade. — *LESCHE KNIFE*

## Fisher® Baseball Cap

One-size-fits-all. — *FCAP*

## Fisher® Camo Baseball Cap

One-size-fits-all. Velcro closure, camouflage with Fisher® logo. — *FCCAP*

## Fisher® Coffee Mug

16oz, stainless steel and plastic — *FMUG*

## Fisher® T-Shirt

100% cotton with Fisher® Logo. Sizes: S, M, LG, XL & XXL — *FTSHIRT*

## Replacement/Accessory Searchcoils

11" DD Elliptical, Open Accessory Coil — *11COIL-GB*  
10" DD Elliptical, Closed Accessory Coil — *10COILDD-GB*  
5" DD Round Replacement Coil — *5COIL-GBUG*

## Coil Covers\*

Specially made to protect your coil from abrasion and damage.

11" DD Coil Cover — *COVER-11DD*  
10" Blaxial Accessory Coil Cover — *202319000*  
5" DD Coil Cover — *5COVER-BLK*

## Rain Cover

Specially designed to protect your detector from dirt and water — *RAINCOV-GB*

FOR COMPLETE DETAILS VISIT [WWW.FISHERLAB.COM](http://WWW.FISHERLAB.COM) • 1-800-685-5050

\*Image not shown.

