



***Instruction Manual***



## **THANK YOU FOR CHOOSING GARRETT METAL DETECTORS!**

The *CSI Pro All Terrain* metal detector was designed for use in the recovery of metallic crime scene evidence in all terrains, including shallow water searching.

The *CSI Pro* includes Garrett's exclusive Target ID technology, notch discrimination and High Resolution Iron Discrimination (40 points) for separating desirable targets from iron junk. Two indicator scales allow you to see the detector's discrimination setting (Lower Scale) as well as the analysis of each target (Upper Scale). In addition, a Digital Target ID scale provides a more specific target value.

The *CSI Pro* includes advanced audio features and a standard 5" x 8" elliptical DD searchcoil engineered for optimum performance in more challenging mineralized soils.

Backed by more than 45 years of extensive research and development, your Garrett *CSI Pro* metal detector is the most advanced of its kind in the industry. In order to take full advantage of the special features and functions of the *CSI Pro*, you are urged to carefully read this instruction manual in its entirety.

## TABLE OF CONTENTS

CSI PRO CONTROL PANEL .....	4
QUICK START GUIDE.....	5
CSI PRO COMPONENTS .....	6
LIST OF PARTS .....	7
ASSEMBLY .....	8
POWERING ON.....	11
TARGET INFORMATION.....	12
DIGITAL TARGET ID .....	13
SENSITIVITY .....	15
GROUND BALANCE.....	16
Automatic Ground Balance.....	17
Manual Ground Balance.....	17
FREQUENCY ADJUSTMENT .....	19
TONE ID AND TONE ROLL AUDIO.....	20
PROPORTIONAL AUDIO CHARACTERISTICS .....	21
SEARCH MODES.....	23
NOTCH DISCRIMINATION .....	25
IRON DISCRIMINATION.....	28
IRON AUDIO .....	31
BENCH TESTS.....	34
CREATE A CRIME SCENE TEST PLOT.....	36
SWEEPING THE SEARCHCOIL.....	37
PINPOINTING .....	39
Narrowing the Detection Area .....	41
Alternative Pinpointing Methods .....	42
ADVANCED TIPS AND TECHNIQUES .....	44
UNDERWATER OPERATION .....	46
CARE AND MAINTENANCE .....	48
Battery Replacement .....	48
TROUBLESHOOTING GUIDE .....	50
WARRANTY / SERVICE .....	51
ACCESSORIES.....	52

# CSI Pro CONTROL PANEL

## Target ID Legend

indicates metal types.

## Digital Target ID

(also shows ground balance settings while in GND-BAL mode.)

## Target ID Cursor

indicates probable target identity.

## Lower Scale

indicates notch discrimination pattern.

## High Resolution Iron Discrimination

indicates level of iron discrimination selected.

## Depth Indicator

indicates depth of bullet-sized target.

## Mode Indicator

## Sensitivity Setting

## Iron Disc Pushbutton

Use (+) or (-) to change iron discrimination level.

**ON / OFF Power:** hold 1 second to turn power on/off.

**MODE:** push quickly to toggle between detection modes.

**RESET:** hold 5 seconds to restore factory settings.

## SENSITIVITY Pushbutton

increases or decreases sensitivity.

## PINPOINT / Frequency Adjust Pushbutton

Press and hold to pinpoint or use with SENSITIVITY (+) or (-) to change frequency.

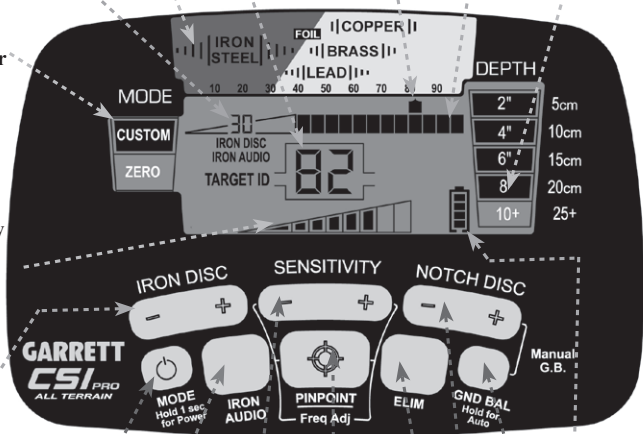
## Battery Level Indicator

## GROUND BALANCE Pushbutton

Press and hold for fast auto ground balance or use with NOTCH DISC (+) or (-) for manual ground balance.

## ELIM and NOTCH DISC Pushbuttons

Use NOTCH DISC (+) or (-) to select a cursor. Then use ELIM button to set its discrimination on or off.



## QUICK START GUIDE

### 1. Install batteries.

The *CSI Pro* operates with four (4) AA batteries which are already installed by Garrett.



### 2. Power ON.

Press and release the ON / OFF Power button. The *CSI Pro* powers on in the last mode used and is ready to search. (Factory default mode is Coins.)



### 3. Select Mode.

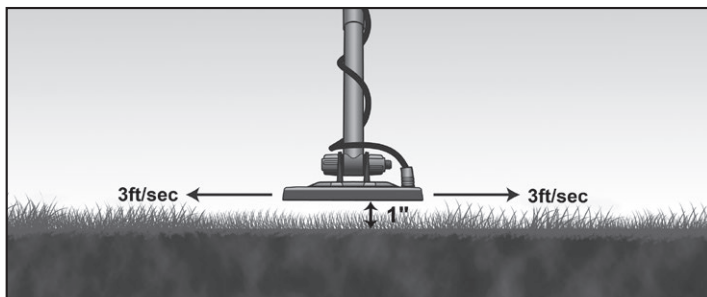
Use the Mode Pushbutton to select a different detection mode, when desired.

### 4. Adjust settings.

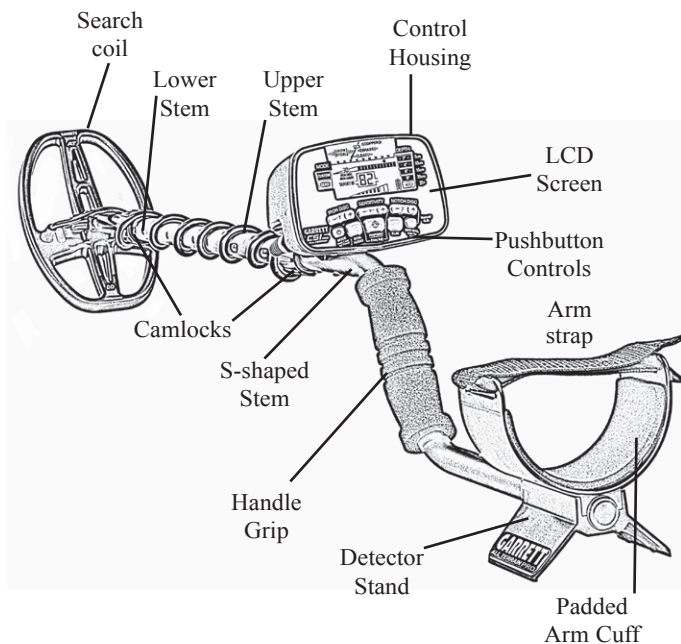
Adjust Sensitivity or Discrimination settings, if desired.

### 5. Begin scanning.

Lower the searchcoil to about 1 inch above the ground and scan the coil left and right at approximately 3 feet/second.



## CSI Pro COMPONENTS



## LIST OF PARTS

No tools are required to assemble the *CSI Pro*. Four (4) AA batteries are included with the detector. The box for your detector contains the following parts:

- |   |                                 |
|---|---------------------------------|
| ❶ One (1) control housing with S-shaped stem                                  | ❹ One (1) 5" x 8" DD searchcoil |
| ❷ One (1) upper stem and one (1) lower stem connected, with camlock fasteners | ❺ Owner's manual                |
| ❸ One (1) wing nut, two (2) mounting washers and one (1) threaded bolt        | ❻ Warranty Card                 |
|   | ❼ Headphones                    |

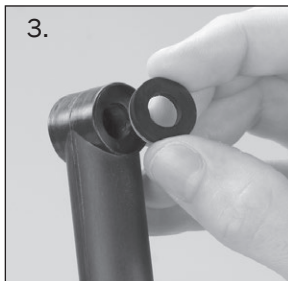
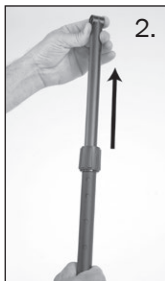
If any part is missing, please contact your local dealer.



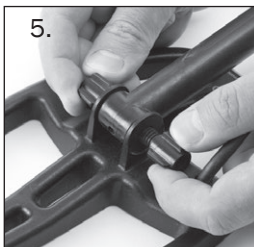
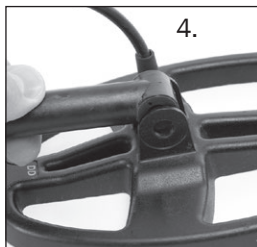


## ASSEMBLY

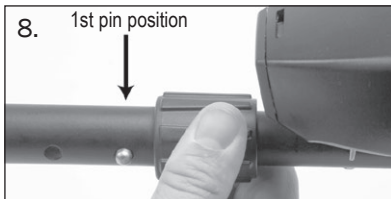
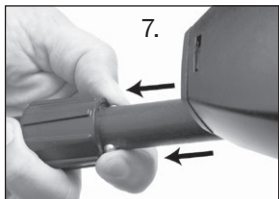
1. Holding the upper and lower stem assembly in front of you (as shown below), twist camlock to the right (clockwise) to loosen.
2. Slide lower stem out to engage spring clips in upper stem holes.
3. Align the holes in the mounting washers with the small posts on the lower stem and press firmly into place.



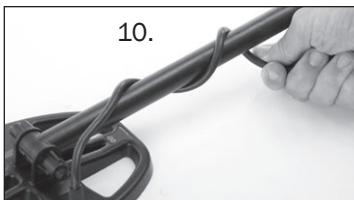
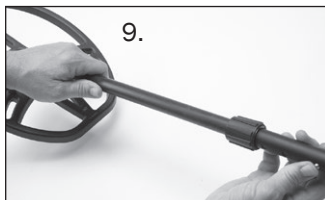
4. Slide the searchcoil onto the stem.
5. Insert the threaded bolt through the holes of the lower stem and searchcoil. Hand-tighten searchcoil assembly with the wing nut.
6. Holding assembly as shown, loosen camlock at the end of the upper shaft by turning counter-clockwise.  
Note: If the camlock collar slides off during loosening, simply slide it back on and tighten slightly.



7. Depress the spring clip in the S-stem (containing control housing) and insert S-stem through the upper camlock collar into the upper stem.
8. The spring clip must be engaged in the FIRST stem opening in order to maintain battery compartment access. Hand-tighten the camlock collar. Do not overtighten!



9. Depress the spring clip in the lower stem and adjust to the most comfortable operating length. Hand-tighten the lower stem camlock collar. Do not overtighten!
10. Wrap the cable snugly about the stem with the first turn of the cable over the stem.

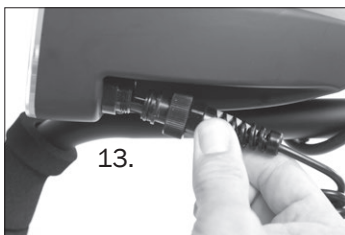


11. Insert the coil connector into the 4-pin connector of the control housing and hand-tighten. After lining up the connector pins, press the connector in firmly, yet carefully, until the O-ring is felt to be fully inserted.

Note: If the O-ring is properly seated, the connector's collar can be easily tightened; if the collar is difficult to turn, the O-ring may not be seated properly.



12. If needed, adjust the arm cuff by removing the screw on the bottom. Move the two-piece cuff to the other hole, reinsert the screw through the headphone cable clip, and tighten.



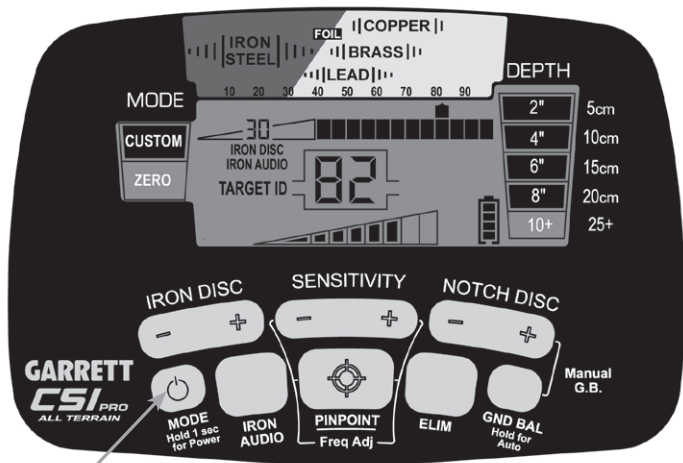
13. If desired, attach headphones to the 2-pin connector of the Control Housing. After lining up the connector pins, press the connector in firmly, yet carefully, until the O-ring is felt to be fully inserted.
14. Secure the headphone cable under the detector's arm cuff by pressing the cable into the headphone cable clip.

Note: Headphones are not required but are desired by many hunters to hear faint targets. Connecting the headphones will silence the detector's speaker.

Note: The provided headphones are for dry use only; see page 55 for optional waterproof headphones.



## POWERING ON



ON/OFF Power  
and MODE  
Pushbutton

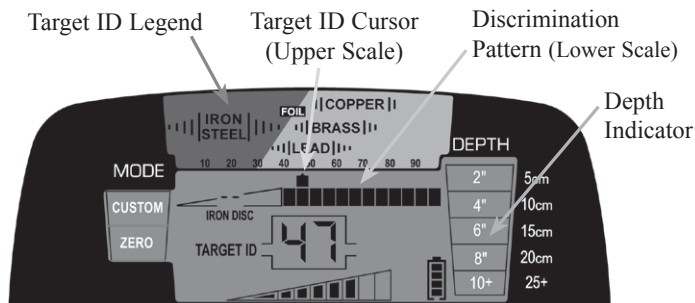
### Switch the detector on with the power button.

Press and release to switch the unit ON and resume hunting with the same settings used prior to switching the unit OFF.

**To turn off the detector**, press and hold this pushbutton for one (1) second (until the detector produces a second beep).

**To restore the factory settings**, press and hold the power button for 5 to 10 seconds (until the detector produces a fast double beep).

## TARGET INFORMATION



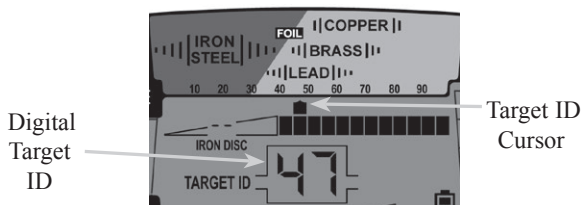
**Target ID Legend**—Works in conjunction with the Target ID Cursor to indicate a target's probable identity. Ferrous (iron) targets will indicate on the left half, non-ferrous targets that are thin or have low conductivity will indicate in the middle, and thick or high conductivity targets (e.g. thick copper) will indicate at the right.

**Target ID Cursor (Upper Scale)**—The Target ID cursor, in conjunction with the Target ID Legend, indicates the probable identity of a detected target. The upper scale consists of twenty (20) graphic segments for Target ID.

**Lower Scale**—The lower scale, or Notch Discrimination Scale, continually indicates the discrimination pattern. The CSI Pro will produce an audible target response for the pixels that are switched on, and no audible response for those that have been switched off. The Target ID Cursor will always indicate all targets.

**Depth Indicator**—The depth of a .38 caliber bullet, or similar sized target, is indicated in 2" (5cm) increments. Note: targets *larger* than a .38 caliber bullet may display shallower than actual depth while targets *smaller* than a .38 caliber bullet may display deeper than actual depth.

## DIGITAL TARGET ID



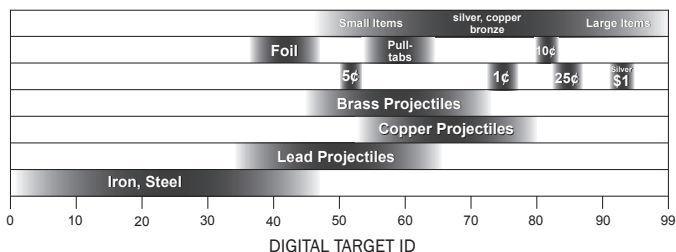
The CSI Pro's Digital Target ID system provides a specific target value to help identify targets more precisely. Targets are identified on the LCD by number, with items near 1 being the most ferrous. The most conductive targets (such as large copper items) register closer to 99.

The Digital Target ID is a more precise version of the Target ID Cursor shown in the Upper Scale. Each Target ID Cursor has a width of 5 digital points. For example, a Digital Target ID of 47 will light the cursor from 45 to 50.

This system, when used in conjunction with the audio target signals, provides you with more information. The sample chart on the following page provides Digital Target ID ranges of some commonly found items.

It is important to note that detection depth can exceed Target ID depth (i.e. faint targets at depth can be heard without providing any Target ID).

The Digital Target ID for conductive metals such as lead, brass or copper can vary widely based upon its size and thickness. This is because small, thin pieces of metal cannot conduct electrical current as well as thicker pieces of metal. Therefore, tiny lead bullets—for example—will register lower on the Target ID scale than would a larger, thicker piece of lead, even if the two pieces have identical purity. In addition, in mineralized soils, the Target ID of small metal objects can

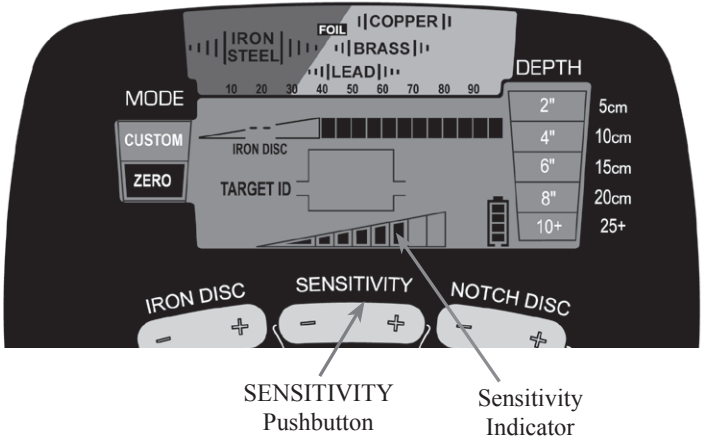


Note: Target values can vary based on the orientation of the target in the ground, amount of ground mineralization, etc. It is important to practice in the field to learn how these factors can affect Target ID. This chart indicates a range of values in which certain targets are more commonly found. The Target IDs of U.S. coins are also included for reference.

be skewed by the ground mineralization into numeric IDs that normally indicate iron. Most lead projectiles indicate in the 35 to 60 range. Very tiny lead pellets and deeply buried targets with small signal response may not give a numeric reading at all. Nevertheless, targets which do not give any Target ID are often worth investigating.

Tips: Digital Target ID is most reliable when the target is properly pinpointed and centered under the searchcoil and the coil is swept flat and at a constant height above the ground. Use a magnet to help remove small bits of shallow iron and then scan over the area again to see if the Target ID has changed.

## SENSITIVITY

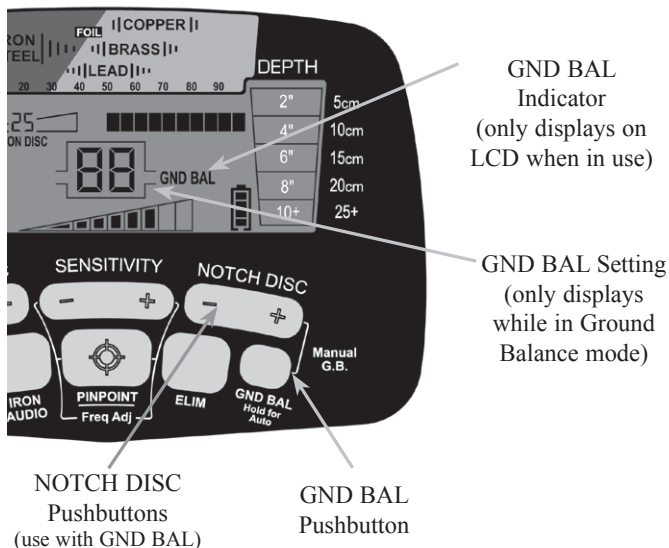


The *CSI Pro* has eight (8) settings for sensitivity. Use the (+) or (-) SENSITIVITY buttons to step through the eight levels, which are continuously shown on the LCD.

Use higher sensitivity levels when searching for very small or very deep targets. Use lower sensitivity levels in locations where the detector is behaving erratically (due to excessive metallic trash, highly mineralized soils, electrical interference or the presence of other metal detectors) and the erratic operation cannot be resolved with discrimination, ground balance, or by changing frequency.



## GROUND BALANCE



**GND BAL Pushbutton**—Hold for Automatic Ground Balance or use in conjunction with the NOTCH DISC pushbuttons for Manual Ground Balance. The Ground Balance setting will be retained when the detector is switched OFF.

As ground mineralization begins to increase, it has a negative affect on detector performance. The greater the amount of mineralization, the greater the loss of detection depth and Target ID accuracy. It is imperative to ground balance the detector to maintain optimal performance.

The *CSI Pro* can be ground balanced either automatically or manually to cancel unwanted ground signals and obtain maximum stability and target detection. By calibrating the *CSI Pro's* ground balance to the phase (measurement) of

the ground's signal, the result is deeper target detection, more accurate Target ID, and more stable operation.

Note: Always locate an area of soil free of metal before attempting to ground balance the detector.

**Automatic Ground Balance**—Press and hold the GND BAL pushbutton while continually "bouncing" or "pumping" the searchcoil from 1 to 8 inches (2 to 20 cm) above the ground. When there is a minimal audio response from the ground, release the pushbutton and begin hunting. The ground balance value will have been indicated in the center of the LCD. Low ground balance values indicate conductive soil; high ground balance values indicate ferrous soil.

Note: If the CSI Pro's Ground Balance setting does not change during the auto ground balancing process, the detector is either sufficiently ground balanced already or the current ground exhibits such neutral mineralization that the settings will not change.

**Manual Ground Balance**—Press and release the GND BAL pushbutton and continually bounce (pump) the searchcoil from 1 to 8 inches (2 to 20 cm) above the ground. If low tones are produced, increase the Ground Balance setting using the (+) NOTCH DISC pushbutton. If high tones are produced, decrease the setting using the (-) NOTCH DISC pushbutton. Press and release the (+) or (-) NOTCH DISC pushbuttons to make single-step adjustments, or press and hold to make large adjustments.

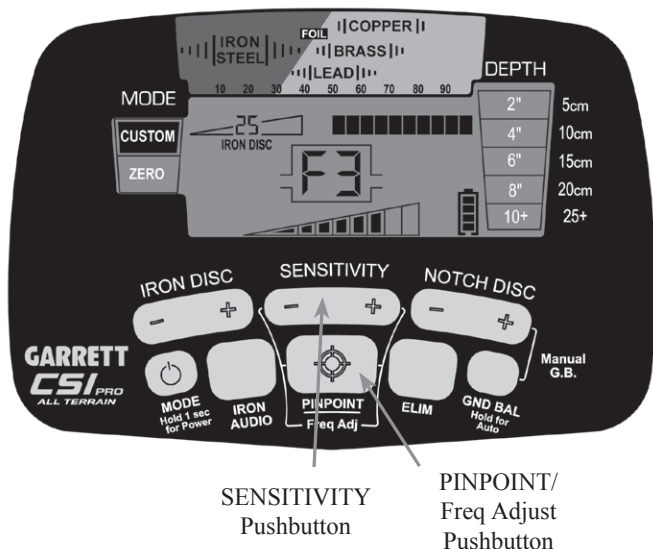
Continue bouncing the coil and making adjustments until a minimum audio response is obtained, indicating the detector is ground balanced. The Ground Balance setting will be indicated on the LCD. Press and release the GND BAL pushbutton again to exit Manual Ground Balance mode.

You may want to use the Manual Ground Balance function to ground balance slightly positive to enhance detection of small targets or balance slightly negative to reduce detection of "hot rocks," terra cotta, clay bricks and saltwater.

**Typical Ground Balance Ranges:**

- 80–99: Highly ferrous (magnetite, ferrous oxide minerals, black sands, hot rocks, terra cotta)
- 60–80: Moderately mineralized soils (red clay, brown clay, iron-bearing clay minerals, etc.)
- 20–60: Likely an iron object
- 0–20: Highly conductive, non-ferrous minerals such as saltwater

## FREQUENCY ADJUSTMENT



Use the PINPOINT/Freq Adj pushbutton in conjunction with the (+) or (-) SENSITIVITY pushbuttons to adjust frequency.

The CSI Pro is capable of operating at four slightly different frequencies in order to minimize the interference caused by electrical sources (e.g. power lines) or other metal detectors.

To see current frequency setting, hold down the PINPOINT button and press the (+) or (-) SENSITIVITY pushbuttons. Tap one of the SENSITIVITY pushbuttons again to change the frequency to find one with the least amount of interference. The frequency setting (F1–F4) will be indicated on the LCD. Release the PINPOINT button when finished.

Note: Frequency adjustments are small and therefore do not affect target detection capabilities.

## TONE ID AND TONE ROLL AUDIO

The *CSI Pro's* Tone ID feature produces three distinct audible tones based on a target's metal type and conductivity.

- Low-Tone: Ferrous targets such as nails, iron, steel-core projectile, etc.
- Medium-Tone: Small, thin targets that are non-ferrous, including many lead bullets, foil, and some smaller brass, such as a .22 casing.
- High Tone: Non-ferrous targets with medium to high conductivity, including larger brass and copper bullets and casings.

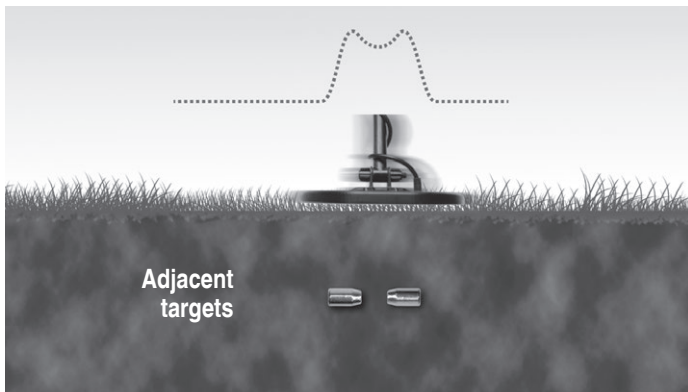
The *CSI Pro's* advanced audio features allow the operator to hear a target's size and depth via the Proportional Audio and conductivity changes via Tone Roll Audio. More audible target information helps the operator to identify targets, particularly flat iron objects such as bottle caps and washers. Garrett's Tone Roll Audio provides a variance of target tones as the searchcoil approaches and passes over such iron targets. These varying tones of audio provide better overall target information to help avoid digging undesired iron targets.

Knives and guns made primarily of steel may produce any of the three above audible tones based upon the size of the object and its orientation in the ground. Scan several test targets to better understand what tones they can produce.

(See "Iron Audio" section, pp. 31–33, for details on using the Iron Audio feature to better identify undesired iron trash items.)

## PROPORTIONAL AUDIO CHARACTERISTICS

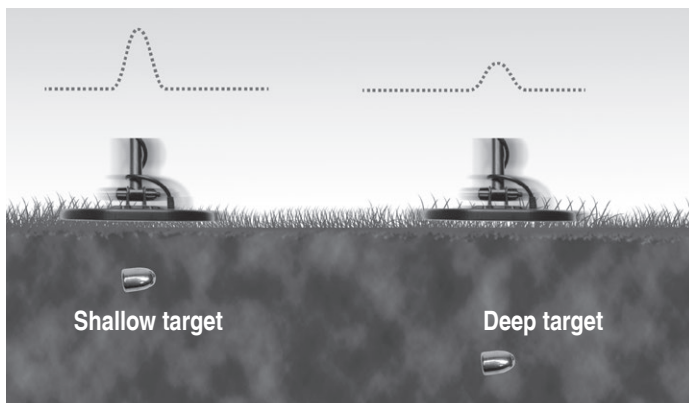
The *CSI Pro*'s advanced audio characteristics provide fast recovery speed, which is especially important in areas where good targets are in close proximity or may be scattered amongst iron trash. (See *Example A.*)



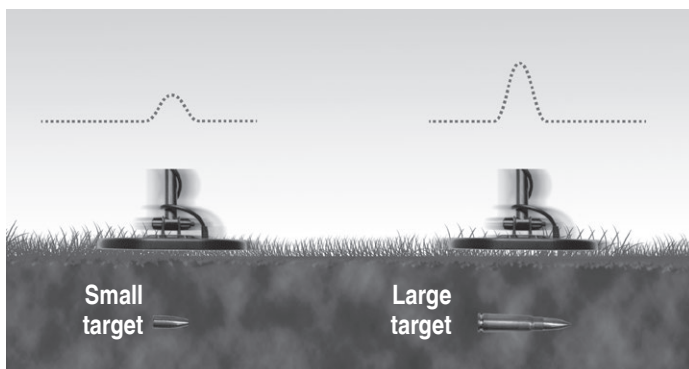
**Example A:** Adjacent targets can often produce a single strong signal with many metal detectors. The fast recovery of the *CSI Pro*, however, will provide two peaks of audio response to these adjacent casings. These multiple audio responses provide the experienced user with more target information.

This fast recovery time helps the *CSI Pro* operator to separate adjacent targets. The proportional audio response which makes this possible also allows the user to better judge a target's size, shape and depth. Proportional audio response means that the loudness of the target's response is proportional to a target's signal strength (i.e. small/deep signals sound faint and strong/large signals sound loud). (See *Examples B and C.*)

## Proportional Audio Target Examples



**Example B:** Notice the different target response provided by the *CSI Pro's* proportional audio in regards to target depth. The shallow target offers a stronger signal, while the same-sized deep object provides a softer signal.



**Example C:** Notice the different target response provided by the *CSI Pro's* proportional audio in regards to target size. The small casing provides a softer signal, while the larger copper bullet at the same depth provides a strong signal. Target size can be estimated by raising and then swinging the coil over the target. Large targets continue to be detected at greater distances from the coil while small targets more quickly lose detection.

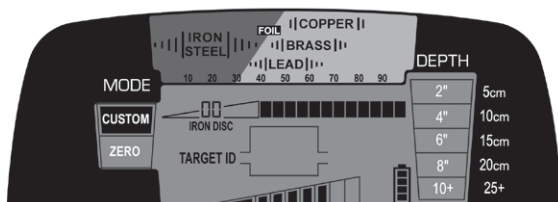
## SEARCH MODES

The *CSI Pro* includes two detection modes: a CUSTOM Discrimination pattern and a ZERO Discrimination pattern. Use the CUSTOM Mode to quickly begin searching with a discrimination pattern that has been previously defined and saved by the operator. Use the ZERO Mode to detect all metallic targets present and to add only as much Iron Discrimination and Notch Discrimination as desired.

### **Press the Mode button to change modes.**

In either of the two modes, the *CSI Pro*'s searchcoil must be in motion to detect targets. Truly static detection is possible while using the detector's Pinpoint pushbutton.

#### • **CUSTOM Mode**



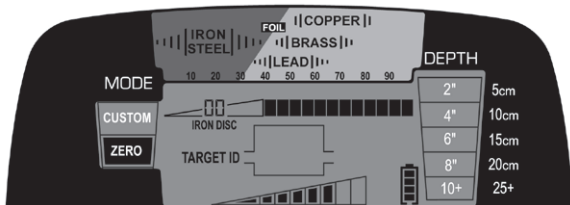
This mode can be customized by the operator and the *CSI Pro* will retain the changes when the detector is switched off. The factory preset for the CUSTOM Mode (see above) is designed to detect every type of metal. All 12 discrimination pixels are switched on and High Res Iron Discrimination is set to 0 (zero)—indicating that no metal targets have been eliminated.

Begin with this discrimination pattern and then use IRON DISC and NOTCH DISC pushbuttons to customize the discrimination settings. Changes



made in the CUSTOM Mode will be retained when the CSI Pro is switched off. (For information on the use of IRON DISC and NOTCH DISC, see pages 25–30.)

- **ZERO Mode**



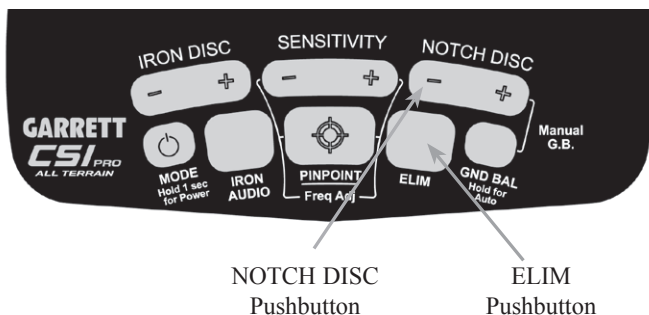
Designed to detect every type of metal; use ZERO mode to find all metal items or when the material of the desired object is unknown. All 12 discrimination pixels are switched on and High-Res Iron Discrimination is set to 0 (zero)—indicating that no metal targets have been eliminated.

Switch to the ZERO Mode to aid in locating a target when its signal is inconsistent. Such signals could mean the target is made of iron or a trash target is close to a good target.

**Note:** The factory preset for the ZERO Mode is the same as the factory preset for the CUSTOM Mode; however, changes made to the ZERO Mode will not be retained after the detector is switched off. (For information on the use of IRON DISC and NOTCH DISC, see pages 25–30.)

## NOTCH DISCRIMINATION

The *CSI Pro's* NOTCH DISC pushbuttons are used in conjunction with the ELIM pushbutton to eliminate trash objects from detection such as foil or pull-tabs.

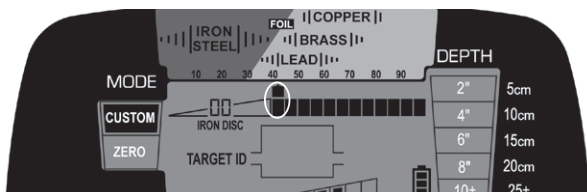


The *CSI Pro* has 12 pixels or "notches" of discrimination (in addition to the 40 points of High-Res Iron Discrimination). Any combination of these pixels can be switched on or off based upon your preference. There are two primary methods for modifying the Notch Discrimination Pattern to reject a specific type of trash or unwanted item.

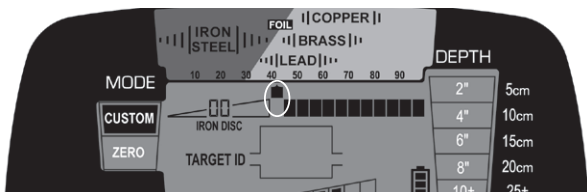
The first method uses the NOTCH DISC and ELIM pushbuttons (seen above) to manually modify the Lower Scale's Notch Discrimination pattern.

Use the (+) or (-) NOTCH DISC pushbuttons to move the Target ID cursor to the left or right. Next, press the ELIM pushbutton to eliminate or activate the pixel located on the Lower Scale, directly below the Target ID cursor. (See *illustrations on next page.*)

## Example: Manual Modification of Notch Discrimination Pattern



Use the NOTCH DISC buttons to position the Target ID Cursor above the pixel you wish to eliminate (see above illustration). Use the ELIM pushbutton to delete this pixel from the Lower Scale (see below). This item is now rejected.



The second method of modifying the Notch Discrimination pattern involves the use of only the ELIM pushbutton. When an unwanted target is audibly detected while hunting, simply push the ELIM button to create a notch at that Target ID Cursor. The next time the *CSI Pro* encounters the same trash item, it will not produce an audible signal.

The *CSI Pro*'s ELIM pushbutton can also be used to find specific metal items. For example, if a particular shell casing is being sought at a crime scene, scan a matching shell casing with the *CSI Pro* while in the ZERO mode. Note where the Target ID cursor appears when the casing is scanned. Next, use the NOTCH DISC and ELIM pushbuttons to switch off all the pixels except the one for the desired target range.

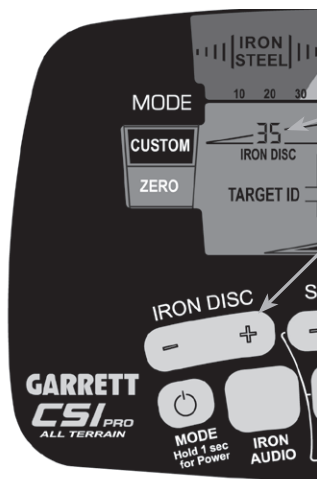
*Note:* Depending upon how the shell casing is laying in the ground, its Target ID may shift a little; therefore, your ability to find it will be enhanced by turning on an additional pixel on either side. The *CSI Pro* is now programmed to find the

desired shell casing or casings based on the conductivity of the matching casing that was scanned.

Note: The notch discrimination function can be used to modify each Mode's discrimination pattern. Notch Discrimination modifications made while in CUSTOM will be retained when the detector is switched OFF. However, all changes made to the Notch Discrimination pattern while in ZERO mode will return to the factory settings when the detector is switched OFF and back ON again.

## IRON DISCRIMINATION

**Iron Discrimination**—The *CSI Pro* features a high-resolution iron discrimination adjustment. This additional resolution allows more precise control of how much iron discrimination can be applied. The level can be adjusted from 0 (no iron discrimination) to 40 (maximum iron discrimination).

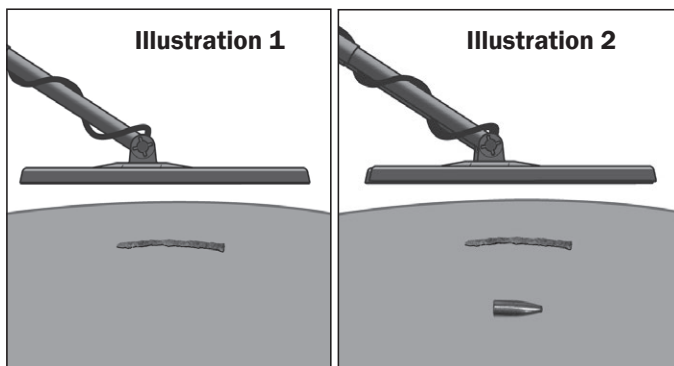


Iron Discrimination  
Setting

IRON DISC Pushbutton

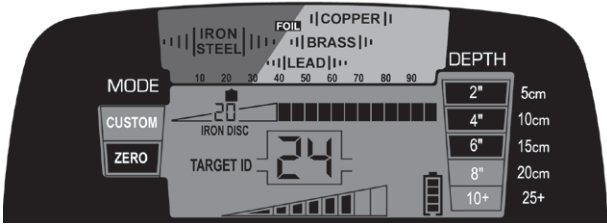
Use the (+) or (-) IRON DISC pushbuttons to adjust the Iron Discrimination up or down. The small two-digit number above the words "IRON DISC" on the LCD indicates the iron discrimination setting.

The examples shown below illustrate how an iron object can often "mask" out the signal of an adjacent good target when too much iron discrimination has been applied. Using the High-Res Iron Discrimination, apply just enough iron discrimination to reject the undesired iron nail shown in this example. By using only a minimal amount of iron discrimination, the detector will detect the combined conductivity of the bullet and nail together thus overcoming the potential "masking" problem.

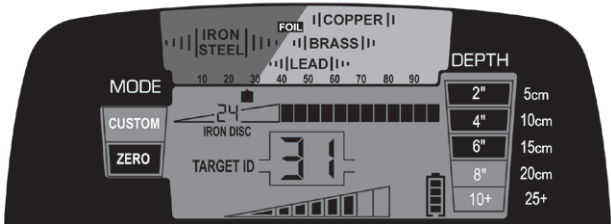


Iron targets, such as the nail shown in Illustration 1, can sometimes mask a good target's signal. If too much iron discrimination is applied, the good target (seen in Illustration 2) can be missed. Read page 30 to learn how to apply the proper amount of iron discrimination to eliminate the nail shown in Illustration 1 and still detect the bullet shown in Illustration 2.

**Example: Detecting Targets in Trash with High-Res Iron Discrimination**



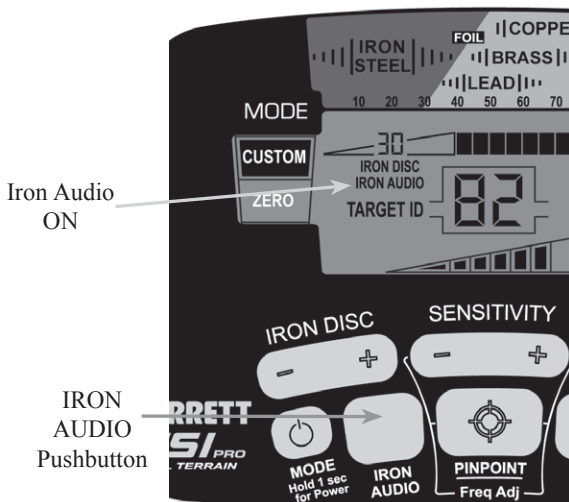
In the illustration above, the *CSI Pro* is operating in the ZERO Mode with an IRON DISC setting of 20. The nail seen in Illustration 1 (on page 29) registers from 18 to 24 on the Digital Target ID scale. To eliminate the nail from detection, increase the iron discrimination level to 24 using the IRON DISC (+) pushbutton.



In Illustration 2, the same iron nail is laying above a bullet. Since the Iron Discrimination level is now set to 24, the nail by itself would not be detected; however, the two objects (nail and bullet) have a combined conductivity of more than 24.

Therefore, the bullet is detected due to the combined conductivity being higher than that of the discriminated target (nail) alone.

## IRON AUDIO



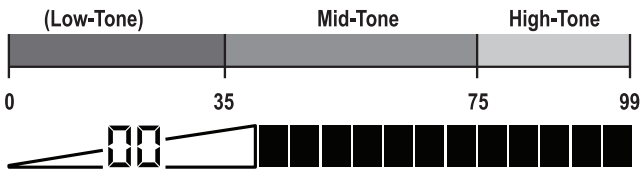
Press and release the IRON AUDIO pushbutton to switch the Iron Audio feature ON/OFF. When this feature is on, the words "IRON AUDIO" appear on the LCD (as shown in the illustration above). The Iron Audio feature can be used in either of the CSI Pro's modes.

Scattered iron objects in the ground can mask good targets and even create "ghost signals" that appear to be a good target. Garrett's selectable Iron Audio feature allows the user to hear discriminated iron (normally silenced) in order to know the whole picture and avoid being tricked into digging an undesired target.

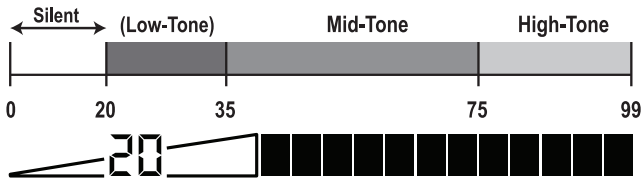
Iron Audio also allows adjustment of the mid-tone's range to include all targets above the iron discrimination setting. The user is adjusting the cut-off between low-tone iron targets and mid-tone targets to better distinguish good targets.



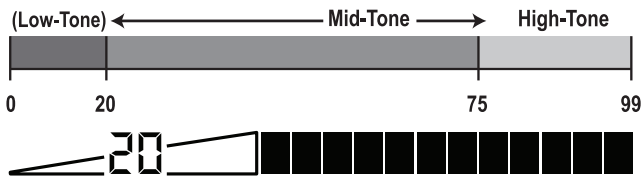
Refer to the illustrations below regarding the use of the Iron Audio feature:



IRON AUDIO OFF: Normal division of low, mid and high tones.



IRON AUDIO OFF: With the Iron Discrimination set to 20, all targets below 20 are silent.



IRON AUDIO ON: Targets below 20 are now heard as a low tone and targets above 20 will produce a mid or high tone.

When Iron Audio is on, iron targets will not only be heard, but they will produce an even more distinctive response with multiple tones. For example, a nail will produce several fast low tones as the searchcoil passes over. A flat iron object like a bottle cap or steel washer will produce a very distinctive Low-High-Low response.

**Tip for using Iron Audio:** In areas with high concentrations of iron, it is recommended to switch off Iron Audio. Otherwise, it may produce far too many signals. Then, if a target is detected that has a questionable or inconsistent response, switch on Iron Audio to check if it is iron.

To fully appreciate the additional information offered by the Iron Audio feature, conduct the following experiment. Start with the *CSI Pro* in Zero Mode (IRON DISC setting at 00) and pass the searchcoil over a bottle cap which is lying flat on the ground. Note that the target response is consistent with the audio of a good target and that the bottle cap's flat surface gives a Digital Target ID reading generally in the 40–60 range.

Then, set IRON DISC to 35. With the Iron Audio feature switched OFF, pass the bottle cap across the coil again. Notice the subtle breaks and inconsistencies of the target response, indicating it might be made of iron. Pass a non-ferrous target such as a coin or gold ring across the coil and note its clean tone in comparison to that of the bottle cap.

With IRON DISC remaining at 35, switch on the Iron Audio feature. Pass the bottle cap completely across the coil again and note the Low–High–Low response that is unmistakably iron. Again, pass the non-ferrous target across the coil to compare its audio to that of the bottle cap.

## BENCH TESTS

You should conduct bench tests to become more familiar with the *CSI Pro's* operation, including use of the Iron Audio feature. Suggested test items should include:

- Bullets, casings, knives, etc.
- Iron nail
- Conductive non-ferrous target (coin or gold ring)
- Bottle cap or steel washer

To conduct a bench test, place the searchcoil on a flat, non-metallic surface that is several feet from other metallic objects. Begin by testing in the ZERO Mode. Pass the test items individually across the searchcoil at a distance of 3 to 4 inches (8–10cm).

Observe the Digital Target ID for each and the proportional audio characteristics. Use both large and small test pieces at varying distances from the searchcoil to observe the levels of their responses.



For bench testing, place the searchcoil on a flat, stable, non-metallic surface that is several feet from other metallic objects.

**Discrimination bench test:** A similar test procedure can be used to better understand how to set iron discrimination levels. Pass the iron nail across the searchcoil. With the factory preset level of zero (0) Iron Discrimination, the nail produces a Low Tone. If the iron nail registers up to a 26 on the Digital Target ID, use the IRON DISC pushbuttons to move the Iron Discrimination setting up to 26. Pass the iron nail across the searchcoil again to verify that it has been eliminated. If not, raise the Iron Discrimination setting a little higher using the (+) IRON DISC touchpad until the iron target no longer produces an audible response.

**Iron Audio bench test:** Next, remain in ZERO Mode with your Iron Discrimination level set to remove the iron nail tested in the example above. Press the IRON AUDIO pushbutton and pass the nail across the searchcoil again to hear the distinctive iron sounds. The distinctive Low-Medium-Low response indicates that the target is unmistakably iron.

Flat iron objects like bottle caps or steel washers can appear to be good conductive targets to detectors. To test the *CSI Pro's* advanced iron recognition abilities, conduct another bench test with an iron bottle cap. (Follow the steps as outlined on page 33 of the previous "Iron Audio" section.)

**Final tip:** Record the results of your bench tests and refer to them when hunting in the field. Knowledge of the audio characteristics and the Iron Audio feature of the *CSI Pro* can reduce the amount of trash targets that are dug.

## CREATE A CRIME SCENE TEST PLOT

It is strongly suggested that you develop a target "test plot" to learn how the *CSI Pro* identifies various targets that are encountered. This test plot will prove invaluable in training others on the use of this metal detector.

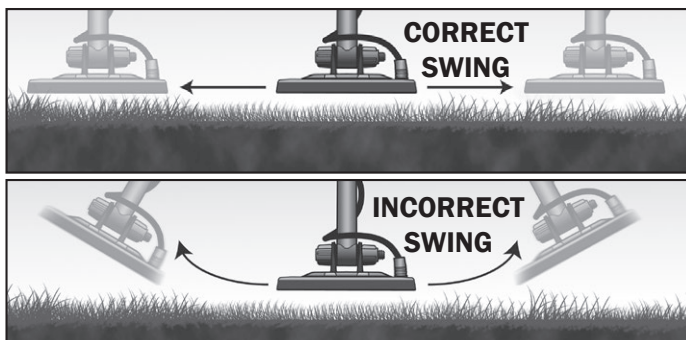
After an area has been selected for your test plot, scan it thoroughly and remove all metal from the ground. Next, select targets for ground search training. These could include .22 caliber bullets, .38 caliber shell casings, a dummy pistol, a knife, a bottlecap, a nail, pulltabs and other targets. Place the targets at varying depths.

Be sure to listen to the tone of each target while scanning over your test plot. With experience, you will begin to recognize the different tones the *CSI Pro* makes when hunting as well as the other types of targets they identify.

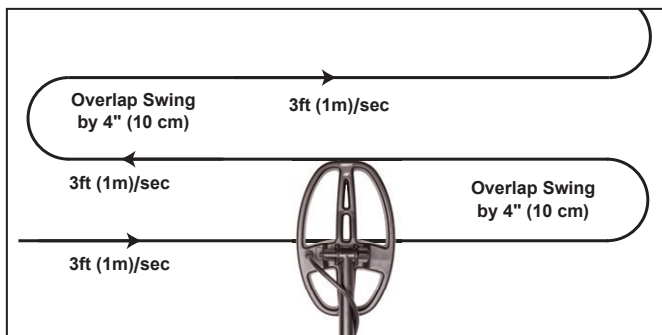
Some law enforcement training facility test plots may simulate realistic recovery situations, such as embedding a bullet in a fallen log. Another scenario could involve placing a desired target in close proximity to scattered iron trash items to test the detector operator's ability to separate a good target from nearby trash targets.

## SWEEPING THE SEARCHCOIL

- Keep your searchcoil at a constant height and parallel to the ground at all times for best detection results. Do not lift or tilt the coil at the end of swings.



- Walk slowly as you scan your searchcoil in a straight line from side to side at a speed of about 3 feet (1 meter) per second. Advance the searchcoil about half the length of the searchcoil at the end of each sweep.



In order to fully search an area, overlap the swings of your searchcoil by half the length of the coil (about 4 inches). Sweep the searchcoil in a straight line or with a slight arc at a sweep speed of about 3ft/sec.



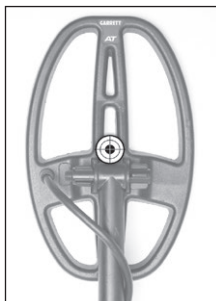
## PINPOINTING

Press and hold the Pinpoint pushbutton to determine the exact location of a target. To use the pinpoint function, position the searchcoil to the side of the target's suspected location at a fixed height above the ground (e.g. 1 inch or 2cm). Press and hold the Pinpoint button and sweep the searchcoil over the target area while maintaining the same fixed height above the ground. Sweep the searchcoil side-to-side and front-to-back in a crosshair pattern to locate the peak signal. Note: it is recommended to maintain a constant height during the entire Pinpointing process to prevent ground mineralization from producing false signals or masking the target's signal.

The bar graph on the LCD can also aid in locating the peak signal. When pinpointing, the Upper Scale on the LCD indicates signal strength. When the greatest number of segments (increasing left to right) are shown, the center of the searchcoil is directly over the target with the depth of a coin-sized target shown on the depth scale. The symbol "PP" for pinpoint is displayed on the LCD while pinpointing.

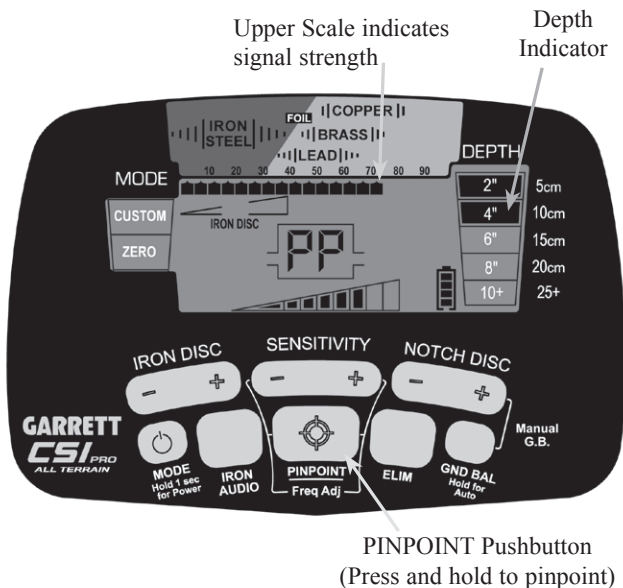
It is recommended to practice pinpointing in a test plot.

**Note:** The center of detection is under the center of the coil, just ahead of its stem mount. The opening just ahead of the stem mount can serve as your reference point for pinpointing.



Indicates  
pinpointing  
center of the  
5"x8" DD  
searchcoil.





PINPOINT Pushbutton  
(Press and hold to pinpoint)

**Note:** For best pinpointing results, maintain a constant height above the ground (e.g. 1" or 2cm) and ensure that the detector is properly ground balanced.

**Tip for narrowing the detection area:** Large targets can produce wide signals while pinpointing, making it difficult to precisely locate the target's center. To help pinpoint, the detector can be retuned to the target to narrow the detection area as follows.

While holding down the Pinpoint pushbutton, move the coil toward the target until the upper scale just reaches a full-scale response. Then, quickly release and depress the Pinpoint button again to retune the detector and narrow its detection field. Continue moving the searchcoil toward the

Traditional  
pinpointing  
technique  
using Pinpoint  
pushbutton.



target to find its central peak response. If needed, repeat the retune process to further narrow the target's response.

A quality hand-held pinpointer such as Garrett's *CSI Pro-Pointer* is recommended to speed the target recovery process and to aid in locating secondary targets.

- **Alternative pinpointing technique: DD-tip or tail.** In the standard pinpointing method described on page 41, the target is pinpointed beneath the center of the searchcoil. Some detectorists using DD coils prefer to pinpoint off the tip or tail of the searchcoil, as follows.

**Image A**



**PULL COIL TOWARD YOU**

⊕ Indicates target position

Press and hold the Pinpoint pushbutton and sweep the searchcoil side-to-side to center the target (the point where the strongest audio response is heard and the maximum signal strength is displayed on the LCD).

Then, pull the searchcoil slowly toward you (see *Image A*), while noting the target signal.

**Image B**



Once the target signal drops off (both audibly and on the LCD meter), shallow targets should be located immediately in front of the searchcoil's tip (see *Image B*). Deep targets will be under or just inside your searchcoil's tip. This is because the conical shape of the searchcoil's detection field begins bending in slightly as the depth increases.

You can reverse this pinpointing technique to pinpoint off the DD coil's tail; in this case, push the coil away from you. The audio and LCD meter will place the target just off the searchcoil's tail.

- **Alternative pinpointing technique: DD-wiggle.** Quickly locate targets *without using the Pinpoint button* as follows. Continuously swing the searchcoil side-to-side using fast, narrow swings of 2 to 4 inches (5–10cm). While continuing this side-to-side wiggle, slowly move the searchcoil sideways toward the target's suspected position until the audio response produces a consistent, symmetric beat. This indicates the lateral left-to-right position of the target. Then locate the target's front-to-back position by rotating around 90° and repeating the same process.

**Tip:** Practice any or all of these various pinpointing options in your test plot. Choose the technique that works best for you. As you improve your pinpointing accuracy, you will dig smaller holes and make your search time more productive.

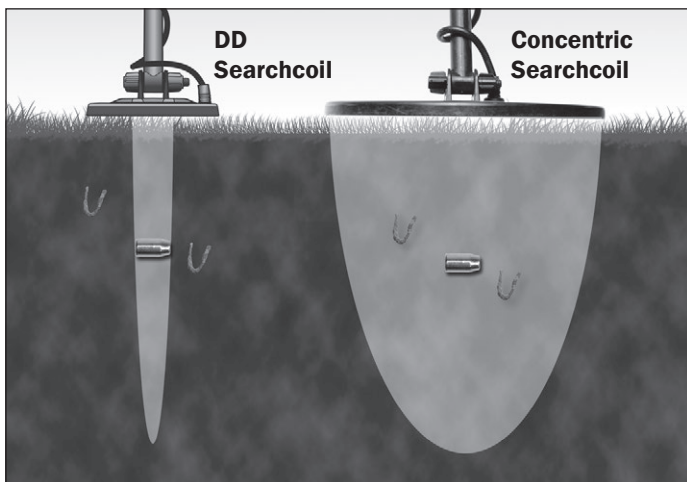
- **Ground balance the *CSI Pro* as often as necessary** as the ground conditions are heard to change (excessive noise, etc.) in order to maintain the most effective detection.

- **Determining ground mineralization level:** It is important to understand the soil conditions of your hunting environment. To determine how mineralized the soil is, begin by ground balancing the *CSI Pro*. (Refer to Ground Balance section for how to ground balance.)

After ground balancing, gauge the concentration of ground minerals by manually increasing or decreasing the ground balance setting by 5 to 10 points and "pumping" the coil to check the ground response. If the ground response is minimal, then the area contains low ground mineralization. In areas of high ground mineralization, an increase or decrease of just 1 to 2 points on the ground balance setting will quickly produce a significant ground response.

- **Swing your searchcoil parallel with uneven terrains** such as rock structures, wash-out areas or ditches. This will minimize the negative effects caused by uneven ground areas. Changes in ground response can reduce the detector's performance as uneven ground rises and falls beneath the searchcoil.

- **Isolating adjacent targets.** The narrow detection field of the *CSI Pro's* DD searchcoil allows better separation of adjacent targets versus a similar size concentric searchcoil. Use narrow swings of the searchcoil in trashy areas to isolate good targets amongst the trash.



## UNDERWATER OPERATION

The *CSI Pro* can be immersed in water to a maximum depth of 10 feet (3 meters) to search in and along shorelines, rivers, piers, docks or swimming holes. Use of the *CSI Pro* at depths exceeding 10 feet (3 meters) can cause leaks and damage the detector. Use of the *CSI Pro* beyond the recommended depth will void the manufacturer's warranty.

The *CSI Pro* is shipped with standard land-use headphones. These can be used for searching along waterways and for wading, but the earphones are not waterproof. For submersion, optional waterproof headphones (available from Garrett) must be used.



The *CSI Pro*'s standard headphones include a waterproof connection for shallow water wading use. If the entire headset is to be immersed in water, waterproof headphones (*sold separately*) must be used.

**Tips for saltwater use:** Searching in a saltwater environment is challenging for any Continuous Wave (VLF) metal detector. Saltwater is conductive and produces signals similar to foil. Although the *CSI Pro* is not specifically designed for saltwater use, it can be used in this environment.

Proper ground balance is the most important step for stable saltwater operation. To achieve stable operation:

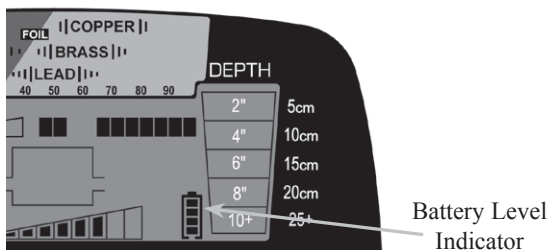
- First, Ground Balance the detector to the area that will be hunted (see pages 16–18). Saltwater beaches typically Ground Balance between 0 and 20.
- If necessary, reduce the Sensitivity until the signals become stable.
- Swing the searchcoil flat and at a constant height. Do not bounce the coil or lift the coil at end of swings.
- Swing the searchcoil parallel to the water's edge.
- The detector will be less stable in shallow, breaking surf where the searchcoil is in and out of the saltwater. In this area the detector is encountering a constantly changing environment produced by the surf, making it difficult for the detector to stabilize.

To improve stability, negatively bias the ground balance by several points. To do so, press and release the Ground Balance button and use the (-) NOTCH DISC button to manually reduce the ground balance setting. For example, if the Ground Balance number was 11, reduce the Ground Balance number to 7 or 8. Introduce only enough negative bias to achieve sufficiently stable operation. Reduce the detector's Sensitivity as needed. *Note:* While some background chatter may remain, a target's more definitive response can be recognized.

- If necessary, notch out the first pixel under Foil. It is important to note that by notching out this pixel, detection of some items will be reduced.

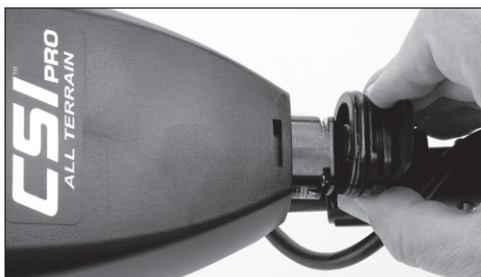


## CARE AND MAINTENANCE



**Battery Replacement**—The *CSI Pro* is operating with fresh or fully charged batteries when 4 illuminated bars on the **Battery Level Indicator** are displayed (see above). The detector will maintain full performance until the batteries need to be replaced. Replace batteries when there is only

Remove the battery cover by rotating the cover one-quarter turn in a counterclockwise direction. Grasp the cap by top and bottom and pull it straight back. Slide the battery tray out to replace the batteries.



one segment remaining. NiMH rechargeable batteries may be used. Expect 20 to 40 hours of operation depending on battery type and quality.

Access and replace the batteries by rotating the battery cover housing one-quarter turn counterclockwise. Pull and remove the cap to slide the battery holder out. Remove batteries when the *CSI Pro* will be stored for longer than 30 days.

The *CSI Pro* is a rugged machine, designed for outdoor use in all environments. However, as with all electronic equipment, there are some simple ways to care for the detector to maintain its high performance.

- Avoid extreme temperatures as much as possible, such as storing the detector in an automobile trunk during the summer or outdoors in sub-freezing weather.
- Keep the detector clean. Wipe the control housing with a damp cloth when necessary.
- Disassemble the stem, and wipe it and the searchcoil clean with a damp cloth.
- When storing for longer than one month, remove the batteries from the detector.
- It is best to use quality alkaline batteries. When changing batteries, be sure to replace with all new batteries for optimum performance.
- Replace protective cover on the connector when not using headphones.

# TROUBLESHOOTING GUIDE

SYMPTOM	SOLUTION
No power	<ol style="list-style-type: none"> <li>1. Ensure batteries are installed in the correct position.</li> <li>2. Replace all old batteries with all new batteries.</li> </ol>
Erratic sounds or target ID cursor movement	<ol style="list-style-type: none"> <li>1. Ensure your searchcoil is securely connected with the O-ring properly sealed and that the coil cable is snugly wound around the stem.</li> <li>2. If using the detector indoors, be aware that excessive amounts of electrical interference exists, plus excessive amounts of metal can be found in floors and walls.</li> <li>3. Determine if you are close to other metal detectors or other metal structures such as electrical power lines, wire fences, benches, etc.</li> <li>4. Adjust frequency.</li> <li>5. Reduce your sensitivity setting.</li> </ol>
Intermittent Signals	Intermittent signals typically mean you've found a deeply buried target or one that is positioned at a difficult angle for your detector to read. Scan from different directions to help define the signal. In the case of multiple targets switch to the ZERO Mode or press the pinpoint button to precisely locate all targets. (NOTE: Iron targets may cause Intermittent Signals. You can identify iron targets in ZERO Mode or with the Iron Audio feature).
I'm not finding specific targets	Use the ZERO mode, which detects all metal targets to ensure desired targets are detected. The use of too many notches of discrimination could prevent some desired objects from being detected.
Target ID Cursor bounces	<p>If your Target ID Cursor bounces erratically, chances are you've found an iron target. However, a Target ID Cursor may bounce if a good target is not parallel to the searchcoil (e.g. on edge). It may also bounce if there is one or multiple "junk" targets laying next to the good target. Scan from different directions until your Target ID Cursor becomes more stable.</p> <p>NOTE: Large, flat pieces of iron—depending on their orientation in the ground—can read as a good target or can cause erratic Target ID Cursor movement. Use Iron Audio feature to help identify iron targets.</p>

## WARRANTY & SERVICE

Your *CSI Pro* detector is warranted for 24 months, limited parts and labor, but does not cover damage caused by alteration, modification, neglect, accident or misuse. Use of the *CSI Pro* at submerged depths exceeding 3 meters will void this warranty.

In the event you encounter problems with your *CSI Pro* detector please read through this Instruction Manual carefully to ensure the detector is not inoperable due to misadjustments. Press and hold the power pushbutton for 5 seconds to return to the factory settings.

You should also make certain you have:

1. Checked your batteries, switches and connectors. Weak batteries are the most common cause of detector problems.
2. Contacted your dealer for help, particularly if you are not familiar with the *CSI Pro* detector.

In the event that repairs or warranty service are necessary for your *CSI Pro*, contact the local outlet where your detector was purchased. To avoid excessive shipping and import charges, do not attempt to return a Garrett product to the factory in the United States.

Information on international warranty/repair needs can be found on the Garrett website: **[www.garrett.com](http://www.garrett.com)**. Click on the Security Division and then the Warranty tab for more details.

### **4.5" (11.5cm) Super Sniper™ Searchcoil—** Part No. 2222500

Use when searching for small, shallow targets or in trashy or tight places.



### **6" x 9" (15 x 23cm) PROformance Concentric Searchcoil—**Part No. 2222600

This waterproof searchcoil offers excellent depth for medium-sized targets in less mineralized soils.



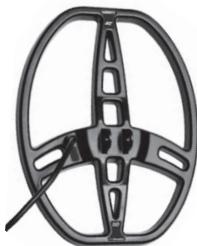
### **9" x 12" (23 x 30.5cm) PROformance Concentric Searchcoil—**Part No. 2222700

This larger size concentric searchcoil is waterproof and offers excellent depth for larger targets in less mineralized soils.



### **8.5" x 11" (21.5 x 28cm) PROformance DD Searchcoil—**Part No. 2222700

This larger size DD searchcoil is waterproof, offers maximum depth for larger targets in more mineralized soils, and offers excellent separation for adjacent targets.



### **Waterproof Headphones—**

Part No. 2202100

Required when the headphones will be immersed in water.



### **5" x 8" (13 x 20cm) DD Searchcoil Cover—**

Part No. 1607400

Protect the searchcoil's surface from scratching and chipping during use.



### **Garrett CSI PRO-POINTER® Pinpointing Detector—**

Part No. 1166020



The *CSI PRO-POINTER* combines performance with sleek design to assist in pinpointing hard-to-find targets. Includes proportional audio/vibration pulse rate target indicators and 360° side scan detection area. Water resistant with LED light for low light uses. Includes woven belt holster and 9-volt battery.

### **1/4" Headphone Adapter—**

Part No. 1626000

Allows use of standard headphones with a 1/4" male phone plug with the Garrett CSI Pro. (*Not intended for submerged use.*)



**To see Garrett's complete collection of metal detector accessories—including "how to" books, recovery tools and protective gear—please visit [www.garrett.com](http://www.garrett.com).**

---

**GARRETT**®  
METAL DETECTORS

---

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

1881 W. State Street  
Garland, Texas 75042  
Toll Free: 800.234.6151  
Tel: 972.494.6151  
Fax: 972.494.1881  
Email: [security@garrett.com](mailto:security@garrett.com)

© 2012 Garrett Electronics, Inc.  
PN 1533700.A.0812