FIELD USE

Every detector must be properly tuned in order to perform at its peak and provide maximum depth. In fact, the more powerful a detector is, the more critical the tuning becomes. Less powerful detectors are more tolerant of improper tuning, but are also not capable of the depth of a properly tuned, high-powered detector such as the Outlaw. To achieve peak performance from your Outlaw, be sure to properly adjust the GROUND BAL control in ALL METAL MODE. The settings of this control will also affect the detector's performance in Discrimination MODE, so make sure to adjust it properly first, even if you will not be hunting in ALL METAL MODE. Remember: improper tuning will reduce performance and can also cause "false" and erroneous "ghost signals".

ADJUSTING THE POLE AND SEARCHCOIL

The pole length should be adjusted so that the detector does not become uncomfortable or tiring after long periods of use. The detector grip should rest in your hand with your arm relaxed, your elbow straight but not locked, with the pole extending out in front of you at the approximate angle shown in the photo.

You should be able to swing the detector back and forth in front of you - using relaxed shoulder movement- while keeping the searchcoil as close to the ground as possible. This swinging movement is often called a "sweep"

The searchcoil should not touch the ground during your sweep. The pole length should be adjusted to allow this without having to lift the detector with your elbow or shoulder. The searchcoil should rest about one inch above the ground while you are standing erect; the angle of the searchcoil should allow the bottom to be parallel to the ground.

The pole length is adjusted by loosening the pole lock, then depressing the spring buttons and extending or shortening the pole until the spring buttons click into the set of holes that give you the most comfortable pole length.

To adjust the searchcoil angle, loosen the searchcoil thumb nut slightly and move the searchcoil into the desired position: tighten the searchcoil thumb nut by hand so that the searchcoil will hold in place.

TUNING YOUR DETECTOR

Tuning your Outlaw can be done in 6 simple steps:

1. Wait up to 6 seconds until the Audio Battery Test is complete once the detector is turned on.
2. Check/Adjust Threshold using THRS control.
3. Ground Balancing the detector using the GROUND BAL control.
4. Setting the operating mode using the MODE switch.
5. Setting the Discrimination Level using the DISC control.
6. Setting the Sensitivity Level using the SENS control.

NOTE: Ground Balancing should be done while in ALL METAL MODE and AUTO Tune MODE. Setting the Discrimination Level and the Sensitivity Level should be done while operating in Discrimination MODE.

AUDIO BATTERY TEST

When you first turn the unit from OFF to ON, the automatic battery test circuit is activated. You will hear an audio tone, the volume and duration relating to the battery strength. When the battery test is no longer heard, the 9 V battery needs to be replaced. See "Installing the Battery" in the GETTING STARTED section.

CHECK AND ADJUST THRESHOLD

Set the MODE switch to AUTO, to be in the ALL METAL MODE with retune. Check that the threshold is set correctly to a faint hum. Adjust the threshold if it is not correct.

GROUND BALANCING

Ground Balancing is not a difficult procedure, but it is critical if you desire maximum depth and stability. It is especially important if you are using the Outlaw in highly mineralized ground.

NOTE: No matter where you will be searching, or whether you will be operating in the ALL METAL MODE or Discrimination MODE, make sure the detector is properly Ground Balanced in the AUTO tune mode of ALL METAL first.

As shown in Figures 11 and 12 below, raise the searchcoil 6 to 8 inches above the ground, level and parallel to the ground. You will lower the searchcoil quickly to ground level and return back to the starting point 6 to 8 inches above the ground. This "pump" is designed to show the ground to the Outlaw.

As you listen to the threshold, one of three things should happen:

1. The sound will remain the same throughout the pump.
2. The sound will increase on the way down, or
3. The sound will get quiet on the way down.

Figure 11 – Lower Coil Quickly

Figure 12 – Return to Starting Point

Step 7 – Use RETUNE Button in Discrimination (DISC) MODE

The RETUNE button can be used to change the mode for a temporary ALL METAL check.

Wave the nickel about four inches over the coil. Turn the Discrimination Level (DISC) up until the signal is just broken. Now depress the RETUNE button completely down with your thumb and waive the coin over the coil again. The unit is in an ALL METAL MODE with RETUNE. The nickel should make a solid tone, but it will require motion to make the beep. Release the RETUNE button. Place your thumb on the bezel surrounding the RETUNE button. Pressing the switch part way down will activate the ALL METAL MODE, but will not retune. Hold the nickel over the coil. The sound should only change when the target moves.

Now you should know how to activate the ALL METAL MODE using the RETUNE button only. You should also be able to retune to pinpoint (as in step 4 above) using only the RETUNE button.

This concludes the air test. You should have a basic understanding of all the controls of the Outlaw Metal Detector.

Step 6 – Adjust the Discrimination (DISC) Level

The Discrimination Level is adjusted to silence more or less targets.

With the Discrimination Level (DISC) set to MIN, you should be able to wave multiple targets over the coil and have the detector beep. At the MIN level, the unit will get rid of some iron targets.

Start by waving the nickel about four inches over the coil. The coin should generate a clear and repeatable signal. Start to turn up the Discrimination Level (DISC) while waving the target. As the DISC level approaches the 12:00 position, the sound should become broken and inconsistent. This is the discrimination circuit working to get rid of the target response. As the Discrimination Level is turned higher, the response should go away. There should be no response, except an occasional chip or pop. The target has been discriminated out.

Turn the Discrimination Level back to 12:00. Wave the zinc penny about four inches above the coil. Turn up the Discrimination Level until the sound becomes broken and inconsistent. This Discrimination Level will be very different than the level for the nickel.

Wave the quarter about four inches above the coil. Turn up the Discrimination Level to the maximum. The quarter may sound good or be broken. The maximum Discrimination Level is not useful for typical hunting, but it may help identify targets before recovery.

Now you should know how to adjust the Discrimination Level to check targets prior to recovery.

Note: It is recommended to redo this step later with good and bad targets (pull tabs, pop tops, foil, screw caps, gold rings, etc.) to see many Discrimination Levels.

Which one of these happen will determine what you need to do to properly Ground Balance your detector for your area.

1. If there is no change in the Threshold sound as you lower the coil, then either there are no minerals in the ground or you have the proper Ground Balance. Either way, you can proceed to hunt.
2. If the Threshold sound gets louder when you lower the searchcoil, then the Ground Balance is too positive. To balance the detector, turn (see note below) the GROUND BAL knob counter clockwise (- direction). “Pump” the detector again and repeat these steps.
3. If the Threshold sound goes away when you lower the searchcoil, it will get louder as you pull the searchcoil away from the ground. The Ground Balance is too negative. To balance the detector, turn (see note below) the GROUND BAL knob clockwise (+ direction). “Pump” the detector again and repeat these steps.

NOTE: Start out using large turns of the GROUND BAL knob, ½ to ¼ of a full turn. Anytime the Ground Balance goes from negative to positive or positive to negative, the proper Ground Balance is between the previous setting and the current setting. Take much smaller steps until the setting is as close to quiet as you can make it.

Important things to remember when Ground Balancing with this method:

1. Make sure you are Ground Balancing in a clean area and not lowering the searchcoil down over a piece of metal.
2. When you pump the searchcoil, be sure that you DO NOT tilt the searchcoil at an angle, as shown in Figure 13.

Figure 13 – Do Not Tilt the Searchcoil at an Angle to the Ground

NOTE: As you move to different areas throughout the day, you may need to make occasional small adjustments to the GROUND BAL knob to maintain peak performance.

SELECTING THE PROPER OPERATING MODE

The Outlaw offer two operating modes: ALL-METAL and Discrimination (DISC) MODE.

The ALL-METAL MODE will detect all metal. Use this mode for pinpointing objects, determining the amount of "trash" metal in an area, to recover all items including iron, or for gold nugget hunting. The Discrimination (DISC) MODE allows the discrimination of some types of metal. Use the DISC MODE when "coin shooting" or jewelry hunting to eliminate some of the "trash" metal.

Now you should know how to use the RETUNE button to pinpoint a target in the no motion ALL METAL MODE.

Step 5 - Adjust the Sensitivity in the Discrimination (DISC) MODE

The Sensitivity Control is adjusted to control the amount of noise in the Discrimination (DISC) MODE.

Flip the MODE switch to the Discrimination MODE (DISC). Wave a coin above the coil, slowly moving farther away from the coil. The signals will start out loud and sharp, then decreasing in intensity as the coin get farther from the coil. When the coin movement no longer makes a signal, turn the Sensitivity Control (SENS) up to 7. The coin should make noise over the coil higher than when the Sensitivity was set to 1. Stop waving the coin. Turn up the Sensitivity to 10. Inside a home, there may be enough electrical noise that the speaker will start to chatter. Try turning up the Sensitivity to the maximum setting. Small signals may be difficult to distinguish from background noise. So the proper setting for the Sensitivity is as high as possible while having a minimum of chatter. Ground minerals, electrical lines, cell phones, cell phone towers, and other environmental effects may all affect where the proper setting for the sensitivity needs to be. Adjust the Sensitivity Control at each new location or if excessive chatter is noticed on the speaker.

Now you should know how to adjust the Sensitivity (SENS) setting for maximum performance in the Discrimination (DISC) MODE.

Now wave the coin above the coil at a height where the detector has only a small sound as the coin passes. Turn the Threshold Control down to the minimum position. Wave the coin again at the same height. The coin may not register at all. Turn the Threshold up to near the MAX. Again, waive the coin at the same height. It will be difficult to hear the small change from the coin against an already loud tone. Turn the Threshold back to just barely a hum. This is the correct setting. The Threshold should not need much changing for a given coil. It should be reset if the coil is changed.

Now you should know how to set the Threshold (THRS) to maximize your ALL METAL depth.

Step 4 - Try the No-Motion ALL METAL MODE

In the AUTO tune MODE, the sound at the speaker always wants to return to the baseline threshold level. This means that target detection requires motion. However, in the ALL METAL MODE (no retune), the sound at the speaker responds to the target only.

Flip the MODE switch to ALL METAL, which is the no motion ALL METAL MODE. Hold a coin four to five inches above the coil. The sound at the speaker should remain loud. As the coin gets closer to the coil, the sound gets louder. As the coin gets farther from the coil, the sound gets softer.

Now bring the coin back to about four inches above the coil. Press and release the RETUNE button. The sound will return to the baseline threshold level. Move the coin back and forth. There should be no sound or a very small signal. Move the coin slightly closer to the coil and wave it back and forth. The signal should be very sharp. By retuning the detector near a target, the current signal was subtracted off and only a bigger signal will get to the speaker. This technique is extremely useful for pinpointing a target in the ground.

The ALL-METAL MODE has two options: AUTO tune or no auto tune. When the switch is in the AUTO position, the Outlaw will slowly retune the machine to bring back the threshold tone. This means that the signal on a target held stationary under the coil will slowly fade back to threshold level. This mode is recommended for most ALL-METAL hunting as it provides the most stability.

When the switch is in the center position marked ALL-METAL, there is no auto tune. The signal from a target held stationary under the coil will not fade until the RETUNE button is pressed. This mode is useful for precise pinpointing, identifying target size, line tracing and ore sampling. For precise pinpointing, find the searchcoil position near the strongest signal. Hold the RETUNE button down to retune the Outlaw to the current target. Release the button, and the signal as you move the searchcoil should be very small.

Note: Pressing the RETUNE button slightly in the Discrimination mode will change the mode to ALL-METAL no auto tune. Pressing the RETUNE button completely will enable the fast retune. With practice, you should be able to use the RETUNE button to change the mode and retune a target to quickly pinpoint a target.

SETTING THE DISCRIMINATION LEVEL

The DISC LEVEL control is used to adjust the detector's response to unwanted trash metal when operating in the Discrimination MODE. At the lowest setting (MIN), the detector will ignore most iron objects, but will still respond to light foil, bottle caps, pull tabs and most other metal objects,. As the Discrimination Level is increased, more of these trash metal objects are ignored and give no target response sound when inside the searchcoil's range.

The DISC LEVEL should be set to your desired "rejection level" for the particular area your searching. We recommend starting at a low setting if you are unsure of how much trash is in the area. Adjust the level higher if you find yourself digging more trash than you like. Remember that with any metal detector, you will lose target response to small gold rings and nickels when Discrimination is set at the pull tab rejection level. So, digging some trash will increase your number of good finds.

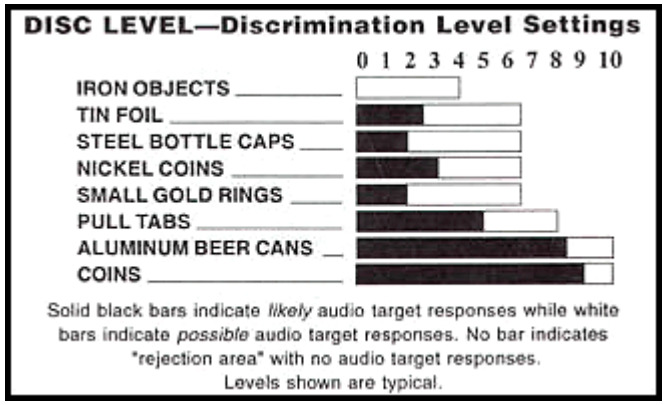

Figure 14 – Discrimination (DISC) Level Settings

In Figure 14 above, DISC settings are shown where many of the common metal objects are ignored by a typical detector. Each detector can vary a little due to manufacturing tolerances so you should experiment with your detector and become familiar with its rejection levels for these trash metal objects.

When searching in the Discrimination MODE, we recommend that you periodically switch to ALL METAL MODE and check the area you are searching to get an idea of how much trash is really there. In extremely trashy areas, it may be desirable to switch to a smaller searchcoil, even though doing so may cause a loss of depth. The smaller coil will allow you a better chance of finding coins between the close pieces of trash.

Step 2 – Perform an Audio Battery Test

When the unit is first turned on, the Outlaw Metal Detector will automatically activate the audio battery test.

Turn the SENS control from OFF to 1.

A solid tone will be heard for up to 6 seconds. The length and the volume of the tone indicate the strength of the battery. When the tone stops, the detector is up and running and the control can be adjusted. If there is no tone at all, the battery needs to be replaced.

Now you should understand that when the unit is first turned on, the duration of the tone indicates the health of your battery.

Step 3 – Adjust the Threshold (THRS)

The Threshold (THRS) is the base or minimum sound in the ALL METAL MODE.

Flip the MODE switch all the way to the left to the automatic retune mode (AUTO). There should be no sound coming from your speaker. Turn your Threshold knob (THRS) up slowly from the 8:00 to the 10:00 position, then from the 10:00 to the 12:00 position, then to the 2:00 position. Finally, turn it all the way to the 4:00 position. At this point, there should be a fair bit of noise coming from the speaker. Turn the Threshold down until the noise is just barely noticeable.

Wave a coin above the coil. When the coin is close to the coil, the detector should make a significant amount of sound. Slowly waive the coin above the coil as you move the coin away from the coil. The response should get smaller until the detector can no longer detect the coin.

Do the following steps:
1. Ground balance (GROUND BAL) knob
2. Perform an audio battery test
3. Adjust the threshold (THRS)
4. Try the no-motion ALL METAL MODE
5. Adjust the sensitivity in the discrimination (DISC) MODE
6. Adjust the discrimination level (DISC)
7. Use RETUNE button in discrimination (DISC) MODE

Step 1 –Ground Balance (GROUND BAL) Knob

The ground balance setting is extremely important when the mineral conditions in the ground are strong enough to affect the Outlaw Metal Detector. (See the Field Use Section on ground balancing for actual use.)

The ground balance is not important for the air-test, so this step is done before the unit is turned on.

Turn the Ground Balance (GROUND BAL) knob one full turn counterclockwise. (e.g. if the knob pointer was at the 12:00 position, turn the knob one direction until the pointer is at the 12:00 position again). Notice that there was no stop on the knob. The plus (+) and minus (-) on the decal indicate a direction, not a position. Turn the knob one more full turn in the counterclockwise direction. There is still no stop on the knob. The potentiometer (pot) inside will turn 3 and ¾ turns before the internal adjustment ends. When the inside of the pot stops, there may be a slight increase in the drag on the knob as it continues to turn. This will not cause any harm to the pot. Turn the knob one full turn clockwise. Don't adjust this knob again for the remainder of the air test.

Now you should understand that the ground balance knob will have a different feel than the other knobs.

SETTING THE SENSITIVITY LEVEL

In lightly to moderately mineralized ground, you can usually set the Sensitivity (SENS) control as high as 8 to 10 (normal maximum setting). In the right conditions, you can move the Sensitivity into the MAXBoost (orange area past the 10) for increased depth.

To adjust the Sensitivity Level to your search conditions, first set the operating MODE to DISC and turn the Sensitivity (SENS) control clockwise as far as possible until the detector just begins to "chirp" intermittently. If the chirping is too frequent, simply turn the control counterclockwise just enough to cause the chirping to subside. Once set, this control should not require readjusting unless site conditions change.

Occasionally you may need to reduce the setting to eliminate "false signals" caused by difficult conditions. Some of the many things that can cause the response of the detector to become erratic during regular use are very large targets, highly mineralized ground on trashy sites, intense ground mineralization changes, CB radios, radio and TV broadcasting antennas, and nearby sources of electrical interference.

There false signals are generally short, choppy sounds that are not repeatable and therefore can easily be distinguished from a good target response sound. They can be distracting though, and reducing the Sensitivity Level will help reduce these signals with an accompanying loss of target sensitivity.

Extreme conditions such as wet salt sand may require you to lower your Sensitivity setting into the 2 to 5 range. Overall, you should always set the Sensitivity Control as high as possible, while still getting smooth operation.

NOTE: The no-motion ALL METAL MODE of the Outlaw is not affected by the Sensitivity Control.

RECOGNIZING FALSE SIGNALS IN DISCRIMINATION MODE

When operating in the Discrimination MODE, some "false signals" may be caused: 1) heavy concentrations of trash metal objects, 2) very large trash metal objects or 3) electrical interference. These signals are generally short, choppy sounds and sound different than "good signals" (good target response sounds).

At the end of your sweep, as you reverse the coil direction, the detector is most susceptible to trash-induced noise. There are two ways to tell whether these sounds are good deep signals or trash "noise". The first is by repeatability. Trash-induced noises will not be regular as you sweep the coil over the suspected target several times, whereas a good target response will be repeatable. The second method is to switch to ALL METAL MODE and check the target response sound. If the response is weak, it may well be a deep, good target. But if the response is very strong, it is probably trash. Note that a coin close to the surface can give a double beep sound, but it is regular and repeatable. Raising the coil an inch or two will restore the single beep on surface targets.

When searching in the Discrimination MODE, it is best not to use a higher Discrimination Level setting than necessary. Nickel and most smaller rings are rejected when the Discrimination Level is set to reject pull tabs on any metal detector that is a TR Discriminator like the Outlaw. If you don't dig any junk at all, you are surely passing up a lot of good finds as well. Set the Discrimination Level only high enough to suit the conditions where you are searching. If there is any doubt whether a target is good or not, dig it.

PERFORMING THE AUDIO BATTERY TEST

Your Outlaw is equipped with an automatic battery test circuit so you can always be sure you are getting top performance from it. The battery should be checked after the detector has been on for about 10 minutes and then periodically if you are using it for long periods.

AIR TEST – SELF-GUIDED TUTORIAL

INTRODUCTION

The air test is designed to introduce the use of controls for the Outlaw Metal Detector. If you have never owned a metal detector before, follow each step carefully.

You will need:

- Fully assembled Outlaw Metal Detector
- Three newer coins: a penny (1984 or newer), a nickel and a quarter
- A non-metal table or counter surface
- Approximately 20 minutes to complete the Air Test

Prepare for the Air Test:

- Place your assembled Outlaw Metal Detector on the non-metal surface as shown in Figure 10
- Make sure there are no metal objects near the coil
- Remove any jewelry from your hands and wrists

Figure 10 – Outlaw on Non-metal Surface

Start with these control settings:

- Threshold (THRS) control to minimum (all the way counter-clockwise)
- Sensitivity (SENS) to OFF
- Discrimination level (DISC) to MIN
- MODE set to DISC
- Ground Balance (GROUND BAL) - starting point not important for air test

duration of the tone is related to the battery strength. When the battery test is no longer heard, the 9 V battery needs to be replaced. Continuing to turn the knob clockwise will increase the sensitivity in the Discrimination (DISC) MODE.

THRS

This rotary control has one function:

- Set the level of the threshold

The threshold is the minimum noise at the speaker in the ALL METAL MODE. Turning the Threshold (THRS) clockwise will increase the threshold. Turning the Threshold (THRS) counterclockwise will decrease the threshold.

Figure 9 – Outlaw Controls (Again)

To activate the Audio Battery Test, simply turn the detector off momentarily and then back on again. If the battery is fresh, the detector should emit a continuous and loud "beep" sound that lasts for about 4 or 5 seconds, and then slowly fades into silence. As the battery ages, this sound is less intense and fades out more quickly. When you hear only a brief "buzz" or no sound at all, replace the battery with a fresh one.

If you prefer, a rechargeable Nickel-Cadmium (Ni-Cad) battery can be substituted for the standard 9 volt alkaline battery. Individual 9 volt size Ni-Cad cells, as well as the chargers for them, are readily available at most electronic supply stores. They are installed into your detector in the same manner as non-rechargeable batteries. The Battery Test sound on a Ni-Cad will be weaker than an alkaline in the beginning, but will not weaken as much with use.

CONTROLLING AUDIO VOLUME

The speaker in the Outlaw does not have a volume control. The volume should be sufficient to accurately hear the target response sound in most environments. If more or less volume is required in your particular situation, we recommend using a set of good quality headphones with a built-in volume control.

HANDLING YOUR DETECTOR

The detector should be held in a position that is comfortable for you as shown in the "Adjusting the Pole & Searchcoil" section in the Field Use Section (Page 18). Swing the detector from side to side in about a three foot arc, overlapping succeeding strokes well. This motion is called a "sweep". The Outlaw was designed to get maximum depth without the frantic pace required of earlier motion detectors, so go at a pace that is comfortable for you. In fact, trying to hunt too fast may even cause a loss of depth in heavily mineralized locations.

Regardless of which MODE you are using, try to keep your searchcoil height constant and close to the ground, Most people tend to raise the coil at the end of a sweep – much like a pendulum – especially if they are hurrying. Try to avoid this, as any increase in height from the ground will cause a corresponding loss of depth.

In areas with well-kept lawns, the easiest way to maintain a constant searchcoil height is to allow the coil to rest on the grass as you sweep from side to side. In rough and rocky areas, it is best not to "scrub" the coils on the ground, as the rocks will act like abrasives and wear away the coil bottom (an optional coil scuff cover will protect against this). Sweep the coil as close to the ground as possible without touching. Hitting the ground or rocks may cause a false signal much like a desired target would. Sweeping the coil too high above the ground results in loss of depth.

PINPOINTING A TARGET

When pinpointing a target, the ALL METAL MODE/Normal Tuning can offer advantages over Discrimination MODE, such as no false signals and no need to move the searchcoil to get a target response.

A good method for pinpointing in ALL METAL MODE is "X-ing" the target with the searchcoil. Remember that the target's response sound is always greatest when the target is directly under the center of the searchcoil. To "X" a target, sweep the searchcoil over the target from side to side and then from front to back until you can identify the center of the X – the spot on the ground where the target response sound is the greatest. Hold your searchcoil stationary over the center of the X and hit the RETUNE switch. Now repeat the X-ing, this time watching for the exact spot-under the coil center where the detector beeps. That spot is where the target is located.

Pinpointing a target in Discrimination MODE is probably best done by "X-ing" as well. Remember that the detector will beep just as the target passes under the center of the searchcoil.

MODE

This three-position switch has two functions:

- Select the operating MODE (ALL METAL or Discriminate DISC)
- Select the retune speed of the ALL METAL MODE (No Motion or AUTO Tune)

RETUNE

This push button has two functions:

- Put the detector in the ALL METAL MODE
- Retunes the threshold of the current signal

DISC

This rotary control has one function:

- Set the level of discrimination

Turning the knob counterclockwise (MIN) will lower the amount of discrimination, lowering the amount of targets discriminated out. Turning the knob clockwise (MAX) will increase the amount of discrimination, increasing the type of targets discriminated out.

SENS

This rotary control switch has three functions:

- Turns the detector ON and OFF
- Activates the automatic Audio Battery Test
- Adjusts the sensitivity level for the Discrimination (DISC) MODE

Turning the knob completely counterclockwise until it clicks turns the detector off. Turning the knob clockwise from the OFF position turns the detector on. It also activates the automatic battery test. The battery test is an audio tone. The volume and

CONTROLS

The Outlaw Metal Detector has only six controls, all mounted on the front panel of the housing for fingertip adjustment. How these controls should be set for peak performance will depend on the type of metal you are searching for, search site conditions, mineral content of the soil and so forth. Use the information in this section and the Field Use Section "Tuning Your Detector" as a basis for setting the controls on your detector. Using your Outlaw Metal Detector in the field will allow you to learn the detector's responses to various conditions and will guide you in fine tuning the detector's operating controls.

Figure 9 – Outlaw Controls

GROUND BAL

This rotary control switch has one function:

- Adjust the ground balance of the detector.

Turning the knob counterclockwise (-direction) will move the ground balance in a negative direction. Turning the knob clockwise (+direction) will move the ground balance in a positive direction.

Slowing the sweep will help you pick out the center of the X because the target response is reduced at very slow speeds making it easier to correlate the sound with the coil center.

Another easy method is to sweep the coil from side to side across the target in very short sweeps as you slowly move forward and backward across the target. Slow down the sweep rate and shorten the sweeps until you just barely get a response at one spot. The target will be directly below the coil center at this response time.

Another method of pinpointing in Discrimination MODE is to quickly change to ALL METAL MODE to check the target response. Remember that ALL METAL MODE is not susceptible to the false signals of Discrimination MODE and can sometimes give a clearer and more consistent response to difficult targets such as a dime buried next to a pull tab. By switching back and forth between modes and comparing the target response sound in ALL METAL to the target response sound in Discrimination MODE, you can often better identify the likely location of the target.

Finally, raising the searchcoil during pinpointing can also help by narrowing the response to the target. Practice pinpointing often, and you will soon become more accurate and faster.

RECOVERING A TARGET

If the target is shallow and the soil is soft, you may be able to "probe" and find the exact location of the target before you dig it. Since filling all holes after you recover the target is so important digging a small precise hole is best. If the target is deep, you may need to dig a larger hole. As you dig, occasionally check the hole with your detector to see if you have moved the object, can probe it or have already dug it. Be sure to fill all holes after you recover the target. Two methods are shown on pages 37 and 38 that work most everywhere.

Be sure to protect your hobby by leaving the site cleaner than you found it and with all holes filled.

PLANTING A TEST GARDEN

To better learn how your detector will perform in the field, it would be helpful to bury some coins and trash metal junk items in an area that you know is clear of other metal objects. Check the area with Discrimination Level set at MIN to be sure it's clear of trash, then bury the targets at least 1 foot apart and from 2 to 4 inches deep to start. Make a map of the area to be sure you know what each target is and how deep it is. Practice on these targets to familiarize yourself with your detector's target response. This will also help you learn the proper sweep speed for best operation. This type of practice area is often called a "test garden" or "test bed" and is one of the best tools to help you develop your metal detecting skills.

Figure 8 – Properly Assembled Outlaw

4. Plug the male cable end into the female connector on the control housing and tighten the cable thumb nut. You are finished!

Figure 7 – Connecting the Cable

Note: You will want to adjust the pole length and the searchcoil angle to your preference. See Field Use Section, Page 18.

GENERAL INFORMATION

BASIC CARE

The Outlaw is a sturdy instrument, but it is not designed to withstand abuse. In caring for your Outlaw, there are several important "DO NOTs" to remember. DO NOT use it to pry rocks loose or to beat bushes out of the way. DO NOT drop the machine into water. DO NOT use it unprotected in the rain. DO NOT leave it exposed at night where dew could form on it. DO NOT store it in places that could get extremely hot (next to a woodstove or in an attic). DO NOT leave it in the trunk of a car or in the back of a hatchback-style car where high temperatures could build up. DO NOT store it with the battery installed as batteries may leak. DO NOT spray lubricants such as WD-40, or any types of cleaners, solvents, sealants or other chemicals into or onto the electronic parts, switches, or controls. And finally, DO NOT attempt to modify or repair the detector's electronics as this will void your detector's warranty.

THE WARRANTY DOES NOT COVER DAMAGE RESULTING FROM AN ACCIDENT, NEGLECT OR ABUSE.

PROTECTING YOUR INVESTMENT

Often detectorists are disappointed when their new detector slowly becomes less and less responsive and seems to have lost some of its original peak performance. You can help avoid this from happening to you detector by following these basic care and protection guidelines:

- √ Operate your detector exactly as recommended in this operator instruction manual.
- √ Use only high-quality alkaline batteries of the correct voltage. Never substitute a different voltage. When using a Ni-Cad battery, always use a separate convertible pack with the proper voltage output for the detector's design.
- √ Remove the battery from the detector after each use. This will prevent damage to the detector if the battery leaks.

- √ The searchcoil cable is hard-wired to the searchcoil and protected by a strain relief. It is very important that the strain relief remains intact and should never be adjusted or tampered with.
- √ Keep cables properly wound around the pole stems and protect them during use. Floppy, pinched, or cables that become snagged during use may short, causing erratic noises or unnecessary replacement of the searchcoil.
- √ Sweep the searchcoil carefully, especially when using around rocks and building foundations. Avoid hitting the searchcoil against hard, solid objects and surfaces.
- √ Keep your searchcoil slightly off the ground during the sweep, especially when using in gravel or hard, rocky dirt.
- √ Always use a properly designed protective scuff cover on the searchcoil. (See "Optional Accessories" on the next page.)
- √ Remove and clean out scuff covers periodically to avoid buildup of mineralized dirt particles which will affect performance.
- √ The searchcoil is waterproof and can be submerged in either fresh or salt water. After the searchcoil is used in salt water, rinse it and the lower stem assembly well with fresh water to prevent corrosion.
- √ The searchcoil is waterproof but the electronics are not, so always prevent any moisture or water from entering the control housing and never allow the cable connectors to become submerged in water.
- √ If there is a possibility of rain or spray, use a Tesoro rain jacket or protective weather resistant pouch. If you use anything other than the Tesoro rain jacket, leave the bottom open. The control housing needs to "breath" to prevent condensation on the electronic board.
- √ After each use, clean the detector with a soft cloth to remove dust, moisture, or other contaminants.

ASSEMBLING YOUR DETECTOR

1. Loosen pole lock on the upper pole assembly. Depress the two spring buttons on the middle pole assembly and slide the middle pole assembly into the upper pole assembly until the spring buttons click into the holes, locking the two assemblies into place. Tighten the pole lock to secure the two assemblies together.

Figure 6 – Attach Middle and Upper Pole Assemblies

2. Choose the coil you're going to use. Remove one-wrap Velcro strip from lower pole assembly. Loosen the pole lock on the middle pole assembly. Depress the first two spring buttons on the lower pole assembly and slide lower pole into middle pole, depress the second two spring buttons and slide until spring buttons click into a set of adjustment holes. Select the adjustment holes that give you the proper overall pole length you require (only one set of spring buttons will be in adjustment holes depending on your length setting). Turn pole lock to tighten, locking the assembly into place.

3. Wrap the cable around the pole leaving enough slack near the searchcoil to permit searchcoil adjustment. (See Figure 8)

Note: Do not allow the cable to flop loosely over the searchcoil. Since the detector is sensitive enough to "see" the tiny wires in the cable, a floppy cable can cause false signals as the searchcoil senses the moving wires.

4. Install the thumb nut on the mounting screw and tighten by hand.

Figure 4 – Mounting Coil to Lower Pole

Note: Do not over tighten the thumb nut. It should be snug, but not too difficult to loosen up.

5. Wrap the cable around the pole and use one-wrap Velcro strip to hold cable per Figure 5. This will prevent the cable from flopping while not in use.

Figure 5 – Lower Poles Properly Attached to Coils

- √ When transporting the detector in a car during hot weather, store it on the floor of the passenger compartment if possible. Using a carry bag gives additional protection. In any case, never allow the detector to roll around unprotected in the trunk or back of a pickup truck.
- √ Protect your detector from dust, moisture, and extreme temperatures during storage.
- √ When shipping, use the original factory carton or similar heavy-duty container and provide a minimum one inch of padding around all parts.
- √ Treat your detector as you would any sensitive electronic instrument. Though ruggedly constructed and designed to withstand the demands of normal treasure hunting, proper care is essential.

Tesoro metal detectors and genuine Tesoro accessories are sold only through independent Tesoro Authorized Dealers, who are almost always metal detectorists themselves. They can answer your questions about your Tesoro detector, what accessories may be helpful, and about metal detecting in general.

See you Tesoro Authorized Dealer for more information and prices on optional accessories.

SCUFF COVERS

Each of your coils come with a scuff cover. We highly recommend using the scuff cover to protect your coil during use. Since the scuff cover will take the wear and tear that would otherwise damage your coil, it will eventually need to be replaced. The part numbers for the Outlaw scuffs are:

SCUFF-8R-WHT
SCUFF-12X10W-WHT
SCUFF-5.75R-WHT

SEARCHCOILS

Three searchcoils are provided with the Outlaw for a broad range of hunting situations. The 8: concentric searchcoil is designed for best all-around performance.

A smaller searchcoil like the 5.75 provided with the Outlaw gives better "target separation" (that is, more distinct target response for metal objects buried closely together) which is very useful when hunting trashy sites. Very small searchcoils can deliver the best response and depth to small targets such as fine gold chains with some sacrifice in depth on larger objects.

Larger searchcoils give a wider sweep and provide greater depth especially on larger objects; however, they may not detect some very small objects such as half dimes and will have difficulty in very trashy areas.

Wide scan searchcoils ignore ground mineralization better than concentric searchcoils and may offer improved performance in extreme ground conditions.

The 12X10 wide scan searchcoil provided with the Outlaw is a large coil in the wide scan family.

Selecting the right optional searchcoil depends on factors such as what you are searching for and search site conditions. No one searchcoil is better than all the rest. Several optional interchangeable searchcoils are available for the Outlaw. They are all easy to mount and require no special tools. See the next page for a list of these searchcoils with the Tesoro part # and description.

ATTACHING LOWER POLES TO THE COILS

1. On a lower pole assembly, remove the mounting screw and thumb nut from the black nylon pole. Leave the friction washers in the recessed feature of the pole tip.

Figure 2 – Remove Mounting Screw and Thumb Nut

2. Insert the pole tip between the mounting ears of the searchcoil and align the holes of the pole tip and friction washers with those of the mounting ears.

Note: The pole tip should fit very snugly into the mounting ears with friction washers in place.

Figure 3 – Pole Tip In Searchcoil Mounting Ears

3. Insert the mounting screw through the holes in the mounting ears and pole tip (entering from the side opposite the cable connection).

If any of these items are missing, immediately contact the Tesoro Authorized Dealer where you purchased your detector.

Assembly of the Outlaw is simple and requires no special tools. Just install the battery, mount the searchcoils on the lower pole assemblies, connect the three pole assemblies together, wrap the excess cable around the pole and plug the cable into the control housing. Finally, adjust the pole length and searchcoil angle and you're ready!

INSTALLING THE BATTERY

To install or replace the battery, first make sure the Sensitivity (SENS) control is set to OFF - turned completely counterclockwise past the "click". Remove the battery door from the back of the control housing. Do this by pressing your thumb firmly on the louvered square - at the bottom of the battery door- and sliding the battery door upward (in the direction of the arrow) while pushing.

Check the polarity on the battery and on the diagram inside the battery compartment. Make sure they match when you insert the fresh 9 volt alkaline battery into the compartment.

Replace the battery door by sliding it into place making sure the upper mount slots are in line and the lock tongue is snapped in place.

TESORO SEARCHCOILS

Tesoro Part #	Description
COIL-3x18W-SW-LITE	3x18" rectangular, wide scan, with scuff, white, short cable**
COIL-4RC-SW	4" round concentric, white, short cable
COIL-5.75C-SW	5.75" round concentric, with scuff, white, short cable
COIL-7RW-SW	7" round wide scan, white, short cable
COIL-8RC-SB	8" round concentric, brown, short cable**
COIL-8.5RW-LW	8.5" round wide scan, white, long cable
COIL-9x8C-SW	9x8" oval/spoked, concentric, white, short cable**
COIL-12X10W-SW	12X10" oval, wide scan, white, short cable **
COIL-12x10C-SW	12x10" oval/spoked, concentric, white, short cable

Optional scuff covers are also available for any Tesoro searchcoil.
**Also available with a long cable.

TESORO ACCESSORIES

Rain jackets are also available at your Tesoro Dealer. We recommend using a rain jacket during inclement weather or if there is a possibility that the control housing could be sprayed or showered upon. The Part # for the rain jacket that fits the Outlaw is ACCS-RAIN JACKET-SMALL.

The small detector bag provides a small convenient way to transport or to store your unit; however, the poles must be taken apart to fit in the bag. The large detector bag will take a detector without separating the poles.
Part # for the large bag is ACCS-CARRYBAG-LARGE
Part # for the small bag is ACCS-CARRYBAG- SMALL

HEADPHONES

Most metal detectorists prefer to use headphones instead of the detector's built-in speaker. Headphones help block out background noise (such as wind) and make it easier to hear faint signals. Headphones with a built in volume control will allow you to adjust the sound volume to your preference. The headphone jack is located on the bottom of the Outlaw housing.

GETTING STARTED

UNPACKING THE BOX

Your Outlaw Metal Detector was shipped with the following:

1 - Upper Pole Assembly
    Fully assembled, including upper pole stem with handle grip, padded arm bracket, pole lock and control housing
1 - Middle Pole Assembly with Pole Lock
3 - Lower Pole Assemblies
    Fully assembled nylon pole complete with two friction washer, wing bolt, and wing nut
1 - 5.75” Round Concentric Searchcoil with 3.5’ Cable
1 - 8” Round, Concentric Searchcoil with 3.5’ Cable
1 - 12x10” Wide Scan Searchcoil with 3.5’ Cable
1 - 9 volt Alkaline Battery
3 - One Wrap Velcro Strips (to hold coil cables)
1 - Operator Instruction Manual
1 - Tesoro Warranty Card

Figure 1 – Out of the Box

Notes:

RECOMMENDED RECOVERY METHODS

Adapted from "Tools 'N Techniques" By Robert H. Sickler

METHOD 1: "PROBE AND DRIVER"

Used in lawns (with very little moisture) where targets are not so deep (one to four inches) and the "Plugging" method is objectionable. The Probe and Driver method requires more practice but is much less damaging to grass than Method 2.

The probe used can be a non-metallic probe such as a modified fiberglass fishing rod or a metallic probe such as a blunted ice pick. A non-metallic probe will be the least damaging to the target.

After pinpointing target, use the probe to locate target depth (Fig. 1A). Next, insert eight-inch screwdriver on center just above target and rotate slightly to open ground (Fig. 1B). Now insert screwdriver just under target at an angle and lever target to surface (Fig. 1C). Brush all loose dirt back in the hole and close by exerting pressure all around opening (Fig. 1D).

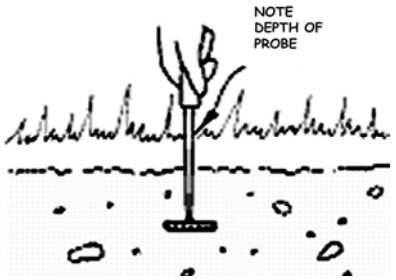

Figure 1A

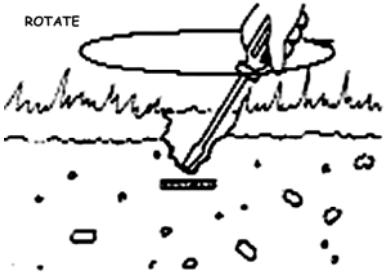

Figure 1B

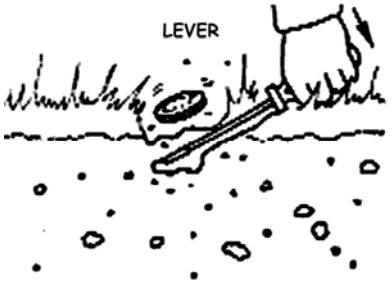

Figure 1C

Figure 1D

RECOMMENDED RECOVERY METHODS

Adapted from "Tools 'N Techniques" By Robert H. Sickler

METHOD 2: "PLUGGING"

Used only where allowed in natural wooded areas and very moist lawn areas. Plugging in hard dry ground can damage grass roots, leaving yellow "dead spots" in time.

After pinpointing target, cut three sides of a four-inch cube around target center using a six-inch sturdy hunting knife (Fig. 2A). Cutting a "hinged" cube rather than a cone shaped plug will properly orient its return, prevent removal by a lawnmower, and lessen the chance of scratching the target. With the knife blade, carefully pry against the cube side opposite the "hinge" (uncut side) and fold back (Fig. 2B). Scan searchcoil over plug and hole to isolate target location. If target is in plug, carefully probe until located. If target is in the hole and not visible, probe bottom and sides until located and remove (Fig. 2C). Repeat scan for additional targets. Replace all loose dirt with plug. Seat plug firmly with foot (Fig. 2D).

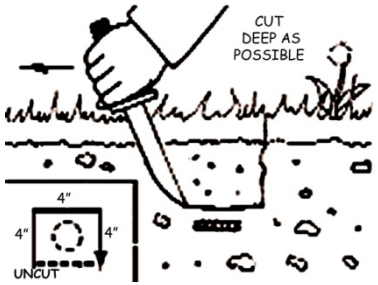

Figure 2A

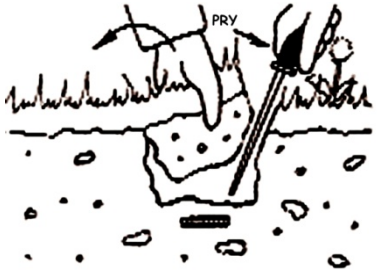

Figure 2B

Figure 2C

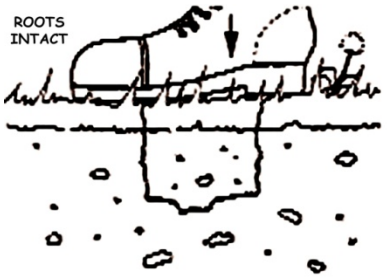

Figure 2D

FIELD USE (cont'd)

GENERAL INFORMATION

LIST OF FIGURES

CONTENTS

METAL DETECTORIST'S CODE OF ETHICS

1. *Always check federal, state, county, and local laws before searching. It is your responsibility to "know the law."*
2. *Abide by all laws, ordinances, or regulations that may govern your search or the area you will be in.*
3. *Never trespass. Always obtain permission prior to entering private property, mineral claims, or underwater salvage leases.*
4. *Do not damage, deface, destroy, or vandalize any property (including ghost towns and deserted structures), and never tamper with any equipment at the site.*
5. *Never litter. Always pack out what you take in and remove all trash dug in your search.*
6. *Fill all holes, regardless how remote the location, and never dig in a way that will damage, be damaging to, or kill any vegetation.*
7. *Do not build fires, camp, or park in non-designated or restricted areas.*
8. *Leave all gates and other accesses to land as found.*
9. *Never contaminate wells, creeks, or any other water supplies.*
10. *Be courteous, considerate, and thoughtful at all times.*
11. *Report the discovery of any items of historic significance to the local historical society or proper authorities.*
12. *Uphold all finders, search, and salvage agreements.*
13. *Promote responsible historical re-search and artifact recovery and the sharing of knowledge with others.*

SPECIFICATIONS

Operating Frequency	10.6 kHz
Searchcoil	5.75” Round Concentric
Searchcoil	8” Round Open Center Concentric
Searchcoil	12” x 10” Spoked Wide Scan
Cable Length	Approximately 3’
Audio Frequency	Approximately 630 Hz
Audio Output	36mm (approximately 1 ½”) Speaker & Headphone Jack
Headphone Compatibility	¼” Stereo Plug
Weight (may vary slightly)	2.2 lbs.
Battery Requirement	One 9 volt DC (Alkaline)
Battery Life (typical)	10 to 20 Hours
Optimum Temperature Range	30° to 100° F
Optimum Humidity	0 to 75% R.H.
Operating Modes	Silent Search Discriminate Threshold Based No Motion All Metal Threshold Based Motion All Metal

OUTLAW
OPERATOR INSTRUCTION MANUAL

Congratulations on the purchase of your Tesoro Outlaw Metal Detector.

You’ve taken the first step to be successful in treasure hunting, purchasing a high quality metal detector.

The second step is to learn to use your metal detector properly. Please take the time to read and understand the manual. It will walk you through assembly, the controls, an air test, and field use.

The third step is to hunt where treasure may be found. Your local dealer may provide insight, as well as treasure hunting magazines and books. Your research about locations and history will be as important as your choice of detectors.

The final step is to be persistent. There is no substitute for time in the field. Your success should grow with your experience and confidence.

All of us at Tesoro wish you success and enjoyment in your treasure hunting experience.

Vince Gifford