





The name that means Treasure

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Tesoro

"The Name That Means Treasure"

BANDIDO II µMAX

BANDIDO II µMAX OPERATOR INSTRUCTION MANUAL

CONGRATULATIONS!

Your new Tesoro Bandido II µMax metal detector is part of a new series of detectors designed to provide you with many happy hours of enjoyment in the most rewarding hobby I can think of—treasure hunting. Ahead of you lie fascinating and exciting experiences as you step into the past—uncovering artifacts lost by past generations, or as you take pleasure in the great outdoors with family and friends searching for precious metals. I wish we could share these experiences with you, and all of us at Tesoro wish you the best of success.

Your Tesoro µMAX detector is capable of meeting your needs in a wide range of treasure hunting situations. As with any other metal detector, familiarity with this instrument is probably the limiting factor in determining how successful you can be. I recommend that you read this manual and fully understand how to operate this detector before attempting to use it in the field. As you become more familiar with your detector through practice, your rate of success will increase dramatically.

The Bandido II µMax is a precision electronic instrument that will last for years if properly cared for. Treat it right and it won't let you down.

Good Hunting! Jack Gifford

INTRODUCTION

To be successful in treasure hunting with a detector you must:

- Use a high-performance metal detector designed for the type of treasure hunting you will be doing.
- Learn how to use your metal detector properly.
- Search where there is buried treasure to be found.
- Be persistent.

The Bandido II µMax is a true all-purpose detector. It was designed for top performance in the widest range of detecting uses possible. It is sensitive to small gold particles, it is powerful enough to relic and cache hunt, it is plenty fast enough for competition hunting and it is great for coin hunting. Yet, even with its amazing power, it is still easy to use.

This OPERATOR Instruction Manual is designed to help you learn to operate the detector properly for maximum performance in various search conditions. Complete instructions on how to operate the Bandido II µMax are found in the two main sections: Getting Started and Operating Techniques.

If you are new to metal detecting, we highly recommend reading and following the entire Getting Started section to develop the "feel" of your detector. Then, study and practice the Operating Techniques section—especially Ground Balancing—to get the best performance from your detector. If you are an experienced detectorist and are familiar with the concepts of metal detecting, you may want to go directly to the Operating Techniques section. Whatever your prior detecting experience is, the more skilled you become at operating this detector, the more rewarding your results will be.

If you are new to treasure hunting with metal detectors, keep in mind that if there are no valuable metal objects buried where you are searching, it won't matter how good your metal detector is or how skilled and persistent you are. To learn more about where to search for valuable buried metals, check with your detector dealer or bookseller for magazines and books on treasure hunting.

GENERAL DESCRIPTION

The Bandido II µMax is one of the first of its kind: an ultra-light weight, compact detector that packs the power and performance of the best full-sized, heavier detectors. By utilizing state-of-the-art circuitry, Tesoro has created an amazingly versatile and powerful, easy to operate detector that's perfect for all types of detecting and for travel.

The Bandido II µMax is a Transmitter-Receiver (TR) type detector that operates in the Very Low Frequency (VLF) portion of the Radio Frequency (RF) spectrum. The Bandido II µMax uses four control knobs and two toggle switches to provide full VLF capabilities.

The performance of the Bandido II µMax will satisfy the requirements of the serious detectorist, whether experienced or a beginner. The Bandido II µMax uses the latest Surface Mount Technology and Tesoro's proven MAXBoost Circuitry to create one of the most unique Printed Circuit Boards in the industry. This circuit board helps provide greater depth and more sensitivity to smaller, less conductive metal objects or

"targets" such as fine gold jewelry.

The Bandido II µMax has features that make its power easy to use. Through simple and fast operator adjusted "ground balancing," the ground rejection circuitry will allow operation in even the most difficult ground mineralization conditions. Two operating modes and two tuning modes add to the versatility of the detector's operation. The Discriminate Mode is Silent Search, meaning the searchcoil must be moving to detect a target. The All Metal Mode is no-motion, meaning the searchcoil will detect a target located directly under it, even when the searchcoil is not moving. Auto Tune, the automatic tuning mode, is fast and retunes the detector in seconds after encountering a target. Normal Tune gives the operator total control of retuning at the touch of a switch.

The electronic miniaturization of Surface Mount Technology permits the complex, powerful circuitry of the µMAX detectors to fit into a very small space. The result is a detector that is so incredibly light that there is no need to body mount the control housing. This exclusive design feature adds to the Bandido II µMax's ease of use and makes those longer searches more enjoyable.

The Bandido II µMax comes with an 8" round concentric searchcoil for best all-around performance with good depth. A variety of optional Tesoro searchcoils are also available and will enhance the detector's performance under various conditions.

GETTING STARTED - UNPACKING THE BOX

Your Bandido II µMax was shipped with these parts:

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

1 Lower Pole Assembly

Fully assembled with nylon pole tip complete with two thick friction washers, mounting screw, lock washer and thumb nut.

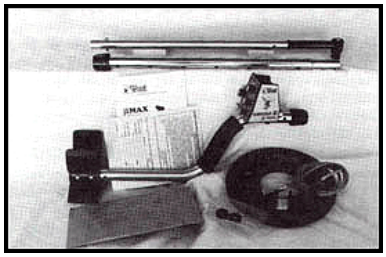
1 8" round, concentric searchcoil with 3' cable

1 9 Volt Alkaline Battery

1 Operator Instruction Manual

1 Tesoro Warranty Card

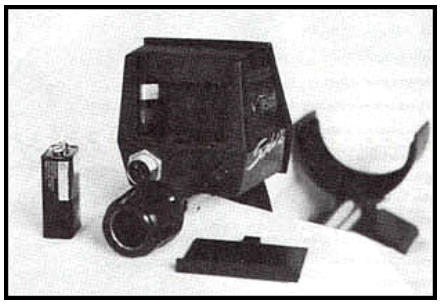
If any of these items are missing, contact the Tesoro Authorized Dealer where you purchased your detector immediately.



Assembly of the Bandido II µMax is simple and requires no special tools. Just install the battery, mount the searchcoil on the lower pole assembly, connect the two 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

Your Bandido II µMax is equipped with an automatic battery test circuit so that you can always be sure you are getting top performance. The battery should be checked after the detector has been on for about 10 minutes, and then periodically when used for long durations.



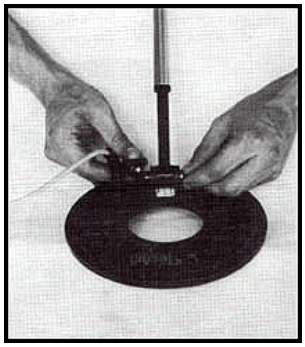
To install or replace the battery, first make sure the SENSITIVITY control is set to POW OFF—turned completely counterclockwise past the "click." Remove the battery door from the back of the control housing. Do this by pressing your thumb firmly on the louvered square—at the bottom of the battery door—and 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 that they match and simply drop a 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.

ASSEMBLING YOUR DETECTOR

1. On the lower pole assembly, remove the mounting screw and thumb nut from the black nylon pole tip.
2. Insert the pole tip between the mounting ears of the searchcoil and align the holes of the pole tip and washers with those of the mounting ears.

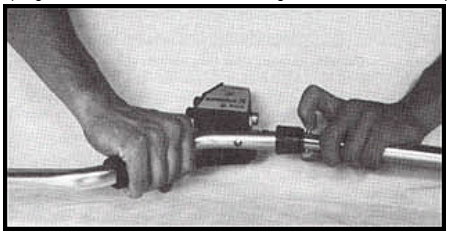


Note: The pole tip should fit very snugly into the mounting ears.

3. Insert the mounting screw through the holes in the mounting ears and pole tip—entering from the side opposite the cable connection.
4. Install the thumb nut on the mounting screw and tighten by hand.

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

5. On the middle assembly, depress the two spring buttons 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.

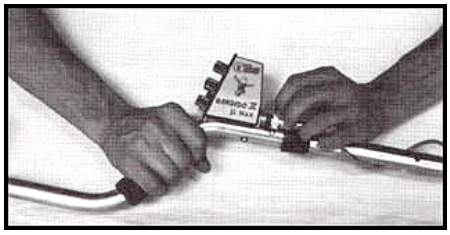


6. Slide lower pole into middle pole until spring buttons click into the first set of adjustment holes. Turn pole lock to tighten — locking the assembly into place.
7. Wrap the cable around the pole leaving enough slack near the searchcoil to permit searchcoil adjustment.

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.

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

Note: You will want to adjust the pole length and the searchcoil angle to your preference.



ADJUSTING THE POLE & 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 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, simply 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.

QUICKSTART - SELF GUIDED TUTORIAL

The Quickstart is designed to help you use your new Bandido II µMax metal detector right away, even if you have never used a detector before. Just follow each easy step carefully and you'll quickly see how the basic detector functions work. You'll also be introduced to some important concepts on the way.

Here's what you will need:

1. Your fully assembled Bandido II µMax metal detector
2. Three newer coins: a penny*, a nickel and a quarter
3. A non-metal table or counter surface
4. Approximately 20 minutes to complete the QuickStart

**must be 1984 or newer—made of zinc*

Here's what you will do:

1. Perform an Audio Battery Test
2. Adjust the SENSITIVITY control
3. Perform an air test in All Metal Mode
4. Perform an air test in Discriminate Mode

Prepare for the QuickStart

Place your assembled Bandido II µMax on the nonmetal surface. Make sure there are no metal objects near the coil. Remove any jewelry from your hands and wrists.

Start with these control settings:

- DISC LEVEL control set to MIN.
- SENSITIVITY control set to POW OFF.
- THRESHOLD CONTROL at 12:00.
- TUNE switch set to NORM.
- MODE switch set to DISC.
- GROUND control set to the middle of its range:
  - turn it 5 complete turns counterclockwise then,
  - turn it 2 complete turns clockwise and stop.

The GROUND control should be left at this setting for the entire QuickStart.

Note: This setting only used for Quickstart Demo. Please read Ground Adjust section.

Step 1 Perform an Audio Battery Test

- Turn the SENSITIVITY control from POW OFF to 1.

You will hear the battery test tone for a few seconds as the battery is automatically tested. When the tone stops, the detector is on and the controls are ready for adjusting.

Function Demonstrated: How the battery test tone will tell you the battery is working each time the detector is turned on. NOTE: You should always perform the Audio Battery Test with Mode Switch set to DISC.

Step 2 Adjust the SENSITIVITY control

- Turn the SENSITIVITY control from 1 to 8.

This is a good setting to begin with each time you use your detector. Leave the control at this setting for the rest of the QuickStart.

Function Demonstrated: Where to set the SENSITIVITY control for basic detector operation.

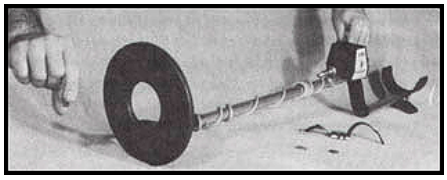
Step 3 Perform an air test in All Metal Mode

Adjust the Threshold
Identify the Threshold Sound
Identify Target Response
Retune the Threshold

- Flip the MODE switch to ALL METAL.

Adjust the threshold sound by turning the "threshold control" until a slight steady hum is heard. Once the threshold is set, it should not require frequent resetting.

Hold the quarter in your fingertips and move the quarter from side to side about 12 inches in front of the searchcoil.



Gradually move the quarter closer to the searchcoil—as you continue to move it from side to side—until you hear the threshold sound increase. This increase in volume is called the "target response sound."

Continue to move the coin to test the target response sound. As you do this, try varying the distance or angle of the coin. Try varying the speed as you move the coin. Try holding the coin still and then moving it slightly. Try passing it in front of the edge of the searchcoil and then under the center. Notice the differences in the target response sound with each change.

Repeat the test with each coin. Notice that the detector responds to each coin although the target response sound may vary, sometimes subtly. Your detector will respond to objects made of any kind of metal when the object is in the searchcoil's sensitivity area or "range." Operating your detector in this way is called a "no-motion All Metal Mode with Normal Tune."

Retuning the threshold

Hold the quarter still about 2 to 4 inches from the searchcoil, in line with the searchcoil center. Listen to the target response sound for 1 or 2 seconds. Do not move the quarter!

- Flip the MODE switch to RETUNE and release it.

Notice that the target response sound will decrease to the regular level of the threshold sound. Now, slowly move the quarter from side to side, going past the edge of the searchcoil. Notice the regular threshold sound is gone and the target response sound is now a "beep" that occurs when the target passes in front of the searchcoil center. This technique is used to "pinpoint" the exact location of a object.

Take the quarter away from the searchcoil.

- Flip the MODE switch to RETUNE and release it.

Notice the regular threshold sound returns. Move the quarter close to the searchcoil and notice the loud continuous target response sound has returned. Take the quarter away again.

- Flip the TUNE switch to AUTO.

Hold the quarter still near the searchcoil for a few seconds and notice the detector automatically retunes itself. Then, try moving the coin from side to side and notice the target response sound is a "beep." Take the quarter away from the searchcoil for a few seconds and try it again. Now, try this test with the different coins using both tuning methods and listen for the differences in the sounds.

Functions Demonstrated: 1) How the All Metal Mode target response sound will vary depending on various factors such as what type of metal targets are buried in the ground, how deep they are, how fast you move your searchcoil and so on. 2) How the detector's threshold can be retuned manually in Normal Tune or automatically in Auto Tune and how this affects the target response sound.

Step 4 Perform an air test in Discriminate Mode

Identify the Target Response
Use Discrimination
Flip the MODE switch to DISC.
Leave the DISC LEVEL control set to MIN.

Note: In Discriminate Mode, you will not hear the continuous threshold sound of the All Metal Mode, so retuning is not needed.

Hold the quarter in your hand and move the quarter back and forth about 12 inches in front of the searchcoil bottom.

Gradually move the quarter closer to the searchcoil—as you continue to move it back and forth—until you hear a "beep." This beep is the target response sound.

Continue to move the coin to test the target response sound. As you do this, try varying the distance or angle of the coin. Try varying the speed you move the coin. Try holding the coin still, then moving it slightly. Notice the differences in the target response sound with each change.

Repeat the test with each coin. Notice that the detector responds to each coin although the target response sound may vary. Your detector can respond to objects made of any kind of metal if there is movement between the object and the detector. Operating your detector in this way is called a "Silent Search."

- Turn the DISC LEVEL control from MIN to MAX.

Pass the quarter back and forth in front of and close to the searchcoil bottom. Notice the sound as the coin nears the center of the searchcoil. Now, try this with the nickel and then with the zinc penny. Notice there is no sound with these two coins. The ability of a metal detector to ignore certain types of metal is called "discrimination." Using your detector in this way is called a "Silent Search Discriminate Mode."

Control settings to ignore most zinc and nickel objects can be:

- MODE switch — DISC
- DISC LEVEL — MAX
- Move the DISC LEVEL control from MAX to 7.

Pass each of the three coins in front of the coil. Notice the quarter and the zinc penny now cause a target response sound.

Control settings to ignore most nickel objects can be:

- MODE switch — DISC
- DISC LEVEL — 7

Now move the DISC LEVEL control from 7 to 4.

Pass each of the three coins in front of the searchcoil. Notice all three coins now cause a target response sound.

Control settings to include newer US coins while excluding most iron objects can be:

- MODE switch — DISC
- DISC LEVEL — 4

Functions Demonstrated: 1) The motion-based operation and target response sound of Silent Search Discriminate Mode. 2) How the Discriminate Mode can be used to help determine the types of metal a target may be. By adjusting the DISC LEVEL control, you can select what metals your detector will ignore.

Conclusion

Well done! You have finished the QuickStart Guide and have operated many of the basic detecting features of the Bandido II µMax. You have also been introduced to the ideas of: 1) target response sound, 2) threshold sound, 3) retuning the threshold, 4) target discrimination and 5) target pinpointing.

Now you are almost ready to begin the journey into the art of metal detecting by actually using your detector to find buried metal. But first a word about air tests.

The air tests in the QuickStart are of limited value. Metal detectors perform differently in air tests than when in actual use "in the field." Tesoro detectors are specifically designed to deliver the best performance in the field.

The CONTROLS and TUNING YOUR DETECTOR sections will give you more detailed information on how to set your detector's controls, especially selecting a tuning mode and using discrimination for the best results.

Before you use your Bandido II µMax in the field, you need to learn how to operate one more feature—the GROUND control. Using the GROUND control to properly "Ground Balance" your Bandido II µMax will allow you to tap into its full power and performance capabilities and is perhaps the most important feature to master. The Ground Balance section will explain step-by-step how to use this feature.

Finally, the only way you can become truly proficient at using your detector to find buried treasure is to use it in the field and learn from experience! However, we strongly suggest that you read this entire manual to become proficient with all of the features as you continue to use your detector.

You have the finest tool available, now all you need is the skill that comes from experience.

To Turn Your Detector OFF:

- Turn The Sensitivity Control To POW OFF
  - Counterclockwise past the "click."

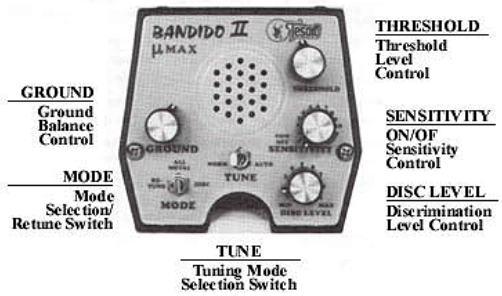
TO TURN YOUR DETECTOR ON:

- Make Sure The Mode Switch Is Set To DISC
- Turn The Sensitivity Control To 1

  - Clockwise past the "click."

OPERATING TECHNIQUES - CONTROLS

The Bandido II µMax 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 TUNING YOUR DETECTOR section as a basis for setting the controls on your detector. Using your 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.



SENSITIVITY

ON/OFF Sensitivity Control

This rotary switch control has three functions:

- Turns the detector ON and OFF
- Activates the automatic Audio Battery Test
- Adjusts the Sensitivity Level

Turning the SENSITIVITY knob counterclockwise completely until it “clicks” into the POW OFF position turns the detector off by disconnecting the battery from the circuit.

NOTE: The detector should always be turned off when not in use.

Turning the SENSITIVITY knob clockwise past the initial “click” turns the detector on and activates the automatic Audio Battery Test circuit. This test will give you a sound, usually lasting several seconds, that indicates the battery’s condition. When the Audio Battery Test is over, the detector’s Sensitivity Level can be adjusted.

Turning the SENSITIVITY knob clockwise increases the detector’s Sensitivity Level. The level from 1 up to 10 is the normal range. This range corresponds with the normal Sensitivity on standard detectors. Turning the SENSITIVITY knob past 10, into the orange area, puts the Sensitivity into the MAXBoost range found only on μMAX detectors.

NOTE: It is best to turn the detector on in Discriminate Mode. Since the Discriminate Mode is a silent mode with no continuous threshold sound, it will be obvious when the Audio Battery Test is complete.

If you turn the detector on in All Metal Mode, the Audio Battery Test sound will be immediately followed by the threshold sound. This may make it difficult to hear the battery test end and to discern the battery condition.

Also, the Sensitivity Level is best set while in the Discriminate Mode. After the Audio Battery Test is over and the Sensitivity Level is properly set, you may change the operating mode to All Metal without difficulty.

DISC LEVEL

Discrimination Level Control

This rotary switch control has one function:

- Adjusts the Discrimination Level

Once the detector is in the Discriminate Mode, the DISC LEVEL control is used to adjust the detector’s Discrimination Level. Turning the DISC LEVEL knob clockwise increases the detector’s Discrimination Level and vice versa.

NOTE: When the detector is operating in the All Metal Mode, the DISC LEVEL control is not used.

TUNE

Tuning Mode Selection Switch

This toggle switch has one function:

- Sets the Tuning Mode: Normal or Auto

This toggle has two positions: To the right—labeled AUTO—it locks in place and sets the threshold tune method to Automatic. To the left—labeled NORM—it locks in place and sets the threshold tune method to Normal. NOTE: The Tuning Mode is used only when operating in the All Metal Mode.

MODE

Mode Selection / Retune Switch

This combination toggle switch has two functions:

- Sets the operating mode: All Metal or Discriminate
- Retunes the threshold in All Metal Mode

This toggle has three positions: To the right—labeled DISC—it locks in place and sets the operating mode to Discriminate. To the center—labeled ALL MET—it locks in place and sets the operating mode to All Metal. To the left—

labeled RETUNE—it spring returns to the center position and retunes the detector's threshold while remaining in All Metal Mode. So, this combo switch functions as Mode Selection Switch when used in the right and center locking positions. It also functions as a Retune Switch by pressing the switch completely to the left and releasing it so it springs back to the center position. NOTE: Manual retuning (MODE/RETUNE) is used only when operating in the All Metal Mode with Tuning set to Normal (TUNE/NORM).

GROUND

Ground Balance Control

This rotary switch control has one function:

- Adjusts the Ground Balance

This control adjusts the All Metal Mode sampling so that the Bandido II µMax ignores the normal ground mineralization. Making this adjustment is often called "Ground Balancing." The knob will turn continually in either direction, although its effective use range is only 3¾ turns. Once you have turned the knob to the end of its use range in either direction, you should notice a slight increase in "drag" as the knob is turned. When you feel the "drag," you may immediately reverse direction to enter the effective use range for the next 3¾ turns.

- NOTE: The GROUND control does affect both operating modes but should be adjusted in All Metal Mode.

Threshold

Threshold Level Control

This rotary switch control has one function:

- Adjusts the Threshold Control

The THRESHOLD control is used to adjust the audio level of the detector's threshold up or down to its desired level. Normal setting would be a barely audible hum. This is not a volume control for the detector itself. Although this control is placed on the front panel for convenience, once it is set to the desired threshold tone, it will not require frequent resetting.

TUNING YOUR DETECTOR

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 Bandido II µMax. To achieve peak performance from your Bandido II µMax, be sure to properly adjust the GROUND control in All Metal Mode. The settings of this control will also affect the detector's performance in Discriminate 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 "ghosting signals."

Tuning your Bandido II µMax can be done in 6 simple steps:

1. Adjust Threshold using Threshold Control.
2. Ground Balancing the detector using the GROUND control.
3. Setting the operating mode using the MODE switch.
4. Setting the tuning mode using the TUNE switch.
5. Setting the Sensitivity level using the SENSITIVITY control.
6. Setting the Discrimination level using the DISC LEVEL control.

NOTE: Ground Balancing should be done while in All Metal Mode and Auto Tune Mode. Setting the Discriminate Level and the Sensitivity Level should be done while operating in Discriminate Mode.

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 plan to gold nugget hunt for match-head sized or smaller nuggets in highly mineralized ground.

NOTE: No matter where you will be searching, or whether you will be operating in the All Metal Mode or Discriminate Mode, make sure the detector is properly Ground Balanced in the All Metal Mode with Auto Tune Mode first.

Start with these control settings:

- Threshold Control at 12:00.
- DISC LEVEL control set to MIN.
- SENSITIVITY control set to POW OFF.
- TUNE switch set to AUTO.
- MODE switch set to ALL METAL.
- GROUND control set to the middle of its range:

  - Turn it 5 complete turns counterclockwise then,
  - turn it 2 complete turns clockwise and stop.

Next:

- Turn the SENSITIVITY control set to 10.

Wait 3 to 4 seconds until the Audio Battery Test is complete.

Adjust the threshold sound by turning the "threshold control" until a slight steady hum is heard. This hum will be your starting point in the ground balancing procedure. Once the threshold is set, it should not require frequent resetting.

As shown in the two photos to the right, raise the searchcoil 6 to 8 inches above the ground, level and parallel to the ground. While listening to the threshold sound, lower the searchcoil quickly to ground level and listen to what the threshold sound does.

One of three things will happen to the sound: 1) the sound will increase, 2) the sound will go silent, or 3) the sound will remain the same. Which one of these happened will determine what you need to do to properly Ground Balance your detector for the area you are at.

1) If the threshold sound gets louder when you lower the searchcoil, it means the GROUND knob needs to go to the left.

2) If the detector goes silent and you lose the threshold sound momentarily, then you will need to turn the GROUND knob to the right.

3) If there is no change in the threshold sound as you lower the searchcoil to the ground, then you just happen to already have the proper Ground Balance and you can proceed to hunt.

Start out using slight turns of the GROUND knob, the distance of the movement being equivalent to about one hour on a clock face. The entire effective area of this control is 3¾ turns from minimum to maximum, so if you start Ground Balancing in the middle of the effective range, it will only take about two complete turns in either direction to be at one end of the effective range.

NOTE: There are three important things to remember when Ground Balancing with this method.

First, you are in Auto Tune Mode and once you hesitate at ground level for a second or two, the detector will retune the threshold automatically. Therefore, when you lower the searchcoil toward the ground, you are only listening to the initial change in volume.

Second, make sure you are Ground Balancing in a clean area and not lowering the searchcoil down over a piece of metal.

Third, when you raise the searchcoil, be sure that you DO NOT tilt the searchcoil at an angle, as shown in the photo .

By continually "pumping" the searchcoil from 6 to 8 inches above the ground to ground level and back up in the air again while turning the GROUND knob in the appropriate direction, you will very quickly reach the point where there is the absolute minimal change in threshold sound during the pumping. When you have reached that point you are "Ground Balanced" and can begin searching the area.

NOTE: Changing ground mineralization may take occasional small adjustments to the GROUND knob necessary to maintain peak performance.



Lift your detector straight off of the ground about 6 to 8 inches. Keep the coil parallel to the ground.



You must lift your coil straight up. Do not swing it like a pendulum.



Once you have got a steady threshold, quickly lower the coil straight down to approximately 1 inch off of the ground.

Selecting the proper operating mode

The Bandido II µMax offers two operating modes—All Metal Mode and Discriminate Mode.

The Discriminate Mode is a "Silent Search" operating mode. This means that the detector will make no sound until it encounters a metal target. This mode requires that the searchcoil be moving slightly for target detection.

The All Metal Mode, however, is a "no-motion" operation mode. This means the detector will emit a continuous "threshold sound" until it encounters a metal target at which time the sound will noticeably increase. This mode does not require motion so the searchcoil can be held still for target detection if needed.

The All Metal Mode, as the name implies, will detect all types of metal targets. When operating in this mode you will find unwanted "trash" metal objects such as nails, foil, pull tabs, etc., just as you would with any high-performance detector. The All Metal Mode is preferred for hunting relics, artifacts and other objects that are made of non-precious metals, especially iron. This mode is also good for beach hunting where the sand allows easy digging and time wasted on digging up trash metal objects is not a major concern.

The All Metal Mode must be used for gold nugget hunting, since the response to small gold items is so close to iron. For most nugget hunting, the All Metal Mode & Auto Tune Mode combination will provide the best performance, although some special attention for hot rocks may be necessary. [See Selecting the Proper Tuning Mode.]

The Discriminate Mode will allow you to control the detector's response to most of the common trash metal objects found in school yards, parks, and beaches. Discriminate mode is generally used for "coin shooting" such areas where you prefer to avoid wasting time digging common trash metal. The Discrimination Level you select will determine what types of metal your detector will ignore.

In many other metal detectors, the All Metal Mode offers greater depth—up to 30% over the Discriminate Mode. Not so with the µMAX detectors. The new µMAX circuitry, with MAXBoost, overcomes this common problem and delivers superior sensitivity and better depth in both operating modes.

Selecting the proper tuning mode

The Auto Tune Mode (TUNE-AUTO) on the Bandido II µMax is a fast automatic tuning that takes just 2 to 3 seconds to automatically adjust itself. Auto Tune quickly retunes the detector to its established threshold following a target response.

Auto Tune Mode also keeps the detector's signal from drifting. This tuning mode offers maximum stability while searching in All Metal Mode and is recommended for gold nugget hunting.

The Normal Tuning Mode (TUNE-NORM) will hold a target's signal without retuning for as long as the searchcoil is held stationary directly over the target. Some drift may occur in this mode, but it is quickly remedied by manually retuning using the MODE switch (MODE-RETUNE). For precise pinpointing, identifying target size, line tracing and ore sampling in All Metal Mode, use the Normal Tune Mode.

Fast automatic tuning can cause an "overshoot signal" on "hot rocks"—that is, a momentary silence as the searchcoil sweeps over an extremely mineralized rock, followed by a loud "boing" sound when the searchcoil passes clear of it. This sound is so different from a good target response sound, that it is easily recognized. The only problem with just ignoring these overshoot signal sounds is that a small gold nugget may be hiding beneath the hot rock. Also, the Auto Tuning Mode will cause a nulling of the threshold sound when the searchcoil sweeps over a very strong metal target.

Setting the Sensitivity Level

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

To adjust the Sensitivity Level to your search conditions, first set the operating mode to DISC and turn the SENSITIVITY 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.

These 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 Bandido II µMax is not affected by the SENSITIVITY control.

Setting the Sensitivity Level in MAXBoost

The MAXBoost feature is a high gain boost over and above the normal maximum of 10 and is indicated by the orange area on the SENSITIVITY control. Using MAXBoost will cause no harm to your detector, but in certain conditions, it can result in the annoying chirping sounds that may make it difficult to hear a good target response sound.

In ideal conditions, MAXBoost can add inches of depth to your search with no chirping. In difficult conditions, the extra depth will still be there but heavy chirping may make the feature too difficult to use. You must determine when and how much of the MAXBoost feature to use for your search site conditions.

Setting the Discrimination Level

The DISC LEVEL control is used to adjust the detector's response to unwanted trash metal when operating in the Discriminate 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 you are 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.



The above diagram "DISC LEVEL—Discrimination Level Settings" shows the settings 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.

Earlier motion detectors that operated with a continuous "threshold" sound would give the user a definite indication of trash metal by either "nulling" completely (no sound made temporarily) or by generating short, choppy sounds. Since the Bandido II µMax's Discriminate Mode is Silent Search and operates without threshold sound, there is no nulling to indicate that the area is extremely trashy.

When searching in the Discriminate 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.

Performing the Audio Battery Test

Your Bandido II µMax is equipped with an automatic battery test circuit so that 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.

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 µMAX 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.

QUICKSTART - SELF GUIDED TUTORIAL

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 Getting Started. Swing the detector from side to side in about a three foot arc, overlapping succeeding strokes well. This motion is called a "sweep." The Bandido II µMax 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 coil 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 a loss of depth.

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, and then try the Bandido II µMax in its two different operating modes. Check the area in All Metal Mode 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

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 best tools to help you develop your metal detecting skills.

Recognizing false signals in Discriminate Mode

When operating in the Discriminate Mode, some "false signals" may be caused by 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 Discriminate Mode, it is best not to use a higher DISC LEVEL setting than necessary. Nickels and most smaller rings are rejected when the DISC LEVEL is set to reject pull tabs on any metal detector that is a TR Discriminator like the Bandido II µMax. If you don't dig any junk at all, you are surely passing up a lot of good finds as well. Set the DISC 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.

Pinpointing a target

When pinpointing a target, the All Metal Mode/Normal Tuning Mode can offer advantages over Discriminate 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 Discriminate 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. Slowing the sweep speed down 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 Discriminate 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 Discriminate 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 Discriminate, 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 in the next two sections that work most everywhere.

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

RECOMMENDED RECOVERY METHODS

GENERAL INFORMATION - CARE AND USE

Basic Care

The Bandido II µMax is a sturdy instrument, but it is not designed to withstand abuse. In caring for your Bandido II µMax 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, 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 type 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 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 your 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. Inspect the strain relief frequently to make sure it is firmly attached and intact.
- 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 of 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" in the next section.)

- 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 of the metal parts.
- 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 working in or near water, or if there is a possibility of rain, use a protective weather resistant pouch or plastic bag to cover the control housing. Make sure it can "breathe" in order to ensure against condensation buildup inside.
- After each use, clean the detector with a soft cloth to remove dust, moisture, or other contaminants.
- 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.

OPTIONAL ACCESSORIES

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

Scuff Covers

We highly recommend using a scuff cover to protect your searchcoil at all times. The scuff cover for the Bandido II µMax fitted with the 8" searchcoil is Tesoro Part # SCUFF-8R-B.

Searchcoils

The 8" concentric searchcoil provided with the Bandido II µMax is designed for best all-around performance. Optional searchcoils may add to your detector's performance.

Smaller searchcoils give 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, covering more ground, 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.

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 Bandido II µMax. They are all easy to mount and require no special tools. See the following list of these searchcoils with the Tesoro part # and description.

Tesoro Searchcoils

COIL-4RC	4" round concentric (closed center, white)
COIL-7RC	7" round concentric (closed center, white)
COIL-8RCW-B	8" round concentric weighted (open center, brown)
COIL-10.5RC	10 1/2" round concentric (open center, white)
COIL-7RW	7" round wide scan (closed center, white)
COIL-8.5RW	8 1/2" round wide scan (closed center, white)
COIL-9x8	9x8" concentric (spoked, white)
COIL-11RW	11" round wide scan (closed center, white)
COIL-12x10	12x10" concentric (spoked, white)

Optional scuff covers are also available for any Tesoro searchcoil.

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.

Specifications

Operating Frequency	10 kHz
Searchcoil Type	Round, open center concentric
Searchcoil Size	8" diameter
Cable Length	Approx. 3'
Audio Frequency	Approx. 630 Hz
Audio Output	1½" speaker and 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	No-motion All Metal
	Silent Search Discriminate
Tuning Modes	Auto Tune (fast
	Normal Tune (manual)

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 and 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. Never dig in a way that will damage, be damaging to, or kill any vegetation.
7. Do not build fires, camp at 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 research and artifact recovery and the sharing of knowledge with others.

BANDIDO II µMAX FEATURES

- **High Gain Sensitivity Circuitry—**designed specifically to deliver greater depth, sensitivity and stability.
- **MAXBoost Feature—**extra power of super high gain can add inches to discrimination search depth.
- **True All-Purpose Detecting—**delivers high performance in the widest variety of detecting uses: gold nuggets, coins, relics, caches, competition.
-
- **Treasure Hunt Everywhere—**adjustable ground balancing allows true mineral free operation in all operating modes.
- **3 piece Knockdown Pole—**compact for storage and travel.
- **Two Operating Modes—**All Metal and Discriminate.
- **Two Tuning Modes—**Normal (manual) and Automatic (fast).
- **High-sensitivity Searchcoil—**8 inch open center concentric for broad sweep, good pinpointing and deep ground penetration.
- **Economical to Use—**up to 20 hours plus on a single battery.
- **Tesoro Lifetime Warranty—**our pledge of quality to you.

What it doesn't have

A big, heavy, high-powered speaker. Loud, heavy speakers are popular with many manufacturers. The "fuller" sound they produce gives the illusion of greater sensitivity to small and deep targets—a great showroom sales tool! Most serious detectorists hunt with headphones and a µMAX will work well with standard headphones. If you choose not to use headphones, the µMAX speaker will be loud enough for most environments. It will allow you to hear the small and deep targets found by the µMAX's high power circuitry—without excessive battery drain.

A hip mount, arm strap or battery recharging system. These kinds of "built-in accessories" are simply unnecessary in a µMAX detector.

The power and features of the Tesoro Bandido II µMax make it ideal for the serious detectorist who wants top-of-the-line performance and versatility in a lightweight, low-cost detector. It is also an ideal detector for a beginner who wants a machine they will never outgrow.

WARRANTY SERVICE

Your Tesoro metal detector is covered by a **Limited Lifetime Warranty**, the terms of which are listed below. If your metal detector should require service, you may return it to the Tesoro factory at the address below.

LIMITED LIFETIME WARRANTY

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

This instrument is warranted to be free of defects in material and workmanship as long as it is owned by the original consumer purchaser. This warranty is not transferable and is valid only if the warranty registration card has been completed and mailed within 10 days of purchase.

TESORO will, at its option, repair or replace any instrument covered by this warranty, without charge, except for transportation charges, at its factory in Prescott, Arizona.

This warranty excludes batteries, damage caused by leaky batteries, cable breakage due to flexing on body mount units, and wear of the searchcoil housing. Also excluded are instruments which have been abused, altered, or repaired by an unauthorized party.

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