

***TROY CUSTOM DETECTORS,
INCORPORATED***



SHADOWx2

SHADOWX2 OPERATOR INSTRUCTION MANUAL

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CONGRATULATIONS!

Your new Troy Custom Detectors ***SHADOWx2*** 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 Troy Custom Detectors wish you the best of success.

Your ***SHADOWx2*** 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 ***SHADOWx2*** 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!

Troy Galloway

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The INDEX OF COMMON QUESTIONS on page 35

is a quick reference that guides you to the page containing the answers to some of the more common questions new metal detector owners have.

INTRODUCTION

To be successful in treasure hunting with your new detector you must:

- Use a high performance 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 ***SHADOWX2*** was designed for coin hunting, competition hunting and all-purpose use. This multi-function detector is very powerful, yet very easy to use. Because it is sensitive to all metals, it can be used to find a variety of jewelry, relics, gold etc. When using this detector, you will also find unwanted "trash" metal such as nails, foil, pull tabs, etc., just as you would with any other high-performance detector.

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 ***SHADOWx2*** 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 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 **SHADOWx2** is one of the first of its kind: an ultra-lightweight, compact detector that packs the power and performance of a full-sized, heavier detector. By simplifying features and complicated adjustments that cause a loss of performance when used improperly, Troy Custom Detectors has created an easy to operate, grab-and-go detector that's perfect for hobby, sport and travel.

The **SHADOWX2** is a Transmitter-Receiver (TR) type detector that operates in the Very Low Frequency (VLF) portion of the Radio Frequency (RF) spectrum. The detector uses only two control knobs and two push-buttons to provide full VLF capabilities.

The performance of the **SHADOWX2** will satisfy the requirements of the serious detectorist, whether experienced or a beginner. The **SHADOWx2** uses the latest Surface Mount Technology 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 **SHADOWX2** has features that make its power easy to use. The factory preset ground rejection circuitry allows "turn-on-and-go" operation in virtually any ground mineralization.* The Discriminate Mode is Silent Search, meaning the searchcoil must be moving to detect a target. The QuickCheck Pinpointing makes it simple to identify the exact location of the target.

The electronic miniaturization of Surface Mount Technology permits the complex, powerful circuitry of the detectors to fit into a very small space. The result is a detector that is so incredibly light there is no need to body mount the control housing. This exclusive design feature adds to the **SHADOWx2's** ease of use and makes those longer searches more enjoyable.

The **SHADOWX2** comes with a 7" round concentric searchcoil for best all-around performance with good depth. A variety of optional searchcoils are also available and will enhance the detector's performance under various conditions.

[See page 31]

*Operation may be more difficult in black sand or certain other extreme ground conditions.

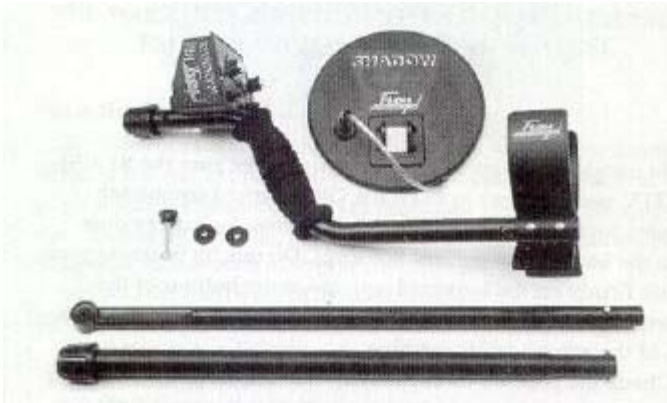
GETTING STARTED- UNPACKING THE BOX

Your **SHADOWx2** was shipped with these parts:

- (1) Upper Pole Assembly
Fully assembled, including upper pole stem with handle grip, padded arm bracket 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) 7" round, thin profile concentric searchcoil with 3' cable
- (1) 9 volt alkaline battery
- (1) Extra set of two thin friction washers
- (1) Operator Instruction Manual
- (1) Tesoro Warranty Card

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

Assembly of the **SHADOWx2** 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 **SHADOWx2** 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. For more detailed information, turn to *Performing the Audio Battery Test* on page 23.

To install or replace the battery, first make sure the SENSITIVITY control is set to POWER 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.

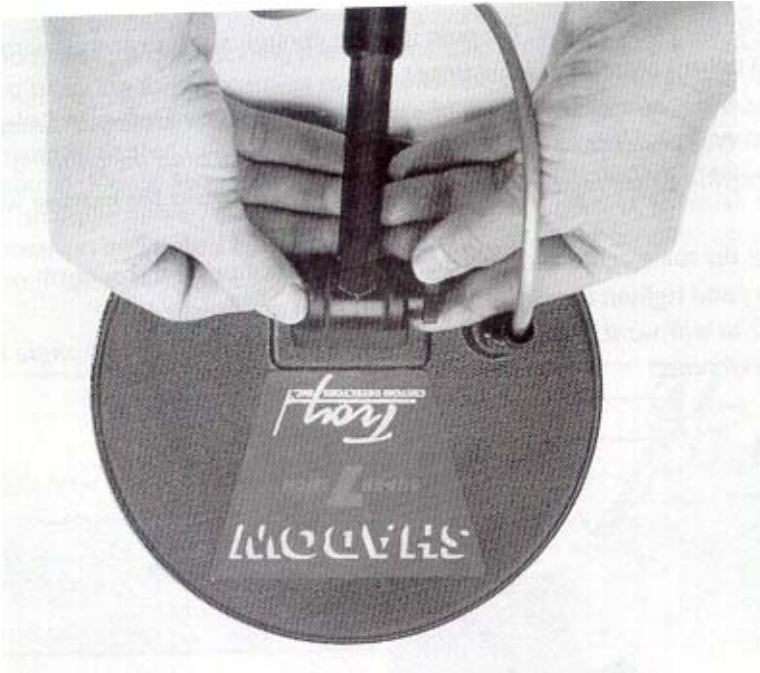
Check the polarity on the battery and on the diagram inside the battery compartment. Make sure that they match and simply drop a fresh 9 volt alkaline battery into the compartment.

Replace the battery door by sliding it into place making sure the upper mount slots are in line and the 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 search coil 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; however it may be necessary to use the thin friction washers instead.

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

5) On the upper pole 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.

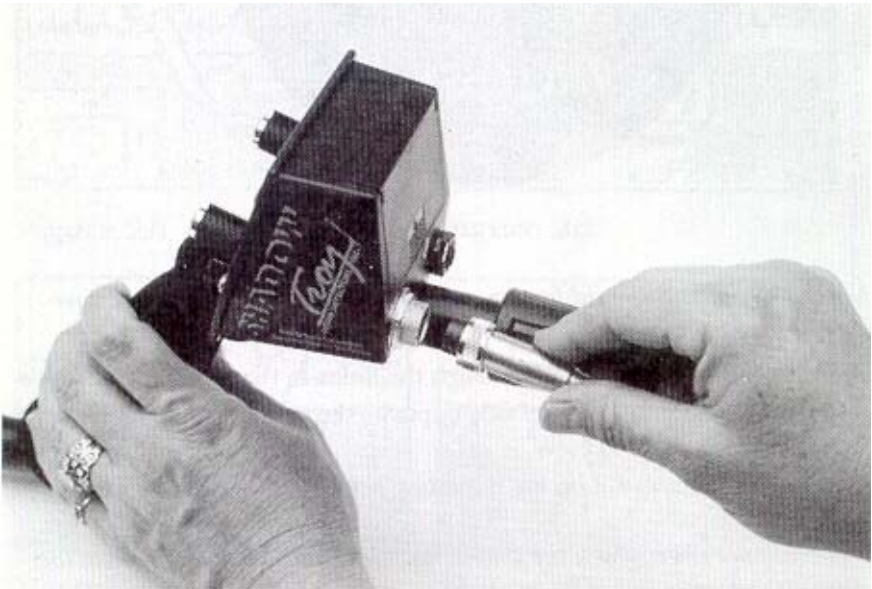
6) Slide lower pole assembly into middle pole until spring buttons click into the first set of adjustment holes. Turn pole lock to tighten--locking the assembly into place.

7) Wrap the cable around the pole leaving enough slack near the search coil to permit search-coil 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 causes false signals as the searchcoil senses the moving wire.

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 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 search coil 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 loosens 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 **SHIADOWX2** 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:

- Your fully assembled **SHIADOWX2** metal detector
- Three newer coins: a penny, a nickel, and a quarter
- A nonmetal table or counter surface

Here's what you will do:

- 1: Perform an Audio Battery Test
- 2: Adjust the SENSITIVITY control
- 3: Perform an air test in Discriminate Mode

Prepare for the QuickStart

Place your assembled **SHIADOWx2** 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: (see photo on page 18):

- *DISC LEVEL* control set to MIN.
- SENSITIVITY control set to POWER OFF



Step 1: Perform an Audio Battery Test

- ◆ Turn the SENSITIVITY control from POWER 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.

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 QuickStart.

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

Step 3: Perform an air test in Discriminate Mode

- Identify the Target Response
- Use Discrimination
- Operate the QuickCheck Pinpoint feature

- Leave the DISC LEVEL control set to MIN.
- Leave the SENSITIVITY control set to 8.
- ⊗ (Do not press PINPOINT or COINCHK button.

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 holding the coin still then moving it slightly. Notice the difference 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 the 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 metal detector in this way is called a "Silent Search Discriminate Mode."

Control settings to ignore most zinc and nickel objects:

- DISC LEVEL: MAX
- SENSITIVITY: any
- ⊗ Do not press PINPOINT or COINCHK button.

GETTING STARTED

- Now 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 penny now cause a target response sound.

Control settings to ignore most nickel objects:

- DISC LEVEL: 7
- SENSITIVITY: any
- ⊗ Do not press PINPOINT or COINCHK button

- 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:

- DISC LEVEL: 4
- SENSITIVITY: any
- ⊗ Do not press PINPOINT or COINCHK button

QuickCheck Pinpointing:

Control Settings to perform QuickCheck Pinpointing

- DISC LEVEL: 4
- SENSITIVITY: any
- ⊗ Do not press PINPOINT or COINCHK button

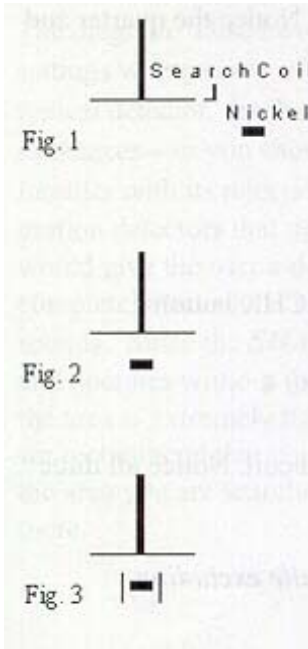
QuickCheck Pinpointing Continued:

Fig 1

With the pinpoint button depressed, place the nickel to the side of and out from the search coil about 3" as shown in Fig 1.

Fig.2

Slowly move the nickel across the coil to its center as shown in Fig 2. Notice how the audio response increases in intensity as you approach the coil's center. Stop the nickel in the center and notice that the audio response gradually stops.

Fig.3

Move the nickel a fraction of an inch in any direction as shown in Fig. 3 and notice you re-establish the audio response.

The combination of listening to the audio response increase and decrease in intensity near the coil's center and moving the nickel slightly back and forth again when the audio response fades out will "PINPOINT" the target near the coil's center.

Comparing the target response sounds made in the Discriminate and Pinpoint mode can help to accurately locate a target.

Release the PINPOINT button to end the QuickCheck pinpoint test.

Summary Of QuickStart Functions Demonstrated:

- (1) The motion-based operation and target response sound of the Silent Search Discriminate Mode
- (2) How the Discriminate Mode can be used to help determine the types of metal a target can be. By adjusting the DISC LEVEL control, you can select what metals your detector will ignore
- (3) How the QuickCheck Pinpointing feature can be used to more accurately determine the exact location of a target by quickly comparing the different target response sounds of the Discriminate and Pinpoint Mode

Conclusion

Well done! You have finished the QuickStart Guide and have operated the basic features of the *SHADOWX2* and have been introduced to the ideas of: 1) target response sound, 2) target discrimination and 3) target pinpointing.

Now you are 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." Troy Custom Detectors are specifically designed to deliver the best performance in the field. The *Controls* and *Tuning Your Detector* sections, beginning on pages 17 and 20 respectively, will give you more detailed information on how to set your detector's controls for the best results, especially when pinpointing and using discrimination.

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 familiar with 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:

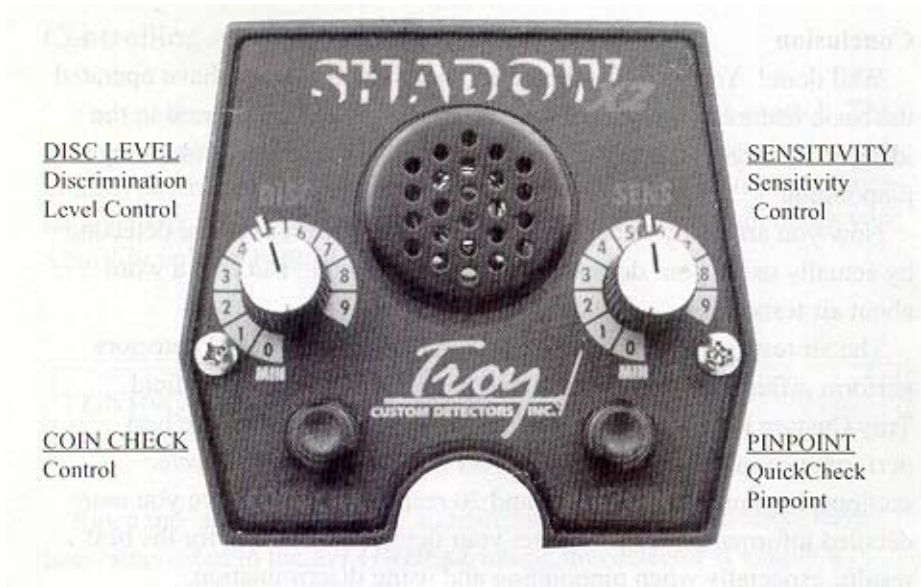
- TURN THE SENSITIVITY CONTROL TO POWER OFF

TO TURN YOUR DETECTOR ON:

- TURN THE SENSITIVITY CONTROL TO MIN

OPERATING TECHNIQUES AND CONTROLS

The *SHADOWx2* has only four controls, all mounted on the front control 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, 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 controls.



SENSITIVITY

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 POWER 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 of 4-6 is the normal range. This range corresponds with the normal Sensitivity of standard detectors. Advancing the SENSITIVITY knob past 6 is possible in many areas and may increase the detector's depth penetration providing soil conditions, and nearby power lines do not create interference.

DISC LEVEL- Discrimination Level Control

This rotary switch control has one function:
Adjusts the Discrimination Level

While 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.

THRESHOLD *Factory Pre-set Level Optimum For Most Situations For most metal detecting situations, the factory pre-set threshold setting is best. Should you need to manually adjust the detector's threshold due to unusual circumstances, do the following:

- 1) Remove the two screws holding the detector face-plate to the housing. On the inside of the face-plate you will find a small trim pot that can be adjusted with a thin blade screwdriver.
- 2) Depress the Pinpoint Control, and while it is depressed, slightly adjust the trim pot clockwise or counterclockwise until the detector's sound is a barely audible hum.
- 3) Release the PinPoint Control and reattach the face plate to the housing.

PINPOINT-QuickCheck Pinpointing Push-button

This push-button control has two functions:
Places the detector in Pinpoint Metal Mode

When the detector is in the Discriminate Mode, the PINPOINT pushbutton is used to momentarily change the operating mode for improved pinpointing. Pressing the push-button places the detector in Pinpoint Mode. The detector remains in Pinpoint as long as the push-button is depressed. Releasing the push-button returns the detector to Discriminate Mode.

COINCHK- Coin Check Push-button Control

When this push-button is depressed, the detector's discriminator instantly eliminates all targets below the conductivity of a copper penny.

Controlling Audio Volume

The speaker in the *SHADOWX2* 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.

TUNING YOUR DETECTOR

Since the most troublesome adjustments of standard detectors have been automated in the *SHADOWx2*, tuning this detector is simply a matter of:

- (1) Setting the Sensitivity level using the Sensitivity control.
- (2) Setting the Discrimination level using the DISC LEVEL control.

Selecting the proper operating mode

The *SHADOWX2* offers two operating modes, Discriminate Mode and Pinpoint Mode. Both modes are also "mineral free." This means the detector's circuitry has been factory preset to ignore all but the most extreme ground mineral conditions.

The Discriminate Mode is "Silent Search." 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 Pinpoint Mode, however, is "no-motion." This means the detector will make a continuous sound until it encounters a metal target. This mode does not require motion so the searchcoil can be held still for target detection.

Setting the Sensitivity Level

In lightly to moderately mineralized ground, you can usually set the SENSITIVITY control as high as 6-7. In some conditions, you can even move the control into the 8-9 range for improved 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 such as highly mineralized ground on trashy sites or nearby sources of electrical interference. These false signals are generally short, choppy sounds that can be easily distinguished from a good target response sound. Extreme conditions such as wet salt sand may require you to lower your Sensitivity setting into the 2-5 range.

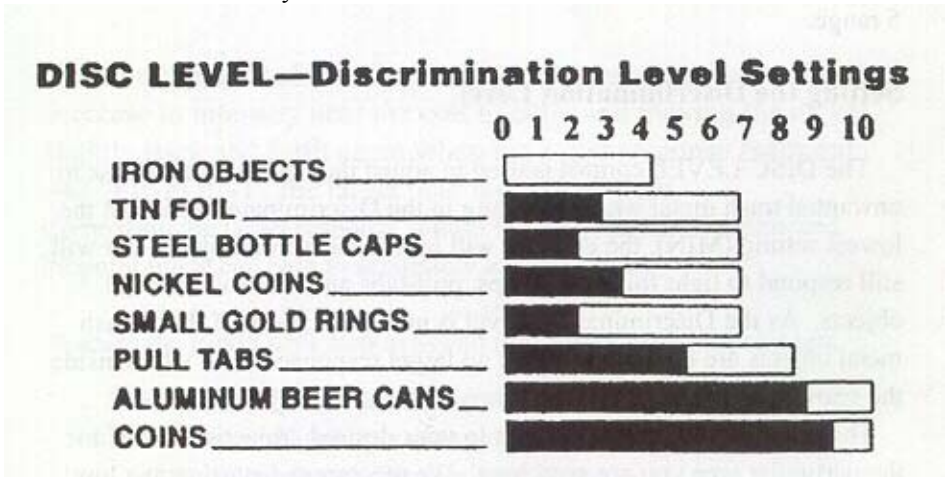
Setting the Discrimination Level

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.

Setting the Discrimination Level Continued:

The 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 'nulling' completely (no sound made temporarily) or by generating short, choppy sounds. Since the *SHADOWx2'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 Pinpoint Mode and check the area you are searching to get an idea of how much trash is really there.



Solid black bars indicate likely audio target responses while white bars indicate possible audio target responses. No bar indicates "rejection area" with no audio target responses. Levels shown are typical.

Performing the Audio Battery Test

Your *SHADOWx2* 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 the detector 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 to 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 battery will be weaker than an alkaline battery in the beginning, but will not weaken much with use.

FIELD USE

Handling your detector

The detector should be held in a position that is comfortable for you as shown in the *ADJUSTING THE POLE & SEARCH COIL* 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 *SHADOWx2* is 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.

Try to keep your search coil height consistent 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. Check the area with Disc set at zero 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.

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 Pinpoint 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 Trash Discriminator like the *SIADOWX2*. 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

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 Pinpoint Mode to check the target response. Remember that Pinpoint 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 Pinpoint to the target response sound in Discriminate, you can often better identify the likely location of the target. The QuickCheck PINPOINT push-button allows you to do this easily and without looking away from the ground at your controls.

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 the next two pages 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 RECOVER METHODS

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

METHOD 1- "PROBE AND DRIVER"

Use in less moist lawns where targets are not so deep (1-4 inches) and where "plugging" is objectionable. This method requires more practice but is much less damaging to the grass than Method 2 -"Plugging" shown on the next page.

After pinpointing the target, use a nonmetallic probe such as a modified fiberglass fishing rod or a metallic probe such as a blunted ice pick (the former causes much less damage to the target) to locate the target depth (Figure 1A). Next insert an eight-inch screwdriver on center just above the target and rotate slightly to open the ground (Figure 1B). Now insert the screwdriver just under the target at an angle and lever the target to the surface (Figure 1C). Brush all loose dirt back into the hole by exerting pressure all around the open-mg (Figure 1D).

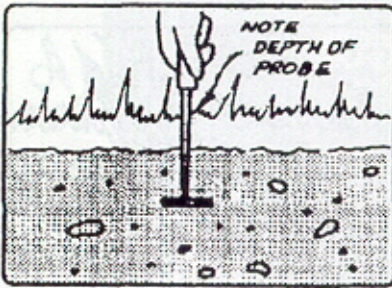


Figure 1A

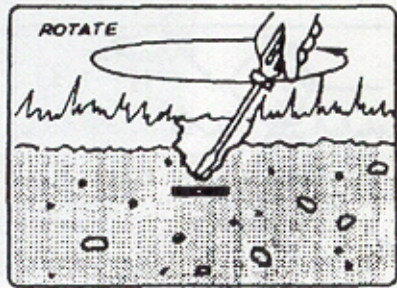


Figure 1B

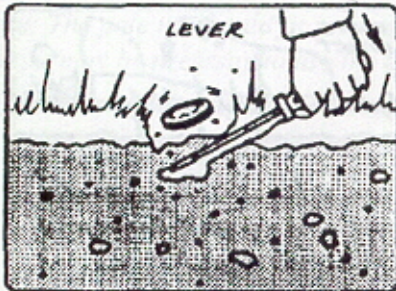


Figure 1C

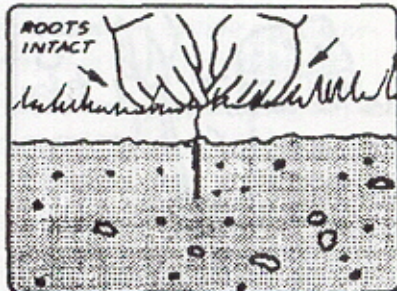


Figure 1D

RECOMMENDED RECOVER METHODS

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

METHOD 2- "PLUGGING"

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

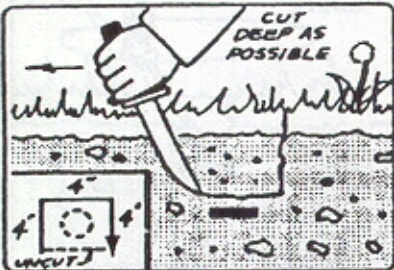


Figure 2A

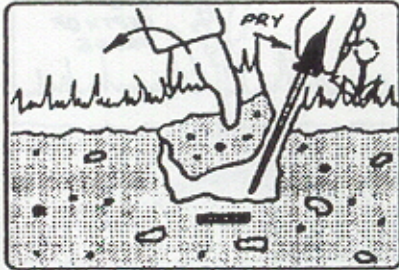


Figure 2B

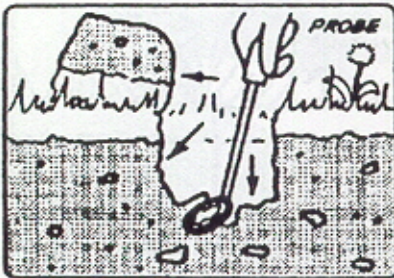


Figure 2C

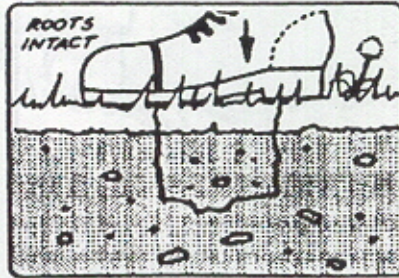


Figure 2D

GENERAL INFORMATION CARE AND USE

Basic Care

The ***SHADOWx2*** is a sturdy instrument, but it is not designed to withstand abuse. In caring for your ***SHADOWx2***, 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 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 hatch-back 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 electrical 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, NEGLIGENCE 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 INSTRUCTIONAL MANUAL.
- Use only high-quality alkaline batteries of the correct voltage. Never substitute a different voltage. When using a Ni-Cad, 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 search coil and protected by a strain relief. Inspect the strain relief frequently to make sure it is firmly attached.

- 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 and 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 on the next page.*)
- Remove and clean out scuff covers periodically to avoid a 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.
- In 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 temperature during storage.
- When shipping, use the original factory carton or similar heavy-duty container, and provide a minimum of 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

Shadow Metal Detectors and genuine Shadow Accessories are sold only through independent Shadow Authorized Dealers, who are almost always metal detectorists themselves. They can answer your questions about metal detecting in general.

See your Shadow or Tesoro Authorized Dealer for more information about prices on optional accessories.

Scuff Covers

Troy Custom Detectors highly recommends using a scuff cover to protect your searchcoil at all times. The scuff cover for the **SHADOWx2** 7" thin profile coil can be purchased from your detector dealer.

Searchcoils

The 7" concentric searchcoil provided with the **SHADOWx2** 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 response for metal objects buried closely together-- which is very useful when hunting trashy sites. Very small searchcoils can deliver the best performance 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, 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 the best. Several optional interchangeable searchcoils are available for the **SHADOWX2**. 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.

Tesoro Searchcoils

Tesoro Part #	Description
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	10.5" round concentric (open center, white)
COIL-7RW	7" round wide scan (closed center, white)
COIL-8.5RW	8.5" round wide scan (closed center, white)
COIL-11RW	11" round wide scan (closed center, 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	7" concentric thin profile
Searchcoil size	8" diameter
Cable Length	Approx. 3'
Audio Frequency	Approx. 630 Hz
Audio Output	1.5" speaker and headphone jack
Headphone Compatibility	1/4" stereo plug
Weight (may vary slightly)	2 lbs.
Battery Requirement	One 9 volt DC (alkaline)
Battery Life (typical)	0 to 20 hours
Optimum Temp. Range	30 ⁰ to 100 ⁰ F
Optimum Humidity	0 to 75% R.H.
Operating Modes	QuickCheck Pinpoint Silent Search Discriminate Coin Check

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 of 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.

SHADOWX2 FEATURES

- ⇒ **Hi Gain Sensitivity Circuitry**--designed specifically to deliver greater depth, sensitivity and stability.
- ⇒ **High-sensitivity Searchcoil**--a seven inch thin profile concentric for broad sweep, good pinpointing and deep ground penetration.
- ⇒ **Ultra-lightweight**--search longer without fatigue.
- ⇒ **3 piece Knockdown Pole**--convenient storage and travel.
- ⇒ **Turn-on-and-go** -- factory preset for "mineral free" operation.
- ⇒ **Three Operating Modes**--Pinpointing, Discriminate, and Coin Check.
- ⇒ **QuickCheck PINPOINT** - simple push-button pinpointing.
- ⇒ **Easy to Operate**--simple controls at your fingertips.
- ⇒ **Silent Search Operation**-- in Discriminate Mode.
- ⇒ **Economical to Use** -- Up to 20 hours plus on a single battery.
- ⇒ **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 the SHADOWx2 will work well with standard headphones. If you choose not to use headphones, the SHADOWx2 speaker will be loud enough for most environments. It will allow you to hear the small and deep targets found by the SHADOWx2'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 SHADOWx2 detector.

The power and features of the Troy Custom Detectors SHADOWx2 make it an ideal detector for a beginner who wants a machine they will never outgrow. It is also ideal for the serious detectorist who wants power, performance, simplicity, and versatility in a single lightweight detector.

INDEX OF COMMON QUESTIONS**What does the factory include with my detector?**

See *Unpacking The Box* on page 7.

How do I put my detector together?

See *Assembling Your Detector* on pages 9-10.

How do I install a new battery?

See *Installing The Battery* on page 8.

Is my battery working and when should I change it?

See *Performing the audio battery test* on page 23.

How do I turn my detector on and off?

See page 17.

How does my detector work?

See *General Description* on page 6
and *Quickstart* on pages 12-17.

What features does my detector have?

See *SHADOWx2 features* on page 34.

What are the Discriminate Mode and Pinpoint Mode?

See *Tuning Your Detector* on page 20.

How do I adjust the discrimination feature?

See *DISC LEVEL Control* on page 19.

How much discrimination should I use?

See *Setting the Discrimination Level* on page 22.

How do I adjust the sensitivity feature?

See *Sensitivity Control* on page 18.

How much sensitivity should I use?

See *Setting the Sensitivity Level* on page 21.

Can I adjust the speaker volume?

See *Controlling Audio Volume* on page 20.

How do I hold and move my metal detector when using it?

See *Handling your detector* on page 24.

How do I find the exact location of a metal object?

See *Pinpointing a target* on page 25.

How do I dig up a buried object?

See *Recovering a target* on pages 26-28.

What can I do to get better at using my detector?

See *Planting a test garden* on page 24.

How do I take care of my detector?

See *Basic Care and Protecting your investment* on pages 29-30.

What is my warranty and where can I get service?

See the *back cover*.

WARRANTY SERVICE

Your **SHADOWx2** 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 transferrable, and is valid only if the warranty registration card has been completed and mailed in within 10 days of purchase.

During the first two years, 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. After two years from date of purchase, TESORO will replace detective parts at no charge, except a nominal labor charge and transportation charges.

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

For warranty service and repairs:

Call or write:

Tesoro Electronics, Inc.
Service Department
715 White Spare Road
Prescott, AZ 86303
(520) 771-2646

For other information:

Call or write:

Troy Custom Detectors, Inc.
13015 Harkness Drive
Dallas, Texas 75243
(972) 690-5703