





The name that means Treasure

Stingray OPERATOR INSTRUCTION MANUAL

CONGRATULATIONS!

Your new TESORO Metal Detector was 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. I wish we could share these experiences with you, and we wish you the best of success.

Your TESORO Metal Detector is capable of meeting your needs in any conceivable treasure hunting situation. As with any detector, operating skill and familiarity with this instrument are probably the limiting factors in determining how successful you will be. We recommend that you read this manual and understand fully before attempting to use the instrument in the field. As you become more familiar with your detector through practice, your rate of success will increase dramatically.

The TESORO Metal Detector is a precision electronic instrument, which will last for years if properly cared for. Treat it right and it won't let you down.

Good Hunting! Jack Gifford

GENERAL DESCRIPTION

The Stingray is a waterproof VLF/TR/VLF Discriminator, which provides three basic operating modes. It can be used as an ALL METAL detector, as a TR discriminator, or as a Motion based discriminator. It is capable of providing Mineral Free operation in any environment, if adjusted correctly.

The Stingray can be used on land, in the surf, or underwater to depths of 200 feet. It is perhaps the most versatile of all waterproof metal detectors yet made.

The detector is supplied with in standard land based metal detector form, but is equipped with a belt bracket for body mounting. It can be used as a pole mounted unit, body mounted or with the optional carrying case, as a belt mounted unit. Further, a shorter diver's pole is optional, which compresses the detector to useable lengths for the diving TH'er.

As with any detector, the familiarity of the user with his instrument will have a great effect on how successful he will be. We recommend that you read and understand this manual fully before attempting to use the instrument in the field.

BE SURE TO FILL OUT AND RETURN YOUR WARRANTY REGISTRATION CARD TO VALIDATE YOUR WARRANTY.

ASSEMBLY

The Stingray can be assembled into several configurations, but the most general forms are either the pole mount or the body mount configurations. It is relatively easy to convert the detector from one form to the other. The installation of the lower pole to the searchcoil is the same regardless of which configuration is used.

1. Depress the two buttons on the upper end of the lower stem, and slide it into the upper stem. Push the lower stem up so that the buttons click into the third set of holes from the end of the upper stem.
2. Insert the pole tip between the mounting ears of the searchcoil, after removing the screw and thumb nut. Align the holes in the pole tip and those in the mounting ears. Be sure that the rubber friction washers are in place. NOTE: It will be much easier to do this if you moisten the friction washers first.
3. Insert the coil mounting screw through the coil and pole tip. The screw head should be on the side of the searchcoil where the cable comes out.
4. Install the thumb nut on the screw and tighten by hand.
5. Wind the searchcoil cable around the pole.

POLE MOUNT

1. The control housing is already mounted on the pole, as shipped from the factory, so all that is required is to wind the cable around the pole, and use the two velcro straps to hold the cable tight against the pole.
2. The preferred configuration for land use is to leave the control housing on the underside of the pole. For diving, it would probably better if the control housing were mounted on the top of the pole. This can be accomplished by

would probably better if the control housing were mounted on the top of the pole. This can be accomplished by depressing the spring buttons, and turning the housing up.

BODY MOUNT

1. To use the detector as a body mount, simply remove the control housing from the upper pole by depressing the spring nuts in the plastic mounting piece, and slide the control housing off the pole.
2. Wind the coil cable up the pole, and fasten it with the two velcro straps. It will be best for you to sometimes move the straps so that there wear on the cable is spread over a larger area.
3. The control housing can be hung around your neck using a camera strap, or can be belt mounted using the optional carrying case which is available from your Tesoro dealer.

CONVERSION

Obviously, converting the unit from body to pole mount or vice versa, is simply putting the control housing back on the pole, or removing it from the pole. Be sure to keep the searchcoil cable wound tight enough around the pole that it doesn't flap right over searchcoil. The Stingray is powerful enough to see the fine wires moving, and can give you false signals if the cable is too loose enough to flop around.

SPECIFICATIONS

Operating Frequency	10 kHz
Searchcoil Type	Concentric
Searchcoil Size	8" Diameter
Cable Length	Approx. 3’
Audio Frequency	Approx. 625 Hz
Audio Output	Piezo Headphones
Weight (may vary slightly)	4 1/4 lbs. including weight of coil and headphone
Battery Requirement	9 volt DC 6 AA alkaline penlight
Battery Life (typical)	15 to 30 hours
Optimum Temperature Range	30° to 100° F
Operating Modes	VLF All Metal
	TR Discriminate
	VLF Discriminate

TESORO Electronics, Inc., reserves the right to modify or improve the design without further notice.

CONTROLS

The Stingray has only four controls on its front panel but three additional controls are on the inside of the control housing and can be adjusted by opening the housing. Since the Threshold Adjust and Ground Adjust are seldom used controls, they are placed on the inside of the housing to minimize the chance of leaking.

NOTE: IMPORTANT - The toggle switches utilized on the front panel contain internal O-rings, for waterproofing, but are installed with rubbery boots anyway. Be sure that if the rubber boots appear to split, to replace them. They are available for your Tesoro dealer.

1. **ON/OFF, BATTERY TEST, SENSITIVITY CONTROL.** The primary function of this control is to reduce the detectors sensitivity to those influences that could make the operation more difficult for you. This control also is used to turn the power on and off. Turning the knob completely counterclockwise until it clicks disconnects the batteries from the circuit. When the knob is first turned on (clockwise), the detector will automatically test its batteries, and give you an audible indication of their connection. **NOTE: This test should be performed with the Mode Switch in the Discriminate position.** Fresh batteries will cause a loud audio response which will gradually decay into silence over a period of about 4 or 5 seconds. As the batteries age and become weaker, the initial audio response will be weaker, and will decay quicker. When the response is just a short buzz instead of a long beep, or when there is no audio response, it's time for new batteries. It is recommended to always use alkaline batteries.

   Many things can cause the response of the detector to become erratic as you are using it. Normally you will not hear any sound from the detector unless you pass the coil over a good target. Very large targets or a multitude of closely spaced smaller rejected trash targets can cause the detector to emit choppy sputtering sounds. CB radios, radio and TV broadcasting antennas, intense mineralization changes, and other sources of electrical noise can also cause the detector to emit false signals. These signals will generally sound "chopped" and will not be repeatable so you will not have any trouble recognizing them. They can be distracting, though, and turning down the sensitivity control will help reduce them. This will also cause a small loss of target sensitivity, so always run the sensitivity control as high as you can, while still getting smooth operation.
2. **DISCRIMINATE LEVEL CONTROL.** This control is used to adjust the detector's response to unwanted trash items

when the detector is used in Discriminate. Since the range of this control reaches from the all Metal (lowest end) up through Screw Cap (highest end), it gives complete control for the compensation of wet salt beaches when used in the TR Discriminate mode as well.

3. **MODE CONTROL.** This toggle switch is used to select the desired operating mode of the Stingray. The Motion Disc position always selects Motion Discriminate, however the detector may operate quieter in some extremely mineralized conditions, if the Select switch is in the All Met. position. The No Motion (center) position of this switch selects one of the two No Motion modes, based on the position of the select switch. They are, either All Metal or TR Discriminate. The Retune position is spring loaded, so that the switch always returns to the center position, and this position simply retunes the desired No Motion mode back to Threshold.
4. **GROUND ADJUST.** This control is mounted on a sub-panel inside the detector. It is a single turn control, and is easily adjusted. Since it doesn't need constant tuning, it was left inside the control housing.
5. **THRESHOLD ADJUST.** This control is accessible through the side of the chassis, just behind the battery pack on the left side of the chassis. It is a control which needs adjustment so seldom that it was left inside the control housing.

TUNING THE STRINGRAY

The Stingray, like other high power metal detectors, will give much better performance if it is properly tuned. To achieve maximum performance from your Stingray, be sure that you understand the following sections of the manual and that you use it in the best mode for the site you are hunting.

Tuning In The All Metal Mode

The Ground Adjust control is located on the front panel and is not designed to be used as the ground adjust control would normally be used on a land based metal detector. It should be set t the best setting for the areas that you work and then left alone.

The Ground Adjust control should be set so that the most negative mineral backgrounds that you will be detecting in response with a slight positive increase in volume as the searchcoil is lowered to the ground. This will yield the best results when the detector is used in the motion discriminate mode, by keeping the detector from responding to negative minerals, or from detecting a hole in the ground.

The Ground Adjust control doesn't have enough range to neutralize salt water beaches. Salt water beaches are always very positive, so the TR discriminate mode should be used with the Disc Level control being set to neutralize the conductive nature of the beach.

1. Put the On/Off Sensitivity control on max, the Mode select switch in the center position, and the No Motion select switch in the All Met. position. Hold the searchcoil about two feet above the ground, and momentarily push the Mode switch into the retune position. After releasing the switch, lower the searchcoil to about two inches above the ground.
2. If there is no change in the Threshold sound, or only a slight positive increase, the detector is properly tuned. If the sound decreases, the ground adjust should be turned slightly clockwise (in the direction labeled Max). If the sound increases dramatically, turn the ground adjust slightly counterclockwise.
3. Repeat the above step until the threshold doesn't change or until there is a slight positive increase in the threshold sound.

NOTE: Since adjusting the Ground Adjust control requires opening the housing, be very careful not to get any sand or dirt particles on the front edge of the housing or onto the O-ring in the panel. Any particles in this seal can cause the detector to leak when it is submerged. When closing the housing, operate both draw bolts at the same time, rather than clamping one side, and then the other. From time to time, it would be good to apply a bit of O-ring grease to the panel O-ring seal.

Tuning In Motion Discriminate Mode

Using the detector in Motion discriminate is simply a matter of setting the Disc Level control to the desired position. The detector should not be affected by mineralization, unless it is quite severe. A slight improvement in response may be noted by reducing the Sensitivity Control switch.

Tuning In TR Discriminate Mode

The TR discriminate mode will probably be unusable in virtually all land locations due to mineralization levels. It may be the most useable mode on certain salt water beaches, however, but only if the discriminate level control is set to neutralize the effects of the combined mineralization and conductive salt water. This obviously means you cannot use the Disc Level control to eliminate any trash items, since you must used it to eliminate mineral effects.

It will probably be best to try using the Motion discriminate mode on salt water beaches since you can use the entire range of the Disc Level control to eliminate some of the more prevalent trash.

1. Turn the ON/OFF Sensitivity control to about mid-range, and the Discriminate Level control to about mid-range. With the Mode switch in the TR Disc position, hold the searchcoil about two inches above the ground. Push the Mode switch into th Retune position for a few seconds, and release it.
2. Raise the coil about two or three inches. If raising the searchcoil slightly makes the threshold sound increase to maximum, the mineralization level will probably make the TR discriminate mode very difficult to use. You must be able to sweep the coil from side to side and still maintain the threshold sound. Attempting to operate in TR discriminate in heavily mineralized ground will almost always cause a large decrease in depth.

3. On a salt water beach, the Discriminate level control can be used to essentially ground compensate the detector if it used in the TR discriminate mode. It will be best to adjust the Disc Level control for a slight increase in sound as the searchcoil approaches the wet salt beach.

SELECTING THE PROPER OPERATING MODE

The TR discriminate mode will probably be unusable in most land areas due to the mineralization levels encountered. However, the TR discriminate mode can be quite possibly the best choice to use on a salt water beach because the Disc Level control can be used to neutralize the conductive wet salt sands. Also if the Motion discriminate mode gives a lot of false signals on such a beach, the TR probably can be adjusted to operate quite well without all of the false signals.

In land hunting, it will be best to use either the ALL METAL mode or the Motion discriminate mode. Either of these modes will be mineral free if the detector is adjusted properly. It will be best to adjust the ground adjust control for a slight positive increase as the searchcoil approaches the ground. This will keep the Motion discriminate mode from reading holes in the ground as you recheck a target you have started to recover. Also, since it is necessary to open the control housing to adjust the Ground Adjust control, we feel it is best to leave the control set at the point where the detector gives the quietest operation in Motion Discriminate mode.

NOTE: Since adjusting the Ground Adjust control requires opening the housing, be very careful not to get any sand or dirt particles on the front edge of the housing or onto the O-ring in the panel. Any particles in this seal can cause the detector to leak when it is submerged. When closing the housing, operate both draw bolts at the same time, rather than clamping one side, and then the other. From time to time, it would be good to apply a bit of O-ring grease to the panel O-ring seal.

FIELD USE

The detector should be held in a position that is comfortable for you. Swing the detector from side to side in about a three foot arc, overlapping succeeding strokes well. This motion is called a “sweep.” The Stingray 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 in Discriminate may even cause a loss of depth in heavily mineralized locations.

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 unit in its various modes. Check the area in All Metal Mode first to be sure its clear of trash then bury the targets at least a foot apart, and from 2 to 6 inches deep to start. Make a map of the test bed 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 rate for DISC operation.

In ALL METAL mode operation, keep the detector tuned so that it is just lightly buzzing. This is easy to do because the ground minerals do not affect the ALL METAL mode if properly adjusted. 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 hurry. Try to avoid this, as any increase in height 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.

When operating in the Discriminate Mode, some “false signals” may be caused by heavy concentrations of trash metal objects, by very large trash items, or by electrical interference. These signals will sound different than good target signals because they are generally short, choppy sounds. At the end of your sweep, as you the 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.

If there is any doubt whether a target is good or not, DIG IT. For this same reason, in the Motion 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 Stingray. 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.

PINPOINTING

The sweep speed of the detector is low enough to allow pin-pointing in the Motion Discriminate Mode, but will require a little more practice. Move the coil slowly from side to side and then from front to back over the target. Raising the coil slightly and slowing the sweep speed will narrow down the detection area enough that it's easy to tell where the coil center is at the instant of the sound.

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.

The easiest way to pinpoint for most people will be to switch to the All Metal, since no motion is required. To pinpoint a

The easiest way to pinpoint for most people will be to switch to the All Metal, since no motion is required. To pinpoint a target that doesn't saturate the audio, just move the coil forward and back, and side to side until you get the strongest sound. The target will be directly below the coil center. If the audio saturates over a large area, hold the coil over the target momentarily to detune the detector. This will narrow its field of response to allow you to once again seek the area of strongest response. It may be necessary to retune more than once with this technique.

BATTERY INSTALLATION

To replace the batteries, open the control chassis by pulling forward on the draw bolt for each side of the housing. Pull the front panel out slightly to expose the battery pack on each side of the internal chassis. Replace the batteries with fresh alkaline AA batteries, in accordance with the markings on the inside of the battery packs. We strongly recommend replacing the batteries at home, or at least in a clean environment. If you need to change them at the beach, lay a towel or some other clean cloth down to lay the detector on while you are changing the batteries. **Be careful not to get dirt or sand into the O-ring seal, as the detector could leak when submerged. When closing the control housing, be sure to pull back on both draw bolts at the same time, instead of clamping one side first, an then the other.**

DETECTOR PROTECTION CHECKLIST

If the detector is to be stored for a long period of time, it is best to remove the battery pack from the detector. This will prevent internal damage to the detector if the batteries should leak.

The searchcoil is waterproof and may be submerged in either fresh or salt water. Caution should be exercised to prevent water from entering the chassis, where it could damage the electronic circuitry. After the coil is used in salt water, the coil and lower stem assembly should be rinsed well with fresh water to prevent corrosion of the metal parts.

There are several good books to help the beginner learn how to use the detector, where to search and how to recover a target without damaging the environment. A good coin shooter can recover a lot of finds and leave the area looking as though he had never been there. Above all, always fill your holes when you have recovered the target.

TESORO Metal Detectors are sold through independent dealers, who are almost always treasure hunters themselves. They can provide you with you much needed information about how to use your detector, how to probe, plug and dig in your locale, and answer most of your questions about treasure hunting in general.

HAPPY HUNTING, and thank you for purchasing a TESORO.

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.

If you have any questions, don't hesitate to contact the factory.

WATERPROOF METAL DETECTOR 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.

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, or at one of its authorized repair centers. After two years from date of purchase, TESORO will replace defective parts at no charge except a nominal labor change 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.

If warrant service should be necessary, contact the factory for nearest repair center.

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