



The name that means Treasure

Product

Detectors

Coils

Accessories

Catalog

Dealers

Information

Frequently Asked Questions

About Tesoro

Manuals

Field Tests

Articles

Testimonials

Customer Finds

Forums

Service

Warranty Repair

Contact Us

Mayan 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 Mayan is a Transmitter-Receiver (TR) type of detector that operates in the Very Low Frequency (VLF) portion of the Radio Frequency (RF) spectrum. The detector utilizes the natural phenomena of the phase delay of all targets to provide mineral-free or ground-compensated response in the normal mode of operation, and to provide discrimination capability in the discriminate mode.

The Mayan is an extremely sensitive detector, but because of its push-button MODE CHANGE/TUNING SWITCH is the easiest "one handed" VLF/TR Discriminator to use.

As with any detector, the familiarity of the user with the instrument will have a great deal to do with how successful the treasure hunter is. 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 mail your warranty registration card to validate your warranty.

ASSEMBLY

Assembly of the Mayan is very simple, and requires no special tools. The only assembly required is to mount the searchcoil to the end of the lower stem and to install the lower stem and lock nut assembly to the upper stem.

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.
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 by depressing the spring buttons and turning the lower stem around several times as necessary.

ADJUSTMENT

The searchcoil angle and stem length should be adjusted so that the unit is not uncomfortable or tiring after long periods of use. The stem length is adjusted by depressing the spring buttons and extending or shortening the pole till they click into the holes that give you the most comfortable setting. The coil should be about one inch above the ground while standing erect. Adjust the angle of the searchcoil, so that the coil is parallel to the ground. Tighten the searchcoil thumb nut by hand to maintain this setting.

The arm rest on the rear of the handle can be moved forward by removing the screws and nuts, and reinstalling the

The arm rest on the rear of the handle can be moved forward by removing the screws and nuts, and reinserting the assembly into the most forward set of holes.

SPECIFICATIONS

Operating Frequency	12 kHz
Searchcoil Type	Concentric
Searchcoil Size	7" Diameter
Cable Length	Approx. 3'
Audio Frequency	Approx. 375 Hz
Audio Output	2 1/4" speaker
Headphone Compatibility	1/4" stereo earphone jack
Weight (may vary slightly)	3 lbs. 12 oz. nominal
Battery Requirement	12 volts DC 8 AA penlight batteries
Battery Life (typical)	15 to 30 hours
Optimum Temperature Range	30° to 100° F
Optimum Humidity	0 to 75% R.H.
Operating Modes	Normal (All Metal)
	TR Discriminate

CONTROLS

The function of the front panel controls the Mayan are as follows.

1. **ON/OFF, TUNING, BATTERY TEST.** This control is used to tune the detector to its most sensitive level (Threshold) regardless of which mode of operation is being used. It also controls the power for the detector, and activates the automatic battery test circuitry. The MODE control should always be in the NORMAL ONLY position and the MODE/TUNING switch depressed when setting the unit to threshold with the TUNING control, or when checking the batteries. The batteries should be tested after about 10 minutes of operation, and with a moderate to heavy amount of sound. Turn the detector off momentarily, and then back on, turning the TUNING control completely clockwise to make maximum sound. The detector will remain in the battery test mode for about 3 to 5 seconds. A meter reading of .6 or above indicates the battery strength is adequate for proper operation. If the meter reading is below .6, replace the batteries.
2. **GROUND ADJUST.** The control is used to adjust the detector so that it doesn't respond to the mineralization in the ground when used in the NORMAL (all metal) mode. While the control will adjust the ground response in either NORMAL mode, it should not be adjusted when the mode switch is in the NORMAL AUTOMATIC TUNE position, as the auto tune will affect the detector's response.
3. **DISCRIMINATE LEVEL.** This control is used to adjust the detector's response to unwanted metallic trash when used in the Discriminate mode. At the lowest setting "0", the detector will eliminate most iron objects, but will still respond in a positive manner to light foil, bottle caps, pull tabs and most other metallic items. As the knob setting is increased, response to more of these metallic trash items is reversed so that these objects give no response.
4. **DISCRIMINATE SENSITIVITY.** This control adjusts the detector's sensitivity to ground effects due to mineralization, as well as to its sensitivity to metallic targets. Since the ground or mineralization effects cannot be ignored in Discriminate, the detector may perform better in heavily mineralized ground at reduced sensitivity.
5. **MODE SWITCH.** This switch is a four position rotary control which selects the detector's primary operating mode. There are two basic modes of operation, NORMAL (all metal) and DISCRIMINATE. Further, each of these modes can be operated in an automatic tuned position, yielding four primary modes of operation. The mode selected will operate when the push button TUNING/MODE CHANGE is not held in. Holding the switch in will cause the detector to change to automatic tuning in the other basic operating mode as long as the switch is depressed. The other front panel controls are color keyed to the MODE SWITCH to help you remember which controls are operational in each of the two basic modes.
6. **TUNING/MODE CHANGE SWITCH.** This push button switch is located in the end of the handle, where it can be operated with the thumb of the hand holding the detector. This switch performs two functions.
 - A. When depressed momentarily and released, it retunes the detector back to the desired threshold.
 - B. When held in the depressed position, it causes the detector to switch to the other basic mode. If the MODE switch is in either Normal position, holding the button down will cause the detector to switch to Discriminate Auto Tuning Mode. If the MODE switch is in either Discriminate position, holding the button down will cause the detector to switch to Normal Auto Tuning Mode. When the button is released, the detector returns to the mode selected by the Mode switch.
7. **METER.** The meter and its associated circuitry, while not really a control, serves three important functions.
 - A. **BATTERY TEST.** This function is automatically performed for about 4 seconds each time the detector power is turned on. The meter reading will be above the .6 mark on the intensity scale when the unit is making a loud noise if the battery strength is adequate for proper performance.
 - B. **COIN DEPTH.** In the NORMAL position, the meter will indicate approximate depth of the detected target, assuming the target to be coin size. In the DISCRIM mode, the depth reading feature will be inoperable.
 - C. **INTENSITY.** In any of the automatic tuned modes, the meter will indicate relative signal strength, as indicated on the Intensity scale. This reading is affected by the automatic tuning, and will always return to zero if the coil is stopped over the target.

Both of these target indicating modes (DEPTH and INTENSITY) are extremely useful aids in pinpointing a target. Both readings will reach a

maximum forward deflection of the meter needle when the coil is centered directly over the target. Further, the meter of the Mayan is placed in a location where it is readily visible to the user.

TUNING

No detector, regardless of how powerful it is, can provide optimum depth if it is improperly tuned. In fact, the more powerful a detector is, the more critical the tuning becomes. Less powerful units are more tolerant of operator misadjustment, but are not capable of the depth of a properly tuned high power detector such as the Mayan.

If you will remember just one thing, and adjust your detector accordingly, you all achieve satisfying results. The thing to remember is, always operate the detector at "Threshold" (with a very slight amount of sound). Any time you operate a detector completely silent, you are losing depth. If the sound is too loud, you will also lose depth, because the weak signals from deep targets will not be as noticeable.

Following the tuning procedures outlined below will help you properly tune your Mayan to allow you to operate it at threshold, and will allow you to fully utilize its performance capabilities.

A. NORMAL MODE TUNING. Normal Mode Tuning.

1. Set the MODE Switch to NORMAL.
2. Turn the TUNING control to ON, depress the TUNING/MODE CHANGE switch in the handle, and turn the TUNING control up until the detector is at threshold, (that point where it is just beginning to make sound).
3. After the battery test period has elapsed, release the TUNING/MODE CHANGE switch with the searchcoil about one foot above the ground.
4. Hold the searchcoil about two feet above the ground, and release the push-button.
5. Lower the searchcoil to the ground, and turn the GROUND ADJUST control up or down as necessary to bring the detector back to threshold. Do not push the button or turn the tuning control during this step.

The detector is now ready to use in the NORMAL modes. Raising and lowering the searchcoil slowly should not appreciably change the tuning threshold. If it does, the coil was probably over a target when it was adjusted. Find a spot free of metallic targets, and repeat the procedure if necessary. Raising and lowering the searchcoil abruptly may cause a momentary "bobble" in the threshold tone in heavily mineralized ground, but will not affect your normal operation.

In some cases of extremely high mineralization, it may be possible to compensate the unit only for the first few inches from the ground. In this case, release the button in step three, with the coil about 2 to 3 inches above the ground.

B. DISCRIMINATE MODE TUNING.

1. Set the MODE switch to DISCRIM.
2. Set the DISCRIMINATE SENSITIVITY control to 5.
3. Set the DISCRIMINATE LEVEL to 5.
4. Turn the TUNING control to ON, depress the TUNING/MODE CHANGE switch in the handle, and turn the TUNING control up until the detector is at threshold.
5. After the battery test period has elapsed, release the TUNING/MODE CHANGE switch with the searchcoil about 1 or 2 inches from the ground.
6. Raise and lower the searchcoil slightly, and note the changes in the tuning threshold. If a slight upward movement causes the audio to become maximum loudness, the ground is heavily mineralized and may require a lower setting on the SENSITIVITY control. If the detector can tolerate an upward movement of several inches before maximum loudness is reached, the ground is lightly mineralized, and the SENSITIVITY control can probably be set higher.
7. Adjust the SENSITIVITY control to the highest setting that will allow you to sweep the detector from side to side at normal sweep height, while still maintaining threshold. Attempting to operate in the detector in DISCRIM mode at maximum sensitivity will almost always result in a loss of depth when used in heavily mineralized ground.

The detector is now ready to use the DISCRIM modes. The DISCRIMINATE LEVEL control should be set to the desired level of trash rejection. Remember to keep the unit at threshold as you sweep it.

SELECTING THE PROPER MODE OF OPERATION

The four primary operating modes of the Mayan allow the treasure hunter to obtain maximum performance in any foreseeable circumstance. Some guidelines are given here to help you choose the best mode of operation for your particular circumstances. Two of the primary operating modes give you mineral free or ground compensated all metal detection, the NORMAL and AUTO TUNE NORMAL modes. The other two modes allow you to reject most common trash items, but the ground mineralization will affect the detector. These modes are DISCRIM and DISCRIM AUTO TUNE.

The NORMAL mode will generally provide the best possible depth in moderate to heavily mineralized ground. It is probably the best mode for Relic Hunting. Coin Shooting in relatively trash free areas, or other situations where it is either desirable to find iron objects or to obtain maximum depth in heavily mineralized ground.

The NORMAL AUTO TUNE mode will probably be most useful in Nugget Hunting, and Beach Hunting, where it is not uncommon to have sudden changes of mineralization type as well as intensity. The automatic tuning will help smooth out these abrupt changes and tend to keep the detector tuned to threshold.

The DISCRIM mode will allow the operator to control the response of the detector to most common trash items, and so is probably the best choice for Coin Shooting in light to moderately mineralized ground. In neutral ground this mode will provide better depth for coins than the NORMAL mode, although such ground is very scarce. The DISCRIMINATE SENSITIVITY control will help reduce the effects of heavy minerals in the ground.

The DISCRIM AUTO TUNE mode may be very helpful when discriminating in areas where the ground is very uneven, has changing grass height, or is heavily mineralized. The detector will still respond to the ground height or conditions, but the auto tuning will constantly try to maintain threshold for you. One minor difference over cooperation in the DISCRIM mode is that the automatic tuning will cause some overshoot or feedback in the audio when the coil has passed over a rejected trash item. For deeper trash items, this sound is usually very faint, but for surface trash, it can be quite loud. Fortunately, it is relatively easy to distinguish the sound as compared to a good target. Passing over a good target gives a sharp sound, followed by a brief, quiet period before the detector re-establishes the threshold. This quiet period helps sharpen the sound into a definite "beep". A rejected target will cause a null or quiet period as the coil passes over the target. During this null, the automatic tuning is trying to maintain threshold by tuning upward. When the coil leaves the target, this upward tuning now causes an audio response until the automatic tuning can once again sense the tuning error and correct itself downward. The automatic tuning speed is slower than the target speed, so this overshoot sound is best described as a 'bonk' or 'boing'. Try laying a coin and item of metallic trash such as a nail or steel bottlecap on the ground, and listen to the difference in response as the trash is rejected in the DISCRIM AUTO TUNE mode. You will quickly learn these characteristic sounds.

Whenever the push button TUNING/MODE CHANGES switch is depressed and held, the detector will change from its selected primary mode to automatic tuning in the other basic mode. Holding the switch down in either NORMAL mode will cause the detector to operate in automatic tuned DISCRIM mode, until the switch is released. Holding the switch down in either DISCRIM mode will cause the detector to operate in automatic tuned NORMAL mode until the switch is released.

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. The Mayan does not need to be hurried, so go at a pace that doesn't wear you out.

Keep the detector tuned so that it is just beginning to buzz. In Normal Mode the detector ignores the ground, if properly adjusted, so this is easy to do. In Discriminate, the ground will affect the detector, so you should sweep the detector at a constant height above the ground (about 1 inch). Irregularities in the ground, as well as in your sweep height will cause variations in the tuning. These changes will usually be much slower than the abrupt signal caused by the coil passing over a good target. A little practice with a coin buried about 1 inch will enable you to pick out the target sound readily, as compared to the background variations. Turning the Sensitivity down will make it easier to maintain threshold. Always operate in Discriminate with the Sensitivity control set only as high as will allow you to operate in the unit at threshold.

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.

Since the combined MODE CHANGE/TUNING SWITCH allows the detector to be operated with just one hand, it is very easy to search in Normal mode until a target is found, and then switch to Discriminate to check whether it is a good target or junk.

Remember that when holding in the push button to change modes, the detector will always be in the automatic tuned mode. It may help to adjust the threshold slightly higher than the point where sound is just barely audible, as lightening for the null on trash items is just as important as listening for the increase of sound for good items, when you are trying to classify a deep target. If you can't get a definite response of either type, dig it. Also, the slightly higher threshold setting will help emphasize the difference between the "bonks" and "beeps". It also helps when classifying shallow targets, to listen to the audio response only as the coil approaches the target center. This requires that you pinpoint fairly accurately in NORMAL before switching modes with the push button. With little practice, you will find getting a definite response on deep targets is really quite easy in the automatic Discriminate mode.

Once a target is located in Normal mode, it is much easier to "find" in Discriminate, because you already know that it is there. Therefore, you can use a higher setting on the sensitivity control for checking known target locations than you could for checking known target locations than you could for hunting in the Discriminate mode. This is possible because you will be limiting your sweep to just a few inches, giving you much better control over your coil height variations.

Pinpointing can be easily accomplished by using either the audio response or by way of the meter. To use the audio response to pinpoint, simply move the coil around to find the spot where the loudest audio signal is heard. The target will be directly beneath the coil center. If the sound saturates over a larger area, simply push the tuning switch in the handle momentarily, close to the center of the loud response area. This will tune out most of the response to the target and the detector will go totally quiet if it is moved away from the target. This will cause an apparent reduction in target size. It may be necessary to retune a couple of times to almost totally tune out the target. This apparent target size reduction occurs automatically in the auto tuned modes, as the auto circuitry tries to tune out the target. Moving the coil slightly back and forth over the target will keep the target from being tuned out completely, and the response will diminish to a slight beep directly over the target.

The meter is also an excellent pinpointing aid, as it can also give you the approximate depth of the target, assuming that the target is a coin. Momentarily depress the tuning button with the coil not centered over the target. Release the button, and then move the coil over the target. Move the coil until you get the most forward deflection of the meter needle, and the target will be directly below the coil center. The meter will also read the approximate depth if the target is a coin. Since a dime and silver dollar obviously will give different signal strength at the same depth, the actual depth can vary somewhat from the meter reading. Also, the depth meter readings can be obtained only in NORMAL or DISCRIM modes, and not in any of the AUTO TUNE modes. When operating in the AUTO TUNE modes, including any time the pushbutton is depressed, the auto tune circuitry will also attempt to zero the depth meter. The meter reading then will be indicative of the relative strength of the signal or its Intensity. This Intensity reading can also be used for pinpointing, but will not indicate coin depth.

In the Discriminate Mode, the tuning will not be affected by changing the DISC LEVEL control setting, so it is fairly easy to identify the target by increasing the DISC LEVEL control as the coil is passed repeatedly over the target, until the target response goes away. Being familiar with your detector and where typical junk items are rejected can save you much needless digging.

ing.

To properly utilize this identification feature, you will need to be tuned to threshold at the same height as you are passing over the target so the ground minerals do not alias the readings. Automatic tuning is helpful here, as the auto tune circuitry will continuously keep your detector tuned to threshold. You will only need to sweep the coil a few inches across the target to get the proper response, unlike "motion" machines which may have to swing several feet for proper response.

One thing to remember, though, is that in Discriminate Mode, it is best not to use any higher Discriminate Level setting than necessary. Nickels and most small rings are rejected when the DISC LEVEL is set to reject pull tabs on all TR Discriminators. If you don't dig any junk at all, you are surely passing up a lot of other good finds too. Set the DISC LEVEL only high enough to suit the conditions where you are searching.

BATTERY REPLACEMENT

The Mayan has an automatic battery test circuit so you can always know you're getting top performance from your detector. The batteries should be tested after the detector has been operated for about ten minutes, and while the detector is making a loud noise, so the batteries are properly loaded. To check the batteries, simply turn the Mayan off for about five seconds, and then turn it back on and rotate the TUNING control completely clockwise. Depress the TUNING/MODE CHANGE button if it is not making lots of sound. The meter will indicate the battery strength for about four seconds. If the meter reads less than .6 during this period, replace the batteries.

To replace the batteries, pull the large knob on the battery door on the front of the unit. The entire door will pop out. Remove the battery pack from the detector, and then remove the batteries from the pack. Replace the new penlight batteries into the pack, observing the polarity indicators that are embossed into the insides of the pack. Slide the pack back into the detector, making sure that the battery clip lead is connected to the pack. Install the battery door flange into the top of the cutout in the chassis, and push the nylon fastener into the hole at the bottom of the chassis, making sure that the plungers are still pulled out. Then push the plunger back in to lock the door in place.

Should you desire to do so, rechargeable Nickel-Cadmium batteries can be substituted for standard penlight cells. Individual AA size cells are readily available at most electronic supply stores, as well as the chargers for them, and they can be inserted into the standard 8 holder used in your Mayan. The initial battery check reading will be slightly lower, but will not drop as much with use, until the batteries are completely discharged.

GENERAL CARE AND USE

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, or from entering the upper stem, where it could leak into the chassis through the push button cable hole. 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.

The use of earphones will benefit you in two ways. Most earphones will very effectively block out most of the ambient noise, such as traffic noise and wind noise, which will enable you to better hear the fainter signals caused by the deeper targets. Obviously, the older, more valuable coins will probably be deeper than the ones which were lost last week, so you should take advantage of anything that will help you hear the weaker signals. Secondly, using earphones will greatly extend the battery life, since it takes much less power to operate them. The detector is not equipped with a volume control, but does have a limiting circuit in the earphone jack. If less volume is desired with earphones, you may want to use earphones with a built in volume control. Any good 8 or 16 ohm set with 1/4 inch stereo jack will do.

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, or one of the factory authorized service centers. Contact the factory for the name and address of the nearest service center.

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

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.

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 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.

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

*Under the copyright laws this documentation may not be copied, photocopied, reproduced, translated or reduced to any electronic or machine-readable form, in whole or in part, without the prior written consent of Tesoro Electronics Incorporated, except for the private use of a Mayan owner or operator, or in a manner otherwise described in this documentation.
© 1995-1996 Tesoro Electronics Incorporated. All rights reserved. Printed in the United States.*

[Home](#)