





The name that means Treasure

Cortés OPERATOR INSTRUCTION MANUAL

CONGRATULATIONS!

Your new TESORO Cortés 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 Cortés 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.

Your Cortés 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 Cortés is a Transmitter-receiver (TR) Metal Detector, operating in the very low frequency (VLF) portion of the RF spectrum. The Cortés utilizes the standard VLF/TR principles to provide mineral free all metal detection in the normal mode, and excellent discrimination capability in the TR discriminate mode. It also utilizes TESORO's proprietary (patent applied for) method of Controlled Phase Response (CPR) to provide mineral free discrimination capability.

The three distinct modes of operation, in conjunction with pushbutton mode change, makes the Cortés the easiest to use, most versatile metal detector we know of. This manual will explain the operation of each mode, as well as giving you tips on when each mode will give you the best results.

Be sure to fill out and mail your warranty registration card to validate your warranty.

ASSEMBLY

Assembly of the Cortés 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 install the lower stem and lock assembly to the upper stem.

1. 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.
2. Insert the coil mounting screw through the coil and pole tip. Be sure the internal tooth lockwasher is on the screw head side. The screw head should be on the side of the searchcoil where the cable comes out.
3. Install the thumb nut on the screw and tighten by hand.
4. The knurled locknut is installed on the upper stem to protect the threads during handling and shipment. Remove the locknut and slide it onto the lower stem as shown. Be sure the lock ring is inside the locknut or behind it, so that it will be pushed into the locknut when the locknut is reinstalled on the threads.
5. Insert the lower stem into the upper stem, push the locknut up to engage the threads, and tighten it finger tight.
6. Wind the searchcoil cable around the pole, and install the searchcoil connector into the connector on the front of the chassis. Tighten the connector finger tight.

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 loosening the knurled locknut and extending or collapsing the stem length until the unit can be held about an inch off the ground while standing erect. Adjust the angle of the searchcoil, so that the coil is parallel to the ground. Tighten the searchcoil thumbnut and stem locknut by hand to maintain this setting.

Specifications

Operating Frequency	12 kHz
Searchcoil Type	Coplanar
Searchcoil Size	8 1/2" Diameter
Cable Length	Approx. 3'
Audio Frequency	Approx. 375 Hz
Audio Output	2 1/4" speaker and
Headphone Compatibility	1/4" stereo earphone jack
Weight (may vary slightly)	4 lbs. 6 oz. nominal
Battery Requirement	12 volt DC (8 AA penlight batteries)
Battery Life (typical)	8 to 15 hours continuous use
Optimum Temperature Range	30° to 100° F
Optimum Humidity	0 to 75% R.H.
Operating Modes	Normal
	TR Discriminate
	CPR Discriminate

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

CONTROLS

The function of the front panel controls of the Cortés are as follows, beginning in the upper left hand corner of the panel, and proceeding counter-clockwise.

1. **Tuning.** This control is used to tune the detector to its most sensitive setting, regardless of which mode is used. Since the target response of a TR detector is an increase in sound level, the ideal setting for maximum depth is so that the detector is just beginning to make sound. This "threshold" setting should be maintained at all times, as operating the detector completely silent means a deep target may have insufficient response to drive the detector out of the quiet region and into "threshold".
2. **Mode Switch.** This switch is a three position rotary switch which selects the basic detector operation mode
   A. **CPR Disc.** The CPR Disc mode provides for mineral free operation while discriminating. This mode of operation is based on motion; that is the coil must be in motion with respect to the target.
   B. **Norm.** This position selects Normal or All Metal mode. In the NORM position, the detector can be adjusted to ignore ground mineralization for maximum depth, but the detector will not discriminate against unwanted metals such as iron, bottle caps, etc.
   C. **TR Disc.** This position selects the Discriminate mode of operation, whereby response to unwanted metal objects such as iron, bottle caps, thin foil pieces, etc., can be controlled. Ground mineralization will affect the operation of the detector in this mode, but the coil need not be in motion for proper operation.
3. **Disc 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 other 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 a negative or "nulling" response.
4. **ON/OFF, TR Sensitivity.** This knob is used to control the power to the unit, as well as to control the sensitivity of the detector when it is used in the TR DISC mode. It has no effect on the NORM or CPR DISC modes of operation. In the TR DISC mode, the effects of ground mineralization are not ignored, so the detector will perform better in heavily mineralized ground when the sensitivity is reduced in this mode.
5. **Battery Test.** This switch is used to check the condition of the batteries. The battery test should be performed after the detector has been on for about 10 minutes, and with a moderate to heavy amount of sound. 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.
6. **Ground Adjust.** This control is used to adjust the detector so that it does not respond to the mineralization in the ground, when used in normal mode.
7. **MODE CHANGE/TUNING Switch.** This push button switch is located in the end of the handle, where it can be operated with the thumb or first finger of the hand holding the detector. This switch performs two basic functions.
   A. When depressed momentarily and released, it retunes the detector back to the desired threshold point, when the mode switch is in the TR DISC, or NORM modes. The following chart shows the mode changes involved.

When mode switch is in...	Depressing tuning switch changes mode to...
CRP DISC	NORM (ALL METAL)
NORM	CPR DISC
TR DISC	NORM

When the mode change/tuning switch is released, the detector returns to the mode selected by the mode switch.

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 Cortés.

If you will remember just one thing, and adjust your detector accordingly, you will achieve satisfying results. This 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 turning procedures outlined below will help you properly tune your Cortés to allow you to operate it at threshold, and achieve maximum performance.

A. **Normal Mode Tuning.**

1. Turn Mode control to Norm.
2. Turn the Ground Adjust control to 5.
3. Turn the On/Off Sensitivity control clockwise until it just clicks on.
4. With the searchcoil held away from the ground or any metal objects, depress the Tuning switch (in the handle) momentarily and release it.
5. Lower the searchcoil to within an inch of the ground, and observe any changes in the meter reading and audio sound as the coil approaches the ground.
6. If the meter reading and the sound increase, turn the Ground Adjust control down slightly (counterclockwise). If the meter reading and the sound decrease, turn the Ground Adjust control up slightly (clockwise).
7. Raise the coil back to about two feet above the ground, and momentarily depress the TUNING switch to re-establish the tuning threshold.
8. Repeat steps 7, 8, & 9 as required, until there is almost no change in the meter reading and the sound as the coil is lowered to the ground. NOTE: the ground must be free of all metallic items where the coil is lowered. If you cannot adjust the detector to do this, you may be over a piece of metal. Move to another spot and try again.
9. Momentarily depress the Tuning switch, and turn the Tuning control down to get just a faint audio buzz.

The detector is now ready to use in the Normal mode of operation. Once the detector is Ground Compensated, remember the number setting on the Ground adjust control, and use it as a starting point next time.

B. **TR Discriminate Tuning.**

1. Set Sensitivity control to mid-range (pointer straight up).
2. Set Mode control to TR Disc.
3. Set the Disc Level control to 5.
4. With the searchcoil held away from the ground or any metal objects, depress the Tuning switch (in the handle) momentarily and release it.
5. Hold the searchcoil about 1 to 2 inches above the ground, and momentarily depress the Tuning switch in the handle and release it.
6. Raise and lower the searchcoil slightly, and note the tuning changes. If a slight upward movement causes a full scale meter deflection and maximum audio, the ground is heavily mineralized, and may require a lower sensitivity setting. If the detector can tolerate an upward movement of several inches before pegging the meter and audio, the ground is lightly mineralized and the Sensitivity knob can probably be adjusted higher.
7. Adjust the Sensitivity control to the highest setting that will allow you to sweep the detector from side to side and still maintain the threshold. Attempting to operate the detector in Discriminate Mode at maximum sensitivity will almost always result in a loss of depth when used in mineralized ground.

The detector is now ready to use in the TR Disc mode. The DISC LEVEL control should be set to the desired level of trash rejection. Remember to keep a slight buzz in the detector as you sweep it.

C. **CPR Discriminate Tuning.**

In order for the CPR DISC mode to provide best performance, the Cortés must be properly adjusted for Norm mode operation. Always perform the ground adjust operations as outlined for Norm mode tuning before using the CRP DISC mode.

1. Set the mode switch to CPR Disc.
2. Set the Disc Level control to the desired level of trash rejection.
3. Set the output to threshold with the Tuning control.

Remember to keep a slight buzz in the audio, and to keep the searchcoil in motion. The CPR Disc mode requires the coil be swept over the target for detection. To pinpoint, hold the mode change/tuning switch in the depressed position to transfer the detector to Norm mode.

SELECTING THE PROPER MODE OF OPERATION

The three modes of operation of the Cortés allow the treasure hunter to obtain maximum performance in any foreseeable circumstance. Some guide lines are given here to help you choose the best mode of operation for particular circumstances.

The Norm mode is an all metal mode, whereby the detector will ignore the effects of ground minerals, providing the maximum depth in moderate to heavily mineralized soil. In neutral soil it may be possible to get better depth in the TR Disc mode, but there are very few areas where the mineralization is this light. The Norm mode is generally the best operational mode for relic hunting, and for coin shooting in relatively trash free areas.

Since depressing and holding the mode change/tuning switch causes the Cortés to switch to the CPR Disc mode, it is very easy to search in Norm, and check any targets found by switching to CPR Disc. You can take your time searching in Norm, and when a target is found, switch to CPR Disc by holding the pushbutton, and sweep the coil rapidly over the target. The sound will null for trash, and increase for good items. This method of searching is probably the most thorough way to search an area.

The TR Disc mode is capable of providing excellent depth in light to moderately mineralized soil. This mode provides excellent discrimination, but since ground effects are not ignored, it requires a little more finesse on the part of the operator. The TR Sensitivity control affects this mode only, and should not be set any higher than will allow you to maintain threshold as you use the detector. Remember that running a TR detector completely silent causes a loss of depth. The TR Disc mode is an excellent choice for searching lightly mineralized areas with a high degree of trash items. It is also the best way to search some extremely trashy areas, regardless of the mineralization content. Since the TR Disc mode doesn't' require sweeping the coil, it is useful in areas where there is not enough room to sweep the coil for CPR Disc operation, in water, where it is virtually impossible to sweep the coil rapidly, or on wet salt water beaches, where the conductive salt can be somewhat neutralized with the Disc Level control. Holding in the pushbutton switch cause the Cortés to change to the Norm mode, so it is easy to re-check the plug and the hole once you have started digging a target.

The CPR Disc mode will provide discrimination ability with depth equal to Norm mode, but requires that the coil be moving to detect an object. It is preferred in areas with moderate trash and high mineralization content, if the operator doesn't want to search in Norm and check each target. Since the coil requires a sweeping motion for detection, it is probably more tiring than

the other modes, but can be much quicker to cover a given area. The sound for a good target is ideally a clean unbroken audio signal, while trash items would give a definite clean null, or loss of audio. In practice, however, deep good targets, which are almost undetectable, can give a broken audio sound. Marginally rejected or very large trash objects, as well as steel bottle caps can also give similar broken audio sounds. Switching to Norm mode, by holding in the pushbutton, will help you ascertain if the object is deep (weak response in Norm, possible good object) or near the surface (possible trash objects). Sometimes several targets in close proximity to each other can cause unusual audio responses. It is best to switch to Norm (hold pushbutton in) and check area around the response to see if there is more than one target. If there are more than one, sweep each of them in CPR Disc in a direction that will allow you to sweep over them individually. Practice with your detector, and you will soon learn to distinguish the characteristic sounds of the marginal targets.

Holding in the pushbutton changes the Cortés to Norm mode, for easy pinpointing.

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. In the TR Disc and Norm modes, you do not need to hurry, so go at a pace that is comfortable for you. In the CPR Disc, you will need to keep the searchcoil moving fast enough to provide proper operation. The Cortés was designed to provide a sweep speed as slow as possible and still get maximum depth when used in the CPR Disc mode.

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 Cortés in its various modes. Check the area in Norm 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 CRP Disc operation.

Keep the detector tuned so that it is just beginning to buzz. In Normal Mode and CRP Disc modes the detector ignores the ground, if properly adjusted, so this is easy to do. In TR Disc, 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. Never operate the detector in TR Disc with the sensitivity knob set higher than will you allow you to operate the detector 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. When used in CPR Disc, 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 results in a loss of depth.

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

This is the preferred method of hunting, because it is probably the most thorough. It's less tiring because you can sweep very slowly in Norm, and also allows most people to operate the coil closer the ground. When checking a target in CPR Disc (by holding the pushbutton), cross the target in a broad rapid sweep, first in one direction, and then at right angles to the first sweeps. The target sound should be the same for good targets, unless trash items are very close to the target which could affect one of the sweep angles and not the other. It is a good practice to check in norm mode to see if there are multiple targets close together, and to sweep each target in CPR Disc at an angel such that the coil will pass over only the target being checked. Check each target individually where there are multiple targets close together.

If there is any doubt where a target is good or not, DIG IT. For this same reason, in either discriminate mode it is best not use any higher Disc 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 good finds, too. Set the Disc Level only high enough to suit the conditions where you are searching.

In the TR Discriminate Mode, the tuning will have to be reset any time that the Disc Level is changed. This merely requires that you momentarily depress the MODE CHANGE/TUNING SWITCH. In the CPR Disc mode, changing the Disc Level will only momentarily affect the tuning, and no tuning corrections should be necessary. Being familiar with your detector and where typical junk items are rejected can save you much needless digging.

It should be remembered that steel bottle caps are harder to reject in CPR Disc. At slow sweep speeds, they will sound just like a coin, regardless of the Disc Level setting. At higher Disc Level settings, a slightly faster sweep speed with cause them to drop out, but coins will not drop out.

If there is a lot of trash in a particular area, you may want to search in CPR Disc instead of Norm. If you do this, it is a good practice to search the area twice, the second time at right angles to the direction of the first search. If the area is so full of trash that the detector is almost constantly quiet, it may be best to search the area in TR Disc. TR Disc allows much slower searching, and offers a better opportunity to "see" down between the trash objects to detect deeper coins. Be sure to adjust the TR Sensitivity control to allow you to operate at threshold.

The CPR Disc mode, since it is based on motion, doesn't allow you to pinpoint an object accurately. Pinpointing can and should be accomplished in Norm or TR Disc modes. If the mode switch is set in CRP Disc, holding the pushbutton in will switch the detector to Norm mode for pinpointing.

To pinpoint or locate a target which doesn't peg the meter and audio, simply move the coil around to find the point where the loudest audio and highest meter reading is given. The target will be right below the center of the coil. if the target response is so strong it pegs the meter and audio, simply push the tuning button momentarily over the strongest signal. 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. It may be necessary to retune a couple of times to almost totally tune out the target, but you will eventually arrive at a tuning level that will not saturate or peg the meter and audio when you are directly over the target.

BATTERY REPLACEMENT

The Cortés is equipped with an internal battery check 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 force the audio on, simply hold the searchcoil near a large metal object while checking the batteries, or depress the tuning button and turn the Tuning control fully clockwise.

If the meter reads less than .6, the batteries should be replaced to ensure best performance.

To change the batteries, depress the chrome button on one side of the detector, and slide the battery cover off the back of the chassis. The batteries are contained in a plastic holder just behind the cover.

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 in each battery compartment of the battery pack.

Replace the pack into the holder, and replace the battery cover by depressing the chrome buttons as the cover is slid back into the chassis.

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

The eight or ten cell rechargeable Ni-Cad packs offered by some manufacturers will also provide proper operation for your Cortés. Make sure the fully charged voltage does not exceed 14 volts, as higher voltage may cause permanent damage to the electronic circuitry.

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 damage the push button or leak into the chassis. 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 Cortés 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.

The 8 1/2" coplanar searchcoil furnished with the Cortés will provide excellent results for both coinshooting and relic hunting. The 7" coplanar coil offered by TESORO will also provide excellent depth, and will provide better performance in some high trash areas and easier pinpointing.

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 tone 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

transferable, and is valid only if the warranty registration card has been completed and mailed within 10 days of purchase.

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