





The name that means Treasure

Toltec 100 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 Toltec 100 is a high performance VLF/TR discriminator which features a Target Identifier circuit which features a Target Identifier circuit which reads the phase angle of the target and displays the probable Target Identity on the front mounted meter. The Toltec also features a meter reading of Coin Depth when in the All Metal mode of operation.

The Toltec 100 has two basic search modes. 1) Normal Discriminate mode, and 2) Notch Discriminate Mode and 3) All Metal mode. Both the Discriminate mode is based on ultra slow motion, and requires that just a very slight motion be present to operate properly. The Normal Discriminate mode is to be used where pulltabs re not too prevalent, and the Notch Discriminate mode is intended to be used to eliminate the detector's response to unwanted pulltabs when used in areas where there are numerous pulltabs.

The All Metal mode is not motion based, and further has a switch which can provide for auto tuning of this mode for nugget hunting or similar uses. A 10 turn Ground Adjust control is used to provide accurate setting.

A separate optional Body Mounting kit is available for rapidly converting the detector to the body mount configuration. The detector is furnished with an 8 1/2" concentric searchcoil, but any of the Tesoro searchcoils will operate properly, except that the coin depth reading may be in error if used with other coils.

As with any metal detector, the familiarity of the use with the instrument will have a great deal to do with how successful the operator is. We recommend that you read and understand this manual fully, and familiarize yourself with the instrument by testing it, outdoors over various types of targets before attempting to use it in the field.

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

ASSEMBLY

Assembly of the Toltec 100 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 assembly to the upper stem.

INSTALLING SEARCHCOIL AND LOWER 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. Adjust fore desired height following assembly.
2. Insert the pole tip and washers between the mounting ears of the searchcoil, after removing the screw and thumb nut. Align the holes in the pole tip with those in the searchcoil mounting ears.
3. Adjust the coil mounting screw through the coil and pole tip. Be sure the internal tooth lock washer is on the screw head side. 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 snuggly around the pole. Install the connector in the connector mounted on the control housing, and tighten by hand.

NOTE that the searchcoil cable should not be allowed to flop loosely above the searchcoil, since the wires in the cable are metal, and may case false signals.

ADJUSTMENT

The searchcoil angle and stem length should be adjusted so that the unit does not become uncomfortable or tiring to hold after long periods of use. The detector should rest in your hand with arm relaxed allowing it to swing back and forth without having to lift with the elbow or shoulder, while keeping the searchcoil as close as possible to the ground without touching. The stem length is adjusted by depressing the spring buttons and extending or shortening the lower stem, till they click into the holes that give you the most comfortable setting. The searchcoil 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 thumbnut by hand so that the coil will maintain this setting.

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

SPECIFICATIONS

Operating Frequency	12 kHz
Searchcoil Type	Concentric
Searchcoil Size	8 1/2" 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)	4 lbs
Battery Requirement	9 volt DC (for ID meter light) 1 ea. 9V alkaline
Battery Life (typical)	15 to 30 hours
Optimum Temperature Range	30° to 100° F
Optimum Humidity	0 to 75% R.H.
Operating Modes	ALL METAL
	DISCRIMINATION
	NOTCH DISCRIMINATE

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

CONTROLS

The control panel of the Toltec 100 is recessed directly behind the speaker on the top of the detector. This area is the most protected place for the controls when using the detector in either the pole mount of the body mount configurations.

1. **GROUND ADJUST.** This control is a ten turn device, and is used to adjust the detector so that it doesn't respond to the ground mineralization when the detector is used in the all metal mode.
2. **SENSITIVITY.** This control is used to set the sensitivity in the Discriminate mode. The preset mark at approx. '7' on the control will usually provide the optimum operating power for the detector. Most situations will allow the use of the detector at even higher settings, and of course you will want to set this control as high as possible, but at the maximum setting the detector may become erratic and noisy. If the detector seems to be giving many false signals, or beeping too much, turning the control back down to the preset or less will make it much more usable.
3. **DISC LEVEL.** This control is used to adjust the detector's response to unwanted metallic trash. At the lowest setting, the detector will eliminate most iron objects, but will still respond in a positive manner to light foil, bottle caps, pull tabs, coins and most other metallic items. As the knob setting is increased in the clockwise direction, response to more of these metallic targets is reversed, so that they are rejected. Every detector can vary somewhat, so it's a good idea to try some of the common coins and junk items on your detector to see where they are rejected. The preset mark will be ideal when using the detector, since it will still allow you to detect nickels and small gold rings.
4. **NORM/ATUO TUNING SWITCH.** This control is used to adjust the Notch filter response to the desired target level when the detector is used in the Notch Disc mode. Typically this mode is used to reject the response to pull tabs, and the preset mark should be very close to eliminate the response to most tabs. Remember that the notch is like a window, so if the control is set too high the effect will be very similar to what happens if it's set too low.
5. **TUNING.** This control is used to adjust the detector to the threshold sound in the All Metal mode. This threshold sound doesn't appear when the is in either of the Discriminate modes.
6. **DISC MODE SWITCH.** This switch is used to turn the units power off and on, to select the desired mode of Discrimination operation, and to test the units batteries. In the Normal position, the Notch filter is not used, and the

detector only response to the targets above the setting of the Disc Level Control. When in the Notch Level setting should always be higher than the Disc Level setting. The preset marks are good starting places for Notch operation.

7. **ALL METAL/DISC SWITCH.** This toggle switch is used to select the detector's primary operating mode. This mode will be selected whenever the Mode Change/Tuning switch is not depressed. When the Mode Change/Tuning switch is depressed and held, the detector transfers to the opposite mode. The Meter will read the target ID when the detector is in the Disc mode, and will read Coin Depth when the detector is in the All Metal mode.
8. **MODE CHANGE/TUNING SWITCH.** Depressing this switch and holding it down, causes the detector to switch to the mode that is not selected by the ON/OFF MODE SWITCH. When the switch is released, the detector returns to the selected primary mode.

TUNING

ALL METAL MODE TUNING

1. Set the controls as follows: AUTO/NORM SWITCH to AUTO, ALL METAL/DIC SWITCH to ALL METAL, DISC MODE SIWTCH to DISC.
2. Turn the TUNING control high enough to make the threshold sound slightly louder than you would normally use it.
3. Lower the searchcoil from about 1 foot above the ground to about 1 inch from the ground in a reasonably rapid fashion. Notice as the coil approaches the ground what happens to the threshold sound.
4. If the threshold sound increases, turn the GROUND ADJUST control slightly counterclockwise, and try lowering the searchcoil again. If the sound decreases as the coil approaches the ground, turn the GROUND ADJUST control in the clockwise direction, and try lowering the searchcoil again.
5. Keep adjusting the GROUND ADJUST control in accordance with step 4 above, until there is very little or no change in the threshold sound as the coil is lowered to the ground in a reasonably rapid motion.

NOTE: The ground adjust can be accomplished with the NORM/AUTO switch in the NORM position, but the Mode Change/Tuning switch must be depressed momentarily with the coil in the air to retune the detector to threshold before lowering the coil to the ground.

6. Retune the threshold back to a normal operating level. The Toltec is now ready to use in the All Metal mode.

DISCRIMINATE MODE TUNING

Tuning the Toltec 100 for use in the Discriminate mode requires that the detector be properly tuned in the ALL METAL mode first, since the ALL METAL signal is used in the circuitry that derives the ID and the Discriminate signals. Also the setting of the threshold signals establishes the minimum sound for deep targets, so turning this setting up will greatly enhance the sound for deep targets, although the detector may become erratic, while adjusting the threshold too low will cause a loss of depth.

After the ALL METAL mode procedure is accomplished, the only additional tuning for operation is to set the DISC mode switch to the proper desired mode, and to adjust the DISC and NOTCH levels to their desired settings. Set the SENSITIVITY control at preset point or higher. Remember that the Notch Level setting should always be set higher than the Disc Level.

SELECTING THE PROPER MODE OF OPERATION

The Toltec 100 offers three basic modes of operation, the All Metal mode, the Normal Disc mode, and the Notch Disc mode. If the Ground Adjust control has been adjusted correctly, all modes are mineral free. The All Metal mode is not based on motion of the searchcoil, and utilizes a Threshold tone. This mode offers the ability to pinpoint without motion, and provides exact ground canceling while also providing a Coin Depth reading. The two Disc modes are both based on very slight motion of the searchcoil, and both of these are completely silent in operation.

The 8 1/2" concentric searchcoil furnished as standard is chosen to provide the maximum efficiency when the detector is used for coin hunting. This coil size will yield the best compromise when the detector is used for this purpose. Any of the concentric or wide scan coils made by Tesoro as of this writing will work on the Toltec 100, and can greatly increase the abilities of the detector.

When coin shooting, we recommend that you do not use the Notch Disc mode unless the area you are hunting is virtually littered with pulltabs. Using the meter ID to avoid digging tabs is generally the best way, if the area is clean enough. You will probably notice some slight increase in depth if you use only the Norm Disc mode. Note that the area on the meter noted "PULL TABS" is somewhat narrow, and some individual tabs may fall just below or above this range. Also note that broken or bent tabs can fall outside the marked range. Generally, most tabs that fall outside the range on the meter will be below the range, and will be very small or broken tabs.

Nugget hunting requires that you use the All Metal mode since the response to small gold targets is so close to iron. Auto tuning is also generally recommended by many nugget hunters, but not necessary. Since nugget hunting is usually done in areas that have many hot rocks, black sand, and other heavy minerals, it may be necessary to change the Ground Adjust as conditions change. Also a Wide Scan coil will be less affected by the minerals.

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 Toltec 100 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. An easy pace

is preferred. 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 best operation.

In ALL METAL mode operation, keep the detector tuned so that there is a slight threshold buzzing of sound. This is easy to do because ground minerals do not affect the All Metal mode if properly adjusted. Regardless of which mode you are using try to keep the coil height constant and close to the ground. Most people tend to raise the coil at the end of a sweep, much like a pendulum, especially if they are hurrying. Try to avoid this, as any increase in height 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 housing. Should wear through occur, it will usually destroy the searchcoil beyond repair, so it is always best to keep a scuff cover on the coil, they are available from your dealer. 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. The higher you hold and sweep the coil above the ground the less depth you'll be able to obtain.

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 at the exact spot with each sweep. 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 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 Toltec 100. 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.

When using the Target ID features in very trashy areas, it will probably be necessary to reduce the sweep length to just a few inches as you pass directly over the target. Since the Toltec discriminator is based on very slow motion, a long sweep in a trashy area will just read all the combined signals rather than just the desired target.

PINPOINTING

The sweep speed of the Toltec 100 is slow enough to allow pinpointing in the 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 directly over the target will narrow down the detection area enough that it's easy to tell where the coil center is at the instant of sound.

To Pinpoint in Normal mode does not require any motion, so may be easier for most people. 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, simply push the tuning button momentarily over the area 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. The coin depth meter is also a good pinpointing tool, since it doesn't saturate under normal conditions. Simply switch to Normal to the side of the target, move the coil over the target, and move it until you get the most forward deflection of the meter. This will not only tell you your target center, but depth also if you did not tune over a target.

RECOMMENDED RECOVERY METHODS

BATTERY REPLACEMENT

The Toltec 100 is provided with a manual battery test features so that you can always be sure that you are getting top performance from it. The batteries should be checked after the detector has been on for about 10 minutes, and then periodically as you are using it for long periods. To activate the Battery Test, simply turn the Disc Mode switch to the Batt Test position. The remaining strength of the batteries is displayed on the meter. When the meter reads in the red area marked REPLACE BATTS, it's time for new batteries.

To replace batteries, just pull on both of the nylatch fasteners on the battery door at the lower rear of the unit. The entire door will pop off. Remove the two battery packs one at a time by disconnecting the clip leads, and remove the batteries from the pack. Replace the batteries, observing the polarity indicators on both the battery pack and batteries. Replace the pack in the detector and fasten the clip lead, taking care to ensure that the clip leads fit tight on the battery pack. When both packs

have been changed, replace the battery door by putting it in place and depressing both nylatch fasteners to lock them in place.

Should you desire to do so, rechargeable Nickel-Cadmium batteries can be substituted for the standard AA penlight cells. Individual AA size cells are readily available at most electronic stores, as well as the chargers for them, and they can be inserted into the standard holders used in the Toltec. The initial battery test reading will be lower than normal, but will not drop as fast 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. 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. When used in the body mount configuration, you should not allow the cable connectors to be submerged. Several waterproof adapters are available through your dealer which will allow you to waterproof the connection between the searchcoil and extender cable connectors.

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 Diablo 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 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 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 factor for nearest repair center.

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