





The name that means Treasure



# Cutlass II 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 Cutlass II is high performance metal detector that is capable of rejecting ground mineralization and buried metallic trash simultaneously. The Cutlass II was designed to satisfy the requirements of the serious treasure hunters, whether they are experienced or not. Design emphasis was placed on performance and easy of use, while minimizing or eliminating those troublesome adjustments and features that could cause a loss of performance if not used properly. The result is a powerful light-weight detector which uses only two controls to provide full VLF capabilities.

The operation of the detector is based on motion, regardless of whether the All Metal or Discriminate mode is selected. This means that the search coil must be moving slightly to detect a target. The motion required is so slight that pin-pointing is very easy. The automatic ground rejection circuitry is set to allow operation in virtually any mineralization you might encounter, although operation may be difficult in black sand.

The Cutlass II is furnished with an 7" concentric searchcoil. We feel that this coil will provide excellent performance in most uses, such as coinshooting in moderately trashy parks, schools, and beaches. A variety of optional searchcoils are available, ranging in sizes from4" to 11".

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 Cutlass II 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. 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. Be sure the internal tooth lockwasher is on the screw head side.
4. Install the thumb nut on the screw and tighten by hand.
5. Wind the searchcoil cable around the pole. Install the connector in the connector mounted on the control housing, and tighten by hand.

### 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 assembly into the most forward set of holes.

## Specifications

| | |
|---|---|
| Operating Frequency | 10 kHz |
| Searchcoil Type | Concentric |
| Searchcoil Size | 8" diameter |
| Cable Length | Approx. 3’ |
| Audio Frequency | Approx. 750 Hz |
| Audio Output | 1 1/2" speaker |
| Headphone Compatibility | 1/4" stereo earphone jack |
| Weight (may vary slightly) | 3 lbs. |
| Battery Requirement | 9 volts DC<br>2 ea. 9V alkaline batteries |
| 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 |
| | Discriminate |

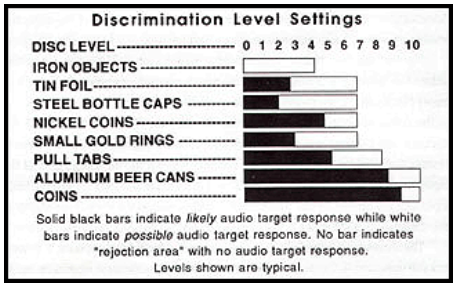
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## CONTROLS

The Cutlass II has only three controls, two are mounted on the front panel of the detector, and one is mounted on the rear panel.

1. **POWER OFF, MODE SELECT, BATTERY TEST.** This rotary switch control is used to select the operating mode (either all metal or discriminate), test the remaining battery strength, and turn the unit off when it is not being used. Turning the knob completely counterclockwise until it clicks disconnects the batteries from the circuit. Turning the knob completely clockwise actives the audio battery test circuit, which will give you an audible indication of the batteries' condition. Fresh batteries will cause a loud audio response. As the batteries age and become weaker, the initial audio response will be weaker. 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.

   This rotary switch is also used to select the All Metal mode of operation or the Discriminate mode. In All Metal, the detector will find not only the highly conductive non-ferrous metals, but will also find the ferrous metals. This mode would be ideal for relic hunting or ghost town searching, since many desirable artifacts (such as guns) are made of iron or steel. In the Discriminate mode, the detectors response to unwanted trash can be controlled to eliminate digging much of the common metallic trash items found in likely hunting spots. The detector may beep briefly when the switch is changed, but is ready for operation in the selected moment instantly.
2. **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. The char below shows the control settings where some of the commonly found trash items can be rejected.
3. **STABILITY.** Turn control clockwise as far as possible or until the instrument just begins to chirp intermittently. If chirps are too frequent for stable operation, simply turn the control counterclockwise just enough to cause the instrument to become stable. Once set this control should not require often readjusting and should be left alone.




## TUNING

Since the most troublesome adjustments of standard detectors have been automated in the Cutlass II, the tuning procedure for this detector is simply a matter of selecting the desired operating mode, setting the stability level, and the discriminate level.

If there are sources of electrical interference present, or if the area is extremely trashy or mineralized, your detector may give some false signals. These signals are generally short choppy sounds which can easily be distinguished from a good target response.

The Discriminate Level should be set to your desired rejection level for the particular area you are searching. We recommend starting at a low setting if you are unsure of how much trash is in the area. Adjust the level upward if you find yourself digging more trash than you like. Remember that you will lose small gold rings and nickels at the pull tab reject level, so digging some trash will increase your number of good finds.

### SELECTING THE PROPER MODE OF OPERATION

The Cutlass II offers two operating modes, the All Metal mode and the Discriminate. Both of these modes are mineral free, and requires that the searchcoil be moving for target detection. There is no threshold sound present as in most ordinary detectors.

The All Metal Mode will detect all manner of metallic targets, as the name implies. This mode is excellent for relic hunting or ghost town searching, as many valuable or desirable artifacts may be made of iron or steel. This mode is also good for beach hunting where the sand allows easy digging.

The Discriminate mode will allow you to control the detectors response to most of the common metallic trash items found in most schools, parks, and beaches. This mode is generally used for coin-shooting such areas to avoid having to dig most of this common trash. The Discriminate Level control is used to adjust the response to these trash items. Each detector can vary somewhat due to the manufacturing tolerances, so you should experiment with your detector and become familiar with the rejection levels for these trash items with your detector.

Earlier motion detectors that operated with "threshold" sound would give the user a definite indication of metallic trash by either nulling completely or by generating short, choppy sounds. Since the Discriminate mode operates without threshold sound, there is no nulling to indicate that the area is extremely trashy. When searching in the Discriminate mode, we recommend that you periodically switch to All Metal and check the area you are searching to get an idea of how much trash is really there.

## 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 Cutlass II 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 best operation.

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 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 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 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 Cutlass II. 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.

Because most detector users are coinshooters and most areas are likely to yield good coins are also likely to contain a goodly amount of trash, the Cutlass II is furnished with an 7" searchcoil as standard. This coil will probably yield the best results in most such situations, and is easier to pinpoint with than the larger coils. Optional searchcoils of 4" through 11" are available to allow you to tailor the response of your detector to suit other conditions.

### PINPOINTING

Pinpointing a target is probably best accomplished by "X-ing" the target with the searchcoil. Remember that the detector will beep just as the target passes the center of the searchcoil. Swing the searchcoil over the target from side to side and then from front to back u ntil you can "zero in" on the exact location of the coil center when the detector beeps. Slowing the sweep speed down will help you pick out the center of the X because the target response will be reduced at very slow speeds and it's easier to correlate the sound with the coil center at slower speeds.

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.

Raising the searchcoil can also help pinpoint by narrowing the response to the target. Practice pinpointing often, and you will soon become more accurate and faster. Be sure to fill all holes after you recover the target. Your local dealer should be able to point out the preferred methods of digging in your area. Be sure to protect your hobby by leaving the site cleaner than you found it, with all the holes filled.

## RECOMMENDED RECOVERY METHODS

Always obtain permission from the person in charge before hunting on private property, schoolyards, parks, churches, or state parks. Even when relic hunting in the woods, NEER LEAVE A HOLE!, or damage anything on the property.

**PROTECT YOUR HOBBY - FILL ALL HOLES**

## BATTERY REPLACEMENT

The Cutlass II has an automatic battery test circuit so that you can always be sure 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 batter test circuit, simply turn the detector off momentarily and then back on. The detector should beep loudly if the batteries are fresh. As the batteries age, this sound less intense, and fades out quicker. When you just hear a brief buzz, or not audio at all, replace the batteries.

To replace the batteries, pull the large knobs on the battery door on the rear of the unit. The entire door will pop out. Remove the batteries from the detector, and then remove the batteries from the clip. Replace the new 9 volt batteries into the clip, observing the polarity indicators. Slide the batteries back into the detector, making sure that the battery clip lead is connected. Install the battery door flange into the top of the cutout in the chassis, making sure that the plunger is still pulled out. Then push the plungers back in to lock the door in place.

Should you desire to do so, rechargeable Nickel-Cadmium batteries can be substituted for standard 9 volt cells. Individual 9 volt 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 holder used in your Cutlass II. 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. 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 Cutlass II 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 at the address below.

## LIMITED LIFETIME WARRANTY

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

This instrument is warranted to be free of defects in material and workmanship as long as it is owned by the original consumer purchaser. This warranty is not 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.

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.

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