

White's Electronics, Inc.

1011 PLEASANT VALLEY ROAD

SWEET HOME, OREGON 97386

OPERATORS INSTRUCTIONS

Coinmaster®

TR 4/D Metal Detector with Discriminate Mode



Manufacturers of The World's Largest Line of Mineral and Metal Detectors

MINERAL AND METAL
DETECTORS

ELECTRONIC
MAGNETOMETERS

SUPER GEIGER AND
SCINTILLATION COUNTERS

ULTRA VIOLET
LIGHTS

Coinmaster®
**TR 4/D Metal Detector
with Discriminate Mode**

A Message from Mr. Kenneth White, Sr. President, White's Electronics

Congratulations! You are now the proud owner of one of the world's finest metal detectors. You'll enjoy the many relaxing hours you'll spend with your new detector.

Ahead of you lie exciting experiences you'll never forget. For years to come you'll have yarns to spin about the places you'll visit, the people you'll meet, the history you'll learn, and the treasures and relics you'll uncover. We envy you your journey and wish you every success.

Before we tell you how to assemble and operate your instrument, however, there are two important points to leave you with:

1. Your new detector is precision-made and has been carefully tested at our factory. Properly cared for, it will last for years and years. Treat it like a good friend and it should never let you down.

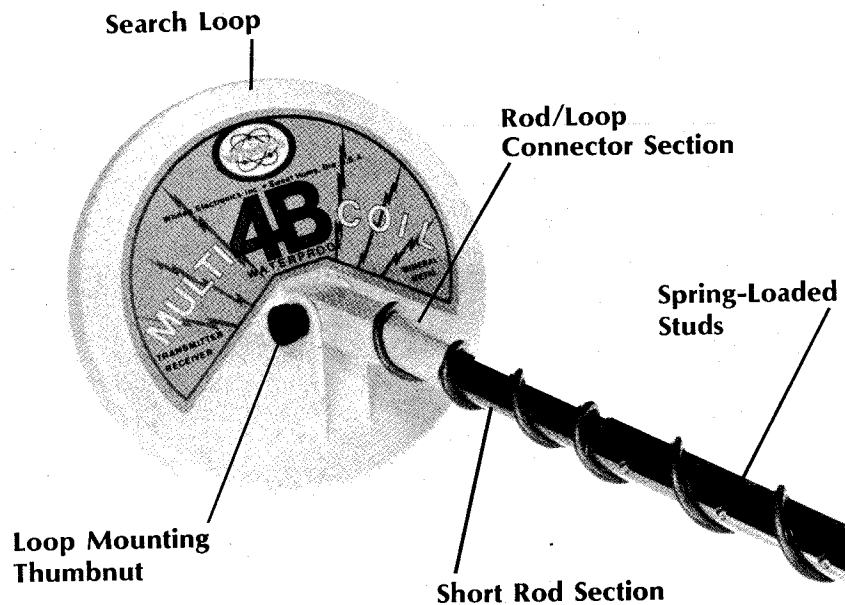
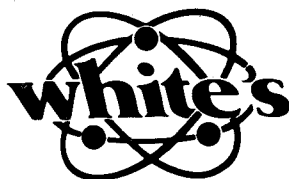
2. Any piece of fine equipment is only as good as the person operating it. Right now your detector is "smarter" than you, so you've got some catching up to do. Become very familiar with your instrument. Practice as much as you can. Soon it will become a part of you.

You and your metal detector will make an outstanding team. We've known many "shooters" who could follow in the tracks of others and find buried coins and rings the others had missed. You've got the equipment to out-shoot most anyone. Now all you need is the practice.

Good Hunting,



Kenneth White, Sr.

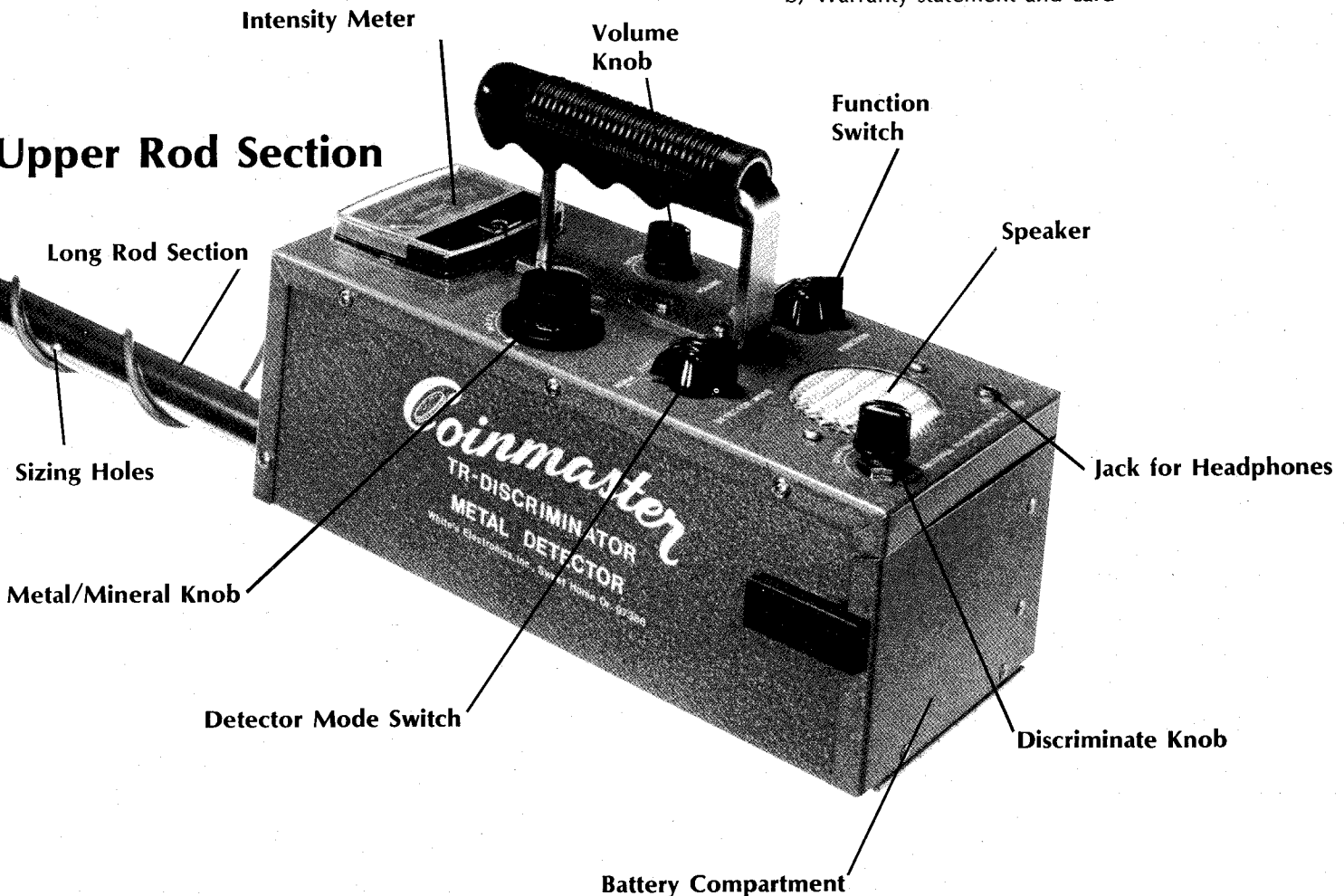


Lower Rod Section

Check the Contents of Your Metal Detector Kit

Your detector kit should contain the items listed below. If any parts are missing, however, contact your dealer at once. If you cannot do that, note the problem on your warranty card and send it back to the factory. Your problem will receive prompt attention.

1. Two brass-colored metal rod sections.
 - a) a short section
 - b) a long section
2. Plastic rod/loop connector section.
3. Search loop, with protective loop cover and loop cable attached.
4. Instrument.
5. Small "Jiffy Bag" containing:
 - a) white battery pack (eight batteries)
 - b) black battery pack (six batteries)
 - c) coin and mineral samples
6. Large envelope containing:
 - a) Assembly and Operating Instructions
 - b) Warranty statement and card



Assembly Instructions

1 Grasp the short rod section in your left hand and the long rod section in your right hand. Align the two sections and insert the short one into the long one until it stops, about two inches. (*Illustration A*)

2 With the thumb and forefinger of your left hand, depress the two spring-loaded studs on the short rod section and push it gently into the long rod section until the *first* pair of matching holes in both sections is lined up. The spring will then automatically force the studs through the holes, locking the two sections together.

3 You are now ready to attach the rod/loop connector to your search loop. If this was accomplished prior to shipping, however, simply proceed to Step 9.

4 Place your loop on a table. Using your left thumb and forefinger, unscrew and remove the black thumbnut, setting it to one side. Note how the brass flange bolt passes through the holes in both of the mounting flanges, and through two plastic washers. (*Illustration B*) Gently remove the flange bolt and the two washers, setting them to one side also.

5 Next, examine the plastic rod/loop connector end. Note that it has two circular depressions, one on either side. Insert the two washers into these depressions.

6 Now, steady the loop with your right hand and, grasping the connector section in your left hand, slowly lower the connector end down between the two mounting flanges until both pairs of holes are lined up. (*Illustration C*)

7 Grasp the brass flange bolt between the thumb and forefinger of your right hand and insert it slowly through the aligned holes. You may find it a bit difficult to align the holes so that the bolt slips through on your first try. If so, just push the rod a little deeper until the holes align.

8 Finally, using the thumb and forefinger of your left hand, screw the black thumbnut onto the brass flange bolt until it is *finger tight*. If it's too tight, the loop will not adjust to different angles. If it's too loose, the loop may not stay in position.

9 Next, grasp the rod/loop connector section in your left hand and the rod in your right hand. Align the two ends and insert the rod/loop connector section into the rod, about 3/4 inch. (*Illustration D*)

10 With your left thumb, depress the spring-loaded stud on the rod/loop connector section and push this section gently into the rod until the holes on both sections match up. The spring will then automatically force the stud through the hole, locking the two sections together.

11 Now you're ready to connect the rod and loop to the instrument. Move the assembled rod and loop from the table and rest it on the floor so that the loop is flat on the floor and the rod is sticking straight up. Make sure that the printing on the loop is facing you and reads right side up.

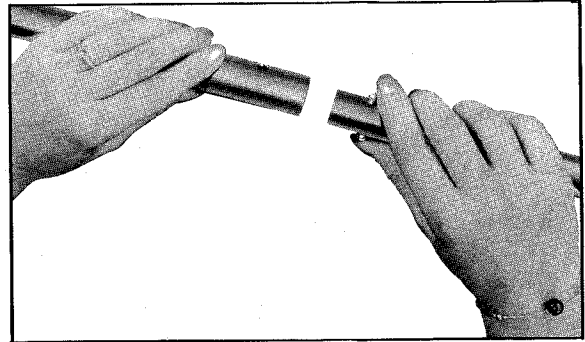


Illustration A

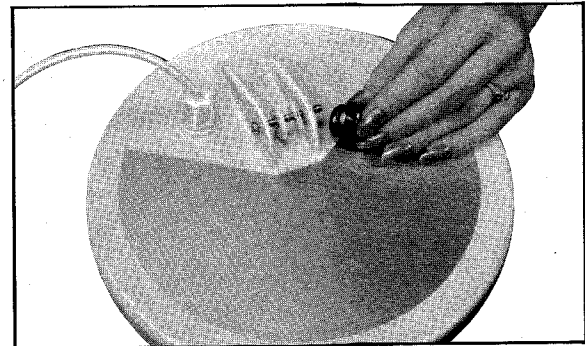


Illustration B

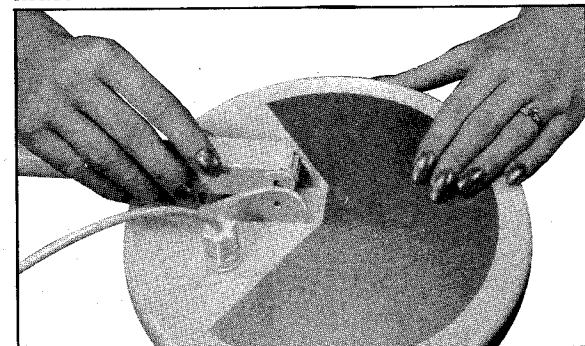


Illustration C

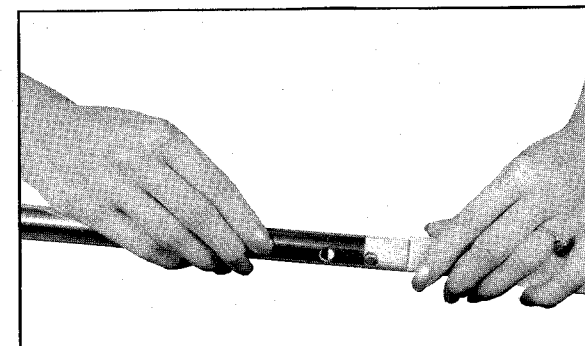


Illustration D

12 Using both hands, pick up the instrument by its sides and hold it so that the underside of the instrument case is facing you. Note that there is a six-inch, brass-colored metal rod coupling attached to the case. Align the rod coupling with the upper end of the rod and gently slide one into the other until it stops, about 1½ inches. (*Illustration E*)

13 Holding the instrument firmly with the one hand, use the thumb and forefinger of the other hand to depress the two spring-loaded studs in the rod. Slowly lower the instrument until the matching holes in both the rod and rod coupling are matched up. The spring will then automatically force the studs through the holes, locking the rod to the instrument.

14 You are now ready to connect the loop cable to the instrument. Grasp the instrument with one hand. With the other hand, grasp the loose loop cable and wrap it around the rod three or four times. Now, with the screwlock connector between the thumb and forefinger, gently ease the cable up the length of the rod until the connector reaches the plug on the end of the instrument case. (*Illustration F*)

15 Insert the screwlock connector into the plug. There is only one way it will go in, so there's no need to force it. Simply turn the connector one way or the other until it slips in. Using the same thumb and forefinger, push the locking ring over the connection and twist to lock the cable in place. Check this by trying to remove the connector from the plug. If it doesn't come out, it's locked in place.

16 Now you're ready to install your two battery packs. Rest the loop flat on the floor, letting the instrument case rest against your knees. On the back of the case are two black latches, one on either side of the case. Unsnap these, allowing the battery access door on the back of the instrument case to open.

17 Inside the opened case, you will notice two sets of red and black wires twisted together. Gently pull on both of these, so that the battery lead snaps on the ends of each red and black wire set are outside the case. Note that one twisted red and black wire set has a white battery lead snap end. The other has a black battery lead snap end. (*Illustration G*)

18 Now, examine the two battery packs. Note that each pack has a pair of button snaps. Snap the white battery lead snap to the white battery pack and the black battery lead snap to the black battery pack. Be sure each is snapped firmly in place.

19 Next, slip both packs into the plastic battery compartment. Keep the red and black wires outside the compartment. Make sure the snap ends of each pack face you and that the snap ends are down. (*Illustration H*)

20 Slowly close the battery access door, tucking all the wires inside the case as you do. Lift up on each case latch until the top of the latch is engaged and then firmly press the latch snugly against the side of the case.

21 Your new detector is fully assembled and ready to use. (**Note:** The length of the rod may be shortened for more comfortable use, or for use in confined areas. To shorten the rod, depress the two spring-loaded studs and push the lower rod section further into the upper section until the *second* and *third* pair of matching holes are lined up. Again, the spring will automatically lock the two sections together. You will probably need to take up the slack in the loop cable after you've shortened the rod. To do so, simply rotate the lower rod section again while depressing the two spring-loaded studs.)

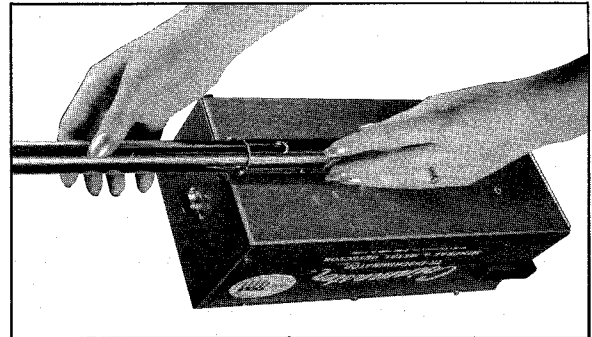


Illustration E

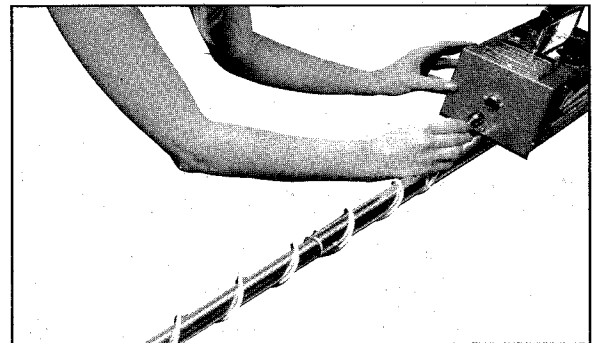


Illustration F

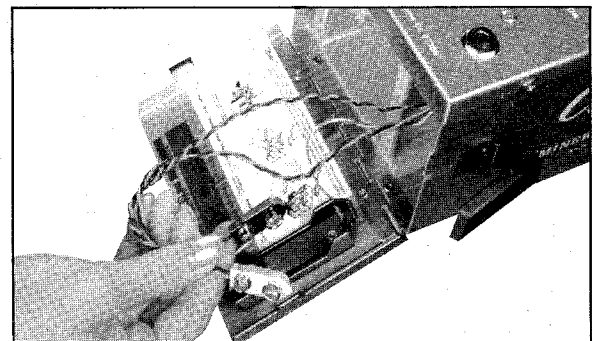


Illustration G

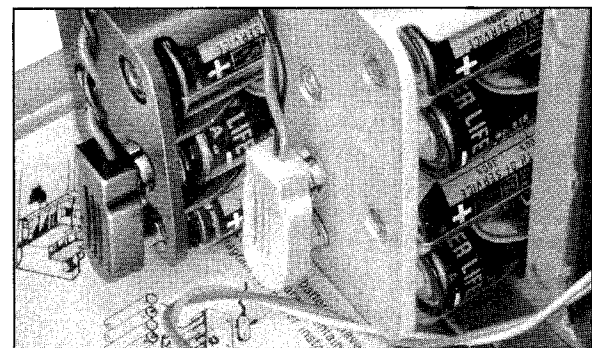


Illustration H

Operating Instructions

Familiarizing Yourself with Your Detector

Function Switch: This switch has four positions. "Off/1-Cell" is the position to use when you want to turn the detector off, or when you want to check the condition of one of your batteries. "Bat. Ck. 9" is the position to use when you want to check the condition of your small black battery pack. "Bat. Ck. 12" is the position to use when you want to check the condition of your large, white battery pack. And "Operate" is the normal operating position of the switch.

Intensity Meter: This meter has two purposes. The signal from the loop goes to both the speaker *and* to the meter. You can listen for telltale sounds of a buried object *and* you can watch for them on the meter. Secondly, this meter is also used to test your two battery packs or individual batteries.

Metal/Mineral Knob: This control is used to tune the detector for either metal or mineral searching. Note that this knob may have no actual stopping points. Instead, it may simply become a little harder to turn when you have reached the highest or lowest points. This *drag* is the same as definite stopping points.

Volume Knob: This control is used to increase the volume of sound coming from the speaker. The arrow marked "Increase" shows the correct direction to turn the knob to make the sound louder.

Detector Mode Switch: This switch has three positions used for selecting the operational mode of the detector. "Norm" is the position for standard detector activity. "Auto" is the position for detecting with automatic tuning compensation for changing ground content. And "Disc." is the position for Discriminate operation.

Discriminate Knob: This control will allow you to select different amounts of discrimination when the Detector Mode Switch is set in the "Disc." position. Note that this knob may have no actual stopping points. Instead, it may simply become a little harder to turn when you have reached the highest or lowest points. This *drag* is the same as definite stopping points.

Speaker: The round, brass-colored grill near the back of the instrument case covers the speaker.

Jack: This is the hole into which you can insert the plug on headphones or an earplug.

How to Tune Your Detector

Your new detector will help you locate buried mineral or metal objects, and the built-in Discriminator circuit can help you decide whether or not to dig them up.

Tuning your instrument properly is extremely important, as you would expect, considering how versatile it is. Read the following instructions carefully and practice the various tuning procedures until you can do them without looking at this manual.

One more thing: Always tune your instrument out-of-doors. That way you won't get unwanted interference from metal objects used in the construction of your home.

Normal Tuning

This tuning is used to detect buried ferrous or non-ferrous objects. Ferrous objects are those that contain *mostly* iron. We call them MINERALS. Sometimes these objects are metallic (nails, horseshoes, etc.) and sometimes they are not (black sand for prospecting).

Non-ferrous objects are those that contain *little or no* iron. We call them METALS. Gold, silver, and copper coins, brass, lead and platinum are all METALS.

Follow these steps for METAL TUNING:

1. Set the Detector Mode Switch to "Norm." Then, while standing, let the loop rest *flat* on the ground. Do not force it, however; simply let the weight of the instrument hold the loop against the ground.
2. Now, turn the Discriminate knob all the way to the left (counter-clockwise) until it stops or begins to *drag*. You should note that this knob may have no actual stopping point, but may simply become a little harder to turn. This *drag* is the same as a stopping point.
3. Next, turn the Metal/Mineral knob all the way to the left (counter-clockwise) until it stops or begins to *drag*. Note that this knob may be just like the Discriminate control and may have no actual stopping point. Remember, it may simply become a little harder to turn.
4. Now raise the loop *just slightly* (about ½-inch) off the ground. Turn the Function Switch to the "Operate" position and adjust the Volume knob to the right (clockwise) until you hear a comfortable level of sound coming from the speaker.
5. Holding the detector as steady as possible, turn the Metal/Mineral knob to the right (clockwise) until the tone disappears. Now turn this same knob back to the left (counter-clockwise) until a *faint tone* reappears. (Illustration 1)

6. Lower the loop *flat* on the ground again, and you are now ready to begin searching in the METAL setting. At this point, the tone coming from your speaker should decrease in volume or disappear completely.

(**Note:** If you are searching in an area of rough terrain—a plowed field for example—it may not be possible to search with your loop *flat* on the ground. In such cases, you should search with the loop *just barely* off the ground, after tuning your instrument with the loop *slightly* above the level at which you intend to search. It is important to note here that if the loop is raised above the height at which the detector was tuned, a loud tone may be emitted from the speaker. Yet, if the instrument is tuned with the loop higher than *necessary*, this may result in unneeded loss of detection depth. In both instances, these reactions will interfere with your ability to locate buried objects.)

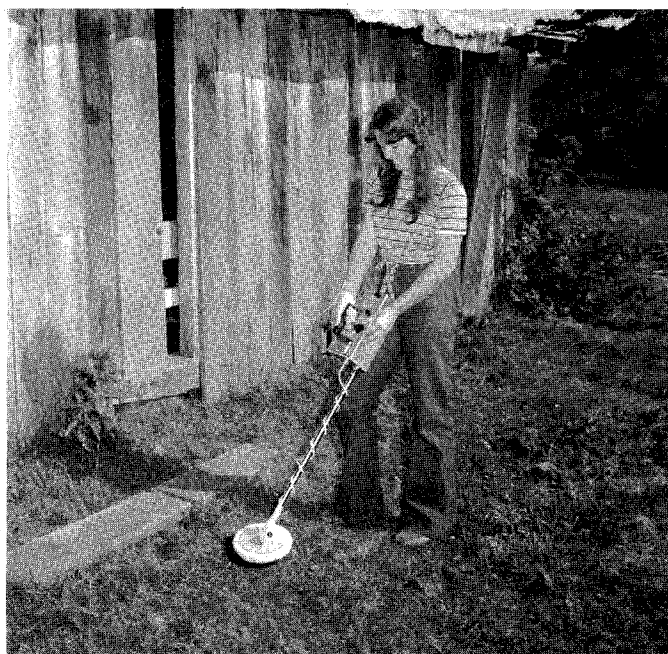


Illustration 1

Follow these steps for MINERAL Tuning:

1. Set the *Detector Mode Switch* to "Norm." Then, while standing, let the loop rest *flat* on the ground. Do not force it, however; simply let the weight of the instrument hold the loop against the ground.
2. Now, turn the *Discriminate* knob all the way to the left (counter-clockwise) until it stops or begins to drag. Remember, this knob may have no actual stopping point, but may simply become a little harder to turn.
3. Next, turn the *Metal/Mineral* knob all the way to the right (clockwise) until it stops or begins to drag. Remember, this knob may have no actual stopping point, but may simply become a little harder to turn.
4. With the loop still *flat* on the ground, turn the *Function Switch* to the "Operate" position and adjust the *Volume* knob to the right (clockwise) until you hear a comfortable level of sound coming from the speaker.
5. Now turn the *Metal/Mineral* knob to the left (counter-clockwise) until the tone disappears. Turn this same knob back to the right (clockwise) again until a *faint* tone reappears.
6. Raise the loop *just barely* (about ½-inch) off the ground, and you are ready to begin searching in the MINERAL setting. At this point, the tone coming from your speaker should decrease in volume or disappear completely.

(**Note:** If you are searching in an area of rough terrain—a plowed field for example—it may not be possible to tune your detector with the loop *flat* on the ground. In such cases, you should tune the instrument with the loop *just barely* off the ground, and then search with the loop *slightly* above that level. It is important to note here that if the loop is lowered below the height at which the detector was tuned, a loud tone may be emitted from the speaker. Yet, if the instrument is tuned with the loop higher than *necessary*, this may result in unneeded loss of detection depth. In both instances, these reactions will interfere with your ability to locate buried objects.)

Automatic Tuning

This detector mode provides automatic tuning compensation for changing content of the ground while searching in METAL or MINERAL settings. This feature allows an operator to search an area with greater speed than possible in the Normal mode.

To avoid a loss of sensitivity, however, you should *keep the loop in motion*, utilizing a faster sweeping action than necessary in the Normal mode. Otherwise, the detector may automatically "fine tune" itself on a buried object.

Follow these steps for Automatic Tuning:

1. Follow Steps 1 through 5 for **Normal Tuning**. At this point a *faint* tone should be coming from the speaker.
2. Now set the *Detector Mode Switch* to the "Auto" position and readjust the *Metal/Mineral* knob for a *faint* tone again.
3. You are now ready to begin searching in the "Auto" mode.

(**Note:** In this mode, you should search with the loop at the same height it was when the instrument was tuned. In addition, a *faint* tone should be coming from the speaker.)

Using Your Detector in the Discriminate Mode

Once you have located a buried object using either the Normal or Automatic modes, you can use your Discriminate mode to help decide whether or not to dig it up. The Discriminate function built into this detector will identify small *junk* items (bottle caps, tin foil, gum wrappers, nails and the like). It will also identify ferrous objects regardless of size. Remember, a ferrous object is one made *mostly* of iron (belt buckles, cannonballs, chunks of scrap iron, tin cans and the like).

You should note, also, that you can actually search an area in the Discriminate mode, and we shall discuss those techniques shortly.

If you are searching for coins, rings or jewelry on a beach or in a park, then you would probably want to use the Discriminate mode to help you eliminate both the small *junk* items and ferrous objects. On the other hand, if you're searching on an old Civil War battlefield for relics (swords, cannonballs, rifles and the like), or if you are prospecting, then you would not want to use the Discriminate mode as it eliminates these ferrous objects, as well as the *junk* items.

To simplify matters in this section, we will consider both the small *junk* items and ferrous objects as MINERALS, even though many *junk* items are not made mostly of iron.

You can determine if a buried object is METAL or MINERAL by following these steps:

1. Locate an object with your detector tuned in the METAL setting. You should note here that the Discriminate operation will not work in the MINERAL setting.
2. Set the *Detector Mode Switch* to the "Disc." position, and hold the loop *just slightly* (about 1/2-inch) off the ground *along side* the spot where you located the object. At this point, a loud tone should be coming from the speaker.
3. Now turn the *Discriminate* knob to the right (clockwise) until you hear a *faint* tone again. Lower the loop *flat* on the ground; the tone should decrease or disappear completely.
4. Sweep the area where you detected the object. If you hear a *sharp bleep* or an increase in the volume of the tone, then the object is METAL. If you do not hear this change in the tone, then the object is MINERAL and probably a bottle cap or small nail.

(**Note:** The object could be MINERAL even if you did hear a *sharp bleep* or an increase in the volume of the tone. You can determine this by increasing the amount of discrimination as described below.)

Adjusting Discrimination

With your instrument tuned as explained above, it will discriminate against such items as bottle caps and small nails. You can, however, increase the amount of discrimination by advancing the *Discriminate* knob *very slightly* to the right (clockwise), and readjusting the *Metal/Mineral* knob to the left (counter-clockwise) until you hear a *faint* tone when the loop is *just slightly* off the ground.

For example, by setting the *Discriminate* knob *just slightly* further to the right (clockwise), you can discriminate against pull tabs and foil. You should note, however, that at this point you will also discriminate against such objects as nickels and rings. By turning the *Discriminate* knob even further to the right (clockwise), you can rule out larger items like aluminum screw caps, tin cans and large chunks of iron. But at the same time, you will eliminate most single coins.

Generally, you can determine through practice just how far the *Discriminate* knob needs to be turned in order to eliminate various types of MINERAL objects. You should, therefore, avoid turning it further than absolutely necessary, as this will result in discriminating against other objects for which you may be searching.

After you have identified the type of object you have located, decided whether or not to dig, and are finally ready to resume searching, you should retune your instrument in either the Normal or Automatic mode.



Illustration J

Searching with Your Detector

To locate hidden or buried objects with a properly tuned detector, systematically sweep the loop from side to side across the area you are working. (*Illustration J*) The larger the diameter of your loop, the more area you can cover in a single sweep and the faster you can search an area. For example, with an eight-inch loop you should take four-inch steps, moving the loop ahead the same amount after each sweep. For maximum performance when searching, you should always try to keep the loop at a constant level and as close to the ground as possible, *following the tuning instructions described earlier in this manual.*

Once you have located an object, you can stop the sweeping movement and use your loop to pinpoint its exact location. When operating your detector in the Automatic mode, however, you must remember that the instrument will automatically adjust its tuning to compensate for changing ground content. Thus, if you stop sweeping the loop over an object, the "Auto" feature will actually *tune out* the object itself. In addition, the faster you sweep the loop, and the smoother and more even your motion, the greater depth of detection your instrument will have in this mode.

Another factor affecting the performance (depth of detection) of your detector *in all operating modes* is the amount of mineralization present in a search area. Generally, the Normal mode works best in areas of light mineralization, while the "Auto" feature tends to work better in areas of higher mineralization. This is because the automatic tuning feature of the "Auto" mode quickly compensates for changing ground content. Regardless of the detector mode in which you search an area, you should always remember that the higher the mineralization present, the less depth of detection your instrument will have.

To determine the amount of mineralization present in a search area, follow these steps:

1. Tune your detector in the Normal mode for the METAL setting, *keeping the loop flat on the ground* throughout the entire process. At this point, a *faint* tone should be coming from the speaker.
2. Now quickly raise the loop and listen to the tone:
 - a) If the tone *does not change*, then there is no mineralization present.
 - b) If the tone becomes *very loud*, then high mineralization is present.
 - c) If the tone *increases only slightly*, then low mineralization is present.

(**Note:** After checking for mineralization, you may find it necessary to retune your instrument prior to searching an area.)

As previously mentioned, you can also search an area with your detector in the Discriminate mode. Like the Normal operating mode, the Discriminate function tends to work best in areas of light mineralization and in areas where the ground is relatively smooth and even, thereby allowing you to search with the loop *flat* on the ground or *just barely* (about ½-inch) above it.

Should you decide to search an area with your detector in the Discriminate mode, use the same searching procedures as described above. *But first, tune your instrument as follows:*

1. Follow Steps 1 through 5 for tuning in the METAL setting of the Normal mode. Remember, the Discriminate function will not work in the MINERAL setting.
2. Holding the loop as steady as possible, set the *Detector Mode Switch* to the "Disc." position. A loud tone should now be coming from the speaker.
3. Finally, turn the *Discriminate* knob to the right (clockwise) until you hear a *faint* tone again, and then lower the loop *flat* on the ground. At this point, the tone should decrease or disappear completely.
4. You are now ready to begin searching with your detector in the Discriminate mode. It should automatically eliminate MINERAL objects as previously described.

(**Note:** You should remember that if you are searching in an area of rough terrain—a plowed field for example—it may not be possible to search with your loop *flat* on the ground. In such cases, you should search with the loop *just barely* off the ground, after tuning your instrument *slightly* above the level at which you intend to search. Remember, also, that if the loop is raised above the height at which the detector was tuned, a loud tone may be emitted from the speaker. Yet, an unneeded loss of detection depth may occur if the instrument is tuned with the loop higher than necessary.)

All in all, the depth to which your instrument will detect may depend on a number of factors: 1) The degree of mineralization in the ground. The less mineralization, the deeper it will detect. 2) The height of the loop during tuning and searching. The lower the loop, the deeper it will detect. And, 3) How carefully your detector is tuned. The more accurate the tuning, the deeper it will detect.

Finally, it is a good policy to periodically stop and readjust the tuning of your instrument slightly. As you become more experienced, however, you will begin to notice—just by differences in the tone you hear—whether or not the tuning needs to be adjusted.

Listen for the Tone

The tone coming from the speaker of your detector will tell you where objects are located. When you hear a sharp *bleep* or an increase in the volume of the tone, the loop is over an object. When the volume decreases or goes away completely, the loop has passed away from an object. Generally, the volume will be loudest when the center of the loop is directly over an object. An exception to this rule, however, is a coin buried *on edge*. In this case, the volume will be loudest when the *edge of the loop* passes over the coin, thus causing a *double sound* when detected.

Finally, large or small increases in volume of the tone are usually caused by one of three things: 1) the size of the object; 2) how deeply the object is buried; or 3) a combination of the two. Normally the larger the object, the greater the increase in volume. Thus, a single coin—deeply buried—may cause only a slight increase in volume, while a large object—buried just as deeply—may cause a much larger increase.

Watch the Meter

The indicator needle on the *Intensity Meter* is extremely sensitive to change. It will give a visual reading at the same time the speaker gives a sound reading. Increases in sound will be matched by increases in the meter reading.

This is most helpful when locating small objects, as many people have difficulty in distinguishing slight differences in the volume of the tone. If the needle is bouncing back and forth as you pass the loop over a suspected area, then most probably an object is there. If the needle doesn't budge, then your ears may have played a trick on you.

So, keep an eye on that meter; it could be very important. (*Illustration K*)

Practice Makes Perfect

In addition to *learning* the tuning and operating instructions described in this manual, here are a few ideas to help you practice and sharpen your "shooting" skills:

1. Place a small object (the sample that comes with your detector kit), a medium-sized object (a tin can lid will do nicely), and a large object (a frying pan from the kitchen) out on the lawn. Leave a few feet between them. Following the instructions given earlier, tune your instrument. Pass the loop over each object, noting how much the volume increases or decreases as you move from object to object. (*Illustration L*)
2. Take two quarters. Place one on top of the grass. A few feet away, dig a small hole, no more than two inches deep, and bury the other coin. Tune your instrument and pass the loop over the coin on the surface, then over the buried coin. Note how the volume increases or decreases as you move from one to the other.
3. Plant a test garden. To become better acquainted with various kinds of buried objects, bury some metal items at known depths. Make sure your test garden is located where you can get to it easily. It's best to make a map of the area, showing what is buried and its depth. Your test garden will help you practice and will also provide a handy method or periodically checking the performance of your instrument.

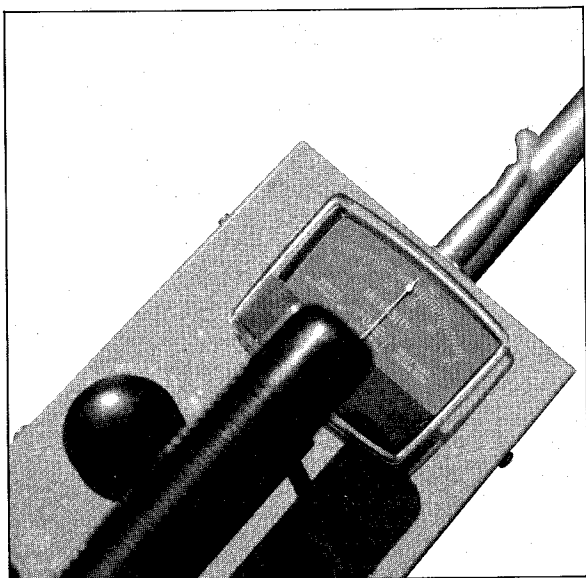


Illustration K

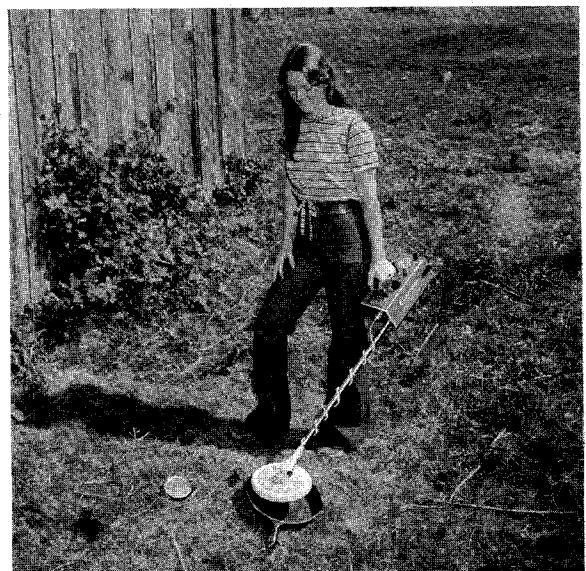


Illustration L

Batteries

Batteries are the lifeblood of your instrument. Your white battery pack holds eight 1½-volt AA penlight batteries. Your black battery pack holds six 1½-volt AA penlight batteries. (*Illustration M*) These are available at drug and grocery stores almost everywhere. Any brand will work well, although many “shooters” recommend the alkaline type for longer life.

To change batteries, first remove the battery pack from the instrument. Before you remove any batteries examine the pack. Note the exact position of each battery and the position of the battery lead snaps. Your detector will not work unless the batteries are properly installed and the battery lead is properly connected.

Each battery has a positive (+) end and a negative (–) end. The plus (+) and minus (–) symbols are clearly marked on all batteries. Remove one of the batteries from the battery pack. Notice that the slot from which it was removed also has the positive (+) and negative (–) symbols clearly marked.

To replace the batteries, simply match the plus (+) and minus (–) symbols on the new battery with the plus (+) and minus (–) symbols on the battery snap, and then snap the new battery into place.

The battery lead snaps must also be matched to the button snaps on the pack—plus (+) to plus, minus (–) to minus—before you reconnect the power cable.

Your detector is designed so that you can test (1) the full white battery pack, (2) the full black battery pack, or (3) each battery, one at a time.

1. To test the full white battery pack:
 - a. Set the *Power* switch to the “Bat. Ck. 12” position.
 - b. Turn the *Volume* knob all the way to the right, in the direction of the arrow, so that the volume of sound coming from the speaker is as loud as it can be. Adjust the *Tuner* knob if necessary.
 - c. Observe the *Intensity Meter*. Notice the area on the dial which has the words “Bat. Check” printed on it. If the indicator needle moves into that area and stays there for three or four seconds, your pack is in good condition. If it does not move into the “Bat. Check” area, or it moves there for only a second and then drops back down, your pack is weak.
 - d. If your pack is weak you will have one or more weak batteries. See the instructions below for testing a single battery.
2. To test the full black battery pack:
 - a. Set the *Power* switch to the “Bat. Ck. 9” position.
 - b. Follow the steps listed above for testing the white pack.
3. To test a single battery:
 - a. Open the battery access door at the rear of your instrument case by unsnapping the side latches.
 - b. Remove the white battery pack (if it is the pack that tested as being weak), or the black battery pack (if it is the weak pack).
 - c. Now, remove a single battery from the weak pack.
 - d. Notice that the battery access door has a receptacle designed to hold one battery. Match the positive (+) end of the battery with the positive (+) end of the receptacle and press the battery into place. (*Illustration N*)
 - e. Observe the indicator needle on the *Intensity Meter*. If it moves into the Bat. Check area and stays there three or four seconds, the battery is good. If the needle fails to move into the area or drops out of it after a second, the battery is weak and should be discarded.
 - f. Repeat this entire procedure to test each individual battery in the weak pack. When you have located all the weak batteries and discarded them, snap new ones in their place and replace the battery pack in its proper position in the battery pack compartment.

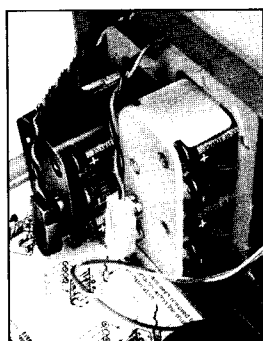


Illustration M

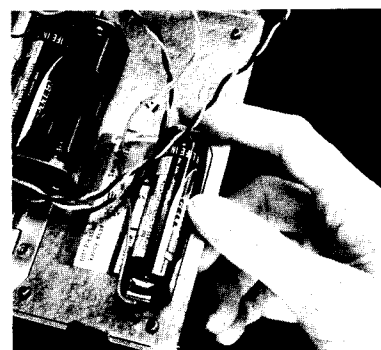


Illustration N

Prolonged use of your detector will cause a severe drain on your batteries. It's best to turn the power off from time to time during the day of “shooting”. This gives you a chance to take a break and it gives your batteries a rest. In a few minutes both you and your batteries will be ready to go again.

If you plan to store your detector for several weeks or more, it would be wise to keep the batteries in the refrigerator. Doing so will prolong their lives. Also, it's a good idea to carry an extra battery pack and some spare batteries with you on outings.

What Will Your Instrument Detect?

Silver, lead, copper, bottle caps, tin foil, cartridge cases, rings, brass and tin cans are just a few of the highly conductive objects that will cause a response in your speaker or headphones. Your instrument, however, will not detect sticks, rags, bones, paper, wood or other non-metallic objects.

The longer many metal objects have been buried, the better you may be able to detect them. A chemical reaction between such objects as silver or copper coins and the surrounding soil often creates a "halo" effect. This "halo" may cause your detector to register a much larger increase in volume than might otherwise be expected for a small coin. The "halo" can actually help you detect better! In fact, if the "halo" is strong enough, your instrument may continue to register even after you have dug up the coin.

Proper Care Of Your Detector

The following are precautions you should take to protect your instrument from harm, insure its long life, and avoid nullifying the warranty.

Cleaning: The loop and rod or probe are waterproof. They can be cleaned with fresh water and a mild cleanser. After cleaning, however, dry the instrument thoroughly. *Caution!* The instrument case is not waterproof, and water—if allowed to enter it—may damage electronic components.

Weather Conditions: Protect your detector from excessively cold weather. Freezing can damage the electronic components, the case and/or the batteries. Excessive heat can also damage the instrument. Never leave it in the sun. It's best to lay it in the shade when temporarily not in use. If it's left in a car on a hot day, cover it with a blanket or something similar to protect it from the direct rays of the sun, and then leave the windows slightly open to permit ventilation. Needless to say, protect your detector if you operate it in the rain, as water may get into the instrument case.

Salt Water: Salt water is very corrosive! Immediately after your detector has been exposed to salt water, rinse it thoroughly with fresh water, being careful not to allow water to enter the instrument case. Then wipe it with a cloth dampened with fresh water and dry it thoroughly.

Storage: If you plan to store your detector for any length of time, unsnap the battery pack, remove it from the instrument and take the batteries out of the holder. Whenever your detector is not in use, turn the *Power* knob all the way to the "Off" position.

Service And Warranty Information

If your new metal detector is ever in need of service, ship it to us at the factory address below or to one of the Service Centers listed on the back of the warranty statement. Insure it fully, prepay the charges and enclose a letter describing the nature of the problem. As long as your detector is under warranty, there is no charge other than a small handling and postage fee.

Read your warranty card carefully. It describes completely what is covered and the length of the coverage. If you have any questions, don't hesitate to write us. We will be happy to answer any questions you may have.



White's Electronics, Inc.

1011 Pleasant Valley Road, Sweet Home, Oregon 97386, U.S.A.

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Storage: If you plan to store your detector for any length of time, unsnap the battery and remove it from the instrument. Whenever your detector is not in use, turn the **VOLUME** knob all the way to the **"PWR OFF"** position.

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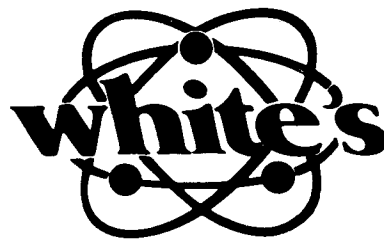
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HELPFUL HINTS AND TIPS

1. "How deep will it go?" Detection depth is determined by five main factors.
 - a. The **SIZE** of the object.
 - b. The **SIZE** of the loop.
 - c. The **LENGTH OF TIME** the object has been buried.
 - d. The **SKILL** of the operator.
 - e. The ground **MINERAL CONTENT**.

The longer an object has been buried, the better you will be able to detect it. A chemical reaction called a "halo effect" between such objects as silver or copper coins and the surrounding soil may cause your detector to register a much larger increase in volume than might otherwise be expected for a small coin. If the halo effect is strong enough, your detector may continue to register even after you have dug up the coin.

2. "What will my detector locate?" Silver, lead, copper, bottle caps, tin foil, pull tabs, cartridge cases, rings, brass and tin cans are just a few of the conductive objects that can be detected. Your detector will not locate sticks, rags, bones, paper, wood or other non-metallic objects.
3. Learn how to interpret the different types of responses from your detector. A nail lying flat in the ground will sometimes produce a double or single reading depending upon whether your loop passed across it lengthwise or across its width. So it's a good idea to sweep your finds from several different directions to try to learn as much as possible about the object you have located. Coins will usually only produce one reading regardless of sweep direction.
4. Rather than waste time, check around the trees for junk items such as foil, pull tabs, bottle caps, etc. This will frequently indicate whether or not someone has already been in the area with a detector.
5. Always "criss-cross" an area when hunting it.
6. After you have dug up a coin, always check the hole again for more. As many as 10 coins have been found in one hole!
7. When beachcombing the best place to look for coins is near the concession stands.
8. Check the shallow water in swimming areas. Most rings and coins are lost when people enter the water.
9. If you make plans for coinshooting, check the history records of the area.
10. Always carry a plastic bag for your detector in case you get caught in the rain.
11. Never ask permission to treasure hunt over the phone. People tend to visualize you using a pick and shovel, making large holes.
12. Join a local historical society or get acquainted with its members.
13. In lawn areas, use a screwdriver of no more than eight inches as your tool. Limit the size of the hole to a **MAXIMUM** of two inches in diameter. Don't forget to fill in the hole. Public and private officials and property owners will be more likely to allow continued treasure hunting if you do no environmental damage.



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