

White's Electronics, Inc.

1011 PLEASANT VALLEY ROAD

SWEET HOME, OREGON 97386

OPERATORS INSTRUCTIONS

Coinmaster[®] G.E.B. 5/DB Metal Detector with Push-Button Tuning



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

MINERAL AND METAL
DETECTORS

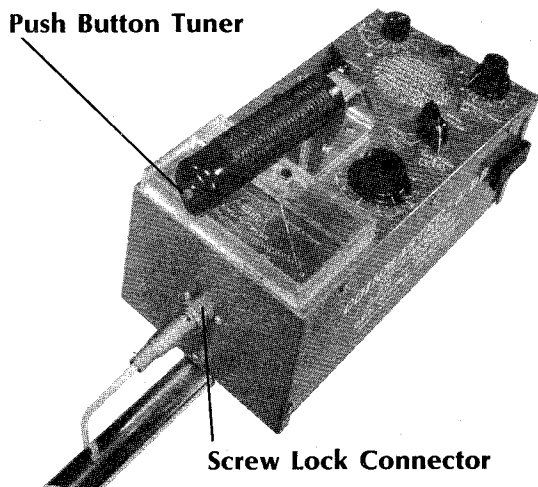
ELECTRONIC
MAGNETOMETERS

SUPER GEIGER AND
SCINTILLATION COUNTERS

ULTRA VIOLET
LIGHTS

Coinmaster®
G.E.B. 5/DB
Metal Detector
with Push-Button Tuning

Push Button Tuner



Screw Lock Connector

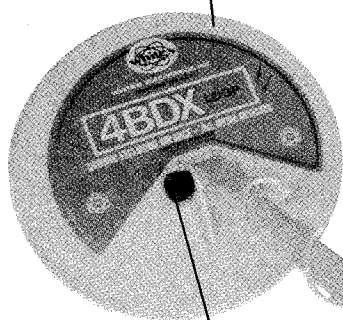
Check the Contents of Your Metal Detector Kit

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, 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

Search Loop

Rod/Loop Connector Section



Loop Mounting Thumbnut

Short Rod Section

Loop Cable

Spring-loaded Studs

Sizing Holes

Intensity Meter

Tuning Knob

Detector Mode Switch

Speaker

T.A. Knob

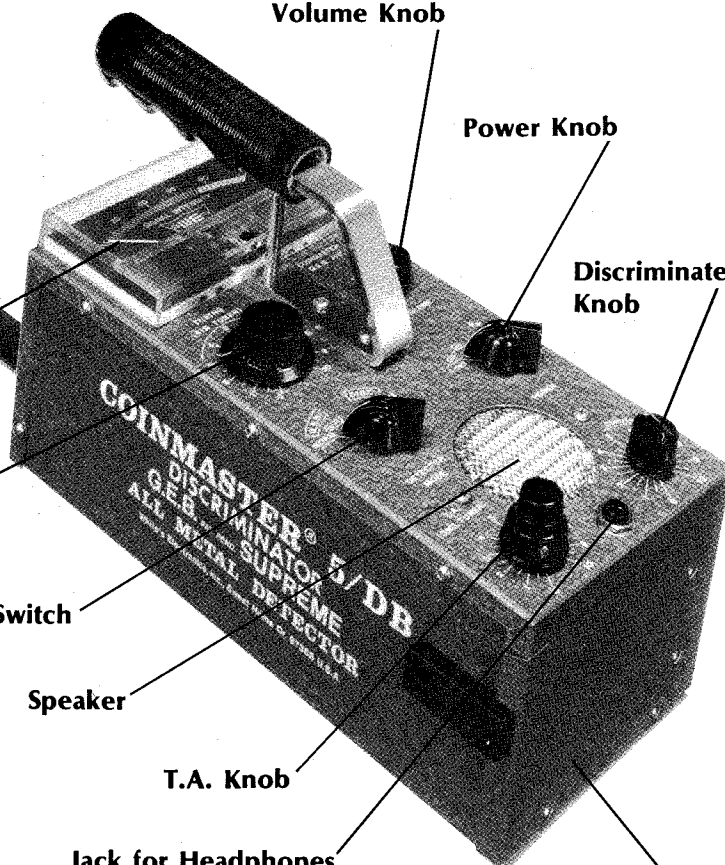
Jack for Headphones

Battery Compartment

Volume Knob

Power Knob

Discriminate Knob



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.

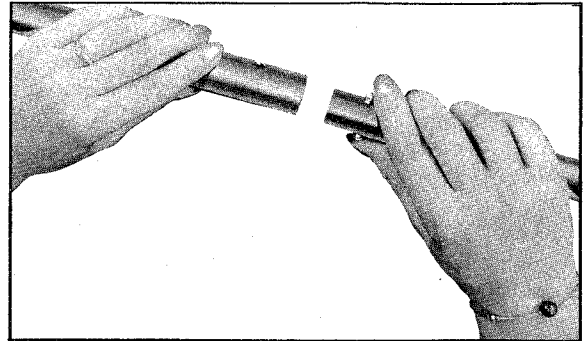


Illustration A

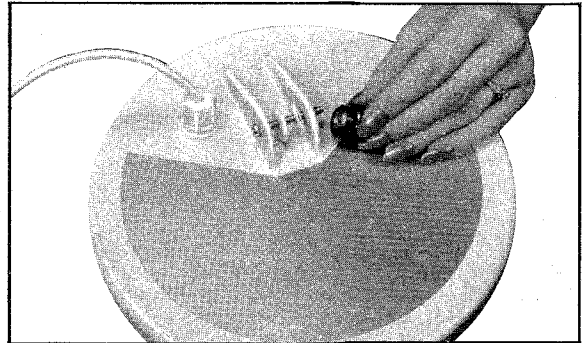


Illustration B

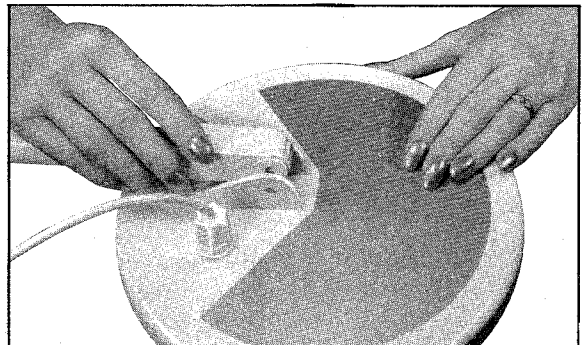


Illustration C

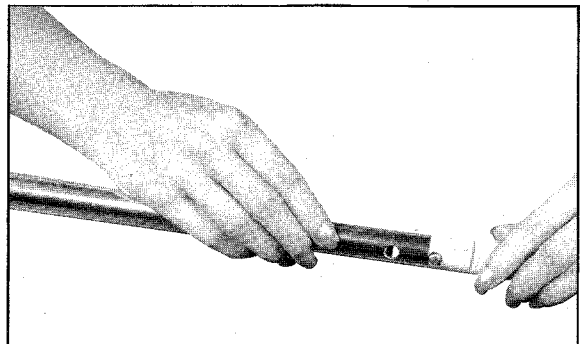


Illustration D

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.)

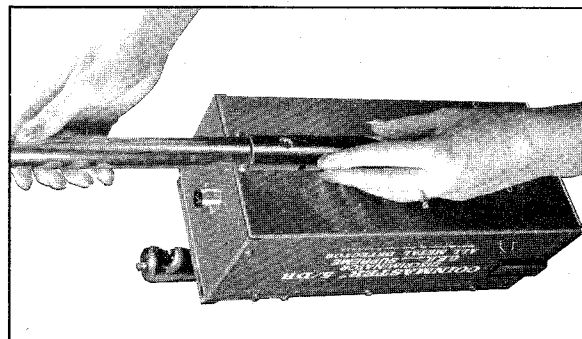


Illustration E

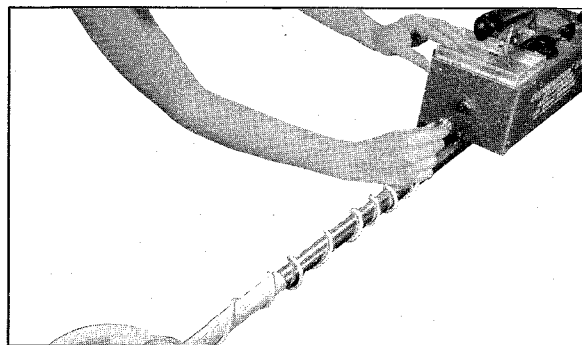


Illustration F

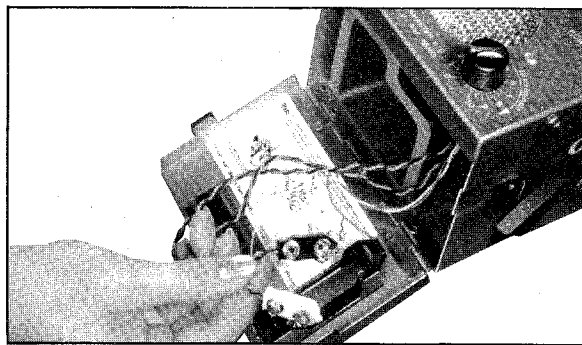


Illustration G

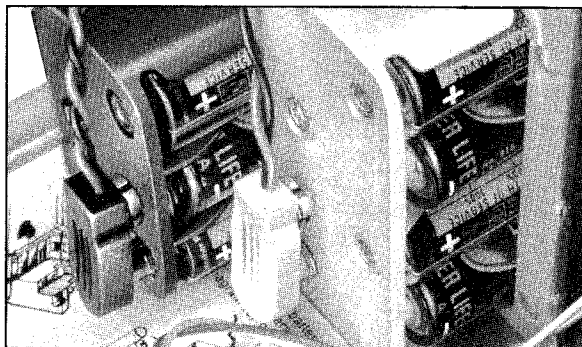


Illustration H

Operating Instructions

Familiarizing Yourself with Your Detector

Power 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. "On" is the normal operating position of the switch. "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.

Intensity Meter: This meter has several purposes. The signal coming from the loop goes to 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 can be used as an aid in tuning your instrument. And finally, this meter is also used to test your two battery packs or individual batteries.

Tuning (Air Tuner): This knob is used to help tune the detector in the air. Note that it has a graduated scale (from 0 to 10) around the outside of the knob which you can use as reference points in tuning.

T.A. (Ground Tuner). These two "stacked" knobs are used to help tune the detector on the ground. There is a graduated scale (from 0 to 10) around the outside of the knobs for use as reference points in tuning. Notice that one full turn of the bottom knob produces ten full turns of the top knob. The bottom knob is used for *coarse tuning*, and the top knob for *fine tuning*. Notice, also, that the top knob has no definite *stopping points*. Rather, it takes ten turns for it to reach either its lowest or highest point, and when it reaches that point the knob will simply become a bit more difficult to turn.

Push-Button Tuner: This push-button control is utilized to simplify all phases of instrument tuning and, when used while searching an area, it can assist you in pinpointing buried objects.

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

Volume: This knob is used to increase the level of sound coming from the speaker or set of headphones. The arrow marked "Increase" shows the correct direction to turn the knob in order to increase the sound.

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

Detector Mode Switch: This switch has four positions. "G.E.B. Norm" is the position for normal detector activity, or Ground Exclusion Balance operation. "G.E.B. Auto" is the position for G.E.B. detecting with automatic tuning compensation for changes in the content of the ground. "Disc. Auto" is the position for Discriminate operation with automatic instrument tuning compensation for changes in the content of the ground. "Disc. Norm" is the position for standard Discriminate function.

Discriminate: This knob will allow you to select different amounts of discrimination when the *Detector Mode Switch* is set in either the "Disc. Auto" or "Disc. Norm" positions.

How to Tune Your Detector for G.E.B. Operation

Your new COINMASTER G.E.B. 5/DB metal detector is one of today's most advanced instruments. It will help you locate buried metal or mineral objects, and the built-in discriminator circuits can help you decide on whether or not to dig them up. In most cases, it will detect deeper in highly mineralized soil than previous G.E.B. instruments, and White's all-new push-button tuning feature allows you to automatically compensate for changing content of the ground.

Initial tuning of your instrument 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.

G.E.B. Normal Tuning

This is the standard tuning used to detect buried ferrous and non-ferrous objects. Ferrous objects are those that contain *mostly* iron. We call them MINERALS. Sometimes these objects are metallic (nails, horseshoes), and sometimes they are not (black sand for prospecting). You should note, however, that your detector — when tuned according to these instructions — will not detect non-metallic objects.

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 G.E.B. Normal Tuning:

1. While standing, let the loop rest flat on the ground. Set the *Detector Mode Switch* to "G.E.B. Norm" and turn the *Discriminate* knob fully left (counter-clockwise) to "0."
2. Turn the *T.A.* knob so that the bottom pointer points to "5." Turn the *Tuning* knob fully left (counter-clockwise) until it stops.
3. Turn the *Volume* knob all the way to the right (clockwise), in the direction of the arrow. If you are wearing headphones, however, you need only to turn this control a small amount to the right (clockwise).
4. Now raise the loop until the rod is parallel with the ground itself, and turn the *Power Switch* to "On." At this point, there will be *no sound* coming from the speaker. (*Illustration I*)
5. Depress and hold the *Push-Button Tuner*. At the same time, turn the *Tuning* knob to the right (clockwise) until you hear a tone coming from the speaker. Turn the *Tuning* knob back to the left (counter-clockwise) until this tone *almost* goes completely away; the *Intensity Meter* should register approximately one to ten points.
6. Release the *Push-Button Tuner*. The faint tone coming from the speaker is called the *Threshold Tone*, and you have now completed preliminary tuning procedures.

(**Note:** Once preliminary tuning procedures are completed, you should not normally need to adjust the *Tuning* knob again. Simply depress the *Push-Button Tuner* when necessary to regain the *Threshold Tone*. You should repeat Steps 5 and 6 above if this action does not restore the proper tone.)
7. Next, lower the loop to the ground, letting it rest flat. Do not force it against the ground, however.
8. The *Threshold Tone* you've been hearing will now do one of three things: a) it will *increase* in volume; b) it will *decrease* or *disappear* completely; or c) it will remain virtually *unchanged*.
 - a) If the sound *increases*, then turn the top *T.A.* knob slowly to the left (counter-clockwise) until the tone *almost* goes completely away. If this does not occur within a very short time (about ¼-turn), however, simply stop and proceed to Step 9. This step is called *Ground Tuning*.
 - b) If the sound *decreases* or *disappears*, then turn the top *T.A.* knob slowly to the right until the sound reappears. (If this does not occur within a very short time—about ¼-turn—however, simply stop and proceed to Step 9.) Now, turn the top *T.A.* knob slowly back to the left (counter-clockwise) until the tone is *almost* gone completely. This step is called *Ground Tuning*.
 - c) If the tone remains virtually *unchanged*, then your detector is properly tuned and ready for operation in the "G.E.B. Norm" position.
9. Now raise the loop back into the air and depress the *Push-Button Tuner*. Release the *Push-Button Tuner* when the *Threshold Tone* is regained.
10. Next, lower the loop back to the ground and reset *Ground Tuning* (Step 8).
11. Repeat Steps 9 and 10 until there is virtually no difference in the volume of sound coming from the speaker as you raise and lower the loop.
12. Your detector is now properly tuned and ready for operation in the "G.E.B. Norm" position. Remember, though, if you move to a different search area, you will probably have to retune your instrument. To do so, simply repeat the steps described above.

(**Note:** If you are unable to complete the *Ground Tuning* sequence properly, you could be over a buried object. Move to another location and begin tuning your detector again.)

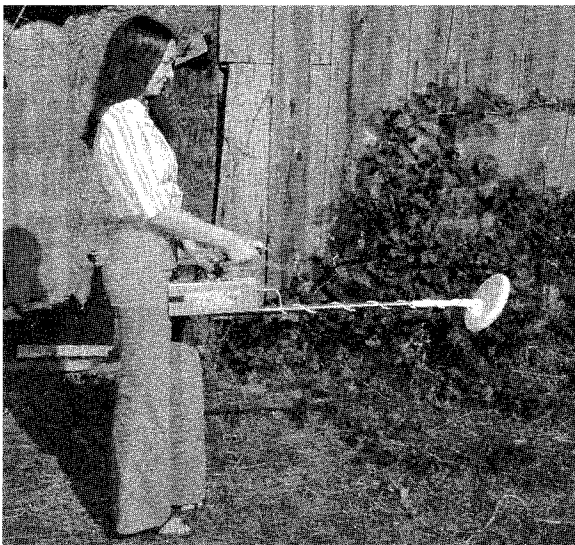


Illustration I

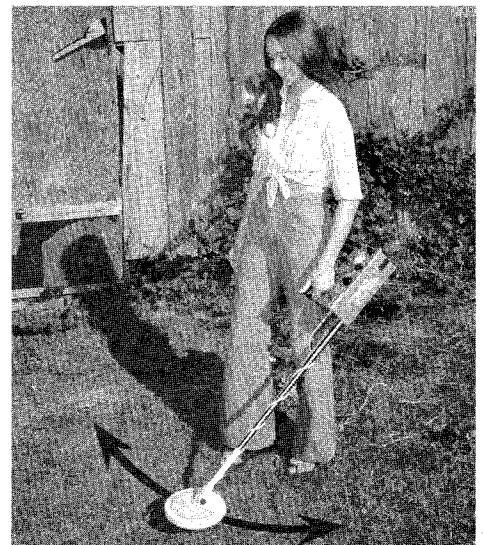


Illustration J

G.E.B. Automatic Tuning

This detector mode provides automatic tuning compensation for changing content of the ground while detecting in G.E.B. settings. Simply put, the instrument will always return its tuning to the *Threshold Tone*, if the loop is not in motion.

Such a feature allows the operator to search an area with greater speed, provides an alternative method with which to pinpoint buried objects, and results in more noticeable sound differences when detecting various types of objects. It can also eliminate constant readjustment of the *T.A.* knob in heavily mineralized areas.

Because this feature greatly increases the versatility of your detector, you should insure that you learn the proper techniques for searching. Be sure you read and follow the instructions listed under **Searching with Your Detector in G.E.B. Modes**. Practice them until you can do them without looking at the manual.

Follow these steps for G.E.B. Automatic Tuning:

1. Set the *Detector Mode Switch* to "G.E.B. Norm" and tune your instrument as described in **G.E.B. Normal Tuning**.
2. Now, raise the loop until the rod is parallel with the ground and turn the *Detector Mode Switch* to "G.E.B. Auto."
3. Depress the *Push-Button Tuner* until the sound coming from the speaker returns to a *Threshold Tone*.
4. Release the *Push-Button Tuner* and your detector is ready for operation in the "G.E.B. Auto" mode.

(**Note:** If you switch back to the "G.E.B. Norm" mode, you must 1) raise the loop until the rod is parallel with the ground, 2) turn the *Detector Mode Switch* back to "G.E.B. Norm," and 3) depress the *Push-Button Tuner* until the *Threshold Tone* is regained.)

Searching with Your Detector in G.E.B. Modes

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*, page 6) 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 as close to the ground as possible *without scraping it*.

Once you have located an object, you may stop the sweeping movement and use your loop to pinpoint its exact location. When operating your detector in the "G.E.B. Auto" mode, however, you must remember that the instrument will automatically return its tuning to the *Threshold Tone* if the loop is not in motion. Thus, if you stop sweeping the loop over an object, the "G.E.B. 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 sensitivity (depth of detection) your instrument will have in this mode. Another advantage of detecting in the "G.E.B. Auto" mode is that you can search closer to fences or other large metal objects, providing you sweep the loop *parallel* (not in an arc) to the fence or object.

Listen for the Tone

The tone coming from the speaker of your detector will tell you where objects are located. When the volume increases, the loop is over an object. When the volume decreases, 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.

Another exception is a nail buried *flat*. To become more familiar with the sound of nails, place a large nail flat on the ground and pass the loop lengthwise high over it. Notice the *double sound* by which you can usually tell a nail or other long iron object is being detected. Notice, also, that you *lose this double sound* if you lower the loop or sweep it at a different angle. Thus, you can avoid digging up most unwanted nails if you test for the *double sound* by simply raising your loop slightly higher and passing it over the area at different angles.

Now, place a quarter flat on the ground and pass the loop over it at different heights. Notice that if the loop is too low, there is a *multiple sound* similar to the sound of nails as described above. This, therefore, is another reason to raise the loop slightly after first locating a buried object. Such a procedure is especially important when detecting in the "G.E.B. Auto" mode if you are to be able to distinguish between *multiple sounds* and *double sounds*.

As you move from one search area to another, minor ground reactions may change the level of the tone coming from the speaker. If this happens, simply depress the *Push-Button Tuner* until the *Threshold Tone* is regained. In the "G.E.B. Auto" mode, remember, this tone will be regained *automatically*. Nevertheless, if the change in ground reactions is severe enough and the level of the tone changes sharply, you may have to repeat *Ground Tuning* procedures (Steps 9 and 10 of the **G.E.B. Normal Tuning** instructions).

Finally, large or small increases in the volume of the tone are usually caused by one of three things when detecting an object: 1) the size of the object; 2) how deeply the object is buried; or 3) a combination of the two. Generally, the larger the object, the greater the increase in volume. The deeper it is buried, the smaller the increase. 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.

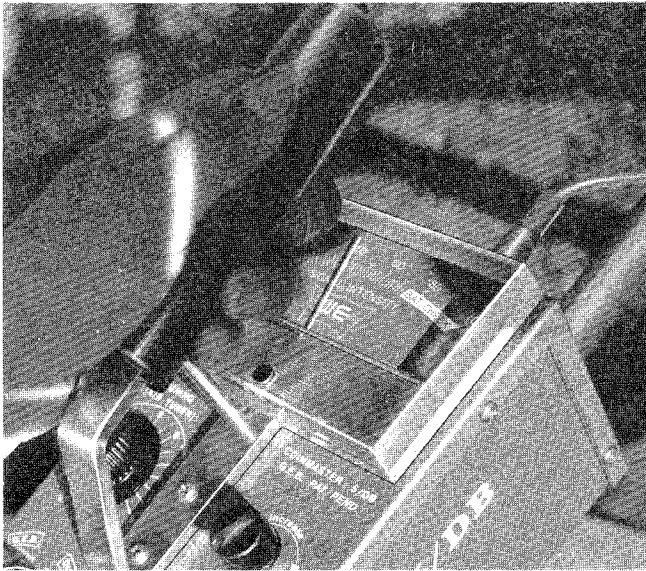


Illustration K



Illustration L

Watch the Meter

The indicator needle on the *Intensity Meter* is very sensitive to change. It will register buried objects that you might miss by just listening to the tone from the speaker. The meter will always provide a visual reading to match sound readings, even if you cannot hear a difference in the tone. So, keep an eye on that meter; it could be very important. (Illustration K)

Pinpointing Buried Objects

Once you have discovered a buried object, you can then pinpoint its exact location using your *Push-Button Tuner*. Simply follow the procedure described below, making sure your detector is in the "G.E.B. Norm" mode.

1. Hold the loop over the area where the loudest tone is received.
2. Depress the *Push-Button Tuner* until the *Threshold Tone* is regained.
3. Now lower the loop slightly and relocate the area where you receive the loudest tone when sweeping the loop.
4. Continue to repeat Steps 2 and 3 until you can barely hear an increase in the tone, or until the loop is flat on the ground. The object you have located should now be directly beneath the center of your loop.

(Note: Once you have decided to resume searching an area, simply raise the loop until the rod is parallel to the ground and depress the *Push-Button Tuner* until the *Threshold Tone* is again reached.)

Another method of pinpointing objects is to vary the speed at which you sweep the loop while detecting in the "G.E.B. Auto" mode. The width of detection changes with the sweeping speed: the slower your speed, the more accurately you can pinpoint the location of the loudest tone. This is because the loop's width of detection becomes narrower as you slow down the sweeping motion.

How to Use Your Detector in Discriminate Modes

Once you have located a buried object using the G.E.B. modes, you can use your Discriminate modes to help decide whether or not to dig it up. The Discriminate functions built into this detector will identify small *junk* items (bottle caps, tin foil, gum wrappers, nails and the like). They 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 modes, 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 one of the Discriminate modes to help you eliminate both the small *junk* items and the 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 modes as they eliminate these ferrous objects, as well as the *junk* items.

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

Discriminate Normal Operation

This is the standard discriminate function of the detector, and it does not incorporate automatic tuning to compensate for changes in content of the ground.

Once you have located an object, you can determine whether it is METAL or MINERAL by following these steps:

1. With the loop raised, set the *Detector Mode Switch* to "Disc. Norm" and insure that the *Discriminate* knob is turned fully left (counter-clockwise) to "0."
2. Lower the loop and let it rest flat on the ground just *along side* the spot where you located the object, or where the tone from your speaker just *began to increase*.
3. Depress the *Push-Button Tuner* until the *Threshold Tone* is regained. If necessary, repeat this step until the tone remains steady.
4. Now, with the loop still on the ground, sweep the area where you located the object. Do not be concerned, however, if the tone increases in volume as you begin this process.
5. If the tone *fades or disappears* as you pass the loop over the *buried object*, then the object is MINERAL and probably a bottle cap or small nail.

(Note: The object *could* be MINERAL even if the tone does not fade or disappear. You can determine this by increasing the amount of *Discriminate Sensitivity* as described under that heading in this manual.)

Discriminate Automatic Operation

This detector mode distinguishes coins and rings from *junk* items and ferrous objects (MINERAL) while providing automatic tuning compensation for changing content of the ground. As in the "G.E.B. Auto" mode, the instrument will always return its tuning to the *Threshold Tone*, if the loop is not in motion.

To obtain the best performance from this detector mode, you should sweep the loop in a very even and level motion. You may find this easier if you stabilize the instrument by holding it with both hands. The loop should pass close to the ground, but it *should not scrape*. If you are searching a grassy area, the loop should brush *lightly* over the grass. And remember, the faster you sweep the loop, the greater sensitivity (depth of detection) your instrument will have.

Once you have located an object, you can determine whether it is METAL or MINERAL by following these steps:

1. With the loop raised, set the *Detector Mode Switch* to "Disc. Auto" and insure that the *Discriminate* knob is turned fully left (counter-clockwise) to "0."
2. Lower the loop until it is *slightly* (about ½-inch) off the ground. Depress the *Push-Button Tuner* until the tone coming from the speaker *increases* in volume.
3. Pass the loop over the area where you located the buried object.
4. On strong signals double check the tone you received by raising the loop and passing it over the object again. Listen to the tone:
 - a) A METAL object will cause the tone to *increase only one time* when the loop passes directly over it.
 - b) A MINERAL object will cause the tone to *disappear* when the loop passes over it, or it may cause the tone to get *louder two or three times* with the tone *fading away completely* between those sounds.

(Note: The object *could* be MINERAL even if a METAL sound is obtained. You can determine this by increasing the *Discriminate Sensitivity* as described under that heading in this manual.)

Adjusting Discriminate Sensitivity

With the *Discriminate* knob set on "0," your detector will discriminate against such items as bottle caps and small nails while in Discriminate modes. You can, however, increase the amount of discriminate sensitivity by advancing this control to the right (clockwise).

For example, by setting the *Discriminate* knob at about "4" you can discriminate against pull tabs and foil. You should note, however, that at this setting 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 one of the G.E.B. modes, as described earlier in this manual.

Searching with Your Detector in Discriminate Modes

As previously mentioned, you can actually search an area in Discriminate modes. You should note, however, that in these modes the detector cannot reject ground mineralization like it can in the G.E.B. modes. Thus, the more mineralization present in a search area, the less depth of detection your instrument will have.

Generally, the "Disc. Norm" mode works best in areas of light mineralization, while the "Disc. Auto" tends to work better in areas of higher mineralization. This is because the automatic tuning feature of the "Disc. Auto" mode quickly compensates for changing content of the ground. Nevertheless, searching in Discriminate modes is most effective in areas where the ground is relatively smooth and even, thereby minimizing the possibilities of incorrect signals caused by changes in the terrain.

Should you decide to search an area with your detector in one of the Discriminate modes, use the same searching procedures described under **Searching with Your Detector in G.E.B. Modes**. But first, tune your instrument as follows:

1. Tune your instrument in the "G.E.B. Norm" mode.
2. With the loop raised, set the *Detector Mode Switch* to the desired Discriminate setting and insure that the *Discriminate* knob is also set at the desired position.
3. Now, lower the loop until it is just *slightly above* the ground (about ½-inch) and depress the *Push-Button Tuner* until the *Threshold Tone* is regained.
4. Your detector is now tuned and ready for searching in Discriminate modes. It should automatically eliminate MINERAL objects as previously described.

(Note: When searching in the "Disc. Auto" position you may sometimes find it necessary to adjust the *Tuning* knob to the left—counter-clockwise—up to as much as ¼-turn. This will eliminate the *Threshold Tone* and should help you distinguish between real signals and those caused simply by mineralization and changes in the terrain. You may also find it helpful to occasionally double-check a signal by switching to the "G.E.B. Auto" position or by raising the loop slightly higher off the ground and listening to the tone.)

Testing for Mineralization

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

1. Tune your detector in the "G.E.B. Norm" mode and then, with the loop raised, set the *Detector Mode Switch* to "Disc. Norm."
2. Now lower the loop to the ground. Depress and hold the *Push-Button Tuner*.
3. Quickly raise the loop and listen to the tone coming from the speaker:
 - a) If the tone *does not change*, then there is no mineralization present.
 - b) If the tone becomes *very loud* prior to returning to the *Threshold Tone*, then high mineralization is present.
 - c) If the tone *increases only slightly* before returning to the *Threshold Tone*, then low mineralization is present.

After you have tested for mineralization, be sure to retune your detector in the desired operating mode.

Practice Makes Perfect

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, page 8*)
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 depth. 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 of periodically checking the performance of your instrument.

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.

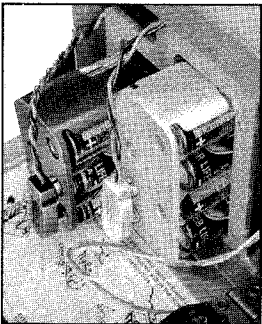


Illustration M

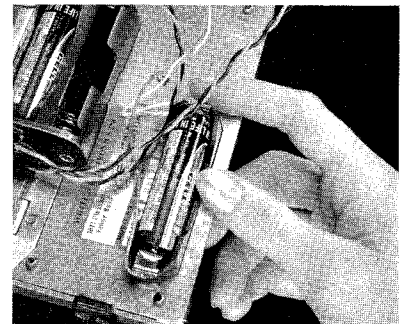


Illustration N

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.

ALTERNATE TUNING PROCEDURES

COINMASTER G.E.B. 5/DB MODEL

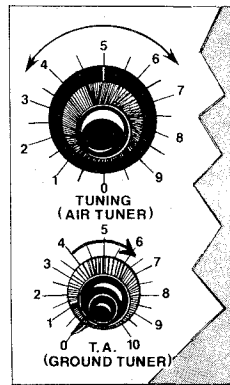
Note: Familiarize yourself with controls (see page 5 in the instruction manual).

INSTANT CONTROL CHECK: This is to check that your GEB controls and search loop are operating correctly. Follow this procedure to complete the control check.

Refer to illustrations.

1. Set the Detector Mode Switch to the GEB Norm position; turn the volume control knob fully in the direction of the arrow (to the right); and turn the instrument to the "ON" position.

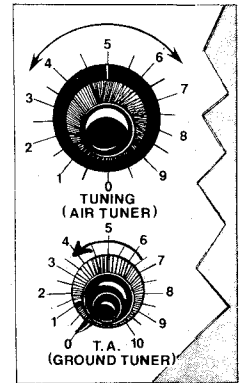
2. Hold the loop 6" to 8" in the air; set the T.A. Knob (ground tuner) fully clockwise (right); depress the PUSH-BUTTON TUNER and adjust the tuning knob (air tuner) for a slight tone from the speaker. The tuner must be turned clockwise to increase or reach the tone, or counter-clockwise to reduce the tone **while** the button is depressed.



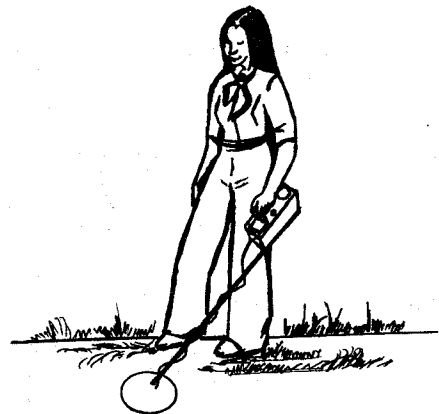
a. Lower the loop to the ground. **THE TONE SHOULD GET LOUDER!**



3. Raise the loop again 6" to 8". Turn the T.A. knob fully **counter-clockwise** (left) and depress the PUSH-BUTTON TUNER momentarily until you obtain a slight tone from the speaker.



a. Lower the loop to the ground. **THE TONE SHOULD GET QUIETER!**



KEEP CLEAR OF ANY BURIED OBJECTS
You have now completed the control checks and

may procede with the Dynamic GEB Tuning procedures below.

DYNAMIC GEB TUNING

With the T.A. Knob (ground tuner) turned **clockwise** (right), lowering the loop to the ground caused the tone to get **LOUDER**.

With the T.A. Knob (ground tuner) turned **counter-clockwise** (left), lowering the loop to the ground caused the tone to get **QUIETER**.

Between these two T.A. positions, however, there is a setting where the ground will have no effect on the tone as the search loop is raised and lowered, and where the sensitivity is the greatest. This is the setting that you must find. You will need to depress the PUSH-BUTTON TUNER and adjust the T.A. (ground tuner) alternately, several times in succession. As you search for the setting remember the six rules below.

DYNAMIC GEB TUNING RULES TO REMEMBER

DYNAMIC GEB TUNING RULES TO REMEMBER

Rule 1. Start with the T.A. (ground tuner) near the center of its range (at 5 or 6) because this is usually close to the correct setting.

Rule 2. It doesn't matter what happens to the tone level when you turn the T.A. (ground

tuner), it **only** matters what happens to the tone when the loop is **being lowered to the ground**. (The tone will either increase, decrease or remain the same.)

Rule 3. The PUSH-BUTTON TUNER may be used at anytime to regain the slight tone so you can listen for the tone change when the loop is lowered to the ground. If a slight tone is not regained when the PUSH-BUTTON TUNER is depressed, the Tuning Knob (air tuner) must be turned clockwise to increase the tone or reach the tone, or counter-clockwise to reduce the tone while the button is being depressed.

Rule 4. If lowering the loop makes the tone get louder, turn the T.A. (ground tuner) to the left, **DON'T FORGET RULE 2**.

Rule 5. If lowering the loop makes the tone get quieter, turn the T.A. (ground tuner) to the right. **DON'T FORGET RULE 2**.

Rule 6. As you get closer to the correct setting the ground affects the tone less as the loop is being lowered. When you seem to be close to the correct setting, turn the T.A. (ground tuner) in smaller steps ($\frac{1}{4}$ turn or less of the small top knob). You have gone past the correct setting if the tone goes the other way when the loop is lowered. With a little experience you will be able to tell about how far the T.A. (ground tuner) needs to be turned.

SPECIAL NOTICE

USING THE "AUTO DISC" MODE

1. Tune your detector in the G.E.B. "Normal" position to eliminate ground interference and obtain maximum depth of detection.

2. When a buried object is detected in the G.E.B. Mode, **be sure you pinpoint it's exact location**.

3. Next, switch to the "AUTO DISC" Mode and press the Push-Button Tuner until the meter reads about "30" or "40". The tone must be **above** the threshold level.

4. Now, sweep the search loop over your "target area," being careful not to "scrape" the loop across the ground. Listen for any changes in the level of the tone while the loop is in motion **over** the buried object:

a) **DECREASES** in the tone mean iron, or "junk" items.

b) **INCREASES** in the tone mean precious metals.

c) **NO TONE CHANGE** -- "good metal," but deep.

Only the "AUTO DISC" Mode and this procedure will enable you to discriminate at depths nearly equal to those of G.E.B. operation in heavily mineralized soil. But the "AUTO DISC" Mode cannot be used alone; it must be used along with the G.E.B. "Normal" operating position.

And, as you use your detector in "AUTO DISC," always remember that any decrease in the level of the tone while over a buried object means "junk". On the other hand, any increase in the tone indicates "good" metal.

GOOD HUNTING!!

WHITE'S NEW RECHARGEABLE BATTERY SYSTEM

As far as we know, White's has become the first to include a rechargeable battery system with a metal detector. This rechargeable system could save you up to \$2,000 in regular batteries over the life of your rechargeable pack. These NICKEL CADMIUM batteries can be recharged as many as 1,000 times or more. Our tests show that under normal conditions you may expect anywhere from 10 to 20 hours of continuous use before you would need to recharge them. If used for only a few hours a day, you can expect many more hours of use. You may use your detector with regular AA penlight batteries in the holder(s) supplied.

OPERATING YOUR CHARGER

1. Connect the white terminal to the large, 10 cell battery pack (12 volt). Connect the black terminal to the small, 8 cell battery pack (9 volt).

NOTE: The 5000/D uses only the 12 volt battery pack.

2. Plug the charger into electrical outlet.
3. CHARGE the pack(s) 3 to 5 hours:
 - A. Before the first use.
 - B. After storage periods of 2 weeks or more.
 - C. When the battery pack(s) test below "75" on the meter.

IMPORTANT CAUTIONS ABOUT YOUR BATTERIES

1. The battery pack(s) should not be left on the charger for any longer than 10 hours.
2. Be sure to connect to the correct terminal(s).
3. Do not dispose of batteries in a fire.
4. Do not attempt to replace one defective cell in your pack.
5. Do not allow any metal (including rings and other jewelry) to lie across the terminals on your pack(s). The VERY LARGE CURRENT available will cause burns and is dangerous.
6. Do not place the pack in your pocket where it might short against coins, etc.
7. Your RECHARGEABLE BATTERY SYSTEM (charger and packs) have a specific charge current. Do not attempt to mix other chargers or packs with this rechargeable system. The batteries may explode if the charge current is too high.
8. Non-rechargeable batteries may explode if you attempt to charge them.

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 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.

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.

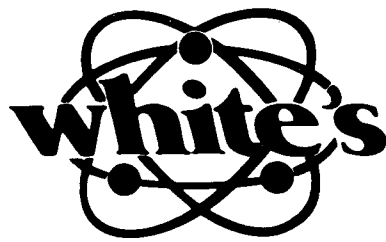
Read your warranty card carefully. It describes completely what is covered and the length of the coverage. If you have any questions don't hesitate to write us. We will be happy to answer any questions you may have.

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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