

**MODEL NO.
321.596290**

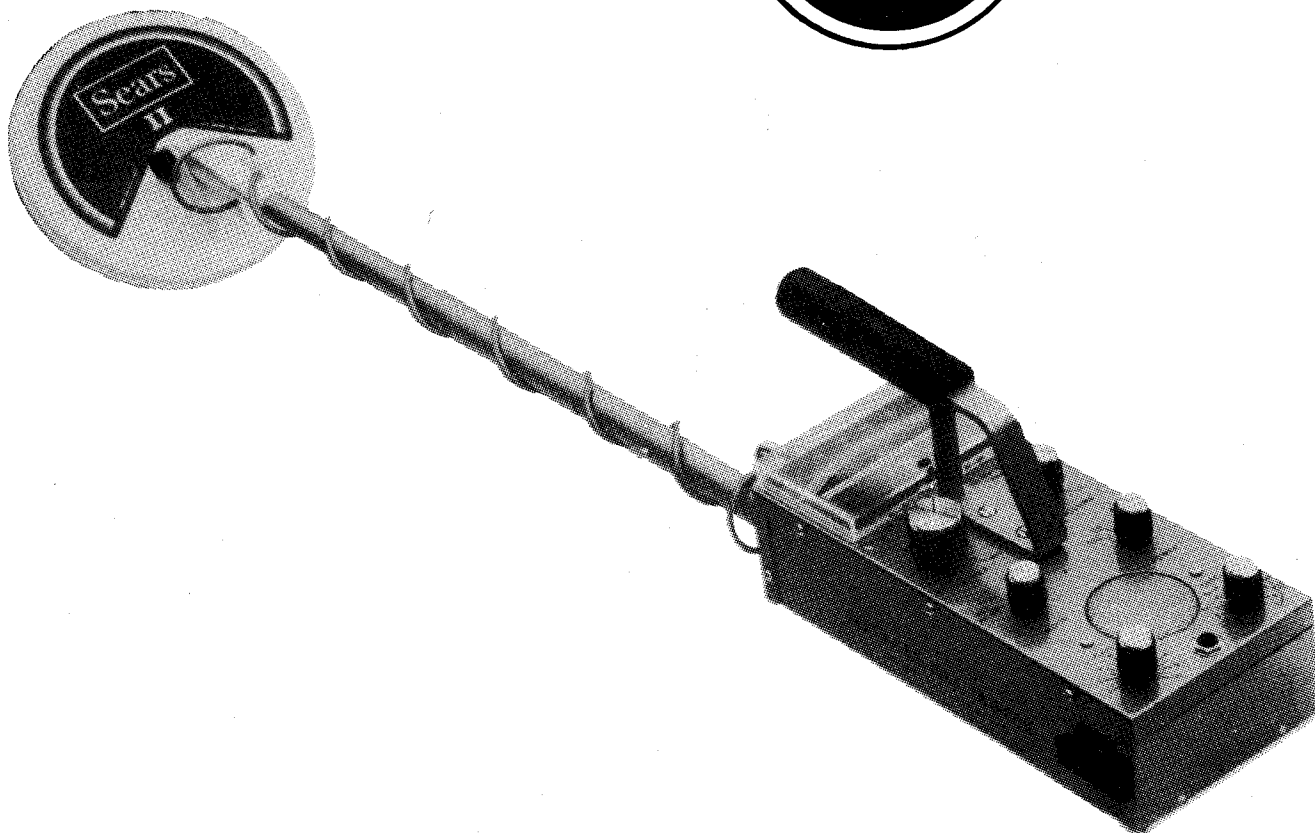
- glossary of terms
- assembly
- control description
- testing procedures
- operating procedures
- maintenance

Sears

METAL DETECTOR

**Push Button G.E.B.,
G.E.B./Discriminator,
TR/Discriminator, and
G.E.B./Max
With Depth Reading**

**OWNERS
MANUAL**



Congratulations! You are now the proud owner of one of the world's finest 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 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!

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SPECIFICATIONS FOR MODEL 321.596290

(U.S. PAT. 4293816, U.S. PAT. 4249128, U.S. PAT. 4030026, U.S. PAT. 4128803, U.K. PAT. 1548239, CDN. PAT. 1038036)
OTHER PATENTS PENDING

USES: Coinshooting, relic hunting, beachcombing (shallow water), and prospecting.

WEIGHT: 5 lbs., 2 oz.

LOOP SIZE AND STYLE: 8'' concentric, completely waterproof

OPERATING FREQUENCY: 6.59 KHz crystal controlled

AUDIO FREQUENCY: 412 Hz

OPTIMUM TEMPERATURE RANGE: 33°F - 100°F

OPTIMUM HUMIDITY RANGE: 0% - 75%

POWER REQUIREMENT: 14 AA penlight batteries

AVERAGE DEPTH ON U.S. 25¢ piece: G.E.B./NORM -8''-10''

NOTE: Your actual depth may vary as a result of mineralization, object size, loop size, length of time the object has been buried, and your skill.

MODES OF OPERATION: G.E.B./NORM., G.E.B./MAX., G.E.B./DISC., TR DISC.

SPECIAL FEATURE: Depth reading on coins

PARTS IDENTIFICATION FOR MODEL 321.596290

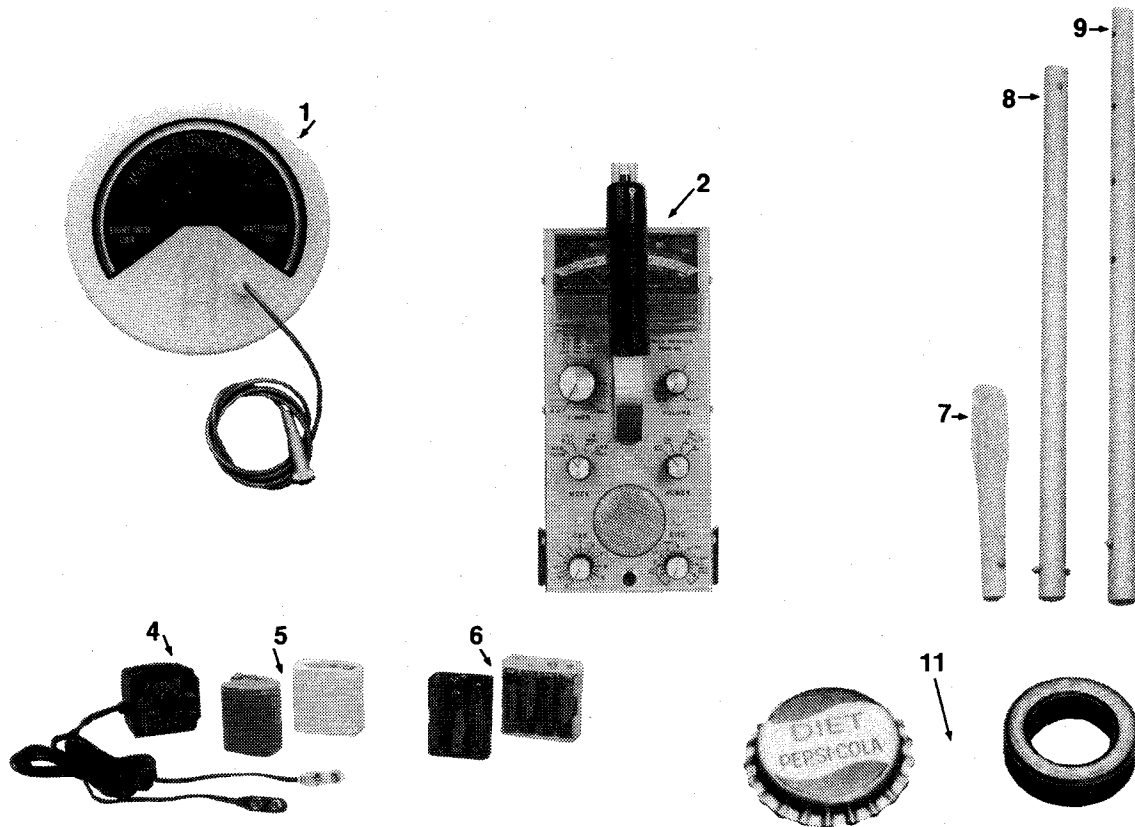
When you unpack your MODEL 321.596290, compare all of your parts with the parts listed on this page and the picture on the following page.

1. Detector Coil
2. Instrument Control Box
3. Loop Bolt, Thumbnut, and 2 Plastic Washers (Not Shown)
4. Battery Charger
5. 6 & 8 Cell Rechargeable Battery Packs
6. 6 & 8 Cell Standard Battery Packs
7. Loop Isolator
8. Lower Portion of Rod (shorter rod)
9. Upper Portion of Rod (longer rod)
10. Warranty Card (Not Shown)
11. Test Samples: A. Bottle Cap; B. Mineral Sample

If you don't have all the parts listed, contact your nearest Sears store at once.

ILLUSTRATION OF PARTS continued on next page...

ILLUSTRATION OF PARTS



ASSEMBLY DIRECTIONS

1. SLIDE THE SHORTER METAL ROD INTO THE LONGER METAL ROD, DEPRESSING THE SNAP LOCKS TO FIT INTO ONE OF THE LONGER ROD'S FOUR HOLES. (ILLUSTRATION 1)

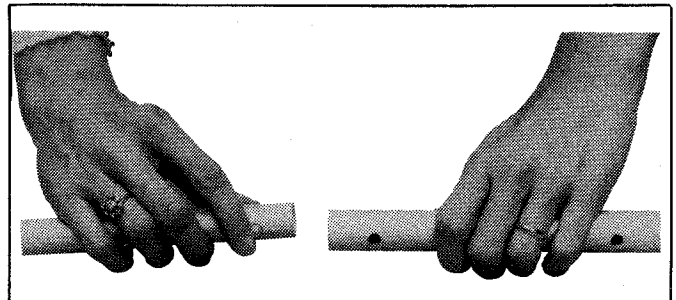


ILLUSTRATION 1

2. PLACE THE TWO WASHERS IN THE DEPRESSIONS ON THE LOOP ISOLATOR AND CONNECT TO THE LOOP BY INSERTING THE BOLT AND THUMBNUIT, TIGHTENING BY HAND. (ILLUSTRATION 2)

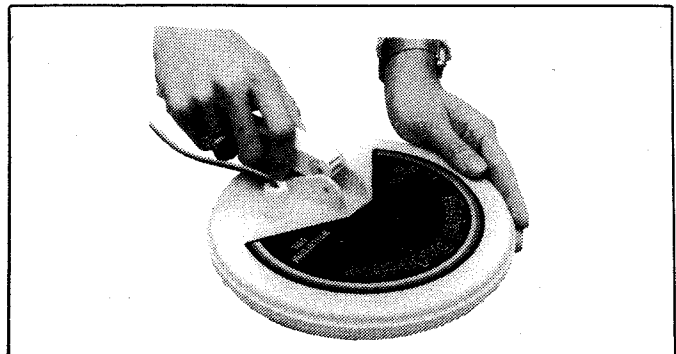


ILLUSTRATION 2

3. **CONNECT THE LOOP ISOLATOR TO THE LOWER PORTION OF THE ROD.
(ILLUSTRATION 3)**

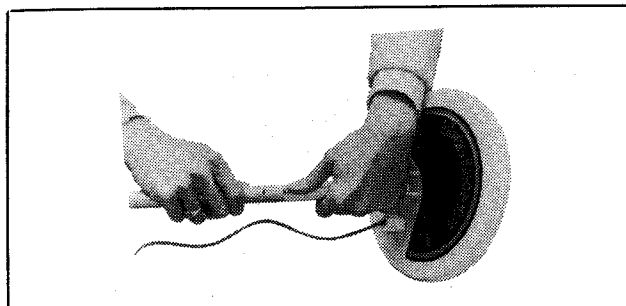


ILLUSTRATION 3

4. **SLIDE THE COMPLETED ROD SECTIONS INTO THE BRACKET UNDERNEATH THE INSTRUMENT CONTROL BOX.
(ILLUSTRATION 4)**

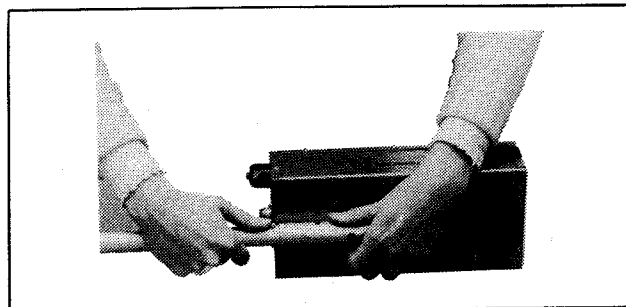


ILLUSTRATION 4

5. **WRAP THE CABLE AROUND THE ROD SO THAT IT JUST REACHES THE CONTROL BOX. (ILLUSTRATION 5)**

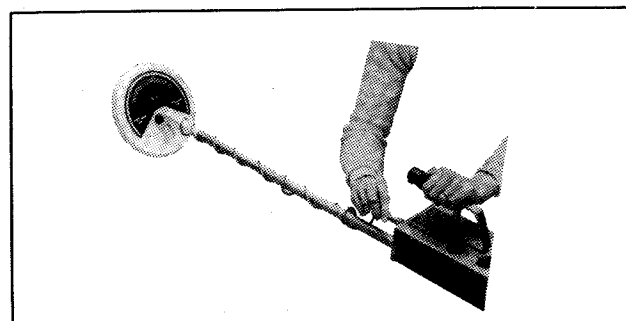


ILLUSTRATION 5

6. **CONNECT THE LOOP CABLE TO THE FRONT OF THE INSTRUMENT.
(ILLUSTRATION 6)**

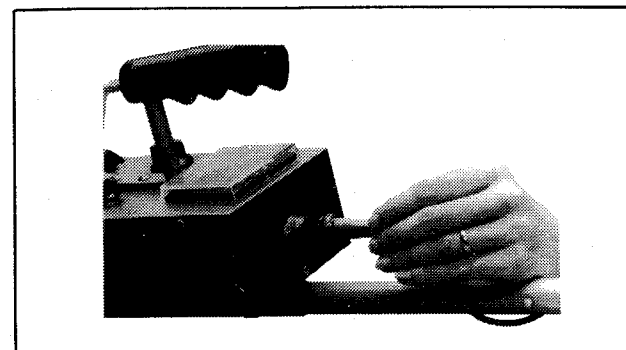


ILLUSTRATION 6

7. OPEN THE DOOR ON THE REAR OF THE INSTRUMENT CONTROL BOX AND CONNECT THE BLACK BATTERY CONNECTOR TO THE BLACK BATTERY PACK. CONNECT WHITE BATTERY CONNECTOR TO WHITE PACK. INSTALL THE PACKS INSIDE THE INSTRUMENT AND CLOSE THE BACK. CONNECT THE RECHARGEABLE BATTERY PACKS TO THE RECHARGER FOR THEIR INITIAL CHARGE, FOLLOWING DIRECTIONS ON PAGE 10. (ILLUSTRATION 7)

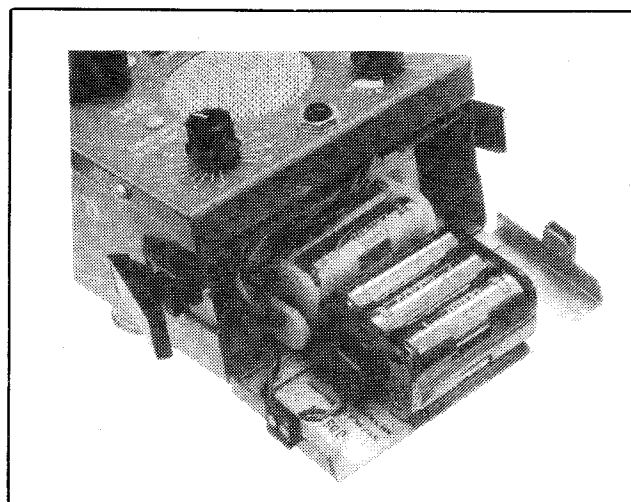


ILLUSTRATION 7

8. SET THE METAL DETECTOR FOR YOUR HEIGHT BY EXTENDING THE RODS AND LOCKING THEM IN PLACE WITH THE SNAP LOCKS. UNIT IS READY TO OPERATE. (ILLUSTRATION 8)



ILLUSTRATION 8

GLOSSARY OF TERMS

DISCRIMINATION (DISC.):

Refers to the detector's ability to distinguish between "junk" and "good" items.

GROUND EXCLUSION
BALANCE (G.E.B.):

Refers to the detector electronically cancelling out the effects of mineralized ground.

GROUND BALANCE

Refers to the detector giving a "neutral" response to the ground. The threshold tone does not change in volume.

HOT ROCK

Any rock which the detector reacts to positively, indicating a mineralization content.

MINERALIZATION

Refers to the ferric oxide or magnetic content of the soil to which the detector will respond.

NULL POINT

It is the point at which there is no discrimination and the detector is balanced with the ground. Nothing will be rejected.

PINPOINTING	Cross the target at right angles, noting where the loop is when the signal is the strongest. Another method of pinpointing is to push and release the push button several times as the loop is moved towards the target. This de-tunes the instrument, making only the center of the loop sensitive to the target. When the tone is only heard in a specific spot, the target is then at the center of the loop.
SWEEP	Refers to searching an area. A method of swinging the loop in front of you as you walk along so that you completely cover the ground for good targets.
TARGET REJECTION	Refers to the detector giving a "negative" response to a target. The tone goes quiet rather than increasing in volume.
TH	Treasure Hunting. A "TH"er is a Treasure Hunter!
THRESHOLD	The point of optimum tuning. At this point the detector operates at its maximum depth range. It is recognized by a slightly audible tone.
TR	Transmit Receive type of detector. TR Discriminate distinguishes between "junk" and "good" targets.

IDENTIFICATION OF CONTROLS AND FEATURES

1. TUNER: Adjusts the detector for its threshold tone.
2. MODE: Selects between the four separate modes of operation, which is like having four detectors in one.
 - a. G.E.B. NORM: Detects all metals and rejects the ground.
 - b. G.E.B. DISC: Used with the DISC ADJUST to distinguish between selected junk and good targets. Rejects the ground.
 - c. TR DISC: Discriminates against junk and is useful for quick ore-sampling and hot rock identification. Does not reject the ground but is useful in searching underwater, in areas of salt water, and where the loop cannot be rapidly swept.
 - d. G.E.B. MAX: More sensitivity than the G.E.B. NORM mode. Rejects the ground.
3. G.E.B. (Ground Exclusion Balance): Adjusts detector's ability to cancel out effect of soil mineralization in G.E.B. modes.
4. HEADPHONE JACK: Allows you to listen to audio tone on mono-headphones. Saves on power drain and gives greater response in distinguishing changes in tone.
 - A. Use of headphones automatically disconnects speaker.
 - B. Stereo headphones may be used if they have a stereo/mono switch and you select mono. However, this is not recommended.
5. DISC. (DISC. ADJUST): Discrimination control allows you to distinguish between some "junk" items, such as nails, foil, pull tabs, etc., and "good" items such as coins and rings in the G.E.B./DISC. and TR/DISC. modes. Adjustment is variable, allowing you to increase it only as necessary. Testing your machine will help you establish its discrimination characteristics and its Null Point. CAUTION: When set to reject pull tabs or screw caps, the American nickel, some gold rings, and small gold items may also be rejected.
6. SPEAKER: Broadcasts the audio tone; silent with headphones.
7. POWER: Turns the detector Off and On. Also used to test the 6 cell and 8 cell battery packs.
8. VOLUME: Adjusts the loudness of audio tone for speaker or headphones. Set at MAX it will register the greatest difference between "positive" and "negative" tones. NOTE: Use of headphones will require turning volume level down from MAX, but no sensitivity will be lost.
9. METER: Gives visual representation of signal intensity when passing over target and, calibrated for depth reading on coins. Also indicates strength of batteries when power is switched to Battery Check.
10. PUSH-BUTTON RETUNER: Pushed in and held when setting threshold level. Acts as a memory for re-tuning detector to threshold. Simply press and release. Also, used for mode changing.

NOTE:

- A. Push-button re-tuning does not work in G.E.B./DISC. mode.
- B. In G.E.B./DISC., holding the button in changes the mode to G.E.B./NORM.
- C. In any other mode, holding the button in changes the detector to G.E.B./DISC. mode.
- D. The push-button can be used in pinpointing as it de-tunes the detector over a target to show its specific location.

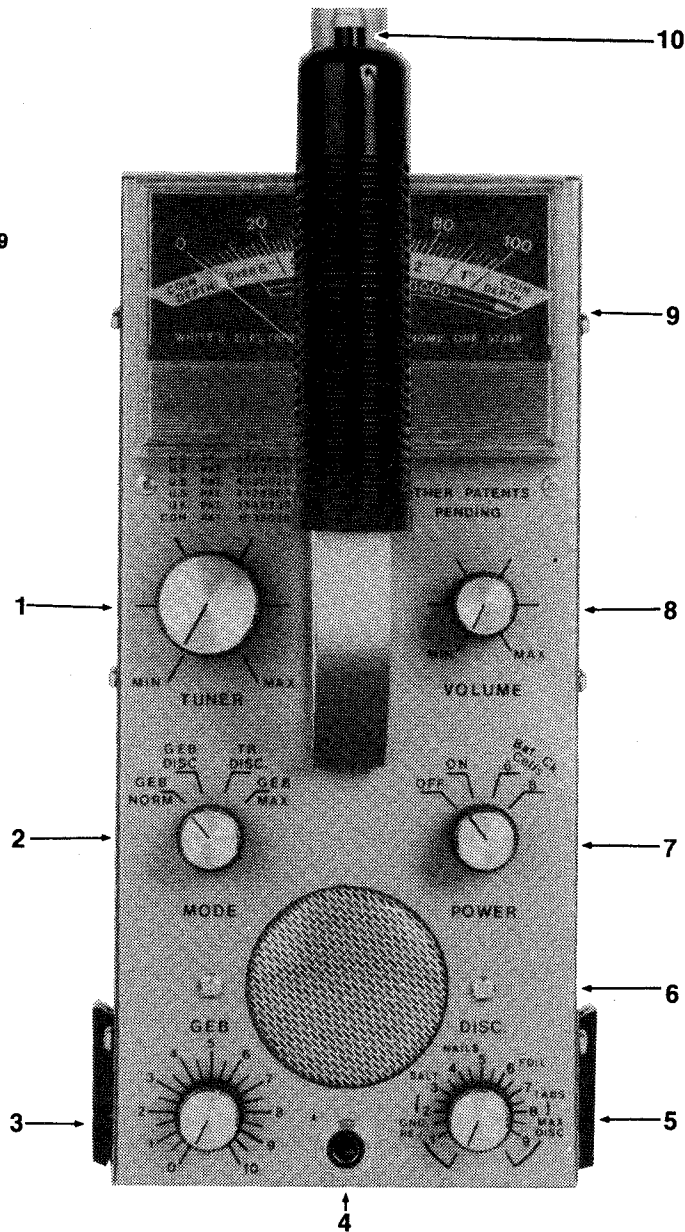
DEPTH READING

This Depth Reading feature will aid you in the pinpointing and recovering of "good" targets. Used in pinpointing, the meter will show you the target's position by registering its depth below the surface. When the loop is at its closest point to the target, the meter will show the target's depth directly below the center of the loop. Before you recover the object, you will be able to judge how deep you will have to dig. This will help keep the size of the hole at a minimum, and will save time. An added advantage is that it won't be necessary to probe for an object in order to determine its depth. Probing can cause damage to the target.

The Depth Reading feature is designed to operate on objects approximately the size of a coin. Objects of this size, lying flat, will produce the most accurate depth readings.

Examples: If the meter's highest reading is "60", then the object is 3" below the center of the loop. If the meter's highest reading is "100", then the object is either 1" below the center of the loop, or, may be along the surface of the ground, concealed in the turf for instance.

ILLUSTRATION 9



BATTERIES (NON-RECHARGEABLE)

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. These are available at 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 connectors. 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 battery to those on the battery holder and then snap the new battery into place.

RECHARGEABLE BATTERIES

Rechargeable batteries are included with this metal detector. This rechargeable system will save you considerable money when compared with the cost of regular batteries over the life of your rechargeable pack. These NICKEL CADMIUM batteries can be recharged up to 1000 times. Under normal conditions you may expect anywhere from 10 to 20 hours of continuous use before you would need to recharge them.

Your metal detector is supplied with two battery packs, a 6 cell and 8 cell pack of regular batteries. The regular battery system will allow you to begin using your detector immediately while your rechargeable batteries are being initially charged OR if you are in the field and your rechargeable batteries go dead, you can insert the regular battery packs and go on detecting until you can recharge your rechargeable battery packs.

NOTE: Batteries last longer when headphones are used.

OPERATING YOUR CHARGER

1. CONNECT white marked lead from charger to the white pack and black lead to black or blue pack.
2. Plug the charger into an electrical outlet.
3. Charge the pack 3 to 8 hours. (After 8 hours, the packs will have reached their maximum charge.):
 - a. Before the first use.
 - b. After storage periods of 2 weeks or more.
 - c. When the battery packs test below the "Battery Good" range. (10 - 100 on the meter.)

IMPORTANT CAUTIONS ABOUT YOUR BATTERIES

1. The battery packs should not be left on the charger for any longer than 10 hours.
2. Be sure to connect to the correct terminals. (Black connector to black or blue pack, white connector to white pack.)
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 packs. 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) has 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, ensure 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 - will 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. If it's left in a car on a hot day, cover it 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.

ADDITIONAL PRECAUTIONS:

- a. Avoid dropping your detector.
- b. Do not use petroleum distillates or other lubricants on any of the electronic components.
- c. Avoid sharp jars to the loop.
- d. Do not allow batteries to corrode inside the instrument.

SEE YOUR WARRANTY: To understand the extent of your coverage and what will nullify the warranty.

G.E.B. INDOOR TEST PROCEDURES

The following procedures will help you to become familiar with your metal detector's operation. See Illustration 10.

In order to test your detector, it is first necessary to tune it to the threshold point. To do this, place your detector on a table with the loop extending into the air away from any metal. Remove any rings or watch that you may be wearing. Obtain a few test samples, such as a coin, ring, bottle cap, nail, pull tab, foil gum wrapper, etc.

ILLUSTRATION 10



Set the controls as follows:

1. TUNER MIN
2. MODE G.E.B. NORM
3. GROUND BALANCE 5
4. DISC ADJUST 1
5. POWER Battery Check 6
If batteries show a meter reading in "Battery Good" range (10 - 100), proceed.
If batteries show a meter reading below "Battery Good", turn to Pages 9 and 10.
6. POWER Battery Check 8
If batteries show a meter reading in "Battery Good" range (10 - 100), proceed.
If batteries show a meter reading below "Battery Good", turn to Pages 9 and 10.
7. POWER ON
8. VOLUME MAX
9. PRESS and hold in the push-button, then turn TUNER clockwise until the threshold tone is barely audible.
10. RELEASE the button.
11. HOLD a coin in front of the loop face as shown in the illustration, and notice the reaction in the tone. Move the coin closer and farther from the loop, and to either side of the loop and notice how the tone changes. The tone should increase as the coin is brought nearer to the loop. Repeat this test using the ring.
12. HOLD a nail in front of the loop and repeat the movements above. Test the bottle cap, pull tab, etc. in the same way.
13. NOTICE that the coin and ring react just like the nail, bottle cap, pull tab, etc.! In the G.E.B. NORM mode, all metals are detected, and the ground will be cancelled out.

The above procedures can be repeated, but with the MODE selected to G.E.B. MAX. The G.E.B. MAX mode has greater sensitivity than the G.E.B. NORM mode, and increased depth capabilities. However, this super-sensitivity can cause a slight erraticness in the threshold tone. This is normal.

G.E.B. DISC INDOOR TEST PROCEDURES

Tune your detector in the G.E.B. NORM mode, following the previous instruction. Put the MODE switch to G.E.B. DISC. You are now ready to test.

1. PLACE a coin in front of the loop. You will notice that if the coin is held still, the detector does not sound off. But, when you move the coin rapidly in front of the loop it will sound off.
NOTE: In this mode, the detector must be in motion across the target in order for it to react positive or negative.

2. TEST each one of your samples in this rapid motion way, noting the difference in tone that each produces.
3. INCREASE the DISC ADJUST gradually and repeat the above test of each sample. Notice the difference each one produces in the tone.
4. CONTINUE this process noticing at which point on the DISC ADJUST each object is rejected. (An object is rejected when the tone goes quiet.) Make notes for these points.

When using the discrimination mode, you should use no higher level of discrimination than is necessary for the type and amount of trash that is in the area you are searching. Increasing the discrimination level will reject certain items of junk, but will also reject certain good items, such as the American nickel, and some small gold items. Therefore, you should note where certain items are rejected on the DISC ADJUST control. Also, some depth loss will result at the very high levels of discrimination.

TR DISC INDOOR TEST PROCEDURES

This detector has a true null point in the TR DISC mode for quick ore sampling and hot rock identification. Since circuit tolerances can result in the true null point being different from instrument to instrument, it is very important that you determine your detector's specific null point before using it in the field. To do this, place your detector on a table with the loop extending into the air away from any metal. Remove any rings or watch that you may be wearing. You will need the small mineral sample which is supplied with your detector. See Illustration on page 2.

Set the controls as follows:

1. TUNER MIN
2. MODE TR DISC
3. GROUND BALANCE 5
4. DISC ADJUST 1
5. POWER Battery Check 6
If batteries show a meter reading in "Battery Good" range, proceed.
If batteries show a meter reading below "Battery Good", turn to Pages 9 and 10.
6. POWER Battery Check 8
If batteries show a meter reading in "Battery Good" range, proceed.
If batteries show a meter reading below "Battery Good", turn to Pages 9 and 10.
7. POWER ON
8. VOLUME MAX
9. TUNE for threshold. Press and hold in the push-button, then turn the Tuner clockwise until a slight tone is heard, then release the button.
10. USING the mineral sample, move it directly towards the center of the loop, coming no closer than one inch from the bottom. (The tone should increase.) Then, move the sample away from the loop.
11. INCREASE the DISC ADJUST, in the area marked "GND REJ", until there is only a slight decrease in the threshold tone, as you move the sample towards the loop.
12. RETUNE to threshold after you move the DISC ADJUST control each time, by pressing and releasing the push-button.
13. MARK this point on the DISC ADJUST dial once it has been determined. This will represent your detector's true null point and should never change.

The null point relates to the TR DISC mode and will be used primarily for prospecting purposes. Setting this point permanently in no way affects the other functions or modes of the detector. When you wish to rely on it, simply turn your DISC ADJUST to this point which you have marked.

To test the TR DISC mode's response to good items and junk items, repeat the procedures for G.E.B. DISC with a variety of samples, such as those used to test the G.E.B. mode. As you increase the DISC ADJUST control, notice the way each item affects the tone and note at which number on the DISC ADJUST each item is rejected. Your notes will help you during field use. Remember, the tone will increase in response to good targets, and will go quiet in response to junk.

G.E.B. FIELD TUNING PROCEDURES

Your detector needs to be Ground Balanced for each location in which you are searching. Following is an initial tuning procedure. But, with experience you will learn shortcuts and a procedure which best suits you. Remember, the G.E.B. NORM is an all metals mode.

Set the controls as follows:

1. TUNER MIN
2. MODE G.E.B. NORM
3. GROUND BALANCE 5
4. DISC ADJUST Null Point
5. POWER Battery Check 6

Make sure batteries are rated in "Battery Good" range (10 - 100).

6. POWER Battery Check 8
Make sure batteries are rated in "Battery Good" range (10 - 100).
7. POWER ON
8. VOLUME MAX
9. PRESS and hold the push-button with the detector's loop in the air waist high. Turn the TUNER clockwise until the threshold tone is slightly heard. (Illustration 11)
10. RELEASE the button. Pushing and releasing button will retune.
11. LOWER the loop to the ground, as in Illustration 12.
12. LISTEN to the threshold tone as the loop nears the ground.
13. IF THE TONE DECREASES, raise the loop back up waist high and increase the GROUND BALANCE control slightly (clockwise).
14. PRESS and release the push-button to retune to threshold.



ILLUSTRATION 11



ILLUSTRATION 12

15. LOWER the loop to the ground and listen to the threshold tone.
16. IF THE TONE INCREASES, raise the loop back up to waist height and decrease the GROUND BALANCE control slightly (counter-clockwise).
17. PRESS and release the push-button to retune to threshold.
18. IMPORTANT: If the threshold tone increases when the loop is lowered to the ground, decrease the GROUND BALANCE. If the threshold tone decreases when the loop is lowered to the ground, increase the GROUND BALANCE. Continue this process, pressing and releasing the push-button switch on handle each time to retune. Do this until the threshold tone remains the same as the loop is moved from the air to the ground.
19. NOTICE: If you have difficulty adjusting the GROUND BALANCE to obtain a constant threshold, you may be over some metal. Move to another spot and repeat procedures.

The above procedures also apply to the detector in the G.E.B. MAX mode.

It is advisable to hunt in the G.E.B. NORM, all metal mode in areas with small junk content. However, when you wish to distinguish between junk and good targets, you should switch your detector to the G.E.B. DISC mode. Follow these procedures:

1. MODE G.E.B. DISC
2. DISC ADJUST Set to desired discrimination level.
3. SEARCH while keeping the loop in constant motion. Illustration 13 on following page.

IMPORTANT: It is also possible to switch your detector into G.E.B. DISC mode by pushing in and holding the push-button while operating in the G.E.B. NORM mode. This allows you to hunt in the all metal mode until you come to a target. At this time you would want to distinguish between its being junk, or, good. Holding the button in, rapidly sweep the target and listen to the affect it has on the tone. With experience you will be able to determine if the target is worth digging. Releasing the button returns the detector to the G.E.B. NORM mode.

ILLUSTRATION 13



TR DISC FIELD PROCEDURES

In the TR DISC mode you will not be able to cancel out the effects of the ground. This will require more practice and patience on your part, but in non-mineralized areas the detector's performance will be worth it! The TR DISC mode is especially useful in areas where there is no room to swing the loop, as is required in the G.E.B DISC mode. It is necessary when searching in shallow waters, or beaches with high salt content, because the discrimination control can be set to reject the salt content. And, it is used for prospecting. Threshold remains the same as when set in G.E.B. NORM mode.

Set the controls as follows in order to begin searching:

1. LOWER the loop to approximately $\frac{1}{2}$ " off the ground.
2. MODE..... TR DISC
3. SET the DISC ADJUST for desired discrimination level.
4. PRESS and release push-button to retune to threshold.
5. LOWER loop COMPLETELY to the ground.
6. SWEEP the loop, and begin searching.
7. IMPORTANT: If the loop is tilted or if you lift the loop up, the tone will get louder. To help eliminate false signals caused by tilting or lifting, try to keep the loop parallel while you sweep.

The detector in the TR DISC mode will not cancel out the effects of the ground. The more the tone changes from the slightest up or down movement of the loop, the more mineralized the soil.

COINSHOOTING

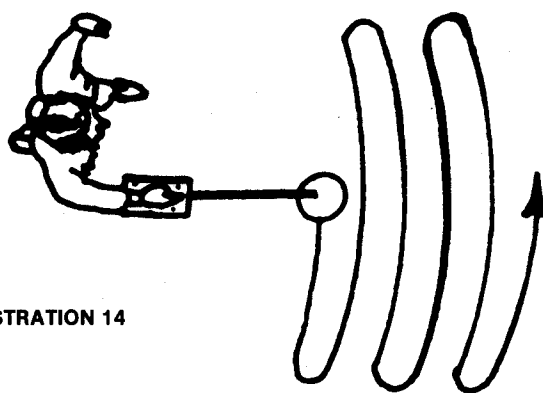
Coinshooting can be divided into two categories:

NORMAL COINSHOOTING and RAPID COINSHOOTING.

In **NORMAL COINSHOOTING**, if you want to locate all coins, both shallow and deep, use the G.E.B NORM or MAX mode to search and pinpoint the object. This is the all metal mode which rejects the ground. After locating the object, depress and hold in the push-button to change to the G.E.B. DISC mode to identify the target as good or junk. You will rapidly sweep over the target so the tone can tell you if it is good or junk. A set of headphones, time, and patience, will also help.

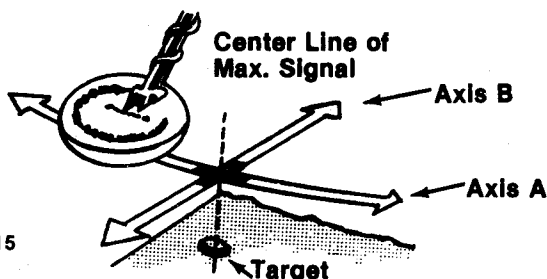
1. In **NORMAL COINSHOOTING**, sweep the loop very slowly in front of you as you walk along. Illustration 14 on following page.
2. The search signal and tone will "peak" as the target center is passed.
3. Try to keep the detector coil parallel to the ground at all times and avoid lifting the loop off the ground at the end of each sweep.
4. Keeping the detector coil parallel to the ground prevents the loss of detection on some deeper targets. On a careless swing you are putting some distance between the loop and target by lifting it off the ground.

ILLUSTRATION 14



5. When you have located a target that sounds promising, hold in the push-button to switch the detector to the G.E.B DISC mode. Also, set your desired discrimination level.
6. Cross the target with a broad, rapid, sweep; first in one direction and then at right angles to ensure a uniform reading. Illustration 15.

ILLUSTRATION 15



NOTE: The G.E.B. DISC mode relies on motion for proper operation. To produce the best possible signal, keep the loop in motion in a wide enough sweep to analyze the signal by its characteristic sound.

7. The object may be identified by the type of signal it produces. In some instances, some junk objects may be recognized by their erratic signal or the extra large area producing the signal.
8. If you detect an object which produces a signal over a much larger area than a coin, ring, or other valuable, it may be several coins together in a group. Illustration 16
9. To distinguish each separate object, sweep at different angles to screen out unwanted objects or to pinpoint a single object. Illustration 17

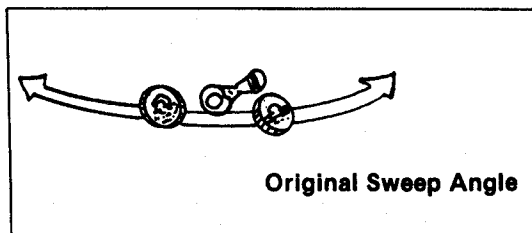


ILLUSTRATION 16

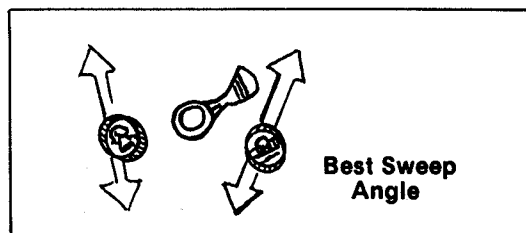


ILLUSTRATION 17

10. To distinguish a coin from a bottle cap, with the DISC ADJUST set to reject pull tabs, increase sweep speed. This will make the signal from a good object better, and cause a bottle cap signal to drop out. This is one of two methods to identify and reject bottle caps.
11. Another way to identify and reject bottle caps is to place the detector in the TR DISC mode and set the DISC ADJUST to the point at which foil is rejected. Then, slowly sweep the target again. A bottle cap is always a strong signal and can usually be rejected in this mode with great certainty. (Remember, in TR/DISC, the loop does not have to be in constant motion as it does in the G.E.B/DISC mode.)
12. When you have decided the target is a good object, retune, pinpoint it, and recover.
13. When in doubt about the target...DIG! You will learn with experience, which targets are truly worth digging. But until then don't miss a valuable opportunity!

RAPID COINSHOOTING

In areas with a heavy concentration of junk, it is best to search with your detector in the G.E.B DISC mode.

1. After initial tuning in the G.E.B. NORM mode, and selection of the desired level of discrimination, place the detector in the G.E.B. DISC mode.
2. Move the detector coil in a broad sweep, keeping the loop in constant motion. It is necessary in the G.E.B. DISC mode to have the loop in constant motion.
3. Keep the loop slightly above the ground and avoid contact with it so that you won't generate a target or object "type" of signal. A good target will produce a clean, unbroken, signal over the object area.
4. When a promising signal is found, hold in the push-button to switch the detector to the G.E.B. NORM mode for pinpointing.
5. Pinpoint the object in the G.E.B. NORM mode as shown in Illustration 15 on Page 15.
6. NOTE: The MODEL 321.596290 is designed to identify an object by its metallic composition, whether it is magnetic or conductive.

RELIC HUNTING

There are many areas where relics and other historically valuable objects have been lost due to battles, such as in the Civil War. Old homesteads, ghost towns and dump sites often yield displaced treasures. You should research areas where people were living, or where battles were fought, to determine good hunting locations before setting out to search. In such areas almost any metallic object may be of interest. To locate them on the site, it is best to use the G.E.B NORM, or G.E.B. MAX, mode.

1. Follow the initial tuning procedures beginning on page 12.
2. To narrow your search to include only items such as brass, metal buttons, rings, medals, or buckles, switch to the G.E.B DISC mode, which will allow you to discriminate against other objects.
3. If too much ground clutter is present, such as pull tabs, you may want to set the DISC ADJUST to the level at which pull tabs and screw caps are discriminated against.

BEACHCOMBING

Your metal detector is designed to be used in areas of wet or dry sand and salt or fresh water. The TR DISC mode can be used on the ocean beach, or in other areas of high salt concentration, by tuning the DISC ADJUST for salt water.

1. Set the mode for TR DISC after initial tuning. If operating around salt water, or in it, tune out its effects by adjusting the DISC ADJUST control (for non-mineralized beaches).
2. If the G.E.B DISC mode is selected for the primary search, (on mineralized beaches) hold in the button to change to G.E.B. NORM mode for pinpointing.
3. If the G.E.B. NORM mode has been selected for the primary search in a salt-free area, it may be necessary to adjust the GROUND BALANCE control to compensate for changing soil conditions. Switch to G.E.B DISC mode for object identification as is done in coinshooting, using the push-button.
4. If you are planning to do an extensive amount of beachcombing, a basket is needed with about 3/8 " mesh or slightly larger. Scoop the target bearing sand into the basket in order to sift the sand out, allowing the coin to remain behind.

PROSPECTING

In prospecting, you will want to locate an area with gold or similar valuable metals. Gold nuggets or gold dust are usually found along with a highly mineralized "black sand". You can either pan for gold dust or tune out the "black sand" effect with the GROUND BALANCE control and search for nuggets.

1. Place the detector in G.E.B. NORM mode.
2. Search in areas where the ground signal increases greatly, even with occasional raising and lowering of the detector loop and push-button retuning.
3. An excellent place to search is in a stream bed (a wash or dry creek bed). Especially good places are downstream from known mining and mineral areas.
4. Once you have detected a possible gold bearing rock, you should switch your unit into the TR DISC mode and set the DISC ADJUST control to its null point. This level will help to identify it as a hot rock and can be used for quick ore sampling.
5. If the tone fades, the target is the mineral rock. If the tone stays the same or increases, the target is a piece of metal, such as gold, silver, iron, etc.

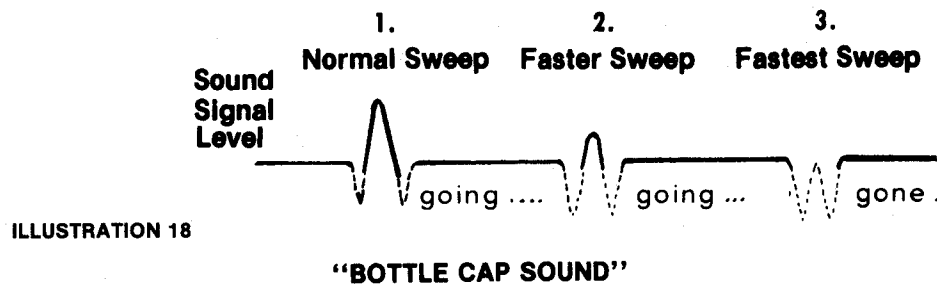
TIPS FOR DEVELOPING YOUR SKILLS

1. "How deep will it go?" In the G.E.B. MODE of operation, the depth is determined by four 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.

In the TR DISCRIMINATE MODE the depth is determined by the same four main factors plus the **AMOUNT OF MINERALIZATION**.

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

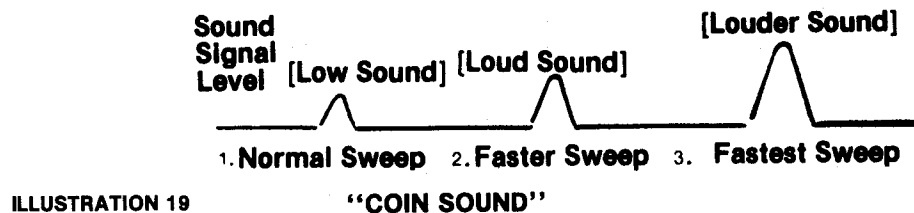
2. "What will the detector locate?" Silver, lead, copper, bottle caps, tin foil, pull tabs, cartridge cases, rings, brass and tin cans are just a few of the conductive objects which can be detected. Your detector will not locate sticks, rags, bones, paper, wood or other non-metallic objects.
3. Learn how to interpret different types of responses from your detector such as the following:
 - a. In the G.E.B. DISC MODE, BOTTLE CAPS produce a coin-like sound, but there are two ways to identify and reject BOTTLE CAPS. One way is to place the detector in the G.E.B. DISCRIMINATE MODE, and the DISCRIMINATE LEVEL to PULL TABS. Then sweep with a fast SWEEP speed. This is necessary to reject a BOTTLE CAP in the PULL TABS position as shown in ILLUSTRATION 18.



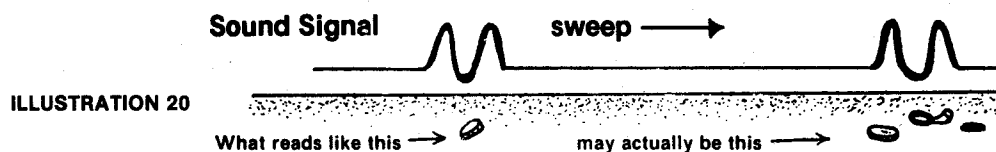
If the object is a coin or other valuable metallic object, the sound signal level will increase with a fast sweep speed rather than drop out as shown in ILLUSTRATION 19.

A second way to identify and reject BOTTLE CAPS is to place the detector in the TR DISC mode and set the DISC ADJUST to the foil setting. Then, slowly check the target again. A BOTTLE CAP is almost always a strong signal and can be easily identified in this mode.

With this detector, you will get very deep objects in the G.E.B. DISC MODE regardless of the soil conditions. But, occasionally you might dig up a bottle cap by mistake, so learn to identify them!



- b. SWEEP ANGLES are important in locating and pinpointing a combination of objects. For example, with the detector set at G.E.B. DISC MODE and the DISC ADJUST set at the PULL TAB DISCRIMINATION LEVEL you will often get an audio signal as in ILLUSTRATION 20.



If you are tempted to pass on and forget such a signal, don't. Instead, do the following:

1. Switch to the G.E.B NORMAL for pinpointing.
 2. Sweep the detector coil across the target area in both directions. You may be able to isolate the signal from more than one object.
 3. If it appears that there is more than one object present, try sweeping the detector coil at different angles with the detector in G.E.B DISCRIMINATE MODE for the most reliable reading. (See Illustration 17 on Page 15.)
 4. **TOO BIG OF A TARGET** signals are produced by objects possessing a large surface area and may consist of an alloy or plating which causes the detector to respond to the non-ferrous or non-iron portion of the object. Such objects include beer cans and pop cans. Characteristics of such signals include:
 - a. The size of the signal both in ground area and strength.
 - b. The distance you can raise the swinging detector coil above the ground before it fades. You may detect pennies buried about 5 or 6 inches below the surface of the ground and yet hit a strong signal with the detector coil raised 10 inches above ground. Such a signal will not be produced by pennies, quarters or dollars, unless possibly there is a large quantity buried in one place such as in a gallon can. To check out such a signal, see how far you can raise the swinging detector coil above the ground before it fades, and test it in the TR DISC. MODE.
 5. **DEPTH READING** can be accomplished as follows:
 - a. To be sure of the most accurate depth reading it is important that the detector be properly ground balanced and that the object is approximately "coin" sized.
 - b. Set the detector in the G.E.B. NORM MODE and retune off to the side. Then place the loop over the target.
 - c. Watching the meter, "X" the target for the strongest signal.
 - d. When the meter hand is as far to the right as it will go, the depth can be read directly from the meter scale.
 6. **PUSH BUTTON** retuning may be necessary due to changing ground conditions when searching in the G.E.B. MODES or TR/DISC MODE. To retune, just press the push-button and release.
 7. **PINPOINTING** a target or object can be accomplished by sweeping a target in one direction and sweeping it at right angles to the original direction as shown in ILLUSTRATION 15. This is called "X"ing the target. It is also helpful to sweep the target at several different angles as you move around it. Coins will usually produce one reading regardless of sweep direction.
- IMPORTANT:** During your search, if the G.E.B. DISC responds to a good target, you can pinpoint it by holding in on the push-button which switches the detector into the G.E.B. NORM MODE and "X"ing the target. **HOWEVER**, when detuning the detector to pinpoint a target, the Depth Reading will be incorrect. (The meter will not indicate correct depth.)
- a. It is possible to exactly pinpoint the target's location by detuning the detector in the G.E.B. NORM MODE.
 - b. Move the loop across the target, noticing at which point the tone is loudest. Make the next sweep at 90 degrees to this point.
 - c. Detune the detector as you move the loop closer and closer to the target by pressing and releasing the push-button several times, until there is only a very slight signal heard as you "X" the target.
 - d. The object will be directly below the center of the loop.
8. Always "criss-cross" an area when searching it.
 9. After you have dug up a coin, always check the hole again for more.
 10. Don't forget to fill in the hole! Public and private officials, and property owners, will be more likely to allow continued Treasure Hunting in the area if you do NO environmental damage.
 11. When beachcombing the best place to look for coins is near concession stands.
 12. Check the shallow water in swimming areas. Most rings and coins are lost when people enter the water.
 13. If you make plans for coinshooting, check the history records of the area.
 14. Always carry a plastic bag for your detector in case you get caught in the rain.
 15. Never ask permission to treasure hunt over the phone. People tend to visualize you using a pick and shovel, making large holes.
 16. Join a local historical society or get acquainted with its members.
 17. When coin hunting, search parks, school yards and areas where fairs or carnivals were recently held.
 18. Always carry extra batteries with you in case the set in the instrument get too low for maximum power.

CODE OF ETHICS

Treasure hunting is the kind of new hobby that fires the imagination and generates its own enthusiasm. It's the most natural thing in the world to dig as fast as you can the minute you hear that first loud unmistakably "good" signal. It's a real thrill to discover there's treasure, right beneath your feet!

But wait a minute! We strongly urge you to adopt a code of ethics which will preserve the environment and also the rights of treasure hunters to operate detectors with as few restrictions as possible.

Before you even begin a search, check the law, ordinance or regulations about hunting on publicly owned sites. Abide by the rules. If the area is private property, get written permission from the owner to search it. You may find he will be more eager to give permission if you suggest sharing your finds with him, or if you offer to search for a specific item he has lost.

About digging: In lawn areas use a screwdriver of no more than six or eight inches long as your tool. Limit the size of the hole to a maximum of two inches in diameter, cutting a plug of sod which can be easily replaced after you make your find and fill the hole, leaving no HOLES. HOLES ARE BOTH UNSIGHTLY AND DANGEROUS!

Detectors designed for locating large and deeply buried objects should be used with discretion - never in the lawn area, and with careful judgment in other locations. Consider the scar you may leave, before you start digging. This will vary alot from one part of the country to another, depending on local soil and climatic conditions. Public officials and private property owners will be much more likely to allow continued treasure hunting if you do no environmental damage. You may even be able to increase your reputation as an ethical hunter by volunteering to carry out and dispose of whatever trash items you find.

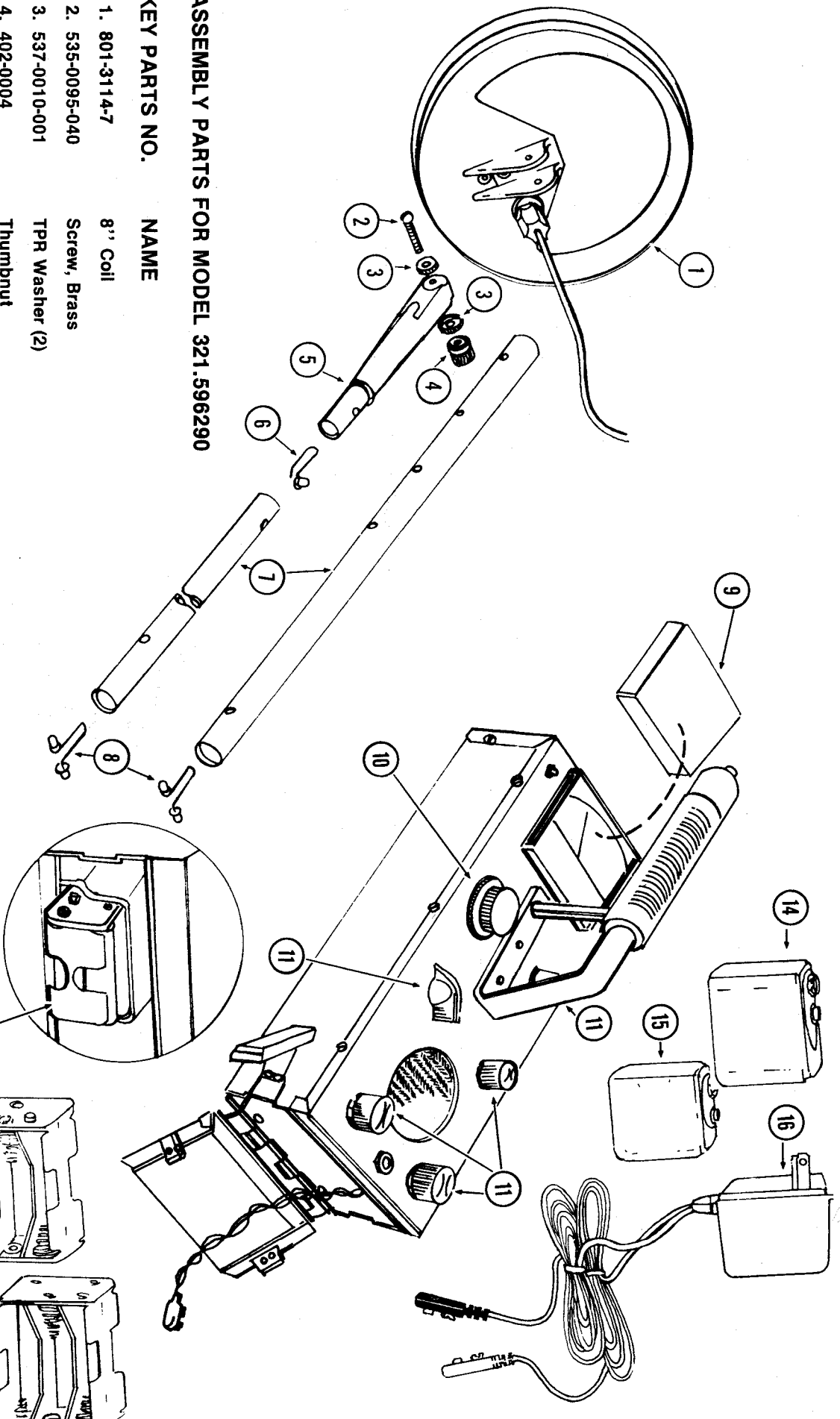
Adoption of these attitudes can only enhance the public's opinion of treasure hunters and assure that many areas, both public and private, remain open to you and your new detector.

SERVICE TIPS

Here are some service tips that may help if difficulties are encountered:

1. The detector is "Dead", will not operate:
 - a. Check battery condition and battery leads.
 - b. Check for proper connection of the coil cable.
 - c. Check controls for intermittent operation.
2. Oscillating or pulsing speaker sound:
 - a. This effect is many times due to external electric sources such as: Other nearby metal detectors, power lines, television sets, and CB radios.
 - b. In many cases moving to another area may be necessary. If the problem persists at other locations, the detector may need servicing.
3. Erratic operation:
 - a. Check for loose battery connections.
 - b. Be sure the coil cable is wrapped snugly around the rod and properly connected.
 - c. Check battery condition.
4. The detector "drifts" out of tune:
 - a. Drift may occur as a result of sudden changes in temperature. Allow stabilization time.
 - b. The detector may appear to drift if not properly ground balanced in the G.E.B. MODE, or if used in the TR DISC MODE in mineralized soil areas.
 - c. Steady drift may be caused by component failure. Detector may need servicing.
5. No sensitivity in the discriminate mode:
 - a. G.E.B. DISC MODE: Insufficient signal as a result of not sweeping the loop over the target.
 - b. TR DISC MODE: Reduced depth as a result of increased ground mineralization.
6. Headphones (Stereo):

This instrument is equipped with a mono-headphone jack. Sound will emanate from only one side of the headphone unless modified for mono use. The use of stereo headphones is not recommended.



ASSEMBLY PARTS FOR MODEL 321.596290

KEY PARTS NO.	NAME	
1. 801-3114-7	8" Coil	
2. 535-0095-040	Screw, Brass	
3. 537-0010-001	TPR Washer (2)	
4. 402-0004	Thumbnut	
5. 501-0038	Clevis, Isolator	
6. 500-2113	Spring, Latch 1 Button	
7. 500-0098	Rod, Extension	
8. 500-2114	Spring, Latch 2 Button	
9. 400-0119	Cover, Meter	
10. 402-0030	Knob, Tuner (1)	
11. 402-0029	Knob, (5)	
12. 523-0006	Holder, 8(1.5V)AA Penlight Batteries	
13. 523-0005	Holder, 6(1.5V)AA Penlight Batteries	
14. 512-0015	Rechargeable Battery (8 Cell)	
15. 512-0014	Rechargeable Battery (6 Cell)	
16. 509-0014	Dual Battery Charger	
18.	Owner's Manual (Not Pictured)	

Sears

METAL DETECTOR

**Push Button G.E.B.,
G.E.B./Discriminator,
TR/Discriminator, and
G.E.B./Max
With Depth Reading**

**MODEL NO.
321.596290**

**HOW TO
ORDER
REPLACEMENT
PARTS**

**OWNERS
MANUAL**

When requesting service or replacement parts for your Sears Metal Detector, always refer to the serial number plate for the instrument Model Number.

All parts listed herein may be ordered from any Sears, Roebuck and Co. Service Center, and some retail stores.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:

1. Part Number
2. Part Description
3. Model Number
4. Name of Item

If the parts are not stocked locally, your order will be electronically transmitted to a Sears Repair Parts Distribution Center for expedited handling.

FULL ONE YEAR WARRANTY

If, within one year from the date of purchase, this Model No. 321.596290 fails due to a defect in material or workmanship, SIMPLY RETURN IT TO THE NEAREST SEARS STORE IN THE UNITED STATES, and Sears will repair it, free of charge. This warranty applies only while this product is in use in the United States.

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

**SEARS, ROEBUCK AND CO.
SEARS TOWER, BSC 41-3,
Chicago, IL 60684**