Sears

SPORTS CENTER

METAL DETECTOR

TR Model

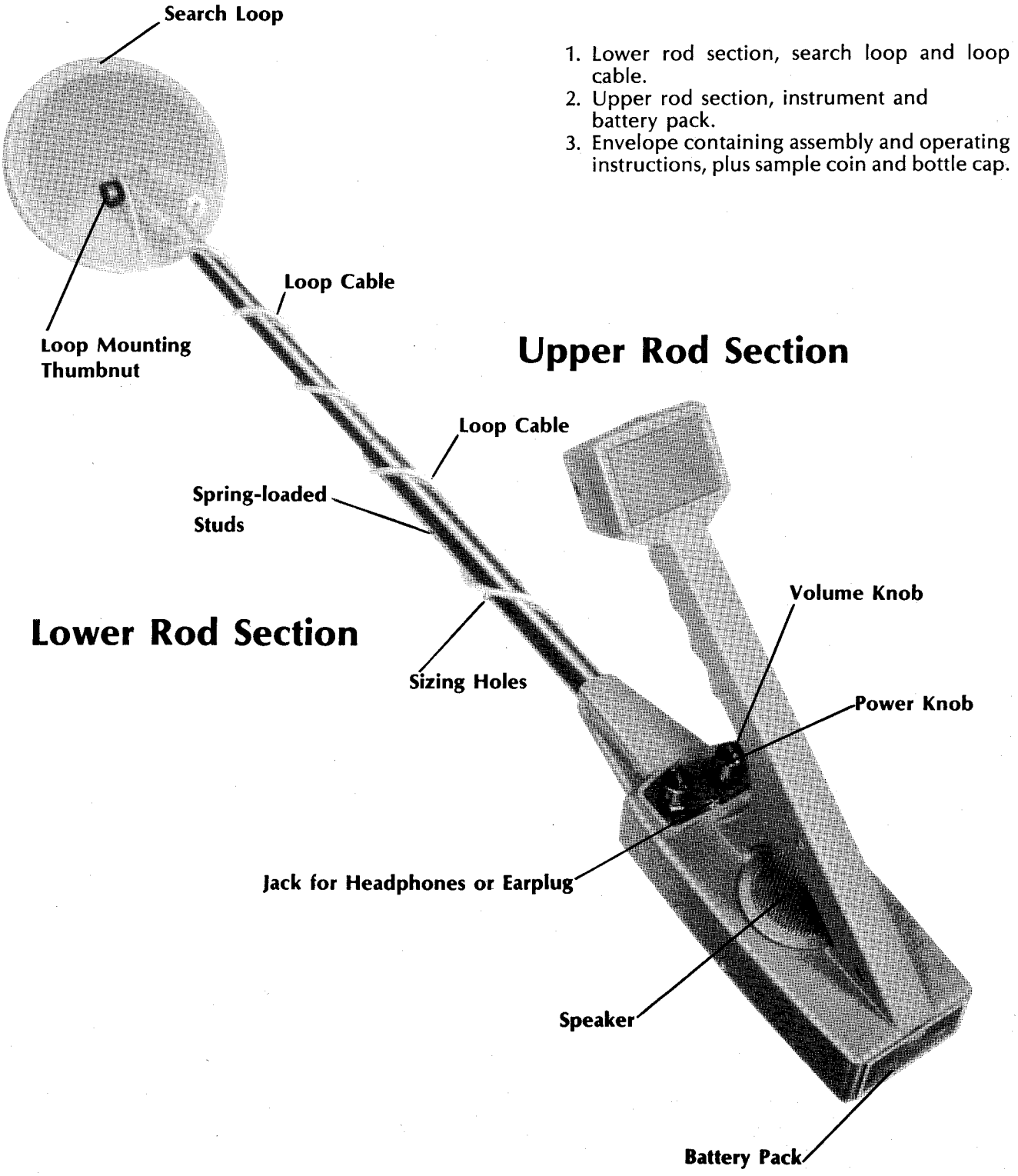
MODEL NO.
321.596350

- assembly
- control description
- trouble shooting
- operating procedures
- maintenance

OWNER'S MANUAL

Check the Contents of Your Metal Detector Kit

1. Lower rod section, search loop and loop cable.
2. Upper rod section, instrument and battery pack.
3. Envelope containing assembly and operating instructions, plus sample coin and bottle cap.



Assembly Instructions

1 Grasp the lower rod section in your left hand and the upper rod section in your right hand. *(Illustration A)*

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2 Align the two rod ends and insert the lower section into the upper section until it stops (about one-half inch).

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3 Now, wrap the loop cable around and up the rod toward the instrument. This is done by simply rotating the lower rod section two or three complete turns. Do not, however, wrap the loop cable too tightly! *(Illustration B)*

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4 With your left hand, depress the two spring-loaded studs at the end of the lower rod section and push the lower section gently into the upper section until the *first* pair of matching holes in both sections are lined up. The spring will then automatically force the studs through the holes, locking the two sections together. *(Illustration C)*

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5 Finally, check the tightness of the loop mounting thumbnut. *(Illustration D)* It should be *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.

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* or *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.

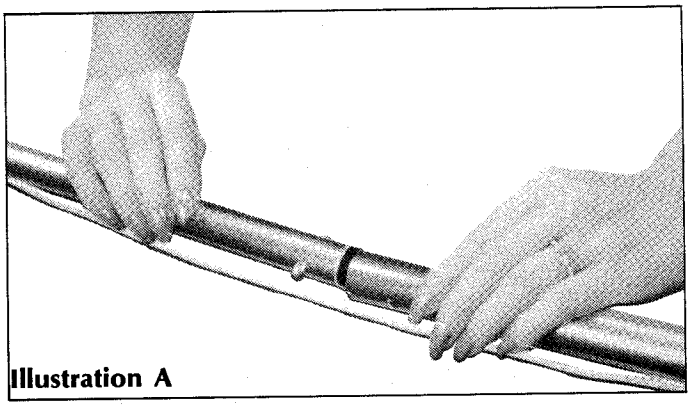


Illustration A

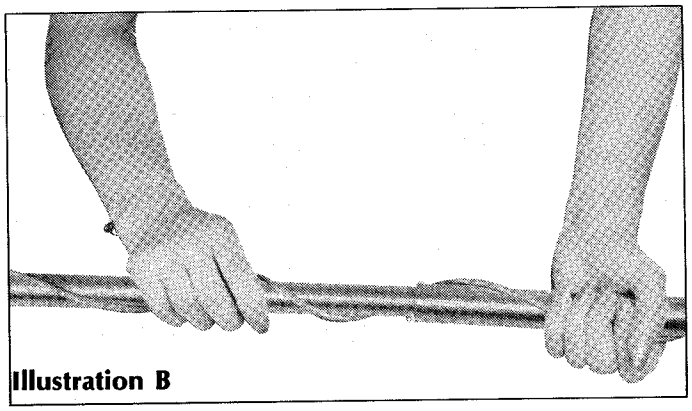


Illustration B

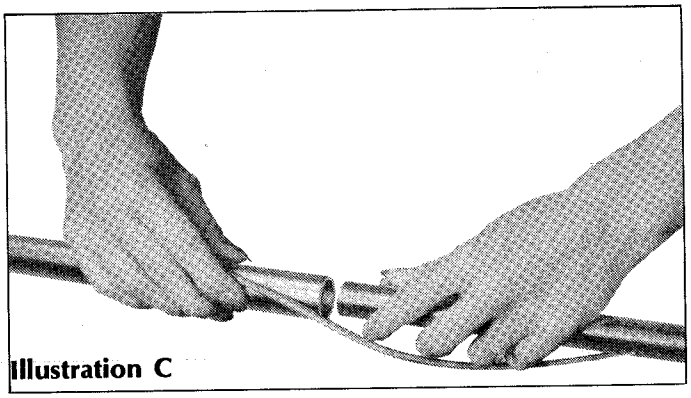


Illustration C

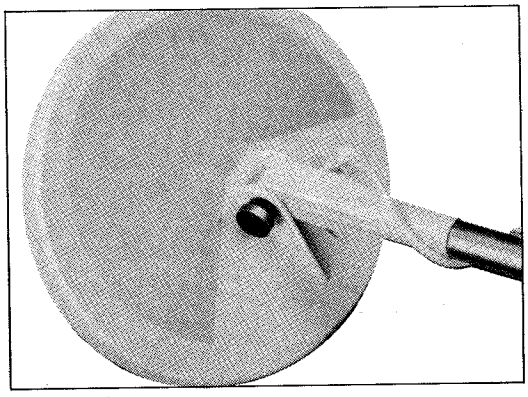


Illustration D

Operating Instructions

Familiarizing Yourself with Your Detector

Grasp the handle of the detector, letting the loop rest on the floor or ground. Notice that the instrument has two knobs. *(Illustration E)* The one on the left is called the *Power* knob. The one on the right is the *Volume* knob. Between them is a small jack (hole) into which you can insert the plug on the headphones or an earplug. The round grillplate between the knobs and the back of the instrument covers the speaker.

The *Power* knob has two functions:

1. It turns the instrument on and off.
2. It adjusts the level of sensitivity to metal objects.

The *Volume* knob is used to control the volume of sound coming from the speaker (soft to loud).

At the back of the instrument is a plate which you can press in and slide down. *(Illustration F)* Behind it is the battery pack and the battery pack compartment. On the back side of the plate are the model and serial numbers of your metal detector.

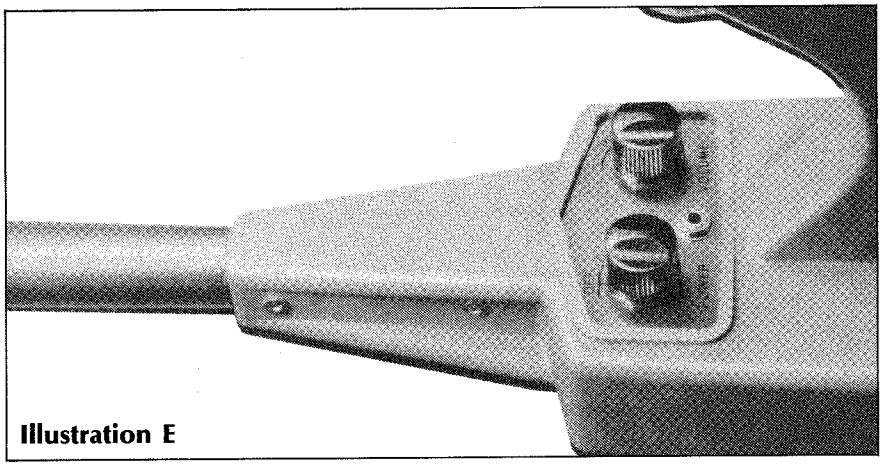


Illustration E

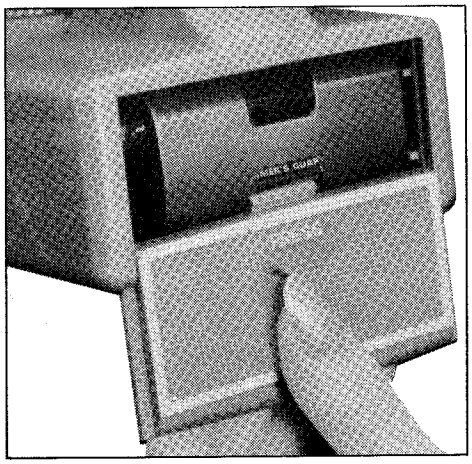


Illustration F

How to Tune Your Detector

Your new detector will help you locate buried metal objects. Gold, silver and copper coins, brass, lead and platinum are all metals.

Tuning your instrument properly is extremely important. Read the following instructions carefully and practice them until you can tune your instrument 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.

Follow these steps to tune your detector:

1. While standing, raise the loop *slightly* (about ½-inch) off the ground and hold it as steady as you can.
2. Now, turn the *Volume* knob all the way to the right (clockwise).
3. Turn the *Power* knob to the right (clockwise) until it clicks. This tells you the instrument is on and the circuit is energized. Continue turning the *Power* knob to the right (clockwise) until you hear a loud tone coming from the speaker or headphones.
4. Next, turn the *Power* knob slowly back to the left (counter-clockwise) until the tone *almost* goes away completely. This faint tone is called the *Threshold Tone. (Illustration G)*
5. Your detector is now tuned and ready for use. Please note, however, that if you lower the loop against the ground while searching, the *Threshold Tone* may disappear completely. Conversely, if you raise the loop above the height at which the instrument was tuned, you will hear a loud increase in the tone. These are normal reactions and do not necessarily indicate the presence, or lack of buried objects.

One final note before we continue: The depth to which your detector will penetrate may depend on a number of factors: 1) The degree of mineralization in the ground. The less mineralization, the deeper it will detect. 2) The height of the loop above the ground. The lower the loop, the deeper it will detect. And, 3) How carefully your instrument is tuned. The more accurate the tuning, the deeper it will detect.

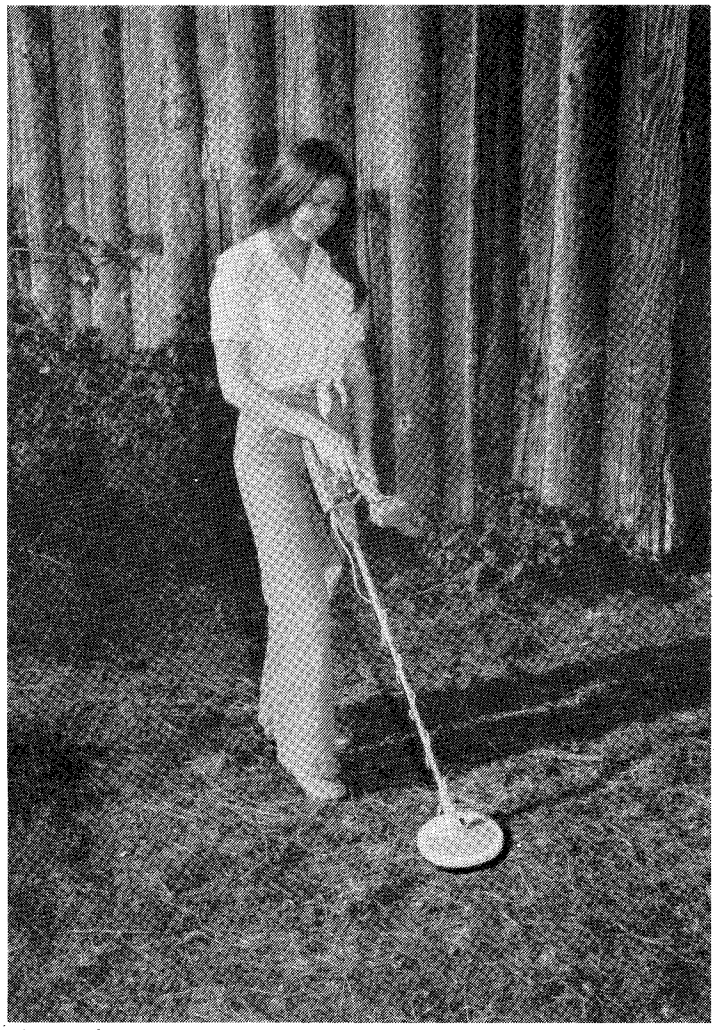


Illustration G

Listen for the Tone

The tone coming from the speaker will tell you exactly where objects are located. When the volume of the tone increases, the loop is over the object. When the volume decreases, the loop has passed away from the object. The volume will be loudest when the center of the loop is directly over the center of the 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.

Large or small increases in volume usually are caused by one of three things: 1) the size of the object, 2) how deeply the object is buried or 3) a combination of the two. Generally, the larger the object, the greater the increase in volume. The deeper it's buried, the smaller the increase. Thus, a single coin, deeply buried, will cause only a slight increase in volume. A large object, buried just as deeply, will cause a much larger increase.

Practice Makes Perfect

Here are a couple of ideas to help you sharpen your "shooting" skill:

1. Place a small object (your sample coin), a medium-sized object (a tin can lid will do nicely), and a large object (a frying pan from the kitchen) out on your lawn. Leave a few feet between them. Following the instructions above, 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 H)*

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 get better acquainted with the various kinds of buried objects, bury some metal items at known depths. Make sure your test garden is located where you can get to it easily. It's best to make a map of the area, showing what is buried and its depth. Your test garden will help you practice and will also provide a handy method of periodically checking the performance of your instrument.

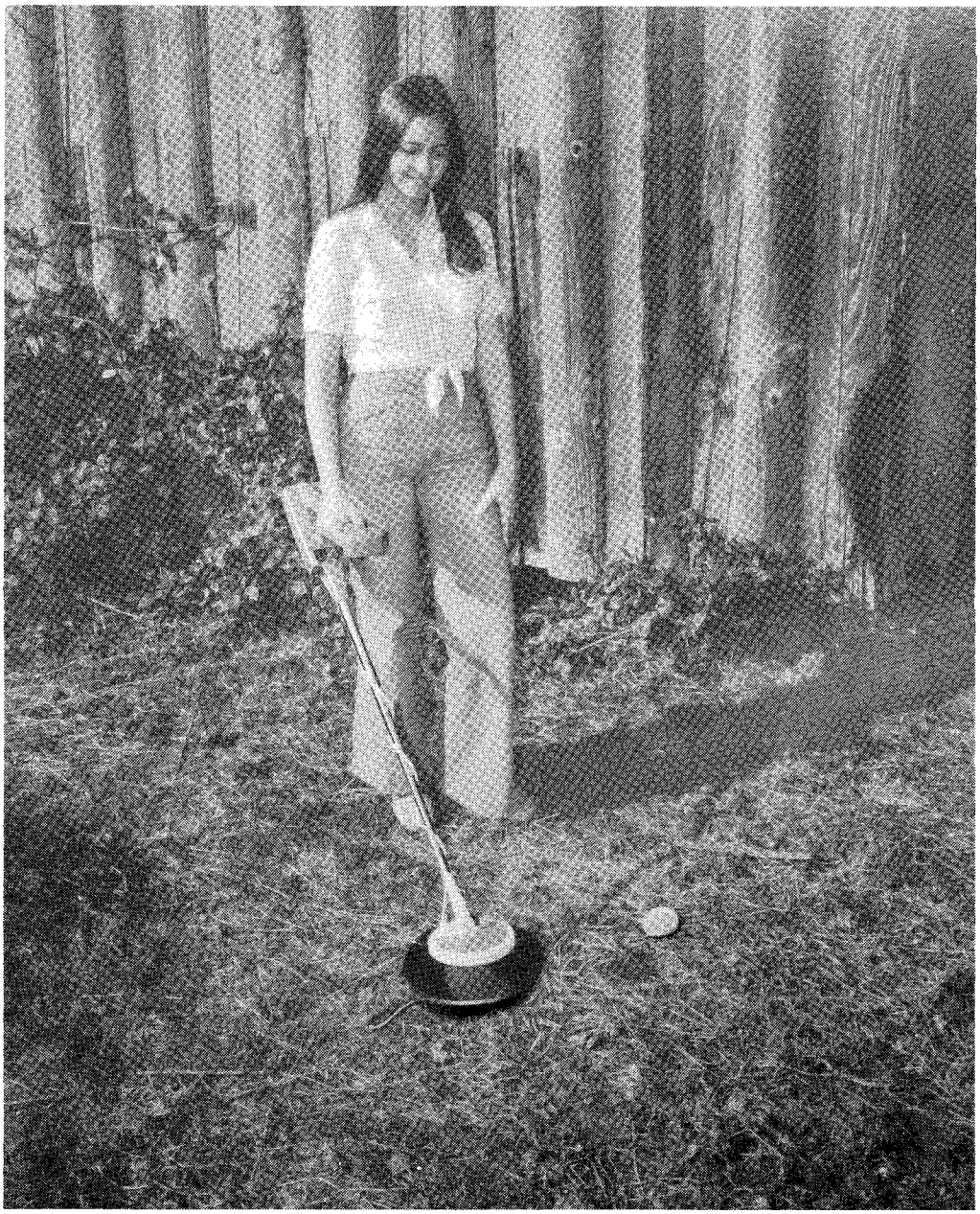


Illustration H

Inspecting the Search Area

The smoother the area, the closer your loop should be to the ground. The rougher the area (the more potholes, grooves, mounds, etc.), the higher the loop will have to be.

When working a lawn or a beach area, the loop can rest lightly on the grass or sand as you sweep from side to side. A plowed field, on the other hand, may mean your loop will have to be set for operating a few inches above the ground.

Remember, the loop should be held at a constant height above the ground. As the ground level rises and falls raise or lower your loop accordingly.

Mineralization of the ground is another factor affecting the sensitivity of your detector. The more mineralization, the more difficult it is to detect objects. The less mineralization, the less the problem. Slowly drag a small magnet through the soil. If the magnet "grows hair" (picks up small particles of magnetic iron) the soil is *probably* highly mineralized.

All in all, the more the mineralization or the rougher the area, the more difficult it will be to detect a single coin or ring. Large objects, however, should never pose a problem.

Sweeping the Search Area

Illustration I

To locate hidden or buried objects, slowly and systematically sweep the loop from side to side across the area. *(Illustration I)* The larger the diameter of your loop the more area you can cover in a single sweep and the faster you can search. With a six-inch loop, for example, you should take three-inch steps, moving the loop ahead three inches after each sweep.

For maximum performance when searching, you should always try to keep the loop at the same height you used when tuning the instrument. This will help insure greater depth of detection, and lessen any possibilities of error in your signal due to varying mineral content within the ground itself.

Periodically Readjusting the Sensitivity

It is a good policy to periodically adjust the tuning slightly. As you become more experienced with your new detector you will begin to notice, just by differences in the tone you hear, whether the tuning needs to be adjusted. Remember, a properly tuned instrument insures that maximum sensitivity is maintained.

What Will Your Instrument Detect?

Silver, lead, copper, bottle caps, tin foil, gold, cartridge cases, rings, aluminum foil, brass and tin cans are some of the highly conductive metal objects that will cause a response in your speaker, headphones or earplug. 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

1 **CLEANING.** Both the loop and rod are waterproof and can be cleaned with fresh water and a mild cleanser. After cleaning, dry the instrument thoroughly. *Caution! Never raise the wet loop above the level of the instrument case. The instrument case is not waterproof and water may run down the rod into the case, damaging the electronic components.*

2 **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 instrument if you operate it in the rain, as water may get into the instrument case.

3 **SALT WATER.** Salt water is very corrosive! After your detector has been exposed to salt water, rinse it thoroughly in fresh water, being careful not to let the loop rise higher than the level of the instrument case. Then wipe it with a cloth dampened with fresh water and dry it thoroughly.

4 **STORAGE.** If you plan to store your instrument for any length of time, unsnap the battery pack, remove it from the instrument and take the batteries out of the holder. Whenever your instrument is not in use turn the *Power* knob all the way to the left until it clicks off.

Batteries

Batteries are the lifeblood of your instrument. Your battery pack holds six 1½ volt AA penlight batteries. AA penlight batteries are readily available at drug and grocery stores everywhere. Any brand of battery will work well, although the alkaline energizer will probably last longer.

To change batteries, first remove the battery pack from the back of the instrument. Before you remove any of the individual batteries, examine the pack and compare it with the illustration shown here. Note the exact position of each battery and the position of the battery lead snaps. Your instrument 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 the 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 slot and 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. *(Illustration J)*

Generally speaking, your batteries need replacing when the volume becomes weak and the instrument loses sensitivity.

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 a day of "shooting." This gives you a chance to take a break and it gives the 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.

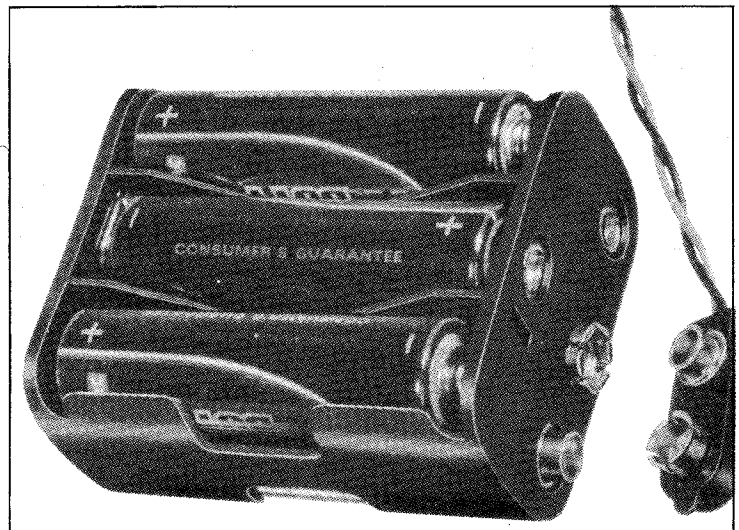
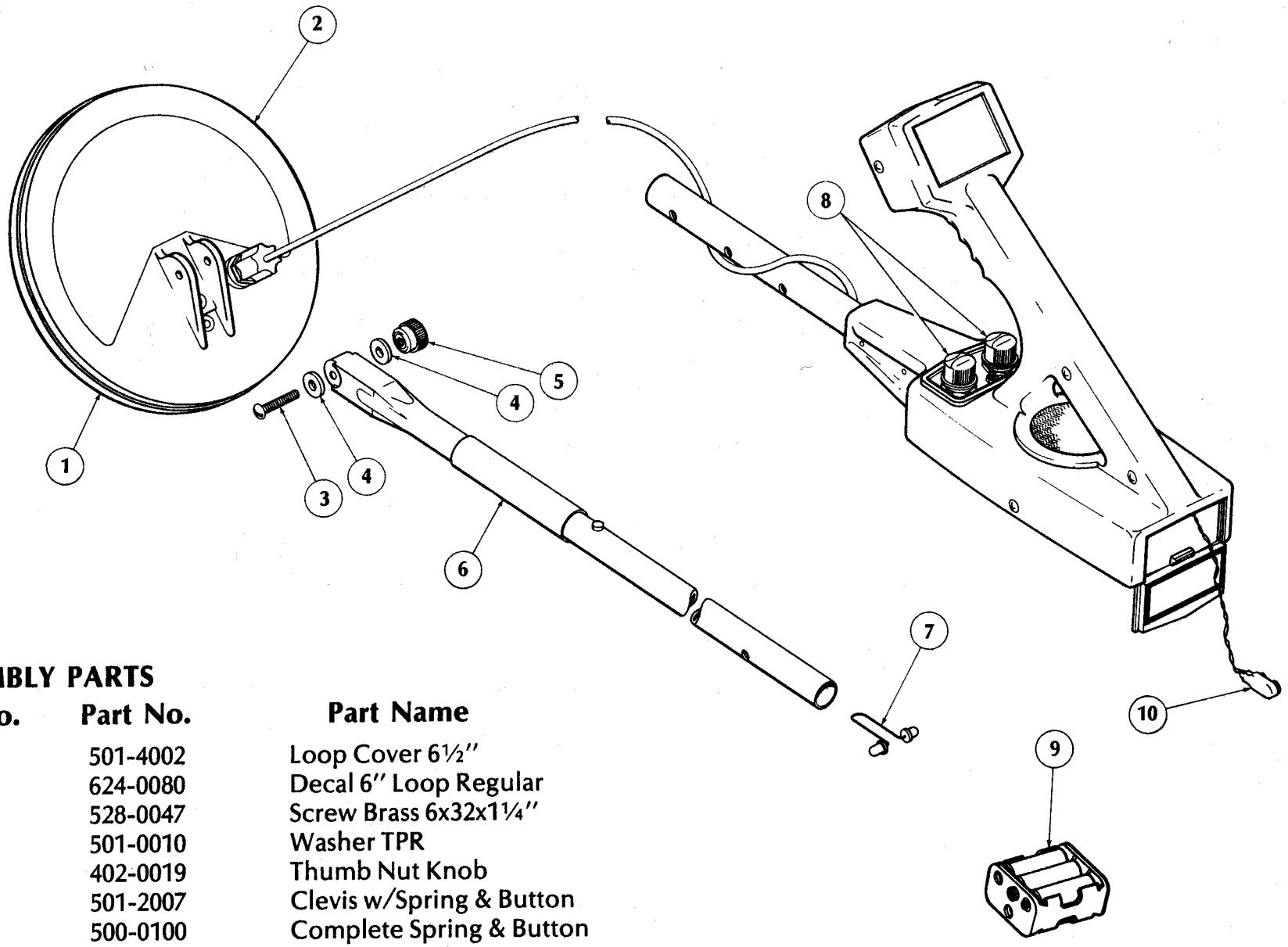


Illustration J

Illustrated Parts Listing



ASSEMBLY PARTS

Key No.	Part No.	Part Name
1	501-4002	Loop Cover 6½"
2	624-0080	Decal 6" Loop Regular
3	528-0047	Screw Brass 6x32x1¼"
4	501-0010	Washer TPR
5	402-0019	Thumb Nut Knob
6	501-2007	Clevis w/Spring & Button
7	500-0100	Complete Spring & Button
8	402-0004	Knob Type 5 lb.
9	523-0005	Battery Holder, 9 Volt
10	520-0017	Connector 9 V Battery

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OWNER'S 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 with a part number may be ordered through SEARS, ROEBUCK and CO.

When ordering parts by mail, selling prices will be furnished on request, or parts will be shipped at prevailing prices and you will be billed accordingly.

When ordering parts, always include the following information:

1. Model Number
2. Part Number
3. Part Name
4. Quantity

FULL ONE YEAR WARRANTY

If, within one year from the date of purchase, this metal detector fails due to a defect in materials or workmanship, simply return it to the nearest Sears store throughout the United States and Sears will repair it free of charge.

This warranty gives 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

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