



METAL DETECTOR

PUSH BUTTON GEB AND
TR/Discriminator

MODEL NO.
321.596340

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

OWNER'S MANUAL

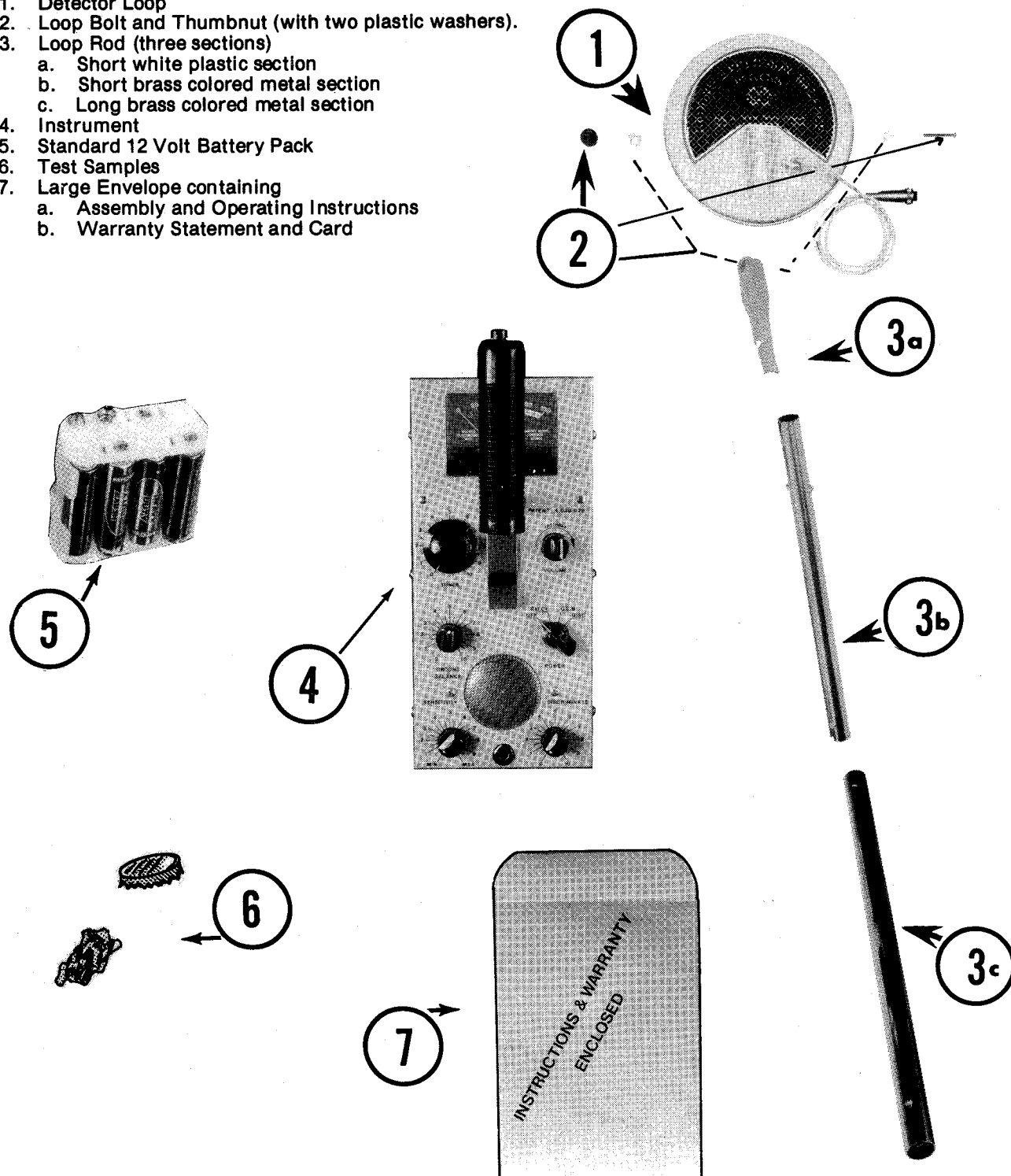


Discriminator
Patent No. 4030026

Unpacking Your MODEL 634

When you unpack your SEARS Metal Detector compare what you've got with the items shown on this page.

1. Detector Loop
2. Loop Bolt and Thumbnut (with two plastic washers).
3. Loop Rod (three sections)
 - a. Short white plastic section
 - b. Short brass colored metal section
 - c. Long brass colored metal section
4. Instrument
5. Standard 12 Volt Battery Pack
6. Test Samples
7. Large Envelope containing
 - a. Assembly and Operating Instructions
 - b. Warranty Statement and Card



Assembly Instructions

1. ASSEMBLE the TWO ROD SECTIONS as shown in illustration A.

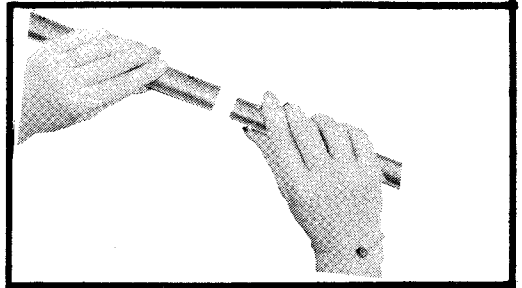


ILLUSTRATION A

2. REMOVE the TWO PLASTIC WASHERS from the LOOP as shown in illustration B.

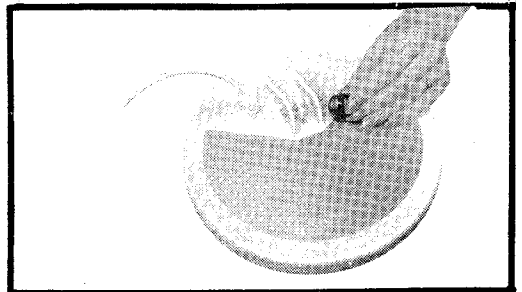


ILLUSTRATION B

CAUTION: NEVER TIGHTEN THE WATERPROOF CABLE FITTING ON THE LOOP!

3. PLACE the TWO WASHERS in the depressions ON the PLASTIC ROD and CONNECT to the LOOP as shown in illustration C.

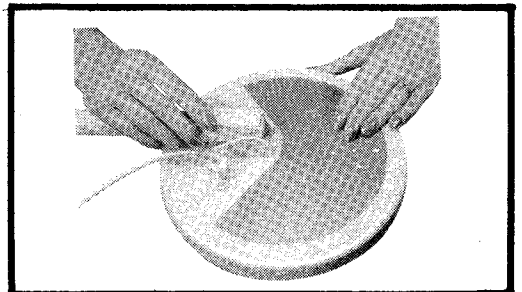


ILLUSTRATION C

4. REINSTALL BOLT and THUMBNUIT.

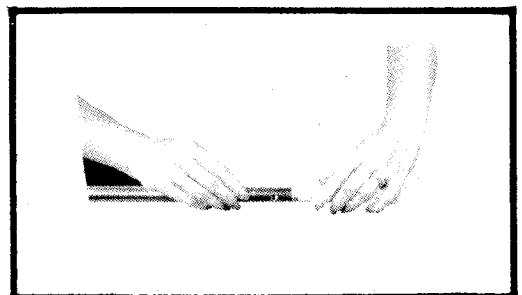


ILLUSTRATION D

5. CONNECT the PLASTIC ROD to the SMALL METAL ROD SECTION as shown in illustration D.

ASSEMBLY [CONT.]

6. CONNECT COMPLETE ROD to INSTRUMENT as shown in illustration E.

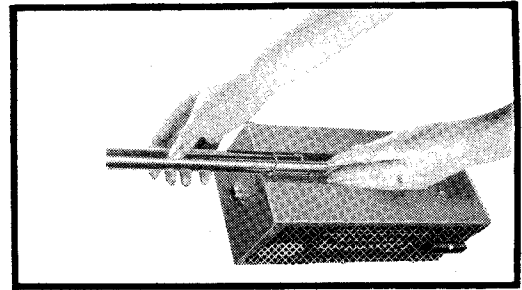


ILLUSTRATION E

7. WRAP the CABLE around the ROD as shown in illustration F.

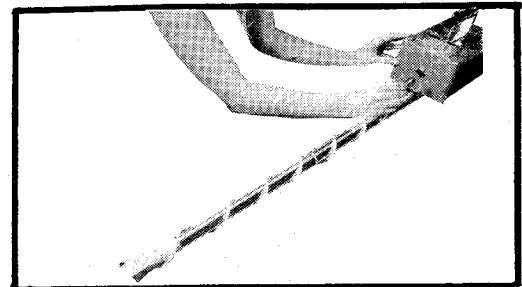


ILLUSTRATION F

8. CONNECT the LOOP CABLE to the top of the INSTRUMENT as shown in illustration G (small slot up).

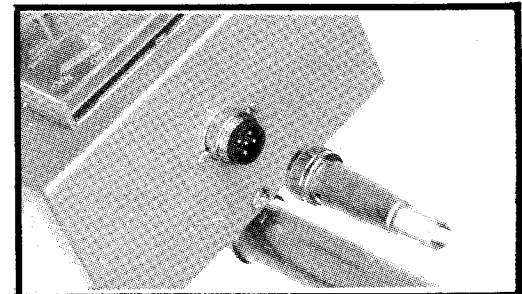


ILLUSTRATION G

9. CONNECT BATTERY CONNECTORS to the BATTERY PACK TERMINALS and INSTALL as shown in illustration H.

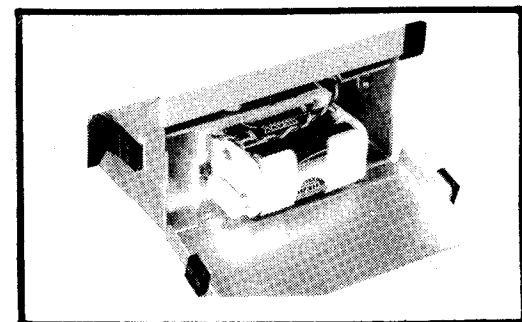


ILLUSTRATION H

OPERATING INSTRUCTIONS

FAMILIARIZING YOURSELF WITH YOUR DETECTOR

There are seven controls on the Model 634 [Refer to Illustration I]

1. TUNER
2. GROUND BALANCE
3. SENSITIVITY
4. DISCRIMINATE
5. POWER
6. VOLUME
7. PUSH-BUTTON

A description of these controls will be given later, but first you will set the controls for the TWO TYPES OF OPERATION (GEB or DISC.) and notice how it reacts to various objects in these two different modes. If you have never used a metal detector before **BE SURE** you follow these tests **BEFORE YOU GO OUTSIDE**. The ground usually will cause false signals that make first time tuning for a novice very difficult.

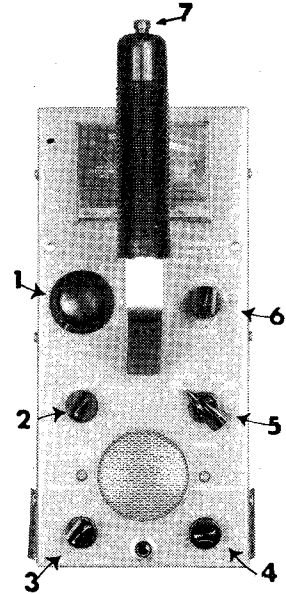


ILLUSTRATION I

GEB TUNING INDOORS

Place your detector on a table, the loop extending into the air **AWAY FROM ANY METAL**. (Refer to illustration J) Note that the person in the picture has removed her watch and ring so there isn't any metal on her hands that might interfere with tuning the Model 634.

To **TUNE** the Model 634 for GEB OPERATION, set the controls as follows:

1. TUNER to "0"
2. GROUND BALANCE to "0"
3. SENSITIVITY to "10"
4. DISCRIMINATE to "0"
5. VOLUME to "FULL"
6. POWER to "BAT. CK."
If meter reads above "75" proceed to Step 7
If meter reads less than "75" turn to the section on batteries (Pages 10 & 11)
7. POWER to "GEB"



ILLUSTRATION J

8. Press and hold the button on the handle and turn the Tuner right (clockwise) to the "THRESHOLD" (start of the tone and the meter is between 0 and 50).
10. Hold a coin in front of the loop face as in illustration J. Move the coin and notice how the tone changes. The tone should get louder as the coin is brought closer to the loop.
11. Now hold a bottle cap in front of the face of the loop. Move the bottle cap and notice how it reacts just like the coin. In GEB, ALL METALS are detected and none are discriminated against.
12. Next hold the ground sample (mineral rock) in front of the loop face. Move the sample and notice how the tone changes. The tone should get quieter this time as you bring the sample closer to the loop.
13. Remove the ground sample.
14. Press and hold in the button on the handle while you turn the GROUND BALANCE control to "10". (You could have turned the control and then pressed and released the button instead of holding the button in.)
15. Release the button.
16. Test with the ground sample again as you did in step 12 above, only this time the tone should get louder as the sample is brought towards the loop.

This means that somewhere between "0" and "10" you should be able to BALANCE OUT the ground sample. (Do not get closer than 2 inches to the loop with the ground sample.)

17. Press in the button and decrease the GROUND BALANCE control.
18. Release the button.
19. Test with the ground sample.
20. Repeat steps 17, 18 and 19 until moving the sample does not significantly change the tone.

The main idea is, when you are OUTSIDE you will be able to adjust out the effects of the ground so that raising or lowering the loop while searching will not affect the tone.

DISCRIMINATE TUNING INDOORS

In the previous steps you adjusted the detector to be able to locate ALL METALS without being affected by minerals in the soil. But if you don't want to detect some metals such as FOIL, BOTTLE CAPS, and NAILS then you will want to use the DISCRIMINATE mode.

In the DISCRIMINATE mode you will NOT be able to adjust out the effects of the ground, so this mode will require more practice and patience to master, but the rewards will be fantastic.

Again, place the detector on a table as shown in illustration J. To tune the set the controls as follows:

1. TUNER to....."0"
2. GROUND BALANCE to.....(last setting)
3. SENSITIVITY to....."5"
4. DISCRIMINATE to....."0"
5. VOLUME to....."FULL"
6. POWER to....."DISC"

7. Press and release the button on the handle. This should be all you need to do to retune back to the threshold; however, if that does not retune for the light tone (0-50 on the meter) then press and hold the button while you adjust the TUNER for the THRESHOLD.

8. Hold a coin in front of the loop face as in illustration J. Move the coin and notice how the tone changes. The tone should get louder as the coin is brought closer to the loop.
9. Next hold a bottle cap in front of the loop face. Move the bottle cap and notice how the tone changes. The tone should get quieter as the bottle cap is brought closer to the loop. Do not get closer than 1 inch or you will get a false reading.
10. Locate a pull tab (or use a nickel) and test as in step 8. The pull tab (or nickel) should cause an increase in the tone.
11. Press in the button and INCREASE the DISCRIMINATE control.
12. Release the button.
13. Test with the pull tab (or nickel) as in step 9 to see if the tone decreases.
14. Repeat steps 11, 12 and 13 until you have just enough discrimination to reject it (the tone decreases as in step 9).

NOTE: The reason a NICKEL can be used for the PULL TAB is that to ALL DISCRIMINATORS A PULL TAB and a NICKEL affect the SEARCH LOOP almost identically. Some RINGS also look like PULL TABS to DISCRIMINATORS.

15. Next test with a SCREW CAP as in step 8. The tone should increase; if not, then you have too much discrimination and you should press the button and DECREASE the DISCRIMINATE control slightly. Then release the button and test again. You should be able to locate a setting where the PULL TAB causes the tone to DECREASE but the SCREW CAP causes the tone to INCREASE.
16. If you would like to also reject SCREW CAPS, then repeat Steps 11 through 15, only substitute the word SCREW CAP for PULL TAB.

IMPORTANT: A small amount of depth will be lost at the PULL TAB setting, but a large amount of depth will be lost at the SCREW CAP setting.



ILLUSTRATION K



ILLUSTRATION L

GEB TUNING OUTDOORS

1. Take your detector outdoors and set the controls for GEB operation as described on page 5, 1-8.
2. Hold the detector as shown in illustration K.
3. Lower the loop towards the ground as shown in illustration L.
4. Since the GROUND BALANCE control is set to "0" the tone should get **quiet** as you lower the loop towards the ground. Therefore, raise the loop (illustration K) and press the button and INCREASE the GROUND BALANCE control.
5. Release the button.
6. Lower the loop towards the ground.



ILLUSTRATION M

7. Repeat steps 4, 5 and 6 until the ground does not change the tone when you lower the loop. (This adjustment does not have to be exact; however the better adjustment, the more the depth.)

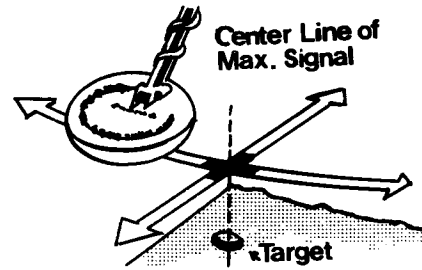


ILLUSTRATION N

If you had difficulty adjusting out the ground, you may have been over some metal. Move to another spot to adjust out the ground. The ground does change from one location to another, so minor adjustments may have to be made when you go to a new hunt site.

8. Sweep the loop back and forth as shown in illustration M. Try to keep the loop as close and as parallel to the ground as possible without scraping. A sharp BLEEP or increase in the loudness of the tone will tell you that you have passed near or over a METAL object.
9. Bury a large coin such as QUARTER, a BOTTLE CAP, and a PULL TAB about 2" deep and 2 feet apart. Cover the holes, and practice on this test garden.
10. Learn how to PINPOINT these targets by "X"ing the spot to locate the loudest signal. (Illustration N)

DISCRIMINATE TUNING OUTDOORS

1. With your detector OUTDOORS, set the controls for DISCRIMINATE operation as described on page 6, 1-7.
2. Hold the detector as shown in illustration K.
3. Lower the loop towards the ground as shown in illustration L.
4. Press and release the button to retune.
5. Sweep the loop as shown in illustration M. You will notice that if you tilt or lift the loop the tone will increase, but if you press down on the loop the tone will go quiet. This is very important to understand.
6. To help cut down on false signals caused by this, either try to keep the loop more parallel while you sweep or press the button and turn down the SENSITIVITY, then release the button.

IMPORTANT NOTICE: The more the tone changes for the slightest up or down movement of the loop - the more mineralized the soil is. If you are in very high mineral, then you will not be able to use the sensitivity control above 6 or 7. If you have the SENSITIVITY control too high for the soil condition YOU WILL NOT DETECT ANYTHING! To test for this condition, raise the loop about a half an inch. If the tone does not change, drop a coin on the ground and test to see if it is detecting.

Don't be afraid of losing depth by turning down the sensitivity control because the depth in the DISCRIMINATE mode is MAINLY DETERMINED BY THE AMOUNT OR STRENGTH OF THE MINERAL IN THE GROUND.

7. Now go over to your test garden.
8. Lower the loop (not over any metal) and press and release the button to retune.
9. With the DISCRIMINATE control at "0" you should be able to get an increase in the tone on the COIN and the PULL TAB, while the BOTTLE CAP will cause the tone to decrease.
10. Next see if you can figure out how to "adjust out the PULL TAB." If you have trouble refer to Page 7, steps 11 through 15.
11. The last step is learning how to retrieve the object without leaving unsightly holes. Refer to the last page under the title of "SOME THOUGHTS ON ETHICS."

YOU SHOULD NOW HAVE A VERY BASIC UNDERSTANDING OF HOW TO USE YOUR DETECTOR. MORE DETAILED INFORMATION FOLLOWS ABOUT THE CONTROLS .

SEARS 59634 CONTROLS

1. **TUNER** - This control should always be adjusted for a slight tone, sometimes referred to as a **THRESHOLD** tone. If it is adjusted for **NO SOUND** then you may miss some or all objects depending upon how far away you were from the **THRESHOLD**. If you have too much sound, then an object may not be able to cause any increase in the **LOUDNESS** of the tone.
2. **GROUND BALANCE** - This control only works in the **GEB** mode. When in the **GEB** mode you can adjust out the effect of the ferric oxide (mineralization) content of the **GROUND**.
3. **SENSITIVITY** — This control compensates for the mineral (iron) content of the soil. The mineral in the soil is itself a target. Therefore, by changing the height of the loop the unit will react the same as if it had located a metal item. If you are in a heavily mineralized area you should use minimum sensitivity so changes in the loop height will not have much effect. The less mineralization, the higher the sensitivity control can be set.
The unit will get greater depth when the sensitivity control is on **MAXIMUM**, but if this control is not set correctly for the area you are searching in, your unit will get little or no depth.

4. **DISCRIMINATE** - This control allows you to select the amount of discrimination best suited for the area and the type of hunting you wish to do. If the area has a lot of **PULL TABS** you will want to use that amount of discrimination, but if you are in an older area that is before the "pull tab era" you will want to lower your amount of discrimination to the **BOTTLE CAP** amount so you can detect **NICKELS**.

THE DISCRIMINATE LEVELS ARE AS FOLLOWS:

- AT "0" you will be rejecting ferrous (contains **IRON**) objects such as **NAILS**, **NUTS** and **BOLTS** as well as **BOTTLE CAPS**.
 - AS you start increasing the **DISCRIMINATE** control the next objects rejected in order are: **FOIL**, **SOME RINGS**, **NICKELS** and **PULL TABS**, and then **SCREW CAPS**.
 - If you could adjust the control enough, you would start adjusting out the coins - pennies, dimes, quarters, halves and metal dollars.
 - Many detectors can only adjust up to **Pull Tabs** and they are still bothered by **SCREW CAPS** in certain areas. However, unless you are in a very high density **SCREW CAP** area, stay in the **PULL TAB** amount because as soon as you increase the discrimination the detector starts rejecting coins a small amount. But at the **SCREW CAP** setting the detector is almost trying to reject pennies and dimes, etc.
5. **POWER** -
 - a. **OFF** - turns the detector completely off.
 - b. **BAT. CK.** Connects the power to the battery test circuitry and the **GEB** circuitry. The batteries are good as long as the meter reads above "75". **NOTE:** See section on **RECHARGEABLE BATTERIES**.
 - c. **GEB** - Connects power to the **GEB** circuitry and connects the meter to the audio (sound) for intensity (signal strength) readings.
 - d. **DISC.** - Connects power to the **DISCRIMINATE** circuitry and connects the meter to the audio.
 6. **VOLUME** - This control allows you to adjust the loudness of the tone in the speaker or headphones. You should set this control for the loudest possible comfortable level. The louder the volume the more the **APPARENT** depth.
 7. **PUSH-BUTTON** — This control acts like an automatic recall system, recalling your main tuner control setting. As long as you push and hold the button in while you set your main tuner, the memory circuit will remember this setting the next time you push and release the button.

Some Thoughts on 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, unmistakable signal. It will be a real thrill to discover what treasure is right beneath your feet.

But stop a minute! Be a little farsighted and consider the long run too.

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 laws, ordinances 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 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 holes is both unsightly and dangerous!

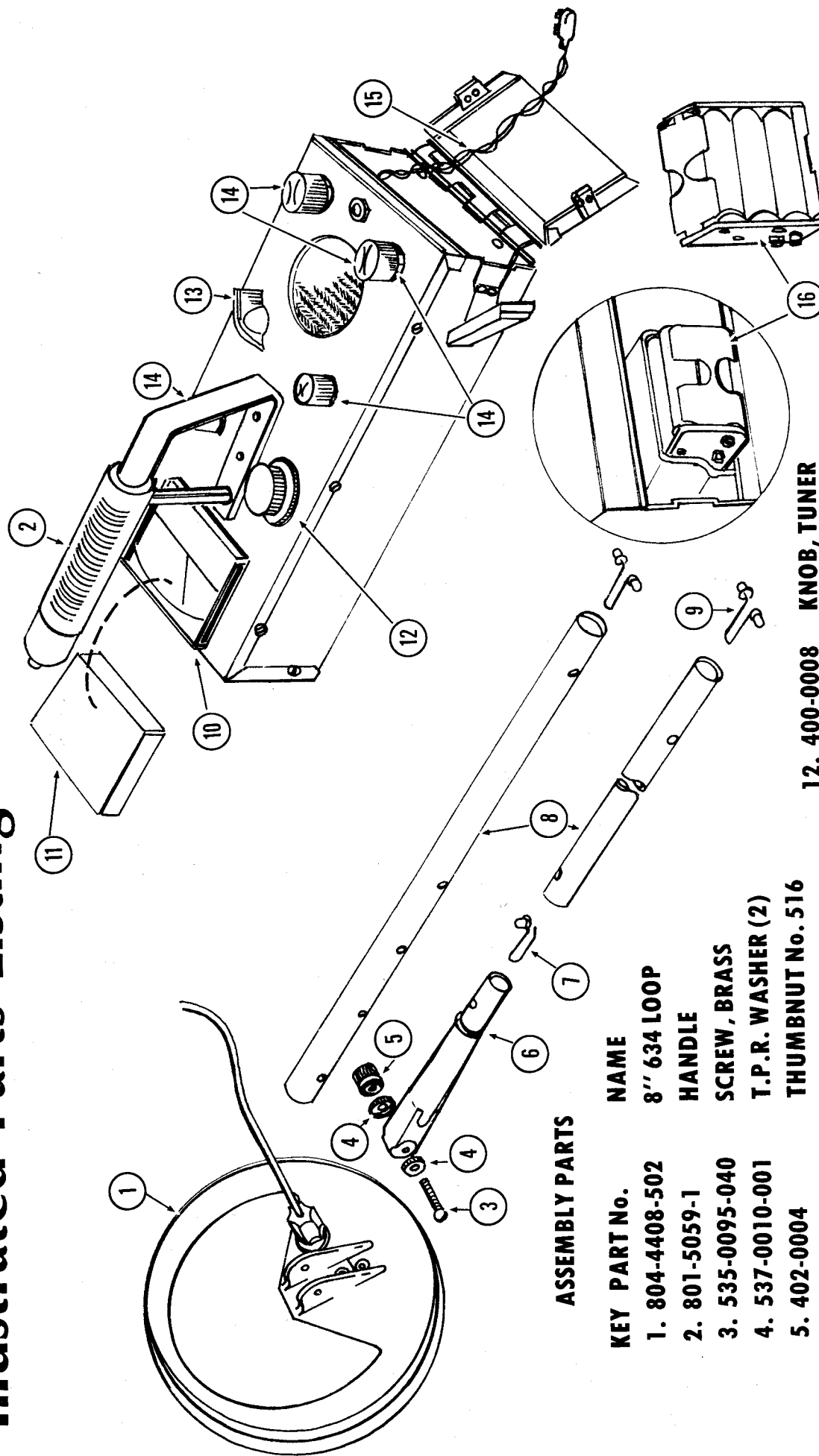
Detectors or detector modes designed for locating large and deeply buried objects should be used with discretion--never in lawn areas--and with careful judgment in other locations. Consider the scar you may leave by your digging before you start. This will vary a lot from one part of the country to another, 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.

...NOTES...

Illustrated Parts Listing



ASSEMBLY PARTS

KEY PART No.	NAME
1. 804-4408-502	8" 634 LOOP
2. 801-5059-1	HANDLE
3. 535-0095-040	SCREW, BRASS
4. 537-0010-001	T.P.R. WASHER (2)
5. 402-0004	THUMBNUt No. 516
6. 501-2007	CLEVIS, ISOLATOR
7. 500-2113	SPRING, LATCH 1B
8. 801-7010	ROD, EXTENSION
9. 500-2111	SPRING, LATCH 2B
10. 400-0025	METER
11. 400-0020	COVER, METER

12. 400-0008	KNOB, TUNER
13. 402-0007	KNOB, POINTER
14. 402-0019	KNOB W/DOT (4)
15. 520-0018	CONNECTOR, BATTERY
16. 523-0006	HOLDER, 12v PENLIGHT



SPORTS CENTER

**MODEL NO.
321.596340**

- assembly
- control description
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OWNER'S MANUAL

METAL DETECTOR

PUSH BUTTON GEB AND TR/Discriminator

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. retail or catalog store.

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 ON METAL DETECTOR

For one year from the date of purchase, Sears will repair this Metal Detector free of charge if defective in material or workmanship.

WARRANTY SERVICE IS AVAILABLE BY CONTACTING THE NEAREST SEARS STORE OR SERVICE CENTER IN THE UNITED STATES.

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