

Long Ranger

Apollo Sales Corp.

P.O. BOX 248

OSCEOLA, IN 46561



PROSPECTING

MINERAL AND METAL DETECTORS
TREASURE HUNTING

COIN SHOOTING

ASSEMBLY AND OPERATING INSTRUCTIONS

FOR THE

APOLLO LONG RANGER METAL DETECTOR

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

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

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

1. Your new Apollo 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 have missed. You've got the equipment to out-shoot most anyone. Now all you need is the practice.

CHECK THE CONTENTS OF YOUR METAL DETECTOR KIT:

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

HAND HELD MODEL

1. Two brass-colored metal rod sections
 - a. a short section
 - b. a long section
2. Plastic rod/loop connector section

3. Eight-inch search loop with loop cable attached
4. Instrument
5. Small Jiffy Bag containing:
 - a. white battery pack (8 batteries)
 - b. black battery pack (6 batteries)
 - c. coin and mineral samples
6. Large envelope containing:
 - a. Assembly and Operating Instructions
 - b. Warranty

HIP MOUNT MODEL

1. Probe consisting of:
 - a. Eight-inch search loop with loop cable attached
 - b. brass-colored lower rod section
 - c. brass-colored upper rod section with attached black hand grip, blue plastic arm rest, and black plastic end grommet
 - d. plastic rod/loop connector section.
2. Instrument and adjustable carrying strap
3. Small Jiffy Bag containing:
 - a. white battery pack (8 batteries)
 - b. black battery pack (6 batteries)
 - c. coin and mineral samples
4. Large envelope containing:
 - a. Assembly and Operating Instructions
 - b. Warranty

ASSEMBLY INSTRUCTIONS

HANDHELD MODEL

1. Grasp the short rod section in your left hand and the long rod section in your right hand.
2. Align the two sections and insert the short one into the long one until it stops, about two inches.
3. 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. Your upper rod is now complete.
4. Next, grasp the rod/loop connector section in your left hand and the completed upper rod in your right hand.
5. Align the two ends and insert the rod/loop connector section into the upper rod, about 3/4 inch.

6. With your left thumb, depress the spring-loaded stud on the rod/loop connector section and push this section gently into the upper 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. Your rod is now complete. Set it to one side.
7. Place your loop on a table. Note the black thumbnut near the center. Using your left thumb and forefinger, unscrew and remove this thumbnut, setting it to one side.
8. Note how the brass flange bolt passes through the holes in both of the mounting flanges, and through two plastic washers. Gently remove the flange bolt and the two washers, setting them to one side.
9. Next, pick up the complete rod and 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. They will fit snugly and should not fall out.
10. Now, steady the loop with your right hand and, grasping the rod in your left hand, slowly lower the rod/loop connector end straight down between the two mounting flanges until both pairs of holes are lined up.
11. 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.
12. 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.
13. Now you're ready to connect the rod and loop to the instrument.
14. 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.
15. 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.
16. Align the rod coupling with the upper end of the rod and gently slide one into the other until it stops, about 1 1/2 inches.
17. 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 upper rod section and slowly lower the instrument down until the matching holes in both the upper rod section and the rod coupling are matched up. The spring will automatically force the studs through the holes, locking the rod to the instrument.

18. You are now ready to connect the loop cable to the instrument.
19. Lay the instrument/rod/loop assembly in your lap. Grasp the instrument handle in one hand. With the other hand, grasp the loose loop cable and wrap it around the rod three or four times.
20. Grasping 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.
21. 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.
22. Now, 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.
23. Now you're ready to install your two battery packs.
24. Take your assembled detector off your lap and rest the loop flat on the floor, letting the instrument case rest against your knees.
25. On the back of the case are two black latches, one on either side of the case. Unsnap these, allowing battery access door on the back of the instrument case to open.
26. 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.
27. 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.
28. 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.
29. You are now ready to insert the battery packs into the instrument.
30. Note that there is a plastic battery pack compartment just inside the case. This compartment holds both battery packs. Slip both packs into the 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, as shown here.
31. Slowly close the battery access door, tucking all the wires inside the case as you do.
32. 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.

33. Your 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.

HIP MOUNT MODEL

1. Note that the upper and lower rod sections are already partially assembled. To complete their assembly, grasp the lower rod section in one hand and the upper rod section in the other.
2. Insert the lower rod section a few inches into the upper rod section.
3. While holding the upper rod section, slip the sleeve ring up to the threaded end of the upper rod section and screw it tightly over the end of that section, locking the two sections firmly together. (NOTE: To adjust the length of the probe, (1) loosen this sleeve ring, (2) adjust the upper and lower sections to lengthen or shorten the probe, (3) pull on the top end of the loop cable to prevent it from "bunching" inside the joined rod sections, and (4) re-tighten the sleeve ring.)
4. Fit the black plastic end grommet into the upper end of the rod where the loop cable comes out.
5. Check the position of the arm rest/hand grip in relation to the loop. If they are out of alignment, hold the lower rod section in one hand and twist the upper rod section in the other until you have them aligned.
6. Next, grasp the rod/loop connector section in your left hand and the completed rod in your right hand.
7. Align the two ends and insert the rod/loop connector section into the rod, about 3/4 inch.
8. Place your loop on a table. Note the black thumbnut near the center. Using your left thumb and forefinger, unscrew and remove this thumbnut and set it to one side.
9. Note how the brass flange bolt passes through the holes in both of the mounting flanges, and through two plastic washers. Gently remove the flange bolt and the two washers and set them to one side.
10. Next, pick up the complete rod and 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. They will fit snugly and should not fall out.

11. Now, steady the loop with your right hand and, grasping the rod in your left hand, slowly lower the rod/loop connector end straight down between the two mounting flanges until both pairs of holes are lined up.
12. 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.
13. 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.
14. Your probe is now complete and you are ready to connect the loop cable to the instrument.
15. Insert the screwlock connector into the plug on the instrument case. 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.
16. Now, 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.
17. Now you're ready to install your two battery packs.
18. Set the instrument case on the table.
19. At the bottom of the case are two latches, one on either side of the case. Unsnap these, allowing the battery access door on the bottom of the instrument case to open.
20. 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.
21. 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.
22. 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.
23. You are now ready to insert the battery packs into the instrument.
24. Note that there is a plastic battery pack compartment just inside the case. This compartment holds both battery packs. Slip both packs into the compartment. Keep the red and black wires outside the compartment. Make sure the snap ends of each pack face left and that the snap ends are down.

25. Slowly close the battery access door, tucking all the wires inside the case as you do.
26. 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.
27. You are now ready to prepare your instrument case for wearing in the hip mount position.
28. Take the adjustable carrying strap and pass it around your waist, adjusting the strap so that the two snap ends are about four inches apart.
29. Remove the strap from around your waist and attach one end of it to either of the "D-rings" on the upper part of the instrument case.
30. Now, lift up the instrument case, rest it on either hip, and pass the free end of the strap around your waist.
31. Snap the free end onto the other "D-Ring" located on the opposite side of the instrument case.
32. The instrument case should be resting comfortably against your hip. The strap should not be too tight or too loose. If you need to make a slight adjustment, unsnap one of the strap ends, tighten or loosen the strap, and snap it back in place.
33. Your detector is fully assembled and ready to use.

OPERATING INSTRUCTIONS

FAMILIARIZING YOURSELF WITH YOUR DETECTOR

First, examine the instrument case which contains the following:

1. POWER SWITCH: This switch has four positions: "Off/1-cell", "On", "Bat. Ck. 9" and "Bat. Ck. 12". "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 on the condition of your small, black battery pack. "Bat. Ck. 12" is the position to use when you want to check on the condition of your large, white battery pack.
2. INTENSITY METER: This meter has two uses. The signal coming from the loop goes to the speaker and to the meter. You can listen for the telltale sound of a buried object and you can watch for it on the meter. When the white indicator moves, the loop may be over a buried object. The other use is for testing your two battery packs or individual batteries. For this use, the meter is used in conjunction with the POWER SWITCH.

3. TUNING: This knob is used to help tune the detector in the air. Note that it has a graduated scale (from 0 to 9) around the outside of the knob which you can use as reference points to aid you in tuning. This is a "Ten-Turn Control" knob. It takes ten turns to turn it all the way from its "lowest" position to its "Highest" position. It actually has no definite stopping points, however. When you've reached the highest or lowest point, the knob will simply become a bit more difficult to turn.
4. 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 9) around the outside of the knobs for use as reference points to aid in tuning. Notice that one full turn of the bottom knob produces ten full turns on the top knob. The bottom knob is used for coarse tuning. The smaller top knob is used for fine tuning. This is also a "Ten-Turn Control" knob.
5. SPEAKER: The round, brass-colored grill near the back of the case covers the speaker.
6. VOLUME: This knob is used to increase the volume of sound coming from the speaker, from a set of headphones, or from an earplug. The arrow marked "Increase" shows the correct direction to turn the knob to make the sound louder.
7. JACK: This is the hole into which you can insert the plug on headphones or an earplug.
8. DETECTOR MODE: This switch has four positions. Three are for setting the sensitivity in the discriminator mode, "High", "Medium", and "Low". The other position is "G.E.B." which is used for normal detecting activity or the Low Frequency mode.
9. DISCRIMINATE: This knob will allow you to select different amounts of discrimination when your DETECTOR MODE switch is set on one of the three discriminator modes (high, medium, low).

HOW TO TUNE YOUR DETECTOR

Your new Apollo detector will help you locate buried metal or mineral objects, and the discriminator circuit available on some models will help you decide on whether or not to dig them up.

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

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

LOW FREQUENCY TUNING

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

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

Follow these steps for Low Frequency Tuning:

1. While standing, let the loop rest flat on the ground. If your instrument has a built-in Discriminator, be sure you have set the DETECTOR MODE switch to "G.E.B".
2. Turn the T.A. knob so that the pointer points to "5". Turn the TUNING knob all the way to the left (counter-clockwise) until it begins to "drag". If your instrument has a built-in Discriminator, be sure you have set the DISCRIMINATE knob all the way to the left (counter-clockwise) to "0".
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 only need to turn this control slightly to the right (clockwise).
4. Turn the POWER switch to "On".
5. Raise the loop until the rod or probe is parallel to the ground, or the loop is two to three feet off the ground. At this point, there will be no sound coming from the speaker or headphones.
6. Now, turn the TUNING knob to the right (clockwise) in the direction of the arrow until a tone appears. Slowly turn the knob back to the left (counter-clockwise) until the tone almost completely goes away. This faint sound is the THRESHOLD TONE, and this step is called AIR TUNING.
7. Next, lower the loop again, letting it rest flat on the ground. Do not force it against the ground.
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) there will be virtually no change in the volume.
 - a) If the sound increases, then turn the top T.A. knob slowly to the left (counter-clockwise) until the tone almost completely goes away. If this does not occur, however, within a very short time, 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 (clockwise) until the sound reappears. Now, turn the top T.A. knob slowly back to the left (counter-clockwise) until the tone is almost completely gone again. If this does not occur, however, within a very short time, simply stop and proceed to Step 9. This step is called GROUND TUNING.

- c) If there is virtually no change, then your detector is properly tuned and ready for low frequency use.
9. Now raise the loop back into the air and reset AIR TUNING. This is done by simply turning the TUNING knob to the right (clockwise) or left (counter-clockwise) as needed in order to restore the faint THRESHOLD TONE.
 10. Again, 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 or headphones as you raise and lower the loop. Three or four repetitions of these steps should be sufficient.
 12. Your detector is now properly tuned and ready for Low Frequency use. Remember, though, if you move to a different search area, you will probably have to retune your instrument. To do so, simply follow the steps described above.

DISCRIMINATE TUNING

Once you have located a buried object using the Low Frequency operation, use your Discriminate Mode to help you decide whether you should dig it up.

The Discriminate function will help identify small "junk" items (bottle caps, tin foil, gum wrappers, nails and the like). It will also identify ferrous objects regardless of size. Remember, a ferrous object is one made mostly of iron (belt buckles, cannonballs, chunks of scrap iron, tin cans and the like).

If you are searching for coins, rings or jewelry on a beach or in a park, then you will probably want to use the Discriminate function 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), then you would not want to use the Discriminate function as that eliminates these ferrous objects, as well as the "junk" items.

Follow these steps for Discriminate Tuning. To simplify matters here, we will consider both small "junk" items and ferrous objects as MINERALS, even though many "junk" items are not made mostly of iron.

1. Turn the DETECTOR MODE switch to the HIGH Discriminate Sensitivity position. Be sure the DISCRIMINATE knob is set all the way to the left (counter-clockwise) to "0".
2. While standing, let the loop rest flat on the ground.
3. Turn the TUNING knob all the way to the right (clockwise) until it begins to "drag". A loud tone should then come from the speaker or headphones.
4. If you do not hear a loud tone, move the DETECTOR MODE switch to the MEDIUM Discriminate Sensitivity position. If there is still no sound coming from the speaker or headphones, then set the DETECTOR MODE switch on the LOW position.

(The reason there may be no sound while in the HIGH, or sometimes MEDIUM position, is that the ground ranges from heavy mineralization to extremely heavy mineralization. It will be most unusual if you ever have to set the switch in the LOW position. But, regardless, you want to hear a tone from the speaker or headphones because it is this tone that will help you discriminate in your "shooting".)

5. Now that you have a loud tone, turn the TUNING knob slowly back to the left (counter-clockwise) until the sound almost completely goes away. This faint sound is called the THRESHOLD TONE.
6. Next, pass the loop over the exact spot where you first received a reading that an object was buried. If the sound fades or disappears, the object is MINERAL. Now, the question is: What type of MINERAL object?
7. If your DISCRIMINATE knob is still set on "0", the MINERAL object is probably a bottle cap or small nail. If the THRESHOLD TONE did not fade or disappear, however, the object could be foil, a gum wrapper or the like. If you'd like to determine whether it is one of those "junk" items, then proceed to Step 8.
8. Turn the DISCRIMINATE knob slightly to the right (clockwise) and pass the loop over the same spot. If the sound fades or disappears, the object is probably a large nail, a wad of tin foil or the like. It could be a nickel, however; so if you want to dig it up on the off chance that it is a nickel rather than "junk", go ahead.
9. As you continue to turn the DISCRIMINATE knob to the right (clockwise), you will continue to eliminate more and more things from the list of possibilities. For example, by increasing the DISCRIMINATE setting you'll rule out pull tabs, but you will also eliminate rings and nickels. By turning it even further to the right (clockwise, you'll rule out larger items like tin cans and large chunks or iron, but you will also eliminate most single coins.

(Remember, you can determine through practice just how far the DISCRIMINATE knob generally needs to be turned in order to eliminate various types of "junk" items. Avoid turning it further than absolutely necessary as this will result in "discriminating" against other objects for which you may be searching.)

10. After you have decided whether to dig, and are finally ready to move on, set the DETECTOR MODE switch back on "G.E.B." and retune your instrument as described under Low Frequency Tuning.

One final note before we continue: The depth 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. 3) The "Detector Mode" being used. The Low Frequency operation will detect deeper than "Discriminator" mode. And, 4) How carefully your instrument is tuned. The more accurate the tuning, the deeper it will detect.

LISTEN FOR THE TONE

The tone coming from the speaker or headphones 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 the loudest when the center of the loop is directly over 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. This same exception is also true when detecting nails 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 the nail. Notice the "double sound" by which you can generally 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 turn and sweep at a different angle.

When detecting an object, 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--may cause only a slight increase in volume. A large object, on the other hand--buried just as deeply--may cause a much larger increase.

KEEP AN EYE ON THE METER

The indicator needle on the meter is extremely sensitive to change. It will register buried objects that you might miss by just listening. When that needle "jumps" you will have found something, even if you cannot hear the difference in the speaker or headphone volume. So keep an eye on that meter; it could be very important.

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 your lawn. Leave a few feet between them. Following the instructions explained 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.
2. Take two quarters. Place one on top of the grass. A few feet away, dig a small hole, no more than two inches deep, and bury the other coin. Tune your instrument and pass the loop over the coin on the surface, then over the buried coin. Note how the volume increases or decreases as you move from one to the other.
3. Plant a "test garden". To become better acquainted with various kinds of buried objects, bury some metal items at known depths. Make sure your test garden is located where you can get to it easily. It's best to make a map of the area, showing what is buried and its depth. Your test garden will help you practice and will also provide a handy method of periodically checking the performance of your instrument.

INSPECTING THE SEARCH AREA

The smoother the area, the closer your loop should be to the ground. The rougher the area (the more potholes, mounds, etc.), the higher your loop will have to be. When working a lawn or 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 operating a few inches above the ground. Remember, though, the loop should be held at a constant height above the ground. As the ground level rises and falls, raise or lower the loop accordingly.

Mineralization of the ground is another factor normally affecting the sensitivity of your detector. The more mineralization, the more difficult it is to detect objects. The less mineralization, the less the problem. The Apollo Long Ranger detectors, however, incorporate a special circuit which allows those instruments to ignore the ground's magnetic field, but to detect objects buried in it.

SWEEPING THE SEARCH AREA

To locate hidden or buried objects, slowly and systematically sweep the loop from side to side across the area you are working. The larger the diameter of your loop, the more area you can cover in a single sweep and the faster you can search. For example, with a six-inch loop you should take three-inch steps, moving the loop ahead the same amount after each sweep. With an eight-inch loop, however, you should take eight-inch steps.

For maximum performance you should always try to keep the loop as close to the ground as possible. Conventional transmitter-receiver detectors should be operated with the loop flat on the ground whenever feasible. This will help insure greater depth of detection, and will lessen the possibilities of error in your signal.

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, 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.

1. **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.
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 detector 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 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.
4. **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.

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. 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 between "30" and "40" has the words "Bat. Check" printed above it. If the white 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 if 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.
 - e. Observe the white 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.

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.

SERVICE AND WARRANTY INFORMATION

If your Apollo 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 card (White's Electronics will honor all Apollo warranties). Insure it fully, prepay the charges and enclose a letter describing the nature of the problem. We'll correct the matter and return the instrument as soon as possible. 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.

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