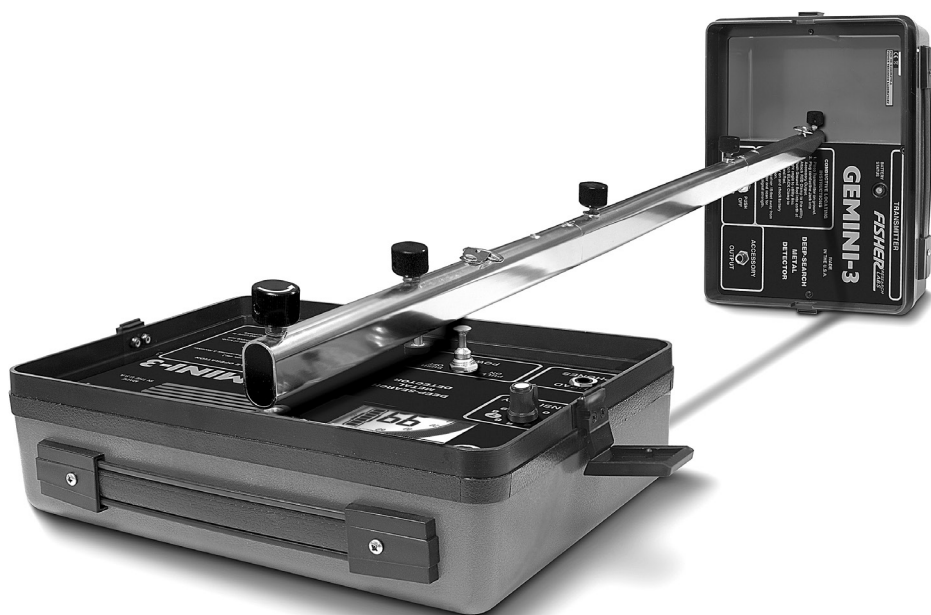


FISHER[®] RESEARCH LABS

Gemini-3

**2-Box Metal and Mineral Detector
for Deep Search and Cache Locating**



Operating Manual

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ABOUT YOUR DETECTOR

Two-box metal detectors have long been used by prospectors, geologists, treasure hunters and public utility companies to locate large, deep objects, ore vein, pipes and cables. Fisher Research Labs is the recognized leader in the field; in fact, Fisher was granted the first two-box metal detector patent over 90 years ago.

The new GEMINI-3 goes 10 to 20 percent deeper than its predecessor. It will trace most pipes and ore veins at least 50 percent farther. The GEMINI-3 is easy to use, light-weight, and features Voltage Controlled Oscillator (V.C.O.) audio target response for precision pinpointing.

Your Fisher GEMINI-3 is a high quality, precision instrument engineered by the oldest and proudest name in metal detection. We recommend you read this instruction manual thoroughly to get the best performance from your Gemini-3.

Drop us a line if you have any questions, comments or exciting GEMINI-3 stories. In the meantime . . .

Happy hunting,
FISHER RESEARCH LABS

THEORY OF OPERATION

The GEMINI-3 is engineered to detect conductivity changes in the earth over which it is carried. Hence, a positive response by the GEMINI-3 indicates the presence of a metal object, ore vein or mineral that is more conductive than the surrounding rock or soil.

The function of the GEMINI-3 Transmitter is to send a radio frequency (RF) signal down to a conductive object and generate an electromagnetic field around that object. When used in any of the Inductive modes, the RF signal travels through the ground to the object. When used in the Conductive Trace mode, the signal is transmitted directly through a wire attached to an exposed portion of the object.

The function of the GEMINI-3 Receiver is to locate the object by detecting the electromagnetic field around it and responding with audio and visual signals.

DEPTH

The GEMINI-3 was designed to locate large, deep objects such as an iron chest, pipe or an ore vein. It will not detect small coin-sized objects. A quart jar full of coins, however, may be detected one-to-three feet deep. A 55-gallon drum may be detected as deep as 10 feet. A very large object, like an automobile, may be detected at 20 feet or more.

The ability of the GEMINI-3 to detect objects at various depths depends on several factors:

1. **Ground Mineralization:** The penetrating power of the GEMINI-3 is adversely affected by the presence of magnetite (a black iron oxide) and wet conductive mineral salts. For example, an object that can be detected at 15 feet in neutral ground may be detected no deeper than 5 feet in highly mineralized ground.
2. **Size and Depth of Object:** A 4-inch diameter target will produce signal 64 times stronger than a similar 1-inch diameter target at the same depth. An object 1-foot underground will produce a signal 4,000 times greater than the object 4 feet deep.
3. **Length of Time Object is Buried:** An object that has been buried for a long time may be easier to detect than a newly buried object. Rust and other oxides as well as mineralization caused by the interaction of the metal with soil chemicals are good conductors and aid in detection.
4. **Shape of an Object:** Ring or looped shaped objects lying flat produce the best results. Flat or dish shaped targets are also easy to detect. Rod shaped objects, especially when scanned on end, are very difficult to detect.
5. **Operator Skill:** Probably the most important factor of all, practice over known buried targets is essential.

TRANSMITTER

Power Switch: Pull switch out to turn power ON.

Accessory Output: For use with the optional Ground Rod Assembly for conductive locating applications.

Battery Status Indicator:

GREEN: Good condition; over 9 volts

AMBER: OK, 7 volts to 9 volts

RED: Change batteries soon; less than 7 volts

Battery Status

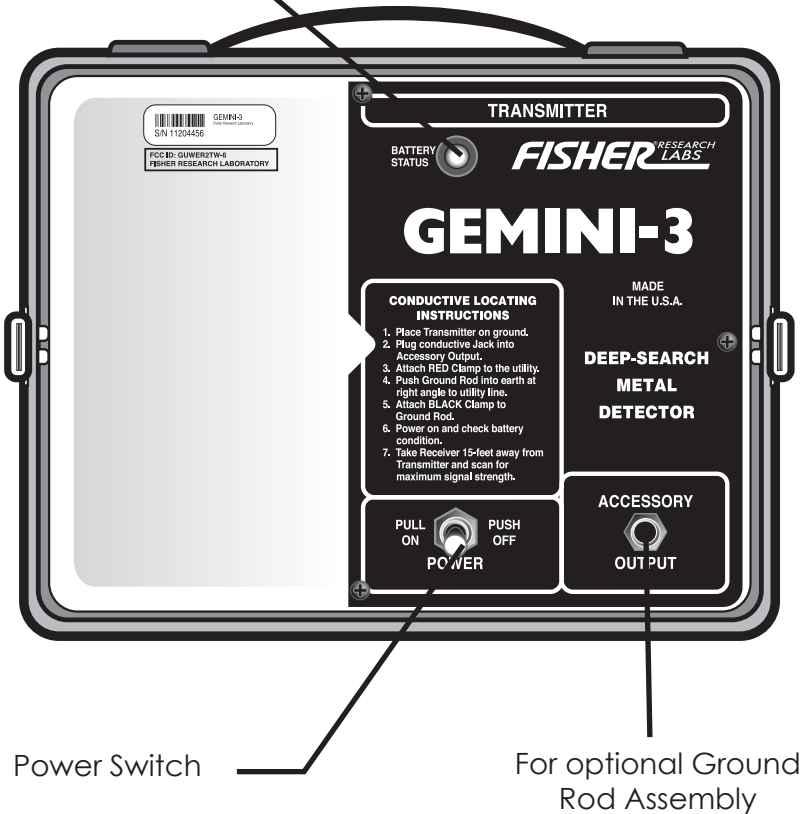


Figure 2. Transmitter

RECEIVER

Speaker: Provides audio feedback for balancing and detection.

Signal Strength Indicator: The numerical readout and the curved bar-graph both indicate the same signal-strength value.

A line on the bar-graph remains illuminated briefly to indicate the highest signal-strength reading.

Sensitivity Control: Used to control sensitivity level. The circled "7" indicates the starting level used for Narrow Scan Inductive Search Mode.

Headphone Jack: Accepts stereo or monaural headphones; silences speaker when headphones are plugged in. (Stereo/mono headphones should be in "stereo" position.)

Power Switch: Pull switch out to power ON.

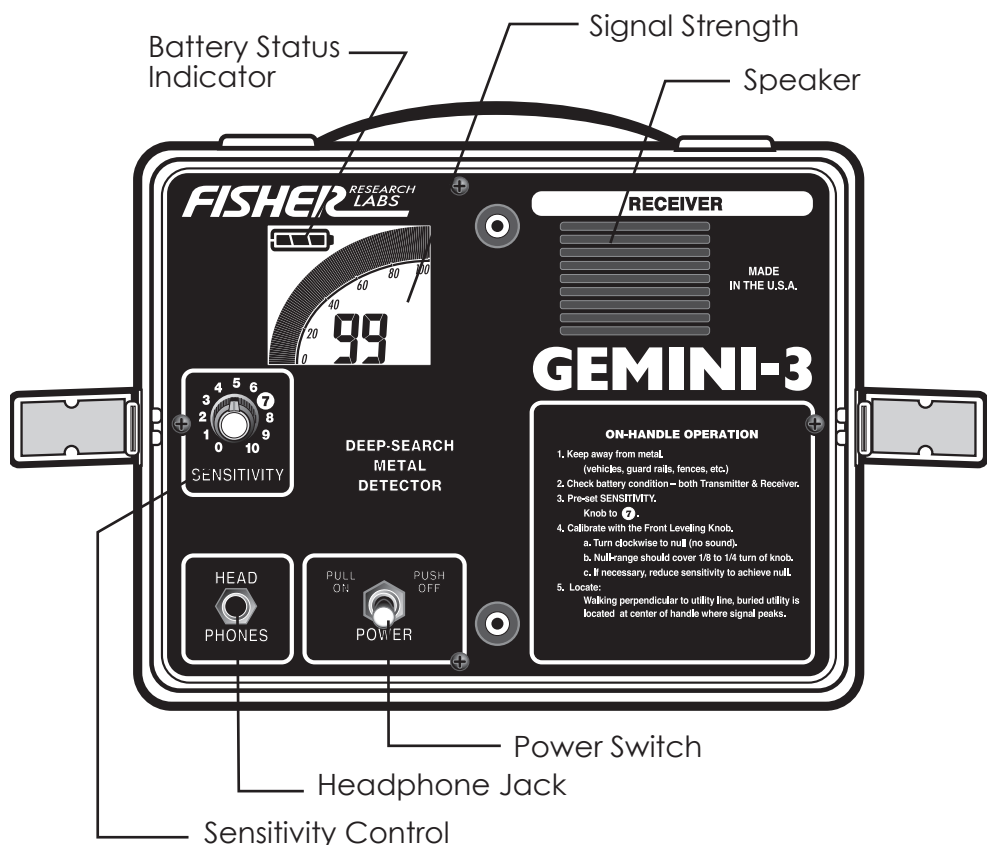


Figure 3. Receiver

SEARCHING

Narrow Scan Inductive Search

This mode of operation is performed by a single operator using the 3-piece handle. It is the best method for locating small or short objects (chest, coin-jar, rifle, etc.). However, it is also an effective way to locate pipes, cables and ore veins.

Set Up

1. Assemble the 3-piece handle by inserting each end piece into the center handle section. Tighten the two center knobs finger tight until there is no wobble. Place the Transmitter on its back and insert the end of the handle with the single brass shaft into the V-shaped slot. Turn the knob until it is finger tight and the handle is firmly in the slot.
2. Align the Receiver panel holes with the upper-handle threaded shafts. Tighten the lower black knob until it is finger tight.
3. Turn the balance knob (with white arrow) until the spring is under tension (at least 10 turns).

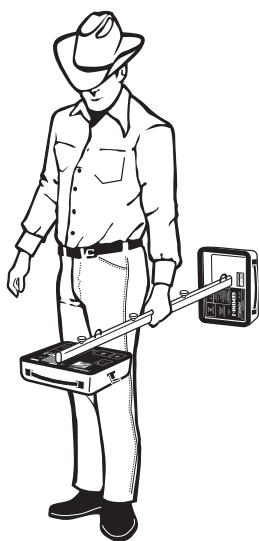


Figure 4. Narrow Scan Inductive Search

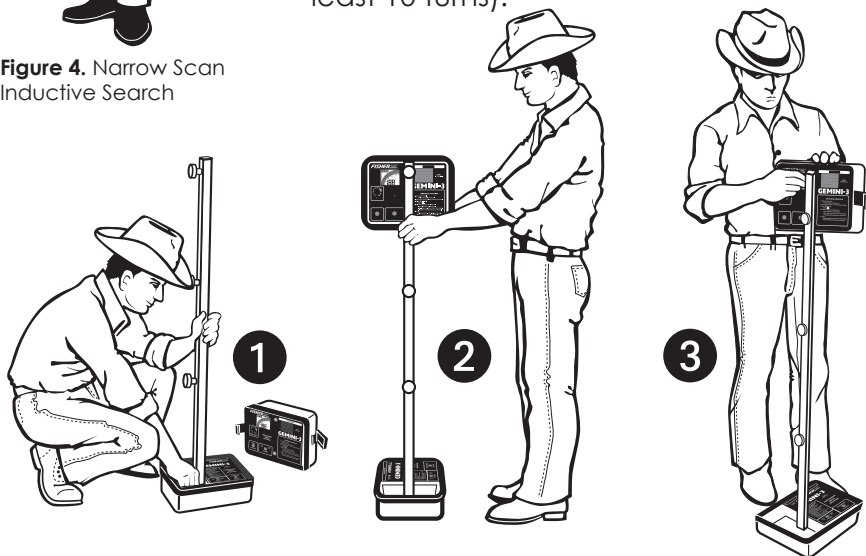


Figure 5. Assembly for Narrow Scan Inductive Search

Tuning

1. Set up the Transmitter:

Power: ON

2. Set up the Receiver:

Power: ON

Sensitivity: 7

You should get a strong audio tone and signal strength indication.

CAUTION: Never attempt to tune the GEMINI-3 in the presence of metal objects like cars, metal walls, roofs or heavy metal reinforcements in any structure. Their presence will make proper balancing impossible.

3. Pick the unit up by the handle and balance it so that it is level with the ground and at normal carrying height (arm's length). Five cm higher in the front is OK. For a deeper search, attach the fully lengthened carrying strap to the eyelets at the ends of the handle (see illustration on page 11). You will need to hold the instrument at this lower level while tuning if you plan to use it in this lowered position. On some highly mineralized ground and some asphalt, you may not be able to use it with the strap fully lengthened. You will know this during tuning if you cannot reach a null (no sound). Not reaching a null can also indicate the presence of nearby metal. If this is the case, move away from the metal object to balance your GEMINI-3 in ground free of metal.
4. Still holding the GEMINI-3 parallel to the ground, slowly turn the BALANCE knob (with arrow) on the three-piece handle counterclockwise until you achieve a null (no sound) and a zero signal strength reading. At this point there should be no sound as you rotate the knob 1/8- to 1/4-turn further counterclockwise. With additional counterclockwise rotation, the Receiver will sound off.
5. If you cannot null the audio or your null point is less than 1/8 turn, reduce SENSITIVITY slightly and try again.
6. If you can turn the BALANCE knob more than 1/4 turn without an increase in the sound or meter, increase SENSITIVITY slightly and try again. Keep adjusting as described until 1/4 turn of silence (null) is achieved.

7. You are ready to search when the BALANCE knob is adjusted within the 1/8- to 1/4-turn silence (null) space. This is extremely important! If this procedure is not followed correctly, the GEMINI-3 will either constantly sound off, (sensitivity too high), or not sound off at all (sensitivity too low). The sensitivity will be calibrated correctly, and your GEMINI-3 will operate optimally, only when a 1/4- to 1/8-turn null has been achieved. If you lower or raise your GEMINI-3, you may have to retune by making repeated adjustments to the BALANCE knob and/or the SENSITIVITY control.

Operating

1. Test your GEMINI-3 in an area you are reasonably sure is free of large buried objects. Scatter some metal objects, such as a tool box or piece of pipe.
2. With the instrument properly tuned and held by the handle or suspended by the strap, slowly walk directly toward your test object. Keep the handle as level and steady as possible while walking; failure to hold the handle steady will result in false signals and a loss of sensitivity.
3. As you approach your target, the speaker volume and signal strength will increase. They will reach maximum readings when you are directly over the conductor (target). Remember, on the GEMINI-3, the volume and pitch can increase slightly after the meter reaches full scale. This allows you to pinpoint without constantly readjusting the SENSITIVITY knob.
4. As you cross the target, the volume will begin to drop because you are moving away from the target. To get a precise fix on the location, make a mark at the ground with your feet at maximum volume, pitch and signal strength. Cross over the target, turn around and come back. Make a second mark when readings return to maximum. Your target will be centered between the two marks.

5. For even more accurate pinpointing of short objects, (i.e., a pipe, cable, etc.) approach the test object at right angles from your previous direction. Mark the ground as you did before. Your test object should be about centered between four marks.
6. To establish the path of a pipe, cable, or other long conductor, pinpoint two more locations 15-20 feet apart. From these three locations you should be able to draw a straight line (unless the pipe isn't straight). Careful additional locations may be necessary if no prints (maps of underground lines) of the area are available.
7. It may be necessary to reduce sensitivity with the SENSITIVITY knob when the pipe or cable is large and/or shallow. If the meter needle has peaked and sound is at a high level, you will want to bring the sensitivity down to see the peak of the needle at a point less than 100 as you move in half or quarter steps back and forth to get your peak reading.
8. If at all possible, practice over some buried targets of known size and depth.
9. There are several things to consider when locating buried objects:

- a. Precise location depends on operator skill.
- b. Position of the ground marks does not indicate size of the object or its path.
- c. More than one metal object may cause a wider or stronger response than expected.
- d. Deeper targets may not produce a signal until the operator has passed directly over them.
- e. Reducing the Receiver SENSITIVITY control will narrow the area between the ground marks for more precise pinpointing.
- f. Small or deeply buried objects such as a cache of coins, require a tight, closely traversed search pattern. Large or shallow objects can be located successfully with a larger, more widely traversed search pattern.

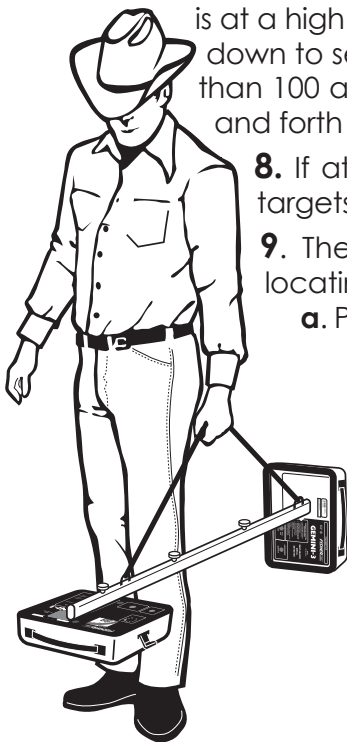


Figure 6. Handle strap: Using the handle strap increases depth; however, it may be difficult to tune the GEMINI-3 this close to highly mineralized ground.

Wide Scan Inductive Search

This mode of operation is the preferred method for searching a large area quickly. Two operators are required and the handle assembly is not used.

The Wide Scan Inductive Search mode is practical only when searching for ore veins, pipes or cable 40 feet long or more. If the operators are too close together, "direct air coupling" will result, meaning the Receiver is detecting the Transmitter signal directly through the air instead of through a buried conductor.

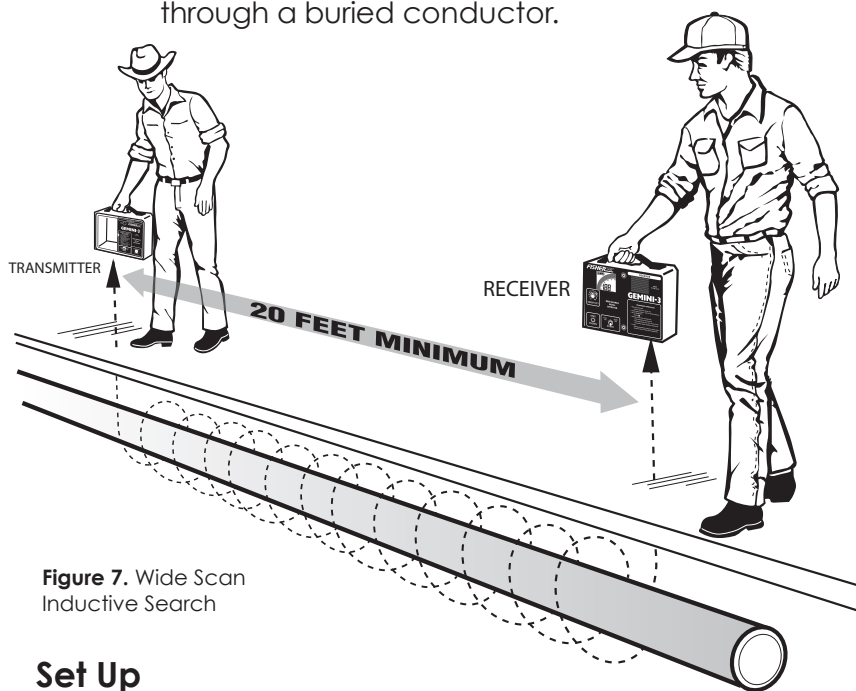


Figure 7. Wide Scan Inductive Search

Set Up

Two operators line up at least 20 feet apart, one holding the Receiver and the other, the Transmitter, facing perpendicular to the assumed direction of the buried conductor. The Transmitter and Receiver should line up parallel to the buried conductor.

Tuning

1. Power on the Transmitter.
2. Set the Receiver: Power: ON Sensitivity: ZERO

3. Slowly increase the SENSITIVITY control until the audio signal is heard, then reduce SENSITIVITY until the audio just disappears. This is the point at which "air coupling" has been eliminated.

Operating

1. Keep the Receiver and Transmitter parallel to one another and both operators are facing perpendicular to the conductor. The two operators can now walk in a straight line at the same pace. The SENSITIVITY control should be checked periodically to ensure that the Receiver is tuned just below the "air coupling" threshold.
2. If both operators cross the same conductive body (pipe, cable, ore vein, etc.) at approximately the same time, the Receiver tone and meter will rise to indicate its presence. The Receiver-operator should alert the Transmitter operator that they have detected a conductive object.
3. The Receiver-operator should then hold his position while the Transmitter-operator moves back and forth to find the strongest Receiver response. At this point, the Transmitter-operator should stop and place the Transmitter on the ground with the handle grip on top.
4. The Receiver-operator can then pinpoint the buried object by moving the Receiver back and forth in line with the Transmitter. The object should be directly beneath the point of maximum response.
5. The Receiver-operator may then trace the signal along the length of the unseen object as described in the Inductive Trace section (page 14).

TRACING

Inductive Trace

The Inductive Trace Mode is usually used to trace a long object (pipe, ore vein, etc.) for which there are exposed portions, but whose two starting points are known.

Set Up

Locate two points along the conductive object at least 30 feet apart as described in the Wide Scan or Narrow Scan Inductive Search sections. The Transmitter and Receiver should be in line with each other, both facing the same direction. The Transmitter should be on the ground and the Receiver should be held by the operator.

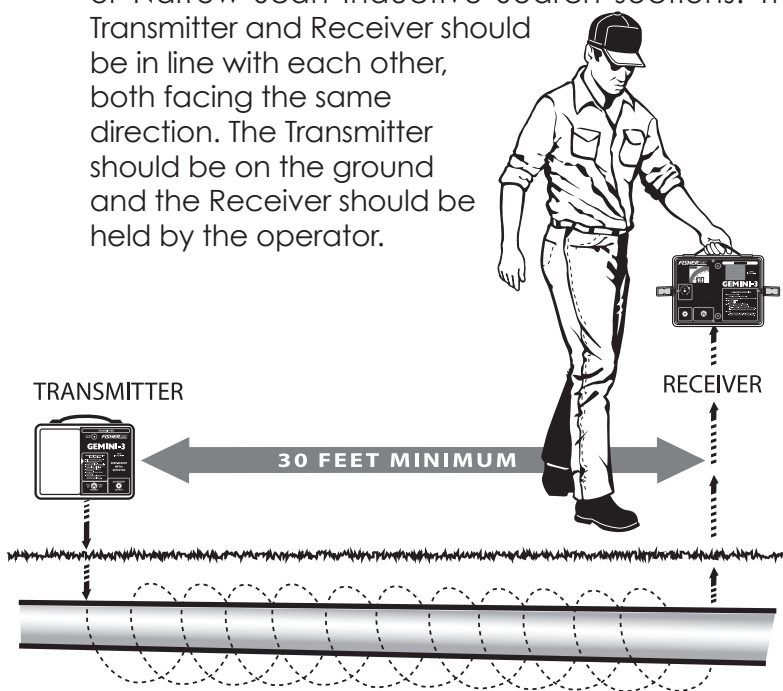


Figure 8. Inductive Trace

Tuning

1. Power ON the Transmitter.
2. Set the Receiver: Power: ON Sensitivity: ZERO
3. Increase the Receiver SENSITIVITY control until you have an audio response and at least a mid-scale signal strength.
4. Determine that you are not direct air coupling by moving the Receiver back and forth. The signal strength indication should peak over the object. No peak will be observed if the Receiver is too close to the Transmitter and direct air coupling is occurring.

Operating

1. Once the two starting points have been established and the Receiver tuned, walk away from the Transmitter in the assumed direction of the buried conductor.
2. Hold the Receiver vertically to maintain a peak signal or horizontally, face up, to maintain a null or minimum signal. Either method indicates that you are over the object and tracing its path.
3. As the distance from the Transmitter increases, the signal will fade. As this occurs, increase the SENSITIVITY as required.
4. When the signal becomes too weak to trace, stop and move the Transmitter closer.
5. Be aware that if you are tracing a pipe, each time a "T" junction or lateral is encountered; the signal will split and weaken.

Conductive Trace

This is the best method for tracing a single pipe in the presence of other pipes. A portion of the pipe must be exposed in order to energize it by direct connection utilizing a Ground Rod Assembly (not included).

Set Up

1. If possible, clean the contact point of the pipe with a wire brush.
2. Connect the Ground Rod Assembly Clamp to the contact point.
3. Plug the jack into the Transmitter accessory output.
4. Set the Transmitter on the ground and in an upright position as far away from the contact point as possible, at right angles to the assumed direction of the pipe or cable. Insert a Ground Rod into the ground as far away from the Transmitter as possible.
5. Hold the Receiver vertically, in line with the contact point of the pipe at least 30 feet away.

Tuning

1. Power ON the Transmitter.
2. Set the Receiver:
Power: ON
Sensitivity: ZERO
3. Slowly increase the SENSITIVITY control until the audio signal is heard, then reduce SENSITIVITY until the audio just disappears. This is the point at which air coupling has been eliminated.

Operating

1. Locate the buried pipe by circling the contact point, keeping the Receiver in line with the contact at all times. Stay at least 30 feet from the Transmitter.
2. Once the pipe has been located by a sharp increase in audio and signal strength, the pipe may be traced exactly as described in the operating section of the Inductive trace instructions.
3. Be aware that a nonconductive gasket in the pipe will terminate the RF signal from the Transmitter.

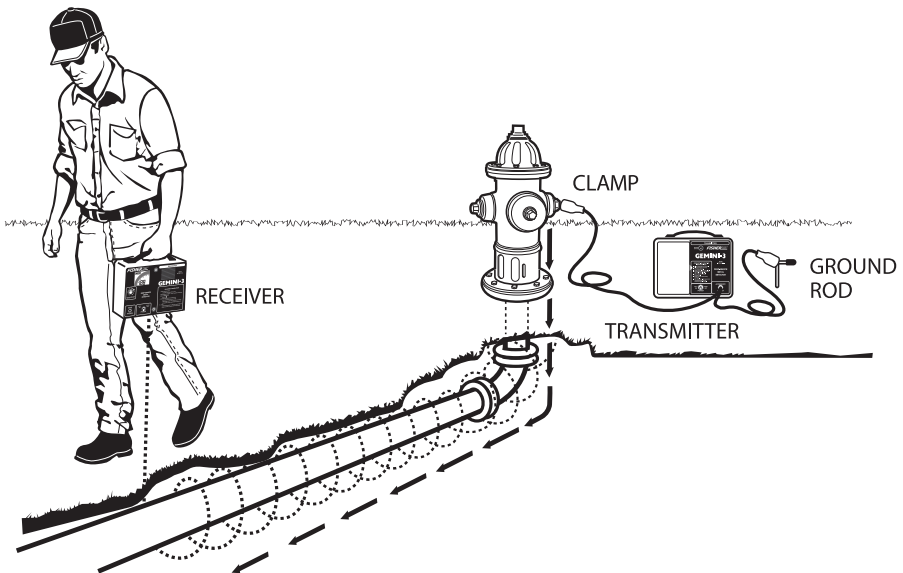


Figure 9. Conductive Trace

PROSPECTING TIPS

Mapping

When an area of high conductivity is encountered, outline and stake it by crossing and re-crossing, using the Narrow Scan Inductive Search mode. It will be noted that in and near the conductive zone, a maximum indication will be received in only one definite direction when the operator stands at one point and rotates the instrument parallel to the surface of the ground. Record the signal strength as read in the maximum directions, at various points along the zones. Note the character of the overburden, outcrops and topographic features.

When the area being inductively surveyed has been completely covered and all of the conductive zones have been staked, these zones are surveyed and plotted on a map. The map should include all creek bottoms, gullies, outcrops and other physical features. The ideal map on which to plot the conductive zones is a topographic and geological map of the proper scale. In this way it is possible to correlate the zones directly with the topography and geology, and thus determine the possible reasons for the presence of the various conductive zones.

Locating Placer Deposits

The GEMINI-3 can assist in the location of placer gold deposits. In general, these deposits cannot be detected with a traditional hand-held metal detector. Placer gold, however, is usually associated with a certain amount of black sand, and some placer deposits carry iron sulphide. Both of these mineral substances are conductive, and may be detected by the GEMINI-3. The GEMINI-3 can detect the black sand and iron sulphide often associated with placer gold deposits, pinpointing the possible location of placer gold.

Sources of Error

The most common nonproductive zones of conductivity are:

1. **Dissolved mineral salts** - Mineral salts become conductive when dissolved in water. As a result, the presence of saline water or water saturated soil high in salt content may hinder the GEMINI-3's function.
2. **Rough terrain** - In very rough terrain it may be difficult to maintain the GEMINI-3 parallel to the ground, resulting in frequent false signals.
3. **Irregularities in the overburden bedrock** - The GEMINI-3 may detect sharp changes in conductivity which are of no important geological significance.
4. **Fault zones** - Fault zones often give positive indications because they are highly fractured and usually contain concentrations of water and minerals.
5. **Alluvial deposits along creek bottoms** - Conductive deposits along creek beds usually have no economic value or importance in determining the geology.
6. **Conductive debris** - Unexpected high readings are often due to highly conductive debris near the surface such as scrap iron, tin cans, etc.
7. **Magnetite** - Heavy concentrations of magnetite will cause false signals and/or loss of penetrating power.

It is obvious from the above that every response by the GEMINI-3 does not indicate the presence of valuable ore, but rather an indication that the earth's conductivity has changed. It remains for the operator to properly interpret this data. The successful prospector will have some understanding of the ore he is seeking and of the existing geological conditions. The successful operator will also have studied that area and will know in advance what ore he is seeking and where the best opportunity exists for locating it. Under these conditions, the GEMINI-3 can provide valuable information.

BATTERIES

1. Turn either instrument (Transmitter and Receiver) over on its face and remove access door with coin or large blade screwdriver.
2. Lift the battery pack out carefully. Rotate the battery pack, unsnap the battery connector and slip off the sleeve. Change all eight batteries. Slip the sleeve back on, then reattach the connector to the pack.

Slip the battery pack back into its compartment and power on each half, observing the battery-status indicators. Refasten the access door.

Battery life:

The Transmitter will run approximately 25 hours on high-quality alkaline batteries. When the battery status indicator is red, the Transmitter will operate with lower output power.

The Receiver will run approximately 30 hours on high-quality alkaline batteries.

NOTE: As supplied from the factory, the battery pack is surrounded by a plastic sleeve to retain the batteries during harsh operating conditions. Always reinstall the sleeve after replacing batteries.

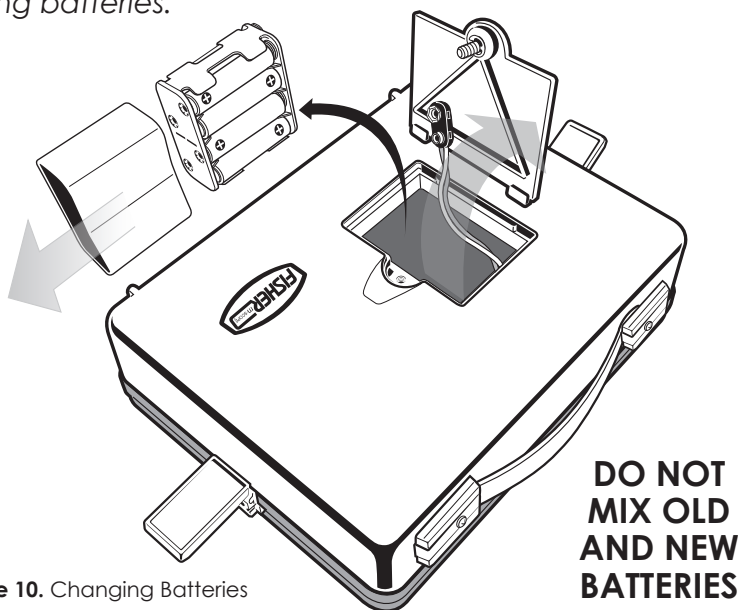


Figure 10. Changing Batteries

TREASURE HUNTERS' CODE OF ETHICS

LET'S PRESERVE OUR TREASURED SPORT!

Laws governing the use of metal detectors are common in some areas. In many countries, the use of metal detectors is illegal or severely restricted.

- Always check Federal, State, County and local laws before searching.
- Respect private property and do not enter private property without the owner's permission.
- Take care to refill all holes and leave no damage.
- Remove and dispose of any and all trash and litter found.
- Appreciate and protect our inheritance of natural resources, wildlife and private property.
- Act as an ambassador for the hobby, use thoughtfulness, consideration and courtesy at all times.
- Never destroy historical or archaeological treasures.
- All treasure hunters may be judged by the example you set; always conduct yourself with courtesy and consideration of others.

Where To Use Your Metal Detector In The U.S.

National Forest and Federal Lands—Metal detecting is allowed only by special permit acquired from the federal government. Each area has a district office.

Corps of Engineers, Lakes, Shorelines and Lands—Permission has been granted only on pre-disturbed sites, such as beaches and attached swimming areas. New Corps lakes and lands must be okayed by the main office of the Army Corps of Engineers. Each area has a district office.

State Parks and Lands—Some state parks are open to metal detecting, but some are not. Always check with the park ranger before attempting to use your detector.

Bureau of Land Management (BLM) Lands—Some areas are open for metal detecting, and some are not. Always check with the district office.

City or County Park Lands—Most are open to metal detecting unless notice is given by a sign or city ordinance. When in doubt, always check with the city's Parks and Recreation Department. **Public School Grounds**—Most are open to metal detecting unless notice is given by a sign, city ordinance, law enforcement official, or school employee. You should always check with the school office first.

Privately Owned Lands (Private Property)—Permission required. It is always best to have the permission in writing.

Historically Marked Lands or Sites—Metal detecting is not allowed.

SPECIFICATIONS

Dimensions

Length on handle	49 1/2 inches ²
Transmitter-Receiver Box Assembly	9 1/4 x 12 x 6 inches(23.5 x 30 x 15 cm) ²

Weight

Complete	7.5 lbs. (3.4 k)
Transmitter	2.5 lbs. (1.1 k)
Receiver	3.0 lbs. (1.4 k)
Handle	2.0 lbs. (.90 k)

Frequency

RF Search and Trace	81.92 KHz Crystal Controlled
	Audio Target Response (V.C.O.) ³

Operating Modes

Search	
1. Narrow Scan, Inductive	
2. Wide Scan, Inductive	
Trace	
1. Inductive	
2. Conductive ⁴	

Target Response

Meter	2 1/4 x 1 3/4 inches, Analog
Speaker	2 1/4 inches, 100 ohm,
Moisture Proof Cone	
Headphones ⁵	1/4 inch Jack, 8-16 ohms,
.....	Stereo/Mono

Batteries

Receiver	(8) AA 1.5V
Transmitter	(8) AA 1.5V
Life (Alkaline batteries)	
Transmitter.....	25 Hours
Receiver.....	30 Hours

Notes

1. Subject to improvement or modification without notice.
2. Approximate.
3. Voltage Controlled Oscillator. Volume and pitch both increase as target is approached for easier, more accurate pinpointing.
4. With optional ground plate assembly.
5. Optional stereo/mono headphones.
6. Use of headphones will significantly increase battery life.

Fisher Research Laboratory does not warrant suitability to specific use. Fisher Research Laboratory shall in no event be liable for any direct, incidental, consequential or indirect damages.

USING HEADPHONES

Using headphones (not included) improves battery life, and prevents the sounds from annoying bystanders.

It also allows you to hear subtle changes in the sound more clearly, particularly if searching in a noisy location. For safety reasons, do not use headphones near traffic or where other dangers are present. This device is to be used with interconnecting cables/headphone cables shorter than three meters.

FISHER[®] RESEARCH LABS

QUALITY

Fisher detectors are renowned for their quality.
Each detector is hand crafted in the USA with pride.

PERFORMANCE

The worldwide underground utility industry relies on Fisher[®].
Our instruments are durable, dependable and locate deeper.

REPUTATION

Fisher produced the first patented metal detector in 1931. For
over 90 years, the Fisher logo has been a mark of excellence.

5 - YEAR LIMITED WARRANTY

Fisher[®] believes in the products we produce and backs this
belief with a 5 year limited warranty.

Proof of purchase is required to make a claim under this warranty.

NOTE TO CUSTOMERS OUTSIDE THE U.S.A.

This warranty may vary in other countries, check with your
distributor for details.

Warranty does not cover shipping costs.

SERVICE

Fisher is committed to providing you, our valued customer, with
superior service. Each and every instrument is rigidly tested and
carefully inspected.

To return your unit for repair, first contact Fisher repair to obtain
an RA number make sure to write this RA number on the outside
of the box - where it can be seen.

Fisher Research Labs, Inc.

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According to FCC part 15.21 Changes or Modifications made to this device
not expressly approved by the party responsible for compliance could void
the user's authority to operate this equipment.

FISHER RESEARCH LABS

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