

PROCEDURES

PIPE LOCATOR

2.0 PURPOSE

The purpose of this section is to establish appropriate and safe procedures for the location of Operator's existing buried facilities.

2.1 SCOPE

Covered in this section is the following:

- A. Location Methods.
- B. How to Use the Pipe Locator.
- C. Locator Operation.
- D. Locator Care.

2.2 LOCATING METHODS

There are three primary methods for locating buried pipelines. These methods are:

- A. Using map sheets, As-built drawings, and other appropriate records.
- B. Use of pipe locators.
- C. Pot holing.

When locating pipelines from map sheets, measurements, etc., the pipeline should also be located with pipe locators, whenever possible. This is necessary to verify that the measurements taken from the drawings are accurate.

Pot holing buried pipelines is required whenever the pipeline cannot be located by methods A or B above.

2.3 PIPE LOCATOR

- A. The pipe locator is an electronic instrument used for detecting and locating buried pipes, conduits and miscellaneous metal objects.

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- B. The instrument consists of two principal component parts:
- Directional, radio-type transmitter assembly.
 - Directional, radio-type receiver assembly.
- C. The function of the transmitter is to generate an electromagnetic field that surrounds the buried metal object or propagates along it in the case of a pipe. The instrument may be operated in either of two ways:
- Inductive: The electromagnetic field inductively coupled through the surrounding air and ground to the buried pipe, locator wire, or other metal object
 - Conductive: coupling using a direct connection between the transmitter-induced electromagnetic field.

This determination of the principal direction(s) and strongest points of propagation of the electromagnetic field establishes the orientation and location of the pipe or other object.

The conductive mode is the most common and most reliable method to use and refers to the direct-wire connection between the transmitter-induced electromagnetic field.

In addition to locating pipelines, the pipe finder may be used to find the depth of a pipeline and to locate valves, pipe stubs, etc. It is however sound policy not to provide depths to contractors or other excavators.

2.4 CARE OF LOCATORS

- A. The pipe locator is a precision instrument; treat it accordingly. The locator shall, when not in use, be stored in the padded storage box. Bouncing it about the body of the truck on rough streets may seriously damage the unit.
- B. Keep the instrument dry.
- C. Locators are equipped with battery testers and permit the testing of the batteries. This should be done each day to avoid failure of the instrument on the job. Spare batteries should be readily available.

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- D. Do not remove tubes or attempt field maintenance other than routine battery change. All maintenance and adjustments should be performed by qualified personnel.
- E. Follow manufactures recommendations for routine maintenance.

2.5 METROTECH 850

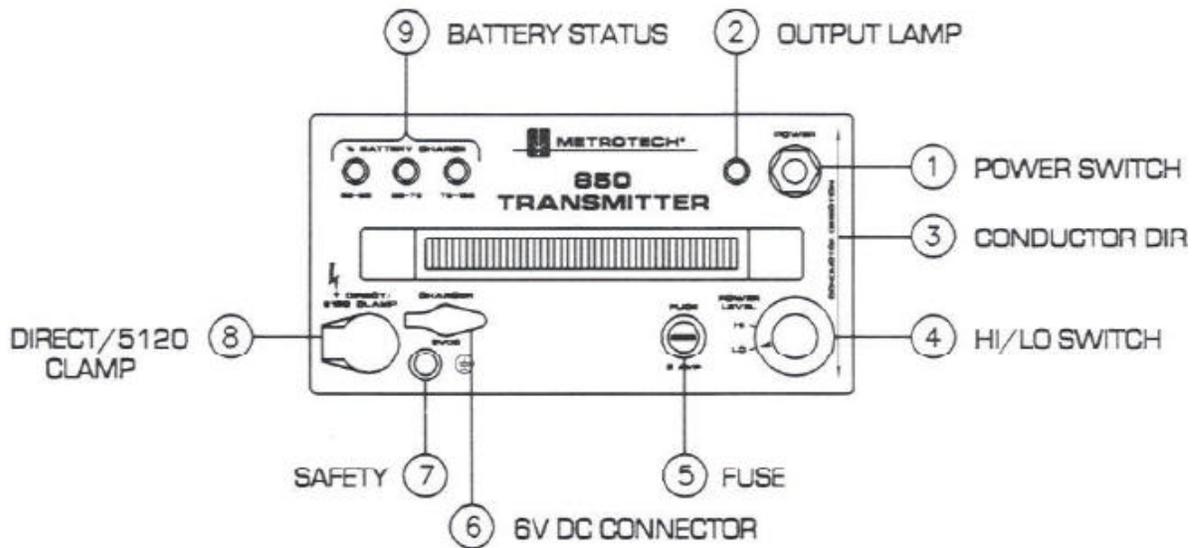


Figure 2-2: 850 Transmitter: Controls and Indicators

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- A. Set-up / Test
 - 1. Turn transmitter ON/OFF switch to ON position. Battery charge indicator lamps should flash.
 - 2. The transmitter should be at least 50% charged. If not, replace battery

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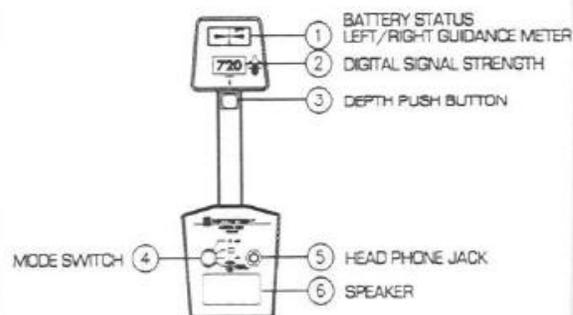


Figure 2-3: 850 Receiver: Controls and Indicators

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3. Fully extend receiver antenna.
4. Set receiver MODE SWITCH to battery test (second position) the needle on the Left/Right Guidance meter should move to the right of the line labeled BATT TEST. The farther the needle is to the right of this line the greater the charge.
5. If the needle is to the left of the line, the receiver batteries should be replaced.
6. Move the receiver MODE SWITCH to AUX 9forth position).
7. Position receiver within 6" of transmitter. The digital signal should display 950 or above.
8. Turn receiver MODE SWITCH to line tracing mode (third position).
9. Move receiver back, 2 – 5 ft from the receiver.
10. Point the receiver at the transmitter. The Left/Right Guidance needle will be centered on the meter and the tone silent.
11. Point the receiver left and right of transmitter. The needle should follow the change in direction.

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- Right - Solid arrow and continuous tone
 - Left – Broken arrow and broken tone
12. Center the needle, then press and release the DEPTH button. A depth reading should appear.
 13. Push the transmitter POWER switch down to turn off.
 14. Test the conductive attachment for loose or broken wires.

B. Operation

Direct connection is the preferred method of locating because the locator transmitter is connected directly to the metallic conductor to be located.

1. With the transmitter OFF, plug the direct connect cable into the jack labeled DIRECT/4820 CLAMP.
2. Attach RED lead to clean metallic part of the targeted conductor (object to be located).
3. Move transmitter away from conductor at right angle.
4. Extend black lead (ground) as far away from transmitter as possible.
5. Attach black ground lead to ground stake or to the MSA opposite side of insulator.
6. Pull power switch on.
7. Trace the signal with the receiver.
8. The pipe is located directly beneath the receiver where needle is centered and sound is null.
9. Appropriately mark the gas facilities per the conditions.

If direct connection is not possible, the locator may be operated using inductive coupling with a Metroclamp.

1. Transmitter OFF, plug Metroclamp into Direct/480 clamp jack.
2. Place Metroclamp around the conductor to be located. Ensure that clamp jaws are completely closed.
3. Follow steps as for direct connection to trace and mark gas facilities.

If direct connection and Metroclamp methods are not possible, the locator may be operated using the Inductive Method.

1. Place the transmitter over the conductor to be located at minimum of 30 ft

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- from the area to be located.
 2. Pull the POWER switch on.
 3. Follow steps as for direct connection to trace and mark gas facilities.
- C. Properly store the locator in its case to ensure that it is protected for damage.
- D. Refer to and follow the equipment manufacturers operating instructions.

2.6 METROTECH 9890 XT

- A. Check Batteries – Turn Transmitter to “L”. If the battery status is low (less than 5 bars) replace or recharge the battery. Turn Transmitter “ON”. Check battery status. If low (less than 1 bar) replace or recharge batteries. **CAUTION: Do NOT** attempt to recharge non-rechargeable D-cell batteries. Damage to the transmitter will occur.
- B. Connect Transmitter to Conductor - Turn Transmitter “OFF”. Plug the Conductive Attachment into Transmitter. Clamp red lead to target conductor. Stretch black lead 90 degrees away from conductor. Push ground rod into the earth. Clamp black lead to grounding rod. Turn Transmitter “ON”. Select power output and frequency.
- C. Adjust Receiver Controls - Turn Receiver “ON” and select frequency. By default, the unit will operate in “Auto” gain mode.
- D. Sweep Area Around Transmitter – Circle Transmitter with Receiver at a distance of 10 feet (3 m). Left/Right display and Receiver signal strength will indicate location of buried conductors.
- E. Locate Line - Follow your target conductor, sweeping left and right as you walk away from the Transmitter. Mark the centerline on the ground.
- F. Measure Depth - Hold the Receiver over the centerline and push the depth button. The LCD will display the depth and current measurement.

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4.6 Receiver: Controls and Indicators, Features

4.6.1 Receiver Controls and Indicators

See Figure 4.3 for the location of the controls and indicators described below.

ON/OFF VOLUME KNOB - Turn clockwise to turn unit "ON". Also controls volume of audio sound.

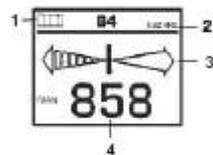
FREQUENCY SETTING KNOB - Your frequency choice depends on which 9800XT model you have purchased.

"RF" Locates carriers of reradiated radio frequencies.

- ⚡ Detects 50/60Hz
- 82K Radio frequency
- 9.8K Audio frequency
- 982 Low audio (Model 9890XT only)

LCD DISPLAY (Liquid Crystal Display) - Displays the battery status, operating frequency, Distance Sensitive Left/Right Guidance™, gain setting, and signal strength.

Figure 4-4: 9800XT Receiver LCD Display



- 1 Battery Status
- 2 Operating Frequency
- 3 Distance Sensitive Left/Right Guidance
- 4 Signal Strength

In the Depth Measurement mode it displays the battery status, current measurement, and depth measurement.