

Multi-Frequency Locator MUR009

User manual

Thanks for purchasing the R311 Multi-Frequency Locator. The Locator is designed to locate buried pipes and cables. The Locator will help you locate and trace the routes of buried power cables, drain, duct, pipes, sewer lines, and telephone cables. Locator can use alone . Or used with the sonde or transmitter.

Notes: The Locator can not using as Metal Detector

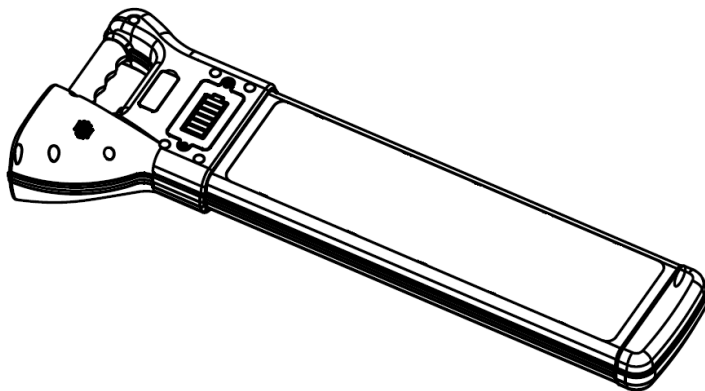
- Passive: 50Hz Power,60Hz Power and Radio

Usually signals are already present in buried cable and can be readily detected by the Locator. These signals are generated by power distribution systems or communication in cable.

- Active: 512Hz, 640Hz, 33KH

Some pipes and drains do not have cables. Usually put a sonde or transmitter inside the pipe. Signals are generated by sonde or transmitter inside the pipes.

Read this manual before using your equipment. Keep it with the equipment at all times for future reference.



Supplied Components

1. Multi-Frequency Locator
2. User Manual
3. TYPE-C to USB-A Charging Cable
4. 7.4V 2200mAh Li-Ion battery package (Built-in)

Specification

Frequency:	512Hz, 640Hz, 32.768kHz, Power-50Hz, Power-60Hz, Radio(6KHz-22KHz)
Battery Capacity	7.4V 2200mAh Li-Ion battery package (Built-in)
Work Current:	100mA(approx)
A Single Charge Work Time	15 Hours(approx)
Charging	DC 5V 1A
Charge time	3 hours

Signal strength:	LCD bar graph and sound volume. Relative Digital Signal Strength readout from 0% to 99.9%
Gain control:	Up/down button for automatic centering. And manual control.
Water-Proof	IP64
Dimensions:	69.0 x 24.5 x 11.0 cm (L x W x H)
Operating temperature :	-10°C to +50°C (14°F to 122°F)
Weight:	2.0 kg

Safety

This equipment shall be used only by fully qualified and trained personnel, and only after fully reading this Operation Manual.

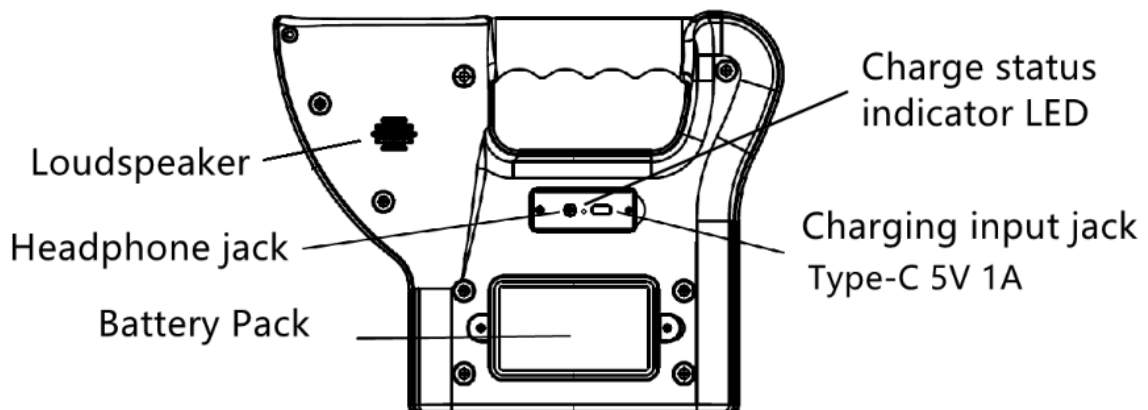
This equipment will not be permanently damaged by reasonable electrostatic discharge, However, in extreme cases temporary malfunction may occur. If this happens, switch off, wait and switch on again. If the instrument still malfunctions, disconnect the batteries for a few seconds.

WARNING: Reduce audio level before using headphones to avoid damaging your hearing.

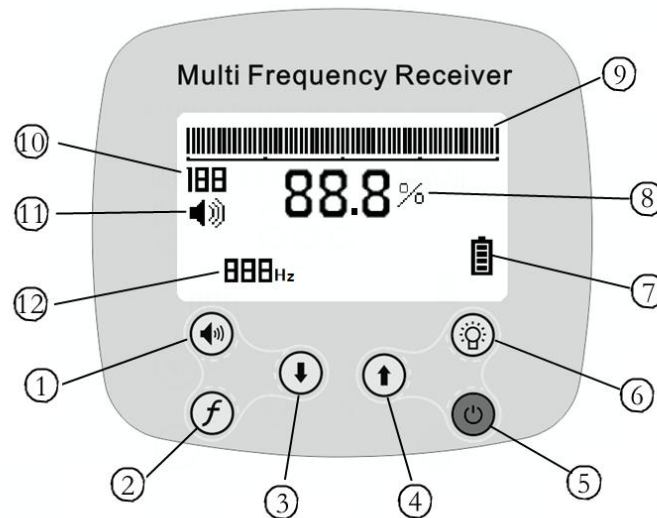
WARNING: This equipment is NOT approved for use in areas where hazardous gases may be present.

WARNING: Exposing the battery to a high temperature above 60°C (140°F) may cause a permanent battery failure.

Basic interface



Display and Function keys



- (1) Speaker volume. Set speaker volume level (off, low, mid, high).
- (2) Frequency key. Select the frequency. Ensure that the Locator frequency is the same as power cable ,sonde or transmitter.
- (3) Gain down Key. Decrease the signal gain, Press and hold down the Gain down Key to quickly decrease the signal gain.
- (4) Gain up Key. Increases the signal gain, Press and hold down the Gain up Key to quickly increase the signal gain.
- (5) On/Off key. Press and hold more than 2s to Power on/off the Locator.

Notes: When no key is pressed, the Locator will automatically shut down after 10 minutes.

Frequency and Volume settings saved when the Locator is power off.

- (6) Backlight Key. Switches the LCD Backlight on and off.
- (7) Battery level indication
The battery icon flicker when battery low.
- (8) (9) Signal strength. Indicates the signal strength.
- (10) Gain. Signal gain-setting value.
- (11) Speaker volume. Shows speaker volume(off, low, mid, high).
- (12) Selected frequency indication. Displays selected frequency.

Battery and Charging

The Locator build-in Li-Ion battery pack, which have been installed in the battery box before delivery.

The Locator recharge battery with accessory charging cable. Open the rubber protection on Locator. Plug the charging cable type-c connector in charging input jack. Plug the other end into

a 5V DC power adaptor. Close the rubber protection cover when charging finished.

Charging indicator LED will be red during charging, will be off when charged fully. Charging indicator LED flashes when battery or power adaptor fail.

Notes:

If not use in a long term, take a recharge per 6 month, to ensure the battery in normal working status.

Do not use the Locator when charging.

Ideally, the battery pack should be charged at an ambient temperature of between 0°C and 40°C.

Magnetic field signal

The Locator receive the magnetic field signal and show strength. Usually get the peak or valley value to determine the location of pipe line.

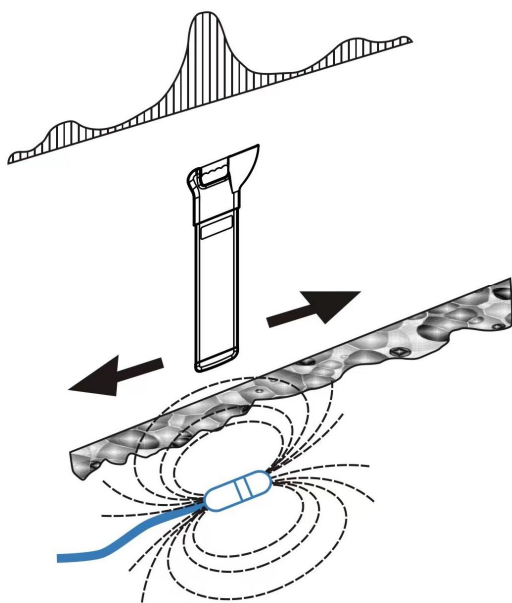
Sonde and power cable has different magnetic field space distribution.

Magnetic field of sonde

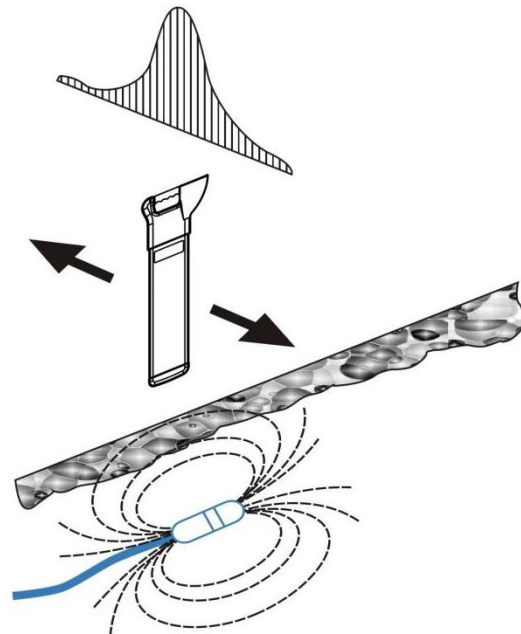
When the Locator position is fixed, the Locator blade parallel to the sonde get maxim signal, and vertical get minimal signal.

Usually keep them parallel and move around to get the peak signal first. Show as fig.

Moves Locator forward and backward



Moves Locator left and right



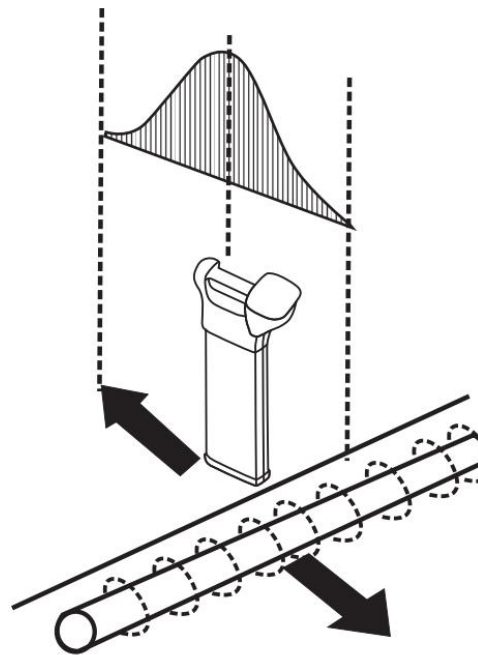
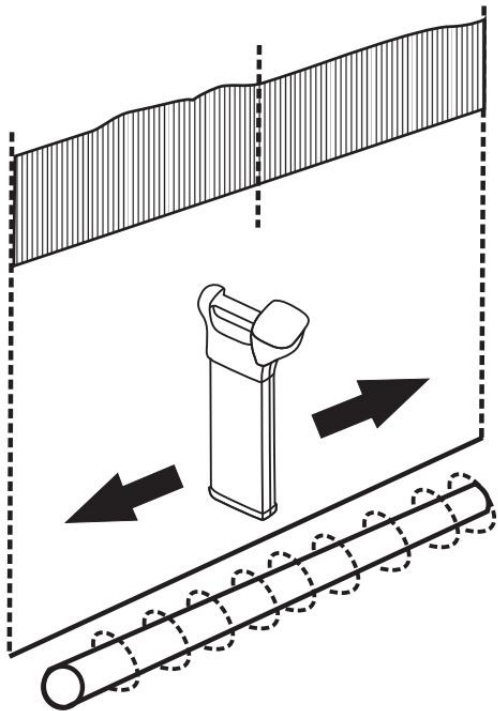
Magnetic field of power cable

When the Locator position is fixed, the Locator blade vertical to the power cable get maxim signal, and parallel get minimal signal.

Usually keep them vertical and move around to get the peak signal first. Show as fig.

Moves Locator forward and backward

Moves Locator left and right

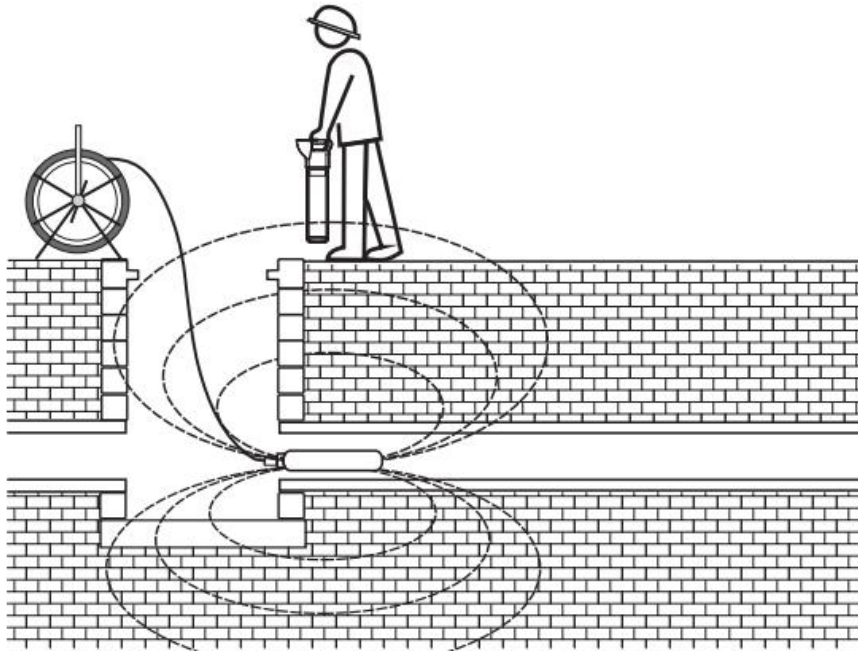


Use with sonde

Before put the sonde inside the pipe line, check the sonde and Locator in the same frequency and working correctly.

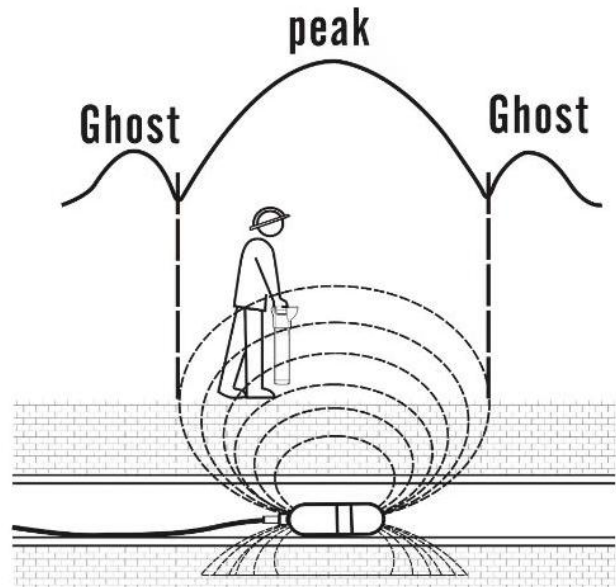
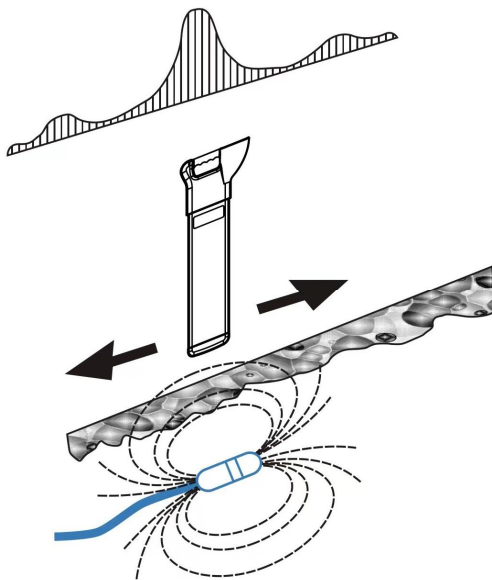
Detection and tracking a sonde

Push the sonde into the pipe line entryway and locate it with Locator. Keep the Locator blade vertical directly over the sonde. Adjust the Locator sensitivity keep the Signal strength shows between 60% and 80% when strong signal .



The sonde radiates a peak field from the centre of its axis with a ghost signal at each end of the peak. Move the Locator a little way behind and then in front of the axis of the sonde to detect the ghost signals. Finding the two ghost signals positively confirms the locate. Reduce the Locator sensitivity to lose the ghost signals but still indicate a clear peak response directly over the sonde.

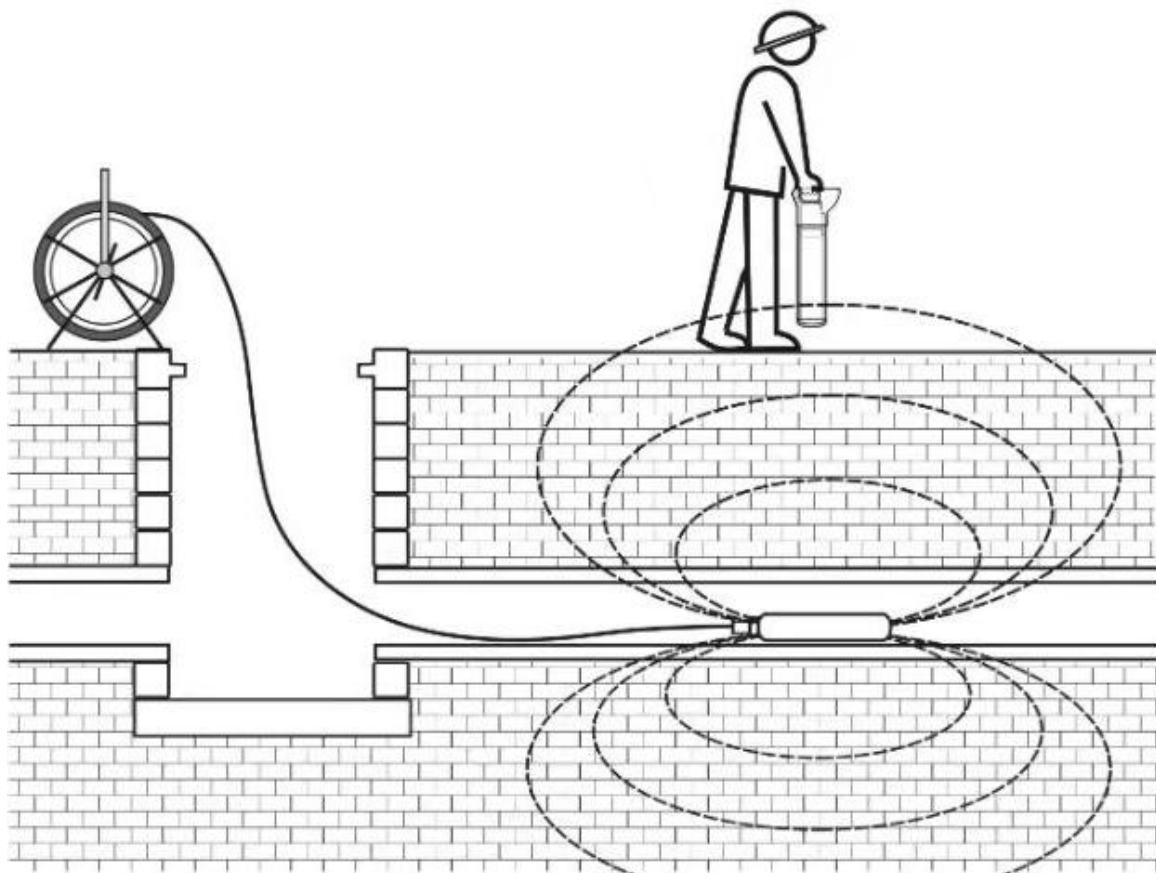
Moves Locator forward and backward



Locator sensitivity is now set for tracing the duct or drain unless the distance between sonde and Locator changes.

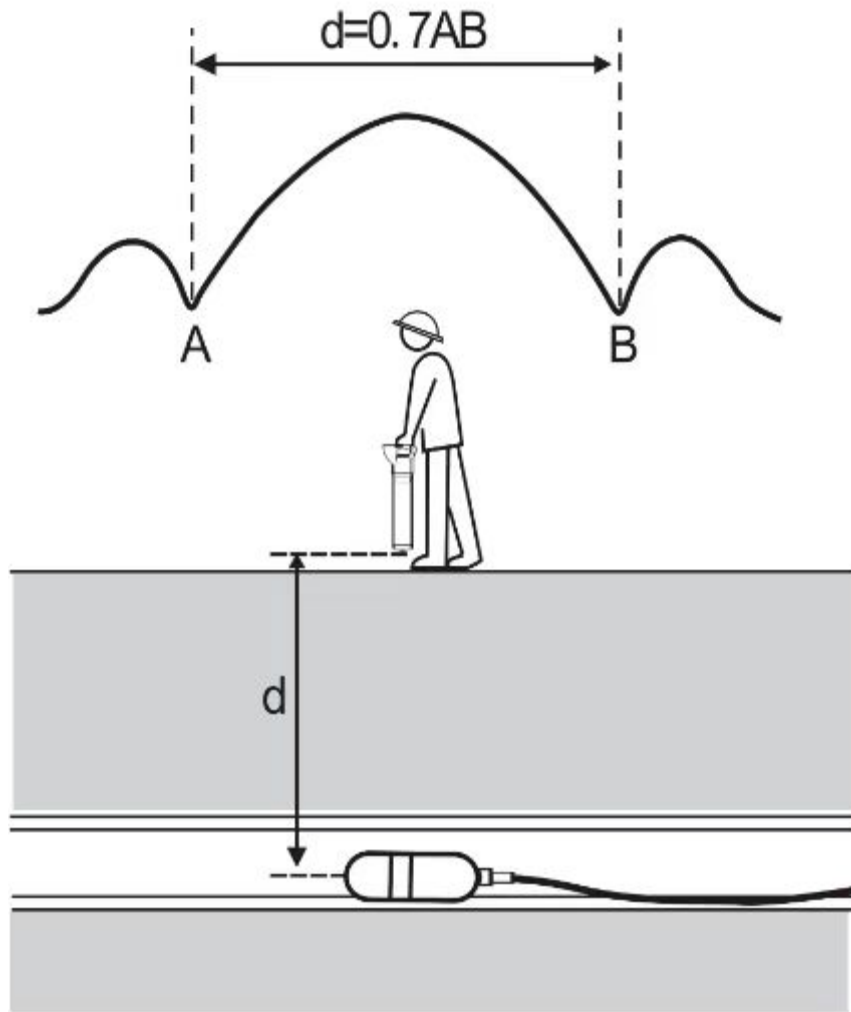
Propel the sonde three paces along the drain or duct and stop. Place the Locator over the supposed position of the sonde. Do not adjust the sensitivity level.

1. Move the Locator backwards and forwards with the blade in line with the sonde and stop when the Signal strength indicates a peak.
2. Rotate the Locator as if the blade is a pivot. Stop when the Signal strength indicates a peak.
3. Move the Locator from side to side until the Signal strength indicates a peak.
4. Repeat 1, 2, and 3 with the antenna vertical and resting on or just above the ground. The Locator should then be directly above the sonde with the antenna in-line with it. Mark the position of the sonde and its direction.
5. Propel the sonde a further three or four paces, pinpoint, and mark the position. Repeat this pinpoint procedure at similar intervals along the line of the drain or duct until the survey is completed.



Determining the depth of sonde by calculation

Pinpoint the sonde. Move the Locator in front of the sonde and still with the antenna in line with it, increase sensitivity to find the peak of the ghost signal. Move the Locator to behind the sonde ensuring that the Locator blade is always in line with the sonde. Find the valley positions A and B. Measure the distance between them and multiply by 0.7 to give an approximate depth measurement.

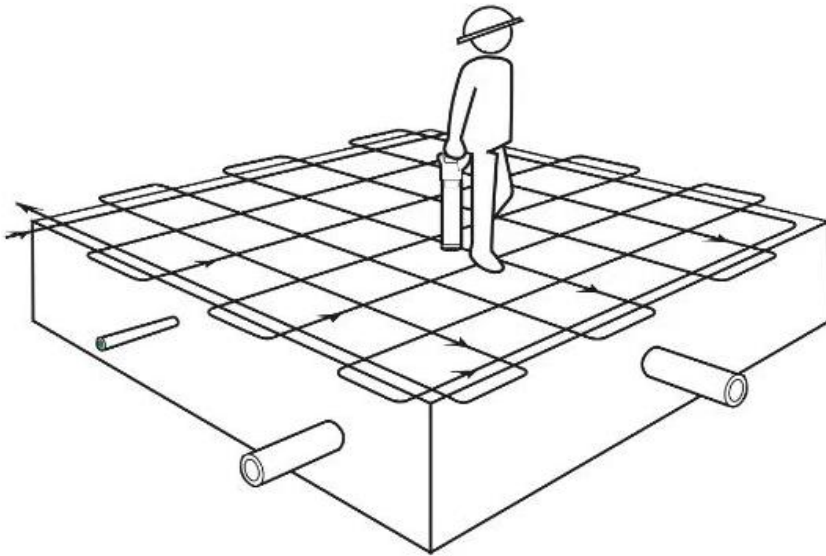


Power cable Location

Turn the Locator to Power-50Hz mode (for areas with 50Hz power frequency, applicable to China and Europe) or Power-60Hz mode (for areas with 60Hz power frequency, applicable to the United States and Japan).

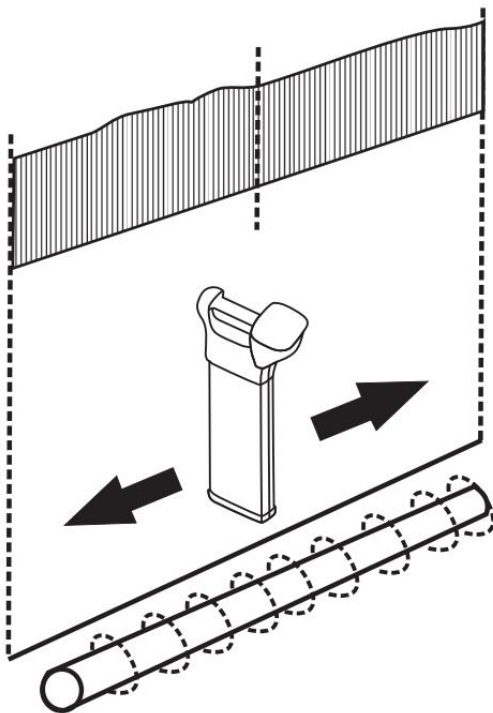
Adjust the sensitivity to maximum. Reduce the sensitivity to keep the signal strength on scale when strong signal.

Traverse the area in a grid search, at a steady walk, and hold the Locator comfortably with the antenna in line with the direction of movement and at right angles to any lines that may be crossed.

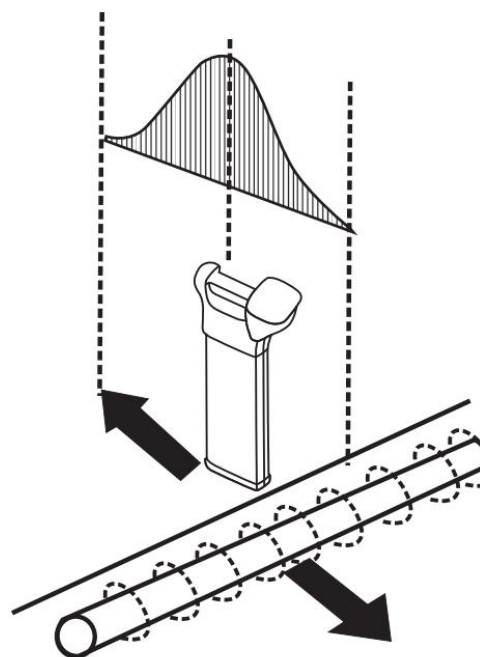


Stop when the Locator response rises to indicate the presence of a line. Rotate the Locator in place. When signal strength show peak, stop and move the Locator left, right, forward and backward. Stop where the signal strength show peak again, and the power line under and vertical to the Locator blade. Pinpoint the line and mark its position.

Moves Locator forward and backward



Moves Locator left and right



Trace the line out of the area being searched. Resume grid search in the area.

In some areas there may be a confusing amount of 50/60Hz power signals. Lift the Locator

5cm/2in from the ground and continue the sweep.

Switch the Locator to 'Radio' if the Locator has a radio detect mode. Increase sensitivity to maximum and repeat the above grid search procedure over the area, pinpointing, marking, and tracing out any lines that are located.

In most, but not all areas, radio mode will locate cables that do not radiate power signals and a grid search should be made in both power and radio modes.