CUES

accupoint

PRECISION LOCATING SYSTEM

Sewer and storm industry sonde and line locator kits

User Guide

SPX

Preface

About this guide

CAUTION: This guide provides basic operating instructions for the ACCUPOINT locator. It also contains important safety information and guidelines and as such should be read in its entirety before attempting to operate the ACCUPOINT locator.

This guide is intended as a quick reference guide only. For detailed instructions, including the use of accessories, please refer to the ACCUPOINT locator operation manual, which is available for download from: **www.radiodetection.com**

Certificates of conformity for the ACCUPOINT locator can be found at: **www.radiodetection.com**

⚠ WARNING: Direct connection to live conductors is POTENTIALLY LETHAL. Direct connections to live conductors should be attempted by fully qualified personnel only using the relevant products that allow connections to energized lines.

⚠ WARNING: The optional transmitter is capable of outputting potentially lethal voltages. Take care when applying signals to any pipe or cable and be sure to notify other technicians who may be working on the line.

⚠ WARNING: Risk of Hearing Loss. The locator emits noise levels which can cause partial or total hearing loss. When using headphones these must have an independent volume control. Set the volume level to its lowest value before donning the headphones.

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

⚠ WARNING: When using the optional transmitter, switch off the unit and disconnect cables before removing the battery pack.

⚠ WARNING: Batteries can get hot after prolonged use at full output power. Take care while replacing or handling batteries.

3 Year Extended Warranty

The ACCUPOINT locator is covered by a 1 year warranty as standard. Customers can extend their warranty period to a total of 3 years by registering their products within 3 months of purchase.

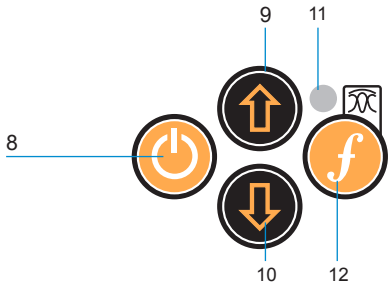
Visit **https://portal.radiodetection.com/** to create your company portal account, and use the Product page to register your locator or transmitter.

Information on how to create a company account can be obtained from: **https://support.radiodetection.com**

From time to time Radiodetection may release new software to improve the performance or add new functionality to its products. By registering, users will benefit from email alerts advising about new software and special offers related to its product range.

Users can opt-out at any time from receiving software and technical notifications, or just from receiving marketing material by contacting Radiodetection.

ACCUPOINT locator



Locator features

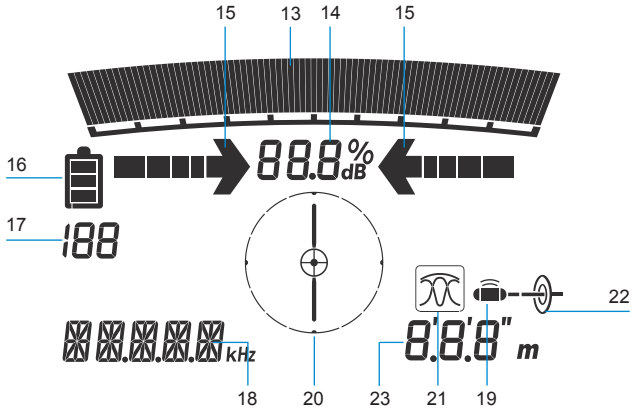
1. Keypad.
2. LCD with auto backlight.
3. Speaker.
4. Battery compartment.
   (Optional Lithium-Ion battery pack).
5. Accessory connector (Not used).
6. Headphone connector.
7. Mini USB-B port
   (inside battery compartment).

Locator keypad

8. Power key.
9. Up arrow key.
10. Down arrow key.
11. Backlight sensor.
12. Frequency key.

Locator screen icons

13. Signal strength bargraph with peak marker.
14. Signal strength readout.
15. Proportional Guidance arrows.
16. Battery level.
17. Sensitivity readout.
18. Frequency readout.
19. Sonde icon: Indicates that a sonde signal source is selected.
20. Compass: Shows the orientation of the located sonde relative to the locator.
21. Antenna mode icon:
    Indicates antenna mode selection:
    Guidance / Peak+.
22. Line icon: Indicates that a line signal source is selected.
23. Depth readout, metric or imperial (configuration dependent).



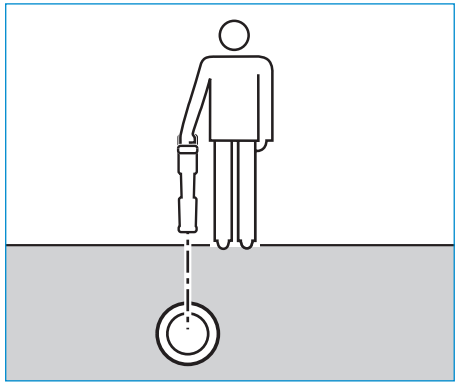
Locating pipes and cables

For more detailed descriptions of using the locator and transmitter, and for detailed locate techniques, refer to the Operation Manual.

The ACCUPOINT MS610 locator is designed to operate with the ‘blade’ of the locator perpendicular to the path of the cable or pipe being located.

Locating with Active Frequencies

An active frequency (eg. 83kHz) is applied to the target pipe or cable using the transmitter, and provides the most effective way of tracing buried pipes or cables.



The transmitter can apply a signal using three different methods:

Direct connection

In direct connection, you connect the transmitter directly to the pipe or cable you wish to survey using the red Direct Connect lead supplied. The black lead is generally connected to earth using the supplied ground stake.

The transmitter will then apply a discrete signal to the line, which you can trace using the locator. This method provides the best signal on an individual line.

⚠ WARNING: Direct connection to live conductors is POTENTIALLY LETHAL. Direct connections to live conductors should be attempted by fully qualified personnel only using the relevant products that allow connections to energized lines.

Induction

In this mode of operation the transmitter is placed on the ground over or near the survey area aligned with the metal pipe under investigation. If a Direct Connection lead or signal clamp is not plugged into the transmitter, it will automatically go into induction mode.

The transmitter will then induce the signal indiscriminately to any nearby metallic conductor.

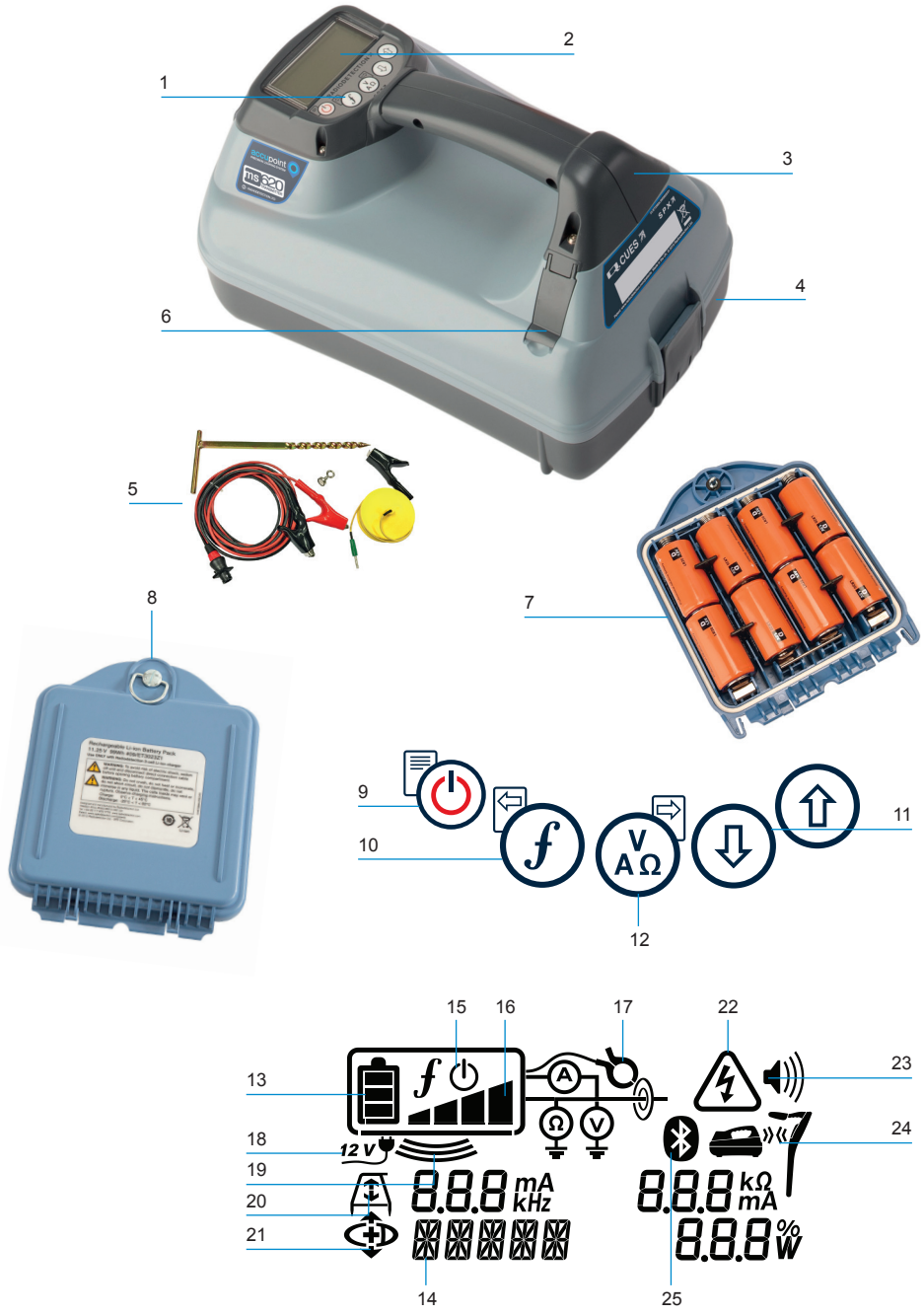
Transmitter Clamp

An optional signal clamp can be placed around an insulated live wire or pipe up to 215mm (8.5") in diameter to transfer the transmitter signal to the utility. This method of applying the transmitter signal is particularly useful on insulated live wires and removes the need to disconnect the supply to the cable.

⚠ WARNING: Do not clamp around uninsulated live conductors.

⚠ WARNING: Before applying or removing the clamp around a power cable ensure that the clamp is connected to the transmitter at all times.

ACCUPOINT MS620 transmitter (option)



Transmitter features

1. Keypad.
2. LCD.
3. Bluetooth module.
4. Removable accessory tray.
5. Accessories.
6. Side support tab.
7. D-cell battery tray.
8. Optional Lithium-Ion battery pack.

Transmitter keypad

9. Power key.
10. Frequency key.
11. Up and down arrows.
12. Measure key.

Transmitter screen icons

13. Battery level indicator.
14. Operation mode readout.
15. Standby icon.
16. Output level indicator.
17. Clamp icon: Indicates when a signal clamp or other accessory is connected.
18. DC Power connected indicator.
19. Induction mode indicator.
20. A-Frame: Indicates when the transmitter is in Fault-Find mode.
21. Not available on this model.
22. Voltage WARNING: indicator: Indicates that the transmitter is outputting potentially hazardous voltage levels.
23. Volume level indicator.
24. Not available on this model.
25. Not available on this model.

Note that when browsing the locator menu, the f and ⇨ keys act as left and right arrows. When browsing the transmitter menu, the f and V/AΩ keys act as left and right arrows.

To navigate menus:

1. Press the ⏻ key to enter the menu.
2. Use the ⇧ or ⇩ keys to scroll through the menu options.
3. Press the ⇨ key to enter the option's submenu.
4. Use the ⇧ or ⇩ keys to scroll through the submenu options.
5. Press the ⇦ key to confirm a selection and return to the previous menu.
6. Press the ⇦ key to return to the main operation screen.

NOTE: When you select an option and press the ⇦ key, the option will be enabled automatically.

Locator menu options

- VOL: Adjust the speaker volume from 0 (mute) to 3 (loudest).
- BT: Enable, disable, reset or pair Bluetooth connections.
- CDR: Performs a Current Direction (CD) Reset. (Alternatively press and hold the f key when in CD mode).
- INFO: Run a Self-Test, display the date of the most recent service recalibration (CAL) or the most recent eCert calibration.
- LANG: Select menu language.
- FREQ: Enable or disable individual frequencies.
- ALERT: Enable or disable Strike*Alert*™.
- COMPA: Enable or disable display of the Compass feature.

Transmitter menu options

- VOL: Adjust the speaker volume from 0 (mute) to 3 (loudest).
- FREQ: Enable or disable individual frequencies.
- BOOST: Boost transmitter output for a specified period of time (in minutes).
- LANG: Select menus language.
- OPT F: Run SideStep*auto*™ to auto-select a locate frequency for the connected utility.
- BATT: Set battery type: ALK, NiMH or Li-ION and enable / disable Eco mode.
- MAX P: Set the transmitter maximum power (W) limit.
- MODEL: Match the transmitter setting to the model of your locator.
- MAX V: Set the output voltage to maximum (90V).
- BT: Enable, disable or pair Bluetooth connections.

Examples of using the menu, selecting options and making changes:

Locator compass enable or disable

The locator compass can be enable or disabled.

To disable the compass:

1. Press the ⏻ key to enter the menu.
2. Scroll to the COMPA (compass) menu using the ⇧ or ⇩ arrows.
3. Press the ⇨ key to enter the COMPA menu.
4. Scroll up or down to select the compass status to OFF or ON.
5. Press the f key twice to accept your selection and return to the main operation screen.

Transmitter batteries

It is important to set the system to match the currently installed battery type to ensure optimal performance and correct battery level indication.

To set your battery type:

1. Press the ⏻ key to enter the menu.
2. Scroll to the BATT menu using the ⇧ or ⇩ arrows.
3. Press the V/AΩ key to enter the BATT menu.
4. Scroll up or down to select the correct battery type (Alk: Alkaline, NIMH: Nickel-metal Hydride or LIION: Lithium-Ion). Lithium-Ion is automatically selected when a Li-Ion pack is connected to a Locator.
5. Press the f key twice to accept your selection and return to the main operation screen.

Transmitter Eco mode

When using alkaline batteries, Eco mode can be selected to maximize run time. When Eco mode is selected the transmitter automatically reduces its maximum power output as battery levels run low. Eco mode is switched off by default. To Enable Eco Mode:

1. Press the ⏻ key to enter the menu.
2. Scroll to the BATT menu using the ⇧ or ⇩ arrows.
3. Press the V/AΩ key to enter the BATT menu.
4. Select the ALK Battery type using the ⇧ or ⇩ arrows.
5. Press the V/AΩ key to enter the ECO sub menu
6. Select ECO using the ⇧ or ⇩ arrows.
7. Press the f key three times to accept your selection and return to the main operation screen.

Locating the Pipe or cable

Having chosen the method of applying the transmitter signal to the pipe or cable, the locator is now ready to use.

Note: When the locator is positioned at a specific distance from the target line, the depth and current values will automatically display, although these values will not be accurate until the locator is directly over the target line and correctly orientated.

When directly over the target line, both depth and current readings will be at their minimum. This can be a very useful feature when attempting to pinpoint the target line.

Note: To display depth and current readings, the locator must be orientated in line with the target by using the compass and left / right arrows. The compass feature and left / right arrows in Figure 2 show the locator directly in line with the target.

Figure 1:

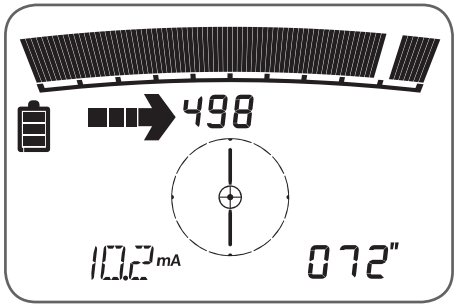


Figure 1 shows the locator in Guidance Mode with the locator positioned to the left of the target line.
In this position the Proportional Left arrow is displayed, indicating the direction in which the locator should be moved towards the target line. The target position indicator indicates the target positioned to the right of the locator and can be used to guide the locator towards the target line. The signal strength value will be displayed, indicating the strength of the signal from the target line. In this position the tone from the speaker of the locator will be continuous.

With the aid of the compass, the locator can be positioned in line with the target line enabling both depth and current readings to be displayed.

As the locator is moved towards the right, the tail on the proportional left arrow will reduce, the target position indicator will move from the right, towards the centre, the speaker tone will reduce and the numerical signal strength value will increase.

Use the proportional arrows, target position indicator and signal strength value to guide the locator directly over the target line.

Figure 2

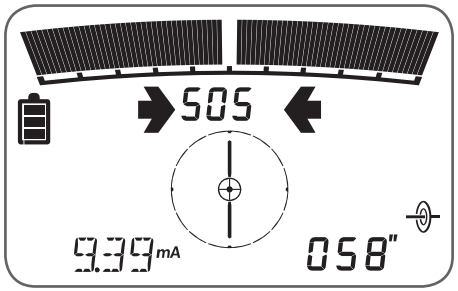


Figure 2 shows the locator in Guidance Mode and directly over the target line. In this position the left and right arrow heads will be displayed simultaneously, target position indicator in the centre, the signal strength value at its maximum, speaker tone silent and both depth and current readings at their minimum.

Figure 3:

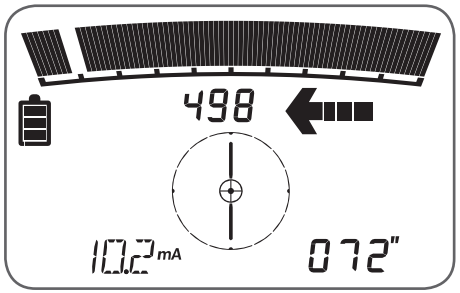


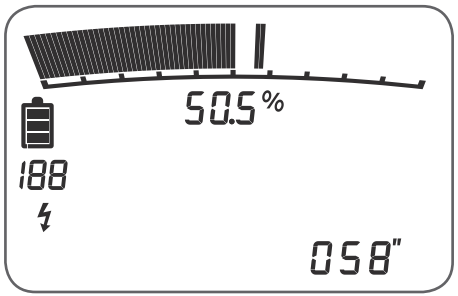
Figure 3 shows the locator in Guidance Mode and positioned to the right of the target line. In this position the Proportional Right arrow is displayed, indicating the direction in which the locator should be moved towards the target line. The target position indicator indicates the target positioned to the left of the locator and can be used to guide the locator towards the target line. The signal strength value will be displayed, indicating the strength of the signal from the target line. In this position the tone from the speaker of the locator will be pulsed.

With the aid of the compass, the locator can be positioned in line with the target line enabling both depth and current readings to be displayed.

As the locator is moved towards the left, the tail on the proportional right arrow will reduce, the target position indicator will move from the left, towards the centre, the pulsing tone from the speaker will reduce and the numerical signal strength value will increase.

Use the proportional arrows, target position indicator and signal strength value to guide the locator directly over the target line.

Figure 4:



With the locator powered up in guidance mode, a momentary press of the mode key will change the mode of operation to power mode. In this mode, the bar graph signal strength indicator, numerical signal strength (%), numerical gain setting and depth (m / ft) are available. The proportional left/right arrows and target position indicator will not be available (Refer to Figure 4).

Keypad actions and shortcuts

Switch the locator on by pressing the power key. Once powered up, the keys function as follows:

Locator keys

KEY	SHORT PRESS	LONG PRESS
	–	Switch power off
	Switch sonde frequency (options include: 512Hz(i) / 640Hz(i), 8kHz and 33kHz)	Switch between Guidance and Peak+ with guidance arrows
	Set gain to mid position and increases gain in 1dB increments in Peak+ mode.	Rapidly increases gain in 1dB increments in Peak+ mode.
	Set gain to mid position and decreases gain in 1dB increments in Peak+ mode.	Rapidly decreases gain in 1dB increments in Peak+ mode.

Note. (i)Configuration dependent.

Tip. Gain values set for each sonde frequency are stored internally and available when the unit is powered on.

Transmitter keys

KEY	SHORT PRESS	LONG PRESS
	Enter the menu	Switch power off
	Scroll through locate frequencies from low to high	–
	Take voltage and impedance measurements using the currently selected frequency	Take voltage and impedance measurements at a standardized frequency
and	Adjusts the output signal	Select standby / maximum standard power

Tip: to scroll through frequencies from high to low, hold while pressing the button (applies to both locators and transmitters).

Before you begin

IMPORTANT
This guide is intended to be a quick reference guide. We recommend you read the full operation manual before you attempt to operate the ACCUPOINT locator.

First use

The ACCUPOINT locator can be powered by D-cell alkaline batteries, D-cell NiMH batteries, or by an accessory Lithium-Ion (Li-Ion) battery pack.

To fit the D cell batteries in the locator, open the battery compartment and insert two D-Cell Alkaline or NiMH batteries, taking care to align the positive (+) and negative (-) terminals as indicated.

Rechargeable battery packs

Lithium-Ion battery packs are available for the locator, providing superior performance over traditional alkaline batteries. To fit these rechargeable packs, follow the instructions provided with each pack.

Checking the system software version and last calibration date

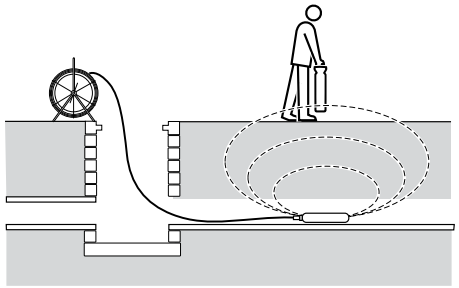
To check which version of software is running on your locator and the date of the last calibration, press and hold the key when switching the locator on. This information may be asked for when contacting Radiodetection or your local representative for technical support.

System setup

Regional and operational requirements are factory configured, no set-up is required.

Locating pipes with a sonde

For more detailed descriptions of using the locator, and for detailed sonde locate techniques, refer to the ACCUPOINT Operation Manual.



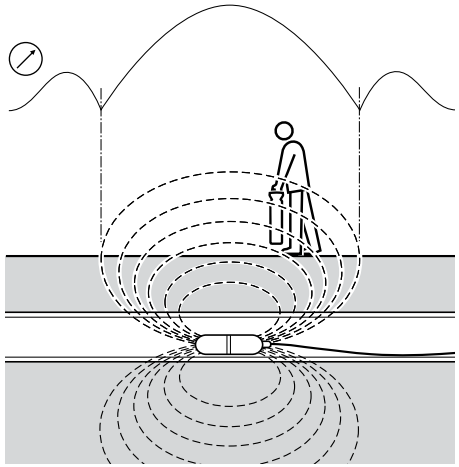
Make sure the sonde frequency matches the selected locator sonde frequency.

Note: The 'blade' of the locator must be in-line with the central axis of the sonde.

A new battery or a freshly recharged battery should be used at the beginning of each day and preferably at the start of a job. Check that the locator and sonde are working correctly.

A quick test for both sonde and locator is to position the sonde at ground level at a distance equal to its rated depth range from the locator. Point the locator at the sonde with its blade in-line with the sonde, and check that the bar graph on the locator displays more than 50% with the sensitivity of the locator set to maximum.

With the sonde in place at the survey location, hold the locator vertically and directly over the sonde's estimated position. Make sure the blade is in-line with the sonde. Adjust the sensitivity (gain) of the locator to give a bar graph display reading between 60% and 80%.



A sonde radiates a peak radio frequency field from the center of its axis with weaker signal (ghost) lobes at each side. Ghost lobe identification helps to confirm the accuracy of the peak (center) position. Move the locator a little way to one side and then along the axis of the sonde iteratively forwards and backwards to detect the ghost lobes. Reduce the sensitivity of the locator until the ghost lobes are no longer detected.

With the locator sensitivity set as desired, propel the sonde along three to four paces and stop.

Place the locator over the estimated position of the sonde:

1. Refer to Figure 1.
   Move the locator backwards and forwards with the blade in-line with the sonde. Stop when the locator display indicates a clear peak response.
2. Refer to Figure 2.
   Rotate the locator as if the blade were a pivot, stop when the display indicates a clear peak response.
3. Refer to Figure 3.
   Move the locator from side to side until the display indicates a clear peak response.
4. Repeat Steps 1 to 3 in smaller increments with the locator blade resting on or near the ground. The locator should now be directly above the sonde with the blade in line with the sonde. Now mark the position.
5. Propel the sonde a further three to four paces along the drain or duct and pinpoint and mark. Repeat this procedure along the route at similar intervals. It should only be necessary to change the locator sensitivity while tracing the sonde if there is a change in the depth of the drain or duct, or the distance between locator and sonde.

Figure 1:

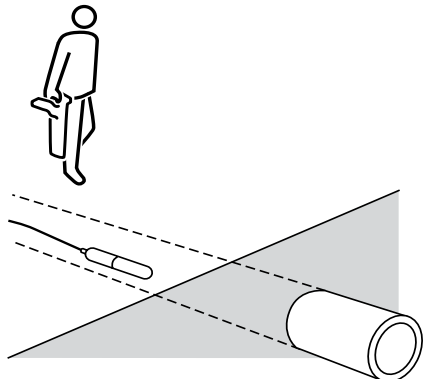


Figure 2:

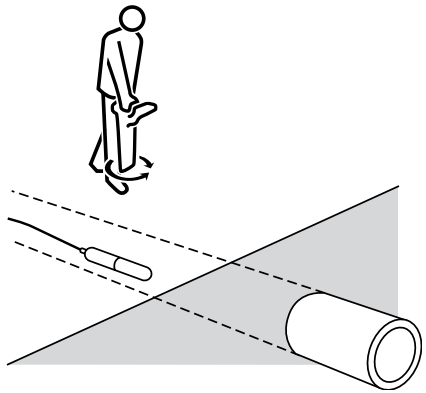
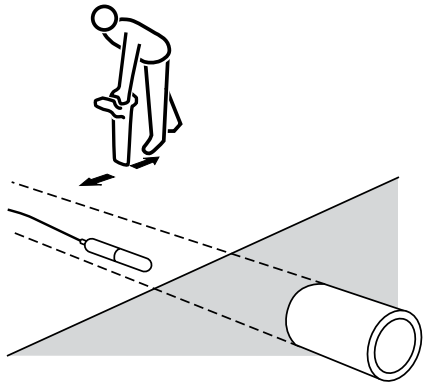


Figure 3:



Locate Modes

The ACCUPOINT locator offers a choice of two locate modes for each sonde frequency. These are designed to maximise the effective use of sonde devices for pipe detection.

To switch between locate modes, press and hold the f key. Modes are described as follows:

GUIDANCE: Proportional arrows and a ballistic 'needle' combine with audio left/right indication for rapidly tracing the general path of a buried utility.

PEAK+: A peak bargraph provides a visual readout of the signal strength with proportional Guidance arrows for rapid line tracing.

Depth and compass readout

⚠ WARNING: Never use the depth measurement readout as a guide for mechanical or other digging activity. Always follow safe digging guidelines.

The ACCUPOINT locator can measure and display sonde depth and the relative orientation of a sonde to the locator. This helps you to make sure that you are following the right pipe, especially when other utilities are present.

The ACCUPOINT locator features TruDepth™, a feature that helps you to ensure the accuracy of your locates. The depth is automatically removed from the display when the locator is at an angle of more than 7.5° from the path of the pipe being located, or when the locator determines that signal conditions are too poor for reliable measurements.

Using accessories

The ACCUPOINT is compatible with a range of sondes and flexrods. For detailed information on using these accessories please refer to the ACCUPOINT locator operation manual.

Sondes and Flexrods

Sondes are battery powered transmitters that are useful for tracing non-metallic pipes. They can be fixed to Flexrods to allow them to be pushed through pipes or conduits, and some are suitable for blowing through ductwork. The ACCUPOINT can detect a range of sonde frequencies, including those transmitted by flexiprobe™ pushrod systems and flexitrax™ crawlers.

Training

Radiodetection provides training services for most Radiodetection products. Our qualified instructors will train equipment operators or other personnel at your preferred location or at Radiodetection headquarters. For more information go to: **www.radiodetection.com** or contact your local Radiodetection representative.

Care and maintenance

The ACCUPOINT locator and optional transmitter are robust, durable and weatherproof. However you can extend your equipment's life by following these care and maintenance guidelines.

General

Store the equipment in a clean and dry environment.

Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged.

Do not use this equipment when damaged or faulty.

Batteries and power supply

Only use the rechargeable battery packs, chargers and power supplies approved by Radiodetection.

If not using rechargeable packs, use good quality Alkaline or NiMH batteries only.

Batteries should be disposed of in accordance with your company's work practice, and/or any relevant laws or guidelines in your country.

Cleaning

⚠ WARNING: Do not attempt to clean this equipment when it is powered or connected to any power source, including batteries, adapters and live cables.

Ensure the equipment is clean and dry whenever possible.

Clean with a soft, moistened cloth. Do not use abrasive materials or chemicals as they may damage the casing, including the reflective labels. Do not use high pressure jets of water to clean the equipment.

If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.

Software upgrades

From time to time, CUES may release software upgrades to enhance features and improve performance of the ACCUPOINT locator or transmitter.

Please contact CUES for details of any updates, their benefits and how they can be installed (may require a return to CUES).

Disassembly

Do not attempt to disassemble this equipment under any circumstances. The locator and optional transmitter contain no user serviceable parts.

Unauthorized disassembly will void the manufacturer's warranty, and may damage the equipment or reduce its performance.

Service and maintenance

The locator and transmitter are designed so that they do not require regular recalibration. However, as with all safety equipment, it is recommended that they are serviced and calibrated at least once a year either at CUES or an approved repair center.

NOTE: Service by non-approved service centers may void the manufacturer's warranty.

Details of CUES offices and distribution partners can be found at:
www.cuesinc.com

CUES products, including this guide, are under continuous development and are subject to change without notice. Go to **www.cuesinc.com** or contact your local CUES representative for the latest information regarding the ACCUPOINT locator or any Radiodetection product.

Visit **www.cuesinc.com**

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As the world's leading manufacturer of water, wastewater, and stormwater inspection equipment, CUES provides the necessary tools for both pipeline inspection and repair. For 50+ years, CUES has manufactured the most rugged and reliable pipeline inspection equipment in the industry.