

C.SCOPE

PRECISION PIPE AND CABLE LOCATION

Accessories Instruction Manual

Signal Clamp

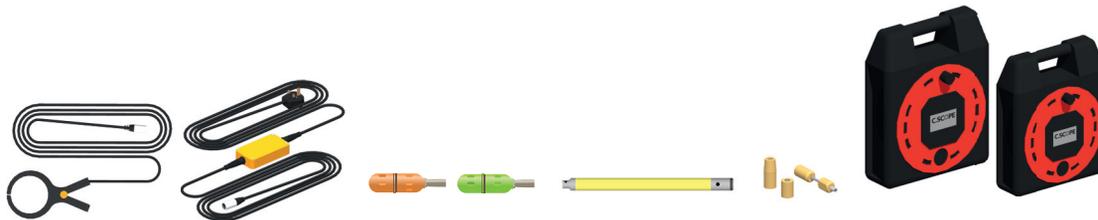
Signal Injector

General Purpose Sonde 33kHz

General Purpose Sonde 8kHz

Duct Sonde 33kHz

20m & 50m Plastic Pipe Tracers







GENERAL WARNINGS (see other Accessory specific warnings)



ALWAYS
EXCAVATE
WITH CARE



WARNING Do not use the equipment outside of the temperature range -10°C to $+50^{\circ}\text{C}$ as the batteries may cease to function adequately.



WARNING Do not use the equipment in areas where hazardous gases may be present.



WARNING Always make sure that the Locator and Transmitter/ Sonde are set to the same frequency when used together.



WARNING Performance may be impaired by unusually strong electromagnetic fields.

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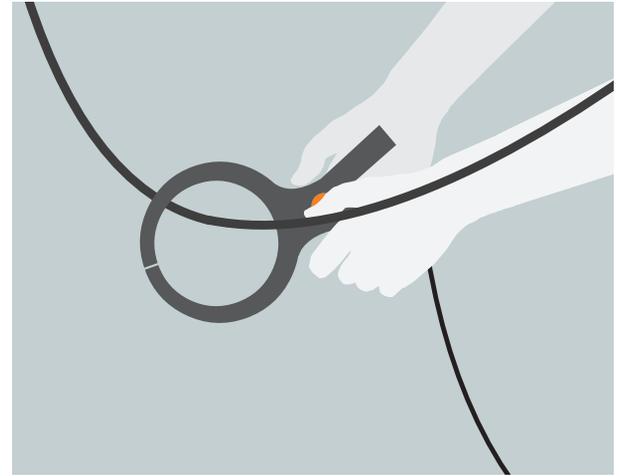
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Transmitter/ Generator Accessories: Signal Clamp

Signal Clamp

1. Plug the Signal Clamp into the connection socket on the Transmitter/ Generator.
2. Turn the Transmitter/ Generator on (and select either 33kHz or 8kHz on the Transmitter).
3. Check that the jaws of the Signal Clamp are clean. Place the Signal Clamp AROUND the cable making sure that the jaws are able to fully close. The audible signal from the Transmitter/ Generator should drop in pitch indicating that the clamp jaws have closed correctly and the response on the Transmitter/ Generator display (if fitted) should increase.



WARNING NEVER attempt to place the Signal Clamp around electricity cables that are deliberately suspended out of reach. They may be unsheathed or unprotected cables.

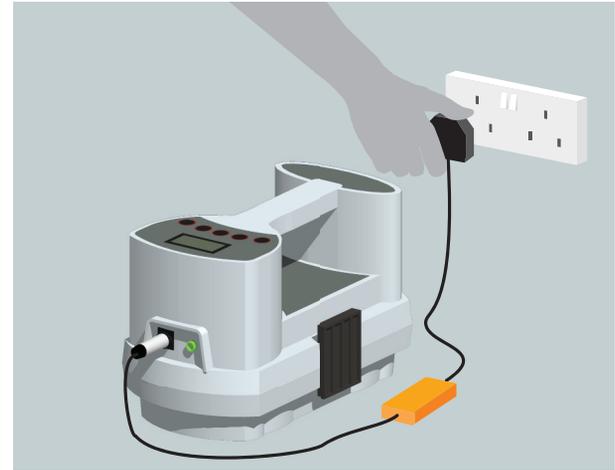


NOTE The Signal Clamp cannot apply a signal to a cable that is not earthed at both ends such as abandoned cables that have been cut off where they appear above ground or cables supplying unearthed equipment.

Transmitter/ Generator Accessories: Signal Injector

Signal Injector

1. Plug the Signal Injector into the connection socket on the Transmitter/ Generator and an electric outlet.
2. Turn the Transmitter/ Generator on (and select either 33kHz or 8kHz on the Transmitter).
3. Turn the wall socket on. The audible tone from the Transmitter/ Generator will drop in pitch to indicate a successful connection and the Transmitter/ Generator display (if fitted) should go to full scale.



NOTE On two wire Protective Multiple Earth (PME) systems it may be necessary to also provide an external earth using the yellow 10 metre Auxiliary Earth Lead and Earth Stake.

NOTE Always check with the owners that it is acceptable to interrupt the supply before connecting the Signal Injector.

NOTE Using the Signal Injector may cause the system protection to trip.



WARNING DO NOT use the Signal Injector on systems with voltages in excess of 240 volts AC. Domestic systems will normally be below this voltage.

Pipe Tracing using a Sonde

Non-metallic pipes such as sewers or drains, service ducts, plastic gas and water pipes are not electrically conductive and so will not be detectable using a Locator on the Power or Radio (or *AllScan* Mode if available). It is also impossible to apply a detectable Transmitter/Generator signal to the non-metallic pipe or, for that matter, to the water or gas within that pipe.

If access can be gained into these pipes then a C.Scope Sonde or Plastic Pipe Tracer should make it possible to determine their position and route.

Sondes

C.Scope Sondes are small, battery powered, waterproof, 33kHz or 8kHz transmitters that can be inserted into a pipe, such as a sewer, drain or cable duct. Their position can be pinpointed (and therefore the location of the pipe) by using the Locator switched to Transmitter/Generator Mode.

The Sonde is inserted into and then moved along the pipe to the point at which the pipe needs to be located. This is normally done by fitting the Sonde to drain rods. Alternatively, the Sonde can be attached to a continuous fibreglass duct rodder, jetter hose or camera inspection system.

- The 33kHz and 8kHz General Purpose Sondes can be used in pipes as small as 50mm in diameter and up to seven metres deep.
- The 33kHz Duct Sonde can be used in pipes as small as 30mm in diameter and up to five metres deep.

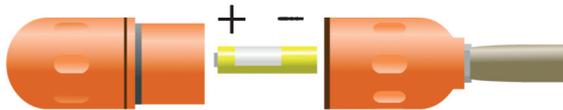


NOTE A 33kHz or 8kHz Sonde will NOT transmit a signal through a metal pipe.

Pipe Tracing using a Sonde: Batteries

General Purpose Sonde and Metal Pipe Sonde

The General Purpose Sonde is supplied in two frequencies; 33kHz (orange casing) or 8kHz (green casing) and is powered by a single AA (LR6) size alkaline battery.



1. To turn the Sonde on, separate the two halves of the Sonde casing. Insert a new battery into the battery compartment with the positive end down.
2. Screw the two halves of the Sonde together being careful not to over tighten them. The Sonde is now transmitting a signal.
3. To turn the Sonde off the battery must be removed or reversed.



NOTE Only use alkaline batteries. Dispose of the used battery safely in accordance with local regulations.

NOTE Always use a new battery in a Sonde if you expect to take a long time to trace the pipe or duct route.



WARNING The Locator frequency **MUST** always be set to the same frequency as the Sonde.

Pipe Tracing using a Sonde: Batteries

Duct Sonde

The Duct Sonde is supplied at 33kHz only (yellow casing) and is powered by a single AAA (LR03) size alkaline battery.

1. To turn the Duct Sonde on, use a large flat bladed screwdriver to unscrew the battery cover located within the hollow end of the Sonde casing. Insert a new battery into the battery compartment with the positive end down.
2. Replace the battery cover fully using the screwdriver to secure. The Duct Sonde is now transmitting a signal.
3. To turn the Sonde off the battery must be removed.



NOTE Only use alkaline batteries. Dispose of the used battery safely in accordance with local regulations.

NOTE Always use a new battery in a Sonde if you expect to take a long time to trace the pipe or duct route.



WARNING The Locator frequency **MUST** always be set to the same frequency as the Sonde.

Pipe Tracing using a Sonde: Tracing a Sonde

The technique used to determine the position of a Sonde is always the same irrespective of which Sonde is being used.

Before inserting the Sonde into the pipe it is best to set up the Locator so that the Sensitivity is correctly adjusted to suit the pipe depth. This is easier to do when the Sonde is visible at the bottom of the manhole rather than already in the pipe.

1. The blade of the Locator must be held IN LINE with the Sonde at all times.

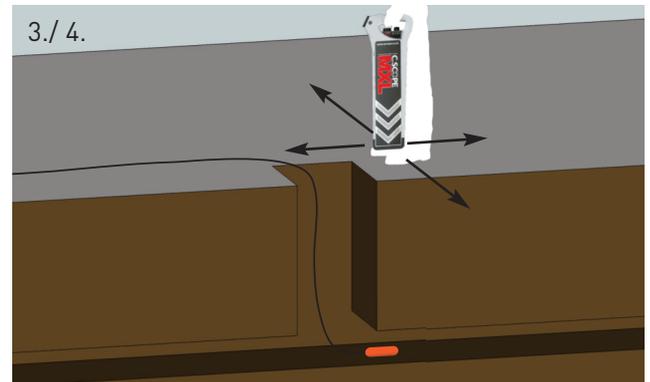


NOTE This is at 90 degrees to the way in which the Locator is held for most other locating tasks.

2. Turn the Locator to Transmitter/ Generator Mode, switch on and select the correct frequency. Check the Battery Level Indicator to confirm the Locator batteries are usable. Replace if necessary.

3. Keeping the blade of the Locator in line with the Sonde, move the Locator backwards and forwards over the length of the Sonde. Adjust the sensitivity until a clear peak response is shown on the display as the Locator passes directly over the position of the Sonde.

4. Move the Locator from side to side over the position of the Sonde. A similar peak response should be seen on the display as the Locator passes directly over the position of the Sonde. The Locator is now set up ready for tracing the Sonde.



Pipe Tracing using a Sonde: Tracing a Sonde

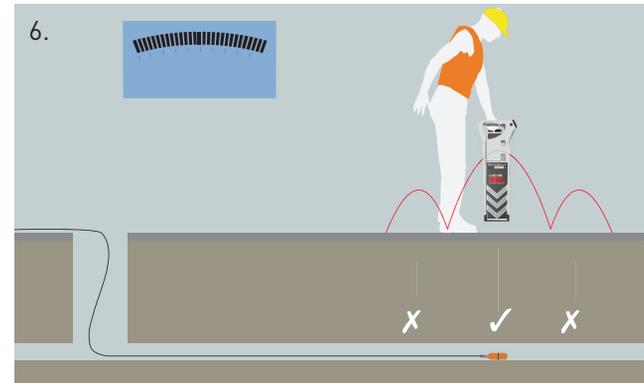
5. Push the Sonde up the pipe.

6. With the Locator turned on, walk from the pipe access point in the direction that the Sonde was pushed. A strong peak signal directly over the Sonde should be detected with two lesser “ghost” signals found either side of the Sonde’s true position. These ghost signals are always weaker than the main signal and should not be mistaken for the true Sonde signal.

7. Pinpoint the Sonde position by moving the Locator back and forth and from side to side to get the peak response.

8. Push the Sonde further up the pipe and repeat the pinpointing process.

See Page 14 for depth measurement using a Sonde.



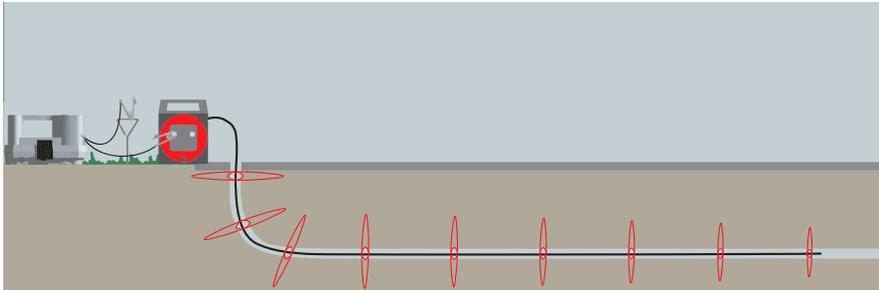
Non-Metallic Pipe Tracing: Plastic Pipe Tracers

Line Tracing

The Plastic Pipe Tracers can be used in services up to 3 metres deep (Locator dependent) on line tracing mode and do not work through metal pipes or ducts.

The Plastic Pipe Tracer needs to be inserted into the pipe before a signal from the Transmitter/ Generator is applied to the length of the Tracer.

The 33kHz Transmitter/ Generator signal is applied using the 'Direct Connection to a metal pipe' method as shown in the Locator manual. Only one lead is connected to the Plastic Pipe Tracer, the other is connected to an Earth Stake.



WARNING Authorisation may be required before using the Plastic Pipe Tracer on some services.

WARNING DO NOT touch the metal of the Crocodile Clips or the terminals of the Plastic Pipe Tracer when using the Transmitter/ Generator.



NOTE It is important that a change of pitch is heard when making the connections to ensure that there is a detectable signal present on the Tracer.

NOTE The Transmitter/ Generator signal is unlikely to travel the entire length of the Tracer within the pipe. Never assume that you have located the end of the Tracer on Line Tracing Mode. Use End Tracing if required.

Non-Metallic Pipe Tracing: Plastic Pipe Tracer

End Tracing

The very tip of the Plastic Pipe Tracer can be energised with the signal from a Transmitter/ Generator. It is acting much like a Sonde and offers a very reliable way of pinpointing the position of the tip.

A 33kHz Transmitter/ Generator signal is applied by connecting the red Direct Connection Lead to one of the terminals on the Tracer and the black Earth Lead to the other terminal. As the second connection is made a change of pitch should be heard from the Transmitter/ Generator signal indicating successful connection.

The tip of the Plastic Pipe Tracer is then pinpointed using the same technique as for Sonde tracing with the Locator blade in line with the Tracer.



WARNING Authorisation may be required before using the Plastic Pipe Tracer on some services.

WARNING DO NOT touch the metal of the Crocodile Clips or the terminals of the Plastic Pipe Tracer when using the Transmitter/ Generator.



NOTE It is important that a change of pitch is heard when making the connections to ensure that there is a detectable signal present on the Tracer.

NOTE End tracing is the ideal method to use to determine where the end of the pipe is but does not give the route of the pipe.

Depth Measurement using Sonde/Plastic Pipe Tracer (end tracing only)



NOTE The following instructions apply equally to the Plastic Pipe Tracer in End Tracing Mode and General Purpose Sondes. The Duct Sonde cannot be used for depth measurement.

1. Pinpoint the exact position of the Sonde as shown in the “Non-metallic Pipes” section. Take care to ensure that you are over the top of the Sonde and not over one of the two “ghost” signals in front of and behind the true position.
2. Rest the Locator on the ground, keeping it vertical and IN LINE with the Sonde.
3. Push the depth button TWICE and hold, on the second push, to select Sonde Depth Mode. The word ‘SONDE’ will flash on the display and the depth will then be displayed. If the word ‘SONDE’ is not displayed then the depth reading will not be accurate.



NOTE The depth shown is that of the Sonde and NOT of the pipe.

Depth Measurement: Error Readings

The Locator may show the following error codes when attempting a Depth Measurement.

1. **000** The Sonde/ Plastic Pipe Tracer is too shallow (less than 0.20m deep) for the Locator to obtain an accurate depth. It should be possible to calculate the depth by raising the Locator a set amount and then carrying out the Depth Measurement again.
2. **888** The Sonde/ Plastic Pipe Tracer is too deep for the Locator to measure its depth or there is no signal at all present.
3. **LD** The signal from the Sonde/ Plastic Pipe Tracer is not strong enough for the Locator to give a reliable Depth Measurement.
4. **OL** Overload. The signal from the Sonde/ Plastic Pipe Tracer is too strong for the Locator to give a reliable Depth Measurement.



Maintenance/ General Symbols

Maintenance

All C.Scope Accessories must be visually inspected for any signs of deterioration prior to each use. Do not use if there is any deterioration.

There are no user serviceable parts for these Accessories.

Handling

C.Scope Accessories are rugged products designed for the rigours of every day use. However, to ensure that the specified performance is maintained, it is essential to treat them with care by avoiding shocks, vibration and excesses of temperature. They are not guaranteed to prevent water ingress if immersed with the exception of all Sondes.

Cleaning

All C.Scope Accessories can be cleaned with a sponge dampened with warm water. A mild soap may be used if required. The use of solvents should be avoided. All Accessories should be stored completely dry. Do not allow moisture in any battery compartments or near any connectors.

Storage

The Accessories should be stored in a clean and dry environment. The temperature should not exceed the range -10°C to +50°C. If stored for long periods any batteries should be removed.

General Symbols



Warning - Refer to manual.



Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice. (In the UK visit www.recycle-more.co.uk)



Conforms to EEC safety requirements.



Tested to harmonised standards. There are some restrictions on use in some EEC countries. Contact Local Authorities.



Double Insulated.

Technical Specifications

Signal Clamp:

Part number	YIRC-33-8
Construction	Laminated toroid induction core housed in robust plastic casing Secondary pivoted assembly providing best contact area Spring loaded jaws
Ingress Protection	IP54
Dimensions	270 x 160 x 28 mm
Lead length	2 m
Max service diameter	105 mm
Frequency	8 to 33 kHz
Insulation	Double Insulated
Safety	Conforms to BSEN61010-1:1993 and BSEN 61010-2-032:1995

Signal Injector:

Part number	YIRC-33-8
Construction	Epoxy resin sealed electronics
Ingress Protection	IP54 (This product is for internal use only)
Dimensions	100 x 50 x 25 mm
Lead lengths	input 0.9 m output input 1.5 m
Connectors	
Output Plug:	Schuko or UK 3 pin (Cat II)
Maximum Voltage	250 V rms
Maximum Power	100 mW (nominal mains load)
Mains Frequency	50/60 Hz (Range 45-65 Hz)
Input Connector:	
Maximum Voltage	42 V rms
Maximum Power	300 mW
Frequency	8 to 33 kHz
Insulation	Double Insulated
Safety	Conforms to BSEN61010-1:1993 and BSEN 61010-2-032:1995

Technical Specifications

33kHz General Purpose Sonde:

Part Number	YIRS-33
Construction	Rugged orange plastic casing, stainless steel stud Epoxy resin filled
Ingress Protection	IP68
Dimensions	39 mm dia, 121 mm long
Battery Type	AA, LR6, Alkaline
Battery Life (typical)	50 hours
Operational Depth	up to 7 m (Locator dependent)
Rod fitting	M10 stud supplied with 7 t.p.i rod fitting, other adaptors available
Frequency	32,768 Hz (continuous)

8kHz General Purpose Sonde:

Part Number	YIRS-8
Construction	Rugged green plastic casing, stainless steel stud Epoxy resin filled
Ingress Protection	IP68
Dimensions	39 mm dia, 121 mm long
Battery Type	AA, LR6, Alkaline
Battery Life (typical)	50 hours
Operational Depth	up to 7 m (Locator dependent)
Rod fitting	M10 stud supplied with 7 t.p.i rod fitting, other adaptors available
Frequency	8,192 Hz (continuous)

Technical Specifications

33_kHz Duct Sonde:

Part Number	YIRSD-33
Construction	Rugged yellow plastic casing Epoxy resin filled
Ingress Protection	IP68
Dimensions	24 mm dia 300 mm long
Battery Type	AAA, LR03, Alkaline
Battery Life (typical)	20 hours
Low battery indication	Changes to continuous frequency
Operational Depth	up to 4.5 m (Locator dependent)
Rod fitting	3/4" Whitworth thread, male one end, female the other
Frequency	32,768 Hz (pulsed)

Plastic Pipe Tracers:

Part number	YIRPPT20-33 & YIRPPT50-33
Construction	Yellow flexible NYLON tube for part no. YIRPPT20-33 (20 m version) Black semi rigid NYLON tube for part no. YIRPPT50-33 (50 m version) Rounded Brass Tip (all models) Polypropylene case and reel
Length	Part no. YIRPPT20-33: 20 m useable length Part no. YIRPPT50-33: 50 m useable length
Diameter	6 mm
Ingress Protection	IP68, tip and tube; IP54, case and reel
Frequency	Designed to operate at 33 +/- 2 kHz
Operational Depth	Line detection depth up to 3.0 m (Locator dependent) Tip detection depth up to 4.0 m (Locator dependent)

Support Services: Training/Service/Repairs

Training

This manual is comprehensive but cannot replace tuition. Excellent training is available directly from C.Scope and via authorised C.Scope agents, cost effectively, at your chosen location. C.Scope always recommend operators are trained and awarded a certificate of competence in the use of Pipe and Cable Locators.

Service

Routine periodic servicing and re-calibration of your equipment is available from C.Scope and C.Scope Authorised Service Centres if required.

Repairs

Before returning equipment suspected of being faulty, please check the machine carefully with a fresh set of batteries. Check the battery connections and rotate the batteries in the holder. Refer to the section in the manual on functional checks and if possible substitute known good equipment as a confirmation.

If the problem persists then contact the company from whom you purchased the equipment, OR contact C.Scope stating the serial number, date and place of purchase and indicating briefly the nature of the fault. Advice on the best course of action can then be given.

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