FERRET™

User Manual

Ferret Small Bore Leak Location System

Model: FSB-SYS-02-A

Notice

Ferret Technology Ltd. shall not be liable for incidental or consequential damages in connection with or arising out of the furnishing, performance, or use of this document.

Safety Information

Always follow basic safety precautions when using this product.

WARNING

To prevent injury or product damage observe the following:

1. Read and understand all the instructions in this user manual.
2. Observe all warnings and instructions marked on the product.
3. Wear protective foot and eye wear when operating the product.
4. Follow local procedures for disinfecting and flushing pipework after using the product.

Symbol explanation

Look out for these symbols in the manual that give you prompts to useful information.

WARNING This symbol warns of dangers that may threaten the safety of the user or damage the product.

TIP This symbol highlights hints and tips for optimal use of the product.

CAUTION This symbol flags advice and actions that should be adhered to, to ensure correct operation of the product.

CHECK This symbol identifies checks that should be made before proceeding to the next stage of operation.

OBSERVE This symbol outlines things that users should look out for and then act on accordingly.

POINTER This symbol links text in the instructions to specific locations on the corresponding product images.

Contents

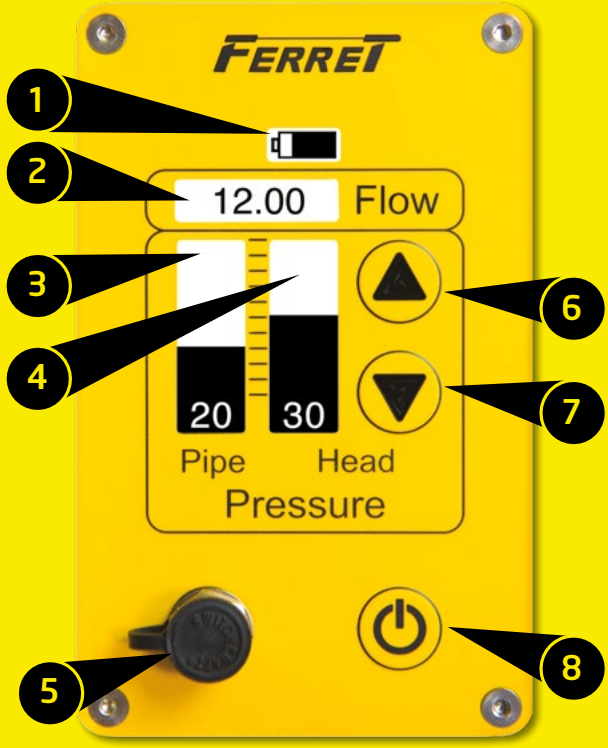
1 Controls & Connection Points

1. Ferret Head Boost
2. Flow On / Off Valve
3. Pipe Pressure Dial
4. Inlet Port
5. Outlet Port

- 6 Air Vent
- 7 Winder Handle
- 8 Trace Connection
- 9 Display & Keypad

2 Display & Keypad Layout

1. Battery Level
2. Flow Meter
3. Pipe Pressure Gauge •
4. Ferret Head Pressure Gauge •
5. Recharging Socket
6. Ferret Head Inflate Button •
7. Ferret Head Deflate Button
8. On Button



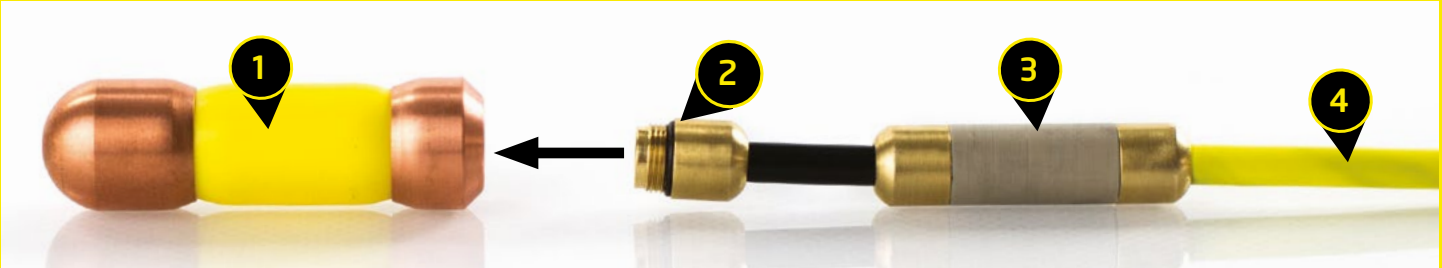
3 Ancillary Equipment

1. Carry Case
2. Ancillary Equipment Bag
3. Outlet Hose
4. Inlet Hose •
5. Trace Lead
6. Mains Charger

4 Ferret Heads

OVERVIEW

The **Ferret Head** ❶ is the part of the system that travels down the inside of the leaking pipe. It is attached to the main system via the **Head Connector** ❷. The Head Connector is attached to the front of the **Sonde** ❸. The back of the Sonde is connected to the **Umbilical Cord** ❹ which is tethered to the main Ferret system.



FERRET HEAD TYPES

There are two types of Ferret Head that are designed to be used at different working pressures. White coloured Heads are for working at less than 20mH2O / 2 Bar / 30psi. Yellow Heads are for working at higher pressures.

FERRET HEAD SIZES

The Ferret Leak Location System is for use in pipes with internal diameters from 10mm (3/8") to 45mm (1 3/4"). There are five different size Ferret Heads for this range of pipes. The table shows the dimensions of the Ferret Heads and the recommended pipe diameters that they should be used in.

Ferret Head			Leaking Pipe			
Size	Outer Ø (deflated)		Internal Ø (mm)		Internal Ø (inch)	
	mm	inch	minimum	maximum	minimum	maximum
Zero	8	5/16	9.5	13	3/8	1/2
One	9	23/64	10.5	15	13/32	19/32
Two	13	33/64	14.5	20	9/16	25/32
Three	17	43/64	18.5	30	23/32	13/16
Four	23	29/32	24.5	45	61/64	1 3/4

TIP When selecting the correct size Ferret Head consider the following:

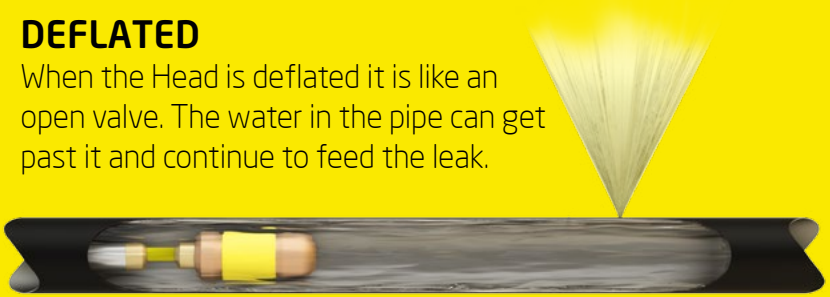
- The less a Ferret Head is inflated the lower the chance of it bursting. Always use the biggest Head possible.
- Allow for liners/inserts in joints and fittings, which will have a smaller internal diameter than the pipe.

5 How the Ferret Works

The Ferret Head acts like a valve that can be moved along the pipe to pinpoint the leak. The Ferret Head has three operating states; **DEFLATED, INFLATED** and **MOVING.**

DEFLATED

When the Head is deflated it is like an open valve. The water in the pipe can get past it and continue to feed the leak.



The leak flow is shown on the Flow Meter. The pressure in the leaking pipe and the Head are shown on the pressure gauges.

INFLATED

When the Head is inflated it is like a closed valve. The Head blocks the pipe so the water in the pipe can't get past to supply the leak.

The Head should be inflated at least 10 to 15 units higher than the pipe pressure. When the flow is turned on it should drop to zero, which shows that the Head has sealed the pipe.

MOVING

When the Head is deflated so that the pressure inside it is almost the same as in the pipe it will start to move.

When the Ferret Head is moving along the pipe the Winder Handle will be turning.

The pressure in the pipe will push the Head down the pipe towards the leak. The Flow Meter will show the flow of water pushing the Head along the pipe.

AUTOMATIC LEAK LOCATION

When the Head passes a leak the pressure in the pipe, which was pushing it, drops so the Head stops moving along the pipe.

The Ferret Head will stop automatically because the pressure in the Head will now be higher than in the pipe, as in the INFLATED state. The Flow Meter shows the size of the leak.

6 Setting up the Ferret

To use the Ferret you will need to connect it to a water supply and the leaking pipe. Either via a small excavation or by removing a water meter or valve.

STAGE 1 - CONNECTING THE FERRET TO A WATER SUPPLY

Before connecting the Ferret make sure the **ON / OFF Valve** ❶ on the side of the Ferret is closed.

The valve is closed when the handle is in-line with ⊗ and is open when in-line with ◯.

Use the yellow Inlet Hose to connect a water supply to the **Inlet Port** ❷. Turn on the water supply and check there are no leaks on any of the inlet connections.

Once STAGE 1 is complete open the ON/OFF Valve to flush air from the inlet hose and internal pipework. As soon as water comes out of the **Outlet Port** ❸ close the ON / OFF Valve.

STAGE 2 – CONNECTING THE FERRET TO THE LEAKING PIPE

Before connecting the Ferret to the leaking pipe you should select the correct Ferret Head for the pipe. For information and guidance on how to do this see Section 4 on page 5.

STEP 1

Pull out the Umbilical Cord from the **Outlet Port** ❶ and feed it through the clear Outlet Hose. Then connect the Outlet Hose to the Outlet Port.

STEP 2

Pass the Umbilical Cord through the fitting that you are going to use to connect to the leaking pipe. Then connect the fitting to the Outlet Hose.

STEP 3

Remove the **Protective Cap** ❶ from the end of the **Head Connector** ❷ and fit the Ferret Head.

CAUTION To ensure that a NEW Ferret Head can seal the pipe it must be stretched. Before use it should be inflated until it has a diameter greater than the bore of the leaking pipe. See Section 7, Stage 1 on page 15.

Always inflate the Ferret Head to check the Ferret Head and connection for leaks before inserting into the pipe.

STEP 4

Pull out two arm lengths of Umbilical Cord from the end of the Outlet Hose and insert the Ferret Head into the leaking pipe. Connect the Outlet Fitting to the leaking pipe.

CHECK The Ferret should now be connected to the water supply and leaking pipe via the Inlet and Outlet hoses. The water supply should be on and there should be no leaks on any of the hose connections.

STAGE 3 – VENTING AIR FROM THE FERRET

Open the ON/OFF Valve so that the leaking pipe begins to fill with water.
Open the **Air Vent** ❶ on the top of the Ferret.

CAUTION Water will vent through the hole in the side of the air vent housing.

When water comes out of the vent tip the Ferret forwards as shown to flush the last bit of air from the Ferret.

Once all the air has been flushed from the system set the Ferret back on the ground and close the Air Vent.

As long as no water is being used in the property the **Flow Meter** ❷ will now be showing the flow through the leak.

STAGE 4 – ADJUSTING THE WATER PRESSURE IN THE LEAKING PIPE

Optimal working pressure is 20mH2O/2 Bar/30psi, however you might have to work at higher or lower pressure. The pipe pressure can't be set higher than the mains pressure.

OBSERVE Always check that the leak flow is still showing once the pipe pressure is set. In certain circumstances the leak flow will stop if the pressure in the pipe is reduced too much.

To adjust the pressure in the pipe there must be a flow of water through the system. Open the **ON / OFF Valve** ❶ slowly until flow just starts to register on the Flow Meter.

To increase pressure in the leaking pipe slowly turn the **Pressure Dial** ❷ clockwise towards the ⊕. And to decrease turn slowly anti-clockwise towards the ⊖. Look at the Pipe gauge to see the pressure changing.

WARNING Do not overwind the dial as it could damage the pressure controller. Pipe pressure will stop increasing when it reaches the mains pressure so do not continue to turn the dial.

Once the Dial has been adjusted turn off the flow to see what the pipe pressure has been set to.

CHECK The Ferret is now set up and ready to find the leak. With the flow turned on complete a final check to ensure that there are no leaks on either of the connection hoses and that the leak flow is showing on the Flow Meter.

7 Sending the Ferret Head down the Leaking Pipe

For optimal operation, especially when locating small leaks, a tap or outlet will need to be opened at the far end of the leaking pipe. This will enable the Ferret Head to push water through the outlet as it travels down the pipe.

CAUTION If you are using a tap inside a property make sure the flow through the Ferret is turned on. Then open the tap and ensure the water can get away to drain without splashing or flooding the property.

STAGE 1 – INFLATING THE FERRET HEAD

Before inflating the Ferret Head make sure that the ON/OFF Valve is closed.

To inflate the Ferret Head press and hold the **Inflate Button** ❶. Keep inflating until the **Ferret Head pressure** ❷ is 10 to 15 units higher than the **pipe pressure** ❸.

When you release the inflate button the Ferret Head pressure will drop slightly. Repeat the inflation process until the correct pressure is reached.

STAGE 2 – TURNING ON THE FLOW

Slowly open the ON/OFF Valve to turn on the flow.

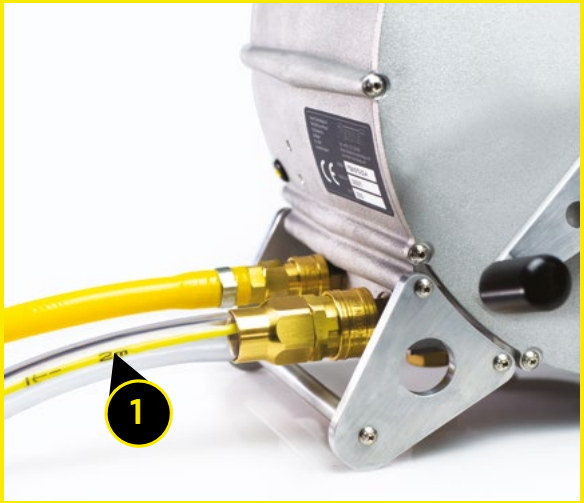
If the Ferret Head has blocked the pipe then the Flow Meter, after an initial surge, should drop to zero and the **Winder Handle** ❶ should not be turning.

If the Winder Handle turns it means the Ferret Head is moving. Close the ON/OFF Valve and increase the pressure in the Head until the water can be turned on without the Winder Handle turning.

CHECK The Head Pressure value, this is the BLOCKING pressure. It is normal for the Head Pressure to increase when the water is turned on as the pressure in the pipe pushes against the back of the Ferret Head.

STAGE 3 – SENDING THE FERRET HEAD TO THE LEAK

To make the Ferret Head move towards the leak you will need to reduce the pressure inside it. Before reducing the pressure make sure you can see the **Umbilical Cord** ❶. The Umbilical Cord is the first thing to move when the correct Head pressure is reached, so you should look at this instead of the pressure gauges.



You might need to release the tension on the umbilical cord to help the Ferret Head move down the pipe if you are working with:

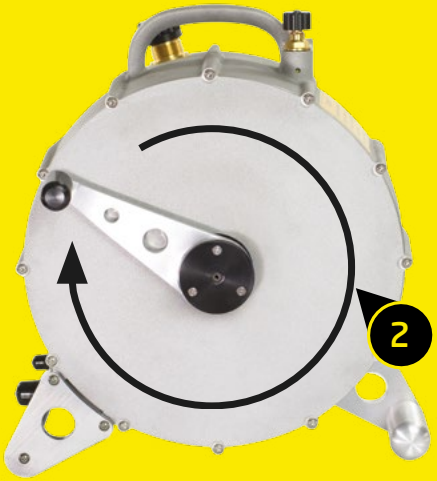
- Size 0 or 1 Ferret Heads
- Low pipe pressure
- Corroded/pitted metal pipes

Deflate the Ferret Head until the cord starts to twitch or creep and then slowly turn the **Winder Handle clockwise as shown** ❷.

WARNING The umbilical cord will get tangled up if you unwind it inside the Ferret. ALWAYS watch the markings on the cord to check it's moving when you are turning the Winder Handle.

To reduce the pressure in the Ferret Head press and then release the Deflate Button so that the Ferret clicks once. Pause after each click to see if the Umbilical Cord starts to move. If not then repeat the process until the Ferret Head moves down the pipe.

To make the Ferret Head move more quickly gradually decrease the pressure in it. To slow the Head down increase the pressure in it or throttle the flow by partially closing the ON/OFF Valve.



CAUTION The faster the Ferret Head moves the greater the risk of it bursting if it contacts a sharp edge.

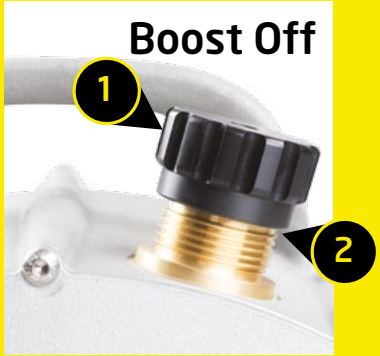
WARNING NEVER use the Winder Handle to stop the Ferret Head moving as this could burst the Ferret Head. To stop the Ferret Head turn off the water by closing the ON/OFF Valve.

USING THE HEAD BOOST

If the pressure in the pipe is set close to or at mains pressure then you will need to use the **Head Boost** ❶ to achieve the Ferret Head Blocking Pressure. The Head Boost should be used in conjunction with the Inflate and Deflate Buttons.

STEP 1 – To use the Head Boost to inflate the Ferret Head. First, use the Inflate Button until the pressure in the Ferret Head will not go any higher. Next, slowly screw the Head Boost clockwise / down while looking at the Ferret Head Pressure Gauge.

STEP 2 – To deflate the Ferret Head slowly screw the Boost anticlockwise / up. If you reach the **upper limit line** ❷ on the boost continue with the Deflate Button.

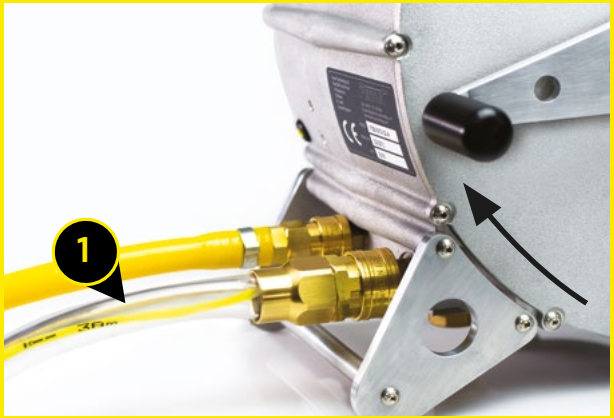


TIP After inflating the Head with the Boost you might deflate it by mistake with the Deflate Button. This will mean the Head Boost will be on/down the next time you want to use it to inflate the Head. If this happens press and hold the Inflate Button while turning the Head Boost anti-clockwise / up, to reset the Boost.

WARNING Do not turn the Head Boost anticlockwise / up without pressing the Inflate Button when there is no pressure in the Head Inflation system. It could create a vacuum, which might damage the system.

8 Getting Through Restrictions, Joints & Fittings

If the Ferret Head meets a restriction in the pipe it will stop, which means that the Winder Handle will stop turning. The Ferret Head will be blocking the pipe so the Flow Meter will drop to zero.



STEP 1 – Turn the Winder Handle clockwise to put a small amount of slack in the **Umbilical Cord** ❶.

STEP 2 – Slowly deflate the Ferret Head one click at a time. Pause after each click and look to see if the umbilical cord moves. Continue deflating until the umbilical cord jumps forward.

TIP To pass right through a joint make sure the Ferret Head moves at least 10 to 15cm (6" to 8"). As soon as the Ferret Head begins to move turn the Winder Handle clockwise. Look at the markings on the Umbilical Cord to make sure the Head has moved forwards by the right amount.

Once you have moved the Ferret Head through the restriction turn off the water. Then inflate the Head to the Blocking Pressure and turn the water back on.

9 Locating the Leak

The Ferret will find large leaks automatically. The Ferret Head will stop by itself as soon as it passes the leak. For smaller leaks you will need to test sections of pipe by stopping the Ferret Head.

AUTOMATIC LOCATION OF LARGE LEAKS

When the Ferret Head passes a large leak the pressure in the pipe will drop and the Ferret Head will stop. You will see the Winder Handle stop turning and flow showing on the Flow Meter.

OBSERVE If there is no flow you have reached a restriction in the pipe rather than a leak.
See Section 8 on previous page.

Check that there is no water coming out of the open outlet at the far end of the supply. This proves that the Flow Meter is showing the flow through the leak. If water is coming out of the tap then the Ferret Head is not blocking the pipe.

Increase the pressure in the Head to the Blocking Pressure and check flow is still showing on the Flow Meter. If it is you have located the leak.

AUTOMATIC LOCATION OF LARGE LEAKS continued

TIP Turn off the water flow, deflate the Ferret Head and retract it a short distance by turning the Winder Handle anticlockwise a quarter turn. Re-inflate the Head to the Blocking Pressure and turn on the water. If the Flow Meter drops to zero it proves that the Head is now just in front of the leak. Slowly deflate the Head to send it just past the leak again.

LOCATING SMALL LEAKS

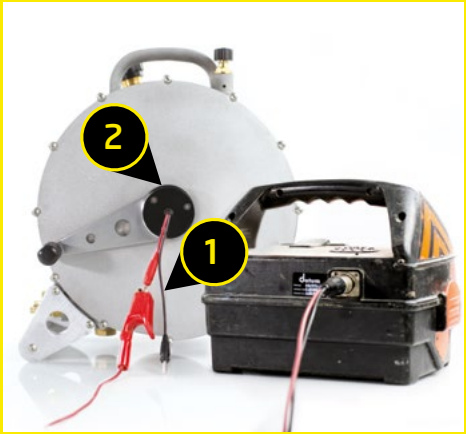
CAUTION Before locating small leaks measure the pipe length to the point where it might pass under the property. **ONLY SEND THE FERRET HEAD UNDER A PROPERTY IF YOU PLAN TO EXCAVATE THE FLOOR / SLAB TO FIX THE LEAK.**

As there is little or no drop in pipe pressure when the Ferret Head passes a small leak it will not stop automatically. Send the Ferret Head half way along the pipe and then stop it manually by closing the ON/OFF Valve. Inflate the Ferret Head to the Blocking Pressure and turn the water back on. If the leak flow is showing on the Flow Meter the Ferret Head has passed the leak. If no flow is showing the leak is further along the pipe.

Locate the leak by sending or rewinding the Ferret Head to the halfway point of the leaking section of pipe. See Section 11, Stage 1 on page 29 for instructions on rewinding the Ferret Head.

TIP Use the metre marks on the Umbilical Cord to narrow down the position of the leak to within a couple of metres. Then use turns of the Winder Handle. For example two revolutions forwards then one revolution backwards and so on.

10 Tracing the Pipe & Locating the Sonde

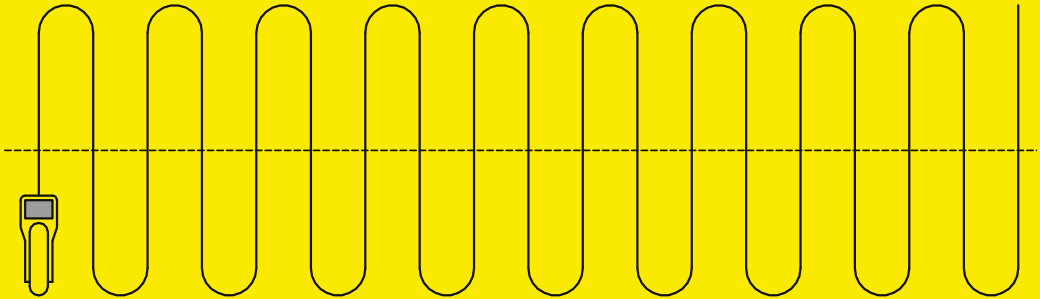


You can use the tracing features in the Ferret to locate the Head very accurately from above ground. You will need to connect a 33 kHz signal generator to the Ferret.

Plug the **Trace Lead** ❶ into the **Trace Connection** ❷ in the centre of the Winder Handle.

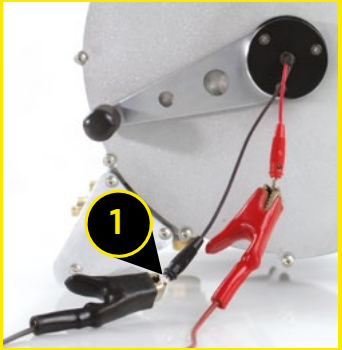
TRACING THE PIPE - LINE MODE

Attach the red terminal from your signal generator to the red wire. Connect the black terminal from your signal generator to an earth/ground stake. Trace the line of the pipe by sweeping the CAT at right angles across the line of the pipe as shown.



TRACING THE SONDE - END MODE (PLASTIC PIPE ONLY)

When you have completed the line trace disconnect the black terminal on the signal generator from the earth/ground stake. Then connect it to the black wire on the **Ferret Trace Lead** ❶.



OBSERVE You should hear a tone change from the signal generator when both wires are connected.

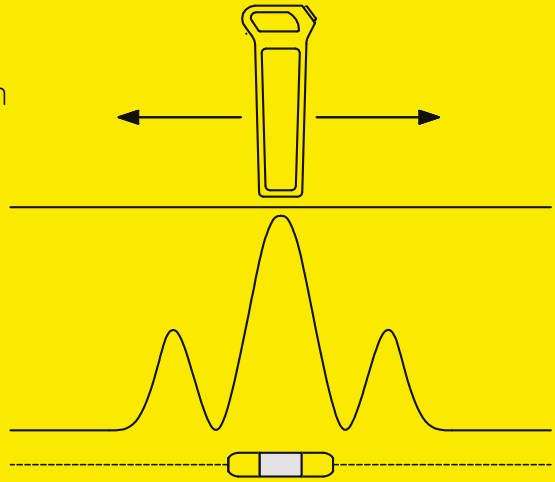
TIP To narrow down the location of the Sonde use the distance marks on the Cord.

Keep the blade of the CAT vertical just above ground level. Carry it along the line of the pipe with the blade in line with the **pipe as shown** ❷.

When you are directly over the Sonde sweep the CAT from **side to side as shown** ❸ to fine tune the line of the pipe.

TRACING THE SONDE - END MODE (PLASTIC PIPE ONLY) continued

As you approach the Sonde you will get a small peak then a null then a large peak followed by another null and finally a small peak. The sonde is directly below the large peak.



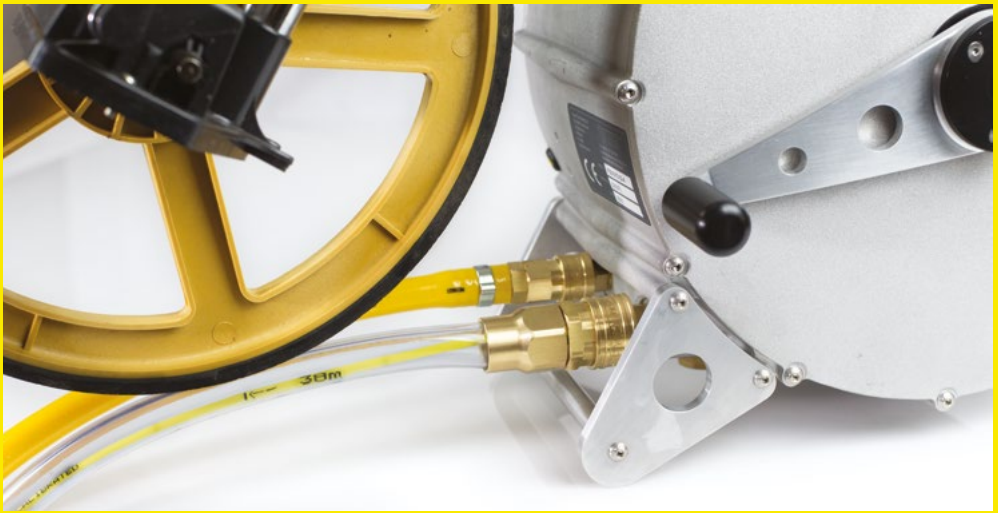
CALCULATING THE SONDE DEPTH (PLASTIC PIPE ONLY)

You can calculate how deep the excavation will need to be to fix the pipe. Measure the distance between the two null points. The depth of excavation will be three quarters of the distance between the null points.

TRACING THE SONDE - MEASUREMENT (METALLIC PIPE)

Once you have completed the line trace. Use the distance marks on the Umbilical Cord to measure out the exact location of the Sonde.

TIP Use a measuring wheel and start by holding it on the clear outlet hose as shown.



11 Winding in the Ferret Head & Disconnecting

WARNING ALWAYS rewind the Ferret Head BEFORE you cut the pipe.

STAGE 1 – REWINDING THE FERRET HEAD

The Ferret Head must be deflated before you rewind it. Make sure the ON/OFF Valve is closed before deflating the Head. Press and hold the Deflate Button whilst applying gentle pressure to the Winder Handle in the **rewind direction** 1 shown.

OBSERVE There is a lag between the Head Pressure Gauge and the pressure in the Ferret Head. Continue to deflate the Head, even if the gauge shows zero, until the Winder Handle turns freely.

WARNING DO NOT apply excessive force to the Winder Handle. You might damage or snap the Umbilical Cord.

Rewind the Ferret Head. You might need to stop rewinding and deflate the Ferret Head more if it meets a restriction in the pipe.

TIP Disconnect the Outlet Fitting from the leaking pipe and leave a gap. Watch to see when the Ferret Head is rewound.

CAUTION Size 2 and above Ferret Heads will jam if wound into the Outlet Fitting.

STAGE 2 – DISCONNECTING THE FERRET

STEP 1 – Remove the Ferret Head and re-fit the Protective Cap.

STEP 2 – Rewind the Umbilical Cord through the Outlet Hose.

STEP 3 – Disconnect the Outlet Hose from the Ferret.

STEP 4 – Turn off the water supply and open the ON/OFF Valve to depressurise the Inlet Hose.

STEP 5 – Disconnect the Inlet Hose from the water supply and the Ferret.

STAGE 3 – DRAINING THE FERRET

After use the Ferret will be full of water. You should drain as much water as possible out of it before putting it in the Carry Case.

To drain the Ferret:

STEP 1 – Make sure the ON/OFF Valve is open.

STEP 2 – Open the Air Vent. The water inside the Ferret will drain out of the Inlet and Outlet Ports.

TIP Raise the back of the Ferret a little by resting the rear foot against a wall or on something.

STEP 3 – When all the water has drained out pick the Ferret up and turn it upside down to drain out the last bit of water.

STEP 4 – Close the ON/OFF Valve and Air Vent.

STEP 5 – Put the Ferret into the Carry Case.

12 Do's & Don'ts

ALWAYS

- ✓ **ALWAYS** read the User Manual before operating the Ferret for the first time.
- ✓ **ALWAYS** observe all warnings and instructions marked on the Ferret.
- ✓ **ALWAYS** advise anyone supplied by the leaking pipe not to use any water for drinking or cooking during the leak location and repair process.
- ✓ **ALWAYS** use approved disinfectant solution to clean the Ferret Head and Sonde prior to inserting them in to the leaking pipe.
- ✓ **ALWAYS** store the Ferret with the Protective Cap fitted to the Head Connector to prevent the water draining out of the Umbilical Cord.
- ✓ **ALWAYS** fit the rubber protective cap back in to the charging socket once recharging is complete.
- ✓ **ALWAYS** keep the threaded connections in the back of the Ferret Heads clean and free of dirt or grit to prevent damage occurring to the Head Connector thread.

NEVER

- ✗ **NEVER** leave the Ferret in a location for a prolonged period where it might freeze. Frost damage could cause serious damage to the wetted internal components.
- ✗ **NEVER** power wash or submerge the Ferret. The Ferret is splash and rain proof but should not be submerged or blasted with high pressure water jets.
- ✗ **NEVER** over bend the Outlet Hose as it is fitted with a Teflon liner that might kink. A kink in the liner will cause friction against the Umbilical Cord that will affect performance.
- ✗ **NEVER** push the Umbilical Cord into the Ferret. To prevent the Umbilical Cord becoming tangled up inside the Ferret always use the Winder Handle to rewind the Ferret Head.
- ✗ **NEVER** use the Ferret in drains or waste water pipes. The Ferret is only for use in drinking water pipes.
- ✗ **NEVER** use lubricants or sealants on any part of the Ferret or ancillary equipment that are not approved for use with drinking water.
- ✗ **NEVER** replace any parts in the Ferret or the ancillary equipment with items that have not been approved by Ferret Technology Ltd or their approved Distributors and Agents.

13 Basic Maintenance

RECHARGING THE BATTERY

You should recharge the Battery when the **level indicator** ❶ shows 1/4 full. Remove the seal cap and push the charger terminal into the **recharging socket** ❷ and do up the nut. Plug into the mains and leave to charge for around 8 hours.

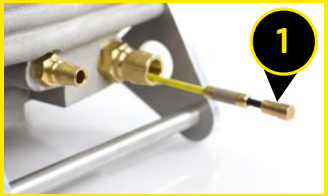
You must ALWAYS replace the seal cap once the charger has been disconnected.

CLEANING & DISINFECTING THE FERRET AND ANCILLARY EQUIPMENT

The parts of the Ferret that are in contact with the pipework should be treated like any other fitting. If for example local operating practice requires fittings to be disinfected with a mild chlorus solution then the same should be applied to the relevant parts of the Ferret. After each use the Ferret and ancillary equipment should be wiped clean.

REMOVING AIR FROM THE HEAD INFLATION SYSTEM

Do the following test to check if there is air in the Head Inflation system. Make sure the **Protective Cap** ❶ is fitted to the Head Connector. Screw the Head Boost clockwise / down whilst looking at the Head Pressure Gauge. If the pressure shown on the gauge does not reach 40 before the Head Boost is screwed right in / down then there is air in the Head Inflation system.



Follow these steps to remove the air from the Head Inflation System:

STEP 1 - Screw the Head Boost anticlockwise / up until it comes off.

STEP 2 - Fit a large tap connector over the Head Boost Chamber and tighten the clamp.

STEP 3 - Connect a hose pipe and turn on the tap so you are running water through the system to remove any air.

REMOVING AIR FROM THE HEAD INFLATION SYSTEM continued

STEP 4 – Remove the Protective Cap from the Head Connector and raise it above the Ferret. Fix the Head Connector in this raised position for at least one hour to ensure all the air is flushed out.

TIP Press and hold your finger over the outlet for a couple of seconds and then release. Repeat several times.

STEP 5 – Refit the Protective Cap. Turn off the hosepipe, remove the tap connector from the Head Boost Chamber and refit the Head Boost Knob.

STEP 6 – Repeat the pressure test again by screwing the Head Boost clockwise / down. If the reading on the Head Pressure Gauge is lower than 40 repeat the air removal process.

NOTES

14 Troubleshooting

PROBLEM	POSSIBLE SOLUTION
The Ferret Head does not stop the flow when inflated.	The Ferret Head has not been stretched properly before use. See Section 7, Stage 1 on page 15.
There is no flow through the system when the ON / OFF Valve is opened.	Check that the water supply to the Ferret is turned on. Check the collars on the female quick release couplings at the ends of the Inlet Hose are fully forwards towards the plug connectors. Check the Inlet Hose is not blocked.
With the system on and set up there is no leak showing on the Flow Meter.	Increase the pipe pressure until leak flow is visible. See Section 6, Stage 4 on page 13.
Pipe pressure is unstable. Pipe pressure creeps up above set point when ON / OFF Valve is closed.	There is air in the system. Disconnect the Outlet hose from the front of the Ferret and fully open the On / Off Valve so that water vents quickly through the Outlet Port. Lean the Ferret from side to side to help the air vent. Also try winding the Pipe Pressure Controller towards the plus to increase the pressure in the system.

PROBLEM	POSSIBLE SOLUTION
The Inflate Button will not inflate the Ferret Head to the required pressure.	You have reached mains pressure level and will need to use the Head Boost to inflate the Ferret Head more. See 'Using the Head Boost' in Section 7 on page 19.
Unable to locate the signal from the Sonde.	The Sonde signal does not pass through metal pipe walls. Trace the line of the pipe and then use the distance marks on the Umbilical Cord and a measuring wheel to locate the Sonde. Once the Ferret Head has been removed from the pipe, test the Sonde above ground to check it is working properly.
The Ferret Head inflates very slowly.	There is air in the Umbilical Cord. See 'Removing air from the Head Inflation system' in Section 13 on page 38.
There is no clicking sound when the Inflate / Deflate Button is pressed and the Ferret Head will not Inflate / Deflate.	One of the valves controlling the Ferret Head inflation/ deflation has got stuck. Hold down the Inflate/Deflate Button and gently tap the Ferret, in the location shown in the picture, with a metal object such as a spanner or wrench. This should free the valve and you should hear it start to click. 

TIP 10 point check for you to follow in number order. This will guide you through the process of locating the leak correctly and efficiently. Tick each process off once you have completed it.

	10 POINT CHECK	PAGE NO	TICK OFF EACH STEP
1	Connect a water supply to the Ferret inlet	P10	
2	Fit the Ferret Head and connect the outlet to the leaking pipe	P11	
3	Turn on the water and vent the air out of the Ferret	P13	
4	Set the pressure in the leaking pipe	P14	
5	Open a tap at the far end of the pipe	P17	
6	Send the Ferret Head to the leak	P17	
7	Get the Ferret Head through any joints or restrictions	P23	
8	Pinpoint the Leak	P24	
9	Trace the pipe line and locate the Sonde	P27	
10	Rewind and disconnect the Ferret	P31	

NOTES

15 Declaration of Conformity (European Economic Area)

DECLARATION OF CONFORMITY

It is declared that the Ferret Small Bore fluid pipe leak location product (Model: FSB-SYS-02-A) (all configurations), manufactured by Ferret Technology Ltd, Unit 3, 68 Worminghall Road, Oakley, HP18 9QY, United Kingdom, fulfils all relevant provisions of:

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast).

This follows the compilation of the technical file by Nathaniel Palmer, Technical Director, Ferret Technology Ltd.

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