



SOLUTIONS FOR THE REPAIR RENOVATION AND DECOMMISSIONING OF PIPELINES



## Mini Pipe Handler

### Operating Instructions

Steve Vick International Ltd

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## 1. INTRODUCTION

Since its foundation in 1981, Steve Vick International has been at the leading edge of trenchless techniques for the repair and renovation of underground **gas** distribution pipes.

In the UK, we are a major supplier to the gas distribution networks and many of our techniques have become accepted practice in the industry. We constantly seek to provide our customers with renewal methods which will minimise their costs and maximise their production.

The company has been supplying pipe handler equipment to the **water** utilities and their contractors for over 20 years. More recently we have entered the market with pipe cutting equipment and our sealant technology has been successfully adapted for use in the waste water sector.

In 2014 the company relocated and can be found at:

### **Steve Vick International Ltd**

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## 2. PRODUCT DESCRIPTION

The Mini Pipe Handler is designed to attach to a midi excavator in order to insert PE pipe into a host pipe. It can also manoeuvre pipe around site where the entire operation is controlled from the cab of the midi excavator reducing manual handling.

Using shell inserts, this model handles pipe diameters from 63mm to 125mm and is suitable for use with a 1.5, 2 or 3 tonne class hydraulic excavator.



Figure 1: Side view of the Mini Pipe Handler

### 2.1 MINI PIPE HANDLER HIGHLIGHTS

Table 1: Mini Pipe Handler Key Points

Fits most 1.5, 2 and 3 tonne excavators — connects to excavator arm via multi-pin swivel bracket using choice of pin locations and sizes.	Pushes at speeds up to 10 metres per minute.
Powered from third service off-take/breaker line hydraulic power source on excavator arm/boom.	Several hundred metres can be pushed in one go.
Suitable for dual flow excavators using powerful spring mechanism to return oil flow.	Capable of pushing or pulling pipe and loading/unloading from storage racks or vehicles.
Hydraulic feeds are 3/8" using flat faced couplings. Adaptors may be required for different sizes.	Compact and lightweight — easy to transport; comes with storage box.
Quick set-up time; simple to use — similar technique to 'grading'.	Requires no anchoring — soft ground conditions not an issue.
Robust construction — designed for use in pipe laying environment — low maintenance.	May be used to align and secure pipe next to butt-fusing machine.

## 2.2 MINI PIPE HANDLER FEATURES

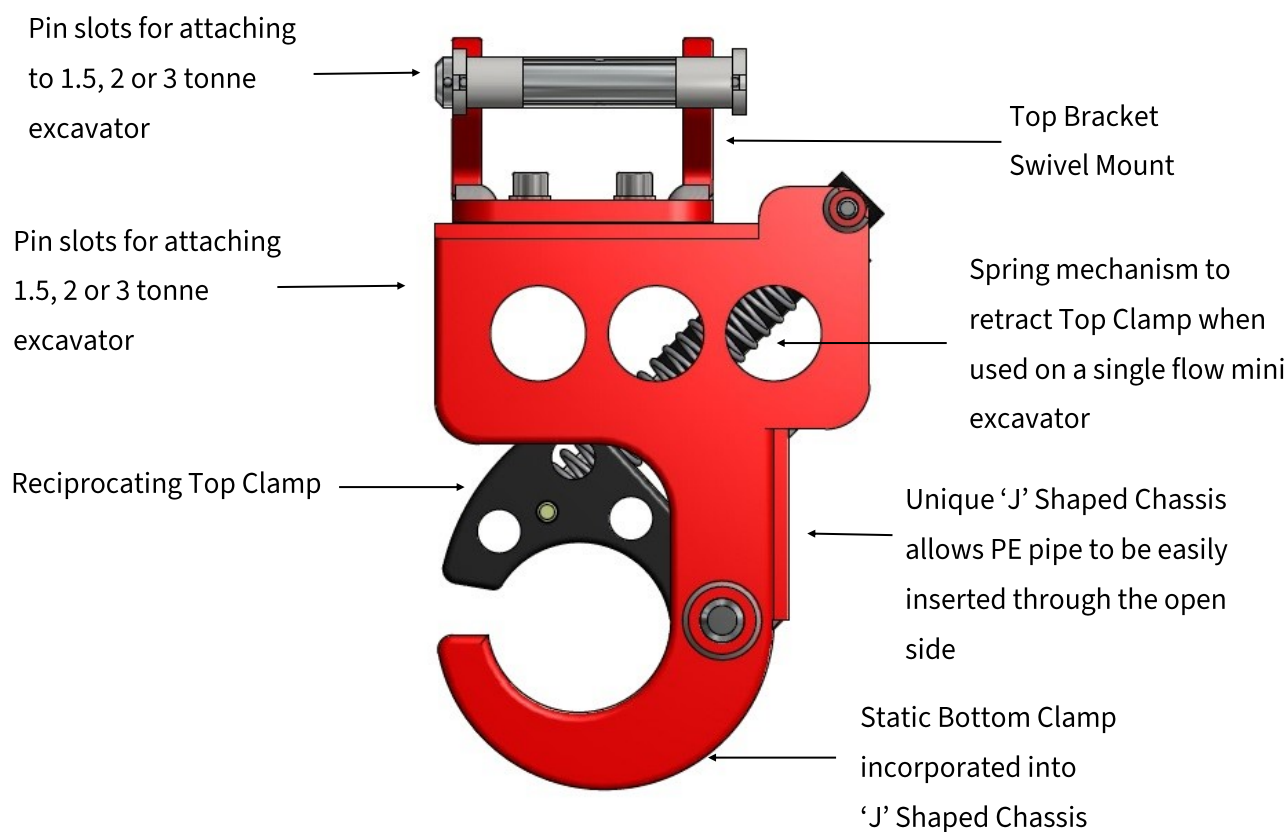


Figure 2: Side view of the Mini Pipe Handler

## 2.3 MINI PIPE HANDLER COMPONENTS



Figure 3: The Mini Pipe Handler in metal storage container.

The Mini Pipe Handler is supplied in a metal storage container and comprises the following:

- Mini Pipe Handler
- Extension Hose
- 3/8" to 3/4" Adaptor Connector
- 25mm, 30mm and 34mm Pins for different size excavators and R-Pins
- Range of shells (if requested on hire or purchase) down to 63mm
- Allen Key
- Shell bolts (if requested with extra shells on hire or purchase)
- Instruction Manual



### 3. SPECIFICATIONS

WEIGHTS AND DIMENSIONS	
OVERALL MACHINE	
LENGTH	295mm
WIDTH	197mm
HEIGHT	511mm
WEIGHT	36kg
WEIGHT (BOXED)	60kg
BOX DIMENSIONS	560 x 340 x 350mm

TOP BRACKET DIMENSIONS			
PIN SIZE	LENGTH BETWEEN CENTRES OF PINS		WIDTH BETWEEN BRACKETS
25mm	110mm	A	137mm
30mm	163.5mm	B	137mm
34mm	220mm	C	137mm

Tables 2 and 3 showing weights and key dimensions

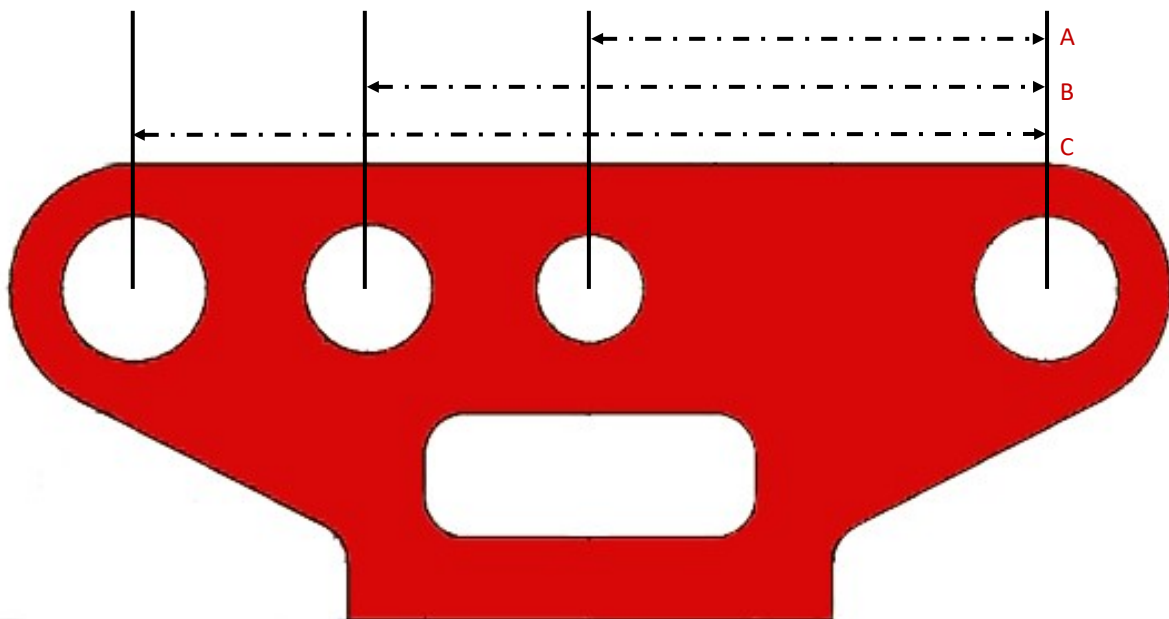


Figure 4 Side view of top bracket and the respective distances between the pin slots.

## **4. SAFETY AND PRECAUTIONS**

**4.1** The following PPE must be worn at all times:

- A. Safety goggles
- B. Hard hat
- C. High visibility jacket
- D. Gloves
- E. Steel toe cap footwear

**4.2** Lifting the Mini Pipe Handler is a two-man operation.

**4.3** All excavation work shall be carried out in accordance with T/PR/SW/1 – Work Procedure for excavations or equivalent, and all other related codes of practice.

**4.4** Ensure there is a designated banksman to control all operations of the excavator.

**4.5** Ensure that the attachment and detachment of the Mini Pipe Handler to and from the excavator is taking place within the cordoned off area.

**4.6** Ensure that all the pipe handling, manoeuvring and pipe insertion activities using the excavator are taking place within the cordoned off area.

**4.7** Ensure the movement of the excavator arm is contained within the cordoned off area.

**4.8** The driver shall operate the excavator and Mini Pipe Handler from the cab at all times.

**4.9** Check that the Safe Working Load of the excavator is not exceeded by the combined weight of the Mini Pipe Handler and the PE pipe being handled.

**4.10** Check there are no overhead lines in close proximity to the lifting position.

**4.11** Check that all of the fittings and attachments required to correctly attach the Mini Pipe Handler to the excavator are available.

**4.12** Only lift PE pipe and do not attempt to lift anything else for example curb stones, as this will damage the Mini Pipe Handler and may exceed the Safe Working Load of the excavator.

## 5. OPERATING INSTRUCTIONS

**5.1 Site Preparation:** Using the Mini Pipe Handler requires no increase in the size of trench normally excavated.

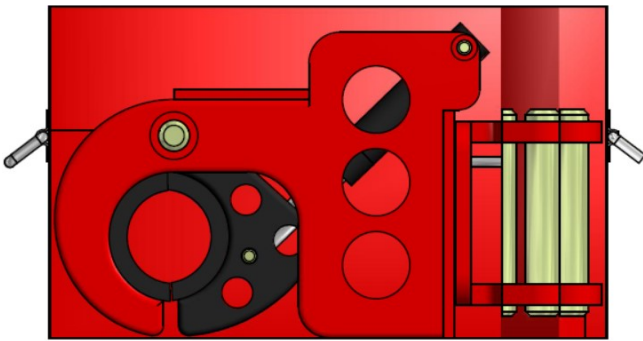
Where the trench needs shoring or shuttering (where a risk assessment deem it necessary due to depth, unstable ground etc.) ensure no support props hinder the movement of the excavator arm. If this is unavoidable, relocate the excavator to a location where the pipe can still be safely inserted. Table 4 shows suggested excavation lengths for inserting up to and including 125mm PE pipe.

SIZE OF EXCAVATION REQUIRED			
MINIMUM TOTAL LENGTH			WIDTH
Up to 1m	1m to 2m	2m to 3 m	750
5m	6m	7m	

*Table 4 - Excavation sizes from UK Standard Main Laying Manual*

**5.2** It is recommended that the Mini Pipe Handler is removed from the storage box only when the excavator is ready to be connected up to avoid any unnecessary damage or storage issues.

When first opening the lid, move aside the hydraulic hose to reveal the back plate and bucket pin lifting points.

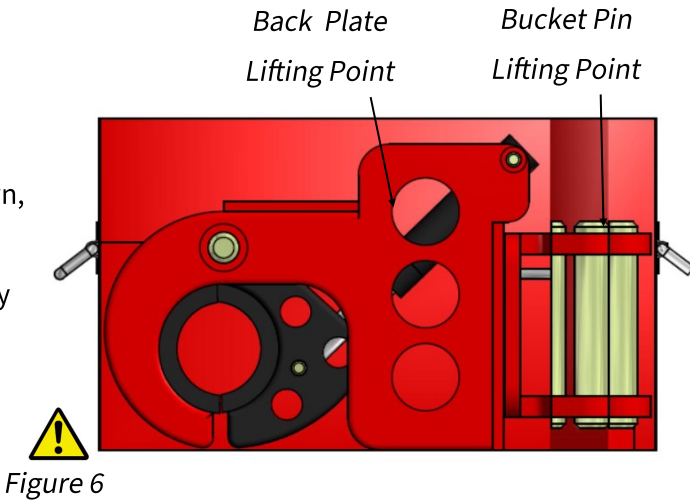


*Figure 5 - Side view of storage box with 'J' Clamp facing base panel*

### 5.3 To remove Mini Pipe Handler manually:

Establish a firm grip on the two lifting points shown, then lift the pipe handler upwards and out of the storage box and locate in a convenient place ready for immediate connection to the excavator.

This is a two man operation due to the weight of the Mini Pipe Handler.



*Figure 6*

#### 5.4 To remove Mini Pipe Handler using excavator:

Position Pipe Handler in its box directly under the arm/boom of the excavator.

This is a two man operation due to the weight.

Rotate the Mini Pipe Handler on its curved base into the upright position and lean it against the side panel of the box.

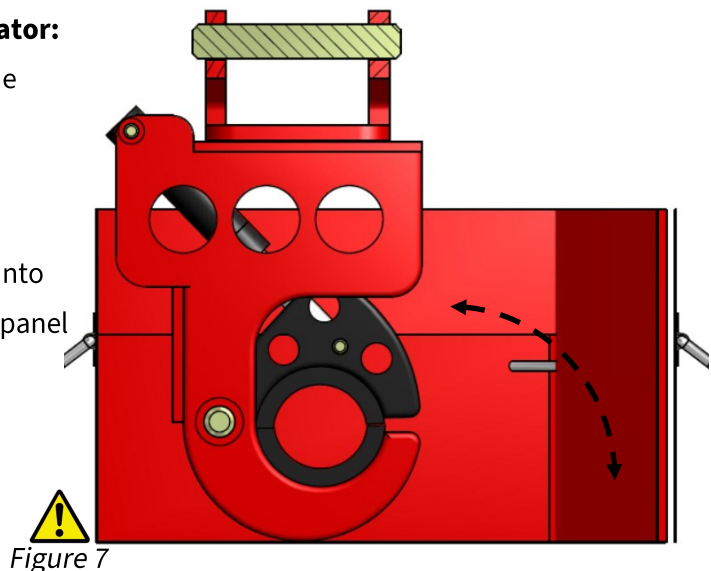


Figure 7

#### 5.5 Attaching Mini Pipe Handler using Bucket Pins:

Position the excavator so that the arm can be lowered onto the Mini Pipe Handler.

Locate the rigid dipper arm of the excavator in line with the single hole slot and slide the pin fully through.

Bushes are not needed for 34mm but are supplied for 30mm and 25mm pins. Swing the link arm to the hole slot of the same size as the pin and slide it fully through. Secure all pins with r-clips provided.

Always use the maximum size pin that will fit with the excavator to prevent a loose fit.

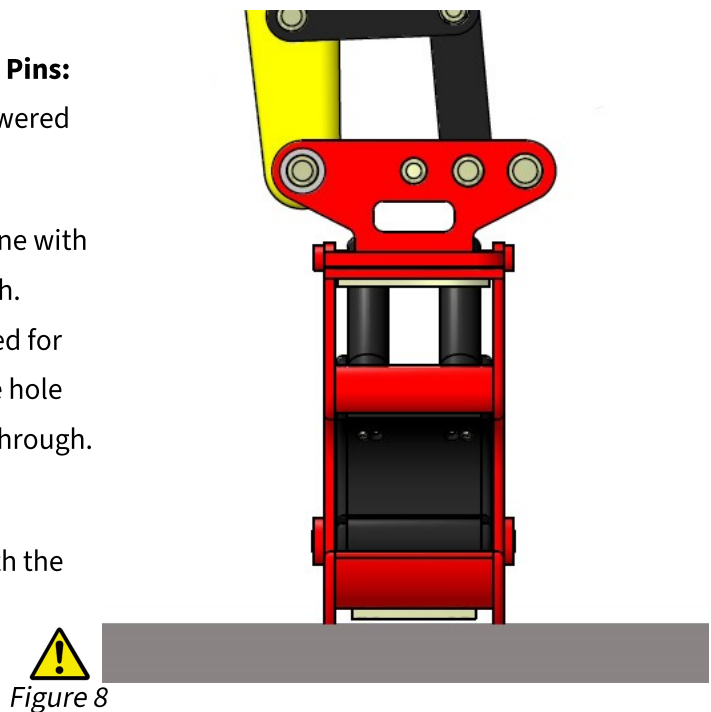


Figure 8

#### 5.6 Attaching Mini Pipe Handler using a Pin System Quick Hitch:

Position the mini excavator so that the arm can be lowered onto the Mini Pipe Handler.

With the pin fitted in the single slot locate the quick hitch so that the open end encompasses the pin.

Bushes are not needed for 34mm but are supplied for 30mm and 25mm pins. If the quick hitch is going to fit the top bracket check the alignment of the locking jaw slot with the nearest pin slot on the bracket. If the alignment is good slide the remaining pin fully through. Secure all pins with r-clips provided.

Always use the maximum size pin that will fit with the excavator to prevent a loose fit.

#### **DO NOT USE IF THE LOCKING PIN WILL NOT FULLY ENGAGE.**

Note, once the quick hitch is confirmed as fitting, the pins can remain in their position to allow quick removal and attachment of the pipe handler.

**5.7** Connect the female coupling on the Mini Pipe Handler hose into the correct male fitting on the excavator and secure by turning the knurled swivel ring. Use the Adaptor to take into account 3/4" fittings on the mini excavator.

Ensure no hoses are restricting the movement of the Mini Pipe Handler.

**Note:** The Mini Pipe Handler is compatible with both single and dual feed excavators but still only needs one hose connected. The gripping force is operated from the pedals in the cabin and the spring then forces the oil back through the system opening the top jaw. In most cases this is the left pedal operated by the left foot.

Confirm which side of the pedal is closing the Mini Pipe Handler by pressing down on one side of the pedal and then the other. Once confirmed this pressing down on either side of the pedal is the operation for opening and closing the Mini Pipe Handler. Although the spring mechanism opens the jaws it may be necessary to still press the other side of the pedal to open the valve allowing the spring to force the oil back into the excavator.

**Note:** The Mini Pipe Handler is fitted with a flow control valve on the hose line. This allows the clamping speed to be controlled to prevent damage to the PE. This is located directly behind the male flat face coupler on the hose line.

*To set the flow control valve at the ideal speed:*

- Loosen the narrow locking nut
- Speed up clamping: Wind the valve body towards the locking nut
- Slow down clamping: Wind the valve body away from the locking nut



Figure 9



Figure 10

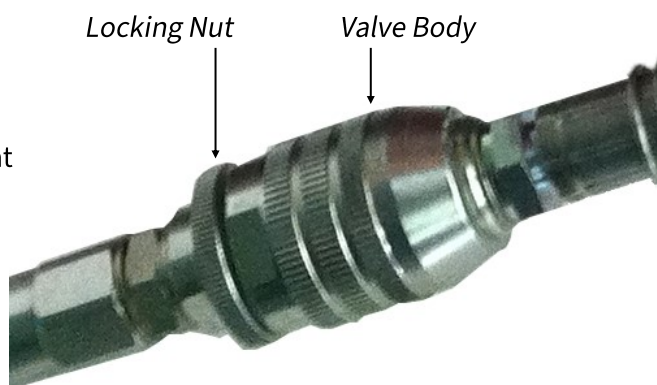


Figure 11



If the Mini Pipe Handler fails to operate check the following:

- The Flow Control Valve is not wound fully away from the locking nut
- The hydraulic line on the excavator is open, there is usually a valve operated by a flat face screw driver that must be turned 'in line' to the coupler
- The pedals can be pressed fully down—check feed screws under pedals
- On single flow mini diggers ensure the hose is not connected to the 'return' coupler—swap hose to the other flat face coupler.



Figure 12

### 5.8 Inserting pipe with the Mini Pipe Handler:

Site the mini excavator on flat stable ground no closer than 0.5m to the edge of the trench wall. Do not straddle the trench. Pack the host main to minimise lateral movement during insertion.

Ensure side jaw of Mini Pipe Handler is fully open.

Position the open jaw around the PE pipe. Select the safest point to grip the PE, at the same time optimising the length of the insertion stroke. *It is recommended to take short strokes of insertion at the beginning and generally then a one metre stroke is sufficient.*



Figure 13



**5.9** Operate the foot pedal to close the top jaw of the Mini Pipe Handler onto the PE pipe, keeping the Mini Pipe Handler at right angles to the PE. Skewing the Mini Pipe Handler will damage the PE.



Figure 14





**5.10** Operating the mini excavator controls in the cab, move the PE into the host main. Ensure the Mini Pipe Handler remains square to the PE pipe AT ALL TIMES during the insertion.

Release the foot pedal and allow the spring to open the top jaw. Repeat the process until the PE has been pushed in as far as possible, or to the desired position.

On dual flow excavators, the opposite pedal may need to be manipulated to open the top jaw.

If the top jaw is slow to open or does not open at all, fully open the flow control valve on the hose line. See 5.7.



Figure 15

**The key point to remember during pipe insertion is not to pull up or push down or twist the pipe. The Mini Pipe Handler should be kept perpendicular to the main so that no 'pinching' occurs.**

**5.11 Using the Mini Pipe Handler to assist in Butt Fusion:** . Locate the Mini Pipe Handler alongside the butt fusion machine. Grip the PE pipe and align as required. Switch off the power line so no accidental movement can occur. The PE pipe is now secured ready for butting to the next length of pipe.



Figure 16

**5.12 Changing Shells:** Shell inserts are used to reduce the size of the jaw to accommodate pipe smaller than 125mm diameter.

With the Mini Pipe Handler attached to the arm of the excavator, lift it off the ground to a safe working height. Shells are secured with four M10 bolts which are inserted and removed using the Allen key provided. Ensure shells are fully hand tightened.

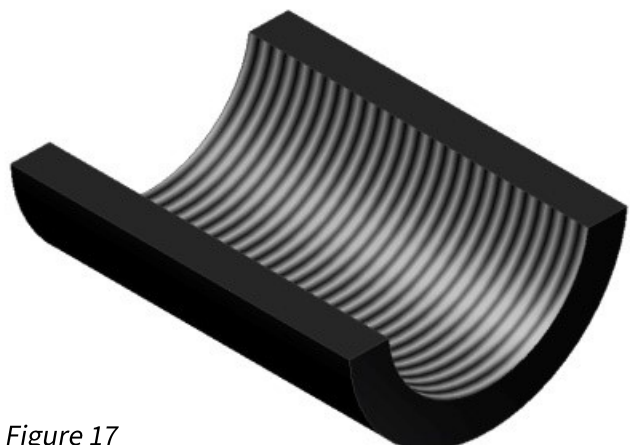


Figure 17

## 6. ROUTINE MAINTENANCE

The Mini Pipe Handler has been designed to be relatively free of maintenance. Simple checks on the tightness of bolts, checking for hydraulic leaks and general wear on parts being all that is required in the normal day to day operation.

<b>ROUTINE MAINTENANCE</b>
Clean down the machine and check all moving parts for wear and tear
Check all hydraulic joints and couplers for leaks
Check all hoses are in good condition
Ensure the flow control feed is operational
Ensure the swivel bracket rotates and is not clogged up with grease and debris
Re-tighten all nuts and bolts, paying particular attention to the swivel brackets. Bolts used on the swivel bracket are M12 and require a torque setting of 100 ft./lbs
Ensure the shells, if used, are fully secured without any part of the cap head showing through which may score the PE pipe

*Table 5 - Routine maintenance*

## 7. CERTIFICATE OF CONFORMITY



# Certificate Of Conformity

**Product Description:** Hydraulically powered mechanical device that is attached to an excavator and is used to grip and insert PE pipe of 40mm – 125mm in diameter in host gas/water mains

**Product Name(s)/Model:** Mini Pipe Handler

**Manufacturer's Name & Address:** Steve Vick International Ltd.  
Greenwood Industrial Estate  
Bradford-on-Avon  
Wiltshire  
UK  
BA15 2AU

The following standards apply to the product listed above:

Directive 2006/42/EC	Directive of the European Parliament and of the Council on 'Machinery'. As transposed into UK law by the 'Supply of Machinery Regulations – SI 2011-2157 and SI 2008-1597.
SI 2011 No. 2157	HEALTH & SAFETY- The Supply of Machinery (Safety) Regulations 2011. Amendment to SI 2008-1597
SI 2008 No. 1597	HEALTH & SAFETY- The Supply of Machinery (Safety) Regulations 2008

The sample of the product listed at the top of this document was examined and fulfils the requirements detailed in the directives and standards listed in the table above. The product has therefore been found to be in compliance with the essential requirements of EC Directive 2006/42/EC as transposed into UK law by SI 2011-2157 and SI 2008-1597 (The Supply of Machinery (Safety) Regulations 2008).

<b>Person(s) responsible for technical file:</b>		<u>Name</u>	<u>Position</u>
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<b>Person responsible for making declaration:</b>			
<u>Name:</u>	Andrew Harrison	<u>Date:</u>	05/12/2014
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