STEVE VICK INTERNATIONAL

SOLUTIONS FOR THE REPAIR RENOVATION AND DECOMMISSIONING OF PIPELINES

Midi Pipe Handler

Operating Instructions

Steve Vick International Ltd

Treenwood Industrial Estate, Bradford on Avon, Wiltshire, BA15 2AU, UK

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CONTENTS

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:

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2. PRODUCT DESCRIPTION

The Midi 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 180mm and is suitable for use with a 1.5, 2 or 3 tonne class hydraulic excavator.

Figure 1: Side view of the Midi Pipe Handler

2.1 MIDI PIPE HANDLER HIGHLIGHTS

Table 1: Midi Pipe Handler Key Points

Fits most 1.5, 2 and 3 tonne excavators — connects to excavator arm via multi-pin swivel bracket : **180 Insertion MUST be on a 3 tonne excavator for increased stability.** ⚠	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 dual ram clamping force ideal for 180 PE.	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.
Top bracket available for fitting to 5 tonne excavators.	Side clamping jaw works against ovality often seen in 180 PE pipe.

2.2 MIDI PIPE HANDLER FEATURES

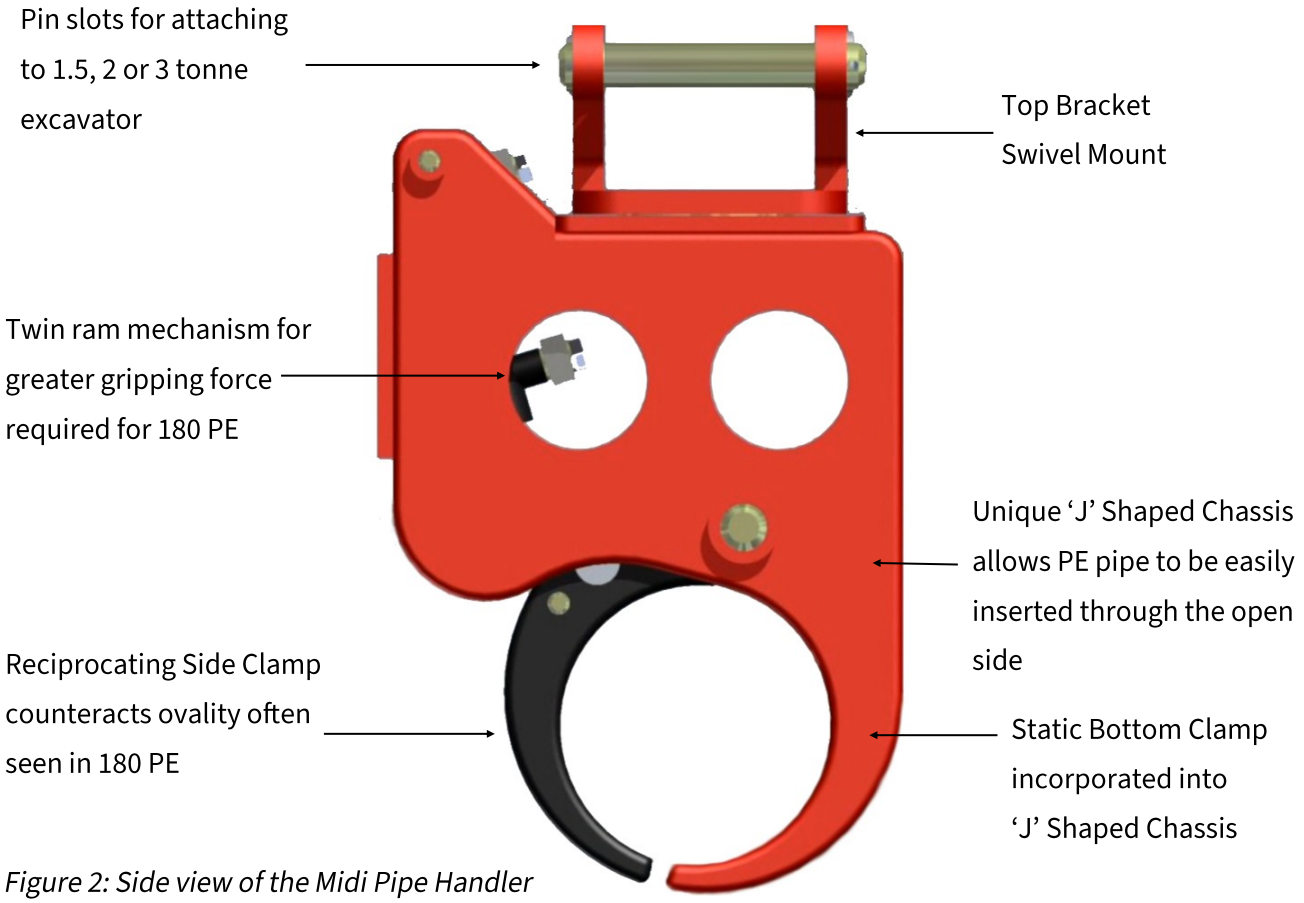

Figure 2: Side view of the Midi Pipe Handler

2.3 MIDI PIPE HANDLER COMPONENTS

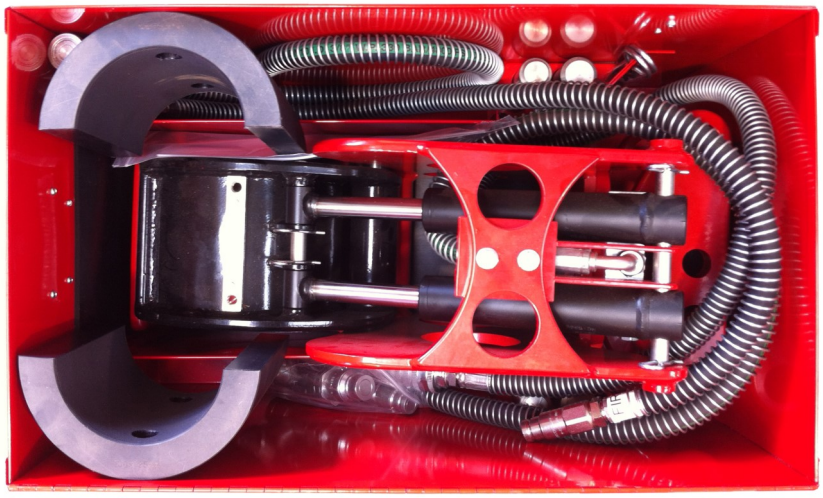

Figure 3: The Midi Pipe Handler in metal storage container.

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

- Midi Pipe Handler
- Extension Hose
- 3/8" to 3/4" Adaptor Connectors
- 25mm, 30mm and 34mm Pins for different size excavators and R-Pins
- Shells to 125mm as standard although smaller shells can be purchased
- Allen Key
- Shell bolts (if requested with extra shells on hire or purchase)
- Instruction Manual

3. SPECIFICATIONS

WEIGHTS AND DIMENSIONS	
OVERALL MACHINE	
LENGTH	340mm
WIDTH	197mm
HEIGHT	560mm
WEIGHT	50kg
WEIGHT (BOXED)	78kg
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

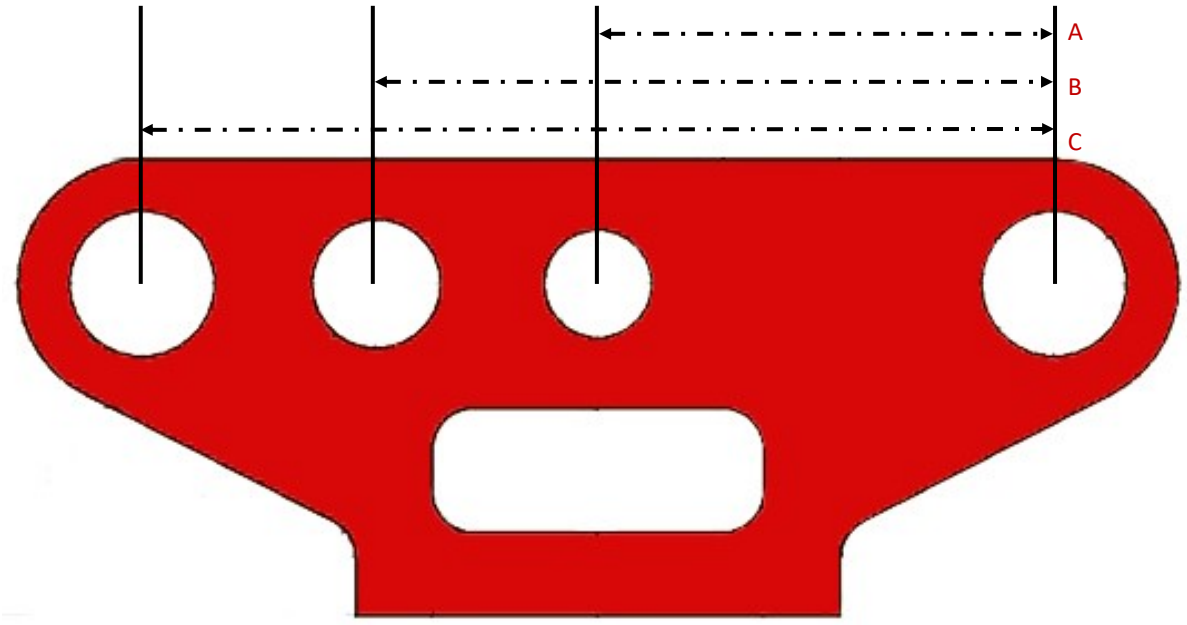

Figure 4 Side view of top bracket and the respective distance between the pin slots.

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 Midi 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 Midi 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 Midi 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 Midi 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 Midi 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 Midi Pipe Handler and may exceed the Safe Working Load of the excavator.

5. OPERATING INSTRUCTIONS

5.1 Site Preparation: Using the Midi 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 180mm PE pipe.

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

Table 4 - Excavation sizes from UK Standard Main Laying Manual

5.2 It is recommended that the Midi 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.

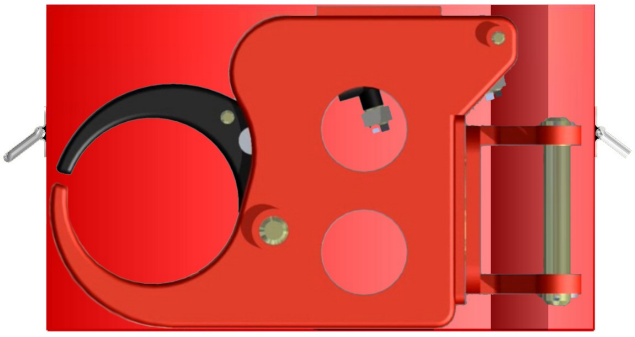

Figure 5 - Side view of storage box with 'J' Clamp facing base panel

5.3 To remove Midi 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 Midi Pipe Handler.

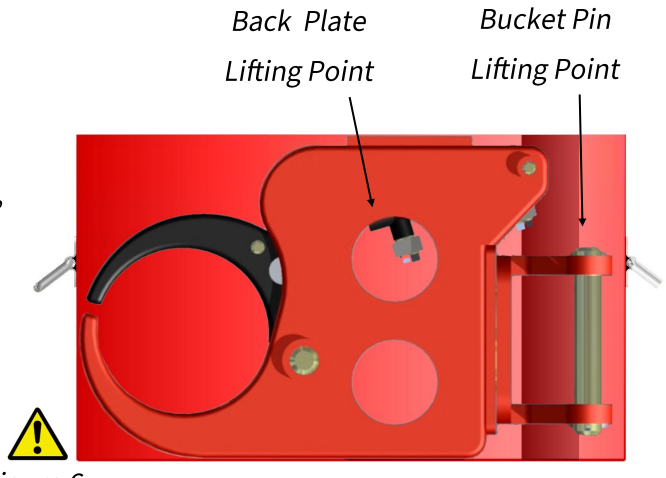

Figure 6

5.4 To remove Midi 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 Midi 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 Midi Pipe Handler using Bucket Pins:

Position the excavator so that the arm can be lowered onto the Midi 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.

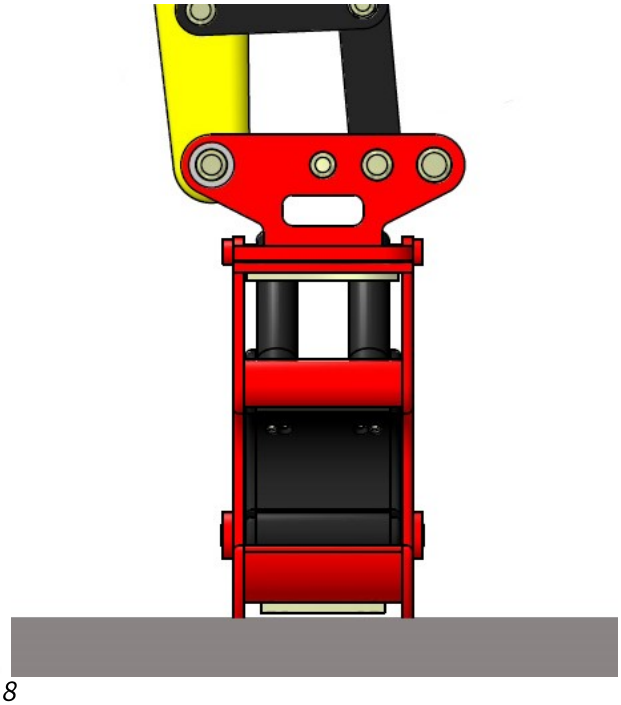

Figure 8

5.6 Attaching Midi Pipe Handler using a Pin System Quick Hitch:

Position the mini excavator so that the arm can be lowered onto the Midi 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 though. 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.

WHEN INSERTING 180mm PIPE IT IS STRONGLY RECOMMENDED TO USE A 3 TONNE EXCAVATOR. SMALLER EXCAVATORS MAY BE UNSTABALE OR NOT POWERFUL ENOUGH TO ALLOW A SAFE INSERTION.

5.7 Connect the corresponding couplings on the Midi Pipe Handler hoses into the corresponding fittings on the excavator and secure by turning the knurled swivel ring. Use adaptors to take into account 3/4" fittings on the excavator.

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

Figure 9

Note: The Midi Pipe Handler is designed for dual feed excavators only. The gripping and release forces are operated from the pedals in the cabin. In most cases this is the left pedal operated by the left foot. The left pedal should pivot allowing either side of the pedal to be pressed down.

Confirm which side of the pedal is opening and closing the Midi 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 Midi Pipe Handler.

Figure 10

Note: The Midi 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

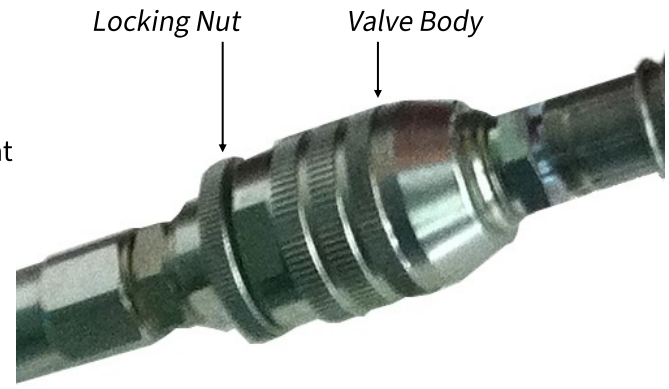

Figure 11

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

- The Flow Control Valve is not wound fully away from the locking nut
- The hydraulic lines on the excavator are 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

Figure 12

Some excavators may be permanently fixed in a single flow mode and cannot be used with the Midi Pipe Handler. However the majority of machines may be in a single flow mode but can be changed over to dual flow. Different machines vary but there is usually a simple method to do this and can often be identified by a set of symbols as shown below. This may indicate a valve that needs to be turned behind a panel or quite often is underneath the foot mat in the cabin. If there is no obvious location it may be necessary to contact the supplier of the excavator.

Figure 13—Typical example of a set of symbols found on a midi excavator to allow the flow of oil to be changed from single to dual flow.

5.8 Inserting pipe with the Midi Pipe Handler:

Site the midi 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 Midi 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 14

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

Figure 15

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

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

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.

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

Figure 16

5.11 Using the Midi Pipe Handler to assist in Butt Fusion: . Locate the Midi 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.

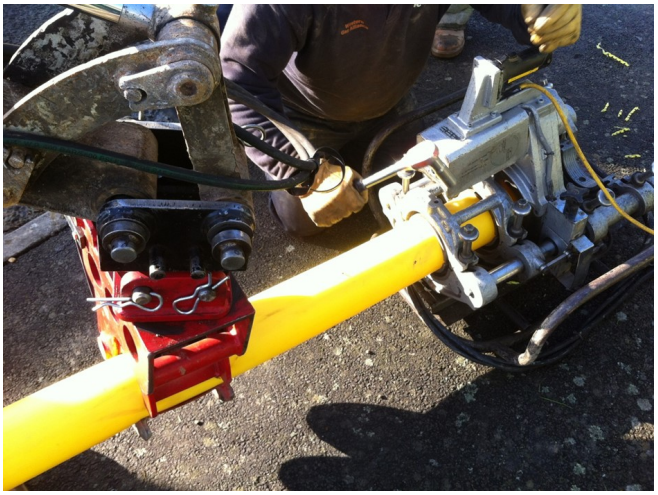

Figure 17

5.12 Changing Shells: Shell inserts are used to reduce the size of the jaw to accommodate pipe smaller than 180mm diameter.

With the Midi 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.

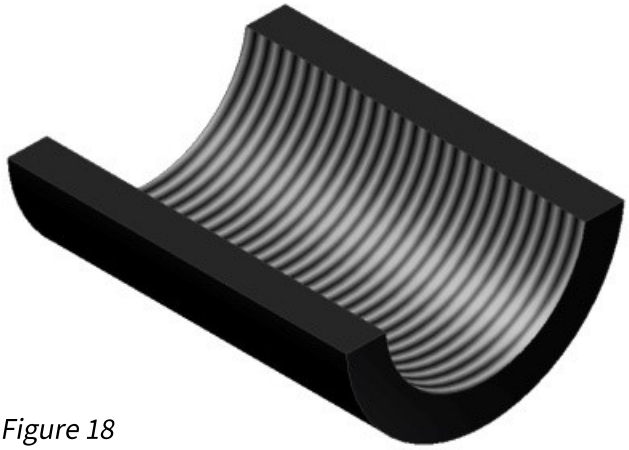

Figure 18

6. ROUTINE MAINTENANCE

The Midi 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.

ROUTINE MAINTENANCE
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

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SOLUTIONS FOR THE TRENCHLESS REPAIR, RENOVATION & DECOMMISSIONING OF PIPES WORLDWIDE

STEVE VICK INTERNATIONAL

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 55mm – 180mm in diameter in host gas/water mains

Product Name(s)/Model: Midi Pipe Handler
Intermediate Pipe Handler
180 Pipe Handler

Manufacturer's Name & Address: Steve Vick International Ltd.
Treenwood 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).

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