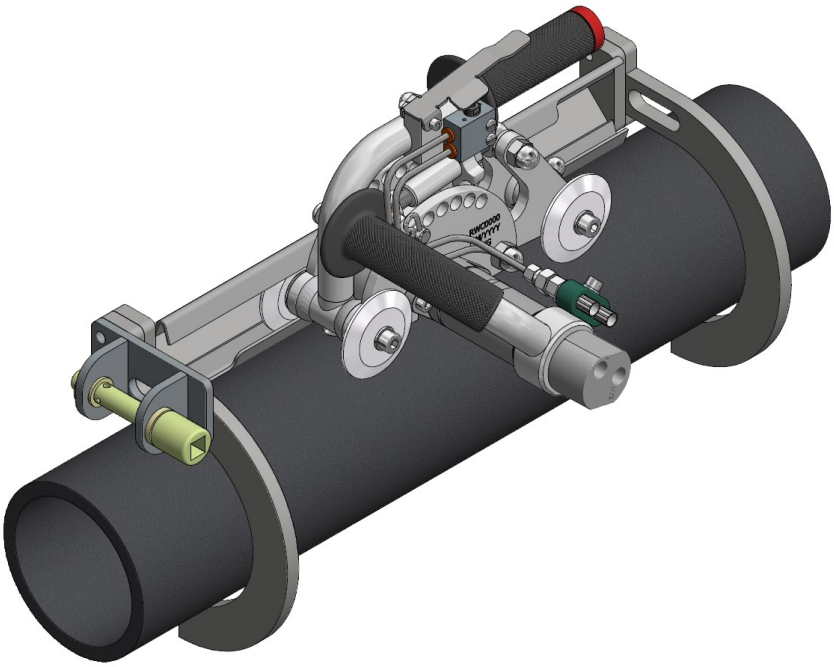
SOLUTIONS FOR THE REPAIR RENOVATION AND DECOMMISSIONING OF PIPELINES



Rapid Window Cutter - Steel

Operating Instructions

Steve Vick International Ltd

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

CE

CONTENTS

1.	Introduction	Page 2
2.	Product Description	Page 3 - 5
3.	Specification	Page 6
4.	Safety & Precautions	Page 7 - 8
5.	Operating Instructions	Page 8 - 15
6.	Service Guide	Page 16
7.	Routine Maintenance	Page 16

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
Treenwood Industrial Estate
Bradford on Avon
Wiltshire
BA15 2AU

Phone: +44 (0)1225 864 864
Email: info@stevevick.com
Website: stevevick.com
Social Media: #stevevick

2. PRODUCT DESCRIPTION

The Rapid Window Cutter is designed to cut out windows on ductile iron mains to allow the installation of a service top tee where the host main is already inserted with PE pipe. Common diameters often associated with ductile iron 4” (100mm), 6” (150mm), and 8” (200mm) would require two longitudinal cuts approximately 8” (200mm) long at approximately the 2 and 10 o’clock position. The window is completed with two circumferential cuts at either end of the longitudinal cuts. The Rapid Window Cutter is adjusted to allow longitudinal and the semi circumferential cuts requiring no other cutting gear.

The Rapid Window Cutter comprises an aluminium chassis with four alignment wheels. Housed between this is an air driven motor and a specialist cutting disc. The Rapid Window Cutter is supplied with depth control discs which allow it to cut inserted mains safely. The motor and cutting disc assembly has a feed screw depth control which also helps to ensure the right depth of cut is achieved.

The motor is air driven and is powered from a typical compressor. The unit comes with a short pneumatic hose and airline lubrication unit which is connected to the hose on the compressor. The lubrication unit maintains the operation of the motor preventing it from freezing, seizing up and prolonging the life of the unit.

The air exhaust hose prevents dust and debris from being blown around the trench and into the face of the operative.

The motor and cutting disc assembly includes a water feed hose that can be connected to a water bowser however the motor is designed to prevent sparking when cutting and to prolong blade life.

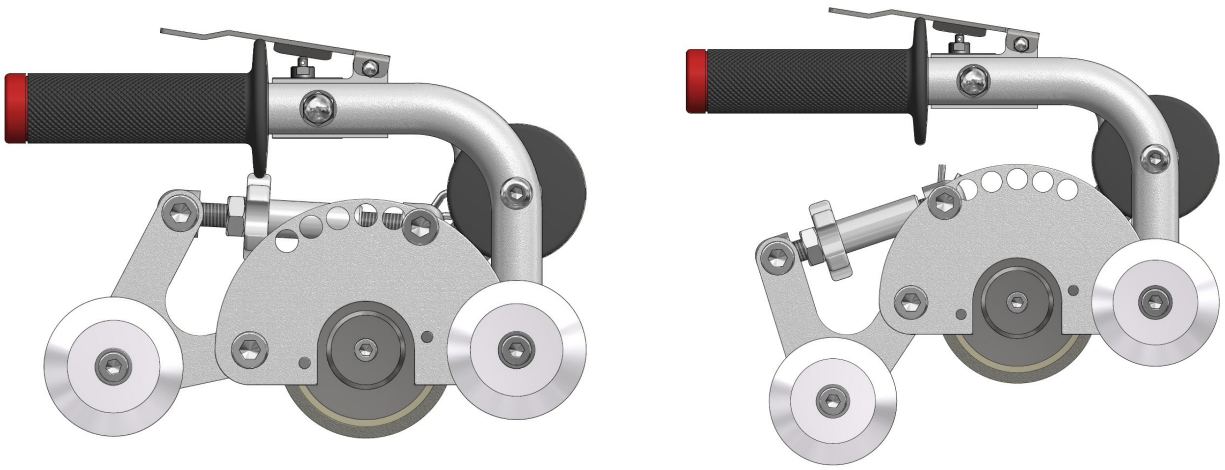


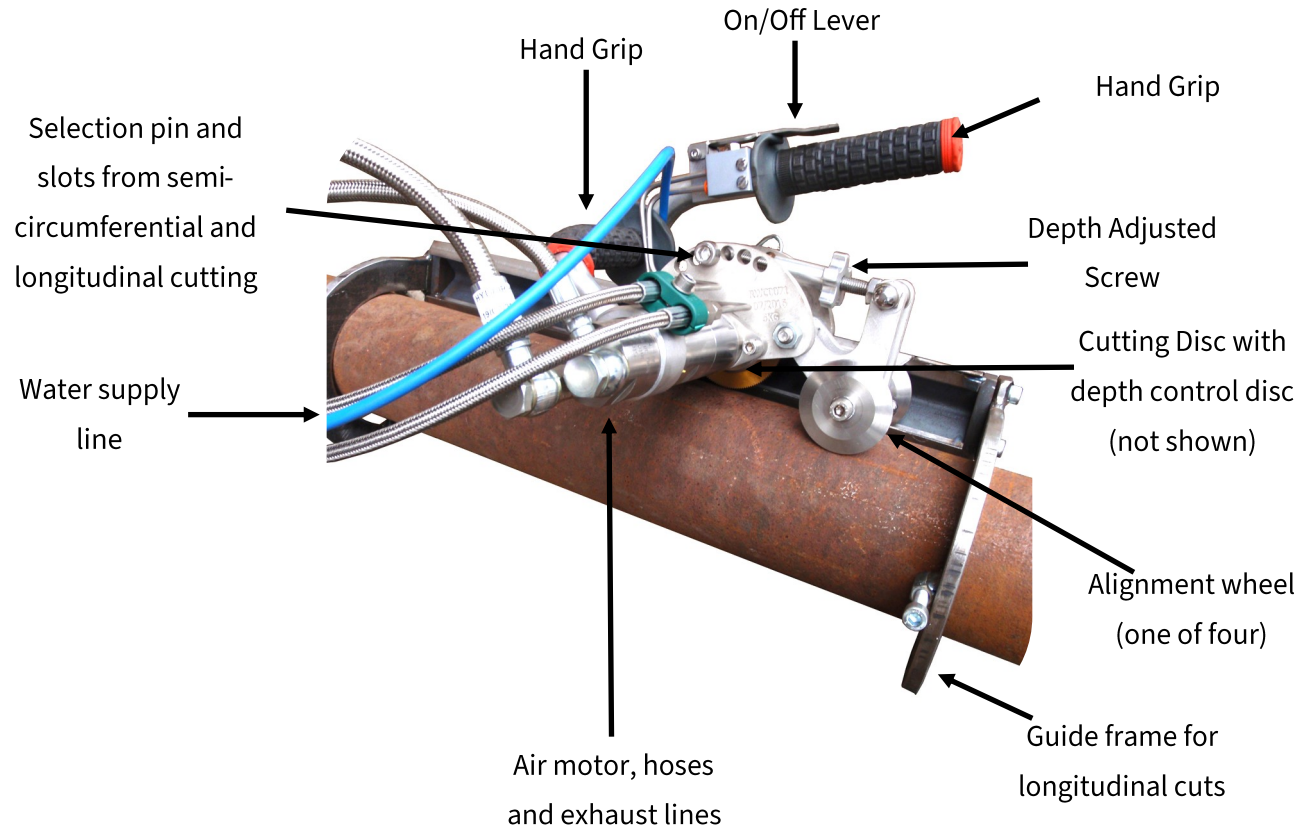
Figure 1 The Rapid Window Cutter uses a cutting disc to make longitudinal cuts on ductile iron mains and Figure 2 shows the Rapid Window Cutter pivoted to make the semi circumferential cuts which complete the window.

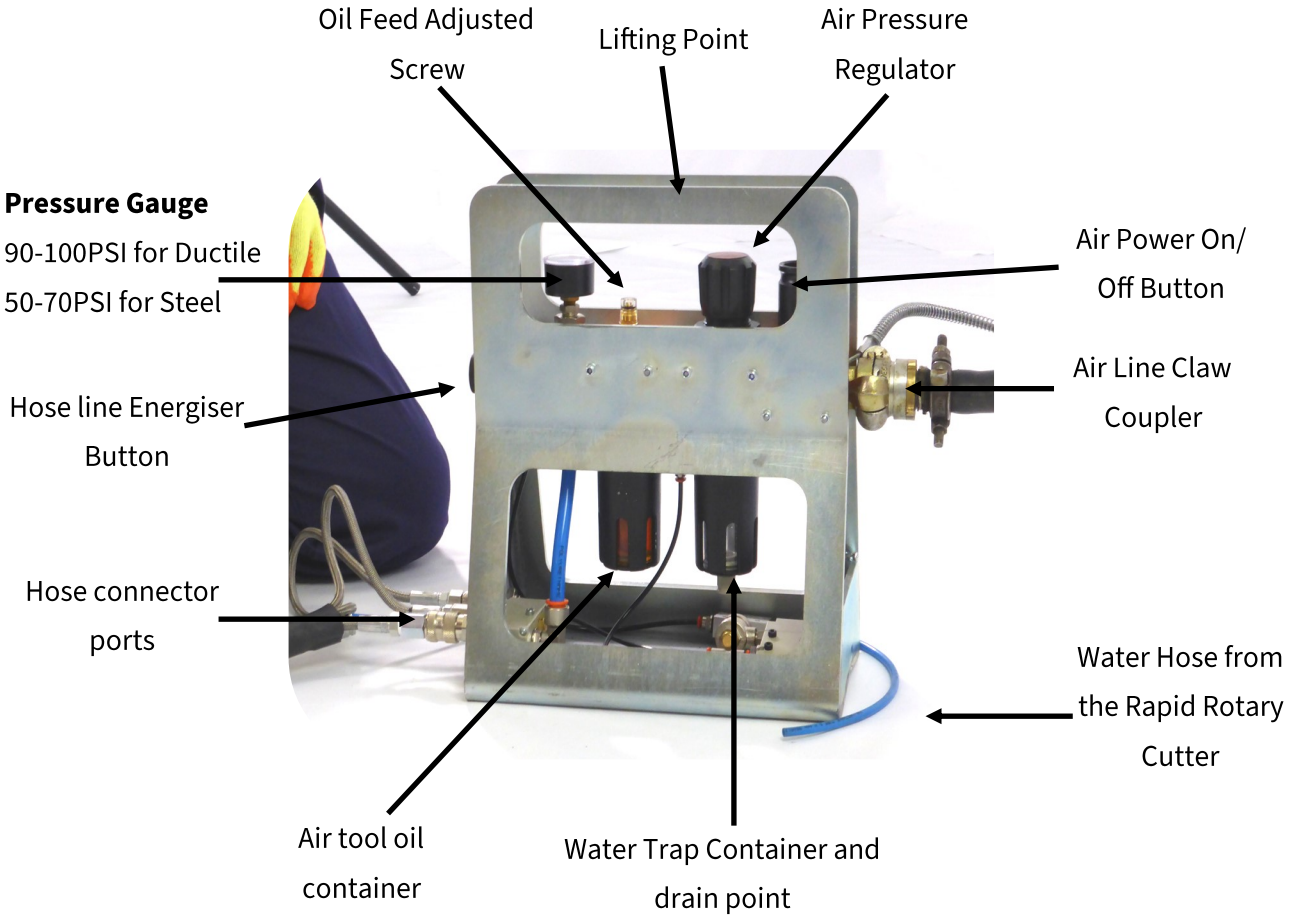
2.1 ROTARY WINDOW CUTTER HIGHLIGHTS

Key Features:

For semi circumferential cuts and longitudinal cuts on ductile mains including live and dead inserted mains	No need to increase the size of the trench
The Rapid Window Cutter can be used on all sizes of Ductile Iron	Safe – cutting blade is mounted safely away from the operator's hand
Extremely quick cutting time	Depth control discs prevent damage to inserted PE
Quick assembly time – install the correct depth disc and it's ready	Incorporates a water feed line to prevent sparking—if required
Single man operation	Uses standard compressor typically found on site – no extra power source needed
Lightweight	Simple to use

2.2 RAPID WINDOW CUTTER OVERVIEW





Figures 3 (top) and 4 above show the key parts of the Cutting Unit (top) and the Lubricator Unit.

3. SPECIFICATION

UNIT	WEIGHT
Rapid Window Cutter without hoses	7kg
Rapid Window Cutter with hoses	9kg
Lubricator Unit	8kg
Guide Frame	7 - 9kg

Table 1—Showing key weights

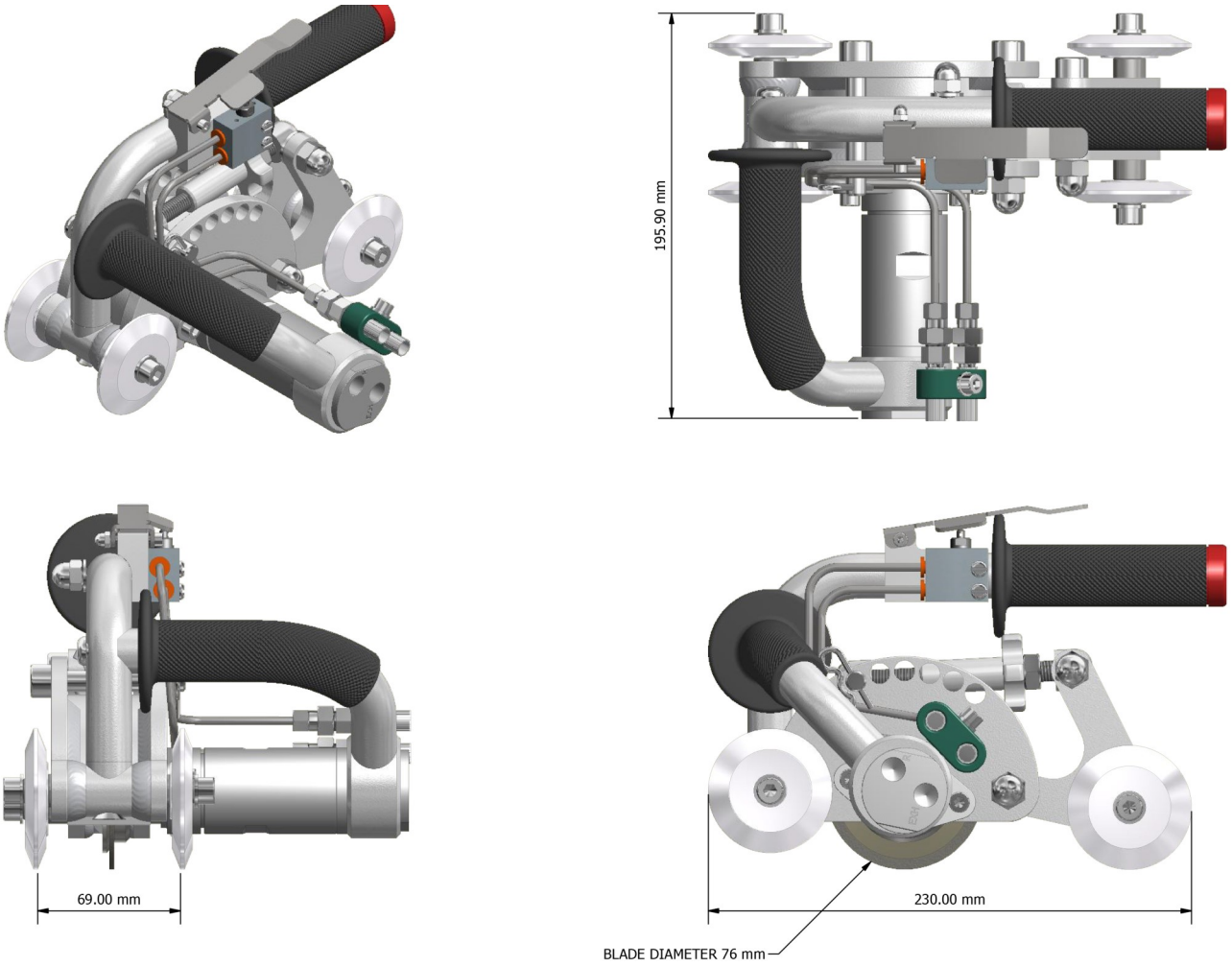


Figure 5 The basic dimensions of the Rapid Window Cutter

4. SAFETY AND PRECAUTIONS - RAPID WINDOW CUTTER

4.1 The following PPE must be worn at all times:

A. Safety goggles
B. Approved Dust Mask
C. The Rapid Window Cutter runs at 85-90db—check local policy if ear defenders are mandatory
D. Hard hat—if applicable
E. High visibility jacket
F. Cut resistant Gloves
G. Steel toe cap footwear

4.2 Operatives MUST BE TRAINED IN THE CORRECT USE OF THE CUTTER TO A SATISFACTORY LEVEL highlighting that limbs must not be placed underneath the unit at any time and always use the hand grips.

4.3 Ensure all operations and equipment, including the compressor and hoses, are situated within an area contained by a barrier.

4.4 Ensure the correct blade is in good condition and can be compared to Figure 6 (left). Any obvious signs of wear or if the diamond coating is missing then the disc must not be used. A disc in unsatisfactory condition will perform badly and create sparks.

4.5 IN ALL CIRCUMSTANCES THE ANNULUS MUST BE CONFIRMED DEAD BEFORE ANY CUTTING OPERATIONS ARE CARRIED OUT. REFER TO STANDARD PROCEDURES.

Figure 6—Cutting blade in good condition scale 1:1

4.6 The section of the steel main being cut should be cleaned of any rust that may inhibit the movement of the Rapid Window Cutter and the installation of the Guide Frame.

4.7 If possible move 3rd party plant out of the way (dead PE service tails).

4.8 SPARKING: In order to prevent sparking check the condition of the blade. The blade should have all teeth present and in good condition. It is also critical the water hose is connected to a separate water bowser. Ensure the bowser is full of clean water and constantly pressurised.

4. SAFETY AND PRECAUTIONS - RAPID WINDOW CUTTER (CONTINUED)

4.9 Ensure the lubricator unit is connected to the hose arrangement and correctly filled with anti-freeze air tool lubricator oil. It is unlikely that the setting on the assembly will need to be adjusted.—See 5.5 to 5.8.

4.10 Ensure enough clearance to the sides of the main. This can be checked by having a dummy run of the cutting movement using the cutter prior to connecting it to the airline. For best practice keep the handle of the cutter to the side of the operative. This allows the cutter to be positioned further around the sides and edges of the main.

4.11 Although the Rapid Window Cutter has been designed primarily for service windows, it can be used for cutting out longer sections to accommodate a connection for example. **However it is recommended to cut in the 12 o'clock position over the entire length but to rest the motor and blade for a few minutes every 12"/300mm.**

5. OPERATING INSTRUCTIONS

5.1 Mark the outline of the intended window on top of the main using a suitable scribe (e.g. chalk). The size of window will be dependant on size of inserted main, size of top tee required, but should be the right size to allow a safe and correct fitting of the tee.

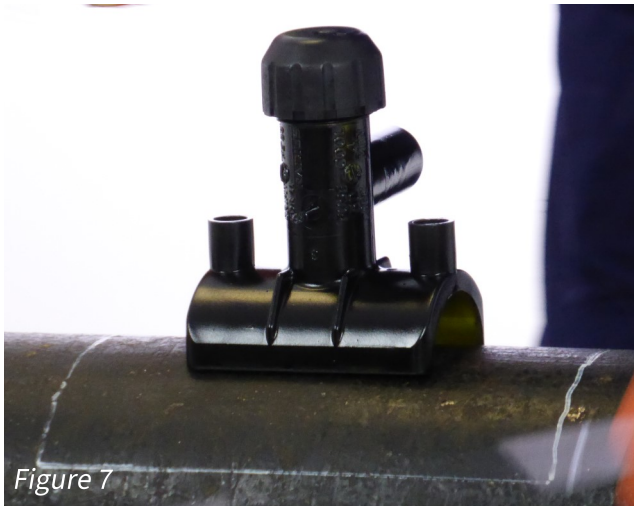


Figure 7

5.2 Select depth control disc using coupon as a guide or a measurement taken from a nearby service hole.

Figure 8

5. OPERATING INSTRUCTIONS (CONTINUED)

5.3 Choose the depth control disc that allows the same measurement of travel to the edge of the cutting disc and install. This should be printed on the wheel.

If in any doubt use depth control blade that offers the least travel.

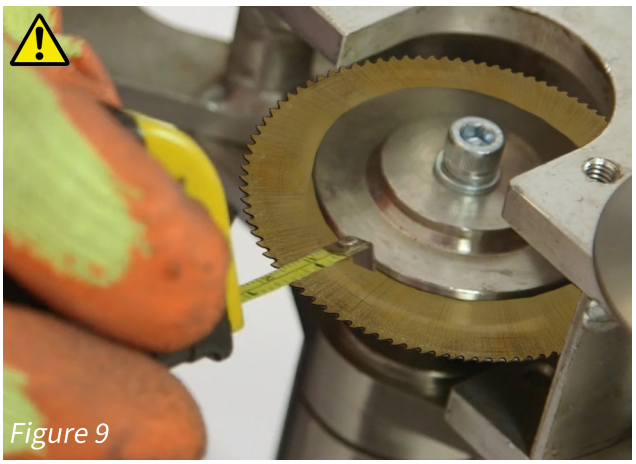


Figure 9

5.4 Fitting the blade and depth disc

Once the correct depth disc is selected the cutting blade is installed at the same time. Verify visually that the blade is fit for purpose and has not warn down.

Slide both discs onto the central spindle, fit and tighten the central locking bolt with an allen key and a 19mm spanner.

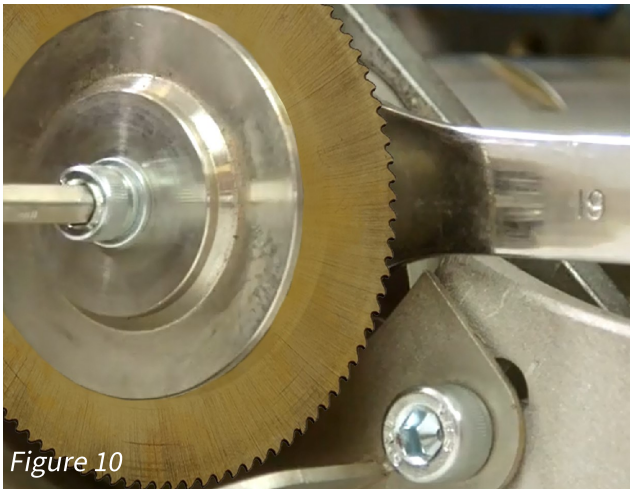


Figure 10

5.5 Connect the air line hose from the compressor to the claw coupler fitting on the lubricator unit. Make safe by fitting the whip chain.

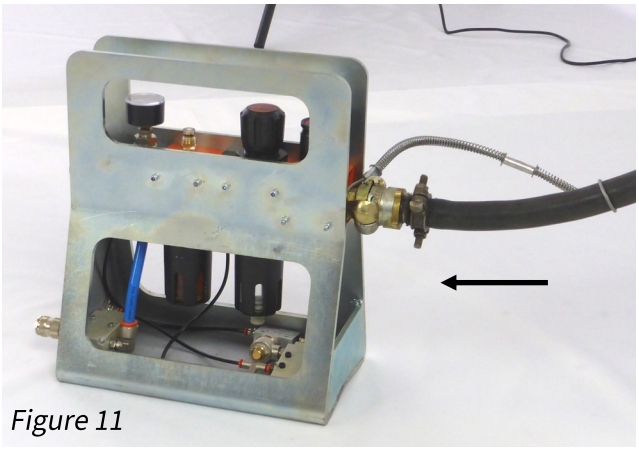


Figure 11

5.6 The group of hoses from the Rapid Window Cutter need to be connected into the other side of the lubricator unit. Each hose has specific opposite connector ports on the lubricator unit so that they cannot be connected up incorrectly. The three hoses are:

A. The air inlet
B. The air exhaust
C. The lubricator line

On steel it is essential the blue water hose is connected to a water bowser before the operation. This prevents sparking and prolongs blade life.

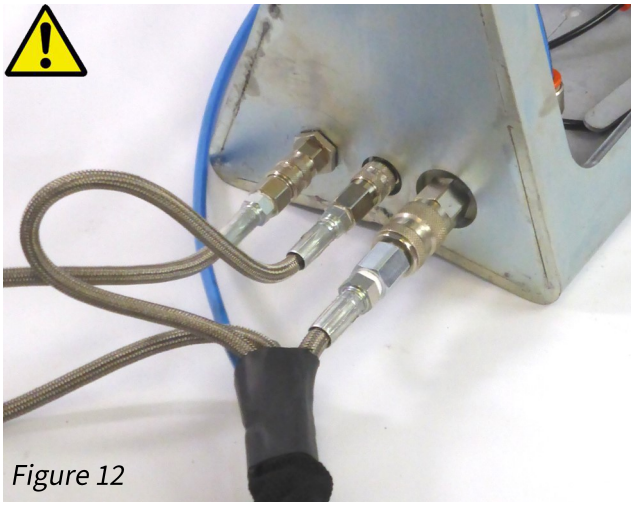


Figure 12

5. OPERATING INSTRUCTIONS (CONTINUED)

5.7 Check all the functions on the Lubricator Unit as outlined on Page 5 Figure 4:

A. The oil reservoir is filled with standard air tool oil and should be about half full.

B. Whilst operating the Rapid Window Cutter ensure there is a sufficient drip rate going to the motor from the oil reservoir. Adjust if necessary.

C. Confirm the water trap container is empty if not there is a drain point underneath the container.

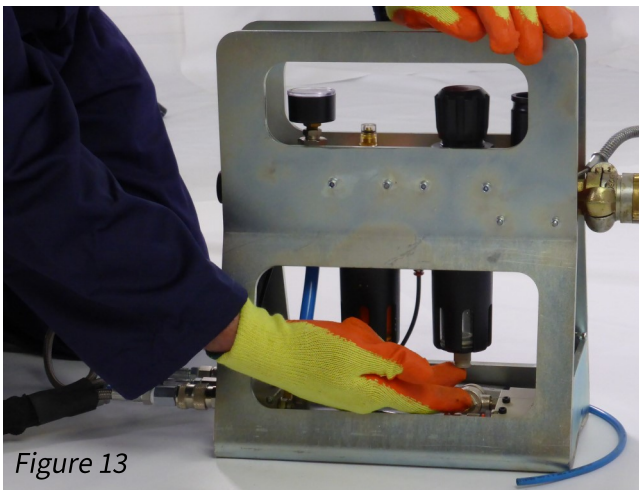


Figure 13

5.8 Switch on the air at the compressor. Switch on the air at the Lubricator Unit using the Air Power On/Off button. The orange centre button turns the air on and the black outer rim button switches the air off. Figure 14 shows the Air Power button in the ON position.
If necessary increase pressure by pulling the regulator upwards and turn clockwise. Refer to page 5 for correct pressure gauge reading—lift up regulator and adjust.

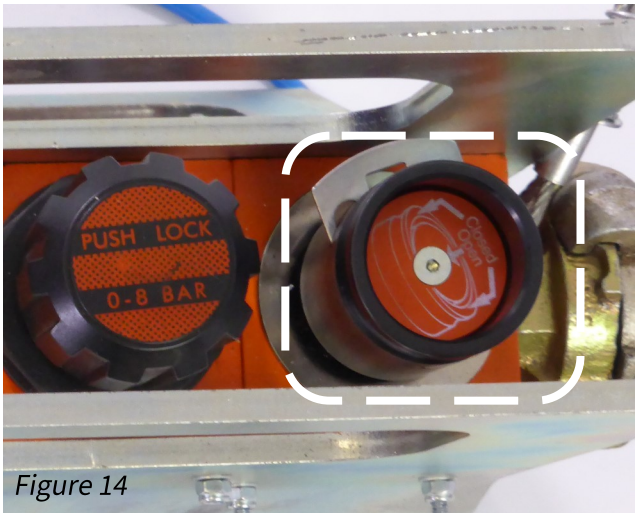


Figure 14

Depress the orange hose line energiser button above the connector ports to allow pressurised air to the motor. *(The hose line energiser button ensures the Rapid Window Cutter cannot accidently start when the compressor is started and the on/off button is on).*

5.9 The host main needs to be cleaned of any significant erosion that may impede the installation of the guide frame and the subsequent travel of the cutter. The guide frame will need to be set up for the size of host. For example if working on a 4” (100mm) steel frame the frame will need the 4” (100mm) end profiles fitted to the track.

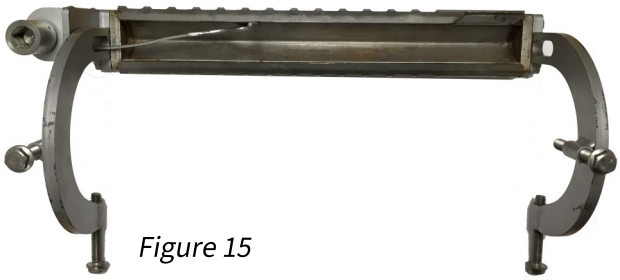


Figure 15

5. OPERATING INSTRUCTIONS (CONTINUED)

5.10 To change the end profiles to the corresponding size unscrew the two bolts at each end (four in total) from the guide track. Spanner size 15. Replace with the correct end profile at each end and secure.

Figure 16

5.11 Place the guide frame onto the host main. Adjust the orientation of the guide frame so that the guide track is at a position that will allow a longitudinal cut at the desired location. In most cases this will be with the track at the 3 or 9 o'clock position where the top securing bolt is at the 12 o'clock position.

Figure 17

5.12 Tighten the four bolts to the host main ensuring the guide frame is secure. Confirm all four bolts are in contact with the host main.

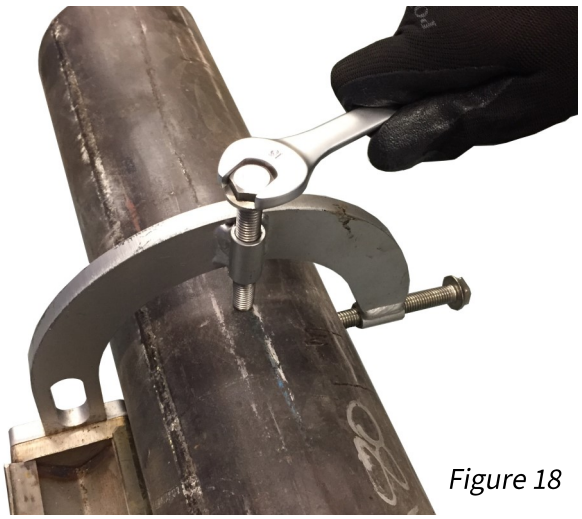


Figure 18

5.13 Confirm the guide track is in contact with the host main along the entire length of the track. This will ensure a consistent cutting depth.

Figure 19

5. OPERATING INSTRUCTIONS (CONTINUED)

5.14 Ensure the cutter is on the horizontal plane (see (Figure 17). Slide the front right side wheel of the cutter into the slot followed by the rear right side wheel.

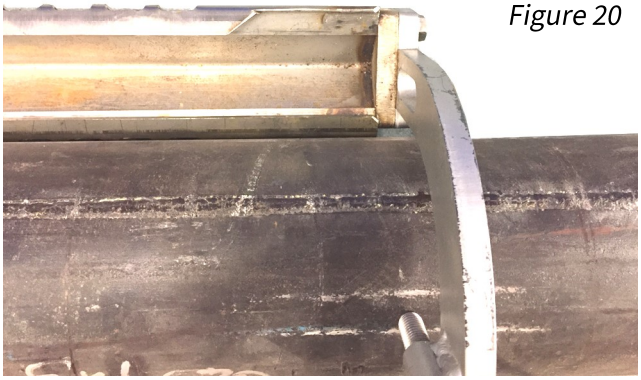


Figure 20

5.15 Confirm both wheels are fully housed inside the track and slide the cutter so that the rear wheels are as tight as possible to the end of the guide track. Figure 17 shows the cutter in the horizontal plane—note the position of the selector pin. Confirm the cutting disc is not in contact with the host main at this stage.

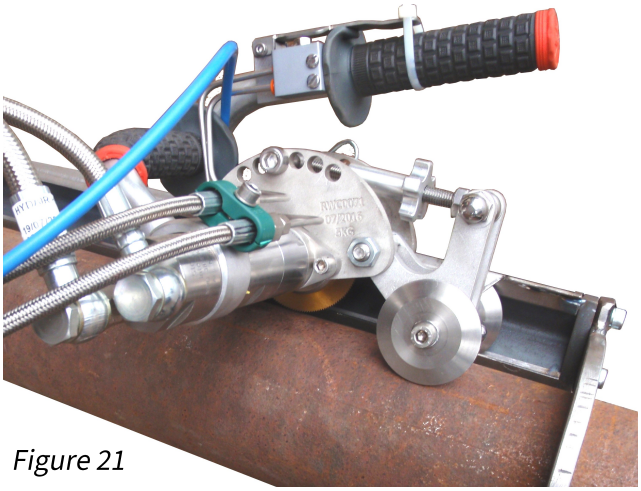


Figure 21

5.16 Tether the cutter to the winch cable underneath the front axle and over and secure as shown.

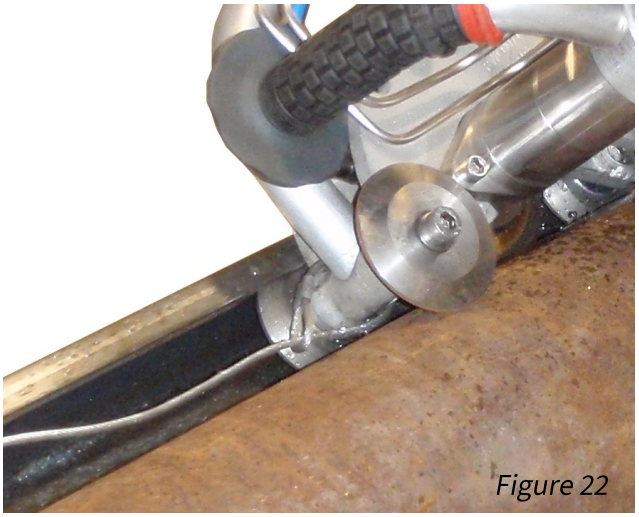


Figure 22

5.17 Press the orange energiser button the oiler unit. OPEN VALVE ON THE WATER LINE.

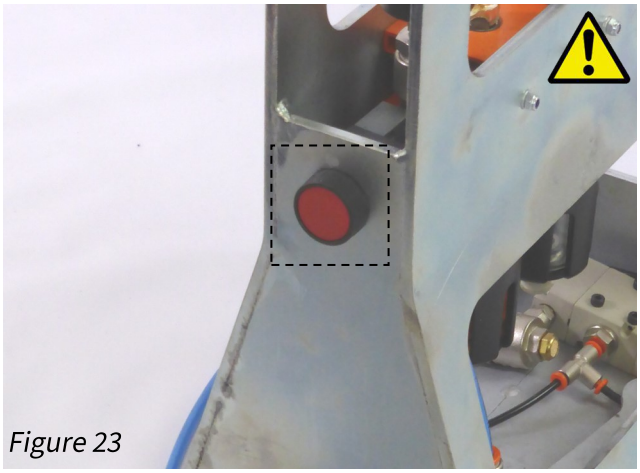


Figure 23

5. OPERATING INSTRUCTIONS (CONTINUED)

5.18 Take up the slack of the winch cable using the 1/2 inch ratchet by turning clockwise.

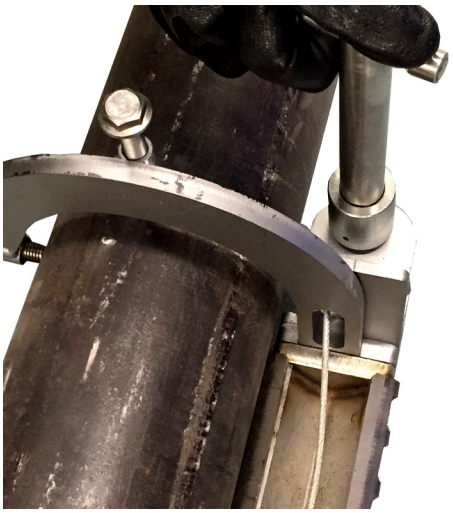


Figure 24

5.19 Press the on lever on the handle of the cutter. At the same time adjust the feed screw handle so that the cutting disc cuts into the wall of the host main. When the desired depth has been achieved by confirming the depth when disc has contacted the host main then very slightly pulled away. Secure the depth of cut by tightening the locking nut against the feed screw.

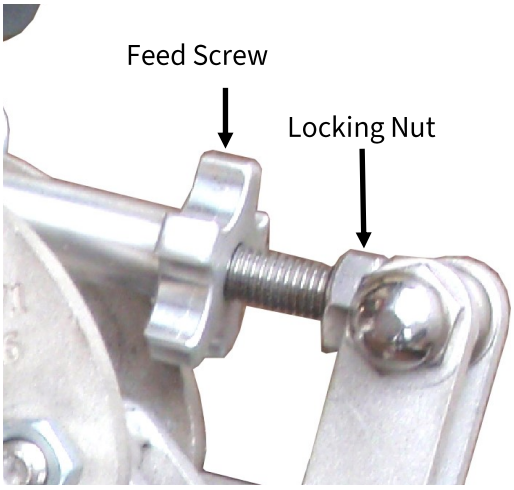
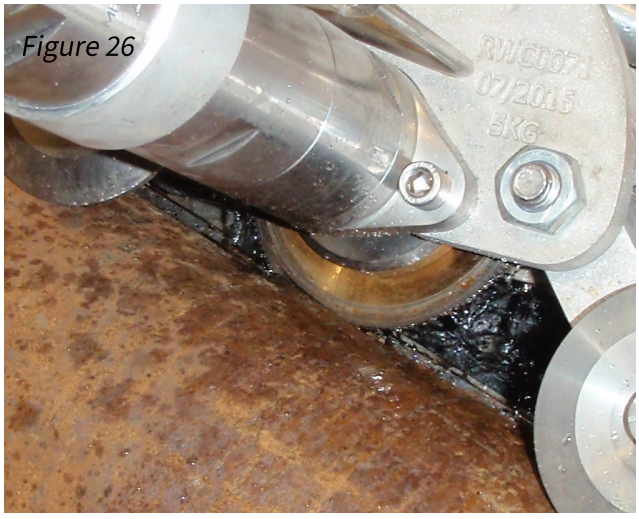


Figure 25

5.20 Draw the cutter along the track by turning the ratchet clockwise in a steady movement. At all times ensure the water is spraying the cutting disc and a clean cut is evident.

Figure 26



When the full length of the track has been traversed the cut is complete. Turn off cutter and isolate air supply at the oiler by pressing the outer black ring as described in 5.8. Retract the cutting disc away from the host main by loosening the locking nut and adjusting the feed screw in the opposite direction. Slide the cutter backwards and out of the guide frame.

Repeat procedure for the adjacent longitudinal cut.

5. OPERATING INSTRUCTIONS (CONTINUED)

5.21 With both longitudinal cuts complete the Rapid Window Cutter must now be configured for the semi circumferential cuts. To do this pull out the R-Pin holding in the Selector Pin and remove from the slot.

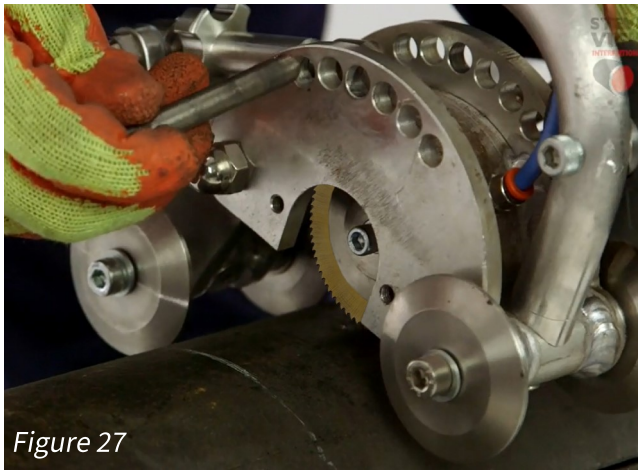


Figure 27

5.22 Typically the slot closest to the rear alignment wheels will be used for the smallest size of Ductile Iron pipe which is 100mm/4". The next slot back towards the centre is for 150mm/6" and the next one for 200mm/8". Secure with the R-Pin.

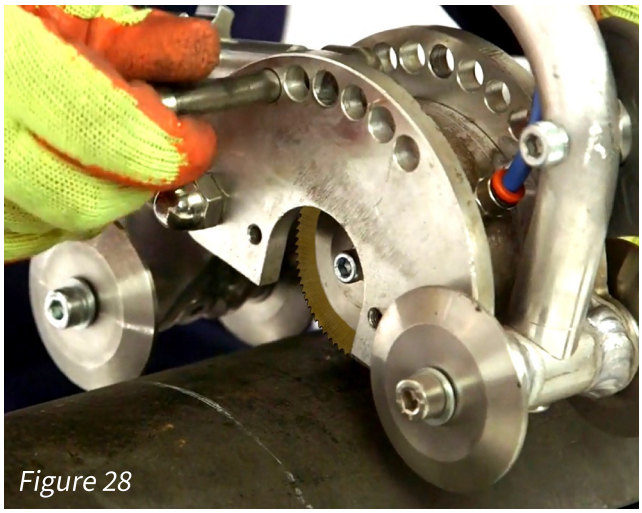


Figure 28

5.23 The side of the Rapid Window Cutter without the hose lines should be facing the trench wall, this makes the most of the trench space and is the safest way to hold the Rapid Window Cutter. Switch on the air and water supply. Adjust the feed screw as described in **5.19** to begin cutting into the wall. It is strongly advised to start at the 12 o'clock position and work downwards towards the longitudinal cuts.

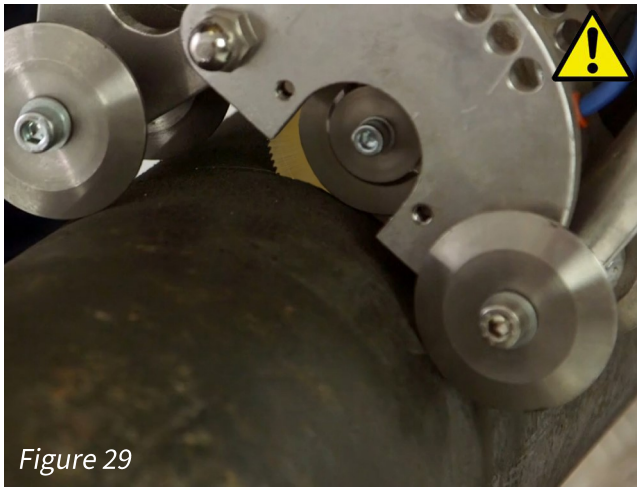


Figure 29

5.24 Ensure the semi-circumferential cuts fully pass the initial longitudinal cuts. This will ensure the window can be removed with minimal effort.

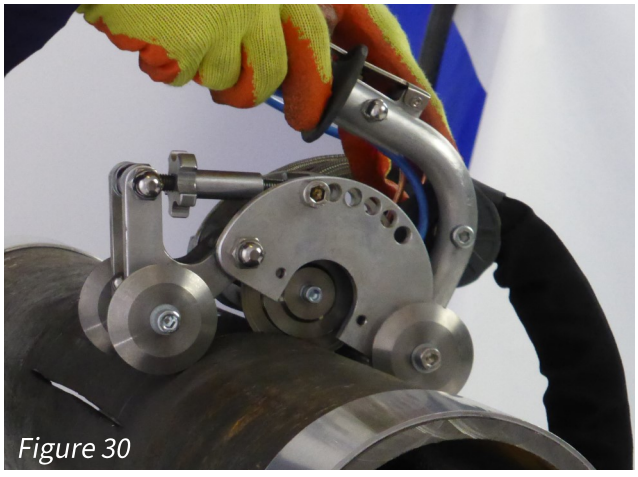


Figure 30

5. OPERATING INSTRUCTIONS (CONTINUED)

5.25 All four cuts should overlap each other fully. Visually inspect the cuts are to the desired depth before attempting to remove the window.

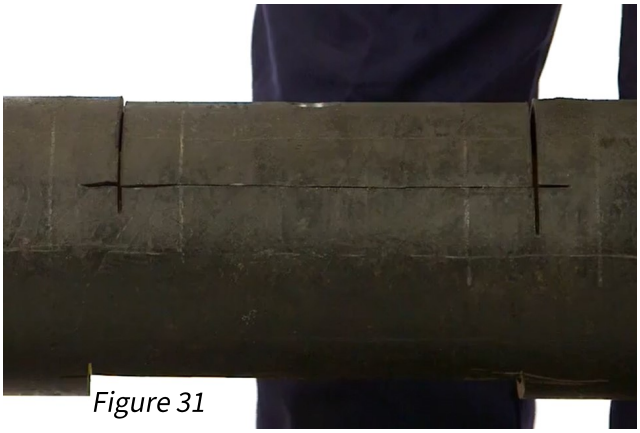


Figure 31

5.26 With gloves still on remove the window by pulling up from the original service hole. If the cutting depth was set to leave a slither of wall material it will be necessary to tap the top of the window with a hammer. Minimal force should be required however if the window will not move then the Rapid Window Cutter will be needed to remove the excess wall material.

Figure 32

5.27 The inserted PE will be exposed by removing the window. Visually check for any damage to the PE pipe and clean and scrape the area in readiness for the electro-fusion of the new service tee.

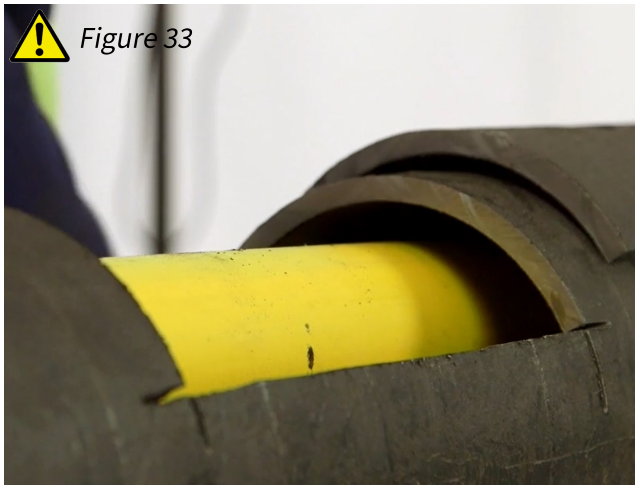


Figure 33

5.28 Check the service tee will fit safely and securely onto the PE pipe before final installation.

Carry out standard procedures for the relay or transfer of the service.

At all times wear gloves and remove any dangerous burrs on the edges of the cut out section.

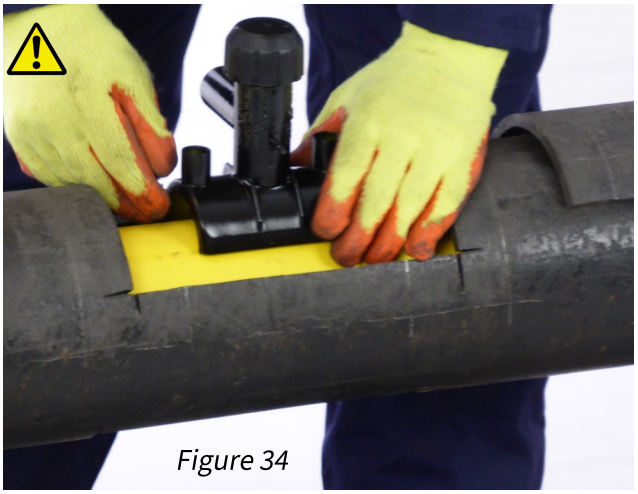


Figure 34

6. SERVICE GUIDE

It is recommended that the Rapid Window Cutter is serviced every 12 months by Steve Vick International. Please contact us for details.

7. ROUTINE MAINTENANCE

The Rapid Window Cutter has been designed to be relatively free of maintenance. Simple checks on the tightness of bolts and clips, any hydraulic leaks and general wear on parts being all that is required in normal day to day operation.

7.1 The assembly unit is designed so that the filter pot precedes the lubricator pot when attached to the airline hose. If in doubt refer to the direction arrow found on assembly which indicates the flow.

7.2 Oil feed rate is pre-set and should last a typical days cutting. On cold days it may be necessary to increase the oil feed rate by inserting a flat head screw driver into the top of the oil pot and twisting a half a turn clockwise.

ROUNTINE MAINTENANCE
Clean down the machine and check all moving parts for wear and tear.
Thoroughly check the cutting blade and replace when worn.
Check all hoses remain in good condition.
Ensure the airline lubricator is operational.
Retighten all nuts and bolts.
Ensure all wheels are present and can rotate.
Ensure all depth control discs are present.
When mounting the cutting blade and depth control disc, ensure they can attach to the motor assembly securely and are not loose.
If the motor fails to operate it is recommended that it is taken to a specialist to investigate the problem.