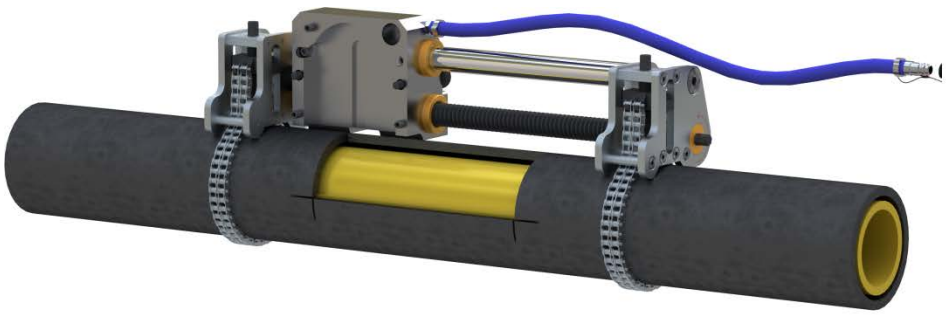
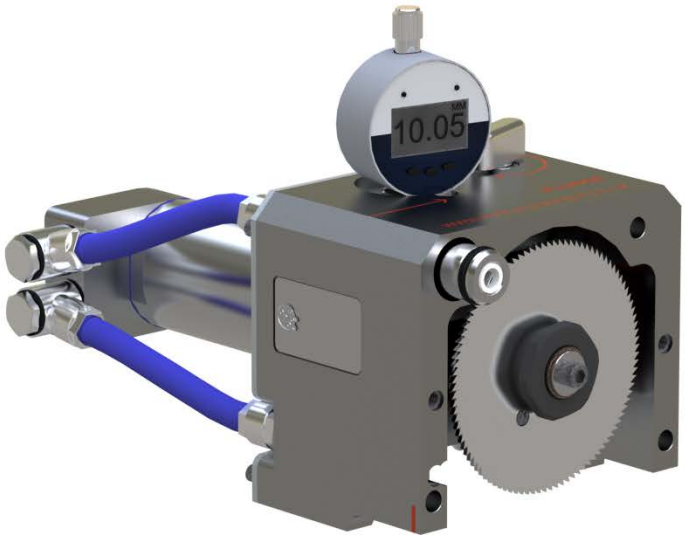
INSTRUCTION MANUAL

Kent Precision Window Cutter





Operator Instructions

Sole North American Distributor: PLCS Inc., 102 Gaither Drive, Unit 1, Mt. Laurel, NJ 08054
856-722-1333 info@plcsusa.cm www.plcsusa.com

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1.0 Safety warnings

- Always use the Kent Precision Window Cutter in a tidy environment; this will reduce the risks of accidents.
- Make sure the environment that you are working in is safe. You will not be able to monitor potential hazards while concentrating on using the Kent Precision Window Cutter.
- This equipment generates hazardous levels of noise, when in operation wear ear protectors.
- Keep any unnecessary persons from the area while using the Kent Precision Window Cutter.
- When not in use return the Kent Precision Window Cutter to its packaging and store in a dry and secure environment.
- Always observe the cutting procedure outlined in this manual.
- If in doubt about the suitability of this product for a situation contact PLCS Inc. for further information.
- Always wear appropriate Personal Protective Equipment (PPE) and apparel, consult the manual or experienced health and safety adviser for further information.
- In situations where material from the cut may become airborne, consult your health and safety adviser in regards to potential health hazards.
- Do not abuse the Kent Precision Window Cutter. Horseplay and misuse can lead to accidents.
- Do not use on a pipe not within the Kent Precision Window Cutters specification. Using this tool outside of its design limits may not provide the results expected or may be dangerous. Consult our technical department for further information.
- Always disconnect the Kent Precision Window Cutter and its accessories from the compressed air supply when not in use to prevent accidental operation.
- Always remove all detachable accessories and tools from the Kent Precision Window Cutter when not in use.
- Always check for damage to the Kent Precision Window Cutter and its accessories. If any damage is found return the item for repair. The use of non-standard items or accessories may present a risk of personal injury.
- Before and after every use check pressurised pipes for signs of damage or deterioration. Replace any faulty items before use.
- Ensure the compressed air supply is compatible with the Kent Window Precision Cutter's requirements.
- Compressed air can cause injury to the body. Examples include entry into orifices, penetration of the skin and air contaminated with swarf being blown onto eyes or skin.
- Never operate the cutter with a cracked, damaged or worn blade.
- Do not remove swarf with your bare hands.
- Disconnect all included tools from the air supply before changing accessories, servicing or performing any maintenance. De-pressurise the tool before removing the air hose.
- Maintain the Kent Precision Window Cutter and its accessories in good condition. Contact PLCS Inc. For genuine replacement parts.
- Replace or repair damaged parts. Use genuine parts only. Non-genuine parts may be dangerous and will invalidate the warranty.
- Only use the tools for their expressed purposes.
- Use a face or dust mask if dust is generated. Wear appropriate protective clothing.
- Remove ill-fitting clothes, ties, watches, rings and other loose jewelry. Contain or tie back long hair.
- Keep children and unauthorised persons away from the working area.
- WARNING! Air pressure should not exceed 7 bar (100 psi).
- Keep air hoses away from heat, oil and sharp edges. Check air hose for wear before each use, and ensure that all connections are secure.
- DO NOT operate any of the tools or accessories if any parts are damaged or missing as this may cause failure or personal injury.
- DO NOT carry the window cutter by the hose, or yank the hose from the air supply.
- DO NOT allow untrained persons to operate these tools.
- DO NOT operate these tools when you are tired, under influence of alcohol, drugs or intoxicating medication.
- DO NOT defeat safety valves or features.
- DO NOT direct air from the blow gun at yourself, others or animals.
- DO NOT operate this tool unless attached to the pipe and all preparations have been carried out to a satisfactory manner.
- When not in use disconnect from the air supply and store in a safe, dry, childproof area.

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2.0 Introduction

The Kent Precision Window Cutter is a lightweight pneumatically powered pipe cutter that has been specifically designed by Pipe Equipment Specialists Ltd (PESL) to quickly and safely make Longitudinal and Circumferential cuts in Ductile Iron, Steel and other materials.

The Kent Window Cutter allows the operator to cut a window or make full Circumferential cuts into a pipe with precise depth control. This enables the user to access PE pipes and tight fit liners without the risk of damaging the internal liner.

The system comprises of 3 Modules; a Cutter Module, a Circumferential Module and a Longitudinal Module. The system operates by the user attaching the Cutter Module to either the Longitudinal or Circumferential Module to perform the required cut.

It has been designed with many safety features including a fully enclosed blade, which cannot be operated while exposed. Its cutting action is also non-sparking. Due to its lightweight high grade aluminium construction the window cutter is easy to handle.

The Kent Window Cutter can be used on pipes with a wall thickness up to 20mm (3/4").

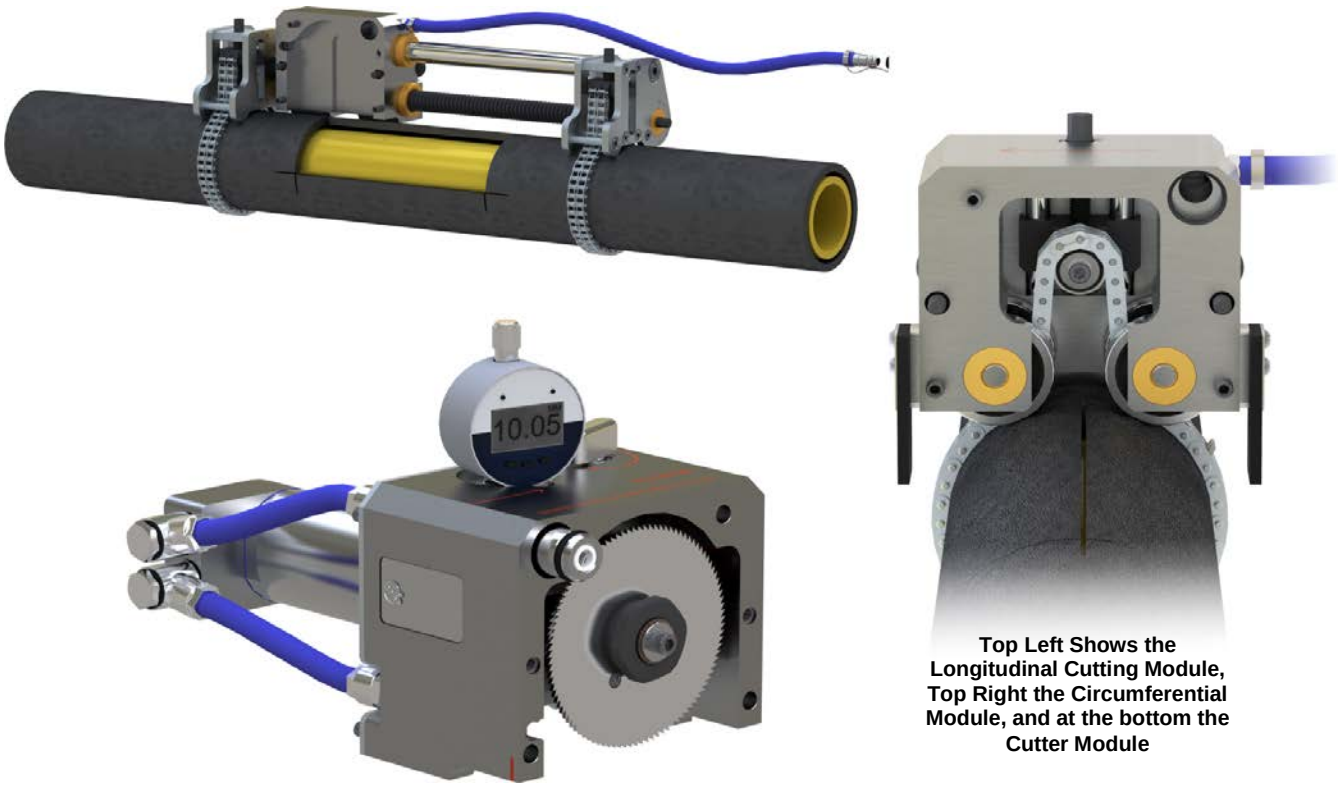
The Longitudinal Cutter Module can be used on all pipe sizes from 100mm (4") upwards (50mm / 2” with the optional 2" foot), whilst the Circumferential Cutter Module can be used on all pipe sizes from 75mm (3”) upwards.

Longitudinal (axial) cuts can be made up to 250mm (10") long. Longer rails are available to make longer cuts.

Circumferential cuts (radial) can be around the pipe up to 300° in one operation (360° in two operations).

Diameters above 200mm (8”) will require extensions to the chains.

A window can be cut in most pipe materials in approximately 45 minutes.



Top Left Shows the Longitudinal Cutting Module, Top Right the Circumferential Module, and at the bottom the Cutter Module

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3.0 Specification

Suitable Types of Material: -	Cast Iron, Ductile Iron, Carbon Steel & Plastic.
Pipe Diameter (Nominal OD): -	The cutter is suitable for Longitudinal cuts on pipes from 100mm (4") upwards (51mm / 2" when using the 2" optional feet), and can cut circumferentially from 75mm (3") upwards. For Sizes 200mm (8") and above chain extensions are required.
Length of Cut: -	The standard unit will make Longitudinal cuts 250mm (10") long, longer cutter lengths are available.
Depth of Cut	The maximum depth of cut is 20mm (3/4").
Control of Cut: -	The Depth of cut can be accurately controlled using the depth plunge on the Cutter Module, and monitored using the supplied Digital Depth Indicator (DDI).
Cutting Speed: -	A window can be cut in most pipe materials in about 45 minutes.
Pipe Clearance: -	Only 140mm (5½") clearance is required when making a circumferential cut - making it suitable for use in congested excavations.
Overall Size: -	Longitudinal - 500mm/20" long, 325mm/12.8" wide, 142mm/5.6" high (without depth gauge). Circumferential - 355mm/14" long, 140mm/5.5" wide, 140mm/5.5" high.
Module Weights: -	Longitudinal Module – 11Kg. (24.25lbs) Circumferential Module – 4.5Kg. (10lbs) Cutter Module – 6Kg. (13.25lbs)
Air Consumption: -	15 Litres/sec (1000 litres/min or 32 cfm) at pressures up to 7 bar (100psi).
Lubrication: -	Supplied complete with an air filter / lubricator (Air Treatment System).
Blade Type: -	Customised High Speed Steel.
Shipping Dimensions: -	39" x 14" x 12" (L x W x H).
Shipping Weight: -	136lbs Typical, depending on specification.

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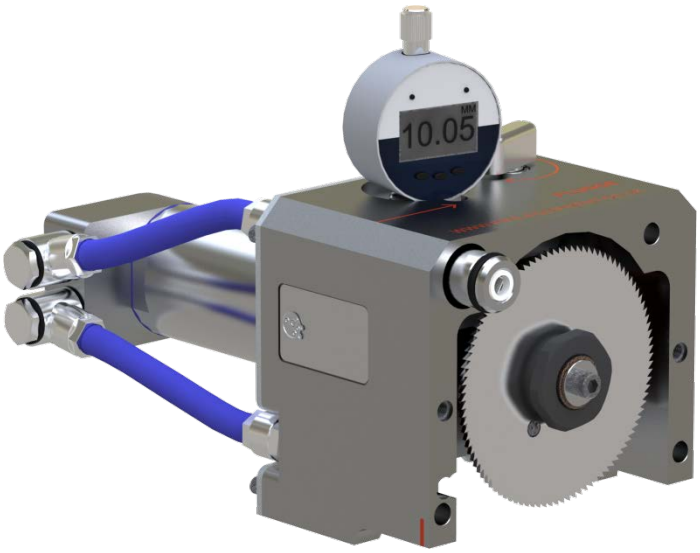
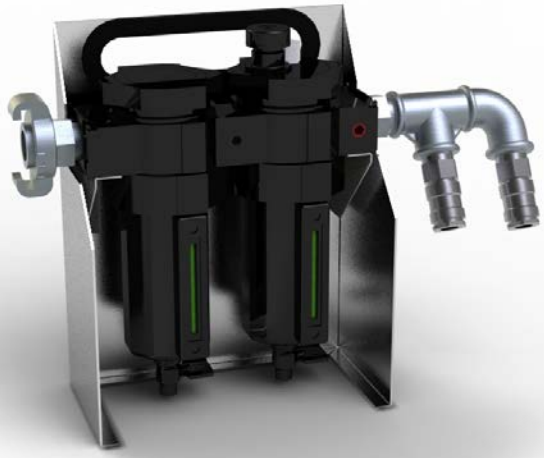
4.0 General Description

- Cutter Module and depth gauge

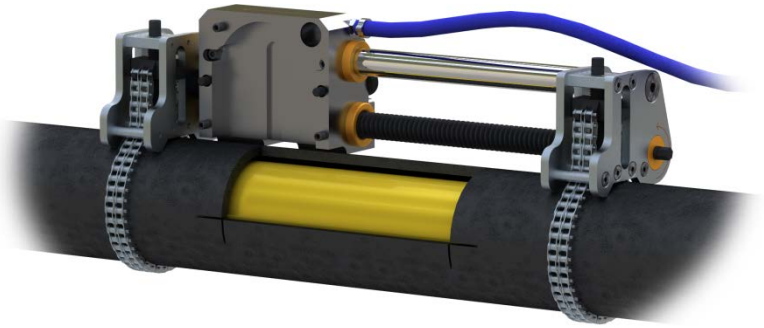


- Circumferential Module

- Air Treatment System

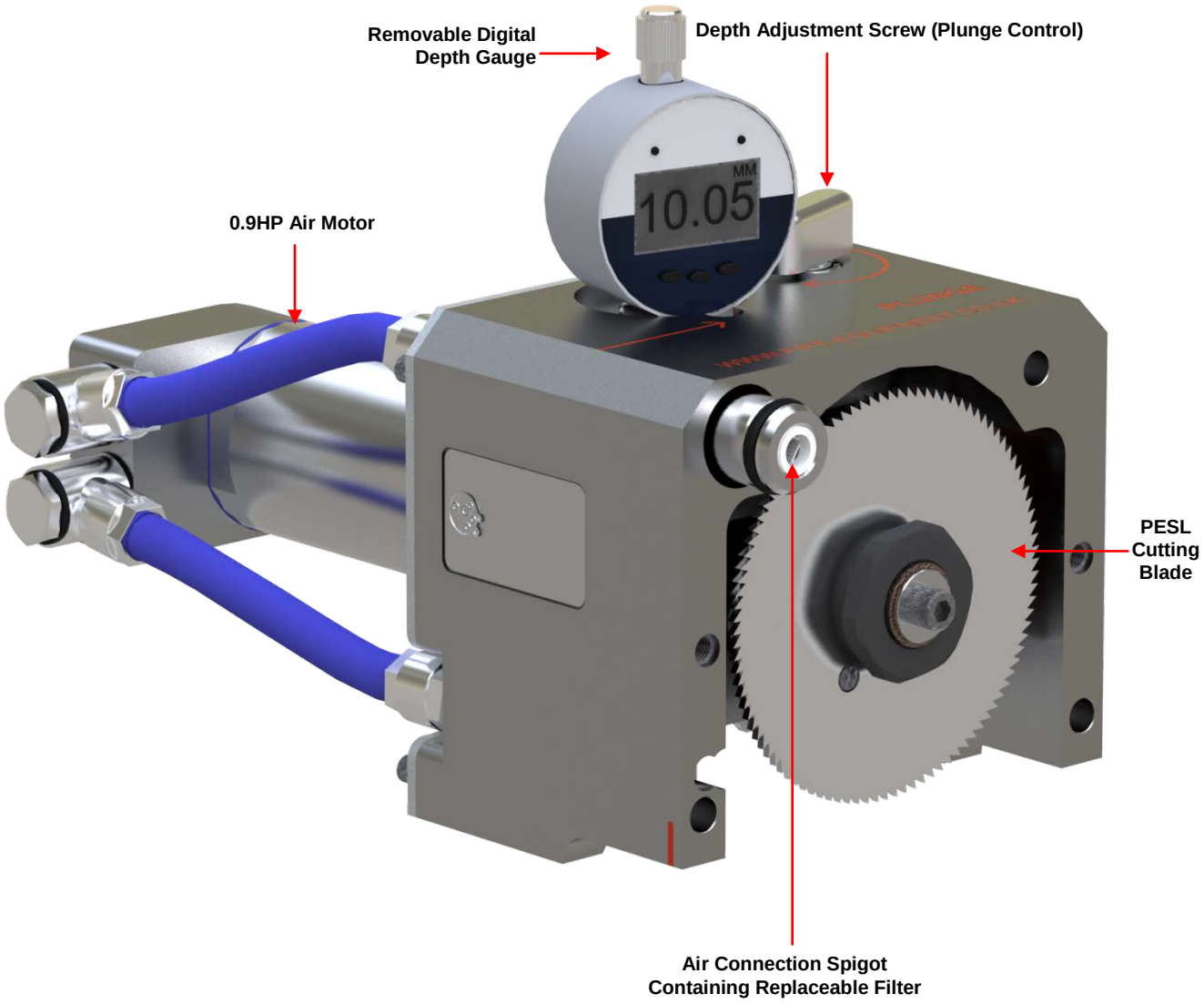


- Longitudinal Module



4.1 Cutter Module and Depth Gauge

This Module is used in all cutting applications. It carries the 0.9hp air powered motor and the specially designed PESL cutting blade. The Digital Depth Indicator is used to accurately gauge the depth of cut.



4.2 Longitudinal Module

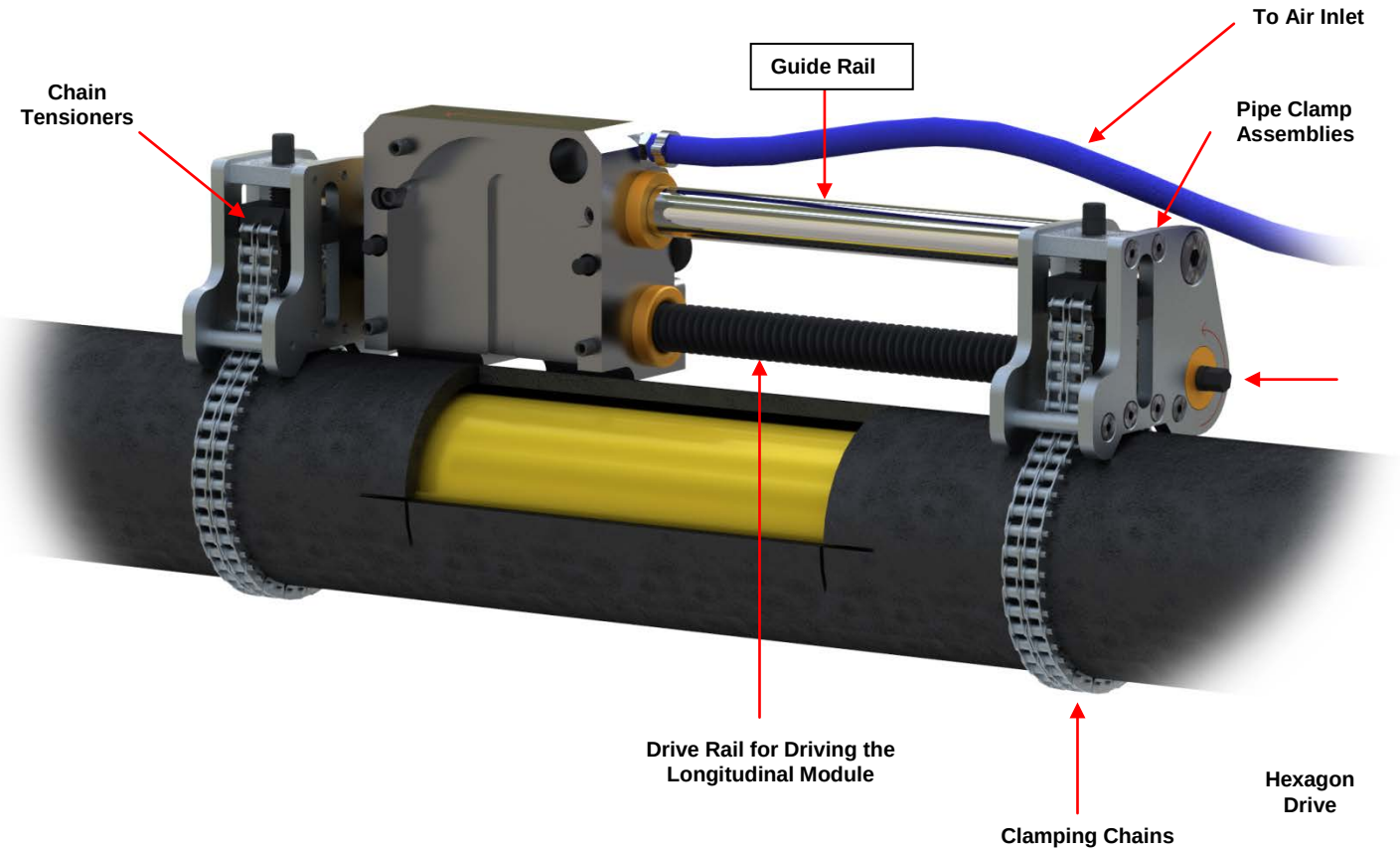
This Module is used to perform the cuts along the length of the pipe. It is secured to the pipe by chains at both ends of the module. This mounting system has been specially designed to equally tighten the chain around the pipe ensuring a positive and secure location during the cutting operation.

It contains the Longitudinal Mounting block to which the Cutter Module is mounted. The Cutter Module is attached using two thumbwheels allowing for quick assembly.

The Longitudinal Mounting block travels along two rails, one of which is the drive rail and the other is a guide rail. By rotating the drive rail the Longitudinal Mounting block is driven along the pipe.

These two rails can be changed in less than 5 minutes to allow the user the flexibility of changing the machines available cutting length.

For pipes larger than 8” chain extensions are required.



4.3 Circumferential Module

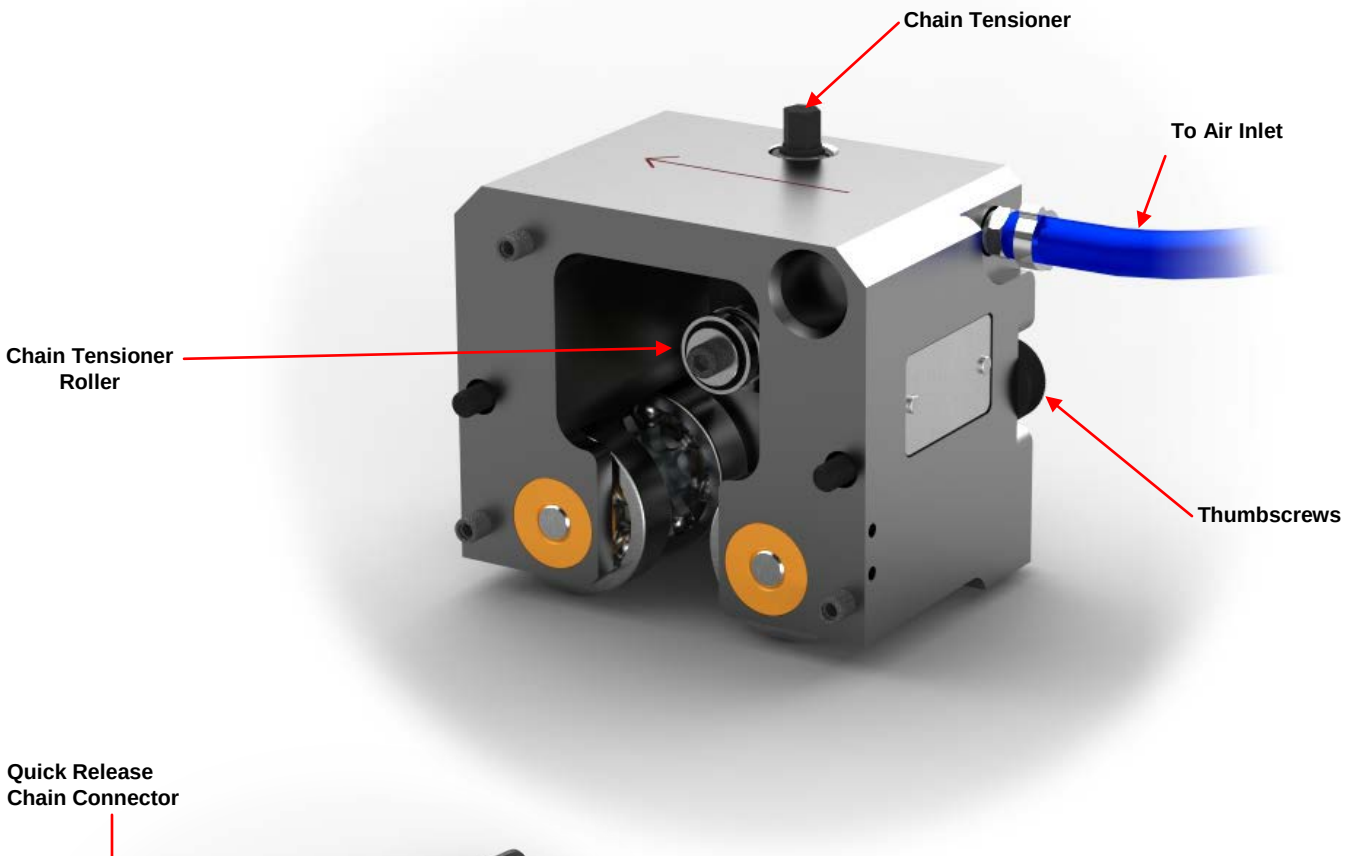
This unit is used to perform cuts circumferentially around the pipe. It is secured onto the pipe by means of a chain, which is threaded over an internal roller, around two sprockets and then passed around the pipe and clipped together.

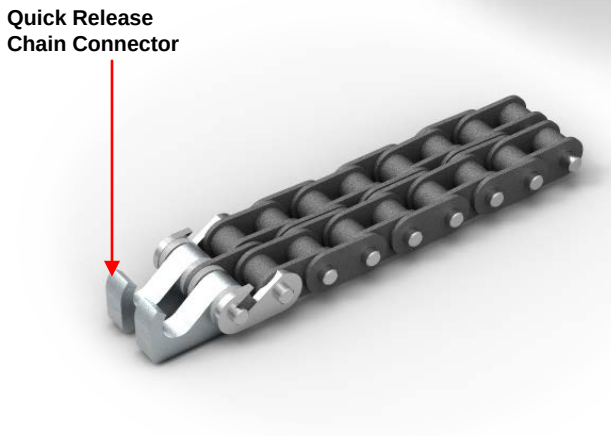
The Cutter Module is attached to the Circumferential Module using two thumbwheels for quick assembly.

The mounting chain is then tensioned and the unit is driven around this chain by either of the two driving points on the rear of the Circumferential Module. For pipes larger than 8" chain extensions are required.

The unit is capable of performing up to 300° cut in a single pass, and with a chain readjustment after 300° a full 360° cut can be achieved.

Alternatively, a single pipe size chain is available to enable a full 360° cut to be made in one operation.



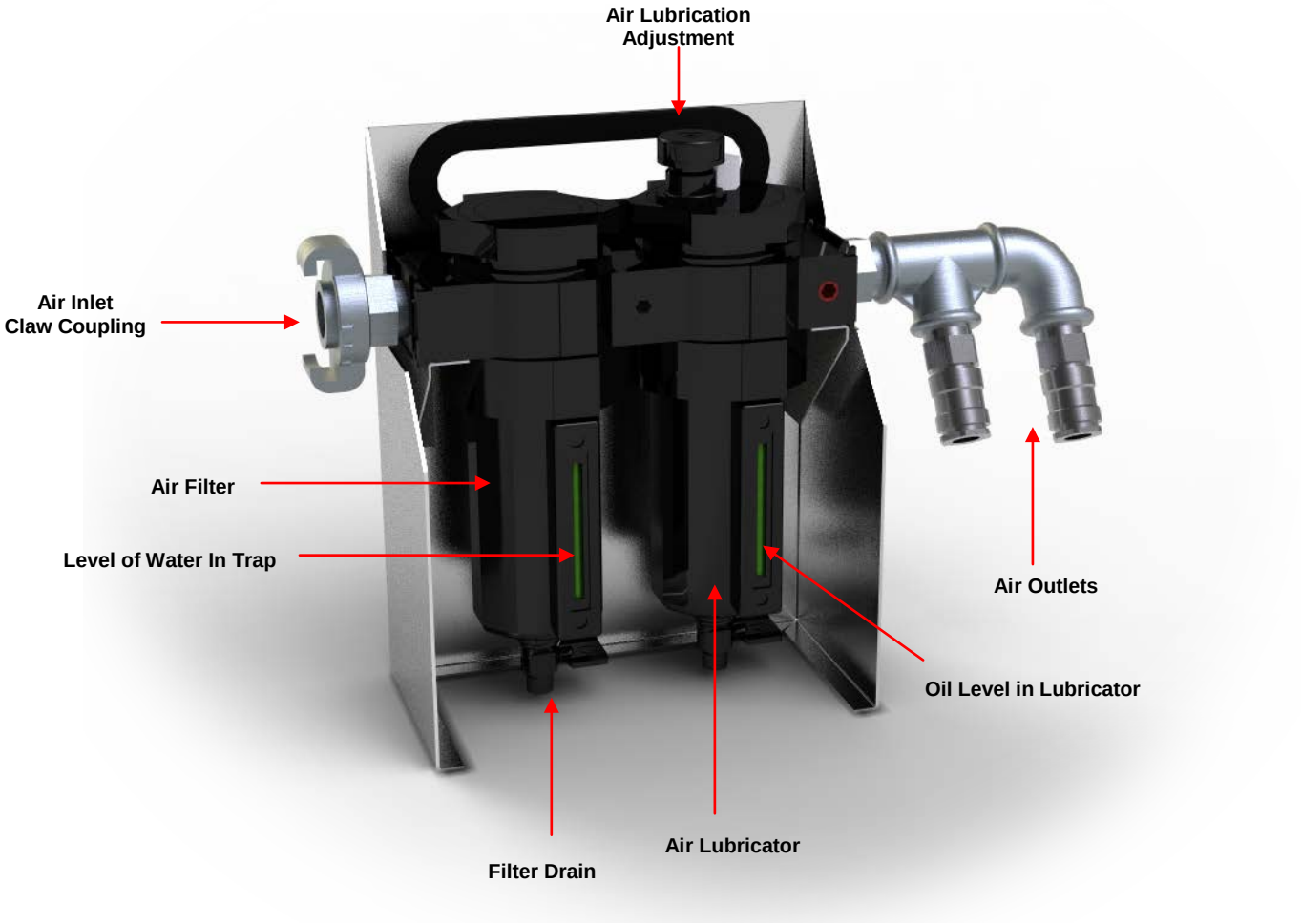


4.4 Air Treatment System

This Module consists of an air filter and lubricator with an inlet and two outlets.

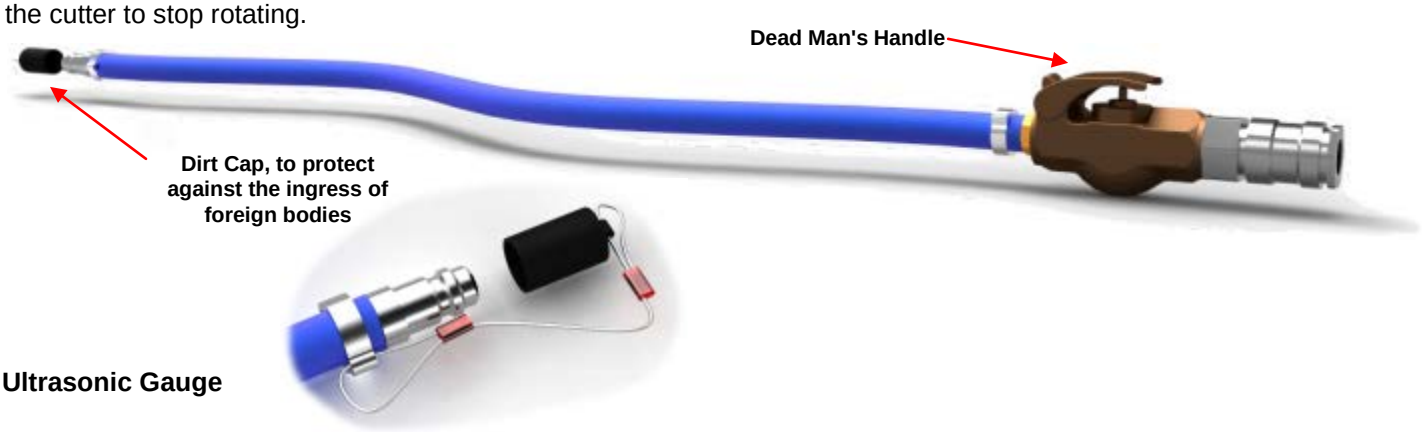
This unit is used to provide a supply of clean filtered air containing a lubricant to the Kent Precision Window Cutter. This ensures reliable operation and enhances the life of the motor. Its secondary use is to supply a fine mist of lubrication to the Cutter blade. This helps to reduce the cutting loads and reduces the blade temperature thus extending the life of the blade

The second air outlet is used to drive accessories such as the Blowgun. The Air Treatment System uses a quick release claw coupling for the air inlet to suit most site compressed air supplies.



4.5 Dead Man's Handle

The Dead Man's Handle provides the air connection from the Air Treatment System to either the Circumferential or Longitudinal Module, and a safety cut off for the tool. It is connected inline from the Air Treatment System to one of the modules and only allows air to flow while the handle is being depressed. Upon release the flow of air is terminated - causing the cutter to stop rotating.



4.6 Ultrasonic Gauge

The ultrasonic gauge is supplied as an optional extra. It gives the operator the ability to measure the wall thickness of a pipe in a completely non-destructive manner. It achieves this by bouncing an ultrasonic sound wave through the material and measuring the time delay for the returning echo. Due to its simplicity of use, the operator can quickly assess the wall thickness and can determine any variance in thickness around a pipes diameter.

For further information, refer to the instruction manual supplied with this equipment.

4.7 Digital Depth Indicator Gauge

The depth gauge is used with the Cutter Module and allows the user to accurately determine the depth that the cutting blade has moved. This is supplied in a storage box to protect it from the harsh site environment.

4.8 Additional equipment required

- An air compressor capable of a minimum of 1000 litre/min (15 litre/sec or 32 cfm) @ 100psi / 7 bar
- A ¾" hose with claw coupling to supply the Air Treatment System

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4.9 Tools and accessories included

- ¼" Square Drive Manual Ratchet with 10mm A/F socket for driving both Modules
- 6mm Stubby Allen Key (Early Models Only)
- 10mm A/F Combination ratchet ring and open ended spanner
- Standard 36mm A/F Spanner
- Reduced Section 36mm A/F Spanner

- Blowgun
- Maintenance Spray
- Steel Ruler
- Set of Picks and Hooks
- Plastic tool box

- Replacement Air Connection Spigot O-Rings (5 off)
- Filter Lubricator Fluid - ISO grade VG 32 (500ml)
- Replacement Air Filters (5 0ff)
- Pressure Gauge

- Instructions
- Dead Man's Handle Assembly
- Air Treatment System
- Cutter Module
- Digital Depth Gauge in protective plastic box
- Longitudinal Module
- Circumferential Module
- Circumferential Chain

- Chain Extensions (Optional Accessory)
- Ultrasonic Depth Gauge (Optional Accessory)
- 2" – 3" Feet (Optional Accessory)

5.0 Operating Procedure

The following methods and instructions are intended to give the user the required guidance to operate this tool safely. However, not all conditions and situations can be accounted for and the user themselves must assess the work they need to perform and how it can be carried out in a safe and productive manner.

5.1 Preparation

Always wear appropriate Personal Protective Equipment.

1. The trench should be excavated a minimum of 36” along the length of pipe to be cut, 20” either side of the pipe and with 6” clearance under the pipe (12” if a full circumferential cut is to be performed), with a flat area for the operator to stand upon.

2. The Air Treatment System should be checked. The air filter should have any fluids drained from the water trap and the lubricator should be topped up with air tool lubricant; typically ISO grade VG 32.

3. While in operation the function of the Filter Lubricator System can be monitored using the level gauges on the fronts of the units. If any water is present in the water filter it will appear as a green level on the gauge. This gauge will turn red when an unacceptable level of water is trapped in the filter. The drain valve on the base of the water trap should be left slightly open (so that a slight hiss of air can be heard) to allow any collected water to drain during the cutting operation. This prevents any water entering the lubricating oil chamber. Water left in the filter should be drained as soon as possible.

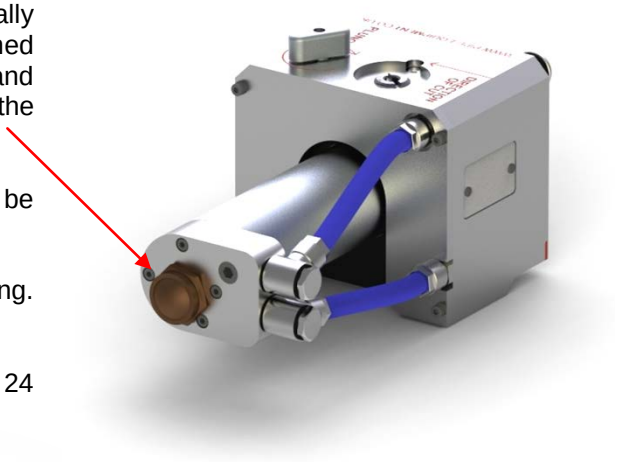
4. The level of oil in the lubricator is also shown as green bar on the level gauge. This should be checked before the start of every window cutter operation, and topped up as necessary.

5. The silencer on the rear of the unit should be periodically checked (every 10 windows / monthly basis). This is performed by unscrewing and cleaning to remove any build up of oils and contaminants in the silencers mesh, which will restrict the exhaust and reduce the performance of the air motor.

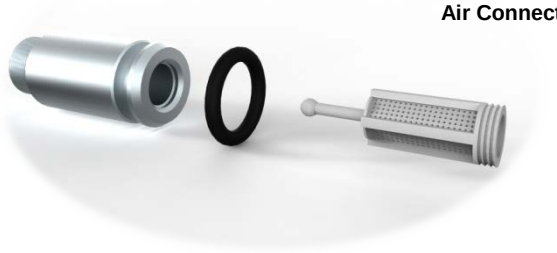
6. The air connection filter on the equipment should also be periodically checked (every 10 windows / monthly basis).

7. Remove and inspect the plastic disposable filter and the O-ring. Replace if they shows sign of contamination or damage.

8. To install or replace the cutting wheel, refer to 7.1 page 24 Maintenance.



Air Connection Spigot

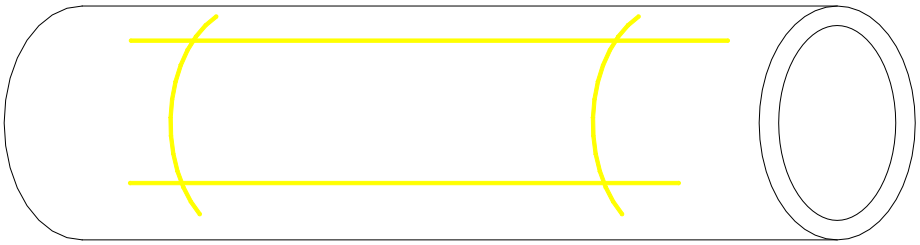


When cleaning any ports on the equipment it is important to ensure debris does not fall into the air line. If the air motor becomes contaminated with foreign material, it must be fully serviced and inspected before operation.

5. Clean the pipe to provide a smooth surface for the Circumferential Module to travel around; any soft tar coverings must be removed.

6. Clean the area to which the longitudinal carriage will fasten to, this will ensure the machine has a solid location giving consistent performance.

7. Using an appropriate marker, sketch onto the pipe the size of window required. The standard unit is capable of cutting 10" Longitudinally and approximately 300 degrees around a pipe (full Circumferential cuts need to be performed in two stages outlined later).



The wall thickness of the pipe can be determined using the optional ultrasonic gauge.

8. Prepare the Air Treatment System for use and connect it to the site compressor (ensure before commencing work that the compressor meets the minimum required specification as in section 3).

5.2 Pipe Sizes and required chains and accessories

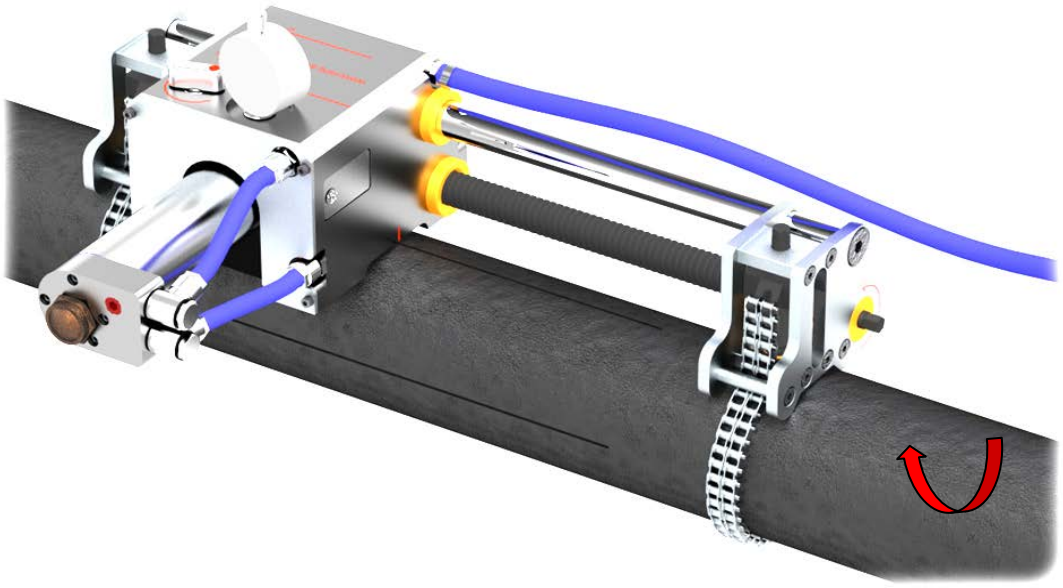
Pipe Diameter – Nominal Bore	Circumferential Module Chain Set	Circumferential Module Chain Length	Longitudinal Foot Required	Longitudinal Chains	Length
2"-3" (50 – 75mm)	Not Applicable	Not Applicable	Yes	8" Standard SELF Colour Chains	36"
3" (75mm)	Chain SELF Colour Set	36"	Yes	8" Standard SELF Colour Chains	36"
4" – 8" (100 - 200mm)	Chain SELF Colour Set	36"	No	8" Standard SELF Colour Chains	36"
8" – 12" (200 – 300mm)	Chain RED Colour Set	50"	No	Chain RED Colour Extension	13"
12" – 18" (300 – 450mm)	Chain YELLOW Colour Set	69"	No	Chain YELLOW Colour Extension	24"
18" – 24" (450 – 600mm)	Chain BLUE Colour Set	88"	No	Chain BLUE Colour Extension	52"

5.3 Window Cutting

To cut a window into a pipe it is necessary to perform two longitudinal cuts and two circumferential cuts.

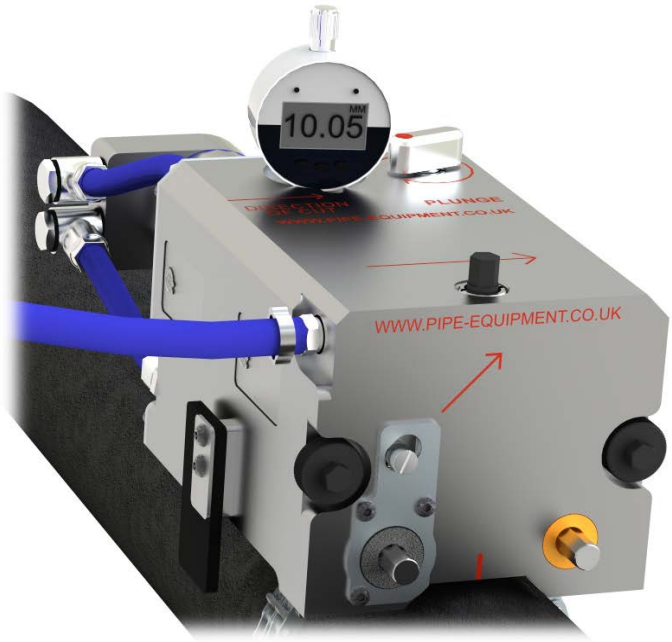
Always perform the two longitudinal cuts first, followed by the two circumferential cuts. With a little planning, it is possible to minimize the amount of set-up operations that are required to create a window.

If space allows, it may be possible to make two longitudinal cuts without remounting the machine.

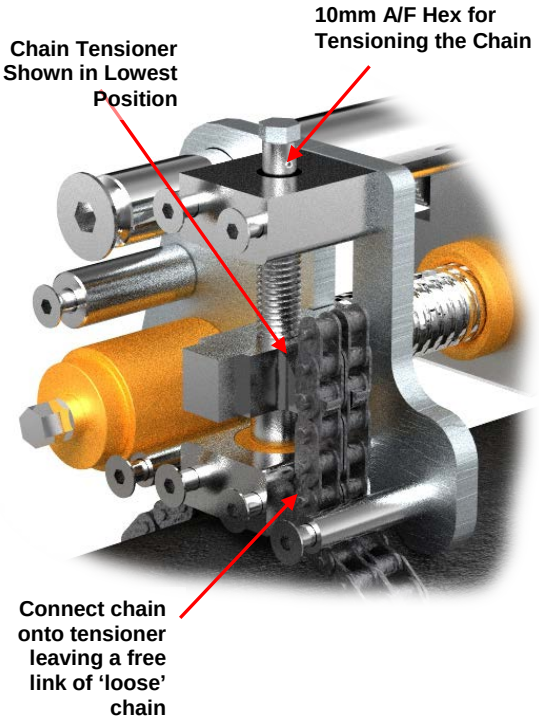


The Longitudinal Cutting Module has been rotated around the pipe, allowing both cuts to be made with minimum set-up.

During Circumferential cuts the wheels on the cutter module **must be supported on the pipe that is not being removed in the window.**



5.3.1 Longitudinal Cutting



1. Always wear appropriate Personal Protective Equipment.

2. Measure the diameter of the pipe and determine the correct longitudinal chain to use, and check if the optional 2" - 3" Longitudinal feet are required. (See Table 1 for a range of pipe sizes and the required chains and feet).

3. Establish the wall thickness of the pipe from a sample or by using the optional Ultrasonic Depth Meter to determine the depth of cut required for the pipe.

4. Take the Longitudinal cutting Module and place it onto the pipe ensuring that the chain follows the path shown in Figure 5. Ensure the chains are straight and are not trapping any foreign material.

5. Make sure both the chain tensioners are at their lowest position (see Figure 5). Pull the chain tight around the pipe and attach the chain to the tensioner. When attaching the chain to the hook leave one free link of 'play' in the chain, this will facilitate in the removal of the chain when work is completed.

6. Position the Longitudinal mounting block at the start of the cut as shown. It should be positioned 2mm (1/16") in front of the marked cut-out.

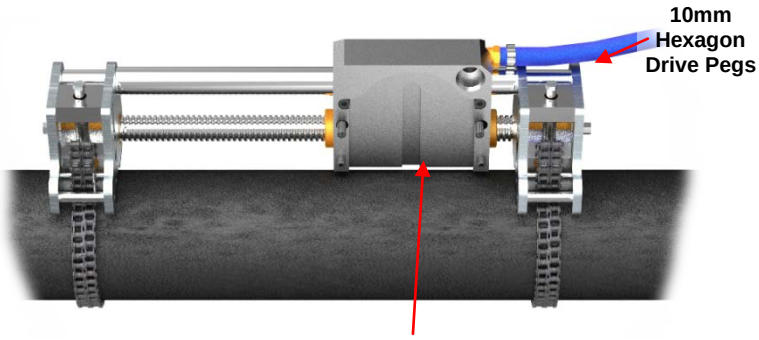


Figure 6. Module Shown In the starting position, with Longitudinal body to the right. It is positioned 2mm from its front face to the marked out window

7. The chains can then be tensioned by turning the 10mm A/F Hex on the top of the feet; this can be tightened with the included Manual Ratchet. A moderate torque is all that is required to tension the chain 3.6lb-ft – 6lb-ft (5-8N/m). When tensioning, ensure that the unit is square on the pipe. If necessary slacken the chains and readjust the unit.

8. Connect the air hoses to the Air Treatment Supply System and give a short blast of air through the Longitudinal module to remove any entrapped dirt or foreign bodies prior to attaching the Cutter Module.

9. Attach the Cutter Module (make sure the blade is fully retracted) to the Longitudinal Mounting Block. It will locate on 3 dowels and the air connection spigot. It can then be secured to the machine by tightening the thumbscrews on the rear of the Longitudinal Mounting Block. These should be tightened to 7.3lb-ft (10N/m).

10. Squeeze the dead man's handle to start the air motor. This handle has to be held at all times by the operative of the tool. The Air Treatment System should be checked to ensure it dispenses 1 droplet of oil per second. This is achieved by turning the adjustment wheel on top of the lubricator (this adjustment can only be performed when air is passing through the Air Treatment System).

11. Slowly turn the depth adjustment screw (see Figure 3) until the blade just contacts the pipe, this can be heard by a change in tone and a slight vibration in the cutter. Assume that the tool is now cutting at a depth of 0.5mm

12. Turn Depth Gauge indicator **On**.
    i. Press **mm/inch** to display readings in mm.
    ii. Insert Depth Gauge into cutter module. (see Figure 5)
    iii. Press **Zero.**
    iv. Remove the gauge from the cutter being careful not to touch any buttons.

13. If you are confident of the pipe wall thickness and the position of the inserted pipe (for instance you can see these through a close by hole) slowly lower the cutting blade to the full wall thickness (remember the tool is already 0.5mm deep) and check by reinserting the depth gauge. However if the blade stalls or the machine labors the depth of cut may need to be reduced.

    If the pipe wall thickness is not known, slowly lower the cutting blade to a depth of 2mm less than the predicted wall thickness (remember the tool is already 0.5mm deep). Check with the depth gauge, then make a short cut approximately 3" (75mm) long. Push the steel ruler into the cut to see if you can break through the sliver of metal left. If not, return the cutter to the start and repeat the exercise taking 0.5mm deep incremental cuts until the steel ruler can break through. Record the depth and complete the full length cut.

14. If the pipe contains a close fit liner, it is prudent to reduce this depth of cut by 0.5mm.

15. Always remove the Depth Gauge while cutting and return it to its storage box.

16. Attach the square drive manual ratchet to one of the 10mm Hexagon Drive Pegs on the screw rail. Ensure that the Longitudinal body is at its starting position (as shown).

17. While squeezing the Dead Man's Handle, slowly advance the machine keeping an even pressure on the manual ratchet to move the cutter from right to left as viewed from the motor end.

18. When the centreline of the tool (shown by a red marker on the rear of the Longitudinal Module) has reached the edge of the window, stop advancing the tool and release the Dead Man's Handle.

19. If the desired depth has been reached in one pass, lift the cutter blade, return to start position and proceed to 24.

20. To make an additional pass keep the air motor running and reverse the direction of the Ratchet to return the tool to its starting position.

21. Return to instruction 14 second paragraph.

24. On completion of the cut remove the Cutter Module from the Longitudinal Module. Shut down the site compressor before removing any hoses, then all disconnected items should be carefully placed back into the storage box and all rubber caps should be placed back onto the ends of the hoses.

25. To remove the Longitudinal module, slacken the chains then gently pull the loose end of the chain and if necessary place a tool on the underside of the chain tensioner behind the chain, and push the chain forwards.

Do not blow or cause swarf to become airborne, brush any loose particles away from the area of work.

Once the cut has been finished, clean the window cutter down prior to returning it to its box. Lightly spray a maintenance spray onto any moving parts.

Remove any excess water from the water trap in the Air Treatment System.

5.3.2 Circumferential Cutting

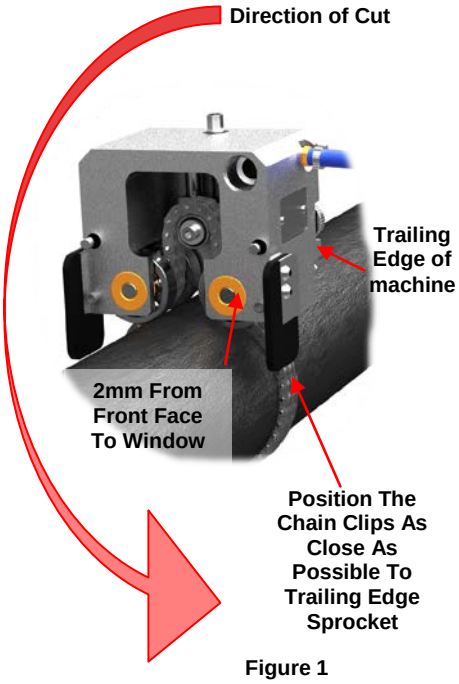


Figure 1

1. Wear appropriate Personal Protective Equipment before starting any work.

2. Check Table 1 to find a suitable chain for the pipe size.

3. Thread the chain as shown in Figure 1. Then pass the chain over the two sprockets in the circumferential cartridge and drape the chain around the pipe ***making sure it is not on the section of pipe that is to be cut out***.

4. Ensure the chain tensioner roller is at its lowest position (turn the chain tensioner anti-clockwise). Pull the chain tight around the pipe and ensure that the open side of the chain hooks are facing outwards from the pipe then push the chain hooks through the next but one available free link on the chain (This will leave one free link, which will allow for easier removal of the chain). Position the face of the Circumferential Module as shown in figure 1, 2mm (1/16") in front of the intended circumferential slot. The chain hooks should be positioned on the trailing side of the machine.

The unit will only advance in the direction of cut due to the safety ratchet, this can be released by pushing the ratchet release in on the rear of the Module See figure 2.

5. Turn the chain tensioner on top of the unit see Figure 2, a moderate torque is all that is required to tension the chain 3.6lb-ft – 6lb-ft (5-8N/m). When tensioning ensure that the unit is still free to move around the pipe.

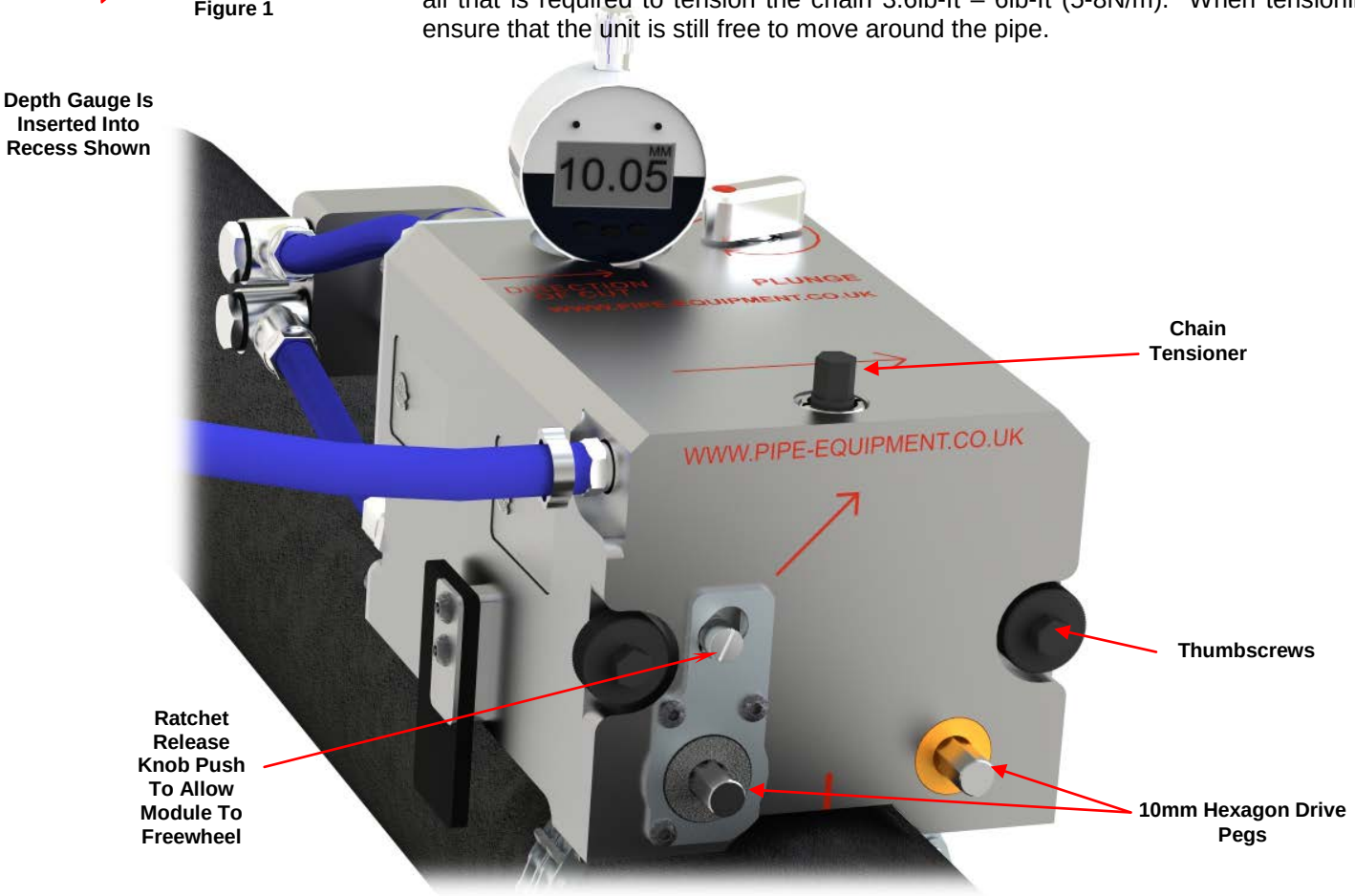


Figure 2

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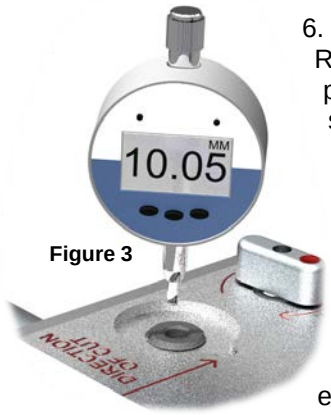

Figure 3

6. Position the Circumferential module in front of you and below the first horizontal cut. Ratchet it around to the opposite horizontal cut using the manual ratchet on the hexagon drive pegs. This will straighten any kinks out of the chain and make the cutting operation smoother.

7. Lift the ratchet release knob in the direction of the arrow to release the ratchet pawl and move the module back to its starting position by hand or using the manual ratchet in the reverse position.

8. Release the ratchet release knob and rock the unit back a little using the manual ratchet until you hear the ratchet pawl drop into position on the ratchet. Move the unit back a little more so the ratchet pawl is fully engaged with the back of the ratchet tooth. This will ensure the machine does not jump when it initially starts.

9. Connect the air hoses to the Air Treatment Supply System and give a short blast of air through the Circumferential module to remove any entrapped dirt or foreign bodies prior to attaching the Cutter Module.

10. Secure the Cutter Module onto the Circumferential Module (ensuring the blade is fully retracted). It will locate on 3 dowels and the air connection spigot. The Modules are secured together by tightening the thumbscrews on the rear of the Circumferential Module see Figure 2. These should be tightened to 6.7lb-ft (10N/m) by the ¼" Drive Manual Ratchet fitted with the 10mm Socket.

When not connected to port all fittings supplied with a rubber cap should be sealed

11. Squeeze the dead man's handle to start the motor in the Cutter Module. This handle has to be held at all times by the operative of the tool. The Air Treatment System should be checked to ensure it dispenses 1 droplet of oil per second. This is adjustment wheel on top of the lubricator (this adjustment when air is passing through the Air Treatment System). achieved by turning the can only be performed

12. Slowly turn the depth adjustment screw (see Figure 4) until the blade just contacts the pipe, this can be 'felt' by a change in tone and a slight vibration in the cutter, assume that the tool is now cutting at a depth of 0.5mm

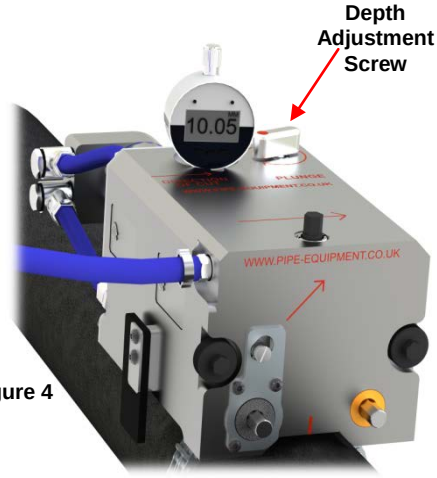

Figure 4

13. Prior to inserting the Depth Gauge into the cutter (Fig 3).
   i. Turn the indicator **On**.
   ii. Press **mm/inch** to display readings in mm.
   iii. Insert the indicator**.**
   iv. Press **Zero**
   v. Remove the gauge from the cutter being careful not to touch any buttons.

14. Slowly lower the cutting blade to the desired depth as determined on the longitudinal cut (remember the tool is already 0.5mm deep), check by reinserting the depth gauge then make a short cut approximately 3" (75mm) long. Push the steel ruler into the cut to see if you can break through the sliver of metal left. If not, return the cutter to the start and repeat the exercise taking 0.5mm deep incremental cuts until the steel ruler can break through. Record the depth and complete the full length cut.

15. If the blade stalls or the machine labors the depth of cut may need to be reduced.

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16. If the pipe contains a close fit liner, it is prudent to reduce this depth of cut by 0.5mm short of full depth. This will allow you to assess the depth of cut to ensure the pipe has an even wall thickness and that the cutter has not penetrated into the wall of the liner pipe. Extra passes may then be undertaken, in 0.5mm increments, until the cutter blades breaks through the pipe wall.

17. Always remove the Depth Gauge while cutting and return it to its storage box.

18. Attach the ¼" Manual Drive Ratchet to one of the 10mm Hexagon Drive Pegs on the rear of the Circumferential Module (see figure 2).

19. While squeezing the Dead Man's Handle, slowly advance the machine keeping an even pressure on the ratchet. The window cutter will only drive in one direction (anti-clockwise as viewed from the motor end).

20. When the centreline of the window cutter has reached the marked edge of the window, the machine can be stopped.

21. If the desired depth has been reached in one pass the blade can be lifted and the Cutter Module removed from the Circumferential Module. Shut down the site compressor before removing any hoses. Then all items should be carefully disconnected, cleaned down with the blowgun and sprayed with the maintenance spray. The Kent Cutter is then placed back into the storage box. Ensure all rubber caps are placed back onto the ends of the hoses.

22. To make an additional pass, stop the air motor and lift the ratchet release on the rear of the Circumferential Module (see figure 2). Using the Manual Ratchet to drive the tool back to the start of the cut. Take care not to drive the blade into the uncut pipe this will dull the edge of the blade and cause the blade to jam on startup.

23. Release the ratchet release knob and rock the unit back a little using the manual ratchet until you hear the ratchet pawl drop into position on the ratchet. Move the unit back a little more so the ratchet pawl is fully engaged with the back of the ratchet tooth. This will ensure the machine does not jump when it initially starts.

24. Return to instruction 14.

Do not blow or cause swarf to become airborne, brush any loose particles away from the area of work.

Once the cut has been finished, clean the window cutter down prior to returning it to its box. Lightly spray a maintenance spray onto any moving parts.

Remove any excess water from the water trap in the Air Treatment System.

5.4 Full Circumferential Cutting / Pipe Removal

It may be necessary to perform full Circumferential cuts to a pipe to enable the user to remove a complete section of pipe. The tools operational principles are the same, however extra planning is required.

1. Make two Longitudinal cuts along each side of the pipe opposite each other.
2. Make a Circumferential cut close to the end of the Longitudinal slot that cuts through both Longitudinal slots of the bottom section.
3. Make a second Circumferential cutting through both Longitudinal slots of the top section.
4. Because you cut through both longitudinal slots each time, it is not necessary that the two Circumferential cuts line up perfectly with each other.
5. Repeat steps 2 and 3 at the other end of the Longitudinal slots.
6. It will be necessary to place steel wedges in the cuts and to properly support all sections of the pipe so that it does not move or flex and trap the blade. **Be prepared and aware that the bottom section will fall once both ends are cut.**

5.5 Depth Gauge Operation

For full guidance on the use and care of the depth gauge, please refer to the instructions supplied with the tool.

To operate

1. Turn the indicator **On**.
2. Press **mm/inch** to display readings in mm.
3. Insert Depth Gauge into cutter module (see Figure 5.).
4. Press **Zero.**
5. Remove the gauge from the cutter being careful not to touch any buttons.

5.6 Ultrasonic Gauge

For full guidance on the use and care of the ultrasonic depth gauge, please refer to the separate instruction sheet supplied with this accessory.

The basic operation of the Ultrasonic Gauge consists of the following steps.

To Calibrate

1. Find a section of the same type of pipe as you will be working on so its wall thickness can be measured with a digital caliper.
2. Take the tool and the glycol fluid from its protective container.
3. Place a small quantity of glycol fluid onto the pipe/specimen surface.
4. Turn the gauge on by pressing the centre of 3 buttons just below the gauge display.
5. Touch the probe onto the pipe through the glycol gel until the tool gives a reading.
6. Press the centre button on the front of the gauge and using the **+** and **–** buttons, navigate the menu through **Zero** then to **Thickness**.
7. Use the **+** and **–** buttons to adjust the displayed value until it matches the reading of the digital caliper.

To Use

1. Apply a small quantity of glycol fluid onto the pipe where the window is to be cut.
2. Turn the gauge on by pressing the centre of 3 buttons just below the gauges display.
3. Touch the probe of the tool onto the pipe through the glycol gel.
4. The tool will now give a reading.

Multiple readings may need to be taken around the pipe to ensure that there are no deviations in the wall thickness of the pipe.

5.7 Manual Ratchet

The basic operation of the tool consists of the following steps.

1 Attach the supplied 10mm A/F ¼" Drive socket on the ratchet.
2 Place the socket over the nut on the 10mm Hexagon Drive Pegs.
3 Take care that the socket is firmly engaged on the nut or shaft.
4 To change the direction, twist the control at the tip of the tool.

5.8 Blowgun

The basic operation of the tool consists of the following steps.

1 Connect to an air supply which has an 8 bar output.
2 Take the un-pressurised air hose and connect it to the Blowgun inlet.
3 Turn the air supply on. Depress the gun trigger to release the flow of compressed air.

Do not disconnect the air supply hose until the compressor has been shut down and the compressed air pressure released.

6.0 Trouble Shooting

The following are some possible examples of issues that may occur with the Kent Precision Window Cutter. These are solutions that may be used when operating this system.

The valve is opened to the air motor, but the air motor does not turn and also <u>does not</u> emit air from the exhaust silencer.

- This is most likely caused by a blockage. Check all air pipes coming from the compressor to ensure that all valves are open and there is not a restriction or kink in any air hoses. Also, check the compressor is running at the correct pressure.

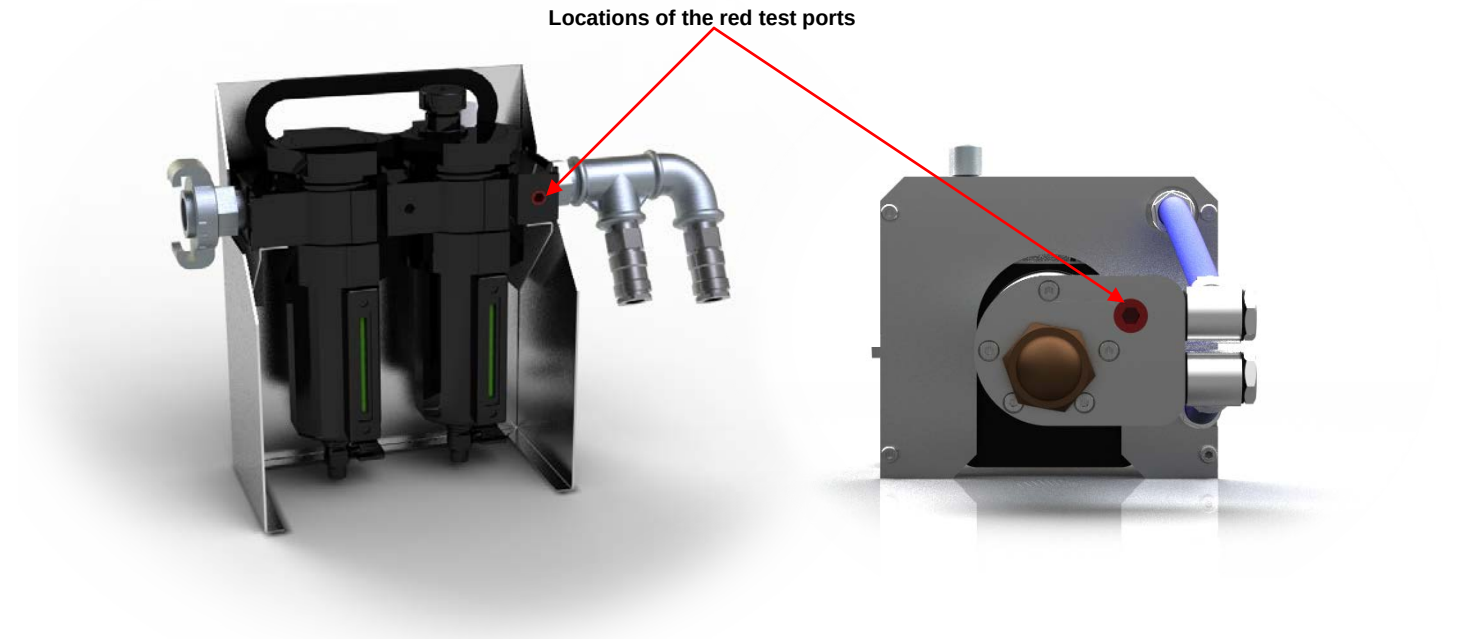
- Obstructions can be caused by the ingress of dirt or other foreign material into the hoses due to the hose connectors becoming soiled by being dropped into dirt etc. All hose connectors should be free from any foreign materials before connections are made.

- Check the gauze filter in the air connection spigot section 5.1 ‘Preparation’.

- Once all the above have been considered, the system needs to be checked to ensure that it does not contain a blockage. This can be checked using the supplied air pressure gauge by inserting it into the port marked with red paint on the Air Treatment System as shown.

  When the dead man's handle is not being pressed the gauge should read 90-110 PSI. Once this is confirmed, the gauge can then be removed (the plug must be reinserted).

  The gauge can then be moved to the test port on the rear of the machine. This is located at the back of the cutter module and is indicated with a red plug. With the gauge inserted into the rear of the machine and the dead man's handle depressed the gauge should read a value in excess of 40PSI. The gauge can then be put back into storage and the plug returned to the rear of the Cutter Module.



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The valve is opened to the air motor, but the air motor remains stationary and does emit air from the exhaust silencer.

This is usually caused by the vanes within the air motor sticking. This may occur after the unit has been unused for a period. A solution to this can be to: -

1. Disconnect the item from the air supply.
2. Rotate the blade a few times by hand, being careful of swarf and the sharp cutting teeth on the blade.
3. Reconnect the air and try to start the air motor.

The cutting blade keeps stalling when under load or has poor performance when cutting.

- Surface conditions of the pipe such as an uneven or flaky surface do not give sufficiently stable anchorage for the tool. Dress or clean the pipe if possible to improve the mounting surface.
- Worn or damaged cutting blade. Replace immediately with an approved new blade.
- Wear of moving parts in the carriage can cause misalignment of the tool when under load. Return the item for service to PLCS Inc.
- Do not drive the tool too hard. The tool should be operated using a steady even pressure allowing the blade to perform the work.
- Taking too deep a cut. The maximum cut depth may need to be reduced from a full cut depending on conditions and pipe hardness. Refer to operation instructions on how to gauge the depth of cut.
- The tool can stall if the alignment of the tool is not correct to the pipe. This will cause a large rise in friction and damage the edge of the blade. If this occurs, the blade needs to be replaced and the tool re-seated onto the surface of the pipe.
- Insufficient air pressure / flow rate from the compressor - ensure the air supply can supply a sufficient quantity of air at the required pressure.

If any of the suggested actions does not improve the performance of the tool, or the operator still has a cause for concern, please contact PLCS Inc. for technical advice.

7.0 Maintenance

Maintenance of the window cutter is very important. It should be stored in its metal box, in a dry place and be free from dirt and other materials.

- A blowgun is included with the kit to aid maintenance. It should be used after every operation to remove any swarf or debris from inside the cutter. Small pieces of abrasive swarf within the machine will reduce its performance and shorten the life of any moving components.
- It should be cleaned down after every use. The guide rails for the Longitudinal cut need to be cleaned and lubricated with a light aerosol oil spray. Apply a dab of silicone gel lubricant to the “O” ring on the air transfer fitting.
- Checking of the blade before and after every cutting operation is crucial. Using a worn or damaged blade will lower the cutting performance. Before every cut, the blade should be inspected for signs of warping, missing teeth and dulling of the teeth edges. The use of a magnifying glass is advisable.
- Check the filter lubricator and air system; ensure that the lubricator is full and dispensing the correct amount of oil, follow all steps outlined in section 5.1.

7.1 Installation and removal of the cutting blade

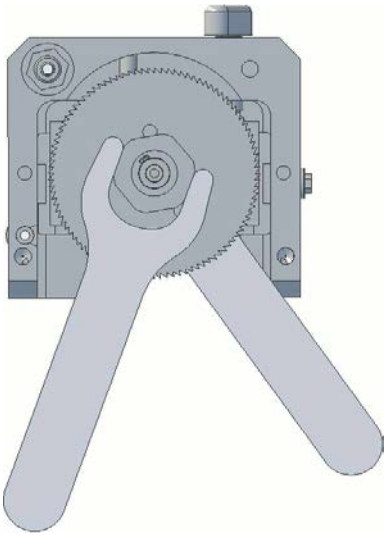
The images below show the blade clamp assembly. For part names and descriptions see the Kent Precision Window Cutter parts manual.

1 Using both supplied wrenches, place the thinner one behind the blade onto the two flats of the blade drive spigot and the thicker one onto the blade nut.

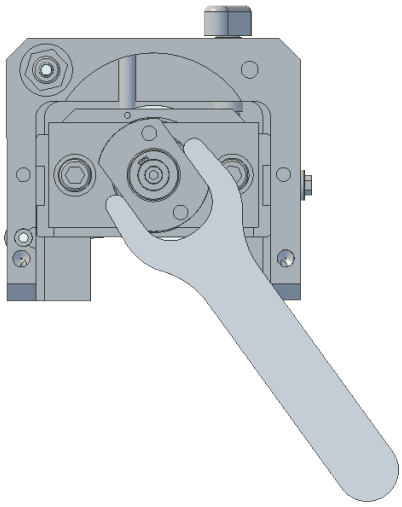
2 Turn the thicker wrench until the nut releases, and remove the nut.

3 The blade is now free to be removed. It may be necessary to place two flat screwdrivers behind the blade and twist them to push the blade off. Check the blade drive spigot for any signs of damage. Ensure that all surfaces are free from swarf or other foreign materials before replacing the blade.

4 The blade is designed to fit in one position only. You will feel the blade “click” onto the locating pins. In this position, the teeth will be oriented to cut anti-clockwise.



Caution – The cutting blade has sharp teeth and may have swarf on its surface. It should only be removed when wearing appropriate PPE.



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8.0 Accessories and optional components

8.1 Ultrasonic Depth Gauge

This accessory can be purchased with the window cutter or separately later. It is available with a range of gauges to allow the unit to be calibrated to the material to be measured.

8.2 Available Longer Rail Sets

The Standard Rail Set (1 Guide Rail and 1 Drive Rail) gives a cutting length of 10”.

The Mid-Size Rail Set gives a cutting length of 16”

The Longest Rail Set gives a cutting length of 24”

8.3 Chain Extensions

Extra sets of chains are available to allow the Kent cutter to cut a greater range of pipe diameters.

8.4 2” – 3” Feet for Longitudinal Cutter

A set of ‘feet’ are available allowing the tool to perform Longitudinal cuts on pipe diameters from 2” to 3”.

9.0 Disposal

Recycle unwanted materials instead of disposing of them as waste. All tools, hoses and packaging should be sorted, taken to the local recycling centre and disposed of in an environmentally safe way. The blade should be removed from the machine and disposed of in a safe manner. The aluminum and steel components have been designed to be fully recyclable.