STEVE VICK INTERNATIONAL

SOLUTIONS FOR THE REPAIR RENOVATION AND DECOMMISSIONING OF PIPELINES

CRACKERJACK™

Operating Instructions

Steve Vick International Ltd

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

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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
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 CRACKERJACK™ compliments the family of cast iron break out tools designed and produced by Steve Vick International. Whilst the MACAW and the Mini MACAW are attached and operated using a mini excavator the CRACKERJACK™ is run from a site compressor and is directly controlled by the operative. Weighing in at just 15kg, CRACKERJACK™ is lowered manually into the trench and onto the host main. Rather than using a battery pack which needs constant recharging the site compressor is connected via a standard hose line to an air hydraulic pump (foot pump). Meaning there is also no risk of running out of power which can happen with a battery pack. The converter is a foot pedal function and easily activated by the operative who is also controlling the CRACKERJACK™ making it a one man operation. The converter then delivers pressurised oil to a 20 tonne ram onto a high density galvanised steel break out beak. Using the adjuster bolt host main sizes of 3" to 6" are covered in one unit. The unit has also been fully approved for **loose** fit inserted mains.

Image A: The CRACKERJACK™ (ready to break out 4" Cast Iron Pipe)

2.1 FEATURES AND BENEFITS

Features:

Fast: The CRACKERJACK™ requires minimal set up and quickly breaks out cast iron main.

Configuration: The unit comprises of a foot operated hydraulic air pump which connects to the CRACKERJACK™ and held by a removable lifting handle.

Air powered: Runs off a standard site compressor delivering 100PSI but then converted to a powerful hydraulic force to a 20 tonne hydraulic ram.

Adjustable from 3" to 6" including ALL sizes in between: Simple adjustment mechanism means one unit covers the most common sizes needed.

Two beaks available: Midi and Maxi beaks both approved.

Breakout control: The foot pedal operation allows a controlled break out force meaning it can be used safely on empty pipe AND inserted mains.

No increase in trench size: The handle pivots on the CRACKERJACK™ base and can be moved away from 3rd party plant without the need to dig out more ground and needs only a few inches of clear space to the side of the main.

Quality: The CRACKERJACK™ has been quality checked to ISO 9001 standards.

Benefits:

Fast: Quick break out of the host main.

Versatile: Ideal for use in Live Mains Insertion and dead insertion projects.

Quick assembly: The unit is adjusted to suit in seconds.

Adaptable: One unit for ALL sizes from 3"up to and including 6".

Easy to use: Compact, lightweight and simple to use - one man operation.

Convenient: No need to dig out more ground to use.

Safe: No risk of break out bars jumping up and injuring the operatives.

Controlled: Control of the break out means no flying debris.

Reliable: No need to ensure the power pack is charged.

Constant: Can be used on countless services so long as the compressor is running.

Cost Effective: Using a standard air compressor (usually already on site) and not a separate power supply like a battery means the total unit cost is extremely competitive to similar products.

2.2 OVERVIEW OF THE CRACKERJACK™ UNIT

Diagram 1: Exploded View (image showing the Midi Beak Version)

ITEM	QTY	DESCRIPTION (for Operators Manual)
1	1	Lifting Handle
2	1	Hydraulic Cylinder and Ram
3	2	Beak Spring
4	1	Break Out Beak (Midi or Maxi)
5	1	Pressure Point Bolt (Break Out Beak)
6	1	R-Pin for Extension Arm
7	1	Adjuster Bolt
8	1	Main Chassis
9	1	Rigid Beak
10	1	Pressure Point Bolt (Rigid Beak)
11	1 (2)	Pivot Bolt and Securing Nuts

Table 1: Key Parts List (see full parts and price list for complete list)

2.3 OVERVIEW OF THE ANICILLARY EQUIPMENT

Image B: The foot operated air to hydraulic pump (foot pump)

Image C and D: The 20m extension reel and the short link hose for connection to the site compressor

3. SPECIFICATION

Unit	Weight
Complete weight including foot pump and extension reel	20kg
CRACKERJACK™ and handle	15kg
CRACKERJACK™ without handle	14.5kg
Foot pump	3kg
Extension reel	2kg

Table 2: Key Weights

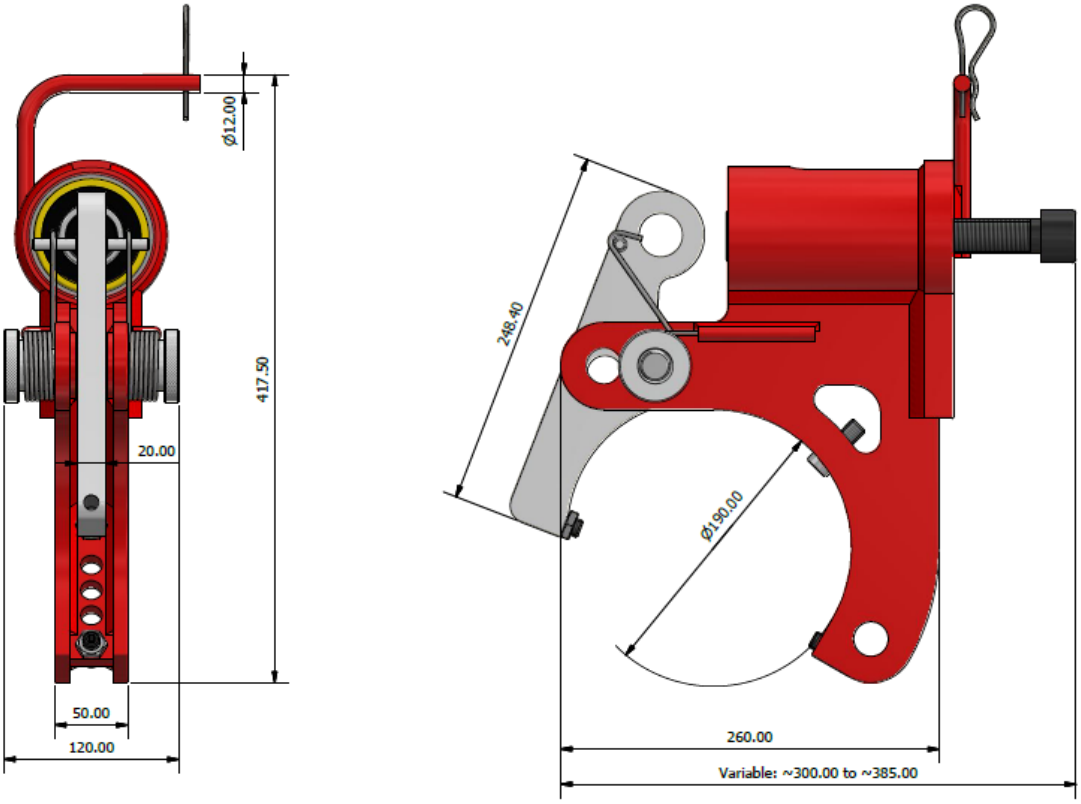
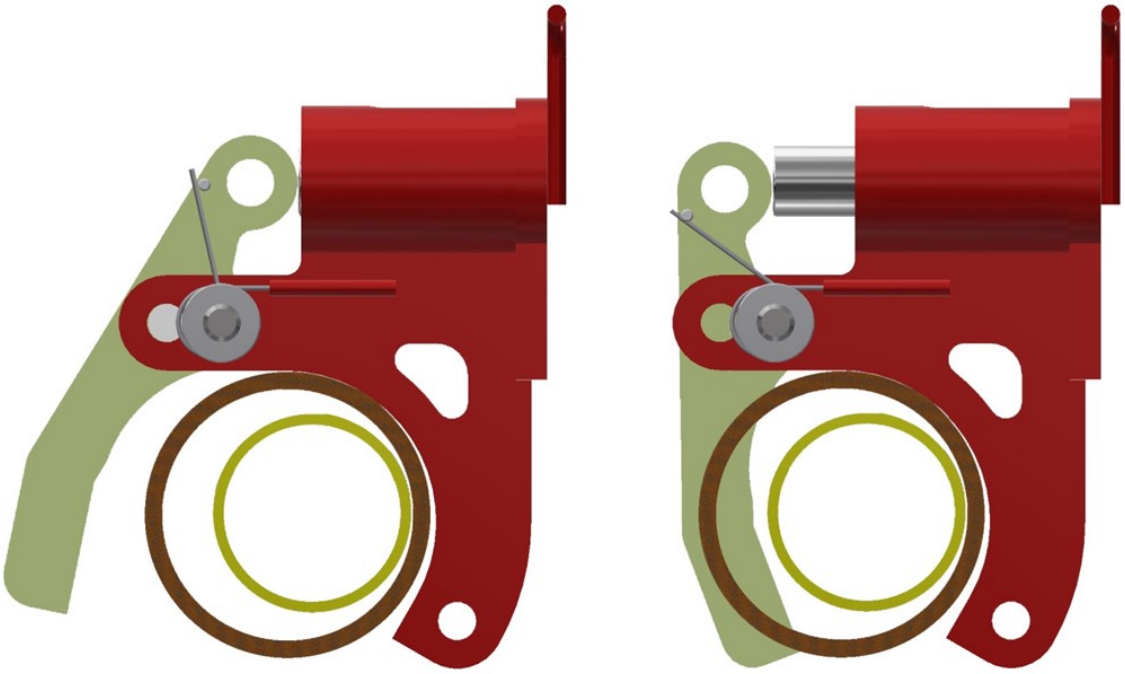


Diagram 2: Front and side views with key dimensions (image above shows Midi Beak Version)

Diagram 3: Open and Closed positions for the Maxi beak (below)



4. SAFETY AND PRECAUTIONS

4.1 The following PPE must be worn at all times:

A. Safety goggles
B. Hard hat—if applicable
C. High visibility jacket
D. Cut resistant Gloves
E. Steel toe cap footwear
F. Flameproof overalls

4.2 Avoid placing any limbs inside the unit at any time and always use the specified lifting handle/ extension.

4.3 Ensure the site is correctly barriered off and that there are no trip hazards from hoses.

4.4 Check the condition of the CRACKERJACK™ for obvious signs of wear and tear that may affect the breaking out of the host main. ENSURE THE KNURLED BOLTS THAT HOLD THE SPRINGS ARE FULLY TIGHT. FAILURE TO DO THIS COULD RESULT IN BENDING THE PIVOT BOLT FOR THE BEAK.

4.5 Visually inspect the condition of the hydraulic ram inside the sleeve, any sign of damage including dents in the unit should not be used and repaired.

4.6 The hose connection needs to be checked prior to use and monitored for leakage during the operation along with the hose line itself.

4.7 Inspect the foot pump for significant damage and check the movement of the pedal.

4.8 Site the compressor in a safe location that allows access to as many service locations as possible to reduce the number of times the compressor will need moving along the street.

4.9 Use the 20m extension reel/s to allow a greater number of services to be worked on before the need to move the compressor. If only a small number of services it may be preferable not to use the extension hose.

4.10 Ensure whip checks are used at all locations.

4.11 Locate the foot pump at a comfortable location directly where the operative will be standing. This ensures there is no need to over stretch during the operation.

4.12 For best results excavate around the main and allow enough room to drive the CRACKERJACK™ around the main.

4.13 Clean excessive rust and mud off the main and ensure the CRACKERJACK™ will not foul 3rd party plant.

4.14 When lowering the CRACKERJACK™ into the trench ensure the unit is kept as close to the operative as possible to minimise any over stretching and uneven weight distribution.

4.15 Operate the CRACKERJACK™ as per these instructions.

4. SAFETY AND PRECAUTIONS (CONTINUED)

4.16 If more than one attempt is needed rotate the CRACKERJACK™ and locate it slightly along the main. If necessary drive the CRACKERJACK™ underneath the main or over the main.

4.17 Remove broken shards between operating the CRACKERJACK™.

4.18 Ensure the remains of the host main are safe to work in and no sharp edges cause injury.

4.19 Live Mains Insertion: Even with the adjuster bolt fully screwed in, the Minimum gap between beaks when at full stroke is not smaller than the typical PE inserted, e.g. 55mm in 3", 75mm in 4" or 125mm in 6". However ensure the adjuster bolt is fully unwound prior to first use. This can then be adjusted to suit depending on the break out efficiency.

4.20 ALL SITE SAFETY PROTOCOL MUST BE FOLLOWED INCLUDING SAFE DIGGING PRACTICES, CABLE AVOIDANCE AND VOLT STICK CHECKS ON THE MAIN TO BE BROKEN OUT. MAIN MUST BE DECOMMISSIONED AND CONFIRMED AS SAFE TO WORK ON.

4.21 The CRACKERJACK™ must not be used on joints or bends and is for Cast and Spun Iron Mains only.

5. OPERATING INSTRUCTIONS

5.1 Preparing the hose lines and air hydraulic pump.

The hydraulic air foot pump has two fittings at either end. The large fitting with the red protector cap connects to the CRACKERJACK™ and the other smaller fitting is the air inlet from the compressor.

Connecting the hose lines and setting the CRACKERJACK™ to the required size is performed BEFORE final connection to the site compressor.

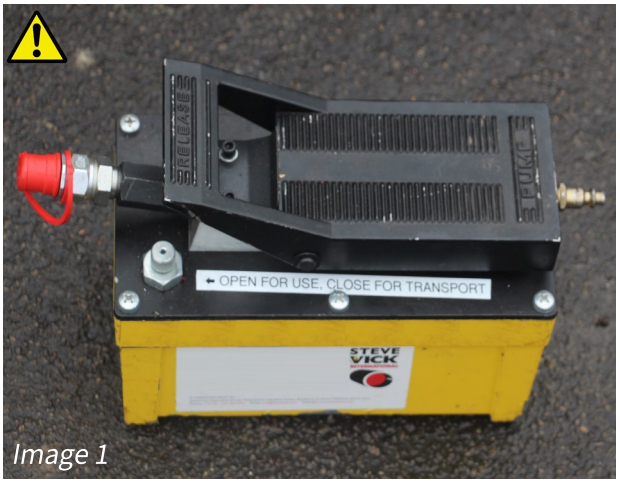


Image 1

5.2 Remove the red cap and connect the hose from the CRACKERJACK™ to the fitting on the foot pump. Check the connection is secure before proceeding.

Image 2

5.3 Next connect either the short link hose or the loose end of the 20m extension reel to the other fitting on foot pump.

This option is to allow either the standard compressor hose to fit direct to the foot pump using the short link hose, or to connect the standard compressor hose to the short link hose which then connects to the extension reel. The loose end of the extension reel will then fit direct to the pump.

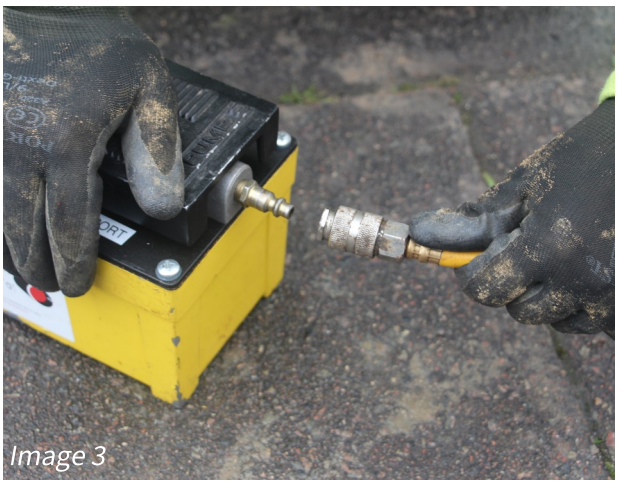


Image 3

5.4 Connect the short link hose to the quick release fitting on the extension reel if being used.

It is also possible to connect two or more 20m extension reels together. The short link hose connects to the first extension reel as described. Then the leading end of the extension reel connects to the quick release fitting on the next extension reel and so on. Once all connected the claw coupler on the short link hose is connected to site compressor hoses or directly onto the compressor.


Image 4

5.5 The relief valve is located to the left of the RELEASE pedal.

THIS VALVE MUST BE OPENED DURING THE ENTIRE OPERATION TO ALLOW THE RAM TO RETRACT.

To open, unscrew anticlockwise until the knurled cap stops, the cap cannot fully unscrew off. Ensure the pump is kept upright during the operation.

THIS VALVE MUST BE CLOSED FOR STORAGE.

To close, screw clockwise until tight. This will prevent any unwanted leakage of oil.

Image 5

5.6 Adjusting the CRACKERJACK™ size range

Sit the CRACKERJACK™ upright and rest it on the rigid beak. This will allow the free movement of the cylinder as the adjuster bolt is operated.

Image shows the Midi Beak—same process for the Maxi Beak


Image 6

5.7 The adjuster bolt is screwed inwards or outwards depending on the size of main.

There is a size sticker on the CRACKERJACK™, however this is a guide only and adjustment may be needed to account for variations in pipe sizes.


Image 7

5.8 Wind the hose centre along using the adjuster bolt as described in 5.7 for the size of main being broken out. This may need adjusting depending on the OD (outer diameter) of the main as these can vary from site to site.

REMOVE SHARDS OF CAST IRON DURING THE PROCESS AND ENSURE THEY DO NOT PRESS AGAINST INSERTED PE.

Note, for <u>standard</u> size 3" mains the lower end of the 4" range bracket should be adequate.

Image 8

5.12 Attach the handle extension to the handle and secure with the R-Pin. The telescopic handle can be extended depending on the depth of the main in the trench.

The CRACKERJACK™ is now ready to be connected to the compressor.

CONFIRM CAST IRON MAIN OR ANNULUS IS FULLY DECOMMISSIONED AND SAFE TO BREAK OUT AS OUTLINED IN RELEVANT CODES OF PRACTICE.


Image 9

5.13 Breaking out the cast iron main

Connect the claw coupler from the short link hose to the compressor or hose line connected to the compressor. Start up the compressor and open the valve. Ensure whip checks are used.

It is recommended to locate the compressor where it will reach as many trenches as possible using the available hoses. This will reduce the number of times the compressor needs moving to complete the break outs required. Ensure hoses are safely located and not hindering the general public.


Image 10

5.14 Carefully lower the CRACKERJACK™ onto the main as far over to one side as possible. Adjust the telescopic handle to avoid any overstretching. It may be necessary to rotate the CRACKERJACK™ around the main due to 3rd party plant.

Ensure the underside of the chassis is in contact with the main at all times during break out.

Image shows the Midi Beak—same process for the Maxi Beak.


Image 11

5.15 Locate the foot pump where it can be safely activated in a stable manner.

Press down on the PUMP end of the foot pump and maintain pressure.

Image 12

5.16 The CRACKERJACK™ will begin to crack the main. It is recommended to only crack the one side on the first break out to get the best results.

Image 13

5.17 Breaking out the cast iron main

When a satisfactory amount of cracking has taken place release the pressure by pressing down on the RELEASE end of the foot pump. This will allow the ram to retract allowing the removal of the CRACKERJACK™ . To speed up the operation it is not usually necessary to fully open the beak.

Image 14

5.18 It may be necessary to make several attempts to break out the main fully. To do so lower the CRACKERJACK™ onto the main as far over as possible to the other side of the main from the first attempt. Also rotate the CRACKERJACK™ to the opposite location to the first attempt.

Activate the foot pump to continue the break out as previously described.

Image 15

5.19 Repeat process for any remaining break outs.

AT ALL TIMES MONITOR THE BREAK OUT FOR SHARDS OF CAST IRON AND REMOVE.

ON INSERTED MAINS DO NOT ALLOW THE JAWS OF THE CRACKERJACK™ TO PRESS AGAINST THE PE PIPE INSIDE AT ANY STAGE OF THE BREAKING OUT OPERATION.

ENSURE THE UNDERSIDE OF THE CHASSIS IS IN CONTACT WITH THE MAIN DURING THE BREAK OUT HOWEVER THE CRACKERJACK™ IS POSITIONED.

Image 16

6. SERVICE GUIDE

It is recommended that the CRACKERJACK™ is serviced every 12 months by specialist service personnel or Steve Vick International. Please contact us for details.

7. ROUTINE MAINTENANCE

The CRACKERJACK™ has been designed to be relatively free of maintenance. Simple checks on the tightness of bolts and clips and a visual check for general wear on parts being all that is required in normal day to day operation.

Routine Maintenance	Schedule of Jobs
Clean down the machine and check all moving parts for wear and tear	Prior to use—Daily
Thoroughly check the pressure points and replace when worn	Prior to use—Daily
Visually check the main body for any signs of stress or cracking	Prior to use—Daily
Check all hoses remain in good condition	Weekly
Ensure the foot pump is operational and the relief is closed for transport	Prior to use—Daily
Ensure the hydraulic ram is operational	Prior to use—Daily
Ensure the break out beak can rotate	Prior to use—Daily
Monitor the performance of the foot pump and top up the oil levels when necessary with standard hydraulic 32 oil. Test hydraulic pump and CRACKERJACK™ to full stroke with no pipe in and ensure the pump stroke rate drops to a slow rate indicating it has reached full pressure and full stroke. If it was low on oil the pump would fill the ram with air and the pumping rate would speed up— this is an indication the oil needs topping up. To do this unscrew the fixing bolt under the bleed valve (knurled cap) using a 22mm spanner. Use a funnel and with the ram in a closed position visually check the level is just under the opening.	Depending on frequency of use
Ensure the R-Pin is present so that it is used to secure the lifting handle	Prior to use—Daily