STEVE VICK INTERNATIONAL

SOLUTIONS FOR THE REPAIR RENOVATION AND DECOMMISSIONING OF PIPELINES

MACAW Pipe Cracker

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:

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2. HIGHLIGHTS

Safer and faster than using a 'podger' or sledge hammer	One machine for 8" - 24" and the odd sizes in-between
For use on inserted and empty pipe (live or dead)	Mini excavator takes the weight significantly reducing handling issues
Operates off an excavator hydraulics	Controlled pressure applied via hydraulic power
Break out speed controlled using flow control valve	Easy to operate once located onto main the hydraulics do the rest
Does not require access around the whole circumference of the pipe	Would supplement cored out trenches as very little space is needed

Table 1 - MACAW Pipe Cracker Key Points

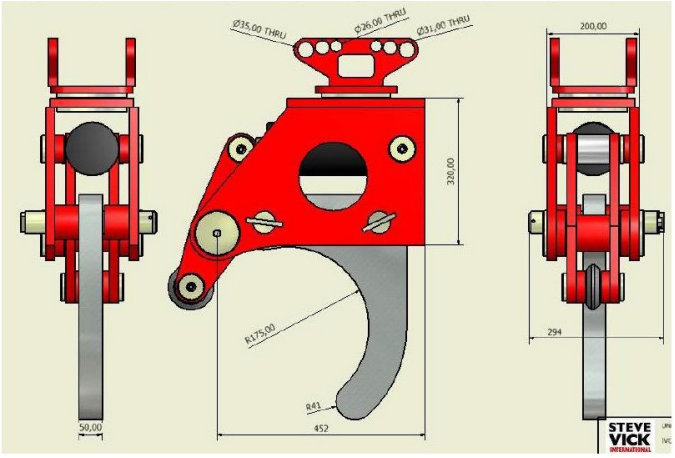
2.1 PRODUCT DESCRIPTION

The MACAW Pipe Cracker was designed as a safer and quicker option to crack out cast iron pipe. Traditionally a 'podger' bar or sledge hammer was used to break the pipe but there was series safety issues with this technique as broken metal can fly up out of the trench and cause injury. The MACAW Pipe Cracker can be used to crack any cast iron pipe from sizes 8" - 24". (Any smaller pipe we have the Mini HD MACAW which can do 4" - 8".) It is powered from the 3rd service or breaker hydraulics of an excavator so the weight of the cracker is taken by the MACAW and is a safer and easier way to manoeuvre around.

3. SPECIFICATION

SPECIFICATION								
Weight without beak	**Chain weight**	**Weight of beak depending on size**						
130kg	6kg	8"	10"	12"	14"	16"	18"	24"
		46kg	36kg	38kg	40kg	56kg	70kg	90kg

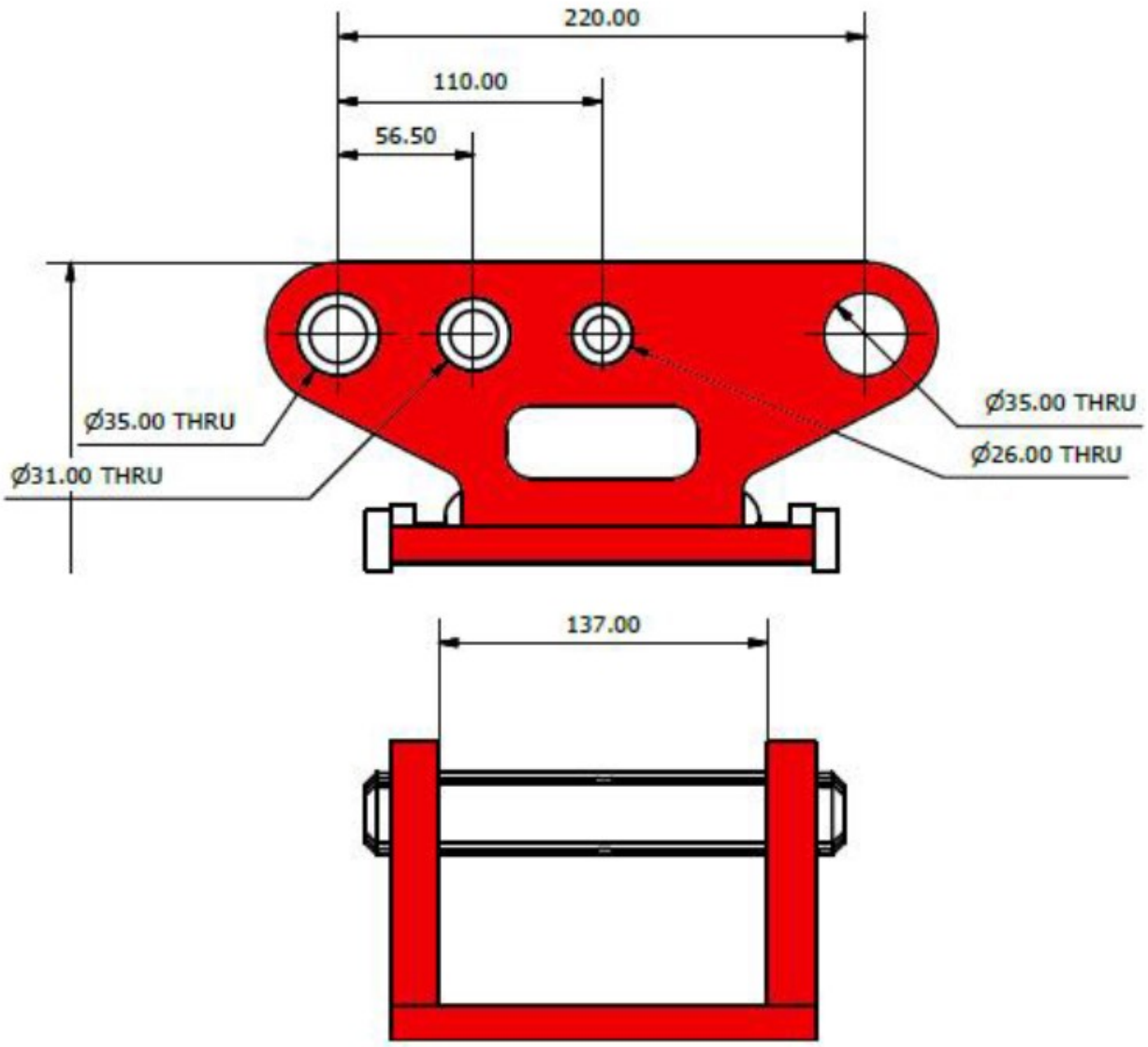
Table 2 - MACAW Pipe Cracker Specifications



3.1 CRACKER CAPACITIES— Due to the MACAW using a hydraulic ram, the breaking out operation is much more controlled giving a safer working environment. This control is achieved using the in-line flow control valve giving a quicker or slower break out meaning it can also be used on inserted mains. Once the main has been broken the operation can be stopped easily and the inserted PE remains undamaged.

3. SPECIFICATION (CONTINUED)

3.2 The top bracket dimensions below are used to ensure this bracket will fit to the boom of a mini excavator.



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

4.3 Ensure all operation including pipe cracking and manoeuvring via the excavator is taking place within an area contained by a barrier.

4.4 Ensure movement of the excavator arm is contained within the barrier-contained area.

4.5 Ensure all fittings and attachments required are present to allow the MACAW to be correctly attached to the excavator arm and that its hydraulic lines on the mini excavator are working.

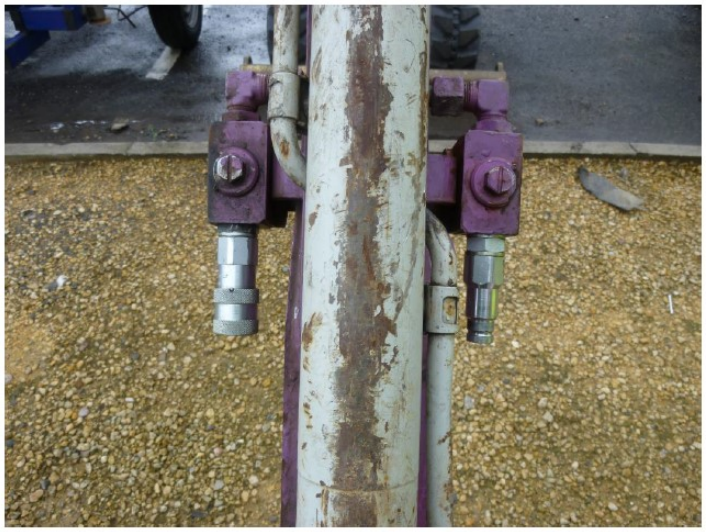
4.6 The section of the cast iron main being broken out should be cleaned of any rust that may inhibit the movement or destabilise the MACAW.

4.7 Unload the MACAW onto horizontal ground within the cordoned off area.

5. PREPARING THE MACAW

The MACAW is run off the hydraulics of a mini excavator 1 1/2, 2 or 3 tonne types as long as the safe working load (SWL) is not less than the weight of the MACAW (see weights on page 3). This is because the MACAW is fitting to the boom of the excavator which is the only option as this removes all manual handling issues and reduces time to break out each main.

The MACAW comes fitted with two 3/8” flat face couplings male and female. The size will fit most mini excavators, however the most common size is 3/4” and Steve Vick International can supply adaptors for these if ordered. Connect these back to back fittings directly to the 3/8” fitting already on the MACAW; there is no need to remove them off the hose line.



Ensure the 3rd service/breaker line shown above are both operating. It may be the mini excavator is set in the single flow commonly used for ‘peckers’. Locate valve (side of machine, under cabin met etc..) and select dual flow option.

6. FITTING THE MACAW TO THE EXCAVATOR

6.1 Bucket Pins - The operative must be fully briefed on how to attach the MACAW Pipe Cracker to an excavator. There are different excavators being used on site, however, the MACAW is designed to fit to most known machines.

The top bracket will take the pin arrangement for 1 1/2, 2 and 3 tonne models and the training is strongly recommended to show which pin slots are used depending on the excavator. The hose arrangement on the double acting MACAW will fit the typical hose arrangement found on most excavators. This is the 3/8" flat face coupler, and is a single connection, usually the male into the female coupler on the excavator.

Position the excavator so that the arm can be lowered on to the MACAW and rotate swivel mount to align with the excavator arm.

With the excavator arm aligned with the pins slots slide the bucket pins fully through the swivel bracket and secure on the other side using R-Pins.

Connect the hose into the correct flat face coupling (3/8") and secure the knurled swivel. Ensure no hoses are restricting the movement of the MACAW.

6.2 Single Pin

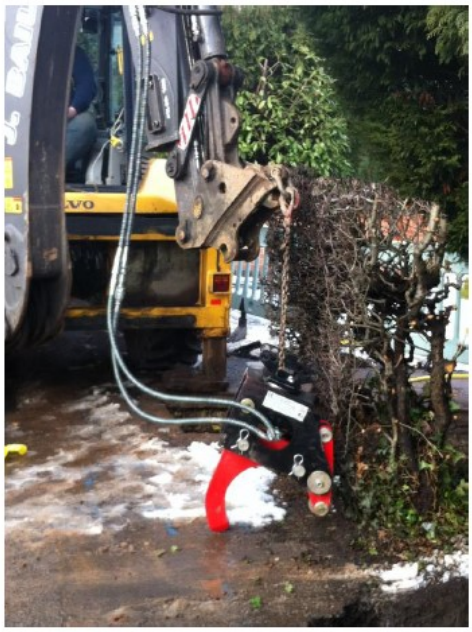
Alternatively use a single pin off the Hitch End Hole and Dipper Arm. The MACAW will find its own centre of gravity and may be easier to be located in the trench.

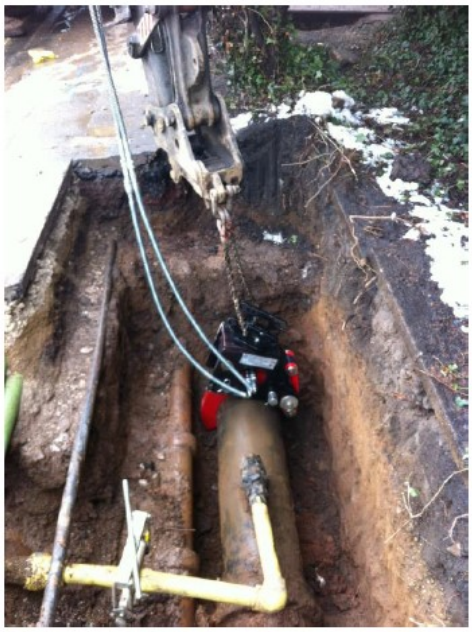
6.3 Chain Mounted

When using a chain ensure it is the once supplied by Steve Vick International, as this has been sized to take the weight of the MACAW.

Use the correct sized pin slot on the bracket at the top of the chain and slide pin through the Dipper Arm hole. This will allow for greater reach but manoeuvring the MACAW will need the assistance of an operative, care must be taken. **Ensure the chain is taking the weight of the MACAW without putting any strain on the hydraulic hoses.**

6. FITTING THE MACAW TO THE EXCAVATOR





7. CHANGING THE JAW

To allow the pipe to be gripped correctly the correct jaw must be fitted. The jaw is secured using two 50mm pins and two R-clips.

Once the MACAW is fully attached to the arm of the excavator lift it up off the ground to a safe working height.

The jaw can now be removed or fitted by sliding one pin into place, then rotating the jaw until the 2nd pin aligns with the appropriate hole. Slide 2nd pin through and secure both pins with R-clips.

8. Operating Instructions

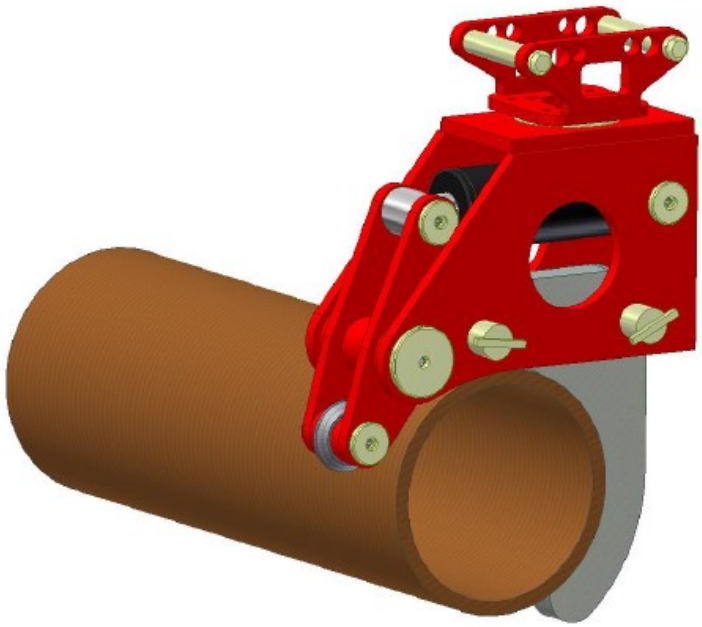
The MACAW must only be used on cast iron mains; under no circumstances must it be used on ductile or steel mains.

The MACAW will only work on dual flow excavators and as such needs both hoses connected. If required, extension hoses can be connected to the excavator. The gripping and retracting motions are operated from within the cabin. The side opening design means the MACAW can be located around the pipe without help from an operative whether on top or in the trench.

8.1 Operating the MACAW— Step by step

- To open the jaw operate the relevant foot pedal in the excavator's cabin.
- Test and adjust the closing speed of the jaw before applying to main using the in line flow control, and then lock off.
- Position the MACAW over the cast main and down onto the circumference of the pipe. Rotate the unit using the dump/crowd control until satisfied that position is correct.

8.1 Operating the MACAW— Step by step (CONTINUED)



- Ensure the MACAW is clear of 3rd party plant/equipment when lowering into trench. A minimum distance of 200mm between the widest parts of the MACAW and any 3rd party plant/equipment should be maintained.
- Operate the foot pedal to close the jaw. It will be necessary to proceed slowly and carefully to ensure that the jaw does not travel too far once the main fails.
- Repeat as required along one side of the main at approximately 0.5m intervals.
- Remove the MACAW from the main, return to safe area and rotate head 180°.
- Repeat process until required length of cast main has been cracked.
- At all times maintain SAFE DIGGING PRACTICES when using the MACAW to avoid stressing the excavator arm.

9. General Service and Maintenance

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

- Clean down the machine and check all moving parts for wear and tear.
- Check all hydraulic joints and couplers for leaks, tighten accordingly.
- Check all hoses remain in good condition.
- Ensure the flow control feed is operational.
- Ensure the swivel bracket rotates and is not clogged up with grease and debris.
- Retighten all nuts and bolts paying particular attention to the swivel bracket. Bolts used on the swivel brackets are M16 and require a torque setting of 50 (ft/ibs).
- Ensure the jaw is free from cracks and bends, and that the cracking wheel is sound.