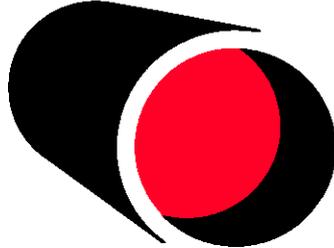


# STEVE VICK INTERNATIONAL



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DESCRIPTION & PROCEDURES FOR WORK CARRIED OUT BY STEVE VICK INTERNATIONAL SERVICES FOR

## THE MINI PURGE EJECTOR

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UNIT 19 TREENWOOD INDUSTRIAL ESTATE BRADFORD-ON-AVON BA15 2AU

Tel: +44 (0) 1225 864 864

[www.stevevick.com](http://www.stevevick.com)

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## FOREWORD

The technique was developed in the mid 1980's as a method for withdrawing gas from the annular space when abandoning mains.

The original technique uses a large ejector in conjunction with a compressor however the same principle applies here using a smaller easier to handle 'Venturi' ejector. This ensures a fast clinical and effective purge.

This system is available for mains sizes from 3"/75mm to 12"/315mm in diameter up to 2 Bar.

The Mini Purge is attached to one end of a main and a vent opened at the other. With the compressor attached to the Mini Purge a vacuum is created and the gas is withdrawn along the main and expelled through the ejector and vent tubes. With a purge velocity of 0.6 to 20m/s ensures a minimal and safe mixture of gas and air.

**BRIEF HISTORY**

<b>Initial Publication</b>	<b>4 th December 2004</b>
<b>1st Publication</b>	<b>5<sup>th</sup> May 2005</b>
<b>2nd Publication</b>	<b>24<sup>th</sup> August 2015</b>
<b>Latest Publication</b>	<b>18<sup>th</sup> November 2019</b>

## PREPARATION FOR PURGE OPERATION

- 1.1 This SVI Procedures provides a means of carrying out Direct Purge Operations on metallic or PE mains in the size range 90mm/3"/75mm to 355mm/12"/300mm using the Mini Purge ejector.
- 1.2 This Steve Vick International Ltd Work Procedure must be read in conjunction with Work Procedure T/PR/D10 and Chapter 8 of T/PR/ML/2 and Chapter 8 T/PR/ML/3.
- 1.3 Note that this SVI Procedure only covers mains up to 2bar.
- 1.4 It is recommended the venturi section is attached to the main first and confirmed secure. After this the vent stacks should be connected together and also confirmed secure. The connected vents should then be installed correctly and securely onto the top of the venturi section.

### 2. REFERENCES

- 2.1 This SVI Procedure makes references to the documents listed in the Appendices. Unless otherwise specified, the latest editions of the documents apply, including all amendments.

### 3. PURGE OPERATIONS

- 3.1 NO SMOKING signs must be displayed and actions must be taken to ensure that no smoking, naked lights or other sources of ignition are present. The Operative must ensure that vigilance is taken to ensure that no members of the public or operatives contravene this instruction.
- 3.2 Fire extinguishers must be available on site and positioned for immediate use.
- 3.3 The top of the ejector vent stack must be a minimum of 2.5m above the surface of the ground (i.e. road, footpath, grass verge etc)
- 3.4 Ensure that the air inlet hole size and minimum quantity comply with the details shown below  
Note that the minimum compressor to be used must not deliver less than 70 ft<sup>3</sup>/min (1.9 m<sup>3</sup>/min)

**Table 1: Ejector/ air inlet sizes including compressor sizes**

Nominal Pipe Diameter	Minimum purge velocity m/s	Typical purge velocity m/s	Minimum air inlet hole	Minimum Ejector Hole	Maximum size of compressor	
					m <sup>3</sup> /min	ft <sup>3</sup> /min
3"/75mm	0.6	11.0*	1"	1"	2.8	100
4"/100mm	0.6	7.0*	1"	1"	2.8	100
6"/150mm	0.6	3.5	1.5"	1.5"	2.8	100
8"/200mm	0.7	2.1	2"	2"	2.8	100
10"/250mm	0.8	2.0	2 x 2"	2"	2.8	100
12"/315mm	0.9	1.1	2 x 2"	2"	2.8	100

Purge velocities marked \* have been extrapolated from measured data

# SVI PROCEDURE FOR DIRECT PURGE OPERATIONS ON MAINS IN SIZE RANGE 3" / 75MM TO 12" / 315MM DIAMETER

## General

NO SMOKING signs must be displayed and actions must be taken to ensure that no smoking, naked lights or other sources of ignition are present. The Operative must ensure that vigilance is taken to ensure that no members of the public or operatives contravene this instruction.

Fire extinguishers must be available on site and positioned for immediate use.

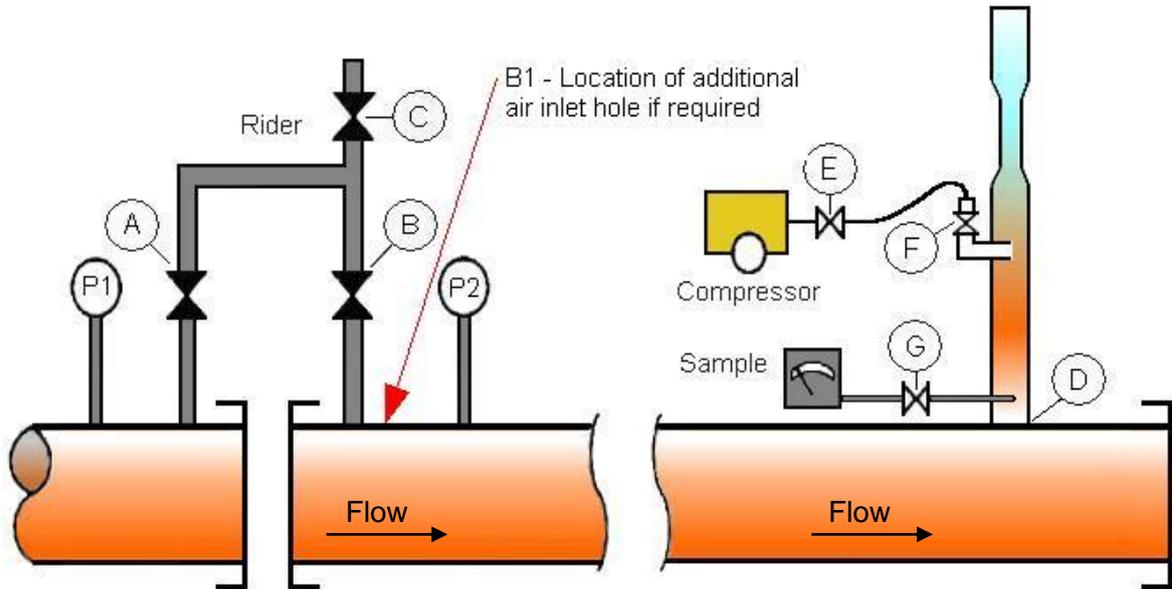
The main must be physically isolated in accordance with either T/PR/ML2 Chapter 8 or T/PR/ML3 Chapter 8 after carrying out successful decay tests as detailed procedures B1 or B2 and B3. The following actions must now be undertaken:

- a. Close and decommission all bypasses by closing valves A and B and opening valve C. (see Fig. 1).
- b. Check all joints on live capped ends with leak detection fluid and wash off with clean water.
- c. Ensuring that the valves from the compressors E to the ejector F are closed, start up the compressor.
- d. Vent the main to atmospheric pressure by opening valve D (on the drill base at the bottom of the ejector) - at the extremity of the mains system to be decommissioned. Close valve D and check that the pressure (P2) in the main does not increase. If there is no pressure increase, preparation for purging can commence.

*At this point if an additional air inlet hole is required (see Table 1) then it can be provided via one of the existing holes that was used for the bagging-off operation prior to the flow stopping of the main (see T/PR/ML/2 Section C or T/PR/ML/3 Section C). The location for an additional air inlet hole must be in the vicinity of the rider (see Figure 1)*

- e. Fully open valves B, (B1 if required) C and D.
- f. Simultaneously fully open the compressor valve E and valve F to admit compressed air to the mini purge ejector.
- g. Monitor pressure at P2 (suggest using 120 mbar Manometer - NDC code 1962) if this exceeds negative pressures of -100 mbar, stop the purge and investigate the reasons causing this excessive negative pressure, i.e. vent not fully open or undersized drilling. *Typical pressure experienced during purge should be in the region of -15 to -30 mbar.*
- h. Continue purge until two successive checks confirm, via sample point G on the mini purge ejector, indications of 10% LEL or less.
- i. Turn off the compressor; remove the mini purge ejector and test inside the main at the top and bottom that gas readings are less than 10% LEL.
- j. Close all vents and inlet valves remove all bypasses and drill bases and install mains plugs.
- k. All openings to the abandoned main must be securely sealed to prevent the egress of residual gas and the ingress of water or possible leakage from the mains systems. All plugs on the live mains must be checked using leak detection fluid.

**Figure 1 :Configuration - Layout for Mini Purge Operation**



## APPENDICES

This manual is to be used in conjunction with the latest work procedures.

Cadent:

T/PR/ML/4 Chapter 8 De-commissioning of mains up to 2bar by Direct Purging.

For other networks refer to appropriate documentation.