



# CONNECTION COLLAR 2.0

## OPERATION & SAFETY MANUAL



### **WARNING**

*These instructions are for your personal safety. Always ensure that you have read and understood these instructions before using the machinery. **SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.***

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SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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To watch practical demonstration videos, take a course, or to download an electronic copy of these Instructions, please visit [www.picoteinstitute.com](http://www.picoteinstitute.com). Please note that videos and courses are not intended as a replacement or alternative to this operating and safety manual, but only as an additional learning tool.

# SAFETY INFORMATION

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

## **WARNING**

*This section contains important safety information. Failure to comply could result in serious injury.*

## Safety Symbols

Safety symbols are used throughout this manual to draw attention to potential hazards.



**Danger** risk of serious injury, follow instructions.

## Personal Protective Equipment (PPE)

Always use Personal Protective Equipment including suitable protective clothing, footwear, plus:



Suitable eye protection to protect against chemicals from irritating eyes.



Suitable gloves to help prevent any contact with chemicals. Do not use gloves which can become entangled.



Suitable respirator to prevent any dust or fumes being inhaled or consumed, which could cause occupational asthma or dermatitis.

# GENERAL SAFETY INFORMATION

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

## **WARNING**

*This section contains important safety information. Failure to comply could result in serious injury or death.*

**Always read all safety warnings and instructions.** Failure to follow warnings and instructions may result in serious injury.




### **1. Always wear eye protection and chemical resistant gloves.**

Other personal protective equipment, such as dust mask, gloves and overalls should be worn when necessary. **Always wear appropriate personal protective equipment.**

2. **Before each use** inspect the Installation Tools and Bladders carefully for any potential break or damage. **Change damaged parts immediately.**

3. Only use this tool with the accessories and spare parts offered by Picote Solutions. Accessories and spare parts should only be used in the manner intended and as described by Picote Solutions.

 4. Some parts of the tool can get hot when steam curing. Avoid touching the tool during or right after steam curing.



# ENVIRONMENT, TRANSPORT, STORAGE & DISPOSAL

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

**⚠ WARNING** *This section contains important safety information. Failure to comply could result in serious injury or death*

## ENVIRONMENTAL

**Operational Ambient Temperature Range:** 0 °C to +50 °C (32 °F to 122 °F)

**Storage Ambient Temperature Range:** -20 °C to +50°C (-4 °F to 122 °F) in a condensation free environment

## TRANSPORT

The Installation Tool and Bladder should be transported un-pressurised in a protective tube to protect from the elements and prevent any damage or premature wear that could cause accidents and/or bladder malfunctions.

## STORAGE

The Installation Tool and Bladder should be stored indoors to protect it from rain and sunlight and somewhere with a constant ambient temperature.

Where the Bladder has been stored for long periods of time it will need to be slowly filled/unfilled with compressed air a few times before being used. This helps the elastic materials to stretch, enabling the Bladder to properly perform.

**If the Bladder has been stored in an environment colder than 0°C (32°F), the Bladder should be stood at room temperature for approximately 2 hours prior to use.**

## DISPOSAL

The two end caps, steel cable ties and connectors can be recycled in metal waste collection points. The Bladders can be disposed of as rubber waste.

**Always check and follow local waste handling rules and regulations!**

# DECLARATION OF INCORPORATION FOR A PARTLY COMPLETED MACHINE

**SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE**

**We Picote Solutions Oy Ltd as the responsible manufacturer, declare that the following Picote Solutions Oy Ltd Equipment:**

**Picote Connection Collar 2.0 System**

are of series production and

**Conform to the following EU Directive:**

**2006/42/EY**

And is manufactured in accordance with the following standards or standardised documents:

**SFS-EN ISO 1200**

**SFS-EN ISO/TR 14121-2:2013**

**SFS-EN ISO 13857:2019**

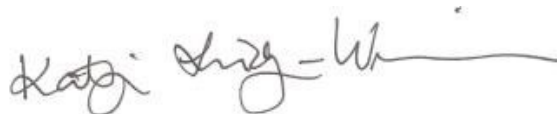
**SFS-EN ISO 14120:2015**

**SFS-EN ISO 13854:2019**

The technical documentation is kept by our authorised representative in Europe who is:

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**1 March 2023**



Katja Lindy-Wilkinson

C.E.O.

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# GENERAL INFORMATION

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Connection Collar 2.0 Products	
Part Number	Product
1410000021	Installation Tool 2.0 Head 31mm (1.22") for DN70-100 / 3-4"
1410000022	Installation Tool 2.0 Head 51mm (2") for DN150 / 6"
1410000036	Installation Tool 2.0 Head 71mm (2.79") for DN200-225 / 8-9" <i>(Discontinued January 2024)</i>
1410000048	Installation Tool 2.0 Head 91mm (2.79") for DN200-300 / 8-12"
1410000023	Push Rod 22mm (0.87") DN70-150 (3-6") more flexible/multiple bends
1410000032	Push Rod 24mm (0.94") DN100-225 (4-9") more rigid/longer runs
1410000024 / 1410000024US	Turning Handle 2.0
1410000025 / 1410000025US	Installation Tool 2.0 Air Adapter
1410000000 / 1410000000US	Pocket Vacuum 2.0
1410000026	Installation Tool 2.0 Hybrid Tape
1410000027	Installation Tool 2.0 Sealing Tape
1410000028	Installation Tool 2.0 Cover Tape
1410000037	Bladder Lubricant Spray
1410000038	Silicone Glue 90ml
1410000029	Strapping Tool
1410000031	Stainless Steel Cable tie
1410000039	Bladder Release Agent
1410000035	Installation Tool 2.0 Accessories Starter Kit <i>(Includes Picote Bladder Release Agent, Hybrid Tape, Sealing Tape, Cover Tape, &amp; Bladder Lubricant Spray in a Picote Tool Bag.)</i>

# GENERAL INFORMATION

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## Installation Tool Heads



- Three Installation Tool Head sizes available:
  - **Installation Tool Head — 31mm (1.22")** for **DN70-100 (3-4")** installations (PN: 1410000021)
  - **Installation Tool Head — 51mm (2")** for **DN150 (6")** installations (PN: 1410000022)
  - **Installation Tool Head — 71mm (2.79")** for **DN200-225 (8-9")** installations (PN: 1410000036) *(Discontinued)*
  - **Installation Tool Head — 91mm (3.58")** for **DN200-300 (8-12")** installations (PN: 1410000048)
- Installation Tool Head one-way/steam port allows for both ambient and steam curing. When the flow/steam port is open, it automatically closes when you begin to vacuum the bladder down.
- Installation Tool Heads can be connected to the Push Rods from either end, which reduces the need for additional Tool Heads. The same Installation Tool Head with a Y-bladder can be used for downstream (Y-lateral pointing towards) & upstream (Y-lateral pointing away) installations, so you only need one Installation Tool Head.

## Push Rod with Turning Handle



Picote's Push Rods work as a push/turn rod and air or steam supply. Separate air/steam hoses are not needed. There are two versions, the slightly smaller 22mm (0.87") version for extra flexibility for more bends and smaller pipes, or the 24mm (0.94") version that has more rigidity for longer runs and larger pipes. They are available in 1.5m (5ft) lengths.

## Silicone Bladders

- Increased length:
  - 1m (3.28ft) main body
  - 40cm (1.31ft) + dome end lateral body
- T (90°) & Y (45°) versions
- Double connections with 90° or 180° angles
- Straight Bladders without connections for point repairs



# GENERAL INFORMATION

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## Connection Collars

Picote Solutions offer a range of connection collars available in 2 versions (GRP - Glass Reinforced Polymer & Felt), as well as Single & Double Connection Options.

## Felt Collars

- Fully Taped Seams eliminates resin leakage
- Available for Single T&Y Connections and Double Connections with 90° or 180° angles
- Designed for use in lined pipes
- Suitable for in-house lining
- For use with Epoxy Resin

## GRP Connection Collars

- Stronger & 25% thicker than the Felt Collars with fiberglass sandwiched layer
- Longer lateral repair lengths compared to the Felt Collars
- Available for Single T&Y Connections
- Suitable for buried unlined or lined pipes
- For use with either Epoxy or Silicate resins

Technical Specifications	
Category	Measurement
<b>GRP Connection Collars (Sizes)</b>	
<b>Main Pipe</b>	DN100-300 (4-12")
<b>Connection Pipe</b>	DN100-300 (4-12")
<b>Felt Connection Collars (Sizes)</b>	
<b>Main Pipe</b>	DN70-225 (3-9")
<b>Connection Pipe</b>	DN50-225 (2-9")
<b>Installation Air Pressure</b>	0.2-1.5 Bar (2.9-21.8 PSI)



# GENERAL INFORMATION

## SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

### Turning Handle

- The Turning Handle (PN: 1410000024 & 1410000024US) makes positioning the Connection Collar easy.
- An air valve facilitates the inflation process, so you are able to control how much pressure/air you let into the Bladder. This allows you to guide the Connection Collar to the precise location before fully inflating it.



Special Installation Tool Head **Sealing Tape** (PN: 1410000027) provides a complete seal between the Installation Tool Head and Bladder. It also has a high temperature resistance, which works well when using steam.



Installation Tool Head **Cover Tape** (PN: 1410000028) is a strong tape used to cover the clamps which hold the Bladder on the Tool Head.



Installation Tool Head **Hybrid Tape** (PN: 1410000026) is used for tying and securing the Connection Collar to the Bladder before installation. It releases easily once you start to inflate the Bladder.

The **Strapping Tool** (PN: 1410000029) combined with the stainless steel **Cable ties** (PN: 1410000031) makes the connection between the Installation Tool Head and Bladder airtight. The advantage of these cable ties is that the locks are very small and thin. The locks on normal hose clamps are quite large, which means they can easily get stuck to pipe joints or tight bends.



The **Installation Tool Air Adapter** (PN: 1410000025 & 1410000025US) is designed to replace the Turning Handle during the **wet-out and curing process**. This enables the release of the Turning Handle to be used in the next installation while the previous one is curing.



**Installation Tool Accessories Starter Kit.** This Starter Kit includes, Bladder Release Agent, Hybrid Tape, Sealing Tape, Cover Tape, & Bladder Lubricant Spray in a Picote Tool Bag.



# OPERATING INSTRUCTIONS

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## Before operation:

**⚠ WARNING** Always use a pressure regulator when using the Picote Connection Collar 2.0.  
Unregulated compressor pressure will burst the bladder.

## USING THE STRAPPING TOOL

**⚠ WARNING** *This section contains important safety information. Failure to comply could result in serious injury*



The Strapping Tool has two tension settings: Manual and Controlled.

Check that the tension switch is pulled backwards towards you (manual position) when tightening the Cable tie. If you use the controlled tension setting it will cause the Strapping Tool to release automatically and you won't be able to fully tighten the Cable tie.



Insert strap tail through the jaw and tensioning mandrel as in the photo.

Start ratcheting the strap until tight. Jaw should be straightly aligned (collinear) with the strap tail when tightening.



# OPERATING INSTRUCTIONS

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Bend strap 90° and cut it.



Bend leftover strap 90° by hand.



Close the strap buckle.





# OPERATING INSTRUCTIONS

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## FASTENING THE BLADDER TO THE INSTALLATION TOOL

1. Clean surfaces from both ends.



2. Add Sealing Tape.

Sealing Tape is vulcanizing tape and you need to stretch it over itself to make it stick.

Add 2-3 layers.

Add Sealing Tape to both ends.

3. Open the Bladder and put the Installation Tool Head inside it. Pay attention to the lateral direction when installing Y-connections.



4. Before adding the Sealing Tape on the Bladder, make sure it is centralised on the Installation Tool Head.



# OPERATING INSTRUCTIONS

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5. Fold over the ends of the Bladder, splitting the difference on each side and wrapping towards the bottom of the Installation Tool and then add the Sealing Tape.

**The Sealing Tape needs to be wide enough to cover the groove of the Installation Tool Head sleeve.**



6. Make double rounds on the cable tie. Add Bladder Release Agent lubricant between the first and second layer to reduce friction.





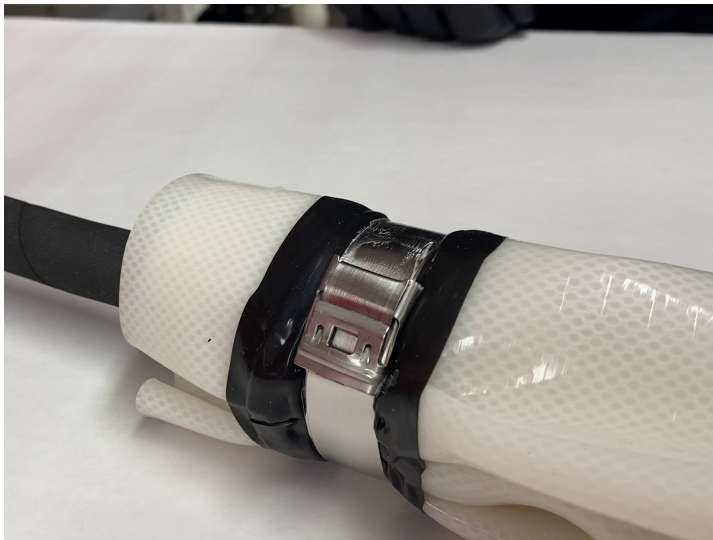
# OPERATING INSTRUCTIONS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

7. Put the cable tie over the Bladder and position the lock to either side of the Bladder folds, making sure that the lock is NOT covering the bladder folds and is NOT on the top of the Bladder. Tighten the cable tie. You will need to tighten them securely beyond what you can likely do with hand strength alone. Position the Strapping Tool against a table surface to provide the extra force needed. You will need to do this around 15 times until fully tightened.



8. Cut the excess cable tie and lock it with the strapping tool. (Refer to Page 11 of the manual)



# OPERATING INSTRUCTIONS

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## ⚠ WARNING



9. Test that the Bladder is not leaking by using the Installation Tool Air Adaptor. Close the steam valve to make it easier to hear possible leaks. Slowly inflate the bladder to approximately 0.5 Bar (7 PSI). Stop inflation by closing the Air Adaptor valve handle, then check for leaks on both ends of the Bladder, as well as the steam valve. If no leaks are found, turn off the air, remove the pressure regulator, and open the Air Adaptor valve handle to release the air pressure from the Bladder.

**REMEMBER TO USE A PRESSURE REGULATOR!**  
**FAILING TO DO SO WILL DAMAGE THE BLADDER.**

10. Add Covering Tape over the cable ties



11. Spray Bladder Lubricant inside the Bladder through the coupling (**not the steam valve**). Spread the lubricant evenly by rubbing the bladder walls together.

# OPERATING INSTRUCTIONS

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12. Test that the Bladder is properly lubricated by pushing the Bladder lateral inside the main using a rounded stick. Add lubrication if necessary.



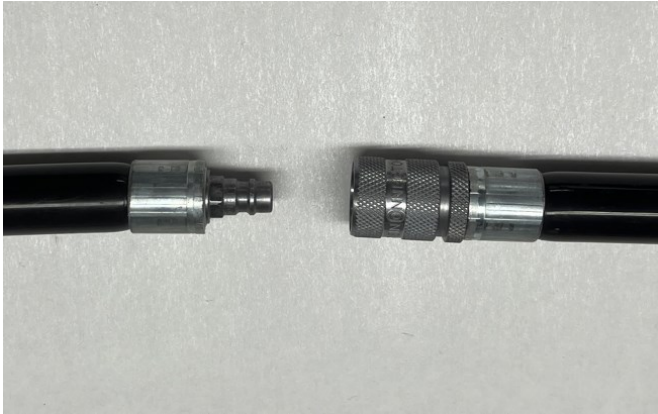


# OPERATING INSTRUCTIONS

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## CONNECTING PICOTE PUSH RODS

Using Picote Push Rods allows you to push/pull, rotate, fill and extend your tools reach using only one hose/rod-system.



Push Rod fittings have a hex socket that must be aligned.

Left: Male-type connector

Right: Female-type connector with turning lock ring



Push the fittings together. Push Rods can be connected even when the locking ring is in the 'pre-locked' position.



Ensure fittings are completely pushed together and won't come loose if you try to pull them apart.

Fittings can be disconnected by pulling the collar from the female-type fitting towards the lock ring.

# OPERATING INSTRUCTIONS

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Fittings have to be secured with locking ring that can be found on the female-type fitting.



Screw locking ring until it's completely turned against the collar to lock it in position.



Additionally, you can wrap protective tape around each fitting to prevent resin from going in between the fittings.

# OPERATING INSTRUCTIONS

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**CHART 1 - BLADDER INSTALLATION PRESSURES FOR "T" & "Y" BLADDERS AMBIENT CURED  
(STEAM PORT CLOSED)**

BLADDER SIZE (mm/in)	PRESSURE (BAR)	PRESSURE (PSI)
70 / 50 (3/2")	0.75	11
70 / 70 (3/3")	0.65	10
100 / 50 (4/2")	0.80	12
100 / 70 (4/3")	0.65	10
100 / 100 (4/4")	0.45	7
150 / 50 (6/2")	0.75	11
150 / 70 (6/3")	0.65	10
150 / 100 (6/4")	0.45	7
150 / 150 (6/6")	0.35	5
200 / 70 (8/3")	0.65	10
200 / 100 (8/4")	0.45	7
200 / 150 (8/6")	0.35	5
200 / 200 (8/8")	0.30	4

BLADDER SIZE (mm/in)	PRESSURE (BAR)	PRESSURE (PSI)
225 / 70 (9/3")	0.60	9
225 / 100 (9/4")	0.45	7
225 / 150 (9/6")	0.35	5
225 / 225 (9/9")	0.30	4
250 / 100 (10/4")	0.45	7
250 / 150 (10/6")	0.35	5
250 / 200 (10/8")	0.30	4
250 / 250 (10/10")	0.25	4
300 / 100 (12/4")	0.45	7
300 / 150 (12/6")	0.35	5
300 / 200 (12/8")	0.30	4
300 / 250 (12/10")	0.25	4
300 / 300 (12/12")	0.20	3

**CHART 2 - STRAIGHT BLADDERS INSTALLATION PRESSURES**

BLADDER SIZE (mm/in)	PRESSURE (BAR)	PRESSURE (PSI)
DN70 (3")	1.2	17
DN100 (4")	1.0	14
DN150 (6")	0.7	10



## STEAM CURING

Picote Push Rods and Connection Collar 2.0 can be used with steam to speed up the curing process.



**[Refer to Picote Midi Steamer manual before steam curing with a Midi Steamer.](#)**

Use a flat screwdriver to open or close steam valve. To open it, turn the screw counter clockwise until it stops.



# OPERATING INSTRUCTIONS

**SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE**

## CHART 3 - BLADDER INSTALLATION PRESSURES FOR STEAM CURING (STEAM PORT OPEN)

**When using Picote Midi Steamer you need to increase the inflation pressure and set temperature based on the number of Push Rods being used.**

Number of Rods	Pressure Setting (BAR)	Pressure Setting (PSI)	Temperature Setting (°C)		Temperature Setting (°F)	
			Min	(Mean) Max	Min	(Mean) Max
1	0.17	3	67	(72) 77	153	(162) 171
2	0.30	4	70	(75) 80	158	(167) 175
3	0.32	5	72	(77) 82	162	(171) 180
4	0.34	5	75	(80) 85	167	(175) 184
5	0.37	5	77	(82) 87	171	(180) 189
6	0.39	6	80	(85) 90	175	(184) 194
7	0.41	6	82	(87) 92	180	(189) 197
8	0.43	6	84	(89) 94	183	(193) 202
9	0.46	7	87	(92) 97	189	(197) 206
10	0.48	7	89	(94) 99	193	(202)210
11	0.50	7	92	(97) 102	197	(206) 215
12	0.53	8	94	(99) 104	202	(210) 219
13	0.55	8	97	(102) 107	206	(215) 225
14	0.57	8	99	(104) 109	210	(219) 228
15	0.60	9	101	(106) 111	214	(224) 232

# OPERATING INSTRUCTIONS

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## STEAM CURING EXAMPLE

- **BLADDER SIZE:** 150mm x 100mm (6 x 4")
- **CONNECTION COLLAR SIZE:** 150mm x 100mm (6 x 4")
- **STEAM CURED:** (Chart 3 – Steam Port Open)
- **BLADDER INFLATION PRESSURE:** (From Chart 1) = 0.45 Bar (7PSI)
- **REQUIRED CURING TEMPERATURE:** 70°C (158°F)
- **DISTANCE FROM POINT OF ENTRY TO THE DAMAGED CONNECTION:** 15m (49ft)

Number of Picote Push Rods required for installation = 10

From Chart 3 the required inflation for 10 rods is 0.48 bar (7 PSI)

Therefore, the correct pressure setting on the Picote Midi Steamer is as follows:

Ambient Inflation Pressure + Inflation Pressure for using 10 Picote Push Rods = Total Pressure of 0.45 Bar (6.5 PSI)+ 0.48 Bar (7 PSI) = 0.93 Bar (13.5 PSI)

Required curing temperature at the Bladder - 70°C (158°F)

From Chart 3 the Picote Midi Steamer set temperature for 10 Picote Push Rods = 94°C (201°F).

Achieving 70°C (158°F) at Bladder

**Picote Midi Steamer settings for this**

**example are:**

**Inflation pressure of 0.93 Bar (13.5 PSI)**

**Temperature setting of 94°C (201°F)**

# MAINTENANCE

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

**WARNING**

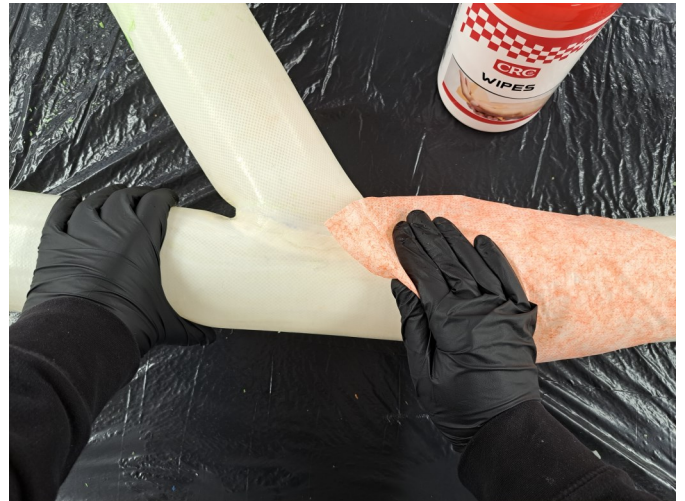


## BLADDER MAINTENANCE

- 1. Before performing any maintenance always check that air supply line is disconnected and turned off.**
- Clean the Connection Collar before and after each use to help increase the Bladder life. Primary cleaning method should be a damp cloth with soap or wet wipes to clean the surfaces.
- Using Picote Bladder Release Agent prevents resin from sticking to the Bladder and makes cleaning and Bladder removal easier.



1. Add approximately 0.2 Bar (2.9 PSI) air to the Bladder.



2. Clean Bladder with wet wipes or damp cloth with soap.



3. After cleaning, check the Bladder for damage.

# MAINTENANCE

## SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

### REPAIRING A DAMAGED BLADDER

A damaged Bladder can be repaired using Picote Silicone Glue.

The Silicone Glue takes approximately 12 hours to cure at room temperature per 1 mm (1/32") applied thickness.

**Recommended curing time is 24 hours minimum.**



Tools needed:

- Nitrile gloves
- Rag/towel
- Scissors
- Sharpie
- Bladder Silicone Glue
- Acetone
- Plastic bag/sheet



# MAINTENANCE

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## REPAIRING A DAMAGED BLADDER

Damage (e.g. holes) can be repaired with the Bladder Silicone Glue and a patch piece.



1. Thoroughly clean outside of the Bladder with acetone.



2. Turn Bladder inside-out to access the damaged area.



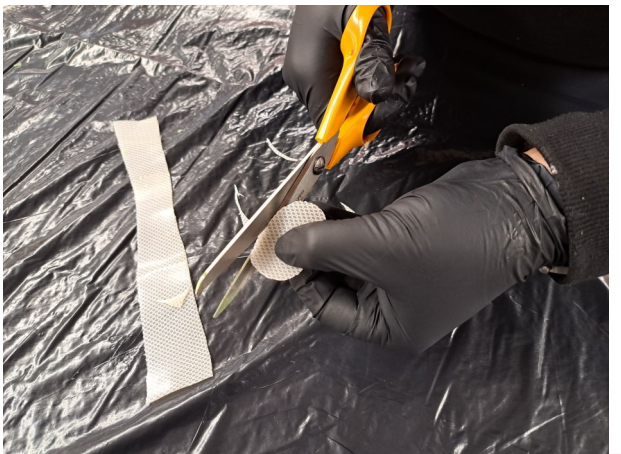
3. Thoroughly clean inside of the Bladder with acetone.



4. Measure the area being repaired. Patch piece should overlap the damaged area around 10mm (1/2")



5. Cut a piece of silicone material (excess Bladder material) to the appropriate size with scissors.





# MAINTENANCE

**SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE**

6. Cut two pieces of a plastic bag or sheet larger than are to be repaired.



7. Place the plastic sheet inside the Bladder, over the area to be repaired.



8. Place the repair patch on another piece of plastic sheet and apply Bladder Silicone Glue onto the patch.



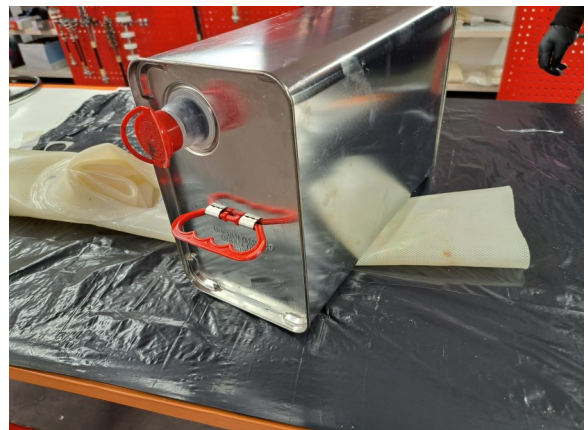
9. Place the patch over the repair area with a piece of plastic sheet.



9. Apply patch over the damaged area.




10. Place a weight on top of the repaired area. The Silicone Glue takes approximately 12 hours to cure at room temperature per 1mm (1/32") applied thickness.



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

## CONNECTION COLLAR SYSTEM

 The following pages contain an example of one type of resin and Connection Collar System. Always check your country regulations, requirements and application restrictions regarding the use of the Connection Collar System for this application.

Follow the instructions provided by the manufacturer and supplier of the resin system.

The Connection Collar System used in this manual is presented for educational purposes only to allow you to visualise the general process.

 **WARNING**



- Always wear protective equipment when handling resin! Chemicals and fumes may cause eye, skin and lung irritation. Ensure good ventilation at area where resin is mixed and handled.
- Always perform a test run before installing the Connection Collar so that you are certain you can set-up and navigate to the desired spot within the resin curing time.
- Curing time depends on the resin that is used and prevailing temperature. Always read resin specification to ensure compatibility and proper operation.

NEVER use resin that has not been properly stored or has expired.

Ensure that you have all the necessary equipment available and everything is set up before wetting out to ensure a good end result.



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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The following pages contain an example of one type of resin and Connection Collar System. Always check your country regulations, requirements and application restrictions regarding the use of the Connection Collar System for this application. Follow the instructions provided by the manufacturer and supplier of the resin system. The Connection Collar System used in this manual is presented for educational purposes only to allow you to visualise the general process.

## TOOL PREPARATION

### CONNECTION COLLAR INSTALLATION TOOL



1. Select correct Bladder based on pipe sizes and configuration. Make sure that the inside of the Bladder is well lubricated, if it feels sticky, add Picote Bladder Lubricant Spray as needed.

Attach the Air Adapter and Pressure Regulator to the Installation Tool assembly.



2. With the Bladder slightly inflated (0.1 Bar (1.4 PSI)), use a rounded stick to fully push the lateral nose inside the Bladder.

Be careful not to damage the Bladder during this step.



3. Push the lateral nose fully into the Bladder body and then remove the stick. For Y-bladders, the nose should be pushed inside towards the tail.



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

## SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

The following pages contain an example of one type of resin and Connection Collar System. Always check your country regulations, requirements and application restrictions regarding the use of the Connection Collar System for this application. Follow the instructions provided by the manufacturer and supplier of the resin system. The Connection Collar System used in this manual is presented for educational purposes only to allow you to visualise the general process.

Bladder Release Agent will prevent adhesion of future coating, lining, or point repairs. Any Bladder Release Agent in the pipe will need to be removed before any subsequent rehabilitations.

### APPLYING BLADDER RELEASE AGENT



1. Apply Picote Bladder Release Agent and spread evenly over main body area where Connection Collar will be placed.

This promotes grip on the Connection Collar during installation and improves releasing of the Collar after curing. It also helps prevent resin staining the Bladder.



2. Avoid adding excess Bladder Release Agent outside of the Connection Collar area.

Bladder Release Agent will prevent adhesion of future coating, lining, or point repairs.

Any Bladder Release Agent in the pipe will need to be removed before any subsequent rehabilitations.



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

The following pages contain an example of one type of resin and Connection Collar System. Always check your country regulations, requirements and application restrictions regarding the use of the Connection Collar System for this application. Follow the instructions provided by the manufacturer and supplier of the resin system. The Connection Collar System used in this manual is presented for educational purposes only to allow you to visualise the general process.

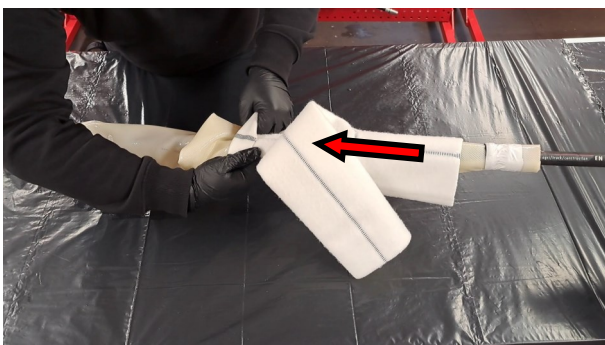
## ADDING THE CONNECTION COLLAR



1. Remove the Connection Collar from its packaging. Position the Collar to correspond with the Connection



2. Fold over the end of the Connection Collar to use as a pulling point.



3. Slide the Connection Collar onto the Bladder.



4. Line up the Collar & Bladder lateral opening.

# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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## ADDING THE CONNECTION COLLAR



5. Add a small amount of air (0.1 Bar / 1.45 PSI) to inflate the main Bladder.



6. Ensure that the Connection Collar is properly positioned on the Bladder so that the connection opening and lateral Bladder portion are aligned.



7. Add more air to pressurise the Bladder up to 0.2 Bar (2.9 PSI). You can deflate and adjust before re-inflating as needed. There should be no wrinkles or twisted areas.

Leave approximately 0.2 bar (2.9 PSI) pressure in the bladder.

**Caution! Do not over pressurise the Bladder to prevent stretching the Connection Collar. Over stretching the Connection Collar may cause wrinkles.**



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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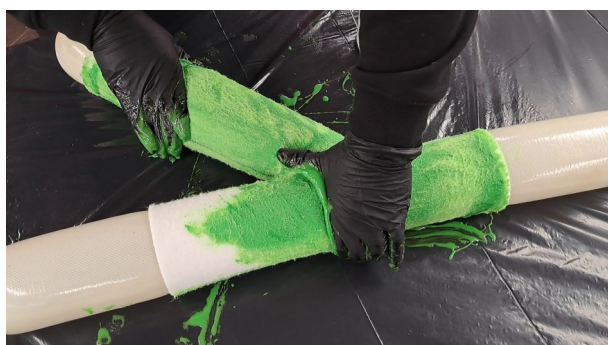
## WETTING OUT THE CONNECTION COLLAR



1. Mix resin of choice. The key is to thoroughly mix the resin according to the manufacturer's instructions.



2. With the Bladder still inflated, spread the resin evenly and ensure that all of the felt on the Connection Collar is properly saturated.



3. Avoid too little or too much resin. If there is too much resin, you can wipe off the excess.

**Be sure to use suitable chemical resistant gloves to prevent resin contact with your skin.**



4. Make sure there are no dry spots on the Connection Collar.

# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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### ALTERNATIVE METHOD (WETTING-OUT CONNECTION COLLAR FIRST)



You can also choose to wet-out the Connection Collar first and then slide it onto the Bladder assembly. For this method, remove the Connection Collar from its packaging and apply your thoroughly mixed resin of choice.

**Be sure to use suitable chemical resistant gloves to prevent resin contact with your skin.**



1. Apply your thoroughly mixed resin of choice.



2. Spread the resin evenly and ensure the Connection Collar is properly saturated. Avoid too little or too much resin. If there is too much resin, you can squeeze off the excess.



3. Check that the Connection Collar is fully wet-out by inspecting the reverse side and ends for any dry spots.



4. Slide the Connection Collar onto the Bladder and line up the Collar & Bladder lateral opening as shown on **page 30**.

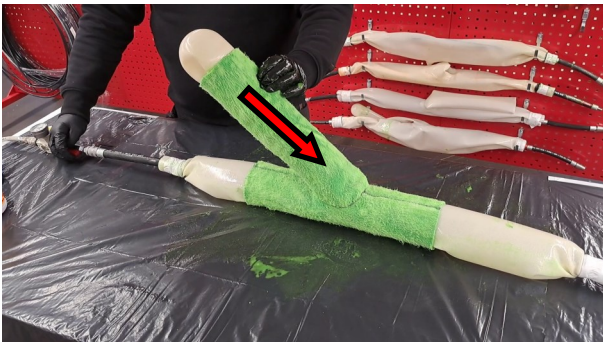


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## INVERTING WET-OUT CONNECTION COLLAR



1. Lower the Bladder pressure to between 0.1 to 0.2 (1.5 to 2.9 PSI).



2. Folding manually and with the help of a rounded stick, push the lateral Bladder portion along with the Connection Collar into the Bladder main body.



3. Make sure both the Bladder and the lateral portion of the Connection Collar are inverted tightly together. This step can be easier to perform while adjusting the Bladder pressure using the Picote Pocket Vacuum.



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### INVERTING WET-OUT CONNECTION COLLAR



4. Release the Pressure Regulator and attach the Pocket Vacuum.



5. Vacuum down the Bladder Assembly and remove the rounded stick.

**Be sure not to pull out the Bladder or Connection Collar when removing.**



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## SECURING THE CONNECTION COLLAR



1. If not already attached, attach the Pocket Vacuum and fully vacuum down the Bladder while folding as shown.



2. Fold whole assembly together as tightly as possible.





# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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### SECURING THE CONNECTION COLLAR



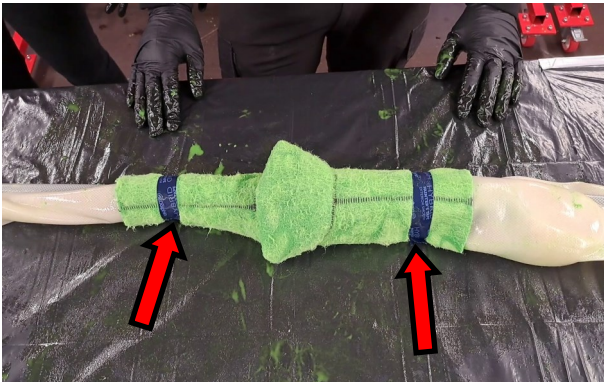
4. Secure Connection Collar. Use blue **Picote Hybrid Tape** to secure the Connection Collar to the Bladder assembly.



5. The Picote Hybrid Tape is wrapped around each end of the wet-out Connection Collar overlapping approx. 50% of the length, while keeping the Bladder and Connection Collar together as tightly as possible.



6. Avoid getting resin between the tape layers. Tear off and discard any excess tape.



7. Secure both ends of the assembly.

# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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### CARRYING CONNECTION COLLAR TO PIPELINE

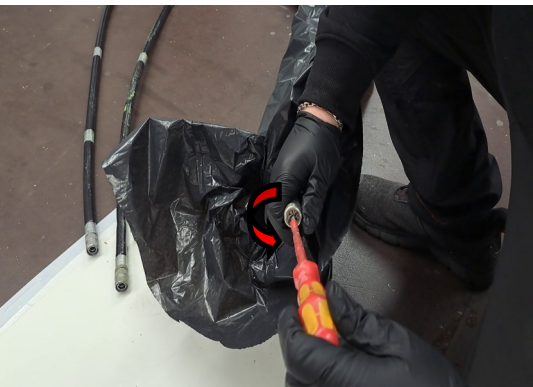


1. Using a plastic bag or sheet, cover and transport the assembly to the installation site.

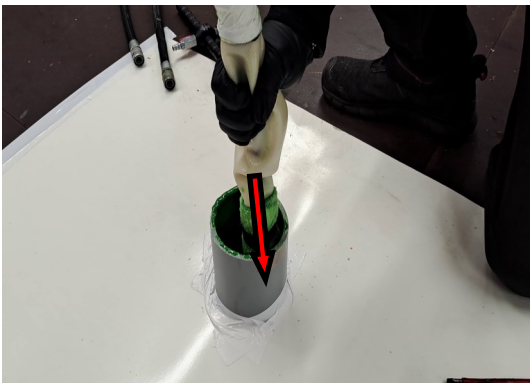
**Ensure the steam port is either open or closed depending on your curing method!**

2. Using a standard flathead screwdriver, turn the port on the Connection Collar Tool Head **counterclockwise** in order to enable steam flow during curing.

For ambient curing, make sure steam port is fully closed (steam port full closed in clockwise direction).



3. Place the Connection Collar Assembly in the pipe and attach the first Push Rod.



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

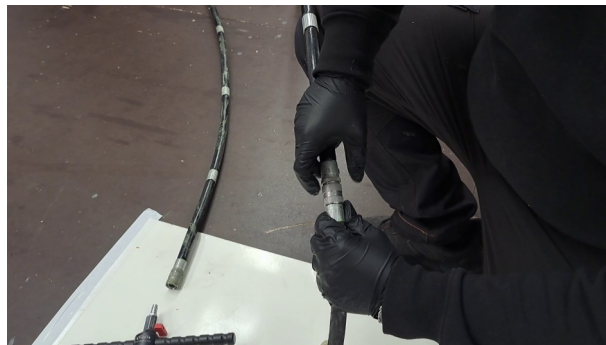
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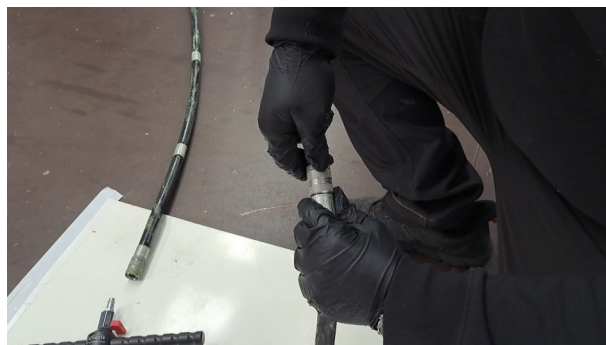
### INSTALLING THE CONNECTION COLLAR



1. The Push Rods have a hexagonal connection design on each end - you may have to rotate slightly to get them to align and connect.



2. The Push Rod connectors should be locked at each connection by turning the locking ring **clockwise**.



3. Continue adding the appropriate number of Push Rods to be able to reach the connection repair location.

Alternatively, you can pre-measure and assemble the complete Push Rod string.





# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

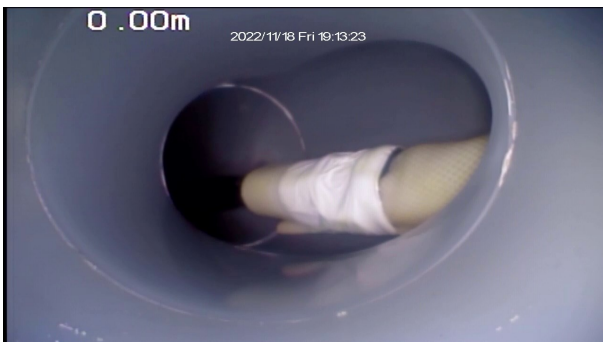
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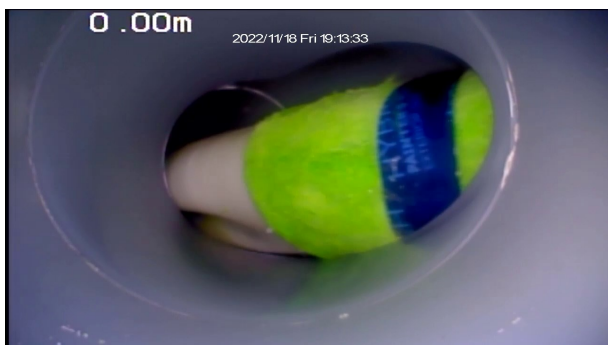
### INSTALLING THE CONNECTION COLLAR



4. While viewing from the lateral connection ensure that the Connection Collar Assembly has reached the connection to be repaired.



5. For difficult installations, such as reaching a repair area through multiple bends, you can apply silicone friendly lubricant of your choice to the front portion of the bladder to help the assembly glide past bends and reach the repair area.



# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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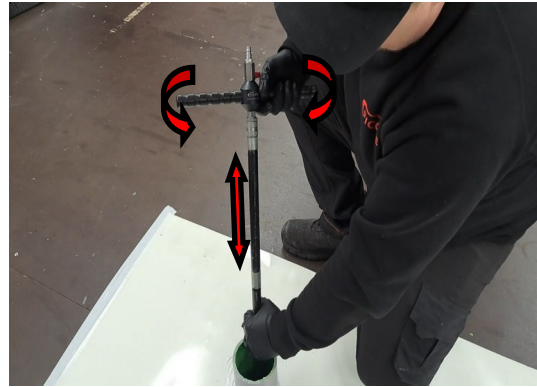
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### INSTALLING THE CONNECTION COLLAR

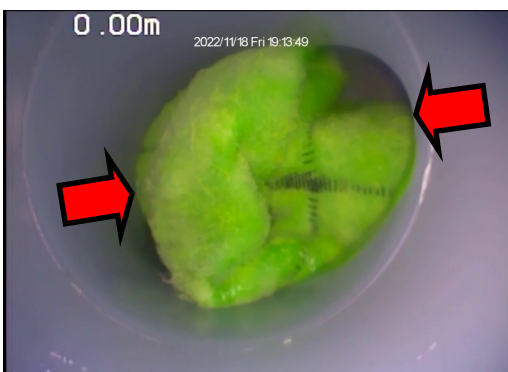
6. Add the Turning Handle.



7. Position the Connection Collar using a C.C.T.V. camera viewed from the lateral connection side.



8. Push or pull to fine tune the position while rotating the Turning Handle as needed in order to align the lateral Bladder opening with the connection opening.



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### INSTALLING THE CONNECTION COLLAR



9. Once you are satisfied with the positioning, check that the air valve on the Turning Handle is in the closed position and only then connect the Pressure Regulator and air supply.

Set initial air pressure to approximately 0.1 Bar (1.5 PSI).



10. While watching the CCTV, begin slowly feathering air into the Bladder by opening and closing the air valve on the Turning Handle.

Don't fully inflate the Bladder—just feather in enough air pressure to start the inversion movement and then stop.



11. Inspect the Connection Collar alignment as it just barely begins to inflate. As long as you haven't added too much air pressure, you should still be able to make small adjustments on the alignment by pulling, pushing or turning the Turning Handle at this point.



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### INSTALLING THE CONNECTION COLLAR



12. When the Connection Collar lateral is as centred as possible, start adding additional pressure to fully inflate the Bladder.

Sometimes more pressure may be necessary to open the Bladder. For example, as the Bladder size decreases, the needed inflation pressure will actually increase. Refer to **Chart 1, Page 19** for recommended standard Bladder curing pressures. However, remember that you should never use than the maximum pressure rating for each Bladder!



13. Bladder inflation.



14. Bladder fully inflated. Make sure Bladder is fully opened. **When installing double Connection Collars, make sure to check both lateral connections with CCTV.**



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### INSTALLING THE CONNECTION COLLAR

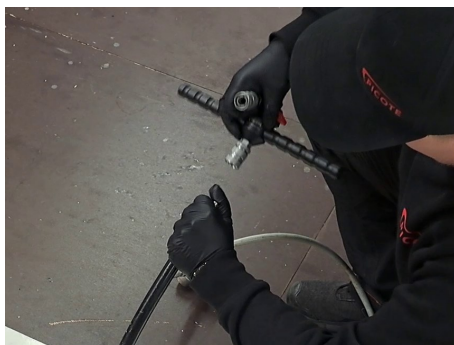


15. Adjust the Pressure Regulator to the final curing pressure.

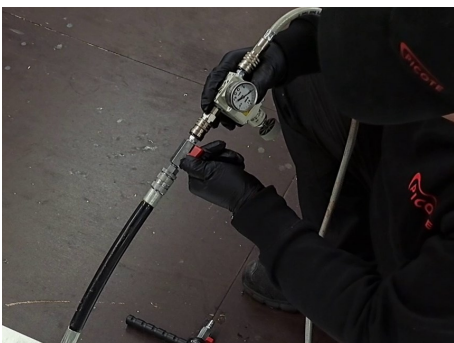
Check the CCTV camera to ensure that the Bladder lateral has fully inflated and inverted to the connection segment, while also inflating the main Bladder.



16. The Installation Tool Air Adapter is designed to replace the Turning Handle before the curing process, enabling you to do multiple installations. This allows the Turning Handle to be used for the next installation while the previous one is curing. To do this, make sure the air valve is closed on the Installation Tool Air Adaptor.



17. Disconnect the Turning Handle while quickly capping off the Push Rod air channel with your finger. Then, add the Installation Tool Air Adaptor.



18. Simply reconnect the air pressure regulator and air hose.

Re-open the air valve and ensure the Bladder has re-pressurised to the correct curing pressure.

# APPENDIX 1: A TYPICAL REPAIR INSTALLATION

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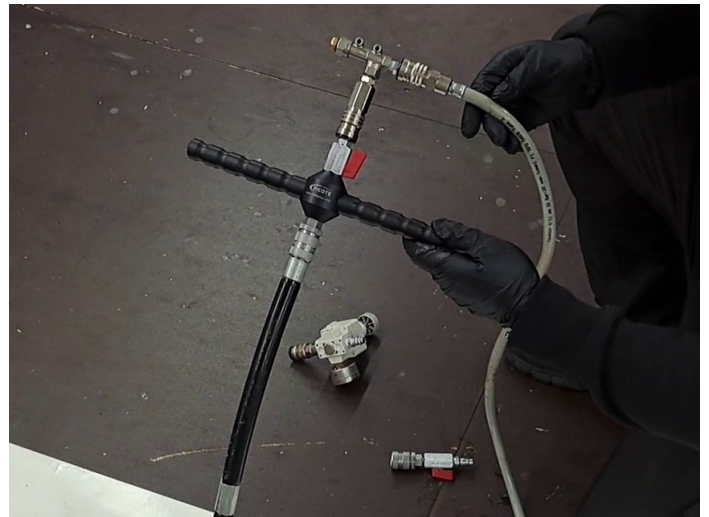
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## REMOVING THE BLADDER

1. After the Connection Collar has been cured, adjust the Pressure Regulator to zero and remove.



2. Attach the Turning Handle, Pocket Vacuum and air hose to vacuum down the Bladder.



3. Once the Bladder is on full vacuum, push or pull in the direction of pipe flow to release.

For example, in repair with a 45 degree lateral, you need to push away from the connection to help release the lateral bladder portion so it will enter main pipe smoothly, otherwise the bladder may be damaged.



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## REMOVING THE BLADDER

You can use the Turning Handle during the removal process as needed.





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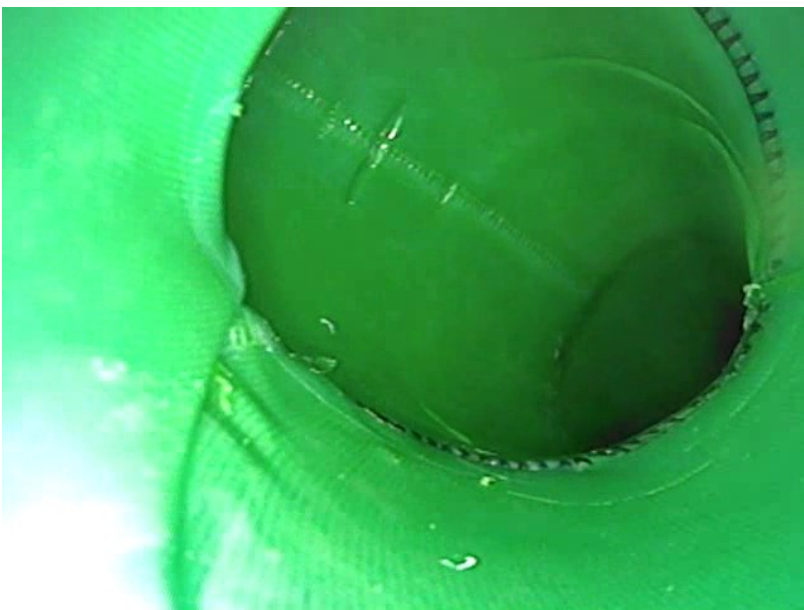
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## FINAL INSPECTION

Check the cured Connection Collar with the CCTV camera. The connection should now be sealed and repaired. Check both from the main and from the lateral.



View looking down the Main Line.



View looking down the Lateral Line.

# WARRANTY POLICY & PROCEDURE

## SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

### Limited Warranty:

Picote warrants to the original End User that the Product purchased by such End User will operate in accordance with, and substantially conform to their published specifications when shipped or otherwise delivered to the End User and for a period of one (1) year, except electric motors and batteries for which the warranty period shall be six (6) months, provided, however, that Picote does not warrant any claim or damage under this Warranty if such claim or damage results from:

1. Consumable parts or normal wear and tear resulting from use of the Products,
2. Regular periodic maintenance of Products,
3. Misuse, neglect, or improper installation or maintenance of the Products, or use of Products not for their intended purpose,
4. Products that have been altered, modified, repaired, opened or tampered with by anyone other than Picote or an authorized Picote Service Centre, or unsuitable or unauthorised spare parts, accessories or third party products when using the Products or;
5. the use of the Products not in compliance with their respective Documentation, user manuals, safety and maintenance instructions, and any usage restrictions contained therein, or
7. accident, fire, power failure, power surge, or other hazard.

Otherwise, the Products are sold AS IS. End User is responsible for using the Products within their specifications and instructions as contained in the Documentation.

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Revision number: Rev. 3

Author: Ville Hukkanen

Accepted: Dawn Greig 21/07/23

Date: 1st April 2024



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Your Reseller / Salesperson or Picote

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