

Operators Check List

Connection Collar Installation Guide

The following guide contains an example of one type of Resin and Connection Collar System. Always check your country and local regulations, requirements and application restrictions regarding the use of the Connection Collar System for this type of application. Always follow the instructions provided by the manufacturer and supplier of the Resin System of choice.

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.



2. Attach the Air Adapter and Pressure Regulator to Installation Tool. With the Bladder slightly inflated (0.1 Bar / 1.4 PSI), use a rounded stick or rod to fully push the lateral nose inside the Bladder.

Be careful not to damage Bladder during this step.

3. Push the lateral Bladder section fully in and then remove the rod. For Y Bladders, the nose should be pushed inside towards the tail.



4. Apply Picote Bladder Release Agent and spread evenly over main body area where Connection Collar will be placed. This promotes grip on Connection Collar during installation and improves the release of the Collar after curing. It also helps prevent resin staining the Bladder.

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



6. 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.

7. Remove the Connection Collar from its packaging. Orient the Collar to correspond with the Connection Collar Assembly layout.



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

9. Slide the selected Connection Collar onto the Bladder and line up the collar and bladder lateral opening. (Felt for use inhouse repairs / non structural. GRP for underground or structural repairs).





10. Add a small amount of air (0.1 Bar / 1.4 PSI) to inflate the main Bladder.

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



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

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

13. Thoroughly mix the resin according to the manufacturer's instructions. **For felt collars only use epoxy resin and for GRP collars use silicate or epoxy resin.** With the Bladder still inflated, spread the resin evenly and ensure that all of the felt on the Connection Collar is properly saturated. Avoid too little or too much resin. If there is too much resin, you can wipe off the excess. Make sure there is no dry spots. **Be sure to use PPE including safety glasses and suitable chemical resistant gloves to prevent resin contact with your skin.**



14. Lower the Bladder pressure to between 0.1 to 0.2 Bar (1.5 to 2.9 PSI). Folding with hand and with help of the inversion rod, push the lateral bladder portion along with the Connection Collar into the Bladder body. 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 pocket vacuum.

15. Release the Pressure Regulator and attach the Pocket Vacuum and vacuum down the Bladder Assembly and remove the inversion rod. Be sure not to pull out the Bladder or Connection Collar when removing the rod.



16. Fully vacuum down the Bladder while folding down the whole assembly together as tightly as possible.

17. Using the blue Picote Hybrid Tape, secure both ends of the Connection Collar to the Bladder assembly by wrapping the tape around each end of the wet-out Connection Collar together as tightly as possible. Overlap the tape by approximately 50% of the length. Avoid getting resin between the tape layers. Secure both ends of the assembly. Remove and discard any excess tape.





18. 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!

For **Ambient Curing**: Using a standard flathead screwdriver ensure the Steam Port is fully closed by turning in a clockwise direction until fully closed.

For **Steam Curing**: Using a standard flathead screwdriver, turn the Steam Port counterclockwise until fully open in order to enable steam flow during curing.

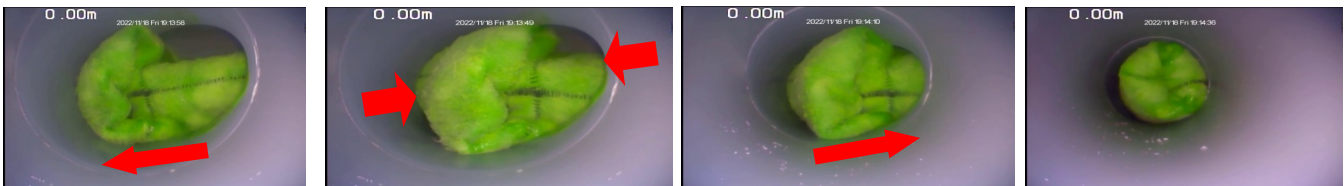


19. Attach the Picote Push Rod's to the Connection Collar Assembly and place the assembly into the pipe.

20. Add the turning handle and then position the Connection Collar using a CCTV camera viewed from the lateral connection side.



21. 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.



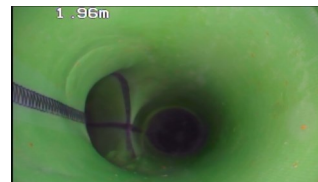
22. When the Connection Collar lateral is as centered as possible, start adding additional pressure to fully inflate the bladder. **Refer to Chart 1 or Chart 2 (Ambient Curing) or Chart 3 (Steam Curing).**

23. Check the cured connection collar with the CCTV camera.

The connection should be now sealed and repaired.

Check both from main and from lateral.

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



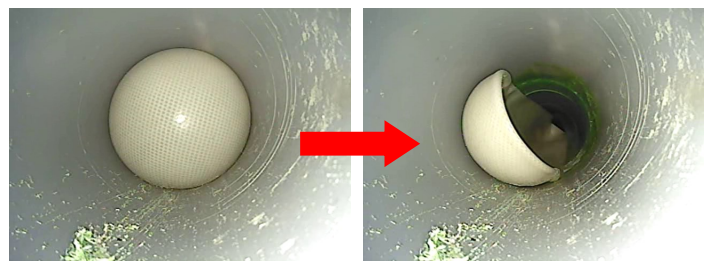
View looking down Main



View down Lateral

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

25. Once the Bladder is on full vacuum, push or pull in the direction of pipe flow to release. For example, in a 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.



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



**CHART 1 - BLADDER INSTALLATION PRESSURES FOR “T” & “Y” 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

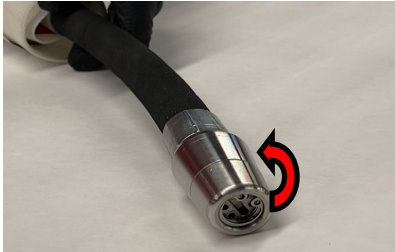
BLADDER SIZE (mm/in)	PRESSURE (BAR)	PRESSURE (PSI)
DN70 (3")	1.2	17
DN100 (4")	1.0	14
DN150 (6")	0.7	10

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



STEAM CURING (STEAM PORT OPEN)

Picote Push Rods and Connection Collar 2.0 can be used with steam to speed up the curing process.
Refer to Picote Midi Steamer Operation & Safety Manual before steam curing!



Using a standard flathead screwdriver, turn the Steam Port counterclockwise until fully open in order to enable steam flow during curing.

When using the Picote Midi Steamer: Inflation pressure should be increased from the specified #'s on Ambient Cure Chart 1 or 2, and temperature set based on the number of Picote Push Rods being used.

Number of Push Rods	ADDITIONAL Pressure To Be Added (BAR)	ADDITIONAL Pressure To Be Added (PSI)	Temp Setting (°C) Min (Mean) Max	Temp Setting (°F) 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

STEAM CURING EXAMPLE

- **BLADDER SIZE** : 150 x 100mm (6 x 4")
- **CONNECTION COLLAR SIZE** : 150 x 100mm (6 x 4")
- **STANDARD BLADDER INFLATION PRESSURE**: (From Chart 1 or Chart 2) = 0.45 Bar (7 PSI)
- **REQUIRED CURING TEMPERATURE**: 70 °C (158°F)
- **DISTANCE FROM POINT OF ENTRY TO THE DAMAGED CONNECTION**: 15 metres (49 feet)
- **STEAM CURE**: Chart 3 – Steam Port Open

Therefore the number of Picote Push Rods required for installation = 10.

From CHART 3 - BLADDER INSTALLATION PRESSURES FOR STEAM CURE the required **additional** inflation pressure for Steam Curing with 10 Push Rods is 0.48 Bar (7 PSI).

Therefore the correct pressure and temperature setting on the Picote Midi Steamer are as follows:

- **Ambient Inflation Pressure + Steam Curing Inflation Pressure for 10 Picote Push Rods = Total Pressure**
 - **0.45 Bar (6.5 PSI) + 0.48 Bar (7.0 PSI) = 0.93 Bar (13.5 PSI).**
- **Required curing temperature at the Bladder: 70 °C (158°F).**
- **From Chart 3 the Midi Steamer Temperature setting for using 10 Picote Push Rods = 94°C (202°F) to achieve 70°C (158°F) at Bladder.**