

Unblocking the MicroSprayer® Aerosolizer – Model IA-1C With the High Pressure Reverse Cleaning Adapter

Instructions for Use

The High Pressure Reverse Cleaning Adapter permits the FMJ-250 High Pressure Syringe to be used to force hot water or solvent backwards – that is, in reverse direction from the tip to the hub of the MicroSprayer® Aerosolizer – Model IA-1C. If successful, this process will loosen and force out whatever is blocking (clogging) the MicroSprayer® tip.

Before you begin:

CAUTIONS!

- The Adapter will not work in all cases. In some cases, material may be stuck in position or may have hardened over time, and may not be possible to clear using this Adapter.
- This Adapter has been successfully used by Penn-Century's technical staff for several years, but it requires patience and skill to operate successfully. The right amount of manual force/pressure must be applied to the plunger at the right rate - otherwise the MicroSprayer® may be damaged beyond repair.

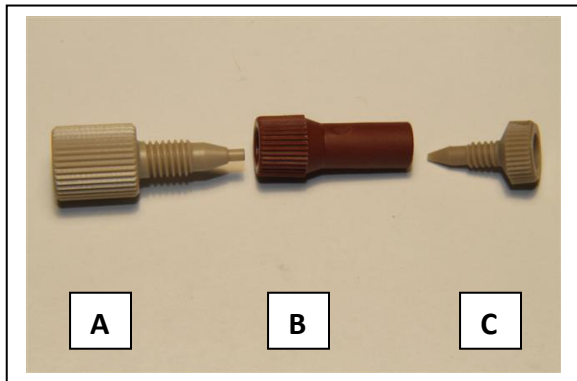
WARNINGS!

- **BEFORE USING THIS ADAPTER, USERS MUST READ ALL OF THE FOLLOWING INSTRUCTIONS TO AVOID CAUSING DAMAGE TO YOUR DEVICES.**
- **ONLY USE THIS ADAPTER KIT IF THE CLEANING METHODS RECOMMENDED IN THE INSTRUCTIONS FOR CLEARING OF THE MICROSPRAYER® AEROSOLIZER - MODEL IA-1C DO NOT WORK AFTER REPEATED ATTEMPTS.**

DISCLAIMER

PENN-CENTURY ACCEPTS NO RESPONSIBILITY FOR DAMAGE THAT MAY OCCUR AS A RESULT OF MISUSE OR INCORRECT USE OF THIS ADAPTER.

High Pressure Reverse Cleaning Adapter

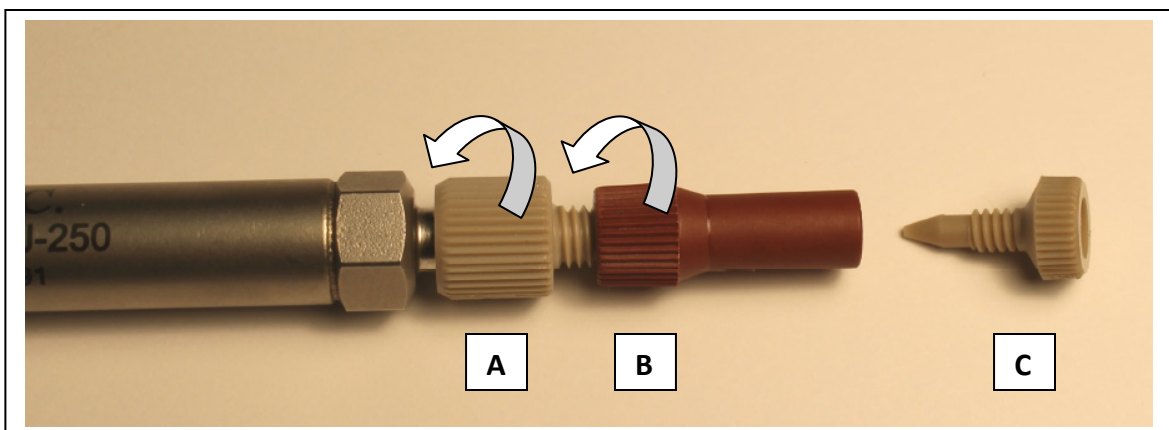


The Reverse Cleaning Adapter consists of three parts:

- A - Syringe Adapter Fitting
- B – Sleeve Fitting
- C – Sprayer Tip Adapter

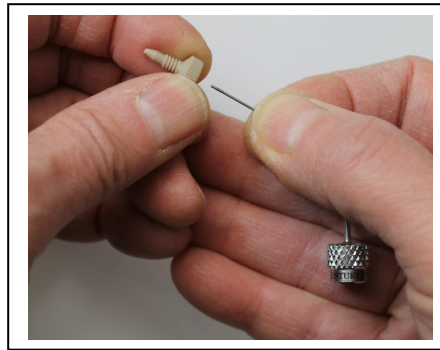
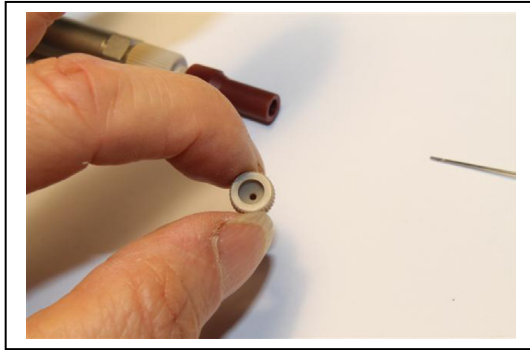
In addition you will need your FMJ-250 High Pressure Syringe and the MicroSprayer® Aerosolizer – Model IA-1C that is blocked.

1. **Soak MicroSprayer® Aerosolizer in boiling hot water.** To begin, pour a small amount of boiling water into a clean bowl and immerse the very tip of the MicroSprayer® Aerosolizer in the boiling water for 1-2 minutes. This will help to soften any material that may have hardened inside.
2. **Ultrasound may also be helpful for this purpose.** You may safely immerse and sonicate the MicroSprayer® for several minutes in hot water or any organic solvent in the ultrasound device. If you prefer, you can place the MicroSprayer® inside of a small plastic dish, cover it with boiling water or organic solvent and place the dish inside the ultrasound device. Take note if any material appears to emerge from either the tip or the hub.
3. Remove the protective black cap from the FMJ-250 High Pressure Syringe. Fill the FMJ-250 Syringe with warm filtered water or de-ionized water. *Note: Avoid subjecting the syringe to extreme changes of temperature, as this may cause the glass liner inside of it to crack, causing damage that cannot be repaired.*
4. Firmly attach the beige **Syringe Adapter Fitting (A)** to the screw threading of the FMJ-250 Syringe, as shown below.



5. Next, attach the wide end of the long red **Sleeve Fitting (B)** to the **Syringe Adapter (A)** as shown above. Tighten both parts firmly. Do not over-tighten. (Note that there will be a gaps between the parts, and the red Sleeve Fitting (B) will NOT cover the screw threads entirely.)

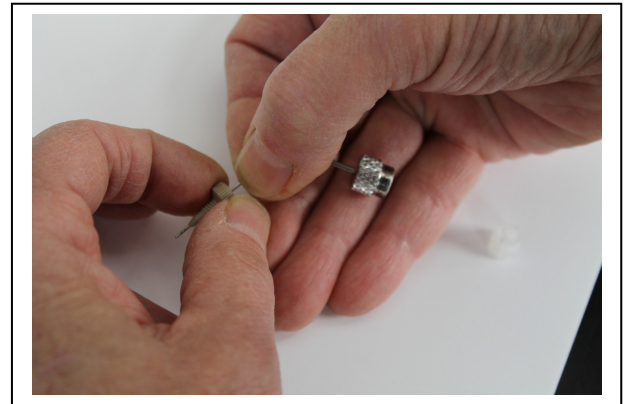
6. Hold the **Sprayer® Adapter (C)** in your non-dominant hand with the hub end facing you. Note the small hole at the center.



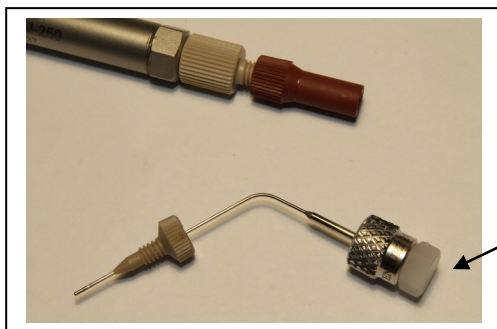
7. In your dominant hand, hold the **MicroSprayer® Aerosolizer** by the thin tubing near the distal tip.

8. **SLOWLY, CAREFULLY AND GENTLY**, push the **MicroSprayer® tip** through the hole in the hub of the **Sprayer Adapter (C)**. Try to maintain the tubing of the sprayer in a straight line and not at an angle to the adapter. This hole will feel tight and you will feel some resistance at first.

9. Keep your finger tips near to the tip of the **MicroSprayer®** to support the fragile tubing. Apply moderate pressure as you guide the tip through the hole until the **MicroSprayer® tip** is protruding about 2 cm beyond the bottom of the threaded screw portion of the **Sprayer Adapter C**.

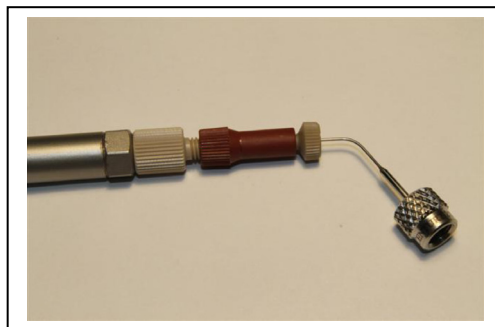
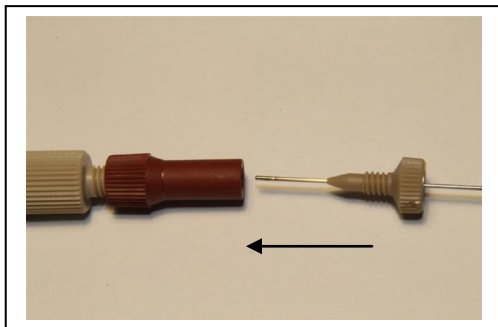


WARNING! TAKE CARE! DO NOT HOLD THE MICROSPRAYER® BY THE HUB WHEN INSERTING IT INTO THE HOLE IN THE ADAPTER. YOU MAY ACCIDENTALLY PUSH TOO HARD AND CAUSE A SHARP BEND IN THE DELICATE TUBING. THIS WILL DAMAGE IT BEYOND REPAIR!



10. After the tip of the **MicroSprayer®** is inserted in the **Sprayer Adapter (C)**, remove the protective white cap from the hub of the **MicroSprayer® Aerosolizer**.

11. Next, move the tip of MicroSprayer® toward the opening of the red **Sleeve Fitting (B)**. Hold only the rim of the **Sprayer Adapter (C)**. Allow the MicroSprayer® to move freely. Insert the **Sprayer Adapter (C)** inside the **Sleeve Fitting (B)** and screw the two parts together. Tighten both parts firmly. Do not over-tighten. The MicroSprayer® will now be held tightly in one position.



12. Hold the syringe and rest the MicroSprayer® Aerosolizer hub on a paper towel or clean surface. Slowly begin to push the plunger of the syringe. **Push firmly and continuously – but do not use excessive force.** Notice if the plunger moves forward. Observe if a drop of water passes through the MicroSprayer® and leaks out from the hub.
13. At first, you may feel no movement - only resistance. This may give way suddenly or gradually and you may observe drop of water leak out of the hub of the MicroSprayer®.
14. If this does not occur and nothing is coming out, do not use excessive force.
15. Be patient. It may take 2 – 3 attempts to free the blockage. If the first attempt has not worked:
- Detach the Reverse Cleaning Adapter parts from the syringe. Unscrew the Sprayer Adapter (C) and pull out the MicroSprayer® Aerosolizer. Soak the MicroSprayer® again in boiling hot water for a few more minutes.
 - Refill the FMJ-250 Syringe. If you used warm water the first time, you can now safely fill it with very hot water the second time.
 - Or you may try soaking the MicroSprayer® in an organic solvent instead of hot water as suggested in our Instructions, and also filling the syringe with organic solvent.
 - Repeat steps 4- 13.

16. If you are able to feel the resistance that is blocking the tip has given way and the plunger can be pushed in with minimal force, remove the MicroSprayer® from the Adapter and remove the Adapter parts from the syringe.
17. **TEST THE MICROSPRAYER®.** Fill the FMJ-250 Syringe with filter or de-ionized water, attach the MicroSprayer® Aerosolizer to the FMJ-250 Syringe as normal, and test everything. Is the aerosol uniform? Does the device feel as if it is working as it normally does - without undue resistance? If you feel the device is still partially blocked, repeat the Reverse Cleaning steps. If the device feels and looks normal when tested, you may wish to repeatedly flush it with water and/or solvent until you are assured that everything that was blocking it is now fully removed.
18. Note that if air bubbles are trapped in the syringe, you may observe streaming rather than a uniform cloud of aerosol. If so, use the Air Purge Kit provided with your syringe to eliminate any air bubbles, reload and try again.

If the resistance in the plunger of your FMJ-250 Syringe will not give way and the MicroSprayer® Aerosolizer still appears to be blocked, do not force it. Contact Penn-Century to inquire about our repair services at 215-753-6540 or email us at info@penncentury.com .