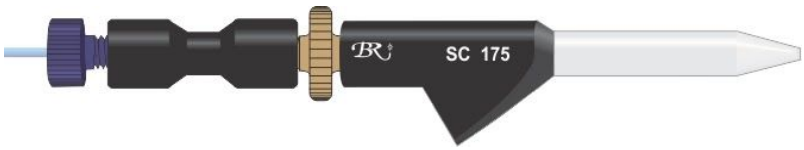
SC-175 Manual



Liability Note: The manufacturer assumes NO liability for damage however caused in the handling & usage of the nebulizers. Use at your own risk.

Caution: Do Not Handle unless you are sure that the nebulizer is dry, or washed with clean water. Acids, particularly HF, often look like water and will wet the end of the nebulizer during usage.

Warning: This device operates on compressed gases. Appropriate care must be taken. If in doubt about correct operating procedures, call an experienced operator or call Burgener Research at +1 905 823 3535.

Please Note: Burgener SC-175 Nebulizers require 60 psi to have a 1 liter / minute of Argon gas flow, so operating pressures are in the range of 45 - 65 psi, depending on the torch optimum flow rate.

Minimizing Pulsations: SC-175 Nebulizers will pulse if the pump can not deliver constant sample flow. Change your pump tubing often, or use a surgeless pump if possible. A Syringe Pump or Gravity feed system will also work.

DO NOT TOUCH THE TIP! This tip is very easily damaged and should NEVER be touched with fingers, tissues, or anything else. If the tip is accidentally touched, and the nebulizer continues to operate, then it is still functional, and its use can be safely continued.

It is recommended that the red Nebulizer safety cap is kept on the Nebulizer while not in use. This will protect the tip from accidental damage.

Dropping and Breakage: Burgener Nebulizer bodies are strong and generally will not break. If a nebulizer is dropped such that the tip is deformed, then it will be irreparably damaged. If it continues to operate after being dropped, then it has not been affected, and it is safe to use.

Operating Instructions

Your new Burgener SC-175 Nebulizer is unique. It should give you a long and convenient service on most solutions. The operation and care of your nebulizer is different from most other nebulizers in several important ways.

1. Solutions and Solvents
The SC-175 internal PEEK capillaries handle almost all liquids. But the Peek can be attacked by some acids: Sulphuric, Perchloric, Bromidic, high HF, and by a few organic solvents. If in doubt, check the internet for Peek's resistance to the liquid.

2. Sample Introduction / Maximizing Stability
Burgener SC-175 Nebulizers do not have any suction, so they require a pump to supply the sample solution. The pump speed and the quality of the pump tubing have a large effect on the stability of the nebulizer. Try to select a pump tubing size that allows running the pump at a high speed. Pulsations occur if the pump can not deliver constant sample flow. Change the pump tubing often: usually once a day for maximum stability and lowest %RSD.

3. Sample Capillary Tubing and Fittings
Sample lines are attached with UpChurch® 10/32 "Fingertight" fittings. TIGHTEN THE SAMPLE LINE GENTLY - it can close the capillary line if over tightened. We supply .062" OD X .010" ID Teflon capillary tubing. You may use any tubing that fits an UpChurch 10/32 Fingertight fitting. We recommend that you use .010" ID or smaller for the sample line. This should catch any particles before they get into the nebulizer. It is much safer & easier to replace the capillary tubing than to clean the nebulizer.

4. Low Flow Operations
The X-175 Mist can run on very low flow rates FOR SOME LIQUIDS. Water and liquids with high surface tension are more difficult than liquids with low surface tension such as Alcohol. To run below 50 microliters per minute, you may need to add 10% Alcohol to your solutions to decrease the surface tension and you probably need to run 1 l/min Argon flow. Lower Argon flow rates may not work for very low flow sample rates. For Single Cell operations you will need to run flows around 0.010 ml/min to maintain a dry chamber.

5. The Gas Line
The gas line is also attached with UpChurch® 10/32 "Fingertight" fittings. We supply 2mm OD X 1mm ID Teflon tubing. A gas line filter is NOT included in the nebulizer. Any particles from the gas line will destroy the nebulizer, so please ensure that the gas line to the nebulizer is clean of any particles. If while replacing the gas lines you detect a leak, tighten the gas fittings harder.

6. Humidified Argon
It does not matter if the Argon is humidified or not.

7. Nebulizer Pressure
Nebulizer operating pressure is usually determined by the torch. However, for Single Cell operations, you need very low flows and that requires AT LEAST 0.8 L/min gas flow. Although torches optimize at some flow between 0.5 to 1.2 liters per minute, you may need to run higher Argon flow than the best torch optimum, or you may get spitting instead of a steady mist. For higher flow operations, you may optimize a torch and nebulizer by testing different pressures to find which gives optimum precision. This will generally be found to be a narrow range. An initial pressure can usually be found by observing the central channel of the plasma while aspirating a solution of 1,000 ppm Y. Adjust the pressure until the red tongue is just level with the upper turn of the work coil. Then try several settings above and below that. Alternatively, begin at about 40 psi (0.8 L/min) and increase at 2 psi intervals until the best precision is found.

8. Nebulizer Orientation - Rotate to Optimize
For Single Cell and LOW FLOW operations use a straight chamber such as a Scott, NOT a cyclonic. If using a cyclonic, some nebulizers are sensitive to orientation. The gas flows from the nebulizer at a bit of an angle, and this affects the flows in cyclonic chambers. Check the orientation once the optimum nebulizer pressure has been found by rotating the nebulizer in 45 degree increments and check for a gain in precision.

9. Washing Your Nebulizer - Salting
For the longest life and best performance, wash your nebulizer by simply running water as a sample for 10 minutes at the end of the day before shutting down the plasma. Any other form of washing is usually unnecessary.

10. Unplugging the Sample Line
If the capillary from the sample to the nebulizer is plugged, it can be easily unscrewed and replaced. If the nebulizer itself is plugged, it is probably NOT repairable. Cleaning wires are too thick to fit into the sample line capillary. The SC-175 can not handle undissolved particles. If you have samples with particles that may plug the nebulizer, we suggest you use our Mira Mist Nebulizers instead.