

Mira Mist Manual

(Peek & Teflon)



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 Mira Mist Nebulizers require 45 - 55 psi to have a 1 liter per minute of Argon gas flow, so the operating pressures are in the range of 35 - 45 psi, depending on the torch optimum flow rate.

Minimizing Pulsations: Mira Mist 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! The gas orifice at the tip of the nebulizer is Teflon, and is SOFT. 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 Mira Mist 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 Teflon Mira Mist handles all liquids as far as we are aware. Peek bodies are 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 Mira Mist 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(r) 10/32 "Fingertight" fittings. **TIGHTEN THE SAMPLE LINE GENTLY** - it can close the capillary line if over tightened. Gently tight will seal it. We supply .043" OD X .017" ID polyethylene capillary tubing. You may use any tubing that fits an UpChurch 10/32 Fingertight fitting. We recommend that you use .017" ID or smaller capillary tube 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. The Gas Line

The gas line is also attached with UpChurch(r) 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 removing and replacing the gas lines, then for Teflon Bodies **GENTLY** tighten until snug, do not force. For Peek bodies, tighten the gas fittings **HARD**.

5. Humidified Argon

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

6. Nebulizer Pressure

The Burgener Mira Mist Nebulizer operating pressure is determined by the torch. Torches require 0.6 to 1 liter per minute. The pressure varies with each nebulizer, but the flow should be almost the same for an individual torch. Each nebulizer should be tested by looking for the pressure 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. This is easy to observe with a relatively new torch, but, once the torch becomes discolored, it may be difficult to see this tongue. In this case, the alternative is to begin at about 30 psi and increase at 2 to 5 psi intervals until the best precision is found.

7. Nebulizer Orientation

Some nebulizers are sensitive to orientation. The gas flows from the nebulizer at a bit of an angle, and this affects the flows in chambers, especially cyclonic chambers. Be sure to check orientation once the apparently optimum nebulizer pressure has been found to determine which gives the better results. For the orientation check, rotate the nebulizer in 45 degree increments and check for a gain in precision. With Mira Mist nebulizers, the rotation usually has only a very small effect.

8. 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. Teflon does not wet, so salts rarely build up. However, over long periods of time - weeks or months - Sodium Silicate salts may occur in the gas orifice. The best way to clean them out is to rinse the tip in 5% HF for 5 to 10 minutes, or to run a 5% HF solution as a sample. Use appropriate caution with HF. Sometimes, an ultrasonic bath may remove such salts.

9. Unplugging the Sample Line

The Burgener Mira Mist uses our patented Enhanced Parallel Path design. This design allows the Mira Mist to have a sample path that is constant in size throughout its length, except at the beginning and ends, where the sample line INCREASES in size. With the Mira Mist's unique sample line design, and the Mira Mist's unique solid construction, it is possible to clean out particles with a cleaning wire. Caution: You MUST use a microscope. The gas orifice is on the edge of the sample hole, and if you TOUCH the gas hole, you will destroy the nebulizer. To clean out a blockage, push a .015" OD wire from the front of the nebulizer until it sticks out the back of the nebulizer.