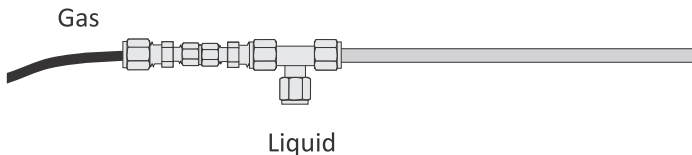




OPERATING INSTRUCTIONS

BURGENER SS 50 NEBULIZER

US Patents # 5,411,208; 6,634,572 Canadian Patents # 2,112,093; 2,384,201



ENHANCED PARALLEL PATH ICP NEBULIZERS

Produced in Canada by:

Burgener Research Inc.

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3 MONTH SATISFACTION WARRANTY

For 3 months after receiving it, if you are not satisfied with your Burgener Nebulizer, Burgener Research will repair, replace or refund your nebulizer, at your request.

CAUTION:

Do Not Handle unless you are sure that the nebulizer is dry or washed with clean water.

Burgener Research Inc. does not warrantee the nebulizer beyond the purchase price. The Manufacturer and Agent(s) assume NO liability for damage however caused in the handling and usage of the nebulizers. Use at your own risk. If in doubt about correct operating procedures, call an experienced operator or call Burgener Research at (+1) 905 823 3535.

Your new Burgener Nebulizer should give you a long and convenient service.

SS 50 Operating Instructions

1. Pressure Ratings Warning.

The components of the nebulizer are all made of parts rated for 3,000 - 4,000 psi. We can not test above 120 psi. As such, we can not guarantee or warranty the system to be operational or safe at pressures above that. You, the customer, must take appropriate precautions when using this nebulizer. Neither we the manufacturer nor the re-seller accept any liability beyond the purchase price of the nebulizer.

If this is not satisfactory, please return nebulizer for a full refund.

2. Optimum Gas Flow Rate & Pressures.

The SS 50 nebulizer has been run at 120 psi, with the gas flowing from the nebulizer into atmospheric pressure gas. SS nebulizers usually run at a nominal 50 psi for good mist. You can expect a reasonable mist at pressures from 40 psi (2.5 bar) to 60 psi (4 bar). However, the higher the gas pressure, the better the mist will be, and similarly, as the gas pressure decreases, the mist will have larger droplets. The SS 50 is made of components rated for 4,000 psi (270 bar), so pressures up to 500 psi (34 barr) are very safe.

Generally, higher gas pressures produce finer mists. Generally higher gas flow rates produce finer mists.

3. Liquid Flow Rates.

The standard SS 50 has a 1/8 OD, giving it a large liquid passage and they can handle liquid flow rates as high as 10 ml/min. With a 1/4" OD, then nebulizer should be able to handle 40 to 50 ml/min. If the nebulizer is aiming vertically, then the SS 50 should work well even at very tiny liquid flow rates. We have run some on flow rates as low as 2 or 3 microliters/min. It depends on the liquid being delivered in a consistent manner, and on the type of liquid. Water is one of the most difficult to atomize, and Alcohol is one of the easiest. If the surface tension of the liquid is high, the low flow range goes up. If the surface tension is low, the lowest flow rates go down.

4. Orientation.

The SS 50 has a large diameter for the liquid. For higher flow rates, orientation is not a problem. For lower flow rates, the nebulizer can grab the liquid faster than it may be delivered, causing pulsing in the aerosol and larger drops. If the nebulizer is aiming up, then the liquid can fill the insides of the liquid passage

and then even very low flows should run without pulsing. You should be able to run low flow rates as low as a few microliters per minute.

5. Droppage and Breaking

The Burgener SS 50 Nebulizer is Stainless Steel. If you drop it, it may be dented where it hits. If you dent the body of the nebulizer, it will not effect its performance. If the tip is dented, it may destroy the nebulizer. If it works after dropping, it has not been effected, and may be continued to be relied upon.

6. Major Caution

The gas orifice and liquid interaction portion of the nebulizer is at the very tip of the nebulizer. Stainless Steel is reasonably strong, but the fine details in the shape of the tip of the nebulizer are essential for the operation of the nebulizer. Touching the tip with your finger, or anything else MAY DESTROY your nebulizer. The only major caution on a Burgener Nebulizer is **DO NOT TOUCH THE TIP.** Having said that, you will accidentally touch the tip sometimes. If it works afterwards you have done no harm. If the gas orifice is untouched, the nebulizer will not be harmed.

7. Gas and Liquid line arrangement

The SS 50 has the gas line in the center, running through the interior 1/16" OD capillary. The Liquid is delivered to the side, usually in a 1/8" line.

