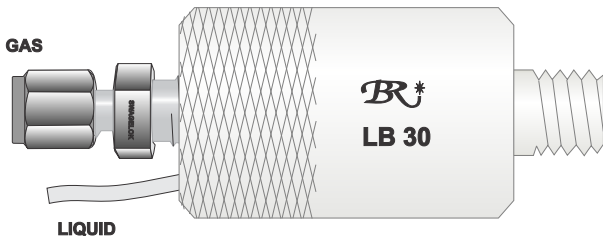




# OPERATING INSTRUCTIONS

## BURGENER LB 30 NEBULIZER

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



### ENHANCED PARALLEL PATH 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 warrant 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.

### 1. Pressure Ratings Warning

The components of the nebulizer are all made of parts rated for 250 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 120 psi. 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 the nebulizer for a full refund.**

### 2. Optimum Gas Flow Rate & Pressures

The LB 30 nebulizer has been run at 120 psi, with the gas flowing from the nebulizer into atmospheric pressure gas. LB 30 nebulizers usually run at a nominal 60-90 psi for good mist. You can expect a reasonable mist at pressures from 50 psi (3 bar) to 100 psi (7 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.

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

### 3. Liquid Flow Rates

The standard LB 30 has 1/8" Swagelok fittings for the gas line and 1/8" tubing for the liquid line which should allow 30 ml/min liquid flows with no problems. The range of liquid flow is from less than 1 ml/min up to about 30 ml/min. You may get excellent mists at much lower and higher flows depending on the surface tension of the liquid being run. 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 lowest flows with a good mist are higher than 1 ml/min. If the surface tension is low, the lowest flow rates go down to less than 1 ml/min.

### 4. Orientation

The LB 30 has a large diameter capillary for the liquid. For flow rates of 2 ml/min or more, 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 may be able to run low flow rates as low as a few microliters per minute for low surface tension liquids such as alcohol.

### 5. Droppage and Breaking

The Burgener LB 30 Nebulizer is PTFE Teflon. 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. Teflon is soft and 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. Suction of liquid

Burgener Nebulizers have zero suction or back pressure. The liquid must be pumped to the nebulizer. Gravity flow, peristaltic pumps, and syringe pumps all work well to deliver the liquid to the nebulizer.