

# Model 241V, 241T Operating Instructions

## SPECIFICATIONS:



Power: Input: DC Operation: 0 - 24 VDC +/- 1 VDC, positive black wire, negative white wire  
 Frequency: 2.4 MHz +/- 50kHz  
 Generator Power: 12-15 Watts  
 Processing Rate (Water 150 degrees F): 200-250 ml/hr @ 2 cfm  
 Processing Rate (Water 70 degrees F): 70-100 ml/hr @ 2 cfm  
 Mounting Plate: Aluminum, TEFLON (PFA Coated)  
 Element: GOLD Plated  
 Seals: Viton or PTFE TEFLON

Particle Size: In the case of water, where  $T = .0729N/m$ ,  $p = 1000kg/cu. m$  and  $f = 2.4 MHz$ , the size of the particles centers around 1.7 microns.

$$d_h = 0.73 \sqrt[3]{\frac{T}{\rho f^2}}$$

Sonaer's Model 241 Nebulizer is a small compact, 2.4 MHz vibrating ultrasonic element used to convert low viscosity liquids into a fine mist. As the liquid is converted into fine like particles, they are to be carried off for processing with a small airflow. This air flow is usually less than 2 cfm.

**OPERATION:** Unit is to be operated with liquid on top of the element at all times. Should liquid run dry a possibility exists that the thin element could be damaged. Damage will cause heating and be a sign of low output from the crystal. It is recommended that extra crystals be purchased if low liquid levels are needed for application.

Allowing liquid to leave cell and spill onto electronic components or leak under TEFLON coated mounting plate will by capillary action leak into nebulizer crystal assembly, possibly melt plastic and damage unit. No Warranty will apply in these cases. Use device in a closed loop system to prevent damage from spillage.

For extended operation, use larger transformer and keep unit at a temperature of 130 degrees F or less by circulating nebulizing fluid if necessary.

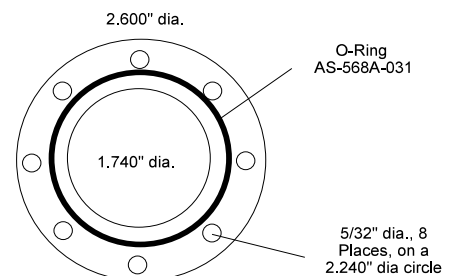
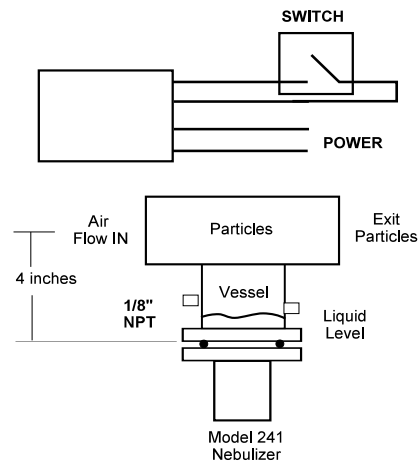
Variable power can be provided a variable 24VDC supply or PWM.

Mount the unit to a vessel using the O-Ring and flange mount bolt hole pattern provided.

Fill the vessel with the liquid being converted into particles. This liquid will vary in height over the element depending on the characteristics of the solution. With water, a typical operating height will be 3/4 to 1 with a volume of 20 ml over the element.

If a switch is needed to turn the unit ON/OFF, connect between jumper wire located on the connector of power transformer.

A typical set-up is shown for generating fine particles and carrying them off for processing. Optimum height for 2 cfm air flow is 4"



For mounting a vessel to the unit.

## **Cleaning**

Use soft materials cleaning the crystal. Q-Tips dipped into alcohol works well in cleaning. If the solution is rough on the gold it may be necessary to replace the gold crystal more often. Periodic maintenance is required to assure the gold is intact without pitting.

## **Troubleshooting**

If the unit does not make particles with the liquid, but it makes particles with water, change the characteristics of the solution to lower the viscosity and surface tension.

If when operating the particle generator, the unit will stop making particles before the experimental time ends or just stops, it means that the unit is getting too hot and excessive current shuts the unit off before damage occurs. Turn off and let cool before operating again. Air cooling maybe required.

## **LIMITED WARRANTY**

For a period of one year from original date of purchase (the warranty period) from Sonaer or an authorized dealer, Sonaer warrants that products distributed by Sonaer in the USA that fail to function properly under normal use due to a manufacturing defect when installed and operated according to the owner's instructions enclosed with the unit will be repaired or replaced with a unit of comparable value, at the option of Sonaer, without charge to you for parts or actual repair work. Parts supplied under this warranty may be new or rebuilt at the option of Sonaer.

This warranty covers the product during the warranty period whether in the possession of the original owner or subsequent owner proved by receipt. In the event service is required, the product must be delivered within the warranty period, customer will provide transportation, return of the repaired unit will be payed by Sonaer.

This warranty does not cover the costs of parts or labor which would be otherwise provided without charge under this warranty, should the product be repaired by any other source other than Sonaer.

The warranty will be void should any alterations or modifications be performed to the product without appropriate authorization from Sonaer.

The warranty will be void for all experimental uses of this equipment without the written consent of Sonaer, Inc.

## **HOLD HARMLESS**

Sonaer makes devices that make very fine particles from liquids. Some of the liquids as gasoline, alcohols, jet fuel, acetone can become very explosive when exposed to heat or sparks and will cause death or bodily harm. Biological agents when made into fine particles can and will travel through the air which will cause death or bodily harm. Customers who use such equipment for research or processes should take the proper precautions to prevent any harm to people or damage to property and will hold Sonaer and its representative held harmless for all uses of this equipment. This equipment is experimental for scientific research and will benefit society with improvements in medicine and new processes.

**Under no circumstances will this equipment be sold directly or indirectly to any nation that the Untied States of America deems to house terrorists or any other organization here or abroad with the intent to cause bodily harm or property damage. This equipment is for scientific purposes and friendly use only.**