

Stable Ozone Generators

Instruction Guide



UVP, LLC
2066 W. 11th Street, Upland, CA 91786
Tel: (909) 946-3197 / (800) 452-6788
Fax: (909) 946-3597

Ultra-Violet Products Ltd.
Unit 1, Trinity Hall Farm Estate
Nuffield Road, Cambridge CB4 1TG UK
Tel: +44(0)1223-420022 Fax: +44(0)1223-420561

Web Site: www.uvp.com

Introduction

Stable Ozone Generators are designed as sources of stable ozone production in the range from 0.1 ppm to 5 ppm (parts per million). These devices utilize the photochemical reaction of the 185nm emission line of mercury to produce ozone from oxygen.

A unit consists of a stable source of 185nm radiation, a quartz reaction duct and radiation housing. The stable radiation source consists of a Pen-Ray[®] mercury discharge lamp inserted into the radiation housing and an external ballast power supply. This system, coupled with an appropriate supply of dry air or oxygen of uniform flow rate, will provide a stable source of ozone for hundreds of hours of operation in instrumentation or other ozone-utilizing systems.

Ozone Caution

The breathing of ozone in high concentrations is dangerous and should be avoided. Concentrations to 1.0 ppm are considered to be the maximum allowable. Concentrations of 0.01 ppm can be detected by persons having a keen sense of smell. For most people, ozone concentrations of 0.1 ppm can produce irritation of the mucous membranes in the nose and throat.

Warning: This lamp emits shortwave UV radiation. Exposure to excessive amounts of shortwave UV can cause injury to the skin and eyes. Proper protective clothing and eyewear are recommended. For more information on protective eyewear, refer to the accessories section of this manual or contact UVP.

Treatment

If excessive exposure to ozone should occur, the exposed person should be removed from ozone source and an adequate supply of oxygen conveyed to the tissues. A medical doctor should be consulted as soon as possible.



Installation

For installation of SOG-1 and SOG-2, refer to Figure 1. For installation of SOG-3, refer to Figure 2.

1. Insert the light source into the port, position the lamp handle inside the port about 0.5 inches.
2. Tighten the set screw to hold the lamp in position.
3. Connect the flow gas unto one side of the quartz tube with the flexible plastic tube (not included; PTFE recommended).
4. Connect the other quartz tube side as ozone output with the flexible plastic tube (not included; PTFE recommended).
5. Connect the light source cable to the power supply.
6. Plug the power supply to the power source and turn the lamp on.
7. Adjust the shield length in order to produce the ozone concentration required.
8. Tighten the set screw to hold the shield into position.
9. Turn off the light source power once the task is completed.

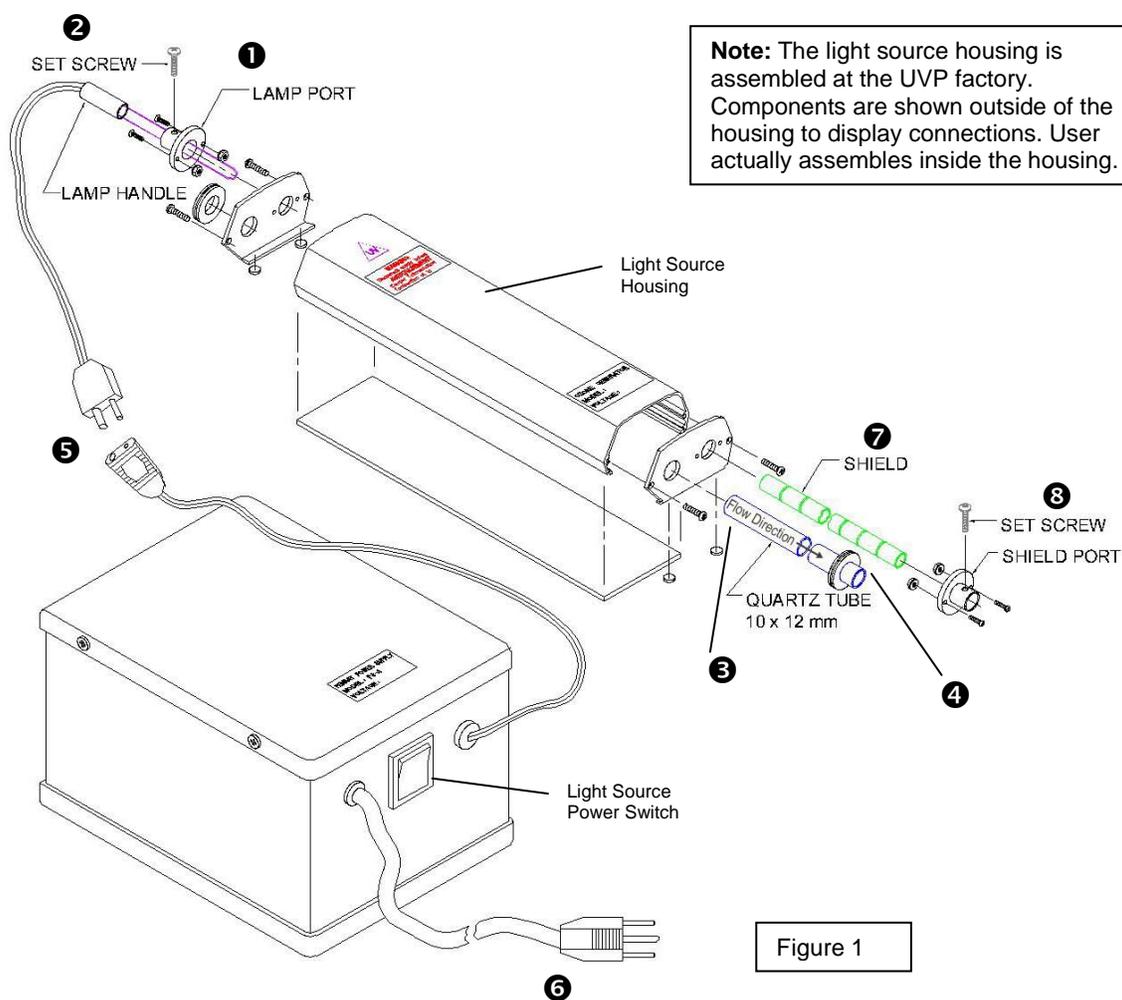
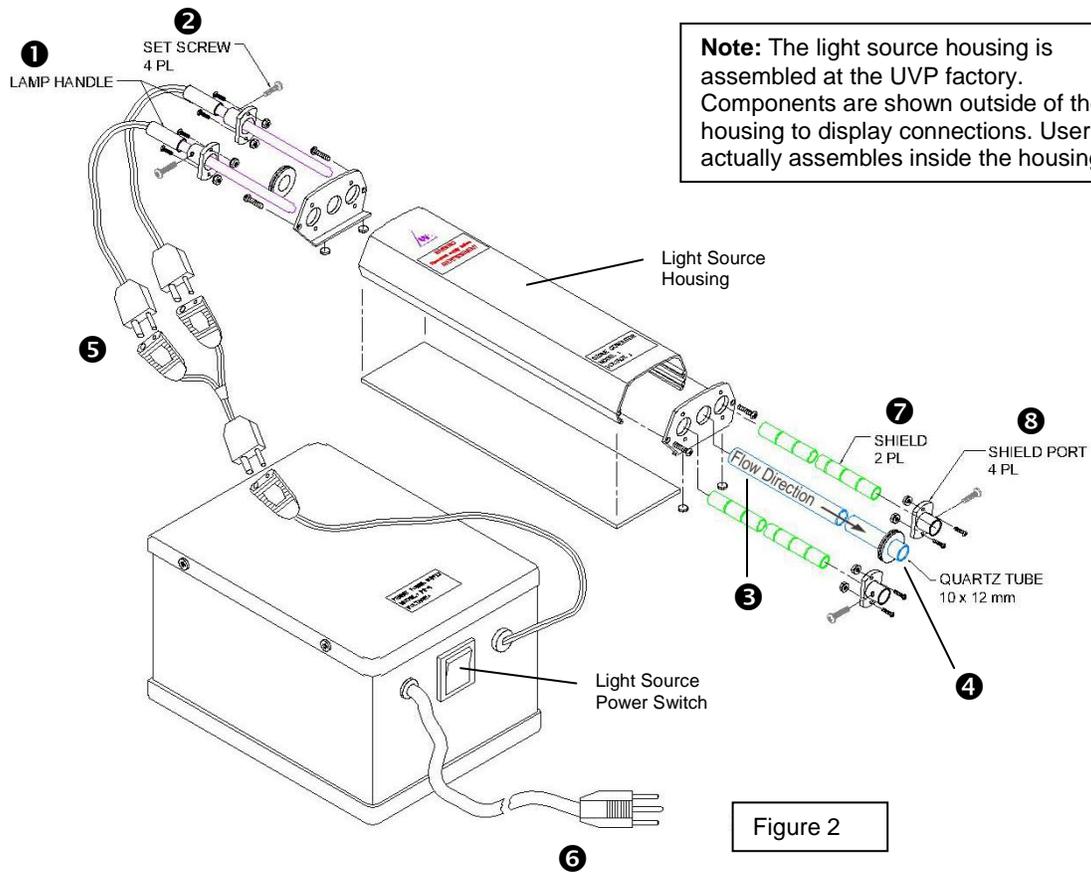


Figure 1



Operation

After unpacking, be sure that the reaction duct is free of packing materials. Connect the duct to an appropriate source of gas. A gas flow meter and a differential pressure gauge are usually connected in the line between the gas supply and the unit. The gas temperature probe is usually inserted at the exit of the unit duct, although at flow rates of 1 liter/min. or higher the temperature rise through the unit is small and is sometimes neglected in preference to thermal measurement prior to entry into the duct. Some metals and, in particular, natural rubber tubing and many plastic tubing, can readily react with ozone to decrease concentration and produce side products detrimental to many ozone experiments. All gas lines downstream of the reaction duct should be made of glass, PTFE or similar material, which do not assist in the decomposition of ozone.

After the proper gas flow has been established, the Pen-Ray lamp should be connected to the power supply and the supply plugged into an outlet having the specified AC voltage. Never disconnect the lamp from the power supply while the lamp is on.

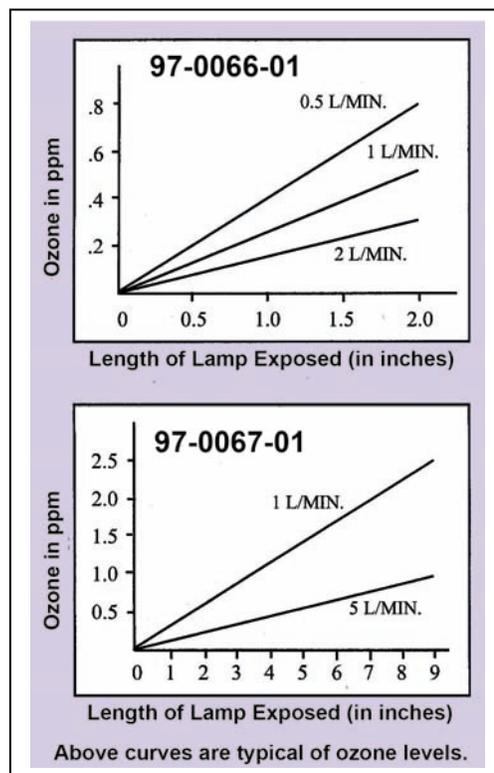
NOTE: Power supplies are available for 120, 220, and 240 volts AC, as well as for 50 and 60 Hz operation. The proper voltage and cycle ratings are necessary for the unit to operate properly. Operation of the unit at less than 85% of the rated voltage may produce an unstable discharge with erratic ozone output. Under no circumstance should the power supply be connected to a voltage higher than specified.

For maximum stability, a constant voltage transformer can be used in the main electrical supply line.

A graduated shield is provided so that the user can reduce the amount of ozone produced at any given flow rate. Initially, this shield is set with the first index mark (the one nearest to the open end) in line with the flange. In this position, the lamp is completely covered. The shield has a number of other index marks down its length which are provided for the convenience of the user in establishing various operating conditions.

The 97-0066-01 (-02) Ozone Generator differs from the 97-0067-01 (-02) Ozone Generator only in its size and thus in the potential quantity of ozone that it can produce. As seen in Figures 3 and 4, the 97-0066-01 (-02) provides up to approximately 0.8 ppm of ozone, and the 97-0067-01 (-02) approximately 3.0 ppm. The curves are typical response curves of ozone rates for dry air at 25°C and 760 mm Hg.

The amount of ozone produced can be regulated by varying the flow rate of the gas, the percentage of oxygen in the gas, or as previously mentioned, the amount of radiation given to the gas by adjusting the lamp discharge tube shield. If a particularly high ozone output is required, it is suggested that pure oxygen be used as the reaction gas, at lower flow rates, on several units connected in sequence.



Service Procedures

Care and Cleaning

The lamp discharge tube and the reaction duct, as well as the inside of the housing, can degrade in radiation transfer efficiency due to contaminants and dust accumulation. The unit should be disassembled periodically and all surfaces cleaned. The surfaces should be gently wiped clean using lint-free tissue and alcohol as a solvent. It is best practice to not touch the lamp discharge tube or the air duct with bare hands as fingerprints may be etched into the surface under certain conditions.

When re-assembling the unit and to ensure proper performance, take care that the parts, especially the discharge lamp, are replaced in the original position. Refer to the scribe marks on lamp's handle. The line cable to the power supply and the wire connecting it to the lamp should be inspected regularly to ensure that no cracks exist in the insulation or that no other hazards are present.

Accessories

PART NUMBER	DESCRIPTION
98-0002-01	UVC-303 Spectacles, UV blocking
98-0002-02	UVC-503 Goggles, UV blocking
98-0002-04	UVC-802 Faceshield, UV blocking

Technical Support

UVP offers expert technical support on all UVP products. If there are any questions about product use, operation or repair, contact UVP's offices at the locations below.

NOTE: A Returned Goods Authorization (RGA) number must be obtained from UVP's Customer Service prior to returning any product.

If you are in North America, South America, East Asia or Australia:	If you are in Europe, Africa, the Middle East or Western Asia:
Call (800) 452-6788 or (909) 946-3197 , and ask for Technical Support during regular business days, between 7:00 am and 5:00 pm, PST.	Call +44(0) 1223-420022 , and ask for Customer Service during regular business days between 9:00 am and 5:30 pm.
E-mail your message to: info@uvp.com or techsupport@uvp.com	E-mail your message to: uvp@uvp.co.uk
Fax Technical Support at (909) 946-3597	Fax Customer Service at +44(0) 1223-420561
Write to: UVP, LLC. 2066 W. 11 th Street, Upland, CA 91786 USA	Write to: Ultra-Violet Products Ltd. Unit 1, Trinity Hall Farm Estate, Nuffield Road, Cambridge CB4 1TG UK

Warranty

The Stable Ozone Generators are guaranteed for 90 days against defects in materials and workmanship.