

Clarus UV Disinfection Unit #3G Part Number 5250-0004

Installation & Operation-

The 3G unit operates on 120 volt AC power (50 or 60 hertz). It draws 0.25 amps and consumes 30 watts. The unit is easily installed (usually in less than 30 minutes) and operates with minimum attention.

Because of the anti-fouling properties of Teflon, periodic cleaning is virtually eliminated. Annual inspection and cleaning is recommended and the UV lamp is replaced every two years. Electrical energy use is 0.7 kilowatt – hour per day.

When fully inserted, the disinfection sub-assembly is properly located by two pins mounted near the top of the disinfection chamber. It causes the wastewater entering one side of the unit to flow vertically downward, to make a 180 degree turn, and then to flow vertically upward and out the other side of the unit. This well-defined flow path is designed to give the proper fluid exposure time and no short circuiting.

The ultraviolet light source is surrounded by a clear fused quartz tube to control lamp surface temperature. A clear Teflon film covers the quartz tube to minimize surface fouling. This design feature incorporates the beneficial attributes of both quartz and Teflon.

When the disinfection chamber is filled with water, the ultraviolet light source can operate continuously, whether or not water is flowing. Continuous operation within a lamp surface temperature range of 105-120 deg. F. provides optimum ultraviolet light output and long lamp lifetime. The Model 3G alarm relay circuit triggers an external alarm to warn the user when the UV lamp is not properly operating. Electronic components in the circuit sense changes in the UV lamp which correlate with the germicidal ultraviolet output. A normally closed relay actuates electrical current in an alarm circuit upon failure, or incipient failure of the UV lamp.

The alarm relay circuit has been designed to be compatible with a wide variety of alarms used on upstream aerobic treatment plants, and is capable of operation in the normally closed or normally open modes. The disinfection sub-assembly is water tight throughout its length, which extends above grade. This protects the electrical connections against a fluid backup which could cause the wastewater effluent level to rise to the maximum height of the upstream treatment plant.

Electrical components form another sub-assembly. A NEMA 4X electrical junction box houses the alarm board, and terminal blocks for electrical connections. The ballast and lamp power cable are pre-connected. A green LED indicator, located on the outside of the electrical junction box, glows when the UV lamp is producing ultraviolet germicidal light at a safe level. It ceases to glow when the light output falls below a safe level.

Specifications-

Maximum flow through the unit is rated at 3 gpm (4320gpd) with the following effluent conditions:

Suspended Solids – less than 30 mg/liter.

BOD (5 days) – less than 30 mg/liter.

* If suspended solids and BOD are each less than 10 mg/liter, **maximum flow rating is increased to 6 gpm (8640gpd).**

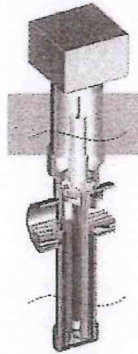
Under the above conditions, the fecal coliform reduction by the 3G unit exceeds 3-logs, or 99.9%, at the end of UV lamp life (two years of continuous operation).

SALCOR INC.

P. O. Box 1090
Fallbrook, CA 92088-1090
Telephone: (760) 731-0745
Fax: (760) 731-2405

INSTALLATION

MANUAL



UV DISINFECTION UNIT

MODEL 3G

September, 2011

I. INSTALLATION INSTRUCTIONS

WARNING! Improper connection of the appliance grounding conductor can result in the risk of an electric shock.

Check with a qualified electrician or service representative if you are in doubt about whether the appliance is properly grounded.

Open and carefully unpack the shipping carton. Check for any damage that may have occurred in shipping. If there are any problems, call **SALCOR INC.** at 760-731-0745 or fax to **SALCOR INC.** at 760-731-2405 and explain the problem(s).

The following list describes the components that are contained in the shipping carton.

1. Disinfection chamber: three-inch diameter ABS pipe with 4-inch inlet and outlet hubs.
2. Disinfection sub-assembly consisting of an anodized aluminum frame supporting a Teflon[®] sleeve containing a pure fused quartz tube. This complete item is packed inside of the above listed three-inch disinfection chamber.
3. Riser pipe: Four-inch diameter ABS pipe.
4. One-inch white PVC handle which is used for inserting and removing the disinfection sub-assembly. It is bubble-wrapped inside of the above listed four-inch riser pipe.
5. The Long Life UV lamp is bubble-wrapped and packed inside of the one-inch white PVC handle.
6. Electrical sub-assembly junction box (rated NEMA 6P) with pre wired alarm board, electronic ballast, and the lamp cable supplying power to the UV lamp.
7. Two 4-inch Schedule 40 ABS pipe couplings.
8. Watertight connection for bringing the power and alarm wires into the junction box. Flexible ***Watertight*** conduit should be used to connect to these fittings.

There will be some additional items needed for installation, which are:

1. ABS cement (also multipurpose cement if bonding to PVC pipe)
2. Teflon tape for sealing PVC and Watertight connectors
3. Isopropyl (rubbing) alcohol
4. Glycerin (available from drug stores)
5. Power and Alarm Wires
6. Power and Alarm Wire Watertight Flexible Conduit for connecting to the Junction Box watertight connectors
7. Irrigation Valve Box if unit is to be installed at or above ground
8. Silicon Adhesive Sealant, also called RTV

**WARNING! THIS DEVICE PRODUCES POTENTIALLY HARMFUL UV LIGHT
PROTECT YOUR EYES AND SKIN FROM EXPOSURE TO UV LIGHT**

Salcor 3G Disinfection Unit

NOTE: Not all dimensions to scale

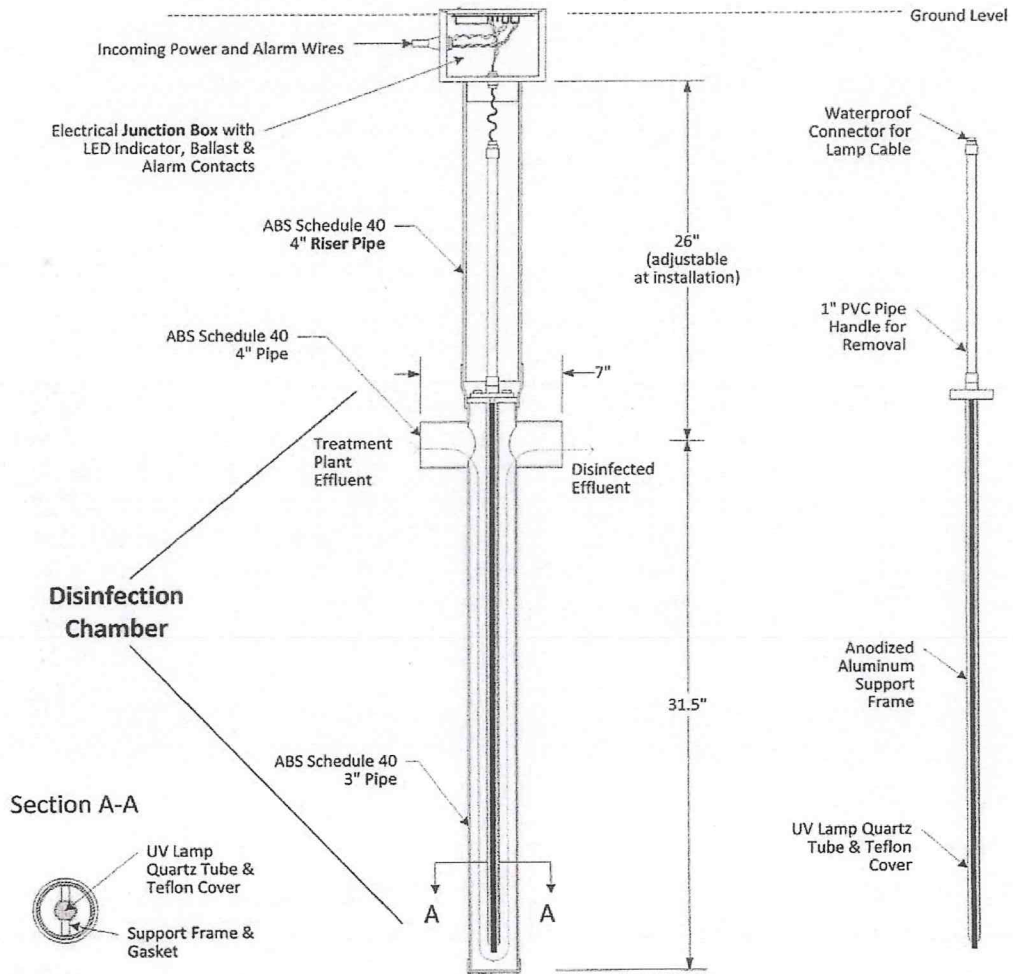


Figure 1

II. TWO INSTALLATION OPTIONS

1. In the ground: couple the 4-inch inlet pipe to the exit pipe of the pretreatment unit, and couple the 4-inch outlet pipe to the drain field pipe. See *Figure 2*.
2. In a Pump Tank: couple the UV unit inlet pipe to the pretreatment unit exit pipe at the entrance of the pump tank. See *Figure 3*.

Note: *Figure 1* indicates that the electrical junction box should be placed at ground level. If this should pose a problem with lawn mowers, etc., then the junction box could be placed below grade in an irrigation valve box. Another possibility is to use a hollow artificial rock to cover the top of the junction box.

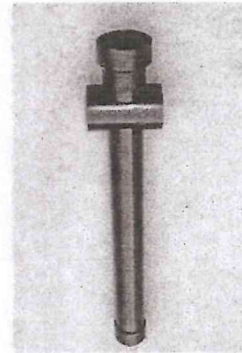
The Junction box is rated NEMA 6P. To be safe, however, the junction box should be protected from flooding.

For in-pump tank installations, special care should be taken to prevent flooding of the junction box.

III. DETAILED INSTALLATION STEPS

1. Install the three-inch disinfection chamber in place at the site.
 - a. Position the disinfection chamber in the ground.
 - b. Connect the hubs to the inlet and outlet pipes.

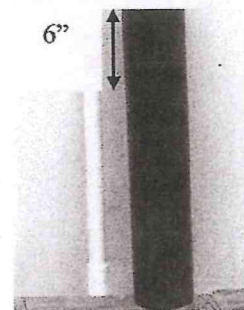
Three-Inch Disinfection Chamber



Cut the 4-inch riser pipe to meet the job needs. The 1-inch lamp handle may be cut to length after cutting the riser pipe.

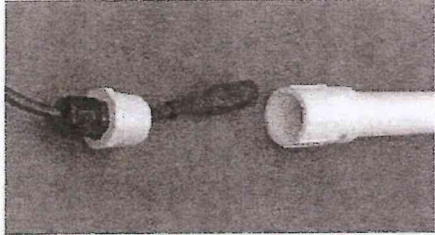
- a. Use the 4-inch ABS inlet pipe connection to the pretreatment unit as a reference point. See figure 1.
- b. The lamp handle upper end should be cut so it will be approximately six inches from the top of the riser pipe.
- c. Bond the riser pipe to the chamber sub-assembly and the second female PVC adapter to the handle.

White PVC Handle and Riser Pipe

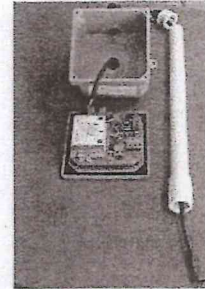


- Carefully slide the lamp cable through the top of the one-inch PVC handle pipe. The lamp cable wire with the 4 pin lamp socket connector should extend out about 6 inches past the threaded female pipe connector at the bottom end of the 1-inch white PVC handle.

Top End of PVC Handle



Threaded Bottom End of PVC Handle



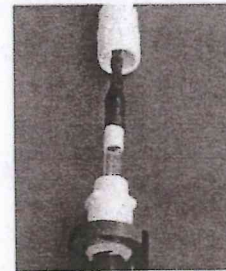
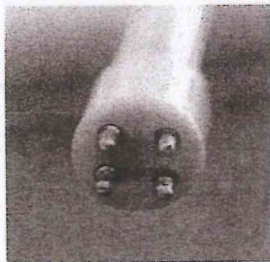
Bottom End

- Carefully connect the 4-pin socket connector of the lamp cord to the UV lamp pins. Note: the pins are not arranged in a square formation. Make certain to put the socket on the pins the correct way. Make sure that the 4-pin socket connector is fully connected onto the pins. The socket to lamp pins connection is electrically critical to maintain the proper operation of the lamp. It is extremely important that there is a fully mated complete connection between the socket and the UV lamp.

- Carefully slide the UV lamp into the quartz tube in the frame assembly.

CAUTION!! The Teflon ® Sleeve Is VERY FRAGILE, So Handle It With Care.

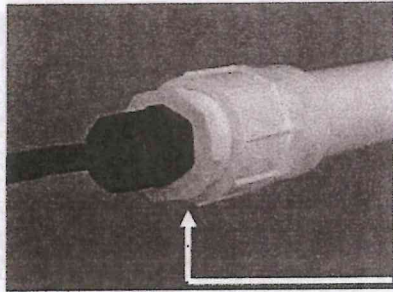
Lamp connector
Pins are not
Arranged in
a square
shape



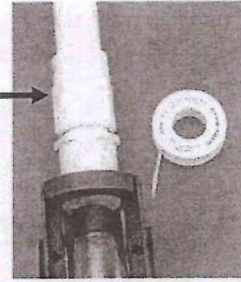
Lamp Cord Connected and
Lamp Inserted Into the Frame.
Make Sure That the Lamp is
Fully Seated in the Quartz Tube

5. Wrap both ends of the threaded white PVC one-inch lamp handle pipe pieces with Teflon ® tape.

- a. First, screw the bottom threaded end of the 1-inch lamp handle onto the upper end of the aluminum frame assembly.



Tighten the Gland



Top of the Aluminum Frame Assembly

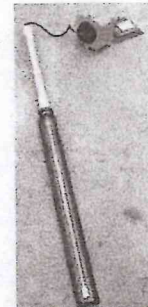
- b. Second, screw the threaded reducer into the top end of the handle pipe. It is important that Teflon ® tape is used to seal the threads to maintain waterproof operation of the lamp.
6. Make sure that the UV lamp is bottomed out in the quartz tube.
- a. Tighten this gland nut to approximately 22 in/lb to make the UV lamp chamber watertight. **CAUTION!!** Do not over tighten!

7. Inspect the Teflon ® sleeve.

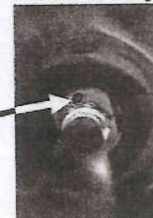
- a. If necessary, use a clean soft cloth and isopropyl (rubbing) alcohol to clean and remove any fingerprints.
- b. Lubricate the rubber gaskets with either water or glycerin.

Note: Do not use silicone or petroleum based lubricants on the gaskets.

PVC handle on the anodized aluminum frame assembly

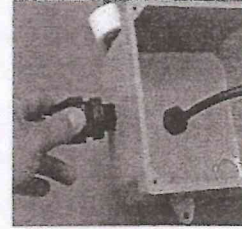


8. Gently insert the entire frame/handle assembly into the riser/chamber assembly using the white PVC handle. Make sure that the wide part of the sub-assembly is at right angles to the inlet and outlet pipes. Align the two holes in the upper hub of the sub-assembly are set over the two pins in the disinfection chamber. The orientation of the frame in the disinfection chamber is very important for successful UV unit operation.



9. After tucking the extra lamp cord wire into the top of the riser pipe, place the junction box onto the 4 inch riser pipe and secure it with 2 set screws.
10. Install the Watertight Conduit connector to the side of the Junction Box and secure with the nut on the inside. Use a little Silicon Adhesive Sealant, also called RTV, on the O-ring of the watertight conduit connector to assist in waterproofing.

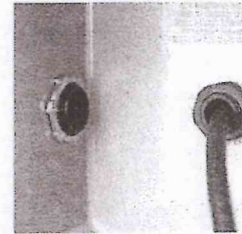
Install watertight Conduit connector



11. Bring the power wires and alarm wires into the junction box via the waterproof conduit connection. Seal the outside of the flexible conduit pipe to the waterproof connector with Silicon Adhesive Sealant, also called RTV. The *installer* is responsible for ensuring that the external flexible wire conduit connection(s) containing the power and/or alarm wires to the junction box are

WATERTIGHT.

Conduit Connector Nut Inside of the Junction Box



12. Attach the cable wires to the appropriate terminals on the alarm board. See figure 4. The alarm contacts are compatible with both normally open (N/O) and normally closed (N/C) external alarm circuit units (furnished by others). Note: N/O means the contacts are **OPEN** when there is **NO POWER** to the alarm board relay. The contacts are rated for up to 240 volts and up to 2 Amps. Select the common contact terminal and then the N/C or N/O contact that complies with the receiving alarm panel circuit.
13. Attach the lid to the junction box with 4 screws.
14. The UV unit operates on 120 VAC single-phase (50 or 60 Hz) power and consumes 30 watts. The SALCOR Model 3G unit requires a specific separate independent 10-15-amp circuit breaker on the main electrical panel. No other electrical unit should be connected to Salcor unit circuit breaker. The Salcor circuit breaker should be a separate from the pumps, etc.
15. Allow the effluent to start flowing through the unit.
16. Turn on the breaker at the main electrical panel. The Green Indicating Light on the junction box lid should now be shining, indicating that the unit is operating properly.
17. The installation is now complete.

In Ground Installation

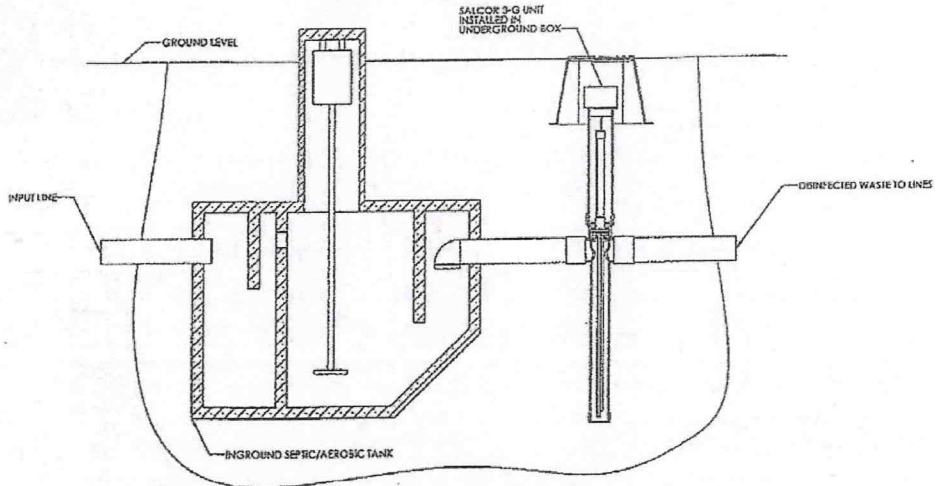


Figure 2

In Tank Installation

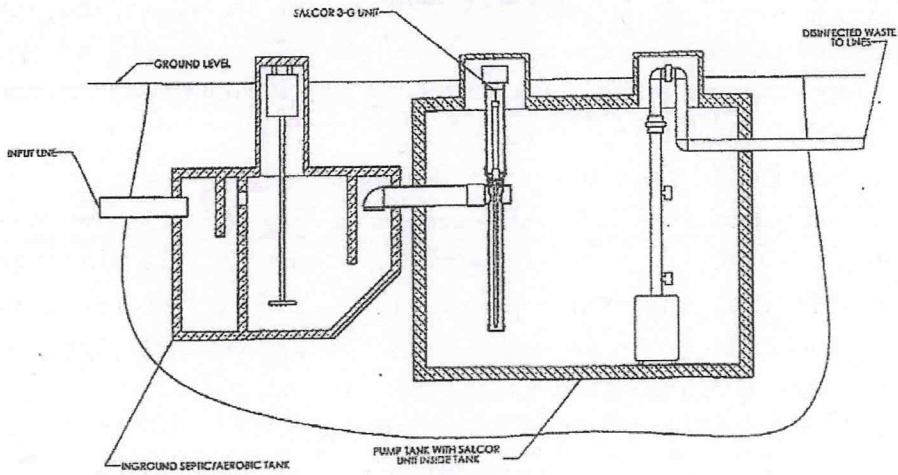


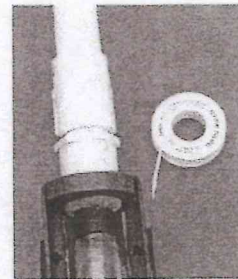
Figure 3

IV. MAINTENANCE AND SERVICE

The Salcor Model 3G UV disinfection unit is designed to provide a long service life. It is recommended that the UV lamp be replaced every two years to insure proper disinfection.

UV LAMP REPLACEMENT PROCEDURE

1. Turn off the dedicated circuit breaker located on the main electrical panel that supplies power to the UV system.
2. Remove the electrical junction box from the UV disinfection chamber by loosening the two setscrews. Then carefully set the junction box aside.
3. Using the lamp cable connected to the UV lamp assembly, lift the assembly out of the disinfection chamber and set the assembly aside.
4. Loosen the lamp cable grip at the top of the Lamp Assembly so that the lamp cable grip will allow the cable to move through the cable grip and allow the handle to move away from the top of the aluminum frame assembly
9. Unscrew the bottom threaded end of the 1-inch lamp handle from the upper end of the aluminum frame assembly. Separate the handle from the assembly.
 1. Disconnect the four pin connector attaching the lamp cable to the UV lamp.
 2. Connect the new lamp to the four-pin connector. Ensure there is a good electrical connection.
 3. Completely lower the new lamp into the quartz tube of the UV sub-assembly.
 4. Tuck the remaining lamp cable into the riser pipe.
 5. the top of the riser pipe.
 6. Turn on the dedicated breaker located in the main electrical panel that supplies power to the UV system.



It is recommended that the disinfection sub-assembly be removed and serviced (cleaned) a minimum of once per year to insure proper effluent disinfection.

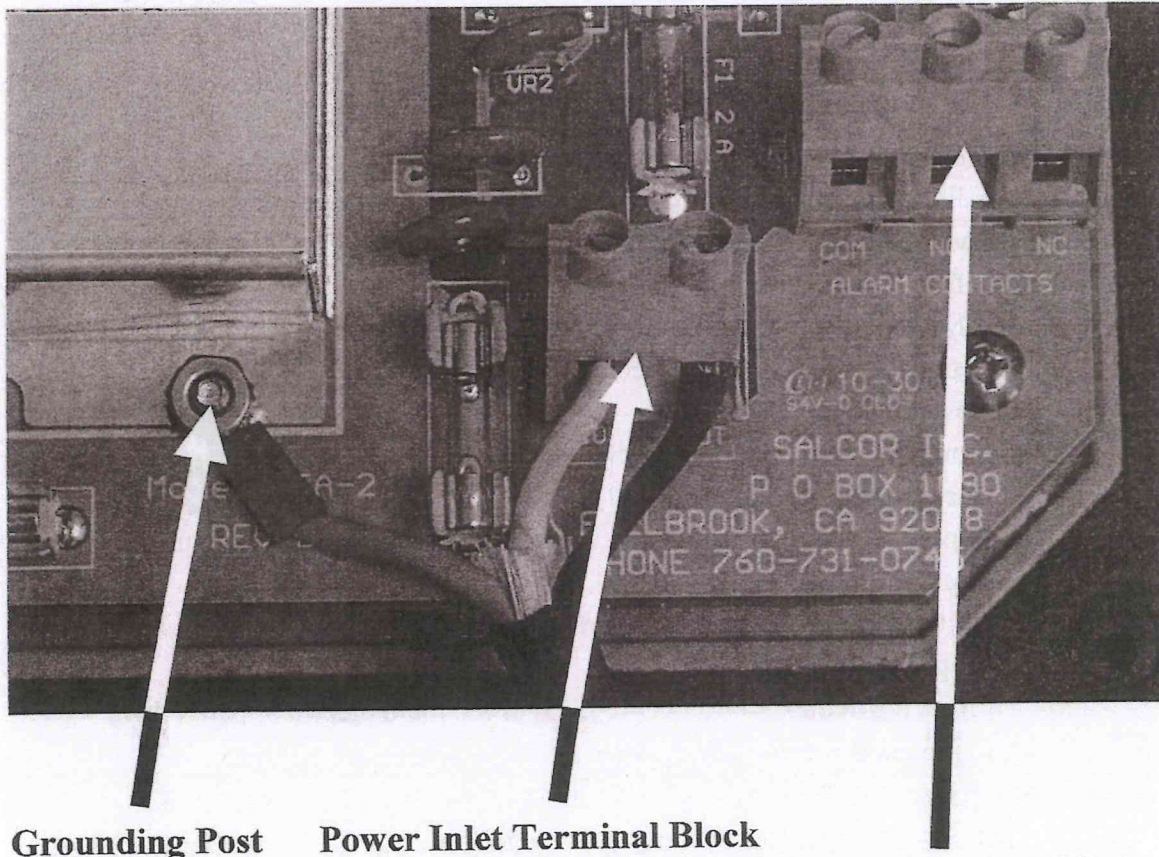
TO CLEAN THE TEFLON® SHEATH AND DISINFECTION SUB-ASSEMBLY

1. Use a soft sponge and detergent to clean the surfaces, especially the Teflon ® sleeve.
2. Use a soft cloth with isopropyl alcohol to remove difficult stains like finger prints and other films.

V. ELECTRICAL JUNCTION BOX LID

The Printed Circuit Alarm Board is permanently mounted on the Junction Box Lid. The power and alarm terminal strips are mounted on the Printed Circuit Alarm Board.

The Ballast is mounted on the Printed Circuit Board. The Ballast is removable from the PCB by maintenance personnel when it needs to be replaced.



Grounding Post Power Inlet Terminal Block Alarm Wire Terminal Block.

Figure 4

Connect alarm wires as needed for your specific circuit.

N/O or N/C describes the contact configuration when there is **NO POWER APPLIED** to the relay.

Another way of designating the N/O or N/C condition is that the relay contacts are in that state when the relay is **NOT ENERGIZED!**

SALCOR INC

P.O. Box 1090 Fallbrook, CA 92088-1090

Telephone: 760-731-0745

Fax: 760-731-2405

LIMITED WARRANTY

SALCOR MODEL 3G UV DISINFECTION UNIT

This warranty is given by SALCOR Inc. for the benefit of the first purchaser of the product to which the warranty applies. The warranty applies only to those parts which are manufactured and delivered by SALCOR Inc.

The warranty is that the parts manufactured and delivered by SALCOR Inc. will be free from defects in the material or workmanship under normal use and service according to the Installation and Operating Instructions for the time specified below.

In the event of a failure of a part due to such a covered defect, SALCOR Inc. will repair or replace, at its option, the defective part at its factory located at 447-D Ammunition Road, Fallbrook, CA 92028. At the option of SALCOR Inc, repairs or replacement may be made at the site of equipment installation.

The part must be returned to the factory at the expense of the person claiming the benefit of the warranty unless SALCOR Inc. elects to repair or replace the defective part at the installed site.

The warranty shall be for a period of twenty four (24) months after the date of delivery of the product, or the specified service life of the product, whichever period is the shortest. All products for which warranty claims are filed must be returned as provided above to the factory within thirty (30) days from the date of the claimed malfunction in order for this warranty to be effective. The only entity authorized to do any warranty repairs is SALCOR Inc.

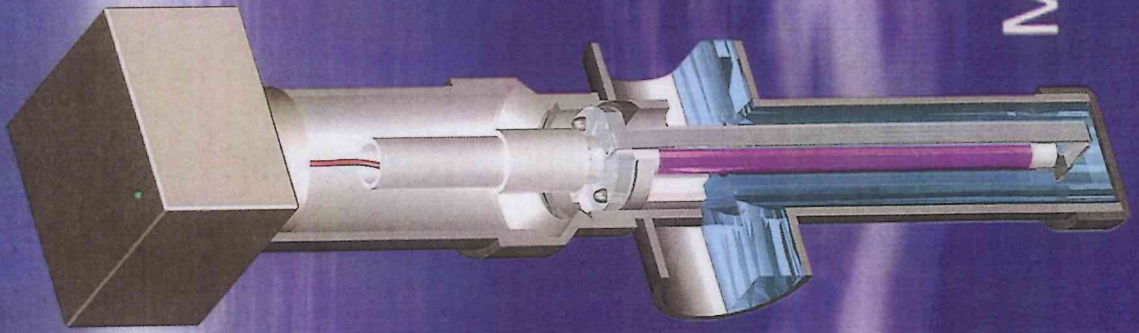
The repairs or replacement by SALCOR Inc. will be accomplished within twenty (20) days from receipt of the defective parts at the factory.

This warranty is expressed in lieu of all other warranties, expressed or implied, including the implied warranty of fitness for a particular purpose, and of all other obligations or liabilities on the part of SALCOR Inc., and it neither assumes nor authorizes any other persons to assume for SALCOR Inc. any other liabilities in connection with the sale of the products.

This warranty does not cover parts of products made by others, or products or any part thereof which have been repaired or altered, except by SALCOR Inc., which shall have been subjected to misuses, negligence, or accident,

SALCOR Inc. shall not be liable for damage or delay suffered by the purchaser regardless of whether such damages are general, special, or consequential in nature whether caused by defective material or workmanship, or otherwise, or whether caused by SALCOR Inc. negligence, regardless of degree.

SALCOR UV DISINFECTION



Model
3 G



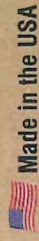
The Finishing Touch

- Gravity Flow to 6 GPM - Onsite Systems
- Unit and UV Lamp Two Year Warranty
- Quick Install In Ground or Pump Tank
- NSF and Other Third Party Tests Confirm Superior Bacteria and Virus "Kill"
- Environmentally Superior - No Harmful Byproducts/Enabling Water Reuse
- UL and cUL Certified, Standard 979
- Energy Efficient - Uses Less Than 30 Watts
- Multiple Units Economically Treat up to 100,000 Gal/Day
- Teflon® Film Resists Fouling - Continual Performance
- Minimum (Annual) Easy Maintenance
- Electronic Performance Monitoring
- NEMA 6P (Passed 30 Day UL Submergence Test)

Residential, Commercial & Municipal UV Leader
Since 1978

Salcor Inc.

PO Box 1090, Fallbrook, CA 92088



Made in the USA

(760) 731-0745

Fax: (760) 731-2405

"Everyone's Friend," Homeowners, Environmental/Public Health Specialists, Engineers, Designers, Installers, O&M Providers, Treatment Plant Manufacturers

SALCOR INC

ULTRAVIOLET (UV) DISINFECTION LEADER **SINCE 1978**

3G Unit "Everyone's Friend," Homeowners, Environmental Public Health Specialists, Engineers, Designers, Installers, O & M Providers, and Treatment Plant Manufacturers

Widely Used **Since 1997** Made in the **USA**

- Successful NSF 6 Month Individual Tests with 18 ATUs
- UL and cUL Listed, Standard 979, NEMA 6P

Cost **Efficient** and **Environmentally Superior**

- Low Operating Expense (Less than 30 Watts)
- No Chemical Expense or Harmful By-Products
- Enables Water Reuse

Easy **Quick Installation** and **Reliable Operation**

- Teflon® Film Resists Fouling
- Alarm Light and Contacts for a Remote Alarm Continually Monitor Proper Performance

Convenient **Maintenance**

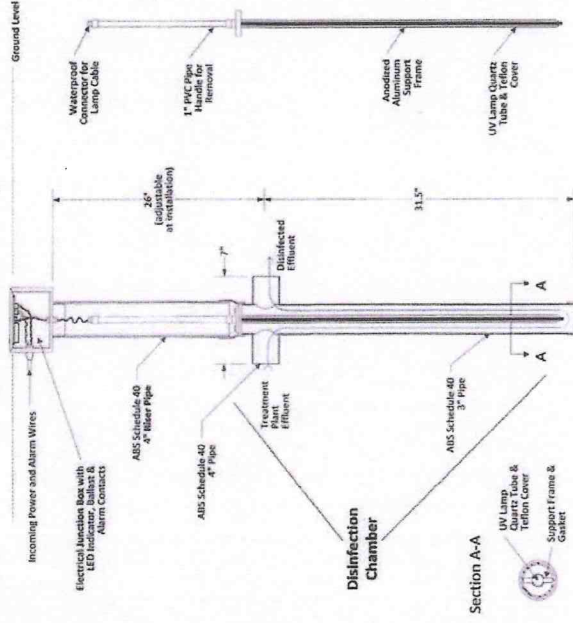
- Sub-Assembly Quickly Removed to Clean/Replace Lamp

Homeowner **Satisfaction**

- Two-Year Warranty for Unit and "Long-Life" UV Lamp
- Time-Saver – No Purchase or Handling Caustic Chemicals
- Assures Highest "Kill" Rate Of Dangerous Pathogens (Bacteria, Viruses, and Parasites)

Salcor 3G Disinfection Unit

NOTE: Not all dimensions to scale



NEMA 6P 30-Day Submergence Test of Model 3G Operating in a Water Tank

