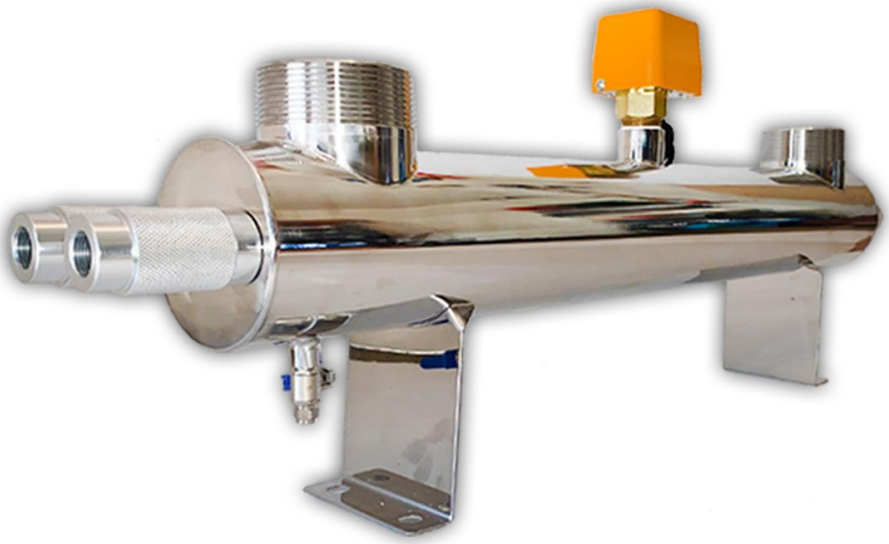
Purity UVC

Ultraviolet Pathogenic Microorganism Inactivation System. Model PUV-2-HO-80G



Instructions for use

Purity UVC

700 Lavaca St., Suite 1401

Austin, TX 78701

PH: 512-255-2271

F: 512-233-0993

LISTED
E513643

Thank you for choosing an Ultraviolet Sanitizer from Purity UVC. Our equipment has been designed to provide long term, reliable service. The sanitizer has been designed to enable fast, easy installation. Its design also enables easy maintenance. Please read these instructions carefully to ensure optimal operating conditions for your micro-organism inactivation system.

This Purity UVC Unit is designed for use in swimming pools, fountains, water features, waterfalls, and fishponds. It is not designed for use in potable (drinking) water installations. Use of this product in applications other than those indicated above will void your warranty and could be harmful to your health or the health of others.

CONTENTS: **Page**

A: Technical Characteristics

Reactor Data	
Material	300 Series Stainless Steel
Maximum Pressure	60 PSI
Flow	80 GPM
Diameter	4" ID
Length	30.75"
Inlet/Outlet	3" Male NPT
Power Supply	120- 240 VAC, 50-60 Hz
Number of Ballast	1
Lamp Data	
Lamp Type	Low Pressure, High Output
Number of Lamps	2
Power	87 W
Fluence - New Lamp at Maximum Flow Rate	37.5mJ/cm2
Fluence - End of Lamp Life at Maximum Flow Rate	30.0 mJ/cm2
Lamp Life	16,000 hrs.

B. Warnings and Safety

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS READ AND FOLLOW ALL INSTRUCTIONS

WARNING FOR YOUR SAFETY – This product should be installed by a professional service technician or similar person, qualified in electrical equipment installation. Improper installation and/or operation could cause serious injury, property damage or death. Improper installation and/or operation will void the warranty.

INSTRUCTIONS PERTAINING TO RISK OF FIRE, ELECTRIC SHOCK OR INJURY TO PERSON WARNING — To guard against injury when using this unit, basic safety precautions should always be taken, including the following:

1. **READ AND FOLLOW ALL SAFETY INSTRUCTIONS.**
2. **DANGER: To avoid possible electrical shock, special care should be taken since water is employed in the use of this equipment. For each of the following situations, do not attempt repairs yourself; return the appliance to an authorized service facility for service or discard the appliance.**
    A. **If any part of the system becomes submerged in water, DO NOT reach for it! First disengage the electrical source until it is completely dry. Then notify your installer for a system safety inspection.**
    B. **Do not operate any appliance if it has a damaged cord or plug, or if it is malfunctioning or if it is dropped or damaged in any manner.**
3. **Do not use an appliance for anything other than its intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause an unsafe condition.**
4. **Always deenergize the power source before putting on or taking off parts, and before cleaning. Never yank any of the cords.**
5. **Never drop or insert any object into any opening.**
6. **This unit contains an ultraviolet bulb that can cause discomfort or irritation to the eyes if viewing while operating. Prolonged exposure to**

the eyes can cause blindness. <u>DO NOT VIEW AN ILLUMINATED UV BULB WHILE OPERATING OR DURING MAINTENANCE.</u>

7. **Read and observe all the important notices on the appliance.**
8. **Warning–To reduce the risk of electrocution, keep all connections dry and off the ground. Do not touch the cables with wet hands.**
9. **DO NOT power this system with an extension cord or any type of temporary wiring. Power to the device must come thru a properly rated conduit per the installation instructions.**
10. **Always check Local Ordinance and Building Codes for your city before installation of equipment.**
11. **<u>SAVE THESE INSTRUCTIONS</u>**

WARNING When using electrical products, basic precautions should always be followed, including the following:

1. **DANGER: RISK OF ELECTRIC SHOCK**. Connect only to a circuit designed and installed to comply with all local codes and good electrical practices.
2. **Grounding is required**. The unit should be installed and grounded by a qualified service representative.
3. **Install to permit access for servicing**. Make sure you choose a position where the lamp removed and reinserted or replaced.

IMPORTANT: Follow the instructions EXACTLY and IN THE ORDER LISTED. Once installed, your UV unit will provide years of successful operation.

<u>IMPORTANT SAFETY INSTRUCTIONS</u>

*****PRIOR TO BEGINNING INSTALLATION INSTRUCTIONS*****

Visually inspect the unit for any damage. Contact the dealer/manufacturer for replacement parts.

C. System Installation

Introduction

Forward: The Purity UVC Unit is designed for use in swimming pools, fountains, water features, waterfalls, and fishponds. It is not designed for use in potable (drinking) water installations. Use of this product in applications other than those indicated above will void your warranty and could be harmful to your health or the health of others.

Introduction - How the Purity UVC System Works: Within the Purity UVC reactor (Vessel) are multiple high intensity electrically operated Ultraviolet (UVC) bulb/quartz sleeve assemblies. This UVC bulbs gives off Ultraviolet light wave emissions when properly energized. The bulb's operating emission range is within the Ultraviolet light wave spectrum at 253.7 nm of wavelength. This wavelength is such that when bacteria, protozoa, viruses, algae spores, or other single celled waterborne microorganisms in the incoming water flow are exposed to the light waves of the UV bulb for a proper period of time, the DNA of the microorganism is altered or disrupted and this controls and eradicates these unwanted contaminates and renders them harmless. Your Purity UVC system has been sized to produce these important UV rays in the same fluence (dosage) as is required for Class A potable drinking water systems, which is 30 mJ/cm2 at 80 GPM flow rate. Lower flow rates give a higher fluence.

Water containing harmful micro-organisms enters the Purity UVC unit's reactor and is exposed to the light rays generated by the UVC lamp. The Purity UVC system is designed to allow for some turbidity in the water, as turbidity will reduce the UV light wave transmission (UVT) capability. Therefore, the Purity UVC system is designed to allow for possible turbidity in the water and the reduction in the intensity of the UVC lamp when it nears the end of its useful life. When the incoming water is exposed to the bulb for the proper duration and intensity, the water exiting the unit is near drinking water biological quality. **CAUTION! THIS UNIT IS FOR POND OR POOL USE ONLY. DO NOT USE THIS UNIT FOR POTABLE (DRINKING) WATER SANITIZATION.**

Pre-Installation

Pre-Installation - To ensure that your Purity UVC system functions with the proper exposure time to achieve the desired water sanitization, it is important to provide the proper water flow rate through the reactor. If water passes through the reactor too quickly, the exposure time of the microorganisms to the UV bulb produced rays will not be sufficient to obtain the desired kill rate. The water flow rate through the reactor unit is governed by the piping of your pool or pond and the size and output of your circulation pump.

Swimming Pool Turnover Rates - Most residential pools are designed to have the capacity of the pool turned over every 12 hours. Semi-commercial pools are normally designed for an 8-hour turnover flow rate. Check with your local jurisdiction for the required flow rate for your type of pool to be sure. Thus, as an example, using the same formula as above, a 20,000 gallon residential pool will need to have a pump capable of a 28 GPM flow rate and a 25,000 gallon Semi-commercial pool will need to have a pump capable of 52 GPM. Like pools and ponds, the Purity UVC system needs to be properly sized by flow rate. Moving the water through the Purity UVC system's reactor at a flow rate in excess of 80 GPM (Gallons Per Minute) will reduce the exposure time of the water and the fluence. Make sure the flow rate of your circulation system pump does not exceed the maximum allowable flow rate of the Purity UVC system. (Consult your supplier or pump manufacturer for the pump's GPM rating if you are in doubt).

Before accessing the connection terminals, ensure that all supply circuits are disconnected.

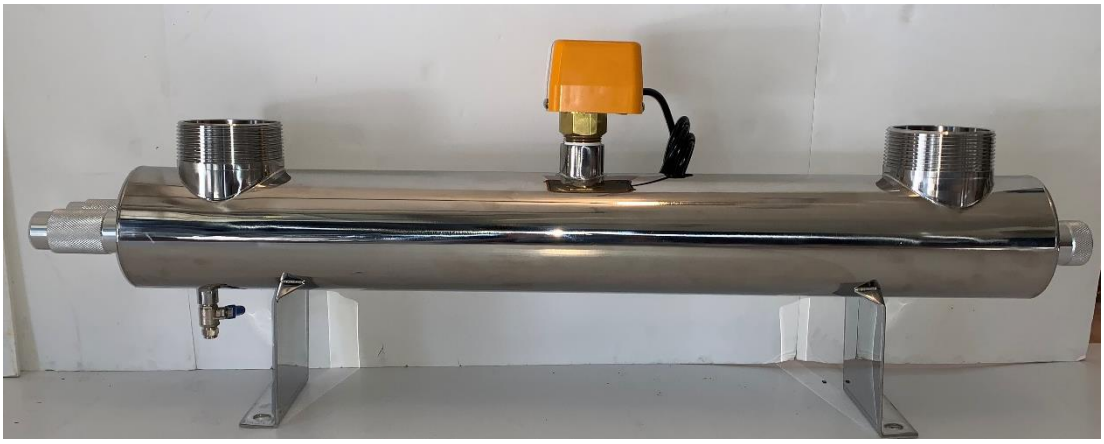
Check Local ordinances and building codes before installation of equipment. (See A. Technical characteristics)

Installation — Before starting the installation, PLEASE read this manual from cover to cover. A few moments spent initially becoming totally familiar with the Purity UVC system and its installation requirements will save a great deal of time (and expense) later. If you have questions that are not answered after you have completed the reading of this manual, contact your supplier or Purity UVC. We are ready to assist you at any time and we want your installation to go smoothly and the equipment to work properly.

PURITY UV-C Installation Instructions

Model PUV-2HO-80G

Reactor (Vessel) Installation Instructions.



**** All Plumbing should be performed by a licensed plumber. ****

**** All electrical work should be performed by a licensed plumber****

IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

1. **READ AND FOLLOW ALL INSTRUCTIONS**

2. **WARNING - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.**

3. **WARNING - Risk of Electric Shock. Connect only to a branch circuit protected by a ground-fault circuit interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI.**

4. **The unit must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a**

GFCI should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test button. The GFCI should interrupt power. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the pump without the test button being pushed, a ground current is flowing, indicating the possibility of an electric shock. Do not use this pump. Disconnect the pump and have the problem corrected by a qualified service representative before using.

5. SAVE THESE INSTRUCTIONS

DO NOT ENERGIZE THE UV SYSTEM UNTIL ALL STEPS DETAILED IN THESE INSTRUCTIONS HAVE BEEN COMPLETED.

1. For optimal performance, the reactor must be mounted horizontally with the water connections facing up.
2. It should be placed on a hard level surface and secured by the two mounting tabs under the reactor (see above) using four (4) bolts or anchors that are ¼" to 3/8" in diameter.
3. With the aluminum lamp nuts attached to the vessel you need to determine the location of the lamp wire connections.
    a. We recommend the lamp wire connections be located where there is the least likely chance of them becoming a trip hazard. Ideally, the end of the vessel with the lamp wires would be facing a wall or other piece of equipment and NOT a walkway. Ensure at least 6 inches of clearance from the lamp wire nuts (the longer nuts) to any other object.
    b. The lamps can be inserted from either direction.
    c. Ensure at least 36 inches of clearance from the end of the reactor the lamps will be inserted from.
    d. There is a drain valve located at one end of the reactor. It should be located for easy access but not in a place where it might easily be "bumped" open by mistake.
4. After the reactor is secured in place, the flow or pressure switch should be installed in the 1" NPT coupling on the top of the reactor vessel.
    a. Teflon pipe tape must be used on this connection to protect the treads and facilitate a leak-free connection.

b. There is an arrow on the outside and on the inside of the flow switch indicating flow direction. Make sure the arrow matches the flow path the water will take when it is fully plumbed into the water system.
c. If a pressure switch is installed, the flow direction does not matter.

5. After the flow or pressure switch is installed in the reactor, connect the green ground lead exiting the switch to the stud located on the side of the 1” coupling. See image below.

6. The reactor has 3” male NPT (National Pipe Thread) connections on the water inlet and outlet.
    a. Flange or union connections should be used to connect to the reactor.
    b. The reactor should be plumbed down-stream from the filter.
    c. For optimal performance use all 3” diameter pipe to and from the reactor. This will improve system performance, minimize back pressure, help reduce pump operating cost, extend pump life, and contribute to maximum water flow.
7. After the flow or pressure switch and lamps have been installed (see instructions below). Pressure test the system using the pool pump at full speed. Run the pump for a minimum of 10 minutes at full speed and check all connections on the reactor for leaks. If leaks are found, turn off the water flow and tighten or remake those connections using best plumbing practices by a licensed plumber. Continue to pressure test the system until it is 100% leak free. If a leak free installation cannot be accomplished, contact the company you purchased the system from or the manufacturer (see contact information in the user manual) for assistance.

Electrical Box Installation Instructions

Front View

Open View

Back View

**** All electrical work should be done by a licensed electrician. ****

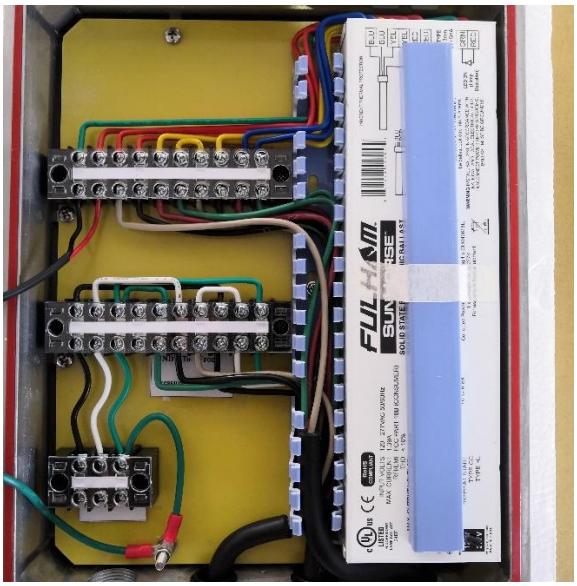
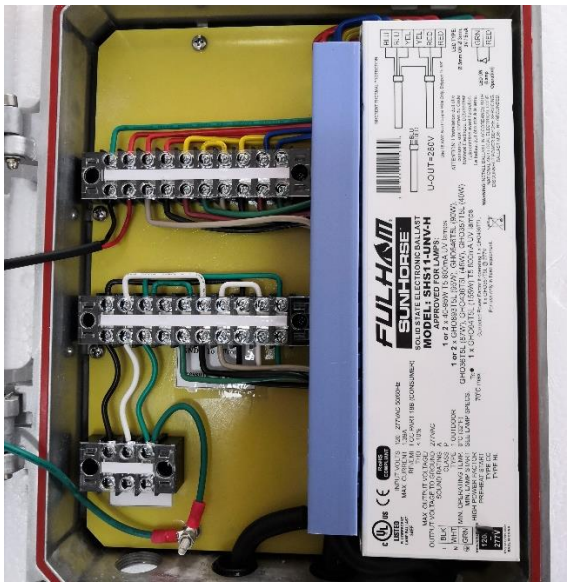
The electrical box must be mounted to a solid secure structure such as a wall or rack.

THE INCOMING POWER MUST COME FROM A POWER SOURCE THAT IS CONTROLLED BY THE POOL EQUIPMENT CONTROL PANEL AND WIRED IN SUCH A WAY THAT THE UV SYSTEM IS ONLY ENERGIZED WHEN THE PUMP RESPONSIBLE FOR THE WATER FLOWING THROUGH THE UV SYSTEM IS “ON”

1. Securely mount the electrical box to a sold structure such as a wall or rack utilizing the four (4) M6 blind holes on the back of the electrical box. DO NOT drill holes through the box itself. This could allow moisture to enter the otherwise weathertight box.
2. Mount the box so the four (4) wire openings of the box are located on the bottom. This eliminates the risk of any moisture entering through the four (4) wire penetrations or the drain hole located between the wire entry points.
3. The wire inlet opening to the far left is a ½" conduit connector (see image above) designed to be used with outdoor rated flexible conduit. The main power 120 – 230 VAC (single phase) must be brought into the box through this connector.
    a. The wire size and type MUST be compliant with all local codes and requirements.
    b. Connect the wires to the dedicated input terminals marked L (Line) N (Neutral) G (Ground) located inside the box directly above the far-left wire inlet.

4. The wire inlet next to the power inlet conduit fitting is fitted with a cord grip. Use the inlet for the multi-conductor cable from the flow or pressure switch.
5. Connect the wire from the flow/pressure switch to the dedicated terminals marked "GND" (Green) "to" and "From" with the Black and White as seen in the image below.

6. Route the multi-cable from the flow/pressure switch through the wire-way in such a manner that none of the connections to the terminal strip are strained.
7. Remove the Wireway cover that is taped to the ballast and place it securely onto the wireway as seen in the images below.

8. Hand tighten the cord grip where the multi-conductor cable from the flow/pressure switch enters the box.
9. Hand tighten all three cord grips on the box and verify that the flexible conduit connector is also securely connected to the flexible conduit.
10. Earth Grounding – Both the electrical box and reactor must be connected to a dedicated earth ground.
    a. The size and type of ground wire must be compliant with local codes and requirements.
    b. There are dedicated ground lugs on the box and reactor that will accommodate up to a #6 wire. See images below.
    c. Secure the ground wire to each ground lug according to good electrical practices and all local code requirements.

Installing the UV lamp and Quartz Assemblies.

O-Ring - Vessel to Quartz Function

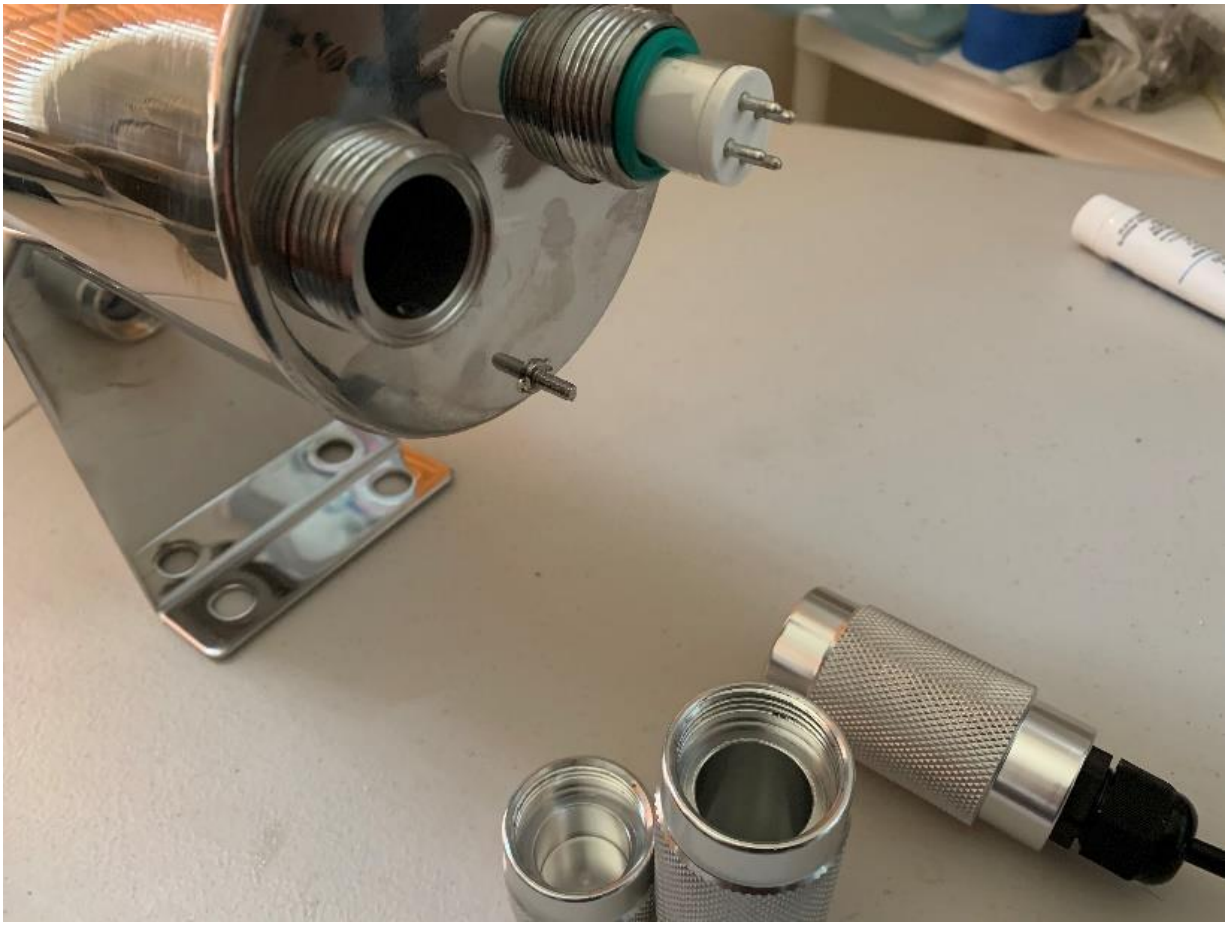
The system uses O-rings to form a seal between the quartz sleeve and the reactor vessel. The reactor has two openings on each end. These openings are identical. This allows the end user to insert the lamps and connect the power to the lamps from whichever end is most convenient for their particular installation. The system utilizes two different style aluminum nuts to facilitate compressing the O-rings. Two of the nuts are short “blind” nuts. The other two are longer to protect the lamp wire connection and feature a threaded opening to allow a weathertight “cord grip” to be used.

When the aluminum nuts are firmly tightened by hand, TOOLS NOT REQUIRED, the O-ring is slightly compressed and forms a seal between the reactor and the quartz sleeve.

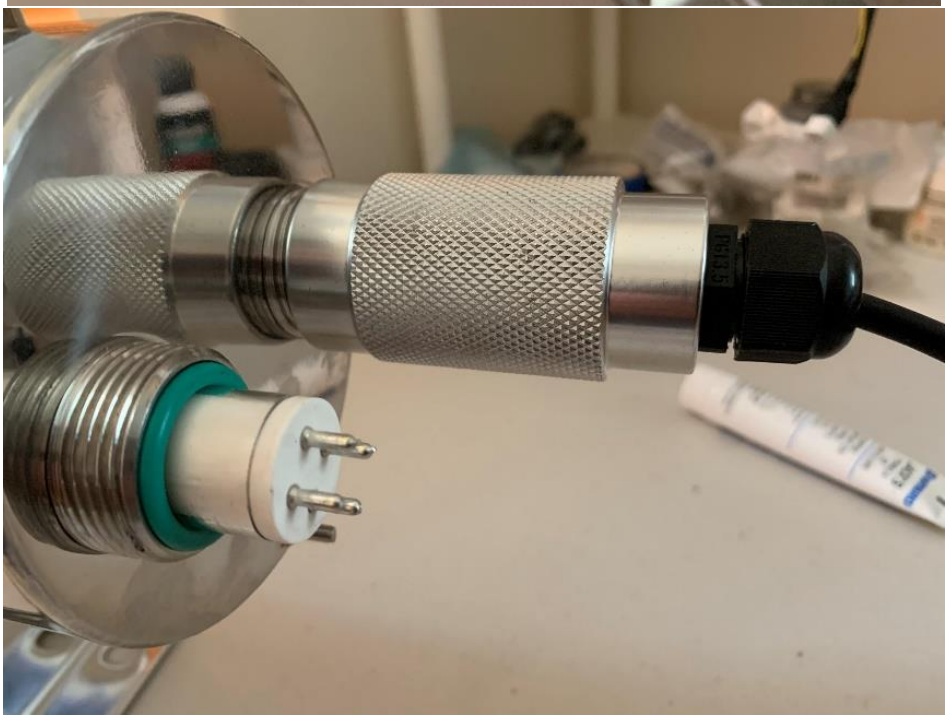
DO NOT SUBSTITUTE O-RINGS. THE SYSTEM WAS DESIGNED AND TESTED FOR O-RINGS OF A SPECIFIC SIZE, MATERIAL AND HARDNESS. Replacement O-rings can be ordered from the system manufacturer or the builder that sold and installed your system.

The image below shows the two types of aluminum nuts. The longer nut is shown with and without the cord grip installed.

The image below shows the O-ring sealing surface on the reactor openings and the aluminum nuts.



The images below show the O-rings on the quartz sleeve.



To Install The Quartz Sleeve And Lamp Assemblies:

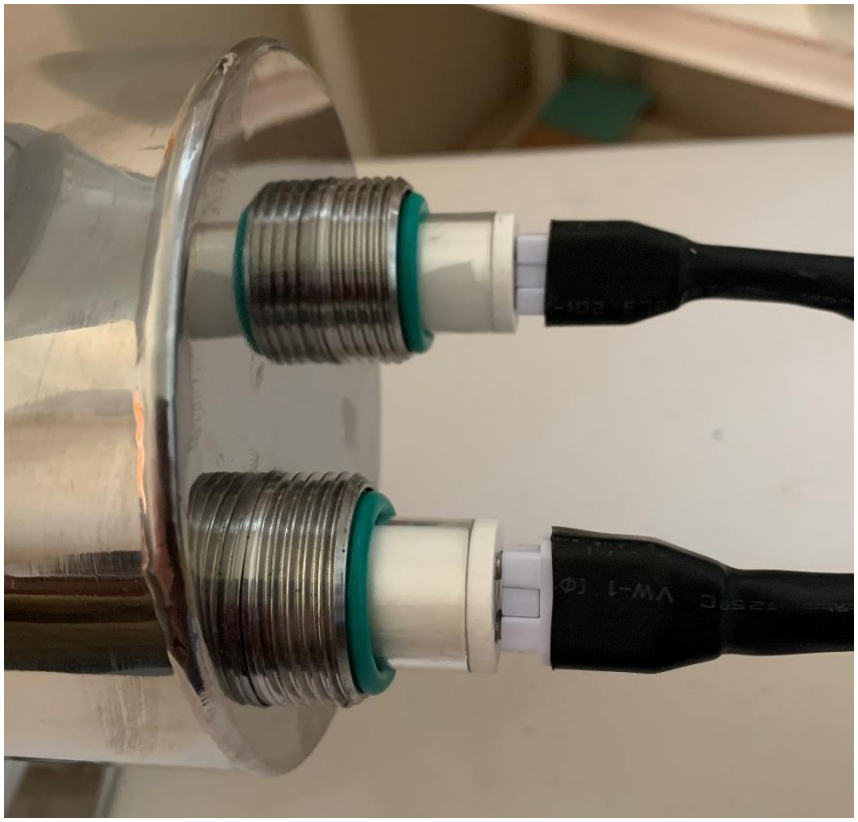
The system was designed and tested for Purity UV-C lamps #M1-CE-05 only.

1. Make sure the threads and sealing surfaces of the reactor and nuts are completely free of any debris.
2. Slide the lamp/quartz assembly in from either end. Take care to not damage the quartz sleeve. The lamps and the reactor openings should be free of dirt and debris.
3. Place the O-rings on the lamp/quartz assembly as detailed above. An FDA approved O-ring lubricant is not required. But it can make the installation and sealing easier. Below is an example of such a lubricant.

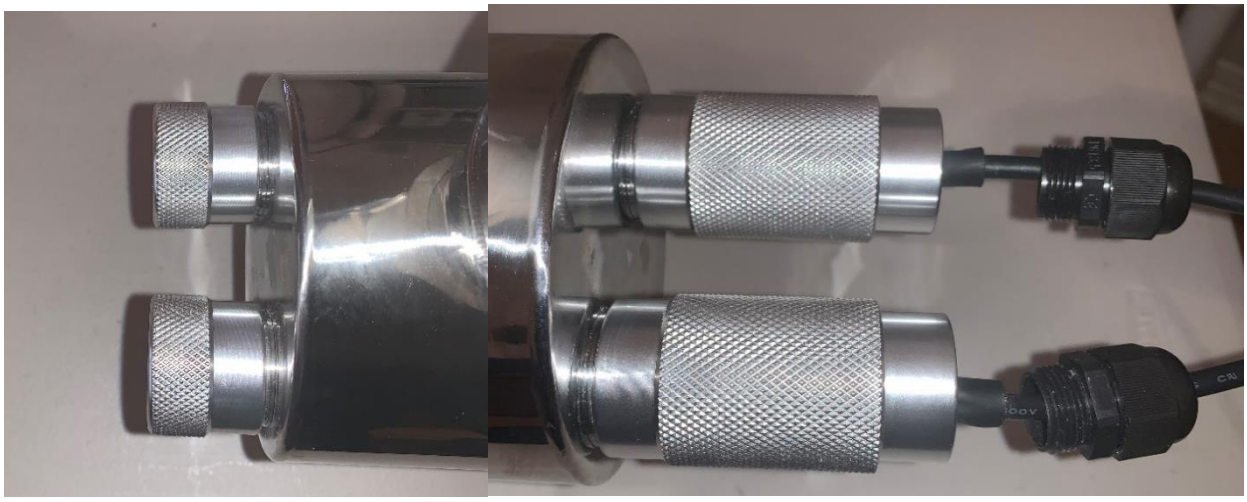
4. With O-rings on each end of the lamp/quartz assembly, install the short “blind” aluminum nut finger tight. See image below.

5. Repeat this process with the 2nd lamp.
6. Slide the lamp power cord through the long aluminum nut as seen in the image below.

7. Attach the lamp wire to the lamp. Note that the four pins of the lamp are in a rectangular, NOT SQUARE configuration. Line the pins of the lamp up with the holes in the lamp cord socket and firmly push them straight onto the lamp.
    a. Do not apply side force as this could damage the quartz sleeve.
    b. Make sure the lamp cord socket is fully seated onto the lamp pins as seen in the image below.



8. Screw the long aluminum nut onto the reactor to compress the O-ring. Tighten the nut very firmly by hand, NO TOOLS REQUIRED. Do the same with the short “blind” nuts on the opposite end of the reactor. See images below.



9. Pressure test the O-ring seals
    a. Take care to NOT pull on the lamp cords. This could loosen the connection of the lamp cord to the lamp.
    b. Verify that all four aluminum nuts are firmly tightened by hand.
    c. Start the pool pump at full speed and allow water to flow through the reactor for a minimum of five minutes. Look for any leaks at the aluminum nuts. If a leak is detected turn off the pump and tighten the aluminum nut. HAND TIGHTEN ONLY.
    d. Restart the pump at full speed and check for leaks by running it for at least 5 minutes. If the leak persists, turn off the pump and drain the reactor using the drain valve located under the reactor at one end.
    e. With the reactor drained, remove the aluminum nut where the leak occurred, remove the O-ring from the quartz/lamp assembly and clean any debris from it and the sealing surfaces of the nut and reactor.
    f. Apply a liberal amount of lubricant (optional but recommended) as shown above and repeat the O-ring sealing process. Close the drain valve and repeat the pressure testing process.
    g. If you are unable to stop the leak, contact your pool builder or the UV system manufacturer.
10. Once a successful pressure test is achieved Install the cord grips into the aluminum nuts and tighten them to form a weathertight seal around the lamp wires. See image below.

11. With the drain valve closed and all the wire connections and cord grips tightened. Start the pool pump and at full speed and do a final inspection for leaks.
12. Repair any leaks and verify that the UV system is functioning. The green LED light on the electrical box verifies that the system is operating normally. See image below.

For any question concerning these instructions please contact you pool builder or system installer or PURITY UVC, LLC directly at: 512-255-2271 or by email at help@purityuvc.com

"This product complies with all applicable provisions of the United States Code of Federal Regulations (CFR) requirements including Title 21, Chapter I, Subchapter J, Radiological Health."

USE and MAINTANCE

Allow the ultraviolet lamp to cool for at least 30 minutes before handling

Never look at the ultraviolet lamps when lit. This may cause severe injuries or burns and may even lead to loss of eyesight.

Never unscrew the quartz tube sealing nut when the sanitizer is on load as the quartz/lamp assembly could be blown out of the sanitizer with force and injure you.

To avoid electric short-circuits; do not place the electric wires or the sanitizer in the pool water or in any other maintenance or cleaning fluid.

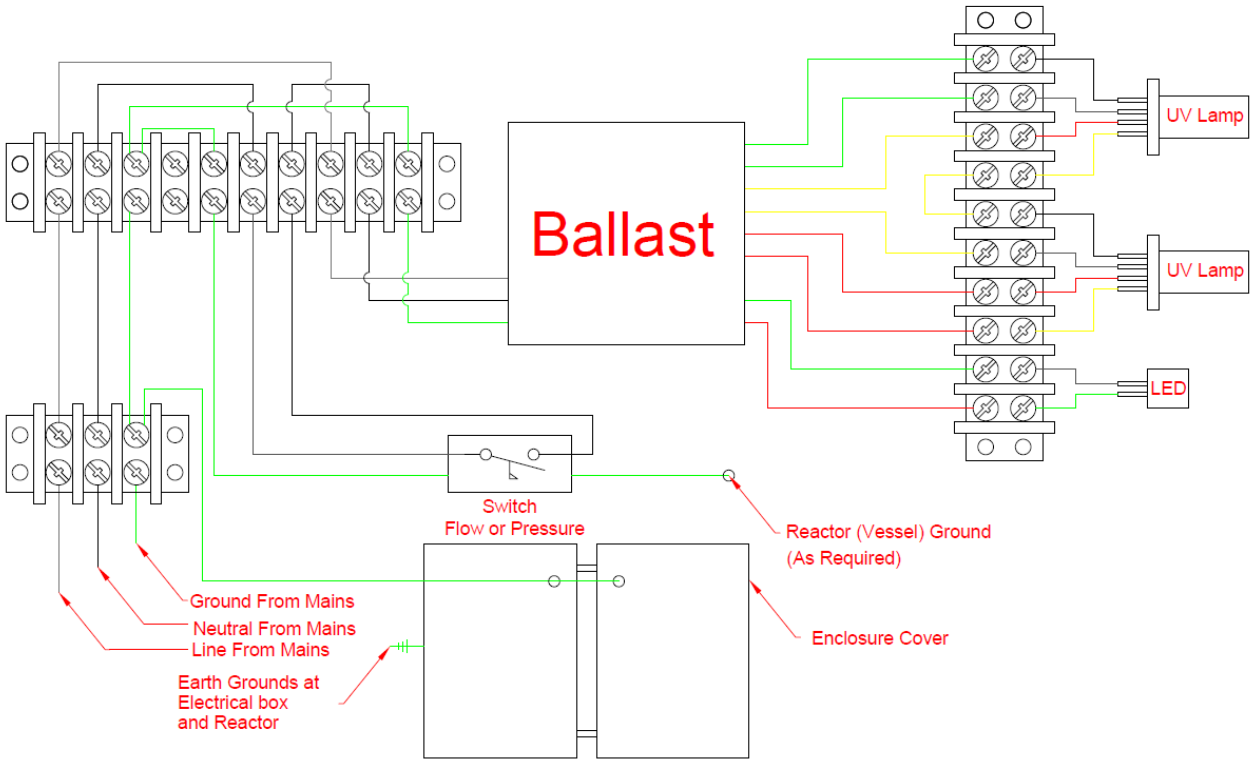
Do not restart the system until the electric unit, the covers exterior elements of the sanitizer are correctly put back in place.

When replacing the quartz/lamp assembly or carrying out annual cleaning of the quartz/lamp assembly, make sure that the electrical elements are in place and correctly attached before switching on the sanitizer.

Do not use the Purity UVC sanitizer for any other use than that for which it was designed.

Hg-Lamp CONTAINS MERCURY. Manage in accord with disposal laws. www.lamprecycle.org

D. ELECTRICAL ENCLOSURE



E. START UP

Your Purity UVC system unit is equipped with a safety pressure switch

This prevents the quartz/lamp assemblies from energizing unless there is at least 4 psi of pressure inside the reactor vessel.

1. Start the circulation pump.
2. Drain all air from your system through the air relief valve on the filter (if so equipped)
3. Check Purity UVC Unit for leaks - Make one final check for leaks in your piping and the reactor. Repair any leaks before proceeding.
4. Check the chemical balance of your swimming pool (particularly pH, TAC*, and TH*). Adjust the chemical balance as per your pool chemical suppliers' instructions. - Remember, the Purity UVC system dramatically reduces the need for chemical sanitizers but does not eliminate the need for proper pool chemical balance.

WINTERIZING

Your Purity UVC system can be damaged if allowed to freeze. The substantial pressure inside the reactor caused by ice can break the quartz/lamp assembly as well as the reactor itself. Therefore, you must protect your Purity UVC system from freezing. Damage due to freezing IS NOT COVERED under your Limited Warranty.

Freeze damage - Freeze damage can be avoided by keeping the water flowing at a minimum of 20 GPM. Freeze damage can also be avoided if all the pool equipment, including the and Purity UVC system are maintained inside a warm enclosure.

Freezing Weather Precautions - If you do not plan to operate your Purity UVC system during freezing temperatures, you must take precautions to make sure all water is removed from inside the Purity UVC reactor and all associated plumbing. Consult your system installer and follow their advice on how to properly drain the system.

F. UV Lamp Replacement and Quartz Maintenance

The Purity UVC system requires little maintenance during the year. The UVC Quartz/Lamp assembly protects the bulb from the water in the reactor. The outermost surface of the Quartz/Lamp assembly is a specially formulated quartz. Made specifically to allow the maximum amount of UVC irradiation to pass through without diminishing the intensity. Debris and/or deposits on the surface of the quartz sleeve will negatively affect the system performance its ability to transmit the UV rays from the lamp contained within it. The Quart/Lamp assembly should be removed from the reactor every six (6) months and inspected to make sure it is clean and that deposits are not attached to the outer surface. To remove the Quartz/Lamp assembly follow the steps shown below.

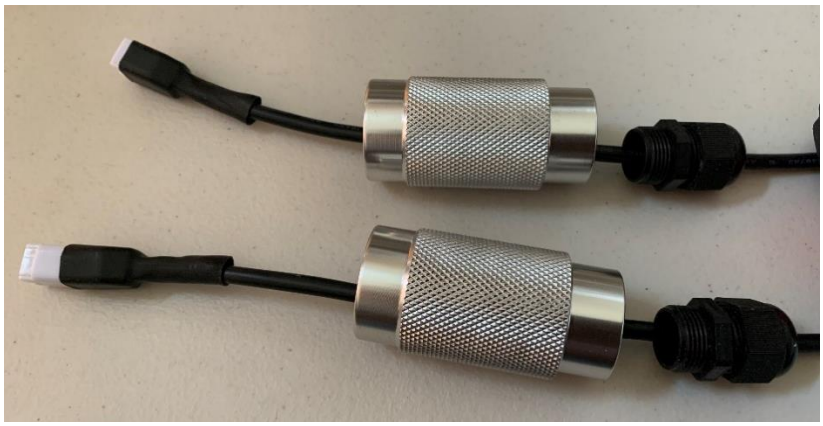
1. Turn OFF the pool pump providing water flow thru the reactor.
2. Place the breaker supplying power to the pump and UV system in the OFF position.
3. Open the drain valve located under the reactor and the vent valve on your filter if so equipped. Make sure the Purity UVC reactor is drained completely before moving to the next step.
4. Loosen, but do not yet remove the blind nuts (short nuts) on the reactor. See image below.
   a. 
5. Loosen the cord grips completely, where the wires from the electrical enclosure connect to the long aluminum nuts on the reactor. Do this with the cord grips on each long aluminum nut. See Image below.

a. 

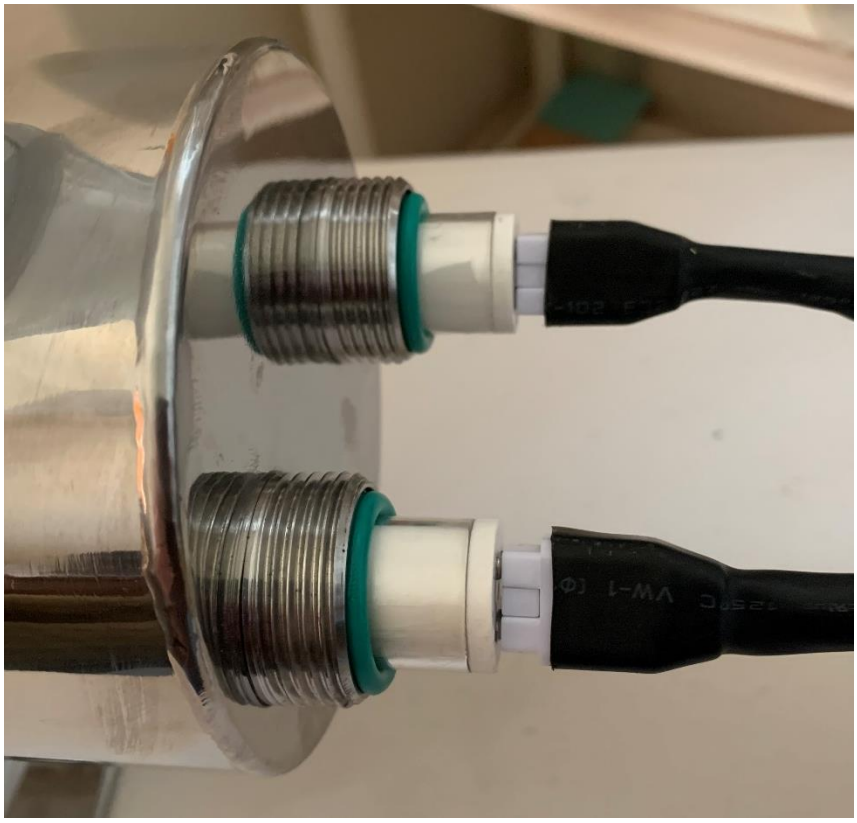
6. Loosen the long aluminum nuts and pull them away from the reactor.
7. Remove the wire connection from the Quart/Lamp assembly. Grip the Quartz/Lamp assembly with fingers from one hand while pulling straight back on the lamp power socket with your other hand. !!DO NOT PULL ON THE CORDS!!
8. Remove the short aluminum nuts completely.
9. Remove the O-rings from each end of the Quartz/Lamp assemblies and inspect them for any cuts or abrasions. Replace the O-rings with new if any defects are found. Only use O-rings supplied by Purity UVC. They are specifically designed to work with the Purity UVC reactors and Lamp Quart assemblies.
10. Gently remove the Quart/Lamp assemblies from the reactor.
11. Clean the outer surface of the Lamp Quart assembly with warm water or a mild acid such as vinegar, CLR or lemon juice. DO NOT USE BLEACH or concentrated acids.
12. If there are stains or any clouding on the outer surface that cannot be removed by the method above, (this is an exceedingly rare situation) the quart/Lamp assembly should be replaced with a new Quart/Lamp assembly.
13. To install the cleaned or new Quart/Lamp assemblies make sure the threads and sealing surfaces of the reactor and nuts are completely free of any debris.
14. Slide the lamp/quartz assembly in from either end. Take care to not damage the quartz sleeve. The lamps and the reactor openings should be free of dirt and debris.
15. Place the O-rings on the lamp/quartz assembly as detailed above. An FDA approved O-ring lubricant is not required. But it can make the installation and sealing easier. Below is an example of such a lubricant.

16. With O-rings on each end of the lamp/quartz assembly, install the short “blind” aluminum nut finger tight. See image below.

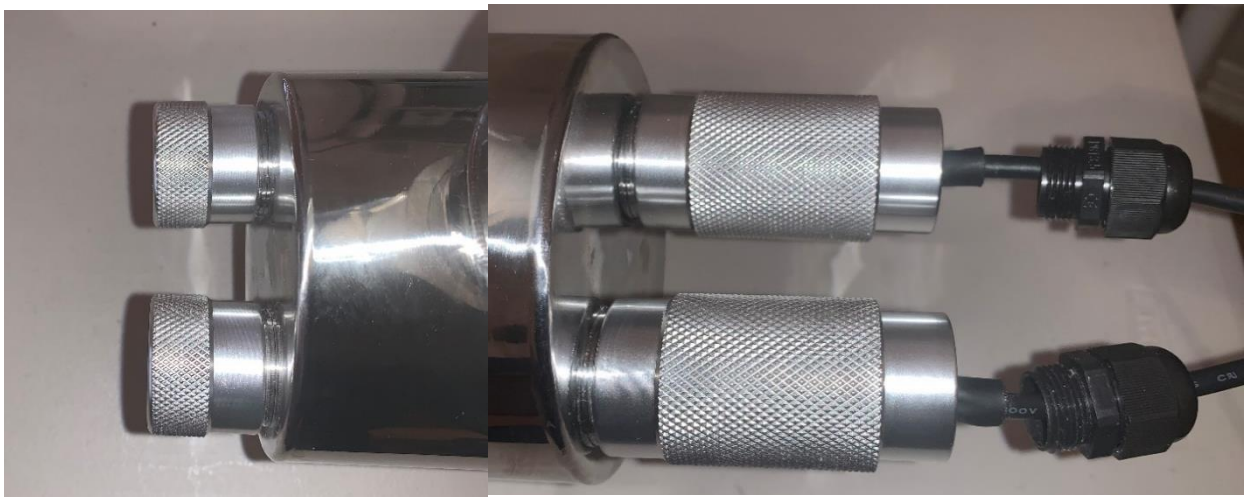
17. Repeat this process with the 2nd lamp.
18. Slide the lamp power cord through the long aluminum nut as seen in the image below.



19. Attach the lamp wire to the lamp. Note that the four pins of the lamp are in a rectangular, NOT SQUARE configuration. Line the pins of the lamp up with the holes in the lamp cord socket and firmly push them straight onto the lamp.
    a. Do not apply side force as this could damage the quartz sleeve.
    b. Make sure the lamp cord socket is fully seated onto the lamp pins as seen in the image below.



20. Screw the long aluminum nut onto the reactor to compress the O-ring. Tighten the nut very firmly by hand, NO TOOLS REQUIRED. Do the same with the short “blind” nuts on the opposite end of the reactor. See images below.



21. Pressure test the O-ring seals
    a. Take care to NOT pull on the lamp cords. This could loosen the connection of the lamp cord to the lamp.
    b. Verify that all four aluminum nuts are firmly tightened by hand.

c. Start the pool pump at full speed and allow water to flow through the reactor for a minimum of five minutes. Look for any leaks at the aluminum nuts. If a leak is detected turn off the pump and tighten the aluminum nut. HAND TIGHTEN ONLY.
d. Restart the pump at full speed and check for leaks by running it for at least 5 minutes. If the leak persists, turn off the pump and drain the reactor using the drain valve located under the reactor at one end.
e. With the reactor drained, remove the aluminum nut where the leak occurred, remove the O-ring from the quartz/lamp assembly and clean any debris from it and the sealing surfaces of the nut and reactor.
f. Apply a liberal amount of lubricant (optional but recommended) as shown above and repeat the O-ring sealing process. Close the drain valve and repeat the pressure testing process.
g. If you are unable to stop the leak, contact your pool builder or the UV system manufacturer.

22. Once a successful pressure test is achieved Install the cord grips into the aluminum nuts and tighten them to form a weathertight seal around the lamp wires. See image below.

23. With the drain valve closed and all the wire connections and cord grips tightened. Start the pool pump and at full speed and do a final inspection for leaks.
24. Repair any leaks and verify that the UV system is functioning. The green LED light on the electrical box verifies that the system is operating normally. See image below.

13. l a Quartz/Lamp assembly follow the instructions below.

G. FAQ

Here are a number of FAQ's that will answer some of the most common questions.

Is the Purity UVC system compatible with saltwater pools? – Yes.

Do I need to turn my Purity UVC system off when I clean my filter? - No, the pressure switch that is part of your Purity UVC system will automatically shut the UV bulb off until proper water pressure inside the reactor is reestablished.

Will a time clock on my pool shorten my bulb life? – The Purity UVC system is designed for daily ON/OFF cycles. And normal use will not shorten the bulb life.

Is there any residual effect from UV? - No, UV light is used as a control and is applied only to the water that passes inside the Purity UVC reactor.

Can the Purity UVC reactor be mounted horizontally? - Yes, however optimal flow, and UV fluence (dosage) is best achieved when mounted horizontally with the 3" water connections facing up.

Can the Purity UVC system be installed below the pond or pool waterline? – Yes, but proper plumbing design is critical as additional valves may be required. The design and installation must be performed by a professional plumber who is familiar with that type of installation.

Can multiple Purity UVC systems be used together for larger systems? - Yes, you can add any number of Purity UVC systems to a plumbing bypass manifold system to allow for larger outputs and flow rates. Purity UVC also designs custom systems for high volume and high flow rate situations.

Can the Purity UVC system be installed on a new or replastered pool immediately? – Yes.

H. Trouble Shooting

The UV Bulb Will Not Light, the Green indicator light on the front of the electrical enclosure is off - If this occurs upon initial start-up, the problem could be caused by a number of issues.

1. The pressure switch is open. This is caused by low pressure in your system. Make sure the pump is on (the bulb will only light when there is 4 psi or more water pressure inside your Purity UVC reactor). Verify that your pools system pressure gauge, located down-stream of the Purity UV reactor, reads 4 PSI or more. If it does not read at least 4 psi, restrict the water flow down-stream of the Purity UVC system by partially closing a valve. This will increase the pressure inside the Purity UVC reactor.
2. The bulb has become disconnected from the bulb connector. With the water pump OFF and the power to the Purity UVC system disengaged, refer to the installation instructions and confirm that the multi-conductor cables to the lamps are properly connected.
3. One of the quart/lamp assemblies is damaged. The Purity UVC two lamp system requires both lamps to be operational for them to work. This is a safety designed into the ballast programing that monitors the quartz/lamp assemblies power consumption. Drawing too much or too little power will trigger a shut-down. It's one of the ways the Purity UVC system self-monitors for optimal performance.
4. The Green indictor light may have burned out. Turn the system OFF for 1 minute or until the pressure gauge down-stream of the reactor drops below 4 psi. Turn the system ON, If the green indicator light comes on for a moment then turns off. The light is fine, and the issue is with another part of the system. If the green light never comes on, contact your Purity UVC system installer or Purity UVC.

The UV Bulb Is No Longer Lit - This occurs after the unit has been operating successfully for a period of time

1. Verify that the pump is running and there is at least 4 psi of pressure in the system.
2. With the power off, do a visual inspection of the conduit going to the Purity UVC ballast box and the three multi-conductor cables exiting the box that go to the Purity UVC reactor.
3. The bulb has burned out. Replace the UV bulb.
4. The ballast has burned out. Contact your supplier or Delta UV for assistance in obtaining a new ballast

The UV Bulb Stays Lit When The Pump Is Off -

1. The Purity UVC system must be installed so that power to the Purity UVC system is only supplied when the pump suppling water to it is operational. Contact your equipment supplier and alert them to the situation.

The Water Is Green - Green water is an indication that the UV rays generated by the Purity UVC system not effective or are not being generated by the UV bulb.

1. Check pool chemistry for phosphates and chemical balance.
2. Check the bulb to make sure it is on. If it is not on, follow the procedures above regarding the UV bulb not lighting.
3. Run your unit longer. If your unit is operating on a time clock, run the circulation pump longer to allow the Purity UVC unit to function fully.
4. Clean the quartz tube. See Installation instructions.
5. Replace the UV bulb if it is nearing the 16,000 hour useful life. At 16,000 hours of operation, the UV bulb is 80% as effective as it was when it was new. This is normal for all low-pressure type UV bulbs, which are the longest life bulbs used in this type of application.

The GFCI Has Tripped - The GFCI protects the system from any fault to ground, as the electrical breaker protects the electrical circuit. When it trips, it is an indication that there is an electrical problem that must be corrected to provide a safe operating environment in your pool or pond.

1. Disconnect the power to the Purity UVC system by turning off the circuit suppling the power.
    a. Inspect all the wires and connections for any visible damage. If damage is found, contact your installer or a licensed electrician so they can safely remedy the problem.
    b. Open the electrical box and look for any foreign objects/contamination/debris. If any is found, verify that the power is disconnected and remove the foreign objects. Or Contact your installer or a licensed electrician so they can safely remedy the problem.
    c. Look for moisture in the electrical box. If water is present inside the electrical enclosure try to locate the source of the moisture. It could be something as simple as debris on the enclosure seal or the mating surface. Both the seal and the mating surface should be thoroughly inspected for damage. If either is damaged in any way contact the manufacturer for replacement parts.
    d. Check for water where the multi-conductor cables connect to the lamp/quart assemblies. If water is found, remove the lamps and sealing O-rings, and reinstall per the steps outlined in the “Installation instructions”.

I. Warranty

WHAT IS COVERED

This Warranty covers defects in materials or workmanship in manufacturing of the UV unit, including housing corrosion causing leakage and plastic component degradation, except as provided below.

FOR HOW LONG

This warranty runs for the following periods from the date of installation, except in the case of replacement Lamps/Quartz which run from the date of purchase ("Warranty Period"):

Reactor vessel – Lifetime for the original owner.

Electrical enclosure and components – 3 years.

Pressure switch – 3 years.

Lamp/Quartz assemblies – full replacement for 1 year. Prorated from 12 to 18 months.

WHAT IS NOT COVERED

This warranty does not cover systems that were not installed in compliance with the

instructions by a licensed plumber/contractor or that have been abused or operated incorrectly. It also does not cover the following:

• Incidental or consequential damages caused by a failure of the product.

• Mechanical Abuse

• Glass/quartz Component Breakage

• Improper Installation

• Damage caused by fire, flood or acts of God.

• Operation At Pressures Greater Than 60 PSI (4.13 Bar)

• Freeze Damage

• Improper Operating Voltage

• Costs of shipping to and from Purity UVC for covered items.

• UV units received with factory identification missing, mutilated, or altered, or systems received containing components not supplied by Purity UVC or modified in any way.

WHAT PURITY UVC WILL DO

Purity will replace the covered defective part of the system, or if necessary, the UV unit and send it to the User with installation instructions for a licensed plumber/contractor, via UPS Surface, at the User's expense.

HOW TO GET SERVICE

To receive service under this Warranty, the User must contact Purity UVC llc within the Warranty Period to describe the problem to a customer service representative who will verify that the product is under warranty and determine whether a part or the system will be replaced. If so, Purity will send the User a Return Authorization Code (RAC). The User will be required to return the UV unit freight prepaid to Purity for Limited Warranty evaluation, and accompanied by Purity's RAC, photocopy of original invoice and proof of a licensed plumber/contractor's installation. The User will be responsible for any freight damage associated with such return. Unit or component failures found to be covered under this Limited Warranty will be repaired or replaced (at Purity's option) without cost to the User and will be returned to the User via UPS Surface, at the User's expense. UV units received unaccompanied by the required documentation will not be accepted by Purity for Warranty evaluation and will be returned to the User in the same condition as received, freight collect (COD) if the User fails to provide the required documentation within ten (10) days from date of notification of missing documentation from Purity UVC. Any unit returned to Purity COD or freight collect will be rejected from the freight carrier.

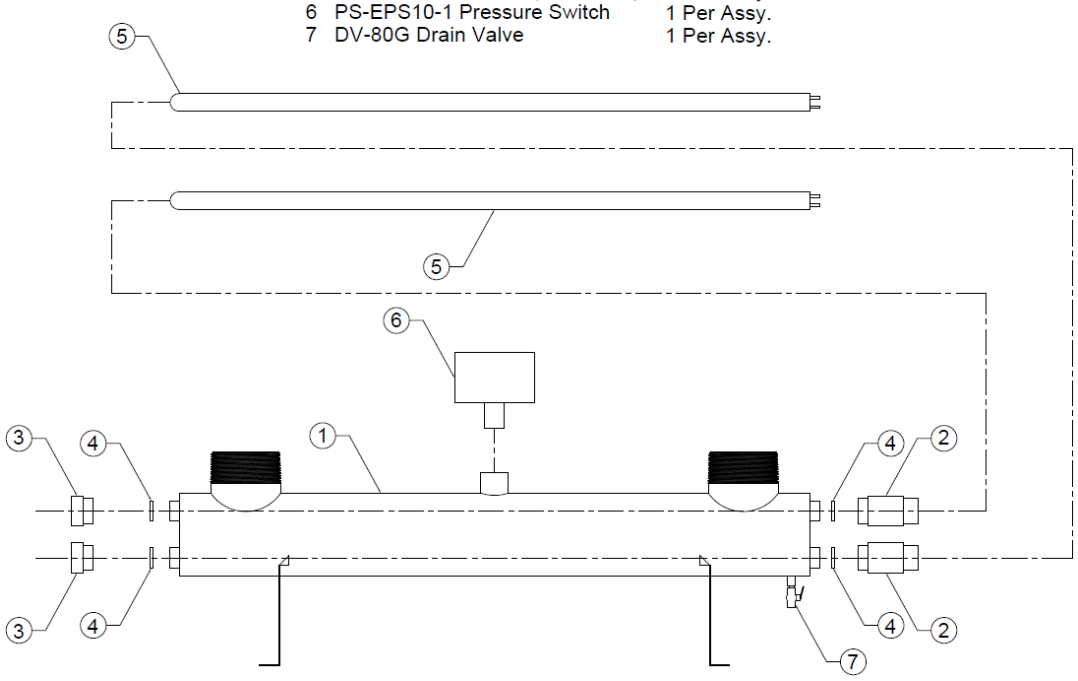
HOW STATE LAW APPLIES

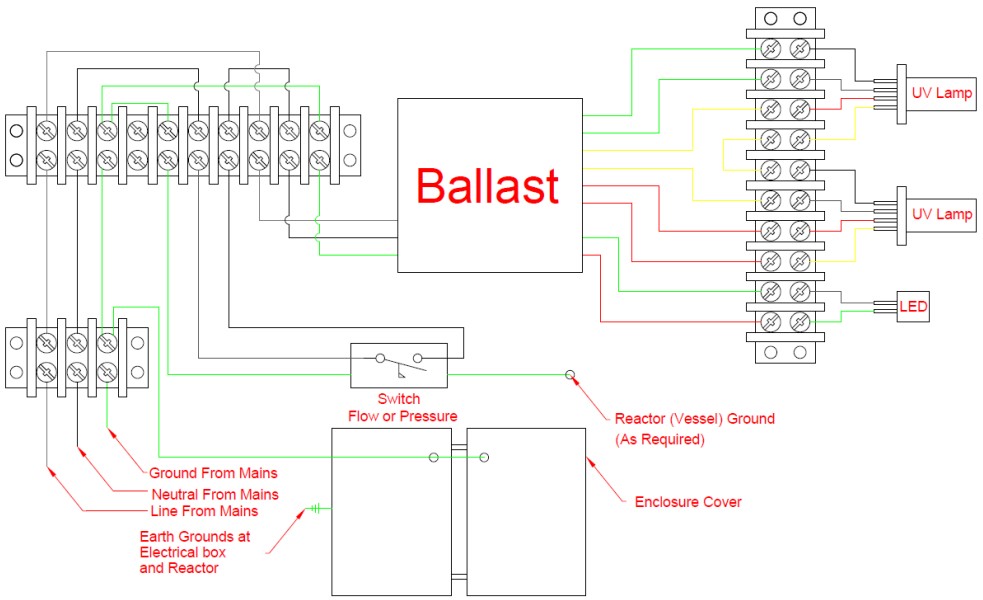
This warranty gives you specific rights and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

J. System Schematics

PURITY UVC Model: PUV-2-HO-80G

1	R-2-HO-80G Reactor	1 Per Assy.
2	LN-L-20M Long Lamp Nut	2 Per Assy.
3	LN-B-20M Blind Lamp Nut	2 Per Assy.
4	OR- 20M O-Ring, Lamp	4 Per Assy.
5	M1-CE-05 Quart/Lamp Assembly	2 Per Assy.
6	PS-EPS10-1 Pressure Switch	1 Per Assy.
7	DV-80G Drain Valve	1 Per Assy.





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