

CrystalClear Ultra CrystalClear Ultra Max



OPERATION & INSTALLATION INSTRUCTIONS

Congratulations on purchasing this CrystalClear Ultra system. By purchasing the CrystalClear Ultra system you are receiving not only a high-quality product but also peace of mind.

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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. **DANGER – Risk of electric shock.** Install at least 5 feet (1.5 m) from all metal surfaces. As an alternative, a unit may be installed within 5 feet of metal surfaces, if each metal surface is permanently connected by a minimum No. 8 AWG (8.4 mm²) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.
4. **DANGER – Risk of injury.**
 - a) Replace a damaged cord immediately.
 - b) Do not bury the cord.
 - c) Connect to a grounded, grounding type receptacle protected by a Class A Ground Fault Circuit Interrupter (GFCI) only.
5. **SAVE THESE INSTRUCTIONS.**
6. Before servicing this equipment, disconnect the power cord from the electrical outlet.
7. **DANGER – Energy given off by the UV lamp is harmful to your eyes and skin.** NEVER look directly at an illuminated UV lamp without adequate eye protection and always protect your skin from direct exposure to UV light.
8. Use only genuine replacement components.
9. It is recommended that installation and maintenance is done by a certified technician.
10. Product is intended for permanent pool installations only.
11. **WARNING – This product is not to be used for general lighting/illumination.**
12. **CAUTION – Chamber may be hot.**
13. **WARNING – Do not operate with any water on electrical connections.**
14. **CAUTION – System is not designed for operation in freezing temperatures. DRAIN WATER IF THE TEMPERATURE DROPS BELOW 36°F (2° C).**

BEFORE YOU BEGIN

The following will be needed for installing the UV system:

Tools

- Pipe cutter, hacksaw or other specialized tools required to cut/modify into your existing pool plumbing
- Wrench (for tightening fittings)

Other materials

- PVC/PVC glue
- Non-hardening pipe-thread sealant specifically rated for use with PVC plastic and stainless steel. **(THIS SEALANT IS INCLUDED IN YOUR SYSTEM PARTS)**. Teflon tape and Teflon-based pipe sealants cannot be used on the stainless steel threads.

WATER CHEMISTRY

The quality of your water is very important in order to ensure successful operation.

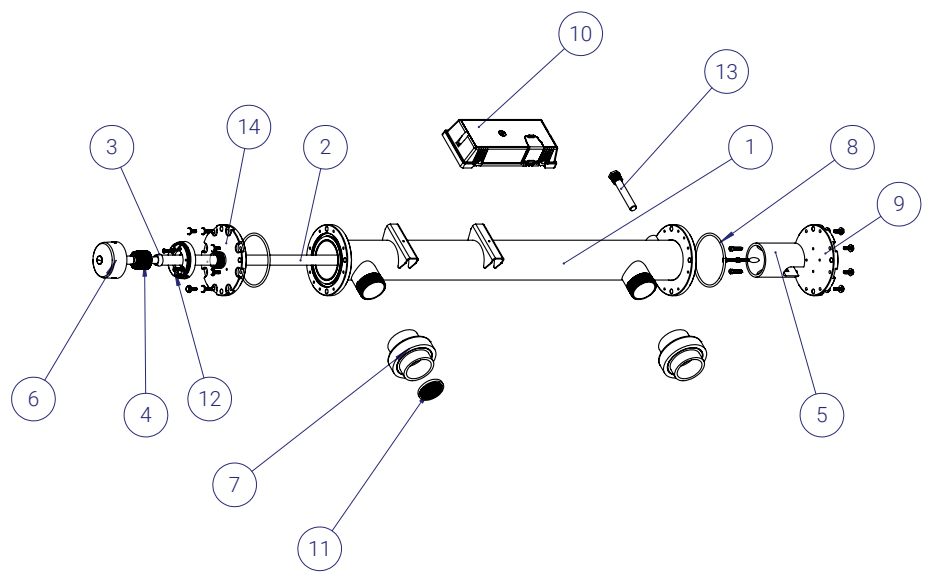
Regular water chemistry testing should be performed as usual.

RECOMMENDED WATER PARAMETERS

Chlorine residual:	1-3 ppm free chlorine
pH:	7.4 - 7.6
Total alkalinity:	80 - 120 ppm

ASSEMBLY AND PARTS LIST

Unpack the system and ensure all the components are included with the system.
Your system is shipped with the following components:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	W-P-00-PL-003-01 W-P-00-PL-004-01	45 GPM Weldment 75 GPM Weldment	1
2	W-R-UV-PL-005-01 W-R-UV-PL-002-01	Quartz Sleeve	1
3	W-R-UV-PL-009-01	Sleeve O-Ring	1
4	W-R-UV-PL-010-01	Gland Nut	1
5	W-R-UV-PL-011-01	Pool Bottom Locator	1
6	W-R-UV-PL-004-01 W-R-UV-PL-001-01	45 GPM Lamp 75 GPM Lamp	1
7	W-R-UV-PL-012-01	PVC Union	2
8	W-R-UV-PL-013-01	Chamber O-ring	1
9	W-R-UV-PL-014-01	Flange Bottom Locator	1
10	W-R-UV-PL-007-01 W-R-UV-PL-033-01	45 GPM Controller 75 GPM Controller	1
11	W-R-UV-PL-016-01	Pol System Strainer	2
12	W-R-UV-PL-017-01	Screw, M5-08, Low Profile Socket, Stainless Steel	2
13	W-R-UV-PL-021-01	Zinc Anode	1
14	W-R-UV-PL-018-01	Flange Assembly Top	1

RECOMMENDED PLACEMENT

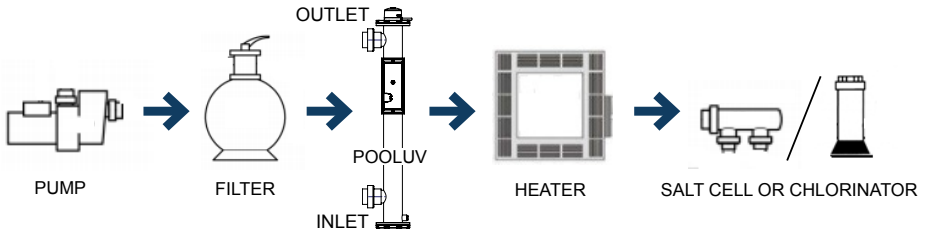


Figure 1. Diagram of flow

FLOW RATES

For detailed flow rates see page 11.

LOCATION

Place the CrystalClear Ultra system in an area to ensure there is enough space at the lamp connector end to safely remove the UV lamp and/or quartz sleeve (Figure 2). The controller will require a ground fault circuit interrupter (GFCI or GFI) outlet and should be mounted beside or above the chamber. The controller must be mounted upright. **If installing unit in horizontal position, you must assemble all components in vertical position.**

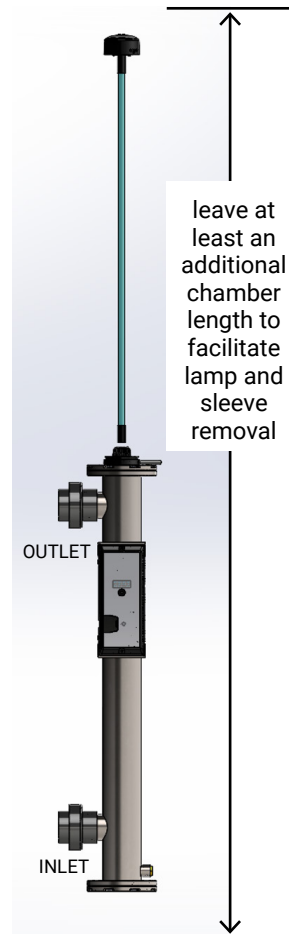


Figure 2. Lamp Removal Spacing

INSTALLATION

Vertical installation is the preferred method with the inlet at the bottom (lamp connection at the top).

The use of a by-pass assembly is recommended as it will allow you to isolate the UV chamber. This will allow for easier access in case maintenance is required.

If installing vertically, the base can be mounted to the ground how it is recommended leaving the unit unfastened for easy removal when storing during the off season.

It is recommended to have a pool professional connect the UV chamber to the water supply and may be a requirement depending on where you are located.

Step 1: Plumb system between filter & heater. Please note, the union with the strainer should be positioned on the outlet. Use the union sealant that is included in the box to glue union to threads on stainless steel chamber. Use regular PVC plumbing glue to attach union to pool piping.

Step 2: Perform a Pressure Test (See Figure 3). Insert pressure test cap in top of chamber & screw on top gland nut. Turn on pump and observe for any leaks.

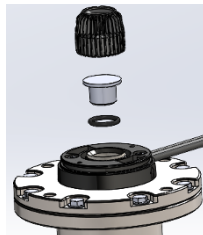


Figure 3. Pressure Test Cap Installation

Step 3: Inserting the Quartz Sleeve. **WARNING: Do not push glass sleeve down too far.** Remove gland nut & pressure test cap. Gently remove the quartz sleeve from its packaging. The use of cotton gloves is recommended for this procedure as oils from the hands can leave residue on the sleeve and lamp which can ultimately block the UV light from getting to the water. **Carefully slide the sleeve into the chamber until you feel it rest inside the centre of internal metal basket holder at bottom of unit** (See Figure 4). There should only be $\frac{5}{16}$ " - $\frac{1}{2}$ " (8-12mm) of glass exposed.

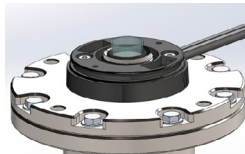


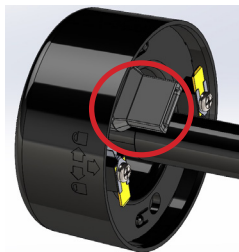
Figure 4. Quartz Sleeve Installation

Caution: Any more than $\frac{1}{2}$ " of glass exposed can cause the quartz tube to break and void the warranty.

Step 4: Install O-ring. Slide the o-ring onto the quartz sleeve until it is butted up against the chamber.

Step 5: Install gland nut. Hand tighten the provided gland nut over the quartz sleeve onto the threaded top of the chamber. Do not overtighten. It has a positive stop to prevent over-tightening. **DO NOT USE TOOLS for this step.**

Step 6: Lamp Installation. Carefully, remove the lamp from its packaging. Always hold UV lamps by the polymer ends, not by the glass. Again, the use of cotton gloves is recommended. Remove the lamp key from the lamp, and insert into the controller. Insert the lamp, lining up the arrows, and twist to lock the lamp.



Your system is now ready to be plugged into the appropriate GFCI protected outlet. You may consider keeping quartz tube and bulb packaging for off season storage, if this winterization method is required (See page 8).

PLEASE NOTE: A timer is recommended in conjunction with your pool pump to ensure the CrystalClear Ultra system is running at the same time as the pump.

MAINTENANCE

CLEANING THE QUARTZ SLEEVE/LAMP REPLACEMENT

At a minimum, the quartz sleeve should be cleaned on an annual basis. Depending on the water quality, the quartz sleeve may require periodic cleaning. The following steps outline a basic cleaning procedure. The lamp should be replaced after 420 days of use & when alerted by the controller.

Step 1: If a by-pass assembly is installed, shut the inlet valve off to prevent water flow through the system. Otherwise, turn off main water valve (and/or turn off the pool pump).

Step 2: Disconnect power cord of UV system from electrical outlet.

Step 3: Release water pressure by opening union and letting water drain from the system.

Step 4: Remove the lamp from the chamber by turning counter-clockwise, being careful to hold it by the polymer end. **CAUTION: the lamp may be hot!**

Step 5: Unscrew the gland nut from the chamber exposing the end of the quartz sleeve.

Step 6: Carefully remove the quartz sleeve and o-ring by **gently twisting and pulling** the quartz sleeve.

Step 7: Using a soft, lint-free cloth or towel wipe the sleeve down using a commercial scale cleaner (i.e. CLR® or LIME-A-WAY®). This removes scaling or mineral deposits that may be on the outside of the quartz sleeve. Be careful not to get any moisture or liquids inside of the sleeve and ensure spring stays in place inside quartz sleeve.

Step 8: Dry the sleeve with separate cloth.

Step 9: Slide the sleeve back into the chamber. Follow steps 3 through 8 from the installation section of the manual. **Do not push down too far and ensure it rests in its place at bottom of chamber.** Replace o-ring and ensure spring is re-installed into quartz sleeve.

Step 10: If the bulb was replaced, remember to replace the lamp key with the new lamp key included with the new lamp. The lamp key automatically resets the timer

INSPECTING THE ZINC ANODE

It is recommended to inspect the Zinc Anode drain plug once per year. Once pump and system has been shut down, use a wrench to remove the drain plug from the bottom of the chamber. As this is a sacrificial anode, the zinc will break down over time. The zinc anode should be replaced once it reaches approximately ½" in size (original size of anode is 3").

WINTERIZATION

Recommended operating temperature is between 36°-104°F (2°-40°C). Please ensure the CrystalClear Ultra system and pump is turned off before winterizing.

During the winterization process (or on an annual basis) it is important to inspect the zinc drain plug (see above).

There are 2 options for winterization (Option 1 is recommended):

1. IF THE BASE IS NOT AFFIXED TO CONCRETE The unit should be disconnected and stored indoors for winter. Turn off the pump, unscrew the unions to disconnect the plumbing and remove the drain plug to allow excess water to escape. A wrench is required to unscrew drain plug. **Keeping the system fully assembled move the chamber and controller inside for the winter.**
2. WHEN BASE IS AFFIXED TO CONCRETE OR IF REQUIRED TO LEAVE CONNECTED TO PLUMBING Disconnect Power. Unscrew the unions to disconnect the plumbing and remove the drain plug. Tip chamber to allow ALL water to drain. Remove the controller from wall mount and carefully disconnect the lamp from the lamp cable. Carefully remove the quartz tube and lamp. These are fragile and must be handled with care, gloves are strongly recommended.

Pressure Test Cap Installation

Ensure the o-ring remains in place as it is essential for reassembly. Utilize original packaging to safely store the lamp and quartz sleeve. Apply the pressure test cap and screw at the top gland nut, as noted in STEP 2 of installation. This will act as a winter cap. After water has been completely drained, the unions can now be re-connected if desired.



Pressure Test Cap Installation

TO MAINTAIN WARRANTY COVERAGE, IT IS REQUIRED TO STORE ELECTRONICS/CONTROLLER INSIDE DURING WINTER MONTHS.

*When ready to reconnect the CrystalClear Ultra in the spring, please refer to the original installation instructions above.

**If proper winterization and installation instructions are not followed, the warranty will be rendered void.

OPERATION

CrystalClear Ultra systems come with a feature laden controller that incorporates both the lamp driver (ballast) and control features in one water-tight case. The controllers contain a power factor corrected, constant current lamp driver.

PLEASE NOTE: While the LED or display screen is red, and the buzzer is sounding the system may not operate at full effectiveness. For CrystalClear Ultra systems, even though they have a visual and audible warning built into the controller, a green LED does not necessarily indicate that the system is operating at full effectiveness. These systems do not measure the level of effectiveness; they simply measure the “on-off” status of the lamp. Please have your water checked for microbiological contaminants on a regular basis.

CONTROLLER

Simplistic in operation, these systems feature a tri-color LED that indicates system status and a 4-digit display to indicate lamp life remaining and any system alarms. Pressing the button will change the display to cycle through the alarms (if any). When the UV lamp is on and within its operating age, the LED will be green. When the UV lamp is not on or the lamp life has expired, the LED will be illuminated red, and an audible buzzer will be sounding. To remedy this condition, the UV lamp must be replaced with a new genuine CrystalClear Ultra lamp.

POWER-UP SEQUENCE

On startup, the controller will display CrystalClear Ultra and once the startup is complete, the number of days remaining on the lamp will be displayed.

LAMP COUNTDOWN SEQUENCE

The system counts down the number of days until a lamp change is required. At thirty days remaining, the LED or display screen will change to a yellow caution indicator. At seven days remaining, the system will additionally repeat an audible chirp. Past the zero-day threshold, the LED or display screen changes to a solid red with a continuous buzzer.





At any point during this sequence, the audible chirp or alarm can be deferred for seven days by holding the controller button down for a period of five seconds. The number of deferrals used will be displayed as below. Once the deferral expires, the alarm will sound once again. The deferral can be repeated up to three times. **PLEASE NOTE:** At any point after lamp expiration, the system may not operate at full effectiveness.

LAMP REPLACEMENT

After the lamp is expired, it must be replaced with the same part number as indicated by the label on the reactor. Begin replacing the lamp by unplugging the power for the controller, then refer to Installation, starting with Step 10: for instructions on installing the new lamp.

SYSTEM TROUBLESHOOTING

The display screen is LED and will scroll the words across the screen when an alert is used.

System Display	Problem	Resolution
	The system has detected a problem with the lamp.	Reset lamp protection circuit – unplug unit for 10 seconds. Replace the lamp with the part indicated on the silver label on the reactor.
	Although the lamp is powered and visibly illuminated, due to the lamp's age its UV output is no longer sufficient.	Replace the lamp with the part indicated on the silver label on the reactor.
	Wrong lamp installed	Replace lamp with the correct model as indicated on the silver label on the reactor.
	Missing or incorrect lamp key.	Ensure the lamp key (packaged with the lamp) is installed. Unplug and reinstall the key. Ensure the key part number matches Lamp on the silver label on the reactor.

For any other questions or troubleshooting, please reach out to us at support@naturesairandwater.com.

SYSTEM SPECIFICATIONS

MODEL	CrystalClear Ultra	CrystalClear Ultra Max
Flow Rate	45 GPM	75 GPM
	170 lpm	284 lpm
Port Size	2" MNPT	
Electrical	120V ± 10% / 50-60Hz	
Plug Type	American, NEMA 5-15	
Lamp Watts	67	89
Replacement Lamp	W-R-UV-PL-004-01	W-R-UV-PL-001-01
Replacement Sleeve	W-R-UV-PL-005-01	W-R-UV-PL-002-01
Chamber Material	316L Stainless Steel, A249 Pressure Rated Tubing, Polished & Passivated	
Chamber Dimensions	3.5 x 25.8" (8.9 x 65.5 cm)	3.5 x 37.6" (8.9 x 95.5 cm)
Controller Dimensions	10.2 x 4.3 x 2.2" (25.8 x 10.8 x 5.5 cm)	
Operating Pressure	10-150 psi (0.7-10.3 bar)	
Operating Water Temperature	36-104° F (2-40° C)	
Lamp Change Reminder	YES (4-digit LED display)	
Visual Lamp Out Indicator	YES	
Audible Lamp Out Indicator	YES	
Shipping Weight	Contact support@naturesairandwater.com	

LIMITED WARRANTY STATEMENT

Products of Nature's Air and Water are warranted to the original user only to be free of defects in material and workmanship for a period as specified below. This warranty only applies to the original purchaser and is not transferable. Warranties will not be approved after installation of replacement parts has been completed without prior authorization from Nature's Air and Water.

UV SYSTEMS

Three (3) year Limited Warranty on the stainless steel chambers, from the date of original purchase, or installation (proper documentation required for verification).

ELECTRONICS

Three (3) year Limited Warranty on the controller, from the date of original purchase, or installation (proper documentation required for verification).

UV LAMPS & QUARTZ SLEEVES

One (1) year Limited Warranty on all ultraviolet lamps, and quartz sleeves from the date of original purchase, or installation (proper documentation required for verification).

This CrystalClear Ultra system will be repaired or replaced, at our sole option, providing that the ultraviolet system or any component is defective in materials or workmanship for the periods outlined above and subject to the "Limitations of Warranty" as outlined below. Nature's Air and Water's liability under this warranty shall be limited to replacing the part, without charge, F.O.B. Nature's Air and Water's closest Distribution Facility. Nature's Air and Water will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. Nature's Air and Water will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed or winterized in accordance with the manufacturer's installation and operating instructions.

Limitations of warranty

This warranty does not apply to any of the following:

- A product that has been incorrectly installed according to the installation manual.
- A product that has been modified in any manner, unless approved by the manufacturer.
- A product where the serial number has been altered, defaced or removed.
- Damage caused by the use of parts that are not compatible, suitable and/or authorized by Nature's Air and Water for use with the product (i.e. non-original lamps or sleeves).
- Damage caused during shipment of the product.
- If the product has not been stored properly or properly assembled.

For Warranty Service

To obtain service under this warranty, you must first contact **support@naturesairandwater.com** to obtain a Warranty Return Authorization. You will require proof of purchase and installation date, failure date, and any other requested data. Unless otherwise provided, contact NATURE'S AIR AND WATER for instructions on returning the product. Any defective product to be returned to NATURE'S AIR AND WATER must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Good Authorization must be included if so instructed.

NATURE'S AIR AND WATER WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY FIRE, FLOOD, OR ACTS OF GOD, LOSSES OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE.

THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY MADE BY NATURE'S AIR AND WATER WITH RESPECT TO THE PRODUCT AND IS GIVEN IN LIEU OF ANY OTHER WARRANTY. TO THE EXTENT ALLOWED BY APPLICABLE LAW, ANY AND ALL EXPRESS OR IMPLIED WARRANTIES NOT SET FORTH HEREIN ARE WAIVED AND DISCLAIMED, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. NATURE'S AIR AND WATER LIABILITY UNDER THIS LIMITED WARRANTY IS LIMITED SOLELY TO THOSE LIABILITY SET FORTH ABOVE. IN THE EVENT THAT ANY PROVISION OF THIS LIMITED WARRANTY SHOULD BE OR BECOME INVALID OR UNENFORCEABLE UNDER APPLICABLE LAW, THE REMAINING TERMS AND CONDITIONS HERE OF SHALL REMAIN IN FULL FORCE AND EFFECT AND SUCH INVALID OR UNENFORCEABLE PROVISION SHALL BE CONSTRUED IN SUCH A MANNER AS TO BE VALID AND ENFORCEABLE.



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