CRYSTAL QUEST®
Water Filters

Crystal Quest® UltraViolet Disinfection System
INSTALLATION AND OPERATION GUIDE

MODELS:

CQE-UV-00101	1 GPM	CQE-UV-00106	36 GPM
CQE-UV-00102	6 GPM	CQE-UV-00107	48 GPM
CQE-UV-00103	8 GPM	CQE-UV-00108	60 GPM
CQE-UV-00104	12 GPM	CQE-UV-00109	72 GPM
CQE-UV-00105	24 GPM	CQE-UV-00110	84 GPM

ONLINE WARRANTY INFORMATION
CrystalQuest.com/warranty.html

ECO FRIENDLY

Eagle Redox Alloy® Filtration Media Technology

CERTIFIED ISO 9001:2015 COMPANY

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OPERATING SPECIFICATIONS:

Pressure Range:	30-60 psi (2.1-4.1 bar)
Temperature Range:	40-85°F (4.4-29.4°C)
Optimum Service Flow:	1-84 gpm (3.78-318 lpm)

The system should be installed by a licensed plumber in any state or country. Specifically, the following states require a licensed plumber OR allow a state-registered installer or contractor to install your water filter system: AR, CA, GA, KS, MA, MI, MN, OK, RI, SC, SD, TX, VT, and WI.

IMPORTANT INFORMATION

- A qualified licensed plumber should install this Ultraviolet (UV) Disinfection System. Not using the service of a qualified plumber could void warranty.
- Inspect the carton and Ultraviolet Disinfection System for evidence of rough handling and concealed damages. If contents appear damaged, ask driver or contact the carrier for a damage claim form to fill out. Notify shipper immediately.
- Remove components from the shipping carton. Check that all installation parts and hardware are present.
- Make a complete inspection of the UV Disinfection System to ensure that:
  a) there are no physical damages to the system,
  b) all accessories are present,
  c) and the system is clean and dust free.

Read all instructions, specifications, cautions, and warnings before installing and using your water filter system.

- Intended for indoor use only. When storing the unit, drain all water from it and disconnect it from water supply.
- The use of attachments not recommended or sold by the manufacturer/distributor may cause an unsafe condition. Installation errors can cause property damage. Crystal Quest® assumes no liability whatsoever for systems improperly installed or those installed by someone other than a licensed plumber or qualified contractor.
- Use the system on a potable, safe-to-drink, COLD water supply only.
- Do not use the system where water is microbiologically unsafe or with water of unknown quality.
- Turn the cold water line off while installing the system.
- When installation is complete, recheck the system to ensure there are no leaks or drips.
- The UV system should be installed to meet local, state and federal plumbing codes and health department rules and regulations.
- All water treatment installations must conform to local plumbing, electrical and sanitation codes. These codes are established for your protection. Check with your local public works department for current plumbing codes.
- Do not use non-Crystal Quest® replacement cartridges.
- Do not use non-Crystal Quest® parts or modify/tamper with unit.

SAFETY PRECAUTIONS

WARNING – To guard against injury, basic safety precautions should be observed, including the following:

- Read all instructions, specifications, cautions, and warnings before installing and using your UV Disinfection System. Learn the specific details regarding installation and use. Failure to follow them could cause serious property damage.

DANGER – To avoid possible electric shock, special care should be taken since water is present near electrical equipment. Carefully examine the UV Disinfection System after installation. It should not be plugged in if there is water on parts not intended to be wet.

- The outlet to plug in the UV Disinfection System must be within reach of the power cord. Do not use an extension cord. Extension cords that are too long or too light do not deliver sufficient voltage to the unit and could present a safety hazard. If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less amperes or watts than the disinfection system rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
- Do not operate the UV Disinfection System if it has a damaged cord or plug, if it is malfunctioning, or if it has been dropped or damaged in any manner.
- Always disconnect water flow and unplug the disinfection system before preforming any cleaning or maintenance activities. Never yank the cord to remove from an outlet; grasp the wall plug and pull to disconnect.

NOTE – The UV lamp inside the disinfection system is rated at an effective life of approximately 9000 hours. To ensure continuous protection, replace the UV lamp annually.

Installation must be made within an area protected from the elements and freezing. The unit must be protected from rain, dust, flooding, snow, freezing, and direct sunlight (the system's exposure to direct sunlight may cause algae growth).
Failure to comply will void the warranty.

WARNING: The light given off by this unit can cause serious burns to unprotected eyes and skin. Never look directly at a burning UV lamp. When performing any work on the UV Disinfection System, always unplug the unit first. Never operate the UV system while the UV lamp is outside of the UV chamber.

WATER CONDITIONS

Feedwater quality is extremely important for the optimum performance of your UV Disinfection System. The following levels are recommended for installation:

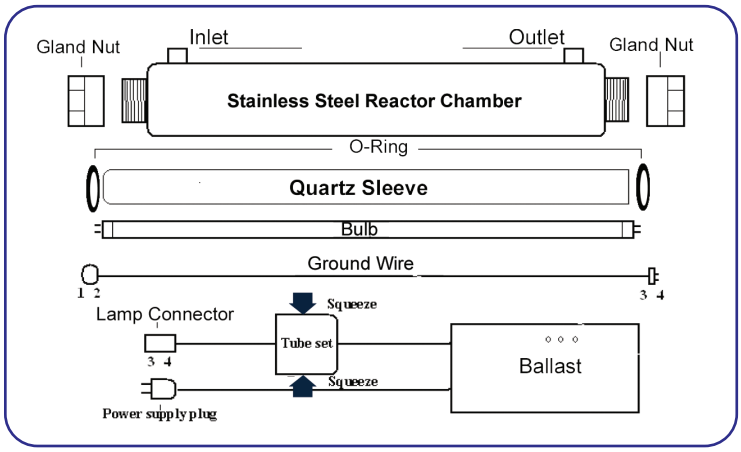
- Turbidity: < 1 NTU
- Hardness*: < 7 gpg (120 mg/L)
- Iron: < 0.3 ppm (0.3 mg/L)
- Manganese: < 0.05 ppm (0.05 g/L)
- Tannins: < 0.1 ppm (0.1 mg/L)
- UV Transmittance: > 75% (call for recommendations on applications where UVT < 75%)

* Where total hardness is less than 7 gpg, the UV Disinfection System should operate efficiently provided the quartz sleeve and/or sensor probe is cleaned periodically. If total hardness is over 7 gpg, the water should be softened.

If your water contains levels in excess of those mentioned above, proper pre-treatment is recommended to correct these water problems prior to the installation of your UV Disinfection System. These water quality parameters can be tested by your local dealer or by most private analytical laboratories. Proper pretreatment is essential for the UV Disinfection System to operate as intended.

Water testing by an independent third-party lab will attest to microbiologically toxic-free disinfected water. California residents are advised to have their water tested to ensure the water filter system is in compliance with Proposition 65.

DIAGRAM OF UV LAMP



(CQE-PT-03269)
1 – Gland Nut

(CQE-PT-03270)
2 – Inlet
3 – Outlet
4 – Stainless Steel Reactor Chamber

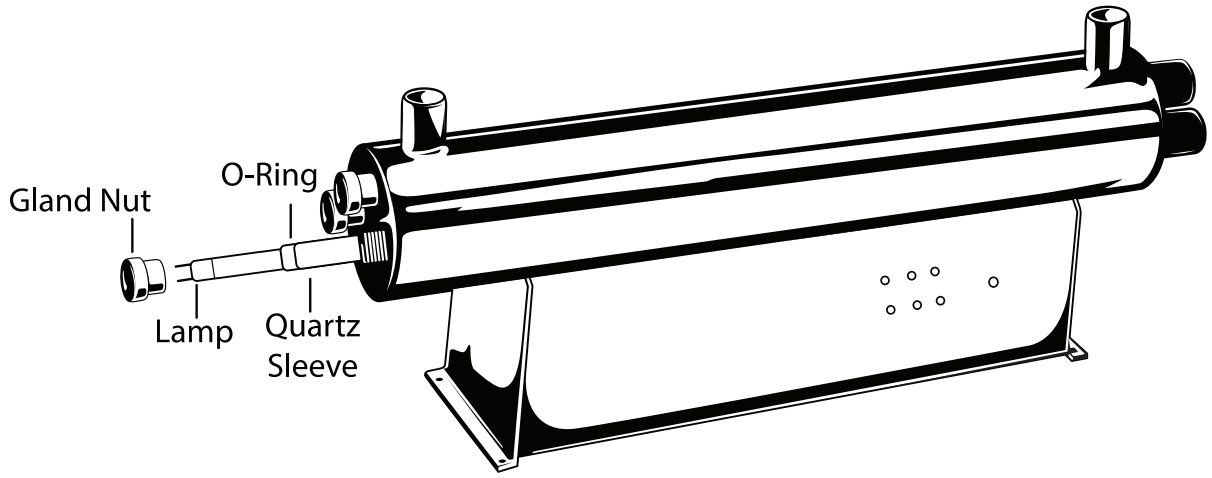
(CQE-PT-03268)
5 – O-Rings

(CQE-PT-03150)
6 – Quartz Sleeve

(CQE-PT-03101)
7 – Bulb

(CQE-PT-03267)
8 – Ground Wire

(CQE-PT-03089)
9 – Lamp Connector
10 – Ballast
11 – Power Supply Plug



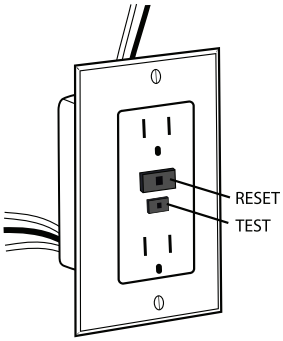
INSTALLATION/LOCATION

CAUTION – Electronic ballast must be connected to a grounded outlet (see GFCI) and the lamp connector ground wire connected to the stainless steel reactor chamber.

- The disinfection system is designed to be mounted horizontally or vertically at the point of use or point of entry depending on the specific flow rate of the unit (see UV installation diagram, Page 4).

NOTE – The ideal installation is vertical with the lamp connector on top. This prevents water damage from occurring on the lamp pins and lamp connector (see UV installation diagram, Page 4).

- The ballast should be mounted either above or beside the reactor chamber. This prevents moisture from entering the ballast enclosure and minimizes the potential for ballast failure.
- The complete water system, including any pressure or hot water tanks, must be sterilized before start-up by flushing with chlorine (household bleach) to destroy any residual contamination.
- For safety purposes, the UV Disinfection System should be connected to a ground fault circuit interrupter.
- If treating the entire house, install the disinfection system before any branch lines.
- A 5-micron sediment filter must precede the UV Disinfection System. Ideally, the UV Disinfection System should be the last treatment the water receives before it reaches the faucet.



RECEPTACLE TYPE GFCI

Test once a month to make sure GFCIs are working properly and are protecting you from fatal shock.

- To test the receptacle GFCI, first plug a nightlight or lamp into the outlet. The light should be on. Then, press the "TEST" button on the GFCI. The GFCI's "RESET" button should pop out and the light should go out.
- If the "RESET" button pops out but the light does not go out, the GFCI has been improperly wired. Contact an electrician to correct the wiring error.
- If the "RESET" button does not pop out, the GFCI is defective and should be replaced. If the GFCI is functioning properly, and the lamp goes out, press the "RESET" button to restore power to the outlet.

INSTALLATION/LOCATION

1. Carefully remove the UV lamp from the shipping tube, being careful not to touch the "glass" portion with your fingers. The UV Disinfection System should be mounted in the horizontal position with the inlet/outlet ports facing up. If the system must be installed in the vertical position, make sure the inlet port is at the bottom of the system. Mount the unit in a clear space with at least 40" (100 cm) of space at the lamp end to facilitate lamp and/or quartz sleeve removal. Fasten the UV Disinfection System to a suitable mounting platform with secure fasteners. Apply two turns of thread seal tape around the port threads to ensure a tight joint.

2. Insert the UV lamp into the quartz sleeve and chamber, making sure the lamp pins are accessible for connection with the lamp connector cable. Attach the lamp connector to the lamp pins and press firm into gland nut. Mount the UV Disinfection System with the supplied clamp. If the UV Disinfection System is to be hard plumbed, leave enough clearance in front of the lamp connector to allow for lamp service (a length equal to the length of the unit should suffice).

3. Various connection methods can be used to connect the water source to the UV Disinfection System; however, union type connectors are recommended. The use of a flow restrictor device is strongly recommended when installing your disinfection system, in order that the recommended flow rate not be exceeded. In addition, the use of a bypass assembly is recommended for emergency use of untreated water when your disinfection system is being serviced.

4. Prior to connecting the power source, check all connections to ensure that they are indeed secure; turn on water supply and check for any leaks. If satisfied that there are no leaks, proceed with the followings steps. DO NOT SOLDER CONNECTIONS WHILE ATTACHED TO THE DISINFECTION SYSTEM. THIS COULD DAMAGE THE O-RING SEALS.

5. To properly ground the stainless steel reactor chamber, attach the green wire coming from the power source to the grounding lug on the UV chamber. Remove the green cap nut and slide the eyelet connector onto the screw. Fasten the cap nut to the screw with a 5/16" wrench.

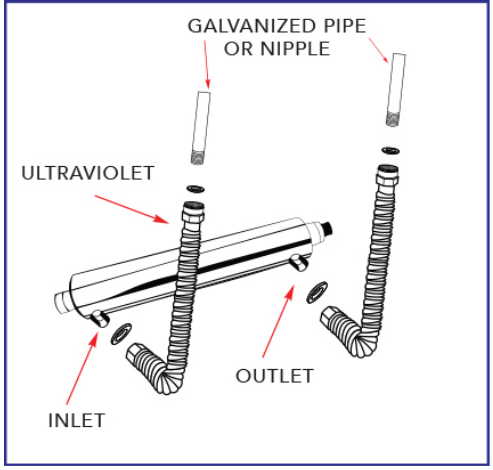
6. The power source provided with your disinfection system must be located within 5 feet of an electrical outlet. DO NOT USE AN OUTLET THAT CAN BE SWITCHED OFF (ie. A WASTE DISPOSAL OUTLET). Attach the lamp connector to the UV lamp and press into the gland nut. Plug the ballast into the outlet and ensure the POWER-ON LED is illuminated. NEVER LOOK DIRECTLY AT THE BURNING UV LAMP. THE LIGHT GIVEN OFF BY THIS UNIT CAN CAUSER SERIOUS BURNS TO UNPROTECTED EYES AND SKIN. When power is first applied, th ballast will enter an audible self- test mode.

NOTE – If ballast enters alarm condition, power must be removed for 30 seconds to allow ballast to reset.

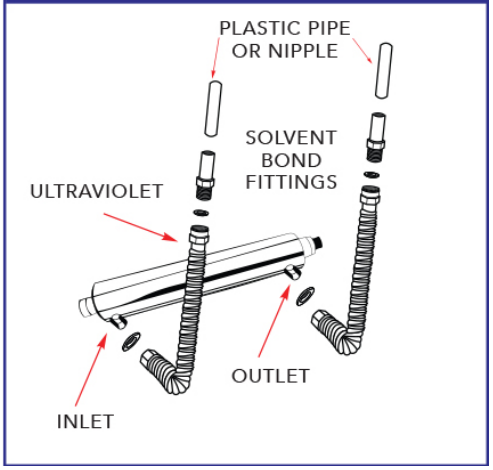
NOTE – The UV Disinfection System requires time to reach its full operating capacity. Allow the disinfection system to operate 3-5 minutes prior to use. In addition, open the faucet and allow water to run through the UV Disinfection System for 2-3 minutes to clear any air or debris. When using a reverse osmosis (RO) application, run the water for 30-45 seconds.

NOTE – When the UV unit is returned to service after being on bypass, the complete water system must be resterilized with chlorine (household bleach) to destroy any contamination that may have entered the distribution system while on bypass.

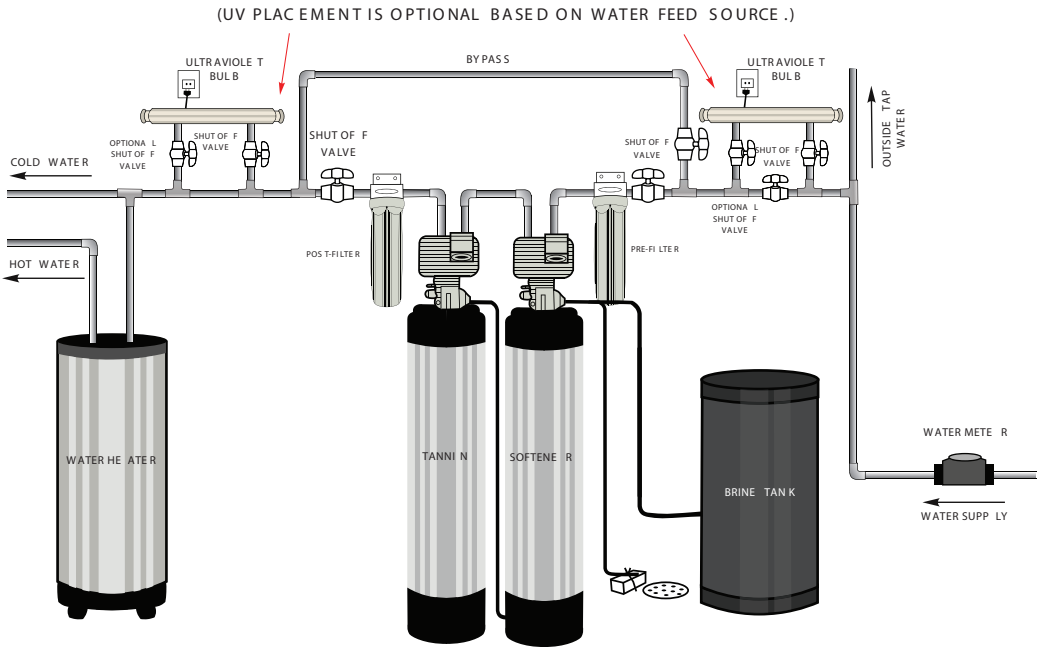
CONNECTING UV TO GALVANIZED PIPE



CONNECTING UV TO PLASTIC PIPE



UV INSTALLATION (WHOLE HOUSE)



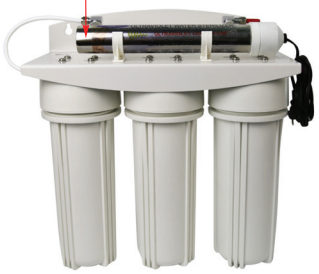
For a P.O.E. system installation, refer to the "Point of Entry Whole House Water Filter System Installation and Operation Guide".

Download a copy from www.CrystalQuest.com/whole-house-water-filters.htm.

Pipe, shut-off valves, and fittings are not provided by Crystal Quest®.

UV INSTALLATION (OTHER)

Triple Undersink with a 1 GPM Ultraviolet Water Sterilizer System CQE-US-00325



Thunder Reverse Osmosis® / Ultrafiltration 3000C with 1 GPM Ultraviolet Water Sterilizer System CQE-RO-00103

Point-of-Use Bottleless Water Cooler with 1 GPM Ultraviolet Water Sterilizer System CQP-WC-05901

MODEL	WATTS	ELECTRICAL VOLTS	ELECTRICAL Hz	OUTPUT POWER	HOUSING MATERIAL SS	DOSAGE uW/cm²	INLET/OUTLET PORT SIZE MNPT	AUDIBLE LAMP FAILURE	MAXIMUM PRESSURE LBS
CQE-UV-00101 1 GPM	11W	110-240	50-60	50mA	304#	>30000	¼"	YES	85
CQE-UV-00102 6 GPM	25W	110-240	50-60	113mA	304#	>30000	½"	YES	100
CQE-UV-00103 8 GPM	30W	110-240	50-60	136mA	304#	>30000	½"	YES	100
CQE-UV-00104 12 GPM	55W	110-240	50-60	250mA	304#	>30000	¾"	YES	100
CQE-UV-00105 24 GPM	110W	110-240	50-60	500mA	304#	>30000	1"	YES	100
CQE-UV-00106 36 GPM	165W	110-240	50-60	750mA	304#	>30000	1"	YES	100
CQE-UV-00107 48 GPM	220W	110-240	50-60	1A	304#	>30000	1.5"	YES	100
CQE-UV-00108 60 GPM	275W	110-240	50-60	1.25A	304#	>30000	2"	YES	100
CQE-UV-00109 72 GPM	330W	110-240	50-60	1.5A	304#	>30000	2"	YES	100
CQE-UV-00110 84 GPM	440W	110-240	50-60	2A	304#	>30000	2.5"	YES	100

OPERATION AND MAINTENANCE

NOTE – PRIOR TO PERFORMING ANY WORK ON THE DISINFECTION SYSTEM, ALWAYS DISCONNECT THE POWER SUPPLY FIRST.
1. Regularly inspect your disinfection system to ensure that the UV lamp is operating.
2. Replace the UV lamp with a new lamp after one year of continuous use to insure a high bacteria and virus kill rate.

NOTE – The UV lamp should be ON continuously. Repeatedly turning the lamp on and off will severely shorten the lamp life and allow bacteria to pass through without being affected by the UV.

TO REPLACE the UV lamp, first disconnect power. Disconnect the lamp connector by carefully separating it from the gland nut (use the aid of a slot screwdriver, if required). Disconnect lamp connector from lamp and carefully remove the UV lamp. Replace the new lamp, being careful not to touch the new UV lamp "glass" with your fingers as oils may impair UV transmission. If contact does occur, clean lamp with alcohol and reconnect lamp connector. Carefully replace lamp into stainless steel chamber. Press lamp connector into aluminum gland nut. Plug power source into outlet. Verify POWER-ON LED is illuminated and audible ballast start-up sequence operates.

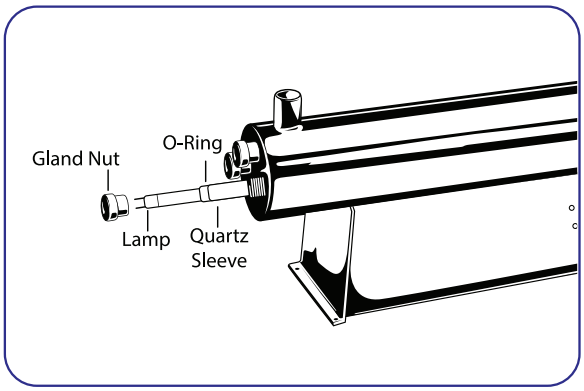
If the water contains any hardness minerals (calcium or magnesium), iron or manganese, the quart sleeve will require periodic cleaning. To remove the quartz sleeve, first remove the UV lamp (see instructions on replacing quartz sleeve) and follow these steps:

1. Shut off water supply and drain all lines.
2. Remove the lowest connection on the disinfection system and drain the UV chamber (use a small bucket under the unit to prevent a spill).
3. Remove gland nuts from chamber (do not allow quartz sleeve to fall).
4. Carefully remove O-rings from the quartz sleeve. As the O-rings may tend to adhere to the quartz sleeve, it is recommended to replace the O-rings annually.
5. Clean the quartz sleeve with a cloth soaked in vinegar or some other mild acid and then rinse.
6. Reassemble to quartz sleeve in the UV chamber, allowing the sleeve to protrude an equal distance from both ends of the UV chamber.
7. Wet the O-rings and slide onto each end of the quartz sleeve, then reassemble the gland nuts (hand tight is sufficient).
8. Retighten all connections, turn on water and check for leaks.
9. Reinstall the UV lamp and lamp connector as per prior instructions.
10. Plug in ballast and verify the POWER-ON LED is illuminated and ballast power-up sequence operates.

NOTE – IF THE SYSTEM IS PUT ON A TEMPORARY BYPASS OR IF IT BECOMES CONTAMINATED AFTER THE DISINFECTION SYSTEM, IT WILL BE NECESSARY TO SHOCK THE SYSTEM WITH HOUSEHOLD BLEACH FOR A FULL 20 MINUTES BEFORE RESUMING THE USE OF THE WATER.

QUARTZ SLEEVE REPLACEMENT AND/OR CLEANING

1. Mineral deposits and sediment may accumulate on the quartz sleeve, decreasing UV output. Good maintenance of filtration equipment will reduce the accumulation of residues. If necessary, remove the quartz sleeve after a few months and clean with a commercially available scale remover (CLR, Lime-Away, etc.) and lint free cloth. Repeat the process as often as necessary to keep the quartz sleeve clean.
2. Disconnect power to remove the quartz sleeve. Disconnect the UV lamp and remove from the UV chamber. The sleeve can be removed in the same manner as the UV lamp (through the end of the disinfection system) or by removing the entire cell.
3. Remove the aluminum gland nuts and the two O-ring seals.
4. Carefully slide the quartz sleeve out of the chamber (either side), being careful not to let the end drop inside the chamber which could accidentally crack the quartz. When reassembling the quartz sleeve, make sure the sleeve protrudes an equal distance at each end of the cell.
5. Wet the O-rings with water with any non-petroleum oil and slide onto each end of the sleeve.
6. Reinstall the gland nuts and hand tighten to achieve a watertight seal.
7. Install the lamp and connect the lamp connector. Press the connector into the gland nut. Slowly turn on water and verify there are no leaks. Reconnect to power source.



CRYSTAL QUEST®
Water Filters

ONE-YEAR LIMITED WARRANTY

CRYSTAL QUEST® warrants your CRYSTAL QUEST® UltraViolet Disinfection System for one year from the date of purchase against all defects in materials and workmanship when used in compliance with the manual. This warranty does not include replacement cartridges unless defective upon receipt. CRYSTAL QUEST® disclaims all implied warranties including, without limitation, warranties of merchantability and fitness for a particular purpose. If for any reason the product proves to be defective within one year from the date of purchase, please call for assistance. This warranty gives you specific legal rights and you may have other legal rights which vary from state to state. CRYSTAL QUEST® assumes no responsibility for incidental or consequential damages, for damages arising out of misuse of the product, or the use of any unauthorized attachment. Some states do not allow the exclusion or limitation of implied warranties or incidental or consequential damages; therefore, the above limitations or exclusions may not apply to you. Should service be required during or after the warranty period or should you have any questions regarding how to use your CRYSTAL QUEST® UltraViolet Disinfection System, please contact our Technical Support Department at service@crystalquest.com, Monday through Friday, 9 AM to 5 PM Eastern Time.

YOUR PURCHASE INFORMATION

Please record the information below for your future reference

Plumber's Name	Plumber's Address	Plumber's Telephone

UV REPLACEMENT LAMPS

CQE-UV-03101 1 GPM
7850840310 12

CQE-UV-03102 6 GPM
7850840310 24

CQE-UV-03103 8 GPM
7850840310 36

CQE-UV-03104 12 GPM
7850840310 48

KEEP THIS MANUAL FOR FUTURE REFERENCE AND UNIT MAINTENANCE

Online warranty information
http://crystalquest.com/warranty.htm

Product design is subject to change without notice.

For further assistance, contact your Crystal Quest dealer or visit us at www.crystalquest.com

To view the latest edition of the UltraViolet Disinfection System Guide, visit CrystalQuest.com

Please note all drawings, pictures, colors and sizes are approximate for illustrative purposes only and may not exactly resemble the end product.

CQE-UV-00101 1 GPM
7850842010 16

CQE-UV-00102 6 GPM
7850842010 23

CQE-UV-00103 8 GPM
7850842010 30

CQE-UV-00104 12 GPM
7850842010 47

CQE-UV-00105 24 GPM
7850842010 54

CQE-UV-00106 36 GPM
7850842010 61

CQE-UV-00107 48 GPM
7850842010 78

CQE-UV-00108 60 GPM
7850842010 85

CQE-UV-00109 72 GPM
7850842010 92

CQE-UV-00110 84 GPM
7850842011 08