HQUA

# Instruction Manual for

# UV Water Sterilizer

# HQUA-OWS-12

# HQUA-OWS-6

## Contents


Section 1 Safety Information……..2-5

1.1 Warning labels

1.2 Safety precautions

Section 2 General Information…….5-12

2.1 Package list & Description

2.2 Water quality request

2.3 Specifications

2.4 Pipe system layout

2.5 Installation

Section 3 Maintenance……12-15

3.1 Replace the UV lamp

3.2 Clean & replace the Quartz sleeve

3.3 Where to buy the replacements accessories?

Section 4 Troubleshooting……16

Section 5 After-Sales Service……...16

Commitment & Appendix 1……17-18

Leak Problem Solution……..19

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# Section 1 Safety Information

Before starting the installation job, it's very important to read the entire instructions below. Make sure that you understand these in order to avoid potential hazards. Failure to do so may result in serious personal injury or damage to the equipment.

## 1.1 Warning Labels

To avoid potential hazards, read the labels and tags below carefully. They will also occur in the installation part of the manual.

| | | | |
|---|---|---|---|
|  | Waste electrical and electronic equipment (WEEE). This symbol indicates that you should not discard wasted electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center. |  | This symbol indicates a potential UV hazard. Proper protection must be worn. |
|   | The UV lamp contains mercury. If the lamp breaks, avoid inhalation or ingestion of the debris and avoid exposure to eyes and skin. |  | This symbol indicates the marked item could be hot and should not be touched without care. |

| | | | |
|---|---|---|---|
|  | This is a safety alert symbol. Obey all safety messages with this symbol to avoid potential injury. When operating the equipment, refer to the Operational and Maintenance manual for additional safety information. |  | This symbol indicates safety glasses is required for protection against injury of UV exposure. |
|  | This symbol indicates the existence of a risk of electrical shock and/or electrocution. |  | This symbol indicates that gloves must be worn. |
|  | This symbol indicates the system is under pressure. |  | This symbol indicates that the transport items are fragile and should be handled with care. |

## 1.2 Safety precautions

### Electrical Safety

Negligence to these instructions may result in serious injury or death.

• **Electric Shock**: To avoid possible electric shock, special care should be taken since water is present near the electrical equipment. Unless explicitly addressed by the provided maintenance and troubleshooting sections, do not attempt repairs yourself. Find a professional plumber or contact us for help.

• **Grounding Plug**: This product must be grounded to reduce the risk of electrical shock. The system is equipped with a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not use any type of adapter with this system.

• DO NOT operate the UV water sterilizer with a damaged cord or plug.

• DO NOT install this UV water sterilizer where it is exposed outdoors or under temperatures below freezing point.

• DO NOT store this disinfection system where it is exposed to the weather or below freezing point unless all water has been drained and the water supply has been shut down.

## Potential Hazards to Physical Body

• **Warning of Hot Water Output**: The water in the chamber of this equipment can be very hot (Approx. 140 °F) during an extended periods of no water flowing. It is recommended to open the faucet till the hot water has been purged from your chamber. Keep your body away from the faucet at this time.

To eliminate such condition, a water tank is recommended to be installed at the outlet of your UV system.10 Gallons for the 12GPM system, 5 Gallons for the 6GPM.

• **Warning of Ultraviolet Exposure**: This system contains an UV Lamp. UV radiation may cause harm to the eyes and skin. It's dangerous to expose yourself directly to a lighted UV Lamp. Short time contact is ok, but make sure wear sunglasses and long-sleeve clothing to protect yourself when you have to light it up out of the UV chamber. Long time lighting outside the shield is not allowed.

## Other Cautions

• **Caution of Short Circuit**: Carefully examine the disinfection system after installation. It should not be plugged with water on parts that should be dry such as, the ballast or lamp connector.

• **Caution of Material Degradation**: Due to thermal expansion concerns and potential material degradation from UV exposure, it is recommended to use metal fittings and at least 10" copper pipe on the inlet/outlet of your UV chamber.

• **Hg Exposure**: The UV lamp contains mercury. If the lamp breaks, avoid inhalation or ingestion of the debris and avoid exposure to eyes and skin. Never use a vacuum cleaner to clean up a broken lamp as this may disperse the spilled mercury. Obey local regulations and guidelines for the removal and disposal of mercury waste.

• **Operation Caution**: The UV system must not be used or played by children.
Persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, are also not allowed to handle the UV system unless given proper supervision or instruction.

• **Maintenance**: The UV lamp inside the disinfection system has a rated effective life of approximately 9000 hours. To ensure continuous protection, replace the UV lamp annually.

• This system is intended to be permanently connected to water lines.
• This system is not intended to be used in or above water or outdoors or in swimming pools.
• Extension Cords: If an extension cord is necessary, use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole cord connectors compatible with the plug of the system.

• Read and understand the Manual before performing any maintenance on this equipment.

# Section 2 General Information

## 2.1 Accessories list & description

Check the package according the list below. Make sure you get everything ready before installing. If something is lost or damaged, contact the manufacturer and seller or its service agent to get more help.

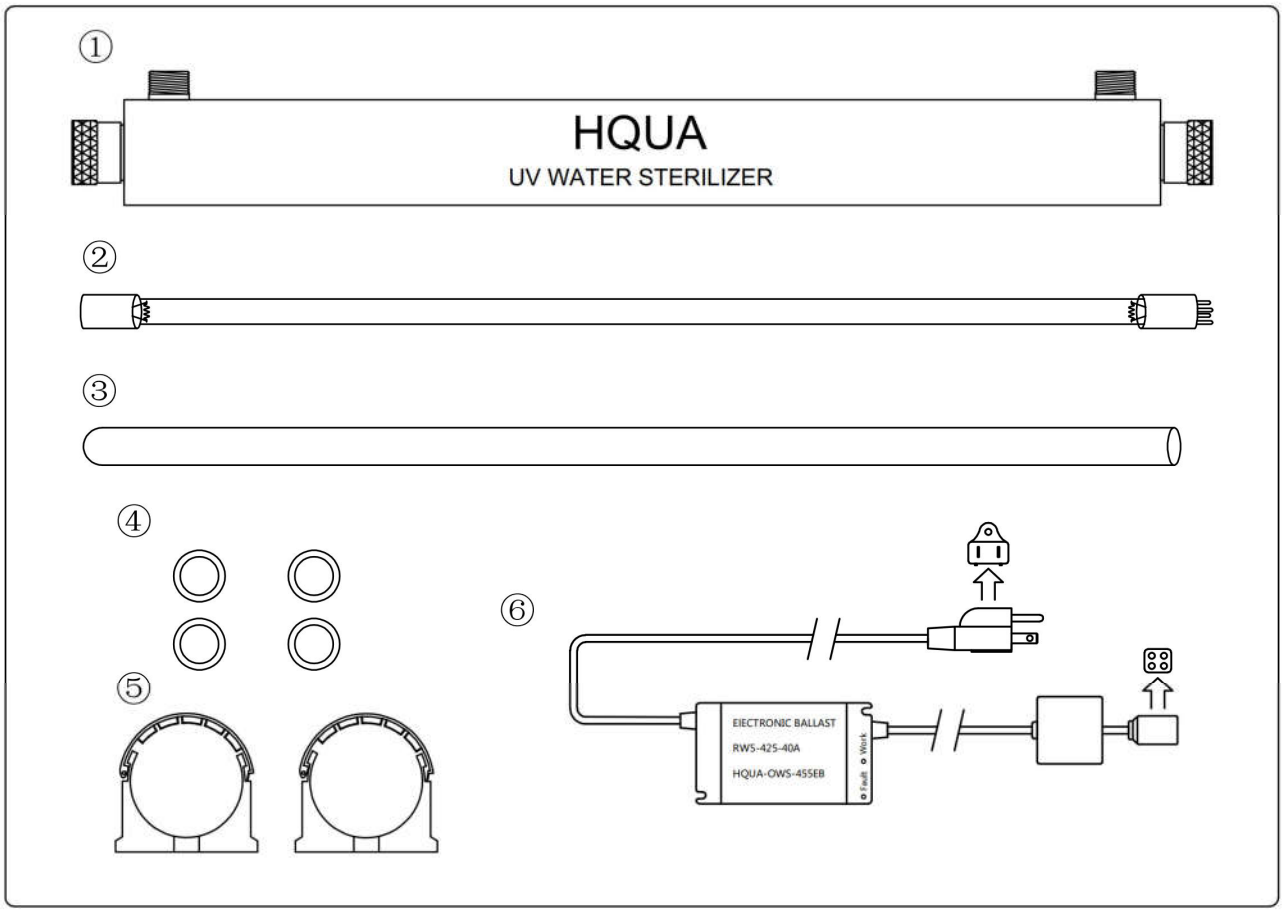



**Figure 1 Accessories List**

1. Stainless Steel Chamber (304, food grade).

   12 GPM Model: 37.2*2.5(945*64mm) inch Cylinder with 3/4” MNPT in/outlet.

   6 GPM Model: 22.8*2.5(580*64mm) inch Cylinder with 1/2” MNPT in/outlet.

2. Quartz Sleeve to protect the UV lamp and guarantee high transmittance.

   12 GPM Model: 37*0.9(940*23mm) inch with one end. HQUA-OWS-12Q.

   6 GPM Model: 22.8*0.9(580*23mm) inch with one end. HQUA-OWS-6Q.

3. UV lamps with 4-pin one end.

   12 GPM Model: 36.5*0.6 T5 (925*15mm) inch. HQUA-OWS-12L.

   6 GPM Model: 22.5*0.6 T5 (565*15mm) inch. HQUA-OWS-6L.

4. Several waterproof O-rings suitable for Quartz Sleeve.
5. Plastic brackets for holding the unit.
6. Electronic ballast-power supply with standard U.S. 3-pin plug. HQUA-OWS-455EB.

**Notice: The amount of UV bulbs, Quartz sleeves & Electronic ballasts depends on what you buy online. But the manual is generic for models of 6GPM, 12GPM.**

## 2.2 Requirement on water quality

Water quality is extremely important for the optimum performance of your UV system. The following levels are recommended for installation:

| Water quality and minerals | Level |
|---|---|
| Iron | < 0.3 ppm (0.3 mg/L) |
| Hardness | < 7 gpg (120 mg/L) |
| Turbidity | < 1 NTU |
| Manganese | < 0.05 ppm (0.05 mg/L) |
| Tannins | < 0.1 ppm (0.1 mg/L) |
| UV Transmittance | > 75% |

Notes:

1. Where total hardness is less than 7 gpg, the UV unit should be operated efficiently provided the quartz sleeve is cleaned periodically. If total hardness exceeds 7 gpg, the water should be softened.

2. If your water chemistry contains levels in excess of those mentioned above, proper pre-treatment is recommended 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 pre-treatment is essential for the UV disinfection system to be used as intended.

## 2.3 Specifications

| Operating Parameters | All models |
|---|---|
| Maximum operating pressure | 125 PSI(862kPa) |
| Minimum operating pressure | 4 PSI(27.5kPa) |
| Maximum ambient air temperature (operating) | 122° F(50° C) |
| Minimum ambient air temperature (operating) | 32° F (0° C) |
| Start-up ambient air temperature | 68-104° F (20-40° C) |
| Installation | Horizontal |

**Notice: Vertically installation might need extra support to hold the UV unit.**

## 2.4 Layout of pipe system

We suggest that you build your UV water purification system as shown in the figure below. This design takes testing, maintenance, and water treatment sequences into account. Please take it as a reference:

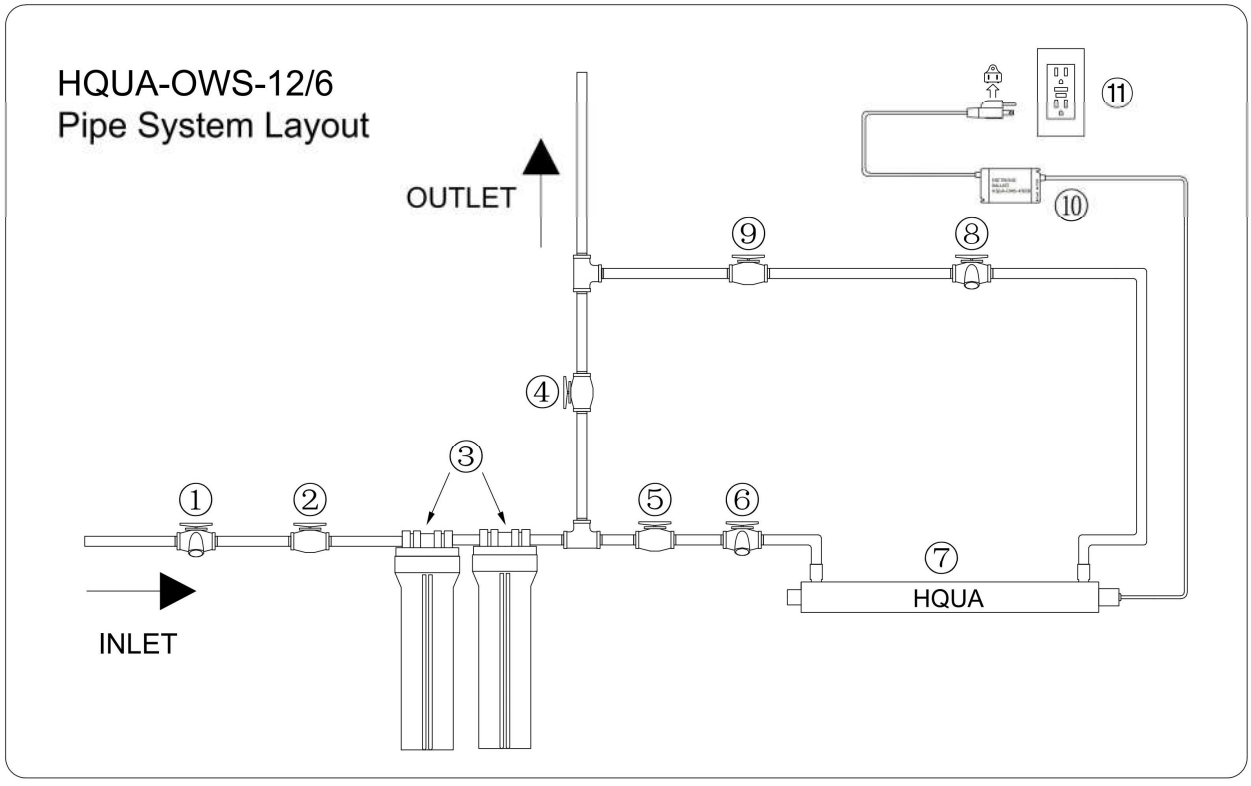


**Figure 2 Layout of Pipe System**

| Item | Description | Function |
|---|---|---|
| 1 | Sample Valve | Allow for sampling of raw water. |
| 2 | Main Water Shut-off Valve | Allow for maintenance of pre-treatment equipment. |
| 3 | Pre-treatment | Refer to the requirement above. |
| 4 | Bypass Shut-off Valve | Bypass line and valve are optional, intended to provide emergency water supply in case the UV system is unavailable. |
| 5 | UV System Shut-off Valve | Allow for maintenance of UV system. |
| 6 | Sample Valve | Allow for sampling of water entering UV chamber; necessary to confirm whether water treated has adequate quality. |
| 7 | UV chamber | Provide disinfection of the water. Horizontal chamber installation is required . |
| 8 | Sample Valve | Allow for sampling of water immediately after UV treatment; necessary to confirm the proper operation of UV system. |
| 9 | UV System Shut-off Valve | Required to allow for maintenance of the UV system. |
| 10 | Electronic Ballast | Power supply of the UV lamp. The indicator identifies the working situation of the unit. You could also upgrade it with the “HQUA UV Lamp Life 365 Days Countdown Timer”. Refer to Appendix 1. |
| 11 | Power Source | Provide power to the controller. For safety reasons the outlet must be protected by a Ground Fault Circuit Interrupter (GFCI). |

**Notice: Please choose the metal connector for the in/outlet (plastic connector will**

**degrade at the irradiation of the ultraviolet).**

## 2.5 Installation

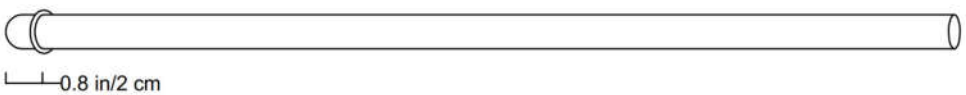
Following the installation steps one by one and make sure you understand each step before moving on. **Contact the manufacturer and seller or its service agent if you misunderstand any part in this section.**

**Prerequisites:**

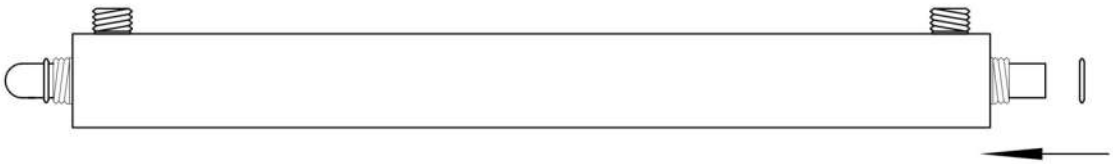
- Measure your water pipe system and make sure you have enough space for this UV unit. Ensure an adequate clearance around the chamber allow for removal of the lamp and quartz sleeve.
- Mark the mounting position and drill holes for the plastic brackets on a flat wall or board. Screw on the plastic brackets for later use.
- Make sure you have turned off the main water supply. Release water pressure and drain it from your pipe system.
- Pay attention to the labels in the installation procedures. Carefully operate. Hand tighten the cap only- quartz parts damage may result from over-tightening.
- Do not connect the UV water sterilizer to electric supply before finishing the installation.
- Use Teflon tape and pipe thread sealing compound if in need. Choose the metal connector for the in/outlet (plastic connector will degrade in the irradiation of the ultraviolet).

**Procedures:**

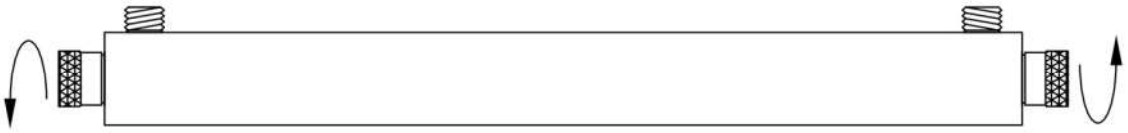

STEP 1 Place the stainless steel chamber on the workbench. Unscrew the caps of the both ends.




STEP 2 Put the o-ring on the quartz sleeve through the closed end about 0.8 inch/2 cm.Be sure to seat the o-rings with the inner flat surface against the quartz glass tube.

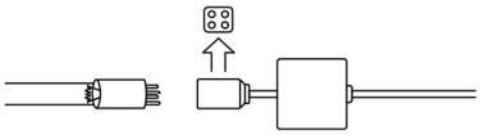


STEP 3 Insert the quartz sleeve into the stainless steel chamber from the left carefully.Put on another o-ring on the quartz sleeve from the right side. Ensure that the o-rings are seated firmly against the both ends of the chamber, fill the gap between the sleeve and the chamber so that the sleeve is sealed with no movement.

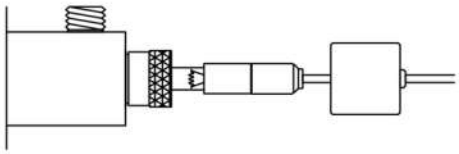


STEP 4 Tighten both end caps as tight as you can by hand to ensure the o-ring creates a leak-proof seal. Leave the hollow cap for the open end of sleeve side.(Use Teflon tape on the end-caps to avoid leaks)

Secure the UV unit on a flat horizontally. Connect the pipeline to this chamber, turn on the water supply to check if there is a leakage first (leakage troubleshooting is at the end of this manual booklet).

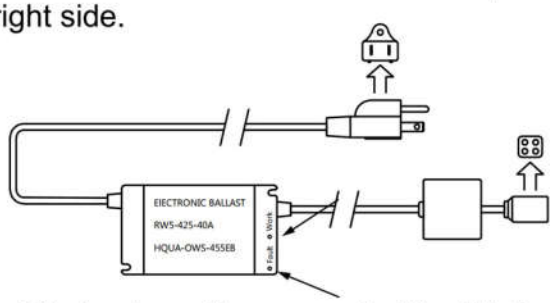


STEP 5 Plug the UV bulb into the socket of the electronic ballast.



Insert the UV bulb into the stainless steel chamber.

STEP 6 Insert the whole UV bulb into the chamber, and cover a protective cap of the right side.




STEP 7 Connect 3-pin plug with your socket.It will take 5-10 minutes for the UV bulb to light up completely and switch to the proper work condition.

Check the indicator of the electronic ballast: The green light on 'work' part means it is working properly. The red light blinks on 'fault' part and beeps signifying the system has stopped working and something is wrong.

Refer to Section 4 Troubleshooting for that situation.

Notice:Please check the uv bulb itself to confirm the failing. Make sure you wear long-sleeve clothing and sunglasses to protect yourself.

# Section 3 Maintenance

**Prerequisites:**

• Always disconnect the power supply before performing any work on this unit. Wait for 15 minutes let the electronic ballast discharge completely.

• **Regularly inspect power indicators on the ballast: the green one means the system is working in a good condition. The red light blinks on the fault and beeps when the system fails. We suggest you check the UV lamp situation with the protection on your eyes and skin such as long sleeve clothing and sunglasses, make a double check.**

## 3.1 Replace the UV lamp

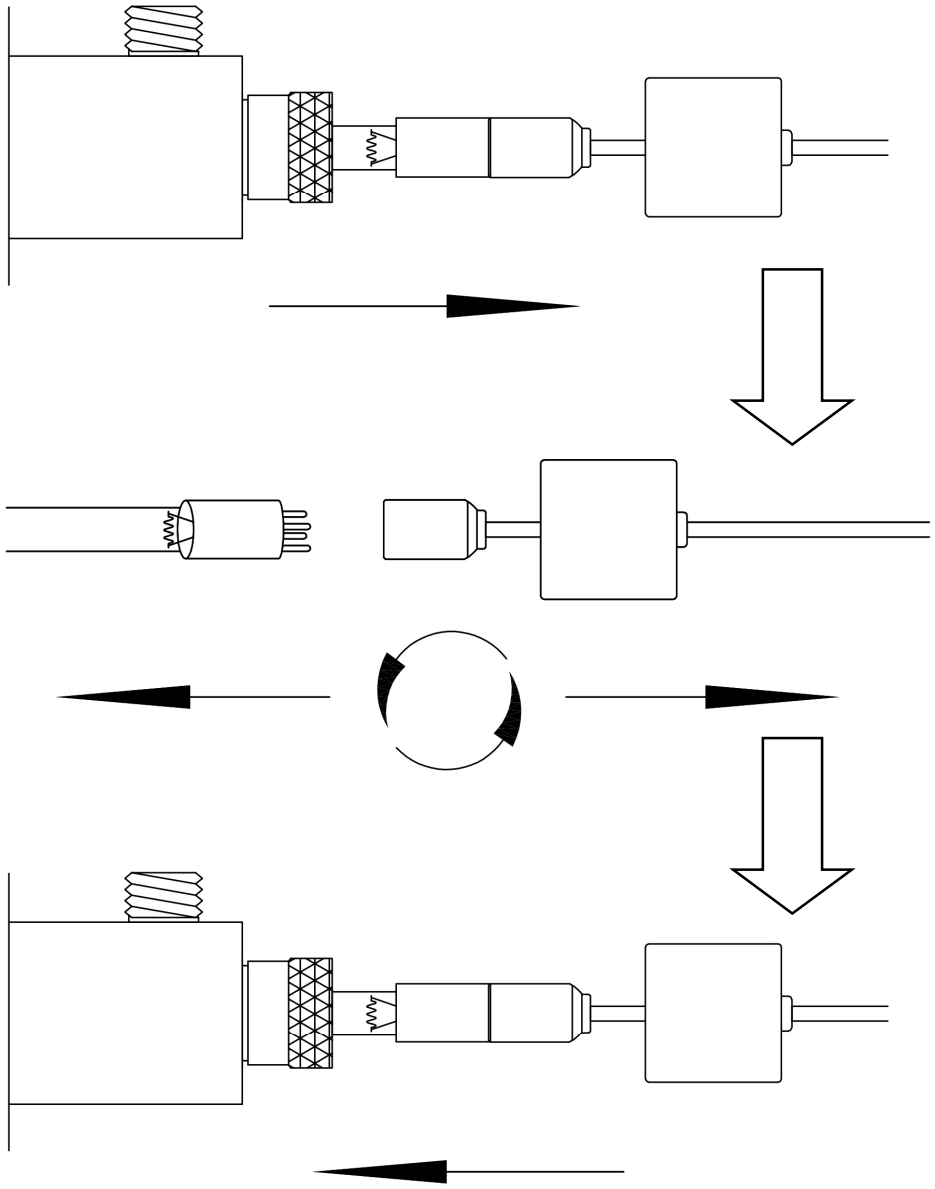
Replacing an UV lamp is quite easy and takes a little while. One UV lamp's lifetime is about 9000 hours, so it should be replaced annually to keep the enough disinfection for 12GPM/6GPM water flow.

**Prerequisites:**

• Close all faucets and shut off water supply to make sure the remain water in the system is sterilized.

• Replace the UV lamp annually (or biennially for seasonal home use) to ensure maximum disinfection.

**Procedures**



STEP 1 Dismantle the protective cover, remove the UV lamp from the top of the chamber.
Disconnect the used UV lamp from the ballast.
Replace it with a new one and connect the terminal of the ballast's output.


STEP 2 Insert the whole UV lamp into the middle hole and cover the protective cap on it.

## Debugging

Connect the power supply first, and check the indicator to confirm the HQUA-OWS-12/6 is working properly. Wait for 5-10 minutes to restart the water supply.

## 3.2 Clean & replace the quartz sleeve

The coating on the quartz sleeve will grow slowly from the mineral in the water. It must be removed since it block the UV irradiation, lower down the performance of the unit. If the sleeve couldn't be cleaned, it must be replaced.

**Prerequisites:**

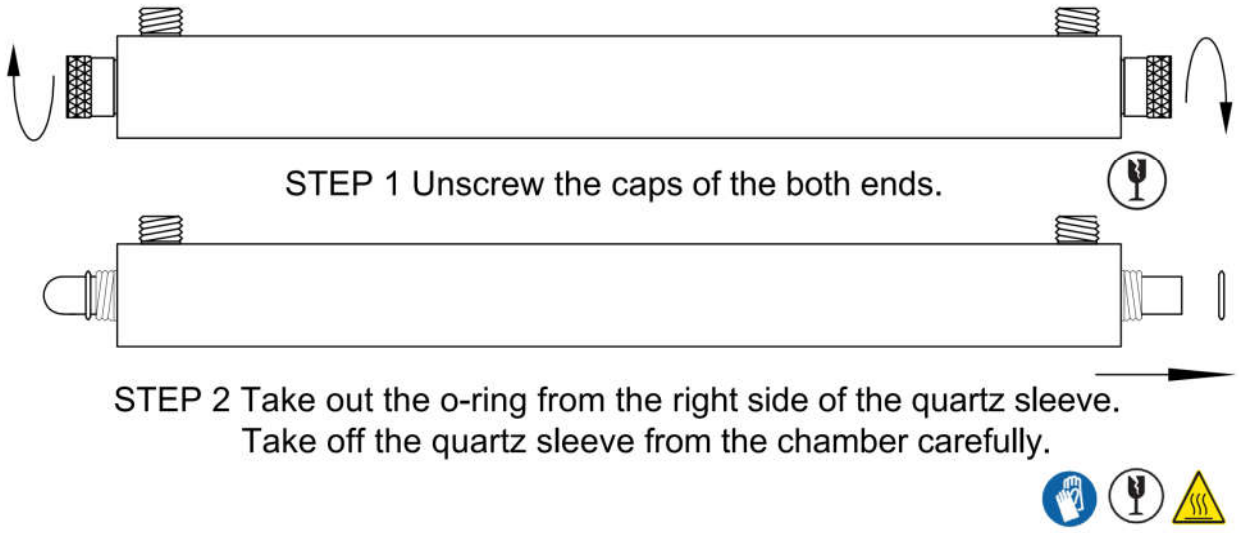
• Always shut off water flow and release water pressure before servicing.

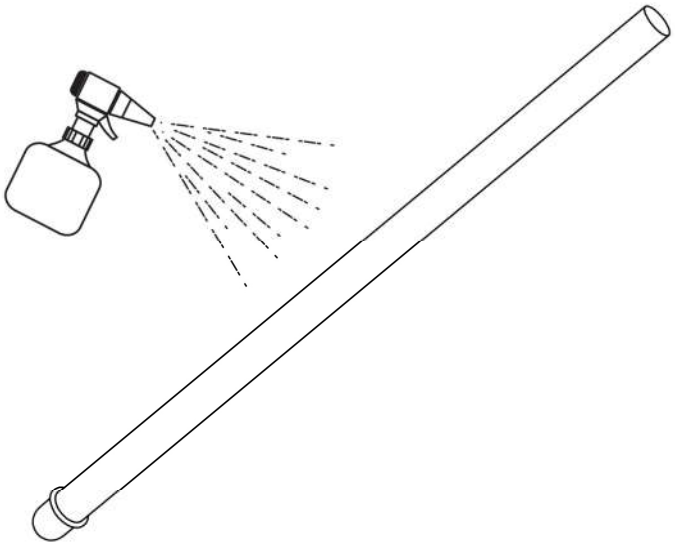
• Drain all lines around the system, refer to Figure 2.

• Place a small pail under the unit in case of any spills.

• Remove the UV lamp; Refer to Section 3.1

**Procedures:**





STEP 3 Clean the quartz sleeve with a cloth soaked in CLR, vinegar or other mild acid and then rinse with water.

Note: Replace the tube if it cannot be cleaned completely,scratched or cracked.

STEP 4 Insert the quartz sleeve into the chamber and finish the rest step via referring to Section 2.5.

## 3.3 Where to buy the replacements accessories?

We suggest you purchase these replacements on Amazon.com.

Search “B07NXX83KM” for 12GPM UV bulb HQUA-OWS-12L.

“B07HQ781CK” for 2Pakc HQUA-OWS-12L.

“B06XFX6Y4S” for 12GPM Quartz Sleeve HQUA-OWS-12Q.

B07HQGW9XQ for 2Pack HQUA-OWS-12Q.

“B07NXWM9T5” for 6GPM UV bulb HQUA-OWS-6L.

“B07HQKKZ9Y” for 2Pack HQUA-OWS-6L.

“B06XG19Q2Y” for 6GPM Quartz Sleeve HQUA-OWS-6Q.

“B071JXXFHK” for Electronic Ballast HQUA-OWS-455EB.

# Section 4 Troubleshooting

| Problem | Possible Cause | Solution |
|---|---|---|
| Indicator shows red and beeps. Eliminate the reasons One by one following the Lead. | GFCI and/or breaker tripped. | Reset GFCI and/or breaker. |
| | Connection problem. | Power off & wait for 15 minutes, adjust the connection between UV lamp and ballast. Then try it again. |
| | Ballast damaged. | Change with your spare UV bulb to check and confirm. Replace ballast and use a TVSS. |
| | UV lamp damaged or died. | Replace it with a new one. |
| Indicator shows no red or green. | Indicator failure. | If the UV bulb is still working, it means the system is working in a good condition. |
| Leakage at inlet or outlet. | Threaded pipe fittings are leaking. | Clean threads, reseal with Teflon tape and retighten. |
| Leakage at other places. | Wrong cooperation, fitting position or O-ring damaged. | Refer to Page 19. |
| System is operating but water tests show bacterial contamination. | Equipment downstream of UV system is acting as a breeding ground for pathogens. | Ensure UV is the last piece of treatment equipment. |
| | Serious contamination. | Reduce the flow rate or increase sterilization equipment. |

# Section 5 After-Sales Service

If you need any support, or have questions about the system, please contact our Technical Support team via hqua_qin@163.com and we will be glad to assist you. We sincerely hope that you enjoy the benefits of clean and safe drinking water after the installation of HQUA disinfection system.

# Our Commitment

**Specific Warranty Coverage**

**Ten-Year Limited Warranty for HQUA UV Chamber**

HQUA warrants that the UV chamber of HQUA product is free from defects of material and workmanship for a period of ten (10) years from the date of purchase. During this period, HQUA will repair or replace, at its option, any defective HQUA UV chamber. Please return the defective part to your dealer for claim.

**One-Year Limited Warranty for Electronic Ballast**

HQUA warrants that the Electronic Ballast is free from defects of material and workmanship for a period of one (1) year from the date of purchase. During this period, HQUA will repair or replace, at its option, any defective parts covered by the warranty. Please return the defective part to your dealer for claim.

**Six-Month Limited Warranty for Lamps & Quartz Sleeves**

HQUA warrants that lamps & quartz sleeves are free from defects of material and workmanship for a period of six (6) months from the date of purchase. During this period, HQUA will repair or replace, at its option, any defective parts covered by the warranty. Please return the defective part to your dealer for claim.

**General Conditions and Limitations**

None of the above warranties covers damage caused by improper use or maintenance, accidents, acts of God or minor scratches/imperfections that do not materially impair the product operation. The warranties do not cover products that are not installed as described in the applicable User Manual either. Parts repaired or replaced under these warranties will be covered up to the end of applicable warranty period.

The above warranties do not include the cost of shipment and handling of returned items.

The limited warranties described above are the only warranties applicable to the HQUA series products. These limited warranties outline the exclusive remedy for all claims based on a failure or defect of any the products, whether the claim is based on contract, tort (including negligence), strict liability or otherwise. These warranties are in lieu of all others regardless of written, oral, implied or statutory ones. Without limitation, no warranty

of merchantability or of fitness for a particular purpose shall apply to any of these products.

HQUA does not assume any liability for personal injury or property damage caused by use or misuse of any of the above products. HQUA shall not in any event be liable for special, incidental, indirect or consequential damages. HQUA's liability shall, in all instances, be limited to repair or replacement of the defective products or parts and this liability will terminate upon expiration of the applicable warranty period.

# Leakage Solution

**Prerequisites:**

• Always disconnect power supply before performing any work on UV water sterilizer.

• Always shut off water flow and release water pressure before servicing.

**Steps to check:**

1. Please check the installation steps carefully in the manual. Make sure you finish each step completely.
2. Unscrew the caps of both ends to check the O-ring's fitting position & O-ring cooperation. Check if there is a gap between the O-ring and the stainless steel chamber.
3. Confirm the O-ring's integrity
4. Check the quartz sleeve to see if any crack or damage on it that may cause the leaking.
5. Check the welding joint of stainless steel chamber for the leakage. Contact us for this problem, and we will replace your chamber for free in 3-5 workdays.

**Notes:**

**1.O-rings fitting should be just as its natural state. Do not mix the inner and outer surfaces.**
**2. Use teflon tape and sealing compound for pipe thread if it's in need.**

Most leakage come from the above reasons. If your problem is not solved, please provide more detailed information and pictures so that we could offer more help.

Free replacements will be provided to help this leakage problem.

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Email:hqua_qin@163.com

……End……

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