

# Owner's Manual



**Models:**  
**400-USUV-10, 400-USUV-**  
**20, 400-USUV-30**

Visit us online at [www.uswatersystems.com](http://www.uswatersystems.com)

Powered by  
***Sterilight***

**US Water Systems** Corporate Office

1209 Country Club Road

Indianapolis, IN 46234

[info@uswatersystems.com](mailto:info@uswatersystems.com)

[www.uswatersystems.com](http://www.uswatersystems.com)

1-800-608-8792

System Tested and Certified by  
NSF International against CSA  
B483.1 and NSF/ANSI 55 for  
Disinfection Performance, Class B

|               |                    |
|---------------|--------------------|
| REVISION #    | 1.0                |
| REVISION DATE | September 29, 2015 |

**Congratulations** on the purchase of the US Water Systems ultraviolet (UV) water disinfection system! This system uses the most advanced UV technology on the market and is designed to provide years of trouble free operation with minimal maintenance required to protect drinking water from microbiological contaminants.

To ensure ongoing disinfection of the water, UV lamps need to be replaced annually with US Water Systems factory-supplied replacements. US Water Systems lamps are the result of extensive development resulting in a highly efficient disinfection platform with extremely stable UV output over the entire 9000 hour lifetime. Its success has led to a proliferation of non-genuine copies in the market.

The UV lamp is the heart of the disinfection system, and there should be no compromise when it's time for a replacement.

Why should US Water Systems replacement lamps be used?

- Use of widely available, non-genuine, replacement lamps has been shown to damage the control module of US Water Systems UV disinfection equipment.
- An increasing number of calls to US Water Systems Technical Support are connected with non-genuine lamps being used (unknowingly) as replacements.
- Damage arising from the use of non-genuine lamps poses a safety risk and is not covered by equipment warranty.
- Unless the UV equipment is equipped with a UV sensor (monitor), it is not possible to verify the UV (invisible) output of replacement lamps.
- Similar appearance to the original lamp and the presence of (visible) blue light does not mean equivalent disinfection performance.
- US Water Systems replacement lamps undergo rigorous performance testing and strict quality control processes to ensure that the safety and performance certifications of the original equipment are not compromised.

So, it is apparent that it's simply not worth the risk! Insist on genuine US Water Systems replacement lamps.


















# Section 1 Safety Information

Please read this entire manual before operating this equipment. Pay attention to all danger, warning, and caution statements in this manual. Failure to do so could result in serious personal injury or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. DO NOT use or install this equipment in any manner other than that specified in the installation manual.


## 1.1 Potential Hazards:



Read all labels and tags attached to the system. Personal injury or damage to the system could occur if not observed.

|   |   |   |   |
|---|---|---|---|
|    | 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 material close to the system, local recycling/reuse or hazardous waste center. |    | This symbol indicates not to store any combustible or flammable material close to the system.   |
|    | This symbol indicates there is Mercury present.   |    | This symbol indicates safety glasses with side protection is required for protection against UV exposure.   |
|    | This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. When on the equipment, refer to the Operational and Maintenance manual for additional safety   |    | This symbol indicates safety glasses with side protection is required for protection against UV exposure.   |
|    | This symbol indicates a risk of electrical shock and/or electrocution exists.   |    | This symbol indicates gloves must be worn.  |
|    | This symbol indicates the marked equipment may contain a component that can eject forcibly. Obey all procedures to safely depressurize.   |    | This symbol indicates safety boots must be worn.  |
|    | This symbol indicates the system is under pressure.   |    | This symbol indicates the operator must read all available documentation to perform required procedures.  |
|  | This symbol indicates there is a potential UV hazard. Proper protection must be worn.   |  | This symbol indicates the plumber must use copper piping.   |
|  | This symbol indicates the marked item could be hot and should not be touched without care.  |  | This symbol indicates that the system should only be connected to a properly grounded, grounding-type controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI). |
|  | This symbol indicates there is a potential for VERY hot water when flow is started.   |   |   |

**Warning:** This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

## 1.2 Safety Precautions:



|  |  |
|--|--|
| <br><br> | <p>Failure to follow these instructions will result in serious injury or death.</p> <ul style="list-style-type: none"> <li>• <b>Electric Shock:</b> To avoid possible electric shock, special care should be taken since water is present near the electrical equipment. Unless a situation is encountered that is explicitly addressed by the provided maintenance and troubleshooting sections, DO NOT attempt repairs yourself, refer to an authorized service facility.</li> <li>• <b>GROUNDING:</b> This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electrical shock. This system is equipped with a cord having an equipment-grounding conductor and 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. Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel if you are in doubt as to whether the outlet is properly grounded. DO NOT modify the plug provided with this system - if it does not fit in the outlet, have a proper outlet installed by a qualified electrician. DO NOT use any type of adapter with this system.</li> <li>• <b>GROUND FAULT CIRCUIT INTERRUPTER PROTECTION:</b> To comply with the National Electrical Code (NFPA 70) and to provide additional protection from the risk of electric shock, this system should only be connected to a properly grounded, grounding-type controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI). Inspect operation of GFCI as per manufacturer's suggested maintenance schedule.</li> <li>• DO NOT operate the 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.</li> <li>• DO NOT use this disinfection system for other than intended use (potable water applications). The use of attachments not recommended or sold by the manufacturer / distributor may cause an unsafe condition.</li> <li>• DO NOT install this disinfection system where it will be exposed to the weather or to temperatures below freezing.</li> <li>• DO NOT store this disinfection system where it will be exposed to the weather.</li> <li>• DO NOT store this disinfection system where it will be exposed to temperatures below freezing unless all water has been drained from it and the water supply has been disconnected.</li> </ul> |
|--|--|



## WARNING



During extended periods of no water flow, the water in your chamber can become very hot (Approx. 60 °C) and potentially lead to scalding. It is recommended to run your water until this hot water has been purged from your chamber. Do not allow water to contact your skin during this time. To eliminate this condition, a temperature management valve can be installed at the outlet of your UV system.

Changes or modifications made to this system without the consent of the manufacturer could render the system unsafe for operation and may void the manufacturer's warranty.



## CAUTION



Failure to follow these instructions could result in minor or moderate injury.

- Carefully examine the disinfection system after installation. It should not be plugged in if there is water on parts not intended to be wet such as, the controller or lamp connector.
- Due to thermal expansion concerns and potential material degradation due to UV exposure, it is recommended to use metal fittings and at least 10" of copper pipe on the outlet of your UV chamber.

## NOTICE



- 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.
- The UV system is not to be used or played with by children. Persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, are also not to handle the UV system unless they have been given supervision or instruction.
- **EXTENSION CORDS:** If an extension cord is necessary, use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from this system. Use only extension cords that are intended for outdoor use. Use only extension cords having an electrical rating not less than the rating of the system. A cord rated for less amperes or watts than this system rating may overheat. Exercise caution when arranging the cord so that it will not be tripped over or pulled. DO NOT use damaged extension cords. Examine extension cord before using and replace if damaged. DO NOT abuse extension cord. Keep extension cord away from heat and sharp edges. Always disconnect the extension cord from the receptacle before disconnecting this system from the extension cord. Never yank cord to pull plug from outlet. Always grasp the plug and pull to disconnect.
- **SYSTEM PROTECTION:** To protect your Controller, a UL1449 certified (or equivalent) transient voltage surge suppressor is strongly recommended.
- The UV lamp in this system conforms to the applicable provisions of the Code of Federal Regulations (CFR) requirements including, Title 21, Chapter 1, Subchapter J, Radiological Health.
- Read and understand the Owner's Manual before operating and performing any maintenance on this equipment.

## 1.3 Water Chemistry

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 (0.3mg/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% (call factory for recommendations on applications where UVT < 75%) |

\* Where total hardness is less than 7 gpg, the UV unit should operate efficiently provided the quartz sleeve is cleaned periodically. If total hardness exceeds 7 gpg, the water should be softened. If your water chemistry 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 pre-treatment is essential for the UV disinfection system to operate as intended.

## Section 2 General Information

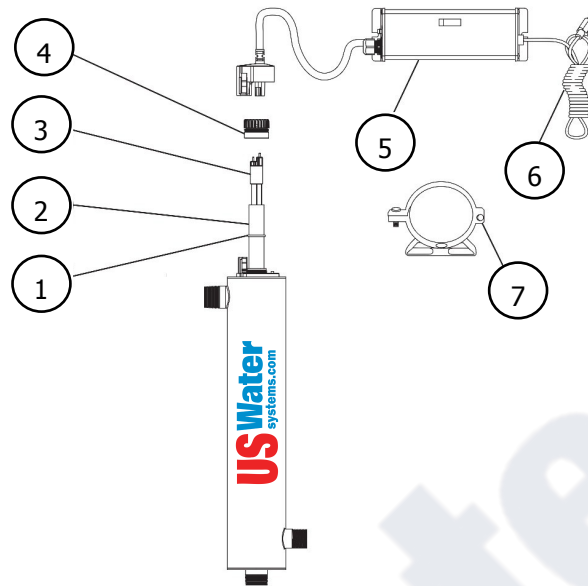


Figure 1 System Components

| Item | Description  | Part Number | UV Systems                             |
|------|--|-------------|--|
| 1    | O-ring   | 410867      | Used on all systems                    |
| 2    | Open-ended, GE 214 fused quartz sleeve with fire polished ends                     | QS-001      | 400-USUV-10                            |
|      |  | QSO-410     | 400-USUV-20                            |
|      |  | QSO-600     | 400-USUV-30                            |
| 3    | Hard glass, coated Sterilume® - HO UV lamps for long, consistent life (9000 hours) | S200RL-HO   | 400-USUV-10                            |
|      |  | S410RL- HO  | 400-USUV-20                            |
|      |  | S600RL - HO | 400-USUV-30                            |
| 4    | Retaining Nut  | RN-001      | Used on all systems                    |
| 5    | Controller (for 100-240V/50-60HZ models only)                                      | BA-ICE-CL   | 400-USUV-10, 400-USUV-20               |
|      |  | BA-ICE-C    | 400-USUV-30                            |
| 6    | IEC replacement power cords for controller (sold separately)                       | 260010      | 400- USUV-10, 400-USUV-20, 400-USUV-30 |
| 7    | Mounting Brackets/Clamp Assembly   | 410067      | Used on all systems                    |

## Section 2 General Information

### 3.1 UV Disinfection System

#### ⚠ CAUTION



Electronic controller must be connected to a Ground Fault Protected Circuit (GFCI) receptacle. Ensure green ground wire ring terminal is securely fastened to ground stud on UV chamber.

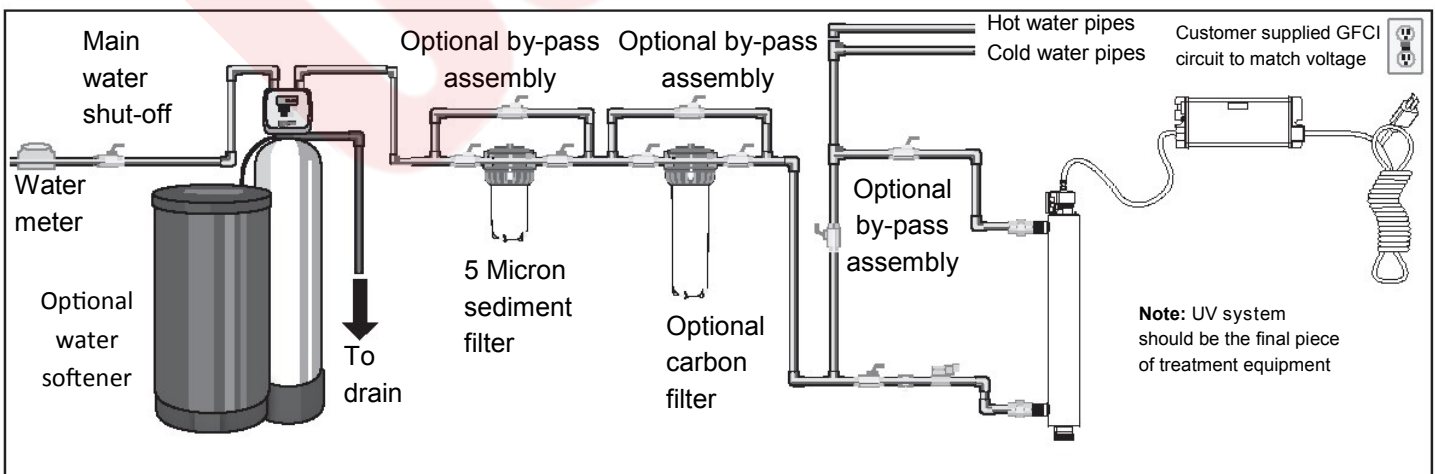
The disinfection system is designed to be mounted either horizontally or vertically at the point-of-use or point-of-entry depending on the specific flow rate of the unit.

**Note:** The ideal installation is vertical with the lamp connector on top. This is to prevent water damage from occurring on the lamp pins and lamp connector.

- The controller should be mounted either above or beside the UV chamber. Always mount controller horizontally to prevent moisture from running down cordage and causing a potential fire hazard. Drip loops in all cordage connected to controller is highly recommended. Refer to Figure 5.
- 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. Refer to Section 3.2.
- The disinfection system is intended for indoor use only. DO NOT install disinfection system where it may be exposed to the weather.
- Install the disinfection system on cold water line only, before any branched lines.
- A 5 micron sediment filter must precede the disinfection system. Ideally, the disinfection system should be the last treatment the water receives before it reaches the faucet.

#### Procedure:

1. **Figure 2** shows the installation of a typical disinfection system and the related components that may be used for the installation. The use of a by-pass assembly is recommended in case the system requires "off-line" maintenance. In this case, note the system requires supplementary disinfection for the distribution system if any water is used during by-pass condition. In addition, during by-pass, the water will NOT be disinfected and a "DO NOT CONSUME THE WATER" tag should be physically installed on the by-pass assembly until such time as the system is sanitized and returned to service. For more information, refer to Section 3.2. If the water is to be consumed while the system is off-line, the water must be boiled for two minutes prior to consumption.





## Installation

2. Select a suitable location for the disinfection system and its related components. As it is recommended to install a GFCI, make sure that this is taken into consideration prior to any installation. The system can either be installed vertically (inlet port at the bottom) as shown in Figure 3 A, or horizontally as shown in Figure 3 B. However, the vertical installation is the most preferred method. When selecting a mounting location, leave enough space to allow the removal of the UV lamp and/or quartz sleeve (typically leave a space equal to the size of the UV chamber itself).

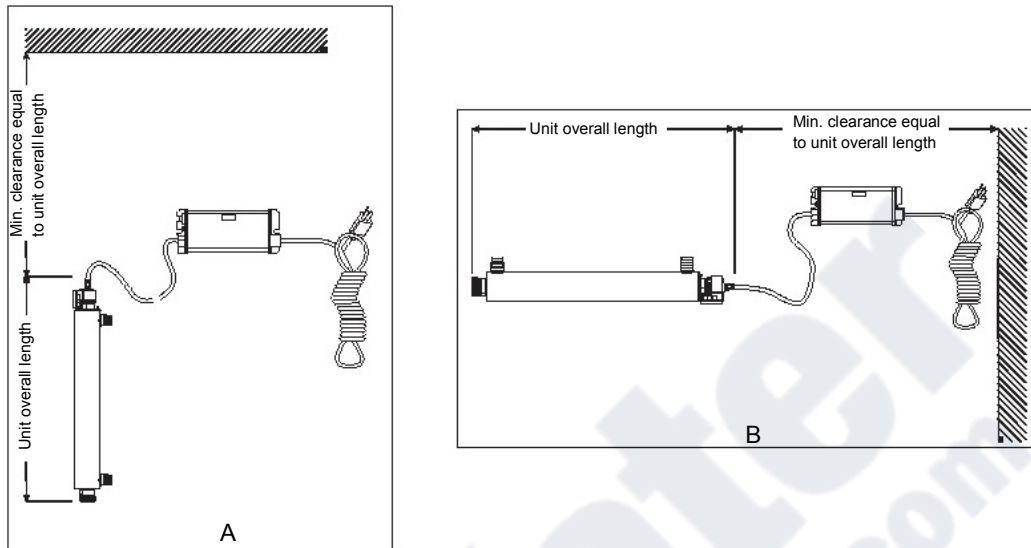


Figure 3 Disinfection Installation - Vertical and Horizontal

3. Mount the system to the wall using the supplied clamps. Various connection methods can be used to connect the water source to the system, however union type connectors are recommended. The use of a flow restrictor device will help to maintain the manufacturers rated flow. The flow restrictor should be installed on the outlet port and is designed to be installed in one direction only. Ensure that the flow of the water matches the flow direction as indicated on the flow restrictor. Refer to Figure 4.

**Note:** DO NOT solder connections while attached to the system as this could damage the O-ring seals.

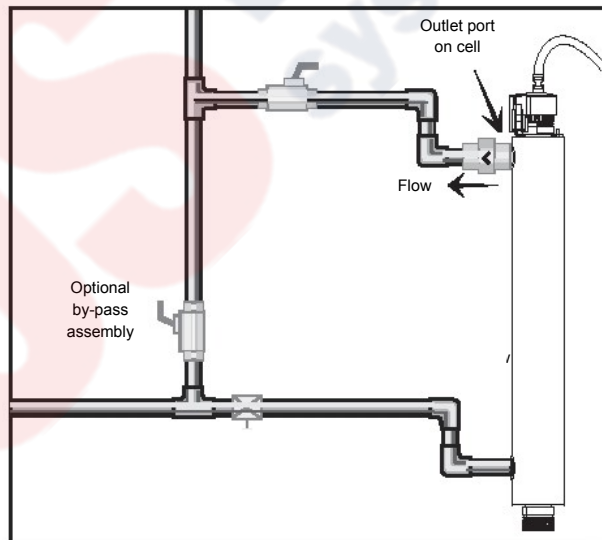


Figure 4 Flow Restrictor

4. Mount the US WATER SYSTEMS ICE controller horizontally to the wall, near the UV chamber. Ideally place the controller above the chamber and away from any water connection point, to prevent any water from potentially leaking onto the controller by means of a leak at a connection point or a “sweating” system. Make sure you allow for a “drip-loop” as shown in Figure 5 on the UV lamp, UV sensor, and power cord, again, to prevent any water from potentially entering the controller.

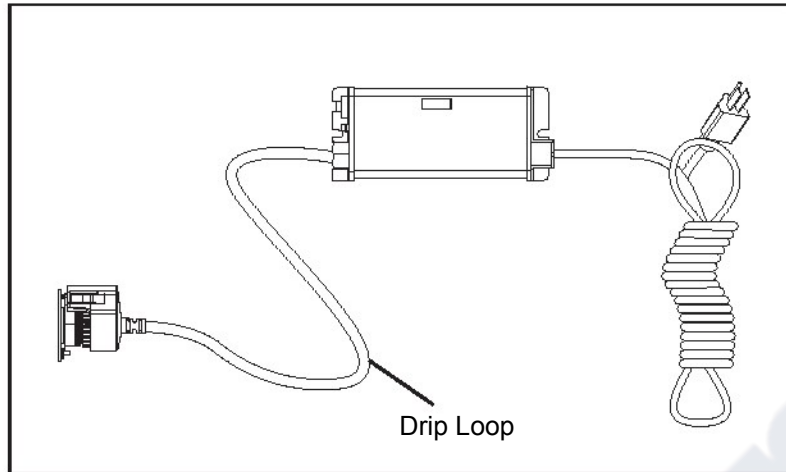


Figure 5 Drip Loop

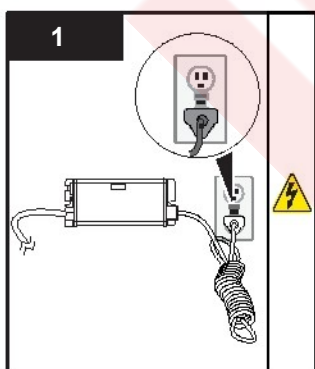
5. Install the UV lamp. Refer to Section 4.1.
6. When all plumbing connections are complete, slowly turn on the water supply and check for leaks. The most likely cause of leaks is from the O-ring seal. In case of a leak, shut water off, drain cell, remove the retaining nut, wipe the O-ring and threads. Clean and re-install.
7. Once it is determined that there are no leaks, plug the system into the ground fault interrupter and check controller to ensure the system is operating properly. The controller should illuminate without any alarms.
 

**Note:** *DO NOT look directly at the glowing UV lamp.*
8. Allow the water to run for a few minutes to clear any air or dust that may be in the UV chamber.
 

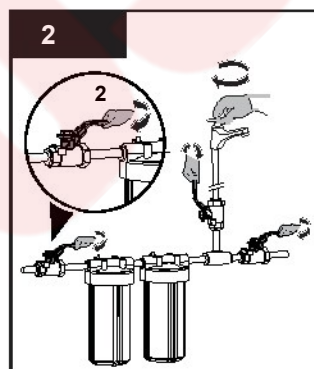
**Note:** *When there is no flow, the water in the cell will become warm, as the UV lamp is always on. To remedy this, run a cold water tap anywhere in the house for a minute to flush out the warm water.*

## 3.2 Disinfection Procedure

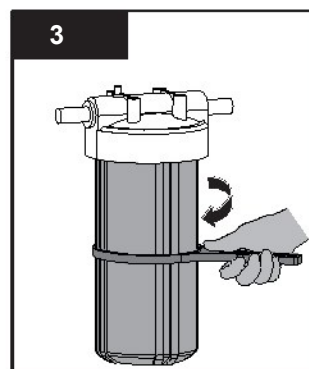
UV disinfection is a physical disinfection process and does not add any potentially harmful chemicals to the water. As UV does not provide a disinfection residual, it is imperative that the entire distribution system located after the UV be chemically disinfected to ensure that the plumbing system is free from any bacteriological contaminants. The disinfection process must be performed immediately after the UV unit is installed and repeated thereafter whenever the UV is shut down for service, without power, or inoperative for any reason. The procedure for sanitizing the plumbing system is readily accomplished as follows:



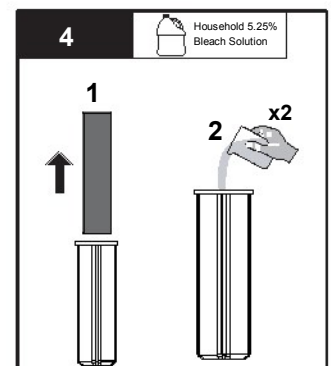
- Ensure the controller is plugged in for entire disinfection process



- Shut off the water supply.
- Close each faucet.



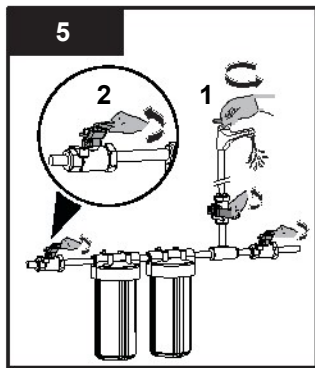
- Remove filter cartridge(s).



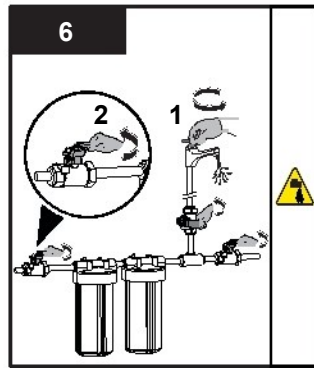
- Pour 2 cups of household bleach solution into the filter housing(s).
- **Note:** *DO NOT use Hydrogen Peroxide.*



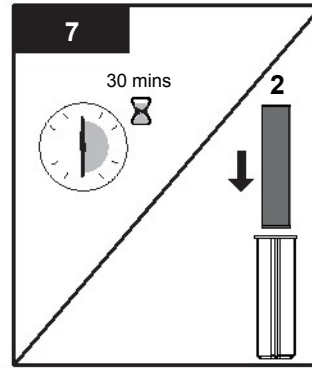
## Installation



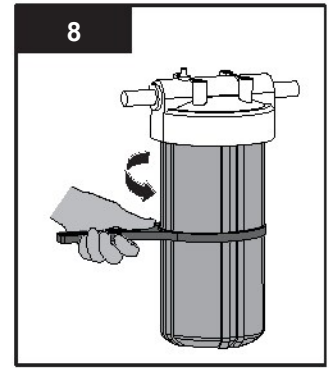
- Re-install the housings.
- Turn on the cold water supply.
- Open each faucet and all water openings until you smell the bleach and then close the faucets.



- Turn on the hot water supply.
- Open each faucet and all water openings until you smell the bleach and then close the faucets.



- DO NOT use water for 30 minutes.
- Flush the system until no chlorine smell is detectable and reinstall the filters.



- Reinstall filter housing(s)

**Notes:** 1) The addition of chlorine (bleach) to a hot water tank that has in the past been fed with untreated raw water with high levels of other contaminants (iron, manganese, hydrogen sulphide, organics, etc.) will result in oxidation of these contaminants and may require repeated flushing of the hot water tank. This contingency must be dealt with independently under the start-up procedure for any other conditioners that may form a part of the pretreatment for the UV unit.

2) The above disinfection procedure will result in a massive chlorine residual far in excess of the 0.5 to 1.0 mg/L typically present in municipally chlorinated water and of a magnitude consistent with the minimum 50 mg/L chlorine solution recommended for the disinfection of distribution systems known to be contaminated. DO NOT consume water until complete system has been flushed.

3) As the monitored systems include a 254nm UV intensity monitor, note that the introduction of the bleach solution required for disinfection will trigger a temporary low UV condition. This is due to the fact that the bleach physically "clouds" the raw water. Once the bleach runs through the system, the alarm condition will return to normal. During this sanitization process, the audible alarm condition on the controller can be temporarily deferred by pressing the "RESET" switch for 5 seconds. By doing this, the audible alarm will be silenced. The system will display **RE** on the controller LED. This condition will remain for 12 hours unless the system is manually reset as outlined on page 10 of this manual.

## Section 4 Maintenance

### ⚠ WARNING



- Always disconnect power before performing any work on the disinfection system.
- Always shut-off water flow and release water pressure before servicing.
- Regularly inspect your disinfection system to ensure that the power indicators are on and no alarms are present.
- Replace the UV lamp annually (or biennially if seasonal home use) to ensure maximum disinfection.
- Always drain the chamber when closing a seasonal home or leaving the unit in an area subject to freezing temperatures.

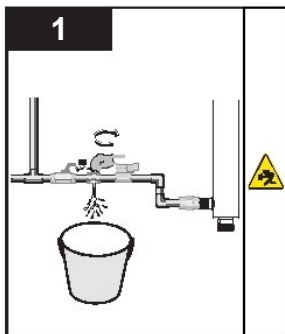
### 4.1 Replacing UV Lamp

### NOTICE

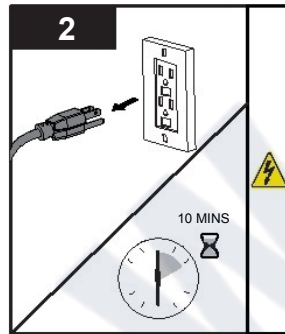
- Reset UV lamp life timer after UV lamp replacement. Refer to [Section 5.1.3](#). Refer to [www.lamprecycle.org](http://www.lamprecycle.org) for UV lamp disposal.
- DO NOT use water during replacement of UV lamp.

UV lamp replacement is a quick and simple procedure requiring no special tools. The UV lamp must be replaced after 9000 hours of continuous operation (approximately one year) in order to ensure adequate disinfection.

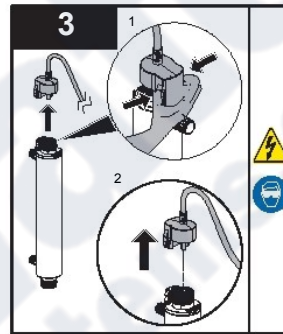
#### Procedure:



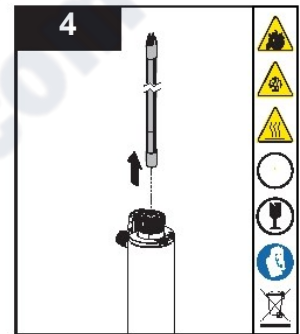
- Shut off the water line to chamber and release system pressure before servicing.



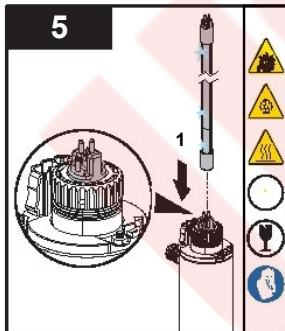
- Disconnect main power source and allow the unit to cool for 10 minutes.



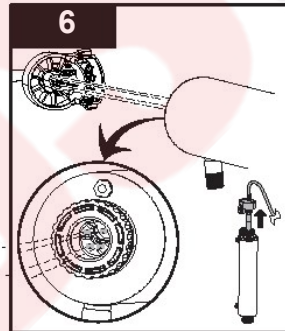
- Remove the lamp connector by squeezing the plastic locking tabs on the side of the connector.



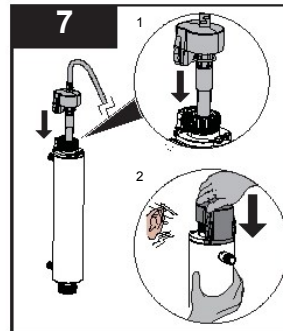
- Remove the lamp in upward direction from the chamber and lamp connector base.
- Always hold the lamp at the ceramic ends.



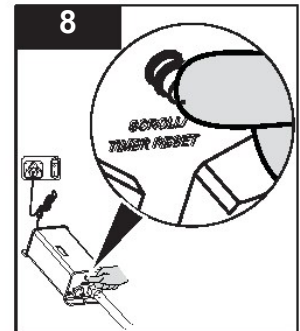
- Insert the new lamp fully into the chamber leaving about two inches of the lamp protruding from the chamber.



- Attach the connector to the lamp and note that the connector will only allow correct installation in one position.



- Push the lamp connector against lamp connector base together until an audible click is heard.
- Re-pressurize the system to check for leaks.



- Hold down the timer reset button and reapply power to the controller until you see [555], then release timer reset button.
- A 5 second delay will occur until you hear an audible tone and the LED display will read one again [365].

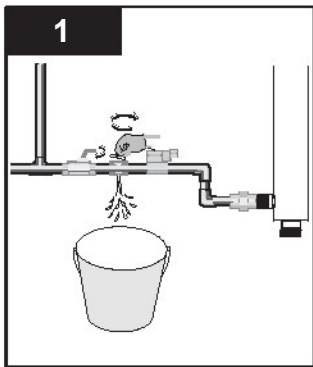
## 4.2 Cleaning and Replacing Quartz Sleeve

**Note:** Minerals in the water slowly form a coating on the quartz sleeve. This coating must be removed because it reduces the amount of UV light reaching the water, thereby reducing disinfection performance. If the sleeve can not be cleaned, it must be replaced.

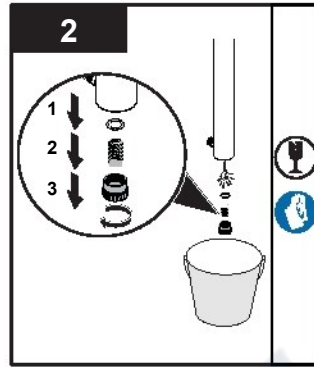
### Prerequisites:

- Shut off water supply and drain all lines.
- Remove the UV lamp. Refer to [Section 4.1](#).

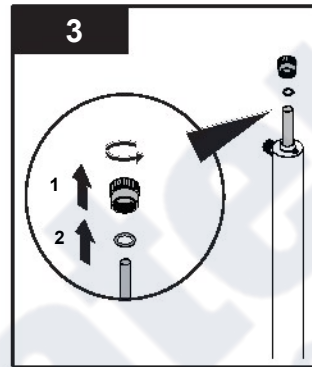
### Procedure:



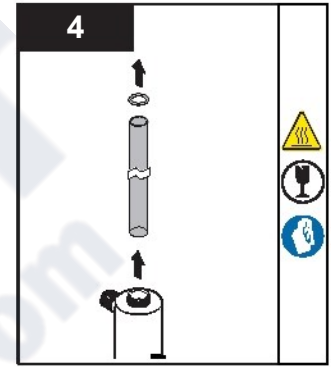
- Drain the chamber by using the drain port.



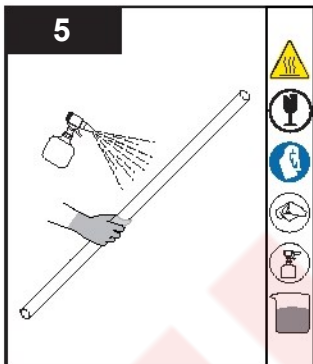
- Remove the bottom retaining nut, floating spring, and O-ring.



- Remove the top retaining nut and O-ring.

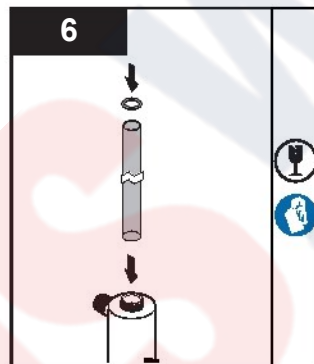


- Carefully, remove O-ring adhering to the quartz sleeve.
- Remove the quartz sleeve.

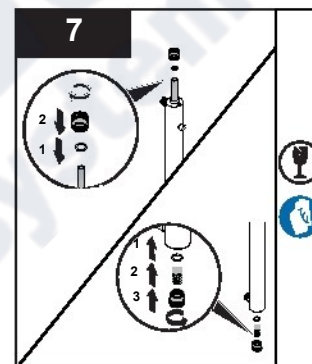


- Clean the quartz sleeve with a cloth soaked in CLR, vinegar or some other mild acid and then rinse with water.

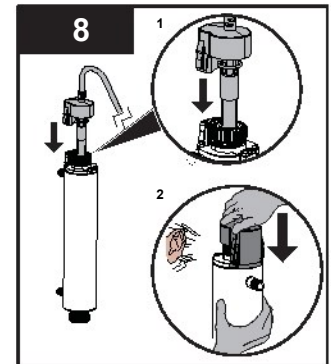
**Note:** If sleeve cannot be cleaned completely or it is scratched or cracked, then replace the sleeve



- Reinstall the quartz sleeve in the chamber allowing the sleeve to protrude an equal distance at both ends of the chamber.
- Slide supplied O-rings onto each end of the quartz sleeve.



- Reinstall the top and bottom retaining nuts, floating spring, and O-rings respectively.
- When service is complete, assemble the prerequisites in the reverse order of disassembly.
- Plug in controller and verify the POWER-ON LED display is illuminated and controller power-up sequence operates.



- Push the lamp connector against lamp connector base together until an audible click is heard.
- Plug in controller and verify the POWER-ON LED display.
- Re-pressurize the system to check for leaks.

**Note:** After replacing the UV lamp or quartz sleeve perform the disinfection procedure, refer to [Section 3.2](#).

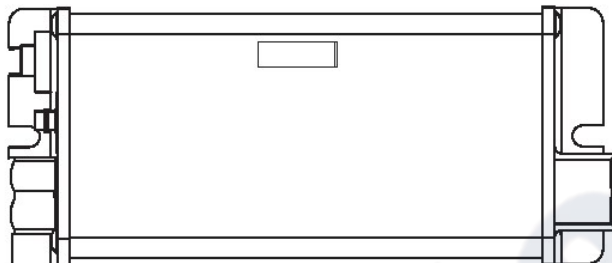
## Section 5 Operation

### WARNING



The advanced warning system has been installed to provide the optimum protection against microbiological contamination in water. DO NOT disregard the warning signals. The best way to ensure optimum UV performance is to have the water microbiologically tested by a recognized testing agency on a regular basis.

### 5.1 Basic Systems Incorporating BA-ICE-S Controller



#### 5.1.1 UV lamp Life Remaining (days)

**365** The controller tracks the number of days of operation of the UV lamp and the controller. The default screen will display the total UV lamp life remaining (in days). The controller will count down the number of days remaining until the UV lamp requires changing (365 days to 1 day). At "0" days, the controller will display **A3** and sound an intermittent audible chirp (1 second on, 5 seconds off), indicating the need to change the UV lamp.

#### 5.1.2 Understanding your "A3" Code

**A3 DEFERRAL** - Once the "A3" or end of UV lamp life message is shown on the LED display, the audible alarm can be deferred up to 4 separate times. The delay is designed to allow you time to address the alarm while you obtain a new UV lamp. This can be done by simply depressing the timer reset button for 5 seconds, which is located on the left side of the controller. Each time the timer reset button is pressed the controller alarm is deferred seven days. Once the final 7 day deferral has been reached the alarm can only be silenced by changing the UV lamp and manually resetting the controller timer, refer to [Section 4.1](#).

#### 5.1.3 Resetting UV lamp Life

Refer to [Section 4.1](#).

**Note:** Even though the alarm on the system can be deferred for a period of time, it is important to address each and every alarm condition as they are indicating that there is a potential problem with the system and should be remedied.

#### 5.1.4 Total Days of Operation

**1680** The controller also displays the total running time of the controller. To obtain this reading, press the push-button once. The total running time of the controller will be numerically displayed in days. This information will remain displayed for ten seconds and will then revert back to the UV lamp life remaining default screen. It should be noted that this value cannot be reset.

#### 5.1.5 UV lamp Failure (Blank Screen)

When the system recognizes UV LAMP FAILURE (no current running through the UV lamp), the display will be blank  (no default UV LAMP LIFE REMAINING screen) and the system will sound an intermittent audible tones (1 second on, 1 second off). The system will remain in this state, until this condition is remedied.

## Section 6 Troubleshooting

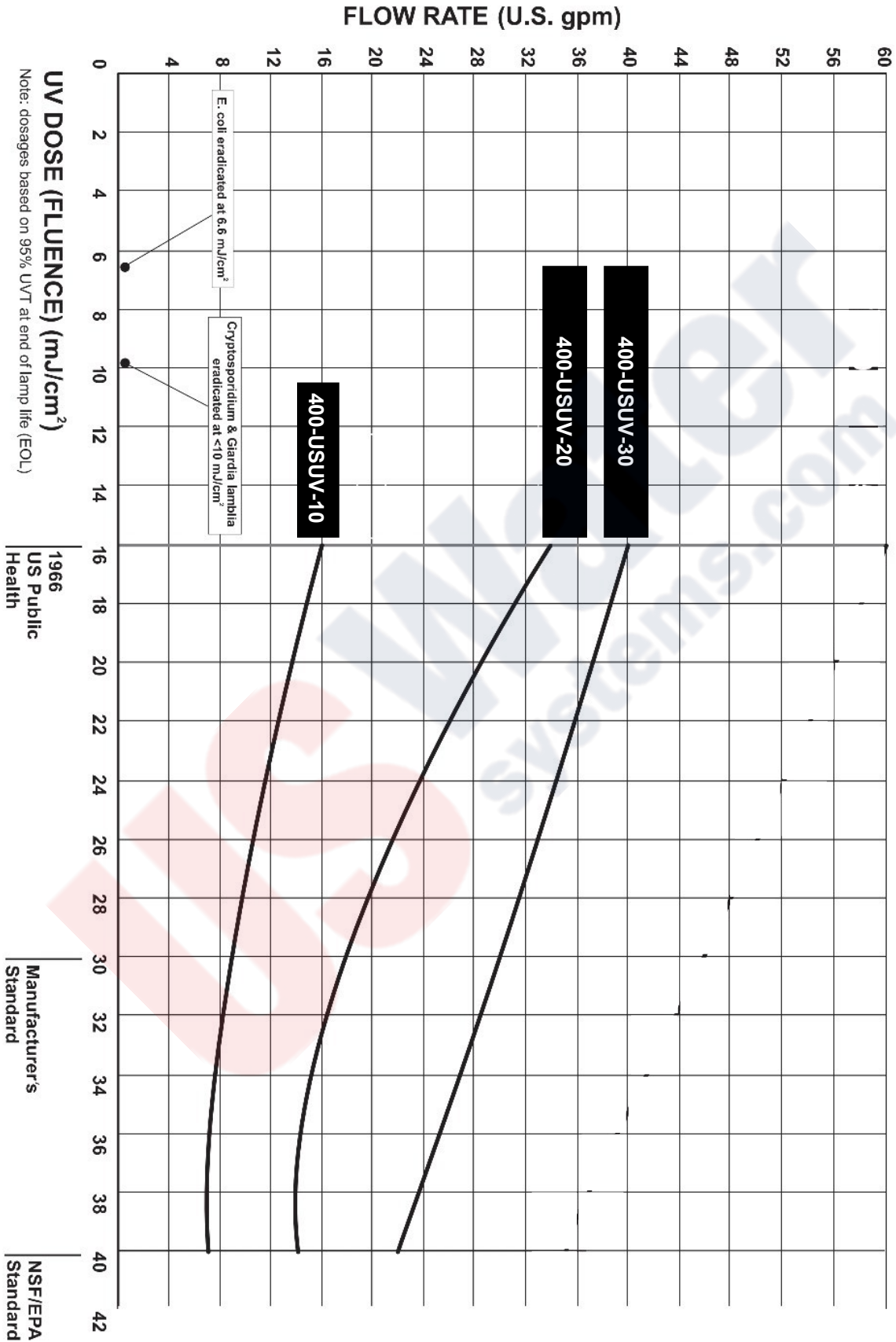
| Symptom                             | Possible Causes  | Solutions  |
|-------------------------------------|--|--|
| Pressure Drop                       | Sediment pre-filter clogged  | Replace filter cartridge with appropriate 5 micron cartridge.<br><b>Note:</b> Check source water supply as fluctuations may occur in source pressure.  |
|                                     | Flow regulator   | Flow regulator will result in pressure drop when approaching full flow.  |
| High Bacteria Counts                | Quartz sleeve is stained or dirty  | Clean sleeve with scale cleaner and eliminate source of staining problem (ie. soften hard water, refer to <a href="#">Section 4.2</a> ).   |
|                                     | Change in feed water quality   | Have source water tested to ensure that water quality is still within allowable limits for this system.  |
|                                     | Contamination in water lines after UV system (eg. power failures, plumbing)                  | Disinfection system must have a bacterial free distribution system to work effectively. Refer to <a href="#">Section 3.2</a>   |
|                                     | Possible break-through of sediment through pre-filter  | Have source water tested for turbidity - may need stepped filtration in order to catch all sediment entering water system (20 micron filter followed by a 5 micron filter followed by UV   |
| Heated Product Water                | Common problem caused by infrequent use of water   | Run water until it returns to ambient temperature.   |
| Water Appears Milky                 | Caused by air in the water lines   | Run water until air is purged.   |
| Unit Leaking Water                  | Problem with O-ring seal (on retaining nut and/or UV sensor)                                 | Ensure O-ring is in place, check for cuts or abrasions, clean O-ring, moisten with water/lubricant and re-install, replace if necessary (410867).  |
|                                     | Condensation on UV chamber caused by excessive humidity & cold water                         | Check location of disinfection system and control humidity.  |
|                                     | Inadequate inlet/outlet port connections   | Check thread connections, reseal with Teflon® tape and re-tighten  |
| System Shutting Down Intermittently | Interrupted controller   | <ul style="list-style-type: none"> <li>• Ensure system has been installed on its own circuit, as other equipment may be drawing power away from UV (ie. pump or fridge).</li> <li>• UV system should not be installed on a circuit which is incorporated into a light switch.</li> </ul> |
| UV lamp Failure Alarm on - New lamp | Loose connection between UV lamp and connector   | Disconnect UV lamp from connector and reconnect, ensuring that a tight fit is accomplished   |
|                                     | Moisture build up in connector may keep UV lamp and connector from making a solid connection | Eliminate chance of any moisture getting to the connector and/or lamp pins   |

### DISPLAY FAULT MODES

|                        |  |
|------------------------|--|
| LED display reads "A3" | <ul style="list-style-type: none"> <li>• UV lamp life expired - countdown is at "0" days.</li> <li>• Press reset button for a deferred alarm, replace UV lamp</li> </ul>   |
| LED display is blank   | <ul style="list-style-type: none"> <li>• Controller is in UV lamp failure mode.</li> <li>• Power system down, allowing it to reset itself; apply power in order to confirm that the controller is able to power UV lamp</li> <li>• Check to see if there is sufficient power to the UV system UV lamp</li> </ul> |



# Section 7 Manufacturer's Dose Flow Chart





## Section 8 Specifications

### 8.1 Home and Professional - Standard

| Model                               |  | 400-USUV-10                                       | 400-USUV-20                                       | 400-USUV-30                                       |
|-------------------------------------|--|---|---|---|
| Flow Rate                           | US Public Health 16mJ/cm <sup>2</sup> @ 95% UVT          | 16 gpm (60 lpm) (3.6 m <sup>3</sup> /hr)          | 34 gpm (130 lpm) (7.8 m <sup>3</sup> /hr)         | 40 gpm (151 lpm) (9.1 m <sup>3</sup> /hr)         |
|                                     | US WATER SYSTEMS Standard 30mJ/cm <sup>2</sup> @ 95% UVT | 9 gpm (34 lpm) (2.0 m <sup>3</sup> /hr)           | 18 gpm (70 lpm) (4.2 m <sup>3</sup> /hr)          | 30 gpm (113 lpm) (6.7 m <sup>3</sup> /hr)         |
|                                     | NSF/EPA 40mJ/cm <sup>2</sup> @ 95% UVT                   | 7 gpm (26 lpm) (1.6 m <sup>3</sup> /hr)           | 14 gpm (54 lpm) (3.3 m <sup>3</sup> /hr)          | 22 gpm (83 lpm) (5.0 m <sup>3</sup> /hr)          |
| Dimensions                          | Chamber  | 45 cm x 8.9 cm (17.8" x 3.5")                     | 59.6 cm x 8.9 cm(23.5" x 3.5")                    | 78 cm x 8.9 cm (30.7" x 3.5")                     |
|                                     | Controller 100-250 VAC                                   | 17.2 cm x 8.1 cm x 6.4 cm<br>(6.8" x 3.2" x 2.5") | 17.2 cm x 8.1 cm x 6.4 cm<br>(6.8" x 3.2" x 2.5") | 22.3 cm x 8.1 cm x 6.4 cm<br>(8.8" x 3.2" x 2.5") |
| Inlet/Outlet Port Size <sup>1</sup> |  | Combo 3/4" FNPT/1" MNPT                           | Combo 3/4" FNPT/1" MNPT                           | 1" MNPT   |
| Shipping Weight                     |  | 5.4 kg (12 lbs)                                   | 7.7 kg (17 lbs)                                   | 8.6 kg (19 lbs)                                   |
| Electrical                          | Voltage <sup>2</sup>                                     | 100-240V/50-60Hz                                  | 100-240V/50-60Hz                                  | 100-240V/50-60Hz                                  |
|                                     | Power Consumption  | 35 W  | 60 W  | 78 W  |
|                                     | UV Lamp Watts  | 25 W  | 46 W  | 58 W  |
| Total Running Time                  |  | Yes   | Yes   | Yes   |
| Maximum Operating Pressure          |  | 8.62 bar (125 psi)                                | 8.62 bar (125 psi)                                | 8.62 bar (125 psi)                                |
| Ambient Water Temperature           |  | 2-40 °C (36-104 °F)                               | 2-40 °C (36-104 °F)                               | 2-40 °C (36-104 °F)                               |
| Lamp Type                           |  | Sterilume™-HO (high-output)                       | Sterilume™-HO (high-output)                       | Sterilume™-HO (high-output)                       |
| Visual "Power-ON"                   |  | Yes   | Yes   | Yes   |
| Audible Lamp Failure                |  | Yes   | Yes   | Yes   |
| Lamp Replacement Reminder           |  | Yes   | Yes   | Yes   |
| Visual lamp Life Remaining          |  | Yes   | Yes   | Yes   |
| Total Running Time                  |  | Yes   | Yes   | Yes   |
| Chamber Material                    |  | Yes   | Yes   | Yes   |

# Section 9 Manufacturer's Warranty

---

### Our Commitment

US WATER SYSTEMS is committed to ensuring your experience with our products and organization exceeds your expectations. We have manufactured your UV disinfection system to the highest quality standards and value you as our customer. Should you need any support, or have questions about your system, please contact our Technical Support team at 1.800.608.8792 or and we will be happy to assist you. We sincerely hope you enjoy the benefits of clean, safe drinking water after the installation of your US WATER SYSTEMS disinfection system.

### How to Make a Warranty Claim Note

To maximize the disinfection performance and reliability of your US WATER SYSTEMS product, the system must be properly sized, installed and maintained. Guidance on the necessary water quality parameters and maintenance requirements can be found in your Owner's Manual. In the event that repair or replacement of parts covered by this warranty are required, contact our Technical Support team at 1.800.608.8792 or e-mail support@uswatersystems.com. Our fully trained technicians will help you troubleshoot the problem and identify a solution. Please have available the model number (system type), the date of purchase, as well as a description of the problem you are experiencing. To establish proof of purchase when making a warranty claim, you will either need your original invoice or the billing name of the purchaser.

### Specific Warranty Coverage

Coverage Warranty coverage is specific to the US WATER SYSTEMS range of products. Warranty coverage is subject to the conditions and limitations outlined under "General Conditions and Limitations".

#### Lifetime Limited Warranty for US WATER SYSTEMS UV Chamber

US WATER SYSTEMS warrants the UV chamber on the US WATER SYSTEMS product to be free from defects in material and workmanship for the lifetime of the original purchaser at their original address. During this time, US WATER SYSTEMS will repair or replace, at its option, any defective US WATER SYSTEMS UV chamber. You must first return the defective part. If this product is used in a commercial application, the warranty on the chamber is 10 years.

#### Ten-Year Limited Warranty for Ballast, Electrical and Hardware Components

US WATER SYSTEMS warrants the electrical (controller or ballast) and hardware components to be free from defects in material and workmanship for a period of ten (10) years from the date of purchase, providing that purchaser uses bulbs and sleeves purchased from US Water. During this time, US WATER SYSTEMS will repair or replace, at its option, any defective parts covered by the warranty. Please return the defective part to process your claim. If this product is used in a commercial application, the warranty on the chamber is 10 years.

#### One-Year Limited Warranty for UV lamps, Sleeves, and UV Sensors

US WATER SYSTEMS warrants UV lamps, sleeves, and UV sensors to be free from defects in material and workmanship for a period of one (1) year from the date of purchase. During this time, US WATER SYSTEMS will repair or replace, at its option, any defective parts covered by the warranty. You must return the defective parts so that we can advise whether the item is indeed defective. If this product is used in a commercial application, the warranty on the ballast and electronics is 3 years.

**Note:** Use only genuine US WATER SYSTEMS replacement lamps and sleeves in your system. Failure to do so will seriously compromise disinfection performance and deny warranty coverage.

### General Conditions and Limitations

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

The above warranties do not include the cost of shipping and handling of returned items. The limited warranties described above are the only warranties applicable to the US WATER SYSTEMS range of products. These limited warranties outline the exclusive remedy for all claims based on a failure of or defect in any of these products, whether the claim is based on contract, tort (including negligence), strict liability or otherwise. These warranties are in lieu of all other warranties whether written, oral, implied or statutory. Without limitation, no warranty of merchantability or of fitness for a particular purpose shall apply to any of these products. US WATER SYSTEMS does not assume any liability for personal injury or property damage caused by the use or misuse of any of the above products.

US WATER SYSTEMS shall not in any event be liable for special, incidental, indirect or consequential damages. US WATER SYSTEMS's liability shall, in all instances, be limited to repair or replacement of the defective product or part and this liability will terminate upon expiration of the applicable warranty period.