

# **SAFETY**



## **Attention!**



**WARNING-** To prevent risk of electrical shock, connect this system to a properly grounded, grounding-type power supply receptacle that is protected by a Ground Fault Circuit Interrupter. Pull plug before servicing or replacing lamp. Keep all connections dry and off the ground. Do not touch plug with wet hands.



**WARNING-** Do not look directly at the UV lamp when it is operating. The light emitted by the lamp will cause serious eye damage and burn unprotected skin.



**WARNING-** Read manual before installing or servicing this system. Only authorized personnel possessing a strong understanding of this system should attempt to replace lamp or service this system.

**AiMadison**  
Your Appliance Authority  
800-570-3355

**WateRx Corporation  
6761 Bramble Avenue  
Cincinnati, OH 45227**

## Water Quality Parameters

These are recommended levels, for use as a guideline for pre-treatment requirements.

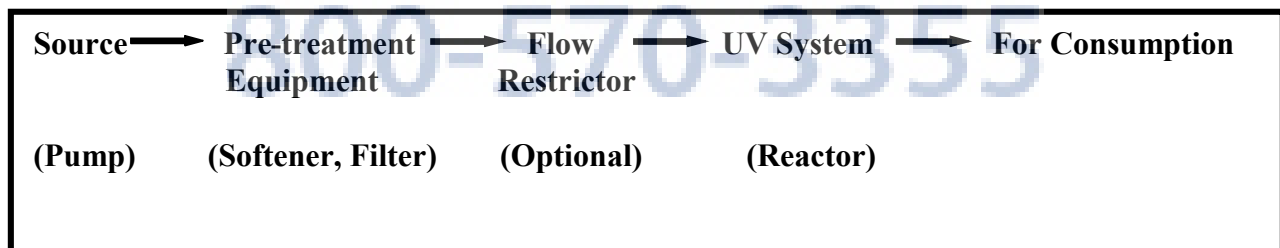
- **Iron:** < .3 PPM (.3 mg/L)
- **Hardness:** < 120 PPM (7 Grains per Gallon)
- **% UVT:** > 75%
- **Total Suspended Solids (TSS):** < 5 PPM (5 mg/L)

To meet the water quality parameters described above, you may need to pre-treat your water to ensure appropriate disinfection. Pre-treatment systems can be comprised of one or a combination of the following elements:

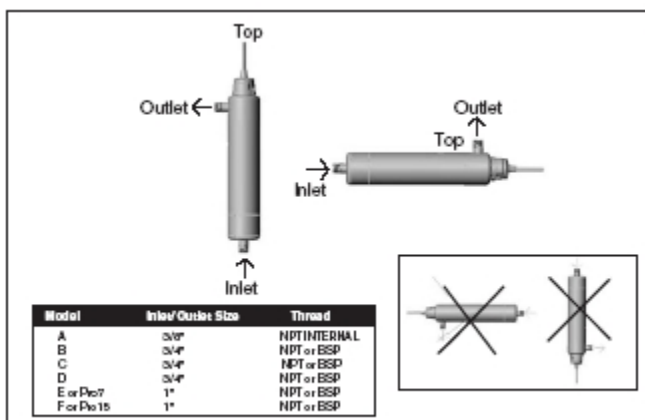
- **Sediment Filter (5 micron)**
- **Carbon Filter**
- **Iron Removal System**
- **Water Softener**
- **Cyst reduction filter (ANSI/NSF Standard 53 listed)**

Pre treatment equipment must be installed BEFORE the UV reactor. Note: Shut off valves should be installed before and after the UV unit.

### Equipment Sequence



### Reactor Chamber Installation

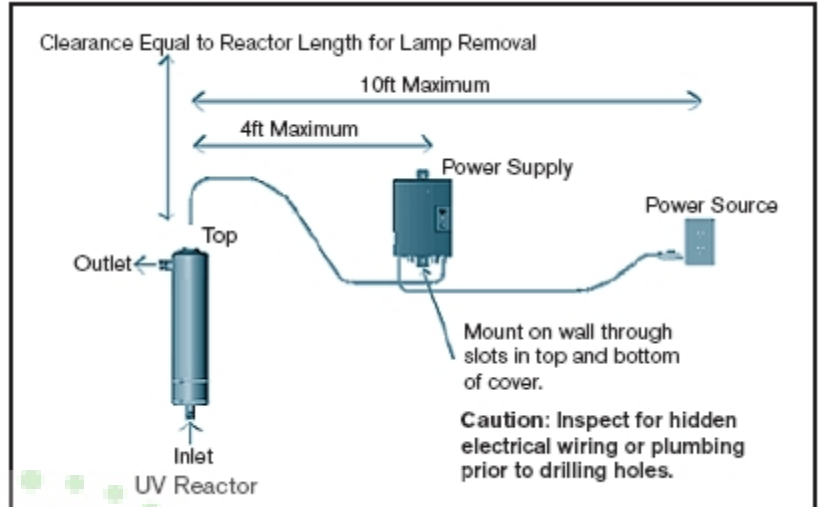


**Note:** Systems equipped with a sensor are not to be installed horizontally.

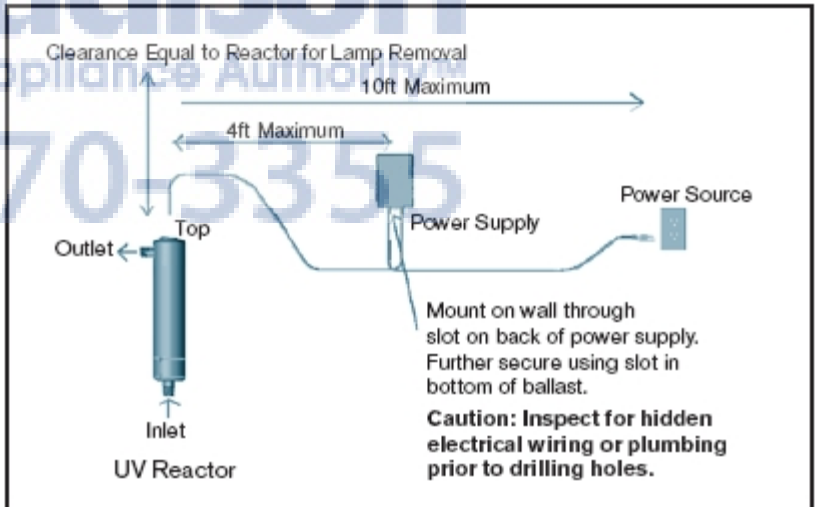
## Installation

1. To protect your power supply, you must use a surge protector.
2. Determine the location referring to information on pages 2, 3, and 4.
3. Attach Reactor Clamp(s) to the wall.
4. Insert Reactor and tighten clamp(s) referring to diagram on page 2.
5. Connect to plumbing.
6. Mount power supply to wall.
7. Attach both ground wire (green/yellow) and strain relief (red) to the ground stud located beside the lamp port (outlet end). Secure both wires with locknut provided (see Figure 9, pg 10).
8. Insert Lamp/ Sleeve assembly (see Figures 10,11,12 page 10).
9. Attach Lamp Harness to lamp (see Figures 10,11,12 page 10).
10. Plug your Ultraviolet system into the outlet. Note: When the UV system is first plugged in, the alarm may sound temporarily until the lamp is operational.

### Models D, E, F, Pro7 and Pro 15 Installation



### Models B & C Installation



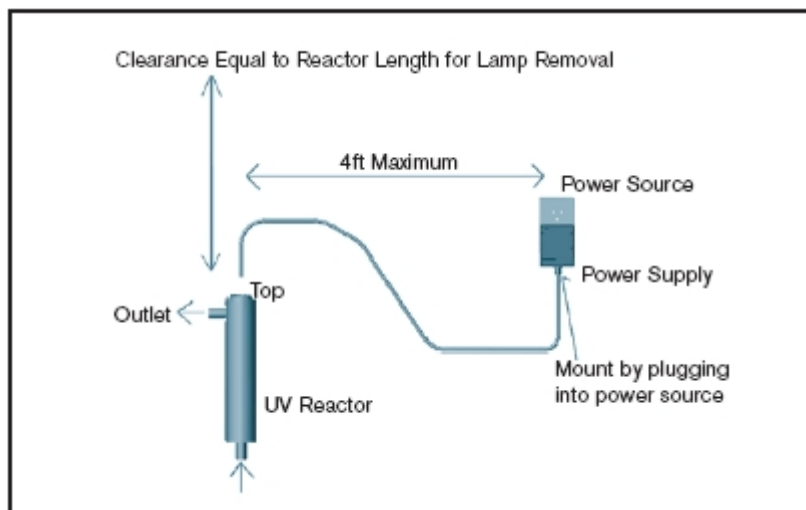
**11. Clean the distribution lines:**

Once the UV system is installed, any contamination in the distribution lines between the UV system and your water outlets must be removed. Similarly, if the power goes out and your Ultraviolet system is not equipped with an automatic shut-off feature, you must also disinfect the downstream distribution lines.

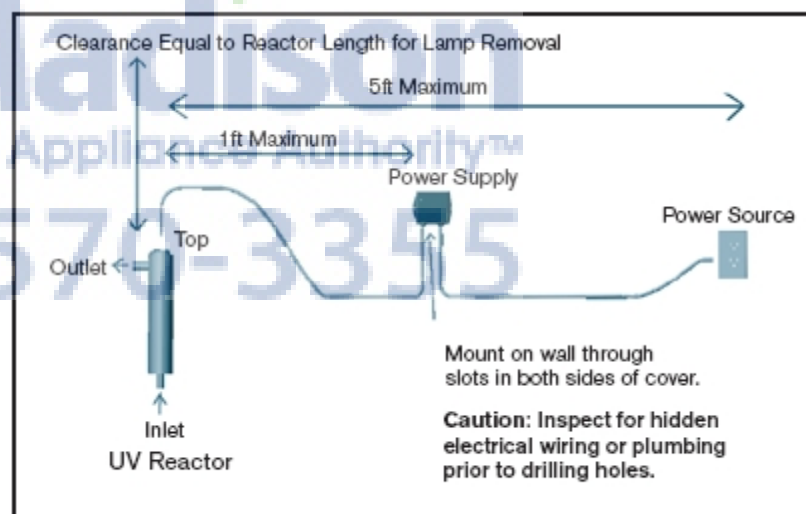
To perform this cleaning operation, first make sure the UV system is on. Remove a filter housing and fill the filter container with bleach (remove the filter for this process). Replace the filter housing and allow water to flow to all faucets (hot and cold, inside and outside the house), your washing machine, toilets, and all other water outlets. Once you can smell the bleach, allow it to sit in the lines for two to four hours, and then completely flush all the lines a minimum of five minutes and replace the filter. Any contamination will have been removed.

**NOTE:** The UV system must remain on during and following this procedure.

**Model A 120V Installation**



**Model A 230V Installation**



## **Operation**

The lamp **MUST** be replaced after 12 months of operation. Failure to replace the lamp will reduce the disinfection strength of the Ultraviolet system.

### **Ultraviolet Models A, B, and C**

#### **Power Supply**

Model A is 104-126 at 60 Hz or 216-253V at 50 Hz. Models B & C are 90-140V or 190-265V at 50 or 60 Hz. For protection from power surges, a surge protector must be employed.

#### **Visual Alarm**

When the unit is operating properly, the LED on the ballast will be green. If the lamp is not operating, the LED will not light.

#### **Audible Alarm**

When the unit is operating properly, no sound will be emitted. If the lamp is not operating, the unit's alarm will sound until either the problem is corrected or the system is unplugged from the electrical outlet. Note: If the system is unplugged the water will not be disinfected and the distribution lines will have to be shocked. The 230V version of Unit A is not equipped with an audible alarm.

### **Ultraviolet Models D, E, F, Pro7, and Pro15**

#### **Power Supply**

Models D, E, F, Pro7, and Pro15 have an auto ranging constant current power supply that will accept 90-265V at 50 or 60 Hz.

#### **Visual Alarm**

During normal operation the LED light will be green. The LED is always on while the lamp is on.

- The LED will turn amber after 11 months of operation or, on the Plus models, if the sensor detects a low UV output.
- The LED will turn red if the lamp is not operating properly or if the UV signal from the sensor is below the set point.
- After 12 months of operation, the LED will turn red, indicating that the lamp must be replaced.

#### **Audible Alarm**

During normal operation no sound is emitted.

- If the lamp is not operating or the UV signal from the sensor is low, the unit's alarm will sound.
- After 12 months of lamp operation, the unit's alarm will sound.

#### **Elapsed Time Meter**

The Elapsed Time Meter shows you the number of months that your lamp has been operating. You **MUST** replace the lamp after it has been operation for 12 months.

- After 11 months the LED turns amber.
- After 12 months the LED turned red and an alarm sounds.
- After 14 months the alarm postpone is disabled, indicating that the lamp must be replaced and that it is not providing proper disinfection.
- After lamp replacement, this meter must be reset (see Elapsed Time Meter Re-set).

The Elapsed Time Meter also indicates the source of the problem should the unit malfunction. See the troubleshooting section for details.

## Alarm Postpone Button

The alarm postpone button has two functions.



### ***24- Hour Postpone Function:***

When the unit is in alarm, the LED is red and an alarm sounds. If you press the Alarm Postpone Button for less than two seconds, the LED will flash red and the audible alarm will stop. The unit is still in alarm, but the audio alarm stops for your convenience until you can contact a dealer.

This alarm will re-occur after 24 hours if its cause has not been corrected.

If the unit detects another problem during the 24-hour alarm postpone period, it will go into alarm again, the LED will turn solid red, and the alarm will sound.

After 14 months of lamp operation, the alarm postpone will not work until the lamp is replaced and the time meter is reset.

### ***Elapsed Time Meter Re-Set Function:***

After the lamp has been changed, the Elapsed Time Meter must be reset by following the procedure below:

1. Disconnect the power supply. Ensure the ballast is left unplugged for 10 seconds.
2. Press and HOLD the reset button.
3. Connect the power supply to the outlet while continuing to press the reset button. The display and LED will flash for about 3 seconds.
4. Continue to hold the reset button until the LED flashes red and the display flashes "00".

### **Dry Contacts**

This feature provides switching for the operation of a solenoid valve and/or remote alarm. When the lamp is not operating properly or the UV sensor signals that the UV output is low, the contacts will open causing the solenoid to stop the water flow and/or a remote alarm to sound. The dry contact remains open if the lamp has been in operation for 12 months or more. Remote Options Cord must be ordered to use Dry Contacts.

### **UV Sensor**

The UV sensor measures the amount of UV light reaching it, allowing the system to monitor whether the intensity is above the minimum required for proper disinfection. The sensor is factory calibrated and is not field adjustable. See your dealer for proper system sizing.

## **Service And Maintenance**



**CAUTION:** UV-C rays are present when the unit is operating. Follow the instructions carefully to avoid injury to eyes and skin. Only qualified persons should install or replace UV lamps or sleeves.



**CAUTION:** Be sure to remove all traces of cleaning solution by thoroughly rinsing the sleeve prior to replacing it into the reactor. Follow the lamp/sleeve replacement instructions.

There are two regular maintenance requirements common to all UV systems: lamp replacement and sleeve cleaning.

### **Lamp Replacement**

The lamp's UV intensity decreases over time. You can safely use your lamp for 12 months, after which it must be replaced. For instance, if you use your system for 12 continuous months, you must replace your lamp at the end of this period. If you use the system only six months each year, you would need to change your lamp at the end of the second six-month period.

### **Sleeve Cleaning**

Minerals in the water will eventually coat the quartz sleeve that protects the lamp. This coating must be cleaned off periodically because it reduces the UV intensity reaching the water. Once a month, check the sleeve and clean it if you can see a mineral coating starting to form. You can use a soft cloth with acid solutions or cleaners such as Lime-A-Way or CLR or regular vinegar to clean the sleeve.

## **Lamp Removal**

1. Shut off water supply to (upstream of) the UV system.
2. Open a tap downstream of the UV unit to release pressure, then close this tap.
3. Unplug the power supply.
4. Let the lamp cool for 5 minutes.
5. Remove the lamp harness: Release the safety clips by gently applying outward pressure on the finger tabs and push off the grey plastic cover (see Figure 1 on pg. 10) or gently squeeze the sides of the cover adjacent to the snap fingers (Figure 2). When the cover is removed you can pull the lamp plug off the lamp end (Figure 3). Caution: Do not pull on the lamp harness cord to remove the plug.
6. Unscrew the lamp/sleeve assembly and carefully remove it from the reactor (Figure 4). Handle lamp/sleeve at ends only. If required, a wrench can be placed on the flat sides of the sleeve bolt, just below the snap ridges.
7. To remove the lamp from its sleeve (Figure 5), use a glove or cloth to support and hold on to the sleeve. Unscrew the lamp from the sleeve bolt. Be careful not to drop the sleeve. If required, place an adjustable wrench on the flats at the side of the sleeve bolt and a screwdriver shaft into one of the slots in the top of the lamp end (Figure 6).

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# **Lamp Installation**

1. Ensure O-ring and seating area are clean prior to assembly. Place the O-rings and the sleeve bolt on the quartz sleeve and put the lamp into the quartz sleeve (Figure 7). Be careful not to angle the lamp while inserting it into the quartz sleeve. If excessive force is applied, the outward pressure on the inside edge of the quartz sleeve will cause it to fracture. Slide the lamp into the quartz sleeve until the top of the sleeve meets the bottom of the groove in the lamp end. Screw the lamp end and sleeve bolt together while ensuring that the quartz sleeve remains at the bottom of the groove in the lamp end (Figure 7). Once the O-ring begins to sit in position, place a screwdriver shaft in one of the slots in the top of the lamp end and an adjustable wrench on the flats at the side of the sleeve bolt (Figure 6). Further tighten the lamp end 1/5<sup>th</sup> of a revolution. **Caution: Do not over-tighten. Over tightening will break the quartz sleeve. Caution: Do not lubricate any of the O-rings.**
2. Ensure O-ring and seating area are clean prior to assembly. Carefully place the lamp/sleeve assembly into the reactor. Center it with the spring in the opposite end of the reactor and screw the assembly into the reactor. Once the O-ring begins to sit in position, place an adjustable wrench on the flats of the sleeve bolt and tighten sleeve bolt ¼ turn (Figure 8). **Caution: Over-tightening will break the quartz sleeve.**
3. If you are attaching the harness for the first time, place the eyelet of the green/yellow ground wire and the red strain relief wire onto the ground stud of the reactor (Figure 9). Screw the lock nut provided onto the ground stud to secure the connectors of the ground wire and strain relief wire. *Note: while tightening the lock nut ensure that the eyelets are turned sideways toward the sleeve bolt. This is to ensure that the eyelets and wires are not sticking out and will be covered by the gray plastic cap.*
4. Push the plug onto the end of the lamp while ensuring that the male tab on the lamp end meets with the female tab on the plug (Figures 10 and 11). Ensure the green/yellow ground wire and the red strain relief wire are tight against the sleeve bolt so that they will be covered by the cap. Push or snap on the gray plastic cap while ensuring that the wires are not in the way of the snap fingers or the support ridges that are on the inside of the cap (Figure 12).
5. If the sleeve required cleaning, the UV sensor will also need cleaning (if so equipped). Refer to Cleaning the UV Sensor section of instructions.
6. Reconnect the power supply and check that the LED is green. The alarm may sound until the lamp operates properly.
7. Open the water line, and check for leaks.
8. Clean the distribution lines- refer to item 11 on page 3.

*Note: During lamp replacement, the ground and strain relief wire of the lamp harness should always remain connected to the stud on the reactor. Wires are fastened to the stud by a lock nut.*



**Caution:** The distribution lines must be cleaned following any maintenance procedure in which the water in the lines may have been exposed to the air or to any undisinfected water. The distribution lines must also be cleaned whenever the system loses power and water use continues.

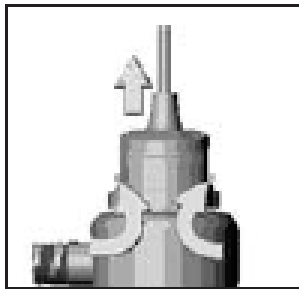


Figure 1

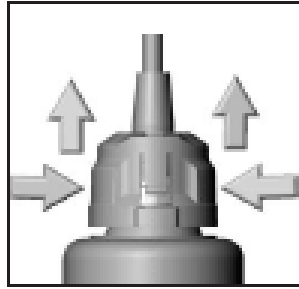


Figure 2

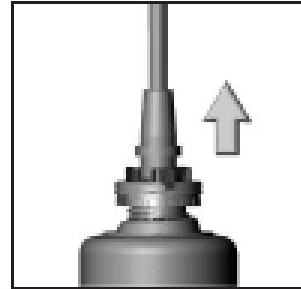


Figure 3



Figure 4



Figure 5

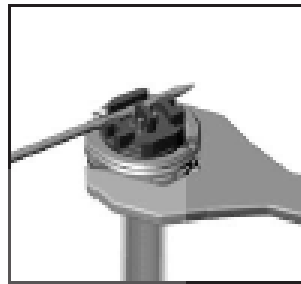


Figure 6



Figure 7



Figure 8



Figure 9

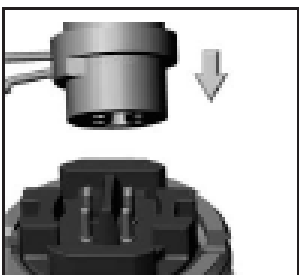


Figure 10



Figure 11

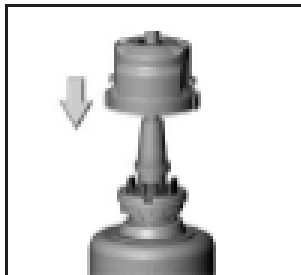


Figure 12

# **UV Sensor Installation and Removal**

To operate properly, the Plus and Pro series systems require that a UV sensor be correctly installed. An adjustable wrench is required to install this sensor.

Note: The UV sensor is fragile and must be handled with care. The quartz window in the end of the UV sensor is made of high quality quartz and may break or clip if mishandled. Handle the UV sensor by the steel, plastic, and brass parts only. Not that pulling on the attached cord may shorten the UV sensor's life.

## **Installation**

1. Always disconnect the power to the power supply before installing, servicing, or maintaining the UV system. To avoid injury, avoid directly exposing skin or eyes to UV light. After disconnecting the power, allow the system to cool for five minutes.
2. Shut off the water supply to (upstream of) the UV system. Open a tap downstream of the system to release pressure, then close this tap.
3. Inspect the O-ring on the UV sensor for damage or wear (contact your dealer for replacement O-rings). Ensure that the O-ring and seating area are clean prior to assembly. Insert the UV sensor into the port in the reactor. Screw the brass nut on finger tight (a wrench should NOT be needed for tightening, over-tightening may cause leakage or may break the sensor).
4. Connect the power to the power supply and check that the LED is green. The alarm may sound until the lamp is operating properly.
5. Open the water supply line to pressurize the system and check for leaks.
6. Clean the distribution lines- refer to item #11 on page 3.

## **Removal**

1. Shut off the water.
2. Open a tap downstream from the unit to release pressure.
3. Unplug the power supply.
4. Let the lamp cool for five minutes.
5. To remove the UV sensor, unscrew the large brass nut holding the UV sensor in place and withdraw the UV sensor. A 15/16" open-ended wrench or adjustable wrench may be required to loosen the brass nut.

# **Cleaning UV System**

## **Cleaning the Quartz Sleeve**

If the water is not sufficiently pre-treated, the quartz sleeve in the water reactor chamber will require periodic cleaning to remove mineral buildup.

1. Follow these steps in Installation or Replacement of UV Lamp/Sleeve section to remove the lamp/sleeve (pg 8).
2. Clean the sleeve by using a commercial grade remove such as Lime-A-Way or CLR on a high-quality lint free cotton swab. When using acidic solution (scale remover), follow the manufacturer's directions for proper use and safety. After the lamp/sleeve is cleaned, handle it by the ends only.
3. Follow the steps in Installation or Replacement of UV Lamp/Sleeve section to install the lamp/sleeve.

*Note: Keep lamp and lamp pins dry.*

*Note: Handle lamp/sleeve at ends only.*

*Note: If the sleeve requires cleaning, the UV sensor will likely require cleaning as well. Refer to the Cleaning the UV Sensor section for instructions.*

## **Cleaning the UV Sensor (Plus and Pro models only)**

1. Follow the steps in the UV Intensity Monitor and Installation Removal section to remove the UV sensor.
2. Clean the quartz window of the UV sensor with a commercial scale remover (such as Lime-A-Way or CLR) on a high-quality lint free cotton swab. Inspect the window to ensure that it is clean, clear, and dry.
3. Follow the steps in the UV Sensor Installation and Removal section to install the UV sensor.

**Note:** Do not attempt to tighten, loosen, or open the sealed UV sensor. Contamination of the UV sensor or loss of function may result.

### **Cleaning Tips**

You may need to use other types of cleaners depending upon the minerals in your water supply. Vinegar or isopropyl alcohol can be used to remove grease and film on the UV sensor, but they may not fully remove scaling. In such cases, use a commercial scale remover such as Lime-A-Way or CLR. Do not combine two or more cleaning solutions.

If you find that you have to clean the sensor frequently, you should check your filters and have your pre-treatment equipment evaluated.