

Sterilight® HF

Installation, Operation and Maintenance

Owner's Manual



**SHF-140, SHF-140/2, SHFM-140, SHFM-140/2,
SHF-180, SHF-180/2, SHFM-180, SHFM-180/2**

Manufactured in Canada by:

VIQUA™

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520189-R_RevB

get **genuine**

If it's NOT a genuine Sterilight part,
it shouldn't be part of your system.

WATER CONFIDENCE

Each component of your VIQUA system has been designed and developed through extensive research and development to be part of an overall system that operates safely and efficiently over its entire lifetime. get genuine Sterilight lamps are:

Safety certified. Replacement with any other lamp voids NSF 55 and UL/CSA/CE certification and compromises safe lamp performance. Using non-genuine lamps results in electrical code no longer being met and safety is at risk.

VIQUA systems are *third-party validated* ensuring effective output and disinfection. Tested and proven system performance ensures disinfection is always achieved.

VIQUA lamps are LongLife coated for stability, longer life and increased efficiency. Even lamps that look the same will not perform the same. Get water confidence with genuine lamps proven to disinfect over their entire lifetime.

Environmentally friendly. With less than 10mg of mercury; 70 per cent less than most other commercially available lamps. Toxicity Characteristic Leaching Procedure compliant, meeting US state requirements regarding the Mercury Phase-Out program.

Your lamps can be recycled at the end of lamp life. Refer to www.lamprecycle.org for information on recycling in your area.

VIQUA provides its equipment with complete safety certifications and warranty for its components. **Getting genuine ensures maintenance of your system warranty.**

VIQUA cannot warranty any system component if non-genuine lamps are used.

Ensure the performance, safety and warranty of
your **Sterilight** systems...get genuine.

Trust genuine VIQUA lamps to deliver water confidence.

Congratulations, you have just purchased a Sterilight® Hi-Flo UV disinfection system. By purchasing this device, you have taken the first step in ensuring the safety of your water supply by using a totally non-intrusive, physical disinfection method. Your Sterilight system uses the most advanced UV technology on the market and is designed to provide you with years of trouble free operation with minimal maintenance required.

Table of Contents:

Parts / Schematic Breakdown	1
Safety Instructions	2-3
Water Chemistry	4
Installing Your UV Disinfection System	4-6
Disinfection Procedure	7-8
Operating and Maintenance Instructions	8-10
Operation	11-14
Troubleshooting	15-16
Hi-Flo Series Dose Flow Chart	16
Specifications	17-18
Manufacturer's Warranty	19

Potential Hazard	Safety Measures
UV Exposure	Never illuminate UV Lamps outside of the UV Chamber. Never look directly at illuminated UV Lamps, even when using protective gear. Always use protective gear, including gloves and UV safety glasses. If accidental exposure occurs, immediately cool affected area and consult physician.
Electrical Shock	Disconnect power to system before performing any maintenance or repair. There may be more than one source of power.
Impalement	Never perform any physical inspection, repair or maintenance on UV Chamber unless UV chamber has been isolated and depressurized. Never service UV Lamps, Sleeves or associated hardware until depressurization of UV chamber has been confirmed.
Hot chamber	Allow UV Lamps, UV Chamber to cool for a minimum of 10 minutes before handling.
Cut or ingestion	Ensure the quartz sleeve or lamp is not broken, cracked or damaged in any way when handling equipment.
Scald from water	When there is no water flow, the water in the chamber will become hot. To prevent scalding, allow the system to cool before draining the system.
Fire	Do not store any combustible or flammable material close to the system.
Hg Exposure	The UV lamp contains mercury. If the lamp breaks, then 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 scatter the spilled mercury. Obey local regulations and guidelines for the removal and disposal of mercury waste.
Water leak	Use proper plumbing materials to avoid potential material degradation from UV exposure.

Symbols:



Caution



Protective Ground



Electrical Warning



Fragile



Eye Protection



*WEEE (waste electrical or electronic equipment)**

** 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.*

Parts:

Controller/Enclosure

POWER - 100-240V/50-60HZ

BA-ICE-HF HI-FLO "BASIC" SYSTEM
 BA-ICE-M-HF HI-FLO MONITORED SYSTEM

Replacement power cords for Hi-Flo ICE Controller (sold separately)

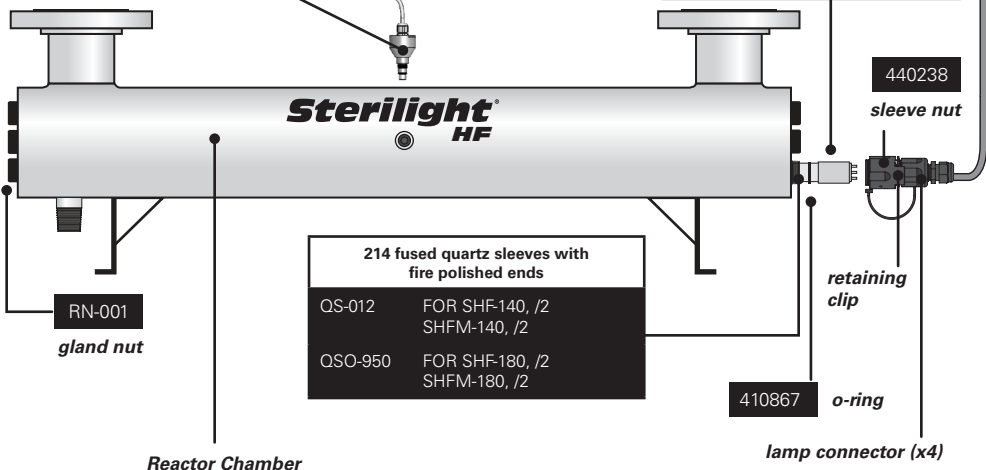
260192-R NORTH AMERICAN (NEMA 5-15P),
3-PRONG GROUNDED
 260198-R CONTINENTAL EUROPEAN (CEE 7/7)
2-PIN WITH GROUND, "SCHUKO"
 260193-R NO CONNECTOR, 3-WIRE,
BARE LEADS

UV sensor

254NM-HF FOR ALL MONITORED
SYSTEMS

Hard glass, coated CIRCLINE-HO UV lamps for long, consistent life (9000 hours)

SHO740/4C-RL FOR SHF-140, /2
SHFM-140, /2
 SHO950/4C-RL FOR SHF-180, /2
SHFM-180, /2



440238
sleeve nut

RN-001

gland nut

214 fused quartz sleeves with fire polished ends

QS-012 FOR SHF-140, /2
SHFM-140, /2
 QSO-950 FOR SHF-180, /2
SHFM-180, /2

retaining clip


410867

o-ring

lamp connector (x4)



Reactor Chamber

Safety Instructions:



 **WARNING** - Always shut-off water flow and release water pressure before servicing.

 **WARNING** - to guard against injury, basic safety precautions should be observed, including the following:



1. **READ AND FOLLOW ALL SAFETY INSTRUCTIONS.**



  2. **GROUNDING** - 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.



DANGER – 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 will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adapter with this system.



  3. **GROUND FAULT CIRCUIT INTERRUPTER PROTECTION** - 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 power supply receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI). Inspect operation of GFCI as per manufacturers suggested maintenance schedule.

 4. **CAUTION** - Always disconnect power before servicing.


  5. **DANGER** - To avoid possible electric shock, special care should be taken since water is present near 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.


  6. 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 ballast or lamp connector.


  7. 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.



  8. Always unplug the disinfection system before performing any cleaning or maintenance activities. Never yank the cord to remove from an outlet; grasp the wall plug and pull to disconnect.

Note: The UV lamps inside of the disinfection system are rated at an effective life of approximately 9000 hours. To ensure continuous protection, replace the UV lamps annually.



 9. 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.

 10. Intended for indoor use only. Do not install this disinfection system where it will be exposed to the weather or to temperatures below freezing. Do not store this disinfection system where it will be exposed to the weather. 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.

 11. Read and observe all the important notices and warnings on the water disinfection system.

  12. **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.

 13. SAVE THESE INSTRUCTIONS.

  **Warning:** The UV light given off by this unit can cause serious burns to unprotected eyes and skin. Never look directly at an illuminated UV lamp. When performing any work on the UV disinfection system always unplug the unit first. Never operate the UV system while the UV lamps are outside of the UV chamber.

Water Chemistry:

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

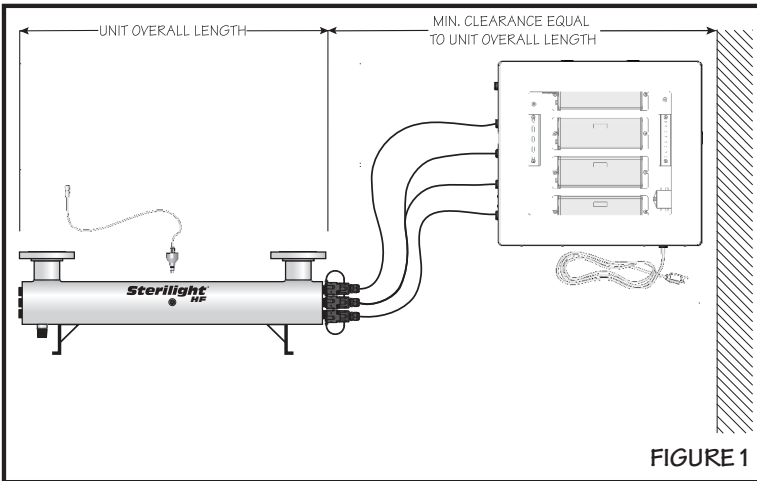
- **Iron: < 0.3 ppm (0.3 mg/L)**
- **Hardness*: < 7 gpg (120 mg/L)**
- **Turbidity: < 1 NTU**
- **Manganese: < 0.05 ppm (0.05 mg/L)**
- **Tannins: < 0.1 ppm (0.1 mg/L)**
- **UV Transmittance: > 75% (call factory for recommendations on applications where UVT < 75%)**

* Where total hardness is less than 7 gpg, the UV unit should operate efficiently provided the quartz sleeves are 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.***

Installing your UV Disinfection System:

- **CAUTION**, power cord on ballast enclosure must be connected to a grounded receptacle and the lamp connector ground wire connected to the stainless steel reactor chamber.
- The disinfection system is designed to be mounted horizontally within the main plumbing lines.
- The enclosure should be mounted either above or beside the reactor chamber. Never mount vertically with AC connector at top of ballast to prevent moisture from running down cordage and causing a potential fire hazard. Drip loops in all cordage connected to ballast controller is highly recommended (see figure 1D).
- The complete water system, including any pressure or hot water tanks, must be sterilized before start up by flushing with chlorine (household bleach) to destroy any residual contamination.
- For safety purposes, the disinfection system should be connected to a ground fault interrupt circuit.
- 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.
- Install the disinfection system before any branch lines.
- 5 Micron filtration must precede the disinfection system. Ideally, the disinfection system should be the last treatment the water receives before consumption.

- ⚠ 1. Figure 1 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. If this is the case, it must be noted that the system will require supplementary disinfection of the distribution system if any water is used during this by-pass condition. In addition, during by-pass, the water will NOT be disinfected and the attached **“DO NOT CONSUME THE WATER”** tag (included with the system), should be physically installed on the by-pass assembly until such time as the system is sanitized and returned to service. Please refer to the complete disinfection procedure as outlined on page 7 of this document. If the water is to be consumed while the system is off-line, the water must be boiled for twenty minutes prior to consumption.
2. Select a suitable location for the disinfection system and its related components. As it is recommended to install a ground fault protected circuit (GFCI), make sure that this is taken into consideration prior to any installation. The system must be installed horizontally (Figure 1). When selecting a mounting location, you must also leave enough space to allow for the removal of the UV lamps and/or quartz sleeves (typically leave a space equal to the size of the reactor chamber itself). *(Note: Installation drawings show monitored system with UV sensor for representation purpose only)*
- ⚠



- ⚠ 3. Mount the system using the chamber mounting legs. Flange type connecting unions must be used to connect the water source. The symmetric design of the chamber allows the water connections to the inlet and outlet ports to be interchangeable.
- ⚠ 4. Mount the Hi-Flo enclosure to the wall, near the reactor chamber. Ideally place the enclosure above the reactor and away from any water connection point, to prevent any water from potentially leaking onto the enclosure by means of a leak at a connection point or a “sweating” system. Make sure you allow for a “drip-loop” (Figure 1D) on the lamp, sensor and power cord, again, to prevent any water from potentially entering the enclosure. Affix the green ground wires to the grounding lug at the end of the reactor vessel and securely fasten with the lugnut provided (Figure 1E).
- ⚠ 5. Install the UV lamps and UV sensor as outlined on pages 8-10.
6. When all plumbing connections are made, slowly turn on the water supply and check for leaks. The most likely cause for 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 view the LED displays through the enclosure window to ensure the system is operating properly. The controller is designed to detect both power to the system and lamp illumination.
It is important to NEVER LOOK DIRECTLY AT THE GLOWING UV LAMPS.
8. Allow the water to run for a few minutes to clear any air or dust that may be in the chamber. **PLEASE NOTE:** When there is no flow, the water in the chamber will become warm, as the UV lamps are always on. To remedy this, run a cold water tap anywhere in the facility to flush out the warm water.

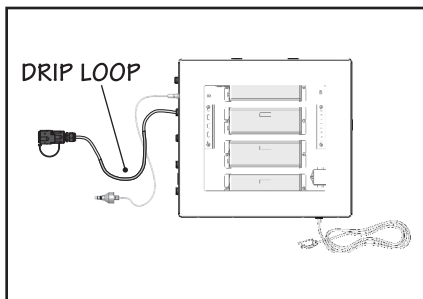


FIGURE 1D

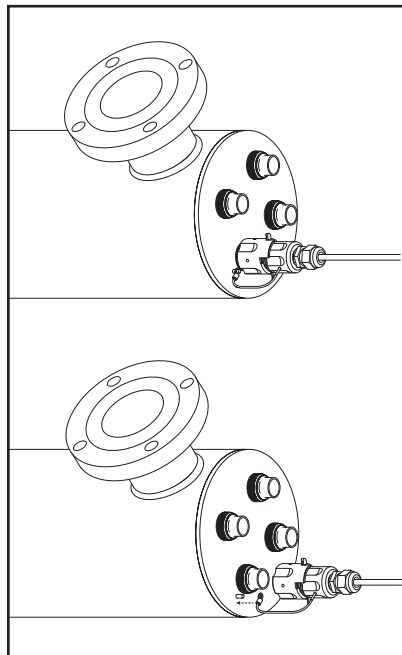


FIGURE 1E


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 strongly recommended that the entire distribution system located after the UV be chemically disinfected to ensure that the pipework is free from any bacteriological contaminants. The disinfection process should 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.

OPERATION

- Always disconnect power before performing any work on the disinfection system.
- Regularly inspect your disinfection system to ensure that the power indicators are on and no alarms are present.
- Replace the UV lamp annually to ensure maximum disinfection.
- Always drain the reactor chamber when closing a seasonal residence or leaving the unit in an area subject to freezing temperatures.








Operating & Maintenance Instructions:

 **Caution:** prior to performing any work on the disinfection system, always disconnect the power supply first.

 **Warning:** Always shut-off water flow and release water pressure before servicing.

UV Lamp Replacement :

NOTE: RESET LAMP LIFE TIMER AFTER LAMP REPLACEMENT (pg. 11)

-  1. DO NOT USE WATER DURING THIS PROCEDURE. Lamp replacement is a quick and simple procedure requiring no special tools. The UV lamp must be replaced after 9,000 hours of continuous operation (approximately one year) in order to ensure adequate disinfection.
- 

 2. Disconnect main power source and allow the unit to cool down for 10 minutes. Remove connector and lamp from the reactor chamber. Separate the lamp from the connector (Figure 2B). Do not twist the lamp from the connector, simply slide the two apart. Avoid touching the lamp on the glass portion. Handling the lamp at the ceramic ends is acceptable, however if you must touch the lamp glass, please use gloves or a soft cloth. Fully remove the lamp from the reactor chamber being careful not to angle the lamp as it is removed from the chamber. If the lamp is removed on an angle, pressure will be applied on the inside of the quartz sleeve, causing the sleeve to fracture.
- 

 3. To install a new lamp, first remove the lamp from its protective packaging, again being careful not to touch the lamp glass itself. Carefully insert the lamp into the reactor vessel (actually inside the quartz sleeve) (Figure 2C). Insert the lamp fully into the chamber leaving about two inches of the lamp protruding from the chamber. Next, attach the connector to the UV lamp (Figure 2B). For Lamp 1 replacement, it is important to remember the lamp is not keyed so it must be ensured that the lamp wires do not interfere with the UV sensor detection as low UV alarms could result in Hi-Flo Monitored systems. The two wires should be oriented furthest away from the sensor port. Ensure the connector

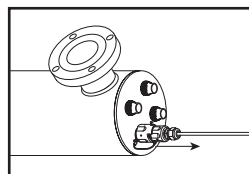


FIGURE 2A

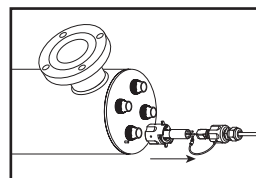


FIGURE 2B

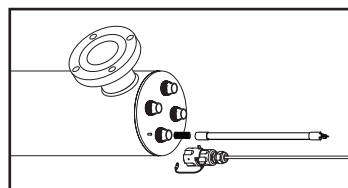


FIGURE 2C

is fully seated onto the UV lamp (Figure 2D).

- Once the lamp is fully seated on the connector, slide the connector up to the retaining nut. Once the connector is located fully against the retaining nut, slide the metal ring back in to lock the connector in place (Figure 2E). As this connector is keyed to the reactor chamber, make sure the notch on the connector (Figure 2D) is located over the ground lug located on the reactor chamber.

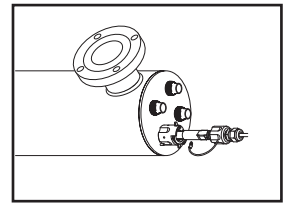


FIGURE 2D

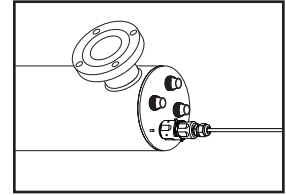


FIGURE 2E

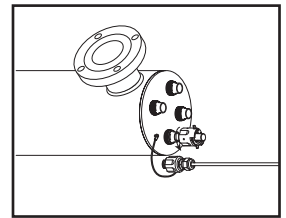


FIGURE 3A

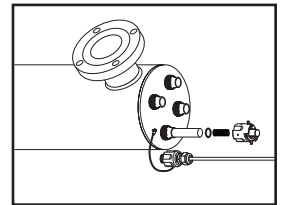


FIGURE 3B

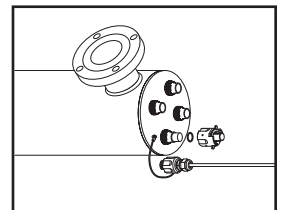


FIGURE 3C

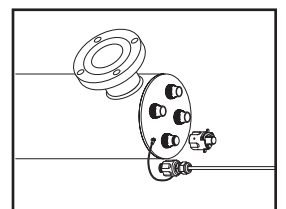


FIGURE 3D

Quartz Sleeve Replacement / Cleaning:

Mineral deposits and sediment may accumulate on the quartz sleeves decreasing the UV energy detected. Good maintenance of filtration equipment will reduce the accumulation of residues. If necessary, remove the quartz sleeves and clean with a commercially available scale remover (CLR, Lime-Away, etc.) and a lint free cloth. Repeat the process as often as necessary to keep the quartz sleeves clean. Be sure to remove all traces of cleaning fluid from the sleeve before it is reinstalled in the reactor (be sure not to allow liquid inside the sleeves).

- Shut off the upstream water supply that feeds water into the reactor chamber.
- Open a downstream faucet to release any pressure that may be built-up in the system.
- Remove the UV lamps by following steps 1 & 2 as outlined in the "Lamp Replacement" section on page 8.
- Remove the retaining nuts by turning counter clockwise (Figure 3a). Drain chamber through drain port. Grasp the quartz sleeve and fully remove from the reactor chamber. Remove both o-rings. As with the lamp, make sure the sleeves are removed from the reactor chamber being careful not to angle the sleeve as they are removed from the reactor (Figure 3b) to avoid breakage. Make sure not to let the sleeve fall inside the chamber after the sleeve end passes the threaded port.
- Clean the sleeve as outlined in above, or replace with a new sleeve. Reinstall the quartz sleeve in the reverse order. To install the sleeves, carefully insert the sleeves into the reactor chamber (do not drop) and push the sleeves (Figure 3c), to the opposite end of the chamber making sure the sleeves are inserted into the corresponding holes on the opposite end of the chamber. Install a wetted o-ring (Part number 410867) onto both ends of the sleeves until they are positioned against the chamfered seat (Figure 3d).
- Reinstall the retaining nut on the reactor chamber and tighten by turning clockwise. The retaining nuts should be hand-tightened only, the use of a wrench is not required, nor recommended. Reinstall the connector as outlined in step four of the "Lamp Replacement" section.
- Slowly turn on water and pressurize the reactor to verify that there are no leaks.
- Reconnect to power source and follow the Controller start-up sequence to make sure the system is operating properly.

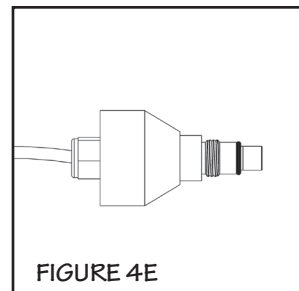
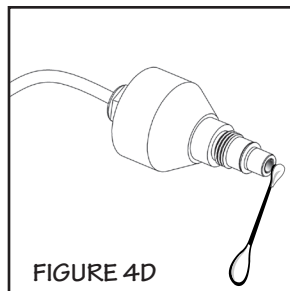
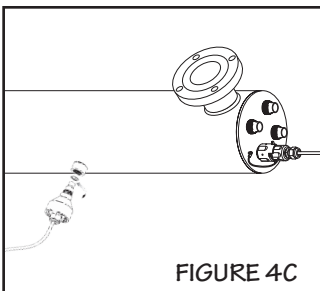
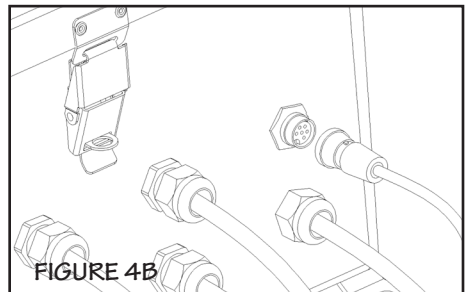
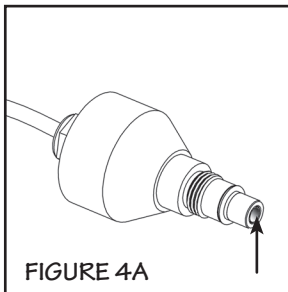
UV Sensor Replacement / Cleaning (SHFM models only):



The UV sensor is a very delicate instrument. Extreme care is required when handling and cleaning. The sensor window itself is constructed from quartz which is extremely fragile, be careful you do not chip or break this quartz window. Manufacturer's warranty does not cover damage due to neglect or misuse.

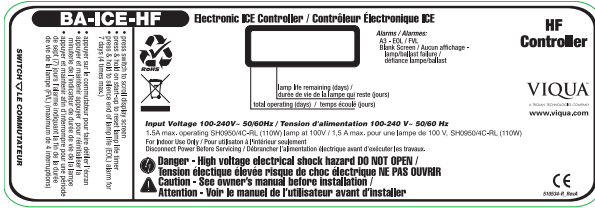
Mineral deposits and sediment may accumulate on the sensor window decreasing the UV energy detected. Good maintenance of pre-treatment equipment will reduce the accumulation of residues. If the system indicates that the UV intensity is low, one cause may be a stained quartz sleeve and/or sensor window. To clean follow steps 1-3 below.

1. Before removing the sensor assembly, follow the steps as outlined in the "Quartz Sleeve Replacement And/Or Cleaning" section. The quartz sleeves should be cleaned at the same time as the UV sensor. Disconnect the UV sensor from the Hi-Flo Monitored (BA-ICE-M-HF) controller by disconnecting the sensor cable, turning the collar counter-clockwise (Figure 4B). To remove the sensor, grasp the body of the sensor and rotate counter-clockwise (Figure 4C) until the sensor is free of the threaded sensor port.
2. Once the sensor is free from the reactor chamber, soak in a commercial scale remover (CLR or Lime-A-Way) for 30 minutes and clean the quartz window (Figure 4A) with a lint free cotton swab (Figure 4D). Follow all manufacturer's instructions regarding the cleaning fluid used. Do not use an abrasive cleaner on the sensor window. Scratching of the sensor window will void any manufacturer's warranty on this item.
3. Ensure sensor lens is rinsed free of cleaning solution. Carefully reassemble the sensor assembly with o-ring (Figure 4E) into the sensor boss. Screw the sensor into the boss and tighten to achieve a water-tight seal. **DO NOT OVER TIGHTEN.** Attach the sensor cable to the Controller and return to service (Figure 4B).



Operation:

Basic Systems incorporating BA-ICE-HF controller:



365

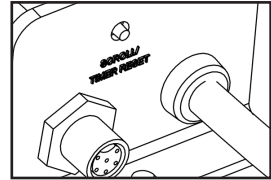
1. Lamp life remaining (days):

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

DEFERRAL - Once the "A3" or end of lamp life message is shown on the LED screen, the audible alarm can be deferred up to 4 separate times. The delay switch 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 push-button "RESET" switch, which is located on the left side of the controller. Each time the reset switch 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. To do this please follow the step by step instructions below:

RESETTING LAMP LIFE:

1. disconnect power supply from controller
2. remove expired lamp from the reactor chamber (dispose of in accordance with local or regional laws and regulations.)
3. install new UV lamp and connect it to lamp connector (refer to page 8)
4. replace lamp connector
5. hold down the "RESET" switch while reapplying power to the controller until you see "rSet," then release
6. 5 second delay will occur until you hear an audible tone & LED display will read once again **365**



Once you hear the tone, let go of the switch and the counter will be reset. 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.

1680

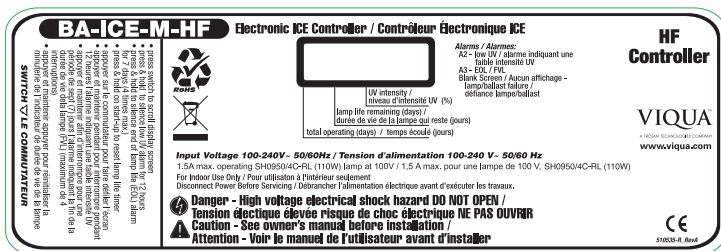
2. Total days of operation:

The controller also displays the total running time of the controller. To obtain this reading, press the push-button SWITCH 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 lamp life remaining default screen. It should be noted that this value cannot be reset.



3. Lamp failure (blank screen):

When the system recognizes LAMP FAILURE (no current running through the lamp), the 4-segment display will be blank (no default LAMP LIFE REMAINING screen) and the system will supply an intermittent audible tone (1 second on, 1 second off). The system will remain in this state, until this condition is remedied.



Monitored Systems incorporating BA-ICE-M-HF controller:







1. UV intensity (%):


The Hi-Flo Monitored series of products incorporate a UV sensor which detects the discrete 254 nm wavelength of the UV lamps. This information is relayed to the top Hi-Flo Monitored controller and is the default display shown in “% UV output”. The system will display the UV output between 50 to 99 percent. When the system drops below 50%, a low UV warning is displayed as  and alternately flashes (at 2 second intervals) back to the actual UV level. —> Eg.  Additionally, the system will supply an intermittent audible tone (2 seconds on, 2 seconds off), during low UV conditions.

Note: UV levels of ...

 to  Indicates the system is functioning within a normal operating range.

 to  Indicates the UV level is still within a safe level, however cleaning or lamp replacement may soon be required.

 to  Indicates the UV level is nearing the point of unsafe UV intensity, UV system should be immediately serviced.

 Indicates the UV level has now reached a level that is unsafe. At this level the water should not be consumed. The system/water supply should be examined to determine the reason for the low UV level of the UV intensity. At this level, the solenoid output has been activated and if a solenoid is installed, water will cease to flow.

DEFERRAL - To temporarily defer the audible alarm and re-activate solenoid valve (if fitted) during a low UV alarm, press the push-button “RESET” switch and hold for five seconds. This will mute the audible alarm condition and activate solenoid output for 12 hours.



This advanced warning system has been installed to provide you with the optimum protection against microbiological contamination in your 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.

Possible causes for low UV alarm conditions:

- a) The UV lamps have perhaps reached a level whereby they can no longer adequately provide a sufficient level of disinfection due to age (> 9000 hours). The lamps should be replaced with new lamps from the manufacturer of the same size and type.
- b) The quartz sleeves and/or the sensor window have become stained or dirty. Mineral deposits or sediment in the water that was not detected during the original water analysis may be the cause for this (refer to page 9 for cleaning instructions).
- c) Intermittent voltage drop in the line power supply reducing the lamp output. The lamp will return to normal when the power is restored to full voltage. **Note: the monitoring system will not operate during power failures.**
- d) The quality of the influent water has changed and is no longer within the acceptable operational range of the UV system. Perform a water analysis to determine the exact constituents and concentration levels.
- e) The UV sensor is not installed correctly (see page 10).



2. Lamp life remaining (days):

To obtain this reading, press the push-button SWITCH a single time and follow the steps as outlined on page 11, regarding the operation of this feature.



3. Total days of operation:

To obtain this reading, press the push-button SWITCH two times in succession and follow steps as outline on page 11, regarding the operation of this feature.



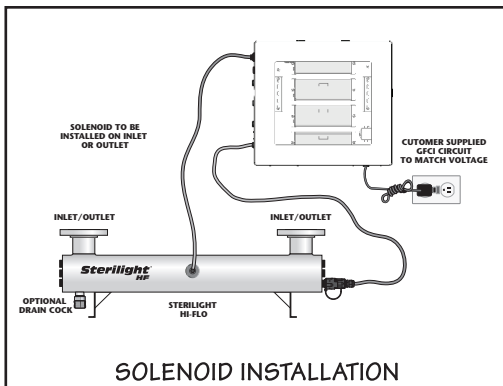
4. Lamp failure (blank screen):

Please refer to page 10 for explanation of this feature.

Note: On the Hi-Flo Monitored systems, the audible tone provided for lamp failure is a continuous alarm, rather than the intermittent (1 second on, 1 second off) condition on the basic Hi-Flo systems.

5. Solenoid Output:

Working in conjunction with the UV intensity monitor, the Hi-Flo Monitored controller provides a powered (line voltage) IEC solenoid output connector. (Note: this is not a dry contact) This solenoid output is protected with a replaceable 2 amp isolated fuse. Connection from this output to the solenoid can be done using the IEC solenoid power cable PN 260184-R. When the UV intensity monitor senses that the water is not adequately being treated and drops to 49% UV intensity or below, the internal relay is opened thereby stopping AC power flowing to the normally closed solenoid valve. The valve will remain closed (no power) until the UV level rises above 49%, at which time the solenoid will open, allowing for water to pass through. (To temporarily enable the operation of this solenoid output for up to 12 hours, please refer to the instructions outlined on page 12 of this manual).



6. *4-20mA output (optional)*: For those looking for the capability to transmit the UV intensity data to a remote location via a 4-20 mA signal, an optional "Y" cable is available from your dealer (Figure 5A). Please order PN 260134. This "Y" cable comes with 20 meters (65') of cable for the 4-20 mA signal. To install, first remove the existing sensor cable from the HF Enclosure (Figure 5B) and affix the new "Y" cable (Figure 5C). Next, attach the "male" end of the existing sensor cable to the "female" end of the new "Y" cable. Appropriately attach the 4-20 mA cable to the applicable equipment and ensure all connections are hand-tight.

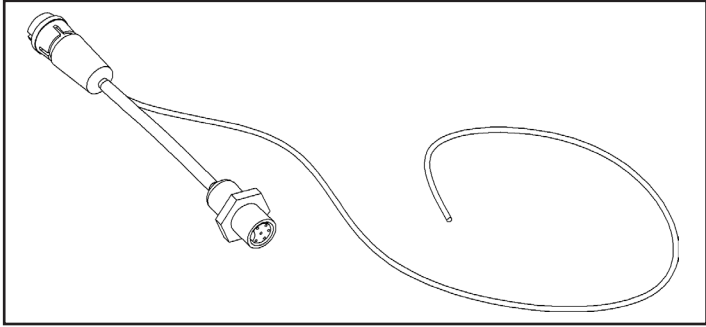


FIGURE 5A

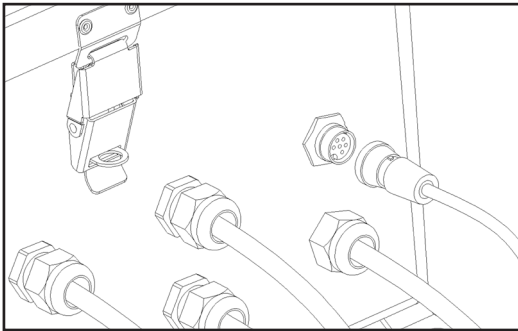


FIGURE 5B

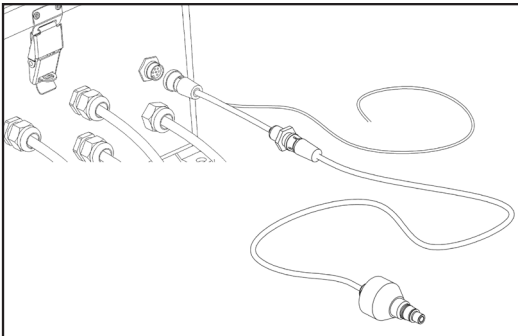


FIGURE 5C

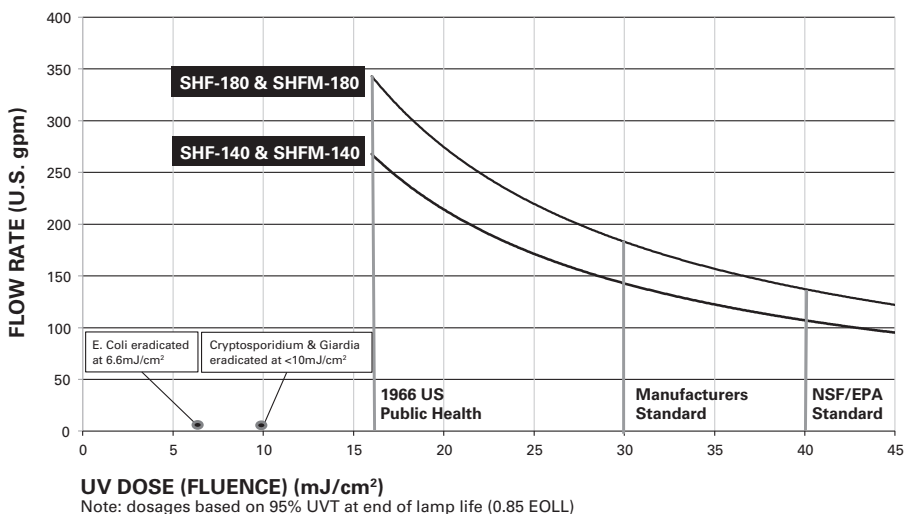
TROUBLESHOOTING GUIDE

Symptom	Possible Causes	Solutions
Pressure Drop	Sediment pre-filter clogged	<ul style="list-style-type: none"> Service pre-filtration <p>Note: check source water supply as fluctuations may occur in source pressure</p>
High Bacteria Counts	Quartz sleeves are stained or dirty	<ul style="list-style-type: none"> clean sleeves with scale cleaner and eliminate source of staining problem (ie. soften hard water, see page 8)
	Change in feed water quality	<ul style="list-style-type: none"> have source water tested to ensure that water quality is still within allowable limits for this system
	Contamination in water lines after UV system	<ul style="list-style-type: none"> shock with chlorine (bleach) downstream of UV system - disinfection system must have a bacterial free distribution system to work effectively (see page 6)
	Possible break-through of sediment through pre-filter	<ul style="list-style-type: none"> 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 system)
Heated Product Water	Common problem caused by infrequent use of water	<ul style="list-style-type: none"> run water until it returns to ambient temperature install temperature management valve
Water Appears Milky	Caused by air in the water lines	<ul style="list-style-type: none"> run water until air is purged
Unit Leaking Water	Problem with o-ring seal (on gland nut and/or UV sensor)	<ul style="list-style-type: none"> 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 reactor chamber caused by excessive humidity & cold water	<ul style="list-style-type: none"> check location of disinfection system and control humidity
	Inadequate inlet/outlet port connections	<ul style="list-style-type: none"> Ensure flange seals are correct and not deteriorated. Clean and re-install. If leaks persist, replace flanges/seals
System Shutting Down Intermittently	Interrupted power supply	<ul style="list-style-type: none"> ensure system has been installed on its own circuit, as other equipment may be drawing power away from UV
Lamp failure alarm is on (blank display)	Loose connection between lamps and connectors	<ul style="list-style-type: none"> disconnect lamps from connector and reconnect, ensuring that a tight fit is accomplished
	Moisture build up in connectors may keep lamp and connectors from making a solid connection	<ul style="list-style-type: none"> eliminate chance of any moisture getting to the connectors and/or lamp pins

DISPLAY FAULT MODES

LED display reads "A3"	<ul style="list-style-type: none"> • lamp life expired - countdown is at "0" days • press reset button for a deferred alarm, replace UV lamps
LED display is blank	<ul style="list-style-type: none"> • controller is in lamp failure mode • power system down, allowing it to reset itself; apply power in order to confirm that the controller is able to power lamp • check to see if there is sufficient power to the UV system • replace lamps
Low UV level displayed on screen	<ul style="list-style-type: none"> • test water supply to see if water quality meets recommended parameter limits • clean quartz sleeves and sensor eye
LED flashing "A2" and then back to UV level	<ul style="list-style-type: none"> • low UV alarm deferral has been activated • UV level has dropped below 50% and the audible alarm has been muted by pressing the reset switch and holding it for 5 seconds • this audible alarm deferral will only last 12 hours

Hi-Flo Series Dose Chart:



NOTE: Not performance tested or certified by NSF.

Specifications Hi-Flo non-monitored:

MODEL		SHF-180, /2	SHFM-140, /2	SHF-180, /2	SHFM-180, /2
Flow Rate	US Public Health 16 mJ/cm ² @ 95% UVT	1014.2 lpm (2679 gpm) (60.8 m ³ /hr)		1298.3 lpm (343.0 gpm) (77.9 m ³ /hr)	
	VIQUA Standard 30 mJ/cm ² @ 95% UVT	540.9 lpm (142.9 gpm) (32.5 m ³ /hr)		692.5 lpm (182.9 gpm) (41.5 m ³ /hr)	
	NSF/EPA 40mJ/cm ² @ 95% UVT	405.7 lpm (107.2 gpm) (24.3 m ³ /hr)		519.3 lpm (137.2 gpm) (31.2 m ³ /hr)	
Dimensions	Reactor	86.4 x 15.2 x 35.6 cm (34" x 6" x 14")		1073 x 15.2 x 35.6 cm (42.25" x 6" x 14")	
	Controller	44.5cm x 49.7cm x 20.7cm (17.5" x 19.55" x 8.14")			
Inlet/Outlet Port Size		3" Standard Flange Inlet and Outlet Ports			
Shipping Weight		30.9 kg (68 lbs)	31.8 kg (70 lbs)	35.5 kg (78 lbs)	36.4 kg (80 lbs)
Electrical	Voltage	100-240V/ 50-60Hz	100-240V/ 50-60Hz	100-240V/ 50-60Hz	100-240V/ 50-60Hz
	Power Consumption	350 W	350 W	440 W	440 W
	Lamp Watts	300 W	300 W	380 W	380 W
Maximum Operating Pressure		8.62 bar (125 psi)	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)	2-40°C (36-104°F)
Lamp Type		Sterilight™-HO (high-output)			
Visual "Power-On"		Yes	Yes	Yes	Yes
Audible Lamp Failure		Yes	Yes	Yes	Yes
Lamp Replacement Reminder		Yes	Yes	Yes	Yes
Visual Lamp Life Remaining		Yes	Yes	Yes	Yes
Total Running Time		Yes	Yes	Yes	Yes
Chamber Material		316SS	316SS	316SS	316SS
254nm UV Monitor		No	Yes	No	Yes
Solenoid Output (solenoid not incl.)		No	Yes	No	Yes
4-20 mA Output		No	Yes (optional 260134)	No	Yes (optional 260134)

Our Commitment

VIQUA is committed to ensuring your experience with our products and organization exceeds your expectations. We have manufactured your UV purification 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 1.800.265.7246 in North America, or 1.519.763.1032 internationally, or technicalsupport@viqua.com 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 Sterilight® purification system.

How to Make a Warranty Claim

NOTE: To maximise the disinfection performance and reliability of your Sterilight® 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, the process will be handled by your dealer. If you are unsure whether an equipment problem or failure is covered by warranty, contact our Technical Support team at 1.800.265.7246 in North America, or 1.519.763.1032 internationally, or e-mail technicalsupport@viqua.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, the name of the dealer from whom you purchased your Sterilight® product ("the source dealer"), 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 have previously completed and returned your product registration card via mail or online.

Specific Warranty Coverage

Warranty coverage is specific to the Sterilight® Copper, Silver, Cobalt, Platinum and Hi-Flo range of products. Warranty coverage is subject to the conditions and limitations outlined under the heading "General Conditions and Limitations" below.

Seven-Year Limited Warranty for Sterilight® UV Chamber

VIQUA warrants the UV chamber on the Sterilight® product to be free from defects in material and workmanship for a period of seven (7) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective Sterilight® UV chamber. Please return the defective part to your dealer who will process your claim.

Two-Year Limited Warranty for Electrical and Hardware Components

VIQUA warrants the electrical (power supply) and hardware components to be free from defects in material and workmanship for a period of two (2) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective parts covered by the warranty. Please return the defective part to your dealer who will process your claim.

One-Year Limited Warranty for Lamps, Sleeves and UV Sensors

VIQUA warrants 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, VIQUA will repair or replace, at its option, any defective parts covered by the warranty. Your dealer will process your claim and advise whether the defective item needs to be returned for failure analysis.

IMPORTANT NOTE: Use only genuine Sterilight® replacement lamps and sleeves in your system. Failure to do so may seriously compromise disinfection performance and affect 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 Sterilight® 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.

VIQUA does not assume any liability for personal injury or property damage caused by the use or misuse of any of the above products. VIQUA shall not in any event be liable for special, incidental, indirect or consequential damages. VIQUA'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.