

Owner's Manual



Models:
VH Series, VH-F Series and VP Series



425 Clair Rd. W, Guelph, Ontario, Canada N1L 1R1
 t. (+1) 519.763.1032 • tf. (+1) 800.265.7246 (US and Canada only)
 t. (+31) 73 747 0144 (Europe only) • f. (+1) 519.763.5069
 e-mail: info@viqua.com

www.viqua.com



FM 797693



Congratulations

on the purchase of your ultraviolet (UV) water system! This 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.

To ensure ongoing optimal operation, UV Lamps need to be replaced annually with VIQUA factory-supplied replacements. VIQUA Lamps are the result of extensive development resulting in a highly efficient 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 UV System, and there should be no compromise when it's time for a replacement.

Why should you insist on genuine factory supplied VIQUA replacement Lamps?

- Use of widely available, non-genuine, replacement Lamps has been shown to damage the control module of VIQUA UV equipment.
- An increasing number of calls to VIQUA 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 performance.
- VIQUA 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, you can see that it's simply not worth the risk! Insist on genuine VIQUA replacement Lamps.

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

Section 1 Safety Information

These are the original instructions. 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 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 that the contents of the transport package are fragile and the package should be handled with care.
	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 information.		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.		

1.2 Safety Precautions:



⚠ DANGER

 	<p>Failure to follow these instructions will result in serious injury or death.</p> <ul style="list-style-type: none"> Electric Shock: 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. 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. 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. 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 controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI) or to a residual current device (RCD) having a rated residual operating current not exceeding 30 mA. Inspect operation of GFCI as per manufacturer's suggested maintenance schedule. DO NOT operate the UV System if it has a damaged cord or plug, if it is malfunctioning or if it has been dropped or damaged in any manner. DO NOT use this UV 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. DO NOT install this UV System where it will be exposed to the weather or to temperatures below freezing. DO NOT store this UV System where it will be exposed to the weather. DO NOT store this UV 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.
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⚠ WARNING

	<ul style="list-style-type: none"> During extended periods of no water flow, the water in your UV 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 UV 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. Do not pass water through the UV System for a minimum of 5 minutes after applying power (including after power interruptions) to avoid passing under-treated water that may, in rare instances, pose health hazards. This system contains a UV Lamp. Do not operate the UV Lamp when it is removed from the UV Chamber. Unintended use or damage of the system may result in the exposure of dangerous UV radiation. UV radiation may, even in little doses, cause harm to the eyes and skin.
	<ul style="list-style-type: none"> 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. A backflow device (not included) is required to be installed upstream of the inlet in accordance with AS/NZS 2845.1 standards.
	<p>WARNING: This product can expose you to chemicals including phthalates, which is known to the state of California to cause cancer, and mercury, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.</p>



⚠ CAUTION

Failure to follow these instructions could result in minor or moderate injury.	
	<ul style="list-style-type: none"> Carefully examine the UV 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 inch of copper pipe on the outlet of your UV Chamber.
	<ul style="list-style-type: none"> 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.

NOTICE

<ul style="list-style-type: none"> The VH200-V, VH410-V, and VH410M-V UV Systems inactivates heterotrophs, Escherichia coli (E. coli) and Fecal Coliform. The VH150, VH200, VH410, VP600, VP950, VH410M, VP600M, and VP950M UV Systems inactivates Cryptosporidium, Giardia, Escherichia coli (E. Coli) and Fecal Coliform. The VH200-F and VH410-F UV Systems inactivates Cryptosporidium, Giardia, Escherichia coli (E. coli) and Fecal Coliform. The VH200/2AW, VH410/2AW, and VH410M/2AW UV Systems inactivates heterotrophs, Escherichia coli (E. coli) and Fecal Coliform. 	
	<ul style="list-style-type: none"> The UV Lamp inside the UV 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. This system is intended to be permanently connected to the water lines. This system is not intended to be used in or above water or outdoors or used in swimming pools when persons are in the pool. 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. If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent. SYSTEM PROTECTION: To protect your Controller, a UL1449 certified (or equivalent) Surge Protective Device (SPD) 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.
<ul style="list-style-type: none"> The Class B system or component conforms to NSF/ANSI 55 for the supplemental bactericidal treatment disinfected public drinking water or other drinking water that has been tested and deemed acceptable for human consumption by the state or local health agency having jurisdiction. The system is only designed to reduce normally occurring non-pathogenic nuisance microorganisms. Class B systems are not intended for treatment of contaminated water. 	

This appliance meets the domestic water treatment appliance Standard AS 3497 for the following water treatment process:

 AS 3497 WM 040316 Global-Mark.com.au	Category	Treatment type	Function	Pass
	I	Microbiological Status Bacteriostatic	Will stop bacteria increasing but will not remove them unless Class II is passed	

General Information

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 (0.3 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 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 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 System to operate as intended.*

Section 2 General Information

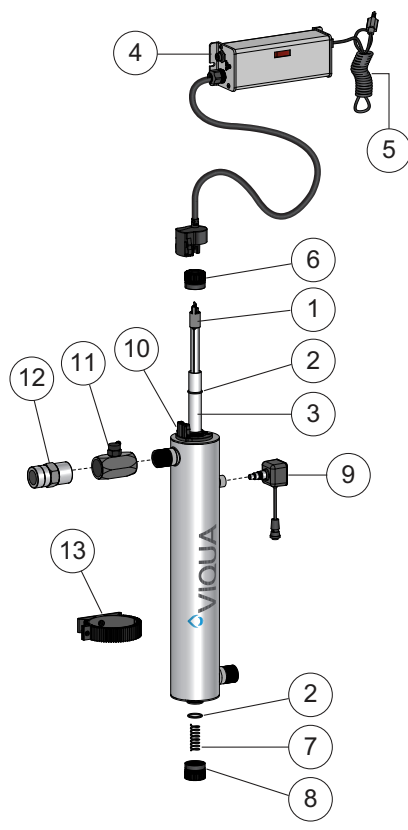


Figure 1 VH / VP / VH-V / VH-2AW System Components

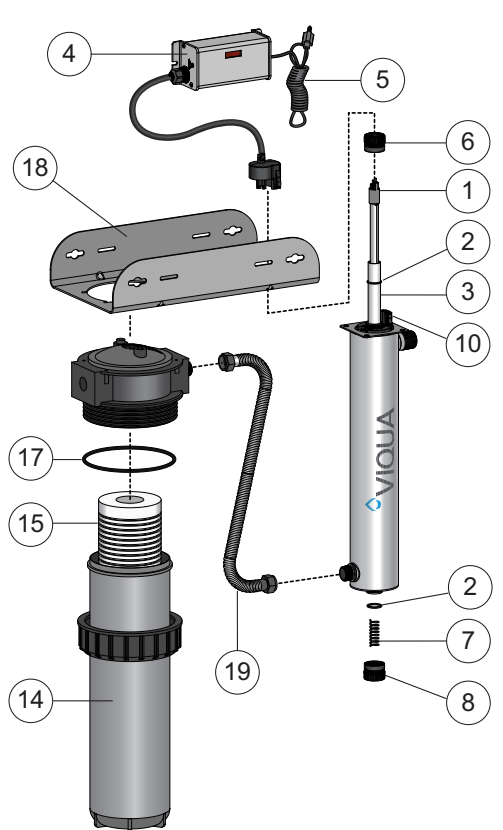


Figure 2 VH-F System (Single Filter Housing Configuration) Components

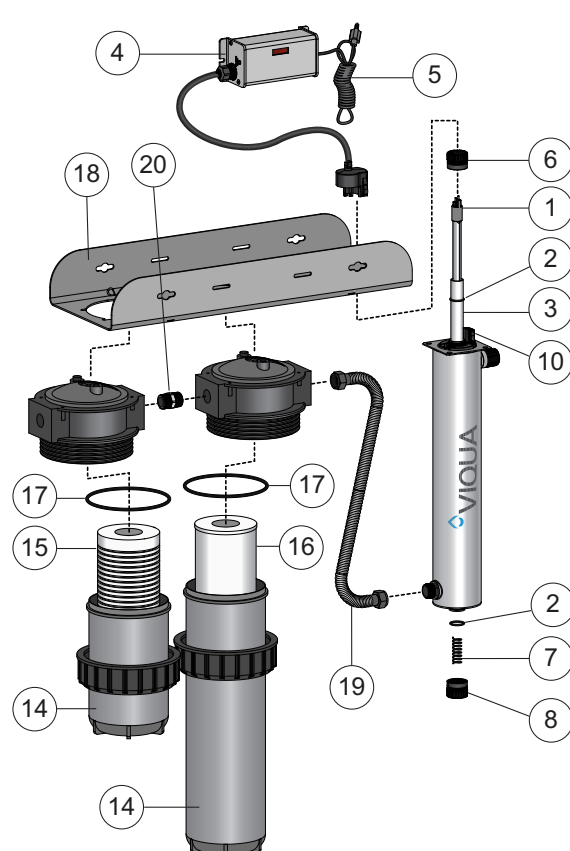


Figure 3 VH-F System (Dual Filter Housing Configuration) Components

Item	Description	Part Number	System Model																				
			VH150	VH200	VH200-V	VH200/2AW	VH200-F10	VH200-F12	VH410	VH410M	VH410-V	VH410/2AW	VH410M-V	VH410M/2AW	VH410-F12	VH410-F20	VH410-F22	VP600	VP600M	VP950	VP950M		
1	UV Lamp	S150RL-HO	✓																				
		S200RL-HO			✓																		
		S410RL-HO									✓												
		S600RL-HO																✓					
		S950RL-HO																				✓	
2	O-Ring	410866									✓												
3	Quartz Sleeve	QSO-150	✓																				
		QS-001			✓																		
		QSO-410									✓												
		QSO-600																✓					
		QSO-950																				✓	
4	Controller (for 100-240V/50-60Hz models only)	BA-ICE-CL			✓						✓				✓								
		BA-ICE-C																✓		✓			
		BA-ICE-CM								✓			✓						✓		✓		✓
5	Power Cords for Controller	602636		✓					✓			✓					✓						
		602637 ¹										✓											
		260012 ²										✓											
		260013 ³				✓						✓		✓									
		260019 ⁴						✓								✓							
6	Retaining Nut	RN-001									✓												
7	Spring	SP008									✓												
8	Retaining Nut with Plug	RN-001/1									✓												
9	UV Sensor	254NM-C1								✓			✓						✓			✓	
10	Lamp Connector Base	270276-R									✓												
11	Temperature Management Valve	440179																				Optional	
12	Flow Restrictor (Required for Validated (-V) and WaterMark certified systems)	440315-R			✓																		
		440316-R										✓											
13	Clamp Assembly (2 pieces)	410076		✓							✓										✓		
14	Filter Housing	AWP40B-V						✓							✓								
		AWP42B-V						✓									✓						

Installation of UV System

Item	Description	Part Number	System Model																			
			VH150	VH200	VH200-V	VH200/2AW	VH200-F10	VH200-F12	VH410	VH410M	VH410-V	VH410/2AW	VH410M-V	VH410M/2AW	VH410-F12	VH410-F20	VH410-F22	VP600	VP600M	VP950	VP950M	
15	Sediment Cartridge Filter 10 inch High, 5 micron	CMB-510-HF					✓							✓								
	Sediment Cartridge Filter 20 inch High, 5 micron	CMB-520-HF														✓						
16	Carbon Filter	C2-02						✓						✓		✓						
17	Filter Housing O-Ring	OR40-50W					✓								✓							
18	Mounting Bracket	420589-R					✓								✓							
		420640-R						✓							✓		✓					
19	Stainless Steel Flexible Hose	411076R-01					✓															
		411076R-02														✓						
20	Brass Fitting	420518-R						✓						✓		✓						
21	Sump Wrench	WR40-50					✓								✓							

¹ Applies only to /2 models (EU, Type F Plug)

² Applies only to /WR models (British, Type G Plug)

³ Applies only to /2A models (AU, Type I Plug)

⁴ No connector, 3-wire, Bare leads

Section 3 Installation of UV System

⚠ CAUTION



Electronic Controller must be connected to a Ground Fault Protected Circuit (GFCI) receptacle and the Lamp Connector ground wire connected to the stainless steel UV Chamber. Ensure the green ground wire ring terminal is securely fastened to UV Chamber ground stud.

3.1 Installing UV System

3.1.1 Installation Orientation

Note: Not applicable to VH-F Systems. For VH-F Systems, skip to [Section 3.1.2](#).

The UV 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. Refer to [Figure 4](#).

Considerations:

- It is preferred that UV Chambers are mounted in a vertical orientation to prevent water exposure and possible damage to the Lamp Pins and Lamp Connector.
- For vertical mounting, the Lamp Connector **must** be on top ([Figure 4](#), Detail A).
- For horizontal mounting, the outlet port **must** be pointing upward to ensure that air can be purged from the UV Chamber ([Figure 4](#), Detail B).

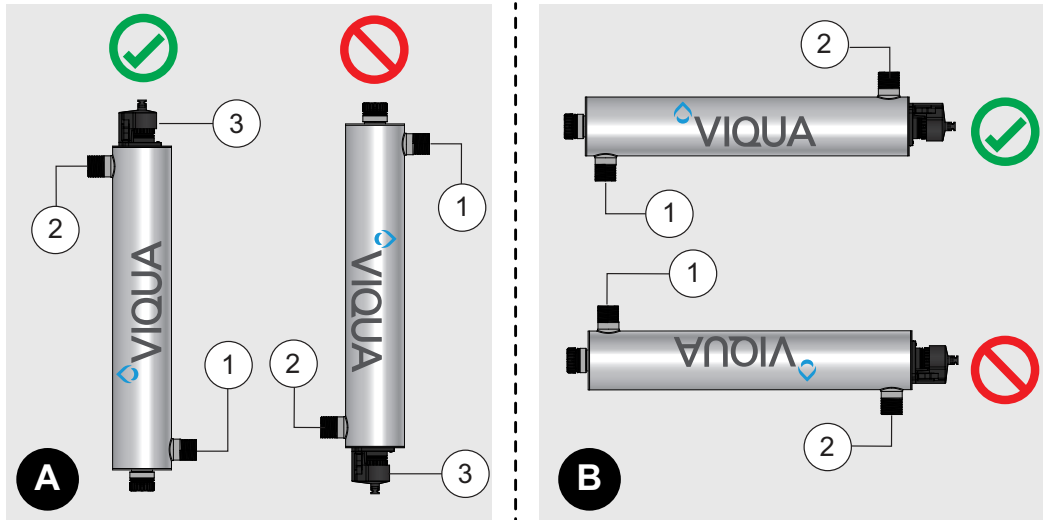


Figure 4 Installation - Vertical and Horizontal

Item	Description	Item	Description
1	Inlet Port	A	Vertical Mounted ¹
2	Outlet Port	B	Horizontal Mounted
3	Lamp Connector		

¹ Preferred install orientation.

3.1.2 Installation Space Claim

Considerations:

- Ensure adequate clearance above/beside the UV Chamber to allow for removal of the UV Lamp and Lamp Sleeve. Refer to [Figure 5](#), [Figure 6](#), and [Figure 7](#).
- The Controller **must** be installed horizontally and higher than the UV Chamber and away from all water sources to prevent moisture from running down cordage and causing a potential fire hazard.
- Drip loops in all cordage connected to the Controller is highly recommended. Refer to [Figure 5](#), [Figure 6](#), and [Figure 7](#).

3.1.3 Installation Procedure

Prerequisites:

For all Systems:

- The UV System is intended for indoor use only, DO NOT install UV System where it may be exposed to the weather.
- Determine a suitable indoor location for the UV System and its related components.
- Shut off the main water supply and depressurize the line.

For VH Validated (-V) and WaterMark Certified Systems:

- A flow restrictor ([Figure 5](#), item 15) must be installed on the outlet side of the UV System.
- Ensure the flow of water matches the flow direction indicated on the flow restrictor. Refer to [Figure 11](#).

For VH WaterMark Certified Systems:

- A backflow device ([Figure 5](#), item 3) (not included) must be installed upstream of the UV System, filters and other upstream processes.

Installation of UV System

Considerations:

- A by-pass assembly (Figure 5, Figure 6, and Figure 7, item 5) is recommended for system off-line maintenance.
- Various connection methods can be used to connect the water source to the UV System, however union type connectors are recommended.
- A customer supplied Ground Fault Circuit Interrupter (GFCI) is required for safety purposes.
- A customer supplied UL1449 certified (or equivalent) Surge Protective Device (SPD) is strongly recommended to protect the Controller.
- Install the UV System on cold water line only, before any branched lines.
- **For VH / VP / VH-V / VH-2AW Systems:** A 5-micron sediment filter **must** precede the UV System.
- The UV System should be the final piece of treatment equipment.
- 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.
- For shipping purposes, the UV Lamp is shipped in a separate cardboard tube. Remove the UV Lamp from the shipping tube, avoiding direct contact with the glass. Handle the UV Lamp by the ceramic ends.
- Figure 5 (VH / VP / VH-V / VH-2AW Systems) and Figure 6, Figure 7 (VH-F Systems) show a typical UV System and related components installation.

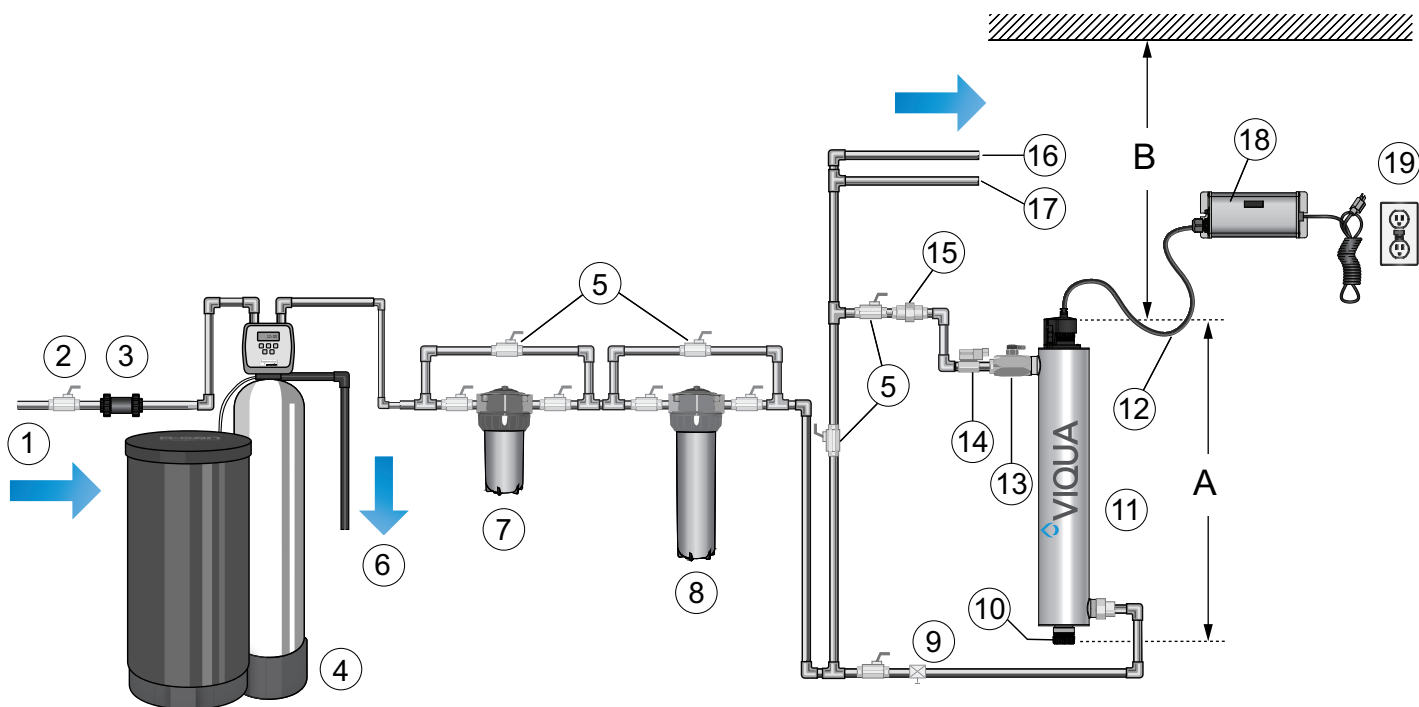


Figure 5 Typical Installation of VH / VP / VH-V / VH-2AW UV System

Item	Description	Item	Description	Item	Description
1	Main Water Supply (Inlet)	8	Optional Carbon Filter	15	Optional Flow Restrictor ³
2	Main Water Shut-off	9	Optional Drain Cock	16	Hot Water Outlet
3	Optional Backflow Device ¹	10	Retaining Nut with Plug	17	Cold Water Outlet
4	Optional Water Softener	11	UV System ²	18	Controller
5	Optional By-pass Assembly	12	Drip Loop	19	GFCI (Customer supplied)
6	To Drain	13	Optional Temperature Management Valve	A	UV Chamber Length
7	5 micron Sediment Filter	14	Optional Solenoid Valve	B	Minimum clearance is equal to UV Chamber Length

¹ Mandatory for WaterMark certified systems.

² UV System should be the final piece of treatment equipment.

³ Mandatory for NSF (-V) and WaterMark certified systems. Installed on outlet side.

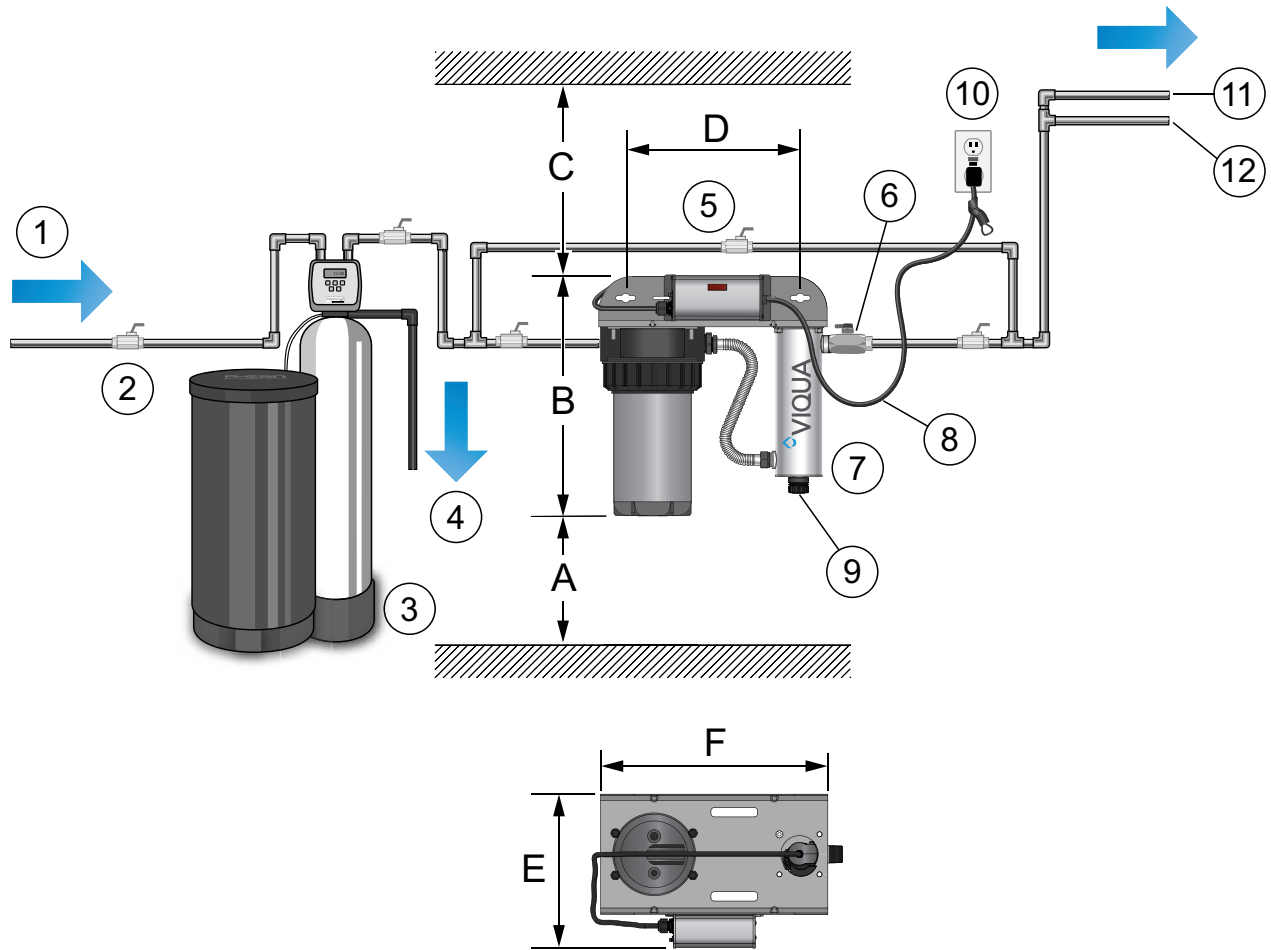


Figure 6 Typical Installation of VH-F UV System (Single Filter Housing Configuration)

Item	Description	Item	Description
1	Main Water Supply (Inlet)	10	GFCI (Customer supplied)
2	Main Water Shut-off	11	Hot Water Outlet
3	Optional Water Softener	12	Cold Water Outlet
4	To Drain	A	Minimum 4 inch (10 cm)
5	Optional By-pass Assembly	B	Overall Height: <ul style="list-style-type: none"> • VH200-F10 System: 18 inch (46 cm) • VH410-F20 System: 28 inch (71 cm)
6	Optional Temperature Management Valve	C	Minimum clearance is equal to UV Chamber Length
7	UV System ¹	D	13 inch (33 cm)
8	Drip Loop	E	11.52 inch (29.3 cm) Overall Depth
9	Retaining Nut with Plug	F	17 inch (43.2 cm) Overall Length

¹ UV System should be the final piece of treatment equipment.

Installation of UV System

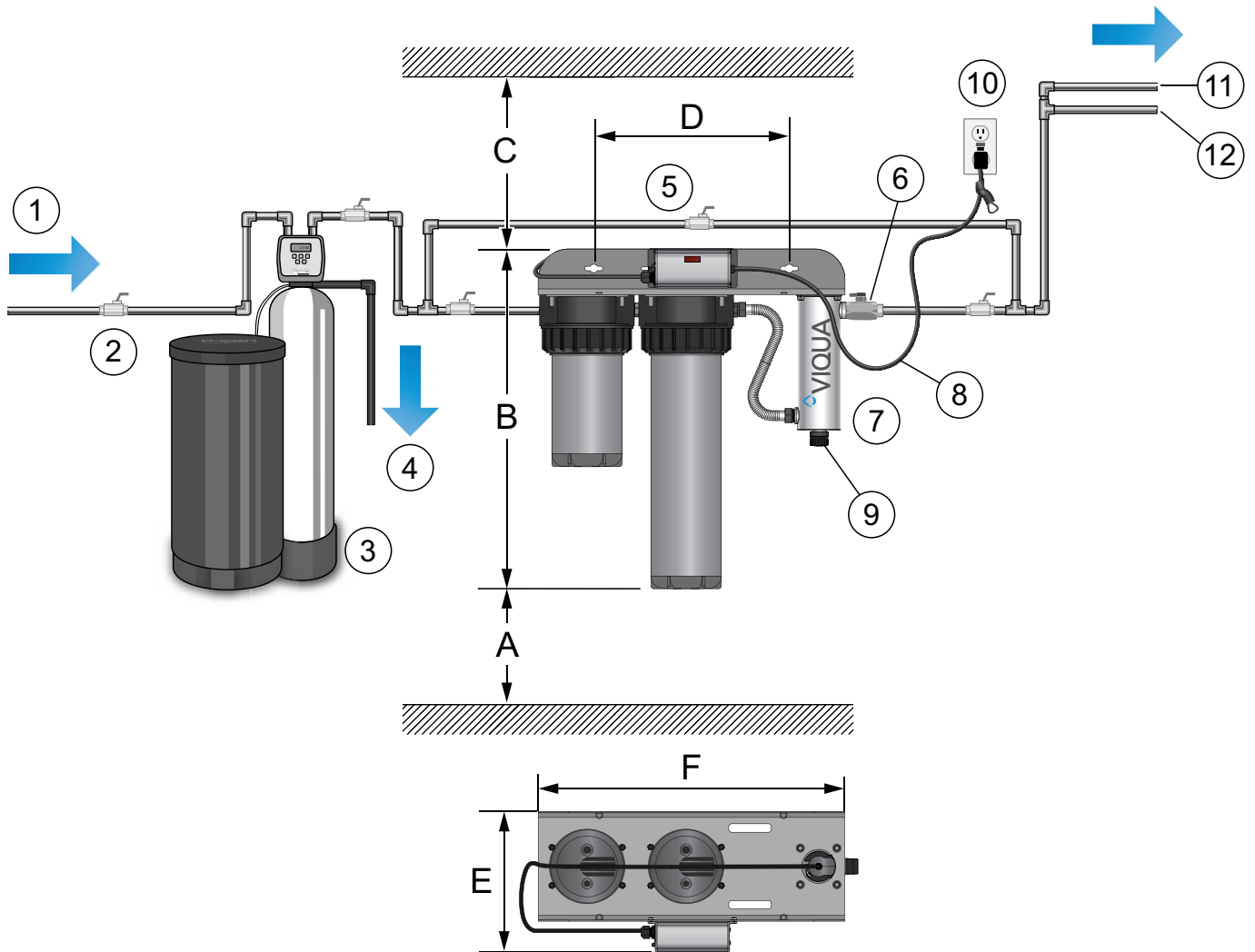


Figure 7 Typical Installation of VH-F UV System (Dual Filter Housing Configuration)

Item	Description	Item	Description
1	Main Water Supply (Inlet)	10	GFCI (Customer supplied)
2	Main Water Shut-off	11	Hot Water Outlet
3	Optional Water Softener	12	Cold Water Outlet
4	To Drain	A	Minimum 4 inch (10 cm)
5	Optional By-pass Assembly	B	Overall Height: 28 inch (71 cm)
6	Optional Temperature Management Valve	C	Minimum clearance is equal to UV Chamber Length
7	UV System ¹	D	16 inch (40.6 cm)
8	Drip Loop	E	11.52 inch (29.3 cm) Overall Depth
9	Retaining Nut with Plug	F	25.12 inch (64 cm) Overall Length

¹ UV System should be the final piece of treatment equipment.

Procedure:

1. Mount the UV System to the wall using:

- **For VH / VP / VH-V / VH-2AW Systems:** the supplied clamps and mounting hardware. Refer to [Figure 8](#).
- **For VH-F Systems:** appropriately sized lag bolts (not provided). Refer to [Figure 9](#) and [Figure 10](#).

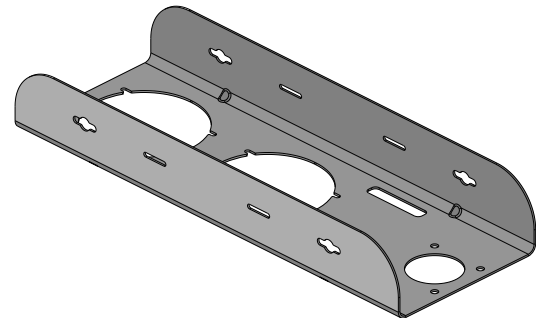
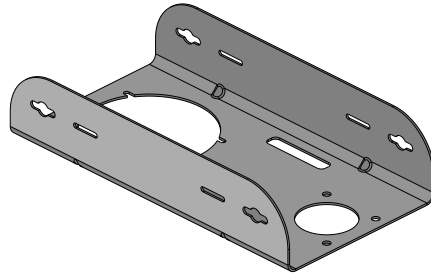
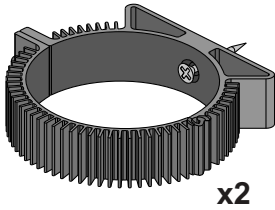


Figure 8 Mounting Clamp - VH / VP / VH-V / VH-2AW Systems

Figure 9 Mounting Bracket - VH-F Systems (Single Filter Housing Configuration)

Figure 10 Mounting Bracket - VH-F Systems (Dual Filter Housing Configuration)

2. Install the interconnecting water source piping or tubing.

Notes: 1) Various connection methods can be used to connect the water source to the UV System, however union type connectors are recommended.

2) DO NOT solder connections while attached to the system as this could damage the O-Ring seals.

3. If provided, install the optional Temperature Management Valve on the outlet port side of the UV Chamber. Refer to [Figure 5](#) (item 13) for VH / VP / VH-V / VH-2AW UV Systems and [Figure 6](#), [Figure 7](#) (item 6) for VH-F Systems.

Required for VH Validated (-V) and WaterMark Certified Systems Only:

Note: For VH/VP Systems skip to step 5.

Note: For VH-F Systems skip to step 6.

4. Install the flow restrictor on the outlet side of the UV System. Refer to [Figure 11](#).

Note: The flow restrictor is designed to be installed in one direction only. Ensure that the flow of the water matches the flow direction indicated on the flow restrictor.

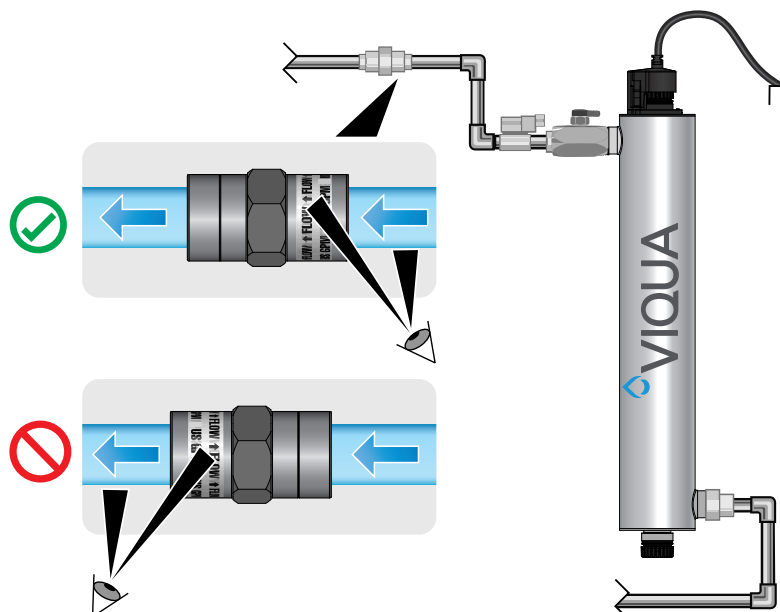


Figure 11 Flow Restrictor Installation Direction

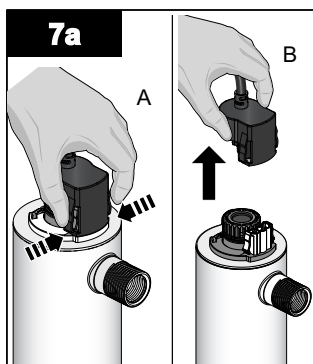
Installation of UV System

Required for VH / VP / VH-V / VH-2AW Systems only:

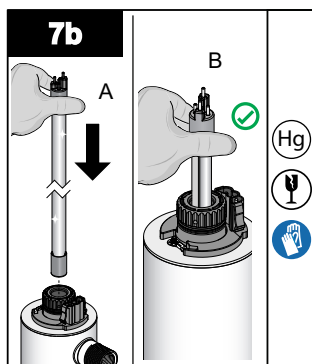
5. Mount the Controller horizontally, either beside or above the UV Chamber and away from any water connection point, to prevent any water from potentially leaking onto the Controller by means of a leak at a connection point or a “sweating” system.

Required for all Systems:

6. Make sure to allow for a “drip-loop” as shown in Figure 5 (item 12), Figure 6 (item 8), and Figure 7 (item 8) on the power cord to prevent any water from potentially entering the Controller.
7. Install the UV Lamp:

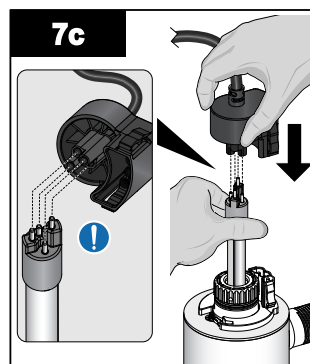


- Remove the Lamp Connector by squeezing the plastic locking tabs on the sides of the Connector.



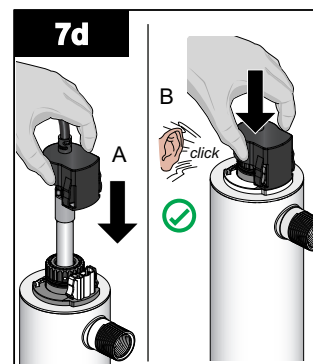
- Insert the UV Lamp fully into the UV Chamber leaving about two inches (5 cm) of the UV Lamp protruding from the UV Chamber.

Note: Always handle the UV Lamp at the ceramic ends.



- Attach the Lamp Connector to the UV Lamp.

Note: The connector is designed to ensure the correct installation orientation.



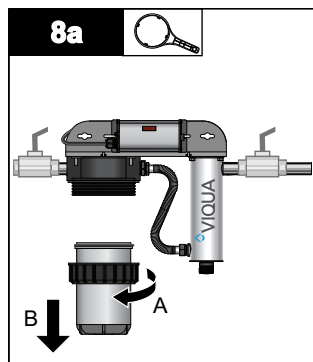
- Push the Lamp Connector against Lamp Connector base until an audible click is heard.

Required for VH-F Systems only:

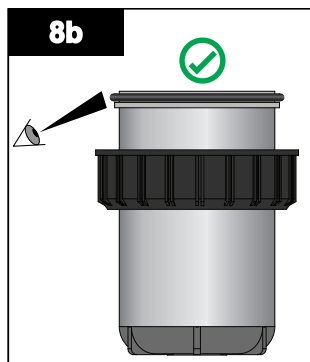
Note: For VH / VP / VH-V / VH-2AW Systems skip to step 9.

8. Install the Cartridge:

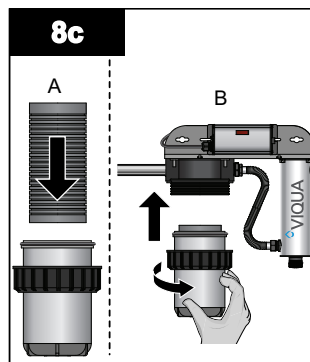
Single Filter Housing Systems:



- Remove the Filter Housing from the Filter Head using a sump wrench.

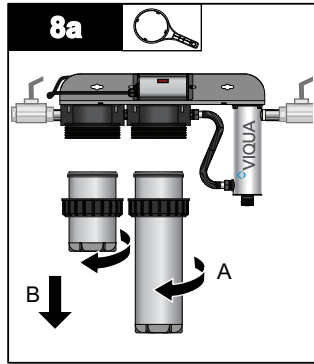


- Ensure that the O-Ring is properly seated on the shoulder at the top of the Filter Housing.

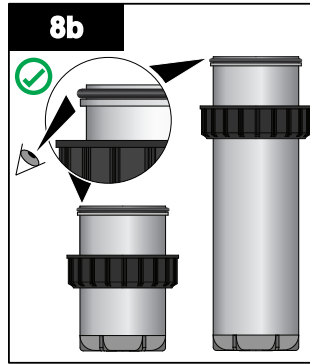


- Install the cartridge into the Filter Housing.
- Reinstall the Filter Housing to the Filter Head.

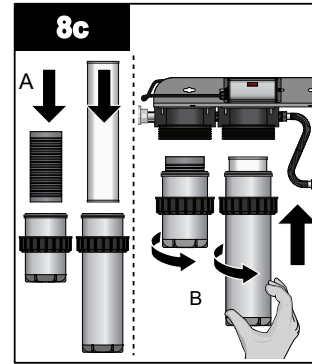
Dual Filter Housing Systems:



- Remove the Filter Housings from the Filter Heads using a sump wrench.



- Ensure that the O-Ring is properly seated on the shoulder at the top of the Filter Housing.



- Install the cartridges into the Filter Housings.
- Reinstall the Filter Housings to the Filter Heads.

- When all plumbing connections are complete, slowly turn on the water supply and check for leaks. In case of a leak, refer to [Section 3.1.4](#).
- Once it is determined that there are no leaks, plug the UV 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.

- 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.

- Perform the Cleaning Procedure. Refer to [Section 3.2](#).

3.1.4 Repair Leaks

UV System

The most likely cause of leaks is from the O-Ring seal.

- Turn off the main water supply and open a faucet after the UV System to depressurize the line.
- Drain the UV Chamber and remove the retaining nuts, floating spring, and O-Rings. Follow steps 1-2 in [Section 4.2](#).
- Wipe the O-Rings and threads with a clean cloth.
- Reinstall the O-Rings, floating spring and the retaining nuts. DO NOT over-tighten. Follow steps 6-7 in [Section 4.2](#).
- Slowly turn on the main water supply and check for leaks. Repeat as needed, until all leaks are resolved.
- Proceed to [Section 3.1.3](#), step 10.

Filter Housings

- Turn off the main water supply and open a faucet after the UV System to depressurize the line.
- Press the Pressure Relief button to release the pressure from the Filter Housing.

3. Remove the Filter Housing from the Filter Head using a sump wrench.
4. Inspect the Filter Housing O-Ring. Wipe and clean the O-Ring and threads with a clean cloth if required. Replace the O-Ring if damaged.
5. Ensure that the O-Ring is properly seated on the shoulder at the top of the Filter Housing.
6. Ensure proper orientation and centering of the Filter Housing and the Filter Cartridge.
7. Verify that the drain screw at the bottom of the Filter Housing is fully tightened.
8. Reinstall and hand tighten the Filter Housing to the Filter Head.

Notes: 1) *DO NOT use the sump wrench to tighten the Filter Housing.*

2) *Apply a generous amount of food grade lubricant to the O-Ring when reinstalling Filter Housings.*


9. Press the Pressure Relief button to release the pressure from the Filter Housing.
10. Slowly turn on the main water supply and check for leaks. Repeat as needed, until all leaks are resolved.
11. Proceed to [Section 3.1.3](#), step 10.

3.2 Cleaning Procedure

Notes: 1) *It is imperative that the entire distribution system located after the UV System be chemically cleaned to ensure that the plumbing system is free from any contaminants. The cleaning process must be performed immediately after the UV Chamber is installed and repeated thereafter whenever the UV System is shut down for service, without power, or inoperative for any reason.*

2) *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 pre-treatment for the UV unit.*

3) *The following cleaning 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 cleaning of distribution systems known to be contaminated. DO NOT consume water until complete system has been flushed.*

4) *For VH/VP/VH-V Systems, as the monitored systems include a 254nm UV intensity monitor, note that the introduction of the bleach solution required for cleaning 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  on the Controller LED. This condition will remain for 12 hours unless the system is manually reset as outlined in [Section 5.2.1](#).*

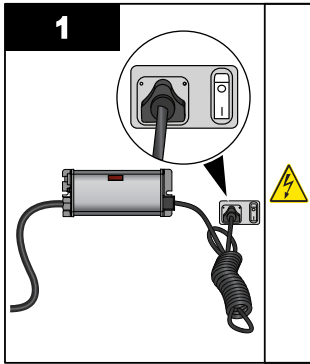
3.2.1 Cleaning Procedure - VH / VP / VH-V / VH-/2AW Systems

Note: Go to Section 3.2.2 for VH-F Systems Cleaning Procedure.

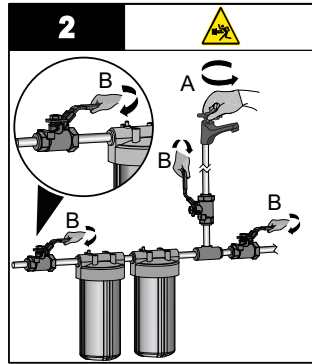
⚠ CAUTION



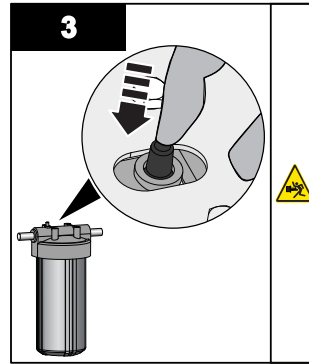
The Filter (sump) Housings will be heavy.



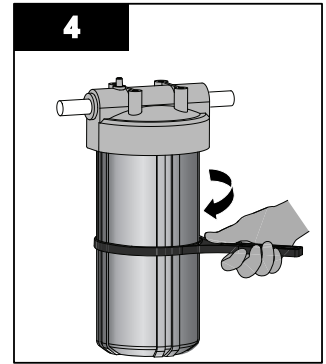
- Ensure power remains on for the entire cleaning process.



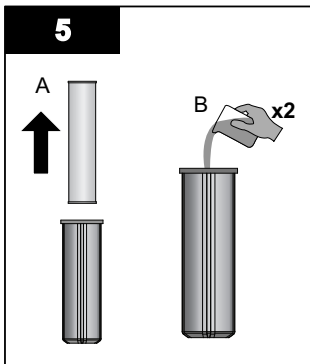
- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Close the faucet.



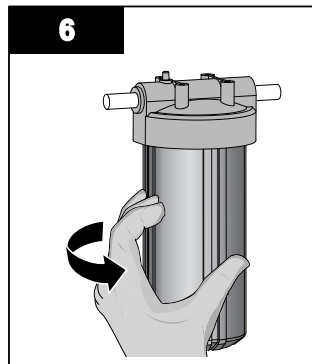
- Release Filter Housing pressure by:
 - Pressing the Pressure Relief button (if equipped), **OR**
 - Rotating the valve knob from the "On" position to the "Bypass" position 2-3 times (if equipped).



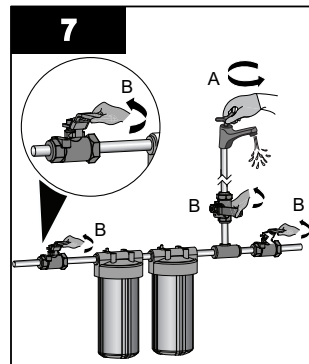
- Remove the Filter Housing drain plug, if equipped and drain into a bucket.
- Reinstall the drain plug.
- Remove Filter Housing(s) with a sump wrench. Clean up spills.



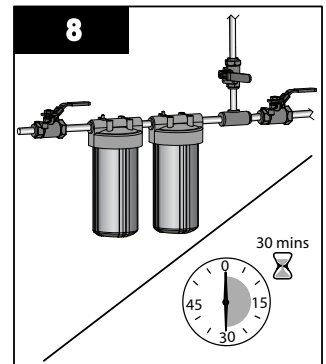
- Remove cartridge(s). Pour 2 cups (0.5L) of 5.25% household bleach solution into the Filter Housing(s).
- Note: DO NOT use Hydrogen Peroxide.**



- Reinstall Filter Housing(s) to Filter Head(s).

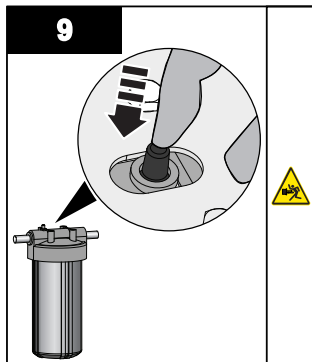


- Turn on main water supply, open a cold water faucet after the UV System. Allow water to fill the Filter Housings and UV Chamber until you smell bleach. Close the faucet.
- Repeat for the hot water faucet (if available).

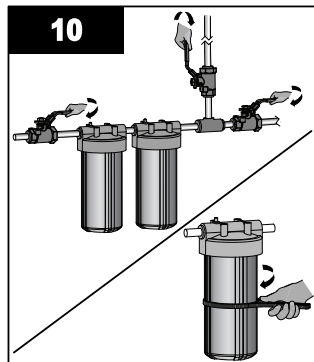


- Repeat step 7 for remaining faucets.
- Wait 30 minutes.

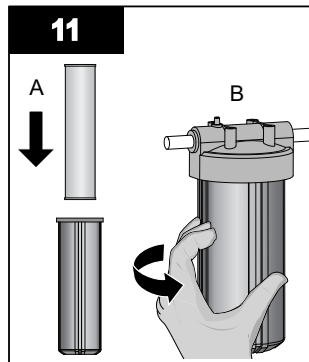
Installation of UV System



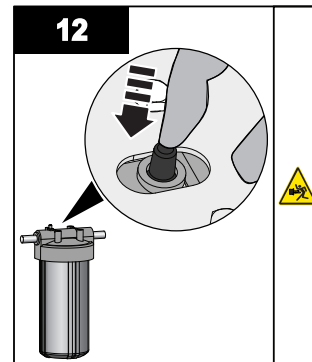
- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Release Filter Housing pressure by:
 - Pressing the Pressure Relief button (if equipped), **OR**
 - Rotating the valve knob from the "On" position to the "Bypass" position 2-3 times (if equipped).



- Close all faucets.
 - Remove the Filter Housing(s) from the Filter Head(s) using a sump wrench.
- Note:** The Filter Housing will be full of water and will be heavy. Clean up spills.



- Reinstall cartridge(s).
- Install Filter Housing(s) to Filter Head(s).
- Turn on main water supply.
- Open all cold and hot water faucets to flush water until bleach can no longer be smelled (minimum 5 minutes).



- Release Filter Housing pressure by:
 - Pressing the Pressure Relief button (if equipped), **OR**
 - Rotating the valve knob from the "On" position to the "Bypass" position 2-3 times (if equipped).
- Inspect for leaks.
- Repair detected leaks. Refer to [Section 3.1.4](#).

3.2.2 Cleaning Procedure - VH-F Systems

Note: Go to [Section 3.2.1](#) for VH / VP / VH-V / VH-/2AW Systems Cleaning Procedure.

⚠ CAUTION



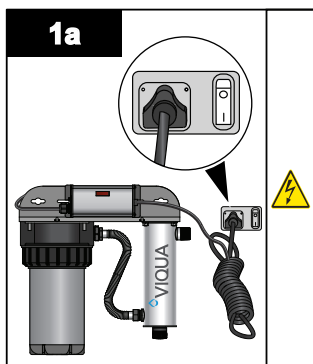
The Filter (sump) Housing will be heavy.

Prerequisites:

- Reapply a generous amount of lubricant to the O-Ring when reinstalling the Filter Housing.

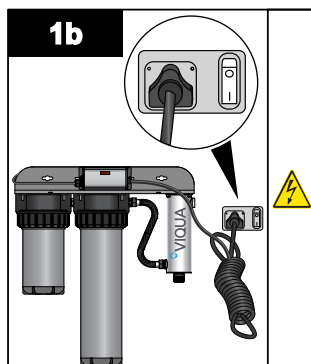
Procedure:

Note: Dual Filter Housing System shown in steps 2 - 13 for illustrative purposes only. The procedure will be the same for Single Filter Housing Systems.



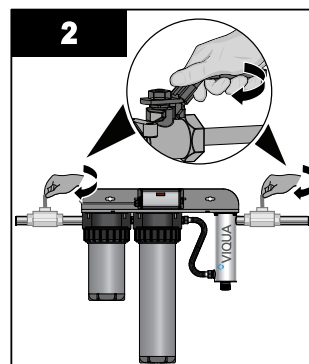
VH-F Systems (Single Filter Housing Configuration)

- Ensure power remains on for the entire cleaning process.

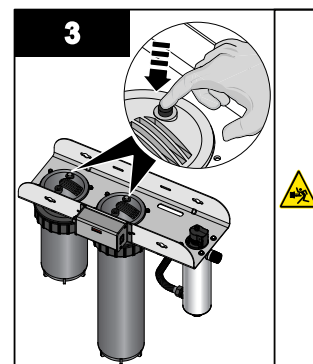


VH-F Systems (Dual Filter Housing Configuration)

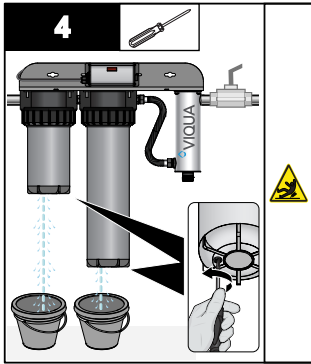
- Ensure power remains on for the entire cleaning process.



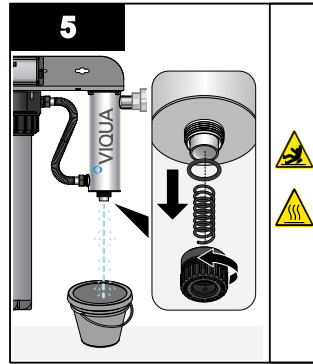
- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Close the faucet.



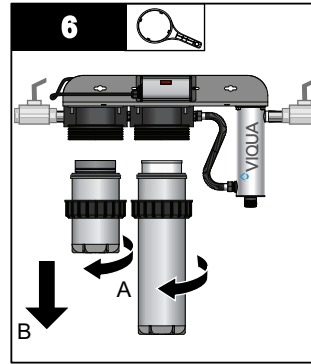
- Press the Pressure Relief button to release the pressure from the Filter Housing.



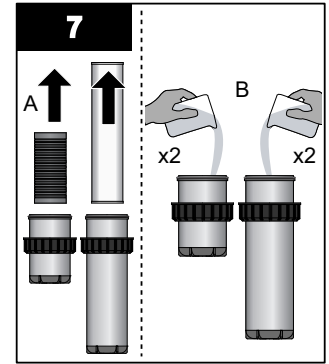
- Place a bucket below the Filter Housing(s).
- Remove drain plug to drain water into the bucket.
- Reinstall the drain plug.
- Clean up spills.



- Drain the UV Chamber by removing the bottom retaining nut and the floating spring.
- Reinstall the floating spring and bottom retaining nut.
- Clean up spills.

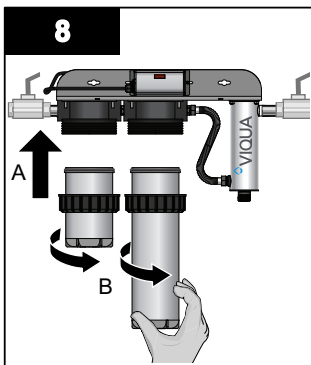


- Remove the Filter Housing(s) from the Filter Head(s) using a sump wrench.

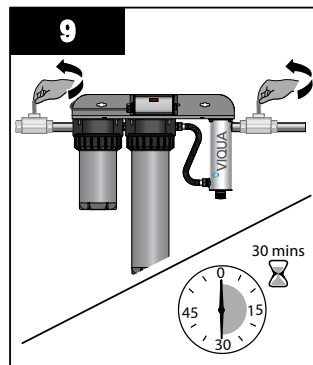


- Remove the cartridge(s). Pour 2 cups (0.5L) of 5.25% household bleach solution into the Filter Housing(s).

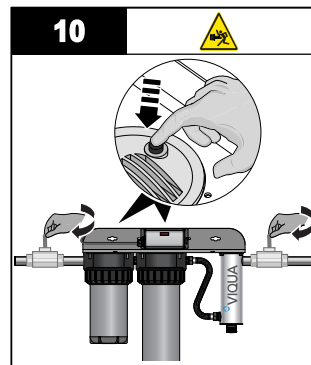
Note: DO NOT use Hydrogen Peroxide.



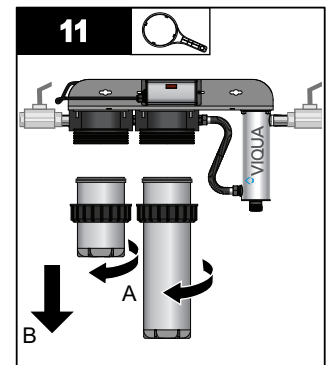
- Reinstall the Filter Housing(s) to the Filter Head(s).



- Turn on main water supply, open a cold water faucet after the UV System. Allow water to fill the Filter Housing(s) and UV Chamber until you smell bleach. Close the faucet.
- Repeat for the hot water faucet (if available).
- Repeat steps for remaining faucets.
- Wait 30 minutes.

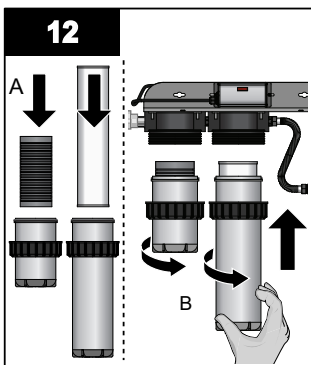


- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Press the Pressure Relief button to release the pressure from the Filter Housing.

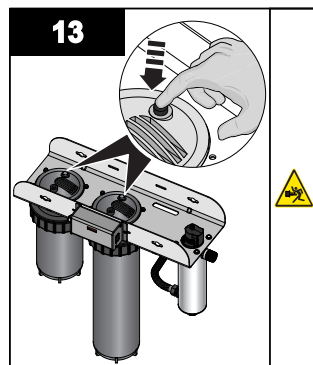


- Close all faucets.
- Remove the Filter Housing(s) from the Filter Head(s) with a sump wrench.

Note: The Filter Housing(s) will be full of water and will be heavy. Clean up spills.



- Reinstall the cartridge(s).
- Install Filter Housing(s) to Filter Head(s).
- Turn on main water supply.
- Open all cold and hot water faucets to flush water until bleach can no longer be smelled (minimum 5 minutes).



- Press the Pressure Relief button to release the pressure from the Filter Housing.
- Inspect for leaks.
- Repair detected leaks. Refer to [Section 3.1.4](#).

Section 4 Maintenance

⚠ WARNING



- Always disconnect power before performing any work on the UV System.
- Always shut-off water flow and release water pressure before servicing.
- Regularly inspect your UV 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 performance.
- Always drain the UV Chamber when closing a seasonal home or leaving the unit in an area subject to freezing temperatures.

4.1 Replacing UV Lamp

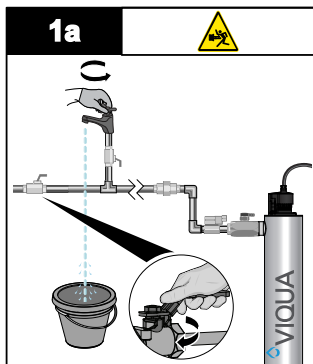
NOTICE

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

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 performance.

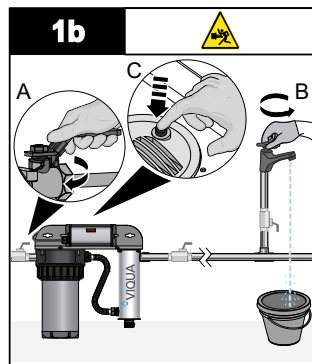
Procedure:

Note: For video-based instruction on how to replace the UV Lamp, follow this [link](#).



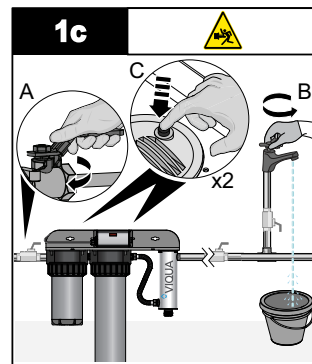
1a
VH / VP / VH-V / VH-2AW
Systems

- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Release Filter Housing pressure by:
 - Pressing the Pressure Relief button (if equipped), **OR**
 - Rotating the valve knob from the "On" position to the "Bypass" position 2-3 times (if equipped).



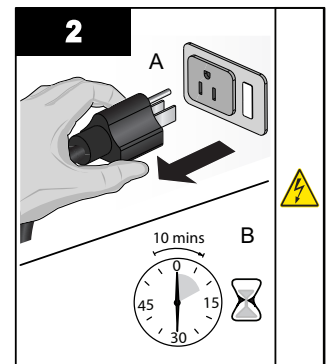
1b
VH-F Systems (Single Filter
Housing Configuration)

- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Press the Pressure Relief button to release the pressure in the Filter Housing.

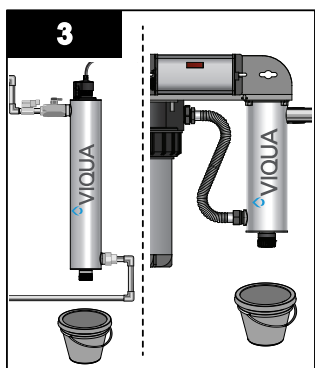


1c
VH-F Systems (Dual Filter
Housing Configuration)

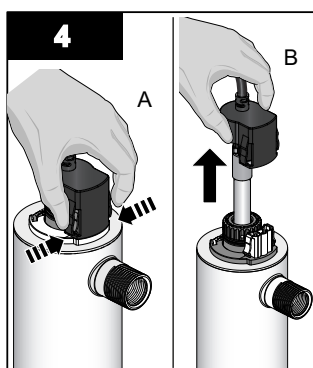
- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Press the Pressure Relief button to release the pressure in the Filter Housing.



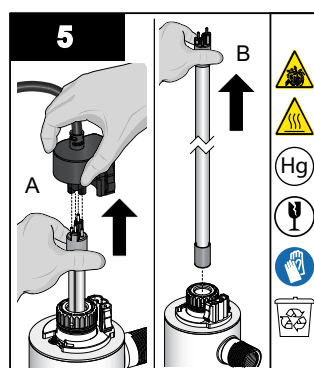
- Disconnect main power source and allow the unit to cool for 10 minutes.



- Place a bucket below the UV Chamber to catch spills.

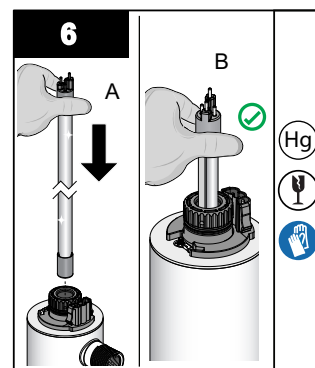


- Remove the Lamp Connector by squeezing the plastic locking tabs on the sides of the Connector.



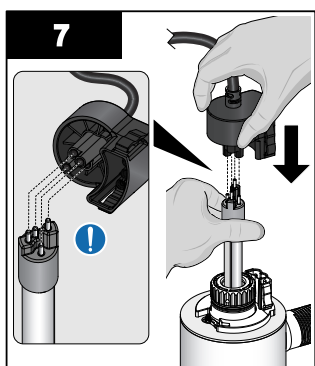
- Remove the UV Lamp in upward direction from the UV Chamber and Lamp Connector base.

Note: Always handle the UV Lamp at the ceramic ends.



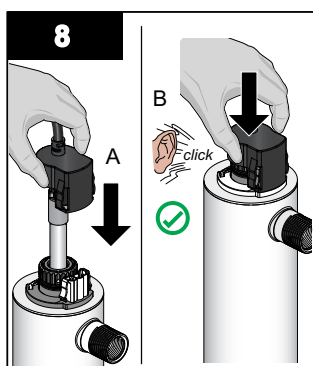
- Insert the new UV Lamp fully into the UV Chamber leaving about two inches (5 cm) of the UV Lamp protruding from the UV Chamber.

Note: Always handle the UV Lamp at the ceramic ends.

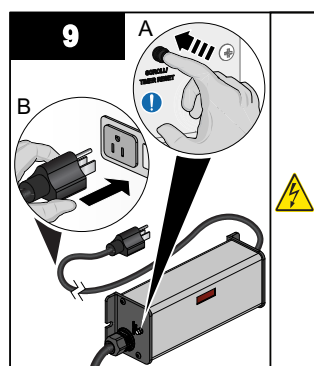


- Attach the Lamp Connector to the UV Lamp.

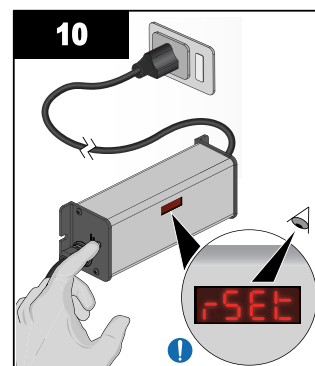
Note: The connector is designed to ensure the correct installation orientation.



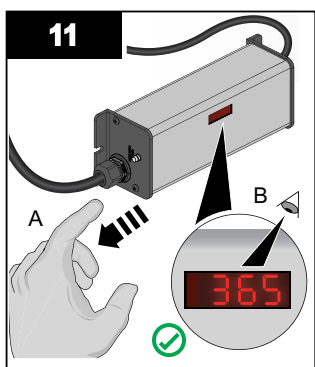
- Push the Lamp Connector against Lamp Connector base until an audible click is heard.
- Re-pressurize the system to check for leaks.



- While holding down the Timer Reset button, reapply power to the Controller.



- Continue holding down the Timer Reset button until 5:00 is displayed on the LED display.



- Release the Timer Reset button, the LED display should then read 3:55.

Note: After replacing the UV Lamp perform the cleaning procedure, refer to [Section 3.2](#).

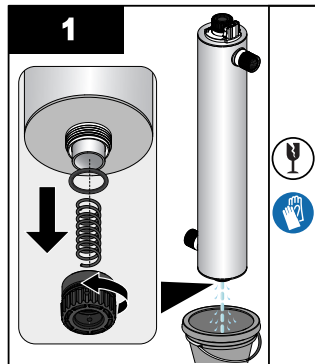
4.2 Cleaning and Replacing Quartz Sleeve

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

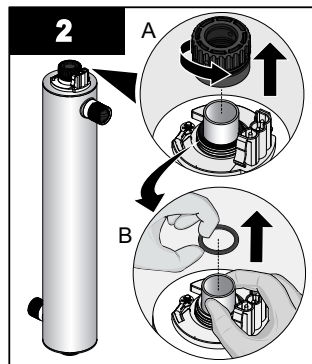
Prerequisites:

- Turn off the main water supply and depressurize the lines.
- Drain all lines.
- Remove the UV Lamp. Refer to [Section 4.1](#), Steps 1 through 5.

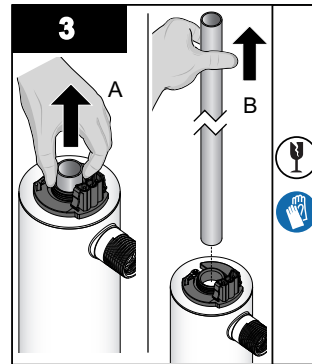
Procedure:



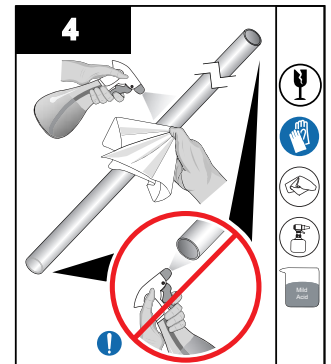
- Drain the UV Chamber by removing the bottom retaining nut, floating spring, and O-Ring.



- Remove the top retaining nut and then remove the O-Ring, while supporting the Lamp Sleeve as shown above.

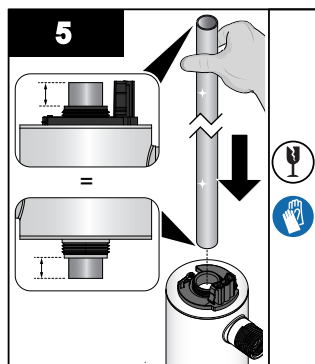


- Remove the Lamp Sleeve.

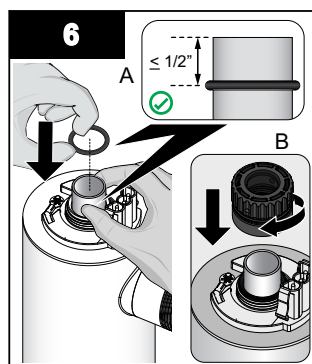


- Clean the Lamp Sleeve with a cloth soaked in CLR, vinegar or some other mild acid and then rinse with water.

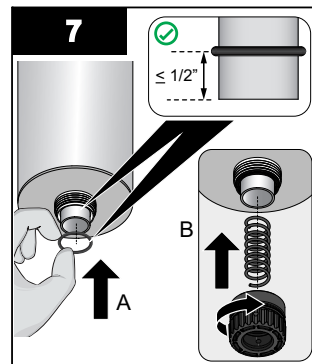
Note: If the Lamp Sleeve cannot be cleaned completely or it is scratched or cracked, then replace the Sleeve.



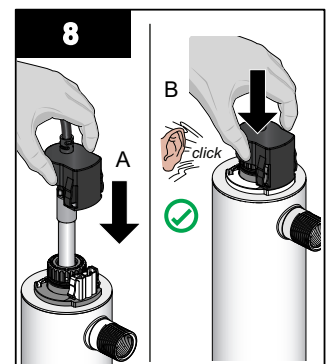
- Reinstall the Lamp Sleeve in the UV Chamber allowing the Sleeve to protrude an equal distance at both ends of the UV Chamber.



- Slide the supplied O-Ring onto the top end of the Lamp Sleeve.
- Ensure the O-Ring is installed at 1/2 inch or less from the open end of the Lamp Sleeve.
- Reinstall the top retaining nut.



- Slide the supplied O-Ring onto the bottom end of the Lamp Sleeve.
- Ensure the O-Ring is installed at 1/2 inch or less from the open end of the Lamp Sleeve.
- Reinstall the floating spring and bottom retaining nut.
- When service is complete, assemble the prerequisites in the reverse order of disassembly.



- Push the Lamp Connector against Lamp Connector base until an audible click is heard.
- Re-pressurize the system to check for leaks.
- Plug in Controller and verify the POWER-ON LED display is illuminated and Controller power-up sequence operates.

Note: After replacing the UV Lamp or Quartz Sleeve perform the cleaning procedure, refer to [Section 3.2](#).

4.3 Cleaning and Replacing UV Sensor

Note: Not applicable to VH-F Systems. For VH-F skip to [Section 4.4](#).

⚠ WARNING



The UV Sensor is 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.

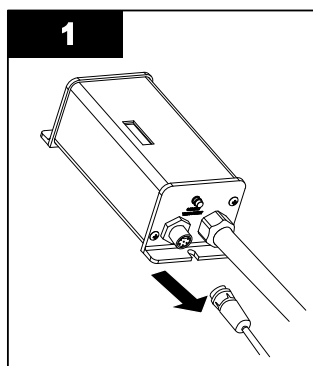
Mineral deposits and sediment may accumulate on the Sensor window decreasing the UV energy detected. Good maintenance of pre-treatment equipment will reduce the accumulation of residues. If the system indicates that the UV intensity is low, one cause may be a stained Quartz Sleeve and/or Sensor window.

Prerequisites:

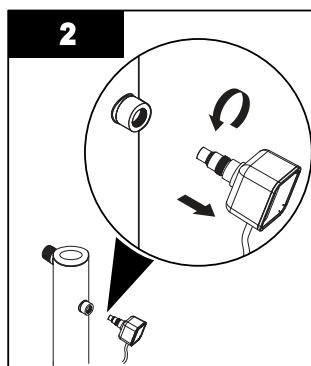
- Remove and clean the Quartz Sleeve. Refer to [Section 4.2](#), Steps 1 through 4.

Note: The Quartz Sleeve and UV Sensor should be cleaned at the same time.

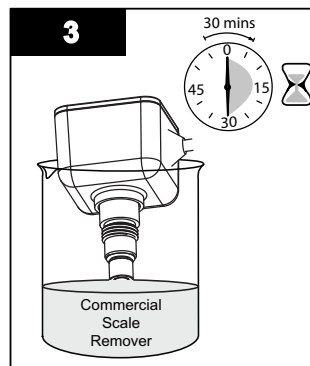
Procedure:



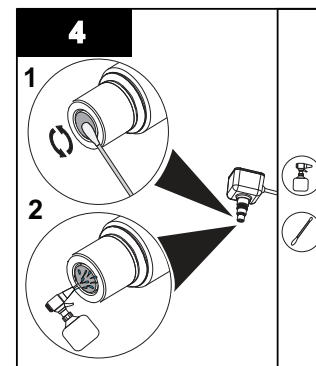
- Disconnect the UV Sensor from the Controller by disconnecting the Sensor cable.



- Remove the UV Sensor by grasping the body of the Sensor and rotating it counter-clockwise.



- Submerge only the end of the Sensor in the commercial scale remover for 30 minutes.



- Clean the Sensor with a cotton swab and spray with water.
- Re-insert the UV Sensor until a water-tight seal is achieved.

4.4 Replacing Cartridges

Note: Only applicable for VH-F Systems. For VH / VP / VH-V / VH-/2AW Systems, skip to [Section 5](#).

⚠ CAUTION

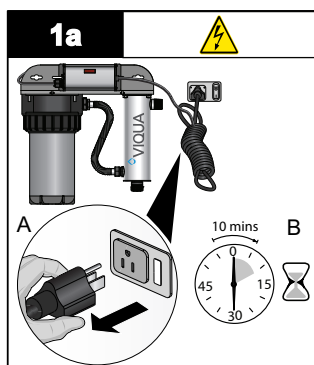


The Filter (sump) Housings will be heavy.

It is recommended to change the filter cartridge every six months, or earlier depending on water quality and usage. A gradual drop in water pressure after the filtration device is an indication that the pre-filter cartridges are nearing end of their useful life.

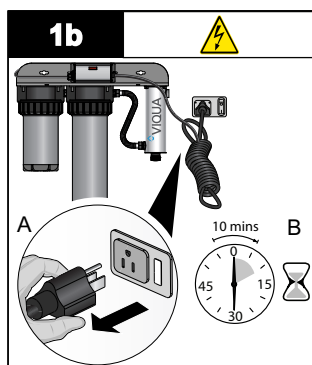
Procedure:

Note: Dual Filter Housing System shown in steps 2 - 9 for illustrative purposes only. The procedure will be the same for Single Filter Housing Systems.



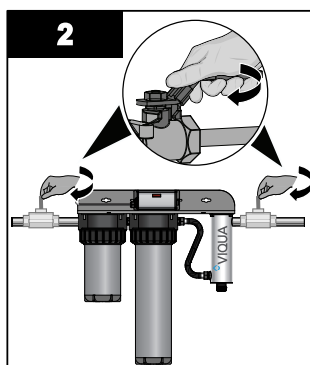
VH-F Systems (Single Filter Housing Configuration)

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

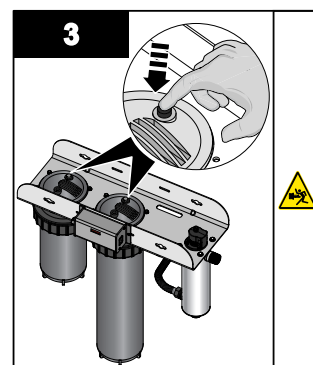


VH-F Systems (Dual Filter Housing Configuration)

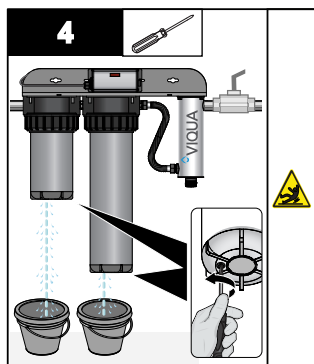
- Disconnect main power source and allow the unit to cool for 10 minutes.



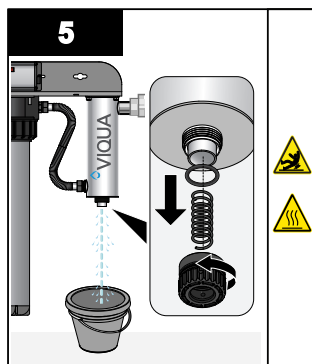
- Shut off the main water supply.
- Open a faucet after the UV System to release pressure.
- Close the faucet.



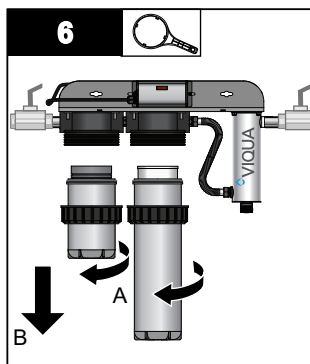
- Press the Pressure Relief button to release the pressure from the Filter Housing.



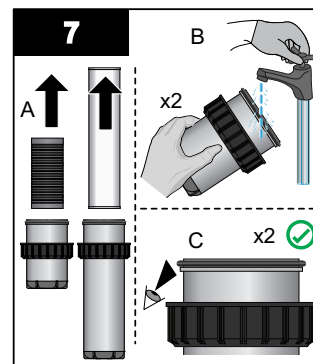
- Place a bucket below the Filter Housing(s).
- Remove drain plug to drain water into the bucket.
- Reinstall the drain plug.
- Clean up spills.



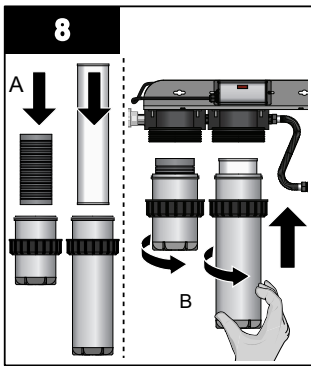
- Drain the UV Chamber by removing the bottom retaining nut and the floating spring.
- Reinstall the floating spring and bottom retaining nut.
- Clean up spills.



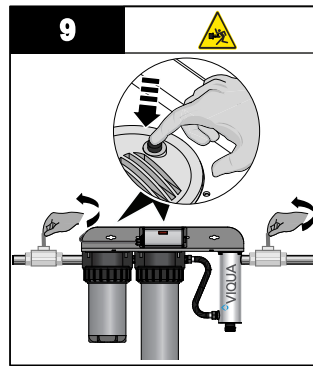
- Remove the Filter Housing(s) from the Filter Head(s) using a sump wrench.



- Remove and discard the old cartridge(s).
- Thoroughly rinse the Filter Housing(s) with water to remove any cleaning agents.
- Ensure that the O-Ring is properly seated on the shoulder at the top of the Filter Housing. Replace the O-Ring if there is any visible damage.
- Apply a generous amount of silicone-based lubricant to the O-Ring when reinstalling the Filter Housing(s).



- Install new cartridge(s).
- Reinstall the Filter Housing(s) to the Filter Head(s).



- Open a faucet after the UV System.
- Restore power and turn on the water supply.
- Close the faucet.
- Press the Pressure Relief button to purge air.
- Inspect for leaks.
- Repair detected leaks. Refer to [Section 3.1.4](#).
- Perform the cleaning procedure. Refer to [Section 3.2](#).

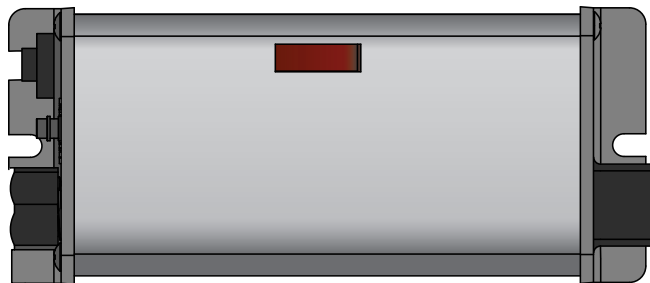
Section 5 Operation

⚠ 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-C and BA-ICE-CL Controllers



5.1.1 Lamp Life Remaining (days)

365 The 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 **00** and sound an intermittent audible chirp (1 second on, 5 seconds off), indicating the need to change the Lamp.

5.1.2 Understanding your “A3” Code

DEFERRAL - Once the “A3” or end of 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 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

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 Lamp life remaining default screen. It should be noted that this value cannot be reset.

5.1.5 Lamp Failure (Blank Screen)

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

5.1.6 Controller Failure (Blank Screen)

When the system recognizes CONTROLLER FAILURE, the display will be blank and there will be a continuous audible alarm.

5.2 Plus Systems Incorporating BA-ICE-CM Controller



5.2.1 UV Intensity (%)

The VIQUA Plus series of products incorporate a UV Sensor which detects the discrete 254 nm wavelength of the UV Lamp. This information is relayed to the VIQUA 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 sound 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/Sleeve 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 timer reset button and hold for five seconds. This will mute the audible alarm condition and activate solenoid output for 12 hours.

Over Temperature - When the water temperature inside the UV Chamber exceeds the maximum rating for the UV System (40 °C) the Controller will show “Ot” on the display. This is usually caused by extended periods of no water flow. To clear this condition simply open a faucet and allow water to flow through the system.

Possible causes for low UV alarm conditions:

- a. The UV Lamp has perhaps reached a level whereby it can no longer adequately provide a sufficient level of performance due to age (> 9000 hours). The Lamp should be replaced with a new Lamp from the manufacturer of the same size and type. Refer to [Section 4.1](#).
- b. The Quartz Sleeve 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 [Section 4.2](#).
- c. Intermittent voltage drop in the household Controller 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.

5.2.2 Lamp Life Remaining (Days)

To obtain this reading, press the timer reset button a single time and follow the steps as outlined in [Section 5.1.3](#), regarding the operation of this feature.

5.2.3 Total Days of Operation

To obtain this reading, press the timer reset button two times in succession and follow steps as outline in [Section 5.1.3](#), regarding the operation of this feature.

5.2.4 Lamp Failure (Blank Screen)

Refer to [Section 5.1.5](#) for explanation of this feature.

5.2.5 Controller Failure (Blank Screen)

When the system recognizes CONTROLLER FAILURE, the display will be blank and there will be a continuous audible alarm.

5.2.6 Solenoid Output

Working in conjunction with the UV intensity monitor, the VIQUA 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 260135. 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.

Note: To temporarily enable the operation of this solenoid output for up to 12 hours, please refer to the instructions outlined in [Section 5.2.1](#).



Figure 7 Solenoid Installation

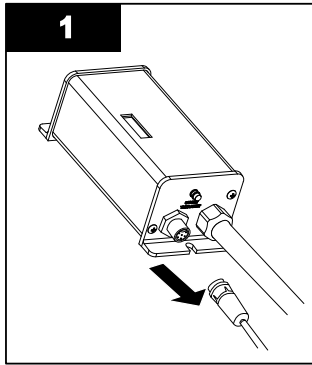
1	Optional Solenoid Valve
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Note: During bypass, do not consume the water until the system has returned to a safe condition.

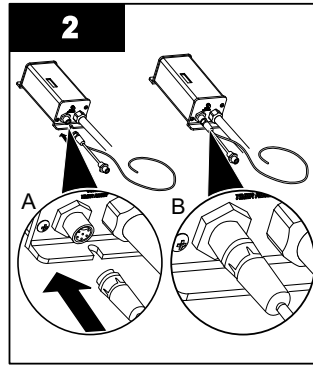
5.2.7 4-20mA Output (Optional)

To achieve the capability to transmit the UV intensity data to a remote location via a 4-20 mA signal, use an optional “Y” cable (PN 260134), available from your dealer. The “Y” cable comes with 20 meters (65′) of cable for the 4-20 mA signal.

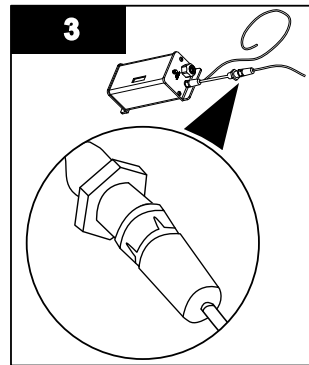
Procedure:



- Disconnect the existing Sensor cable from the Controller.



- Connect the 'Y' cable to the Controller.



- Attach the “male” end of the removed 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-tighten.

Section 6 Troubleshooting

Symptom	Possible Causes	Solutions
Pressure Drop	Sediment pre-filter clogged	Replace filter cartridge with appropriate 5 micron cartridge. Note: 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 Section 4.2).
	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	It is imperative that effluent water stream be shocked with chlorine (bleach) before water leaves UV System - UV System must have a bacterial free distribution system to work effectively. Refer to Section 3.2 .
	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 System).
Heated Product Water	Common problem caused by infrequent use of water	Run water until it returns to ambient temperature.
		Install temperature management valve. (If not installed).
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 or lubricate O-Ring with food-grade lubricant and re-install, replace if necessary (Refer to Section 2 for part number).
	Condensation on UV Chamber caused by excessive humidity & cold water	Check location of UV 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"> • Ensure system has been installed on its own circuit, as other equipment may be drawing power away from UV (i.e. pump or fridge). • UV System should not be installed on a circuit which is incorporated into a light switch.

Troubleshooting

Symptom	Possible Causes	Solutions
Lamp Failure Alarm on - New Lamp	Loose connection between Lamp and connector	Disconnect Lamp from connector and reconnect, ensuring that a tight fit is accomplished
	Moisture build-up in connector may keep 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"> Lamp life expired - countdown is at "0" days. Refer to Section 5.1.2. Press reset button for a deferred alarm, replace UV Lamp. Refer to Section 4.1.
LED display is blank with intermittent alarm tone	<ul style="list-style-type: none"> Controller is in Lamp failure mode. Refer to Section 5.1.5 and Section 5.2.4. Power system down, allowing it to reset itself; apply power in order to confirm that the Controller is able to power the Lamp. Check to see if there is sufficient power to the UV System. Replace the UV Lamp. Refer to Section 4.1.
LED display is blank with continuous alarm tone	<ul style="list-style-type: none"> Controller is in failure mode. Unplug the UV System. Wait one (1) minute, and then plug the UV System in. If the issue is not resolved, replace the Controller.
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. Refer to Section 5.2.1. 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.
LED display reads "8888" <i>(Applies to BA-ICE-CL/C/CM Controllers only)</i>	<ul style="list-style-type: none"> Controller may have failed. Power the UV System down for 30 seconds to one (1) minute. If the UV System does not resume normal operation, replace the Controller.
LED display reads "OT" <i>(Applies to VH410M, VP600M and VP950M systems only)</i>	<ul style="list-style-type: none"> Over Temperature - When the water temperature inside of the UV Chamber exceeds the maximum rating for the UV System (40°C), the Controller will display "Ot". This is typically caused by extended periods of no water flow. Open a faucet and allow water to flow through the system.

Section 7 Manufacturer's Dose Flow Chart

VH / VP / VH-V / VH-/2AW Systems

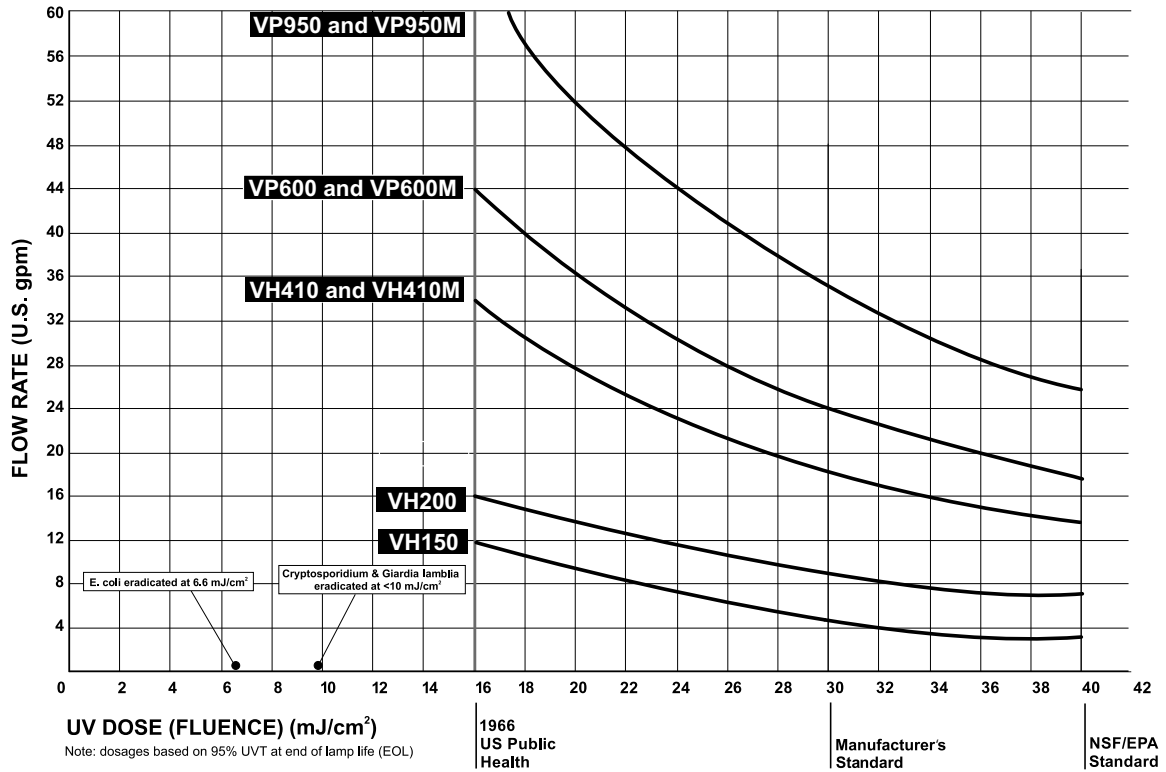


Figure 8 Dose Flow Chart - VH / VP / VH-V / VH-/2AW Systems

Note: Not performance tested or certified by NSF.

VH-F Systems

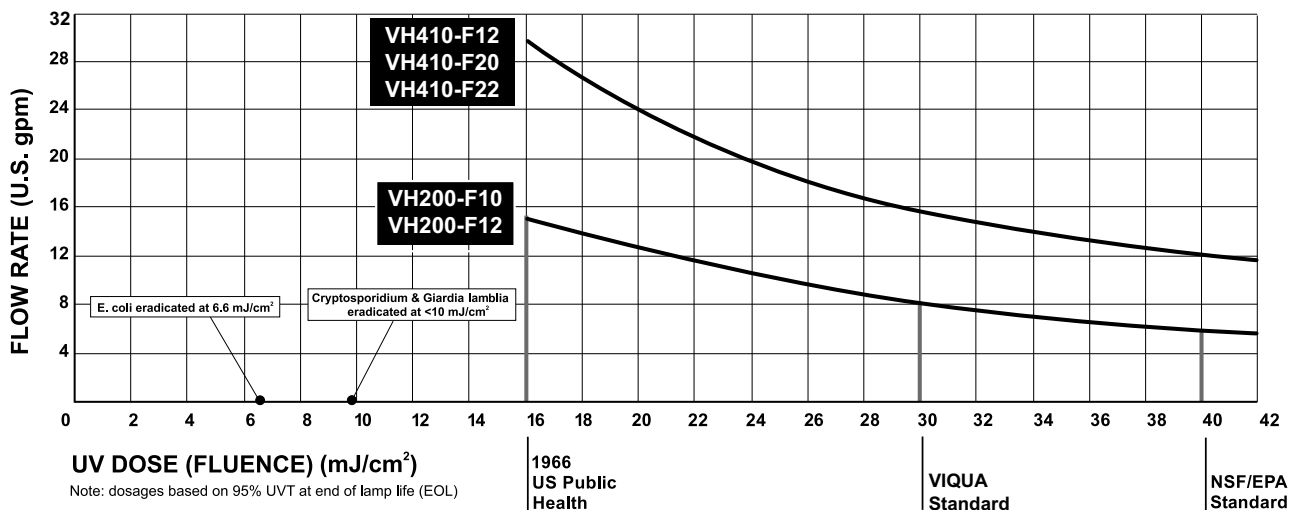


Figure 9 Dose Flow Chart - VH-F Systems

Note: Not performance tested or certified by NSF.

Section 8 Specifications

8.1 Home and Professional - Standard

		System Model					
		VH150	VH200 VH200-V*	VH200/2AW*	VH410 VH410-V*	VH410/2AW*	VP600
Flow Rate ¹	*NSF Class B Certified 16mJ/cm ² @ 70% UVT	-	7.8 gpm (29.5 lpm) (1.7 m ³ /hr)	14 gpm (53 lpm) (3.2 m ³ /hr)	-	-	
	US Public Health 16 mJ/cm ² @ 95% UVT	12 gpm (45 lpm) (2.7 m ³ /hr)	16 gpm (60 lpm) (3.6 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)	40 gpm (150 lpm) (9.0 m ³ /hr)	60 gpm (230 lpm) (13.7 m ³ /hr)	
	VIQUA Standard 30 mJ/cm ² @ 95% UVT	5 gpm (19 lpm) (1.1 m ³ /hr)	9 gpm (34 lpm) (2.0 m ³ /hr)	18 gpm (70 lpm) (4.2 m ³ /hr)	24 gpm (91 lpm) (5.5 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)	
	NSF/EPA 40mJ/cm ² @ 95% UVT	3.5 gpm (13 lpm) (0.8 m ³ /hr)	7 gpm (26 lpm) (1.6 m ³ /hr)	14 gpm (54 lpm) (3.3 m ³ /hr)	18 gpm (68 lpm) (4.1 m ³ /hr)	26 gpm (97 lpm) (5.8 m ³ /hr)	
Dimensions	Chamber	33 cm x 8.9 cm (13" x 3.5")	45 cm x 8.9 cm (15" 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")	114 cm x 8.9 cm (45.2" x 3.5")	
	Controller	17.2 cm x 8.1 cm x 6.4 cm (6.8" x 3.2" x 2.5")	17.2 cm x 8.1 cm x 6.4 cm (6.8" x 3.2" x 2.5")	17.2 cm x 8.1 cm x 6.4 cm (6.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")	
Inlet/Outlet Port Size ²		Combo 3/4" FNPT / 1" MNPT	Combo 3/4" FNPT / 1" MNPT	Combo 3/4" FNPT / 1" MNPT	1" MNPT	1.5" MNPT	
Shipping Weight		3.6 kg (8 lbs)	5.4 kg (12 lbs)	7.7 kg (17 lbs)	8.6 kg (19 lbs)	13.1 kg (29 lbs)	
Electrical	Voltage ³	100-240 V / 50/60 Hz	100-240 V / 50/60 Hz	120-240 V / 50/60 Hz	100-240 V / 50/60 Hz	120-240 V / 50/60 Hz	100-240 V / 50/60 Hz
	Max. Current	0.7 A	0.7 A	1.5 A	0.7 A	1.5 A	1.5 A
	Power Consumption	32 W	35 W	60 W	78 W	110 W	
	Lamp Watts	22 W	25 W	46 W	58 W	90 W	
Total Running Time		Yes	Yes	Yes	Yes	Yes	
Maximum Operating Pressure		125 psi (861 kPa)	125 psi (861 kPa)	125 psi (861 kPa)	125 psi (861 kPa)	125 psi (861 kPa)	
Minimum Operating Pressure		15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)	
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)	2-40 °C (36-104 °F)	
Lamp Type		HO (high-output)	HO (high-output)	HO (high-output)	HO (high-output)	HO (high-output)	
Visual "Power-On"		Yes	Yes	Yes	Yes	Yes	
Audible Lamp Failure		Yes	Yes	Yes	Yes	Yes	
Lamp Replacement Reminder		Yes	Yes	Yes	Yes	Yes	
Visual Lamp Life Remaining		Yes	Yes	Yes	Yes	Yes	
Total Running Time		Yes	Yes	Yes	Yes	Yes	
Chamber Material		304SS	304 SS	304 SS	304 SS	304 SS	

¹ Flow rates based on End of Lamp Life; 20°C.

² Units ending in "/WR" have BSPT connections.

³ Units ending in "/2" are for 230V applications.

⁴ Units ending in */NOM are Certified to the Mexican NOM standard.

8.2 Home and Professional - Plus

		System Model			
		VH410M VH410M-V*	VH410M /2AW*	VP600M	VP950M
Flow Rate ¹	*NSF Class B Certified 16mJ/cm ² @ 70% UVT	14 gpm (53 lpm) (3.2 m ³ /hr)		-	-
	US Public Health 16 mJ/cm ² @ 95% UVT	34 gpm (130 lpm) (7.8 m ³ /hr)		40 gpm (150 lpm) (9.0 m ³ /hr)	60 gpm (230 lpm) (13.7 m ³ /hr)
	VIQUA Standard 30 mJ/cm ² @ 95% UVT	18 gpm (70 lpm) (4.2 m ³ /hr)		24 gpm (91 lpm) (5.5 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)
	NSF/EPA 40mJ/cm ² @ 95% UVT	14 gpm (54 lpm) (3.3 m ³ /hr)		18 gpm (68 lpm) (4.1 m ³ /hr)	26 gpm (97 lpm) (5.8 m ³ /hr)
Dimensions	Chamber	57.9 cm x 8.9 cm (22.8" x 3.5")		78 cm x 8.9 cm (30.7" x 3.5")	114 cm x 8.9 cm (45.0" x 3.5")
	Controller 100-250 VAC	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")		22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")
Inlet/Outlet Port Size ²		Combo 3/4" FNPT / 1" MNPT		1" MNPT	1.5" MNPT
Shipping Weight		7.7 kg (17 lbs)		8.6 kg (19 lbs)	13.1 kg (29 lbs)
Electrical	Voltage ³	100-240 V / 50/60 Hz	120-240 V / 50/60 Hz	100-240 V / 50/60 Hz	100-240 V / 50/60 Hz
	Max. Current	2.5 A		2.5 A	2.5 A
	Power Consumption	60 W		78 W	110 W
	Lamp Watts	46 W		58 W	90 W
Maximum Operating Pressure		125 psi (861 kPa)		125 psi (861 kPa)	125 psi (861 kPa)
Minimum Operating Pressure		15 psi (103 kPa)		15 psi (103 kPa)	15 psi (103 kPa)
Ambient Water Temperature		2-40 °C (36-104 °F)		2-40 °C (36-104 °F)	2-40 °C (36-104 °F)
Lamp Type		HO (high-output)		HO (high-output)	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
254nm UV Monitor		Yes		Yes	Yes
Chamber Material		304 SS		304 SS	304 SS
Solenoid Output		Yes		Yes	Yes
4-20 mA Output		Yes (Optional 260134)		Yes (Optional 260134)	Yes (Optional 260134)

¹ Flow rates based on End of Lamp Life; 20°C.
² Units ending in "WR" have BSPT connections.
³ Units ending in "/2" are for 230V applications.
⁴ Units ending in */NOM are Certified to the Mexican NOM standard.

8.3 Home - Filtered

		Model				
		VH200-F10	VH200-F12	VH410-F12	VH410-F20	VH410-F22
Flow Rate ¹	US Public Health 16 mJ/cm ²	16 gpm (60 lpm) (3.6 m ³ /hr)	16 gpm (60 lpm) (3.6 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)
	VIQUA Standard 30 mJ/cm ²	9 gpm (34 lpm) (2.0 m ³ /hr)	9 gpm (34 lpm) (2.0 m ³ /hr)	18 gpm (70 lpm) (4.2 m ³ /hr)	18 gpm (70 lpm) (4.2 m ³ /hr)	18 gpm (70 lpm) (4.2 m ³ /hr)
	NSF/EPA 40 mJ/cm ²	7 gpm (26 lpm) (1.6 m ³ /hr)	7 gpm (26 lpm) (1.6 m ³ /hr)	14 gpm (54 lpm) (3.3 m ³ /hr)	14 gpm (54 lpm) (3.3 m ³ /hr)	14 gpm (54 lpm) (3.3 m ³ /hr)
Overall Dimensions (width x depth x height)		43.2 cm x 29.5 cm x 45.2 cm (17" x 11.6" x 17.8")	66.7 cm x 29.5 cm x 70.6 cm (26.25" x 11.6" x 27.8")	66.7 cm x 29.5 cm x 70.6 cm (26.25" x 11.6" x 27.8")	43.2 cm x 29.5 cm x 70.6 cm (17" x 11.6" x 27.8")	66.7 cm x 29.5 cm x 70.6 cm (26.25" x 11.6" x 27.8")
Inlet/Outlet Port Size ²		3/4" FNPT (Inlet) / Combo 3/4" FNPT / 1" MNPT (Outlet)	3/4" FNPT (Inlet) / Combo 3/4" FNPT / 1" MNPT (Outlet)	3/4" FNPT (Inlet) / Combo 3/4" FNPT / 1" MNPT (Outlet)	3/4" FNPT (Inlet) / Combo 3/4" FNPT / 1" MNPT (Outlet)	3/4" FNPT (Inlet) / Combo 3/4" FNPT / 1" MNPT (Outlet)
Shipping Weight		10.5 kg (23 lbs)	10.5 kg (23 lbs)	13.2 kg (29 lbs)	13.2 kg (29 lbs)	13.2 kg (29 lbs)
Electrical	Voltage ³	100-240 V/ 50/60 Hz	100-240 V/ 50/60 Hz	100-240 V/ 50/60 Hz	100-240 V/ 50/60 Hz	100-240 V/ 50/60 Hz
	Max. Current	0.7 Amp	0.7 Amp	0.7 Amp	0.7 Amp	0.7 Amp
	Power Consumption	35 W	35 W	60W	60W	60W
	Lamp Watts	27 W	27 W	45W	45W	45W
Maximum Operating Pressure		100 psi (689 kPa)	100 psi (689 kPa)	100 psi (689 kPa)	100 psi (689 kPa)	100 psi (689 kPa)
Minimum Operating Pressure		15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)
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)	2-40 °C (36-104 °F)
UV Lamp Type		HO (high output)	HO (high output)	HO (high output)	HO (high output)	HO (high output)
Visual "Power-On"		Yes	Yes	Yes	Yes	Yes
Audible Lamp Failure		Yes	Yes	Yes	Yes	Yes
Lamp Replacement Reminder		Yes	Yes	Yes	Yes	Yes
Visual Lamp Life Remaining		Yes	Yes	Yes	Yes	Yes
Total Running Time		Yes	Yes	Yes	Yes	Yes
254 nm UV Monitor		No	No	No	No	No
Solenoid Output (solenoid not incl.)		No	No	No	No	No
Chamber Material		304 SS	304 SS	304 SS	304 SS	304 SS
Filter Housing		10" high flow	10" high flow	10" high flow	20" high flow	20" high flow

¹ The max flow rate is determined by the carbon filter.

**Flow rates based on UVT=95% and End of Lamp Life; 20°C.

² Units ending in "/WR" have BSPT connections.

³ Units ending in "/2" are for 230V applications.

⁴ Units ending in */NOM are Certified to the Mexican NOM standard.

Section 9 Manufacturer's Warranty

Our Commitment

VIQUA is committed to ensuring your experience with our products and organization exceeds your expectations. We have manufactured your UV 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 or technicalsupport@viqua.com and we will be happy to assist you.

How to Make a Warranty Claim

Note: *To maximize the performance and reliability of your VIQUA 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 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 VIQUA 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 VIQUA range of products. Warranty coverage is subject to the conditions and limitations outlined under "[General Conditions and Limitations](#)".

Ten-Year Limited Warranty for VIQUA UV Chamber

VIQUA warrants the UV Chamber on the VIQUA product to be free from defects in material and workmanship for a period of ten (10) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective VIQUA UV Chamber. Please return the defective part to your dealer who will process your claim.

Three-Year Limited Warranty for Electrical and Hardware Components

VIQUA warrants the electrical (Controller) and hardware components to be free from defects in material and workmanship for a period of three (3) 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 UV Lamps, Sleeves, and UV Sensors

VIQUA 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, 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.

Note: *Use only genuine VIQUA replacement Lamps and Sleeves in your system. Failure to do so may seriously compromise 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 VIQUA 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.



425 Clair Rd. W, Guelph, Ontario, Canada N1L 1R1
t. (+1) 519.763.1032 • tf. (+1) 800.265.7246 (US and Canada only)
t. (+31) 73 747 0144 (Europe only) • f. (+1) 519.763.5069
e-mail: info@viqua.com
www.viqua.com

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