



US WATER FILTERS

## Operation & Installation Instructions

USWF-H4-PS    USWF-H4-PL



Standard Systems			
System	Rated Flow	System	Rated Flow
USWF-H4-PS	42 gpm	USWF-H4-PL	82 gpm

**Congratulations on purchasing the US Water Filters Ultraviolet Water Sterilizer.**

By purchasing this system, you are receiving not only a high quality product but also peace of mind. In addition to your chlorine feeder or salt chlorine generator, a UV system gives you reassurance that your family will have access to cleaner, safer pool water, while significantly reducing chemical usage. This is a chemical free process which is simple in its concept and effective in its abilities to inactivate microorganisms which are resistant to chlorine. Simple maintenance, continuous disinfection and ultimately safe water, US Water Filters makes it that easy.

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## Safety Considerations

It is important that care is taken when operating and/or maintaining your system.

### Please read the instructions

- The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children should be supervised so that they do not to play with the appliance.
- **WARNING:** Do not operate the UV-C emitter when it is removed from the appliance enclosure.
- The appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.
- This appliance contains a UV-C emitter.
- Unintended use of the appliance or damage to the housing may result in the escape of dangerous UV-C radiation. UV-C radiation may, even in little doses, cause harm to the eyes and skin.
- The appliance must be disconnected from the supply before replacing the UV-C emitter.
- The appliance is intended to be permanently connected to pool return lines and not connected by a hose-set.
- Maximum working voltage of built-in UV driver U-OUT=240V
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Before servicing this equipment, disconnect the power cord from the electrical outlet.
- **Energy given off by the UV lamp is harmful to your eyes and skin.** NEVER look directly at an illuminated UV lamp without adequate eye protection and always protect your skin from direct exposure to the UV light.
- For complete disinfection, use ONLY genuine replacement parts.
- Do not operate the unit if it has any damaged or missing components.
- To avoid possible electrical shock, use only with a properly grounded electrical outlet.
- Never perform any maintenance to the system unless you are comfortable in doing so. Contact the manufacturer for service instructions if required.
- Do not use this system for any purpose other than what it was intended for. Misuse of this system could potentially cause harm to the user or others.
- The disinfection system should be directly installed into a ground fault circuit interrupter (GFCI). If the use of an extension cord is required, the cord must be manufactured with a minimum of 16 gauge wire and care should be taken to avoid potential tripping hazards.
- We recommend that a licensed plumber or certified technician install the system.

**This product is not to be used for general lighting / illumination.**

## Before You Begin

The following will be needed for installing the UV system:

### Tools

- Pipe cutter, hacksaw or other specialized tools required to cut/modify into your existing pool plumbing
- Wrench (for tightening fittings)

### Other Materials

- PVC/PVC glue
- Non-hardening pipe-thread sealant specifically rated for use with PVC plastic (THIS SEALANT IS INCLUDED IN YOUR SYSTEM PARTS). Teflon tape and Teflon-based pipe sealants are NOT recommended for use with plastic threads
- If installing in an area that is exposed to the elements, the enclosed ballast cover is required to protect the ballast and maintain warranty coverage

Save packaging for quartz tube and bulb for winter storage.

## Water Quality Parameters

UV disinfection is extremely effective against microorganisms but only if the UV light can pass through the water it needs to treat. This means that the quality of your water is very important in order to ensure complete disinfection.

Regular water chemistry testing should be performed as usual.

## Recommended Water Parameters

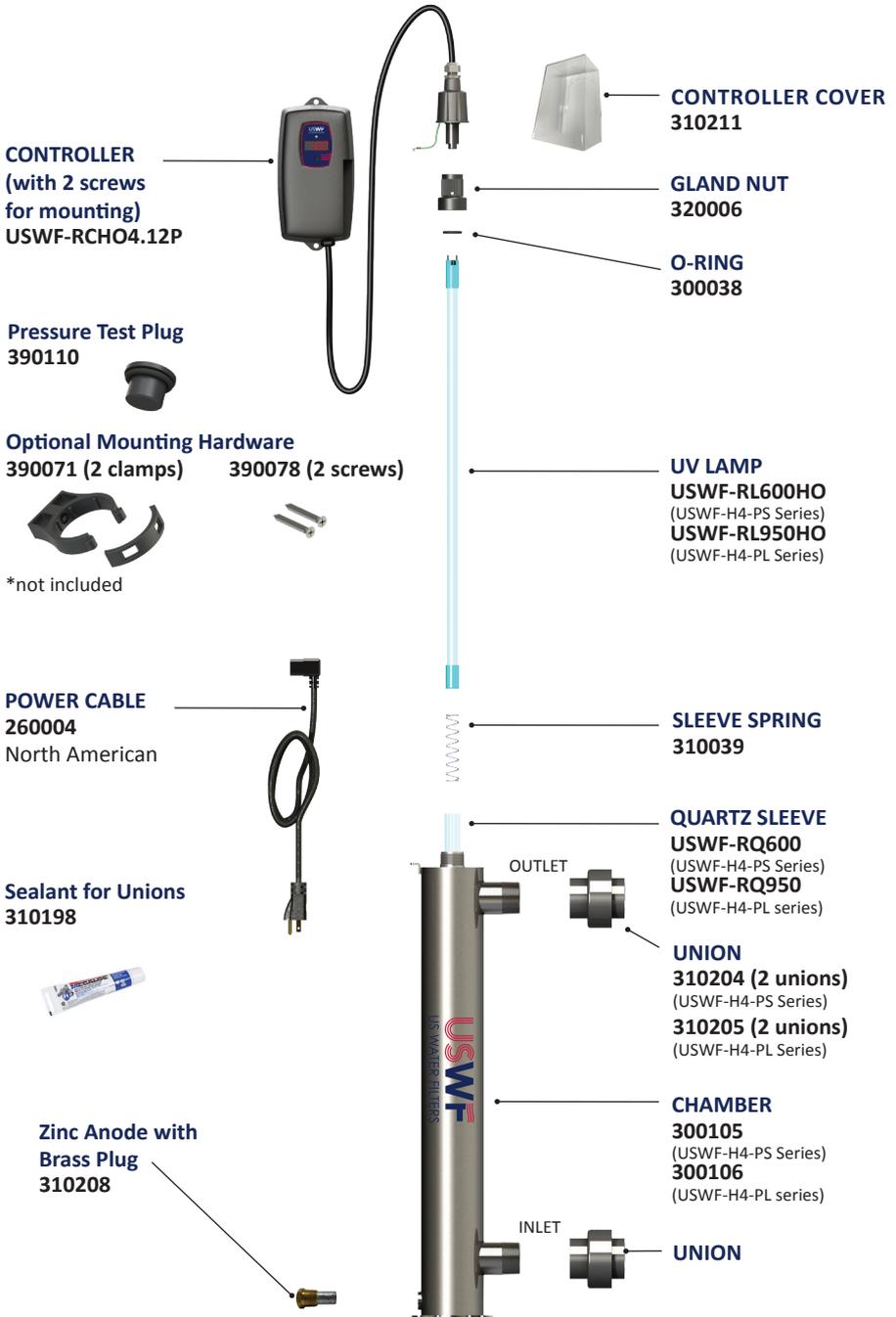
**Chlorine residual:** 1-3 ppm free chlorine

**pH:** 7.4 - 7.6

**Total alkalinity:** 80 - 120 ppm

## Assembly

Unpack the system and ensure all the components are included with the system. Your system is shipped with the following components:



## Recommended Placement

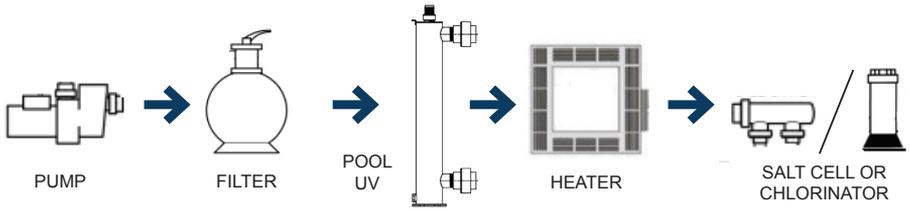


Figure 1. Diagram of flow

## FLOW RATES

For detailed flow rates see page 13.

## LOCATION

Place UV system in an area to ensure there is enough space at the lamp connector end to safely remove the UV lamp and/or quartz sleeve (Figure 2). The controller will require a ground fault circuit interrupter (GFCI or GFI) outlet and should be mounted beside or above the chamber. The controller must be mounted upright. If the controller is mounted outside, the enclosed cover is required to protect electronics from the elements. **If installing unit in horizontal position, you must assemble all components in vertical position.**



Figure 2. Lamp Removal Spacing

## INSTALLATION

The chamber can be installed either horizontally or vertically. Vertical installation is the preferred method with the inlet at the bottom (lamp connection at the top). If installing horizontally additional mounting hardware is required.

The use of a by-pass assembly is recommended as it will allow you to isolate the UV chamber. This will allow for easier access in case maintenance is required.

If installing vertically, the base can be mounted to the ground.

It is recommended to have a pool professional connect the UV chamber to the water supply and may be a requirement depending on local regulations.

**Step 1:** Plumb system between filter & heater. Please note, the inlet should be at the bottom and the outlet at the top of the chamber. Use the union sealant that is included in the box to glue union to threads on stainless steel chamber. Use regular PVC plumbing glue to attach union to pool piping.

**Step 2:** Perform a Pressure Test (See Figure 3). Insert pressure test cap into the top of the chamber and screw on the gland nut. Turn on pump and observe for any leaks. Proceed to Step 3 if no leaks are detected.

**Step 3:** Remove the gland nut and pressure test cap. Gently remove the quartz sleeve from its packaging, being careful not to touch the length with your hands. The use of cotton gloves is recommended. Carefully slide the sleeve into the chamber until you feel it rest inside the centre of the internal metal basket. (See Figure 4). There should only be 8-12mm ( $\frac{3}{16}$ "- $\frac{1}{2}$ " ) of glass exposed.

**Step 4:** Install the o-ring and spring. Slide the o-ring onto the quartz sleeve until it is butted up against the chamber. Insert spring inside quartz tube. **DO NOT install a UV lamp inside the quartz sleeve without the spring in place.**

**Step 5:** **HAND TIGHTEN** the gland nut over the quartz sleeve onto the threaded top of the chamber. It has a positive stop to prevent over-tightening. **DO NOT USE TOOLS for this step.**



**Figure 3. Pressure Test Cap Installation**



**Figure 4. Quartz Sleeve Installation**

**NOTE: Installation of your UV disinfection system shall comply with applicable provincial / state & local regulations.**

**Step 6:** Carefully remove the lamp from its packaging. Always hold UV lamps by their ceramic ends. Gently lower lamp into quartz sleeve.



**Figure 5. UV Lamp Connection**

**Step 7:** Plug the lamp connector into the lamp. Note the keying for proper alignment (see Figure 5). Insert the lamp connector into the gland nut and turn the connector approximately  $\frac{1}{4}$  turn to lock the connector to the gland nut (Figure 6).

**Step 8:** Tighten the captive ground screw to the ground lug on the UV chamber (Figure 7).

**Step 9:** Mount controller in an upright vertical position above or beside the UV chamber.

Your system is now ready to be plugged into the appropriate GFCI protected outlet.

**PLEASE NOTE:** A timer is recommended in conjunction with your pool pump to ensure the UV system is running at the same time as the pump.



**Figure 6. Lamp Connector**

## MAINTENANCE

### CLEANING THE QUARTZ SLEEVE

At a minimum, the quartz sleeve should be cleaned on an annual basis. Depending on the water quality, the quartz sleeve may require periodic cleaning. The following steps outline a basic cleaning procedure.

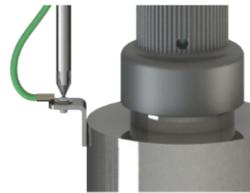
**Step 1:** If a by-pass assembly is installed, shut the inlet valve off to prevent water flow through the system. Otherwise, turn off main water valve (and/or turn off the pool pump).

**Step 2:** Disconnect power cord of UV system from electrical outlet.

**Step 3:** Release water pressure by opening union and letting water drain from the system.

**Step 4:** Remove the captive ground screw from the ground lug on the UV chamber.

**Step 5:** Remove the lamp connector from the chamber (gland nut) by pushing the lamp connector gently down and turning it  $\frac{1}{4}$  turn counter-clockwise. Disconnect the lamp connector from the lamp. **CAUTION: the lamp may be hot!**



**Figure 7. Ground Screw**

**Step 6:** Being careful to touch only the ceramic ends, remove the lamp out of the chamber.

**Step 7:** Unscrew the gland nut from the chamber exposing the end of the quartz sleeve.

**Step 8:** Carefully remove the quartz sleeve and o-ring by **gently twisting and pulling** the quartz sleeve.

**Step 9:** Using a soft, lint-free cloth or towel wipe the sleeve down using a commercial scale cleaner (i.e. CLR® or LIME-A-WAY®). This removes scaling or mineral deposits that may be on the outside of the quartz sleeve. Be careful not to get any moisture or liquids inside of the sleeve and ensure spring stays in place inside quartz sleeve.

**Step 10:** Dry the sleeve with separate cloth.

**Step 11:** Slide the sleeve back into the chamber following step 3 from the installation section of the manual. Replace the o-ring and ensure spring is re-installed into quartz sleeve.

## **INSPECTING THE ZINC ANODE**

It is recommended to inspect the Zinc Anode Drain plug once per year. Once pump and system has been shut down, use a wrench to remove the drain plug from the bottom of the chamber. As this is a sacrificial anode, the zinc will break down over time. The zinc anode should be replaced once it reaches approximately 1/2" in size (original size of anode is 1").

## **WINTERIZATION**

Recommended operating temperature is between 2-40 degrees C (36-104F). Please ensure the Pool UV system and pump is off before winterizing.

There are 2 options for winterization:

WHEN BASE IS NOT AFFIXED TO CONCRETE: The Pool UV unit should be disconnected and stored indoors for winter. Unscrew the unions to disconnect the plumbing and remove the drain plug to allow excess water to escape. Keeping the system fully assembled move the chamber and controller inside for the winter.

WHEN BASE IS AFFIXED TO CONCRETE OR IF REQUIRED TO LEAVE CONNECTED TO PLUMBING: Disconnect Power. Unscrew the unions to disconnect the plumbing and remove the drain plug. Remove the controller from wall mount and carefully disconnect the lamp from the lamp cable. Unscrew ground screw from the ground lug on chamber. Carefully remove the quartz tube and lamp. These are fragile and must be handled with care, gloves are strongly recommended. Ensure the spring remains in the quartz tube as it is essential for reassembly. Utilize original packaging to safely store the lamp and quartz sleeve. Apply the pressure test cap and screw a top gland nut, as noted in STEP 2 of installation. After water has been completely drained the unions can now be re-connected if desired.

\*To reconnect the Pool UV system in the spring, please refer to the original installation instructions above.

\*\*If proper winterization and installation instructions are not followed, the warranty will be rendered void.

## OPERATION

Pool UV systems come with a feature laden controller that incorporates both the lamp driver (ballast) and control features in a fully sealed case to prevent water intrusion. Controllers feature a built in lamp monitor, with both audible and visual indication of lamp life, and auto sensing dual voltage for plug in or hard wired use.

## CONTROLLER



Simplistic in operation, this system features a tri-colour LED light indicating system status and a 4-digit display to indicate lamp life remaining. Pressing the button will change the display to indicate total running time. When the UV lamp is on and within its operating age, the LED will be green. When the UV lamp is not on or the lamp life has expired, the LED will be illuminated red and an audible buzzer will sound. To remedy this condition, the UV lamp must be replaced with a new genuine Pool UV system UV lamp.

**PLEASE NOTE:** A timer is recommended in conjunction with your pool pump to ensure the Pool UV system is running at the same time as the pump.

## LAMP COUNTDOWN SEQUENCE

The system counts down the number of days until a lamp change is required.



At thirty days remaining, the LED or display screen will change to a yellow caution indicator. At seven days remaining, the system will additionally repeat an audible chirp. Past the zero day threshold, the LED or display screen changes to solid red with a continuous buzzer.



At any point during this sequence, the audible chirp or alarm can be deferred for seven days by holding the controller button down for a period of five seconds. The number of deferrals used will be displayed as below. Once the deferral expires, the alarm will sound once again. The deferral can be repeated up to three times. **PLEASE NOTE:** At any point after lamp expiration, the water disinfection rate will be compromised.



### LAMP REPLACEMENT

After the lamp is expired, it must be replaced with the same part number as indicated by the label on the chamber. Begin replacing the lamp by unplugging the power for the controller, then refer to step 8 from the installation section of the manual (page 6) for instructions on installing the new lamp. To reset the timer in the controller, firmly hold down the button on the controller for 10 seconds. The controller will read "rSt3", "rSt2", "rSt1" and then beep. The button can now be released, the lamp countdown timer has been reset.

### SYSTEM TROUBLESHOOTING

**Hard Alarms:** The following give a constant audible alarm.

System Display	Problem	Resolution
	<p>The system has detected a problem with the lamp.</p>	<p>Reset lamp protection circuit -unplug unit for 10 seconds. Replace the lamp with the part as indicated on the silver label on the chamber.</p>
	<p>Although the lamp is powered and visibly illuminated, due to the lamp's age its UV output is no longer sufficient for proper disinfection.</p>	<p>Replace the lamp with the part as indicated on the silver label on the chamber.</p>

For any other questions or troubleshooting, please contact your dealer or reach out to us at 1-855-837-3801.

## SYSTEM SPECIFICATIONS

Model	USWF-H4-PS	USWF-H4-PL
Flow Rate 16mJ/cm <sup>2</sup> @ 95% UVT	42 GPM	82 GPM
	159 lpm	310.4 lpm
	9.5 m <sup>3</sup> /hr	18.6 m <sup>3</sup> /hr
Port Size	1.5" MNPT	2" MNPT
Electrical	90-265V/50-60Hz. (IEC power cord included)	
Plug Type	NEMA 5/15	
Lamp Watts	67	101
Replacement Lamp	USWF-RL600HO	USWF-RL950HO
Replacement Sleeve	USWF-RQ600	USWF-RQ950
Replacement Controller	USWF-RCHO4.12P	
Chamber Material	316L Stainless Steel, A249 Pressure Rated Tubing	
Chamber Dimensions	3.5 x 26.9" (8.9 x 68.3 cm)	3.5 x 40.7" (8.9 x 103.4 cm)
Controller Dimensions	8.6 x 4.2 x 4" (21.7 x 10.8 x 10.2 cm)	
Operating Pressure	0.7-10.3 bar (10-150 psi)	
Operating Water Temperature	2-40° C (36-104° F)	
Lamp Change Reminder	YES (4-digit LED display)	
Visual Lamp Out Indicator	YES	
Audible Lamp Out Indicator	YES	
Shipping Weight	7.9 kg (17.5 lbs)	10.0 kg (22.1 lbs)

## Limited Warranty Statement:

Products manufactured by US WATER FILTERS are warranted to the original user only to be free of defects in material and workmanship for a period as specified below. This warranty only applies to the original purchaser and is not transferable.

### UV SYSTEMS

Three (3) year Limited Warranty on the stainless steel reactors, from the date of original purchase, or installation (proper documentation required for verification).

### ELECTRONICS

Three (3) year Limited Warranty on the ballasts and controllers, from the date of original purchase, or installation (proper documentation required for verification).

### UV LAMPS, UV SENSORS & QUARTZ SLEEVES

One (1) year Limited Warranty on all ultraviolet lamps, UV sensors and quartz sleeves from the date of original purchase, or installation (proper documentation required for verification).

This US Water Filters Ultraviolet Disinfection System will be repaired or replaced, at our sole option, providing that the ultraviolet system or any component is defective in materials or workmanship for the periods outlined above and subject to the "Limitations of Warranty" as outlined below. US Water Filters liability under this warranty shall be limited to repairing or replacing the product, without charge, F.O.B. US Water Filters closest Distribution Facility or authorized service depot. US Water Filters will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. US Water Filters will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with the Manufacturers printed installation and operating instructions.

## LIMITATIONS OF WARRANTY

This warranty does not apply to any of the following:

- Water Quality Parameters lie outside of the following ranges
  - Hardness > 120 mg/L (7 gpg)
  - Iron > 0.3 mg/L (ppm)
  - Manganese > 0.05 mg/L (ppm)
  - Tannins > 0.1 mg/L (ppm)
  - Turbidity > 1 NTU
  - Transmittance (UVT) < 75%
- A product that has been incorrectly installed according to the owners manual.
- A product that has been modified in any manner, unless approved by the manufacturer.
- A product where the serial number has been altered defaced or removed.
- Damage caused by the use of parts that are not compatible, suitable and/or authorized by US Water Filters for use with the product (e.g. non-original lamps or sleeves).
- Damage caused during shipment of the product.
- Water damage is found inside ballast housing or controllers.
- Product is installed outdoors in direct contact with the environment (rain).
- Product is installed in freezing temperatures.
- Product is used in conditions that exceed US Water Filters specifications.

## TO GET WARRANTY SERVICE

To obtain service under this warranty, you must first contact where the product was originally purchased to obtain a Warranty Return Authorization. You will require proof of purchase and installation date, failure date, and any other requested data. Unless otherwise provided, the Dealer or Distributor will contact US Water Filters for instructions on returning the product. Any defective product to be returned to US Water Filters must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Goods Authorization must be included if so instructed.

US WATER FILTERS WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY FIRE, FLOOD, OR ACTS OF GOD, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE.

THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY MADE BY US WATER FILTERS WITH RESPECT TO THE PRODUCT, AND IS GIVEN IN LIEU OF ANY OTHER WARRANTY. TO THE EXTENT ALLOWED BY APPLICABLE LAW, ANY AND ALL EXPRESS OR IMPLIED WARRANTIES NOT SET FORTH HEREIN ARE WAIVED AND DISCLAIMED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. US WATER FILTERS LIABILITY UNDER THIS LIMITED WARRANTY IS LIMITED SOLELY TO THOSE LIABILITIES SET FORTH ABOVE. IN THE EVENT THAT ANY PROVISION OF THIS LIMITED WARRANTY SHOULD BE OR BECOME INVALID OR UNENFORCEABLE UNDER APPLICABLE LAW, THE REMAINING TERMS AND CONDITIONS HEREOF SHALL REMAIN IN FULL FORCE AND EFFECT AND SUCH INVALID OR UNENFORCEABLE PROVISION SHALL BE CONSTRUED IN SUCH A MANNER AS TO BE VALID AND ENFORCEABLE.

## Warranty Registration

It is imperative that you complete the warranty registration process. This not only registers your UV disinfection system for the provided manufacturer's warranty, but also allows the factory to provide you with any important product updates or technical bulletins concerning your product. The registration process is a simple process and can ONLY be done online at **[www.uv-warranty.com](http://www.uv-warranty.com)**. Please ensure that ALL information is filled in, including a valid e-mail address. **PLEASE NOTE:** This information is for the sole purpose of technical support for your disinfection system and will not be used, or sold, to any other organization for any other purpose.



EPA Establishment  
#088776-CAN-001

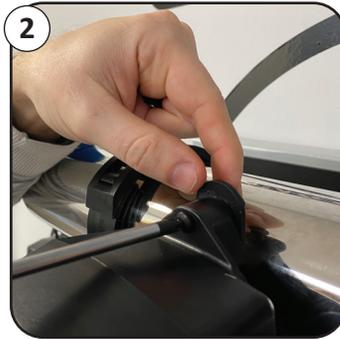
PN: 910571  
Version Date: 05-2023



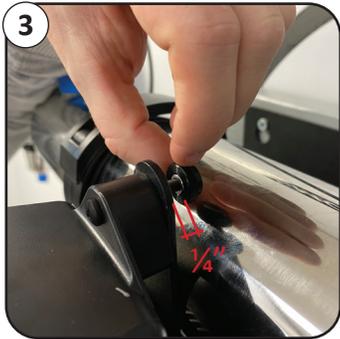
## Splash Cover Installation for Rack Mounted Controller Systems



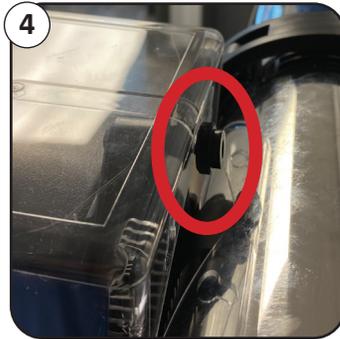
1 Remove **ONLY** the top mounting bolt from controller.



2 Insert **NEW MOUNTING BOLT (B)** included with splash cover.



3 Attach nut **(A)** to bolt, leaving approximately  $\frac{1}{4}$ " inch gap to the bracket.



4 Lower splash cover into the gap and finger-tighten nut.



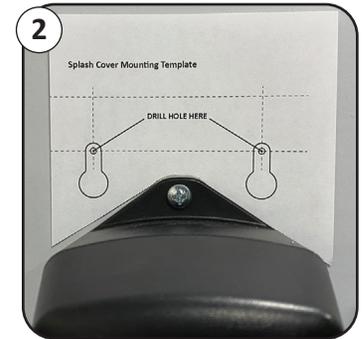
5 Splash cover installation is now complete.



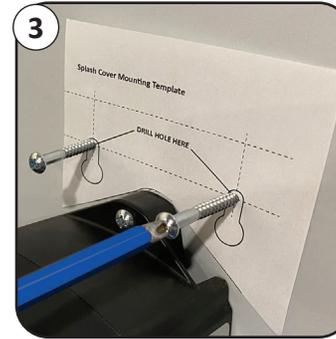
## Splash Cover Installation for Wall Mounted Controller Systems



1 Ensure controller is already mounted.



2 Trim out template and place above controller.



3 Use the template to drill the two holes required for the splash cover.



4 Place the splash cover over the two screws **(C)**.

