

# RW519

## RAIN WATER FILTRATION AND DISINFECTION SYSTEM USER MANUAL



Thank you for purchasing a Rainfresh system.

If you have any questions or concerns before or after the installation, **please contact us !**  
We are committed to ensuring that you are **totally satisfied.**

### QUESTIONS



Canada Toll Free  
**1800 667 8072**  
Toronto and Area  
**(905) 884 9388**  
(Monday to Friday  
8:00 AM to 5:00 PM EST)



### CONTENTS

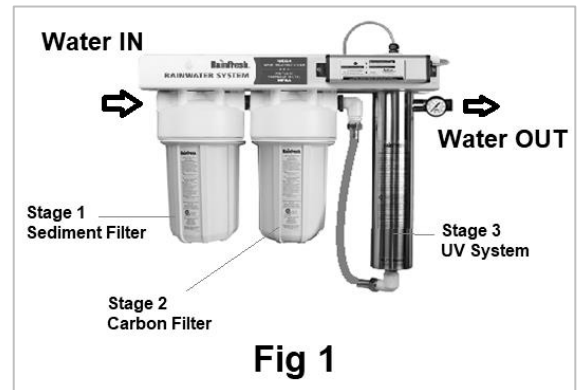
A. Introduction.....	2
B. Safety Instructions.....	2
C. Water Quality Requirements.....	3
D. Installation.....	3
E. Disinfection Procedure.....	6
F. Ballast Features.....	6
G. Operation and Maintenance.....	7
a. Winterizing the system.....	7
H. Troubleshooting.....	9
I. Technical Specifications.....	9
J. Parts List.....	10
K. Warranty.....	10



<b>Date of Installation</b>	
<b>Purchased from</b>	
<b>Installer details</b>	

## (A) INTRODUCTION

Rainfresh RW519 Filtration System makes rain water safe to drink by instantly destroying pathogenic bacteria (such as coliform, E. coli, viruses etc.). It also reduces sediment, chlorine, bad tastes and odours. RW519 utilizes the proven disinfection properties of ultraviolet light (UV) emitted at 254 nm wavelength. UV systems are used by many municipalities in Canada and around the world as a primary disinfectant as it is a natural, non-chemical, environmentally safe technique that does not form any harmful disinfection by-products.



### HOW THE RAINFRESH RW519 SYSTEM WORKS

RW519 features a 3-stage design. The first stage is a 1 micron sediment filter that reduces dirt, rust, sand and other fine particulate matter that rain water can collect from rooftops or cisterns or other storage containers. The second stage is an activated carbon block filter that reduces chlorine, organics taste and odour by >95%. The 3<sup>rd</sup> and final stage is a UV system that instantly destroys bacteria & viruses in the water using germicidal ultraviolet light emitted by a specially engineered UV lamp. Treated water flows out of the chamber and is ready for consumption. See Fig. 1

## (B) SAFETY INSTRUCTIONS



Contains mercury

- UV Lamp contains mercury (Hg).
- Dispose or recycle in accordance with applicable laws.
- For information on safe handling procedures and safe disposal and recycling, consult : <https://www.ec.gc.ca/mercure-mercury/default.asp?lang=En&n=D2B2AD47-1>

- **For use on main cold water line only.**
- Always install on the discharge side of the pump and pressure tank. NEVER INSTALL FILTER HOUSING BETWEEN THE PUMP & PRESSURE TANK as that can cause damage to the unit and/or your pump.
- **Caution:** The rubber O-rings provide a water tight seal between the filter head and sump. It is important that they are properly **seated in the grooves** of the sump or a water leak could occur.
- **To avoid** possible electric shock, extra care should be taken since water may be present near electrical equipment. Unless specifically referred to in these instructions, do not attempt repairs yourself. **Do not** plug the unit in if any electrical surfaces or electrical parts are wet.
- **DO NOT LOOK DIRECTLY AT UV LAMP WHEN ON.** UV light can cause serious burns to eyes and skin.
- **Do not** operate the UV lamp outside the UV disinfection chamber.
- **Do not** use this unit for any purpose other than its intended use for potable water filtration and disinfection. The use of attachments not recommended, approved or sold by the manufacturer may result in improper performance of the unit or an unsafe condition and void the product warranty.
- **Do not** operate the system if it has a damaged electrical cord or plug, is malfunctioning, or has been damaged in any way.
- **Do not touch** the lamp or quartz dome with dirty or moist hands. Hold the lamp and dome by the ends with **soft dry gloves** or cloth.
- Before any cleaning or maintenance on the system, always unplug the unit from the power source.
- Disconnect power cable from the power outlet by holding the plug. Never pull the cord.
- To comply with the National Electrical Code 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).

- Ensure that the lamp connector ground wire is connected to the grounding stud on the chamber.
- Installation of the RW519 system will interrupt electrical grounding continuity of your plumbing system. For directions on restoring the electrical grounding continuity, consult a certified electrician
- Protect your unit from freezing and weather elements.
- **Do not** over tighten metal fittings into plastic filter head or it may crack.
- **Do not** use torch/heat near plastic housing. If necessary, wrap a wet cloth around the pipe and head to absorb heat. All solder joints should be made before joining pipe to the filter head.
- **Do not** install in direct sunlight.
- **Do not** use thread sealing compounds. Use thread seal tape for connections into unit.
- **Do not** use petroleum based lubricants on the unit as that can damage the unit and cause leaks. Use only food grade silicone lubricant available at most retail stores.
- Allow at least six (6) inches below filter for clearance.

○ To ensure continuous protection, **UV LAMP MUST BE REPLACED ANNUALLY.** After 1 year of use, it will no longer provide effective disinfection even though it stays lit.

○ **USE ONLY GENUINE RAINFRESH UV LAMPS.** Use of non-Rainfresh UV lamps can result in unsafe drinking water and will void your product warranty. (see page 8 for details)

## (C) WATER QUALITY REQUIREMENTS

The unit should only be operated with rain water collected in a closed or open storage tank or cistern. If you wish to use this system with a different water supply, please consult Rainfresh before doing so.

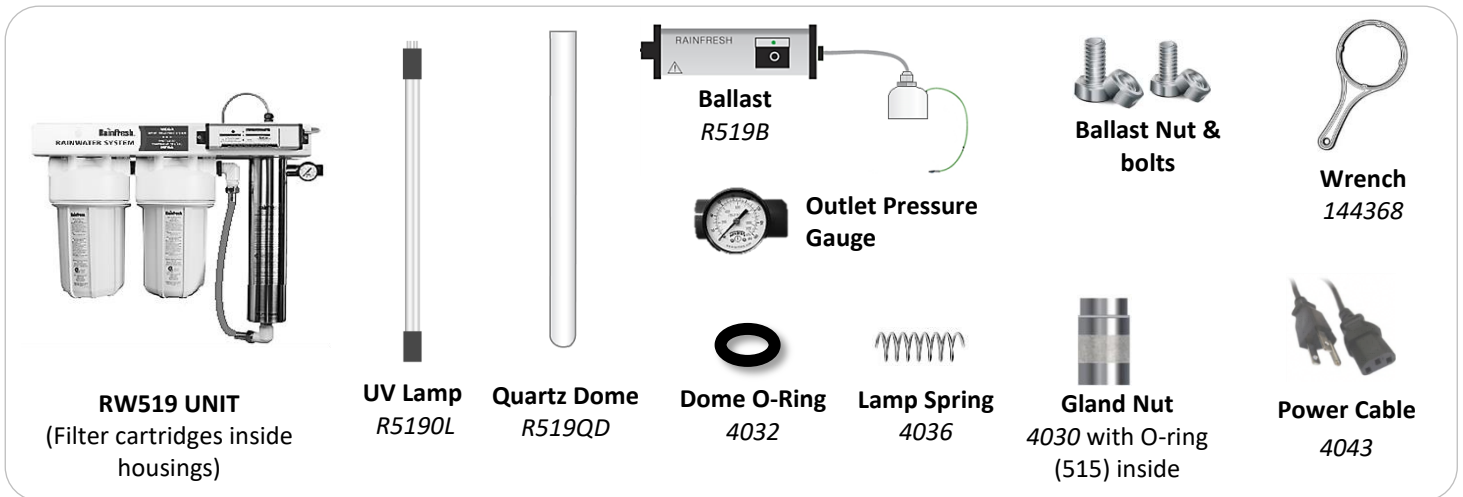
## (D) INSTALLATION

### INSTALLATION NOTES AND CAUTIONS

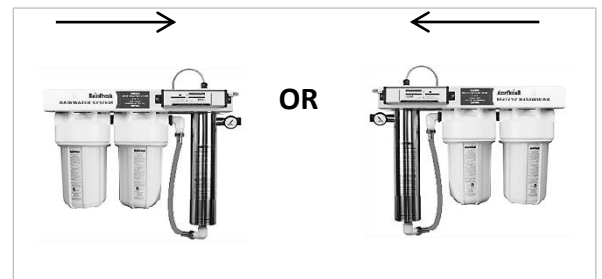
- The RW519 System is designed for installation on the cold water line only at the point of entry (POE). For installation in the Province of Quebec, install the unit to serve a max of 1-2 outlets only, but not serving majority of the premises.
- The system requires a constant power supply of 110V AC.
- It is strongly recommended to have a **dedicated electrical circuit** for the UV system. **A CSA or equivalent certified surge protector must be installed to protect the ballast from electrical surges.** We recommend surge protector rated for a clamping voltage of less than 400 Volts, response time of less than one nanosecond, and energy absorption of at least 600 Joules.
- The RW519 system is designed for maximum water flow rate of 5 US GPM (19 liters per minute). If higher flow rates exist occasionally, it is recommended that a 5 US GPM flow restrictor (Rainfresh model FR5K) be installed so that the water does not exceed the max system flow rate.
- The system should be installed indoors in a protected area where the temperature does not fall below 4°C (40°F).
- It is highly recommended to install **bypass piping** with unions and a shut-off valve around the unit. This way you can still have water in case you need to remove the system for service.
- Provide a minimum **clearance of 2 feet above the unit** for lamp replacement.
- Use only Teflon tape for all connections. Do not use any other sealant on the threads.

## Unpacking the RW519 System

Your RW519 system includes the following items



**REVERSIBLE DESIGN:** The RW519 system can be installed in two orientations. Simply position the unit to follow the water flow direction (left to right or right to left) and attach the electronic ballast in the front using the nuts & bolts included with the unit. The ballast is not attached to the unit and is shipped in the inside box. The outlet pressure gauge comes separate and should be installed on the OUTLET side of the unit.

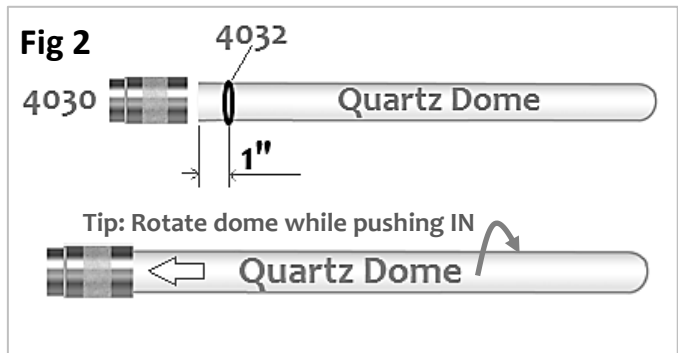


### Fittings Required for Installation (Not Included)

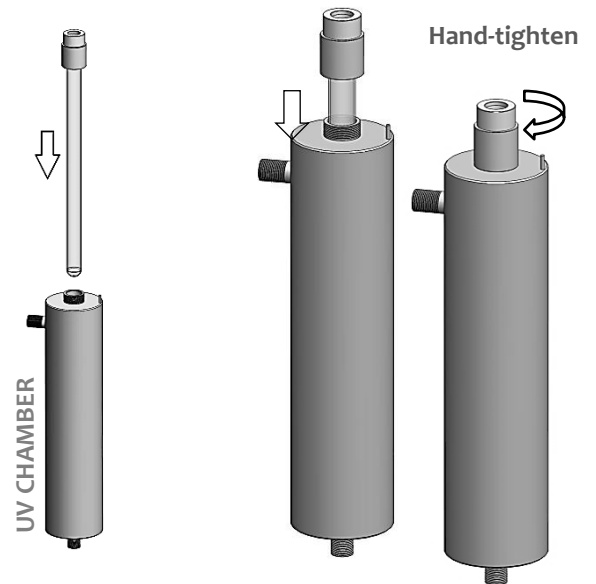
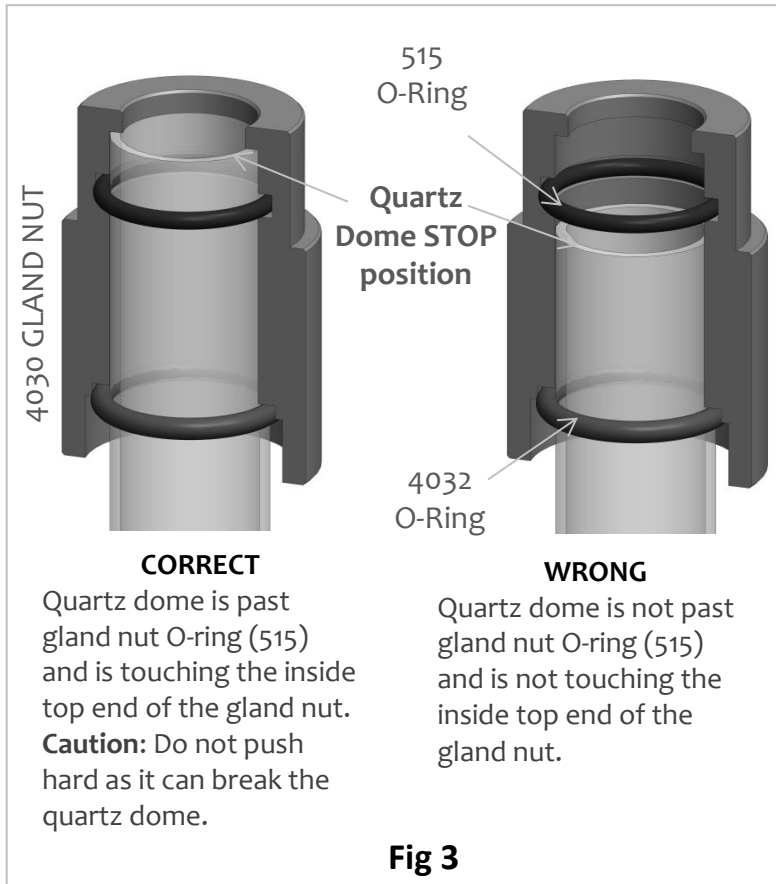
Fittings required for a typical install on 3/4" copper pipe are 1" x 3/4" bushing, 3/4" FNPT female adapter. Depending on the location, you may also need (not necessary) some, 3/4" Tees, 3/4" elbows, 3/4" pipe, 3/4" union couplings and 3/4" ball valves. You may need different fittings if your pipe size or material is different. If you are unsure of what fittings to use, please call Rainfresh. **Note: UV light can degrade plastics over time. If your water pipe is plastic (such as PEX), it is recommended that you use at least 6 to 12 inches of UV-resistant material (e.g. copper) on the outlet of the unit to prevent damage.**

### Installing the RW519 unit.

1. The mounting holes on the RW519 unit are 16" apart so that you can mount it directly on to wall studs with appropriate screws to carry the weight of the unit. **Warning:** Do not mount the unit directly on drywall without appropriate reinforcement.
2. Connect the inlet and outlet of the system to the water pipe.
3. Carefully unpack UV lamp (R519L) and quartz dome (R519QD). **Note: Hold lamp and dome by the ends with soft, dry gloves or cloth.** The gland nut O-ring (515) is in the groove of the gland nut (factory-installed) and the dome O-ring (4032) is in a separate plastic pack.



- Gently slide the dome O-ring (4032) over the top (open end) of the quartz dome to about 1" from the open end (Fig 2)
- Gently insert the quartz dome into the gland nut (4030) and gently rotate the dome while pushing in until it goes past the nut O-ring (515) and touches the inside top end of the gland nut. See Fig 3.

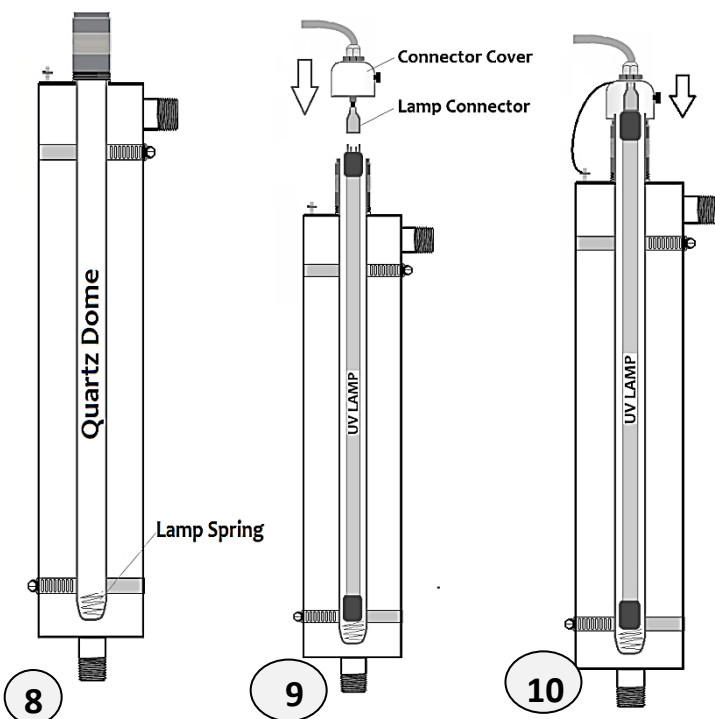


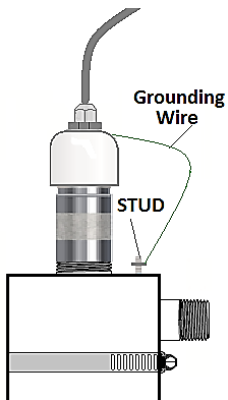
- Carefully slide the quartz dome with gland nut attached into the opening at the top of the UV chamber and **hand-tighten** the gland nut into place. - Do not overtighten the gland nut as it can break the quartz dome. **Note: Broken quartz domes are not covered under warranty.** - Do not use pipe dope or tape on these top threads before attaching gland nut
- Slowly open supply-valve and valves before and after UV system. **Check for leaks. Do not proceed to next step until leaks are fixed.**

8. From the top of the gland nut, drop the lamp spring (4036) into the quartz dome.

9. Holding the top 4-pin end of the lamp, carefully slide the lamp into the quartz dome and attach the lamp pins to the lamp connector. The lamp connector fits over the pins in only one orientation.

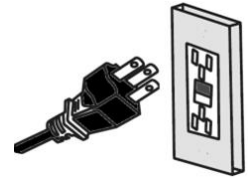
10. Slide the lamp connector cover over the gland nut and tighten the black screw on it.





11. Remove the nut from the ground stud at the top of the unit. Next place the ground wire (green wire with yellow stripes) over the stud and tighten the nut.

12. Connect the power cable (4043) to the ballast and then to the AC supply (with surge protector). The green lamp-on LED will light up followed by three buzzer beeps and three red timer LED flashes. **Your Rainfresh RW519 Rain Water System is now ready for service.**



## (E) DISINFECTION PROCEDURE

Before service begins, all household plumbing lines should be disinfected to prevent the possibility of re-contamination after UV disinfection. You should also disinfect your plumbing system if the power goes out for several hours or more or if the unit has been accidentally shut-off for several hours or more. It is advisable to disinfect the plumbing lines at least once a year.

**The following is a general method for disinfection of plumbing lines. If you are uncertain about the efficacy of this procedure you are advised to contact your local health authority responsible for water safety.**

1. Shut off the supply valve and de-pressurize the lines by opening a tap until it runs dry.
2. Remove the filters from the filter housing and add about 1-2 cups (250-500ml) of unscented household bleach (5 to 6% sodium hypochlorite) to the empty filter housings and put it back on the filter head.
3. Open the supply valve and slowly open a faucet and let the water run until you can smell the chlorine and then shut the faucet off. Repeat the procedure for all hot and cold outlets in the house. Add more bleach as required. Run hot faucets longer to allow the chlorine to come through the hot water tank.
4. Leave the bleach solution in the plumbing system for about 6 to 8 hours preferably overnight.
5. Shut-off the supply valve again and open a faucet to depressurize the system. Open the filter housing and re-install the filter cartridge and then re-attach the filter housing. Make sure that the UV system is ON.
6. Take off aerators (if any) on the faucets and thoroughly flush all outlets until the chlorine smell is minimal.
7. Open the supply valve slowly. You are ready to use the water now.

## (F) BALLAST FEATURES

The micro-processor controlled electronic UV ballast supplied with your Rainfresh RW519 system has both audio and visual alarm indicators to indicate the lamp operation and an integral annual lamp change reminder timer.



**UV Power Source Initialization Sequence:** When AC power is applied to the UV ballast, the lamp is ignited as indicated by the green lamp-ON LED and alarm buzzer consisting of three buzzer beeps and three red timer LED flashes.

**Normal Operation:** During normal operation only the green lamp-ON LED is illuminated.

**Lamp-Change Timer Operation:** At the end of 11 months (one month before end of lamp life), the red lamp-change timer LED will flash and the buzzer will sound indicating that the timer is in a **28-day grace period**. You can silence the buzzer for seven days by pushing the timer button, but the LED will continue to flash. At the end of the 28-day period, the red timer LED illuminates continuously and the buzzer sounds. Pressing the timer button at this point will not silence the buzzer until the lamp is replaced. **The UV lamp is not shut down in this alarm mode.**

**Time Remaining:** When the lamp-change-timer is not in the grace period or lamp change alarm mode, the number of months of lamp life remaining can be determined by pressing the timer push button and counting the number of times the red LED flashes.

**Lamp Failure:** When the UV ballast detects a lamp failure or enters the auto-shut down mode due to abnormal operating conditions, the alarm buzzer sounds and the green lamp-ON LED switches OFF. **Note:** The UV ballast is designed to shut down if the AC input voltage is outside the operating limits. When this happens, a lamp failure alarm will become active. You should unplug the unit from the AC power source wait for fifteen seconds and then reconnect. If the failure was due to out-of-limit AC power, the unit will re-ignite the lamp and operate normally. If not refer to trouble-shooting.

## (G) OPERATION AND MAINTENANCE

Your RW519 system is ON continuously during normal use and will continuously supply with safe water. **(Note:** Do not try to shut off the UV during short periods of non-use (such as overnight) as repeated ON/OFF cycles can shorten the UV lamp and ballast life). To maintain the optimum disinfection performance of the RW519 system:

- UV lamp should be replaced every 9,000 hours (approx 1 year of use). After 9,000 hours, the UV lamp continues to light but its ability to disinfect the water drops below safe limits. **Therefore the lamp MUST BE REPLACED WHEN THE LAMP REPLACEMENT ALARM COMES ON.**
- Clean quartz dome at the time of lamp replacement. If your water exceeds the water quality parameters listed in section C, you should clean and inspect the quartz dome more frequently and clean as necessary.
- Replace pre-filters every 4-6 months

**Winterizing your system:** To winterize the system, unplug the unit first. Drain the pre-filters by removing the sumps and dumping the water. Let the filter cartridges dry out and then reinstall in the housing. To drain the UV, undo the SS flex connector from the bottom until the UV drains completely. Re-attach the flex connector. Leave the UV lamp and dome inside. When turning unit back on, plug the ballast first and slowly allow water into the unit. Wait for about 10 minutes and flush water through for a few minutes before consuming water.

ITEM	MODEL	REPLACEMENT FREQUENCY	CLEANING
Sediment Pre-filter	BC101 or BP1	4-6 months or when pressure across unit drops by 10 psi	
Carbon Filter	BC2		
UV Lamp	R519L	Every 1 year of use	
Filter O-Ring	151122	Annually	
Quartz Dome	R519QD	Every 3 years	At least during every annual lamp change. More frequently if water is hard or has iron, manganese etc.
Dome and Gland Nut O-ring	4032 & 515	Annually	

## USE ONLY **GENUINE** RAINFRESH UV LAMPS

Use only GENUINE RAINFRESH UV Lamps with your UV system. Rainfresh UV lamps are designed with extensive product research and engineering to provide reliable and consistent UV output and performance that ensures the safety of your drinking water. Using non-Rainfresh UV lamps can not only compromise the system performance but also voids your product warranty, electrical and CSA certification, and may result in any one or more of the following issues:

- Unsafe drinking water
- Ballast failure
- Electrical fire

### Use of non-Rainfresh lamps will void all warranty & product certification

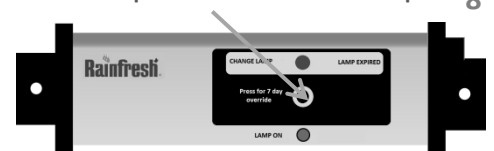
Genuine Rainfresh UV lamps can be identified as follows:



### How to replace the UV Lamp and clean Quartz Dome:

1. Unplug unit from electrical outlet and turn off supply valve before the unit. Open a faucet to depressurize the RW519 system and turn off the valve at the outlet port to isolate RW519 unit. CAUTION: The lamp end can be very hot. Wait several minutes for the lamp to cool down.
2. Unscrew the ground nut and remove the ground wire (green wire with yellow stripes).
3. Loosen the black screw on the lamp connector cover and remove cover from the gland nut.
4. Carefully slide UV lamp slightly out of chamber and hold the lamp end with one hand. Gently pull off the connector with your other hand to disconnect the lamp completely. Slowly remove lamp from the disinfection chamber completely.
5. Remove the quartz dome by loosening the gland nut and carefully extracting from the unit. Remove dome absolutely vertically from its position until the other end comes out. CAUTION: If you bend the dome mid-way, it can break easily and pieces of quartz can fall into the UV chamber. Do not lose the spring.
6. Remove & discard used dome "O" ring. Clean dome gently with a vinegar solution or a household scale-removal product. **Do not use abrasive pads.** A soft cloth or paper towel is recommended.
7. Using a small pointed tool carefully take the gland-nut "O" ring out of the gland nut. Take care not to scratch the gland nut.
8. A dome "O" ring (thicker) and gland nut "O" ring (thinner) are included with the replacement lamp. Slide gland nut "O" ring into the internal groove of the gland nut.
9. Follow instructions 6 to 11 in previous section "Installing the RW519 Unit". Do not plug in ballast yet
10. **Depress timer button while reconnecting ballast to electrical outlet and keep the button depressed until the ballast emits a solid three-second beep.** This will re-set the lamp-change-timer to zero and the 3-second beep will confirm that the re-set was successful

Keep Timer Button pressed while connecting ballast to AC power. Hold until 3 sec beep





## (H) TROUBLESHOOTING

### General Ballast Alarm Conditions

Green LED	Red LED	UV Lamp	Buzzer	Condition likely due to	Action
OFF	ON	OFF	Intermittent	Ballast has received power which is outside the operating limits	Unplug ballast from power source. Wait for 15 seconds and plug back in. Normal operation should begin
ON	FLASHING	ON	Intermittent	Lamp is nearing end of life and is now in grace-period of 28 days	Press re-set button to silence alarm for 7 days. Replace lamp as soon as possible
OFF	OFF	OFF	Intermittent or long beep	Caused by catastrophic failure of ballast either due to power surge or water leak	Replace ballast
OFF	FLASHING	OFF	Intermittent	Ballast failure	Unplug ballast. Wait for 15 seconds and plug back in. If normal ballast function of ballast is not resumed, replace ballast

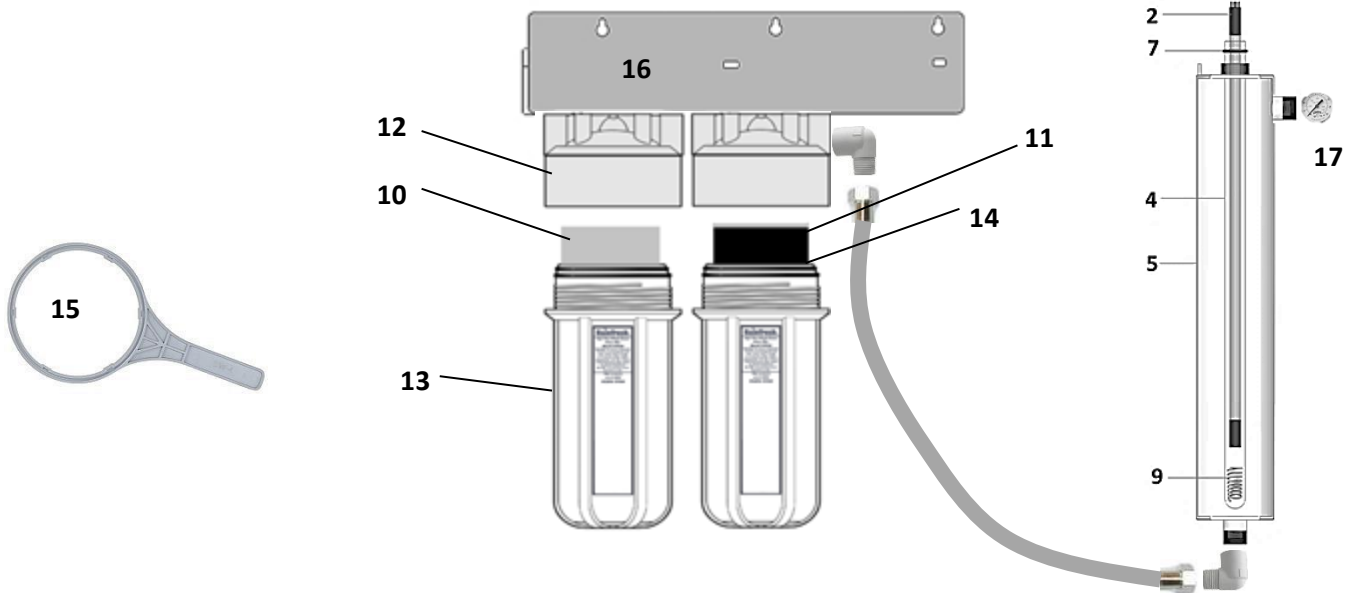
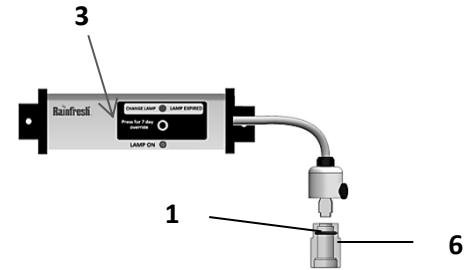
PROBLEM	PROBABLE CAUSE	SOLUTION
Leak at gland nut	Gland nut is loose or O-ring defective	Hand-tighten gland nut & replace O-ring(s)
Condensation outside the UV chamber	High humidity in the environment	This is normal if humid conditions exist. Install dehumidifier to protect ballast. Protect flooring below UV
Hot water coming out of taps/faucets	Water inside UV unit becomes hot after long periods of non-use. You may have oversized the unit for the home	To prevent scalding, before using water after periods of non-use such as overnight, flush water for about 2 minutes. Install a temperature controlled purge valve on the UV outlet
UV lamp ends seem burnt after some time	This is normal	As long as the UV lamp lights, a little burn mark at the ends is normal and there is no need to replace the UV lamp
Sump is difficult to remove	<ul style="list-style-type: none"> <li>Unit may still be under pressure</li> <li>Head seal may be stuck to sump</li> </ul>	<ul style="list-style-type: none"> <li>Close supply valve and open a faucet to release pressure</li> <li>To break the seal, use a pipe on the wrench handle as extra leverage to open the housing. <b>Never use wrench to tighten the sumps.</b> Always lubricate the O-rings with food grade silicone and replace annually</li> </ul>
Leak at pressure relief valve	Debris under vent seal	Replace vent O-ring

## (I) TECHNICAL SPECIFICATIONS

PRODUCT SPECIFICATION	RW519
Suitable for homes with	1-2 bathrooms
Max rated water flow rate	5 US GPM (19 LPM)
UV dose at max rated flow	> 40 mJ/cm <sup>2</sup> @ 85% UVT
AC Supply Voltage	120VAC ; 50/60 Hz, 0.8A max
Power consumption	40 Watt max
Disinfection chamber material	Stainless Steel 304
Operating Pressure psi (kPa)	10 – 100 psi (68.9 – 689 kPa)
Water Temperature Range	4 – 37°C (40 – 99F)
UV Lamp Model	R519
Lamp Service Life	9,000 Hours (Approx. 1 year of use)
Quartz Dome Model / Service Life	R519QD / 3 years
Sediment Pre-filter model/service life	BC101 or BP1 / 4-6 months
Carbon pre-filter model/service life	BC2 / 4-6 months
Inlet/Outlet Port Size	1" FNPT/3/4" Male NPT

## (J) PARTS LIST

Item as Labelled	PART NUMBER	DESCRIPTION	QTY
1	515	Gland Nut O-Ring (Thinner)	1
2	R519L	UV Lamp	1
3	R519B	Ballast, power cord & lamp connector assembly	1
4	R519QD	Quartz Dome	1
5	4000	SS Chamber for R519,R519F/R519	1
6	4030	Gland Nut	1
7	4032	Dome O-Ring (Thicker)	1
8	4043	Ballast Power Cord	1
9	4036	Lamp Spring	1
10	BC101 or BP1	1 micron sediment pre-filter cartridge	1
11	BC2	Activated carbon block pre-filter	1
12	BH010-1	Filter Housing head	2
13	BH020-2	Filter Housing Sump	1
14	BH010-3	Sump O-ring	2
15	BH010-5	Wrench to open filter housings	1
16		Integral Mounting bracket	1
17		Outlet pressure gauge with Tee	1



## (K) WARRANTY

The RW519 System stainless steel housing is warranted to the original Consumer purchaser for a period of seven (7) years, from the date of purchase, against defects in materials or workmanship. Miscellaneous hardware, seals and electrical system, pre-filter housings and bracket are warranted to the original Consumer purchaser for a period of one (1) year, from the date of purchase, against defects in material or workmanship. The Ultraviolet lamp is warranted for a period of thirty (30) days from the date of purchase against defects in materials and workmanship. The company's obligation under this warranty shall consist of repair or replacement, at its option, of any part found by company inspection to be defective, provided that the product has not been misused, abuse, altered or damaged by Consumer with respect to the original installation, as determined by the company. This warranty will not apply if water passing through the RW519 System meets conditions specified in this manual. This limited Warranty applies only to a unit when returned to the Warrantor at the owner's expense and in accordance with shipping instructions received from the Warrantor. This warranty does NOT cover, and is intended to exclude, any liability on the part of Envirogard for any incidental damages, consequential damages, labour charges or any other costs incurred in connection with the purchase, installation, use, maintenance or repair of the water filter whether under this warranty or any other warranty implied by law. Some provinces/states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from province/state to province/state. This warranty applies only to water filter/systems purchased in Canada or the U.S.A.

## ENVIROGARD PRODUCTS LIMITED

446 MAJOR MACKENZIE DRIVE EAST, RICHMOND HILL, ON L4C 1J2, CANADA  
 TEL : (905) 884 9388 HELPLINE: 1800 667 8072 WEB: www.rainfresh.ca

© COPYRIGHT . ENVIROGARD PRODUCTS LIMITED 2019 . ALL RIGHTS RESERVED



Jul 2019