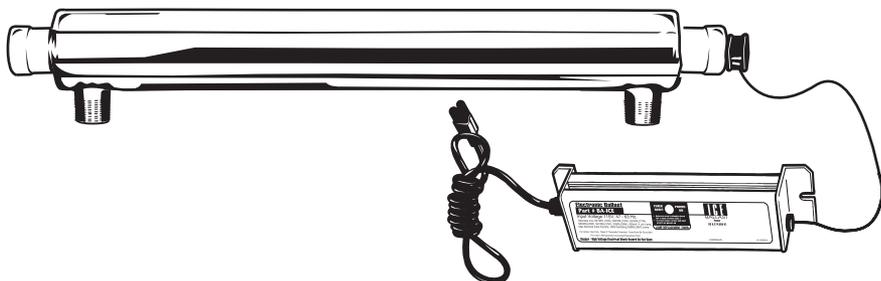




ULTRAVIOLET DISINFECTION SYSTEM



SQ-PA, S1Q-PA, S2Q-PA, S5Q-PQ, S8Q-PA, S12Q-PA

Installation Instructions & Owner's Manual

Manufactured in Canada by:



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SAFETY INSTRUCTIONS:

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

1. **READ AND FOLLOW ALL SAFETY INSTRUCTIONS.**
2. **DANGER** - To avoid possible electric shock, special care should be taken since water is present near electrical equipment. Unless a situation is encountered that is explicitly addressed by the provided maintenance and troubleshooting sections, do not attempt repairs yourself, refer to an authorized service facility.
3. Carefully examine the disinfection system after installation. It should not be plugged in if there is water on parts not intended to be wet.
4. Do not operate the disinfection system if it has a damaged cord or plug, if it is malfunctioning or if it is dropped or damaged in any manner.
5. Always disconnect water flow and unplug the disinfection system before performing cleaning or maintenance activities. Never yank the cord to remove from an outlet grasp the wall plug and pull to disconnect.
6. Do not use this disinfection system for other than intended use (potable water applications). The use of attachments not approved, recommended or sold by the manufacturer / distributor may cause an unsafe condition.
7. Intended for indoor use only. Do not install this disinfection system where it will be exposed to the weather or to temperatures below freezing. Do not store this disinfection system where it will be exposed to the weather. Do not store this disinfection system where it will be exposed to temperatures below freezing unless all water has been drained from it and the water supply has been disconnected.
8. Read and observe all the important notices and warnings on the water disinfection system.
9. If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less Amperes or Watts than the disinfection system rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
10. **SAVE THESE INSTRUCTIONS.**

Warning: The light given off by this unit can cause serious burns to unprotected eyes and skin. Never look directly at a burning UV lamp. When performing any work on the UV Disinfection System always unplug the unit first. Never operate the UV system while the UV lamp is outside of the UV Chamber.

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



“NEW FEATURES”

The *Newly Revised* ICE Ballast you have just purchased is an upgraded version of the original ICE Ballast. This new ICE Ballast features an audible lamp replacement reminder. After one year of lamp operation an alarm will sound reminding you to replace your UV lamp in order to ensure optimum UV disinfection levels.

The lamp replacement alarm function can be temporarily disabled for seven days, by depressing the timer reset SWITCH/LED. After seven days the alarm will sound again and may be delayed three more times for a total of 28 days. After the fourth delay the lamp replacement alarm will sound continuously until the lamp is changed and the alarm timer has been reset (see below).

RESETTING THE REPLACEMENT LAMP ALARM TIMER:

After installing the replacement UV lamp, apply power to the ballast while holding the reset SWITCH/LED until you hear the three second beep, at this time release the reset switch. Your timer has now been reset. In approximately one year the alarm will sound again reminding you to replace your UV lamp.

ADDITIONAL FEATURES INCLUDED IN THE NEW ICE BALLAST:

- improved transient protection
- improved surge protection
- improved EMI filtering
- improved alarm circuitry to warn of fuse failure
- improved lamp starting
- brownout protection
- conformal coated circuit board to assist with condensation protection
- Patent US 6,274,988 B1

WATER CHEMISTRY:

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

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

** Where total hardness is less than 7 gpg, the UV unit should operate efficiently provided the quartz sleeve and/or sensor probe is cleaned periodically. If total hardness is over 7 gpg, the water should be softened.*

If your water chemistry contains levels in excess of those mentioned above, proper pre-treatment is recommended to correct these water problems prior to the installation of your UV disinfection system. These water quality parameters can be tested by your local dealer, or by most private analytical laboratories. Proper pre-treatment is essential for the UV disinfection system to operate as intended.

INSTALLING YOUR UV DISINFECTION SYSTEM:

- CAUTION, electronic ballast must be connected to a grounded receptacle and the lamp connector ground wire connected to the stainless steel reactor chamber.
- The disinfection system is designed to be mounted horizontally or vertically at the point-of-use or point-of-entry depending on the specific flow rate of the unit.

Note: The ideal installation is vertical with the lamp connector on top. This is to prevent water damage from occurring on the lamp pins and lamp connector.

- The ballast should be mounted either above or beside the reactor chamber. This will prevent moisture caused by condensation from entering the ballast enclosure, causing a potential for ballast failure.
- The complete water system, including any pressure or hot water tanks, must be sterilized before start up by flushing with chlorine (household bleach) to destroy any residual contamination.
- For safety purposes, the disinfection system should be connected to a ground fault interrupt circuit.
- The disinfection system is intended for indoor use only, do not install disinfection system where it may be exposed to the weather.
- Install the disinfection system on cold water line only.
- If treating the entire house, install the disinfection system before any branch lines.
- A 5 micron sediment filter must precede the disinfection system. Ideally, the disinfection system should be the last treatment the water receives before it reaches the faucet.

1. For shipping purposes, the UV lamp is shipped in a separate cardboard tube. Carefully remove the UV lamp from the shipping tube being careful not to touch the "glass" portion with your fingers. Insert the UV lamp into the quartz sleeve and chamber making sure the connection end is inserted last. Mount the disinfection system to the wall with the supplied clamp (1 clamp on all 1/2 and 1 gpm units and 2 clamps on all 2, 5, 8 and 12 gpm units). If required, a double-end clamp can be purchased from your dealer to affix to an RO membrane.
2. If the disinfection system is to be hard plumbed, make sure you leave enough clearance in front of the lamp connector to facilitate lamp service (a length equal to the length of the unit should suffice).

3. Various connection methods can be used to connect the water source to the disinfection system, however union type connectors are recommended. The use of a flow restrictor device is strongly recommended when installing your disinfection system in order that the manufacturers recommended flow rate not be exceeded. These flow restrictors are available from your dealer. In addition, the use of a by-pass assembly is recommended for emergency use of untreated water when your disinfection system is being serviced.

Note: When the UV unit is returned to service after being on by-pass the complete water system must be sterilized once again with chlorine (household bleach) to destroy any contamination that may have entered the distribution system while on by-pass. **DO NOT SOLDER CONNECTIONS WHILE ATTACHED TO THE DISINFECTION SYSTEM AS THIS COULD DAMAGE THE O-RING SEALS.**

4. Prior to connecting the power source, check all connections to ensure that they are indeed secure, turn on water supply and check for any leaks. If satisfied that there are no leaks, proceed with the following steps.
5. To properly ground the stainless steel generating chamber, attach the green wire coming from the power source to the grounding lug on the UV chamber. Remove the green cap nut and slide the eyelet connector onto the screw. Fasten the cap nut to the screw with a 5/16" wrench.
6. The power source provided with your disinfection system must be located within (5) feet of an electrical outlet. **DO NOT USE AN OUTLET THAT CAN BE SWITCHED OFF (IE. A WASTE DISPOSAL OUTLET).** Attach the lamp connector to the UV lamp and press into the aluminum gland nut. Plug the ballast into the outlet and ensure the POWER-ON LED is illuminated. The audible ballast will enter a self test mode when power is first applied to verify ballast operation.

Note: If ballast enters alarm condition, power must be removed for 30 seconds to allow ballast to reset.

Note: As the system requires time to reach its full operating capacity, please allow the disinfection system to operate 3 - 5 minutes prior to using the water from the unit. In addition, to clear any air or debris from the system, open the faucet and allow water to run through the disinfection system for 2 - 3 minutes (when using an RO application, run the water for 30 - 45 seconds).

OPERATING & MAINTENANCE INSTRUCTIONS:

NOTE: PRIOR TO PERFORMING ANY WORK ON THE DISINFECTION SYSTEM, ALWAYS DISCONNECT THE POWER SUPPLY FIRST.

1. Regularly inspect your disinfection system to ensure that the UV lamp is operating.
2. Replace the UV lamp with a new lamp after one year of continuous use to ensure a high bacteria and virus kill rate. It should be noted that the UV lamp should be ON continuously as repeatedly turning the lamp on and off will severely shorten the lamp life and allow bacteria to pass through without being affected by the UV.
3. To replace the UV lamp, first disconnect power. Disconnect the lamp connector by carefully separating it from the gland nut (use the aid of a slot screwdriver if required). Disconnect lamp connector from lamp and carefully remove the UV lamp. Replace the new lamp being careful not to touch the new UV lamp "glass" with your fingers as oils may impair UV transmission. If contact does occur, clean lamp with alcohol and reconnect lamp connector. Carefully replace lamp into stainless steel cell. Press lamp connector into aluminum gland nut. Plug power source into outlet. Verify POWER-ON LED is illuminated and ballast audible start-up sequence operates.
4. If the water contains any hardness minerals (calcium or magnesium), iron or manganese, the quartz sleeve will require periodic cleaning. To remove the quartz sleeve, first remove the UV lamp as outlined in step 3. and follow the following steps:
 - a) Shut off water supply and drain all lines.
 - b) Remove the lowest connection on the disinfection system and drain the UV chamber (use a small bucket under the unit to prevent a spill).
 - c) Remove aluminum gland nuts from chamber. (do not allow quartz sleeve to fall)
 - d) Carefully remove o-rings from the quartz sleeve. As the o-ring may tend to adhere to the quartz sleeve, it is recommended to replace the o-rings annually.
 - e) Clean the quartz sleeve with a cloth soaked in vinegar or some other mild acid and then rinse.
 - f) Re-assemble the quartz sleeve in the UV chamber allowing the sleeve to protrude an equal distance from both ends of the UV chamber.
 - g) Wet the o-rings and slide onto each end of the quartz sleeve and reassemble the gland nuts (hand tight is sufficient).
 - h) Re-tighten all connections, turn on water and check for leaks.
 - i) Re-install the UV lamp and lamp connector as per prior instructions.
 - j) Plug in ballast and verify the POWER-ON LED is illuminated and ballast power-up sequence operates.

Note: If the system is put on a temporary by-pass or if it becomes contaminated after the disinfection system, it will be necessary to shock the system with household bleach for a full 20 minutes before resuming the use of the water.

MANUFACTURER'S WARRANTY:

Manufacturer warrants the ultraviolet disinfection system hardware and electrical systems to be free from defects in material and workmanship for a period of five (5) years from the date of purchase by the original owner (consumer) on a pro-rated basis. Manufacturer warrants the ultraviolet lamps and to be free from defects in material and workmanship for a period of one (1) year and the reactor chamber for a period of seven (7) years. The warrantor will at its option and expense, either repair or replace such units subject to the following conditions, exceptions, and exclusions. No other warranties with respect to the units other than those expressly included in this one year warranty, have been made by the Warrantor.

CONDITIONS, EXCEPTIONS, AND EXCLUSIONS

The foregoing limited Warranty is subject to the following terms and conditions:

1. Water passed through the unit must fall within the following parameters:

- a) Iron: < 0.3 ppm (0.3 mg/L)
- b) Hardness*: < 7 gpg (120 mg/L)
- c) Turbidity: < 1 NTU
- d) Manganese: < 0.05 ppm (0.05 mg/L)
- e) Tannins: < 0.1 ppm (0.3 mg/L)
- f) 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 and/or sensor probe is cleaned periodically. If total hardness is over 7 gpg, the water should be softened. **Warranty will be void, if the proper steps are not taken to ensure that these impurities are not present.***

2. This limited Warranty shall not apply to any unit which has been repaired or altered by anyone other than the Warrantor or by a person authorized by the Warrantor, nor to any units which have been subject to misuse, neglect, or accident.

3. This limited Warranty runs exclusively to the original Consumer and with respect to the original installation only.

4. WARRANTOR SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

5. This limited Warranty excludes the cost of labour in removing any defective unit or installing any replacement unit. 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.

PARTS BREAKDOWN:

LAMPS

S212RL.....	FOR SQ-PA UNIT
S287RL.....	FOR S1Q-PA UNIT
S330RL.....	FOR S2Q-PA UNIT
S463RL.....	FOR S5Q-PA UNIT
S810RL.....	FOR S8Q-PA UNIT
S36RL	FOR S12Q-PA UNIT

QUARTZ SLEEVES

QS-212.....	FOR SQ-PA UNIT
QS-001.....	FOR S1Q-PA UNIT
QS-330.....	FOR S2Q-PA UNIT
QS-463.....	FOR S5Q-PA UNIT
QS-810.....	FOR S8Q-PA UNIT
QS-012.....	FOR S12Q-PA UNIT

BALLASTS (IEC POWER CORDS SOLD SEPARATELY)

BA-ICE-1F	FOR ALL (100-130V./50-60HZ.) UNITS
BA-ICE-2F	FOR ALL (200-250V./50-60HZ.) UNITS

IEC POWER CORDS FOR BALLASTS

260010	NORTH AMERICAN (NEMA 5-15P), 3-PRONG GROUNDED
260011	CONTINENTAL EUROPEAN (CEE 7/7), 2 PIN WITH GROUND, "SCHUKO"
260012	UK VERSION (BS 1363), 3 PRONG GROUNDED (5 AMP FUSE)
260013	AUSTRALIAN VERSION (AS 3112), 3 PRONG GROUNDED
260019	NO CONNECTOR, 3 WIRE, BARE LEADS

O RINGS

OR-212.....	FOR ALL UNITS
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ALUMINUM GLAND NUTS

RN-001.....	FOR ALL UNITS
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SPECIFICATIONS:

SPECIFICATIONS		SQ-PA	S1Q-PA	S2Q-PA	S5Q-PA	S8Q-PA	S12Q-PA
Flow Rate		2 L/min (1/2 gpm) (0.12m ³ /Hr.)	4 L/min (1 gpm) (0.24m ³ /Hr.)	7.5 L/min (2 gpm) (0.45m ³ /Hr.)	19 L/min (5 gpm) (1.14m ³ /Hr.)	30 L/min (8 gpm) (1.80m ³ /Hr.)	45 L/min (12 gpm) (2.73m ³ /Hr.)
Dimensions	Length	28cm (11")	35.5cm (14")	47cm (18.5")	56cm (22")	90cm (35")	94cm (37")
	Width	5.2cm (2")	6.5cm (2.5")	6.5cm (2.5")	6.5cm (2.5")	6.5cm (2.5")	8.9cm (3.5")
	Height	5.2cm (2")	6.5cm (2.5")	6.5cm (2.5")	6.5cm (2.5")	6.5cm (2.5")	8.9cm (3.5")
	Diameter	5.2cm (2")	6.5cm (2.5")	6.5cm (2.5")	6.5cm (2.5")	6.5cm (2.5")	8.9cm (3.5")
Shipping Weight		1.8kg (4lbs.)	2.3kg (5lbs.)	2.7kg (6lbs.)	2.7kg (6lbs.)	4.5kg (10lbs.)	5.4kg (12lbs.)
Electrical	Voltage	100-130V./ 50-60Hz ¹	100-130V./ 50-60Hz ¹	100-130V./ 50-60Hz ¹	100-130V./ 50-60Hz ¹	100-130V./ 50-60Hz ¹	100-130V./ 50-60Hz ¹
	Power Consumption	12	16	19	26	39	42
	Lamp Watts	10	14	17	24	37	39
Maximum Operating Pressure		8.62 bar (125 psi)	8.62 bar (125 psi)	8.62 bar (125 psi)	8.62 bar (125 psi)	8.62 bar (125 psi)	8.62 bar (125 psi)
Ambient 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)	2-40°C (36-104°F)
Inlet/Outlet Port Size		1/4" MNPT	1/4" MNPT	1/2" MNPT	3/4" MNPT	3/4" MNPT	Combo 3/4" FNPT 1" MNPT
Visual "Power-On"		Yes	Yes	Yes	Yes	Yes	Yes
Audible Lamp Failure		Yes	Yes	Yes	Yes	Yes	Yes
Chamber Material		304 S.S. ²	304 S.S. ²	304 S.S. ²	304 S.S. ²	304 S.S. ²	304 S.S. ²

1. 200-250V./50-60 Hz., also available 2. 316L stainless steel available on request