

OWNER'S MANUAL

ULTRAVIOLET WATER PURIFIERS

Model

SSE&SDE SERIES

Installation, Operation and Maintenance

Congratulations on the purchase of your ultraviolet (UV) water purifier 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 required to protect your drinking water from microbiological contaminants.

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PART 1 INFORMATION

1.1 General Information
















- The UV water purifier is intended for indoor use only. The UV water purifier should be protected from the elements and from temperatures below freezing. The ambient temperature, in the area surrounding the water purifier, should be 2 °C-40 °C (36 °F -104 °F)
- Electrical power supplied to the UV water purifier MUST match power requirements listed on the water purifier. Use of a voltage surge protector is recommended.
- CAUTION:UV water purifier will need to be installed into approved ground fault circuit interrupt (GFCI) receptacle. Where a 2-prong or unprotected 3-prong receptacle is encountered, it must be replaced by a properly grounded Ground Fault Circuit Interrupt (GFCI) receptacle. Installation must be in accordance with the National Electrical Code and any local codes and ordinances by a qualified electrician.
- The UV water purifier should be located in a dry, well-lit area, which provides enough room to perform routine maintenance. This includes a minimum distance of one chamber length from the chamber end, to allow for cleaning and/or the changing of the lamp and quartz sleeve .
- The UV water purifier should always be located closest to the point of use. This reduces the chance of the purified water being re-contaminated by bacteria .

The UV water purifier should be located after all other water devices, such as De-ionizers, Water Softeners, Carbon Filters, Pre-Filters, Reverse Osmosis, Pressure Tanks, and Pumps. This reduces the chance of the purified water being re-contaminated by bacteria in any of these units.

1.2 Safety information

POTENTIAL HAZARDS: Read all labels and tags attached to the system. Personal injury or damage to the system could occur if not observed.

CAUTION: Lamp and quartz sleeve are easily damaged. Exercise care when handling.

<p>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.</p> <p> This symbol indicates there is Mercury present.</p> <p>This is the safety alert symbol. Obey all safety messages that follow this is symbol to avoid potential injury. When on the equipment, refer to the Operational and Maintenance manual for additional safety information</p> <p> This symbol indicates a risk of electrical shock and/or electrocution exists</p> <p>This symbol indicates the marked equipment may contain a component that can eject forcibly obey all procedures to safely depressurize.</p> <p> This symbol indicates the system is under pressure.</p> <p> This symbol indicates there is a potential UV hazard. Proper protection must be worn</p> <p> This symbol indicates the marked item could be hot and should not be touched without care</p> <p> This symbol indicates there is a potential for VERY hot water when flow is started.</p>	<p> This symbol indicates not to store any combustible or flammable material close to the system.</p> <p> This symbol indicates that the contents of the transport package are fragile and the package should be handled with care</p> <p> This symbol indicates safety glasses with side protection is required for protection against UV exposure</p> <p> This symbol indicates gloves must be worn</p> <p> This symbol indicates safety boots must be worn</p> <p> This symbol indicates the operator must read all available documentation to perform required procedures</p> <p> This symbol indicates the plumber must use copper piping</p> <p>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)</p> <p> Ultraviolet radiation risk. Please avoid exposure to eyes and skins. Do not look directly at light. Read and follow the installation guideline and user manual before operation.</p> <p></p>
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Warning: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

PART 1 INFORMATION



DANGER

Failure to follow these instructions will result in serious injury or death.

- **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.
- **DO NOT** operate the 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 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 system where it will be exposed to the weather or to temperatures below freezing.
- **DO NOT** store this system where it will be exposed to the weather.
- **DO NOT** store this 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.



WARNING

- This system contains a UV Lamp. Do not operate the UV Lamp when it is removed from the 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.
- 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.



CAUTION

Failure to follow these instructions could result in minor or moderate injury.

- Carefully examine the 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" of copper pipe on the outlet of your UV chamber.
- **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

- The UV lamp inside the system is rated at an effective life of approximately 8000 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.
- Read and understand the Owner's Manual before operating and performing any maintenance on this equipment.

PART 2 PRINCIPLE OF OPERATION

The radiation has been carefully conceived to provide adequate UV dosage throughout the UV chamber. The dosage, as it applies to ultraviolet radiation, is a function of time and the intensity of ultraviolet radiation to which the water is exposed. The exposure time, in seconds, is the total time it takes the water to flow through the purification chamber exposing it to the UV lamp. Exposure time is related to the flow rate; the higher the flow rate, the lower the exposure time or the lower the flow rate, the higher the exposure time. The operation of the SSE&SDE Series is as follows:

- Water enters the purifier and flows into the annular space between the quartz sleeve and the chamber wall.
- The LED indicator light, located on the ballast, provides visual indication of UV I lamp operation.
- Water leaving the purifier is instantly ready for use, no further contact time is required.

2.1 Limitation of Use

The water purifier is intended for the use with visually clear water, not colored, cloudy or turbid. See "Water Quality" section. The UV Water purifier is NOT intended for the treatment of water that has an obvious contamination or intentional source, such as raw sewage; nor is the unit intended to convert wastewater to safe drinking water.

Applications: Drinking water, residential and commercial water purification etc.

2.2 Water Quality

Water quality plays a major role in the transmission of ultraviolet rays. It is recommended that the water does not exceed the following maximum concentration levels:

PART 2 PRINCIPLE OF OPERATION

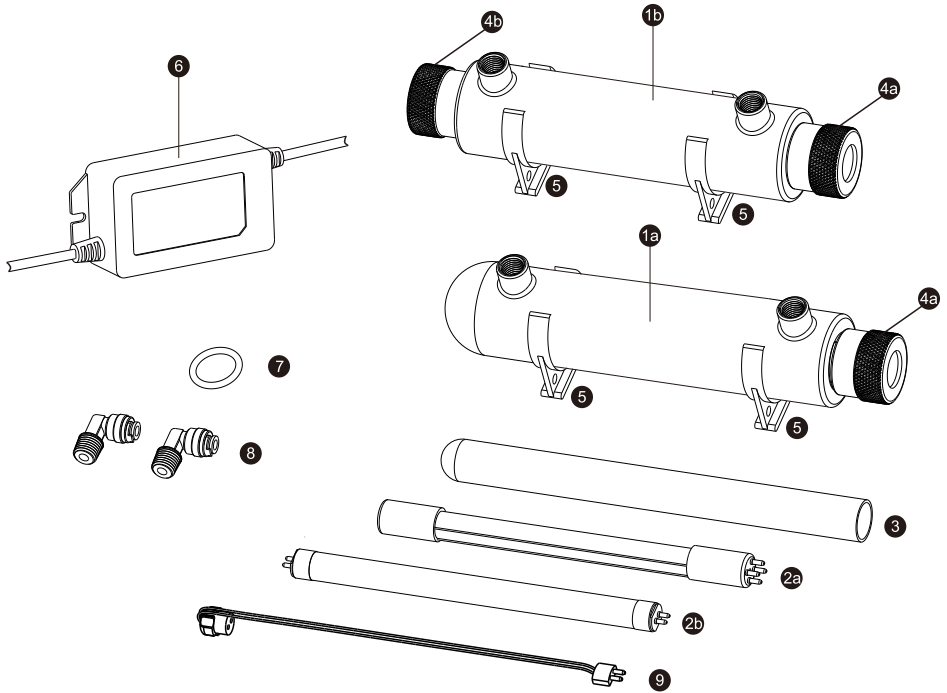
Maximum Concentration Levels	
Turbidity < 1 NTU	Manganese 0.05 mg / L
Total Suspended Solids 10 mg /L	pH: 6.5 - 9.5
Color: None	Hardness :6 GPG or 102.6 PPM
Iron: 0.3 mg /L	Tannins: < 0.1 ppm (0.1 mg / L)

Effectively treating water with higher concentration levels than listed above can be accomplished, but may require added measures to improve water quality to treatable levels. If, for any reason, it is believed the ultraviolet transmission is not satisfactory, contact the supplier.

CAUTION: As with any water handling device, the UV water purifier should be located in an area where any possible condensation or leakage from the system, any purifier accessory and/or plumbing will not result in damage to the area surrounding the water purifier. For added protection, it is recommended that a suitable drain pan be installed under the purifier. The drain pan must be plumbed to an adequate, free flowing drain to prevent water damage in event of a leak. There are numerous leak detection/flood stop devices, available on the market today, designed to stop flow of water, reducing the chance of water damage due to leakage. For more details regarding leak prevention and/or limiting damages due to leaks please contact your local plumber.

PART 3 INSTALLATION

3.1 Components



1a Stainless steel chamber, SSE series only

2a UV lamp with 4 pins,G10Q lamp base (optional)

3 quartz sleeve

4b closed end nut, dual end only

6 UVC ballast

8 quick fitting, for chamber with 1/4"port only

1b Stainless steel chamber, SDE series only

2b UV lamp with 2 pins,G5 Lamp base(optional)

4a open end nut, SSE & SDE series chamber both

5 clamp

7 O-ring

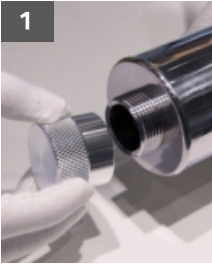
9 high temperature wire ,for uv lamp 2 pins only

3.2 Unit Assembly for 2 pins lamp

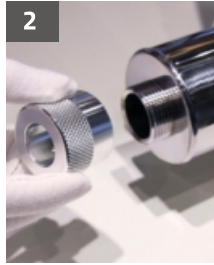
Open package to check all components inside:

Reactor Chamber, UV Lamp, Quartz Tube, O-rings, Electronic Ballast.

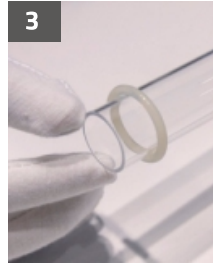
Make sure the Quartz Tube and UV Lamp are clean before installation (clean with alcohol or mild detergent). Wear soft non-abrasive gloves to keep any finger marks away from them



Remove the closed end nut from reactor chamber closed end. For SDE series chamber only.



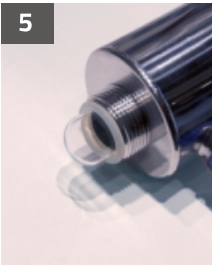
Remove the open end nut from reactor chamber open end.



Install o-ring onto the open end of quartz tube (~12mm from the edge).



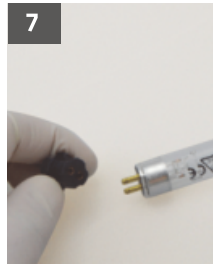
Insert the quartz tube into the reactor chamber.



Install o-ring onto the closed end of quartz tube. For SDE series chamber only



Hand-screw closed end nut on the reactor chamber (closed end of quartz tube) to protect the o-ring, do not over tighten. For SDE series chamber only



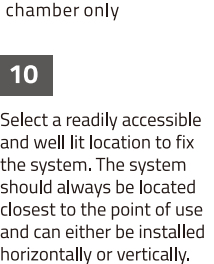
Connect 2-pin Electrical Socket with UV Lamp 2 pins tightly.



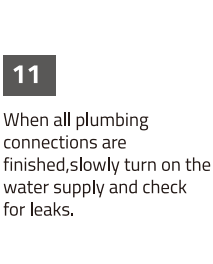
Carefully insert the UV lamp into the quartz tube through open end nut.



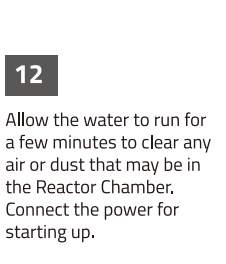
Install the cover cap and hand-tighten onto open end nut.



Select a readily accessible and well lit location to fix the system. The system should always be located closest to the point of use and can either be installed horizontally or vertically.



When all plumbing connections are finished, slowly turn on the water supply and check for leaks.



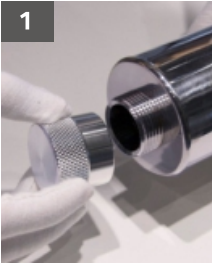
Allow the water to run for a few minutes to clear any air or dust that may be in the Reactor Chamber. Connect the power for starting up.

3.2 Unit Assembly for 4 pins lamp

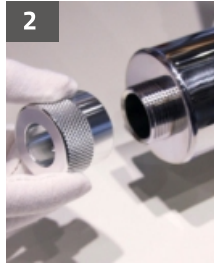
Open package to check all components inside:

Reactor Chamber, UV Lamp, Quartz Tube, O-rings, Electronic Ballast.

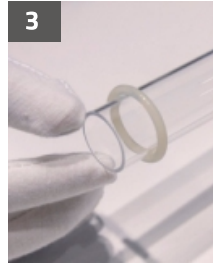
Make sure the Quartz Tube and UV Lamp are clean before installation (clean with alcohol or mild detergent). Wear soft non-abrasive gloves to keep any finger marks away from them



Remove the closed end nut from reactor chamber closed end . For SDE series chamber only.



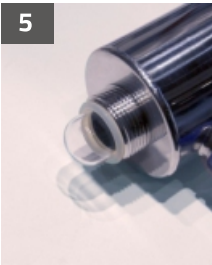
Remove the open end nut from reactor chamber open end.



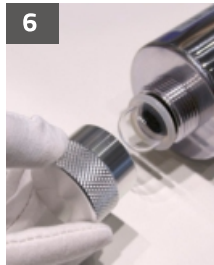
Install o-ring onto the open end of quartz tube (~12mm from the edge).



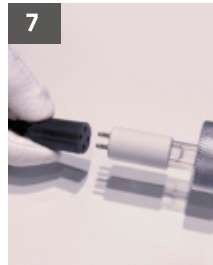
Insert the quartz tube into the reactor chamber.



Install o-ring onto the closed end of quartz tube. For SDE series chamber only



Hand-screw closed end nut on the reactor chamber (closed end of quartztube) to protect the o-ring, do not over tighten. For SDE series chamber only



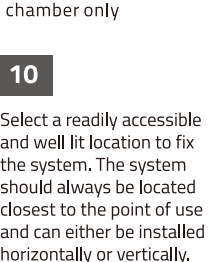
Connect the lamp socket with uv lamp pins tightly.



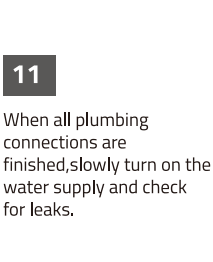
Carefully insert the UV lamp into the quartz tube through open end nut.



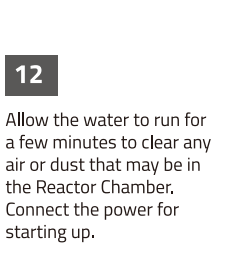
Install the cover cap and hand-tighten onto open end nut .



Select a readily accessible and well lit location to fix the system. The system should always be located closest to the point of use and can either be installed horizontally or vertically.



When all plumbing connections are finished,slowly turn on the water supply and check for leaks.



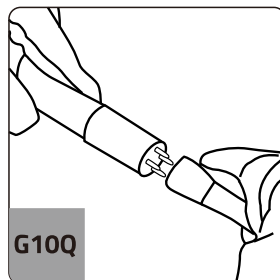
Allow the water to run for a few minutes to clear any air or dust that may be in the Reactor Chamber. Connect the power for starting up.

PART 4 OPERATION

4.1 Lamp connection

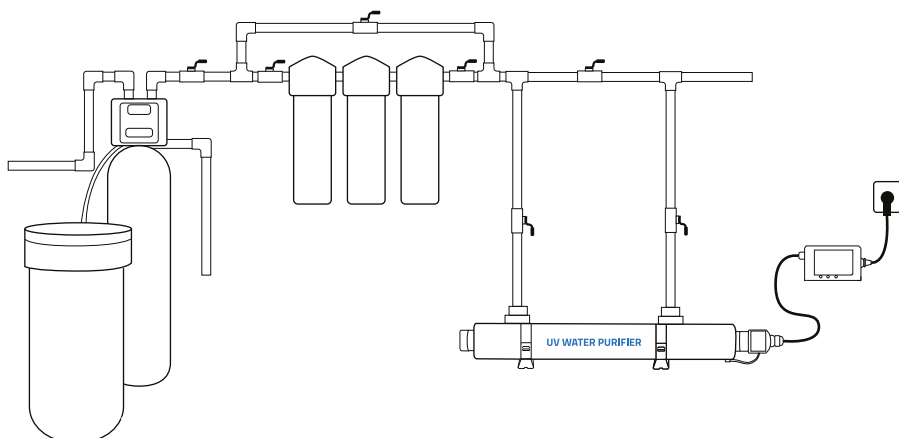
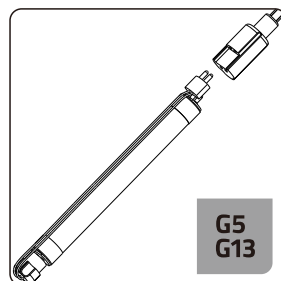
4.1.1 G10Q Lamp connection

Connect the lamp socket of the ballast output line to the four-pin of the lamp. The interface between the G10Q lamp socket and the lamp connector a fool-proof connection way. Pay attention to the hole distance and align it so that it can be inserted. Or the lamp holder rotates 90 degrees. When connecting the lamp to the lamp socket, hold the ceramic lamp connector part of the lamp with your hand, and do not touch the glass of the lamp to prevent it from breaking.



4.1.2 G5/G13 Lamp connection

First connect the female end of the high-temperature cable with one end of the lamp G5/G13 lamp cap, then insert the male end of the high-temperature cable into the two spaces beside the ballast lamp socket, and finally insert the other end of the lamp G5/G13 lamp cap into the ballast.



PART 5 TROUBLESHOOTING

Troubleshooting Guide

Symptom	Possible Causes	Solutions
High Bacteria Counts	Quartz Sleeve is stained or dirty	Clean the quartz sleeve and eliminate source of staining problem
	Change in feed water quality	Have source water tested to ensure that water quality is still within allowable limits for UV system
	Contamination in water after UV system	It is imperative that effluent water stream be shocked with chlorine (bleach) before water leaves UV system purification system must have a bacterial free distribution system to work effectively
Heated Product Water	Common problem caused by infrequent use of water	Run water until it returns to ambient temperature
Water Appears Milky	Caused by air in the water lines	Run water until air is purged
Unit Leaking Water	Problem with o-ring seal	Ensure o-ring and washer is in place.Clean them then re-install, replace them if necessary
	Condensation on reactor chamber caused by excessive humidity & coldwater	Check location of disinfection system and control humidity
	Inadequate inlet/outlet ports connections	Check thread connections. reseal with Teflon tape and re-tighten
System Shutting Down intermittently	Interrupted power supply	Ensure system has been installed on its own circuit, as other equipment may be drawing power away from UV(ie.Pump or fridge)
		UV system should not be installed on a circuit which is incorporated into a light switch
Lamp Failure Alarm on – New Lamp	Loose connection between lamp base and socket	Disconnect lamp from socket and reconnect, ensuring that a tight fit is accomplished
	Moisture build up in connector may keep lamp and socket from making a solid connection	Eliminate chance of any moisture getting to the socket and/or lamp pins

If questions still remain after completing a troubleshooting procedure, please contact the manufacturer.

Additional Guidelines

- Recheck the installation before plug the uv water purifier into power.
- Do not proceed to install the equipment when UV Lamp or Sleeve Tube is broken, buy one again and continue.
- UV water purifier System is designed for continuous operation and frequent switching will reduce Ultraviolet radiation and service life.
- If this unit falls into the water, turn main power off and then retrieve it. Do not attempt to use this system if it has been submerged.
- Do not operate this unit if it has a damaged cord or plug, if it is malfunctioning or if it has been dropped or been damaged in any manner.
- The UV system should be installed after the filter on the return line.
- Always disconnect the water supply and completely drain the water purifier if it will be subjected to temperatures below freezing for extended periods of time.

Note: To save the energy, turn off the power and water supply if you do not use the equipment for a long time.

PART 7 MAINTENANCE & INSPECTION

MAINTENANCE

The water purifier is designed to operate with a minimal amount of maintenance, providing the water quality does not exceed maximum concentration levels, see “Water Quality” in the “Principle of Operation” section. Ordinary maintenance consists of:

- Lamp replacement is recommended every 8,000 hours of operation, approximately 12 months of continuous service.
- Cleaning of the quartz sleeve, when conditions warrant. It is recommended that the inspection of quartz sleeve be performed after one month of use. If quartz sleeve is found to be coated (not clear), then frequency of cleaning must be done more often. Deposits or discoloration on the surface of quartz sleeve are caused by excessive levels of the subject contaminant within the water that is in contact with the quartz sleeve. Most often false deposits on the quartz sleeve are caused by an excess of calcium (hardness), iron or manganese.

INSPECTION

- Regularly inspect the water purifier to ensure that the UV lamp is still in operation.
- An LED indicator light, located on the ballast, provides visual indication of UV lamp operation. This provides an indication of lamp operation and does not indicate the level of ultraviolet intensity or transmission through the water.
- Ballasts have a built-in audio alarm which will indicate lamp failure.
- To ensure proper operation of the water purifier, regular biological testing should be performed on a schedule recommended by local public health authorities, or at minimum; at installation, quarterly for the first year of service and annually, at lamp replacement, for the life of the water purifier.
- Additional testing should be performed whenever modifications, change or additions are made to plumbing system, pumps, well source water etc. to ensure adequate performance under new condition.
- As with any water purifier installation, routine maintenance is necessary to ensure your equipment is operating correctly. Regular inspection must also include the inspection of the ground to ensure grounding wires are secure to both the water purifier and grounding point as originally installed. Regular inspection must also include confirmation that approved ground fault circuit interrupt (GFCI) receptacle is still operational and that water purifier is plugged into this GFCI. Any components which are damaged, or broken should be replaced.

PART 8 SPECIFICATIONS

UV water purifier with 4 pins UV lamp

Model#	SSE-004	SSE-006	SSE-012	SSE-016	SSE-025	SSE-030	SSE-035	SSE-040	SSE-055
	SDE-004	SDE-006	SDE-012	SDE-016	SDE-025	SDE-030	SDE-035	SDE-040	SDE-055
Lamp power	4W	6W	12W	16W	25W	30W	35W	40W	55W
Flow rate	0.07m ³ /hr	0.1m ³ /hr	0.2m ³ /hr	0.4m ³ /hr	1.4m ³ /hr	1.8m ³ /hr	2m ³ /hr	2.3m ³ /hr	2.7m ³ /hr
	0.3GPM	0.5GPM	1GPM	2GPM	6GPM	8GPM	9GPM	10GPM	12GPM
Quartz tube code	QT5-185	QT5-245	QT5-300	QT5-360	QT5-580	QT5-900	QT5-940	QT5-875	QT5-940
In/outlet port	1/4"female	1/4"female	1/4"female	1/2"male	1/2"male	3/4"male	3/4"male	3/4"male	3/4"male
Ballast Code	ZAP2-170-6	ZAP2-170-6	ZAP2-425-16	ZAP2-425-16	ZAP2-425-28	ZAP2-425-35	ZAP2-425-35	ZAP2-425-55	ZAP2-425-55
Chamber material	304SS (316L SS available on request), single or dual end optional								
Maximum operating pressure	8bar(116psi)								
Ambient water temperature	2-40 °C(36-104F°)								
Voltage	110V or 220V 50/60Hz								

UV water purifier with 2-pin philips UV lamp

Model#	SSE-004	SSE-006	SSE-011	SSE-016	SSE-025	SSE-030	SSE-055
	SDE-004	SDE-006	SDE-011	SDE-016	SDE-025	SDE-030	SDE-055
Lamp power	4W	6W	11W	16W	25W	30W	55W
Flow rate	0.07m ³ /hr	0.1 m ³ /hr	0.2m ³ /hr	0.4m ³ /hr	1.4m ³ /hr	1.8m ³ /hr	2.7m ³ /hr
	0.3GPM	0.5GPM	1GPM	2GPM	6GPM	8GPM	12GPM
Quartz tube code	QT5-185	QT5-245	QT5-245	QT5-360	QT8-498	QT8-955	QT8-955
In/outlet port	1/4"female	1/4"female	1/4"female	1/2"male	1/2"male	3/4"male	3/4"male
Ballast Code	ZAP2-170-6	ZAP2-170-6	ZAP2-425-16	ZAP2-425-16	ZAP2-610-25	ZAP2-370-30	ZAP2-770-55
Lamp base	G5	G5	G5	G13	G13	G13	G13
Chamber material	304SS (316L SS available on request), single or dual end optional						
Maximum operating pressure	8bar(116psi)						
Ambient water temperature	2-40 °C(36-104F°)						
Voltage	110V or 220V 50/60Hz						

PART 9 WARRANTY

We warrant that this product will be free from defects in material and workmanship for a period of one year from the date of shipment thereof or the product's total rated life, whichever first occurs. Within the warranty period we shall repair or replace such products, which are returned to us with shipping charges prepaid, and which are determined by us to be defective. This warranty will not apply to any product, which has been subjected to misuse, negligence, or accident; or misapplied; or modified; or repaired by unauthorized persons; or improperly installed.

The Buyer shall inspect the product promptly after receipt and shall notify us at our main office in writing of claims, including claims of breach of warranty, within thirty (30) days after the Buyer discovers or should have discovered the facts upon which the claim is based. Failure of the Buyer to give written notice of a claim within the time period shall be deemed to be a waiver of such claim.

The provisions of the above warranty are our sole obligation and exclude all other remedies or warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose, whether or not purposes or specifications are described herein. We further disclaim any responsibility whatsoever to the customer, or to any person, for injury to person, damage to, or loss of property or value caused by any product which has been subjected to misuse, negligence, accident; or modified or repaired by unauthorized persons; or improperly installed.

Under no circumstances shall manufacturer be liable for any incidental, consequential or special damages, losses or expenses arising from the contract for this product, or in connection with the use of, or inability to use, our product for any purpose whatsoever.