

Ultimate™

GERMICIDAL ULTRAVIOLET WATER PURIFIERS

Models U4, U7, U9 & U15

Installation, Operation & Maintenance

Read and Follow All
Safety Instructions.
Save These Instructions.



ATLANTIC ULTRAVIOLET
CORPORATION® SINCE 1963

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Germicidal Ultraviolet – Equipment & Lamps

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Owner's Manual

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These instructions generally describe the installation, operation and maintenance of the **Ultimate™** line of water purifiers, Models U4, U7, U9 and U15. Questions that are not specifically answered by these instructions should be directed to the Factory.

Atlantic Ultraviolet Corporation® takes all possible precautions when packaging equipment to prevent damage. Carefully inspect and report all damage upon receipt of product. Do not install damaged equipment.


Follow all instructions on all labels and tags. Carefully inspect all packing materials before discarding to prevent the loss of accessories, mounting hardware, spare parts or instructions.


The information and recommendations contained in this publication are based upon data collected by the Atlantic Ultraviolet Corporation® and are believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. Specifications and information are subject to change without notice.





SAFETY WARNINGS


- All personnel should be alerted to the potential hazards indicated by the product safety labeling on this unit.
- The following conventions are used to indicate and classify precautions in this manual and on product safety labeling. Failure to observe precautions could result in injury to people or damage to property.

 This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

 **DANGER** Danger indicates an **IMMINENTLY** hazardous situation, which, if not avoided, **WILL** result in death or serious injury.


 **WARNING** Warning indicates a **POTENTIALLY** hazardous situation, which, if not avoided, **COULD** result in death or serious injury.

 **CAUTION** Caution indicates a **POTENTIALLY** hazardous situation, which, if not avoided, **MAY** result in minor or moderate injury.


 **CAUTION** Caution used without the safety alert symbol indicates a potentially hazardous situation, which, if not avoided, may result in property damage.


 This symbol/pictorial is used to identify an **ELECTRICAL SHOCK** or **ELECTROCUTION** hazard.

 This symbol/pictorial is used to identify an **ULTRAVIOLET LIGHT** hazard.

 This symbol/pictorial is used to identify the need to wear approved ultraviolet blocking eyewear.





 This symbol/pictorial is used to identify the need to wear approved ultraviolet blocking face shield.

 This symbol/pictorial is used to identify the need to wear protective gloves.

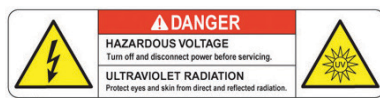
 This symbol/pictorial is used to identify components which must not be disposed of in trash

SAFETY INSTRUCTIONS

 **WARNING** To guard against injury, basic safety precautions should be observed, including the following:

1. Read and follow **ALL** safety instructions.
2. Do not use this water purifier for other than its intended purpose as described in this manual.
3. Do not alter design or construction.
4. Do not remove any labels or devices.
5.  **DANGER** To prevent the risk of severe or fatal electrical shock, special precautions must be taken since water is present near electrical equipment. **Always disconnect power before performing any service or maintenance.**
6.  **WARNING** Avoid exposure to direct or reflected germicidal ultraviolet rays. **Germicidal ultraviolet rays are harmful to the eyes and skin.**
7. Intended for indoor use only. The water purifier should be protected from the elements and from temperatures below freezing.
8. Do not operate water purifier if lamp cable, lamp connection, power cord and/or plug are damaged, or if any other damage to the water purifier is visible or suspected
9. Electrical power supplied, to the water purifier, **MUST** match power requirements listed on the water purifier.
10.  **WARNING** Plug the purifier only into an **APPROVED GROUND FAULT CIRCUIT INTERRUPT (GFCI) RECEPTACLE.**
11.  **WARNING** Do not operate without proper electrical ground.
12. Do not exceed water purifier's maximum rated flow capacity.
13. Do not exceed maximum operating pressure of 100 PSI.
14. Read and follow all notices and warnings on the water purifier.
15. **SAVE THESE INSTRUCTIONS.**

SAFETY LABELS



Danger Label: Hazardous Voltage and Ultraviolet Radiation (70-0038)



Location of Danger Label (70-0038)

CAUTION

It is the user's responsibility to determine and validate the suitability of this equipment for use in the user's system or process.

No warranty or representation is made by the manufacturer with respect to suitability or performance of this equipment or to the results that may be expected from its use.

The user should periodically inspect, clean as necessary and confirm the presence and good legibility of the product safety labels. Contact the factory for replacement labels in the event that any of the labels are missing or illegible.

PRODUCT APPLICATION

CONSTRUCTION

- The water purifier is designed to mount vertically.
- The water purifier's chamber is passivated and electropolished type 304 Stainless Steel.
- The water purifier has a flow control valve inserted in the inlet fitting of the chamber.
- Translucent plug provides indication of germicidal lamp operation.

PRINCIPLE OF OPERATION

The **Ultimate™** design has been carefully conceived to provide adequate germicidal dosage throughout the disinfection chamber. The dosage, as it applies to ultraviolet disinfection, 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 disinfection chamber exposing it to the germicidal 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 ultraviolet intensity is the amount of energy, per unit time, emitted by the germicidal lamp. The dosage is the product of ultraviolet intensity and the exposure time. The operation of the **Ultimate™** is as follows:

- Water enters the purifier and flows into the annular space between the quartz sleeve and the chamber wall.
- Suspended microorganisms are exposed to the ultraviolet rays emitted by the germicidal lamp.
- The LED indicator light, located on the ballast, and the translucent plug on top of chamber provides visual indication of germicidal lamp operation.
- Water leaving the purifier is instantly ready for use, no further contact time is required.

LIMITATION OF USE

The water purifier is intended for the use with visually clear water, not colored, cloudy or turbid. See “**Water Quality**” section below. The 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 microbiologically safe drinking water.

WATER QUALITY

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

Table 1 - 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)
UV Transmission	>85% per cm*

* Contact Factory for recommendations on applications where UV transmission is < 85%

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 factory.

UNPACKING

- Remove the **Ultimate**TM Ultraviolet Water Purifier from its shipping carton.
- Atlantic Ultraviolet Corporation[®] takes all possible precautions when packaging this unit to prevent damage. Carefully inspect the disinfection chamber, lamp cable, lamp connection, power cord and plug for damage, report all damage immediately. Do not assemble or operate if there is any damage, visible or suspected.
- Germicidal lamp is packed separate in a cardboard tube, to ensure maximum protection in shipping. Keep aside until ready for installation.
- Quartz sleeve is packed separate in a cardboard tube, to ensure maximum protection in shipping. Keep aside until ready for installation.
- Carefully inspect all packing materials to prevent the loss of accessories, mounting hardware, and spare parts.
- Do not discard packing materials until unit is assembled and check out is complete.

The **Ultimate**TM Ultraviolet Water Purifier includes:

- 1 - Disinfection Chamber
- 1 - **STER-L-RAY**[®] Germicidal Ultraviolet Lamp
- 1 - **Surelite**[®] Ballast manufactured for **Ultimate**TM
- 1 - **CRYSTAL CLEAR**TM Quartz Sleeve
- 1 - O-Ring
- 1 - Teflon[®] Washer
- 1 - **Promate**TM Static Gland Nut
- 2 - Mounting Brackets (Upper & Lower)
- 1 - Bracket Nut
- 1 - Owner's Manual
- 1 - Grounding Kit

INSTALLATION

LOCATION

1. The water purifier is intended for indoor use only. The water purifier is designed to mount vertically. The 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 between 35° F and 100° F.
2. The water purifier must be connected to the cold water line only. Inlet water temperature should not exceed 100° F.
3. Electrical power supplied to the water purifier **MUST** match power requirements listed on the water purifier. Use of a voltage surge protector is recommended.
4. **▲ CAUTION** Install water purifier within 48" of a known good ground. 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.
5. The water purifier should be located in a dry, well-lit area, which provides enough room to perform routine maintenance. The **Ultimate**TM is designed to mount in a vertical position, with the gland end up. Unit must be mounted to a secure wall or structure using the brackets provided. It is not recommended to have the unit solely supported by the plumbing to the unit. (The quartz sleeve and lamp are removed from the gland end.) Allow a service area of at least one chamber length from the gland end, for replacement of the lamp or cleaning/replacing quartz sleeve, as well as a minimum of 6" on the opposite end of the water purifier. Minimum clearance to the floor 18"
6. Choose a location for your **Ultimate**TM unit that is isolated from vibration. Vibration will damage lamp and lead to premature system failure.
7. The water purifier should be located closest to the point of use. This eliminates the possibility of purified water being re-contaminated by bacteria in the water distribution system after purification.
8. If your system is subject to water hammer conditions, it is recommended that you install a water hammer suppressor. Water hammer may cause damage to the O-Ring seal.
9. **CAUTION** As with any water handling device, the purifier should be located in an area where any possible condensation or leakage from the purifier, accessories and/or plumbing will not result in damage to the purifier or to the area surrounding the 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 the event of a leak. There are numerous leak detection/flood stop devices, available on the market today, designed to stop the 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 the factory. (Continued on Page 6)**

10. The 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.
11. Flow Direction: Water enters the unit through the lower fitting and exits through the upper fitting. The flow control is mounted in the lower (inlet) fitting.
12. Installation requires a 5-micron sediment filter be installed, in line, prior to the water purifier. The sediment filter will stop or trap any particulates from entering the water purifier. Particulates may cause deposit on the quartz sleeve as well as interfere with the purifier's ability to disinfect the water. The sediment filter may also help to reduce the amount of routine cleaning of the quartz sleeve.
13. Shut off valves and unions should be installed on both the inlet and outlet sides of the water purifier. The use of bypass valves is not recommended. The shut off valves allow the purifier to be isolated from the water supply, which is required when removing the quartz sleeve.

DIMENSIONAL DATA

Figure 1 – Dimensional Drawing

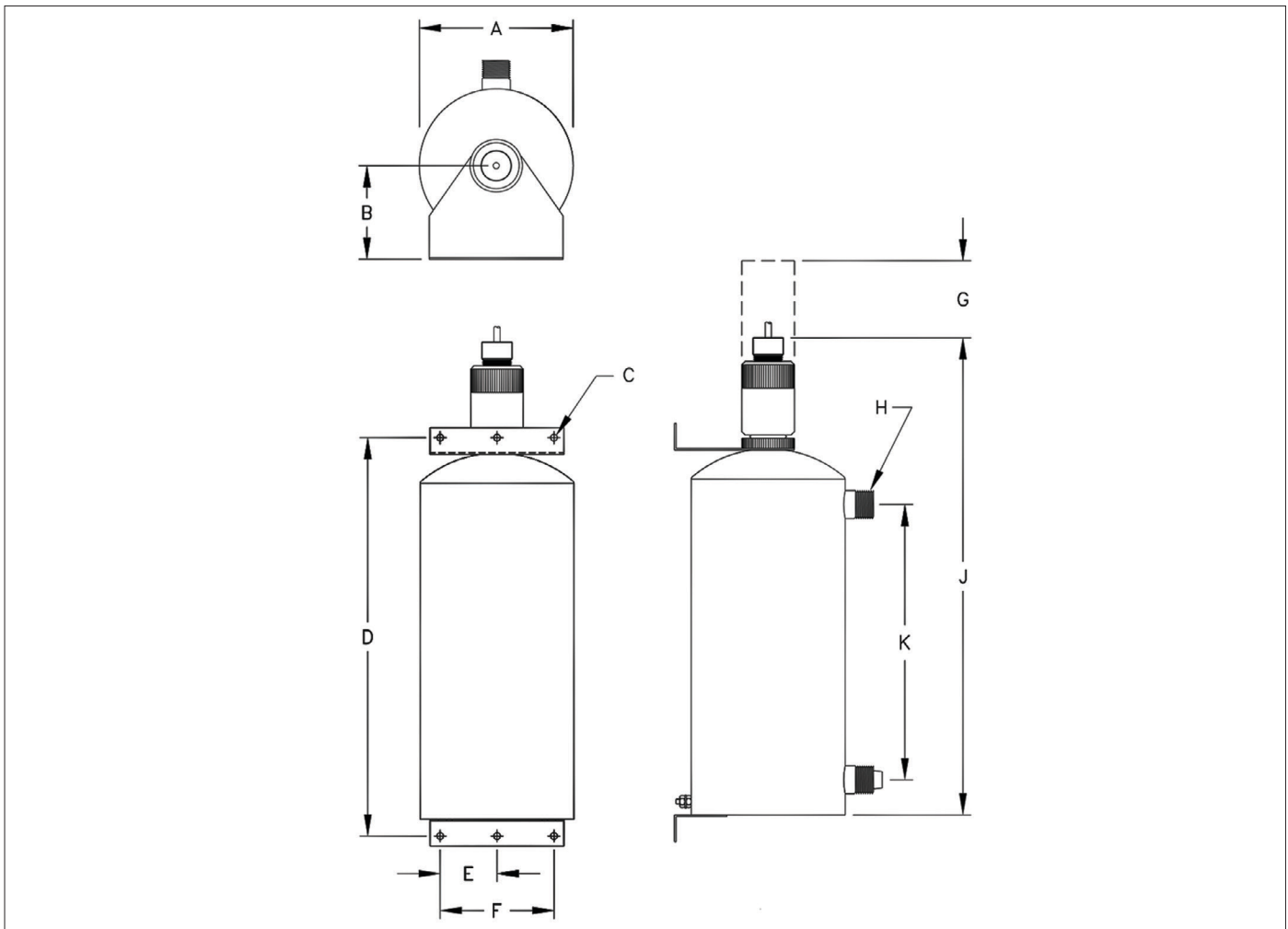
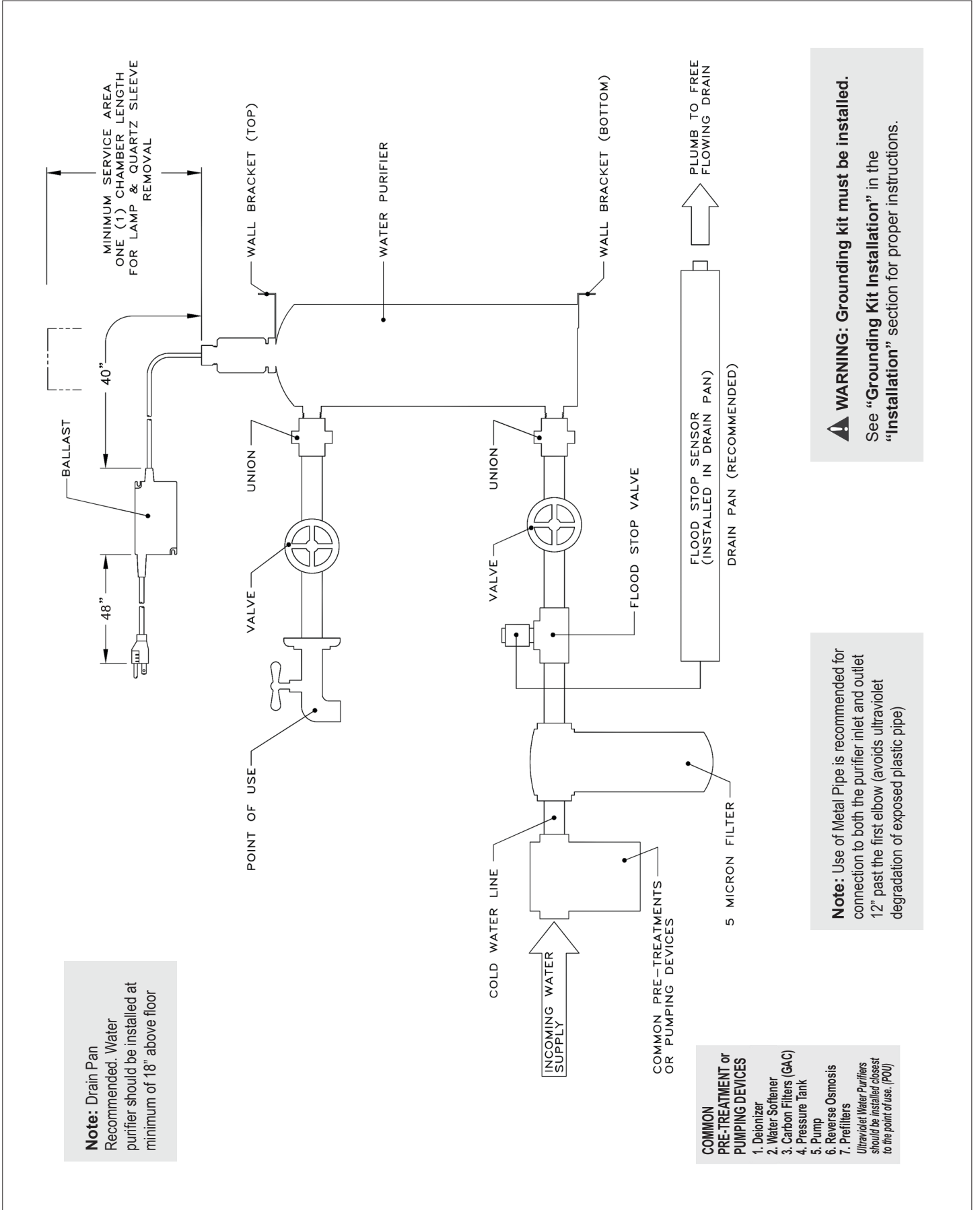


Table 2 – Ultimate® Dimensional Data

Model	A	B	C	D	E	F	G	H	J	K
U4	3-7/8" Dia.	2-7/8"	1/4" Dia.	14-11/16"	1-1/2"	3"	14-11/16"	3/4" MNPT	17-5/8"	10-3/4"
U7	5-3/4" Dia	3-1/2"	1/4" Dia.	15-1/8"	2-1/8"	4-1/4"	14-3/4"	3/4" MNPT	17-7/8"	10-9/16"
U9	5-3/4" Dia.	3-1/2"	1/4" Dia.	19-3/8"	2-1/8"	4-1/4"	18-15/16"	3/4" MNPT	22-1/16"	14-17/32"
U15	5-3/4" Dia.	3-1/2"	1/4" Dia.	33-5/8"	2-1/8"	4-1/4"	33-3/8"	1" MNPT	36-1/2"	28-1/2"

All specifications, dimensional data, etc are approximate and subject to change without notice.

Figure 2 – Recommended Installation



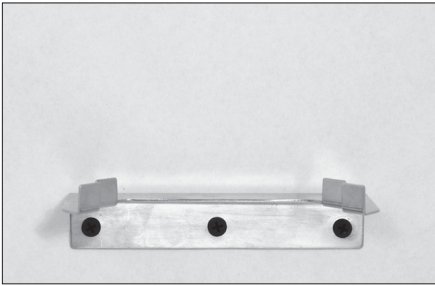
Note: Drain Pan Recommended. Water purifier should be installed at minimum of 18" above floor

- COMMON PRE-TREATMENT or PUMPING DEVICES**
1. Deionizer
 2. Water Softener
 3. Carbon Filters (GAC)
 4. Pressure Tank
 5. Pump
 6. Reverse Osmosis
 7. Prefilters
- Ultraviolet Water Purifiers should be installed closest to the point of use. (POU)*

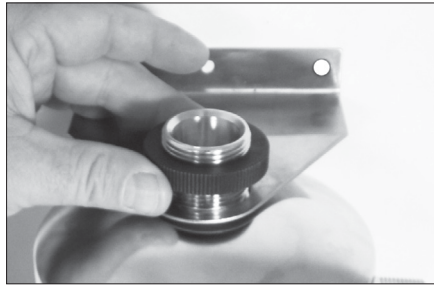
Note: Use of Metal Pipe is recommended for connection to both the purifier inlet and outlet 12" past the first elbow (avoids ultraviolet degradation of exposed plastic pipe)

WARNING: Grounding kit must be installed. See "Grounding Kit Installation" in the "Installation" section for proper instructions.

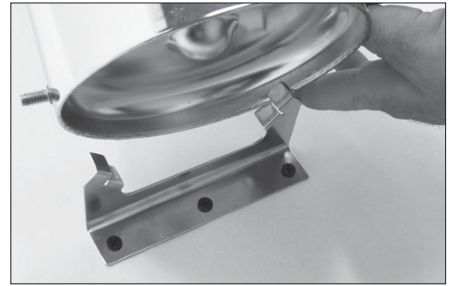
INSTALLATION - STEPS 1 TO 10



Step 1 - Install bottom bracket



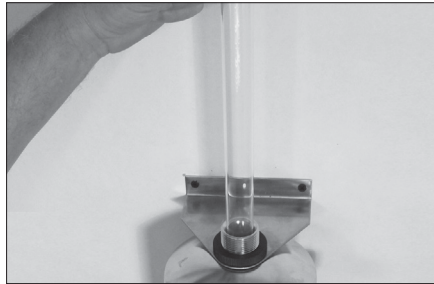
Step 2A - Install top bracket and bracket nuts



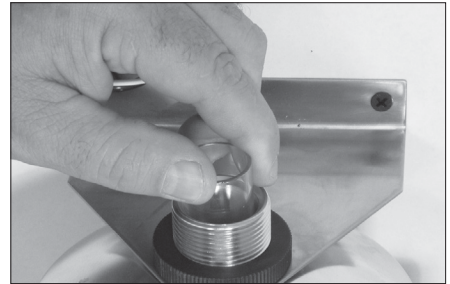
Step 2B - Place chamber & top bracket assembly onto the bottom bracket



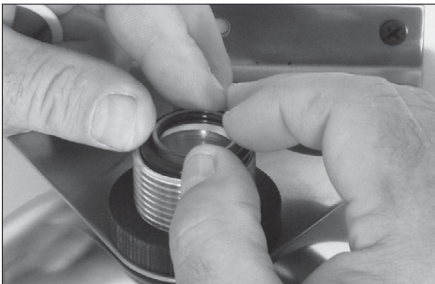
Step 2C - Secure the top bracket to the mounting surface



Step 3A - Slowly slide quartz sleeve into the disinfection chamber



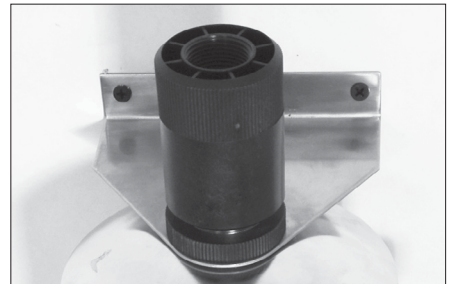
Step 3B - Carefully guide quartz sleeve until it seats into bottom center of water purifier



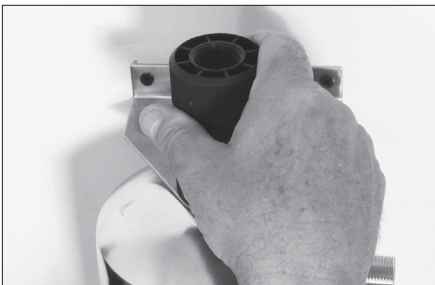
Step 4 - Place O-Ring over end of quartz sleeve until seated against the static gland nipple



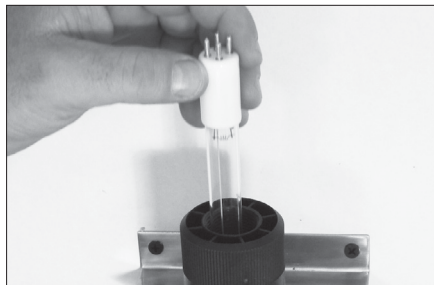
Step 5 - Place Teflon® washer over quartz sleeve until it rests on O-Ring



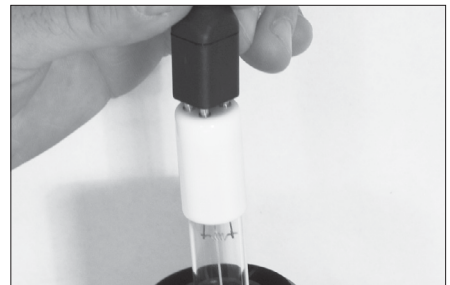
Step 6A - Install static gland nut over quartz sleeve and onto static gland nipple



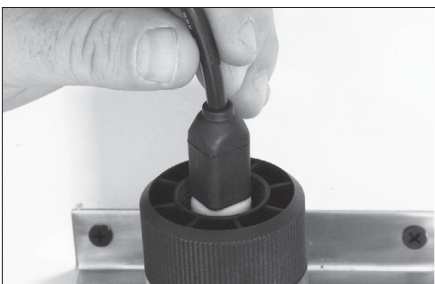
Step 6B - Firmly tighten the static gland nut by hand



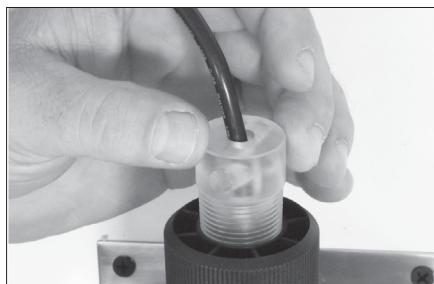
Step 7A - Insert the lamp part of the way into the disinfection chamber



Step 7B - Attach the lamp socket connector to the lamp



Step 8 - Lower, **DO NOT DROP**, ultraviolet lamp into quartz sleeve



Step 9 - Thread translucent sight port plug into static gland nut and hand tighten



Step 10 - Install Grounding Kit, Plumb unit, and plug ballast into an approved Ground Fault Circuit Interrupt (GFCI) receptacle

INSTALLATION



IN ORDER TO PERFORM THIS TASK, BE SURE TO WEAR THE FOLLOWING SAFETY EQUIPMENT: SAFETY GLASSES OR A FACE SHIELD, AS WELL AS GLOVES.

▲WARNING Always disconnect power to the unit, before performing any service or maintenance.

▲CAUTION Lamp and quartz sleeve are easily damaged. Exercise care when removing or replacing.

NOTE: Screws are needed to secure water purifier to mounting surface and **ARE NOT** included. Please use screws appropriate for the mounting surface.

- Unpack the water disinfection chamber and components following the steps in the “**Unpacking**” section.
- Be sure that you have read and followed all the instructions mentioned in the “**Location**” section.
- To allow for adequate room for installation and maintenance of the **Ultimate™** Ultraviolet Water Purifier refer to “**Dimensional Data**” **Figure 1** and **Table 2**.
- Use the “**Dimensional Data**” **Figure 1** to mark the location of the bracket mounting pattern on the surface where the unit will be mounted. (Refer to Dimensions “D”, “E”, & “F”.)

CAUTION For added protection, a suitable drain pan must be installed under the purifier. The drain pan must be plumbed to an adequate, free flowing drain to prevent water damage in the event of a leak. There are numerous leak detection/flood stop devices, available on the market today, designed to stop the 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 the factory.

Installation Steps 1 to 10

1. Install the bottom bracket to the mounting surface (with screws not included). The lip of the bracket should face down.
 2. Place top bracket over the static gland nipple where the lip of the bracket faces up (refer to “**Dimensional Data**” **Figure 1**). Install bracket nut onto the static gland nipple so that it holds the bracket against the top of the chamber - hand tighten only. Place the chamber and top bracket assembly onto the bottom bracket. (Upward facing fingers on the lower bracket straddle the bottom rim of the chamber.) Align the top bracket so that it faces the mounting surface and is in line with the bottom bracket. Secure the top bracket to the mounting surface (with screws not included).
 3. Slowly slide the quartz sleeve into the disinfection chamber, guiding it through the gland fitting until it seats into bottom center of water purifier. **NOTE:** Use care to keep the quartz sleeve parallel to the chamber. Angling the quartz sleeve in any direction could result in the breakage of the quartz sleeve.
 4. Place the O-Ring over the end of the quartz sleeve and push the O-Ring down the quartz sleeve until it is seated against the static gland nipple.
 5. Place the Teflon® washer over the quartz sleeve until it rests on the O-Ring.
 6. Install the static gland nut over the quartz sleeve and onto the static gland nipple. Be careful when installing static gland nut. Firmly tighten the static gland nut by hand. Hand tightening will provide the required seal. **DO NOT USE HAND TOOLS**, tightening with hand tools is likely to cause the quartz sleeve to break.
 7. Insert the lamp part of the way into the disinfection chamber, then attach the lamp socket connector to the lamp; make sure the connector is fully seated on the ultraviolet lamp. Carefully slide the lamp into the quartz sleeve.
 8. Lower, **DO NOT DROP**, the ultraviolet lamp into the quartz sleeve so that the lamp is resting at the bottom of the quartz sleeve.
 9. Thread the translucent sight port plug (connected to the lamp socket connector) into the static gland nut and hand tighten.
 10. Install Grounding Kit following the instructions in the “**Grounding Kit Installation**”.
- Plumb unit following the recommended installation in “**Unit Installation**” **Figure 2**.
 - When all plumbing connections are complete, allow water to enter the water purifier at a low flow rate, until the purifier is full. With the purifier pressurized, it should be checked for leaks. If the unit leaks, make sure that the static gland nut is firmly tightened. **DO NOT** use seal compounds to stop the leak. If the leak continues, close the inlet shut-off valve; release the pressure on the unit and drain. Inspect the quartz sleeve for damage. Be sure that the O-Ring and Teflon® washer are on in the correct order on the quartz sleeve (not inside the static gland nut).
 - Re-pressurize unit and check for leaks. Once it is determined that there are no leaks, the inlet valve can be full opened.
 - Once the plumbing hook ups are made, it is good practice to disinfect the “downstream” plumbing between the purifier and point of use. This is done by introducing chlorine or other disinfectant solution directly into the purifier chamber, a 100 parts per million of chlorine is suggested. **(Continued on Page 10)**

- **(Continued from Page 9)** With the disinfectant solution in the purifier chamber, turn the ultraviolet purifier on. Open the “down-stream” outlet until a chlorine or disinfectant solution odor is noticed. Close the outlet and allow the disinfectant to remain in the plumbing for at least three (3) hours. Flush the plumbing with ultraviolet purified water; allow the water purifier to run for a minimum of 5 minutes before use to ensure no chlorine or disinfectant solution smell can be detected. This will allow the chlorine or disinfectant solution to be flushed through the pipe.
- **▲WARNING** Plug the ballast into an 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.

▲WARNING Avoid exposure to direct or strongly reflected germicidal ultraviolet rays. Germicidal ultraviolet rays are harmful to the eyes and skin.

GROUNDING KIT INSTALLATION

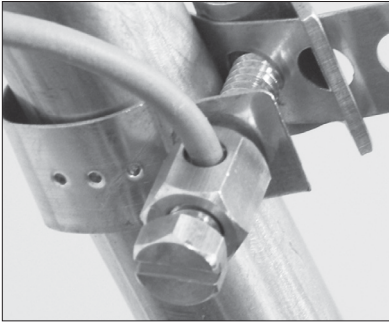


Photo 1 - Side angle view of copper pipe with ground placement

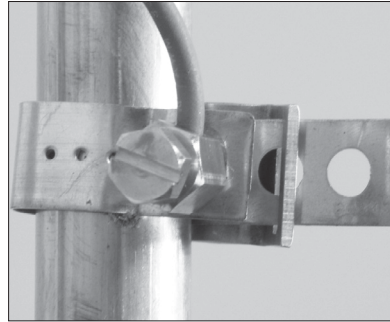


Photo 2 - Front view of copper pipe with ground placement



Photo 3 - Copper wire in contact with the screw and bolt on unit

▲WARNING To ensure proper operation and safety of your water purifier, your unit must be grounded to a known good ground.

Purpose: To permanently connect a ground wire from the water purifier chamber to a known ground.

Placement: Select a location that is visible as well as accessible. Connect the ground strap to a known ground or a water pipe that is metallic, with no intervening plastic fittings between it and the power ground. An electrician can measure the resistance between the water pipe and an electrical outlet ground to ensure your ground selection is correct.

Installation:

1. Wrap the copper strap tight around the pipe and line-up the strap end hole with another hole on the copper strap as well as a hole on the brass colored “S” clip.
2. Pull strap as tight as possible to ensure contact between the strap and the pipe.
3. Insert the bolt through both copper holes and into the threaded hole on the brass colored “S” clip.
4. Remove 5/8” of the ground wire insulation and insert into the bolt hole as shown and install the screw.
5. Ensure that the strap is securely fastened to the pipe and that the copper wire is in contact with the screw and bolt.

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 “Product Application” section. Ordinary maintenance consists of:

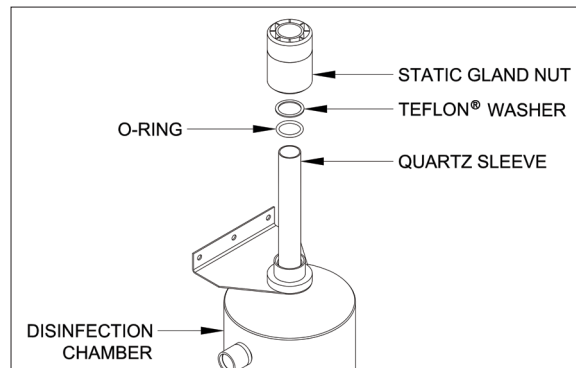
- Lamp replacement is recommended every 10,000 hours of operation, approximately 12 months of continuous service.
- Cleaning of the quartz sleeve, when conditions warrant. It is recommended that the inspection of quartz sleeve be performed after one month of use. If quartz sleeve is found to be coated (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 deposits on the quartz sleeve are caused by an excess of calcium (hardness), iron or manganese. **Table 1** lists the maximum recommended concentration of these minerals in the water that passes through the ultraviolet purifier. If you encounter difficulty due to deposits on the quartz sleeve, your dealer will be able to recommend suitable pretreatment to reduce or eliminate the offending contaminant. If quartz sleeve is clean (clear) then frequency of cleaning may be extended.
- Always disconnect the water supply and completely drain the water purifier if it will be subjected to temperatures below freezing.
- Contact factory with questions.

INSPECTION

1. Regularly inspect the water purifier to ensure that the germicidal lamp is still in operation.
Surelite™ Electronic Ballast, designed specifically for the **Ultimate™** line of water purifiers, includes an LED that provides visual indication (Green and Red LED Indicators) of the germicidal ultraviolet lamp operation and a **Promate™** Audio Alarm that alerts the user to lamp failure. The Electronic Ballast does not indicate the level of ultraviolet intensity or transmission through the water.
2. To ensure proper operation of the water purifier, regular biological testing of the purifier output water 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.
3. Additional testing should be performed whenever modifications, change or additions are made to plumbing system, pumps, well source water etc. to ensure adequate disinfection under new condition.
4. 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.

QUARTZ SLEEVE INSTALLATION, CLEANING OR REPLACEMENT

Figure 3 – Quartz Sleeve Exploded View



IN ORDER TO PERFORM THIS TASK, BE SURE TO WEAR THE FOLLOWING SAFETY EQUIPMENT: SAFETY GLASSES OR A FACE SHIELD, AS WELL AS GLOVES.

▲WARNING Always disconnect power to the unit, before performing any service or maintenance.

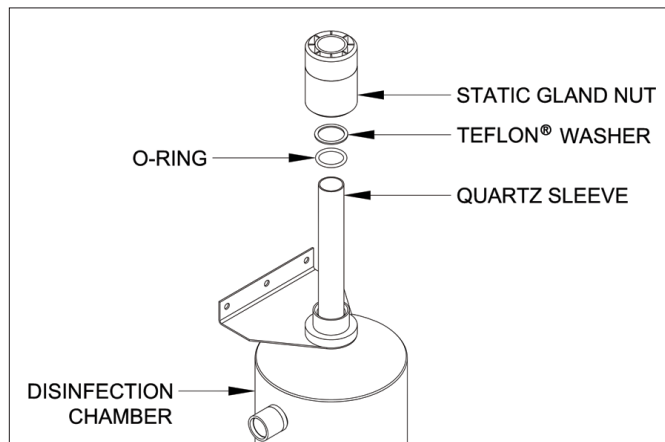
▲CAUTION Lamp and quartz sleeve are easily damaged. Exercise care when removing or replacing.

1. **▲WARNING** Disconnect power to water purifier.
2. Shut off water supply to water purifier via inlet and outlet shut off valve. Drain chamber.
3. Remove lamp, following the steps in “**Lamp Replacement**” section.
4. Unscrew static gland nut from end of the chamber. Avoid striking quartz sleeve with static gland nut.
5. Remove Teflon® washer and O-Ring from end of quartz sleeve. Teflon® washer will sometimes remain within the static gland nut. If so, remove Teflon® washer from static gland nut before proceeding.
6. Carefully remove quartz sleeve from chamber.
7. Once the quartz sleeve is removed, moisten a clean, lint-free cloth with denatured alcohol or a mild, non-abrasive detergent and clean quartz. Stubborn stains usually can be removed with dilute hydrochloric acid. **NOTE: Follow all manufacturer’s instructions and precautions when handling chemicals**
8. Reassemble in reverse order. Be sure O-Ring is placed on quartz sleeve before Teflon® washer.
9. Tighten static gland nut firmly by hand only, **DO NOT USE HAND TOOLS**. Tightening with hand tools is likely to cause the quartz sleeve to break.
10. When all connections are complete allow water to enter the water purifier at a low flow rate until the purifier is full. With the purifier pressurized, it should be checked for leaks.
11. If no leaks occur, install lamp, following the steps in “**Lamp Replacement**” section.

▲WARNING Germicidal ultraviolet rays are harmful to eyes and skin. Do not restore power to water purifier until quartz sleeve, lamp and connections have been properly reinstalled.

REPLACEMENT OF BROKEN QUARTZ SLEEVE

Figure 4 – Quartz Sleeve Exploded View



IN ORDER TO PERFORM THIS TASK, BE SURE TO WEAR THE FOLLOWING SAFETY EQUIPMENT: SAFETY GLASSES OR A FACE SHIELD, AS WELL AS GLOVES.

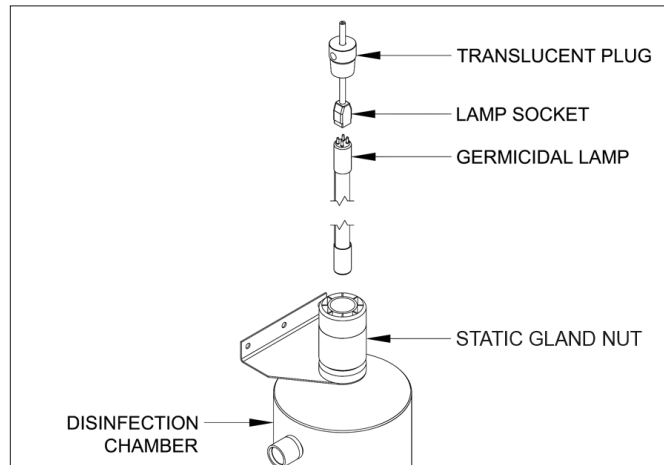
⚠ CAUTION Broken Quartz is SHARP. It is recommended that protective glasses and gloves are worn when handling broken quartz sleeve.

1. **⚠ WARNING** Disconnect power to water purifier.
2. Shut off water supply to water purifier via inlet and outlet shut off valve. Drain chamber.
3. Remove the lamp following the steps in “**Lamp Replacement**” section.
4. Unscrew static gland nut from end of the chamber. Avoid striking quartz sleeve with static gland nut.
5. Remove Teflon® washer and O-Ring from end of quartz sleeve. Teflon® washer will some times remain within the static gland nut. If so, remove Teflon® washer from static gland nut before proceeding.
6. **⚠ CAUTION** Carefully remove as much of the broken quartz sleeve as possible.
7. To remove fragments of quartz sleeving, hold the purifier vertically and shake. The quartz fragments will break and drop out of the purifier through the gland fitting. Flush water through chamber being careful to remove all quartz fragments from the interior of the chamber.
8. **⚠ CAUTION** Carefully discard all pieces of the broken quartz sleeve.
9. Align the end of the quartz sleeve with the gland fitting of the chamber.
10. Carefully slide the quartz sleeve into the chamber, guiding it through the gland fitting until it seats into bottom center of water purifier. **NOTE:** Use care to keep the quartz sleeve parallel to the chamber, angling the quartz sleeve in any direction could result in the breakage of the quartz sleeve.
11. Re-install O-Ring, Teflon® washer, and static gland nut. Be sure O-Ring is placed on quartz sleeve before Teflon® washer. Tighten static gland nut firmly by hand only, **DO NOT USE HAND TOOLS**. Tightening with hand tools is likely to cause quartz sleeve to break.
12. When all connections are complete allow water to enter the water purifier at a low flow rate until the purifier is full. With the purifier pressurized, it should be checked for leaks.
13. If no leaks occur, reinstall lamp, following the steps in “**Lamp Replacement**” section.

⚠ WARNING Germicidal ultraviolet rays are harmful to eyes and skin. Do not restore power to water purifier until quartz sleeve, lamp and connections have been properly reinstalled.

LAMP INSTALLATION OR REPLACEMENT

Figure 5 – Lamp Replacement



IN ORDER TO PERFORM THIS TASK, BE SURE TO WEAR THE FOLLOWING SAFETY EQUIPMENT: SAFETY GLASSES OR A FACE SHIELD, AS WELL AS GLOVES.

CAUTION Broken Quartz is SHARP. It is recommended that protective glasses and gloves are worn when handling broken quartz sleeve.

1. **WARNING** Disconnect power to water purifier.
2. Remove lamp from cardboard packing tube.
3. Shut off water supply to water purifier via inlet and outlet shut off valve.
4. Unscrew translucent plug from static gland nut. **DO NOT USE HAND TOOLS**
5. Carefully remove lamp from chamber.
6. While holding lamp end, disconnect lamp socket from the lamp.
7. Reinstall in reverse order

WARNING Germicidal ultraviolet rays are harmful to eyes and skin. Do not restore power to water purifier until quartz sleeve, lamp and connections have been properly reinstalled.

DISPOSAL OF MERCURY ADDED LAMPS



Germicidal ultraviolet lamps, like standard fluorescent lamps contain small amounts of mercury. Mercury added lamps should not be placed in the trash. Dispose of properly. For further information regarding the disposal and recycling of lamps containing mercury, along with Federal and State requirements visit LampRecycle.org. For more information on **STER-L-RAY**® Germicidal Ultraviolet Lamps, visit AtlanticUltraviolet.com or Ultraviolet.com.

OPTIONAL ACCESSORIES

SENTRY™ Safety Sensor (30-0168): Indicators provide constant visual monitoring of normal operation. In the event of ballast or lamp failure the safety sensor indicates an alarm condition. The safety sensor is capable of operating an optional **Promate™** Audio Alarm and/or **Promate™** Solenoid Valve.

Promate™ Time Delay Mechanism (30-1369B): Provides a 2-minute warm up period during which the ultraviolet lamp achieves its full germicidal output before the water is allowed to flow through the water purifier. The time delay mechanism is used in conjunction with, and is electrically connected to the **Promate™** Solenoid Valve.

Promate™ Solenoid Valve: Operated in conjunction with the Safety Sensor or Time Delay Mechanism, this valve prevents water flow through the water purifier when an abnormal condition is detected or in the event of power failure.

Promate™ Elapsed Time Indicator (30-1008A): A non-resettable display of the water purifier operating hours. Useful for scheduling and recording maintenance and lamp replacement.

Promate™ Safety Glasses (00-1299): Safety eyewear **MUST** be used as general-purpose safety protection and for additional shielding from ultraviolet rays.

Promate™ Face Shield (00-0126): Lightweight visor with adjustable headgear provides eye and face protection from germicidal ultraviolet rays.

TROUBLESHOOTING

⚠️ WARNING Always disconnect power to the water purifier before performing any service or maintenance
IMPORTANT: This unit is to be serviced **ONLY** by qualified, and appropriately licensed, personnel.

Table 3 – Troubleshooting

Problem	Possible Cause	Corrective Action
Purifier not operating	No electrical power	Verify that the purifier is connected to a live power source.
Water leaking from purifier	Cracked or broken quartz sleeve	Shut down purifier, drain, and replace quartz sleeve. See “ Quartz Sleeve Installation, Cleaning or Replacement ” or “ Replacement of Broken Quartz Sleeve ” in the “ Maintenance ” section.
	Quartz sleeve sealing O-Ring (s) worn, damaged	Shut down purifier, drain, and remove static gland nut, replace sealing O-Ring. See “ Quartz Sleeve Installation, Cleaning or Replacement ” in the “ Maintenance ” section.
	Poor, or loose, connections or fittings	Tighten suspect connection or fitting; or shut down purifier, drain, and remove fitting or connection. Clean threads; reapply thread sealing tape and reinstall.
Poor purifier disinfection performance	Quartz sleeve fouled	Clean quartz sleeve, see “ Quartz Sleeve Installation, Cleaning or Replacement ” in the “ Maintenance ” Section.
	STER-L-RAY® Germicidal Lamp output depreciating	Replace lamp, as it nears its end of life (EOL). See “ Lamp Installation or Replacement ” in the “ Maintenance ” section.
	STER-L-RAY® Germicidal Lamp not functioning	Replace lamp. See “ Lamp Installation or Replacement ” in the “ Maintenance ” section.
	Low input voltage	Verify input voltage to purifier.
	Change in water quality	Have water tested to confirm that it does not exceed maximum recommended concentration levels for use with this purifier.

Ballast No. 10-0505B Has Lamp-out Protection

If power is applied to the ballast without a lamp connected to the circuit or if the lamp fails, the ballast’s lamp-out protection will prevent the ballast from operating, and a red LED light will illuminate and audio alarm will sound. **To reset:** disconnect the ballast from power and reconnect or replace the lamp. **The ballast must remain disconnected from power for (2) minutes to reset.** After 2 minutes restore input power, ballast should resume proper operation.

⚠️ WARNING The equipment that this ballast is used with requires connection to a known good ground. It is the User’s responsibility to ensure that their equipment is properly grounded in compliance with the National Electrical Code and any applicable local codes. Equipment wiring and hook up should be performed by a qualified, licensed electrician. Failure to comply with this requirement could result in serious injury or death.

TECHNICAL SPECIFICATIONS

Table 4 – Technical Specifications

Model:	U4/120	U7/120	U9/120	U15/120
Flow Rate (GPM):	4	7	9	15
Inlet/Outlet Size:	3/4”M NPT	3/4”M NPT	3 /4”M NPT	1”M NPT
Length:	4-15/16”	6-13 /16”	6-13 /16”	6-13 /16”
Width:	3-7/8”	5-3/4”	5-3/4”	5-3/4”
Height:	18-9/16”	18-7/8”	23-1/16”	37-1/2”
Chamber Diameter:	3-7/8”	5-3/4”	5-3/4”	5-3/4”
Shipping Weight:	9 Lbs	10 Lbs	11 Lbs	16 Lbs
Voltage: ①	120V 50/60Hz	120V 50/60Hz	120V 50/60Hz	120V 50/60Hz
Power Consumption: ②	20 Watts	20 Watts	24 Watts	45 Watts
Max Operating Pressure:	100 PSI	100 PSI	100 PSI	100 PSI
Ambient Temperature:	35–100 °F	35–100 °F	35–100 °F	35–100 °F

① 220v 50/60Hz are also available. Consult factory.

② Total power consumption, including ballast loss (based on 120v). All specifications, dimensional data etc. are approximate and subject to change without notice.

REPLACEMENT PARTS

Figure 6 - Exploded View U4, U7, U9 and U15

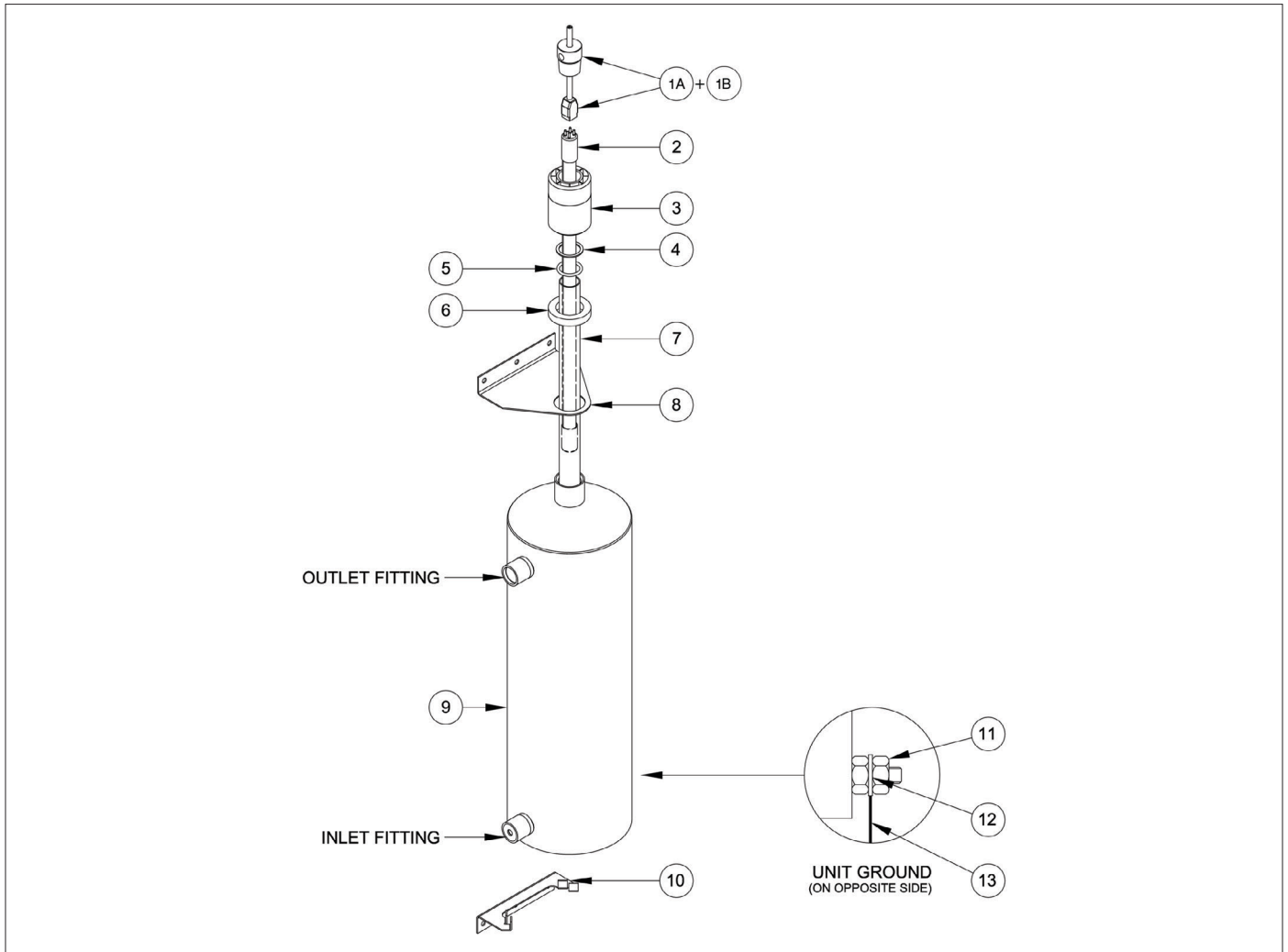


Table 5 – Replacement Parts

Item No.	Description	Quantity	U4	U7	U9	U15
1 A	Surelite™ Ballast 120v Red/Green Alarm	1	10-0505B	10-0505B	10-0505B	10-0505B
1 B	Surelite™ Ballast 220v Red/Green Alarm	1	10-0152A	10-0152A	10-0152A	10-0152A
2	STER-L-RAY® 4 Pin Single Ended Lamp	1	05-0640A	05-0640A	05-0641A	05-0642A
3	Static Gland Nut	1	25-8105D	25-8105D	25-8105D	25-8105D
4	Teflon® Washer	1	00-0229A	00-0229A	00-0229A	00-0229A
5	O-Ring Buna-N	1	00-8300A	00-8300A	00-8300A	00-8300A
6	Bracket Nut	1	25-8106B	25-8106B	25-8106B	25-8106B
7	CRYSTAL CLEAR™ Quartz Sleeve	1	15-8110A1	15-8110A2	15-8110A3	15-8110A4
8	Wall Bracket (Top)	1	25-8108B	25-8111B	25-8111B	25-8111B
9	Disinfection Chamber	1	25-8136A	25-8137A	25-8138A	25-8139A
10	Wall Bracket (Bottom)	1	25-8107A	25-8112A	25-8112A	25-8112A
11	Jam Nut ¼-20"	2	50-1388	50-1388	50-1388	50-1388
12	¼" Lock Washer	1	50-1330	50-1330	50-1330	50-1330
13	Grounding Kit *	1	35-8300A	35-8300A	35-8300A	35-8300A

All specifications, dimensional data, etc are approximate and subject to change without notice.

*Ground kit includes Item No. 11 & 12

USER ASSISTANCE

Atlantic Ultraviolet Corporation® makes every effort to ensure that the **Ultimate™** Ultraviolet Water Purifier is a product of superior quality and workmanship. This manual describes the installation, operation and maintenance of the **Ultimate™** Ultraviolet Water Purifier.

Please read and become familiar with the contents of this manual before installing or using this unit. If after reading the manual you still have questions, or concerns, regarding the installation or use of this unit, contact our offices, weekdays between 8:30 am and 5:00 pm Eastern Time, at:

Atlantic Ultraviolet Corporation®
375 Marcus Boulevard
Hauppauge, New York, 11788
Tel: (631) 273-0500
Fax: (631) 273-0771
Email: Sales@AtlanticUV.com
Shop: AtlanticUltraviolet.com
Learn More: Ultraviolet.com

PATENT NOTICE

No attempt has been made to determine the patent status of applications illustrated or described in this publication. Inclusion in this publication of any design or method of use, which may be patented, is not to be construed as promoting or sanctioning unauthorized use.

WARRANTY & PRODUCT REGISTRATION

We warrant this product to the original owner to be free from defects in material and workmanship when installed in accordance with Atlantic Ultraviolet Corporation® specifications for a period of time as follows:

UV Water Purifier Chambers – Type 316 stainless steel chambers will have a Twelve (12) year Limited Warranty on the stainless steel chamber, from the date of original purchase while the Type 304 stainless steel chambers will have a Six (6) year Limited Warranty on the stainless steel chamber.

UV Air Disinfection Housing – Three (3) year Limited Warranty on the metal housing, from the date of original purchase.

Ballasts – Three (3) year Limited Warranty, from the date of original purchase.

UV Lamps, Monitoring Devices, Optional Accessories, and Other Parts – One (1) year Limited Warranty from the date of original purchase.

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 person; or improperly installed. Warranty will be null and void if any of the product's original labels are removed. This Limited warranty excludes the cost of labor.

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 the Company 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.

Be sure to register your product and validate purchase within 30 days –registration is simple and will take less than 2 minutes to do.

NOTE – failure to register your purchase may jeopardize warranty.

Go to AtlanticUltraviolet.com and scroll down to the bottom of the page, under “Trust” click the “Warranty Registration Form”, complete and click “Submit”. Or click on “Warranty Registration PDF” to download the warranty registration card as a PDF, complete and mail to us at 375 Marcus Boulevard, Hauppauge, NY 11788, or simply fax to (631) 273-0771. If you prefer to register by phone, please call (631) 273-0500 and our customer service staff will be glad to assist you.

For your convenience, record the following information below. The model and serial number can be found on a label located on the **Ultimate™** Ultraviolet Water Purifiers. Keep this manual, along with proof of purchase, handy when contacting our offices.

Purchased From:	Date:
Model:	Serial No.: