



## Installation and Operation Manual



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## MWC-ES Series Ultraviolet Sterilizers

### MWC-ES7 / MWC-ES10 / MWC-ES20

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2022 VERSION

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**Installation and Operating Instructions**  
**for MWC-ES Series Ultraviolet Sterilizers**

***Model #:***

_____	MWC-ES7	7 gpm UV - $\frac{3}{4}$ "
_____	MWC-ES10	10 gpm UV - $\frac{3}{4}$ "
_____	MWC-ES20	20 gpm UV -1"

**CAUTION:**

**NEVER LOOK DIRECTLY AT THE ULTRAVIOLET LIGHT WITH THE NAKED EYE.** View through a piece of ordinary glass or optical glasses. **ULTRAVIOLET LIGHT** may cause eye irritation if eye is not properly protected. You should never have to look directly at the **ULTRAVIOLET LIGHT** when installing or trouble-shooting one of our MWC-E Water Sterilizers.

***Shipping Description:***

The UV unit is shipped complete as follows:

The large box contains the UV vessel and inside that box you will also find the following:

1. A box containing the gland nut, quartz o'ring, silicone, and UV brackets with grounding lug.
2. A box containing the MWC-ES power supply with grounding wire.
3. A box containing the (1)- $\frac{3}{4}$ " SS or (1)- N/C SS normally closed solenoid.
4. A tube containing the germicidal lamp.
5. A tube containing the quartz sleeve.

***Pre-Treatment:***

A complete water test is recommended to determine if pre-treatment equipment is required before installation of the UV unit. **Water must meet criteria below:**

Contaminant	Maximum Allowable Level
Chloride	250 ppm
Color	None
Hardness	8 gpg
Iron	0.3 ppm
Manganese	0.05 ppm
pH	Range between 6 and 8.5
Total Dissolved Solids (TDS)	500 ppm
Turbidity	5 ntu

**If untreated water quality exceeds the maximum allowable levels specified, this will result in bacteria passing through the UV unit and into the piping system.**

**Unit Location:**

1. The MWC-ES unit must be installed after the well tank and any water pre-treatment equipment (softeners, filter, etc.). You must install a Cartridge type Dirt Filter before the MWC-ES unit to eliminate the possibility of a dirt build-up inside the stainless steel sterilization chamber. **(SEE PAGE 2, PIPING LAYOUT )**
2. Install at least 4 feet from a dedicated electrical outlet.

**DO NOT INSTALL NEAR ANY HEATING SYSTEMS WHICH RAISE THE AIR TEMPERATURE OVER 100 DEGREES.**

***MWC-ES 304 Electro Polished SS Vessel Installation:***

1. The ultraviolet unit is designed to be installed in a vertical position. The unit is supplied with (2) brackets to support the unit.  
**NOTE: The upper bracket has a grounding lug attached to it.**
2. Place the top bracket (larger one) over the nipple located at the

- top of the vessel. The end of the bracket with the three holes should be facing up towards the top of the vessel.
3. Tighten the gray PVC ring onto the nipple. This will compress down onto the top of bracket.
  4. Attach the smaller bracket to the bottom of the vessel. The bracket has a clip type fastener that attaches to the bottom rim of the vessel. The end of the bracket with the three holes should be facing down towards the bottom of the vessel.
  5. Secure the top bracket to a wall by using three appropriate screws or fasteners (not provided).

**Be sure to leave plenty of clearance above vessel for servicing the quartz tube and germicidal lamp. (For proper clearance, see Specification Table on page 2)**

6. Secure the bottom bracket to the wall by using three screws or fasteners (not provided).
7. Use quality unions and ball valves on the inlet and outlet for servicing the unit. **See Page 2** for a typical installation piping layout. If sweat fittings are used, be sure soldering is done in such a manner as not to allow heat to reach the UV vessel. If Schedule 80 PVC or CPVC is used, make sure to follow the proper primer and solvent instructions.
8. Pipe the **inlet** into the **bottom** nipple of the UV vessel.
9. Install a 1" x 3/4" reducing bushing (not provided) into the inlet of the solenoid valve.
10. Install the 3/4" (for the ES7 and ES10 units) or the 1" (for the ES20 units) normally closed solenoid to the **outlet** on the **top** nipple of the UV vessel. Make sure that the solenoid is installed in the proper direction. **See page 2** There is an internal flow restrictor in the outlet nipple of all units. **It is recommended you install a boiler drain on the inlet piping of the unit. This will allow for easy draining of the vessel when replacing the UV quartz.**

### ***Electrical Requirements:***

**Always follow all local electrical codes when installing our water**

**Treatment equipment.**

1. Provide a 115v/60Hz properly grounded a dedicated electrical outlet. (It's very important that the polarity be correct)  
**Avoid using outlets that are switch controlled.**
2. Maximum amperage required is 5 amps.
3. Make sure the electrical service provides power 24 hours per day. We recommend installing a **surge protector** to protect unit from power surges, which are not covered by warranty.

**!!! DO NOT UNDER ANY CIRCUMSTANCE WIRE THE UV UNIT TO THE WELL PUMP SWITCH OR WELL PUMP ELECTRICAL SUPPLY !!!**

***MWC-ES Power Supply Installation:***

1. Choose a wall placement that is dry and clear of all piping and metal objects, and within 4 feet of the UV vessel and the electrical outlet.
2. Remove cover from power supply for mounting.
3. Secure power supply to wall with screws (not provided).

***SEE THE FOLLOWING PAGE FOR PROPER GROUNDING INSTRUCTIONS.***

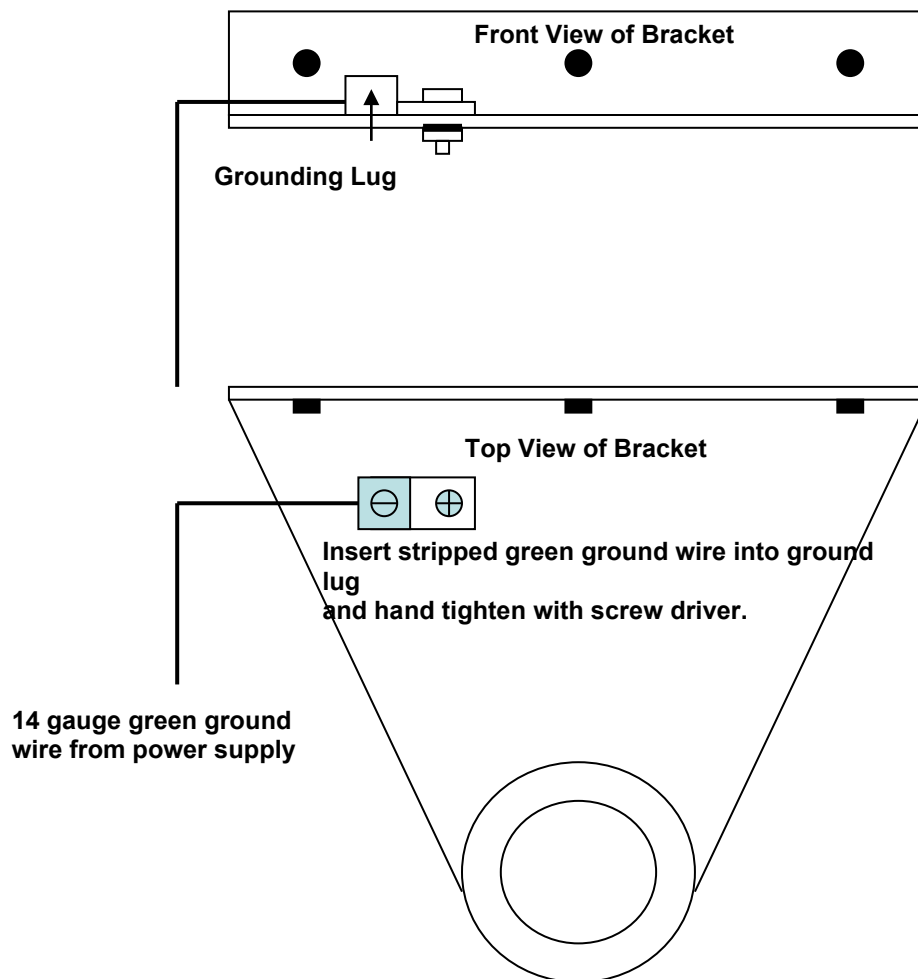


## MWC-SERIES GROUNDING INSTRUCTIONS

### IMPORTANT

All MWC-Series UV systems must be properly grounded. The vessel must be grounded to the MWC-Power Supply to make a complete ground.

### MWC-SERIES Grounding Lug Installation





### ***Quartz and O'ring Installation:***

1. Wipe the quartz sleeve with household alcohol to remove dirt, oil and fingerprints.
2. Carefully place the quartz sleeve into the top opening of the vessel.
3. Lubricate the o'ring with silicone (which is supplied) then place the o'ring over the top of the quartz sleeve.
4. Hand-tighten the clear gland nut onto the nipple located on the top of the vessel. **Do not over tighten or the quartz sleeve may shatter. When operating, the clear gland nut will glow blue.**

### ***Germicidal Lamp Installation:***

1. Clean the germicidal lamp with household alcohol to remove dirt, oil and fingerprints.
2. Remove jumper wire from white-end connection of power supply and insert UV lamp pins in place of jumper wire.
3. Gently insert the germicidal lamp into the quartz sleeve through the center of the clear gland nut located at the top of the vessel. **Be careful not to drop the lamp inside the vessel. This could break the quartz sleeve.**
4. Slide the black fitting into the center of the clear gland nut.

### ***Power Supply Start Up:***

1. Press the reset button (hold for 5-seconds and release) which is located in the lower center of the circuit board left of the battery.
2. Re-install cover.
3. Plug the power supply into the surge protector (not provided) then into dedicated electrical outlet. The germicidal lamp is now operating and the solenoid is energized to open.

### ***Filling the UV Unit with Water:***

1. Open the inlet ball valve about 25% to fill the UV vessel slowly.
2. Open the inlet and outlet ball valve to their **full** open position.
3. Open cold water faucet in kitchen and run until all air is purged. Shut off faucet.
4. Inspect for leaks and repair if any are found.

### ***Disinfecting the Piping System with Chlorine:***

1. Shut off the water to the inlet and outlet of the cartridge filter.
2. Remove the cartridge sump and empty all water. Fill with household chlorine (Clorox, non-scented), 5.25% sodium hypochlorite.
3. Re-install the sump to the filter assembly and open the inlet and outlet valves.
4. Open the cold water faucet at the furthest point in the piping until you detect chlorine odor. Once the odor is detected, close that faucet. Continue this procedure until the chlorine odor has been detected at every faucet. If chlorine odor is not detected at all faucets, repeat steps 1 through 4.
5. Close ball valve on outlet of cartridge filter.
6. Allow the water to stand for at least (4) hours to kill the bacteria residual in the piping system.

**\*\* No water should be used during disinfection. \*\***

### ***Final Check:***

1. Open outlet ball valve on UV unit.
2. Make sure the MWC-ES UV Unit is plugged into a surge protector (not provided) then a dedicated electrical outlet with power 24 hours per day.
3. Check all piping for leaks, repair if necessary.
4. Open cold water lines and flush out until chlorine odor is no longer detected.

**Before consumption of water, an EPA Lab Test is suggested.**

## ***ANNUAL MAINTENANCE PROCEDURE:***

### ***Annual Germicidal Lamp Replacement and Quartz Cleaning:***

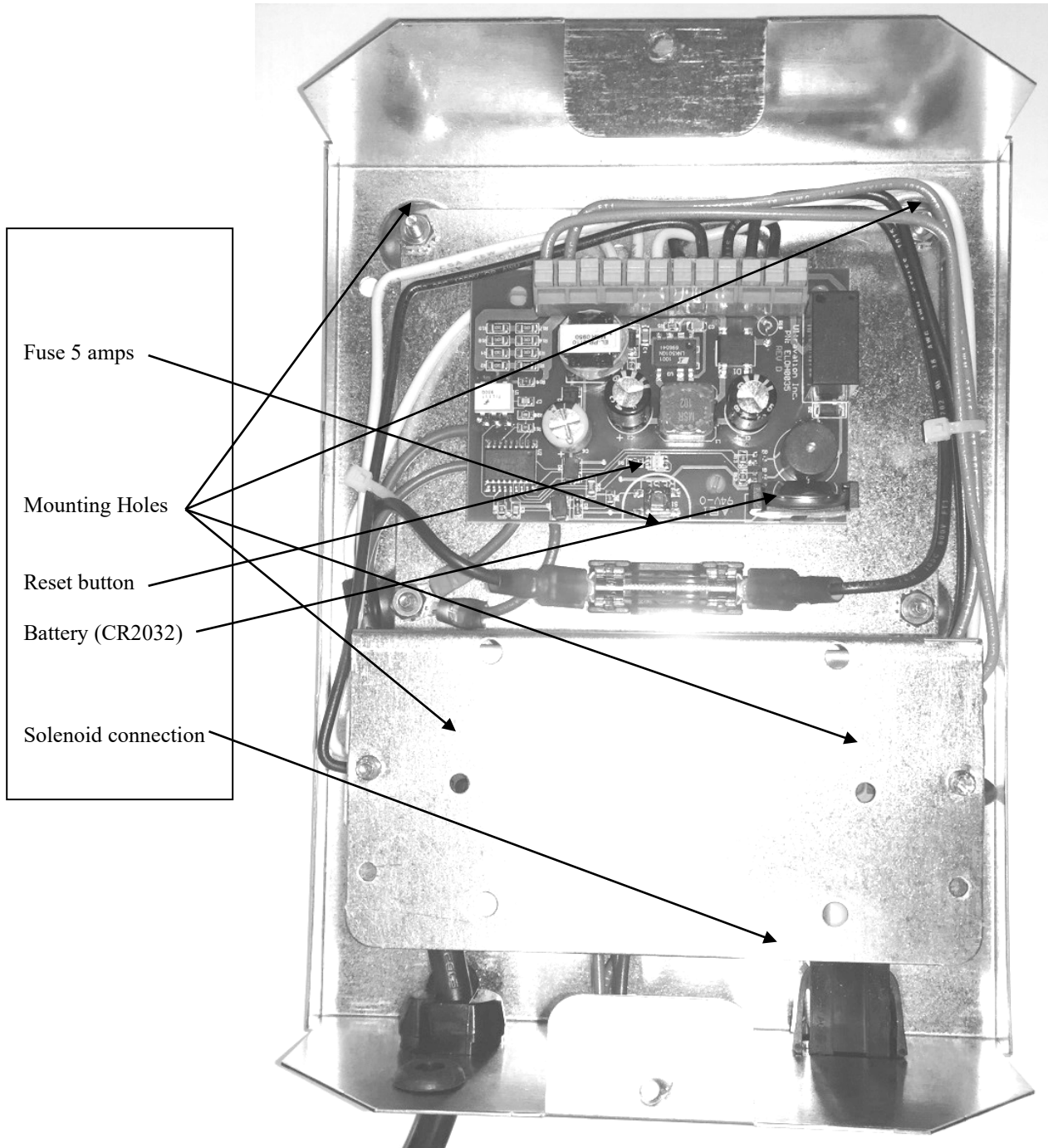
1. Unplug the power supply from surge protector and the electrical outlet.
2. Pull the black cap from the center of the clear gland nut.
3. Carefully lift the germicidal lamp out of the quartz sleeve by pulling up on the gray harness wire and discard the lamp. Remember the lamp is glass and can cause injury to you if the lamp is dropped.
4. Open the boiler drain on outlet side of UV unit to depressurize vessel. When completed, close boiler drain.
5. Carefully remove clear gland nut, gently grasp quartz sleeve and lift out.
6. Remove clear gland nut and O-ring from quartz sleeve.
7. Clean quartz sleeve with household alcohol. If stained, replace.  
**(Reference Quartz Installation)**
8. Follow with germicidal lamp installation

### ***9000 Hour Timer Reset and Annual Battery Replacement:***

**It is recommended to reset the 9000 hour timer after replacing the germicidal lamp.**

1. Make sure the electrical power cord is removed from the electrical outlet.
2. Remove power supply cover.
3. The battery which operates the 9000 hour timer during a power outage should be changed annually with a CR2032 (3V) battery or equivalent. To remove old battery pull it up and away from the battery harness located on the right side of circuit board.  
**( Reference Figure 1 )** When installing the new battery, make sure the “+” side of the battery is viewable.
4. Locate the brown reset button on the lower center portion of the green circuit board, to the left of the battery. **( Reference Figure 1 for exact location)** Once located, hold reset button for 5 seconds and release.
5. Re-install the power supply cover and plug electrical power cord into the dedicated outlet.

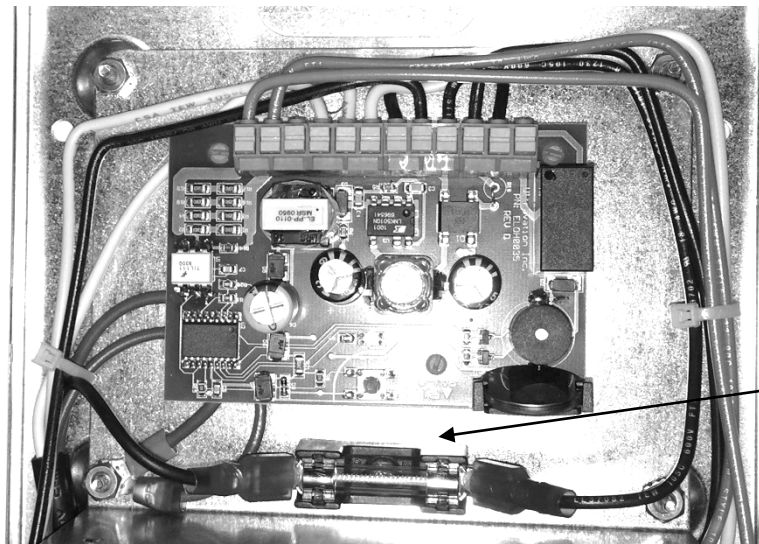
Figure 1



## MWC-ES SERIES TROUBLESHOOTING

**Symptom:** No flow of water no Alarm and Gland Nut not glowing

Cause	Solution
Electric Supply	Check electrical outlet and breaker box for power. Replace fuse (Buzz 5 amp) in Power Supply



5 Amp Fuse

**Symptom:** No flow of water or Alarm and *Gland Nut* is *glowing blue*.

Cause	Solution
Solenoid	Turn off water and release pressure to the MWC-EM unit. Remove solenoid coil and clean port and plunger. Defective solenoid replace

**Symptom:** Alarm is chirping and Gland Nut is NOT glowing blue

<b>Cause</b>	<b>Solution</b>
Germicidal Lamp is out	Replace lamp and reset 9000 hour timer. See Germicidal Lamp Replacement and 9000 hour timer reset.
Defective Power Supply	Replace power supply. See electrical supply and power supply start up

**Symptom:** Alarm is chirping, Lamp is on and Gland Nut IS glowing blue

<b>Cause</b>	<b>Solution</b>
9000 hour timer has counted 9000 hours.....Lamp is 1 yr. old	Replace lamp and reset 9000 hour timer. See Germicidal Lamp Replacement and 9000 hour timer reset.

# **4 YEAR LIMITED WARRANTY**

As of November 2022

This MWC-E, ES & EM Series Ultraviolet Sterilizer is warranted for a period of **four years** from date of purchase by first user against defects in materials and workmanship, except for the Ultraviolet Lamp which is warranted for 90 days and a UV Meter Eyepiece Assembly which is warranted for one year from date of purchase against defects in materials and workmanship. Except, as specifically set forth in this paragraph, Master Water Conditioning Corporation makes no other warranties, express or implied.

This warranty shall be void if the ultraviolet sterilizer is moved from the place of original installation, or if damage is caused by misuse, misapplication, accident, freezing, flood, fire or if not installed in accordance with instructions furnished by Master Water Conditioning Corporation.

This warranty shall be void in the event of damages from external sources or where the ultraviolet sterilizer has been operated at pressure in excess of 100 pounds per square inch or at a temperature in excess of 100 degrees F., or below 32 degrees F. Incidental costs or consequential damages are not covered by this warranty.

All defective parts shall be returned prepaid to Master Water Conditioning Corporation for inspection. Master shall not be liable for labor charges other than Master factory repairs.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow limitations on duration of implied warranties or exclusion of incidental or consequential damages, so the above limitations may not apply to you.

All claims must be submitted in writing to Master Water Conditioning Corporation at 224 Shoemaker Road, Pottstown, Pennsylvania 19464, within thirty (30) days from the discovery of the defect. Master Water Conditioning Corporation thereafter will correct defective parts and workmanship or rusting, corrosion or bursting within sixty (60) days.



224 Shoemaker Rd. Pottstown, Pa. 19464

# **MWC-ES FACTS SHEET**

## **IMPORTANT**

### **GROUNDING INSTRUCTIONS**

**All MWC-SERIES UV Systems must be grounded! The green 14# copper wire coming out of the power supply must be grounded to the UV Vessel! Attached the copper wire to the grounding lug to the upper mounting bracket and tighten the screw.**

#### **CAUTION:**

**NEVER LOOK DIRECTLY AT THE ULTRAVIOLET LIGHT WITH THE NAKED EYE.** View through a piece of ordinary glass or optical glasses. **ULTRAVIOLET LIGHT** may cause eye irritation if eye is not properly protected. You should never have to look directly at the **ULTRAVIOLET LIGHT** when installing or trouble-shooting one of our MWC-E Water Sterilizers.

#### ***Pre-Treatment:***

A complete water test is recommended to determine if pre-treatment equipment is required before installation of the UV unit. **Water must meet criteria below:**

<u>Untreated Water Quality</u>	<u>Maximum Allowable Level</u>
Chloride	250.00 ppm
Color	0.00 units
Hardness	8.00 gpg
Iron	0.30 ppm
Manganese	0.05 ppm
pH	6.0 to 8.5
Total Dissolved Solids	500.00 ppm
Turbidity	5.00 ntu

**If untreated water quality exceeds the maximum allowable levels specified, this will result in bacteria passing through the UV unit and into the piping system.**

#### **Unit Location:**

1. The MWC-ES unit must be installed after the well tank and any water pre-treatment equipment (softeners filter, etc.). You must install a Cartridge type Dirt Filter before the MWC-E unit to eliminate the possibility of a dirt build-up inside the stainless steel sterilization chamber. **(SEE PAGE 2, PIPING LAYOUT)**
2. Install at least 4 feet from a dedicated electrical outlet.

**DO NOT INSTALL NEAR ANY HEATING SYSTEMS WHICH RAISE THE AIR TEMPERATURE OVER 100 DEGREES.**

#### ***Disinfecting the Piping System with Chlorine:***

1. Shut off the water to the inlet and outlet of the cartridge filter.
2. Remove the cartridge sump and empty all water. Fill with household chlorine (Clorox, non-scented), 5.25% sodium hypochlorite.
3. Re-install the sump to the filter assembly and open the inlet and outlet



valves.

4. Open the cold water faucet at the furthest point in the piping until you detect chlorine odor. Once the odor is detected, close that faucet. Continue this procedure until the chlorine odor has been detected at every faucet. If chlorine odor is not detected at all faucets, repeat steps 1 through 4.
5. Close ball valve on outlet of cartridge filter.
6. Allow the water to stand for at least (4) hours to kill the bacteria residual in the piping system.

**\*\* No water should be used during disinfection. \*\***

**Before consumption of water, an EPA Lab Test is suggested.**

### **MWC-ES SERIES**

### **TROUBLESHOOTING**

**Symptom:** No flow of water no Alarm and Gland Nut not glowing

<b>Cause</b>	<b>Solution</b>
Electric Supply	Check electrical outlet and breaker box for power. Replace fuse (Buzz 1.5 amp) in Power Supply

**Symptom:** No flow of water or Alarm and *Gland Nut* is *glowing blue*.

<b>Cause</b>	<b>Solution</b>
Solenoid	Turn off water and release pressure to the MWC-EM unit. Remove solenoid coil and clean port and plunger. Defective solenoid replace

**Symptom:** Alarm is chirping and Gland Nut is NOT glowing blue

<b>Cause</b>	<b>Solution</b>
Germicidal Lamp is out	Replace lamp and reset 9000 hour timer. See Germicidal Lamp Replacement and 9000 hour timer reset. ( <b>Pages 5,7</b> )
Defective Power Supply	Replace power supply. See electrical supply and power supply start up ( <b>Page 4</b> )

**Symptom:** Alarm is chirping, Lamp is on and Gland Nut IS glowing blue

<b>Cause</b>	<b>Solution</b>
9000 hour timer has counted 9000 hours.....Lamp is 1 yr. old	Replace lamp and reset 9000 hour timer. See Germicidal Lamp Replacement and 9000 hour timer reset. ( <b>Pages 5,7</b> )