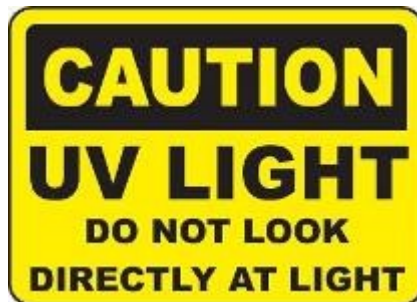


# Flowmark

## FlowMark Disinfection System Model DS-PI-4 Installation Operation Manual

EPA Est.#: 40290-MI-1



### Record Information About Your System

Date Purchased: \_\_\_\_\_

Date Installed: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Local Representative: \_\_\_\_\_

For assistance please call your local representative or call (386)453-5091 or (800) 292-5908

## Check Contents:

Please inspect the package for the following contents and any damage that may have occurred during shipping.

1. FlowMark Controller
2. Quad Lamp Assembly
3. Quad Injector Manifold
4. 4 X 1/4" Tubing
5. 4 X 1/4" check valve
6. 8 X 1/4" clamps for check valve

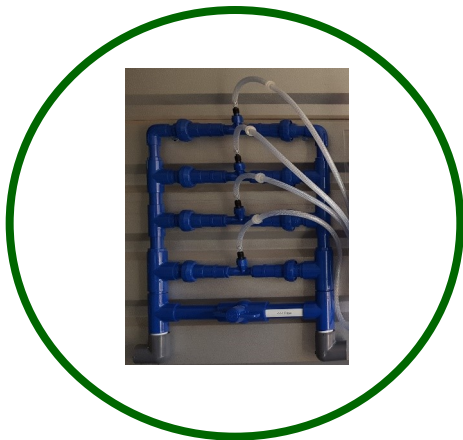


## Installation Location

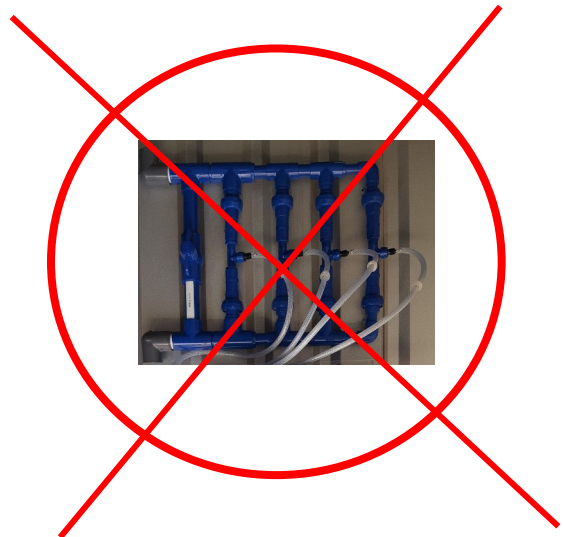
The FlowMark PI Series disinfection systems are designed for mechanical room installation. The injector manifold installs into a dedicated 1" line specifically installed for this system. Ten feet of 1/4" tubing is provided for each lamp so the controller plate with lamp assembly should be installed within 10 feet of the manifold location. Excess tubing can be cut off if not needed.

## Injector Manifold Orientation

Choose a horizontal section of pipe with 16 inches available to remove and accept the manifold. Do not install the manifold on vertical piping. If necessary modify the piping to make sure the manifold installs horizontally. Failure to do so will negatively affect the venturi performance,



Correct



Incorrect

## Warning: Minimum Flow & Pressure Required

This quad system requires a **minimum of 20 GPM and 20 PSI** to operate properly and provide maximum gas/liquid transfer. It is not recommended to install the manifold in the conductivity control loop as flowrates may not be sufficient. It is best to tap into the circulation system and install a dedicated 1" connection with the discharge from the manifold returning to the cooling tower basin.

## Installing the Manifold — Direction Of Flow Is Critical

<<Flow<<



<<Flow<<

If the manifold is installed incorrectly you can switch the flow direction of the venturi by unscrewing the unions and reversing the direction. Tighten unions by hand. Do not loose the "O" Rings.

### Remove Dry Fit Elbows

Measure the exact amount of pipe to be removed and cut out that section. Dry fit the elbows provided onto the pipe to double check the cut length. The manifold must line up perfectly as both legs must be glued simultaneously. Glue the elbows to the pipe and then glue the manifold to the elbows. Allow 20 minute dry time then test for leaks.

## Adjusting Venturing Suction

Venturi suction is governed by pressure differential. The ball valve provided on the manifold is how maximum pressure differential is attained. Depending on the flow and pressure available the ball valve may have to be slightly closed or possibly completely closed especially on twin venturi systems.

1. Open ball valve completely.
2. Hold your wetted finger over the tip of the pre-installed check valve on the venturis.
3. Gradually close the ball valve while feeling for suction on all venturis.
4. Leave the ball valve setting at the maximum suction with the least amount of valve closure possible. Systems with low flow may require complete closing of the ball valve.

*Suggestion: To avoid people tampering with the ball valve setting it is recommended to remove the handle following adjustment. Remove the plastic cap to access the screw that secures the handle. Remove the screw and gently pry off the handle without changing adjustment.*

## Mounting the DS Controller / Lamp Plate

Holes are pre-drilled in each corner of the acrylic plate. Choose an area 24" long by 14" tall and mount the plate with tap-cons or lag bolts. Consider leaving 12" of overhead space to provide clearance for annual lamp replacement. Install the controller on the RHS of the plate.

## Installing Tubing and Check Valve

Connect the 4 X 10 foot, 1/4" tubing provided to the bottom of the UV Canisters and the other end to the check valves which is preinstalled on the venturi. Use the spring clamps provided to secure the check valve connections as the braided tubing does not fit tightly on the check valve.

## Powering the FlowMark DS-PI-4 System

Systems are supplied with a molded 10 foot long 120 VAC Power Cord that can be plugged into any **120 VAC wall outlet**. If you choose to hard wire the unit simply cut the male plug off the power cord and wire the three wires accordingly to a 120 VAC source:

White: Neutral

Black: Hot Leg

Green: Ground

Power Requirement: 2.0 Amps - 100 Watts

## Testing the FlowMark DS-PI-4 System

Once the unit is installed and tubing connected, power up the system by turning ON the breaker switch..

The **Green** Power Light on the face of the controller will illuminate when the system is energized. The **Yellow** Treatment Lights will illuminate indicating the Ultraviolet Lights are on. The white color barb connectors at the side and bottom of the Lamp Chambers will also illuminate a light **Blue** color when the Ultraviolet Lamp is operating.

Barb Fittings will glow **Blue** when the UV Lamps are ON.

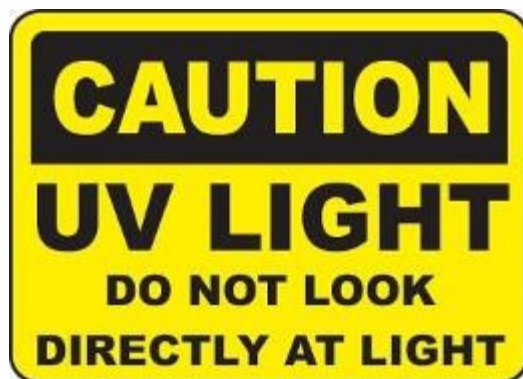


**Green** Light = System is Powered Up

**Yellow** Lights = UV Lamps ON.

## Lamp Replacement

**Do not look at the UV Light when running. Permanent eye damage may occur.**



The blue lamp chambers contains special Ultraviolet Lamps that splits oxygen molecules O<sub>2</sub> into single molecules O<sub>1</sub> that create the disinfecting gas. The useful lamp life is 9,000 hours (one year of continuous operation). After the one-year term the lights will continue to shine but their ability to split oxygen molecules is degraded so the lamps must be replaced. Order a new pre-assembled replacement lamps from your FlowMark distributor.



**Warning: Do not touch the lamp glass with your fingers as damage may occur.**

**Warning: Do not connect the lights and power the system with the lamps out of the chambers. UV light may damage your eyes.**

**There is no need to remove the Blue Lamp Chambers.**

***\*\*\*Always Power Off Before Performing Service\*\*\****

1. Simply unplug the weatherproof 4-pin connector at the top of each Lamp Chamber.
2. Unscrew the Lamps from the Chambers. The Lamps were installed hand tight from the factory but may need a pair of channel lock pliers to remove it after time.
3. Gently insert the new lamps into the chambers and hand tighten. If pliers are used do not tighten more than an 1/8th turn after hand tight.
4. Reconnect the 4-pin connectors. Push together until you hear a click.
5. Turn on the system and check to make sure the lamps and indicator lights are operational and you can see the translucent barb fittings on the canisters glowing blue.

## Hour Meter Instructions



Your FlowMark system is fitted with a digital hour meter that will count hours the system is turned ON up to 99,999.9 hours. If power is interrupted a battery inside the hour meter will save the last reading so when power is restored the hours begin at the saved value.

**Hour Meter Re-Set:** On the bottom of the enclosure you will find a plastic fitting labeled hour meter reset. After you replace the UV Lamp at 9,000 hours power the system up and then use a pen tip to push the reset button for 3 seconds. Verify the digital display has reset to zero. Periodically check the meter reading and prepare to replace the UV Lamps every 9,000 hours for best treatment results.



## **Trouble Shooting**

### **UV Light Not Operating**

If your UV light is not operating it can be only one of 3 problems.

1. No power to the unit.
2. A defective lamp.
3. A bad lamp connection.
4. A defective ballast.

Order new lamps and/or ballasts from your FlowMark distributor. The new lamps come pre-fitted with a female plugs. Simply unscrew the old lamps and hand screw in the new lamps. Connect the male to female plugs and test the lights.

The new ballasts will be shipped with connectors pre-installed. Connect the black and white wires on the power terminal strip to corresponding black and white terminals. Connect the red and blue wires to the output terminal strip as shows in the photo below.

### **Power and Treatment Lights OFF**

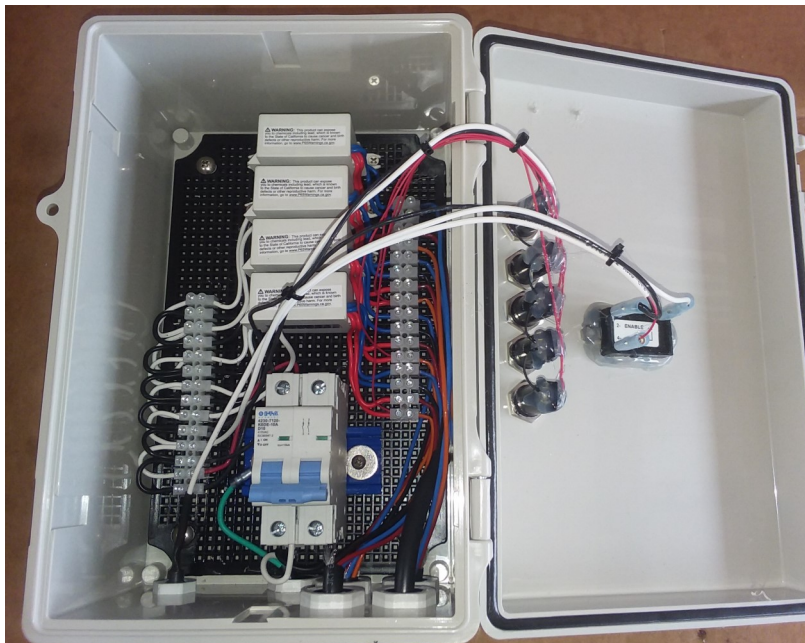
Check the unit is plugged in and the internal breaker switch is ON..  
Check service circuit breaker or GFI and re-set.

### **Power Light On / Treatment Light Dim**

The Lamp corresponding to the dim Yellow Light is OFF.  
The corresponding lamp is defective and requires replacement.

### **Power Light On / Treatment Light OFF**

The corresponding yellow light ballast is defective. Replace ballast. If 60,000 hours run time has past replace all 4 ballasts.



## No Venturi Suction

If you are experiencing no suction at the venturi's perform the following:

*If the system is new and there is no suction after adjusting the ball valve there is not enough flow and/or pressure differential to drive the venturi's. A continuous duty in-line booster pump may be required and is not supplied by FlowMark. Contact local suppliers.*

Turn off water flow and remove the complete venturi assembly by unscrewing the unions. You should be able to see right through the assembly from end to end. If there is a restriction remove it with a long thin screw driver or something similar.

If the venturi appears to be free of debris then carefully remove the top by unscrewing it. There is a check-ball, spring and seat inside so be careful not to loose the components after you pry up the seat with a small screwdriver. Clean as necessary and reassemble. Test for suction.

## Systems Discharging to Atmospheric Pressure

The venturi's require some backpressure to operate. A long discharge line to atmosphere may have sufficient static backpressure to allow venturi's to operate but a short discharge line may not. In the event of no suction a ball valve must be installed in the manifold discharge line and adjusted slightly closed to provide back pressure and proper venturi operation.



## FlowMark DS-PI-4 System Warranty

**ELECTRONIC CONTROLLER:** FlowMark Water Treatment, LLC warrants this water treatment device to the original purchaser against defective parts and workmanship for a period of (1) one year from the end user purchase date according to the following schedule: The Electronic Water Treatment Device will be repaired or replaced (at our option) free of charge during the full 1year term.

**EXCLUSION:** This warranty does not apply to lightning damage, flood damage, abuse or improper installation. This warranty is limited to repair or replacement and does not include consequential damage or installation expenses and is in lieu of any and all other warranties, either expressed or implied. This warranty gives you specific rights and you may have other rights which vary from state to state.