

## FlowMark Disinfection System Model DS-PI-1 Installation Operation Manual



### 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

## Check Contents:

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

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



## Installation Location

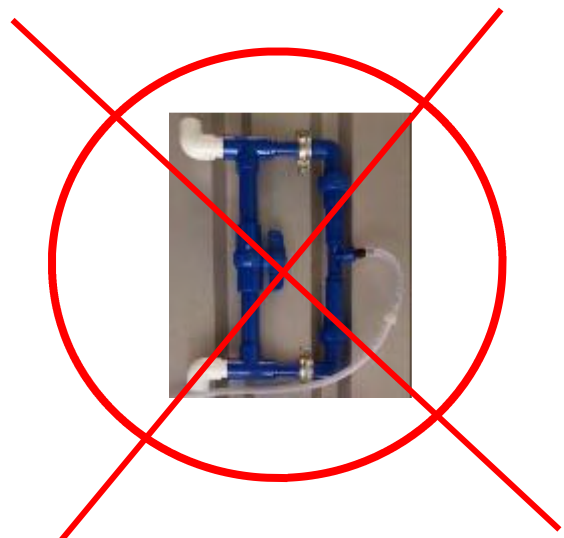
The FlowMark PI Series disinfection systems are designed for mechanical room installation. The injector manifold installs into the conductivity control loop after the conductivity probe and after the corrosion coupon rack. Six feet of 1/4" tubing is provided so the controller plate with lamp assembly should be installed within 6 feet of the manifold location. Excess tubing can be cut off if not needed.

## Injector Manifold Orientation

Choose a horizontal section of pipe with **13 3/4" 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: Avoid Pump Cavitation

If the manifold is installed directly into the conductivity control loop and the return water is plumbed back to the suction side of the condenser pump there is a good chance the gas produced by the DS system will cause pump cavitation (noise). It is strongly suggested the control loop be modified to discharge water directly to the cooling tower basin rather than into the suction line. Cap off the return line and install new piping to return the treated water back to the 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 a 13 3/4" long section of horizontal pipe 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 venturi.
3. Gradually close the ball valve while feeling for suction.
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 16" 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.

## Installing Tubing and Check Valve

Connect the 6 foot, 1/4" tubing provided to the bottom of the UV Canister and the other end to the check valve which is preinstalled on the venturi. Use the spring clamp provided to secure the check valve connection as the braided tubing does not fit tightly on the check valve.

## Powering the FlowMark DS-1 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:

White: Neutral

Black: Hot Leg

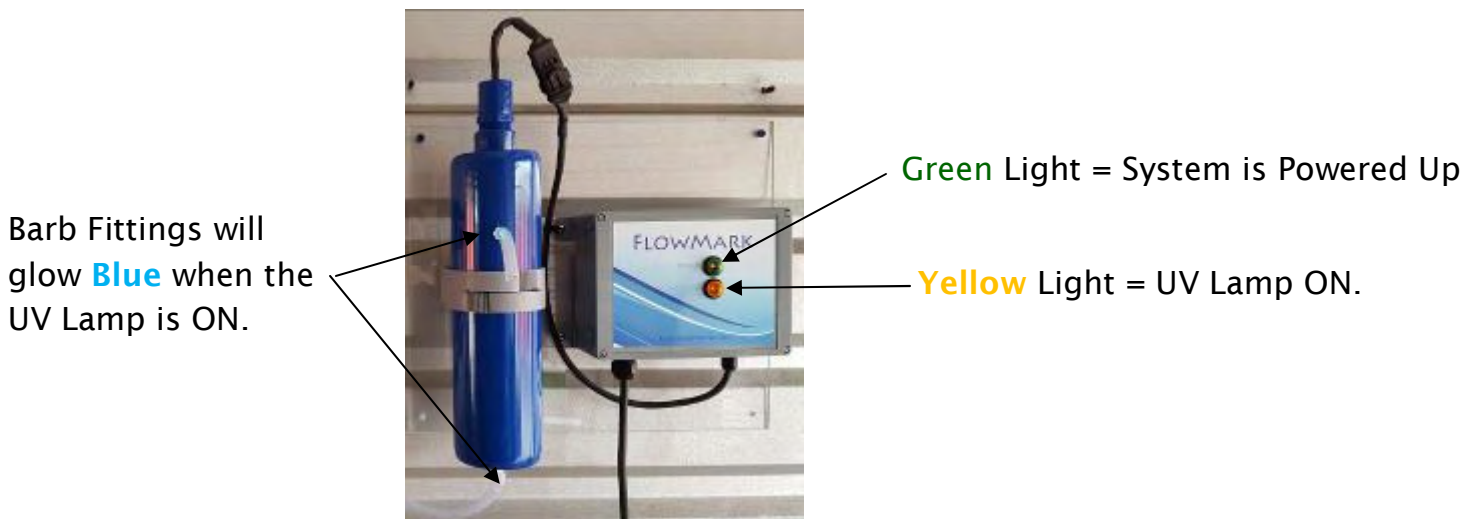
Green: Ground

Power Requirement: 0.25 Amps - 18 Watts

## Testing the FlowMark DS-1 System

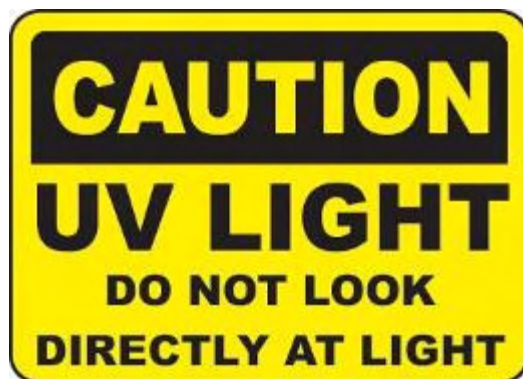
Once the unit is installed and tubing connected, power up the system.

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



## Lamp Replacement

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



The blue lamp chamber contains a special Ultraviolet Lamp 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 light will continue to shine but it's ability to split oxygen molecules is degraded so the lamp must be replaced. Order a new pre-assembled replacement lamp from your FlowMark distributor.



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

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

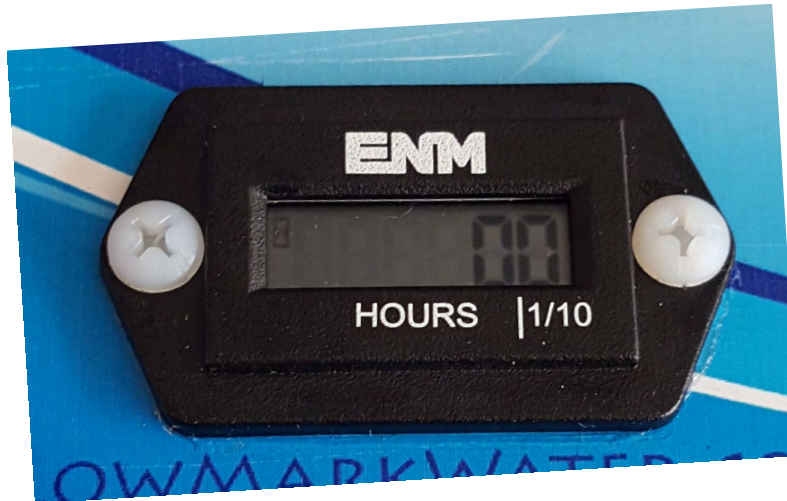
**There is no need to remove the Blue Lamp Chamber.**

***\*\*\*Always Unplug or Turn Hard Wire Power Off Before Performing Service\*\*\****

1. Simply unplug the weatherproof 4-pin connector at the top of the Lamp Chamber.
2. Unscrew the Lamp from the Chamber. The Lamp was 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 lamp into the chamber and hand tighten. If pliers are used do not tighten more than an 1/8th turn after hand tight.
4. Reconnect the 4-pin connector. Push together until you hear a click.
5. Turn on system and check to make sure the lamp and indicator lights are operational and you can see the translucent barb fittings on the canister 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 an e-prom 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 a new lamp and/or ballast from your FlowMark distributor. The new lamp comes pre-fitted with a female plug. Simply unscrew the old lamp and hand screw in the new lamp. Connect the male to female plug and test the light.

The new ballast 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.  
Check circuit breaker or GFI and re-set.

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

Lamp is not connected.  
Lamp is defective and requires replacement.

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

Ballast is defective. Replace ballast and test system.



## No Venturi Suction

If you are experiencing no suction at the venturi 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 to drive the venturi's. A continuous duty in-line booster pump will 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.



## FlowMark DS-PI-1 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.