

**Aquaculture Systems Technologies, LLC.**  
**Propeller Wash Bead Filter System Controller**  
**Model PW1**

## **Controller Installation**

**Wire # 0 -> hook up to all neutrals (-) in wire nut**

**Connector # 1 -> 20 amp power in hot (+)**

**Connector # 2 -> Pump (+)**

**Connector # 3 -> Valve (+)**

**Connector # 4 -> Mixing Motor (+)**

**Connectors # 6 -> micro switch hook up on actuated ball valve.**

### **SPECIAL INSTRUCTIONS - PLEASE NOTE!**

SYSTEM WIRING **MUST** HAVE 20 AMP INDEPENDENT BREAKER INSTALLED BY A LICENSED ELECTRICIAN BEFORE THE CONTROLLER CAN BE INSTALLED WHICH **MUST** MEET NATIONAL - STATE - AND LOCAL REGULATIONS. INSTALLATION AND OPERATION **MUST** BE IN COMPLIANCE WITH STATE, COUNTY AND LOCAL PLUMBING AND ELECTRICAL CODES.

THIS CONTROLLER IS EQUIPPED WITH THREE 10 AMP RELAYS TO CONTROL THE PUMP, MIXING MOTOR AND THE ACTUATED BALL VALVE ON THE SLUDGE LINE. THE PUMP SIZE AND AMP DRAW AND THE MIXING MOTOR SIZE AND AMP DRAW ARE DEPENDENT ON FILTER MODEL AND PUMP SELECTION, WHILE THE SLUDGE VALVE DRAWS ONLY 2.2 AMPS. **IF YOUR PUMP OR MIXING MOTOR DRAWS MORE THAN 8 AMPS YOU MUST USE AND EXTERNAL RELAY OR MOTOR STARTER WITH A 110 VOLT COIL.** FAILURE TO USE AN EXTERNAL RELAY OR MOTOR STARTER IN CONJUNCTION WITH A PUMP(S) OR MIXING MOTOR THAT DRAW MORE THAN 8 AMPS WILL VOID ANY AND ALL WARRANTIES.

**WARNING!** BEFORE BEGINNING ANY WORK MAKE SURE POWER IS TURNED OFF TO ALL POWER WIRES, CONTACTORS OR OTHER SOURCES OF ELECTRICAL CURRENT.

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## **DETAILED INSTRUCTIONS**

1. Remove the four screws securing the cover of the box.
2. Determine and cut the length of the 14/3 SO cord or ½" pipe (gray PVC conduit) needed so that the box can be mounted at eye level on a wall or on a post.
3. Cut the pipe and glue\* feeding through:
  - A) the ½" PVC connector - The 20 amp controller power wires
  - B) the ½" PVC connector- The sludge valve power wires, micro switch wires and the pump power wires.
  - C) the ½" PVC connector- The mixing motor power wires and external alarm wires.
4. Connect the pump power wire (+) to the # 2 butt end connector and crimp.
5. Connect the valve power wire (+) to the # 3 butt end connector and crimp.
6. Connect the mixing motor power wire (+) to the # 4 butt end connector and crimp.
7. Connect the micro switch wires to the # 6 butt end connectors and crimp.
8. Connect the hot wire (+) to the # 1 butt end connector and crimp.
9. Connect # 0 wire, neutral from power line, valve motor wire, mixing motor and pump wire in one wire nut.
10. Connect the ground from the power line, valve motor, mixing motor and pump in one wire nut.
11. Backfill the end of the SO connector or ½" conduit with Silicone II .\*
12. Re-install cover with the four screws, making sure that the black gasket is in place
13. Turn on 20 amp breaker.

**\* Failure to glue and Silicone II conduit connectors will void any warranty!**

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## **DESCRIPTION/SEQUENCE OF OPERATION**

**Power Up Self Check** - turn independent 20 amp breaker on, you will hear a beep and the BACKWASH yellow light will come on. After a 5 second system check the SLUDGE VALVE OPERATION yellow light will come on as the controller turns the valve and confirms that the valve is in the closed position.

1. VALVE CLOSED/PUMP ON: System knows that the valve is in the closed position and will operate the recirculating water pump for the duration selected on the BACKWASH FREQUENCY selector.
2. PUMP OFF (AUTO OR TIME) : When the system cycle has completed either the amount of time selected on the BACKWASH FREQUENCY selector or the back pressure has reached approximately 15 psi (in Auto position only) then the system will shut down the pump and go into BACKWASH mode.
3. MIXING DURATION: Mixing motor will run for the time selected on the switch.
4. MIXING MOTOR OFF: and system settles for 10 minutes. The settling time is fixed.
5. OPEN DUMP VALVE: For time selected for DRAIN TIME
6. CLOSE DUMP VALVE
7. CONFIRM VALVE CLOSED AND RESTART SYSTEM. NOTE - THE SYSTEM WILL NOT RESTART UNLESS THE SLUDGE VALVE HAS FULLY CLOSED.

## **TO MANUALLY BACKWASH THE FILTER**

1. With the controller BACKWASH FREQUENCY selector in any position, press and hold the RED BUTTON on the side of the controller for 35 seconds. Once you hear the first beep you can let off on the button, your filter will backwash within 30 seconds.

## **TO CHANGE BACKWASH FREQUENCY**

1. Power down the system at the independent breaker.
2. Confirm that none of the lights on the panel are on.
3. Change the BACKWASH FREQUENCY selector to the desired position.
4. Power up the system at the independent breaker. This procedure is necessary to prevent unauthorized or inadvertent changes in backwash frequency. The microprocessor in the controller only reads the BACKWASH FREQUENCY selector position when the unit is first powered up.

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#### **TO MANUALLY DRAIN THE SYSTEM** **(Allows You to Run the Pump with the Actuated Ball Valve Open)**

1. Power down the system and wait 5 seconds.
2. Turn the BACKWASH FREQUENCY selector to the AUTO Position.
3. Power up the system.
4. Within 5 Seconds turn the BACKWASH FREQUENCY sector one click back to the seven days Position.
5. Pump will run and pump the tank down until the system is powered down. As a reminder that you are in drain mode, the Controller will chirp.
6. To return the controller to standard mode, just power down the unit, check that the BACKWASH FREQUENCY selector is in the desired position, wait 5 seconds, power up the system.

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## **Propeller Wash Bead Filter System Controller**

### **Declaration of Warnings**

**WARNING!** FAILURE TO COMPLY TO THE INSTRUCTIONS FOR THE INSTALLATION OF THE SYSTEM CONTROLLER WILL VOID ANY AND ALL WARRANTIES PROVIDED BY AQUACULTURE SYSTEMS TECHNOLOGIES, LLC. OR INNOVATIVE ENVIRONMENTAL SOLUTIONS, LLC., AND WILL PLACE THE BURDEN OF WARRANTY COVERAGE ON THE INSTALLER. FAILURE TO FOLLOW INSTALLATION INSTRUCTIONS PROPERLY MAY CAUSE SERIOUS INJURY, ILLNESS, OR DEATH TO PERSONS OR PROPERTY AND MAY CAUSE SERIOUS DAMAGE TO THE SYSTEM, CONTROLLER, OR OTHER PROPERTY.

**DANGER!** ONLY A QUALIFIED PROFESSIONAL SHOULD ATTEMPT TO REPAIR OR FIX THE CONTROLLER. FAILURE TO CONTACT AQUACULTURE SYSTEMS TECHNOLOGIES, LLC. PRIOR TO ANY ATTEMPTED REPAIR WILL RESULT IN THE VOID OF ANY AND ALL REMAINING WARRANTIES. AQUACULTURE SYSTEMS TECHNOLOGIES, LLC. WILL HAVE REPAIR PARTS AVAILABLE FOR PURCHASE ONCE THE WARRANTY PERIOD HAS LAPSED. WORK BY ANYONE OTHER THAN A QUALIFIED PROFESSIONAL MAY CAUSE SERIOUS BODILY INJURY OR DEATH TO THE OPERATOR OR OTHER PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE EQUIPMENT AND OTHER PROPERTY.

**WARNING!** IN CASE OF POTENTIAL FLOOD, IMMEDIATELY TURN OFF THE ELECTRICAL POWER TO THE CONTROLLER SYSTEM AT THE INDEPENDENT BREAKER LOCATED WITHIN SITE OF THE CONTROLLER. FAILURE TO TURN OFF THE ELECTRICAL POWER MAY CAUSE SERIOUS INJURY OR DEATH TO THE OPERATOR AND OTHER PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE AQUACULTURE SYSTEM AND OTHER PROPERTY.

# **LIMITED WARRANTY**

**Aquaculture Systems Technologies, LLC**, (AST) warrants the material and workmanship to be free of defects under designated use and normal service on its **Bead Filter Controller (Model AST-BB1, BB220V, BBX2, BBDV1, BBDV2, PW1, PW1220V, PW2, PW2220V, PW3 and PW3220V)** for a period of one (1) year from the date of shipment. All warranty claims must be presented in writing to AST. **Aquaculture Systems Technologies, LLC** extends to buyers the manufacturer's warranties (copies of which are available on request) only for the components which make up the **Bead Filter Controller** including, if purchased from AST, the Actuated Ball Valve which is required for automation of the backwash sequence. Normal use and service requires the following:

1. The bead filter controller be installed and operated according to the installation and operational instructions supplied by the manufacturer.

This warranty applies only to the original purchase price, and is good only when the total payment for the equipment has been received. The limited warranty (expressed or implied) during the warranty period shall consist of the repair or replacement of the items of manufacture, at the discretion of **AST**, and said warranty applies only to the original purchaser. This warranty is void if the items are damaged by negligence or accident after purchase; used for other than the intended purpose; altered; repaired at other than an authorized service center; or used with other items that affect the integrity, performance, or safety of these items. Liability does not cover indirect or consequential cost, including materials lost, labor or installation/reinstallation cost, injury, property damage, or damages caused by mishandling. Returns for repairs must be pre-approved and the return authorization number prominently displayed on the outside of the shipping container. Returns will not be accepted without a "return authorization number". Returns for repair should be sent to the following address "FREIGHT PREPAID":

Aquaculture Systems Technologies, LLC  
Warranty Returns  
108 Industrial Ave.  
Jefferson, LA 70121

Manufacturer's liability for incidental or consequential damages is specifically excluded to the full extent permitted by the applicable law. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. **THIS WARRANTY IS EXCLUSIVE OF ALL OTHER IMPLIED WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**