



**AUTO-EC-3-E-PLC**  
**Electric Filter Backwash Controller**  
Operation & Maintenance Manual



## Contents

<b>Controller Basics</b>	<b>3</b>
<b>Controller Components</b>	<b>4</b>
<b>Screen Flow Diagram</b>	<b>5</b>
<b>Controller Functions</b>	<b>6</b>
<b>Installation</b>	<b>7</b>
<b>Warranty</b>	<b>8</b>

## Controller Basics

Auto-EC-3-E-PLC Backwash Controllers are designed to monitor and activate a cleaning cycle for three Low Pressure Series filters in parallel. The controller allows the user to adjust the flush duration, dwell time between backwashes, and the specified periodic backwash. Other features include manual start, counter reset, and alarm reset.

The controller receives an open/closed signal via terminals 1 through 6. This signal is from the differential pressure gauge, and means that the gauge has reached a preset value. Reaching the preset value (usually 7 psid) tells the controller that debris has collected on the screen element, and that an automatic backwash will activate.

When a closed signal is sensed on terminals 1 and 2 for a 5 second period, the backwash sequence begins. The backwash sequence is: station 1 energizes for the flush duration, then an idle period for the dwell duration, then station 2 energizes for the flush duration, another dwell, and then station 3 energizes for the flush duration.

### Controls

A. Panel enclosure: NEMA 4X

B. Control panel for each filter module shall include:

1. All required control and power elements to provide automatic self-cleaning system operations.
2. Main power disconnect switch
3. Starters
4. Transformer
5. PLC
6. Relays
7. Timers
8. Alarm logic modules
9. TIME & DP, and DP ONLY modes of operation with two position selector switch.
10. Indicating lights

C. Depending on mode of operation, control

panel will be responsible for opening the electric exhaust ball valve and starting the motor to rotate the cleaning element. After the cleaning interval is complete, control panel shall stop the motor, close the exhaust valve, and reset the cleaning cycle for the next operation.

D. With the selector switch in the TIME&DP position, timers shall intermittently initiate the cleaning cycle at preset adjustable intervals ranging from 0 to 24 hours for the length of time necessary to complete one cleaning cycle.

E. A differential pressure switch shall be arranged on the filter or across the inlet and outlet piping of the filter to override the timer in the TIME&DP mode or acting alone in the DP ONLY mode to initiate the cleaning cycle whenever a differential pressure across the filter exceeds a preset value. The differential pressure switch shall continue to operate the cleaning cycle until the differential pressure across the filter returns to normal or an adjustable timer inside the control panel elapses. If the cleaning cycle continues until this preset timer elapses,

then the control panel shall shut down the cleaning operation completely causing the red alarm FAULT light to glow on the cover of the control panel and send a 24 volt AC alarm signal to terminals 17 and 18 inside the control panel.

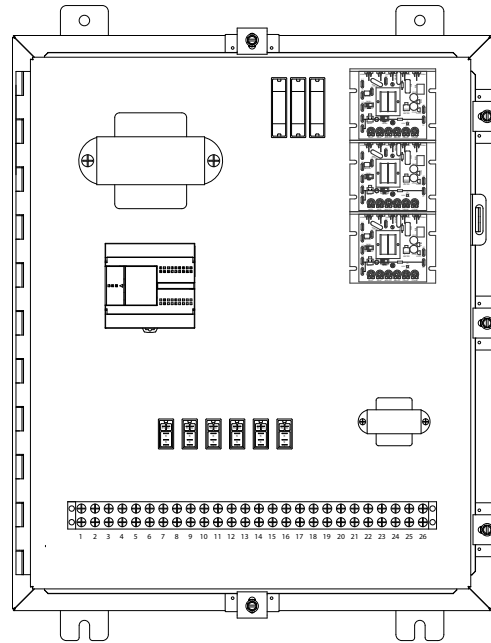
F. A "TEST" button shall be located on the control panel door that will initiate a cleaning cycle upon demand.

G. A "RESET" button shall be located on the control panel door.

H. Control panel and all components of each control panel shall be Underwriter's Laboratory listed.

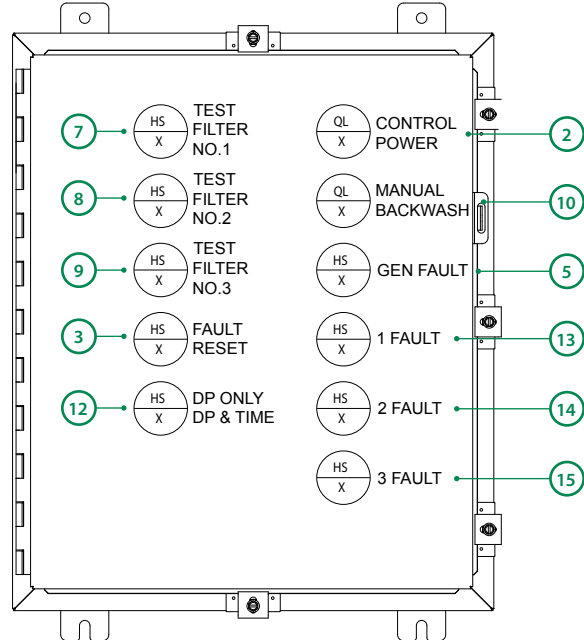
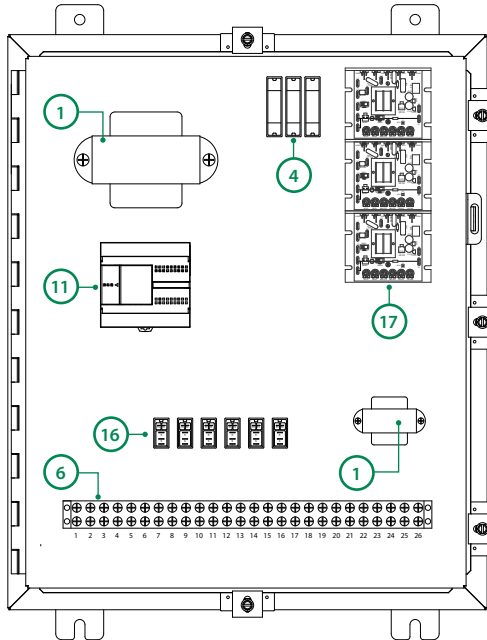
I. Additional features

1. Flush in progress - relay contact closure output
2. System fault alarm - relay contact closure output

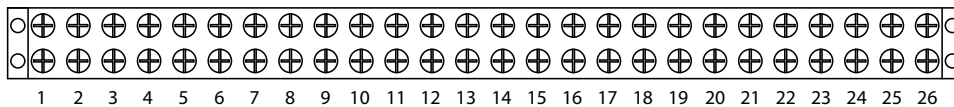


**Auto-EC-3-E-PLC**

# Controller Components



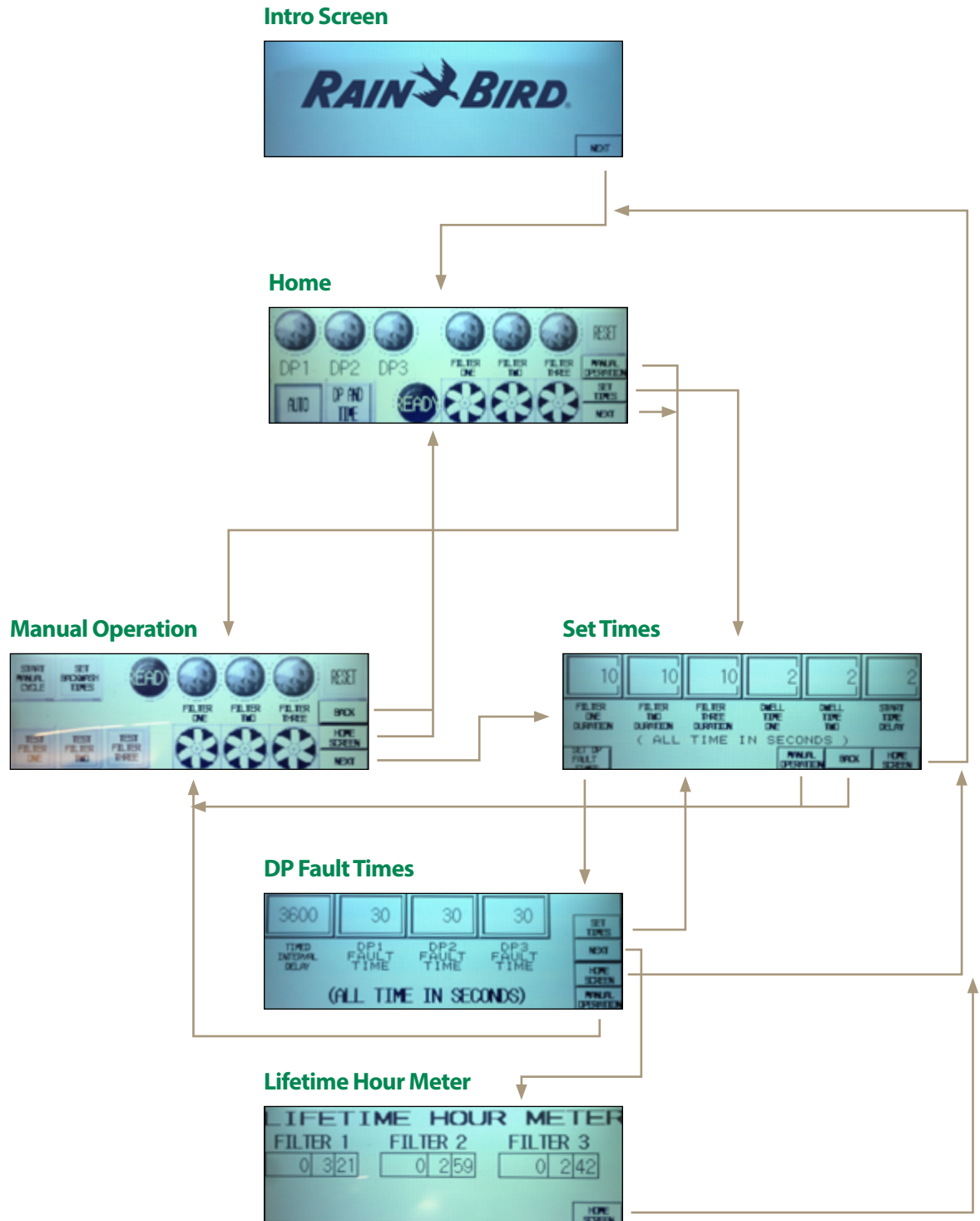
- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>1. Step-down Transformers. Converts 480 VAC to 110VAC and 110 VAC to 24 VDC.</li> <li>2. Power. Controls power to the controller board.</li> <li>3. Fault Reset.</li> <li>4. Circuit Breaker.</li> <li>5. Manual Backwash. Manually initiates a backwash sequence for stations 1-3.</li> <li>6. Terminal Block: Connections for valves, motors, and differential pressure gauge.</li> <li>7. Test Filter 1. Executes a backwash cycle for station 1 filter.</li> </ul> | <ul style="list-style-type: none"> <li>8. Test Filter 2. Executes a backwash cycle for station 2 filter.</li> <li>9. Test Filter 3. Executes a backwash cycle for station 3 filter.</li> <li>10. General Fault. DP fault time exceeded without relieving differential pressure.</li> <li>11. IDEC PLC. Set flush duration, dwell, and timed backwash</li> <li>12. DP / DP &amp; Time. Selector switch for DP only mode or DP &amp; timed interval mode.</li> <li>13. Fault Filter 1. Indicates fault for station 1 filter.</li> </ul> | <ul style="list-style-type: none"> <li>14. Fault Filter 2. Indicates fault for station 2 filter.</li> <li>15. Fault Filter 3. Indicates fault for station 3 filter.</li> <li>16. 24VDC Relays</li> <li>17. Motor Drive Boards</li> </ul> |
|---|---|--|



## Terminals

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>T1–2. Open/Close terminal for station 1 differential pressure gauge.</li> <li>T3–4. Open/Close terminal for station 2 differential pressure gauge.</li> <li>T5–6. Open/Close terminal for station 3 differential pressure gauge.</li> <li>T7. Motor 1 Red Lead</li> <li>T8. Motor 1 Black Lead</li> </ul> | <ul style="list-style-type: none"> <li>T9. Motor 2 Red Lead</li> <li>T10. Motor 2 Black Lead</li> <li>T11. Motor 3 Red Lead</li> <li>T12. Motor 3 Black lead</li> <li>T13–14. Valves 1-3 Red Lead</li> <li>T15–16. Valves 1-3 Black Lead</li> <li>T17. Valve 1 White Lead</li> <li>T18. Valve 2 White Lead</li> </ul> | <ul style="list-style-type: none"> <li>T19. Valve 3 White Lead</li> <li>T20–21. Input Voltage Hot</li> <li>T22. Input Voltage Ground</li> <li>T23–24. Alarm Output</li> <li>T25–26. Emergency Stop</li> <li>T27–28. 24VAC for Utility Water Backwash</li> </ul> |
|--|---|---|

# Screen Flow Diagram



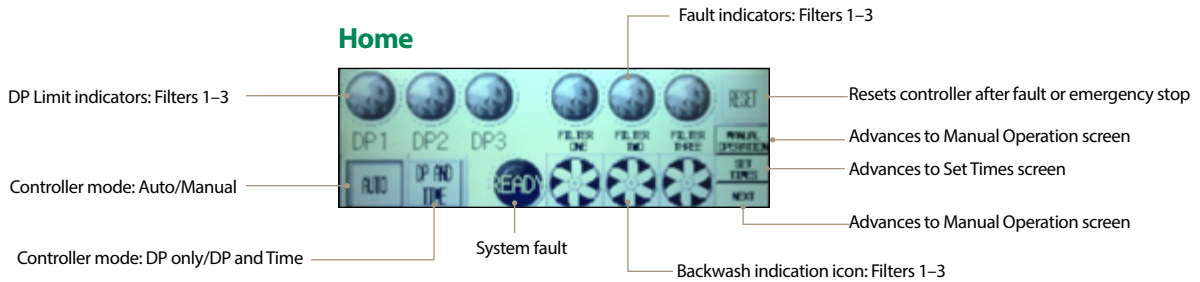
# Controller Functions

## Intro Screen

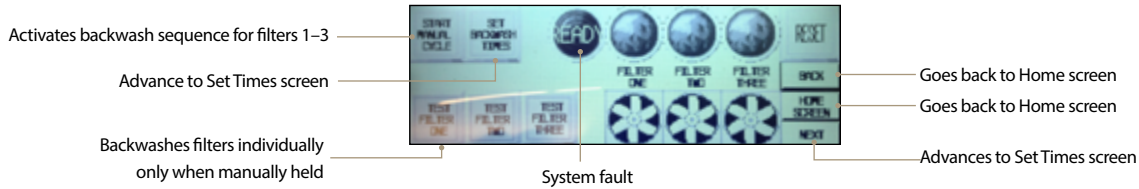


Advances from Intro to Home screen

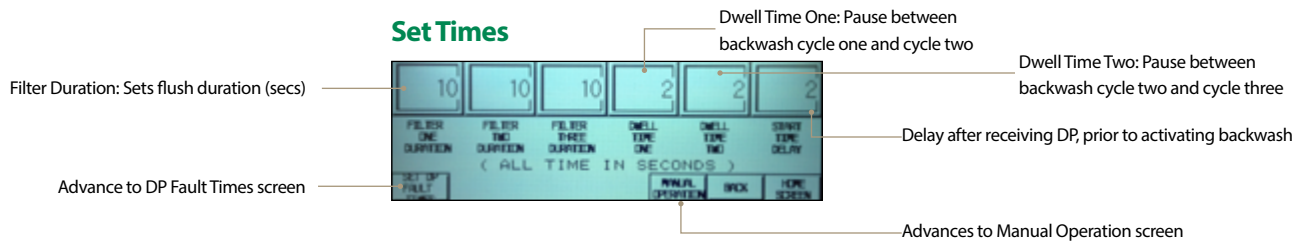
## Home



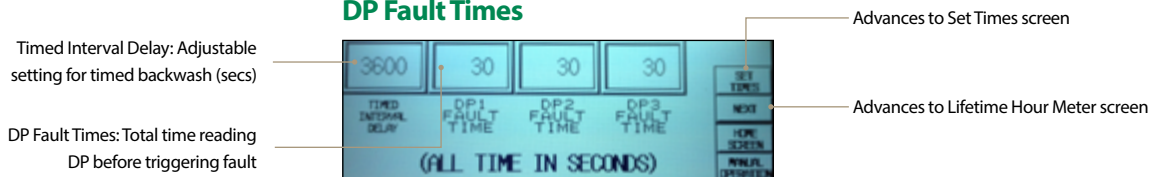
## Manual Operation



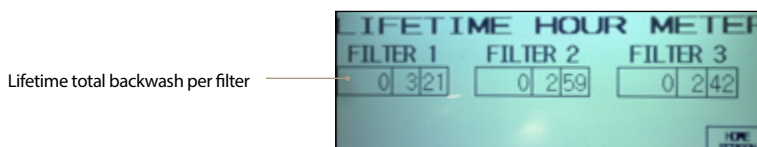
## Set Times



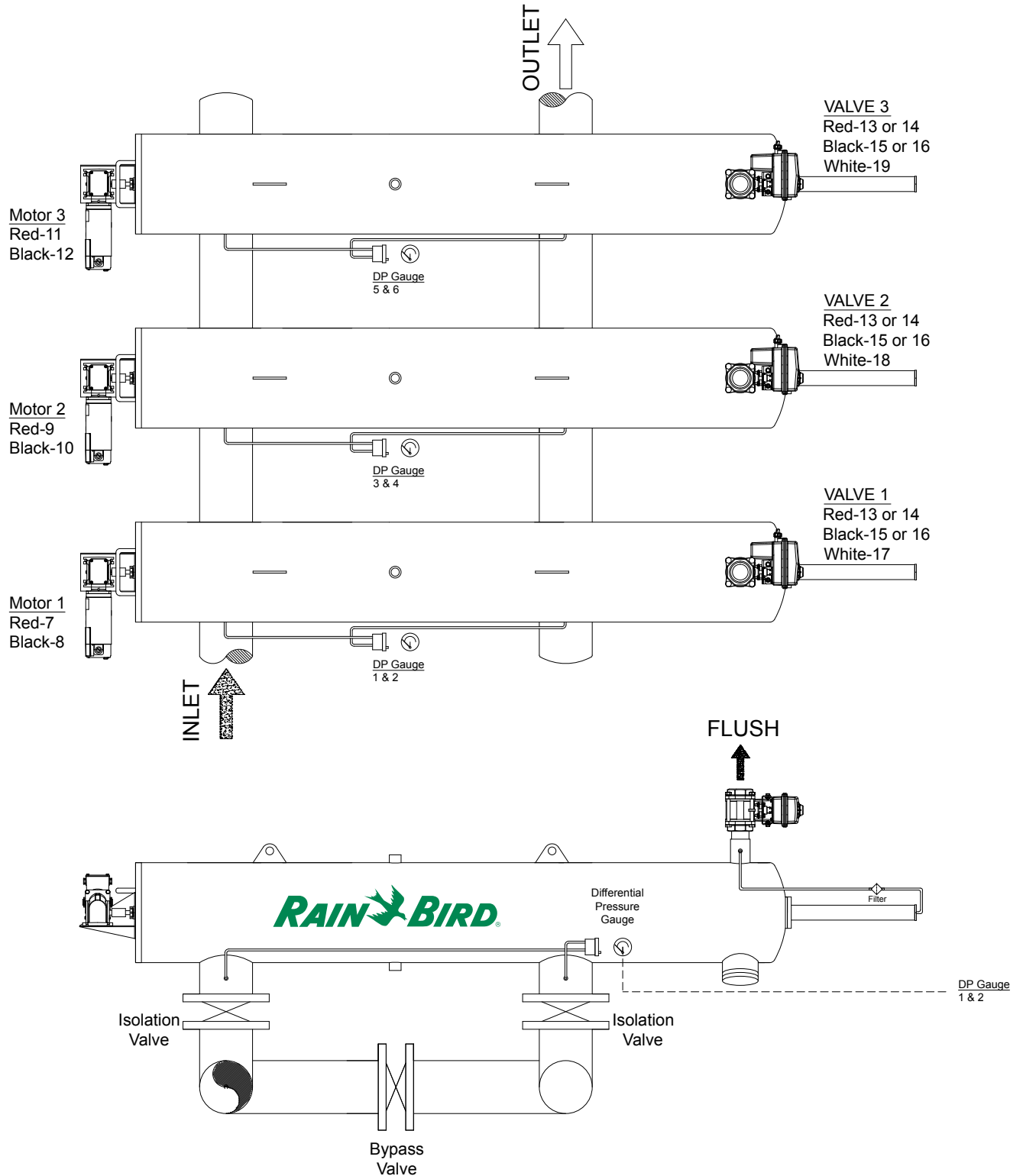
## DP Fault Times



## Lifetime Hour Meter



# Installation



## Warranty

Rain Bird Filters guarantees all self cleaning water filters, components, and accessories free of defects for one year from the date of installation, or 18 months from the date of original shipment. Rain Bird will replace any part found defective during the warranty period, provided the equipment in question was handled, installed, and operated in accordance with the operation and maintenance manual and sound engineering practices. Rain Bird Filters assumes no liability for incidental or consequential damage resulting from the use of its products, services, or data. Liability is limited to replacement or repair of products provide by Rain Bird Filters, and no agent or sales representative has authority to extend the warranty period without the express written consent of Rain Bird Filters, Inc. Shipping charges for returned equipment will be at the expense of the purchaser, and all returned equipment must be sent to Rain Bird Filters.