AQUATIC INTELLIGENCE
DIFFERENTIAL PRESSURE CONTROLLER

This instruction guide for the Aquatic Intelligence D.P. controller is intended for guiding you through installation, electrical wiring, programming, initial start-up, general operations, trouble shooting and parts. For detailed features, refer to the sales literature and technical specifications. This D.P. controller is designed to install and operate on all EPD single or multiple tank filter systems.

Step by Step photos or illustrations with captions will guide you through each assembly step. Individual, easy to follow electrical schematics for each terminal connection are provided. To program the D.P. controller, follow the easy “touch screen” steps. The initial start-up section guides you through each step necessary to get your filter system up and running and “fine-tuned” for general operations.

A trouble shooting section and an exploded parts list of the components are located in the back.
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QUICK REFERENCE ASSEMBLY GUIDE

DIFFERENTIAL PRESSURE CONTROL

STEP PAGE ASSEMBLY/INSTALLATION
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ASSEMBLY PROCEDURE

REMOVE COMPONENTS AND PARTS FROM SHIPPING CRATE

CAREFULLY UNPACK THE AQUATIC INTELLIGENCE D.P. CONTROLLER AND COMPONENTS, TO PREVENT FROM DAMAGING OR BREAKING THE GLASS IN THE GAUGE PANEL, USE THE CRATE AS A WORK BENCH, COVERING THE SURFACE WITH PAPER OR CLOTH TO PREVENT SCRATCHING THE CONTROLLER SURFACES.

ORGANIZE THE LOOSE PARTS AND COMPONENTS, FITTINGS, SOLENOIDS, ETC., TO GUARD AGAINST MISPLACING THESE ITEMS.

1. INSTALL D.P. CONTROLLER

SINGLE TANK SYSTEMS

INSTALL THE D.P. FILTER CONTROLLER ONTO THE CONTROLLER MOUNTING BRACKET USING THE HARDWARE PROVIDED. (REFER TO PARTS LIST)
MULTIPLE TANK SYSTEMS

INSTALL THE D.P. FILTER CONTROLLER ONTO THE CONTROLLER MOUNTING BRACKET FOR MULTIPLE TANK SYSTEMS USING THE HARDWARE PROVIDED. (REFER TO PARTS LIST)

2. INSTALL SOLENOIDS

SINGLE TANK SYSTEMS

POSITION SOLENOID ON THE CONTROLLER MOUNTING BRACKET AS SHOWN AND SECURE WITH HARDWARE PROVIDED. (REFER TO PARTS LIST)

MULTIPLE TANK SYSTEMS

INSTALL THE SOLENOID/PLATE ASSEMBLY TO THE CONTROLLER MOUNTING BRACKET

INSTALL THE SOLENOID/PLATE ASSEMBLY TO THE CONTROLLER MOUNTING BRACKET AS SHOWN AND SECURE WITH HARDWARE PROVIDED. (REFER TO PARTS LIST)
3. INSTALL GAUGE PANEL

ATTACH THE 3/8" TUBE X 1/4" NPT ELBOWS TO THE GAUGES, TURNING TOWARDS EACH OTHER AS SHOWN. USE OPEN END WRENCH TO HOLD GAUGES TO PREVENT BREAKAGE OF THE GLASS LENS.

POSITION THE GAUGE PANEL ASSEMBLY TO THE STUDS ON THE BACK (TOP CENTER) OF THE D.P. CONTROLLER AND SECURE WITH 1/4"-20 ELASTIC LOCKNUTS. (REFER TO PARTS LIST)

4. WATER PRESSURE REGULATOR ASSEMBLY

REFER TO THE FILTER ASSEMBLY GUIDES FOR INSTALLATION OPTIONS OF THE WATER PRESSURE REGULATOR ASSEMBLY.
5. TUBING DIAGRAM FOR SINGLE TANK AUTO SYSTEM

REFER TO EXPLODED PARTS LIST OF THE FILTER SYSTEM FOR THE PROPER FITTINGS. APPLY FIVE (5) WRAPS OF TEFLON TAPE (CLOCKWISE) ONTO EXTERNAL FITTING THREADS. WHEN INSTALLING FITTINGS INTO THREADED HOLES OR PORTS, BE CAREFUL NOT TO CROSS THREADS OR LEAKAGE MAY OCCUR.

GAGE PANEL

EFFLUENT GAUGE

INFLUENT GAUGE

REVERSE FLOW BACKWASH VALVE

DIP CABLE

IN - LINE FILTER

WATER PRESSURE SUPPLY: REGULATE TO 50 P.S.I.
6. TUBING DIAGRAM FOR TWO TANK AUTOMATIC SYSTEM WITH PRIORITY VALVE

REFER TO EXPLODED PARTS LIST OF THE FILTER SYSTEM FOR THE PROPER FITTINGS. APPLY FIVE (5) WRAPS OF TEFOLN TAPE (CLOCKWISE) ONTO EXTERNAL THREADS. WHEN INSTALLING FITTINGS INTO THREADED HOLES OR PORTS, BE CAREFUL NOT TO CROSS THREADS OR LEAKAGE WILL OCCUR.

PRIORITY VALVE

TO WASTE

BACKWASH VALVES

SOLENOID VALVES

VENT

WATER PRESSURE SUPPLY. REGULATE TO 50 P.S.I.
7. TUBING DIAGRAM FOR THREE THRU SIX TANK AUTOMATIC SYSTEMS

REFER TO THE EXPLODED PARTS LIST OF THE FILTER SYSTEM FOR THE PROPER FITTINGS. APPLY 5 WRAPS OF TEFLOM TAPE (CLOCKWISE) ONTO EXTERNAL THREADS. WHEN INSTALLING FITTINGS INTO THREADED HOLES OR PORTS, BE CAREFUL NOT TO CROSS THREADS OR LEAKAGE MAY OCCUR.

BACKWASH VALVES

SOLENOID VALVES

VENT

WATER PRESSURE SUPPLY. REGULATE TO 50 P.S.I.

NOTE: INSTALL TUBING IN TUBING CONDUIT.
POWER SUPPLY WIRING DIAGRAM

POWER TO CONTROLLER, 115 VAC, 60 HZ., SINGLE PHASE TWO WIRES MINIMUM
SUPPLY CONDUCTOR, 20 AMPS

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
WIRING DIAGRAM FOR BACKWASH SOLENOID VALVE CONNECTIONS INSIDE CONTROLLER

PRESS OUT ONE SMALL HOLE PLUG LOCATED ON UNDERSIDE OF CONTROLLER FOR EACH SOLENOID VALVE TO BE TERMINATED INSIDE CONTROLLER. INSERT CORD GRIP FROM UNDERSIDE AND FIRMLY SECURE WITH PLASTIC NUT FROM INSIDE. LOOSEN CORD GRIP NUT AND INSERT SOLENOID VALVE CABLE, ONE PER CORD GRIP.

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
DIFFERENTIAL PRESSURE SWITCH
TERMINATE THE RED WIRE AT TERMINAL #207 AND THE BLACK WIRE AT TERMINAL #202 INSIDE CONTROLLER AS SHOWN.

ROUTE CABLE THRU OUTLET AT BOTTOM OF FILTER CONTROLLER

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
HYDRAULIC SOLENOID OPERATED PRIORITY VALVE CONNECTIONS

IF THE HYDRAULIC PRIORITY VALVE IS INSTALLED ON YOUR SYSTEM, ROUTE SOLENOID VALVE WIRING THROUGH ONE OF THE PORTS ON THE Underside OF THE FILTER CONTROLLER AND TERMINATE TO TERMINALS #201 & #226.

FROM PAS SYSTEM OR CITY WATER PRESSURE

SOLENOID VALVE

TO TOP OF PRIORITY VALVE

VENT TO ATMOSPHERE. DO NOT INSTALL INTO THE WASTE LINE.

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
BOILER (HEATER) INTERLOCK (FIREMAN SWITCH)

A HEATER, WHEN WIRED TO THE FILTER CONTROLLER, WILL SHUT DOWN PRIOR TO BACKWASHING THE FILTER SYSTEM OR CIRCULATING PUMP SHUTTING OFF FOR THE DURATION RECOMMENDED BY THE HEATER/BOILER COMPANY AND HAS BEEN PROGRAMMED INTO THE FILTER CONTROLLER. THIS ALLOWS FOR THE COOLING DOWN OF THE HEATER TUBES, ETC., TO PREVENT SCALING OR THERMAL DAMAGE.

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
PRESSURE AMPLIFICATION SYSTEM, 60 HZ

THE EPD PRESSURE AMPLIFICATION SYSTEM STARTS / STOPS ON DEMAND DURING THE BACKWASH CYCLE.

D.P. CONTROLLER

ADJUSTABLE PRESSURE SWITCH

PRESSURE AMPLIFICATION SYSTEM MOTOR
115 VAC, 60 HZ
15 AMP

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
PRESSURE AMPLIFICATION SYSTEM, 60 HZ
FOR USE WITH TWO FILTER SYSTEMS

ONE EPD PRESSURE AMPLIFICATION SYSTEM MAY BE USED FOR TWO FILTER SYSTEMS. IT WILL START / STOP ON DEMAND DURING THE BACKWASH CYCLE.

DP CONTROLLER #1

DP CONTROLLER #2

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
START BACKWASH SIGNAL FROM REMOTE LOCATION

YOU MAY INITIATE A BACKWASH CYCLE FROM A REMOTE LOCATION BY INSTALLING A MOMENTARY CONTACT SWITCH AND WIRE IT TO THE D.P. CONTROLLER AT TERMINALS 202 & 209 AS SHOWN.

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
BACKWASH LOCK-OUT (DUAL CONTROLLERS)

WHEN TWO FILTER SYSTEMS ARE INSTALLED, THIS WIRING CONFIGURATION WILL PREVENT BOTH SYSTEMS FROM BACKWASHING AT THE SAME TIME THAT COULD OTHERWISE CAUSE WASTE DISCHARGE BACK-UP IN THE WASTE LINE.

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
CIRCULATION PUMP EMERGENCY STOP

NOTE: IT IS IMPERATIVE THAT THE PUMP MAGNETIC MOTOR STARTER BE CONNECTED TO THE EPD D.P. CONTROLLER FOR THE PROGRAMMED AND CONTROLLING FUNCTIONS OF THE FILTER CONTROLLER TO PERFORM AS REQUIRED. FOR A TIME CLOCK OPERATED CIRCULATION PUMP, REFER TO "TIME CLOCK OPERATED CIRCULATION PUMP WITH 20 MINUTE HEATER DELAY SHUT-DOWN SWITCH".

To connect wires to the terminal strip a small flat blade screwdriver is required. Insert the blade in the square hole adjacent to the oval hole for the wire. Lean the screwdriver away from the oval hole, insert wire and release. Pull gently on the wire to be sure it is securely in place.
PROGRAMMING OPERATIONS

WHEN POWER IS APPLIED TO THE D.P. CONTROLLER AND THE POWER SUPPLY SWITCH (LOCATED INSIDE THE CONTROLLER) IS SWITCHED ON, THE EPD INTELLIGENCE D.P. CONTROLLER SCREEN APPEARS. HOWEVER, IF THE EMERGENCY STOP BUTTON HAS BEEN PUSHED IN, IT WILL REQUIRE RE-SETTING. AFTER A 5 SECOND DELAY, THE STATUS SCREEN WILL APPEAR. FROM THESE TWO SCREENS YOU CAN ACCESS ALL OF THE CONTROLLERS’ FUNCTIONS.

EMERGENCY STOP BUTTON

IF THE EMERGENCY STOP BUTTON IS PUSHED IN, ALL CONTROLLER FUNCTIONS STOP AND DEFAULT TO OFF. ROTATE THE EMERGENCY STOP BUTTON CLOCKWISE TO RESET.

POWER-UP

SWITCH ON THE MAIN POWER BREAKER SWITCH SUPPLYING POWER TO THE D.P. CONTROLLER. LOOSEN THE TWO SCREWS AT TOP OF CONTROLLER FACE AND LOWER THE DOOR. SWITCH ON THE POWER SUPPLY LOCATED INSIDE THE UPPER RIGHT CORNER.

EPD DISPLAY SCREEN

THE “EPD INTELLIGENCE D.P. CONTROLLER” SCREEN APPEARS.
AFTER A 5 SECOND DELAY WHEN POWER IS APPLIED TO THE CONTROLLER, THE STATUS SCREEN IS DISPLAYED SHOWING FLOW RATE AND MODE. IF “A” IS FLASHING, IT INDICATES THAT POWER IS NOT PROVIDED TO THE PRESSURE AMPLIFICATION PUMP. DURING BACKWASH, THE FLASHING “A” WILL STOP. PRESS “NEXT” TWO TIMES TO ACCESS THE MAN/OFF/AUTO SCREEN.

THE MAN/OFF/AUTO SCREEN WILL APPEAR WITH “OFF” FLASHING. THIS SCREEN WILL BE PROGRAMMED DURING OPERATIONS. PRESS “NEXT”.

YOU WILL HAVE 5 SECONDS TO ACCESS THE PASSWORD SCREEN. PRESS BOTH F2 AND F5 AT THE SAME TIME TO ACCESS THAT SCREEN FOR ENTERING THE CODE NUMBER 1250.

PRESS THE UP ARROW (F4) ONCE TO OBTAIN THE “1”. (0001 IS DISPLAYED)
PRESS THE LEFT ARROW (F3) ONCE TO MOVE THE “1” TO THE LEFT. (0010 IS DISPLAYED)

PRESS THE UP ARROW (F4) TWICE TO OBTAIN THE “2” (0012 IS DISPLAYED)

PRESS THE LEFT ARROW (F3) ONCE AGAIN TO MOVE THE 1 AND 2 TO THE LEFT. (0120 IS DISPLAYED)

PRESS THE UP ARROW (F4) FIVE TIMES TO OBTAIN THE “5” (0125 IS DISPLAYED)
PRESS THE LEFT ARROW (F3) ONCE AGAIN TO MOVE THE NUMBERS TO THE LEFT TO DISPLAY 1250.

PRESS (ENT) TO INPUT THE CODE NUMBER 1250.

PRESS F1 TO CONTINUE. “NUMBER OF TANKS” WILL BE DISPLAYED.

PRESS THE UP ARROW ONCE FOR EACH FILTER TANK IN YOUR SYSTEM (UP TO 6 TANKS), THEN PRESS F6 (ENT) FOLLOWED BY F1 (NEXT).
BW TIME (M): WILL BE DISPLAYED. PRESS THE UP ARROW ONCE FOR EACH MINUTE YOU WISH TO BACKWASH EACH TANK. NORMALLY, 2 MINUTES IS RECOMMENDED. HOWEVER DURING THE INITIAL START-UP, VARIOUS PROGRAM TIMES WILL BE REQUIRED. PRESS F6 (ENT) FOLLOWED BY F1 (NEXT).

BW INT TIME (M): WILL BE DISPLAYED. THIS IS THE INTERIM DELAY TIME BETWEEN THE BACKWASHING OF EACH TANK, NORMALLY 1 MINUTE. IF YOU ARE BACKWASHING INTO A HOLDING TANK AND AN EXTENDED DURATION OF TIME IS REQUIRED FOR DRAINING, THE INTERIM TIME CAN BE PROGRAMMED FOR UP TO 999 MINUTES IF DESIRED. PRESS THE UP ARROW FOR EACH INTERIM DELAY MINUTE YOU DESIRE. THEN, PRESS F6 (ENT) FOLLOWED BY F1 (NEXT).

BW DLY TIME(S): IS DISPLAYED. THIS IS THE DELAY TIME IN SECONDS BEFORE A DIFFERENTIAL PRESSURE OR LOW FLOW SIGNAL CAN CALL FOR A BACKWASH. PRESS THE UP ARROW FOR THE NUMBER OF SECONDS, NORMALLY 5 TO 10 SECONDS, THEN, PRESS F6 (ENT) FOLLOWED BY F1 (NEXT).

HTR COOL DN (M): IS DISPLAYED. NORMALLY IT TAKES 20 MINUTES FOR THE HEATER EXCHANGER TUBES AND REFRACTORY TO COOL DOWN BEFORE BACKWASHING OR SHUTTING OFF SYSTEM. A COOLING DOWN PERIOD IS REQUIRED (NORMALLY 20 MINUTES). PRESS F4 TWICE, F3 ONCE, THEN F6 (ENT), FOLLOWED BY F1 (NEXT).
"LOW FLOW GPM" IS DISPLAYED. A LOW FLOW RATE IN GPM MAY BE CONFIGURED TO CALL FOR A BACKWASH BEFORE THE D.P. SWITCH ACTIVATES. EXAMPLE (475 GPM). PRESS THE UP ARROWS FOUR TIMES, LEFT ARROW ONCE, UP ARROW SEVEN TIMES, LEFT ARROW ONCE AGAIN, THEN THE UP ARROW FIVE TIMES. PRESS F6 (ENT) FOLLOWED BY F1 (NEXT).


THE CHART AT RIGHT LISTS PIPE SIZES AND THE ‘K’ FACTORS FOR PIPE SIZE ACCORDING TO IT’S SCHEDULE.

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Schedule 40</th>
<th>Schedule 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>13.26</td>
<td>14.70</td>
</tr>
<tr>
<td>6&quot;</td>
<td>7.24</td>
<td>8.44</td>
</tr>
<tr>
<td>8&quot;</td>
<td>4.40</td>
<td>4.90</td>
</tr>
<tr>
<td>10&quot;</td>
<td>2.80</td>
<td>3.06</td>
</tr>
<tr>
<td>12&quot;</td>
<td>1.98</td>
<td>2.16</td>
</tr>
</tbody>
</table>

THE “TOTAL # BW’S” (DISPLAYED) CAN BE CLEARED BY PRESSING F3 AND F4 AT THE SAME TIME.
INITIAL START-UP

1. INTRODUCTION

DURING THE INITIAL START-UP, THE FILTER SYSTEM AND PIPE LINES MUST BE FLUSHED OF ALL AIR AND THE FILTERING MEDIA INSIDE EACH TANK MUST BE THOROUGHLY BACKWASHED AT LEAST TWICE TO FLUSH OUT ALL EXTRA FINE MEDIA GRAINS BEFORE YOUR FILTER SYSTEM CAN PERFORM PROPERLY. READ THE FOLLOWING INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING TO OPERATE THE FILTER SYSTEM.

2. SHUT OFF HEATER

TO PREVENT THE HEATER FROM STARTING/STOPPING OR WAITING FOR THE COOL DOWN PERIOD DURING THE INITIAL START-UP AND BACKWASHING PROCEDURES SHUT OFF THE HEATER AND RE-PROGRAM THE “HRT COOL DN” TO 1 MINUTE.

3. SHUT OFF ALL ACCESSORY PUMPS (EXCEPT PRESSURE AMPLIFICATION SYSTEM)

TO PREVENT ANY ACCESSORY PUMPS FROM STARTING AND STOPPING, SWITCH OFF ALL ACCESSORY PUMPS EXCEPT FOR THE PRESSURE AMPLIFICATION SYSTEM.

4. OPEN AIR RELIEF VALVE (S)

OPEN THE AIR RELIEF VALVE(S). DURING THE INITIAL START-UP, AIR RELEASING FROM INSIDE THE FILTER TANK(S) WILL EVACUATE AGGRESSIVELY THROUGH THESE VALVES. OPEN ALL OTHER VALVES IN THE SYSTEM REQUIRED FOR THE FILTERING AND BACKWASHING OPERATIONS.
5. START CIRCULATION PUMP

SWITCH “ON” THE CIRCULATION PUMP. AS THE FILTER SYSTEM FILLS WITH WATER, EXCESSIVE AIR WILL EVACUATE AGRESSIVELY BY LOUD HISSING NOISES OUT THE AIR RELIEF VALVE(S). IF A LEAK SHOULD OCCUR DURING THIS INITIAL FILLING OF THE TANKS, SWITCH “OFF” THE CIRCULATION PUMP. THEN, REPAIR THE LEAKS.

6. SHUT OFF AIR RELIEF VALVES WHEN AIR STOPS

WHEN A STEADY STREAM OF WATER EXITS THE AIR RELIEF VALVE(S), SHUT IT (OR THEM) OFF. AS THE FILTER SYSTEM PRESSURIZES, YOU WILL NOTE THE INFLUENT PRESSURE GAUGE (LEFT) WILL INDICATE A HIGHER THAN NORMAL PRESSURE READING AND THE EFFLUENT (RIGHT) A LOWER THAN NORMAL READING. THIS IS DUE TO THE MEDIA CONTAINING VERY FINE MEDIA GRAINS. THE GAUGES WILL SETTLE DOWN AFTER A THOROUGH BACKWASHING. EXCESSIVE PUMPING FLOW THROUGH THE SYSTEM MUST BE CONTROLLED OR REGULATED BY ADJUSTING THE EFFLUENT VALVE.

INFLUENT AND EFFLUENT PRESSURE GAUGES SHOWN IN THE GAUGE PANEL. INFLUENT PRESSURE GAUGE IS ON THE LEFT AND THE EFFLUENT ON THE RIGHT.
7. ADJUST EFFLUENT RATE OF FLOW

The effluent rate of flow or priority valve should be adjusted as follows to reduce the flow rate to your systems design flow rate. Re-adjustment will be required after backwashing.

Adjust the bolt, top center, on the valve cover counter clockwise to decrease flow until the design flow rate is indicated on the D.P. controller status screen.

If a priority valve is installed on your system, loosen jam nut on bolt on the valve cover and adjust the bolt ‘in’ (clockwise) until the design flow rate is indicated, then tighten jam nut.

8. CALIBRATE BACKWASH FLOW TRANSMITTER

Install the flow meter sensor (provided by your representative or dealer) into the waste line flow meter saddle. Calibrate the transmitter according to the pipe size of the waste line per the manufacturers instructions of the flow meter. Proceed to “initial start-up backwash procedure”.
9. INITIAL START-UP BACKWASH PROCEDURE

THE INITIAL START-UP BACKWASH PROCEDURE IS ACCOMPLISHED IN TWO SEGMENTS. THE FIRST RUN-THROUGH BACKWASH INVOLVES BACKWASHING EACH TANK FOR ONE MINUTE, FOLLOWED BY A SECOND RUN-THROUGH BACKWASH OF 5 FULL MINUTES PER TANK.

PROGRAM HEATER COOL DOWN FOR 1 MINUTE

THE HEATER COOL DOWN SHOULD BE PROGRAMMED FOR 1 MINUTE WITH THE HEATER SHUT OFF. REFER TO PAGE 26.

PROGRAM B.W. TIME 1 MINUTE PER TANK

REFERENCING BACK TO THE PROGRAMMING SECTION, PROGRAM THE BACKWASH OF EACH TANK FOR 1 MINUTE. REFER TO PAGE 26.
PROGRAM “MAN” MODE

PROGRAM THE “MAN/OFF/AUTO” SCREEN TO “MAN” BY PRESSING F3 THEN F6 (ENT). THE SYSTEM WILL ENTER INTO A BACKWASH CYCLE.

HEATER COOL DOWN

THE “HTR COOL DN” WILL BEGIN AND ‘TIME-OUT’ THE 1 MINUTE PREVIOUSLY PROGRAMMED.

BACKWASH TANK #1

AT THE END OF THE “HTR COOL DN” THE BACKWASHING OF TANK 1 WILL BEGIN AND BACKWASH FOR 1 MINUTE.

INTERIM DELAY BETWEEN BACKWASHING TANKS

AT THE END OF BACKWASHING TANK 1, THE INTERIM DELAY TIME OF ONE MINUTE ALLOWS THE BACKWASH VALVE ON TANK #1 TO VENT AND RESUME ITS NORMAL FILTERING POSITION. THESE OPERATIONS ARE REPEATED FOR EACH TANK IN YOUR SYSTEM.
ADJUST BACKWASH SIGHT GLASS VALVE

ADJUST THE BACKWASH SIGHT GLASS VALVE ADJUSTMENT BOLT (TOP CENTER OF COVER) COUNTER-CLOCKWISE UNTIL WATER FLOW THROUGH THE SIGHT GLASS IS OBSERVED. FINE TUNE THE ADJUSTMENT WHILE OBSERVING THE FLOW METER IN THE WASTE LINE AND SET THE FLOW RATE ACCORDING TO YOUR TANK SIZE AND MEDIA INSTALLED. SEE CHART BELOW.

BACKWASH FLOW RATES

THE FOLLOWING CHART PROVIDES THE DESIRED BACKWASH FLOW RATES ACCORDING TO TANK SIZE AND SIZE OF MEDIA.

<table>
<thead>
<tr>
<th>MEDIA</th>
<th>FILTER AREA (FT) PER TANK/FLOW (GPM)</th>
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<tbody>
<tr>
<td></td>
<td>13.5 FT</td>
</tr>
<tr>
<td>#20 SILICA SAND</td>
<td>200-275</td>
</tr>
<tr>
<td>#30 SILICA SAND</td>
<td>175-225</td>
</tr>
</tbody>
</table>

WHEN THE INITIAL START-UP BACKWASH PROCEDURE OF ONE MINUTE PER TANK HAS COMPLETED ITS CYCLE, SHUT OFF THE CIRCULATION PUMP.
10. SECONDARY INITIAL BACKWASH PROCEDURE

RE-PROGRAM THE BACKWASHING OF EACH TANK TO 5 MINUTES EACH. START THE CIRCULATION PUMP. PRESS F3 ON THE MAN/OFF/AUTO SCREEN FOLLOWED BY F6 TO INITIATE THE SECONDARY BACKWASH CYCLE. YOU SHOULD DETECT SMALL AMOUNTS OF FINE MEDIA GRAINS BEING DISCHARGED DURING EACH 5 MINUTE BACKWASH. OBSERVE YOUR FLOW METER AND MAKE NECESSARY ADJUSTMENTS TO CONTROL THE BACKWASH WASTE WATER FLOW RATE.

CAUTION: (FOR COMMERCIAL POOL FILTRATION APPLICATIONS) DURING THIS SECONDARY INITIAL BACKWASH PROCEDURE, IT IS RECOMMENDED THAT THE WATER MAKE-UP POOL FILL LINE FROM THE RAW WATER SOURCE BE TURNED ‘ON’ WITH PERIODIC OBSERVATION OF THE POOL WATER LEVEL. CONTINUE THE SECONDARY INITIAL BACKWASH PROCEDURE UNTIL EACH TANK IN THE SYSTEM HAS BEEN BACKWASHED FOR A FULL 5 MINUTES. THESE INITIAL BACKWASH PROCEDURES ARE ESSENTIAL FOR REMOVAL OF THE FINE GRAINS PRESENT IN ALL FILTER MEDIA. THE SYSTEM IS ALSO SEEKING ITS HYDRAULICALLY BALANCED OPERATING LEVEL. THIS PROCEDURE WILL NOT BE REQUIRED AGAIN UNLESS THE FILTER MEDIA IS BEING REPLACED.

FOLLOWING THE COMPLETION OF THE BACKWASHING PROCEDURES, THE PRESSURE GAUGES SHOULD SETTLE DOWN TO THE NORMAL OPERATING PRESSURES. IF THE GAUGES ARE STILL INDICATING HIGHER THAN NORMAL DIFFERENTIAL PRESSURE, ADDITIONAL BACKWASHING WILL BE NECESSARY AS THE MEDIA STILL CONTAINS AMOUNTS OF FINE PARTICLES CAUSING THE HIGH DIFFERENTIAL PRESSURE.

11. RE-ADJUST EFFLUENT RATE OF FLOW

RE-ADJUST THE EFLUENT RATE OF FLOW VALVE OR THE PRIORITY VALVE TO FINE TUNE THE FLOW RATE TO YOUR FILTER SYSTEM DESIGN FLOW RATE. THEN SHUT OFF THE CIRCULATION PUMP.

12. RE-PROGRAM HEATER COOL-DOWN

RE-PROGRAM THE "HTR COOL DN” FOR 20 MINUTES.
13. RE-PROGRAM BACKWASH TIMES

RE-PROGRAM THE BACKWASH TIME FOR EACH TANK (NORMALLY 2 MIN.).

14. RESET BACKWASH COUNTER

RESET THE BACKWASH COUNTER BY PRESSING F3 AND F4 AT THE SAME TIME ON THE "TOTAL # BW’S”

15. REMOVE BACKWASH FLOW METER SENSOR

REMOVE THE BACKWASH FLOW METER SENSOR FROM THE SADDLE IN THE WASTE LINE.

16. INSTALL PLUG IN B.W.FLOW METER SADDLE

INSTALL THE SPECIAL SENSOR PLUG INTO THE SENSOR PORT IN THE SADDLE.
GENERAL OPERATIONS

PROGRAM D.P. AQUATIC INTELLIGENCE FILTER CONTROL FOR OPERATIONS.

THE AQUATIC INTELLIGENCE D.P. CONTROLLER MONITORS ANY DEMANDS CALLING FOR A BACKWASH CYCLE EITHER BY MANUAL INITIATION OR AUTOMATIC DIFFERENTIAL PRESSURE DEMAND. THE D.P. CONTROLLER WILL SHUT DOWN THE POOL HEATER 20 MINUTES PRIOR TO A BACKWASH CYCLE BEING INITIATED TO PREVENT THERMAL DAMAGE TO THE HEATER (IF INSTALLED). DURING THE BACKWASH CYCLE, THE PRESSURE AMPLIFICATION SYSTEM STARTS & STOPS ON DEMAND BY THE D.P. CONTROLLER. THE STATUS SCREEN DISPLAYS THE FILTER SYSTEMS FLOW RATE IN GALLONS PER MINUTE.

THE FILTERING AND BACKWASHING OPERATION CAN ONLY OCCUR WHEN POWER IS SUPPLIED TO THE CIRCULATING PUMP FROM ANOTHER LOCATION BY OTHERS. THE DP CONTROLLER DOES NOT START/STOP THE CIRCULATING PUMP.

1. **VERIFY ALL PROGRAMMED TIMES**

VERIFY ALL PROGRAMMED TIMES FOR NORMAL OPERATIONS AS YOU DESIRE.

2. **ADJUST D.P. SWITCH SET POINT**

THE DIFFERENTIAL PRESSURE SWITCH LOCATED BETWEEN THE GAUGES SHOULD BE SET AT 12 TO 15 P.S.I. D.P. INSERT A 1/16” HEX ALLEN WRENCH INTO THE HEX ADJUSTMENT OPENING IN THE FACE OF THE SWITCH. ROTATE THE INDICATOR NEEDLE CLOCKWISE TO INCREASE THE DIFFERENTIAL PRESSURE POINT OR COUNTER-CLOCKWISE TO DECREASE THE DIFFERENTIAL SET POINT.

3. **TO FILTER**

FILTERING OPERATIONS ARE CONTROLLED FROM ANOTHER LOCATION SOURCE BY EITHER MANUALLY SWITCHING “ON” THE CIRCULATING PUMP OR BY A MECHANICAL TIME CLOCK THAT INCORPORATES THE 20 MINUTE HEATER DELAY SHUT DOWN SWITCH (IF HEATER IS INSTALLED).

4. **TO MANUALLY INITIATE A B.W. CYCLE**

TO MANUALLY INITIATE A BACKWASH CYCLE, THE CIRCULATING PUMP MUST BE RUNNING. PROGRAM THE “MAN/OFF/AUTO” SCREEN TO “MAN” BY PRESSING F3 THEN F6 (ENT). THE SYSTEM WILL ENTER INTO A BACKWASH CYCLE, BEGINNING WITH THE “HTR COOL DN”.

5. **AUTO BACKWASH**

TO ALLOW THE D.P. CONTROLLER TO MONITOR AND INITIATE A BACKWASH CYCLE AUTOMATICALLY, PRESS F5 (CLR) ON THE “MAN/OFF/AUTO” SCREEN AND THEN F6 (ENT). WHEN THE DIFFERENTIAL PRESSURE SET POINT IS REACHED, THE SYSTEM WILL ENTER INTO A BACKWASH CYCLE BEGINNING WITH THE “HTR COOL DN”.

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6. CONTROLLER STATUS

THE CONTROLLER STATUS SCREEN INDICATES THE CONTROLLER MODE (MAN/OFF/AUTO) AND THE FLOW RATE IN GPM.

7. EMERGENCY STOP

THE "EMERGENCY STOP" BUTTON LOCATED ON THE FRONT COVER OF THE D.P. CONTROLLER IS INTENDED FOR USE IN AN EMERGENCY TO SHUT THE SYSTEM OFF. IF ACCIDENTALLY PUSHED-IN, YOU WILL BE REQUIRED TO ROTATE THE "EMERGENCY STOP" BUTTON CLOCKWISE TO RESET.
TROUBLE SHOOTING GUIDE

EFFLUENT WATER QUALITY AND FILTER MEDIA RELATED PROBLEMS:

1. FILTER MEDIA BEING DISCHARGED OUT THE EFFLUENT

   **CAUSE:**
   
   A. UNDERDRAIN SYSTEM OR LATERALS DAMAGED OR INSTALLED INCORRECTLY.
   
   B. INCORRECT MEDIA (EXCESSIVELY FINES).

   **SOLUTION:**
   
   A. REMOVE REMAINING MEDIA (VIA MEDIA DUMP PORT). REPAIR UNDERDRAIN SYSTEM OR LATERAL AND RE-INSTALL MEDIA.
   
   B. CHECK MEDIA SIZE. IF INCORRECT, REPLACE WITH PROPER GRADE.

2. SOURCE WATER NOT CLEARING UP.

   **CAUSE:**
   
   A. INCORRECT MEDIA.
   
   B. RATE OF FLOW IN EXCESS OF 20 GPM PER SQ. FT. OF FILTER AREA.
   
   C. SOURCE CHEMISTRY NOT IN BALANCE.
   
   D. MUD BALLS HAVE FORMED IN MEDIA.
   
   E. FILTER SYSTEM IS NOT BEING BACKWASHED.
   
   F. ORIGINAL WATER SOURCE.

   **SOLUTION:**
   
   A. REMOVE MEDIA AND INSTALL CORRECT MEDIA.
   
   B. ADJUST FLOW RATE.
   
   C. CONSULT LOCAL WATER CHEMIST.
   
   D. REPLACE MEDIA.
   
   E. BACKWASH FILTER MANUALLY, OBSERVING WASTE WATER.
   
   F. CONSULT LOCAL WATER CHEMIST.

CAUTION: INCORRECT MEDIA SELECTION WILL RESULT IN POOR FILTERED WATER QUALITY AND/OR SHORT FILTER CYCLES.
3. FREQUENT BACKWASH INTERVALS.

CAUSE:  
A. EXCESSIVE CONTAMINATE LOADING AND INSUFFICIENT BACKWASHING.  
B. MEDIA BED WAS NOT BACKWASHED THOROUGHLY IN THE INITIAL START-UP TO RID THE MEDIA OF FINE MEDIA PARTICLES.  
C. MEDIA IS TOO FINE.  
D. LATERALS INSIDE TANK ARE PLUGGED WITH FINER MEDIA GRAINS OR ALGAE GROWTH.  
E. BACKWASH FLOW RATE IS BELOW 15 GPM PER SQ. FT. OF FILTER AREA.  

SOLUTION:  
A. MANUALLY BACKWASH EACH TANK THOROUGHLY UNTIL WASTE LINE SIGHT GLASS IS CLEAR.  
B. MANUALLY BACKWASH EACH TANK FOR APPROXIMATELY FIVE (5) MINUTES.  
C. REPLACE WITH PROPER SIZE MEDIA AS RECOMMENDED.  
D. REMOVE MEDIA, CLEAN OUT SLOTS IN LATERALS WITH RAZOR BLADE AND REPLACE WITH NEW MEDIA.  
E. INCREASE BACKWASH FLOW RATE.  

4. CLEAN MEDIA, HIGH INLET PRESSURE, LOW OUTLET PRESSURE, LITTLE OR NO OUTLET FLOW.

CAUSE:  
A. MEDIA TOO FINE.  
B. MEDIA NOT BACKWASHED SUFFICIENTLY IN INITIAL START UP CAUSING COMPACTION OF MEDIA BED.  
C. MEDIA BED COMPACTED DUE TO HIGH DIFFERENTIAL PRESSURE BETWEEN THE INLET AND OUTLET. RESTRICTS FLOW.  

SOLUTION:  
A. REPLACE WITH PROPER SIZE MEDIA.  
B. MANUALLY BACKWASH EACH TANK THOROUGHLY FOR SEVERAL MINUTES.  
C. RESTRICT THE EFFLUENT VALVE TO BACK-UP PRESSURE ACROSS MEDIA BED, THUS RELAXING MEDIA BED TO ALLOW FLOW TO PASS THROUGH. RATE OF FLOW MAY BE EXCEEDING DESIGNED FLOW RATE.
5. HIGH INFLUENT PRESSURE GAUGE READING AND LOW EFFLUENT PRESSURE GAUGE READING. SYSTEM WON’T BACKWASH.

CAUSE:  
A. WATER PRESSURE SUPPLY BELOW 50 P.S.I., AUTOMATIC BACKWASH VALVES ARE NOT ACTIVATED.  
B. MEDIA BED BLINDED OFF WITH HEAVY CONTAMINATE LOADING.  
C. LATERALS INSIDE TANK ARE PLUGGED WITH FINER MEDIA GRAINS OR ALGAE GROWTH.  
D. MEDIA TOO FINE.  
E. MEDIA NOT BACKWASHED SUFFICIENTLY DURING INITIAL START UP TO REMOVE THE FINE MEDIA GRAINS.

SOLUTION:  
A. CORRECT LOW WATER PRESSURE CONDITION, PROVIDE 50 P.S.I. TO EPD SYSTEM.  
B. MANUALLY BACKWASH EACH TANK OR REMOVE UPPER 4” OF MEDIA BED INSIDE EACH TANK. REPLACE WITH NEW MEDIA.  
C. REMOVE MEDIA, CLEAN OUT SLOTS IN LATERALS WITH RAZOR BLADE AND REPLACE WITH NEW MEDIA.  
D. REPLACE WITH PROPER MEDIA.  
E. BACKWASH THE SYSTEM THOROUGHLY FOR SEVERAL MINUTES.

6. HIGH INFLUENT PRESSURE GAUGE READING AND LOW EFFLUENT PRESSURE GAUGE READING 19.P.S.I. PLUS DIFFERENTIAL READINGS. SYSTEM WILL NOT GO INTO BACKWASH.

CAUSE:  
A. “DIFFERENTIAL PRESSURE SWITCH” MALFUNCTION.

SOLUTION:  
A. REPLACE DIFFERENTIAL PRESSURE SWITCH.

7. SYSTEM NOT BACKWASHING.

CAUSE:  
A. WATER SUPPLY PRESSURE TO SOLENOIDS IS SHUT OFF.  
B. SUPPLY PRESSURE BELOW 50 P.S.I.  
C. SUPPLY PRESSURE BEING SUPPLIED FROM TUBING TAPPED FROM INLET MANIFOLD. PUMP MAY HAVE INSUFFICIENT PRESSURE.  
D. BACKWASH VALVE LEAKING INTERNALLY.

SOLUTION:  
A. TURN ON PRESSURE.  
B. INCREASE PRESSURE.  
C. HOOK UP TO SOURCE WITH A MINIMUM 50 P.S.I.  
D. REPLACE PISTON CUP SEAL.
8. CONTINUOUS FLOW TO WASTE. PUMP RUNNING.

CAUSE:  
A. BACKWASH VALVE PORT DISC NOT IN PLACE.
B. OBSTRUCTION LODGED INSIDE VALVE TO PREVENT VALVE FROM CLOSING OFF WASTE PORT.

SOLUTION:  
A. REPAIR
B. REMOVE OBSTRUCTION.

9. OTHER POSSIBLE PROBLEMS RELATED TO ACCESSORY EQUIPMENT.

PUMP RUNNING BUT NO PRESSURE ON GAUGES, NO FLOW.

CAUSE:  
A. PUMP CAVITATING, HIGH VACUUM ON SUCTION SIDE (SOUNDS LIKE MARBLES RATTLING INSIDE PUMP).
B. SUCTION EXPOSED TO OPEN ATMOSPHERE AND NOT PUMPING WATER.
C. PUMP SUCTION DRAWING IN EXCESSIVE AIR.

SOLUTION:  
A. CLEAR OBSTRUCTION OR OPEN VALVE(S) IF REQUIRED.

10. PUMP AND FILTER SYSTEM NOT OPERATING

CAUSE:  
A. EMERGENCY STOP SWITCH ON CONTROLLER PUSHED IN.
B. NO POWER TO CONTROLLER.
C. MAIN CIRC PUMP POWER SUPPLY IS SHUT OFF.

SOLUTION:  
A. ROTATE EMERGENCY STOP SWITCH CLOCKWISE TO RESET.
B. SWITCH “ON” MAIN POWER TO CONTROLLER OR POWER ON/OFF SWITCH INSIDE CONTROLLER.
C. SWITCH “ON” POWER TO CIRC PUMP.
THE EPD FILTER SYSTEM IS EASILY WINTERIZED IF IT IS NOT TO BE IN OPERATION DURING MONTHS WHICH ENCOUNTER FREEZING TEMPERATURES.

THE RECOMMENDED WINTERIZING PROCEDURE FOR THE FILTER SYSTEM ONLY IS:

NOTE: SEE OTHER ACCESSORY COMPONENT MANUFACTURER’S INSTRUCTIONS RELATED TO FREEZE PROTECTION.

STEP 1: SHUT "OFF" ALL ELECTRICAL POWER TO THE FILTER SYSTEM’S FILTER CONTROL.

STEP 2: DISCONNECT AND DRAIN ALL CONTROL AND SENSOR TUBING; REATTACH AFTER COMPLETELY VOID OF WATER.

STEP 3: REMOVE WINTERIZING PLUG(S) FROM TANK DRAIN PORT(S), AND OPEN AIR RELIEF VALVE(S).

STEP 4: LOOSEN BOLTS ON BACKWASH VALVE COVER(S) AND DRAIN WATER FROM VALVE ACTUATOR CYLINDER.

STORE ALL PLUGS WITH OR NEAR THE FILTER SYSTEM FOR RE-INSTALLATION AT TIME OF START UP.
DIFFERENTIAL PRESSURE CONTROL

LIST OF PARTS

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GAUGE PANEL
DIFFERENTIAL PRESSURE BACKWASH CONTROLLER
ASSEMBLY NO. 1100-1621

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* PACKED IN WITH 303-1649 (ITEM 1)