

ProSystems®

A Division of Aquion Water Treatment Products

2401 FILTER VALVE

Installation & Service Manual



This product is manufactured in an ISO 9001:2000 certified facility.

TABLE OF CONTENTS

System Information	3
Pre-Installation Instructions	3
Installation Instructions	4-5
Control Information	6-7
How to Program the Installer's Level	8-10
How to Program the End User's Level	11
Understanding the Diagnostic Level	12
Start Up Instructions	13
Annual Maintenance Requirements.....	13
Troubleshooting Guide	14-15
Exploded Views and Parts Lists	16-20
Wiring Diagram	21
Before Servicing the Equipment	21
Required Tools for Service	21
Disassembly Instructions	22-31

SYSTEM INFORMATION

AGENCY APPROVALS

The control meets international standards for electromagnetic compatibility (EMC). It has been tested by an independent laboratory to be in compliance with CE requirements. It is resistant to electrical noise and will not emit levels of RFI (Radio Frequency Interference) that could disturb nearby electronic devices.

POWER REQUIREMENTS

The computer board receives power from an external wall-mount or plug-in transformer. The factory or the manufacturer will supply the transformer.

Voltage: The voltage supplied to the computer board is 24V AC.

Frequency: The line frequency is 50 Hz or 60 Hz.

WATER PRESSURE

Operating Pressure Range: 20 psi - 120 psi (138 kPa - 828 kPa)

BYPASS VALVE

The bypass valve enables the customer to bypass the system in situations of: emergency leaks in the equipment, service calls and/or outdoor water use. Bypass valves are available through the Erie Order Department, part number 72316.

TEMPERATURE OPERATING RANGES

Operating Temperature Range: The ambient air around a computer board must not exceed 50°C (122°F). The computer board operates down to 0°C (32°F).

Storage Range: The computer board can be stored at temperatures from -20°C (-4°F) to 70°C (158°F).

Humidity: The computer board operates properly with relative humidity from 10% to 95%, non-condensing.

ENVIRONMENTAL REQUIREMENTS

Location: The water softener and control cannot be exposed to outdoor elements, such as direct sunlight or atmospheric precipitation. The system may be installed in a covered, open-air structure such as a carport, residential or commercial building. Weather covers are also available through the Erie Order Department, part number 72370.

PRE-INSTALLATION INSTRUCTIONS

- Do not install this product where water is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- This product must be installed in an area that is not affected by extreme heat, cold or the elements. The selected installation area must be adequate for easy service of all parts.
- This product must be installed in accordance with all applicable state and local laws and regulations.

INSTALLATION INSTRUCTIONS

1. SAFETY PRECAUTIONS

- To prevent accident or injury, do not hoist the unit over your shoulder. Use a hand truck to transport the unit. **Note: Do not lay the unit on its side during transportation and/or installation.**
- Wear safety glasses and work gloves during installation and service.

2. TEST THE RAW WATER

- Test the raw water for hardness, iron, pH and/or any other element that could affect the performance of the system.

3. CHECK THE WATER PRESSURE

- Use a pressure gauge to confirm that the water pressure does not exceed 120 psi. If the water pressure does exceed this limit, install a pressure regulator on the inlet pipe of the unit. The minimum pressure for a filter is 40 psi. 60 psi is the optimum operating pressure.

4. LOCATE A SITE FOR THE UNIT

- There are three primary requirements needed for a site: the main water source, a drain (the drain may be a floor drain, a sewer trap, utility sink, vent stack, dry well, etc., depending on local plumbing codes) and an electrical connection. Locate the system as close to these items as practical. Avoid drain lines over 25 feet long. In most applications, bypass any outside faucets.
- Place the unit in the desired location. The location must have a level, smooth, clean surface.
- If the system is located outdoors, protect the unit from direct sunlight. (Direct sunlight can damage the fiberglass and other system components.) If necessary, build a box or shed. **Note: The system can only be installed outdoors in climates that do not reach freezing levels.**

5. TURN OFF THE WATER AND DRAIN THE PLUMBING

- Turn off the water at the meter or the pressure tank.
- Drain all the pipes. Do not sweat the pipes with water in them; steam will damage plastic parts in the valve.
- To drain the plumbing system, open all the faucets in the house and flush the toilets. This procedure will allow air to enter the plumbing system. The water will drain out of the lowest faucet or outlet.

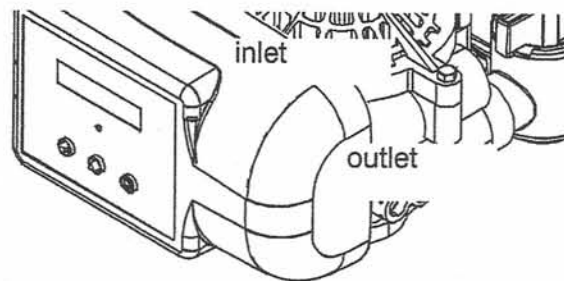
6. BYPASS THE OUTSIDE FAUCETS

- Install plumbing pipes to bypass the outside faucets. If the plumbing is not accessible, provide an untreated hose bib on the inlet pipe.

7. CONNECT THE PLUMBING TO THE BYPASS VALVE

- Do not point the soldering torch directly at the system. The thermo-plastic material will last a lifetime, within normal operating temperatures, but will melt in a torch flame.
- To prevent hot water from backing up into the filter, avoid short connections of pipe between the filter and the hot water heater. If you can't avoid a short connection, move the equipment to another location. As a last resort, install a check valve. If the check valve causes "water hammer", install a water hammer suppressor.
- Connect the raw water pipe to the INLET pipe connection of the bypass valve. When looking at the front of the unit, the inlet is the pipe connection on the LEFT side of the valve.

- Connect the treated water pipe to the OUTLET pipe connection of the bypass valve. When looking at the front of the unit, the outlet is the pipe connection on the RIGHT side of the valve.



8. TURN ON THE WATER AND TEST FOR LEAKS

- Turn the water back on at the water meter or pressure tank.
- Check for leaks. If a leak is present, drain the plumbing again before soldering.

9. FLUSH THE REMAINING DEBRIS FROM THE SYSTEM

- Close all the faucets that were opened in Step 5, except for the closest bathtub.
- Allow the system to flush the remaining dirt and debris into the bathtub, until the water runs clear. This procedure will prevent dirt and debris from entering the valve.
- Close off the bathtub faucet and wipe down the bathtub.

10. FLUSH THE REMAINING HARD WATER FROM THE PLUMBING

- To flush the remaining hard water from the plumbing, turn on all the faucets in the house and flush the toilets (approximately two to three minutes per faucet).
- To empty the hot water heater of untreated water, run hot water in the bathtub.

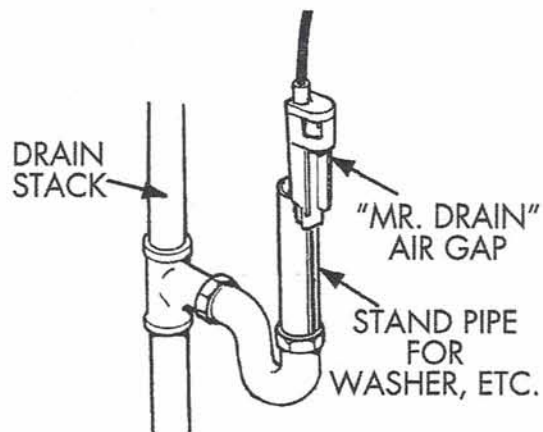
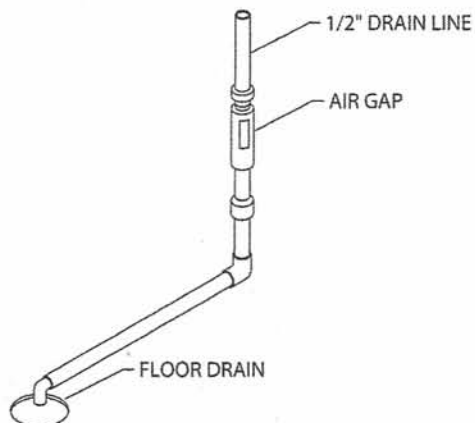
11. INSTALL THE DRAIN LINE AND AIR GAP (AIR GAP NOT INCLUDED WITH THE UNIT)

- For all drain lines, use at least a 1/2 inch ID line.
- Connect the drain line to the drain outlet on back of the valve, opposite the inlet connection. A fitting is required to connect the female pipe thread to the drain line. **Note: The drain line operates under pressure and may be installed higher than the conditioner.**
- Run the drain line to the air gap. **Note: There must be a GAP-A-Flow (for floor drains), Mr. Drain (for stand pipes) or suitable air gap between the end of the drain line and the drain to prevent possible back siphoning. The air gap should always be a minimum of two times the diameter of the drain line.**

CONTROL INFORMATION

POWER ON LED

A green LED is ON when power is applied to the control and the microprocessor is operating properly.



SERVICE REQUIRED

If this message displays in the window of the control, a fault has occurred on the board (also known as a corrupt signal). In most cases, reprogramming the board will clear this message from the window. If the screen does not clear, other checks must be made to the switches, boards and parts.

BLINKING ITEMS

Digits blinking at the rate of 0.5 seconds ON and 0.5 seconds OFF can be changed by pressing and releasing the UP or DOWN ARROW. The values can be increased or decreased by pressing the two arrow keys. A message blinking at the rate of 1 second ON and 1 second OFF cannot be changed.

REAL-TIME CLOCK

A real-time clock maintains the time of the day when line power is applied to the control. The time of day is maintained by a super capacitor for a minimum of 2 hours, following the loss of line power. The memory reset registers and records this error to non-volatile memory.

CORRUPT REAL-TIME CLOCK

If line power is lost for an extended period, the super capacitor will lose its charge and the real-time clock will stop operating. When line power returns, the clock will blink, indicating that the clock needs to be set to the correct time. The clock will activate from 8:00 AM, until the clock is set to the correct time. After the time has been set, the colon flashes to indicate that the clock is operating properly. The memory reset registers and records this error to the non-volatile memory.

NON-VOLATILE MEMORY

The computer board configuration parameters are saved in non-volatile (E2PROM) memory that has a minimum of 100,000-erase/write-cycle capability. The Hardness, Capacity and Volume are the types of settings stored in the non-volatile memory.

In the occurrence of a power outage, the non-volatile memory will hold this important setting information. The time of day, however, will need to be reset if the power interruption has lasted longer than two hours. The non-volatile memory is not programmed to store the time of day and in most cases, the super capacitor will last only two hours.

CORRUPT INSTALLER'S, MANUFACTURER'S AND DIAGNOSTIC LEVEL PARAMETERS

This corrupt mode signifies that the computer board received an incorrect signal and rejected that signal. The computer board is now put on notice that an error has occurred. The memory reset will register and record the error to non-volatile memory. If any of the parameters, except Valve Type, Meter Type or Duplex Type become corrupt, the default for the corrupted parameter will also be saved in the non-volatile memory. The number of corruptions can be read in the Diagnostic Level.

MEASUREMENT UNITS

English-US Units: When the manufacturer selects English-US units, the volume is displayed by "GL" (gallons), the flow rate is indicated by "GPM" (gallons per minute), the average volume is indicated by "GL/d" (gallons per day) and the time is displayed in a 12 hour AM/PM format.

Metric Units: When the manufacturer selects Metric units, the volume is displayed by "L" (liters), the flow rate is indicated by "L/m" (liters per minute), the average volume is indicated by "L/d" (liters per day) and the time is displayed in a 24 hour format.

FLOW INPUT (METERS)

Standard Meter: The meter produces 108 pulses per one gallon of flow and 29 pulses per liter of flow. The maximum pulse rate is 54 per second, corresponding to a maximum flow rate of 30 GPM.

Secondary Meter: The control can be programmed for a non-standard meter (this is a non Hall-effect

type meter). Use the Volume/Pulse setting to program this meter (100 gal/per pulse). **Note: The factory selects a "K" factor for the meter. For English-US, the "K" factor defines the number of gallons per pulse and for Metric, the "K" factor defines the number of liters per pulse. The default setting is 100.**

OVERRIDE COUNTER

If the override parameter is set to OFF, the days to override counter will not be used to initiate a regeneration. The days to override counter is always used to initiate regeneration when No Meter has been selected. If days to override is programmed with a meter, the override will only initiate regeneration if the meter has not recorded enough water usage.

REGENERATION LEVEL

When a regeneration in progress is aborted, the valve is cycled to the service position. If the aborted regeneration was initiated by the control (not manually initiated), the regeneration is restarted after a 60 second delay. If a manual regeneration is aborted, there is no backup regeneration. Example: A power outage is an aborted regeneration.

REGENERATION

Once an immediate regeneration is requested, a complete regeneration must occur to clear the request. Once the regeneration starts, it must finish or the computer board will not clear. Manually walk (scroll) the control through regeneration to clear the computer board. If the regeneration is aborted and the request is not cleared, another immediate regeneration will occur.

HIGH-SPEED MOTOR OPERATION IN THE REGENERATION MODE

High-speed motor operation is achieved while scrolling the control through the regeneration cycle. **Note: Pressing the scroll button a second time, while in regeneration, activates the higher speed.**

PROGRAM LEVELS

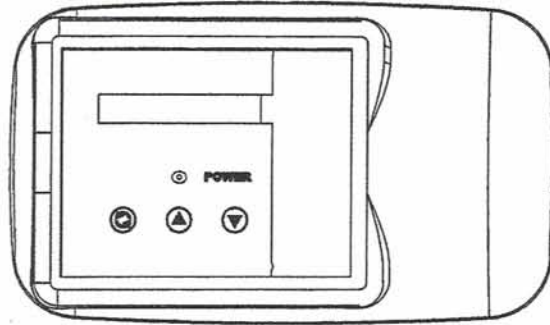
To enter any of the program levels, the control must be in the Service Mode (time of day and gallons remaining). The 2401 valve has four program levels available:

1. The Installer's Level is for trained personnel only. To access the Installer's Level, you must provide the five key sequence code located on page 8. Please refer to pages 8-10 for programming information.
2. The End User's Level does not require a special code to access. Please refer to page 16 for programming information.
3. To access the Diagnostic Level, press and hold the UP ARROW for five seconds. Please refer to page 17 for diagnostic information.

HOW TO PROGRAM THE INSTALLER'S LEVEL

KEY BUTTONS:

- ⊙ SCROLL BUTTON
- ▲ UP ARROW
- ▼ DOWN ARROW



To begin, verify that the control is in the Service Mode.

Time of Day GL Remaining

- Press the DOWN ARROW and hold it for 5 seconds; the control will display:

System Check

- Within 10 seconds, enter the following key sequence:

- ▼ DOWN ARROW
- ▼ DOWN ARROW
- ⊙ SCROLL BUTTON
- ▼ DOWN ARROW

1. CAPACITY

The control will display:

Capacity: 1000 GL

- Press the UP or DOWN ARROW to change the volume of softened water between regenerations. The gallons are in increments of 100. The setting range is 100 to 999,999 liters (maximum limit).

Press the **SCROLL BUTTON** to advance the next setting.

2. RESET AVERAGE

The control will display:

Reset Avg: NO

- Press the UP or DOWN ARROW to select YES.
- If YES is selected, the control will reset the average volume per day to 25% of the capacity.

Press the **SCROLL BUTTON** to advance the next setting.

3. RESERVE CAPACITY

The control will display:

Rsrv: 200 GL Fxd

- To adjust the reserve, press the SCROLL BUTTON. Use the UP OR DOWN ARROW to set the reserve capacity in increments of 10 liters; up to 70% capacity of the bed.
- To calculate the reserve capacity, take the number of people in the home and multiply it by 70 gallons per day. The reserve capacity will equal one day of water use.
Example: 3 people X 70 gallons per day = 210 gallons (suggested reserve capacity)
- To select a Variable Reserve, press the UP OR DOWN ARROW. The control will display:

Rsrv: Variable

- The reserve capacity will be calculated automatically, based on the registered daily water consumption. The default setting is 25% of the capacity.

Press the SCROLL BUTTON to advance the next setting.

4. TIME OF REGENERATION

The control will display:

Regen @ 2:00 am

- Press the UP or DOWN ARROW to adjust the time of regeneration.

Press the SCROLL BUTTON to advance the next setting.

5. DAYS OVERRIDE

The control will display:

Override: OFF

- Press the UP or DOWN ARROW to set the number of days between regenerations. The setting range is OFF to 30 days (maximum limit).

Press the SCROLL BUTTON to advance the next setting.

6. CYCLE 1 - BACKWASH

The control will display:

Backwash: 10 min

- Press the UP or DOWN ARROW to change the length of the backwash cycle. The setting range is 0 to 99 minutes (maximum limit). **Note: In most applications, the factory setting of 10 minutes should be adequate.**

Press the SCROLL BUTTON to advance the next setting.

7. CYCLE 2

The control will display:

BRN/RNS: 0 min

- The filter controls do not use the BRN/RNS cycle and the factory set time is set at 0 min.

Press the SCROLL BUTTON to advance the next setting.

8. CYCLE 3 - FAST RINSE/BRINE REFILL

The control will display:

FILL/RNS: 5 min

- Press the UP or DOWN ARROW to change the length of the fast rinse. The setting range is 0 to 99 minutes (maximum limit). **Note: In most applications, this setting will not need adjusting.**

Press the **SCROLL BUTTON**; the control will display:

Exit

- Press the UP or DOWN ARROW to exit the Installer's Level.

IMPORTANT NOTE: TO ACTIVATE THE NEW SETTINGS, YOU MUST EXECUTE A COMPLETE REGENERATION. IF YOU DO NOT MANUALLY REGENERATE THE SYSTEM, THE SETTINGS WILL NOT BECOME ACTIVE UNTIL THE UNIT HAS COMPLETED THE NEXT SCHEDULED REGENERATION.

BACKWASH FLOW CONTROL INFORMATION

The backwash flow control determines the resin bed expansion during backwash, independent of the inlet pressure.

TANK		BACKWASH FLOW CONTROL		
INCH	MM	NUMBER	GALLONS/MINUTE	LITERS/MINUTE
10	254	J	2.6	9.8
13	330	L	4.0	15.1

Note: The following backwash flow control recommendations are based on general tank sizes.

HOW TO PROGRAM THE END USER'S LEVEL

To begin, verify that the control is in the Service Mode.

Time of Day GL Remaining

Press the **SCROLL BUTTON** to advance the next setting.

PROGRAMMING OPTIONS MENU:

1. TIME OF DAY

The control will display:

Set Time of Day

- Press the UP or DOWN ARROW to program the time of day.

Press the **SCROLL BUTTON** to advance the next setting.

2. VACATION (ENGLISH-US)/HOLIDAY (METRIC) MODE

The control will display:

Vacation or Holiday OFF

- Press the UP or DOWN ARROW to activate the Vacation/Holiday Mode. **Note: The unit will not regenerate when the Vacation/Holiday Mode has been selected.**
- The Vacation/Holiday Mode will deactivate when a flow rate greater than 1.5 gallons per minute has been measured by the meter or when any button is pressed on the control. After the Vacation/Holiday Mode has been deactivated, the unit will go into an immediate regeneration.

3. IMMEDIATE REGENERATION MODE

The control will display:

Regen in 10 sec

- If the control is left in this position, the timer will countdown from 10 to 0, initiating a regeneration at 0.
- To avoid an immediate regeneration, press the **SCROLL BUTTON** before the timer reaches 0.

Press the **SCROLL BUTTON** to advance the next setting.

4. DELAYED REGENERATION MODE

Note: This function will not be available if the control was programmed for Immediate in the Manufacturer's Level.

The control will display:

Regen @ (current setting)

- If the control is left in this position, the unit will regenerate at the programmed time. The display will remain in the Delayed Regeneration Mode until the regeneration has begun.
- To cancel the Delayed Regeneration Mode, press the **SCROLL BUTTON**.

Press the **SCROLL BUTTON** to return to the Service Mode.

UNDERSTANDING THE DIAGNOSTIC LEVEL

To begin, verify that the control is in the Service Mode.

Time of Day GL Remaining

- Press the UP ARROW and hold it for 5 seconds; the control will display:

Regen Days Ago

The control is now in the Diagnostic Level. Use the SCROLL BUTTON to advance to each diagnostic. If no button is pressed within 5 minutes, the display will return to the Service Mode.

The following items are available in the Diagnostic Level (Read Only):

- Regen_Days Ago: Displays how many days ago the unit last regenerated.
- In Srv: Displays how many days the control has been in service.
- # of Regens: Displays the number of regenerations that have taken place since the control was first installed.
- Tot Vol: Displays the total volume of water used since installation.
- Last Rgn @: Displays the amount of water used before the last regeneration.
- Flow Rate (English-US): Displays the current flow rate.
Peak Flow (Metric): Displays the peak flow rate since the last regeneration. **Note: This function resets back to 0 after every regeneration.**
- Avg Vol: Displays the average daily water consumption.
- Capacity/System: The control is programmed for a volume setting. The display will read capacity along with maximum water to be used before regeneration.
- Rsrv: Displays whether the control is programmed for a Fixed or Variable Reserve. **Note: Reserve will not display when the control is programmed for an Immediate Regeneration.**
- Regen @: Displays the time of day the unit will regenerate.
- Override: Displays the override mode by reading OFF or the number of days programmed into the control.
- Cycle 1 - Backwash: Displays the minutes of backwash programmed into the control.
- Cycle 2 - Brine/Slow Rinse: This cycle is not used on filter controls.
- Cycle 3 - Fast Rinse/Brine Refill: Displays the minutes of fast rinse and brine refill programmed into the control.
- Units: Displays the mode of measurement, ENGLISH-US or METRIC.
- Meter: Displays whether the control is programmed as a Standard Meter, No Meter or a Volume/Pulse setting.
- MTR: Snap Sensor: Displays the type of meter sensor that the control is programmed for.
- Capacity Volume: Displays the control that is programmed for a volume/gallon setting.
- Regen: Displays the programmed regeneration type - Delayed, Immediate or Delayed/Immediate.
- Valve Type: Displays the type of valve the factory programmed into the control.
- M P Resets: Displays how many times the programs have been reset.
- Memory Reset: For factory information only.
- R1SDa VTI R: For factory information only.

To exit the Diagnostic Level, press the UP or DOWN ARROW at the EXIT display.

START UP INSTRUCTIONS

1. Turn the main shutoff valve until it is just barely open. This will allow the unit to release the air trapped inside, without agitating the mineral, when you manually regenerate the system.
2. Verify that the control is in the Service Mode (time of day and gallons remaining).
3. Manually advance (scroll) the control to the regeneration position. The display will countdown from 10 to 0. The first step will be backwash. Allow the water to flow from the drain until all the air has purged from the system. ***Note: Do not backwash the system if the mineral is new and has not been water soaked for at least 2 hours. Loss of mineral may occur. If necessary, advance past this cycle on a new start up.***
4. Open the main shutoff valve.
5. Advance (scroll) the control to fill/rinse. Allow the system to rinse for at least 3 minutes.
6. Use the SCROLL BUTTON to advance the control back to the Service Mode (time of day and gallons remaining).
7. The installation is now complete.

ANNUAL MAINTENANCE REQUIREMENTS

- Clean the backwash flow control.
- Verify that the flow meter is functioning correctly. Clean the impeller, if necessary.
- Verify the programming of the control. Reprogram, if necessary.
- Verify the minimum and maximum water pressure. Install a pressure reducer, if necessary.

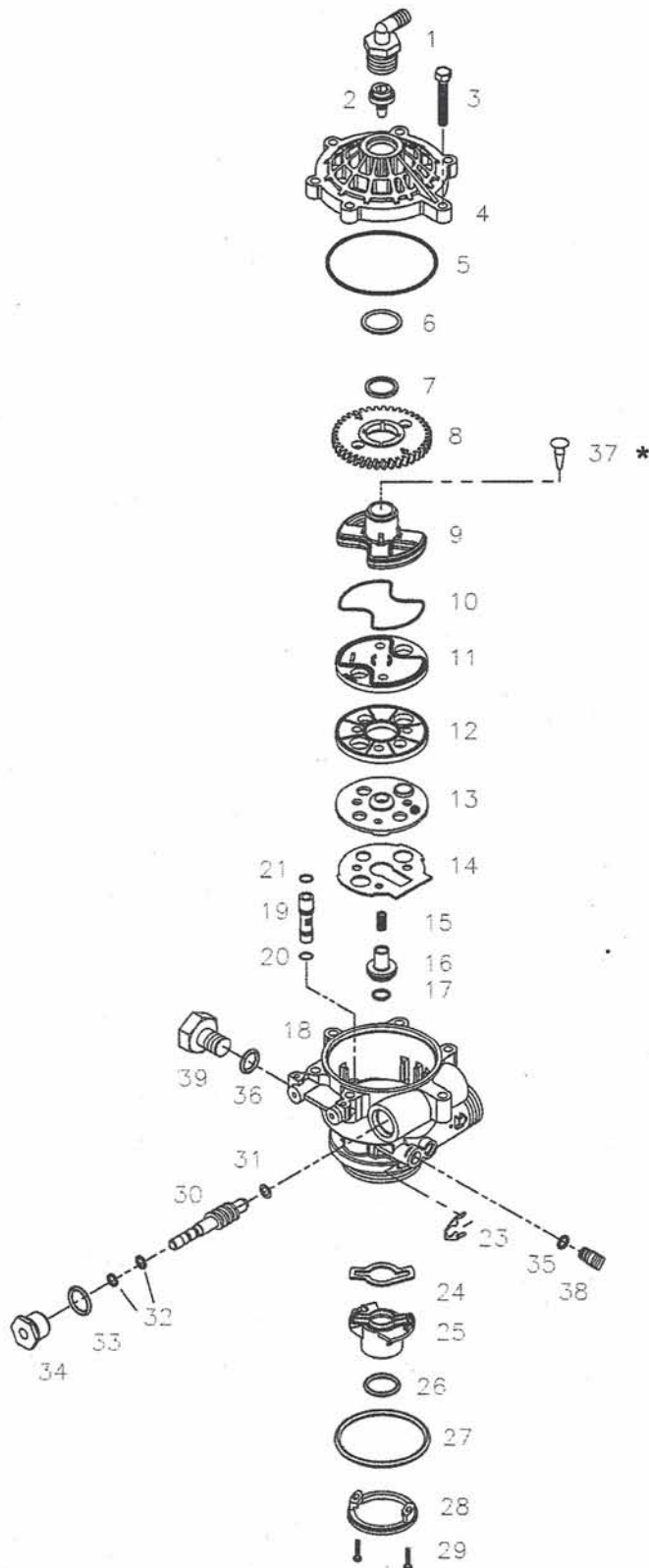
TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	SOLUTION
1. Untreated water to service	<ol style="list-style-type: none"> 1. The bypass valve is open. 2. Loss of mineral. 3. The valve is in regeneration. 4. Excessive water use. 5. Change in raw water quality 6. The unit fails to regenerate. 7. Decreasing capacity of mineral. 8. Leak between rotor and seal disk. 9. Leak at the riser tube. 10. The valve body and timer are out of synchronization. 	<ol style="list-style-type: none"> 1. Close the bypass valve. 2. Refer to SYMPTOM #9. 3. Wait for the regeneration to complete. 4. Check the frequency of regenerations. 5. Adjust the settings accordingly. 6. Refer to SYMPTOM #2. 7. Replace the mineral bed. 8. Check the rotor and seal disk; replace if necessary. 9. Verify that the riser tube is seated correctly and is not cracked. 10. Synchronize the valve body and timer.
2. The unit fails to regenerate	<ol style="list-style-type: none"> 1. Faulty electrical supply. 2. The control is not set properly. 3. The drive motor is defective. 4. The flow meter is defective. 5. The computer board is defective. 6. The microswitches are defective. 	<ol style="list-style-type: none"> 1. Check the electrical items (fuse, transformer). 2. Verify the correct regeneration schedule and reset the control. 3. Replace the drive motor. 4. Replace the flow meter. 5. Replace the computer board. 6. Replace the microswitches.

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	SOLUTION
3. The valve cycles continuously	1. Defective or shorted microswitch(es)	1. Replace the microswitch(es)
4. Loss of mineral through the drain line	1. Excessive backwash/fast rinse flow. 2. The lower and/or upper distributor is damaged. 3. A leak between the riser tube and upper distributor.	1. Verify that the backwash flow control is installed and sized correctly. 2. Replace the distributor(s). 3. Verify that the riser tube is seated correctly and is not cracked.
5. Loss of water pressure	1. Mineral or iron build up in the filter tank. 2. Plugged lower and/or upper distributor. 3. Crushed lower and/or upper distributor. 4. Plugged riser tube.	1. Clean or replace bed and control valve. Increase the regeneration frequency. 2. Remove the debris from the distributor(s). 3. Replace the distributor(s). 4. Remove and clean the riser tube.
6. Constant water flow to the drain	1. Drive motor failure. 2. Computer board failure. 3. Defective microswitch(es). 4. The valve body and timer are out of synchronization.	1. Replace the drive motor. 2. Replace the computer board. 3. Replace the microswitch(es). 4. Defective microswitch(es).

VALVE EXPLODED VIEW



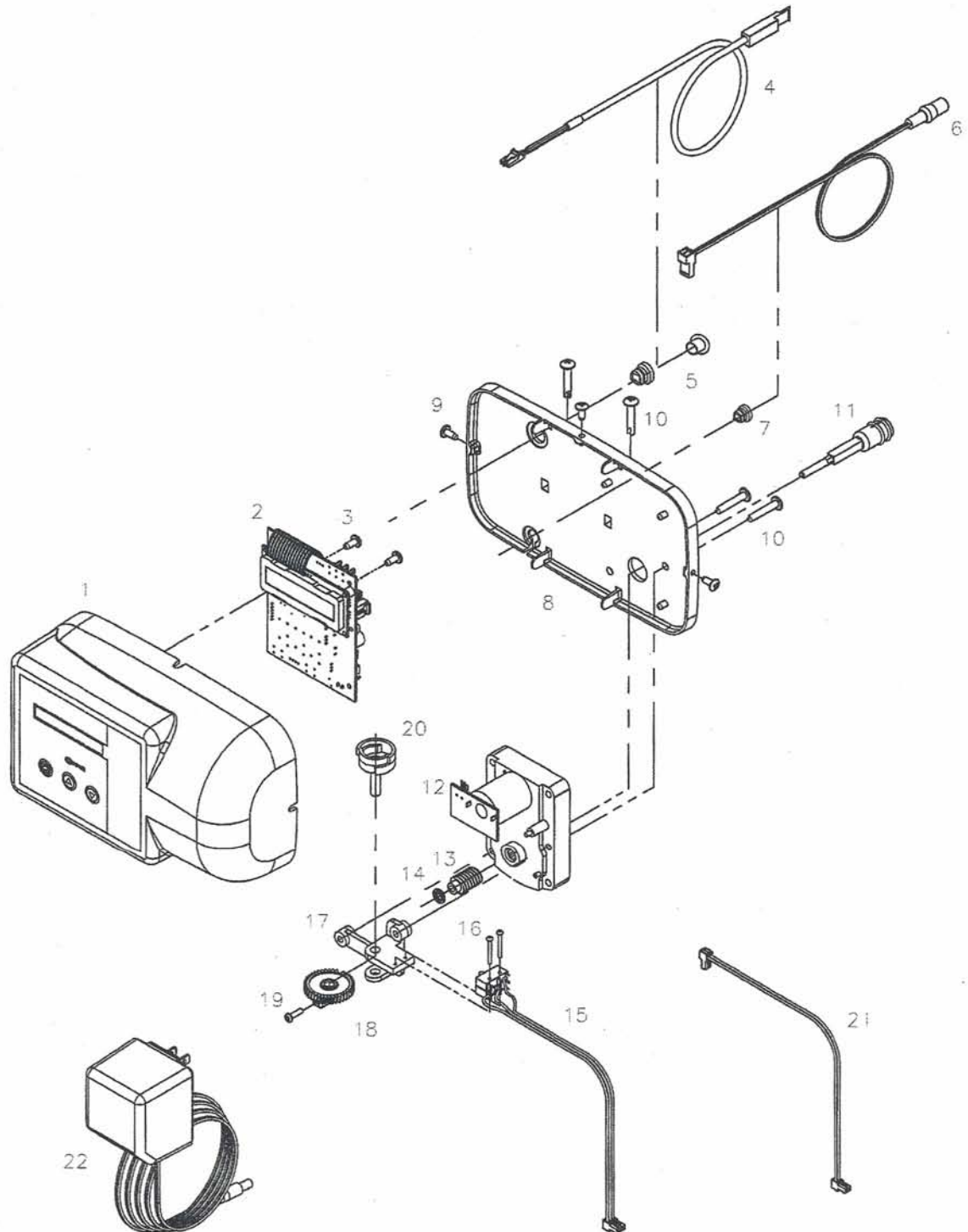
VALVE PARTS LIST

ITEM	QTY	AQUION PART #	ERIE REF. PART #	DESCRIPTION
1	1	70793	21-83	3/4 NPTF TO 1/2 ID HOSE MALE ELBOW (OPTIONAL)
2	1	75050	568-271-1.6	BACKWASH FLOW CONTROL ASSEMBLY 1.6 GPM "E"
		75015	568-271-1.8	BACKWASH FLOW CONTROL ASSEMBLY 1.8 GPM "F"
		72174	568-271-2.0	BACKWASH FLOW CONTROL ASSEMBLY 2.0 GPM "G"
		75052	568-271-2.2	BACKWASH FLOW CONTROL ASSEMBLY 2.2 GPM "H"
		75053	568-271-2.5	BACKWASH FLOW CONTROL ASSEMBLY 2.5 GPM "J"
		71099	568-271-3.0	BACKWASH FLOW CONTROL ASSEMBLY 3.0 GPM "T"
		72175	568-271-3.5	BACKWASH FLOW CONTROL ASSEMBLY 3.5 GPM "K"
		75265	568-271-4.0	BACKWASH FLOW CONTROL ASSEMBLY 4.0 GPM "L"
		75074	568-271-5.0	BACKWASH FLOW CONTROL ASSEMBLY 5.0 GPM "M"
		75075	568-271-6.0	BACKWASH FLOW CONTROL ASSEMBLY 6.0 GPM "N"
		75076	568-271-7.0	BACKWASH FLOW CONTROL ASSEMBLY 7.0 GPM "P"
		75077	568-271-8.0	BACKWASH FLOW CONTROL ASSEMBLY 8.0 GPM "Q"
		75078	568-271-9.0	BACKWASH FLOW CONTROL ASSEMBLY 9.0 GPM "R"
		72173	568-271-10.0	BACKWASH FLOW CONTROL ASSEMBLY 10.0 GPM "S"
3	6	72678	-	SCREW 1/4-20 X 1-1/4 LG HEX WASHER HD
4	1	71083	568-254-3	VALVE BODY COVER
5	1	70658	185-154-1	VALVE COVER O-RING
6	1	72327	-	TEFLON WASHER
7	1	70665	186-112	TEFLON O-RING
8	1	71089	568-260	GEAR
9	1	71087	568-259	CAM SHAFT
		71088	568-259-2	CAM SHAFT, MACHINED
10	1	70656	185-041-1	ROTOR PLATE O-RING
11	1	71132	568-345-2	ROTOR PLATE, COATED
12	1	71084	568-256	SEAL DISC, COATED
13	1	71182	568-383	INSERT PLATE
14	1	71183	568-384	GASKET
15	1	71006	51-5-105	FLOAT VALVE SPRING
16	1	71127	568-338-4	FLOAT VALVE
17	1	70660	185-210-8	FLOAT VALVE O-RING
18	1	71202	568-400	VALVE BODY W/BRINE REFILL TUBE SUBASSY
19	1	71063	568-215-1	INJECTOR #1 RED
20	1	70655	185-011-1	INJECTOR O-RING, LOWER
21	1	70664	186-107	INJECTOR O-RING, UPPER
22	-	-	-	-

VALVE PARTS LIST(Cont.)

ITEM	QTY	AQUION PART #	ERIE REF. PART #	DESCRIPTION
23	1	71947	541-254	SPRING CLIP
24	1	71344	570-251	RISER INSERT GASKET
25	1	71118	568-334	RISER INSERT
26	1	70662	185-214-1	RISER INSERT O-RING
27	1	70663	185-337-1	TANK O-RING
28	1	71010	541-232-0	UPPER BASKET ADAPTER RING
29	2	70630	15-207-12	SCREW #6-19 X 3/4 LG SS
30	1	71060	568-208-2	WORM DRIVE SHAFT
31	1	70616	14-43	WORM DRIVE SHAFT TEFLON WASHER
32	2	70666	186-115	WORM DRIVE SHAFT O-RING
33	1	70661	185-211-1	PACKING GLAND O-RING
34	1	71069	568-216-3	PACKING GLAND NUT, 15/16-12 THREAD
35	1	70667	186-118	O-RING
36	1	70659	185-208-1	O-RING
37	1	70932	3000-271	UMBRELLA CHECK (OPTIONAL)
38	1	71958	541-273	BRINE LINE PLUG
39	1	70791	21-72-3	BRINE LINE PLUG, THREADED
40	1	72548	-	FLOW METER DIFFUSER
41	1	72544	-	FLOW METER IMPELLER ASSY
42	1	72545	-	FLOW METER HUB ASSY
43	1	72519	-	FLOW METER SENSOR & CABLE (INCLUDED IN CONTROL HEAD)

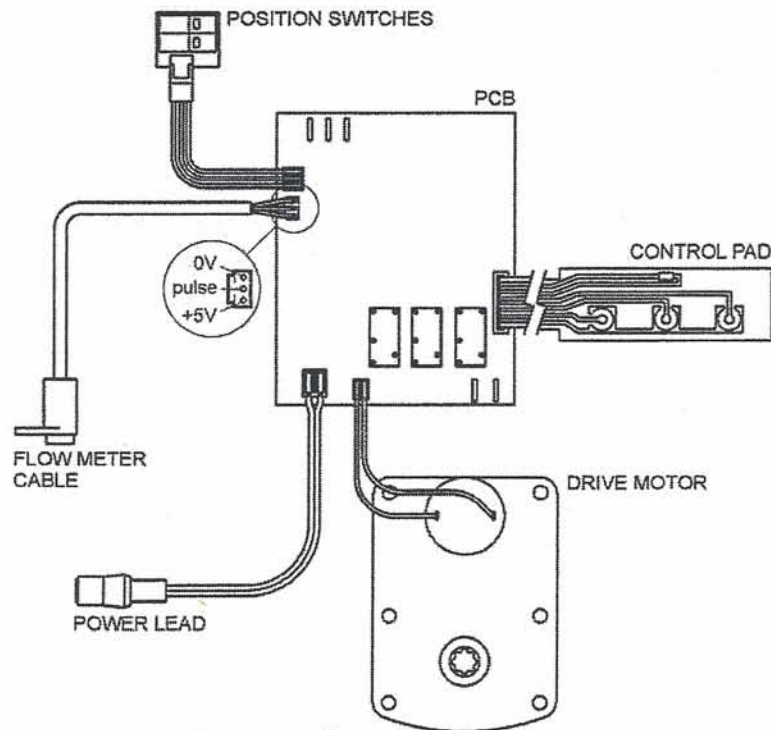
CONTROL EXPLODED VIEW



CONTROL PARTS LIST

ITEM	QTY	AQUION PART #	ERIE REF. PART #	DESCRIPTION
1	1	72614 72635	- -	FRONT COVER SUBASSEMBLY, BLACK FRONT COVER SUBASSEMBLY, WHITE
2	1	72265	-	BOARD ASSY, DEMAND ENGLISH UNITS, R1FDJ PROGRAM
3	2	70618	15-102	SCREW #4-24 X 3/8 SELF THRD. (INCLUDED IN ITEM #1)
4	1	72519	-	FLOW METER SENSOR & CABLE
5	1	72134	28-8-7	HEYCO BUSHING SR 5P-4
6	1	70971	4000-207	POWER CORD
7	1	70312	28-8-29	HEYCO BUSHING SR 2P-4
8	1	70962 72340	4000-200-1 -	BACKPLATE, BLACK BACKPLATE, WHITE
9	3	71502	15-236-6	SCREW #8-18 X 3/8 LG, SELF THRD
10	4	71497	15-222	SCREW #10-16 X 1 LG, TYPE BT SS SELF THRD
11	1	70720	2100-206	DRIVE SHAFT
12	1	72261	-	DRIVE MOTOR SUBASSEMBLY
13	1	71075	568-227-2	WORM
14	1	70668	19-48	RETAINING RING
15	1	72451	-	POSITION INDICATING MICROSWITCHES SUBASSY
16	2	70622	15-173-12	SCREW #2-28 X 3/4 LG, SELF THRD
17	1	71185	568-386	BRACKET
18	1	71106	568-310	GEAR
19	1	70625	15-184-7	SCREW #6-32 X 7/16 LG
20	1	70965	4000-202	CAM & SHAFT
21	1	71679	4000-206-1	MOTOR LEAD
22	1	72138	28-234-2	TRANSFORMER, 120 VAC TO 24 VAC/833 mA, US 2 PIN

WIRING DIAGRAM



BEFORE SERVICING THE EQUIPMENT

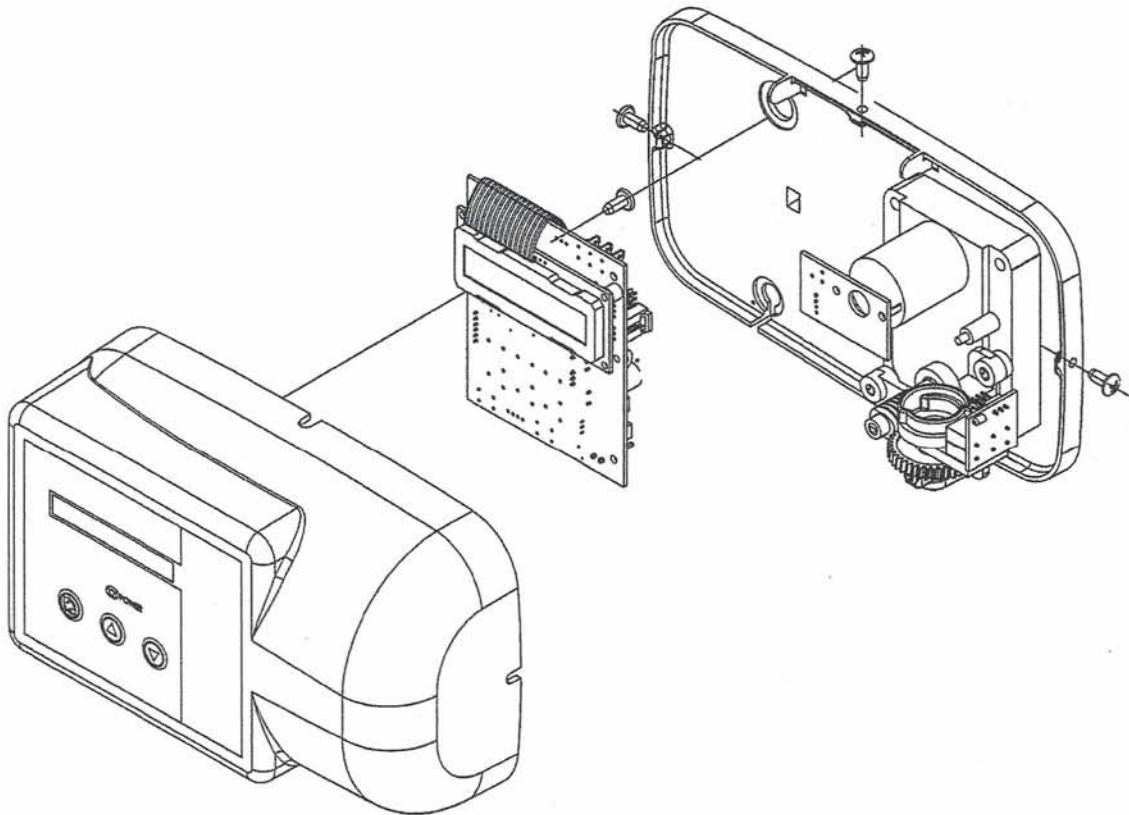
- The control must be in the Service Mode (time of day and gallons remaining).
- Disconnect all electrical power to the unit.
- Bypass or disconnect the water supply.
- Relieve the water pressure.
- Familiarize yourself with the part replacement procedures and components.

REQUIRED TOOLS FOR SERVICE

- Phillips screwdriver
- Needle nose pliers
- Adjustable wrench
- Small standard screwdriver
- 3/8" Allen wrench

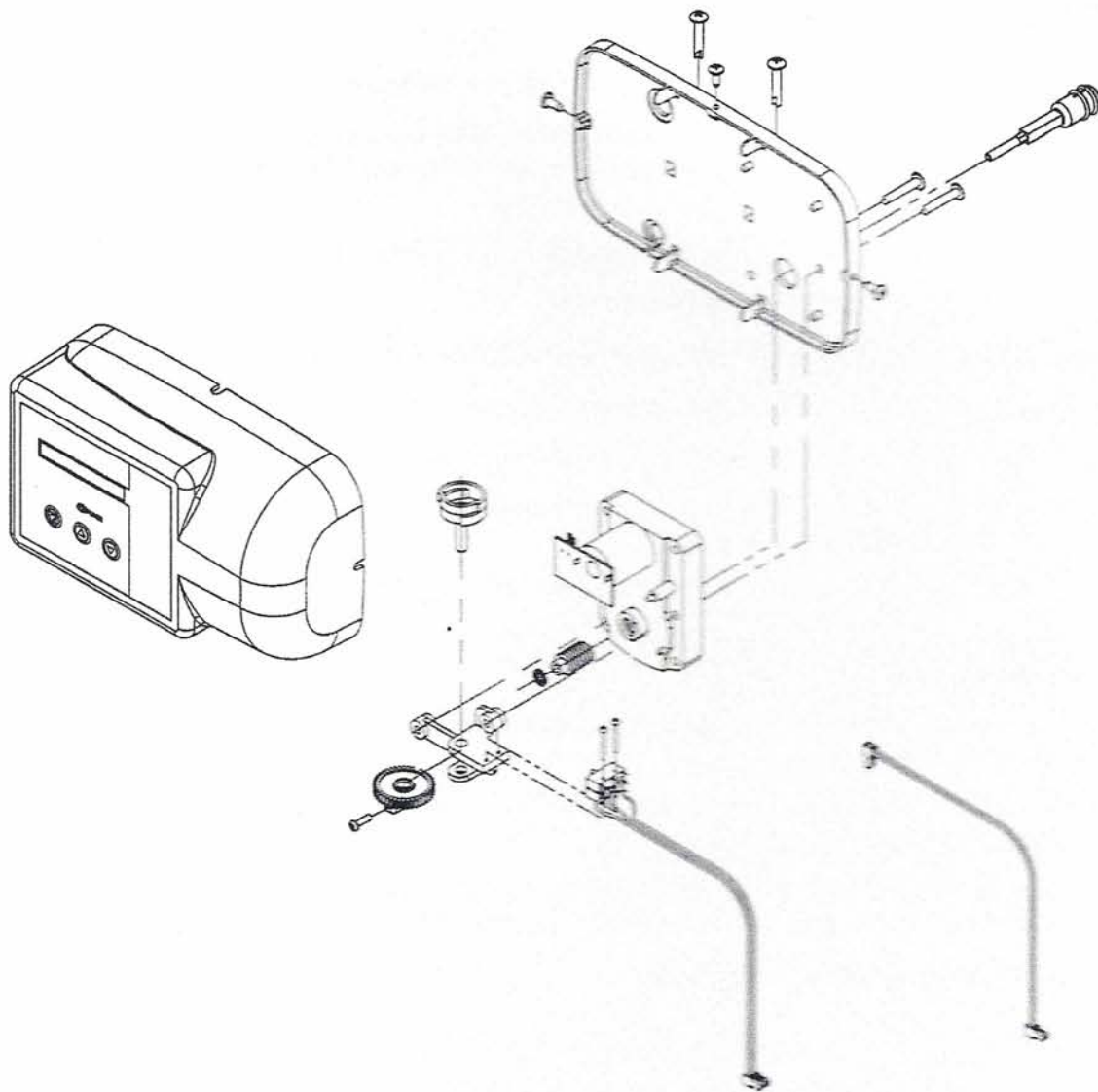
COMPUTER BOARD REPLACEMENT

1. Disconnect all electrical power to the unit.
2. Loosen the 3 front cover screws and remove the front cover with computer board.
3. Disconnect all wire connections from the computer board.
4. Remove the clear zebra strip from the push-in connection on the computer board.
5. Remove the one screw holding the computer board in place.
6. Push aside the clips holding the computer board in place and remove the computer board.
7. Reverse the procedure for reassembly. Refer to the wiring diagram on page 28 for the proper lead connections.



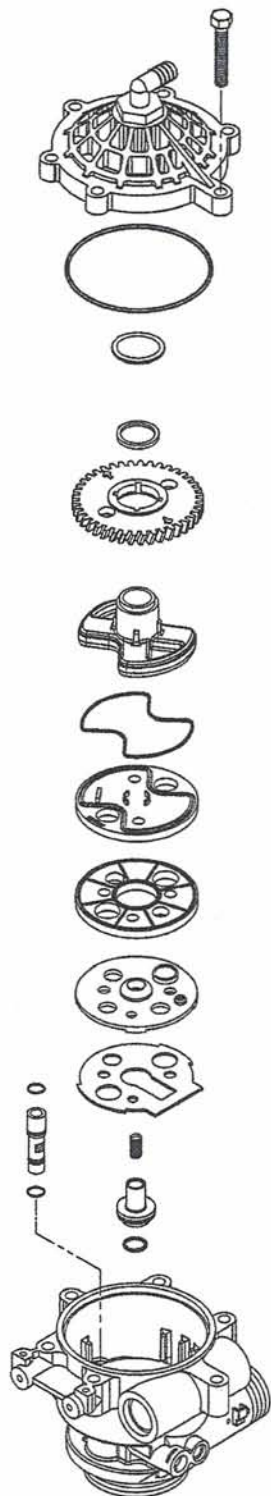
DRIVE MOTOR REPLACEMENT

1. Disconnect all electrical power to the unit.
2. Remove the screw holding the flow meter sensor in place and remove the flow meter sensor.
3. Remove the 2 backplate mounting screws and take away the control head assembly.
4. Loosen the 3 front cover screws and remove the front cover.
5. Disconnect the wires from the drive motor assembly and microswitch assembly.
6. From the backplate, remove the 2 screws holding the drive motor assembly in place and remove the microswitch assembly and drive motor assembly. **Note: The small PCB board is soldered onto the drive motor assembly.**
7. Remove the retaining ring securing the worm and remove the worm from the drive shaft.
8. Pull the drive shaft out of the drive motor assembly.
9. To replace the cam shaft and/or hub gear, remove the screw and lift out the parts.
10. To replace the microswitch assembly, remove the 2 screws from the top of the assembly.
11. Reverse the procedure to reassemble the cam shaft, hub gear and microswitch assembly.
12. Reinstall the drive shaft into the drive motor assembly, with the flat side on the drive shaft pointing down (mark on the drive shaft pointing up).
13. Reinstall the worm onto the drive shaft and install the retaining ring to secure the worm.
14. Put the microswitch assembly onto the drive motor assembly. The microswitch assembly and cam shaft must be in the service position.
15. Install the microswitch assembly and drive motor assembly onto the backplate and secure it with the 2 screws.
16. Connect the wires to the drive motor assembly and microswitch assembly. Refer to the wiring diagram on page 28 for the proper connections.
17. It is now necessary to check the synchronization of valve body and control head. Refer to "Synchronizing the Control Head and Valve Body" on page 40.
18. Reverse the remaining steps for reassembly.



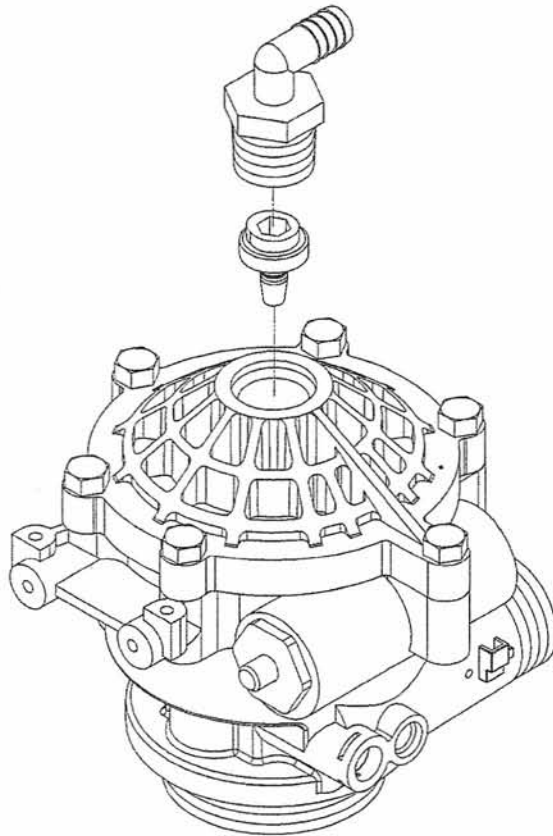
ROTOR, SEAL DISK, FLOAT VALVE, GASKET

1. Remove the drain hose from the drain elbow.
2. Remove the 6 bolts holding the valve body and cover together.
3. Lift the valve cover away from the valve body.
4. Remove the worm gear and cam shaft from the valve cover; the white Teflon O-ring will remain in the valve cover.
5. Remove the rotor plate from the valve body and inspect the surface. The rotor plate surface should be smooth and free of any circular grooves or scratches; replace if necessary.
6. Remove the seal disk from the valve body. Inspect the seal disk; make sure the raised ribs are intact. The green Teflon coating may be worn off of the ribs, but this will not affect the sealing performance of the disk. Replace the seal disk, if necessary.
7. Use a silicone base lubricant to lubricate the green side of the seal disk.
8. Remove the insert plate from the valve body. Inspect the insert plate; make sure the ribs are intact. Replace the insert plate, if necessary.
9. Remove the gasket from the valve body. Inspect the gasket for wear or damage; replace if necessary.
10. Clean the surface of the valve body.
11. Lift the float valve straight out of the float valve chamber of the valve body.
12. Remove the spring from the float valve shaft.
13. Clean all sealing surfaces inside the float chamber.
14. Make sure the float valve is straight up in the float chamber of the valve body.
15. Reinstall the gasket and insert plate into the valve body.
16. Lightly lubricate the O-rings and of the new injector with a soapy water solution.
17. Install the injector. One of the rectangular openings on the injector should be facing directly towards the center of the valve body. Push the injector down firmly.
18. Reinstall the seal disk into the valve body, with the green side facing up.
19. Reinstall the rotor assembly into the valve body, ensuring that the arrow on the worm gear is pointing directly towards the second tooth on the worm drive shaft (facing the front of the control valve). The 2 holes in the rotor assembly should now be exactly aligned with the corresponding holes in the seal disk.
20. Center the washer onto the worm gear.
21. Make sure the valve cover O-ring is clean and securely installed around the raised rib on the valve cover.
22. Lower the valve cover straight down onto the valve body and press down firmly and evenly to seat the valve cover.
23. Reinstall the 6 bolts and tighten them in a cross pattern.
24. Reinstall the drain hose to the drain line elbow.



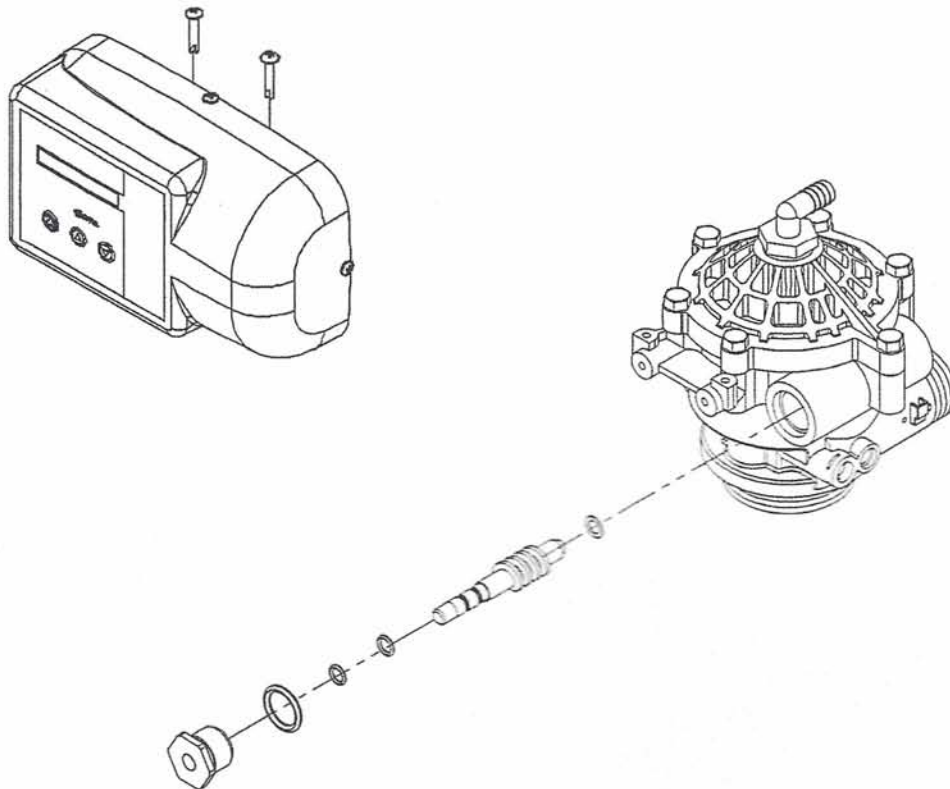
BACKWASH FLOW CONTROL REPLACEMENT

1. Remove the drain hose from the drain elbow and unscrew and remove the drain elbow.
2. Unscrew the backwash flow control with a 3/8" Allen wrench.
3. Reverse the procedure for reassembly.



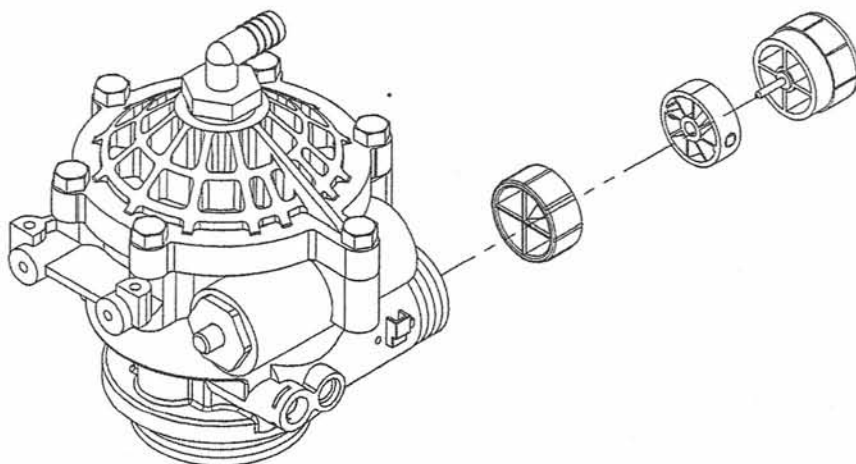
WORM DRIVE SHAFT REPLACEMENT

1. Disconnect all electrical power to the unit.
2. Remove the screw holding the flow meter sensor in place and remove the flow meter sensor.
3. Remove the 2 base mounting screws and take away the control head assembly.
4. Unscrew the packing gland nut.
5. Remove the packing gland nut/worm drive shaft from the valve body.
6. Separate the packing gland nut from the worm drive shaft.
7. Inspect the worm drive shaft. The threads on the worm drive shaft should not be deformed or damaged; replace if necessary.
8. Check the worm drive shaft washer for wear and/or damage; replace if necessary.
9. Lubricate the O-rings.
10. Install the worm drive shaft into the valve body by turning it clockwise.
11. Install the packing gland nut over the worm drive shaft and screw it into the valve body.
12. Reinstall the control head assembly onto the valve body and tighten the 2 base mounting screws.
13. Reinstall the flow meter sensor.
14. It is now necessary to check the Synchronization of the Control Head and Valve Body. Refer to "Synchronizing the Control Head and Valve Body" on page 40.



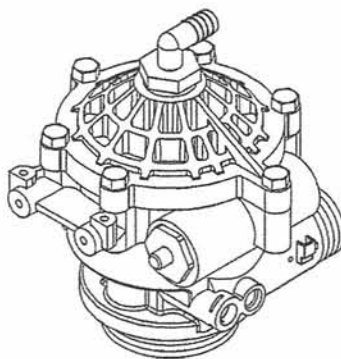
IMPELLER REPLACEMENT

1. Remove the bypass valve assembly from the valve body.
2. Using a slot screwdriver, separate the impeller assembly from hub. The impeller hub will remain pressed into the valve body.
3. Inspect the impeller assembly; replace if necessary.
4. Reverse the procedure for reassembly.



RISER REPLACEMENT

1. Place the bypass valve into the "bypass" position.
2. Relieve the system pressure.
3. Disconnect the unit from the bypass connections.
4. Remove the unit from the resin tank. **Note: Do not use the control assembly as a handle while rotating the valve.**
5. Remove the two adapter screws and remove the adapter ring.
6. Separate the riser assembly from the valve body.
7. Clean the 2 riser O-rings and wipe out the valve body cavity.
8. Use Dow 111 Silicone based lubricant or equivalent to lightly lubricate the riser O-rings and the valve body cavity.
9. Reverse the procedure for reassembly.



SYNCHRONIZING THE CONTROL HEAD AND VALVE BODY

THE CONTROL HEAD

To ensure proper operation of the control valve, the valve body and control head must be synchronized in the Service Position.

1. Loosen the 4 timer cover screws and remove the timer cover.
2. Make sure the switch cam is with the service mark (an arrow) in front (Figure 1); the upper micro-switch should be deactivated by the service opening on the upper part of the switch cam. If this is not the case, (1) Loosen the locking screw from the switch cam, (2) Turn the switch cam to the right, to the correct position and (3) Secure the locking screw.
3. Make sure the flat side on the worm drive shaft is pointing down and the mark on the drive shaft is pointing up (Figure 2). If this is not the case, please refer to "Drive Motor Replacement" on page 30.

THE VALVE BODY

1. Remove the drain hose from the drain elbow.
2. Remove the 6 bolts holding the valve body and cover together.
3. Lift the valve cover away from the valve body.
4. Make sure the arrow on the worm gear is pointing directly towards the second tooth on the worm drive shaft (facing the front of the control valve). The 2 holes in the rotor assembly should now be aligned exactly with the corresponding holes in the seal disk.
5. Make sure the valve cover O-ring is clean and installed securely around the raised rib on the valve cover.
6. Lower the valve cover straight down onto the valve body and press down firmly and evenly to seat the valve cover.
7. Reinstall the 6 bolts and tighten them in a cross pattern.
8. Reinstall the drain hose to the drain line elbow.

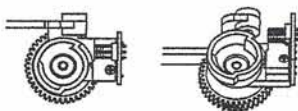


Figure 1

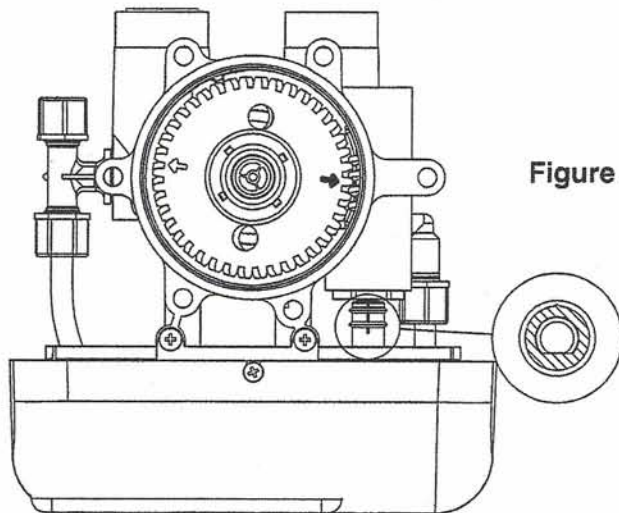


Figure 2

ProSystems Division of Aquion Water Treatment Products
2080 East Lunt Avenue
Elk Grove Village, Illinois 60007
Telephone: 1.800.811.3489

©2009 AWTR, LLC