PENTAIR

WaterTrust Pro Series™

WHOLE HOUSE CARBON FILTRATION SYSTEMS
1.0, 1.5, 2.0
INSTALLATION & OWNERS MANUAL

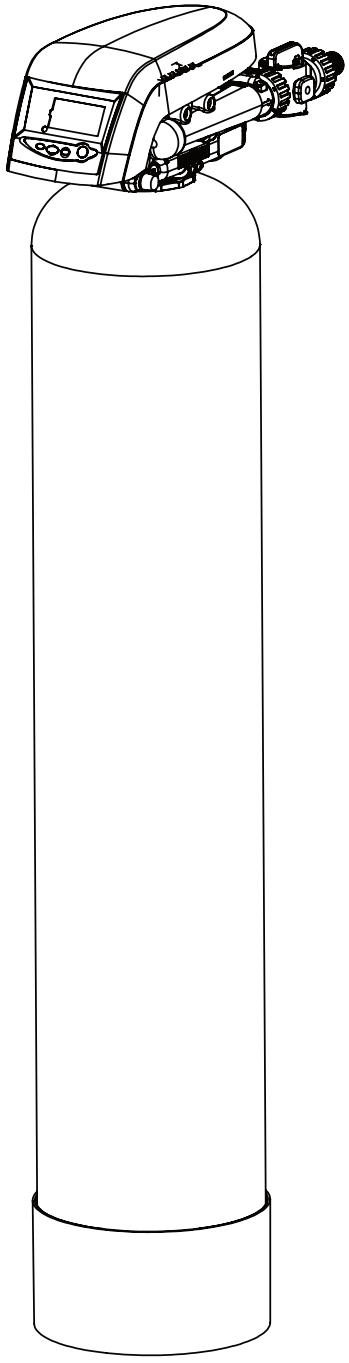


TABLE OF CONTENTS

SYSTEM INFORMATION

POWER REQUIREMENTS

The computer board receives power from an external wall-mount transformer, supplied with each system.

Voltage: The voltage supplied to the computer board is 12V AC.
Frequency: The line frequency is 60 Hz.

WATER PRESSURE

A minimum of 20 pounds of water pressure is required for proper operation of the system. The stated operating pressure range is 20 psi - 125 psi (138 kPa - 862 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.

TEMPERATURE OPERATING RANGES

Operating Water Temperature Range: 40° F - 100° F (4.4° C - 38° C)

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 filter 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.

OPERATIONAL SPECIFICATIONS

MODEL	MEDIA AMOUNT (CU.FT)	SERVICE FLOW RATE (GAL/MIN)	CHLORINE CAPACITY (GAL)	PSI DROP AT SERVICE FLOW RATE	DRAIN FLOW RATE (GAL/MIN)
PENTAIR CARBON FILTRATION SYSTEM 1.0	1.0 CARBON	11.6	400,000	10	5.0
PENTAIR CARBON FILTRATION SYSTEM 1.5	1.5 CARBON	11.9	600,000	15	5.0
PENTAIR CARBON FILTRATION SYSTEM 2.0	2.0 CARBON	13.2	800,000	14	7.0

SYSTEMS TESTED AND CERTIFIED BY WQA UNDER NSF/ANSI/CAN 61 FOR MATERIAL SAFETY AND NSF/ANSI 372 FOR LEAD FREE COMPLIANCE ONLY. NOT CERTIFIED FOR CONTAMINANT REDUCTION OR STRUCTURAL INTEGRITY.

PRE-INSTALLATION INSTRUCTIONS

- Do not install this system where water is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- This system 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 system must be installed in accordance with all applicable state and local laws and regulations.
- This system is designed to treat cold water only and can be installed on any cold water supply.

ANNUAL MAINTENANCE REQUIREMENTS

- Clean the backwash flow control.
- Verify the programming of the control. Reprogram, if necessary.
- Verify the minimum and maximum water pressure. Install a pressure reducer, if necessary.

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

- If water contains iron, manganese or hydrogen sulfide, a seperate iron removal system is suggested to be installed prior to the system, consulting with your local dealer.

3. CHECK WATER PRESSURE

- Use a pressure gauge to confirm that the water pressure does not exceed 125 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 20 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 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

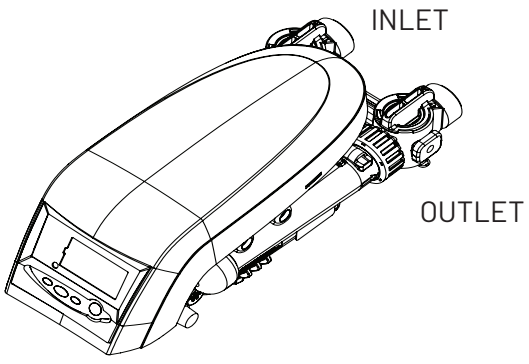
- Turn off the water at the meter or the pressure tank.
- To drain the plumbing system, open all the faucets in the house and flush the toilets. This procedure will allow air to enter the plumbing system. The water will drain out of the lowest faucet or outlet.

6. BYPASS THE OUTSIDE FAUCETS

- When possible it is best to bypass the outside faucets. However in some cases the outside faucets can not be accessed. In this situation the bypass valve should be used whenever watering outside for extended periods of time. If the installation is outside or in a garage a faucet can be installed on the inlet water side to provide an option for untreated water.

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 conditioner, avoid short connections of pipe between the conditioner 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. PLUMBING GROUND CONNECTION

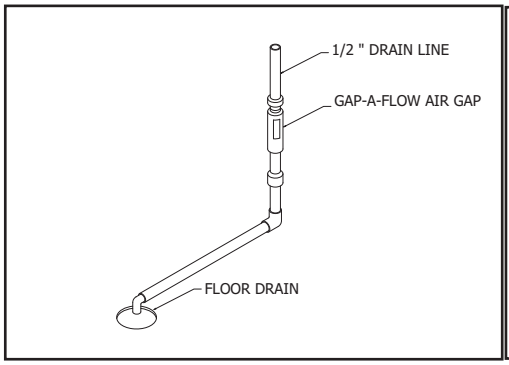
- In some homes, metal piping may serve as a ground connection for the home electrical system. Installing a Pentair Filter with its nonmetallic valve body will interrupt the ground connection. Whenever a system is installed on metallic plumbing, we recommend you use grounding pipe clamps and a ground cable to maintain continuity of the ground connection from the inlet to the outlet pipe. ¼" bare stranded wire is recommended for the ground cable. Check electrical continuity of the connection after installation**.**

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

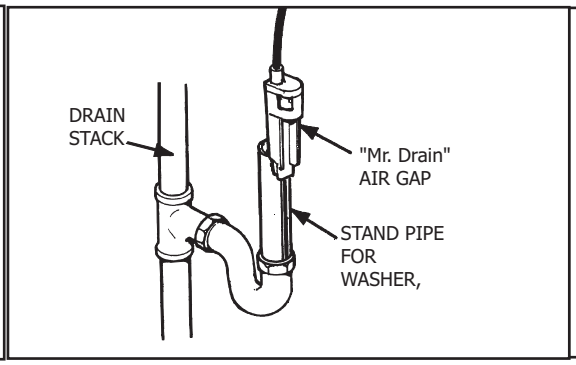
- Using the supplied drain line fitting use Teflon tape on the threads and attach to the top of the valve. Run 1/2 inch ID flexible drain line tubing (not supplied) to an appropriate drain. Most local codes require an air gap. See pictures below.
- If you wish to use an air gap device (not included) you may purchase one from the Order Department.

Note: Drain line may be plumbed with rigid pipe or PEX, if required by local code. The drain connection on the valve will accommodate any standard 3/4 inch NPT fitting.

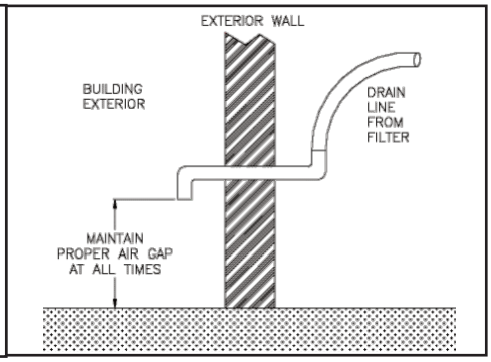
Note: For whole house carbon filters and acid neutralizers, the regeneration cycle is a simple backwash to refresh the filter bed. Since no regeneration chemicals are added, the discharge water may be drained to the outside and used for irrigation in climates where freezing is not a concern. See drawing below.



Air Gap - Floor Drain



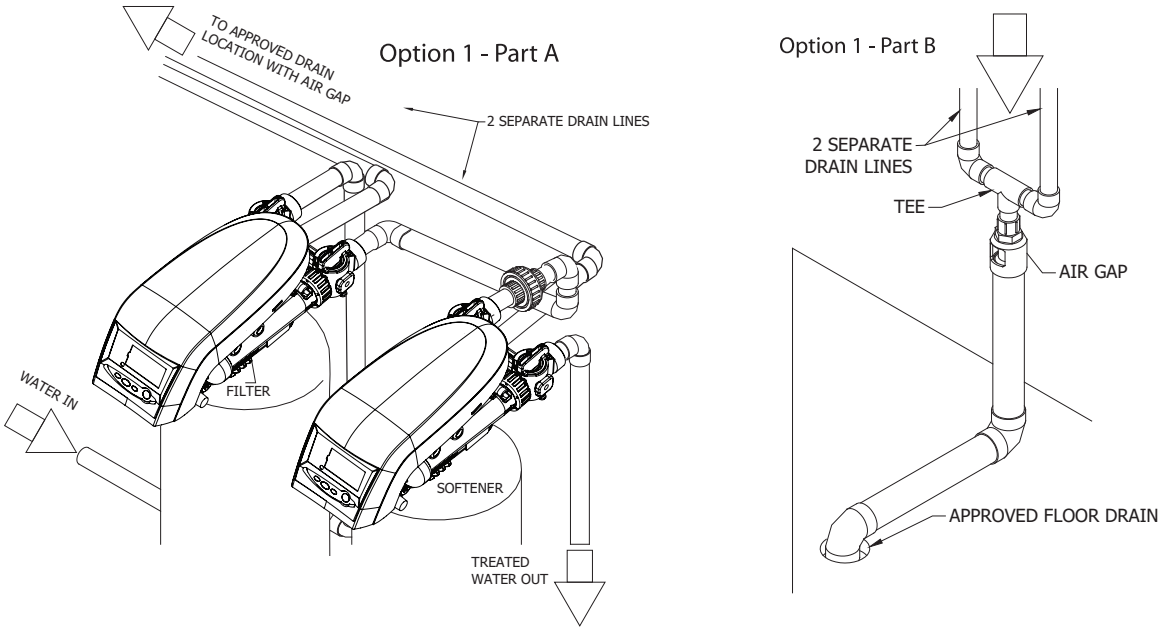
Air Gap - "Mr. Drain"



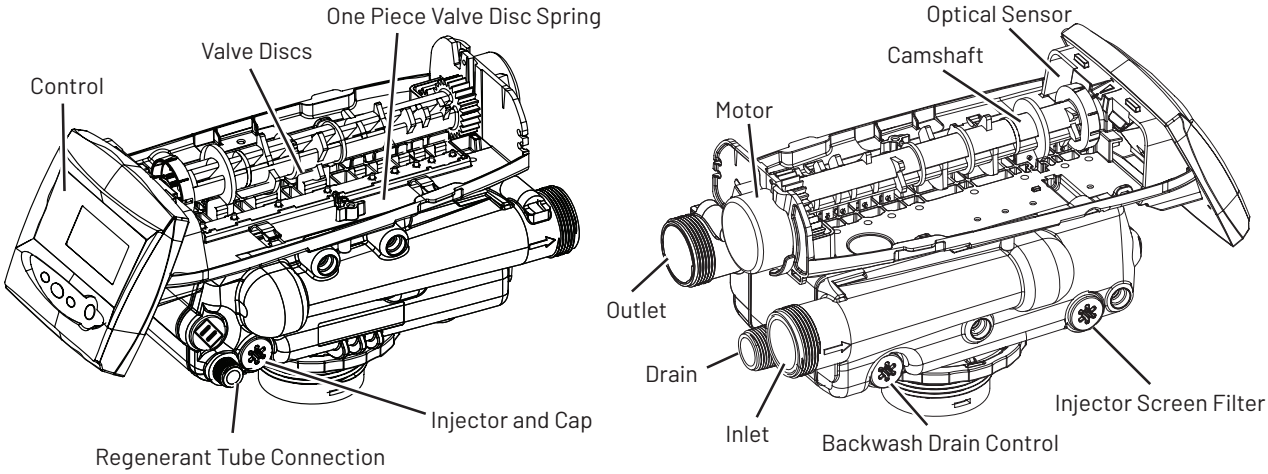
Option for non-freezing climate only

Special attention for situations where a filter and a softener are installed together:

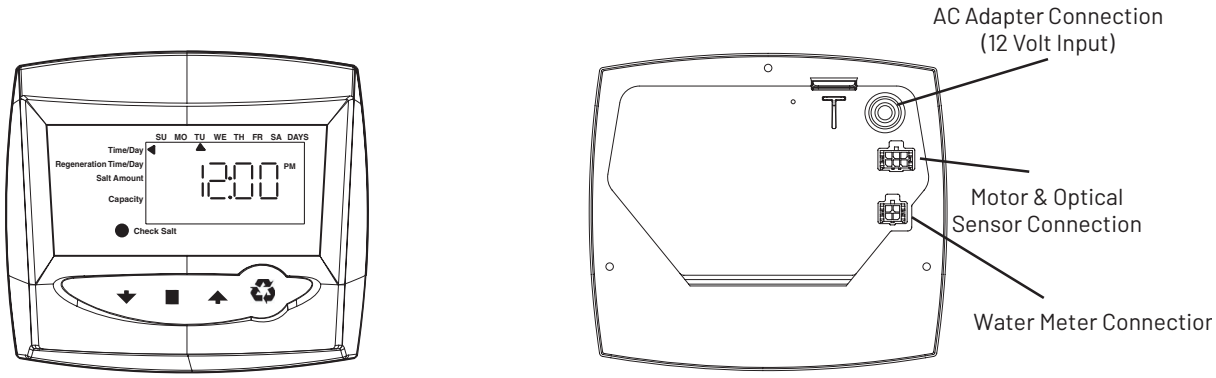
Install the drain lines from both systems (see part A). Then terminate the lines separately using an air gap device or connect them together as shown in Part B.



VALVE LAYOUT



CONTROL LAYOUT



DISPLAYS, ICONS AND CURSORS

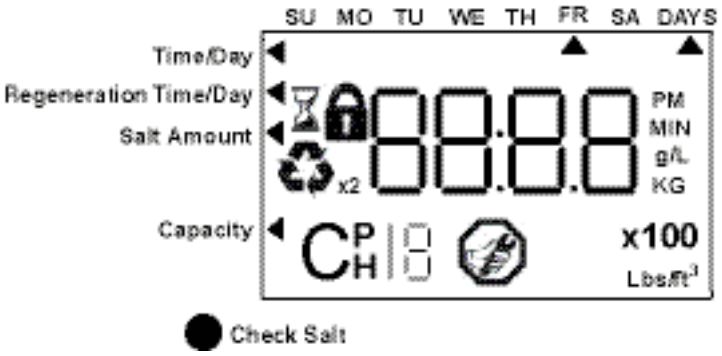


Figure 15.

Note: In normal operation and during programming, only a few of the icons will actually be displayed.

1. Used to select and indicate the actual Day of the Week setting.
2. This cursor is displayed when programming the Days Override.
3. PM indicator displayed when setting Time of Day and Time of Regeneration. Note: There is no AM indicator.
4. Indicates displayed value in minute increments.
5. Indicated kilograins or kilograms when estimated capacity is displayed.
6. Used to display "P", "H", and "C" parameter.
7. Indicates access into "H" Level IV History viewing.
8. Indicates access into "P" Level II programming.
9. Used to display cycle position during regeneration. Also indicates access into "C" Level III cycle programming.
10. This cursor is displayed during Level I programming: Time of Day, Regen Time, Day, Salt, etc.
11. When flashing, this indicates regeneration is to occur at next Time of Regen. Appears as a solid icon during regeneration.
12. When hourglass is flashing, this indicates that the control is moving to a regeneration cycle. Appears as a solid icon during a cancelled regeneration and the control is cycling directly back to the home position.
13. Indicates the selected program setting has been locked out. Lock settings are changed in Level II programming.
14. Indicates double regeneration.
15. Normally off. Will glow red if salt brine is not reaching the valve during recharge. Indicates out-of-salt condition.
16. Maintenance display turns on if the months in service exceed the value programmed in P11 "Service Interval".
17. When Lbs/ft^3 is displayed, the value for regenerant amount entered is in pounds per cubic foot.
18. X100 multiplier for large values.
19. When "g/L" is displayed the valve is in grams per liter.

BUTTON FUNCTIONS

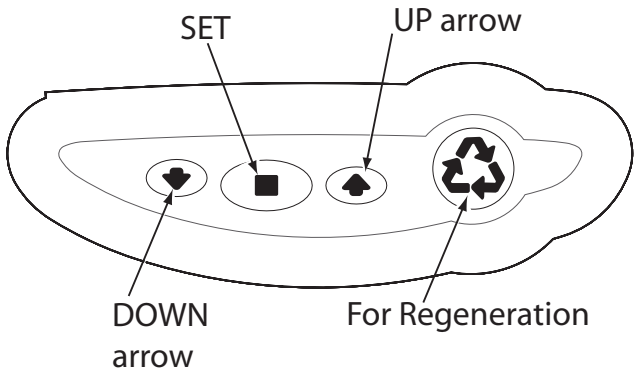


Figure 16.

DOWN and UP Arrows: Used to scroll through settings or change setting value.

SET: Used to enter a setting into memory or activate a setting to be changed.

REGEN: Used to command the control to regenerate and enable or disable lockout setting.

PROGRAMMING OVERVIEW

The control includes multiple program levels that allow the Wat er Treatment Professional to customize the system for many water conditions. Additionally, historical data can be viewed allowing quick and easy troubleshooting. In most cases, Level I programming is all that is required to set up the water conditioning system for proper operation. A brief description of each program level is listed below.

- Level I: Used to program control for normal applications..
- Level II: (P-Values) Allows the installer to customize programming for non-standard applications.
- Level III: (C-Values) Allows the installer to adjust the length of select cycles for non-standard applications.
- Level IV: History (H-Values) Allows access to historical information for troubleshooting the system.

Note: If a button is not pushed for thirty seconds, the control returns to normal operation mode.

CONTROL OPERATION

Power Loss Memory Retention

The control features battery-free Time of Day and Day of Week retention during loss of power. A super capacitor is designed to hold the information in memory for 8 to 24 hours depending on the installation. If the super capacitor is exhausted, the control will display four dashes (- - :- -) immediately upon po wer up. The Time of Day and Day of Week must be reset.

All other programmed parameters are stored in the static memory and are retained during power outages.

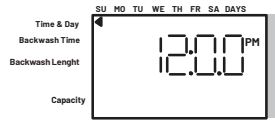
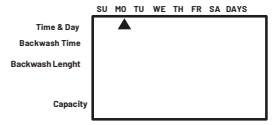
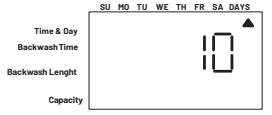
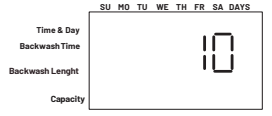
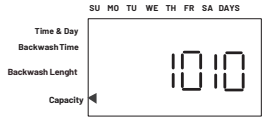
LEVEL I PROGRAMMING

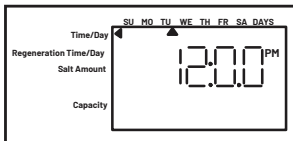
The control can be quickly programmed by following the sequential procedure on the following page. Level I program parameters are those that can be accessed by pressing the UP or DOWN buttons.

- Time of Day: Includes PM indicator. Can be set to display as a 24-hour clock. See Level II Programming.
- Day of Week: Set to actual day of the week.
- Time of Regeneration: Fully adjustable. Default is 2:00 AM.
- Days Override: Range 0.5 to 99 days. Leave at 0 to disable.

Note: When the control is set up for a twelve-hour clock a PM indicator will illuminate when the displayed time is in the PM hours. There is no AM indicator.

FILTER QUICK PROGRAMMING

Screen	Buttons to	Description	Range
	press ■ then ▼ or ▲ press ■	**1. Time of Day (12 hr.)** Set to time of day Note: Setting includes PM indicator.	
	press ■ then ▼ or ▲ press ■	**2. Day of Week** Set to actual day of the week	
	press ■ then ▼ or ▲ press ■	**3. Time of Regeneration** Set to desired time of Backwash	
	press ■ then ▼ or ▲ press ■	**4. Days Override** Do not set at 0 if you backwash on volume. Set the desired days between backwash	**Days: 1 to 30**
	press ■ then ▼ or ▲ press ■	**5. Backwash Duration** Set to desired duration of Backw ash in minutes 0 to 99. suggested value 14	
	press ■ then ▼ or ▲ press ■	**6. Capacity** To backwash your filter on volume intervals set the filter capacity in gallons	



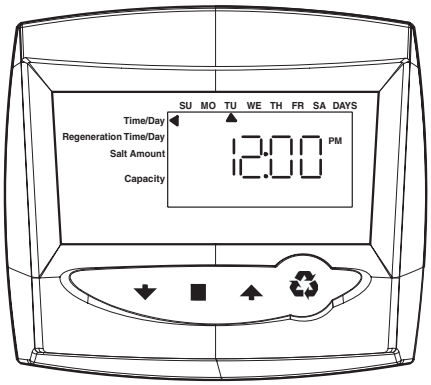
Service Display
Displays actual day of the week and time of day.

Note:

Upon completing the Level I Programming, the Regen icon will begin flashing, indicating that a delayed regeneration will occur at the next programmed time of regeneration. If a delayed regeneration is not desired, press the REGEN button to disable the delayed regeneration and the system will regenerate by water usage.

PROGRAMMING THE LOCKOUT FEATURE

All parameters can be locked out when the control is in Level II programming. Simply press the REGEN button during Level II programming and a Lock icon will appear indicating that the specific setting has been locked out. When locked out, the setting cannot be adjusted. To disable the Lock Out Feature, press the REGEN button when in Level II. The lock icon will not be displayed.



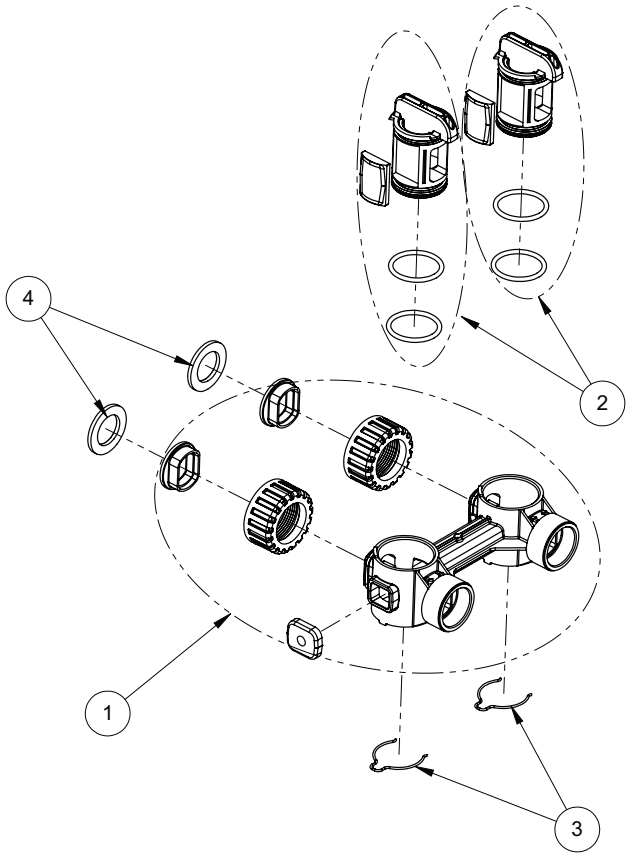
LEVEL III CYCLE PROGRAMMING – C VALUES

Several Level III program parameters can be adjusted to fine-tune a conditioner's operation for non-standard applications. Typically these parameters will not need to be adjusted, as the default settings accommodate most applications. Contact your Water Treatment Professional before attempting any programming. The parameters are accessible by pressing and holding the UP and SET buttons until the display shows a "C" value.

Note: The control must be in the treated water position to change settings.

C#	Description	Range	Minimum Increments	Default Setting	Notes
C1	Backwash	0 – 200	1 Min	14	Flow rate dictated by size of drain line flow controller
C2	Regenerant Draw	Not Adjustable	1 Min	0	Set to zero
C3	Slow Rinse	0	1 Min	0	Set to zero
C4	Repressurization	0 – 200	1 Min	3	Allows system to equalize water pressure across valve discs
C5	Fast Rinse	0 – 200	1 Min	5	Rinse residuals and compact the media
C6	2nd Backwash	0 – 200	1 Min	0	Set to zero
C7	2nd Fast Rinse	0 – 200	1 Min	0	Set to zero
C8	Regenerant Refill	Not Adjustable	1 Min	0	Set to zero

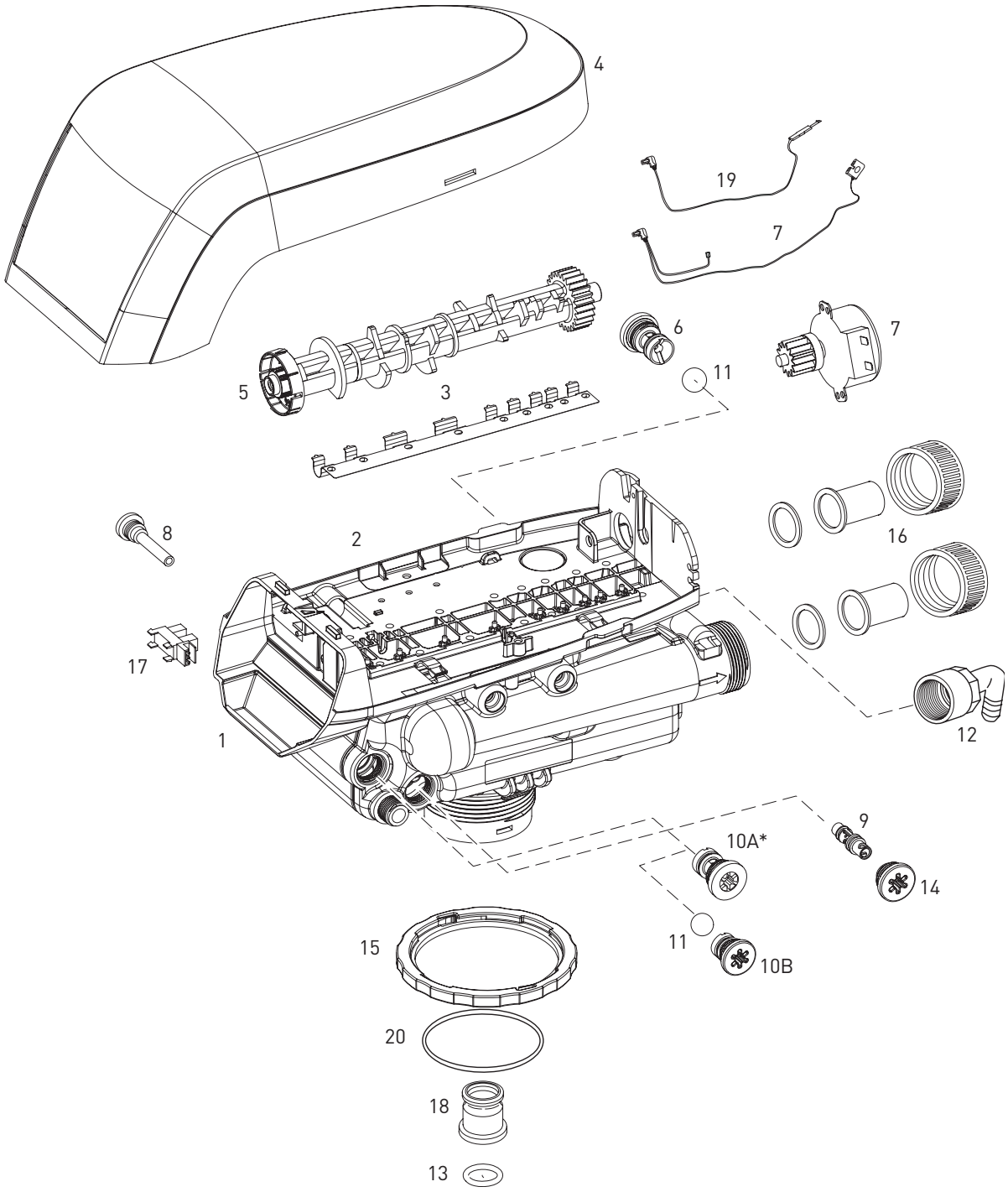
BYPASS VALVE EXPLODED VIEW



BYPASS VALVE ASSEMBLY PART NUMBER 1040930

BYPASS PARTS SHOWN IN THE ABOVE DRAWING ARE NOT SOLD STAND-ALONE.

CONTROL EXPLODED VIEW

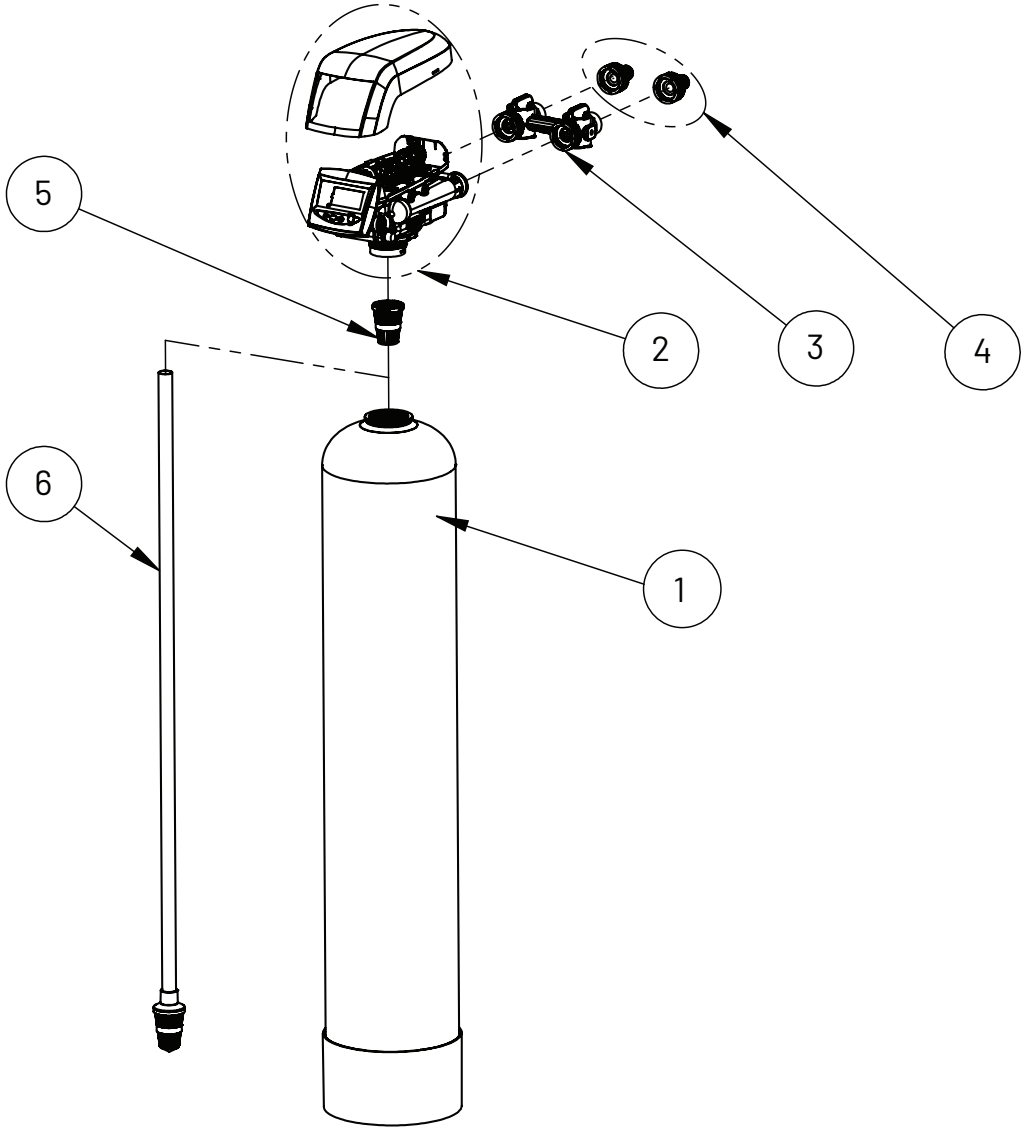


⚠ WARNING: Do not use the flow control ball with #10A.

CONTROL PARTS LIST

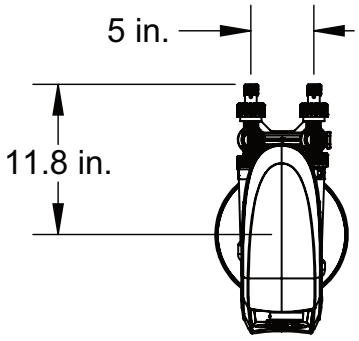
WHOLESALES SYSTEMS SERVICE PARTS			
*	1041174	Flappers Service Kit	1
WHOLESALES SYSTEMS REPAIR PARTS			
1	1244651	Valve Assembly W/O Flow Controls	1
2	1235338	Top Plate, 268/700 Series Valves	1
3	1235339	Valve Disc Spring, One Piece	1
4	1236246	Cover, Valve, 255/Performa 700/860 Series Controller	1
5	1235352	Camshaft Standard	1
	4000806	AIO Camshaft	1
6	1000212	Flow Control For 1.0 & 1.5 Softeners & Tannin	1
	1000213	Flow Control For 2.0 Softeners & Tannin	1
	1030355	Flow Control, Ext, 5 GPM	1
	1030356	Flow Control, Ext , 6 GPM	1
	1030357	Flow Control, Ext , 7 GPM	1
7	3019221	Motor/Optical Cable Assembly	1
8	1000226	Screen Cap Assembly With O-ring	1
9	1035734	Injector For 1.0 & 1.5 Cu Softeners	1
	1035735	Injector For 2.0 Cu Softeners	1
10	1000222	Brine Flow Control For Softeners & Tannin Filter	1
11	1030502	Ball, Refill Flow Control For Softeners & Tannin Filters	1
	1030334	Refill Plug For Carbon & Acid Filters	1
12	1002449	Drain Fitting Elbow	1
13	1010428	O-ring	1
14	1000269	Injector Cap With O-ring	1
15	1035622	Tank Ring	1
16	1001769	Autotrol 3/4" Connection Kit	1
	1001603	Autotrol 1" Connection Kit	1
*	1041174	Flappers Kit	1
*	38191	Valve Bypass	1
17	1235373	Optical Sensor	1
19	1235446	Turbine Cable	1
20	1010154	Tank Oring	1
*	1033444	Internal Turbine Meter	1
*	1233187	Motor Lock Pin	1
	44149	Autotrol 268 Valve Transformer US	1
	1242168	762 Controller NA	1
	1242162	742 Controller NA	1

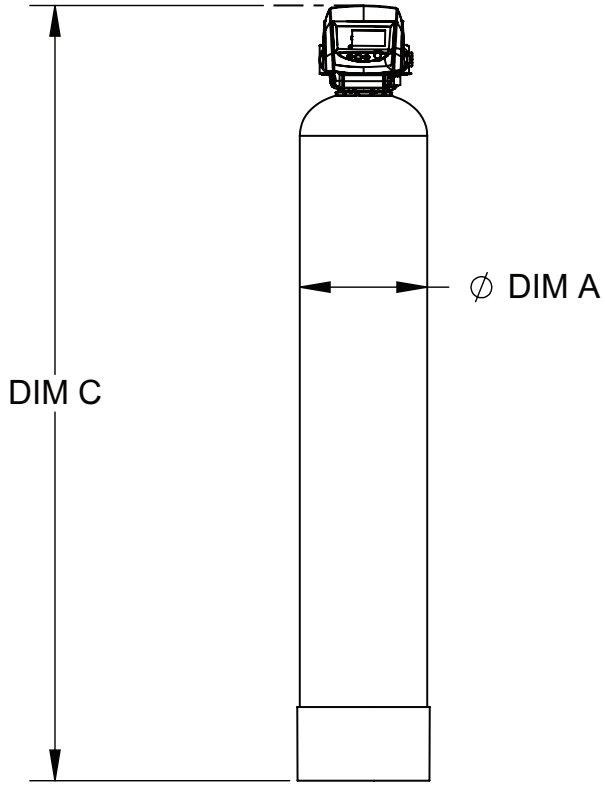
SYSTEM EXPLODED VIEW AND PARTS LIST

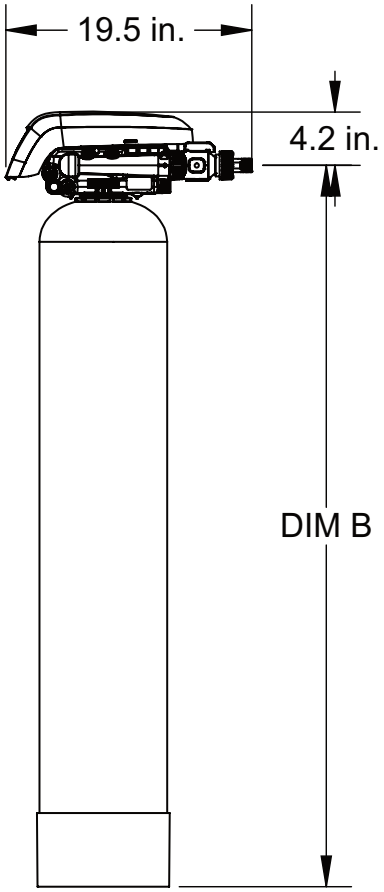


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	38256	10 X 44 TANK BLACK W/BASE, 1.0	1
	38257	10 X 54 TANK BLACK W/BASE, 1.5	1
	38258	12 X 48 TANK BLACK W/BASE, 2.0	1
2	4000625	263 AUTOTROL VALVE WITH COVER	1
3	1040930	BYPASS ASSEMBLY	1
4	1001769	3/4" MALE NPT FITTING CONNECTORS	1
	1001603	1" MALE NPT FITTING CONNECTORS	1
5	4000562	UPPER BASKET	1
6	4000988	DISTRIBUTOR ASSEMBLY, 1.0	1
	4001980	DISTRIBUTOR ASSEMBLY, 1.5	1
	4000987	DISTRIBUTOR ASSEMBLY, 2.0	1
7 (not shown)	39516	10 X 44 TANK SLEEVE, 1.0	1
	39517	10 X 54 TANK SLEEVE, 1.5	1
	39518	12 X 48 TANK SLEEVE, 2.0	1

TANK SIZE	DIM A	DIM B	DIM C
10x44	10.2 in.	47.4 in.	51.6 in.
10x54	10.2 in.	57.4 in.	61.6 in.
12x48	12.2 in.	51.4 in.	55.6 in.







TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
1. Untreated water to service	1. Open bypass valve. 2. Loss of filter media 3. The valve is in regeneration. 4. Excessive water use. 5. The unit fails to regenerate. 6. Capacity of filter media is exhausted. 7. Leak on flapper bypass. 8. Leak at the riser tube. 9. The valve body and timer are out of synchronization. 10. Media exhausted or consumed.	1. Close the bypass valve. 2. Refer to SYMPTOM #4 3. Wait for the regeneration to complete. 4. Check the frequency of regenerations. 5. Refer to SYMPTOM #2. 6. Replace the filter bed. 7. Check and replace flappers if necessary. 8. Verify that the riser tube is seated correctly and is not cracked. 9. Synchronize the valve body and timer. 10. Add or replace media
2. The unit fails to regenerate	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 optical sensor is defective.	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 optical sensor.

If the troubleshooting guide did not resolve the unit's symptoms, please contact your local Dealer for service.

TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
3. Loss of filter media 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.
4. 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 pipe.	1. Clean the filter 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 pipe.
5. Constant water flow to the drain	1. Drive motor failure. 2. Computer board failure.	1. Replace the drive motor. 2. Replace the computer board.

If the troubleshooting guide did not resolve the unit's symptoms, please contact your local Dealer for service.

TROUBLESHOOTING

700 Series Controller Troubleshooting

Problem	Cause	Correction
ERR 1 is displayed	Controller power has been connected and the control is not sure of the state of the operation.	Press the UP arrow and the control should reset.
ERR 2 is displayed	Controller power does not match 50 or 60 Hz.	Disconnect and reconnect the power. If problem persists, obtain the appropriate controller or AC adapter for either 50 or 60 Hz power.
ERR 3 is displayed	Controller does not know the position of the camshaft. Camshaft should be rotating to find Home position.	Wait for two minutes for the controller to return to Home position. The hourglass should be flashing on the display indicating the motor is running.
	Camshaft is not turning during ERR 3 display.	Check that motor is connected.
		Verify that motor wire harness is connected to motor and controller module.
		Verify that optical sensor is connected and in place.
		Verify that motor gear has engaged cam gear.
		If everything is connected, try replacing in this order: —Wire harness, Motor and Optical Sensor Assembly —Controller
	If camshaft is turning for more than five minutes to find Home position:	Verify that optical sensor is in place and connected to wire.
		Verify that camshaft is connected appropriately.
		Verify that no dirt or rubbish is clogging any of the cam slots.
		If motor continues to rotate indefinitely, replace the following components in this order: —Wire harness, Motor and Optical Sensor Assembly —Controller
Four dashes displayed: — — : — —	Power failure occurred	Press SET to reset the time display.

Notes

For information on Pentair Product Warranties visit: pentair.com/assets/residential-filtration-warranty

13845 Bishops Dr. | Suite 200 | Brookfield, WI 53005 | United States
P: 262.238.4400 | Customer Service: 800.279.9404 | tech-support@pentair.com | pentair.com

37298 REV B SE23