



# WHOLE HOUSE CARBON FILTRATION SYSTEMS INSTALLATION AND SERVICE MANUAL



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## IMPORTANT INFORMATION

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- Read these instructions carefully and determine the location of all system components before beginning installation.
- Check all applicable plumbing, building, and electrical codes for installation compliance.
- Install the system on the main water supply.
- The use of plumbers tape and/or pipe thread seal paste will be needed on all threaded connections.
- To condition all water in the home, install the filter system close to the water supply inlet, and upstream of all other plumbing connections, except outside water pipes. Outside faucets should remain on unfiltered water.
- Systems that contain electronic components cannot be installed outside in uncovered areas.

### **WARNING**

Installing this system in a metal (conductive) plumbing system, i.e., copper or galvanized metal, will interrupt the continuity of the plumbing system and grounding source in some homes. If your home's electrical appliances are grounded through the plumbing system, you will need to install a bypass that consists of the same material as the existing plumbing or a grounded "jumper wire" to bridge the equipment and re-establish the contiguous conductive nature of the plumbing before using this Pentair system. Failure to do so can result in errant electricity from improperly grounded appliances or potential galvanic activity in the plumbing system, which could increase the risk of fire or injury while using your home appliances. Please consult a licensed electrician before attempting to install.

### **CAUTION**

When adding a filtration/softening system to homes/buildings supplied by well water, the system should be installed following the pressure tank. **DO NOT USE this system for pneumatic or hydropneumatic applications. If you are using a booster pump, then install this system following the booster pump.** If you have questions, please call customer service.

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|--|
| <p align="center"><b>Customer Service Contact Information Section</b></p> <p><b>Homeowners</b> Phone: 877.842.1635      <b>Professionals</b> Phone: 800.811.3489</p> |
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## OPERATION SPECIFICATION

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### 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 24V AC.

**Frequency:** The line frequency is 50 Hz or 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 - 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.

### TEMPERATURE OPERATING RANGES

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

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

**Humidity:** The computer board operates properly with relative humidity 10% - 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. Weather covers are also available through the Order Department (part number 72370).

| 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**

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- 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 INSTRUCTIONS**

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- 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.

# INSTALLATION INSTRUCTIONS

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## 1. SAFETY PRECAUTIONS

- To prevent accident or injury, do not hoist the unit over your shoulder. Use a hand truck to transport the unit.



### Notice

**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 separate iron removal system is suggested to be installed prior to the system. Consult with your dealer.

## 3. CHECK 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 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.



### Notice

**The system can only be installed outdoors in climates that do not reach freezing levels.**

## 5. TURN OFF THE WATER AND DRAIN THE PLUMBING

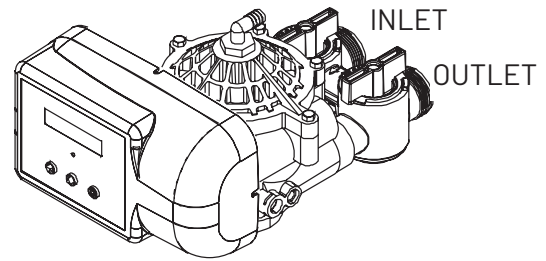
- Turn off the water at the meter or the pressure tank.
- Drain all the pipes. Do not sweat the pipes with water in them; steam will damage plastic parts in the valve.
- To drain the plumbing system, open all the faucets in the house and flush the toilets. This procedure will allow air to enter the plumbing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

## 6. BYPASS THE OUTSIDE FAUCETS

- When possible it is best to bypass the outside faucets. However, in some cases, the outside faucets cannot 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. 1/4" 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 plumber's 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.



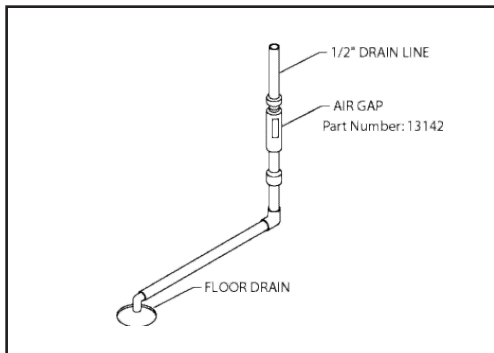
### Notice

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.

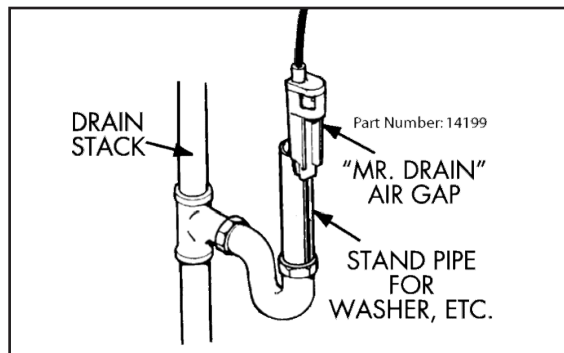


### Notice

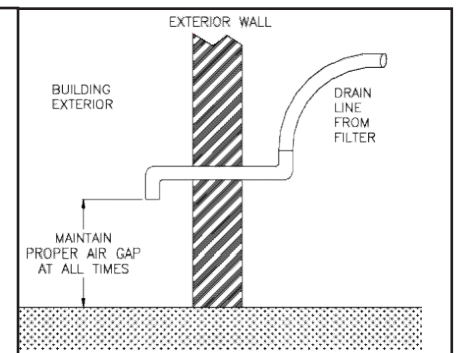
For whole house carbon filters and acid neutralizers, the regeneration cycle is a simple backwash to refresh the filter bed. Since no regeneration chemicals are added, the discharge water may be drained to the outside and used for irrigation in climates where freezing is not a concern. See drawing below.



Air Gap\_Floor Drain  
Part Number: 13142



Air Gap\_Mr. Drain,  
Part Number: 14199



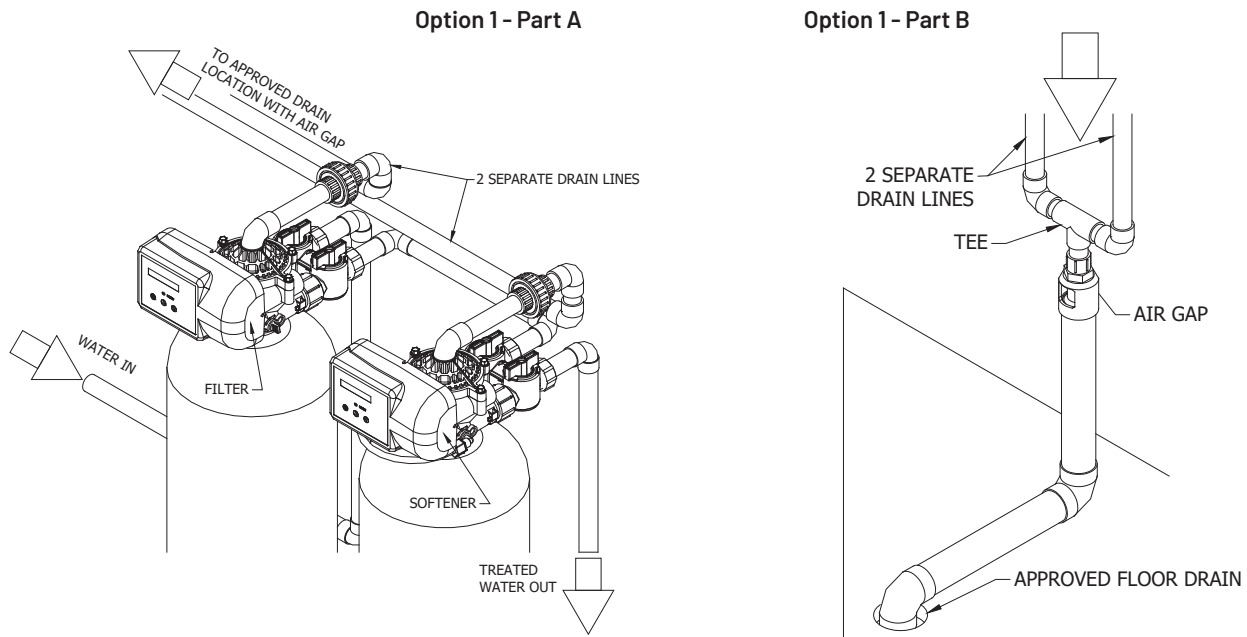
Option for non-freezing climate only

**Special Attention for situations where a Filter and a Softener are installed together:**

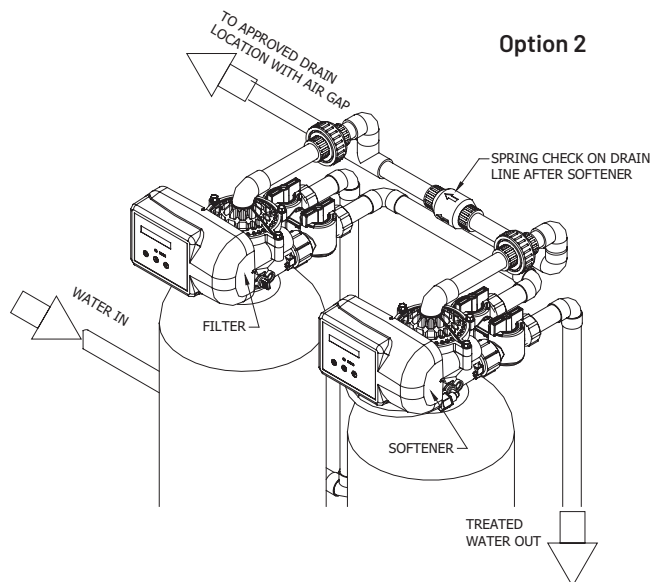
When a whole house filter and a softener are installed side by side, the preferred approach is to run a separate drain line from each unit all the way to the point of termination. If this is not done, there is the potential for drain water from the filter to back feed through the softener and overflow the brine tank, especially when drain lines are run overhead. (Please note that back feed goes only into the brine tank, not the service line.)

If circumstances require you to tie the drain lines together, please use one of the following methods to avoid back feed issues:

**Option 1:** Run the drain lines from both systems to the point of termination, and tee them together before the air gap. (See figures below)



**Option 2:** Install a PVC check valve with a light spring on the Softener side to prevent back flow to the Softener. (See figure below)



## **QUICK START GUIDE: SYSTEM START-UP INSTRUCTIONS CONTINUED**

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### **1. Connect the unit to the existing plumbing:**

(Facing the front of the system, INLET is on the LEFT – OUTLET is on the RIGHT)



### **WARNING**

**The bypass is only hand tightened at the factory and must be fully tightened and checked for leaks by the installer.**

Connect the drain line to a proper location; adhere to ALL LOCAL and STATE CODES. When turning the water back on, leave the system in bypass mode and then turn water on to the house and check for leaks. Run the cold water in bathtub or outdoor faucet to flush debris and air from the lines. (Bathtubs do not have aerators that may plug with debris.) Then, once the programming is complete, follow the start up procedure starting at step 8.

### **2. Understanding the face plate.**

There are 3 buttons on the face of the unit. The button on the left with the 2 arrows in a circle is called the scroll button. The buttons to the right are the up and down buttons.

### **3. Programming the System:**

To begin, verify that the control is in the service mode.

Press and hold the DOWN arrow for 5 seconds; the control will display: SYSTEM CHECK

Then enter the following code by pressing and releasing the following buttons.

**DOWN, DOWN, SCROLL, DOWN**, THIS MUST BE DONE WITHIN 10 SEC. or the control will return to the home screen. The screen will display **“CAPACITY: 1200 GL”**, by using the UP or DOWN arrow.

The number will advance by 100 each time you press the arrow. The factory setting is fine for most applications.

### **4. Press the SCROLL button to advance to the next setting.**

The screen will read **“CHANGE PHONE? NO”** use DOWN button change to **“YES”** Press the SCROLL button 1 time and the 1st number will flash.

Use the UP or DOWN button to program your phone number to display. After each number press the SCROLL button 1 time to advance to the next number. After setting all the numbers, press SCROLL to advance to the next setting.

### **5. The control will display “TIME OF DAY”, press the UP or DOWN arrow to program the time of day.**

### **6. Press the SCROLL button to advance to the next setting. The control will then display “Go to ADVANCED menu? No”** If you want to go to advanced settings, press the UP or DOWN arrow, change to “YES” and press the SCROLL button (Default settings on ADVANCED MENU will not need to be changed for most applications).

\*The ADVANCED MENU consist of **RESET AVERAGE: NO, RESERVE CAPACITY: VARIABLE, TIME OF REGENERATIONS: 1 AM, DAYS OVERRIDE: OFF, BACKWASH: 10min, BRINE/SLOW RINSE: 0min, FILL/RINSE: 3min**

### **7. If you don't want to access the advanced settings, leave at “NO”. Press SCROLL button 1 time. The control will display “EXIT: PRESS ↓”, press DOWN to exit installer's program level. The Time of day and rolling message “For Service, Call (your number)” will be displayed.**



## QUICK START GUIDE: SYSTEM START-UP INSTRUCTIONS

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**To avoid damage, do not backwash filter for a minimum of 24 hours!**

**8. Confirm the system is plumbed correctly:** inlet on left, outlet on right.

If there is a softener installed after the carbon filter, place the softener system in bypass. Follow the softener start up instructions after the filter is complete. Open a faucet without an aerator, such as a bathtub or outdoor faucet, close all others. Turn on the water and allow the system to rinse for **a minimum of 10 to 15 minutes to get rid of all fines** (you can't rinse too much).

**9. Advance to backwash:** Press SCROLL button 2 times. The display will start a 10 second count down.

At zero, the motor will start and advance valve to cycle 1 (backwash). Allow the air to purge (2 to 3 seconds) **then immediately advance the valve** to next cycle by pressing and holding briefly the SCROLL button. Once the motor starts release the SCROLL button. The valve will advance to cycle 3 (fast rinse). Allow the system to complete the cycle. **\*Because carbon can take 24 hours to saturate, we advance the valve quickly to avoid the carbon from lifting.**

**10 Flush the system and verify gallon counter.** While the water is flowing, check the gallons remaining on the home screen and verify that the number is decreasing. This will confirm that the system is counting gallons. Run a faucet on the hot water side until it runs cold to drain hot water tank. Explain system basics to the homeowner and answer any questions they may have.



**The homeowner will likely notice an initial "cloudy" appearance to the water for a few days or so - this cloudiness is actually tiny air bubbles being purged from the carbon. This is normal, harmless, and will clear up within a few days.**

## **CONTROL INFORMATION**

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### **POWER ON LED**

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

### **SERVICE REQUIRED**

If the message "For Service Call" or "Service Required" displays in the window of the control without showing the time of day, the control valve has encountered a problem, such as failure to reach the proper position during regeneration. The valve, the motor assembly, and board must be checked to diagnose and fix this problem.



### **Notice**

**It is normal for the message 'For Service Call' followed by a phone number to scroll across the second line of the display. The time of day & capacity remaining will appear on line 1 during normal operation.**

### **TIME CLOCK**

The time clock maintains the time of day for an extended period of time in the event of power loss. A super capacitor provides this function and eliminates the need of a battery. In the event the power is off past the charge of the capacitor only the time of day is lost. The rest of the programming is stored in the memory and will not need to be reprogrammed. When the power is restored the clock will restart at 8 AM and will need to be reset.

### **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 stepping the control through the regeneration cycle. 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 display the time of day and gallons of capacity remaining (Service Mode).

The system has three program levels available:

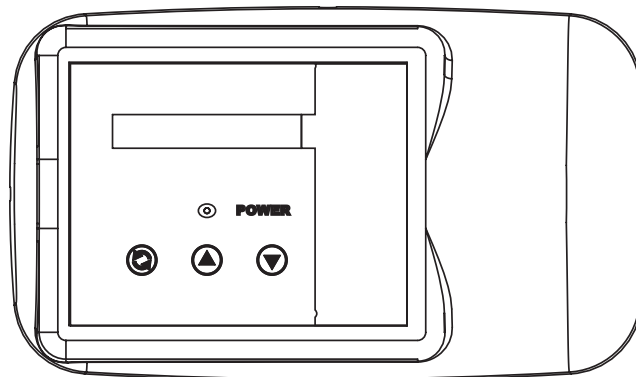
1. The Installer's Level: To access the Installer's Level, you must enter the five key sequence code located on page 11. Please refer to pages 11-16 for programming information.
2. The End User's Level: The End User's Level does not require a special code to access. Please refer to page 15 for programming information.
3. The Diagnostic Level: Please refer to page 17 for information.

## HOW TO PROGRAM THE INSTALLER'S LEVEL

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### 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

The control is now in the Installer's Level. Use the SCROLL BUTTON to advance through the different settings.

The following settings are available in the Installer's Level:

### 1. CAPACITY

The control will display:

Capacity: 1200 GL

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

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

### 2. SERVICE PHONE NUMBER

The control will display:

Change Phone? No  
000-000-0000

- If you do not want to change the phone number, leave this setting at **NO**. Press **SCROLL** to advance to the next setting.
- To change the number, select **YES**; Press the **UP** or **DOWN** ARROW and then enter the service phone number. Press **SCROLL** to advance through the digits. After setting the number, press **SCROLL** to advance to the next settings.

### 3. 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 to the next setting.**

The control will display:

Go to ADVANCED menu ? No

If you want to go to advanced setting, press the **UP** or **DOWN** ARROW, change to **YES** and **press the SCROLL BUTTON. (see ADVANCED MENU below)**

If you do not want to access advance setting, leave this at **NO**. Press Scroll to advance to Exit screen.

To Exit Press Down Arrow

Press the DOWN ARROW to exit the Installer's Level.



#### **Notice**

If you need to recheck settings or make a change, pressing SCROLL when "EXIT" is displayed will take you back to the start of Installer Settings.



#### **WARNING**

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.

## ADVANCED MENU

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### Notice

On WF10-P, WF8-P, WF6-P and WF4-P Iron & Sulfur Systems, you must use the advanced menu to set the calendar override to 3 days. See step 4 for more details.

### 1. RESET AVERAGE

The control will display:

Reset Average No

- If you want to reset the average daily volume, 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 to the next setting.**

### 2. RESERVE CAPACITY

The control will display:

Rsrv: Variable

- The reserve capacity will be calculated automatically, based on the daily water consumption. The initial setting is 25% of the capacity, which will adjust over time to accurately reflect daily water use.
- If you prefer, you can select a Fixed Reserve. While at the Reserve screen when "Variable" is flashing, press the UP or DOWN ARROW. 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 to 10 gallons, upto 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: Three people X 70 gallons per day = 210 gallons (suggested reserve capacity)

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

### 3. TIME OF REGENERATION

The control will display:

Regen @ 1:00 am

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

Regeneration should be set for a time when water use is minimal. 1:00 AM is good for most households.



### Notice

**The system diverts untreated water to the home during regeneration. If any water is drawn during regeneration, some untreated water will enter the plumbing system and possibly the hot water tank.**

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

#### 4. 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.



#### Notice

In most situations with carbon filter, override can remain "OFF". Set a number of days if you wish to have the filter be refreshed periodically regardless of water use.



#### Notice

On WF10-P, WF8-P, WF6-P and WF4-P Iron or Sulfur systems, it is recommended to set the days override to 3 days. Questions on this setting should be addressed with technical support for your individual conditions.

Press the SCROLL BUTTON to advance to the next setting.

#### 5. 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.

Press the SCROLL BUTTON to advance to the next setting.

#### 6. CYCLE 2 - BRINE/SLOW RINSE

The control will display:

BRN/RNS: 0 min

- Press the UP or DOWN ARROW to change the length of the brine/slow rinse cycle. The setting range is 0 to 99 minutes (maximum limit).



#### Notice

In most applications, this setting will not need adjusting.

Press the SCROLL BUTTON to advance the next setting.

## 7. CYCLE 3 - FAST RINSE/BRINE REFILL

The control will display:

FILL/RNS: 3 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).



### Notice

**In most applications, this setting will not need adjusting.**

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

To Exit Press Down Arrow

Press the **DOWN ARROW** to exit the Installer's Level.



### Notice

**If you need to recheck settings or make a change, pressing SCROLL when "EXIT" is displayed will take you back to the start of Installer Settings.**



### WARNING

**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.**

## HOW TO PROGRAM THE END USER'S LEVEL

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

Time of Day GL Remaining

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

The following settings are available in the End User's Level:

### 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 to the next setting.**

### 2. 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 to the next setting.**

### 3. DELAYED REGENERATION MODE

The control will display:

Regen @ (1 am)

- 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.



## UNDERSTANDING THE DIAGNOSTIC LEVEL

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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

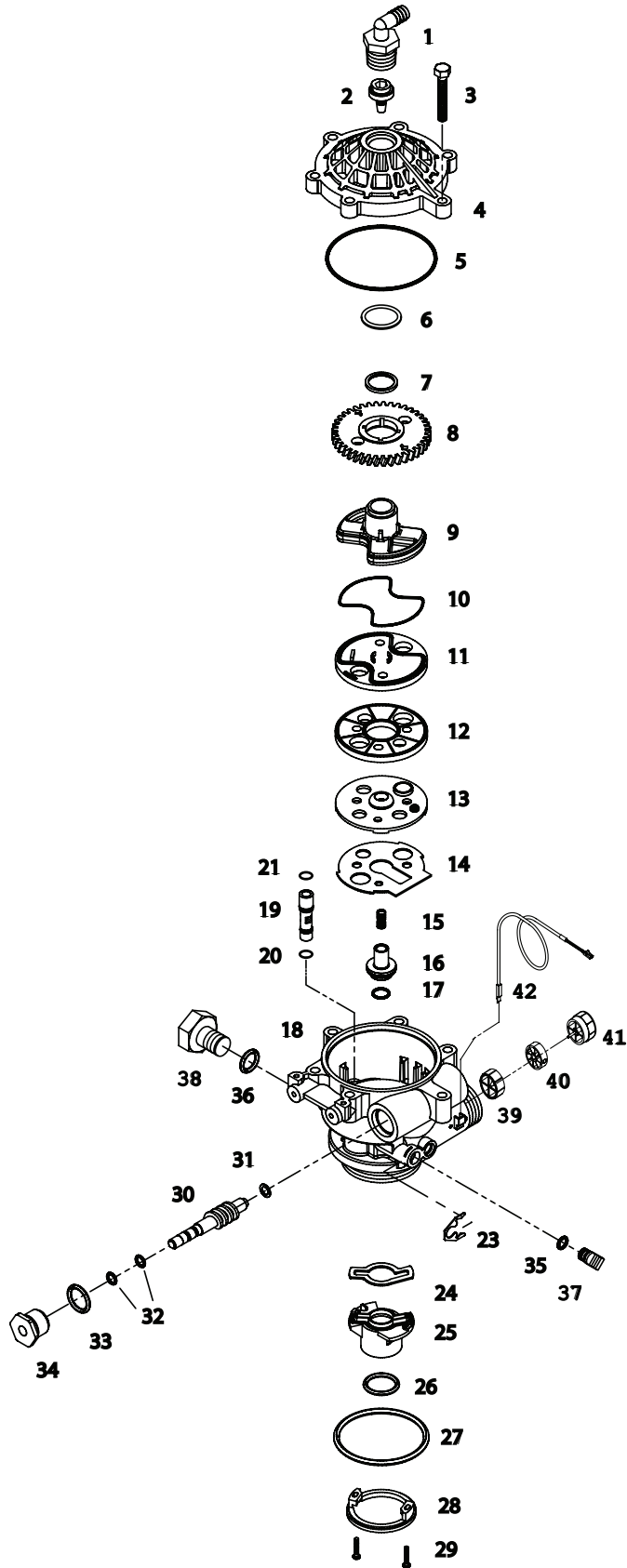
The control is now in the Diagnostic Level. Use the SCROLL BUTTON to advance to each diagnostic. If no button is pressed within 5 minutes, the display will return to the Service Mode.

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

- Regen \_ Days Ago: Displays how many days ago the unit last regenerated.
- In Srvc: 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: Displays the current flow rate.
- Avg Vol: Displays the average daily water consumption.
- Capacity: 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.
- 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.
- Backwash: Displays the minutes of backwash programmed into the control.
- BRN/RNS: Displays the minutes of brine and slow rinse programmed into the control.
- FILL/RNS: Displays the minutes of fast rinse and brine refill programmed into the control.
- Units: English - US
- M P Resets: Displays how many times the control has lost power.
- Memory Reset: Displays how many times the control lost power long enough to lose the time of day.
- SP1Fc PlumbR21: Displays the current program.

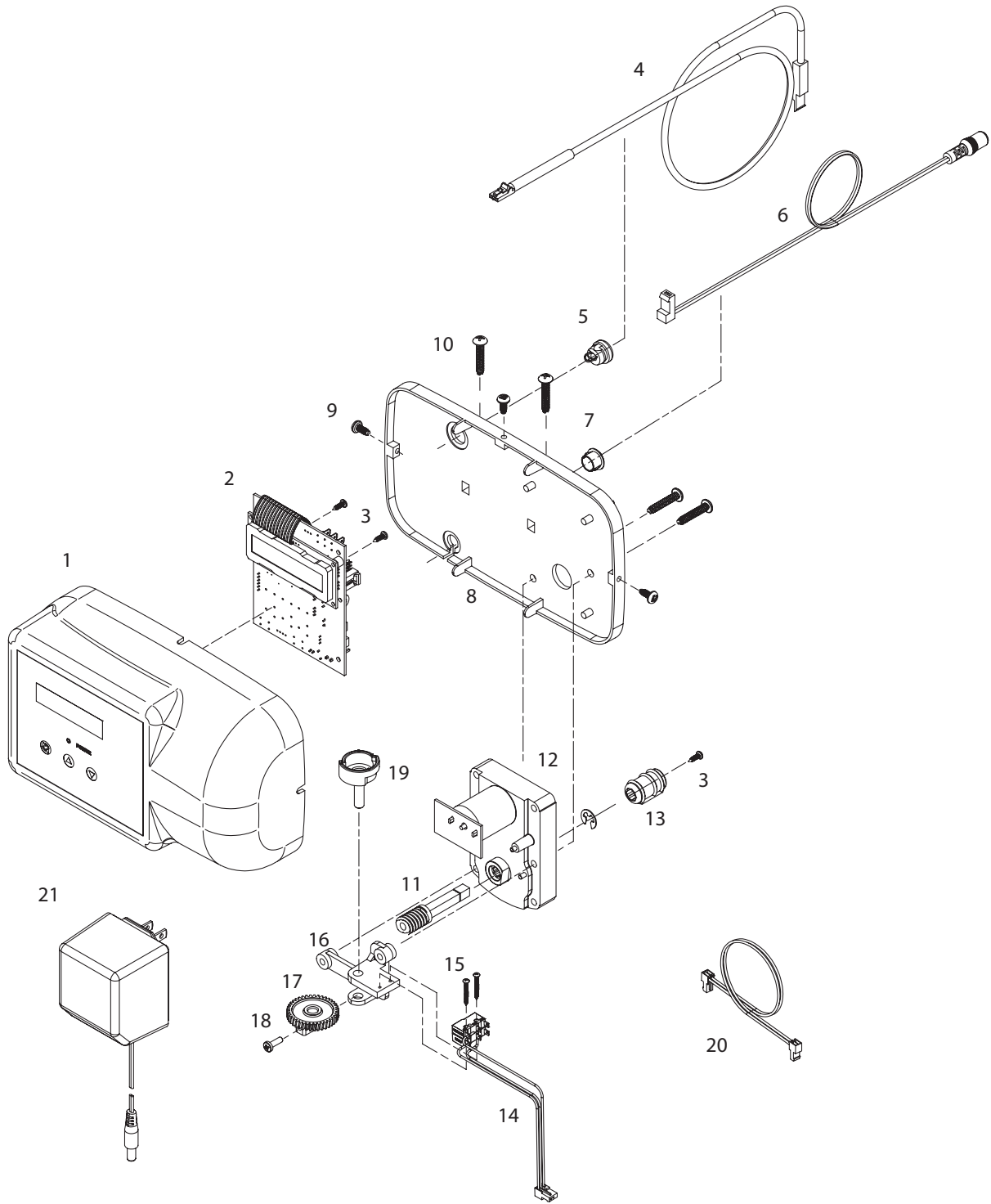
**To exit the Diagnostic Level, press the DOWN ARROW at the EXIT display.**

# VALVE EXPLODED VIEW



## VALVE PARTS LIST

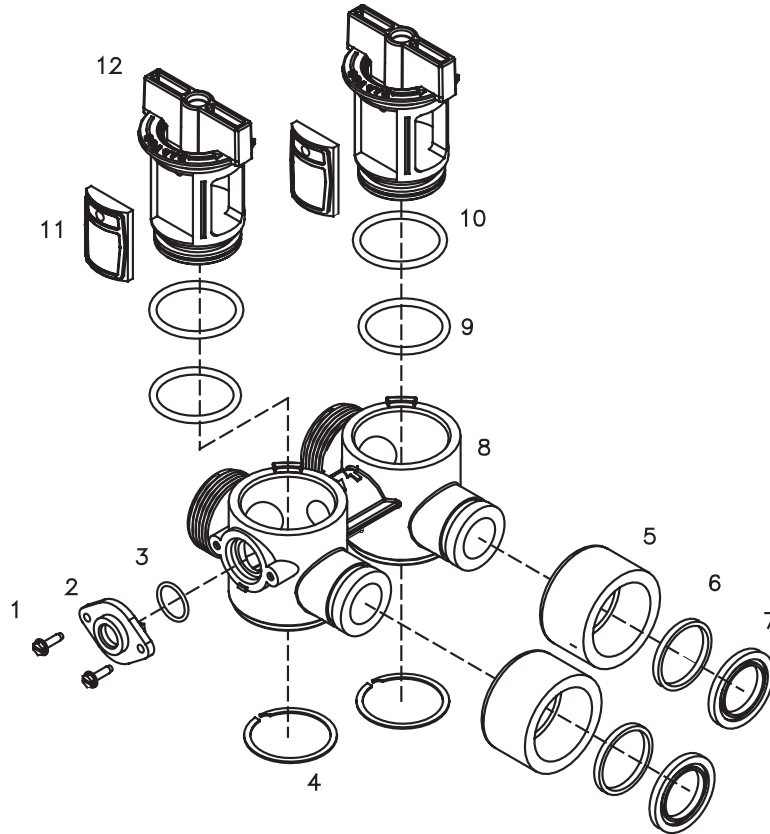
| ITEM | QTY | PART NUMBER             | DESCRIPTION  |
|------|-----|-------------------------|--|
| 1    | 1   | 70793                   | 3/4 NPTF TO 1/2 ID HOSE MALE ELBOW (OPTIONAL)  |
| 2    | 1   | 75074<br>75075<br>75076 | BACKWASH FLOW CONTROL 5.0 GPM ( SIZE 1.0 & 1.5 CARBON)<br>BACKWASH FLOW CONTROL 6.0 GPM (SIZE 1.0 ACID NEUTRALIZER)<br>BACKWASH FLOW CONTROL 7.0 GPM (SIZE 2.0 CARBON) |
| 3    | 6   | 72678                   | SCREW 1/4-20 X 1-1/4 LG HEX WASHER HD  |
| 4    | 1   | 71083                   | VALVE BODY COVER   |
| 5    | 1   | 70658                   | VALVE COVER O-RING   |
| 6    | 1   | 72327                   | TEFLON WASHER  |
| 7    | 1   | 70665                   | TEFLON O-RING  |
| 8    | 1   | 71089                   | GEAR   |
| 9    | 1   | 71087                   | CAM SHAFT  |
| 10   | 1   | 70656                   | ROTOR PLATE O-RING   |
| 11   | 1   | 71132                   | ROTOR PLATE, COATED  |
| 12   | 1   | 71084                   | SEAL DISC, COATED  |
| 13   | 1   | 71182                   | INSERT PLATE   |
| 14   | 1   | 71183                   | GASKET   |
| 15   | 1   | 71006                   | FLOAT VALVE SPRING   |
| 16   | 1   | 71127                   | FLOAT VALVE  |
| 17   | 1   | 70660                   | FLOAT VALVE O-RING   |
| 18   | 1   | 72770                   | VALVE BODY ROTARY GEN-3 W/INSERTS  |
| 19   | 1   | 71063                   | INJECTOR #1 RED  |
| 20   | 1   | 70655                   | INJECTOR O-RING, LOWER   |
| 21   | 1   | 70664                   | INJECTOR O-RING, UPPER   |
| 23   | 1   | 71947                   | SPRING CLIP  |
| 24   | 1   | 71344                   | RISER INSERT GASKET  |
| 25   | 1   | 71118                   | RISER INSERT   |
| 26   | 1   | 70662                   | RISER INSERT O-RING  |
| 27   | 1   | 70663                   | TANK O-RING  |
| 28   | 1   | 71010                   | UPPER BASKET ADAPTER RING  |
| 29   | 2   | 70630                   | SCREW #6-19 X 3/4 LG SS  |
| 30   | 1   | 71060                   | WORM DRIVE SHAFT   |
| 31   | 1   | 70616                   | WORM DRIVE SHAFT TEFLON WASHER   |
| 32   | 2   | 70666                   | WORM DRIVE SHAFT O-RING  |
| 33   | 1   | 70661                   | PACKING GLAND O-RING   |
| 34   | 1   | 72772                   | PLASTIC PACKING GLAND ROTARY   |
| 35   | 1   | 70667                   | O-RING   |
| 36   | 1   | 70659                   | O-RING   |
| 37   | 1   | 71958                   | BRINE LINE PLUG  |
| 38   | 1   | 70791                   | BRINE LINE PLUG THREADED   |
| 39   | 1   | 72458                   | FLOW METER DIFFUSER  |
| 40   | 1   | 72544                   | IMPELLER ASSY L W/BUSHING  |
| 41   | 1   | 72545                   | HUB FLOWMETER ASSY   |
| 42   | 1   | 72519                   | FLOW METER SENSOR CABLE  |



## CONTROL PARTS LIST

| ITEM | QUANTITY | PART NUMBER | DESCRIPTION                                     |
|------|----------|-------------|---|
| 1    | 1        | 39497       | FRONT COVER ASSY, PENTAIR ROTARY                |
| 2    | 1        | 38752       | BOARD ASSY FILTER WITH 2 LINE DISPLAY           |
| 3    | 3        | 70618       | SCREW #4-24 X 3/8 LG SELF-THREADING             |
| 4    | 1        | 72519       | FLOW METER SENSOR CABLE NGC                     |
| 5    | 1        | 72134       | HEYCO BUSHING, SR 5P-4                          |
| 6    | 1        | 70971       | POWER LEAD                                      |
| 7    | 1        | 70312       | HEYCO BUSHING, SR 2P-4                          |
| 8    | 1        | 70962       | ELECTRONIC CONTROL BACKPLATE                    |
| 9    | 3        | 71502       | SCREW #8-18 X 3/8 LG, SELF-THREADING            |
| 10   | 4        | 71497       | SCREW #10-16 X 1 LG, TYPE BT SS, SELF-THREADING |
| 11   | 1        | 75156       | ROTARY WORM DRIVE GEAR                          |
| 12   | 1        | 71656       | MOTOR, 24VCD WITH INTERNAL CAPACITORS           |
| 13   | 1        | 75157       | ROTARY WORM COUPLING                            |
| 14   | 1        | 72451       | MICROSWITCHES SUBASSY 2401                      |
| 15   | 2        | 70622       | SCREW #2-28 X 3/4 LG, SELF-THREADING            |
| 16   | 1        | 71185       | BRACKET   |
| 17   | 1        | 71106       | HUB AND GEAR                                    |
| 18   | 1        | 70625       | SCREW #6-32 X 7/16 LG                           |
| 19   | 1        | 70965       | CAM SHAFT                                       |
| 20   | 1        | 71679       | MOTOR LEAD                                      |
| 21   | 1        | 72138       | TRANSFORMER 120VAC .5 A                         |

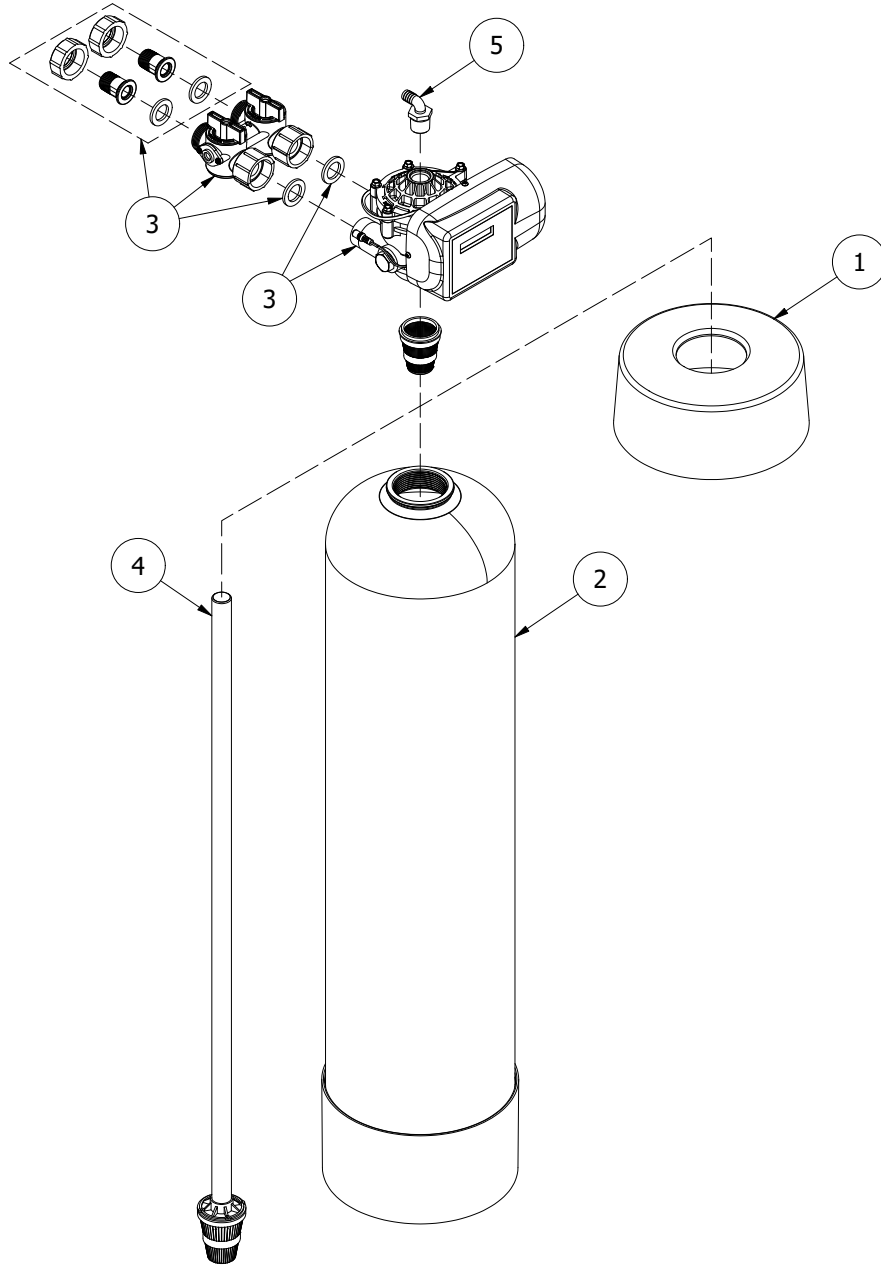
## BYPASS VALVE EXPLODED VIEW AND PARTS LIST



### BYPASS VALVE ASSEMBLY PART NUMBER 72668

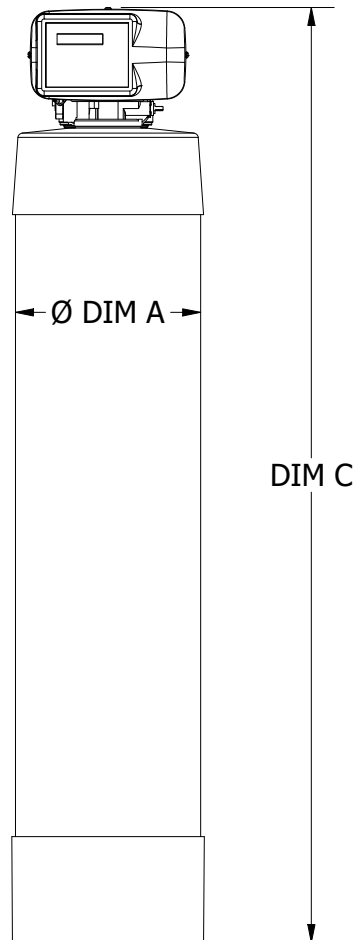
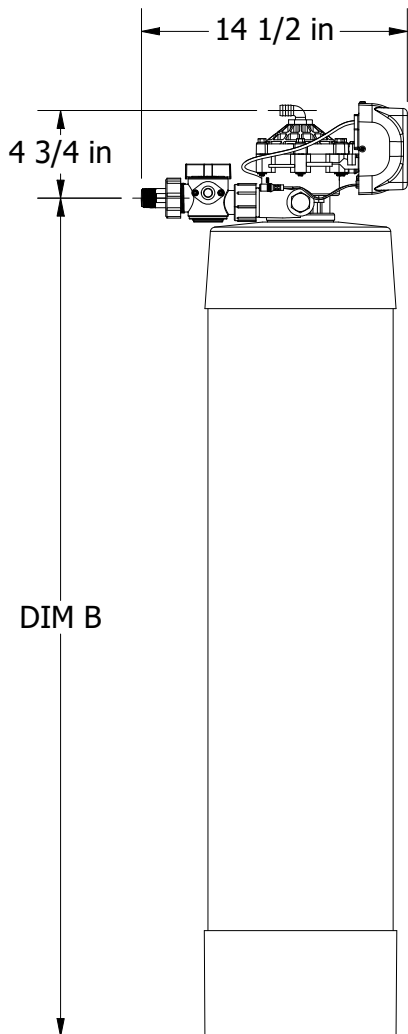
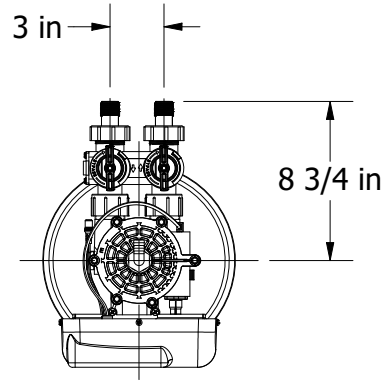
| ITEM | QUANTITY | PART NUMBER | DESCRIPTION                |
|------|----------|-------------|----------------------------|
| 1    | 2        | 72599       | SCREW 6X32X1/2 TYPE        |
| 2    | 1        | 72580       | BYPASS END CAP 541         |
| 3    | 1        | 13328       | 017 O-RING 8730            |
| 4    | 2        | 72584       | RETAINING RING VS-15       |
| 5    | 2        | 71161       | 568-363 NUT, BYPASS VALVE  |
| 6    | 2        | 71162       | 568-364 RING, NUT RETAINER |
| 7    | 2        | 71110       | 568-320 GASKET             |
| 8    | 1        | 72669       | BYPASS BODY ROTARY         |
| 9    | 2        | 72585       | O-RING 220 EPC 70 DURO     |
| 10   | 2        | 72586       | O-RING 222 EPC 70 DURO     |
| 11   | 2        | 72583       | SEAL BYPASS VALVE          |
| 12   | 2        | 72670       | BYPASS HANDLE ROTARY       |

# SYSTEMS EXPLODED VIEW AND PARTS LIST



| ITEM | QUANTITY | PART NUMBER | DESCRIPTION   |
|------|----------|-------------|---|
| 1    | 1        | 38946       | 10" PENTAIR PRINTED TANK COLLAR 1.0 & 1.5             |
|      |          | 38947       | 12" PENTAIR PRINTED TANK COLLAR 2.0                   |
| 2    | 1        | 38256       | 10 X 44 TANK BLACK W/BASE 1.0                         |
|      |          | 38257       | 10 X 54 TANK BLACK W/BASE 1.5                         |
|      |          | 38258       | 12 X 48 TANK BLACK W/BASE 2.0                         |
| 3    | 1        | 83489       | PENTAIR ROTARY VALVE CARBON FLT 1.0 & 1.5 WITH BYPASS |
|      |          | 83490       | PENTAIR ROTARY VALVE CARBON FLT 2.0 WITH BYPASS       |
| 4    | 1        | 18961       | RISER PIPE ASSY 1.0                                   |
|      |          | 18962       | RISER PIPE ASSY 1.5                                   |
|      |          | 38013       | RISER PIPE ASSY 2.0                                   |
| 5    | 1        | 70793       | 3/4" NPT TO 1/2 ID ELBOW                              |

| Tank Size | DIM A     | DIM B     | DIM C     |
|-----------|-----------|-----------|-----------|
| 10x44     | 10-1/4 in | 46 in     | 51 in     |
| 10x54     | 10-1/4 in | 55-7/8 in | 61-1/4 in |
| 12x48     | 12 in     | 50 in     | 55-1/4 in |





## TROUBLESHOOTING GUIDE

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

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

## TROUBLESHOOTING GUIDE

| SYMPTOM   | CAUSE   | SOLUTION  |
|---|---|---|
| 3. The valve cycles continuously.               | Defective or shorted microswitches.   | Replace the microswitches.  |
| 4. Loss of filter media through the drain line. | <ol style="list-style-type: none"> <li>1. Excessive backwash/fast rinse flow.</li> <li>2. The lower and/or upper distributor is damaged.</li> <li>3. A leak between the riser tube and upper distributor.</li> </ol>                      | <ol style="list-style-type: none"> <li>1. Verify that the backwash flow control is installed and sized correctly.</li> <li>2. Replace the distributor(s).</li> <li>3. Verify that the riser tube is seated correctly and is not cracked.</li> </ol>                           |
| 5. Loss of water pressure.                      | <ol style="list-style-type: none"> <li>1. Mineral or iron build up in the filter tank.</li> <li>2. Plugged lower and/or upper distributor.</li> <li>3. Crushed lower and/or upper distributor.</li> <li>4. Plugged riser pipe.</li> </ol> | <ol style="list-style-type: none"> <li>1. Clean the filter bed and control valve. Increase the regeneration frequency.</li> <li>2. Remove the debris from the distributor(s).</li> <li>3. Replace the distributor(s).</li> <li>4. Remove and clean the riser pipe.</li> </ol> |
| 6. Constant water flow to the drain.            | <ol style="list-style-type: none"> <li>1. Drive motor failure.</li> <li>2. Computer board failure.</li> <li>3. Defective microswitch(es).</li> <li>4. The valve body and timer are out of synchronization.</li> </ol>                     | <ol style="list-style-type: none"> <li>1. Replace the drive motor.</li> <li>2. Replace the computer board.</li> <li>3. Replace the microswitch(es).</li> <li>4. Synchronize the valve body and timer.</li> </ol>  |

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



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