



## FILTRATION & PROCESS

5730 NORTH GLEN PARK ROAD, MILWAUKEE, WI 53209

P: 262.238.4400 | 800.297.9404

www.pentairaqua.com

## PRF26K, PRF34K, and PRF40K Water Softening System

### INSTALLATION INSTRUCTIONS

English. . . . . Pages 2-19

Repair Parts. . . . . Page 14

## Manual de Sistema ablandador de agua

### INSTRUCCIONES DE INSTALACIÓN

Español . . . . . Páginas 20-37

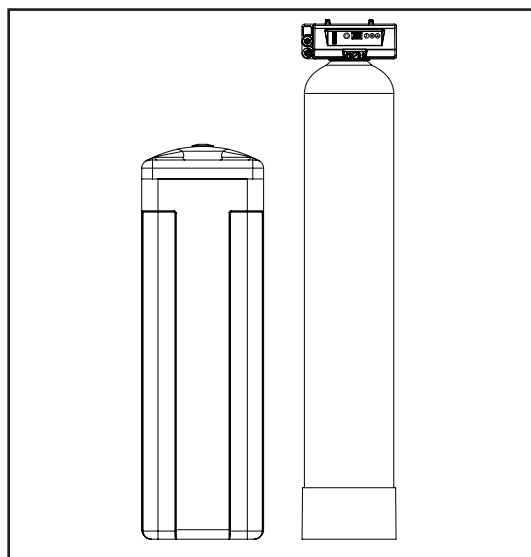
Piezas de repuesto . . . . . Página 32

## Manuel Adoucisseur d'eau

### INSTRUCTIONS D'INSTALLATION

Français. . . . . Pages 38-55

Pièces de Remplacement . . . . . Page 50



### Tools and Fittings Required

- Pipe Cutter
- Tubing Cutter
- File
- Pliers
- Tape Measure
- Soldering Tools
- Lead Free Solder
- Bucket
- Towel
- PTFE Pipe Tape
- Adjustable Wrench
- Tube 100% Silicone Grease

### Herramientas y accesorios necesarios

- Sierra para cortar tuberías
- Cortatubos
- Lima
- Pinzas
- Cinta métrica
- Herramientas para soldar
- Soldador libre de plomo
- Cubeta
- Toalla
- Cinta de PTFE para tubería
- Llave ajustable
- Tubo de grasa 100% de silicona

### Outils et accessoires requis

- Coupe-tuyau
- Coupe-tube
- Lime
- Pince
- Mètre ruban
- Outillage de brasage
- Brasure sans plomb
- Seau
- Serviette
- Ruban pour tuyau en PTFE
- Clé ajustable
- Graisse de silicone à 100 % pour tube



Tested and Certified by WQA to NSF/ANSI Standard 44 & 372 for softener performance & lead free compliance and CSA B483.1.

C USA



Probado y certificado por la WQA según la norma 44 y 372 de NSF/ANSI por el desempeño del suavizador y el cumplimiento del no contenido de plomo y CSA B483.1.

C USA



Testé et certifié par WQA conforme à la norme 44 et à la norme 372 de NSF/ANSI pour la performance des adoucisseurs et pour la conformité à l'exemption de plomb et CSA B483.1.

C USA

For further operating, installation, maintenance, parts or assistance:

Call Technical Service at:  
800.297.9404

Para obtener más información sobre el funcionamiento, la instalación, el mantenimiento, las piezas o para obtener asistencia:

Comuníquese con el Servicio de atención al cliente al: 800.297.9404

Pour de tout autre renseignement concernant le fonctionnement, l'installation ou l'entretien:

Appelez le service à la clientèle en composant le : 800.297.9404

# TABLE OF CONTENTS

## Contents

MANUAL OVERVIEW .....	2
PARTS INCLUDED .....	2
EQUIPMENT INSTALLATION .....	2
CONTROL OPERATION & LAYOUT .....	9
PROGRAMMING.....	10
AUTOMATIC RECHARGE .....	11
MANUAL REGENERATION .....	11
QUICK CYCLING THE CONTROL.....	11
CYCLE DEFAULTS TABLE .....	11
START-UP .....	12
INSTALLATION CHECKLIST .....	12
CARE AND USE OF YOUR BRINE TANK .....	13
SYSTEM DISINFECTION .....	13
ACCESSING HISTORY VALUES.....	13
TANK ASSEMBLY .....	14
VALVE ASSEMBLY.....	15
BRINE WELL ASSEMBLY CH15675.....	16
TROUBLESHOOTING .....	17
PERFORMANCE DATA SHEET .....	19

## MANUAL OVERVIEW

### How To Use This Manual

This installation manual is designed to guide the installer through the process of installing and starting the system.

This manual is a reference and will not include every system installation situation. The person installing this equipment should have:

- Knowledge in the water softener installation
- Basic plumbing skills

### Icons That Appear In This Manual

**⚠ WARNING:** Failure to follow this instruction can result in personal injury or damage to the equipment.

**NOTE:** This will make the process easier if followed.

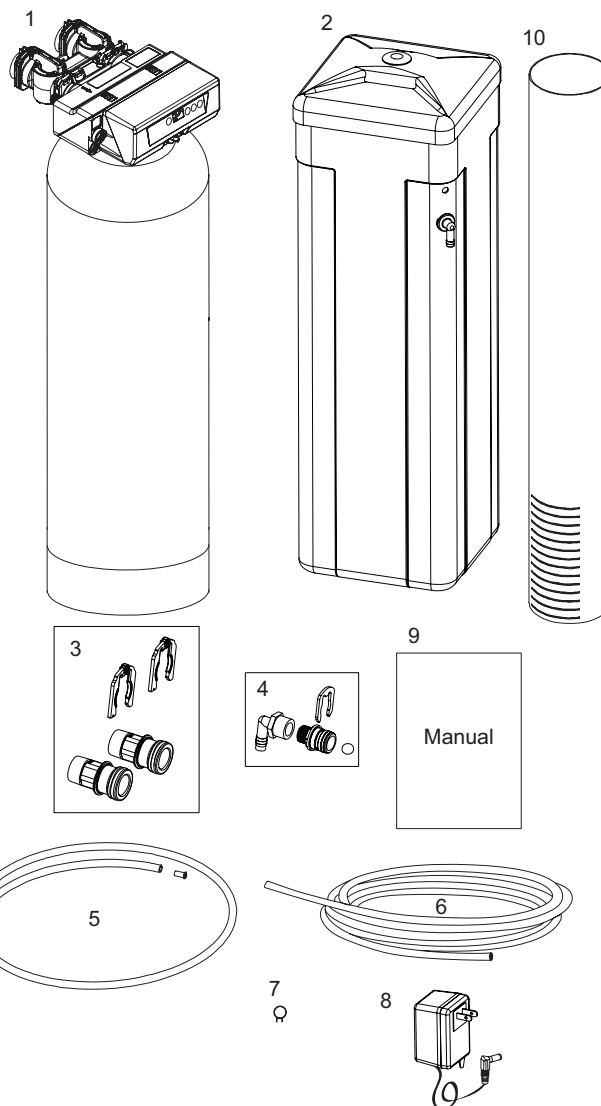
### Inspection

Inspect the unit for damage or missing parts. Contact your supplier if any discrepancies exist.

## PARTS INCLUDED

The PRF Water Softening System should have the following parts:

1. Softener Tank with Valve and Bypass
2. Salt Tank with Cover
3. Connector Kit
4. Drain Line Flow Control and Drain Fitting
5. Brine Line Tubing with End Inserts (shipped inside the Brine Well #10)
6. Drain Line Tubing
7. Tubing Clamp
8. Wall Transformer
9. Instruction Manual
10. Brine Well



## EQUIPMENT INSTALLATION

### General Warnings And Safety Information Electrical

There are no user-serviceable parts in the AC adapter, motor, or controller. In the event of a failure, these should be replaced.

- All electrical connections must be completed according to local codes.
- Use only the power AC adapter that is supplied. If the AC adapter is replaced use a Class II, 12 volt, 150 mA supply.
- The power outlet must be grounded and always on.
- To disconnect power, unplug the AC adapter from its power source.
- Install an appropriate grounding strap across the inlet and outlet piping of the water system to ensure proper grounding is maintained.

## Mechanical

- Do not use petroleum based lubricants such as vaseline, oils, or hydrocarbon based lubricants. Use only 100% silicone lubricants.
- All plastic connections should be hand tightened. Plumber's tape should be used on connections that do not use an O-ring seal. Do not use pliers or pipe wrenches.
- All plumbing must be completed according to local codes.
- Soldering of the plumbing should be done before connecting to the valve. Excessive heat will cause interior damage to the valve.
- Observe drain line requirements.
- Do not use lead-based solder for sweat solder connections.
- The drain line must be a minimum of 1/2-inch diameter. Use 3/4-inch pipe if the pipe length is greater than 20 feet (6 m).
- Do not support the weight of the system on the control valve fittings, plumbing, or the bypass.
- It is not recommended to use sealants on the threads. Use Plumber's tape on all NPT threads.

## General

- Observe all warnings that appear in this manual.
- This system is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- Keep the unit in the upright position. Do not turn on side, upside down, or drop. Turning the tank upside down will cause media to enter the valve.
- Operating ambient temperature is between 34°F (1°C) and 120°F (49°C).
- Operating water temperature is between 35°F (1°F) and 100°F (38°C).
- Working water pressure range is 20 to 125 psi (1.38 to 8.61 bar). In Canada the acceptable working water pressure range is 20 to 100 psi (1.38 to 6.89 bar).
- Use only salts designed for water softening. Acceptable salt type is sodium chloride pellet salt.
- Follow state and local codes for water testing. Do not use water that is micro biologically unsafe or of unknown quality.
- When filling media tank, do not open water valve completely. Fill tank slowly to prevent media from exiting the tank.
- Always make modifications to house plumbing first. Connect to valve last.
- Plastic parts and O-rings may be damaged by heat and solvents. When constructing plumbing connections allow heated parts to cool and protect parts from solvents.

## System Recharge Cycles

### Service (Downflow):

Untreated water is directed down through the resin bed and up through the riser tube. The hardness ions attach themselves to the resin and are removed from the water. The water is conditioned as it passes through the resin bed.

When a recharge cycle starts, the softener goes through seven cycles. During the recharge cycle the softener will allow untreated water to bypass into the building.

#### 1. Backwash 1 (Upflow):

The flow of water is reversed by the control valve and directed down the riser tube and up through the resin bed. During the backwash cycle, the bed is expanded and debris is flushed to the drain.

#### 2. Brine Draw (Downflow):

The brine draw cycle takes place during the slow rinse cycle. The control directs water through the brine injector and brine is drawn from the salt tank. Brine draw is completed when the air check in the salt tank closes.

#### Slow Rinse (Downflow):

The brine is directed down through the resin bed and up through the riser tube to the drain. The hardness ions are displaced by sodium ions and are sent to the drain. The resin is recharged during the brine cycle.

#### 3. Repressurize Cycle (Hard Water Bypass Flapper Open):

This cycle closes the flappers for a short time to allow the air and water to hydraulically balance in the valve before continuing the recharge.

#### 4. Fast Rinse 1 (Downflow):

The control directs water down through the resin bed and up through the riser tube to the drain. Any remaining brine residual is rinsed from the resin bed.

#### 5. Backwash 2 (Upflow):

The flow of water is reversed by the control valve and directed down the riser tube and up through the resin bed. During the backwash cycle, the bed is expanded and debris is flushed to the drain.

#### 6. Fast Rinse 2 (Downflow):

The control directs water down through the resin bed and up through the riser tube to the drain. Any remaining brine residual is rinsed from the resin bed.

#### 7. Brine Refill:

Water is directed to the salt tank at a controlled rate, to create brine for the next recharge.

## EQUIPMENT INSTALLATION *continued*

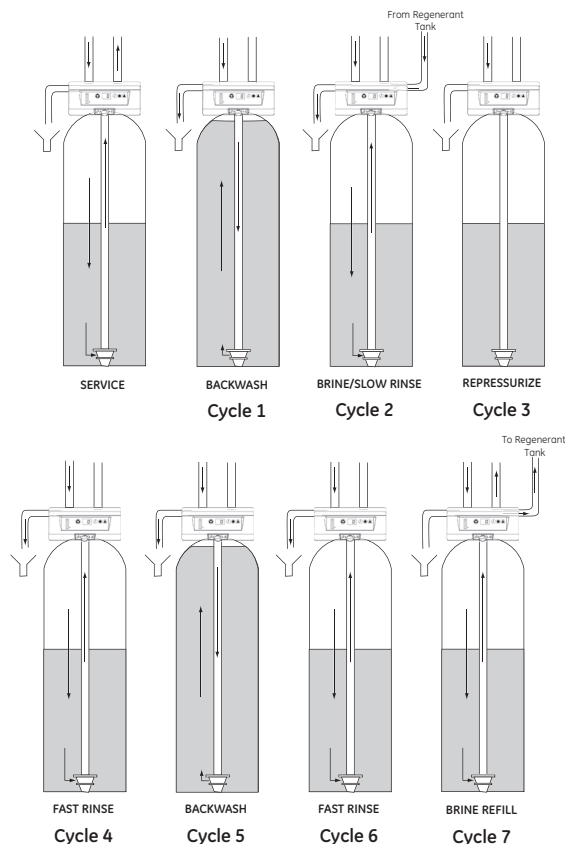
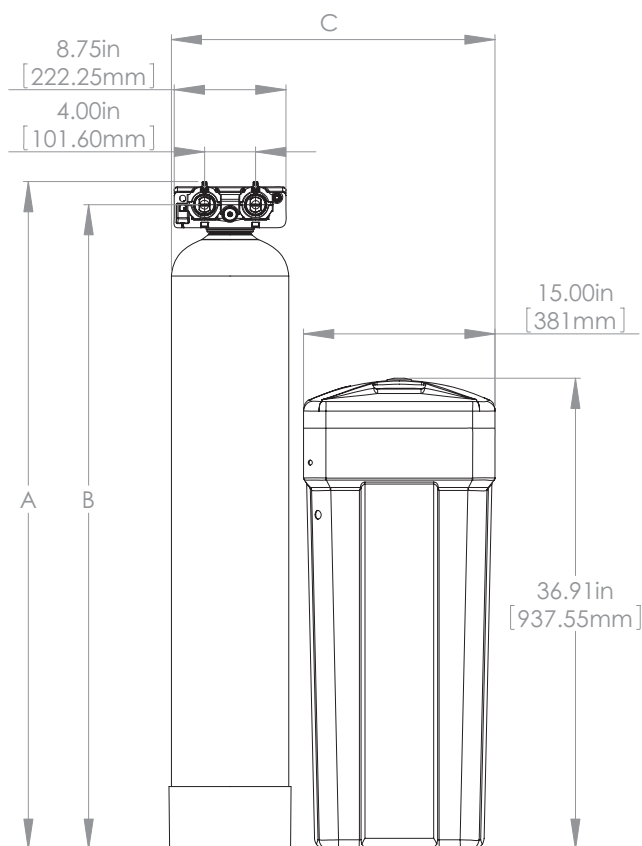


Figure 1 Flow Patterns

### Location Selection

Location of a water treatment system is important. The following conditions are required:

- Level platform or floor.
- Ambient temperatures over 34°F (1°C) and below 120°F (49°C).
- Water pressure below 125 psi (8.61 bar) and above 20 psi (1.4 bar).
- In Canada the water pressure must be below 100 psi (6.89 bar).
- Constant electrical supply to operate the controller.
- Total minimum pipe run to water heater of ten feet (three meters) to prevent backup of hot water into system.
- Local drain or tub for discharge as close as possible.
- Water line connections with shutoff or bypass valves.
- Must meet any local and state codes for site of installation.
- Valve is designed for minor plumbing misalignments. Do not support weight of system on the plumbing.
- Be sure all soldered pipes are fully cooled before attaching plastic valve to the plumbing.
- Room to access equipment for maintenance and adding salt to tank.



	PRF26K	PRF34K	PRF40K
A	48.3 in (1266.8 mm)	52.33 in (1329.2 mm)	48.4 in (1229.4 mm)
B	46.5 in (1181.1 mm)	50.51 in (1282.9 mm)	46.6 in (1183.6 mm)
C	24.36 in (618.7 mm)	25.36 in (644.23 mm)	26.36 in (669.54 mm)

### System Specifications

Model	PRF26K	PRF34K	PRF40K
Recharge Style	Meter - Demand	Meter - Demand	Meter - Demand
Media Tank Size	8" x 44"	9" x 48"	10" x 44"
Resin Volume	0.80 Ft <sup>3</sup>	1.04 Ft <sup>3</sup>	1.25 Ft <sup>3</sup>
Recharge (Salt) Tank Size	14" x 34"	14" x 34"	14" x 34"
Salt Storage	240 lbs	240 lbs	240 lbs
Drain Water Rate	2.1 GPM	2.1 GPM	2.7 GPM
Service Connection Size	1" NPT	1" NPT	1" NPT
Drain Connection Size	1/2" NPT	1/2" NPT	1/2" NPT
Recharge (Brine) Connection Size	3/8" NPT	3/8" NPT	3/8" NPT
Installation Space Requirements	25" W x 15" D	25" W x 15" D	26" W x 15" D
Shipping Weight	78 lbs	95 lbs	110 lbs

## EQUIPMENT INSTALLATION *continued*

### Outdoor Locations

It is recommended that the system be installed indoors. When the water conditioning system must be installed outdoors, several items must be considered.

- **Moisture** — The valve and controller are rated for NEMA 3 locations. Falling water should not affect performance. The system is not designed to withstand extreme humidity or water spray from below. Examples are: constant heavy mist, near corrosive environment, upwards spray from sprinkler.
- **Direct Sunlight** — The materials used will fade or discolor over time in direct sunlight. The integrity of the materials will not degrade to cause system failures.
- **Temperature** — Extreme hot or cold temperatures may cause damage to the valve or controller. Freezing temperatures will freeze the water in the valve. This will cause physical damage to the internal parts as well as the plumbing.
- **Insects** — The controller and valve have been designed to keep all but the smallest insects out of the critical areas.

### Things You Need to Know

- When the controller is first plugged in, it may display an Err 3, this means that the controller is rotating the camshaft to the home position.
- The preset default time of recharge is 2:00 AM.
- The controller is programmed to recharge if a recharge has not taken place in the last 7 days. This setting cannot be changed.
- Make sure control power source is plugged in. The transformer should be connected to a non-switched power source.
- Unless changed, the settings for a newly installed system are:  
Hardness - 25 grains per gallon  
Salt Setting - HC (High Capacity)  
Internal System clock starts at 0 hours (midnight)  
The first recharge will occur when the system clock reaches 2:00 AM
- Test your water. Take a 4-5 oz sample of your water to someone who can test for hardness. This information will be used to setup the control.

### Inspection

The system is shipped with several parts unassembled. When parts are removed from the packing, they should be inspected for damage. If any parts are damaged or missing, contact your supplier.

**⚠ WARNING:** When handling the media tank do not turn it upside down or drop on its side.

When the carton is first opened, the softener will be standing upright.

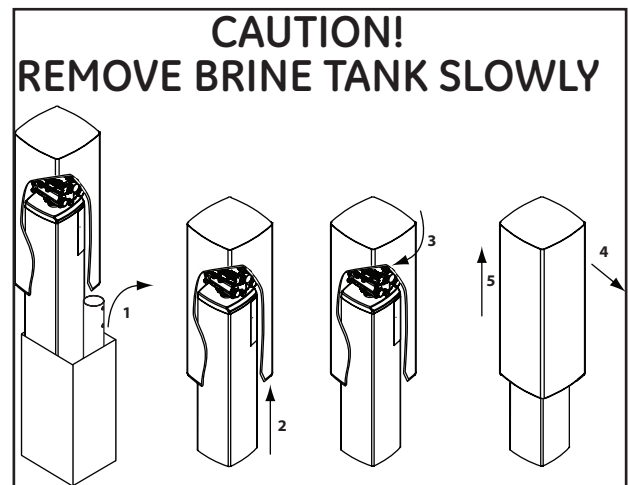


Figure 2

**⚠ WARNING:** The brine tank fits tightly over the valve. When removing the brine tank tip it forward and rotate slightly to pull off. Take care not to damage valve cover or control.

To assemble the system, remove the salt tank components (cover, tank and brine tube assembly) from the shipping container.

1. Remove the brine well, parts box and brine line.
2. Lift the brine tank off unit
3. Tilt the brine tank forward and slowly lift free.

The media tank can now be removed.

### To Assemble the Salt Tank:

1. Stand the salt tank up and in position. Level as needed. The tank has two ports that will be connected. One to a drain and one to the valve.
2. Remove the overflow fitting from the brine tube. Place the brine tube in position. Align the large hole in the brine well with the hole in the brine tank. Install the overflow fitting in this hole to secure well to tank. Lay cover aside for now.

### To Assemble the Media Tank:

1. Stand the tank up and in position.
2. If the floor under the media tank is uneven, level as needed.

**⚠ WARNING:** The media tank contains loose particles that will shift. If the tank is turned upside down or laid back quickly, the particles may enter the valve. If this happens, the valve may need to be disassembled and cleaned.

## EQUIPMENT INSTALLATION *continued*

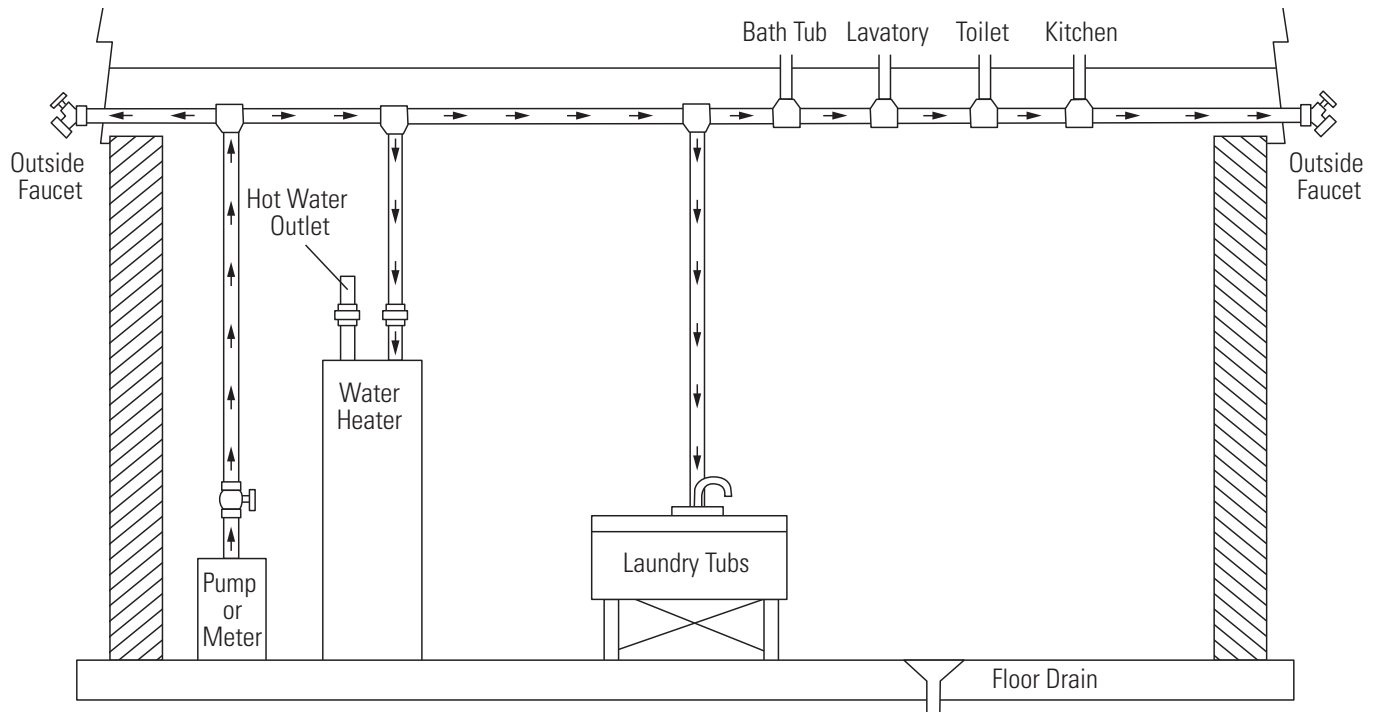


Figure 3 Standard Basement Before Installation. Cold Water Lines Shown

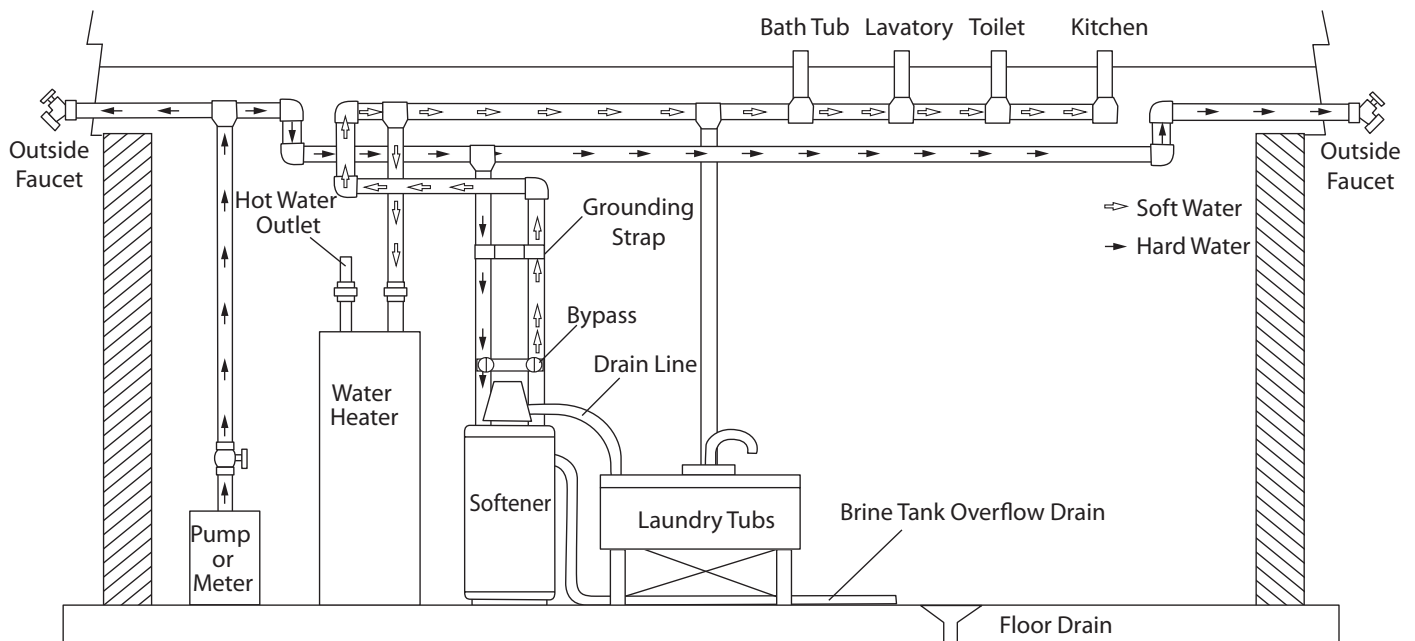


Figure 4 Softened Water Flow



## EQUIPMENT INSTALLATION *continued*

### Grounding the Plumbing

It is important that the plumbing system be electrically grounded. When a water softener is installed a non-metallic bypass valve may interrupt the grounding. To maintain continuity, a grounding strap can be purchased at a hardware store. When it is installed the strap will connect the plumbing into the softener to the plumbing out of the softener.

If you have other water treating equipment such as; chlorinator, sediment filter, neutralizer, iron filter, or taste & odor filter they should be installed upstream of the water softener.

You may wish to consult a water professional if additional water treating equipment is to be installed.

### Valve Layout

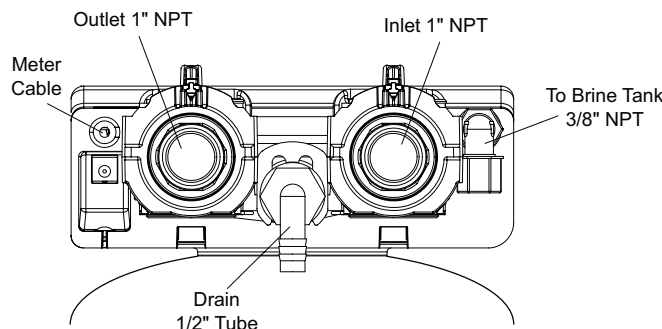


Figure 5

### Drain Line Flow Control

The drain line flow control (DLFC) requires assembly (Figure 6).

1. Locate parts and a roll of Plumber's tape. The plumbing adapters should be removed (Figure 8 Connector Assembly).
2. Wrap the tape over threads of the flow control.
3. Screw the flow control and the 90° elbow together. Hand tighten.
4. Place the ball into the flow control and insert the assembly into the drain line opening.
5. Push the assembly in and secure with the drain line clip.

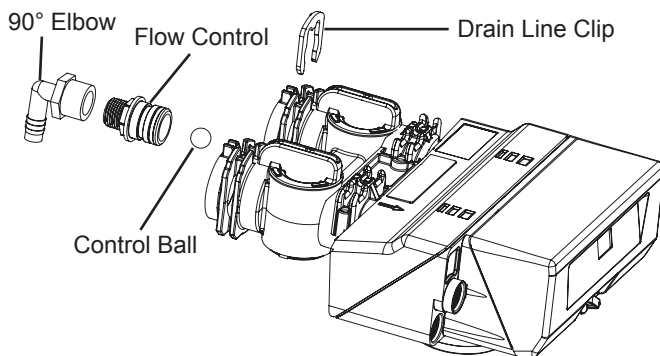


Figure 6

### Water Line Connection

A bypass valve system is included and will be installed on the water conditioning system. Bypass valves isolate the softener from the water system and allow unconditioned water to be used. Service or routine maintenance procedures may also require that the system is bypassed.

**IMPORTANT:** The bypass valve is shipped to you in the **bypass position** (Figure 7 Bypass Operation). When the valve is in **bypass water will not enter the softening tank**. The water in the building will not be treated. **Figure 7 Bypass Operation**, shows the handles in the **service position**.

Once you have selected your location check the direction of the waterflow in the main pipe. Figure 7 Bypass Operation can be used to plan the new plumbing assembly.

Inspect the main water pipe. Write down the type of pipe (copper, plastic, galvanized etc.). Record the size of the pipe. Plastic style pipes usually have the size printed on the outside. Other pipes can be measured for the outside diameter and converted into the pipe size at the store. Do not use pipe that is smaller than the main water pipe.

The bypass has two fittings that connect to the plumbing. These connections are threaded 1" NPT.

If the main plumbing is galvanized pipe and you are installing copper pipe, then you must use dielectric insulating connectors between the two styles of pipe.

Place the two tanks in position. The design of the tank does not allow for bad alignment of the connections. You may ask your supply store about flexible connections.

Take measurements and create a drawing of your installation. Include pipe lengths and elbows that are needed. If the water flow is from right to left you will need to cross the plumbing to the softener. Take the drawing to your plumbing supply store. Consult with their expert for installation ideas and suggestions. Assemble the plumbing.

**⚠ WARNING:** If pipes will be sweat soldered, do not connect adapters to the bypass until the pipes have cooled.

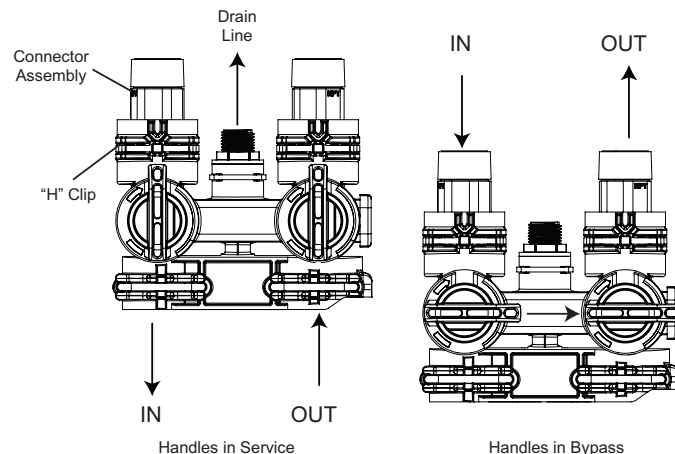


Figure 7 Bypass Operation

**⚠ WARNING:** The inlet water must be connected to the inlet port of the valve. When replacing non-PRF Water valves, it is possible that the inlet and outlet plumbing is installed in a reversed position. Be certain the inlet connection on the valve is connected to the incoming water fitting from the water supply. Do not solder pipes with lead-based solder.

**⚠ WARNING:** Do not use petroleum grease on gaskets when connecting bypass plumbing. Use only 100% silicone grease products when installing any plastic valve. Non-silicone grease may cause plastic components to fail over time.

## EQUIPMENT INSTALLATION *continued*

The bypass assembly connects to the water system by means of a connector assembly. The connector is secured to the plumbing and then inserted into the bypass. A clip is used to hold it in place.

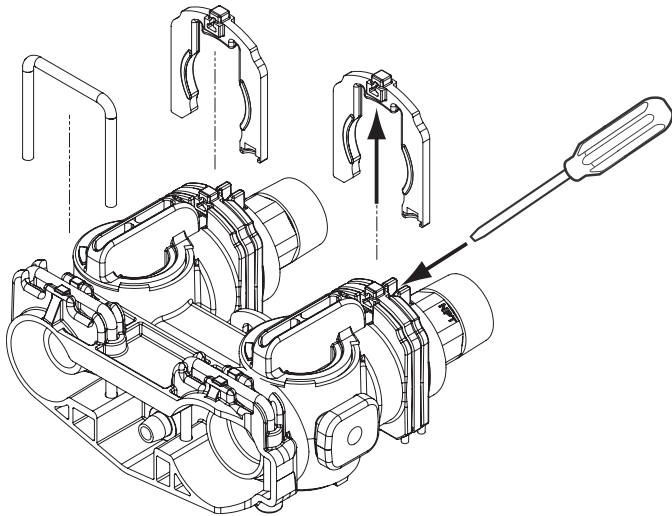


Figure 8 Connector Assembly

Before inserting the connector:

- Check that all O-rings are in place and not damaged.
- O-rings are pre-lubricated. Sliding surfaces should be lubricated with 100% silicone grease.

Firmly insert connector into bypass. Press locking clip into position. Make certain the clip is fully engaged.

**NOTE:** Before turning on the water to the valve, rotate the two handles on the bypass valve 2-3 times. This will help seat O-rings and prevent leaking.

To remove a clip:

1. Turn off water and release water pressure at the valve.
2. Push the water line connectors into the bypass and valve. This will help release O-rings that may have seated in place.
3. Remove the clip by inserting a flat blade under the top center of the clip and lifting (prying up) (Figure 8 Connector Assembly).

**▲ WARNING:** Do not use pliers to remove a clip. It is likely the clip will break.

### Drain Line Connection

**NOTE:** Standard commercial practices are expressed here. Local codes may require changes to the following suggestions. Check with local authorities before installing a system.

1. The unit should be above and not more than 20 feet (6.1 m) from the drain. Use an appropriate adapter fitting to connect 1/2-inch (1.3 cm) plastic tubing to the drain line connection of the control valve.
2. If the unit is located 20-40 feet (6.1-12.2 m) from drain, use 3/4-inch (1.9 cm) tubing. Use appropriate fittings to connect the 3/4-inch tubing to the 3/4-inch NPT drain connection on valve.
3. The drain line may be elevated up to 6 feet (1.8 m) providing the run does not exceed 15 feet (4.6 m) and water pressure at the softener is not less than 40 psi (2.76 bar). Elevation can increase by 2 feet (61 cm) for each additional 10 psi (.69 bar) of water pressure at the drain connector.

4. Where the drain line is elevated but empties into a drain below the level of the control valve, form a 7-inch (18-cm) loop at the far end of the line so that the bottom of the loop is level with the drain line connection. This will provide an adequate siphon trap. Where the drain empties into an overhead sewer line, a sink-type trap must be used.

**NOTE:** The drain line connects to the elbow previously installed. It is located between the water line connections at the rear of the valve.

5. Use pliers to expand a clamp. Slide the clamp up one end of the longer length drain line tubing about 1-2 inches and release.
6. Push the tubing over the ribbed drain line fitting.
7. Expand the clamp and move it up the tube to pinch the tube to the fitting.
8. Secure the discharge end of the drain line to prevent it from moving.

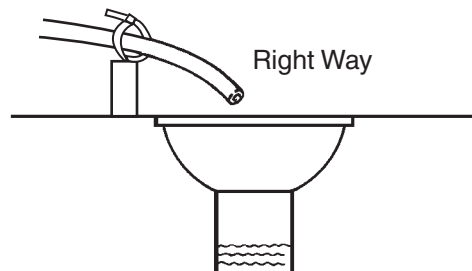


Figure 9 Drain Line Connection

**NOTE:** Waste connections or drain outlet shall be designed and constructed to provide for connection to the sanitary waste system through an air-gap of 2 pipe diameters or 1 inch (22 mm) whichever is larger.

**▲ WARNING:** Never insert drain line directly into a drain, sewer line, or trap (Figure 9 Drain Line Connection). Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into the softener.

### Overflow Line Connection

In the event of a malfunction, the salt TANK OVERFLOW will direct "overflow" to the drain instead of spilling on the floor. This fitting should be on the side of the cabinet.

To connect the overflow line, locate the tubing connector on the side of the tank (Figure 10 Tubing Connections). Attach length of 1/2-inch (1.3-cm) I.D. tubing to fitting and run to drain. Do not elevate overflow line higher than overflow fitting.

Do not tie into drain line of control unit. Overflow line must be a direct, separate line from overflow fitting to drain, sewer or tub. Allow an air gap as per drain line instructions.



## EQUIPMENT INSTALLATION *continued*

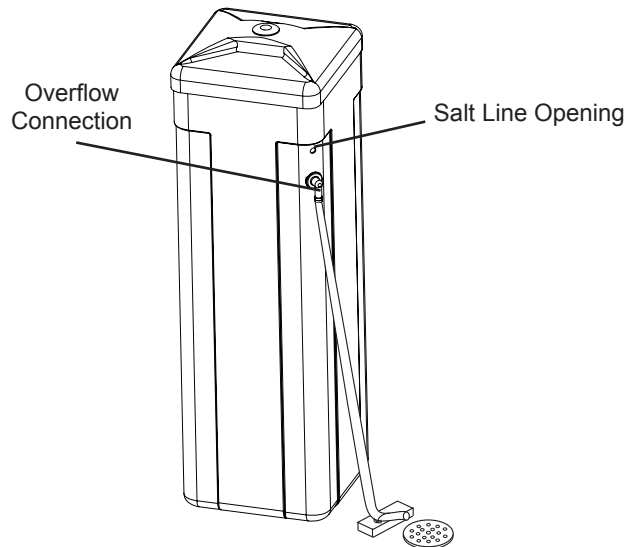


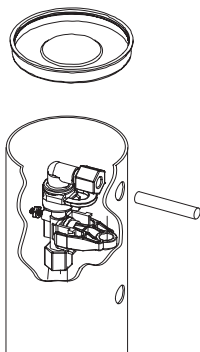
Figure 10 Tubing Connections

### Salt Line Connection

The salt line from the brine tube connects to the valve. Make certain the connections are hand tightened. Be sure that the salt line is secure and free from air leaks. Even a small leak may cause the salt line to drain out, and the softener will not draw salt from the tank. This may also introduce air into the valve causing problems with valve operation.

To install the brine line:

1. Inside the salt tank, remove the cap from the large cylinder to gain access to the connection.
2. Be sure the brass insert is in the end of the brine tubing. Insert the tubing through the opening in the tank.
3. Push the tubing into the plastic nut. Slowly unscrew the nut until the tubing moves into the connection. The tubing will hit bottom.



**NOTE:** Once the tubing has been pushed into the nut it cannot be pulled out. The nut will need to be removed. See Figure 11 for correct assembly.

4. Hand tighten the nut until the connection is tight.

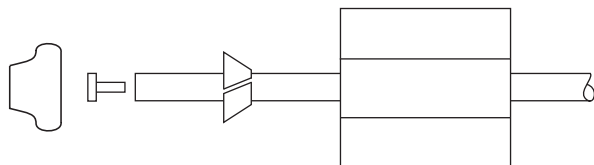


Figure 11

### Electrical Connection

**⚠ WARNING:** This valve and control are for dry location use only unless used with a Listed Class 2 power supply suitable for outdoor use.

The controller operates on 12-volt alternating current power supply. This requires use of the supplied AC adapter included with your system.

#### 120 Vac Adapters:

Make sure power source matches the rating printed on the AC adapter.

**NOTE:** The power source should be constant. Be certain the AC adapter is not on a switched outlet. Power interruptions longer than 8 hours may cause the controller to lose the time setting. When power is restored, the time setting must then be re-entered.

## CONTROL OPERATION & LAYOUT

### Large LED Display

A large 2 digit LED readout is highly visible in most installations.

### Simplified Three-Step Programming

Only three buttons are required to fully program the control.

### Camshaft Indicator

A column of windows located on the left of the control provides a visual indicator of the camshaft rotation.

### Manual Regen Button

The Manual Regen button when pressed initiates either a delayed regeneration or immediate regeneration.

### Time Button

When pressed will display the current hour of day for 5 seconds. Press again quickly to change the hour of day by 1. Press and hold to change rapidly.

### Salt Button

Press to display the current setting (HE/HC) for 5 seconds. Press again during the 5 seconds to change the setting.

### Hardness Button

Press to display the hardness setting for 5 seconds. Press again during the 5 seconds to change the setting by 1 grain per gallon. Press and hold to change rapidly.

### Flow Indicator

The decimal point/flow indicator blinks on and off when water flow turns the meter.

### Power Loss Memory Retention

The control features battery-free Time of Day retention during loss of power. The Time will remain in memory.

**NOTE:** All other programmed parameters are stored in the flash memory and are retained during power outages. Flash memory retention is 100 years.

# CONTROL OPERATION & LAYOUT

## continued

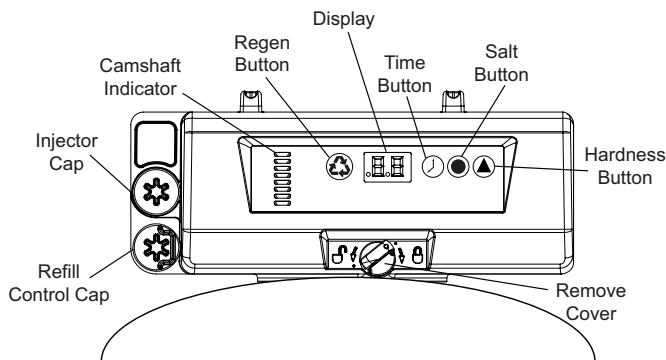


Figure 12

## PROGRAMMING

Plug in the control. Un-programmed controls will have the following settings.

Default settings:

- Hardness - 25 grains per gallon
- Salt setting - HC, High capacity
- System will recharge every 7 days (calendar override) even if no water is used. Unplug system for long periods of no water usage. Calendar override is not programmable.

### To change settings

1. Set hour of day - The controller starts (defaults) with 0 hours as the time. To change the hour of the day press until the desired hour appears in the display. Minutes will not be shown. Any elapsed minutes after the displayed hour will be reset to zero when the hours is changed. The range of hours is 0-23.
  - A. Time of recharge - The softener will recharge when the controller reaches 2:00 AM (02 is displayed). If this time is acceptable then the controller should be set for the correct hour of the day. If you want the recharge to start at some other time then change the clock setting.
  - B. Recharge sooner - Set the clock ahead by the number of hours needed. Advancing the hours by two will cause the recharge to start at midnight.
  - C. Recharge later - Set the clock back by the number of hours needed. Backing up the hours by two will cause the recharge to start at 4:00 AM (04 is displayed).

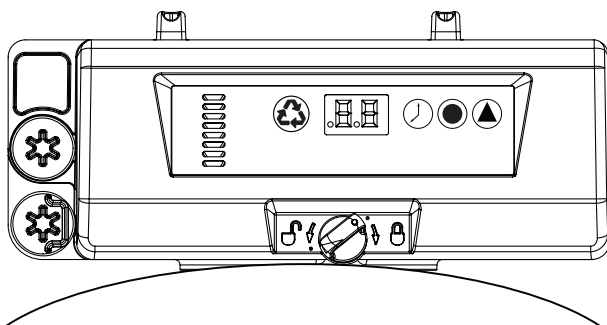


Figure 13 Step 1

2. Pick the salt setting - If you had your water tested, the hardness is described as grains per gallon. Use this number to help select the HC or HE setting. The controller starts (defaults) with the HC (high capacity) setting. If you want to check or change the setting, press the Salt Amount button to display the current setting. To change it, press the Salt Amount button again within 5 seconds. The setting will be saved after 5 seconds.

HC this setting maximizes the system capacity between recharges and will also use the most salt. This setting can be used if you have high water hardness (26 grains per gallon) or high water usage. Example: 3 or more people and/or more than 26 grains per gallon.

HE this setting minimizes salt used for a recharge (uses the least amount of salt) and provides the least amount of water between recharges. This setting can be used if you have low water hardness (13 grains per gallon) or low water usage. Example: 2 people or less and/or less than 20 grains per gallon.

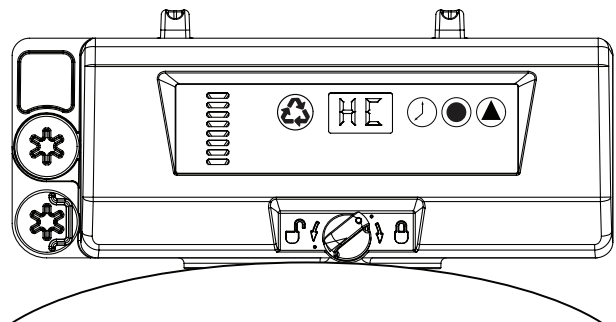


Figure 14 Step 2

3. Enter the hardness of the water - The controller starts (defaults) at a hardness of 25 grains per gallon. Check your water for the actual hardness. Press the Water Hardness button to display the current settings. To change the setting press the button again within 5 seconds. To rapidly increase the setting push and hold the Water Hardness button. Release the button and the setting will be saved after 5 seconds. A hardness setting too high will cause the system to recharge more often than needed and use more salt and water than what is needed to soften your water. A hardness setting too low will cause the system to recharge less often. The system may pass hard water shortly before it recharges.

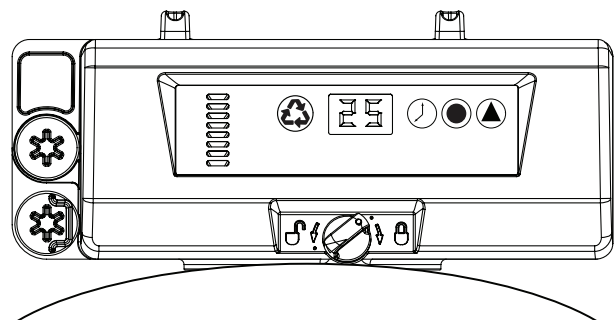


Figure 15 Step 3

Programming is complete.


**NOTE:** During programming if a button is not pushed for 5 seconds, the control returns to the normal operation mode and displays the hour of day.

## AUTOMATIC RECHARGE


The PRF26K, PRF34K, and PRF40K use an internal water meter that counts the gallons used. When the recharge setpoint (gallons of water treated) is reached, the unit will recharge. The setpoint depends on the capacity setting used (HE or HC) and the hardness of the water. See page 19 for rated capacities and system performance.

## MANUAL REGENERATION

### Delayed Regeneration

Press and release  to program a delayed regeneration. The system will regenerate at the next Time of Regeneration (2:00 AM). Repeat procedure to disable the Delayed Regen. Regen dot blinks when delayed regeneration is on.

### Immediate Regeneration

Press and hold the  for 3 seconds to initiate an immediate regeneration. The control cycles to backwash. The control will proceed through a complete regeneration. A cascading symbol (- -) will be displayed until regeneration is complete. The symbol (- -) is not displayed during a quick cycling of the control.

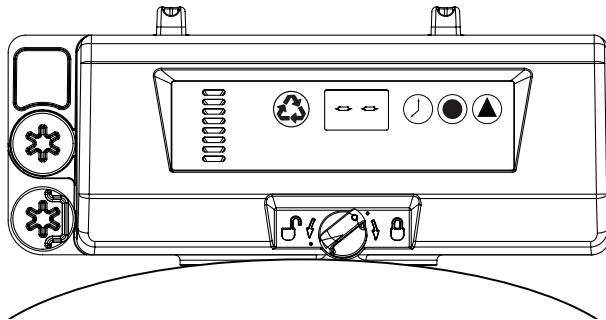






Figure 16



## QUICK CYCLING THE CONTROL

### Quick Cycling



Press and hold the  for 3 seconds to initiate an immediate regeneration. The control will cycle to the backwash cycle.

1. Press and release the  to display "C 1"
2. Simultaneously press then release  and  to move the control to the next cycle.

**NOTE: The time may be displayed for 5 seconds.**

3. Press and release the  to display "- -" or the "C#". Continued pressing of  will switch the display between "- -" and "C#".
4. Repeat steps 2 and 3 to cycle through each position.

### Quick Cycle to Service Position

Simultaneously press  and  and hold for 3 seconds during any regeneration cycle. The control will skip the remaining regeneration cycles and return to the service position. The Time of Day will be displayed when the control reaches the service position.

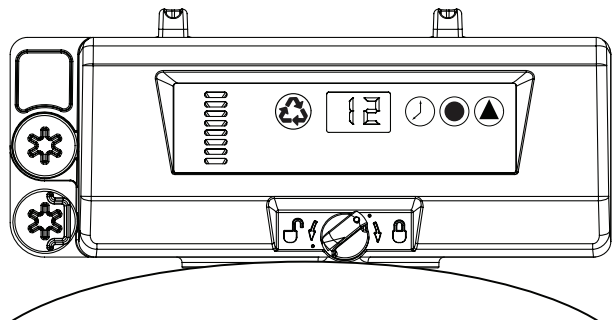


Figure 17

## CYCLE DEFAULTS TABLE

### PRF26K Recharge Cycles:

		Length of Cycle		Time remaining to end of cycle	
Cycle	Cycle Description	HE Setting	HC Setting	HE Setting	HC Setting
1	Backwash 1	10 min	10 min	76.6 min	105.6 min
2	Brine Draw	55 min	74 min	66.6 min	95.6 min
	Slow Rinse				
3	Re-Pressurize	3 min	3 min	11.6 min	21.6 min
4	Fast Rinse 1	4 min	4 min	8.6 min	18.6 min
5	Backwash 2	1 min	1 min	4.6 min	14.6 min
6	Fast Rinse 2	1 min	1 min	3.6 min	13.6 min
7	Refill	2.6 min	12.6 min	2.6 min	12.6 min

\*The camshaft does not move between Brine Draw and Slow Rinse. Slow Rinse begins when the brine in the salt tank runs out and the check valve closes.

### PRF34K Recharge Cycles:

		Length of Cycle		Time remaining to end of cycle	
Cycle	Cycle Description	HE Setting	HC Setting	HE Setting	HC Setting
1	Backwash 1	10 min	10 min	76.5 min	117.5 min
2	Brine Draw	54 min	82 min	66.5 min	107.5 min
	Slow Rinse				
3	Re-Pressurize	3 min	3 min	12.5 min	25.5 min
4	Fast Rinse 1	4 min	4 min	9.5 min	22.5 min
5	Backwash 2	1 min	1 min	5.5 min	18.5 min
6	Fast Rinse 2	1 min	1 min	4.5 min	17.5 min
7	Refill	3.5 min	16.5 min	3.5 min	16.5 min

\*The camshaft does not move between Brine Draw and Slow Rinse. Slow Rinse begins when the brine in the salt tank runs out and the check valve closes.

## CYCLE DEFAULTS TABLE *continued*

### PRF40K Recharge Cycles:

		Length of Cycle		Time remaining to end of cycle	
Cycle	Cycle Description	HE Setting	HC Setting	HE Setting	HC Setting
1	Backwash 1	10 min	10 min	74.1 min	118.1 min
2	Brine Draw	51 min	79 min	64.1 min	108.1 min
	Slow Rinse				
3	Re-Pressurize	3 min	3 min	13.1 min	29.1 min
4	Fast Rinse 1	4 min	4 min	10.1 min	26.1 min
5	Backwash 2	1 min	1 min	6.1 min	22.1 min
6	Fast Rinse 2	1 min	1 min	5.1 min	21.1 min
7	Refill	4.1min	20.1 min	4.1 min	20.1 min

\*The camshaft does not move between Brine Draw and Slow Rinse. Slow Rinse begins when the brine in the salt tank runs out and the check valve closes.

### PRF26K Recharge Cycle Requirements:

	Minimum Salt/ Capacity	Maximum Salt/ Capacity
Salt/Recharge (lbs)	2.6	12.8
Regeneration Time (min)	75	109
Water to Drain (gal)	37	44
Max. Flow to Drain (gpm)	1.7	1.7

### PRF34K Recharge Cycle Requirements:

	Minimum Salt/ Capacity	Maximum Salt/ Capacity
Salt/Recharge (lbs)	3.4	16.7
Regeneration Time (min)	76.5	117.5
Water to Drain (gal)	46.3	56.9
Max. Flow to Drain (gpm)	2.1	2.1

### PRF40K Recharge Cycle Requirements:

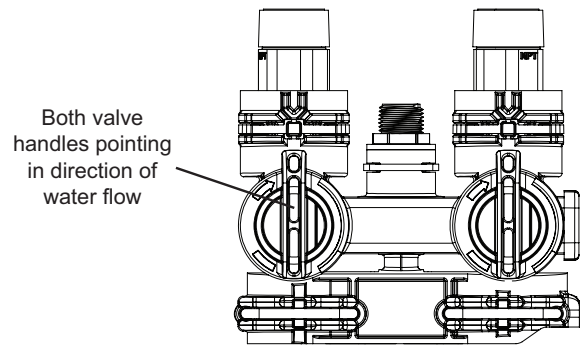
	Minimum Salt/ Capacity	Maximum Salt/ Capacity
Salt/Recharge (lbs)	4.1	20
Regeneration Time (min)	74.1	118.1
Water to Drain (gal)	58.7	72.1
Max. Flow to Drain (gpm)	2.7	2.7

## START-UP

The conditioner will now need to be placed into operation. Please review Quick Cycling the Control procedure before attempting start-up.

DO NOT put regenerant material into the brine tank.

1. With the supply water for the system still turned off, position the bypass valve to the "not in bypass" (normal operation) position.



2. Press and hold the button on the controller for 3 seconds. This will initiate a manual regeneration, and cycle to the backwash position.
3. Filling the media tank with water.
  - A. With the conditioner in backwash, open the water supply valve very slowly to approximately the 1/4 open position. Water will begin to enter the media tank. Air will begin to be purged to drain as the media tank fills with water.
4. **⚠ WARNING:** If opened too rapidly or too far, media may be lost out of the tank into the valve or the plumbing. In the 1/4 open position, you should hear air slowly escaping from the valve drain line.
5. B. When all of the air has been purged from the media tank (water begins to flow steadily from the drain line), open the main supply valve all of the way. This will purge the final air from the tank.
6. C. Allow water to run to drain until the water runs clear from the drain line. This purges any debris from the media bed.
7. D. Pour about 3 gallons of water into the brine tank. Advance to cycle 2 (Brine Draw) by pressing the and buttons at the same time. The water in the brine tank should be drawn into the valve. If the water is not receding from the tank, refer to Troubleshooting.
8. E. Quickly cycle the control to the refill cycle (C7). Place salt in brine tank. Allow this cycle to finish and the control to move to service. The brine tank will have the correct amount of water.

**⚠ WARNING:** Ensure that the system has been properly disinfected per the water conditioning system manufacturer's recommendations.

**The water conditioning system is now fully operational.**

The display will show the hour of the day. The decimal point at bottom center of the display will blink when water is flowing.

## INSTALLATION CHECKLIST

- ☐ Read the owner's/installation manual?
- ☐ Follow all safety guidelines in the manual?
- ☐ If metal pipe was used, did you restore the electrical ground?
- ☐ Securely install both drain hoses to an approved drain?
- ☐ Perform a leak test?
- ☐ Move the bypass valve to service?
- ☐ Sanitize the softener?
- ☐ Add salt pellets to the salt storage tank?
- ☐ Program the control correctly to meet your needs?
- ☐ Start a recharge?

## CARE AND USE OF YOUR BRINE TANK

Each time the softener recharges, salty water (brine) is needed to recondition the media in the water tank. The brine is pulled from the salt tank at a controlled amount. If the salt tank does not contain enough salt, the brine is weak, the media will not fully recondition and untreated water will pass through.

You must keep salt in the tank.

The salt tank operates best when the salt level is below half-full. If the tank is filled more than that the salt pellets may "bridge". The salt pellets wedge against each other and do not fall into the water at the bottom. Bridging will eventually provide no salt to make brine. The softener will recharge but not recondition the media. A salt bridge can be broken up using a broom handle or similar rod. Carefully pound it into the salt and the pellets will collapse. After loosening the salt pellets wait 2 hours and start a regeneration. A second recharge may be needed to fully recondition the media.

You should only use sodium chloride pellet salt for water softeners. Other types of salt (rock or snow melting) will contain dirt and chemicals that will affect your water softener.

Keep the brine tank covered.

Empty and clean the tank every 3 years.

## SYSTEM DISINFECTION

### Disinfection Of Water Softeners

The materials of construction of the modern water softener will not support bacterial growth, nor will these materials contaminate a water supply. During normal use, a softener may become fouled with organic matter, or in some cases with bacteria from the water supply. This may result in an off-taste or odor in the water.

Some softeners may need to be disinfected after installation and some softeners will require periodic disinfection during their normal life.

Depending upon the conditions of use, the style of softener, the type of ion exchanger, and the disinfectant available, a choice can be made among the following methods.

### Sodium or Calcium Hypochlorite

#### Application

These materials are satisfactory for use with polystyrene resins, synthetic gel zeolite, greensand and bentonites.

#### 5.25% Sodium Hypochlorite

These solutions are also known as household bleach. If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

##### 1. Dosage

- Polystyrene resin; 1.2 fluid ounce (35.5 ml) per cubic foot.
- Non-resinous exchangers; 0.8 fluid ounce (23.7 ml) per cubic foot.

##### 2. Salt tank softeners

- Backwash the softener and add the required amount of hypochlorite solution to the well of the salt tank. The salt tank should have water in it to permit the solution to be carried into the softener.
- Proceed with the normal recharge.

### Calcium Hypochlorite

Calcium hypochlorite, 70% available chlorine, is available in several forms including tablets and granules. These solid materials may be used directly without dissolving before use.

##### 1. Dosage



- Two grains (approximately 0.1 ounce [3 ml]) per cubic foot.

##### 2. Salt tank softeners



- Backwash the softener and add the required amount of hypochlorite to the well of the salt tank. The salt tank should have water in it to permit the chlorine solution to be carried into the softener.
- Proceed with the normal recharge.



## ACCESSING HISTORY VALUES



The control features a review level that displays the operation history of the system. This is a great troubleshooting tool for the control valve.

To access history values, press Recharge  followed by the Salt Amount button  and hold for 3 seconds to view the Diagnostic Codes.

**NOTE: If a button is not pushed for 30 seconds the controller will exit the history table.**

Press the Time of Day button  to increment through the table. When the desired code is reached, Press the Salt Amount button  to display the value.

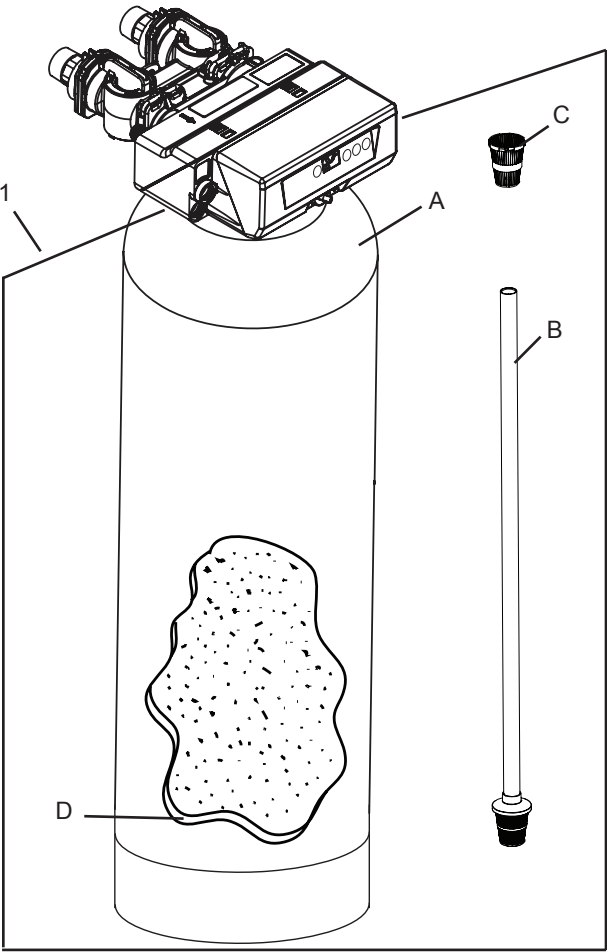
Some of the values have four digits 1, 2, 3, 4. Press the Salt Amount button  to display the first two (1, 2). Press the Water Hardness button  to display the last two (3, 4).

When the Salt Amount button  is pressed to view H2 the current flow rate will be displayed but not updated. Continue to press and release the Salt Amount button  every 5 seconds to update the display. The flow dot on the display will flash when there is flow thru the softener.

Code	Description	Notes
H1	Days since last recharge	Days since last recharge
H2	Current flow rate	Gallons per minute
H3	Current day of week	Current day of week
H4	Water used today since 0200	In gallons, max value displayed 9999 max value stored 65,535.
H5	Water used since last recharge	
A0	Average water usage for day 0	
A1	Average water usage for day 1	
A2	Average water usage for day 2	
A3	Average water usage for day 3	
A4	Average water usage for day 4	
A5	Average water usage for day 5	
A6	Average water usage for day 6	

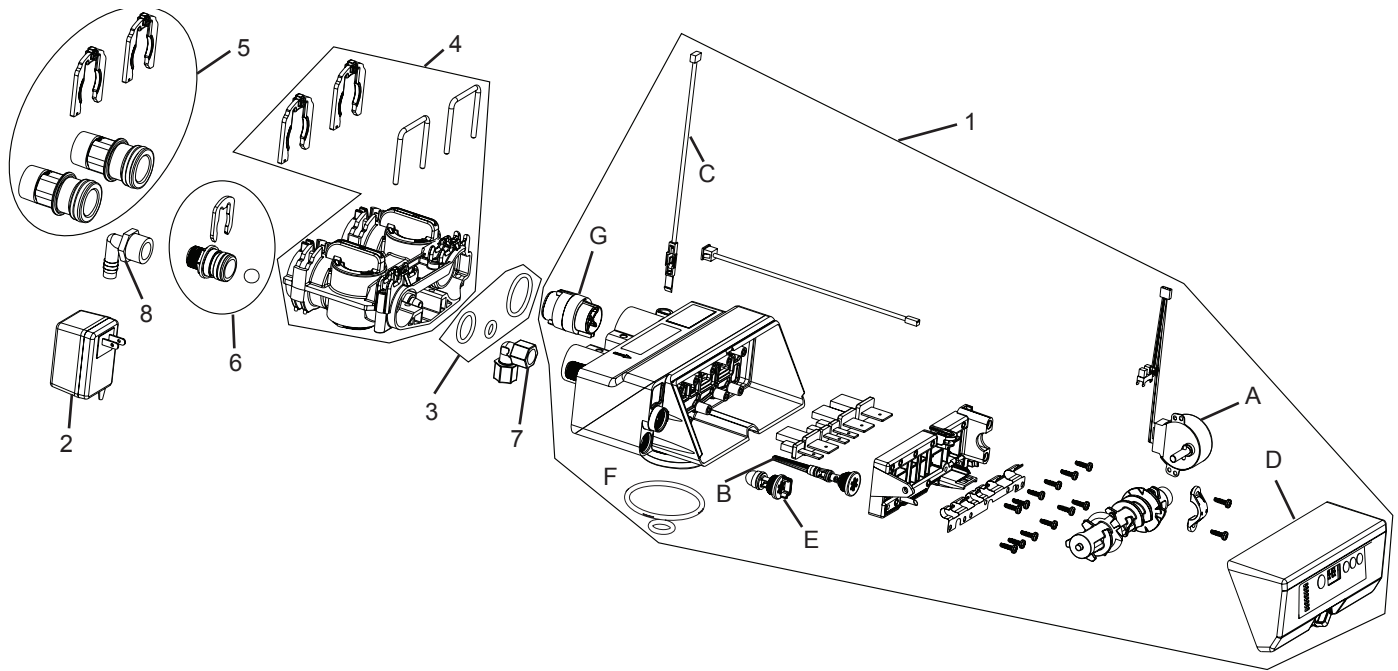


TANK ASSEMBLY



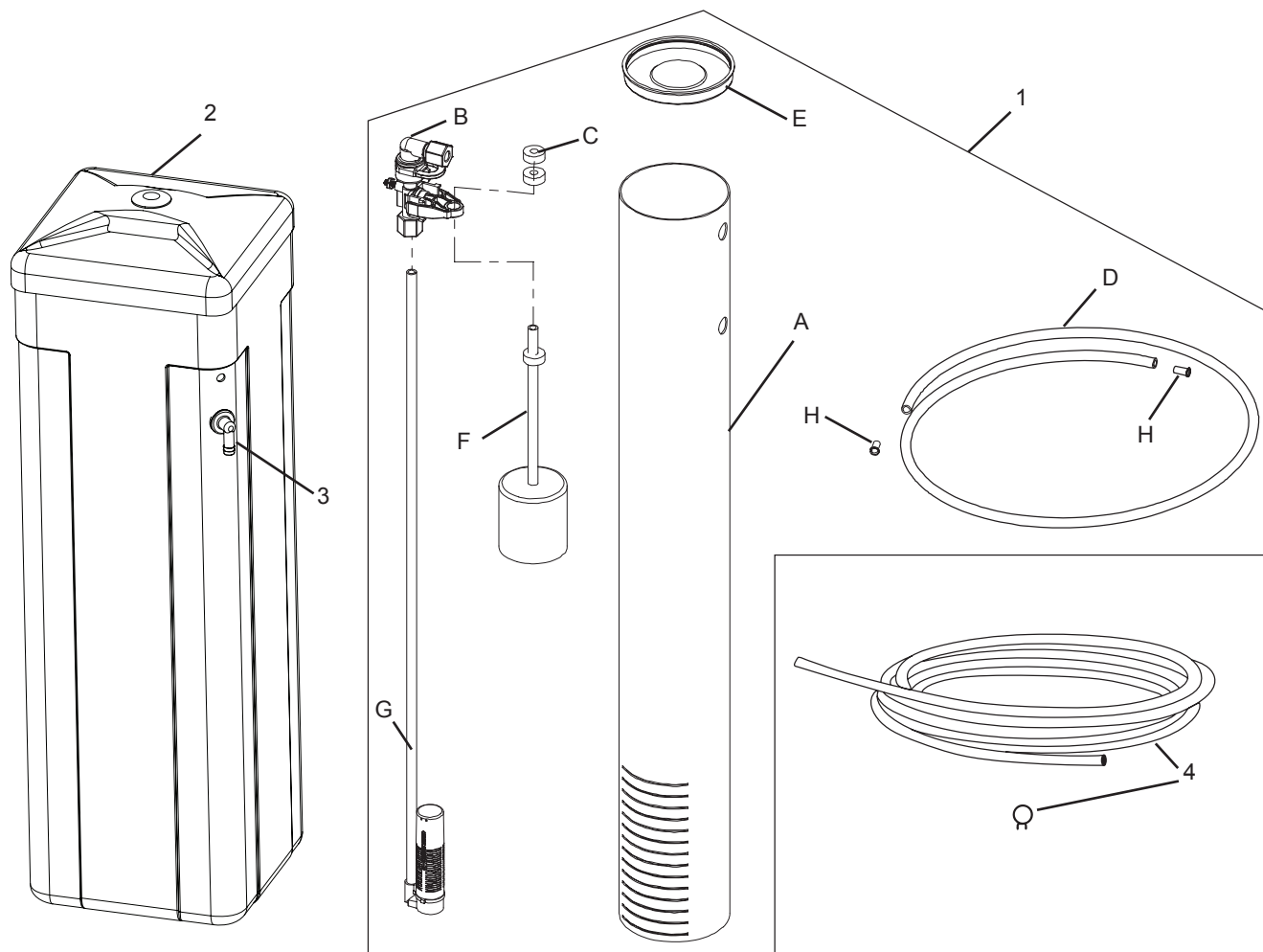
Item No.	QTY	Part No.	Description
1	1	4001927	Resin Tank Assy, 8 x 44, PRF26K
		4001884	Resin Tank Assy, 9 x 48, PRF34K
		4001882	Resin Tank Assy, 10 x 44, PRF40K
A			Resin Tank
B			Lower Distributor Assembly
C			Upper Basket
D			Conditioning Resin

## VALVE ASSEMBLY



Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	4001925	Valve Assembly, 368, PRF26K	6	1	4001028	8" Kit, Drain Line Flow Control
		4001883	Valve Assembly, 368, PRF34K			4001286	9" Kit, Drain Line Flow Control
		4001881	Valve Assembly, 368, PRF40K			4000887	10" Kit, Drain Line Flow Control
A		4001260	368 Valve Motor/Optical Sensor Assy	7	1	4000871	Female Elbow, 3/8 NPT to 3/8 Tubing
B		3025328	"G" Injector, Tan, 8" Tank	8	1	4000996	Fitting, Drain Line, 90°, 1/2" NPT, 1/2" Tube
		3025329	"H" Injector, Lt. Purple, 9" Tank				
		4000880	"J" Injector, Lt. Blue, 10" Tank				
C		3027837	Assembly, Sensor Cable				
D		4001926	607 Control PRF26K				
		4001885	607 Control PRF34K				
		4001616	607 Control PRF40K				
E		3021829	Assy Refill Control 0.33 gpm				
F		4001889	Kit, O-ring, 360 Valve				
G		3027839	Meter Assembly				
2	1	1000811	120 VAC, 60 Hz, N. America Plug				
3	1	3031825	Kit, O-ring, Manifold				
4	1	4000886	Bypass Valve Assembly				
5	1	4000888	Connector Kit, 1" NPT (Includes Clip Retainer and Connector Assy)				

## BRINE WELL ASSEMBLY CH15675



Item No.	QTY	Part No.	Description
1	1	CH15675	Brine Well Assembly
		A	Brine Well w/Slots
		B	Safety Brine Valve
		C	Grommet
		D	Brine Tube 3/8" x 60"
		E	Cap, Brine Well 4" Dia. (Caplug STP-4)
		F	Brine Float w/One Grommet (As purchased)
		G	Air Check Assembly
		H	Tubing Insert, Brass
2	1	CH34393-1	Cover and Brine Tank, 14" x 34"
3	1	CH20774	Brine Tank Overflow Fitting Assembly
4	1	4001983	Tubing, 12 Foot, 1/2" ID, Drain Line, w/ Clamp

# TROUBLESHOOTING

## 607 Control - Error Codes

Problem	Possible Cause	Solution
Err 1 is displayed.	Program settings have been corrupted.	Press any key. If Err 1 does not clear, replace control.
Err 3 is displayed.	Control does not detect the camshaft position and is returning to the service position.	Wait until the control returns to the service position. Flashing hourglass in the display indicates that the motor is running
	Camshaft is not turning during Err 3 display.	Check that motor is connected. Verify that the 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 the camshaft.  If everything is connected, replace components in this order: 1. Motor Assembly, Optical Sensor 2. Control
	Camshaft is turning more than five minutes to find Home position:	Verify that optical sensor is in place and connected to wire. Inspect for debris in the camshaft slots. If motor continues to rotate indefinitely, replace the following components in this order: 1. Optical Sensor 2. Control

## System

Problem	Possible Cause	Solution
Salt tank overflow.	Loose salt line connection.	Ensure all salt line connections are tight.
	Drain line restricted with debris.	Clean drain control.
Flowing or dripping water at drain or salt line after recharge.	Debris is preventing #4 valve disc from closing. See Figure 18.	Remove debris.
	Worn #4 valve disc. See Figure 18.	Replace valve discs.
Hard water leakage after recharge.	Improper recharge.	Repeat recharge after making certain correct salt dosage was set.
	Leaking of external bypass valve.	Replace bypass valve.
	O-Ring around riser pipe damaged.	Replace O-ring.
Control will not draw salt.	Restricted drain line.	Remove restriction.
	Injector plugged.	Clean injector and screen.
	Debris is preventing valve discs from closing. See Figure 18.	Remove foreign matter from valve discs.
Control will not recharge automatically.	AC adapter or motor not connected.	Connect power.
	Defective motor.	Replace motor.
	Meter clogged with debris. Unit will recharge every 7 days anyway.	Remove and clean meter.
Control recharges at wrong time of day.	Time of Day set incorrectly.	Set the correct Time of Day.
Intermittent salt draw.	Low water pressure.	Maintain a minimum of 20 psi (1.3 bar) feed.
No conditioned water after recharge.	No salt in salt tank.	Add salt to salt tank.
	Injector plugged.	Clean injector and screen.
Backwashes or purges at excessively low or high rate.	No drain line flow control.	Install drain line flow control.
	Restricted drain line.	Remove restriction.
Runs out of conditioned water between recharges.	Control improperly programmed.	Verify salt dosage.
Flow indicator on control does not display service flow.	Bypass valve in bypass position.	Remove bypass valve from bypass.
	Meter cable dislodged from valve.	Fully insert meter cable into valve.
	Meter clogged with debris.	Remove and clean meter.
Water hammer	Air in media tank.	Check all salt line connections for air leaks. Tighten to stop air leaks.
	Air check not sealing.	Clean air check assembly.

## TROUBLESHOOTING *continued*

### Flapper Positions

When the control cover is removed the flappers and camshaft are visible (Figure 18).

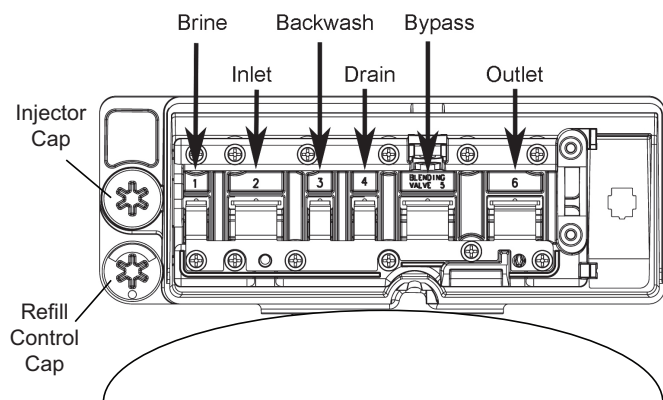


Figure 18



## PERFORMANCE DATA SHEET

Model	PRF26K	PRF34K	PRF40K
Rated Service Flow (gpm)	8.0	9.6	10.7
Pressure Drop at Rated Service Flow Rate (psid)	12.0	15.0	15.0
Rated Capacity (grains @ lb of salt)	11,612 @ 2.6 26,487 @ 12.6	15,095 @ 3.4 34,433 @ 16.7	18,143 @ 4.12 41,386 @ 20.0
Rated Efficiency (grains/lb Salt @ lb of salt)	4,400/lb Salt @ 2.6 lbs	4,400/lb Salt @ 3.4 lbs	4,400lb Salt @ 4.1 lbs
Maximum Flow Rate During Regeneration (gpm)	1.7	2.1	2.7
Resin Volume per tank - ft <sup>3</sup> Resin Type - Strong Acid cation	0.81	1.04	1.25
Tank size	8 x 44 in	9 x 48 in	10 x 44 in

Operating Pressure: 20 - 125 psi or 1.4 – 8.8 kg/Centimeter<sup>2</sup>, Operating Temperature: 34 - 110° F or 1.1 – 43.3° C  
 Acceptable Salt Type: Sodium Chloride  
 All Systems above tested at 35psi +/- 5 psi, pH of 7.5 +/- 0.5,  
 Capacity Testing Flow Rate = 50% of the rated service flow rate for the various size systems.

These water softener systems have been tested by WQA and conform to NSF/ANSI 44 for specific performance claims as verified and substantiated by test data. The rated salt efficiencies above were also determined in accordance with NSF/ANSI 44 and are only valid at the salt dosage referenced above. An efficiency rated water softener is a demand initiated regeneration (DIR) softener which also complies with specific performance specifications intended to minimize the amount of regenerant brine and water used in its operation. Efficiency rated water softeners shall have a rated salt efficiency of not less than 3350 grains of total hardness exchanged per pound of salt (based on NaCl equivalency) (477 grams of total hardness exchanged per kilogram of salt), and shall not deliver more salt than its listed rating. The rated efficiency of the water softener, the salt dosage at that efficiency, the capacity at that salt dosage and that of the efficiency is only valid at the stated salt dosage. Efficiency is measured by a laboratory test described in NSF/ANSI 44. The test represents the maximum possible efficiency the system can achieve. Operational efficiency is the actual efficiency achieved after the system has been installed. It is typically less than the efficiency due to individual application factors including water hardness, water usage, and other contaminants that reduce the water softener's capacity. These systems are not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Refer to the system Installation and Service Manuals for set-up and programming instructions.

Contact your local dealer for parts and service. See your owner's manual for warranty information.

### Iowa Requirement:

Seller: \_\_\_\_\_ Date: \_\_\_\_\_

Buyer: \_\_\_\_\_ Date: \_\_\_\_\_

10/17/2014



C USA

Tested and Certified by WQA to NSF/ANSI Standard 44 & 372 for softener performance & lead free compliance and CSA B483.1.

**PENTAIR  
 FILTRATION & PROCESS  
 5730 NORTH GLEN PARK ROAD  
 MILWAUKEE, WI 53209  
 P: 262.238.4400 | 800.279.9404**