Pentair Water

PRF 368 Valve

Installation and Operation Manual

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MANUAL OVERVIEW

How To Use This Manual

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

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.

SAFETY INFORMATION

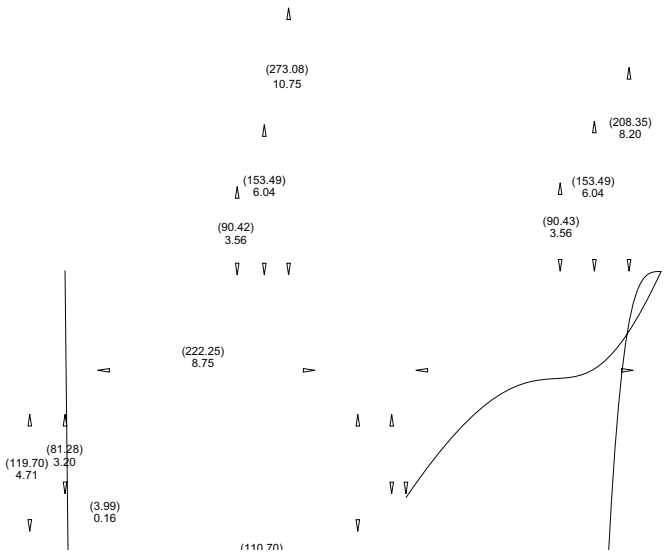
- Review the entire Operation Manual before installing the water conditioning system.
- Follow all applicable plumbing and electrical codes when installing this water conditioning system.
- This water conditioning system is not intended for the treatment of water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- This water conditioning system is to be used only for potable water.
- Inspect the water conditioning system for carrier shortage or shipping damage before beginning installation.
- Use caution when installing soldered metal piping near the water conditioning system. Heat can adversely affect the plastic control valve or bypass valve system. Be sure all soldered pipes are fully cooled before attaching plastic valve to the plumbing.
- All plastic connections should be hand tightened. Tefon* tape may be used on connections that do not use an O-ring seal. Do not use pipe dope type sealants on the valve body. Do not use pliers or pipe wrenches.
- Minimum pipe run to water heater of three meters to prevent backup of hot water into system.
- Do not use petroleum-based lubricants, oils or hydrocarbon-based lubricants. Use only 100% silicone lubricants.
- Use only the power transformer supplied with this water conditioning system.
- The power outlet must be grounded.
- Install an appropriate grounding strap across the inlet and outlet piping of the water conditioning system to ensure that a proper ground is maintained.
- To disconnect power, unplug the AC adapter from its power source.
- Observe drain line requirements. The drain line must be a minimum of 1/2-inch diameter. Use 3/4-inch pipe if the total length of the drain line exceeds 6 meters.
- Do not support the weight of the system on the control valve connections, or plumbing.
- Do not allow this water conditioning system to freeze. Damage from freezing will void this water conditioning system's warranty.
- Keep the media tank in the upright position. Do not turn upside down or drop. Turning the tank upside down or laying the tank on its side can cause media to enter the valve.
- Use only regenerants designed for water conditioning.

* Tefon is a trademark of E. I. duPont de Memours

TYPICAL TOOLS AND FITTINGS REQUIRED

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

VALVE DIMENSIONS- 368



SPECIFICATIONS

Flow Rates (Valve Only)

Service @ 15 psi (1.03 bar drop)
16.6 gpm (4.3 Cv) / 3.77 m^3/h (3.68kV)

Backwash @ 25 psi (1.72 bar drop)
2.75 gpm (.55 Cv) / 0.62 m^3/h (.48kV)

Service	3.68 Kv
Backwash	0.48 Kv

Valve Connections

Tank Thread	2-1/2-inches – 8, male
Inlet/Outlet Thread	3/4" BSPT, male, 3/4" NPT, male, 1" BSPT, male, 1" NPT, male
Drain Line	1/2" – BSPT, male, 1/2" – NPT, male
Brine Line	3/8" – BSPT male, 3/8" – NPT, male
Distributor Tube Diameter	1.050 inch (27 mm)
Distributor Tube Length	Flush to top of tank ± 1/2-inch

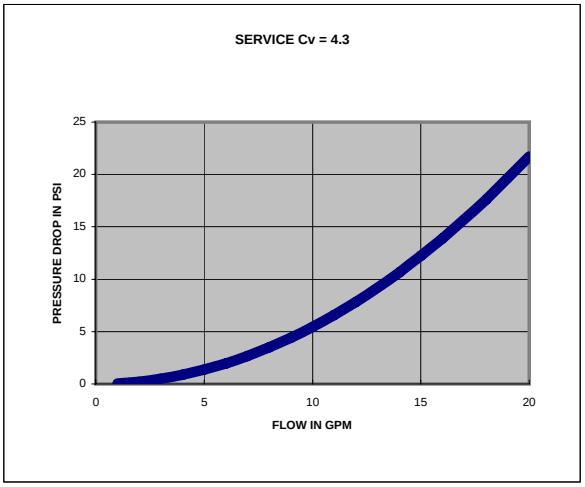
Valve Body	Glass-filled Noryl®
Rubber Components	Compounded for cold water
Operating Pressure	20-125 psi (1.38 – 8.61 bar)
Water Temperature	35-100°F (2 - 38°C)
Ambient Temperature*	35-122°F (2 - 50°C)
Refill Flow Rate	0.14 gpm (0.53 Lpm)/0.33 gpm (1.25 Lpm)

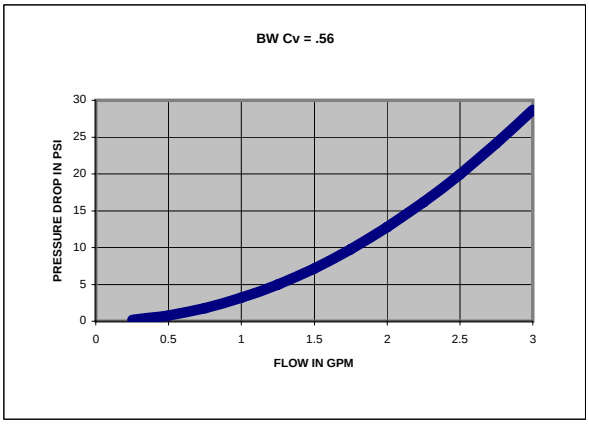
* Recommended for indoor use only

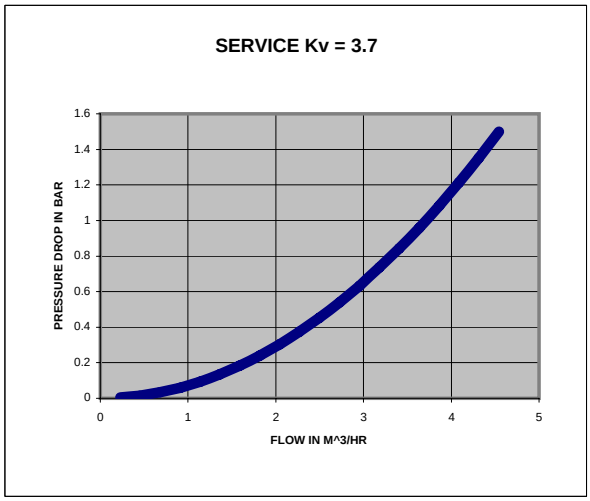
Options/Accessories (6" to 10" diameter tanks)

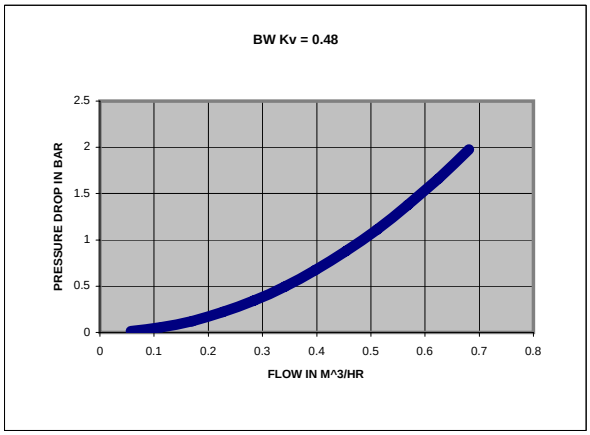
Regenerant Injectors	E, F, G, H, and J

External Drain Line Flow Controls
1.0, 1.3, 1.7, 2.2 gpm (3.8, 4.9, 6.4, 8.3 Lpm)









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. Tefon 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 the pipe length is greater than 20 feet (6 m).
- Do not support the weight of the system on the control valve fttings, plumbing, or the bypass.
- Always make modifcations to house plumbing frst. 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.

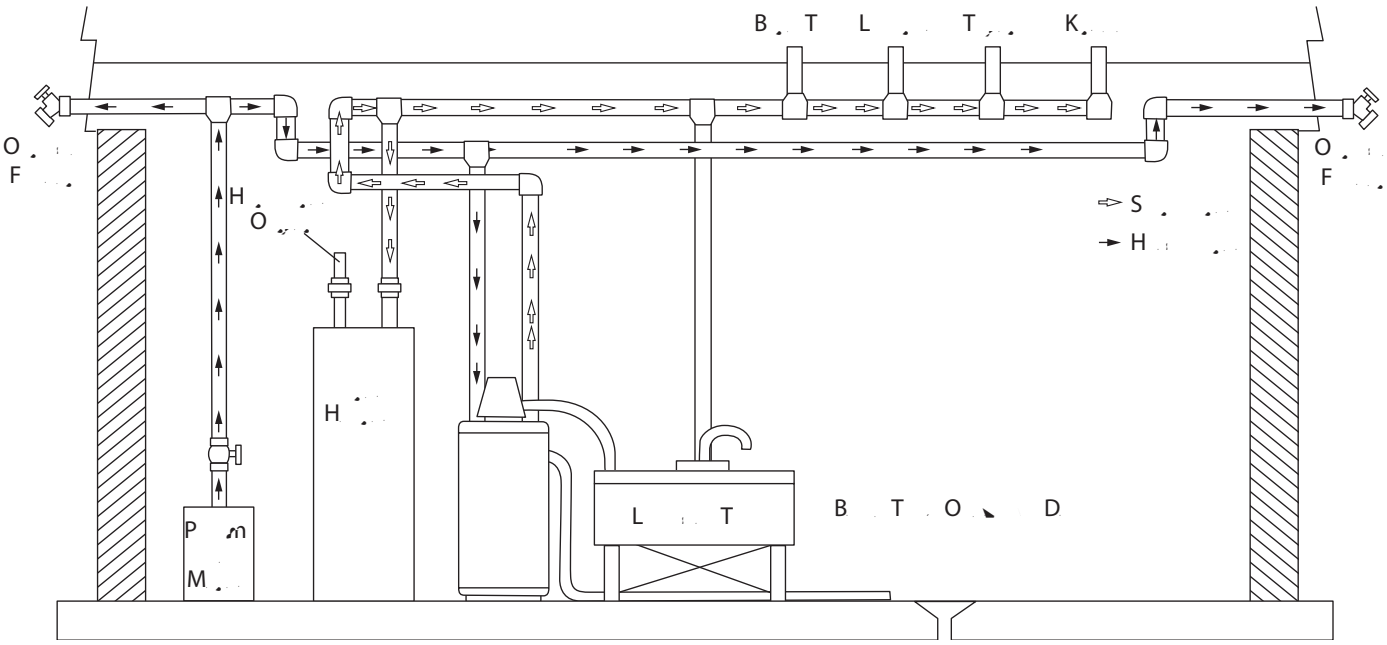
System Recharge Cycles

Service (Downfow):
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 (Upfow):
   The fow 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 fushed to the drain.
2. Brine Draw (Downfow):
   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 (Downfow):
   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 fappers for a short time to allow the air and water to hydraulically balance in the valve before continuing the recharge.
4. Fast Rinse 1 (Downfow):
   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 (Upfow):
   The fow 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 fushed to the drain.
6. Fast Rinse 2 (Downfow):
   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 Refll:
   Water is directed to the salt tank at a controlled rate, to create brine for the next recharge.

EQUIPMENT INSTALLATION *continued*



EQUIPMENT INSTALLATION *continued*

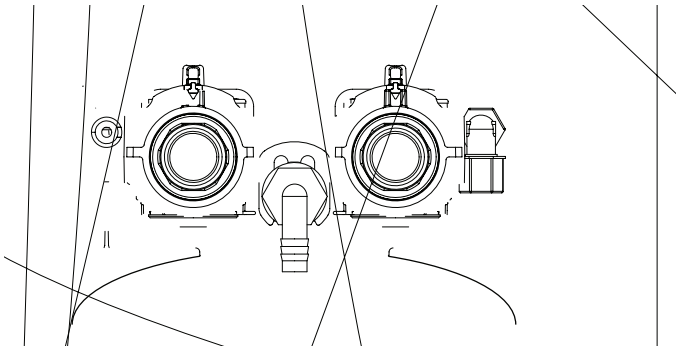
Grounding the Plumbing

It is important that the plumbing system be electrically grounded. When a water softener is installed a nonmetallic 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.

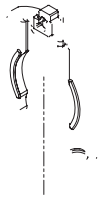
If you have other water treating equipment such as; chlorinator, sediment flter, neutralizer, iron flter, or taste & odor flter they should be installed upstream of the water softener.

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

Valve Layout



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.



CONTROL OPERATION & LAYOUT

Large LED Display

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

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 to increase 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 increase the setting by 1 grain per gallon. Press and hold to change rapidly.

Flow Indicator

The decimal point/fow indicator blinks on and off when water fow 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

PROGRAMMING - 368/606

QUICK CYCLING THE CONTROL

Quick Cycling

Press and hold the

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.

VALVE ASSEMBLY - 368

VALVE ASSEMBLY - 368 *continued*

Item No.	QTY	Part No.	Description
1	1		Valve Body Assembly
		4001890	Kit, Service, Valve 368-604B, 14,WD
		4001891	Kit, Service, Valve 368-606B, 14,WD
		4001892	Kit, Service, Valve 368-604B, 33,WD
		4001893	Kit, Service, Valve 368-606B, 33,WD
		4001494	Kit, Service, Valve 368-604B, 14, NA
		4001495	Kit, Service, Valve 368-606B, 14, NA
		4001896	Kit, Service, Valve 368-604B, 33, NA
		4001897	Kit, Service, Valve 368-606B, 33, NA
A	1	4001260	12 Volt Motor/Optical Sensor Cable Assembly
B	1	1000269	Injector Cap Assembly
C	1		Injector/Screen Assemblies
		3026445	E Injector 6" Tank - Yellow
		3026446	F Injector 7" Tank - Peach
		3026447	G Injector 8" Tank - Tan
		3026448	H Injector 9" Tank - Lt Purple
		4000880	J Injector 10" Tank - Lt Blue
D	1		Refll Flow Control Assemblies
		1000221	Ass'y Refll Cont - 0.14 gpm
		1243510	Ass'y Refll Cont - 0.33 gpm (Required with 1030502)
		1030502	Ball, Brine-Backwash, 0.557"Dia. Required with 1243510)
E	1	3027837	Meter Cable
F	1		Valve Controller Assembly - 368
		4001617	368/604B Control - NA 0.33 gpm
		4001741	368/604B Control - World 0.33 gpm
		4001618	368/606B Control - NA 0.33 gpm
		4001742	368/606B Control - World 0.33 gpm
		4001739	368/604 Control - NA 0.14 gpm
		4001737	368/604 Control - World 0.14 gpm
		4001740	368/606 Control - NA 0.14 gpm
		4001738	368/606 Control - World 0.14 gpm
G	1	4001889	Valve O-ring Kit
2	1		AC Wall Mound Adapters
		1000812	Australian Wall Trans - 240V
		1000813	British Wall Trans - 240 V
		3031517	China Wall Trans - 240V
		1262524	Europe Cord Connect Trans - 240V
		1000814	Europe WallTrans - 240V
		1000810	Japan Wall Trans - 100V
		1000811	N. Amer Wall Trans - 120V
		1030418	N. Amer WallTrans - 230V
		3019151	N. Amer WallTrans - 120V E EFF
		1235448	N. Amer Outdoor Trans - 120V
3	1	3027839	Meter Assembly
4	1	3031825	Kit, O-ring Manifold
5	1	4000886	368 Bypass
6	1		Kit, Bypass Connectors (2 connectors)
		4001606	Kit, 3/4" BSP Connectors
		4001605	Kit, 3/4" NPT Connectors
		4000888	Kit, 1" NPT Connectors
		4001604	Kit, 1" BSP Connectors
7	1		Kit, Drain Line Flow Control Bypass - 368
		4001297	#6 EXT DLFC - Bypass - BSP
		4001298	#7 EXT DLFC - Bypass - BSP
		4001299	#8 EXT DLFC - Bypass - BSP
		4001300	#9 EXT DLFC - Bypass - BSP
		4001545	#10 EXT DLFC - Bypass - BSP
		4001284	#6 EXT DLFC - Bypass - NPT
		4001285	#7 EXT DLFC - Bypass - NPT
		4001028	#8 EXT DLFC - Bypass - NPT
		4001286	#9 EXT DLFC - Bypass - NPT
		4000887	#10 EXT DLFC - Bypass - NPT
8	1	4000871	Elbow 36X Valves, 3/8 tube x 3/8 NPT (only used with bypass)
9	1	4000996	Drainline 90° 1/2 NPT x 1/2 Hose Barb
10	1		Manifold Assembly - 368
		3031927	3/4" BSP Adapter - Gray
		4000968	3/4" NPT Manifold/Adapter
		4000970	3/4" BSP Adapter - Black
		4000969	3/4" NPT Adapter - Black
11	1		Kit, Drain Line Flow Control Manifold - 368 (only used with manifold)
		3031526	#6 EXT DLFC - Manifold - BSP
		3031527	#7 EXT DLFC - Manifold - BSP
		3031528	#8 EXT DLFC - Manifold - BSP
		3031529	#9 EXT DLFC - Manifold - BSP
		4001303	#6 EXT DLFC - Manifold - NPT
		4001307	#7 EXT DLFC - Manifold - NPT
		4001310	#8 EXT DLFC - Manifold - NPT
		4001313	#9 EXT DLFC - Manifold - NPT
		4000887	#10 EXT DLFC Bypass, NPT
12		4000390	Bypass Clip DLFC, 360 Valve

TROUBLESHOOTING

604-606 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.
	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. Motor Assembly, 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 #3 or #4 valve disc from closing.	Remove debris.
	Worn #3 or #4 valve disc.	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.	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.	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.

SERVICE ASSEMBLIES

Valve Body Assemblies:

4001890..... Kit, Service, Valve 368-604B, 14, World
4001891..... Kit, Service, Valve 368-606B, 14, World
4001892..... Kit, Service, Valve 368-604B, 33, World
4001893.....

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