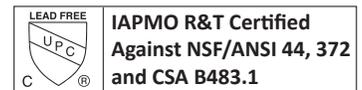


Service Manual



89UF/DF

Upflow & Downflow Softener Manual



This manual is intended to be supplemental to the 80155330 89UF DF Home Owners Manual and contains additional trouble shooting and programming information intended for the use of qualified service technicians only.

NOTICE: THIS MANUAL CONTAINS A LIMITED WARRANTY. BY INSTALLING AND OR USING THIS PRODUCT, YOU WAIVE CERTAIN LEGAL RIGHTS INCLUDING THE RIGHT TO SUE OR CLAIM COMPENSATION IN THE EVENT OF PROPERTY DAMAGE, INJURY, AND OR DEATH.

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SAFETY

Throughout this manual, certain conventions are used, including;

HAZARD SYMBOLS	
	For your own safety, please pay strict attention! Examples include: temperature, electrical, and water pressure, etc.
HAZARD SIGNALS	
	Indicates a hazardous situation that, if not avoided will result in death or serious injury, and/or property loss or damage.
	Indicates a hazardous situation that, if not avoided may result in death or serious injury, and/or property loss or damage.
	Indicates a hazardous situation that, if not avoided, could result in a minor or moderate injury, and/or property loss or damage
	Indicates important information, that if not followed may result in damage to equipment, or property loss.
WARRANTY EXCLUSIONS	
	Identify specific instructions that, if not followed, will void the warranty. The warranty provided gives you specific legal rights and otherwise limits your legal rights to the extent permitted by law. By installing and/or using this product, you are accepting these limits on your legal rights.
NOTES	
	Help you take full advantage of the system and are used to emphasize installation, operation, or maintenance information that is important but does not present a hazard.
MANDATORY SIGNS	
	Used to depict a specific behavior that MUST be followed to avoid the present hazard (problem).

Canature WaterGroup U.S.A. Inc. / Canature WaterGroup Canada Inc. ("Canature") has disclosed all known risks associated with the product within this manual but cannot disclose risks that are beyond its knowledge.

Original instructions. All information, illustrations, and specifications in this manual are based on the latest information available at the time of the publication.

The right is reserved to make changes at any time without notice.

HOW YOUR WATER SOFTENER WORKS

Water softeners remove problem minerals (calcium and manganese) causing hardness, from your water by exchanging them with harmless sodium ions in a process called ion exchange. Unlike calcium and magnesium, sodium does not form scaling. Sodium also does not interfere with the cleaning action of soaps. Resin beads charged with sodium ions release the sodium and exchange them with the hardness ions. The resin beads and the softener must be regenerated as these ions are exchanged and are used up.

Regeneration is accomplished by rinsing the resin with a saturated brine solution that removes the calcium and magnesium from the resin bead while replenishing the sodium. This is why the softener requires a brine tank and salt. The water softener will provide soft water for several days before needing to be regenerated when sized correctly for your application. Your system measures the amount of water used to determine when regeneration is required.

This softener is equipped with an internal automatic bypass which will allow for untreated water to bypass the unit during a regeneration so the home will not be without water during this period. Regeneration time is factory set for 2:00 a.m. to minimize the chance of untreated water getting into your system during regeneration. Please try to avoid use of water during this time period or adjust the regeneration time to a suitable time period when water use is at its minimum. Use of water during the regeneration time will result in hard untreated water being used.

FEATURES & TERMINOLOGY

Flow Rate

It will only display if treated water is running, otherwise, it will read zero (0).

Date and Time

The current date and time are always displayed.

Remaining Gallons

The total amount of soft water the system can produce before the next regeneration.

Capacity Gallons

Total capacity of system from last regeneration.

Variable Reserve Brining

The remaining amount of water will be added just prior to the regeneration and will be proportional to the amount of capacity left in the system. **Upflow units only.**

Manual Delayed Regeneration

Generally, used after servicing the valve so that it will regenerate at a standard pre-set time.

Adjustable Backwash

Using a clean municipal water supply, there is no need to backwash and clean the bed with every regeneration. The 89 valve saves a significant amount of water by skipping up to ten (10) backwash cycles.

Soft Water Brine Tank Refill

Conserves capacity and keeps the brine tank cleaner by adding only treated soft water to the brine tank rather than raw untreated hard water. **Upflow units only.**

Regen Time

Time of day that the softener is scheduled to regenerate.

Salt Reminder

A feature that will provide both a visual and audible alarm based on the salt consumption settings.

System Bypass

All systems come with a manual bypass valve which allows you to bypass the 89 valve. This allows raw untreated water to be used in your home for any reason, including system servicing.

Usage History & General Diagnostics

This can be accessed in the Advanced Programming in the Service Manual.

Total Regenerations

The total number of times the softener has regenerated.

Historical Total Gallons

Total gallons treated by the softener.

Hardness

This can be adjusted seasonally if needed. The installer usually sets this for the worst case scenario, where water hardness fluctuates..

Dealer Contact Information

Is displayed when available.



FLOW RATE INFORMATION

At the stated service flow rates, the pressure drop through these devices will not exceed 15 psig.

Peak flow rates are intended for intermittent use only (10 minutes or less) and are for residential applications only. Do not use peak flow rate for commercial applications or for a continuous rate when treated water supplies are geothermal heat pump, swimming pool, etc.

For satisfactory operation, the pumping rate of the well system must equal or exceed indicated backwash flow rate.

NOTE

See **Start-Up Instructions - Problem Water Injector Kit** if you have iron in your water and are installing an upflow water softener.

FEED WATER PARAMETERS

Maximum Iron** = 2.0 ppm ferrous (clear water iron)

Maximum Hydrogen Sulfide = 0.0 ppm

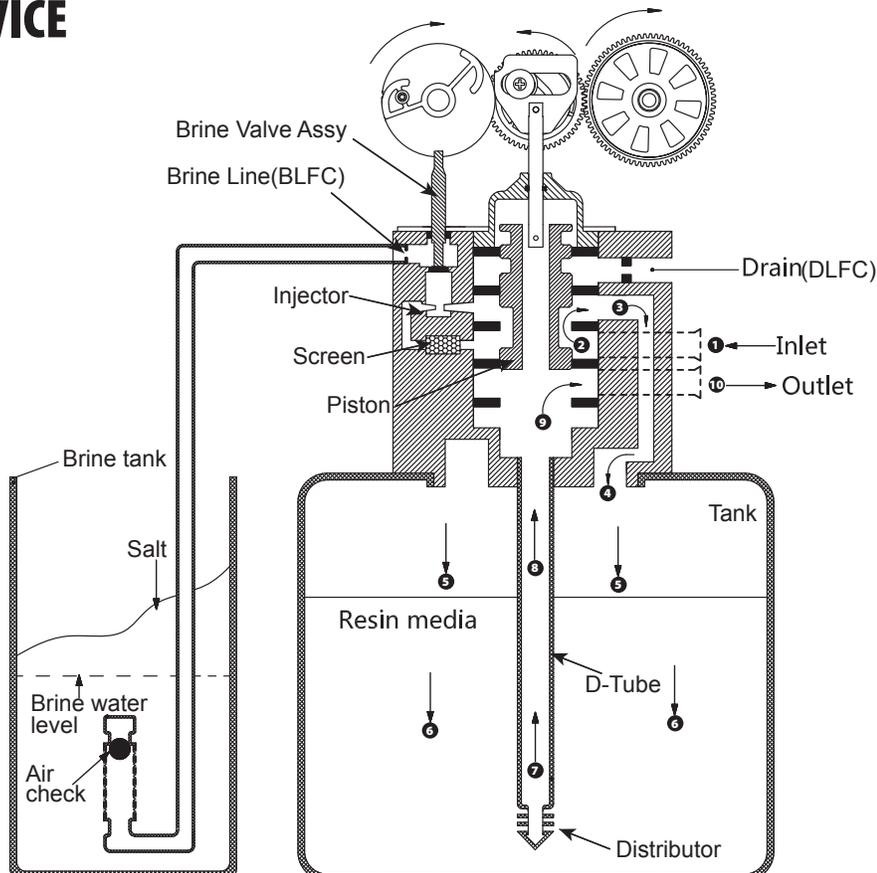
Maximum Manganese = .75 ppm

pH = 6.5 to 8.5 with no iron present or 6.5 to 7.5 with iron present

****See System Maintenance Section - Resin Cleaner**

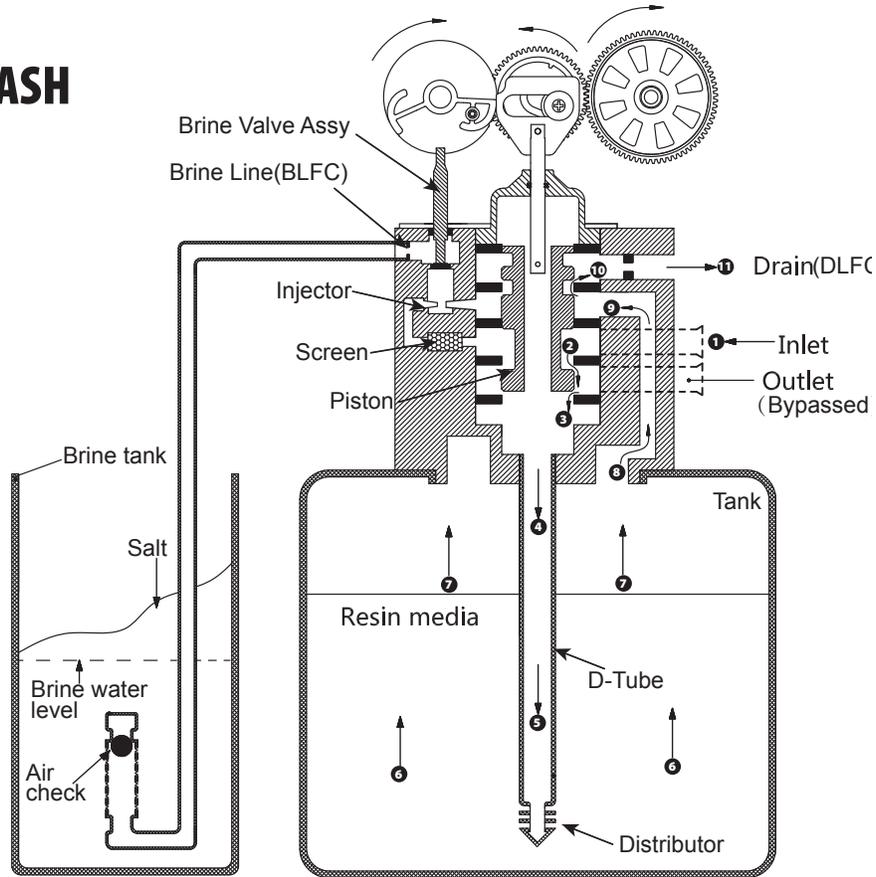
89 DOWNFLOW DIAGRAMS

89 DF: SERVICE

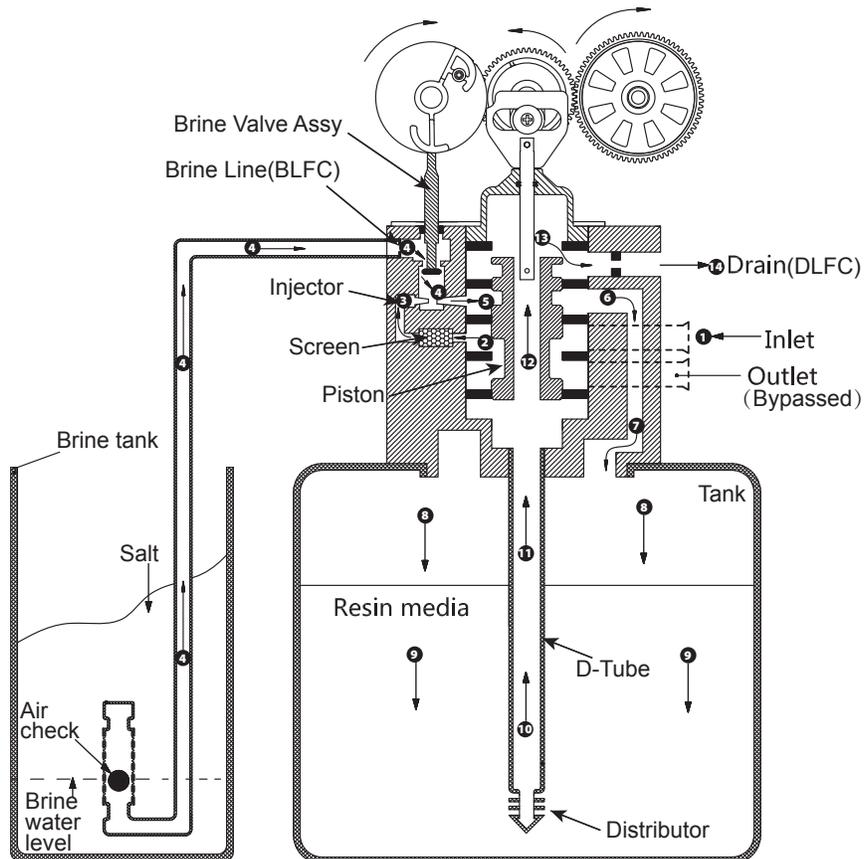


89 DOWNFLOW DIAGRAMS (CONTINUED)

89 DF: BACKWASH

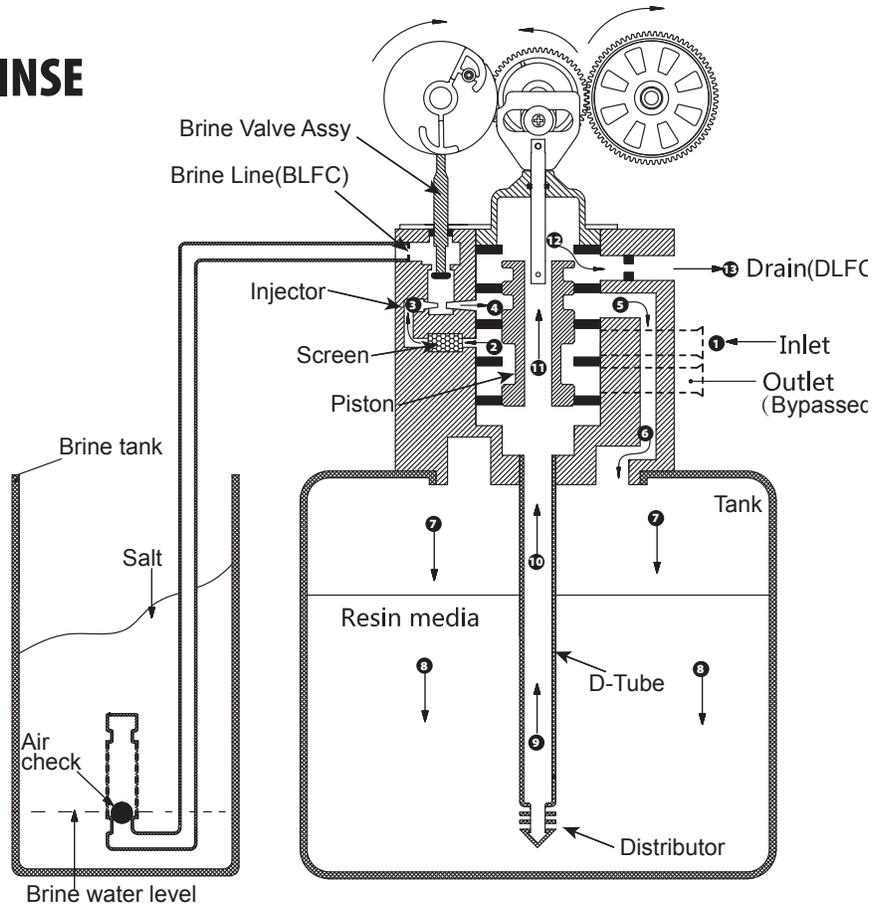


89 DF: BRINE

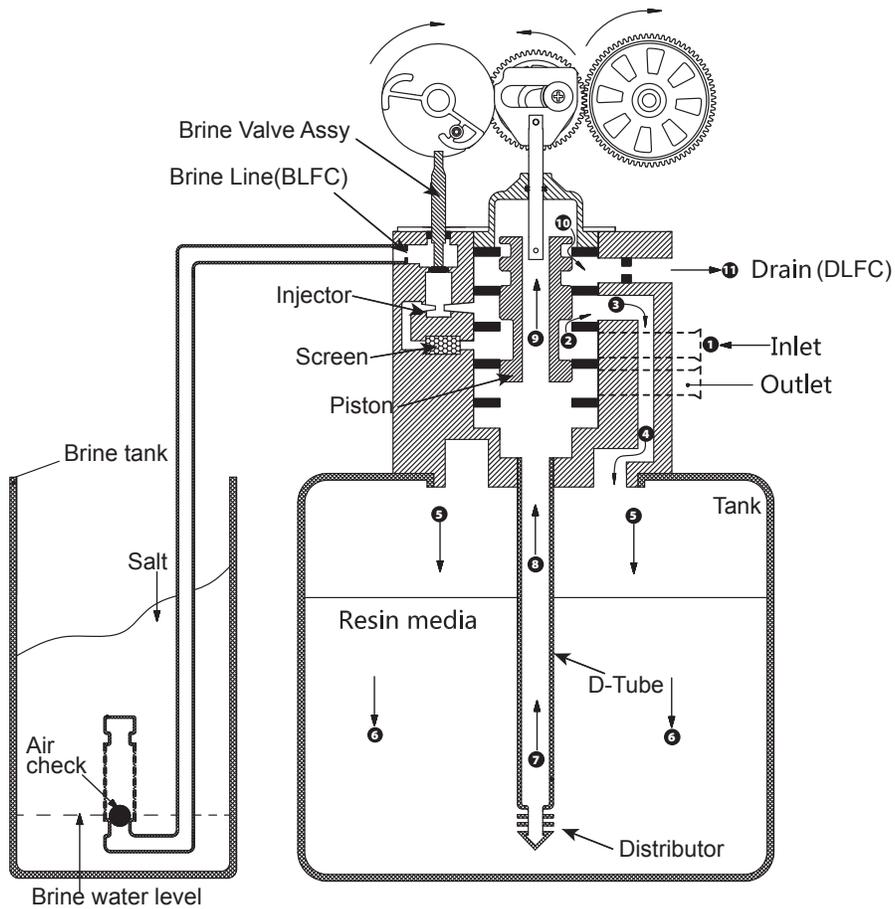


89 DOWNFLOW DIAGRAMS (CONTINUED)

89 DF: SLOW RINSE

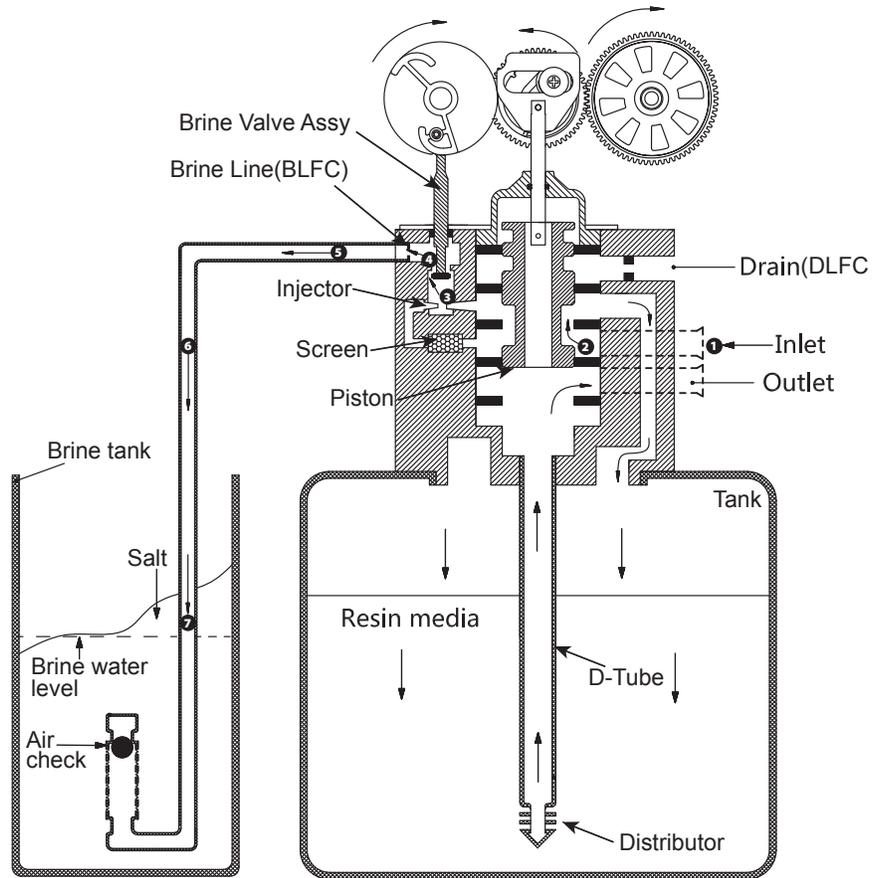


89 DF: RINSE



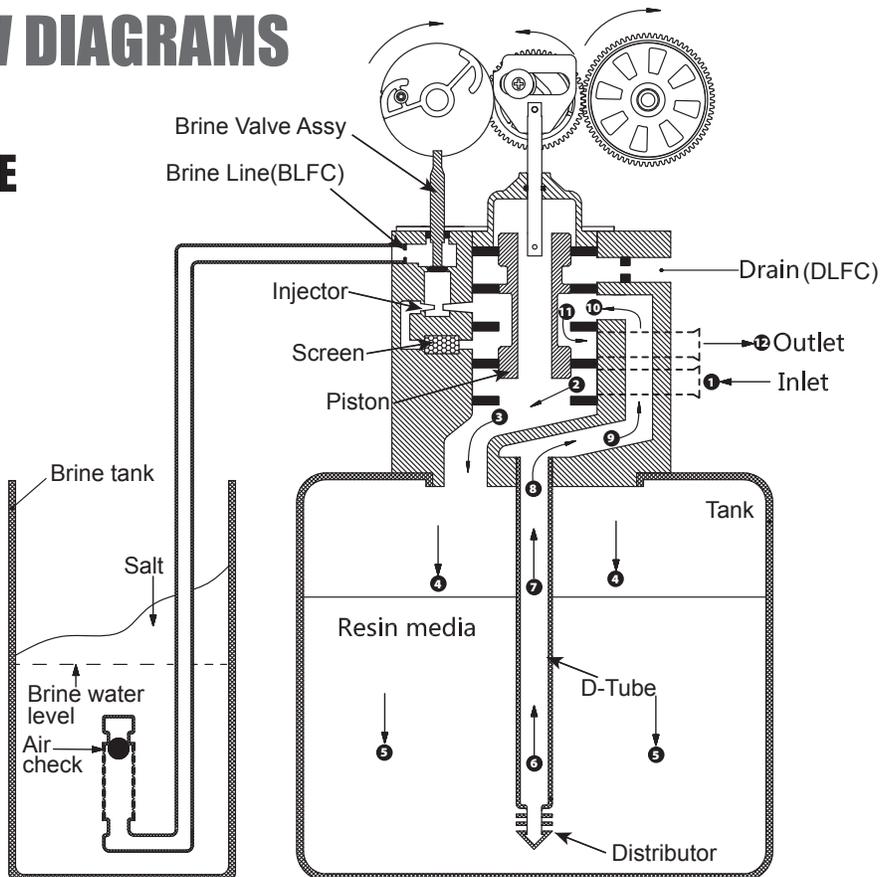
89 DOWNFLOW DIAGRAMS (CONTINUED)

89 DF: REFILL



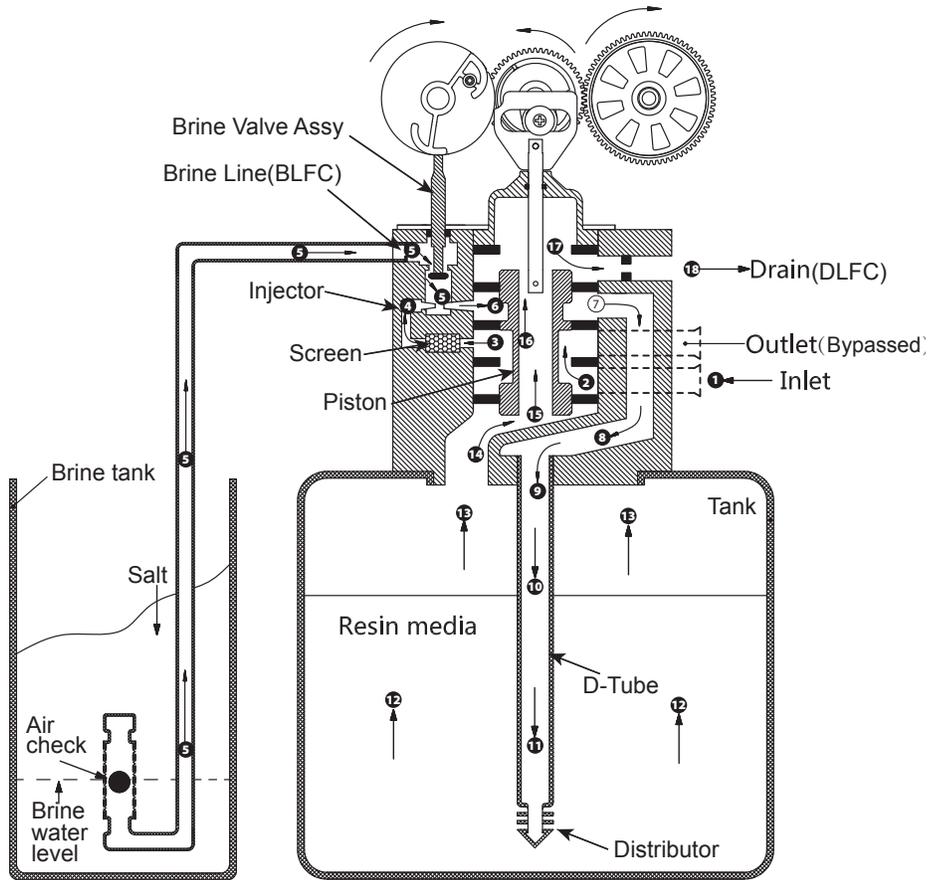
89 UPFLOW DIAGRAMS

89 UF: SERVICE

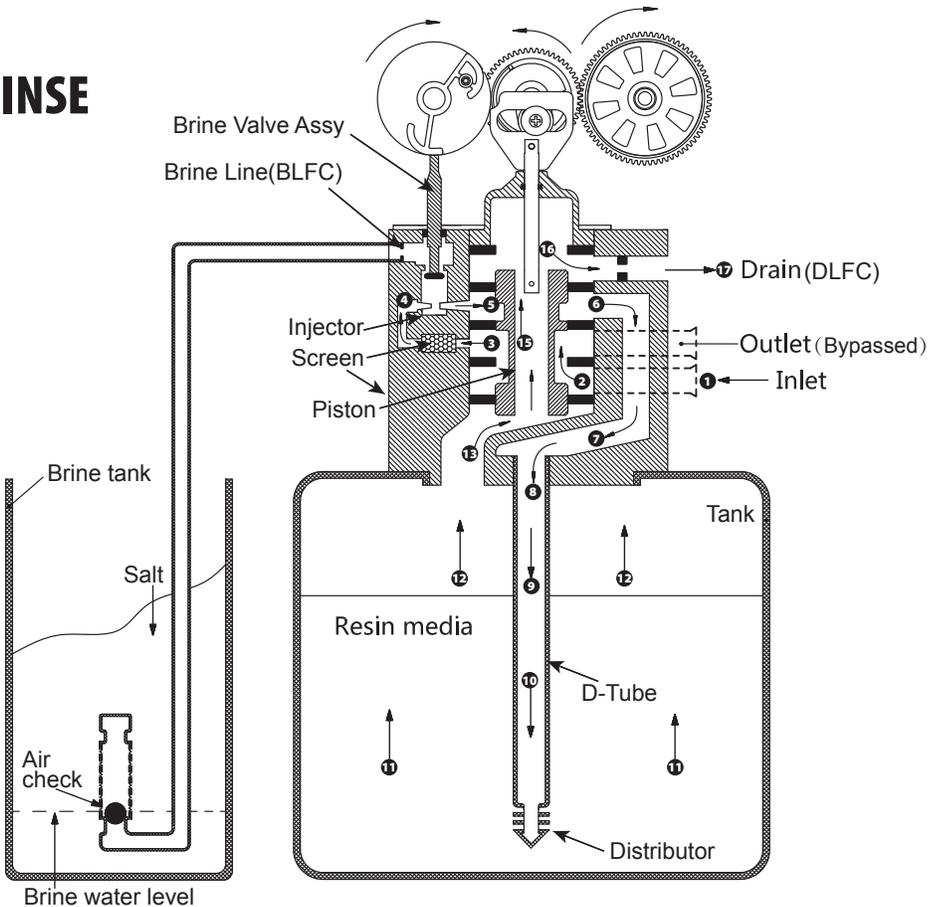


89 UPFLOW DIAGRAMS (CONTINUED)

89 UF: BRINE

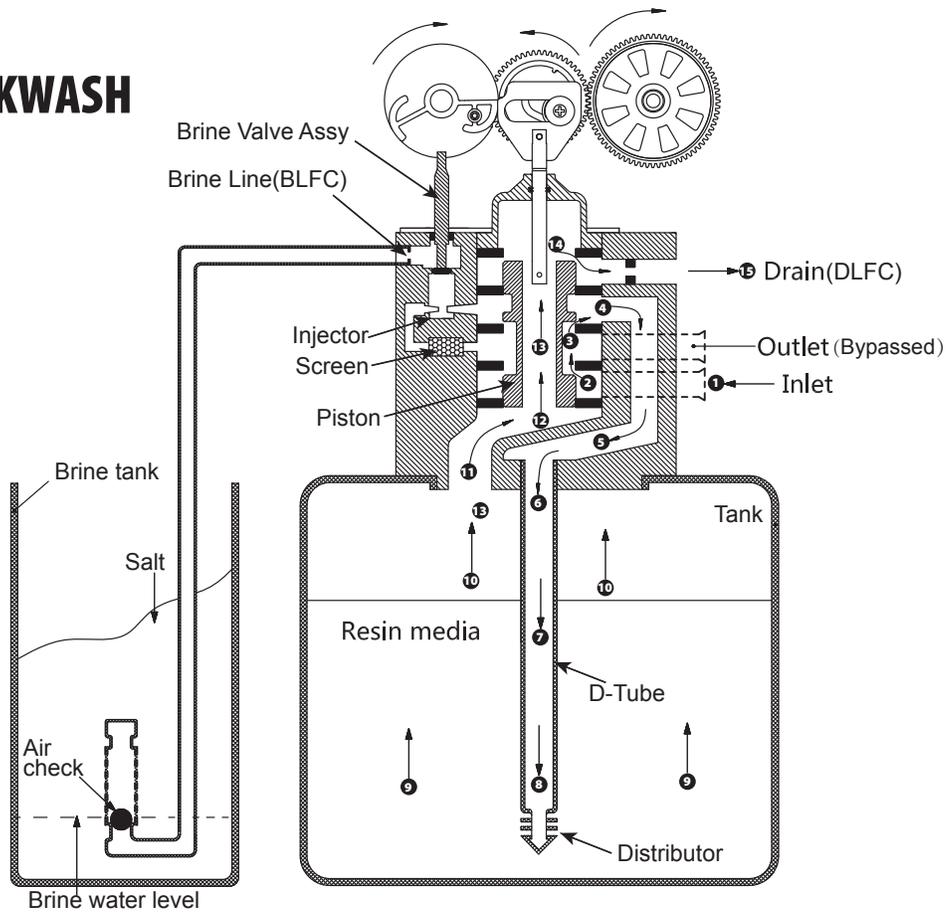


89 UF: SLOW RINSE

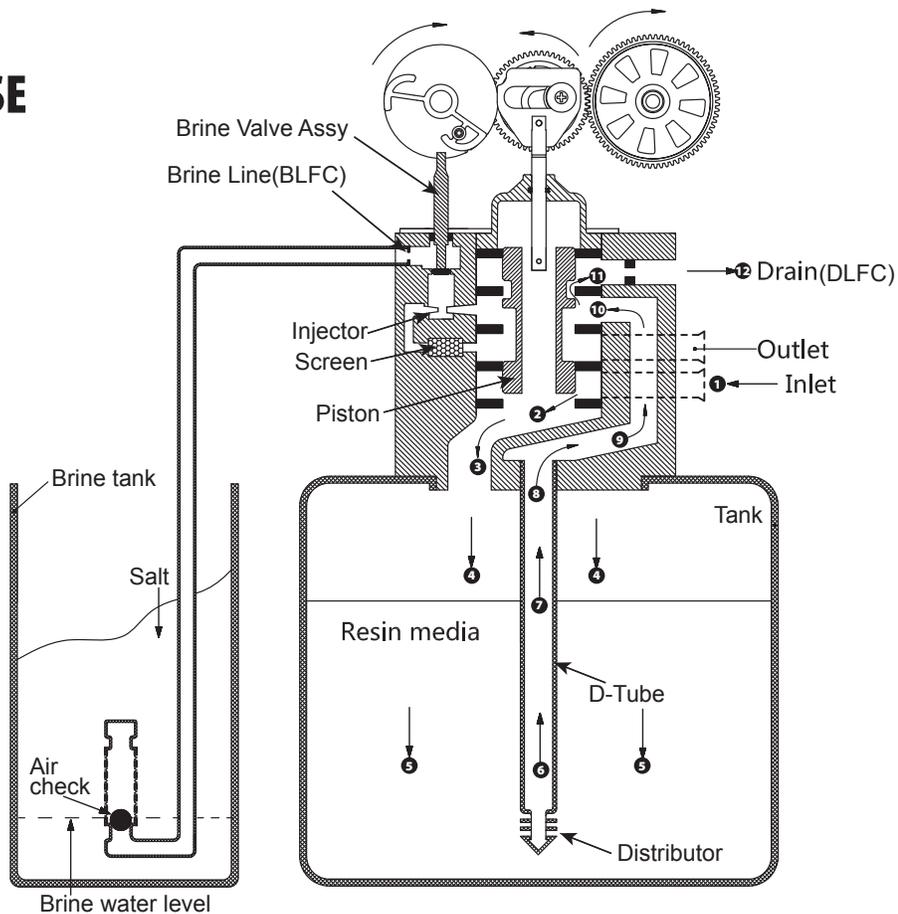


89 UPFLOW DIAGRAMS (CONTINUED)

89 UF: BACKWASH

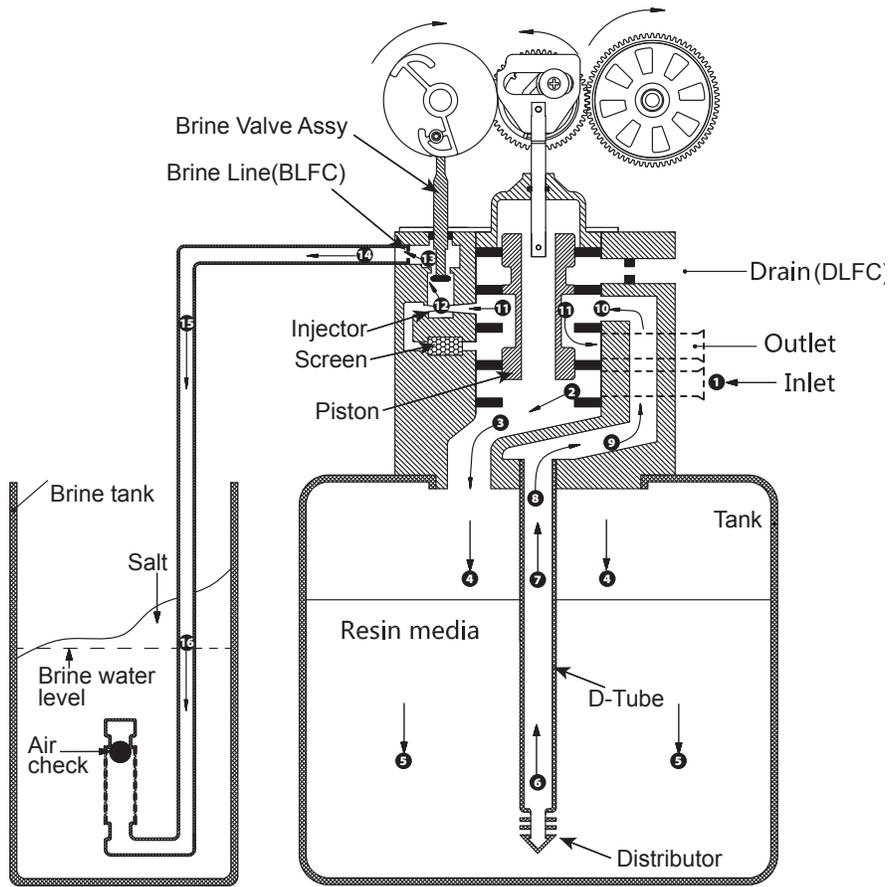


89 UF: RINSE



89 UPFLOW DIAGRAMS (CONTINUED)

89 UF: REFILL



TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE SOLUTIONS
1. CONDITIONER DELIVERS HARD WATER	
<ul style="list-style-type: none"> A. Bypass valve is open B. No salt in brine tank C. Injector or screen plugged D. Insufficient water flowing into brine tank E. Hot water tank hardness F. Leak at distributor tube G. Internal valve leak H. Flow meter jammed I. Flow meter cable disconnected or not plugged into meter cap J. Improper programming 	<ul style="list-style-type: none"> A. Close bypass valve B. Add salt to brine tank and maintain salt level above water level C. Replace injectors and screen D. Check brine tank fill time and clean brine line flow tank control if plugged E. Make sure distributor tube is not cracked. Check O ring and tube pilot F. Make sure distributor tube is not cracked. Check O ring and tube pilot G. Replace seals and spacers and/or piston H. Remove obstruction from flow meter I. Check meter cable connection to timer and meter cap J. Reprogram the control to the proper regeneration type, inlet water hardness, capacity or flow meter size.
2. CONDITIONER FAILS TO REGENERATE	
<ul style="list-style-type: none"> A. Electrical service to unit has been interrupted B. Timer is not operating properly C. Defective valve drive motor D. Improper programming 	<ul style="list-style-type: none"> A. Assure permanent electrical service (check fuse, plug, chain or switch) B. Replace timer C. Replace drive motor D. Check programming and reset as needed
3. UNIT USES TOO MUCH SALT	
<ul style="list-style-type: none"> A. Improper salt setting B. Excessive water in brine tank C. Improper programming 	<ul style="list-style-type: none"> A. Check salt usage and salt setting B. See #7 C. Check programming and reset as needed
4. LOSS OF WATER PRESSURE	
<ul style="list-style-type: none"> A. Iron build-up in line to water conditioner B. Iron build-up in water conditioner C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system. 	<ul style="list-style-type: none"> A. Clean line to water conditioner B. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration C. Remove piston and clean control
5. LOSS OF RESIN THROUGH DRAIN LINE	
<ul style="list-style-type: none"> A. Air in water system B. Drain line flow control is too large 	<ul style="list-style-type: none"> A. Assure that well system has proper air eliminator control. Check for dry well condition. B. Ensure drain line flow control is sized
6. IRON IN CONDITIONED WATER	
<ul style="list-style-type: none"> A. Fouled resin bed B. Iron content exceeds recommended parameters 	<ul style="list-style-type: none"> A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time. B. Add iron removal filter system
7. EXCESSIVE WATER IN BRINE TANK	
<ul style="list-style-type: none"> A. Plugged drain line flow control B. Brine valve failure C. Improper programming 	<ul style="list-style-type: none"> A. Clean flow control B. Replace brine valve C. Check programming and reset as needed

TROUBLE SHOOTING GUIDE (CONTINUED)

PROBLEM	POSSIBLE SOLUTIONS
8. SALT WATER IN SERVICE LINE	
<ul style="list-style-type: none"> A. Plugged injector system B. Timer not operating properly C. Foreign material in brine valve D. Foreign material in brine line flow control E. Low water pressure F. Improper programming 	<ul style="list-style-type: none"> A. Clean injector and replace screen B. Replace timer C. Clean or replace brine valve D. Clean brine line flow control E. Raise water pressure F. Check programming and reset as needed
9. CONDITIONER FAILS TO DRAW BRINE	
<ul style="list-style-type: none"> A. Drain line flow control is plugged B. Injector is plugged C. Injector screen is plugged D. Line pressure is too low E. Internal control leak F. Improper programming G. Timer not operating properly 	<ul style="list-style-type: none"> A. Clean drain line flow control B. Clean or replace injectors C. Replace screen D. Increase line pressure (line pressure must be at least 20 psi at all times) E. Change seals and spacers and/or piston assembly F. Check programming and reset as needed G. Replace timer
10. CONTROL CYCLES CONTINUOUSLY	
<ul style="list-style-type: none"> A. Timer not operating properly B. Faulty microswitches and/or harness C. Faulty cycle cam operation 	<ul style="list-style-type: none"> A. Replace timer B. Replace faulty microswitch or harness C. Replace cycle cam or reinstall
11. DRAIN FLOWS CONTINUOUSLY	
<ul style="list-style-type: none"> A. Foreign material in control B. Internal control leak C. Control valve jammed in brine or backwash position D. Timer motor stopped or jammed teeth E. Timer not operating properly 	<ul style="list-style-type: none"> A. Remove piston assembly and inspect bore. Remove foreign material and check control in various regeneration positions B. Replace seals and/or piston assembly C. Replace piston and seals and spacers D. Replace timer motor and check all gears for missing teeth E. Replace timer
12. (ERROR CODE) (ERROR E1) - ELECTRICAL TROUBLE SHOOTING:	
<p>Issue1: When the controller is plugged, the buzzer beeps and the screen displays "System Error E1"</p> <p>Cause: The wire of micro switch is not plugged or loose.</p>	<p>Check the micro switch and connect the wire well.</p>
13. (ERROR CODE) (ERROR E1) - ELECTRICAL TROUBLE SHOOTING:	
<p>Issue2: The buzzer beeps and the screen displays "System Maintaining E1"</p> <p>Cause: The wire of micro switch is not plugged or loose.</p>	<p>Check the micro switch and connect the wire.</p>
14. (ERROR CODE) (ERROR E2) - ELECTRICAL TROUBLE SHOOTING:	
<p>Issue: The buzzer beeps and the screen displays "System Error E2"</p> <p>Cause: The motor can not find its right position, micro switch or motor malfunction, automatic circuit protection action.</p>	<p>Check the current of micro switch and motor.</p>
15. (ERROR CODE) (ERROR E2) - ELECTRICAL TROUBLE SHOOTING:	
<p>Issue 2: The buzzer beeps and the screen displayed " System Maintaining E2"</p> <p>Cause: The motor can not find its right position.</p>	<p>Replace Motor or PCB.</p>

TROUBLE SHOOTING GUIDE (CONTINUED)

Problem	Possible Solutions
LEVEL 2 – recommended for qualified service technician only	
Not drawing brine solution	<p>Injectors or injector screen plugged. Clean and or replace injectors and screen - See Replacement/Service Section</p> <p>Drain line flow control plugged or drain line restricted - See Replacement/Service Section</p> <p>Safety float assembly seating prematurely – clean or replace safety float and clean brine tank - See Parts Section</p> <p>Loose connections between control valve and safety float allowing unit to draw air - See Replacement/Service Section</p>
No water in salt tank	<p>Loose connections between control valve and safety float allowing unit to draw air - See Replacement/Service Section</p> <p>Refill time not set correctly for unit size; water not coming above the grid plate.</p> <p>Refill control button plugged causing no refill – clean and or replace refill control button.</p> <p>Check size of BLFC noted on silver label of valve and be sure valve is programmed to correspond to the correct size used.</p>
Problem	Possible Solutions
** Not regenerating automatically Alarms **	<p>Jammed piston - replace piston and seal assembly - See Replacement/Service Section</p> <p>Defective or damaged circuit - replace circuit See Replacement/Service Section</p> <p>Drive motor defective replace motor - See Replacement/Service Section</p>
Conditioner initiates regeneration but alarms after a few seconds	<p>Drive motor defective replace motor - See Replacement/Service Section</p> <p>Defective transformer replace transformer.</p>
Internal valve leak - Running to the drain constantly	Replace piston and seal assemblies - See Replacement/Service Section
Not drawing brine no problem with injectors or drain	Replace piston and seal assemblies - See Replacement/Service Section
**Meter not counting down **	<p>Check diagnostics for last regeneration .</p> <p>Check that meter cable is plugged into the meter assembly - See Replacement/Service Section</p> <p>Check that meter cable is reading the meter by moving a fridge magnet (or similar magnet) across it rapidly for a few seconds you should be able to see the gallons change.</p> <p>Be sure there is no debris caught in the turbine</p> <p>If the meter cable is good, and no debris caught then replace the meter assembly - See Replacement/Service Section</p>
Leaking past distributor tube	Contact Technical services for additional trouble shooting information: 877-288-9888
Excessive pressure loss	<p>Check unit specifications - peak or continuous service flow rates may be exceeding capacity causing the unit to be restrictive due to size - See product specific information on warranty sheets supplied with the unit. Contact Customer Service for clarification if this is suspected – 877-288-9888.</p> <p>Upper distributor cone plugged with foreign material – remove valve, remove upper distributor cone and clean then replace and put valve back on unit.</p> <p>Chlorine degradation of resin – excessive amounts of chlorine or chloramine can damage softening resin and break it down causing excessive pressure loss – replace media bed and add in chlorine removal system to protect softener.</p>

SANITIZATION PROCEDURE

Care is taken at the factory to keep your water conditioner clean and sanitary. Materials used to make the conditioner will not infect or contaminate your water supply, and will not cause bacteria to form or grow. However, during shipping, storage, installing, and operating, bacteria could get into the conditioner. For this reason, sanitizing is suggested when completing installation.

TO SANITIZE:

1. Be sure to complete all installation steps, including programming before sanitizing.
2. For effective and complete sanitization, Sani-System Liquid Sanitizer Concentrate is recommended. Pour one packet into the brine well located in the cabinet or brine tank. Alternatively use 3/4 fl oz [22 ml] of common household bleach.
3. Start an immediate regeneration.
4. The solution in the brine well is drawn into and through the water conditioner to sanitize itself. This sanitizing regeneration takes two (2) hours. Then, treated water is available for your use.

Sanitizing is recommended by the Water Quality Association for disinfecting. Quarterly sanitizing is suggested for low-quality water supplies.

Sani-System Liquid Sanitizer Concentrate



**Item 50032 Pack of 24
conditioner sanitizer. 2.5 fl oz [7.4 ml]**

SYSTEM MAINTENANCE



Maintenance of your new water softener requires very little time or effort but is essential. Regular maintenance will ensure many years of efficient and trouble-free operation. Check with your local dealer about setting up a regular maintenance plan. Failure to follow maintenance instructions and schedule will result in the unit failing to operate properly and void your warranty.

CARE OF YOUR SOFTENER

To retain the attractive appearance of your new water softener, occasionally clean it with a mild soap solution. Do NOT use abrasive cleaners, ammonia, or solvents.

SERVICE SCHEDULE

- The seals and spacers along with the piston assembly should be inspected/cleaned or replaced annually or as required depending on the inlet water quality and water usage. See Inspection and Replacement of Piston Assembly and Seal and Spacer Kit.
- The injectors should be cleaned/inspected or replaced annually or as required depending on the water quality and use. See Clean Injector Assembly.
- Your inlet water quality and water consumption will determine how often the media should be replenished or replaced. Check with your water treatment expert for the media bed change frequency.
- Maintenance materials – Please see Common Spare Parts.

AUTOMATIC RESIN CLEANER SOLUTION FEEDER INSTALLATION INSTRUCTIONS (OPTIONAL)

RESIN CLEANER

An approved resin cleaner MUST be used on a monthly basis if your water supply contains iron. The amount of resin cleaner and frequency of use is determined by the quantity of iron in your water. Consult your dealer and follow the directions on the resin cleaner package.



Item #	Description
45127	Rust Out - 5 lb. Bottle
45128	Rust Out - 50 lb Pail (USA only)

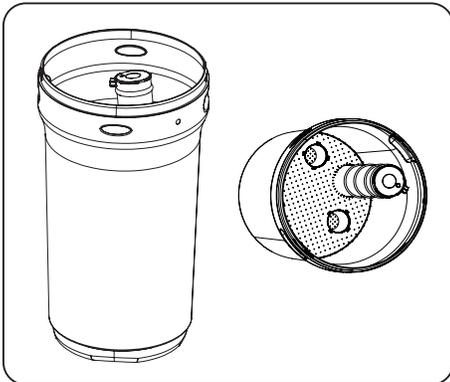


Item #	Description
45147	ResCare - 1 gal. (128 oz) Bottle
80030022	ResCare - 64 oz Bottle (Easy Feeder Refill)

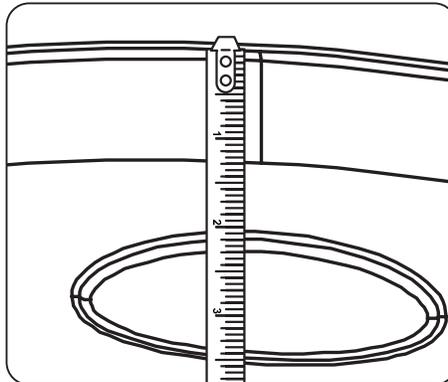


Item #	Description
55030010	Easy Feeder Starter Kit 1 oz & ½ oz wick with 64 oz of Rescare

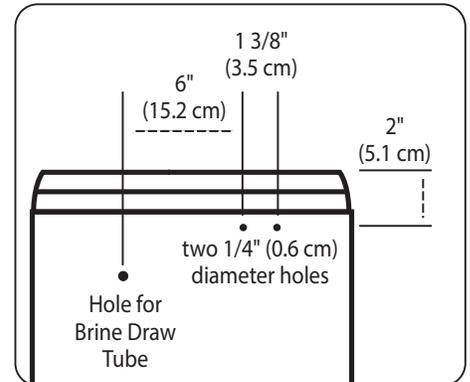
Easy Feeder® Starter Kit Installation Instructions



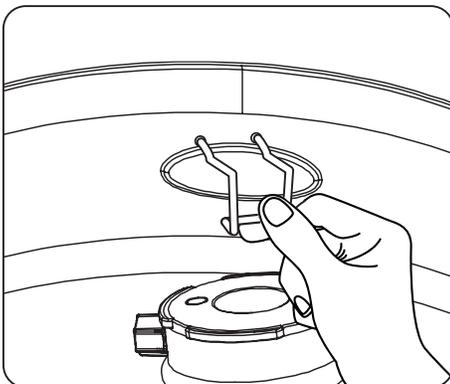
1. Install the grid and brine well inside the round tank.



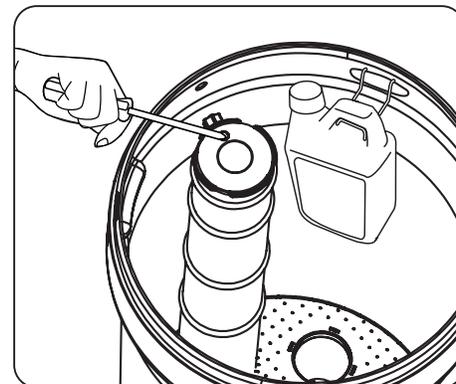
2. Measure 2 inches from the top of the tank beside the oblong molding.



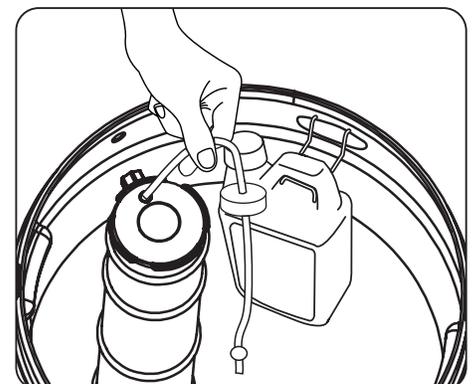
3. Mark the location of the 3 required holes.



4. Install the holder and the Res Care Solution



5. Take off the small hole cover on the Brine Well lid.



6. Take off the cover of the Res Care bottle. Insert the wick, making sure it touches the bottom of the bottle. Insert the other end of the tube completely into the hole in the brine well cap. Automatic feeding will start in a few hours.

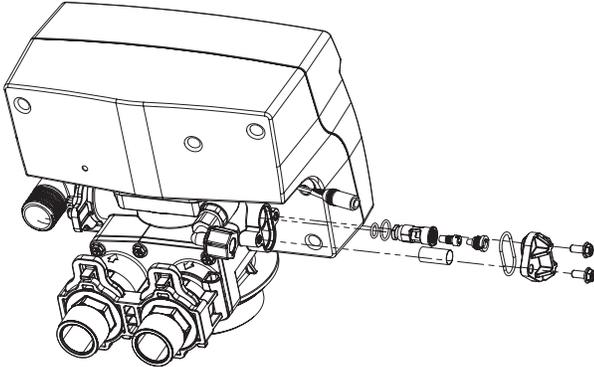
NOTE

Remove appropriate wick assembly from box and submerge in water until wick is completely saturated (Soak minimum of 2 minutes).

PROBLEM WATER INJECTOR KIT

IMPORTANT!: If the water source this water softener is being applied on is not municipal water and contains up to 1.5 mg/l/ppm of ferrous (Clear Water) iron and/or up to .75 mg/l/ppm of manganese, the enclosed **Problem Water Injector Kit** needs to be installed into the control valve following these instructions. You will need to make **3 programming changes**. In the main user settings: **1.** Salt Mode Setting change to High Capacity Mode. **2.** Salt vs Efficiency setting capacity requires additional adjustments see instructions below. **FAILURE TO DO THIS WILL RESULT IN UNSATISFACTORY OPERATION OF THIS EQUIPMENT AND VOID ANY IMPLIED PERFORMANCE WARRANTY.**

89UF Valve



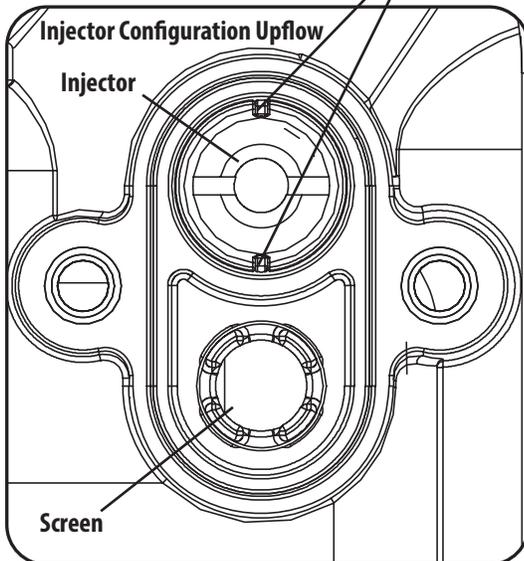
Replace injectors with correct number and color corresponding to your equipment size.

***NOTE:** Remember to properly lubricate ALL O Rings with Silicone Lubricant - supplied.

Size CF	Color
1.0	#1 WHITE
1.5	#1 WHITE
2.0	#2 BLUE

IMPORTANT

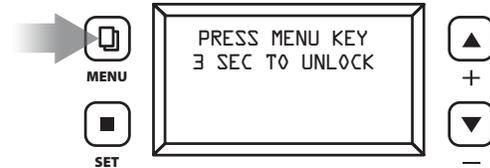
The injector cage must be lined up and inserted properly to avoid crushing when the injector cap is re-installed. Markings on the cage and valve body must line up.



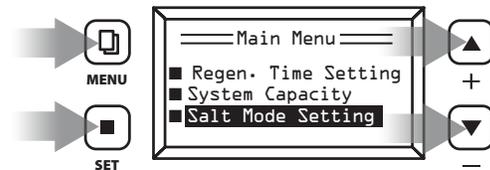
CAUTION!
DO NOT over tighten injectors. Snug tight only.

Programming Change Required

Change the Salt Mode Setting in the second level programming from 2,500 grains per pound of salt to 2,100 grains per pound of salt.



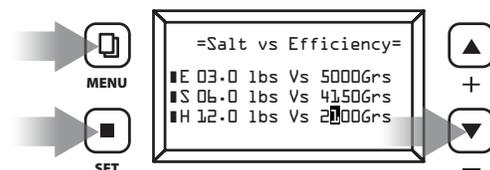
1. The display will read **PRESS MENU KEY 3 SEC TO UNLOCK**.
2. After 3 seconds, the display will beep confirming unlock.



3. Press **PRESS MENU KEY** and arrow down to **Main Menu**
4. Arrow down to **Salt Mode Setting**
5. Choose High Capacity Mode. Press **SET** to confirm



6. Press & hold **UP & DOWN** arrows
7. Press **DOWN** arrow to **Salt vs Efficiency** and press **SET**



8. Press **SET** to go to **Line H** to change **Grains**. Press **DOWN** arrow to change 2500 to 2100. Press **SET** until setting is complete. Press **MENU** to exit.

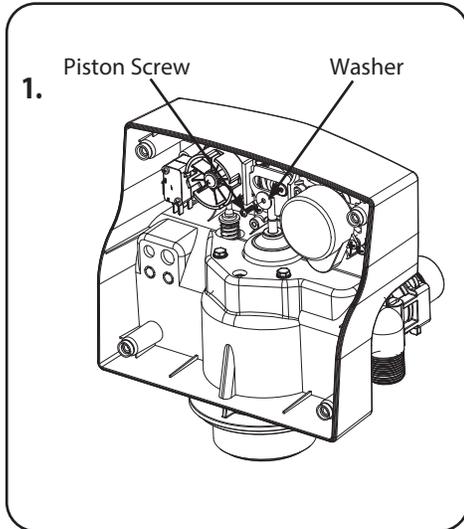
IMPORTANT

This change is necessary to compensate for the injector conversion

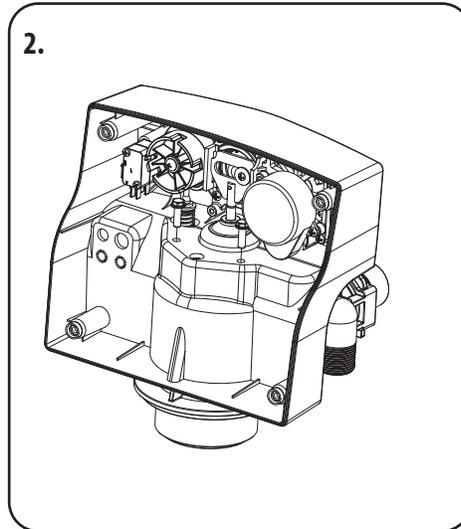
REPLACEMENT/SERVICE

THE FOLLOWING 'REPLACEMENT / SERVICE SECTION', PAGES CONTAIN CONTENT THAT SHOULD ONLY BE USED BY A QUALIFIED SERVICE TECHNICIAN:

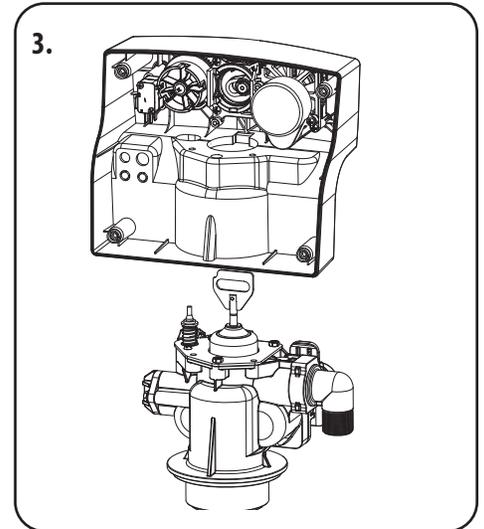
TIMER REMOVAL



1. Remove screw & washer from piston rod link.

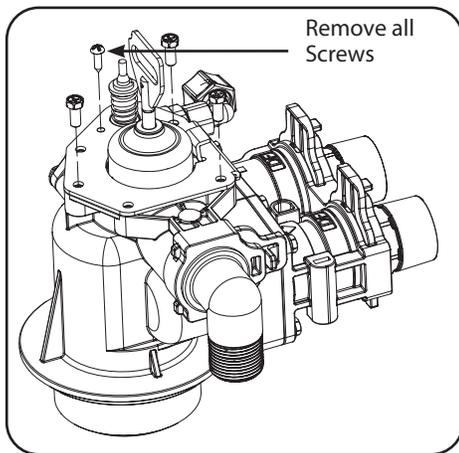


2. Remove two (2) bolts securing powerhead to body.



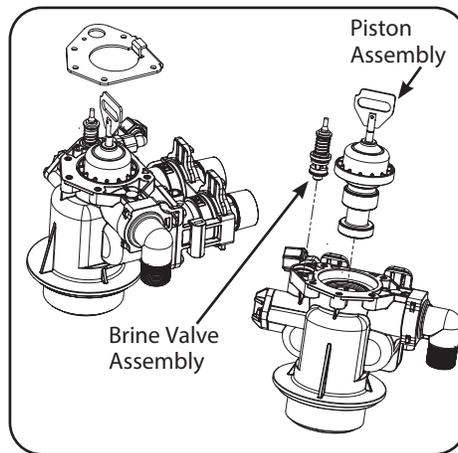
3. Remove powerhead from body.

INSPECTION AND REPLACEMENT OF PISTON ASSEMBLY AND SEAL AND SPACER KIT



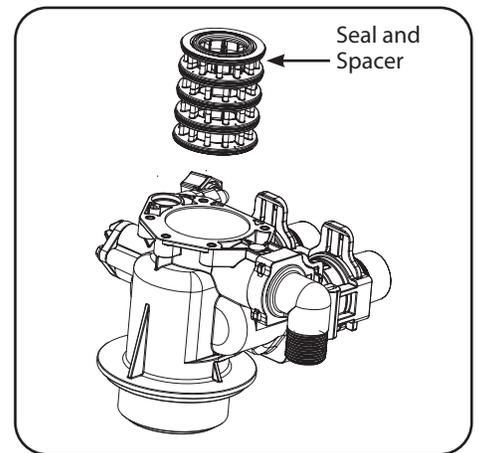
1. Follow steps 1 to 3 of Powerhead Removal above.

2. Remove four (4) screws from the plate on the valve body.



3. Remove the plate from the valve body and pull the piston assembly from the valve. The brine valve assembly can also be removed in this stage.

4. If only lubricating, remove the piston assembly, grease it with silicone lubricant (Part #92360) and put back in.



5. Replace seal and spacer set as shown. Place spacer in then a seal and repeat until finishing with a seal.

6. Lubricate the piston assembly with silicone lubricant (Part #92360) and then replace the Piston Assembly.

NOTICE

Do NOT use petroleum-based grease products during replacement and assembly.

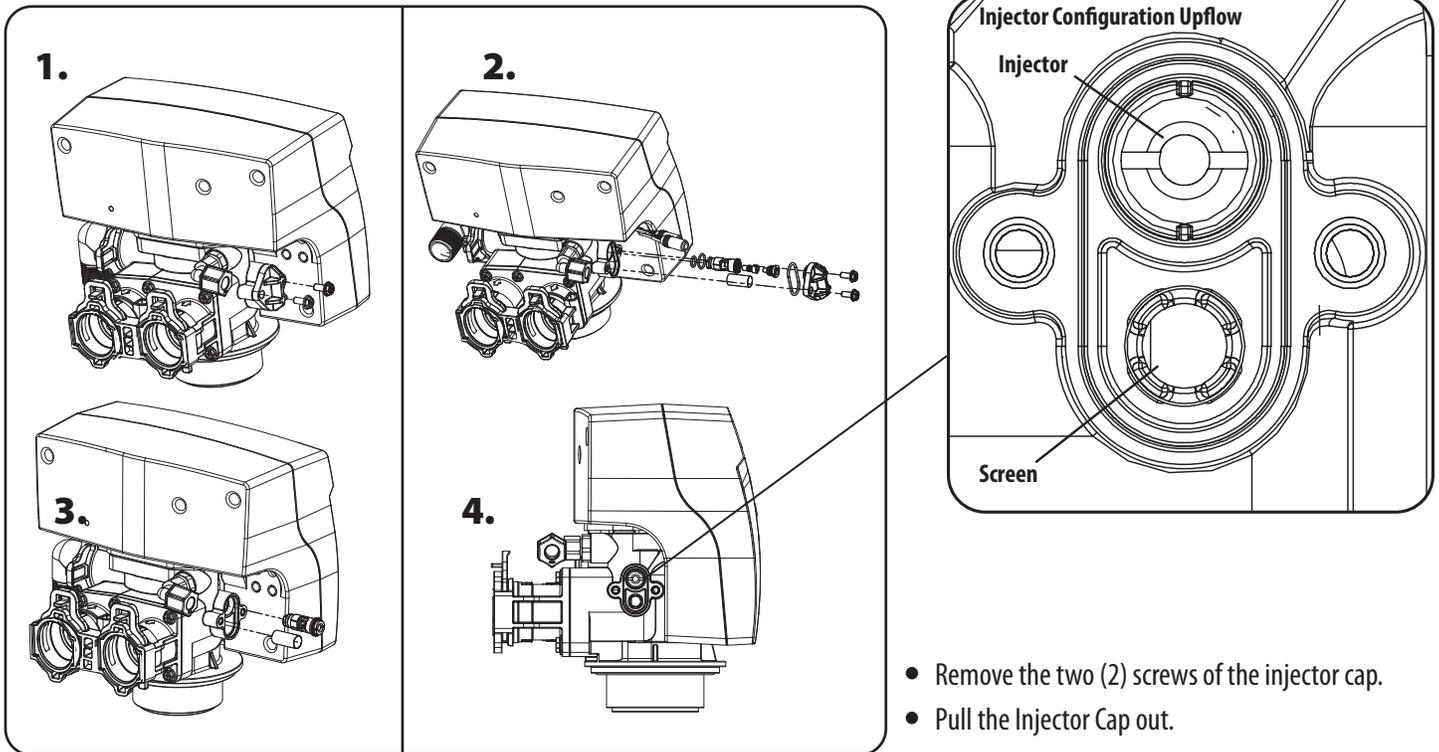
REPLACEMENT/SERVICE (CONTINUED)

CLEAN INJECTOR ASSEMBLY

Sediment, salt, and silt will restrict or clog the injector. A clean water supply and pure salt will prevent this from happening. The injector assembly is located on the right side of the control valve when facing your softener.

The assembly is easy to clean, start by:

1. Shut the water supply to your softener OFF.
2. Reduce the pressure by opening a cold-treated tap.
3. Using a screwdriver, remove the two (2) screws holding the injector cover to the control valve body.
4. Carefully, remove the cover, and disassemble as shown below.
5. The injector orifice is removed from the valve body by carefully turning it out with a screwdriver.
6. Remove the injector throat the same way.
7. Carefully flush all parts including the screen.
8. Use a mild acid such as vinegar or Pro Rust Out to clean the small holes in the orifice and throat.
9. Reassemble by reversing the procedure.

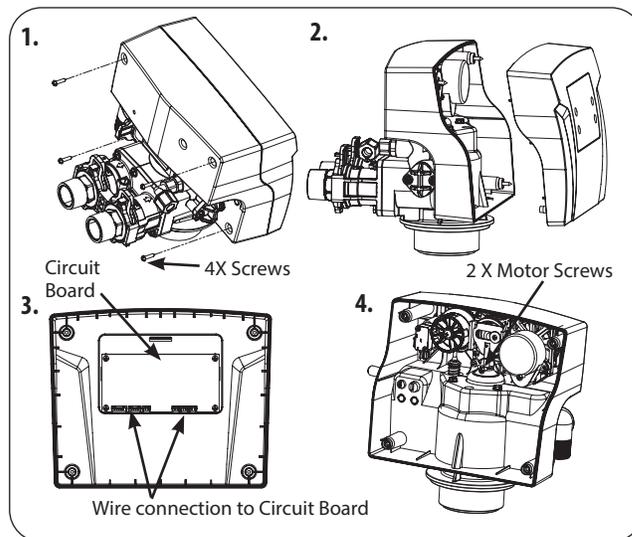


- Remove the two (2) screws of the injector cap.
- Pull the Injector Cap out.
- Remove the Injector Assembly, O-ring, and screen.
- Clean the injectors and replace the cap.
- Be sure to replace the O-rings when reassembling and lubricate with approved 100% silicone-based lubricant. Order part #92360.
- During final assembly be sure the injector is seated correctly as shown in figure above.

REPLACEMENT/SERVICE (CONTINUED)

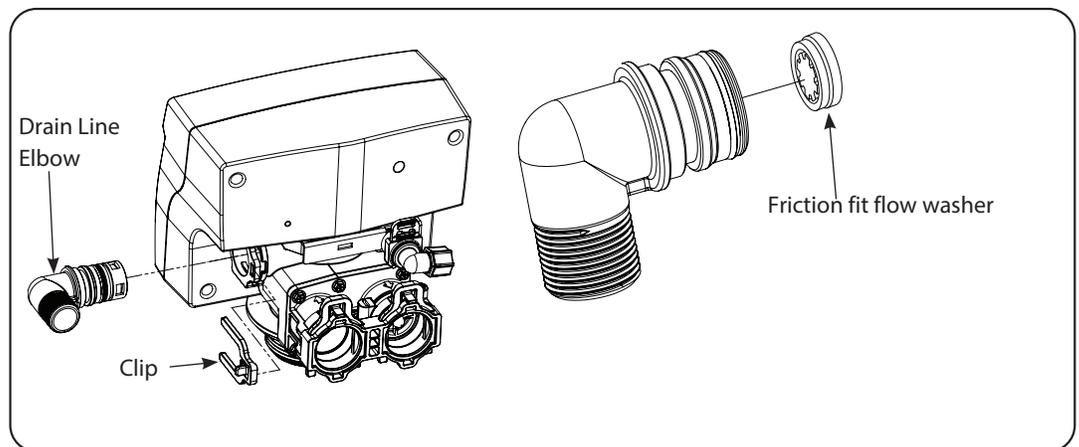
REPLACE MOTOR

1. Remove Screws from the back of the valve and pull the cover
2. Remove all connections from the circuit board
3. Remove the two screws from the motor. Remove the motor and watch for the pin under the motor.
4. Replace the motor, connections and cover



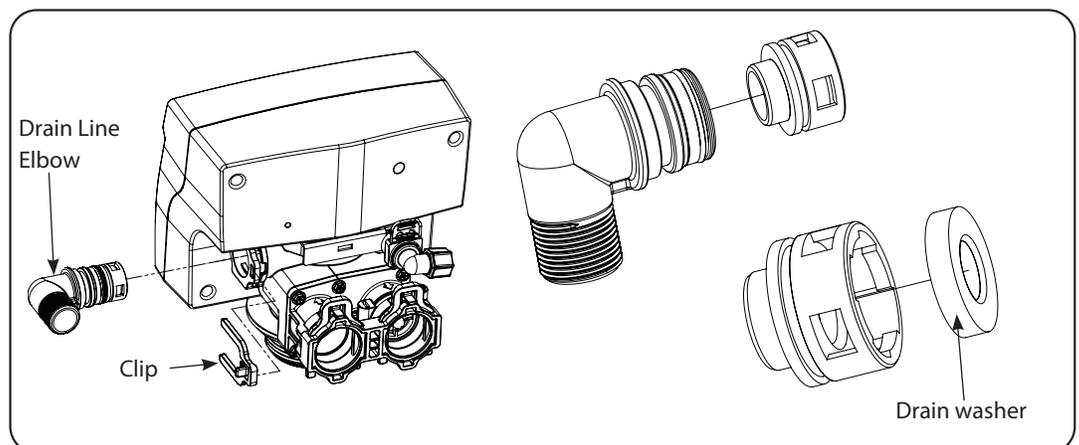
REPLACE FRICTION FIT DRAIN LINE FLOW CONTROL

1. Pull the drain line clip and remove the drain line elbow and washer
2. Clean/replace drain line washer



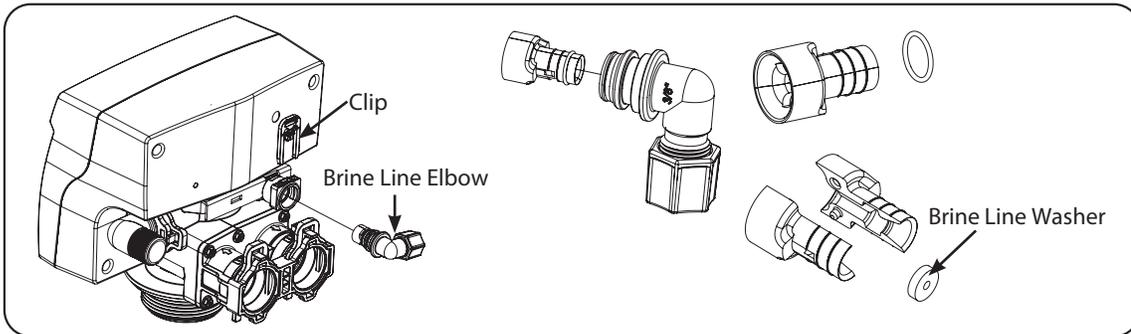
REPLACE DRAIN LINE FLOW CONTROL

1. Pull the drain line clip and remove the drain line elbow and washer
2. Clean/replace drain line washer



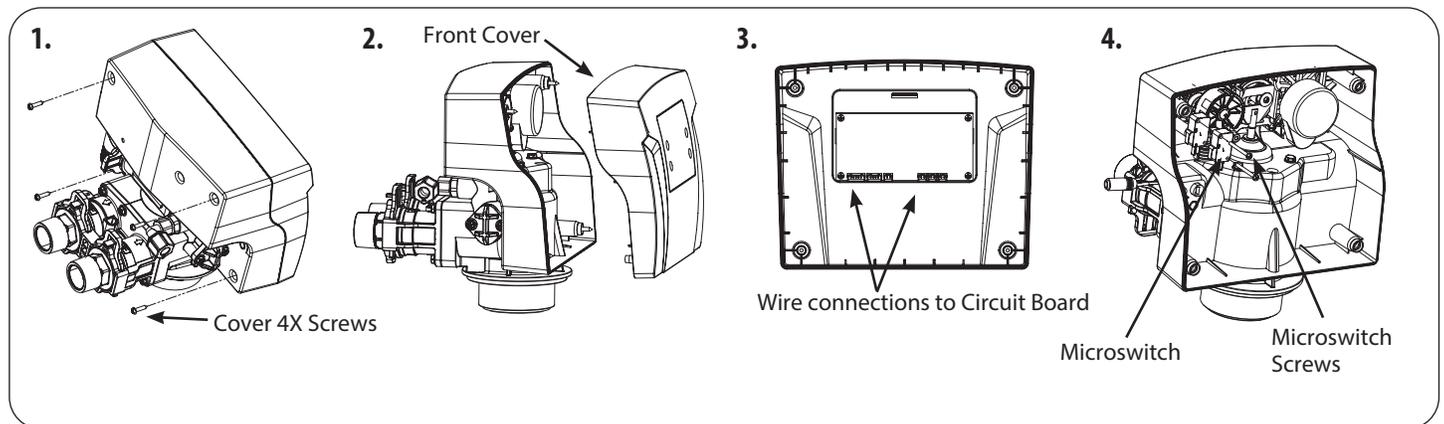
REPLACEMENT/SERVICE (CONTINUED)

REPLACE BRINE LINE FLOW CONTROL



1. Pull the brine line clip and remove the brineline elbow and washer
2. Clean/replace brine line washer

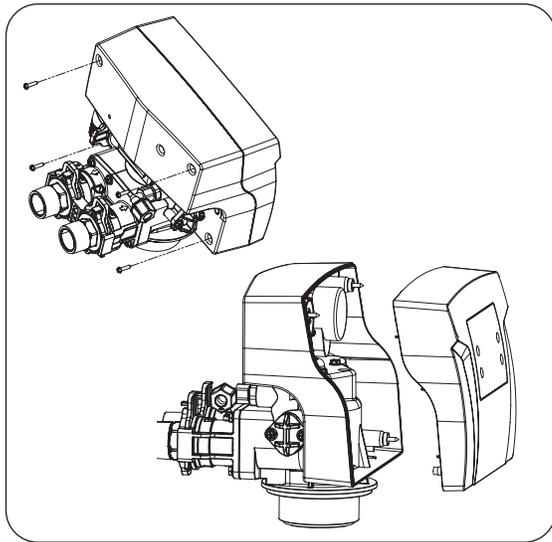
REPLACE MICROSWITCHES



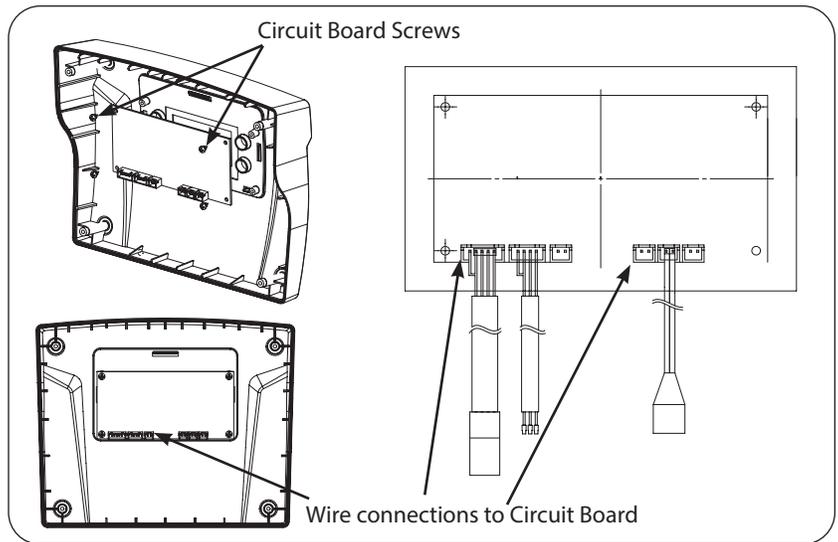
1. Remove Screws from the back of the valve and pull the cover
2. Remove all connections from the circuit board
3. Remove the two screws from the microswitch
4. Replace the microswitch, connections and cover

REPLACEMENT/SERVICE (CONTINUED)

CIRCUIT BOARD REPLACEMENT



1. Remove the screws from the back of the valve and pull the front cover



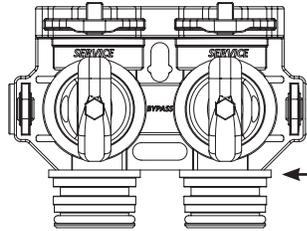
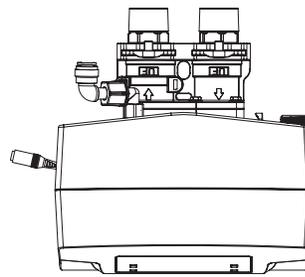
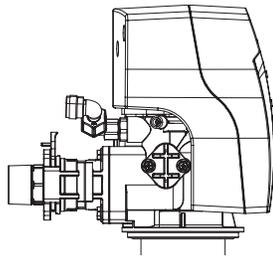
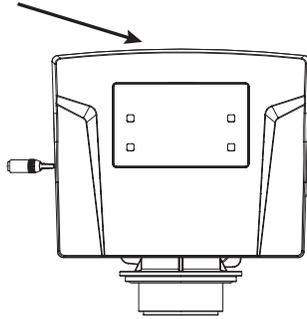
2. Remove all connections from the circuit board
3. Remove the four screws from the circuit board and pull it out

AFTER SERVICING

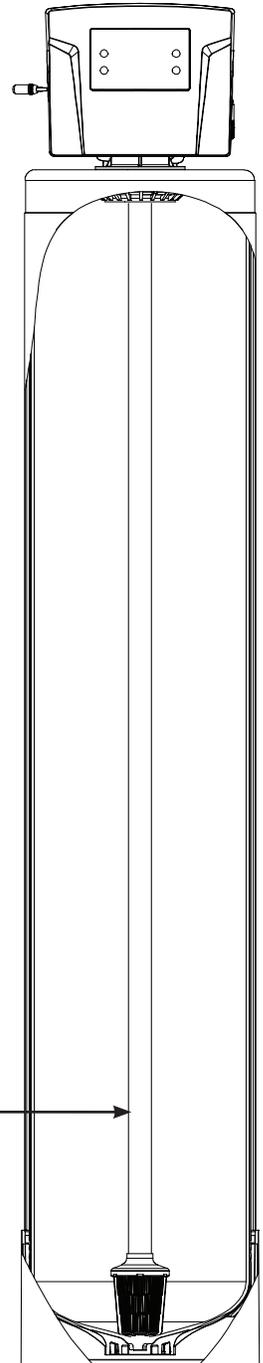
1. Reconnect drain line
2. Return bypass or inlet valve to normal in service position. Water Pressure will automatically build in the Softener
3. Check for leaks at all sealed areas. Check Drain seal with the control in the backwash position
4. Plug electrical cord into outlet
5. Set Time of Day and cycle the control valve manually to assure proper function. Make sure control valve is returned to the In Service position. Unit should always be manually regenerated after servicing. If the unit was not working prior to service then 2 manual regenerations should be done 24 hours apart to restore the full bed capacity.

PARTS BREAKDOWN

Control Valve



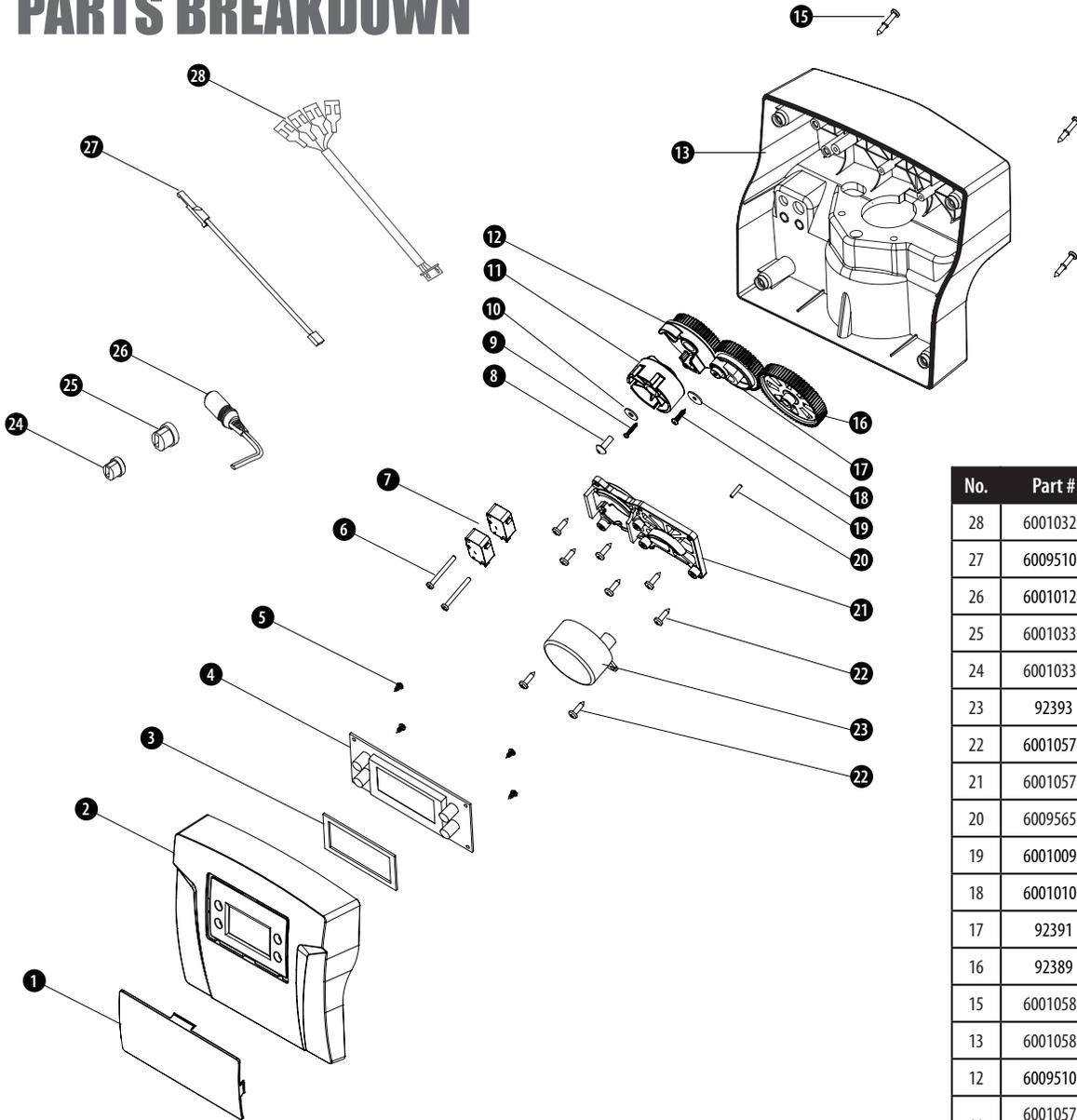
Bypass - 60010004



Distributor

Model	Pressure Tank Size	Tank #	Distrubutor#	Valve #	Media Bed #
Softener Upflow (Single Tank)					
75	8 x 44	Call for part number	50010005	Call for part number	95600
100	9 x 48		50010005		95601
150	10 x 54		50010005		95606
200	12 x 52		50010005		95609
250	13 x 54		50010010		95610
300	14 x 65		50010010		95604

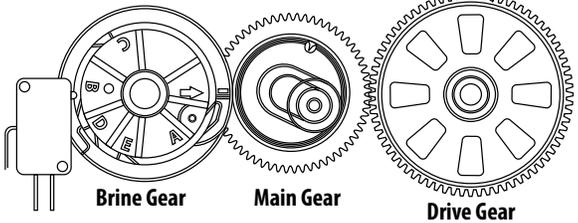
PARTS BREAKDOWN



No.	Part #	Part Description	Qty
28	60010329	Micro Switch Cable	1
27	60095101	Meter Cable Grey	1
26	60010124	Power Cable	1
25	60010330	Meter Cable Clip	1
24	60010331	Power Cable Clip	1
23	92393	Motor 12VAC 3W	1
22	60010574	Screw on Mounting Plate	8
21	60010573	Mounting Plate	1
20	60095658	Motor Pin	1
19	60010099	Screw on Main Gear	1
18	60010100	Washer on Main Gear	1
17	92391	Main Gear	1
16	92389	Drive Gear	1
15	60010581	Screw on Back Cover	4
13	60010582	89 Back Cover(Black)	1
12	60095103	Brine Gear	1
11	60010576 60010577	Locating Wheel (DF) Locating Wheel (UF)	1
10		Washer on Locating Wheel	1
9	60010333	Screw 2.2×13	1
8	60010575	Screw on Locating Wheel	1
7	60010580	Micro Switch	2
6	60010579	Screws on Micro Switch	2
5	60010572	Screws on PCB	4
4	92388	89 PCB	1
3	60010571	PCB Absorb Shock Foam	1
2	60010570	89 Front Cover(Black)	1
1	60010376	Controller Touch Panel	1
	60010368	Powerhead 89DF Valve	
	60010369	Powerhead 89UF Valve	

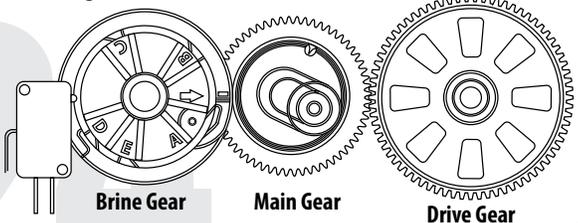
Upflow Gear Alignment

Correct Alignment for 89 Upflow Gears

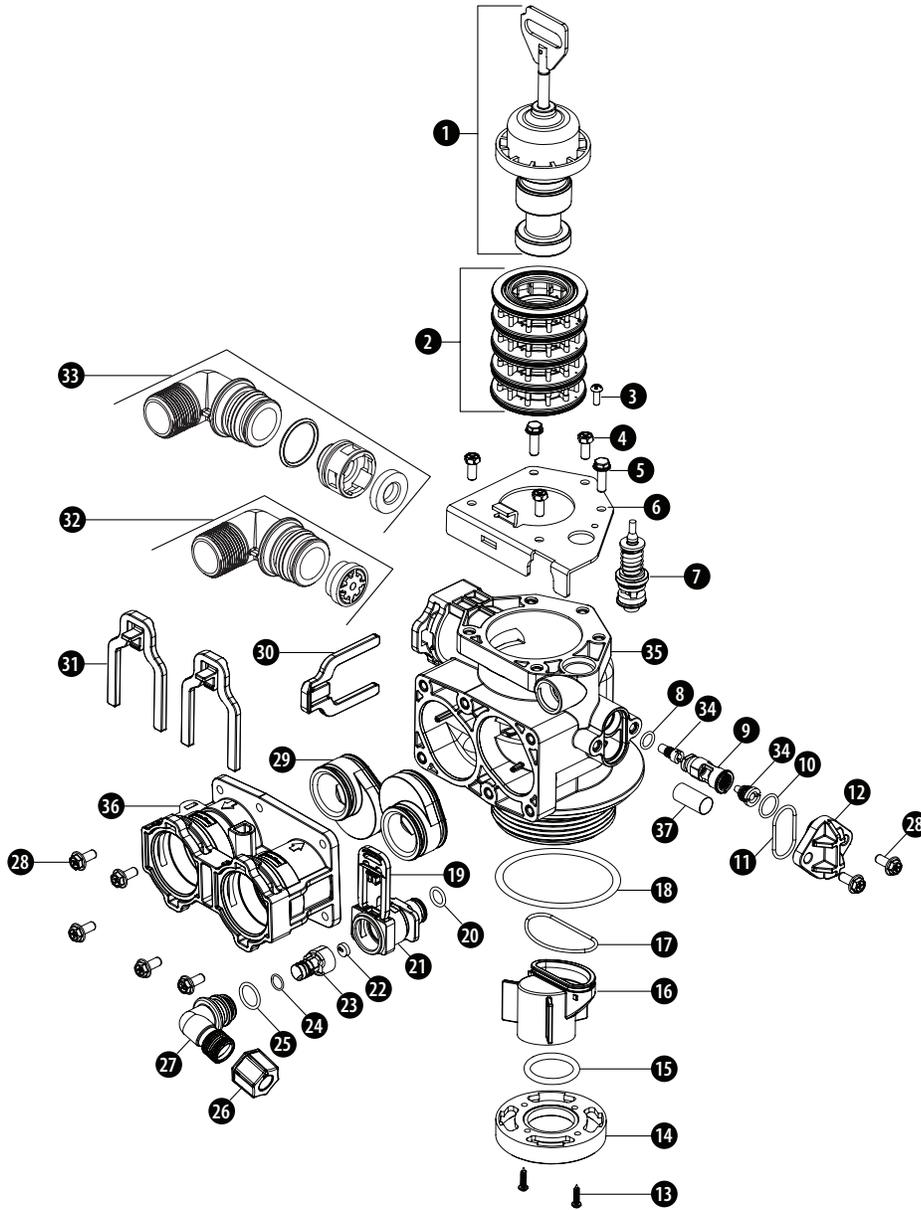


Downflow Gear Alignment

Correct Alignment for 89 Downflow Gears



PARTS BREAKDOWN (CONTINUED)



No.	Part #	Part Description	Qty
1	92383	DF Piston Assy.	1
	92384	UF Piston Assy.	1
2	92382	Seal and Spacer Kit	1
3	60010574	Screw 3.5x13	1
4	60010075	Screw, End Plug Retainer	3
5	60010076	Valve Body Connect Screws	2
6	60010343	End Plug Retainer	1
7	60010417	Brine Valve	1
8	60010187	Small O-Ring, Injector Holder	1
9	60010174	Injector Holder	1
10	60010186	Large O-Ring, Injector Holder	1
11	60010091	O-Ring of Injector Cover	1
12	60010595	Injector Cover	1
13	60010099	Screw Bottom Connector	2
14	60010599	Valve Bottom Connector	1
15	60010080	Distributor O-Ring	1
16	60010598	Central Pipe Adaptor	1
17	60010597	O-Ring of Central Pipe Adaptor	1
18	60010077	O-Ring Tank	1
19	60010069	Secure Clip Brine Line	1
20	60010265	O-Ring Brine Line Connector	1
21	60010340	Brine Line Connector	1
22		BLFCs	1
23	60010173	BLFC Holder	2
24	60010188	O-Ring of BLFC Holder	1
25	60010044	O-Ring of Brine Line Elbow	1
26	60010184	Brine Line Elbow Nut	1
27	60010172	Brine Line Elbow	1
28	60010596	Screw M5-12	8
29	60010585	Adaptor Coupling	2
30	60010227	Secure Clip of Drain Line	1
31	92387	Adaptor Secure Clip	2
32		Elbow Friction Fit 3/4"	1
33		Elbow & DLFC Holder 3/4" & 1"	1
34		Injector Set, Throat and Nozzle	1
35	60010342	Valve Body	1
36	60010589-1	Connector C/W Meter	1
37	60010715	Screen	1

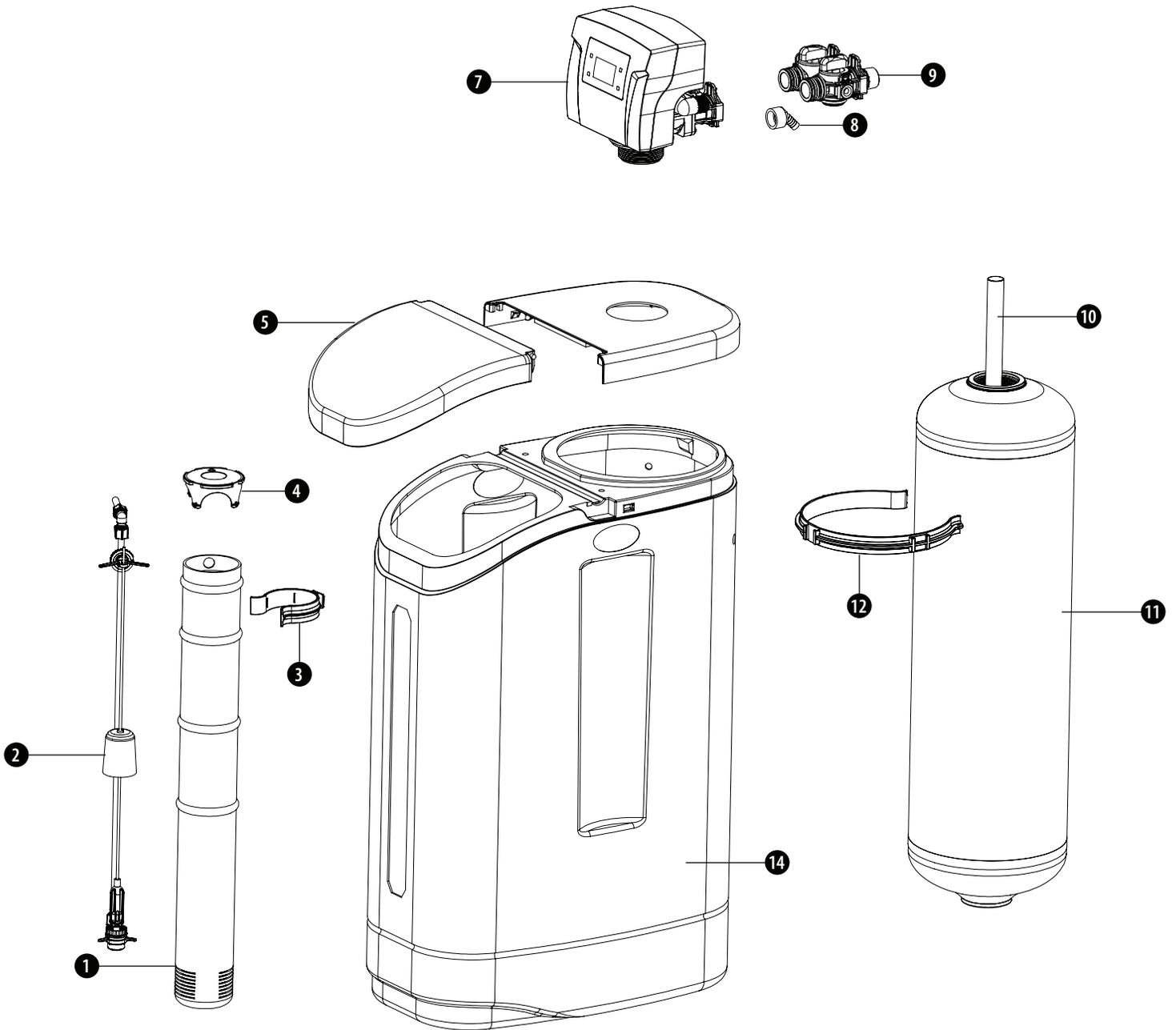
Part #	Part Description
60010773	Elbow Friction Fit 3/4"
60010770	DLFC, 2.0 Green Small
60010771	DLFC, 2.5 Orange Small
60010772	DLFC, 3.5 Pink Small
60010785	DLFC, 5.0 Black Small
60010786	DLFC, 7.0 White Large
60010787	DLFC, 10 Black Large

Part #	Part Description
60010034	INJECTOR SET #0 Red
60010035	INJECTOR SET #00 Purple
60010127	INJECTOR SET #0000 Black
60010033	INJECTOR SET #1 White
60010032	INJECTOR SET #2 Blue
60010036	INJECTOR SET #2 PVC Grey
60010031	INJECTOR SET #3 Yellow

Part #	Part Description
60010253	Drain Elbow 3/4" NPT
60010254	Drain Elbow 1" NPT
60010211	O-Ring on Drain Elbow
60095694	DLFC Holder Large Button
12054	DLFC Holder Small Button
12052	DLFC, 1.4 GPM
12053	DLFC, #1 2.0 GPM
60095721	DLFC, #1S 2.4 GPM
60010140	DLFC, #4S 5.0GPM
60010142	DLFC, #7S 7.0 GPM
60010143	DLFC, #1 7.0 GPM
60010144	DLFC, #2 11.0 GPM
60010145	DLFC, #3 14.0 GPM
60010146	DLFC, #4 17.0 GPM
60010147	DLFC, #5 21.0 GPM
60095692	DLFC, #6 24.0 GPM

Part #	Part Description
60010128	BLFC BUTTON 0.2GPM
60010110	BLFC BUTTON 0.3GPM
60010082	BLFC BUTTON 0.7GPM

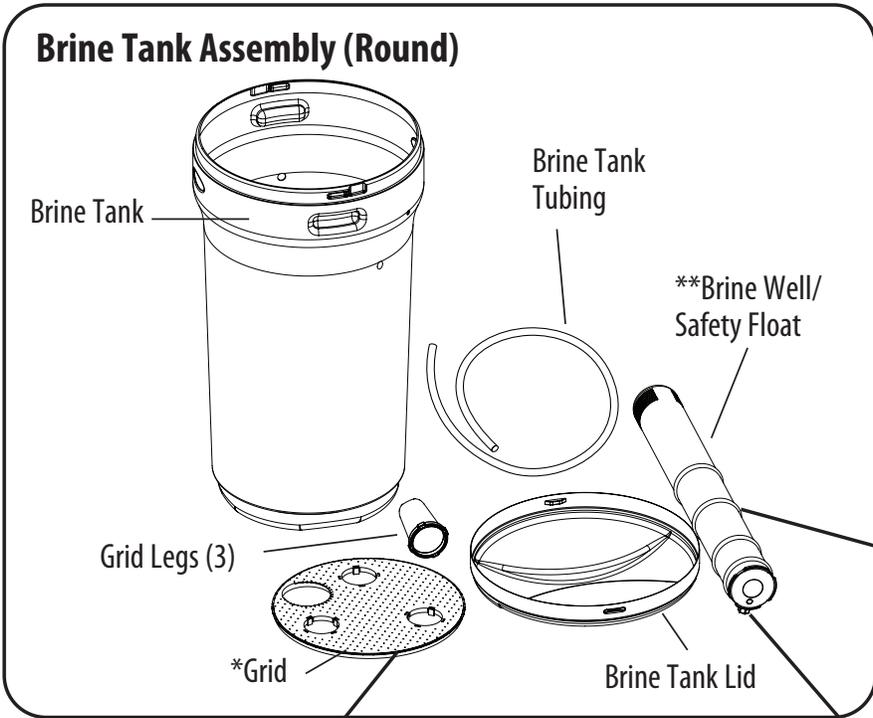
PARTS BREAKDOWN (CONTINUED)



Cabinet Parts List

No.	Part #	Part Description	Qty
1	55010010	Brine Well	1
2	55010023	Safety Float	1
3	60010362	Brine Well Clamp	1
4	55020002	Brine Well Cap	1
5	Call for Part Number	Softener Salt Lid	1
6	Call for Part Number	Softener Low Cover	1
7	Call for Part Number	89 Control Valve	1
8	60090028	Hose Barb	1
9	60010004	Bypass Valve Assy	1
10	50010020	Distribution Assy	1
11	25020043	Tank Assy 1035 NAT	1
12	60010361	Pressure Tank Clamp	1
13	Call for Part Number	Softener Cabinet	1

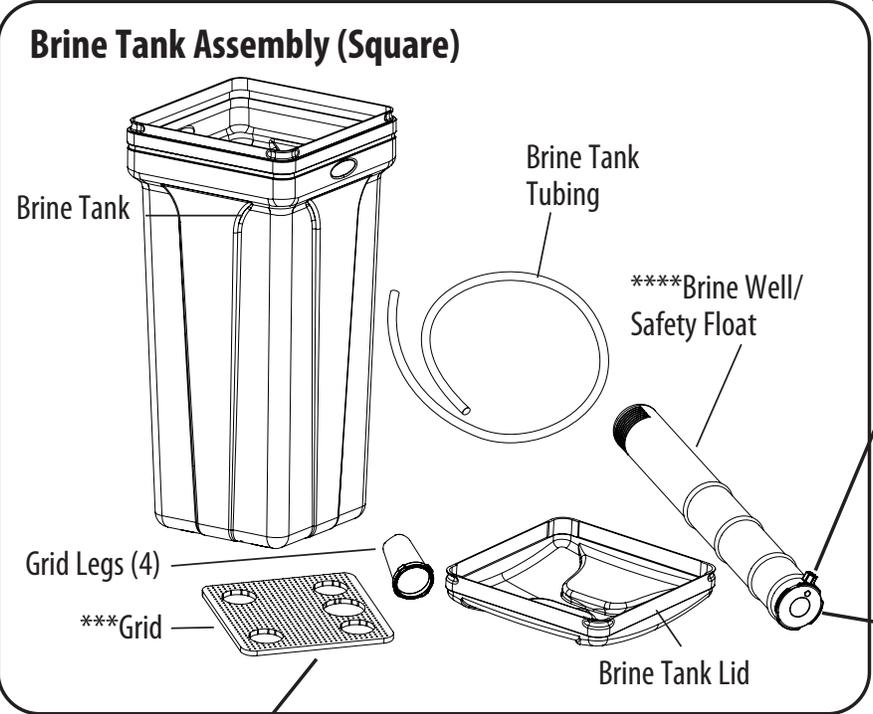
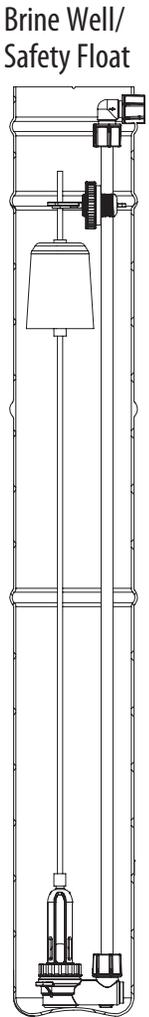
PARTS BREAKDOWN (CONTINUED)



*GRID
55010035 SALT PLATE WITH LEGS BTR-70
55010013 SALT PLATE WITH LEGS BTR-100
55010036 SALT PLATE WITH LEGS BTR-145
55010037 SALT PLATE WITH LEGS BTR-200

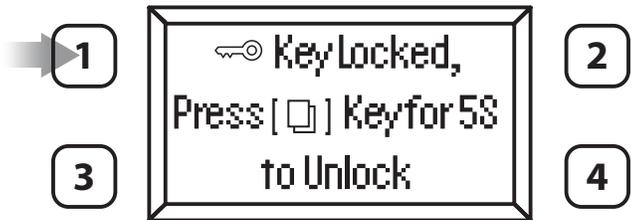
60010181 - Tube Stiffener 3/8" PLASTIC TUBE INSERT

IMPORTANT:
PLEASE ENSURE THE ATTACHED TUBE STIFFENER IS INSERTED INTO THE BRINE LINE BEFORE TIGHTENING THE NUT.



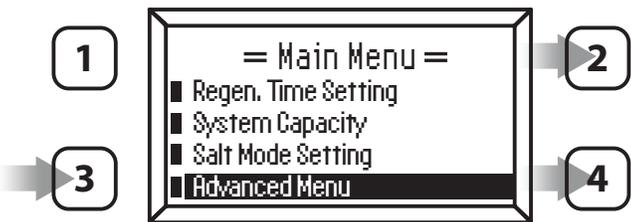
***GRID
55010015 SALT PLATE WITH LEGS BTS-70
55010016 SALT PLATE WITH LEGS BTS-100

MASTER PROGRAMMING GUIDE 89 DOWNFLOW



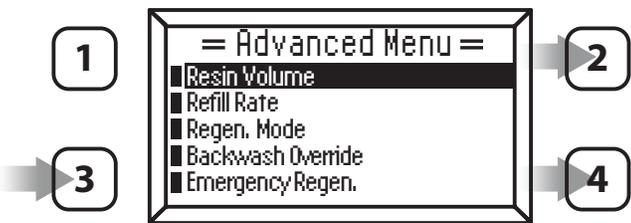
1. Press and hold **button one (1)**, the display will read "PRESS [] 5 Seconds to Unlock".
2. After 5 seconds, the display will beep confirming unlock.
3. Press **button one (1)** [] to enter user programming.

4. Press **button four (4)** to Main Menu.
5. Press **button three (3)**.
6. Press **button four (4)** to Advanced Menu.
7. Press and hold **button three (3)** until it beeps to enter into the **Advanced Menu**.

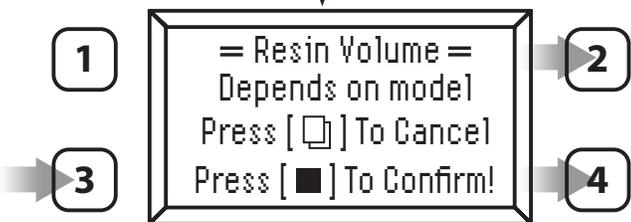


Press **buttons two (2) or four (4)** to select.
Press & hold **button three (3)** to Confirm.

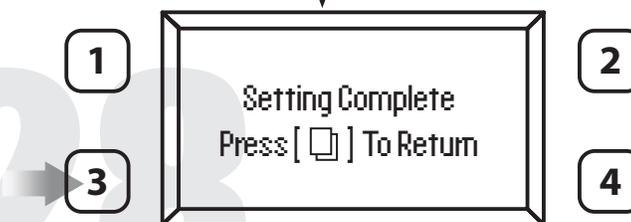
Resin Volume



1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



3. Setting complete.

DF SOFTENER (DOWNFLOW)

This mode is for the operation of a downflow regenerating softener. The regeneration sequence is 1. BRINE MAKE (REFILL), 2. BACKWASH, 3. BRINE, 4 RINSE, 5. REFILL.

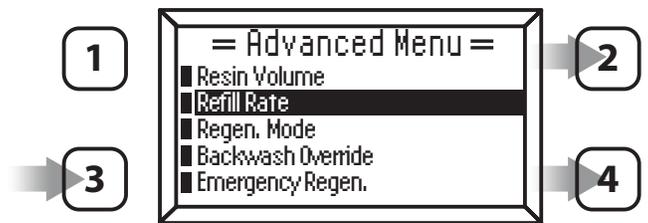
RESIN VOLUME

This setting is the amount of ion exchange media used in the system. The value is used to calculate system capacity and refill time. It is also used to select the pre-engineered valve cycle settings. "C" designates a cabinet model.

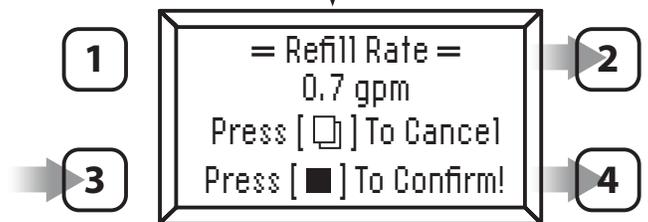
REFILL RATE

This value should match the BLFC flow washer. It is used to calculate the refill time.

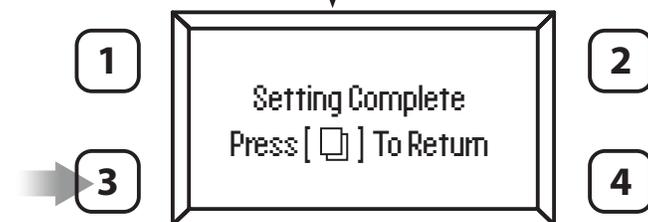
Refill Rate



1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



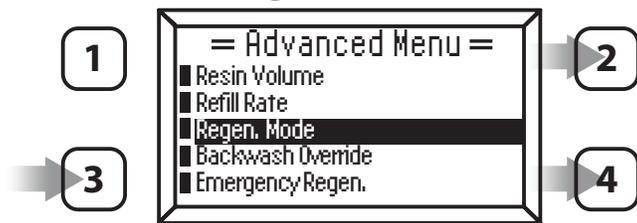
2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



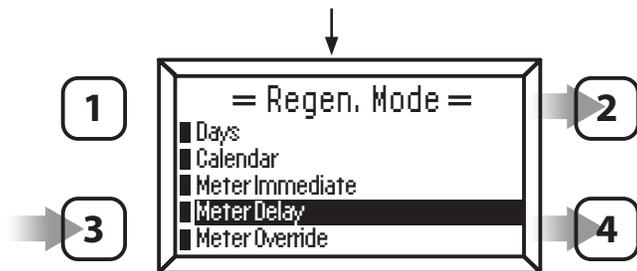
3. Setting complete.

MASTER PROGRAMMING GUIDE 89 DOWNFLOW (CONTINUED)

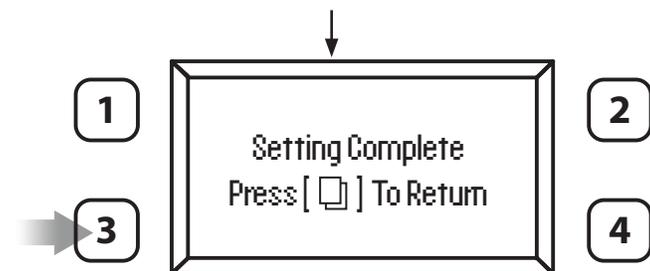
Regen. Mode



1. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.



2. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.



3. Setting complete.

REGEN MODE

Days - Every X days the system will regenerate at the regen time.

Calendar - On specific days of the week the system will regenerate at the regen time.

Meter Immediate - When the volume remaining reaches zero gallons the system will immediately regenerate.

Meter Delayed - When the volume remaining goes below the calculated reserve for that day the system will regenerate at the regen time.

Meter Override - When the volume remaining goes below the calculated reserve for that day the system will regenerate at the regen time or when X days has passed. Which ever occurs first.

BW/RINSE OVERRIDE

This setting can be used to skip the Backwash or Rinse cycle. As an example if the setting is 10, the system will skip 10 back wash cycles. The setting will only work if the WATER TYPE is set to CITY for clean water applications.

BW/Rinse Override



1. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.

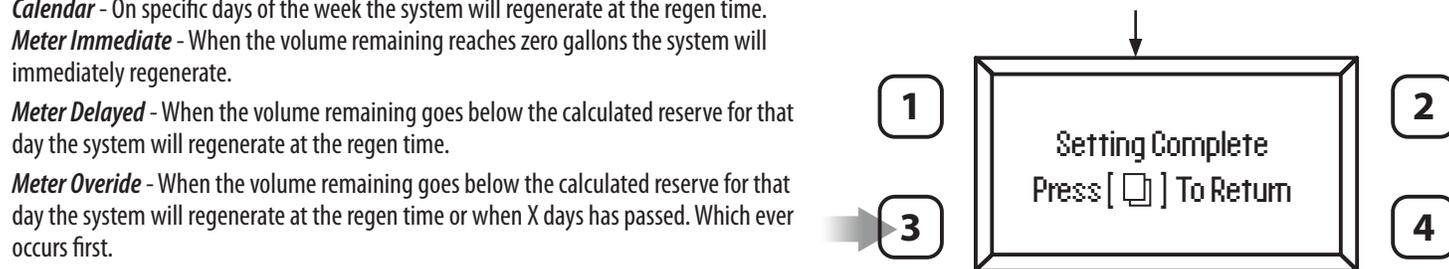


2. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.

When set to ON choose Backwash or Rinse



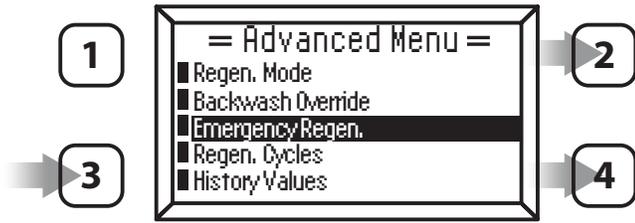
2. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.



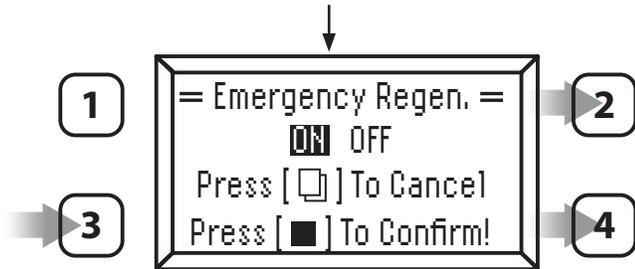
3. Setting complete.

MASTER PROGRAMMING GUIDE 89 DOWNFLOW (CONTINUED)

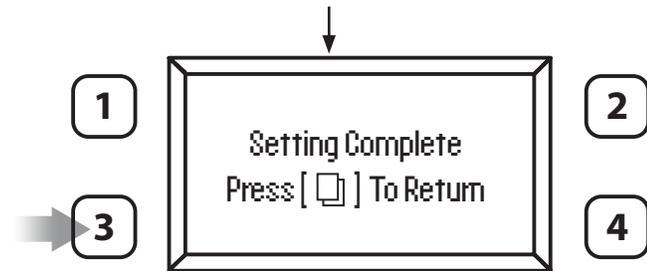
Emergency Regen.



1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

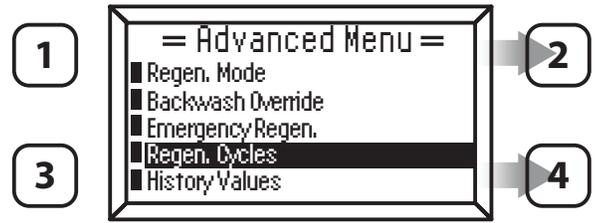


2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

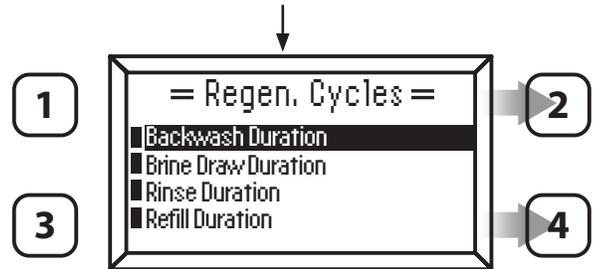


3. Setting complete.

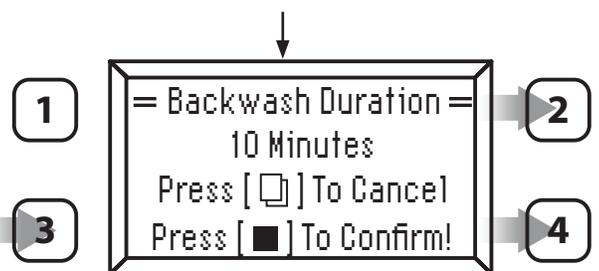
Regen. Cycles



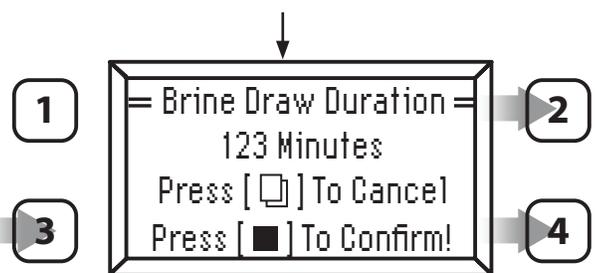
1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



3. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



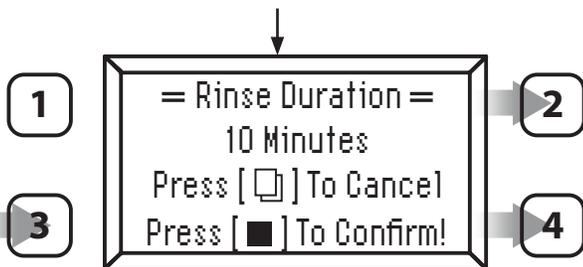
4. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

Continued on page 31

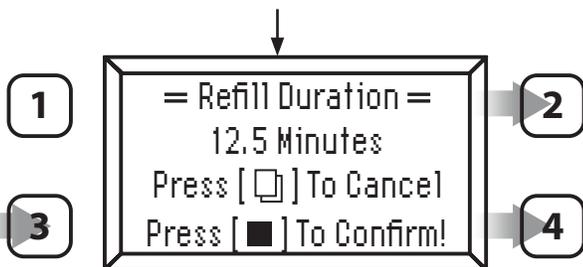
MASTER PROGRAMMING GUIDE 89 DOWNFLOW (CONTINUED)

Continued from page 30

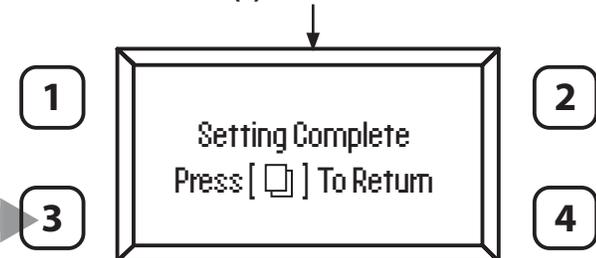
Regen. Cycles (continued)



5. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

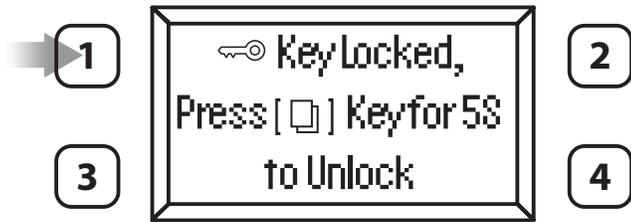


6. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



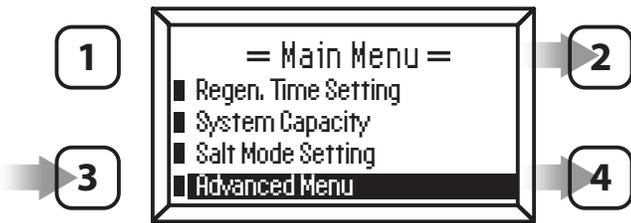
7. Setting complete.

MASTER PROGRAMMING GUIDE 89 UPFLOW



1. Press and hold **button one (1)**, the display will read "PRESS [] 5 Seconds to Unlock".
2. After 5 seconds, the display will beep confirming unlock.
3. Press **button one (1)** [] to enter user programming.

4. Press **button four (4)** to Main Menu.
5. Press **button three (3)**.
6. Press **button four (4)** to Advanced Menu.
7. Press and hold **button three (3)** until it beeps to enter into the **Advanced Menu**.



Press **buttons two (2) or four (4)** to select.
Press & hold **button three (3)** to Confirm.

UF SOFTENER (UP FLOW)

This mode is for the operation of an up flow regenerating softener. The regeneration sequence is 1. BRINE MAKE (REFILL), 2. BRINE, 3. BACKWASH, 4 RINSE, 5. REFILL.

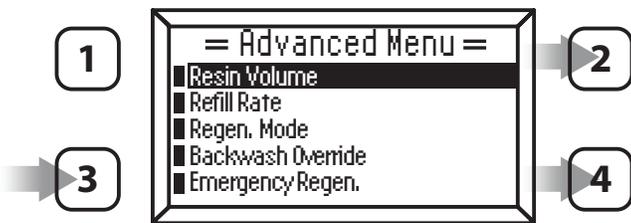
RESIN VOLUME

This setting is the amount of ion exchange media used in the system. The value is used to calculate system capacity and refill time. It is also used to select the pre-engineered valve cycle settings. "C" designates a cabinet model.

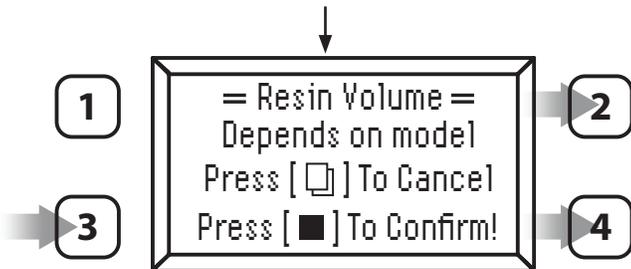
REFILL RATE

This value should match the BLFC flow washer. It is used to calculate the refill time.

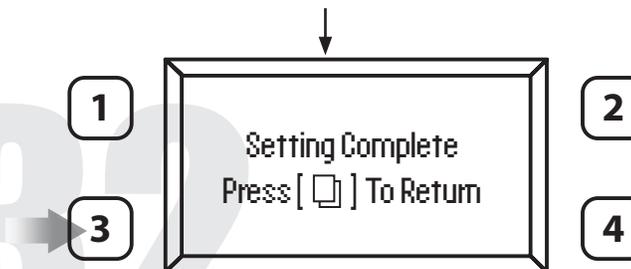
Resin Volume



1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

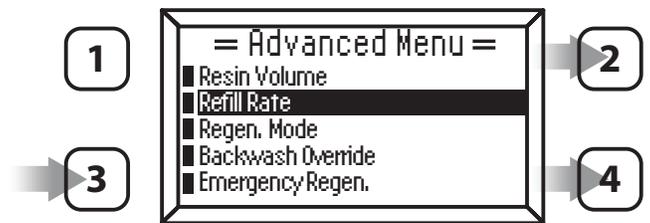


2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

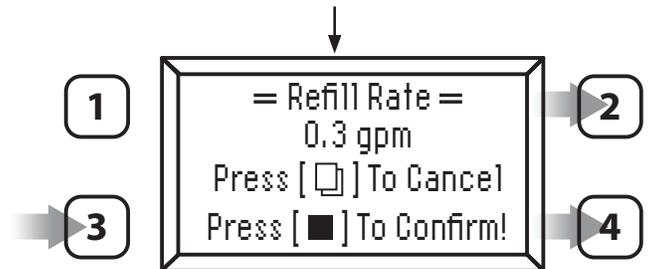


3. Setting complete.

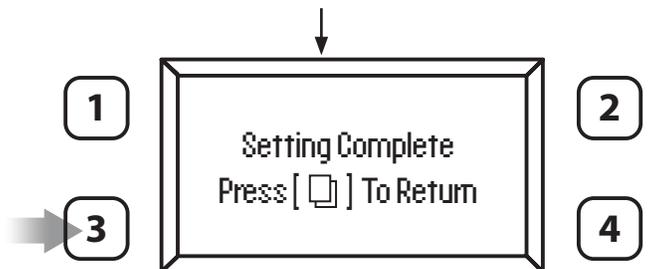
Refill Rate



1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



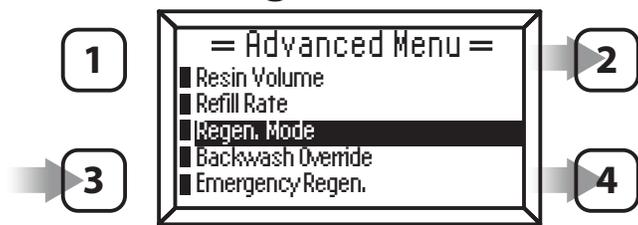
2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



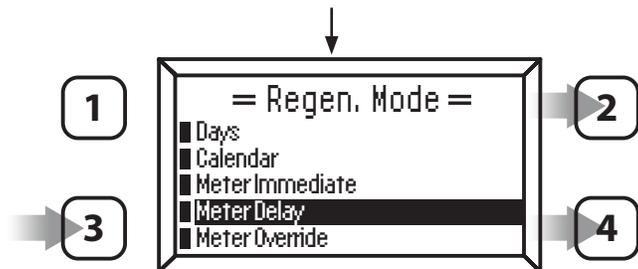
3. Setting complete.

MASTER PROGRAMMING GUIDE 89 UPFLOW (CONTINUED)

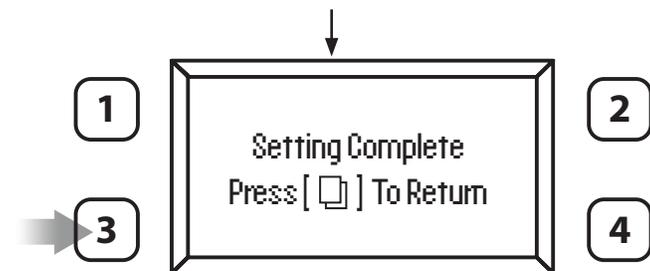
Regen. Mode



1. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.



2. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.



3. Setting complete.

REGEN MODE

Days - Every X days the system will regenerate at the regen time.

Calendar - On specific days of the week the system will regenerate at the regen time.

Meter Immediate - When the volume remaining reaches zero gallons the system will immediately regenerate.

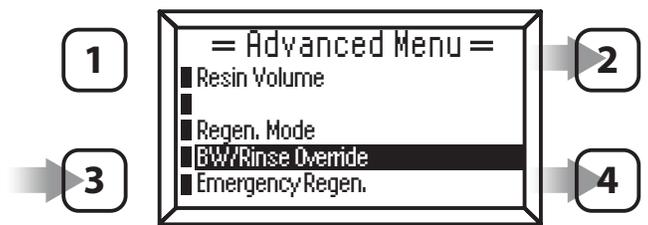
Meter Delayed - When the volume remaining goes below the calculated reserve for that day the system will regenerate at the regen time.

Meter Override - When the volume remaining goes below the calculated reserve for that day the system will regenerate at the regen time or when X days has passed. Which ever occurs first.

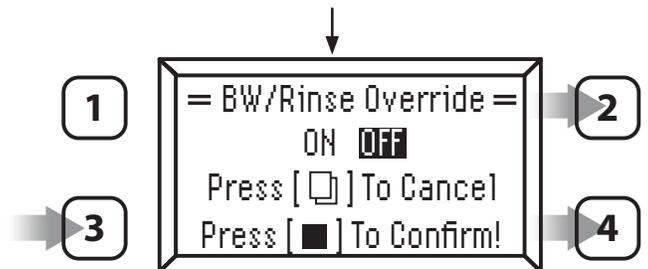
BW/RINSE OVERRIDE

This setting can be used to skip the Backwash or Rinse cycle. As an example if the setting is 10, the system will skip 10 back wash cycles. The setting will only work if the WATER TYPE is set to CITY for clean water applications.

BW/Rinse Override

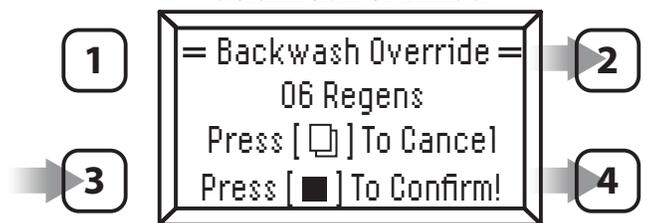


1. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.

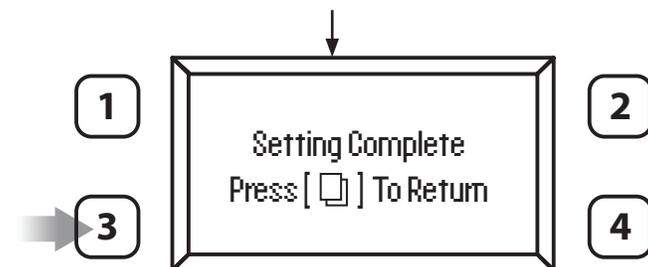


2. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.

When set to ON choose Backwash or Rinse



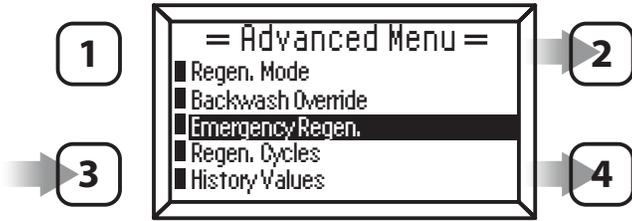
2. Press **buttons two (2) or four (4)** to select. Press **button three (3)** to Confirm.



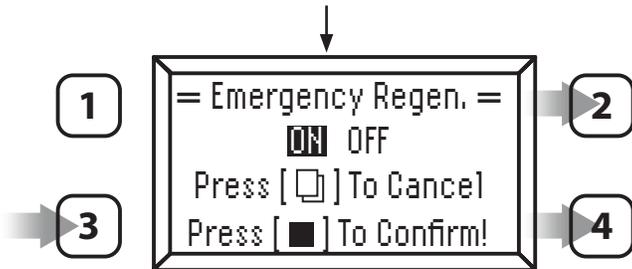
3. Setting complete.

MASTER PROGRAMMING GUIDE 89 UPFLOW (CONTINUED)

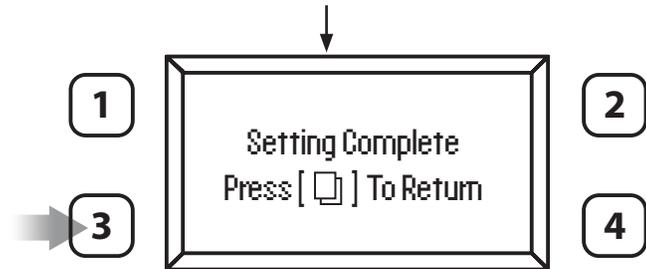
Emergency Regen.



1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

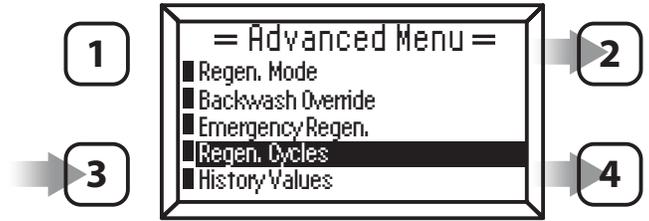


3. Setting complete.

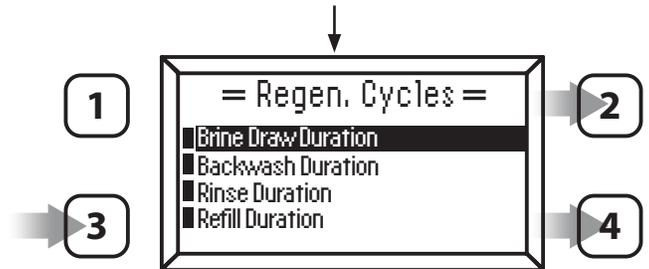
EMERGENCY REGEN

When set to ON, the system will start a forced regeneration when the remaining capacity reaches 3%. The regeneration consists of 8 minutes of Brine and 12 minutes of Rinse. The 20 minutes regeneration will restore up to 33% of the system capacity. At the next regeneration time (2:00 AM), the system will automatically perform a standard regeneration to restore capacity to 100%.

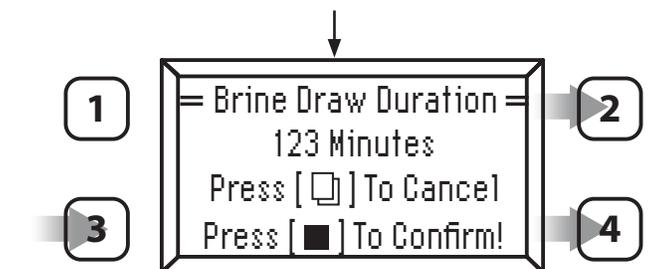
Regen. Cycles



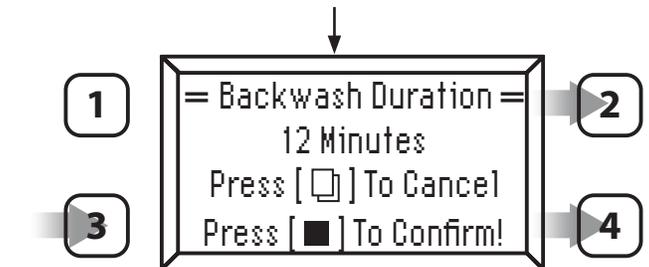
1. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



2. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



3. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



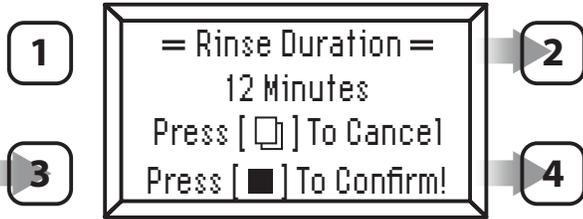
4. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.

Continued on page 35

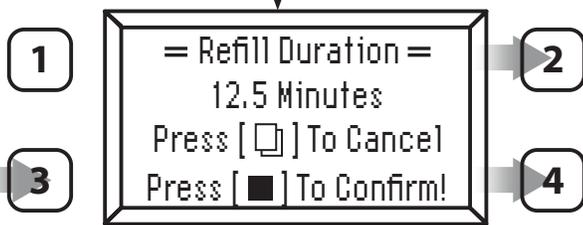
MASTER PROGRAMMING GUIDE 89 UPFLOW (CONTINUED)

Continued from page 25

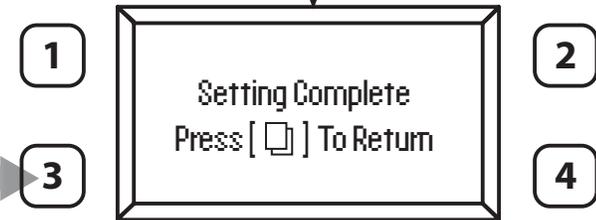
Regen. Cycles (continued)



5. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



6. Press **buttons two (2) or four (4)** to select.
Press **button three (3)** to Confirm.



7. Setting complete.

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