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Flex High-Efficiency Metered Professional-Grade Compact Water Softener



USWaterSystems.com
FLEX
Water Softener

Owners Manual

Models:

100-FLEX-20, 100-FLEX-24, 100-FLEX-34

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Safety Guide

For your safety, the information in this manual must be followed to minimize the risk of electric shock, property damage or personal injury.

- Check and comply with your provincial / state and local codes. You must follow these guidelines.
- Use care when handling the water softening system. Do not turn upside down, drop, drag or set on sharp protrusions.
- The water softening system works on 12 volt-60 Hz electrical power only. Be sure to use only the included transformer.
- Transformer must be plugged into an indoor 120 volt, grounded outlet only.
- Use clean water softening salts only, at least 99.5% pure. NUGGET, PELLET or coarse SOLAR salts are recommended. Do not use rock, block, granulated or ice cream making salts. They contain dirt and sediments, or mush and cake, and will create maintenance problems.
- Keep the salt lid in place on the softener unless servicing the unit or refilling with salt.
- **WARNING:** This system is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Proper Installation

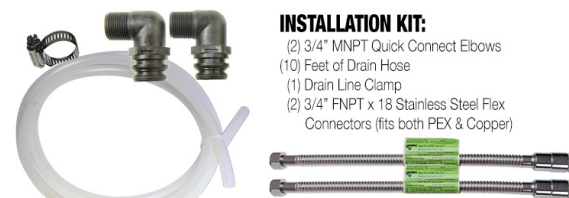
This water softening system must be properly installed and located in accordance with the Installation Instructions before it is used.

- Install or store where it will not be exposed to temperatures below freezing or exposed to any type of weather. Water freezing in the system will break it. Do not attempt to treat water over 100°F.
- **Do not** install in direct sunlight. Excessive sun or heat may cause distortion or other damage to non-metallic parts.
- Properly ground to conform with all governing codes and ordinances.
- Use only *lead-free solder and flux* for all sweat-solder connections, as required by state and federal codes.
- The water softening system requires a minimum water flow of three gallons per minute at the inlet.
- Maximum allowable inlet water pressure is 125 psi. If daytime pressure is over 80 psi, night time pressure may exceed the maximum. Use a pressure reducing valve to reduce the flow if necessary.
- Softener resins may degrade in the presence of chlorine above 2 ppm. If you have chlorine in excess of this amount, you may experience reduced life of the resin. In these conditions, you may wish to consider purchasing a whole house carbon filter.
- **WARNING:** Discard all unused parts and packaging material after installation. Small parts remaining after the installation could be a choke hazard.

Unpacking / Inspection

Be sure to check the entire softener for any shipping damage or parts loss. Also note damage to the shipping cartons. Contact US Water Systems within 24 hours for all damage and loss claims. The manufacturer is not responsible for damages in transit.

Small parts, needed to install the softener, are in a parts bag. To avoid loss of the small parts, keep them in the parts bag until you are ready to use them.



INSTALLATION KIT:

- (2) 3/4" MNPT Quick Connect Elbows
- (10) Feet of Drain Hose
- (1) Drain Line Clamp
- (2) 3/4" FNPT x 18" Stainless Steel Flex Connectors (fits both PEX & Copper)

Specifications

Specifications	Flex-20	Flex-24	Flex-34	
Maximum Hardness Removal	19,500 grains	24,180 grains	34,320 grains	
Factory Settings - High Efficiency				
Salt Used	1.5 lbs	2.1 lbs	2.4 lbs	
Water Used	9.6 gal	11.7 gal	15.8 gal	
System Capacity	7,300 grains	11,800 grains	13,400 grains	
High Capacity Settings				
Salt Used	3.0 lbs	3.7 lbs	5.3 lbs	
Regeneration Water Used	16.9 gal	21.4 gal	32.5 gal	
System Capacity	12,000 grains	18,000 grains	20,500 grains	
High Capacity Resin	0.5 cubic feet	0.7 cubic feet	0.8 cubic feet	
Coconut Activated Carbon	No	No	Yes	
Integrated Meter in Bypass	Yes	Yes	Yes	
Plumbing Connections	3/4" or 1"	3/4" or 1"	3/4" or 1"	
Flow Rate @ 15 psi Pressure Drop	10.9 gpm	10.2 gpm	10.0 gpm	
Salt Storage Capacity	80 lbs	120 lbs	170 lbs	
Shipping Weight	58.5 lb	68.3 lb	84.3 lb	
Maximum Efficiency	5,600 grains /lb salt			
Electrical Requirements	120V 50/60 Hz			
Maximum Water Temperature	120 degrees Fahrenheit			
Water Pressure	min. 20 - max. 120 psi			
Foot Print	13 inches wide x 18 inches long			

- Continuous operation at flow rates greater than the service flow rate may affect capacity and efficiency performance.
- The manufacturer reserves the right to make product improvements which may deviate from the specifications and descriptions stated herein, without obligation to change previously manufactured products or to note the change.
- The above capacity and flow rate specifications have not been validated by WQA.

Water Quality

- If the water supply contains sand, sulfur, bacteria, iron bacteria, tannins, algae, oil, acid, or other unusual substances, pre-treatment must be added to remove these contaminants before the US Water Systems Flex Series Softener Systems.

Iron In Your Water Supply (Problem Water)

- Ferrous Iron (sometimes called clear water or dissolved iron) can be removed with a water softener. The Flex softener should be cleaned with a resin bed cleaner at least every 6 months. Follow instructions carefully. You should also increase your water hardness setting by 4 grains per gallon for every 1 ppm of ferrous iron. **THE MAXIMUM LIMIT FOR FERROUS IRON IS 10 PPM.**
- Ferric Iron, Organic Iron, Bacterial Iron, or Colloidal Iron cannot be removed by a softener system and must be removed prior to the Flex Series Softener Systems.

Before Starting Installation

Tools, Pipe, and Fittings, Other Materials

- Pliers
- Screwdriver
- Teflon tape
- Razor knife
- Two adjustable wrenches
- Additional tools may be required if modification to home plumbing is required.
- Plastic inlet and outlet fittings are included with the softener. To maintain full valve flow, 3/4" or 1" pipes to and from the softener fittings are recommended. You should maintain the same, or larger, pipe size as the water supply pipe, up to the softener inlet and outlet.
- Use copper, brass, or PEX pipe and fittings.
- Some codes may also allow PVC plastic pipe.
- ALWAYS install the included bypass valve, or 3 shut-off valves. Bypass valves let you turn off water to the softener for repairs if needed, but still have water in the house pipes.
- 1/2" Drain line is needed for the valve drain. A 10' length of hose is included with some models.
- A length of 1/2" drain line tubing is needed for the brine tank over flow fitting (optional).
- Nugget or pellet water softener salt is needed to fill the cabinet tank.

Where To Install The Softener

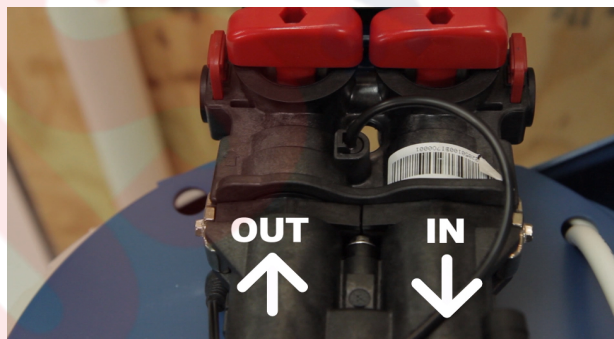
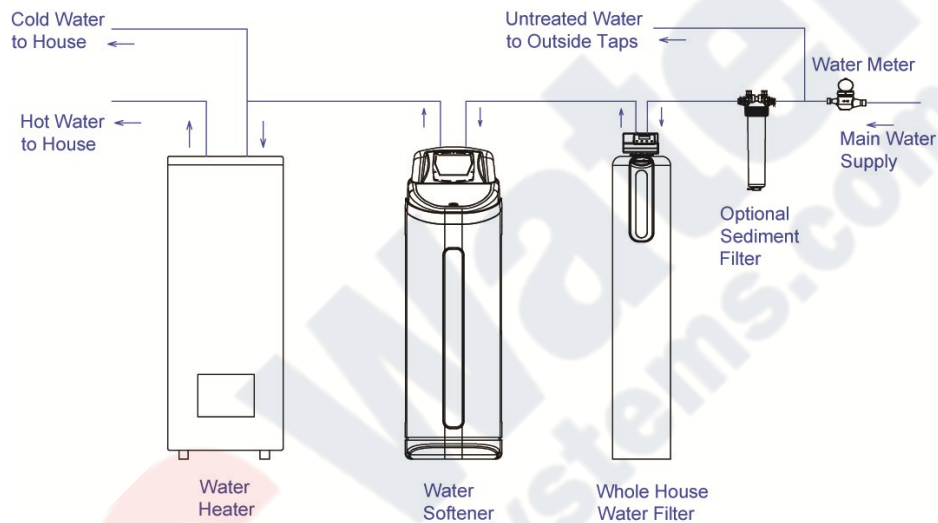
- Place the softener as close as possible to the pressure tank (well system) or water meter (city water).
- Place the softener as close as possible to a floor drain, or other acceptable drain point (laundry tub, sump, standpipe, etc.).
- Connect the softener to the main water supply pipe BEFORE the water heater. **DO NOT RUN HOT WATER THROUGH THE SOFTENER.** Temperature of water passing through the softener must be less than 110 deg. F.
- Keep outside faucets on hard water to save soft water and salt.
- Do not install the softener in a place where it could freeze. **Damage caused by freezing is not covered by the warranty.**
- Put the softener in a place water damage is least likely to occur if a leak develops. The manufacturer will not repair or pay for water damage.
- A 120 volt electric outlet, to plug the included transformer into, is needed within 6 feet of the softener. The transformer has an attached 6 foot power cable. **Be sure the electric outlet and transformer are in an inside location, to protect from wet weather.**
- If installing in an outside location, you must take the steps necessary to assure the softener, installation plumbing, wiring, etc., are as well protected from the elements, contamination, vandalism, etc., as when installed indoors.
- **Keep the softener out of direct sunlight.** The sun's heat may soften and distort plastic parts.

General Installation

Typical Softener Location

You must first decide how to run in and out pipes to the softener. Look at the house main water pipe at the point where you will connect the softener. Is the pipe soldered copper, glued plastic, PEX, or threaded brass/galvanized? What is the pipe size?

Now look at the typical installation illustrations below. Use it as a guide when planning your particular installation. Make sure you have correctly identified the inlet of the system. **Be sure to direct raw, hard water to the softener valve inlet fitting.** The bypass valve is marked with IN and OUT arrows. The picture below shows the flow if you are in front of the unit.



Remove the screws for the top cover. Remove the top cover and let it hang to the side.



Installation Instructions

1. If your hot water tank is electric, turn off the power to it to avoid damage to the element in the tank.
2. If you have a private well, turn the power off to the pump and then shut off the main water shut off valve. If you have municipal water, simply shut off the main valve. Go to the faucet, (preferably on the lowest floor of the house) turn on the cold water until all pressure is relieved and the flow of water stops.



3. Locate the softener tank and brine tank close to a drain where the system will be installed. The surface should be clean and level.
4. Connect the inlet and outlet of the softener using appropriate fittings. Perform all plumbing according to local plumbing codes.
 - Use a 1/2" minimum pipe or tubing size for the drain line
 - **ON COPPER PLUMBING SYSTEMS BE SURE TO INSTALL A GROUNDING WIRE BETWEEN THE INLET AND OUTLET PIPING TO MAINTAIN GROUNDING.**

Any solder joints near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the valve and joints when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.

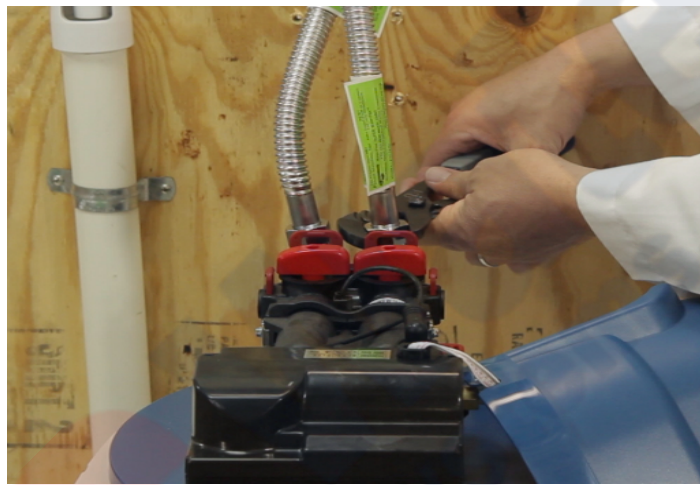
Select the connectors that make the plumbing easiest. The Flex water softener is shipped with both straight and elbow connections.



Apply a layer of food grade silicon grease to the connector o-rings. There is a small amount supplied with the unit that should be enough for both connectors.



Now connect the supplied flexible connector to the water softener.



Now connect the flexible connector to your plumbing system. Be sure the in and out connections are correct. The flexible connector will fit 3/4" CPVC, CTS copper or PEX.



Installation Instructions (Continued)

5. Connect the drain hose (10 ft included) to the valve and secure it with a hose clamp (also included). Run the drain hose to the nearest laundry tub or drain pipe. This can be run up overhead or down along the floor. If running the drain line more than 20 ft overhead, it is recommended to increase the hose size to 3/4". NEVER MAKE A DIRECT CONNECTION INTO A WASTE DRAIN. A PHYSICAL AIR GAP OF AT LEAST 1.5" SHOULD BE USED TO AVOID BACTERIA AND WASTEWATER TRAVELLING BACK THROUGH THE DRAIN LINE INTO THE SOFTENER. A TYPICAL AIR GAP IS SHOWN BELOW.



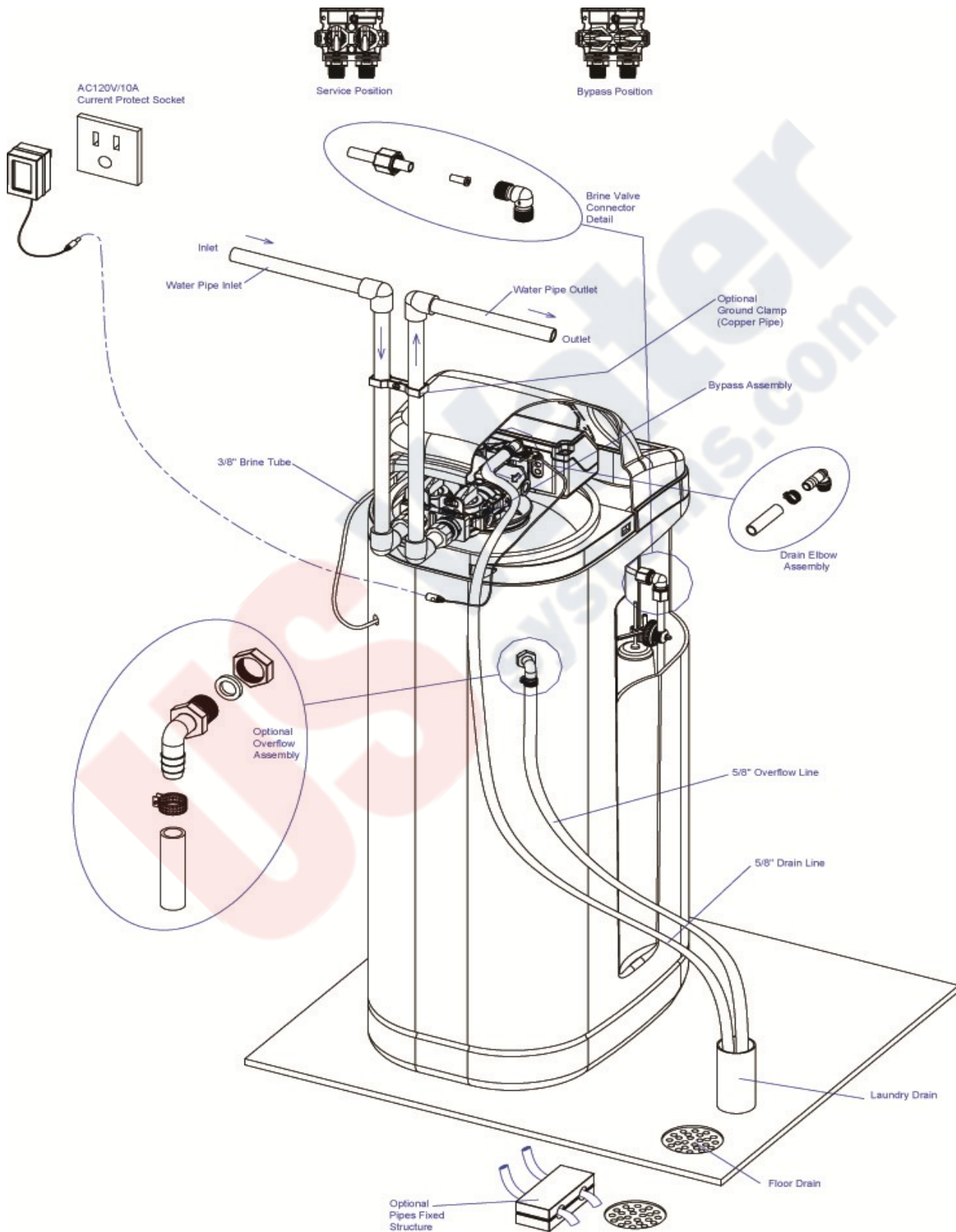
6. Using the Allen Key (included), place the unit in the bypass position. Slowly turn on the main water supply. At the nearest cold treated water tap nearby remove the faucet screen, open the faucet and let water run a few minutes or until the system is free of any air or foreign material resulting from the plumbing work.



7. Make sure there are no leaks in the plumbing system before proceeding. Close the water tap when water runs clean. If there are leaks repair them now.

8. Open the cabinet salt lid and add water until there is approximately 3" (75 mm) of water (5 gallons) in the cabinet tank. Add at least one bag of salt to the salt tank.
9. Proceed to start up instructions.

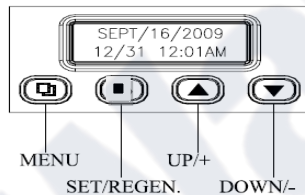
Note: The unit is not ready for service until you complete the start up instructions.



Start-Up Instructions

1. Slowly open the inlet valve on the bypass about 1/4 turn. Let the water fill the softener until the flow stops.
2. Now open a laundry sink or garden spigot down stream. Now slowly open the outlet on the bypass valve about 1/4 turn.
3. Let the water flow through the softener until there is no air coming out of the spigot.
4. Slowly open both valves on the bypass until they are fully open. Leave the garden spigot open the water runs clear and there is no air. Once there is no air and the water is clear close the water spigot/laundry sink faucet.
5. Check the softener for leaks. If there are leaks fix them now.
6. Now re-install the cover and tighten the screws. Make sure the water lines and transformer wire is not pinched by the cover.

Programming Instructions



Key Pad Configuration

- MENU BUTTON "□":** The function of this key is to enter the level one programming mode where the valve settings can be adjusted.
- SET / REGEN BUTTON "□":** This button has two functions. The first is to initiate a manual regeneration by holding the button for 3 or more seconds. The second function is while in programming mode, pressing this key allows the user to change the value of each setting.
- UP / DOWN "▲ ▼":** These buttons are used to increase or decrease the value of the settings while in the programming mode.

System Initialization

When power is first supplied, the valve may take up to two minutes to initialize the valve. During this time the valve will show "INITIALIZING WAIT PLEASE". Do not touch any buttons at this time. One beep signals the valve has reached the service position. It will display the current date and time.

Manual Regeneration (Immediate or Delayed)

If screen is locked, press MENU for 3 seconds to unlock. To initiate an Immediate Regeneration, press the SET / REGEN button for 3 seconds, an option for Delayed or Immediate Regeneration will appear. Press the SET / REGEN button again and delayed will begin flashing, press the down arrow button to have Immediate flash, press the SET / REGEN button and then press the MENU button and the valve will immediately start into manual regeneration.

To initiate a Delayed Regeneration, press the SET / REGEN button for 3 seconds, then press the menu button and a regeneration will be queued to the next pre-set regeneration time (2:00 a.m.).

Setting Current Time

1. If screen is locked, press MENU for 3 seconds to unlock. Press MENU again to enter level one programming mode and adjust CURRENT TIME.
2. Press SET/REGEN to adjust hours. When you have entered the change value mode, the cursor will blink. Press UP OR DOWN arrows to change the hour values. Press SET/REGEN again to accept the hour value and advance to change the minutes value. Press UP OR DOWN arrows to change the minute values. Press SET/REGEN again to accept the minute values and advance to adjust the AM/PM values. Press UP OR DOWN to change the AM/PM value. Press SET/REGEN again to accept the AM/PM value and exit. When you have exited the change value mode, the cursor will stop flashing.

Setting Current Date

1. Press DOWN to advance to CURRENT DATE.
2. Using the same procedure as setting the time, press SET/REGEN to enter value change mode.

Setting Number of People in Household

1. Press DOWN to advance to NUMBER PEOPLE.
2. Press the SET/REGEN to change the value. Press UP OR DOWN to change the values.

Setting Water Hardness

1. Press DOWN to advance to WATER HARDNESS.
2. Press the SET/REGEN to change the value. Press UP OR DOWN to change the values.

Setting Vacation Mode

1. Press DOWN to advance to VACATION MODE.
2. Press the SET/REGEN to change the value. Press UP OR DOWN to change the values.
Vacation mode is only used when home is left un-occupied for lengthy amounts of time and the owner wishes to have a periodic flush of the softener system. The unit will not operate properly if vacation mode is left on.

Exiting Programming Mode

At any time, press the " MENU" to accept all changes and return to main page display.

Level I User Program Mode		
PARAMETER	OPTIONS	DESCRIPTION
1	CURRENT TIME	This option is the current time of day.
2	CURRENT DATE	This option is the current date. The date is used to track the last time the system regenerated.
3	NUMBER PEOPLE	This value is the number of people living in the home. It is used to calculate the amount of water needed for daily use and the reserve capacity of the system.
4	WATER HARDNESS	This value is the maximum water hardness in grains per gallon of the raw water supply. It is used to calculate the system capacity.
5	VACATION MODE	This function may be activated by the user during a prolonged absence such as vacation. The system will perform a brief backwash and rinse based on the advanced setting. The purpose is to keep the water fresh in the softener tank and plumbing system.
	Yes	
	No	

About The Water Softener System

Control Operation During A Power Failure

In the event of a power failure, the valve will keep track of the time and day for 48 hours. The programmed settings are stored in a non-volatile memory and will not be lost during a power failure. If power fails while the unit is in regeneration, the valve will finish regeneration from the point it is at once power is restored. If the valve misses a scheduled regeneration due to a power failure, it will queue a regeneration at the next regeneration time once power is restored.

Main Display

This valve is controlled with simple, user-friendly electronics displayed on a large LCD screen. The main page displays the current date and time. In addition, the main page also shows key valve information and statistics including; current capacity setting, volume remaining, date of last regeneration, current flow rate, and peak flow rate.

MAY 8, 2009 9:05 AM	CAPACITY 1,350 GAL	VOLUME REMAINING 1,125 GAL
REGEN DAYS 7 DAYS	REMAINING DAYS 5 DAYS	REGENERATION TIME 2:00 AM
LAST REGEN MAY 4, 2009	CURRENT FLOW 1.5 GPM	PEAK FLOW 5.8 GPM

Automatic Hard Water Bypass During Regeneration

For emergency needs, hard water is available to the home during the regeneration cycles. However, you should avoid using HOT water because the water heater will refill with the hard water.

System Configuration

Valve Set-up

MODEL	VALVE SETTINGS (MINUTES)								
	MUNICIPAL WATER (HIGH EFFICIENCY)			MUNICIPAL WATER (HIGH CAPACITY)			PROBLEM WATER		
	BACKWASH	BRINE / RINSE	RINSE	BACKWASH	BRINE / RINSE	RINSE	BACKWASH	BRINE / RINSE	RINSE
Flex-20	1	21	1	1	35	1	4	35	
Flex-24	1	23	1	1	52	1	5	52	5
Flex-34	2	33	1	2	80	2	10	80	10

Change Valve Cycle Settings

1. If screen is locked, press MENU for 3 seconds to unlock.
2. Press and hold UP AND DOWN for three seconds to enter Level Two Master Programming.
3. Press the DOWN and advance to the BACKWASH menu option. Press SET/REGEN to edit the BACKWASH minutes. Press UP OR DOWN arrows to change the BACKWASH minute values. Press SET/REGEN again to accept the new value.
4. Press the DOWN twice to advance to the RINSE menu option. Press SET/REGEN to edit the RINSE minutes. Press UP OR DOWN arrows to change the RINSE minute values. Press SET/REGEN again to accept the new value.
5. Press MENU to exit programming mode.

Change Efficiency Settings

MODEL	HIGH EFFICIENCY		HIGH CAPACITY		PROBLEM WATER	
	SALT SETTING	UNIT CAPACITY	SALT SETTING	UNIT CAPACITY	SALT SETTING	UNIT CAPACITY
	Flex-20	1.5	7,300	3.0	12,000	5.0
Flex-24	2.1	11,800	3.7	18,000	7.0	19,600
Flex-34	2.4	13,400	5.3	20,500	8.0	22,400

1. If screen is locked, press MENU for 3 seconds to unlock.
2. Press and hold UP AND DOWN for three seconds to enter Level Two Master Programming.
3. Press the DOWN and advance to the SALT SETTING menu option. Press SET/REGEN to edit the SALT SETTING. Press UP OR DOWN arrows to change the SALT SETTING values. Press SET/REGEN again to accept the new value.
4. Press the DOWN and advance to the UNIT CAPACITY menu option. Press SET/REGEN to edit the UNIT CAPACITY. Press UP OR DOWN arrows to change the UNIT CAPACITY values. Press SET/REGEN again to accept the new value.
5. Press MENU to exit programming mode.

Automatic Bypass

The regeneration cycle can last 30 to 80 minutes, after which soft water service will be restored. During regeneration, hard water is automatically bypassed for use in the household. Hot water should be used as little as possible during this time to prevent hard water from filling the water heater. This is why automatic regeneration is set for sometime during the night and manual regenerations should be performed when little or no water will be used in the household.

Normal regeneration time is 2:00 AM. It can be changed by going into the PROGRAM menu and selecting REGEN TIME.

Safety Float

The brine tank is equipped with a safety float which prevents your brine tank from overflowing as a result of a malfunction such as a power failure.

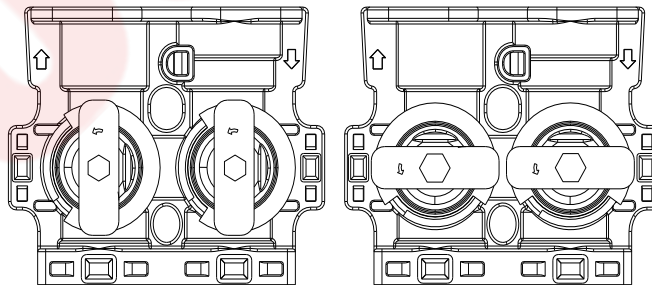
New Sounds

You may notice new sounds as your water softener operates. The regeneration cycle lasts up to 80 minutes. During this time, you may hear water running intermittently to the drain.

Manual Bypass

In the case of emergency, such as an overflowing brine tank, you can isolate your water softener from the water supply using the bypass valve located at the back of the control. In normal operation the bypass is open with the on/off knobs in line with the inlet and outlet pipes.

To isolate the softener, simply rotate the knobs clockwise (as indicated by the word BYPASS and arrow) until they lock. You can use your water related fixtures and appliances as the water supply is bypassing the softener. However, the water you use will be hard. To resume soft water service, open bypass valve by rotating the knobs counterclockwise.



SERVICE POSITION

BYPASS POSITION

Maintenance

Adding Salt

Use only crystal water softener salt. Check the salt level monthly. It is important to maintain the salt level above the water level. To add salt, simply lift the salt lid and add the salt directly into the brine tank. Be sure the brine well cover is on and fill only to the height of the brine well.

Bridging

Humidity or wrong type of salt may create a cavity between the water and the salt. This action, known as "bridging", prevents the brine solution from being made, leading to your water supply being hard.

If you suspect salt bridging, carefully pound on the outside of the brine tank or pour some warm water over the salt to break up the bridge. This should always be followed up by allowing the unit to use up any remaining salt and then thoroughly cleaning out the brine tank. Allow four hours to produce a brine solution, then manually regenerate the softener.

Care of Your System

To retain the attractive appearance of your new water softener, clean occasionally with mild soap solution. Do not use abrasive cleaners, ammonia or solvents. Never subject your softener to freezing or to temperatures above 120°F.

Resin Cleaner

An approved resin cleaner must be used on a regular 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 local representative or follow the directions on the resin cleaner package).



Item #	Description
80030006	Res Care - 1 gal. Bottle
80030005	Res Care - 1 qt. Bottle

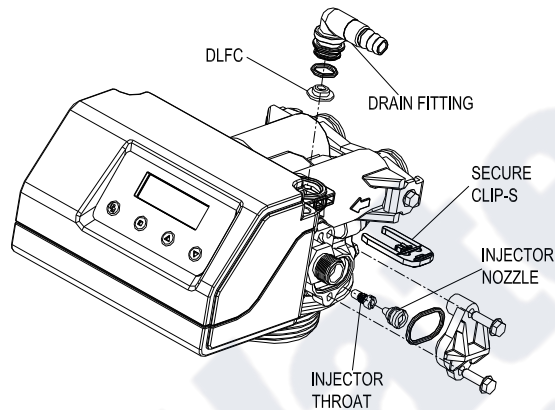
Item #	Description
80030002	Rust Out - 1.5 lb. Bottle
80030003	Rust Out - 5 lb. Bottle
80030004	Rust Out - 50 lb. Pail

Item #	Description
55030001	Res Up Feeder - 0.5 oz/day Feeder
55030002	Res Up Feeder - 1.0 oz/day Feeder

Cleaning 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. This assembly is easy to clean.



1. Shut off the water supply to your softener and reduce the pressure by opening a cold soft water faucet.
2. Using a screwdriver, remove the two screws holding the injector cover to the control valve body.
3. Carefully remove the assembly and disassemble as shown in above figure.
4. The injector orifice is removed from the valve body by carefully turning it out with a large screwdriver. Remove the injector throat the same way.
5. Carefully flush all parts including the screen. Use a mild acid such as vinegar or Pro-Rust Out to clean the small holes in the orifice and throat.
6. Reassemble using the reverse procedure.

Sanitizing Procedure

Care is taken at the factory to keep your water softener clean and sanitary. Materials used to make the softener 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 softener. For this reason, sanitizing as follows is suggested when installing.

Sani-System Liquid Sanitizer Concentrate

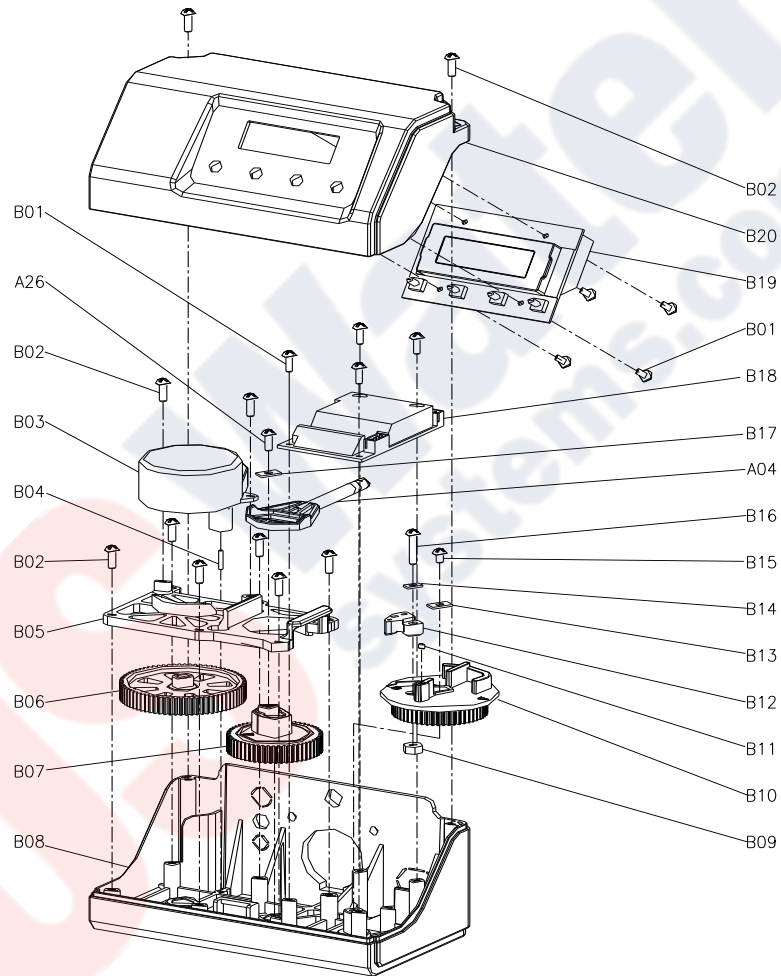


Item# 80030021—Softener Sanitizer 0.25 fl.oz (24 Pack)

1. Be sure to complete all installation steps, including programming.
2. For effective and complete sanitization, Flex series recommends Sani-System Liquid Sanitizer Concentrate. Pour one 0.25 fl. Oz. package into the brine well located in the cabinet tank. (Alternative use 3/4 oz of common 5.25% household bleach)
3. Start an immediate regeneration. If screen is locked, press MENU for 3 seconds to unlock. To initiate an Immediate Regeneration, press the SET / REGEN button for 3 seconds, an option for Delayed or Immediate Regeneration will appear. Press the SET / REGEN button again and delayed will begin flashing, press the down arrow button to have Immediate flash, press the SET / REGEN button and then press the MENU button and the valve will immediately start into manual regeneration.
4. The Softener Sanitizer Solution is drawn into and through the water softener to sanitize it. This sanitizing regeneration is over in about two hours. Then, **soft water** is available for your use.

NOTE: Sanitizing is recommended by the Water Quality Association for disinfecting. On some water supplies, they suggest periodic sanitizing.

Valve Powerhead Assembly

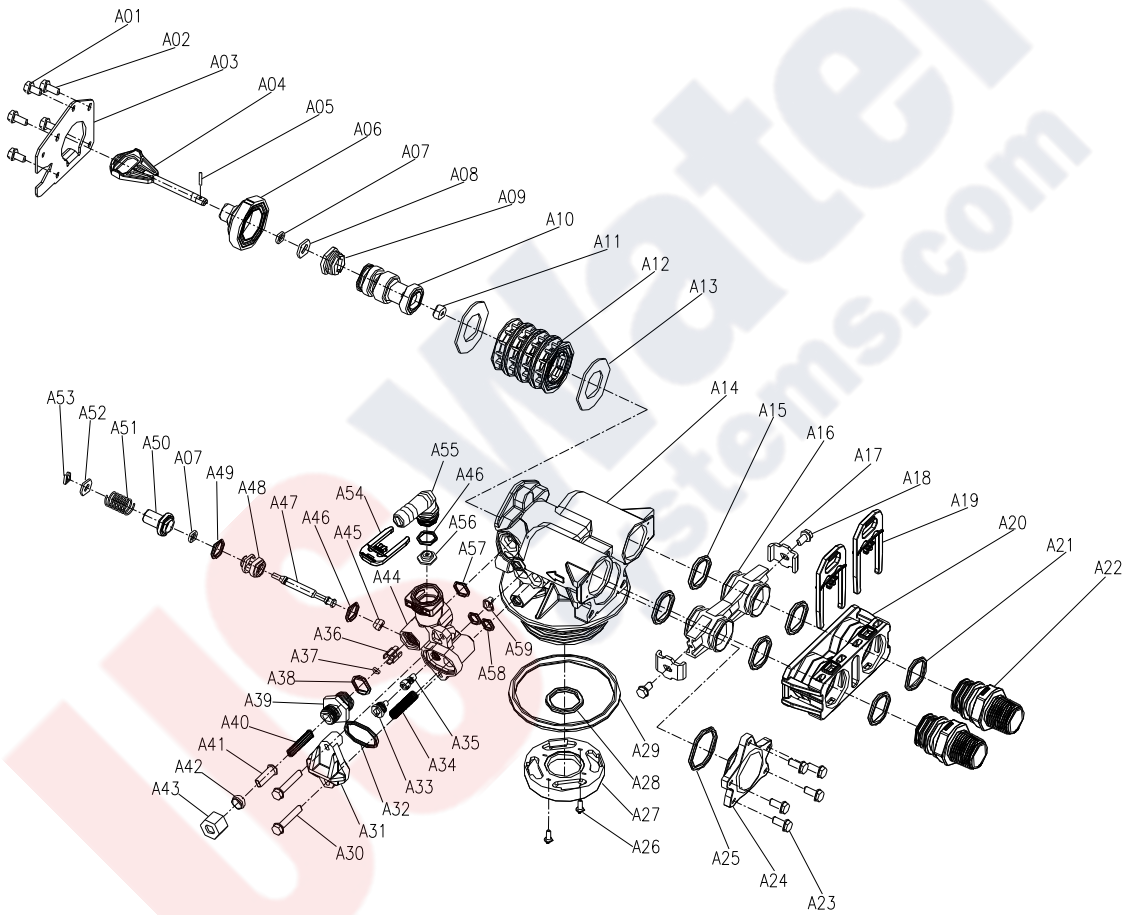


To order replacement parts contact US Water Systems.
1-800-608-8792

Powerhead Assembly Parts List

Item No.	Part No.	Part Description	Quantity
B01	05010037	Screw-ST2.9×10	8
A26	13000426	Screw-ST2.9×13(Large Wafer)	1
B02	05056084	Screw-ST3.5×13	8
B03	05056510	Motor-12v/2rpm	1
	05030014	Motor Power Cable	1
	11700005	Wire Connector	2
B04	05056098	Motor Pin	1
B05	05030006	Bnt85 Mounting Plate	1
B06	05030009	Bnt85 Drive Gear	1
B07	05030007	Bnt85 Main Gear	1
B08	05030005	Bnt85 Housing	1
B08*	05030016	Bnt185 Housing	1
B09	05056089	Nut-M4	1
B10	05030008	Bnt85 Brine Gear	1
B11	05010023	Magnet-φ3×2.7	1
B12	05056016	Refill Regulator	1
B13	05056141	Washer-4x12	1
B14	13111004	Washer-4x9	1
B15	05056166	Screw-ST4.2×12(Large Wafer)	1
B16	05056083	Screw-M4x14	1
A04	05030002	Bnt85 Piston Rod	1
B17	05056139	Washer-3x13	1
B18	05030010	Bnt85 Main Pcb	1
	05010031	Meter Assembly	1
	05010046	Meter Strain Relief	1
	05010029	Power Cable	1
	05010035	Power Strain Relief	1
	19010105	Wire Rope-3×100	2
B19	05030011	Bnt85 Display	1
	05030021	Bnt85 Wiring Harness	1
B20	05030003	Bnt85 Cover	1
	05030012	Bnt85 Label	1
B20*	05030015	Bnt185 Cover	1
	05030017	Bnt185 Label	1

Valve Body Assembly



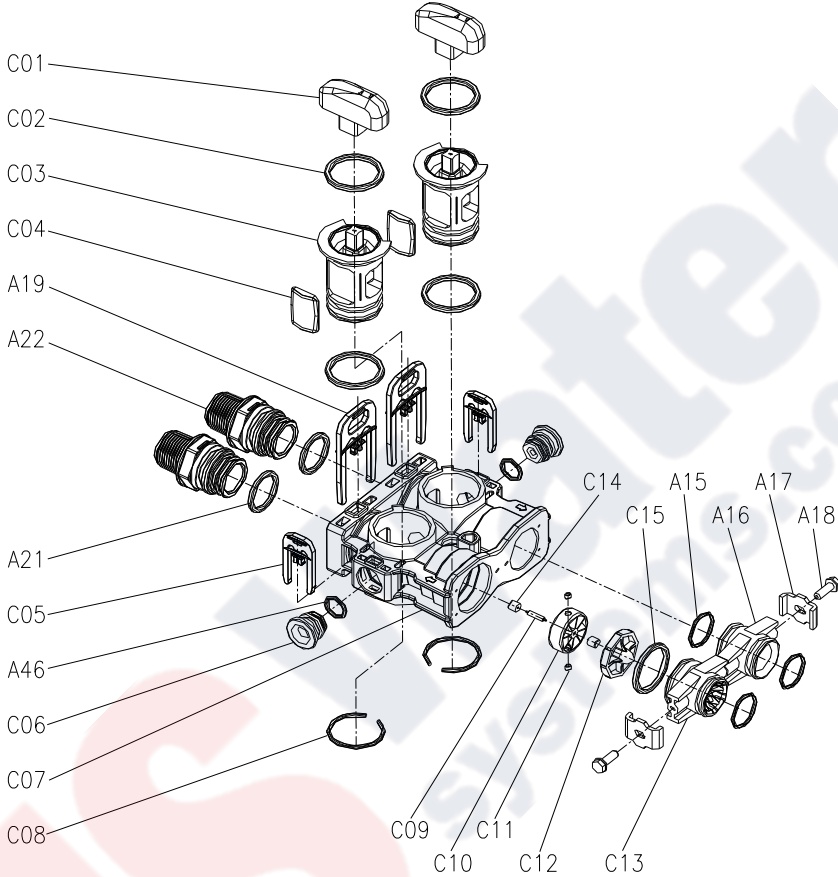
Valve Body Assembly Parts List

Item No.	Part No.	Part Description	Quantity
A01	05056087	Screw-M5×12(Hexagon)	3
A02	05056088	Screw-M5×16(Hexagon with Washer)	2
A03	05056047	End Plug Retainer	1
A04	05030002	Bnt85 Piston Rod	1
A05	05056097	Piston Pin	1
A06	05056023	End Plug	1
A07	05056070	Quad Ring	2
A08	05056024	End Plug Washer	1
A09	05056022	Piston Retainer	1
A10	05056181	Piston (Electrical)	1
A11	05056104	Muffler	1
A12	05056021	Spacer	4
A13	05056073	Seal	5
A14	05030001	Bnt85 Valve Body	1
A15	05056129	O-ring-φ23×3	4
A16	05056025	Adaptor Coupling	2
A17	05056044	Adaptor Clip	2
A18	05056090	Screw-ST4.2×13(Hexagon with Washer)	2
A19	21709003	Secure Clip	2
A20	05056140	Valve Connector	1
A21	05056065	O-ring-φ23.6×2.65	2
A22	21319006	Screw Adaptor	2
A23	05056508	Screw-M5×12(Hexagon with Washer)	5
A24	05030004	Bnt85 End Cover	1
A25	05030013	O-ring-φ30×2.65	1
A26	13000426	Screw-ST2.9×13(Large Wafer)	2
A27	07060007	Valve Bottom Connector	1
A28	26010103	O-ring-φ25×3.55	1
A29	05056063	O-ring-φ78.74×5.33	1
A30	05056086	Screw-M5×30(Hexagon with Washer)	2
A31	05056029	Injector Cover	1
A32	05056072	O-Ring-φ24×2	1
A33	05056027	Injector Nozzle	1
A34	05056103	Injector Screen	1
A35	05056028	Injector Throat	1
A36	05056035	BLFC Button Retainer	1
A37	05056191	BLFC-2#	1
A38	05056138	O-Ring-φ14×1.8	1
A39	05056100B	BLFC Fitting	1
A40	05056106	Brine Line Screen	1
A41	05056107	BLFC Tube Insert	1

Valve Body Assembly Parts List (Continued)

A42	05056033	BLFC Ferrule	1
A43	05056108	BLFC Fitting Nut	1
A44	05056177	Injector Body	1
A45	05056075	Injector Seat	1
A46	05056134	O-Ring- ϕ 12 \times 2	2
A47	05056054	Injector Stem	1
A48	05056031	Injector Spacer	1
A49	05056081	O-Ring- ϕ 12.5 \times 1.8	1
A50	05056030	Injector Cap	1
A51	05056093	Injector Screen	1
A52	05010049	Special Washer	1
A53	05056105	Retaining Ring	1
A54	05056172	Secure Clip—S	1
A55	05010082	Drain Fitting-B	1
A56	05056186	DLFC-2#	1
A57	05056066	O-Ring- ϕ 11 \times 2	1
A58	05056067	O-Ring- ϕ 7.8 \times 1.9)	2
A59	05056037	Air Disperser	1
A60	05056165	Injector Body (Filter)	1

Bypass Assembly



Bypass Parts List

Item No.	Part No.	Part Description	Quantity
C01	05056147	Bypass Knob	2
C02	26010028	O-Ring- ϕ 28 \times 2.65	4
C03	05056148	Bypass Plug	2
C04	05056149	Bypass Seal	2
A19	21709003	Secure Clip	2
A22	21319006	Screw Adaptor	2
A21	05056065	O-Ring- ϕ 23.6 \times 2.65	2
C05	05056172	Secure Clip—S	2
A46	05056134	O-Ring- ϕ 12 \times 2	1
C06	05056146	Bulkhead	2
C07	05056145	Bypass Body	1
C08	05056150	Collar— ϕ 32 \times 2.5	2
C09	05010079	Impeller Pin	1
C10	05010014	Impeller	1
C11	05010078	Magnet- ϕ 4 \times 3	2
C12	05010077	Impeller Holder	1
C13	05010083	Adaptor Distributor	1
C14	05010019	Pin Holder	2
C15	26010046	O-ring- ϕ 27 \times 3	1
A15	05056129	O-ring- ϕ 23 \times 3	3
A16	05056025	Adaptor Coupling	1
A17	05056044	Adaptor Clip	2
A18	05056090	Screw-ST4.2 \times 13(Hexagon with Washer)	2

Trouble Shooting

Issue	Possible Cause	Possible Solution
A. Unit fails to initiate a regeneration cycle.	1. No power supply.	Check electrical service, fuse, etc.
	2. Defective circuit board.	Replace faulty parts.
	3. Power failure.	Reset time of day.
	4. Defective meter.	Replace turbine meter.
B. Water is hard.	1. By-pass valve open.	Close by-pass valve.
	2. Out of salt or salt level below water level.	Add salt to tank.
	3. Plugged injector / screen.	Clean parts.
	4. Flow of water blocked to brine tank.	Check brine tank refill rate.
	5. Hard water in hot water tank.	Repeat flushing of hot water tank required.
	6. Leak between valve and central tube.	Check if central tube is cracked or o-ring is damaged. Replace faulty parts.
	7. Internal valve leak.	Replace valve seals, spacer, and piston assembly.
	8. Reserve capacity setting too low.	Increase reserve capacity.
	9. Not enough capacity.	Increase salt dosage.
C. Salt use is high.	1. Refill time is too high.	Check refill time setting.
	2. Defective flow control.	Replace.
D. Low water pressure.	1. Iron or scale build up in line feeding unit.	Clean pipes.
	2. Iron build up inside valve or tank.	Clean control and add resin cleaner to clean bed. Increase regeneration frequency.
	3. Inlet of control plugged due to foreign material.	Remove piston and clean control valve.
	4. Deteriorated resin. (Maybe caused from high chlorine or chloramines.)	Re-bed unit. Consider adding carbon pre-treatment.
E. Resin in drain line.	1. Air in water system.	Check well system for proper air eliminator control.
	2. Incorrect drain line flow control (DLFC) button.	Check for proper flow rate.
F. Too much water in brine tank.	1. Plugged injector or screen.	Clean parts.
	2. Valve not regenerating.	Replace circuit board, motor, or control.
	3. Foreign material in brine valve.	Clean parts.
	4. Unit not drawing brine.	Check for vacuum leak in brine line connections.
G. Unit fails to draw brine.	1. Drain line flow control is plugged.	Clean parts.
	2. Injector or screen is plugged.	Clean parts.
	3. Inlet pressure too low.	Increase pressure to 25 PSI.
	4. Internal valve leak.	Replace seals, spacers, and piston assembly.
	5. Safety valve closed.	Check for leak in brine line connections. Replace safety float assembly.
	6. Vacuum leak in brine line.	Check for leak in brine line connections. Tighten all connections.
	7. Drain line has kink in it or is blocked.	Check drain line.
H. Valve continuously cycles.	1. Defective position sensor PCB.	Replace faulty parts.
I. Flow to drain continuously.	1. Valve settings incorrect.	Check valve settings.
	2. Foreign material in control valve.	Clean control.
	3. Internal leak.	Replace seals, spacers, and piston assembly.
	4. Piston is stuck in position. Motor may have failed or gears have jammed or disengaged.	Check for power to motor. Check for loose wire. Check for jammed gears or gears disengaged. Replace faulty parts.
J. Valve makes beeping sound.	1. The piston has not advanced to the next cycle position properly.	Check for power to motor. Check for loose wire. Check for jammed gears or gears disengaged.

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FLEX

Limited Warranty

For the lifetime of the original purchaser, at the original residential place of installation of this Flex Water Conditioning System, *US WATER SYSTEMS, INC.* warrants the following:

Ten Year Warranty

Media Tank

Free of all costs to you except transportation and labor charges, we warrant that we will replace or repair the fiberglass media tank, if for any reason it is found to be defective, because of faulty materials or workmanship.

Brine Tank

Free of all costs to you except transportation and labor charges, we warrant that we will replace or repair the plastic brine tank, if for any reason it is found to be defective, because of faulty materials or workmanship.

Five Year Warranty

Valve & Electronics

We warrant that for five (5) years from the date of purchase, we will replace or repair the valve and electronics, if for any reason it is found to be defective, because of faulty materials or workmanship at no charge to you except for transportation and standard labor charges.

GENERAL PROVISIONS

This warranty does not apply to any commercial or industrial installations or to any part of the water conditioner which has been subjected to misuse, neglect, alteration or accident; or to any damage caused by fire, flood, freezing, Acts of God, or any other casualty, or if the original serial numbers have been removed. Fouling or damage to the media caused by iron, sulfur, bacterial iron, silt, sand, tannins, organics, hot water or chlorine voids the warranty on media.

These warranties are in lieu of all other warranties expressed, or implied, and we do not authorize any person to assume for us any other obligation on the sale of this water conditioner. No responsibility is assumed for delays or failure to meet these warranties caused by strike, government regulations or other circumstances beyond the control of *US WATER SYSTEMS, INC.*

TO OBTAIN WARRANTY SERVICE, CALL OR WRITE: *US WATER SYSTEMS, INC. 1209 COUNTRY CLUB ROAD INDIANAPOLIS, IN 46234 (800) 608-USWA(8792).*

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SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

THIS WARRANTY MAY BE TRANSFERRED TO A SUBSEQUENT OWNER WITH WRITTEN APPROVAL OF *US WATER* AND PAYMENT OF STANDARD TRANSFER FEE.