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Two-Tank Economy Water Softener



Owners Manual

Models:

080-FSC-075, 080-FSC-100, 080-FSC-150, 080-FSC-200

REVISION # 1.2 REVISION DATE December 2, 2014 **US Water Systems** Corporate Office 1209 Country Club Road Indianapolis, IN 46234

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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 at **1-800-608-8792** to report any shipping damage within 24 hours of delivery. Claims made after 24 hours may not be honored.

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 24 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. Extra Course Grade or Crystal salts are recommended. Do not

- use rock, block, granulated or ice cream making salts. They contain contaminants that could cause 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. Contact US Water Systems for disinfection treatment equipment.

Proper Installation

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

Do not install or store where it will 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.

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 roduce the pressure.

Softener resins may degrade in the presence of chlorine or chloramines above 2 ppm. If you have chlorine or chloramines 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 softener system with a chlorine reducing media. Contact US Water Systems for Chlorine and Chloramine removal equipment.

WARNING: Discard all unused parts and packaging material after installation. Small parts remaining after the installation could be a choke hazard.













Two-Tank Model System Dimensions

Focus Two-Tank Water Softeners				
Model	Tank Size	Α	В	С
FSC-075	8" X 44"	51.5	46"	8"
FSC-100	9" X 48"	55.5"	50"	9"
FSC-150	10" X 54"	61.5"	56"	10"
FSC-200	12" X 52"	59.5"	54"	12"



Specifications

	FOCUS TWO-TANK WATER SOFTENER			
Specifications	FSC-075	FSC-100	FSC-150	FSC-200
High Capacity Settings				
Salt Used Per Regeneration	8 lbs	10 lbs	15 lbs	20 lbs
Hardness Removal-Grains	26,000	35,000	53,000	70,000
Resin Quantity - Cubic Feet	0.75	1	1.5	2
Tank Size	8X44	9X48	10 X 54	12X52
Brine Tank Size	13x13x35	13x13x35	13x13x35	13x13x35
Service Flow Rates				
Normal	5 GPM	8 GPM	12 GPM	17 GPM
Peak	7 GPM	10 GPM	15 GPM	20 GPM
Backwash Flow Rate	2 GPM	2.4 GPM	3.0 GPM	3.5 GPM
Plumbing Connections	3/4"			
Electrical Requirements	Input 120V 60 Hz - Output 24V 450mA			
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit			
Water Pressure	Min. 20 - Max 125 psi			

- 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.

Before Starting Installation

Tools, Pipe, and Fittings, Other Materials

- Channel Locks
- 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" 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.
- 5/8" OD drain line is needed for the valve drain.
- Extra Course Grade or Crystal water softener salt is needed to fill the cabinet or brine tank.



How Your Water Conditioner Works

The principle behind water softening is simple chemistry. A water softener contains resin beads which hold electrically charged ions. When hard water passes through the softener, calcium and magnesium ions are attracted to the charged resin beads. The result is removal of calcium and magnesium ions which produces soft water.

This system is controlled with simple, user-friendly electronics displayed on a LCD screen.

Where To Install The Softener

- Place the softener as close as possible to
 A 120 volt electric outlet is needed within 6 the pressure tank (well system) or water meter (city water).
 A 120 volt electric outlet is needed within 6 feet of the softener. The transformer has an attached 8 foot power cable.
- 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 100 deg. F.
- Outside faucets and irrigation systems should be supplied with hard water prior to the water softener.
- 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 where 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 is needed within 6 feet of the softener. The transformer has an attached 8 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 protected from the elements and contamination sources.
- Keep the softener out of direct sunlight.
 The sun's heat may soften and distort plastic parts.

Unwrap and lay out the parts in the brine tank. The following parts should be with each system:

- Control Valve (1)
- Funnel (2)
- Upper Distributor Basket (3)
- Brine Line (4)
- Power Transformer (5)
- Brine Connector Packs (6)



Softener Preparation

Focus Tank Installation Instructions

WATER PRESSURE: A minimum of 20 pounds of water pressure is required for regeneration valve to operate effectively.

ELECTRICAL FACILITIES: An uninterrupted alternating current (A/C) supply is required. Please make sure your voltage supply is compatible with your unit before installation.

EXISTING PLUMBING: Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced.

LOCATION OF FOCUS TANK AND DRAIN: The Infusion tank should be located close to a drain to prevent air breaks and back flow.

CAUTION: Water pressure is not to exceed 80 psi, water temperature is not to exceed 110°F (43°C), and the unit cannot be subjected to freezing conditions.

Media Installation

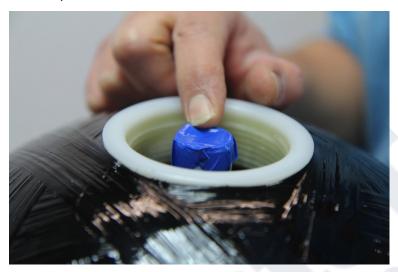
- 1) Remove the resin tank from carton.
- 2) Verify the riser tube is centered in the bottom center of the tank. A flashlight may be necessary. There is an indentation in the bottom of the tank that will center the distributor tube. The distributor tube should be flush with the top of the tank when it is installed properly.





Softener Preparation

3) Place a piece of duct tape over the riser tube so no media enters the riser while filling.



4) Use the Blue Funnel provided, to pour the softening resin into the tank. Pour it evenly around the hole to ensure it is well distributed in the tank and pour slow enough, to keep from plugging the hole. A helper may be needed to hold the funnel during the filling process. It is recommended that a dust mask and safety goggles be worn to prevent possible injury. Pour all the media sent with the system in the tank. US Water does not ship "extra" media.



5) When media is installed move tank side to side to settle the media. Remove the funnel and tape from the distributor tube.

Softener Preparation

6) Lubricate both O-rings on the bottom of the control valve. Install the upper basket on the bottom of the valve by lining up the tabs then turning the basket clockwise to lock it in place. Place the upper basket over the distributor tube and push the valve on the tank. Thread the valve on the tank by turning it clockwise. Be sure not to cross-thread the valve on the tank. Tighten the valve hand tight, then snug it further by tapping it with the palm of the hand. DO NOT use tools to tighten the valve or damage could occur. The Split-Cabinet system must be put on its' side and pulled out of the cabinet. A helper is needed to hold the tank while the valve is tightened. DO NOT use tools to tighten the valve or damage could occur. Once the valve is tight, stand the tank back up.



- 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.
 - ON COPPER PLUMBING SYSTEMS BE SURE TO INSTALL A GROUNDING WIRE BETWEEN THE INLET AND OUTLET PIPING TO MAINTAIN GROUND-ING.

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

The Focus is equipped with 3/4" male NPT connections. It is recommended that these connections are made using Teflon tape.

The inlet and outlet can be identified on the bypass valve. There are arrows stamped in the bypass valve showing flow. The arrow pointing toward the valve is the inlet and the arrow pointing away from the valve is the outlet.

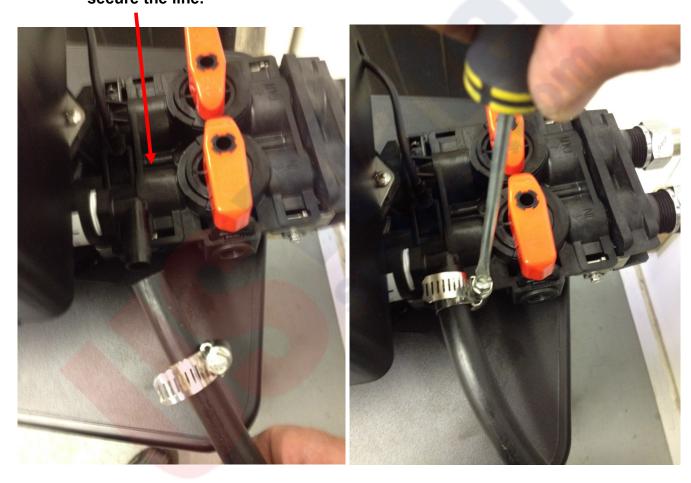
All piping should be secured to prevent stress on the bypass valve and connectors.





5. Connect the drain hose to the valve and secure it with a hose clamp. Run the drain hose to the nearest laundry tub or floor drain. This can be ran up overhead or down along the floor. Drain hose should be a minimum of 1/2". If running the drain line more than 20 ft overhead, it is recommended to increase the hose size to 3/4". A DIRECT CONNECTION INTO A WASTE DRAIN IS NOT RECOMMENDED. 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.

Hose barb fitting for drain line. Be sure to use a hose clamp to secure the line.



Be sure to secure the drain line. The softener will drain with force and it should be secured to prevent a leak. Hose clamps should be used to secure the drain line at the connection points.

6. Connect the brine line to the control valve by removing the nut on the control valve and sliding it on the brine line. Then install plastic sleeve on the brine line. Push the brass tube stiffener in the brine line. Install the cone shaped screen in the brass tube stiffener. Push the brine line in the brass fitting on the control valve until it stops. Then push the nut down on the fitting and tighten it hand tight. Use channel locks to tighten the nut an additional 1/2 turn.













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Remove the lid from the brine tank. Remove the brine well cap. Remove the plastic tube stiffener taped to the brine well cap. Remove the nut from the brine safety valve in the brine well. Push the brine line through the hole in the brine tank and brine well. Install the nut on the brine line. Now install the tube stiffener. Push the brine line into the brine elbow on the brine safety valve. Now tighten the nut hand tight. Tighten the nut and additional 1/2-1 turns. Make sure both brine line connections are tight.



- 7. Place the unit in the bypass position (see below). 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.
- 8. Make sure there are no leaks in the plumbing system before proceeding. Close the water tap when water runs clear.
- 9. Open the brine tank lid and add 5 gallons of water to the brine tank. Add a minimum of 80lbs of salt to the brine tank.
- 10. Proceed to start up instructions.

BYPASS POSITION





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

System Start-Up

Key Pad Configuration

"GEAR" This function is to enter the programing mode

required at the time of installation. This button

serves as the "Save" button.

REGEN This function is to initiate a regeneration. This "Triangle button also unlocks each parameter to be Arrows" changed in the programming mode.

DOWN / UP Increase or decrease the value of the settings

while in the programming mode.



IMMEDIATE REGENERATION

To start an immediate regeneration (or step valve through each position), press and hold the MANUAL REGEN. Button for 3 seconds (until beeps). The valve will start an immediate regeneration. Press any key to skip to the next cycle.



- 1. Plug the power transformer into an approved power source. Connect the power cord to the valve.
- 2. When power is supplied to the control, the 5. When the rinse cycle is complete, the screen will display the time of day, gallons remaining and the mode. Press and hold the "Manual" regen button. The valve will display "goto BW". Once the valve stops moving the valve
- 3. Once in the backwash (BW) cycle the display will show a time value (10), open the inlet on the bypass valve slowly and allow water to enter the unit. Allow all air to es- 6. The valve will automatically advance to the cape from the unit before turning the bypass fully open. Then allow water to run to drain for 3-4 minutes or until all media fines are washed out of the softener indicated by clear water in the drain hose.
- 4. When the backwash cycle is complete, the 7. Program unit. valve will advance to the brine draw (BD) position. Once the valve reaches the BD cycle, push and release the "Regen" butdisplay will show "goto ton.



- RR" (Rapid Rinse). Allow the system to rinse to the drain. Allow the water to run for the entire rinse cycle.
- valve will advance to the REFILL position. Check that the control valve is pushing water into the brine tank (remove brine well cap to confirm that the water level is rising in the brine tank). Allow the valve to refill for the full amount of time as displayed on the screen to insure a proper brine solution for the next regeneration.
- SERVICE position. Open the outlet valve on the bypass, then open the nearest treated water faucet and allow the water to run until clear, close the tap and replace the faucet screen.

Within the Advance Menus, the Regeneration Mode, Regeneration Cycle Period Lengths, and Unit Capacity are adjustable.

To enter, press both the Gear and Regen button at the same time. All mode types will be flashing.

Flashing

12:00 P

13:00 P

13:00 P

Press the Regen button again to select the mode type you wish to be in. Use the up and down arrow to scroll through the selections. "TM" should be used.

Flashing

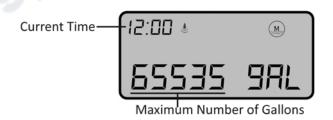
12:00
T M TM

ESPE

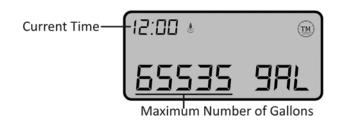
Time Mode: Home screen will display days and hours left until the unit regenerates.

Meter Mode: Meter mode tracks the number of gallons used instead of regenerating on a specific time. In this mode immediate regeneration will occur once the unit hits its target calculated number of gallons based on hardness settings.





Timed Meter Mode: Timed Meter Mode tracks the number gallons used, like the Meter Mode, but waits until its set time to regenerate instead of immediately. A buffer period is factored in to prevent you from running out of soft water. The water droplet to the right of Current Time signifies the unit tracking water flow.



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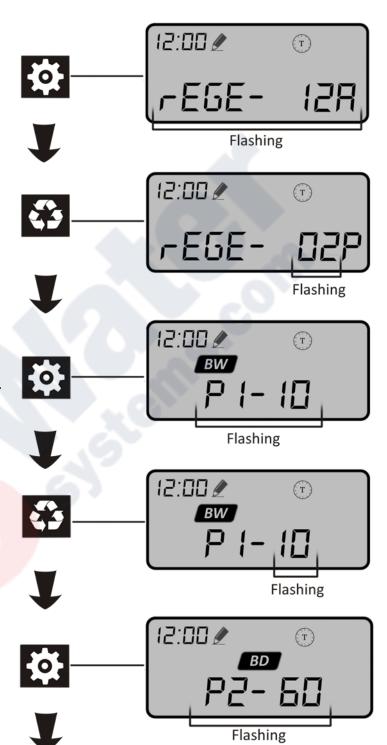
After selecting the mode, the time of day the unit is set to regenerate will appear.

Pressing the Regen button will allow the time to be changed. Use the up and down arrows to adjust the hours and A.M. and P.M. settings. The regen time should be set to (2) two hours after usage has stopped for the day.

Pressing the gear again will bring you to phase 1, Backwash. BW will be present and P1-10 will be flashing.

Total minutes spent in backwash will be flashing. The unit can be programmed for 0-99 minutes. This should be set to "10" (10 minutes).

Next menu displays brine draw settings. BD will be present and P2-60 will be flashing.



Total minutes the unit draws brine will be flashing. Unit can be set anywhere from 0-99 minutes. This should be set to "60" (60 minutes).

Flashing

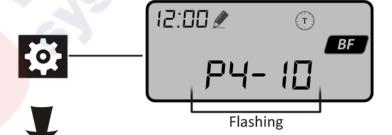
This menu displays Rapid Rinse settings. RR will be present and P3-12 will be flashing.



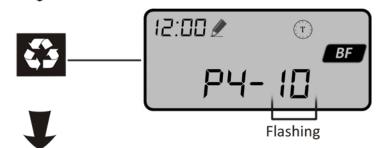
Total minutes the unit rinses will be flashing. Unit can be set anywhere from 0-99 minutes. This should be set to "10" (ten minutes).



This menu displays Brine Refill settings. BF will be present and P4-10 will be flashing.



Total minutes the unit fills the brine tank for will be flashing. Unit can be set anywhere form 0 -99 minutes. Use the table below for the correct setting for the unit purchased.

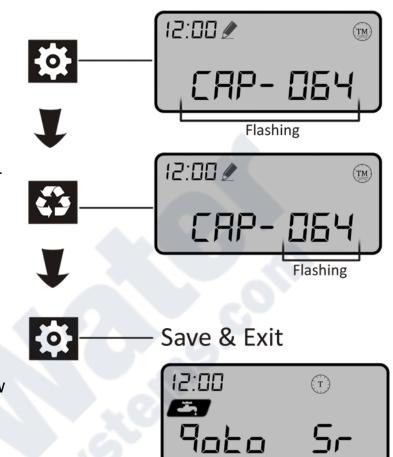


	FOCUS TWO-TANK WATER SOFTENER			
Parameter	FSC-075	FSC-100	FSC-150	FSC-200
Medium Salt Curve Capacity Setting	21,000	25,000	37,000	50,000
Brine Fill Setting in Minutes	6	8	10	14

This last menu is to change the unit's capacity.

Unit has a range of 1-199 Capacity (for Meter and Timed Meter Modes only). Multiply capacity setting by 1000 to get grains. Example: A setting of 064 is equal to 64,000 grain capacity. Use the table on the bottom of page 18 for the correct capacity setting for the unit purchase.

Press the gear button to save and exit the advanced programming mode. The scree will show "goto SR". The unit is returning to the service mode.



Programming Instructions

The following menus will allow you to change the current time, unit hardness, and calendar day override settings within the Meter and Timed Meter Modes.

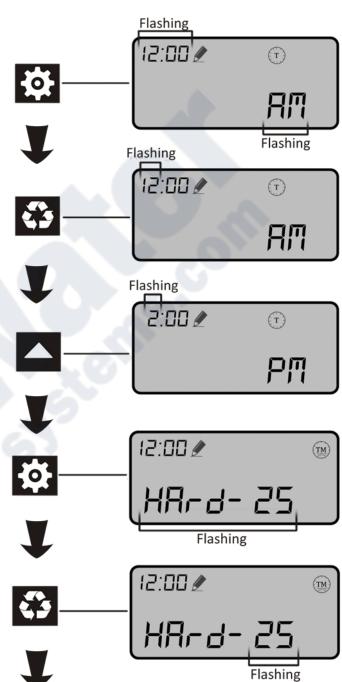
Current Time settings: Press the gear to begin menu selections. Current time and 12 hour cycle of the day will be flashing.

After pressing the Regen button, only the hour portion will be flashing.

Use the up and down arrows to adjust the time. Press the gear again to switch to the minute portion. Note, once the timer passes a 12 hour period it will automatically change A.M. to P.M.

Unit Hardness settings: Hard-25 will be flashing.

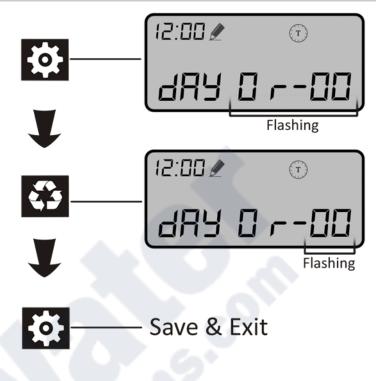
Pressing the Regen button will allow changes to hardness to be made. The unit has a range of 1-99 grains per gallon. The hardness should be set to 5 GPG higher than the actual feed water hardness.



Programming Instructions

Calendar Day Override setting: Allows user to set a time to regenerate by if the unit hasn't met its set meter amount within that time period.

Pressing the Regen button allows you to change the days. Default setting is 0 days, but can range from 0-99 days. This should be set to 14 days. If the system isn't in operation for more than two weeks, this should be set to 10 days. Press the gear button to save and exit the standard programming mode. The unit is now programmed and ready for use.



Immediate Regeneration

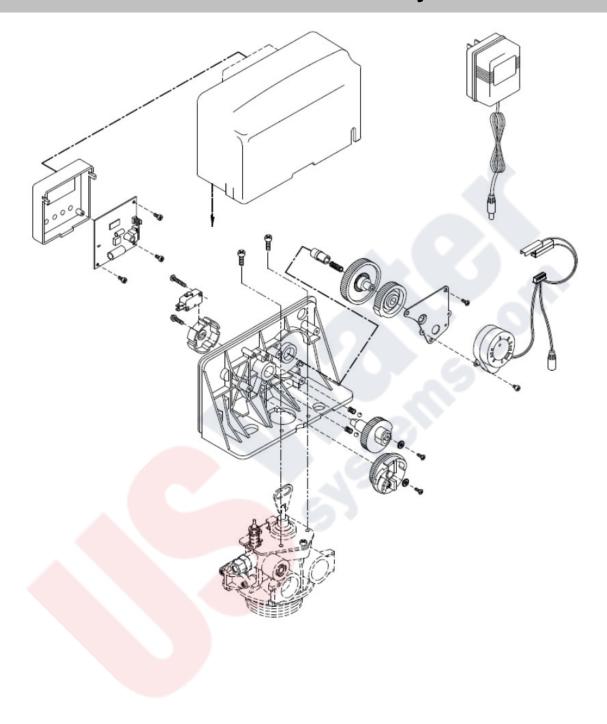
While in service position, hold the Regen button in for 5-6 second to initiate an immediate regeneration.

Pressing the Regen button again will jump to the next cycle phase. Holding the two arrow buttons together will terminate Immediate Regeneration and return the unit to service position.

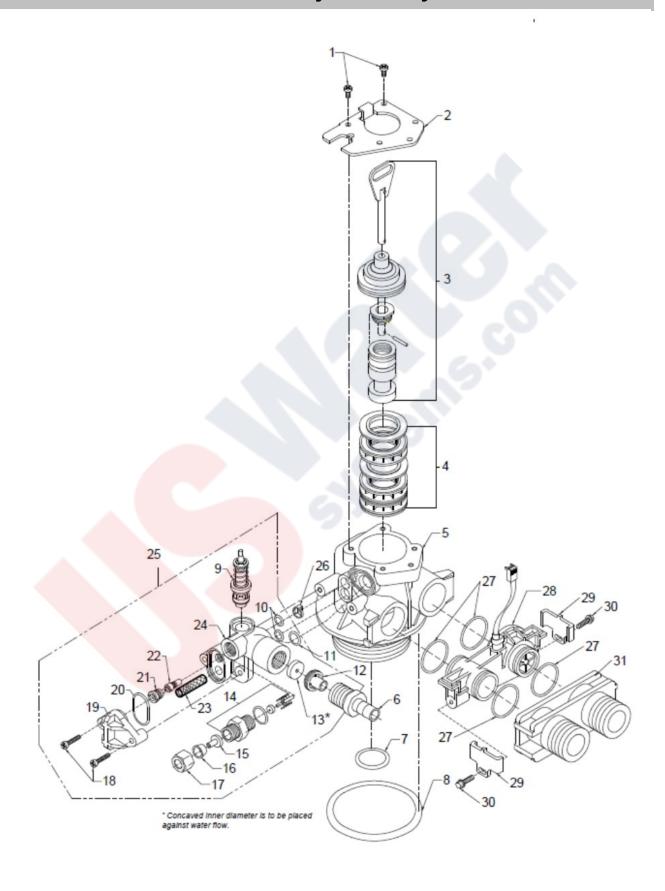
Power Outage Memory

During a loss of power, all program settings will be stored in permanent memory. The current valve position, cycle step and time of day are all stored as well, but upon power up a reset of the current time will be necessary. If the unit were to lose power during a regeneration stage, the valve will return back to its prior position when the outage occurred. The unit will take 4 -5 minutes to reset back to that position.

Power Head Assembly



Valve Body Assembly



Ref. Number	Part Number	Part Description	Qty. Req'd.
1	20561X250	Screw - Hex Hd. 10-24 x 1/2"	3
2	20561X249	End Plug Retainer	1
3	20561X254	Piston & End Plug Assy.	1
4	20561X253	Seal & Spacer Kit	1
5	20561X203	Body - Softener Only	1
6	20561X256	Straight Hose Barb	1
7	20561X204	O Ring - Dist. Tube	1
8	20561X205	O Ring - Valve to Tank	1
9	20561X225	Brine Valve Assy.	1
10	20561X219	O Ring - Injector	2
11	20561X218	O Ring - Drain	1
12	20561X246	Retainer - Drain Line Flow Button	1
13	20251X275	1.2 GPM Flow Control Button	1
	20251X266	1.5 GPM Flow Control Button	1
	20251X268	2.4 GPM Flow Control Button	1
	20251X267	2.0 GPM Flow Control Button	1
	20251X270	3.5 GPM Flow Control Button	1
	20251X272	5.0 GPM Flow Control Button	1
14	20561X241	BLFC Brass Fitting	1
15	20251X303	Insert - Brine Line	1
16	20251X305	Ferrule - Brine Line	1
17	20251X304	Nut - Compression for Brine Line	1
18	20561X214	Screw - Injector Mounting	2
19	20561X22 <mark>6</mark>	Injector Cover	1
20	20561X221	O Ring - Injector Cover	1
21	20251X205	Inj. Nozzle # 1 White	1
	20251X241	Inj. Nozzle # 2 Blue (64k only)	1
	20251X235	Inj. Nozzle # 2 PVC (-IP units only)	1
22	20251X206	Inj. Venturi # 1 White	1
	20251X242	Inj. Venturi # 3 Blue (64k only)	1
	20251X236	Inj. Venturi # 2 PVC (-IP units only)	1
23	20251X204	Injector Screen	1
24	20561X222	Injector Body	1
25	20561X260	Injector Assy. Specify # Inj. & DLFC	1
26	20561X248	Air Disperser	1
27	20561X216	O Ring - Bypass Adaptor	4
28	20564X200	Meter Assy.	1
29	20564X202	Clip - Bypass Adaptor	2
30	20561X217	Screw - 8-18 x 5/8"	2
31	20561X288	3/4 in plastic yoke	1



US Water Systems will replace any part on the valve or electronics which fails or the softening resin within (3) five years from tale to of manufacture, as indicated by the serial number, provided the failure is due to a defect on material or workmanhspin. The only exception shall be when proof to purchase or installation is provided and then the warranty period shall be from the date thereof. Resin will not be covered for systems used to remove iron, manganese or with very high chlorine concentrated feed waters.

Ten Year Warranty on Resin Tank and Brine Tank

US Water Systems will provide a replacement resin tank or brine tank to any original equipment purchaser in possession of the Focus water softener that fails for life, provided that the it is at all times operated in accordance with specifications and not subject to freezing.

Ceneral Provisions

US Water Systems assumes no responsibility for consequential damage, labor or expense incurred as a result of a safetic or for failure to meet the terms of these guarantees because of circumstances beyond our control. Installation workmanship failure is not oevered under warranty.

These warranties are in lieu of all other warranties expressed or implied, and we do not authorize any person to assume for use any other obligation on the sale of his water conditioner. No responsibility is assumed for delays or failure to meet the terms of these guaranties expressed or implied, and we do not authorize any person to assume for use any other obligation on the sale of his water conditioner. No responsibility is assumed for delays or failure to meet hese warranties expressed or implied, and we do not authorize any person to assume for use any other obligation on the sale of his water conditioner. No responsibility is assumed for delays or failure to meet hese warranties expressed or implied, and we do not authorize any person to assume for use any other obligation on the sale of his water conditioner. No responsibility is assumed for delays or failure to meet hese warra

