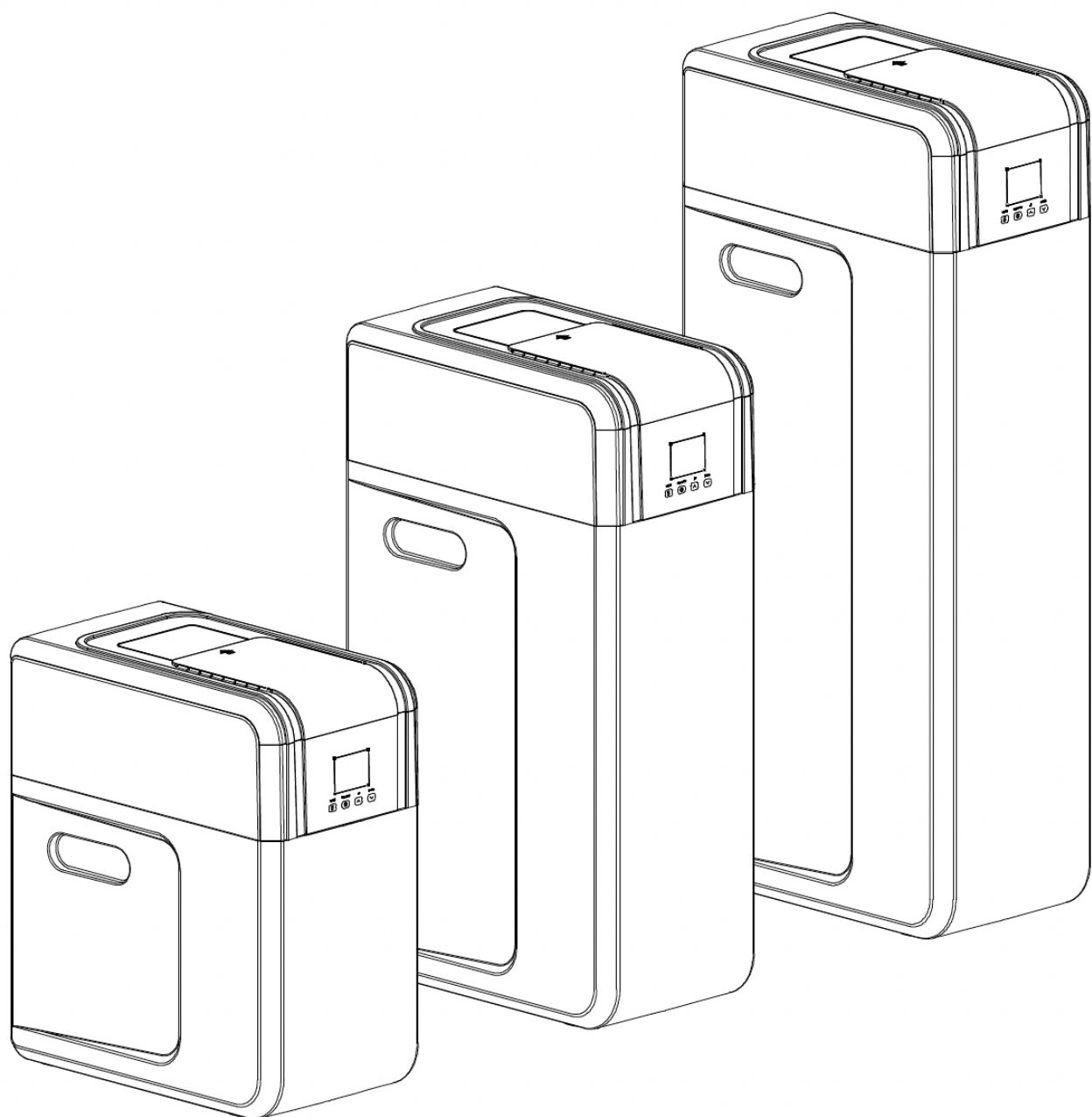


A stylized white outline of a house on a dark background. The house has a gabled roof with a chimney on the right side. A large rectangular window is centered on the front facade. The background features dark, concentric, wavy lines.

WATER
TREATMENT
AT HOME

SPECTRUM
HOME

S1 SOFTENING SYSTEM MANUAL



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- Read all instructions carefully before operation.
- Avoid pinched O-rings during installation by applying (provided with install kit) NSF certified lubricant to all seals.
- This system is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

- You must read and understand the contents of this manual before installing or operating your water softener.
- The S1 Range has a 1-year warranty from the date of sale.

Personal injury or property damage could result if you fail to follow instructions in this manual.

- These systems and their installation must comply with national and local authority regulations. Check with your local public works department for plumbing and sanitation codes. Local codes should be followed in the event the codes conflict with any content in this manual.
- These water softeners must be operated on pressures between 2 bar (30 psi) to 8.6 bar (125 psi). If the water pressure is higher than 8.6 bar (125 psi), use a pressure reducing valve in the water supply line to the softener.
- These softeners must be operated at temperatures between 4°C - 43°C (40°F and 110°F).
- Do not use these water softeners on hot water supplies.
- Do not install these units where they may be exposed to wet weather, direct sunlight, or temperatures outside of the range specified above.
- The systems are only to be used with the power supply unit provided with the system.
- The systems must only be supplied at safety extra low voltage corresponding to the marking on the systems.
- Apply provided NSF certified lubricant to all O-rings during installation. Do not use pinched or damaged O-rings during installation.
- Softeners can be exposed to high levels of iron, manganese, sulphur, and sediment. Damage to pistons, seals, and/or spacers within the control valve are not covered in this warranty due to the harsh environment.
- It is recommended to annually inspect and service the control valve. Frequent cleaning and/or replacement of pistons, seals, and/or spacers may be necessary depending on the conditions.
- Do not use water that is microbiologically unsafe without adequate disinfection before or after this system.
- This manual is based on information available when approved for printing. Continuing design refinement could cause changes that may not be included in this publication.
- These systems can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge if they have been given supervision or instruction concerning use of the system in a safe way and understand the hazards involved.
- Children shall not play with the systems.

INSTALL NOTES & SAFETY MESSAGES

Look out for the following messages in this manual:

Example

NOTE

Check and comply with your national and local authority codes. You must follow these guidelines.

Example

⚠ CAUTION

Disassembly while under pressure can result in flooding.

Example



⚠ CAUTION

Electrical Shock Hazard! Unplug the unit before removing the cover or accessing any internal control parts.

WHAT IS HARD WATER AND HOW IT IS SOFTENED?

All of the fresh water in the world originally falls as rain, snow, or sleet. Surface water evaporates and is drawn upward by the sun, forming clouds. Then, nearly pure and soft as it starts to fall as rain. It begins to collect impurities as it passes through smog and dustladen atmosphere back to the ground. As it seeps through soil and rocks it gathers hardness, rust, acid, unpleasant tastes and odours.

Water hardness is caused primarily by limestone dissolved from the earth by the rainwater. Because of this, in earlier times, people who wanted soft water collected rainwater from roofs in rain barrels and cisterns before it picked up hardness from the earth.

Iron is a common water problem. The chemical/physical nature of iron found in natural water supplies is exhibited in four general types:

1. DISSOLVED IRON - Also called ferrous or "clear water" iron. Dissolved iron is soluble in water and is detected by taking a sample of the water to be treated in a clear glass. The water in the glass is initially clear, but on standing exposed to the air, it may gradually turn cloudy or coloured as it oxidises. This type of iron can be removed from the water by the same ion exchange principle that removes the hardness elements, calcium and magnesium.

2. PARTICULATE IRON - Also called ferric or colloidal iron, this type of iron is an undissolved particulate. A pre filter is recommended to remove this type of iron. A softener will remove larger particles, but the particles may not be washed out in regeneration effectively and will eventually foul the ion exchange resin.

3. ORGANIC BOUND IRON - This type of iron is strongly attached to an organic compound in the water. The ion exchange process alone cannot break this bond down and the softener will not remove this type of iron.

4. BACTERIAL IRON - This type of iron is protected inside a bacteria cell. Like the organic bound iron, it is not removed by a water softener.

It's important that when a softener is removing both hardness and dissolved iron, it must regenerate more frequently than it normally would for just hardness. Many factors and formulas have been used to determine this frequency. It is recommended that the softener be regenerated when it has reached 50-75% of the calculated hardness capacity. This will minimise the potential for bed fouling.

Regular resin bed cleaning is needed to keep the bed from being coated with iron if you are operating a water softener with high dissolved iron content. Even when operating a softener on water with lower levels of dissolved iron, regular cleaning should be performed. Clean every six months or more often if iron appears in your conditioned water supply. Use resin bed cleaning compounds carefully following the directions on the container.

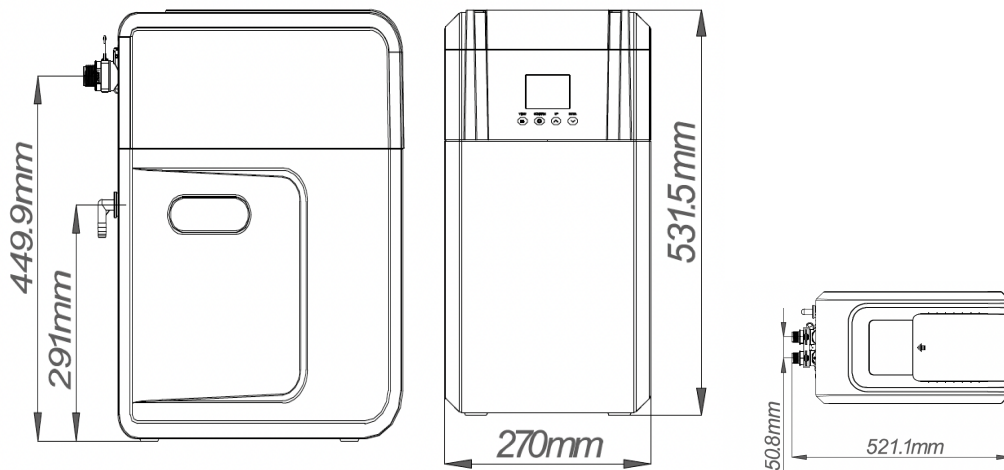


DO NOT USE WATER FILTERED THROUGH THIS SOFTENER WHERE THE WATER IS MICROBIOLOGICALLY UNSAFE OR THE WATER IS OF UNKNOWN QUALITY. THE WATER MUST BE DISINFECTED BEFORE OR AFTER THE UNIT.

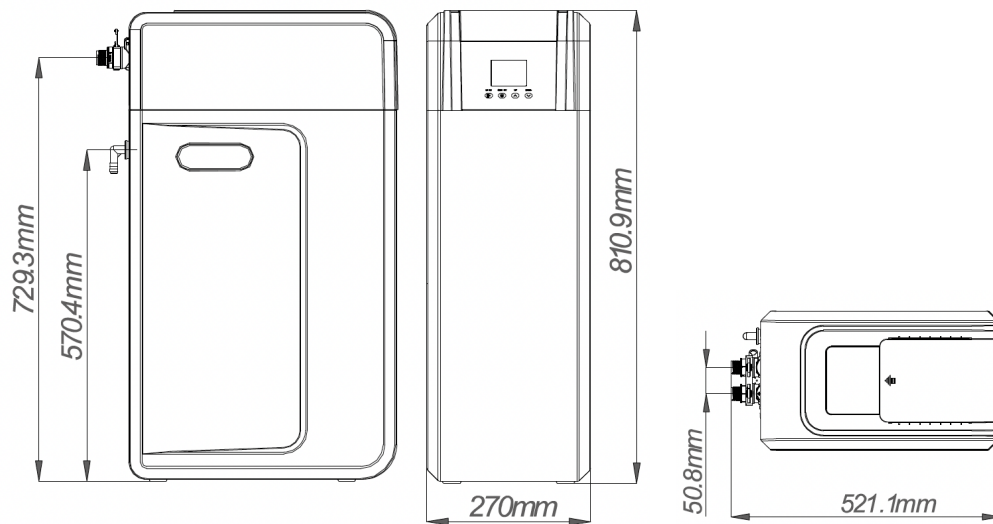
Performance Data Sheet and Specifications			
Model	S1-4	S1-8	S1-12
Regeneration Type	UP Flow		
Integrated Meter in Bypass	Yes		
Hardness Removal (mg)	377,000	1,050,000	1,522,000
Media Loaded	Yes		
Resin Quantity (L)	10	20	29
Resin Type	Strong acid cation		
Tank Size (Inch)	9 x 15	9 x 26	9 x 35
Salt Storage Capacity (Kg)	21	42	58
Rated Service Flow Rate (m³/h)	1.0	1.4	1.9
Recommended Cycle Settings			
Backwash Duration Setting (Min)	2	2	2
Brine Duration Setting (Min)	40	63	63
Rinse Duration Setting (Min)	2	4	4
Refill Duration Setting (Min)	Auto	Auto	Auto
Salt Used - Per Regeneration (6 lb/cf Salt Dosage)	0.96		
Water Used - Regeneration (L)	47		
Flow Rate (Only Valve)			
Continuous Flow Rate @ 15 psi Pressure Drop (lpm)	78		
Peak Flow Rate @ 25 psi Pressure Drop (lpm)	102		
Back Wash Flow Rate @ 25 psi Pressure Drop (lpm)	30		
Pipe Size	3/4"		
Plumbing Connections	Includes 3/4" Elbow fittings		
Electrical Requirements	Input 110V-120V /220-240V AC 50/60Hz		
	Output 12V AC 650mA		
Carton Size (mm)	335 x 579 x 580		
Shipping Weight (Kg)	21	35	47
Water Supply	Municipal		
Water Temperature (°C)	3 ~ 38		
Water Pressure (bar)	1.4 - 8.6		

- Capacity of softener may deviate from the chart above depending on flow rates and raw water conditions.
- Changing salt settings from factory setting may require changing injector sizes to achieve stated capacities.
- Hardness removal is based on standard salt setting (96kg/m³).
- Iron content must not exceed 1 ppm. Beyond 1 ppm an iron softener must be used.
- Do not subject the unit to freezing temperatures.
- Do not use water that is microbiologically unsafe without adequate disinfection before or after the system.
- 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.

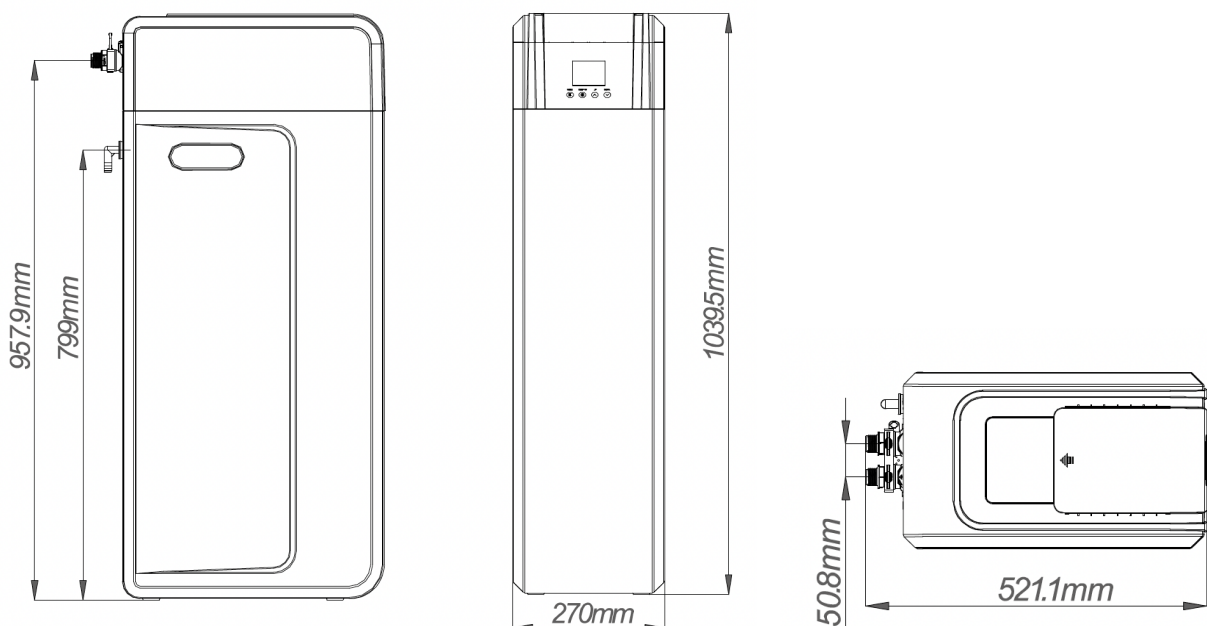
S1-4



S1-8



S1-12



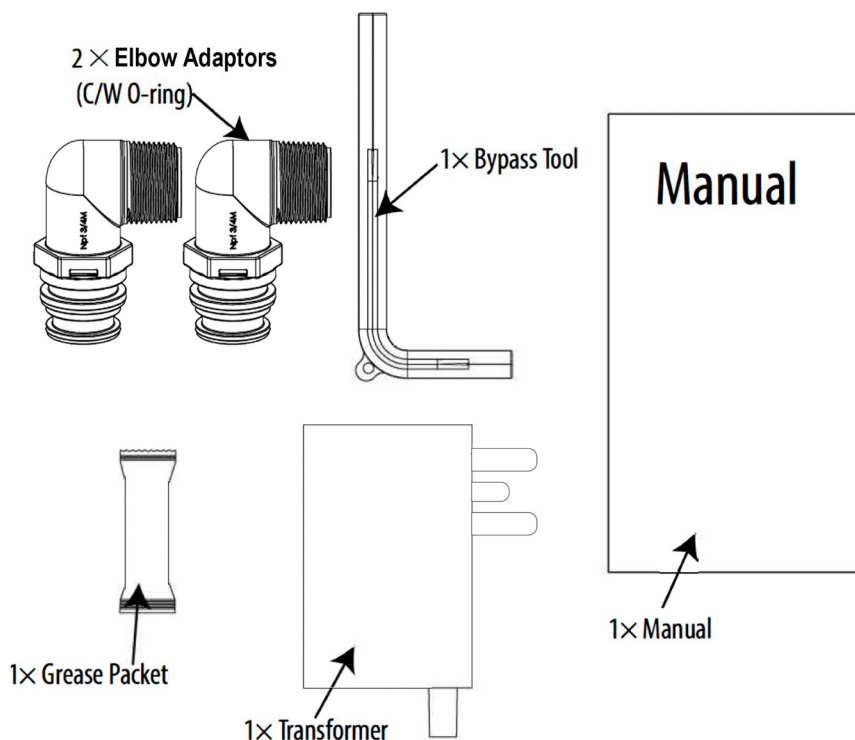
Inspect the water softener for any shipping damage. If damage is found, notify the transportation company and request a damage inspection. Damage to cartons should also be noted.

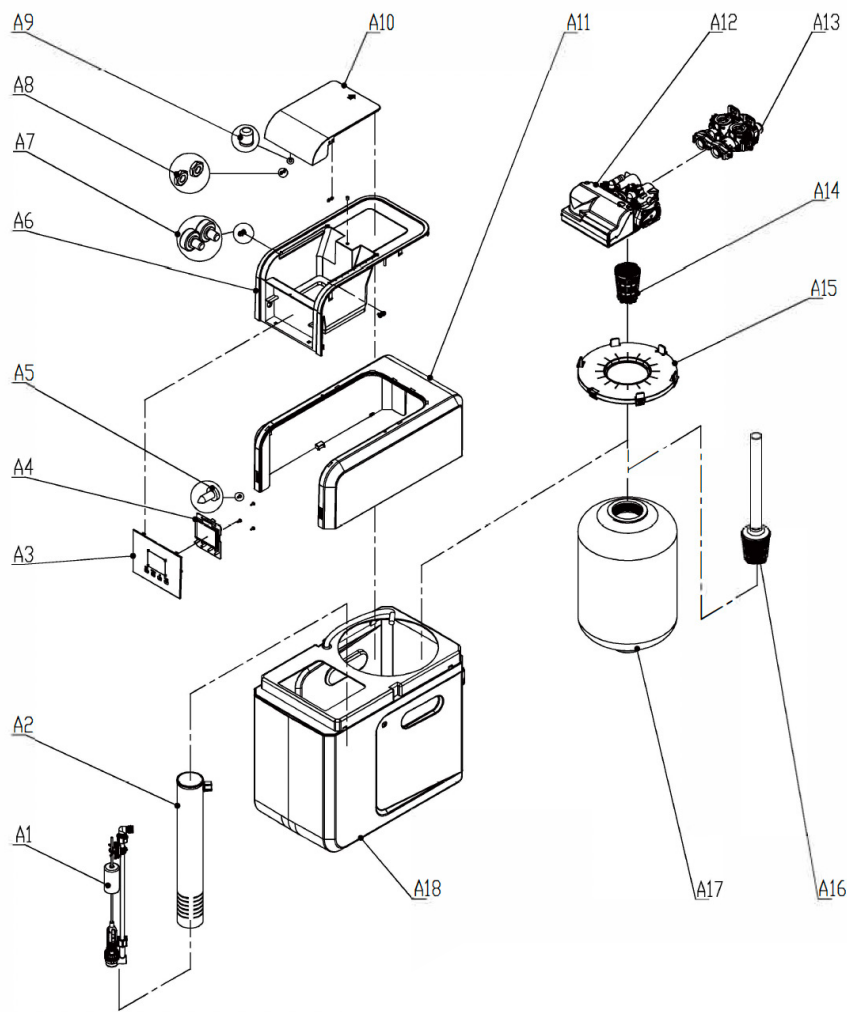
Handle the softener unit with care. Do not drop the unit or place on sharp, uneven projections on the floor. Do not turn the softener unit upside down.

NOTE

IF THERE IS A SEVERE LOSS IN WATER PRESSURE WHEN THE SOFTENER UNIT IS INITIALLY PLACED IN SERVICE, THE SOFTENER TANK MAY HAVE BEEN LAID ON ITS SIDE DURING TRANSIT. IF THIS OCCURS, BACKWASH THE SOFTENER TO "REDISTRIBUTE" THE MEDIA.

The manufacturer is not responsible for damages in transit. Small parts, needed to install the softener, are in a parts box. To avoid loss of the small parts, keep them in the parts bag until you are ready to install.

ACCESSORIES CONTENTS

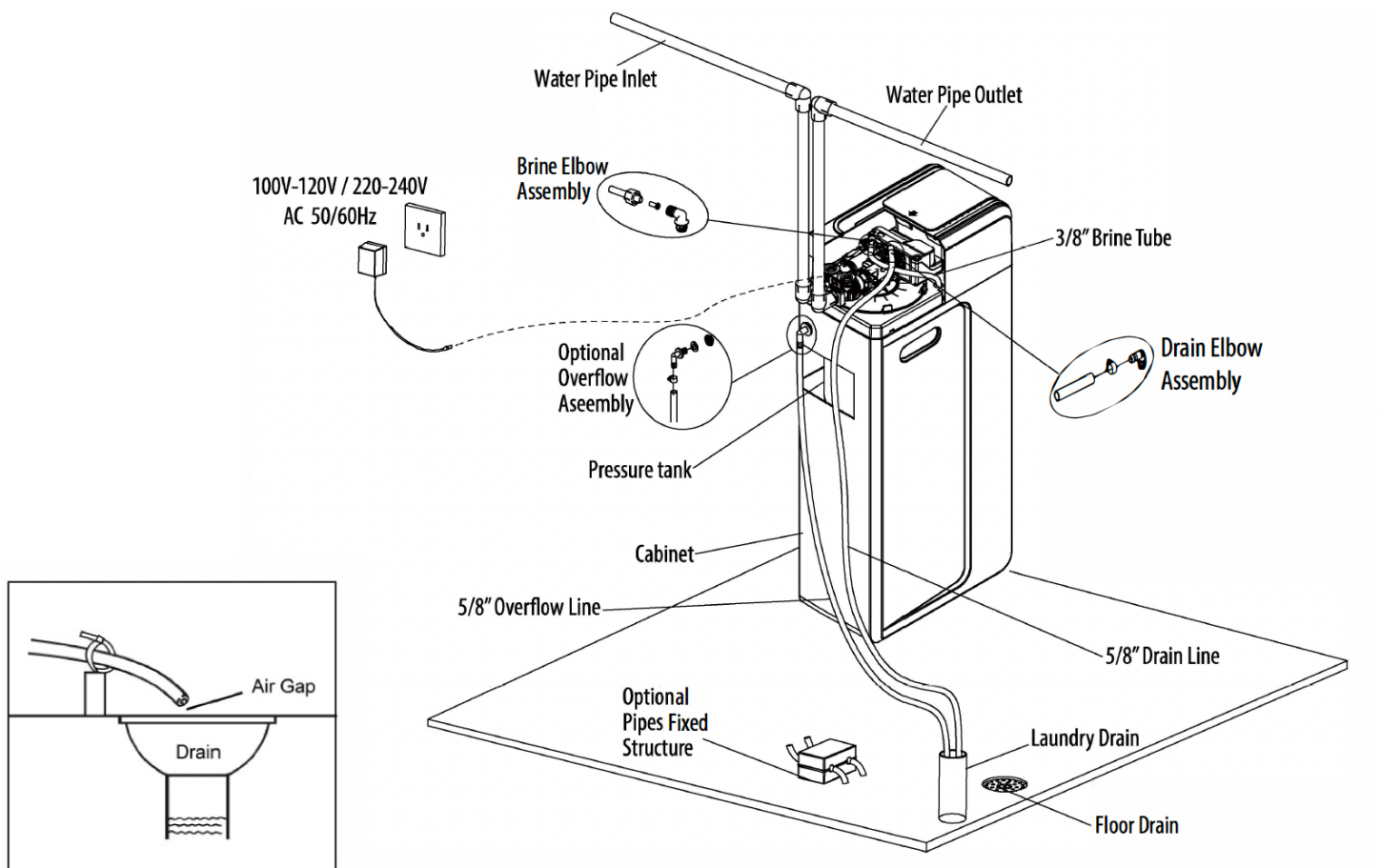


NO.	DESCRIPTION	QTY
A1	Brine Valve	1
A2	Brine Well	1
A3	Front Panel	1
A4	Display PCB	1
A5	Screw ST2.9x10	1
A6	Softener High Cover	1
A7	Screw Bearing	4
A8	Nut M4	4
A9	Positioning Ball	1

NO.	DESCRIPTION	QTY
A10	Softener Slide Cover	1
A11	Softener Middle Cover	1
A12	Control Valve Assembly	1
A13	Bypass Valve Assembly	1
A14	Top Cone	1
A15	Tank Fixed Plate	1
A16	Distribution Assembly	1
A17	Pressure Vessel (Black)	1
A18	Softener Cabinet	1

TOOLS REQUIRED FOR INSTALLATION

- Two adjustable wrenches.
- Additional tools may be needed if modifications to home plumbing are required.
- Use copper, brass, or PEX pipe and fittings.
- Some codes may also allow PVC plastic pipe. Refer to local authority regulations.
- Always install the included bypass valve, or 3 shut-off valves. Bypass valves let you turn off water to the softener for repairs, but still have water in the house.
- 5/8" OD drain line is needed for the drain.



CAUTION

NEVER INSERT THE DRAIN LINE DIRECTLY INTO A DRAIN, SEWER LINE, OR TRAP. ALWAYS ALLOW AN AIR GAP BETWEEN THE DRAIN LINE AND THE WASTE WATER. THIS WILL PREVENT THE POSSIBILITY OF SEWAGE BACK FLOWING INTO THE SOFTENER.

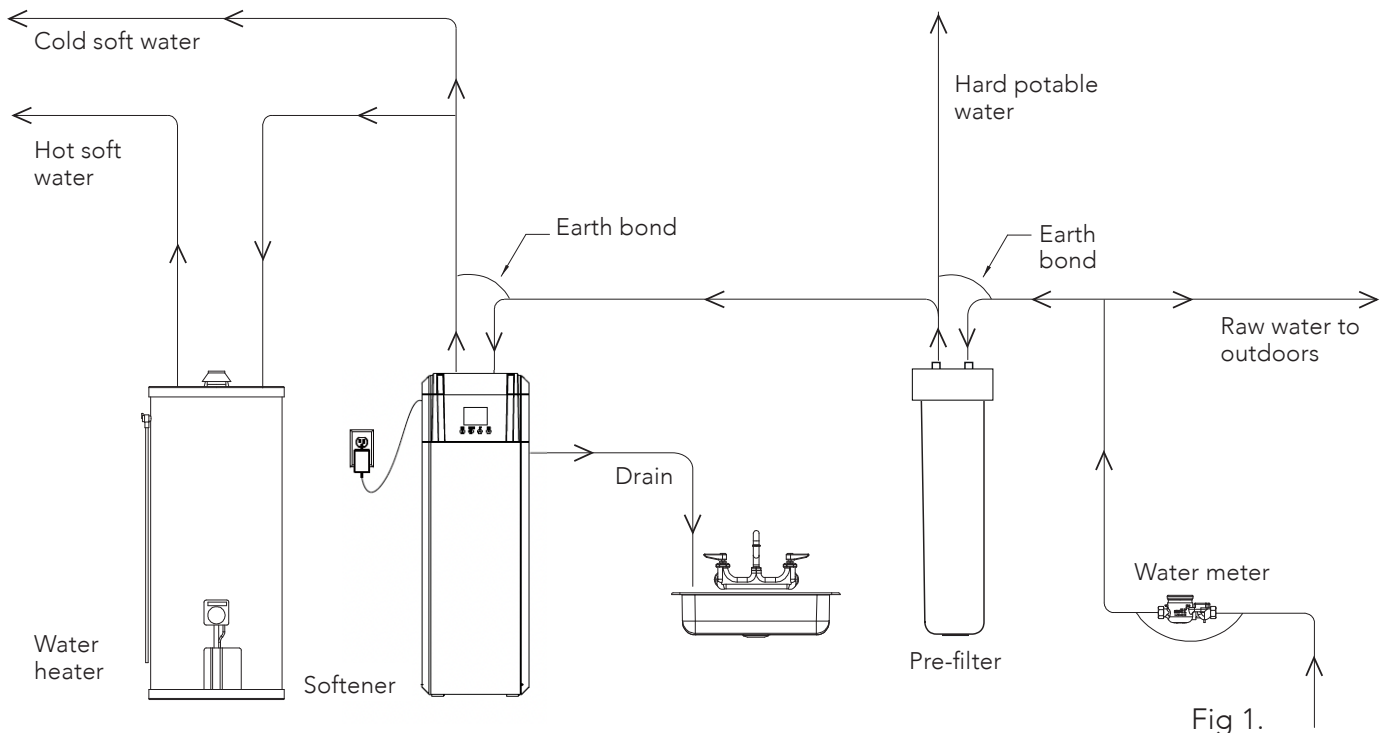
CAUTION

THE WASTE CONNECTION OR DRAIN OUTLET SHALL BE DESIGNED AND CONSTRUCTED TO PROVIDE AN AIR-GAP TO THE SANITARY WASTE SYSTEM OF 2 PIPE DIAMETERS OR 1 INCH(25MM) (WHICHEVER IS LARGER).

NOTE

PERFORM ALL PLUMBING ACCORDING TO LOCAL PLUMBING CODES.

Contact your local distributor to have a complete water analysis and check your water hardness on your water supply, this will keep your softener in proper working condition/order.



NOTE

YOU MUST FOLLOW ALL NATIONAL AND LOCAL AUTHORITY CODES AND REGULATIONS GOVERNING THE INSTALLATION OF THESE DEVICES.

INSTALLATION INSTRUCTIONS

Select the location of your softener with care. Review the various conditions below to determine a proper location:

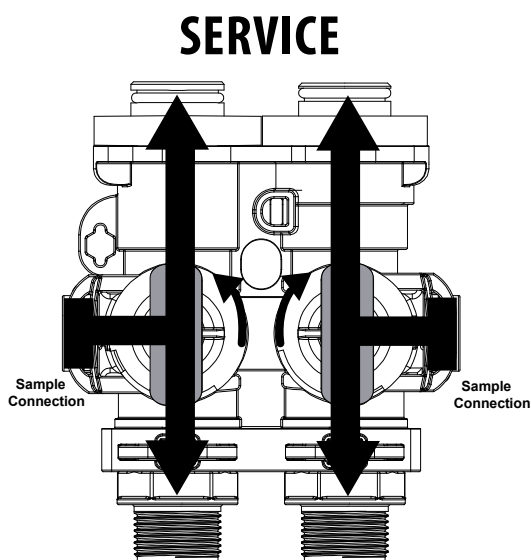
1. Locate as close as possible to the water supply source.
2. Locate as close as possible to the floor.
3. Locate in line with pre filtration equipment (See Fig.1).
4. Softener should be located in the supply line before a boiler. Temperatures above 120°F (49°C) damage softeners.
5. Do not install a softener in a location where freezing temperatures occur. Freezing may cause permanent damage to this type of equipment and will invalidate the warranty.
6. Allow sufficient space around the unit for easy servicing.
7. Determine if additional plumbing is required if you wish to bypass water used for a geothermal heat pump, lawn sprinkling, out-buildings or other high demand applications, refer to Fig.1.
8. Keep the softener out of direct sunlight. Heat build up from direct sunlight may soften and distort plastic parts.

For softener maintenance or emergencies, 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 to the BYPASS position.

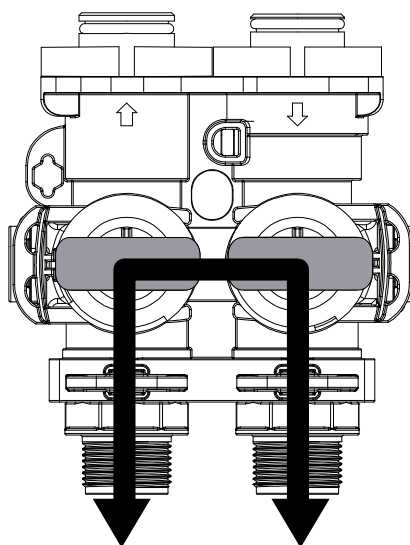
You can use your water related fixtures and appliances as the water supply is bypassing the softener. However, the water you use will be hard. To resume service, open the bypass valve by rotating the knobs to SERVICE position.

Please make sure bypass knobs are completely open otherwise the raw water could bypass through the valve.

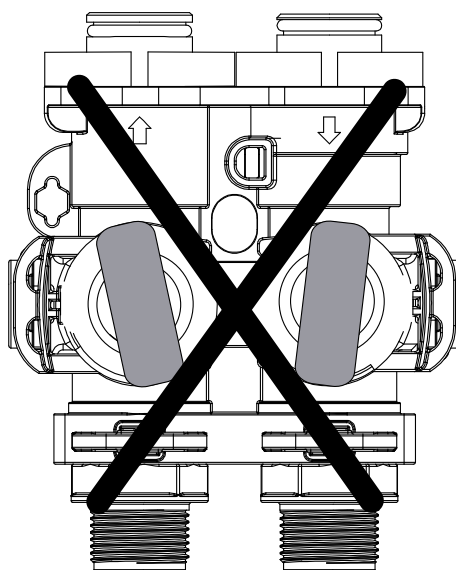
SERVICE



BYPASS



INCORRECT BYPASS POSITION



NOTE

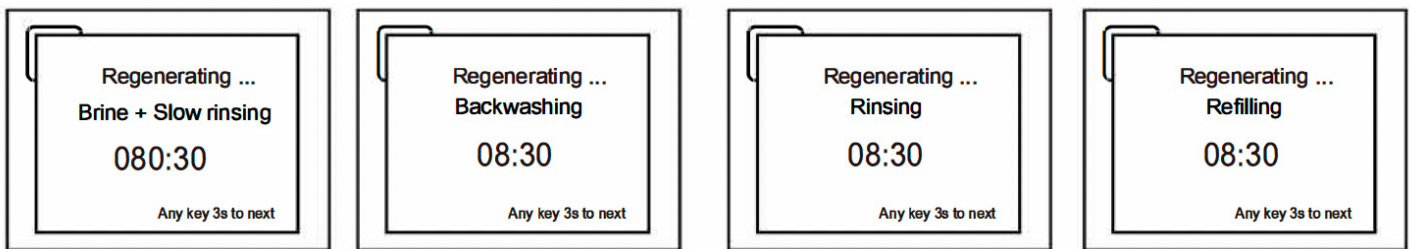
PLEASE MAKE SURE BYPASS KNOBS ARE COMPLETELY OPEN OTHERWISE UNTREATED RAW WATER COULD BYPASS THROUGH THE VALVE.

START UP INSTRUCTIONS

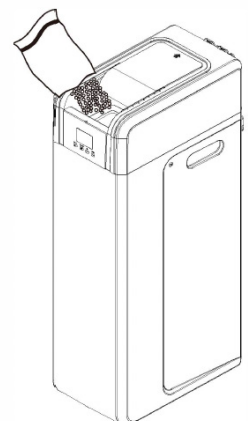
1. Add two litres of water into the brine tank at the time of installation. This is for the unit to achieve the correct capacity the first time of regeneration.
2. Plug the power transformer into an approved power source. Connect the power cord to the valve.
3. When power is supplied to the control, the screen will display "Advancing to Service Please Wait "while it finds the service position.



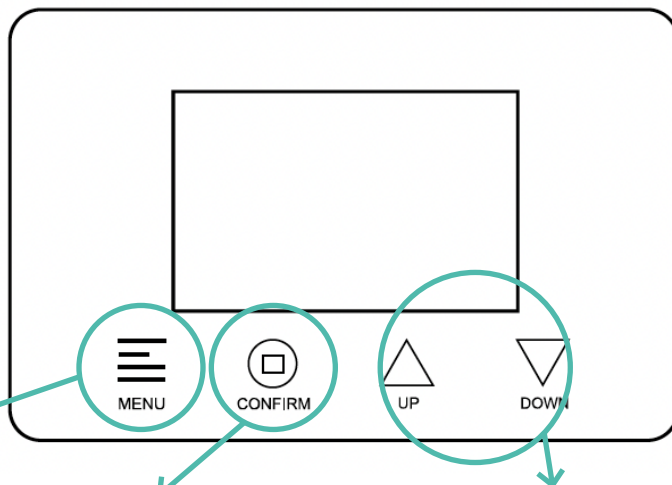
4. Manually step the valve to the BACKWASH position. If screen is locked, the screen will display "Key Locked, Press and Hold "MENU" key for 3 Seconds to Unlock". Follow the instructions below to step the valve to BACKWASH position. As the valve arrives at BACKWASH position, unplug the power and let valve stay at BACKWASH position.



5. Slowly open the inlet knob on the bypass valve with the bypass tool supplied and allow water to enter the unit. Allow all air to escape 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. Open a cold soft water tap nearby and let water run a few minutes or until the system is free of foreign material resulting from the plumbing work. Close the water tap when water runs clean.
6. Turn power back on. Press any button to advance to the RINSE position. Check the drain line flow. Allow the water to run for 3-4 minutes or until the water is clear.
7. Press any button to advance to the REFILL position. Check that the valve is filling water into 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.
8. The valve will automatically advance to the SERVICE position. Open the outlet knob on the bypass with the bypass tool supplied. With the bypass open, turn on the nearest treated water tap and allow the water to run until clear.
9. Add salt into the brine tank. 21kgs of SPECTRUM water softener salt in the softener brine tank. The unit will automatically fill the water to the correct level when it regenerates.
10. Program unit.



KEY PAD CONFIGURATION



MENU

This function enters the basic set up information required at the time of installation.

CONFIRM

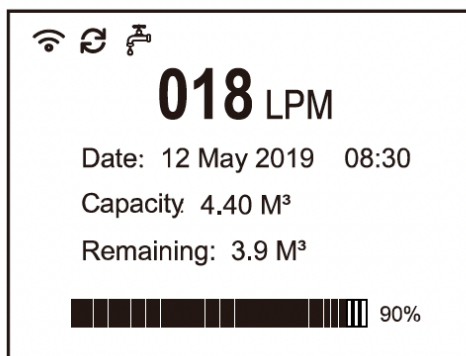
This function is to press and select one item to change and accepts the values if changed.

UP / DOWN

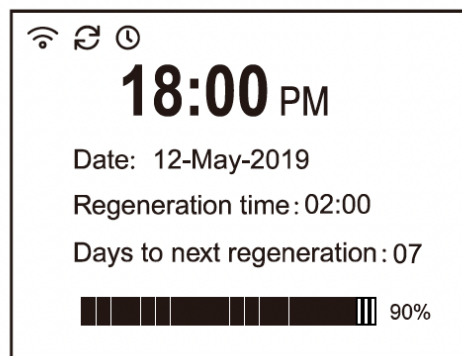
This function is to scroll up or down the programming items and increase or decrease the values of the settings while in the programming mode.

SYSTEM STANDBY DISPLAY

METERED



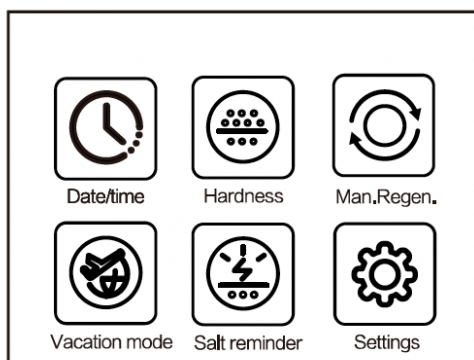
CALENDAR



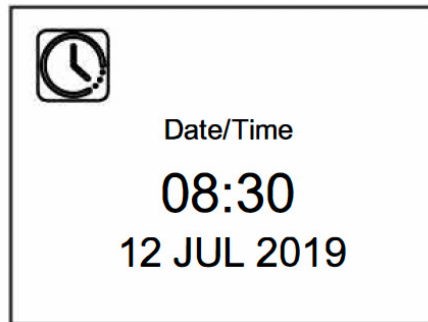
DISPLAY ICONS

MAIN MENU DISPLAY

Press 'MENU' to enter main menu while the screen is unlocked:

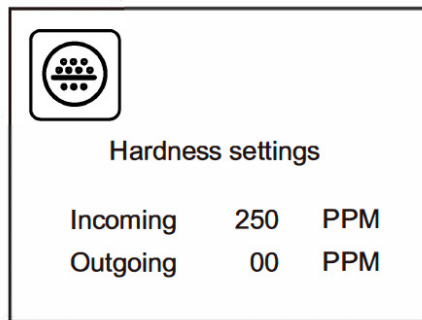


1. Date/Time: press  and   to change the setting.



2. Hardness: the default setting of incoming is 250 PPM (range from 1 to 700), outgoing is 0.

Search for your water hardness online through your local water provider or use a water hardness test kit to provide the value to input.

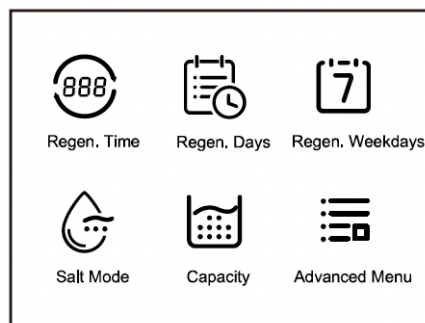


Using the SPECTRUM test kit?
scan below for instructions

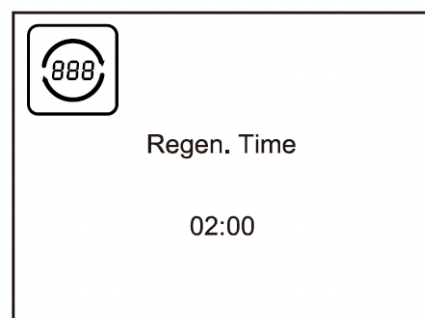


3. SETTINGS MENU DISPLAY

Put the cursor on the "Settings" icon in main menu, press  for 3 seconds to enter settings menu. There are some grey icons that cannot be operated in different modes.

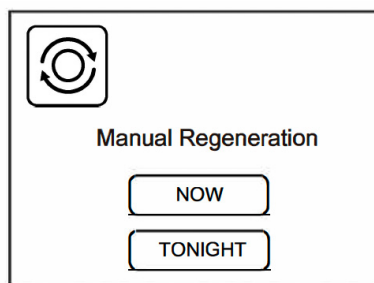


4. Regen Time: This setting determines the time of day to perform a scheduled regeneration, the default setting is 2:00 AM.



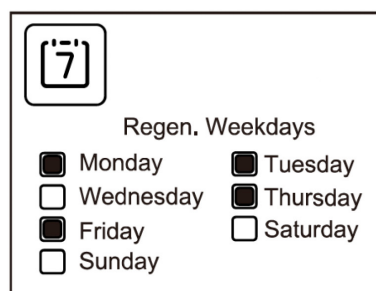
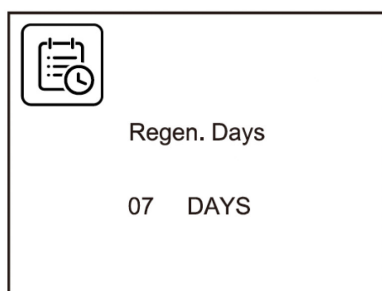
Vacation mode: it is available only in "METER IMMEDIATE" and "METER DELAY", the default setting is OFF. When set to ON, the system will perform 3 minutes back wash and 3 minutes rinse if there is no water flow detected in 7 days. The regeneration will occur at the scheduled REGEN TIME.

Manual Regeneration: "Tonight" means a delayed regeneration that will occur tonight at the regeneration time, while the screen displays . Please note "Now" is the only option in MI mode.

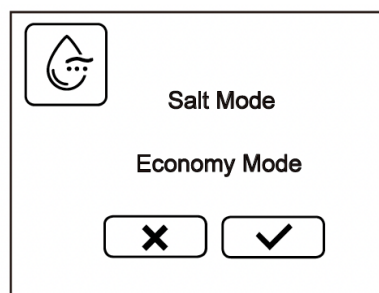
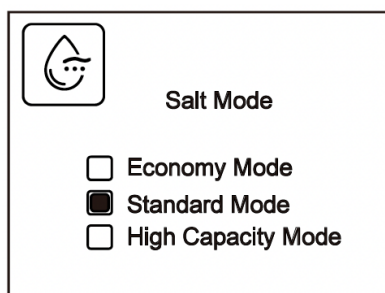


Regen Days: This value is the number of days between regenerations, the default setting is 7 days, range from 1 to 99.

Regen Weekdays: This setting determines the day to perform a scheduled regeneration,  means it is chosen, the default setting is Tuesday.

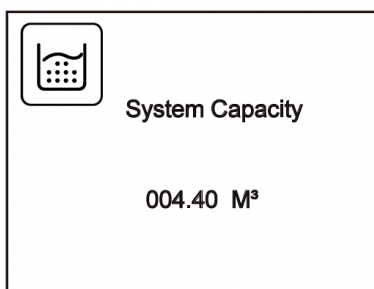


Salt Mode: These settings will determine the salt dosage and capacity for the system, the default setting is Standard mode.



Capacity:

When automatic calculation is set to ON, the value cannot be changed; when set to OFF, the value can be changed, range from 0.01 to 999.99 M³.



OPERATION DURING A POWER FAILURE

In the event of a power failure, the valve will keep track of the time and day. 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.

 CAUTION

LIQUID BRINE WILL IRRITATE EYES, SKIN AND OPEN WOUNDS - GENTLY WASH EXPOSED AREA WITH FRESH WATER. KEEP CHILDREN AWAY FROM YOUR WATER Softener.

AUTOMATIC RAW WATER BYPASS DURING REGENERATION

The regeneration cycle can last approximately 60 minutes after which softened water service will be restored. During regeneration, raw water is automatically bypassed for use in the household. Hot water should be used as little as possible during this time to prevent raw 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.

 CAUTION

IF THE VALVE STOPS AT NON-SERVICE POSITION DURING A POWER FAILURE, THE DRAIN LINE MAY CONTINUE TO DRAIN, IF FOUND, BYPASS THE SYSTEM UNTIL THE POWER IS RESTORED.

CHECK THE SALT LEVEL

Check the salt level regularly. Remove the lid from the cabinet or brine tank, make sure salt level is always above the brine level.

NOTE

YOU SHOULD NOT BE ABLE TO SEE WATER IN THE CABINET OR BRINE TANK.

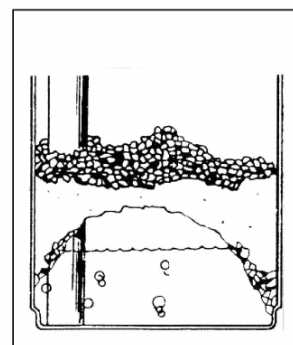
ADDING SALT

Use only salt labelled for water softener use, such as granular or pillow. The use of rock salt is discouraged because it contains insoluble silt and sand which build up in the brine tank and can cause problems with the system's operation. Add the salt directly to the tank, filling no higher than the top of the brine well.

BRIDGING

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

If you suspect salt bridging, carefully 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 cabinet. Allow four hours to produce a brine solution, then manually regenerate the softener.



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 concentration of iron in your water. (for more information contact technical support at techsupport@spectrum-filtration.com).

CARE OF YOUR WATER SOFTENER

To retain the appearance of your new water softener, clean occasionally with a mild soap solution. Do not use abrasive cleaners, ammonia or solvents. Never subject your Softener to freezing.

SERVICE THE CONTROL VALVE

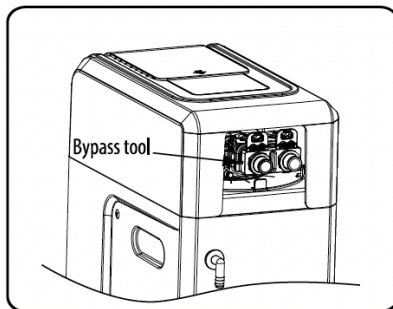
CAUTION

DISASSEMBLY WHILE UNDER PRESSURE CAN RESULT IN FLOODING. ALWAYS FOLLOW THESE STEPS PRIOR TO SERVICING THE VALVE.

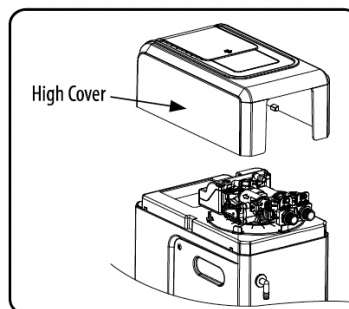
**CAUTION**

Electrical Shock Hazard! Unplug the unit before removing the cover or accessing any internal control parts.

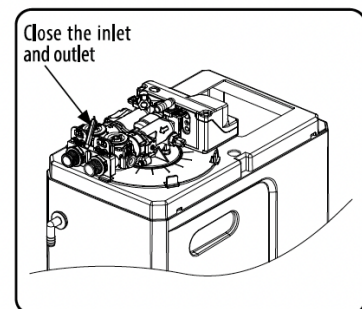
BEFORE SERVICING



1. Turn off water supply to softener using the bypass tool.



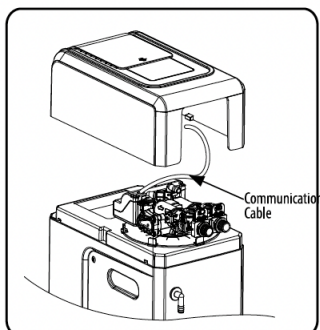
2. Lift the top cover up.



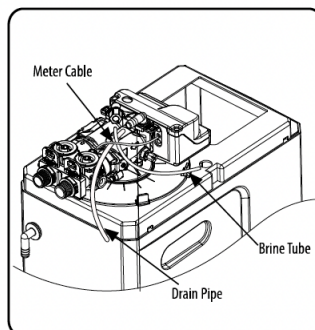
3. Turn off water supply to softener using the bypass tool included.

4. Relieve water pressure in the softener by stepping the control into back wash position momentarily. Return the control to the In Service position.

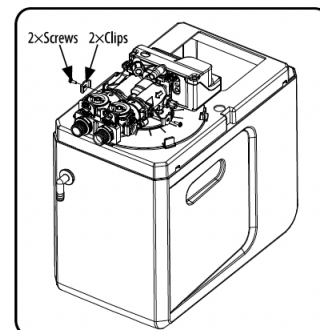
5. Unplug from electrical outlet.



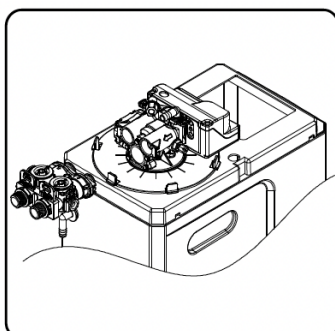
6. Disconnect the communication cable.



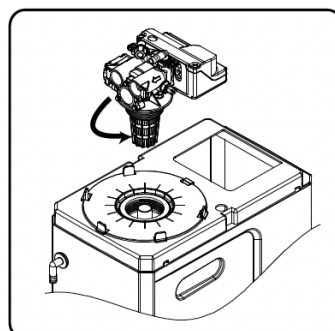
7. Disconnect the meter cable, brine tube and drain pipe.



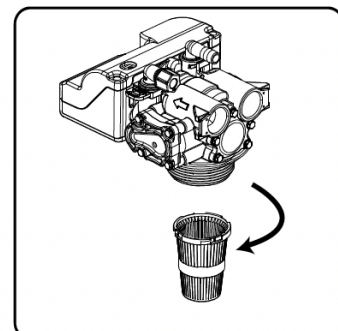
8. Remove the clips that connect control valve and bypass.



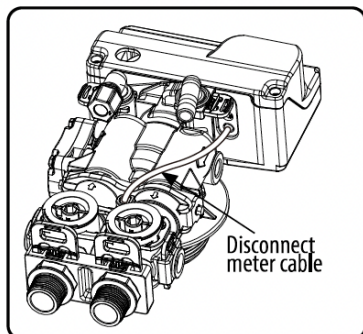
9. Disconnect the softener from the bypass valve.



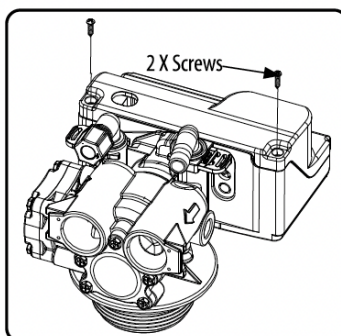
10. Disconnect the valve from the pressure vessel.



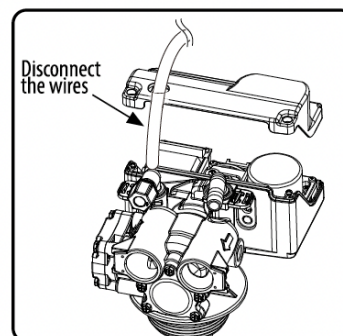
11. Remove the top screen from the valve.

REPLACE TIMER

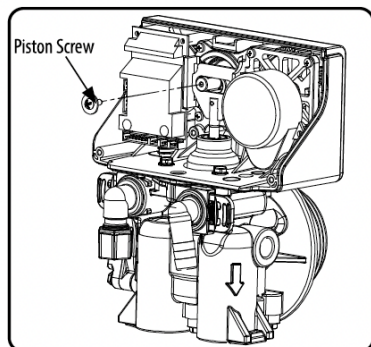
1. Disconnect the meter cable from the meter. (If meter cable is attached)



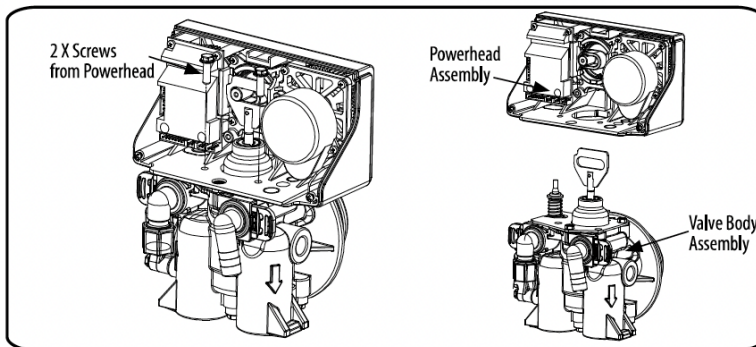
2. Remove the two screws from the valve cover.



3. Remove the cover of the valve and disconnect the wires attached to PCB.

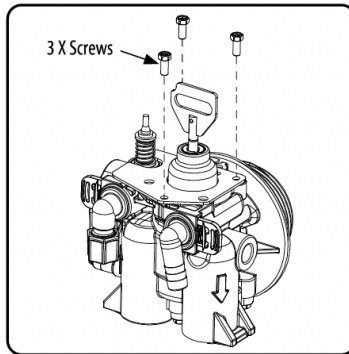


4. Remove the piston screw (with washer) from the piston rod.

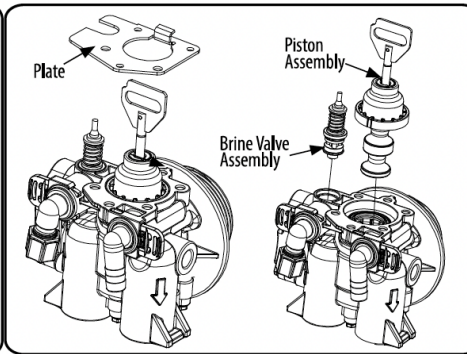


5. Remove the two screws from the powerhead as shown.
6. Lift the powerhead from the valve body assembly.
7. Replace the powerhead by following the steps in this section in reverse order.

REPLACE PISTON AND/OR BRINE VALVE

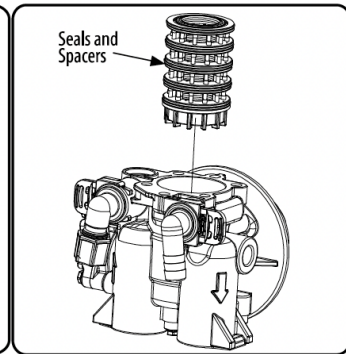


1. Follow steps 1 to 6 of Timer/Powerhead replacement.
2. Remove three screws from the plate on the valve body.



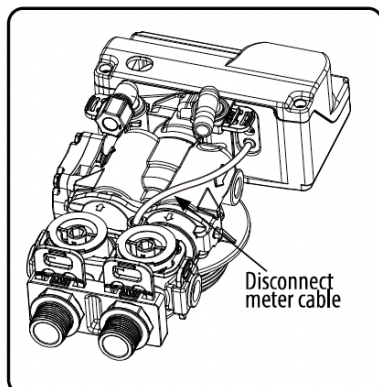
3. Remove the plate from the valve body and pull the Piston Assembly from the valve. The brine valve assembly can also be removed in this stage.

REPLACE SEAL AND/OR SPACER

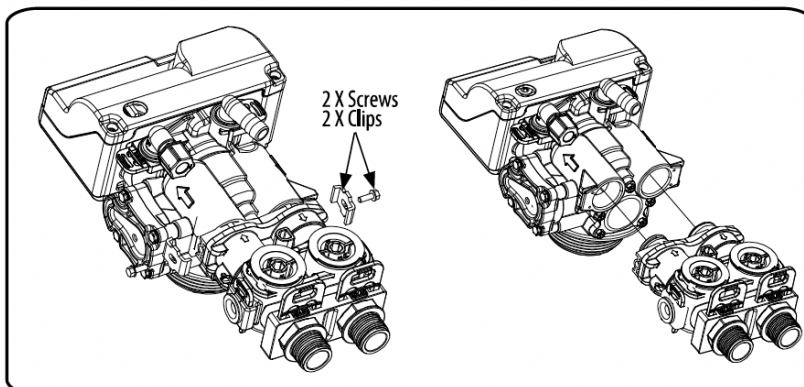


4. Remove the seals and spacers assembly, grease it with silicone lubricant and put back in.
5. After servicing, following steps in this section in reverse order.

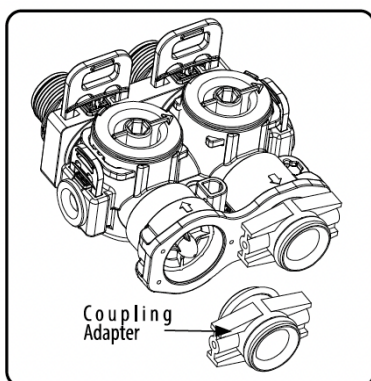
REPLACE METER



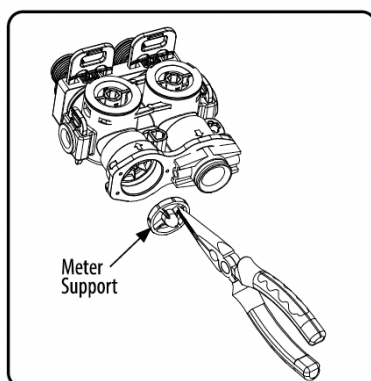
1. Disconnect the meter cable from the meter. (If flow meter cable is attached)



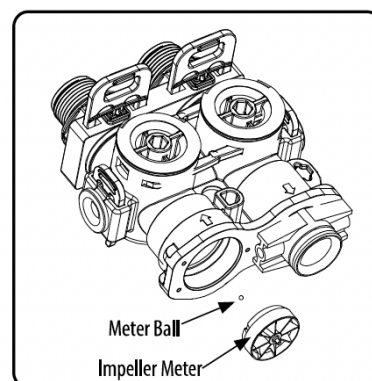
2. Disconnect the bypass from valve by removing clips.



3. Remove the coupling adapter from the bypass.

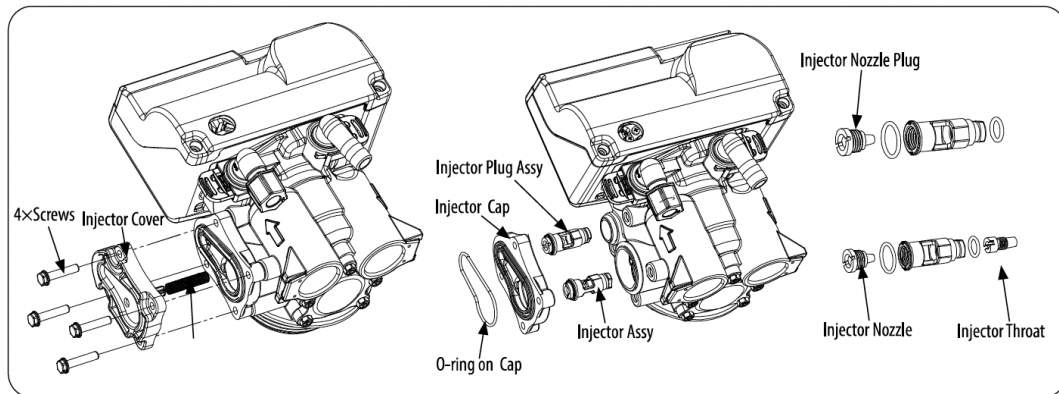


4. Remove the meter support from the bypass.



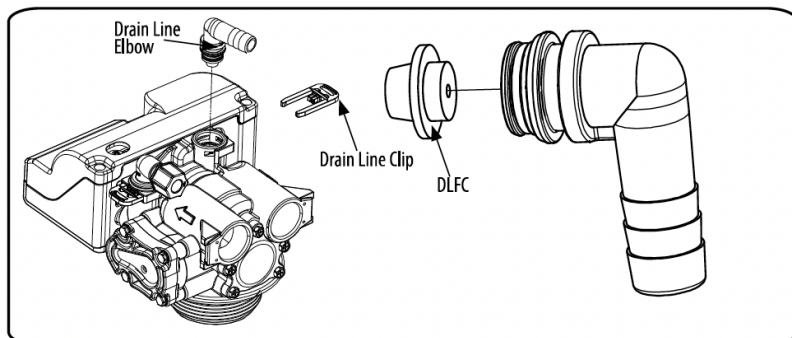
5. Remove the impeller and replace it. (Watch for the meter ball under the impeller ball)

CLEAN INJECTOR ASSEMBLY



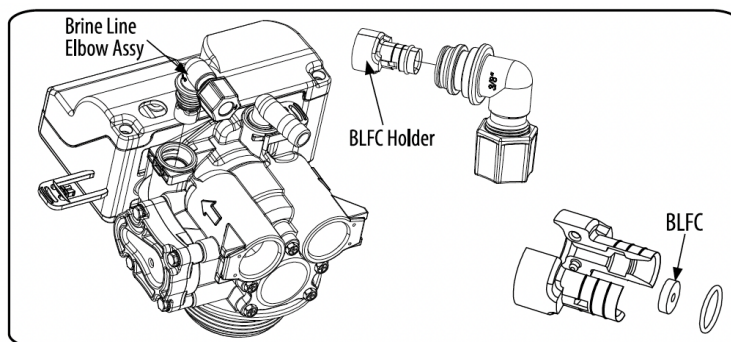
1. Remove the four screws on the injector cover.
2. Pull the injector cover out, watch for the screen and O-ring.
3. Pull the injector cap out, pull the injector assembly and injector plug assembly out.
4. Screw the injector nozzle and injector throat out, clean and replace it.
5. After servicing, follow steps in this section in reverse order.

REPLACE DRAIN LINE FLOW CONTROL

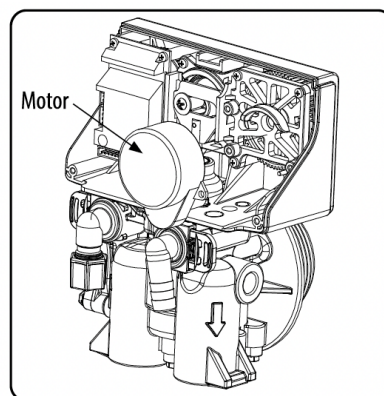
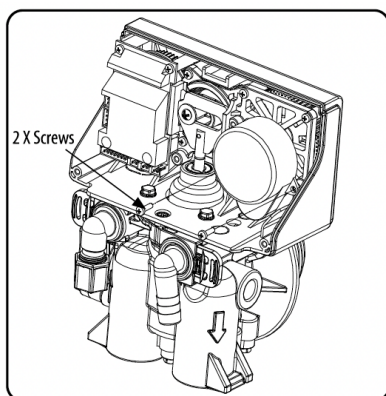


REPLACE BRINE LINE FLOW CONTROL

1. Pull the brine line clip and remove the brine line elbow assembly.
2. Remove the BLFC holder.
3. Take out the BLFC, clean/replace the BLFC seal.

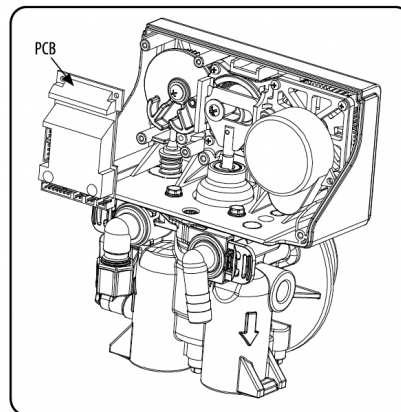
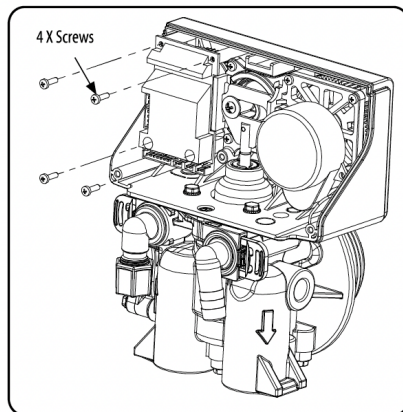


REPLACE MOTOR



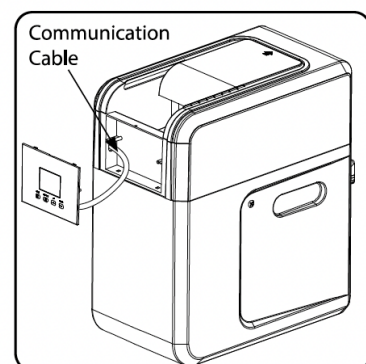
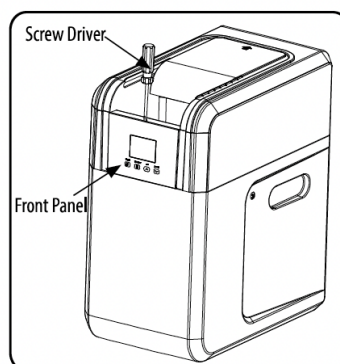
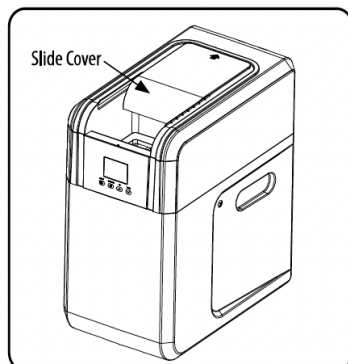
1. Follow steps 1 to 3 of Timer/Powerhead replacement.
2. Remove the two screws from the motor. Remove motor (disconnect the wire attached to PCB if any), watch for the pin under the motor.
3. Replace the motor.

REPLACE CIRCUIT BOARD

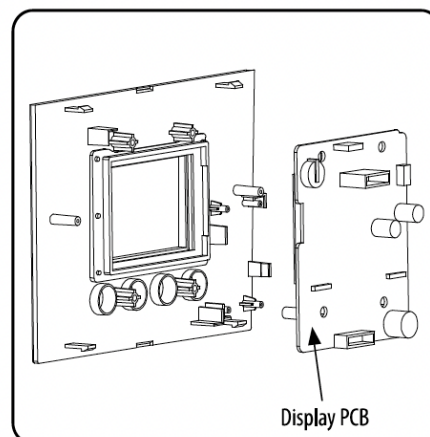
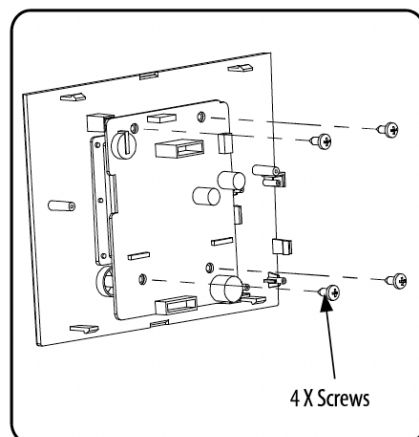


1. Follow steps 1 to 3 of Timer/Powerhead replacement.
2. Remove all the connections to PCB.
3. Remove the four screws from the PCB.
4. Replace the PCB.

REPLACE DISPLAY



1. Slide the salt lid to back.
2. Use a screw driver to lever the front panel out.
3. Disconnect the communication cable.



4. Remove the four screws attached on display PCB.
5. Remove the display PCB.

PROBLEM	POSSIBLE SOLUTIONS
1. SOFTENER DELIVERS HARD WATER A. Bypass valve is open B. No salt in brine tank C. Injector or screen plugged D. Insufficient water flowing into brine tank E. Leak at distributor tube F. Internal valve leak G. Flow meter jammed H. Flow meter cable disconnected or not plugged into meter cap I. Improper programming	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 refill time and clean brine line flow control if plugged E. Make sure distributor tube is not cracked. Check O-ring and tube pilot F. Replace seals and spacers and/or piston G. Remove obstruction from flow meter H. Check meter cable connection to timer and meter cap I. Reprogram the control to the proper regeneration type, inlet water hardness, capacity or flow meter size.
2. SOFTENER FAILS TO REGENERATE A. Electrical service to unit has been interrupted B. Timer is not operating properly C. Defective valve drive motor D. Improper programming	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 A. Improper salt setting B. Excessive water in brine tank C. Improper programming	A. Check salt usage and salt setting B. See #7 C. Check programming and reset as needed
4. LOSS OF WATER PRESSURE A. Iron build-up in line to water Softener B. Iron build-up in water Softener C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	A. Clean line to water Softener 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 A. Air in water system B. Drain line flow control is too large	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 A. Fouled resin bed B. Iron content exceeds recommended parameters	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 A. Plugged drain line flow control B. Brine valve failure C. Improper programming	A. Clean flow control B. Replace brine valve C. Check programming and reset as needed
8. SALT WATER IN SERVICE LINE 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	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. SOFTENER FAILS TO DRAW BRINE 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	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 A. Timer not operating properly B. Faulty microswitches and/or harness C. Faulty cycle cam operation	A. Replace timer B. Replace faulty microswitch or harness C. Replace cycle cam or reinstall
11. DRAIN FLOWS CONTINUOUSLY A. Foreign material in control B. Internal control leak C. Control valve jammed in backwash, brine or rinse position D. Timer motor stopped or jammed teeth E. Timer not operating properly	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

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