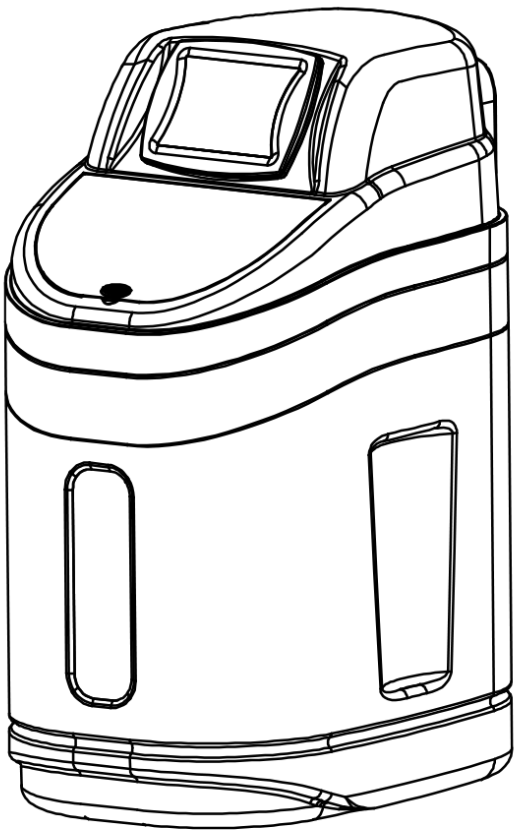
WATER
TREATMENT
AT HOME

SPECTRUM HOME

S2 SOFTENING SYSTEM MANUAL



Contents

- 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 S2 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.

- This system and its 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.
- This water softener 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.
- This unit must be operated at temperatures between 4°C - 43°C (40°F and 110°F).
- Do not use this water softener on hot water supplies.
- Do not install this unit where it may be exposed to wet weather, direct sunlight, or temperatures outside of the range specified above.
- The appliance is only to be used with the power supply unit provided with the appliance.
- The appliance must only be supplied at safety extra low voltage corresponding to the marking on the appliance.
- 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.
- This appliance 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 appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance.

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 in service 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.

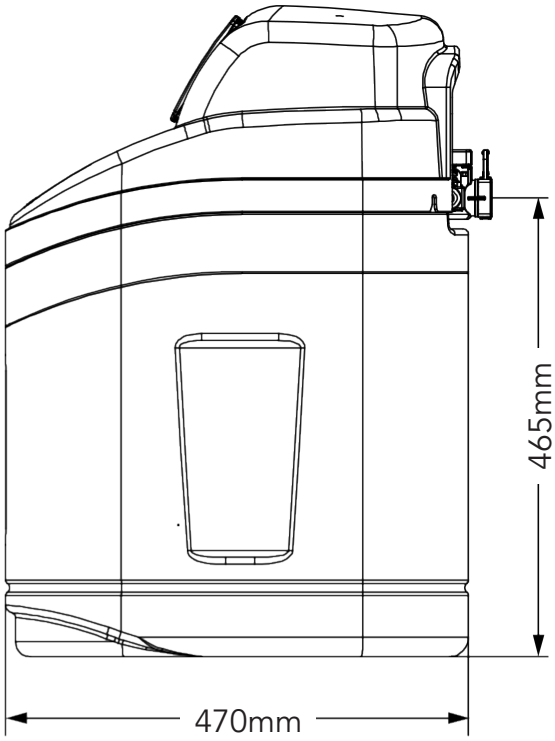
It's important that when a softener is removing both hardness and dissolved iron, it must regenerate more frequently than it normally would for just hardness. Many factors and formulas have been used to determine this frequency. It is recommended that the softener be regenerated when it has reached 50-75%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

⚠ CAUTION **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	S2
Regeneration Type	Down Flow
Integrated Meter in Bypass	Yes
Hardness Removal (mg)	760,000
Media Loaded	Yes
Resin Quantity (L)	14
Resin Type	High Capacity Strong Acid Cation
Tank Size (Inch)	10 x 17
Salt Storage Capacity (Kg)	23
Rated Service Flow Rate (m^3/h)	0.5
RECOMMENDED CYCLE SETTINGS	
Backwash Duration Setting (Min)	2
Brine Duration Setting (Min)	36
Rinse Duration Setting (Min)	2
Refill Duration Setting (Min)	6.3
Salt Used - Per Regeneration (6 lb/cf Salt Dosage)	1.2
Water Used - Regeneration (L)	45
FLOW RATE (ONLY VALVE)	
Continuous Flow Rate @ 15 psi Pressure Drop (lpm)	75
Peak Flow Rate @ 25 psi Pressure Drop (lpm)	98
Back Wash Flow Rate @ 25 psi Pressure Drop (lpm)	27
Pipe Size	3/4"
Plumbing Connections	Includes 3/4"elbow fitting
Electrical Requirements	Input 220 - 240V AC 50/60Hz
	Output 12V DC 650mA
Carton Size (mm)	520 x 360 x 740
Shipping Weight (Kg)	23
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/m^3).
- 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.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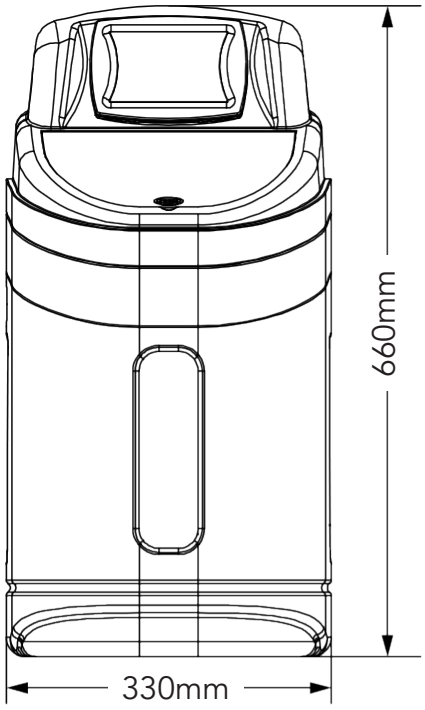
470mm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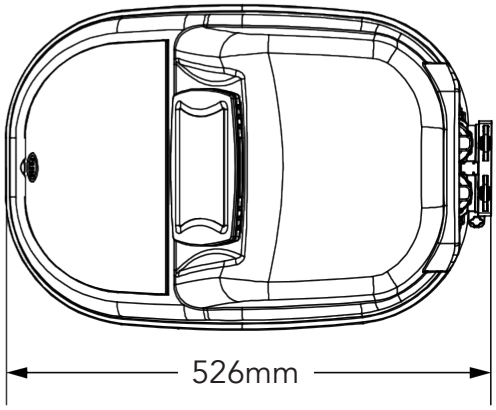

526mm

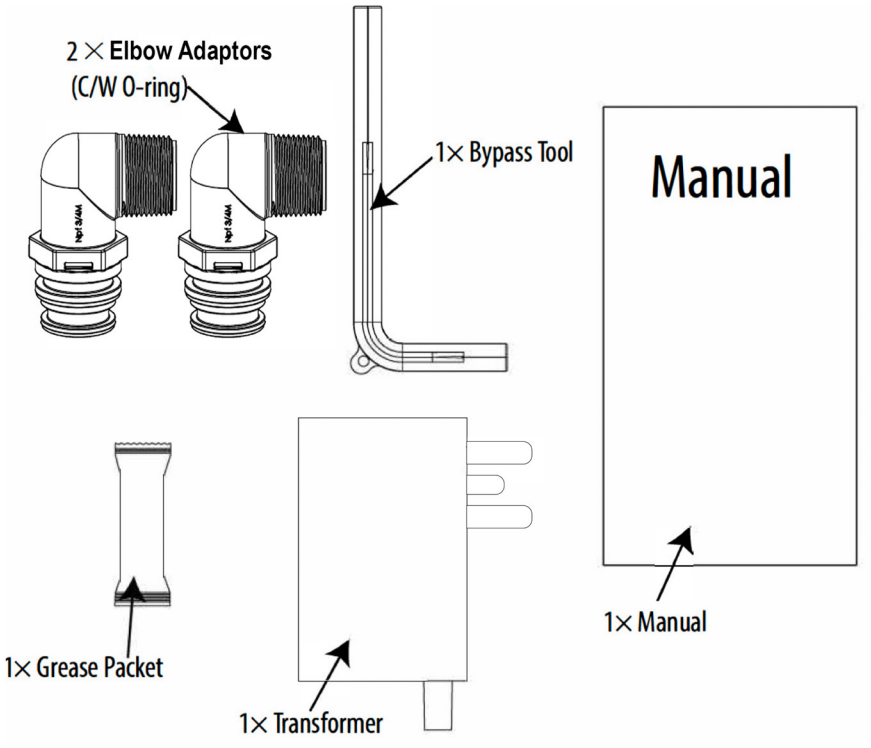
Inspect the water softener for any shipping damage. If damage is found, notify the transportation company and request a damage inspection. Damage to cartons should also be noted.

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



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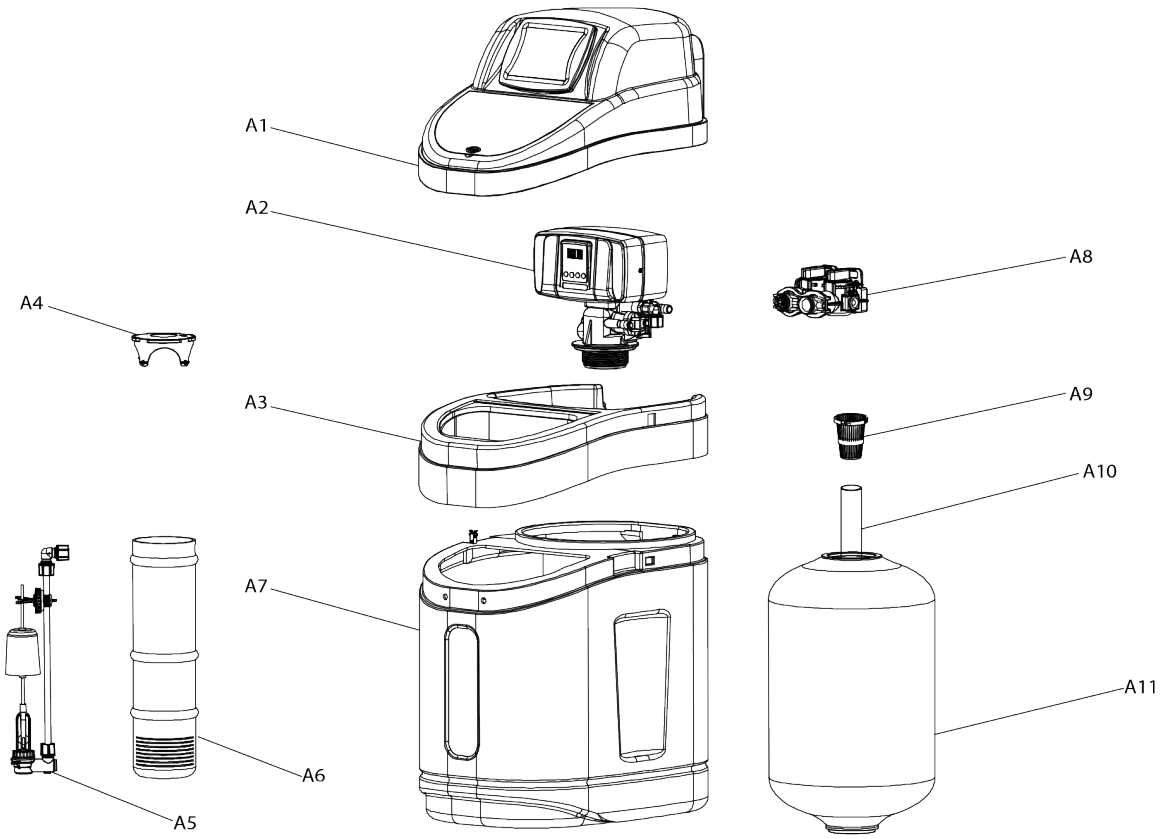
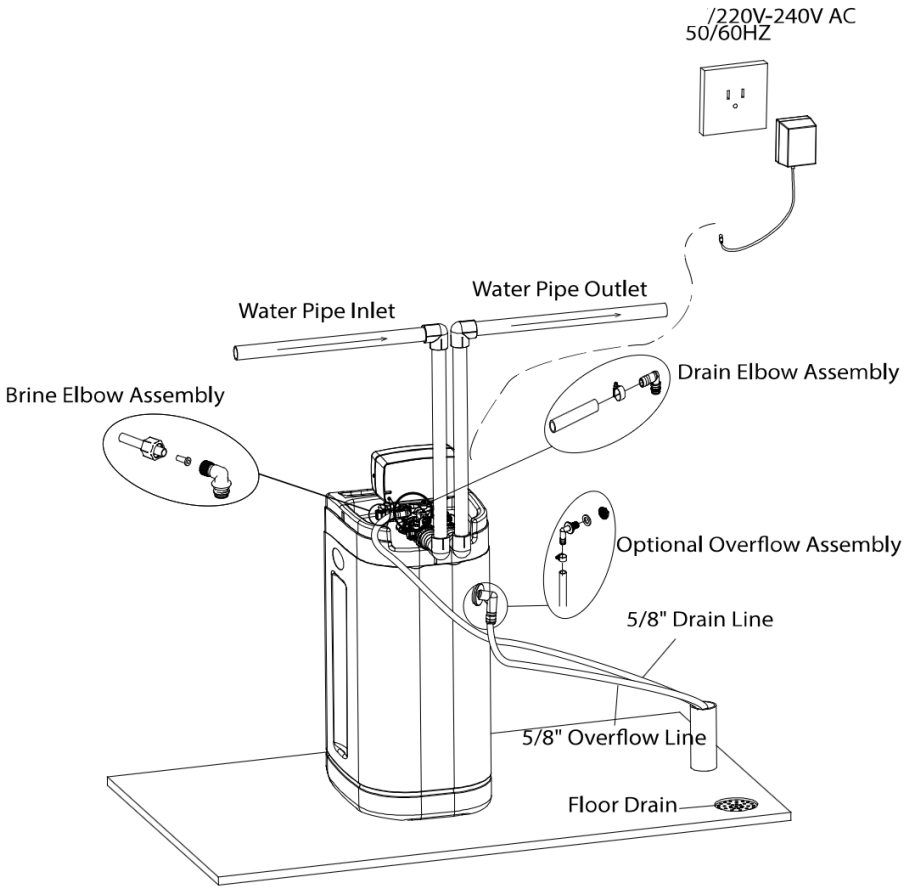


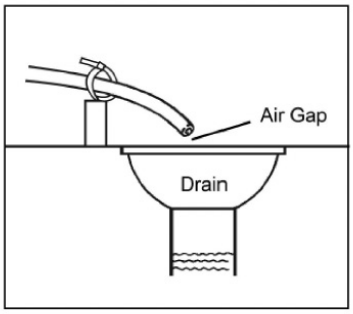
NO.	DESCRIPTION	QTY
A1	Softener Cover	1
A2	Control Valve Assembly	1
A3	High Mid Cover	1
A4	Brine Well Cap	1
A5	Brine Valve Assembly	1
A6	Brine Well	1

NO.	DESCRIPTION	QTY
A7	Softener Cabinet	1
A8	Bypass Valve Assembly	1
A9	Top Cone	1
A10	Distribution Assembly	1
A11	Pressure Tank	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 BEING 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.

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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.

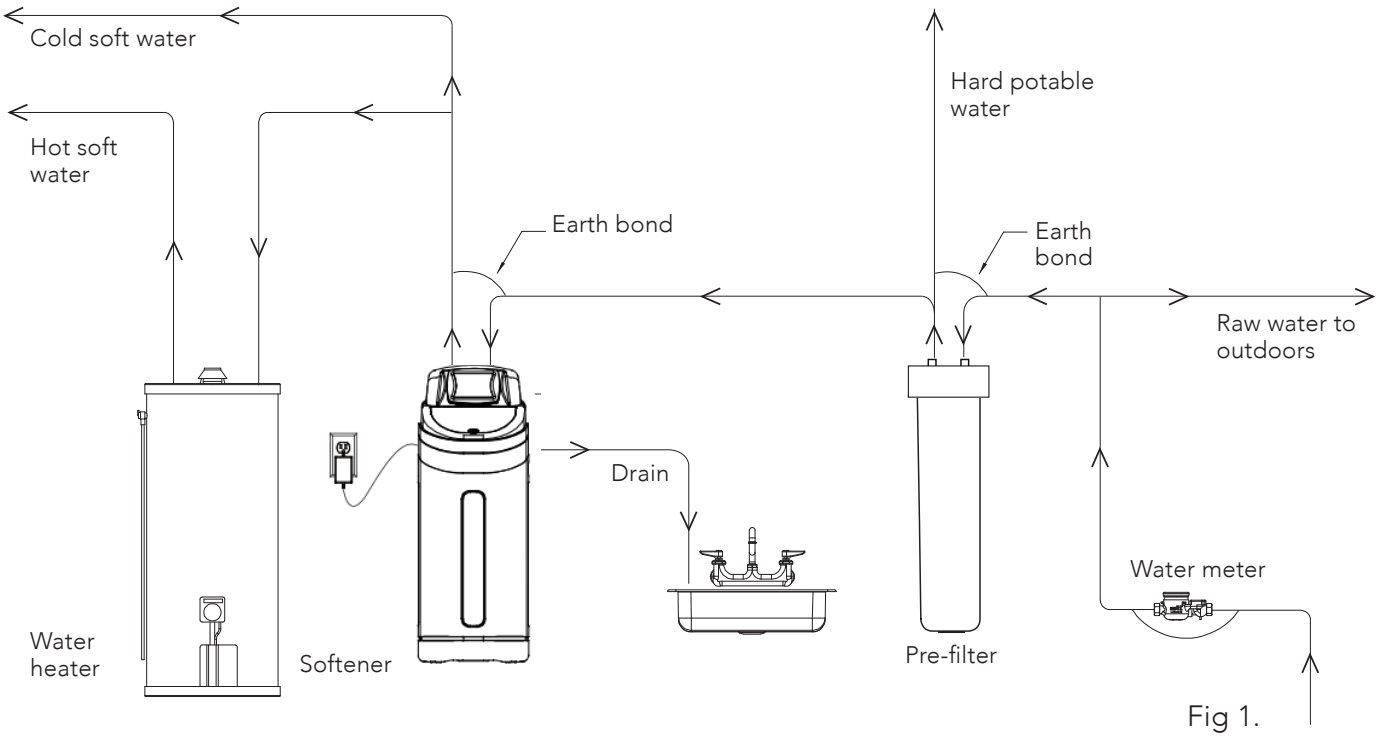


Fig 1.

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:

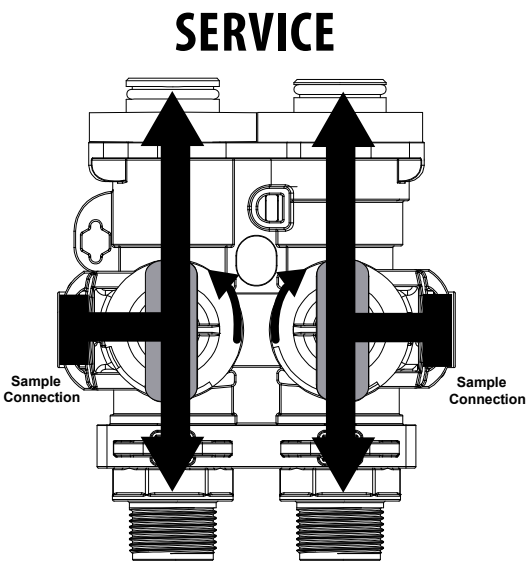
1. Locate as close as possible to the water supply source.
2. Locate as close as possible to the floor.
3. Locate in line with pre filtration equipment (See Fig.1).
4. Softener should be located in the supply line before a boiler. Temperatures above 120°F (49°C) damage softeners.
5. Do not install a 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 your water source is a community water supply, a public water supply or 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.

In case of an emergency such as softener maintenance, 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.

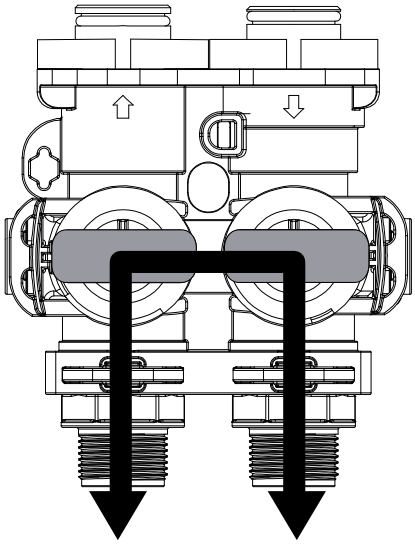
You can use your water related fixtures and appliances as the water supply is bypassing the softener. However, the water you use will be hard. To resume service, open the bypass valve by rotating the knobs to SERVICE position.

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

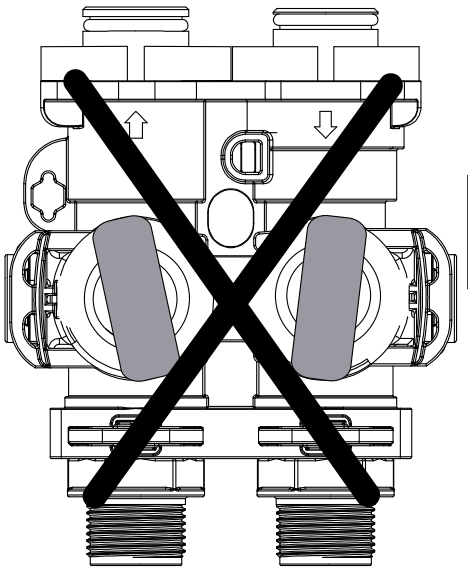
SERVICE



BYPASS



INCORRECT BYPASS POSITION



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

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1. Add two liters of water into the brine well at the time of installation. This is for the unit to achieve proper capacity at 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 may display "WAITING PLEASE" while it finds the service position.

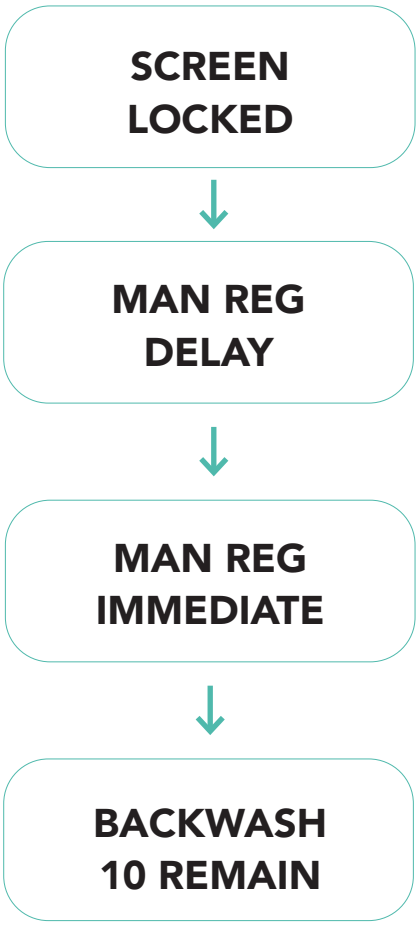
4. Manually step the valve to the BACKWASH position. If screen is locked, the screen will display "SCREEN LOCKED". Follow the instructions below to step the valve to BACKWASH position. As the valve arrives at BACKWASH position, unplug the power and let valve stay at BACKWASH position.

4.1 Press and hold "Menu" key for 5s to unlock.

4.2 Press and hold "Set/Regen." key to enter Manual Regen. display. Press "Set/Regen." key again to activate Manual Regen. option.

4.3 Press "Up" or "Down" key to select Immediate Regen. option.

4.4 Press "Menu" key to start an Immediate Regen.



5. Once in the BACKWASH cycle, open the inlet on the bypass valve slowly and allow water to enter the unit. Allow all air to escape from the unit before turning the water on fully 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.

6. Reconect the power supply and press any button to advance to the BRINE position, once it arrives at BRINE position, 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, open the nearest treated water faucet and allow the water to run until clear.

9. Put 18 kgs of water softener salt in the brine well, the unit will automatically fill the water to the correct level when it regenerates.

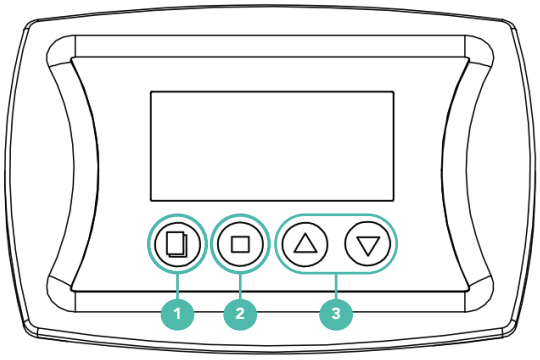
⚠ CAUTION	**LIQUID BRINE WILL IRRITATE EYES, SKIN AND OPEN WOUNDS – GENTLY WASH EXPOSED AREA WITH FRESH WATER. KEEP CHILDREN AWAY FROM YOUR WATER SOFTENER.** **AUTOMATIC RAW WATER BYPASS DURING REGENERATION**

The regeneration cycle can last 60 minutes after which softened water service will be restored. During regeneration, un-softened water is automatically bypassed for use in the household. Hot water should be used as little as possible during this time to prevent un-softened 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	**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 BEING BACK FLOWING INTO THE SOFTENER.**

KEY PAD CONFIGURATION

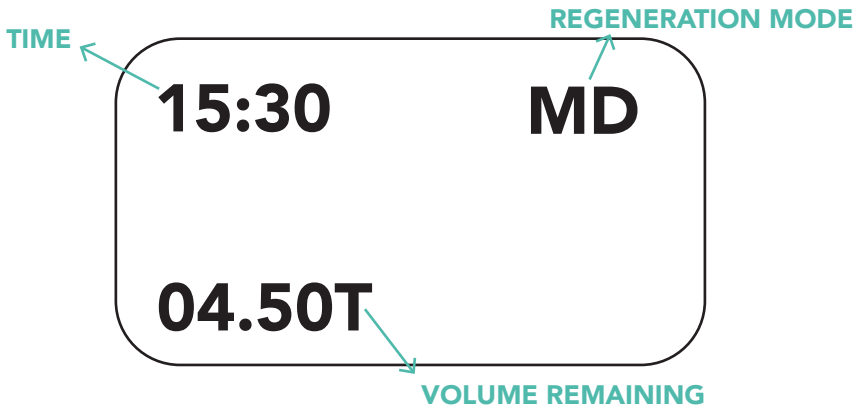


1 MENU
This function enters the basic menu to set up information required at the time of installation.

2 SET/REGENERATE
This function is to accept the values if changed and advance to the next page in the menu

3 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



SETTING YOUR WATER HARDNESS

From the standby display, press **"MENU"**, then press ▽ to find the hardness setting. Input your incoming water hardness.

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

SETTING YOUR SOFTENER CAPACITY

- From the standby display, press menu ( ), then press the down button (▽) until **"REG CAP"** is displayed.
- Press the **"SET/REGENERATE"** button ( ) and the value will flash.
- You can now use the UP and DOWN arrows to input the relevant value based on your feed water hardness.
- Once the value in each section is correct, press the **"SET/REGENERATE"** button to save the value for that section and move on to the next.

Please see capacity chart for reference.

Capacity of this softener is measured in tons; **1 ton is equal to 1000 litres.** Using the table below, input the relevant capacity based on your feed water hardness.

*For example, if your feed water hardness is 100ppm, you should input 07.60 in the **"REG CAP"** section of the menu.*

Hardness (PPM)	Capacity (T)
20	38.00
40	19.00
60	12.67
80	09.50
100	07.60
120	06.33
140	05.43
160	04.75
180	04.22
200	03.80
220	03.45

Hardness (PPM)	Capacity (T)
240	03.17
260	02.92
280	02.71
300	02.53
320	02.38
340	02.24
360	02.11
380	02.00
400	01.90
420	01.81
440	01.73

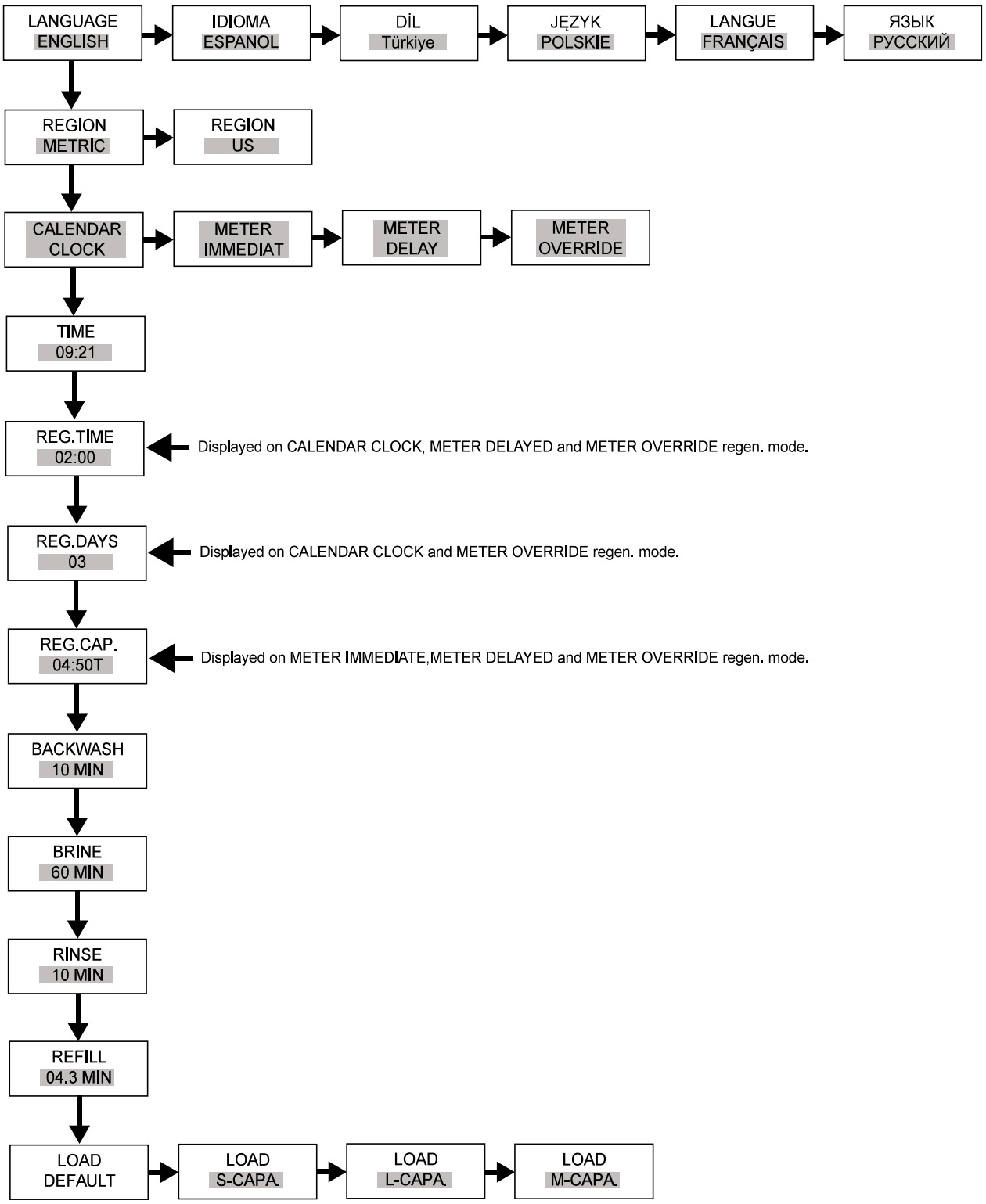
Hardness (PPM)	Capacity (T)
460	01.65
480	01.58
500	01.52

Using the SPECTRUM test kit?
Scan below for instructions

DISPLAY ICONS

MAIN MENU DISPLAY

Press and hold 'MENU' key for 3 seconds to unlock screen.
Press SET/REGEN, key to activate the option and let it flash
Press the 'UP' and 'DOWN' key to change the option or value
Press the SET/REGEN key to confirm it



PARAMETER	DESCRIPTION
Language	System language used on the valve display.
Region Metric	Unit of measure the system used, METRIC (litre) and US (gallon) options are available now.
Calendar Clock	The unit will initiate a regeneration at the next pre-set regeneration time based on the interval of regeneration days.
Meter Immediate	The unit will initiate a regeneration immediately after the volume remaining reaches zero.
Meter Delay	This is the most common setting. When the volume remaining reaches zero, the system will initiate a regeneration at the next pre-set regeneration time.
Meter Override	When the volume remaining reaches zero, the system will initiate a regeneration at the next pre-set regeneration time. If the days between regeneration are reached before the volume remaining reaches zero, the system will override the meter setting and initiate a regeneration.
Time	Current time setting.
REG. Time	This setting determines the time of day to perform a scheduled regeneration.
REG. Days	This value is the interval (days) between regenerations. It is used to determine how many days between regenerations.
REG. Cap	This value is the total capacity between regenerations. It is used to determine how many water can be treated between regenerations.
Backwash	Control the backwash duration during regeneration cycle.
Brine	Control the brine duration during regeneration cycle.
Rinse	Control the rinse duration during regeneration cycle.
Refill	Control the refill duration during regeneration cycle.
Load Default	The function of this option is to load pre-set values of BACKWASH, BRINE, RINSE, and REFILL for large, medium, and small capacity systems.

CHECK THE SALT LEVEL

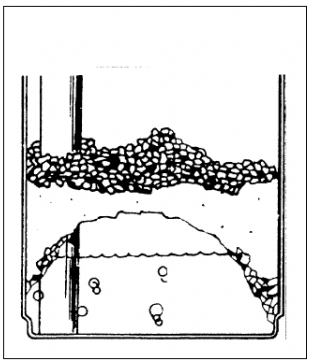
Check the salt level monthly. Remove the lid from the brine well, make sure salt level is always above the water level.

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

ADDING SALT

Use only clean salt labeled for water softener use. 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 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 plastic cabinet 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 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 quantity of iron in your water (for more information contact technical support at techsupport@spectrum-filtration.com).

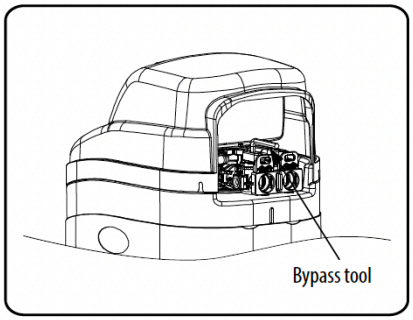
CARE OF YOUR WATER SOFTENER

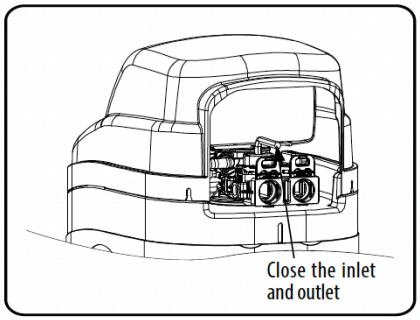
To retain the attractive appearance of your new water Softener, clean occasionally with a mild soap solution. Do not use abrasive cleaners, ammonia or solvents. Never subject your Softener to freezing.

SERVICING THE CONTROL VALVE

Before Servicing

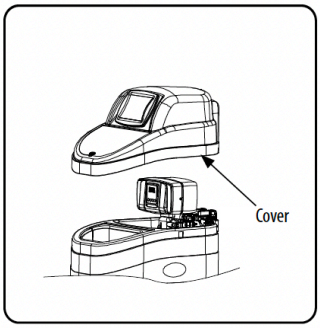
1. Turn off water supply to softener using the bypass tool.



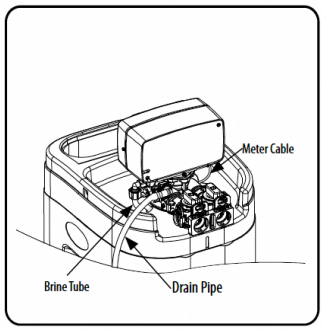


2. Relieve water pressure in the softener by stepping the control into the backwash position momentarily. Return the control to the In Service position.

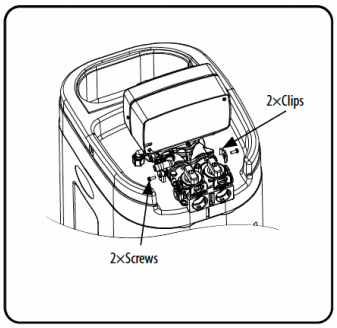
3. Unplug electrical cord from outlet.



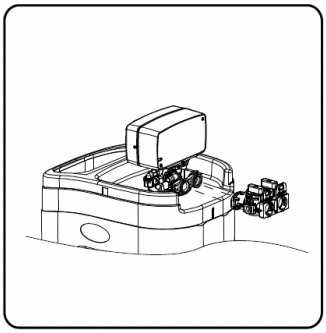
4. Lift the high cover up.



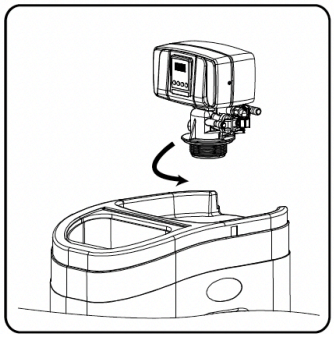
5. Remove the brine tube and the drain pipe.



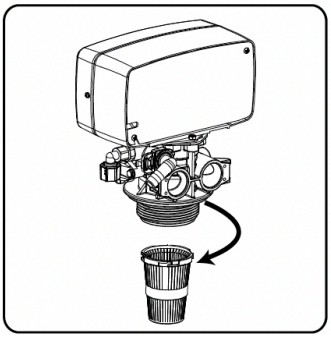
6. Remove the clips that connect control valve and bypass.



7. Disconnect the softener from the bypass.



8. Remove the valve from the softener.

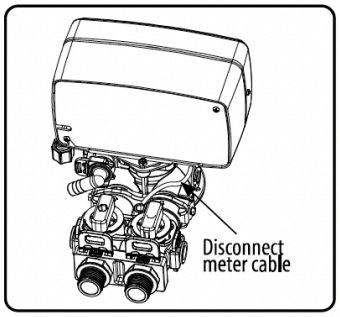


9. Remove the upper screen from the valve.

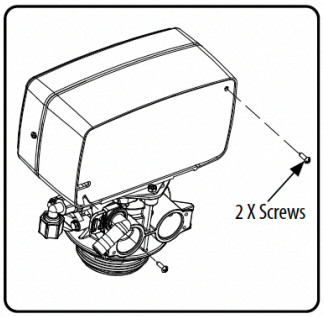
CAUTION **ELECTRICAL SHOCK HAZARD! Unplug the unit before removing the cover or accessing any internal control parts.**

CAUTION **Disassembly while under pressure can result in flooding. Always follow these steps prior to servicing the valve.**

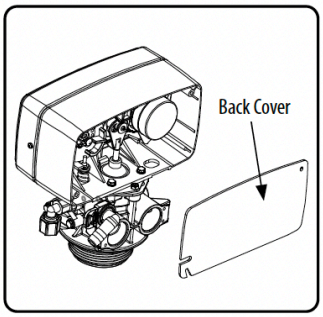
REPLACE TIMER



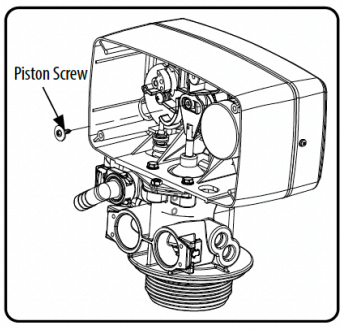
1. Disconnect the meter cable from the meter. (If meter cable is attached).



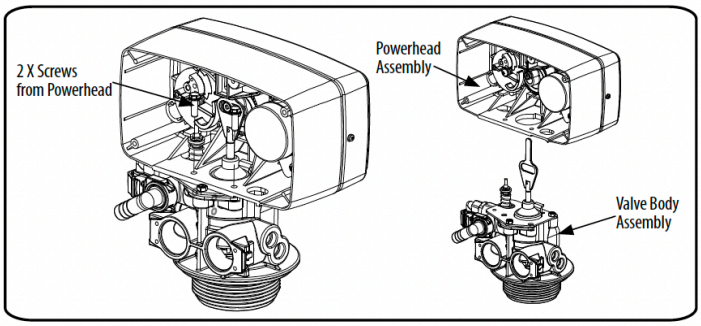
2. Remove the two screws on back cover.



3. Remove the back cover.

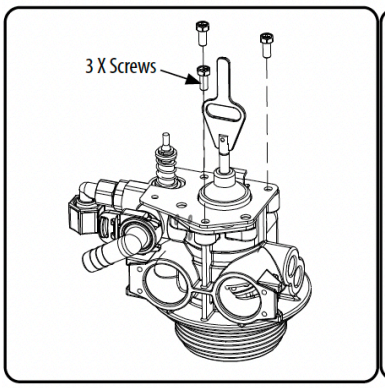


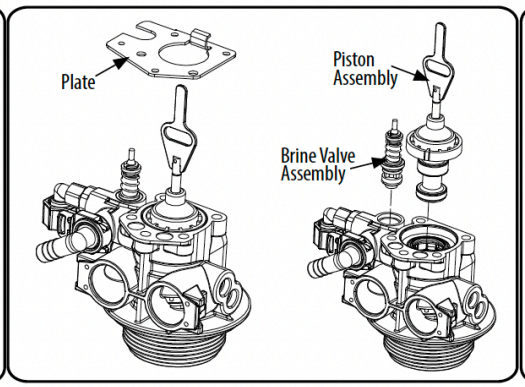
4. Remove the piston screw from the piston rod.



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

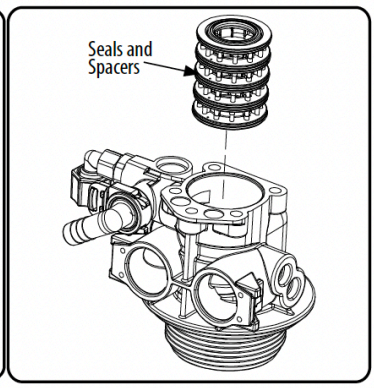
REPLACE PISTON AND/OR BRINE VALVE





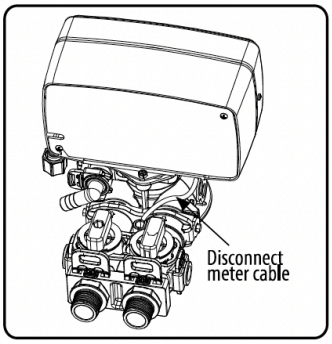
1. Follow steps 1 to 6 of Timer/ Powerhead replacement.
2. Remove three screws from the plate on the valve body.
3. Remove the plate from the valve body and pull the Piston Assembly from the valve. The brine valve assembly can also be removed in this stage.

REPLACE SEAL AND/OR SPACER

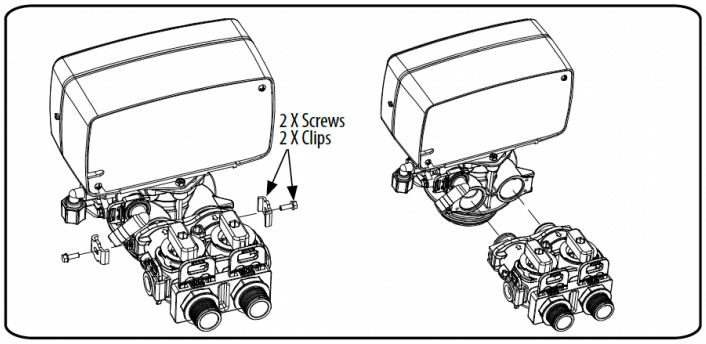


4. Remove the seals and spacers assembly, grease it with silicone lubricant and put back in.
5. After servicing, reverse following steps in this section.

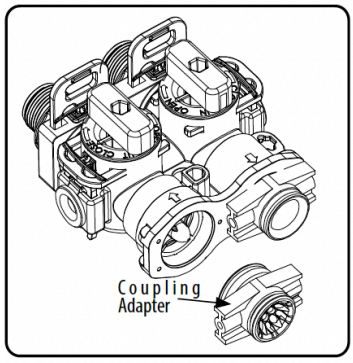
REPLACE METER



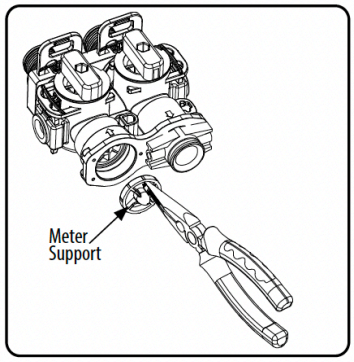
1. Disconnect the meter cable from the meter. (If flow meter cable is attached)



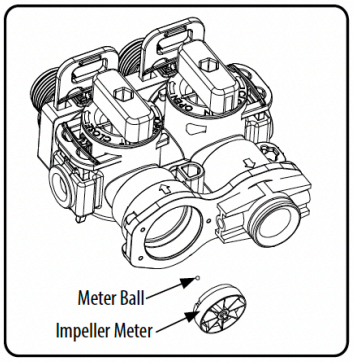
2. Disconnect the bypass from valve by removing clips.



3. Remove the coupling adapter from the bypass.

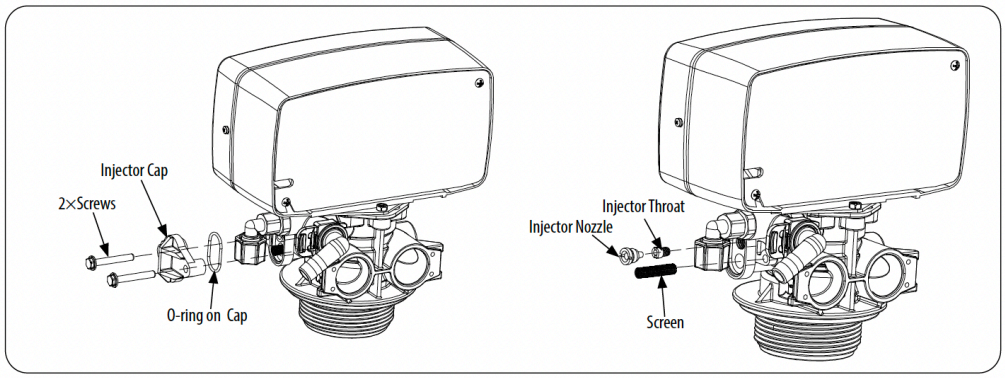


4. Remove the meter support from the bypass.



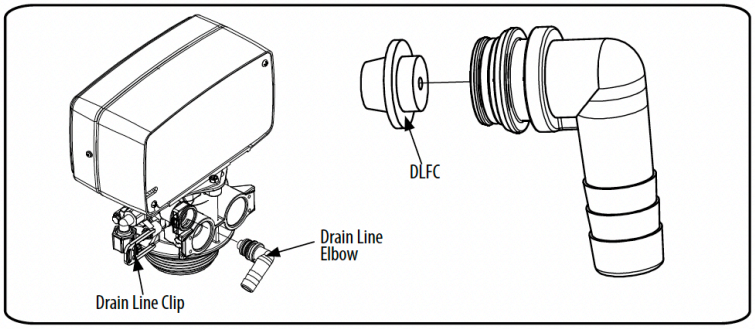
5. Remove the impeller and replace it. (Watch for the meter ball under the impeller, do not miss the ball)

CLEAN INJECTOR ASSEMBLY



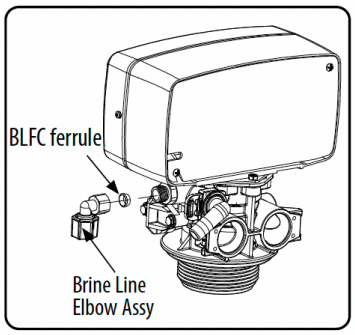
1. Remove the two screws on the injector cap.
2. Remove the injector cap, watch for the o-ring on cap.
3. Take out the screen inside, clean and replace it.
4. Screw the injector nozzle and injector throat out, clean and replace it. After servicing, reverse following steps in this section.

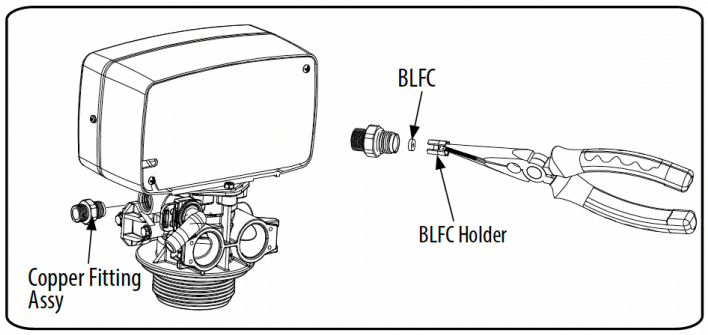
REPLACE DRAIN LINE FLOW CONTROL



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

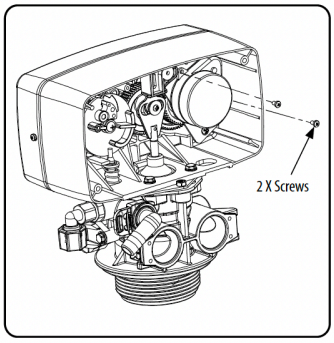
REPLACE BRINE LINE FLOW CONTROL

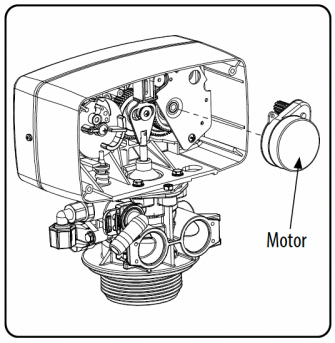




3. Use a wrench to screw off the brine line elbow assy, watch for the BLFC ferrule.
4. Use a wrench to screw off the copper fitting and use a nipper plier to remove the BLFC holder.
5. Use a nipper plier to remove the BLFC holder, clean/ replace brine line flow control.

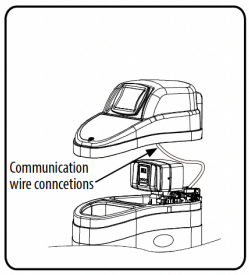
REPLACE MOTOR



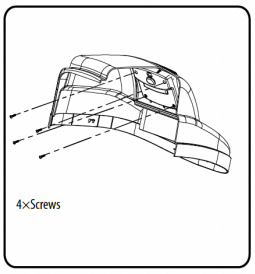


1. Follow steps 1 to 3 of Timer/Powerhead replacement.
2. Remove the two screws from the motor. Remove motor(disconnect the wire attached on PCB if any), watch for the pin under the motor.
3. Replace the motor.

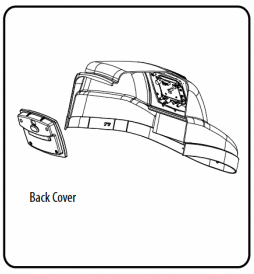
REPLACE DISPLAY



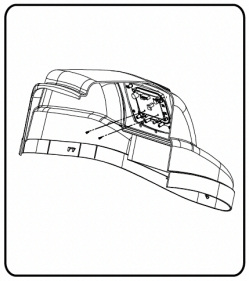
1. Remove the cover and disconnect the wire connection.



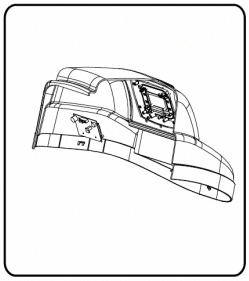
2. Remove the four screws attached on controller back cover.



3. Remove the four screws attached on controller back cover.



4. Remove the two screws attached on display PCB.



5. Remove the display PCB.

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PROBLEM	POSSIBLE SOLUTIONS
1. SOFTENER DELIVERS HARD WATER	
A. Bypass valve is open	A. Close bypass valve
B. No salt in brine tank	B. Add salt to brine tank and maintain salt level above water level
C. Injector or screen plugged	C. Replace injectors and screen
D. Insufficient water flowing into brine tank	D. Check brine refill time and clean brine line flow control if plugged
E. Leak at distributor tube	E. Make sure distributor tube is not cracked. Check O-ring and tube pilot
F. Internal valve leak	F. Replace seals and spacers and/or piston
G. Flow meter jammed	G. Remove obstruction from flow meter
H. Flow meter cable disconnected or not plugged into meter cap	H. Check meter cable connection to timer and meter cap
I. Improper programming	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	A. Assure permanent electrical service (check fuse, plug, chain or switch)
B. Timer is not operating properly	B. Replace timer
C. Defective valve drive motor	C. Replace drive motor
D. Improper programming	D. Check programming and reset as needed
3. UNIT USES TOO MUCH SALT	
A. Improper salt setting	A. Check salt usage and salt setting
B. Excessive water in brine tank	B. See #7
C. Improper programming	C. Check programming and reset as needed
4. LOSS OF WATER PRESSURE	
A. Iron build-up in line to water Softener	A. Clean line to water Softener
B. Iron build-up in water Softener	B. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration
C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system	C. Remove piston and clean control
5. LOSS OF RESIN THROUGH DRAIN LINE	
A. Air in water system	A. Assure that well system has proper air eliminator control. Check for dry well condition
B. Drain line flow control is too large	B. Ensure drain line flow control is sized
6. IRON IN CONDITIONED WATER	
A. Fouled resin bed	A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time
B. Iron content exceeds recommended parameters	B. Add iron removal filter system
7. EXCESSIVE WATER IN BRINE TANK	
A. Plugged drain line flow control	A. Clean flow control
B. Brine valve failure	B. Replace brine valve
C. Improper programming	C. Check programming and reset as needed
8. SALT WATER IN SERVICE LINE	
A. Plugged injector system	A. Clean injector and replace screen
B. Timer not operating properly	B. Replace timer
C. Foreign material in brine valve	C. Clean or replace brine valve
D. Foreign material in brine line flow control	D. Clean brine line flow control
E. Low water pressure	E. Raise water pressure
F. Improper programming	F. Check programming and reset as needed
9. SOFTENER FAILS TO DRAW BRINE	
A. Drain line flow control is plugged	A. Clean drain line flow control
B. Injector is plugged	B. Clean or replace injectors
C. Injector screen is plugged	C. Replace screen
D. Line pressure is too low	D. Increase line pressure (line pressure must be at least 20 psi at all times)
E. Internal control leak	E. Change seals and spacers and/or piston assembly
F. Improper programming	F. Check programming and reset as needed
G. Timer not operating properly	G. Replace timer
10. CONTROL CYCLES CONTINUOUSLY	
A. Timer not operating properly	A. Replace timer
B. Faulty microswitch and/or harness	B. Replace faulty microswitch or harness
C. Faulty cycle cam operation	C. Replace cycle cam or reinstall
11. DRAIN FLOWS CONTINUOUSLY	
A. Foreign material in control	A. Remove piston assembly and inspect bore. Remove foreign material and check control in various regeneration positions
B. Internal control leak	B. Replace seals and/or piston assembly
C. Control valve jammed in backwash, brine or rinse position	C. Replace piston and seals and spacers
D. Timer motor stopped or jammed teeth	D. Replace timer motor and check all gears for missing teeth
E. Timer not operating properly	E. Replace timer

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