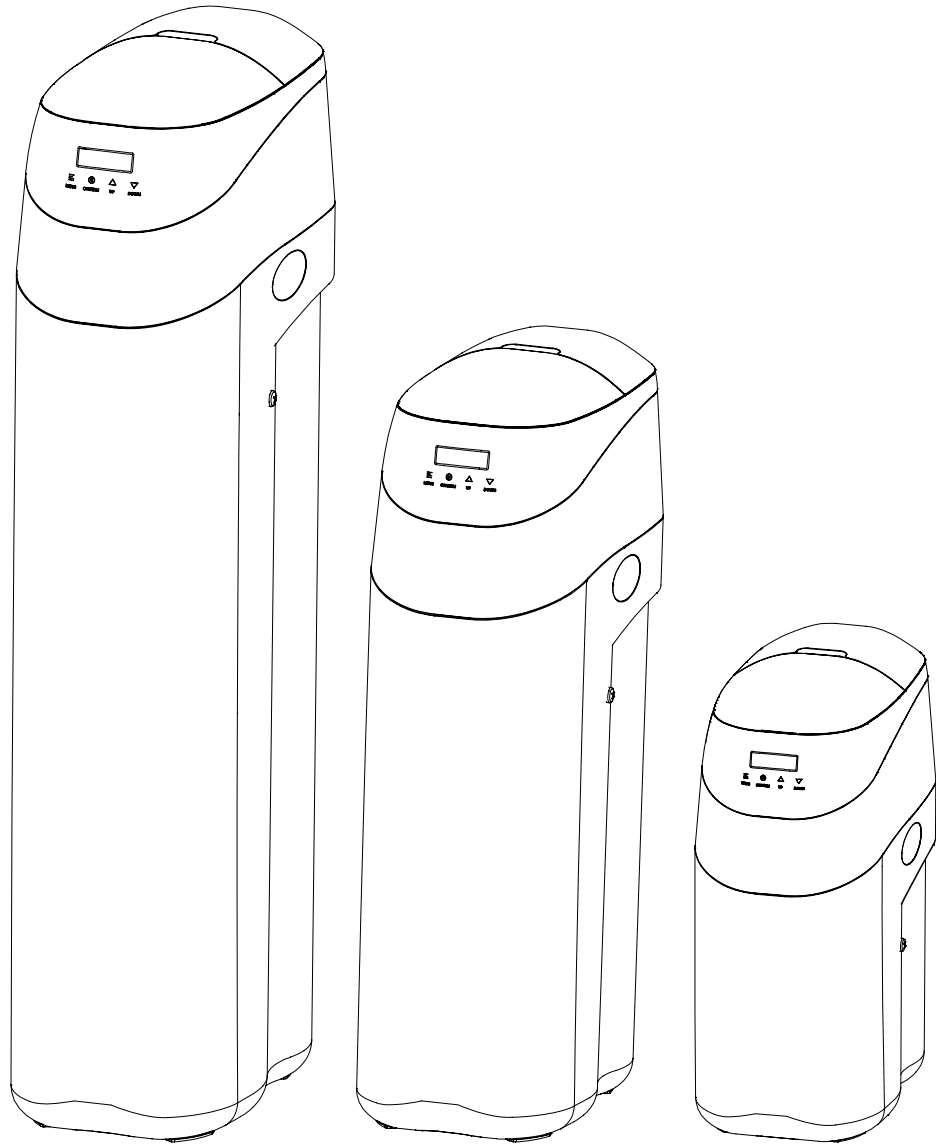
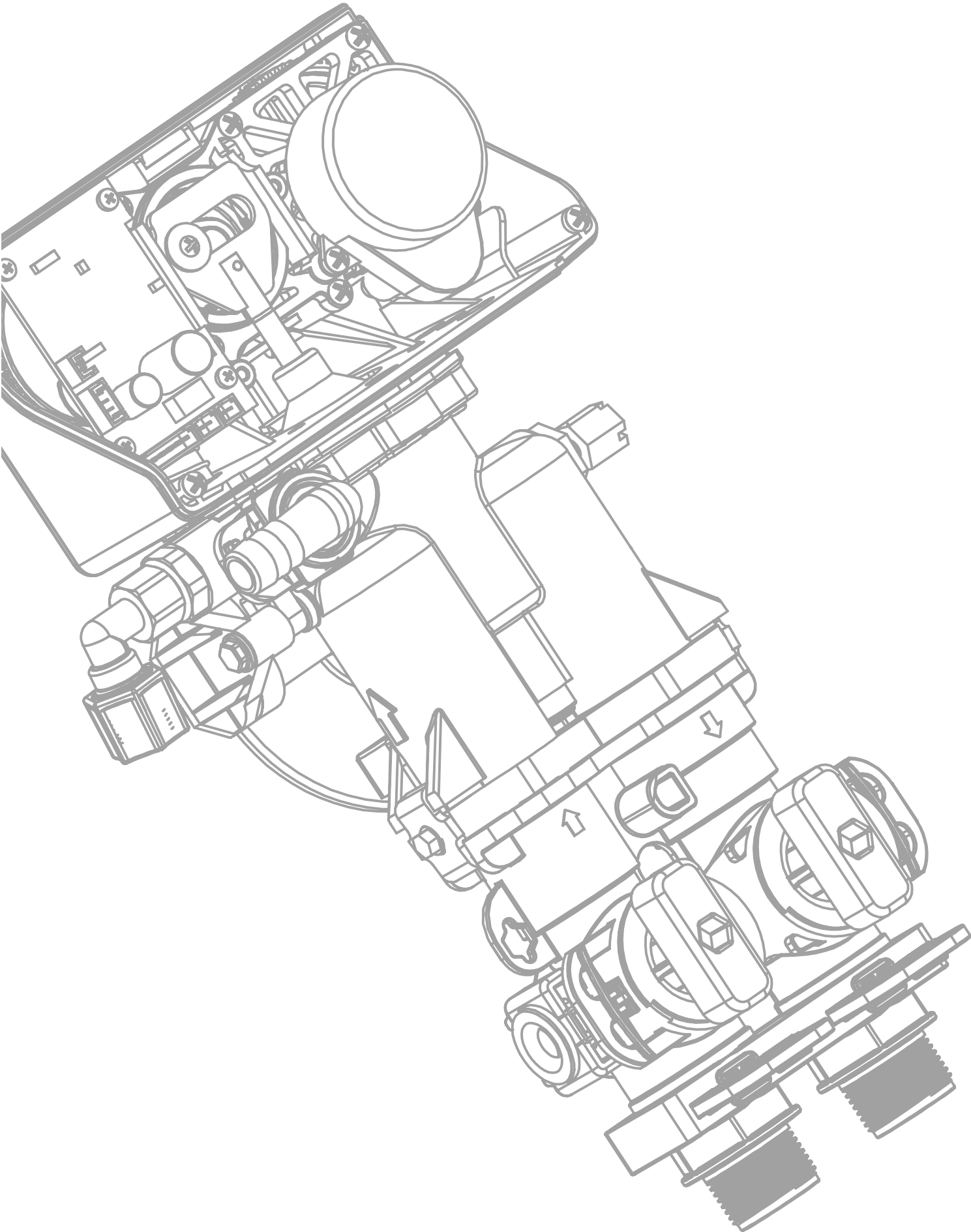


# Owners Manual



## CS8F Series Water Softener

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



# TABLE OF CONTENTS

<i>READ THIS PAGE FIRST</i>	4
<i>WATER CONDITIONER BASICS</i>	5
<i>SOFTENER SYSTEM SPECIFICATIONS</i>	6
<i>SOFTENER SYSTEM DIMENSIONS</i>	7
<i>UNPACK &amp; INSPECT YOUR WATER SOFTENER</i>	9
<i>CHECK THE VALVE SERIAL NUMBER</i>	10
<i>CHECK THE SOFTENER SERIAL NUMBER</i>	11
<i>PARTS BREAKDOWN</i>	12
<i>PRE-INSTALLATION INSTRUCTIONS</i>	16
<i>INSTALLATION INSTRUCTIONS</i>	16
<i>WATER BYPASS</i>	18
<i>PROGRAMMING GUIDE</i>	19
<i>START UP INSTRUCTIONS</i>	22
<i>MAINTENANCE INSTRUCTIONS</i>	24
<i>TROUBLE SHOOTING GUIDE</i>	30

# READ THIS PAGE FIRST

## BEFORE STARTING INSTALLATION

► You must read and understand the contents of this manual before installing or operating your water softener.

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

► This system and its installation must comply with state and local 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 0.21MPa(30 psi) to 0.86MPa(125 psi). If the water pressure is higher than 0.86MPa(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 are exposed to high levels of iron, manganese, sulfur, and sediments. 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 piston, seals, and/or spacers may be necessary depending on how harsh the conditions are.

► Do not use water that is microbiologically unsafe without adequate disinfection before or after this system.

► This publication 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.

► Cleaning and user maintenance shall not be made by children without supervision.

### INSTALL NOTES & SAFETY MESSAGES

Watch for the following messages in this manual:

EXAMPLE:

#### NOTE

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

EXAMPLE:

#### CAUTION

Disassembly while under pressure can result in flooding.

EXAMPLE:



#### WARNING

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

# WATER CONDITIONER BASICS

## 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. And as it seeps through soil and rocks it gather hardness, rust, acid, unpleasant tastes and odors.

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.

Some localities have corrosive water. A softener cannot correct this problem. This softner has warranty disclaims of liability for corrosion of plumbing lines, fixtures or appliances.

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 colored as it oxidizes. 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 particle of iron. A filtering treatment will be required 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 alone capacity. This will minimize the potential for bed fouling.

Regular resin bed cleaning is needed to keep the bed from coating with iron if you are operating a water softener on clear water iron. Even when operating a softener on water with less than the maximum of dissolved iron, regular cleanings 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.**

# SOFTENER SYSTEM SPECIFICATIONS

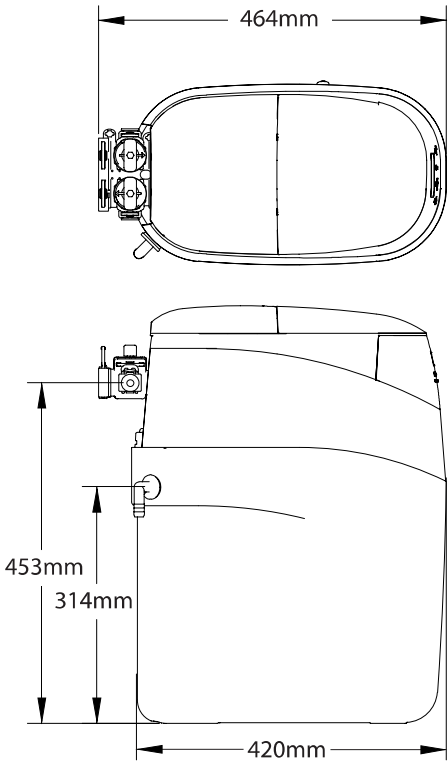
## BNT850 OF VALVE

<b>Performance Data Sheet and Specifications</b>			
Model	CS8F-0815	CS8F-0824	CS8F-0835
Control System	BNT-850 Control Valve		
Regeneration Type	Down Flow		
Regeneration Mode	Meter immediately, Meter Delayed, Day Override, Vacation		
Hardness Removal (96g/L Salt Dosage)	381 gram	595 gram	986 gram
Tank Size	08x15	08x24	08x35
Resin Quantity	8 L	12 L	18 L
Salt Storage Capacity	15 kg	29 kg	46 kg
Rated Service Flow Rate	15 L/min	17 L/min	21 L/min
<b>Recommended Cycle Settings</b>			
Backwash Duration Setting	2 min	3 min	4 min
Brine Duration Setting	21 min	34 min	49 min
Rinse Duration Setting	1 min	2 min	3 min
Refill Duration Setting	2.9 min	4.3 min	6.4 min
Salt Used - Per Regeneration (96 g/L Salt Dosage)	0.77 kg	1.16 kg	1.73 kg
Water Used - Per Regeneration	31 L	53 L	75 L
<b>Flow Rate (Only valve)</b>			
Continuous Flow Rate @ 15psi Pressure Drop	4500 L/h		
Peak Flow Rate @ 25 psi Pressure Drop	5900 L/h		
Back Wash Flow Rate @25 psi Pressure Drop	1600 L/h		
Product Dimensions(DxWxH mm)	420x244x555	420x244x787	420x244x1068
Carton size(mm)	482x262x680	482x262x912	482x262x1178
Shipping Weight	18 kg	21 kg	28kg
Container Capacity(40" HQ)	588 pcs	392 pcs	392 pcs
Plumbing Connections	Includes 3/4" & 1" Straight Fittings		
Electrical Requirements	Input 110V-120V / 220-240V AC 50/60Hz		
	Output 12V AC 650mA		
Water Supply	Municiple		
Water Temperature	4°C ~ 43°C		
Water Pressure	0.21MPa ~ 0.86MPa		

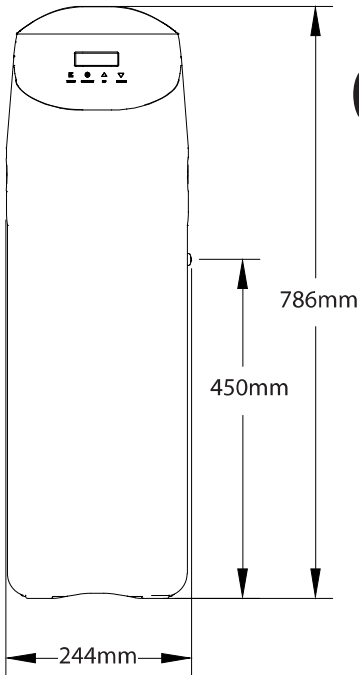
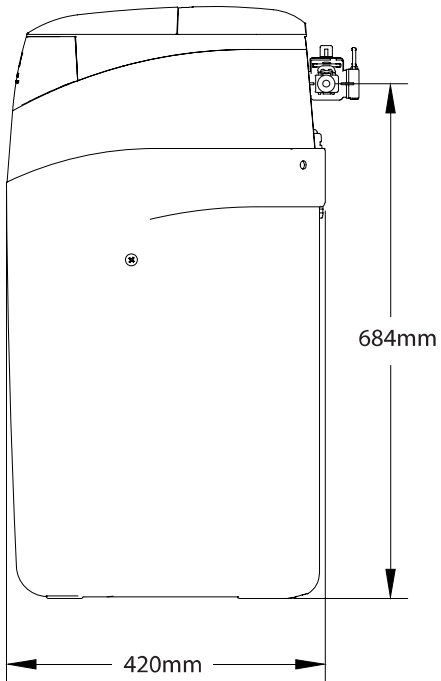
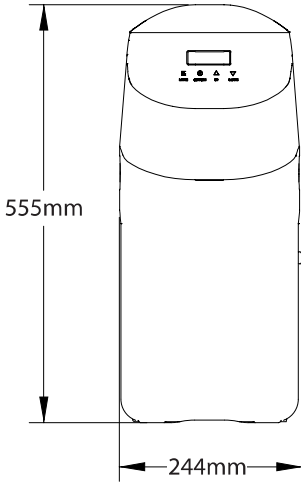
Notes: The data of softener performance is only for reference, it may vary from different water qualities and applications.

- Capacities of conditioners 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(96g/L).
- 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.

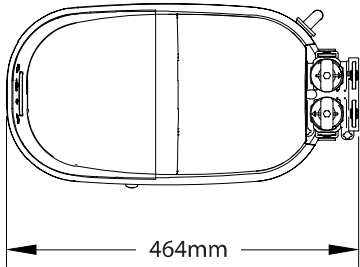
# SOFTENER SYSTEM DIMENSIONS



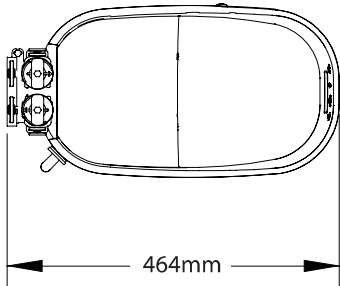
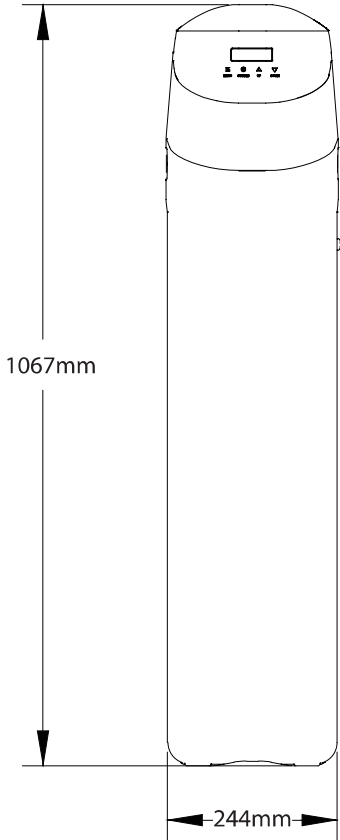
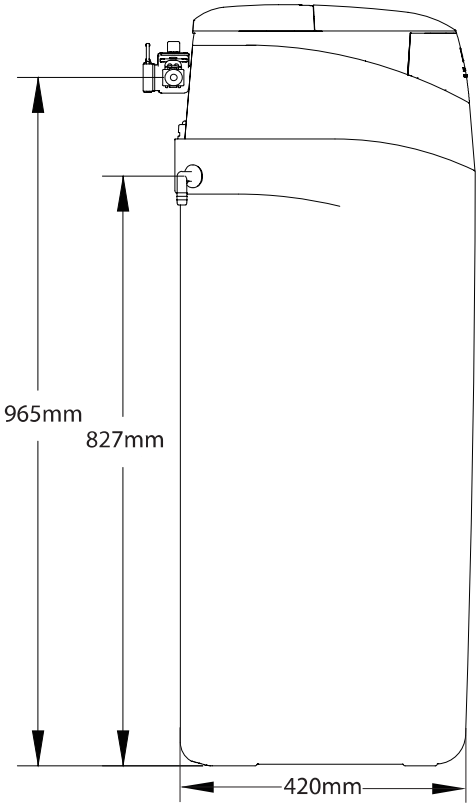
## 0815 TANK



## 0824 TANK



# 0835 TANK





# UNPACK & INSPECT YOUR WATER SOFTENER

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.

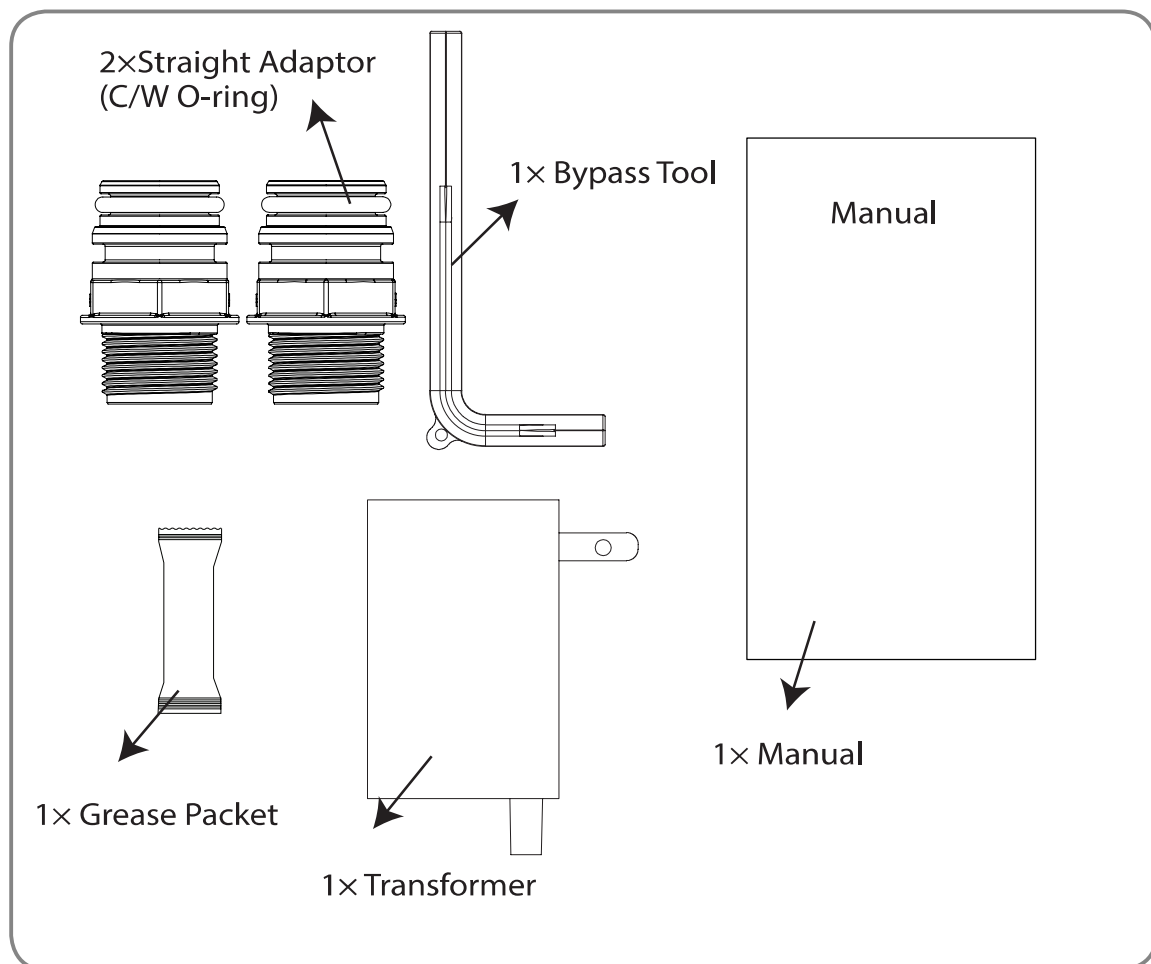
Handle the softener unit with care. Do not drop the unit or set on sharp, uneven projections on the floor. Do not turn the softener unit upside down.

## 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 "RECLASSIFY" THE MEDIA.

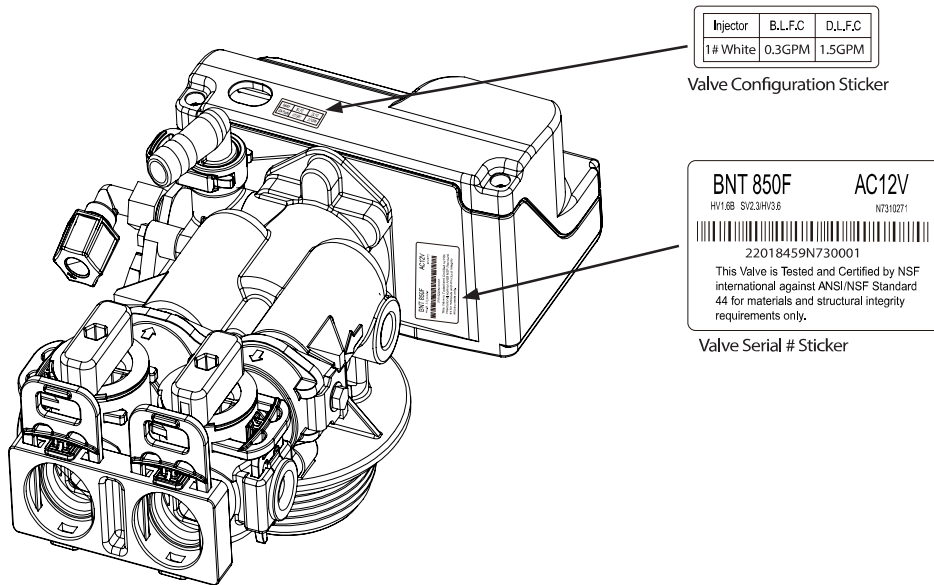
The manufacturer is not responsible for damages in transit. Small parts, needed to install the Softener, are in a parts box. To avoid loss of the small parts, keep them in the parts bag until you are ready to install.

## ACCESSORIES CONTENTS :



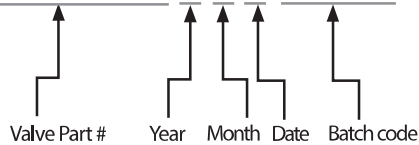
# CHECK THE VALVE SERIAL NUMBER AND VALVE TYPE

Check to make sure the valve type matches what you ordered. The valve configuration sticker will show the injector, BLFC and DLFC size. The valve model sticker shows model, hardware/software version, serial # and batch code of the control valve. Serial numbers are important for troubleshooting.



## VALVE SERIAL NUMBER:

22018459N730001



**(22018459):** Valve part #

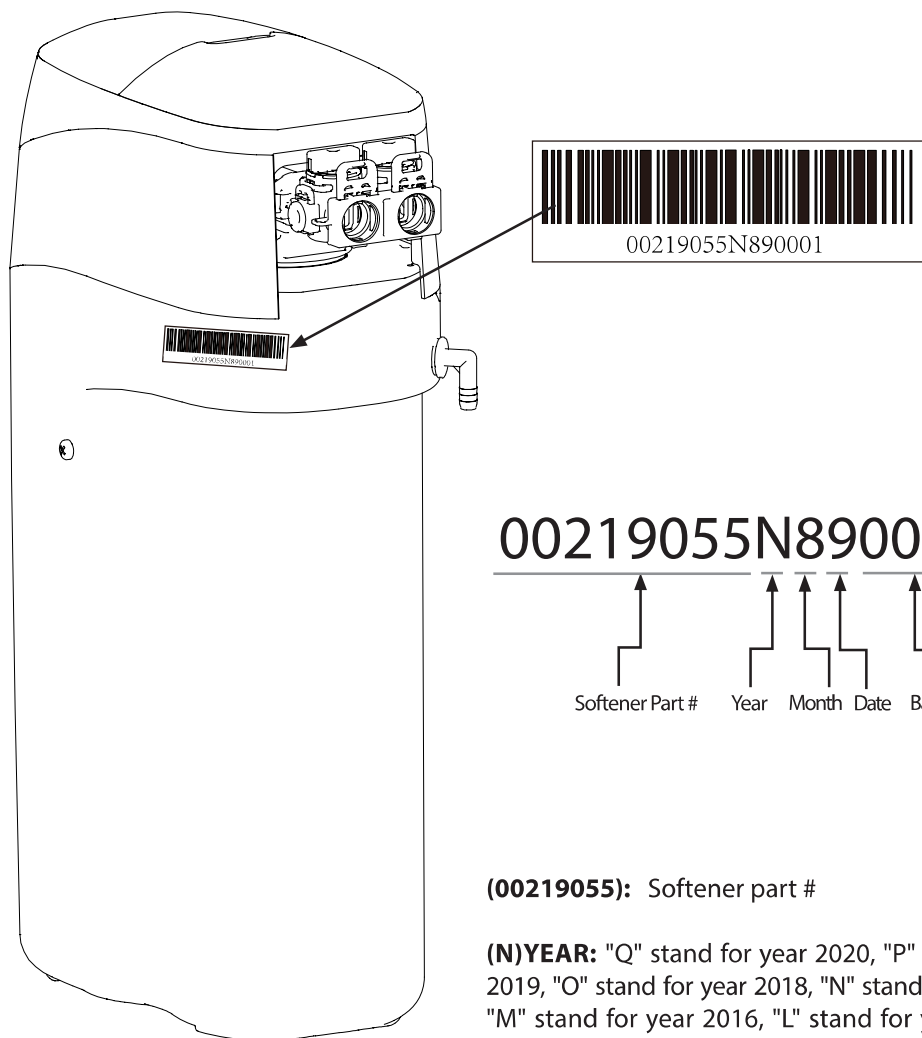
**(N)YEAR:** "Q" stand for year 2020, "P" stand for year 2019, "O" stand for year 2018, "N" stand for year 2017, "M" stand for year 2016, "L" stand for year 2015, "K" stand for year 2014...

**(7)MONTH:** 1(JAN), 2(FEB), 3(MAR), 4(APRIL), 5(MAY), 6(JUNE), 7(JULY), 8(AUG), 9(SEP), A(OCT), B(NOV), C(DEC)

**(3)DATE:** 1 2 3 4 5 6 7 8 9 (A)10 (B)11 (C)12 (D)13 (E)14 (F)15 (G)16 (H)17 (I)18 (J)19 (K)20 (L)21 (M)22 (N)23 (O)24 (P)25 (Q)26 (R)27 (S)28 (T)29 (U)30 (V)31

**(0001):** Batch code

# CHECK THE SOFTENER SERIAL NUMBER



00219055N890001

Softener Part #    Year    Month    Date    Batch code

**(00219055):** Softener part #

**(N)YEAR:** "Q" stand for year 2020, "P" stand for year 2019, "O" stand for year 2018, "N" stand for year 2017, "M" stand for year 2016, "L" stand for year 2015, "K" stand for year 2014...

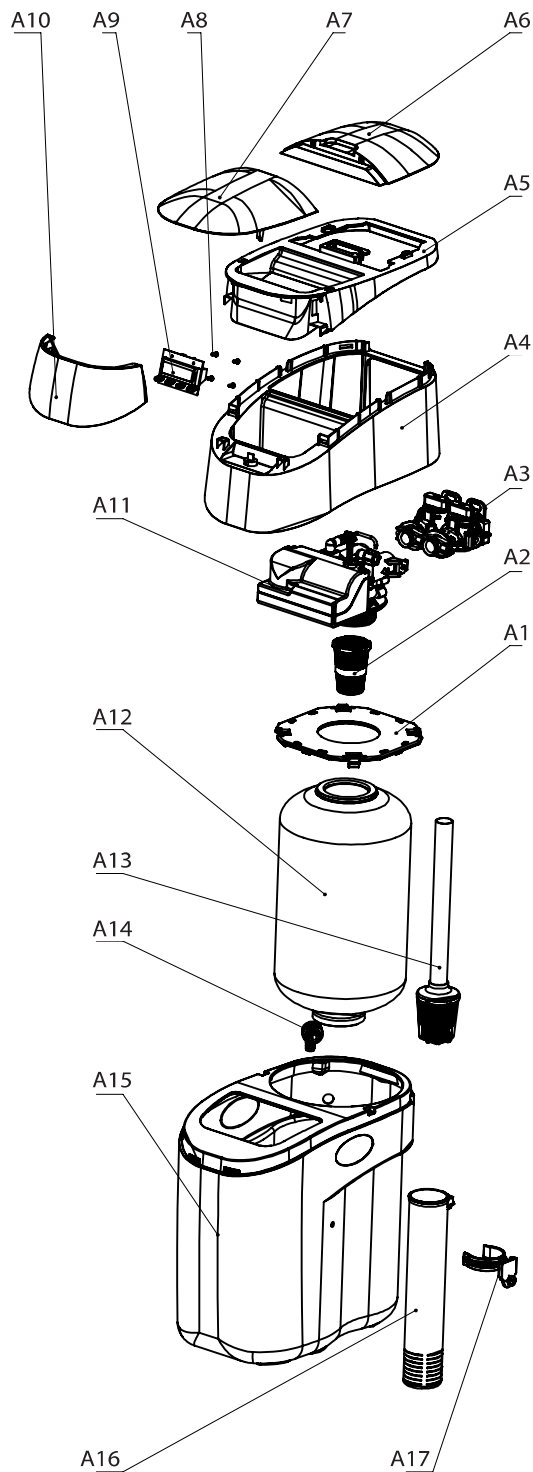
**(7)MONTH:** 1(JAN), 2(FEB), 3(MAR), 4(APRIL), 5(MAY), 6(JUNE), 7(JULY), 8(AUG), 9(SEP), A(OCT), B(NOV), C(DEC)

**(3)DATE:** 1 2 3 4 5 6 7 8 9 (A)10 (B)11 (C)12 (D)13 (E)14 (F)15 (G)16 (H)17 (I)18 (J)19 (K)20 (L)21 (M)22 (N)23 (O)24 (P)25 (Q)26 (R)27 (S)28 (T)29 (U)30 (V)31

**(0001):** Batch code

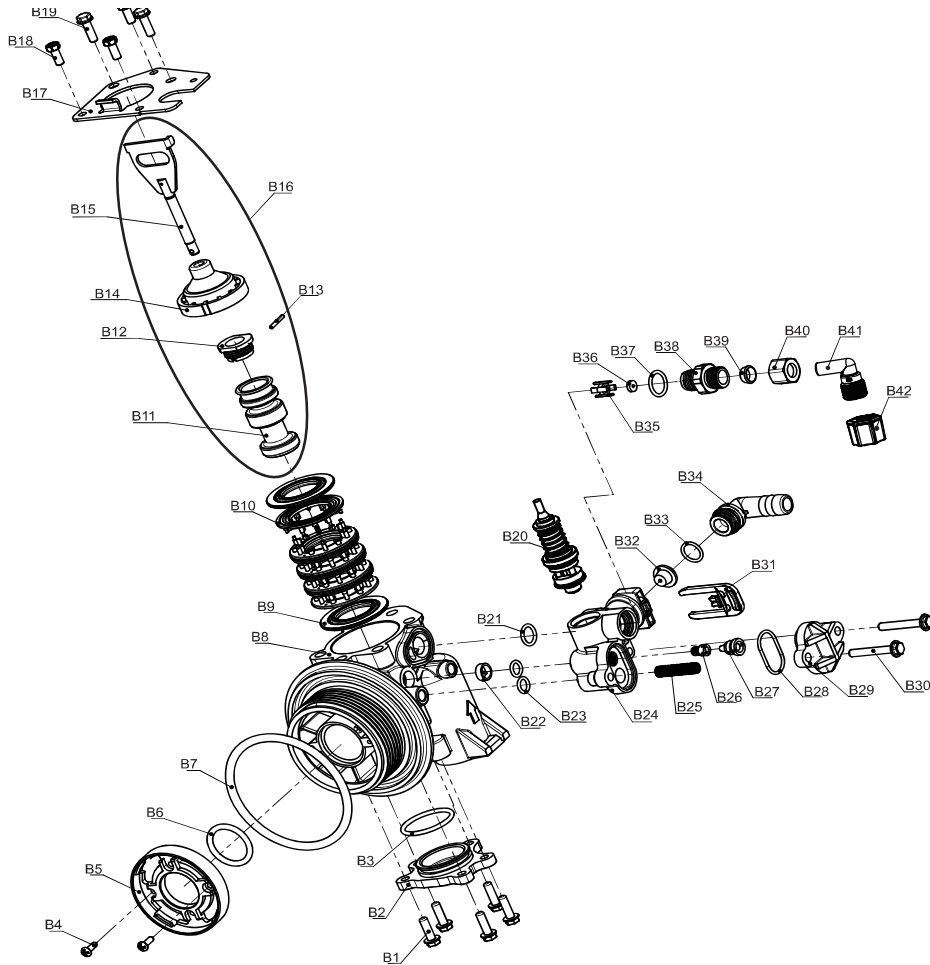
# PARTS BREAKDOWN

## SOFTENER PARTS LIST



No.	Part #	Description	Qty
A1	07050060	Snap-Guage (8"tank)	1
A2	07060077	Top Cone	1
A3	22053013F	Bypass Valve Assy	1
A4	07032140	CS8F-Softener Cover(White)	1
A5	07200030	CS8F-Softener Cover Decoration(Black)	1
A6	07032141	CS8F-Softener Top Cover (White)	1
A7	07032142	CS8F-Softener Salt Lid (White)	1
A8	13000402	Screw 2.9x9.5	4
A9	05031023K	BNT85HE Display PCB	1
A10	50030227	CS8F-Softener IMD Panel (Black)	1
A11	22018852	Control Valve Assy	1
A12	07500815E	0815 Pressure Tank	1
	07500824E	0824 Pressure Tank	1
	07650835E	0835 Pressure Tank	1
A13	02030031	Distribution Assy-1015	1
	02030067	Distribution Assy-1024	1
	02030016	Distribution Assy-1035	1
A14	02170173	Overflow Assy	1
A15	07000177K	CS8F-0815 Softener Cabinet (White)	1
	07000178J	CS8F-0824 Softener Cabinet (White)	1
	07000179H	CS8F-0835 Softener Cabinet (White)	1
A16	02150006	0213 Brine Well Brine Valve Assy	1
	02150017	0222 Brine Well Brine Valve Assy	1
	02150015	0235 Brine Well Brine Valve Assy	1
A17	02170171	Brine Well Clamp Assy	1

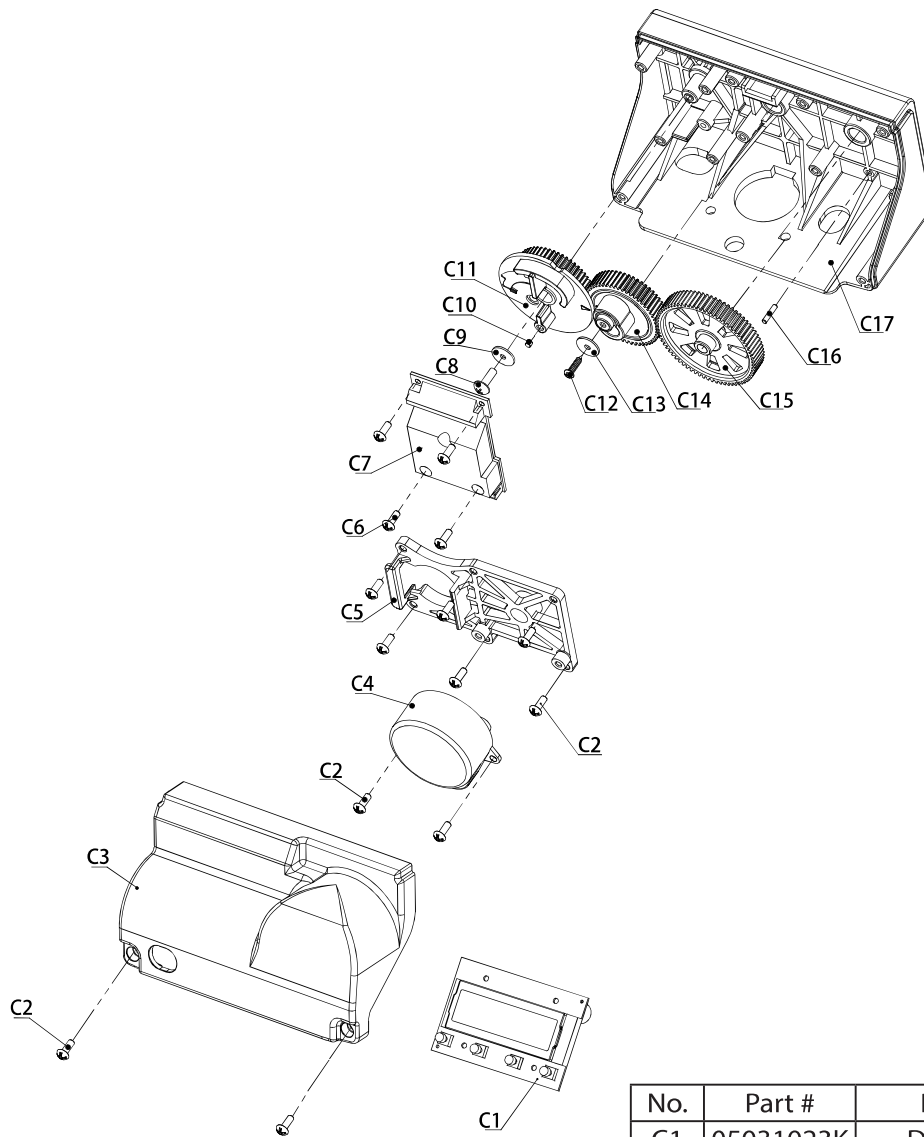
# VALVE BODY PARTS LIST



No.	Part #	Description	Qty
B1	05056508	Screw-M5×12(withWasher)	5
B2	05030004	Bnt85 End Cover	1
B3	05030013	O-ring-φ30×2.65	1
B4	05056084	Screw-ST3.5×13	2
B5	07060007	Valve Bottom Connector	1
B6	26010103	D-tube O-ring	1
B7	05056063	Tank O-ring	1
B8	05030001	Bnt85 Valve Body	1
B9	05056073	Seal	5
B10	05056204	Spacer	8
B11	05056520	Piston	1
B12	05056022B	Piston Retainer	1
B13	05056097	Piston Pin	1
B14	05005605	End Plug	1
B15	05030002B	Bnt85 Piston Rod	1
B16	02170054	Piston Assy	1
B17	05056047	End Plug Retainer	1
B18	05056087	Screw-M5×12	3
B19	05056088	Screw-M5×16	2
B20	05056180M	Brine Valve Injector Stem Assy	1

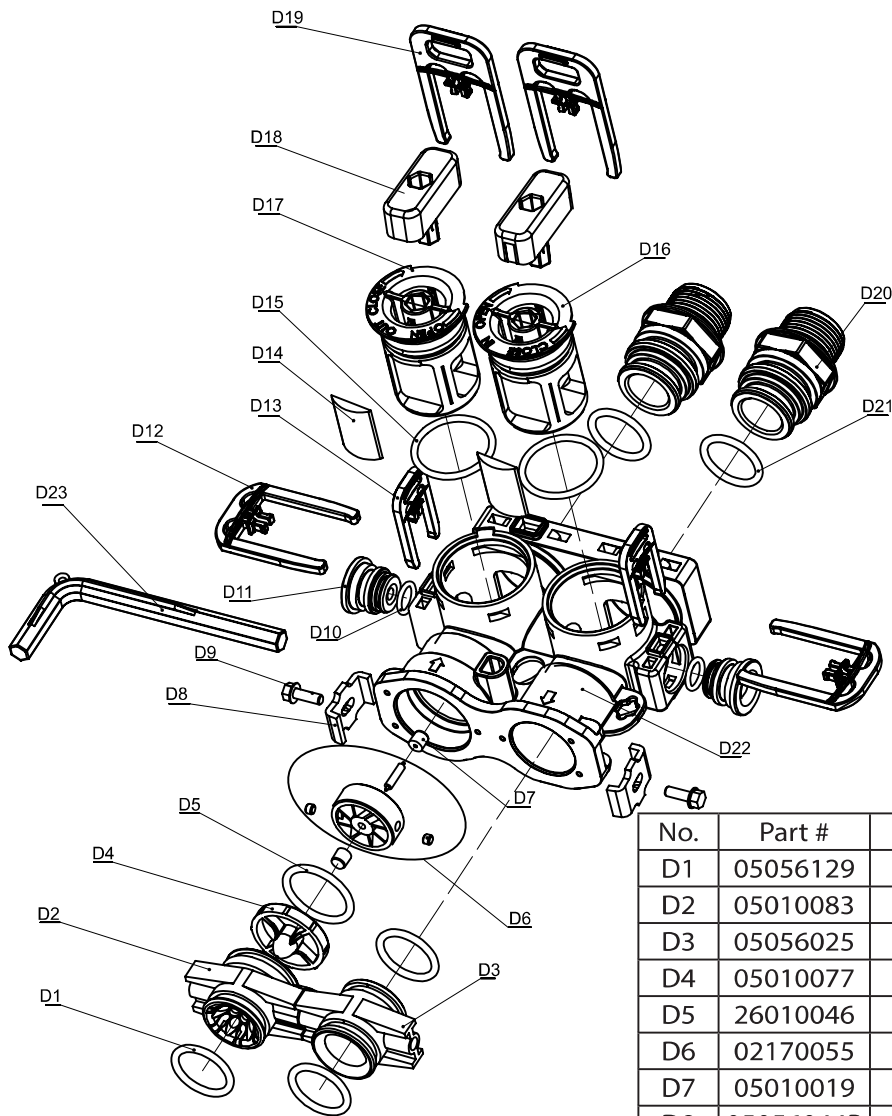
B21	05056066	O-Ring-φ11×2	1
B22	05056037	Air Disperser	1
B23	05056067	O-Ring-φ7.8×1.9	2
B24	05056177	Injector Body	1
B25	05056103	Injector Screen	1
B26	30040085	Injector Throat(White)	1
B27	30040086	Injector Nozzle(White)	1
B28	05056205	O-RING(23.9×1.8)	1
B29	05056029	Injector Cover	1
B30	05056086	Screw-M5×30	2
B31	05056172	Secure Clip-S	1
B32	05056188	DLFC 3.0GPM	1
B33	05056134	O-ring 12×2	1
B34	05010082	Drain Elbow	1
B35	05056035	BLFC Button Retainer	1
B36	05056076	BLFC(0.3GPM)	1
B37	05056138	O-Ring-φ14×1.8	1
B38	05056100B	BLFC Copper Fitting	1
B39	05056033	BLFC Ferrule	1
B40	05056108	BLFC Fitting Nut	1
B41	21499233	Brine Line Elbow	1
B42	21389033	Brine Line Elbow Nut	1

# POWER HEAD PARTS LIST



No.	Part #	Description	Qty
C1	05031023K	Display board	1
C2	05056084	Screw-ST3.5×13	1
C3	05030024	Bnt85 Cover	1
C4	05056550	Bnt85 Motor	1
C5	05030006	Bnt85 Mounting Plate	1
C6	05010037	Screw-ST2.9×10	4
C7	05030010E	Bnt85 Main Pcb	1
C8	05056166B	Screw-ST4.2×12	1
C9	05056141B	Washer-4x12	1
C10	05010023	Magnet-φ3×2.7	1
C11	05030008	Bnt85 Brine Gear	1
C12	13000426	Screw-ST2.9×13	1
C13	05056139	Washer-3x13	1
C14	05030007	Bnt85 Main Gear	1
C15	05030009	Bnt85 Drive Gear	1
C16	05056098	Motor Pin	1
C17	05030005	Bnt85 Housing	1

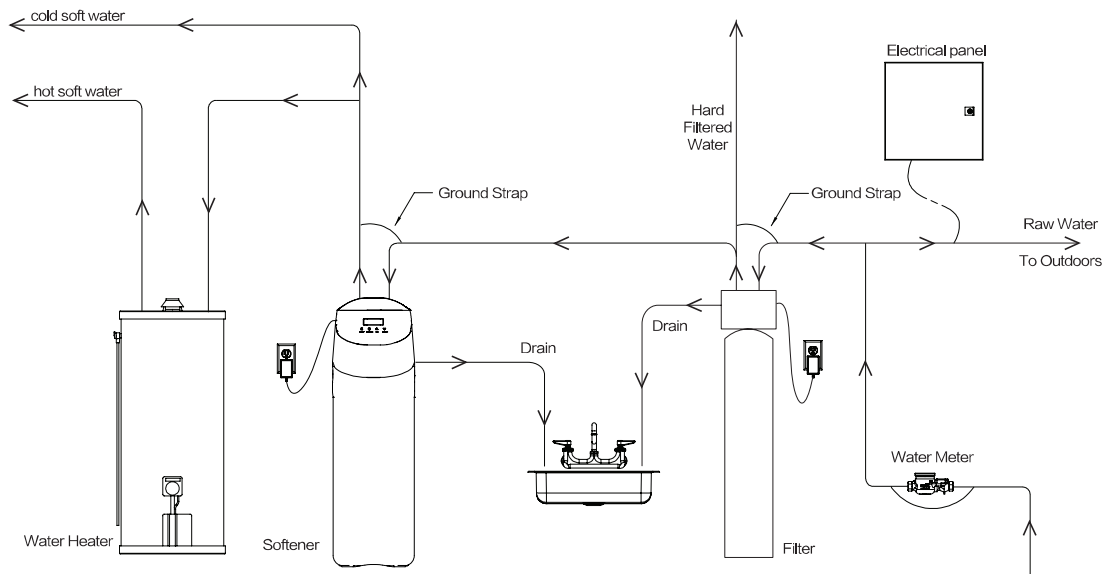
# BYPASS PARTS LIST



No.	Part #	Description	Qty
D1	05056129	O-ring-φ23×3	3
D2	05010083	Adaptor Distributor	1
D3	05056025	Adaptor Coupling	1
D4	05010077	Impeller Holder	1
D5	26010046	O-ring-φ27×3	1
D6	02170055	Meter Assy	1
D7	05010019	Bush	2
D8	05056044B	SS Clip	2
D9	13000327	Screw M4×12	2
D10	05056134	O-ring(12×2)	2
D11	05056146	Bypass Plug	2
D12	21709004	Shaft Clip	2
D13	05056172N	Plug Clip	2
D14	05056149B	Shaft Seal	2
D15	05030013	O-ring(30×2.65)	2
D16	05056213	Bypass Shaft( Inlet)	1
D17	05056214	Bypass Shaft( Outlet)	1
D18	05056220	Bypass Knob	1
D19	21709003	Connector Clip	2
D20	21319006	Connector 3/4" Straight	2
	21319001	Connector 1" Straight	2
D21	26010143	O-ring( 22.4×3.55)	2
D22	05056212	063 Bypass Body	1
D23	70020007M	Bypass Tool	1

# PRE-INSTALLATION INSTRUCTIONS

Contact your local distributor to have a complete water analysis and check your water hardness on your water supplier, this will keep your conditioner in proper working.



## NOTE

*YOU MUST FOLLOW ALL GOVERNMENT CODES AND REGULATIONS GOVERNING THE INSTALLATION OF THESE DEVICES.*

# INSTALLATION INSTRUCTIONS

## **DETERMINE THE CORRECT LOCATION OF THE WATER CONDITIONING EQUIPMENT**

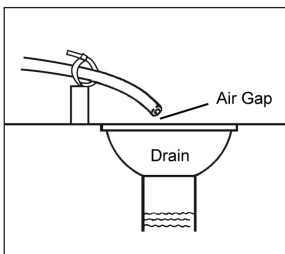
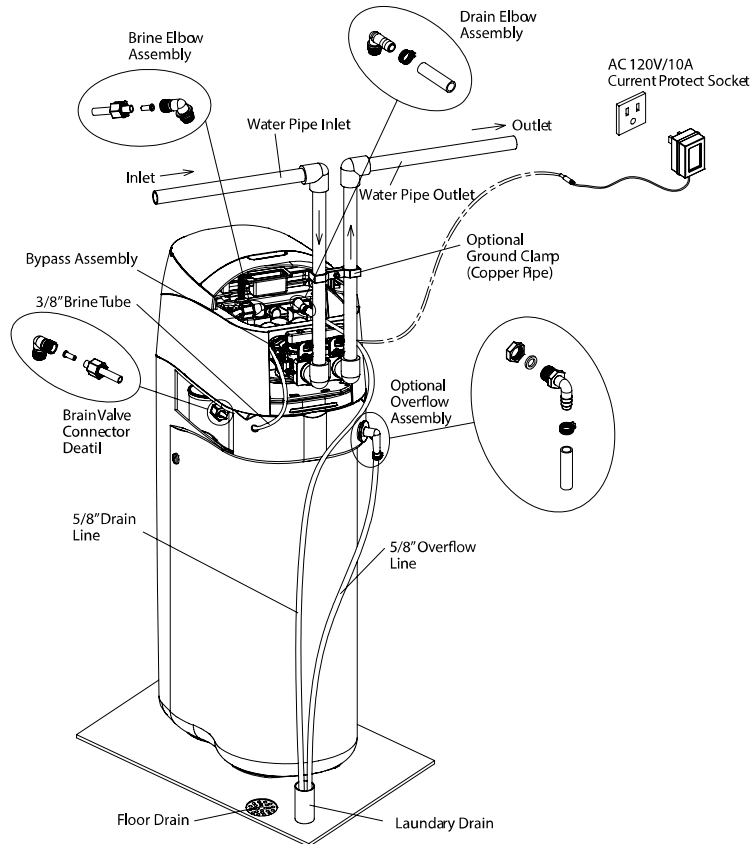
Select the location of your softener with care. Review the various conditions below to determine a proper location:

1. Locate as close as possible to the water supply source.
2. Locate as close as possible to a floor or laundry tub drain.
3. Locate in correct relationship to other water conditioning equipment.
4. Softener should be located in the supply line before the water heater. Temperatures above 48.8°C (120°F) 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 void the factory 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.
8. Keep the softener out of direct sunlight. Heat build up from direct sunlight may soften and distort plastic parts.



## TOOLS REQUIRED FOR INSTALLATION:

- ▶ Two adjustable wrenches.
- ▶ Additional tools may be required 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 codes.
- ▶ 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 pipes.
- ▶ 5/8" OD drain line is needed for the drain.



**⚠ 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)

**⚠ 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-SIPHONED INTO THE CONDITIONER.

## NOTE

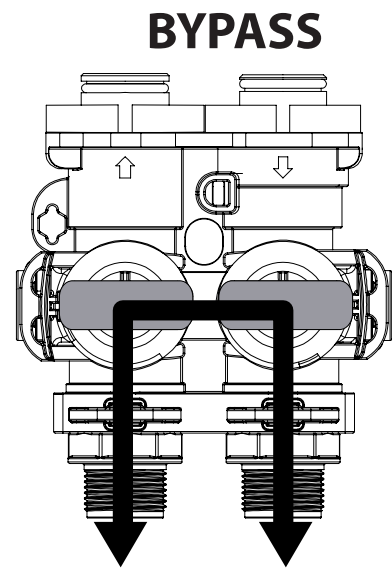
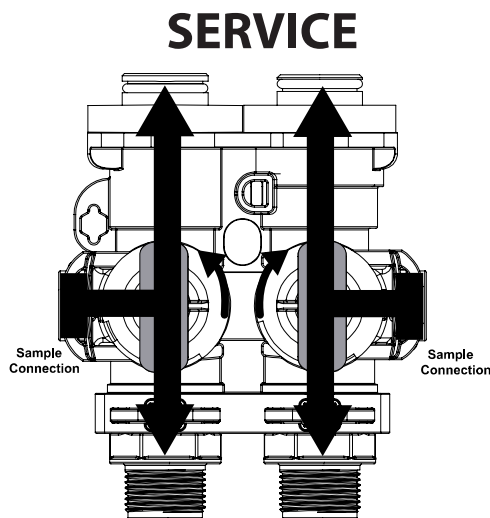
PERFORM ALL PLUMBING ACCORDING TO LOCAL PLUMBING CODES.

# WATER BYPASS

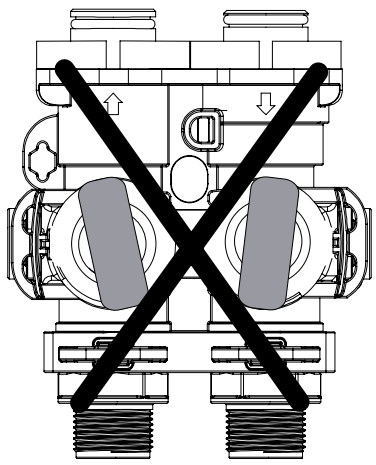
In case of an emergency such as softener maintenance, you can isolate your water softener from the water supply using the bypass valve located at the back of the control. In normal operation the bypass is open with the ON/OFF knobs in line with the INLET and OUTLET pipes. To isolate the softener, simply 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 treated service, open the bypass valve by rotating the knobs to SERVICE position.

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



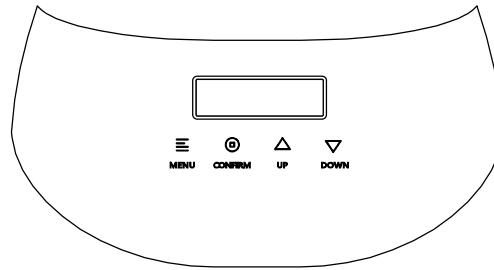
## BYPASS NOT ALLOWED POSITION



**NOTE** Please make sure bypass knobs are completely open otherwise the unsoftened water could bypass through the valve.

# PROGRAMMING GUIDE

## FAMILIARIZE WITH KEY PAD CONFIGURATION



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

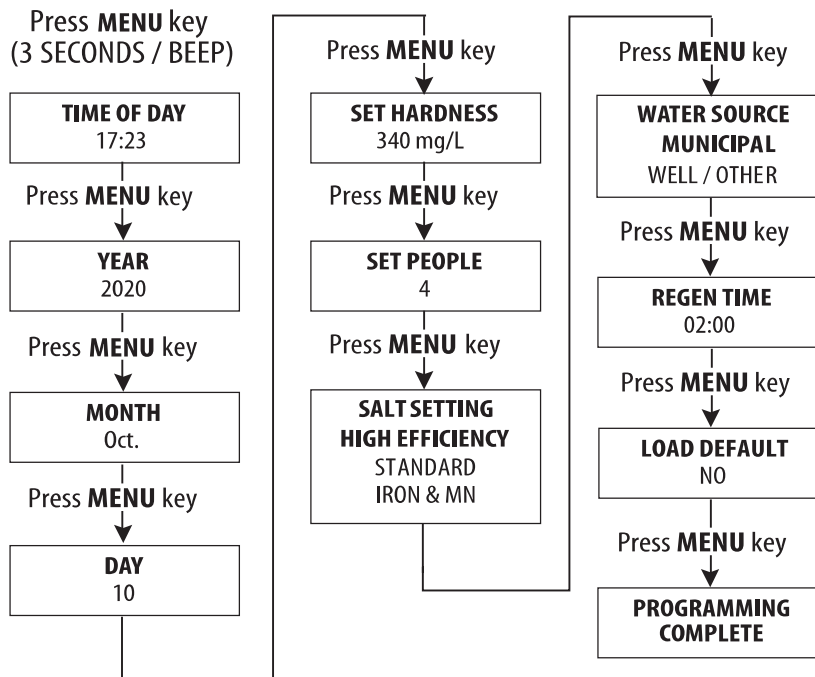


This function is to press and select one item to change and accepts the values if changed.

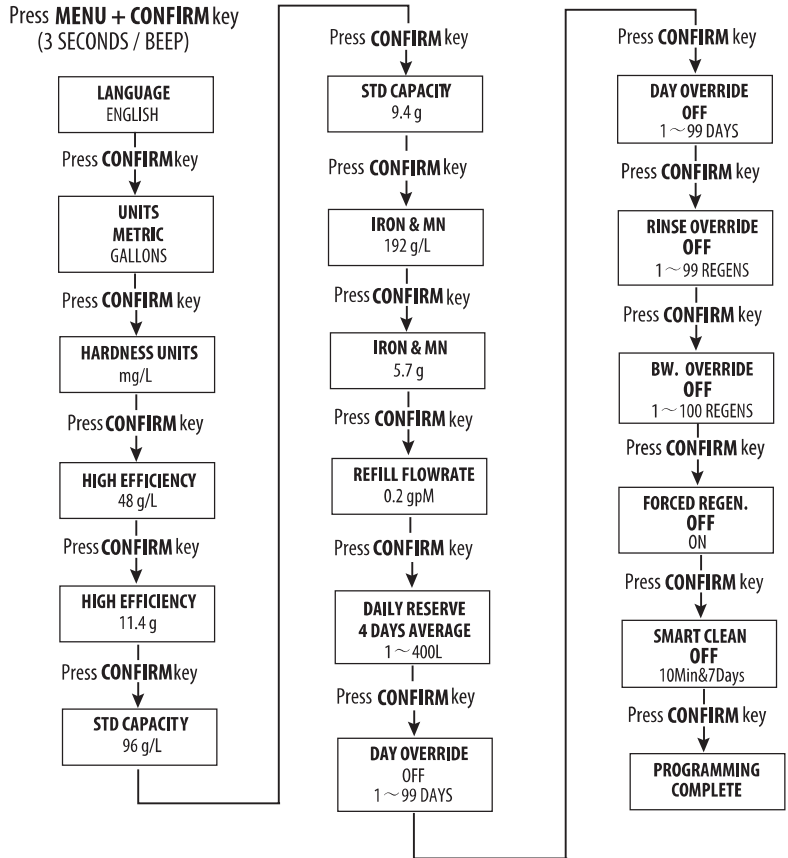


This function is to scroll up or down the programming items and increase or decrease the values of the settings while in the programming mode.

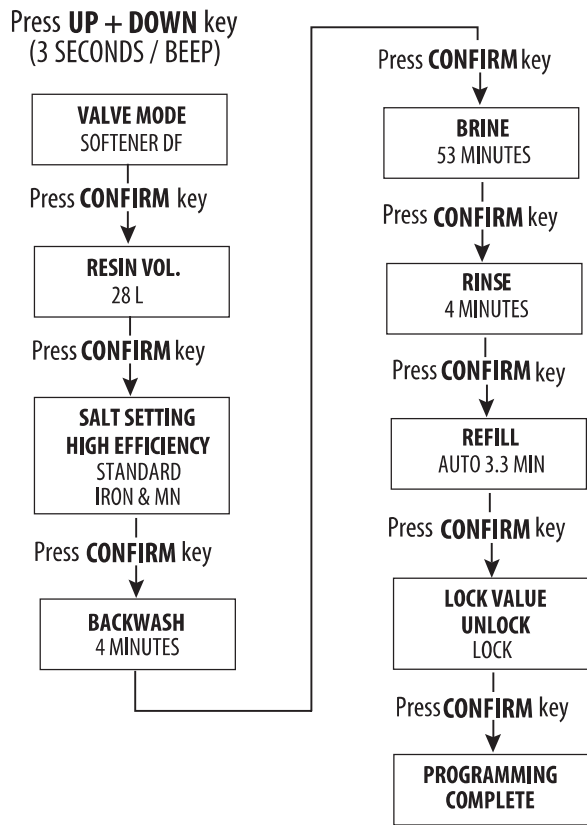
## START UP SETTING MENU



# FACTORY OPTIONS SETTINGS MENU



# ADVANCED OPTIONS SETTINGS MENU



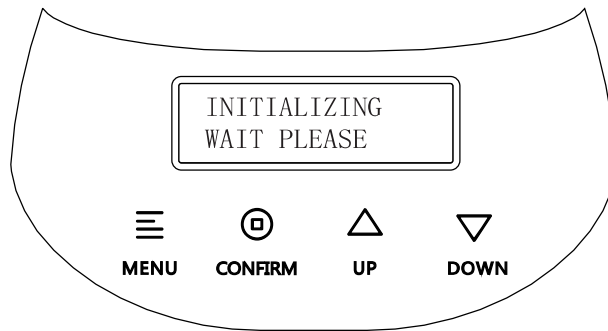
PARAMETER	DESCRIPTION
TIME OF DAY	Current time setting.
YEAR	Current year setting.
MONTH	Current month setting.
DAY	Current date setting.
SET HARDNESS	This value is the maximum compensated water hardness in grains per gallon of the raw water supply. It is used to calculate the system capacity. If Ferrous Iron is present add 4 gpg for every 1 ppm of Ferrous Iron.
SET PEOPLE	This value is the number of people living in the home. It is used to calculate the amount of water needed for daily use and the reserve capacity of the system.
SALT SETTING	Choose HIGH EFFICIENCY to minimize salt usage. Your system will regenerate a little more often but your salt usage can be reduced by 20% compared to the STANDARD setting. Choose STANDARD when you need to maximize your capacity but still operate the system with good efficiency. Choose IRON & MN if you have problem water containing these minerals. The high salt setting will be needed since these minerals are more difficult to clean out of the resin bed.
WATER SOURCE	If you are on clean city water choose the MUNICIPAL option so that the unit does not waste water performing a back wash every regeneration. If you are on well water or other choose WELL / OTHER to perform a back wash every regeneration.
REGEN. TIME	This setting determines the time of day to perform a scheduled regeneration.
LANGUAGE	System language used on the valve display.
UNITS	Unit of measure the system used, METRIC (litre) and US (gallon) options are available now.
EFFICIENCY & CAPACITY SETTINGS	There are 3 settings to choose in Settings. High Efficiency, Standard Capacity, and Iron & Manganese. The values for these settings are set in the Factory Options and are used to calculate the system capacity and refill time.
REFILL FLOW RATE	This value should match the BLFC flow washer. It is used to calculate the refill time.
DAILY RESERVE	This value is used to calculate the reserve capacity. Reserve Capacity = No. People x DAILY RESERVE.
DAY OVERRIDE	This setting can be used to add number of days to over ride the meter. As an example if the setting is 5, the system will regenerate after 5 days even if there is still gallons capacity remaining. OFF will cancel this feature.
RINSE OVERRIDE	This setting can be used to skip the rinse cycle. As an example if the setting is 10, the system will skip 10 rinse cycles.
BW OVERRIDE	This setting can be used to skip the back wash cycle. As an example if the setting is 10, the system will skip 10 back wash cycles.
FORCED REGEN.	When set to ON, the system will start a forced regeneration when the remaining capacity reaches 3%. The regeneration consists of 8 minutes of Brine and 12 minutes of Rinse. The 20 minutes regeneration will restore up to 33% of the system capacity. At the next regeneration time (2:00 AM), the system will automatically perform a standard regeneration to restore capacity to 100%.
SMART CLEAN	When set to ON, the system will perform a 10 minute back wash and 10 minute rinse if there is no water flow detected after 7 days. The regeneration will occur at the scheduled REGEN TIME.
RESIN VOL.	This setting is the amount of ion exchange media used in the system. The value is used to calculate system capacity and refill time.
BACKWASH	Control the backwash duration during regeneration cycle.
BRINE	Control the brine duration during regeneration cycle.
RINSE	Control the rinse duration during regeneration cycle.
LOCK VALUE	When set to ON, the value of unit size, salt setting, backwash and rinse duration will be locked.

## 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.

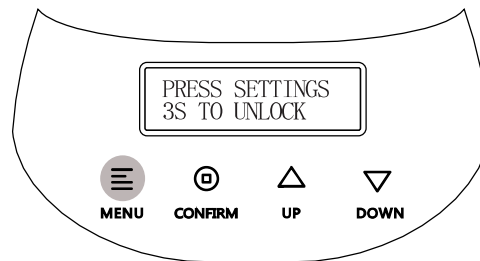
# START-UP INSTRUCTIONS

1. Add two liters of water into the cabinet at the time of installation. This is for the unit to achieve proper capacity in 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 "INITIALIZING WAIT PLEASE" while it finds the service position.

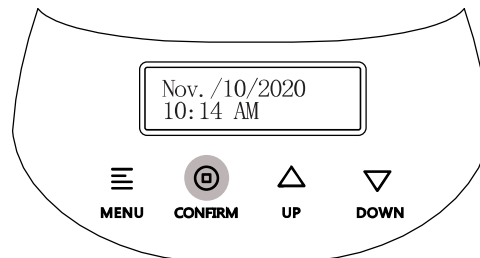


4. Manually step the valve to the BACKWASH position. If screen is locked, the screen will display "PRESS SETTINGS 3S TO UNLOCK". Press "MENU" key for 3 seconds to unlock and follow the instructions below to step the valve to BACKWASH position. As the valve arrives at BACKWASH position, unplug the power and let valve stay at BACKWASH position.

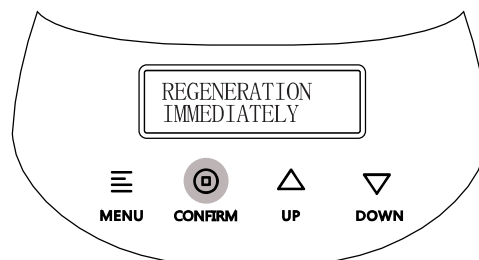
- 4.1** Press and hold MENU key for 3s to unlock.



- 4.2** Press and hold CONFIRM. key for 3s to advance to MANUAL REGEN menu.



- 4.3** Press CONFIRM. key again to initiate the immediate regeneration.



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 conditioner 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.

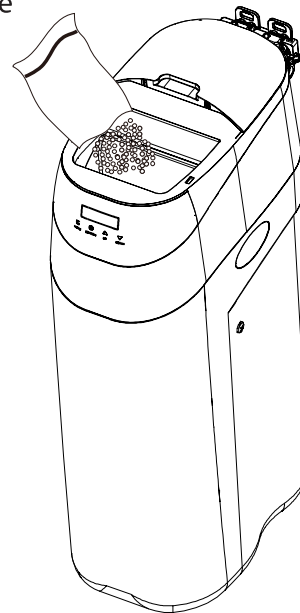
6. Press any button to advance to the BRINE position, when it arrives, press any key to skip the BRINE cycle. Press any button to advance to the RINSE position. Check the drain line flow. Allow the water to run for 3-4 minutes or until the water is clear.

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. Add salt into the cabinet. Put 10 kgs of crystal water softener salt in the 0815 softener cabinet, 20kgs of crystal water softener salt in the 0824 softener cabinet and 30kgs of crystal water softener salt in the 0835 softener cabinet. The unit will automatically fill the water to the correct level when it regenerates.

10. Program unit.



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

## **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.

# MAINTENANCE INSTRUCTIONS

## CHECK THE SALT LEVEL

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

## NOTE

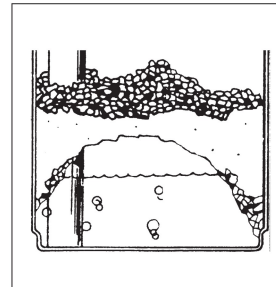
YOU SHOULD NOT BE ABLE TO SEE WATER IN THE CABINET OR BRINE TANK.

## ADDING SALT

Use only clean salt labeled for water conditioner use, such as crystal, pellet, nugget, button or solar. 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 product water 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 (consult your local representative or follow the directions on the resin cleaner package).

## Care of Your Water Conditioner

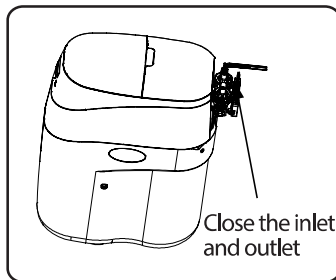
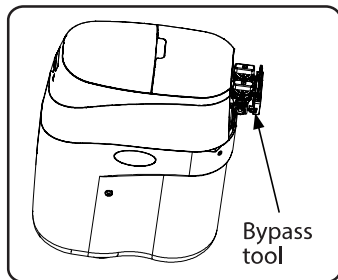
To retain the attractive appearance of your new water conditioner, clean occasionally with a mild soap solution. Do not use abrasive cleaners, ammonia or solvents. Never subject your conditioner to freezing.



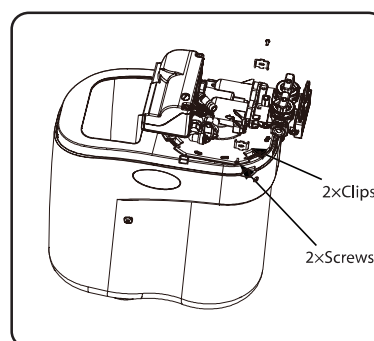
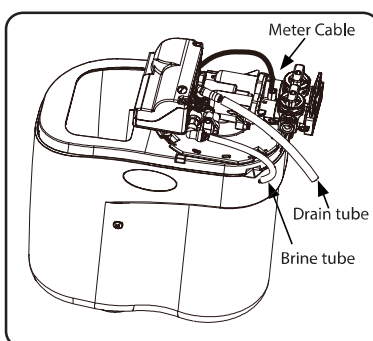
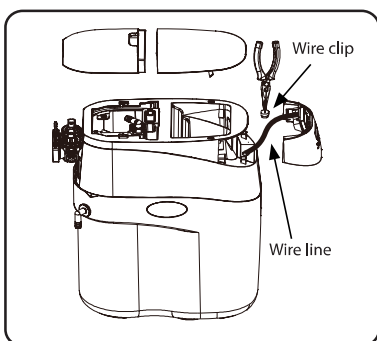
# SERVICE THE BNT850 CONTROL VALVE

## Before Servicing

1. Turn off water supply to conditioner using the bypass tool attached on the bypass.



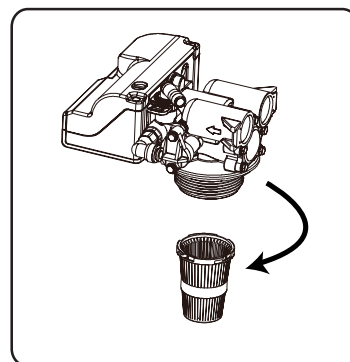
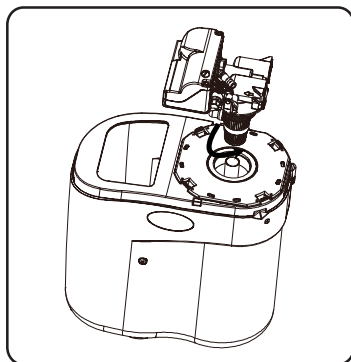
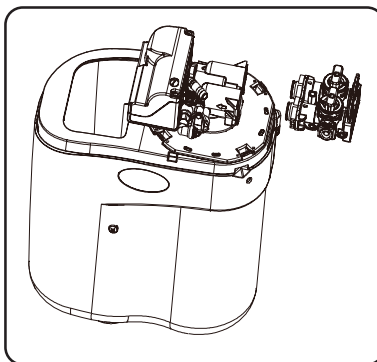
2. Relieve water pressure in the conditioner by stepping the control into the backwash position momentarily. Return the control to the In Service position, unplug electrical cord from outlet.



3. Remove the top cover and use a plier to remove the wire clip, disconnect the wire line in the display.

4. Remove cover, disconnect the brine tube, drain tube and meter cable.

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



6. Disconnect the softener and the bypass.

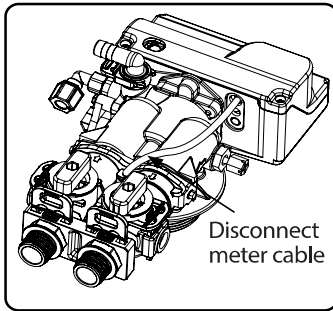
7. Remove the valve from the softener.

8. Remove the top cone from the valve.

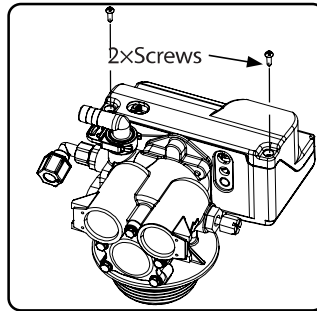
**!** **CAUTION**  
**ELECTRICAL SHOCK HAZARD! UNPLUG THE UNIT BEFORE REMOVING THE COVER OR ACCESSING ANY INTERNAL CONTROL PARTS.**

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

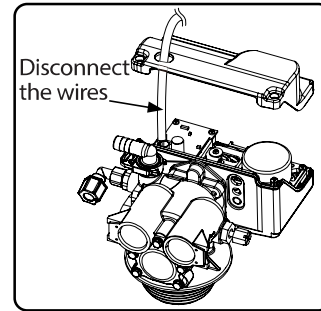
## REPLACE TIMER



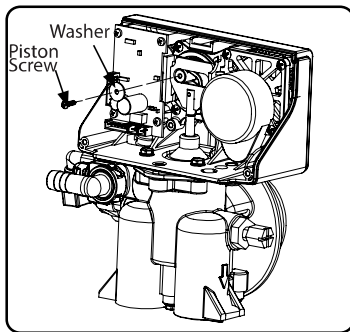
1. Disconnect the meter cable from the meter. (If meter cable is attached).



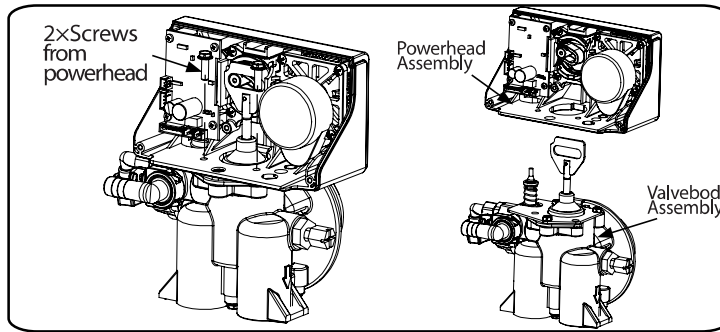
2. Remove the two screws from the valve cover.



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



4. Remove the piston screw and washer from the piston rod.

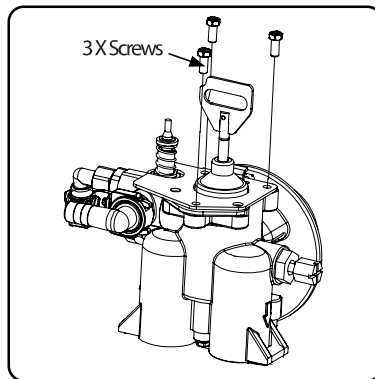


5. Remove the two screws from the powerhead as shown.

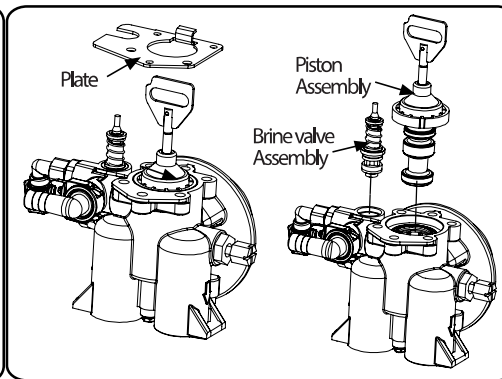
6. Lift the powerhead from the valve body assembly.

7. Replace the powerhead by reverse following the steps in this section.

## REPLACE PISTON AND/OR BRINE VALVE

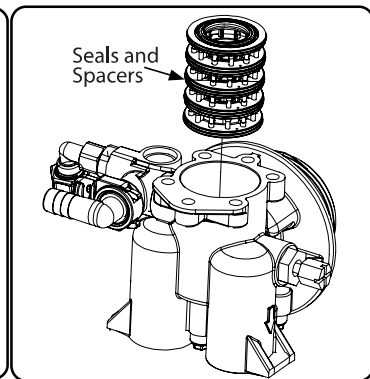


1. Follow steps 1 to 6 of timer/Powerhead replacement.  
2. Remove three screws from the plate on the valve body.



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.

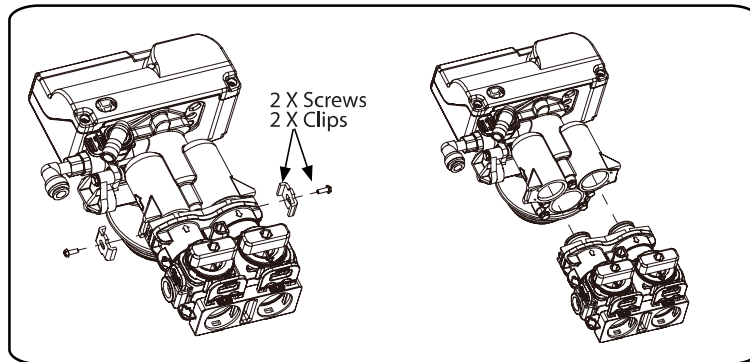
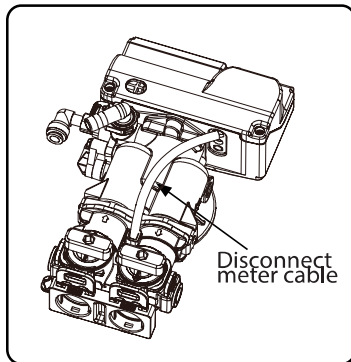
## REPLACE SEAL AND/OR SPACER



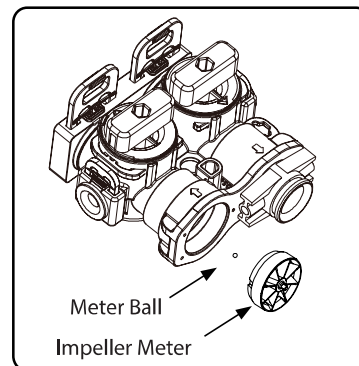
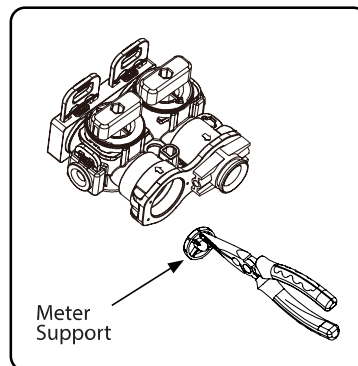
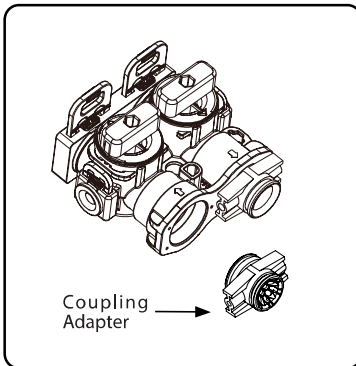
4. Remove the seals and spacers assembly, grease it with silicone lubricant and put back in.

5. After servicing, reverse following steps in this section.

## REPLACE METER

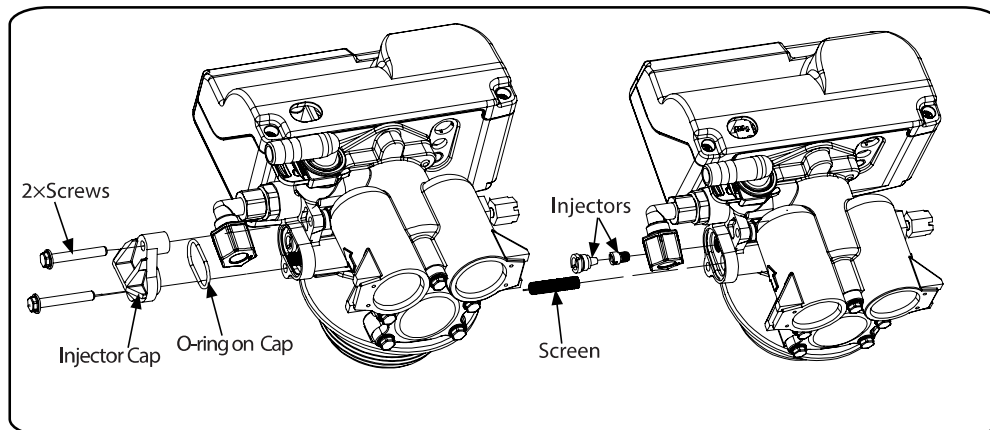


1. Disconnect the meter cable from the meter. (If flow meter cable is attached)
2. Disconnect the bypass from valve by removing clips.



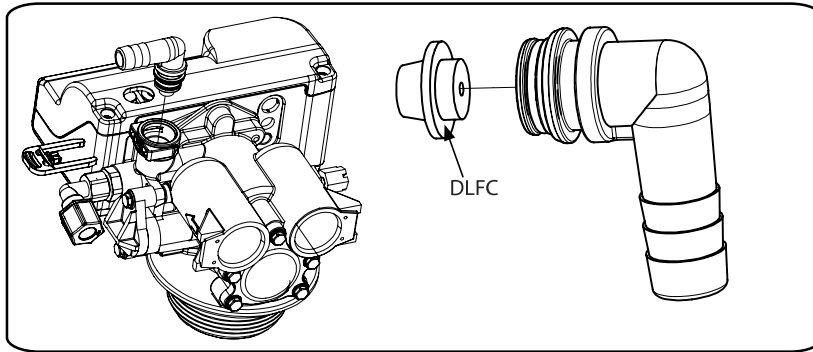
3. Remove the coupling adapter from the bypass.
4. Remove the meter support from the bypass.
5. Remove the impeller and replace it. (Watch for the meter ball under the impeller ball).

## CLEAN INJECTOR ASSEMBLY



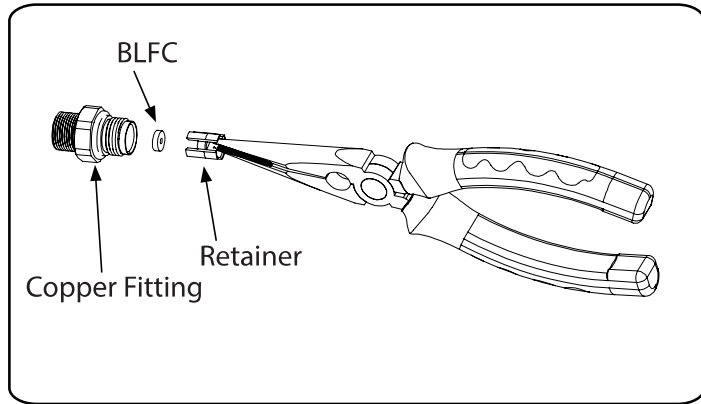
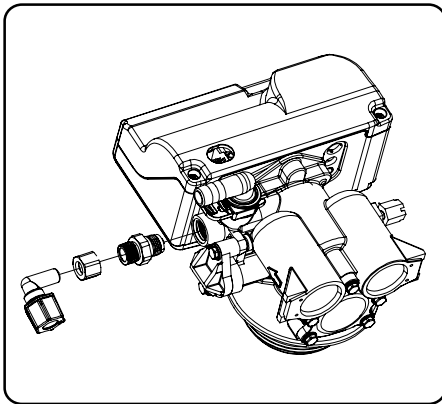
1. Remove the two screws of the injector cap.
2. Pull the injector cap out, watch for the o-ring on the cap.
3. Screw the injector assembly out, clean/replace it.
4. Pull the screen out, clean/replace it.
5. After servicing, reverse following steps in this section.

## 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.

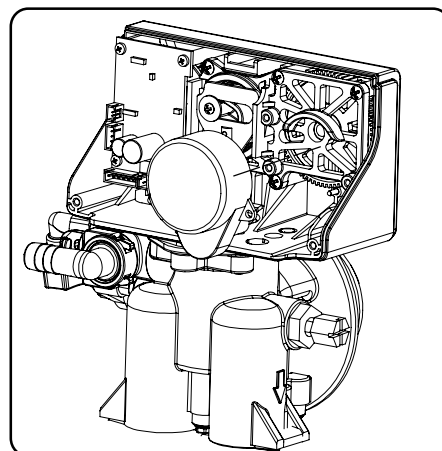
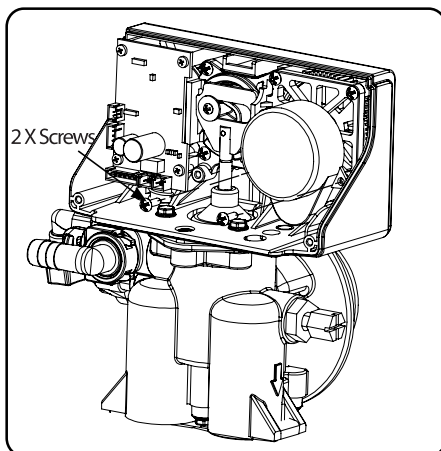
## REPLACE BRINE LINE FLOW CONTROL



1. Screw the copper fitting out.
2. Remove the retainer out.

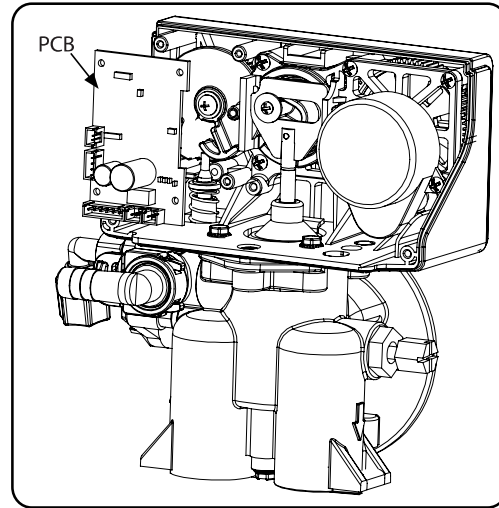
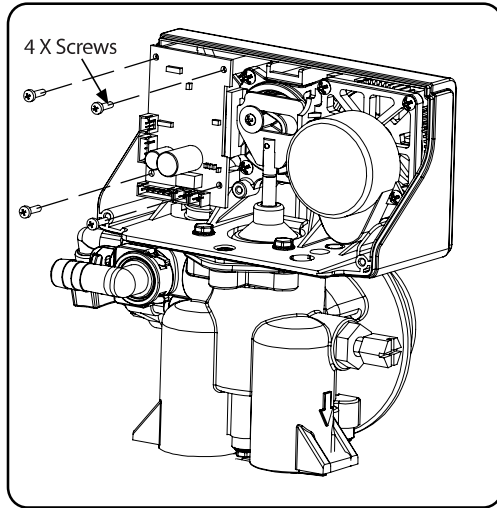
3. Use a wrench to screw off the copper fitting and use a nipper plier to remove the BLFC retainer.

## REPLACE MOTOR



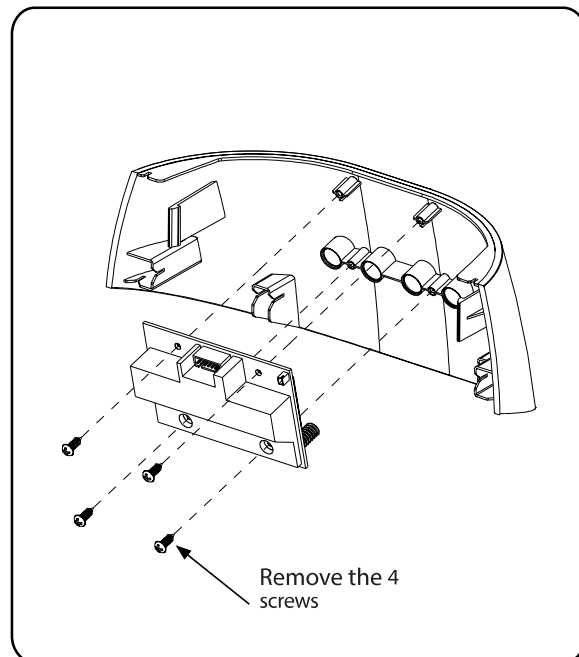
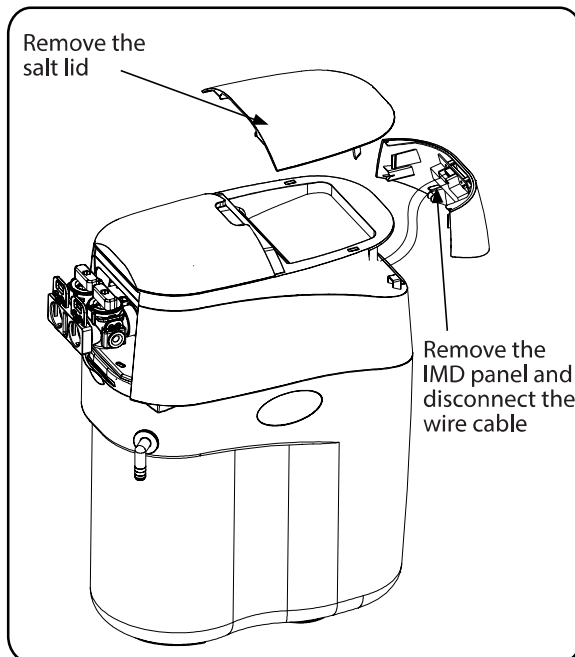
1. Follow steps 1 to 3 of timer /Powerhead replacement.
2. Remove the two screws from the motor. Remove motor, watch for the pin under the motor.
3. Replace the motor.

## REPLACE CIRCUIT BOARD



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

## REPLACE DISPLAY



1. Remove the salt lid from the cabinet.
2. Remove the IMD panel from the cabinet, the display is fixed on it with four screws.

3. Disconnect the wire connection.
4. Remove the four screws from the IMD panel.

# TROUBLE SHOOTING GUIDE

Problem	Possible Solutions
<p><b>1. CONDITIONER DELIVERS HARD WATER</b></p> <p>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</p>	<p>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.</p>
<p><b>2. CONDITIONER FAILS TO REGENERATE</b></p> <p>A. Electrical service to unit has been interrupted            B. Timer is not operating properly            C. Defective valve drive motor            D. Improper programming</p>	<p>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</p>
<p><b>3. UNIT USES TOO MUCH SALT</b></p> <p>A. Improper salt setting            B. Excessive water in brine tank            C. Improper programming</p>	<p>A. Check salt usage and salt setting            B. See #7            C. Check programming and reset as needed</p>
<p><b>4. LOSS OF WATER PRESSURE</b></p> <p>A. Iron build-up in line to water conditioner            B. Iron build-up in water conditioner            C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.</p>	<p>A. Clean line to water conditioner            B. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration            C. Remove piston and clean control</p>
<p><b>5. LOSS OF RESIN THROUGH DRAIN LINE</b></p> <p>A. Air in water system            B. Drain line flow control is too large</p>	<p>A. Assure that well system has proper air eliminator control. Check for dry well condition.            B. Ensure drain line flow control is sized</p>
<p><b>6. IRON IN CONDITIONED WATER</b></p> <p>A. Fouled resin bed            B. Iron content exceeds recommended parameters</p>	<p>A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time.            B. Add iron removal filter system</p>
<p><b>7. EXCESSIVE WATER IN BRINE TANK</b></p> <p>A. Plugged drain line flow control            B. Brine valve failure            C. Improper programming</p>	<p>A. Clean flow control            B. Replace brine valve            C. Check programming and reset as needed</p>
<p><b>8. SALT WATER IN SERVICE LINE</b></p> <p>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</p>	<p>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</p>
<p><b>9. CONDITIONER FAILS TO DRAW BRINE</b></p> <p>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</p>	<p>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</p>
<p><b>10. CONTROL CYCLES CONTINUOUSLY</b></p> <p>A. Timer not operating properly            B. Faulty microswitches and/or harness            C. Faulty cycle cam operation</p>	<p>A. Replace timer            B. Replace faulty microswitch or harness            C. Replace cycle cam or reinstall</p>
<p><b>11. DRAIN FLOWS CONTINUOUSLY</b></p> <p>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</p>	<p>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</p>