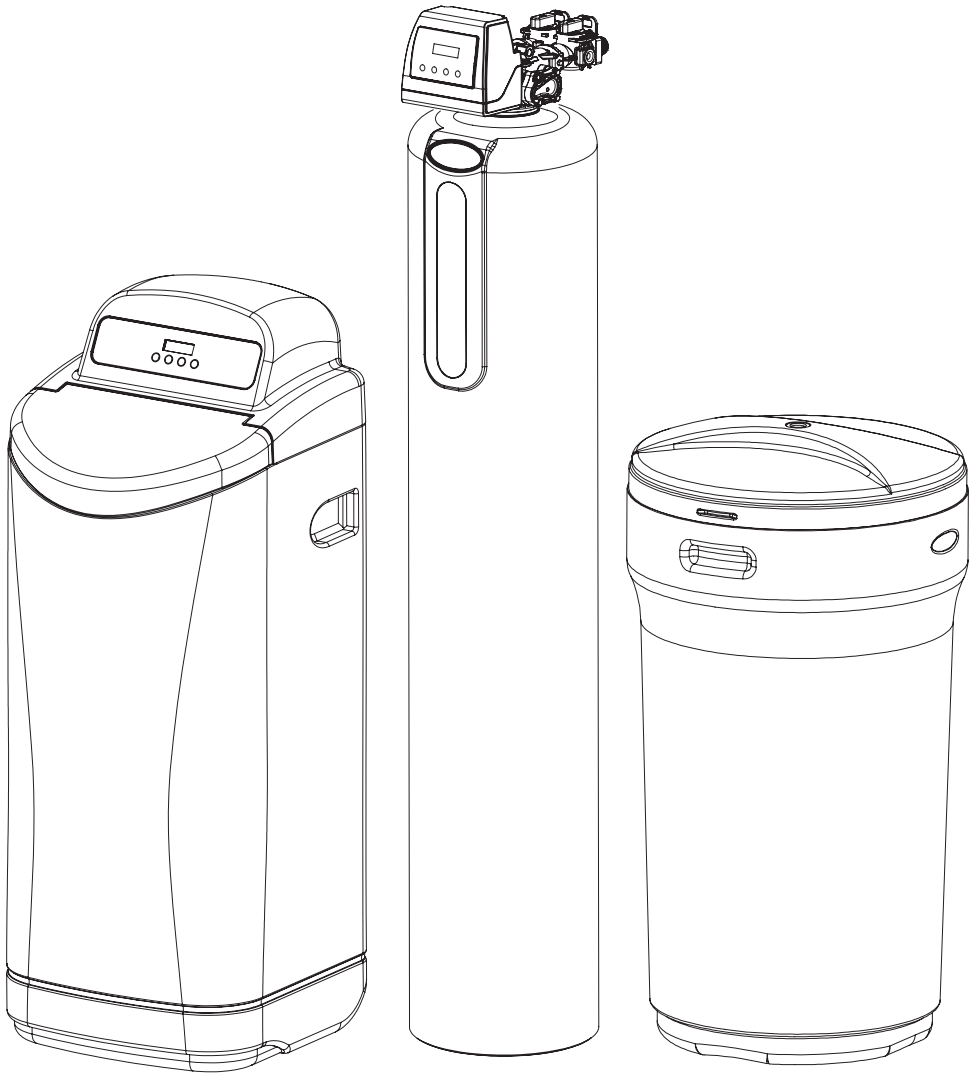
Owners Manual



NovoSoft 485HE

Upflow Softener Manual

IAPMO R & T Certified against CSA B483.1

IAPMO R & T Certified against NSF/ANSI 44

1. Page 22 of this manual contains important maintenance procedures for the continued proper operation of your unit. These MUST be performed regularly for your warranty to remain valid.

2. Read all instructions carefully before operation.

3. Avoid pinched o-rings during installation by applying NSF certified lubricant to all seals (provided with install kit).

4. This system is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Canada West
855 Park St., Unit 1
Regina, SK S4N 6M1

Canada East
490 Pinebush Rd., Unit 1
Cambridge, ON N1T 0A5

U.S.A.
56 Lightcap Rd.
Pottstown, PA 19464

9760 Mayflower Park Drive
Suite 110
Carmel, IN 46032

4645 W. McDowell Rd.
Suite 106
Phoenix, AZ 85035

Table of Contents

READ THIS PAGE FIRST

BEFORE STARTING INSTALLATION

- Read this manual thoroughly to become familiar with the device and its capabilities before installing or operating your Water Softener. Failure to follow instructions in this manual could result in personal injury or property damage. This manual will also help you to get the most out of your softener.
- This system is intended for use on municipal water only and its installation must comply with all State, provincial or local regulations. Check with your local public works department for plumbing and sanitation codes. In the event the codes conflict with any content in this manual the local codes should be followed. Consult your licensed plumber for installation of this system.
- This water softener is designed to operate on pressures of 30 psi to 125 psi. If the water pressure is higher than the maximum use a pressure reducing valve in the water supply line to the softener.
- This unit is capable of operating at temperatures between 40°F and 110°F (4°C - 43°C). 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.
- Avoid pinched o-rings during installation by applying (provided with install kit) NSF certified lubricant to all seals.
- It is not uncommon for sediment, precipitated iron or hardness to be present in water supplies. Precipitated minerals or sediments can cause damage to the seals and piston. This is considered a harsh environment and the seals and piston would not be covered by warranty stated or otherwise.
- It is recommended to regularly inspect and service the control valve on an annual basis. Cleaning and or replacement of piston, seals, and or spacers may be necessary depending on how harsh the conditions are. An Annual Maintenance kit (Part # 60010565) is available for this purpose
- 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. The manufacturer reserves the right to change the specifications referred to in this literature at any time, without prior notice.

INSTALL NOTES & SAFETY MESSAGES

Watch for the following messages in this manual:

NOTE

Do not remove or destroy the serial number. It must be referenced on request for warranty repair or replacement

NOTE: used to emphasize installation, operation or maintenance information which is important but does not present a hazard.

CAUTION!

Disassembly while under pressure can result in flooding.

CAUTION: used when failure to follow directions could result in damage to equipment or property.

WARNING!

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

WARNING: used to indicate a hazard which could cause injury or death if ignored.

EFFICIENCY STATEMENT

This product is efficiency rated according to NSF/ANSI 44. The stated efficiencies are valid only at the specified salt dosages and maximum service flow rate.

PERFORMANCE DATA SHEET							
Model Number	485HE-75C	485HE-100C	485HE-75	485HE-100	485HE-150	485HE-200	485HE-300
Qty High Capacity Resin	0.75 ft3	1.0 ft3	0.75 ft3	1.0 ft3	1.5 ft3	2.0 ft3	3.0 ft3
Rated Service Flow (gpm)	7.5	12.1	7.5	11.0	11.2	12.4	12.9
Pressure Drop at Rated Service Flow (psi)	7.0	15.0	9.0	15.0	15.0	15.0	15.0
Rated Softening Capacity (grains)	9,609 @ 2.25lbs	13,269 @ 3lbs	10,222 @3lbs	13,269 @ 3lbs	20,443 @ 4.5lbs	27,258 @ 6lbs	40,887 @ 9lbs
Efficiency (grains/lb salt)	4,271	4,543	4,543	4,543	4,543	4,543	4,543
Max. Flow Rate to Drain (gpm)	2.0	2.4	1.5	2.0	2.4	3.5	5.0
Working Pressure	Min. 20 - Max. 125 psi						
Operating Temperature	40°F and 110°F (4°C - 43°C)						

These softeners conform to NSF/ANSI 44 for the specific performance claims as verified and substantiated by test data. These models are efficiency rated. The efficiency rating is valid only at the stated salt dose and maximum service flow rate. They have a demand initiated regeneration (D.I.R.) feature that complies with specific performance specifications intended to minimize the amount of regenerant brine and water used in their operation. These softeners have a rated softener efficiency of not less than 3350 grains of total hardness exchange per pound of salt (based on sodium chloride) and shall not deliver more salt than their listed ratings. The rated salt efficiency is measured bylaboratory tests described in NSF/ANSI Standard 44. These tests represent the maximum possible efficiency that the systems can achieve. Operational efficiency is the actual efficiency after the system has been installed. It is typically less than the efficiency due to individual application factors including water hardness, water usage, and other contaminants that reduce the softener's capacity. These systems are not intended for use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. For best results, use plain, white block salt. Refer to Installation/ operation manual and warranty for further details on installation, parts and service, maintenance and further restrictions or limitations to the use of the product.

HOW YOUR WATER CONDITIONER WORKS

Water softeners remove hardness in the water by exchanging particles in the water, or ions. They remove hard ions such as calcium and magnesium in the water by trading it for sodium ions producing soft water. Unlike the calcium and magnesium, sodium stays dissolved in water and does not form a scale. Sodium also does not interfere with the cleaning action of soaps. The sodium is released by a charged resin contained in the softener, this resin also traps the calcium and magnesium ions. Eventually this resin releases all of its sodium and has filled up with other ions, so it then must be regenerated. Regeneration is accomplished by washing the resin with a salt saturated brine solution that removes the calcium and magnesium while replenishing the sodium. This is why the softener requires a brine tank and salt. The water softener can run for days before running out of sodium, and when it does, the sodium is replenished in only a matter of a few hours

When using a softener to remove both hardness and dissolved iron it is important that it regenerates more frequently than ordinarily would be calculated for hardness removal alone. Although 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.

If you are operating a water softener on clear water iron, regular resin bed cleaning is needed to keep the bed from coating with 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.

Precision Brining: Precision brining means that your conditioner calculates the exact amount of brine required to regenerate saving up to 30% more salt
When your conditioner regenerates it will display 2 numbers for capacity 1 will be total capacity the other will be 70 % of capacity. The unit counts down to the end of the 70% then calculates how much of the 30% you used (your reserve) it then adjusts the brine amount accordingly and regenerates that evening. This feature means that your capacity will always be different after every regeneration therefore maximizing your salt use.

Brine Pre-Fill%: This is the percentage of the water that will be added to the brine tank after a regeneration. The default is 70%. The remaining amount of water will be added just prior to the regeneration and will be proportional to the amount of capacity left in the system.

Soft Water Recharge for High Usage: Should you reach the 70% capacity and then go beyond the 30% before it is time to regenerate the conditioner will do a quick regeneration to restore limited capacity to get it through the remainder of the day.

System Refresh: If you are away for an extended period of time the Conditioner does a refresh cycle to prevent any chance of bacterial growth or stagnation inside the conditioner.

Scrolling Diagnostics: By pressing any button to light the LCD display the unit will automatically begin scrolling important information for diagnostic purposes

Date and Time

Total Gallons and Remaining Gallons

Number of People: in the household as programmed at install

Reserve Capacity: calculated as 75 gallons per person

Estimated Days to Next: estimation of days to the next regeneration based on current consumption, hardness and capacity

Last Regeneration: the date of the last regeneration cycle by the conditioner

Total Regenerations: this is the total number of times the conditioner has regenerated

Total Gallons: total gallons treated by the conditioner

Over Run Total: – how many times Soft water recharge was required due to high usage

Current Flow Rate: will only display if treated water is running otherwise it would read 0

Peak Flow: maximum flow that has gone through the conditioner.

Delayed Regen OFF: – generally only used after servicing.

Regen Time: This is the time of day that the conditioner is scheduled to regenerate

Refill Time: The current calculated refill time for makeup brine (displays up to 70% of total brine required)

Valve Mode: current valve setting EG. Softener UF (up flow)

To stop the scrolling you can unlock the board as directed and press the down arrow to stop the scrolling. You can then use the down arrow to go to each of the diagnostics as required.

SPECIFICATION

***NOTE**

Clean water application for municipal or city supplies only.

Specifications	485HE-75C	485HE-100C	485HE-75	485HE-100	485HE-150	485HE-200	485HE-300
	15010450	15010451	15010452	15010453	15010454	15010455	15010456
Optional Settings - High Efficiency*							
Salt Used - Per Regeneration	2.3 lbs	3.0 lbs	2.3 lbs	3.0 lbs	4.5 lbs	6.0 lbs	9.0 lbs
Water Used - Regeneration	22.7 gal	28.3 gal	22.6 gal	31.6 gal	44.3 gal	60.9 gal	102.2 gal
Hardness Removal - Grains	11,250	15,000	11,250	15,000	22,500	30,000	45,000
Factory Settings - Standard Capacity							
Salt Used - Per Regeneration	4.5 lbs	6.0 lbs	4.5 lbs	6.0 lbs	9.0 lbs	12.0 lbs	18.0 lbs
Water Used - Regeneration	40.5 gal	48.6 gal	34.0 gal	43.4 gal	62.7 gal	87.1 gal	139.2 gal
Hardness Removal - Grains	18,750	25,000	18,750	25,000	37,500	50,000	75,000
Optional - High Capacity							
Salt Used - Per Regeneration	7.5 lbs	10.0 lbs	7.5 lbs	10.0 lbs	15.0 lbs	20.0 lbs	30.0 lbs
Water Used - Regeneration	56.1 gal	69.5 gal	49.6 gal	64.3 gal	90.3 gal	124.6 gal	196.2 gal
Hardness Removal - Grains	22,500	30,000	22,500	30,000	45,000	60,000	90,000
Resin Quantity - Cubic Feet	0.75 ft	1.0 ft	0.75 ft	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Tank Size	9x35	10x35	8x44	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	Yes	Yes	Yes	No	No
Brine Tank / Cabinet Size (Inches)	16.5 x 19.3 x 43.3	16.5 x 19.3 x 43.3	18.1 x 34.5	18.1 x 34.5	18.1 x 34.5	20.3 x 37.4	23.0 x 40.5
Salt Storage Capacity	175 lbs	175 lbs	240 lbs	240 lbs	240 lbs	350 lbs	420 lbs
Flow Rate @ 15 psi Pressure Drop	11.6 gpm	12.0 gpm	10.4 gpm	11.0 gpm	11.2 gpm	12.2 gpm	12.6 gpm
Flow Rate @ 25 psi Pressure Drop	15.6 gpm	16.0 gpm	14.3 gpm	15.0 gpm	15.1 gpm	16.2 gpm	16.6 gpm
Back Wash Flow Rate	2.0 gpm	2.4 gpm	1.5 gpm	2.0 gpm	2.4 gpm	3.5 gpm	5.0 gpm
Shipping Weight	93 lbs	110 lbs	105 lbs	122 lbs	155 lbs	172 lbs	244 lbs
Regeneration Type	Counter Current / Up Flow						
Maximum Efficiency	5,060 grains /lb salt						
Plumbing Connections	¾" and 1" connections						
Resin Type	Aquafine 8% High Capacity Ion Exchange Resin						
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA						
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit						
Water Pressure	Min. 20 - Max. 125 psi						

*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 Iron, Manganese or hardness in excess of 50 gpg. The high salt setting will be needed since these minerals are more difficult to clean out of the resin bed. Note: A resin cleaner will also need to be periodically added to the brine tank to insure proper operation.

See page 24: Res-Up® Feeder Installation Instructions

CAUTION!

Do not use where the water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit.

Working Temperature: This unit must be operated at temperatures between 40°F and 110°F (4°C - 43°C).

Working Pressure: This water softener must be operated on pressures between 30 psi to 125 psi. If the water pressure is higher than 125 PSI, use a pressure reducing valve in the water supply line to the softener.

Voltage = 120V / 60 Hz

Pipe Size = 3/4" and 1"

- At the stated service flow rates, the pressure drop through these devices will not exceed 15 psig.
- 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.

Peak flow rates intended for intermittent use only (10 minutes or less) and are for residential applications only. Do not use peak flow rate for commercial applications or for a continuous rate when treated water supplies are geothermal heat pump, swimming pool, etc.

For satisfactory operation, the pumping rate of the well system must equal or exceed indicated backwash flow rate.

All units come with plastic bypass

****Maximum Iron** = 2.0 ppm ferrous (clear water iron)
Maximum Hydrogen Sulfide = 0.0 ppm
Maximum Manganese = .75 ppm
pH = 6.5 to 8.5 with no iron present with iron present 6.5 - 7.5

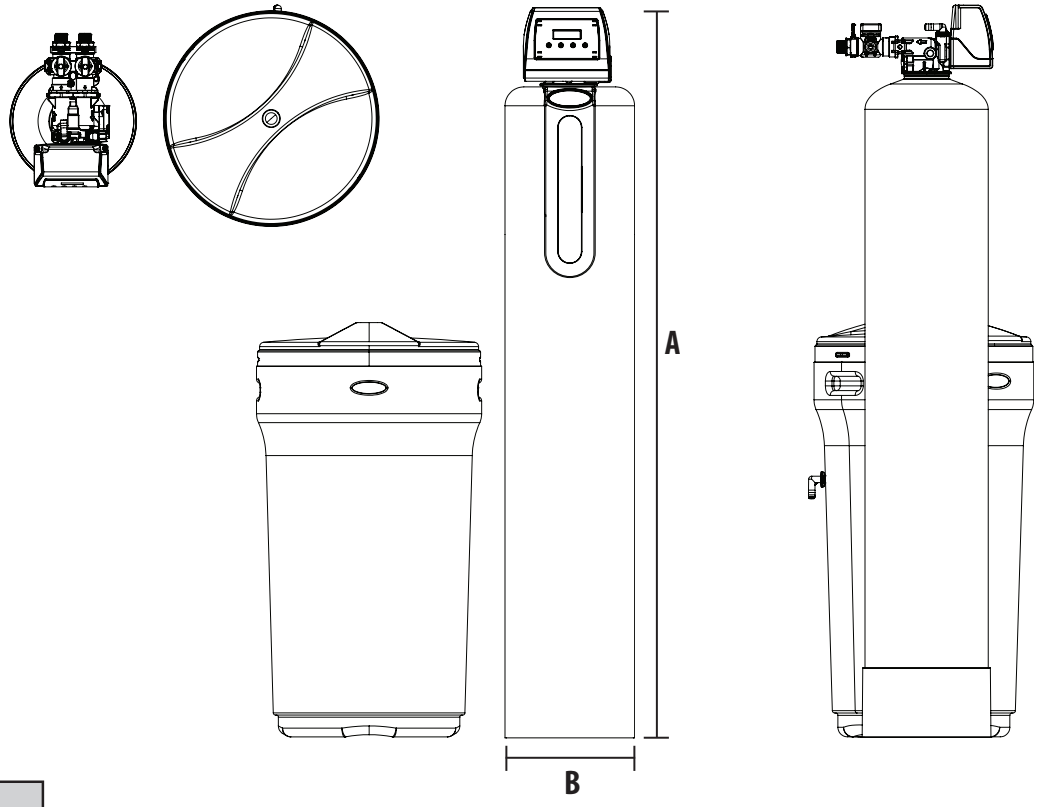
****NOTE**

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, 8 gpg for Ferrous Manganese.

SYSTEM DIMENSIONS

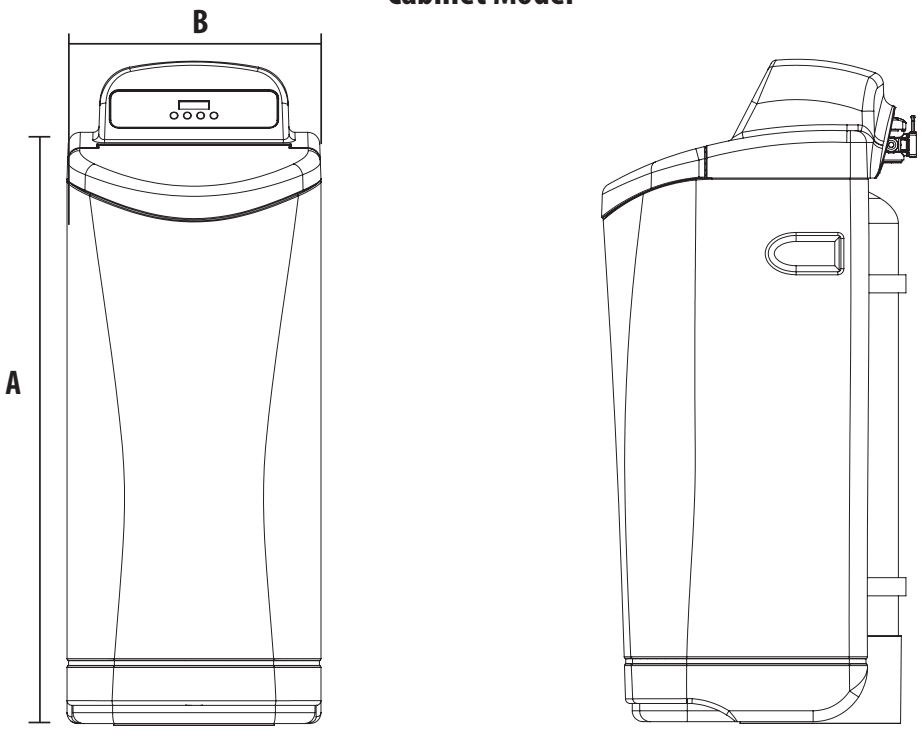
Twin Tank Model

	A	B
0844	49.98″	8″
0948	53.98″	9″
1054	59.98″	10″
1252	57.98″	12″
1354	59.98″	13″
1465	70.98″	14″



	75C	100C
A	43.31″	43.31″
B	16.54″	16.54″

Cabinet Model

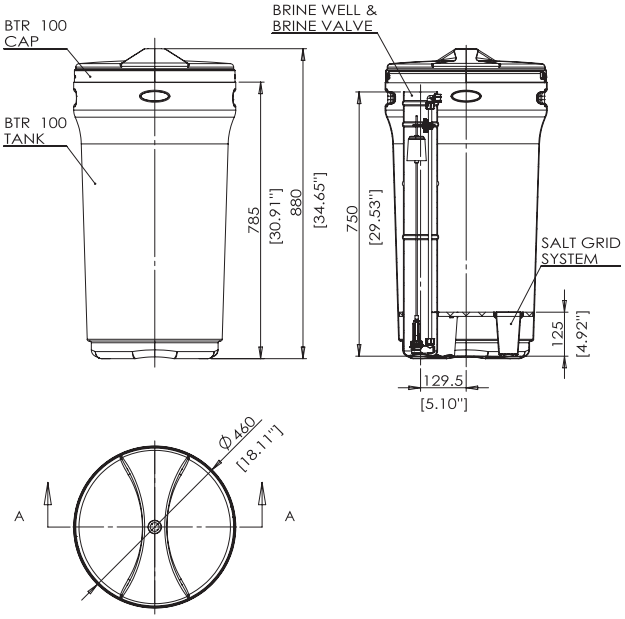


BRINE TANK DIMENSIONS

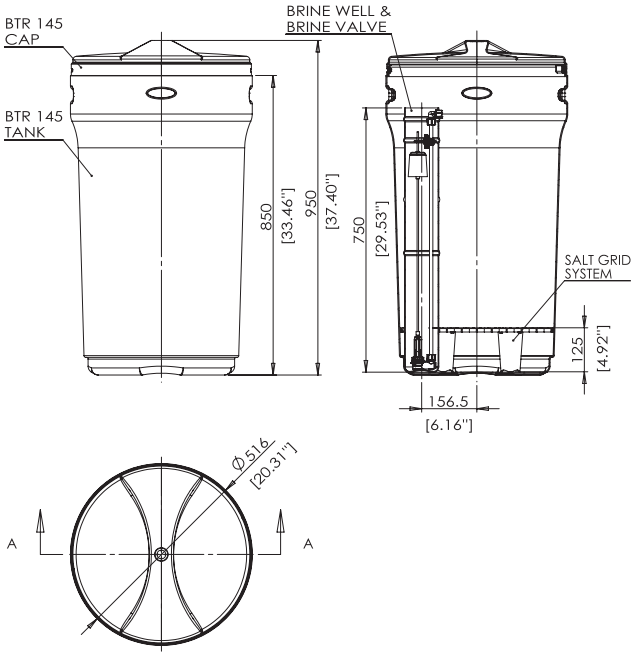
Model	Color	Liquid Volume		Tank Dimensions (inches)	5 Pack Carton Dimensions (inches)	Salt Capacity		5 Pack Carton Shipping Weight	
		US Gal	Liters	L x W x H	L x W x H	Lbs	Kg	Lbs	Kg
Brine Tanks									
BTR-100	Grey	29.5	111.5	18.1 x 34.7	18.9 x 18.9 x 65.6	270.0	122.2	52.8	23.9
BTR-145	Grey	42.3	159.7	20.3 x 37.4	21.9 x 21.9 x 72.2	385.0	174.2	65.6	29.8
BTR-200	Grey	53.0	200.3	23.0 x 40.5	24.6 x 24.6 x 84	700.0	316.7	125.0	56.6

* All brine tanks come with salt grid, safety float and brine well

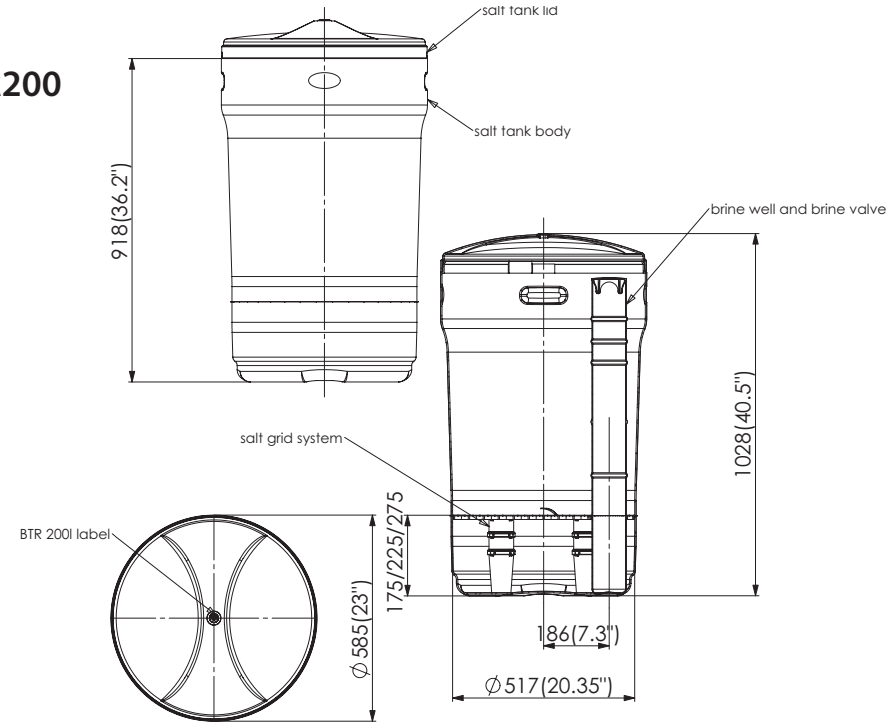
BTR100



BTR145



BTR200



UNPACKING / INSPECTION OF TWIN TANK MODEL

Be sure to check the entire unit for any shipping damage or parts loss. Also note damage to the shipping cartons. Contact the transportation company for all damage and loss claims. **The manufacturer is not responsible for damages in transit**.

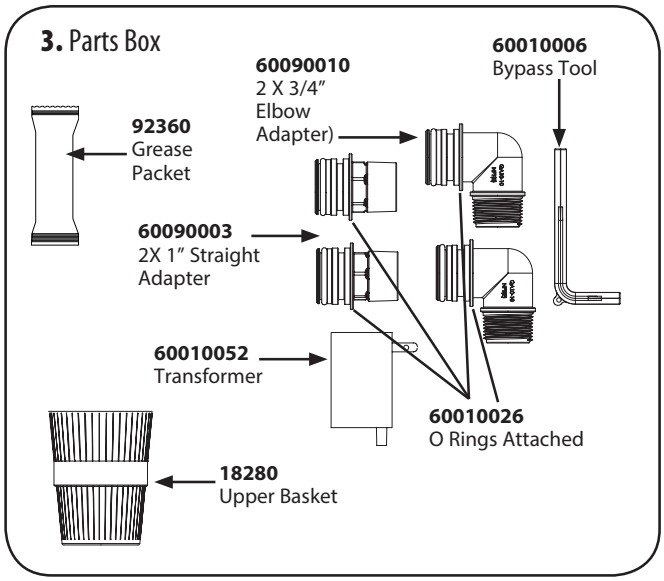
Small parts, needed to install the Softener, are in a parts box. To avoid loss of the small parts, keep them in the parts bag until you are ready to use them.

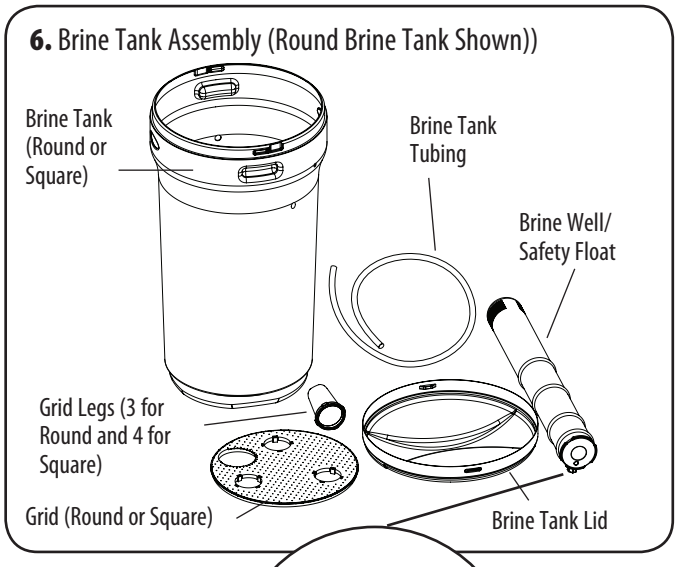
What is included in the box?

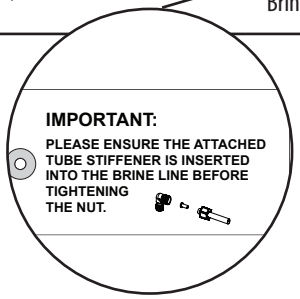
For Models 75,100,150, 200, you will expect the following:

1. Control Valve*
2. Tank
3. Parts Box
4. Owners Manual
5. Drain Hose & Clamp (Not included in some brands)
6. Brine Tank Assembly

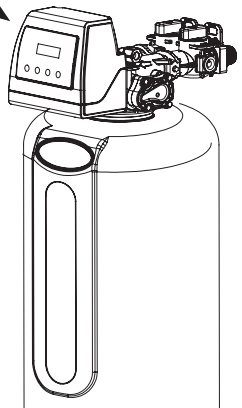
***All units (75, 100, 150, 200) are pre assembled with control valve installed on the tank, no assembly required.**



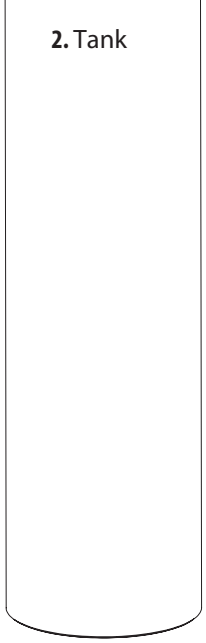




1. Control Valve



2. Tank



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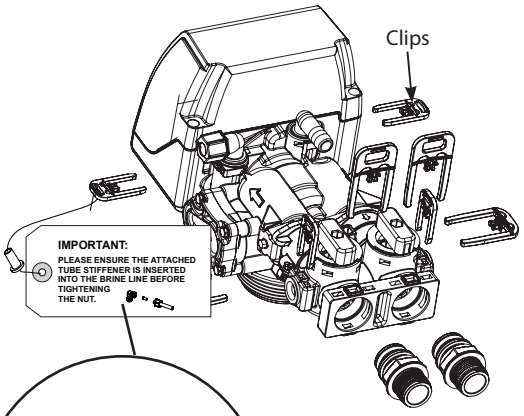
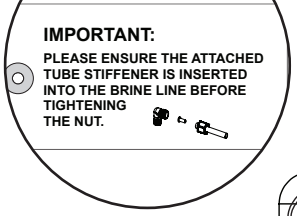
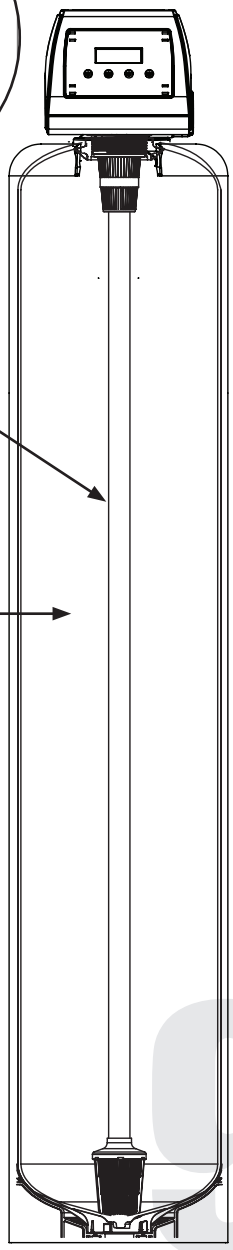






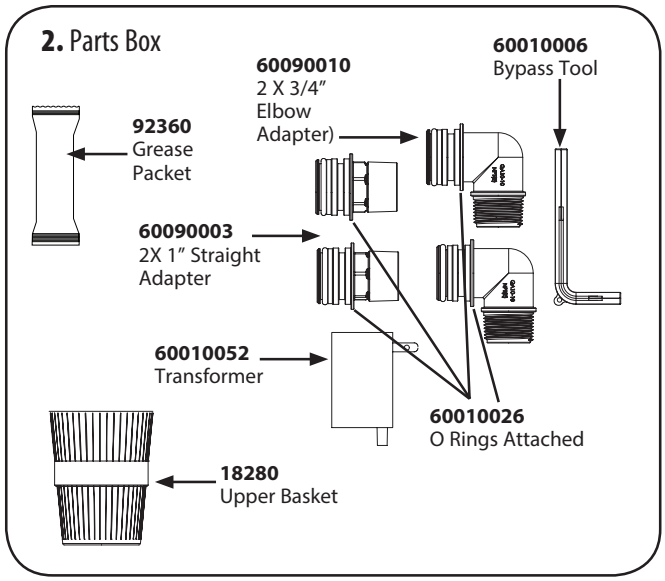
NOTE

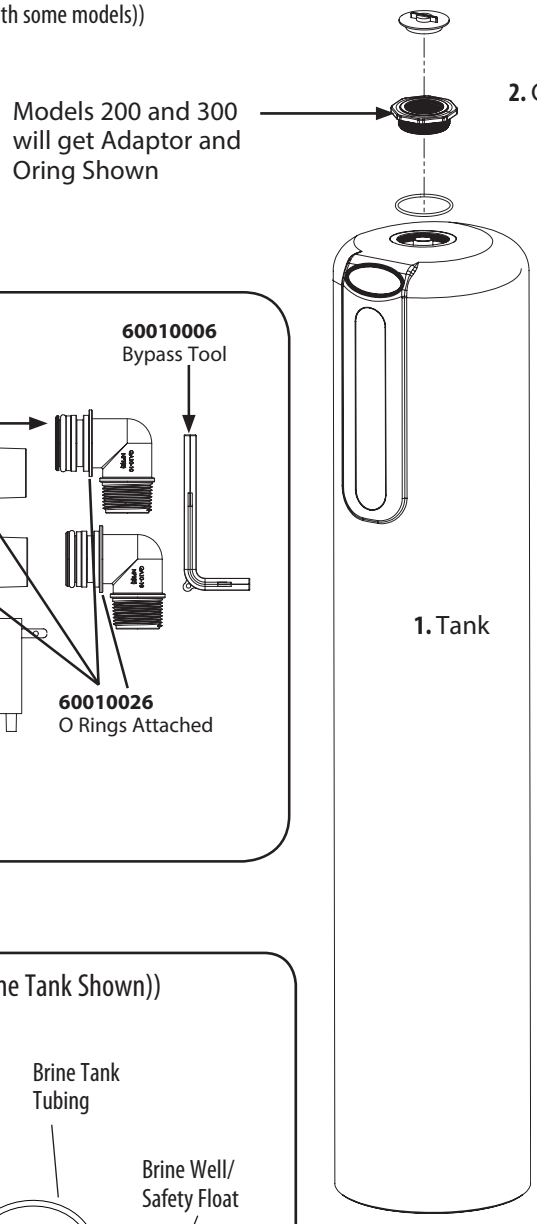
Due to transportation and climatic conditions all connections including the valve to the tank need to be checked at time of installation and tightened if necessary.

For Models 200 and 300 the media and Control Valve is packaged separately in carton and bags

What is included with 200 and 300 models?

1. Tank (Model 200 and 300 will get an Adapter and Oring attached to the tank)
2. Control Valve with Parts Box
3. Media Boxes (Qty 3 for 200 and 300)
4. Drain Line and Hose Clamp (Not Included with some models))
5. Brine Tank Assembly





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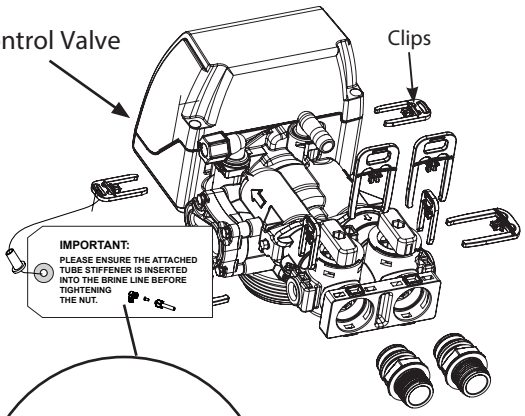
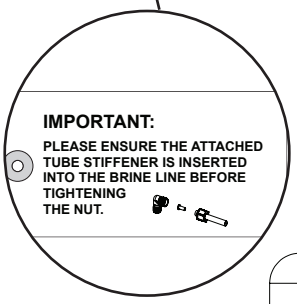
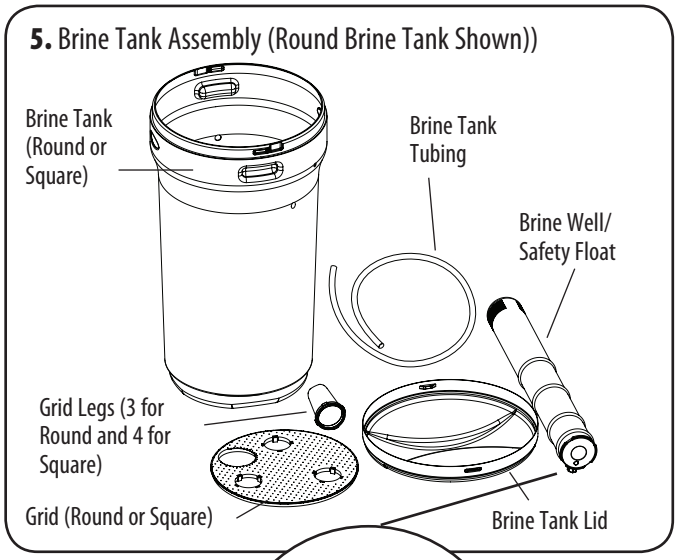
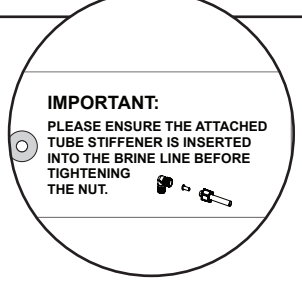
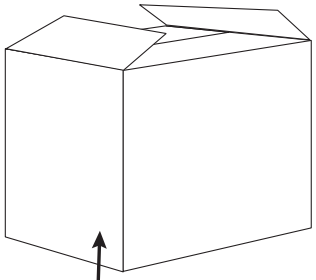


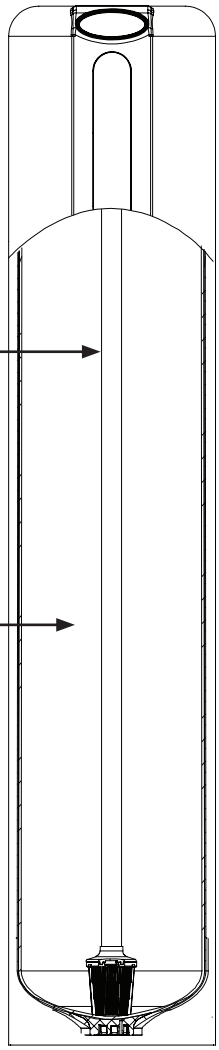






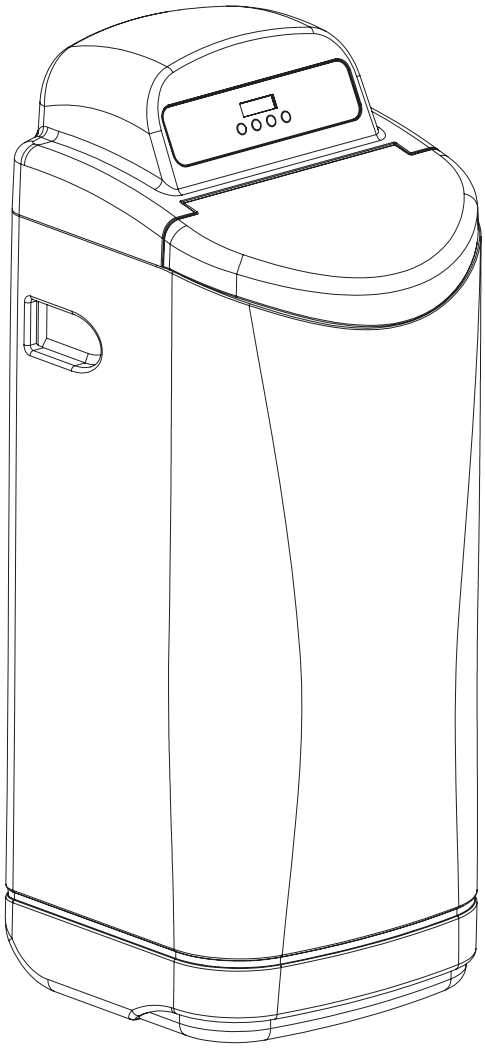


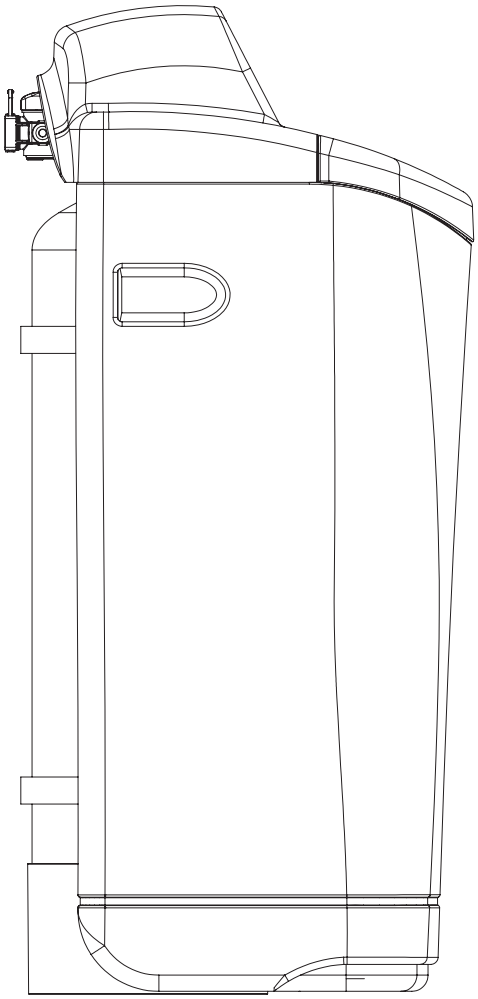
3. Media Box
(Qty depends
on Models)



UNPACKING / INSPECTION OF CABINET MODEL

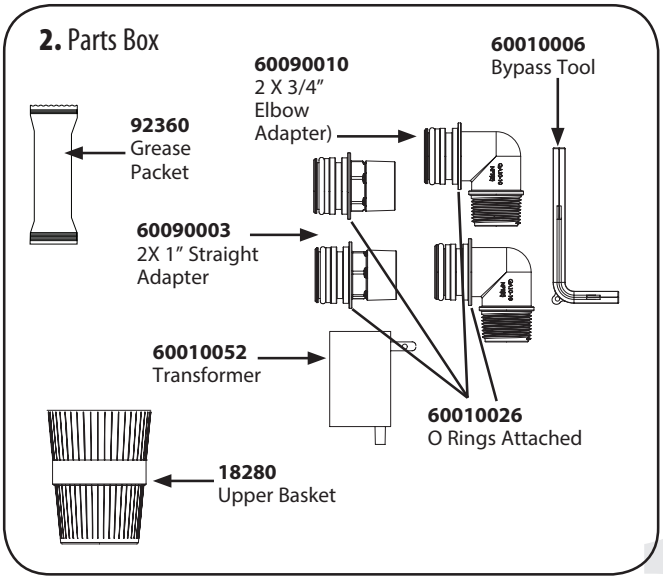
1. Cabinet with Valve attached
2. Parts Box
3. Drain Line and Hose Clamp





NOTE

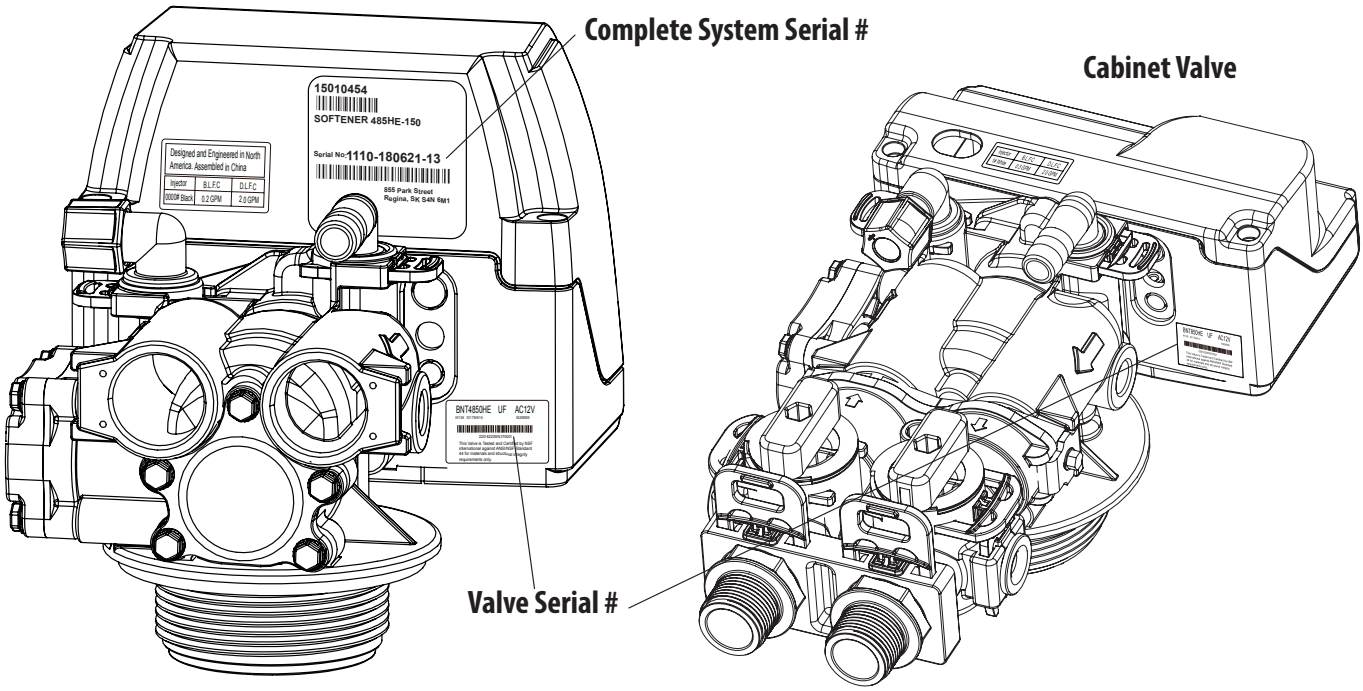
Due to transportation and climatic conditions all connections including the valve to the tank need to be checked at time of installation and tightened if necessary.



Check Valve Type and Valve Serial

Check to make sure Valve Type is Upflow (UF) (left Sticker shown below). The right Sticker shows the serial # of the control valve. The middle Sticker is dataplate which provides information of Serial # and Date of Manufacture of complete system. Both Serial # labels are important for troubleshooting.

Please record these numbers for future use on page 23 in the maintenance section.



Valve Serial #:

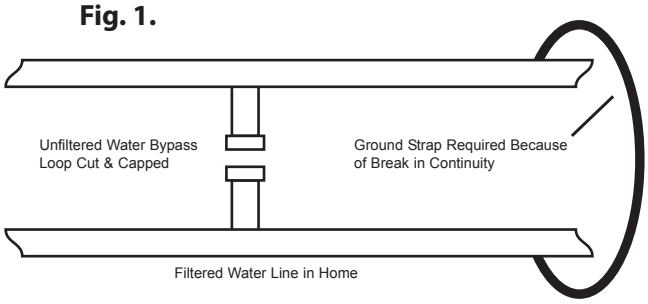
Date Code Canature Valve				
22018421Y	**M**	**4**	**L**	**0001**
PART NUMBER	YEAR (2016)	MONTH (APR)	DAY of MONTH (21)	BATCH NUMBER
	H = 2011	1 = JAN	1	
	I = 2012	2 = FEB	2	
	J = 2013	3 = MAR	3	
	K = 2014	4 = APR	4	
	L = 2015	5 = MAY	5	
	M = 2016	6 = JUN	6	
	N = 2017	7 = JUL	7	
	O = 2018	8 = AUG	8	
	P = 2019	9 = SEP	9	
	Q = 2020	A = OCT	A = 10	
		B = NOV	B = 11	
		C = DEC	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	

BEFORE INSTALLATION

Make sure you have a copy of your most recent water test results. If your water has not been tested previously you can contact your supplier of this product to obtain a water sample bottle to be sent to one of our facilities for a free analysis. **It is important that this product not be installed until you have this information**.

In all cases where metal pipe was originally used and is later interrupted by poly pipe or the Noryl bypass valve or by physical separation, an approved ground clamp with no less than #6 copper conductor must be used for continuity, to maintain proper metallic pipe bonding.

Fig. 1.



Inspecting and Handling Your 485HE Softener*

Inspect the equipment for any shipping damage. If damaged, notify the transportation company and request a damage inspection. Damage to cartons should also be noted.

Handle the softener unit with care. Damage can result if it is dropped or set on sharp, uneven projections on the floor.

Do not turn the softener unit upside down.

To Ensure this Product Functions Properly:

Your feed water line size to the unit must be a minimum of 1/2 inch with an operating pressure of no less than 30 psi and no more than 125 psi.

MECHANICAL:

Do not use petroleum based lubricants such as petroleum jelly, oils or hydrocarbon based lubricants.Use only 100% silicone lubricants (grease packet provided in parts kit). All plastic connections should be hand tightened only. Teflon tape may be used on connections that do not use an O-ring seal. Do not use pliers or pipe wrenches except where indicated by Nut shape (eg. pipe adapters) All plumbing must be completed according to local codes. Soldering connections should be done before connecting any pieces to the pipe as excessive heat can damage them.

Tools Required for Installation:

NOTE: We recommend installation only be completed by a competent installer or plumbing professional to insure this product is installed in accordance with local plumbing codes.

- Two adjustable wrenches
- Additional tools may be required if modification to home plumbing is required.
- Plastic inlet and outlet fittings are included with the softener. To maintain full valve flow, 3/4" or 1" pipes to and from the softener fittings are recommended. You should maintain the same, or larger, pipe size as the water supply pipe, up to the softener inlet and outlet.
- Use copper, brass, or PEX pipe and fittings.
- Some codes may also allow PVC plastic pipe.
- ALWAYS install the included bypass valve, or 3 shut-off valves. Bypass valves let you turn off water to the softener for repairs if needed, but still have water in the house pipes.
- 5/8" OD drain line is needed for the valve drain. A 10' length of hose is not included with some models.

NOTE

All government codes and regulations governing the installation of these devices must be observed.

⚠ CAUTION!

If the ground from the electrical panel or breaker box to the water meter or underground copper pipe is tied to the copper water lines and these lines are cut during installation of the Noryl bypass valve and/or poly pipe, an approved grounding strap must be used between the two lines that have been cut in order to maintain continuity. The length of the grounding strap will depend upon the number of units being installed and/or the amount of copper pipe being replaced with plastic pipe. See Fig. 1.

NOTE

Check your local electrical code for the correct clamp and cable size.

NOTE

If a severe loss in water pressure is observed 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.

***NOTE**

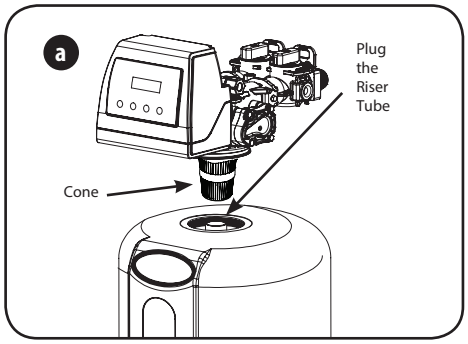
Due to transportation and climatic conditions all connections including the valve to the tank need to be checked at time of installation and tightened if necessary.

PREPARATIONS

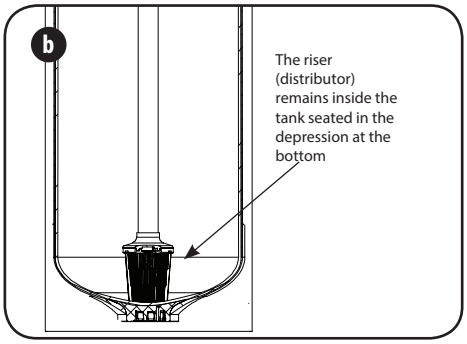
CAUTION!

The unit should be depressurized before installing or replacing media

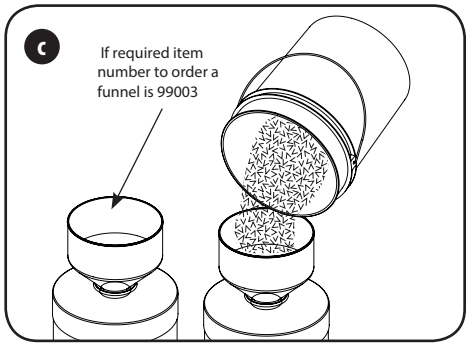
Media Installation (When Necessary). Models including and higher than 2 CF (Models 200,300) of media are shipped with separate media in pails or boxes. Models lower than 2 CF of media come loaded with media and this step can be skipped for new installation.



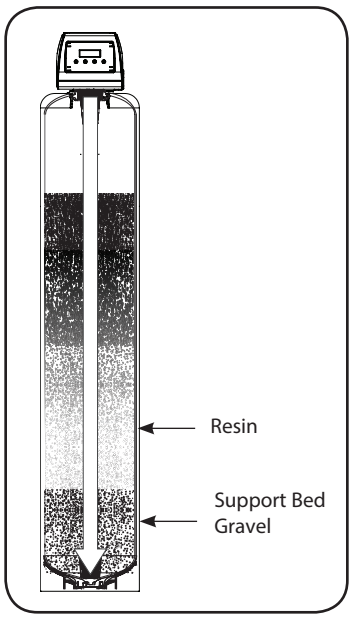
a) Lube the bottom oring (picture **d**) and attach the cone to the valve.



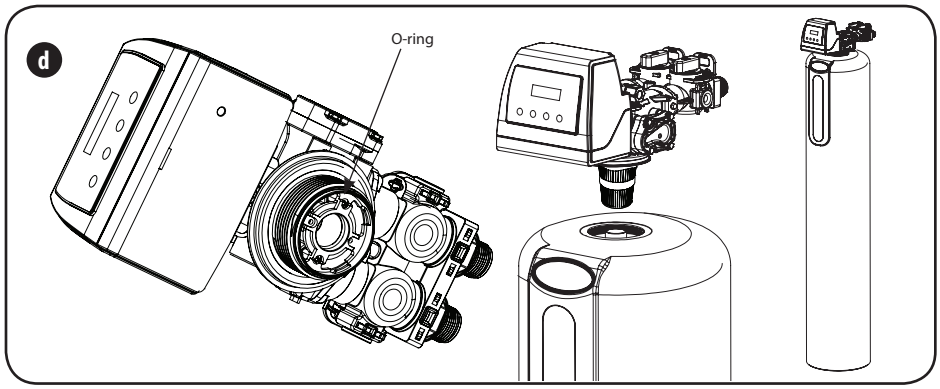
b) Temporarily plug the open end of the riser tube to ensure that no resin or gravel falls down into the distribution. The riser (distributor) remains inside the tank seated in the depression at the bottom. Plug tube with a tape. Remove after media is loaded.



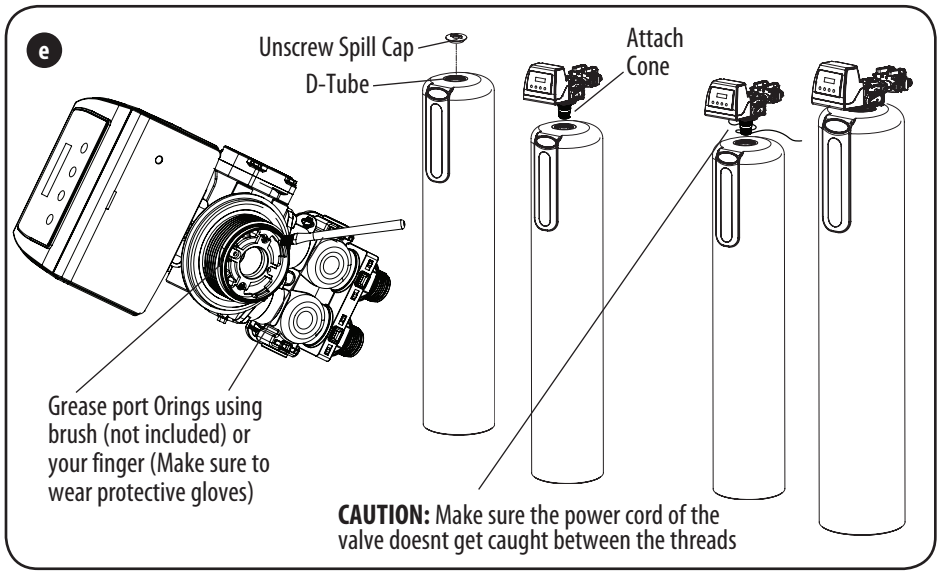
c) Fill support bed first. The media will not always spill down inside the tank and may need to be swept inside.The large funnel (sold separately makes filling the tank easier and neater. (Or an empty 1 gallon or 4 liter container with the bottom cut out makes a good funnel.)



Fill tank one quarter full of water to protect distribution during gravel installation. Place the media into the tank in the order indicated above. Slowly and carefully add the gravel support bed and the filtration media leveling each layer as it is placed into the tank.



d) Unplug the riser tube, carefully position the valve over it and turn the valve into the threads in the fiberglass tank, tightening securely into tank. Note: Ensure that the internal O-ring in the valve fits securely over the riser tube. Silicone grease (part # 92360) or other food grade lubricant may be applied to the O-ring to ease installation of the riser tube.



d) Lube the bottom Valve Orings with the grease supplied, Attach the Cone. Unscrew the spill cap. Carefully Slide the D-Tube inside the Valve and Screw the Valve inside the Tank such that the power cord doesn't get caught between the valve and the tank.

CAUTION!

Make sure that the unit is de-pressurized before conducting this task.

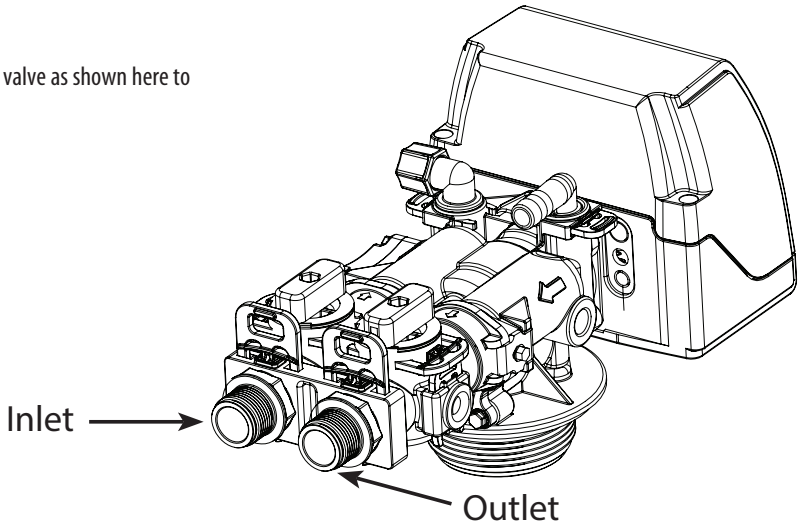
CAUTION!

DO NOT use petroleum based lubricants as they will cause swelling of O-ring seals.

PREPARATIONS

Determine the best location for your water softener, bearing in mind the location of your water supply lines, drain line and 120 volt AC electrical outlet. Subjecting the softener to freezing or temperatures above 43°C (110°F) will void the warranty.

Please notice the inlet and outlet labels on the valve as shown here to determine the position of the equipment:



Facts to Remember When Planning Your Installation

1. All installation procedures must conform to local and state or provincial plumbing codes.
2. Outside faucets used to water lawns and gardens should not supply untreated water, replace untreated water with feed water to the unit. If necessary to do this please install check valve, see page 14. A new water line is often required to be connected to supply untreated water to the inlet of the water softener and to the outside faucets.
3. Make sure the bypass is attached well to the control valve. Connect the straight or elbow connectors to the bypass with red clips. Connect the inlet and outlet of the water softener to the plumbing of the house. The control valve must not be submitted to temperatures above 43°C (110°F). When sweat fittings are used, to avoid damaging the control valve, solder the threaded copper adapters to the copper pipe and then, using Teflon tape, screw the assembly into the bypass valve.

   Do not use pipe thread compound as it may attack the material in the valve body.
4. Apply Teflon Tape and Orings to the fittings
5. Connect Softener to the house plumbing. Any solder joints near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the valve and joints when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.
6. **Drain Line connection:** Using Teflon tape, screw the 1/2" hose barb and attach oring into the drain port in the valve. Attach 1/2" drain hose (Supplied with some models and brands) to the hose barb and tighten securely with a hose clamp (Supplied with some models and brands). Run the drain line to a floor drain or a laundry drain. Complete any necessary plumbing.
7. Using the Allen Key (included), place the unit in the bypass position. Slowly turn on the main water supply. At the nearest cold treated water tap nearby remove the faucet screen, open the faucet and let water run a few minutes or until the system is free of any air or foreign material resulting from the plumbing work.
8. Make sure there are no leaks in the plumbing system before proceeding. Close the water tap when water runs clean.
9. Open the brine tank / cabinet salt lid and add water until there is approximately 3" (75 mm) of water in the tank. Do not add salt to the brine tank at this time.

NOTE

If the plumbing system is used as the ground leg of the electric supply, continuity should be maintained by installing ground straps around any nonconductive plastic piping used in installation.

NOTE

Before starting installation, read page 16, Plumbing System Clean-Up, for instructions on some procedures that may need to be performed first.

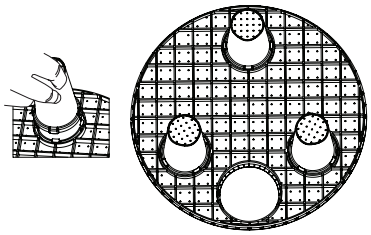
Water Lines

Outside faucets used to water lawns and gardens should not supply softened water. A new water line is often required to be connected to supply hard water to the inlet of the water softener and to the outside faucets. Cut the water line between where it enters the house and before any lines that branch off to feed the hot water heater or other fixtures in the house and as near the desired location of the water softener as possible. Install a tee fitting on the feed end of the cut pipe, and an elbow fitting on the other end. Install piping from the tee to the inlet of the water softener and from the elbow to the outlet of the softener. To sever the water lines which branch off to feed any outside faucets, cut the branch lines approximately two inches from the fitting on the main water line. Install an elbow on the end of the pipe nearest the outside faucet and a cap on the end connected to the existing water line. Install piping from the tee installed on the inlet line to the water softener to the elbow installed on the pipe to the outside faucet. Following this procedure will result in all lines in the house, with the exception of the outside faucets, but including the water heater and therefore the hot water lines, being supplied with soft water.

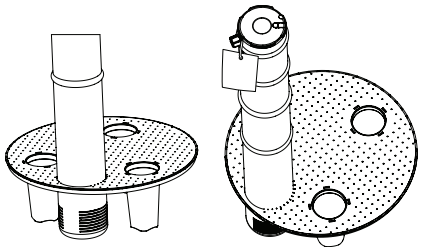
INSTALLING BRINE TANK*

Assembling Brine Tank

a) Attach the three brine grid legs to grid plate. The legs will snap on to the tabs of the salt plate making a "click" sound. For square brine tank there are four legs.)

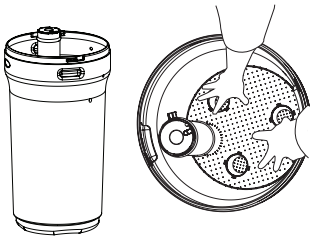


b) Insert the brine well assembly inside the grid plate as well below.

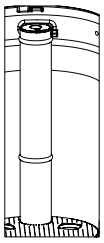


c) Drop the brine grid with brine well inside the brine tank such that the nut fitting faces the hole on the brine tank. Then press the grid evenly inside the brine tank until the brine grid legs touches the bottom of the brine tank.

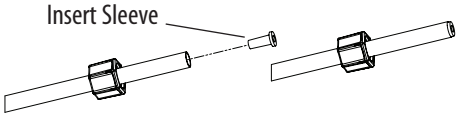
IMPORTANT:
IT IS IMPORTANT TO ALIGN THE HANDLE TO THE BRINE WELL AS SHOWN



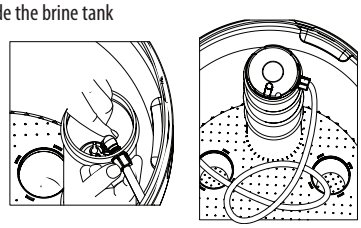
The hole in the brine tank should line up with the brine line as shown



d) Take the brine tube and insert the nut and plastic sleeve as shown below.

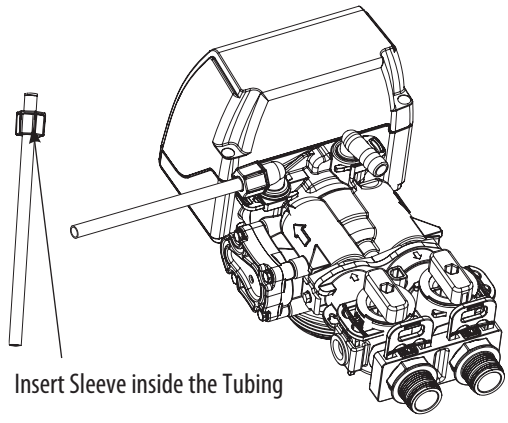


e) Insert the tube in the float assembly elbow and hand tighten the nut. In many cases the brine line already come installed from the factory. Leave the other end of the brine line tube inside the brine tank



f) For installation of brine tank at the installation site, pull the other end of the brine tube from the hole on the brine tank. The completed assembly is shown below.

Attaching Brine Tubing to the Brine Line of the Valve



Insert Sleeve inside the Tubing

***NOTE**

Resin Cleaner

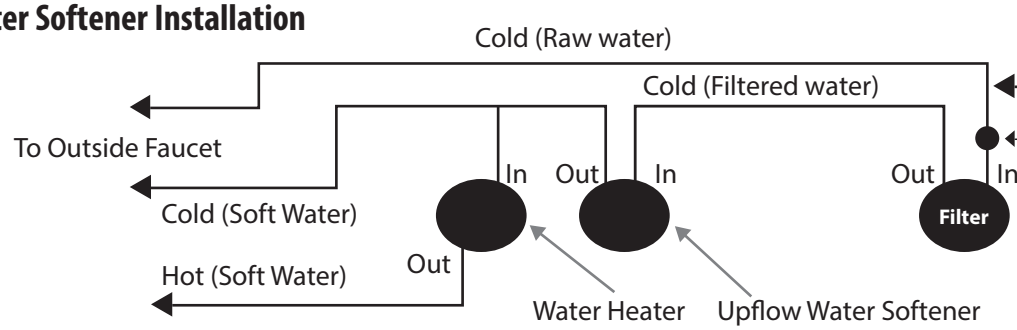
An approved resin cleaner MUST be used on a regular basis if your water supply contains iron.

See page 24 - Res-Up® Feeder Installation Instructions

WATER SOFTENER INSTALLATION

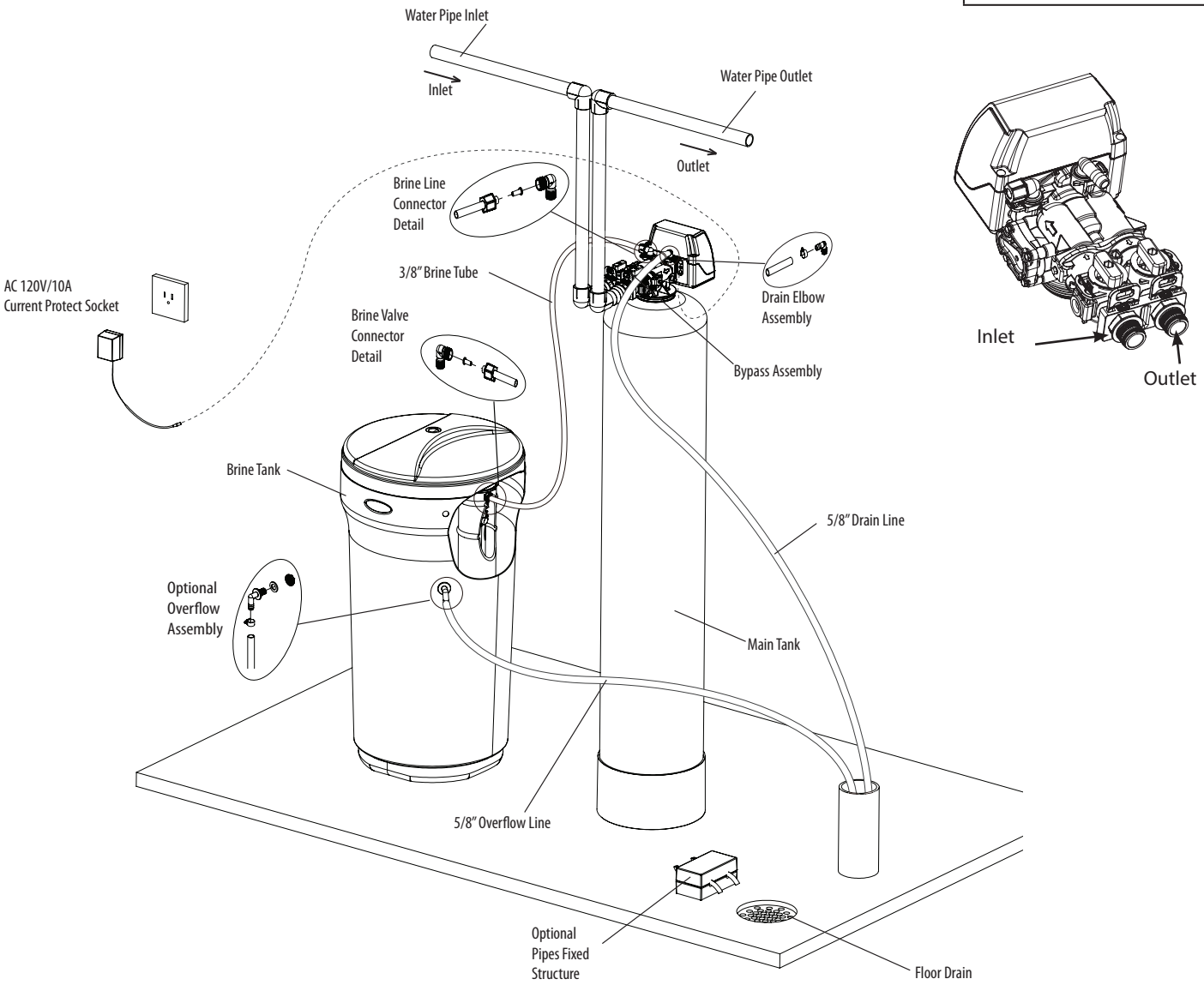
Connect Softener to the HousePlumbing Any solder joints near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the valve and joints when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.

Water Softener Installation



***NOTE**

Check local plumbing codes in regards to requirements for use of Check Valve or back flow prevention or vacuum breaker

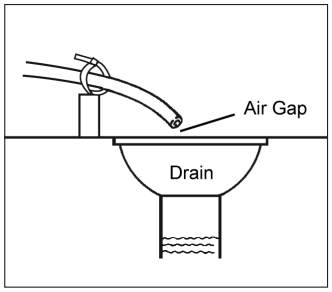


NOTE

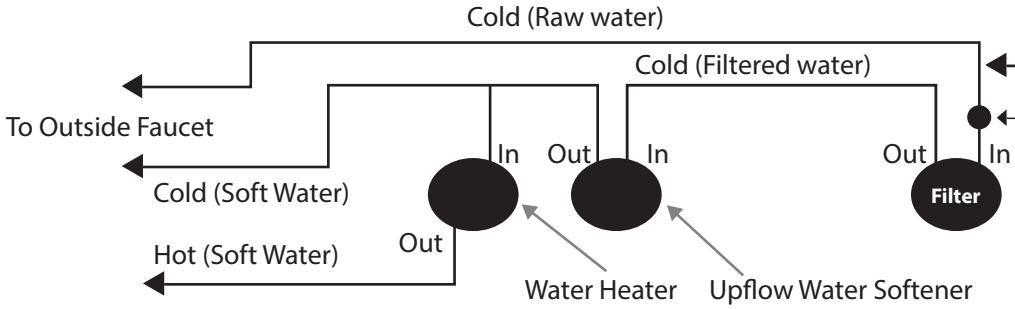
Waste connections or drain outlet shall be designed and constructed to provide for connection to the sanitary waste system through an air-gap of 2 pipe diameters or 1 inch (22 mm) whichever is larger.

CAUTION!

Never insert drain line directly into a drain, sewer line, or trap. Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into the conditioner.

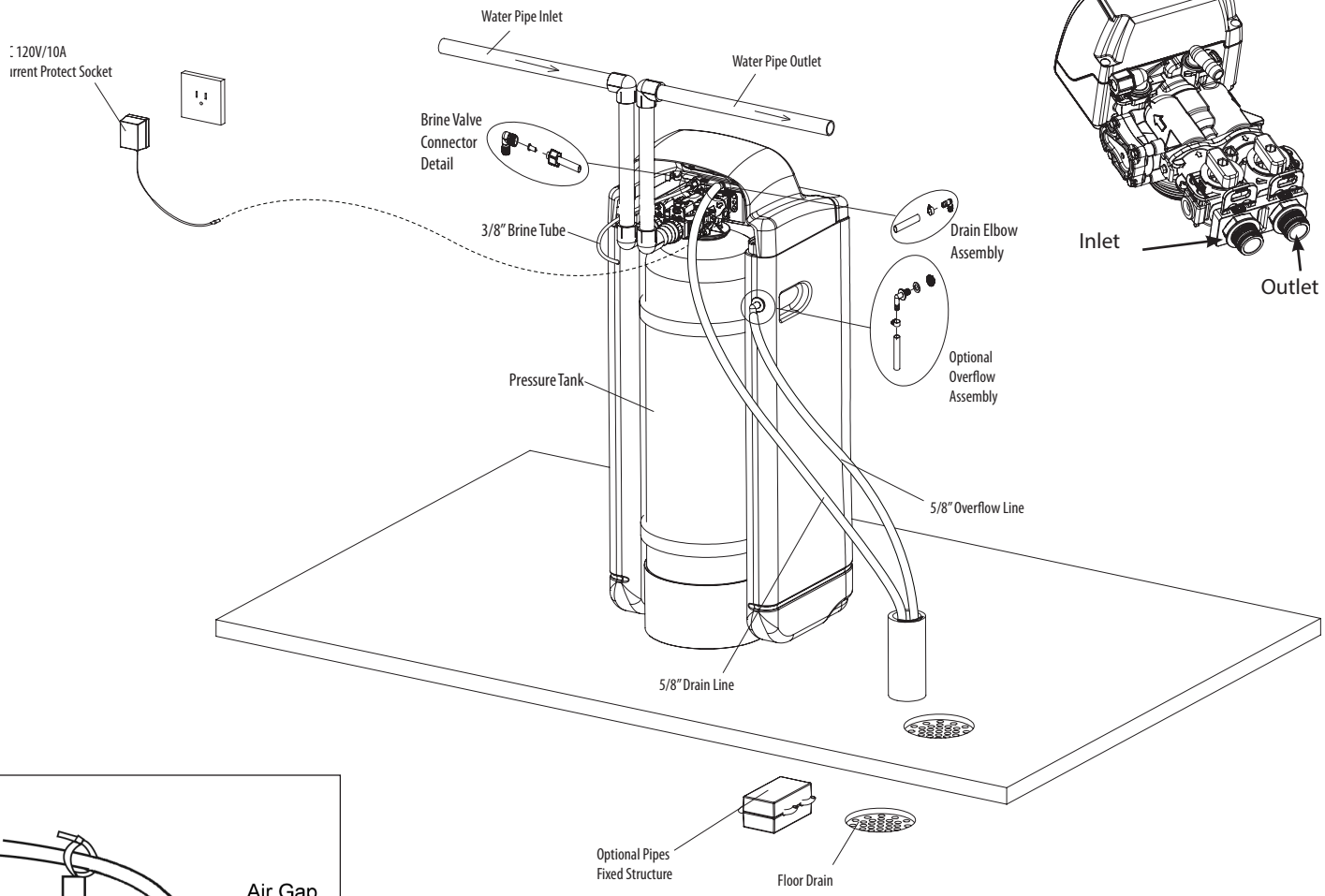


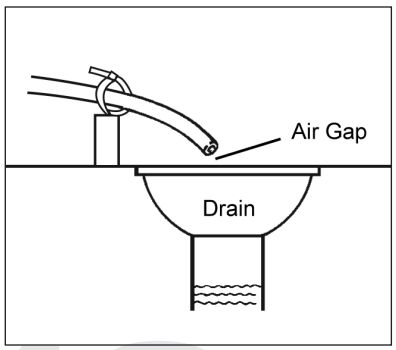
CABINET WATER SOFTENER INSTALLATION



***NOTE**

Check local plumbing codes in regards to requirements for use of Check Valve or back flow prevention or vacuum breaker





NOTE

Waste connections or drain outlet shall be designed and constructed to provide for connection to the sanitary waste system through an air-gap of 2 pipe diameters or 1 inch (22 mm) whichever is larger.

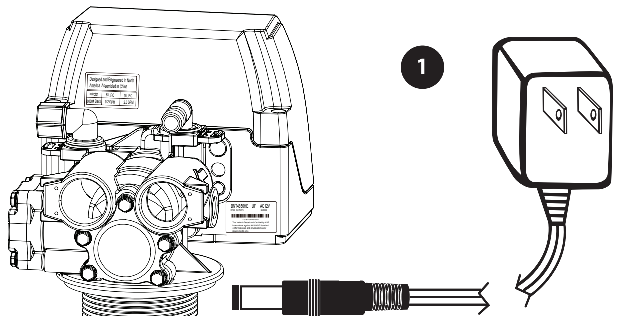
⚠ CAUTION!

Never insert drain line directly into a drain, sewer line, or trap. Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into the conditioner.

STARTUP INSTRUCTIONS

1. Connect the Transformer to the Valve

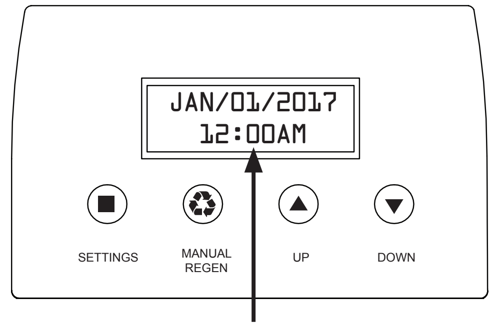
Plug the 12-volt transformer into a 120 VAC 60 Hz outlet.



1. Connect the transformer to the valve. Plug the 12-volt transformer into a 120 VAC 60 Hz outlet.
2. Open the brine tank / cabinet salt lid and add water according to the chart on right. Do not add salt to the brine tank at this time.

2. Screen Display

Familiarize with Button Configuration:



The controller will show the following on the screen - Time, Date and number of Days Remaining for Regeneration.

3. Add Water to Brine Tank

Open the brine tank /cabinet salt lid and add water as per the info below. Do not add salt to the brine tank at this time.

BRINE TANK MODEL – Water to be Added at the Time of Installation:

BTR-100 (18.1" x 34.7") - 2.5 US Gallons

BTR-145 (20.3 x 37.4) - 3.25 US Gallons

BTR-200 (23.0" x 40.5") - 5.5 US Gallons

Key Pad Setting

SETTINGS This function is to enter the basic set up information required at the time of installation.

MANUAL REGEN This function is to initiate an immediate or delayed manual regeneration.

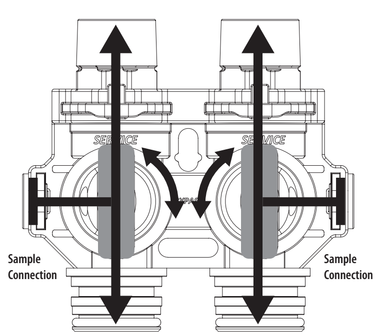
DOWN / UP Increase or decrease the value of the settings while in the programming mode.

4. Manually Regenerate the Valve

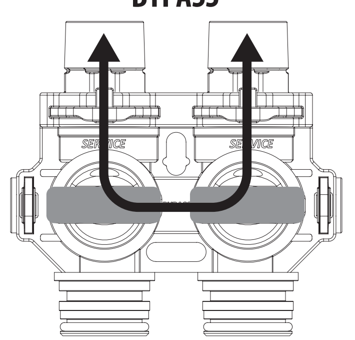
Manually step the valve to the BACKWASH position. If screen is locked, press **SETTINGS** Key for 3 seconds to unlock.
Manually Regenerate the Valve and move it to backwash position.

Press **MANUAL/REGEN** Button for 3 seconds. Press **MANUAL/REGEN** Button once to select delayed or immediate regeneration. Use Up and Down Arrows ▲▼ to Select. Press **MANUAL/REGEN** Key, Press **SETTINGS** Button to exit and start Regen.

SERVICE



BYPASS



MANUAL REGEN
Delay **Immediate**

BACKWASH
BRINE DRAW
RINSE (SKIP)
REFILL (SKIP)

BACKWASH
IIIIIIIIIIIIIIIIIIIII 15 Minutes

BRINE DRAW
IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII 50 Minutes

STARTUP INSTRUCTIONS (CONTINUED)

4. Manually Regenerate the Valve (Continued)

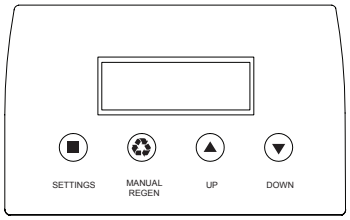
4a. Open the inlet on the bypass valve slowly and allow water to enter the unit. (The outlet of the bypass should remain closed to prevent any fines or debris from entering the plumbing system. Allow all air to escape from the unit before turning the water on fully then allow water to run until the drain water appears to be clear of any fines.

4b. Plug in the valve. Allow the valve to continue its cycles until complete and back in service. Do not manually shorten this cycle as it is critical to have the valve go through all cycles normally to purge all air from the control valve for the upflow injection system to work correctly.

4c. The Valve is already programmed from factory. Please set up date and time of day and feedwater hardness as shown below:

NOTE All units are factory programmed for the correct size and regeneration cycle, alteration should only be done by a factory trained technician or after consultation with one of our technical representatives if you have any questions please call: 1-877-288-9888**

Key Pad Configuration:

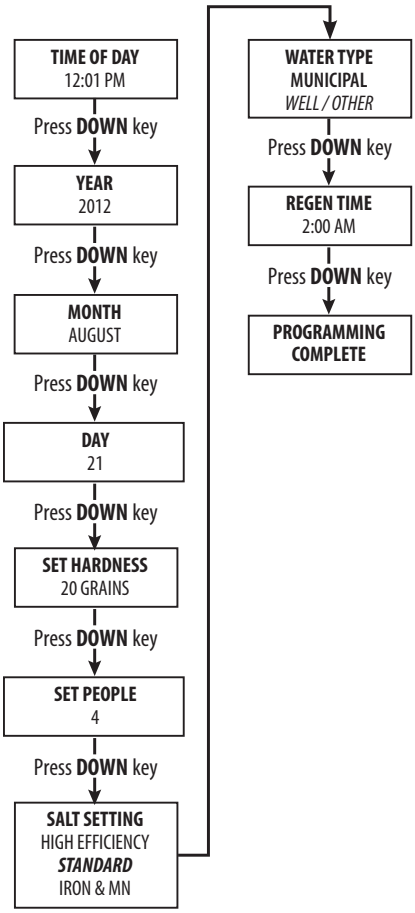


Program Valve

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

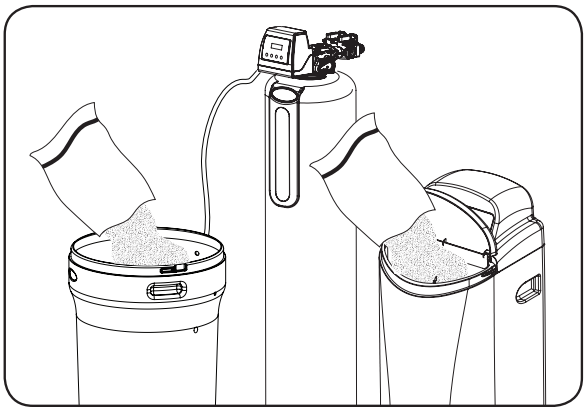
Setting Current Date

1. Press **"DOWN"** to advance to CURRENT DATE.
2. Press the **"MANUAL REGEN"** to change the value. Press **"UP** or **DOWN"** to change the values.



5. Add Salt to the Brine Tank/ Cabinet

Put 40 kgs of crystal water softener salt in the brine tank. The unit will automatically fill the water to the correct level when it regenerates.



Start up and programming complete. Unit is now operational.

DURING REGENERATION

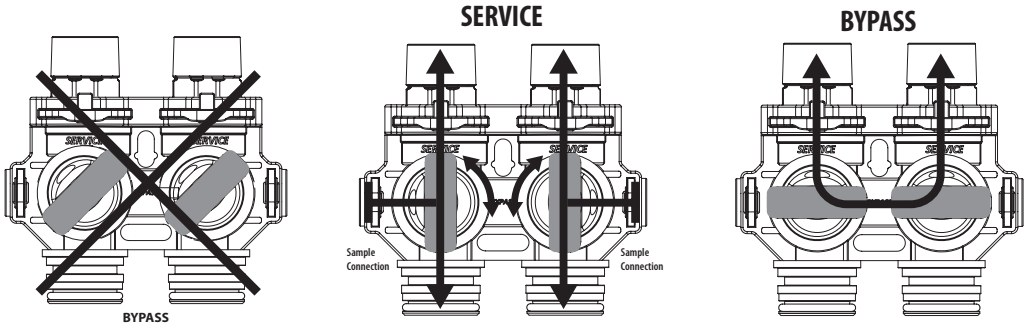
Automatic Water Bypass

The regeneration cycle lasts approximately 1.5 hours to 3.0 hours depending on the specific model, after which treated water service will be restored. During regeneration, untreated water is automatically bypassed for use in the household. Hot water should be used as little as possible during this time to prevent hard water from filling the water heater.

IMPORTANT: 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.

Manual Water Bypass

In case of an emergency or when performing 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 clockwise (as indicated by the word BYPASS and arrow) until they lock. You can use your water related fixtures and appliances as the watersupply is bypassing the softener. However, the water you use will be hard. To resume treated service, open the bypass valve by rotating the knobs counterclockwise. **Please make sure bypass knobs are completely open otherwise the unsoftenered water could bypass through the valve.**



New Sounds

You may notice new sounds as your water softener operates. The regeneration cycle lasts approximately 1.5 hours to 3.0 hours depending on the specific model. During this time, will be able to hear water running intermittently to the drain, depending on proximity of the unit to sleeping area and time of regeneration.

PLUMBING SYSTEM CLEAN-UP

The following procedures are guidelines only but have proven successful in most instances. Under no circumstances should any procedure outlined below be followed if contrary to the appliance manufacturer's instructions. Should there by any questions concerning the advisability of performing a procedure, it is strongly recommended the manufacturer's authorized service outlet be consulted prior to performing the procedure.

Water Heater

If the water heater has been exposed to both iron and hardness for a long period of time, replacement of the heater tank maybe the only practical solution to prevent continued staining originating from this source. After completing the installation of the conditioner, clean the water heater by following these instructions:

1. Shut off energy supply to water heater and close heater inlet water valve.
2. Drain hot water tank completely. Open inlet water valve allowing heater tank to be refilled with iron-free water. Continue flushing until water runs clear to drain.
3. If, after approximately 30 minutes flushing, water does NOT clear, terminate flushing operation. Refill hot water heater with water and pour approximately 1/2 gallon of household bleach into top of heater tank. Allow bleach solution to stand in tank for 20 to 30 minutes. Flush tank

NOTE

If water does not clear in approximately 10 minutes, water heater should probably be replaced.

Dishwasher

Consult owners' handbook and follow manufacturer's instructions.

Toilet Flush Tanks

Prior to commencing installation of the softener system, pour 4 to 6 ounces of resin mineral cleaner Pro-Rust Out or or other suitable cleaner such as CLR that contains a mild acid into flush tanks and bowls and let stand. When installation is completed, flush toilets several times with conditioned water. If stains or deposits return check that lines are connected to treated water. Repeat procedure until clear. again until water is clear at drain. Turn energy supply on.

MAINTENANCE INSTRUCTIONS AND SCHEDULE

Service Schedule

- The seals and spacers along with the piston assembly should be inspected/cleaned or replaced every year depending on the inlet water quality and water usage on clean municipal supplies every 2 - 3 years should be sufficient but the first check should be done after 1 year. See inspection and replacement of Piston assembly and seal and spacer kit, page 26.
- The injectors should be cleaned/inspected or replaced every year depending on the water quality and use. See Clean Injector Assembly, page 27.
- **Maintenance Kit (60010565)** should be used for servicing control on an annual basis. The maintenance kit consists of piston assembly, seals and spacers, injectors.

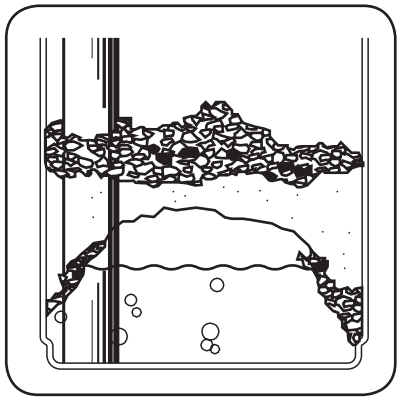
Maintenance of your new water conditioner requires very little time or effort but it is essential. Regular maintenance will ensure many years of efficient and trouble free operation.

FAILURE TO FOLLOW BASIC MAINTENANCE SCHEDULE WILL RESULT IN THE UNIT FAILING TO OPERATE PROPERLY AND VOID YOUR WARRANTY.

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



CAUTION!

Liquid brine will irritate eyes, skin and open wounds - gently wash exposed area with fresh water. Keep children away from your water conditioner.

Cleaning of your Brine / Salt tank

Salt tanks will build up sludge (undissolved salt) in the bottom of them that will continue to increase as time goes by. Every 2 - 3 years the salt tank should be cleaned out completely and re started using the original start up instructions.

CAUTION!

Never subject your conditioner to freezing, vacuum or to temperatures above 43°C (110°F).

MAINTENANCE INSTRUCTIONS AND SCHEDULE

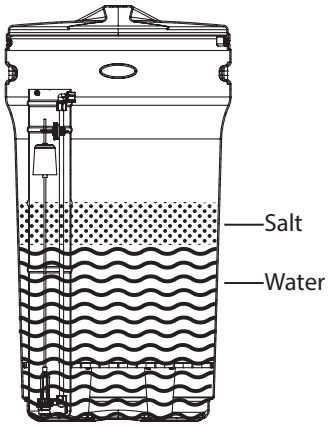
Checking the Salt Level

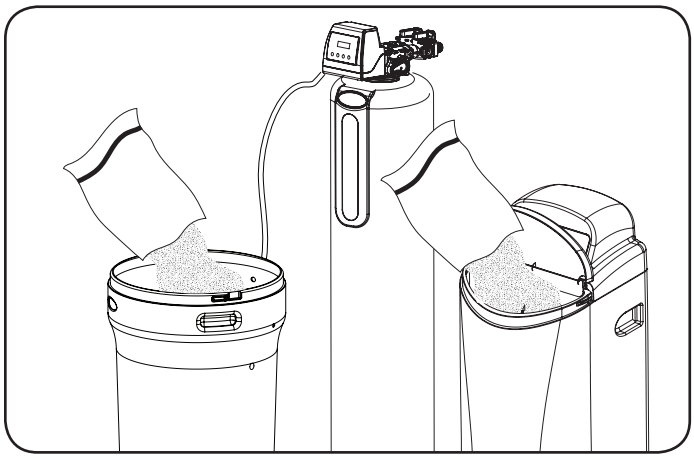
Check the salt level monthly. Remove the lid from the cabinet or brine tank, make sure salt level is always above the brine level.

Add Salt to the Brine Tank

Put 40 kgs of crystal water softener salt in the brine tank. The unit will automatically fill the water to the correct level when it regenerates. 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.

NOTE :THE WATER LEVEL SHOULD BE BELOW THE SALT LEVEL ALL THE TIME





CAUTION!

Incorrect start up, water above the salt level, (not enough salt in tank) will both effect the units capacity and result in hardness slippage. Should either of these situations happen or the unit fails to regenerate for any other reason please first correct the problem. Then regenerate the unit manually 2 times in a row to restore the reserve capacity and bring the media bed back up to specification.

IMPORTANT WARRANTY AND MAINTENANCE INFORMATION

Please have the information below filled out and available when calling in for parts or warranty:

Model number:
Serial number:
Valve Serial number:
Date installed:

Additional notes:

_____

_____

_____

_____

_____

_____

Care of Your 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 or to temperatures above 43°C (110°F).

Servicing Components

- The injector assembly should be cleaned or replaced every year depending on the inlet water quality and water usage.
- The seals and spacer should be inspected/cleaned or replaced every year depending on the inlet water quality and water usage.

Please refer to the servicing section of this manual for step by step procedure.

Not following the above will void all warranty on the control valve.

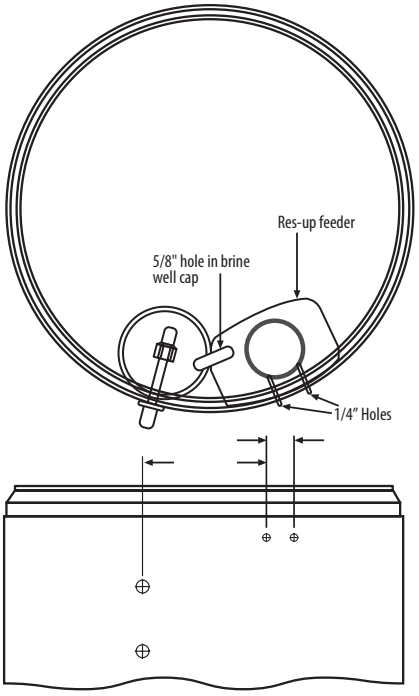
Resin Cleaner

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).

Res-Up® Feeder Installation Instructions (Optional)

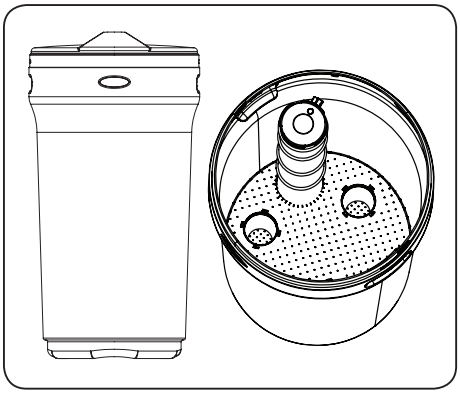
Res-Up Feeders attach to your brine tank and automatically dispense the Res-Up cleaner into the brine solution where it cleans the resin during the regeneration cycle.

The feeder hooks onto the tube inside your brine tank and you just pour some chemical in it and your water conditioner should last significanly longer. A res-up feeder is essential if your raw water contains measurable amounts of iron.

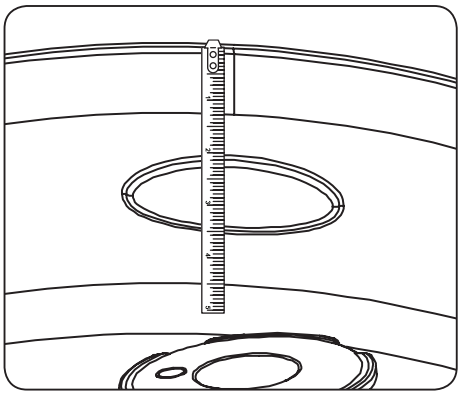


Res-up Feeder Bottle (Chemical sold Separately)
The 12 cc feeder (Part # 33010) is for conditioners up to 64,000 grains (2 ft3 of resin).
The 30 cc feeder (Part # 33018) is for larger conditioners over 64,000 grains.
Pro-Res Care Chemicals
Item #45147 Pro-ResCare - Gallon
Item #45148 Pro-ResCare - Quart

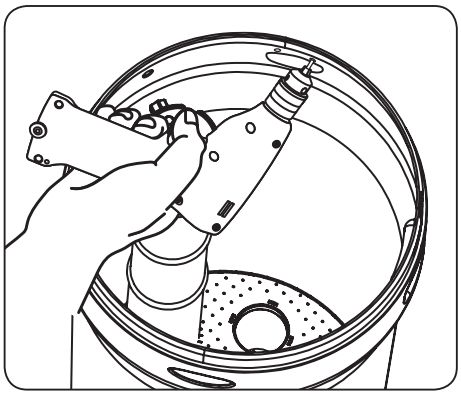
Install Resup Feeder



1. Install the grid and brine well inside the tank.

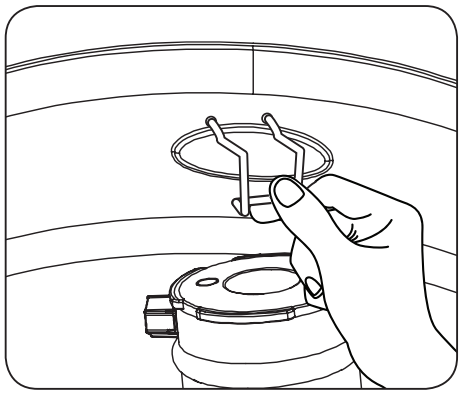


2. Measure 2 inches from the top of the tank beside the oblong molding.

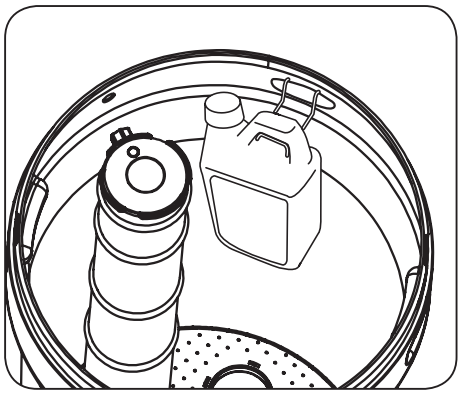


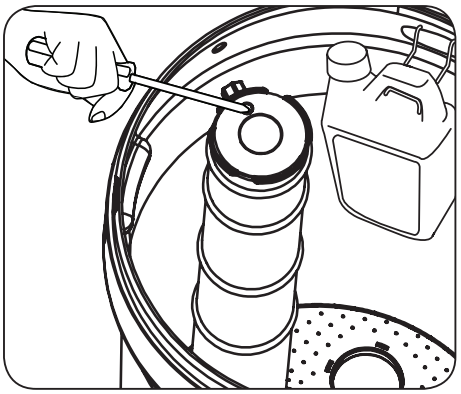
3. Mark the location of the holder and drill.

Res-Up® Feeder Installation Instructions (Optional)

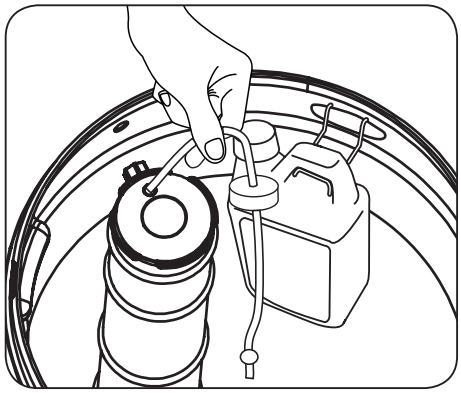


4. IInstall the holder and the Res Care Solution





5. Take off the small hole cover on the Brine Well lid.



6. Take off the cover of the Res care bottle . Insert the wick, making sure it touches the bottom of the bottle. Insert the other end of the tube completely into the hole in the brine well cap. Automatic feeding will start in a few hours.

SERVICING 485HE VALVE

Before Servicing

1. Turn off water supply to conditioner :
   - **a.** If the conditioner installation has a 3 valve bypass system first open the valve in the bypass line, then close the valves at the conditioner inlet & outlet.
   - **b.** If the conditioner has an integral bypass valve, put it in the bypass position.
   - **c.** If there is only a shut-off valve near the conditioner inlet, close it.
2. Relieve water pressure in the conditioner by stepping the control into the backwash position momentarily. Return the control to the In Service position.
3. Unplug Electrical Cord from outlet.
4. Disconnect drain line connection.

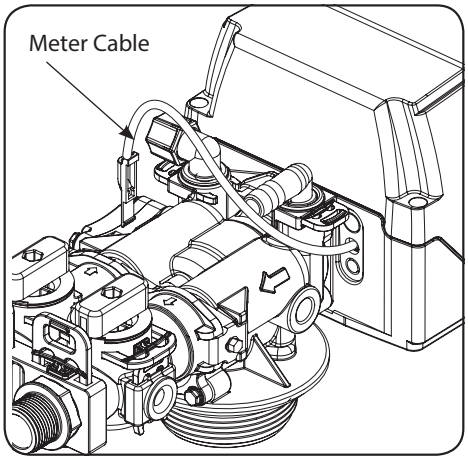
WARNING!

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

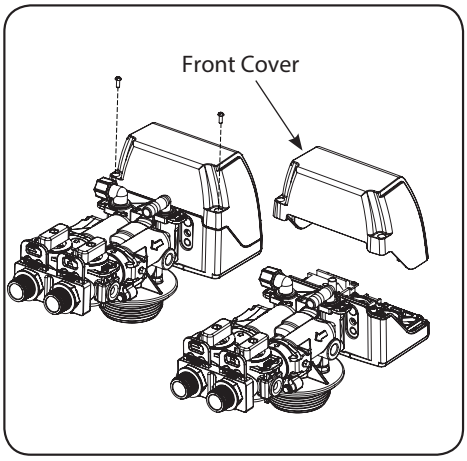
CAUTION!

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

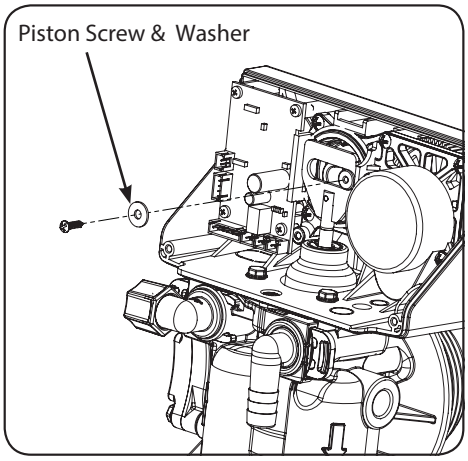
TIMER REPLACEMENT



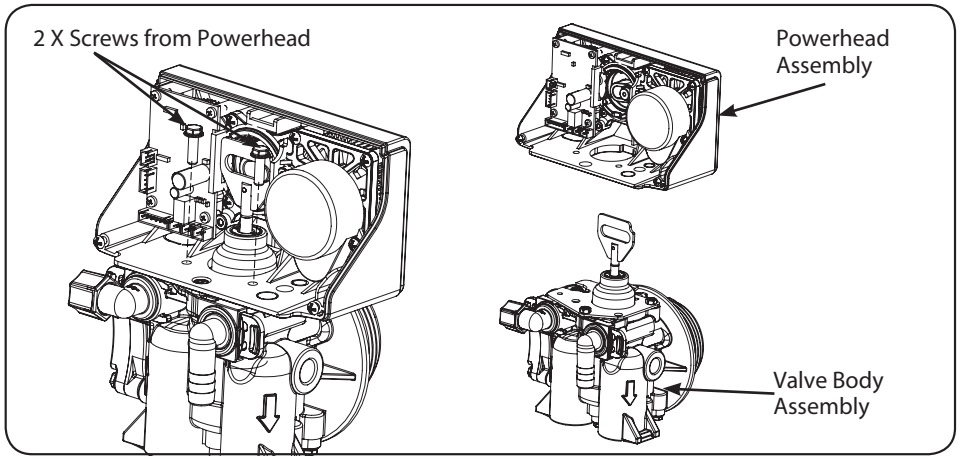
1. Disconnect the meter cable from the meter. (If flow meter is attached)



2. Remove the front cover of the valve.

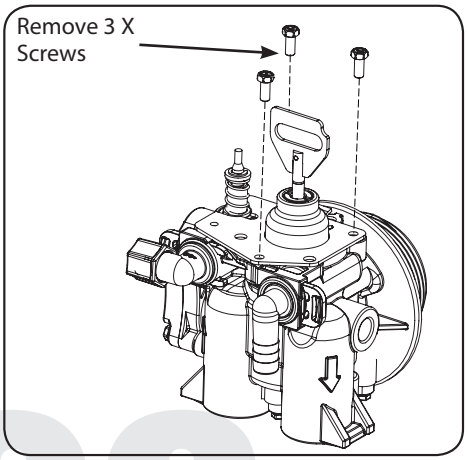


3. Remove the piston screw and washer from the piston rod.

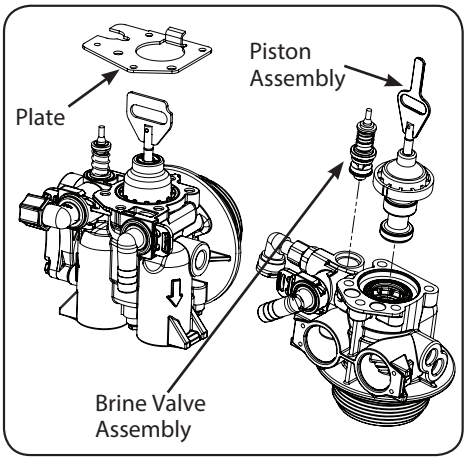


4. Remove the two screws from the powerhead as shown
5. Lift the powerhead from the valve body assembly
6. Replace the powerhead by reverse following the steps in this section

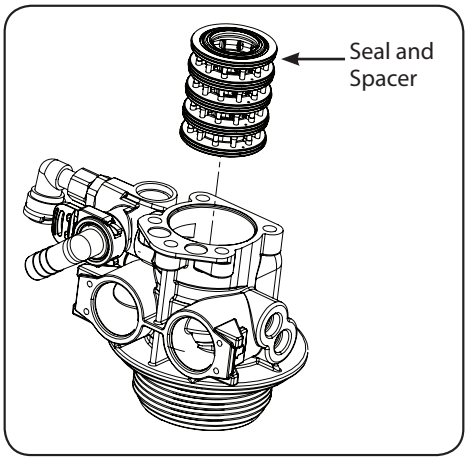
PISTON AND/OR BRINE VALVE ASSEMBLY REPLACEMENT



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

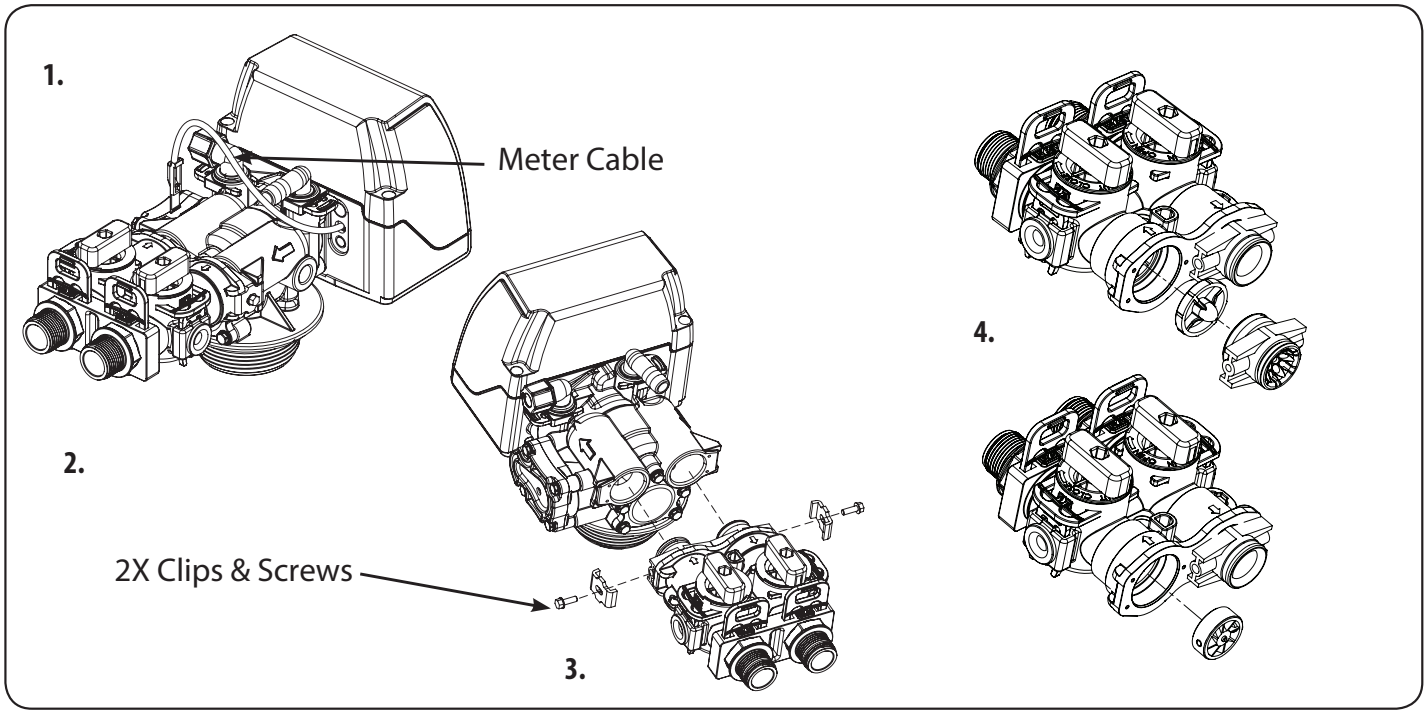


3. Remove the plate from the valve body and pull the Piston Assembly from the valve. The brine valve assembly can also be removed in this stage.
4. Remove the seal spacer assembly, grease it with silicone lubricant and put back in.



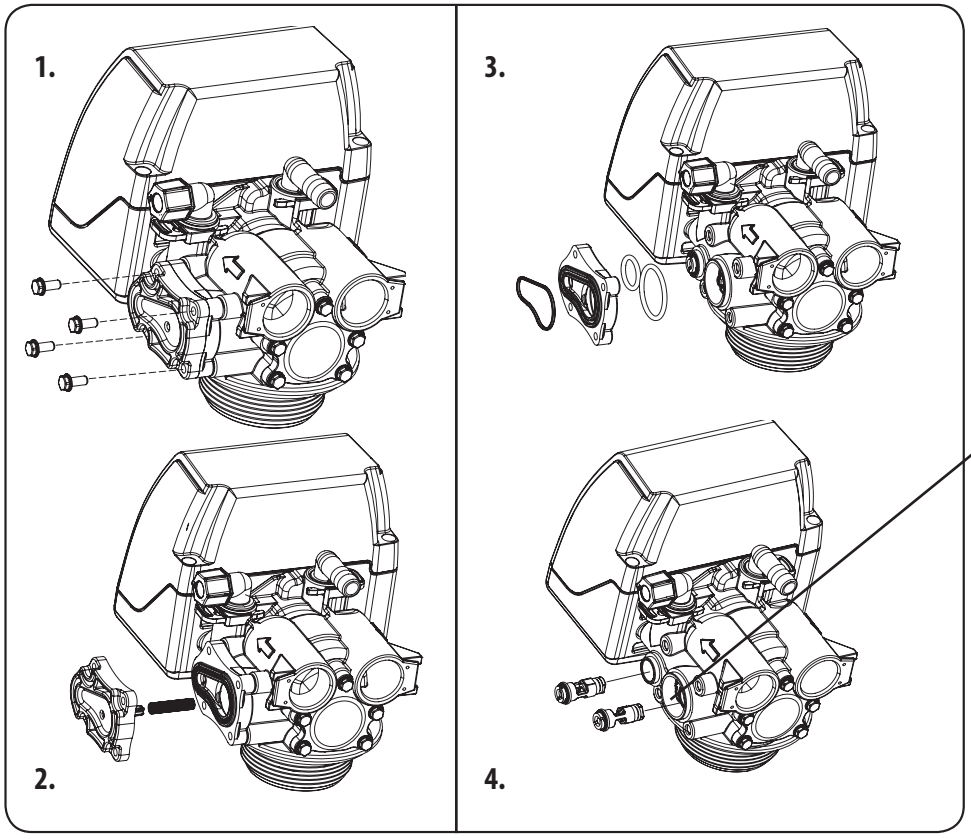
5. Replace piston assembly followed by timer assembly.
6. Replace the piston assembly and reverse following steps in this section

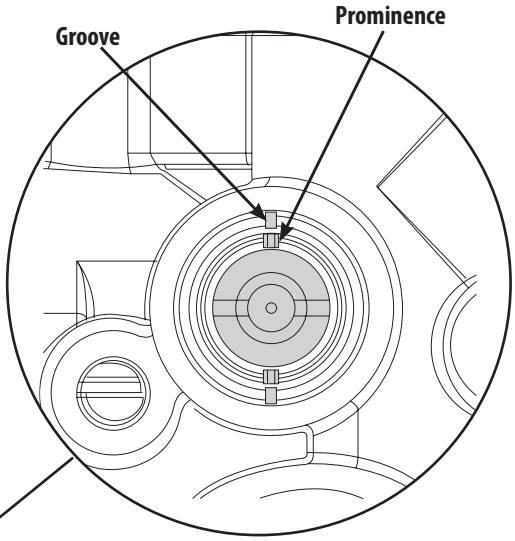
METER ASSEMBLY REPLACEMENT



1. Disconnect the meter cable from the meter.
2. Disconnect the valve from bypass by removing clips
3. Remove the coupling adapter from the valve
4. Remove the meter support and then the impeller out from the coupling and clean it
5. Replace meter with the help of special tool and re-assemble the removed components back in the section

CLEAN INJECTOR ASSEMBLY





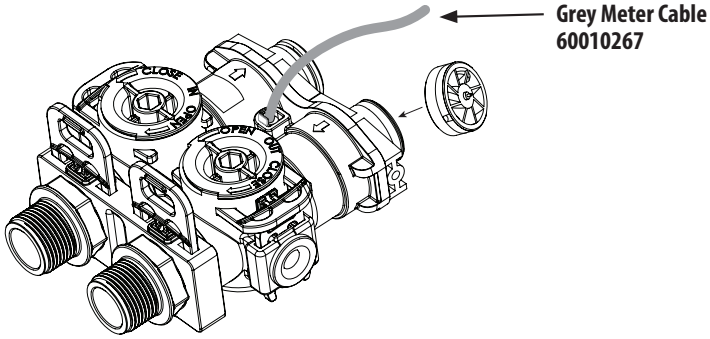
PLEASE NOTE: Make sure the two prominences on the injector are aligned to the grooves on the valve body.

1. Remove four screws of the injector cap.
2. Pull the Injector Cap Out
3. Remove the injector assembly, oring and screen,
4. Clean the injectors and replace cap

REPLACING THE BYPASS AND METER CABLE

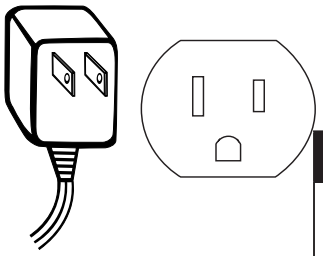
If valve is manufactured before March 20th, 2018, and customer wishes to replace or service impeller on bypass. Customer can order 60010238. If customer wishes to replace to new design, then follow the steps below.

60095101	Bypass comes with Meter and Grey Meter Cable



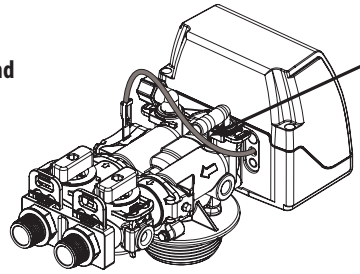
Step 1

Unplug the power from the wall socket.



Step 2*

Remove 2 screws and clips from bypass.



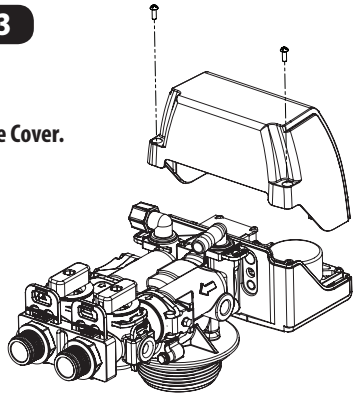
Disconnect the meter cable from the bypass.

***NOTE**

Water to the household needs to be turned off and pressure relieved before Step 2

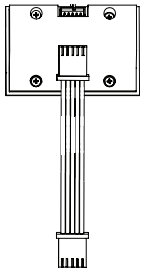
Step 3

Remove Cover.



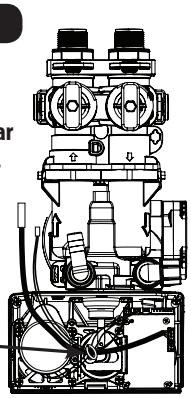
Step 4

Disconnect the cables from the front PCB display.

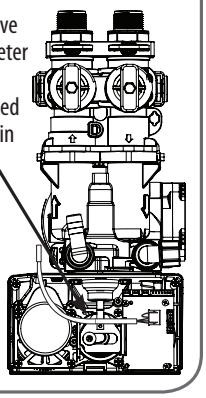


Step 5

Disconnect the cables from the rear PCB display.



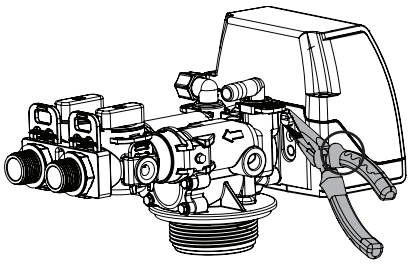
Remove the meter cable attached on Main PCB.



Cut the tie that fastens the wires

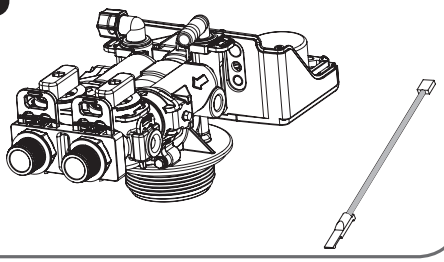
Step 6

Remove strain relief with pliers.



Step 7

Replace the old cable with the new Cable.



Step 8

Assemble the valve. Plug the power supply back into the wall socket and follow the programming shown on right:

If there are "TB-L" and "TB-H" meter type options in PCB programming, select "TB-H".

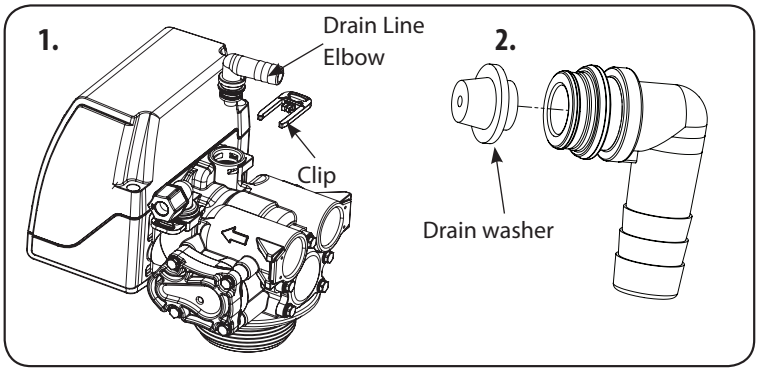
If the valve programming has no "TB-L" and "TB-H" options, change the meter ratio to the new value as per chart on right:*

Press the **SET** to step through to PROGRAMING COMPLETE and past this until TIME OF DAY screen appears.

***Meter and Cable Ratio**

Valve Model	Region	Meter Ratio	
		(OLD) Before March 20th 2018	(NEW) After March 20th 2018
485HE Series	U.S Gallon	8.000	5.680

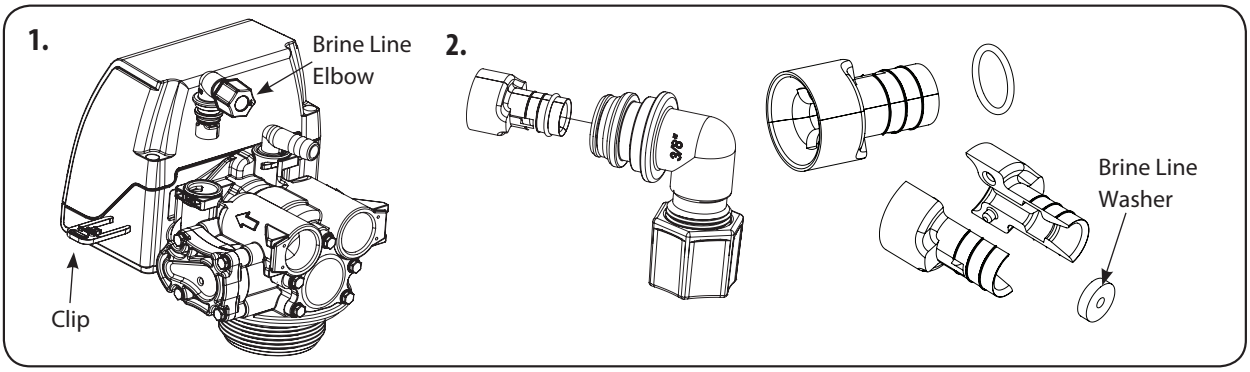
REPLACE DRAIN LINE FLOW CONTROL



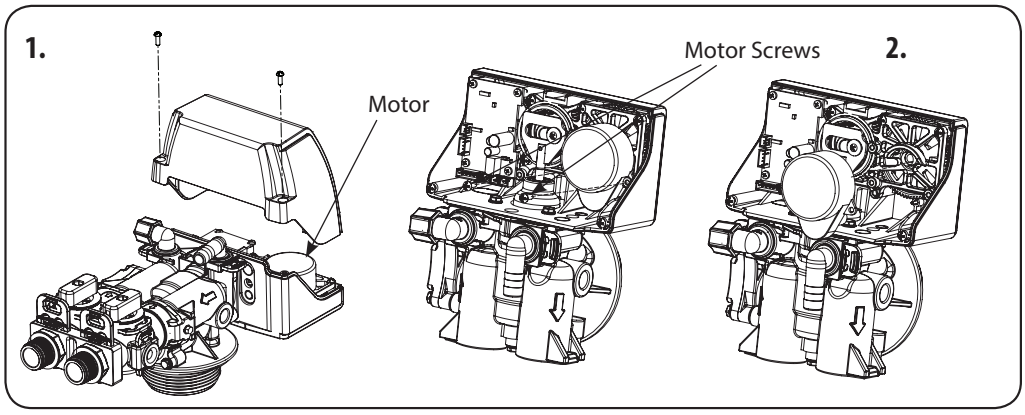
1. Pull the drain line clip and remove the drain line elbow and washer
2. Clean/replace drain line washer

REPLACE BRINE LINE FLOW CONTROL

1. Pull the brine line clip and remove the brine line elbow and washer
2. Clean/replace brine line washer

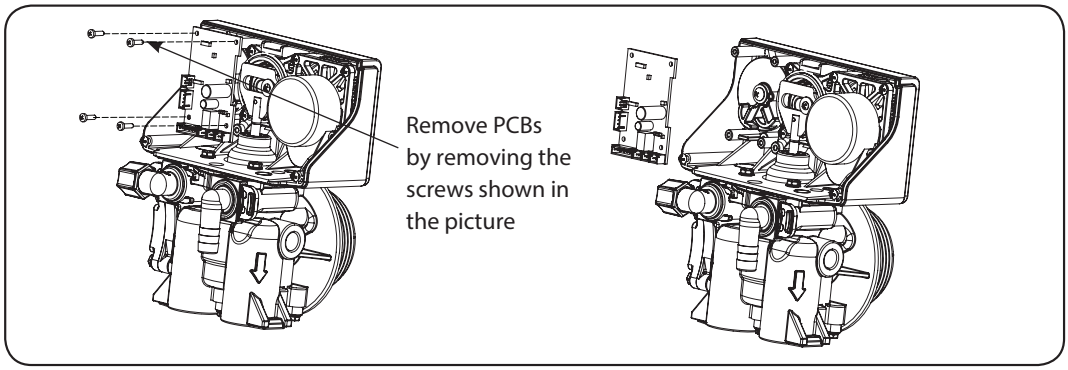


REPLACE MOTOR



1. Remove the powerhead front cover
2. Remove the motor screws and pull the motor out from powerhead

REPLACING PCBS



AFTER SERVICING

1. Reconnect drain line

2. Return bypass or inlet valve to normal in service position. Water Pressure will automatically build in the Softener

NOTE

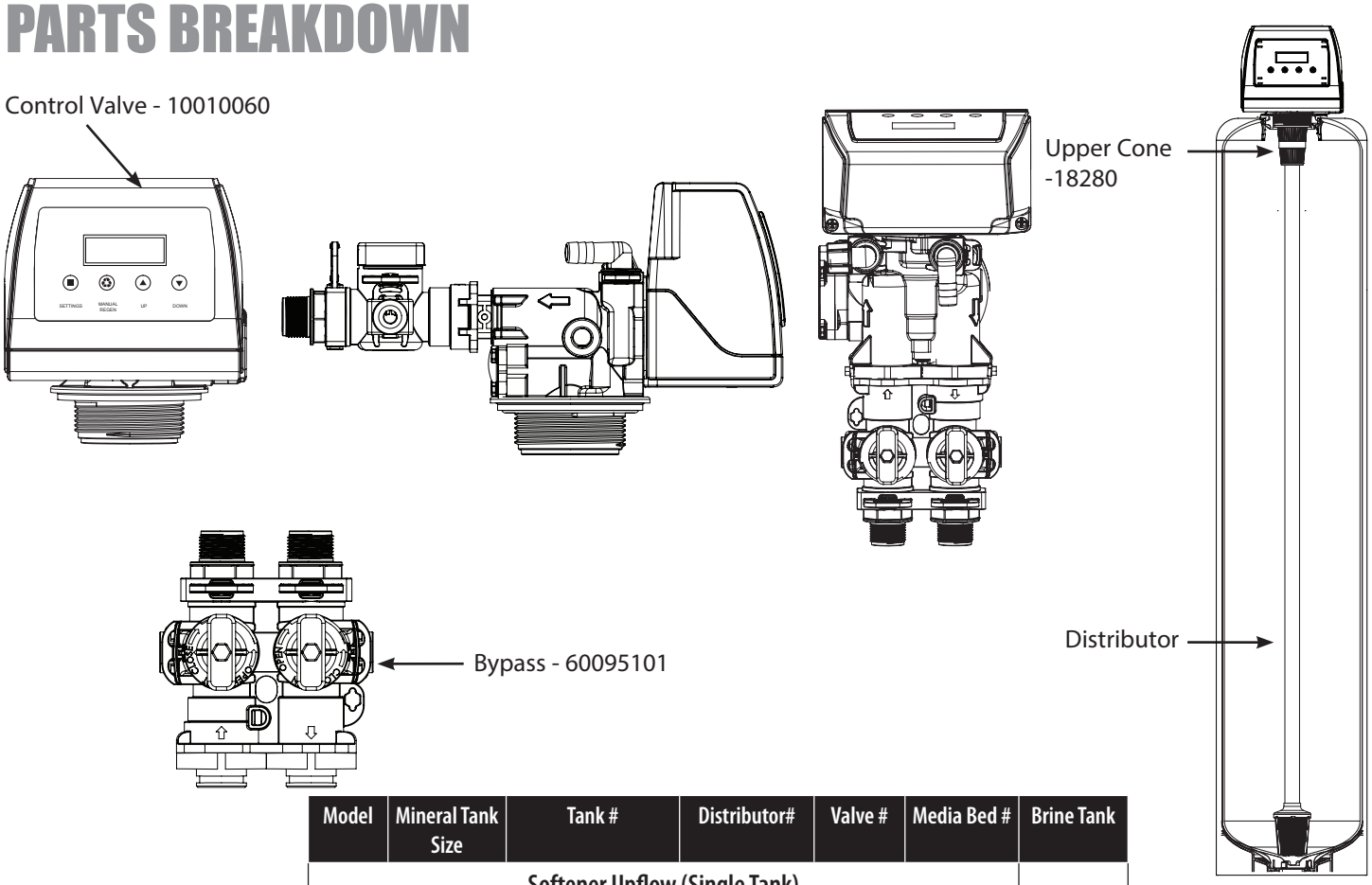
Be sure to shut off any bypass line.

3. Check for leaks at all sealed areas. Check Drain seal with the control in the backwash position

4. Plug electrical cord into outlet

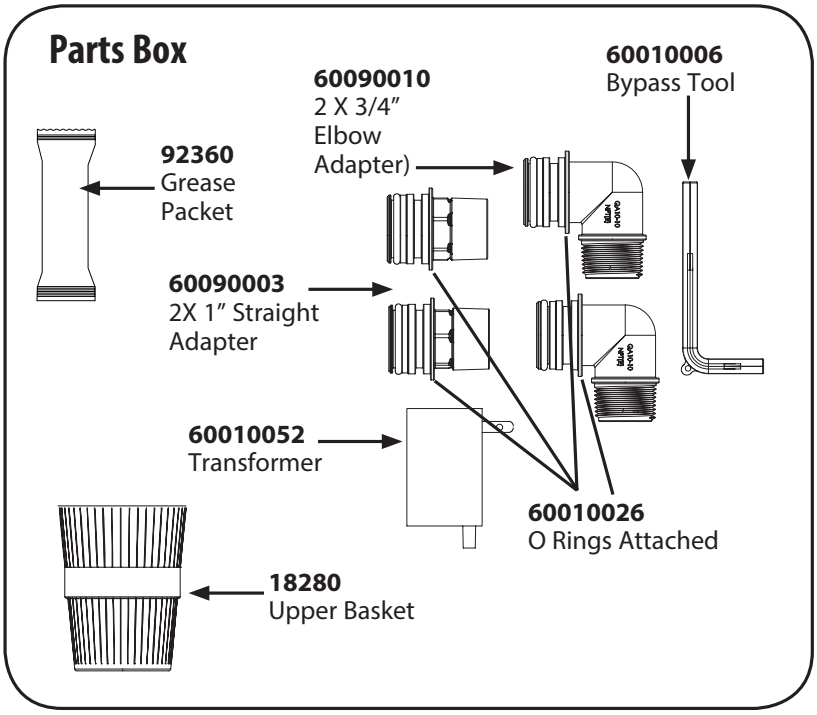
5. Set Time of Day and cycle the control valve manually to assure proper function. Make sure control valve is returned to the In Service position. Unit should always be manually regenerated after servicing. If the unit was not working prior to service then 2 manual regenerations should be done 24 hours apart to restore the full bed capacity.

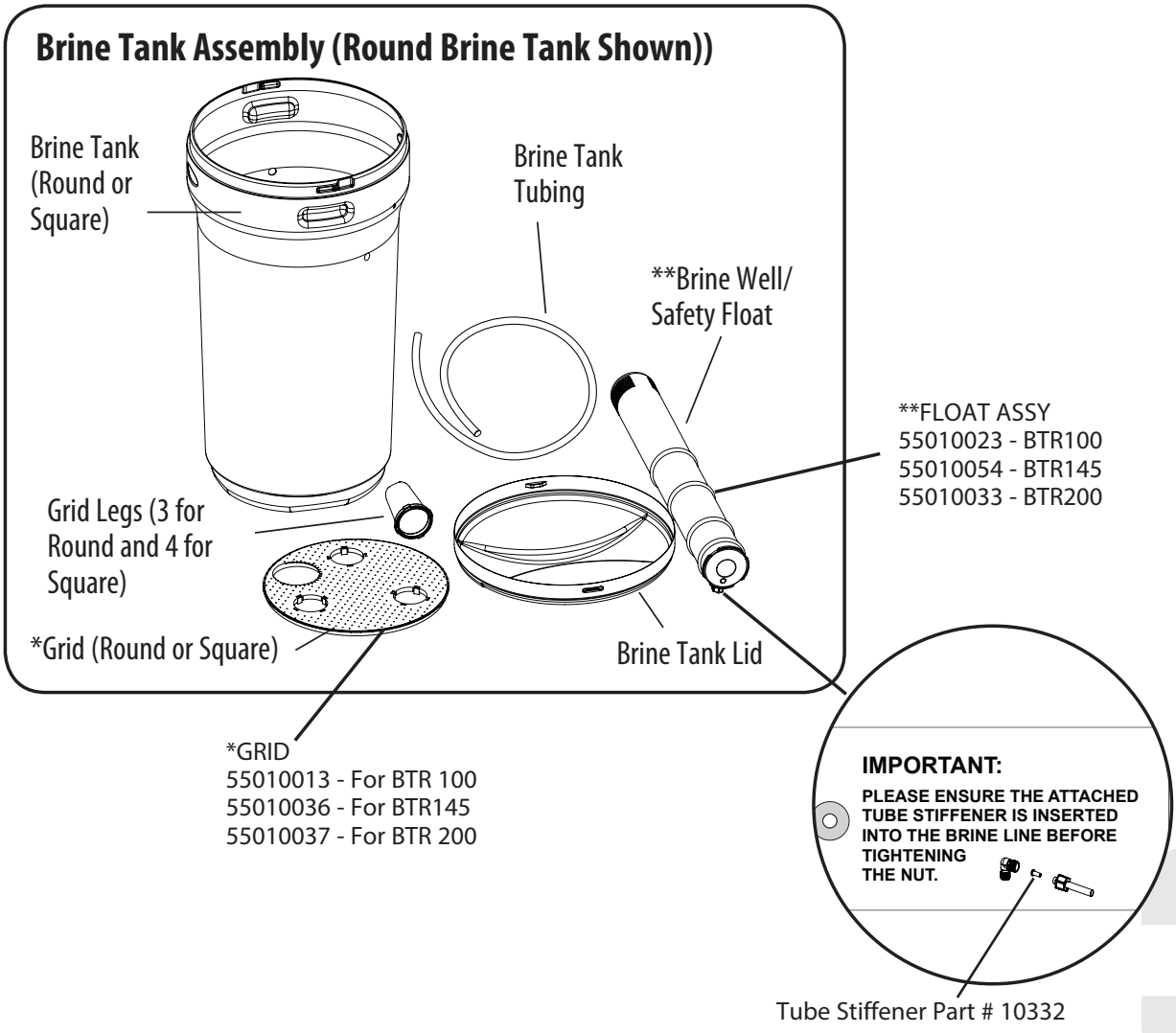
PARTS BREAKDOWN



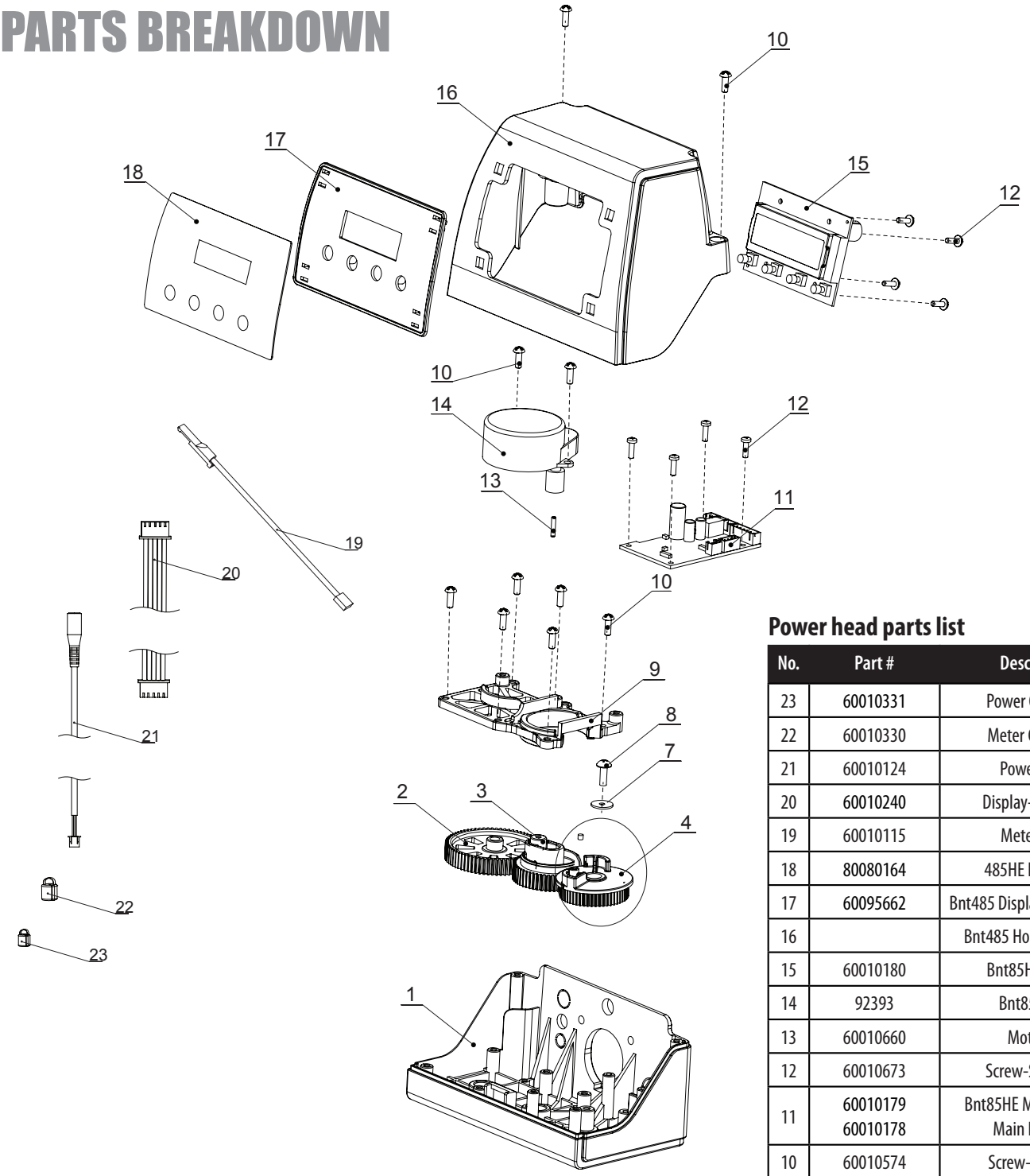
Model	Mineral Tank Size	Tank #	Distributor#	Valve #	Media Bed #	Brine Tank
Softener Upflow (Single Tank)						
75	8 x 44	25020051	50010019	10010060	95600	30020006
100	9 x 48	25020052	50010006		95601	30020006
150	10 x 54	25020053	50010005		95606	30020006
200	12 x 52	25010058	50010005		95609	30020010
250	13 x 54	25010064	50010010		95610	30020010
300	14 x 65	25030001 and 50040039	50010010		95604	30020032
75C	9 x 35	25010028	50010020		95600	N/A
100C	10 x 35	25010043	50010020		95601	N/A

PARTS BREAKDOWN





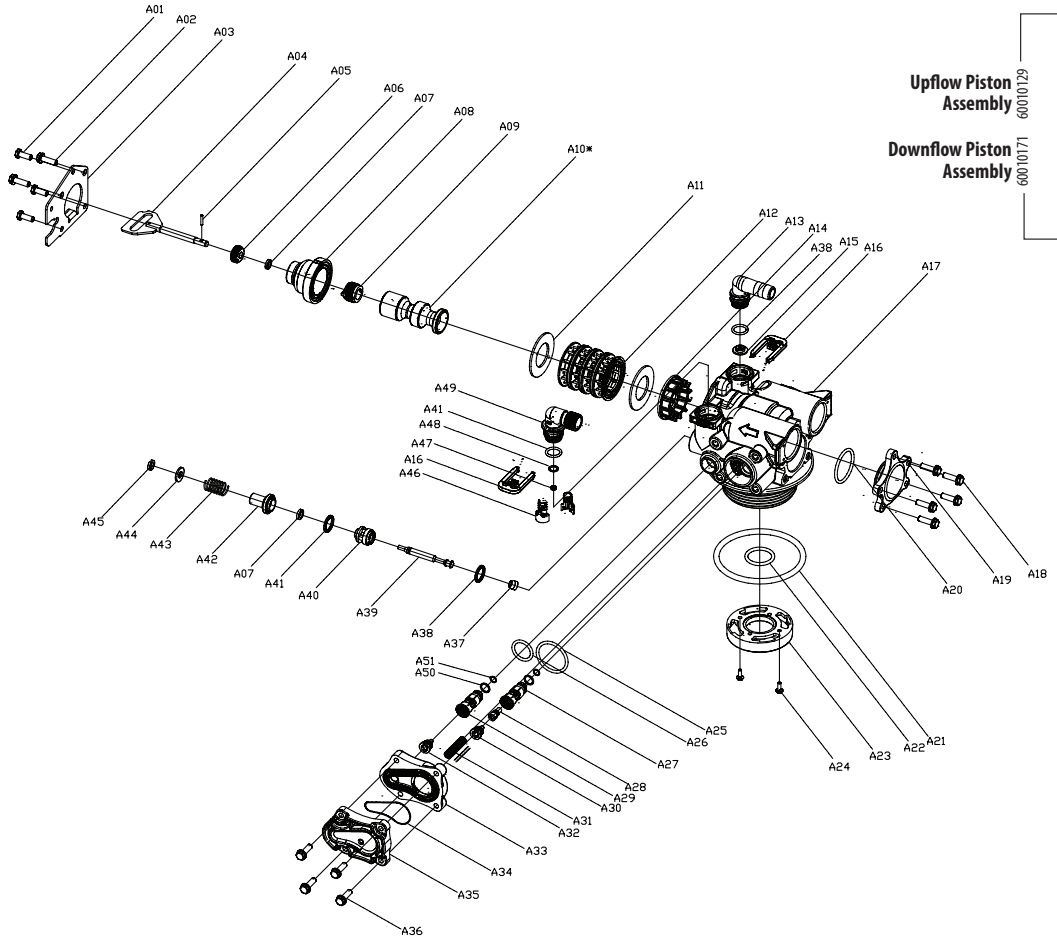
PARTS BREAKDOWN



Power head parts list

No.	Part #	Description	Qty
23	60010331	Power Cable Clip	1
22	60010330	Meter Cable Clip	1
21	60010124	Power Cable	1
20	60010240	Display-PCB cable	1
19	60010115	Meter Cable	1
18	80080164	485HE Face Label	1
17	60095662	Bnt485 Display Plate(White)	1
16		Bnt485 Housing(White)	1
15	60010180	Bnt85HE Display	1
14	92393	Bnt85 Motor	1
13	60010660	Motor Pin	1
12	60010673	Screw-ST2.9×10	8
11	60010179 60010178	Bnt85HE Main Pcb, (DF) Main Pcb, (UF)	1
10	60010574	Screw-ST3.5x13	10
9	60010573	Bnt85HE Mounting Plate	1
8	60010575	Screw-4.2×12	1
7	60010661	Washer-4x12	1
6		Brine Gear(DF)(C/W magnet)	1
5	60010672	Magnet-φ3×2.7	1
4	60095102	Gear, Brine, 85HE(UF)	1
	60095102	Gear, Brine, 85HE(UF)	
3	60095103	Gear, Brine, 85HE(DF)	1
2	92389	Bnt85 Drive Gear	1
1		Bnt485 Base(White)	1
	60010371	Complete Powerhead,485UF	
	60010372	Complete Powerhead,485DF	

PARTS BREAKDOWN



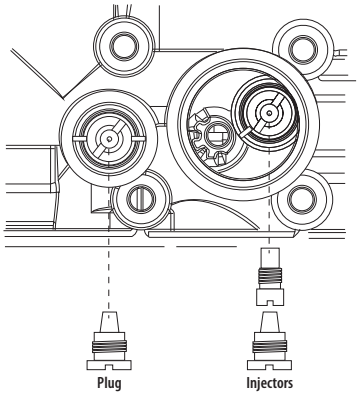
Upflow Piston Assembly 60010129

Downflow Piston Assembly 60010171

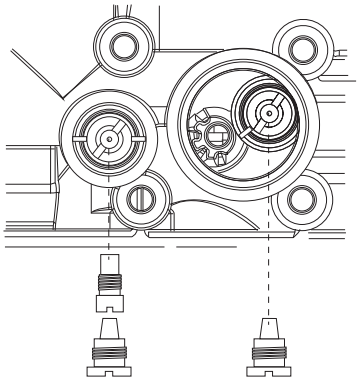
Valve Body Parts List

No.	Part #	Description	Qty
A01	60010075	Screw-M5x12(Hexagon)	3
A02	60010076	Screw-M5x16(Hexagon With Washer)	2
A03	60010645	End Plug Retainer	1
A04	60095056	BNT85HE Rod	1
A05	60010647	Piston Pin	1
A06	60010344	BNT85HE Quad Ring Plug Cover	1
A07		Quad Ring	2
A08		BNT85HE End Plug	1
A09	60095058	BNT85HE Piston Retainer	1
A10	60095075, 60095059	BNT85HE Piston(Up flow and Downflow)	1
A11	13242-02	Seal	5
A12	14241	Spacer	8
A13	60010229	Drain Fitting-B	1
A14	60095060	BNT85HE Spacer	1
A16	60010069	Secure Clip-s	2
A17	60095061	BNT85HE Valve Body	1
A18	60010596	Screw-M5x12(Hexagon With Washer)	5
A19	60095063	BNT85 End Cover	1
A20	60095614	O-Ring-C30×2.65	1
A21	60010077	O-Ring-C78.74×5.33	1
A22	60010080	O-Ring-C25×3.55	1
A23	60010599	Valve Bottom Connector	1
A24	60010099	Screw-ST2.9X13(Large Washer)	2
A25	60010190	O-Ring-C32×3	1
A26	60010189	O-Ring-C18×3	1
A27	60010174	BNT85HE Injector Fixed Sleeve	1
A29	60010175	Injector Plug Body	1
A31	10227	Injector Screen	1
A32	60095076	Injector Plug	1
A33	60010193	BNT85HE Injector Cover Body	1
A34	60010195	O-Ring-C40×2.65	1
A35	60010194	BNT85HE Injector Cover Cap	1
A36	60010196	Screw-M5×25(Hexagon with Washer)	4
A37	92381	Seal Mat	1
A38		O-Ring-C12×2	3
A39		Injector Stem	1
A40		Injector Spacer	1
A41		O-Ring-C12.5×1.8	1
A42		Injector Cap	1
A43		Injector Screen	1
A44		Spacer Washer	1
A45		Retaining Ring	1
A46	60010173	BNT85HE BLFC Fixed Sleeve	2
A47		BLFC(optional)	1
A48	60010188	O-Ring-C8×1	1
A49	60010172	BNT85HE Brine Line Elbow	1
A50	60010186	O-Ring-C12.5×1.5	2
A51	60010187	O-Ring-C8×1.5	2
A52	60010191	Ball, Seal	

Injector Configuration Upflow



Injector Configuration Downflow



Item #s For All Injector Assemblies and Brine Line and Drain Line Washers

Injector Assemblies A28 and A30

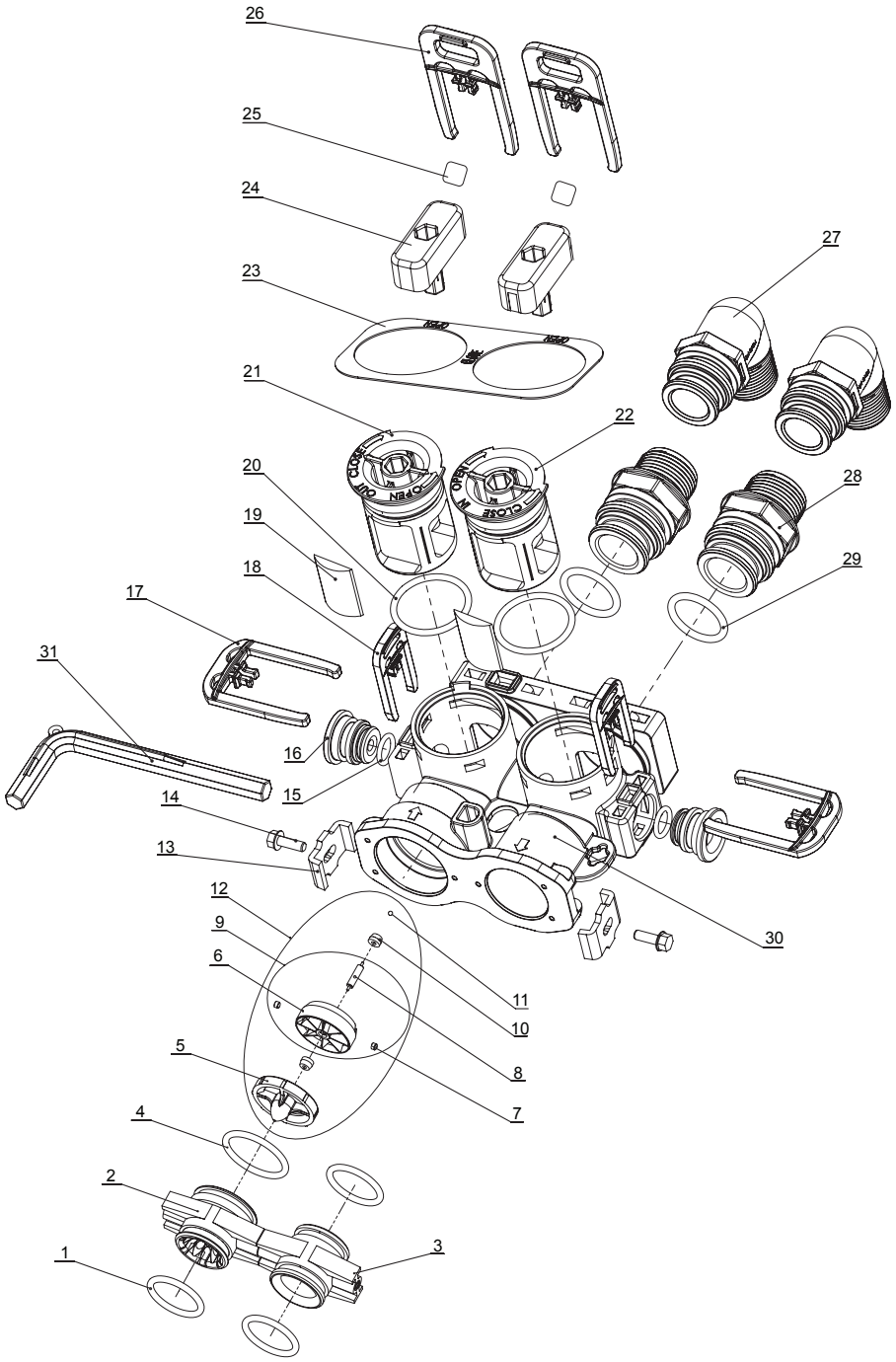
	Part #	Part Description
A47	60010110	BLFC BUTTON #2 0.3GPM A32
	60010082*	BLFC BUTTON #2 0.7GPM A32
	60010128	BLFC BUTTON 0.2GPM
60010127	60010601	INJECTOR SET #0000 BLACK THROAT
	60010602	NOZZLE #0000 BLACK THROAT
60010126	60010603	INJECTOR SET #000 GREY THROAT
	60010604	NOZZLE #000 GREY THROAT
60010035	60010605	INJECTOR SET #00 VIOLET THROAT
	60010606	NOZZLE #00 VIOLET THROAT
60010034	60010607	INJECTOR SET #0 RED THROAT
	60010608	NOZZLE #0 RED THROAT
60010033	60010609*	INJECTOR SET #1 WHITE THROAT
	60010610*	NOZZLE #1 WHITE THROAT
60010032	60010611	INJECTOR SET #2 BLUE THROAT
	60010612	NOZZLE #2 BLUE THROAT

*** Default**

Injector Assemblies A28 and A30

	Part #	Part Description
60010031	60010613	INJECTOR SET #3 YELLOW THROAT
	60010614	NOZZLE #3 YELLOW THROAT
60010686	60010685	INJECTOR SET #4 GREEN THROAT
	60010686	NOZZLE #4 GREEN THROAT
A15	60010131	DLFC #1 1.5GPM
	60010132	DLFC #2 2.0GPM
	60010133	DLFC #3 2.4GPM
	60010135	DLFC #5 3.5GPM
	60010041	DLFC #6 4GPM
	60010169	DLFC #7 5GPM
	60010136	DLFC #A 5.0GPM
	60010137	DLFC #B 7.0GPM
	60010138	DLFC #C 11.0GPM

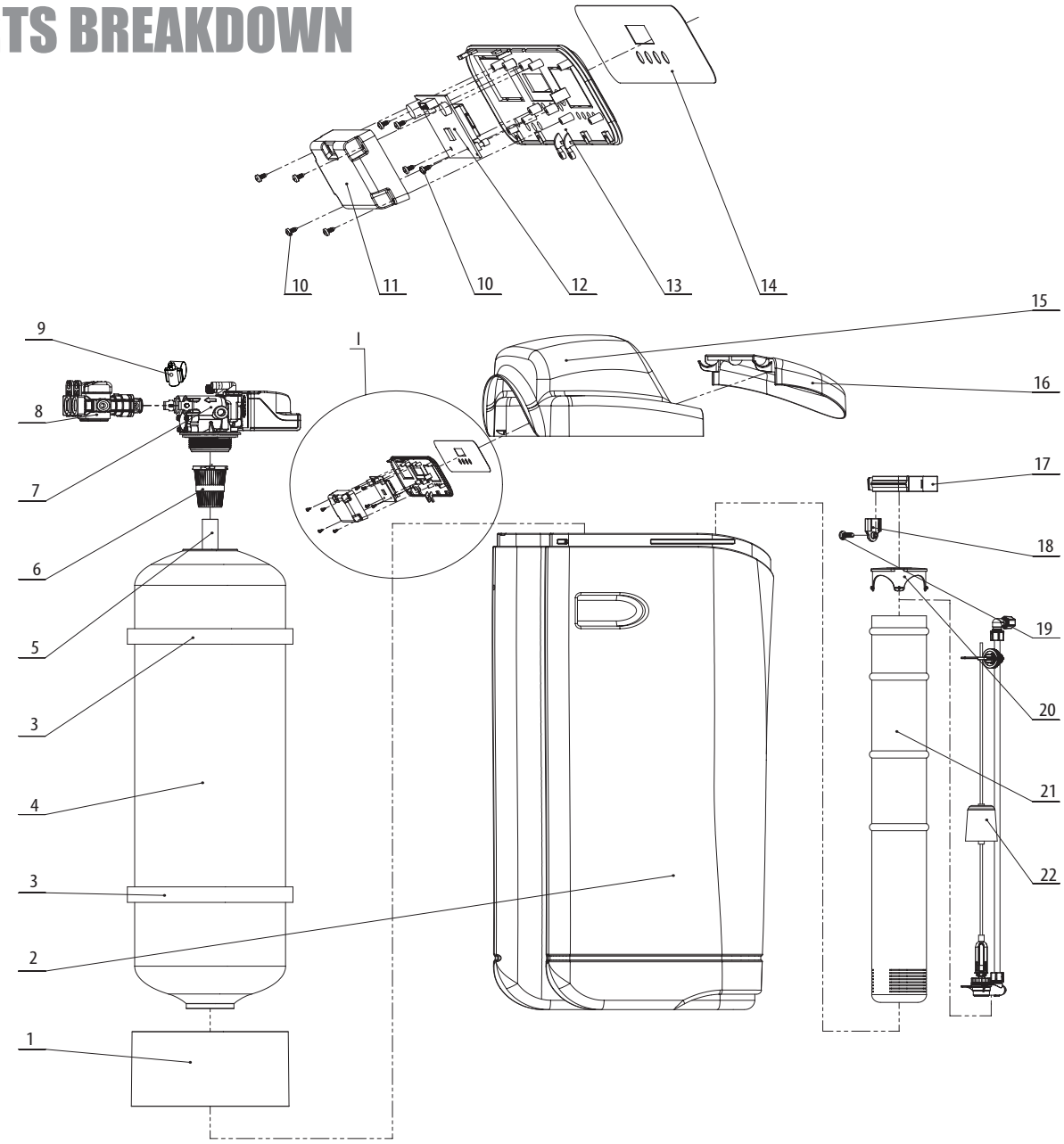
PARTS BREAKDOWN



Bypass Parts List

No.	Part #	Description	Qty
32	60010267	Grey Meter Cable cc	1
31	60010006	Bypass Tool	1
30		063 Bypass Body	1
29	60010026	O-ring on Inlet and Outlet	2
28	60010019	Straight 1" NPT Inlet and Outlet	2
27	60010023	Elbow 3/4" NPT Inlet and Outlet	2
26	60010025	Secure Clip Inlet and Outlet	2
25	60010740	Direction Indication Label	2
24	60010740	Bypass Knob	2
23	60010740	Bypass Indication Plate	1
22	60010740	Bypass Shaft(Inlet)	1
21	60010740	Bypass Shaft(Outlet)	1
20	60095614	O-ring(30×2.65)	2
19	60010740	Shaft Seal	2
18	60010069	Plug Clip(Red)	2
17	60010740	Shaft Clip(Red)	2
16	60010209	Bypass Plug	2
15	60010044	O-ring(12×2)	2
14	60010126	Screw M4×12	2
13	60010046	SS Clip	2
12	*60010308 * Manufactured date After March 20th 2018 60010238 for before March 20th 2018	Meter Spare Parts	1
11		Bush Ball	1
10		Bush	2
9		Meter Assy	1
8		Impeller Pin	1
7		Magnet	2
6		Impeller	1
5		Impeller Support	1
4	60010102	O-ring(27×3)	1
3	60010079	Valve-Bypass Connector(Inlet)	1
2	60010101	Valve-Bypass Connector(Outlet)	1
1	60010562	O-ring(23×3)	3

PARTS BREAKDOWN



Cabinet Parts List

No.	Part #	Description	Qty
22	55010023	0435 Brine Valve Assembly	1
21	55010010	0435 Brine Well	1
20	55020002	4" Brine Well Cap	1
19		Plastic Screw M8×20	1
18		Hoop Clinch	1
17	60010362	4" Brine Well Clamp	1
16	85010132	Salt Lid(CS5)	1
15		High Cover(CS5)	1
14	80080015	Control Plate Label	1
13	80080021	Control Plate(CS5)	1
12	60010180	85HE Display Board	1
11		Transparent Back Cover	1

No.	Part #	Description	Qty
10		Screw 2.9×6.5	10
9	302171	Drain Line Clamp	1
8	60095097-1	Canature Bypass Valve C/W Meter	1
7	10010061	Control Valve Assembly(CS5)	1
6	18280	Top Cone	1
5	50010020	D-Tube(35")	1
4	25020019 935	Pressure Tank 0935(Without base)	1
	25020020 1035	Pressure Tank 1035(Without base)	
3		Pressure Tank Protection 9"	2
		Pressure Tank Protection 10"	
2	25020019	TANK ASSY CS5H-1035	1
	25020020	TANK ASSY CS5H-1035	
1	50010011	9" Tank Base	1
	50010013	10" Tank Base	

TROUBLE SHOOTING GUIDE

NOTE

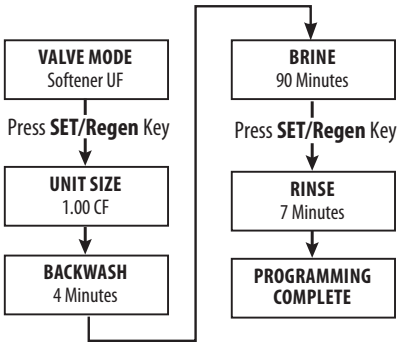
Before doing any service, record the diagnostic information provided by the controller. See page 21

Problem	Possible Solutions
1. CONDITIONER 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 tank fill time and clean brine line flow tank control if plugged
E. Hot water tank hardness	E. Make sure distributor tube is not cracked. Check O ring and tube pilot
F. Leak at distributor tube	F. Make sure distributor tube is not cracked. Check O ring and tube pilot
G. Internal valve leak	G. Replace seals and spacers and/or piston
H. Flow meter jammed	H. Remove obstruction from flow meter
I. Flow meter cable disconnected or not plugged into meter	I. Check meter cable connection to timer and meter
J. Improper programming	J. Reprogram the control to the proper regeneration type, inlet water hardness, capacity or flow meter size.
2. CONDITIONER 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 circuit with display
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 1 - C
C. Improper programming	C. Check programming and reset as needed
4. LOSS OF WATER PRESSURE	
A. Iron build-up in line to water conditioner	A. Clean line to water conditioner
B. Iron build-up in water conditioner	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 control valve from unit, remove upper cone and clean cone
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
C. Dirty resin	C. if cleaning resin does not resolve then replacement of resin is required.
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 circuit c/w display
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. Water pressure must be above 20 psi
F. Improper programming	F. Check programming and reset as needed
9. CONDITIONER 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 circuit c/w display
10. CONTROL CYCLES CONTINUOUSLY	
A. Timer not operating properly	A. Contact customer support for additional trouble shooting information
B. Faulty cycle times	B. Contact customer support for re programming instructions.
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 brine or backwash 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

MASTER PROGRAMMING

Press **Up** and **Down** Button for 5 seconds

Press **MANUAL REGEN** Button and and change value using **Up** and **Down** Buttons

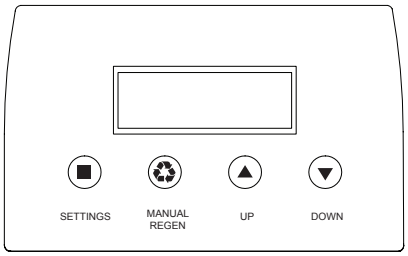


Key Pad Setting

SETTINGS This function is to enter the basic set up information required at the time of installation.

MANUAL REGEN This function is to initiate an immediate or delayed manual regeneration.

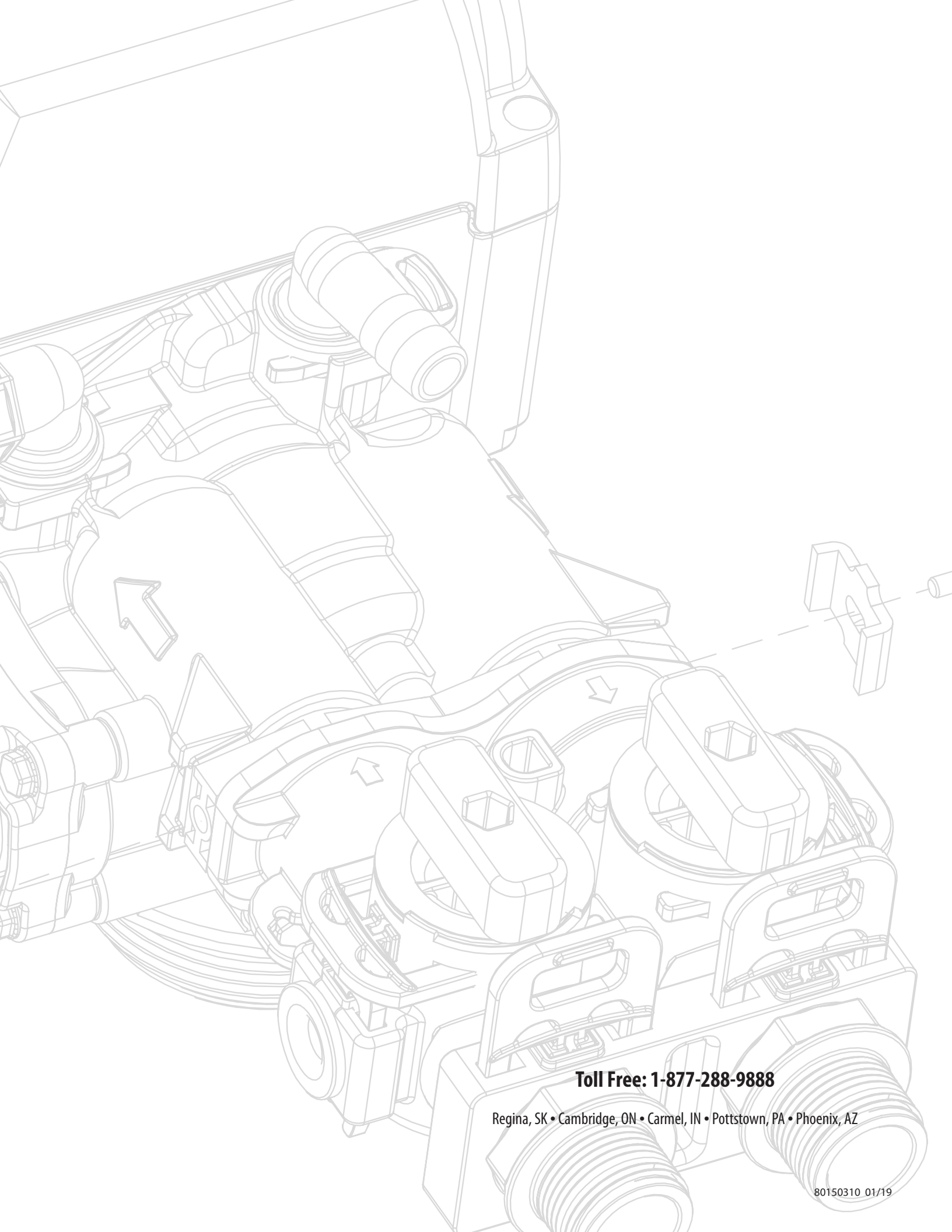
DOWN / UP Increase or decrease the value of the settings while in the programming mode.



Main Valve Settings	
Meter Ratio	METER RATIO AFTER MAR 20,2018 - 5.68 METER RATIO BEFORE MAR 20,2018 - 8.00
Service Delay	3.0
Backwash Delay	7.0
Brine Delay	4.0
Rinse Delay	5.0
Refill Delay	4.0

85HE UPFLOW SOFTENER -Programming									10/29/2018
MASTER SETTINGS	**PRESS & HOLD**	♻ ▲ ▼							
MASTER SETTINGS	**HE-75C**	**HE-100C**	**HE-75**	**HE-100**	**HE-125**	**HE--50**	**HE-200**	**HE-250**	**HE-300**
VALVE TYPE	UPFLOW	UPFLOW	UPFLOW	UPFLOW	UPFLOW	UPFLOW	UPFLOW	UPFLOW	UPFLOW
SOFTWARE VER.	Default	Default	Default	Default	Default	Default	Default	Default	Default
METER RATIO AFTER MAR 20,2018	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
METER RATIO BEFORE MAR 20,2018	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Service Delay	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Backwash Delay	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Brine Delay	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Rinse Delay	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Refill Delay	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
FACTORY SETTINGS	**PRESS & HOLD**	■ ♻							
LANGUAGE = ENGLISH UNITS = GALLONS HIGH EFFICIENCY = 3 LBS HIGH EFFICIENCY = 5000 GRAINS STD CAPACITY = 6 LBS STD CAPACITY = 4100 GRAINS IRON & MN = 12 LBS HIGH CAPACITY = 2500 GRAINS REFILL = 0.2 GPM BRINE MAKE TIME = 30 MIN	NO CHANGE REQUIRED								
BRINE PREFILL %	70%	70%	70%	70%	70%	70%	70%	70%	70%
DAILY RESERVE	75 GAL	75 GAL	75 GAL	75 GAL	75 GAL	75 GAL	75 GAL	75 GAL	75 GAL
BW OVERIDE	10	10	10	10	10	10	10	10	10
FORCED REGEN	ON	ON	ON	ON	ON	ON	ON	ON	ON
VACATION MODE	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SETTINGS	PRESS & HOLD	■							
TIME OF DAY YEAR MONTH DAY	NO CHANGE REQUIRED								
SET HARDNESS	25	25	25	25	25	25	25	25	25
SET PEOPLE									
SALT SETTING	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD
WATER TYPE	WELL / OTHER	WELL / OTHER	WELL / OTHER	WELL / OTHER	WELL / OTHER	WELL / OTHER	WELL / OTHER	WELL / OTHER	WELL / OTHER
REGEN TIME	2:00 AM	2:00 AM	2:00 AM	2:00 AM	2:00 AM	2:00 AM	2:00 AM	2:00 AM	2:00 AM
ADVANCED SETTINGS	**PRESS & HOLD**	▲ ▼							
VALVE MODE	SOFTENER UF	SOFTENER UF	SOFTENER UF	SOFTENER UF	SOFTENER UF	SOFTENER UF	SOFTENER UF	SOFTENER UF	SOFTENER UF
UNIT SIZE	0.75 ft3	1.0 ft3	0.75 ft3	1.0 ft3	1.25 ft3	1.5 ft3	2.0 ft3	2.5 ft4	3.0 ft4
SALT SETTING	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD
BACKWASH BRINE RINSE	PRESS MANUAL REGEN BUTTON TO "PROGRAMING COMPLETE" AND ONCE MORE TO LOCK								
LOCK VALVE	LOCK	LOCK	LOCK	LOCK	LOCK	LOCK	LOCK	LOCK	LOCK
VALVE SETUP									
Injector	#0000 BLACK	#0000 BLACK	#0000 BLACK	#0000 BLACK	#0000 BLACK	#0000 BLACK	#00 PURPLE	#00 PURPLE	#1 WHITE
BLFC Washer	0.2 GPM	0.2 GPM	0.2 GPM	0.2 GPM	0.2 GPM	0.2 GPM	0.2 GPM	0.2 GPM	0.2 GPM
DLFC Washer	#2 2.0 GPM	#3 2.4 GPM	#1 1.5 GPM	#2 2.0 GPM	#3 2.4 GPM	#3 2.4 GPM	#5 3.5 GPM	#5 3.5 GPM	#A 5.0 GPM
TANK SIZE	9X35	10X35	8X44	9X48	10x47	10X54	12X52	13x54	14X65

UPFLOW MODELS: C/W UPPER CONE



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