KENT
Water Purifiers

Marketed by:
KENT RO SYSTEMS LTD.
E-6, Sector-59, Noida, U.P.-201 309, India.
E-mail: sales@kent.co.in I Website: www.kent.co.in

Made in India

High Capacity 100 L

CELEBRATING 25 YEARS OF TRUST

KENT
Water Purifiers

KENT Automatic Water Softener 100 L

Instruction Handbook for Installation, Operation and Maintenance.

Automatic Regeneration
WATER SOFTENER

Welcome to KENT

Dear Customer

Welcome to the world of KENT, leaders of water purification industry in India. With a KENT's product you have all reasons to smile, since at KENT, we take pride in the quality and laboratory-tested performance of our products.

We are confident that your decision to own KENT Automatic Water Softener 100 L will go a long way in serving you with soft water. We assure you that you will be satisfied with its performance and quality which comes without any compromise.

This manual will familiarizie you with the operation of KENT Automatic Water Softener 100 L. Before operating the unit, please read it thoroughly and retain it for future reference. To ensure that the warranty of your water softener is effective, it is important that you fill up the enclosed warranty card and mail us the installation report within 15 days of purchase. Should you need further assistance, do not hesitate to contact your nearest KENT dealer or branch.

Best Wishes

KENT RO SYSTEMS LTD.

Contents

Introduction

Presenting the all-new High Capacity KENT Automatic Water Softener 100 L, to liberate you from the problems of hard water and provide your family with soft water. Automatic Water Softener 100 L lathers up your bathing experience and maintains the texture of your skin and hair. With Automatic Water Softener 100 L, deposits on your sinks, tubs, showers, and stains on your clothing are problems of the past.

The microprocessor controlled compact KENT Automatic Water Softener 100 L regenerates automatically, thus liberating you from the tedious and time consuming manual regeneration process. It's time to bid good bye to hard water and welcome a continuous supply of soft water, 24 hours a day, 7 days a week.

The quality of water in our environment is getting worse every passing day, leading to an ever increase in water hardness. This causes problems in pipes and effects the proper functioning of appliances using water, by increasing the maintenance and reducing their service life. The KENT Automatic Water Softener 100 L would provide you and your family with advantages outlined below.

Salient Features of KENT Automatic Water Softener 100 L

- Enhances the quality of water by replacing hard salts of Magnesium & Calcium with Sodium.
- 24 hours control and monitoring with a timer; automatically regenerate the medial bed at the system's set time of regeneration according to the set generation frequency.
- Fully automatic microprocessor controlled time based regeneration process regenerates at a fixed time.
- High capacity operation as regeneration can be done any number of times.
- High quality resin for long life and efficient ion-exchange process.
- Maintenance-free, long-life valve.
- Cost saving as it reduces the consumption of soap, fabric softeners, and other chemical products.
- Increases the service life of electrical appliances and heaters

Items in the box

Please verify the following items in the packaged box:

1.	FRP Tank	1 N
2.	Brine Tank	1 N
3.	Control Valve	1 N
4.	Resin	4 N
5.	Instruction Manual	1 N

What is Water hardness?

Hardness is the quality of scaling salts present in the water, which are mainly composed of low solubility salts of Calcium and Magnesium. These salts due to its chemicals properties, have a tendency to precipitate, producing scale on pipes and obstructing them as they accumulate in this way the hardness has a higher tendency to scale on electrical resistors and to precipitate into heaters when temperature increases.

How does the System Works

Water softener is carried out by the means of ion exchange process. In this process, the system uses resins with a chemical capacity to capture calcium Ca and Magnesium Mg ions and remove them from water.

When Calcium and Magnesium ions are captured by the resin, two sodium Na ions are released, which due to its chemical properties produces salts with the higher solubility avoiding all the hardness related problems.

Regeneration of the System

The quantity of Calcium and Magnesium ions that the resin may retain is limited, therefore, the water volume that can be treated by softener is limited as well. The system must periodically carryout a process known as regeneration, which allows the resin top recharge with sodium ions, so it can continue to soften water.

In KENT Automatic Water Softener 100 L, the regeneration process starts automatically.

Important Instructions

- Without reading and truly understanding the contents of this user manual, please do not perform any operation on the control value.
- Strictly prohibit leaning position when shipping, installing and using this product, otherwise it would be damaged inside.
- Initiate a regenerate cycle after being inactivated in a long period of time, and then turn on the tap for serval minutes before resuming normal use.
- Do not disconnect power during service time to keep the timer run normal that controls the regeneration function.
- If water usage or hardness of the raw water dramatically increases (comparing to the normal usage), the frequency of regeneration should correspondingly increase.
- Hot water can cause severe damage to the softener system. For boiler water and water heaters user, ensure a total run of the piping between the softener and the boiler is not less than 3 meters. It is recommended to install a check valve between the filters and the boiler if unable to meet the required piping length.
- The input water pressure must be between 20 to 150 psi, no negative water pressure is allowed.
- No chemical allowed at the inlet and outlet connections sectors. No excessive force which can damage the plastic conjunction parts should be applied by any tools.
- The required operating temperature for softener is 40°C.
- Please set up a waterspour on the floor nearby the softener in case of any leakage accident.
- Avoid installation under direct sunlight. Exposure to excessive sun heat may cause distortion or other damages to non-metallic parts.
- Do not subject the water softener to freezing temperatures.
- Please select regeneration salt pill as regenerant.

Softening Process

- Hard Water containing high concentrations of dissolved Magnesium and Calcium enters the softener through the 'IN' port. It passes through the control valve into the tank, where it flows down through a specially prepared ion-exchange resin that 'softens' it.
- The resin consists of specially manufactured beads that have been saturated with sodium ions. The process of 'Softening' occurs as the ions of hardness minerals Calcium and Magnesium are attracted to the charged resin beads. They swap their places with Sodium ions resulting in Soft Water.
- Soft Water then enters the strainer basket, located at the bottom of tank and passes upward through a long central tube, known as the Riser. Water exits the softener via the control valve and is then ready to use.
- Eventually when the beads of resin become saturated with hard minerals, the softener automatically starts regenerating. The regeneration process initiated by the timer, washes down the hard minerals to drain via a drain tube. By the time regeneration is over; the resin bed is rinsed, resettled and recharged with Sodium ions. KENT Automatic Water Softener 100 L is set to soften your water again.

Installation Location

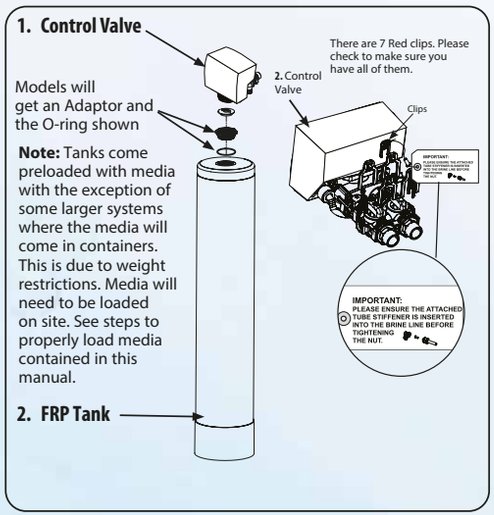
- To condition the complete water supply at home, install the water softener close to main water supply inlet. Outdoor faucets should remain on hard water to avoid wastage of conditioned water and salts.
- A nearby drain is required to carry away regeneration discharge (drain) water. Use a floor drain, laundry tub, sump, standpipe or any other options.
- Any other conditioning equipment should not be installed between the water softener and main water supply inlet.
- The location chosen for the installation must have enough space for the system itself, its accessories, and connections and to carry out a proper maintenance.
- The system should not be installed next to heat source or where it receives a direct flow of hot air.
- Avoid external dips from pipes, drains, etc onto the system
- Should the softened water be supplied to a hot water it would be necessary to install a dependable check valve between water softener and the supply in order to prevent hot returning to the system and damaging it.

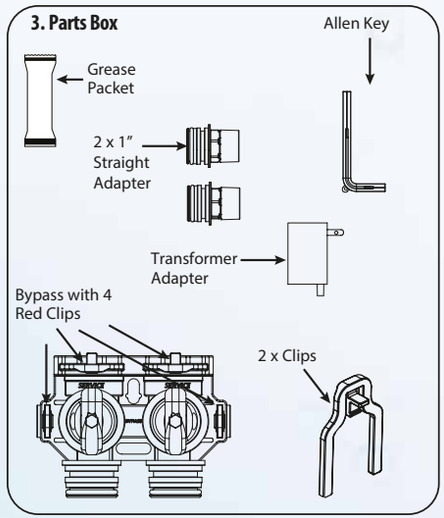
Unpacking

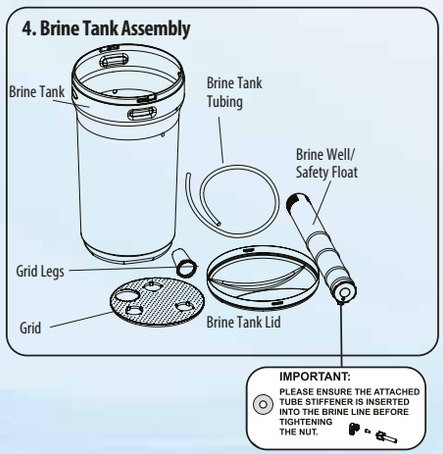
To install the softener many parts are provided in the packaging.

Included in the box:

1. FRP Tank
2. Control Valve
3. Brine Tank Assembly
4. Resin
5. Small Parts
6. User Manual



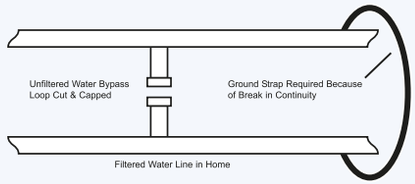




Before Installation

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

Fig. 1.



WARNING

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 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 Figure 1.

Mechanical

Do NOT use petroleum-based lubricants such as petroleum jelly, oils or hydrocarbon-based lubricants. Use only 100% silicone lubricants provided in parts kit. All plastic connections should be hand tightened only. Thread tape may be used on connections that do not use an O-ring seal.

Do NOT use pliers or pipe wrenches except when indicated by nut shape, e.g., pipe adapters. Soldering connections should be done before connecting any plastic pieces to the pipe as excessive heat can damage them.

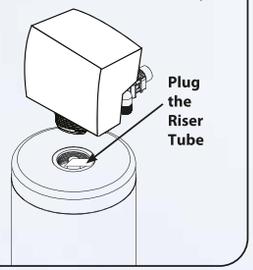
Softener resins will degrade in the presence of chlorine or chloramines above one (1) ppm. If you have anything in excess of this amount, you will experience reduced life of the resin. Pre-carbon - filtration may be required ahead of the water softener to reduce chlorine/chloramine levels.

Preparations

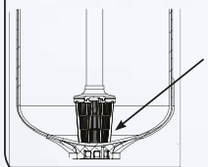
Media Installation (When Necessary)

Follow the steps below for proper media loading.

1. Temporarily plug the open end at the top of the riser (distribution) tube with tape.



2. Ensure the bottom of the riser tube remains seated in the depression at the bottom of the tank. Fill tank one-quarter full with water to protect the distribution tube during gravel installation.

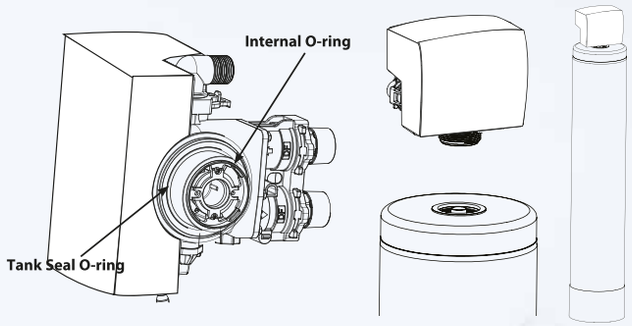


NOTE

If 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.

Preparations (Continued)

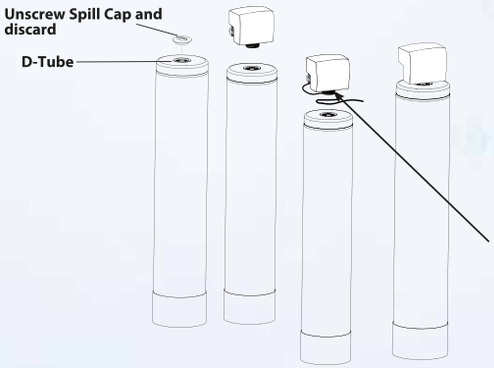
4. Apply the supplied lubricant to the internal O-ring at the bottom of the control valve.
Apply lubricant to the larger O-ring on the bottom of the valve that seals with the tank threads.



NOTICE

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

5. Remove the tape from the top of the riser tube. Carefully position the valve over the riser tube, inserting riser into the internal O-ring.
Turn the valve clockwise into the threads of the tank until secure.



NOTICE

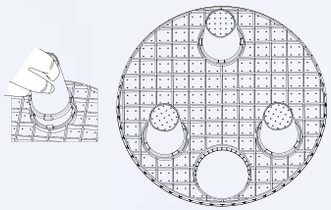
Make sure the quick connect power cord is not yet connected to prevent the cord getting caught between the threads of the tank and the valve.

Preparations (Continued)

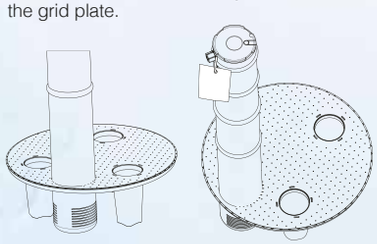
Brine Tank Assembly

To assemble the brine tank, (some tanks may be square) follow these steps:

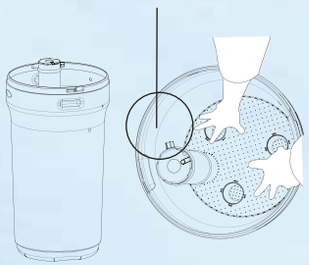
1. Attach the three brine grid legs to grid plate. The legs will snap on to the tabs of the salt plate making a “clicking” sound. Please note, some models will have extensions that are intended to be used as well.



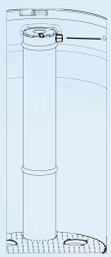
2. Insert the brine well assembly inside and below the grid plate.



3. Place the brine grid with the 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 and the brine well, as an assembly, touch the bottom of the brine tank.

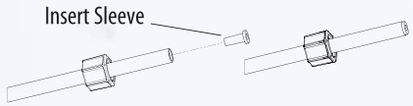


The hole in the brine tank should line up with the brine line as shown

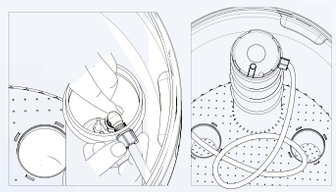


IMPORTANT: IT IS IMPORTANT TO ALIGN THE HANDLE TO THE BRINE TANK AS SHOWN.

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



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



6. 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 below.

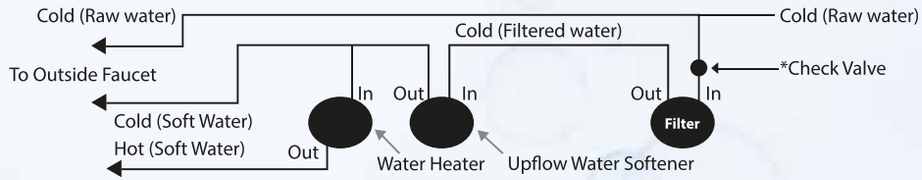
Planning Your Installation

Water Softener Installation Layout

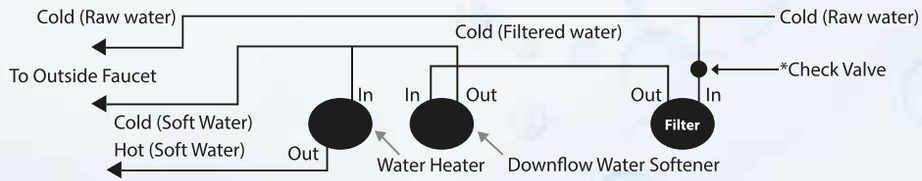
Select the location for your softener tank with care.
Various conditions that contribute to proper location include:

1. Outside taps used to water lawns and gardens should be isolated from the water line required to supply untreated water to the inlet of the water softener – a separate (new) line may be needed.
2. Locate softener as close as possible to the water supply source.
3. Locate softener as close as possible to a floor or laundry tub drain and a 120 volt AC electrical outlet.
4. Softeners should be located before the water heater on the supply line. If closer than three (3) metres [10 feet]
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. Freezing could also result in flooding and / or property loss and damage.
6. Allow sufficient space around the unit for easy servicing.
7. Keep the softener out of direct sunlight.

Upflow Water Softener Installation



Downflow Water Softener Installation

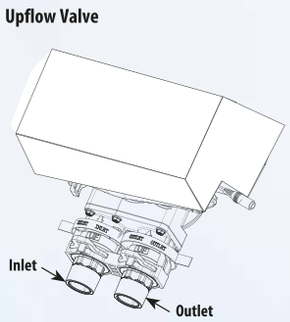


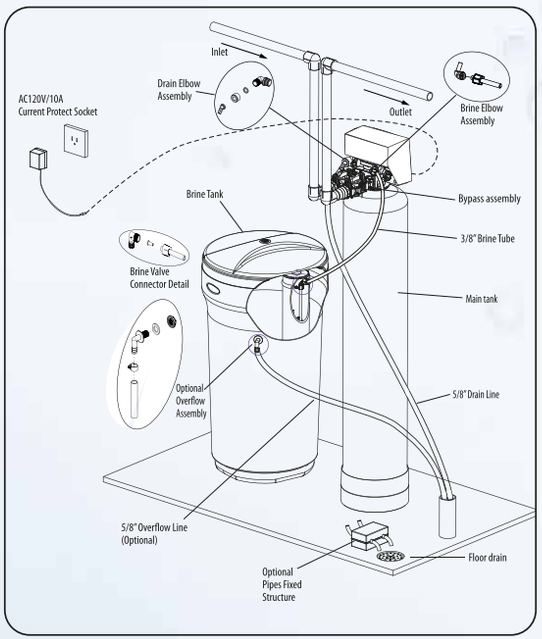
***NOTE**

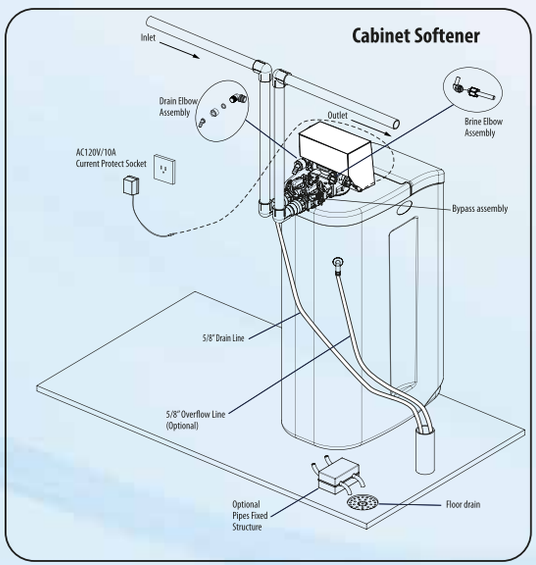
Check local plumbing codes requirements for use of check valve(s), back-flow prevention, or vacuum breakers. Canature is not liable for any

Planning Your Installation (Continued)

Water Softener Installation Upflow







Installation Steps

To Begin Your Installation:

1. Make sure the bypass is attached securely to the control valve.
2. Apply thread tape to threaded connections straight or elbow plumbing adaptors
3. Apply the supplied lubricant to the O-rings of the fittings.
4. Connect the supplied straight or elbow plumbing adaptors to the bypass with red clips.
5. Connect the inlet and outlet of the water softener to the plumbing of the house.

NOTICE

Any solder joints near the valve must be done before connecting any piping to the valve. Failure to do this could cause damage to the valve.

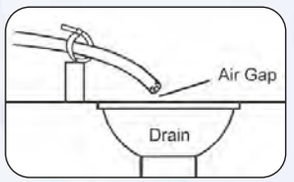
NOTICE

Do NOT use pipe thread compound as it may attack the material in the valve body.

NOTICE

Failure to leave enough distance could cause damage to the valve. Always leave at least 6" [152 mm] between the valve and joints when soldering pipes that are connected to the valve.

6. For the drain line connection; attach a 1/2" [12.7 mm] Inside Diameter (ID), 5/8" [15.875 mm] Outside Diameter (OD) drain hose to the drain line fitting.
   a. Run the drain line to a floor or laundry drain.
   b. Complete any necessary plumbing to maintain a proper air gap.

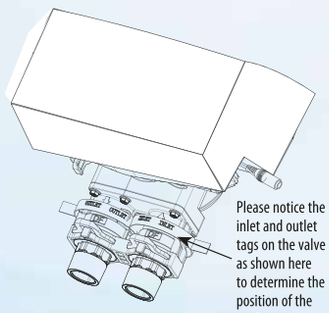


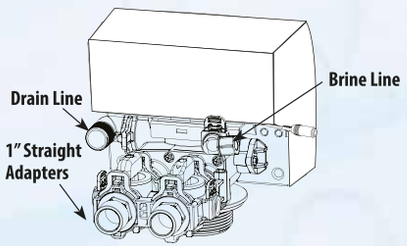
NOTE

The 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" [25.4 mm] whichever is larger.

CAUTION

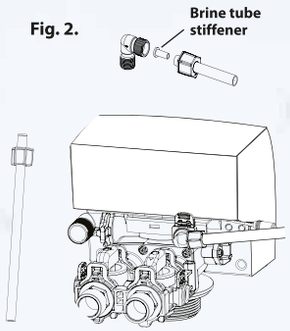
Never insert drain line directly into a drain, sewer line, or trap. Always allow an air-gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into the softener.





7. Attach the brine line from brine tank to brine line fitting on control valve. install the tube stiffener into the end of the brine line before attaching it to the brine line fitting on the control valve See Fig. 2.

Fig. 2.



8. Using the included Allen key, place the unit in the bypass position.
   a. Slowly turn the main water supply ON.
   b. At the nearest cold treated water tap, remove the tap screen, OPEN the tap and let water run a few minutes or until the system is free of any air or foreign material resulting from the plumbing work.

Manual Water Bypass

In case of an emergency, or to perform softener maintenance, you can isolate your water softener from the water supply using the bypass valve located at the back of the control.

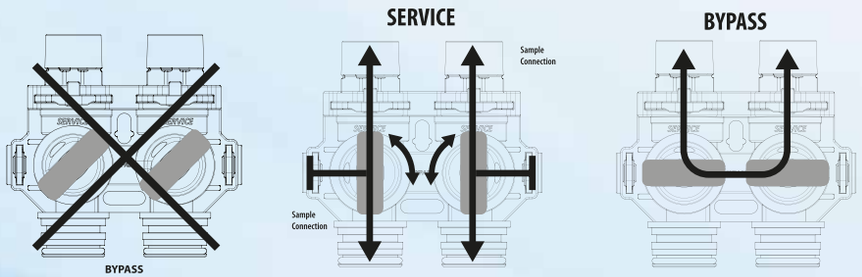
In normal operation the bypass is OPEN with the ON/OFF knobs in line with the INLET and OUTLET pipes, i.e., the black marks in the vertical position. See SERVICE below.

NOTE

If the tap has a screen, it should be removed to allow debris to flush out of the plumbing.

To isolate the softener, simply rotate the knobs as indicated to the CLOSE position until they lock. You can continue to use your water related fixtures as the water supply is bypassing the softener. However, the water you use will be untreated.

To resume treated service, OPEN the bypass valve by rotating the knobs back to the SERVICE position.



NOTE

Please make sure bypass knobs are completely open otherwise the untreated water may enter through the valve.

9. Make sure there are no leaks in the plumbing system before proceeding. Shut the water tap OFF when the water runs clean.

Troubleshooting Guide

PROBLEM	POSSIBLE SOLUTIONS
1. CONDITIONER DELIVERS HARD WATER	
A. Bypass valve is open B. No salt in brine tank C. Injector or screen plugged D. Insufficient water flowing into brine tank E. Hot water tank hardness F. Leak at distributor tube G. Internal valve leak H. Flow meter jammed I. Flow meter cable disconnected or not plugged into meter cap J. Improper programming	A. Close bypass valve B. Add salt to brine tank and maintain salt level above water level C. Replace injectors and screen D. Check brine tank fill time and clean brine line flow tank control if plugged E. Make sure distributor tube is not cracked. Check O ring and tube pilot F. Make sure distributor tube is not cracked. Check O ring and tube pilot G. Replace seals and spacers and/or piston H. Remove obstruction from flow meter I. Check meter cable connection to timer and meter cap 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 B. Timer is not operating properly C. Defective valve drive motor D. Improper programming	A. Assure permanent electrical service (check fuse, plug, chain or switch) B. Replace timer C. Replace drive motor D. Check programming and reset as needed
3. UNIT USES TOO MUCH SALT	
A. Improper salt setting B. Excessive water in brine tank C. Improper programming	A. Check salt usage and salt setting B. See #7 C. Check programming and reset as needed
4. LOSS OF WATER PRESSURE	
A. Iron build-up in line to water 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.	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
5. LOSS OF RESIN THROUGH DRAIN LINE	
A. Air in water system B. Drain line flow control is too large	A. Assure that well system has proper air eliminator control. Check for dry well condition. B. Ensure drain line flow control is sized
6. IRON IN CONDITIONED WATER	
A. Fouled resin bed B. Iron content exceeds recommended parameters	A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time. B. Add iron removal filter system
7. EXCESSIVE WATER IN BRINE TANK	
A. Plugged drain line flow control B. Brine valve failure C. Improper programming	A. Clean flow control B. Replace brine valve C. Check programming and reset as needed

Troubleshooting Guide (Continued)

PROBLEM	POSSIBLE SOLUTIONS
8. SALT WATER IN SERVICE LINE	
A. Plugged injector system B. Timer not operating properly C. Foreign material in brine valve D. Foreign material in brine line flow control E. Low water pressure F. Improper programming	A. Clean injector and replace screen B. Replace timer C. Clean or replace brine valve D. Clean brine line flow control E. Raise water pressure F. Check programming and reset as needed
9. CONDITIONER FAILS TO DRAW BRINE	
A. Drain line flow control is plugged B. Injector is plugged C. Injector screen is plugged D. Line pressure is too low E. Internal control leak F. Improper programming G. Timer not operating properly	A. Clean drain line flow control B. Clean or replace injectors C. Replace screen D. Increase line pressure (line pressure must be at least 20 psi at all times) E. Change seals and spacers and/or piston assembly F. Check programming and reset as needed G. Replace timer
10. CONTROL CYCLES CONTINUOUSLY	
A. Timer not operating properly B. Faulty microswitches and/or harness C. Faulty cycle cam operation	A. Replace timer B. Replace faulty microswitch or harness C. Replace cycle cam or reinstall
11. DRAIN FLOWS CONTINUOUSLY	
A. Foreign material in control B. Internal control leak C. Control valve jammed in brine or backwash position D. Timer motor stopped or jammed teeth E. Timer not operating properly	A. Remove piston assembly and inspect bore. Remove foreign material and check control in various regeneration positions B. Replace seals and/or piston assembly C. Replace piston and seals and spacers D. Replace timer motor and check all gears for missing teeth E. Replace timer
12. (ERROR CODE) (ERROR E1) - ELECTRICAL TROUBLE SHOOTING:	
Issue1: When the controller is plugged, the buzzer beeps and the screen displays " System Error E1" **Cause:** The wire of micro switch is not plugged or loose.	Check the micro switch and connect the wire well.
13. (ERROR CODE) (ERROR E1) - ELECTRICAL TROUBLE SHOOTING:	
Issue2: The buzzer beeps and the screen displays "System Maintaining E1" **Cause:** The wire of micro switch is not plugged or loose.	Check the micro switch and connect the wire.
14. (ERROR CODE) (ERROR E2) - ELECTRICAL TROUBLE SHOOTING:	
Issue: The buzzer beeps and the screen displays "System Error E2" **Cause:** The motor can not find its right position, micro switch or motor malfunction, automatic circuit protection action.	Check the current of micro switch and motor.
15. (ERROR CODE) (ERROR E2) - ELECTRICAL TROUBLE SHOOTING:	
Issue 2: The buzzer beeps and the screen displayed " System Maintaining E2" **Cause:** The motor can not find its right position.	Replace Motor or PCB.