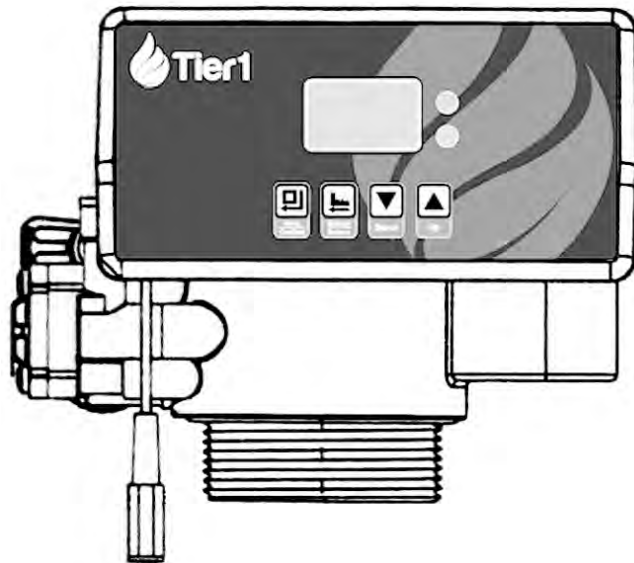




Tier1 Water Softener

Everyday 165 Series



INSTRUCTION MANUAL

Please read this manual in detail before using the system and keep it in a safe location for future reference.

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Operating Conditions

Environmental Parameters	Air Temperature	40°F - 120°F
	Relative Humidity	Less than 95% @ 77°F
	Electrical Requirement	AC100~240V/50~60Hz
Water Quality Parameters	Water Pressure	20 psi - 87 psi
	Water Temperature	40°F - 120°F
	Free Chlorine	<0.1 mg/L
	Iron	< 0.3 mg/L
	Turbidity	< 5 NTU Down-flow Regeneration < 20 NTU Filter Applications

System Specifications

Model	Capacity	Resin Tank Size	Brine Tank Size	Resin Cu. Ft.	Flow Rate
165-124	24,000 GR	8" x 35"	13.5" x 34"	0.75 cubic feet	18 GPM
165-132S	32,000 GR	10" x 35"	13.5" x 34"	1 cubic feet	18 GPM
165-132	32,000 GR	9" x 48"	13.5" x 34"	1 cubic feet	18 GPM
165-150	48,000 GR	10" x 54"	13.5" x 34"	1.5 cubic feet	18 GPM
165-164	64,000 GR	12" x 52"	13.5" x 34"	2 cubic feet	18 GPM

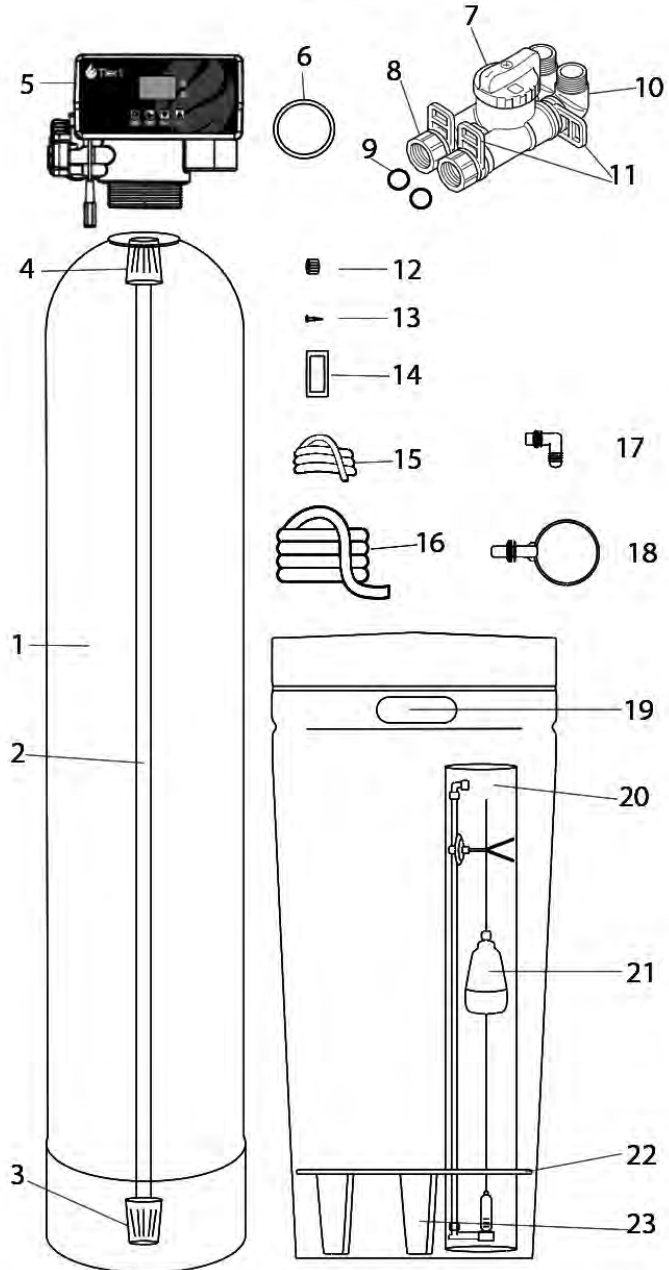
Important Notices

- Read this manual thoroughly to become familiar with the system and its capabilities before installation or operation. Failure to follow instructions in this manual could result in personal injury or property damage.
- This system and its installation must comply with state and 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 a licensed professional for any plumbing or electrical work required prior to the installation of this system.
- This system is designed to operate on pressures of 20 psi to 87 psi. If the water pressure is higher than 80 psi a pressure reducing valve is required on the water supply line prior to the system.
- This unit is capable of operating at temperatures between 40°F and 120°F (5°C - 50°C). Do not use this system 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 damaging, pinching, or leaking O-rings by applying food grade silicone lubricant to all seals during installation.
- Do not use water that is microbiologically unsafe without adequate disinfection before or after this system.
- System parameters must be adjusted according to the working environment, water quality, and application of the system. Test water periodically to verify system performance.
- 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.
US Water filters Inc. reserves the right to change the specifications referred to in this literature at any time, without prior notice.

Installation Instructions

Included parts:

- 1) Resin tank
- 2) Riser tube
- 3) Lower distributor basket
- 4) Upper distributor basket
- 5) Control valve
- 6) Control valve O-ring
- 7) Bypass valve
- 8) Bypass adapters x2
- 9) Bypass adapter seals x2
- 10) 1" Elbow adapters x2
- 11) Locking clips x 4
- 12) Brine adapter nut
- 13) Brine tubing insert w/screen
- 14) Lubricant
- 15) Brine tubing
- 16) Drain tubing
- 17) Overflow elbow
- 18) Brine well bracket
- 19) Salt tank
- 20) Brine well
- 21) Float assembly
- 22) Salt shelf
- 23) Shelf legs



Prior to Installation:

- Identify where you are going to install the water softener.
 - The softener should be installed on the main water supply before the water heater but after plumbing that supplies outdoor faucets (if possible).
 - The softener should be installed on a level surface within 6 feet of an electrical outlet, and as close to a suitable drain as possible. (Floor drain, laundry tub, standpipe, or sump.)
 - If the softener is being installed outdoors it must be protected from the elements to keep it within the environment parameters of the system.
- Turn off the main water supply valve completely.
- Test that the water is completely shut off by opening the closest cold water faucet.
 (Note: DO NOT continue installing the water softener if the water supply cannot be turned off.)

Step 1: Attaching the Control Valve

You will need the Resin tank, Control valve, Control valve O-ring, Upper distributor basket, and Lubricant.

1. Apply a small amount of lubricant to your finger.
2. Apply lubricant to the riser tube O-ring inside the control valve.
3. Apply lubricant to the main valve O-ring.
4. Install the main O-ring on the valve.



1



2



3



4

5. Attach the upper distributor to the base of the control valve by twisting clockwise until it clicks and locks into place.

(Note: Double check that the distributor basket locks securely to the control valve. If the basket is not locked resin will be able to escape the mineral tank during backwashing.)



5

6. Slide the control valve and upper distributor over the riser tube and thread onto the resin tank until it is hand tight.



6

Step 2: Attaching the Bypass to the Control Valve

You will need the Lubricant, Bypass valve, Bypass adapters (x2), Bypass adapter seals (x2), 1" Elbow adapters (x2), and Locking clips (x4).

7. Apply a small amount of lubricant to the two adapter seals, and the O-rings on the bypass and elbow adapters.
8. Insert the adapter seal into the bypass adapter.
9. Attach the bypass adapter to the valve.
10. Repeat 8 and 9 for the second adapter seal and bypass adapter.



7



8



9



10

11. Push the bypass valve onto the bypass adapters.

(Note: It is important to push the bypass completely onto the adapters in order to install the locking clips. DO NOT force the locking clips.)

If the bypass is not fully connected (**11a**), the locking clips will not install. Ensure the bypass is connected properly, (**11b**), before installing the locking clips.



11



11a (NOT fully connected)

fully



11b (Connected Properly)

- 12. Locate two of the four black locking clips.
- 13. Insert the locking clips vertically by pushing them down into the holes on the bypass securing the connector.
(Refer to step 11 if you feel you are having to force clips into place.)
- 14. Take the two 1" elbows adapters and connect them to the bypass.
- 15. Insert the remaining two locking clips horizontally by pushing them into the holes on the bypass securing the elbows.



12



13



14



15

(Note: If the elbow adapters are not fully connected (15a), Do NOT force the locking clips.

Ensure the elbows are fully connected (15b), before installing the locking clips.



15a (NOT fully connected)



15b (Connected Properly)

- 16. Locate the end of the flow probe cord connected to the back of the control valve.
- 17. Insert the end of the flow probe into the semi-circular notch in the middle of the bypass.



16



17

Step 3: Assembling the Salt Tank

You will need the Salt tank, Salt shelf, Shelf legs (x4), Brine well, Float assembly, Brine well bracket, Overflow elbow, and Brine tubing.

Salt Shelf

18. Line the holes in the top of a shelf leg with the clips around the holes in the bottom of the salt shelf and push them together until the leg clips into place.
19. Repeat 18 for the rest of the shelf legs until the salt shelf is completely assembled.
20. Place the assembled salt shelf into the salt tank oriented so that the large brine well hole is on the same side of the salt tank as the two hole in the top.



18



19



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Brine Well

21. Insert the brine well into the hole in the salt shelf, and spin it so that the hole in the top of the brine well lines up with the holes in the side of the salt tank.
22. Remove the black nut from the brine well bracket.
23. Slide the bracket over the brine well with the threaded end sticking out through the top hole of the salt tank and reattach the nut from outside the tank to hold the bracket in place.



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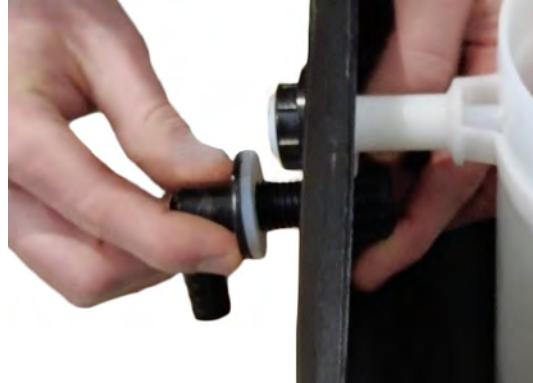
23

Overflow Elbow

24. Remove the black nut from the overflow elbow.
25. Slide the threaded end of the overflow elbow through the bottom hole in the salt tank and thread the nut back onto the overflow elbow from the inside of the salt tank securing it in place.



24



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Brine Tubing

26. Remove the compression nut and brine tubing insert from the elbow at the top of the float assembly



26

27. Put the tubing insert into the end of the brine line that is going to be connected to the float assembly.



27

28. Insert the brine tubing through the top hole in the salt tank, through the brine well bracket and into the brine well.
29. Once inside the brine well put the elbow nut over the brine tube, push the tubing into the elbow and tighten the nut to secure the tubing.



28



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Step 4: Connecting the Salt Tank to the Valve

You will need the Brine tubing, Brine tubing insert w/screen, Brine adapter nut, and the Control valve.

30. Insert the tube bushing with screen to the open end of the brine tubing, and slide the other compression nut over the end of the tubing



30

31. (Optional) To make connecting the brine tubing easier you may disconnect the Remove the locking clip from the brine tubing adapter on the control valve and disconnect the brine tubing adapter from the valve.



31

32. Insert the tubing into the brine adapter and tighten the locking nut to secure the tubing to the adapter.



32

33. Reconnect the brine adapter to the control valve.
34. Reinsert the brine locking clip to secure the brine adapter in place.



33



34

Step 5: Connecting the Drain and Overflow tubing

You will need the Drain tubing, Hose clamps, Control valve, Flathead screwdriver, and Tape measure.

Drain Tubing

35. Disconnect the drain adapter from the valve by unscrewing the drain swivel nut and pulling out the barbed fitting.
36. Slide a hose clamp over the end the drain tubing, then push the drain tubing over the barbed fitting on the drain adapter.
37. Tighten the hose clamp using a flathead screwdriver.
38. Reconnect the drain adapter to the valve by screwing the swivel nut back onto the threads of the drain outlet.



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Overflow Tubing (Optional)

39. Measure the length of drain line tubing that is required to connect from the control valve to the nearest drain and cut the tubing to length.

(Note: the 10 feet of drain tubing is intended to be enough for both the drain line and overflow tubing, but additional tubing may be required depending on the location of the nearest drain.)



39

40. Connect the remaining drain line tubing to the overflow elbow using the remaining hose clamp to direct water to the nearest floor drain.

(Note: Water should not flow out of the overflow elbow under normal operation. The overflow tubing is designed to direct water to a drain in the case the salt tank overflows.)



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Step 6: Connect the Water Softener to the Home's Plumbing

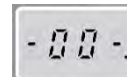
You will need additional plumbing components to connect your home's plumbing to the 1" elbow adapters. 1 inch flex connectors can be an easy to use option, but Copper, PEX, CPVC, or PVC fittings may be needed depending on your homes specific plumbing.



41. Connect the water softener to the plumbing ensuring that the water flows in the same direction as the arrows on the bypass.

Step 7: Initial System Startup

42. Put the water softener into the bypassed position.
43. Slowly open the main water supply and check the plumbing connections for any leaks.
44. If no leaks are present continue by plugging the control valve in.

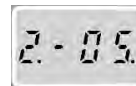
(Note: When first powered on the ceramic disk will spin and the screen will display -00- for 60 seconds.)



45. The system automatically locks the buttons after being idle for 60 seconds. To unlock the buttons press and hold the  and  buttons at the same time for 5 seconds.

46. Press the  button to initiate a manual regeneration.

47. Wait until the valve enters the Backwash stage of the regeneration (2 - 05), then slowly open the bypass valve on the softener to fill the resin tank with water and purge air from the softener.

















48. Add 1-2 bags of water softener salt to the salt tank, and allow the softener to run through the rest of the manual regeneration.

(Note: You can continue with setting the system programming during the initial regeneration.)



Step 8: System Programming

Full programming instructions can be found on page 15 of the instructions below only go through what needs to be set when first setting up the system.

49. The system automatically locks the buttons after being idle for 60 seconds. To unlock the buttons press and hold the  and  buttons at the same time for 5 seconds.
50. Unlock the screen and press the  button. The settings menu indicator will turn on, and the time of day setting will be displayed.
51. Press the  button and use the  and  buttons to set the hour (the system uses a 24 hour clock).
52. Press the  button again, and use the  and  buttons to set the minutes.
53. Press the  button one more time to save the time setting.
54. Press the  button 3 times to get to the capacity setting. (Default of 1750)
55. Press the  button and use the  and  buttons to adjust the capacity setting based on the size of your softener and your specific water quality using the calculation below.

$$(\text{Softener Size} \div \text{Water Hardness}) - (\# \text{ of people} \times 75 \text{ gallons})$$

$$(\text{ _____ Grains Softener size} \div \text{ _____ Grains per gallon water hardness}) - (\text{ _____ people} \times 75 \text{ gallons})$$

Here is an example calculation for a 32,000 grain water softener for a home with 3 occupants that has 15 grains per gallon of hardness.

$$(32,000 \text{ grains} \div 15\text{GPG}) - (3 \text{ people} \times 75 \text{ gallons}) = 1900 \text{ gallon capacity}$$

Note: It may be necessary to set the system capacity lower than the capacity calculated by hardness, if iron is present in the water. For every 1 ppm of iron add an additional 4GPG of hardness to the measured water hardness.

Control Valve Settings and Usage

When the valve is in service the display will cycle through four screens:

1. Time of Day: When the time is displayed the center two dots on the display will be flashing, the valve uses a 24 clock so 00:00-11:59 is AM and 12:00 - 23:59 is PM.
2. Regeneration Time: When the valve is displaying the Regeneration time the center two dots on the display will be solid instead of flashing, the default setting is 02:00 or 2 am.
3. Remaining Capacity: When the valve displays the remaining number of gallons until the next regeneration the top indicator light will illuminate.
4. Current Flow Rate: When the valve displays the current flow rate through the valve the bottom indicator light will illuminate.

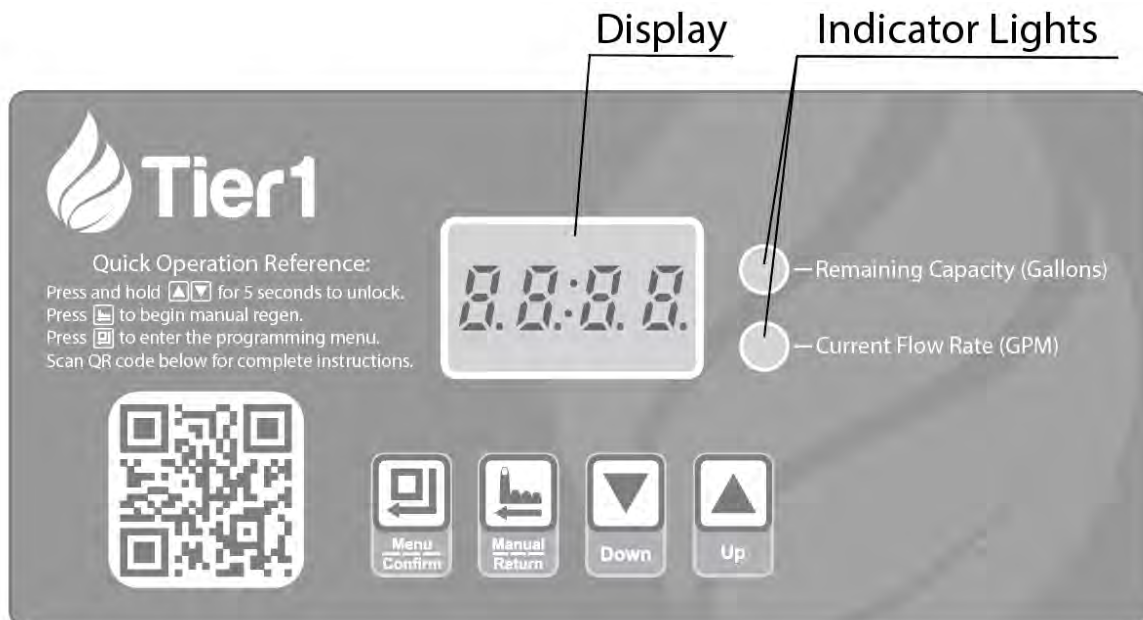
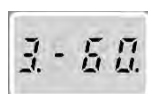
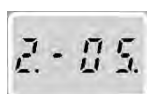


When the valve enters a regeneration and the motor is running the display will show “-00-” to indicate the valve is switching between states.

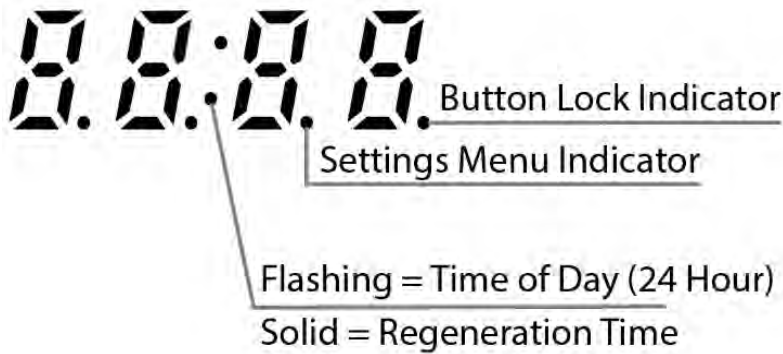


The 5 different valve stages and their numerical display are as follows:

Service Backwash Brine & Slow Rinse Fast Rinse Brine Refill Service.



In addition to the dedicated indicator lights the system also uses the decimal points in the numerical display to indicate when the system's buttons are locked, and when the system is in the settings menu.



The 4th decimal light indicates Button Lock, if this light is illuminated the buttons are locked and the system must be unlocked to operate.



The 3rd decimal light will illuminate when entering the Settings Menu.

The two center dots indicate Time of Day or Regeneration Time depending on if they are flashing or solid.





How to Unlock the Buttons:

The system automatically locks the buttons after being idle for 60 seconds. To unlock the buttons press and hold the ▲ and ▼ buttons at the same time for 5 seconds. After 5 seconds the system will beep and the button lock indicator will turn off.


How to Perform a Manual Regeneration:

To initiate a manual regeneration unlock the screen and press the  button. The valve will display “-00-” and start turning to begin the regeneration. During a regeneration pressing the  button will immediately advance to the next stage of the regeneration.

How to View/Edit Setting in the Programming Menu:

To view and change the programming settings unlock the screen and press the  button. The settings menu indicator decimal will turn on, and the time of day setting will be displayed. Use the ▲ and ▼ buttons to navigate through the settings. To change a setting navigate to the setting you want to change in the menu and press the  button. The value of the setting will start blinking, use the ▲ and ▼ buttons to adjust the value, and press the  button again to save the changes. When finished programming press the  button to exit the menu.

Control Valve Programming Functions

Function	Indicator	Factory Default	Parameter Range	Notes
Time of Day	“:” Flashing	12:12	00:00 ~ 23:59	When “:” is flashing Time of Day is being displayed. When programming the hours and minutes set separately. Set the hours, press the  button, then set the minutes.
Regeneration Time	“:” Solid	02:00	00:00 ~ 23:59	When “:” is solid Regeneration Time is being displayed. This is time the system will regenerate when set to Meter Delayed. Set to a time with water use is minimal.
Control Mode	A -	A-01	A-01	Meter Delayed: When the remaining treatment capacity reaches zero (0) the system will wait until the set regeneration time before regenerating.
			A-02	Meter Immediate: When the remaining treatment capacity reaches zero (0) the system will immediately begin regenerating.
Water Treatment Capacity	Remaining Capacity Light	1750	0 ~ 9999	Number of gallons that will be treated before the system regenerates. Optimal setting will depend on the type and size of system, along with inlet water quality.
Backwash Time	2.-	2.- 05	0 ~ 99	Length of the backwash stage of regeneration in minutes.
Brine & Slow Rinse Time	3.-	3.- 60	0 ~ 99	Length of the Brine & Slow Rinse stage of regeneration in minutes.
Fast Rinse Time	4.-	4.- 05	0 ~ 99	Length of the Fast Rinse of regeneration in minutes.
Brine Refill Time	5.-	5.- 05	0 ~ 99	Length of the Brine Refill stage of regeneration in minutes.
Max Regeneration Interval	H -	H - 30	0 ~ 40	This is the maximum number of days between regenerations, at this number of days the system will regenerate regardless of the remaining treatment capacity.
Signal Output Mode	b -	b - 01	b - 01	Signal on at the start of the regeneration and off at the end.
			b - 02	Signal on between each stage of regeneration, and off during each stage.

Troubleshooting

Problem	Cause	Correction
1). No soft water and salt level is not dropping.	<p>A). Flow probe is not placed correctly.</p> <p>B). Salt Bridge has formed in the brine tank.</p> <p>C). System is plumbed incorrectly, inlet and outlet are swapped.</p> <p>D). Bypass valve is in bypass position.</p> <p>E). Impeller is not registering flow.</p>	<p>A). Insert flow probe into dock on bypass valve.</p> <p>B). Break up salt in brine tank, perform manual regeneration on the system.</p> <p>C). Verify the flow of water into the system matches the arrows on the bypass. If they do not, swap the inlet/outlet.</p> <p>D). Move bypass valve into the service position.</p> <p>E). Verify impeller is properly placed in the bypass. Cleaning the impeller with vinegar and water may be necessary after extended use or if hard water passes through it.</p>
2). System regenerates at the incorrect time.	A). Time of day improperly set.	A). Reset time of day.
3). Complete loss of water pressure when system is in service.	A). Resin has become fouled due to incoming water quality.	A). For high chlorine and iron content on incoming water, pre-treat to prevent this. Place system in bypass to verify the softener is the source of the pressure loss. Replace resin tank.
4). Excessive water in the brine tank.	<p>A). Leak at brine line connection in the brine tank well.</p> <p>B). Salt bridge has formed in the brine tank.</p> <p>C). Drain Line is blocked</p>	<p>A). Place system into the 3rd stage of the regeneration, check for leaks at the elbow connection and verify water level is dropping. If a leak is detected, re-insert the line firmly.</p> <p>B). Break up salt in brine tank, perform manual regeneration on the system.</p> <p>C). Verify there is no kinks in the drain line or blockage within the drain line.</p>
5). Resin in household plumbing.	A). Failure of the distributor basket or the riser tube.	A). Can occur with highly chlorinated incoming water, pre-treat to prevent this. Bypass softener, flush waterlines, replace resin tank.
6). Water hard some of the time.	<p>A). Incorrect water treatment capacity set.</p> <p>B). Excessive hot water being used while system is regenerating.</p> <p>C). Increase in incoming water hardness.</p> <p>D). Plumbing leak in household plumbing system.</p>	<p>A). Increase water treatment capacity.</p> <p>B). Change regeneration time to when water service will be sparse, avoid using hot water when the system regenerates as it can bring hard water to the water heater.</p> <p>C). Test incoming water for hardness, adjust water treatment capacity, utilize resin cleanser.</p> <p>D). Small leaks can cause over-regeneration of the system and loss of salt in the brine tank.</p>
7). E1, E3, or E4 error code displaying on Control Valve	A). Damage to the Control Valve.	A). Replace control valve.

Our American based Technical Support Team can be reached at support@tier1water.com or 1-855-378-9116