WellSoft™

MODELS

WS80 | WS100

Version 1.2

Owner's Manual & Installation Guide

10 Year Limited Warranty

To place this equipment under warranty, the warranty registration card must be completed and returned by the original owner to WellSoft® within 30 days of installation.

Coverage

To Whom Warranty Is Extended

This warranty is issued to the original owner at the original location site and is not transferable to other sites or to subsequent owners of the system.

TO PLACE THE EQUIPMENT UNDER WARRANTY, THE WARRANTY REGISTRATION CARD MUST BE COMPLETED AND RETURNED BY THE ORIGINAL OWNER TO WellSoft® WITHIN 30 DAYS OF INSTALLATION.

Coverage

This limited warranty covers the **WellSoft®** system delivered to the original owner at the original location when the system is purchased for personal, family, or household use. It is intended to cover defects occurring in workmanship or materials or both.

Warrantor's Performance and Length of Limited Warranty

WellSoft® warrants that upon receipt from the original owner of any mechanical or electronic part which is found to be defective in materials or workmanship, **WellSoft®** will repair or replace the defective item for 3 years from date of original installation. Media is not warranted.

WellSoft® further warrants that upon receipt from the original owner of any **WellSoft®** media tank/ main control valve, brine cabinet, found to be defective in material or workmanship, **WellSoft®** will repair or replace the defective item for 10 years from date of original installation.

All defective parts must be returned, along with the equipment serial number and date of original installation, to **WellSoft®** PREPAID, and replacement parts will be returned by **WellSoft®** to the original owner FREIGHT COLLECT.

Further Exclusions and Limitations on Warranty

THERE ARE NO WARRANTIES OTHER THAN THOSE DESCRIBED IN THIS WARRANTY INSTRUMENT.

This warranty does not cover any service call or labor costs incurred with respect to the removal and replacement of any defective part or parts. **WellSoft®** will not be liable for, nor will it pay service call or labor charges incurred or expended with respect to this warranty.

In the event the water supply being processed through this product contains sand, bacterial iron, algae, sulphur, tannins, organic matter, or other unusual substances, then, unless the system is represented as being capable of handling these substances in the system specifications, other special treatment of the water supply must be used to remove these substances before they enter this product. Otherwise, **WellSoft®** shall have no obligations under this warranty.

This warranty does not cover damage to a part or parts of the system from causes such as fire, accidents, freezing, or unreasonable use, abuse, or neglect by the owner.

This warranty does not cover damage to a part or parts of the system resulting from improper installation. All plumbing and electrical connections should be made in accordance with all local codes and the installation instructions provided with the system. The warranty does not cover damage resulting from use with inadequate or defective plumbing; inadequate or defective water supply or pressure; inadequate or defective house wiring; improper voltage, electrical service, or electrical connections; or violation of applicable building, plumbing, or electrical codes laws, ordinances, or regulations.

THIS WARRANTY DOES NOT COVER INCIDENTAL, CONSEQUENTIAL, OR SECONDARY DAMAGES.

ANY IMPLIED WARRANTIES ON THE PRODUCT DESCRIBED IN THIS WARRANTY WILL NOT BE EFFECTIVE AFTER THE EXPIRATION OF THIS WARRANTY.

No dealer, agent, representative or other person is authorized to extend or expand this limited warranty.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Claims Procedures

Any defects covered by this warranty should be promptly reported to:

WellSoft®
4343 S. Hamilton Rd.
Groveport, OH 43125

When writing about the defects, please provide the original owner's name, telephone number, and original address, serial number and model number of the product, and date of purchase. (This information should be listed in General Information at the front of this manual.) **WellSoft®** reserves the right to replace defective parts with exact duplicates or their equivalent.

Call the HelpLine, 1-844-375-6917, for Return Information from 8 a.m. to 5 p.m. EST. The HelpLine fax number is (614) 836-9876.

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General Information

Congratulations on choosing a WellSoft water treatment appliance! Soon you and your family will be enjoying clean, clear water. Use this guide to attain the maximum benefit from your appliance. As an owner, you may find the first few pages to be the most helpful in solving your needs. If you have trouble with the operation of your appliance, ***see Troubleshooting*** in the back of this manual or contact the HelpLine at 1-844-375-6917.

Warning: This appliance must be applied to potable water only.

The manufacturer reserves the right to make specification and product changes without prior notice.
This manual is for installation, operation, and maintenance of the following water conditioning appliance model(s):

- **WS80**
- **WS100**

For further information on parts
and service please contact:

WellSoft
4343 S Hamilton Road
Groveport, OH 43125
1-844-375-6917
www.wellsoftwatersoftener.com

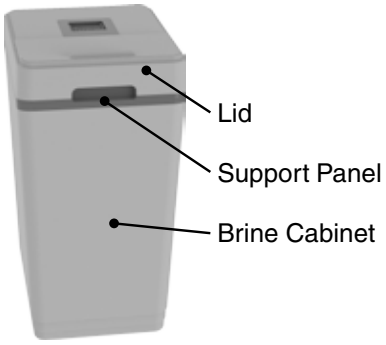
For Owner's Reference

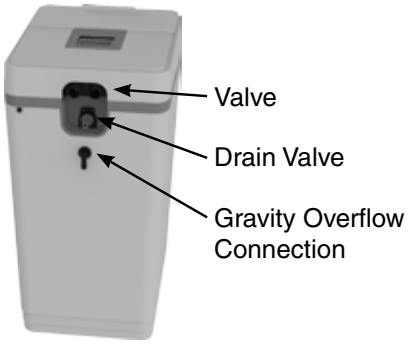
Date of Installation:	
Model Number:	
Serial Number[1]:	
Hardness:	
Iron:	
pH:	
Water Pressure:	
Water Temperature:	
Returned Warranty Card Date[2]:	

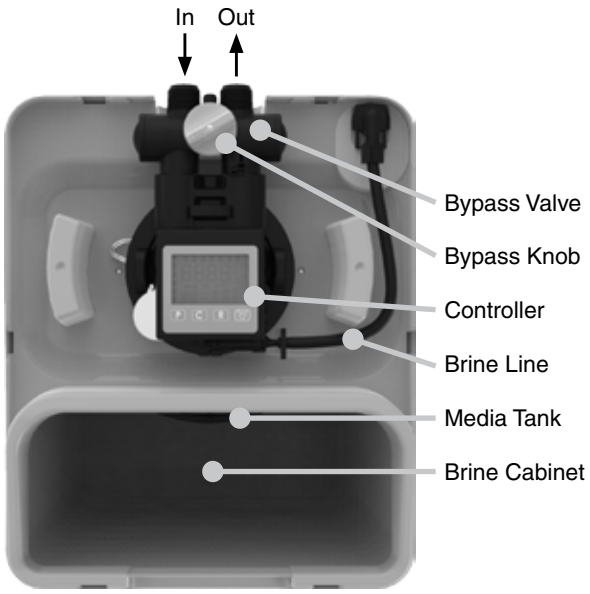
[1] The serial number is located on the left front support panel.

[2] Completely fill out the Warranty Card and return it by mail to ensure that the appliance is registered with the factory and the warranty becomes validated.

Appliance Overview



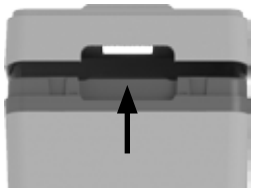




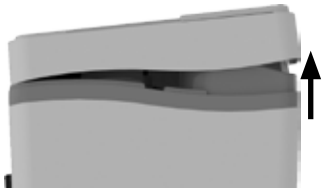
Lid Removal

The lid can be removed by grabbing either the front or the rear of the lid and pulling it straight up to access the valve and controller.

Front



Side



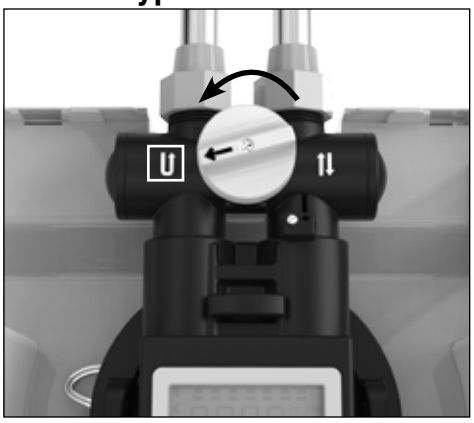
Bypass Valve Overview

The bypass valve can isolate the appliance should the appliance malfunction or leak. It can also permit the use of untreated water for watering plants, shrubs, or lawns.

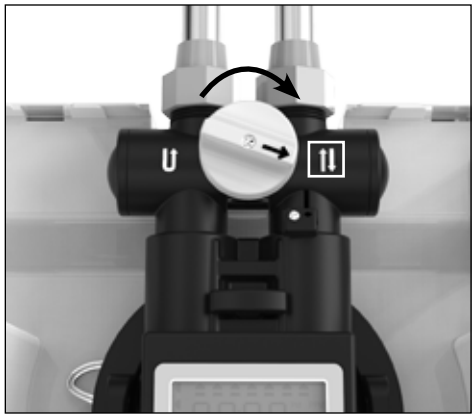
The bypass valve is attached to the main control valve. (***see Figure 1***) To engage the bypass valve, locate the gray knob on top of the bypass valve. Turn the knob counterclockwise until it hits the stop. The appliance will be bypassed and all water to the home is raw, untreated water. To prevent untreated water from entering the home, water should not be used inside the home when the appliance is in Bypass mode. Ensure that the appliance is returned to Service mode when the appliance is repaired or the use of untreated water is complete by turning the gray knob clockwise until it hits the stop.

Figure 1: Bypass Valve

Bypass Position



Service Position



Checklist Before You Begin *(Refer to this checklist before installation) (continued)*

- ❑ **Test Your Water** - The first step to setting up your appliance is determining what your water supply contains. Use one of the options below to determine the characteristics of your water.

  1. Call Water Department - For municipal water, you can call the water department to determine the hardness and pH of your water supply.

  2. Provided Test Strips - If test strips are provided, follow the instructions on the test strips. If the color on your test strip is between two readings, use the higher number. Compare the colors as soon as you remove them from your water.

  Hardness Test - This number gives the hardness in grains per gallon (gpg) and/or parts per million (ppm or mg/L).

  pH - The pH number is used to rate the level of acidity or alkalinity of water soluble substances. Pure water should have a pH of 7, though common tap water has a pH between 6 and 5.5.

  3. Testing Laboratory - To ensure proper settings, have a sample of your untreated water tested for iron and pH. To find a facility to test your water sample, check your Online or in the Yellow Pages under Water Analysis or Water Testing or contact the company below to conduct a test for you.

  National Testing Laboratories, Ltd.
  1-800-458-3330
  www.ntllabs.com or www.watercheck.com

- ❑ **Water Quality** - If the water supply contains sand, sulfur, bacteria, iron bacteria, tannins, algae, oil, acid, or other unusual substances, consider pre-treating the water to remove these contaminants before the water supply enters the appliance, unless the appliance is represented as being capable of treating these contaminants in its specifications.

  An appropriate Water Filter can address these water shortcomings.

- ❑ **Water Characteristics** - Models WS80 and WS100 require a pH of 7 or above to function properly. An iron test to determine iron levels is also necessary.
- ❑ **Water Hardness** - Double check water hardness with test strips provided to verify that your appliance is right for the job.
  - ❑ Model WS80 will condition water for up to 70 grains of hardness per gallon (1200 mg/L).
  - ❑ Model WS100 will condition water for up to 90 grains of hardness per gallon (1540 mg/L). ***(see Specifications)***
- ❑ **Water Pressure** - Not less than 20 psi or greater than 100 psi (1.4 - 7 bar) constant. If water pressure exceeds 70 psi (4.8 bar), a pressure regulator is recommended.
- ❑ **Water Temperature** - Not less than 40°F or greater than 120°F (4°C - 49°C).
- ❑ **Iron** - A common problem found in many water supplies is iron. It is important to know what type of and how much iron is in the water supply.

Iron Type	Description
Ferrous Iron* *(sometimes called clear water or dissolved iron)*	Only type of iron that can be treated with a water softener.
Ferric Iron	Insoluble and the particles can eventually foul a resin bed. It should be filtered out before the water reaches the softener.
Organic Iron or Bacterial Iron	Attached to other organic compounds in the water. Additional treatment is needed to remove this type of iron.
Colloidal Iron	Not dissolved, yet stays in suspension. A softener cannot remove this type of iron.
** If the water supply contains ferrous iron, a commercially available resin bed cleaner should be used every six months. Follow the instructions on the container. You should increase your water hardness setting by 5 grains per gallon (86 mg/L) for every 1 ppm (1mg/L) of ferrous iron.*	

Checklist Before You Begin *(Refer to this checklist before installation)*

- ❑ **Water Supply Flow Rate** - A minimum of 2.0 gallons (7.6 liters) per minute is recommended. For the purposes of plumbing sizing, only the rated service flow rate and corresponding pressure loss may be used. Prolonged operation of a water conditioner at flow rates exceeding the tested service flow rate may compromise performance.
- ❑ **Drain** - Connect the appliance to an appropriate drain, such as a floor drain or washer drain that will comply with all local and state plumbing codes. To prevent back-siphoning, provide an adequate air gap or a siphon break. ***(see Installation Steps)***
- ❑ **Electricity** - The transformer supplied is for a standard 115 volt, 60-cycle AC outlet for locations in North America or 220 volt, 50-cycle AC outlet for locations outside North America.

If ferrous iron is not present in your water, please skip this step.

- ❑ **Determine Your Hardness or Compensated Hardness** - Compensated Hardness is the amount of iron present in the water as well as hardness content.

  To determine compensated hardness in standard measurements you should increase your water hardness setting by 5 grains per gallon (86 mg/L) for every 1 ppm (1mg/L) of ferrous iron.

  Use the section below for guidance and fill in the blank chart to determine your Compensated Hardness.

Standard Example

This example uses 3 (ppm or mg/L) of ferrous iron present in the water.

Description	Results
Actual Hardness	20 (gpg)
Ferrous Iron times five (x5)*	15
Compensated Hardness (20 + 15)	35
**Add five times (x5) the iron content in ppm or mg/L to the actual hardness*	

Metric Example

This example uses 3 (ppm or mg/L) of ferrous iron present in the water.

Description	Results
Actual Hardness	342 (ppm)
Ferrous Iron times eighty six (x86)*	258
Compensated Hardness (342 + 258)	600
**Add eighty six times (x86) the iron content in ppm or mg/L to the actual hardness*	

Compensated Hardness Worksheet

Use this blank chart to determine your Compensated Hardness using standard measurements.

Description	Results
Actual Hardness (use your test results for hardness)	
Ferrous Iron (x5 for standard) or (x86 for metric)	+
Compensated Hardness (add first two results for result)	=

If you have any questions, call the HelpLine. ***(see General Information)***

Getting Maximum Efficiency From the Appliance

To achieve the maximum benefit and performance from this appliance, familiarize yourself with this manual and the appliance.

1. The salt level should always be at least 1/3 full. Refill the salt when the level drops below the water level in the brine cabinet. A resin cleaner can be used on a monthly basis. Clean white pellet, cube-style, or solar salt is recommended. Do not use rock salt.

   Warning: Do not mix different types of salt.

1. You may use a salt substitute (such as potassium chloride) in place of water conditioner salt. If potassium chloride is used in place of salt, multiply compensated hardness by 1.12.

   Warning: Do not use potassium chloride if there is iron and/or manganese in the water.

2. Should your electricity be off for any reason, check your controller for the correct time and reset as necessary. ***(see Setting The Controller)***

3. Program the appliance to regenerate at a time when the water is not being used. ***If there is more than one appliance, allow two hours between each regeneration.***

4. If dirt, sand, or large particles are present in the water supply, the appropriate filter can eliminate this problem.

5. The appliance may be disinfected with 5.25% sodium hypochlorite, which is the active ingredient in household chlorine bleach. To disinfect the appliance, add 4.0 fluid ounces (120 mL) of chlorine bleach solution to the brine well of the brine tank. The brine tank should have water in it. Start a manual regeneration.

   Warning: Do not mix bleach with commercial resin cleaners since a dangerous chemical reaction may occur.

6. Protect the appliance, including the drain line, from freezing.

7. The bypass valve (attached to the main control valve) enables you to bypass the appliance if any work is being performed on the appliance, well pump, or plumbing. Use Bypass mode also for watering plants or lawns with untreated water. To bypass, turn the gray knob counterclockwise until it hits the stop; turn it clockwise to restore service. ***(see Bypass Valve Overview)***

8. Before putting the appliance back in service after work has been performed, turn on the nearest cold water tap until water runs clear.

9. Adhere to all operational, maintenance, and placement requirements.

10. Inspect and clean the brine tank and air check/draw tube assembly annually or when sediment is present in the brine tank.

Do

1. Comply with all state and local, building, plumbing, and electrical codes.
2. Test your water quality with the strips provided. *Optionally, obtain a report on your water's quality.*
3. Install the appliance before the water heater.
4. Install the appliance after the pressure tank on well-water installations.
5. Install a pressure-reducing valve if the inlet pressure exceeds 70 psi (4.8 bar).
6. Examine the inlet line to ensure water will flow through it freely and that the inlet pipe size is sized correctly. For well water with iron, the recommended minimum inlet pipe size 3/4-inch I.D. and for municipal water the recommended minimum inlet pipe size is 1/2-inch I.D.
7. Install a gravity drain on the cabinet.
8. Secure the drain line on the appliance and at the drain outlet. ***(see Installation Steps)***
9. Allow a minimum of 8 to 10 feet (2.4 to 3.0 m) of 3/4-inch pipe from the outlet of the appliance to the inlet of the water heater.

Do Not

1. Do not install if checklist items are not satisfactory. ***(see Checklist Before Installation)***
2. Do not install if the incoming or outlet piping water temperature exceeds 120°F (49°C). ***(see Water Conditioner Specifications)***
3. Do not allow soldering torch heat to be transferred to valve components or plastic parts when using the optional copper adapters.
4. Do not over tighten the plastic fittings.
5. Do not plumb the appliance against a wall that would prohibit access to plumbing. ***(see Installation Steps)***
6. Do not install the appliance backward. Follow the arrows on the inlet and outlet.
7. Do not plug the transformer into an outlet that is activated by an On/Off switch.
8. Do not connect the drain and the overflow (gravity drain) lines together.
9. Do not use to treat water that is micro-biologically unsafe or of unknown quality without adequate disinfection before or after the appliance.
10. Do not allow your appliance or drain line to freeze.

Installation Steps

Failure to comply with these specifications may decrease the effectiveness of the backwash and cause control valve malfunction. The water softener, like any other appliance, requires correct installation and setting for optimum performance.

Step 1 Test Your Water *(see Checklist Before You Begin)*

A. Test your water with the strips provided or have your water tested by an authorized water treatment provider.

B. Have you Hardness or Compensated Hardness figure on hand for setting the controller.

Step 2 Prepare the Appliance

A. Remove any packaging or installation materials from the brine cabinet.

Step 3 Prepare the Placement Area

A. Make sure the placement area is clean.

B. Turn off the electricity and water supply to the water heater. For gas water heaters, turn the gas cock to “Pilot.”

C. Examine the inlet plumbing to ensure that the pipe is not plugged with lime, iron, or any other substance. Clean or replace plugged plumbing.

Note: *A minimum 3/4 inch pipe is required between the pressure tank and the appliance for the appliance to function properly.*

D. Make sure the inlet/outlet and drain connections meet the applicable state and local codes.

E. Check the arrows on the bypass valve to ensure that the water flows in the proper direction. ***(see Bypass Valve Overview)***

Warning: Do not plumb the appliance in backward.

F. Place the appliance in the desired location using the installation diagram as a guide ***(see Figure 2)***. The installation diagram applies to a basement, slab, crawl space, and outside installations.

G. For most installations, install the appliance after the pressure tank and any water filter appliance or water meter and before the water heater unless otherwise recommended. When installing any additional filters, such as a carbon filter for well water, place the filter after any water conditioning appliance unless otherwise recommended.
Water Heaters: If less than 10 feet (3 meters) of pipe connects the water treatment appliance(s) to the water heater, install a check valve between the water treatment appliance and the water heater as close to the water heater as possible. Ensure that the water heater has an adequately rated temperature and pressure safety relief valve.

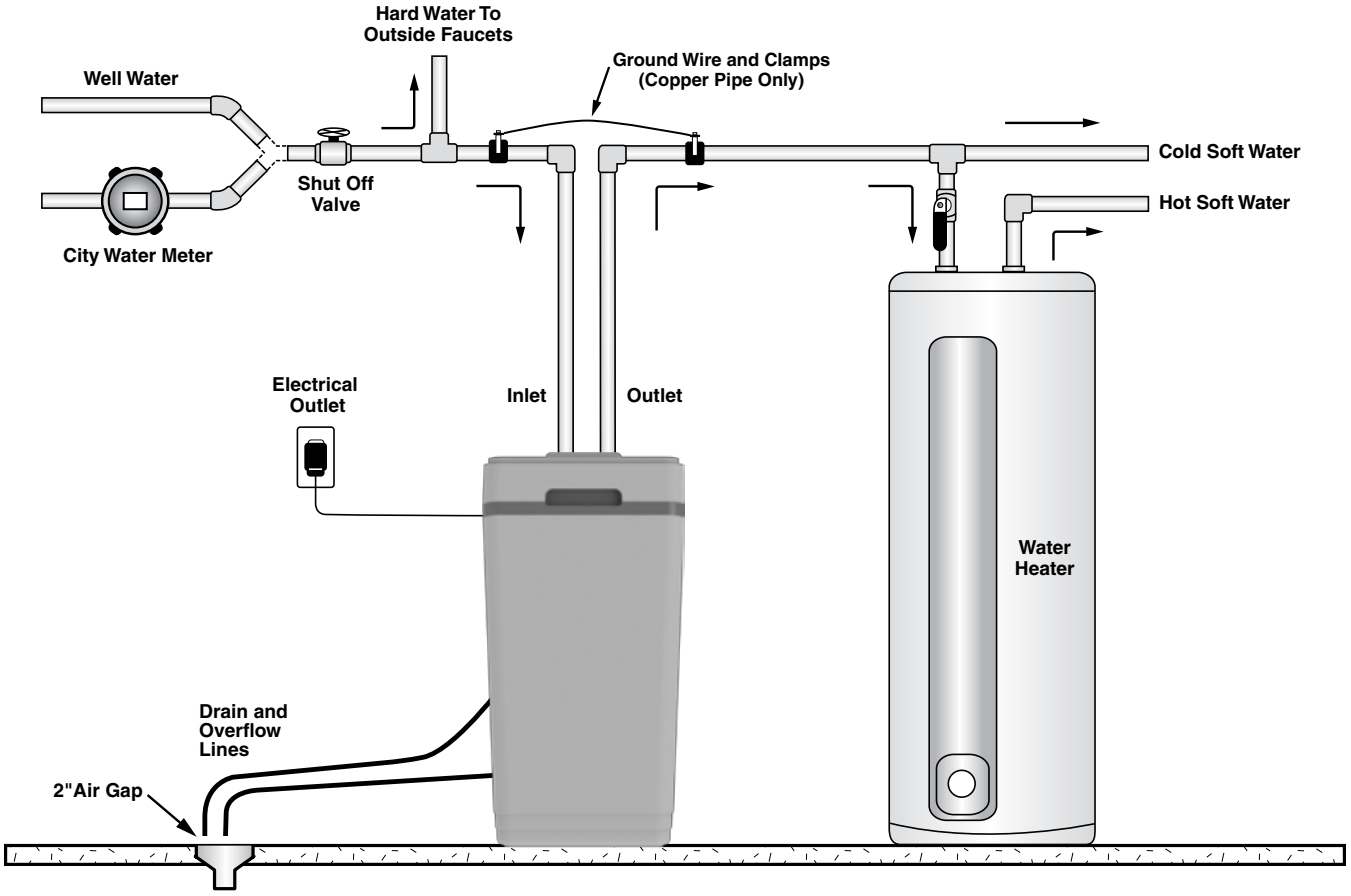
H. For outside installations, the appliance should be enclosed so it is protected from the weather.

Step 4 Turn Off Water Supply

A. Turn off the water supply.

B. Open the hot and cold water taps to depressurize the lines.

Figure 2: Appliance Placement



Step 5 Connect Water Lines

Connect water lines in compliance with all state and local, building, plumbing, and electrical codes. The Wellsoft valve connection fittings on the back of the unit are 1" NPT. They can be connected to your home's plumbing supply with a variety of connectors / fittings (sold separately). You can plumb your softener to plastic PVC/CPVC, PEX, or copper. If using copper fittings do not allow solder torch to melt the plastic threads on the valve.

Note: (see Optional Plumbing Procedures) for information on copper fittings and joining plastic pipe.

Step 6 Connect Gravity Overflow Connection

The overflow line drains away excess water should the cabinet fill with too much water or the appliance malfunction. ***(see Figure 5)***

A. Check that the overflow elbow is in the down position.

B. Connect 1/2-inch I.D. tubing (size cannot be reduced) between the overflow fitting and a floor drain, laundry tub, or other suitable waste receptor. This tubing is not supplied with the appliance. Ensure that the overflow line ends at a drain that is at least 3 inches (8 cm) lower than the bottom of the overflow fitting. Maintain a minimum 2-inch (5 cm) air gap between the overflow line and the flood level rim of the waste receptor to prevent back-siphoning. The gravity line cannot be run overhead.

Figure 5: Gravity Overflow Elbow

Step 7 Connect Drain Line

The drain line carries away the backwash water as part of the regeneration cycle.

A. Connect the drain line to the drain end cap ***(see Figure 6)*** with a minimum 5/8-inch I.D. tubing (supplied). The size cannot be reduced. Note: Using Teflon tape or plumber's putty, screw the threaded drain fitting into the drain end cap.

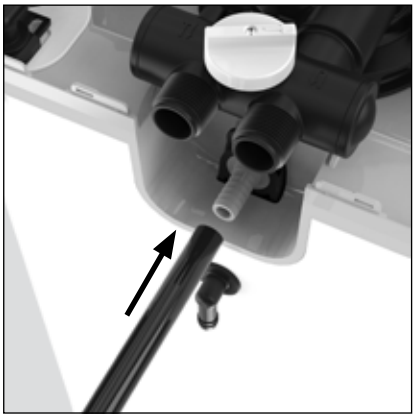
B. Route the drain line to a floor drain, laundry tub, or other suitable waste receptor. Maintain a minimum 2-inch (5 cm) air gap between the drain line and the flood level rim of the waste receptor to prevent back siphoning. This drain line should make the shortest run to the suitable drain.

C. The drain line may be elevated up to 8 feet (2.4 m) from the discharge on the appliance as long as the water pressure in your system is 40 psi (2.8 bar) or more.

D. If the drain line is 25 feet (7.6 m) or longer, increase the drain line to 3/4-inch I.D. The end of the drain line must be equal to or lower in height than the control valve. Caution: The drain line must not be kinked, crimped, or restricted in any way.

Warning: The drain line may require a hose clamp to hold drain line in place.

Figure 6: Connect Drain Line



Warning: Keep the drain line being kinked, crimped, or restricted in any way.

Step 8 Flush Lines

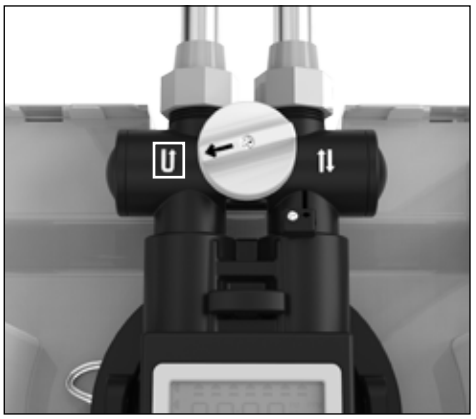
A. Place the appliance in the Bypass position. ***(see Figure 7)***

B. Turn on the main water supply.

C. Open the nearest cold water faucet to flush the plumbing of any excess soldering flux, air, or any other foreign material.

D. Return the appliance to Service position. Note: To prevent untreated water from entering your home, avoid using water inside your home when the appliance is in Bypass position. Remember to return the appliance to Service position when you have finished using untreated water.

Figure 7: Bypass Position



Bypass Position

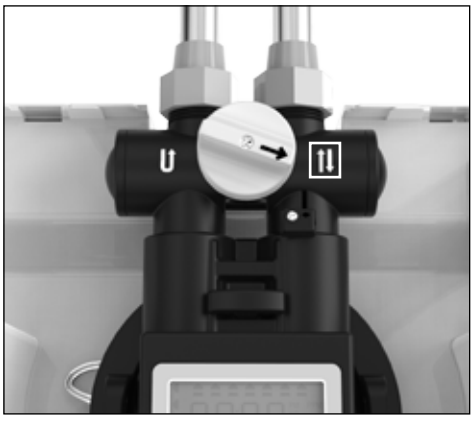
Step 9 Check for Leaks

A. Close all faucets.

B. Check all lines and connections for leaks. If leaks are found:

1. Turn off the main water supply.
2. Open a cold water faucet to depressurize the lines.
3. Close the faucet to eliminate any siphoning action.
4. Repair all leaks.
5. Turn on the water supply.
6. Place the bypass in the Service position to slowly fill the media tank. ***(see Figure 8)***
7. Open a cold water faucet to purge air out of the media tank.
8. Close the faucet and recheck for leaks.

Figure 8: Service Position



Service Position

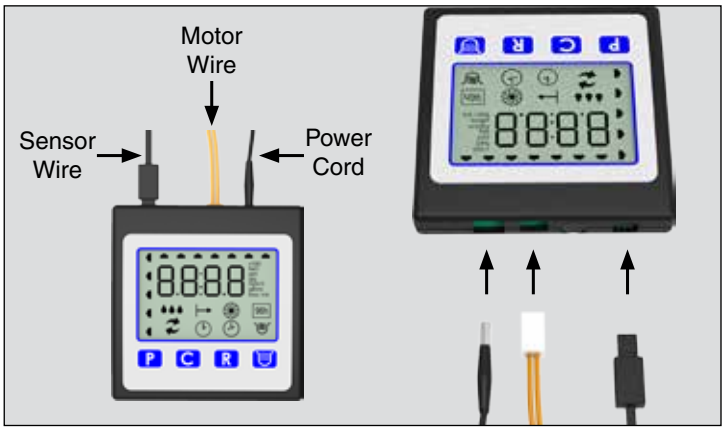
Step 10 Plug in the Transformer

A. Make sure the sensor wire and motor wire are connected then plug the transformer power cord to the back of the controller. ***(see Figure 9)***

B. Plug the transformer into an appropriate outlet.

C. Ensure that the outlet selected is not operated by an On/Off switch.

Figure 9: Connect Power



Step 11 Set Up the Controller

A. Program the appliance controller before moving to step 12. ***(see Setting The Controller)***

Step 12 Add Water to the Brine Cabinet

A. Add 2 gallons (7.6 L) of water to the brine cabinet. After the first regeneration, the appliance will automatically refill the correct amount of water into the brine cabinet.

B. Ensure the appliance is in Service position and your water supply is turned on.

C. Press the Regenerate button to advance to the Brine Refill (04) position. Let the tank fill with the proper amount of water. The controller will then step the valve to the Home position. Note: This initial startup is the only time you will add water to the brine cabinet. Do not add water at any other time.

Step 13 Fill Brine Cabinet With Salt

A. Fill the brine cabinet with salt. Use clean white pellet, cube-style, or solar salt. Do not mix pellet with solar salt.

Note: *Always keep the salt level above the water level. For convenience, completely fill the tank when refilling with salt.*

A. After you add salt, including adding it after the tank has run out of salt, wait two hours for saturated brine before starting any regeneration.

Warning: Use of potassium chloride when iron and/or manganese are present in the raw water supply is not recommended.

Step 14 Complete the Installation

A. Ensure that the bypass is left in the Service position. ***(see Bypass Valve Overview)***

B. Ensure the water supply is on.

C. Open the inlet valve and turn on the electricity to the water heater. For gas water heaters, return the gas cock to “On.”

D. Open a cold water tap and allow the appliance to flush for 20 minutes or until approximately 72 gallons (270 liters) have passed through the appliance. This procedure is required to meet NSF compliance. Verify the controller indicates water flow. ***(see Setting The Controller)***

E. Place the cover on the cabinet.

Hard Plumbing the Bypass With Copper Fittings

Do not use Qest fittings for hard plumbing with copper fittings. When preparing the male threaded fittings of the I/O adapter, use the following guidelines to avoid damage to the plastic pipe threads.

A. Wrap the threads three times with 1/2-in. wide Teflon tape. Place each consecutive wrap on top of the previous wrap.

B. To prevent tearing of the tape, use Teflon paste on the first two male threads only. The paste lubricates the tape and fills the small void areas that might exist between the threads. When the joint is complete, there will be a small bead of sealant at the fitting interface, which indicates a properly joined connection.

C. Use a union with a threaded connection to facilitate repair of potential leaks in soldered joints.

D. Prepare the copper tail assemblies in advance to enable them to cool prior to final assembly. Advance preparation and cooling will prevent heat damage to the plastic pipe threads of the adapter.

E. Ensure that the copper tube is at least 4 in. (10 cm) long.

F. Turn the fitting counterclockwise until you feel the threads engage and then tighten to prevent cross threading. DO NOT overtighten the fittings.

Warning: DO NOT allow heat from the torch to transfer to the plastic valve component, which could be damaged.

Plastic (PVC/CPVC) Pipe Joining Procedures

To ensure reliable joint integrity when using solvent cement for PVC/CPVC plumbing, follow these recommendations:

A. Cutting - The pipe must be cut square to allow for the proper interfacing of the pipe end and the fitting socket bottom. Use a wheel cutter, miter saw, or a ratchet shear for best results.

B. Deburring and Beveling - Use a knife, plastic pipe deburring tool, or a file to remove burrs from the end of the pipe. Be sure to remove all burrs from the inside as well as the outside of the pipe. Remove all loose plastic debris since it could clog the injector. All pipe ends should be beveled to permit easier insertion of the pipe into the fitting. Failure to bevel the pipe end may cause a “wiping” effect in the fitting where the cement is forced to the end of the fitting socket. This creates a weak joint.

C. Test Dry Fit of the Joint - Tapered fitting sockets are designed so that an interference fit should occur when the pipe is inserted about one-third to two-thirds of the way into the socket. Occasionally, when pipe and fitting dimensions are at the tolerance extremes, it will be possible to fully insert dry pipe to the bottom of the fitting socket. When this happens, a sufficient quantity of cement must be applied to the joint to fill the gap between the pipe and fitting.

D. Inspection, Cleaning, and Priming - Inspect the inside of the pipe and fitting sockets and remove dirt, grease, or moisture with a clean dry cloth. If wiping fails to clean the surfaces, use a chemical cleaner. Check for possible damage such as splits or cracks and replace if necessary. Use purple primer to penetrate and soften the bonding surfaces of the PVC or CPVC pipe and fittings. Proceed without hesitation to the cementing procedure while the primed surfaces are still wet.

E. Application of Solvent Cement - Apply the solvent cement evenly and quickly around the outside of the pipe while the primer is still wet. Apply a light coat of cement evenly around the inside of the fitting socket. Do not allow excess cement to “puddle” in the fitting. Apply a second coat of cement to the pipe end.

F. Joint Assembly - Working quickly, insert the pipe into the fitting socket and give a one-quarter turn of the pipe or fitting while pushing toward the fitting stop. This action will evenly distribute the cement. DO NOT continue to rotate the pipe or fitting after the stop has been reached. Hold the joint tightly together for about 15 seconds to prevent the pipe from “creeping” out of the fitting. A good joint will have sufficient cement to make a small bead all the way around the outside of the fitting hub. The joint should not be disturbed immediately after the cementing procedure. Allow adequate time for the joint to cure properly. Exact drying time is hard to predict because of environmental variables. Follow the recommended joint curing times on the primer and cement container labels.

Controller Overview

This appliance features a four-button icon controller with an LCD display. The controller can be used to view the appliance's status, perform regenerations, and change settings. The controller must be set up correctly for the appliance to perform properly.

Note: *Ensure that the bottom of the controller is firmly locked into the three clips on the top of the valve assembly.*

The controller measures water usage and regenerates based on need, so you do not have to worry about vacation settings or extra guests. If your power has been off, the appliance will retain programmed settings indefinitely. Time of day should be checked if power is out more than 24 hours.

Button Function

P — Used to set Customer Settings

C — Used to change Customer Settings

R — Used when starting your water conditioner to start an immediate regeneration, or to restore capacity if you run out of salt.

To Start an Immediate Regeneration

1. Press and hold the Regenerate button for about five seconds.
2. The appliance is in regeneration mode and will display the status of each cycle.
3. After all regeneration cycles are complete, the display will return to normal operating mode.

To Quickly Advance Through the Regeneration Cycles

(used when starting up or diagnosing the appliance only)

1. Press and hold the Regenerate button for about five seconds until the cycle begins.
2. The cycle position will display (for example, 01).
3. If the controller does not advance to the next cycle position after 20 seconds, press and hold the Regenerate button until the cycle number changes (about 2 seconds).

Each cycle can be advanced by pressing the Regenerate button. Always wait until the cycle position displays without flashing before advancing to the next cycle position.

Activates/deactivates the Iron Purge feature, which is a service/maintenance step for water supplies that have an excessive amount of iron. The appliance will regenerate every other day with five pounds (2.3 kg) of salt. Leave the Iron Purge feature on for a minimum of two weeks. The frequent regeneration will eliminate iron buildup in the resin bed. The use of salt with an iron cleaning agent or iron out cleaner is recommended for continuous use as a preventive measure against iron fouling of the resin bed. Use this feature every six months as a part of your routine maintenance procedure to ensure a long service life for your water treatment appliance.

The Iron Purge Icon will display when this feature is activated.

Screen Display

This area will display the gallons (or liters) of soft water remaining. Typically, each person in the household uses about 75 gallons (284 L) per day.

This area will also show regeneration cycle numbers during regeneration. The read-out will flash with the cycle number. The flashing regeneration numbers are:

01 - First Cycle - First Backwash

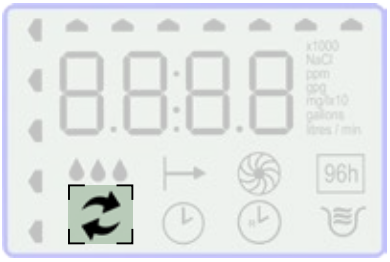
02 - Second & Third Cycles - Brine / Slow Rinse

03 - Fourth Cycle - Second Backwash

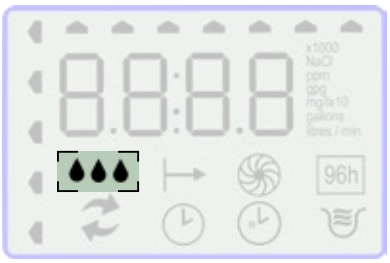
04 - Fifth Cycle - Brine Refill

HO - Sixth Cycle - Moving to Home Position

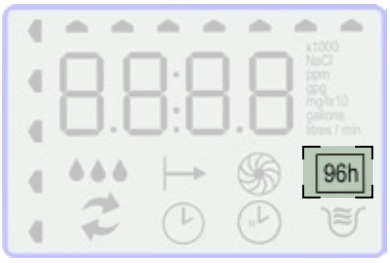
When regeneration is complete, the display shows the number of gallons of soft water remaining. A complete Regeneration typically is complete in about 30 minutes.



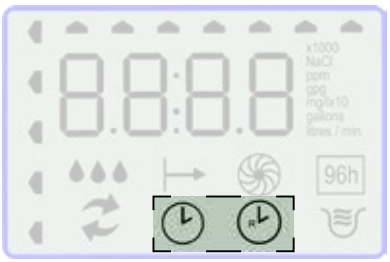
Indicates that unit is in regeneration.



Indicates that water is flowing through the appliance; the water flow indicator animates whenever water is being used; useful for checking for proper plumbing and leaks.



96 Hour Mode - With 96 hour mode on, the unit will never go more than 4 days between regenerations. More frequent regenerations help keep iron build up from occurring. This setting is recommended to be used when iron is present in your water supply.



The clock icon will display when setting the time of day. The clock icon with an “R” on it will display when setting the regeneration time of day.

Quick Setup / Basic Settings

Step 1 Enter The Hardness

A. Hold down P for about 4 seconds until the controller beeps and shows the gpg or mg/L x 10.

B. Press C until display matches your hardness or compensated hardness. ***(see Checklist Before You Begin)***

C. Press P to store the setting and move on to the time of day setting.

Step 2 Set Time of Day (continued from step 1)

Note: *Time of day is stored in 24 hour format. (1:00 PM = 13:00)*

A. Press C until the current hour is correct. Press P to save the hour and move onto setting minutes.

B. Press C until the current minutes are correct. Press P to store the minutes and return to home screen.

Iron Purge Feature

Step 1 Turn Iron Purge Feature On/off

Press and release to turn on the Iron Purge Feature On/Off.

The Iron Purge feature helps to clean out iron build up in your softener. When this feature is on, the controller will regenerate every other night. These frequent regenerations help to break up and remove iron build up. This feature should stay turned on for 2 weeks at a time. Depending on the iron levels in your water, you should perform this feature at least once a year.

Advanced Settings

The advanced settings will allow you to choose your salt mode, toggle 96 hour mode, change display units to gallons or liters, or set the regeneration time. Most customers will want to use the factory default settings, so no changes are necessary. Please use caution when using the advanced settings.

Step 1 Change Salt Mode

A. Hold down P and C for about 4 seconds and the controller beeps and displays a salt mode.

B. Press C to toggle between AU, HC, and HE. Press P to save the setting and move on to step 2.

Description of Salt Modes

AU = Automatic Mode - With this mode, the controller monitors your average daily water use and automatically adjusts the salt setting. If 96 Hour Mode is off, the controller tries to deliver one regeneration per week. If 96 Hour Mode is on, the controller tries to deliver two regenerations per week.
HC = High Capacity Mode - This is a fixed salt setting delivering more gallons between regenerations.
HE = High Efficiency Mode - This is a fixed salt setting delivering fewer gallons, but generally uses less salt than HC Mode.

HE Salt Setting - lb/grains (kg/grams) removed	2.2/9,000 (1.0/583)	2.5/10,500 (1.1/680)
HE Salt Setting - Total Length of Regeneration - min/gal (L)	23/17.5 (66)	24/17.7 (67)
HC Salt Setting - lb/grains (kg/grams) removed	6.6/18,875 (3/1223)	8.5/28,500 (3.8/1846)
HC Salt Setting - Total Length of Regeneration - min/gal (L)	33/23.8 (90)	37/25.7 (97.3)
AU Mode Max. Salt Setting - lb/grains (kg/grams) removed	12/24,000 (5.4/1555)	15/31,800 (6.8/2061)
AU Mode Max. Salt Setting - Total Length of Regeneration - min/gal (min/L)	44/29.2 (110)	50/32.2 (122)

Step 2 96 Hour Mode - On/Off

A. Press C to switch the 96 hour mode on and off. The display will turn the 96h on the right side of the screen on and off. Press P to save the setting and move on to step 3.

96 Hour Mode - With 96 hour mode on, the unit will never go more than 4 days between regenerations. More frequent regenerations help keep iron build up from occurring. This setting is recommended to be used when iron is present in your water supply.

Step 3 Choose Display Units - gallons/liters

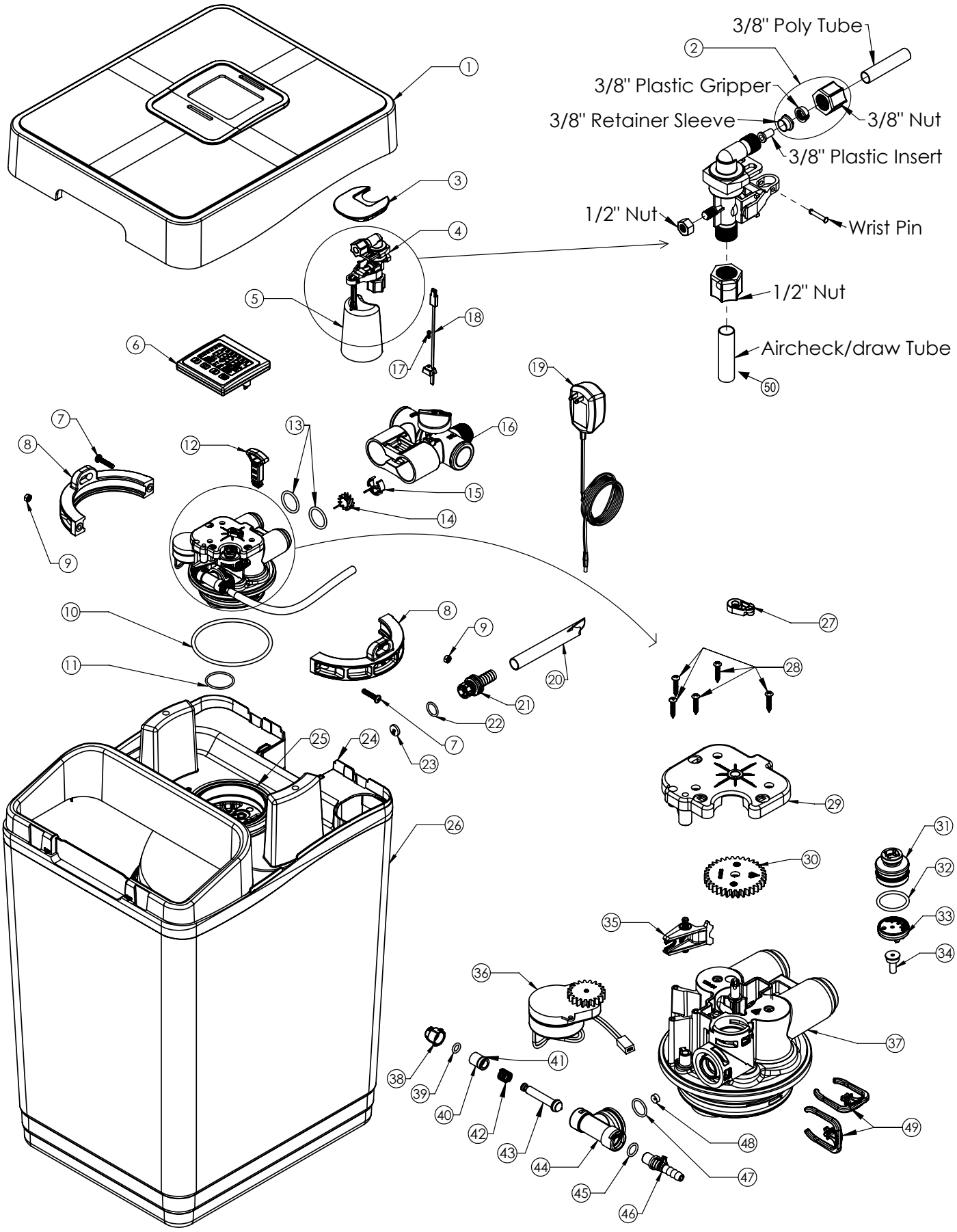
A. Press C to toggle between gallons or liters. The display will show gallons or liters on the right side of the screen. Press P to save the setting and move on to step 4.

Step 4 Set Regeneration Time

A. Press C to change the regeneration hour. Press P to save and move on to setting the minutes.

B. Press C to change the regeneration minutes. Press P to save the minutes and the controller will return to the home screen.

Time of day is stored in 24 hour format.


3/8" Poly Tube
3/8" Plastic Gripper
3/8" Retainer Sleeve
3/8" Nut
3/8" Plastic Insert
1/2" Nut
Wrist Pin
1/2" Nut
Aircheck/draw Tube

	Part #	Description
1	123505	Lift Off Top
	123515	Sliding Lift Off Top
	123516	Sliding lid
2	54138	3/8-inch Compression Assembly
3	123504	Brine Well Cap
4	54226	Safety Shutoff
5	56018	Float
6	123300	WS100 Controller - English
	123301	WS80 Controller - English
	123302	WS100 Controller - Metric
	123303	WS80 Controller - Metric
7	123803	Machine Screw
8	123118	Clamp
9	123804	Hex Nut
10	120349	O-Ring
11	120129	O-Ring
12	123142	Bypass Clip
13	93838	O-Ring
14	123420	Turbine
15	54320	Plastic Turbine Axle
16	123450	Bypass Assembly
17	90809	Screw
18	93865	Sensor Wire Assembly w/Cap
19	93245	12V Transformer/Power Cord
20	93842	Drain Line
21	123208	Barb Drain
22	90821	O-Ring
23	H2096-2.0	Drain Line Flow Control
24	123503	Support Panel
25	123223	WS80 Tank
	123228	WS100 Tank

	Part #	Description
26	123501	WS80 Cabinet
	123502	WS100 Cabinet
27	123130	Magnet Arm Assembly
28	93834	Screw
29	123116	Helical Gear Cover Plate
30	123119	Gear
31	123117	Injector Cap
32	93806	O-Ring
33	53224	Injector Nozzle
34	93223	Injector Throat
35	123113	Brine Lever
36	120217	Drive Motor
37	123190	Valve Assembly
38	123112	Brine valve Retainer
39	123010	O-Ring
40	123110	Bushing
41	123108	O-Ring
42	120802	Spring
43	12311	Brine Piston
44	123114	Brine valve Body
45	90828	O-Ring
46	123120	Brine Barb
47	93805	O-Ring
48	90843	.5 gpm Flow Control
49	123121	Clip
50	180400	WS80 Air Check
	54900	WS100 Air Check

For further information on parts
and service please contact:

WellSoft
4343 S Hamilton Road
Groveport, OH 43125
1-844-375-6917
www.wellsoftwatersoftener.com

Troubleshooting

Problem	Possible Cause	Solution
No Soft Water After Regeneration	No salt in brine cabinet	Add salt
	Sediment in brine cabinet has plugged the brine line and air check/draw tube	Remove the brine line and flush clean Remove the air check/draw tube and flush with clean water. Clean injector assembly. Clean any sediment from brine cabinet
	Flow control is plugged	Remove brine piston housing and clear debris from the flow control
	Drain line is pinched, frozen, or restricted	Straighten, thaw, or unclog the drain line
	Clogged injector assembly	Remove injector cap and clean nozzle and throat with a wooden toothpick. Replace throat if removed
	Salt bridge has formed due to high humidity or the wrong kind of salt	Test with a blunt object like a broom handle. Push the handle into the salt to dislodge the salt bridge, or use hot water around the inside perimeter to loosen salt
No Soft Water	The bypass valve is in the Bypass position	Place the bypass valve in the Service position
	Appliance is plumbed backward	Check that appliance is plumbed correctly
	Extended power outage	Reset the time of day
	Water hardness has increased	Re-test the water and re-enter a new setting number
	Not metering water	Flow should be indicated with water usage. If no flow, see below.
No Flow Is Indicated When Water Is Flowing	The bypass valve is in the Bypass position	Place the bypass valve in the Service position
	Appliance is plumbed backward	Check that appliance is plumbed correctly
	Sensor not receiving signal from magnet on turbine	Remove sensor from bypass housing. Test with magnet on either flat side of sensor. If flow is indicated, check turbine. If no flow, replace sensor
	Turbine is jammed	Remove bypass valve and clear debris from turbine
Flow Indicated When Water Is Not Being Used	The household plumbing system has a leak	Repair the leak
No Read-Out In Display	Electric cord is unplugged	Plug in the transformer
	No electric power at outlet	Check power source. Make sure outlet is not controlled by a switch
	Defective transformer	Test with voltmeter for 12 VAC at control. If less than 10 VAC replace the transformer
	Defective circuit board	With 12 VAC present at controller, replace the controller
	High ambient room temperature. If the temperature exceeds 120°F (49°C), the display will blank out. This does not affect the operation of the controller	No action necessary

Troubleshooting

Problem	Possible Cause	Solution
Appliance Stays In Regeneration	Controller not attached properly	Make sure the controller is pushed all the way onto the cover plate
	Defective magnet disk	Replace magnet arm
	Foreign object in main control valve	Remove foreign object(s) from the main control valve
	Broken valve assembly. Motor running	Repair the valve assembly
Excess Water In Brine Tank	Restricted, frozen, or pinched drain line	Remove restriction, thaw, or straighten drain line
	Plugged brine line, brine line flow control, or air check/draw tube	Clean flow control, air check/draw tube, and brine line. Clean any sediment from the brine cabinet
	Plugged injector assembly	Clean or replace injector. Replace throat if removed
Salty Water	Plugged injector	Replace injector screen, nozzle, and throat
	Low water pressure	Maintain minimum pressure of 30 psi (2.1 bar)
	Drain line or flow control is restricted	Remove restriction
	Brine line restricted or crimped	Remove restriction, replace if crimped
	Excessive amount of water in brine cabinet	Verify correct water level relative to salt setting. Check brine line and fittings for loose connections
	Intermittent pressure drop from feed source	Install check valve on the inlet water line to the appliance (Check local plumbing codes first)
	Brine valve drips water back to brine tank	Clean brine valve housing, replace piston assembly
Controller Error Messages	“E1” Home not found	Cycle power by unplugging the transformer and plugging it back in. It will look for Home again. Make sure the controller is pushed all the way onto the cover plate
	“E2” Motor error	Plug motor in and cycle power. If it is already plugged in, then motor wiring or the motor plug is defective
	“E3” Home offset	Disk did not start in proper home location. Cycle power controller will automatically try to reset itself by finding Home and continuing the regeneration. Make sure the controller is pushed all the way onto the cover plate
	“E4” Home latched	Gear teeth are not engaged, gear is stripped, or something is jammed in the valve. Cycle the power to reset
	“E5” Memory error	Replace controller

Efficiency Statements

This product is efficiency rated according to NSF/ANSI 44. The stated efficiencies are valid only at the specified salt dosage and 5.5 gpm (20.8 L/min):

Model	Rated Efficiency	Salt Dosage	Capacity at That Dosage
WS80	4,731 grains/lb (676 grams/kg)	1.6 lb (0.7 kg)	7,569 grains (490 grams)
WS100	4,876 grains/lb (697 grams/kg)	1.6 lb (0.7 kg)	7,801 grains (505 grams)

An Efficiency-rated water softener is a Demand-initiated regeneration softener that also complies with specific performance specifications intended to minimize the amount of regenerant brine and water used in its operation.

Efficiency-rated water softeners shall have a rated salt efficiency of not less than 3,350 grains of total hardness exchange per pound of salt (based on NaCI equivalency) (477 grams of total hardness exchange per kilogram of salt), and shall not deliver more salt than its listed rating.

Efficiency is measured by a laboratory test described in NSF/ANSI 44. The test represents the maximum possible efficiency that the system can achieve. Operational efficiency is the actual efficiency achieved 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 contaminates that reduce the softeners' capacity.

Reduction Capabilities for Specific Contaminants

Name of Substance	USEPA Max. Contaminant Level	Influent Challenge Level
Barium	2.0 mg/L	10 +/- 10% mg/L
Radium 226/228	5 pCi/L	226/228: 25 pCi/L

Water Conditioner Performance & Specifications

Specification		WS80	WS100
Maximum Capacity - grains		24,000	35,000
Maximum Compensated Hardness - gpg (mg/L)		70 (1200)	90 (1540)
Maximum Ferrous Iron Reduction - ppm[1]		10	10
Minimum pH - standard units		7	7
Water & Ambient Temperature Minimum-Maximum - °F (°C)		40°-120° (4°-49°)	40°-120° (4°-49°)
Water Pressure Minimum - Maximum - psi (bar)		20 (1.4) - 100 (7)	20 (1.4) - 100 (7)
Maximum Flow Rate to Drain During Regeneration[2]	gpm (L/min)	2.0 (7.6)	2.0 (7.6)
Service Flow Rate (@15 psi (1.0 bar)) drop - gpm (L/min)[3]		5.5 (20.8)	5.5 (20.8)
Pressure Drop @ 5.5 gpm (22.7 L/min) - psi (bar)		15 (1)	15 (1)
Salt Used lb (kg)	Water Used Gallons (Liters)	WS80 Grains (Grams) removed	WS100 Grains (Grams) removed
1.6 (0.7)	14 (53)	7,569 (490)	7,801 (505)
8 (3.6)	23.5 (89)	25,862 (1676)	28,314 (1835)
15 (16.8)	35 (132)	27,792 (1801)	35,910 (2327)
Controller Type		Metered	Metered
Electrical Rating		12VAC, 50/60 Hz, 0.015 kW-hr	12VAC, 50/60 Hz, 0.015 kW-hr
Plumbing Connections (NPT)		1 inch male (MNPT)	1 inch male (MNPT)
Minimum Drain Line ID - inch (cm)		5/8 inch (1.6)	5/8 inch (1.6)
Media Tank Size - (ID x Height) - inch (cm)		10.5 x 23 (26.7 x 58.4)	10.5 x 26 (26.7 x 66)
Height - inches (cm)		27.8 (70.6)	31.3 (79.5)
Footprint - inches (cm)		15.9 x 19.1 (40.4 x 48.5)	15.9 x 19.1 (40.4 x 48.5)
Shipping Weight - approx. - lb (kg)		95 (43)	105 (48)
Media Type / Amount			
Fine Mesh Resin		0.8 cu.ft. (23L)	1.0 cu.ft. (28L)

For All Models:

Use clean white pellet, cube-style, or solar salt.
Drain Line (Minimum I.D.) 5/8 inch (1.6 cm)
Brine & Rinse total - 0.75 gpm (2.8 L/min)
Brine Draw - 0.25 gpm (0.9 L/min)
Rinse - 0.5 gpm (1.9 L/min)

[1] Iron reduction to 0.3 ppm or less. Iron reduction claims limited to 5 ppm in the state of Wisconsin.

[2] Rate of flow must be verified at the end of the drain line.

[3] For the purposes of plumbing appliance sizing, only the rated service flow rate and corresponding pressure loss may be used. Prolonged operation of a water softener at flow rates exceeding the tested service flow rate of 5.5 gpm (20.8 L/min) may compromise performance. Intermittent flow rate must not exceed 9.3 gpm (35.2 L/min).

System conforms to NSF/ANSI 44 for the specific performance claims as verified and substantiated by test data.

Notes

Notes

WellSoft™

Made In USA

System Tested and Certified by NSF International against NSF/ANSI 44 for the reduction of the claims specified on the Performance Data Sheet and at *www.nsf.org*

WellSoft

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