

WATERBOSS[®]

MODELS 700/900/950

OWNER'S MANUAL



Next >

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Water Softening by WaterBoss®

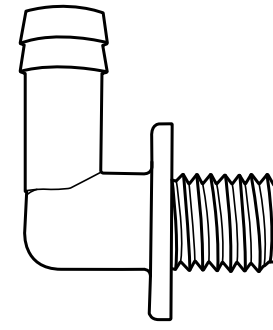
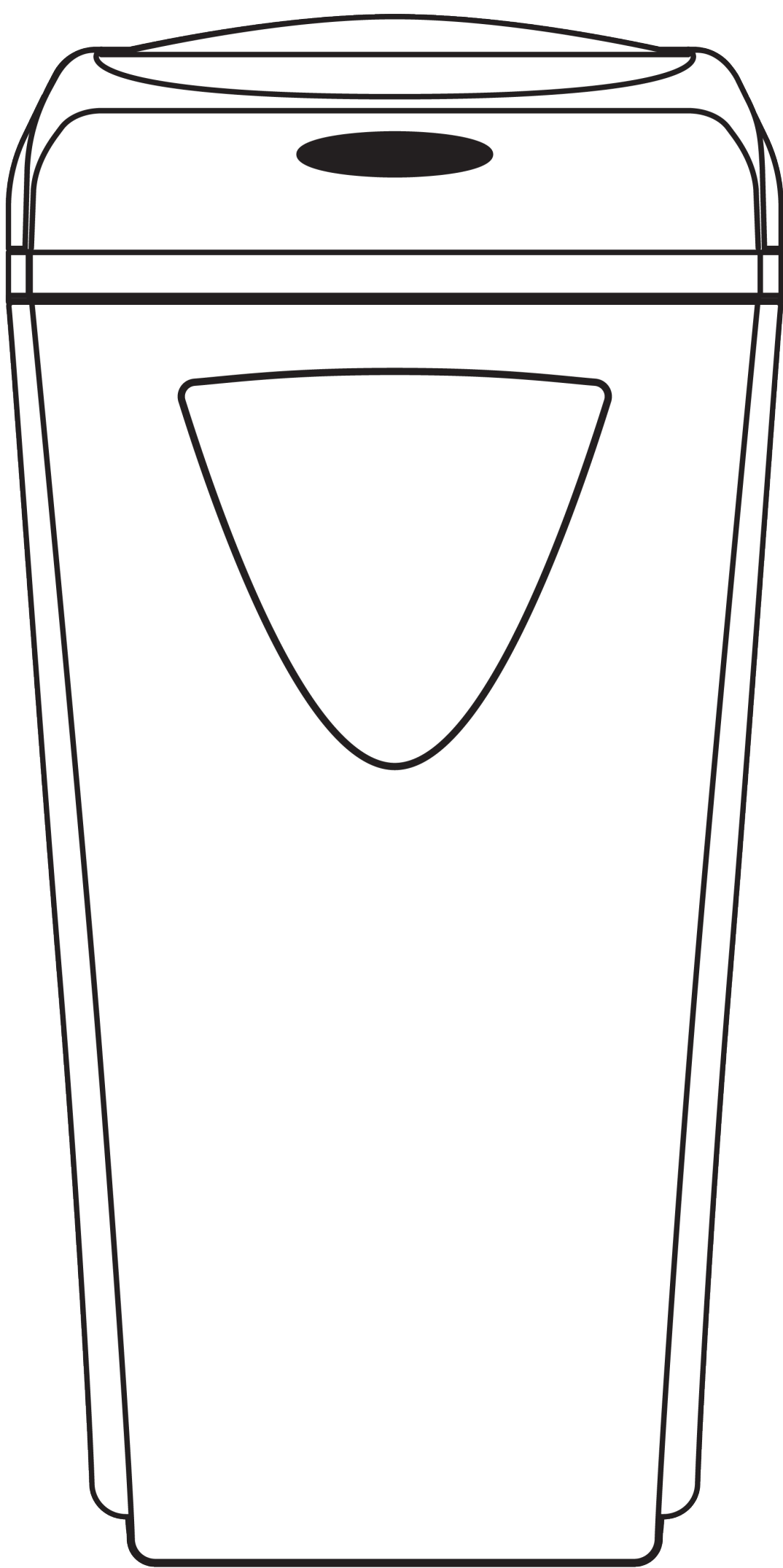
Congratulations on choosing a superior WaterBoss® water treatment solution. Keep this owner's manual to reference for installation and troubleshooting. If you have issues with the operation of your appliance, see the troubleshooting guide in the back of this manual or contact the HelpLine at 1-800-437-8993 from 8AM to 5PM ET. Help is also available on the WaterBoss® website: www.waterboss.com.

WATER SOFTENERS

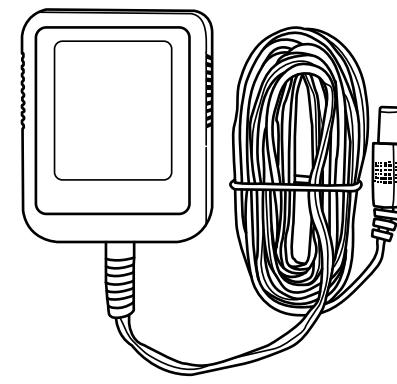
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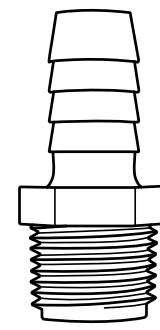
WATER SOFTENER



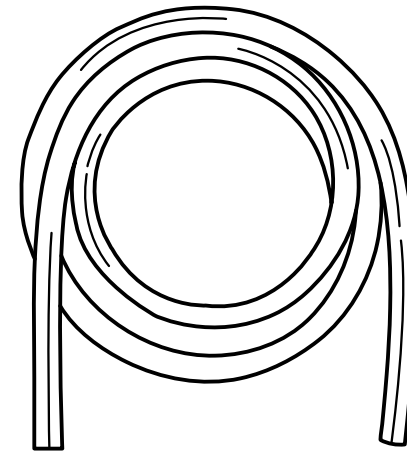
OVERFLOW ELBOW



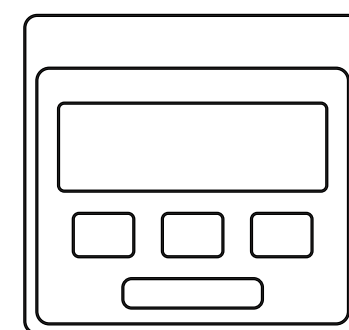
12V TRANSFORMER



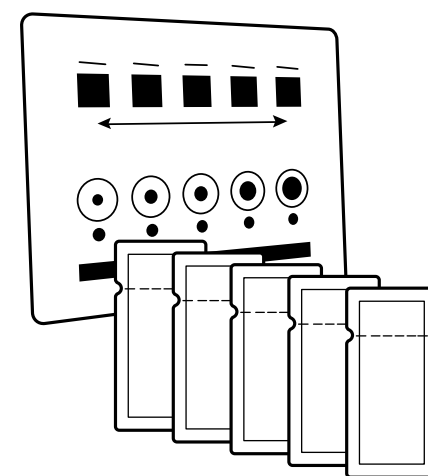
V-185 NOZZLE



DRAIN LINE



CONTROLLER



WATER TEST STRIPS

Please read entire manual to ensure all parts listed are present before installation. If any part is missing or damaged let us know by calling 1-800-437-8993. Do not attempt to install the softener.

Tools & parts recommended for installation:

- Crescent wrench
- Fittings 3/4" to 1"
- Pliers
- Drain Line Hose Clamp
- Screwdriver
- Valve Connection Fitting 1" FNPT (2)
- 1/2" ID Tubing for Overflow

Note: We recommend using a professional if pipe cutting or drilling is required. Basic plumbing knowledge is recommended prior to installation.

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. **Caution:** Do not mix different types of salt.
2. You may switch to a salt substitute (such as potassium chloride) in place of water conditioner salt at any time. If potassium chloride is used in place of salt, increase your hardness setting by 12% (multiply by 1.12). See Setting the Controller. **Caution:** Do not use potassium chloride if your water contains iron and/or manganese.
3. Should your electricity be off for any reason check your controller for the correct time and reset as necessary (See Advanced Customer Settings).
4. 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.
5. Protect the appliance, including the drain line, from freezing.
6. Adhere to all operational, maintenance, and placement requirements.
7. If dirt, sand, or large particles are present in the water supply, the appropriate WaterBoss® filter can reduce this issue.
8. 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 of chlorine bleach solution to the brine well of the brine cabinet. The brine cabinet should have water in it. Start a manual regeneration.
9. The bypass valve (located on the main control valve) enables you to bypass the appliance if any work is being performed on the appliance, well pump, or plumbing. See Bypass Valve. Use Bypass mode also for watering plants or lawns with untreated water.
10. Before putting the appliance back in service after work has been performed, turn on the nearest cold water tap until water runs clear.
11. Inspect and clean the brine cabinet and air check/draw tube assembly annually or when sediment is present in the brine cabinet.
12. Model 950 contains redox media and activated carbon media. These have a finite life and will eventually require replacement if the advertised performance capabilities of this device are to be maintained.
13. This product is certified for barium and radium 226/228 reduction according to NSF/ANSI Standard 44. Any Bypass system must be completely in the Service position to ensure maximum barium and radium 226/228 reduction.

Refer to this checklist before installation.

- 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. The appropriate WaterBoss® Water Filter can address these water concerns.
 - Model 900-IF (Iron Filter) — Reduces iron, manganese, hydrogen sulfide, and iron bacteria.
 - Model 900-NF (Acid Neutralizing filter) — Adjusts low pH water to a non-corrosive state.

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 also increase your water hardness setting by 5 grains per gallon (86 mg/L) for every 1 ppm (1 mg/L) of ferrous iron.

- Water Characteristics** — Models 700, 900, and 950 require a pH of 7 or above to function properly. An iron test to determine iron levels is also necessary. The 900-NF Acid Neutralizing Filter adjusts pH levels of 6.3 or above.
- Water Hardness** — Double check hardness of water with test strips provided to verify that your appliance is right for the job.
 - Model 950 is for municipally-supplied water without iron. Model 950 will condition water up to 35 grains of hardness per gallon (600 mg/L).

- Model 700 will condition water for up to 70 grains of hardness per gallon (1,200 mg/L).
 - Model 900 will condition water for up to 90 grains of hardness per gallon (1,540 mg/L). (See Specifications.)
- Water Pressure** — Not less than 20 psi or greater than 80 psi (1.4–5.5 bar) constant. If water pressure exceeds 70 psi (4.8 bar), a pressure regulator is recommended.
- Water Supply Flow Rate** — A minimum of 2 gallons (7.6 L) for the 700 and 900 models to 3 gallons (11.4 L) for the 950 model per minute or equal to the backwash flow rate of the particular model 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.
- Water Temperature** — Not less than 40° or greater than 100°F (4°–49°C).
- Drain** — Drain 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 and Start-Up Procedures.
- 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.

PRECAUTIONS

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. Examine the inlet line to ensure water will flow through it freely and that the inlet pipe size is correct. For well water with iron, the recommended minimum inlet pipe size is 3/4-inch I.D. and for municipal water the recommended minimum inlet pipe size is 1/2-inch I.D.
6. Install a pressure-reducing valve if the inlet pressure exceeds 70 psi (4.8 bar).
7. Install a gravity drain on the cabinet.
8. Secure the drain line on the appliance and at the drain outlet. See Installation Steps and Start-Up Procedures.
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 100°F (38°C). See 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 overtighten plumbing connections.
5. Do not plumb the appliance against a wall that would prohibit access to plumbing. See Installation Steps and Start-Up Procedures.
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 microbiologically unsafe or of unknown quality without adequate disinfection before or after the appliance.
10. Do not allow your appliance or drain line to freeze.

Note: A bacteriostasis claim does not mean that these devices will make microbiologically unsafe water safe to consume or use.

Install, set up, and use the appliance within the operating limits outlined in this manual. 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 Site Setup

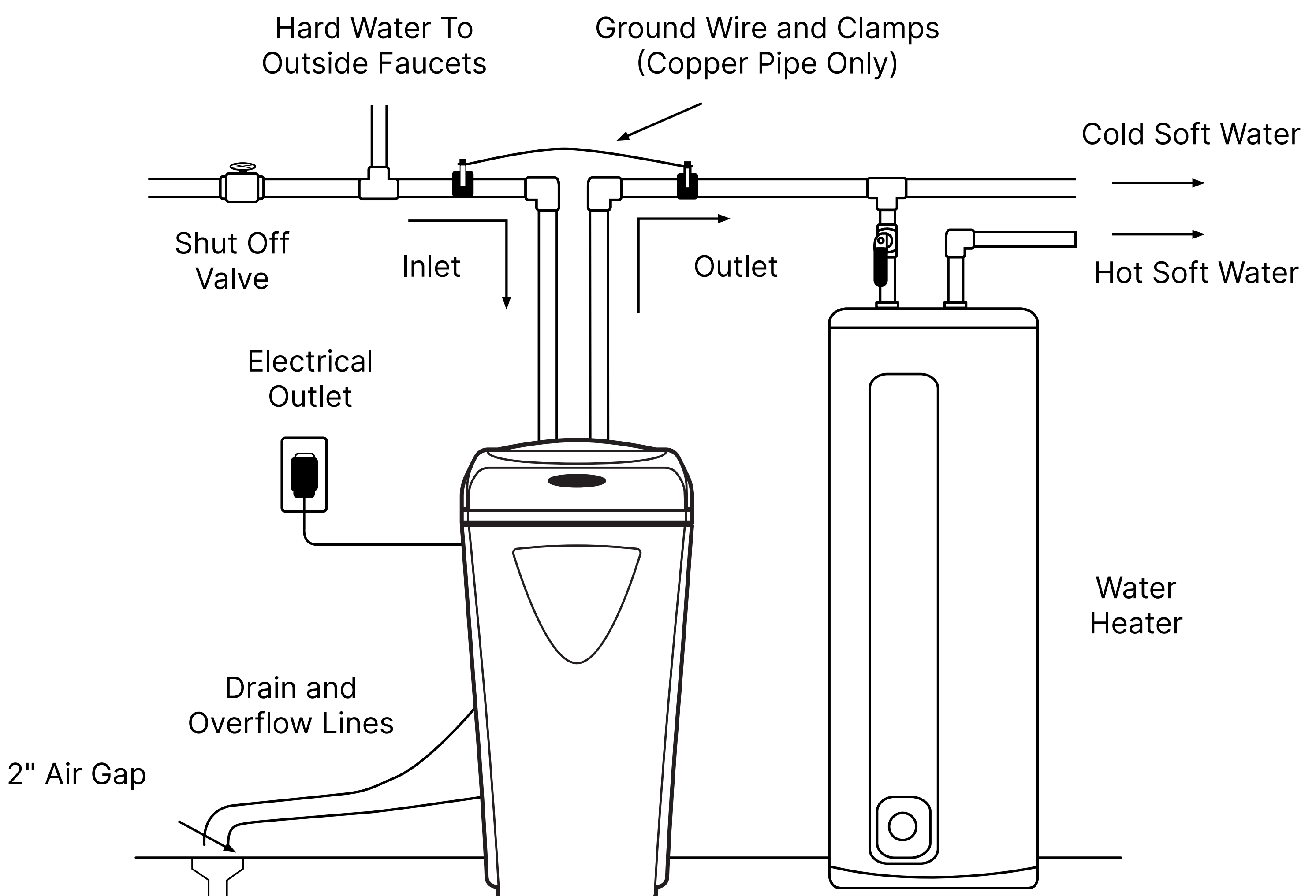
1. Make sure the placement area is clean.
2. Turn off the electricity and water supply to the water heater. For gas water heaters, turn the gas cock to "Pilot."
3. Examine the inlet plumbing to ensure that the pipe is not plugged with lime, iron, or any other substance. Clean or replace plugged plumbing

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

4. Make sure the inlet/outlet and drain connections meet the applicable state and local codes.
5. Check the arrows on the bypass valve to ensure that the water flows in the proper direction. See Bypass Valve.

Caution: Do not plumb the appliance in backward.

6. Place the appliance in the desired location using Figure 1 as a guide. The diagram in Figure 1 applies to basement, slab, crawl space, and outside installations.



STEP 1 Site Setup, Cont.

- 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. Contact the HelpLine for further assistance in determining the proper installation sequence.

Water Heaters: If less than 10 feet (3.0 m) 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.

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

STEP 2 Test Your Water

- Remove any packaging or installation materials from the brine cabinet.
- Test your water quality with the strips provided. (See Setting the Controller.) Optionally, obtain a report on your water's quality.

STEP 3 Turn Off Water Supply

- Turn off the water supply.
- Open the hot and cold water taps to depressurize the lines.

STEP 4 Connect Water Lines

Note: See *Optional Plumbing Procedures* for information on copper fittings and joining plastic pipe.

- Lift and remove the cabinet cover.

Note: *PTFE tape or pipe joint compound is acceptable, but plumber's putty or caulk should not be used.*

- Attach the water lines to the appliance in compliance with all state and local, building, plumbing, and electrical codes. Do NOT overtighten the connections on the plastic threads.

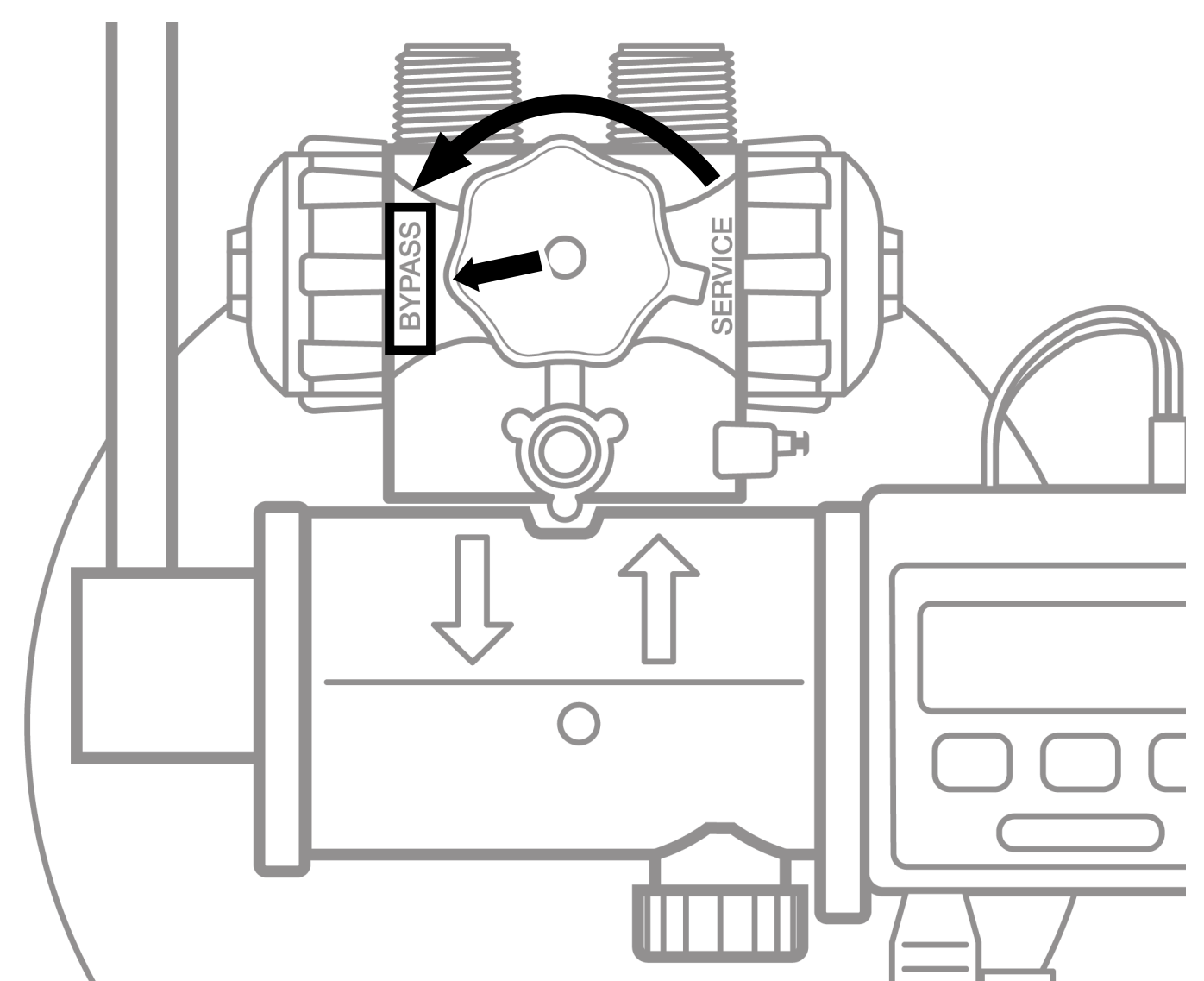


Figure 2: Connect Water Lines

Note the Bypass Valve Position.

**Connection fittings are NOT INCLUDED additional purchase required.*

STEP 4 **Connect Water Lines, Cont.**

3. Check the arrows on the valve to ensure that the water flows in the proper direction.

Caution: Do NOT plumb your appliance in backward.

STEP 5 **Connect Gravity Overflow Connection**

Note: The overflow line drains away excess water should the tank fill with too much water or the appliance malfunction.

1. Attach the gravity overflow connection elbow and check that it is in the down position. (See Figure 3)
2. Connect 1/2-inch I.D. tubing (size cannot be reduced) between the overflow fitting and a suitable floor drain, laundry tub, or other suitable waste receptor. This tubing is not supplied with the appliance.

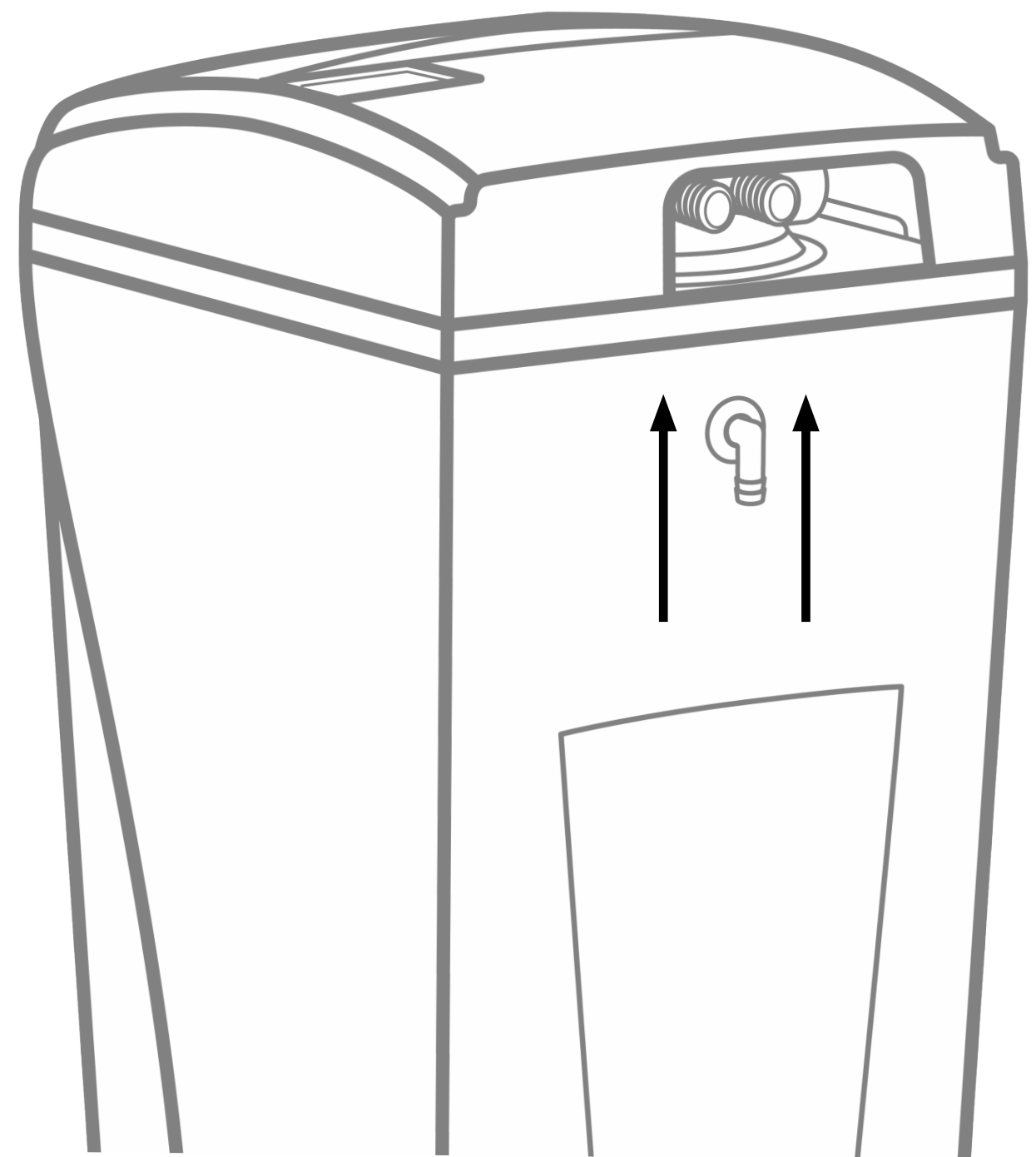


Figure 3: Gravity Overflow Connection

Ensure that the overflow line ends at a drain that is at least 3-inch (8 cm) lower than the bottom of the overflow fitting. Maintain a minimum of 2-inch (5 cm) air gap. The gravity line cannot be run overhead.

STEP 6 **Connect Drain Line**

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

1. Connect the drain line to the drain end cap (See Figure 4) with a minimum 1/2-inch I.D. tubing (supplied). The size cannot be reduced.

Note: Using PTFE tape or plumber's putty, screw the threaded drain fitting into the drain end cap.

2. 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.

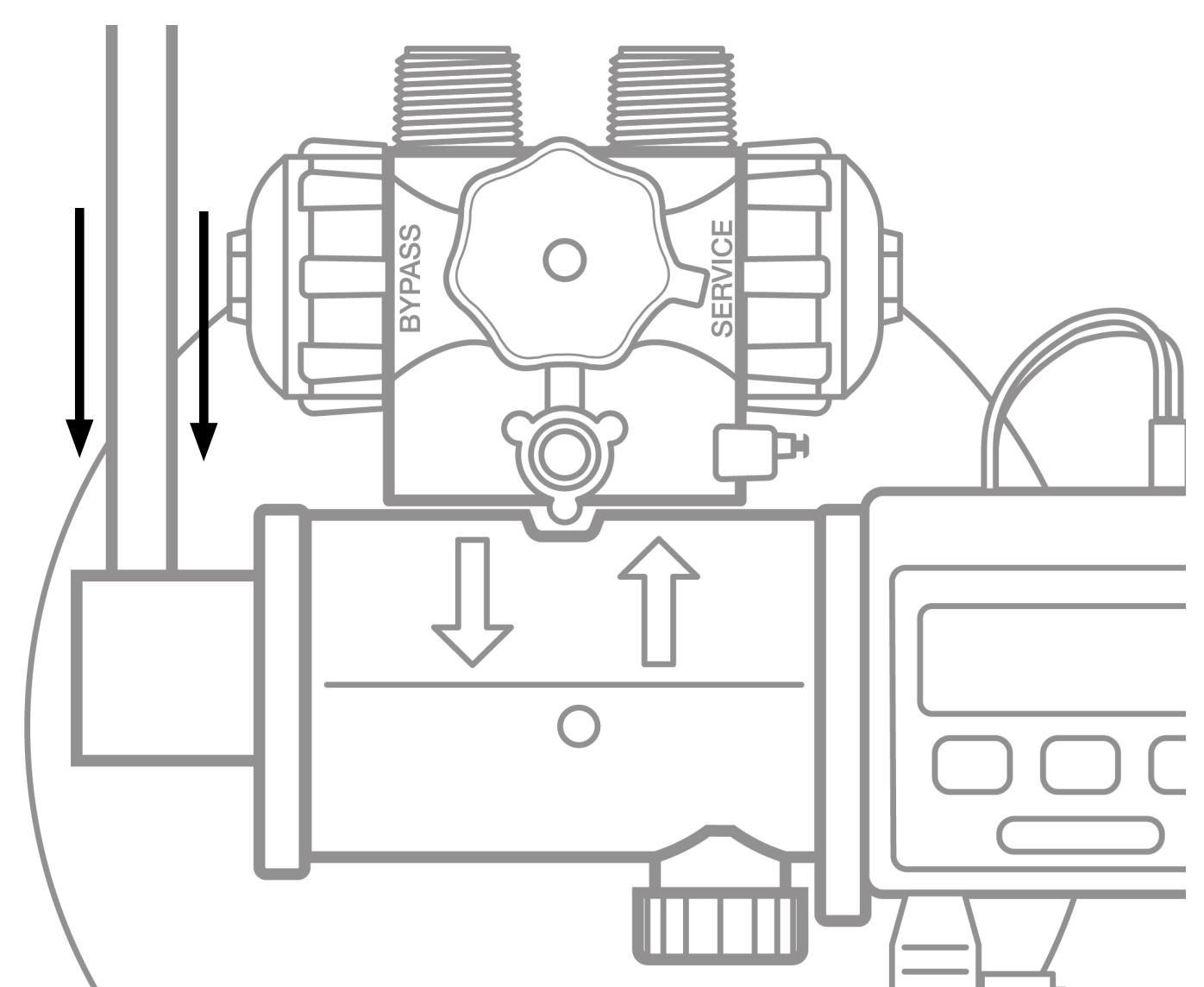


Figure 4: Connect Drain Line

STEP 6 **Connect Drain Line, Cont.**

3. 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.
4. 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.

STEP 7 **Flush Lines**

1. Place the appliance in the Bypass position. (See Figure 5)
2. Turn on the main water supply.
3. Open the nearest cold water faucet to flush the plumbing of any excess soldering flux, air, or any other foreign material.
4. Return the appliance to Service position.

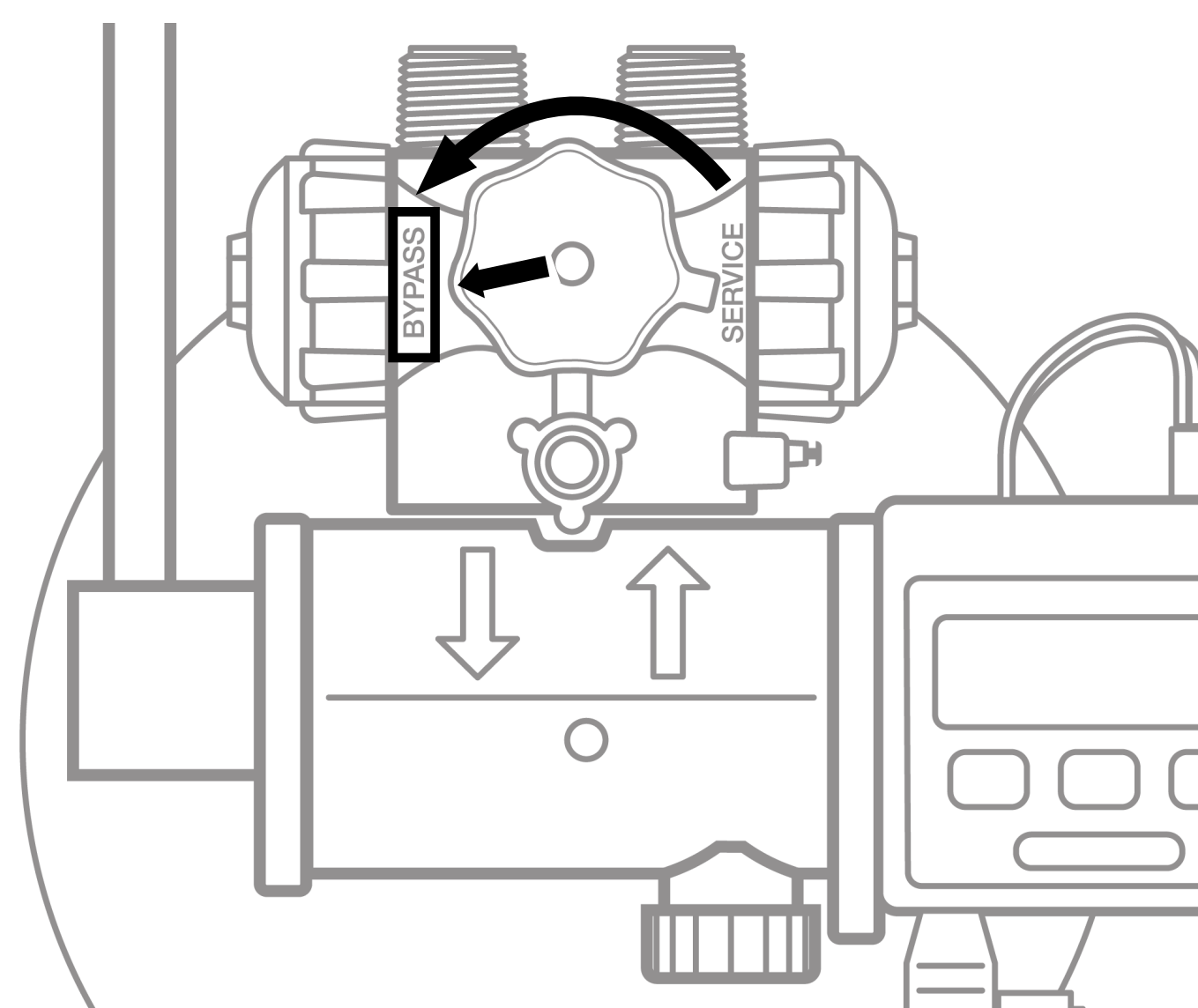


Figure 5: Bypass Position

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.

STEP 8 **Check for Leaks**

1. Close all faucets.
2. Check all lines and connections for leaks. If leaks are found:
3. Turn off the main water supply.
4. Open a cold water faucet to depressurize the lines.
5. Close the faucet to eliminate any siphoning action.
6. Repair all leaks.
7. Turn on the water supply.
8. Place the appliance in the Service position to slowly fill the media tank. (See Figure 6)
9. Open a cold water faucet to purge air out of the media tank.
10. Close the faucet and recheck for leaks.

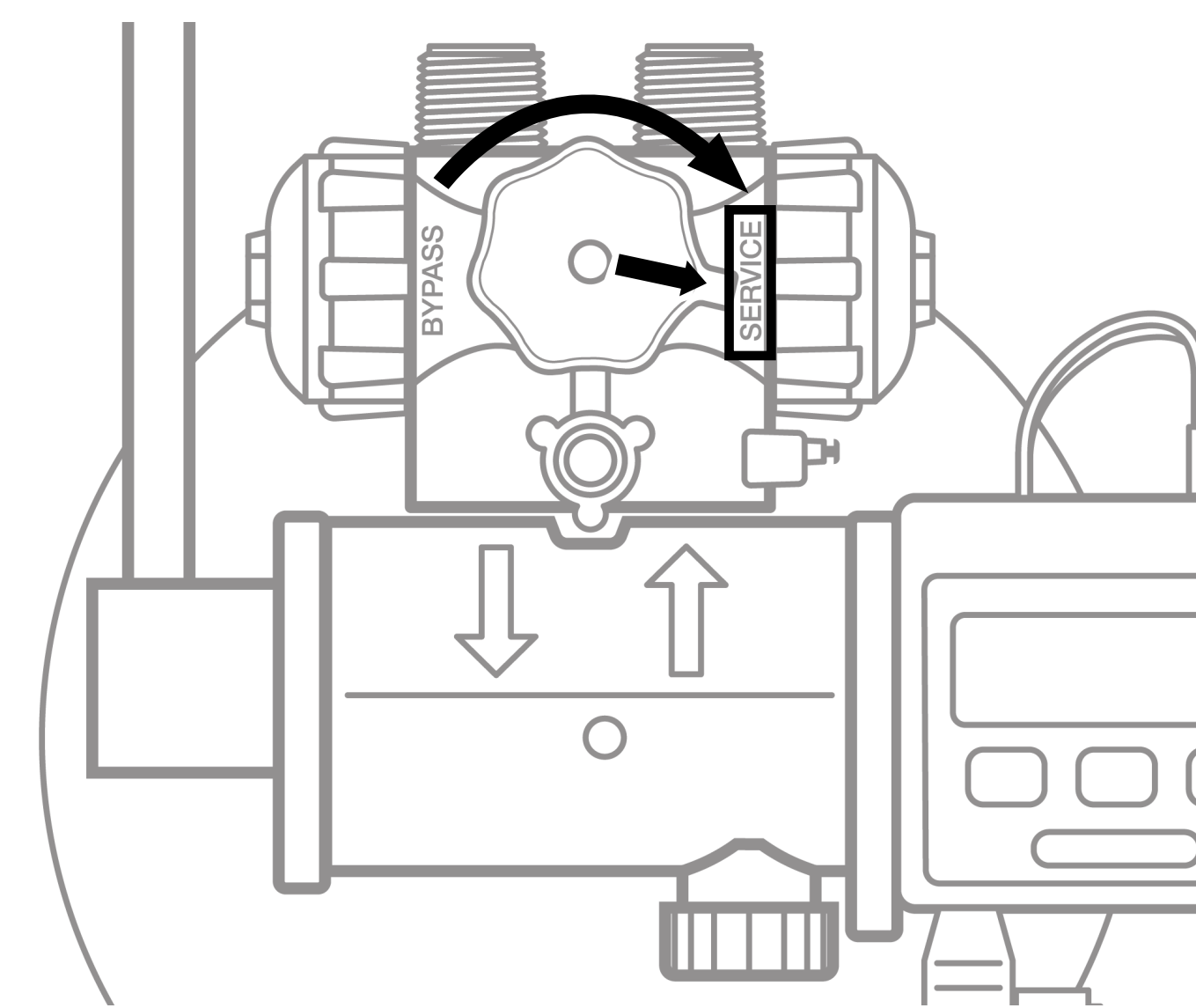
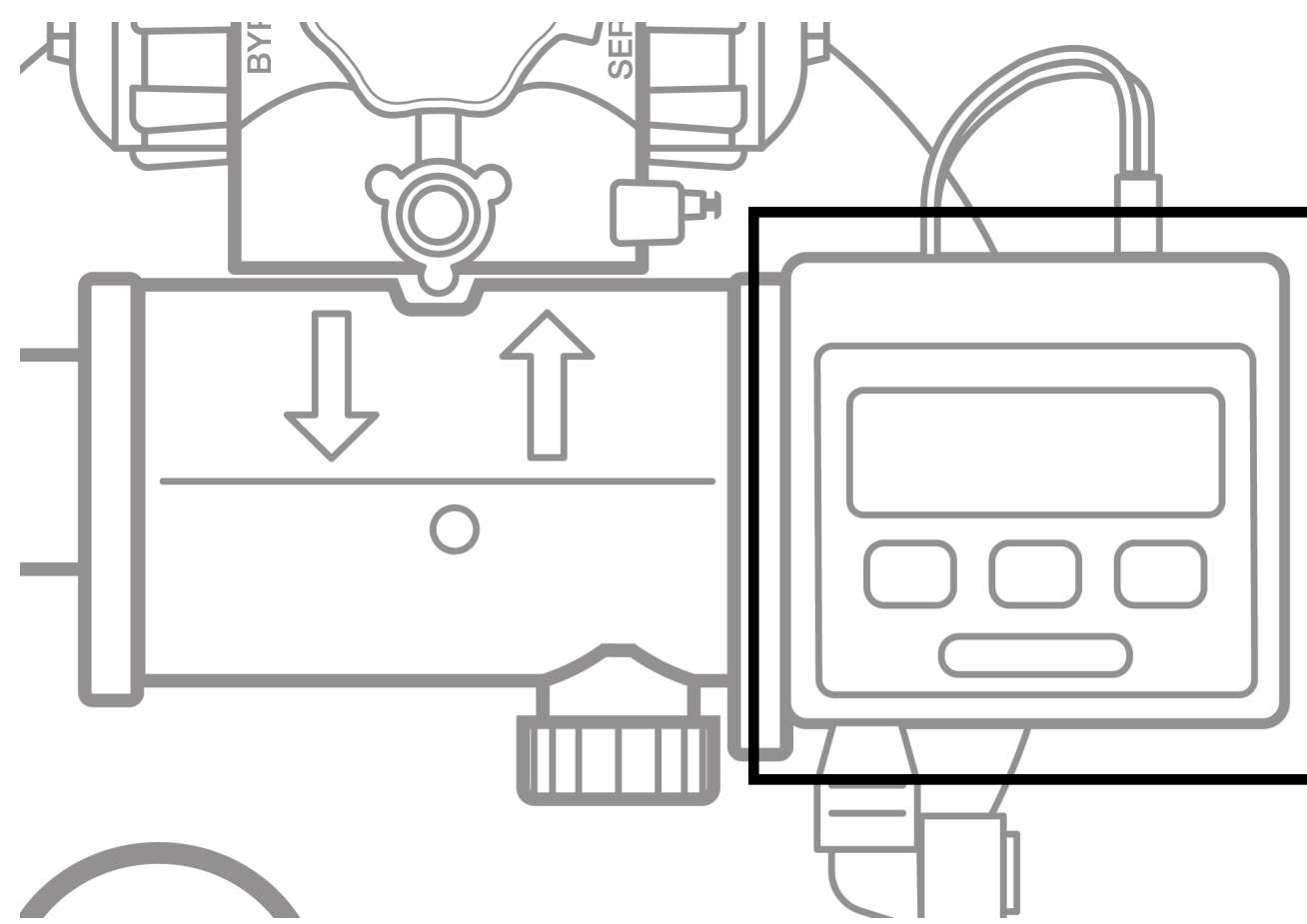


Figure 6: Service Position

STEP 9 Plug in the Transformer

1. Connect the transformer power cord to the back of the controller. (See Figure 7)
2. Plug the transformer into an appropriate outlet.
3. Ensure that the outlet selected is not operated by an On/Off switch.

**Figure 7: Connect Power Cord****STEP 10 Program the Controller**

1. Program the appliance controller See Setting the Controller information on page 17.

STEP 11 Add Water to the Brine Cabinet

1. 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.
2. Ensure the appliance is in Service position and your water supply is turned on.
3. 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 sep 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 12 Fill the Brine Cabinet with Salt

1. 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.*

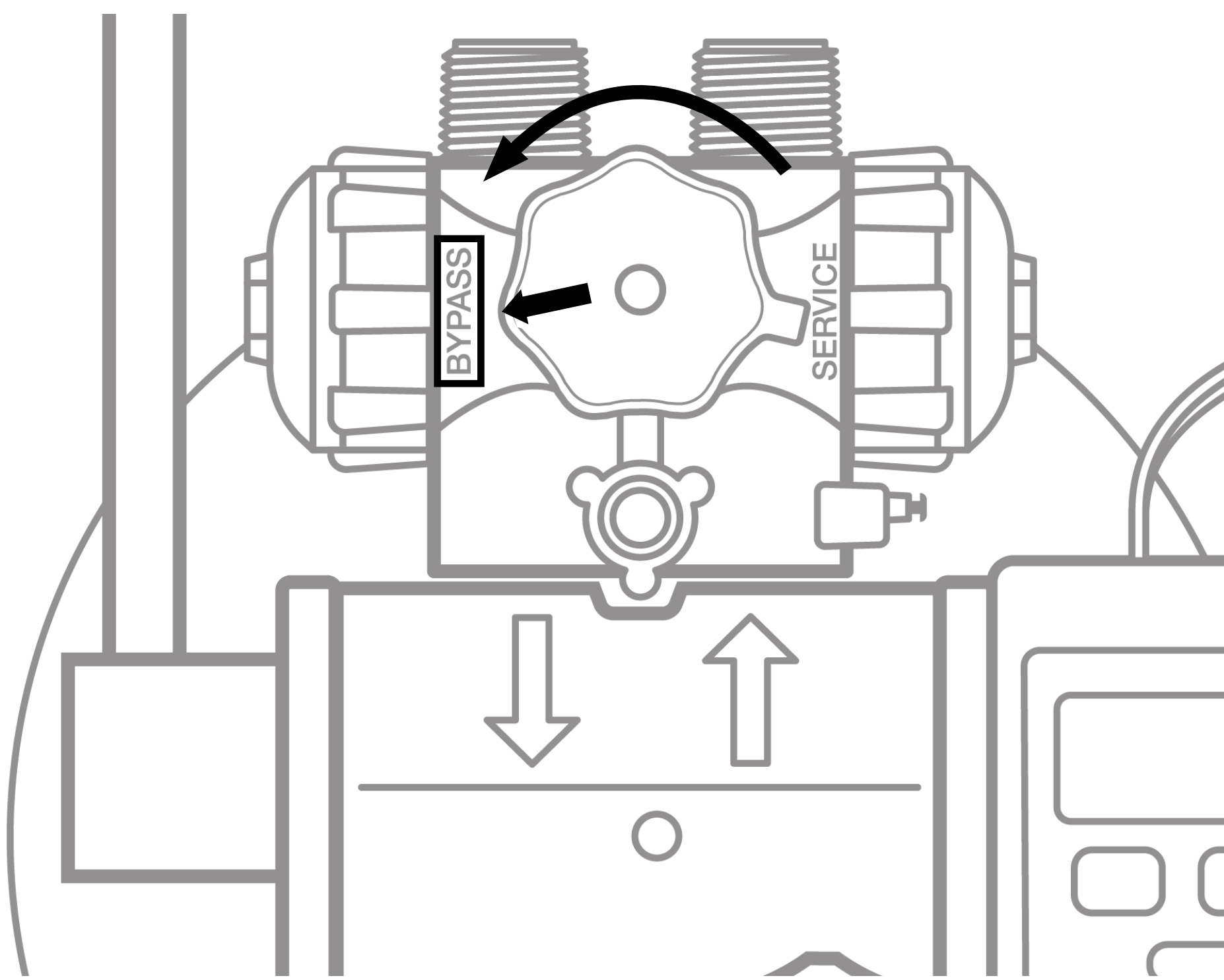
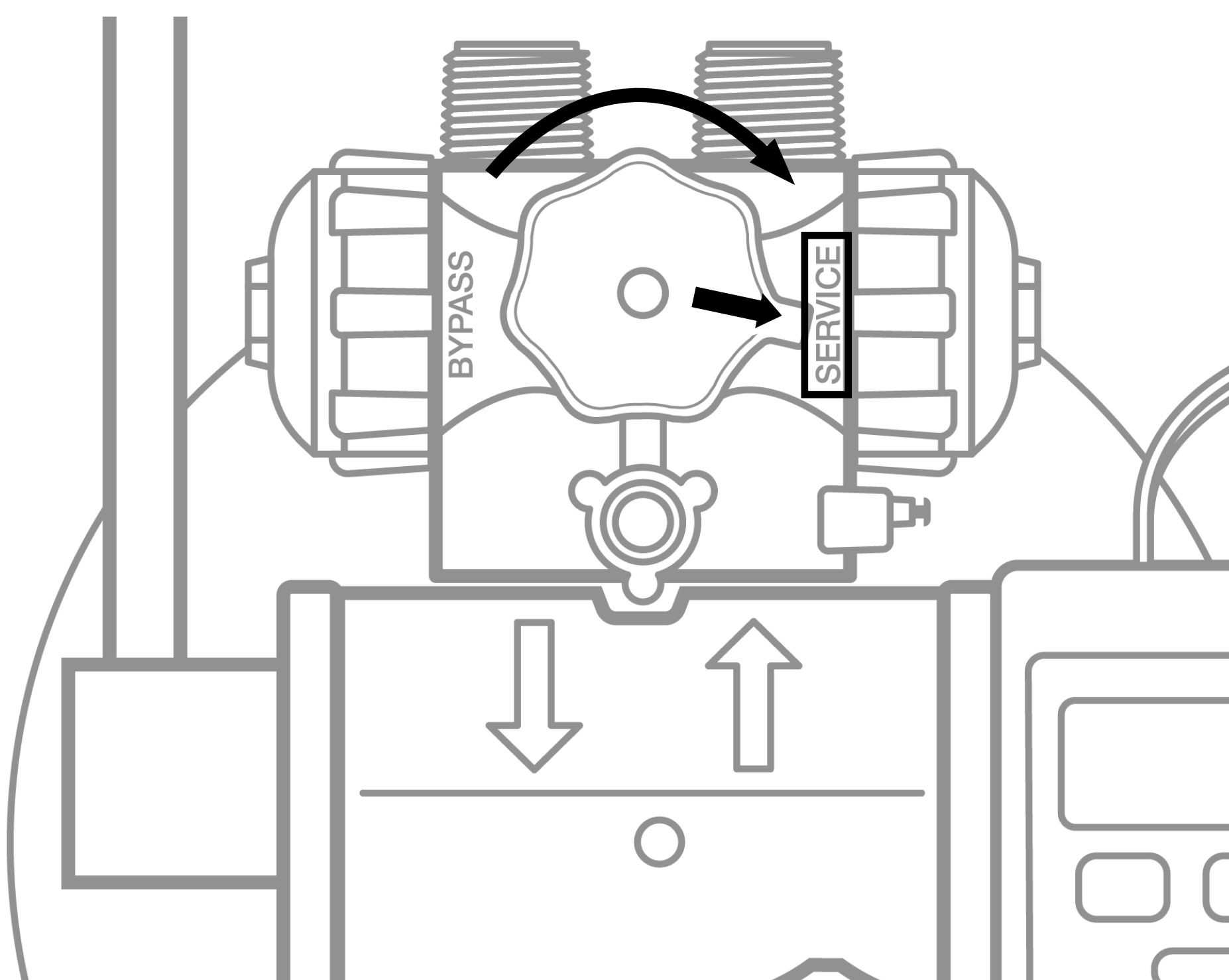
2. After you add salt, including adding it after the tank has run out of salt, wait two hours for saturated brine before starting any regeneration

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

STEP 13 Complete Installation

1. Ensure that the appliance is in the Service position. (See Figure 6)
2. Ensure the water supply is on.
3. Turn on the electricity and water supply to the water heater. For gas water heaters, return the gas cock to "On."
4. Open a cold water tap and allow the appliance to flush for 20 minutes or until approximately 72 gallons (273 L) have passed through the appliance. This procedure is required to meet NSF requirements. Verify the flow rate on the controller, which indicates water flow. (See Figure 2)
5. Replace the cabinet cover.

Your appliance is equipped with a bypass valve. 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 is located on the main control valve. (See Figure 8) To engage the bypass, turn the knob to the Bypass position. 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 position. Ensure that the appliance is returned to Service position when the appliance is repaired or the use of untreated water is complete by turning the knob to Service. To blend hardness back into the water using the bypass, turn the knob slightly from the Service position toward the Bypass position.

**Figure 8: Bypass Valve****Figure 9: Service Position**

This appliance features a four-button 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.



Figure 10: Four-Button Controller

Note: Ensure that the bottom of the controller is firmly locked onto the four tabs on the top of the drive end cap assembly. See Cabinet and Cover Assemblies diagram later in this manual.

CONTROLLER PART	FUNCTION
LCD Display	Shows the status of the controller
Demand Mode	The controller measures water usage and regenerates based on need, so you do not have to worry about vacation settings or extra guests. The appliance will regenerate using only the necessary amount of water and salt. If your power has been off, the appliance will retain programmed settings indefinitely. Note: You should not need to change from Demand Mode.
Soft Water Remaining	Shows regeneration cycle numbers during regeneration. The read-out will flash with the cycle number. The flashing regeneration numbers are: <ul style="list-style-type: none"> • First cycle (01) First Backwash • Second and Third cycles (02) Brine/Slow Rinse • Fourth cycle (03) Second Backwash • Fifth cycle (04) Brine Refill • Sixth cycle (H0) Service (Briefly) When regeneration is complete, the display shows the number of gallons in hundreds of soft water remaining. (See above) Regeneration typically is complete in about 30 minutes.
waterMizer®	Indicates that water is flowing through the appliance; the waterMizer® indicator turns whenever water is being used; useful for checking for proper plumbing and leaks.
powerClean™	Displays when feature is activated. See powerClean™ Button.

BUTTON	FUNCTION
Set	Used to set Customer Settings
Change	Used to change Customer Settings
powerClean™ (700 and 900 only)	<p>Activates/deactivates the powerClean™ feature, which is a service/maintenance step for water supplies that have an excessive amount of iron. powerClean™ will display when this feature is activated. The appliance will regenerate every other day with five pounds (2.3 kg) of salt. Leave the powerClean™ 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.</p>
Regenerate	<p>Used when starting your water conditioner to start an immediate regeneration, or to restore capacity if you run out of salt.</p> <p>To Start an Immediate Regeneration</p> <ol style="list-style-type: none"> 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. <p>To Quickly Advance Through the Regeneration Cycles (used when starting up or diagnosing the appliance only)</p> <p>Press and hold the Regenerate button for about five seconds until the cycle begins.</p> <p>The cycle position will display (for example, 01).</p> <p>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 before advancing to the next cycle position.</p>

STEP 1 Determine the Controller Setting Number

For municipal water, call the water department to determine the hardness and pH of your water supply.

For well water, use the hardness test strips provided with your appliance, or have a sample of your untreated water tested by a water testing laboratory.

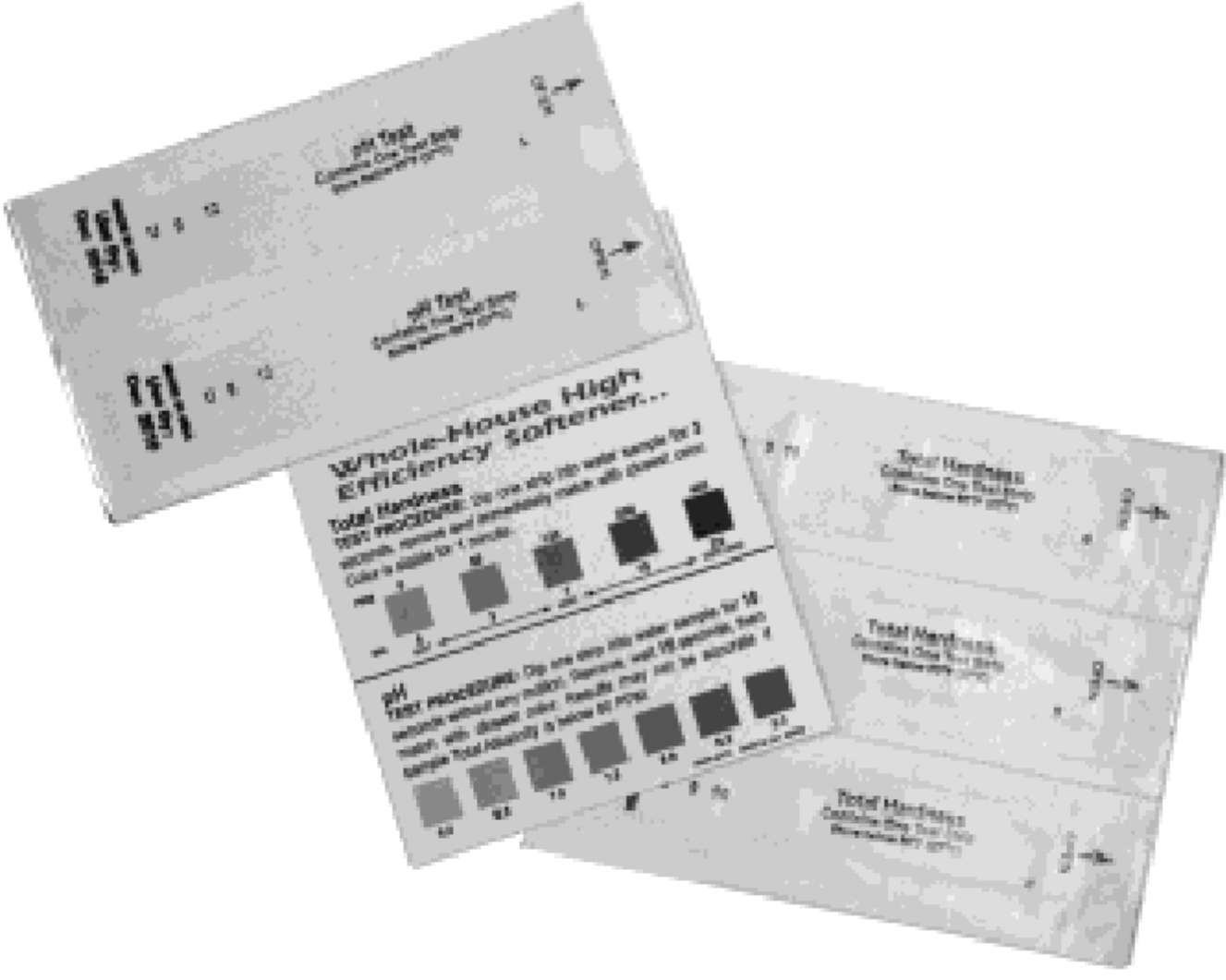


Figure 11: Water Test Kits

1. Test Strips — Follow the instructions on the test kits. 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. This number gives the hardness in grains per gallon and parts per million (mg/L).
2. Testing Laboratory — To ensure proper settings, have a sample of your untreated water tested for iron and pH.
3. If the pH is below 7 and you have a 700 or 900 unit, call the HelpLine listed in General Information.
4. Use the following example to determine the controller setting.

IRON TYPE	YOUR WATER	ENGLISH EXAMPLE	METRIC EXAMPLE
Enter hardness grains per gallon (mg/L)		20	342
If your water contains 3 ppm (mg/L) iron, add 15 (257)*	+	+ 15	257
The sum is your controller setting number		35	600 (rounded)

STEP 2 Enter Your Setting Number Into the Controller

1. Press and hold the Set button for about 5 seconds until “25” displays.
2. Press the Change button until the display matches your compensated number. Once you pass “70” (models 700 and 950) or “90” (model 900), the display will reset to “03.”
3. Press Set to save the hardness setting number.
4. To recheck the hardness setting number, hold down the Set button for about 5 seconds.

Note: Refer to Specifications for the maximum water hardness that your appliance can handle.

Most customers will want to use the factory default settings, so no changes are necessary. However, you can reset the controller settings if the factory default settings are not suitable for your needs.

Note: Be sure to check that the Time of Day is correct.

Set High Capacity or High Efficiency

Your appliance can be programmed for High Capacity (HC) or High Efficiency (HE).

- High Capacity means the appliance will regenerate less often, but use more salt.
- High Efficiency will make the appliance regenerate more often and use less salt. This is the default. The High Efficiency setting meets or exceeds the requirement some states have for salt efficiency.

To Enter Advanced Customer Settings Mode

Press and hold the Set and Change buttons at the same time for 3 seconds. The display should show only the controller type. After 3 seconds, the entire screen is lit for a half second, and then “HC” displays.

Press Change to toggle the digit display between “HC” and “HE.”

When the desired value is displayed, press Set.

Note: HE ensures the appliance chooses salt settings that get 4,000 grains per pound (570 grams/kg) of salt for each regeneration or better. This choice meets or exceeds the requirement some states currently have in regards to salt efficiency.

Note: All models are equipped with patented capacity guard.

Once in HC or HE, you can set the mode, hours to next regeneration, gallons or liters, time format, time of day, and time of regeneration.

STEP 1 Set Mode

Display reads “Demand Mode.”

To Change Mode

1. Press Change.
 - Delay Mode allows regeneration at a specific time (for example, at 2 a.m. when less water is typically being used).
 - Demand Mode triggers a regeneration as soon as softening capacity is exhausted. This is the default.
 - When the desired mode is displayed, press Set.

STEP 2 Set 96 Hours Until Regeneration

Display reads “96 Hours.”

To Change Mode

1. Press Change to turn Off. If “96 Hours” is selected, the appliance will work no more than 4 days without a regeneration. Default is for “96 Hours” to be On.

Note: If there is iron in your water, select this option. If you are using model 950, on most municipal water supplies, turn this option Off.

2. When the desired mode is displayed, press Set.

STEP 3 Set Gallons or Liters

Display reads Gallons x 100 (or Liters x 1000).”

To Set Gallons or Liters

1. Press Change to toggle between gallons and liters. Choosing “Gallons” sets the controller to English units, and choosing “Liters” sets it to metric units.
2. When the desired units are displayed, press Set.

STEP 4 Set Time Format

Display reads between “12” if gallons were chosen or “24” if liters were chosen.

To Set Time Format

1. Press Change to toggle between 24 and 12. This controls the selection of a 12-hour (AM/PM) or 24-hour clock. If 24-hour, 00=midnight.
2. When the desired time format is displayed, press Set.

STEP 5 Set Time of Day

Display reads “Set Time” and “12” (or “24”) on left side of screen.

To Change Time of Day

1. Press Change until the current time is displayed. Default is 12 PM.

Note: Set time to the nearest hour.

2. When the desired time is displayed, press Set.

STEP 6 Set Regeneration Time

Display reads “Set Reg. Time” followed by the current regeneration time that is set (02).

To Change Regeneration Time

1. Press change until your desired regeneration time is displayed. Default is 2 AM.
2. When the desired regeneration time is displayed, press Set.

Note: Whenever you experience an electrical outage, check your controller for the correct time. Make any necessary corrections.

Programming is now complete.

Optional Procedures

This section provides information on plumbing with copper fittings and with plastic pipe.

Hard Plumbing the Bypass With Copper Fittings

Do not use connection 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.

1. Wrap the threads three times with 1/2-in. wide PTFE tape. Place each consecutive wrap on top of the previous wrap.
2. To prevent tearing of the tape, use PTFE 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.
3. Use a union with a threaded connection to facilitate repair of potential leaks in soldered joints.
4. 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.
5. Ensure that the copper tube is at least 4 in. (10 cm) long.
6. Turn the fitting counterclockwise until you feel the threads engage and then tighten to prevent cross threading. Do NOT overtighten the fittings.
Caution: Do NOT allow heat from the torch to transfer to the plastic valve component, which could be damaged.

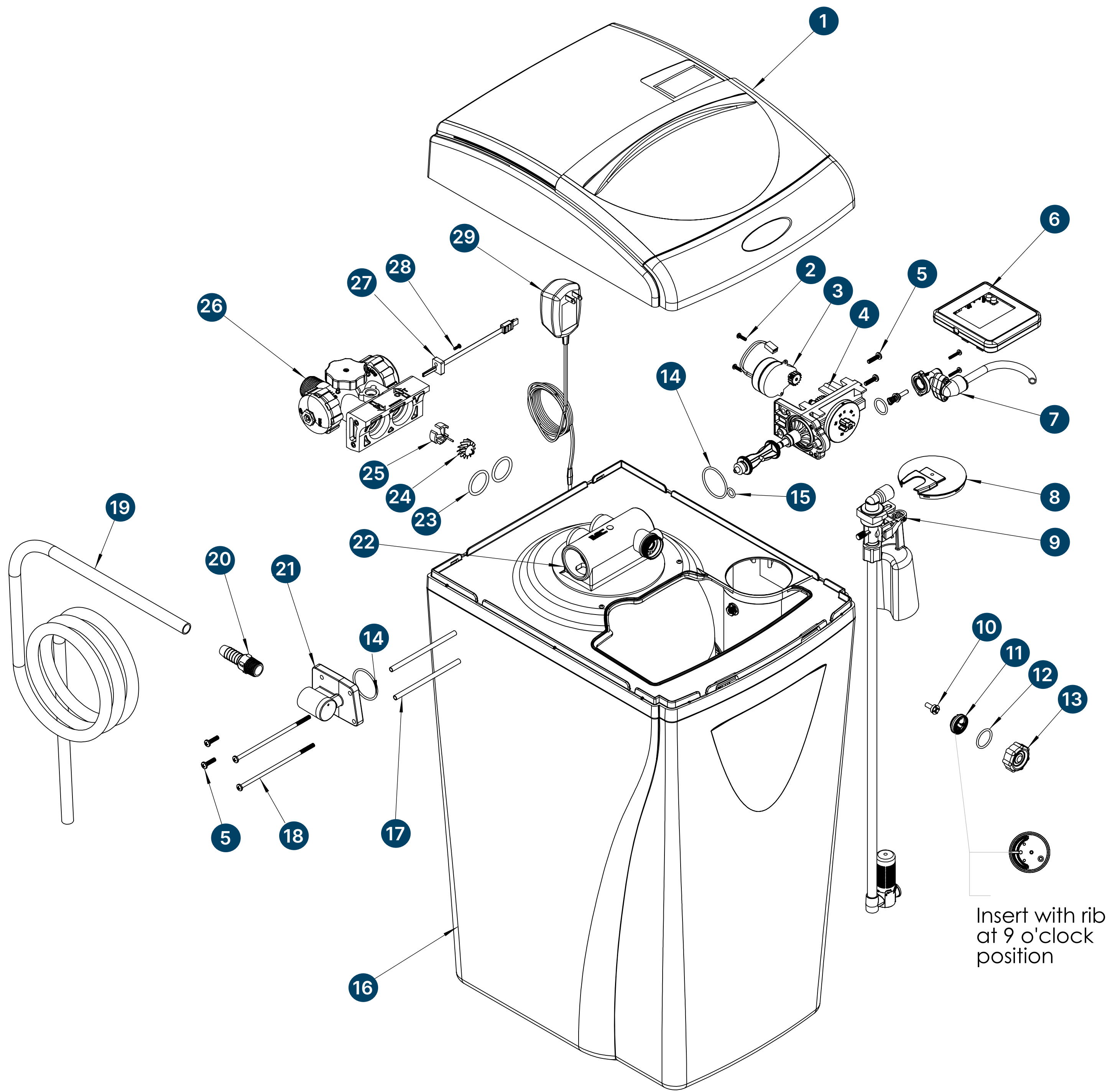
Plastic (PVC/CPVC) Pipe Joining Procedures

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

1. 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.
2. 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.
3. 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.

4. **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.
5. **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.
6. **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.



PART #	DESCRIPTION	QTY.	PART #	DESCRIPTION	QTY.
1	100241011 Valve Cover Assembly	1	16	100240987 Cabinet 700	1
2	100238196 Screw	2		100240995 Cabinet 900/950	1
3	100238181 12 Volt Motor	1	17	100242049 Sleeve	2
4	100252693 Drive End Cap Assembly	1	18	100238198 Screw	2
5	100238199 Screw	4	19	100238186 ½" ID Drain Line	1
6	100241148 700/950 Computer Control Assembly	1	20	100238185 Drain Fitting, 1/2-inch MNPT x Barb	1
	100241150 900 Computer Control Assembly	1	21	100238228 700/900 Drain End Cap	1
7	100242017 Brine Valve Assembly	1		100241852 Drain End Cap Assembly, Model 950 only	1
8	100240996 Brine Well Cover	1	22	100107247 700 Media Tank with Resin	2
9	100065565 700 Safety Shutoff	1		100107248 900 Media Tank with Resin	2
	100238183 900/950 Safety Shutoff	1		100242142 950 Media Tank with Resin	2
10	100241946 Injector Throat	1	23	100242050 O-Ring	2
11	100237421 Injector Nozzle with Over-Mold Gasket	1	24	100238201 Turbine Assembly	1
12	100242034 O-Ring	1	25	100238202 Plastic Turbine Axle	1
13	100037729 Injector Cap	1	26	100238184 Bypass Valve Assembly	1
14	100241865 O-Ring	2	27	100238200 Turbine Sensor/Cap Assembly	1
15	100241869 O Ring	1	28	100241861 Sensor Cap Screw, Self-Tapping	1
			29	100238182 12V Transformer/Power Cord	1

	700	900	950
Max Compensated Hardness gpg (mg/L)	70 (1,200)	90 (1,540)	35 (600)
Maximum Ferrous Iron Reduction¹	10 ppm ¹	10 ppm ¹	0
Minimum pH (standards units)	7	7	7
Media Type and Amounts	Self-Cleaning Filter Media Super Fine Mesh Resin Total—0.7 cu. ft. (20L)	Self-Cleaning Filter Media Super Fine Mesh Resin Total—1 cu. ft. (28L)	Redox Media-4 lb (1.8 kg) Activated Carbon-0.25 cu. ft. (7 L) Super Fine Mesh Resin-0.7 cu. ft. (20 L) Total: 1 cu. ft. (28 L)
Salt²—Pounds (kg) Capacity—Grains (grams) Water—Gallons (L) Time—Minutes	1.1 5105 grains 19.4 gal (73.4 L) 20:30	1.6 8180 grains 19.5 gal (73.8 L) 26:00	1.1 4980 grains 20.7 gal (78.4 L) 20:30
Salt²—Pounds (kg) Capacity—Grains (grams) Water—Gallons (L) Time—Minutes	6.5 (2.9) 15640 grains 30.7 gal (116.2 L) 34:00	6.5 (2.9) 23277 grains 19.5 gal (73.8 L) 35:30	6.5 (2.9) 18615 grains 23.2 gal (87.8 L) 34:00
Salt²—pounds (kg) Capacity—Grains (grams) Water—Gallons (L) Time—Minutes	12 (5.4) 18759 grains 36.2 gal (137.1 L) 43:00	15 (6.8) 39676 grains 36.8 gal (139.3 L) 48:30	12 (5.4) 18805 grains 42.5 gal (160.9 L) 43:00
Minimum / Maximum water and ambient temperature-oF (oC)	40/100 (4-38)	40/100 (4-38)	40/100 (4-38)
Mineral Tank Size-in. (cm)	10.5 I.D. x 19 (26.7I.D. x 48.3)	10.5 I.D. x 26 (26.7I.D. x 66)	10.5I.D. x 26 (26.7 I.D. x 66)
Service Flow Rate	8 gpm (30 L/Min)	7.5 gpm (28 L/Min)	8 gpm (30 L/Min)
Pressure Drop at Service Flow Rate of 8 gpm (30.3 Umin)-psi (bar)	15 (1.0)	14.2 (0.97)	12.6 (0.87)
Maximum Flow Rate to Drain During Regeneration-Backwash gpm (Umin)	2.0 (7.6)	2.0 (7.6)	3.0 (11.4)

	700	900	950
Water Pressure (min-max psi) (bar)*	20-80 (1.4/5.5)	20-80 (1.4/5.5)	20-80 (1.4/5.5)
Minimum Water Flow Required-gpm (Umin)	2.0 (7.6)	2.0 (7.6)	3.0 (11.4)
Maximum Chlorine (ppm)	0.0	0.0	3.0
Controller Type	4 Button	4 Button	4 Button
Frequency of Regeneration	Demand	Demand	Demand
Salt Storage-lb (kg)	100 lbs (45 kg)	120 lbs (54 kg)	120 lbs (54 kg)
Height-in. (cm)	25.5 (65)	30.5 (78)	30.5 (78)
Footprint-in. (cm)	15 X 19 (38 X 48)	15 X 19 (38 X 48)	15 X 19 (38 X 48)
Electrical Rating	12 VAC, 50/60 Hz, 0.015kW-hr	12 VAC, 50/60 Hz, 0.015kW-hr	12 VAC, 50/60 Hz, 0.015kW-hr
Plumbing Connections	1" male (MNPT)	1" male (MNPT)	1" male (MNPT)
Shipping Weight-Approximate-lb (kg)	85 (39)	105 (48)	105 (48)

¹ The state of Wisconsin limits iron reduction claims to 5 ppm.

² Use clean white pellet, cube-style, or solar salt.

* IAPMO Unified Plumbing Code limits water supply pressure to 80 psi maximum.

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

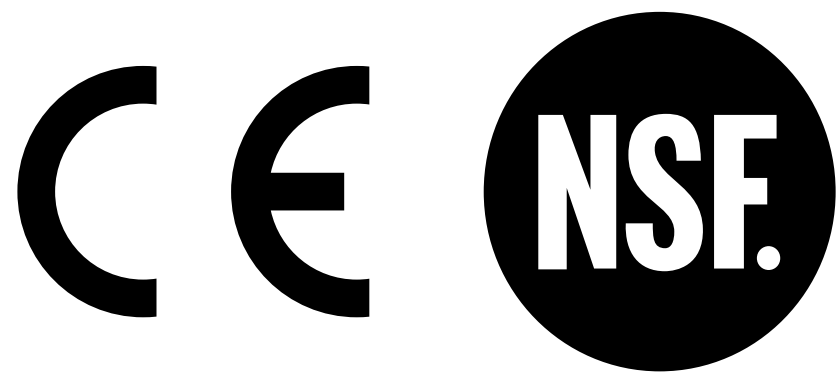
MODEL	FLOW RATE	RATED EFFICIENCY	SALT DOSAGE	CAPACITY AT THAT DOSAGE
700	8 gpm	4641 grains/lb	1.1 lbs	5105 grains/lb
900	7.5 gpm	5112 grains/lb	1.6 lbs	8180 grains/lb
950	8 gpm	4527 grains/lb	1.1 lbs	4980 grains/lb

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 no less than 3,350 grains of total hardness exchange per pound of salt (based on NaCl equivalency) (477 grams of total hardness exchange per kilogram of salt), and shall not deliver more salt than its listed rating.

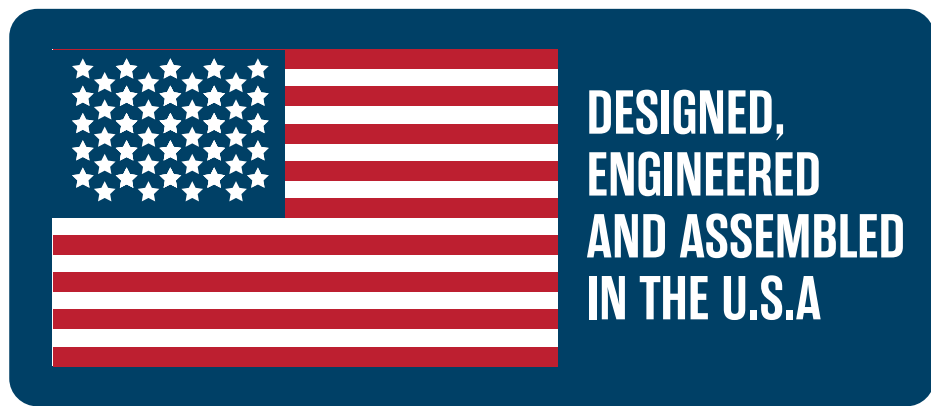
Efficiency is measured by a laboratory test described in NSF/ANSI 44. The test represents the maximum possible efficiency that the system can achieve. Operational efficiency is the actual efficiency achieved after the system has been installed. It is typically less than the efficiency due to individual application factors including water hardness, water usage, and other contaminants that reduce the softener’s capacity.

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

NAME OF SUBSTANCE	USEPA MAX. CONTAMINANT LEVEL	pH	FLOW RATE	PRESSURE
Barium	2.0 mg/L	7.5 ± 0.5	8.0 gpm (30 Umin)	35 ± 5 psig (2.4 ± 0.3 bar)
Radium 226/228	5 pCi/L	7.5 ± 0.5	8.0 gpm (30 Umin)	35 ± 5 psig (2.4 ± 0.3 bar)



System Tested and Certified by NSF International according to CSA B483.1 and NSF/ANSI Standard 44 for the reduction of Barium , Radium 226/228 and Hardness reduction.



PROBLEM	POSSIBLE CAUSE	SOLUTION
No Soft Water After Regenerations	No salt in brine cabinet.	Add salt
	Sediment in brine cabinet has plugged the brine line and air check/draw tube.	Remove air check/draw tube and flush 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.	waterMizer indicator should turn 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.

PROBLEM	POSSIBLE CAUSE	SOLUTION
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.
Appliance Stays in Regeneration	Controller not attached properly.	Make sure the controller is pushed all the way onto the drive end cap.
	Defective magnet disk.	Replace magnet disk.
	Foreign object in main control valve	Remove foreign object(s) from the main control valve.
	Broken valve assembly. Motor running.	Repair the drive end cap.
Excess Water in Brine Cabinet	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.
	Sticking brine refill valve.	Remove valve. Check for obstruction.
	Not Regenerating in Proper Sequence	Magnet disk defective.
Defective controller.		Replace controller.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Salty Water	Plugged injector.	Replace injector screen, nozzle, and throat.
	Low water pressure.	Maintain minimum pressure of 20 psi (1.4 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 lines 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 cabinet.	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 drive end cap.
	"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. 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 drive end cap.
	"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.

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 register your product under warranty, please visit www.waterboss.com/product-registration. Registration is not required but if done within 30 days of purchase, will qualify as proof of the original ownership.

Coverage

This limited warranty covers the WaterBoss® 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

WaterBoss® warrants that upon receipt from the original owner of any mechanical or electronic part which is found to be defective in materials or workmanship, WaterBoss® will repair or replace the defective item for 5 years from date of original installation. Media is not warranted.

WaterBoss® further warrants that upon receipt from the original owner of any WaterBoss® media tank/ main control valve, brine cabinet, found to be defective in material or workmanship, WaterBoss® 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 WaterBoss® PREPAID, and replacement parts will be returned by WaterBoss® to the original owner FREIGHT COLLECT. The limited warranty on any replacement part of whole unit is limited to the unexpired portion of the warranty.

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.

WaterBoss® 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, WaterBoss® 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, PUNITIVE, 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:

WaterBoss®

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. A. O. Smith Water Treatment (North America), Inc. reserves the right to replace defective parts with exact duplicates or their equivalent.



WaterBoss®
4343 S Hamilton Rd | Groveport, OH 43125
Phone: 1-800-437-8993