

HomeGUARD™

Full Size Performance In Half The Space.



Owner's Manual and Installation Guide

Version 1.5

10 Year Limited Warranty

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 **Hague Quality Water International** WITHIN 30 DAYS OF INSTALLATION.

Coverage

This limited warranty covers the **Hague Quality Water International** 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

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

Hague Quality Water International further warrants that upon receipt from the original owner of any **Hague Quality Water International** media tank/valve body, brine cabinet, found to be defective in material or workmanship, **Hague Quality Water International** 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 **Hague Quality Water International** PREPAID, and replacement parts will be returned by **Hague Quality Water International** 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. **Hague Quality Water International** 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, **Hague Quality Water International** 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:

Hague Quality Water International
4343 South Hamilton Road
Groveport, Ohio 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.) **Hague Quality Water International** reserves the right to replace defective parts with exact duplicates or their equivalent.

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General Information



Congratulations on choosing a superior Hague 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 your independent Hague dealer.

Warning: This appliance must be applied to potable water only. It is recommended that an independent Hague dealer install and maintain this appliance.

Note: 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 models:

- **Model 410**

For Owner's Reference

Date of Installation: _____

Model Number: _____

Serial Number¹: _____

Installer's Signature: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone Number: _____

Hardness: _____

Iron: _____

pH: _____

TDS: _____

Water Pressure: _____

Water Temp: _____

Returned Warranty Card Date²: _____

¹ The serial number is located on the control valve adjacent to the controller.

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.

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 clean pellet, solar, or cube-type salt is recommended. Do not use rock salt.

Caution: Do not mix different types of salt.

2. You may use a salt substitute (such as potassium chloride) in place of water conditioner salt. A Hague dealer should be contacted before a switch is made to a salt substitute. If potassium chloride is used in place of salt, the technician must select the potassium option during the programming of the controller. See *Service Settings*.
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 *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. If dirt, sand, or large particles are present in the water supply, the appropriate Hague filter can eliminate this problem.

6. Protect the appliance, including the drain line, from freezing.
7. The appliance may be disinfected with 5.25% sodium hypochlorite, which is the active ingredient in household chlorine bleach. To disinfect the appliance, add 1.5 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.
8. 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 and lawns with untreated water.
9. Before putting the appliance back in service after work has been performed, turn on the nearest cold water tap until water runs clear.
10. Adhere to all operational, maintenance, and placement requirements.
11. Inspect and clean the brine cabinet and air check/draw tube assembly annually or when sediment is present in the brine cabinet.
12. 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.

Efficiency Statements*

This product is efficiency rated according to NSF/ANSI 44. The stated efficiencies are valid only at the specified salt dosage and 8 gpm (30 L/min):

Model	Rated Efficiency	Salt Dosage	Capacity at That Dosage
410	5,210 grains/lb (741 grams/kg)	1 lb (0.45 kg)	5,210 grains (368 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 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 softeners' capacity.

Five-Button Controller

This appliance features a five-button controller with an LCD display. The controller can be used to view the appliance's status, perform regenerations, and change settings. An independent Hague dealer should set the Service Settings during installation of the appliance.

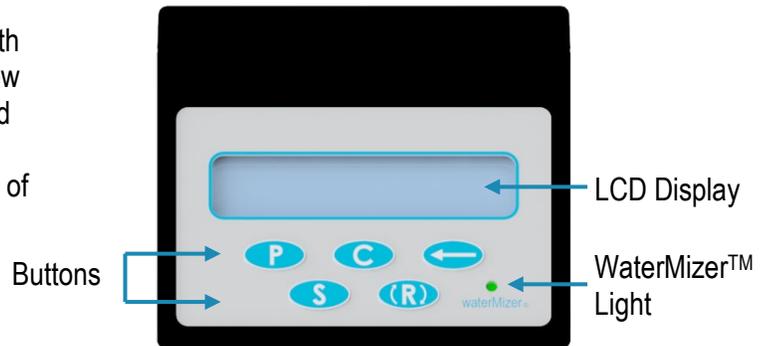


Figure 1: Five-Button Controller

Controller Part	Function
LCD Display	Shows the status of the controller; it is very important to know which mode the controller is in for proper operations
Normal Operating Mode	Shows some or all of the following depending on settings: <ul style="list-style-type: none"> • The amount of soft water remaining until the next automatic regeneration • The number of days until the next regeneration (in Mode 1) • The flow rate in gallons per minute • Whether the appliance will regenerate tonight (If the REGENERATE button has been pressed and released) • Time of day
Service Settings Mode	Includes settings such as the language, mode, water hardness, and time of each regeneration step. Service Settings must be set before Customer Settings. Otherwise, some values may not be available. Service Settings Mode is intended for use by qualified service personnel
Customer Setting Mode	Includes setting the time of day, the regeneration time, and the number of people in the household; depending on the service settings, this option may not be available
Water Flowing Indicator	Indicates that water is flowing through the appliance; useful for checking for proper plumbing and leaks
Soft Water Remaining	Shows the gallons (or liters) of soft water remaining until the next automatic regeneration. Typically, each person in the household uses about 75 gallons (284 L) per day.
Recharge/Regeneration Status	Shows regeneration cycle numbers during regeneration. When regeneration is complete, the display returns to the Normal Operating Mode (see above). Regeneration typically is complete in about 30 minutes.

Five-Button Controller, Cont.

Button	Function
Buttons	The CHANGE (C), SELECT (S), DISPLAY (P), and SCROLL BACK (←) buttons are used when changing Customer Settings and Service Settings.
REGENERATE (R)	<p>The REGENERATE (R) button can be used in three ways.</p> <ol style="list-style-type: none"> 1. The REGENERATE (R) button can be used to put the appliance into an immediate regeneration. <ol style="list-style-type: none"> a. Press and hold the REGENERATE (R) button for about five seconds until the display changes to “Going to 1”. b. The appliance is in regeneration mode and will display the status of each cycle. After all regeneration cycles are complete, the display will return to normal operating mode. 2. The REGENERATE (R) button can be used to toggle through all of the regeneration cycles to speed up the cycles. <ol style="list-style-type: none"> a. Speeding up the cycle is used only when starting up or diagnosing the appliance. b. To quickly advance through the regeneration cycles, press and hold the REGENERATE (R) button for five seconds to start a regeneration. c. Wait for the cycle to begin. The controller will indicate “Going to”, then the cycle position will display (for example, Backwash 1). d. Each cycle can be advanced by pressing the REGENERATE (R) button. e. Always wait until the cycle position displays before advancing to the next cycle position. 3. Press and release the REGENERATE (R) button in Normal operating mode to schedule a regeneration tonight or toggle it off. <p>Out of Salt</p> <p>Should your appliance run out of salt, you might not have soft water available.</p> <ol style="list-style-type: none"> 1. Open the salt port lid and add salt. 2. Wait two hours, then press and hold the REGENERATE (R) button for 2 to 5 seconds. 3. Regeneration is complete after approximately 12 to 18 minutes. After regeneration the appliance is returned to Service mode.
CHANGE (C)	<p>The CHANGE (C) button is used with the SELECT (S) button to set the value of certain parameters.</p> <ol style="list-style-type: none"> 1. When you press the CHANGE (C) button, the value under the cursor changes to the next available value, typically increasing by one until all values have been displayed and the process begins again.
SELECT (S)	<p>The SELECT (S) button is used to move the cursor when setting parameters.</p> <ol style="list-style-type: none"> 1. Press and release the SELECT (S) button to move the cursor one digit to the right of the parameter to be changed. 2. When the cursor is at the extreme right position, press the SELECT (S) button again to reset the cursor to the extreme left position.
DISPLAY (P)	<p>The DISPLAY (P) button is used to enter programming modes and also to save a value and display the next value to be changed.</p> <ol style="list-style-type: none"> 1. To program Customer Settings, press and hold the DISPLAY (P) button for about five seconds while “Customer Setting” is displayed. 2. To program Service Settings, press and hold both the DISPLAY (P) button and the SELECT (S) button while “Service Setting” is displayed. 3. To reset the factory defaults, press and hold both the DISPLAY (P) button and the SCROLL BACK (←) button for about five seconds.
SCROLL BACK (←)	The SCROLL BACK (←) button function is used to step back to a previous parameter setting. It is typically used to go back to correct a setting without the need to scroll forward through all settings.

Customer Settings

Service Settings must be set before Customer Settings; Service Settings should be set during installation of the appliance.

To set Customer Settings, press and hold the DISPLAY (P) button for about five seconds while “Customer Setting” displays. Release the button when “Set Time” displays. If the setting displayed is correct, press the DISPLAY (P) button to move to the next setting.

Step 1 *Set Time of Day*

Display reads “Set Time” followed by the current time that is set; the cursor will be under the second hours digit.

To Change the Time of Day

- A. Press the CHANGE (C) button repeatedly until the current hour is displayed. Ensure the time is correct with regard to a.m. or p.m.
- B. Press the SELECT (S) button to move the cursor to the right.
- C. Press the CHANGE (C) button repeatedly until the current tens minute is displayed.
- D. Do the same to set the minutes. Select a.m. or p.m. When the desired time is displayed, press the DISPLAY (P) button to step to the next parameter.

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

Step 2 *Set Regeneration Time*

Display reads “Reg. Time” followed by the current regeneration time that is set; the cursor will be under the second hours digit. Usually you want to set a regeneration time when water will not be used.

To Change the Regeneration Time

- A. Follow the procedure outlined above for setting the time.
- B. When the desired regeneration time is displayed, press the DISPLAY (P) button.

Step 3 *Set Number of People—Mode 2 Only*

Display reads “# People” followed by the current setting for the number of people in the household; the cursor will be under the tens digit.

To Change the Number of People

- A. Press the CHANGE (C) button repeatedly until the desired value is displayed; values will cycle from 0 to 9.
- B. Press the SELECT (S) button and the cursor moves to the right.
- C. Press the CHANGE (C) button repeatedly until the desired value is displayed.
- D. When the desired number of people is displayed, press the DISPLAY (P) button to exit the Customer Setting mode.

When you press the DISPLAY (P) button at “# People,” the values are saved, and the controller returns to Normal operating mode.

Programming Customer Settings Is Now Complete

Checklist Before Installation

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, pre-treat 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 Hague Water Filter can address these water shortcomings. Contact your water treatment specialist for assistance in obtaining appropriate pre-treatment before the water supply enters this appliance.

- 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. See Maximum Ferrous Iron in <i>Specifications</i> .
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. The hardness setting increases by 4 grains per gallon for every 1 mg/L (ppm) of ferrous iron programmed into the controller.

- Water Characteristics**—The conditioner requires a pH of 7 or above to function properly. An iron test to determine iron levels is also necessary. An Acid Neutralizing Filter may be necessary if pH levels are below 7.
- Water Hardness**—Double check hardness of water with test strips, if provided, to verify that your appliance is right for the job. If the result of your hardness test strip reaches the test maximum of 25 grains per gallon (430 ppm), mix 1 cup (0.25 liters) tap water with 1 cup (0.25 liters) distilled water. Then retest this mixture for hardness. Multiply your reading by 2 and use this setting number. If total hardness exceeds 35 grains (600 ppm) of hardness, do not install this product and contact your water treatment specialist.
- Water Pressure**—Not less than 20 psi (1.4 bar) or greater than 120 psi (8.3 bar) constant. If water pressure exceeds 70 psi (4.8 bar), a pressure regulator is recommended.
- Water Supply Flow Rate**—A minimum of 2.4 gallons (9 liters) 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°F (4°C) or greater than 120°F (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. The transformer supplied for Japan is 100 volt, 50/60 cycle AC.

If you have any questions, contact your water treatment specialist.



Precautions

Do

1. Comply with all state and local, building, plumbing, and electrical codes.
2. Install the appliance before the water heater.
3. Install the appliance after the pressure tank on well-water installations.
4. Install a pressure-reducing valve if the inlet pressure exceeds 70 psi (4.8 bar).
5. 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 (19-mm) I.D. and for municipal water the recommended minimum inlet pipe size is 1/2-inch (13-mm) I.D.
6. Install a gravity drain on the cabinet.
7. Secure the drain line on the appliance and at the drain outlet. See *Installation Steps and Start-Up Procedures*.
8. Allow a minimum of 8 to 10 feet (2.4 to 3.1 meters) of 3/4-inch (19-mm) 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 *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 the plastic fittings.
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.



Installation Steps and Start-Up Procedures

We recommend that you have your water treatment specialist install and maintain this appliance. Each water treatment appliance comes with 8 feet (2.4 meters) of drain line.

Step 1 *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 (19-mm) pipe is required between the pressure tank (if equipped) and the appliance for the appliance to function properly.

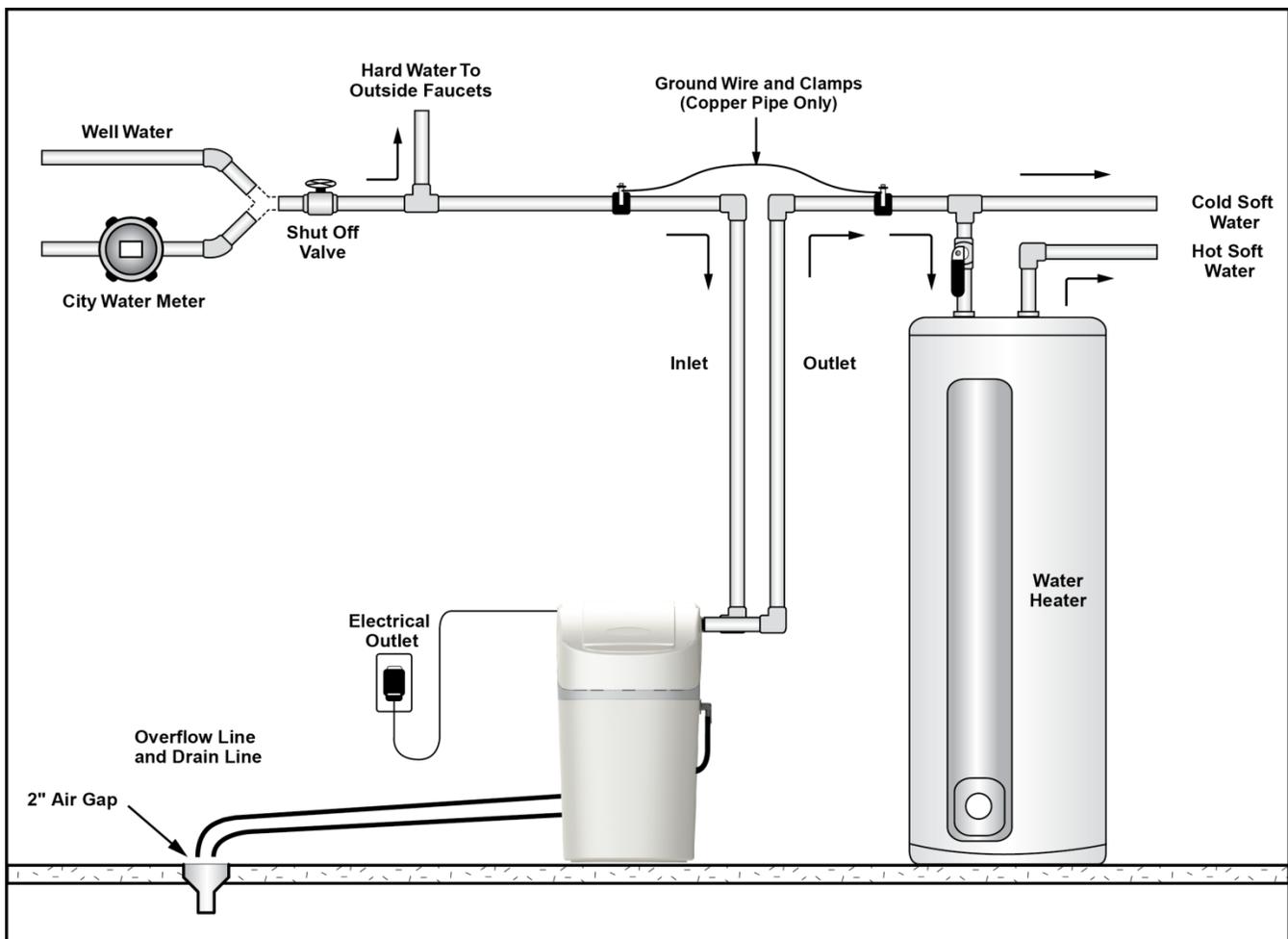


Figure 2: Appliance Placement

Installation Steps and Start-Up Procedures, Cont.

Note: Your appliance may come with a bypass valve that enables you to remove the appliance from service when necessary. Should your appliance NOT have the bypass, a bypass valve like Figure 3 may be available from your local hardware store or install three-way bypass plumbing similar to Figure 4.

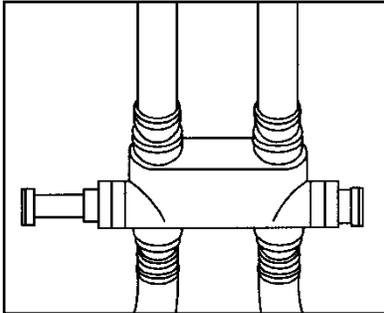


Figure 3: Example of a Commercially Available Bypass Valve

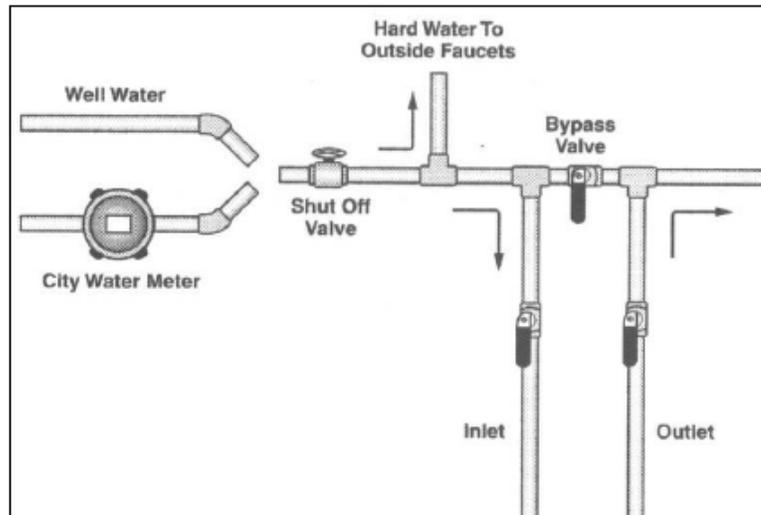


Figure 4: Three-Way Bypass Plumbing

- 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*.

Caution: Do not plumb the appliance in backward.

- F. Place the appliance in the desired location using Figure 2 as a guide. The diagram in Figure 2 applies to 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.

Installation Steps and Start-Up Procedures, Cont.

Step 2 *Turn Off Water Supply*

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

Step 3 *Connect Water Lines*

- A. Remove the valve cover.
 1. Open the salt port lid on the valve cover.
 2. Place your fingertips on the bottom, inner edge of the valve cover.

Note: You may need to use both hands.
 3. Squeeze the edge and pull the valve cover toward yourself until it clicks free. See Figure 5.
 4. Lift and remove the valve cover.
- B. Attach the water lines to the appliance in compliance with all state and local, building, plumbing, and electrical codes. See Figure 6. Do NOT over tighten the connections. Do NOT use PTFE tape or similar direction.

Caution: Do NOT use soldered fittings within 450 mm.
- C. Check the arrows on the valve to ensure that the water flows in the proper direction.

Caution: Do NOT plumb your appliance in backward.



Figure 5: Remove Valve Cover

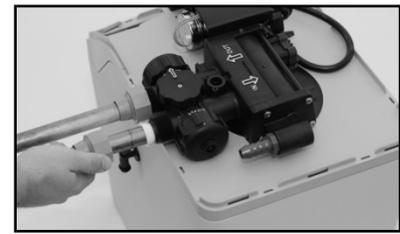


Figure 6: Connect Water Lines (Shown with Bypass Valve)

Step 4 *Connect Gravity Overflow Connection*

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

- A. Check that the overflow elbow is in the down position.
- B. Connect 1/2-inch (13-mm) 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. The gravity line cannot be run overhead.
- C. Open the nearest cold water faucet to flush the plumbing of any excess soldering flux, air, or any other foreign material.

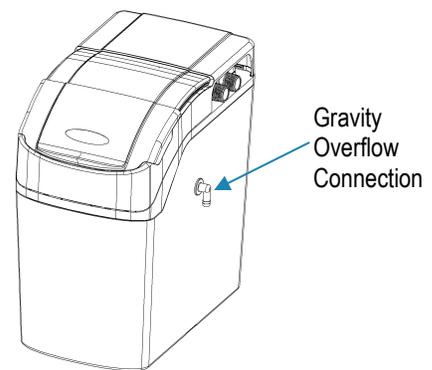


Figure 7: Gravity Overflow Connection

Installation Steps and Start-Up Procedures, Cont.

Step 5

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 with a minimum 5/8-inch (16-mm) I.D. tubing (supplied). The size cannot be reduced.
- 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 (19-mm) 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.

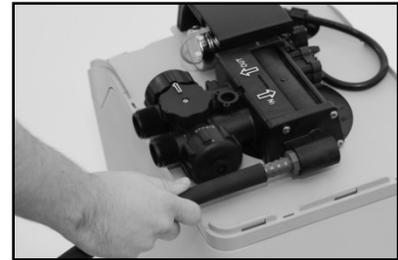


Figure 8: Connect Drain Line

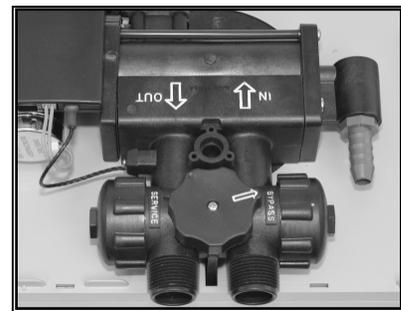


Figure 9: Bypass Position

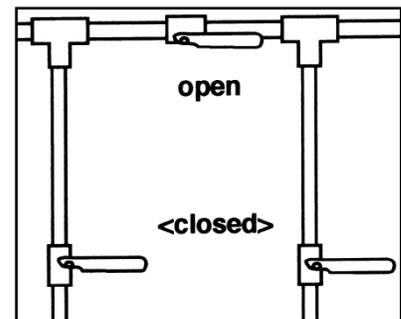


Figure 10: Bypass Position

Step 6

Flush Lines

- A. If your appliance is equipped with a bypass, place the appliance in the Bypass position.
- B. Turn on the main water supply.

Installation Steps and Start-Up Procedures, Cont.

Step 7

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. If your appliance is equipped with a bypass, place the appliance in the Service position to slowly fill the media tank.
 7. Open a cold water faucet to purge air out of the media tank.
 8. Close the faucet and recheck for leaks.



Figure 12: Service Position

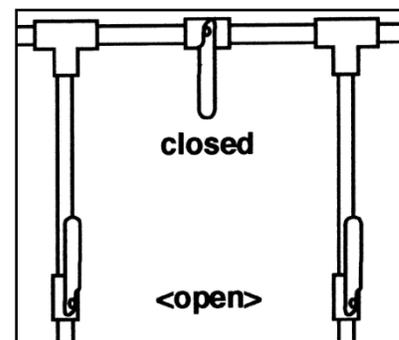


Figure 13: Service Position

Step 8

Connect the Controller

- A. Make sure the controller is properly attached to the drive end cap. See Figure 14.
- B. Make sure the Turbine Sensor wire and the motor wire are plugged into the controller.
- C. Connect the transformer power cord to the controller. See Figure 11. Do not plug the transformer into the wall yet.
- D. Make sure the transformer cord is fed through the same area as the drain and water lines.
- E. Replace the valve cover.



Figure 11: Connect Transformer Power Cord

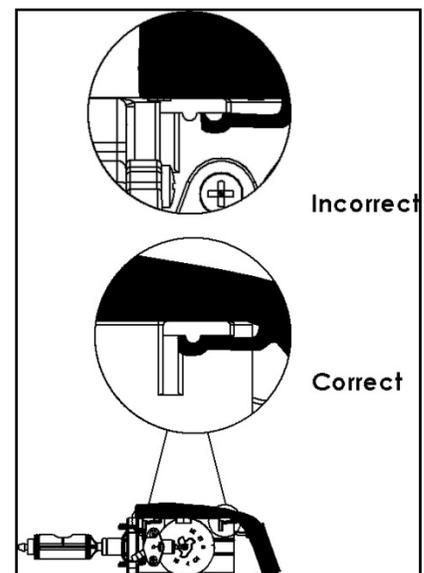


Figure 14: Controller Tab Lock Detail

Installation Steps and Start-Up Procedures, Cont.

Step 9 *Plug in the Transformer*

- A. Plug the transformer into an appropriate outlet.
- B. Ensure that the outlet selected is not operated by an On/Off switch.

Step 10 *Set Up the Controller*

- A. Program the appliance controller. See *Setting and Using the Controller*.

Step 11 *Add Water to the Brine Cabinet*

- A. Remove any packaging or installation materials. Do NOT remove the grid plate.
- B. Add water to the brine cabinet to a minimum of 2 inches above the grid plate. After the first regeneration, the appliance will automatically refill the correct amount of water into the brine cabinet.
- C. Ensure that the bypass is in Service position.
- D. Ensure that the salt dosage is set as recommended for the application.
- E. Initiate a manual regeneration (see *Setting and Using the Controller*) and inspect for proper operation. Allow the appliance to draw all the water out of the brine cabinet until the air check/draw tube sets (8–10 minutes).
- F. Press the Regenerate (R) button to advance to the Brine Refill 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 12 *Fill the Brine Cabinet With Salt*

- A. If the grid plate is not sitting on its supports at the bottom of the brine cabinet, carefully reposition it.
- B. Fill the brine cabinet with salt. See Figure 15. Use clean, white pellet, solar, cube-type, block, or brick salt. Do not mix different types of salt.
Note: Always keep the salt level above the water level. For convenience, completely fill the tank when refilling with salt.
- C. 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.
- D. Close the salt port lid.
Caution: Use of potassium chloride when iron and/or manganese are present in the raw water supply is not recommended.



Figure 15: Fill Brine Cabinet With Salt

Installation Steps and Start-Up Procedures, Cont.

Step 13 *Complete the Installation*

- A. If your appliance is equipped with a bypass, ensure that the appliance is in the Service position. See *Bypass Valve*.
- B. Ensure the water supply is on.
- C. Turn on the electricity and water supply 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 L) have passed through the appliance. This procedure is required to meet NSF compliance. Verify the flow rate on the controller and via the WaterMizer™ indicator light. See Figure 1.
- E. Test the water at the nearest tap to verify soft water.

Bypass Valve

Your appliance may be 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 16. 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 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 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.

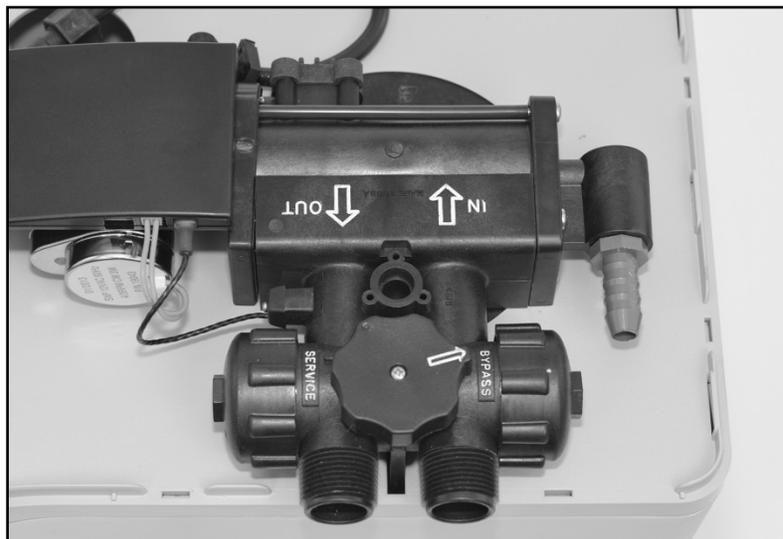


Figure 16: Bypass Valve

Blending Valve

The 3/4-inch or 1-inch I/O Adapter Assembly may come with a blending valve.

In some situations, a blending valve may be desired. The amount of hardness blended back into the water line is determined by the hardness of the incoming water and the setting of the blending valve. Where extremely hard water is present, the blending valve may only need to be “cracked” open. Where the incoming water has relatively low levels of hardness, the blending valve will need to be opened further.

The blending valve is located between the input and output connections on the top of the 3/4-in or 1-in I/O Adapter Assembly. See Figure 17. It is adjusted by placing a flat blade screwdriver in the slot provided and turning clockwise to open. Total movement of the blending valve from full closed to full open is 1/4 revolution. Precise setting of the blending valve will require “trial and error” testing. The initial setting should be conservative. Because of the blending valve’s ease of access and adjustment, you can increase or decrease the setting according to your preference over a period of time.

Use of the blending valve is not recommended where objectionable concentrations of ferrous iron or sediment are present. Because the blending valve is mixing “raw” water with softened, any ferrous iron or sediment in the “raw” water will also be blended and reintroduced into the softened water line.

Note: If the appliance is installed for barium and/or radium reduction, the blending valve must remain in the fully closed position at all times.

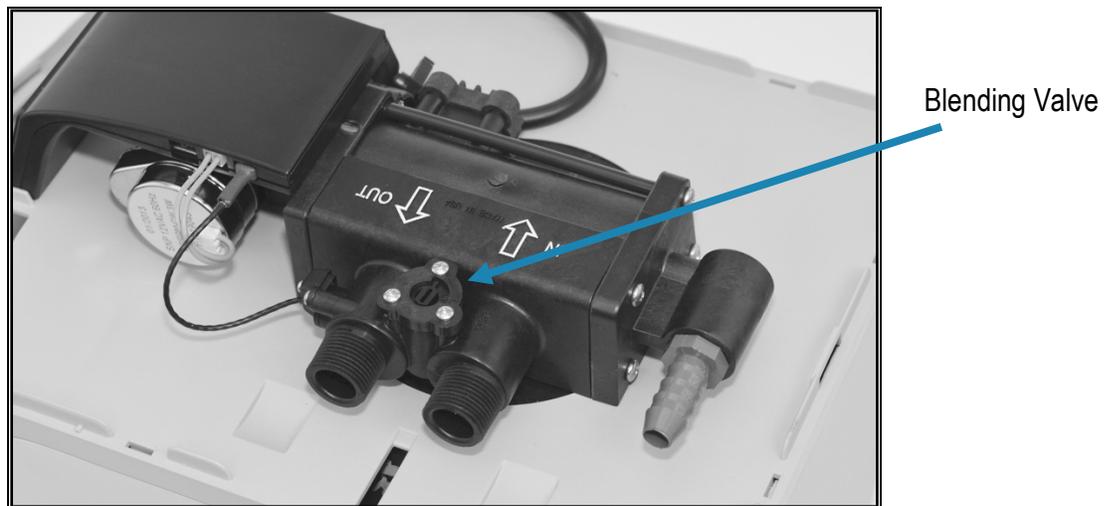


Figure 17: Adjusting Blending Valve

Service Settings

To program Service settings on the controller, press and hold the P and S buttons while “Service Settings” is displayed until “Set Language” is displayed. Programming Service Settings is similar to programming Customer Settings (see *Customer Settings* for programming details). The values that can be set are listed below. The values in the table are factory default settings only.

Note: This section is recommended for qualified service personnel only. The Service Settings must be set before the Customer Settings.

Display	Meaning	Possible Values	Comments
Set Language Eng	Set the language of the display	ENG=English FRA=French ESP=Spanish IT=Italian Deutsch=German	
Units Eng (Units MET)	Units of measure	ENG=English (Gallons) MET=Metric (Liters)	
History? No	Activates “History” file	No to skip History file Yes to view/edit History file	The History file is used to record initial values for later reference
H-Soft. V. #X.XX	Displays software version	Cannot be set	Displays only when History is set to Yes. Only an authorized service technician should set and save values.
H-Date <u>ddmmyy</u>	Install Date (DDMMYY)	000000 to 999999	
H-# People <u>04</u>	Record number of people when installed	00 to 99	
H-Hard. Gr. <u>018</u> (H-Hard. mg/L) (0300)	Record reading at time of original installation	001-999 (0001-9999)	
H-Iron ppm <u>00</u> (H-Iron mg/L)		00-99	
H-Mang. ppm <u>00</u> (H-Mang. mg/L)		00-99	
H-Sulfur ppm <u>000</u> (H-Sulfur mg/L)		000-999	
H-pH <u>00.0</u>		00.0-99.9	
H-Iron Bact. <u>No</u>		No or Yes	
H-Total Regen <u>00000</u>		Lifetime total of regenerations	
H-Tot. G <u>0000000</u> (H-Tot. L) 0	Lifetime total of water passed through appliance	Cannot be reset 00000000-99999999	
H-Model # M410	Model number	Cannot be set	
H-Save Hist. <u>No</u>	Saves history values	No or Yes	
Mode <u>3</u>	Operating (Regeneration) Mode	Timer Mode (Mode 1) Demand Delayed Mode (Mode 2) Demand Immediate Mode (Mode 3)	See <i>Operating Modes</i>

This table continues on the next page.

Service Settings, Cont.

Display	Meaning	Possible Values	Comments
Hard. Gr. <u>018</u> (Hard. mg/L 00300)	Hardness of the water that was tested	001 to 999 Grains (0001 to 9999 mg/L)	This is the actual hardness reading and is not compensated for iron
Iron ppm <u>00</u> (Iron mg/L)	Amount of iron in parts per million of the water that was tested	00 to 99 ppm (mg/L)	This value is used to calculate compensated hardness automatically
Mang. ppm <u>00</u> (Mang. mg/L 00)	Amount of manganese in parts per million of incoming water	00 to 99 ppm (mg/L)	This value is used to calculate compensated hardness automatically
Salt = Sodium	Regenerant filling the brine cabinet	Sodium or Potassium	See <i>Warning</i> below
Comp. Hard. 00018 (Comp. Hard. 00300)	Compensated hardness using the hardness, iron, and manganese settings	Cannot be set ppm or mg/L	The formula used is: Hardness + (4 x each ppm iron)+(4 x each ppm manganese) = compensated hardness
Capac. Gr. <u>06173</u> (Capac. gm. 0400)	The desired softening capacity number	00000 to 99999 Grains (0000 to 9999 gm)	
72–96 hr Regen Yes	A way to force regeneration at regularly-scheduled intervals	No (or Yes, for iron)	See <i>72–96 Hour Regeneration</i>
Backwash 1 <u>00.0</u>	Number of minutes the first backwash cycle lasts	00.0 to 99.9	Set to the nearest tenth of a minute
Brine/Rinse <u>09.0</u>	Number of minutes the brine and slow rinse cycle lasts	00.0 to 99.9	Set to the nearest tenth of a minute
Backwash 2 <u>02.0</u>	Number of minutes the second backwash cycle lasts	00.0 to 99.9	Set to the nearest tenth of a minute
Salt lbs. <u>01.5</u> (Salt kg 00.7)	Amount of salt set to be used in each regeneration to achieve the capacity setting	00.0 to 99.9 lb (kg)	Set to the nearest tenth
Turbine Test No	Used by qualified personnel for diagnostic purposes	No or Yes	WARNING: Do not engage this feature
Reg. Tonight No	Sets the appliance to regenerate tonight	No or Yes	If set to Yes, it will force a regeneration at the next set regeneration time (such as 02:00 a.m.). After the regeneration, the value will be set to No
RO Comp? No	Used when an RO system is also installed	No or Yes	If set to Yes, the capacity will be adjusted slightly to compensate water use from an RO system

When you press the P button at “RO Comp?,” the values are saved, and the controller returns to Normal operating mode.

Warning: When iron and/or manganese is present in the water supply, do not use potassium chloride as a regenerant. Iron and/or manganese bacteria may develop and foul the conditioning media and may void the warranty.

Service Settings, Cont.

Operating Modes

The appliance has three operating modes: Timer mode, Meter Delayed mode, and Demand Immediate mode. All three modes are equipped with Capacity Guard®, which ensures that a supply of conditioned water will be available even with excessive water usage.

Mode 1—Timer Mode

When the appliance is in Timer mode, it will regenerate based on the frequency that is set, for example every two days or up to every 12 days. The time of regeneration can be set.

Mode 2—Meter Delayed Mode

When the appliance is in Meter Delayed mode, it will regenerate based on the actual water usage and the total capacity of the appliance. The time that the regeneration takes place can be set, for example 2:00 a.m. Should the total capacity be depleted before the set regeneration time, a forced regeneration will occur.

Mode 3—Demand Immediate Mode

When the appliance is in Demand Immediate mode, it will regenerate based on water usage alone. Regeneration will occur when the capacity limit is reached.

72–96 Hour Regeneration

If this value is set to Yes, the appliance will be forced to regenerate every 72–96 hours unless a regeneration based on water usage occurs within the time interval. The value should always be set to Yes if iron is present in the water.

Mode 1 (Timer Mode) and Mode 2 (Meter Delayed Mode) Setting Chart

This section provides guidance for using different service settings to achieve the desired capacity.

	410
Mode 1 and 2	Yes
Regeneration Frequency	As required
96-hour regeneration (if iron present—yes) ¹	—
#1 Salt Setting	
Backwash 1 (minutes)	0.0
Brine/Rinse (minutes)	9
Backwash 2 (minutes)	2
Capacity-grains (grams) @ salt-lb (kg)	6,173 @ 1.5 (400 @ 0.7)
#2 Salt Setting	
Backwash 1 (minutes)	0.0
Brine/Rinse (minutes)	12
Backwash 2 (minutes)	2
Capacity-grains (grams) @ salt-lb (kg)	8,300 @ 2 (540 @ 0.9)
#3 Salt Setting	
Backwash 1 (minutes)	0.0
Brine/Rinse (minutes)	15
Backwash 2 (minutes)	2
Capacity-grains (grams) @ salt-lb (kg)	10,400 @ 3 (670 @ 1.4)

¹ If iron is present in water supply, use salt setting #3.



Assembly and Parts

Cabinet and Cover Assemblies

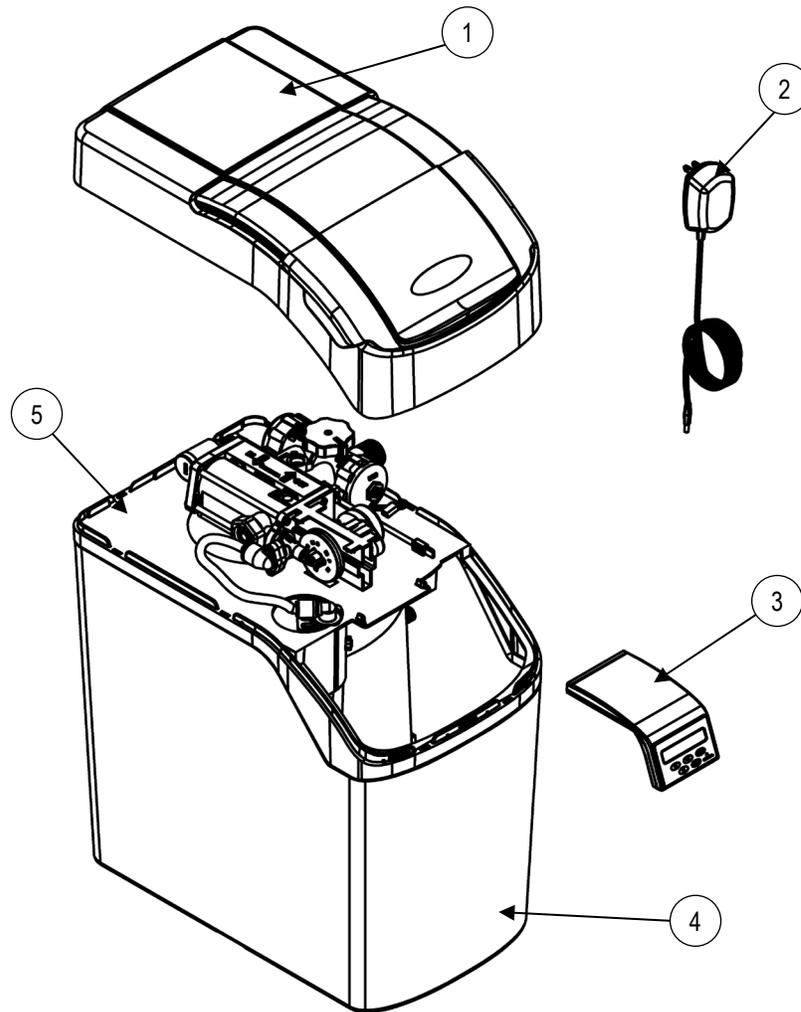


Figure 18: Cabinet and Cover Assemblies

	Old Part #	Current Part #	Description	Quantity
1	56350	100241703	Valve Cover Assembly (without label)	1
2	93245	100238182	US Transformer 115V	1
	C0905	100242180	China Transformer	-
	C0915	100242182	Europe Transformer 220V	-
	C0915-UK	100242183	United Kingdom Transformer 220V	-
	C0916	100242184	Japan Transformer 100V	-
	C0917	100242185	Australia Transformer	-
	C0919	100242186	Philippines Transformer	-
	3	56120	100241691	Computer Control Assembly
4	56004	100241658	Cabinet	1
5	56106	100241681	Support Panel	1

Assembly and Parts, Cont.

Cabinet and Assemblies

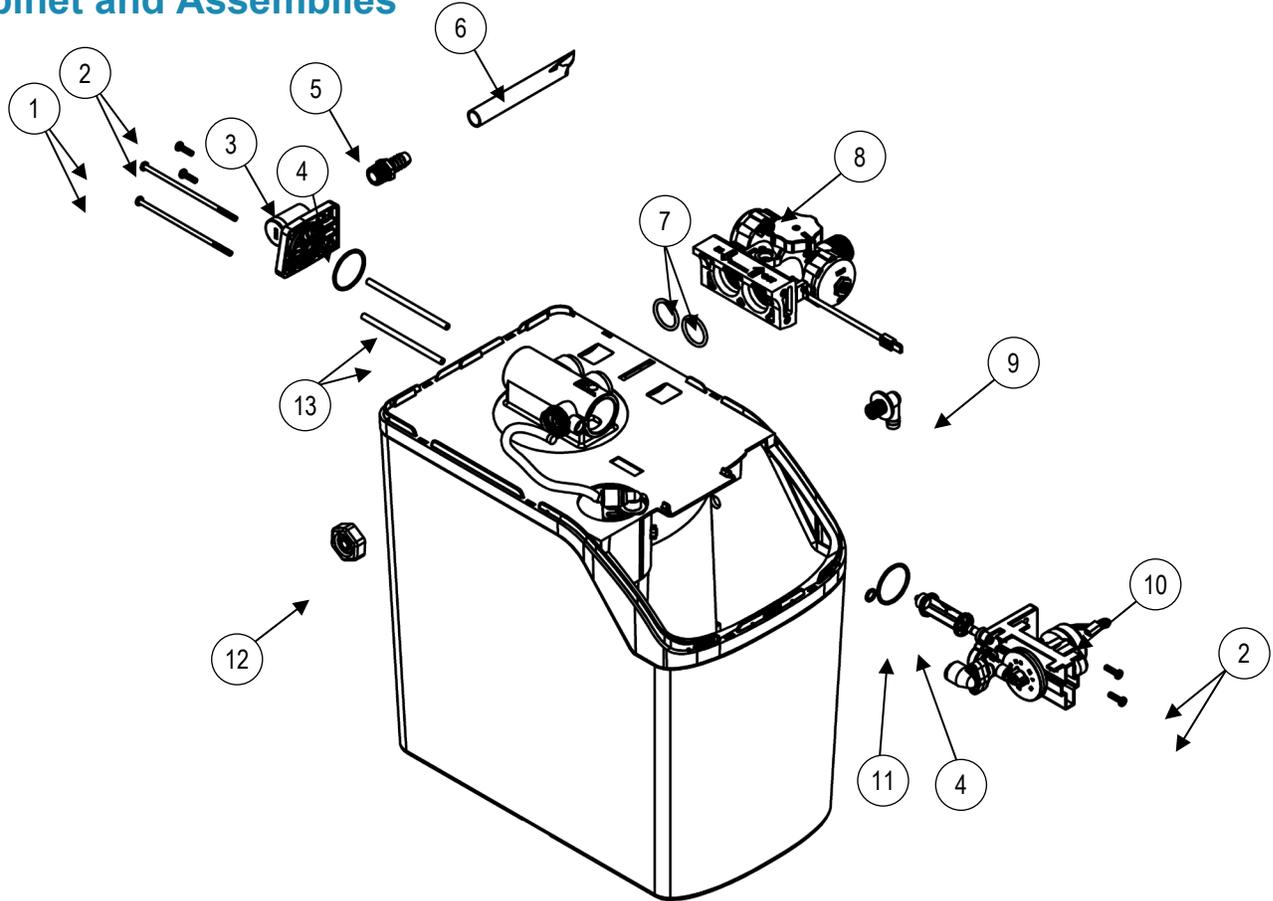


Figure 19: Cabinet and Assemblies

	Old Part #	Current Part #	Description	Quantity
1	93809	100238198	Screw	2
2	93870	100238199	Screw	4
3	90614-3.0* 90614-5.0 90614-7.0	100241852 100241853 100241854	Drain End Cap	1
4	93808	100241865	O-Ring	2
5	93185	100238185	Drain Fitting, 1/2-inch (13-mm)	1
6	93915	100238186	Drain Hose, 1/2-inch (13-mm) I.D., 8 feet (2.4 m)	1
7	93838	100242050	O-Ring	2
8	54512	100238184	Bypass Assembly	1
9	C0700A	100238195	Cabinet Overflow	1
10	95301T-JG	100242111	Drive End Cap Assembly	1
11	90828	100241869	O-Ring	1
12	93504	100238192	Injector Assembly	1
13	93835	100242049	Sleeve	2
-	56500	100241714	Replacement Tank with Media	1

* Must specify drain line flow control size. "-X.X" indicates the backwash flow rate in gpm. Example: 90614-3.0 or 90614-5.0.

Assembly and Parts, Cont.

Optional 3/4-inch (19-mm) and 1-inch (2.5-cm) I/O Adapter Assembly with Blending Valve

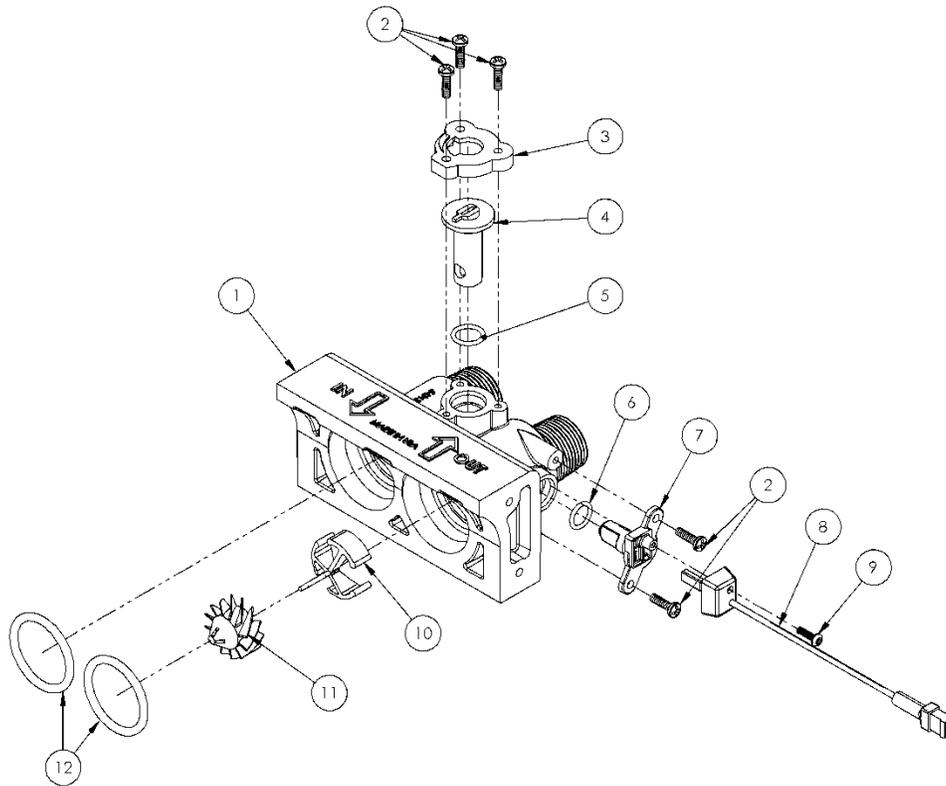


Figure 20: Optional 3/4-inch (19-mm) I/O Adapter Assembly with Blending Valve

	Old Part #	Current Part #	Description	Quantity
1	54313	100241000	3/4-inch (19-mm) I/O Adapter	1
-	93252	100241964	1-inch (2.5-cm) I/O Adapter (not shown)	-
2	90802	100238196	# 6 X .5 Screw, self-tapping	5
3	90252	100241811	Blending Dial Cap	1
4	90222	100241804	Blending Dial	1
5	90827	100241868	O-Ring	1
6	90828	100241869	O-Ring	1
7	54605	100241189	Sensor Housing	1
8	93860	100238200	Turbine Sensor Wire Assembly w/ Cap	1
9	90809	100241861	Sensor Cap Screw, self-tapping	1
10	54320	100238202	Plastic Turbine Axle	1
11	90522	100238201	Turbine Assembly	1
12	93838	100242050	O-Ring	2
-	93521	100241990	Entire 3/4-inch (19-mm) Assembly (all of the above parts)	-
-	93521-1	100241991	Entire 1-inch (2.5-cm) Assembly (all of the above parts)	-

Assembly and Parts, Cont.

Injector Assembly

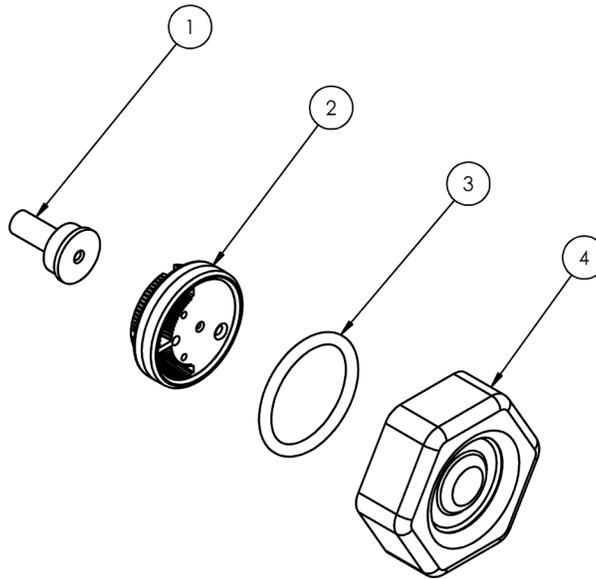


Figure 21: Injector Assembly

	Old Part #	Current Part #	Description	Quantity
1	93223	100241946	Injector Throat	1
2	53224	100237421	Injector Nozzle with Over-Mold Gasket	1
3	93806	100242034	O-Ring	1
4	100037729	100037729	Injector Cap	1
-	93504	100238192	Entire Assembly (all of the above parts)	-

100241946 Injector Throat	In conjunction with the Injector Nozzle (100237421) it creates the vacuum that draws the brine solution from the brine cabinet. The center hole should be clear of debris, round and undamaged. The Throat should be pressed flush into the opening in the valve. If the Throat is removed, it must be replaced with a new one.
100237421 Injector Nozzle with Over-Mold Gasket	Together with the Throat (100241946) creates the vacuum that draws the brine solution from the Brine Cabinet. The small hole in the Injector Nozzle (100237421) is the one that creates the “injection-stream” that enters the Throat. It is important that this hole is round, undamaged, and clear of debris. If this hole becomes “clogged”, do not use anything (such as metal objects) to clear this opening. Damage may occur. Use a clean cloth and flush with water. If necessary, a wooden toothpick may be used. When assembling to the Valve, the Nozzle hole should line up with the Throat. Flush screen with water to clean. The over-mold gasket seals between the Injector Nozzle and the Injector Cap.
100037729 Injector Cap	Holds the injector assembly together and seals the assembly to the Main Control Valve.

Assembly and Parts, Cont.

Drive End Cap Assembly

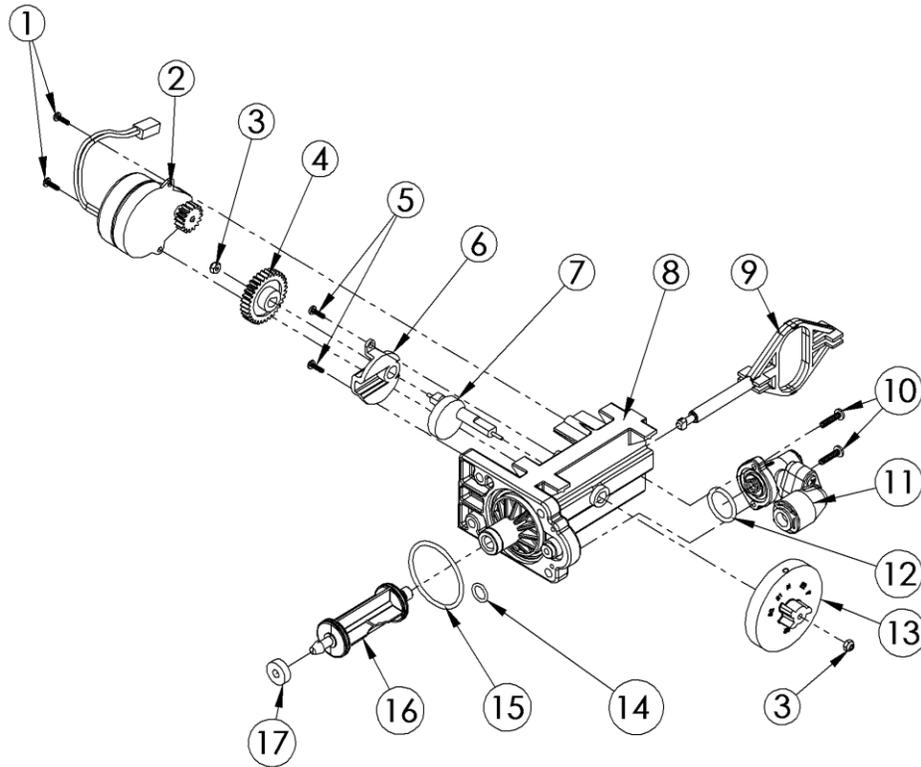


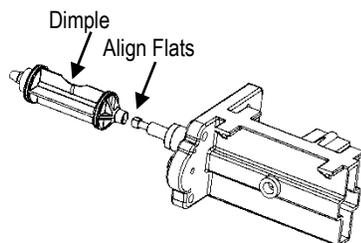
Figure 22: Drive End Cap Assembly

	Old Part #	Current Part #	Description	Quantity
1	90802	100238196	# 6 X .5 Screw, self-tapping	2
2	90217	100238181	Drive Motor	1
3	93891	100238190	1/4-inch Hex Nut	2
4	93238	100238188	Drive Gear	1
5	90809	100241861	Screw, self-tapping	2
6	93219	100241941	Piston Slide Cam Cover	1
7	93217	100241940	Piston Slide Cam	1
8	93583	100242008	Drive End Cap	1
9	54202	100240958	Piston Slide	1
10	90818	100238197	Screw, self-tapping	2
11	93601-JG	100242011	Brine Valve Housing Assembly	-
12	90821	100241867	O-Ring	1
13	4502KIT	100238193	Magnet Disk Assembly Brine Valve Housing Assembly	1
14	90828	100241869	O-Ring	1
15	93808	100241865	O-Ring	1
16	53344	100238189	Drive Piston Assembly (includes 100242051 Drain Gasket)	1
17	93839	100242051	Drain Gasket	1
-	95301T-JG	100242111	Entire Assembly (all of the above parts except 1, 2, and 13)	-

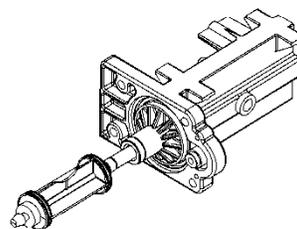
Assembly and Parts, Cont.

Drive End Cap Assembly Cont.

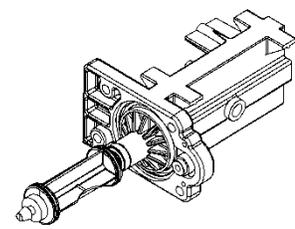
100238181 Drive Motor	<p>The Motor is held in place by two, 1/2-inch (13-mm) self-tapping screws. The screws should be “snug.” The brass pinion gear on the Motor should engage the plastic Drive Gear (100238188). The wires should be securely fastened to the Control.</p>
100238188 Drive Gear	<p>The Drive Gear is assembled to the Slide Cam by means of a “keyed” opening, which transfers the “torque” generated by the Motor to the rest of the drive system. If the drive system becomes jammed, this opening can become “rounded” causing the gear to turn, but not the Piston Slide Cam. If this occurs, clear the jam and replace the Drive Gear (100238188) and Piston Slide Cam (100241940).</p>
100241941 Piston Slide Cam Cover	<p>The cover secures the Piston Slide Cam (100241940) in place and acts as a bushing for the Cam Shaft.</p>
100241940 Piston Slide Cam	<p>This is the “heart” of the drive system. There is a threaded stainless steel shaft that runs through the main drive axle. The Drive Gear (100238188) is attached at the short end and the Magnet Disc (100241057) at the other end. The Slide Cam is assembled inside of the Piston Slide (100240958). This Cam Shaft should turn freely before the Motor is assembled.</p>
100242008 Drive End Cap	<p>Seals the two openings on the Main Valve Body. The larger diameter opening is sealed with an O-Ring used as an axial or “face” seal. The O-Ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and must also be free of debris. The smaller diameter seal is accomplished with an O-Ring used as a radial seal. The O-Ring should be placed on the male boss on the End Cap. When assembling the End Cap to the Valve Body, care should be taken to make sure the small O-Ring is aligned with the opening in the Valve Body and that the large O-Ring stays in the groove in the End Cap. If misaligned, the O-Rings can become pinched and leak.</p>
100240958 Piston Slide	<p>The Slide should move freely inside the End Cap Housing.</p>
100238189 Drive Piston Assembly	<p>The Drive Piston attaches to the Piston Slide (100240958) by placing the “slot” of the Piston onto the matching flat of the Slide. To remove Piston, rotate Piston 90° counterclockwise. To replace Piston, rotate 90° clockwise until you hear an audible “click.” See reference drawings below.</p>



Position Piston Assembly (100238189)
Vertical



Slide Piston Assembly Onto Piston Slide.
Push Toward End Cap to stop.



Rotate The Piston Assembly 90 Degrees
Clockwise Until You Hear An Audible Click
As It Snaps Into Place

Assembly and Parts, Cont.

Bypass Assembly

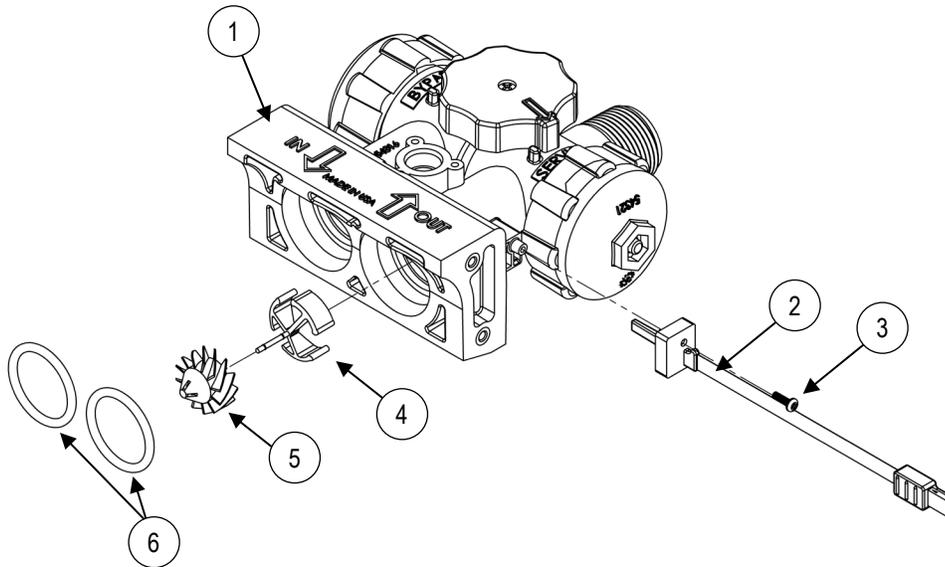


Figure 23: Bypass Assembly

	Old Part #	Current Part #	Description	Quantity
1	54512	100238184	Bypass Assembly (also includes items 2–6)	1
2	93860	100238200	Turbine Sensor Wire Assembly w/Cap	1
3	90809	100241861	Sensor Cap Screw, self-tapping	1
4	54320	100238202	Plastic Turbine Axle	1
5	90522	100238201	Turbine Assembly	1
6	93838	100242050	O-Ring	2

Assembly and Parts, Cont.

Brine Valve Housing Assembly

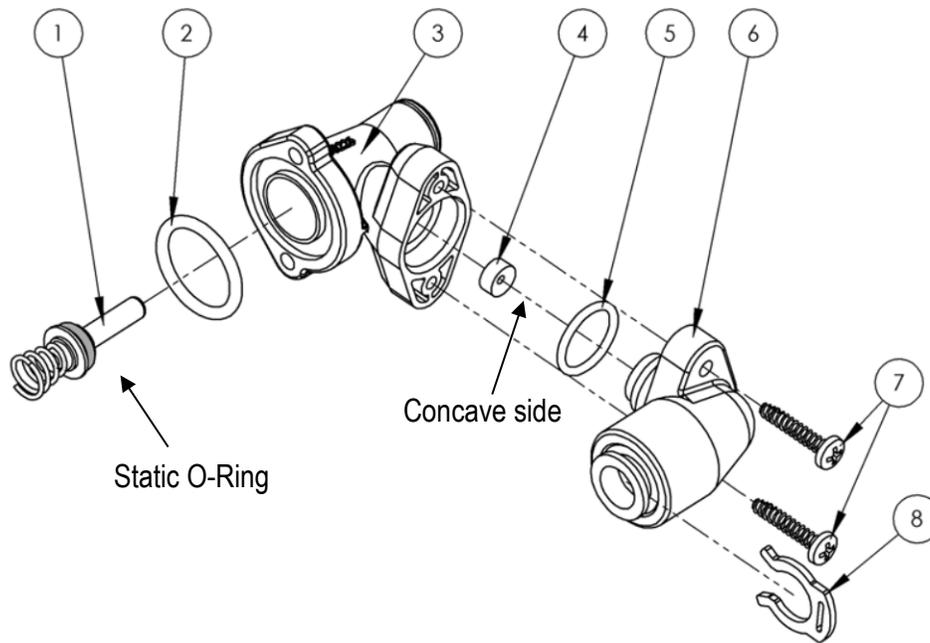


Figure 24: Brine Valve Housing Assembly

	Old Part #	Current Part #	Description	Quantity
1	53511	100237712	Piston Assembly (includes O-Ring & Spring)	1
2	90821	100241867	O-Ring	1
3	53510	100237707	Housing (Not sold separately)	1
4	90843	100241875	0.5 gpm Flow Control	1
5	93805	100242033	O-Ring	1
6	93247	100241962	Housing End Cap (Not sold separately)	1
7	90818	100238197	Screw, self-tapping	2
8	200199	100236202	3/8-inch Locking Clip	1
-	93601-JG	100242011	Entire Assembly (all of the above parts)	-

100237712 Brine Piston	The Piston should have an O-Ring on the shaft side of the flange and a spring pressed onto a boss on the other side. The O-Ring should be free of defects such as cuts or debris on the shaft side.
100237707 Housing	Just inside the entrance hole for the Brine Piston is a concave seat area that must be free of defects such as nicks, indentations, or debris. This seat area ensures a leak-free seal for the static O-Ring on the Brine Piston. If any defects are detected by visual inspection, repair or replace as needed.
100241875 0.5 gpm Flow Control	The Flow Button has two distinct and different sides. One is “flat”; the other is “concave.” The button should be centered in the housing opening with the four locator “ribs” with the concave side facing the Housing End Cap.
100241962 Housing End Cap	The Cap is held in place by two 3/4-inch self-tapping screws that engage the Housing flange. An O-Ring seals the Cap and Housing. Place the O-Ring onto the housing end cap, lubricate with silicone grease and then using a twisting action, insert the Cap into the housing. Caution: The 3/8-inch locking clip must be installed to prevent air from being drawn into the appliance during brine rinse.

Assembly and Parts, Cont.

Drain End Cap Assembly

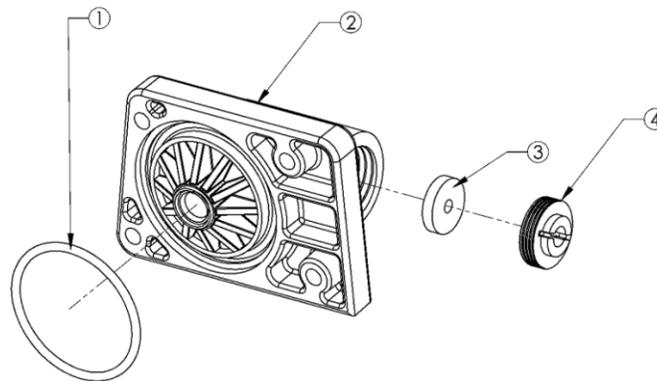


Figure 25: Drain End Cap Assembly

	Old Part #	Current Part #	Description	Quantity
1	93808	100241865	O-Ring	1
2	90268	100241822	Drain End Cap	1
3	H2086-1.5 H2086-2.0 H2086-2.4 H2086-3.0 H2086-4.0 H2086-5.0 H2086-7.0	100242253 100242254 100242255 100242256 100242257 100242258 100242259	Drain Line Flow Control	1
4	90267	100241821	Retainer	1
-	90614-3.0* 90614-5.0 90614-7.0	100241852 100241853 100241854	Entire Assembly (all of the above parts)	1

* Must specify drain line flow control size. "-X.X" indicates the backwash flow rate in gpm. Example: 90614-3.0 or 90614-5.0.

100241822 Drain End Cap	The Drain End Cap (100241822) seals the left opening on the Main Valve Body. The opening is sealed with an O-Ring used as axial or "face" seal. The O-Ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. When assembling the End Cap to the Valve Body, care should be taken to make sure that the O-Ring stays in the groove in the End Cap. If misaligned, the O-Ring can become pinched and leak.
Drain Line Flow Control	The Drain Line Flow Control (DLFC) maintains a constant (plus or minus 10%) backwash flow rate at varying pressures. Care should be taken when replacing DLFCs to ensure that the correct rate is being used for a particular model. Refer to <i>Specifications</i> . When assembling the flow control, ensure that the rounded (radius) side of the hole faces in toward the water flow.
100241821 Retainer	The Retainer (100241821) holds the backwash Flow Control in place. One side is smooth and the other has a groove for a screwdriver. When assembling the retainer to the Drain End Cap (100241822), the retainer should be screwed in until it stops. If the retainer is not fully engaged, the Flow Control may not function properly.

Assembly and Parts, Cont.

Safety Shutoff Assembly and Valve Elbow Installation

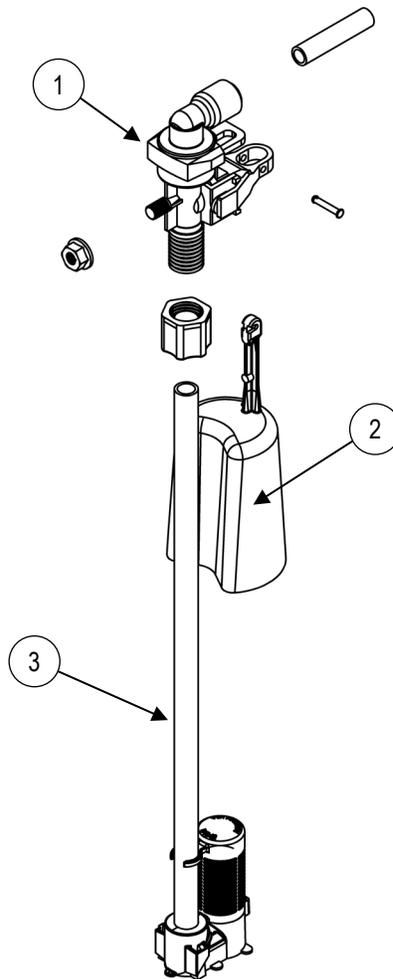


Figure 26: Safety Shutoff Assembly

	Old Part #	Current Part #	Description	Quantity
1	54225	100240967	Safety Shutoff Push Connect	1
2	56018	100241668	Float	1
3	56400	100241710	Air Check	1
-	56424	100241713	Entire Assembly (all of the above parts)	-

The nut, gripper, and retainer sleeve are a three-piece assembly that can come apart if removed from the elbow body. Parts must be reassembled exactly as shown to function properly.

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	WaterMizer™ light should flash with water usage. If no flow, see below.
WaterMizer™ indicator does not flash 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
WaterMizer™ indicator flashes 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 volt meter for 12 VAC at control. If less than 10 VAC, replace the transformer
	Display board is not plugged into the controller	Connect display board to the controller with ribbon cable
	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, Cont.

Problem	Possible Cause	Solution
Appliance stays in regeneration.	Controller not attached properly	Make sure the controller is pushed all the way onto the drive end cap
	Foreign object in valve body	Remove foreign object(s) from the valve body
	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	Replace magnet disk
	Defective controller	Replace controller
Salty water	Plugged injector	Replace injector screen, nozzle, and throat
	Low water pressure	Maintain minimum pressure of 30 psi
	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
	Insufficient rinse time	Check mode setting chart for proper brine rinse time. Adjust time, if necessary
	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

Specifications

	410
Max Compensated Hardness—gpg (mg/L)	35 (600)
Minimum pH (standard units)	7
Maximum Ferrous Iron	3
Media type and amounts	Chlorostat (2.0 lb) Filter Media.(1.5 lb) Fine Mesh Resin 0.4 cu. ft (11.3 L)
*Salt usage (used per regeneration) / Capacity	1 lb / 5,200 grains (0.5 kg / 365 grams)
*Salt usage (used per regeneration) / Capacity	2 lb / 8,300 grains (0.9 kg / 540 grams)
*Salt usage (used per regeneration) / Capacity	3 lb / 10,400 grains (1.4 kg / 670 grams)
Minimum / Maximum water and ambient temperature—°F (°C)	40-120 (4- 49)
Mineral tank size—in. (cm)	9 I.D. X 16 (22.9 I.D. X 40.6)
Flow Rate @ 15 psi (1.0 bar) drop – gpm (L/min)	6.0 (22.7)
Flow Rate @ 25 psi (1.7 bar) drop** – gpm (L/min)	8.7 (32.9)
Maximum flow rate to drain during regeneration (backwash)—gpm (L/min)	2.4 (9.1)
Water Pressure (min—max psi) (bar) ¹	20–80 (1.4–5.5)
Minimum water flow required—gpm (L/min)	2.4 (9.1)
Controller type	5 Button
Regeneration time—1 lb (0.45 kg) salt setting	12 minutes
Regeneration time—2 lb (0.91 kg) salt setting	15 minutes
Regeneration time—3 lb (1.36 kg) salt setting	18 minutes
Water used/regeneration—1 lb (0.45 kg) salt setting	9.9 gallons (37 liters)
Water used/regeneration—2 lb (0.91 kg) salt setting	13.6 gallons (51 liters)
Water used/regeneration—3 lb (1.36 kg) salt setting	15.6 gallons (59 liters)
Frequency of regeneration	Demand or Timer
Salt Storage (pellet salt)—lb (kg)	30 (13.6)
Height—in. (cm)	21.0 (53.3)
Footprint—in. (cm)	11.5 (29.2) x 18.5 (47)
Electrical Rating	115 VAC, 60 Hz / 220 VAC, 50 Hz
Plumbing Connections (NPT)	3/4-inch or 1-inch. male
Shipping Weight—Approximate—lb (kg)	55 (25)

* Use clean, white pellet, solar, cube-type, block, or brick salt.

** Flow rates at pressure drop greater than 15 psi (1.0 bar) do not represent the maximum service flow rate used for determining the softener's rated capacity and efficiency. Continuous operation at flow rates greater than the maximum rated flow @ 15 psi (1.0 bar) may affect the capacity and efficiency performances. Only the maximum rated service flow @ 15 psi (1.0 bar) shall be used for the purpose of sizing Point of Entry water treatment devices.

¹ IAPMO Unified Plumbing Code limits water supply pressure to 80 psi maximum.

Reduction capabilities for specific contaminants verified by test data.

Name of Substance	USEPA Max. Contaminant Level	pH	Flow Rate	Pressure
Barium	2.0 mg/L	7.5 ± 0.5	10.0 gpm (38 L/min)	35 ± 5 psig (2.4 ± 0.3 bar)
Radium 226/228	5 pCi/L	7.5 ± 0.5	10.0 gpm (38 L/min)	35 ± 5 psig (2.4 ± 0.3 bar)



Notes

Model 410[®] has these third-party listings:



Tested and certified by WQA according to CSA B483.1. The appliance is certified by WQA to NSF/ANSI 372 and 44 for Efficiency, Softening Performance and the reduction of Barium and Radium 226/228, as verified and substantiated by test data. Barium/Radium reduction occurs as long as the appliance is softening the water. Test product water hardness every 12 months to check for proper functioning.

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