



Water Conditioning Appliance



## SIGNATURE SERIES

Owner's Manual and Installation Guide

*Version 1.0*

## 25 Year Limited Warranty

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### Coverage

This warranty covers the Hague **WaterMax®** Appliance delivered to the original owner when the appliance 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 Warranty

Hague Quality Water International warrants that upon receipt from the owner of any Hague Media Tank, Brine Tank, Main Control Valve, or the fine mesh polystyrene resin found to be defective in material or workmanship, Hague will repair or replace the defective item, at no charge for that item, for 25 YEARS from date of installation.

Hague Quality Water International further warrants that upon receipt from the owner of any other mechanical or electronic parts, which are found to be defective in material or workmanship, Hague will repair or replace the defective parts, at no charge for those parts for 5 YEARS from date of installation.

All defective parts must be returned, along with the equipment serial number and date of original installation, to an authorized Hague dealer of Hague Quality Water International PREPAID, and replacement parts will be returned by Hague to the owner FREIGHT COLLECT.

Further Exclusions and Limitations on Warranty: This warranty is null and void unless the Hague Appliance was purchased from an independent Hague dealer. 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, sulfur, tannins, organic matter, or other unusual substances, then unless the appliance is represented as being capable of handling these substances in the appliance 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 appliance 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 appliance 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 appliance. 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 Procedure

At Hague Quality Water, we believe in providing the best water treatment solutions in the industry. If you have any questions or concerns about your product, rest assured that we will stand behind your purchase with our manufacturer's warranty. PLEASE WORK WITH YOUR LOCAL AUTHORIZED HAGUE DEALER TO FILE ANY WARRANTY CLAIMS.

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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:

- **WaterMax®** 3MAQ\*
- **WaterMax®** 3BAQ\*
- **WaterMax®** 3BEQ\*
- **WaterMax®** 2MXQ\*
- **WaterMax®** 3MDQ
- **WaterMax®** 2AMQ\*
- **WaterMax®** 2APQ\*
- **WaterMax®** 2AKQ
- **WaterMax®** 2AJQ
- **WaterMax®** 1AAN

\*Tested by WQA

If your specific model is not listed here, your appliance has been customized to solve additional water conditioning problems that you may have. Your dealer will be happy to explain any additional special features.

**Note:** For Model 2AJQ, be sure to read *2AJQ Replenishment Procedure*. For Model 1AAN, be sure to read *1AAN WaterMax® Iron Filter Sizing Formula and Iron Filter and Potassium Permanganate Feeder Installation Guide*.

## For Owner's Reference

Date of Installation: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number<sup>1</sup>: \_\_\_\_\_

Installer's Signature: \_\_\_\_\_

Dealership Name: \_\_\_\_\_

Dealership Address: \_\_\_\_\_

Dealership Phone Number: \_\_\_\_\_

Hardness: \_\_\_\_\_

Iron: \_\_\_\_\_

pH: \_\_\_\_\_

Water Pressure: \_\_\_\_\_

Water Temp: \_\_\_\_\_

Warranty Registration Date<sup>2</sup>: \_\_\_\_\_

<sup>1</sup> The serial number is located on the left front support panel.

<sup>2</sup> Visit <https://www.haguewater.com/warranty-registration/> to register your Hague product warranty online.

## Getting Maximum Efficiency From the Appliance

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

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

**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 there is iron and/or manganese in the water.

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. See *Filter Specifications*.

6. The appliance may be disinfected with 5.25% sodium hypochlorite, which is the active ingredient in household chlorine bleach. To disinfect the appliance, add 4.0 fluid ounces (120 mL) of chlorine bleach solution to the brine well of the brine tank. The brine tank should have water in it. Start a manual regeneration.
7. Protect the appliance, including the drain line, from freezing.
8. The bypass valve (attached to the main control valve) enables you to bypass the appliance if any work is being performed on the appliance, well pump, or plumbing. See *Bypass Valve*. Use Bypass mode also for watering plants or lawns with untreated water. To bypass, turn the blue knob counterclockwise until it hits the stop; turn it clockwise to restore service.
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 tank and air check/draw tube assembly annually or when sediment is present in the brine tank.
12. Potassium permanganate will need to be added periodically to any iron filter.
13. These appliances are 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.

# Checklist Before Installation

See 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 Hague Water Filter can address these water shortcomings. See *Filter Specifications* for details on each filter.

- ☐ **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	Function
<b>Ferrous Iron*</b> (sometimes called clear water or dissolved iron)	Only type of iron that can be treated with a water softener
<b>Ferric Iron</b>	Insoluble and the particles can eventually foul a resin bed. It should be filtered out before the water reaches the softener
<b>Organic Iron or Bacterial Iron</b>	Attached to other organic compounds in the water. Additional treatment is needed to remove this type of iron
<b>Colloidal Iron</b>	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.

- ☐ **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 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 3 gallons (11 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° or greater than 120°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

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### 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 I.D. and for municipal water the recommended minimum inlet pipe size is 1/2-inch I.D.
6. Install a gravity drain on the cabinet elbows. See Step 5 of **Installation Steps and Start-Up Procedures**.
7. Secure the drain line on the appliance and at the drain outlet. See Step 6 of **Installation Steps and Start-Up Procedures**.
8. Allow a minimum of 8 to 10 feet (2.4 to 3.0 m) of 3/4-inch pipe from the outlet of the appliance to the inlet of the water heater.

### Do Not

1. Do not install if checklist items are not satisfactory. See *Checklist Before Installation*.
2. Do not install if the incoming or outlet piping water temperature exceeds 120°F (49°C). See *Water Conditioner Specifications*.
3. Do not allow soldering torch heat to be transferred to valve components or plastic parts when using the optional copper adapters.
4. Do not over-tighten the plastic fittings.
5. Do not plumb the appliance against a wall that would prohibit access to plumbing. See **Installation Steps 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.

# Installation Steps and Start-Up Procedures

## 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.
- 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 1 as a guide. The diagram in Figure 1 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.

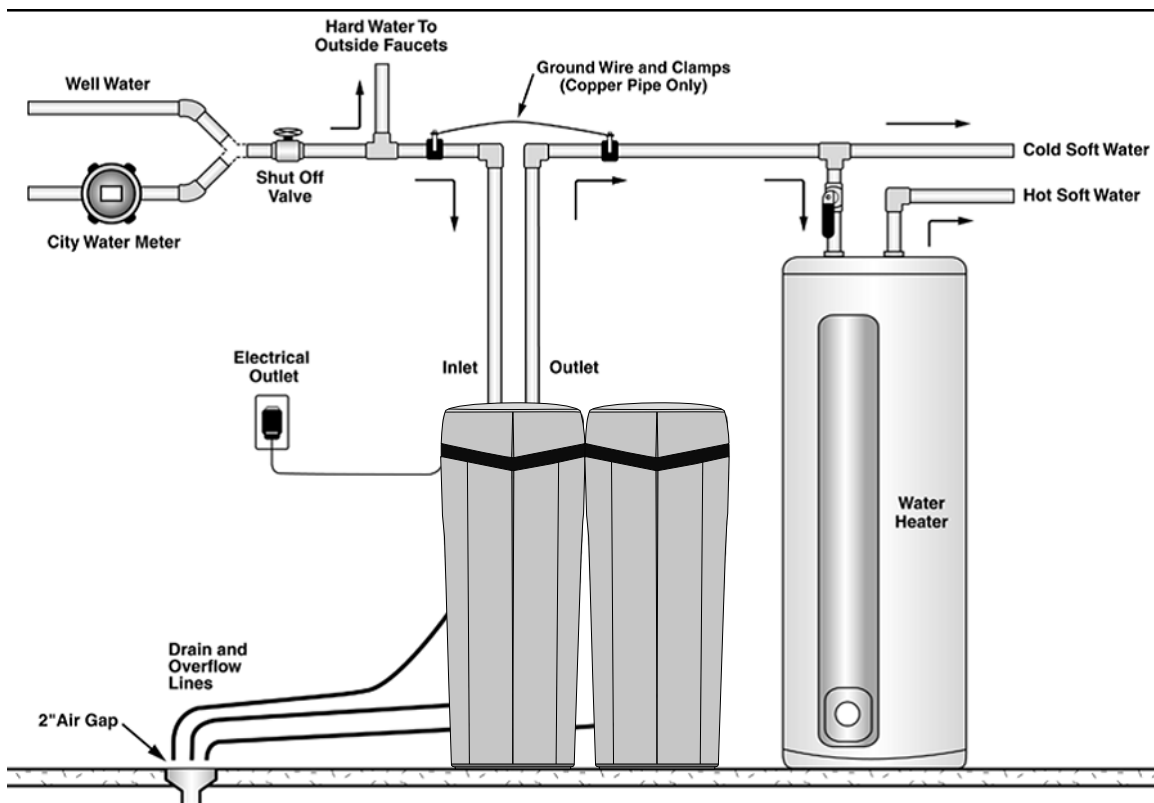


Figure 1: Appliance Placement



## 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. Connect water lines in compliance with all state and local, building, plumbing, and electrical codes.

### Step 4 Connect the Brine Tank

- A. Connect the brine tank to the main control valve with the flexible 3/8-inch poly tube included with the appliance.

### Step 5 Connect Gravity Overflow Connections

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

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

### Step 6 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 1/2-inch I.D. tubing (not supplied). The size cannot be reduced.

**Note:** If the drain line is 25 feet (7.6 meters) 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.

- B. Route the drain line to a floor drain, laundry tub, or other suitable waste receptor. Maintain the same 2-inch (5 cm) air gap as with the overflow line. 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 meters) from the discharge on the appliance as long as the water pressure in your system is 40 psi (2.8 bar) or more.

### Step 7 Flush Lines

- A. Place the appliance in the Bypass position.
- B. Turn on the main water supply.
- C. Open the nearest cold water faucet to flush the plumbing of any excess soldering flux, air, or any other foreign material.

## Installation Steps and Start-Up Procedures, Cont.

### Step 8

#### Check for Leaks

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

### Step 9

#### Plug in the Transformer

- A. Connect the transformer power cord to the back of the controller.
- B. Plug the transformer into an appropriate outlet.
- C. 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 Tank

- A. Add water to the brine tank to a minimum of 2 inches (5 cm) above the grid plate. After the first regeneration, the appliance will automatically refill the correct amount of water into the brine tank.
- B. Ensure that the bypass is in Service position.
- C. Ensure that the salt dosage is set as recommended for the application.
- D. 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).
- E. Press the Regenerate button to advance to the Brine Refill position. Let the tank fill with the proper amount of water. The controller will then step the main control valve to the Home position.

**Note:** This initial startup is the only time you will add water to the brine tank. Do not add water at any other time.

### Step 12

#### Fill the Brine Tank With Salt

- A. Fill the brine tank 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.

- B. 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.

## Installation Steps and Start-Up Procedures, Cont.

### Step 12 Complete the Installation

- A. Ensure that the bypass is left in the Service position. See *Bypass Valve*.
- B. Ensure the water supply is on.
- C. Open the inlet valve and turn on the electricity to the water heater. For gas water heaters, return the gas cock to "On."
- D. Open a cold water tap and allow the appliance to flush for 20 minutes or until approximately 72 gallons (270 liters) have passed through the appliance. This procedure is required to meet NSF compliance. Verify the flow rate on the controller, which indicates water flow. See Figure 4.
- E. Adjust the blending valve if it is being used. See *Blending Valve*.
- F. Test the water at the test port to verify soft water.
- G. Place the covers on both of the cabinets.

### 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 valve is attached to the main control valve. See Figure 2. To engage the bypass valve, locate the blue knob on top of the bypass valve. Turn the knob counterclockwise until it hits the stop. The appliance will be bypassed and all water to the home is raw, untreated water. To prevent untreated water from entering the home, water should not be used inside the home when the appliance is in Bypass mode. Ensure that the appliance is returned to Service mode when the appliance is repaired or the use of untreated water is complete by turning the blue knob clockwise until it hits the stop.



Figure 2: Bypass Valve

## Blending Valve

In some situations, the blending valve may be used to decrease water softness. 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 bypass valve. See Figure 2. 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, the user can increase or decrease the setting according to their 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.

## Setting and Using the Controller

The controller must be set up correctly for the appliance to perform properly.

**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 Figure 8.

## Regenerate Button

The Regenerate button is used when starting the water filtration appliance and to start an immediate regeneration. The Regenerate button can be used in three ways:

1. The Regenerate button can be used to put the appliance into an immediate regeneration.

- A. Press and hold the Regenerate button for about 5 seconds until the display changes to “Going to Backwash 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 button can be used to quickly advance through all of the regeneration cycles to speed up the cycles, which is used when starting up or diagnosing the appliance only.

- A. To advance through the regeneration cycles, tap the Regenerate button.
- B. The cycle position will display (for example, Backwash 1).
- C. Each cycle can be advanced by pressing the Regenerate button. Always wait until the cycle position displays before advancing to the next cycle position.

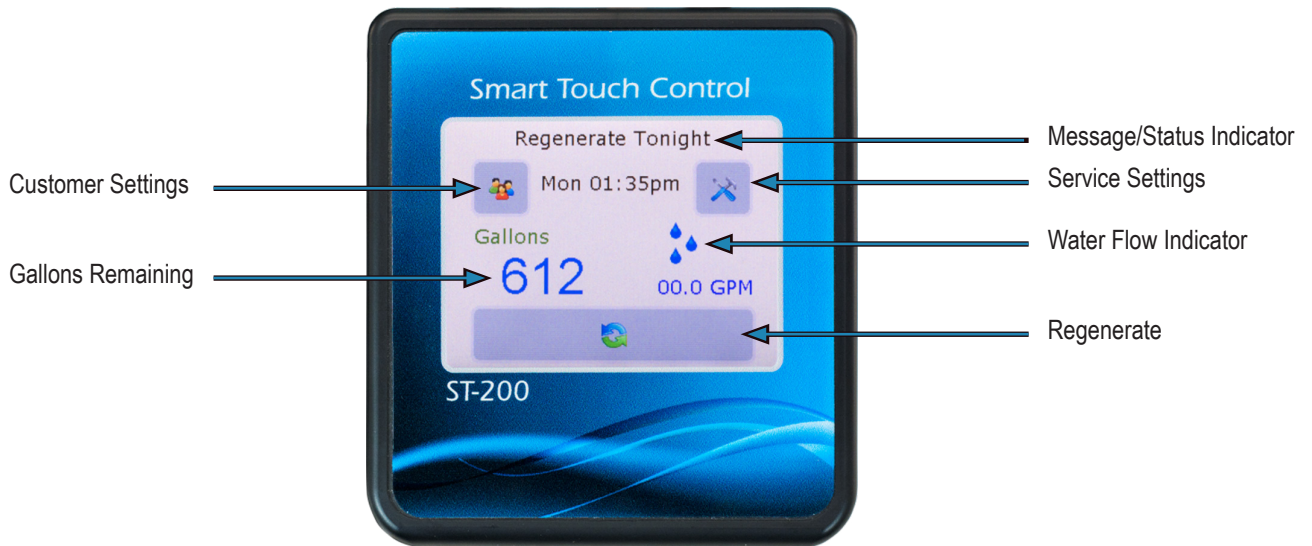
3. Tap the Regenerate button in Normal operating mode to schedule a regeneration tonight or toggle it off.



Figure 3: Regenerate Button

## Smart Touch Controller


This appliance features a touch screen controller with a color screen 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 4: Smart Touch Controller**

## Service Settings

To program Service Settings on the controller, tap on the screen to bring up the “Main Menu.”

Tap the Service Settings button  . The values that can be set are listed below. (Metric values are in parentheses.)

**Note:** The Service Settings must be set before the Customer Settings.

Title	Function	Factory Setting
<b>Password</b>	Enter the password	1397
<b>Language</b>	Select the desired language (English, Français, Español, Deutsch, Italiano)	English
<b>Units</b>	Select units of measure (Metric or English)	Eng
<b>History?</b>	Option to show history (Yes or No) (see Service Settings—History)	No
<b>Total Regenerations</b>	Displays the number of regenerations since the last time Service Settings mode was entered. Value resets to 0 once the number is viewed	0
<b>Total Gallons</b>	Displays the number of gallons that have passed through the unit since the last time Service Settings mode was entered. Value resets to 0 once the number is viewed	0
<b>Mode (1–3)</b>	Enter operating mode (1 to 3) (see Operating Modes)	2
<b>Hardness Grains</b>	Enter hardness test results (1 to 199 grains) or (0000 to 3999 mg/L)	40
<b>Iron ppm*</b>	Enter iron test results (0 to 99 ppm (mg/L))	0
<b>Manganese ppm</b>	Enter manganese test results (0 to 99 ppm (mg/L))	0
<b>Salt</b>	Select regenerant (Sodium or Potassium)	Sodium
<b>Compensated Hardness Grains</b>	Automatically calculated	40
<b>Capacity Grains</b>	The desired capacity number (52 to 99999 grains) or (788 to 6999 gm)	24480
<b>Backwash 1 Minutes</b>	First backwash cycle duration (0 to 999.9)	001.0
<b>Brine/Rinse Minutes</b>	Brine and rinse cycle duration (0 to 999.9)	030.0
<b>Backwash 2 Minutes</b>	Second backwash cycle duration (0 to 999.9)	005.0
<b>72–96 hour Regeneration</b>	Force regeneration setting every 72 to 96 hours unless a demand based regeneration occurs within time interval (Yes or No)	Yes*
<b>Distiller/RO</b>	Yes, if distiller or RO in use	Yes
<b>Turbine Test</b>	Used for advanced diagnosis (Yes or No)	No
<b>Salt Monitor</b>	Optional salt monitor in use (Yes or No)	No
<b>Salt lb</b>	Amount of salt for each regeneration	006.2
<b>Low Temp Alarm</b>	Optional, detects low ambient temperature (Yes or No)	Yes
<b>Water Usage Alarm</b>	Optional, detects prolonged non-stop water flow (Yes or No)	Yes
<b>Turbine Disconnect Alarm</b>	Optional, detects disconnected sensor wire (Yes or No)	Yes
<b>Regenerate Tonight</b>	Set to regenerate tonight (Yes or No)	No
<b>Dealer Name</b>	Enter the dealership/business name	Dealer name
<b>Dealer Number</b>	Enter the dealership/business phone number	800-123-4567

\*Required if iron is present



## Service Settings, Cont.

### Service Settings — History

History is an optional set of menus that acts as a clipboard for storing the history of water chemistry, total regenerations, amount of water to pass through the unit, unit model number, and other settings. The history can be used for diagnosis purposes or just for reference. History settings DO NOT affect operation.

When you select “Yes” in the history screen, the following screens will be available. Take notice of the “H-” prefix to signify that you are viewing the history.

	Service Settings – History (if set to Yes)	
Title	Function	Factory Setting
<b>Serial Number</b>	(For Reference Only)	AR0726
<b>H-Software V. #</b>	Software version number (For Reference Only)	V1.1
<b>H-Date</b>	Enter Installation Date Format MMDDYY	0
<b>H-Number of People</b>	Enter number of people in the household (1 to 50)	4
<b>H-Hardness grains</b>	Enter hardness test results (0 to 199 ppm (mg/L))	1
<b>H-Iron ppm</b>	Enter iron test results (0 to 99 ppm (mg/L))	0
<b>H-Manganese ppm</b>	Enter manganese test results (0 to 99 ppm (mg/L))	0
<b>H-Chlorine ppm</b>	Enter chlorine test results (0 to 99 ppm (mg/L))	1
<b>H-Sulfur ppm</b>	Enter sulfur test results (0 to 99 ppm (mg/L))	1
<b>H-pH ppm</b>	Enter pH test results (0 to 99.9)	00.0
<b>H-Iron Bacteria</b>	Is iron bacteria present (Yes or No)	No
<b>H-Total Regenerations</b>	Number of regenerations completed. Value does not reset (For Reference Only)	0
<b>H-Total Gallons</b>	Number of gallons that have passed through the unit. Value does not reset (For Reference Only)	0
<b>H-Hours Over Max Temp.</b>	Hours over 120 degrees Fahrenheit	0
<b>H-Model Number</b>	Enter model number	3MAQ
<b>H-Save History</b>	Choose to save history (Yes or No)	Yes

### Service Settings — Button Functions

Please reference the chart to the right in order to properly navigate the service settings area. These are the button options that will be shown on screen throughout the process.

Button	Function
<b>Ok</b>	Sets the information and moves to the next screen
<b>Back</b>	Navigates to the previous screen
<b>Clr</b>	Resets all values to 0 and/or to the default value
<b>Esc</b>	Escapes to the main menu
<b>day</b>	Advances to the next day, when applicable
<b>AP</b>	Toggles between AM and PM, when applicable

## Service Settings, Cont.

### Operating Modes

The controller has a Timer mode (Mode 1 Frequency and Mode 1 Days of the Week), a Demand Delayed mode (Mode 2), and a Demand Immediate mode (Mode 3). Only Mode 2 enables absolute brining. These 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

Select “Frequency” or “Days of Week.”

When the appliance is in Mode 1 – Frequency, it will regenerate based on the frequency that is set. For example, every 1 day up to every 20 days. The days between regenerations can be set in the “Service Settings.”

When “Frequency” is selected, the next screen displays “Regen Frequency.” Enter the desired number of days (1–20) between regenerations.

When “Days of Week” is selected, it will regenerate on a specific day(s) of the week. The next screen displays “Regeneration Time.” In “Customer Settings,” select the days on which you would like the unit to regenerate.

#### Mode 2—Demand Delayed Mode

When the appliance is in the Patented Savematic Demand 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 02:00am). 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 the Demand Immediate mode, it will regenerate based on water usage alone. Regeneration will occur when the capacity limit is reached. The time of regeneration cannot be set.

### 72–96 Hour Regeneration

If this value is set to Yes, the appliance will be forced to regenerate every 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.

### Screen Power Saving Mode

The screen powers off and goes black to save energy. When the screen is touched, it wakes up and displays the name and phone number of the dealer.





## Service Settings, Cont.

### Mode 1 (Timer Mode) Setting Chart

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

ST Series	3MAQ <sup>1</sup>	3BAQ <sup>1,2</sup>	3BEQ <sup>1,2</sup>	2MXQ <sup>1</sup>	3MDQ	2AMQ <sup>1</sup>	2APQ <sup>1,3,4</sup>	2AKQ	2AJQ <sup>5</sup>
Mode 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regeneration Frequency	As Required	As Required	As Required	As Required	1 or 2 days	As Required	1 or 2 days	1 or 2 days	1 or 2 days
96 hour regeneration (if iron present—yes) <sup>6</sup>	—	—	—	Yes	—	Yes	—	—	—
<b>#1 Salt Setting</b>									
Backwash 1 (minutes)	1	1	1	1 <sup>6</sup>	—	2 <sup>6</sup>	—	—	—
Brine/Rinse (minutes)	20	20	20	31	—	20	—	—	—
Backwash 2 (minutes)	3	3	3	3	—	2	—	—	—
Capacity—grains @ salt—lb (grams @ salt—kg)	5,700 @ 1.1 (369 @ 0.5)	6,000 @ 1.1 (389 @ 0.5)	6,000 @ 1.1 (389 @ 0.5)	9,300 @ 1.7 (603 @ 0.8)	—	5,700 @ 1.1 (369 @ 0.5)	—	—	—
<b>#2 Salt Setting</b>									
Backwash 1 (minutes)	1	1	1	1 <sup>6</sup>	—	2 <sup>6</sup>	—	—	7 <sup>6</sup>
Brine/Rinse (minutes)	23	23	23	35	—	23	—	—	23
Backwash 2 (minutes)	3	3	3	3	—	2	—	—	2
Capacity—grains @ salt—lb (grams @ salt—kg)	12,000 @ 2.7 (778 @ 1.2)	12,600 @ 2.7 (816 @ 1.2)	12,600 @ 2.7 (816 @ 1.2)	19,700 @ 4.2 (1,280 @ 1.9)	—	12,000 @ 2.7 (778 @ 1.2)	—	—	11,900 @ 2.7 (771 @ 1.2)
<b>#3 Salt Setting</b>									
Backwash 1 (minutes)	1	1	1	1 <sup>7</sup>	1	2 <sup>7</sup>	7	7	7
Brine/Rinse (minutes)	27	27	27	41	38	27	27	27	27
Backwash 2 (minutes)	3	3	3	3	3	2	2	2	2
Capacity—grains @ salt—lb (grams @ salt—kg)	23,400 @ 6.2 (1,520 @ 2.8)	24,600 @ 6.2 (1,590 @ 2.8)	24,600 @ 6.2 (1,590 @ 2.8)	38,300 @ 9.6 (2,480 @ 4.4)	23,100 @ 8.5 (1,500 @ 3.9)	23,400 @ 6.2 (1,520 @ 2.8)	23,600 @ 6.2 (1,590 @ 2.8)	23,100 @ 6.2 (1,500 @ 2.8)	23,100 @ 6.2 (1,500 @ 2.8)
<b>#4 Salt Setting<sup>8</sup></b>									
Backwash 1 (minutes)	1	1	1	1 <sup>7</sup>	1	2 <sup>7</sup>	7	7	7
Brine/Rinse (minutes)	31	31	31	48	45	31	31	31	31
Backwash 2 (minutes)	3	3	3	3	3	2	2	2	2
Capacity—grains @ salt—lb (grams @ salt—kg)	30,600 @ 9.3 (1,980 @ 4.2)	32,100 @ 9.3 (2,080 @ 4.2)	32,100 @ 9.3 (2,080 @ 4.2)	50,100 @ 14.4 (3,250 @ 6.5)	30,300 @ 10.7 (1,960 @ 4.9)	30,600 @ 9.3 (1,980 @ 4.2)	32,100 @ 9.3 (2,080 @ 4.2)	30,300 @ 9.3 (1,960 @ 4.2)	30,300 @ 9.3 (1,960 @ 4.2)

<sup>1</sup> Models 3MAQ, 3BAQ, 3BEQ, 2MXQ, 2AMQ and 2APQ are certified by WQA. All other models are not tested or certified by WQA.

<sup>2</sup> Municipally supplied chlorinated water only.

<sup>3</sup> Must have a minimum of 2 ppm iron and a minimum of 200 ppm TDS. See *Water Conditioner Specifications*.

<sup>4</sup> Model has no backwash flow control button or retainer. Must have a minimum of 7 gpm @ 30 psi available for proper backwash.

<sup>5</sup> Calcite will add additional hardness to water before softening.

<sup>6</sup> If iron is present in water supply, use salt setting #3 or #4.

<sup>7</sup> If iron is present in the water supply, set Backwash 1 to 7 minutes.

<sup>8</sup> Do not use this salt setting in California.

## Service Settings, Cont.

### Mode 2 (Demand Delayed Mode) Setting Chart

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

**Note:** Mode 2 and Mode 3 have the same settings. Mode 3 is NOT recommended for residential use.

ST Series	3MAQ <sup>1</sup>	3BAQ <sup>1,2</sup>	3BEQ <sup>1,2</sup>	2MXQ <sup>1</sup>	3MDQ <sup>3</sup>	2AMQ <sup>1</sup>	2APQ <sup>1,3,4</sup>	2AKQ <sup>3</sup>	2AJQ <sup>3,5</sup>
Mode 1	Yes	Yes	Yes	Yes	No	Yes	No	No	No
Regeneration Frequency	As Required	As Required	As Required	As Required	—	As Required	—	—	—
96 hour regeneration (if iron present—yes) <sup>6</sup>	Yes or No	Yes or No	Yes or No	Yes or No	—	Yes or No	—	—	—
#1 Salt Setting									
Backwash 1 (minutes)	1	1	1	1 <sup>6</sup>	—	2 <sup>6</sup>	—	—	—
Brine/Rinse (minutes)	20	20	20	31	—	20	—	—	—
Backwash 2 (minutes)	3	3	3	3	—	2	—	—	—
Capacity—grains @ salt-lb (grams @ salt-kg)	5,700 @ 1.1 (369 @ 0.5)	6,000 @ 1.1 (389 @ 0.5)	6,000 @ 1.1 (389 @ 0.5)	9,300 @ 1.7 (603 @ 0.8)	—	5,700 @ 1.1 (369 @ 0.5)	—	—	—
#2 Salt Setting									
Backwash 1 (minutes)	1	1	1	1 <sup>6</sup>	—	2 <sup>6</sup>	—	—	—
Brine/Rinse (minutes)	23	23	23	35	—	23	—	—	—
Backwash 2 (minutes)	3	3	3	3	—	2	—	—	—
Capacity—grains @ salt-lb (grams @ salt-kg)	12,000 @ 2.7 (778 @ 1.2)	12,600 @ 2.7 (816 @ 1.2)	12,600 @ 2.7 (816 @ 1.2)	19,700 @ 4.2 (1,280 @ 1.9)	—	12,000 @ 2.7 (778 @ 1.2)	—	—	—
#3 Salt Setting									
Backwash 1 (minutes)	1	1	1	1 <sup>7</sup>	—	2 <sup>7</sup>	—	—	—
Brine/Rinse (minutes)	27	27	27	41	—	27	—	—	—
Backwash 2 (minutes)	3	3	3	3	—	2	—	—	—
Capacity—grains @ salt-lb (grams @ salt-kg)	23,400 @ 6.2 (1,520 @ 2.8)	24,600 @ 6.2 (1,590 @ 2.8)	24,600 @ 6.2 (1,590 @ 2.8)	38,300 @ 9.6 (2,480 @ 4.4)	—	23,400 @ 6.2 (1,520 @ 2.8)	—	—	—
#4 Salt Setting <sup>8</sup>									
Backwash 1 (minutes)	1	1	1	1 <sup>7</sup>	—	2 <sup>7</sup>	—	—	—
Brine/Rinse (minutes)	31	31	31	48	—	31	—	—	—
Backwash 2 (minutes)	3	3	3	3	—	2	—	—	—
Capacity—grains @ salt-lb (grams @ salt-kg)	30,600 @ 9.3 (1,980 @ 4.2)	32,100 @ 9.3 (2,080 @ 4.2)	32,100 @ 9.3 (2,080 @ 4.2)	50,100 @ 14.4 (3,250 @ 6.5)	—	30,600 @ 9.3 (1,980 @ 4.2)	—	—	—

<sup>1</sup> Models 3MAQ, 3BAQ, 3BEQ, 2MXQ, 2AMQ and 2APQ are certified by WQA. All other models are not tested or certified by WQA.

<sup>2</sup> Municipally supplied chlorinated water only.

<sup>3</sup> NA, See Mode 1 Setting Chart.

<sup>4</sup> Model has no backwash flow control button or retainer. Must have a minimum of 7 gpm @ 30 psi available for proper backwash. See Mode 1 Setting Chart.

<sup>5</sup> Calcite will add additional hardness to water before softening.

<sup>6</sup> If iron is present in water supply, use salt setting #3 or #4.

<sup>7</sup> If iron is present in the water supply, set Backwash 1 to 7 minutes.

<sup>8</sup> Do not use this salt setting in California.

## Customer Settings

Service Settings must be set before Customer Settings; Service Settings should be set during installation of the appliance. To program Customer Settings on the controller, tap twice on the screen to bring up the “Main Menu.”

Tap the “Customer Settings” button .

**Note:** If a value displayed on the screen is correct, press Ok to move on to the next programmable value.

### Step 1 Set Day and Time

Display reads “Set Time” followed by the current day and time that is set (Ex. Mon 1:00pm).

#### To Change the Day and Time

- A. Tap “day” to change the day of the week.
- B. Enter the time (hh:mm).
- C. Tap “AP” for AM or PM.
- D. When the desired day and time are displayed, press Ok.

### Step 2 Set Regeneration Time

Display reads “Regeneration Time” followed by the current regeneration time that is set (Ex. 02:00am).

#### To Change the Regeneration Time

- A. Enter the desired regeneration time (hh:mm).
- B. Tap “AP” for AM or PM.
- C. When the desired regeneration time is displayed, press Ok.

### Step 3 Set Regeneration Mode

Mode 1 and Days of the Week only (see Operating Modes).

### Step 4 Set Silent Mode Start Time

Display reads “Quiet Start Time” followed by the current time that is set (Ex. 12:00am).

#### To Set the Silent Mode Start Time

- A. Enter the desired silent mode start time (hh:mm).
- B. Tap “AP” for AM or PM.
- C. When the desired time is displayed, press Ok.

### Step 5 Set Silent Mode Stop Time

Display reads “Quiet Stop Time” followed by the current time that is set (Ex. 06:30am).

#### To Set the Silent Mode Stop Time

- A. Enter the desired silent mode stop time (hh:mm).
- B. Tap “AP” for AM or PM.
- C. When the desired time is displayed, press Ok.

## Customer Settings, cont.

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### Step 6

#### **Set Number of People**

Display reads “# People” followed by the current setting for the number of people in the household (Ex. 4).

##### **To Change the Number of People**

- A.** Enter the number of people in the household.
- B.** When the desired number of people is displayed, press Ok.

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

## Salt Depths

Based on the water level measured from the bottom of the brine cabinet with grid plate, the following depths correlate to the amount of salt used per regeneration:

Modes 1 and 3		Mode 2	
Salt-lb (kg)	Depth-in. (cm)	Salt-lb (kg)	Depth-in. (cm) <sup>1</sup>
<b>1.0 (0.5)</b>	<b>5-3/4 (14.6)</b>	<b>1.0 (0.5)</b>	<b>5 (12.7)</b>
<b>1.6 (0.7)</b>	<b>6 (15.2)</b>	<b>1.6 (0.7)</b>	<b>5-1/4 (13.3)</b>
2.5 (1.1)	7-5/8 (19.4)	2.5 (1.1)	5-7/8 (14.9)
<b>2.7 (1.2)</b>	<b>8 (20.3)</b>	<b>2.7 (1.2)</b>	<b>5-7/8 (14.9)</b>
3.0 (1.4)	8-7/8 (22.6)	3.0 (1.4)	6 (15.2)
<b>4.2 (1.9)</b>	<b>9-5/8 (24.4)</b>	<b>4.2 (1.9)</b>	<b>7-1/4 (18.4)</b>
6.0 (2.7)	11-7/8 (30.2)	6.0 (2.7)	8-7/8 (22.6)
<b>6.2 (2.8)</b>	<b>12 (30.5)</b>	<b>6.2 (2.8)</b>	<b>8-7/8 (22.6)</b>
6.5 (2.9)	12-3/8 (31.4)	6.5 (2.9)	9 (22.9)
<b>8.5 (3.9)</b>	<b>14-3/4 (37.5)</b>	<b>8.5 (3.9)</b>	<b>9-5/8 (24.4)</b>
9.0 (4.1)	15-3/8 (39.1)	9.0 (4.1)	9-7/8 (25.1)
<b>9.3 (4.2)</b>	<b>15-7/8 (40.3)</b>	<b>9.3 (4.2)</b>	<b>10 (25.4)</b>
<b>9.6 (4.4)</b>	<b>16-1/2 (41.9)</b>	<b>9.6 (4.4)</b>	<b>10-3/4 (27.3)</b>
<b>10.7 (4.9)</b>	<b>17-3/8 (44.1)</b>	<b>10.7 (4.9)</b>	<b>11-3/4 (29.8)</b>
<b>14.4 (6.5)</b>	<b>22 (55.9)</b>	<b>14.4 (6.5)</b>	<b>13-5/8 (34.6)</b>

<sup>1</sup>These depths reflect 50% of the total brine refill for the Absolute Brining feature.

**Note:** Bold numbers pertain to available settings listed under Mode 1 and 2 Service Settings.

To maintain peak performance of the appliance, inspect and clean the brine tank and air check/draw tube assembly annually or when sediment is present in the brine tank.

## 2AJQ Replenishment Procedure

The neutralizing media that adjusts the pH level of the water must be refilled periodically. Typically, this media is calcite and is available from Hague. To refill the neutralizing media, measure the appliance's media bed depth upon installation (factory freeboard). Use this measurement to determine the amount of media to add to maintain optimum performance of the 2AJQ.

### Tools and Materials Needed

The following tools and materials are needed to replace the neutralizing media:

- Analog scale (do not use digital)
- 5-gallon bucket with handle
- 1/2-inch siphon hose
- 12-inch wooden ruler or dowel rod
- Steel tape measure
- Replacement media (P/N 100242302)
- Funnel with 1-inch fill tube
- 3/4-inch socket

### Replenishment Procedure

The replenishment procedure is as follows:

#### Step 1 Turn Off the Water

- A. Turn off the water to the appliance.
- B. Open a tap to depressurize the appliance.
- C. Close the tap.

#### Step 2 Remove Water From Media Tank

- A. Remove the fill plug from the media tank using a 3/4-inch socket.
- B. Insert the siphon hose into the fill port.
- C. Siphon the water into the bucket down to the media level in the tank.

#### Step 3 Calculate Amount of Media to Add

- A. Measure the freeboard distance from the top of the fill plug to the media. See Figure 5.  
**Note:** The recommended freeboard distance is 4-3/4-inch (12 cm).
- B. Add five pounds (2.3 kg) of media per inch (2.5 cm) below 4-3/4-inches (12 cm).

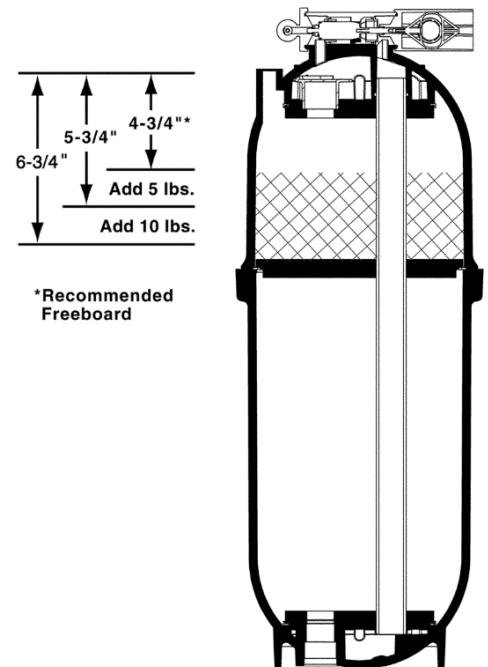


Figure 5: Max Freeboard Amount

#### Example:

Measured Freeboard                      6-3/4 inches (17.1cm)

Minus factory Freeboard              -4-3/4 inches (12.1cm)

---

Adjusted Freeboard                      2 inches (5.0cm)

Replenishment equals

5lb (2.3 kg) media x 2 inches (2.5 cm) (adjusted freeboard) = 10lb (4.5kg) media.

## 2AJQ Replenishment Procedure, Cont.

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### Step 4 Add Replenishment Media

- A. Weigh the replenishment media.
- B. Place the funnel into the fill port.
- C. Pour the media into the funnel to fill the tank with the measured amount of media.

### Step 5 Refill Tank With Water

- A. Open the main water valve.
- B. Slowly fill the tank with water up to the bottom of the fill port.
- C. Turn off the water.

### Step 6 Replace Fill Plug

- A. Make sure the threads of the fill port are clean.
- B. Replace the fill plug.
  - Caution:** Do not overtighten the fill plug.

### Step 7 Check for Leaks

- A. Turn on the water to re-pressurize the appliance.
- B. Check for leaks.
- C. Fix any leaks.

The following pages provide information about the Hague Iron Filter and Potassium Permanganate Feeder.

# 1AAN WaterMax® Iron Filter Sizing Formula

The iron filter may be programmed to regenerate every one to twelve days. Select the frequency based on the amount of iron in the water and the number of people in the household. **For optimum performance, program the water softener to regenerate first, followed by the Iron Filter.**

**Example:** Softener 1:00am; Iron Filter 3:00am.

## Regeneration Cycle Frequency Worksheet

This table will help you determine how often the iron filter will need to regenerate.

	Water		Example	
Total Iron	___ ppm (mg/L) x 1 =	___ ppm (mg/L)	3.5 ppm (mg/L) x 1 =	3.5 ppm (mg/L)
+ Manganese*	___ ppm (mg/L) x 3 =	___ ppm (mg/L)	0.2 ppm (mg/L) x 3 =	0.6 ppm (mg/L)
+ Sulfur	___ ppm (mg/L) x 5 =	___ ppm (mg/L)	1.0 ppm (mg/L) x 5 =	5.0 ppm (mg/L)
<b>= Total compensated ppm</b>		<b>___ ppm (mg/L)</b>		<b>9.1 ppm (mg/L)</b>
x Gallons per day for one person		75 gallons (284 L)		75 gallons (284 L)
<b>= ppm per person per day</b>	=	<b>___ ppm (mg/L)</b>		<b>682.5 ppm</b>
x Number of people in household		___ people		4 people
<b>= Daily ppm capacity</b>		<b>___ ppm (mg/L)</b>		<b>2730 ppm</b>
Iron filter capacity	=	10,000 ppm		10,000 ppm
÷ Daily ppm requirements	=	___ ppm		2730 ppm
= Frequency of regeneration		___ days		3.6 days
Set regeneration frequency	@	___ days		3 days

\* If manganese is unknown, multiply the iron and sulfur total by 1.15 to adjust total compensated ppm.

## Determine Monthly Usage

This table will help you determine how much regenerant the iron filter will use each month.

	Water	Example
Total days per month	___ days	30 days
÷ Frequency of regeneration	___ days	3 days
= Regenerations per month	___ regenerations	10 regenerations
x 4 oz (118 g) per regeneration = oz KMnO4 per month	___ oz	4 oz (118 g) x 10 regenerations = 40 oz (1.1 kg)
÷ 16 = lb per month	___ lb	40 oz (1.1 kg) ÷ 16 oz/lb (1 kg/kg) = 2.5 lb (1.1 kg)*



# Iron Filter and Potassium Permanganate Feeder Installation Guide

**Important:** The iron filter is capable of treating a combination of undesirable constituents in the water (iron, manganese, and/or hydrogen sulfide). However, the filter must be applied within the operating limits stated in the *Filter Specifications* in this manual. Failure to comply with these specifications will degrade performance and possibly cause the control valve to malfunction.

**Note:** The iron filter should be installed after the pressure tank or water meter and before the water heater or any water softener appliance, unless otherwise recommended. See Figure 6. A minimum 3/4-inch pipe is required for proper function of the filter. Examine the inlet piping to make sure the pipe is not plugged with lime or iron. If the piping is plugged, it must be cleaned or replaced.

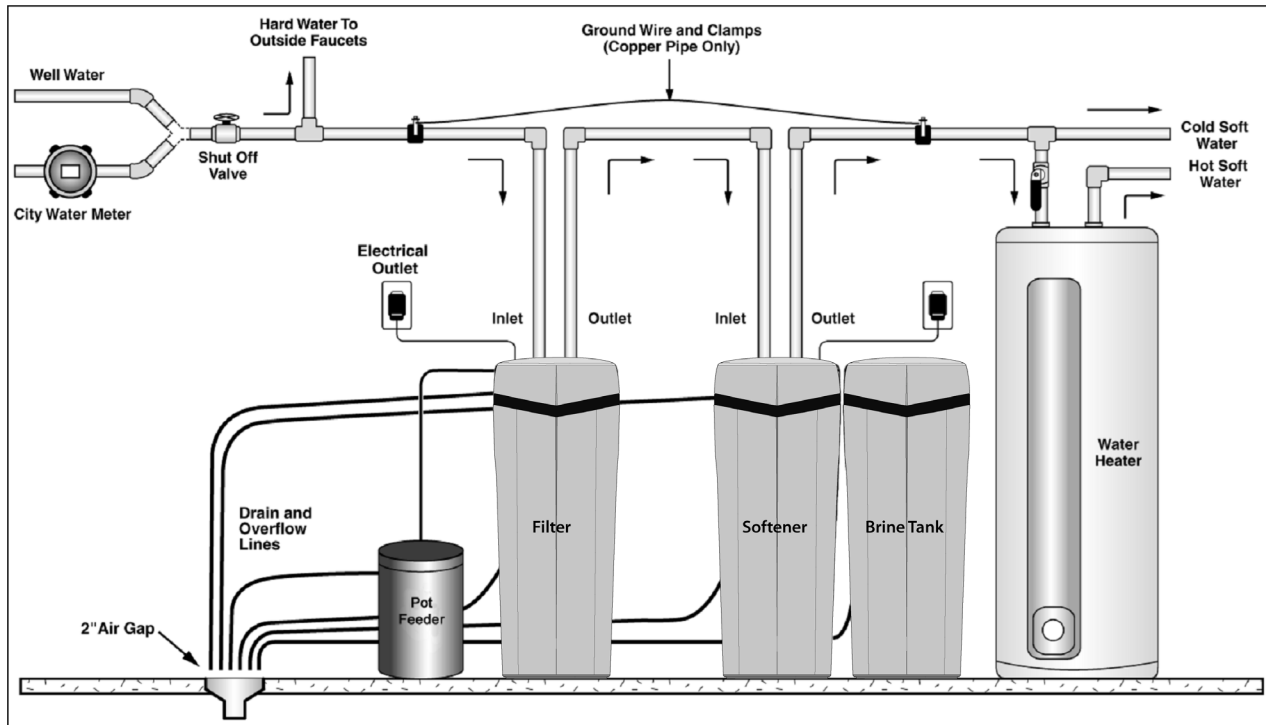


Figure 6: Iron Filter and Potassium Permanganate Feeder Placement

## Step 1 Install Filter

- A. Follow steps 1–3 of Installation Steps and Start-Up Procedures.
- B. Instead of connecting the brine tank, connect the potassium permanganate feeder as outlined below.

## Step 2 Unpack Feeder

- A. Remove feeder from shipping carton.
- B. Read the instructions in red, remove the label from the feeder, and discard it into the shipping carton.
- C. See Figure 6 for feeder placement.
- D. Remove the cover and set it aside.
- E. Pull up on the brine well cap to remove the safety shutoff assembly. Remove the rubber band from the air check/draw tube float rod assembly and replace the safety shutoff back into the brine well.
- F. Remove the plastic bag containing the three stainless steel screws and the 3/8-inch tubing.

## Iron Filter and Potassium Permanganate Feeder Installation Guide

### Step 3 Connect Lines

- A. Connect the 3/8-inch tubing to the brine valve on the filter by pushing the tube to the stop. Pull back on the tubing to install the red locking clip behind the collet.
- B. Connect the tubing to the feeder.
- C. Connect the overflow line.

### Step 4 Add Water to Feeder

- A. Add 2 gallons (8 liters) of treated water to the feeder. The water should cover the felt pad by at least 1/2-inch (1.3 cm).

**Caution:** Do not use water that contains iron, manganese, or hydrogen sulfide.

**Caution:** Do not adjust the float assembly. This feeder is preset for a 4-ounce (120 mL) feed of potassium permanganate. Use care when working with potassium permanganate. Follow instructions printed on the cover of the feeder as well as the instructions on the potassium permanganate container.

### Step 5 Set Air Check/Draw Tube

- A. Allow the water to be drawn out of the feeder until the air check/draw tube sets and then let the feeder tank refill to the right level.
- B. Follow steps 5–10 of *Installation Steps and Start-Up Procedures*.

### Step 6 Add Potassium Permanganate to Feeder

- A. Slowly add 5 lb (2.3 kg) of potassium permanganate (KMnO<sub>4</sub>) to the feeder. (P/N 100242148).  
**Warning:** Follow the safety instructions on the container when working with potassium permanganate. Use care when removing the cover and pouring it into the feeder.
- B. Place the cover on the feeder and secure it with the three stainless steel screws.

### Step 7 Regenerate Filter

- A. Regenerate the iron filter immediately to charge the manganese greensand. To start a regeneration, push and hold the Regenerate button until the controller displays “Going to.”

### Step 8 Complete the Installation

- A. Follow Step 13 of the *Installation Steps and Start-Up Procedures*.

## Assembly and Parts

### Cabinet and Cover Assemblies

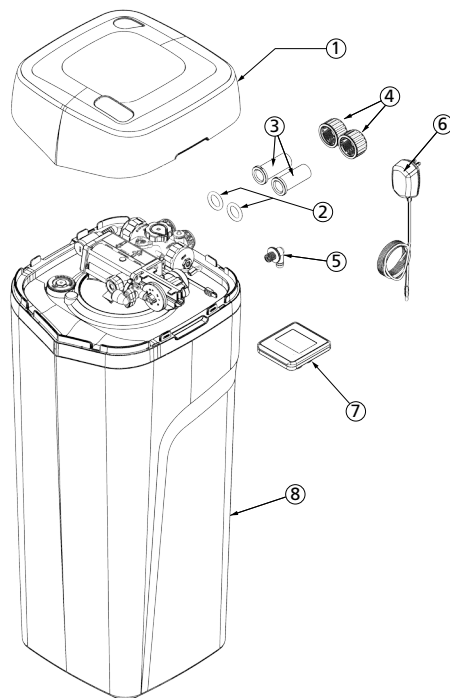


Figure 7: Cabinet and Cover Assemblies

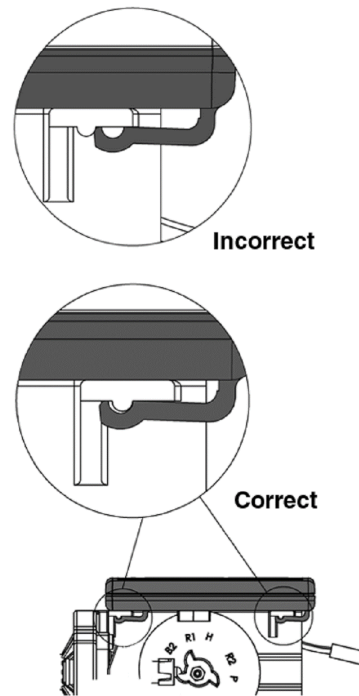


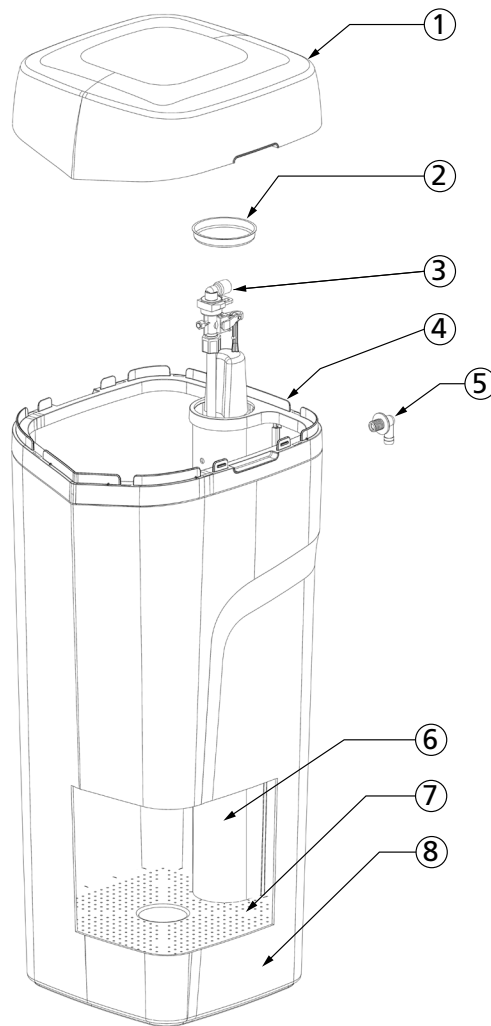
Figure 8: Controller Tab Lock Detail

	Current Part #	Description	Quantity
1	100252705	Signature Media Cabinet Cover Assembly	1
2	100241873	Bypass Nut Gasket	2
3	100241817	1-inch CPVC CTS Adapter (optional)	2*
	100241812	3/4-inch Copper Adapter (optional)	
	100241814	3/4-inch PVC Adapter (optional)	
	100241816	Copper Adapter, 1-inch (optional)	
4	100241810	Bypass Nut	2
5	100238195	Cabinet Overflow	1
6	100238182	12V Transformer/Power Cord	1
7	100241051	Smart Touch Controller Assembly	1
8	100037646	Cabinet, Signature Series	1
	100241844	3/4-inch to 1-inch Copper Adapter Kit (includes 100241810 and 100241873)	1*
	100241847	3/4-inch PVC Adapter Kit (includes 100241810 and 100241873)	
	100241848	1-inch Copper Adapter Kit (includes 100241810 and 100241873)	
	100241849	1-inch CPVC CTS Adapter Kit (includes 100241810 and 100241873)	

\* A qualified dealer will specify the adapter(s) required.

## Assembly and Parts, Cont.

### Brine Tank Assembly



**Figure 9: Brine Tank Assembly**

	Current Part #	Description	Quantity
1	100037650	Brine Tank Cover	1
2	100245878	Brine Well Cap - 3.5	1
3	100347036	Safety Shutoff Assembly - welded	1
4	100253331	Signature Support Panel (BT)	1
5	100238195	Cabinet Overflow	1
6	100037651	Signature Brine Well	1
7	100037652	Signature Grid Plate	1
8	100037646	Signature Cabinet	1
	100348538	Signature Entire Assembly (all of the above parts)	

## Assembly and Parts, Cont.

### Cabinet and Assemblies

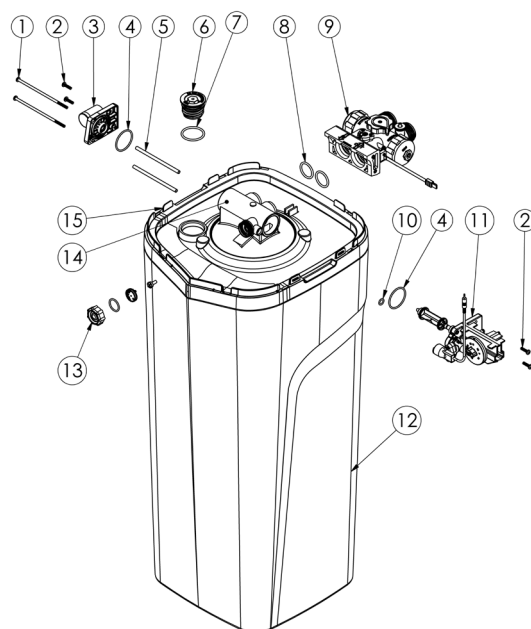


Figure 11: Cabinet and Assemblies

	Current Part #	Description	Quantity
1	100238198	Screw	2
2	100238199	Screw	4
3	100241828	Drain End Cap and Container (No DLFC) - See <b>Figure 17</b>	1
4	100241865	O-Ring	2
5	100242049	Sleeve	2
6	100241807	Fill Plug	1
7	100241870	O-Ring	1
8	100242050	O-Ring	2
9	100241175	Bypass Valve Assembly	1
10	100037867	O-Ring	1
11	100242111	Drive End Cap Assembly -- See <b>Figure 15</b>	1
12	100037646	Signature Cabinet	1
13	100238192	Round Injector Assembly	1
14	100037763	Media Tank (3-compartment) (empty)	1
	100241094	Media Tank (2-compartment) (center and bottom screen)(empty)	
	100241110	Media Tank (1-compartment) (bottom screen)(empty)	
	100241078	BAQ Media Tank	
	100241101	AMQ Media Tank	
	100241112	AAA Media Tank	
	100241083	MAQ Media Tank	
15	100037647	Signature Support Panel	1

## Assembly and Parts, Cont.

### Injector Assembly

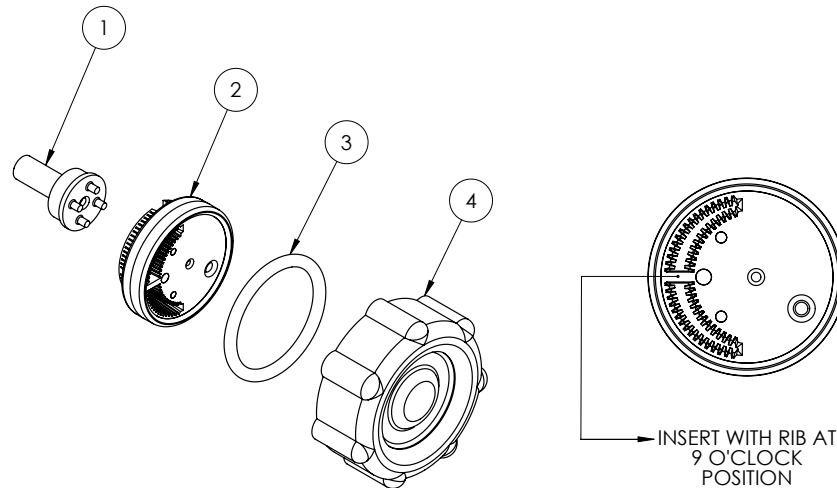


Figure 12: Injector Assembly

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

<b>100241946 Injector Throat</b>	In conjunction with the Injector Nozzle 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.
<b>100237421 Injector Nozzle with Over-Mold Gasket</b>	Together with the Throat creates the vacuum that draws the brine solution from the Brine Cabinet. The small hole in the Injector Nozzle 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.
<b>100037729 Injector Cap</b>	Holds the injector assembly together and seals the assembly to the Main Control Valve.

## Assembly and Parts, Cont.

### Fill Plug Assembly

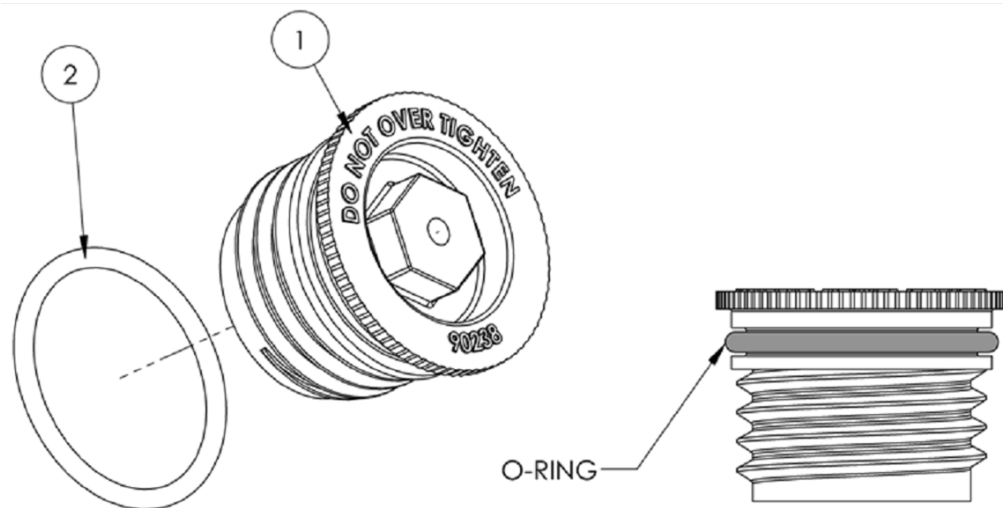


Figure 13: Fill Plug Assembly

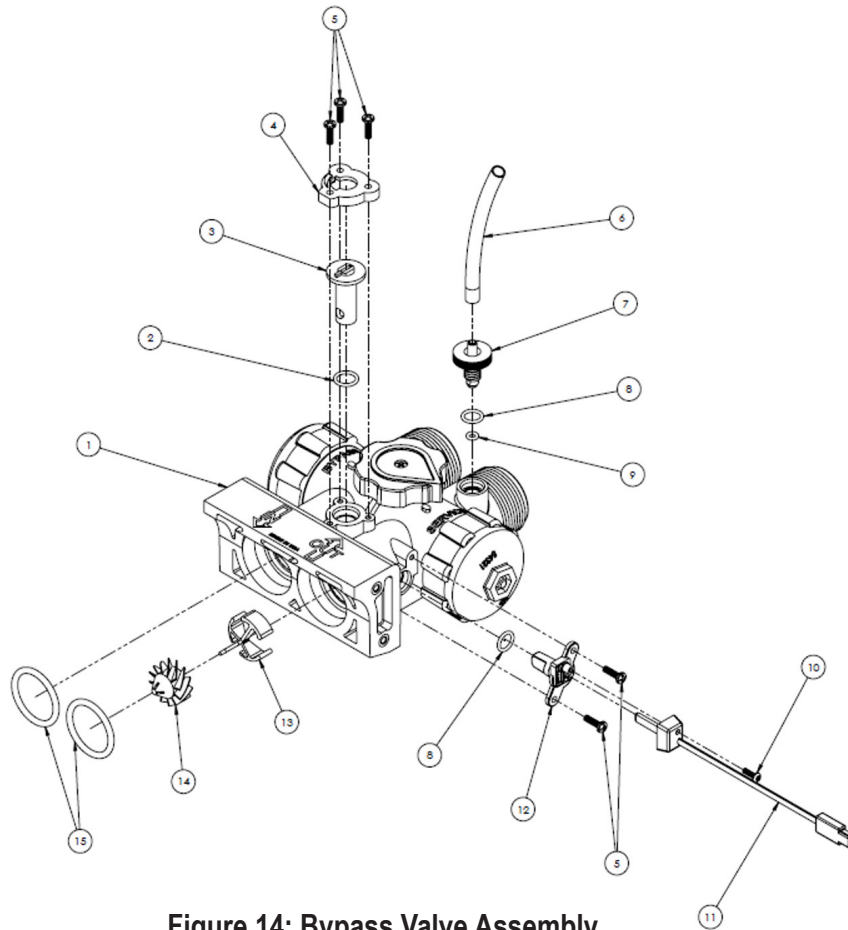
	Current Part #	Description	Quantity
1	100241807	Fill Plug	1
2	100241870	Fill Plug O-Ring Seal	1
	100241857	Fill Plug Assembly (all of the above parts)	

#### 100241807 Fill Plug

The Fill Plug seals the media access ports in the Media Tank. Care should be taken that the O Ring seal area is kept clean and free of debris. Also, the O-Ring should be in the proper location in the groove. Do not overtighten the Fill Plug when assembling. When the flange comes into contact with the Media Tank, stop tightening. A 3/4-inch socket is recommended for assembly.

## Assembly and Parts, Cont.

### Bypass Valve Assembly



**Figure 14: Bypass Valve Assembly**

	Current Part #	Description	Quantity
1	100241175	Bypass Valve Assembly (also includes items 2-15)	1
2	100241868	O-Ring	1
3	100241804	Blending Dial	1
4	100241811	Cap - Blending Dial	1
5	100238196	Screw	5
6	100241863	Tubing 4.0-inch	1
7	100241805	Test Port Valve	1
8	100241869	O-Ring	2
9	100241820	O-Ring	1
10	100241861	Screw	1
11	100238200	Turbine Sensor Wire with Cap	1
12	100241189	Turbine Sensor Housing	1
13	100238202	Plastic Turbine Axle	1
14	100238201	Turbine Assembly	1
15	100242050	O-Ring	2



## Assembly and Parts, Cont.

### Bypass Valve Assembly Cont.

<b>100241811 Blending Dial Cap</b>	The Cap should be held in place by the three 1/2-inch self-tapping screws and be in the proper orientation.
<b>100241804 Blending Dial</b>	The Dial permits the addition of “untreated water” into the soft water outlet. It is closed when pointing toward the Main Control Valve and open when pointing toward the inlet side.
<b>100241805 Test Port Valve</b>	<p>The Test Port Valve is used to draw water samples from the unit. When the Bypass Valve is in the Service position, the water tested should be soft, treated water. When the Bypass Valve is in Bypass position, the water treated is from the raw, incoming water supply.</p> <p><b>Note:</b> There are two types of seals on the Test Port. One seal is an O-Ring which seals off the threaded area when the Valve is opened. The other seal is a compression O-Ring seal between the Test Port Valve material and the Bypass Housing. If this seal is “overtightened,” it can damage the O Ring and cause a permanent leak.</p>
<b>100238200 Turbine Sensor Wire with Cap</b>	Picks up the magnetic field from the Turbine and relays it to the Controller. Care should be taken when putting the Sensor Wire into the Sensor Housing. The cap is then put in place and the self tapping mounting screw is installed. A slot is provided in the cap for the wire to exit. The three wire socket connector must be properly installed in the controller. Stops on the connector prevent improper (upside down) assembly. Do not force the connector past the stops.
<b>100238202 Plastic Turbine Axle</b>	Sits on a ridge in the Main Control Valve side of the outlet stream of the Bypass Valve Assembly. Needs to fit around the Turbine Sensor Housing (100241189) when assembled. If the Plastic Turbine Axle is not correctly seated, the Sensor Wire may not sense the Turbine magnet.
<b>100238201 Turbine Assembly</b>	The Turbine must have a 1/8-inch diameter Rare Earth magnet pressed into place adjacent to the axle opening. When assembled to the axle, the Turbine should spin freely. Do not use any lubricants. If the Turbine should become “jammed,” clean and flush the Turbine and Bypass Valve.
<b>100241175 Bypass Valve Assembly</b>	Makes the connection between the plumbing and the appliance. The Bypass Valve Assembly allows water to bypass the appliance for service or when untreated water is desired. The recommended seal for the 1-1/4-inch male inlet-outlet threads is the plastic Bypass Nut (100241810), O-Ring (100241873), and 1 inch CPVC CTS Adapter (100241817). Make sure the O-Ring is between the Bypass Valve Assembly and the flange on the CPVC Adapter. The O Ring seal areas at the Main Control Valve inlet and outlet must be smooth, free of defects and debris, and lubricated with silicone grease before assembling. When attaching to the Main Control Valve, put the O-Rings on the male bosses on the Main Control Valve and push the Bypass Valve Assembly into place; if not, the O-Rings may be “pinched.” If the O Rings get pinched, replace with new ones. The Bypass Valve Assembly is pre-assembled and is not considered field-serviceable. If the Bypass Valve Assembly is damaged it must be replaced with a new assembly.

## Assembly and Parts, Cont.

### Drive End Cap Assembly

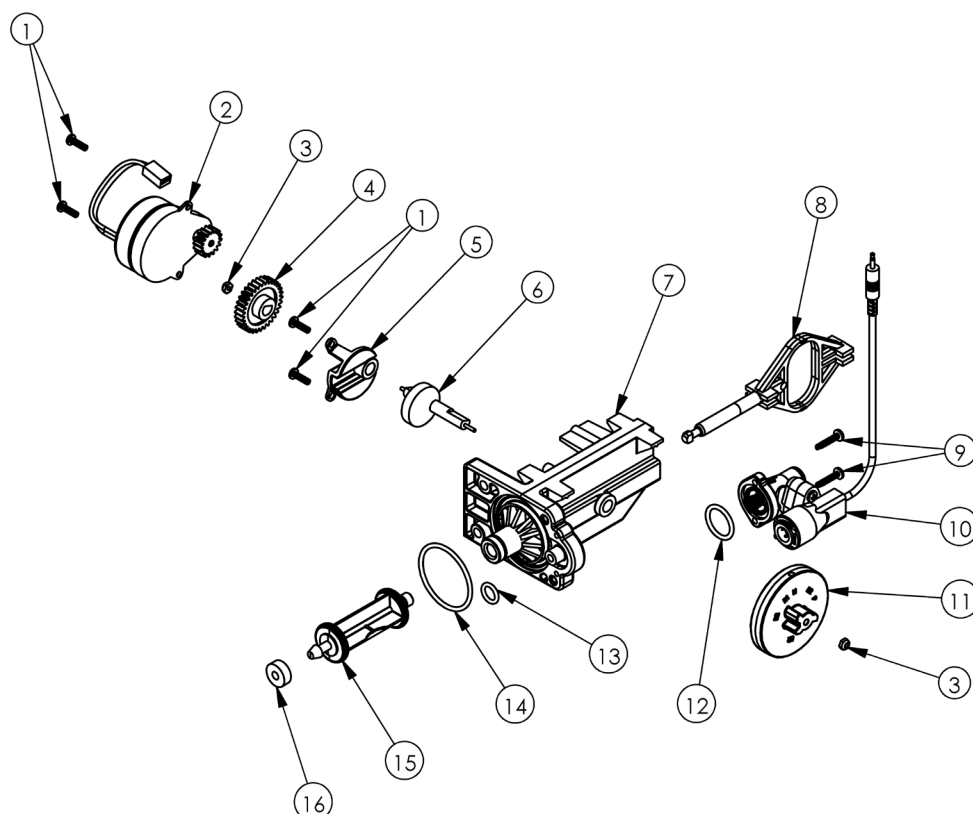


Figure 15: Drive End Cap Assembly

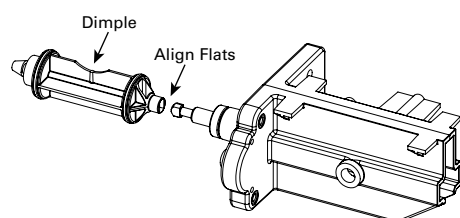
	Current Part #	Description	Quantity
1	100238196	Screw, self-tapping	2
2	100238181	Drive Motor	1
3	100238190	1/4-inch Hex Nut	2
4	100238188	Drive Gear	1
5	100241941	Piston Slide Cam Cover	1
6	100241940	Piston Slide Cam	1
7	100037805	Drive End Cap	1
8	100240958	Piston Slide	1
9	100238197	Screw, self-tapping	2
10	100359580	Brine Valve Assembly with Salt Probe	1
11	100238193	Magnet Disk Assembly	1
12	100252699	O-Ring	1
13	100037867	O-Ring	1
14	100241865	O-Ring	1
15	100238189	Drive Piston Assembly (includes 100242051 Drain Gasket)	1
16	100242051	Drain Gasket	1
	100242111	Entire Assembly (all of the above parts except line 1, 2, and salt probe* from line 10)	

\*To include a salt probe, please order as a separate item using part # 100037735

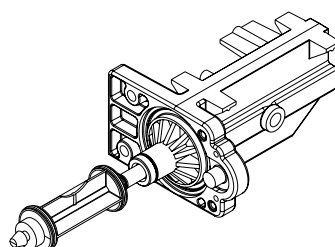
## Assembly and Parts, Cont.

### Drive End Cap Assembly Cont.

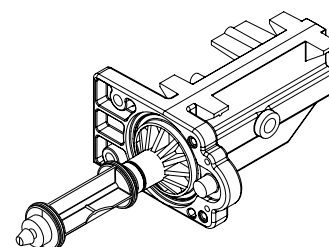
<b>100238181 Drive Motor</b>	The Motor is held in place by two 1/2-inch self-tapping screws. The screws should be “snug.” The brass pinion gear on the Motor should engage the plastic Drive Gear. The wires should be securely fastened to the Control.
<b>100238188 Drive Gear</b>	The Drive Gear is assembled 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 and Piston Slide Cam.
<b>100037655 Piston Slide Cam Cover</b>	The cover secures the Piston Slide Cam in place and acts as a bushing for the Cam Shaft.
<b>100241940 Piston Slide Cam</b>	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 is attached at the short end and the Magnet Disc at the other end. The Slide Cam is assembled inside of the Piston Slide. This Cam Shaft should turn freely before the Motor is assembled.
<b>100037805 Drive End Cap</b>	Seals the two openings on the Main Control Valve. 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 also 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 Main Control Valve, care should be taken to make sure the small O-Ring is aligned with the opening in the Main Control Valve and that the large O-Ring stays in the groove in the End Cap. If misaligned, the O-Rings can become pinched and leak.
<b>100240958 Piston Slide</b>	The Slide should move freely inside the End Cap Housing.
<b>100359580 Brine Valve Assembly with Salt Probe</b>	Attaches to the Drive End Cap with two 3/4-inch self-tapping screws and has one O-Ring seal. The O Ring is used as a axial or face seal. The O-Ring sits in a groove in the Brine Valve Housing. The groove and the face seal must be free of defects such as pits and scratches or debris.
<b>100238189 Drive Piston Assembly</b>	The Drive Piston attaches to the Piston Slide 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.



Position Piston Assembly (100238189) With Dimple Oriented Vertically



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.

### Brine Valve Housing Assembly

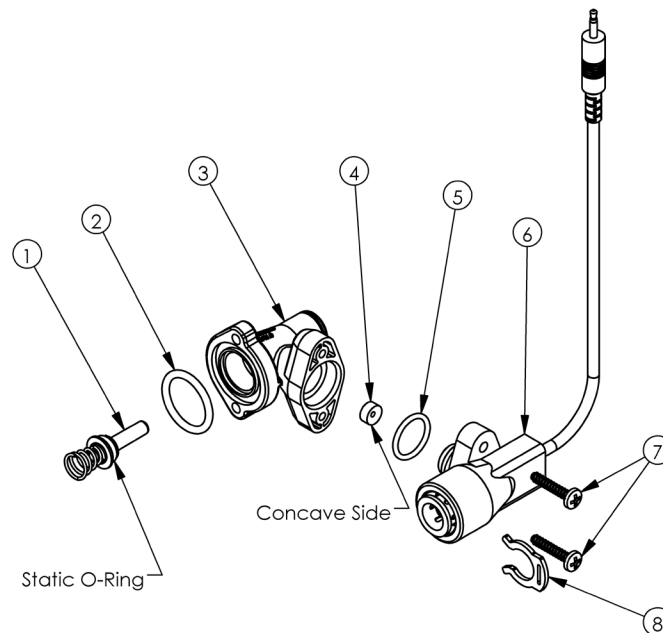


Figure 16: Brine Valve Housing Assembly

	Current Part #	Description	Quantity
1	100237712	Piston Assembly (includes O-Ring & Spring)	1
2	100252699	O-Ring	1
3	100237707	Housing	1
4	100241875	0.5 gpm Flow Control	1
5	100242033	O-Ring	1
6	100037735	Salt Monitor Probe - JG Elbow	1
7	100238197	Screw, self-tapping	2
8	100236202	3/8-inch Locking Clip	1
	100359580	Entire Assembly (all of the above parts)	

<b>100237712 Brine Piston</b>	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.
<b>100237707 Housing</b>	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.
<b>100241875 0.5 gpm Flow Control</b>	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 Salt Monitor Probe.
<b>100037735 Salt Monitor Probe - JG Elbow</b>	The Salt Monitor Probe is held in place by two 3/4-inch self-tapping screws that engage the Housing flange. An O Ring seals the Salt Monitor Probe and Housing. Place the O-Ring onto the housing end cap, lubricate with silicone grease and then using a twisting action, insert the Salt Monitor Probe into the housing. <b>Caution:</b> 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

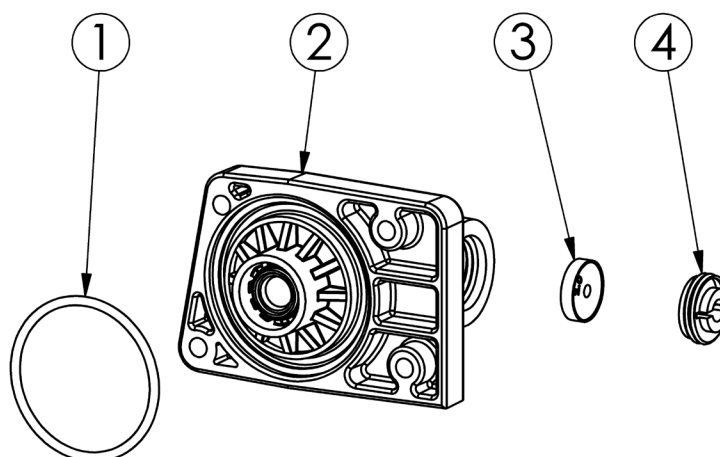


Figure 17: Drain End Cap Assembly

	Current Part #	Description	Quantity
1	100241865	O-Ring	1
2	100241822	Drain End Cap	1
3	100242255	Drain Line Flow Control	1
4	100241821	Retainer	1
		Entire Assembly (all the above parts) 2.4 GPM = 100238229 3.0 GPM = 100241852 5.0 GPM = 100241853 7.0 GPM = 100241854	1

<b>100241822 Drain End Cap</b>	The Drain End Cap seals the left opening on the Main Control Valve. 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 Main Control Valve, 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.
<b>Drain Line Flow Control</b>	<p>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. See <i>Specifications</i>. When assembling the flow control, ensure that the rounded (radius) side of the hole faces in toward the water flow. Available parts:</p> <ul style="list-style-type: none"> <li>● 100242255 - 2.4*</li> <li>● 100242256 - 3.0*</li> <li>● 100242258 - 5.0*</li> <li>● 100242259 - 7.0*</li> </ul> <p>* Indicates the backwash flow rate in gpm.</p>
<b>100241821 Retainer</b>	The Retainer 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, the retainer should be screwed in until it stops. If the retainer is not fully engaged, the Flow Control may not function properly.

# Troubleshooting

Problem	Possible Cause	Solution
<b>No soft water after regeneration</b>	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
<b>No soft water</b>	The bypass valve is in the Bypass position	Place the bypass valve in the Service position
	Appliance is plumbed backward	Check that appliance is plumbed correctly
	Extended power outage	Reset the time of day
	Water hardness has increased	Re-test the water and re-enter a new setting number
	Not metering water	Flow should be indicated with water usage. If no flow, see below
	Blending dial is open	Make sure blending dial is closed
<b>No flow is indicated when water is flowing</b>	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
<b>Flow indicated when water is not being used</b>	The household plumbing system has a leak	Repair the leak
<b>No read-out in display</b>	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 or greater than 14 VAC, replace the transformer
	Defective circuit board	With 12 VAC present at controller, replace the controller
	High ambient room temperature. If the temperature exceeds 120°F (49°C), the display will blank out. This does not affect the operation of the controller	No action necessary

## Troubleshooting

Problem	Possible Cause	Solution
<b>Appliance stays in regeneration</b>	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
<b>Excess water in brine tank</b>	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
<b>Not regenerating in proper sequence</b>	Magnet disk defective	Replace magnet disk
	Defective controller	Replace controller
<b>Salty water (pink water from iron filter)</b>	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 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 tank	Clean brine valve housing, replace piston assembly



## Reading Model Numbers

Hague appliance model numbers typically consist of two numerals followed by three letters, such as the **WaterMax® 3BEQ**.

Number or Letter	3	B	E	Q
Explanation	Number of compartments in appliance	No Media	No Media	Fine Mesh Resin

Refer to the following table as a key for the letters and corresponding media types

Letter	Media Type	Letter	Media Type
A	Empty	M	Ultra-fil
B	Chlorostat	N	Manganese Greensand
C	A554 Nitrate Resin	P	SulfurStat and 6 lb. Ultra-fil
D	Tannin Resin	Q	Fine Mesh Resin and 2 lb. Bacteriostat
E	PC Carbon (Activated Carbon)	R	Filter Ag
F	Multi-Grade	S	Calcite/Corosex
J	Calcite and 6 lb. Ultra-fil	X	Fine Mesh Resin
K	BIRM and 6 lb. Ultra-fil		

The letters BWO added to the end of a filter model number stand for Backwash Only.

**Note:** The iron filter (1AAN) does not have a BWO designation because it uses the regenerant potassium permanganate.

## Efficiency Statements

3MAQ, 3BAQ, 3BEQ, 2MXQ, 2AMQ, 2APQ are efficiency rated according to NSF/ANSI 44. The stated efficiencies are valid only at the specified salt dosage and 8 gpm (30.3 L/min):

Model	Rated Efficiency	Salt Dosage	Capacity at That Dosage
<b>3MAQ</b>	5,200 grains/lb (738 grams/kg)	1.1 lb (0.5 kg)	5,700 grains (369 grams)
<b>3BAQ</b>	5,400 grains/lb (772 grams/kg)	1.1 lb (0.5 kg)	6,000 grains (389 grams)
<b>3BEQ</b>	5,400 grains/lb (772 grams/kg)	1.1 lb (0.5 kg)	6,000 grains (389 grams)
<b>2MXQ</b>	5,400 grains/lb (772 grams/kg)	1.7 lb (0.8 kg)	9,300 grains (603 grams)
<b>2AMQ</b>	5,200 grains/lb (738 grams/kg)	1.1 lb (0.5 kg)	5,700 grains (369 grams)
<b>2APQ</b>	3,900 grains/lb (569 grams/kg)	6.2 lb (2.8 kg)	24,600 grains (1,594 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.



# Specifications

	3MAQ <sup>1</sup>	3BAQ <sup>1,2</sup>	3BEQ <sup>1,2</sup>	2MXQ <sup>1</sup>	3MDQ
Max Compensated Hardness—gpg (g/L)	90 (1.5)	90 (1.5)	90 (1.5)	110 (1.9)	90 <sup>4</sup> (1.5)
Iron (ppm) <sup>1</sup> ferrous-clear water	0	0	0	12 <sup>5</sup>	0
Maximum ferrous iron reduction <sup>2</sup>					
Minimum pH—standard units	7	7	7	7	7
Tannin—ppm	0	0	0	0	0-2
Sulfur—ppm-SulfurStat	0	0	0	0	0
Maximum Chlorine—ppm	0	0	3	0	0
Filtration-nominal rating-microns	20	25	25	20	20
Media Amount Compartment #1 <sup>3</sup> —lb (kg)	2.0 (0.9)	2.0 (0.9)	2.0 (0.9)	1.5 (0.7)	1.5 (0.7)
Media Amount Compartment #2 <sup>3</sup> —cu. ft. (L)	Empty	Empty	0.4 (11.3)	0.6 (17)	0.3 (8.5)
Media Amount Compartment #3 Fine Mesh Cation Resin—cu. ft. (L)	1.06 (30)	1.06 (30)	1.06 (30)	1.06 (30)	1.06 (30)
Backwash Rate @ min. water pressure maximum flow to drain—gpm (L/min)	2.4 <sup>4</sup> (9.1)	3 <sup>9</sup> (11.4)	3 <sup>9</sup> (11.4)	2.4 <sup>4</sup> (9.1)	2.4 <sup>4</sup> (9.1)
Brine Line Flow Control Refill—gpm (L/min)	0.5 (1.9)	0.5 (1.9)	0.5 (1.9)	0.5 (1.9)	0.5 (1.9)
Water Pressure—min—max psi (bar)	20–80 (1.4–5.5)	20–80 (1.4–5.5)	20–80 (1.4–5.5)	20–80 (1.4–5.5)	20–80 (1.4–5.5)
Flow Rate @ 15 psi (1.0 bar) drop-as tested —gpm (L/min) <sup>11</sup>	11.8 (44.7)	13 (49.2)	13 (49.2)	10.8 (40.9)	10.5 (39.7)
Pressure Drop in psi (bar) @ Service Flow Rate of 8 gpm (30.3 L/min)	8.0 (0.6)	6.8 (0.5)	6.8 (0.5)	9.8 (0.7)	12 (0.8)
#1 Setting—Salt lb/grains (kg/grams) removed	1.1/5,700 (0.5/369)	1.1/6,000 (0.5/389)	1.1/6,000 (0.5/389)	1.7/9,300 (0.8/603)	NA
#2 Setting—Salt lb/grains (kg/grams) removed	2.7/12,000 (1.2/778)	2.7/12,600 (1.2/816)	2.7/12,600 (1.2/816)	4.2/19,700 (1.9/1277)	NA
#3 Setting—Salt lb/grains (kg/grams) removed	6.2/23,400 (2.8/1,520)	6.2/24,600 (2.8/1,590)	6.2/24,600 (2.8/1,590)	9.6/38,300 (4.4/2,482)	8.5/23,100 (3.9/1,500)
#4 Setting—Salt lb/grains (kg/grams) removed	9.3/30,600 (4.2/1,980)	9.3/32,100 (4.2/2,080)	9.3/32,100 (4.2/2,080)	14.4/50,100 (6.5/3,250)	10.7/30,300 (4.9/1,960)
#1 Salt Setting—Total length of reg. Min/gal (L)	25/21 (25/79.5)	25/23 (25/87)	25/23 (25/87)	36/26 (36/98)	NA
#2 Salt Setting—Total length of reg. Min/gal (L)	28/22 (28/83)	28/24 (28/91)	28/24 (28/91)	39/28 (39/106)	NA
#3 Salt Setting—Total length of reg. Min/gal (L)	32/24 (32/91)	31/27 (31/102)	31/27 (31/102)	46/31 (46/119)	47/31 (47/117)
#4 Salt Setting—Total length of reg. Min/gal (L)	36/26 (36/100)	36/29 (36/110)	36/29 (36/110)	53/35 (53/132)	64/39 (64/148)
Shipping weight—lb (kg)	135 (61)	152 (69)	152 (69)	168 (76)	152 (69)
Bacteriostatic-KDF® Process Media*	Yes	Yes	Yes	Yes	Yes

## For All Models:

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

Drain Line (Minimum I.D.) 1/2-inch (1.3 cm)

Height—inches (cm) 38–1/4 (97)

Salt storage capacity—lb (kg) 200 (90)

Electrical rating: 115V, 60 cycle

Valve Inlet/Outlet—1 inch

Water Temperature (Min-Max) 40°–120°F (4°–49°C)

Floor Space—inches (cm) 15 x 30 (38 x 76)

Brine & Rinse total—gpm (L/min) 0.75 (2.5)

Brine Draw—gpm (L/min) 0.25 (0.9)

Rinse—gpm (L/min) 0.5 (1.5)

Iron reduction to 0.3 ppm or less (Not certified by WQA.)

\*Listed with the U.S. EPA as a Bacteriostatic Device U.S. EPA # 54369-

OH-001. Not certified by WQA

<sup>1</sup> Regeneration every 96 hours is required when iron is present in the raw water supply unless noted otherwise. Use Salt Setting #3 or #4.

<sup>2</sup> Iron reduction claims limited to 5 ppm in the state of Wisconsin.

<sup>3</sup> When adding media in the field, check for proper settings. (See Water Conditioner Specifications, above.)

<sup>4</sup> Rate of flow must be verified at the end of 1/2-inch I.D. drain line.

<sup>1</sup> Models 3MAQ, 3BAQ, 3BEQ, 2MXQ, 2AMQ and 2APQ are certified by WQA for barium and radium reduction as verified and substantiated by test data. All other models are not certified by WQA and make no health claims.

<sup>2</sup> Municipally supplied chlorinated water only.

<sup>3</sup> Calcite will add additional hardness to water before softening.

<sup>4</sup> Any hardness over 10 gpg (0.17 grams/liter) will increase the chance of calcium carbonate precipitation. As the hardness increases so does the chance of this precipitation. Must use citric acid to regenerate along with salt.

<sup>5</sup> Regeneration every 96 hours is required when iron is present in the raw water supply unless noted otherwise.

Use Salt Setting #3 or #4.

<sup>6</sup> Iron reduction claims limited to 5 ppm in the state of Wisconsin.

<sup>7</sup> Must have a minimum of 2 ppm iron and a minimum of 200 ppm TDS.

<sup>8</sup> When adding media in the field, check for proper settings. (See Water Conditioner Specifications, above.)

<sup>9</sup> Rate of flow must be verified at the end of 1/2-inch I.D. drain line.

<sup>10</sup> This model has no backwash flow control button or retainer. Must have a minimum of 7 gpm @ 30 psi (26.5 L/min @ 2.1 bar) available for proper backwash.

<sup>11</sup> For the purposes of plumbing appliance sizing, only the rated service flow rate and corresponding pressure loss may be used. Prolonged operation of a water softener at flow rates exceeding the tested service flow rate of 8 gpm (30.3 L/min) may compromise performance.

# Specifications

	2AMQ <sup>1</sup>	2APQ <sup>1</sup>	2AKQ	2AJQ <sup>3</sup>
Max Compensated Hardness—gpg (g/L)	90 (1.5)	90 (1.5)	90 (1.5)	60 (1.0)
Iron (ppm) <sup>1</sup> ferrous-clear water	12 <sup>5</sup>	2-12 <sup>5,7</sup>	15	5
Maximum ferrous iron reduction <sup>2</sup>				
Minimum pH—standard units	7	7	7	6.3
Tannin—ppm	0	0	0	0
Sulfur—ppm-SulfurStat	0	0-5 <sup>7</sup>	0	0
Maximum Chlorine—ppm	0	0	0	0
Filtration-nominal rating-microns	20	20	20	20
Media Amount Compartment #1 <sup>8</sup> —lb (kg)	Empty	Empty	Empty	Empty
Media Amount Compartment #2 <sup>8</sup> —cu. ft. (L)	6 lb (2.7 kg)	27 lb (122.2 kg)	0.4 (11.3)	0.4 (11.3)
Media Amount Compartment #3 Fine Mesh Cation Resin—cu. ft. (L)	1.06 (30)	1.06 (30)	1.06 (30)	1.06 (30)
Backwash Rate @ min. water pressure maximum flow to drain—gpm (L/min)	2.4 <sup>4</sup> (9.1)	3 <sup>9</sup> (11.4)	3 <sup>9</sup> (11.4)	2.4 <sup>4</sup> (9.1)
Brine Line Flow Control Refill—gpm (L/min)	0.5 (1.9)	0.5 (1.9)	0.5 (1.9)	0.5 (1.9)
Water Pressure—min—max psi (bar)	20–80 (1.4–5.5)	30–80 (1.4–5.5)	30–80 (1.4–5.5)	30–80 (1.4–5.5)
Flow Rate @ 15 psi (1.0 bar) drop-as tested —gpm (L/min) <sup>11</sup>	12.2 (46.2)	12.7 (48.1)	10.6 (40.1)	12.5 (47.3)
Pressure Drop in psi (bar) @ Service Flow Rate of 8 gpm (30.3 L/min)	7.8 (0.5)	6.0 (0.4)	10 (0.7)	11 (0.8)
#1 Setting—Salt lb/grains (kg/grams) removed	1.1/5,700 (0.5/369)	NA	NA	NA
#2 Setting—Salt lb/grains (kg/grams) removed	2.7/12,000 (1.2/778)	NA	NA	2.7/11,900 (1.2/771)
#3 Setting—Salt lb/grains (kg/grams) removed	6.2/23,400 (2.8/1,520)	6.2/24,600 (2.8/1,594)	6.2/23,100 (2.8/1,500)	6.2/23,100 (2.8/1,500)
#4 Setting—Salt lb/grains (kg/grams) removed	9.3/30,600 (4.2/1,980)	9.3/32,100 (4.2/2,080)	9.3/30,300 (4.2/1,960)	9.3/30,300 (4.2/1,960)
#1 Salt Setting—Total length of reg. Min/gal (L)	25/31 (25/117)	NA	NA	NA
#2 Salt Setting—Total length of reg. Min/gal (L)	28/32 (28/121)	NA	NA	34/70 (34/265)
#3 Salt Setting—Total length of reg. Min/gal (L)	31/35 (31/132)	37/78 (37/295)	37/78 (37/295)	37/78 (37/295)
#4 Salt Setting—Total length of reg. Min/gal (L)	36/37 (36/140)	41/80 (41/303)	41/80 (41/303)	41/80 (41/303)
Shipping weight—lb (kg)	140 (64)	167 (76)	160 (73)	180 (82)
Bacteriostatic-KDF® Process Media*	Yes	Yes	Yes	Yes

## For All Models:

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

Drain Line (Minimum I.D.) 1/2-inch (1.3 cm)

Height—inches (cm) 38–1/4 (97)

Salt storage capacity—lb (kg) 200 (90)

Electrical rating: 115V, 60 cycle

Valve Inlet/Outlet—1 inch

Water Temperature (Min-Max) 40°–120°F (4°–49°C)

Floor Space—inches (cm) 15 x 30 (38 x 76)

Brine & Rinse total—gpm (L/min) 0.75 (2.5)

Brine Draw—gpm (L/min) 0.25 (0.9)

Rinse—gpm (L/min) 0.5 (1.5)

Iron reduction to 0.3 ppm or less (Not certified by WQA.)

\*Listed with the U.S. EPA as a Bacteriostatic Device U.S. EPA # 54369-OH-001. Not certified by WQA

<sup>1</sup> Models 3MAQ, 3BAQ, 3BEQ, 2MXQ, 2AMQ and 2APQ are certified by WQA for barium and radium reduction as verified and substantiated by test data. All other models are not certified by WQA and make no health claims.

<sup>2</sup> Municipally supplied chlorinated water only.

<sup>3</sup> Calcite will add additional hardness to water before softening.

<sup>4</sup> Any hardness over 10 gpg (0.17 grams/liter) will increase the chance of calcium carbonate precipitation. As the hardness increases so does the chance of this precipitation. Must use citric acid to regenerate along with salt.

<sup>5</sup> Regeneration every 96 hours is required when iron is present in the raw water supply unless noted otherwise. Use Salt Setting #3 or #4.

<sup>6</sup> Iron reduction claims limited to 5 ppm in the state of Wisconsin.

<sup>7</sup> Must have a minimum of 2 ppm iron and a minimum of 200 ppm TDS.

<sup>8</sup> When adding media in the field, check for proper settings. (See Water Conditioner Specifications, above.)

<sup>9</sup> Rate of flow must be verified at the end of 1/2-inch I.D. drain line.

<sup>10</sup> This model has no backwash flow control button or retainer. Must have a minimum of 7 gpm @ 30 psi (26.5 L/min @ 2.1 bar) available for proper backwash.

<sup>11</sup> For the purposes of plumbing appliance sizing, only the rated service flow rate and corresponding pressure loss may be used. Prolonged operation of a water softener at flow rates exceeding the tested service flow rate of 8 gpm (30.3 L/min) may compromise performance.

## 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 (37.9 L/min)	35 ± 5 psig (2.4 ± 0.3 bar)
Radium 226/228	5 pCi/L	7.5 ± 0.5	10.0 gpm (37.9 L/min)	35 ± 5 psig (2.4 ± 0.3 bar)

## Specifications

The following table describes the available filters.

Filter	Purpose
<b>1AAN</b>	Reduces iron, iron algae, and bacteria. Reduces manganese. Also reduces up to 5 ppm Hydrogen Sulfide with the presence of 2 ppm iron. For regeneration frequency, see <b>1AAN WaterMax® Filter Sizing Formula</b> for this model.
<b>1AAE-BWO</b>	Reduces tastes, odors and will reduce most man-made pollutants. Backwash every 3 days or as needed. <b>Warning:</b> Must not be backwashed for 24 hours after installation.
<b>1AAR-BWO</b>	Reduces suspended matter (turbidity) from water down to the 20–40 micron range. Backwash every 3 days or as needed
<b>1AAS-BWO</b>	Will raise the pH of most low pH water. The mineral media must be replenished periodically to maintain optimum bed depth for effective correction. Backwash every 2 days to prevent solidification of mineral media.
<b>1AAF-BWO</b>	Reduces suspended matter (turbidity) from water down to nominal 20 microns. Backwash every 3 days or as needed.

Refer to the following specifications for the **WaterMax®** water filtration appliances Signature Series

Filter	1AAN	1AAE-BWO	1AAR-BWO	1AAS-BWO	1AAF-BWO
Capacity-ppm	10,000	N/A	N/A	N/A	N/A
Sulfure H <sub>2</sub> S	5	N/A	N/A	N/A	N/A
Iron-ppm	20	N/A	N/A	N/A	N/A
Minimum pH	7	N/A	N/A	5 <sup>1</sup>	N/A
Media type	Manganese Greensand (N)	Activated Carbon (E)	Filter Ag (R)	Calcite/Corosex (S)	Multi-Grade (F)
Media amount-cu. ft. (L)	1.25 (35.4)	1 (28.3)	1.25 (35.4)	1.25 (35.4)	1 (28.3)
Cont. flow rate-gpm (L/min)	6 (23)	6 (23)	6 (23)	6 (23)	6 (23)
Peak flow rate-gpm (L/min)	10 (38)	10 (38)	10 (38)	10 (38)	12 (45)
Backwash rate-gpm (L/min)	7 (26)	5 (19)	5 (19)	7 (26)	7 (26)
Brine line flow control-gpm (L/Min)	0.5 (1.9)	N/A	N/A	N/A	N/A
Water Pressure-psi (bar)	30–80 (1.4–5.5)	30–80 (1.4–5.5)	30–80 (1.4–5.5)	30–80 (1.4–5.5)	30–80 (1.4–5.5)
Mode settings	1	1	1	1	1
Backwash #1-min	5	7	7	7	7
Brine/rinse-min	45	0	0	0	0
Backwash #2-min	3	0	0	0	0
Salt (lb) 3 lb salt setting=4 oz (118g) KMnO <sub>4</sub> <sup>2</sup>	3	0	0	0	0
Regenerant used	4 oz (118g) KMnO <sub>4</sub> <sup>2</sup>	N/A	N/A	N/A	N/A
Flow rate at 25 psi (a.7 bar) drop-gpm (L/min)	16.7 (63.2)	21.4 (81.0)	21.5 (81.4)	20.4 (77.2)	19.4 (73.4)
Flow rate at 15 psi (1.0 bar) drop-gpm (L/min)	10.5 (39.7)	15.9 (60.2)	15.9 (60.2)	15.2 (57.5)	15.2 (57.5)
Service flow in gpm (L/min) @ pressure drop <sup>3</sup> in psi (bar)	4.5@4.7 (17.0@0.3)	3.6@1.1 (13.6@0.1)	4.5@1.5 (17.0@0.1)	4.5@1.8 (17.0@0.1)	3.6@1.5 (13.6@0.1)

<sup>1</sup> The 1AAS-BWO will raise the pH of most, but not all low pH water. Some water requires chemical injection using a chemical feed pump.

<sup>2</sup> **Caution:** Follow the instructions on the KMnO<sub>4</sub> container.

<sup>3</sup> For optimum water quality, do not exceed recommended service flow rate for filter media type



A.O. Smith Water Treatment (North America), Inc.