HAGUE MAXIMIZER®

WATER SOFTENING APPLIANCE

MODELS 7180 AND 7380

OWNER'S MANUAL AND INSTALLATION GUIDE

VERSION 1.1

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.

For international sales, the supplying dealer is the administrator of the warranty and should be the first point of contact in the case of a claim.

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
A.O. Smith Water Treatment (North America), Inc. warrants that upon receipt from the original owner of any mechanical or electronic part which is found to be defective in materials or workmanship, A.O. Smith Water Treatment (North America), Inc. will repair or replace the defective item for 3 years from date of original installation. Media is not warranted.

A.O. Smith Water Treatment (North America), Inc. 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, A.O. Smith Water Treatment (North America), Inc. 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 A.O. Smith Water Treatment (North America), Inc. PREPAID, and replacement parts will be returned by A.O. Smith Water Treatment (North America), Inc. 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. A.O. Smith Water Treatment (North America), Inc. 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 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, A.O. Smith Water Treatment (North America), Inc. 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 locations 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 location to location.

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

A.O. Smith Water Treatment (North America), Inc.
4343 S. Hamilton Rd.
Groveport, OH 43125 USA
1-614-836-2115

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

For international sales, the supplying dealer is the administrator of the warranty and should be the first point of contact in the case of a claim.

Contents

General Information

Congratulations on choosing a superior Hague Quality Water International 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. Keep it handy for a reference guide and service log. If you have trouble with the operation of your appliance, see *Troubleshooting* in the back of this manual.

Manufactured by:
A.O. Smith Water Treatment (North America), Inc.
4343 S. Hamilton Rd.
Groveport, OH 43125 USA
1-614-836-2115

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

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 softening appliance models:

- **7180**
- **7380**

For Owner's Reference

Date of Installation: _____

Model Number: _____

Serial Number[1]: _____

Hardness: _____ Iron: _____ pH: _____

Water Pressure: _____

Water Temperature: _____

[1] The serial number is located underneath the valve cover.

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.
- ❒ **Iron**—A common problem found in many water supplies is iron. It is important to know what type of and how much iron is in the water supply.

Iron Type	Description
Ferrous Iron* (sometimes called clear water or dissolved iron)	Only type of iron that can be treated with a water softener
Ferric Iron	Insoluble and the particles can eventually foul a resin bed. It should be filtered out before the water reaches the softener
Organic Iron or Bacterial Iron	Attached to other organic compounds in the water. Additional treatment is needed to remove this type of iron
Colloidal Iron	Not dissolved, yet stays in suspension. A softener cannot remove this type of iron

* If the water supply contains ferrous iron, a commercially available resin bed cleaner should be used every six months. Follow the instructions on the container. You should also increase your water hardness setting by 5 grains per gallon (8.6 mg/L x 10) for every 1 ppm (1 mg/L) of ferrous iron.

- ❒ **Water Characteristics**—Softeners require a pH of 7 or above to function properly. An iron test to determine iron levels is also necessary.
- ❒ **Water Hardness**—Double check hardness of water with test strips provided to verify that your appliance is right for the job.
  - **Model 7180** will soften water for up to 70 grains of hardness per gallon (1,200 mg/L).
  - **Model 7380** will soften water for up to 100 grains of hardness per gallon (1,710 mg/L).
- ❒ **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 2.0 to 3.0 gallons (7.6 to 12 L) per minute is recommended. For the purposes of plumbing sizing, only the rated service flow rate and corresponding pressure loss may be used. Prolonged operation of a water softener 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 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 220 volt, 50-cycle AC outlet.

Precautions

Do

1. Comply with all local building, plumbing, and electrical codes.
2. Test your water quality with the strips, if provided. Optionally, obtain a report on your water's quality.
3. Install the appliance before the water heater.
4. Install the appliance after the pressure tank on well-water installations.
5. Examine the inlet line to ensure water will flow through it freely and that the inlet pipe size is sized correctly. The recommended minimum inlet pipe size is 3/4-inch I.D. for well water with iron and 1/2-inch I.D. for municipal water.
6. Install a pressure-reducing valve if the inlet pressure exceeds 70 psi (4.8 bar).
7. Install a gravity drain on the cabinet.
8. Secure the drain line on the appliance and at the drain outlet. See *Installation Steps and Start-Up Procedures*.
9. Allow a minimum of 8 to 10 feet (2.4 to 3 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 *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 install the appliance without an adequate drainage provision where water leakage, if it occurs, will cause damage.
9. Do not connect the drain and the overflow (gravity drain) lines together.
10. Do not use to treat water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the appliance.
11. Do not allow your appliance or drain line to freeze.

Installation Steps and Start-Up Procedures

The water softener is capable of treating a combination of undesirable constituents (such as iron, dirt, sediment, chlorine, and/or lead) in water. See *Specifications* for the capabilities of your appliance. Install, set up, and use the appliance within the operating limits outlined in this manual. Failure to comply with these specifications may decrease the effectiveness of the backwash and cause control valve malfunction. The water softener, like any other appliance, requires correct installation and setting for optimum performance.

Each water treatment appliance includes water test strips and 15 feet (4.6 m) of drain line.

Step 1 *Prepare the Placement Area*

A. Make sure the placement area is clean.
Note: A pipe with a minimum of 3/4-inch I.D. is required between the pressure tank and the appliance for the appliance to function properly.

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

C. Check the arrows on the inlet manifold for correct connections.

D. 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.

E. Do not install the appliance without an adequate drainage provision where water leakage, if it occurs, will cause damage.

F. For outside installations, the appliance should be enclosed, so it is protected from the weather.
Caution: Do NOT plumb the appliance in backward.

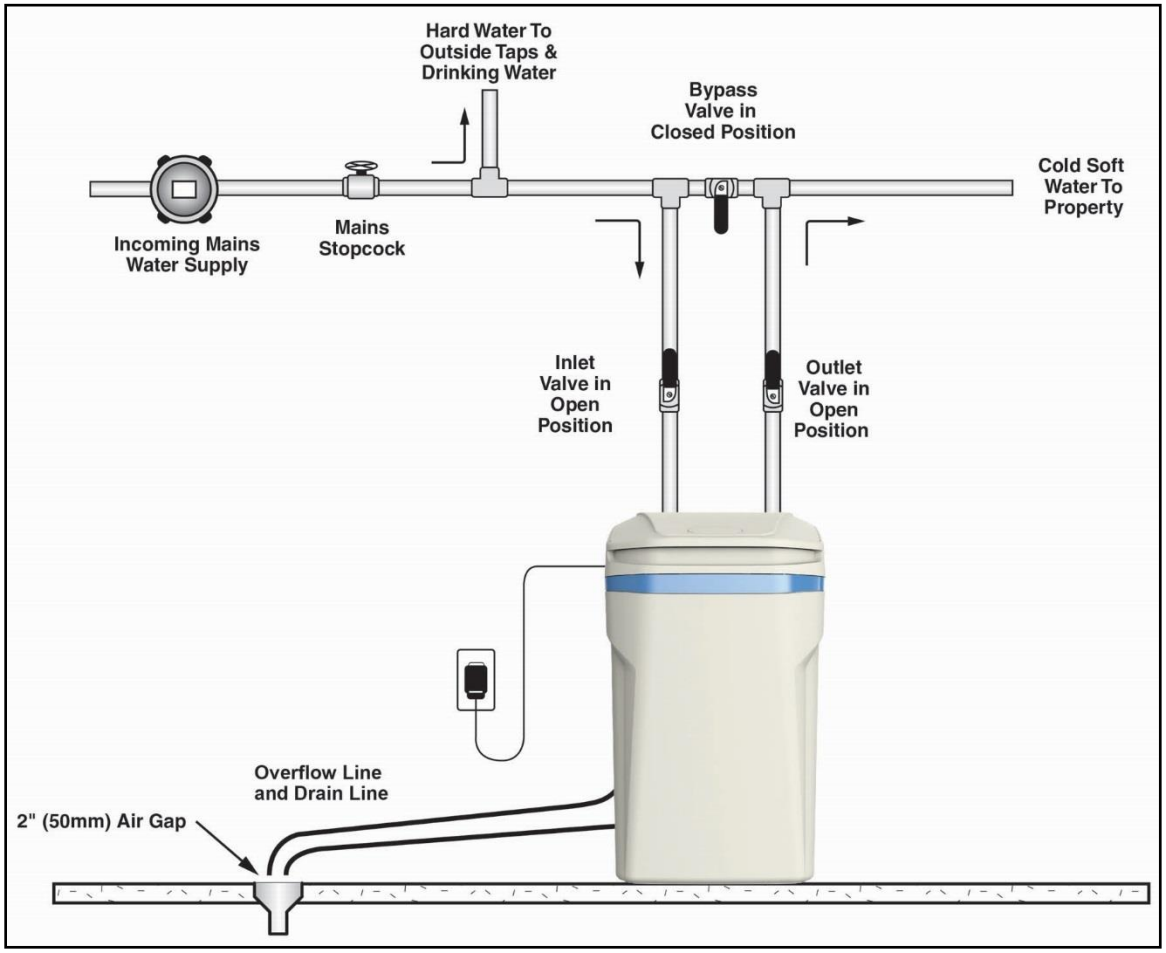

Figure 1: Appliance Placement—Normal Operation

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.

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

C. For 3/4-inch installation, attach the 3/4-inch water lines to the appliance using flexible connector and sealing washers provided. (See Figure 2.)

D. Connect the other end of the flexible connectors to your pipework using suitable 3/4-inch BSP adaptors (not supplied).

E. For 1-inch installation, connect directly to the inlet and outlet connections using a 1-inch compression female iron to copper adaptor.
Caution: Do NOT use soldered fittings within 450 mm.

F. Use the fibre sealing washers provided only. Do NOT use PTFE tape or similar direction.
Caution: Do NOT plumb your appliance in backward.

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

Figure 2: Connect Water Lines

Step 4 *Connect Gravity Overflow Elbow*

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

A. Attach the overflow elbow and check that it is in the down position. (See Figure 3.)

B. Connect 1/2-inch I.D. tubing (size cannot be reduced) between the gravity overflow elbow and a floor drain or safe discharge point. Ensure that the overflow line ends at a drain or safe discharge point that is at least 3 inches (80 mm) lower than the bottom of the overflow elbow. Maintain a minimum of 2-inch (50-mm) air gap. The gravity line cannot be run overhead.

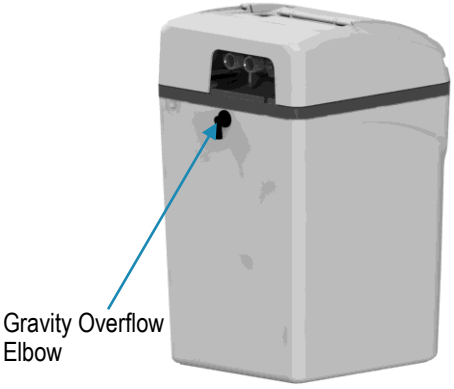

Figure 3: Gravity Overflow Elbow

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. Screw the drain fitting into the drain end cap using suitable jointing tape.

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

C. Route the drain line to a floor drain or suitable waste outlet, maintaining a minimum 2-inch (50-mm) 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.

D. 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. The maximum length for the drain line is 25 feet (7.6 m). **Caution:** The drain line must NOT be kinked, crimped, or restricted in any way.

Figure 4: Connect Drain Line

Step 6 Flush Lines

A. Place the appliance in the Bypass position. (See Figure 5.)

B. Turn on the main water supply.

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

D. Return the appliance to Normal Operation.

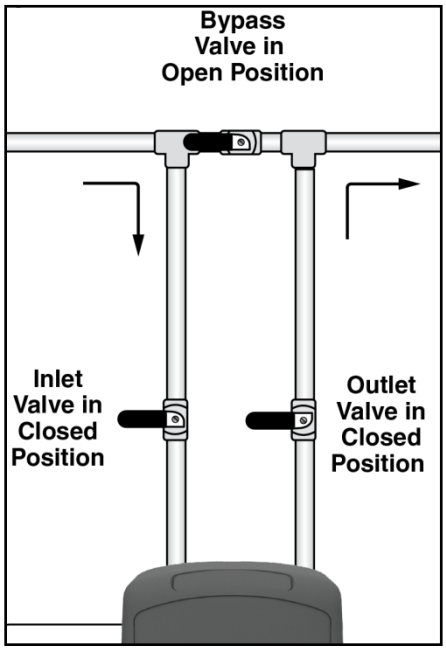

Figure 5: Bypass Position

Step 7 Check for Leaks

A. Turn on the water supply.

B. Slowly open the inlet valve to slowly fill the media tank.

C. Open the outlet valve and allow the air to purge out of the media tank to the nearest cold mains water draw off point.
Note: This water may be discolored at first. This is quite normal and nothing to worry about.

D. Run until the water runs clear.

E. Close the tap and recheck for leaks.

Installation Steps and Start-Up Procedures, Cont.

Step 8 Plug in the Transformer

A. Connect the transformer power cord to the controller. (See Figure 6.)

B. Make sure the transformer cord is fed through the same area as the drain and water lines.

C. Plug the transformer into an appropriate outlet.

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

Figure 6: Connect Transformer Power Cord

Step 9 Set Up the Controller

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

Step 10 Add Water to the Brine Cabinet

A. Remove any packaging or installation materials.

B. Add 2 gallons (8 L) of water to the brine cabinet. After the first regeneration, the appliance will automatically refill the correct amount of water into the brine cabinet.

C. Ensure that the valves are correctly set for normal use, and that the bypass valve is closed.

Figure 7: Fill the Brine Cabinet with Salt

Step 11 Fill the Brine Cabinet With Salt

A. Fill the brine cabinet with salt**.** Use clean, white tablet salt or block 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. This is not normally necessary on initial set-up.

Step 12 Complete the Installation

A. Ensure that inlet and outlet valves are fully open and the bypass valve is fully closed. (See Figure 1.)

B. Ensure the water supply is on.

C. Place the cover on the cabinet.

D. Close the salt port lid.

Optional Bypass Valve with Blending 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 8. 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 8: Optional 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 8. 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.

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. A clean pellet, solar, or cube type salt is recommended. Do not use rock salt.
   Caution: Do not mix different types of salt.
   Caution: Do not use potassium chloride if your water contains iron and/or manganese.
2. Should your electricity be off for any reason, check your controller for the correct time and reset as necessary. (See *Customer Settings*.)
3. Program the appliance to regenerate at a time when the water is not being used. If there is more than one appliance, allow two hours between each regeneration.
4. Protect the appliance, including the drain line, from freezing.
5. Adhere to all operational, maintenance, and placement requirements.
6. If your appliance runs out of salt:
   A. Open the salt lid and add salt.
   B. Wait two hours, then press and hold the Regenerate button for 5 seconds.
   C. Regeneration is complete after approximately 12 to 45 minutes, and the appliance is returned to Normal Operation.
7. If dirt, sand, or large particles are present in the water supply, please contact your water treatment specialist.
8. The appliance may be disinfected with 5.25% sodium hypochlorite, which is the active ingredient in household chlorine bleach. To disinfect the appliance, add 4.0 fluid ounces (120 mL) of chlorine bleach solution to the brine well of the brine cabinet. The brine cabinet should have water in it. Start a manual regeneration.
9. The bypass enables you to bypass the appliance if any work is being performed on the appliance, well pump, or plumbing. Use Bypass mode also for watering plants or lawns with untreated water.
10. Before putting the appliance back in service after work has been performed, turn on the nearest cold water tap until water runs clear.
11. Inspect and clean the brine cabinet and air check/draw tube assembly annually or when sediment is present in the brine cabinet.
12. Potassium permanganate will need to be added periodically to any iron filter.
13. An efficiency rated water softener is a DIR softener, which also complies with specific performance specifications intended to minimize the amount of regenerant brine and water used in its operation.

Five-Button (5B) Controller

This appliance may feature 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 dealer should set the Service Settings during installation of the appliance.

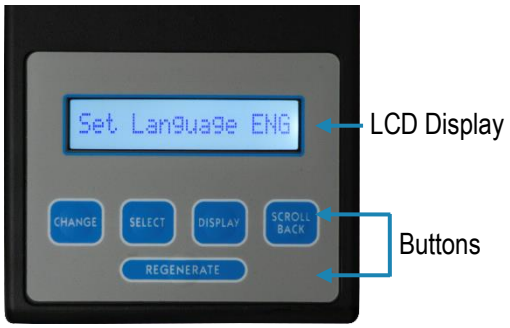

Figure 9: Five-Button Controller

Five-Button (5B) Controller, Cont.

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 • The amount of soft water remaining until the next automatic regeneration (Each person in the household uses about 75 gallons [290 liters] per day) • The number of days until the next regeneration (Mode 1, Filter = No) • The flow rate in gallons (or liters) per minute (Filter = No) • Whether the appliance will regenerate tonight (If the Regenerate button has been pressed and released)
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.
Recharge/ Regeneration Status	Shows regeneration cycle positions during regeneration.
Buttons	The Change, Select, Display, and Scroll Back buttons are used when changing Customer Settings and Service Settings.
Change	The Change button is used with the Select button to set the value of certain parameters. • When you press the Change 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	The Select button is used to move the cursor when setting parameters. 1. Press and release the Select 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 button again to reset the cursor to the extreme left position.
Display	The Display button is used to enter programming modes and also to save a value and display the next value to be changed. 1. To program Service Settings, press and hold both the Display button and the Select button for about five seconds while “Service Setting” is displayed. 2. To program Customer Settings, press and hold the Display button for about five seconds while “Customer Setting” is displayed.
Scroll Back	The Scroll Back 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.
Regenerate	The Regenerate button at the bottom of the controller is used when starting your water softening appliance, to start an immediate regeneration, or to restore capacity if you run out of salt.

Setting and Using the Controller—5B

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.

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 five seconds until the display changes from “Regenerate” to “Going to.”
   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, press and hold the Regenerate button for about five seconds until the display changes to “Going to.”
   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. Press and release the Regenerate button in Normal operating mode to schedule a regeneration tonight or toggle it off.

Figure 10: Regenerate Button

Customer Settings—5B

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 button for about five seconds while "Customer Setting" displays. Release the button when "Set Time" displays. If the setting displayed is correct, press Display 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 Change repeatedly until the current hour is displayed.
B. Press Select to set the hour and move the cursor to the right.
C. Do the same to set the minutes.
D. Select AM or PM.
E. When the desired time is displayed, press Display 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 (Ex. 02:00 am).

To Change the Regeneration Time

A. Follow the procedure outlined above for setting the time.
B. When the desired regeneration time is displayed, press Display.

Step 3 *Set Number of People*

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 Change repeatedly until the desired value is displayed; values will cycle from 0 to 9.
B. Press Select and the cursor moves to the right.
C. When the desired number of people is displayed, press Display to exit the Customer Setting mode.

When you press the Display button at "# People," the values are saved, and the controller returns to Normal operating mode.

Service Settings—5B

To program Service settings on the controller, press and hold the Select and Display buttons while "Service Settings" is displayed until "Set Language Eng" 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.

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

Display	Meaning	Possible Values	Comments
Set Language Eng	Set the language of the display	Set Language Eng Entrer Langue Fra Entre La Leng. Esp	
Units ENG	Units of measure	ENG or MET	
Soft. v. # X.XX	Displays the current software version	Cannot be set	2.10 or later
Mode 2	Operating Mode: Timer (Mode 1) Demand Delayed (Mode 2)	1 or 2	See *Operating Modes*
Regen Freq. 01	How often regeneration occurs	1–12 days	Only displays when in Mode 1
Hard. Gr. 040	Hardness of the water that was tested	003 to 999 Grains (00000 to 99999 mg/L)	This is the actual hardness reading and is not compensated for iron and/or manganese
Iron ppm 00	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 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 tank	Sodium or Potassium	See *Warning*
Comp. Hard. 00070	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. 22,700	The desired softening capacity number	00000 to 99999 Grains (0000 to 9999 gm)	See *Specifications* or *Mode 1 (Timer Mode) and Mode 2 (Demand Delayed Mode) Setting Chart* for capacities based on salt usage
72–96 hr Regen No	A way to force regeneration at regularly scheduled intervals	No (or Yes, for iron)	See *72–96 Hour Regeneration*
Backwash 1 01.0	Number of minutes the first backwash cycle lasts	00.0 to 99.9	Set to the nearest tenth of a minute

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 softening media and may void the warranty.

This table continues on the next page.

Service Settings—5B, Cont.

Display		Meaning	Possible Values	Comments
Brine/Rinse	30.0	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	05.0	Number of minutes the second backwash cycle lasts	00.0 to 99.9	Set to the nearest tenth of a minute
Salt lbs.	06.2	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	Do not engage this feature
Reg. Tonight	Yes	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 AM). After the regeneration, the value will be set to No
Filter?	No	Used by qualified service personnel to set the model number	No or Yes	Has no effect on the function of the appliance

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

Operating Modes

The appliance has two operating modes: Timer mode and Demand Delayed mode. Both modes are equipped with Capacity Guard®, which ensures that a supply of softened 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 day or up to every 12 days. The time of regeneration can be set.

Mode 2—Demand Delayed Mode

When the appliance is in 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 2:00 AM. Should the total capacity be depleted before the set regeneration time, a forced regeneration will occur.

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.

Smart Touch (ST) Controller

This appliance may feature 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 the installation of the appliance.

Figure 11: Smart Touch Controller—Main Menu

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

Setting and Using the Controller—ST

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.

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 12: Regenerate Button

Customer Settings—ST

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 "Customer Settings"  .

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 01:00pm).

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.

Customer Settings—ST, Cont.

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 Days*

Mode 1 - Days Of 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). Use silent mode to prevent audible alarms during specified hours.

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.

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.

Service Settings—ST

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	Description	Factory Setting
Language	Select the desired language (English, Français, Español, Deutsch, Italiano)	English
Units	Select units of measure (Metric or English)	English
History?	Option to show history (Yes or No) (see *Service Settings—History*)	No
Total Regenerations	Displays the number of regenerations since the last time Service Settings mode was entered. Value resets to 0 once the number is viewed	0
Total Gallons	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
Mode (1–3)	Enter operating mode (1 to 3) (see *Operating Modes*)	2
Hardness Grains	Enter hardness test results (1 to 199 grains) or (0000 to 3999 mg/L)	40
Iron ppm	Enter iron test results (0 to 99 ppm (mg/L))	0
Manganese ppm	Enter manganese test results (0 to 99 ppm (mg/L))	0
Salt	Select regenerant (Sodium or Potassium)	Sodium
Compensated Hardness Grains	Automatically calculated	40
Capacity Grains	The desired capacity number (52 to 9999 grains) or (788 to 6999 gm)	24480
Backwash 1 Minutes	First backwash cycle duration (0 to 999.9)	001.0
Brine/Rinse Minutes	Brine and rinse cycle duration (0 to 999.9)	030.0
Backwash 2 Minutes	Second backwash cycle duration (0 to 999.9)	005.0
Salt lbs.	Amount of salt for each regeneration	006.2
72–96hr Regeneration	Force regeneration setting every 72 to 96 hours unless a demand-based regeneration occurs within time interval (Yes or No)	Yes*
Distiller/RO	Yes, if distiller or RO in use	Yes
Turbine Test	Used for advanced diagnosis (Yes or No)	No
Salt Monitor	Salt monitor in use (Yes or No)	Yes
Regenerate Tonight	Set to regenerate tonight (Yes or No)	No
Dealer Name	Enter the dealership/business name	Dealer Name
Dealer Number	Enter the dealership/business phone number	800-123-4567

* Required if iron is present

Service Settings—ST, 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	**Description**	**Factory Setting**
H-Software V. #	Software version number (For Reference Only)	V1.1
H-Date	Enter Installation Date Format MMDDYY	0
H-Number of People	Enter number of people in the household (1 to 50)	4
H-Hardness grains	Enter hardness test results (0 to 199 ppm (mg/L))	1
H-Iron ppm	Enter iron test results (0 to 99 ppm (mg/L))	0
H-Manganese ppm	Enter manganese test results (0 to 99 ppm (mg/L))	0
H-Chlorine ppm	Enter chlorine test results (0 to 99 ppm (mg/L))	1
H-Sulfur ppm	Enter sulfur test results (0 to 99 ppm (mg/L))	1
H-pH ppm	Enter pH test results (0 to 99.9)	00.0
H-Iron Bacteria	Is iron bacteria present (Yes or No)	No
H-Total Regenerations	Number of regenerations completed. Value does not reset (For Reference Only)	00.0
H-Total Gallons	Number of gallons that have passed through the unit. Value does not reset (For Reference Only)	0
H-Model Number	Enter model number	7380
H-Save History	Choose to save history (Yes or No)	Yes

Service Settings—ST, Cont.

Operating Modes

The controller has a Timer mode (Mode 1 – Frequency and Mode 1 – Days Of Week), a Demand Delayed mode (Mode 2), and a Demand Immediate mode (Mode 3). These modes are equipped with Capacity Guard®, which ensures that a supply of softened 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. Mode 3 is NOT recommended for residential use.

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.

Salt Settings—5B or ST Controller

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

This section provides guidance for using different service settings to achieve the desired capacity. Depending on your water hardness, other settings as detailed below may be preferable. In most cases, when hardness is 35 grains per gallon (600 mg/L), setting #2 is the most efficient.

5B or ST Controller	Model 7180	Model 7380
#1 Salt Setting		
Backwash 1 (minutes)	1	1
Brine/Rinse (minutes)	8	22
Backwash 2 (minutes)	3	3
Capacity (grains/grams)	4,500/292	5,510/785
Salt (lb/kg)	1.0/0.5	1.0/0.5
Total length of regeneration (minutes)	12	24
Water Used per regeneration (gallons/liters)	14.5/54.8	20/75.7
#2 Salt Setting		
Backwash 1 (minutes)	1	1
Brine/Rinse (minutes)	16	25
Backwash 2 (minutes)	3	3
Capacity (grains/grams)	10,400/685	10,380/673
Salt (lb/kg)	2.5/1.1	2/0.9
Total length of regeneration (minutes)	20	29
Water Used per regeneration (gallons/liters)	14/53	22.1/83.7
#3 Salt Setting[1]		
Backwash 1 (minutes)	1	1
Brine/Rinse (minutes)	32	28
Backwash 2 (minutes)	3	3
Capacity (grains/grams)	19,100/1,238	19,360/1,255
Salt (lb/kg)	6.5/2.9	4/1.8
Total length of regeneration (minutes)	36	32
Water Used per regeneration (gallons/liters)	22.4/84.8	23.6/89.3
#4 Salt Setting[1]		
Backwash 1 (minutes)	1	1
Brine/Rinse (minutes)	54	29
Backwash 2 (minutes)	3	3
Capacity (grains/grams)	22,700/1,471	23,310/1,510
Salt (lb/kg)	12/5.4	5/2.3
Total length of regeneration (minutes)	58	33
Water Used per regeneration (gallons/liters)	29/109.8	24.1/91.2

[1] If iron is present in the water supply, use salt setting #3 or #4.

Cabinet and Assemblies

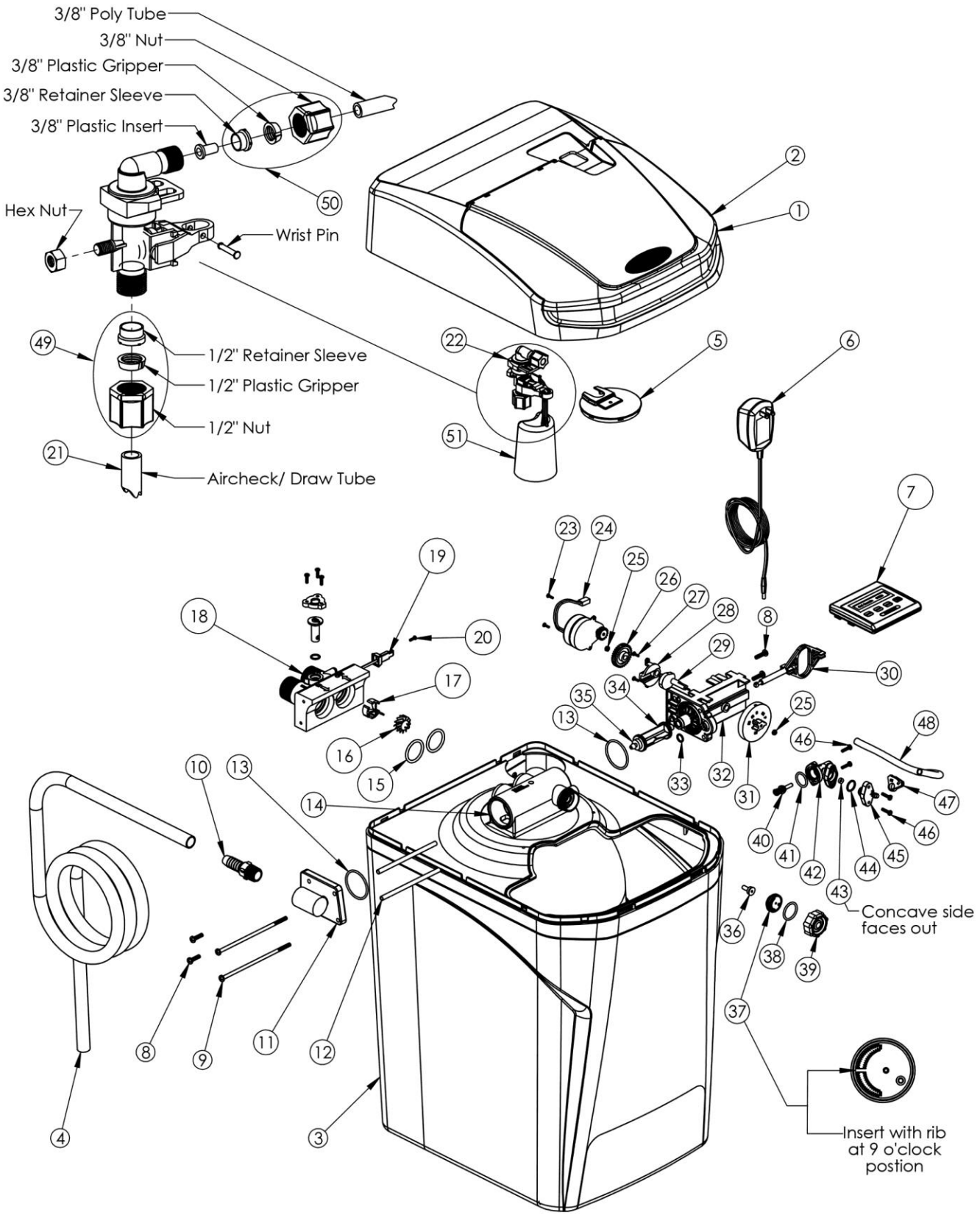

Figure 13: Cabinet and Assemblies

Cabinet and Assemblies, Cont.

	Part Number (Old P/N)	Description	Qty.		Part Number (Old P/N)	Description	Qty.
1	180115	7180 Salt Port Lid	1	23	100238196 (90802)	Screw, self-tapping	2
	380115	7380 Salt Port Lid	1	24	100238181 (90217)	Drive Motor	1
2	180329	7180 Valve Cover (No Label)	1	25	93891	1/4-inch Hex Nut	2
	380329	7380 Valve Cover (No Label)	1	26	100238188 (93238)	Drive Gear	1
3	180100	7180 Cabinet	1	27	90809	Screw, self-tapping	2
	380100	7380 Cabinet (not shown)	1	28	93219	Piston Slide Cam Cover	1
4	93915	Drain Line	1	29	93217	Piston Slide Cam	1
5	54310	Brine Well Cover	1	30	54202	Piston Slide	1
6	C0915-UK	UK 12V Transformer	1	31	100238193 (54502KIT)	Magnet Disk Assembly	1
	C0915	Europe 220V Transformer	1	32	93583	Drive End Cap	1
7	54550	50 Series Controller (5B)	1	33	90828	O-Ring	1
	54990	ST Controller (not shown)	1	34	100238189 (53322)	Drive Piston Assembly†	1
8	100238199 (93870)	Screw	4	35	93839	Drain Gasket	1
9	100238185 (93809)	Screw	2	36	93223	Injector Throat	1
10	100238185 (V185-93185)	1/2-inch Barb Drain Fitting	1	37	53224	Injector Nozzle with Over-Mold Gasket	1
11	90614-X.X*	Drain End Cap Assembly	1	38	93806	O-Ring	1
12	93835	Sleeve	2	39	53235	Injector Cap	1
13	90819	O-Ring	2	40	53511	Brine Piston Assembly (O-Ring & Spring)	1
14	93530	7180 Media Tank, Empty	1	41	90821	O-Ring	1
	380210	7380 Media Tank, Empty	1	42	53510	Housing	1
15	93838	O-Ring	2	43	90843	0.5 gpm Flow Control	1
16	100238201 (90522)	Turbine Assembly	1	44	93805	O-Ring	1
17	100238202 (54320)	Turbine Axle	1	45	380125	Brine Valve Cap	1
18	93521-1	1-inch I.O. Assembly**	1	46	100238197 (90818)	Screw, self-tapping	4
	100238184 (54512)	Bypass Assembly (not shown)	1	47	93832	Brine Line Hose Clamp	1
19	100238200 (93860)	Turbine Sensor/Cap Assembly	1	48	93848	Brine Draw Tubing	1
20	100238185 (90809)	Screw	1	49	54112	1/2-inch Compression Assembly	1
21	180125	Air Check, 7180	1	50	54138	3/8-inch Compression Assembly	1
	380135	Air Check, 7380 (not shown)	1	51	56018	Float with the Safety Shut-off Assembly	1
22	54226	Safety Shutoff	1		54750	Salt Monitor (not shown)	1

* Must specify drain line flow control size. X.X Indicates the backwash flow rate in gpm. Example: 90614-2.4

** Includes Blending Valve

† Includes 93839 Drain Gasket

Troubleshooting

Problem	Possible Cause	Solution
No soft water after regeneration	No salt in brine cabinet	Add salt
	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
	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
No flow indicated when water is being used	Appliance is plumbed backward	Check that appliance is plumbed correctly
	Sensor not receiving signal from magnet on turbine	Remove sensor from valve housing. Test with magnet on either flat side of sensor. If flow is indicated, check turbine. If no flow, replace sensor
Flow indicated when water is not being used	The household plumbing system has a leak	Repair the leak
No read-out in display	Electric cord is unplugged	Plug in the transformer
	No electric power at outlet	Check power source. Make sure outlet is not controlled by a switch
	Defective transformer	Test with voltmeter for 12 VAC at control. If less than 10 VAC, replace the transformer
	Defective circuit board	With 12 VAC present at controller, replace the controller
Appliance stays in regeneration	Controller not attached properly	Make sure the controller is pushed all the way onto the drive end cap
	Defective magnet disk	Replace magnet disk
	Foreign object in valve body	Remove foreign object(s) from the valve body
Excess water in brine cabinet	Restricted, frozen, or pinched drain line	Remove restriction, thaw, or straighten drain line
	Plugged injector assembly	Clean or replace injector. Replace throat if removed
Salty water	Plugged injector	Replace injector screen, nozzle, and throat
	Low water pressure	Maintain minimum pressure of 20 psi (1.4 bar)

Specifications

Model	7180 (5B and ST[1])	7380 (5B and ST[1])
Maximum Compensated Hardness–gpg (mg/L)	70 (1,200)	100 (1,710)
Maximum Capacity–grains (grams)	22,700 (1,471)	38,000 (2,462)
Maximum ferrous iron reduction	10 ppm	10 ppm
Minimum pH (standard units)	7	7
Media type and amounts	Ultrafil–1.5 lb (0.7 kg) Fine Mesh Resin–0.7 cu. ft. (20 L)	Ultrafil–1.5 lb (0.7 kg) Fine Mesh Resin–1.25 cu. ft. (35 L)
Minimum/Maximum water and ambient temperature–°F (°C)	40/120 (4/49)	40/120 (4/49)
Mineral tank size–in. (cm)	10.5 I.D. x 19 (26.7 I.D. x 48.3)	11.5 I.D. x 28 (29.2 I.D. x 71.1)
Flow rate @ 1.7 bar drop as measured by Hague–gpm (L/min)	15.3 (58)	23.0 (87)
Flow @ 1 bar pressure drop-gpm (L/min)	8 (30.3)	11.3 (43.0)
Maximum flow rate to drain during regeneration–backwash gpm (L/min)	3.0 (12)	3.0 (11.4)
Minimum/Maximum Water Pressure–psi (bar)	20/120 (1.4/8.3)	20/120 (1.4/8.3)
Minimum water flow required–gpm (L/min)	2.4 (9.6)	3.0 (11.4)
Salt storage–lb (kg)	120 (55)	170 (78)
Height–in. (cm)	25.5 (64.8)	33.4 (84.8)
Footprint–in. (cm)	15 x 19 (38 x 48)	16.5 x 20 (42 x 51)
Plumbing connections	1-inch male (NPT)	1-inch male (NPT)
Shipping weight—approximate–lb (kg)	85 (39)	135 (61)
Clearance required above for salt filling—in. (cm)	10 (27)	10 (27)
Minimum/Maximum regeneration time—minutes	18/41	30/52
Electrical requirements	220 VAC, 50Hz to 12V transformer	220 VAC, 50Hz to 12V transformer
Minimum/Maximum salt used per regeneration—lb (kg)	1.1/11.9 (0.5/5.4)	1.3/9.9 (0.6/4.5)

[1] Salt monitor system is optional.

7180 and 7380
have these third-party listings:

A.O. Smith Water Treatment (North America), Inc.
4343 S. Hamilton Rd.,
Groveport, OH 43125 USA