



Water Softening system

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Water Softening System

Owner's Manual & Installation Instructions

Models GXSH40V, GXSH45V

*Write the model and serial
numbers here:*

Model # _____

Serial # _____

To find these numbers, lift
the cover and look on the rim
below the control panel.



Systems tested and certified by NSF International against NSF/ANSI Standard 44 for the chemical reduction claims specified on the performance data sheet.



Systems Tested and Certified by the Water Quality Association against CSA B483.1.

If you have any questions or concerns when installing or maintaining your water softener, call our toll free number at **800-952-5039 (US)** or **866-777-7627 (Canada)**, or visit **www.geappliances.com**. When you call, please be prepared to provide the model and serial number of your product. This information can be found on the rating decal located on the rim under the salt cover.

IMPORTANT SAFETY INFORMATION.

READ ALL INSTRUCTIONS BEFORE USING.

SAFETY PRECAUTIONS

⚠ WARNING! For your safety, the information in this manual must be followed to minimize the risk of electric shock, property damage or personal injury.

⚠ WARNING:
Electric Shock Hazard:
Install metal ground clamp to metal house water supply pipe before beginning installation. Securely tighten connection in center of metal ground clamp. Failure to do so can result in death or electric shock.

- Check and comply with your state and local codes. You must follow these guidelines.
- Use care when handling the water softening system. Do not turn upside down, drop, drag or set on sharp protrusions.
- Water softening systems using sodium chloride (salt) for recharge add sodium to the water. Persons on sodium restricted diets should consider the added sodium as part of their overall intake. Potassium chloride can be used as an alternative to sodium chloride in your softener.

In the state of California: You must turn the Salt Efficiency Feature setting to ON. This may initiate more frequent recharges. However it will operate at 4,000 grains per pound of salt or higher. To turn on the Salt Efficiency Feature, follow the instructions in the "Salt Efficiency" section of this manual

⚠ WARNING: Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

- The water softening system works on 24 volt-60 Hz electrical power only. Be sure to use only the included transformer.
- Transformer must be plugged into an indoor 120 volt, grounded outlet only.

Use clean water softening salts only, at least 99.5% pure. NUGGET, PELLET or coarse SOLAR salts are recommended. Do not use rock, block, granulated or ice cream making salts. They contain dirt and sediments, or mush and cake, and will create maintenance problems.

- Keep the salt hole cover in place on the softener unless servicing the unit or refilling with salt.

In the Commonwealth of Massachusetts, Plumbing Code 248 CMR shall be adhered to. Consult with your licensed plumber.



READ AND FOLLOW THIS SAFETY INFORMATION CAREFULLY.

SAVE THESE INSTRUCTIONS

Specifications and Performance Claims.

This model is efficiency rated. The efficiency rating is valid only at the minimum stated salt dose. The softener has a demand initiated regeneration (D.I.R) feature that complies with specific performance specifications intended to minimize the amount of regenerant brine and water used in its operation.

The softener has a rated salt efficiency of not less than 4,000 grains of total hardness exchange per pound of salt (bases on sodium chloride), and shall not deliver more salt than its listed rating or be operated at a sustained maximum service flow rate greater than its listed rating. This softener has been proven to deliver soft water for at least ten continuous minutes at the rated service flow rate. The rated salt efficiency is measured by laboratory test described in NSF/ANSI Standard 44. These tests represent the maximum possible efficiency that the system can achieve. Operational efficiency is the actual efficiency after the system has been installed. It is typically less than the efficiency, due to individual application factors including water hardness, water usage, and other contaminants that reduce the softener's capacity.

Specifications		
Model	GXSH40V	GXSH45V
Rated Capacity* (Grains@ Salt Dose)	11,700 @ 2.3 lbs 31,500 @ 8.7 lbs. 40,000 @ 15.1 lbs.	13,200 @ 2.6 lbs 35,700 @ 9.9 lbs. 45,100 @ 17.0 lbs.
Rated Efficiency** (Grains/Pound of Salt @ Minimum Salt Dose)	5,100 @ 2.3 lbs.	5,090 @ 2.6 lbs.
Water Consumption used during Regeneration (gallons/grains)	2.7 /1000	2.8 /1000
Total Water Used per Regeneration @ Maximum Salt Dose	37.0 gallons	43.0 gallons
Amount of High Capacity Ion Exchange Resin (lb/cu.ft.)	57.56/1.11	65.0/1.25
Resin Tank Nominal Size (in., dia. x height)	9 x 40	10 x 40
Service Flow Rate (gpm)	9.5	9.5
Pressure Drop at Rated Service Flow (psig)	12.7	10.3
Water Supply Maximum Hardness (gpg)	110	160
Water Supply Maximum Clear Water Iron (ppm)***	8	10
Water Pressure Limits (minimum-maximum psi)****	20-125	20-125
Water Temperature Limits (minimum-max. °F)	40-120	40-120
Maximum Flow Rate to Drain (gpm)	2.3	2.3

These systems conform to NSF/ANSI 44 for the specific capacity claims as verified and substantiated by test data.

- * Testing was performed using pellet grade sodium chloride as the regenerant salt.
- ** Efficiency rating is valid only at the lowest stated salt dosage. These softeners were efficiency rated according to NSF/ANSI 44.
- *** Extent of iron removal may vary with conditions. The capacity to reduce clear water iron is substantiated by WQA test data. State of Wisconsin requires additional treatment if water supply contains greater than 5 ppm clear water iron. Refer to Cleaning Iron Out of the Water Softening System section.
- **** Canada working pressure limits: 1.4–7.0 kg/cm².

Performance Claims		
Contaminant	Influent Challenge Level	Maximum Allowable Product Water Level
Barium	10 ±10% mg/L	2.0 mg/L
Radium 226/228	25 pCi/L	5pCi/L

Test parameters include: pH = 7.5±0.5, flow rate = 7.5 gpm and dynamic pressure = 35±5 psig

About the water softener system.

SERVICE

When the water softening system is providing soft water, it is called "Service." During service, hard water flows from the house main water pipe into the water softening system. Inside the water softening system resin tank is a bed made up of thousands of tiny, plastic resin beads. As hard water passes through the bed, each bead attracts and holds the hard minerals. This is called ion-exchanging. It is much like a magnet attracting and holding metals. Water without hard minerals (soft water) flows from the water softening system and to the house pipes.

After a period of time, the resin beads become coated with hard minerals and they have to be cleaned. This cleaning is called recharge. Recharge is started at 2:00 AM (factory setting) by the water softening system control, and consists of five stages or cycles. These are **FILL, BRINING, BRINE RINSE, BACKWASH and FAST RINSE.**

AUTOMATIC HARD WATER BYPASS DURING RECHARGE

During recharge the water softener is automatically put in bypass mode allowing hard water to be available to the home. Once the softener is recharged water is directed back through the softener to be conditioned.

However, you should avoid using HOT water because the water heater will fill with the hard water.

FILL

Salt dissolved in water is called brine. Brine is needed to clean the hard minerals from resin beads. To make the brine, water flows into the salt storage area during the fill stage.

BRINING

During brining, brine travels from the salt storage area into the resin tank. Brine is the cleaning agent needed to remove hard minerals from the resin beads. The hard minerals and brine are discharged to the drain.

The nozzle and venturi create a suction to move the brine, maintaining a very slow rate to get the best resin cleaning with the least salt.

BRINE RINSE

After a pre-measured amount of brine is used, the brine valve closes. Water continues to flow in the same path as during brining, except for the discontinued brine flow. Hard minerals and brine flush from the resin tank to the drain.

BACKWASH

During backwash, water travels up through the resin tank at a fast flow rate, flushing accumulated iron, dirt and sediments from the resin bed and to the drain.

FAST RINSE

Backwash is followed by a fast flow of water down through the resin tank. The fast flow flushes brine from the bottom of the tank, and packs the resin bed.

After fast rinse, the water softening system returns to soft water service.

About the water softener system.

NORMAL OPERATION, CONTROL DISPLAYS

During normal operation, the present time of day and AM or PM and **DAYS TO EMPTY** show in the control display area. When the demand computer determines a recharge is needed, **RECHARGE TONIGHT** begins to flash in the display along with the present time. **RECHARGE TONIGHT** flashes until the next recharge start time, then changes to **RECHARGE NOW**, which flashes until the recharge is over.

FEATURE: OPTIONAL RECHARGE CONTROLS

Sometimes, a manually started recharge may be desired or needed. Two examples:

- You have used more water than usual (house guests, extra washing, etc.) and you may run out of soft water before the next recharge.
- The system ran out of salt.

Use one of the following features to start a recharge immediately, or at the next preset recharge start time.

RECHARGE TONIGHT

Touch (do not hold) the **RECHARGE** button. **RECHARGE TONIGHT** flashes in the control display area. A recharge will occur at the next preset recharge start time. If you decide to cancel this recharge, touch the same button once more.

RECHARGE NOW

Press and hold the **RECHARGE** button until **RECHARGE NOW** starts to flash in the control display area. The water softening system begins an immediate recharge and, when over in about two hours, you will have a new supply of soft water. Once started, you cannot cancel this recharge.

FEATURE: MEMORY

If electrical power to the water softening system is interrupted, the control display is blank, and the blue indicator light is off, but the control keeps correct time for 24 hours. When power is restored, you have to reset the present time only if the display and blue indicator light are flashing. All other settings are maintained and never require resetting unless a change is desired.

If the time is flashing after a long power outage, the water softening system continues to work as it should to provide you with soft water. However, recharge may occur at the wrong time of day until you reset the control to the correct time of day..

FEATURE/SERVICE: AUTOMATIC ELECTRONIC DIAGNOSIS

The control computer has a self-diagnostic function for the electrical system (except input power and water meter). The computer monitors the electronic components and circuits for correct operation. If a malfunction occurs, an error code appears in the control display.

About the water softener system.

WATER CONDITION INFORMATION IRON

Iron in water can cause stains on clothing and plumbing fixtures. It can negatively affect the taste of food, drinking water, and other beverages. Iron in water is measured in parts per million (ppm). The total* ppm of iron, and type or types*, is determined by chemical analysis. Four different types of iron in water are:

- Ferrous (clear water) iron
- Ferric (red water) iron
- Bacterial and organically bound iron
- Colloidal and inorganically bound iron (ferrous or ferric)

Ferrous (clear water) iron is soluble and dissolves in water. This water softener will reduce moderate amounts of this type of iron (see specifications). **Ferrous (clear water) iron is usually detected by taking a sample of water in a clear bottle or glass. Immediately after taking, the sample is clear. As the water sample stands, it gradually clouds and turns slightly yellow or brown as air oxidizes the iron. This usually occurs in 15 to 30 minutes.

When using the softener to reduce Ferrous (clear water) iron, add 5 grains to the hardness setting for every 1 ppm of Ferrous (clear water) iron. See "Set Water Hardness Number" section.

Ferric (red water), and bacterial and organically bound irons are insoluble. This water softener will not remove ferric or bacterial iron. This iron is visible immediately when drawn from a faucet because it has oxidized before reaching the home. It appears as small cloudy yellow, orange, or reddish suspended particles. After the water stands for a period of time, the particles settle to the bottom of the container. Generally these irons are removed from water by filtration. Chlorination is also recommended for bacterial iron.

Colloidal and inorganically bound iron is of ferric or ferrous form that will not filter or exchange out of water. This water softener will not remove colloidal iron. In some instances, treatment may improve colloidal iron water. Colloidal iron water usually has a yellow appearance when drawn. After standing for several hours, the color persists and the iron does not settle, but remains suspended in the water.

SEDIMENT

Sediment is fine, foreign material particles suspended in water. This water softener will not remove sediment. This material is most often clay or silt. Extreme amounts of sediment may give the water a cloudy appearance. A sediment filter installed upstream of the water softener normally corrects this situation.

* Water may contain one or more of the four types of iron and any combination of these. Total iron is the sum of the contents.

** Capacity to reduce clear water iron is substantiated by WQA test data.

CHLORINE

Softener resins may degrade in the presence of chlorine above 2 ppm. If you have chlorine in excess of this amount, you may experience reduced life of the resin. In these conditions, you may wish to consider purchasing a GE point-of-entry household filtration system with a chlorine reducing filter.

Before you start.

BEFORE YOU START

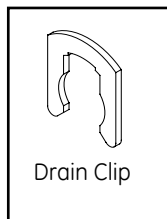
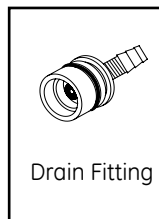
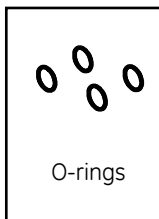
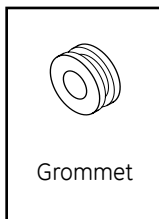
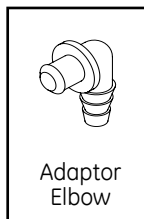
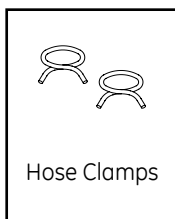
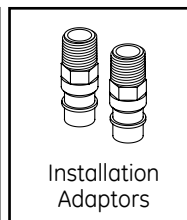
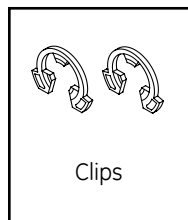
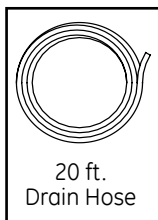
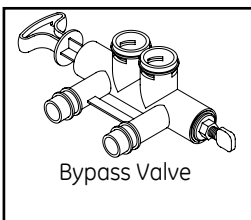
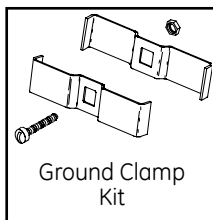
- The water softener requires a minimum water flow of 3 gallons per minute at the inlet. Maximum allowable inlet water pressure is 125 psi. If daytime pressure is over 80 psi, nighttime pressure may exceed the maximum. Use a pressure reducing valve if necessary (Adding a pressure reducing valve may reduce the flow). If your home is equipped with a back flow preventer, an expansion tank must be installed in accordance with local codes and laws.
- The water softener works on 24 volt, 60 Hz electrical power only, supplied by a direct plug-in transformer (included). Be sure to use the included transformer and plug it into a nominal 120V, 60 cycle household outlet that is in a dry location only, grounded and properly protected by an over current device such as a circuit breaker or fuse.
- Do not use this system to treat water that is microbiologically unsafe or of unknown quality without adequate disinfection upstream or downstream of the system.

INSPECT SHIPMENT

The parts required to assemble and install the water softener are included with the unit. Thoroughly check the water softener for possible shipping damage and parts loss. Also inspect and note any damage to the shipping carton.

Remove and discard (or recycle) all packing materials. To avoid loss of small parts, we suggest you keep the small parts in the parts bag until you are ready to use them.

⚠ WARNING! *Discard all unused parts and packaging material after installation. Small parts remaining after the installation could be a choke hazard.*



Installation Requirements.

LOCATION REQUIREMENTS

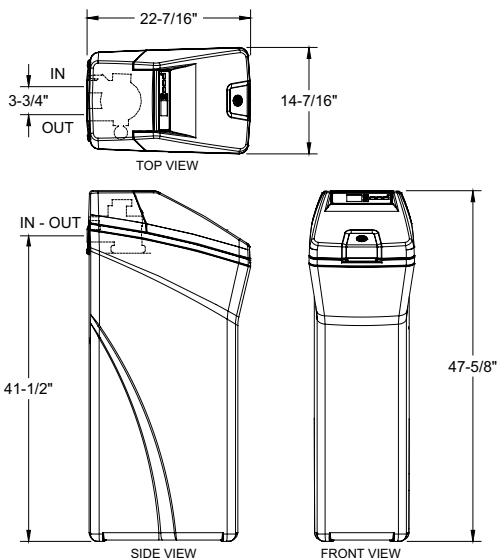
Consider all of the following when selecting an installation location for the water softener.

- Do not locate the water softener where freezing temperatures occur. Do not attempt to treat water over 120°F. **Freezing temperatures or hot water damage voids the warranty.**
- To condition all water in the home, install the water softener close to the water supply inlet, and upstream of all other plumbing connections, except outside water pipes. Outside faucets should remain on hard water to avoid wasting conditioned water and salt.
- A nearby drain is needed to carry away regeneration discharge (drain) water. Use a floor drain, laundry tub, sump, standpipe, or other options (check your local codes). See "Air Gap Requirements" and "Valve Drain Requirements" sections.
- The water softener works on 24 volt, 60 Hz electrical power only, supplied by a direct plug-in transformer (included). Provide an electrical outlet within 10 feet, in accordance with NEC and local codes.
- Always install the water softener between the water inlet and water heater. Any other installed water conditioning equipment should be installed between the water inlet and water softener (See Figure below).

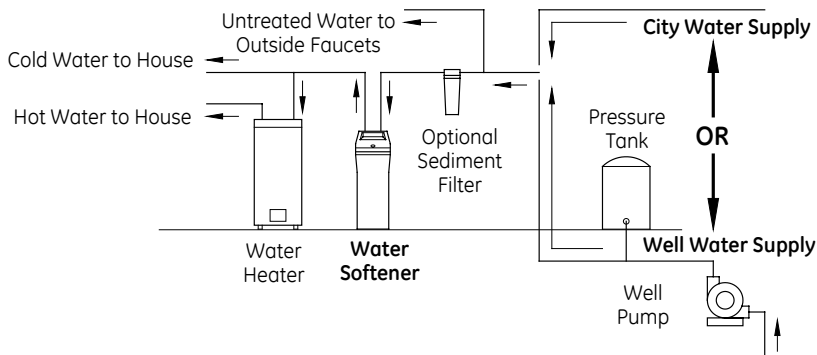
- Avoid installing in direct sunlight. Excessive sun heat may cause distortion or other damage to non-metallic parts.

- **Outside installation is not recommended and voids the warranty.**

DIMENSIONS



PROPER ORDER TO INSTALL WATER TREATMENT EQUIPMENT



Installation Requirements.

PLUMBING CODES

All plumbing must be completed in accordance with national, state and local plumbing codes.

In the state of Massachusetts: The Commonwealth of Massachusetts plumbing code 248-CMR shall be adhered to. A licensed plumber shall be used for this installation.

AIR GAP REQUIREMENTS

A drain is needed for regeneration water (See Figure 1). A floor drain, close to the water softener, is preferred. A laundry tub, standpipe, etc. are other drain options. Secure valve drain hose in place. Leave an air gap of 1-1/2" between the end of the hose and the drain. This gap is needed to prevent back flow of sewer water into the water softener. Do not put the end of the drain hose into the drain.

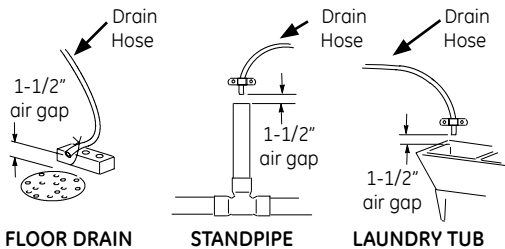


Figure 1

VALVE DRAIN REQUIREMENTS

Using the flexible drain hose (included) see Figure 2, measure and cut to the length needed. Flexible drain hose is not allowed in all localities (check your plumbing codes). If local codes do not allow use of a flexible drain hose, a rigid valve drain run must be used. Purchase a compression fitting (1/4 NPT x 1/2 in. minimum tube) and 1/2" tubing from your local hardware store. Plumb a rigid drain as needed (See Figure 3).

NOTE: Avoid drain hose runs longer than 30 feet. Avoid elevating the hose more than 8 feet above the floor. Make the valve drain line as short and direct as possible.

FLEXIBLE DRAIN LINE

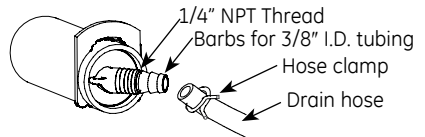


Figure 2

RIGID DRAIN LINE

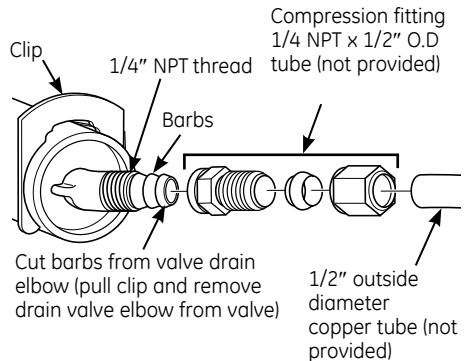


Figure 3

Installation Requirements.

INLET/OUTLET PLUMBING REQUIREMENTS

Always install either a single bypass valve (provided), as shown in Figure 4, or, if desired, parts for a 3 valve bypass system (not included) can be purchased and assembled, as shown in Figure 5. Bypass valves allow you to turn off water to the softener for maintenance if needed, but still have water in house pipes.

Pipe fittings must be 3/4" minimum.

Use:

- Copper pipe
- Threaded pipe
- PEX (Crosslinked Polyethylene) pipe
- CPVC plastic pipe
- Other pipe approved for use with potable water

IMPORTANT: Do not solder with plumbing attached to installation adaptors and single bypass valve. Soldering heat will damage the adaptors and valve.

SINGLE BYPASS VALVE

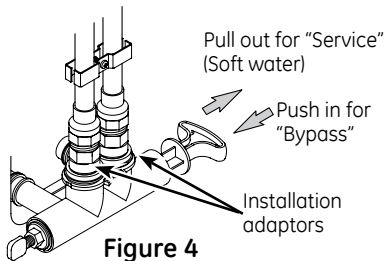


Figure 4

⚠ WARNING:

Electric Shock Hazard:

Install metal ground clamp to metal house water supply pipe before beginning installation. Securely tighten connection in center of metal ground clamp. Failure to do so can result in death or electric shock.

3-VALVE BYPASS SYSTEM

For soft water service: Open the inlet and outlet valves and close the bypass valve.

For bypass hard water: Close the inlet and outlet valves and open the bypass valve.

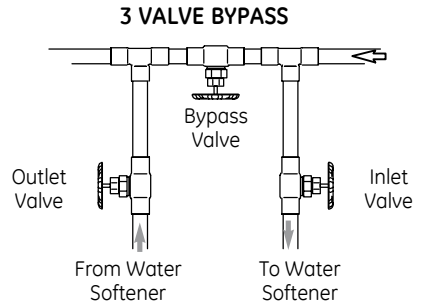


Figure 5

Installation Instructions.

TYPICAL INSTALLATION

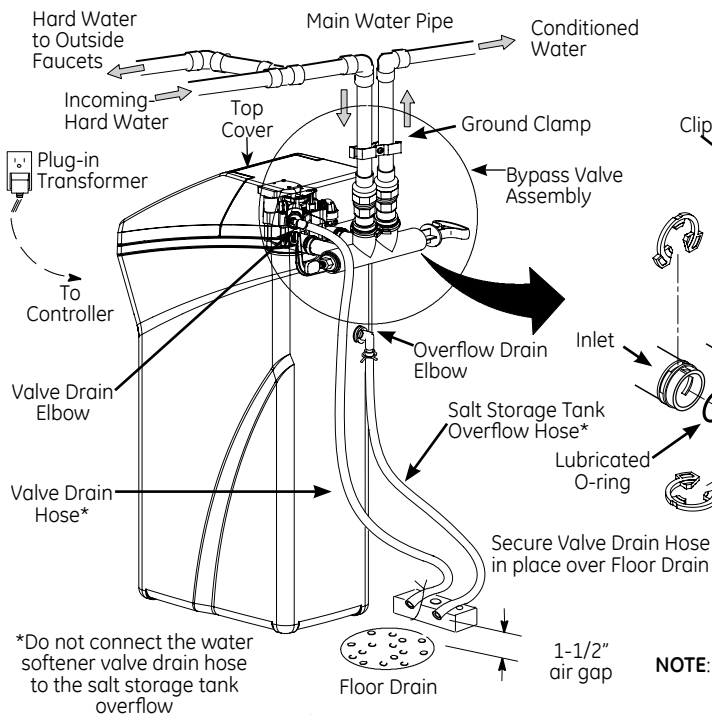


Figure 6

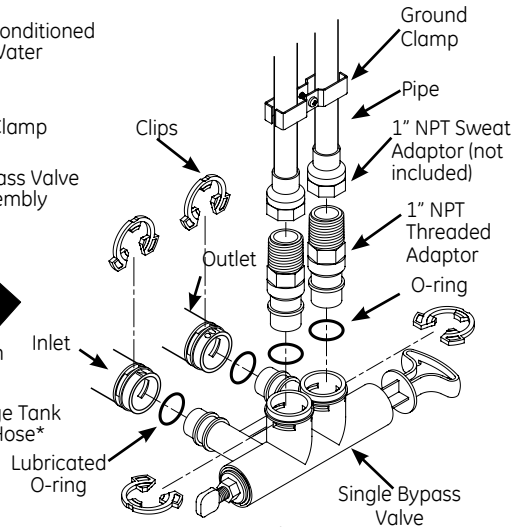


Figure 7

NOTE: See "Air Gap Requirements" section.

- Remove plastic shipping plug and wire from valve outlet.

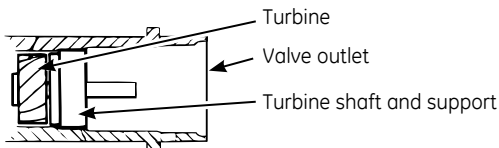


Figure 8

NOTE: Be sure the turbine and support are firmly in place in the valve outlet. Blow into the valve port and observe the turbine for free rotation.

Installation Instructions.

TURN OFF WATER SUPPLY

1. Close the main water supply valve, located near the well pump or water meter.
2. Open all faucets to drain all water from house pipes.

NOTE: Be sure not to drain water from the water heater, as damage to the water heater elements could result.

INSTALL THE BRINE TANK OVERFLOW ELBOW

Install the brine tank overflow grommet and elbow in the 13/16" diameter hole in the back of the salt storage tank sidewall, see Figure 9.

NOTE: The brine tank overflow elbow accepts either 1/2" or 3/8" I.D. hose.

INSTALL THE BYPASS VALVE

NOTE: For easier installation, remove the top cover. Release 2 clips at rear of cover. Rotate cover forward and lift up.

1. Remove two clips from the water softener valve inlet and outlet ports and visually check and remove any debris, see Figure 7.
2. Make sure the turbine assembly spins freely in the "out" port of the valve, see Figure 8.
3. If not already done, put a light coating of silicone grease on the single bypass valve o-rings, see Figure 7.
4. Push the single bypass valve into the softener valve as far as it will go. Snap the two large holding clips into place, from the top down, see Figure 7 and 10.

IMPORTANT: Be sure the clips snap firmly into place so the single bypass valve will not pull out.

MOVE THE WATER SOFTENER INTO PLACE

⚠ WARNING!
Excessive Weight Hazard

Use two or more people to move and install water Softener Failure to do so can result in back or other injury.

1. Move the water softener into the desired location. Set it on a solid, level surface.

IMPORTANT: Do not place shims directly under the salt storage tank to level the softener. The weight of the tank, when full of water and salt, may cause the tank to fracture at the shim.

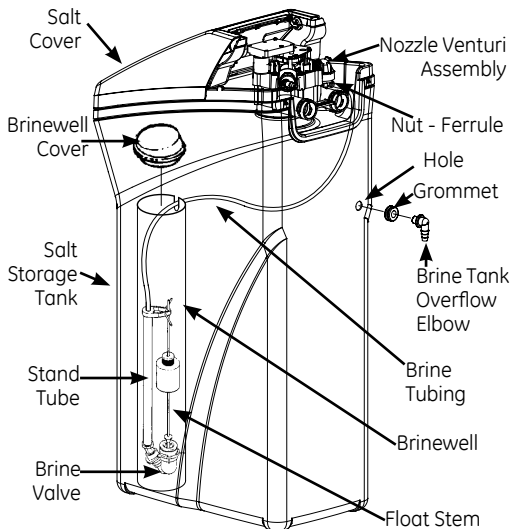
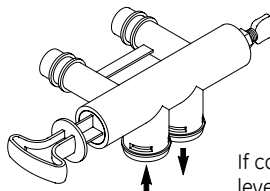


Figure 9

Note: Unit is shown with top cover removed.

SINGLE BYPASS VALVE



If connecting to floor level plumbing, install the bypass valve turned downward, as shown.

CORRECT ASSEMBLY

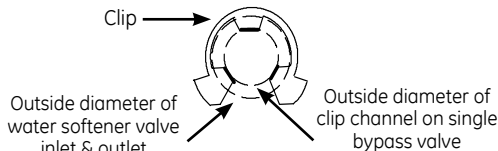


Figure 10

NOTE: Be sure all 3 tabs of the clip go through the matching holes on the water softener valve inlet or outlet, and fully into the channel on the single bypass valve. Make sure that the tabs are fully seated.

Installation Instructions.

COMPLETE INLET AND OUTLET PLUMBING

WARNING!

ELECTRICAL SHOCK HAZARD:

Install metal ground clamp to metal house water supply pipe before beginning installation. Securely tighten connection in center of metal ground clamp. Failure to do so can result in death or electrical shock.

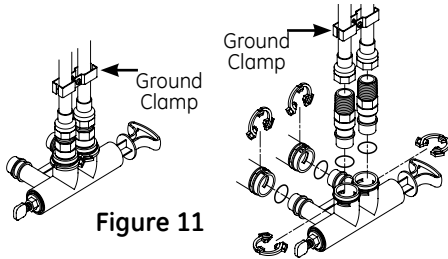


Figure 11

- Secure ground clamp to metal pipes.

Measure, cut, and loosely assemble pipe and fittings from the main water pipe to the inlet and outlet ports of the water softener valve. Be sure to keep fittings fully together, and pipes squared and straight. **BE SURE INCOMING HARD WATER SUPPLY IS DIRECTED TO THE SOFTENER VALVE INLET PORT.**

NOTE: Inlet and outlet are marked on the water softener valve. Trace the water flow direction to be sure hard water is to inlet.

IMPORTANT: Be sure to fit, align and support all plumbing to prevent putting stress on the water softener valve inlet and outlet. Stress from misaligned or unsupported plumbing may cause damage to the valve.

- If making a soldered copper installation, do all sweat soldering before connecting pipes to the NPT adapters and bypass valve. Torch heat will damage plastic parts.

WARNING!

If solder is used to make pipe connection use only lead free solder and flux to prevent lead poisoning.

- When turning threaded pipe fittings onto plastic fittings, use care not to cross-thread.

- Use Teflon Tape on all external pipe threads. Complete the inlet and outlet plumbing for the type of pipe you will be using. Secure ground clamp to metal pipes.

ASSEMBLE THE DRAIN PORT ELBOW

1. Locate the drain elbow that is in the parts bag.
2. Make sure the black O-ring is attached to the outside of the drain elbow. Also look inside the drain elbow to be sure the small black flow plug is inside and hasn't fallen out during shipping.

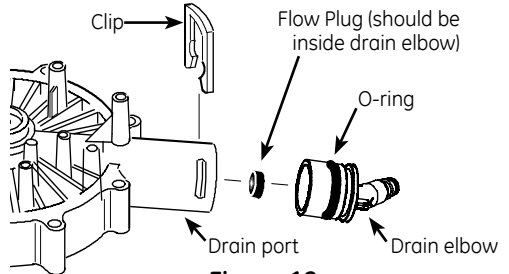


Figure 12

3. Insert the drain elbow into the valve's "drain" port until it stops and the black O-ring is pushed in beyond the slots in the drain port with the smaller, barbed end pointing out of the valve.
4. Secure the drain elbow to the valve using the black "U" clip (also in the parts bag) by sliding it into the slots in the drain port and into the grooves in the drain elbow (see figure 13).

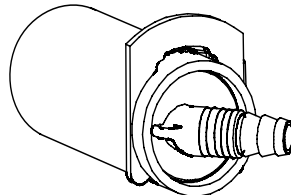


Figure 13

5. Gently pull on the drain elbow to make sure it is secure in the valve.

Installation Instructions.

INSTALL VALVE DRAIN HOSE

1. Measure and connect the 3/8" drain line (provided) to the water softener valve drain fitting. Use a hose clamp to hold the hose in place.

NOTE: Avoid drain hose runs longer than 30 feet. Avoid elevating the hose more than 8 feet above the floor. Make the valve drain line as short and direct as possible.

IMPORTANT: If codes require a rigid drain line see "Valve Drain requirements" section.

2. Route the drain hose or copper tubing to the floor drain or other suitable drain point. Secure drain hose. This will prevent "whipping" during regenerations. See "Air Gap Requirements" section.
3. Cut and secure the hose.

NOTE: The softener will not work if the water cannot exit the drain hose during recharge.

INSTALL SALT STORAGE TANK OVERFLOW HOSE

1. Measure, cut to needed length and connect the 3/8" drain line (provided) to the salt storage tank overflow elbow and secure in place with a hose clamp.
2. Route the hose to the floor drain, or other suitable drain point **no higher** than the drain fitting on the salt storage tank (This is a gravity drain). If the tank overfills with water, the excess water flows to the drain point. Cut the drain line to the desired length and route it neatly out of the way.

IMPORTANT: For proper operation of the water softener, do not connect the water softener valve drain tubing to the salt storage tank overflow hose.

TEST FOR LEAKS

To prevent air pressure in the water softener and plumbing system, complete the following steps in order:

1. Fully open two or more softened cold water faucets close to the water softener, located down stream from the water softener.
2. Place the bypass valve (single or 3 valve) into the "bypass" position. See Figures on Page 10.
3. Slowly open the main water supply valve. Run water until there is a steady flow from the opened faucets, with no air bubbles.
4. Place bypass valve(s) in "service" or soft water position as follows:
 - Single bypass valve (Figure 4): Slowly move the valve stem toward "service," pausing several times to allow the water softener to fill with water.
 - 3 valve bypass (Figure 5): Fully close the bypass valve and open the outlet valve. Slowly open the inlet valve, pausing several times to allow the water softener to fill with water.
5. After about three minutes, open a hot water faucet until there is a steady flow and there are no air bubbles, then close this faucet.
6. Close all cold water faucets and check for leaks at the plumbing connections that you made.
7. Check for leaks around clips at softener's inlet and outlet. If a leak occurs at a clip, depressurize the plumbing (turn off the water supply and open faucets) before removing clip. When removing clips at the softener's inlet or outlet, push the single bypass valve body toward the softener (See Figure 14). Improper removal may damage clips. Do not reinstall damaged clips.

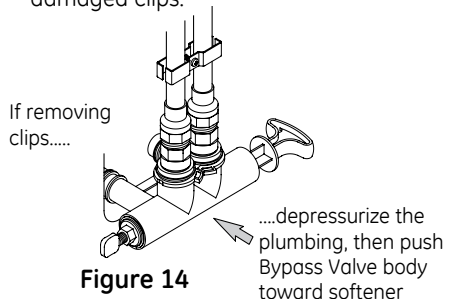


Figure 14

Installation Instructions.

ADD WATER AND SALT TO THE SALT STORAGE TANK



WARNING!

EXCESSIVE WEIGHT HAZARD:

Use two or more people to move and lift salt bags. Failure to do so can result in back or other injuries.

1. Using a container, add about three gallons of clean water into the salt storage tank.
2. Add salt to the storage tank. Use nugget, pellet or coarse solar salts with less than 1% impurities.

PLUG IN THE WATER SOFTENER

1. Plug the water softener into an electrical outlet that is not controlled by a switch.
2. Replace the top cover.
3. Replace the salt hole cover.

NOTE: The water heater is filled with hard water and, as hot water is used, it will refill with conditioned water. In a few days, the hot water will be fully conditioned. To have fully conditioned hot water immediately, wait until the initial recharge is over. Then, drain the water heater (following instructions for water heater) until water runs cold.



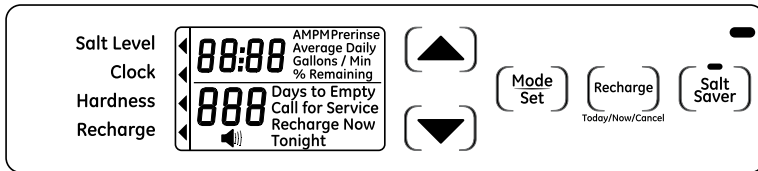
WARNING!

Discard all unused parts and packaging material after installation. Small parts remaining after the installation could be a choke hazard.

SANITIZE THE WATER SOFTENER /SANITIZE AFTER SERVICE

1. Open salt hole cover, remove the brinewell cover and pour about 3 oz. (6 tablespoons) of household bleach into the softener brinewell. Replace the brinewell cover.
2. Make sure the bypass valve(s) is in the "service"(open) position.
3. Start a recharge (regeneration). See "Start a Recharge" on Page 13.
4. After the recharge has completed, fully open a cold water faucet, downstream from the softener, and allow 50 gallons of water to pass through the system. This should take at least 20 minutes. Close the faucet.

Programming the Water Softener.



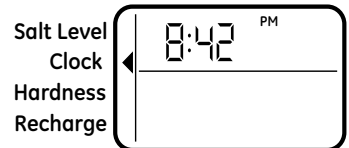
When the transformer is plugged into the electrical outlet, a model code and test number (example: J3.4 & H45) are shown in the display. Then, "12:00 PM" begins to flash. An arrow ◀ is displayed next to **CLOCK** on the face plate decal.

CONTROL OPERATION:

- **CONTROL SETTINGS REQUIRED** upon initial installation and after an extended power outage.
- Use the **MODE/SET** button to scroll arrow to desired control function set.
- After the mode is selected use the UP ▲ and DOWN ▼ buttons to change the settings of the control.
- Press the **MODE/SET** button to accept changes.
- A "beep" sounds while pressing buttons for control programming. One beep signals a change in the control display. Repeated beeps mean the control will not accept a change from the button you have pressed, and you should select another button.

SET TIME OF DAY

1. Press **MODE/SET** button until the arrow ◀ points to **CLOCK**.
2. Press the UP ▲ or DOWN ▼ buttons to set the present time. UP ▲ moves the display ahead; DOWN ▼ sets the time back. Be sure AM and PM is correct.

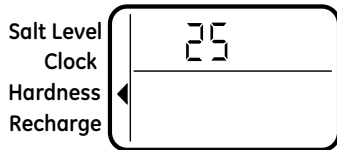


- NOTE:** Press buttons and quickly release to slowly advance the display one number at a time. Hold the buttons down for fast advance.
3. When the correct time is shown in the display, press **MODE/SET** to accept.

Programming the Water Softener.

SET WATER HARDNESS NUMBER

1. Press the **MODE/SET** button until the arrow ◀ points to **HARDNESS**. A flashing 25 will appear in the display.



2. Press the UP ▲ or DOWN ▼ buttons to set your water hardness number.

NOTE: If your water supply contains iron, compensate for it by adding to the water hardness number. For example, assume your water is 20 gpg hard and contains 2 ppm iron. Add 5 to the hardness number for each 1 ppm or iron. In this example, you would use 30 for your hardness number.

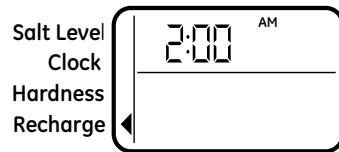
$$\begin{array}{rcl} & 20 \text{ gpg hardness} & \\ 2 \text{ ppm iron} \times 5 = 10 & +10 & \\ \text{(times)} & & 30 \text{ HARDNESS NUMBER} \end{array}$$

3. When the display shows your water hardness (in grains per gallon), press **MODE/SET** to accept.

You can get the grains per gallon (gpg) hardness of your water supply from a water analysis laboratory. If you are on a municipal supply, call your local water department. Or call Legend Technical Services, an independent laboratory, to request a water hardness test kit at 1.800.949.8220, Option 4. If your report shows hardness in parts per million (ppm) or milligrams per liter (mg/l), simply divide by 17.1 to get the equivalent number of grains per gallon.

SET RECHARGE (STARTING) TIME

1. Press the **MODE/SET** button until the arrow ◀ points to **RECHARGE**.



NOTE: A flashing 2:00 AM (factory default) should show in the display. This is a good time for recharge to start (takes about 2 hours) in most households because water is not in use. HARD WATER is bypassed to house faucets during recharge.

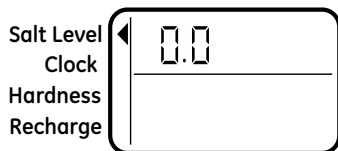
If no change is needed, go to step 3. To Change the recharge starting time, follow step 2.

2. Press UP ▲ or DOWN ▼ button to set the desired recharge start time. Be sure to observe the AM or PM as you did when setting the time of day.
3. Press the **MODE/SET** button to accept.

Programming the Water Softener.

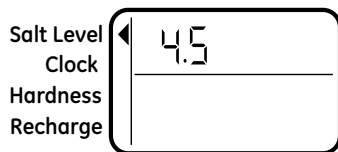
SET SALT LEVEL

1. Press the **MODE/SET** button until the arrow ◀ points to **SALT LEVEL**.



2. Determine level of salt in brine tank using yellow indicator on side of brine well, inside brine tank (see Figure 15).

3. Press UP ▲ or DOWN ▼ button to set the **SALT LEVEL** to correspond to level on yellow indicator in brine tank.



NOTE: Each press of a button changes the level by increments of 0.5 up to 8.0. Lowering the salt level below zero turns the **SALT LEVEL** indicator OFF.

4. Press the **MODE/SET** button to accept. The display shows the present time of day and **DAYS TO EMPTY**.

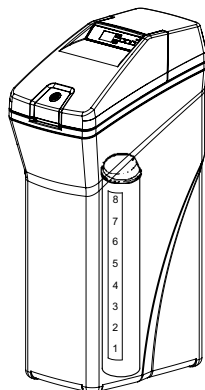
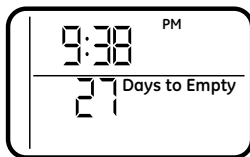
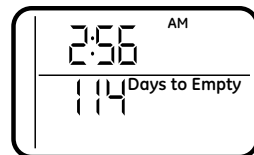


Figure 15



DAYS TO EMPTY

The words **DAYS TO EMPTY** and a number are shown in the lower half of the display. This information is shown in the normal run display. This is to inform the user of the number of days before the salt level in the brine tank reaches Level 0. There will be salt left in the salt tank, but it may not be sufficient to fully recharge the system. Salt should be added at this time to avoid hard water. The value is updated daily and whenever the **SALT LEVEL** value is changed.



NOTE: For the first several weeks of operation, the **DAYS TO EMPTY** may provide erratic operation. For example, the blue indicator light may flash, showing that more salt is required when the actual salt level in the tank is well above the Level 0. In some cases, the **DAYS TO EMPTY** may even increase over a several week period.

It takes a couple of months for the water softener to learn **your** water usage pattern. Once it does this, it will accurately determine actual salt usage pattern. During this first period, check salt level when blue indicator light flashes. If the salt level in the tank is at Level 1 or above, allow system to run. Be sure to reset your salt level indicator each time you add salt to the system.

START A RECHARGE

Press the **RECHARGE** button and hold for three seconds, until "RECHARGE NOW" begins to flash in the display, starting a recharge. This recharge draws the sanitizing bleach into and through the water softener. Any air remaining in the water softener is purged to the drain. During this time periodically check for leaks.

NOTE: As with all other water system applications, leaks may occur. Leaks may not be immediately apparent. Recheck 24 hours after first recharge cycle is complete.

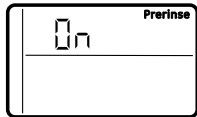
Programming the Water Softener.

OPTIONAL CONTROL SETTINGS

The controller display has several options and features.

LOW SALT ALARM

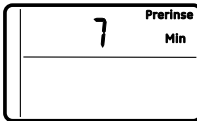
The **LOW SALT ALARM**, when enabled, will sound the beeper when the **DAYS TO EMPTY** value is 15 days or less. To change this setting, press and hold the **MODE/SET** button for 3 seconds or hear a beep. ON (factory default) or OFF will flash in the display. Press the UP ▲ or DOWN ▼ buttons to toggle this feature ON or OFF. Press the **MODE/SET** button to accept, and the display will move to the **PRERINSE ON/OFF** screen. Press the UP ▲ or DOWN ▼ buttons to turn prerinse on or off.



PRERINSE

If your water contains sediment the prerinse feature will remove sediment from the resin bed prior to regeneration.

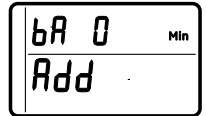
Press the **MODE/SET** button and the display will move to **Prerinse Time** mode. In this screen you can adjust the duration of the prerinse by pressing the UP ▲ or DOWN ▼ buttons. Press the **MODE/SET** button to accept, and the display will move to the **Back Wash** screen.



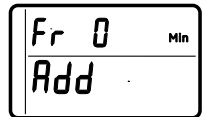
BACKWASH AND FAST RINSE

If you experience salty tasting water after regeneration, you may need to increase the backwash and fast rinse times. The cycle times during regenerations are determined by the softener's electronic controller. However, you may increase the backwash and fast rinse times. You may add up to 10 minutes.

For **Backwash**, you can add up to 10 minutes in 1 minute increments, by pressing the UP ▲ button, or subtract time by pressing the DOWN ▼ button.



For **Fast Rinse**, press **MODE/SET** and the display moves to the add fast rinse time screen. You can add up to 10 minutes in 1 minute increments, by pressing the UP ▲ button, or subtract time by pressing the DOWN ▼ button. Press the **MODE/SET** button to accept, and the display will move to the **Run Display** screen.



SALT SAVER

When this feature is ON, the water softener will operate at salt efficiencies of 4000 grains of hardness per pound of salt or higher (May recharge more often using smaller salt dosage and less water). The softener is shipped with this feature set OFF.

In the state of California: You must turn the Salt Saver Feature ON. This may initiate more frequent recharges. However, it will operate at 4,000 grains per pound of salt.

To turn Salt Saver ON: Press the Salt Saver button once until the blue status light above the button is ON.



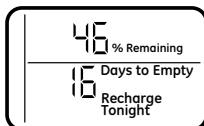
Programming the Water Softener.

FEATURE: OTHER DATA DISPLAY

These models have an option to have the run display indicate different information. The information displayed on the top half of the display can be changed to one of the following by pressing UP ▲ or DOWN ▼ buttons:

• CAPACITY REMAINING

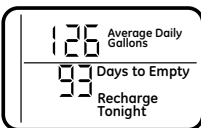
– This is the percentage of water softening capacity remaining. Immediately after a regeneration, 100% shows. As water is used, the percentage will decrease until the next regeneration. During regenerations, the percentage increments upward.



When present time is displayed, press the DOWN ▼ button; **% Remaining** will appear in the display. The value shown is between 0 and 100 percent. This value is based on current operating capacity. Pressing the UP ▲ button will return the screen to the previous display.

• AVERAGE DAILY GALLONS

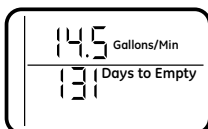
– The figure displayed is the average gallons of water used by the household each day over the past seven-day period.



Press the DOWN ▼ button again to display the Average Daily Gallons. **Average Daily Gallons** will appear in the display. This value is updated every night at midnight. Pressing the UP ▲ button will return the screen to the previous display.

• FLOW RATE, GPM

– When using soft water, this display shows the flow rate passing through the softener (in gallons per minute). Zero shows if water is not passing through the softener.

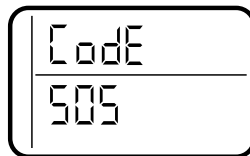


Press the DOWN ▼ button again to display the flow rate. **Gallons/Min** will appear in the display. This value is updated every ½ second. Pressing the UP ▲ button will return the screen to the previous display. Pressing the DOWN ▼ button will return the screen to the present time display.

RESETTING TO FACTORY DEFAULT

To reset the electronic controller to its factory default for all settings (time, hardness, etc.):

1. Press the **MODE/SET** button and hold until the display changes twice to show the flashing mode code.
2. Press the UP ▲ button to display a flashing “SoS”.



3. Press the **MODE/SET** button and the electronic controller will restart.
4. Set the present time, hardness, etc, as described in the Programming the Water Softener section

Programming the Water Softener.

POWER OUTAGE MEMORY

If electrical power to the water softener is lost, "memory" built into the timer circuitry will keep all settings for up to 24 hours. While the power is out, the display is blank and the water softener will not regenerate. When electrical power is restored, the following will occur:

Reset the present time only if the display is flashing. The **HARDNESS** and **RECHARGE TIME** never require resetting unless a change is desired. Even if the clock is incorrect after a long power outage, the softener operates as it should to keep your water soft. However, regenerations may occur at the wrong time of day until you reset the clock to the correct time of day.

NOTE: If the water softener was regenerating when power was lost, it will now finish the cycle.

BLUE INDICATOR LIGHT

Steady blue light indicates that the unit is working correctly. The light flashes when the unit needs attention from the user.

- Light will also flash when power to unit has been interrupted. Check the **PRESENT TIME** setting.
- Light flashes and **DAYS TO EMPTY** flashes - check salt level and add salt as required.
- Light flashes and **Err** is in the display - electrical problem with system.

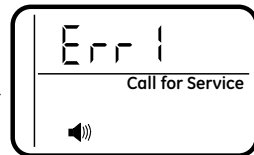
LOW SALT SIGNAL

When the **DAYS TO EMPTY** drops to 15, the blue indicator light and **DAYS TO EMPTY** in the display will flash every second and the alarm will beep every 30 seconds (from 8:00 AM to 8:00 PM), to notify the user that the unit is running low on salt. As soon as any button is pressed, the alarm will stop beeping. The blue indicator light and **DAYS TO EMPTY** will continue to flash. Once salt is added to the brine tank and the **SALT LEVEL** is reset, the **DAYS TO EMPTY** will be reset.

ERROR SIGNALS

If there is an error code detected, the blue indicator light will flash 4 times every second, the display will flash **Err** and the alarm will beep every 30 seconds (from 8:00 AM to 8:00 PM) to signal that the softener requires service. The alarm can be turned off by pressing any button, but the blue indicator light and display will continue to flash.

Disconnect the transformer from the wall outlet momentarily, and plug it back in. The normal display will appear. The motor may run for several minutes, as the unit resets. If the problem is not corrected, the error code will reappear in 6 minutes. See the *Before you Call for Service* section to assist in troubleshooting the water softener.



Care and cleaning.

ADJUSTING YOUR WATER HARDNESS

The blend adjusting knob (Figure 16) gives the ability to finely adjust hardness of the treated water leaving the water softener. If slightly harder water is desired than is normally delivered by the water softener, the blend adjusting knob can divert a small stream of hard water and blend it with the soft water entering the home. The amount of water diverted is controlled by turning a blend adjusting knob on the end cap of the valve stem.

NOTE: To get full performance from your water softener leave blending valve in the factory closed position.

To make adjustments to water hardness:

1. Hold bypass handle to keep the valve stem from rotating (see figure 16). Loosen hex nut on blend adjustment knob by turning the hex nut counterclockwise.
2. **TO INCREASE HARDNESS:** With the bypass in the service position (see figure 16) hold the handle to keep the valve stem from rotating and turn the blend adjusting knob counterclockwise up to 2 turns from the closed position. It is recommended that adjustments be made in quarter turn increments over several weeks until the desired hardness is achieved. **NOTE:** Once an adjustment is made to the blend valve knob the change in water hardness at the homes faucets or shower heads may take several days to be noticed. This delay is due to the large amounts of already conditioned water in the pipes and water heater that must be exchanged before a change in hardness can be noticed. Have the water tested to determine the actual water hardness.
3. **TO DECREASE HARDNESS:** With the bypass in the service position (see figure 16) hold the handle to keep the valve stem from rotating and turn the blend adjusting knob clockwise. When the knob will not turn anymore, hard water is no longer being blended into the soft water.
4. Once the desired hardness is achieved tighten the hex nut (see figure 16) clockwise until it comes in contact with the bypass stem.

NOTE: To meet the water softener performance specifications and reduction of barium and radium claims the adjustable hardness must be kept in the "OFF" position. The off position is achieved when the blend adjusting knob is fully rotated clockwise until it stops.

SERVICE POSITION (Normal Softener Operation)

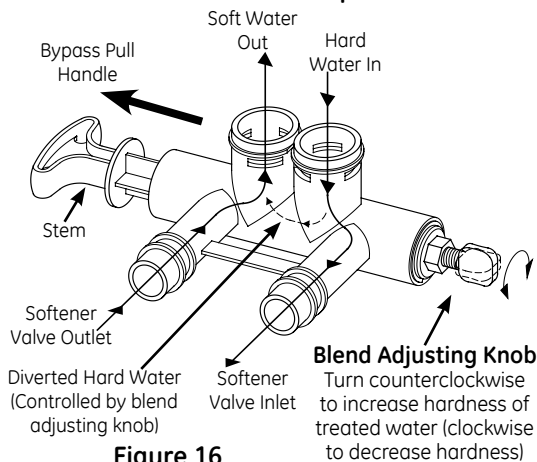


Figure 16

BYPASS POSITION

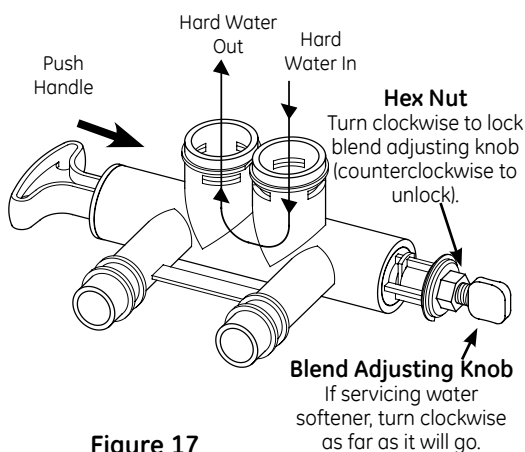


Figure 17

CAUTION! If the water softener is to be serviced or disconnected from the bypass valve, the blend adjusting knob must be turned all the way clockwise to close the diversion path and prevent water leaking from the softener valve inlet of the bypass.

Care and cleaning.

CHECKING THE SALT STORAGE LEVEL and REFILL

Brine (salt dissolved in water) is needed for each and every recharge. The water for making brine is metered into the salt storage area by the water softening system valve and control. **However, you must keep the tank supplied with salt.**

ADDING SALT

Lift the salt hole cover and check the salt storage level frequently. If the water softener uses all the salt before you refill it, you will experience hard water. Until you have established a refilling routine, check the salt every two or three weeks. Always add if less than 1/4 full. Be sure the brinewell cover is on.

NOTE: if using potassium chloride (KCl), do not fill above level 4 on the brinewell decal.

NOTE: In humid areas, it is best to keep the salt storage level lower, and to refill more often to avoid salt "bridging".

Recommended Salt: Nugget, pellet or coarse solar salts with less than 1% impurities.

Salt Not Recommended: Rock salt, high in impurities, block, granulated table, ice melting, ice cream making salts, etc.



CAUTION:

Water softening salt with iron removing additives:

Some salts may have an additive to help the water softening system handle iron in the water supply. Although this additive may help to keep the water softening system resin clean, it may also release corrosive fumes that weaken and shorten the life of some water softening system parts.

CLEANING IRON OUT OF THE WATER SOFTENING SYSTEM

Your water softening system takes hardness minerals (calcium and magnesium) out of the water. Also, it can control some (see the Specification Guidelines section) "clear water" iron. With clear water iron, water from a faucet is clear when first put into a glass. After 15 to 30 minutes, the water begins to cloud or turn rust colored. A water softening system **will not** remove any iron that makes the water cloudy or rusty as it comes from the faucet (called red water iron). To take red water iron out of water, or over the maximum of clear water iron, an iron filter or other equipment is needed.

If your water supply has clear water iron, periodic resin bed cleaning is needed. GE recommends using Super Iron Out® brand resin bed cleaner to thoroughly clean your resin bed if your iron content is high. Clean the bed at least every six months, or more often if iron appears in the soft water between cleanings.

IMPORTANT: It is important to mix the resin bed cleaner with water (following the manufacturer's instructions), pour it into the **brinewell** (see Figure 9) and recharge the softener immediately. Do not pour the resin bed cleaner in with the salt, as it will not be as effective in cleaning the resin, and can cause damage to the softener if it is left in the brine tank for an extended period due to the corrosive gases that are formed.

Routine Maintenance.

CLEANING THE NOZZLE AND VENTURI ASSEMBLY

A clean nozzle and venturi is needed for the water softening system to work properly. This small unit makes the suction to move brine from the salt storage area to the resin tank during recharge. If it becomes plugged with sand, dirt, etc., the water softening system will not work and you will get hard water.

To get to the nozzle and venturi, remove the water softening system top cover. Be sure the water softening system is in service cycle (no water pressure at nozzle and venturi). Then, while holding the nozzle and venturi housing with one hand, remove the cap. Lift out the screen support and screen, then the nozzle and venturi. Wash and rinse the parts in warm water until clean. If needed, use a small brush to remove iron or dirt. Also check and clean the gasket.

NOTE: Some models have a small flow plug located in the nozzle and venturi, and/or a small cone shaped screen in the housing. Be sure to check and clean these parts, if your model is so equipped.

Carefully replace all parts in the correct order. Lightly lubricate the o-ring seal with clean silicone grease or petroleum jelly and place in position. **Install and tighten the cap, by hand only. Do not overtighten the cap.**

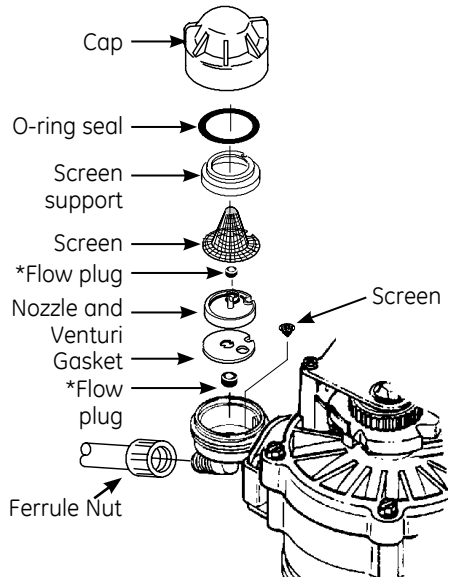
BREAKING A SALT BRIDGE

Sometimes, a hard crust or salt bridge forms in the salt storage area. It is usually caused by high humidity or the wrong kind of salt. When the salt bridges, an empty space forms between the water and salt. Then salt will not dissolve in the water to make brine.

If the brine tank is full of salt, it is hard to tell if you have a salt bridge. Salt is loose on top, but the bridge is under it. The following is the best way to check for a salt bridge.

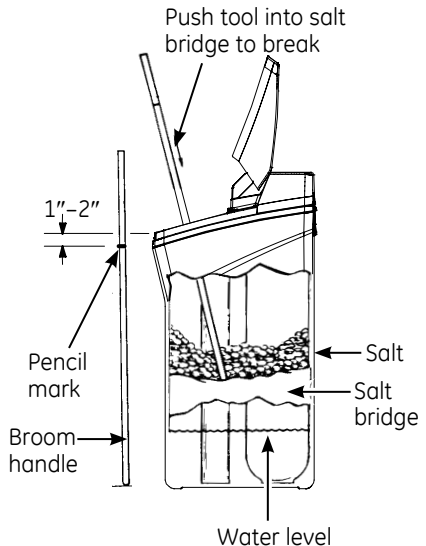
Salt should be loose all the way to the bottom of the tank. Take a broom handle or like tool, and carefully push it down into the salt, working it up and down. If the tool strikes a hard object (be sure it's not the bottom or sides of the tank), it's most likely a salt bridge. Carefully break the bridge with the tool. **Do not** pound on the walls of the tank.

If the wrong kind of salt made the bridge, take it out. Then fill the tank with nugget or pellet salt only. In humid areas, it is best to fill with less salt, more often to prevent a salt bridge from forming.



IMPORTANT: Be sure small holes in the gasket are centered directly over the small holes in the nozzle and venturi housing.

*Install with numbered side up, concave side down.



Before you call for service.



Troubleshooting Tips
Save time and money! Review the chart on this page first and you may not need to call for service.

NO SOFT WATER – Most Common Problems:

Check the following before calling for service:

- Not enough salt—should be at least 1/3 full.
- Bypass valve in “Bypass” position—handle should be in the “OUT” (service) position.
- Hardness setting too low. Check hardness setting and adjust. Verify hardness of supply water— from local water company, water test or call the GE Answer Center (800-952-5039 in US).
- Salt Bridge—salt solidifies above water level so that brine water is not in contact with salt. See the Breaking a Salt Bridge section.

Problem	Possible Cause	What to do
No soft water	Faucet or fixture where sample was taken not plumbed to soft water. <i>NOTE: Be sure sample is from a faucet that does not mix soft and hard water. For example, a single lever kitchen faucet, if the cold side is plumbed to hard water.</i>	• To conserve salt, the installer may have isolated some fixtures (outside faucets, toilets, etc.) from soft water. From the outlet of the water softening system, trace the water flow path, in house plumbing. If soft water is not directed to a faucet or fixture where wanted, consult a plumber.
	No salt in the brine tank or salt bridged	• Check for a salt bridge or, if the tank is empty, refill with recommended salt. Press (for 3 seconds) the RECHARGE button to start an immediate recharge and restore soft water supply.
	Transformer unplugged at wall outlet or power cable to softener not connected. Fuse blown or circuit breaker popped on circuit to electrical outlet. Electrical outlet on a circuit that can continuously be switched off	• Check for a loss of electrical power to the water softening system, due to any of these conditions and correct as needed. With the power supply restored, observe the faceplate time display and read Programming the Control section. NOTE: the electrical outlet for the softener should be live so it cannot be accidentally switched off.
	Manual bypass valve in bypass position	• Be sure the bypass valve stem is positioned properly, with the handle in the OUT position.
	Blending valve in open position	• Turn blending valve clockwise to closed position.
	Valve drain hose pinched, plugged, elevated too high or otherwise restricted	• Any restriction in the drain hose may prevent proper operation of the nozzle and venturi and reduce or prevent brine draw during recharge..
	Nozzle and venturi dirty, incorrectly assembled or damaged	• Refer to Cleaning the Nozzle and Venturi Assembly instructions. With water pressure to the water softening system off, take the nozzle assembly apart. Inspect, clean and replace as needed. Any foreign particle(s), scratches, nicks, etc. in the passages can prevent operation. Be sure holes in the gasket are centred over holes in the housing.

Before you call for service.

Problem	Possible Cause	What to do
Water hard some-times	Using hot water while the water softening system is regenerating	• Avoid using hot water during water softening system recharge because the water heater will refill with hard water. See Automatic Hard Water Bypass During Recharge section.
	Control HARDNESS number setting too low	• Press MODE/SET button until arrow points to HARDNESS. Be sure the number shown is the same as the actual grains per gallon hardness of your water supply. See Programming the Control section if a change in setting is needed.
	Grains of hardness in your water supply have increased	• Water hardness can change over time, especially in well water. To check, have the water tested by a water analysis laboratory or call your local water department. Adjust the Hardness number setting as needed.
Water feels slippery after installation of water softener	Absence of hardness minerals	• This is normal. Hardness in water gives it the abrasive feel you may have been accustomed to. The slippery feel is the clean feel of soft water. • See the <i>Adjusting your Water Hardness</i> section.
Water Softener not using any salt	Water softening system is a "demand" unit	• Does not use much salt to regenerate - very efficient.
	Possible salt bridge	• See the <i>Breaking a Salt Bridge</i> section.
	Possible plugged nozzle and venturi	• See the <i>Cleaning the Nozzle and Venturi Assembly</i> section.
Water is blue color after water softener was installed	Acidic water in copper plumbing	• Have the water tested at once.
Water softener not regenerating	Meter turbine stuck	• See the Manually Initiated Electronics Diagnostics section for troubleshooting procedures . • Call for service.
	Sensor wire not plugged into the control	• See the Manually Initiated Electronics Diagnostics section for troubleshooting procedures . • Call for service
	No power to unit	• Check the circuit breaker or fuses.
	Mechanical defect	• Call for service.
Cloudiness on glass-ware (automatic dishwashers)	Combination of soft water and too much detergent	• This is called etching and is permanent. To prevent this from happening, use less detergent if you have soft water. Wash glassware in the shortest cycle that will get them clean..

Before you call for service.

Problem	Possible Cause	What to do
Excessive/high level of water in brine tank	Valve drain hose pinched, plugged, elevated too high or otherwise restricted	A restriction in this drain hose may prevent proper operation of the nozzle and venturi and reduce or prevent brine draw during recharge.
	Nozzle and venturi dirty, incorrectly assembled or damaged.	Refer to Cleaning the Nozzle and Venturi Assembly instructions. With water pressure to the water softening system off, take the nozzle assembly apart. Inspect, clean and replace as needed. Any foreign particle(s), scratches, nicks, etc. in the passages can prevent operation. Be sure holes in the gasket are centred over holes in the housing
Salty tasting or brown/yellow colored water after installation	Unit not sanitized	- Complete Sanitization Procedures. - At completion of recharge cycle (approx. 2 hours), run water from faucets to purge the salty water.
	Low water pressure	Check pressure: - Drain height 8' or less, pressure should be minimum 20 psi. - Drain height above 8', pressure should be minimum 50 psi.
	Restricted drain hose	- Clean and reconnect hose. - Check for kinks in drain line
Brown/yellow colored water	Unit was idle for a period of time	Complete the Sanitization Procedures.
Resin beads showing up in drinking water	Cracked distributor	- Check softener "IN & OUT" plumbing is correct. - Call for service.
Sounds you might hear	Running water from the unit into a drain during recharge	This is normal.
Water has air bubbles and is cloudy	Air in system after installation	Will go away after it runs for a while.
Blue light Flashing		
When power applied to the system	Control needs to be programmed (a power outage may have occurred)	See the Programming the Control section.
If "DAYS TO EMPTY" is flashing	Low salt level, less than 15 days	- Fill with salt. - Reset salt level.

Before you call for service.

Problem	Possible Cause	What to do
Error Codes on Control	Wiring may have worked loose in the control	• Unplug transformer. • Remove control cover, release clips on side. • Check for loose/incorrect wiring connections to electronic board or switch. Reconnect as required. • Reassemble control cover. • Plug in Transformer. • Wait six minutes for Error Code to reappear. • If error Code reappears, call for service.
If "Err" in display	Electrical problem with system	• Call for service.

Advanced troubleshooting for service.

AUTOMATIC ELECTRONIC DIAGNOSTICS

This water softener has a self-diagnostic function for the electrical system (except into power and/or water meter). The water softener monitors electronic components and circuits for correct operation. If a malfunction occurs, an error code appears in the display.

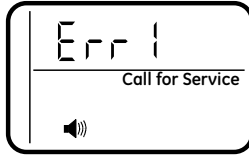


Figure 18

While an error code appears in the display, all buttons are inoperable except the **PROGRAM** button. PROGRAM remains operational so the service person can perform the Manual Advanced Diagnostics, see below, to further isolate the problem.

Procedure for removing error code from display:

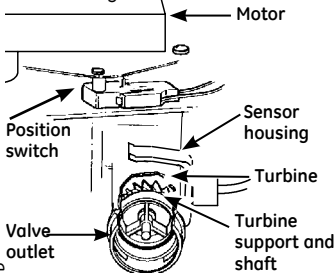
1. Unplug transformer from electrical outlet.
2. Correct problem.
3. Plug in transformer.
4. Wait 6 minutes. The error code will return if the problem was not corrected.

MANUAL INITIATED ELECTRONIC DIAGNOSTICS

Use the following procedures to advance the water softener through the regeneration cycles to check operation.

Lift off the Salt Hole Cover, remove the top cover by unlocking the tabs in the back and rocking forward, to observe cam and switch operation during valve rotation.

1. Press and hold **MODE/SET** for 3 seconds until "000" shows in the display, then release, see Figure 19.
2. The 3 digits indicated water meter operation as follows: If you don't get a reading on the display, with faucet open, pull the sensor from the valve outlet port. Pass a small magnet back and forth in front of the sensor. You should get a reading in the display. If you get a reading, shut off water supply, unhook the in and out plumbing and check the turbine for binding.



3. Symbols in the display indicate POSITION switch operation, see Figure 19

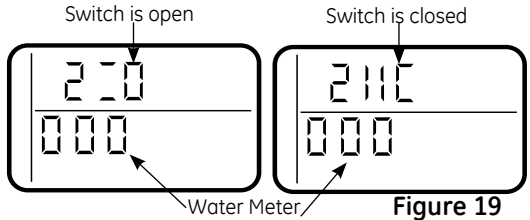
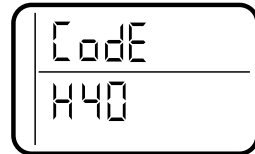


Figure 19

4. Use **RECHARGE** button to manually advance the valve into each cycle and check correct switch operation. **NOTE:** Be sure water is in contact with salt, and not separated by a salt bridge (see *Breaking a Salt Bridge* section).
5. While in this diagnostic screen, the following information is available and may be beneficial for various reasons. This information is retained by the computer from the first time electrical power is applied to the electronic controller.
 - a. Press the **▲** UP button to display the number of days this electronic control has had electrical power applied.
 - b. Press the **▼** DOWN button to display the number of regenerations initiated by the electronic control since the code number was entered.
6. Press and hold the **MODE/SET** button until the mode code (H40 for GXSH40V or H45 for GXSH45V) shows in the display. This code identifies the softener mode. If an incorrect model code is displayed, the softener will operate on incorrect configurations data.



7. To change the code number, press the **▲** UP or **▼** DOWN button until the correct code shows.
8. To return to the present time display, press the **MODE/SET** button.
9. Press the **MODE/SET** button to return to the present time display. If the code was changed, make all the timer setting. **NOTE:** If the control is left in a diagnostic display or a flashing display when setting times or hardness, present time automatically returns if a button is not pressed within four minutes.

Advanced troubleshooting for service.

Service: Manually Advance Recharge Check

NOTE: The control display must show a steady time (not flashing).

1. Press the **RECHARGE** button and hold in for three seconds. **RECHARGE** begins to flash as the water softening system enters the fill cycle of recharge. Remove the brinewell cover and, using a flashlight, observe fill water entering the brine tank. If water does not enter the tank, look for an obstructed nozzle, venturi, fill flow plug or brine tubing. See Care and Cleaning of the Water Softener System section.
2. After observing fill, press the **RECHARGE** button to move the water softening system into brining. A slow flow of water to the drain will begin. Verify brine draw from the brine tank by shining a flashlight into the brinewell and observing a noticeable drop in the liquid level over an extended period of time (is to 20 minutes).

NOTE: Be sure a salt bridge is not preventing water from contacting salt. See Care and cleaning of the water softening system section.

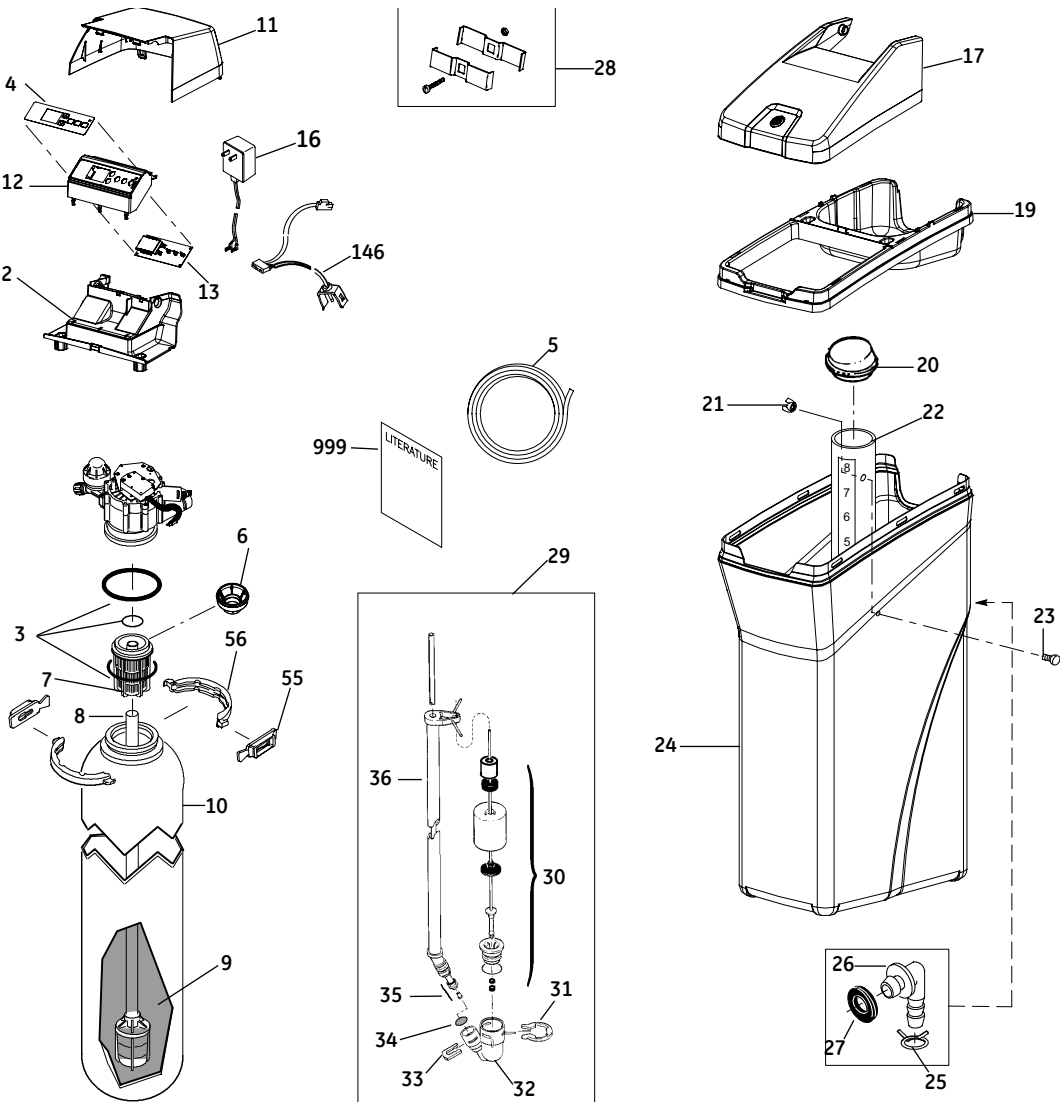
If the water softening system does not draw brine, check:

- nozzle and/or venturi dirty or defective.
- defective nozzle and venturi seal.
- nozzle and venturi not seated properly on gasket.
- other inner valve defect (rotor seal, rotor and disc, wave washer, etc.).
- restricted drain (check drain fitting and hose).

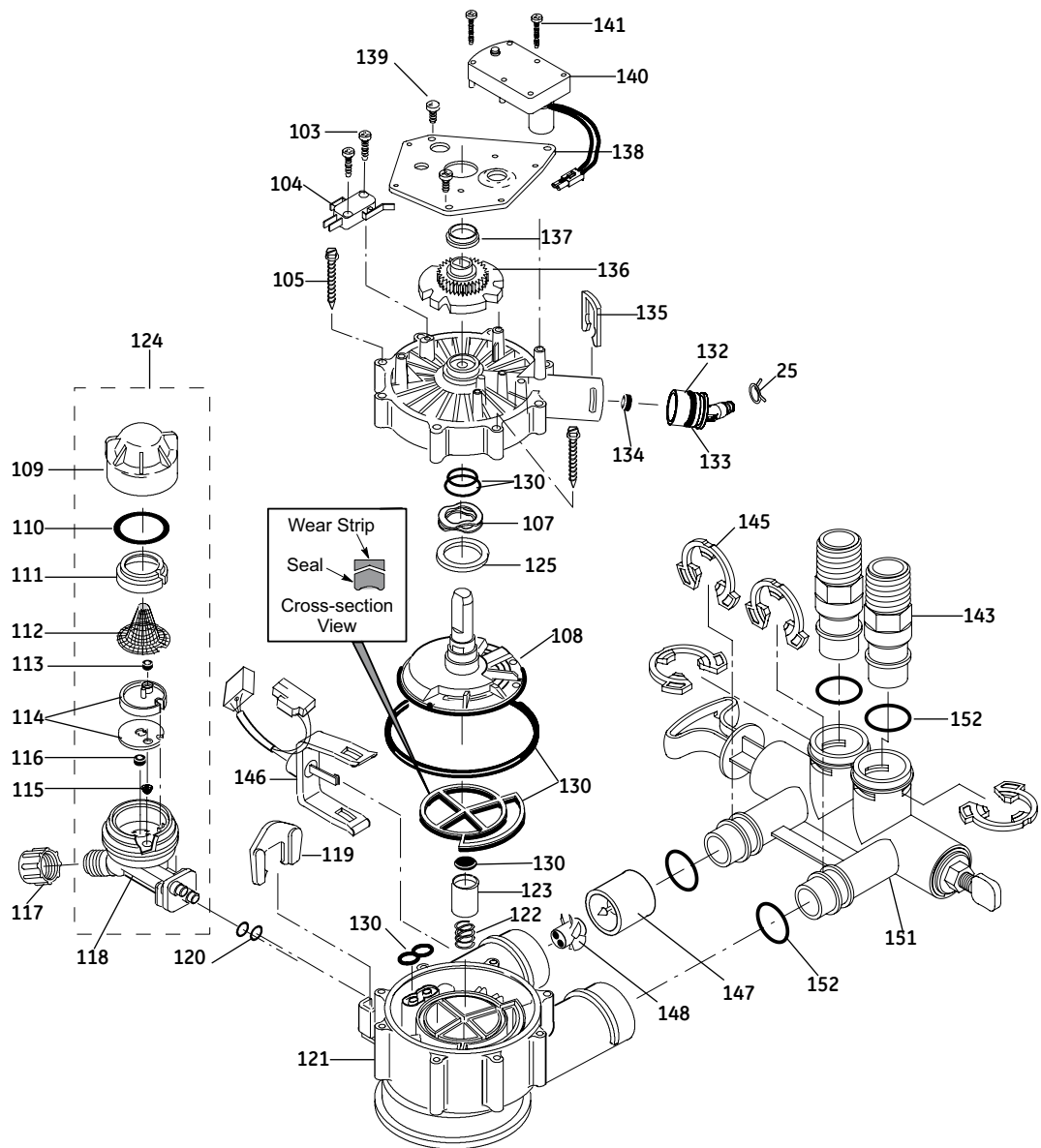
NOTE: If water system pressure is low, an elevated drain hose may cause back pressure, stopping brine draw.

3. Again, press the **RECHARGE** button to move the water softening system into backwash. Look for a fast flow of water from the drain hose. A slow flow indicates a plugged top distributor, backwash flow plug or drain hose.
4. Press the **RECHARGE** button to move the water softening system into fast rinse. Again look for a fast drain flow. Allow the water softening system to rinse for a few minutes to flush out any brine that may remain in the resin tank from the brining cycle test.
5. To return the water softening system to service, press the **RECHARGE** button.

Exploded View.



Exploded View.



Parts List.

			G X S H 4 0 V	G X S H 4 5 V
REF. NO.	GE PART NO.	PART DESCRIPTION	(00)	(00)
0002	WS31X10051	SUPPORT, FACEPLATE	1	1
0003	WS35X10001	O-RING SEAL KIT	1	1
0004	WS34X10023	DECAL, FACEPLATE	1	1
0005	WS07X10004	HOSE, DRAIN, 20 FT.	1	1
0006	WS31X10044	FILTER SCREEN		1
0007	WS14X10002	DISTRIBUTOR, TOP	1	1
0008	WS14X10001	DISTRIBUTOR, BOTTOM	1	1
0009	WS01X10009	RESIN, 1-CU. FT.	1	1
0010	WS32X10011	TANK, RESIN 9X40	1	
0010	WS32X10018	TANK, RESIN 10X40		1
0011	WS31X10052	COVER, TOP	1	1
0012	WS34X10021	FACEPLATE	1	1
0013	WS21X10054	CONTROL	1	1
0016	WS26X10013	TRANSFORMER WITH POWER CORD	1	1
0017	WS31X10053	COVER, SALT HOLE, WITH LABELS	1	1
0019	WS33X10010	RIM	1	1
0020	WS31X10024	COVER, BRINEWELL W/ DECAL	1	1
0021	WS02X10009	NUT	1	1
0022	WS32X10017	BRINEWELL W/ DECAL	1	1
0023	WS02X10027	SCREW	1	1
0024	WS32X10032	TANK, BRINE	1	1
0025	WS18X10003	CLAMP, HOSE	2	2
0026	WS22X10016	ADAPTER, HOSE	1	1
0027	WS22X10017	GROMMET	1	1
0028	WS35X10035	GROUND CLAMP KIT	1	1
0029	WS15X10077	BRINE VALVE ASM.	1	1
0030	WS35X10063	FLOAT, STEM & GUIDE	1	1
0031	WS03X10006	CLIP	1	1
0032	WS15X10006	VALVE BODY, BRINE	1	1
0033	WS03X10007	CLIP	1	1
0034	WS03X10008	SCREEN	1	1
0035	WS07X10030	TUBING ASM.	1	1
0036	WS07X10015	BRINE TUBE ASM.	1	1
0038	WS02X10029	SPACER	1	1
0055	WS28X10003	RETAINER CLAMP	2	2
0056	WS28X10007	CLAMP	2	2
0101	WS02X10023	SCREW	2	2
0103	WS21X10003	SWITCH	1	1
0105	WS02X10024	SCREW	8	8
0106	WS31X10013	COVER, VALVE	1	1
0107	WS03X10034	WAVE SPRING	1	1
0108	WS26X10010	ROTOR & DISC ASM.	1	1
0109	WS19X10004	CAP, VENTURI	1	1
0110	WS03X10011	SEAL, O-RING	1	1

Parts List.

			G	G
			X	X
			S	S
			H	H
			4	4
			0	5
			V	V
REF. NO.	GE PART NO.	PART DESCRIPTION	(00)	(00)
0111	WS19X10005	SUPPORT SCREEN	1	1
0112	WS03X10013	SCREEN	1	1
0113	WS22X10034	FLOW PLUG, .10 GPM	1	
0113	WS22X10036	FLOW PLUG, .15 GPM		1
0114	WS08X10006	GASKET, NOZZLE/VENT	1	1
0115	WS03X10015	CONE SCREEN	1	1
0116	WS22X10021	PLUG, FILL FLOW .30 GPM	1	1
0117	WS03X10017	FERRULE NUT	1	1
0118	WS15X10034	NOZZLE/VENTURI BODY	1	1
0119	WS03X10018	RETAINER	1	1
0120	WS03X10019	SEAL, O-RING 1/4" X 3/8"	2	2
0121	WS15X10025	BODY, VALVE	1	1
0122	WS03X10020	SPRING	1	1
0123	WS22X10022	PLUG, DRAIN SEAL	1	1
0124	WS15X10027	NOZZLE/VENTURI ASM.	1	
0124	WS15X10036	NOZZLE/VENTURI ASM.		1
0125	WS03X10043	WAVE SPRING BEARING	1	1
0130	WS35X10020	SEAL KIT, 1"	1	1
0132	WS22X10058	ADAPTER, DRAIN HOSE	1	1
0133	WS03X10025	SEAL, O-RING	1	1
0135	WS03X10033	CLIP	1	1
0136	WS26X10008	CAM & GEAR	1	1
0137	WS26X10009	BEARING	1	1
0138	WS26X10023	PLATE, MOTOR 1"	1	1
0139	WS02X10028	SCREW, #6-20 X 3/8"	3	3
0140	WS26X10021	MOTOR ASM.	1	1
0141	WS02X10058	SCREW, #8-32 X 1"	2	2
0143	WS60X10011	ADAPTER-NPT THREAD-1" VALVE	2	2
0145	WS60X10008	CLIP	4	4
0146	WS28X10018	HARNESS WIRE, SENSOR ASSY., 1"	1	1
0147	WS19X10008	TURBINE SUPPORT	1	1
0148	WS19X10009	TURBINE	1	1
0151	WS15X10026	BYPASS ASM.	1	1
0152	WS03X10072	SEAL, O-RING	4	4
0998	WS35X10049	INSTALLATION KIT	1	1
0999	49-50283	OWNER'S MANUAL	1	1

GE Water Softening System Warranty.*(For Customers in the U.S.)*



All warranty service provided by our Factory Service Centers or an authorized technician. For service, call toll free 1.866.777.7627. Please have serial number and model number available when calling for service.

For The Period Of:	We Will Replace:
One Year From the date of the original purchase	Any part of the Water Softening System which fails due to defect in materials or workmanship. During this limited one-year warranty , GE will also provide, free of charge , all labor and related service to replace the defective part.
Three Years From the date of the original purchase	The electronic monitor , if it fails due to a defect in materials or workmanship. During this three-year limited warranty , you will be responsible for any labor or related service cost.
Ten Years From the date of the original purchase	A replacement brine tank or resin tank , if either fails due to defect in materials or workmanship. During this ten-year limited warranty , you will be responsible for any labor or related service costs.

What Is Not Covered:

- Service trips to your home to teach you how to use the product.
- Improper installation, delivery or maintenance.
- Failure of the product if it is abused, misused, altered, used commercially or used for other than the intended purpose.
- Use of this product where water is microbiologically unsafe or of unknown quality, without adequate disinfection before or after the system.
- Replacement of house fuses or resetting of circuit breakers.
- Damage to the product caused by accident, fire, floods or acts of God.
- Incidental or consequential damage caused by possible defects with this appliance, its installation or repair.
- Product not accessible to provide required service.

EXCLUSION OF IMPLIED WARRANTIES—Your sole and exclusive remedy is product repair as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to one year or the shortest period allowed by law.

This warranty is extended to the original purchaser and any succeeding owner for products purchased for home use within the USA. If the product is located in an area where service by a GE Authorized Servicer is not available, you may be responsible for a trip charge or you may be required to bring the product to an Authorized GE Service location for service. In Alaska, the warranty excludes the cost of shipping or service calls to your home.

Some states do not allow the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To know what your legal rights are, consult your local or state consumer affairs office or your state's Attorney General.

Warrantor: General Electric Company, Louisville, KY 40225

GE Water Softening System Warranty.*(For Customers in Canada)*



All warranty service provided by our Factory Service Centers or an authorized technician. For service, call toll free 1.866.777.7627. Please have serial number and model number available when calling for service.

For The Period Of:	We Will Replace:
One Year <i>From the date of the original purchase</i>	Any part of the Water Softening System which fails due to defect in materials or workmanship. During this limited one-year warranty , GE will also provide, free of charge , all labor and related service to replace the defective part.
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- Replacement of house fuses or resetting of circuit breakers.
- Damage to the product caused by accident, fire, floods or acts of God.
- Incidental or consequential damage caused by possible defects with this appliance, its installation or repair.
- Product not accessible to provide required service.

EXCLUSION OF IMPLIED WARRANTIES—Your sole and exclusive remedy is product repair as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to one year or the shortest period allowed by law.

This warranty is extended to the original purchaser and any succeeding owner for products purchased for home use within Canada. In-home warranty service will be provided in areas where it is available and deemed reasonable by Mabe to provide.

WARRANTOR IS NOT RESPONSIBLE FOR CONSEQUENTIAL DAMAGES.

Warrantor: MABE CANADA INC.

California certificate

FOR IOWA USE ONLY

All sales in Iowa require the following signature before consummation of sale. These signatures must be retained by seller/renter for 2 years minimum.

Buyer/Renter Date

Seller Date

Seller's Address

Seller's Phone No.

Model GXSH40V or Model GXSH45V

