

# OWNERS MANUAL

How to maintain and operate your  
EcoWater digital demand water system

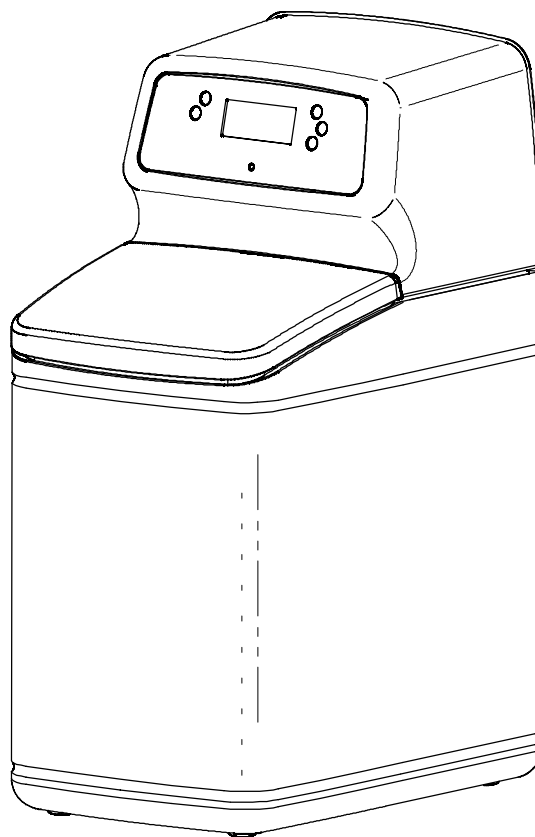


EcoWater Digital Demand

**MODELS**

**ESM11CE**  
**ESM15CE**

Version 02-2005



The parts required to assemble and install the unit are included in a parts bag.

Thoroughly check the unit for possible shipping damage and parts loss. Also inspect and note any damage to the shipping carton.

Remove and discard (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.

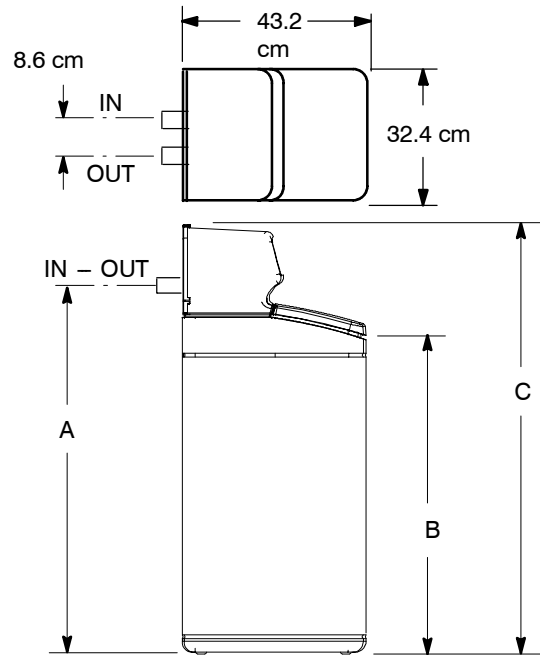
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**FOR FUTURE REFERENCE, ENTER THE FOLLOWING INFORMATION**

MODEL NO. ① ② \_\_\_\_\_ SERIAL NO. ① ② \_\_\_\_\_  
 CODE ② \_\_\_\_\_ INSTALLATION DATE \_\_\_\_\_  
 WATER HARDNESS \_\_\_\_\_ IRON CONTENT \_\_\_\_\_ PPM

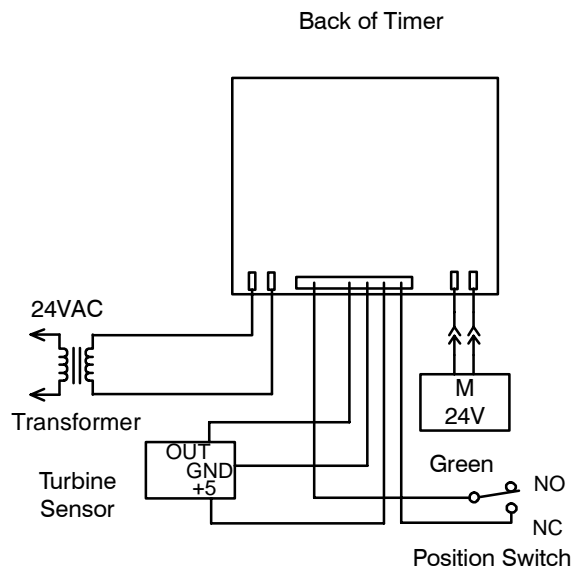
① on registration decal

② on shipping carton



MODEL	NOMINAL RESIN TANK SIZE	A	B	C
ESM11CE	8" DIA. X 19"	54 cm	41.4 cm	66.8 cm
ESM15CE	8" DIA. X 25"	70 cm	58.4 cm	83.8 cm

### Wiring Schematic



MODEL CODE		ESM11CE	ESM15CE
MODEL CODE		E11	E15
FILL CYCLE	① TIME	1.0–4.0	1.7–9.3
	② FLOW	0.3 gpm (1.1 l/min)	0.3 gpm (1.1 l/min)
BRINE CYCLE	③ TIME	64–67	60–77
	④ FLOW	0.15 gpm (0.57 l/min)	0.15 gpm (0.57 l/min)
BRINE RINSE CYCLE	④ FLOW	0.10 gpm (0.39 l/min)	0.10 gpm (0.39 l/min)
BACKWASH CYCLE	⑤ TIME	3	3
	④ MAX. FLOW	2.2 gpm (8.33 l/min)	2.2 gpm (8.33 l/min)
FAST RINSE CYCLE	⑤ TIME	1	1
	④ MAX. FLOW	2.2 gpm (8.33 l/min)	2.2 gpm (8.33 l/min)

① minutes, varies with capacity operating level

② gallon or liters per minute flow to brine tank

③ includes brine rinse cycle minutes

④ gallon or liters per minute flow to drain

⑤ factory set default minutes

Values listed are certified by WQA	ESM11CE	ESM15CE
Rated Softening Capacity °Fm <sup>3</sup> @ kg of Salt	30 @ 0.4 49 @ 0.9 65 @ 1.6	48 @ 0.7 80 @ 1.4 113 @ 3.8
Rated Service Flow Rate (l/ min)	15	23
Amount of High Capacity Resin (Liters)	10.5	15
Pressure Drop at Rated Service Flow (Bar)	0.3	0.6
Peak flow @ 1 bar pressure drop (l/min)	32.8	31.7
Water Supply Max. Clear Water Iron (ppm)	0	4
Water Pressure Limits (min./max. bar)	1.4 to 8.6	1.4 to 8.6
Min. – Max. Water Temperature (°C)	4–49	4–49
Min. Water Supply Flow Rate for a regeneration (litres/min)	11	11
Max. Drain Flow Rate (litres/min)	8.33	8.33
Valve connections	3/4"	3/4"
Electrical rating	24 VAC / 50 Hz	24 VAC / 50 Hz

	ESM11CE	ESM15CE
Salt Storage Capacities	25	50

Follow the installation instructions carefully. **(Failure to install the unit properly voids the warranty.)**

Before you begin installation, read this entire manual. Then, obtain all the materials and tools you will need to make the installation.

**Check local plumbing and electrical codes.** The installation must conform to them.

**Use only lead-free solder and flux** for all sweat-solder connections, as required by local codes.

Use care when handling the unit. Do not turn upside down, drop, or set on sharp protrusions.

Do not locate the unit where freezing temperatures occur. Do not attempt to treat water over 49°C. **Freezing, or hot water damage voids the warranty.**

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

The unit requires a minimum water flow of 11 litres per minute at the inlet. **Maximum allowable inlet water pressure is 8.6 bar.** If daytime pressure is over 5.5 bar, nighttime pressure may exceed the maximum. Use a pressure reducing valve if necessary. (Adding a pressure reducing valve may reduce the flow.)

**The unit works on 24 volt-50 hz electrical power only.** Be sure to use the included transformer.

This system is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

## Water Conditioning

Water conditioning is the treatment of four general conditions. These are:

1. HARDNESS
2. IRON
3. ACIDITY
4. SEDIMENTS

1. **HARDNESS** is a term to describe the presence of calcium and magnesium minerals in water. A chemical analysis accurately measures the amount of minerals in grain weight. For example, one gallon<sup>2</sup> of water with 5 grains per gallon (gpg)<sup>1</sup> hardness has dissolved minerals, that if solidified, about equals the size of one ordinary aspirin tablet. One gallon<sup>2</sup> of water, 25 gpg<sup>1</sup> hard, has a mineral content equal in size to 5 aspirin tablets. Water hardness varies greatly across the country. It generally contains from 3 to 100 gpg<sup>1</sup>.

Hard water affects living in general. Hardness minerals combine with soap to make a soap curd. The curd greatly reduces the cleaning action of soap. Precipitated hardness minerals form a crust on cooking utensils, appliances, and plumbing fixtures. Even the tastes of foods are affected. A water softener removes the hardness minerals to eliminate these problems, and others.

<sup>1</sup> 1 gpg = 0.959 °d = 1.71 °F

<sup>2</sup> 1 gallon = 3.78 litres.

**Sodium Information:** Water softeners using sodium chloride (salt) for regeneration add sodium to the water. Persons on sodium restricted diets should consider the added sodium as part of their overall intake.

2. **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:

- ① Ferrous (clear water),
- ② Ferric (red water),
- ③ Bacterial and organically bound iron,
- ④ Colloidal and inorganically bound iron (ferrous or ferric).

\*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.

① Ferrous (clear water) iron is soluble and dissolves in water. It 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. **This unit will remove moderate amounts of this type of iron (see specifications).**

**When using the softener to remove Ferrous (clear water) iron, add 5 grains<sup>1</sup> to the hardness setting for every 1 ppm of Ferrous (clear water) iron. <sup>1</sup> 1 gpg = 0.959 °d = 1.71 °F**

② Ferric (red water), and ③ Bacterial and organically bound irons are insoluble. 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. **This unit will not remove ferric or bacterial iron.**

④ Colloidal and inorganically bound iron is of ferric or ferrous form that will not filter or exchange out of water. In some instances, treatment may improve colloidal iron water, but always CONSULT A QUALIFIED WATER CHEMISTRY LAB before attempting to treat it. 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.

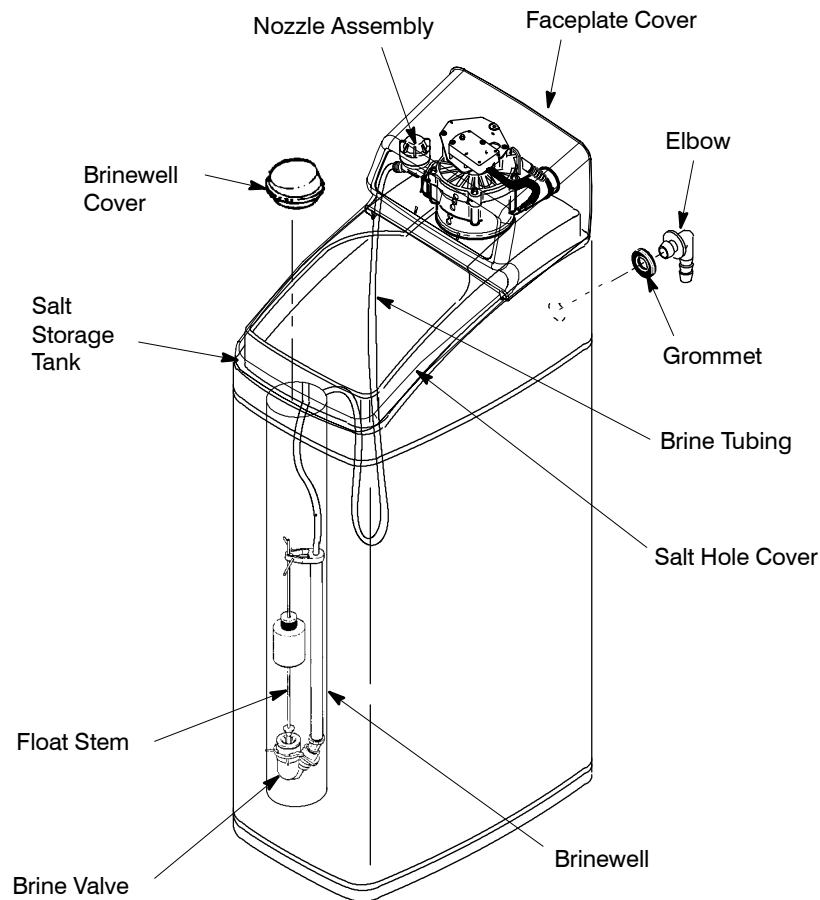
Iron in water causes stains on clothing and plumbing fixtures. It negatively affects the taste of food, drinking water, and other beverages. **This unit will not remove colloidal iron.**

3. **ACIDITY** or acid water is caused by carbon dioxide, hydrogen sulfide, and sometimes industrial wastes. It is corrosive to plumbing, plumbing fixtures, water heaters, and other water using appliances. It can also damage and cause premature failure of seals, diaphragms, etc., in water handling equipment.

A chemical analysis is needed to measure the degree of acidity in water. This is called the pH of water. Water testing below 6.9 pH is acidic. The lower the pH reading, the greater the acidity. A neutralizer filter or a chemical feed pump are usually recommended to treat acid water.

4. **SEDIMENT** is fine, foreign material particles suspended in water. This material is most often clay or silt. Extreme amounts of sediment may give the water a cloudy appearance. **A sediment filter installed ahead of the water softener normally corrects this situation.**

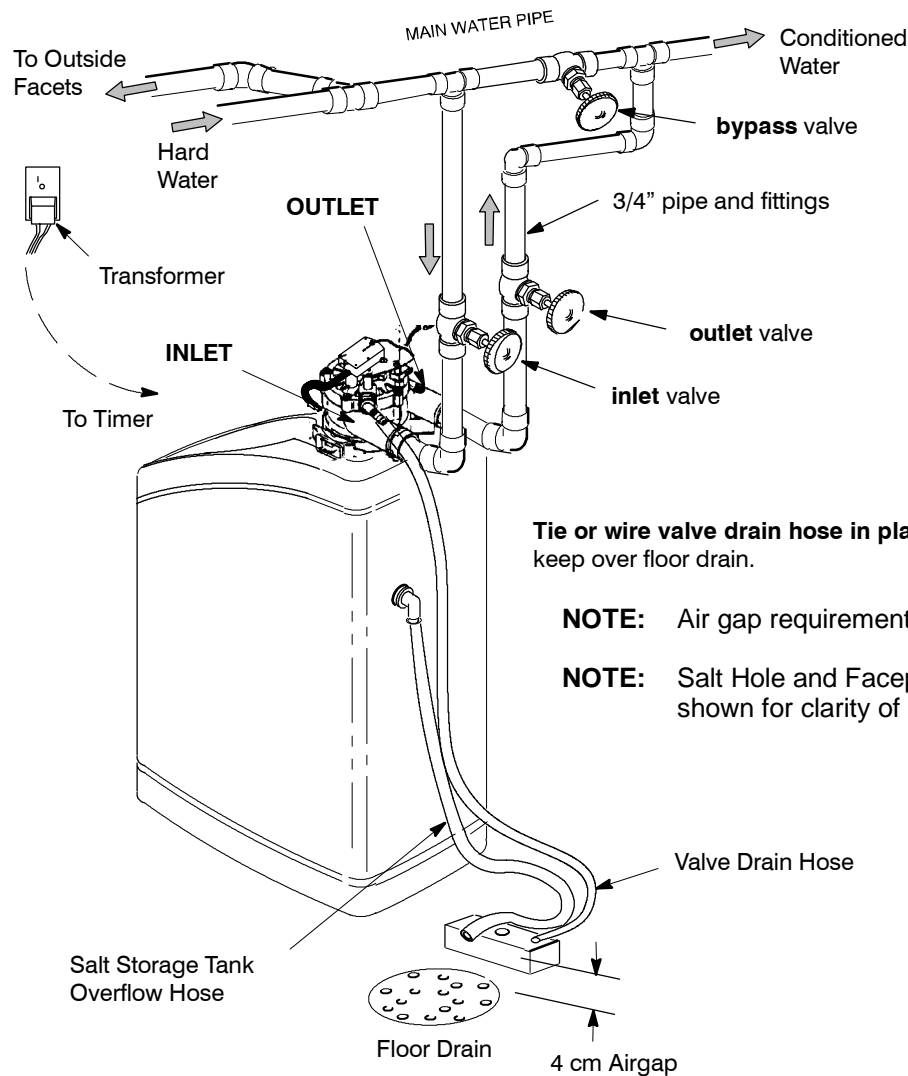
1. Water softeners are factory assembled. During installation, remove the Salt Hole Cover. Set aside to prevent damage. Check the brinewell to be sure it is secured and vertical (see Figure 1). Slide Faceplate Cover forward to expose back valve assembly.
2. Lift the brine valve out of the brinewell. Be sure the float stem is parallel to stand tube so seals will seat properly during operation. Replace the brine valve in the brinewell bottom and install the Brinewell Cover.
3. Install the brine tank overflow grommet and elbow in the 2 cm diameter hole in the back of the salt storage tank sidewall.



**Figure 1**

**Inlet - Outlet Plumbing Options**

- **ALWAYS INSTALL** either a single bypass valve (not included) or a 3 valve bypass system (not included). Bypass valves allow you to turn off water to the softener for repairs if needed, but still have water in house pipes.
- Use 3/4" (minimum) pipe and fittings.
- Use sweat copper... or, threaded pipe... or, PVC plastic pipe... or, other approved plumbing.

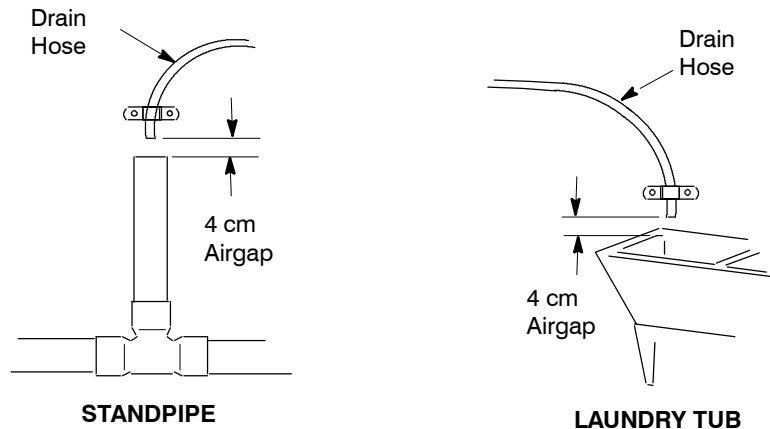


**Figure 2**



**Other Requirements**

- A 220V-50Hz, grounded electrical outlet (continuously “live”) is needed within 2 meters of the unit.
- A drain is needed for regeneration discharge water. A floor drain, close to the unit, is preferred. A laundry tub, standpipe, etc., are other drain options.



**Figure 3**

**Tools and Materials You May Need**

- Common Screwdriver
- Pliers
- Tape Measure
- Pipe and fittings as required

**Soldered Copper**

- Tubing cutter
- Propane torch
- Misc. fittings
- LEAD-FREE solder and flux
- Emery cloth, sandpaper or steel wool

**Threaded**

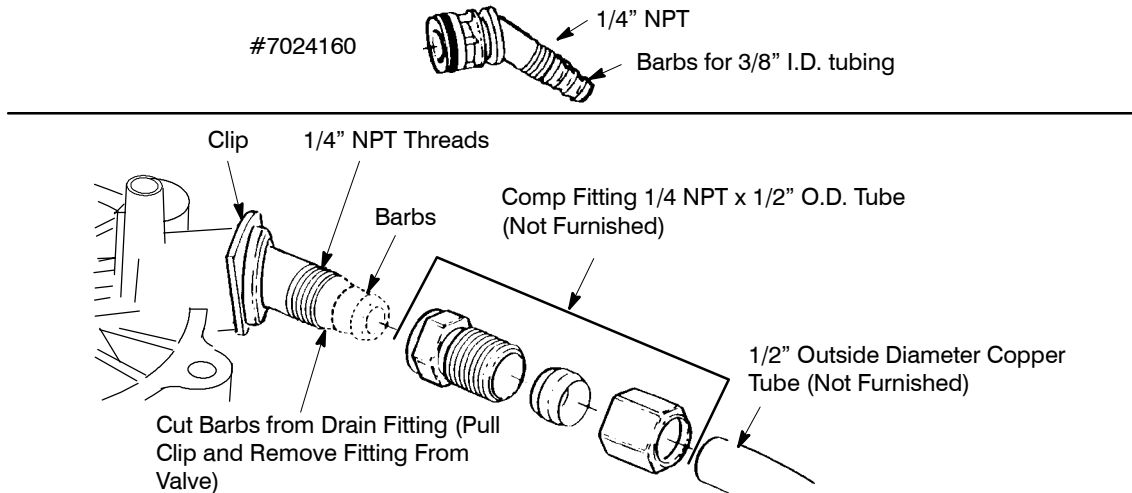
- Pipe cutter or hacksaw
- Threading tool
- Pipe joint compound
- Misc. fittings

**CPVC Plastic**

- Pipe cutter
- Hacksaw
- Adjustable wrench
- Solvent cement
- Primer
- Misc. fittings

**NOTE:** The salt storage tank drain elbow accepts either 1/2” or 3/8” I. D. hose.

**VALVE DRAIN OPTIONS:** Flexible drain hose is not allowed in all localities (check your plumbing codes). For a rigid valve drain run, cut the barbed section off the drain fitting for access to the 1/4” pipe threads. Then plumb a rigid drain as needed (see Figure 4).

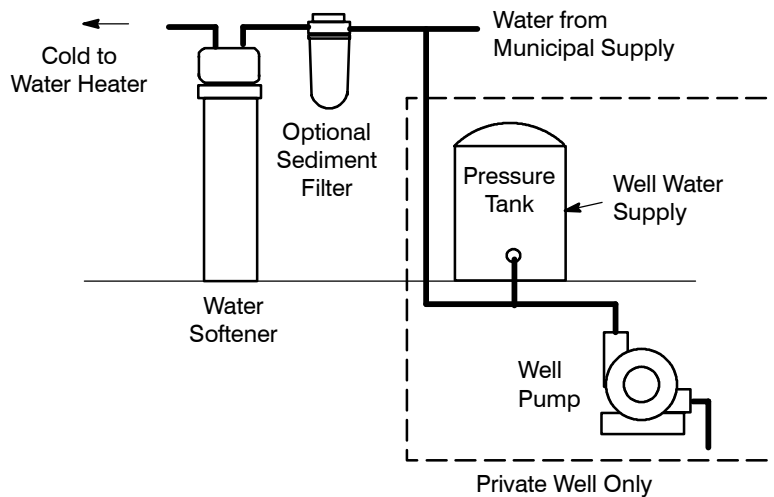


**Figure 4**

**Select Installation Location**

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

- To condition all water in the home, install the unit close to the water supply inlet, and before 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 water. Use a floor drain, laundry tub, sump, standpipe, etc., or other options (check your local codes).
- **The unit works on 24 volts only.** A transformer is required to reduce 220V-50 Hz household electrical power. Provide an approved, grounded outlet within 2 meters of the unit.
- **Always install the unit BEFORE the water heater** and after all other installed water conditioning equipment (see Figure 5 below).

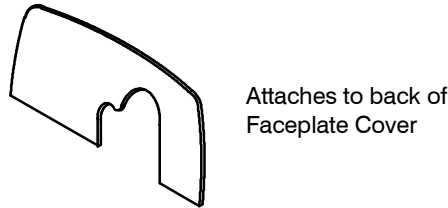


**Figure 5**

**Optional Weather Protection**

If installing the unit in an outside location, be sure to provide protection from the elements, contamination, vandalism, and direct sunlight.

An optional Weather Cover is available for outdoor installations by contacting your local dealer.



**Figure 6**

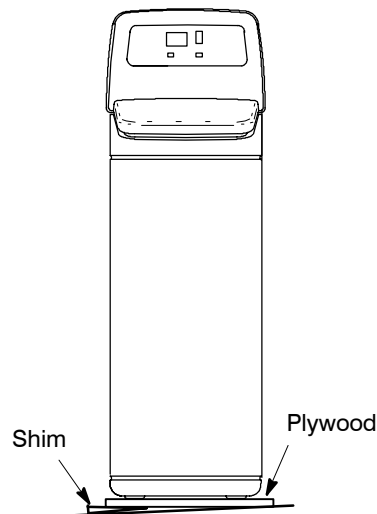
**Step 1. Turn Off Water Supply**

1. Close the main water supply valve, near the well pump or water meter.
2. Shut off the electric or fuel supply to the water heater.
3. Open all faucets to drain all water from the house pipes.

**Step 2. Move the Unit into Place**

Move the unit into installation position. Set it on a solid, smooth and level surface. If needed, place the unit on a section of plywood, a minimum of 2 cm thick. Then, shim under the plywood to level the unit, see Figure 7.

**CAUTION:** *DO NOT PLACE SHIMS DIRECTLY UNDER THE SALT STORAGE TANK.* The weight of the tank, when full of water and salt, may cause the tank to fracture at the shim.



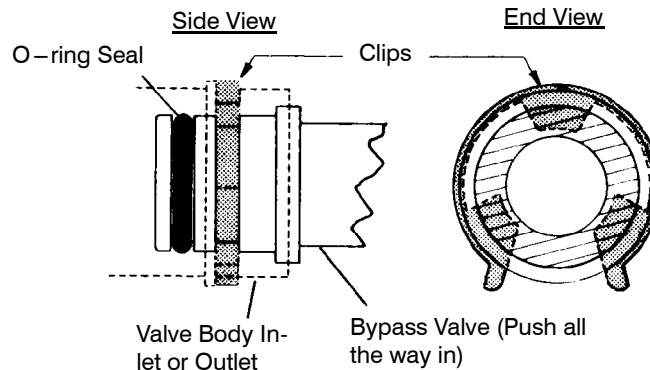
**Figure 7**

Visually check and remove any foreign materials from the valve inlet and outlet ports.

If not already done, put a light coating of silicone grease or Vaseline on the bypass valve o-rings.

Push the bypass valve into the softener valve as far as it will go. **Snap the two large holding clips into place, from the top down as shown in Figure 8.**

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



**Figure 8**

### Step 3. Assemble Inlet and Outlet Plumbing

Measure, cut, and loosely assemble pipe and fittings from the main water pipe to the inlet and outlet ports of the valve.

Be sure **hard water** supply pipe **goes to** the valve **inlet side**.

**NOTE:** Inlet and outlet are marked on the valve. Trace the water flow direction to be sure.

**CAUTION:** Be sure to fit, align and support all plumbing to prevent putting stress on the softener valve inlet and outlet. Undo stress may cause damage to the valve.

### Step 4. Connect Inlet and Outlet Plumbing

Complete the inlet and outlet plumbing as applicable, below.

#### 1. SOLDERED COPPER

- a. Thoroughly clean and flux all joints.
- b. Make all solder connections. Be sure to keep fittings fully together, and pipes square and straight. **DO NOT solder with installation tubes attached to bypass valve.** Soldering heat will damage the valve.

#### 2. THREADED PIPE

- a. Apply pipe joint compound to all outside pipe threads.
- b. Tighten all threaded joints.
- c. If soldering to the inlet and outlet tubes, observe step 1 above.

#### 3. CPVC PLASTIC PIPE

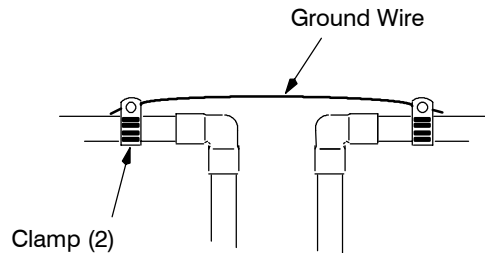
- a. Clean, prime and cement all joints, following the manufacturer's instructions supplied with the plastic pipe and fittings.
- b. If soldering to the inlet and outlet tubes, observe Soldered Copper step 1 above.

**Step 5. Cold Water Pipe Grounding**

**WARNING:** The house cold water pipe (metal only) is often used as a ground for the house electrical system. The 3-valve bypass type of installation, shown in Figure 2, will maintain ground continuity. If you use a plastic bypass valve at the unit, continuity is broken. To restore the ground, do the following.

Install a #4 copper wire across the removed section of main water pipe, securely clamping at both ends, see Figure 9 (parts not included).

**NOTE:** Check local plumbing and electrical codes for proper installation of the ground wire.



**Figure 9**

**Step 6. Install Valve Drain Hose**

**NOTE:** See valve drain options on page 9.

1. Connect a length of 3/8" or 7/16" I.D. hose (check codes) to the valve drain elbow, on the controller, see Figure 4. Use a hose clamp to hold the hose in place. Route the hose out through the notch in the Faceplate Cover.
2. Run the hose to the floor drain, and as typically shown in Figure 2, tie or wire the end to a brick or other heavy object. This will prevent "whipping" during regenerations. **Be sure to provide a 4 cm minimum air gap, to prevent possible sewer water backup.**

**NOTE:** In addition to a floor drain, you can use a laundry tub, or standpipe as a good drain point for this hose. Avoid long drain hose runs, or elevating the hose more than 2.5 meters above the floor.

**Step 7. Install Salt Storage Tank Overflow Hose**

1. Connect a length of 3/8" I. D. hose to the salt storage tank overflow elbow and secure in place with a hose clamp (see Figure 2).
2. Run 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.

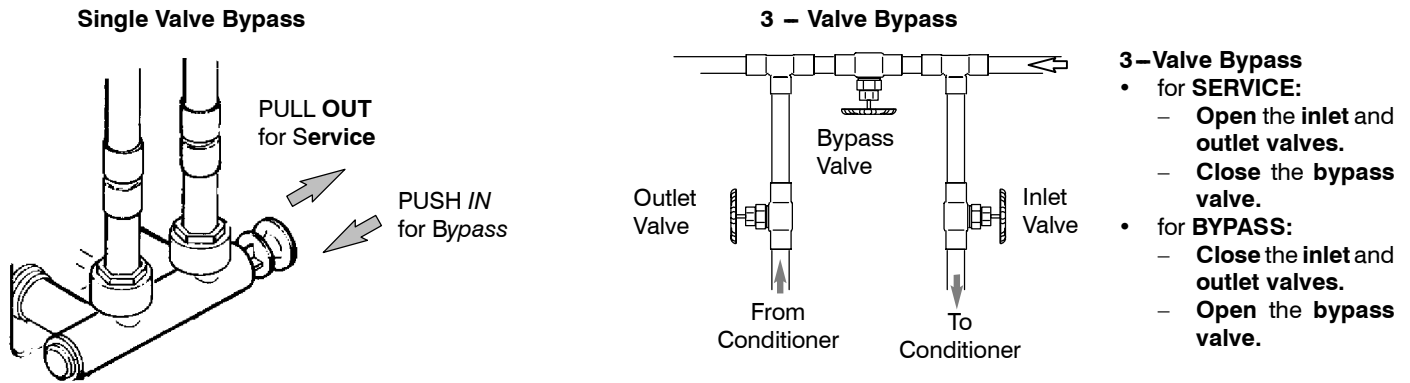
**NOTE:** Route the tubing neatly out of the way and cut it to the desired length.

**DO NOT** connect the valve drain tubing from step 6 to the salt storage tank over flow hose.

**Step 8. Pressure Testing for Leaks**

To prevent excessive air pressure in the unit and plumbing system, do the following steps **EXACTLY** in order.

1. Fully open two or more *softened* cold water faucets nearby the unit.
2. Place the bypass valve(s) in “bypass” position. See Figure 10.



**Figure 10**

3. Fully open the main water supply valve. Observe steady flow from the opened faucets, with no air bubbles.
4. **EXACTLY** as follows, place bypass valve(s) in “service”.
  - a. **SINGLE BYPASS VALVE**: **SLOWLY**, move the valve stem toward “service”, pausing several times to allow the unit to pressurize slowly.
  - b. **3-VALVE BYPASS**: Fully close the bypass valve and open the outlet valve. **SLOWLY**, open the inlet valve, pausing several times to allow the unit to pressurize slowly.
5. **After about three minutes, open a hot water faucet** for about one minute, or until all air is expelled, then close.
6. **Close all cold water faucets** and check your plumbing work for leaks.

**Step 9. Add Water and Salt to the Salt Storage Tank**

1. Using a container, add about 4 litres of clean water into the salt storage tank.
2. Fill the salt storage tank with salt.

**NOTE:** See page 25 for additional information on salt.

**Step 10. Sanitizing the Softener**

Care is taken at the factory to keep your unit clean and sanitary. Materials used to make the unit will not infect or contaminate your water supply, and will not cause bacteria to form or grow. However, during shipping, storage, installing and operating, bacteria could get into the unit. For this reason, sanitizing as follows is suggested <sup>1</sup> when installing.

<sup>1</sup> Recommended by the Water Quality Association. On some water supplies, the unit may need periodic disinfecting.

1. Remove the Brinewell Cover and pour about 45 ml. (2 to 3 tablespoons) of common household bleach into the softener brinewell, Figure 1, page 7. Clorox, Linco, BoPeep, White Sail, Eagle, etc. are brand names of bleach readily available. **Replace the Brinewell Cover.**
2. The final step in the sanitizing procedure is done as you complete the following steps, including timer programming on page 16.

3. This process will flush out all sanitizing solution and condition the unit.

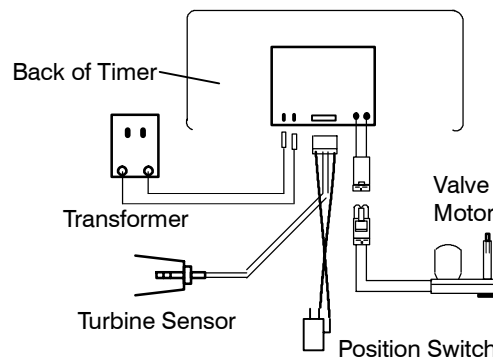
**Step 11. Connect Transformer**

1. Connect the power cable leads to the two terminals on the transformer.

**NOTE:** Check to be sure all leadwire connectors are secure on the back of the timer.

**CAUTION:** Be sure all wiring is away from the valve gear and motor area, which rotates during regenerations.

2. Plug the transformer into a continuously “live”, grounded house electrical outlet, approved by local codes. **THE UNIT WORKS ON 24V ONLY. DO NOT CONNECT WITHOUT THE TRANSFORMER.**



**Figure 11**

**Step 12. Start a Recharge**

Press the **RECHARGE** button and **hold** for three seconds until Recharge Now begins to flash in the timer display, starting a recharge. This recharge draws the sanitizing bleach into and through the unit. Any air remaining in the unit is purged to the drain.

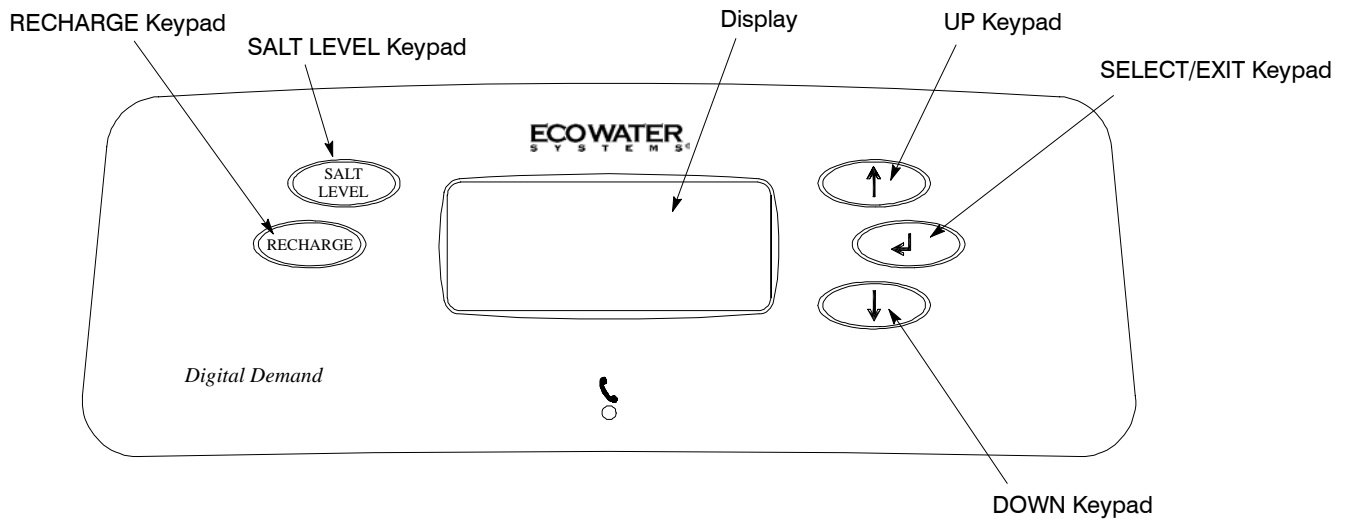
**Step 13. Restart the Water Heater**

Turn on the electricity or fuel supply to the water heater, and light the pilot, if applicable.

**NOTE:** The water heater is filled with HARD water and, as hot water is used, it refills with conditioned water. In a few days, the hot water will be fully conditioned. To have fully conditioned hot water immediately, wait until the recharge (Step 12) is over. Then, drain the water heater until water runs cold.

**Step 14. Install the Salt Hole and Faceplate Cover(s).**

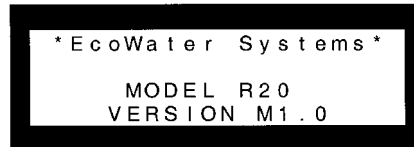
Complete the Programming Steps on pages 16 - 17.



**Figure 12**

**THE FOLLOWING STEPS ARE FOR FIRST TIME SET UP ONLY.**

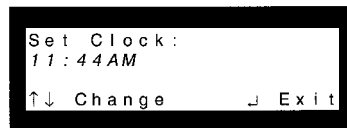
When the transformer is plugged in, a “beep” will sound, followed by the factory set model code display and software version for a few seconds. Then, 12:00 PM present time display.



**1. MODEL CODE:** The controller is factory set to the model code, which provides the shortest recharge times and greatest water savings. Verify the correct model code or set if needed.

Note: To reset the model code, see page 24.

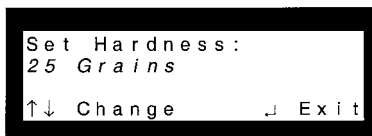
**2. SET THE CLOCK:** Use the (↑) or (↓) keypads to set the present time of day. Press (↑) to move the display ahead; press (↓) to move the time backward. NOTE: Each press of a keypad changes the time by 1 minute. Holding a keypad in changes the time by 32 minutes each second. Pressing the SELECT/EXIT (←) keypad will set the clock.



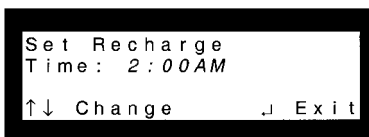


**3. SET WATER HARDNESS:** The controller is factory set to 430 ppm (25 gpg)<sup>1</sup>. Set the ppm(gpg)<sup>1</sup> hardness of your water supply. Water hardness is determined by water analysis, or call your local water department. Use the (↑) keypad to advance the number; use the (↓) keypad to reduce the number. Each press of a keypad changes the display by 10 (or in gpg mode by 1). Hold down the keypad to scroll. After 400 ppm (25 gpg), scrolling will be at a faster rate. **NOTE:** To compensate for iron in the water, add 86 ppm(5gpg) to the hardness number for each 1 ppm of iron. Pressing the SELECT/EXIT (↵) keypad will set the hardness level. **NOTE:** If using potassium chloride (KCl) instead of standard sodium chloride (NaCl) water softener salt, hardness setting must be increased by 25%.

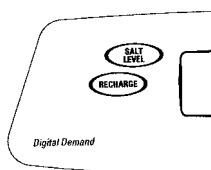
11 gpg = 0.595 °d = 1.71 °F = 17.1 PPM



**4. SET RECHARGE (REGENERATION) TIME:** The controller is factory set to 2:00 AM. At this setting, the EcoWater conditioner begins recharge, or regeneration, ending no later than 5:30 AM. This is a good time in most households because water is not being used. If **hot** water is used while the unit is regenerating, the water heater will refill with *hard* water. To select a different recharge start time, use the (↑) or (↓) keypad. Pressing the SELECT/EXIT (↵) keypad will set the recharge time.



**5.** Press the RECHARGE keypad to get to the recharge menu. Move the cursor to Start Recharge Now and press the SELECT/EXIT (↵), starting a recharge. This recharge **draws the bleach** (see step 12, page 15) through the EcoWater conditioner **to sanitize** it and to purge any air remaining in the resin tank assembly.



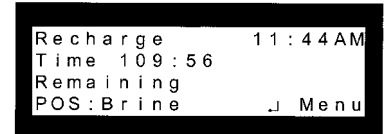
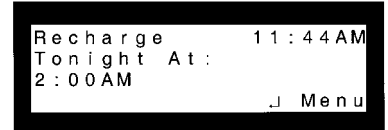
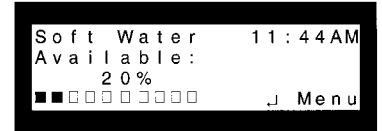
**6. RESTART THE WATER HEATER:** Turn on the electric or fuel supply to the water heater, and light the pilot, if applies.  
**NOTE:** The water heater is filled with HARD water and, as hot water is used, it refills with conditioned water. In a few days, the hot water will be fully conditioned. To have fully conditioned hot water immediately, wait until the recharge (step 6) is over. Then, drain the water heater until water runs cold.

**INSTALLATION OF THE DIGITAL DEMAND ECOWATER CONDITIONER IS COMPLETE.**  
 Additional faceplate controller features and options are described on following pages.

**NORMAL SCREEN VIEWS**

The display will scroll through as many as 5 screens at an interval of 4 seconds each.

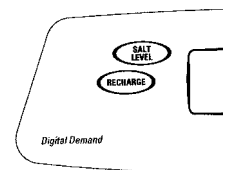
- Soft Water Available will show a percent of available soft water and a bar graph at the bottom of the display.
- Water Flow Rate shows litres per minute or gallons per minute (GPM) flowing through the system at that time and a moving bar graph at the bottom of the screen.
- Recharge Tonight is shown only if the unit will be initiating a recharge that night.
- Salt Level is Low is shown only if the salt level is below the amount set for warning.
- If the unit is in recharge, the display will show remaining time in recharge and current stage of recharge.



**PROGRAM MEMORY:** If electrical power to the EcoWater conditioner goes off, the display is blank, but the faceplate controller keeps the correct time for at least two days. When electrical power comes on again, you have to verify clock time is correct. The MODEL CODE, HARDNESS and RECHARGE TIME never need resetting unless a change is desired.

Even if the controller is incorrect, after a long power outage, the unit works as it should to keep your water conditioned. However, regenerations may occur at the wrong time of day until you reset the controller to the correct time of day. To reset present time, see step 2 on page 16.

**CONTROL FEATURES:** There are two keypads on the left side of the display. **Salt Level** keypad is used when adding salt to the brine tank. The level number on the brinewell corresponds to the number to program into the controller. **Recharge** keypad has two options: Set/Cancel recharge tonight, which either sets or cancels a recharge for that night and Start Recharge Now, which will start a recharge immediately. NOTE: If in a recharge, and the Recharge keypad is pressed, it will advance the valve to the next regeneration cycle.



- **SOUND “BEEPER”**- A “beeper” sounds while pressing keypads for controller setup. One beep signals a change in the faceplate display. Repeated beeps means the controller will not accept a change from the keypad you have pressed, telling you to use another keypad. For example, while setting the hardness number, the beeper sounds repeatedly when the display reaches 1 using the (↓) keypad or 160, for example, using the (↑) keypad.

**SALT LEVEL:** This feature is used when salt is added to the conditioner. Press the salt level keypad and use the (↑) keypad to reset the level of salt as it corresponds to the decal on the brinewell. Press the SELECT/EXIT (↵) to set and return to Normal Screen Views.

**INITIATING EXTRA RECHARGES**

**RECHARGE NOW:** Press the Recharge keypad to go to the recharge menu. Move square cursor down to Start Recharge Now. Press SELECT/EXIT keypad and a recharge begins immediately.

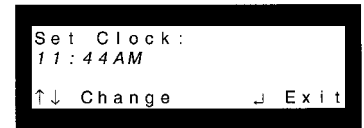
To assure an adequate supply of conditioned water, at times of unusual or *unexpected* high water use demand, use the RECHARGE NOW feature. For example, if you have guests and the Soft Water Available screen is at or below 50%, you could deplete conditioned water capacity before the next recharge is automatically initiated. To be sure this will not happen, use RECHARGE NOW to restore 100% conditioned water capacity.

**RECHARGE TONIGHT:** Press the Recharge keypad to go to the recharge menu. Move cursor down to Set/Cancel Recharge Tonight. Press SELECT/EXIT keypad to return to Normal Screen Views. When this feature is set, the EcoWater conditioner will regenerate at the next programmed start time. This feature is beneficial to assure a sufficient supply of conditioned water for an *expected* heavy water usage the next day.

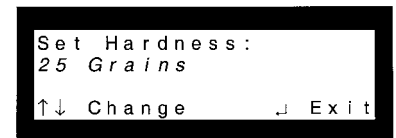
To cancel a recharge when RECHARGE TONIGHT is shown, press the Recharge keypad to go to the recharge menu. Move cursor down to Set/Cancel Recharge Tonight. Press SELECT/EXIT keypad to return to Normal Screen Views.

The following is a description of the options in the Primary Menu. To enter this menu press SELECT/EXIT (↵) keypad and move square cursor (■) to menu choice. To exit to Normal Screen Views move square cursor (■) to EXIT, which appears at either the top or the bottom of this menu. If no keypad has been pressed display will show for 4 minutes before defaulting back to the Normal Screen Views.

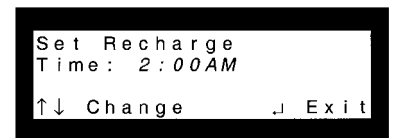
**Set Clock:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set Clock. Again, use the (↑) or (↓) keypads to set the present time of day, being sure AM or PM shows, as applicable. Press (↑) to move the display ahead; press (↓) to move the time backward. NOTE: Each press of a keypad changes the time by 1 minute. Holding a keypad in changes the time by 32 minutes each second. Press the SELECT/EXIT (↵) keypad to set.



**Set Water Hardness:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set Hardness. Press the SELECT/EXIT (↵) keypad once to display a flashing number and ppm (or GRAINS). Set the ppm<sup>1</sup> hardness of your water supply. Use the (↑) keypad to advance the number; use the (↓) keypad to reduce the number. Pressing the SELECT/EXIT (↵) keypad will set the hardness level. **NOTE:** If using potassium chloride (KCl) instead of standard sodium chloride (NaCl) water softener salt, hardness setting must be increased by 25%.  
11gpg = 0.959 °d = 1.71 °F = 17.1 ppm



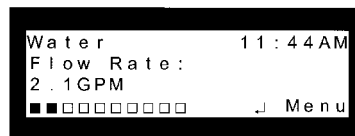
**Set Recharge (Regeneration) Time:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set Recharge Time. Press the SELECT/EXIT (↵) keypad once to display a flashing 2:00 AM. At this setting, the EcoWater conditioner begins recharge, or regeneration, at 2:00 AM., ending no later than 5:30 AM. This is a good time in most households because water is not being used. If **hot** water is used while the unit is regenerating, the water heater will refill with *hard* water. To select a different recharge start time, use the (↑) or (↓) keypad. Pressing the SELECT/EXIT (↵) keypad will set the recharge time.



continued

Primary Menu, continued

**Water Flow Rate:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Water Flow Rate. Press the SELECT/EXIT (↵) keypad. When selected, this screen will show the water flow rate in liters per minute (LPM) or gallons per minute (GPM) with the moving bar graph at the bottom of the display.



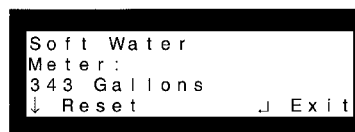
**Water Used Today:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Water Used Today. Press the SELECT/EXIT (↵) keypad and the liters/gallons used since midnight will be shown in the display.



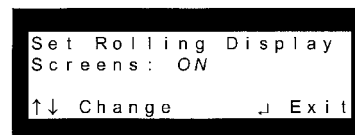
**Average Water Use:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Average Water Use. Press the SELECT/EXIT (↵) keypad and the average liters/gallons use each day will be shown in the display.



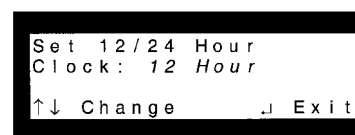
**Soft Water Meter:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Soft Water Meter. Press the SELECT/EXIT (↵) keypad. This screen is similar to a trip odometer in that it will count the number of liters/gallons through the system until it is reset. To reset back to zero press the (↓) keypad.



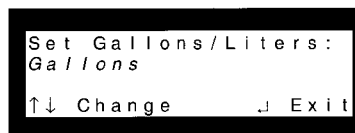
**Set Rolling Screen:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set Rolling Screen. Press the SELECT/EXIT (↵) keypad. This menu will disable the Normal Screen Views from scrolling and will show only the screen that is most current.



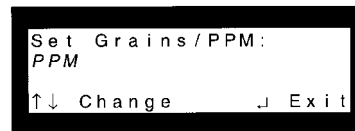
**Set 12/24 Hour Clock:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set 12/24 Hour Clock. Press the SELECT/EXIT (↵) keypad. Moving the (↑) or (↓) keypads will change clock display from 12 hour (AM & PM) or 24 hour format.



**Set Gallons/Liters:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set Gallons/Liters. Press the SELECT/EXIT (↵) keypad. Moving the (↑) or (↓) keypads will change displays to indicate water in gallons or liters.



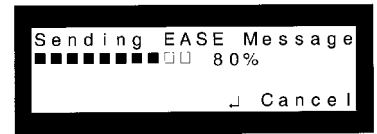
**Set Grains/PPM:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Set Grains/PPM. Press the SELECT/EXIT (↵) keypad. Change between displaying hardness units in grains or parts per million (PPM). **Note:** 1 gpg = 0.959 °d = 1.71 °F = 17.1 ppm



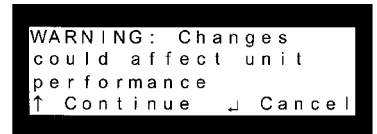
continued

Primary Menu, continued

**Send E.A.S.E. Message:** Enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Send E.A.S.E. Message. Press the SELECT/EXIT (↵) keypad. The unit will automatically start sending E.A.S.E. message and show a progress bar on the display.

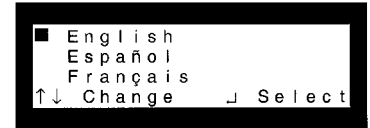


**Advanced/Service:** By entering these menus, a warning screen will first be displayed. Only technicians or knowledgeable users should use these menus.



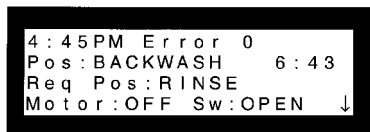
The following is a description of the options in the Advanced/Service Menu. To enter any of the following menus, press SELECT/EXIT (↵) to enter Primary Menu. Press the (↑) or (↓) keypads until cursor is next to Advanced/Service. Press the SELECT/EXIT (↵) keypad to enter this menu. Warning screen will show, press the (↑) keypad to continue. To exit to Normal Screen Views move square cursor (■) to EXIT, which appears at either the top or the bottom of this menu. If no keypad has been pressed display will show for 4 minutes before defaulting back to the Normal Screen Views.

**Set Language:** Press the (↑) or (↓) keypads until cursor is next to Set Language. Language can be changed from English to Spanish or French. **Warning:** If the language has been mistakenly changed, the following steps can be followed to reset.

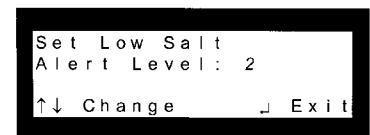


- 1) Unplug transformer, then reapply power to the unit. After 4 seconds, the time of day should show in the upper right corner. If the time of day is not shown, press the SELECT/EXIT (↵) keypad until it is.
- 2) Press the SELECT/EXIT (↵) keypad.
- 3) Press the (↓) keypad until the square cursor (■) is next to one of the following:
  - Advanced/Service (English)
  - Servicio/Avanzando (Spanish)
  - Fonct avanc (French)
- 4) Press the SELECT/EXIT (↵) keypad.
- 5) Press the (↑) keypad.
- 6) Press the (↓) keypad until the square cursor (■) is next to one of the following:
  - Set Language (English)
  - Seleccionar idioma (Spanish)
  - Réglage langue (French)
- 7) Press the SELECT/EXIT (↵) keypad.
- 8) Language can now be selected by pressing the (↑) or (↓) keypads until the cursor is next to correct language.
- 9) Press the SELECT/EXIT (↵) keypad to select language.
- 10) Press the (↑) or (↓) keypads until cursor is next to EXIT.
- 11) Press the SELECT/EXIT (↵) keypad.

**Diagnostics:** Press the (↑) or (↓) keypads until cursor is next to Diagnostics and press SELECT/EXIT (↵). This screen is for viewing only and will show any error codes plus information about the unit. Use the (↑) or (↓) keypads to view all lines of the screen. See page 28.



**Set Low Salt Alert:** Press the (↑) or (↓) keypads until cursor is next to Set Low Salt Alert and press SELECT/EXIT (↵). Use the (↑) or (↓) keypads to change Alert Level. At this level the controller will signal that salt needs to be added to the conditioner brine tank. Press SELECT/EXIT (↵) to exit.



continued

Advanced/Service Menu, continued

**Efficiency Mode:** Press the (↑) or (↓) keypads until cursor is next to Efficiency Mode and press SELECT/EXIT (↵). Default is **Auto Adjusting** which has a minimum efficiency of 3350 grains/lb of salt (= 48.2 °Fm<sup>3</sup>/kg of salt). Use the (↑) or (↓) keypads to change to either **High Capacity** which sets the regeneration salt doses that are increased by a certain % to handle applications requiring 1.5 PPM (parts per million) or less soft water, or to handle special cases such as low leakage requirement or problem water conditions; and **Salt Efficient** which operates at a minimum of 4000 grains/lb of salt (= 57.5 °Fm<sup>3</sup>/kg of salt). Changing this setting will prompt a warning that changes could affect performance. Press SELECT/EXIT (↵) to exit.

```
Set Efficiency Mode:
Auto Adjusting
↑↓ Change      ↵ Exit
```

```
Warning: Changes
could affect unit
performance
↑ Continue    ↵ Cancel
```

**Set Max Days/Recharge:** Press the (↑) or (↓) keypads until cursor is next to Set Max Days/Recharge and press SELECT/EXIT (↵). Default is Automatic. The algorithm will determine when to recharge. Use the (↑) or (↓) keypads to change between 1 and 15 days. With this setting the unit will never go past number of days set for a recharge, but could recharge before. Press SELECT/EXIT (↵) to exit.

```
Set Max Days Between
Recharges: AUTO
↑↓ Change      ↵ Exit
```

**Set 97% Feature:** Press the (↑) or (↓) keypads until cursor is next to Set 97% Feature and press SELECT/EXIT (↵). Default is Off. Use the (↑) keypad to set to On. By setting to On, unit will automatically recharge when 97% capacity has been used, at any time of day. Press SELECT/EXIT (↵) to exit.

```
Set 97%
Feature: OFF
↑↓ Change      ↵ Exit
```

**Set Backwash Time:** Press the (↑) or (↓) keypads until cursor is next to Set Backwash Time and press SELECT/EXIT (↵). Time can be changed from 1 to 30 minutes. See chart on page 4 for recommended backwash time. Press SELECT/EXIT (↵) to exit.

```
Set Backwash
Time: 5 MIN
↑↓ Change      ↵ Exit
```

**Set 2nd Backwash:** Press the (↑) or (↓) keypads until cursor is next to Set 2nd Backwash and press SELECT/EXIT (↵). Default is Off. Use the (↑) keypad to set to On. When set to On, unit will always perform a 2nd backwash and rinse. Press SELECT/EXIT (↵) to exit. Elect this feature if water contains a lot of sediment or iron.

```
Set 2nd
Backwash: OFF
↑↓ Change      ↵ Exit
```

**Set Fast Rinse:** Press the (↑) or (↓) keypads until cursor is next to Set Fast Rinse and press SELECT/EXIT (↵). Time can be changed from 1 to 30 minutes. See chart on page 4 for recommended fast rinse time. Press SELECT/EXIT (↵) to exit.

```
Set Fast Rinse
Time: 15 MIN
↑↓ Change      ↵ Exit
```

continued

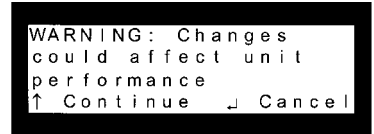
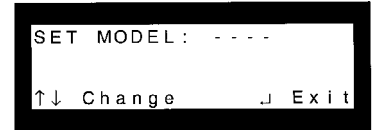
Advanced/Service Menu, continued

**Set Model:** The controller is factory set to the model code, which provides the shortest recharge times and greatest water savings. Do the following to change to this code, if desired.

1) Press the (↑) or (↓) keypads until cursor is next to Set Model and press SELECT/EXIT (↵). Warning screen will display, press (↑) to continue.

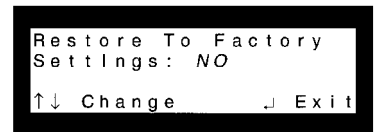
2) Use the (↑) or (↓) keypads to change to new model code. **Be sure to set the correct code, or the EcoWater conditioner will operate on incorrect timing.**

**NOTE:** If this feature is changed, it will delete all information stored in the controller (Hardness, Recharge time will have to be reset. All usage history will be cleared). When you are certain the correct code appears, press SELECT/EXIT (↵) to exit. Warning screen will appear after changing model code, press (↑) to continue. The display will return to the start-up screens.



MODEL NUMBER (on rating decal)	Required Code
ESM11CE	<b>E11</b>
ESM15CE	<b>E15</b>

**Restore To Factory Settings:** Press the (↑) or (↓) keypads until cursor is next to Restore System and press SELECT/EXIT (↵). Default is No. If set to Yes will restore controller to factory settings. **NOTE:** This will affect **ALL** settings, and controller will go through first time set-up screens again. Press SELECT/EXIT (↵) to exit.



**NOTE: ALSO SEE SERVICE INFORMATION, PAGES 28 THROUGH 29.**



**Refilling With Salt**

Remove the Salt Storage Tank Front Cover and check the salt storage level frequently. If the conditioner uses all the salt before you refill it, you will get hard water. Until you have established a refilling routine, check the salt every two or three weeks. ALWAYS refill if less than 1/3 full. **Be sure the Brinewell Cover is on.**

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

**RECOMMENDED SALT:** Cube, pellet, coarse solar, etc., water conditioner salt is recommended. This type of salt is from high purity evaporated crystals, sometimes formed, or compressed, into briquets. It has less than 1% insoluble (will not dissolve in water) impurities.

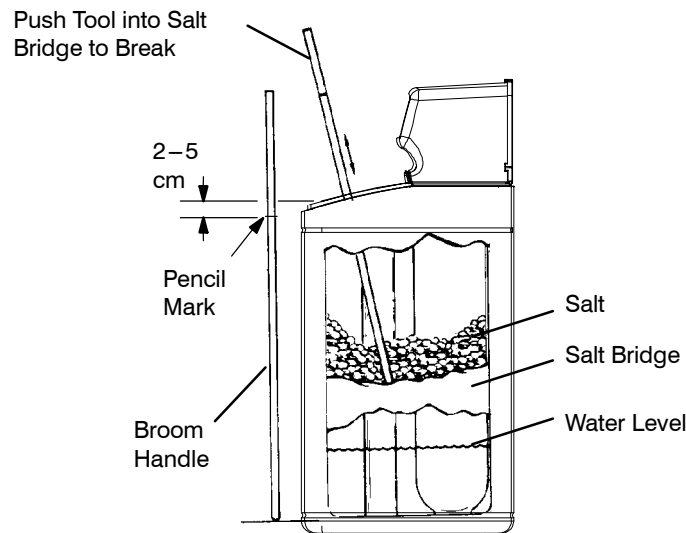
**SALT NOT RECOMMENDED:** Rock salt, high in impurities, block, granulated, table, ice melting, ice cream making salts, etc., are not recommended.

**SALT WITH IRON REMOVING ADDITIVES:** Some salts have an additive to help a water conditioner handle iron in a water supply.

**Breaking A Salt Bridge**

Sometimes, a hard crust or salt bridge forms in the brine tank. 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 the salt. Then, salt will not dissolve in the water to make brine. Without brine, the resin bed does not regenerate and you will have hard water.

If the storage 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. Take a broom handle, or like tool, and push it straight down into the salt. If a hard object is felt, it's most likely a salt bridge. *Carefully* push into the bridge in several places to break it. **DO NOT use any sharp or pointed objects as you may puncture the tank.**



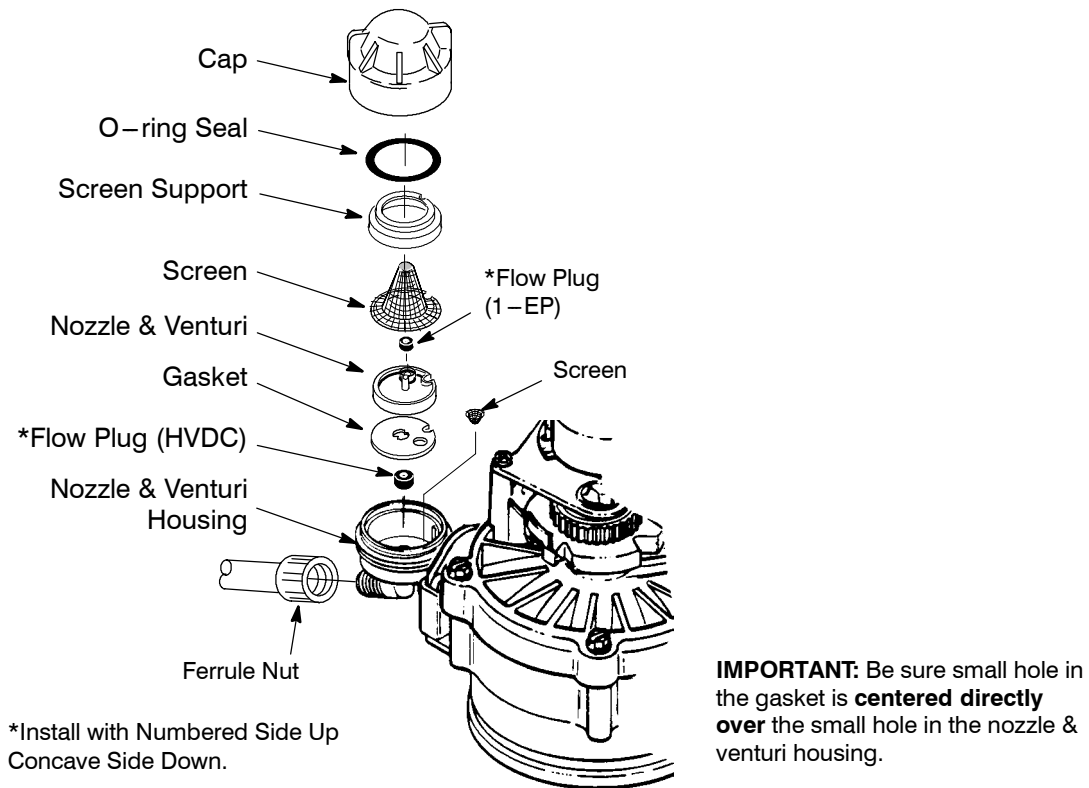
**Figure 13**

**Cleaning the Nozzle and Venturi**

A clean nozzle and venturi (see Figure 14) is a must for the conditioner to work properly. This small unit creates the suction to move brine from the brine tank, into the resin tank. If it should become plugged with sand, silt, dirt, etc., the conditioner will not work, and you will get hard water.

To get to the nozzle and venturi, slide Faceplate Cover forward. **Be sure the unit is in soft water cycle** (no water pressure at nozzle and venturi). Then, holding the nozzle and venturi housing with one hand, turn off the cap. *Do not lose the o-ring seal.* Lift out the screen support and screen. Then, remove the nozzle and venturi. Wash the parts in warm, soapy water and rinse in fresh water. If needed, use a small brush to remove iron or dirt. Be careful not to scratch, misshape, etc., surfaces of the nozzle and venturi. Also, check and clean the gasket and flow plug(s).

Carefully replace all parts in the correct order. Lubricate the o-ring seal with silicone grease and locate in position. Install and tighten the cap, **by hand only**. **Do not overtighten** and break the cap or housing.



**Figure 14**

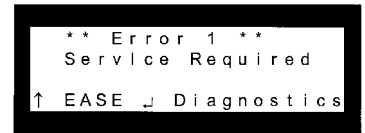
**Tools Needed For Most Repairs: 5/16 Hex Driver, Phillips Screwdriver, Needle–nose Pliers**

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>	<b>REPAIR KIT(S) NEEDED</b>
<b>No Soft Water</b>	1. No salt in the storage tank	a. Refill with salt (see page 25) b. Use Recharge Now feature (page 21)	None
<b>No Soft Water Timer Display Blank</b>	1. Transformer unplugged at wall outlet, or power cable disconnected, Transformer OR POWER CORD defective	a. Check for loss of power and correct. Reset timer and use the Recharge Now feature (page 21)	Transformer Power Cord
	2. Fuse blown, circuit breaker popped, or circuit switched off. (See page NO TAG "Timer Power Outage Memory").	a. Replace fuse, reset circuit breaker, or switch circuit on use the Recharge Now feature (page 21).	None
	3. Timer control board defective	a. Replace Electronic Control Board (page 28)	Timer Control Board
<b>No Soft Water Salt Level Not Dropping</b>	1. Salt in storage tank bridged	a. Refer to page 25 to break.	None
	2. Manual bypass valve(s) in bypass position	a. See page 16 figure 10. Move stem in single bypass to service	None
<b>No Soft Water, Salt Storage Tank Full Of Water, Water Running To The Drain (While Unit Is In The Soft Water Cycle)</b>	1. Dirty, plugged or damaged nozzle & venturi	a. Take apart, clean and inspect nozzle and venturi (see page 23)	Nozzle Kit
	2. Inner valve defect causing leak	a. Replace seals and rotor (page 28)	Rotor/Seal Kit
	3. Valve drain hose plugged	a. Hose must not have any kinks, sharp bends or any water flow blockage (see page 8)	None
	4. Low or high system water pressure (low pressure may disrupt brine draw during recharge, high pressures may cause inner valve parts failure)	a. If pressure is low, increase well pump output to a minimum 1.4 bar. Add a pressure reducing valve in the supply pipe to the softener, if daytime pressure is over 7 bar.	None
	5. Brine valve float kit dirty or defective	a. Clean Brine or replace valve float kit assembly (page 28)	Float Kit
	6. Leak between valve and resin tank assembly	a. Replace Tank/Valve O–Rings	Tank/Valve O–ring Kit
<b>Water Hard Sometimes</b>	1. Time setting wrong	a. Check and change time setting	None
	2. Incorrect water hardness setting	a. Refer to page 19 to find correct settings	None
	3. Incorrect model code programmed	a. Refer to page 18 to find correct settings	None
	4. Hot water being used when softener is regenerating	a. Avoid using hot water while the softener is regenerating as the water heater will fill with hard water. Check timer for correct settings	None
	5. Possible increase in water hardness	a. Test the raw water for hardness and iron and program the timer accordingly (page 19).	None
	6. Leaking faucet or toilet valve. Excessive water usage.	a. A small leak will waste hundreds of gallons of water in a few days. Fix all leaks and always fully close faucets.	None
<b>Iron In Water</b>	1. Clear water iron in water supply	a. Test the raw water for hardness and iron and program the timer accordingly (page 19).	None
	2. Iron in soft water	b. Clean resin bed with Resin Bed Cleaner	
	3. Bacterial or organic bound iron	c. Cannot be treated by water softener	
<b>Resin In Household Plumbing, Resin Tank Leaking</b>	1. Crack in distributor or riser tube	a. Replace resin tank assembly (page 28)	Resin Tank Assembly
<b>Salt Storage Tank Leaking</b>	1. Crack in brine tank	a. Replace salt storage tank assembly (page 28)	Salt Storage Tank Assembly
<b>Motor Stalled Or Clicking</b>	1. Motor defective or inner valve defect causing high torque on motor	a. Replace Rotor/Seal kit (page 28)	Rotor/ Seal Kit
		b. Replace Motor & Switch	Motor/Switch Kit
<b>Error Code E1, E2, E3, or E4 appears</b>	1. Wiring Harness or Connection to Position Switch	a. Replace Wiring Harness or Connection to Position Switch	Motor/Switch Kit
	2. Switch	b. Replace Switch	
	3. Valve Defect Causing High Torque	c. Replace Rotor Seal Kit	Rotor/ Seal Kit
	4. Motor Inoperative	d. Replace Motor	
<b>Error Code E5 appears</b>	1. Faceplate	a. Replace Electronic Control Board	Electronic Control Board Kit

**PROCEDURE FOR REMOVING ERROR CODE FROM FACEPLATE:** 1. Unplug transformer – – – – 2. Correct defect – – – – 3. Plug in transformer – – – – 4. Wait for 6 minutes. The error code will return if the defect was not corrected.

**Automatic Electronic Diagnostics**

The faceplate computer has a self-diagnostic function for the electrical system (except input power and water meter). The computer monitors electronic components and circuits for correct operation. If a malfunction occurs, the computer attempts to self correct, displaying ADJUST VALVE in the Normal View Screen. If self correction fails, an error code appears in the faceplate display.



The chart below shows the error codes that could appear, and the possible defects for each code.

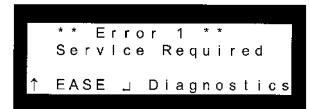
While an error code appears in the display, all faceplate keypads are inoperable except the SELECT keypad. SELECT remains operational so the service person can make the MANUAL INITIATED ELECTRONIC DIAGNOSTICS, below, to further isolate the defect, to check the water meter and to send an E.A.S.E. transmission.

CODE	POSSIBLE DEFECT	
	MOST LIKELY →	← LEAST LIKELY
Error 1 Error 2 Error 3 Error 4	wiring harness or connection to position switch / switch / valve defect causing high torque / motor inoperative	
Error 5	faceplate	

**PROCEDURE FOR REMOVING ERROR CODE FROM FACEPLATE:** 1. Unplug transformer---- 2. Correct defect---- 3. Plug in transformer---- 4. Wait for 8 minutes. The error code will return if the defect was not corrected.

**Manual Advance Diagnostics**

1. To enter diagnostics, press the SELECT/EXIT (↵) to enter the menu. This screen contains information that can be used to troubleshoot errors. Use the (↑) and (↓) keypads to scroll through all lines on this screen.



The first line shows time of day and error code.

Second line is **Pos:** which shows what position the valve is in. Example: Service, Fill, Brining and Brine Rinse, Backwash and Fast Rinse. The clock to the right counts backward the time for each of the positions to be completed.



The next line is **Req Pos:** which is for requested position, or what position the valve is travelling to.

Next line displays **Motor:**, either on or off, and **Sw:** (switch) either open or closed.

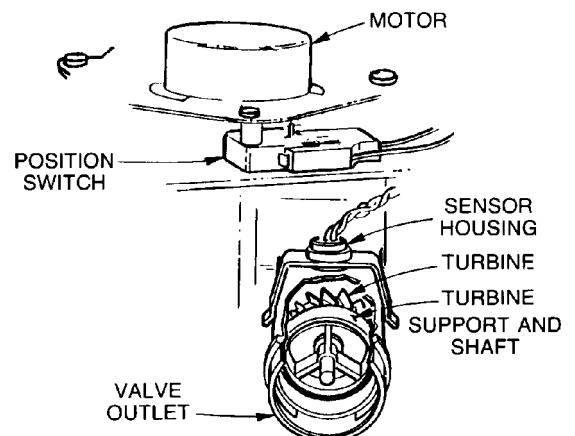
Next is **Trbn:** (turbine) and **Gals:** (gallons) or **Ltrs:** (litres) which indicate water meter operation as follows.

000 (steady) = conditioned water not in use...no flow through the meter.

**-open a nearby CONDITIONED WATER faucet-**

000 to 199 (continual) = repeats display for each gallon (roughly 4 litres) of water passing through the meter. Gallons up by one or litres up by 4.

If you don't get a reading in the display, with a faucet open, pull the sensor housing from the valve outlet port. Pass a small magnet back and forth in front of the sensor. You should get a reading. If you **do get a reading**, disconnect the outlet plumbing and check the turbine for binding. If you **don't get a reading**, the sensor is probably defective.



Use the recharge keypad to manually advance the valve into each cycle and check correct switch operation, and observe the valve position indicator.

NOTE: *The position switch is closed when the plunger is depressed, open when extended.*

While in this diagnostic screen, the following information is available and may be beneficial. This information is retained by the computer from the first time electrical power is applied to the faceplate.

...**Remote**: either Installed or Not Installed.

...**Days**: displays the number of days this faceplate has had electrical power applied.

...**Rchg**: to show the number of regenerations initiated by this faceplate since power was first applied.

NOTE: This number resets to 0 if the model code is changed.

...**Last Rchg**: displays the number of days since last recharge.

...**Cap**: displays numerically the capacity the softener is operating at with 1 lowest and 5 highest.

Press the SELECT/EXIT (↵) to exit to the Advanced/Service menu, move cursor up to EXIT and press SELECT/EXIT (↵) to go to Normal Screen Views.

### Manual Initiated Electronic Diagnostics

This check verifies proper operation of the gearmotor, brine tank fill, brine draw, regeneration flow rates, and other controller functions. *Always make the initial checks, and the manual initiated diagnostics first.*

**1.** Press the RECHARGE keypad. Move cursor down to Start Rchg Now and press SELECT/EXIT (↵) to start a recharge. As the EcoWater conditioner enters the fill cycle of regeneration, remove the brinewell cover and, using a flashlight, observe fill water entering the tank.

**a.** If water does not enter the tank, look for an obstructed nozzle and venturi, fill flow plug or brine tubing Figure 14, page 26.

**2.** After verifying fill, press Recharge keypad to move the valve into brining\*. A slow flow of water to the drain will begin. Verify brine draw from the brine tank by shining the flashlight into the brinewell and observing a noticeable drop in the liquid level.

\*If the 2ND BACKWASH option is set, the valve will enter backwash and fast rinse before brining, see page 23.

NOTE: Be sure water is in contact with the salt, and not separated by a salt bridge, see page 25.

**a.** If the unit does not draw brine, check for...

...dirty or defective nozzle and venturi, page 26

...nozzle and venturi not seated on the gasket, or gasket defective

...restriction in valve drain, causing a back-pressure (bends, kinks, elevated too high, etc.), installation step 8

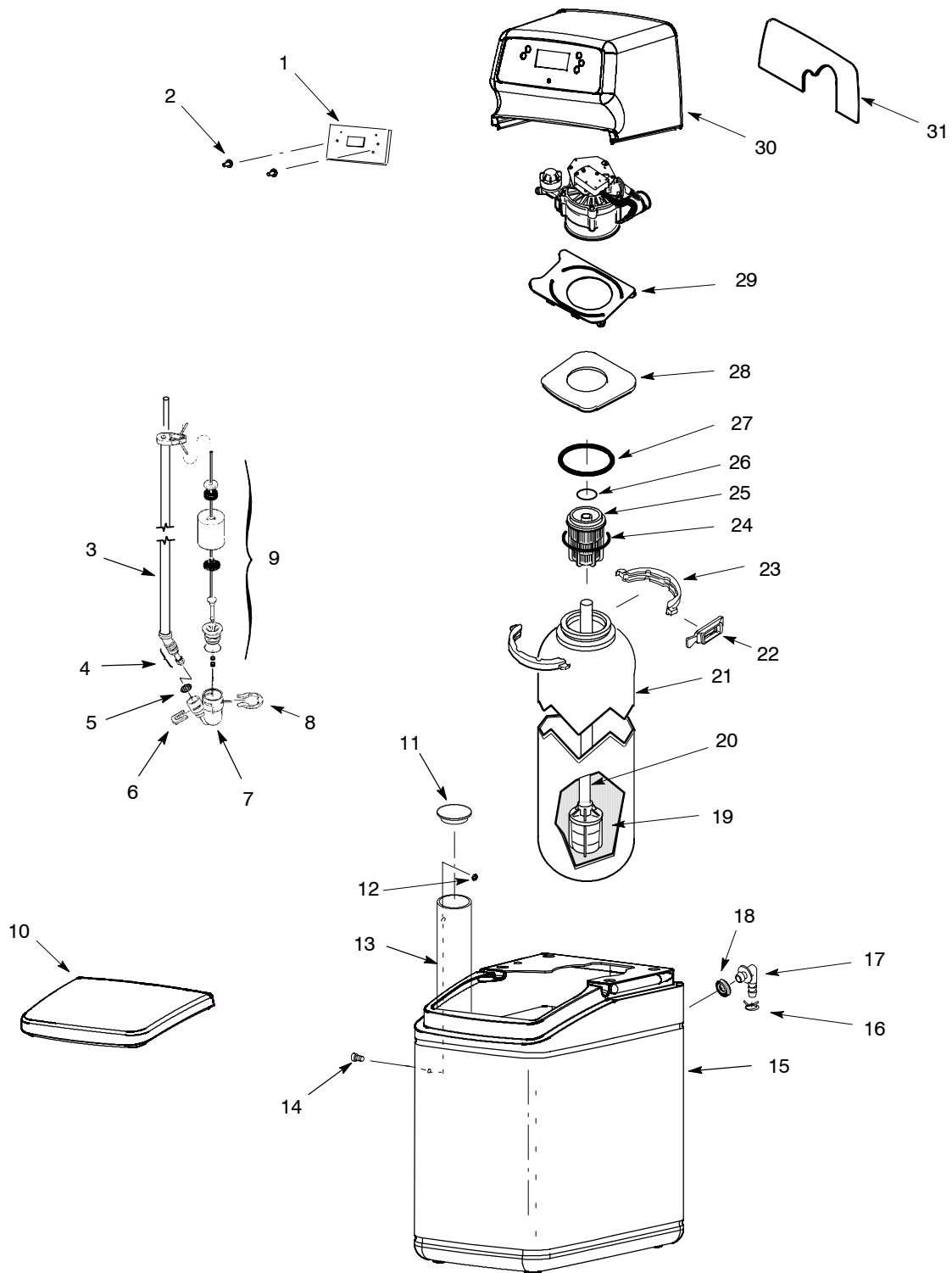
...obstruction in brine valve or brine tubing, Figure 1, page 7

...inner valve failure (obstructed outlet disc, wave washer defective, etc.)

**3.** Again press Recharge keypad to move the valve into backwash. Look for a fast flow of water from the drain hose.

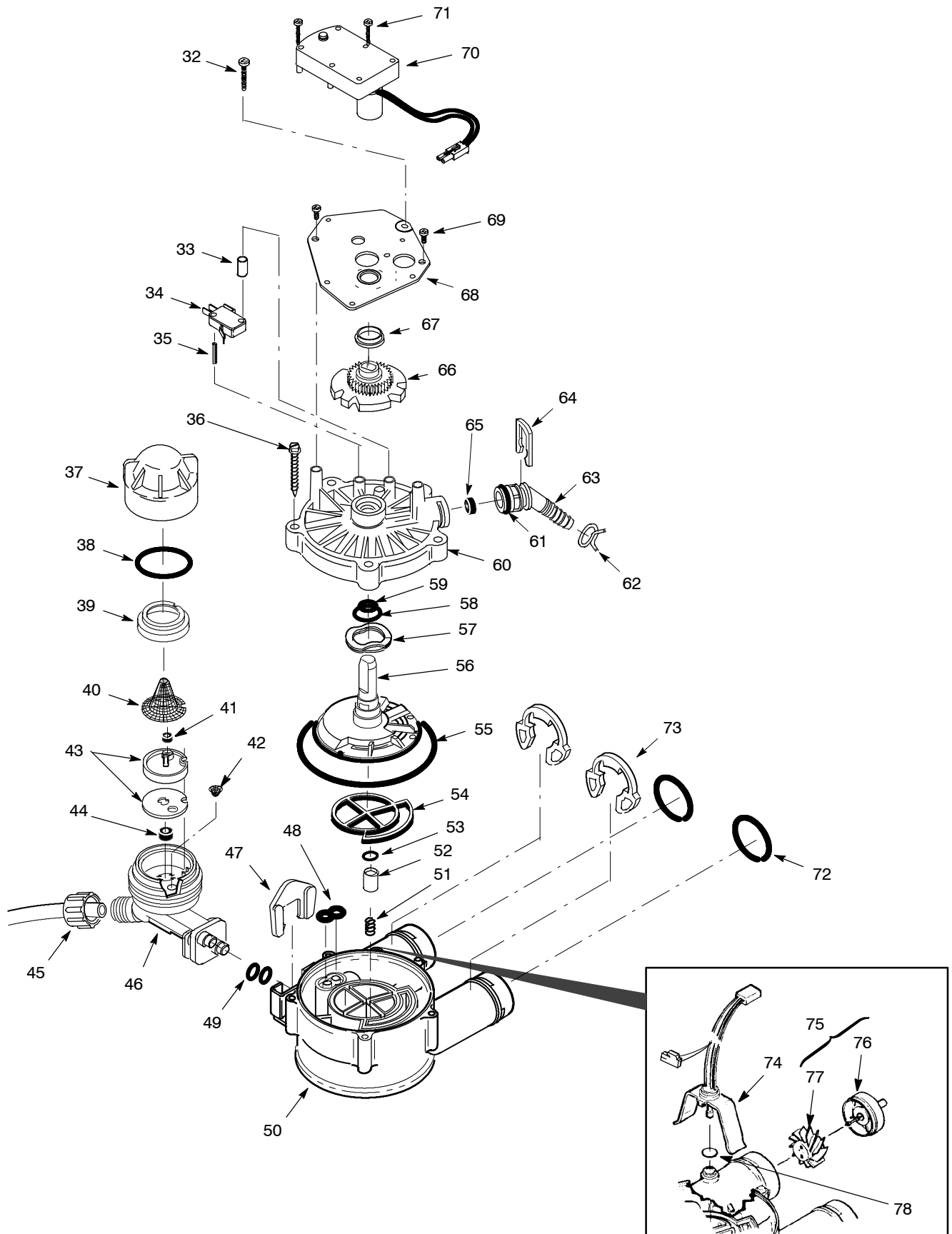
**a.** If flow is slow, check for a plugged top distributor, backwash flow plug or drain hose.

**4.** Press Recharge keypad to move the valve to fast rinse position. Again look for a fast drain flow. Allow the unit to rinse for several minutes to flush out any brine that may remain from the brining cycle test.



KEY-NO.	PART NO.	DESCRIPTION
1	30476	Rep'l PWA ESM 11 ED
	30477	Rep'l PWA ESM 15 ED
2	7269257	Cap, 2 req'd
3	7269524	Brine Tube, ESM15CE
	7269532	Brine Tube, ESM11CE
4	7113016	Tubing Assembly
5	7131365	Screen
6	7080653	Clip
7	7092252	Brine Valve Body
8	7116713	Clip
9	7113008	Float, Stem & Guide Asm., ESM15CE
	7269508	Float, Stem & Guide Asm., ESM11CE
10	7266819	Salt Hole Cover
11	7219888	Brinewell Cover, ESM11CE & ESM15CE
12	7219595	Washer
13	7267027	Brinewell, ESM15CE
	7267035	Brinewell, ESM11CE
14	7219587	Screw
15	7268934	Repl. Brine Tank, ESM15CE
	7268926	Repl. Brine Tank, ESM11CE

KEY NO.	PART NO.	DESCRIPTION
16	0900431	Hose Clamp
17	1103200	Hose Adaptor
18	9003500	Grommet
19	RMH001	Resin
20	7105047	Repl. Bottom Distributor
21	7264037	Resin Tank, 8 in. dia x 25 in., ESM15CE
	7256377	Resin Tank, 8 in. dia x 19 in., ESM11CE
22	7088033	Clamp Retainer, 2 req'd
23	7176292	Clamp Section, 2 req'd
24	7170270	O-ring Seal, 2-3/4 in. x 3 in.
25	7077870	Top Distributor, ESM11CE & ESM15CE
26	7170254	O-ring Seal, 13/16 in. x 1-1/16 in.
27	7170296	O-ring Seal, 2-7/8 in. x 3-1/4 in.
28	7237381	Vapor Barrier
29	7225499	Locking Plate
30	7258028	Faceplate Cover (order decal below)
	7265295	Decal (for above cover)
31	7235460	Weather Cover





KEY NO.	PART NO.	DESCRIPTION
32	7070412	Screw, #4 – 24 x 1 – 1/8 in.
33	7117816	Spacer
34	7030713	Switch
35	7077472	Expansion Pin
36	7074123	Screw, #10 14 x 2 in. (5)
37	7199729	Cap
38	7170262	O – ring Seal, 1.1 in. x 1.4 in.
39	7167659	Screen Support
40	7146043	Screen
41	0521829	Flow Plug, .1gpm
42	7095030	Cone – Screen
43	7248007	Nozzle & Venturi, w/Gasket Kit, ESM11CE & ESM15CE
	7190547	Gasket (only)
44	1148800	Fill Flow Plug, .3 gpm, ESM11CE & ESM15C
45	1202600	Nut – Ferrule
46	7081104	Nozzle & Venturi Housing
47	7081201	Retainer
48	7081764	Seal (Nozzle & Venturi)
49	7170319	O – ring Seal, 1/4 in. x 3/8 in. (2)
50	7082053	Valve Body
51	7129889	Spring
52	7092642	Plug (Drain Seal)
53	7170204	O – ring Seal, 3/8 in. x 9/16 in.

KEY NO.	PART NO.	DESCRIPTION
54	7134224	Rotor Seal / Wear Strip
55	7170246	O – ring Seal, 3 – 3/8 in. x 3 – 5/8 in.
56	7199232	Rotor & Disc
57	7082087	Wave Washer
58	7170212	O – ring Seal, 3/4 in. x 15/16 in.
59	7170238	O – ring Seal, 7/16 in. x 5/8 in.
60	7085263	Valve Cover
61	7170327	O – ring Seal, 5/8 in. x 13/16 in.
62	0900431	Hose Clamp
63	7024160	Drain Hose Adaptor
64	7142942	Clip
65	0501228	Flow Plug, Backwash / F. Rinse control
66	7113927	Cam and Gear
67	0503288	Bearing
68	7231385	Motor Plate
69	0900857	Screw, #6 – 20 x 3/8 in. (2)
70	7250622	Motor – Includes Key No. 71
71	7224087	Screw, #6 – 20 x 7/8 in. (2)
72	7170288	O – ring (2)
73	7116713	Clip (2)
74	7248714	Sensor Housing/Wiring Harness Asm
75	7113040	Turbine and Support Assembly
76	--	Turbine Support
77	--	Turbine
78	0900060	O – ring Seal