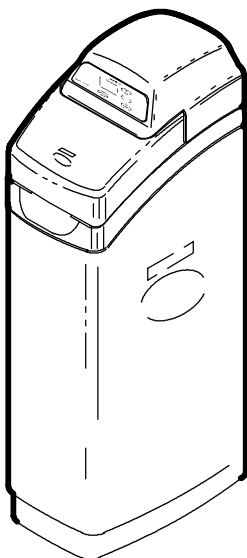


# OWNER'S MANUAL

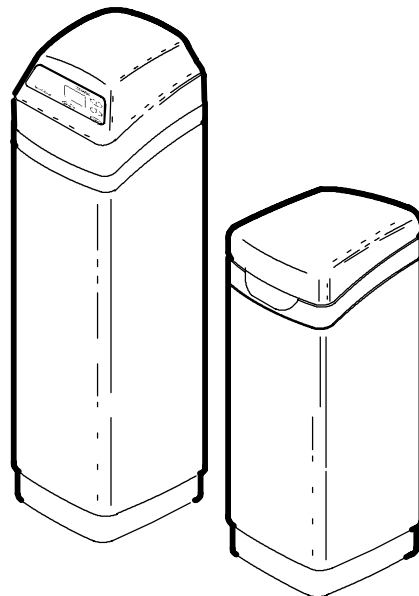
How to maintain and operate your  
EcoWater electronic demand water system



**MODEL  
ESD 518**



**MODELS  
ESD 2502 R30  
ESD 2502 R39**



Systems Tested and Certified by NSF International against  
NSF/ANSI Standard 44 for softener performance.

**LIMITED WARRANTY**  
**EcoWater Systems LLC Advantage Warranty**  
**Series ESD 518, ESD 2502 R30**  
**& ESD 2502 R39 Water Systems**

Congratulations! You have just purchased the highest quality water conditioning product on the market. To register your warranty, complete the enclosed Warranty Registration Card and mail it within 30 days of purchase.

**To whom is this warranty extended?**

EcoWater Systems LLC warrants its products to the original owner and guarantees that the products will be free from defects in materials and workmanship from the original date of installation.

**How does my warranty work?**

If, during the respective warranty period, a part proves, after inspection by EcoWater, to be defective, EcoWater will, at its sole option repair or replace that part at no charge, other than normal shipping, installation or service charges.

**What is covered by the warranty?**

EcoWater Systems LLC guarantees that,

for the LIFETIME of the original owner, the MINERAL TANK will not rust, corrode, leak, burst, or in any other manner fail to perform its proper function and that,

for a period of TEN YEARS, the SALT TANK will be free of defects in materials and workmanship and will perform its proper function and that,

for a period of THREE YEARS, the VALVE BODY, ELECTRONIC FACEPLATE and ALL OTHER PARTS will be free of defects in materials and workmanship and will perform their normal functions.

**How do I obtain warranty service?**

Should you need service, your local, independent EcoWater Dealer is only a phone call away.

PHONE: \_\_\_\_\_

To obtain warranty service, notice must be given, within thirty (30) days of the discovery of the defect, to your local EcoWater Systems dealer.

**If I need a part replaced after the factory warranty expires, is the replacement part warranted?**

Yes, EcoWater Systems LLC warrants FACTORY REPAIRS as well as all REPLACEMENT PARTS for a period of 90 DAYS. This warranty does not include normal shipping, installation or service charges.

**Are any additional warranties available?**

We are pleased to say, YES! EcoWater Systems LLC sells an EXTENDED, PARTS ONLY WARRANTY for the ELECTRONICS portion of your product. This warranty is called the "Perfect Ten" and extends the three year warranty on the electronic FACEPLATE, WIRING HARNESS, DRIVE MOTOR, TRANSFORMER, POWER CORD, SENSOR HOUSING, and MICRO SWITCHES to a total of TEN YEARS from the date of original installation. Your local dealer will provide details regarding this warranty or will refer you to the factory for additional information.\*

**General Provisions**

The above warranties are effective provided the water conditioner is operated at water pressures not exceeding 125 psi, and at water temperatures not exceeding 120°F; provided further that the water conditioner is not subject to abuse, misuse, alteration, neglect, freezing, accident or negligence; and provided further that the water conditioner is not damaged as the result of any unusual force of nature such as, but not limited to, flood, hurricane, tornado or earthquake. EcoWater Systems LLC, is excused if failure to perform its warranty obligations is the result of strikes, government regulation, materials shortages, or other circumstances beyond its control.

\*THERE ARE NO WARRANTIES ON THE WATER CONDITIONER BEYOND THOSE SPECIFICALLY DESCRIBED ABOVE. ALL IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED TO THE EXTENT THEY MIGHT EXTEND BEYOND THE ABOVE PERIODS. THE SOLE OBLIGATION OF ECOWATER SYSTEMS LLC UNDER THESE WARRANTIES IS TO REPLACE OR REPAIR THE COMPONENT OR PART WHICH PROVES TO BE DEFECTIVE WITHIN THE SPECIFIED TIME PERIOD, AND ECOWATER IS NOT LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES. NO ECOWATER DEALER, AGENT, REPRESENTATIVE, OR OTHER PERSON IS AUTHORIZED TO EXTEND OR EXPAND THE WARRANTIES EXPRESSLY DESCRIBED ABOVE.

Some states do not allow limitations on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damage, so the limitations and exclusions in this warranty may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. This warranty applies to consumer-owned installations only.

**GUARANTEE**  
**BOND**

The Safeco Insurance Company of America has issued its bond in the form shown below, guaranteeing full performance by EcoWater Systems LLC

SAFECO INSURANCE COMPANY OF AMERICA, hereinafter called "Surety," guarantees unto Bank of New York as Trustee holding said Guarantee Bond under the terms of a Trust Agreement dated April 9, 2003, for the use and benefit of original purchasers of residential EcoWater Systems Units within the Continental United States, as described herein, that EcoWater Systems LLC, will discharge the obligations of the "EcoWater Bonded Parts and Service Guarantee Policy."

PROVIDED, HOWEVER, that:

1. Liability of Surety hereunder shall not exceed the sum of FIVE HUNDRED AND 00/100th DOLLARS (\$500.00) as to any one installation, and shall not exceed the sum of FIVE HUNDRED THOUSAND AND 00/100th DOLLARS (\$500,000.00) in the aggregate, and

2. There shall be no liability hereunder as to any purchaser to whom there has not been issued at the time of installation and purchase completed registration card which is enclosed with a facsimile of this bond, and who has not returned such card in accordance with this guarantee.

3. Claim must be made by such original purchaser in writing within 30 days from the expiration of these guarantees upon EcoWater Systems LLC, PO Box 64420, St. Paul, MN 55164, to perform the terms of said guarantee, and notice of any default on such guarantee must be sent to Surety at its address by Registered Mail.

SAFECO INSURANCE COMPANY OF AMERICA

This is to certify that the original of the above guarantee and bond is on file with Bank of New York.

BANK OF NEW YORK  
As Trustee

## SAFETY GUIDES

Follow the installation instructions carefully. Failure to install the EcoWater softener 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. In Massachusetts, plumbing codes of Massachusetts shall be adhered to. Consult with your licensed plumber.

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

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

Do not locate the EcoWater softener where freezing temperatures occur. Do not attempt to treat water over 120°F. **Freezing, or hot water damage voids the warranty.**

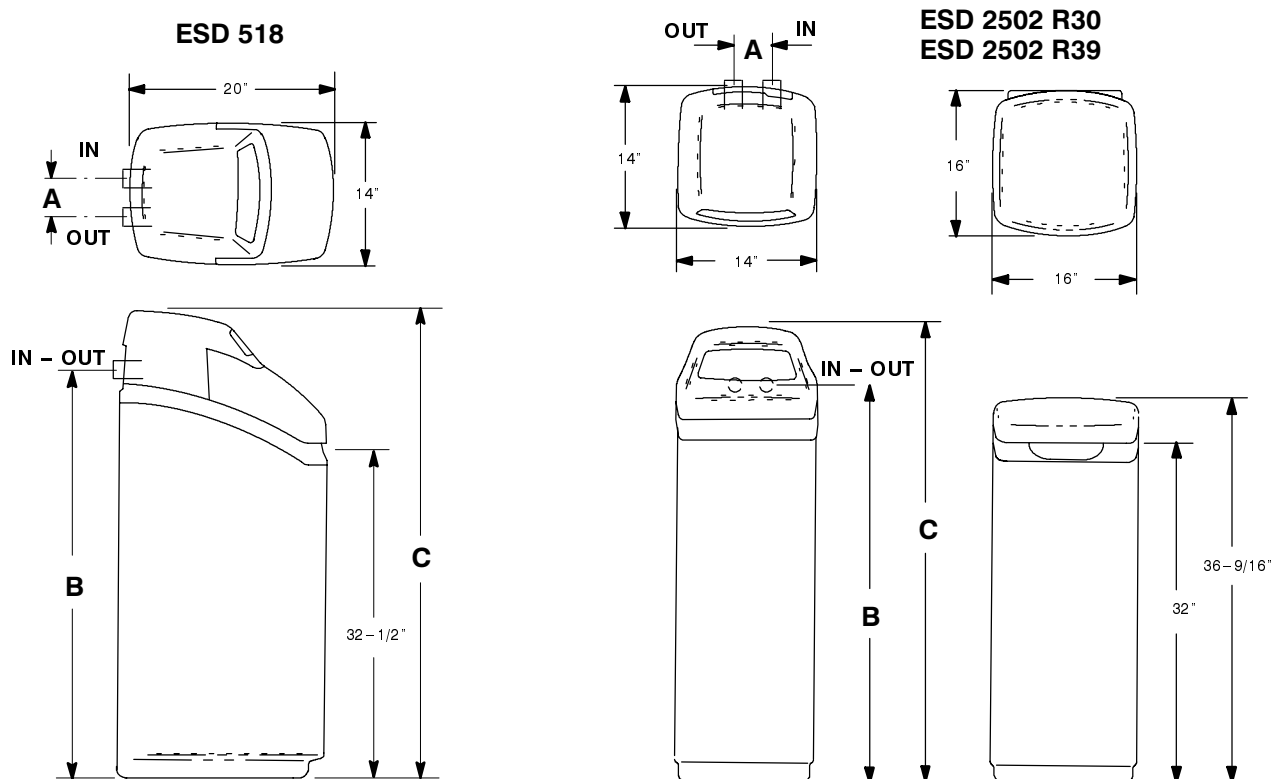
Avoid installing in direct sunlight. Excessive sun heat may cause distortion or other damage to non-metallic parts.

The EcoWater 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.)

**The EcoWater softener works on 24 volt – 60 hz electrical power only.** Be sure to use the included transformer and plug it into a nominal 120V, 60 cycle household outlet that is grounded and properly protected by an overcurrent device such as a circuit breaker or fuse. If transformer is replaced, use only the authorized service Class II, 24 volt, 10 VA 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.

## DIMENSIONS / SPECIFICATIONS



MODEL	NOMINAL RESIN TANK SIZE	A	B	C
<b>ESD 518</b>	8" DIA. X 35"	3-3/8"	38-1/8"	45"
<b>ESD 2502 R30</b>	8" DIA. X 40"	3-3/8"	41.6"	48.75"
<b>ESD 2502 R39</b>	10" DIA. X 47"	3-3/4"	49.8"	56.6"

	ESD 518	ESD 2502 R30	ESD 2502 R39
<i>Rated Capacity (grains @ salt dose)</i>	10,100 @ 2.0 lbs 21,500 @ 6.4 lbs 25,600 @ 10.7 lbs	12,200 @ 2.4 lbs 25,600 @ 7.5 lbs 30,600 @ 12.6 lbs	12,100 @ 2.4 lbs 31,700 @ 8.9 lbs 40,200 @ 15.4 lbs
<i>Service Flow Rate (gpm)</i>	5.0	7.8	7.0
<i>Pressure Drop at Service Flow Rate (psi)</i>	7	15	6
<i>Intermittent Flow Rate (gpm) @ 15 psi</i> ♦	8.7	7.8	13.3
<i>Intermittent Flow Rate (gpm) @ 30 psi</i> ♦	13.5	12.2	20.9
<i>Rated Efficiency (gr / lb of salt @ min. salt dose)</i> ▣	5030 @ 2.0	5070 @ 2.4	5030 @ 2.4
<i>Amount of High Capacity Resin (cu ft)</i>	.67	.79	1.13
<i>Water Supply Max. Hardness (gpg)</i>	50	60	80
<i>Water Supply Max. Clear Water Iron (ppm)</i> ●	3	4	5
<i>Water Pressure Limits (min./max. psi)</i> ▲	20 - 125		
<i>Min./Max. Water Temperature (°F)</i>	40° - 120°		
<i>Min. Water Supply Flow Rate (gpm)</i>	3		
<i>Max. Drain Flow Rate (gpm)</i>	2.0	2.0	2.3

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

♦ Intermittent flow rate does not represent the maximum service flow rate used for determining the softeners rated capacity and efficiency. Continuous operation at flow rates greater than the maximum service flow rate may affect capacity and efficiency performance.

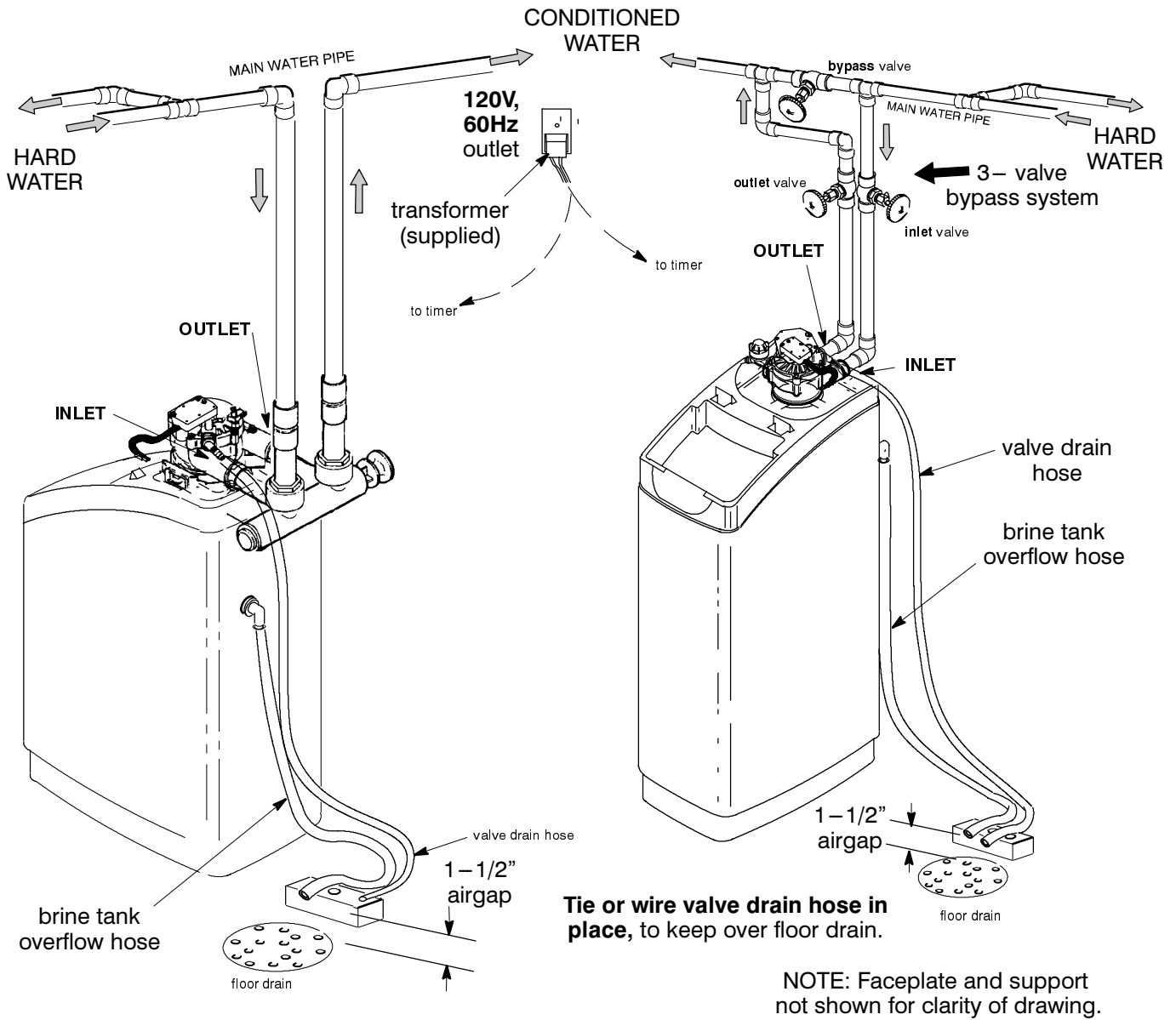
▣ Efficiency rating is only valid at the minimum stated salt dose. These softeners were efficiency rated according to NSF/ANSI standard 44.

● Capacity to remove clear water iron is substantiated by WQA test data.

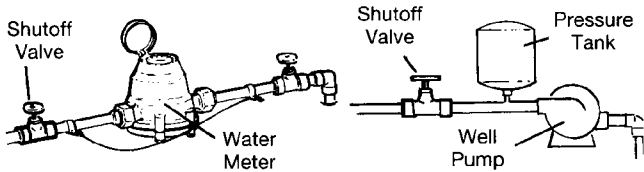
▲ Working pressure for Canadian use is 1.4 - 7.0 kg/cm<sup>2</sup>.

**INSTALLATION – (MODELS ESD 518 & ESD 2502 R30)  
(ESD 518 shown)**

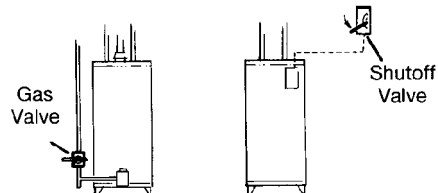
**FIGURE 1**



1. Close the shut off valve on the house main water pipe, near the water meter or pressure tank, to turn off the water.



2. Shut off the gas or electric supply to the water heater.



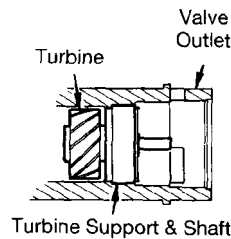
3. Open the highest and lowest water faucets in your house to let water drain from the pipes. Close faucets after water has drained.

4. If not already done, remove all cardboard or plastic packing pieces from inside the softener.

## INSTALLATION (continued) – (MODELS ESD 518 & ESD 2502 R30)

### 5. INSTALL INLET AND OUTLET ADAPTORS, OR THE OPTIONAL BYPASS VALVE.

**IMPORTANT:** Be sure the turbine, turbine support and sensor housing are firmly in position, in or on the valve outlet.



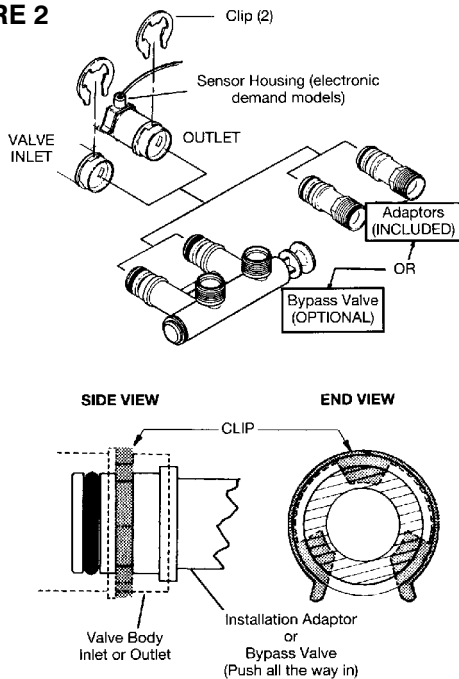
- INLET AND OUTLET ADAPTORS – Push adaptors into the valve ports. Be sure the o-ring seals are lubricated with silicone grease or Vaseline.

– OR –

**BYPASS VALVE** – Push the bypass valve into the valve ports (can be inverted for connecting to floor level plumbing). Be sure the o-ring seals are lubricated with silicone grease or Vaseline.

- SNAP THE TWO LARGE HOLDING CLIPS INTO PLACE, FROM THE TOP DOWN AS SHOWN. BE SURE THEY SNAP FIRMLY INTO PLACE, SO THE ADAPTORS, OR BYPASS VALVE, DO NOT PULL OUT.

FIGURE 2



**NOTE: O-RING SEALS PLACED IN OUTER GROOVES ONLY. CLIPS SNAP INTO INNER GROOVES.**

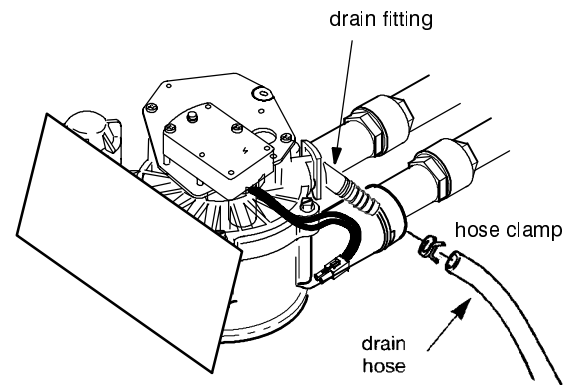
6. Move the softener into installation position, setting on a smooth and level surface. If needed, set it on a piece of 3/4" thick plywood (slightly larger than the bottom of the brine tank). Then shim under the plywood to level the softener.

7. Referring to page 5, run inlet and outlet pipes to the softener, observing all of the following notes.

- If the optional bypass valve is not used, be sure to use a three valve bypass as typically shown in Figure 1. Position in "bypass" only if needed for softener repairs. The bypass valve maintains continuity of the water supply when the softener is disconnected.
- Be sure to plumb so HARD WATER flows TO the softener valve INLET.
- If sweat soldering, first disconnect copper pipes from plastic softener parts. **DO NOT SOLDER WITH COPPER CONNECTED TO THE SOFTENER OR PLASTIC PARTS WILL BE DAMAGED.**
- If using threaded fittings, use extreme care not to cross thread onto plastic.
- Support inlet and outlet plumbing in some manner, to keep the weight off of the softener valve.

### 8. CONNECT THE VALVE DRAIN HOSE

Attach a length of 3/8" I.D. hose to the valve drain fitting. Use a hose clamp to hold it in place. Place the other end of the hose over a floor drain, laundry tub, sump, standpipe or other suitable drain. **BE SURE TO OBSERVE LOCAL CODES.**



#### IMPORTANT NOTES:

Leave an air gap of about 1 – 1/2" between the end of the hose and the drain. This gap is needed so you don't get a back-flow of sewer water into the softener. **DO NOT** put the end of the hose into the drain or connect without the air gap.

Place and support the hose so it does not kink or have sharp bends. Tie or wire the hose in place so water pressure will not make it "whip". Do not pinch the hose shut. **THE SOFTENER WILL NOT WORK IF THIS DRAIN HOSE IS PINCHED, PLUGGED OR CLOSED IN ANY WAY.**

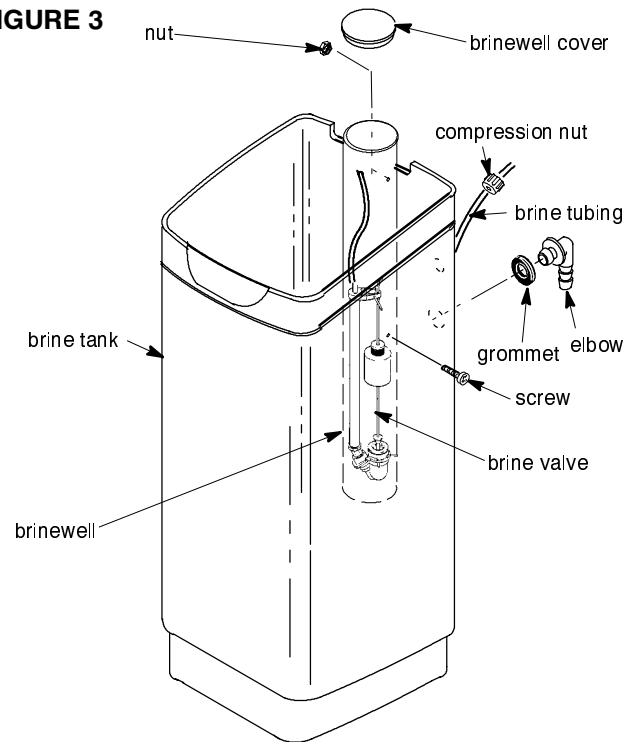
Keep the hose lower than the drain fitting. In some homes, to get to a drain you must raise the hose and run it over head. If you need an overhead drain, do not raise the hose more than 8' above the floor.

## BRINE TANK ASSEMBLY -- (MODELS ESD 2502 R30 & R39)

Note: On some models, the factory may complete steps 1 and 2 below.

1. Locate the brinewell in position and secure with a screw and nut (from parts skin-pack).
2. Lower the brine valve into the brinewell and install the brinewell cover.
3. Insert the grommet into the hole in the tank sidewall. Then, push the hose adaptor elbow into the grommet.
4. Continue with step 6., on page 8.

FIGURE 3



## INSTALLATION -- (MODEL ESD 2502 R39)

BE SURE TO READ AND COMPLY WITH ALL GUIDES LISTED ON PAGE 3.

1. Install the installation adaptors, or the optional bypass valve (Figure 4). **Be sure clips hold parts firmly in place.** Pull on the adaptors or bypass valve to insure they are secure.

Note: If the optional bypass valve is not used, be sure to install a 3-valve bypass (Figure 5).

2. Run the **hard water** supply to the **valve inlet**, and **conditioned water** out from the valve outlet.

**CAUTION: Do all soldering, and allow to cool, before connecting pipe to the adaptors or bypass valve.**

3. Install the ground clamp if cold water pipe ground continuity was interrupted.

FIGURE 4

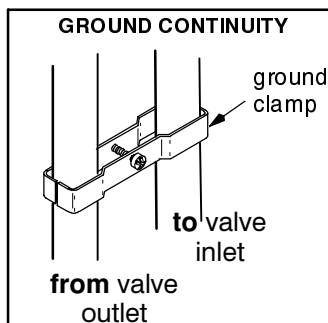
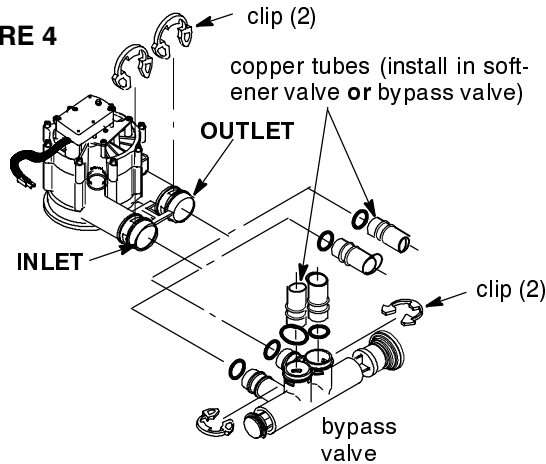
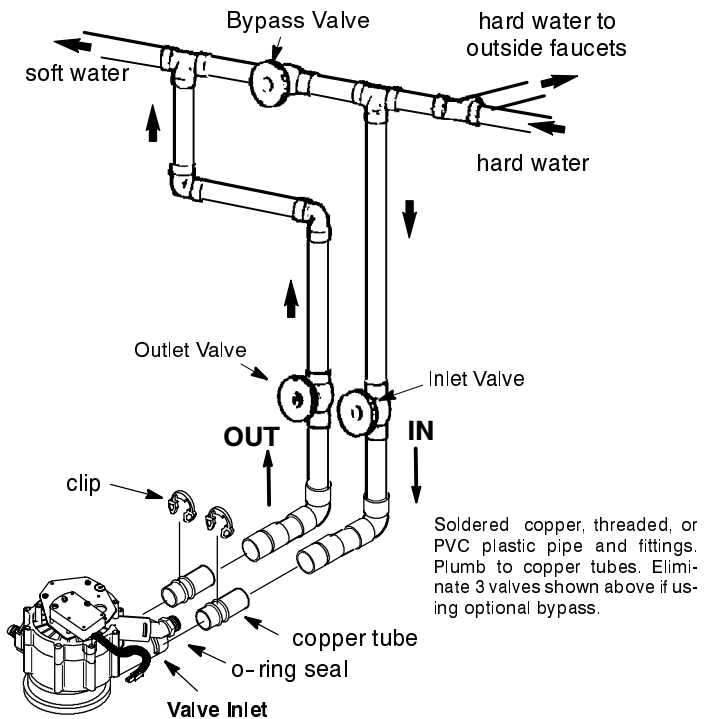


FIGURE 5



Soldered copper, threaded, or PVC plastic pipe and fittings. Plumb to copper tubes. Eliminate 3 valves shown above if using optional bypass.

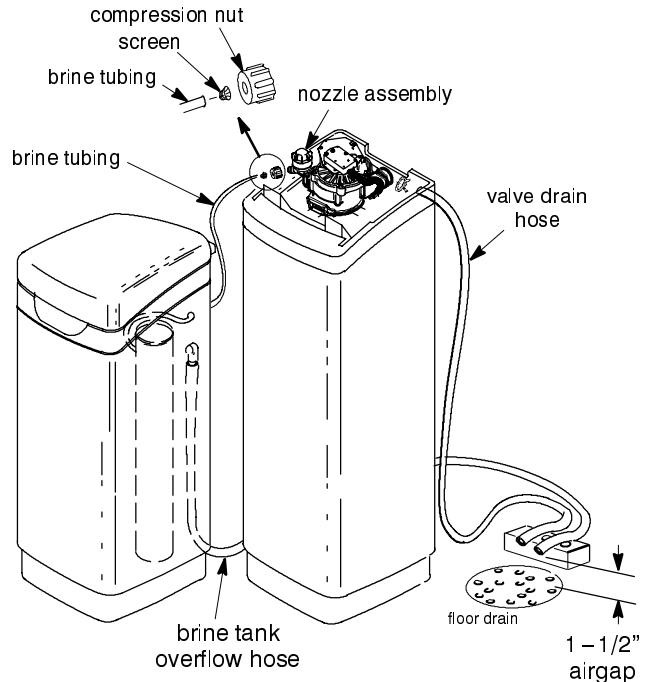
## INSTALLATION (continued) – (MODEL ESD 2502 R39)

- Run the valve and brine tank overflow drain hoses (Figure 6). Secure the valve drain hose to the drain fitting with the included hose clamp. Provide a minimum 1–1/2" air gap at the floor drain, standpipe, laundry tub, or other approved drain. If you need to elevate the valve drain hose to get to the drain point, do not raise more than 8' above the floor. The *gravity* overflow hose must be lower than the drain fitting along the entire run.

Note: Flexible drain hose is not allowed by some state or local codes. A fitting (1/4" NPT x 1/2" O.D. tube, part no. 0504574) is available from EcoWater for adapting copper tubing to the valve drain fitting.

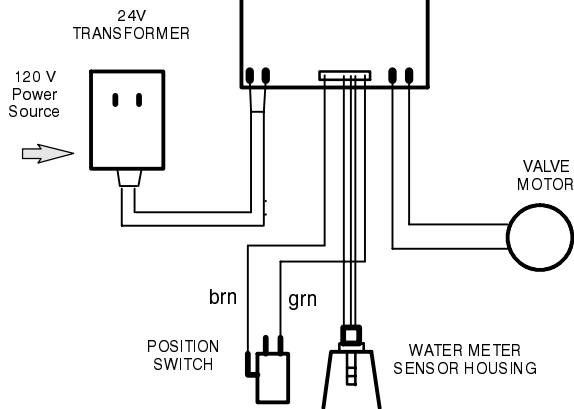
- Route the brine valve tubing out of the brine tank and connect to the nozzle assembly. Use the small screen and compression nut included (on skin – pack) to fasten.
- Connect the power cable to the transformer and plug into a 120V – 60Hz electrical outlet.

FIGURE 6



- Open nearby faucets and advance (use RCHG keypad) the softener valve to backwash position to vent air from the tank. Turn on the water supply and allow the softener to fill. When water at nearby faucets runs smooth, with no more air bubbles, close the faucets and advance the softener valve to “service”.
- Check your installation work for leaks.
- Make all timer settings, page 9.
- Sanitize the unit following procedures below, and use “Recharge Now” to start a recharge.
- Fill the brine tank with salt. You may use most water conditioner salts, but it must be clean. Recommended nugget, pellet or coarse solar salts have less than 1% impurities.
- Install the brine tank cover.

### WIRING SCHEMATIC



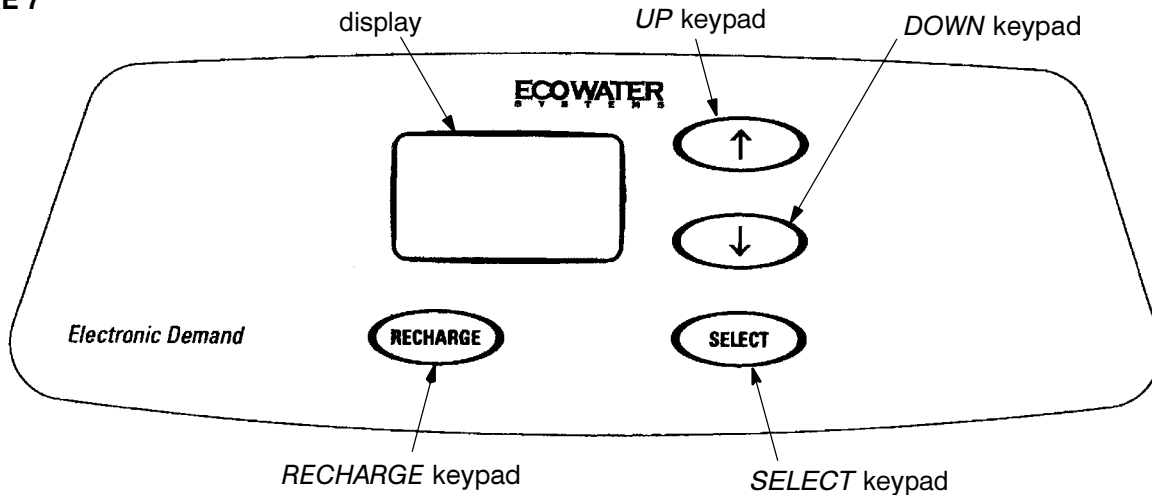
### DISINFECTING THE SOFTENER

Care is taken at the factory to keep your softener 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 when installing.

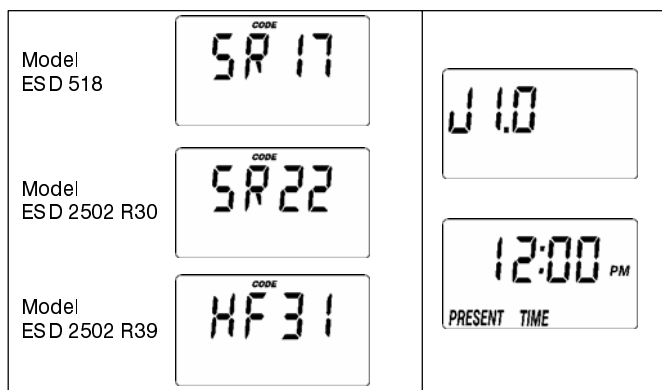
- Use a pail or hose to fill the brine tank with about 3 gallons of water.
- Remove the brinewell cover and pour about 1 – 1/2 oz. (2 to 3 tablespoons) of common household bleach into the softener brinewell. Clorox, Linco, BoPeep, White Sail, Eagle, etc. are brand names of bleach readily available. **Replace the brinewell cover.**
- Start an automatic regeneration to draw the bleach into and through the softener, and to the drain.

Note: When the sanitizing regeneration is over all remaining bleach is flushed from the system.

**FIGURE 7**



When the transformer is plugged in, a model code shows in the face plate display for the first few seconds. The model code for your water softener is SR17, SR22 OR HF31, as shown in the following drawing. The model code is followed by a test number (example: J1.0). After the test number, 12:00 PM begins to flash. The words PRESENT TIME show in the display.



**NOTE:** If — — — — is flashing in the display, press the UP (↑) keypad (Figure 7) until the correct code shows, as needed for your model. **Be sure to set the correct code.** Then, press the SELECT keypad to display the flashing 12:00 PM. **If other than the above codes show**, when the transformer is first plugged in, please see page 13 to reset.

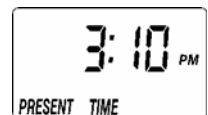
**SOUND “BEEPER”:** A “beeper” sounds while pressing keypads for timer set-up. One beep signals a change in the face plate display. Repeated beeps means the timer will not accept a change from the keypad you have pressed, telling you to use another keypad. For example, in setting the hardness (step 2), the beeper sounds repeatedly when the display reaches 1 using the DOWN keypad, or the highest hardness setting using the UP keypad.

**1. SET PRESENT TIME OF DAY:**

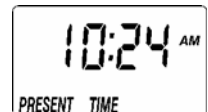
**NOTE:** If the words PRESENT TIME do not show in the display, press the SELECT keypad (Figure 7) until they do.

Press the (↑) UP/DOWN (↓) keypads to set the present time. Press UP to move the display ahead; press DOWN to move the time backward.

If the present time is between noon and midnight, be sure PM shows.



If the present time is between midnight and noon, be sure AM shows.

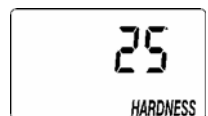


**NOTE:** Each press of the UP or DOWN keypads changes the time by 1 minute. Pressing and holding the keypads changes the time 32 minutes each second.

**2. SET WATER HARDNESS NUMBER:**

Press the SELECT keypad once to display 25 (flashing) and HARDNESS.

Set the grains per gallon hardness of your water supply (determined by water analysis or call your local water department).



**NOTE:** If your water supply contains iron, compensate for it by adding to the water hardness number. *For example, assume your water is 15 gpg hard and contains 2 ppm iron. Add 5 to the hardness number for each 1 ppm of iron. In this example, you would use 25 for your hardness number.*

$$2 \text{ ppm iron} \times 5 = 10 \text{ (times)} \quad \begin{array}{r} 15 \text{ gpg hardness} \\ +10 \\ \hline 25 \text{ HARDNESS NUMBER} \end{array}$$

Press the (↑) UP/DOWN (↓) keypads to set your water hardness number in the display. The DOWN keypad moves the display to 1. The UP keypad moves the display to the highest setting (see maximum setting for your model in the specifications).

**NOTE:** Each press of the UP/DOWN keypad changes the display by 1 between 1 and 25. Between 25 and the highest number, the display changes 5 at a time 25, 30, 35, etc. Continuous pressure on the UP or DOWN keypad changes the display twice each second.

**NOTE:** If using potassium chloride (KCl) instead of standard sodium chloride (NaCl) water softener salt, hardness setting must be increased by 25%.

### 3. SET RECHARGE (REGENERATION) TIME:

Press the SELECT keypad once to display 2:00 AM (flashing) and RECHARGE TIME.

At the 2:00 AM RECHARGE TIME setting, the softener begins regeneration at 2:00 AM, ending no later than 4:00 AM. This is a good time in most households because water is not being used.



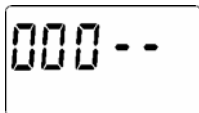
If a different RECHARGE TIME setting would be better for your household, do the following.

Press the (↑) UP/DOWN (↓) keypads to set the desired RECHARGE starting hour. Be sure to observe the AM-PM as you did when setting the time of day.

**NOTE:** Each press of the UP/DOWN keypads changes the display 1 hour. Continuous pressure on the UP or DOWN keypad changes the display twice each second.

### 4. SET EFFICIENCY, BACKWASH TIME AND RINSE TIME:

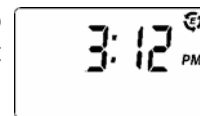
Press and hold the SELECT button. "000--" should show in display. Press SELECT button once more to go to Efficiency screen.



Press the UP or DOWN button to set the efficiency setting either on or off.

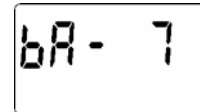
NOTE: California regulations require the efficiency setting to be ON for sale in California.

NOTE: When efficiency setting is set to on, an icon will show in the upper right hand corner of the display.



Press the SELECT button once to go to the backwash time setting.

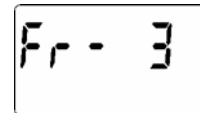
NOTE: Factory default for this setting is 7 minutes.



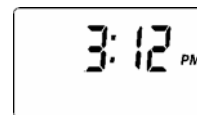
Press the UP or DOWN button to set the desired backwash time.

Press the SELECT button once to go to the rinse time setting.

NOTE: Factory default for this setting is 3 minutes.



**Press the SELECT keypad once again,** to return the present time (steady) of day.



## CALIFORNIA EFFICIENCY REQUIREMENT

Your water softener has a "High Efficiency" feature with an "ON" or "OFF" setting. This softener setting is shipped in the "OFF" position, which utilizes the maximum rated capacity while most often achieving maximum salt efficiencies. When installing this unit in the State of California, you **MUST** turn this setting to the "ON" position which may initiate more frequent recharges, however it will operate at 4000 grains per pound of salt or higher.

If you wish to turn the Salt Efficiency feature "ON" (☺ icon will show in display), follow the instructions on this page.

## EXTRA RECHARGE

Sometimes, a manually started regeneration (recharge) may be desired, or needed. Two examples are:

☞ You have used more water than usual (guests visiting) and you may run out of soft water before the next timer started regeneration.

☞ You did not refill the softener with salt before it was gone.

You can start a regeneration right away, or you can set the timer to regenerate at the next 2:00 AM (or other pre-set recharge time). Do the following.

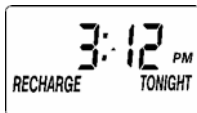
### RECHARGE NOW

Press the RECHARGE keypad and hold for 3 seconds. RECHARGE NOW begins to flash in the display, and the softener enters the fill cycle of regeneration right away. This regeneration will last for about 2 hours. Then, you will have soft water again.



### RECHARGE TONIGHT

Press and release (do not hold) the RECHARGE keypad. RECHARGE TONIGHT flashes in the display, and the softener begins regeneration at the next preset recharge time. If you decide to cancel the regeneration before it has started, press and release the RECHARGE keypad once more to turn off the flashing RECHARGE TONIGHT.



### PROGRAM MEMORY

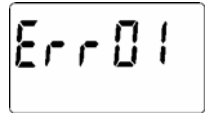
If electrical power to the softener goes off, the time display is blank but the face plate timer keeps the correct time for about 6 hours. When electrical power comes on again, you have to reset the present time only if the dis-

play is flashing. The HARDNESS and RECHARGE TIME never require resetting unless a change is desired.

Even if the timer is incorrect after a long power outage, the softener works as it should to keep your water soft. However, regenerations may occur at the wrong time of day until you reset the timer to the correct time of day.

### ERROR CODE

An error code could appear in the face plate display if a problem occurs in the softener electronics.



### WATER METER:

The water meter, consisting of a turbine, turbine mounting assembly, and the sensor housing, is located at the valve outlet port. As water passes through and spins the turbine, two magnets (in the turbine) cause a back-and-forth movement of a switch in the sensor housing. This switch movement sends a pulse to the electronic demand timer.

### ELECTRONIC DEMAND TIMER:

The demand timer is actually a small computer. As it receives pulses from the water meter, it converts them to gallons of water passing through the water softener. It multiplies this water usage information times the water hardness (preprogrammed into timer) to continually calculate the soft water capacity required. The computer adjusts daily to water using habits, seeking to supply soft water for the longest time, using the least (and most efficient) amount of salt and water to regenerate.

When the computer determines more capacity is needed, at the next regeneration starting time (2:00 a.m., or as otherwise preset), it will schedule a regeneration. RECHARGE TONIGHT shows in the display to inform of the coming regeneration.

## REFILLING WITH SALT

Remove the brine tank cover and check the salt storage level frequently. If the unit uses all the salt before you refill it, you will get hard water. Until you have established a refilling routine, check the salt every 2 or 3 weeks. **ALWAYS** refill if less than 1/2 full. **Be sure the brinewell cover is on.**

**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. *Clean, high grade* rock salts are acceptable, but may require frequent brine tank cleaning to remove the “sludge” residue (insolubles). **NOTE:** If using potassium chloride (KCl) instead of standard sodium chloride (NaCl) water softener salt, hardness setting must be increased by 25%.

**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. Although this additive may help keep the resin bed clean, it may also release corrosive fumes that will weaken and shorten the life of some EcoWater System Unit parts.

## 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.

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

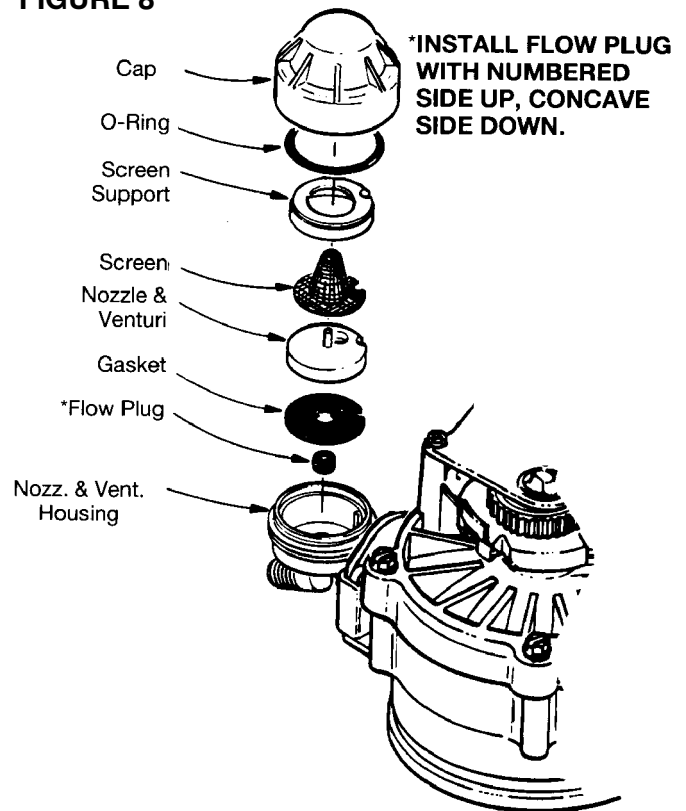
## CLEANING THE NOZZLE AND VENTURI

A clean nozzle and venturi (Figure 8) is a must for the EcoWater System Unit to work right. 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 EcoWater System Unit will not work, and you will get hard water.

To get to the nozzle and venturi, remove the EcoWater System Unit top cover. **Be sure the unit is in service 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) if dirty.

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 8**



## **RESIN BED CLEANING**

If the water supply contains “clear water” iron (see page 9), regular resin bed cleaning is needed to keep the bed from coating with iron. Use resin bed cleaner, available from EcoWater, following directions on the container. Clean the resin every 6 months, or more often if iron appears in your conditioned water supply.

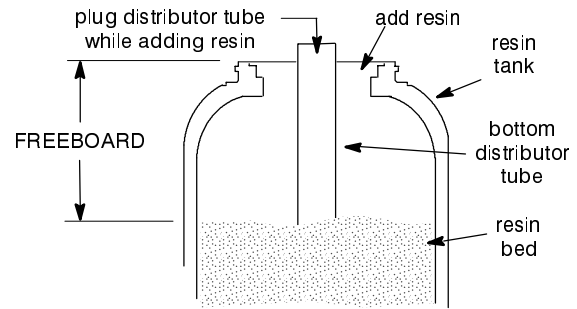
## **ADDING RESIN**

Normally, the resin bed (Figure 9) will last the lifetime of the EcoWater System Unit. However, certain conditions may require partial or total replacement of the resin bed. Some of these conditions are:

- (1) damaged top and/or bottom distributors have allowed resin to escape
- (2) resin bed iron fouled beyond use
- (3) some water supplies cause resin degradation

To add more resin, or to replace the entire bed, use the following guides. See resin requirements on page 4.

**FIGURE 9**



## **IMPORTANT NOTES:**

Turn off the water supply and relieve pressure.

Handle the resin tank carefully. It is heavy when filled with resin and water.

Do not lose o-ring seals or other small parts.

Refer to the assembly instructions and to installation steps to reassemble and restart the unit.

## **CHECKING THE MODEL CODE ENTRY (See page 9)**

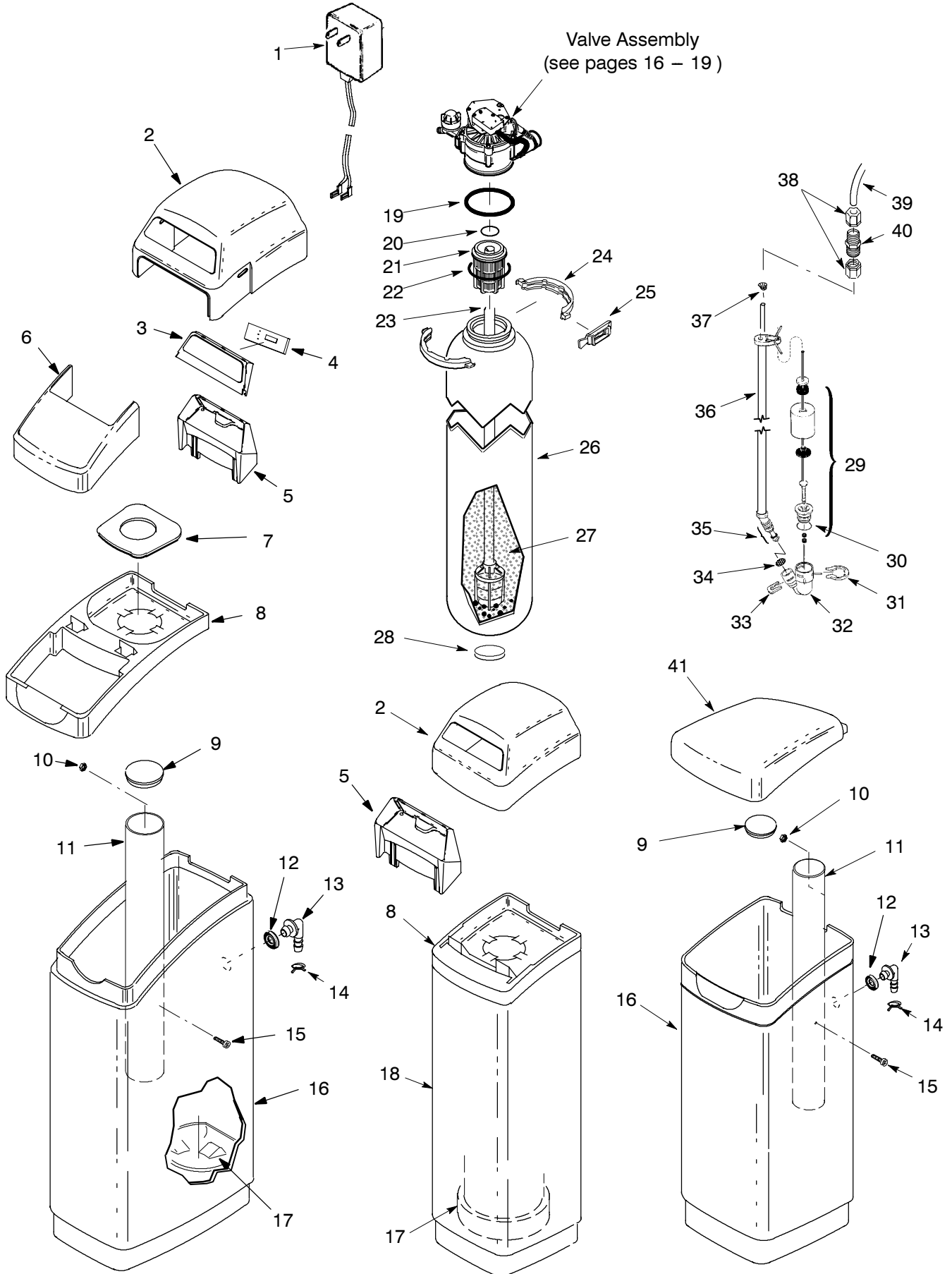
Unplug the transformer at the electrical outlet, then plug it in again. A “beep” will sound, then the model code displays for a few seconds. The test number will then display for a few seconds, followed by the present time display.

## **CHANGING THE MODEL CODE**

**IMPORTANT: READ page 9 BEFORE CHANGING THIS CODE.**






1. Enter the secondary mode...press SELECT and hold for 3 seconds.
2. Again, press SELECT and hold for 3 seconds. The current model code setting will be flashing.
3. Use the (↑) or (↓) keypad to display the desired model code.
4. Press SELECT to set.
5. Reset the timer (page 9) and reselect other desired options.


# REPAIR PARTS – ALL MODELS




## REPAIR PARTS – ALL MODELS

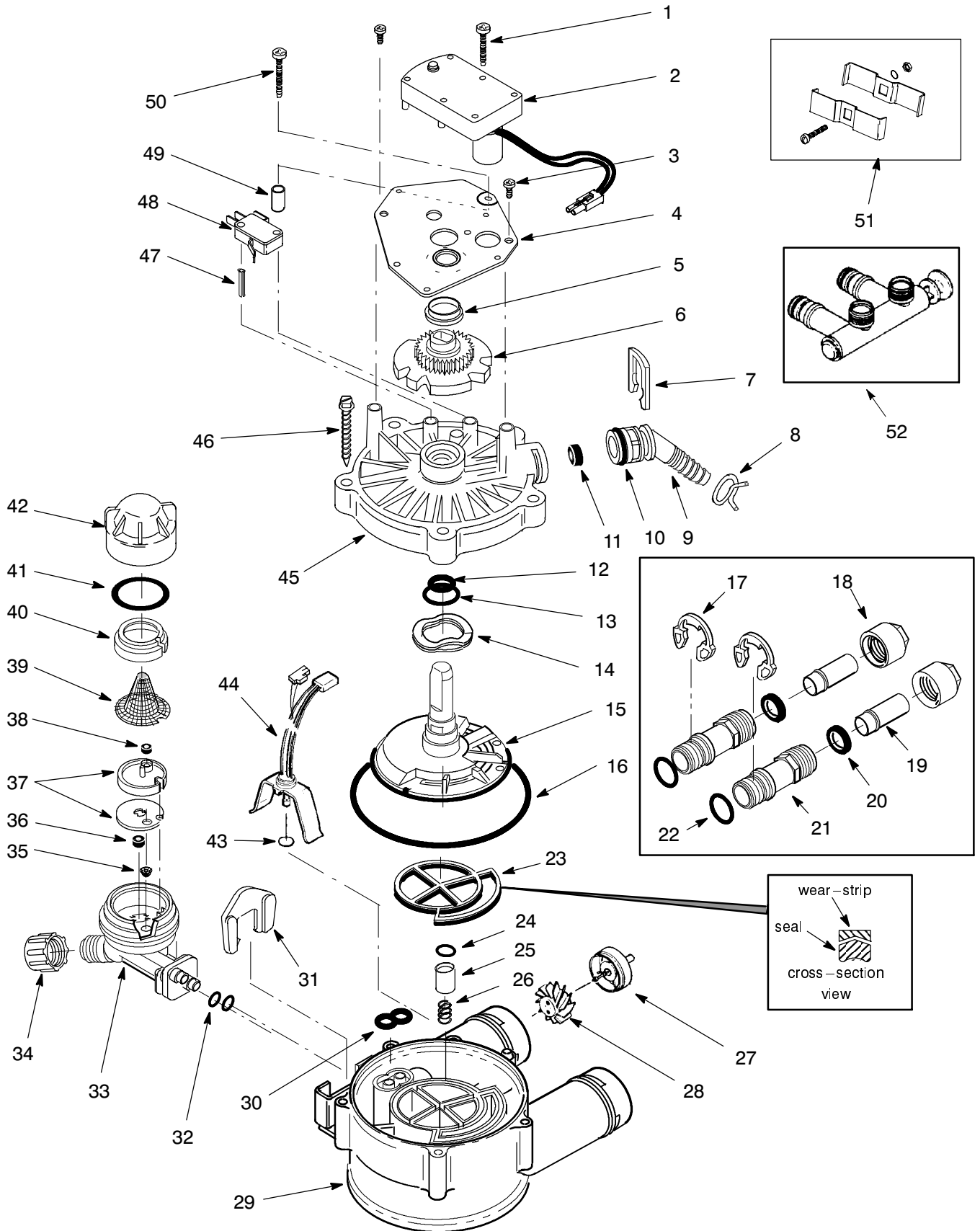
KEY NO.	PART NO.	DESCRIPTION
1	7252373	Transformer, 24V – 10VA
2	7218662	Top Cover (ESD 518)
	7218670	Top Cover (ESD 2502 models)
3	7210509	Faceplate (order following decal)
–	7214692	Decal
4	7238418	Repl. PWA
5	7211173	Faceplate Support
6	7210389	Salt Hole Cover (ESD 518)
7	7214244	Vapor Barrier (ESD 518)
8	7210397	Rim (ESD 518)
	7210460	Rim (ESD 2502 models)
9	7155115	Brinewell Cover
10	7219595	Washer
11	7109871	Brinewell
12	9003500	Grommet
13	1103200	Hose Adaptor
14	0900431	Hose Clamp
15	7219587	Screw
16	7218604	Brine Tank (ESD 518)
	7218612	Brine Tank (ESD 2502 models)
17	7141205	Tank Base
18	7218620	Resin Tank Sleeve (ESD 2502 R30)
	7218646	Resin Tank Sleeve (ESD 2502 R39)
19	7170296	O – ring Seal, 2 – 7/8" x 3 – 1/4"
20	7170254	O – ring, 13/16" x 1 – 1/16"
21	7077870	Top Distributor
22	7170270	O – ring, 2 – 3/4" x 3"

KEY NO.	PART NO.	DESCRIPTION
23	7105047	Repl. Distributor (bottom)
24	7176292	Clamp Section, 2 req.
25	7088033	Clamp Retainer, 2 req.
26	7114787	Resin Tank, 8" dia. x 35", ESD 518
	7113058	Resin Tank, 8" dia. x 40", ESD 2502 R30
	7092202	Resin Tank, 10" dia. x 47", ESD 2502 R39
27	0502272	Resin, 1 cu ft (stand. mesh)
	0501741	Resin, 1/2 cu ft (stand. mesh)
28	1184700	Spacer (ESD 518, ESD 2502 R30)
29	7113008	Float, Stem and Guide Assem.
30	7170288	O – ring, 15/16" x 1 – 3/16"
31	1205500	Clip
32	7092252	Brine Valve Body
33	7080653	Clip
34	7131365	Screen
35	7113016	Tubing Assembly, BV
36	7095470	Brine Tube
37	7171349	Screen
38	9003201	Nut – Ferrule, 2 req. 
39	7161807	Tubing, 20 ft 
–	7161768	Tubing, 100 ft
40	7094987	Union Connector 
41	7210486	Brine Tank Cover (ESD 2502)
	7116488	Brine Valve Asm (incl. Key Nos. 29 – 36)
	7108118	Hose, 1/2" I.D. Drain (order length needed)

 optional parts to extend brine tubing (not included)

 Not shown.

# REPAIR PARTS – ESD 518 & ESD 2502 R30



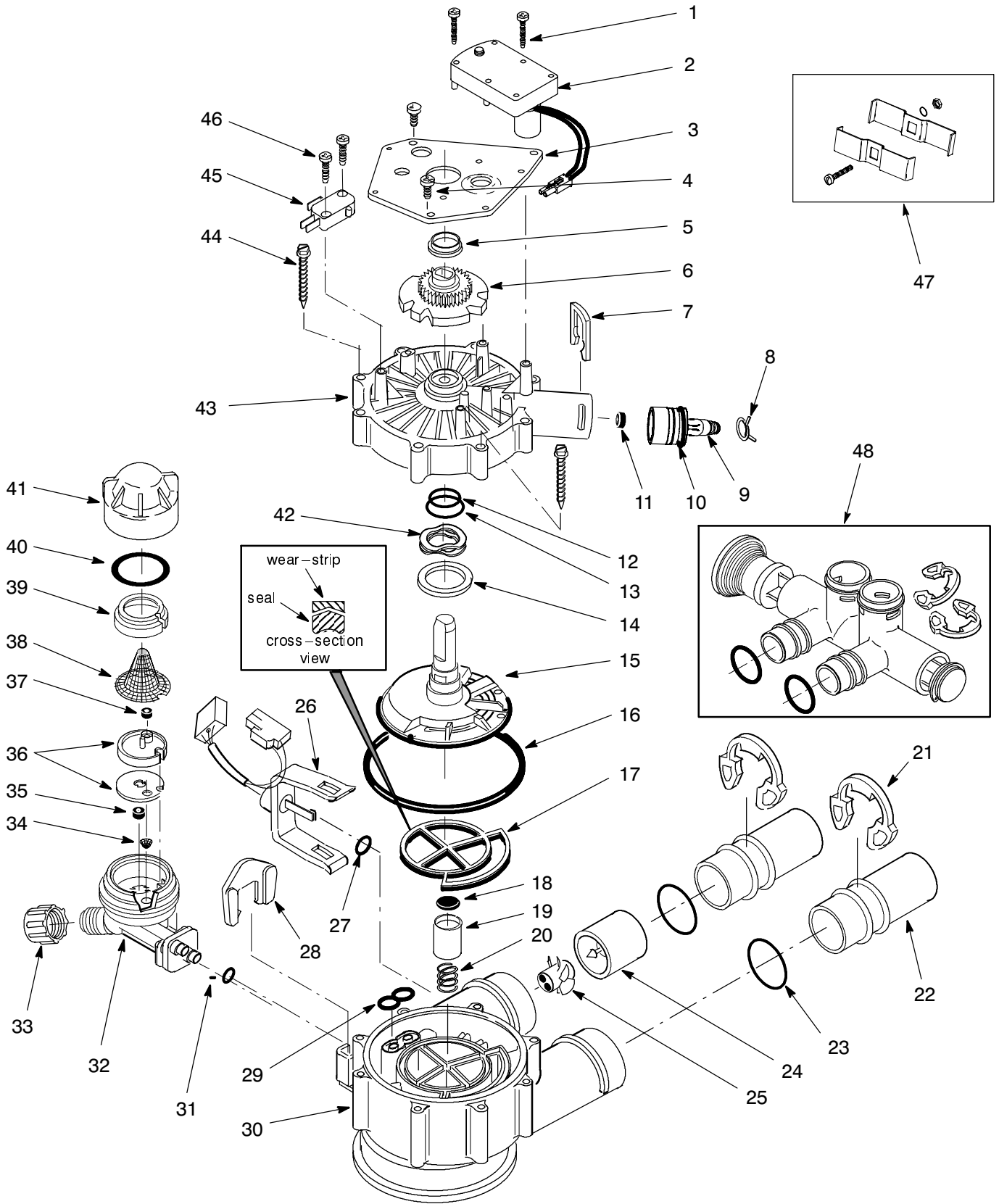
## REPAIR PARTS – ESD 518 & ESD 2502 R30

KEY NO.	PART NO.	DESCRIPTION
1	7224087	Screw, #8-32 x 1" (2 req.)
2	7228544	Motor (incl. 2 ea. of Key No. 1)
3	0900857	Screw, #6-20 x 3/8 (2 req.)
4	7231385	Motor Plate
5	0503288	Bearing
6	7113927	Cam and Gear
7	7142942	Clip (Drain)
8	0900431	Tubing Clamp
9	7024160	Drain Hose Adaptor
10	7170327	O-Ring, 5/8 x 13/16
11	0501228	Flow Plug
12	7170238	O-Ring, 7/16 x 5/8
13	7170212	O-Ring, 3/4 x 15/16
14	7082087	Wave Washer
15	7199232	Rotor & Disc
16	7170246	O-Ring, 3-3/8 x 3-5/8
17	7116713	Clip (2 req.)
18	0507369	Installation Nut (2 req.)
19	0507615	Installation Tube (2 req.)
20	7170335	Washer (2 req.)
21	2207800	Installation Adaptor (2 req.) (incl. 2 ea. of Key No. 22)
22	7170288	O-Ring, 15/16 x 1-3/16 (2 req.)
23	7134224	Rotor Seal
24	7170204	O-Ring, 3/8 x 9/16
25	7092642	Plug (Drain Seal)
26	7129889	Spring
27	2204101	Turbine Support and Shaft
28	7117858	Turbine
29	7082053	Valve Body
30	7081764	Seal (Nozzle & Venturi)

KEY NO.	PART NO.	DESCRIPTION
31	7081201	Retainer (Nozzle & Venturi)
32	7170319	O-Ring, 1/4 x 3/8 (2 req.)
33	7081104	Nozzle & Venturi Housing
34	1202600	Nut - Ferrule
35	7095030	Cone Screen
36	1148800	Flow Plug, .3 gpm
37	7147706	Nozzle & Venturi Gasket Kit (ESD 518)
	7248007	Nozzle & Venturi Gasket Kit (ESD 2502 R30)
–	7204362	Gasket (only) (ESD 518)
–	7190547	Gasket (only) (ESD 2502 R30)
38	0521829	Flow Plug, .1 gpm
39	7146043	Screen
40	7167659	Screen Support
41	7170262	O-Ring, 1-1/8" x 1-3/8"
42	7199729	Cap
43	0900060	O-Ring
44	7235371	Sensor Housing & Wiring Harness
45	7085263	Valve Cover
46	7074123	Screw, #10-14 x 2 (5 req.)
47	7077472	Expansion Pin
48	7030713	Switch
49	7117816	Spacer
50	7070412	Screw, #4-24 x 1-1/8 (flat head)
51	7248706	Ground Clamp
52	7129871	Bypass Valve (optional)
◆	7214969	Nozzle & Venturi Assy. (incl. Key Nos. 33, & 35 – 42)
◆	7129716	Seal Kit (incl. Key Nos. 12, 13, 16, 23, 24 & 30)

◆ Not shown.

# REPAIR PARTS – ESD 2502 R39



## REPAIR PARTS – ESD 2502 R39

KEY NO.	PART NO.	DESCRIPTION
1	7224087	Screw, #8-32 x 1" (2 req.)
2	7228544	Motor (incl. 2 ea. of Key No. 1)
3	7231393	Motor Plate
4	0900857	Screw, #6-20 x 3/8 (3 req.)
5	7171250	Bearing
6	7219545	Cam and Gear
7	7169180	Clip (Drain)
8	0900431	Hose Clamp
9	7271270	Drain Hose Adaptor
10	7170288	O-ring, 15/16 x 1-3/16
11	0501228	Flow Plug, 2.0 gpm
12	7170327	O-ring, 5/8 x 13/16
13	7173024	O-ring, 1-1/8 x 1-1/2
14	7174313	Bearing, Wave Washer
15	7185500	Rotor & Disc
16	7173032	O-ring, 4-1/2 x 4-7/8
17	7185495	Rotor Seal
18	7172989	Seal
19	7171187	Plug (Drain Seal)
20	7129889	Spring
21	7089306	Clip (2 req.)
22	7077642	Copper Tube, 1" (2 req.)
23	7170262	O-ring, 1-1/8 x 1-3/8 (4 req.)
24	7094898	Turbine Support
25	7101548	Turbine
26	7248722	Wire Harness (Sensor)

KEY NO.	PART NO.	DESCRIPTION
27	0900060	O-ring
28	7081201	Retainer (Nozzle & Venturi)
29	7195482	Seal (Nozzle & Venturi)
30	7171145	Valve Body
31	7170319	O-ring, 1/4 x 3/8 (2 req.)
32	7081104	Nozzle & Venturi Housing
33	1202600	Nut - Ferrule
34	7095030	Cone Screen
35	1148800	Flow Plug, .3 gpm
36	7114533	Nozzle and Venturi - Gasket Kit
-	7204362	Gasket only
37	7084607	Flow Plug, .15 gpm
38	7146043	Screen
39	7167659	Screen Support
40	7170262	O-ring, 1-1/8 x 1-3/8
41	7199729	Cap
42	7175199	Wave Washer
43	7171161	Valve Cover
44	7172997	Screw, #10 x 2-5/8 (8 req.)
45	7145186	Switch
46	7140738	Screw, #4-24 x 3/4 (2 req.)
47	7248706	Ground Clamp
48	7214383	Bypass Valve (optional)
◆	7253808	Nozzle & Venturi Asm (incl. Key Nos. 32, & 34 – 41)
◆	7185487	Seal Kit (incl. Key Nos. 12, 13, 16, 17, 18 & 29)

◆ not illustrated