

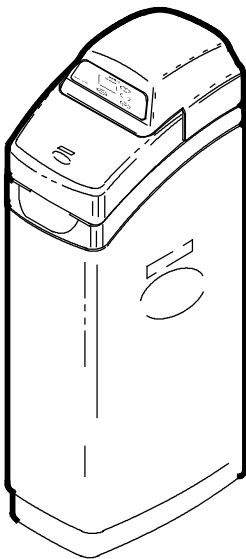
OWNER'S MANUAL

How to maintain and operate your
EcoWater electronic demand water system

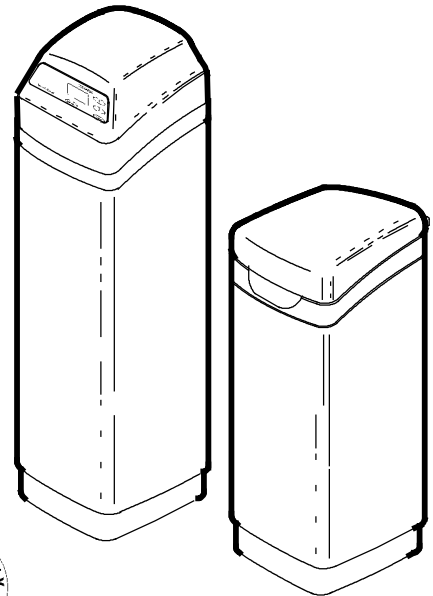


A Marmon Water/Berkshire Hathaway Company

**MODEL
ESD 518**



**MODELS
ESD 2502R30
ESD 2502R39**



Systems tested and certified by NSF International against NSF/ANSI Standard 44 for hardness reduction and efficiency and the reduction of barium and radium 226/228, and certified to NSF/ANSI Standard 372.

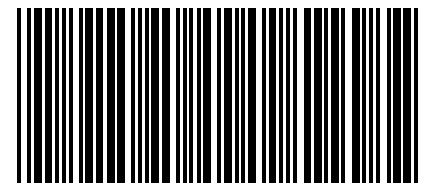


Systems tested and certified by the Water Quality Association against CSA B483.1.



Designed, Engineered &
Assembled in the U.S.A.

EcoWater Systems LLC
P.O. Box 64420, St. Paul, MN 55164-0420
www.ecowater.com



Part No. 7339905 (Rev. G 2/20/17)

LIMITED WARRANTY

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

Congratulations! You have just purchased the highest quality water conditioning product on the market.

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 and installation 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 (10) YEARS after installation, 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 (3) YEARS after installation, 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 local service?

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

PHONE: _____

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

Yes, EcoWater Systems LLC warrants FACTORY REPAIRS as well as all replacement parts for a period of 90 DAYS.

Are any additional warranties available?

We are pleased to say, YES! EcoWater Systems LLC offers 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, POWER SUPPLY, POWER CORD, SENSOR HOUSING, and MICRO SWITCHES to a total of TEN YEARS from the date of original installation. Should your local dealer not offer this warranty, you may contact 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.

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

*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.

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.)

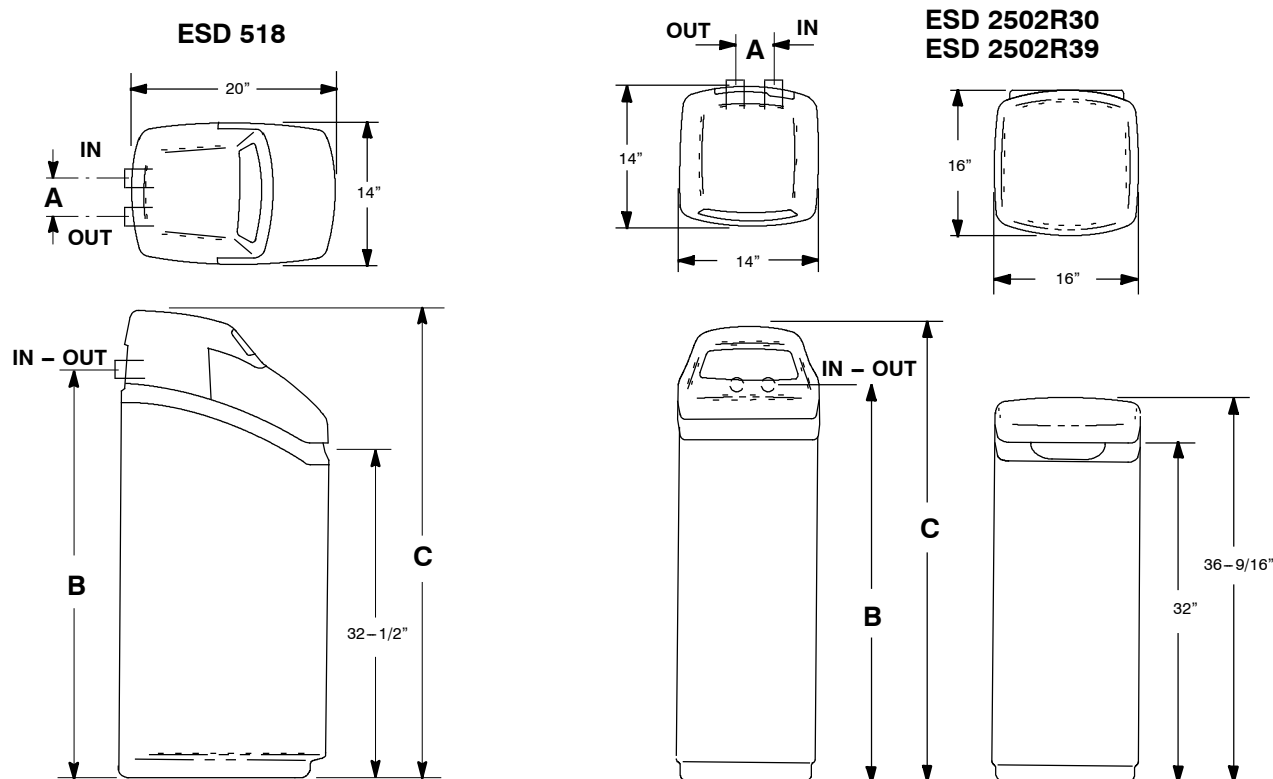
The EcoWater softener works on **24V DC** electrical power, supplied by a direct plug-in power supply (included). Be sure to use the included power supply and plug it into a nominal **120V, 60 Hz** household outlet that is in a **dry location only**, grounded and properly protected by an overcurrent device such as a circuit breaker or fuse.

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.



European Directive 2002/96/EC requires all electrical and electronic equipment to be disposed of according to Waste Electrical and Electronic Equipment (WEEE) requirements. This directive or similar laws are in place nationally and can vary from region to region. Please refer to your state and local laws for proper disposal of this equipment.

DIMENSIONS



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

SPECIFICATIONS AND PERFORMANCE CLAIMS

These models are efficiency rated. The efficiency rating is valid only at the minimum salt dose and the service flow rate. These softeners have a demand initiated regeneration (D.I.R.) feature that complies with specific performance specifications intended to minimize the amount of regenerant brine and water used in their operation.

These softeners have a rated softener efficiency of not less than 3,350 grains of total hardness exchange per pound of salt (based on sodium chloride) and shall not deliver more salt than their listed rating or be operated at a sustained maximum service flow rate greater than their listed rating. These softeners have been proven to deliver soft water for at least ten continuous minutes at the rated service flow rate. The rated salt efficiency is measured by laboratory tests described in NSF/ANSI Standard 44. These tests represent the maximum possible efficiency that the system can achieve. Operational efficiency is the actual efficiency after the system has been installed. It is typically less than the rated efficiency, due to individual application factors including water hardness, water usage, and other contaminants that reduce a softener's capacity.

	ESD 518	ESD 2502R30	ESD 2502R39
<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	7.2	7.0
<i>Pressure Drop at Service Flow Rate (psi)</i>	7.7	14.7	6.2
<i>Intermittent Flow Rate (gpm) @ 15 psi ▲</i>	7.5	7.2	12.5
<i>Intermittent Flow Rate (gpm) @ 30 psi ▲</i>	11.3	11.0	19.1
<i>Rated Efficiency (gr / lb of salt @ min. salt dose)</i>	5,030 @ 2.0	5,070 @ 2.4	5,030 @ 2.4
<i>Water Used During Regeneration @ Minimum Salt Dose (gallons)</i>	2.7 / 1,000 grains	2.4 / 1,000 grains	4.5 / 1,000 grains
<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

▲ 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. The validity of these flow rates is verified by NSF.

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

● Working pressure for Canadian use is 1.4 - 7.0 kg/cm².

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

While testing was performed under standard laboratory conditions, actual performance of the system may vary based on local water conditions.

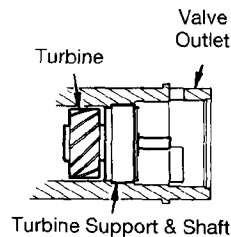
PERFORMANCE CLAIMS		
Contaminant	Influent Challenge Level	Maximum Allowable Product Water Level
Barium	10 ±10% mg/L	2.0 mg/L
Radium 226/228	25 pCi/L	5 pCi/L

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

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

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.



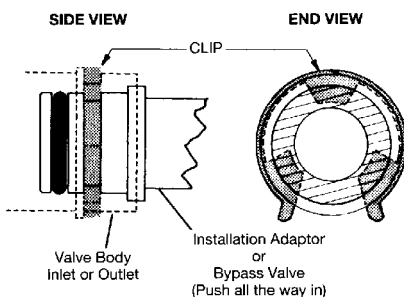
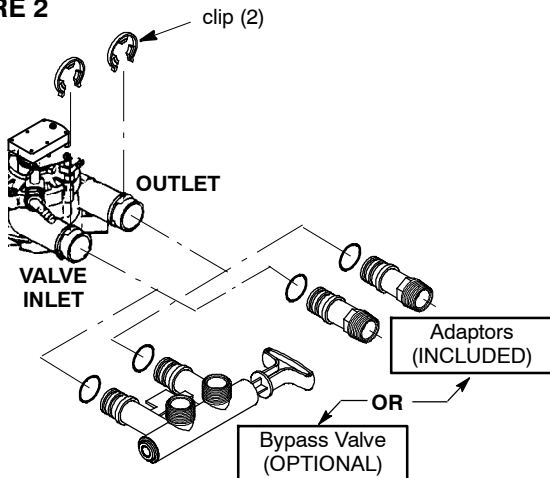
- **INLET AND OUTLET ADAPTORS** – Push adaptors into the valve ports. Be sure the o-ring seals are lubricated with silicone grease or Vaseline.

– 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

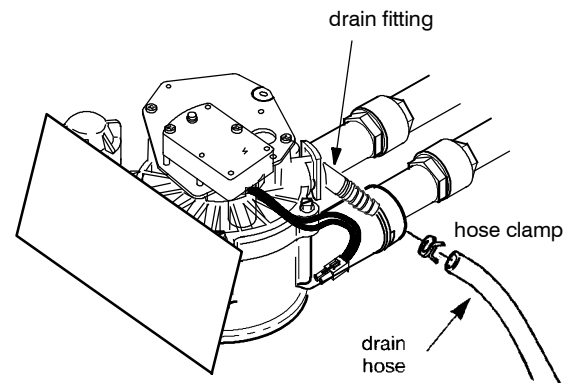
piece of 3/4" thick plywood (slightly larger than the bottom of the brine tank). Then shim under the plywood to level the softener.

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 2502R30 & ESD 2502R39)

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 (provided).
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.

INSTALLATION – (MODEL ESD 2502R39)

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.

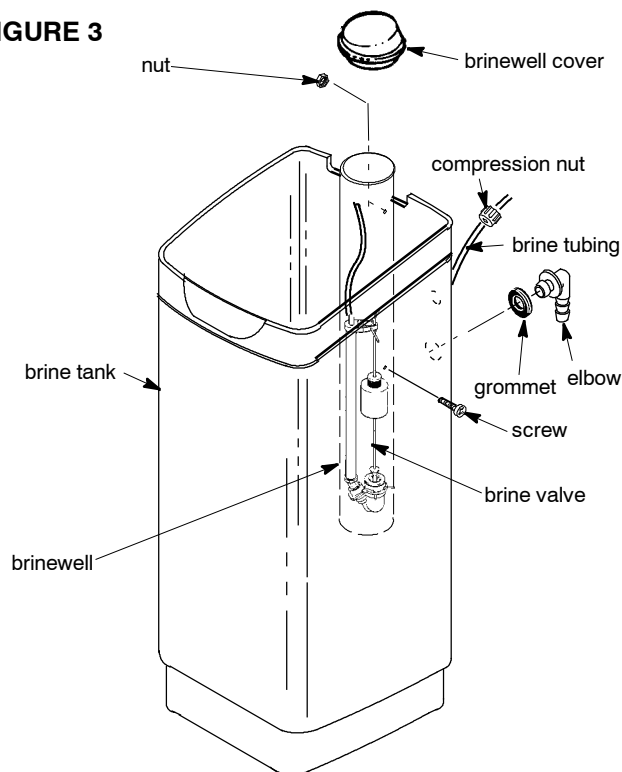
Note: If the optional bypass valve is not used, be sure to install a 3–valve bypass (Figure 5).

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. 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 3, will maintain ground continuity. If you use the plastic bypass, continuity is broken. To restore the ground, do either step **a** or **b** following.

FIGURE 3



a. Use the EcoWater ground clamp kit (not included) to make a jumper across the inlet and outlet pipes (See Figure 4).

b. Install a #4 copper wire across the removed section of main water pipe, securely clamping at both ends – parts not included.

FIGURE 4

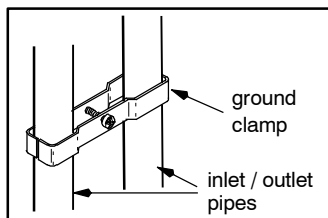
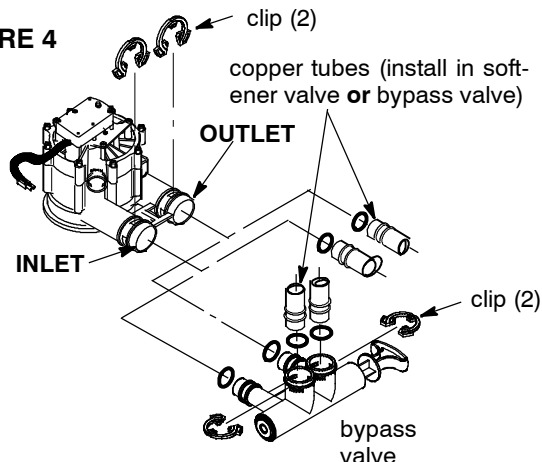
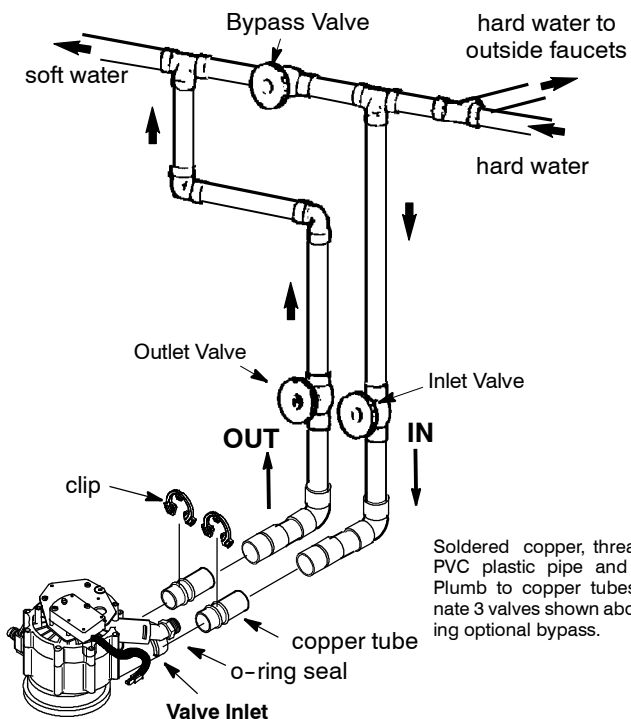


FIGURE 5



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

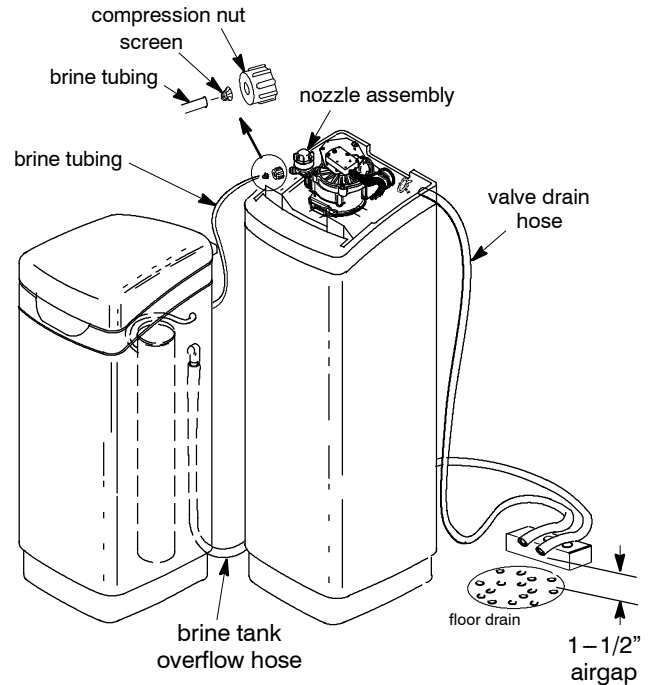
INSTALLATION (continued) – (MODEL ESD 2502R39)

- 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 (provided) to fasten.
- Plug the power supply into a continuously "live", grounded 120V, 60 Hz household electrical outlet, approved by local codes.
- 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.

FIGURE 6



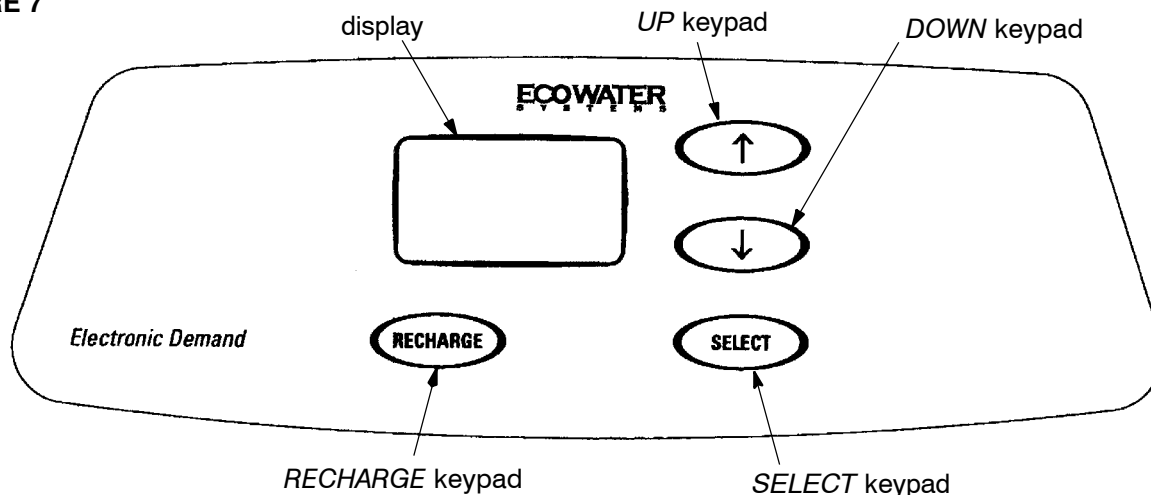
- Sanitize the unit following procedures below, and use "Recharge Now" to start a recharge.
- Fill the brine tank with salt. You may use most water conditioner salts, but it must be clean. Recommended nugget, pellet or course solar salts have less than 1% impurities.
- Install the brine tank cover.

SANITIZING THE SOFTENER

Care is taken at the factory to keep your softener clean and sanitary. Materials used to make the softener 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 a recharge:** Press the RECHARGE button and hold for 3 seconds, until *RECHARGE NOW* begins to flash in the display. This recharge draws the sanitizing bleach into and through the water softener to sanitize it. Any air remaining in the unit is purged to the drain.
- After the recharge has completed, fully open a cold water faucet, downstream from the softener, and allow 50 gallons of water to pass through the system. This should take at least 20 minutes. Close the faucet.

FIGURE 7



When the power supply 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 S518, S30 OR H40, as shown in the following drawing. The model code is followed by a test number (example: J2.0). After the test number, 12:00 PM begins to flash. The words PRESENT TIME show in the display.

Model ESD 518	CODE 55 18	
Model ESD 2502 R30	CODE 5 30	12:00 PM PRESENT TIME
Model ESD 2502 R39	CODE H40	

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 power supply is first plugged in, please see page 13 to reset.

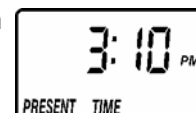
SOUND “BEEPER”: A “beeper” sounds while pressing keypads for timer set-up. One beep signals a change in the face plate display. Repeated beeps means the timer will not accept a change from the keypad you have pressed, telling you to use another keypad. For example, in setting the hardness (step 2), the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

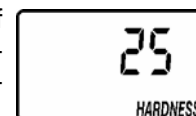


NOTE: Each press of the UP or DOWN keypads changes the time by 1 minute. Pressing and holding the keypads changes the time 32 minutes each second.

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.*

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

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.



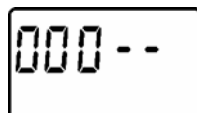
If a different RECHARGE TIME setting would be better for your household, do the following.

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:

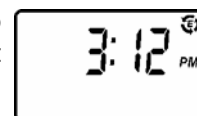
Press and hold the SELECT button. "000--" should show in display. Press SELECT button once more to go to Efficiency screen.



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

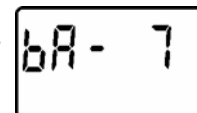
NOTE: California regulations require the efficiency setting to be ON for sale in California.

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.

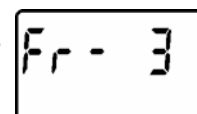
NOTE: Factory default for this setting is 7 minutes.



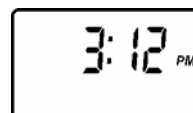
Press the UP or DOWN button to set the desired backwash time.

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.

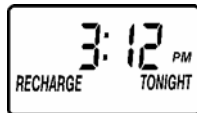
RECHARGE NOW

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 several hours. When electrical power comes on

again, you have to reset the present time only if the display is flashing. The HARDNESS and RECHARGE TIME never require resetting unless a change is desired.

Even if the 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:

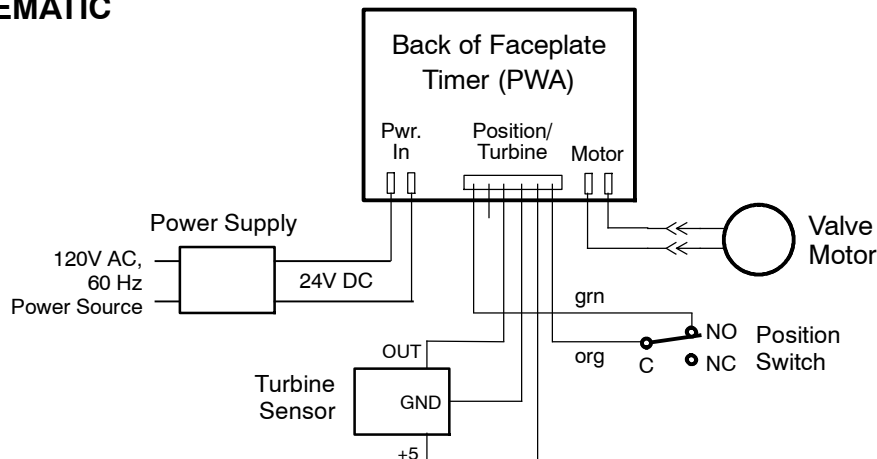
The water meter, consisting of a turbine, turbine mounting assembly, and the sensor housing, is located at the valve outlet port. As water passes through and spins the turbine, two magnets (in the turbine) cause a back-and-forth movement of a switch in the sensor housing. This switch movement sends a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

WIRING SCHEMATIC



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.*

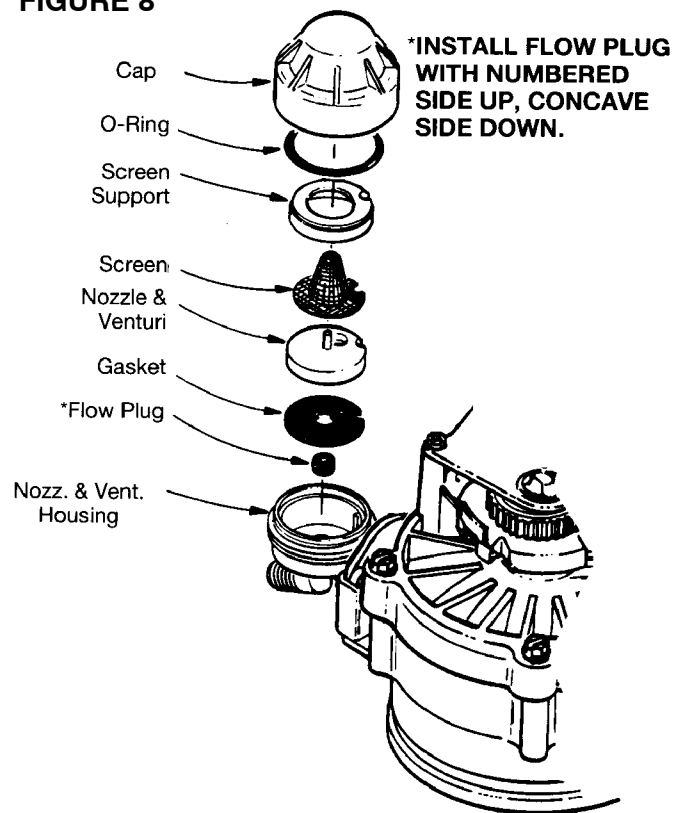
CLEANING THE NOZZLE AND VENTURI

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.

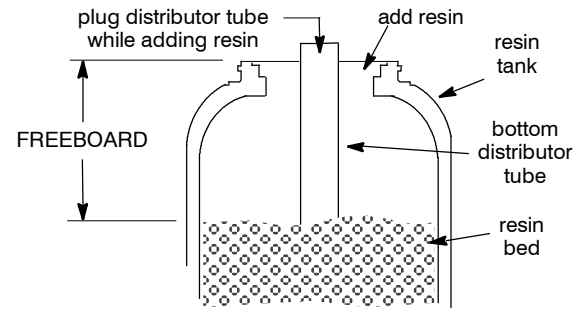
ADDING RESIN

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 power supply 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.

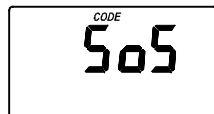
1. Enter the secondary mode...press SELECT and hold for 3 seconds.
2. Again, press SELECT and hold for 3 seconds. The current model code setting will be flashing.
3. Use the (↑) or (↓) keypad to display the desired model code.
4. Press SELECT to set.
5. Reset the timer (page 9) and reselect other desired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

RESETTING TO FACTORY DEFAULTS

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

1. Press the SELECT keypad and hold it until the display changes twice to show “CODE” and the flashing model code.

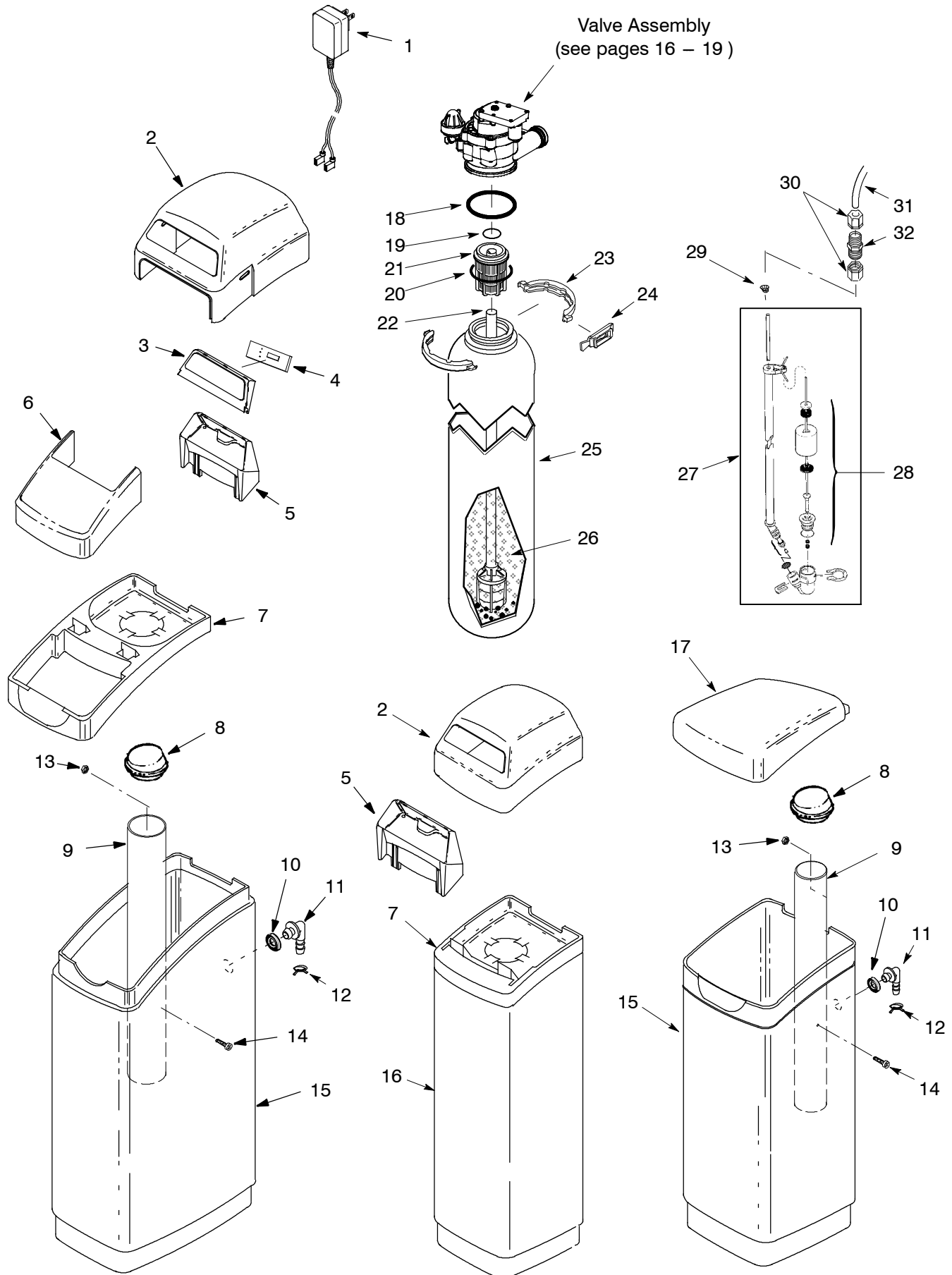
2. Press the UP keypad (a few times, if necessary) to display a flashing “SoS”.



3. Press the SELECT keypad, and the electronic controller will restart.

4. Set the present time, hardness, etc., as described on pages 9 & 10.

REPAIR PARTS – ALL MODELS



REPAIR PARTS – ALL MODELS

KEY NO.	PART NO.	DESCRIPTION
1	7351054	Power Supply, 24V DC
2	7218662	Top Cover (ESD 518)
	7218670	Top Cover (ESD 2502 models)
3	7210509	Faceplate (order following decal)
–	7287409	Decal
4	7285782	Repl. PWA
5	7291212	Faceplate Support
6	7273997	Salt Lid (ESD 518)
7	7287386	Rim (ESD 518)
	7274286	Rim (ESD 2502 models)
8	7155115	Cover, Brinewell
9	7109871	Brinewell
–	7331258	Overflow Hose Adaptor Kit (includes Key Nos. 10 – 12)
10	↑	Grommet
11	↑	Adaptor Elbow
12	↑	Hose Clamp
–	7331698	Brinewell Mounting Hardware Kit (includes Key Nos. 13 & 14)
13	↑	Washer
14	↑	Screw
15	7218604	Brine Tank (ESD 518)
	7218612	Brine Tank (ESD 2502 models)
16	7211076	Resin Tank Sleeve (ESD 2502R30)
	7218646	Resin Tank Sleeve (ESD 2502R39)
17	7274008	Brine Tank Cover (ESD 2502 models)

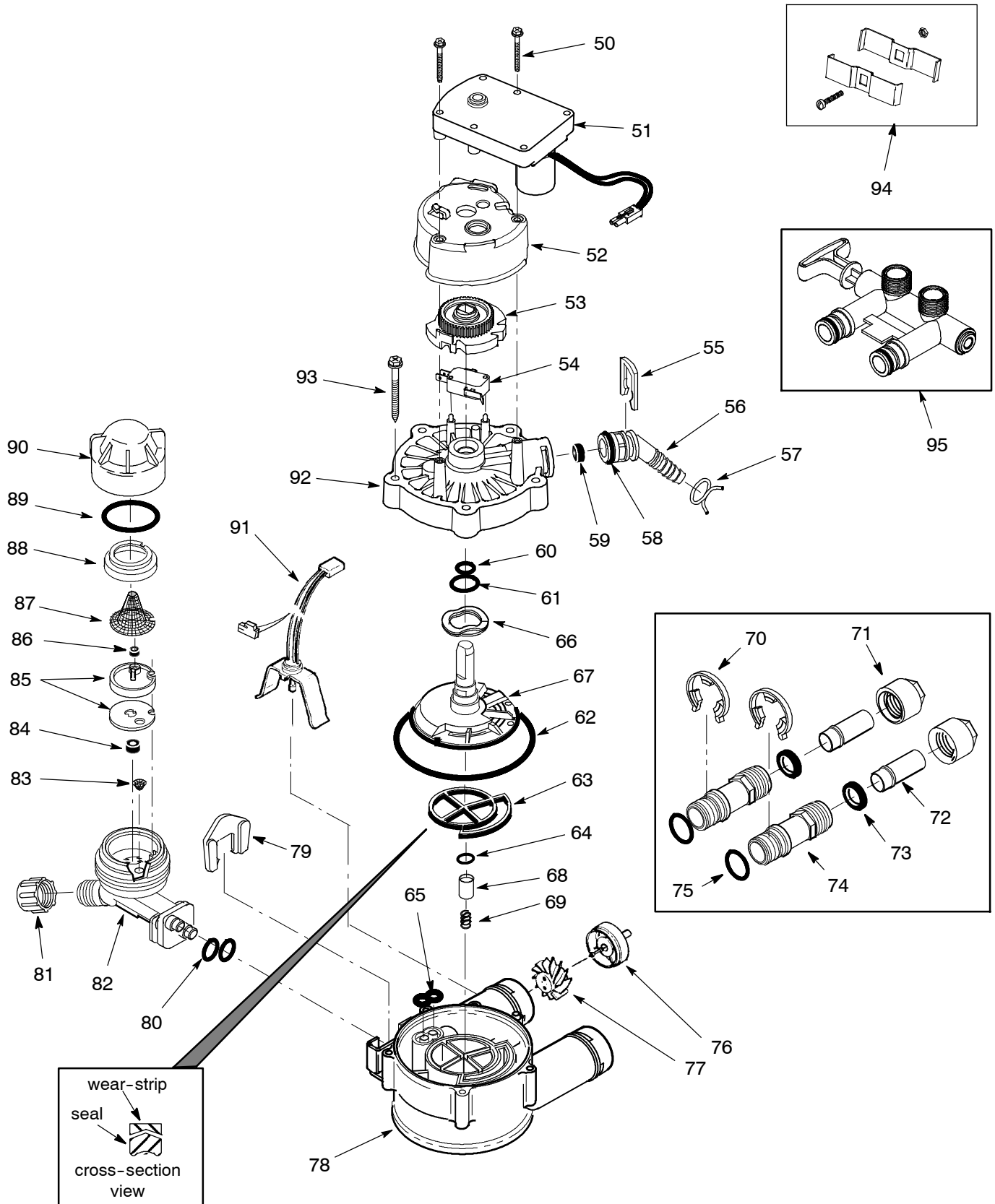
KEY NO.	PART NO.	DESCRIPTION
–	7112963	Distributor O–Ring Kit (includes Key Nos. 18–20)
18	↑	O–Ring, 2–7/8" x 3–1/4"
19	↑	O–Ring, 13/16" x 1–1/16"
20	↑	O–Ring, 2–3/4" x 3"
21	7077870	Top Distributor
22	7105047	Repl. Distributor (bottom)
–	7331177	Tank Neck Clamp Kit (includes 2 ea. of Key Nos. 23 & 24)
23	↑	Clamp Section (2 req.)
24	↑	Retainer Clip (2 req.)
25	7304235	Resin Tank, 8" dia. x 35" (ESD 518)
	7113058	Resin Tank, 8" dia. x 40" (ESD 2502R30)
	7092202	Resin Tank, 10" dia. x 47" (ESD 2502R39)
26	0502272	Resin, 1 cu ft (stand. mesh)
27	7310197	Brine Valve Assembly (ESD 518 and ESD 2502R30)
	7310210	Brine Valve Assembly (ESD 2502R39)
28	7113008	Float, Stem and Guide Assembly (ESD 518 and ESD 2502R30)
	7327568	Float, Stem and Guide Assembly (ESD 2502R39)
29	7171349	Screen
30	9003201	Nut–Ferrule (2 req.) 
31	7161807	Tubing, 20 ft 
	7161768	Tubing, 100 ft 
32	7094987	Union Connector 
◆	7108118	Drain Hose, 1/2" I.D. (order length needed)

 optional parts to extend brine tubing (not included)

◆ Not shown.

To order parts, call your local EcoWater dealer or go to www.ecowater.com to locate a dealer in your area.

REPAIR PARTS – ESD 518 & ESD 2502R30



REPAIR PARTS – ESD 518 & ESD 2502R30

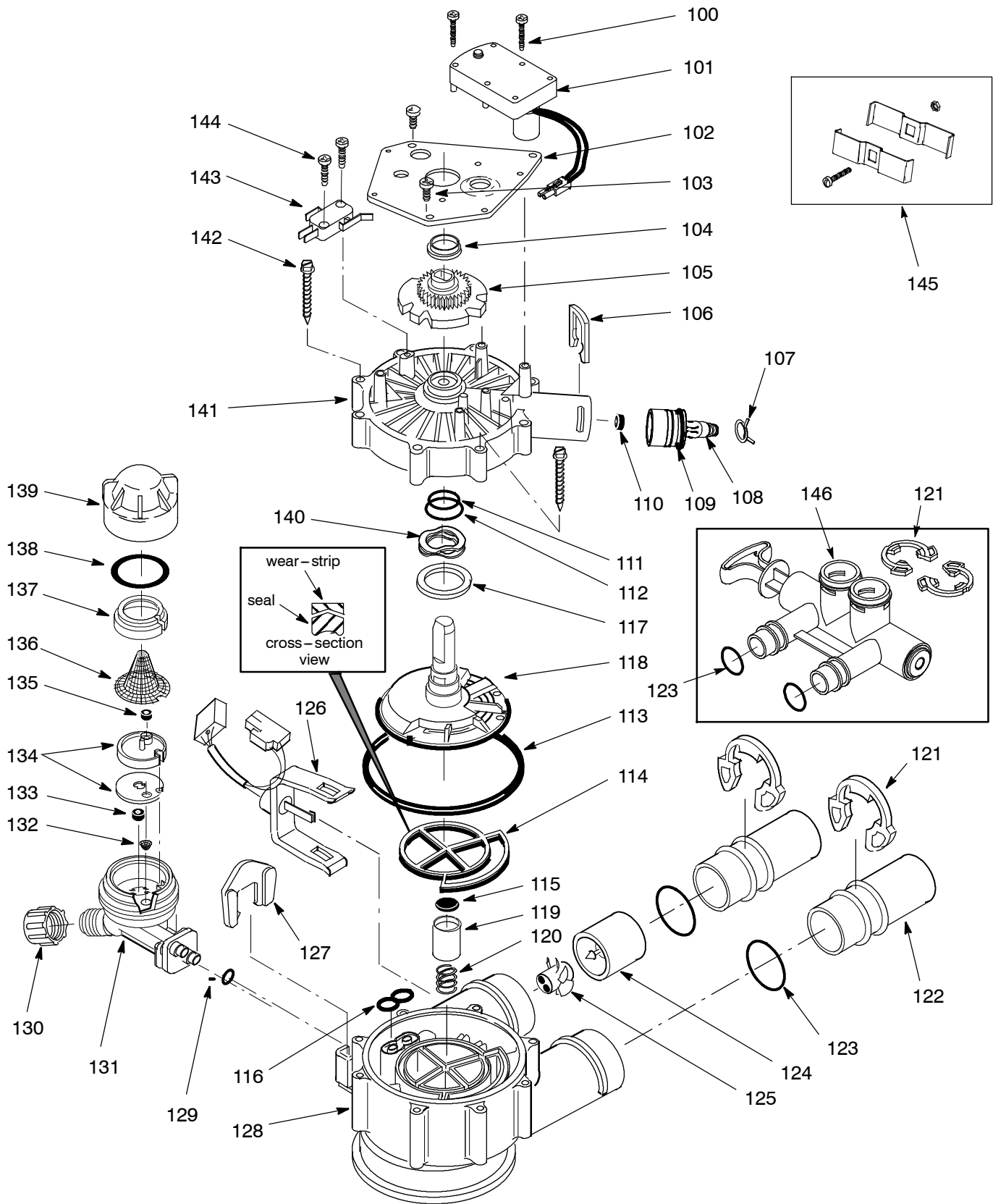
KEY NO.	PART NO.	DESCRIPTION
50	7338111	Screw, #6-19 x 1-3/8" (2 req.)
51	7281291	Motor
52	7337474	Motor Mount
53	7284964	Cam & Gear
54	7030713	Switch
–	7331185	Drain Hose Adaptor Kit (includes Key Nos. 55–59)
55	↑	Clip, Drain
56	↑	Drain Hose Adaptor
57	↑	Hose Clamp
58	↑	O-Ring, 5/8" x 13/16"
59	↑	Flow Plug, 2.0 gpm
–	7129716	Seal Kit (includes Key Nos. 60–17)
60	↑	O-Ring, 7/16" x 5/8"
61	↑	O-Ring, 3/4" x 15/16"
62	↑	O-Ring, 3-3/8" x 3-5/8"
63	↑	Rotor Seal
64	↑	O-Ring, 3/8" x 9/16"
65	↑	Seal, Nozzle & Venturi
66	7082087	Wave Washer
67	7199232	Rotor & Disc
68	7092642	Plug, Drain Seal
69	7129889	Spring
70	7116713	Clip, 3/4", single (2 req.)
	7336397	Clip, 3/4", pack of 20
–	7344146	Copper Tube Kit, 3/4" (includes 10 ea. of Key Nos. 71–73)
71	0507369	Installation Nut (2 req.)
72	0507615	Installation Tube, 3/4" (2 req.)
73	7170335	Washer (2 req.)
74	2207800	Installation Adaptor, 3/4", single (2 req.)
	7344154	Installation Adaptor, 3/4", pack of 10 (includes 10 ea. of Key No. 75)

KEY NO.	PART NO.	DESCRIPTION
75	7170288	O-Ring, 15/16" x 1-3/16", single (2 req.)
	7336402	O-Ring, 15/16" x 1-3/16", pack of 20
–	7113040	Turbine & Support Assembly (includes 1 ea. of Key Nos. 76, 77 & 2 ea. of Key No. 75)
76	↑	Turbine Support & Shaft
77	↑	Turbine
78	7082053	Valve Body
79	7081201	Retainer, Nozzle & Venturi
80	7170319	O-Ring, 1/4" x 3/8" (2 req.)
81	1202600	Nut–Ferrule
–	7187065	Nozzle & Venturi Assembly (includes Key Nos. 82–90)
82	7081104	Nozzle & Venturi Housing
83	7095030	Cone Screen
84	1148800	Flow Plug, .3 gpm
85	7147706	Nozzle & Venturi Kit w/Gasket
	7204362	Gasket only, single
	7336486	Gasket only, pack of 20
86	0521829	Flow Plug, .1 gpm
87	7146043	Screen
88	7167659	Screen Support
89	7170262	O-Ring, 1-1/8" x 1-3/8", single
	7336436	O-Ring, 1-1/8" x 1-3/8", pack of 20
90	7199729	Cap
91	7309803	Sensor Housing & Wiring Harness
92	7337466	Valve Cover
93	7074123	Screw, #10-14 x 2" (5 req.)
94	7248706	Ground Clamp Kit ①
95	7129871	Bypass Valve Assembly, 3/4", Threaded ①
–	7278434	Bypass Valve Assembly, 3/4", Clip Style ①

① Optional part – not included

To order parts, call your local EcoWater dealer or go to www.ecowater.com to locate a dealer in your area.

REPAIR PARTS – ESD 2502R39



REPAIR PARTS – ESD 2502R39

KEY NO.	PART NO.	DESCRIPTION
100	7224087	Screw, #8-32 x 1" (2 req.)
101	7286039	Motor (incl. 2 ea. of Key No. NO TAG)
102	7231393	Motor Plate
103	0900857	Screw, #6-20 x 3/8" (3 req.)
104	7171250	Bearing
105	7283489	Cam & Gear
–	7331169	Drain Hose Adaptor Kit (includes Key Nos. 106 – 110)
106	↑	Clip (Drain)
107	↑	Hose Clamp
108	↑	Drain Hose Adaptor
109	↑	O-Ring, 15/16" x 1-3/16"
110	↑	Flow Plug, 2.0 gpm
–	7185487	Seal Kit (includes Key Nos. 111 – 116)
111	↑	O-Ring, 5/8" x 13/16"
112	↑	O-Ring, 1-1/8" x 1-1/2"
113	↑	O-Ring, 4-1/2" x 4-7/8"
114	↑	Rotor Seal
115	↑	Seal
116	↑	Seal, Nozzle & Venturi
117	7174313	Bearing, Wave Washer
118	7185500	Rotor & Disc
119	7171187	Plug, Drain Seal
120	7129889	Spring
121	7089306	Clip, 1", single (2 req.)
	7336428	Clip, 1", pack of 20
122	7077642	Copper Tube, 1", single (2 req.)
	7344138	Copper Tube, 1", pack of 10 (includes 10 ea. of Key No. 123)
123	7311127	O-Ring, 1-1/16" x 1-5/16", single (2 req.)
	7336410	O-Ring, 1-1/16" x 1-5/16", pack of 20

KEY NO.	PART NO.	DESCRIPTION
–	7290931	Turbine & Support Assembly (includes 1 ea. of Key Nos. 124, 125 & 2 ea. of Key No. 123)
124	↑	Turbine Support & Shaft
125	↑	Turbine
126	7309811	Wire Harness, Sensor
127	7081201	Retainer (Nozzle & Venturi)
128	7171145	Valve Body
129	7170319	O-Ring, 1/4" x 3/8" (2 req.)
130	1202600	Nut – Ferrule
–	7253808	Nozzle & Venturi Assembly (includes Key Nos. 131 – 139)
131	7081104	Nozzle & Venturi Housing
132	7095030	Cone Screen
133	1148800	Flow Plug, .3 gpm
134	7114533	Nozzle & Venturi Gasket Kit
	7204362	Gasket only, single
	7336486	Gasket only, pack of 20
135	7084607	Flow Plug, .15 gpm
136	7146043	Screen
137	7167659	Screen Support
138	7170262	O-Ring, 1-1/8" x 1-3/8", single
	7336436	O-Ring, 1-1/8" x 1-3/8", pack of 20
139	7199729	Cap
140	7175199	Wave Washer
141	7171161	Valve Cover
142	7172997	Screw, #10 x 2-5/8" (8 req.)
143	7305150	Switch
144	7140738	Screw, #4-24 x 3/4" (2 req.)
145	7248706	Ground Clamp Kit ①
146	7214383	Bypass Valve, 1" ① (incl. 2 ea. of Key Nos. 121 & 123)

① Optional part – not included

To order parts, call your local EcoWater dealer or go to www.ecowater.com to locate a dealer in your area.