

UNI - FIT CONTROLLER KIT

with *electronic demand* timer

for use on the following size tanks and resin loads

Resin Tank Diameter	Resin Load
8"	from 32 to 39-1/2 lbs.
9"	from 41 to 53 lbs.
10"	from 61 to 79-1/2 lbs.

PARTS INCLUDED IN KIT

- Valve assembly
- In - out installation fittings
- Valve covers and electronic timer
- Other parts needed to assemble and install
- Valve to resin tank adaptor

SPECIFICATIONS

Water Pressure Limits, psi	20 - 125						
Water Temperature Limits, °F	35 - 120						
Electrical Rating, volts-cycles	24 - 60 ①						
Operational Cycles	<i>default length (minutes)</i>					<i>water flow direction through resin tank</i>	<i>water flow rate (gpm) ③</i>
	SR17②	SR22②	SR30②	SR31②	SR39②		
Service	not applicable					down	--
Fill	1.5 - 6.5	2 - 8.5	5 - 10.5	3 - 10.5	4.5 - 13	down	.3
Brining / Brine Rinse	98 - 103	102 - 104	52 - 76	97 - 106	51 - 84	up	.24 / .15
Backwash	7	7	12	7	12	up	1.8
Fast Rinse	3	3	4	3	4	down	1.8

① A transformer to reduce 120 volt house electrical power to 24 volts is included.

② Times vary depending on model code setting (see page 4), water usage, etc., and are automatically determined by the demand timer.

③ Flows are with factory installed flow plugs and nozzle/venturi (red). An additional flow plug (#16) and nozzle/venturi (white) are included in the parts bag. Rates will vary with resin bed and tank sizes.

NOTE: To program the demand timer, **you must know** . . .

1. resin tank size and resin load, to set the model code on page 4.
2. water supply grains per gallon hardness.
3. If the water supply contains iron, you must know parts per million iron content.

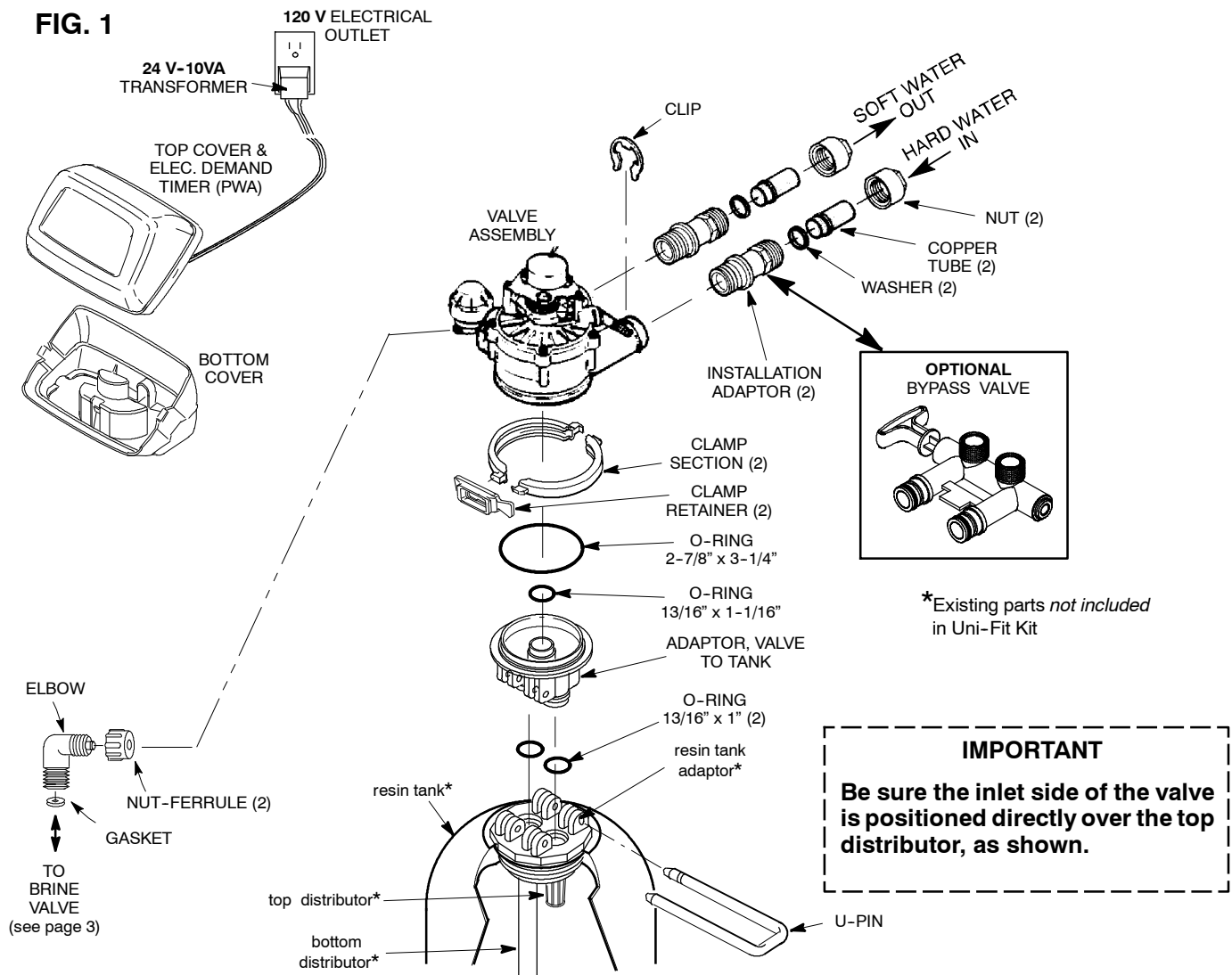


A Marmon Water/Berkshire Hathaway Company

EcoWater Systems LLC
P.O. Box 64420, St. Paul, MN 55164-0420
1-800-86WATER

7206128 (Rev. J 3/14/12)

Installation Drawing:



INSTALLATION STEPS

FIRST, REMOVE EXISTING CONTROLLER

1. Unplug the transformer (24V), or the softener electrical cord (120V) at the wall outlet
2. Position plumbing bypass valve(s) to isolate the softener from the water supply, or close the main water supply valve.
3. Disconnect the valve drain hose, and the 5/16" brine tubing at the controller.
4. Disconnect inlet and outlet plumbing.
5. Pull the retaining pin holding the controller to the resin tank adaptor, and remove the controller.

6. Check the resin tank adaptor ports and the top distributor. Clean or replace parts as needed.

INSTALL NEW CONTROLLER

7. Be sure the resin tank is oriented so the **controller inlet side** will be positioned directly **over the top distributor**. Lubricate and install the 13/16" I.D. x 1" O.D. o-ring seals on the adaptor (valve to tank) feet. Then, carefully position the adaptor onto the resin tank adaptor and secure in place with the U-pin.
8. Lubricate and place the 13/16" I.D. x 1-1/16" and 2-7/8" I.D x 3-1/4" O.D. o-ring seals on the valve to tank adaptor.

continued

Installation Steps, continued:

9. Position the new valve assembly onto the adaptor, being careful not to pinch the o-ring seals. Install the clamp sections and clamp retainers.

10. Insert the installation adaptors, or the optional bypass valve, into the valve inlet and outlet. Secure in place with the large "C" clips. **Pull outward on the adaptors or bypass valve to be sure they are held firmly in place.**

Note: For a sweat solder installation, use the included copper tubes, washers and special nuts. Threads on the adaptors or bypass valve are 1" NPT if you will use threaded pipe and fittings.

11. Assemble in and out fittings as needed, being sure **hard water IN** is connected to the **valve inlet** side. The valve is marked IN and OUT.

CAUTION: If sweat soldering, disconnect the pipes from the adaptors or bypass valve while soldering. Reconnect after the pipes have cooled. Use pipe joint compound on outside pipe threads.

12. Attach the drain hose to the valve drain fitting. Use a hose clamp to hold it in place. *Be sure to provide an air gap between the end of the hose and the drain point.*

13. Remove the brine tank and brinewell covers (fig. 2). If the softener has a salt platform, remove and discard it. Lift the brine valve up and out of the brinewell.

14. Slide the float stop on the float rod and set the the float to about 10" as shown in fig. 2.

15. Loosen the nut and remove the nozzle & venturi adaptor from the brine valve.

16. Disengage the float rod from the guide (fig. 3). Turn the riser pipe out of the brine valve body and remove the refill flow regulator (not all models have one). Reassemble the brine valve, being sure the guide holds the float rod perpendicular to the body.

FIG. 3

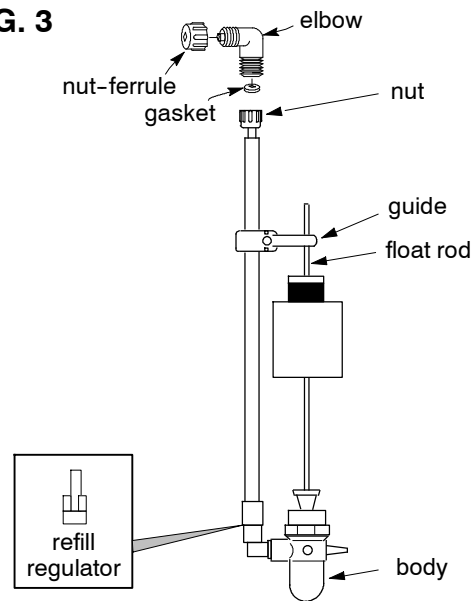
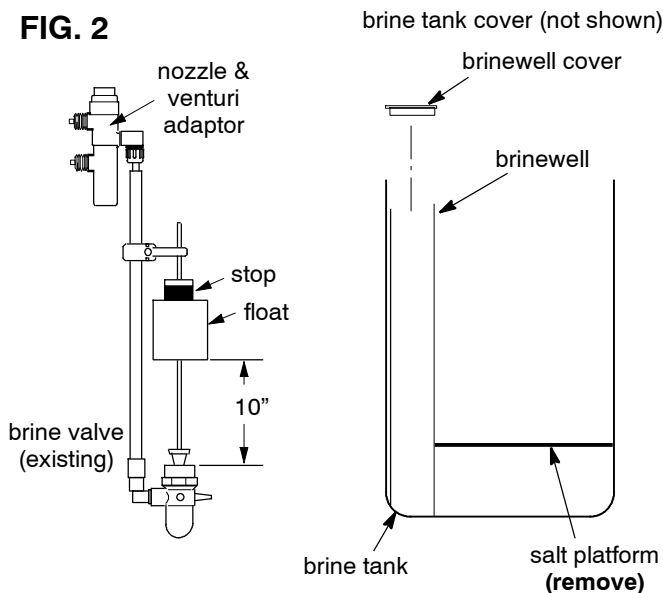


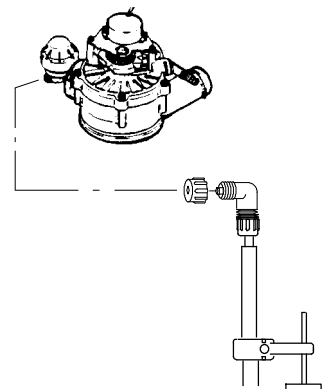
FIG. 2



17. Using the small gasket, turn the top brine valve nut onto the elbow fitting. Position so the elbow will protrude from the slot in the brinewell, and the float will be centered in the brinewell. Then, tighten the nut.

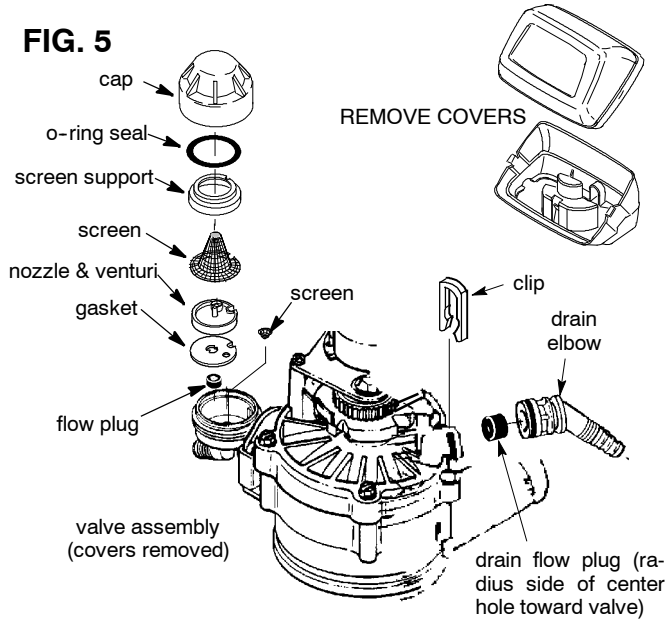
18. Remove 1 of the lengths of tubing from the nozzle & venturi adaptor. Cut both ends of the tubing square. Then, connect the tubing between the elbow fitting, and the nozzle assembly on the valve (fig. 4).

FIG. 4



Installation Steps, continued:

19. The valve contains a #18 backwash/fast rinse (drain) flow plug, and a red nozzle/venturi. These are the correct most models. For models with an 8" diameter resin tank, install the #16 flow plug and white nozzle/venturi.



20. Open several house faucets to expel air, and position bypass valve(s) to route water to the softener. Close faucets after all air is gone and water runs smooth. Check your work for leaks.

21. Position the bottom cover over the valve and lock to the tabs on the outside of the valve inlet and outlet.

22. Hold the top cover over the valve and make the following electrical connections. Refer to the wiring schematic on page 9.

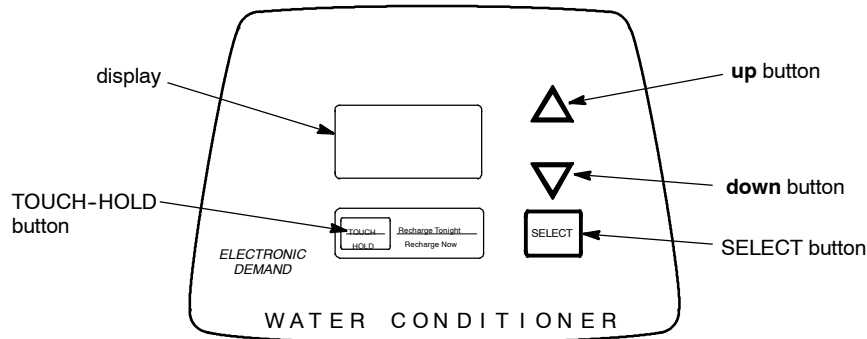
- a. motor to back of timer (PWA)
- b. position switch to back of timer (PWA)
- c. power cable to back of timer (PWA)
- d. sensor housing to back of timer (PWA)

23. Lower the top cover onto the bottom cover.

24. Plug the 24 volt transformer into the wall electrical outlet.

25. Program the timer.

PROGRAMMING THE ELECTRONIC DEMAND TIMER



► **TIMER SETTINGS REQUIRED...** upon installation, and after an extended power outage (see Program Memory).

NOTES:

- WHEN THE TRANSFORMER IS PLUGGED INTO THE ELECTRICAL OUTLET (step 24 above), **SR17 or - - - begins flashing** in the display area. Set the correct model code, then program the timer as instructed beginning on page 5.
- If **12:00PM** (flashing), and **PRESENT TIME** show in the display, press and *hold* SELECT for 3 seconds to enter diagnostics. Then, go to page 8 and do steps 2 and 3 to check for the correct model code setting.
- A “beeper” sounds while pressing buttons for timer programming. One beep signals a change in the timer display. Repeated beeps means the timer will not accept a change from the button you have pressed, and you should use another button.
- To set the timer, you will use the UP ▲ , DOWN ▼ and SELECT buttons.

Programming Steps, continued:

► SET MODEL CODE

1. From the flashing display, use the UP Δ button to set the correct SR code as shown in the following table. If you pass by the correct code number, use the DOWN ∇ button. Then, press the SELECT button and program the timer below.

	Resin load (pounds) in tank				
	32 to 39-1/2	40 to 46-1/2	47 to 51-1/2	52 to 64-1/2	65 to 79-1/2
MODEL CODE \rightarrow	SR17	SR22	SR30	SR31	SR39

► SET PRESENT TIME OF DAY

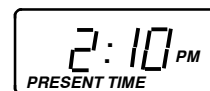
NOTE: If the words PRESENT TIME do not show in the display, press the SELECT button until they do.

1. Press the UP or DOWN button to set. The UP button moves the display ahead; the DOWN moves the time backward.

NOTE: Each press of the buttons changes the time by 1 minute. Holding the buttons in changes the time 32 minutes each second.

2. When the present time shows, press SELECT to set.

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.



► SET WATER HARDNESS NUMBER

NOTE: If 15 or 25 (factory defaults) and HARDNESS do not show in the display, press SELECT until they do.

1. Press the UP or DOWN button to set your water hardness number in the display. DOWN moves the display down to 1. UP moves the display up to between 50 (SR17), to 120 (SR39).

NOTE: Each press of a button changes the display by 1 between 1 and 25. Above 25, the display changes 5 at a time ... 25, 30, 35, etc. Holding a button in changes the numbers twice each second.

2. When your water hardness number shows, press SELECT to set.



You can get the grains per gallon (gpg) hardness of your water supply from a water analysis laboratory, or call and ask your local water department, if you are on a municipal supply. If the water contains iron, compensate for it by adding 5 to the hardness number for each 1 ppm of iron. Also see **important note** on page 7.

► SET REGENERATION (STARTING) TIME

NOTE: RECHARGE TIME and a flashing 2:00 AM (factory default) should show in the display. This is a good time for regeneration to begin (over in about 2 hours) in most households because usually water is not in use. HARD WATER bypasses the softener and goes to house faucets, if opened, during regeneration.

If no change is needed, go to step 2. To change this time, if desired, do step 1.

1. Press the UP or DOWN button to set the desired regeneration start time.

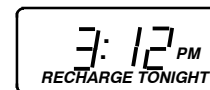
NOTE: Each press of the buttons changes the time by 1 hour. Holding the buttons in changes the time twice each second.

2. Press the SELECT button once more.

Be sure to observe the AM or PM, as you did when setting the time of day.



The display shows the present time of day and RECHARGE TONIGHT.

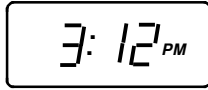


ELECTRONIC DEMAND TIMER FEATURES, AND SERVICE

NOTE: SEE PAGE 5 TO SET THE TIMER TO THE CORRECT TIME OF DAY, WATER HARDNESS NUMBER, AND RECHARGE START TIME.

■ **NORMAL OPERATION, TIMER DISPLAYS**

During normal operation, the present time of day, and AM or PM, show in the time display area.



When the demand computer determines a regeneration is needed, RECHARGE TONIGHT begins to

flash in the display, along with the present time. RECHARGE TONIGHT flashes until the next regeneration start time, then changes to RECHARGE NOW, which flashes until the regeneration is over.



■ **OPTIONAL RECHARGE CONTROLS**

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

... You have used more water than usual (house guests, extra washing, etc.) and you may run out of soft water before the next regeneration.

... You did not refill the storage tank with salt before it was all gone.

Use 1 of the following features to start a regeneration immediately, or at the next preset regeneration start time.

● **RECHARGE NOW**



Press and *hold* in the TOUCH - HOLD button until **RECHARGE NOW** starts to flash in the time display area. The softener begins an immediate regeneration, and when over in about 2 hours, you will have a new supply of soft water. Once started, you cannot cancel this regeneration.

● **RECHARGE TONIGHT**



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

VACATION NOTE

Demand water softeners regenerate only while water is used and softening capacity must be restored. For this reason, the softener will not regenerate when you are away from home for extended periods.

■ **PROGRAM MEMORY**

If electrical power to the softener is interrupted, the time display is blank, but the timer keeps correct time for several hours. When power is restored, you have to reset the present time **only if** the display is flashing. **All** other settings are maintained and never require resetting unless a change is desired.

If the time *is* flashing after a long power outage, the softener continues to work as it should to provide you with soft water. However, regenerations may occur at the wrong time of day until you reset the timer to the correct time of day, page 5.

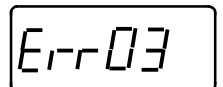
■ **AUTOMATIC ELECTRONIC DIAGNOSTICS**

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

each code. While an error code is displayed, all timer buttons are inoperable except for the SELECT button.

The following chart (next page) shows the error codes that could appear, and possible defects for

SELECT remains operational so the service person can make the Manual Initiated Electronic Diagnostics to further isolate the defect, and check the water meter.



ELECTRONIC DEMAND TIMER FEATURES, AND SERVICE, continued

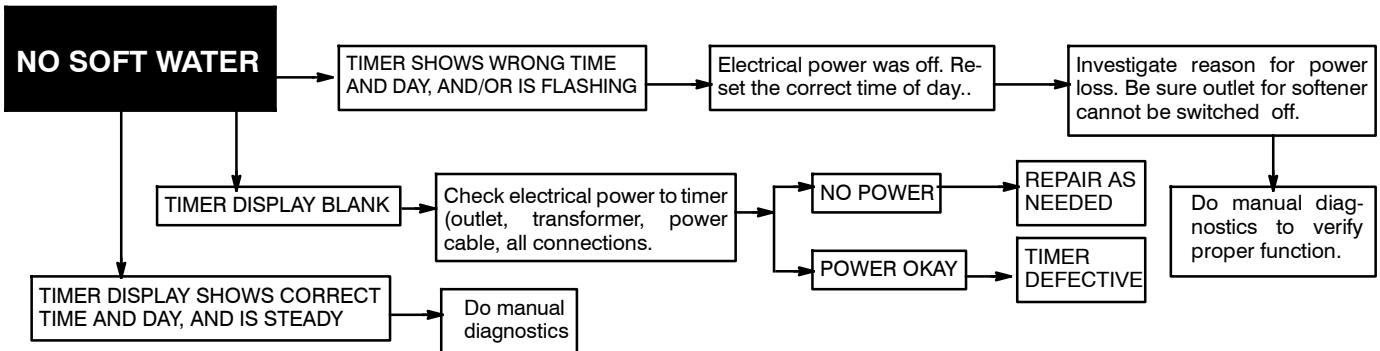
	ERROR CODE DISPLAYED				
	Err 01	Err 02	Err 03	Err 04	Err 05
POSSIBLE DEFECT	<ul style="list-style-type: none"> ▶ wiring harness, or connection to switch ▶ valve defect causing high torque 	<ul style="list-style-type: none"> ▶ position switch 	<ul style="list-style-type: none"> ▶ motor inoperative 		<ul style="list-style-type: none"> ▶ timer (PWA)
<p>TO REMOVE AN ERROR CODE: (1) unplug transformer (2) correct defect (3) plug transformer in (4) Wait for at least 8 minutes. The error code will return if the reason for the error code was not corrected.</p>					

■ **TIMER / SOFTENER, SERVICE CHECKOUT PROCEDURE**

If you are not getting soft water, and an error code is not displayed, use the procedures below to find the problem. First, make the following visual checks.

(2) Is there salt in the storage tank? (3) Is the plumbing bypass valve(s) directing water for soft water service? (4) Is the valve drain hose open to the drain, not elevated too high, and unobstructed? If you do not find a problem with the visual checks, continue below.

VISUAL CHECKS: (1) Is there electrical power to the wall outlet the softener transformer is plugged into?

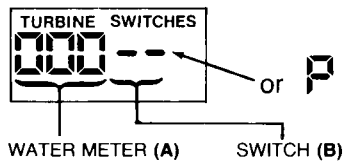


Important Note: The Demand Uni-fit Controller may be installed on a softener that does not have the *exact* resin load required to match the demand timer software model code. This could cause some hard water between regenerations, or a *not enough soft water* complaint. To compensate, adjust the hardness number (page 5) upward a few at a time until the condition is corrected. An opposite situation could result in the use of too much salt. In this case, set the hardness number downward a few at a time until obtaining maximum efficiency.

■ **MANUAL INITIATED ELECTRONICS DIAGNOSTIC**

1. To enter diagnostics, press and hold the SELECT button until (000 - -) shows in the display.

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



(A)The first 3 digits indicate water meter operation as follows:

— OPEN A NEARBY **SOFT WATER FAUCET** —

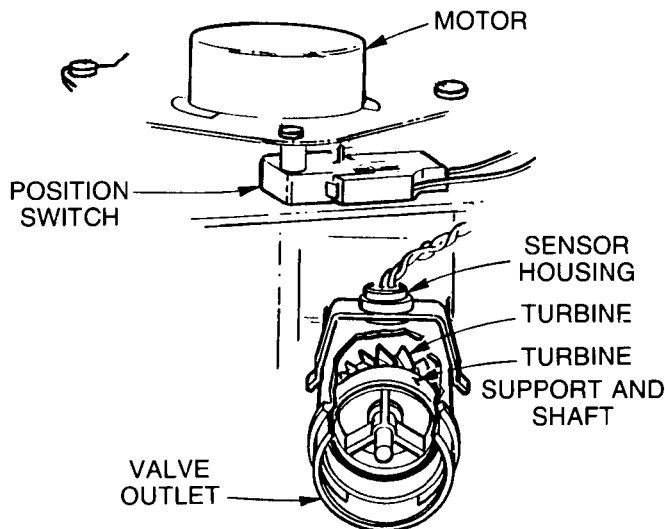
▶ 000 to 199 (continual) = repeats display for each gallon of water passing through the meter.

If you don't get a reading in the display, with faucet open, pull the sensor from the valve outlet port. Pass a small magnet back and forth in front of the sensor.

continued

ELECTRONIC DEMAND TIMER FEATURES, AND SERVICE, continued

You should get a reading in the display. If you get a reading, unhook the in and out plumbing and check the turbine for binding.



(B) The letter (P) and dash(es) indicate POSITION switch operation. The letter appearing means the switch is closed; the dash means the switch is open.

Use the TOUCH - HOLD (Recharge Tonight - Now) button to manually advance the valve into each cycle and check correct switch operation.

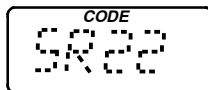
CORRECT SWITCH DISPLAYS	VALVE CYCLE STATUS
--	Valve in service, fill, brining, backwash or fast rinse position.
- P	Valve rotating from one position to another.

C. While in this diagnostic screen, the following information is available and may be beneficial for various reasons. This information is retained by the computer from the first time electrical power is applied to the face plate.

...Press the UP Δ button to display the number of days this face plate has had electrical power applied.

...Press the DOWN ∇ button to display the number of regenerations initiated by this face plate since the SR code number was entered.

2. Press the SELECT button and *hold* in 3 seconds until a Service Rating code appears in the display.



For correct softener operation, the SR number must match the resin load as shown in the table on

page 5. To reset the code, press the UP or DOWN button until the correct number shows.

3. Press SELECT to return the present time display. If the code was changed, make ALL the timer settings, page 5.

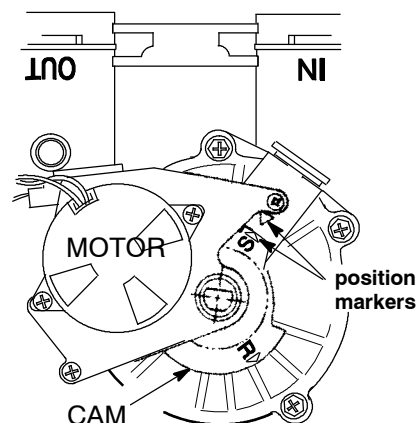
NOTE: If the face plate is left in a diagnostic display (or a flashing display when setting times or hardness), present time automatically returns if a button is not pressed within 4 minutes.

MANUAL ADVANCE REGENERATION CHECK

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

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

1. Press the TOUCH - HOLD button and *hold* in for 3 seconds. RECHARGE NOW begins to flash as the softener enters the fill cycle of regeneration. Remove the brinewell cover and, using a flashlight, observe fill water entering the brine tank.



continued

ELECTRONIC DEMAND TIMER FEATURES, AND SERVICE, continued

◆ If water **does not** enter the tank, look for an obstructed nozzle, venturi, fill flow plug, brine tubing, or brine valve riser pipe.

2. After observing fill, press the TOUCH - HOLD button to move the softener into brining. A slow flow of water to the drain begins. Verify brine draw from the brine tank by shining a flashlight into the brinewell and observing a noticeable drop in the liquid level.

NOTE: Be sure a salt bridge is not preventing water with salt contact.

◆ If the softener does not draw brine...
 ...nozzle and/or venturi dirty or defective.
 ...nozzle and venturi not seated properly on gasket.
 ...restricted drain (check drain fitting and hose).
 ...defective nozzle and venturi seal.
 ...other inner valve defect (rotor seal, rotor & disc, wave washer, etc.).

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

3. Again, press the TOUCH - HOLD button to move the softener into backwash. Look for a fast flow of water from the drain hose.

◆ A slow flow indicates a plugged top distributor, backwash flow plug, or drain hose.

4. Press TOUCH - HOLD to move the softener into fast rinse. Again look for a fast drain flow. Allow the softener to rinse for a few minutes to flush out any brine that may remain in the resin tank from the brining cycle test.

5. To return the softener to service, press TOUCH - HOLD.

■ RESETTING TO FACTORY DEFAULTS

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

1. Press the SELECT button and hold it until the display changes twice to show "CODE" and the flashing model code.

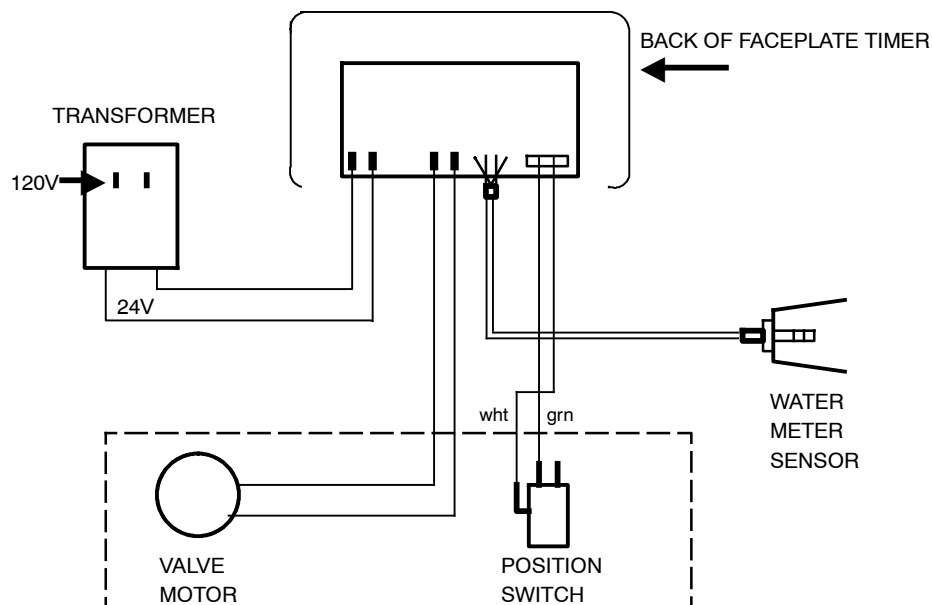
2. Press the UP button (a few times, if necessary) to display a flashing "SoS".



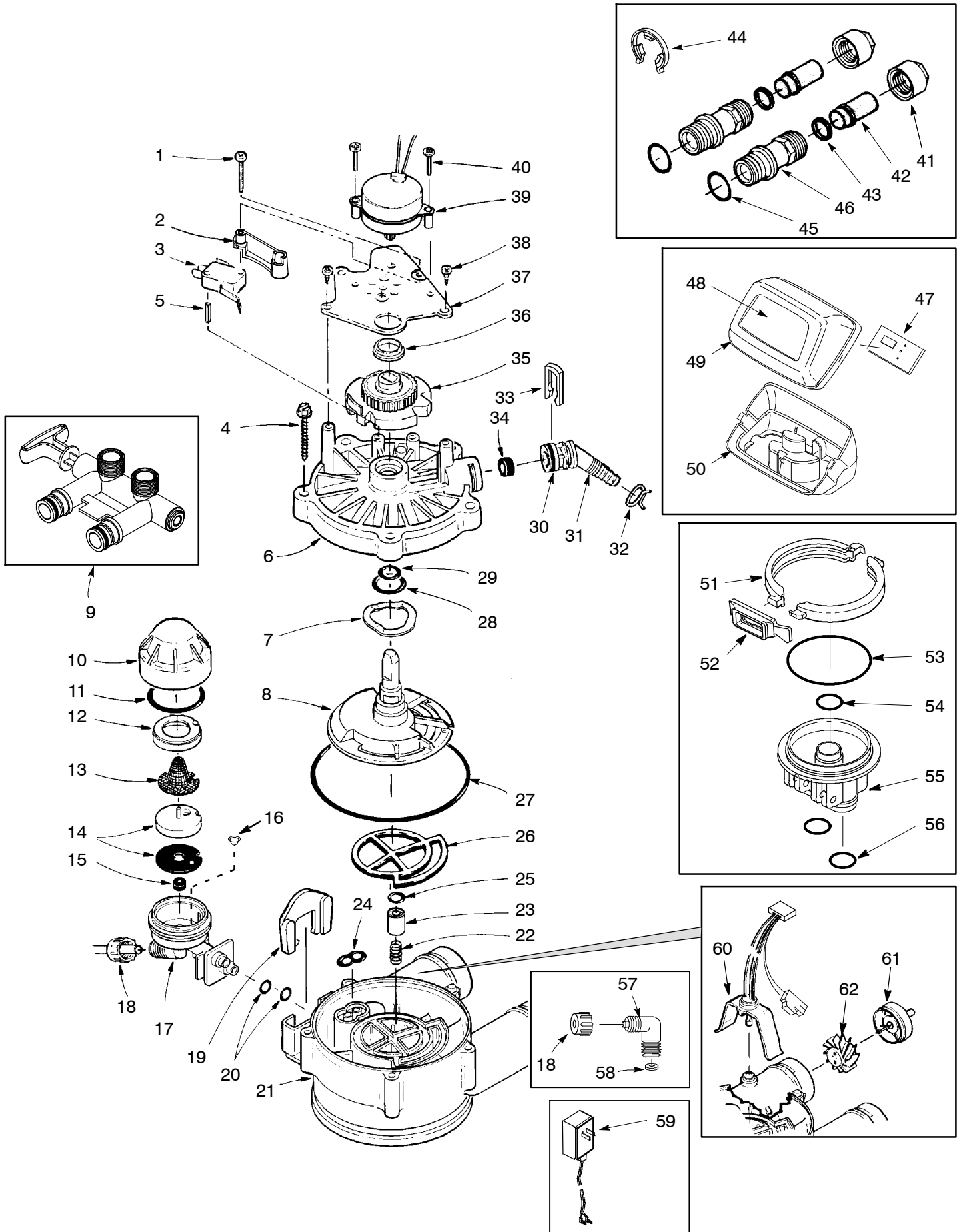
3. Press the SELECT button, and the electronic controller will restart.

4. Set the present time, hardness, etc., as described on page 5.

WIRING SCHEMATIC



REPAIR PARTS



REPAIR PARTS

KEY NO.	PART NO.	DESCRIPTION OF PART	KEY NO.	PART NO.	DESCRIPTION OF PART
1	7070412	Screw, #4 - 24 x 1-1/8 in.	-	7332157	Drain Hose Adaptor Kit (includes Key Nos. 30-34a)
2	7325702	Spacer, Motor Mount	30	↑	O-ring Seal, 5/8 in. x 13/16 in.
3	7030713	Switch	31	↑	Drain Hose Adaptor
4	7074123	Screw, #10 14 x 2 in. (5)	32	↑	Hose Clamp
-	7331266	Valve Cover Assembly (includes Key Nos. 5 & 6)	33	↑	Clip
5	↑	Expansion Pin	34a	↑	Flow Plug, Bkw and F. Rin., 2.0 gpm
6	↑	Valve Cover	34b	0501763	Flow Plug, Bkw and F. Rin., 1.6 gpm
7	7082087	Wave Washer	35	7284964	Cam and Gear
8	7199232	Rotor & Disc	36	0503288	Bearing
9	7129871	Bypass Valve, Threaded ①	37	7308085	Motor Plate
-	7278434	Bypass Valve, Clip Style ①	38	0900857	Screw, #6 - 20 x 3/8 in. (2)
-	7091866	Nozzle & Venturi Assembly, red (includes Key Nos. 10-17)	39	7285944	Motor - Includes Key No. 40
-	7085221	Nozzle & Venturi Assembly, white (includes Key Nos. 10-17)	40	7131755	Screw, #6 - 20 x 7/8 in. (2)
10	7199729	Cap	41	0507369	Installation Nut (2)
11	7170262	O-ring Seal, 1-1/8 in. x 1-3/8 in.	42	0507615	Installation Tube (2)
12	7167659	Screen Support	43	7170335	Washer (2)
13	7146043	Screen	44	7116713	Clip (2)
14	7187772	Nozzle & Venturi, with Gasket, red	45	7170288	O-ring Seal, 15/16 in. x 1-3/16 in. (2)
14	7113024	Nozzle & Venturi, with Gasket, white	46	2207800	Installation Adaptor (2)
-	7204362	Gasket (only)	47	7208235	Repl. Timer (PWA)
15	1148800	Fill Flow Plug	48	7206110	Decal, Faceplate
16	7095030	Cone Screen	49	7180291	Cover (also order above decal)
17	7081104	Housing, Nozzle & Venturi	50	7180314	Bottom Cover
18	1202600	Nut-Ferrule (2)	-	7331177	Tank Neck Clamp Kit (includes 2 ea. of Key Nos. 51 & 52)
19	7081201	Retainer	51	↑	Clamp Section (2)
20	7170319	O-ring Seal, 1/4 in. x 3/8 in. (2)	52	↑	Retainer Clip (2)
21	7082053	Valve Body	53	7170296	O-ring Seal, 2-7/8" I.D. x 3-1/4" O.D.
22	7129889	Spring	54	7170254	O-ring Seal, 13/16" I.D. x 1-1/16" O.D.
23	7092642	Plug (Drain Seal)	55	7159826	Adaptor, Valve to Tank
-	7129716	Seal Kit (includes Key Nos. 24-29)	56	7105013	O-ring Seal, 13/16" I.D. x 1" O.D.
24	↑	Seal (Nozzle & Venturi)	57	7052668	Elbow
25	↑	O-ring Seal, 3/8 in. x 9/16 in.	58	0500284	Gasket
26	↑	Rotor Seal	59	7275907	Transformer, 24V-10VA
27	↑	O-ring Seal, 3-3/8 in. x 3-5/8 in.	60	7309803	Sensor Housing/Wiring Harness
28	↑	O-ring Seal, 3/4 in. x 15/16 in.	-	7113040	Turbine & Support Assembly (includes 1 ea. of Key Nos. 61, 62 & 2 ea. of Key No. 45)
29	↑	O-ring Seal, 7/16 in. x 5/8 in.	61	↑	Turbine Support
			62	↑	Turbine

① Optional part - not included