

**Permutit<sup>®</sup>**

**USER & INSTALLER  
HANDBOOK**

**MODELS 307-311**  
*TIMETRONIC*

**MODELS**  
**411-418-426**  
*SENSATRONIC*

**ECOWATER<sup>™</sup>**  
S Y S T E M S



# INTRODUCTION

Thank you for choosing a Permutit Water Softener from EcoWater.

With over 80 years experience we have manufactured your new water softener from quality corrosion free materials to give you many years of trouble-free softened water.

This User Manual will guide you through the steps of how to install your unit and how to get the best out of it.

Please read it carefully.

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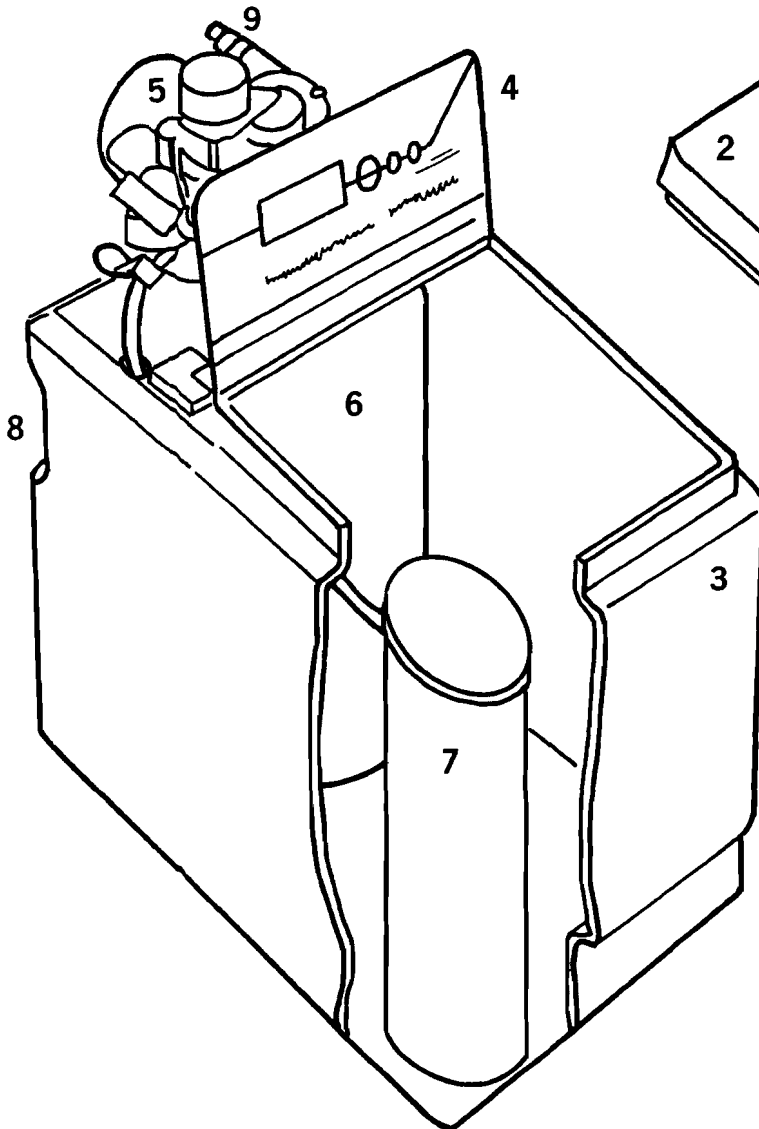
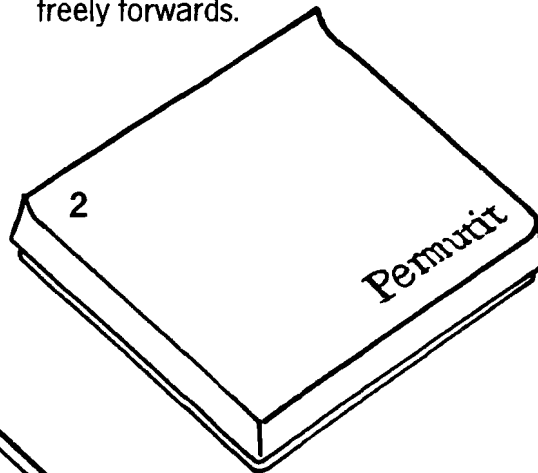
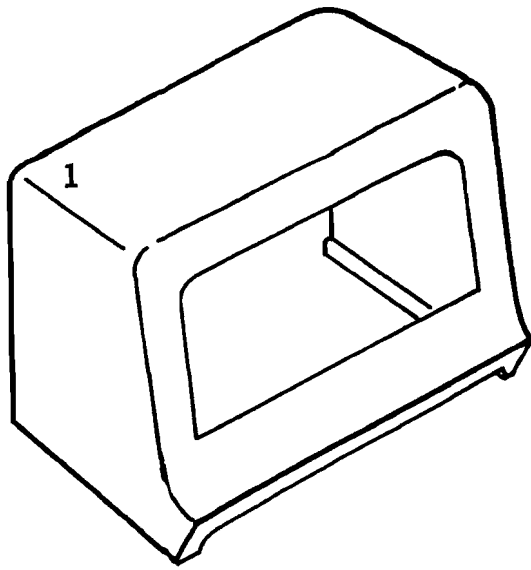
# UNPACKING YOUR WATER SOFTENER

## UNIT EXPLOSION

### Notes

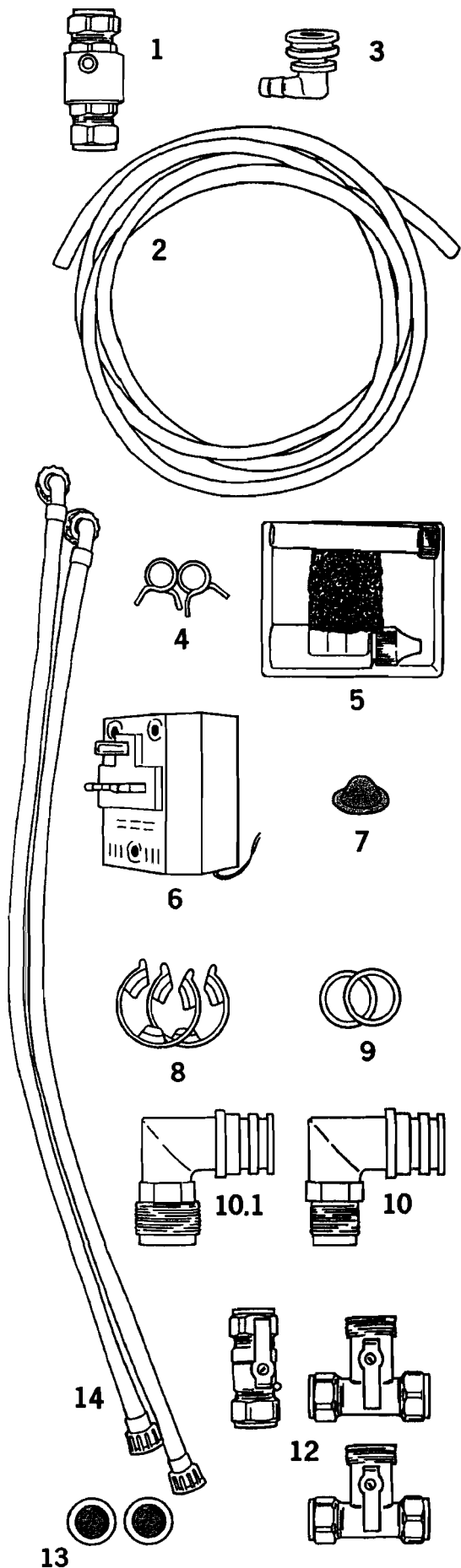
1. Remove all packaging and parts from inside the unit.
2. To remove valve cover for ease of installation follow the instructions carefully.

The valve cover is removed by sliding it forwards. First remove the salt lid. Firmly push the faceplate back with both thumbs positioned on the upper grey area. Push until the faceplate is released from the holding support so that the valve cover can slide freely forwards.

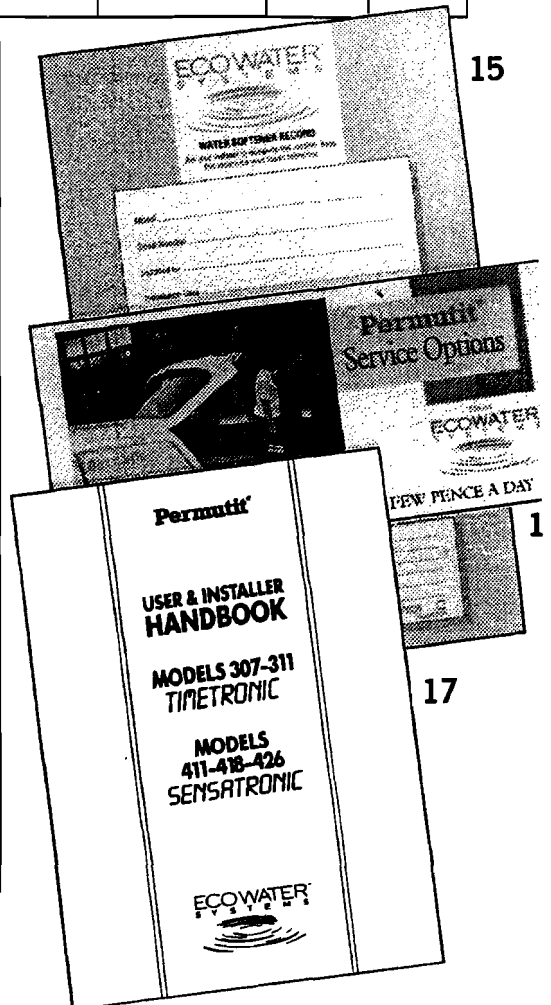
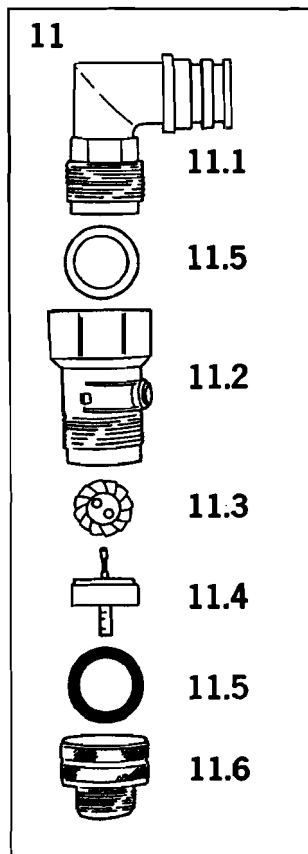


- 1 Control Valve Cover
- 2 Salt Lid
- 3 Brine Cabinet
- 4 Electronic Faceplate
- 5 Water Softener Valve & Motor
- 6 Resin Cylinder
- 7 Brine Float and Tube
- 8 Overflow Connection
- 9 Drain Connection

# INSTALLATION KIT PARTS



PART REF.	DESCRIPTION	TIMETRONIC 307/311	SENSATRONIC	
			411/418	426
1	Non-return Valve	1	1	1
2	Drain/Overflow Tubing	1	1	1
3	Overflow Elbow & Grommet	1	1	1
4	Hose Clips	2	2	2
5	Water Hardness Test Kit	1	1	1
6	Transformer	1	1	1
7	Inlet Filter	1	1	1
8	Adaptor Clips	2	2	2
9	Adaptor "O" Rings	2	2	2
10	Adaptor Elbows (1" to 3/4")	2	1	0
10.1	Adaptor Elbows (1" to 1")	0	0	1
11	Adaptor Elbow Meter Set	N	Y	Y
11.1	Adaptor Elbow	0	1	1
11.2	Meter Housing	0	1	1
11.3	Meter Turbine	0	1	1
11.4	Meter Turbine Support	0	1	1
11.5	Gaskets (1 Black & 1 White)	0	1	1
11.6	Meter Hose Adaptor	0	1	1
12	Bypass Set (3 Valves)	1	1	0
13	Filter Discs	2	2	0
14	Inlet/Outlet Hoses	2	2	0
15	Warranty Card	1	1	1
16	Extended Warranty Details	1	1	1
17	User & Installer Manual	1	1	1



# INSTALLATION OF YOUR WATER SOFTENER

## PLANNING & SITING THE INSTALLATION

The installation of a Permutit water softener is relatively easy to carry out, but we recommend that this work is undertaken by a plumber or an experienced DIY handyman. Where possible the water softener should be sited close to the rising main, allowing

for any required hard water draw off points, i.e. drinking tap and outside tap. Keep the drain run as short as possible and allow for ease of access for salt refill. Do not install next to a boiler or hot water cylinder.

## OPERATING CONSIDERATIONS

### FREEZING

The installation of all water fittings should be in accordance with local water byelaws and the water softener, and all associated pipework must be protected against freezing. Take special care where the drain runs outside. Freezing will prevent recharge and cause overflowing.

### LEAD PIPEWORK

Where lead pipework exists downstream of the proposed location of the water softener, we advise you ask the local water authority for advice on the replacement of lead pipework. Grants may be available. Homes built since 1976 will not have lead pipework.

### ELECTRICAL REQUIREMENTS

The water softener requires a 240 volt 50 Hz electrical supply fused at 3 amps taken off a power supply not a lighting circuit. Power is supplied via a 24 volt 50 Hz transformer.

### HARDWATER TAP

Water Authority byelaws require that one tap in the house remains unsoftened for drinking purposes. It is also recommended that the garden tap is left with a hard water supply.

### PRESSURE

All water softeners have an effect on flow rate and pressure. Low or high pressure could lead to damage or non operation of the water softener. If the daytime pressure exceeds 4.76 BAR (70 psi) a pressure reducing valve

should be fitted. If daytime pressure is less than 25 psi a pressure pump is required. Note that night time pressures will be much higher than daytime.

### FLOW RATES

The water flow must be at least 10 litres per minute for the water softener to be working as per its design specification.

### PLUMBING COMPONENTS NEEDED

The Installation Kit provides the basic plumbing components but additional piping and connectors (capillary and/or compression copper fittings) should be used as required.

**WARNING** FAILURE TO MEET THE FOLLOWING REQUIREMENTS CAN CAUSE DAMAGE TO THE WATER SOFTENER, OR RESTRICT ITS OPERATION.

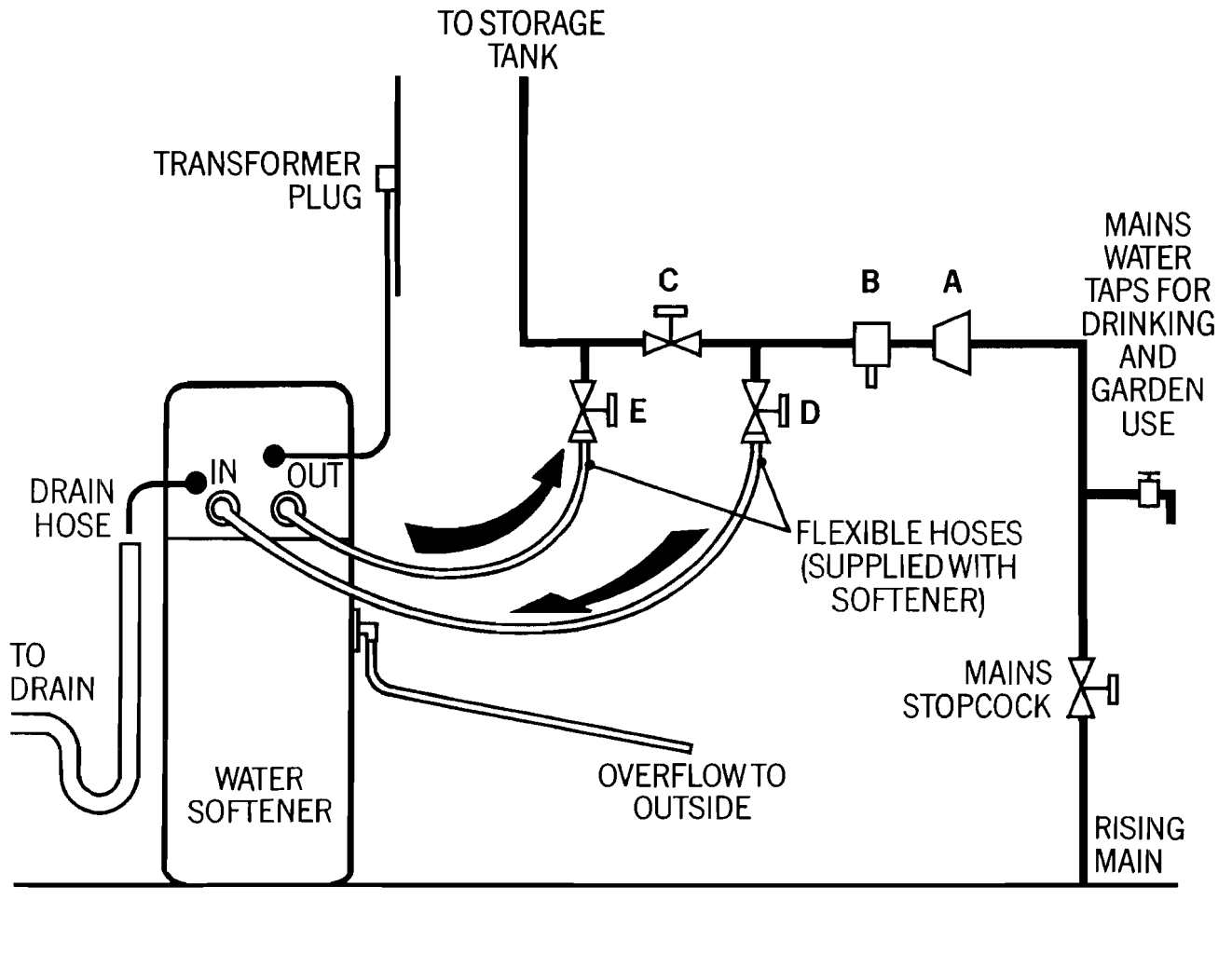
### SPECIFICATION REQUIREMENTS

Maximum Water Temperature 49°C (120°F)  
Maximum Daytime working pressure 4.76 BAR (70 psi)  
Minimum working pressure 1.7 BAR (25 psi)  
Minimum system flow 0.6m<sup>3</sup>/hr

If a pressure reducing valve is required this may be ordered from Ecowater Systems:

Quote Part No. 800220 for ½" or 15mm pipework  
Quote Part No. 800223 for ¾" or 22mm pipework

**TYPICAL INSTALLATION DIAGRAM  
(SOFTENER VIEWED FROM REAR)**



- A** CHECK VALVE (NON RETURN VALVE)
- B** PRESSURE REDUCING VALVE (IF REQUIRED)\*
- C** BYPASS VALVE
- D** INLET VALVE
- E** OUTLET VALVE

\*Refer to Maximum Pressure Limits on page (4).

# STEP BY STEP GUIDE TO PLUMBING

## PLUMBING

Turn off the water supply at the incoming main and begin plumbing as per the installation on the previous page.

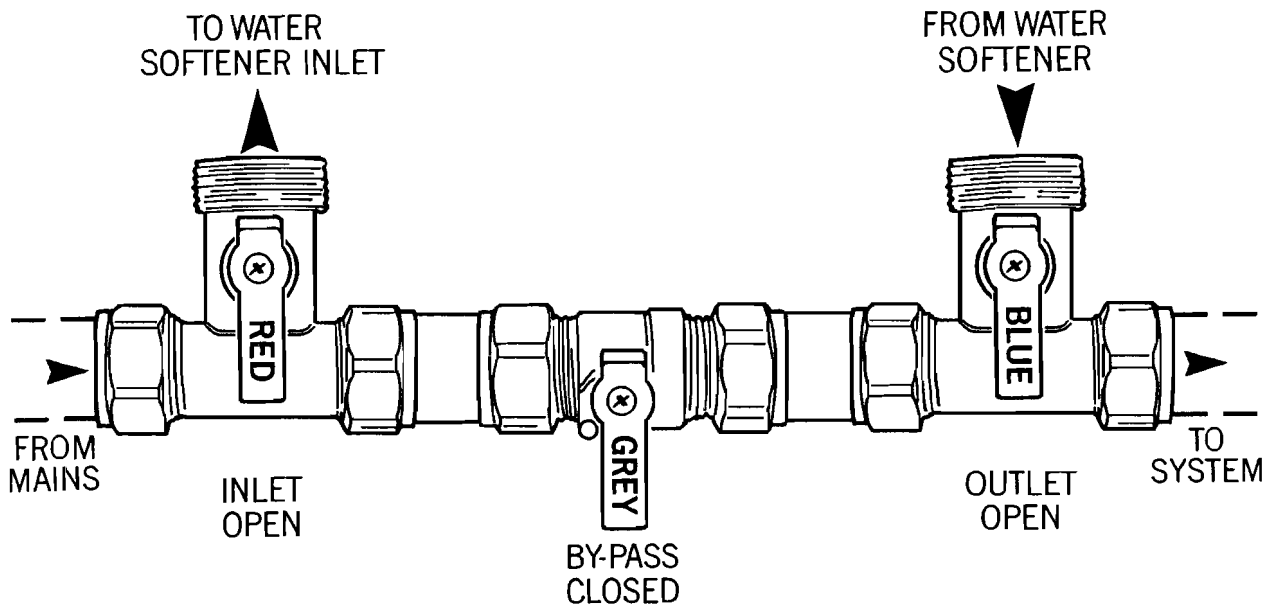
## FIT THE BYPASS KIT

Cut the rising main and install the check valve. Next, plumb the bypass, inlet and outlet valves so that the water supply can be turned on. For ease and future customer confidence, follow the typical installation illustration below. Use the red valve for the inlet, the blue

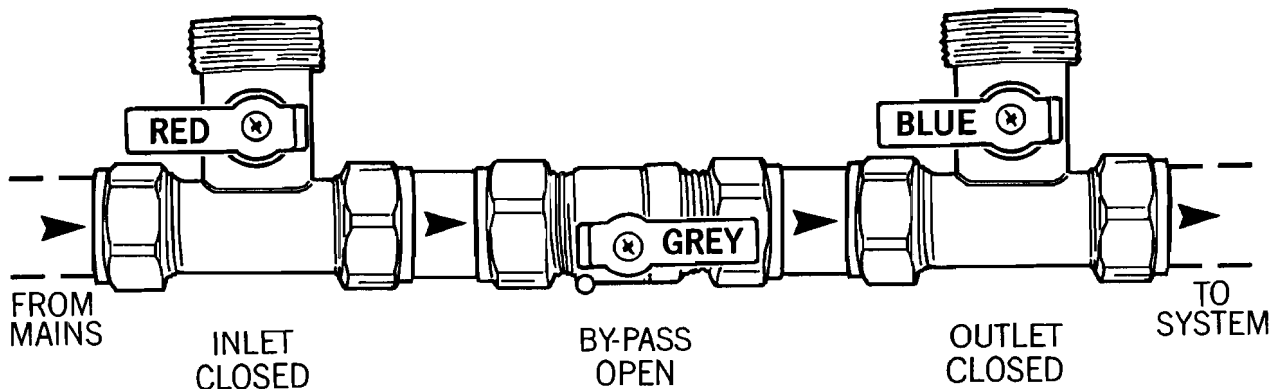
valve for the outlet and the grey valve as the bypass. Before turning the water back on, make sure the bypass is open and the inlet and outlet valves are closed. This will allow water to pass directly to the household system without it diverting to the water softener. (The use of the plastic plumbing fittings with copper pipe may affect the electrical earthing or bonding of the copper pipe. We advise that you contact an electrician about the implications on your system.)

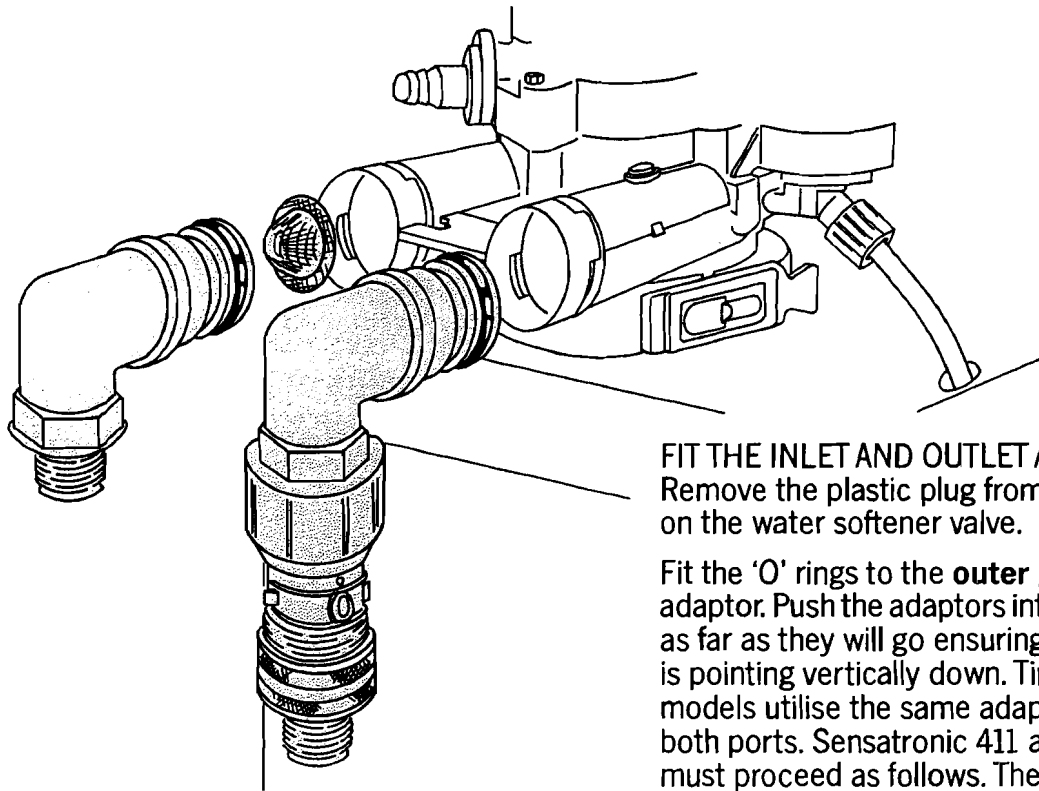
## TYPICAL VALVE INSTALLATION

**WATER TO UNIT. INLET IS OPEN, OUTLET IS OPEN, BY-PASS IS CLOSED**



**WATER BY-PASSES SOFTENER TO SYSTEM**





#### FIT THE INLET AND OUTLET ADAPTORS

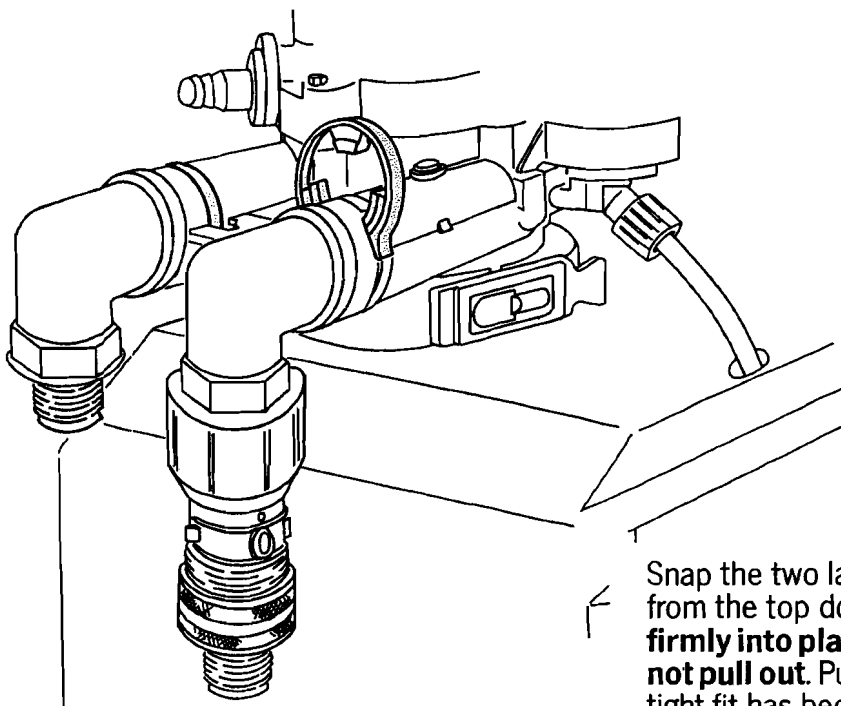
Remove the plastic plug from the outlet port on the water softener valve.

Fit the 'O' rings to the **outer** groove of each adaptor. Push the adaptors into the valve inlet as far as they will go ensuring that the elbow is pointing vertically down. Timetronic models utilise the same adaptor elbow for both ports. Sensatronic 411 and 418 models must proceed as follows. The 1" to 3/4" Adaptor Elbow should be installed in the Inlet port. **The Adaptor Elbow Meter Set (see page 3) must be installed in the outlet port, vertically downwards.**

#### FIT THE INLET SCREEN

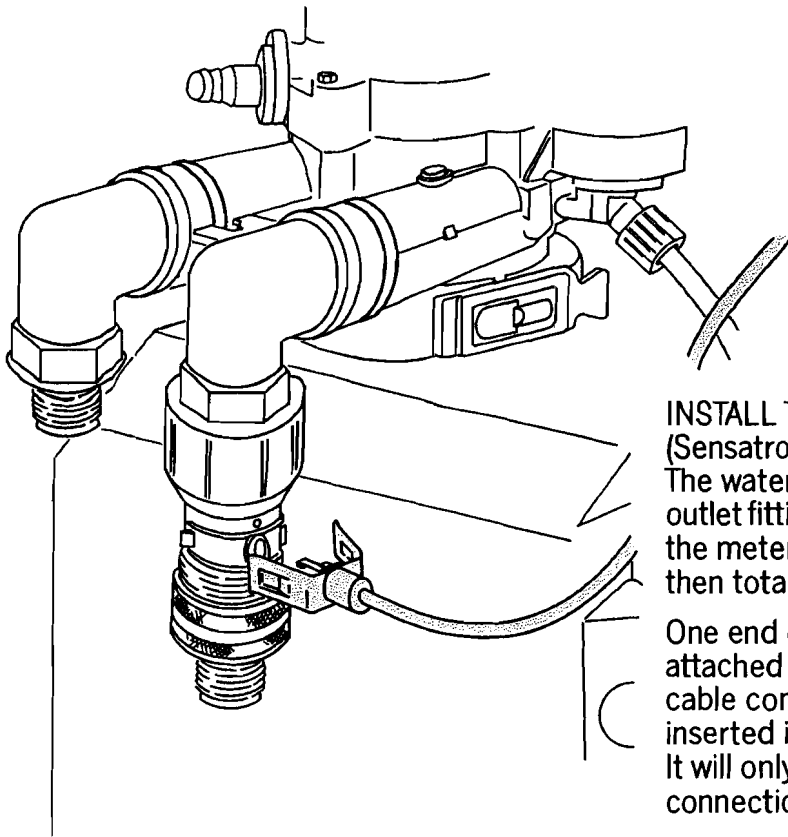
The inlet screen is included in the small parts installation kit. This screen, put in the softener valve inlet, stops dirt and other sediments from getting inside the softener. To install it put the inlet screen into the valve inlet with the pointed end facing outward, towards incoming water.

Sensatronic 426 Models proceed by installing the 1" to 1" Adaptor in the inlet port and the adaptor elbow meter set (see page 3) in the outlet port.



← Snap the two large holding clips into place, from the top down. **Be sure they snap firmly into place so that the adaptors will not pull out.** Pull on the adaptors to assure a tight fit has been achieved.





**INSTALL THE METER SENSOR  
(Sensatronic models only)**

The water meter assembles to the valve outlet fitting. Softened water passing through the meter is measured by the sensor and then totalled to the computer.

One end of the meter sensor cable is attached to the faceplate. The end of the cable containing the sensor should be inserted into the turbine housing as shown. It will only fit in one way. Ensure that the connection is secure.

**THE INLET AND OUTLET CONNECTIONS**

Use the connecting hoses provided with the elbow unions to make the inlet and outlet connections. Ensure that the hoses are connected such that access can be obtained to the rear of the water softener by pulling the water softener away from the installed site. The elbow connection should be fitted to the adaptor union and the straight end connected to the inlet or outlet valve as appropriate.

open drain or via the waste outlet similar to a washing machine. The drain and overflow must be kept straight and not kinked.

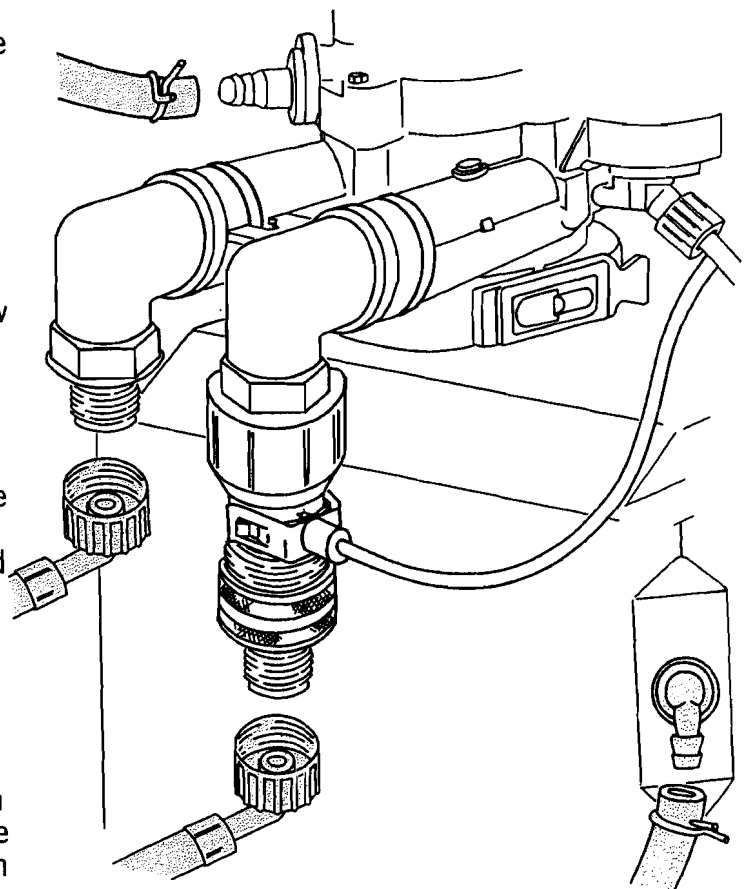
**DRAIN OUTLET/OVERFLOW CONNECTION**

Insert the rubber grommet into the overflow socket situated  $\frac{2}{3}$  of the way up the rear of the water softener cabinet. Only insert the overflow adaptor once the grommet is secure.

Cut two lengths of hose as required to make the drain and overflow connections. Fit one length of hose onto the overflow adaptor and one length onto the drain line adaptor. Turn the drain line adaptor so that a straight connection can be made.

The drain hose and overflow hose must be secured with the supplied metal clamps.

Pass the overflow hose through a hole in an outside wall so that its end can be seen. The drain hose may be connected directly into an

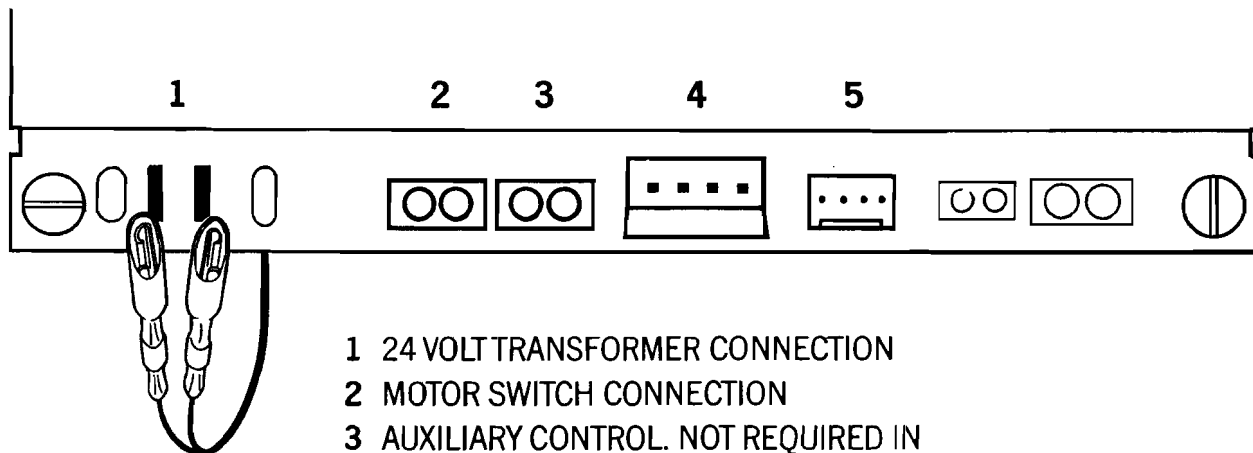


## ELECTRICAL SUPPLY

The water softener works on a 24 volt, 50 Hz electric power supply. You must plug the transformer into a 240 volt outlet only. Be sure that the electrical outlet you plug the transformer into is inside, as the transformer is not designed for outdoor use.

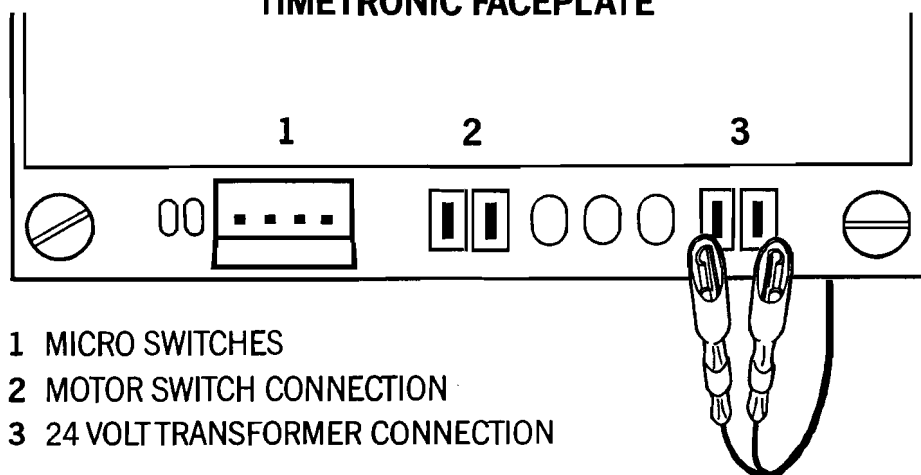
To connect the transformer to the valve push the female end plugs on to the male connectors as indicated below. The two flat ends of the female connectors should face each other to allow for an easy connection.

## SENSATRONIC FACEPLATE



- 1 24 VOLT TRANSFORMER CONNECTION
- 2 MOTOR SWITCH CONNECTION
- 3 AUXILIARY CONTROL. NOT REQUIRED IN THIS APPLICATION
- 4 MICRO SWITCHES
- 5 METER TURBINE SENSOR CONNECTION

## TIMETRONIC FACEPLATE



- 1 MICRO SWITCHES
- 2 MOTOR SWITCH CONNECTION
- 3 24 VOLT TRANSFORMER CONNECTION

## REPLACE THE VALVE COVER

Slide the Valve Cover back into place. Ensure that the faceplate 'snaps' into place. Secure the unit by replacing the salt cover.

# PROGRAMMING

Your unit is now fully plumbed in and ready to programme. If the unit is a Timetronic 307 or 311 advance to page 11.

If the unit is a Sensatronic 411, 418 or 426 advance to page 18.

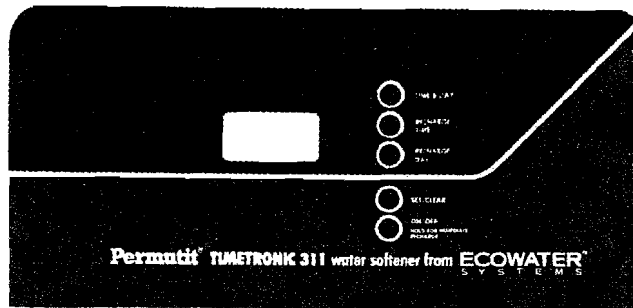
**RETURN HERE TO FINISH THE INSTALLATION ONCE THE PROGRAMMING IS COMPLETE.**

## NOTES TO THE INSTALLER – BEFORE YOU LEAVE

1. Having programmed your unit you will wish to ensure that the unit is functioning properly before you leave the site.
2. Our Service Department will offer you advice. If you have any queries do not hesitate to call us.
3. Open the inlet and outlet valve and close the bypass as indicated in the diagram (p.6). Check that all the plumbing connections are secure and that there are no leaks.
4. Check that the time of day is correct and that for the Timetronic models, the day is correct and that the days of recharge have been set.
5. Initiate a Recharge.  
For Timetronic Models hold down the On/Off button for 3 seconds until RCHG shows in the display.  
For Sensatronic models hold down the recharge button for 3 seconds until RECHARGE flashes in the display.  
After a few minutes, water will be drawn into the Brine Cabinet and will fill approximately 2" to 2½" from the bottom. This process will take approximately 15-20 minutes.  
At this stage the water will be drawn from the cabinet and run to drain. Again check for leaks.
6. Once the water has run to drain fill the cabinet with salt. You will require a 25 Kg bag of Pellet or Tablet salt. **Do not** use granular salt. For best results Ecowater Systems recommend AQUASOL.  
Make sure that the brinewell cover is in place and secure as salt must not be allowed to enter the brinewell. Do not fill salt above the overflow.
7. The whole recharge procedure will take approximately 1½ hours and softened water will gradually replace the hard water in the storage tank over a period of 3-4 days.
8. Advise the customer that those water outlets fed from the header tank will not see softened water immediately. However, following the recharge appliances drawing directly from the water softener may be tested for softened water.
9. Warranty on the unit will be undertaken by Ecowater's Service Department. However, call outs not due to the water softener but to installation problems will be chargeable.
10. Ensure that the customer is left with all literature relating to the unit and that the guarantee card is returned immediately to effect the full warranty.



# ABOUT TIMETRONIC



Your water softener has an advanced electronic mechanism which provides for superior features not available on conventional timeclock units.

- a) A seven day timer programme option. You can automatically recharge the water softener on the days of the week when you need to.
- b) Simple to effect automatic recharge. This allows an extra provision of softened water at any time, even when your consumption is unexpectedly higher.
- c) Touch button time, recharge time and hardness setting. There are no complicated

dials to worry about. The recharge time can be easily altered to suit your requirements.

d) Vacation on/off switch. When you go on holiday no water is being used and your unit does not need to recharge. The on/off button switches off the recharge modes without the need to switch off the whole unit. On your return one touch of the button restores all settings.

e) A Microprocessor back up during power cuts. If electrical power to the time goes off, the memory built into the timer circuitry keeps all settings for a minimum of 6 hours.

# PROGRAMMING

**1**

Switch on the transformer, the unit will flash 12.00 a.m. Sunday (whole display flashes).

## SET THE TIME

**2**

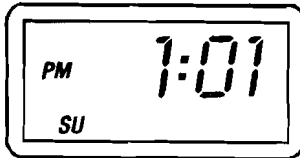
Press the TIME & DAY button once.  
The **hour display** will flash.

**3**

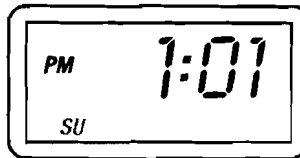
To advance the hour display press the SET/CLEAR button.  
 Each time you press the SET/CLEAR button the time advances by one hour.  
 Advance the time to the required hour.

**4**

To set the required hour press the TIME & DAY button once.  
 The hour display will cease to flash.  
 The **minute display** will begin to flash.

**5**

To advance the minute display press the SET/CLEAR button.  
 Each time you press the SET/CLEAR button the time advances by one minute.  
 Advance the time to the required minute setting.

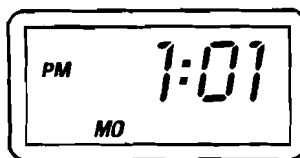
**6**

Press the TIME & DAY button to set. The day display will flash.



## SET THE DAY OF THE WEEK

*(In normal operation press TIME & DAY three times to reach this point)*

**1**

The day display is flashing.  
 Each time you press the SET/CLEAR button the day advances.  
 Advance until the required day is reached.

**2**

Press the TIME & DAY button to set. The display will be steady.



## SET THE TIME OF RECHARGE

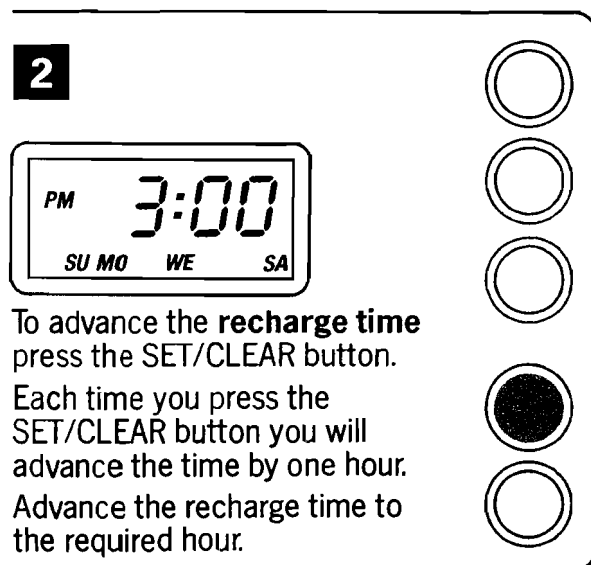
### NOTE

The display should now be steady and read the correct time and day of the week. Only the hour minute/separator will flash as it is pulsing once a second. If an hour, minute, or day display is flashing press the TIME & DAY button once. Repeat pressing the TIME & DAY button until the display steadies.

The unit is factory set to recharge at 2.00 a.m. If you wish to change this time then proceed as follows: (if not proceed to the next section).

NOTE 2.00 a.m. is chosen because hard water will enter the system during recharge. Consequently a time is required when very little, if any, water will be used.

**2**

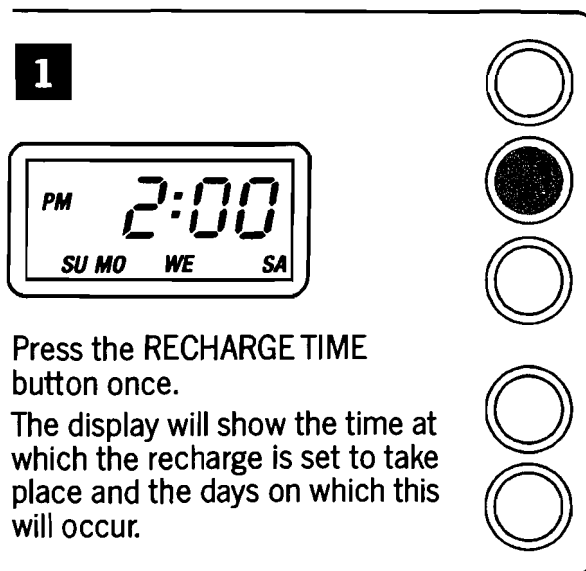


To advance the **recharge time** press the SET/CLEAR button. Each time you press the SET/CLEAR button you will advance the time by one hour. Advance the recharge time to the required hour.

## SET THE REQUIRED DAYS OF RECHARGE

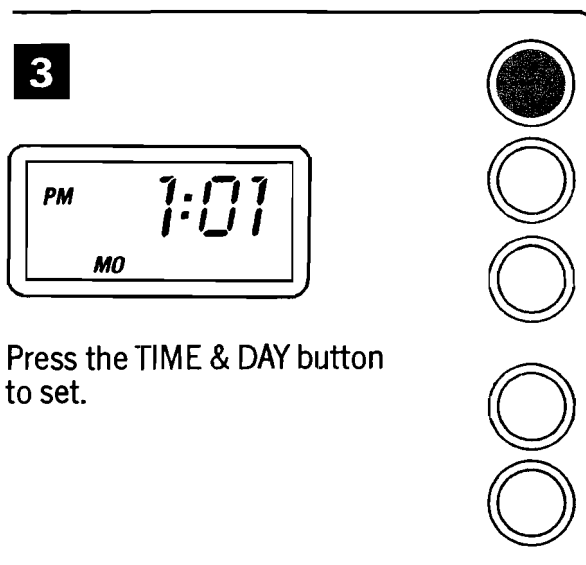
The unit is factory set to recharge on Monday, Wednesday and Friday. You may wish to set the days around your own household requirements or to set the days of recharge according to our user guide on page ??.

**1**



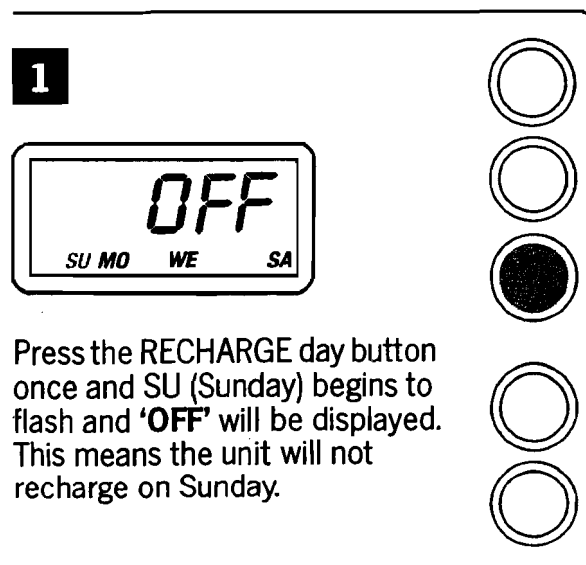
Press the RECHARGE TIME button once. The display will show the time at which the recharge is set to take place and the days on which this will occur.

**3**



Press the TIME & DAY button to set.

**1**



Press the RECHARGE day button once and SU (Sunday) begins to flash and 'OFF' will be displayed. This means the unit will not recharge on Sunday.

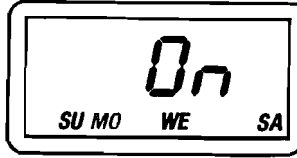
**2** To change the instruction for Sundays to **ON**, press the SET/CLEAR button once.



The display will advance to show **ON**. Sunday continues to flash. Pressing the SET/CLEAR button once more will change the instruction to off again.



**3** To set the instruction for Sunday press RECHARGE DAY once again.



The display will begin to flash **MO** (Monday) and **ON** to indicate that the unit will re-charge on Mondays. To change the instruction for Monday repeat the SET/CLEAR procedure described in **2** for Sunday.



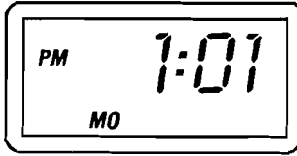
**4**



To set each day as required, advance through the days of the week by pressing RECHARGE DAY. Each time you depress RECHARGE DAY you will advance one day. The new day will flash.



**5**



Once all days are set as required, to **ON** or **OFF**, press TIME & DAY once to set. The display will return to the time display.



### CHECK YOUR RE-CHARGE SETTINGS

**1**



To check the settings you have made press RECHARGE TIME once. The display will show the time that recharge is set for and the days on which the recharge will take place.



**2**

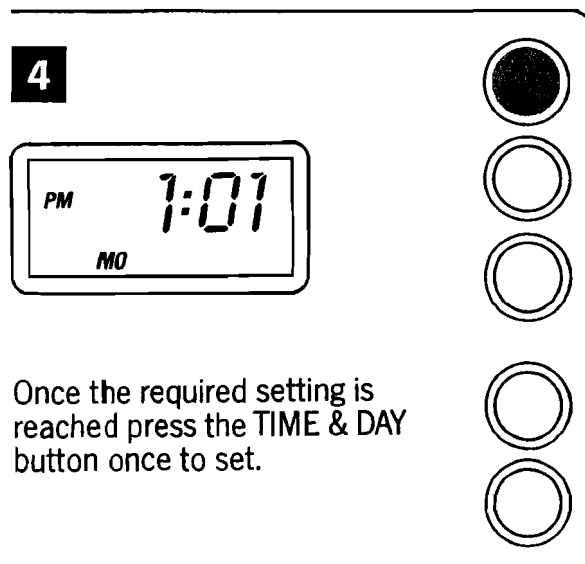
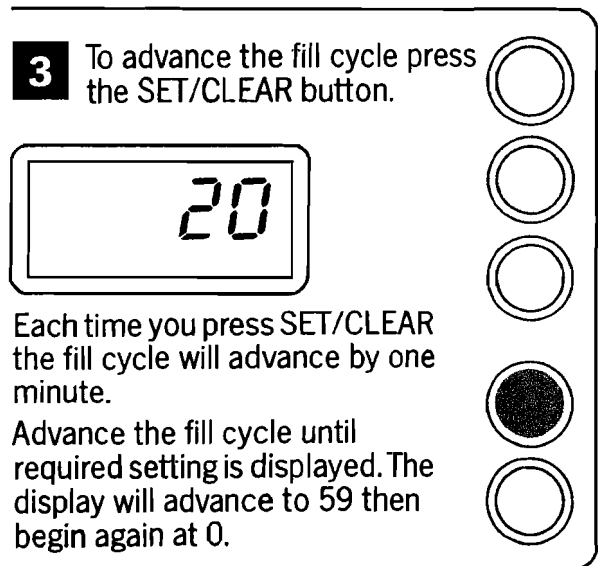
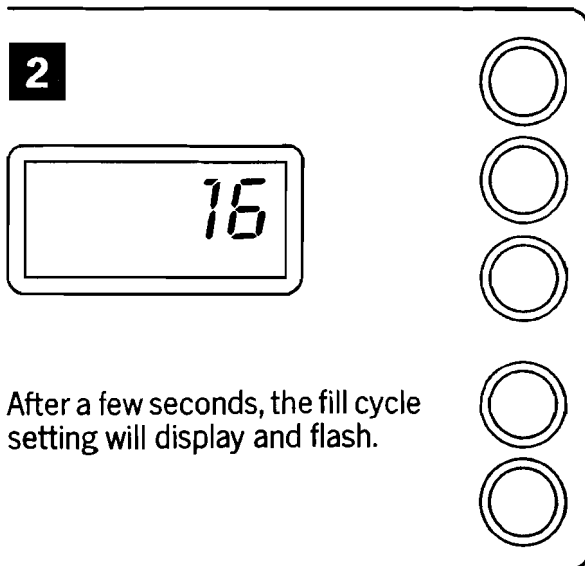
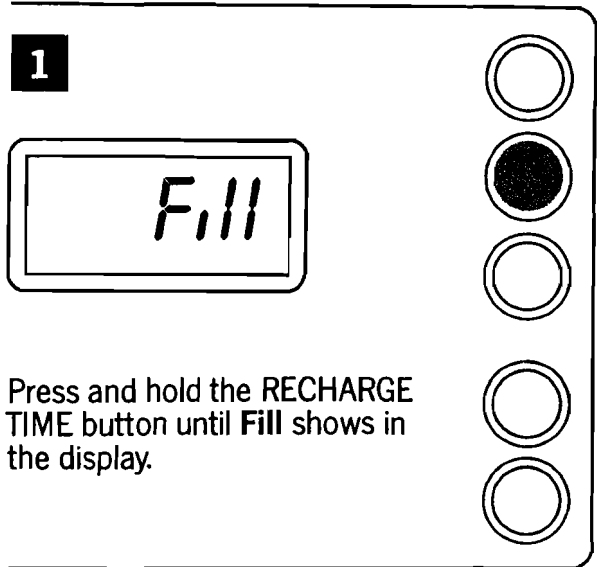


If you need to make any changes to these settings, repeat the sections above. Press TIME & DAY to clear and return to the time display.



## SET THE FILL CYCLE MINUTES

The unit is factory set to fill the unit with water for 16 minutes to soak the salt and produce brine for recharge. If the time setting for the cycle is too low you may get hard water between recharges. If the time setting is too high you will waste salt. Refer to the user guide on page 36 for the required setting for your particular unit.



**\*NOTE TO INSTALLER –  
YOU MAY RETURN TO PAGE 10**



## TO RECHARGE NOW

An automatic recharge can be initiated at any time. If you have guests visiting or expect to use more water than usual, you may run out of softened water. If the unit is not due to recharge for another day or two and you think you may run into hard water then an automatic recharge will prevent this from happening.

At the end of the recharge the time display will return to normal.

**1** Press and hold the ON/OFF button until **RCHG** shows in the display.



**RCHG** will flash in the display during the recharge which lasts for approximately 2 hours.

Use as little water as possible during this time period as hard water will bypass the water softener.

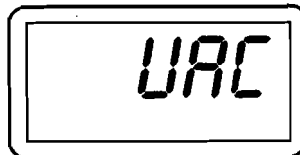


## HOLIDAYS OR LONG WEEKENDS

As your unit is programmed to recharge on set days it will waste water and salt even if you are not there. To overcome this you need to switch the unit off but still keep the time and cycle setting which have been pre-programmed.

Do not switch the unit off at the mains.

**1**

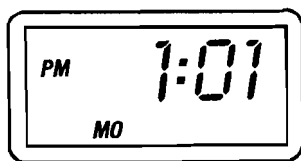


Press the ON/OFF button once (DO NOT HOLD DOWN).

**VAC** (Vacation) will flash in the display. The timer will keep time but not recharge to waste salt or water.



**2** On return from your holiday.



Press the ON/OFF button once to return the unit to service. If this is not done the unit will not recharge and hard water will enter the system.

The correct time and day will show in the display.



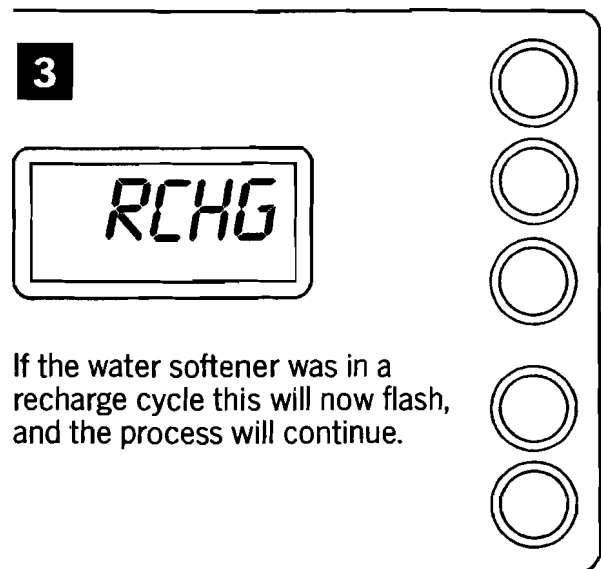
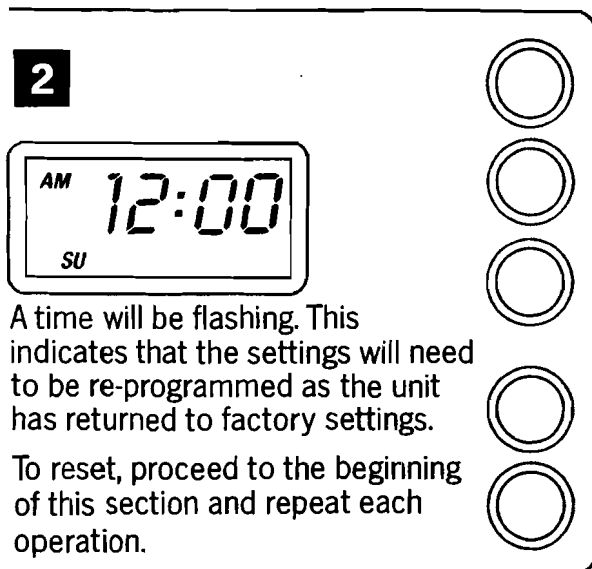
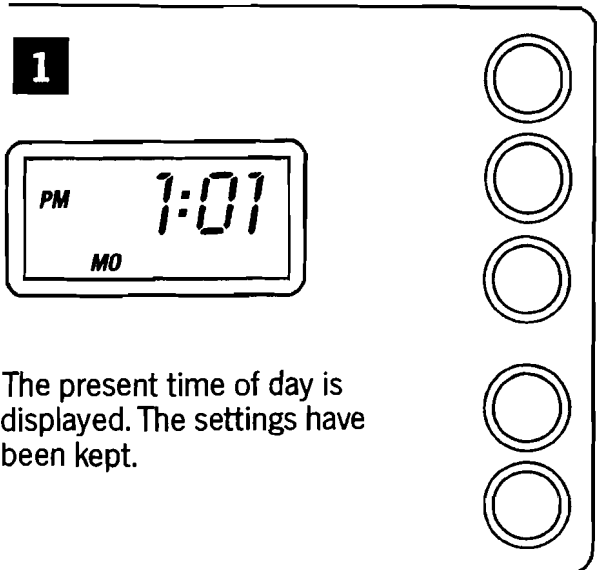
If the correct Time & Day do not re-appear a power cut may have occurred whilst you were away.

The following section describes the procedure for power cuts.

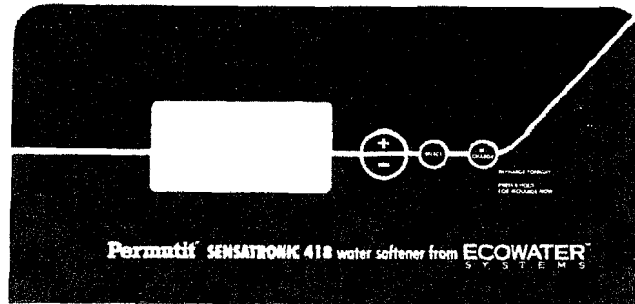
## POWER CUTS

If electrical power to the timer is interrupted, the "memory" built into the timer circuitry keeps all settings for a minimum of 6 hours. The display is blank and the softener will not recharge, although it will provide softened water.

When electrical power is returned, 1 of 3 things will happen.



# ABOUT SENSATRONIC



Your water softener has an advanced Sensatronic metering system which gives many product features and important savings on salt and water usage during recharge.

- a) Back lit LCD display and user friendly buttons. This makes the unit easy to read in all conditions and allows for easy to understand programming.
- b) A capacity charge bar indicator. You can see at a glance the remaining capacity of your unit before the next recharge cycle will take place.
- c) An Extended power back up (over 72 hours). The memory retains all settings for

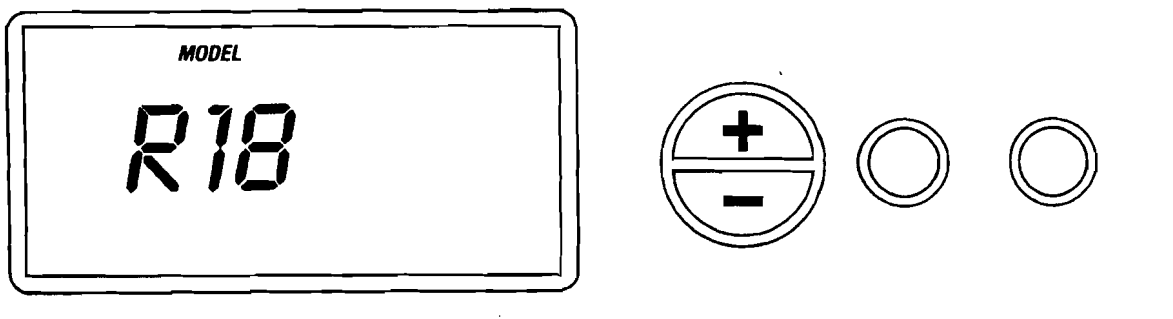
extended periods during any power loss and beyond that time only requires the time setting to be reprogrammed.

- d) Recharge is based on volumetric water usage patterns, giving you the maximum conservation of water and salt usage.
- e) Your unit displays the average daily water usage. You can monitor your home water use.

## NOTE

To alter settings during normal operation press **SELECT** until desired function is reached (see page 22).

# PROGRAMMING



**1** When the Transformer is first plugged in the display will show the model reference.

This Number reference should relate to your actual unit as follows:

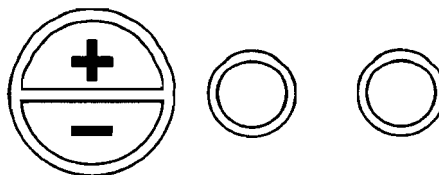
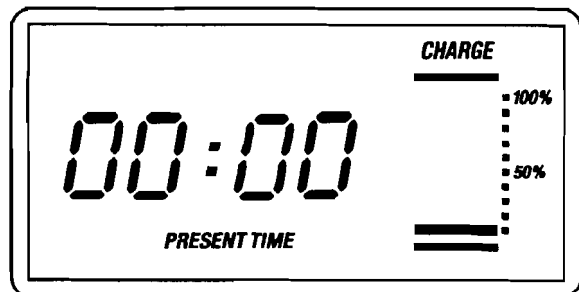
**Sensatronic 411 – R11**  
**Sensatronic 418 – R18**  
**Sensatronic 426 – R26**

The unit will then display a version number.

- 2** The unit will flash 00:00 after a few seconds.

**NOTE**  
Each time you press a button on the fascia

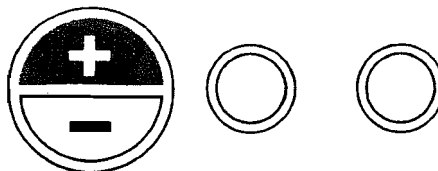
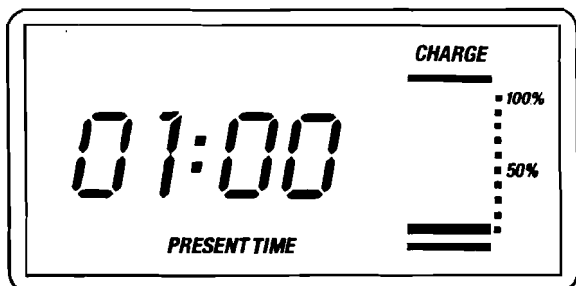
panel display a beeper sounds. One beep signals that a change is accepted. If the beeper sounds continually then a different button is required to effect the required operation.



### SET THE PRESENT TIME

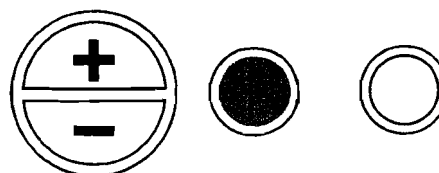
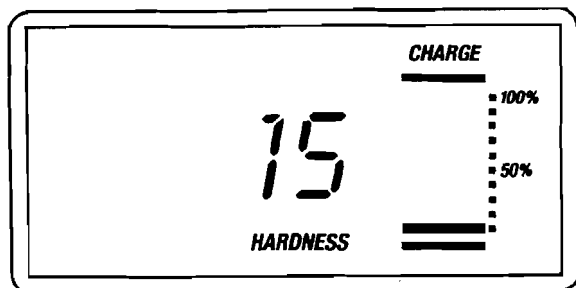
- 1** The display will continue to flash and the time can be advanced or moved backwards using the (+) or (-) buttons. Holding down the buttons advances the time at 30 minutes per second.

If the time requires changing during normal operation, press the SELECT button once. The display will flash and indicate present time. You may use the (+) or (-) buttons as described above to alter the time.



- 2** Once the required time is displayed the time may be set by pushing the SELECT button once more.

The display will flash "15 hardness".



SENSITRONIC

## SET THE WATER HARDNESS CALCULATION

The display will flash "15 hardness" (this is a preset factory setting).

The user guide on Page 35 indicates how you might find your water hardness.

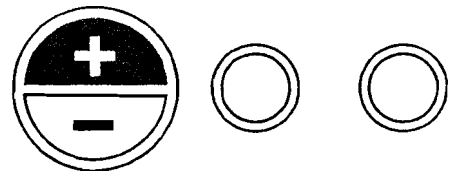
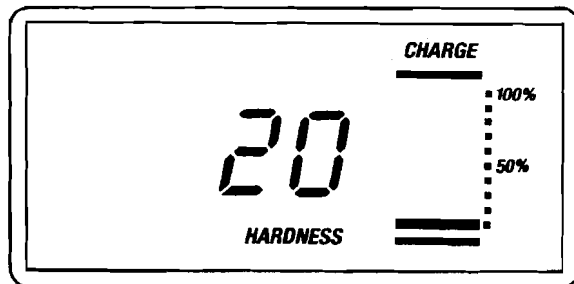
To set the calculation you will need to use the following table. Read down the left hand side of the table and find your current water hardness in degrees Clark or parts per million (ppm) – the water softener setting to the right is the number which requires programming into the unit.

For settings above 35 degrees Clark increase unit setting by 5 units for every 5 degrees Clark.

WATER HARDNESS		
DEGREES CLARK	(PPM)	UNIT SETTING
14	(200)	13
15	(220)	14
17	(240)	17
18	(260)	17
20	(280)	19
21	(300)	20
22	(320)	21
24	(340)	22
25	(360)	23
27	(380)	24
28	(400)	25
29	(420)	25
31	(440)	30
32	(460)	30
34	(480)	35
35	(500)	35

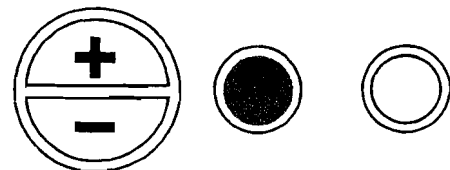
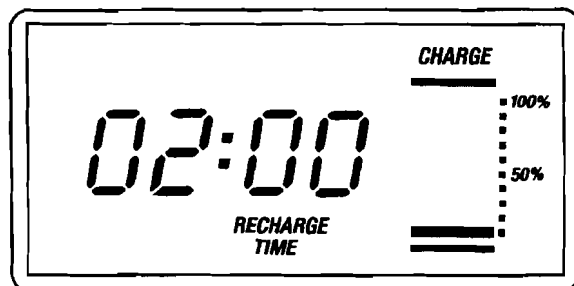
**1** To advance or reduce the displayed number to your required setting, use the (+) or (-) buttons.

Between 25 and 95 the display changes in units of 5. Once 95 is reached the (-) button must be used to return to a lower setting.



**2** Once the required setting is displayed it may be set by pushing the SELECT button once more.

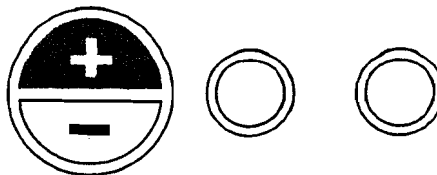
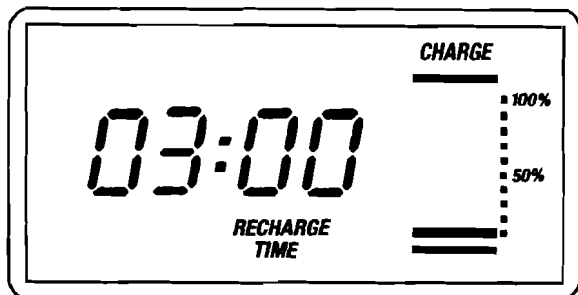
The display will flash 02:00 recharge time.



## SET THE RECHARGE TIME

**1** The display will flash 02:00 recharge time which is the pre-set factory setting. If you wish to change this time then proceed as follows: (If not, press SELECT and proceed to the next section).

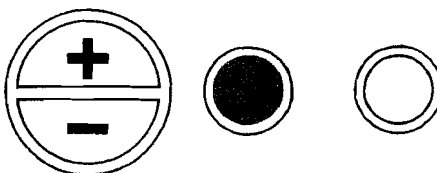
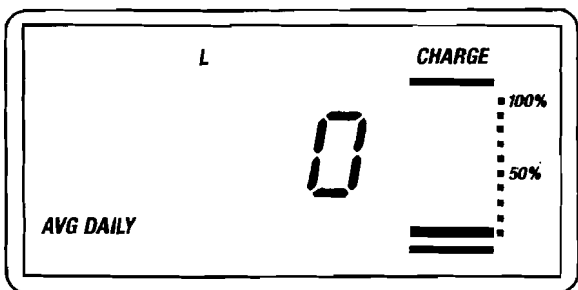
**NOTE**  
02:00 is chosen because hard water will enter the system during recharge. Consequently a time is required when very little, if any, water will be used.



**2** The recharge time can only be set for hours and not minutes. To select a different recharge time use the (+) or (-) buttons, to advance or retreat one hour at a time.

Once the required setting is displayed it may be set by pressing the SELECT button once

more. The display will show the average daily litre consumption. (**Note:** A recharge will take approximately 2 hours. At the time set, each day, the water softener will calculate the capacity remaining and additionally evaluate your water usage patterns to determine if it requires a recharge or not).



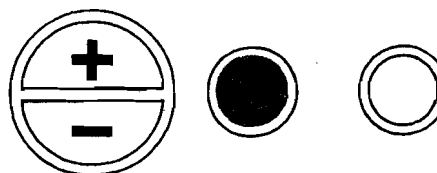
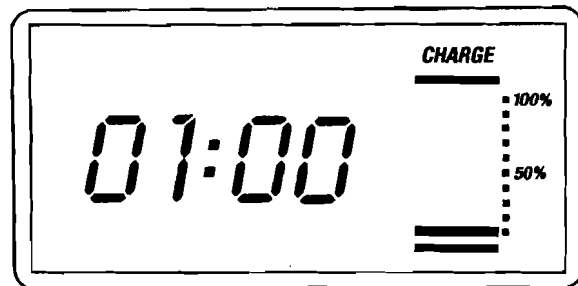
## VIEW THE AVERAGE DAILY LITRES USED

The display will show the average daily litre consumption. At first this will read Zero but normally will show the average daily water used for the past 7 days. A small L is displayed to indicate the litre setting.

No adjustments can be made.

To return to the time display press SELECT.

**NOTE**  
Your water softener is not designed to be a water meter. The reading measures softened water output but not regeneration water or water drawn that is not softened. Your water softener is similarly not designed to be a quartz accurate clock. Small variations on time keeping may be noticed.



SENSITRONIC

## CHECK THE SETTINGS

Pressing the SELECT button runs you through the different stages of the programming.

### Press Select once

Time will flash and show the present time.

### Press Select again

Water hardness will flash and shows setting.

### Press Select again

Recharge time is displayed and flashes.

### Press Select again

Average daily litres used is displayed.

### Press Select again

Returns to the operation mode.

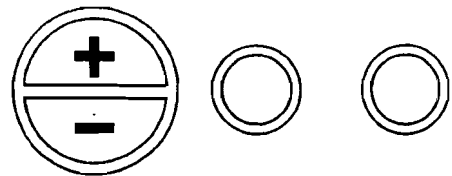
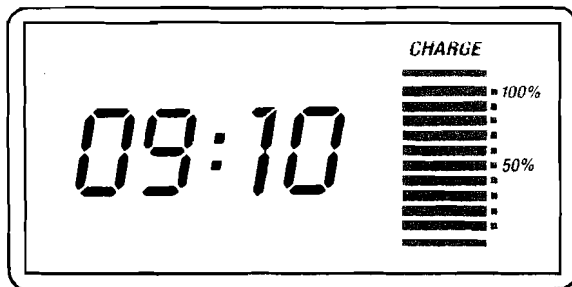
**\*NOTE TO INSTALLER  
ONCE SETTINGS ARE PROGRAMMED AS REQUIRED  
YOU MAY RETURN TO PAGE 10.**

## READING THE CHARGE BAR DISPLAY

The charge bar is continually displayed and shows at a glance the percentage of water softening capacity remaining. Following a recharge, the charge bar returns to the 100% charge position.

This is a useful feature as it allows you to see at a glance the status of your machine. If you

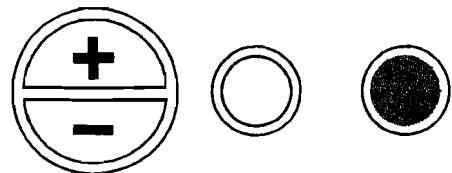
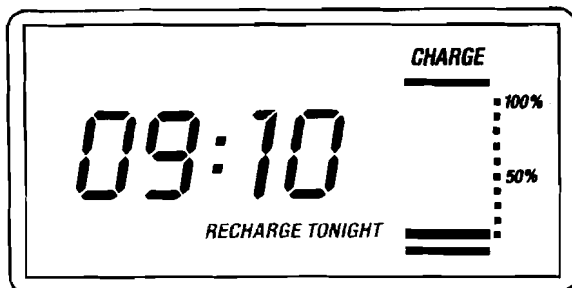
are about to have an influx of weekend guests and want to ensure that you will not deplete your water softening capacity then check the unit status. If it is below 50% it may be wise to initiate an immediate recharge or set the machine to recharge that night.



## TO RECHARGE TONIGHT

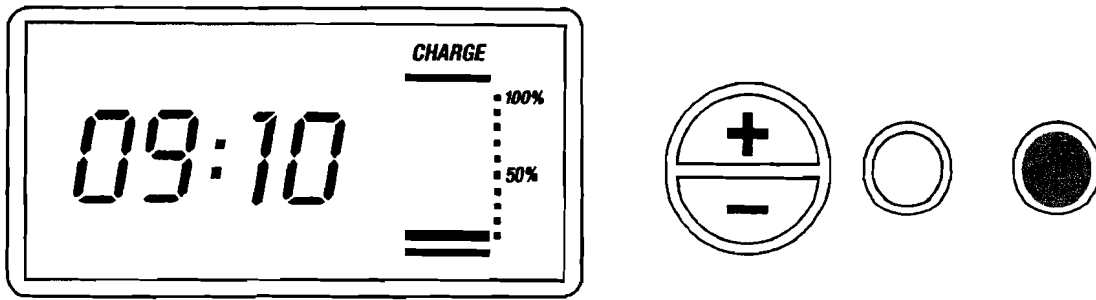
**1** The unit can be programmed to recharge at the next pre-programmed time, regardless of its remaining capacity. This is particularly beneficial to ensure a

sufficient softened water supply for an expected heavy water usage the next day. Simply press the RECHARGE button once. Recharge tonight will flash on the display.



**2** To cancel recharge tonight, press the RECHARGE BUTTON once and immediately release.

The display will return to the time display.



## TO RECHARGE IMMEDIATELY

Alternatively an automatic recharge can be initiated at any time.

Simply press the RECHARGE button and hold it down for 3 seconds.

Recharge will flash on the display. The process will take a few minutes to begin and lasts approximately 2 hours.

It cannot be cancelled once started.

Use as little water as possible during this time period as hard water will by-pass the water softener.

Once the recharge is complete the recharge

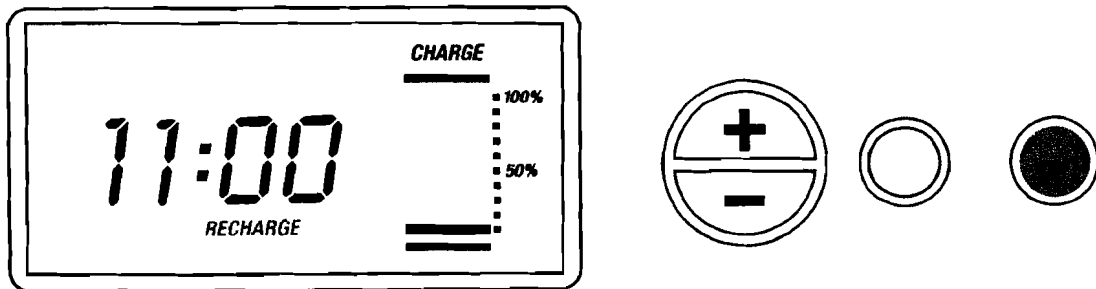
display will disappear. The present time will be displayed.

### NOTE

The unit will automatically flash "recharge tonight" once the computer calculates that a recharge is required to restore water softening capacity.

At the next programmed recharge time the cycle will automatically begin.

Once a recharge is initiated a flashing recharge replaces the flashing "recharge tonight".



## HOLIDAYS OR LONG WEEKENDS

Your unit is programmed to calculate water consumption and the capacity of the water softener remaining.

When you are on holiday, no water will be used and the water softener will not recharge, so no salt or water will be wasted.



## POWER CUTS

If the electrical power to the water softener is interrupted, the time display is blank, but the 'memory' built into the faceplate will keep the correct time for a minimum of 72 hours.

The water softener will not recharge but will pass softened water. In the case of a power

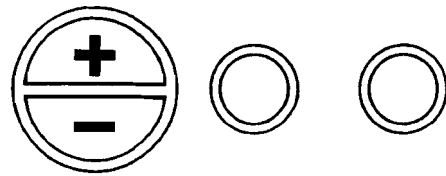
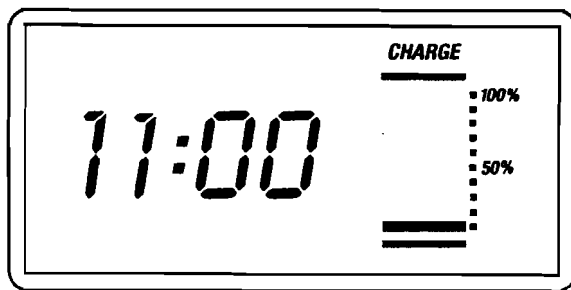
cut your demand for water will be less as most appliances will not work and so a recharge should not be necessary.

When electrical power is returned, 1 of 2 things will happen.

### 1 Power off up to 72 hours

The display returns and is steady.

No operation is necessary.



### 2 Power off over 72 hours

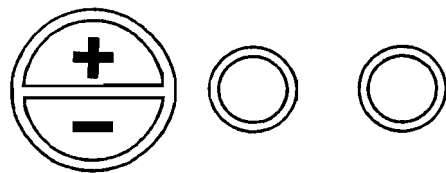
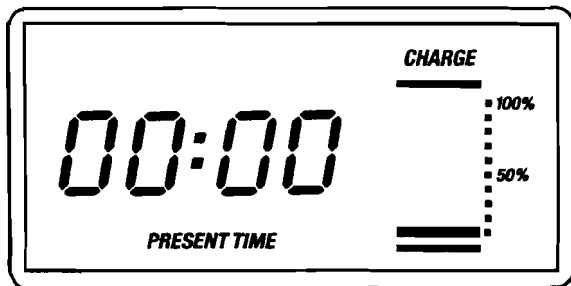
The display returns and flashes.

Only the time requires re-setting.

The Model code, hardness and recharge time will not have been lost as they are stored.

Even if the time is incorrect after a long period the water softener will continue to work but will recharge at what it believes the time to be.

Re-set the time as described in the Programming Section (see page 19).



# ADVANCED OPTION FOR SENSATRONIC MODELS

This section provides instruction on how to enter the secondary functions of the Sensatronic programme. By entering the secondary function you may monitor the performance of your unit and most importantly manage your household water usage.

If you are in any part of an operation you do not recognise do not touch any buttons for

2 minutes. The display automatically returns to the present time mode.

## WARNING

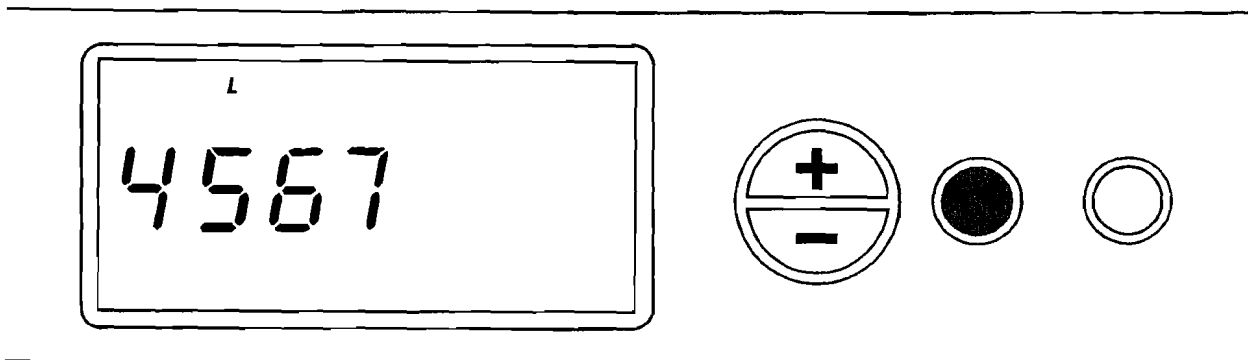
The settings for your water softener have been calculated to produce the most efficient usage of your water. Any change to these settings will result in your unit working inefficiently.

## THE SECONDARY FUNCTIONS

### TOTAL WATER USAGE SINCE INSTALLATION

Press and hold the select button for three

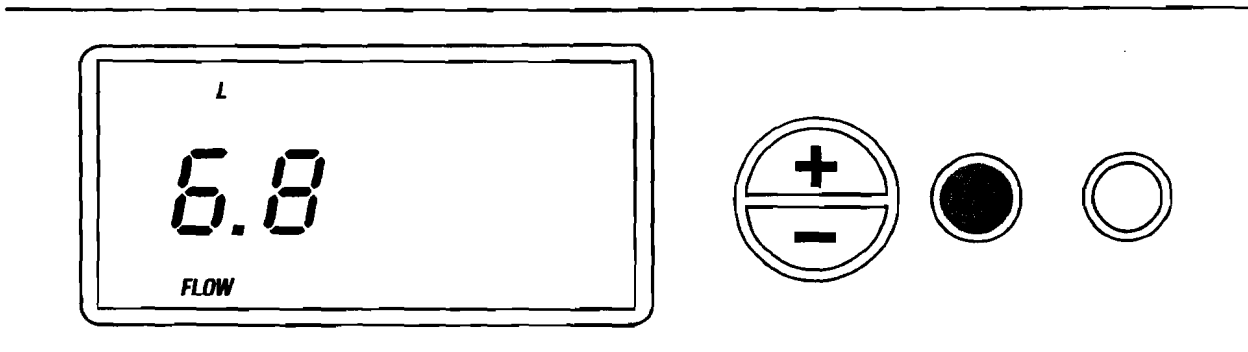
seconds. The display will show the total volume of softened water used since the unit was installed. The reading will be in litres (European) or gallons (United States).



### MEASURING THE WATER FLOW RATE

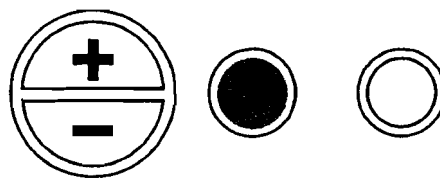
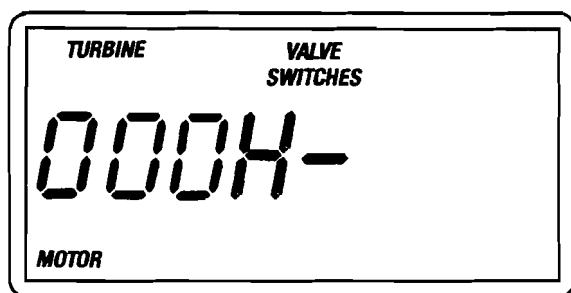
Press select once. The unit will now display the water flow in litres or U.S. gallons per minute through the water softener. If the

reading is Zero, open a tap connected to the softened supply to achieve a reading. If the reading is still Zero check that the inlet, outlet and bypass valves are set as per diagram (P.6).

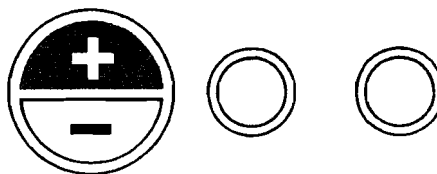
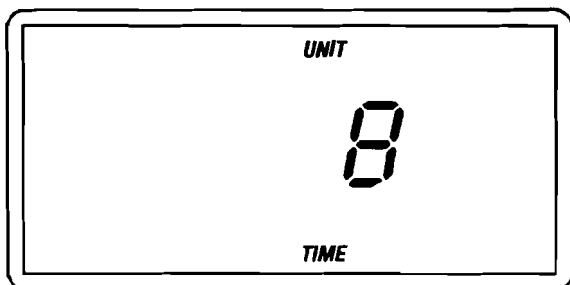


## COUNTING THE DAYS OF OPERATION AND NUMBER OF RE-CHARGES

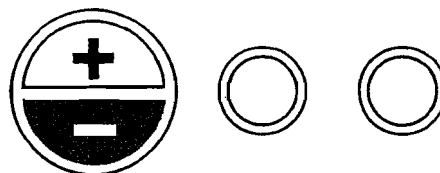
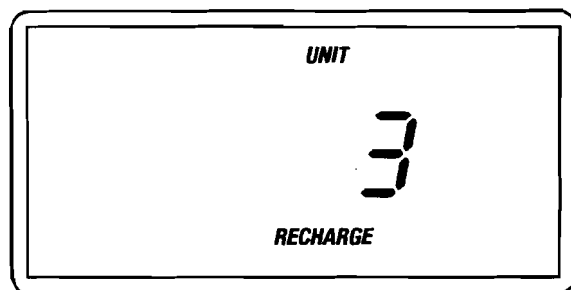
**1** Press select once. The unit will display a counting meter. If water is passing through the unit this will be advancing.



**2** Press (+) once to display the number of days the unit has been in operation.



**3** Press (-) once to display the number of times the unit has recharged since it was installed.

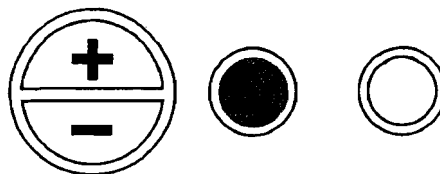
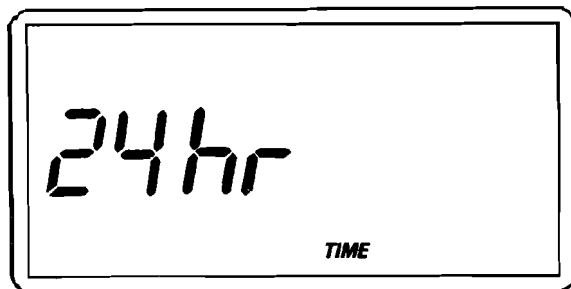


## SETTING A 12 HOUR OR 24 HOUR CLOCK

Press select once. The display will flash the current setting. The unit is factory set to display a 24 hour clock.

Press (+) once to activate the 24 hour clock mode.

Press (-) once to activate the 12 hour clock mode.

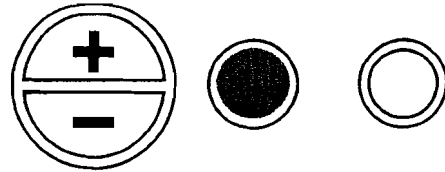
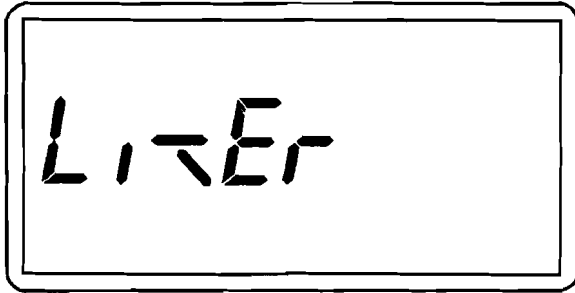


## SETTING A LITRES OR GALLON (US) MEASURE

Press select. The display will flash the current setting. The unit is factory set to display litres and all water flow rate and usage displays are shown in this mode.

Press (+) once to activate the litre count mode.

Press (-) once to activate the U.S. gallon count mode.

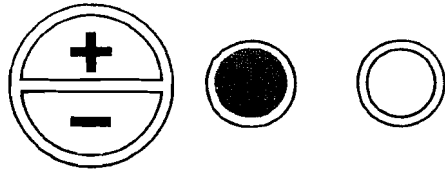
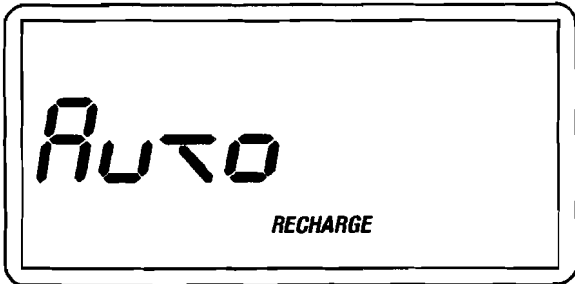


## MAXIMUM DAYS BETWEEN RE-CHARGE SETTING

Press select once. The display will flash the current setting. The unit is factory set to automatically control all re-charges with intervals based on water usage.

Press (+) to set a maximum time in days between re-charges. Each press of the (+) button advances 1 day. When set the unit will re-charge after the set number of days since the last re-charge irrespective of water usage.

We recommend for maximum efficiency that the unit is set to AUTO.

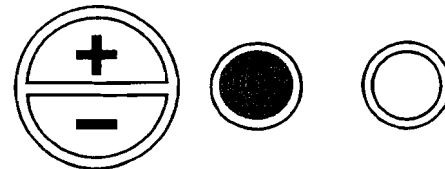
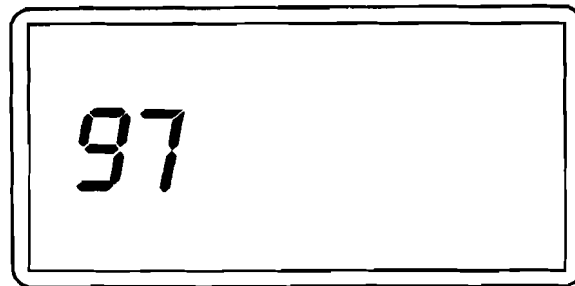


## DISPLAY THE AUTOMATIC RECHARGE OPTION

Press select once. The display will flash between '97' and 'OFF'. This setting would be

switched to 'ON' in Industrial settings to automatically initiate a recharge once 97% of the capacity was depleted.

This is not advised in a domestic application.

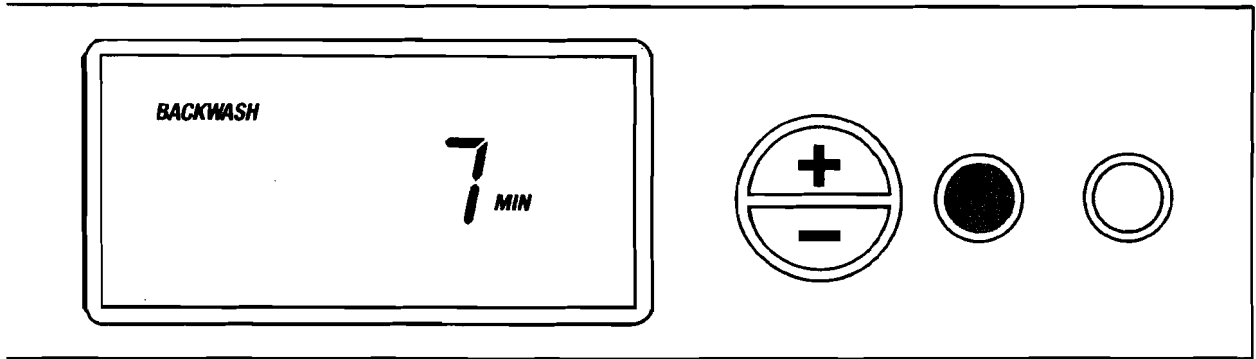


SENSIRUMIL

## DISPLAY THE BACKWASH TIME

Press select once. The display will flash the current setting. The unit is factory set to

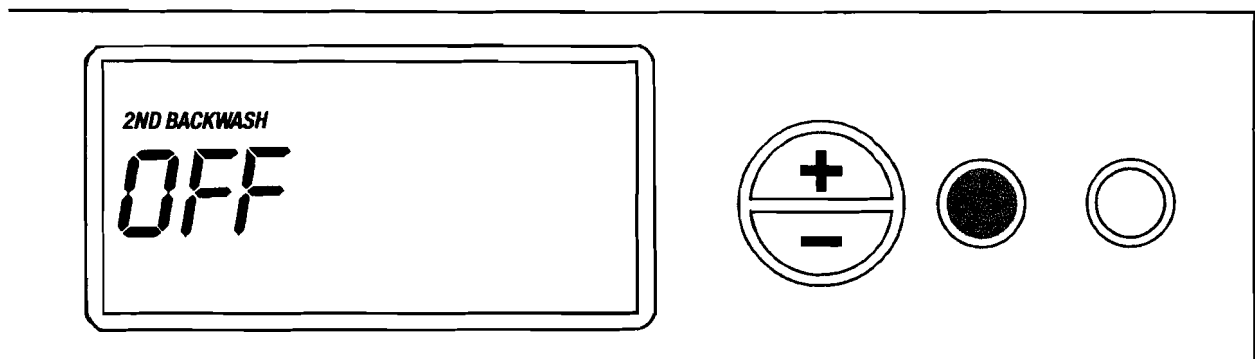
backwash for 7 minutes for maximum efficiency.



## DISPLAY THE 2ND BACKWASH SETTING

Press select once. The display will flash the current setting. The unit is factory set to OFF

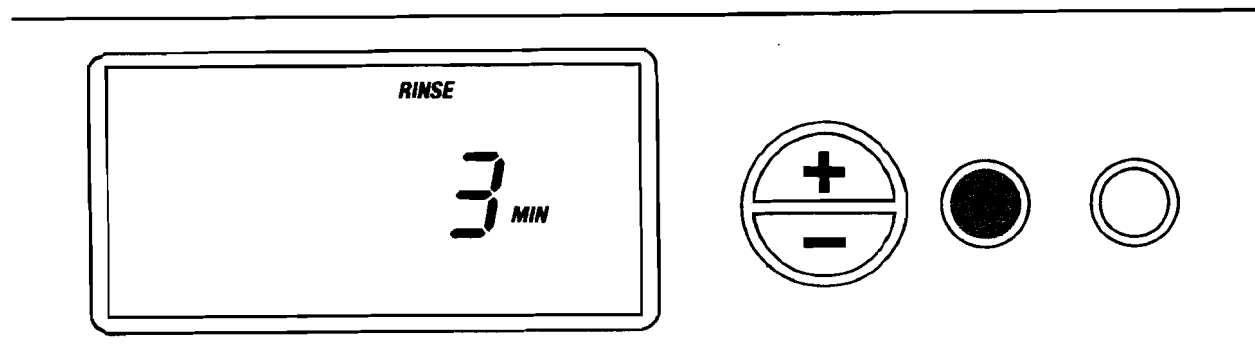
for maximum efficiency.



## DISPLAY THE RINSE TIME

Press select once. The display will flash the current setting. The unit is factory set to rinse for 3 minutes for maximum efficiency. Press

select once to return to the primary function the present time will be displayed.



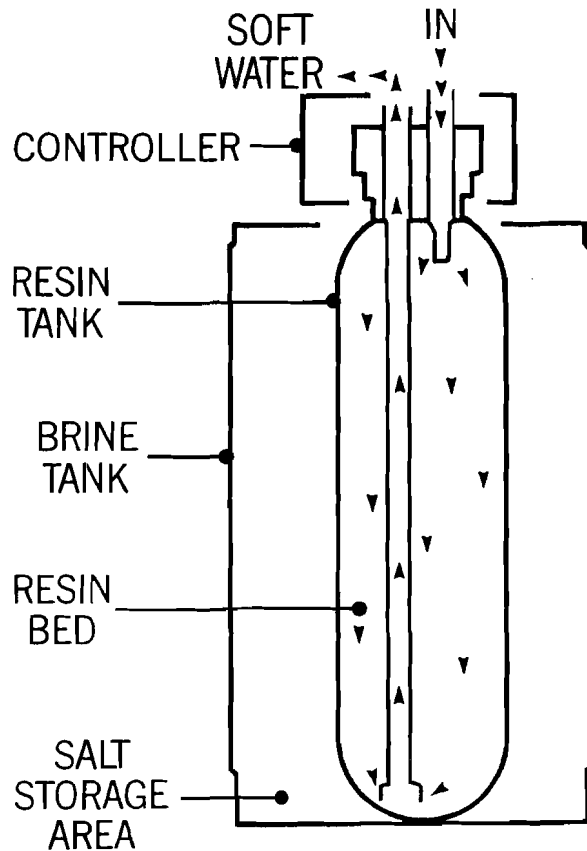
# HOW YOUR WATER SOFTENER WORKS

## SERVICE

Hard water enters from the back of the controller and flows down to the resin tank. As it flows down through the resin bed, the resin beads attract the hardness minerals from the water and holds onto them.

This is known as "Ion Exchange".

Depending on how many hardness minerals are in the water, and how much water is used, the resin bed reaches a point where it can no longer hold onto any more minerals. The resin bed needs cleaning. Cleaning the bed is known as "Regeneration" or "Recharge".



## RECHARGE

Recharge is triggered by different methods according to your type of machine.

A Timetronic will recharge on the days programmed regardless of how much of the capacity is used. A Sensatronic has a meter built into the valve outlet. As water is used the meter sends electronic pulses to the circuit board computer registering the volume used. The hardness of your water is programmed

into the controller. All of this information is collated together with the knowledge of the time since the last recharge and water usage cycles.

The computer continually updates this information to calculate when the next recharge is due. When this occurs recharge tonight is displayed.

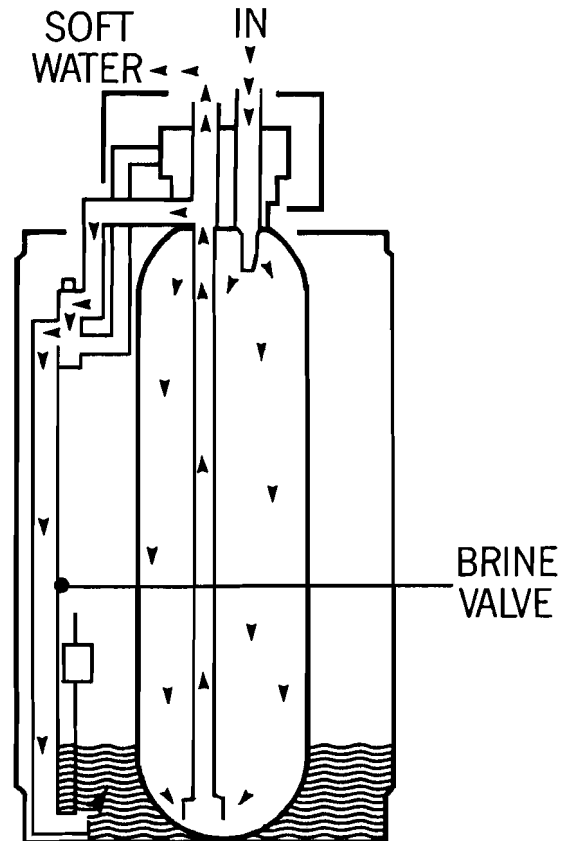
## THE RE-CHARGE CYCLE

### A) FILL

Water passes through the brine valve and into the brine tank. The fill water dissolves the stored salt to make brine solution. This solution is used to cleanse or re-charge the resin bed.

Timetronic units have a pre-set fill time to soak sufficient brine to cleanse the resin bed.

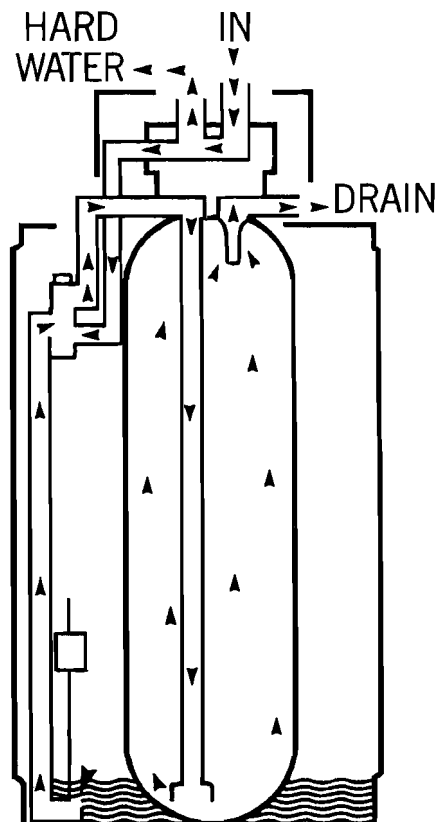
Sensatronic units calculate the exact proportion of brine required to recharge the capacity used. Consequently the fill time is adjusted and the minimum salt is used. During the fill, softened water continues to pass to service.



### B) UPFLOW BRINING

Salt brine is drawn from the brine tank, through the valve and to the bottom of the resin bed. The brine passes up through the resin bed and releases the hardness minerals which have collected on the resin.

The mineral laden brine leaves the resin tank at the top and flows through the valve to the drain. Small deposits of sodium are left on the resin bed as a residue. Upflow brining is important in reducing the volume of water used and the salt saturation required as those beads which need most cleansing are at the top and can be flushed upwards to the drain more quickly.

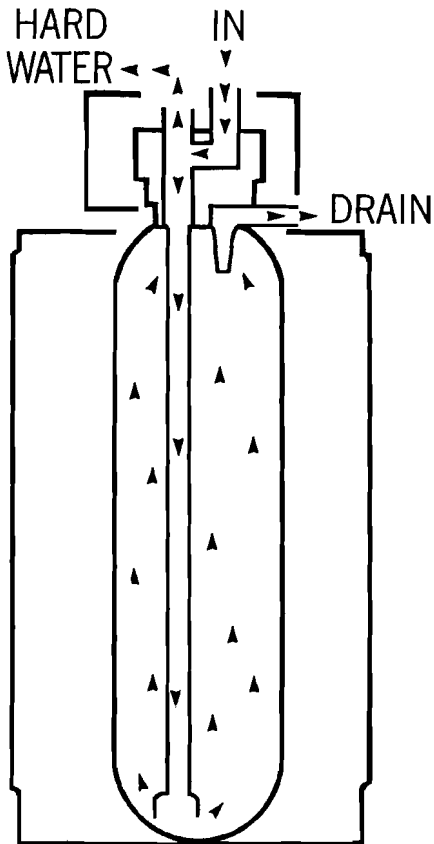


### C) BRINE RINSE

Clean fresh water replaces the brine drawn and flows up the resin bed and cleanses the resin bed of residual brine. The rinse water flows to drain.

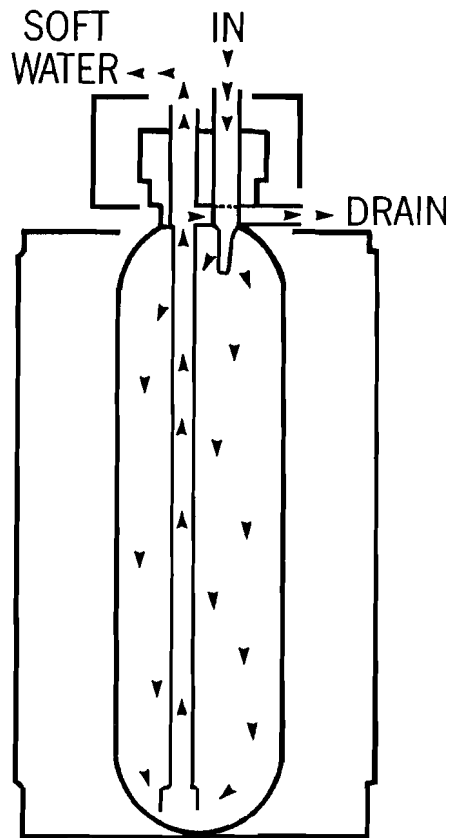
#### D) BACKWASH

Water enters the resin bed at the bottom and flows upward loosening it and fluffing the bed causing any remaining deposits to release and discharge to drain.



#### E) FAST RINSE

Water flows at a fast rate, down through the resin bed, then out through the valve to drain. Following the fast rinse cycle the water softener returns to service.



## GENERAL INFORMATION

### SALT

Salt is used as the regenerate (cleansing agent) for your Water Softener's resin bed. The salt cabinet will need to be refilled from time to time.

**It is essential that approximately 6 inches of salt is maintained as a minimum to ensure operating efficiency.**

Failure to replenish salt will prevent the unit from cleansing itself on its re-charge cycle and consequently it will be unable to soften the water.

Pour the salt slowly into the cabinet. Ensure that the brinewell cap is secure, as no salt should be allowed to enter here. Do not use granular salt. **Only** use tablet or pellet salt. Ecowater Systems recommend Aquasol. Your local water softener stockist will stock salt.

**NOTE:** During the cleaning process salt does **not** enter the water supply. Salt is rinsed to drain.



## **CLEANING**

Your unit may be cleaned with a damp cloth and detergent. Do not use bleaches, solvents or spirits as they may cause damage.

## **WATER LEVEL**

The water level will vary. Generally there will be no more than two inches of water in the cabinet. During re-charge this will increase. Water may normally be visible only when the salt level is very low.

## **THE USE OF SOFTENED WATER**

### **WASHING MACHINES**

You will need much less soap powder. In most washes one tablespoon will be sufficient. Too much lather and clothes will not rinse properly.

### **DISHWASHERS**

Your dishwasher will no longer need to be filled with salt as this was used to soften the water in the dishwasher. Use much less detergent as too much powder or liquid will result in spotting.

### **STEAM IRONS/CAR BATTERIES**

Only use distilled or deionised water, not softened water. An Ecowater Distiller (part no. 202100) is a cost effective alternative to buying distilled water.

### **AQUARIUMS**

Most fish will thrive on softened water, but ask for expert advice from your local aquarium supplier.

### **WATERING PLANTS**

Some household plants dislike softened water whilst others prefer it. Watering the garden with softened water is wasteful and we recommend the external tap is connected to the hard water supply.

### **CLEANING SINKS, BATHS AND BASINS**

You will find that your cleaning chores are reduced, as cleaning becomes a quick wipe around. Occasionally 'spotting' may result but this is easily rinsed off and nothing to worry about.

### **HOW SOFTENED IS MY WATER**

Test the water hardness from a softened supply using Ecowater's Test kit. Your water should change the colour of the test with one drop of solution. If your unit has been installed for a short period of time it may be 2-3 weeks before the softened water replaces the hard water in your header tank.

### **DRINKING WATER**

One household tap will be left on a hard water supply. Softened water contains a small amount of sodium. In one pint of softened water the sodium content is the same as in two slices of white bread or  $\frac{1}{4}$  pint of milk.

Individuals on a low sodium diet should follow the Department of Health's advice that water from a domestic water softener should not be used for drinking and cooking. All water for mixing with powdered milk for babies should be taken from an unsoftened mains tap as powdered milk and softened water both contain sodium for which young babies have a limited tolerance.

Anyone on a sodium restricted diet should follow their doctor's advice.

If you are concerned about the quality of your drinking water supply ask your local stockist about the benefits of an Ecowater Reverse Osmosis purification system.

# TROUBLE SHOOTING

**SAVE MONEY  
BY ENSURING THAT AN ENGINEER  
IS NOT UNNECESSARILY CALLED OUT**

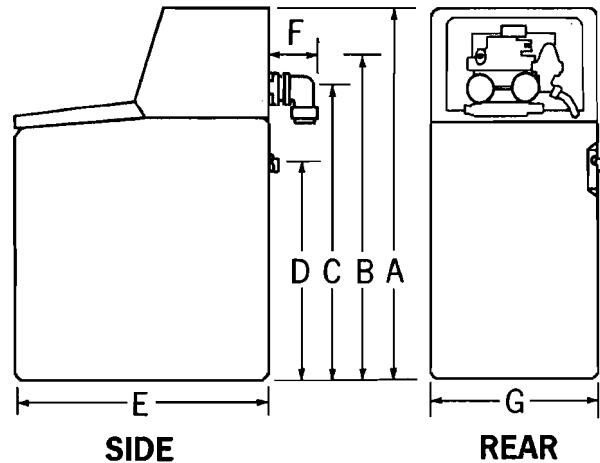
CHECKLIST	SOLUTION	PAGE REF.	
		TIMETRONIC	SENSATRONIC
<b>PROBLEM: HARD WATER</b>			
1. Is there Salt in the Cabinet, 6 inches of Salt is a minimum level	1. Fill the cabinet with salt, add ½ bucket of water, initiate an immediate recharge	16	23
2. Is the Bypass closed and the inlet and outlet open	2. Close the Bypass valve and open the inlet and outlet	6	6
3. Is the power on	3. Switch the power on and check connections	9	9
4. Does Timetronic read "VAC"	4. Press the ON/OFF button once	16	–
5. Is the Timetronic "Fill" time set	5. Increase the fill time if necessary	15	–
6. Is the correct time of day set	6. Reset Time & Day functions	11	19
7. Is the recharge time set	7. Set the recharge time	13	21
8. Sensatronic – Is the hardness setting correct	8. Re-set the hardness setting – Increase if necessary	–	20
NOTE: If any of the above requires action, add ½ bucket of water to the salt and initiate a 'recharge now'.		16	23
<b>PROBLEM: SOMETIMES HARD, SOMETIMES SOFT</b>			
1. Check the water hardness and settings	1. – Reset the settings of the Timetronic unit – Increase the Sensatronic hardness setting	13 –	– 20
2. Timetronic – Check the Fill time	2. Increase if too low	15	–
3. Timetronic – Check the days of recharge	3. Increase if too few	13	–
4. Timetronic – Check Display & Time of recharge	4. Correct if necessary. Set to time of very little water usage	13	–
5. Sensatronic – Check the model number	5. Switch off unit. Switch on – Display will show Model number. Call Service Department if incorrect	–	18
<b>PROBLEM: NO WATER</b>			
1. Check the Mains is open	1. Open Mains	5	5
2. Check the Inlet/Outlet valves are open	2. Open valves	6	6

CHECKLIST	SOLUTION	PAGE REF.	
		TIMETRONIC	SENSATRONIC
<b>PROBLEM: UNIT RECHARGES AT INCORRECT TIME OF DAY</b>			
1. Check the present time	1. Re-set the present time	11	19
2. Check the recharge time	2. Re-set the recharge time	13	21
<b>PROBLEM – NO RECHARGE OCCURING</b>			
1. Is the water soft	1. If yes – take no action	–	–
2. <b>Timetronic</b> – Check that the days of recharge are set	2. Reset the recharge days if incorrect or not set	13	–
3. <b>Sensatronic</b> – Check the capacity bar – if % remaining is high and you have hard water	3. Increase the hardness setting	–	20
<b>PROBLEM: EXCESSIVE SALT USAGE</b>			
1. <b>Sensatronic</b> – Check the hardness setting	1. Reduce the hardness setting	–	35,20
2. <b>Timetronic</b> – Check the hardness Check the days of recharge/fill time	2. Reduce settings if necessary	35,13	–
<b>PROBLEM: LITTLE SALT USAGE</b>			
1. Check water hardness If soft – unit is efficient	1. No action	–	–
2. If hard water refer to hard water section			
<b>PROBLEM: NO WATER IN CABINET OR VERY LOW</b>			
1. This is quite normal. Unlike conventional water softeners only 1½" to 2" of water is at the bottom of the cabinet	1. No action	32	32
<b>PROBLEM: WATER RUNNING DOWN THE OVERFLOW</b>			
1. Is the water level high	1. Bypass the water softener	6	6
2. Call for service		37	37
<b>PROBLEM: WATER RUNNING DOWN THE DRAIN LINE CONSTANTLY</b>			
1. Is the unit in recharge mode	1. If Yes – Wait until completed	–	–
	– Check the Time of Day settings – Check that the recharge time is set as required	11 13	19 21
	2. If No – Bypass the unit – Call Service Department	6 37	6 37
<b>PROBLEM: FACEPLATE PROBLEMS</b>			
1. Is the faceplate blank	1. – Check Power – Switch on – Check connection – Push in tight	9	9
2. Is the display stuck in one function	2. – Turn off power for 10 seconds and switch back on	9	9
	– Call Service if still stuck	37	37
3. Does error code appear	3. – Check all connections are secure	9	9
	– Call Service Hotline	37	37

# UNIT SPECIFICATION AND HARDNESS SETTING

## UNIT DIMENSIONS (mm)

MODEL	A	B	C	D	E	F	G
307	643	555	515	380	455	55	300
311	643	555	515	380	455	55	300
411	643	555	515	380	455	55	300
418	822	735	690	558	455	55	300
426	1120	1015	970	725	600	60	360



## SOFTENER CAPACITY TABLE

These tables indicate the volume of softened water obtained per regeneration from the models for different levels of water hardness.

## CAPACITY TABLES

SOFTENED WATER OUTPUT BETWEEN RECHARGE IN LITRES AND GALLONS											
MAINS WATER HARDNESS		TIMETRONIC 307		TIMETRONIC 311		SENSATRONIC 411		SENSATRONIC 418		SENSATRONIC 426	
DEGREES CLARK	P.P.M.	LITRES	GALLONS	LITRES	GALLONS	LITRES	GALLONS	LITRES	GALLONS	LITRES	GALLONS
upto -10°	to 140	3571	786	5143	1132	5143	1132	7857	1729	11571	2546
14	200	2500	551	3600	793	3600	793	5500	1211	8100	1784
15	220	2273	501	3273	721	3273	721	5000	1101	7364	1622
17	240	2083	459	3000	661	3000	661	4583	1010	6750	1487
18	260	1923	424	2769	610	2769	610	4231	932	6231	1372
20	280	1786	393	2571	566	2571	556	3929	865	5786	1274
21	300	1667	367	2400	529	2400	529	3667	808	5400	1189
22	320	1563	344	2250	496	2250	496	3438	757	5063	1115
24	340	1471	324	2118	466	2118	466	3235	713	4765	1049
25	360	1389	306	2000	441	2000	441	3056	673	4500	991
27	380	1316	290	1895	417	1895	417	2895	638	4263	939
28	400	1250	275	1800	396	1800	396	2750	606	4050	892
29	420	1190	262	1714	378	1714	378	2619	577	3857	850
31	440	1136	250	1636	360	1636	360	2500	551	3682	811
32	460	1087	239	1565	345	1565	345	2391	527	3522	776
34	480	1042	229	1500	330	1500	330	2292	505	3375	743
35	500	1000	220	1440	317	1440	317	2200	485	3240	714

# TESTING YOUR WATER HARDNESS

Hardness varies from one point of use to another. Use the kit provided to determine your water hardness. From the hardwater tap, drain 10ml of water. Add the supplied solution one drop at a time – shaking in between. When the solution turns from wine red to blue, record the number of drops.

Number of drops      ppm of Hardness  
 × 20      =     

Owners of Sensatronic models may now programme their units as described on Page 20.

## DAYS OF RECHARGE AND FILL TIME

### SETTINGS FOR TIMETRONIC MODELS

The following are the recommended frequency of recharge for the relevant

Timetronic units and the accompanying fill times. These settings are for guidance only and you may find that you need to adjust them according to your own household requirements.

NO. OF PERSONS	TIMETRONIC 307 Hardness in Parts per Million						TIMETRONIC 311 Hardness in Parts per Million					
	1 to 140	160-220	240-300	320-340	360-440	460-500	1 to 140	160-220	240-300	320-340	360-440	460-500
1	M 9	M 9	M 9	M 9	M 9	M TH 9	M 9	M 9	M 9	M 9	M 9	M 15
2	M 9	M 9	M F 9	M F 9	M TH 9	M TH S 9	M 9	M 9	M 15	M F 9	M F 12	M F 15
3	M 9	M F 9	M TH S 9	M TH S 9	M W F S 9		M 9	M 15	M F 12	M F 15	M TH S 15	M TH S 15
4	M F 9	M TH S 9	M W F S 9	M W F S 9			M 9	M F 12	M TH S 12	M TH S 15	M W F S 12	M W F S 15
5	M TH 9	M W F S 9	M W F S 9				M 15	M F 15	M TH S 15	M W F S 15	M W F S 15	
6	M TH S 9	M W F S 9					M F 12	M TH S 15	M W F S 15			

\* Shaded areas will provide inefficient results. We recommend that the next largest model is used.

**STEP 1** – Read down the side of the table for the number of persons in your family using water.

**STEP 2** – Read across the top of the table and find the table listing the relevant hardness for your model (see page 35).

**STEP 3** – Read across and down to find the point where steps 1 and 2 meet. At this meeting point the recommended days of recharge

and fill times are listed. Refer to the legend below for guidance.

**STEP 4** – These settings are based on average water usage. You may find that you can reduce these settings to the next lowest hardness level setting.

**STEP 5** – Record your fill time settings in the spaces provided and write **ON** against those days recommended for recharge in Step 3.

### LEGEND

MONDAY	TUESDAY	WEDNESDAY	=	M	T	W
THURSDAY	FRIDAY	SATURDAY		TH	F	S
SUNDAY		FILL TIME		SU		12

KG OF SALT USED EACH RECHARGE FOR FILL SETTING											
LENGTH OF FILL TIME	9	10	11	12	13	14	15	16	17	19	20
KG OF SALT USED	1.2	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.2	2.5	2.6

RECORD YOUR SETTINGS HERE

FILL TIME  MINS =  KG/RECHARGE

DAYS OF RECHARGE

(ON/OFF)

M	T	W	TH	F	S	SU
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# GUARANTEE AND SERVICE (UK ONLY)

All Permutit Domestic Water Softeners are fully covered by a one year parts and labour guarantee against manufacturing defect from the date of purchase.

This guarantee does not effect the statutory rights of the consumer.

Any faults which are not attributable to the water softener but to faulty installation or operation will be chargeable.

The following are excluded from your warranty and a call out will be chargeable.

1. Water Softeners installed where pressure or flow rates are not within the limits stated in the user and installer handbook.
2. Faults arising from misuse or neglect.
3. Failure to replenish salt.
4. Resetting the programmer in the event of a power failure or incorrect programming.

5. Resetting the programmer when the influent water hardness or the number of people in the household changes.
6. Water Softeners not installed in accordance with the local water authority regulations.
7. Any fault arising from repairs or alterations to the water softener carried out by anyone other than engineers employed by Ecowater Systems Limited.
8. Water Softeners installed outside mainland England and Wales.
9. Faults arising from faulty installation, plumbing or electrical.
10. Any defect or damage occasioned by fire, lighting, explosion, flood, storm, tempest, impact or other extraneous causes.

On receipt of your Registration Card we will send your Warranty Number. Please record it here:

**MY WARRANTY NO. IS**

## YOUR TIMETRONIC WARRANTY

The Timetronic 307 and Timetronic 311 are fully covered by a one year parts and labour warranty against manufacturing defect from the date of purchase.

***3 year parts and labour warranty – free of charge.***

On receipt of your Registration Card this warranty will be updated to fully cover a three year parts and labour warranty from the date of purchase. Please ensure that this Registration Card is returned immediately and we will send you your Warranty Number.

## YOUR SENSATRONIC WARRANTY

The Sensatronic 411, Sensatronic 418 and Sensatronic 426 are fully covered by a one year parts and labour warranty against manufacturing defect from the date of purchase.

***5 year parts and labour warranty – free of charge.***

On receipt of your Registration Card your warranty will be updated to fully cover a five year parts and labour warranty from the date of purchase. Please ensure that this Registration Card is returned immediately and we will send you your Warranty Number.

## EXTENDED WARRANTY

Ecowater Systems offer an extension to your warranty. Timetronic units can be extended for a further three years, giving a total of six years cover. Sensatronic units can be extended for a further five years, giving a total of ten years cover.

The cost of the Extended Warranty is just a few pence a day – call us for more details.

## SERVICE

We have a nationwide network of Ecowater employed engineers. In case of any difficulty not covered by this handbook, call us on **0494 484848**. Please quote your Warranty Number at the time of your call.

**RETURN YOUR REGISTRATION CARD TODAY!**

ECOWATER™  
S Y S T E M S



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