ECO19M-34, ECO30M-34 & ECO35M-34
ECO19M1, ECO30M1 & ECO35M1

INSTALLATION AND OPERATING GUIDE

3/4in and 1” Light Commercial Control Valve
Metered
LOW SALT
LOW WASTE WATER RANGE

Thank you for purchasing this Wrekin Water Softener. We are sure this will provide you with many years of trouble free service. This guide is designed to help you plan, install and commission your softener correctly so that you get the best out of the machines capability

PLANNING YOUR INSTALLATION

The installation schematic found later in this guide covers all the aspects to assist you with the correct installation of the softener and covers the main points you need to consider during the planning stage of your installation (FIG 1)
Check that you have only one rising main and that you have allowed space to access the unit for possible future maintenance and salt replenishment.
Unless you are replacing an existing water softener, this installation will require you to carry out plumbing work and may require an electrical outlet to be fitted near the softener. You should only attempt this if you have the necessary skills

POSITIONING THE SOFTENER

Where possible the softener should be placed close to the rising main. Allowances should be made to take hard water take off points for untreated drinking water and/or outside taps if required. Ensure that the drain and overflows will not freeze or reach temperatures higher than 40°C. If the softener is to be placed inside a cupboard ensure that the base has adequate support. If you are fitting in a loft space, then the softener should be placed inside a secondary tank/container with its own overflow fitted at least 3/4in in size. This overflow on the tank must be positioned lower than the overflow located on the softener. A tank size capable of holding 100 litres would be preferable if space allows. If installation is to be outside, then this must be contained in a well, insulated cabinet containing at least 2” of High Grade insulation on all sides and any other steps taken to avoid freezing

SINGLE CHECK VALVE.

A suitable check valve should be fitted on the supply to the softener. This can be purchased separately or will be included in the optional fixing kit supplied with the machine.

WATER PRESSURE TEST

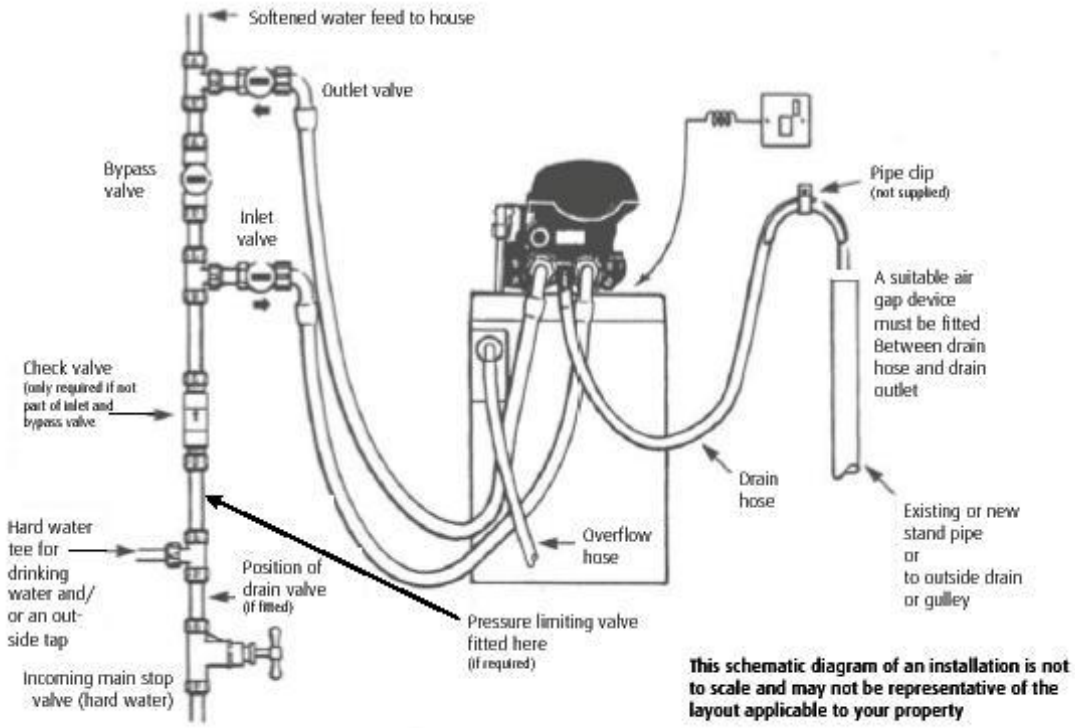
It is important to test the water pressure. High and low water pressure can result in either damage to or failure of the softener. Although the softener is tested to a pressure of 8 Bar (120psi), we recommend fitting a pressure limiter should your daytime pressure exceed 5bar (70psi). A 5 Bar PRV can be purchased separately. The minimum working pressure is 1.4bar (20psi). Please note that partially closing the stop cock will not reduce maximum pressure, it will just reduce flow.

WASTE PIPE CONNECTION

The waste, or Drain pipe should be run to an up stand with a 20mm air gap or to an outside drain or gully. Softened water waste will have no adverse effect on septic tanks. Should you need to extend the drain hose this can be done by connecting to 15mm copper tube to a maximum run of 8mtrs with a daytime pressure of 40psi and can be run uphill to a maximum of 1m per 40psi of daytime pressure Ensure that the drain hose is not kinked or obstructed in any way as this will lead to an overflow of the softener. A plumbing out kit, with its own Non-Return Valve that can be attached to a 32mm or 40mm waste pipe to assist in the drain connection can be purchased separately if required

Now you can commence the installations of the valves. Before starting, ensure that you have turned off the water supply at the main stop cock

Fig 1 – Typical Installation Schematic



CONNECTING THE SOFTENER

Once the installation of the valves is complete, and with the inlet, outlet and bypass valves closed the stop cock can be turned on. Then open the bypass valve and check for leaks in the plumbing and correct as necessary.

You can now proceed with the connection of the softener to the valves, which is normally done with flexible hoses as in FIG1. The direction of flow is embossed on top of the softeners tails so you can identify which port is the flow in and which is flow out. Ensure that the hoses are attached to the correct ports. The drain connection is normally the central port as in FIG1 above. Hoses normally are supplied with a bent connector on one end, which is usually fitted to the rear of the softener and a straight connector on the other. A sealing washer must be inserted into the connectors to achieve a water tight seal when attaching the hose to the softener and the valves. A washer is also supplied for the drain connector.

WASTE PIPE CONNECTION

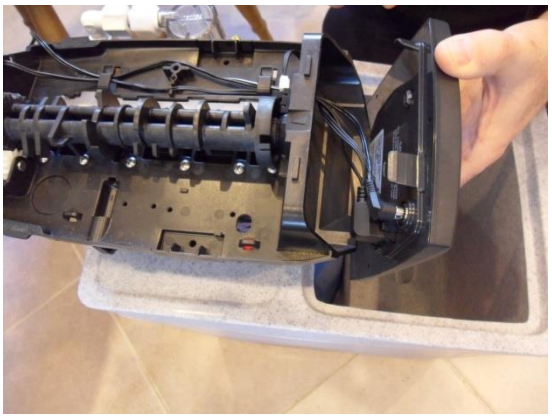
Connect the waste pipe ensuring kink free. If fitting into a standpipe ensure that the hose is fastened securely as the waste is vented at mains pressure to prevent the hose from coming out during the cleaning process

OVERFLOW

The overflow connection is the white 1/2in hose spigot on the rear of the cabinet. The overflow must run downhill through an outside wall with no kinks or restrictions. It is recommended that the white hose is visible when it exits the outside wall.

ELECTRICAL CONNECTION

Connect the transformer provided to a continuous electrical supply with the power off. Plug the flying lead from the transformer into the electrical connection on the back left hand side of the control panel. Ensure the flying lead cannot get caught on the camshaft or any moving parts on the Softener valve. The power lead is best fed down the right hand side and placed under the clips that hold the existing wires. The front display panel can be unclipped from the valve frame so that the power lead can be fed through the frame and behind the control panel. Re-clip the control panel back into position. The release clip for the control panel is at the back of the panel on the left hand side as you face the softener.



PREPARING THE SOFTENER TO GO INTO SERVICE
Quick Set up Guide

Initial Power Up

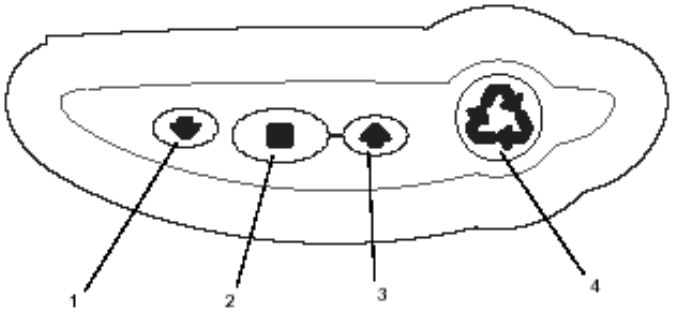
Stage 1- Setting the Control Programme

Your softener will be supplied factory set with the basic settings so there are no complicated calculations to make. You will need to enter and/or confirm the following options;

		ECO19	ECO30	EC035
Control Valve		¾ & 1in	¾ & 1in	¾ & 1in
Model/ Resin Volume		19	30	35
Level 1 Parameters				
Time of Day - (HH:MM)	P1	Set on Site		
Day of Week (Day)	P2	Set on Site		
Time of Regeneration (HH:MM)	P3	Set on Site - Factory default 2.00am		
Calendar Override Days - Default	P4	14	14	14
Not Used in Metered Softeners	P5			
Salt Setting - Factory Set	P6	150		
Capacity (Kg) - Factory Set	P7	0.9	1.5	1.7
Hardness in PPM (CaCO3)	P8	Set on Site		

The hardness figure is arrived at by using the test kit that comes with your softener. This setting is important on the metered machines as this determines the capacity of soft water that can be produced between regeneration cycles. In normal Service mode the display alternates between the time of day and Flow Rate through the softener. If there is no flow, 0 will be showing. The flow indication also has a running tap symbol that appears at the same time. Hardness is input as PPM

Turn on the power and the display will flash either **--:--, or** show the Valve ref 268, time or if ERR3 displays, the valve is locating home position. Wait for the valve to stop in this case. During set up, if no input is made, after 25secs, the display reverts to normal service mode. Pressing the set button repeatedly will return you to the part of the set up programme required.



1) Down Arrow to Scroll down or increment through a group of choices
2) SET button used to accept a setting and store into memory
3) Up Arrow used Scroll up or increment up through a group of choices
4) REGENERATION Button. Press once to request a delayed regeneration. Press continuously for 3 Secs. to go into immediate regeneration mode

SET TIME
Press the set button. The time should be flashing and a small pointer indicator will display the programme function you are setting. Using the up or down arrows set the time and confirm by pressing the set button

SET DAY OF THE WEEK
Press the set button to display the days of the week. Display will flash, using the up and down arrows bring the indicator to the required day and press set to confirm

SET DAYS TO REGENERATE

A. Metered Models: This is a calendar override that forces a regeneration if you haven't used enough water in the set days to do an automatic regeneration. This enables the resin bed to be refreshed at reasonable intervals. The override days should be set between 7-21 days. The default setting is at 14 and this can be left on this setting unless there are obvious reasons to change it:
    a. Press SET and the display will flash and use the up/down arrows to the desired setting
    b. Press SET to accept
B. Timed machines: This then applies on how many days you want to elapse on a timed model before the machine regenerates. This setting can from 0.5 days to 21 days. The default setting is 3 days
    a. Press SET and the display will flash and use the up/down arrows to the desired setting
    b. Press SET to accept

TIME OF REGENERATION
Press the Set Button and display will flash. This defaults to 02:00 hrs (2am) and this is the time the machine will perform the regeneration cycle. The regeneration requirement will be determined by the hardness settings you input on a metered softener or by your planned days sequencing on the Timed version. If you prefer the machine to clean at an alternative time of day, this can be set now by using the up/down arrows. Otherwise, press SET to accept the default setting.

SALT AMOUNT – Factory Set: Do not change: Press SET to advance

CAPACITY (Kg) – Factory Set: Do Not Change: Press SET to advance

SETTING THE HARDNESS
Press the SET button and the display will flash. The hardness calculated from the test results gained from the test kit supplied with your machine. Use the up/down arrows to set the hardness. Press SET to accept

The display will revert back to clock and now you can proceed to commissioning the softener

COMMISSIONING THE SOFTENER

Now the programming is complete it is time to turn on the water supply to the softener. There is no hard and fast rule on this but we prefer to use the following sequence

1) Close the bypass valve
2) Partially open the inlet valve to the softener until the softener is pressurised. This gives you chance to inspect for any leaks. Once pressurised, the Inlet valve can be fully opened
3) Once the softener is pressurised and all fittings and connections are water tight, we are going to prime the softener ready for use by fast tracking the softener through a regeneration cycle. Be sure that your drain connection is fitted correctly as water will be vented out of the drain at various stages of this process. Before we do that, familiarise yourself with the information that will be shown in the display panel.

When the softener is in the regeneration mode, the display will change from the clock and show information as below

The Key Points are

- The Triangular REGEN symbol shows in the display throughout when a regeneration cycle is in progress
- The Egg Timer Symbol shows when the CAM is rotating. Only advance the cycle when this symbol disappears confirming the cam rotation has stopped
- The stage of the regeneration cycle will be indicated by the letter C following by the regeneration Sequence number.
- To start the manual regeneration, press the REGEN button for 3 seconds and release
- To advance to the next stage, press and hold the SET button and press the up arrow once and release both. This must only be done when the EGG timer symbol is not visible in the display
- The time shown in the display is the time remaining of the regeneration cycle. As you fast track through the cycle this figure will change.

Now we are ready to force a manual regeneration:

The Regeneration cycle comprises of a number of stages as below:

- C1 Backwash (Prepares Resin bed by aerating the bed for brining)
- C2 Brine and slow rinse (Draws brine from the Salt bin through the resin)
- C4 System Pause (Re-pressurise the tank)
- C5 Fast Rinse
- C6 Backwash Cycle 2
- C7 Fast Rinse
- C8 Refill – Fill Salt tank with Water

Immediate Regeneration

1) Press the Regeneration button for 3 Secs. The cam will rotate and stop at C1. Leave at this stage for about 1 minute. This will allow any discoloration in the resin to be washed to drain

2) Advance the programme, 1 sequence at a time by pressing and holding the SET button and then pressing the UP arrow once then release both. The Cam will move, the indicator Egg Timer symbol appears and when it disappears the C code will advance to the next stage

3) Repeat the above process until the C8 sequence is reached. Allow the C8 sequence to finish fully. At this stage, water will begin to fill the salt bin. At this time any remaining air in the cylinder will be expelled and the correct level of water will be put into the salt bin after the sequence fully times out.

4) Following the completion of C8 – Refill, the display will return Service Mode and the display will start alternating between Flow Rate and capacity remaining. Capacity is expressed in cubic meters and this figure will reduce as water is consumed. Please note – Flow rate will show “O” if no flow is being recorded and the flow rates are expressed in litres per min.

5) Turn on the Outlet valve fully and double check that the by-pass is fully closed. Your softener is now producing softened water. Fill up the Salt Chamber to within a few inches from the top of the bin with salt and your installation is complete

6) When completed, the clock returns to “in service” mode. The display will alternate between capacity (expressed in m3) and Flow Rate and tap symbol. (Metered Versions Only). The flow will show “0” when there is no soft water being drawn off. When water is flowing through the machine, the flow rate will be displayed accordingly. If there is no flow indication, check that the bypass valve is fully closed and the contact cable on the outflow port is fully home and secure.

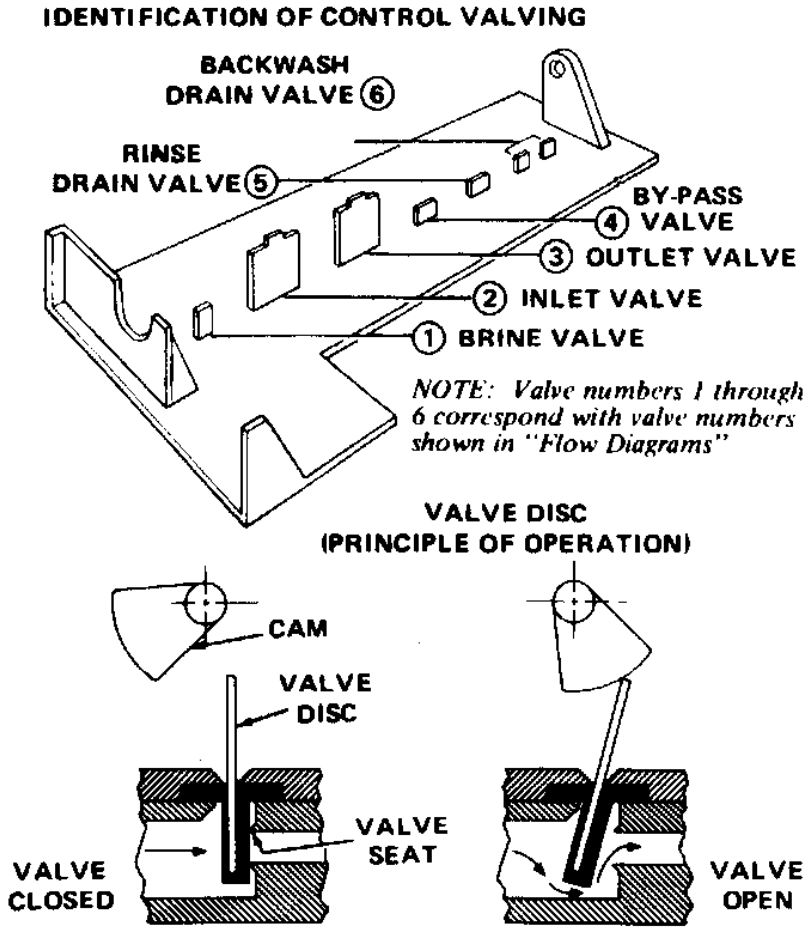
700 Series Controller Troubleshooting.

Problem	Possible cause	Solution
ERR 1 is displayed.	Controller power has been connected and the control is not sure of the state of operation.	Press the up arrow and the control should reset.
ERR 2 is displayed	Controller power does not match 50 or 60 Hz	Disconnect and reconnect the power. If the problem persists, obtain the appropriate controller or AC adapter for either 50 or 60 Hz power.
ERR 3 is displayed	Controller does not know the position of the camshaft. Camshaft should be rotating to find home position.	Wait for two minutes for the controller to return to home position. The hour glass should be flashing on the display indicating the motor is running.
	Camshaft is not turning during ERR 3 display.	Check that motor is connected. Verify that the motor wire harness is connected to the motor and controller module. Verify the optical sensor is connected and in place. Verify that motor gear has engaged cam gear. If everything in connected, try replacing in this order: Wire harness Motor Optical sensor Controller
	If camshaft is turning for more than five minutes to find home position.	Verify that the optical sensor is in place and connected to wire. Verify that the camshaft is connected appropriately. Verify that no dirt or rubbish is clogging any of the cam slots. If motor continues to rotate indefinately replace the following in this order: Wire harness Motor Optical sensor Controller
Four dashes displayed	Power failure occurred	Press SET to reset time display.

System Troubleshooting

Problem	Possible cause	Solution
1. Regenerant Tank Overflow. See also 4.	a. Drain line restricted. b. Uncontrolled refill flow rate c. Air leak in regenerant line d. Drain control clogged with resin or other debris. e. Sinking air check ball (255 only) f. Incorrect drain control fitted. g. Regenerant valve disc 1 being held open. h. Valve disc 2 not closed during regenerant draw causing a refill.	a. Check the drain line is not blocked or kinked. b. Remove refill flow control to clean ball and seat. c. Check all connections in regenerant line for leaks. d. Clean drain control. e. Replace air check ball. f. Too small of a drain control with a larger injector may reduce draw rates. g. Remove obstruction. h. Remove obstruction.
2. Water flow from drain or regenerant line when in service.	a. Flapper valve return spring weak. b. Debris stopping flapper valve from closing.	a. Replace valve spring. (contact dealer) b. Remove debris.
3. Hard water after regeneration.	a. Incorrect / failed regeneration. b. Leaking external bypass valve. c. O-Ring around riser damaged. d. Capacity too low due to incorrect setting.	a. Repeat regeneration after checking settings. b. Replace bypass (contact dealer) c. Replace O Ring (contact dealer) d. Check settings and adjust if required.
4. Will not draw regenerant or intermittent or irregular draw.	a. Low water pressure b. Drain line restriced. c. Injector plugged. d. Injector defective. e. Flapper valve 2 &/or 3 not fully closed. f. Air check prematurly closed.	a. Fit pump (contact dealer) b. Check the drain line is not blocked or kinked. c. Clean injector and screen. d. Replace injector. e. Remove debris, check flapper for closing or replace. (contact dealer) f. Put control into refill C8, replace or repair air check if needed. (contact dealer)
5. System will not regenerate automatically.	a. Power not connected. b. Defective motor c. Fouled or defective turbine d. Defective turbine cable.	a. Connect power. b. Replace motor. (contact dealer) c. Clean or replace turbine. d. Replace turbine cable.
6. System regenerated at the wrong time.	a. Settings incorrect.	a. Correct settings.
7. No conditioned water after regeneration.	a. No salt in regenerant tank. b. Injector plugged. e. Air check closes prematurely.	a. Add salt to regenerant tank. (Salt must be above the water level) b. Clean injector and screen. e. Check connections for air leaks and check air check ball (255) floats. See also 1.e. & 4.f.
8. Backwashes at excessively low or high rate.	a. Incorrect drain controller used. b. Debris affecting valve operation.	a. Replace with correct size. b. Remove drain controller and clean. volume to correct setting.

9. Valve will not draw brine.	a. Low water pressure b. Drain line restriced. c. Injector plugged. d. Injector defective. e. Air check closes prematurely.	a. Fit pump (contact dealer) b. Check the drain line is not blocked or kinked. c. Clean injector and screen. d. Replace injector. e. Put control into brine draw C2 to check. Repair or replace if needed.
10. Uses more or less salt than setting.	a. Foreign matter in valve causing incorrect flow rates.	a. Remove brine control and flush out any debris. Put system through a regeneration to flush valve.
11. No water flow display on metered valves.	a. Bypass valve in bypass. b. Meter probe not connected to control or turbine housing. c. Restricted turbine rotation due to foreign matter in turbine.	a. Open bypass. b. Connect correctly. c. Remove and clean turbine, Turbine should spin freely, if not replace.
12. Run out of conditioned water between regenerations.	a. Impropper regeneration. b. Incorrect regenerant setting. c. Incorrect hardness or capacity settings. d. Water hardness has increased. e. Restricted turbine rotation	a. Repeat regeneration after checking the correct regenerant doseage is set. b. Set correct salt setting. c. Set to correct values. d. Set hardness to new value. e. See 11.c



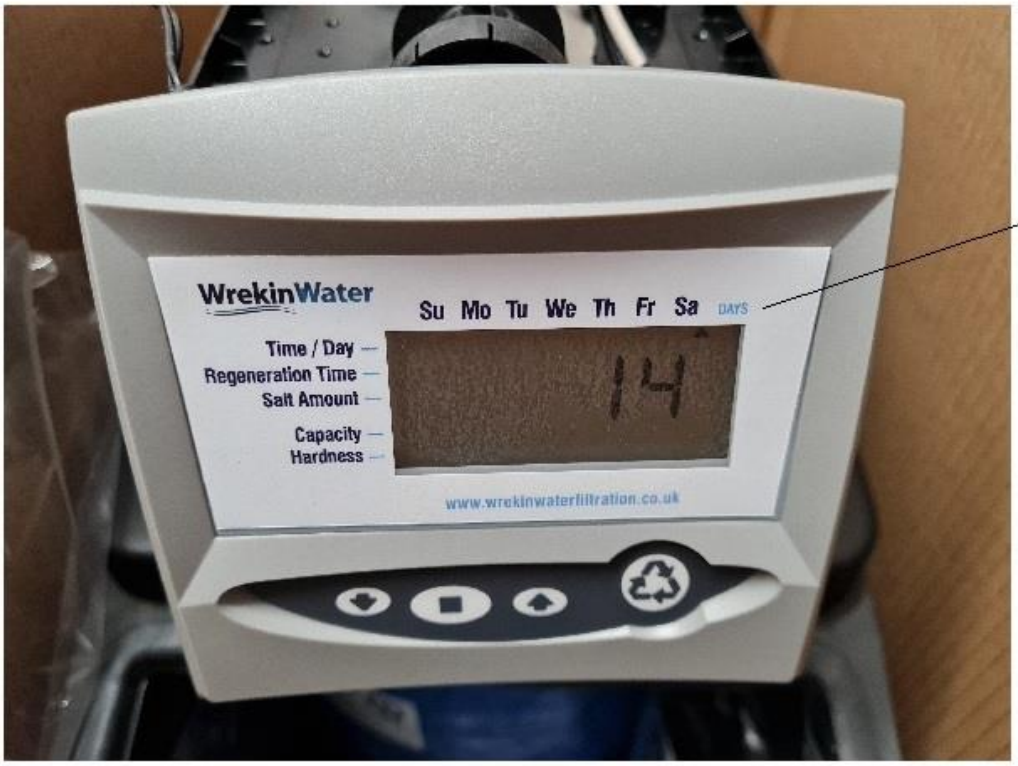
762 Controller Settings

762 controller settings

762 controller settings

Regeneration Time - Default time 02-00 hrs

762 controller settings



Calendar Override Default = 14

762 Controller Settings

Salt amount Setting - factory set for model and usually locked to prevent accidental changing

762 Controller Settings

Capacity Setting - Factory set for model and locked to prevent accidental changing

762 Controller Settings

Hardness setting in PPM (Parts per Million)

762 Controller - Display symbols when in Regen Mode

EGG-TIMER Symbol
Shows when cam. is moving to next stage. Wait for this symbol to go off before pressing buttons to advance that programme

Regen Symbol visible indicates that the valve is in regeneration mode

C Code indicates which stage the regen cycle is in

While valve is making its way to the first stage of the regen cycle - C 0 is dispalyed and total time remaining of the cycle is displayed

Service Mode - Remaining Capacity shows in m3

Display Alternates between Capacity Renmaining and Flow Rate

Service Mode - Flow Rate

Autotrol 268/762 1in Control Valve

255/762 – ¾ in Control Valve