

5600SE Series

Installation Operation Maintenance Manual



Cabinet Water Softener With 5600SE Series Valve

Models

- 4 lit
- 7 lit
- 10 lit
- 14 lit
- 20 lit
- 25 lit
- 30 lit

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1.0 GENERAL NOTES

These instructions cover the 5600SE Range of Cabinet Water Softeners, which includes models ranging in size from 10-30 litres resin volume.

It is recommended that these instructions are read throughout before commencing any work on the unit, particularly if you have no previous experience of installing and using a water softener.

The installation of a softener is very straight forwards, and the only adjustments to be made to the controller program are setting the time of day and water hardness as detailed in Section 8.2.2. However we have tried to make these instructions as comprehensive as possible to answer any queries you may have about the functioning of your softener.

This softener will require salt for regeneration. We recommend the used of proprietary 'pellet' or 'tablet' salt.

Drinking softened water has not been shown to be harmful to normal healthy children and adults, but softened water contains a higher level of Sodium than a hard town mains supply. This is of concern to individuals on low Sodium diets or for babies fed with powder formula milk that already contains Sodium. It is therefore recommended that a separate un-softened drinking water supply is left in place or installed on a drinking water faucet. If a cartridge type water filter is installed on the drinking water line, this must be fed with un-softened water.

In the appendix to this manual is the original valve manufacturer's handbook. This is written for American customers and has a number of small differences in the setting up instructions from those used in Europe. In the event of confusion, refer to the data in this manual rather than in the valve manufacturer's handbook!

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2.0 THE SOFTENING PROCESS

Hardness in water is caused by the presence of dissolved salts of Calcium and Magnesium. In order to overcome the problems associated with the use of hard water, these salts must be removed. This process is called 'Softening'. One means of removing the salts is to exchange them for soluble Sodium salts. This technique is known as 'Ion Exchange Softening'.

2.1 IN SERVICE

In order to soften the water, it is passed through a bed of Ion Exchange resin beads which are contained inside a vertical cylindrical vessel. these beads are made of a synthetic material, and are usually amber or dark brown in colour and between 0.5 and 1.0 mm in diameter.

As the water flows down through the resin, the Calcium and Magnesium in the hard water are progressively exchanged for Sodium, with the result that the water which flows out of the unit contains only Sodium salts, which are not scale-forming. The Calcium and Magnesium remain, attached to the resin.

The Ion Exchange resin does not have an unlimited capacity for exchanging Calcium and Magnesium, so to keep the exit water soft it is necessary to periodically 'Regenerate' the resin to restore its capacity to soften the water.

2.2 REGENERATION

The softening process can be reversed if a strong solution of Sodium Chloride (i.e. Common salt dissolved in water -'brine') is passed through the resin.

The high concentration of Sodium allows it to exchange for the Calcium and Magnesium held on the resin, and these are then carried away to drain. The resin is left full of Sodium to enable it to soften water again.

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2.3 THE REGENERATION PROCESS

The regeneration process consists of four stages:-

Backwash - Water flows upwards through the resin bed, and out to a drain. As it does so, it loosens the ion exchange beads, removes any resin 'fines' (i.e. small pieces of broken beads etc.) and cleans off any particles of dirt or pipework corrosion products which may have accumulated during the service cycle.

Brine injection/Displacement Rinse - During the first part of this stage, the concentrated salt -solution is drawn from the salt storage tank, blended with water to reduce the concentration to the correct level, and passed up through the resin. When the required quantity of brine has been drawn in, the water flows alone to push the remaining brine through the resin at the correct rate, and ensure that all the resin sees the right amount of regenerant. The brine/slow rinse stage takes place before backwash in a high efficiency countercurrent regenerating water softener.

Fast Rinse - This follows the backwash, and entails rinsing away the residual brine and Calcium and Magnesium salts from the resin and re-packing the resin bed down. This is done down with water flowing through the resin in the direction of service.

Salt Tank Refill - Following the fast rinse, a quantity of water sufficient to dissolve the correct amount of salt for the next regeneration is returned to the salt tank. When this has finished, the unit automatically returns to service.

2.4 METER CONTROL OF REGENERATION INITIATION

A water meter is installed in the outlet from the softener, to measure the volume of water which passes to service. This meter drives a turbine, the movement of which is measured by a magnetic sensor which sends signals to the regeneration controller. The controller microprocessor uses this information to calculate when the unit should be regenerated. Every night, at 2 am (for example), the volume of water used in the preceding days is compared to the capacity of the softener. The computer then assesses if the resin has enough capacity left to supply the next day's use, and if not, starts the regeneration.

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2.5 TIME CLOCK CONTROL OF REGENERATION INITIATION

Time clock configuration valves initiate regeneration at a pre-set time after a pre-set number of days. Both the time of day for regeneration and the frequency of regeneration are adjustable.

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3.0 UNPACKING AND PARTS IDENTIFICATION

3.1 BASIC PACKAGES

The softener will be delivered in a single carton. Other items such as salt for regeneration or installation kit parts may be supplied in other packages.

3.2 UNPACKING NOTES

The unpacking of the softener is quite straightforward, and there are no 'hidden' items. It is advisable to keep the packages sealed until such time as they are used, to prevent dust or water entry.

Care should be taken in lifting the softener out of the carton. It is advisable to lay the carton on its side and slide out the softener prior to standing it up.

3.3 MISSING OR DAMAGED GOODS

Immediately on receipt of the goods, it is advisable to check that all items ordered have been received. If you have any doubt that goods have been supplied as requested, please contact your supplier immediately. If any items are missing or damaged, the carrier and your supplier must be notified in writing within 3 days of receipt if a claim is to be made.

4.0 TEMPORARY STORAGE

If installation is not to start immediately after delivery, the equipment should be stored in a clean dry area, where it will not be damaged, or be subjected to temperatures below freezing.

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5.0 DESCRIPTION OF PLANT COMPONENTS

5.1 SOFTENER VESSEL AND INTERNALS

The pressure vessel which contains the ion exchange resin is made from a fibreglass/epoxy resin outer layer surrounding an inner, seamless shell made from Polyethylene. The vessel has a threaded hole at the top, of 2.5 inch nominal diameter, into which the control valve fits.

All vessels are equipped with a single filter distribution system. This is attached to a central riser tube, which is connected to the control valve, and passes water into and out of the resin bed.

5.2 CONTROL VALVE

The control valve is mounted on top of the vessel, and directs the water flow in and out of the resin bed during the service and regeneration cycles. The body of the control valve is made from glass reinforced Noryl.

The valve carries out its various functions by rotating a cam that drives a piston through a series of seals and ports. Depending on the position of the piston in the seal stack, the different functions of the valve will take place

5.3 REGENERATION CONTROLLER AND TRANSFORMER

The regeneration controller is attached to the valve, and is contained in a plastic housing.

The controller is powered by 24v AC electricity, and a separate, wall mounted transformer is connected to the valve to reduce normal mains voltage down from 240v so that all the electrical supply in and around the control valve runs at a safe 24v.

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5.4 BRINE SYSTEM

The brine system consists of a moulded polyethylene cabinet into which the vessel and valve are assembled which form the salt storage container. The brine pick-up tube is connected to the pipe from the control valve which sucks the brine from the tank. At the bottom of the brine pick-up tube is an air check valve. This serves to prevent air entering the valve when all the brine has been drawn in. Air in the system could cause spurting and 'hammering' at the taps or outlets.

5.5 BLENDING SYSTEM

In some applications, it is beneficial to retain a small proportion of the hardness, for instance, to increase the effectiveness of chemical treatments. Under these circumstances, a blending facility is provided in the valve, which allows a set proportion (depending on the raw water hardness) of the feed water to bypass the softening resin, before being blended with the softened water prior to the water meter.

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6.0 PRE-INSTALLATION

6.1 MECHANICAL

6.1.1 Foundation/Drainage

The softener will not require any special foundations, provided that a firm, level area which is capable of supporting the working weight is available. (See Engineering Data, Section 12.2)

Unwanted water from the regeneration process must flow to drain, and so an open drain or gully, capable of passing the necessary flow is required (see Process and Operating Data, 12.1, for relevant flows). The total flow of water to drain depends on site conditions, but will be approximately 8 times the resin volume. The drain may be at a level no higher than 500mm above the softener valve.

A second drain is required for the cabinet overflow. This is a safety drain which will only discharge water if there is a malfunction in the control valve. Where possible this should be installed through an outside wall like a cistern overflow, where it will give a visual indication of any failure.

6.1.2 Operating Space

The space occupied by the softener can be found in the Engineering Data (Section 12.2).,

Access will be required to refill the salt tank, and to carry out adjustments or maintenance on the equipment. It is therefore recommended that a minimum of 500mm clearance be allowed in front of the unit for this purpose.

6.1.3 Incoming Water

The raw water to be fed to the softener must comply with the following:-

1. Available at all times at a flow equal to the required service flow or greater, and
2. At a pressure between 1.7 and 5.5 bar
3. Temperature between 0 and 50°C
4. Suspended solids less than 1 ppm
5. Iron less than 0.2 ppm, Manganese less than 0.1 ppm, Free Chlorine less than 1 ppm if temperature is less than 15°C, less than 0.3 ppm if temperature higher (up to 30°C)

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6.1.4 Pipework

Pipework to be connected to the softener should not have an excessive amount of hardness scale deposit. Piping that is heavily built up with scale (or Iron deposits) should be replaced.

Make sure that the pipework can be connected to the softener in such a way as to impose no stresses on the control valve, and that it is properly aligned and supported.

A system for the complete by-passing and isolation of the softener should be installed (see Section 7.1.6).

6.1.5 Water Supply Company Requirements

It is essential that if the equipment is to be connected directly to a mains water supply, the local bylaws must be adhered to. These cover both plumbing and the prevention of backflow into the mains. If there is any doubt, the local water inspector should be consulted, but in general, the installation of a 'Double check valve assembly' conforming to BS6282 part 2 will be required in the feed pipework to the softener.

If the pressure available from the mains is not adequate it will be necessary to install a booster pump arrangement. Such a system would be covered by additional bylaws, and the water storage tank needed must comply with these.

6.2 ELECTRICAL

A continuous supply of 24v, 5 VA is required by the softener. A 240v transformer with an output of 9.6 VA is provided, which should be connected to an uninterrupted mains supply, which is separately 1 Amp fused, and does not have any additional switch.

It is recommended that the transformer be attached to a nearby wall, within 500mm metre of the softener in an area free from water spray or excessive heat or condensation.

A plug is not provided with this softener since the cable should be connected to fused spur outlet. However if that is not possible then a plug should be fitted to the cable with a 1 amp fuse. The socket used should be un-switched to prevent the softener from being inadvertently turned off.

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7.0 ASSEMBLY/INSTALLATION

7.1 MECHANICAL

A diagram showing the dimensions and parts identification is included as Fig. 1 in Section 14.1, and should be referred to for guidance.

Check all the items against the parts list and shipping documents, and ensure you have them all before starting work. In addition to the softener you will require installation materials and basic tools, (i.e., spanners, screwdrivers etc., and PTFE tape)

7.1.1 Pipework

Pipework should be assembled incorporating the features shown in the Installation Diagram, Fig 3 in Section 14.2. It is essential that inlet and outlet isolating valves and a by-pass valve are provided, and that the water main is protected by a double check valve where appropriate (see Local Water Bye-laws).

In domestic premises it is recommended that a hard water supply is still used for drinking water (see General Notes Section 1.0).

Pipework can be constructed from any normally acceptable material (Copper, Galvanised, Plastic), provided it is properly supported and aligned. Ensure that the pipe is sufficiently large to accommodate the flow of water required, making due allowance for the pressure drop between the softener and the point of discharge of soft water.

NOTE: IF BRAZED OR SOLDERED FITTINGS ARE TO BE USED, THE PIPEWORK MUST BE DISCONNECTED FROM THE VALVE DURING HEATING AND COOLING. EXCESS HEAT CAN CAUSE PERMANENT DAMAGE TO SOME OF THE VALVE COMPONENTS.

The inlet and outlet pipework should be connected to the horizontal, rear facing connections on the rear of the valve manifold (3/4" BSP Female) (see Fig 1 in Section 14.1).

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7.1.2 Storage tank ball valve

Conventional ball float valves pass water at a slow trickle into storage tanks and cisterns when they are shutting off. Trickle flow is not recommended for satisfactory functioning of a water softener since channelling can occur through the resin bed and the meter may not accurately monitor very low flows. It is therefore recommended that main storage tanks for softened water should have the ball valve replaced with a servo type valve such as a Torbeck or Fluidmaster which permit full flow until they close off. These are inexpensive and are a direct replacement for the more common brass ball float valves.

7.1.3 Drains and overflow connections

Connect the overflow fitting on the brine tank to a suitable drain, using flexible or rigid tubing. Make sure that there is a clear gap of approximately 50 mm between the end of the tube and the top of the drain tundish or gully edge.

The drain connection from the valve is a 1/2" hose spigot. Flexible tube should be run from this spigot to a drain capable of taking the maximum flow in regeneration (see Section 12.1), and leaving a similar gap above the drain edge. The drain must not be higher level than the 500mm above the control valve and preferably should have an air break at the same height as the control valve. A standard washing machine upstand is quite suitable for this.

7.1.4 Blending System

For those applications where it is advantageous to retain some hardness in the treated water, a blending system has been. This is controlled by a rotating knob on the left side of the control valve.

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7.2 ELECTRICAL

Electrical installation is very straightforward, but should still be carried out by a competent electrician, and must conform to the appropriate standards of safety.

7.2.1 Mains Supply

The mains supply should be through a separate, switched supply, fused and earthed in accordance with Institute of Electrical Engineers Regulations. Current rating should be 1 Amp.

7.2.2 Transformer

A safety transformer is provided to reduce the voltage to 24 Volts to operate the controls.

This should be attached to a convenient wall, within 500mm of the softener. **DO NOT SWITCH ON THE ELECTRICAL SUPPLY AT THIS STAGE** See Fig 3 in Section 14.2

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8.0 COMMISSIONING

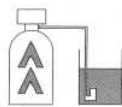
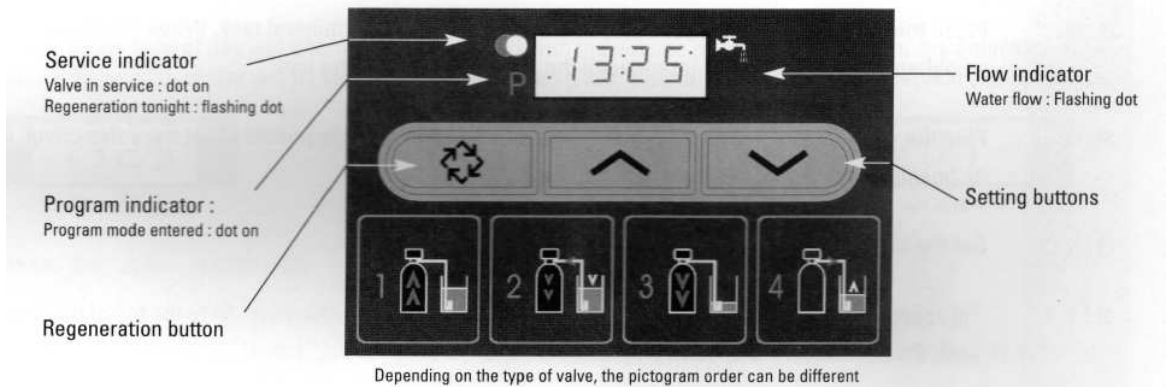
8.1 INTRODUCTION

It is recommended that the commissioning of the plant is undertaken by a trained service engineer, who will be able to put the plant into service quickly, and most efficiently. However, if the services of an experienced engineer are not available, following the steps outlined below will result in the system being properly commissioned.

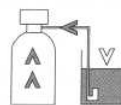
8.2 CONTROLLER SETTING - Site programming mode

All controller settings will require the valve to have a mains supply switched on. The valve must not be regenerating when controller settings are adjusted.

8.2.1 Setting the Time of Day



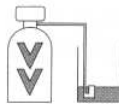
Backwash



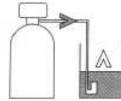
Brine draw & slow rinse
Up flow



Brine draw & slow rinse
Down flow



Rapid rinse



Brine refill



Symbol means cycle not used on
Filter valve

Note: depending on the type of valve, some of these symbols will be used.

Meter controlled valves: The display alternates between the time of day on the left and the remaining calculated capacity in litres on the

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right. Wait until the time of day is displayed and then press the up ▲ and down ▼ arrow keys until the correct time of day is displayed.

Time clock only valve: The time of day is permanently displayed. Press the up ▲ and down ▼ arrow keys until the correct time of day is displayed.

8.2.2 Site programming - Setting the capacity, time of day of regeneration and regeneration override.

The softener regeneration cycles have been factory programmed. On metered softeners the volume capacity of the resin in litres has also been entered as a full capacity with no reserve included – Please calculate your reserve and adjust capacity accordingly, based on local water hardness and reserve required for the occupants of the property.

The time of day set for regeneration to take place has been entered as 2:00 AM and this may need to be altered depending on site requirements.

On metered softeners, the regeneration override is used to freshen the resin if a regeneration has not taken place for a number of days. On time clock softeners the override is used to set the frequency of regeneration.

Press and hold the press the up ▲ and down ▼ arrow keys together for 5 seconds. On metered softeners only the volume capacity of the resin in litres will be displayed. This can be adjusted to suit site conditions by pressing the up and down arrows.

Press the extra cycle button to set the time of day of regeneration. The default is set to 2:00 am. This may be changed to any other convenient time by pressing the up and down arrows.

Press the extra cycle button to set the regeneration override. The default is 7 days for metered softeners and every 3 days for time clock softeners. This may be changed to a different frequency by pressing the up and down arrows.

Press the extra cycle button to exit the Site Programming mode.

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8.3 BRINE SYSTEM

8.3.1 Salt Tank Filling

Place approximately 100 mm depth of water in the bottom of the cabinet. Fill with pellet/tablet salt (recommended) until the cabinet is full or with granular salt until it is 3/4 full.

Overfilling the cabinet with granular salt can result in an overflow of brine. This cannot happen with pellet salt which is why it is recommended.

Under no circumstances use cooking salt or Pure Vacuum Dried (PVD) salt to fill the cabinet as either of these will damage the resin and the internal components of the regeneration valve and brine draw system.

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8.4 PRE-SERVICE FLUSH AND REGENERATION

Set the manual isolating valves so that water will by-pass the softener. Turn on the main water supply. Open a soft water tap close by and let the water run for a few minutes to flush out any debris or foreign matter from the pipework system.

Turn on the power supply to the valve.

Press the extra cycle button for five seconds. The display will then indicate 1-----. Wait for the controller to advance the valve until a time in minutes appears on the right of the display. Slowly open the mains inlet isolating valve until water starts to flow slowly from the drain line. Air will escape initially through the drain line. When water begins to flow steadily, open the valve fully

Press the 'Extra Cycle' button again briefly and the controller will indicate 2-----. Wait for the controller to advance the valve until a time in minutes appears on the right of the display.

Press the 'Extra Cycle' button three times more to return the valve to service. After each press, wait for a time to appear on the right of the display. There will be loud 'click' as the brine valve closes while the valve advances from position 4 to the home position.

Finally press the 'Extra Cycle' button to initiate a complete regeneration and refill the brine tank to the correct level. Do not advance any of the cycles.

During regeneration the softener will pass hard water to service. The bypass can therefore be closed and the outlet valve opened. When the softener returns to service then soft water will be available.

8.5 Blending System

The valve has a built in blending adjustment on the left of the valve body behind and below the control valve powerhead. The blender is factory set to **fully closed**.

Blending is not normally required for domestic applications but is occasionally used for industrial processes where a small amount of hardness is used in conjunction with special chemicals.

The blender is not calibrated. The blend flow must also be set with the water flowing through the softener at its normal working flow rate.

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This is done by trial and error. When the unit is in service, open the blend controller, by turning the knob **clockwise** half a turn. Check the downstream water hardness with a test kit and then turn the knob open or closed to adjust the hardness to the required level.

A change will then need to be made to the valve programming on metered softeners. See section 13.4 'Custom settings' for information on adjusting the valve program to work correctly with the blender.

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9.0 OPERATION

9.1 NORMAL OPERATION

Operation is completely automatic, with regeneration being initiated whenever required by the meter controller.

9.2 REFILLING WITH SALT

Since salt is used in the regeneration process, the level of salt in the brine tank will fall after each regeneration. It should not be allowed to fall below 75 mm above the bottom of the cabinet. When the low level is approached (or more often, as a routine) the cabinet should be refilled to the top with pellet salt or 3/4 filled with granular salt.

The approximate capacity of the cabinet for salt is shown in Section 12.1.

9.3 MANUAL REGENERATION

There can be occasions during the life of equipment such as softeners when the original design basis is not applicable. For example, after a shutdown period, the demand for soft water may far exceed the design flow rate for a short period. Another possibility is that the Water Service Plc finds it necessary to change to a supply which is much harder than that normally received. It will then be necessary to give the unit an additional regeneration to ensure that soft water continues to be available to service.

This additional regeneration is initiated manually.

Press and hold in the 'Extra Cycle' button for five seconds until the number 1----- appears in the display. Regeneration will proceed automatically immediately.

If the 'Extra Cycle' button is only pressed briefly, the 'Service' indicator will begin to flash immediately and a regeneration will occur at the normal regeneration time (2:00 am set as default).

9.4 BY-PASSING THE SOFTENER

There may be occasions when it is desirable to by-pass the softener, to allow hard water to go to service, or if the softener is for some reason not performing properly.

To do this, open the by-pass isolating valve and close the softener outlet isolating valve (see Installation Diagram in Section 14.1). The

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softener can still be safely regenerated with the valves in this position. If for any reason, it is desired to completely isolate the softener, it will be necessary to close the inlet isolating valve as well.

9.5 TEMPORARY SHUT-DOWN

The softener can be left indefinitely without use. During periods of low or minimal water use, for example during vacation absences, the valve controller will automatically regenerate the resin at the frequency set in the regeneration override.

If the softener needs to be taken out of service for some time for any other reason, it is recommended that one or two simple procedures be undertaken to ensure the return to operation is as smooth as possible.

1. The unit should be left regenerated.
2. The electrical supply should be turned off
3. The inlet and outlet manual isolating valves should be closed.
4. The valve should be drained of water if there is the possibility of the system freezing.

On restart, it will be necessary to reset the 'time of day. It is also recommended that the unit be regenerated again before being put into service.

9.6 CHANGES IN INCOMING WATER

There is a much greater tendency these days for the Water supply Plc to use water from more than one source. It is unlikely that two sources will have similar chemical composition, and so when this happens the raw water being fed to the unit may also change. It is suggested that routine monitoring be undertaken to check whether this is the case (see 9.9). If variation greater than 5% is found, it will be necessary to check whether the settings for regeneration need changing. Resetting is the same as setting.

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9.7 ROUTINE MONITORING

The following recommendations are made to help the user of the softener confirm that it is performing as required, and to give early warning of possible problems. The operation of the softener is completely automatic, and should not require adjustment (except as above).

Weekly

Check the treated water hardness with a hardness test kit.
Inspect the level of salt in the salt tank and refill if necessary.

Monthly

Check raw water hardness, and record. Compare with original hardness and adjust volume capacity setting if required (see Section 13.1).

Annually

Inspect and clean/replace as necessary the brine injector, piston and the internal seals. This should be performed by a competent engineer familiar with Fleck valves.

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10.0 FAULT FINDING AND RECTIFICATION

Modern water softeners are extremely reliable and unlikely to give any problems if they are installed and operated correctly.

10.1 NO FLOW TO SERVICE

Check mains pressure is above 1.7 bar.

Check inlet and outlet isolating valves are open.

Check service outlet valve is open.

Check pressure drop across resin. If excessive, resin may be fouled, or internals blocked. Initiate a regeneration. If this does not free up the resin the softener will need to be inspected and serviced by a competent engineer.

10.2 POOR TREATED WATER QUALITY

Check manual by-pass closed.

Check blending valve has not been opened or adjusted.

Check salt level in salt tank. Refill if necessary.

Trickle flow through conventional ball valve in storage tank. Replace with Torbeck or Fluidmaster servo valve.

Check raw water pressure above minimum. If flow is less than minimum, channelling of water can occur in resin, which results in inadequate treatment.

Check injector strainer and injector not blocked (see Appendix for drawings). Clean if necessary.

Check brine pick-up screen not blocked. Clean if necessary.

Check brine line not split. Replace if necessary.

Check raw water hardness, and then check if controller setting is correct for this hardness (see Section 8)

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10.3 NO REGENERATION

Check electrical supply, fuses etc. satisfactory.

Check control head motor runs, by initiating a manual regeneration, and listening for drive motor gently 'ticking' as it advances between cycles. Replace if necessary.

Check meter running freely (if fitted) indicated by running a treated water outlet and watching the flow indicator and 'volume remaining' reading on the display count down at the same rate as the water flow.

10.4 UNSATISFACTORY CAPACITY BETWEEN REGENERATIONS

See Section 10.2.

Check condition of resin. It may have become fouled, inhibiting the regeneration process. If fouled, it should be cleaned or replaced.

Check incoming water for presence of Chlorine. If high, the resin may have been degraded.

Check raw water pressure. Too high pressure may mean the brine draw stage of regeneration is not effective

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11.0 WARRANTY AND SERVICE

11.1 AFTER SALE WARRANTY

Your softener is covered by a parts warranty for a period of one year from installation.

Should you have any problems with your softener or require routine service, please contact your installer.

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12.0 TECHNICAL DATA

12.1 PROCESS AND OPERATING DATA

5600SE Series Water Softeners

MODEL		7L	10 L	14 L	20 L	25 L	30 L
PARAMETER	UNITS						
Max. Service Flow	M3/hr	0.30	0.50	0.70	1.00	1.25	1.50
Min Service Flow	M3/hr	0.03	0.05	0.07	0.10	0.13	0.15
Salt used per regeneration	kg	0.98	1.40	1.96	2.8	3.50	4.20
Resin Volume	litres	7	10	14	20	25	30
Salt Storage Capacity	kg	20	20	25	50	50	50
Maximum Flow to drain	Lit/min	4.6	4.6	4.6	4.6	5.7	7.6

IMPORTANT NOTES

Much of the data quoted in the above table is affected by the inlet pressure, and so should be regarded as nominal only.

Total flow to drain will be similarly affected and is therefore not quoted, but will be about 6 times the resin volume.

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12.2 ENGINEERING DATA

5600SE Series Water Softeners (Trojan, Trident and Caribbean cabinets)

MODEL		7L	10 L	14 L	20 L	25 L	30 L
PARAMETER	UNITS						
Width	mm	230	230	2300	340	340	340
Depth	mm	450	450	515	530	520	520
Height to valve	mm	620	620	760	1100	1100	1100
Height to hood	mm				1120	1120	1120
Rear clearence required	mm	50	50	50	50	50	50
Inlet Conn.	ins BSPM	3/4	3/4	3/4	3/4	3/4	3/4
Outlet Conn.	ins BSPM	3/4	3/4	3/4	3/4	3/4	3/4
Drain Conn.	ins	1/2	1/2	1/2	1/2	1/2	1/2
Cabinet/Salt Tank Overflow Conn.	ins	1/2	1/2	1/2	1/2	1/2	1/2
Delivered Wt.	Kg.	14	16	22	34	39	44
Working Wt. (approx)	Kg.	42	46	57	94	99	104
Maximum Flow to drain	Lit/min	4.6	4.6	4.6	4.6	5.7	7.6
Electrical Power	v	240	240	240	240	240	240
	Hz	50	50	50	50	50	50
	V/A	1.2	1.2	1.2	1.2	1.2	1.2

MAXIMUM OPERATING PRESSURE 5.5 Bar MINIMUM OPERATING PRESSURE 1.7 Bar MAXIMUM OPERATING TEMPERATURE 50.0C
HEADROOM - Allow 100 mm greater than overall height.

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13.0 Factory Programming

13.1 Master Program Settings

Master Program set up summary

Details applicable to each valve or programming type are in the columns 'T/C' (Timeclock) and 'DEL' (Delayed regeneration). Regeneration cycle data applicable to each resin volume is shown in the resin volume columns. The treated water capacity is entered at the factory as a hardness of 300 ppm with no reserve. The exact output and reserve will need to be calculated during installation and capacity adjusted accordingly.

To adjust any of these settings see the following section 13.2

Parameter description	T/C	DEL REG	Res Vol	4	7	10	14	20	25	30
Metric format with 24 hr clock	U--2	U--2								
Regeneration type	7--1	7--3								
Capacity (lit) @ 300ppm without reserve		see across	⇒	640	1100	1600	2300	3300	4100	5000
Regen time	2:00	2:00								
Regen day override	A--3	A--7								
Reg step 1	see across	see across	⇒	2	2	4	4	4	4	4
Reg step 2	see across	see across	⇒	30	30	30	30	40	40	60
Reg step 3	see across	see across	⇒	2	2	4	4	4	4	4
Reg step 4	see across	see across	⇒	1.6	3	4	6	8	10	12
Flow meter size		35.1								
Valve type	o--1	o--1								
Line frequency	LF50	LF50								
Exit to time of day										

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13.2 Master Programming

This section is for information only. The valve is pre-programmed and will not need adjustments made to the Master Level Program unless custom settings are required.

Set the time of day display to 12:01

Press and hold the press the up ▲ and down ▼ arrow keys together for 5 seconds.

A 'U' will appear in the left of the display. The number on the right sets the controller for the 'metric' regeneration program and the display on the metered softener to read in litres. This should be set to 'U--2

Press Extra Cycle button again to set regeneration type which is prefixed '7'

7--1 = Timeclock delayed (used for timeclock only softeners)

7--2 = Metered immediate regeneration

7--3 = Metered delayed regeneration. This is the factory setting for metered softeners.

Press Extra Cycle button again to set system capacity. This has the same function as the capacity setting in the Site Setting program - see section 8.2.2. Factory set to system volume capacity at 300 ppm with 30% reserve.

Press Extra Cycle button again to set the time of day of regeneration. This has the same function as the regeneration time setting in the Site Setting program - see section 8.2.2. The default is set to 2:00 am.

Press Extra Cycle button again to set the regeneration day override. This has the same function as the regeneration day override setting in the Site Setting program - see section 8.2.2. The default is set to 'A--7' days for metered softeners and 'A--3' days for time clock softeners. To cancel the setting on metered softeners set the display to 'AOFF'. A day setting must be displayed for time clock softeners to work.

Press the Extra Cycle button again to set regeneration cycle 1 - backwash. Set this as shown in the table above.

Press the Extra Cycle button again to set regeneration cycle 2 – brine and slow rinse. Set this as shown in the table above.

Press the Extra Cycle button again to set regeneration cycle 3 - fast rinse. Set this as shown in the table above.

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Press the Extra Cycle button again to set regeneration cycle 4 -brine refill. Set this as shown in the table above.

Press the Extra Cycle button again to set the flow meter size on metered softeners. With metric settings the display should read 35.1

Press the Extra Cycle button again to set the valve type. This **must** be set to 'o--1' for the 5600SE valve.

Press the Extra Cycle button again to set the line frequency. For European 50 Hz supplies this **must** be set to 'LF50'

Press the Extra Cycle button again to exit the Master Programming mode

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13.3 Softener output (capacity) at differing hardness levels

Outputs detailed in litres

Resin vol Lit	4	7	10	14	20	25	30
Hardness (ppm)							
100	2000	3500	5000	7000	10000	12500	15000
125	1600	2800	4000	5600	8000	10000	12000
150	1333	2333	3333	4667	6667	8333	10000
175	1143	2000	2857	4000	5714	7143	8571
200	1000	1750	2500	3500	5000	6250	7500
225	889	1556	2222	3111	4444	5556	6667
250	800	1400	2000	2800	4000	5000	6000
275	727	1273	1818	2545	3636	4545	5455
300	667	1167	1667	2333	3333	4167	5000
325	615	1077	1538	2154	3077	3846	4615
350	571	1000	1429	2000	2857	3571	4286
375	533	933	1333	1867	2667	3333	4000
400	500	875	1250	1750	2500	3125	3750
425	471	824	1176	1647	2353	2941	3529
450	444	778	1111	1556	2222	2778	3333
475	421	737	1053	1474	2105	2632	3158
500	400	700	1000	1400	2000	2500	3000

When setting the capacity of the softener, allowance must be made for a 24 hour reserve on metered units. On domestic supplies this should be calculated at 150 litres per person per day unless meter reading data is available that is substantially different.

eg 1: A 30 litre softener at 400 ppm supplying a four person household should be set to a capacity of:

$$3750 - (4 \times 150) = 3150 \text{ litres}$$

eg 1: A 10 litre softener at 225 ppm supplying a two person household should be set to a capacity of:

$$2222 - (2 \times 150) = 1622 \text{ litres}$$

The factory default setting is 100% of the capacity at 300 ppm.

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13.4 Custom Programming

There are two variations on the settings that may be required. Both need adjustments to be made through the Master Programming Mode.

13.4.1 Using blender. If the blender fitted to the valve is to be used, the valve capacity needs to be adjusted. This means that the valve will still be able to calculate when the resin should be regenerated without wasting salt.

You will first need to adjust the blender and check the hardness of the blended water on site during normal service flow.

Next, calculate the percentage or proportion of the blended water when compared with the raw water. If, for example, the hardness of the blended water is 60 ppm, and the raw water is 300 ppm, the proportion of blended water is $60/300 = 1/5$, or 20%. The 'capacity' of the softener can then be increased by 20%, saving salt.

13.4.2 Immediate regeneration. The valve is factory programmed for delayed regeneration which means that it will check whether it has zeroed out at the pre-programmed regeneration time (factory set to 2:00 AM).

However the valve can also be set for 'immediate' regeneration when it will regenerate as soon as the water meter zeroes out. The setting is made in step 2 of the Master Programming mode when the setting should be changed to 7--2.

No reserve needs to be allowed for the system capacity when the softener is programmed for immediate regeneration.

Please note, that there will then be no 'regeneration time of day' option presented during the Master or Site Programming modes when immediate regeneration is selected.

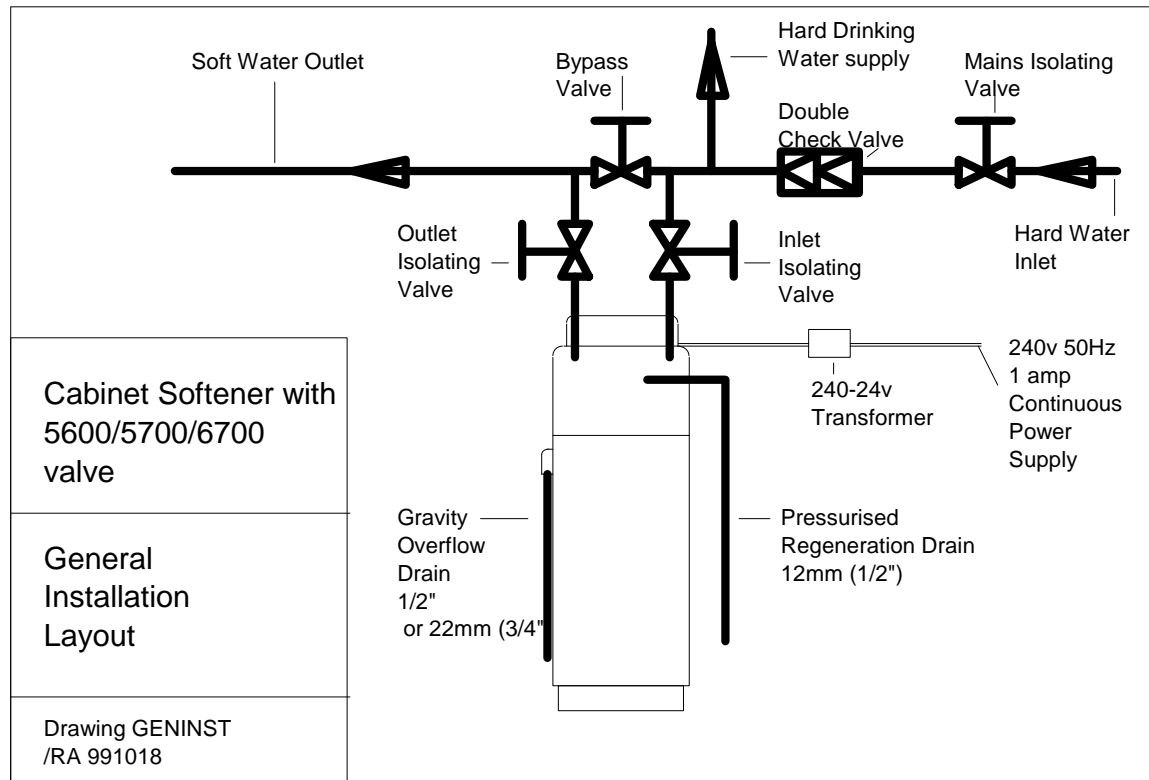
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14.0 Drawings

14.1 Installation Layout

Fig 1 General Installation Layout Cabinet Softeners



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Manufacturer's Declaration of Conformity

We the undersigned

EURAQUA UK, HITCHIN, ENGLAND

Certify that the product

*type: SIMPLEX WATER SOFTENER WITH FLECK 5600SE
24 VOLT AC VALVE*

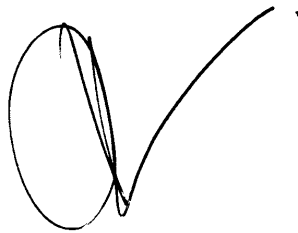
*has been designed and manufactured in accordance with the
specifications of the following:*

Directive

Machinery Directive 89/392/EEC
Low Voltage Directive 73/23/EEC
EMC-Directive 89/336/EEC

Standard

EN 292-1, EN 292-2
EN 60 335-1
EN 55 014



RT Adam
Director

Hitchin, England 01/01/06
Issue place & date