9000/9100/9500 Duplex Series

Installation
Operation
Maintenance
Manual

Duplex Softener
With 9000/9100/9500 Series
Downflow Brining Valve
20-350 litres Resin
Inc. Measuring Tank Option

Models:

Mechanical Meter/Timer

SXT Electronic Meter/Timer

CONTENTS

1.0 GENERAL NOTES

These instructions cover the 9000/9100/9500 Range of Duplex Water Softeners, which includes models ranging in size from 20-120 litres resin volume fitter with ¾" – 1.1/2" Mechanical Meter/Timer or SXT Electronic Meter/Timer.

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 straightforwards, and the only adjustments to be made to the controller program are setting the water hardness as detailed in Section 8. 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.

We have also supplied with the system the original valve manufacturer's handbook. This is written principally 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!

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.

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 down 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.

Fast Rinse - This follows the brine injection and displacement rinse stage, 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.

2.5 DUPLEX OPERATION

A 'Duplex' system is a means of operation to achieve a constant flow of soft water to service, without the need for extensive treated water storage.

The system is essentially two vessels, which are connected to common inlet and outlet pipework, and which are in service alternately. Both vessels are served by a single valve/controller mounted on one of the vessels. This diverts water to the appropriate tank for treatment or regeneration. One vessel will be in service at any one time, the other being in its regeneration cycle, or regenerated and on stand by, ready to enter service.

The vessel in service will operate until the integral water meter reaches its pre-set volume. At this stage, the stand-by vessel is switched into service, and the vessel which had been in service enters its regeneration cycle. At the end of regeneration, this vessel goes into stand by, and waits for the vessel now in service to complete its pre- set volume, at which point the vessels swap over again, and the whole cycle starts again.

3.0 UNPACKING AND PARTS IDENTIFICATION

3.1 BASIC PACKAGES

The softener will be delivered in a number of packages which include a pair of glassfibre reinforced pressure vessels, a control valve, slave valve adapter, interconnecting hoses, a brine tank, an even number of 25 litre bags of resin with possibly two additional part bags, and a funnel to fill the vessels. The 20 litre system wil be supplied with just two 20 litre bags of resin.

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 or its parts out of their cartons. It is advisable to lay large cartons on their side and slide out the softener or parts prior to standing them 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.

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, Polypropylene or ABS. Vessels below 80 litre resin capacity have a threaded hole at the top, of 2.5 inch nominal diameter, into which the control valve fits. Vessels for 100 litres of resin or more have larger 4 inch nominal diameter hole and an adapter is supplied to reduce the hole to the 2.5 thread on the valve fro use with 9000 and 9100 valves. The 9500 valve can only be used with 4 inch hole vessels.

All vessels are equipped with a 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. On smaller systems this will have a single distributor fitted to the riser. On larger and high flow systems there will be multiple distributors built up as a 'hub and laterals' on the bottom of the riser tube.

5.2 CONTROL VALVE

The control valve is mounted on top of one vessel, and directs the water flow in and out of the resin beds during the service and regeneration cycles. A manifold assembly or 'slave valve adapter' is mounted on top of vessel No. 2. This is then connected to the main control valve via a pair of braided hoses (9000), plastic interconnect pipes (9100) or copper tubes (9500). The body of the control valve is a brass casting (9000 & 9500) or injection moulded polymer (9100), containing operating parts made from Teflon and synthetic rubber.

The valve carries out its various functions by moving pistons backwards and forwards in a series of seals and spacers contained within the body casting. The movement of these pistons is controlled by a rotating cam, which is driven from the controller. Further cams in the controller direct the movement of the valve controlling the brine system.

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.

5.4 BRINE SYSTEM

The brine system consists of a moulded polyethylene tank into which the brine well and brine pick up are assembled. The tank forms the salt storage container.

The brine pick-up tube within the brine well 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.

BRINE MEASURING SYSTEM

The Brine Measuring System consists of a measuring tank, brine high level float, brine solenoid and brine pick up. These needs to be fed from a Salt Storage Tank with fully saturated brine solution.

The brine pick-up tube within the brine well 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.

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 6 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 brine tank 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 brine 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^{O}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^{O}C, less than 0.3 ppm if temperature higher (up to 30^{O}C)

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 (70 VA if Brine Measuring System used) 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 500 mm 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.

7.0 ASSEMBLY/INSTALLATION

7.1 MECHANICAL

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 Assembling Vessel, Riser Tube and Internals

The larger units are shipped as pre-assembled components to reduce the risk of transit damage. These need to be assembled on site. Open the cartons containing the pressure vessels and remove them. Check that the vessels have not been damaged in transit. Pay particular attention to the vessel's top hole threads, as this is where the valve will seal. Check that there is no dirt or swarf inside.

Riser Tube/Bottom Filter

This comprises a length of pipe (the 'riser tube') to one end of which is bonded a moulded screen or hub and lateral. The other end is fitted into the bottom of the control valve. To make sure the riser fits properly, and there is no leakage, it will be supplied to the correct length prior to despatch.

7.1.2 Charging the Resin

The ion exchange resin is supplied in 25 litre bags and/or part bags if applicable - half for each vessel. All models will be supplied with exactly the right quantity of resin. It is important that only the correct volume of resin is put into each vessel or the system will not function properly. (See **Section 12.1.2** for data)

Place the vessel in its final location - once filled with resin and water they should not be moved. Fill the vessel about 1/5 –1/3 full with clean water. A cover is provided to be slipped over the end of the riser when filling with resin. This must be carefully removed without disturbing the riser prior to fitting the control valve. Carefully open the resin bags and pour the resin into the vessel, using a funnel, keeping the riser tube central and upright. Take great care not to spill resin on the floor. If any is spilt, make sure it is swept up immediately, as it is very easy to slip on it. Wash away any loose resin from the threads of the vessel or adapter collar. Remove the riser cover and check that the top of the riser is still correctly located

7.1.4 Assembling the Control Valve

Carefully remove the control valve and the slave tank adapter from their packing, and check that all parts are present. On the 9000 and 9100 valves, snap in the bayonet fit distributors to the control valve and slave tank adapter.

7.1.5 Attaching the Control Valve and Slave Adapter

Carefully fit the control valve on to the right hand vessel, taking care to ensure that the riser tube locates correctly into the valve base through the top distributor, and that the threads are not crossed. Also take care to make sure that the 'O' rings are properly seated and not pinched. Repeat the process to fit the slave adapter. Connect the two vessels together using the braided flexible hoses using the swivel coupling end on the slave adapter. The vessel with the slave adapter must be connected to the left hand side of the control valve.

Install a suitable service flow controller to the outlet connection of the control valve if the treated water is to be supplied in to a storage tank at the same level as the system. This will ensure that there is sufficient back pressure for regeneration of the standby vessel.

7.1.6. Brine System

Move brine tank into position and connect the outer port of the bulk head union to the brine draw connection on the valve using the 3/8" or ½" tubing. Make sure that this connection is also tight to stop air leaking in.

If the brine draw tubing is adjusted for length during installation, ensure that brass tubing inserts are refitted into tubing end prior to connecting into brine tank and control valve.

7.1.7 Pipework

Pipework should be assembled incorporating the features shown in the Installation Diagram, Section 14.1. 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, right facing connections on the right of the valve manifold (1" BSP Female) (see Fig 1 in Section 14.1).

7.1.8 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, Fluidmaster or Aylesbury which permit full flow until they close off. These are inexpensive and are a direct replacement for the more common brass ball float valves.

7.1.9 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 (9000 & 9100) or ¾" BSPF threaded socket (9500). Flexible tube should be run from this connection 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 at a higher level than the 500mm above the control valve and preferably should have an air break at the same height as the control valve.

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***

The transformer supply should be connected with the brown cable to the live (fused) terminal in the supply outlet and the blue cable to the neutral terminal. The transformer is double insulated and does not require an earth connection.

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 SXT 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

There is no requirement on the Mechanical Initiation valves to set the time of day

On SXT timers the display alternates between the time of day, the remaining calculated capacity in litres before regeneration and the vessel on line (U1 or U2). Wait until the time of day is displayed and the press the up ? and down ? arrow keys until the correct time of day is displayed.

8.2.2 Site programming - Setting the capacity and regeneration override.

The softener regeneration cycles have been factory programmed. The volume capacity of the resin in litres has also been set up based on a default hardness of 21 Degrees Clark (300ppm). This may need to be altered based on local water hardness (see section 13.2).

There is no regeneration override facility on the Mechanical Initiation valves.

On SXT valves, a regeneration override is used to freshen the resin if a regeneration has not taken place for a number of days.

Press and hold the press the up ? and down ? arrow keys together for 5 seconds. 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 regeneration override. The default is 3 days for duplex softeners. This may be changed to a different interval by pressing the up and down arrows.

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

8.3 BRINE SYSTEM

8.3.1 Brine Tank Filling

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

Overfilling the brine tank 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 brine tank as either of these will damage the resin and the internal components of the regeneration valve and brine draw system.

8.3.2 Brine Measuring System Filling

Connect the solenoid inlet to the outlet of the Salt saturator (3/4" solvent weld) ensure the middle of the two high level floats (mounted side by side) is set at the a height above the brine pick up shut off position corresponding to the following table.

RESIN QUANTITY (LITRES)	QUANTITY OF BRINE ABOVE PICK UP (LITRES)
20	8
25	12
50	19
75	34
100	37
120	46
150	61
190	76
200	76
250	106
300	121
350	137

8.4 PRE-SERVICE FLUSH AND REGENERATION – MECHANICAL TIMERS

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.

Remove the dust cover from the control valve and ensure that the meter cable is not plugged into the meter on outlet of the valve. Swing 'open' the timer assembly on the left of the valve by pulling on its right hand edge. Turn the manual regeneration knob on the front of the timer clockwise until the first row of pins on the program wheel on the back of the timer lifts the outer microswitch.

Turn on the power supply. The drive motor on the right of the control valve will run and will start to slowly drive the internal gearing. The bottom shaft will move first, followed by the top shaft. When both shafts and all the gears have finished moving the valve is in the backwash position of the regeneration cycle. This will take several minutes. Turn off the power supply.

Slowly open the water inlet valve. Air will be expelled from the drain line, followed by water once the vessels are filled with water. Open the inlet valve fully to allow water to run to drain for 4-5 minutes.

Turn on the power supply and index the regeneration knob to the 'brine' position - the microswitch is in the first (long) gap in the bank of pins. Water/brine will be drawn in from the brine tank, and water will trickle slowly down the drain line.

When the gears have stopped moving, index to the rapid rinse section - second bank of pins - and again wait for the gears to stop moving. Water will run quickly down the drain line.

Index the knob to the brine refill section - second (short) gap in the pins - and wait for the gears to stop moving. Water will be refilled into the brine tank.

Finally, index the knob to the 'home' position past the last pair of pins (inner microswitch drops into the indent in program wheel) and wait for the gears to stop moving. This has commissioned one vessel.

Leave the power supply on and repeat the sequence in 5) above to commission the second vessel. However after indexing the knob to the brine position (iii) leave the timer to drive the program wheel round until the final pair of pins have lifted the microswitch. This will ensure that the correct

amount of water has refilled into the brine tank. Finish off by indexing the knob to the home position. This has now commissioned both vessels and the system is ready for service.

'Close' the timer so that the support leg snaps into the backplate. Adjust the capacity of the softener if necessary using the reference sheet attached. The units used on the dial are cubic metres (m3). Replace the valve dust cover. Plug the meter cable back into the meter on the outlet of the valve

Open the outlet valve (if fitted) and test the water output from a downstream tap.

Fill the brine tank with tablet salt to 6" from the top or to 12" from the top if granular salt is used (unless Brine Measuring System used).

8.5 PRE-SERVICE FLUSH AND REGENERATION – SXT TIMERS

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 four 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.

Close the isolating valve and repeat the process to expel air from the second column.

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.

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 to 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.

Remove the timer cover and index the program wheel knob approximately 6mm clockwise until a loud click is heard. Regeneration will proceed automatically immediately. However due to the slow rotation of the program wheel and piston motors, it will be some minutes until regeneration water starts to pass to drain.

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, Fig 3 in Section 14.2). The 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

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 with both columns fully regenerated 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 is recommended that both columns 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.

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.

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 (if fitted) has not been opened or adjusted.

Check salt level in brine tank. Refill if necessary.

Trickle flow through conventional ball valve in storage tank. Replace with Torbeck, Fluidmaster or Aylesbury 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)

10.3 NO REGENERATION

Check electrical supply, fuses etc. satisfactory.

Check control head motor runs, by initiating a manual regeneration. Replace if necessary.

10.4 UNSATISFACTORY CAPACITY BETWEEN REGENERATIONS

See Section 10.2.

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

Check incoming water for presence of Chlorine. If Chlorine level too 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

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 supplier.

12.1 PROCESS AND OPERATING DATA

12.1.1 9000/9100 Series Water Softeners 20-60 litre

MODEL		20 L	25 L	30 L	40 L	50 L	60L
PARAMETER	**UNITS**						
Max. Service Flow	M3/hr	0.80	1.00	1.20	1.60	2.00	2.40
Min Service Flow	M3/hr	0.10	0.12	0.15	0.20	0.25	0.30
Capacity	m3°	70	88	105	140	176	210
Volume treated between regens (300 ppm CaCO3, 21° Clarke)	M3	3.3	4.2	5.0	6.7	8.4	10.0
Salt used per regeneration	kg	2.8	3.5	4.2	5.6	7.0	8.4
Regeneration Time	mins	70	70	70	76	80	80
Resin Volume	litres	20	25	30	40	50	60
Salt Storage Capacity	kg	80	120	120	200	200	200
No of Regens Salt stored	-	28	34	28	35	28	23
Maximum Flow to drain	Lit/min	5.7	7.5	9.1	9.1	9.1	13.3

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.

12.1.2 9000/9100 Series Water Softeners 80-150 litre (9100 80L ¾" only)

MODEL			80 L	100 L	120 L	140L	150L
PARAMETER	**UNITS**	**MET**					
Max. Service Flow	M3/hr	¾"	3.00	3.00	3.00	3.00	3.00
		1"	3.20	4.00	4.00	4.00	4.00
Min Service Flow	M3/hr		0.40	0.50	0.60	0.70	0.75
Capacity	m3°		286	350	420	490	525
Volume treated between regens (300 ppm CaCO3, 21° Clarke)	M3		13.3	16.7	20.0	23.3	25.0
Salt used per regeneration	kg		11.2	14.0	16.8	19.6	21.0
Regeneration Time	mins		80	82	82	94	96
Resin Volume	litres		80	100	120	140	150
Salt Storage Capacity	kg		250	350	500	500	500
No of Regens Salt stored	-		22	25	29	25	23
Maximum Flow to drain	Lit/min		15.2	19.2	19.2	26.8	26.8

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.

12.1.3 9000 Series Water Softeners 190-250 litre

MODEL		190 L	200 L	250L
PARAMETER	**UNITS**			
Max. Service Flow	M3/hr	3.20	4.00	4.00
Min Service Flow	M3/hr	0.95	1.00	1.25
Capacity	m3°	665	700	875
Volume treated between regens (300 ppm CaCO3, 21° Clarke)	M3	31.6	33.3	41.6
Salt used per regeneration	kg	26.6	28.00	35
Regeneration Time	mins	108	108	108
Resin Volume	litres	190	200	250
Salt Storage Capacity	kg	750	750	750
No of Regens Salt stored	-	28	26	21
Maximum Flow to drain	Lit/min	26.8	26.8	26.8

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.

12.1.4 9500 Series Water Softeners 100-150 litre

MODEL		100 L	120 L	140L	150L
PARAMETER	**UNITS**				
Max. Service Flow	M3/hr	4.00	4.80	5.60	6.00
Min Service Flow	M3/hr	0.50	0.60	0.70	0.75
Capacity	m3°	350	420	490	525
Volume treated between regens (300 ppm CaCO3, 21° Clarke)	M3	16.7	20.0	23.3	25.0
Salt used per regeneration	kg	14.0	16.8	19.6	21.0
Regeneration Time	mins	82	82	94	96
Resin Volume	litres	100	120	140	150
Salt Storage Capacity	kg	350	500	500	500
No of Regens Salt stored	-	25	29	25	23
Maximum Flow to drain	Lit/min	19.2	19.2	26.8	26.8

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.

12.1.5 9500 Series Water Softeners 190-350 litre

MODEL		190 L	200 L	250L	300 L	350 L
PARAMETER	**UNITS**					
Max. Service Flow	M3/hr	7.60	8.00	8.40	8.40	8.40
Min Service Flow	M3/hr	0.95	1.00	1.25	1.5	1.75
Capacity	m3°	665	700	875	1050	1225
Volume treated between regens (300 ppm CaCO3, 21° Clarke)	M3	31.6	33.3	41.6	50.00	58.3
Salt used per regeneration	kg	26.6	28.00	35.00	42.00	49.00
Regeneration Time	mins	96	108	108	108	108
Resin Volume	litres	190	200	250	300	350
Salt Storage Capacity	kg	750	750	750	1000	1000
No of Regens Salt stored	-	28	26	21	23	20
Maximum Flow to drain	Lit/min	32.2	37.8	37.8	56.8	56.8

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.

12.2 ENGINEERING DATA

12.2.1 9000/9100 Series Water Softeners 20-60 lit

MODEL		20 L	25 L	30 L	40 L	50 L	60 L
PARAMETER	UNITS						
Diameter of vessel/valve	mm	170	247	265	265	265	315
Height to top of valve	mm	1084	1085	1085	1304	1567	1418
Diameter of brine tank	mm	462	462	462	555	555	555
Height of brine tank	mm	800	800	800	980	980	980
Inlet Conn.	ins BSPF	1.0	1.0	1.0	1.0	1.0	1.0
Outlet Conn.	ins BSPF	1.0	1.0	1.0	1.0	1.0	1.0
Drain Conn.	ins	1/2	1/2	1/2	1/2	1/2	1/2
Brine Tank Overflow Conn.	ins	3/4	3/4	3/4	3/4	3/4	3/4
Delivered Wt.	Kg.	45	55	75	90	110	150
Working Wt. (approx)	Kg	150	175	190	350	380	500
Maximum Flow to drain	Lit/min	5.7	7.5	9.1	9.1	9.1	13.3
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.

NB Vessels can vary depending on manufacturer used, dimensions are therefore nominal.

12.2.2 9000/9100 Series Water Softeners 80-150 lit

MODEL		80 L	100 L	120 L	140 L	150 L
PARAMETER	**UNITS**					
Width of vessel/valve	mm	334	369	369	406	406
Height to top of valve	mm	1561	1850	1850	1850	1850
Diameter of brine tank	mm	555	700	830	830	830
Height of brine tank	mm	1170	1100	1200	1200	1200
Inlet Conn.	ins BSPF	1.0	1.0	1.0	1.0	1.0
Outlet Conn.	ins BSPF	1.0	1.0	1.0	1.0	1.0
Drain Conn.	ins	1/2	1/2	1/2	1/2	1/2
Brine Tank Overflow Conn.	ins	1/2	1/2	1/2	1/2	1/2
Delivered Wt.	Kg.	190	250	290	350	370
Working Wt. (approx)	Kg.	550	650	690	870	900
Maximum Flow to drain	Lit/min	15.2	19.2	19.2	26.8	26.8
Electrical Power	v	240	240	240	240	240
	Hz	50	50	50	50	50
	V/A	10	10	10	10	10

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.

NB Vessels can vary depending on manufacturer used, dimensions are therefore nominal.

12.2.3 9000MI Series Water Softeners 190-250 lit

MODEL		190 L	200 L	250 L
PARAMETER	**UNITS**			
Width of vessel/valve	mm	469	552	552
Height to top of valve	mm	1990	1850	1850
Diameter of brine tank	mm	970	970	970
Height of brine tank	mm	1240	1240	1240
Inlet Conn.	ins BSPF	1.0	1.0	1.0
Outlet Conn.	ins BSPF	1.0	1.0	1.0
Drain Conn.	ins	1/2	1/2	1/2
Brine Tank Overflow Conn.	ins	1/2	1/2	1/2
Delivered Wt.	Kg.	400	450	550
Working Wt. (approx)	Kg.	1000	1100	1200
Maximum Flow to drain	Lit/min	26.8	26.8	26.8
Electrical Power	v	240	240	240
	Hz	50	50	50
	V/A	10	10	10

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.

NB Vessels can vary depending on manufacturer used, dimensions are therefore nominal.

12.2.4 9500 Series Water Softeners 100-150 lit

MODEL		100 L	120 L	140 L	150 L
PARAMETER	**UNITS**				
Width of vessel/valve	mm	369	369	406	406
Height to top of valve	mm	1850	1850	1850	1850
Diameter of brine tank	mm	700	830	830	830
Height of brine tank	mm	1100	1200	1200	1200
Inlet Conn.	ins BSPF	1.5	1.5	1.5	1.5
Outlet Conn.	ins BSPF	1.5	1.5	1.5	1.5
Drain Conn.	ins	3/4	3/4	3/4	3/4
Brine Tank Overflow Conn.	ins	1/2	1/2	1/2	1/2
Delivered Wt.	Kg.	250	290	350	370
Working Wt. (approx)	Kg.	650	690	870	900
Maximum Flow to drain	Lit/min	19.2	19.2	26.8	26.8
Electrical Power	v	240	240	240	240
	Hz	50	50	50	50
	V/A	10	10	10	10

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.

NB Vessels can vary depending on manufacturer used, dimensions are therefore nominal.

12.2.5 9500I Series Water Softeners 190-350 lit

MODEL		190 L	200 L	250 L	300 L	350 L
PARAMETER	**UNITS**					
Width of vessel/valve	mm	469	552	552	610	610
Height to top of valve	mm	1990	1850	1850	2000	2000
Diameter of brine tank	mm	970	970	970	1050	1050
Height of brine tank	mm	1240	1240	1240	1500	1500
Inlet Conn.	ins BSPF	1.5	1.5	1.5	1.5	1.5
Outlet Conn.	ins BSPF	1.5	1.5	1.5	1.5	1.5
Drain Conn.	ins	3/4	3/4	3/4	3/4	3/4
Brine Tank Overflow Conn.	ins	1/2	1/2	1/2	1/2	1/2
Delivered Wt.	Kg.	400	450	550	670	770
Working Wt. (approx)	Kg.	1000	1100	1200	1900	2000
Maximum Flow to drain	Lit/min	32.2	37.8	37.8	56.8	56.8
Electrical Power	v	240	240	240	240	240
	Hz	50	50	50	50	50
	V/A	10	10	10	10	10

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.

NB Vessels can vary depending on manufacturer used, dimensions are therefore nominal.

13.0 Factory Programming

13.1 Regeneration Settings

9000/9100 valves

Softener Lit	Tank	B/wash USGPM	Injector Std	Inj C'	BLFC*	Slow rinse USGPM	Slow rinse lpm	B/wash time	BSR time	Fast Rinse time	Brine** refill time	Regen time
20	835	1.2/1.5	1		0.25	0.40	1.52	6	60	4	8	70
25	935	1.5/2.0	1		0.25	0.40	1.52	6	60	4	10	70
30	1035	2.4	1		0.25	0.40	1.52	6	60	4	12	70
40	1044	2.4	1		0.25	0.40	1.52	6	66	4	16	76
50	1054	2.4	1		0.5	0.40	1.52	6	70	4	10	80
60	1248	3.5	2		0.5	0.80	3.03	6	70	4	12	80
80	1354	4.0	2		0.5	0.80	3.03	6	70	4	16	80
100	1465	5.0	2		1	0.80	3.03	6	70	6	10	82
120	1465	5.0	2		1	0.80	3.03	6	70	6	12	82
140	1665	7.0	3		1	1.10	4.17	8	80	6	14	94
150	1665	7.0	3		1	1.10	4.17	8	80	8	16	96
190	1885	7.0	3		1	1.10	4.17	10	90	8	20	108
200	2160	7.0	4		1	2.30	8.72	10	90	8	22	108
250	2160	7.0	4		1	2.30	8.72	10	90	8	26	108

9500 valves

Softener Lit	Tank	B/wash USGPM	Injector Std	Inj C'	BLFC*	Slow rinse USGPM	Slow rinse lpm	B/wash time	BSR Time	Fast Rinse	Brine** refill time	Regen time
100	1465	5.0	2		1	0.80	3.03	6	70	6	10	82
120	1465	5.0	2		1	0.80	3.03	6	70	6	12	82
140	1665	7.0		3	1	1.10	4.17	8	80	6	14	94
150	1665	7.0		3	1	1.10	4.17	8	80	8	16	96
190	1885	8.5		3	2	1.10	4.17	8	80	8	10	96
200	2160	10.0		4	2	2.30	8.72	10	90	10	12	108
250	2160	10.0		4	2	2.30	8.72	10	90	10	14	108
300	2469	15.0		4	2	2.30	8.72	10	90	10	16	108
350	2469	15.0		4	2	2.30	8.72	10	90	10	18	108

* For Brine Measuring System use a 0.25 GPM BLFC for 9000 and 9100 and a 1 GPM BLFC for a 9500 valve
** For a Brine Measuring System set to 1 minute

13.2 Softener output (capacity) at differing hardness levels

Outputs detailed in cubic meters (1000 Litres per cubic meter)
Hardness in ppm

Res vol Lit	Max cont flow m3/h	Max cont flow lpm	Output m3ppm	@100 ppm Deg Cl 7	@150 ppm Deg Cl 10.5	@200 ppm Deg Cl 14	@250 ppm Deg Cl 17.5	@300 ppm Deg Cl 21	@350 ppm Deg Cl 25	@400 ppm Deg Cl 28	Salt kg (Nom)
20	0.80	13.33	1000	10.00	6.67	5.00	4.00	3.33	2.86	2.50	2.80
25	1.00	16.67	1250	12.50	8.33	6.25	5.00	4.17	3.57	3.13	3.50
30	1.20	20.00	1500	15.00	10.00	7.50	6.00	5.00	4.29	3.75	4.20
40	1.60	26.67	2000	20.00	13.33	10.00	8.00	6.67	5.71	5.00	5.60
50	2.00	33.33	2500	25.00	16.67	12.50	10.00	8.33	7.14	6.25	7.00
60	2.40	40.00	3000	30.00	20.00	15.00	12.00	10.00	8.57	7.50	8.40
75	3.00	50.00	3750	37.50	25.00	18.75	15.00	12.50	10.71	9.38	10.50
80	3.20	53.33	4000	40.00	26.67	20.00	16.00	13.33	11.43	10.00	11.20
100	4.00	66.67	5000	50.00	33.33	25.00	20.00	16.67	14.29	12.50	14.00
120	4.80	80.00	6000	60.00	40.00	30.00	24.00	20.00	17.14	15.00	16.80
140	5.60	93.33	7000	70.00	46.67	35.00	28.00	23.33	20.00	17.50	19.60
150	6.00	100.00	7500	75.00	50.00	37.50	30.00	25.00	21.43	18.75	21.00
190	7.60	126.67	9500	95.00	63.33	47.50	38.00	31.67	27.14	23.75	26.60
200	8.00	133.33	10000	100.00	66.67	50.00	40.00	33.33	28.57	25.00	28.00
250	10.00	166.67	12500	125.00	83.33	62.50	50.00	41.67	35.71	31.25	35.00
300	12.00	200.00	15000	150.00	100.00	75.00	60.00	50.00	42.86	37.50	42.00
350	14.00	233.33	17500	175.00	116.67	87.50	70.00	58.33	50.00	43.75	49.00

The factory default setting is the capacity at 300 ppm.

The maximum flow rate of larger systems is determined by the control valve.

9000 & 9100 ¾” valves are limited to 3.0 m3/h (50 lpm)
9000 1” valves are limited to 4.0 m3/h (67lpm)
9500 1.1/2” valves are limited to 8.4m3/h (140 lpm)

13.3 Master Program Settings – SXT valves only

Master Program set up summary – 9000/9100 valves
Set to 12:01 and hold up and down button down together

Parameter description	Disp	Value	Res Vol	20	25	30	40	50	60	75	80
Display Format	DF	Ltr									
Valve Type	VT	dF1b									
Control Type	FI										
Number of Tanks	NT	2									
Tank in service	TS	Check Tank Arrow									
Unit capacity	C	see across	⇒	100	125	150	200	250	300	375	400
Feedwater Hardness	H	30									
Reserve Selection	RS	SF									
Safety Factor	SF	0									
Day Override	DO	Off									
BackWash	BW	see across	⇒	4	4	4	6	6	6	6	6
Brine Draw/Slow Rinse	BD	see across	⇒	40	40	40	60	60	60	60	70
Fast Rinse	RR	see across	⇒	4	4	4	6	6	6	6	4
Brine Refill *	BF	see across	⇒	8	10	12	18	10	12	12	16
Flow meter type	FM	P0.7									
Exit to time of day											

- * 1 minute for Brine Measuring System

Parameter description	Disp	Value	Res Vol	100	120	140	150	190	200	250
Display Format	DF	Ltr								
Valve Type	VT	dF1b								
Control Type	FI									
Number of Tanks	NT	2								
Tank in service	TS	Check Tank Arrow								
Unit capacity	C	see across	⇒	500	600	700	750	950	1000	1250
Feedwater Hardness	H	30								
Reserve Selection	RS	SF								
Safety Factor	SF	0								
Day Override	DO	Off								
BackWash	BW	see across	⇒	6	6	8	8	10	10	8
Brine Draw/Slow Rinse	BD	see across	⇒	70	70	80	80	100	100	120
Fast Rinse	RR	see across	⇒	6	6	6	8	8	8	6
Brine Refill *	BF	see across	⇒	10	12	14	16	20	20	26
Flow meter type	FM	see across	⇒	P0.7	P1.0	P1.0	P1.0	P1.0	P1.0	P1.0
Exit to time of day										

* 1 minute for Brine Measuring System

13.4 Master Program Settings – SXT valves only

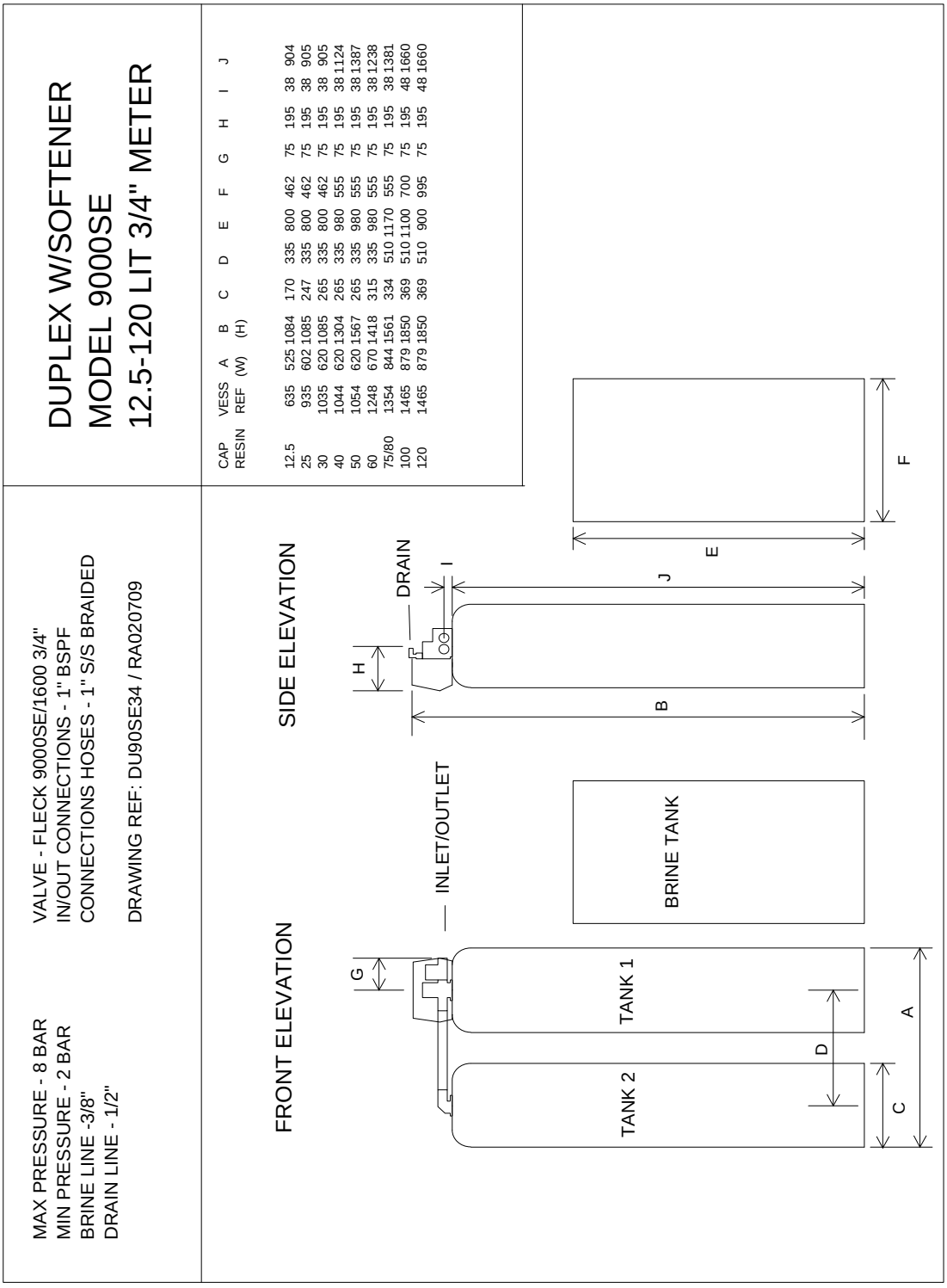
Master Program set up summary – 9500 valves

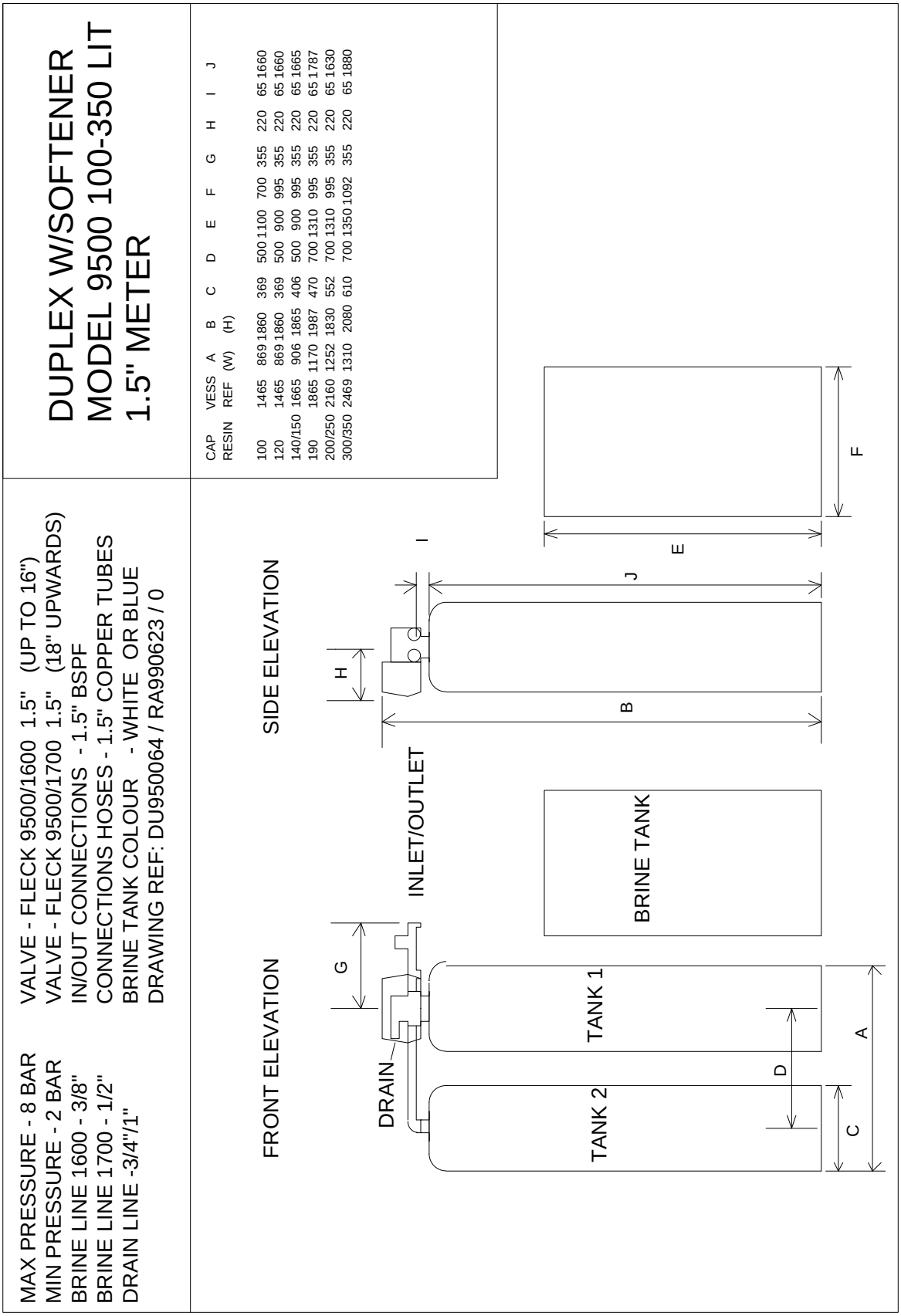
Parameter description	Disp	Value	Res Vol	100	120	140	150	190	200	250
Display Format	DF	see across	⇒	Ltr	Ltr	Ltr	Ltr	Ltr	Ltr	Ltr
Valve Type	VT	dF1b								
Control Type	FI									
Number of Tanks	NT	2								
Tank in service	TS	Check Tank Arrow								
Unit capacity	C	see across	⇒	500	600	700	750	950	1000	1300
Feedwater Hardness	H	30								
Reserve Selection	RS	SF								
Safety Factor	SF	0								
Day Override	DO	Off								
BackWash	BW	see across	⇒	6	6	8	8	10	10	8
Brine Draw/Slow Rinse	BD	see across	⇒	70	70	80	80	100	100	120
Fast Rinse	RR	see across	⇒	6	6	6	8	8	8	6
Brine Refill *	BF	see across	⇒	10	12	14	16	20	20	26
Flow meter type	FM	P1.5								
Exit to time of day										

- 1 minute for Brine Measuring System

Parameter description	Disp	Value	Res Vol	300	350
Display Format	DF	Ltr			
Valve Type	VT	dF1b			
Control Type	FI				
Number of Tanks	NT	2			
Tank in service	TS	Check Tank Arrow			
Unit capacity	C	see across	⇒	1500	1750
Feedwater Hardness	H	30			
Reserve Selection	RS	SF			
Safety Factor	SF	0			
Day Override	DO	Off			
BackWash	BW	see across	⇒	12	10
Brine Draw/Slow Rinse	BD	see across	⇒	120	120
Fast Rinse	RR	see across	⇒	10	10
Brine Refill *	BF	see across	⇒	16	18
Flow meter type	FM	P1.5			
Exit to time of day					

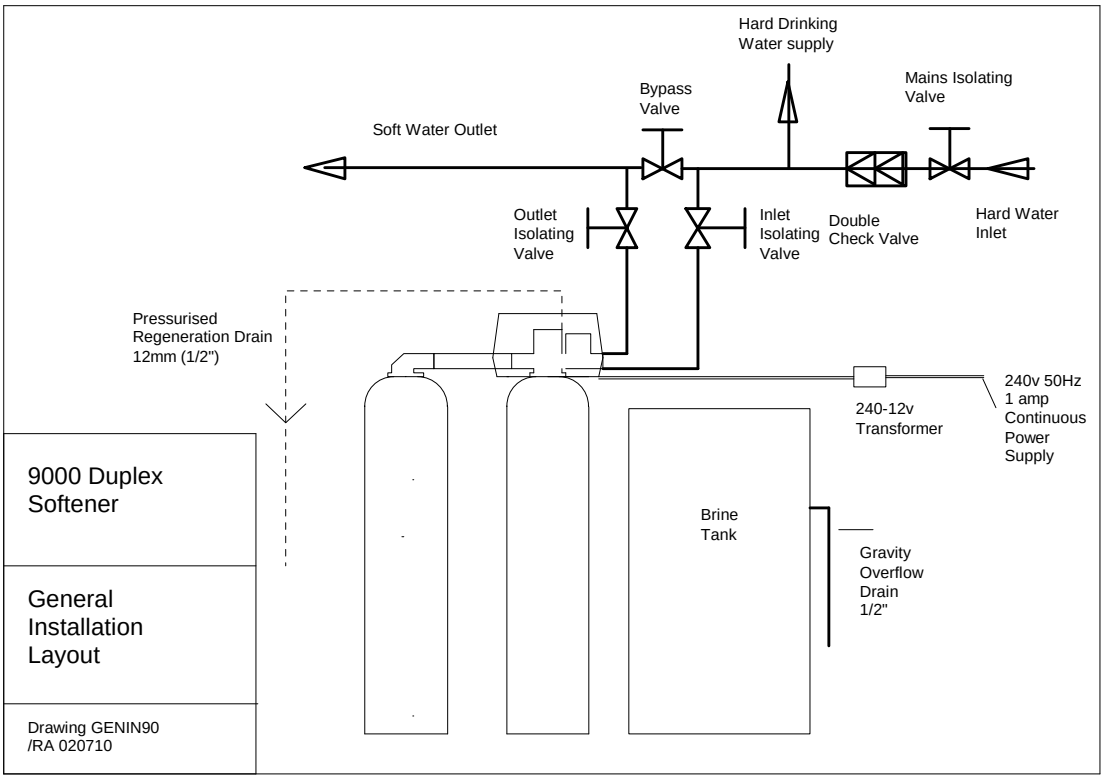
14.1 Drawings



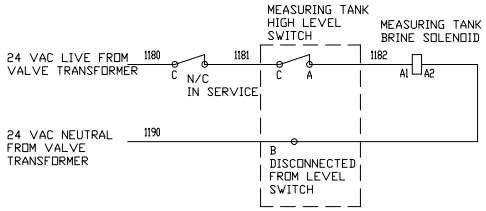

DUPLEX W/SOFTENER
MODEL 9500 100-350 LIT
1.5" METER
MAX PRESSURE - 8 BAR
MIN PRESSURE - 2 BAR
BRINE LINE 1600 - 3/8"
BRINE LINE 1700 - 1/2"
DRAIN LINE -3/4"/1"
VALVE - FLECK 9500/1600 1.5" (UP TO 16")
VALVE - FLECK 9500/1700 1.5" (18" UPWARDS)
IN/OUT CONNECTIONS - 1.5" BSPF
CONNECTIONS HOSES - 1.5" COPPER TUBES
BRINE TANK COLOUR - WHITE OR BLUE
DRAWING REF: DU950064 / RA990623 / 0
CAP RESIN VESS REF A (W) B (H) C D E F G H I J
100 1465 869 1860 369 500 1100 700 355 220 65 1660
120 1465 869 1860 369 500 900 995 355 220 65 1660
140/150 1665 906 1865 406 500 900 995 355 220 65 1665
190 1865 1170 1987 470 700 1310 995 355 220 65 1787
200/250 2160 1252 1830 552 700 1310 995 355 220 65 1630
300/350 2469 1310 2080 610 700 1350 1092 355 220 65 1880
FRONT ELEVATION
SIDE ELEVATION
INLET/OUTLET
DRAIN
TANK 1
TANK 2
BRINE TANK
A
B
C
D
E
F
G
H
I
J

14.2 Installation Layout

Fig 1 General Installation Layout 9000 Duplex Softeners



14.2 Measuring system Wiring



Manufacturer's Declaration of Conformity

We the undersigned

EURAQUA UK, HITCHIN, ENGLAND

Certify that the product

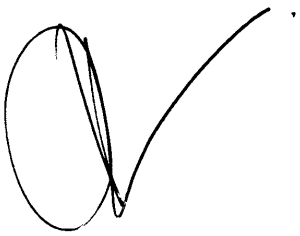
---

type: DUPLEX WATER SOFTENER WITH FLECK 9000/9100/9500 24 VOLT AC VALVE

---

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

Directive	**Standard**
Machinery Directive 89/392/EEC	EN 292-1, EN 292-2
Low Voltage Directive 73/23/EEC	EN 60 335-1
EMC-Directive 89/336/EEC	EN 55 014



RT Adam
Director

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