

SIMPLEX SOFTENER – System Manual

Your Simplex Softener System will contain the following items:

- 1 off suitably sized mineral tank
- 1 off riser tube with bottom distributor attached
- 1 off top basket
- 1 off WS1 Clack 1" CI softener valve (5 button) with internal meter
OR 1 off WS1 Clack 1" Time Clock softener valve (3 button)
- 1 off Clack 1" by-pass valve assembly
- 2 off Clack 1" male BSP adaptors
- 1 off Clack valve wrench
- 1 off suitably sized brine tank with well and float assembly
- 1 off length of brine line
- 1 off length of drain line
- Bag or bags (depending on size of system supplied) of Cation Softener Ion Exchange resin

Your Simplex Softener System will look something like this:



Colour of mineral and brine tank may vary, size of each will depend upon volume and hardness of water to be treated.

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Planning of the Softener system installation

Please observe any local or national regulations concerning the installation of your Softener system (certainly ensure the fitting of a non-return valve before the Softener system).

Check that sufficient space has been allowed for access to the unit for installation, possible future maintenance and salt addition.

Check the water pressure (minimum of 20 psi/1.4 bar required, maximum of 90 psi/6.3 bar, ideally 57 psi/4.0 bar) fitting a pressure reducing device will assist in avoiding over pressure.

Locate a nearby drain (the drain line should be as short as possible) and a 230V power supply.

The area chosen should be flat and level, the incoming water to be treated should be between 4°C & 43°C. The area chosen should also be adequately insulated to prevent frost damage during cold weather conditions.

It is not recommended to fit the Softener system in a loft – if it is, then the floor of the loft should be strong enough to carry the weight of the entire system including the water that it will contain – **NOTE** it should be installed within a suitably sized “bund” for protection against flooding.

We strongly advice to use a “Check List” before commencing the installation to ensure that all necessary pipe-work, fittings and tools are available.

Prior to installation ensure the untreated water supply is turned off.

Installation of the Softener system

Place the mineral tank and brine tank onto the level base of the installation – moving them after filling with the Softener resin and salt will be difficult.

Insert the riser with bottom distributor (attached) through the neck of the mineral tank and locate it in the bottom centre of the tank (there is a “bevel” in the base that will aid with this).

The riser will be the correct length. Cover the open end of the riser tube with a cap or tape to prevent media from entering the riser during the filling of the mineral tank with Softener resin.

A small volume of water can be added at this stage to cushion the base of the tank from any damage when adding the Softener resin.

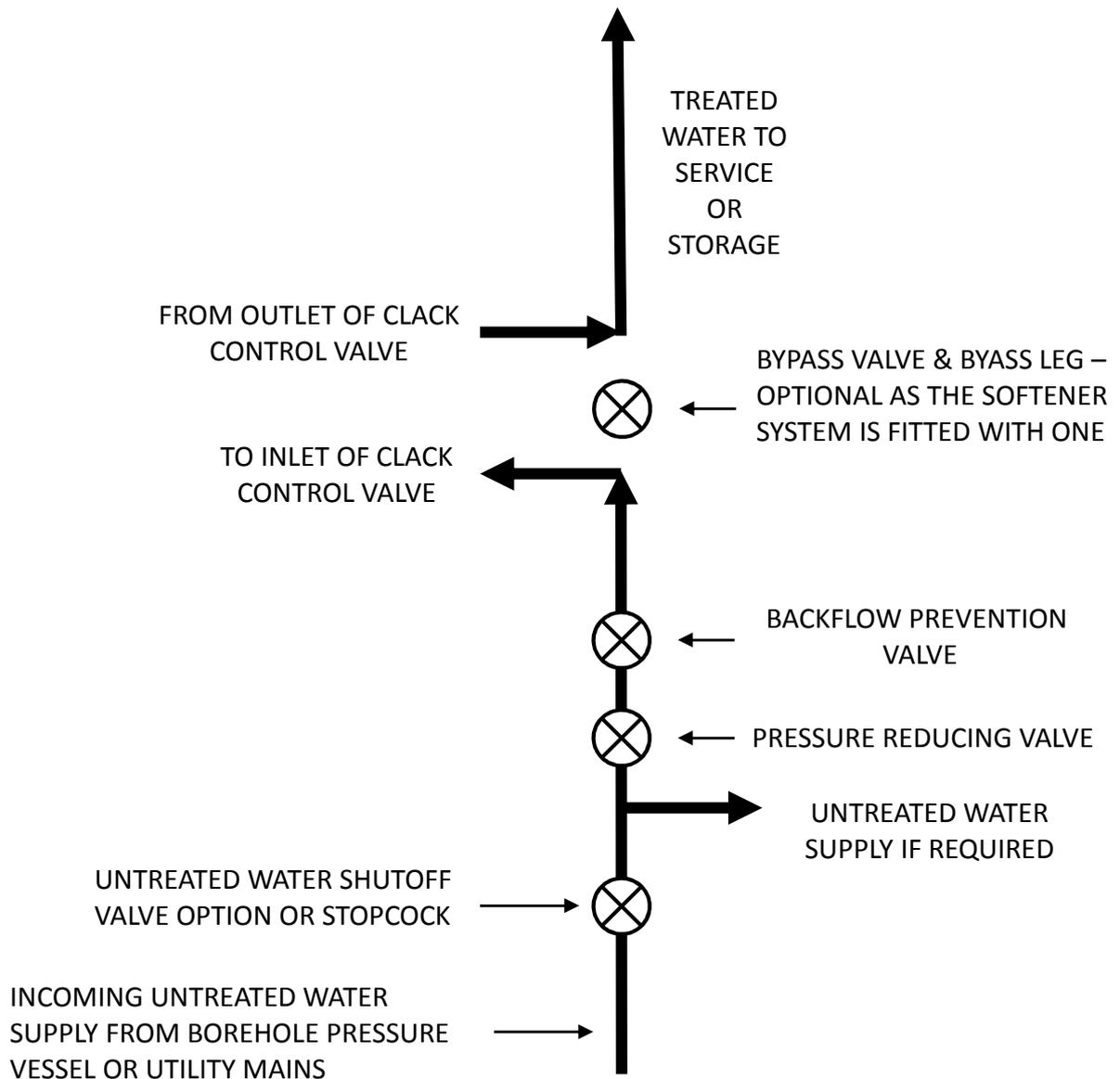
Carefully pour the Softener resin into the tank, ensure the riser tube does not move. There will be sufficient Softener resin for the size of system, it will not fill the mineral tank as there has to be “freeboard” volume to ensure expansion of the Softener resin during the regeneration cycles.

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Installation of the Softener system (continued)

Clean the top of the mineral tank and threads of any residual Softener resin. Remember to remove the cap or tape from the end of the riser tube.

Possible plumbing arrangement



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Installation of Softener System (continued)

Visually check the threads of the Clack WS1 1" CI softener valve, if necessary clean the threads and 'O' ring and if necessary lubricated with silicone or soap, **do not** use Vaseline or grease.



Fit top basket (as shown) over distributor pilot (push ¼ turn and lock).

Locate the WS1 valve on to the neck of the mineral tank, making certain that the riser tube is centred, then screw the valve (clock-wise) onto the tank. Final tightening can be accomplished by tapping the rear side of the valve with your hand.

Fit the Clack 1" bypass valve to the inlet and outlet of the WS1 valve, assembly instruction for the bypass valve are with the bag, as it leaves the factory.



Directional "shut-off" arrows for flow: normal, bypass, diagnostic and shut-off modes.

Radial seals allow for minor vertical and horizontal misalignments and connections only require hand tightening.

Fit the Clack 1" male BSP adaptor kit to the inlet and outlet of the bypass valve assembly (again, instruction for assembly are with the bag) – hand tighten.

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Installation of Softener system (continued)

Connect the drain line to the backwash drain connection (left/top of valve, shown below) – ensure the drain line is firmly anchored with no kinks.



Make all plumbing connections to the inlet and outlet of the WS1 1" control valve.

Connect the electricity supply to the valve (thread the power through the "back left or right corner of the valve).



Unhinge the drive bracket by using the two finger tabs on the top left and top right of the black drive bracket – then thread the power cable into the valve and attach to the connection marked 12 VAC on the green PC board.

Turn the power supply on, the valve will operate for a few seconds as it re-synchronises and finds the home position. All the programmes necessary for the valve to perform the regeneration functions correctly have been pre-programmed. The Clack WS1 control valve has a non-volatile memory, which means these programmes will not be lost, even in the event of a power failure. The time of day needs to be set as follows:

WS1 Clack 1" CI valve (5 button) with meter -

Press "SET CLOCK"

Press "UP" or "DOWN" to set hour (24 hour clock)

Press "NEXT"

Press "UP" or "DOWN" to set minutes

Press "NEXT" goes back to original screen

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Installation of Softener system (continued)

WS1 Clack 1" TC valve (3 button)

Press "SET HOUR"

Press "UP" or "DOWN" to set hour (24 hour clock)

Press "SET HOUR"

Press "UP" or "DOWN" to set minutes

Press "SET HOUR"

Display returns to home screen

Locate the brine tank close to the mineral tank and connect the brine line from the valve to the fitting on the outside of the brine tank that is connected internally to the brine well.

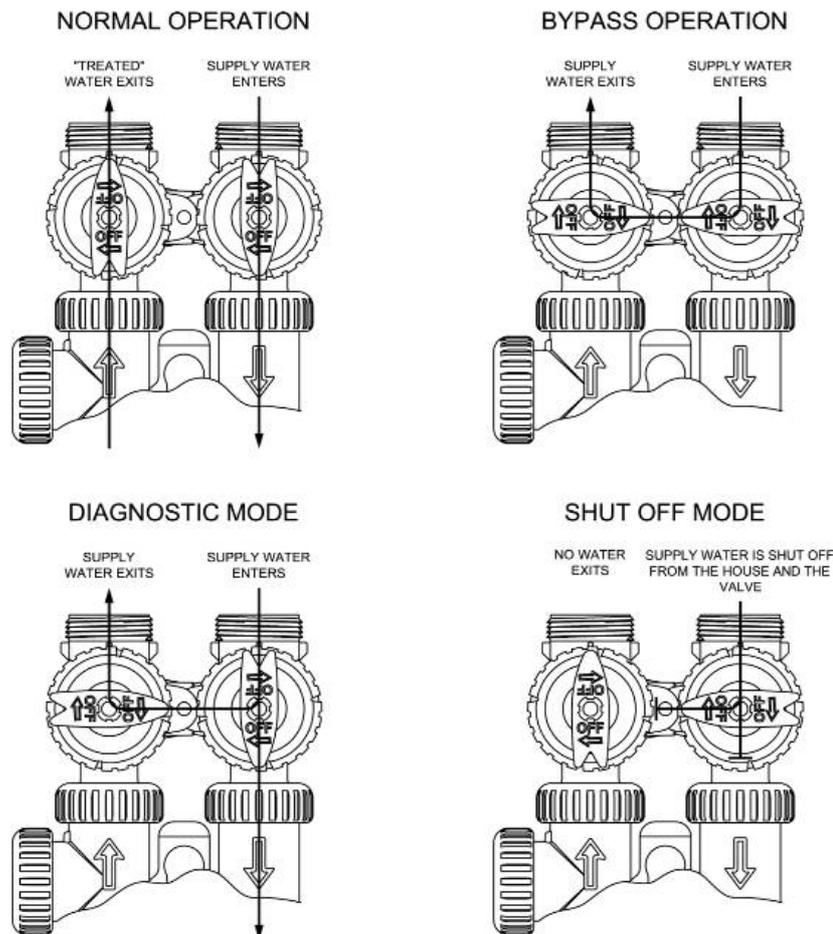
Fit a drain line from the overflow connection on the brine tank, take this to a suitable drain or soak away (remember this needs to be as short as possible – long lengths could affect the brine regeneration).

Fill the brine tank with softener salt to just below the overflow. We recommend the use of either tablet or granular water softener salt (not "block" salt).

Commissioning of Softener system

Turn the Clack 1" bypass valve into bypass mode – please see below:

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Commissioning of Softener system (continued)

Turn on the untreated water supply. Ensure that there is sufficient water pressure (between 1.4 & 6.3 bar).

Slowly open the Clack 1" bypass valve. This will introduce untreated water into the Softener system and also start to purge air from the system.

When as much air has been purged then commence the following sequences:

For the WS1 Clack 1" Softener valve (5 button) with meter –

Press & hold "REGEN" for 3 seconds

The above action puts the system into an immediate regeneration.

The first cycle of the regeneration is a backwash cycle, this will complete the purging of air from the system. The backwash cycle will last for between 5 & 15 minutes dependant on the size of the system.

Once this cycle is completed the Clack WS1 valve will automatically go to the second cycle of regeneration, which is the "down brine" cycle – during commissioning this cycle should be "skipped" once the piston has stopped moving, by:

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Commissioning of Softener system (continued)

Press "REGEN"

The WS1 valve will move to the third cycle of regeneration, which is a rinse cycle. The rinse cycle will last for between 2 & 15 minutes dependant on the size of the Softener system. During commissioning this cycle can be "skipped" once the piston has stopped moving, by:

Press "REGEN"

The WS1 valve will move to fourth cycle of regeneration, which is the "fill" cycle. This cycle will place the correct amount of water into the brine tank, to make the correct amount of brine solution for the next regeneration of the Softener system.

When this cycle is completed the WS1 valve will automatically move back to the "home" position.

For the WS1 Clack 1" Time Clock Softener valve (3 button) –

Press and hold "UP" & "DOWN" together for a full 3 seconds

The above action puts the system into an immediate regeneration.

The first cycle of the regeneration is a backwash cycle, this will complete the purging of air from the system. The backwash cycle will last for between 3 & 12 minutes dependant on the size of the system.

Once this cycle is completed the Clack WS1 valve will automatically move to the second cycle of regeneration, which is the "down brine" cycle – this cycle cannot be "skipped" and will last for between 50 & 70 minutes dependant on the size of the system.

Once this cycle is completed the Clack WS1 valve will automatically move to the third cycle of regeneration, which is a second backwash cycle - this cycle cannot be "skipped" and will last for between 3 & 12 minutes dependant on the size of the system.

Once this cycle is completed the Clack WS1 valve will automatically move to the fourth cycle of regeneration, which is a rinse cycle - this cycle cannot be "skipped" and will last for between 3 & 12 minutes dependant on the size of the system.

Once this cycle is completed the Clack WS1 valve will automatically move to the fifth cycle of regeneration, which is a fill cycle - this cycle cannot be "skipped" and will last for between 1 & 20 minutes dependant on the size of the system. This cycle will place the correct amount of water into the brine tank, to make the correct amount of brine solution for the next regeneration of the Softener system.

When this cycle is completed the WS1 valve will automatically move back to the "home" position.

Commissioning is now complete.

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The Softener system will now automatically regenerate at a pre-set time, usually at 2am, usually the time when least water is being consumed. Regenerations will either take place on a meter basis (the WS1 CI, 5 button valve with meter automatically reads the volume of water that has been treated) or on a "day set" basis usually 3 or 4 days (the WS1 TC, 3 button valve).

During any part of the regeneration process, water can be drawn, but **NOTE** it will not be softened water.

Softener system salt usage

Periodically check the brine tank as this requires topping up dependant on salt usage. The following table shows how much salt will be consumed for each size of Softener system:

Softener System Size Inches (Litres)	Salt Usage per Regeneration Kgs
8x35 (20)	3.0
10x35 (30)	4.5
10x54 (50)	7.5
12x52 (60)	9.0
13x54 (75)	11.25
14x65 (100)	15.0
16x65 (150)	22.5
18x65 (200)	30.0
21x60 (250)	37.5
24x69 (350)	52.5

Softener system after care

Simplex Softener systems require virtually no after care – if a Clack WS1 1" CI softener valve manual or a Clack WS1 1" TC (3 button) valve manual is required, we can e-mail this to you.