

Water Softener



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Overview

A water softener is made up of a valve head, resin vessel and brine cabinet. The valve head diverts water through a resin vessel. As the water passes through the vessel, the hardness (calcium and magnesium) is trapped. The water produced is described as “soft water” as it contains less than 20ppm of CaCO_3 .



After a period of use, the resin becomes saturated with unwanted hardness salts. When this happens, brine from the brine cabinet is used to automatically wash, rinse and flush the hardness salts to drain.

Water softeners eliminate limescale from water either on the incoming main or on the cold feed to an appliance such as a dishwasher or plate heat exchanger.

Maintenance

Water softeners use sodium (salt) during the backwashing programme. This means that the brine cabinet will need to be topped up with salt periodically.

The valve head contains a number of moving parts including valves that used constantly. As with other valves, it is good practice to carry out periodic maintenance checks which include the cleaning and replacement of key components where necessary.

Installation Guidelines

The distance between the unit and a drain should be as short as possible. Since salt must be added periodically to the softener, the location should be easily accessible.

It is advisable to configure the distribution system in a way that ensures one drinking tap remains untreated by the water softener.

Salt usage

Salt is used to regenerate the water softener resin bed. This means the brine cabinet will need topping up from time to time. As a general rule in a residential situation, the softener will use approximately 25kg of salt every 6 to 8 weeks depending on water hardness and the amount of water used.

A water softener will only perform effectively if there is salt in the brine cabinet during the regeneration process. It is therefore recommended that the salt level does not fall lower than 6 inches from the base of the brine cabinet.

Water Softener

Sodium and health: British Water Guidelines

The relationship between sodium intake and increased risks of heart and blood pressure problems remains subject to debate within the medical profession. Research continues with some recent publications suggesting that reduced-salt diets may not contribute significantly to reducing coronary disease. However, the government, via the Food Standards Agency, promotes the need for a general reduction in salt intake with our food.

Sodium is contained in much of our everyday diet, especially snacks and processed foods, and it is quantified on many product labels.

Water softening introduces a low level of sodium into the water and softened water will satisfy the Water Quality Regulations in all but the few areas of very hard water with greater than 435 mg/l of hardness (calcium carbonate). The average amount of sodium in softened water is only a fifth of that in semi-skimmed milk and processed foods can contain up to 20 times more sodium than softened water.

Some people prefer to use and drink softened water; its use to prepare drinks and food can improve flavour and appearance.

There are two specific situations, however, where the use and drinking of softened water is inadvisable:

- In the reconstitution of infant formula powders, as softened water could affect its fine nutritional balance; and
- For anyone on a medically prescribed low sodium diet.

It is for these reasons and to allow for personal choice that, when installing a water softener, a mains water tap should be fitted, as described in the Water Fittings Regulations and consequently recommended in the British Water Code of Practice for Installation of Water Softeners. This tap also enables the water company to sample the unsoftened mains supply as part of their routine testing.

Eczema and skin problems

Over the years, many eczema sufferers have reported that the use of softened water has substantially reduced inflammation. Softened water is also known to have a calming, soothing effect on other skin problems, including psoriasis, but such benefits have not been formally established, although recent research by a leading UK dermatologist identified a strong link between hard water and childhood eczema.

Minimum hardness

The incidence of cardiovascular disease is slightly higher in populations with a NATURALLY soft water supply than where the water is moderately hard. Artificially softened water is chemically different from naturally soft water and there is no evidence that it has a similar effect.

1 1/2" Simplex WS Specification Sheet

All data relates to incoming water hardness of 300ppm

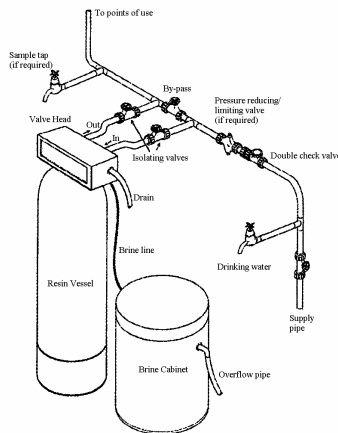
Working pressure: Min 1.4 BAR(20psi). Max 7BAR(100psi)

If daytime pressure is greater than 5BAR (75psi) then a pressure limiting valve must be installed

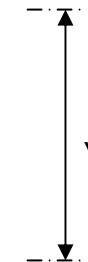
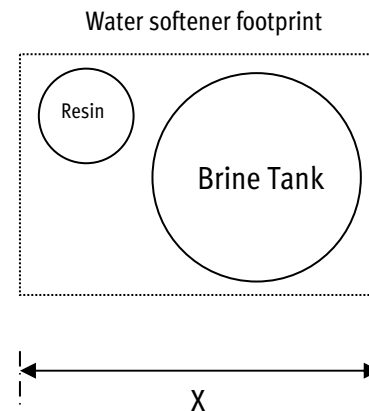
NB For the system to achieve flow rate where *sys max flow* is greater than *valve flow*, it should be noted that the pressure drop would increase, that is, be greater than 1.8 BAR

Model	Inlet/Outlet BSPM	Resin Vessel diameter (mm)	Overall height of resin vessel and control head (mm)	Brine tank diameter (mm)	Footprint X x Y	System max. flow (M ³ /hr)	System min. flow (M ³ /hr)	Valve flow data @ 1 & 1.8BAR pd (M ³ /hr)	Capacity between regeneration's @ 300ppm (M ³)	Capacity of brine tank (kg of salt)	Salt per regen (kg)	Rinse water per regen (ltr)	Drain outlet BSPF	Resin in each vessel
WS V16/6	1 1/2"	356	1798	555	971 x 615	5	0.8	6.8 & 9.5	16.6	200	15	420	3/4"	100
WS T/V22/5	1 1/2"	409	1,808	755	1224 x 815	6	1.08	7.3 & 10	22.5	350	20	660	3/4"	135
WS T/V33/3	1 1/2"	508	1834	755	1323 x 815	10	1.6	8.8 & 11.6	33.3	350	30	980	1"	200
WS T/V46/6	1 1/2"	625	1821	895	1580 x 955	13.75	2.2	9.5 & 12.7	46.6	800	41	1260	1"	275

Note: Adjoining pipework double check valve, sample tap, isolating valves and by-pass valves are not supplied by Springhill.



MS resin increases system max. flow by improving the contact efficiency between the incoming water and the



NB: The footprint allows a 30mm gap between each unit. To alter the shape of the footprint, the brine tank can be re-positioned in relation to the resin vessel.

1" Simplex WS Specification Sheet

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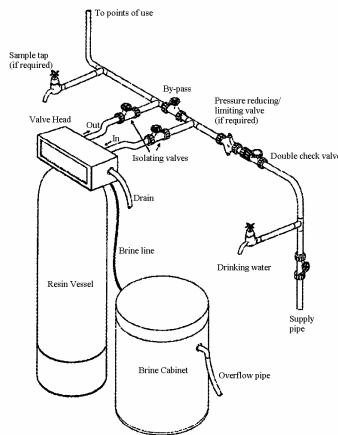
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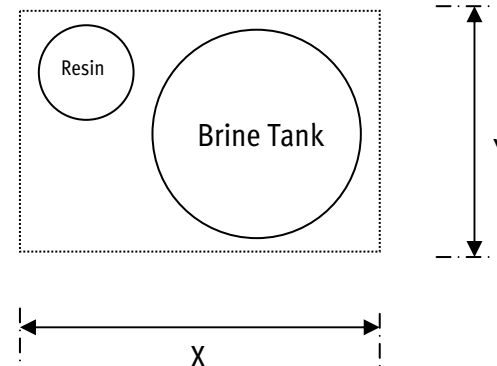
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WS T11/6E	1"	333	1,560	555	980 x 615	3.5	0.56	4.2 & 5.7	11.6	170	10.5	420	3/4"	70
WS T16/6	1"	356	1,800	555	1,000 x 615	5	0.8	4.3 & 5.9	16.6	170	15	420	3/4"	100

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Water softener footprint



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Specifying

For the removal of hard water a Base Exchange water softener shall be installed on the incoming mains or prior to the relevant equipment. Size should be as recommended by the manufacturer.

The water softener shall recharge using tablet salt which should be topped up periodically.

The water softener shall connect to a drain so that rinse water can be discharged into a suitably sized tundish or drain channel.

The unit shall connect to the mains operate from a 230 / 240, single phase, 50Hz fused power supply.

The unit shall be a Springhill WS water softener detailed in the adjacent table.

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Item	Rating
Configuration options	Simplex or Duplex
Control valve	Manual or Electronic
Maximum flow rate	Low pressure mercury
Minimum flow rate	___m ³ /cm ² @ a flow of ___m ³ /h
Maximum operating pressure	8 BAR
Amount of water used between each regeneration	_____litres
Amount of water used during regeneration	_____litres
Type of salt used	Tablet Water Softener Salt
Salt consumption per regeneration	_____Kg

3/4" Simplex WS Specification Sheet

All data relates to incoming water hardness of 300ppm

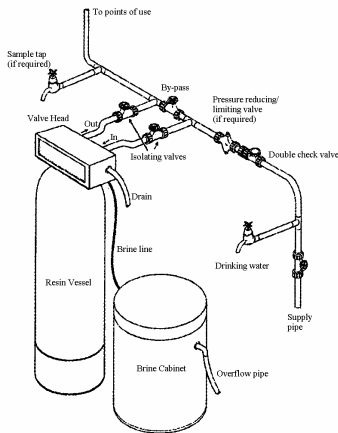
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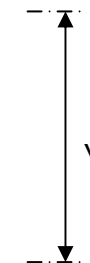
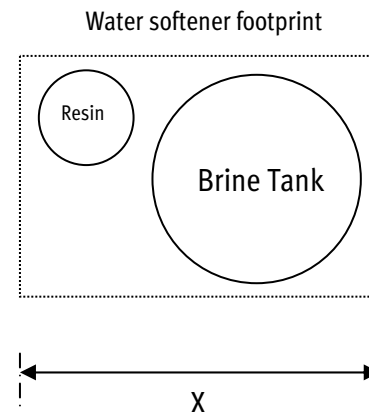
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Model	Inlet/Outlet BSPM	Resin Vessel diameter (mm)	Overall height of resin vessel and control head (mm)	Brine tank diameter (mm)	Footprint X x Y	System max. flow (M ³ /hr)	System min. flow (M ³ /hr)	Valve flow data @ 1 BAR pd (M ³ /hr)	Capacity between regeneration's @ 300ppm (M ³)	Capacity of brine tank (kg of salt)	Salt per regen (kg)	Rinse water per regen (ltr)	Drain outlet BSPF	Resin in each vessel
WS T/V1/6	3/4"	213	830	330	633 x 390	0.5	0.08	3	1.6	25	1.5	180	1/2"	10
WS T/V2/3	3/4"	193	1,120	460	743 x 520	0.7	0.11	3	2.3	80	2.1	188	1/2"	14
WS T/V 3/3	3/4"	234	1,120	460	784 x 520	1.0	0.16	3	3.3	80	3	225	1/2"	20
WS T/V 5/0	3/4"	259	1,240	555	904 x 615	1.5	0.24	3	5.0	100	4.5	255	1/2"	30
WS T/V 5/0MS	3/4"	259	1,240	555	904 x 615	2.1	0.24	3	5.0	100	4.5	255	1/2"	30
WS T/V 7/5	3/4"	259	1,600	555	904 x 615	2.25	0.36	3	7.5	100	6.8	285	1/2"	45
WS T/V 7/5MS	3/4"	259	1,600	555	904 x 615	3.15	0.36	3	7.5	100	6.8	285	1/2"	45
WS T/V11/6	3/4"	333	1,610	555	978 x 615	3.5	0.56	3	11.6	170	10.5	370	1/2"	70

Note: Adjoining pipework double check valve, sample tap, isolating valves and by-pass valves are not supplied by Springhill.



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2" Simplex WS Specification Sheet

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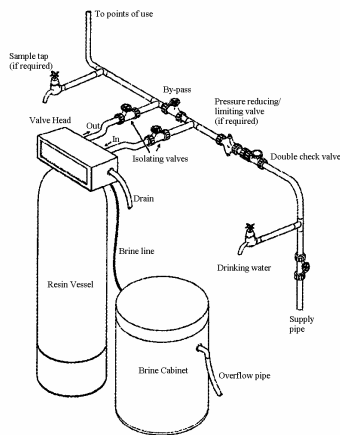
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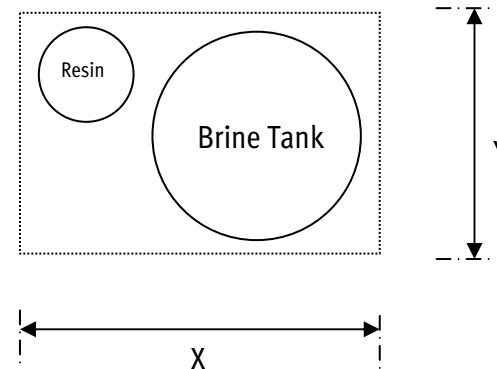
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WS T/V83/3	2"	785	2,377	1,020	1,865 X 1,080	25	4	14.8 & 20	83.3	800	75	1,260	1"	500
WS T/V125/0	2"	942	2,392	1,200	2202 X 1,260	30	6	19.1 & 23.8	125	1,000	112.5	2,200	1"	750

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Warranty

Provided the Water Softener has been sized, installed, commissioned and serviced according to the manufacturer's instructions, then the following warranty will apply.

Parts - Electrical and mechanical that fail due to faulty manufacture will be repaired/renewed by us for the period of the warranty, presently set at 12 months from date of installation.

The Water Softener has a performance guarantee, which will begin from the date of commissioning. The Warranty is restricted to faulty workmanship on electrical and mechanical parts. We will replace or repair at our discretion.

Terms of warranty

Under the terms of our warranty we would require the following actions to be taken prior to installing the Water Softener.

The Customers Responsibility

The 'Customer' will be responsible for ensuring permanent power supply to the system and that the Brine tank is continuously filled with Salt, tablet form preferable or Brine solution from a Saturator. (In cases where the reason for Softener not softening, which is a direct result of there being no Salt or Brine within the Brine tank, then a call out fee will be charged at a rate of £125.00 + VAT).

The Customer is responsible for informing Springhill Water Services of any problems with the unit within a period of 4 weeks, failure will forfeit the Warranty agreement. Please note that our Engineers are always pre-booked, please allow two weeks for an engineer to attend site. We will of course endeavour to improve on this.

The Customer is responsible for any accidental damage to the unit. Repair costs will be charged for if it is found to be an error on the client's side that has caused the problem.

Springhill Water Services can not be held responsible for any factors / occurrences which are beyond our control, i.e.; Flood Damage, Fire Damage, Pressure Surges, Power Failure's, Bomb Damage etc.

The Customer is responsible for ensuring that the Water Softener is maintained to the Manufacturer's recommendations. At least one service visit per annum should take place to ensure no blockages have occurred within the brine suction tubing and that Valve Control Mechanism's are operating correctly and that the seals / manifolds have no leaks, etc.; if necessary these must be replaced.

Springhill Water Services can provide an Annual Service Contract which covers two visits per annum, cost of which can be provided and will vary in price according to type and size of Softener.