Water Softeners

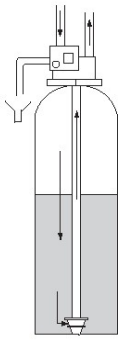
An automatic ion exchange water softener will remove hardness from the water which in turn saves money. Typical industrial applications include central heating protection, boiler feed water, car wash systems, RO pre – treatment, catering systems, cleaning applications, the retail sector and the electronics industry.

What is hard water?
Rainwater which falls on chalk and limestone dissolves and collects hardness minerals such as calcium and manganese. This water collects in underground aquifers before either naturally coming back to the surface as streams or being pumped via a borehole. The minerals naturally drop out of solution forming scale deposits, especially when the water is heated. In many applications this scale build up becomes unsightly or interferes with the efficiency of applications, and needs to be removed. Just 1.6mm of scale build up will cause a 12% loss in heating efficiency in boiler water. Softened water also reduces the excessive use of detergents and soaps.

Applications

Domestic houses	Boiler feed water
Industrial/domestic hot water systems	Pure Water pre-treatment (eg reverse osmosis).
Food industry	Electronics industry
Window/car cleaning industry	Chemical industry

How does it work?
An automatic water softener consists of a pressure vessel filled with resin. Located on the top of the pressure vessel is the control valve. The water is passed through the control valve and down through the vessel. As the water passes across the resin bed, the calcium and magnesium attach to the resin so the water leaving the unit is soft.
Periodically, depending on how much water is used, the resin needs to be refreshed. This is done by flushing a small amount of salt (stored in an external brine tank), though the resin vessel. Once this process has been completed the resin is refreshed and ready to begin again.

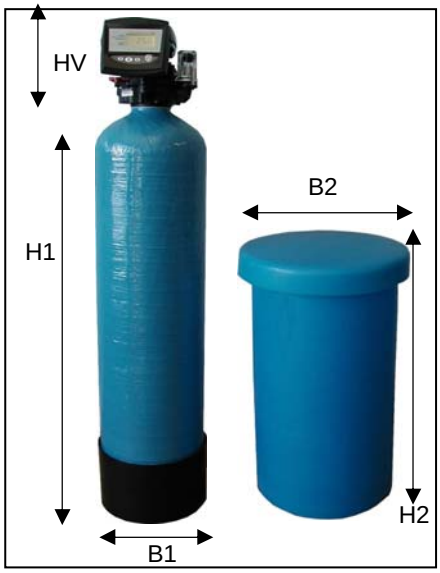


How to size.
On average 160 litres of water is used per person per day. This normally occurs in two peak periods, one in the morning and one in the evening. A family of four typically uses 700 litres of water per day but may use 300 litres in an hour in the morning. Larger households, farms, stables and irrigations systems all use more water.

When sizing a system the average flow and the peak flow rate need to be taken into account. Try and size a system to run for 3 days without regenerating or a duplex for 12 hours. The vessel size is often given as the diameter and the height (in inches).
Recommended operating pressure range 20 to 120 psi.
Water temperature range from 2 to 38 degrees Celsius
The average flow rate is normally 40 bed volumes (40 times the litres of resin) although peak flows are higher.

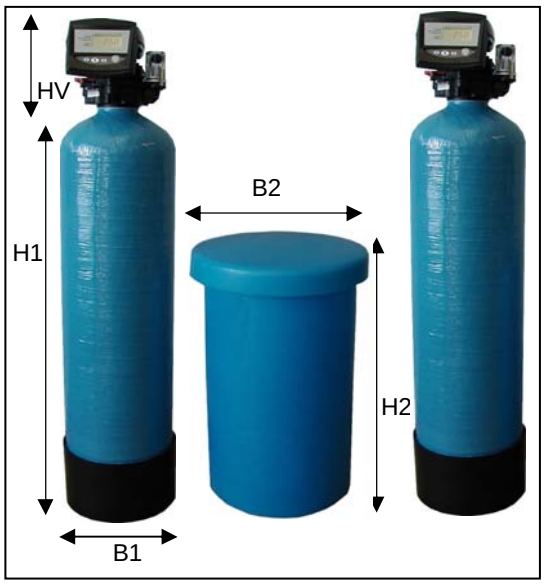
Simplex Softener Data

Resin Vol (l)	Vessel Ø" X h"	Flow m3/h	Capacity @300ppm	Valve Type	Salt (Kg)	BT Vol	BT (B2)	BT (H2)	Ves (B1)	Ves (H1)
20	8-35	**0.8**	3.3	255/WS1	3	35	320[R]	440	220	904
30	10-35	**1.2**	5	255/WS1	4.5	75	320[R]	890	269	905
40	10-44	**1.6**	6.7	255/WS1	6	125	432[R]	839	269	1124
50	10-54	**2.0**	8.3	255/WS1	7.5	125	432[R]	839	269	1387
60	12-48	**2.4**	10	255/WS1	9	125	432[R]	839	315	1235
75	13-54	**3.0**	12.5	255/WS1	11	200	670	830	341	1374
125	14-65	**5.0**	20	268/WS1	19	200	670	830	380	1660
150	16-65	**6.0**	25	278/WS125	22	300	760	1000	420	1660
200	18-65	**6/8**	33	278/WS125	30	400	870	930	510	1750
250	21-60	**10**	41.6	298/WS1.5	37	400	870	930	552	1640
350	24-69	**14**	58	298/WS2	52	500	860	1230	610	1890
500	30-72	**17/20**	83	298/WS2	75	750	1000	1100	770	2050
700	36-72	**17/26**	116	298/WS2	105	750	1000	1100	927	2150
1000	42-78	**40**	166	WS3	150	1000	1070	1290	1074	2435
1250	48-82	**50**	208	WS3	187	1750	1260	1500	1226	2450
2250	55-120	**55**	375	WS3	337	1750	1260	1500	1429	3081



Autotrol Valves			
Valve	Inlet/ outlet	Drain	HV
255	¾"	½"	200
268/278	1"	3/4 "	210
298	2"	1½ "	291

Clack Valves			
Valve	Inlet/ outlet	Drain	HV
WS1	1"	1"	180
WS125	1¼"	1"	180
WS15	1½"	1"	182
WS2	2"	1½ "	217
WS2H	2"	2"	295
WS3	3"	3"	320



Duplex Softeners

Resin Vol (l)	Vessel Ø" X h"	Flow m3/h	Capacity @300ppm	Valve Type	Salt (Kg)	BT Vol	BT (B2)	BT (H2)	Ves (B1)	Ves (H1)
20	8-35	**0.8**	3.3	255/WS1	3	125	432[R]	839	220	904
30	10-35	**1.2**	5	255/WS1	4.5	125	432[R]	839	269	905
50	10-54	**2.0**	8.3	255/WS1	7.5	125	432[R]	839	269	1387
60	12-48	**2.4**	10	255/WS1	9	200	670	830	315	1235
75	13-54	**3.0**	12.5	255/WS1	11	300	760	1000	341	1374
100	14-65	**4.0**	16.7	268/WS1	19	400	870	930	380	1660
150	16-65	**6.0**	25	278/WS125	22	500	860	1230	420	1660
200	18-65	**8.0**	33	278/WS125	30	500	860	1230	510	1750
250	21-60	**12.5**	41.6	298/WS1.5	37	750	1000	1100	552	1640
350	24-69	**14**	58	298/WS2	52	750	1000	1100	610	1890
500	30-72	**17/20**	83	298/WS2	75	1000	1070	1290	770	2050
700	36-72	**17/26**	116	298/WS2	105	1000	1070	1290	927	2150
1000	42--78	**40**	166	WS3	150	1750	1260	1500	1074	2435
1250	48-82	**50**	208	WS3	187	1750	1260	1500	1226	2450
2250	55-120	**55**	375	WS3	337	1750	1260	1500	1429	3081

Iron and manganese removal systems are also available as are other medias such as pH correction, sand, carbon etc

[R] – rectangular brine tank with this as the size of the largest side. Vol is in litres, and height and width in mm unless otherwise stated

Sizes and dimensions are for indication purposes only and may change without notice.