

## PRODUCT INFORMATION

### Water Softener units

#### What is hard water?

Rainwater which falls on chalk and limestone dissolves and collects hardness minerals such as calcium and magnesium. This water collects in underground aquifers before either naturally coming back to the surface as streams or being pumped out 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. Hard water can be softened by passing the water through an ion exchange resin where the calcium and magnesium are absorbed. Periodically the hardness needs to be flushed away and the resin regenerated with a brine solution

#### Applications

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 ions of calcium and magnesium become attached to the resin so the water leaves the unit with these ions removed. Periodically, depending on how much water is used, the resin needs to be regenerated. This is done by flushing a small amount of brine (stored in an external brine tank), through the resin vessel. This process displaces the ions of calcium and magnesium and replaces them with sodium. At the end of this cycle the brine is flushed away and the unit is ready to be put back on line. When in use the hardness (calcium and magnesium) replaces the sodium held on the regenerated resin and so the softened water will contain more sodium than the raw water. When using a softener for drinking water it is very important that we know the levels of hardness and sodium in the raw Water in order to calculate the sodium level in the treated water. Sodium must not exceed 200 mg/l in drinking water



Vessel	10.44	10.54	12.52	13.54	14.65	16.65
Forward flow cu.m.h	1.6	2.0	2.5	3.0	5.0	6.0
Capacity in cu.m/h @ 300 ppm CaCO3	6.7	8.3	10	12.5	20	25

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