

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.

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 salt.

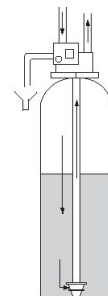
Applications

- 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 calcium and magnesium attached 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), through 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. The tables below indicate the size of system needed. When sizing a system the average flow and the peak flow rate need to be taken into account.

Vessel size Cxxyy - C = composite material, xx is the diameter and yy is the height (inches)

Recommended operating pressure range 20 to 120 psi.

Water temperature range from 2 to 38 degrees Celsius

The maximum flow rate is normally 40 bed volumes (40 times the litres of resin)

| Valve Type | 255 | 268 | 278 | Magnum |
|----------------------------|---------------------|---------------------|---------------------|--------|
| Inlet & outlet connections | 3/4" | 1" | 1" | 1.5" |
| Drain connection | 1/2" hose connector | 3/4" hose connector | 3/4" hose connector | 1.5" |

Simplex Unit – Time-clock

| Kit Number | 20.0461 | 20.0462 | 20.0463 | 20.0464 | 20.0465 | 20.0466 | 20.0467 | 20.0469 | 20.0470 | 20.0471 | 20.0473 | 20.0255 | 20.0257 | 20.0259 | 20.0261 |
|-----------------------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vessel size | C735 | C835 | C935 | C1035 | C1044 | C1054 | C1248 | C1354 | C1465 | C1665 | C1865 | C2160 | C2469 | C3072 | C3672 |
| Valve Type & timer | 255 742 | 255 742 | 255 742 | 255 742 | 255 742 | 255 742 | 255 742 | 268 742 | 268 742 | 278 742 | 278 742 | Mag 942 | Mag 942 | Mag 942 | Mag 942 |
| Service flow rate m3/hr | 0.56 | 0.72 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 | 3.0 | 4.0 | 5.0 | 5.7 | 9 | 12 | 15 | 15.0 |
| Capacity @ 300 ppm CaCO3 m3 | 2.3 | 3.0 | 3.7 | 4.7 | 5.8 | 7.0 | 8.3 | 12.5 | 16.7 | 20.8 | 29.1 | 37.5 | 50 | 83 | 116 |
| Salt usage in Kgs | 1.7 | 2.2 | 2.6 | 3.4 | 4.2 | 5 | 6 | 9 | 12 | 15 | 21 | 27 | 36 | 60 | 84 |

Simplex – Metered

| Kit Number | 20.0481 | 20.0482 | 20.0483 | 20.0484 | 20.0485 | 20.0486 | 20.0487 | 20.0489 | 20.0490 | 20.0492 | 20.0493 | 20.0256 | 20.0258 | 20.0260 | 20.0262 |
|-----------------------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vessel size | C735 | C835 | C935 | C1035 | C1044 | C1054 | C1248 | C1354 | C1465 | C1665 | C1865 | C2160 | C2469 | C3072 | C3672 |
| Valve Type & timer | 255 742 | 255 742 | 255 742 | 255 742 | 255 742 | 255 742 | 255 742 | 268 742 | 268 742 | 278 742 | 278 742 | Mag 942 | Mag 942 | Mag 942 | Mag 942 |
| Service flow rate m3/hr | 0.56 | 0.72 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 | 3.0 | 4.0 | 5.0 | 5.7 | 9 | 12 | 15 | 15.0 |
| Capacity @ 300 ppm CaCO3 m3 | 2.3 | 3.0 | 3.7 | 4.7 | 5.8 | 7.0 | 8.3 | 12.5 | 16.7 | 20.8 | 29.1 | 37.5 | 50 | 83 | 116 |
| Salt usage in Kgs | 1.7 | 2.2 | 2.6 | 3.4 | 4.2 | 5 | 6 | 9 | 12 | 15 | 21 | 27 | 36 | 60 | 84 |

Duplex Unit – Metered

| Kit Number | 20.0271 | 20.0272 | 20.0273 | 20.0274 | 20.0275 | 20.0276 | 20.0281 | 20.0282 | 20.0283 | 20.0284 | 20.0293 | 20.0294 | 20.0295 | 20.0296 |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vessel size | C835 | C935 | C1035 | C1044 | C1054 | C1248 | C1354 | C1465 | C1665 | C1865 | C2160 | C2469 | C3072 | C3672 |
| Valve Type & timer | 255 Ready | 255 Ready | 255 Ready | 255 Ready | 255 Ready | 255 Ready | 268 Perf | 268 Perf | 278 Perf | 278 Perf | Mag Dup | Mag Dup | Mag Dup | Mag Dup |
| Service flow rate m3/hr | 0.72 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 | 3.0 | 4.0 | 5.0 | 5.7 | 9 | 12 | 15 | 15 |
| Capacity @ 300 ppm CaCO3 m3 | 3.0 | 3.7 | 4.7 | 5.8 | 7.0 | 8.3 | 12.5 | 16.7 | 20.8 | 29.1 | 37.5 | 50 | 83 | 116 |
| Salt usage in Kgs | 1.7 | 2.6 | 3.4 | 4.2 | 5 | 6 | 9 | 12 | 15 | 21 | 27 | 36 | 60 | 84 |

Crystal Right, Birm, Manganese dioxide, and Greensand kits are also available as are other medias such as pH correction, sand, carbon etc.