

Terminologies!

Top Screen: This is a basket with slots fitted to the base of a water softener valve/CFU head at the top of the riser tube. The slots allow water to pass through but its main purpose is to keep resin in the vessel when the softener is regenerating.

Bottom Screen: This is a basket fitted to the bottom of riser with slots that allows water to flow through but prevents resin escaping.

The water enters the resin vessel through the slots of the top screen, passes through the resin and out through the slots into the bottom screen into the riser and then out through the softener valve to service. The slots are big enough to allow water through, but small enough to stop resin escaping.

Riser: Not someone getting out of bed early! It is the central tube inside the resin vessel that allows the treated water to return to service, having previously been 'cleansed' by the resin.

Salt Tabs: An abbreviation of tablet salt.

Resin Vessel: A sealed vessel that holds the resin contained within it.

Resin: A styrene bead that removes levels of calcium determined by how it is regenerated. Magnified it looks like a sponge!

Examples: De-alk resin will remove Temporary Hardness, whereas softener resin will remove Total Hardness.

Chlorine Attack: Relates to when resin has been subject to high chlorine levels. Normally happens when the water board has been working on the mains water somewhere in the local area and they disinfect the pipework with chlorine up to 100 times stronger than normal. High levels of chlorine damage resin beads by splitting them. This results in the overall mass of beads increasing and in all probability top or bottom screen splitting allowing resin escape. See link [Resin Degradation](#)

Resin Blinding: As the description suggests, the resin has been blinded i.e. covered. In most cases it's from iron/rust from the mains supply caused by the water board working on a water main and disturbing any iron/rust deposits. Nigh on impossible to remove these build ups from resin.

Temporary Hardness: The actual part of water that causes scale.

Permanent Hardness: Part of Total Hardness, but doesn't actually cause any real scale issues.

Total Hardness: Is Temporary Hardness and Permanent Hardness added together.

De-alk Resin: Abbreviation for De-alkalisation resin. Is used to remove temporary hardness from water.

WAC Resin: Weak Acid Cation resin. The true name for de-alk resin

SAC Resin: Strong Acid Cation resin. The true name for water softener resin. Used to remove total hardness from water.

Brine: What you get when you mix salt and water. Brine is what is used to regenerate the resin. It contains 2 constituents, one being sodium, the other being chlorides. The sodium is the actual part what regenerates the resin. The chlorides do nothing at all and pass through the resin directly to drain.

Brine soak: Terminology used to describe the creation of brine. 95% saturated brine is created within 30 minutes. Full brine takes up to 4 hrs. It is important to remember that this 'creation time' is added on to a regen frequency in duplex operations. Salt must be above water level at all times to create brine.

Regeneration: A cleansing of the resin (see link [How a Water Softener Works](#))

Chlorides: An impurity found in certain mains water supplies. Chlorides will corrode metals leading to failure of components within the appliance. They are especially prevalent in the food service industry. Often quoted in association with water softeners due to lack of knowledge how a softener regenerates.

Important: Water softeners do not create chlorides in softened water (see [Chlorides link](#))

Time Control Softener: Where the regeneration frequency is controlled by a Time Clock built into the softener control valve. Regeneration frequency is determined by softener output / daily demand, to give so many days availability of soft water between regens. Regen is at 2am. These models are primarily used in the food service industry.

Meter Control Softener: Where the regeneration frequency is controlled by an internal water meter built into the outlet of the softener control valve. Every litre passing through the softener is measured and once a pre-determined amount of water has passed through, the control valve will activate a regeneration at 2am.

Proportional Brining: Works in conjunction with Meter Control. Works out the exact amount of soft water capacity used and adds water to the salt to create enough brine to clean the exhausted resin only. Only activated when there is not enough soft water for a further 24hr period.

Timed Brine Fill: Where the softener control valve opens a valve for a period of time and a measured amount of water enters the salt to make brine.

Live Brine Line: Where there is a float in a tube (brine well) that has a mains supply of water (from the softener control valve) at all times except during the regeneration. The float sets the level of water/brine. Float height is based on the salt compartment being full of salt tablets. It is important to keep the salt chamber full at all times on these units.

Brine Well: A vertical tube fixed to side wall inside the salt compartment. Has a series of very thin slots at the bottom to allow brine flow and a cap at each end to keep salt out. Float sits inside the brine well. Is sometimes called a 'chimney'!

GAC: Granular Activated Carbon. Is used in water filters to absorb chlorine, bad tastes and odours, organic chemical and herbicides and pesticides

SIAC: GAC impregnated with silver. Silver stops bacterial growth within the filter. Please do not get bacteria confused with cysts.

Cysts: Living organism occasionally found in mains water. Once enters the human body it is very difficult to remove. Antibiotics are not always successful. Examples: Cryptosporidium and Giardia.

Micron Rating: A measurement of level of filtration.

Sub-Micron Rating: A level of micron rating below one, necessary to guarantee prevention of Cryptosporidium and Giardia entering the system.

Polyphosphate: A food grade product that dissolves into water to coat calcium particles to stop them coming together as scale. Good up to 300ppm, but with the majority of hard water areas in the UK being above this hardness level, its effect decreases at high hardness levels. Monarch use polyphosphate in AP100 and QTT filters

Siliphos: See polyphosphate, but up to 500ppm. Monarch uses Siliphos in the post filters of the SXP Scaleouts and MA filters.

Nominal: A guide to its size

Actual: To be used in conjunction with Nominal. Actual determines actual size/capacity etc. Examples: 25 gallon nominal water tank with an actual storage of 20 gallons. 1 micron rating water filters with actual micron rating of 2. Note reversal of numbers when describing water filter rating levels!

pH: Level of acidity in water. Especially relevant in CTU/CFU applications

Erosion Corrosion: Often confused with general corrosion. Erosion Corrosion is linked to pH levels and is associated to blue/green stains on taps etc. See link [Blue Green Stains](#)

Aggressive Water: See Erosion Corrosion

Saltless Water Softeners: A water softener needs salt to regenerate. There is no such thing anywhere in the world as a saltless water softener. Water is officially classified as soft by Defra (government body) if under 50ppm of hardness. Saltless water softeners do not remove the hardness ions in the water, so cannot reduce the hardness levels.

http://www.dwi.gov.uk/consumers/advice-leaflets/hardness_map.pdf

Water conditioner: The below test is taken from Drinking Water Inspectorates leaflet on water hardness. Please note the recommendation '*not for the household situation*'

Water conditioning devices

Some devices are sold on the basis that they produce a magnetic field which reduces scaling by altering the shape of the crystals from needle like to rhomboid – which means they are less adherent to the heating elements in boilers. These devices do not soften the water. The science behind them is based on continuous water flow and they were designed originally for large industrial water systems, not for the household situation, where water tends not to flow for up to 8 hours in 24 hours (at night). If you are considering purchasing such a device it is recommended you do so only on a sale or return basis, and that you request data on performance in the home setting.

Capacity: Normally given as litres of treated water available before unit needs regenerating (water softener) or changing the cartridge (water filter)

ppm: Level of water hardness. One French degree = 10 ppm. One English degree = 14.3 ppm. (See link [Water Hardness](#) conversion table)

mg/l: Another way of describing ppm i.e. 350 mg/l is the same as 350 ppm

Grains per gallon: An American version of measuring water hardness. 1 gpg = 17.1 ppm

Litres per regen: Amount of treated water available before the unit needs regenerating

lph: Litres per hour of water being required or be produced

lpm: Litres per minute of flow rate required or be produced

lps: Litres per second. Quite often quoted by architects when specifying flow rates in calculating size of water softener models required

QC fitting: Not your barrister! Relates to a Quick Connect fitting for ease of use maintenance

Push Fit fitting: See QC

Isolating Valve: Used to isolate water from appliance

Bypass Valve: Is used to allow water to 'bypass' an appliance. Normally closed but opened when the appliance needs to be isolated. Used in conjunction with inlet and outlet valves. When inlet and outlet are open, bypass is closed. Vice versa when appliance isolation is required.

Check Valve: Not to be confused with a non-return valve! A check valve is a legally required fitting that prevents water returning back into the mains supply. Used as a protection to protect against the Fire Service sucking water from people's property if they connect their hoses to a fire hydrant. A single check valve is required in domestic dwellings, whereas a double check valve is required in commercial applications. They are often confused with a non-return valve. A check valve has a positive action shut-off normally operated by a spring, whereas a non-return normally can have a swing seal flap inside the fitting.

Hard Water Tap: The Water Supply (Water Fittings) Regulations (see link [June 2007](#)) require that "all premises supplied with water for drinking purposes shall have at least one tap conveniently situated for the drawing of drinking water". Softened water meets the drinking water purposes (wholesomeness) criteria unless the incoming water hardness exceeds 425 mg/l. The WRAS Information and Guidance Note for Softeners, acknowledges this and stresses that provision of a hard water tap is essential where the softened water exceeds 200 mg Na/l. (see link [Drinking Softened Water](#))

Notes:

200 mg Na/l of sodium is equivalent to 425 mg/l hardness.
1 mg of sodium is 2.125 mg hardness.

Observation notes:

1. The NHS states that bottle fed babies can drink softened water as long as the total sodium content remains below 200ppm i.e. 425ppm hardness.
2. Monarch recommends that for people on low sodium diets, it is recommended to install a potable mains hard water tap.

Ceramic Bead Technology (CBT): Prevents scale forming cations i.e. Ca^{2+} and Mg^{2+} coming together as scale. Glass coated ceramic beads, that when activated by the flow of water, convert any scale causing calcium and magnesium ions into non scale forming calcium and magnesium crystals. The effect is permanent, even with water heated up to 380C and works up to 600ppm. Used exclusively by SXP Scaleout units throughout the UK.

Template Assisted Crystallization (TAC): Similar to CBT, but bead surface has no longevity as is not protected by silica coating. Often associated with claims of being a saltless water softener!

Permanent Assisted Crystallization (PAC): Exactly as per CBT. Both CBT and PAC are associated with Monarch Scaleout units.

Primary circuit: Is the sealed side of the boiler that is effectively the radiators. Once filled up with water (fill with hard water by putting softener onto bypass), this water stays in the radiators for nigh on always. Average primary/radiator system holds 100 litres of water. Same water goes round the radiators unless removed for some reason (see [HHIC position paper](#))

Secondary side: The domestic hot and cold water side of your boiler (where all the benefits of soft water are enjoyed) i.e. hot and cold taps, shower, bath, appliances, toilets, hot water cylinders etc

R.O: Short for Reverse Osmosis. Is where water passes under pressure through a semi-permeable membrane that has a series of very fine holes. Larger dirty water molecules because of their size cannot pass through the membrane holes and run to drain. Smaller pure water molecules pass through to give end use pure clean water free of all impurities.