

Filtration Media Systems – ADI 9100TS Softeners



The 9100TS Water Treatment System provides a 24/7 flow of softened water. The system's dual sensors measure the conductivity of the resin bed to determine the true softening capacity. This advanced technology ensures the system provides 100% of its treatment capacity before regenerating. The 9100TS pairs superior valve design and the sophisticated Logix™ controller electronics for unrivalled performance and dependability. Advanced sensor technology constantly adjusts to meet variable feedwater hardness and ensure maximum efficiency with minimum salt consumption.

The 9100TS uses a pair of gold-plated electronic sensors located in the side of the media tanks to monitor water hardness as water flows through the media bed and is progressively softened. This method provides:

- **Consistent quality** – High hardness levels in the treated water are detected by the sensors and operation switched to the second media bed while the first is regenerated. No untreated water will exit the system.
- **High efficiency** – the system uses 100% of its treatment capacity before regenerating, saving both water and regenerant. The sensors are always operational to guard against changes in the water condition, responding only when the time is right to protect water quality.

Where there are appreciable or variable levels of suspended solids, the 9100TS is paired with an automatic backwash CNX zeolite-based sediment removal system capable of removal of suspended solids greater than 5-microns. ACF automatic carbon filters may also be used to taste, colour and odours. UV sanitation systems may also be incorporated to provide protection against microbial contamination.

How it Works

Advanced Sensor Technology

- Super monitoring with non-corrosive 18-karat gold plated sensor probes
- Replaces traditional metered and time clock controls

24/7 Monitoring

- Automatically adjusts to changing water conditions
- A continuous supply of quality water is always available

Eco- Friendly

- Fewer regeneration and rinse cycles conserve water and regenerant.

Upflow Regeneration

- Improves efficiency and eliminates resin bed compaction



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The 9100TS is ideal for use where feedwater quality varies season-to-season and from different water supplies feeding into the same property. They eliminate continuous manual measurement and adjustments commonly found with conventional water softeners and make sure that the only water exiting the treatment system has been softened.

Twin Sensor Water Treatment System – 9100TS



Features and Benefits

- **Salt and water savings** by using 100% capacity of the tank service before switching to the second tank
- **Dual sensor** that reads varying shifts in hardness and adjusts valve settings for optimal performance and savings
- **Regenerates immediately** when needed for continuous soft water
- **Regenerates with soft water** and keeps system clean for optimum operating efficiency and minimum maintenance
- **Proven technology** and performance
- **Corrosion-free** fibre-reinforced polymer valve body
- **Innovative** second tank quick connection
- **LOGIX™** timer
- **Perfect** for light commercial/heavy residential systems that require twin tank conditioning capabilities

Options

- Fibre-reinforced polymer or lead-free brass meter
- Bypass valve (fibre-reinforced polymer or lead-free brass)
- 32mm high flow distribution system

Valve Specifications

Valve material	Fibre-reinforced polymer
Inlet/Outlet	¾", 1" or 1 – 1 ¼"
Cycles	6

Flow Rates (50psi Inlet) – Valve with Meter

	¾" Meter	¾" Turbine	1" Meter
Continuous (15psi drop)	18gpm	19gpm	21gpm
Peak (25psi drop)	24gpm	25gpm	28gpm
Cv (flow at 1psi drop)	4.8	5	5.1
Max. backwash (25psi drop)	8.5gpm	8.5gpm	8.5gpm

Regeneration	Dimensions	Typical Applications	Additional Information
<ul style="list-style-type: none"> • Upflow only • Adjustable cycles • Time available: Logix – 199 mins/cycle 	<ul style="list-style-type: none"> • Distributor Pilot: 1.05" O.D & 32mm • Drain line: ½" NPT • Injector Brine System: 1600 • Mounting Base: 2 – ½" – 8 NPSM 	<ul style="list-style-type: none"> • Water softener: 6 – 16" diameter 	<ul style="list-style-type: none"> • Electrical rating: 24V, 110V, 240V – 50Hz, 60Hz • Estimated shipping weight: Logix valve: 12lbs • Pressure: Hydrostatic: 300psi Working: 20 - 125psi • Temperature: 34 - 110°F (cold water only)

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When water passes through soil containing Calcite, Gypsum or Dolomite, it dissolves some of the salts it encounters as it passes down to an aquifer or water table. Salts that contribute to hardness include cations (metals) such as Calcium, Magnesium, and Iron. Waters containing appreciable levels of calcium or magnesium are referred to as Hard Waters and these will interfere with the action of soaps and lead to the build-up of limescale in plumbing and possible galvanic corrosion. Iron derived salts result in scale and rust-coloured stain formation on contact surfaces.

There are two types of hardness commonly referred to:

Temporary Hardness is due to the presence of Calcium Hydrogen Carbonate $\text{Ca}(\text{HCO}_3)_2$ and Magnesium Hydrogen Carbonate $\text{Mg}(\text{HCO}_3)_2$. Both these decompose when heated and the original insoluble carbonate forms (CaCO_3 and MgCO_3) result, causing scale precipitation on wetted surfaces. Heating removes some of the calcium and magnesium ions from the water and the hardness due to the presence of Calcium and Magnesium hydrogen carbonates is said to be temporary.

In general, an increase in water temperature will increase the solubility of most salts but there are some exceptions such as CaCO_3 , CaSO_4 , MgCO_3 , $\text{Mg}(\text{OH})_2$ which become less soluble with increasing temperature.

Permanent Hardness is usually due to the presence of Calcium or Magnesium sulphates in the water and is not removed by heating. Removal of these hardness compounds by ion-exchange processes such as a water softener is generally required.

Total Permanent Hardness = Calcium Hardness + Magnesium Hardness

On heating hard water, any dissolved calcium and magnesium form a scale on the wetted surfaces. When hard water is used for bathing or washing, the calcium and magnesium salts form a scum with the soap that coats the skin, hair or clothing and remains after rinsing.

Table of Water Hardness and Classification

Classification	Hardness in mg/L	Hardness in mmol/L	Hardness in dGH/°dH	Hardness in gpg
Soft	0 - 60	0 - 0.60	0.3 - 3.00	0 - 3.50
Moderately Hard	61 - 120	0.61 - 1.20	3.72 - 6.75	3.56 - 7.01
Hard	121 - 180	1.21 - 1.80	6.78 - 10.08	7.06 - 10.51
Very Hard	≥ 181	≥ 181	≥ 10.14	≥ 10.57

Water softener systems for domestic use generally include a media vessel containing a specific type of ion-exchange resin suitable for the removal of calcium and magnesium from the feedwater supply. Some resins may also remove soluble iron (where present), however it should be noted that iron removal with water softener ion exchange resins requires significantly more ion-exchange capacity than for waters free from iron. Hard water flows through the media vessel and softener resin where all hardness minerals are exchanged for Sodium. The resultant Soft Water is essentially free from Calcium or Magnesium. Water softeners will not remove taste, colour or odours from the feedwater but will remove common hardness minerals such as calcium, magnesium and a limited amount of iron.