

## Twin Water Softening System

Water softening involves the use sodium form cation exchange resins in an ion exchange column to exchange hardness causing ions such as calcium, magnesium and barium, etc.

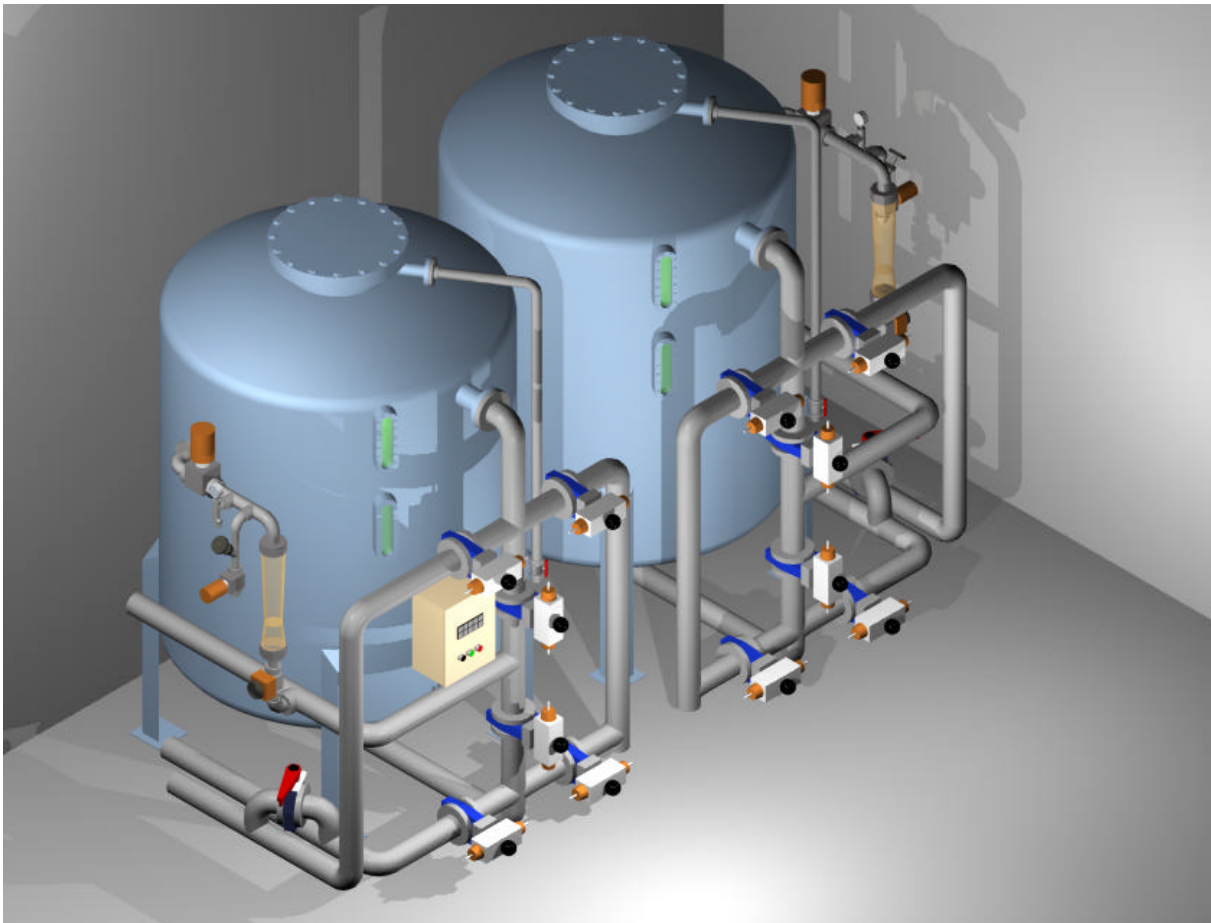
Hard water - water containing calcium and magnesium ions is admitted to the ion - exchange column.

Before being contacted by the water, the resin particles have associated with them only mobile, replaceable sodium cations and fixed, irreplaceable anions. There are, of course, thousands of particles in a typical exchanger unit, each particle containing not just a few ions, but literally billions.

Exchange is initiated. Some of the calcium and magnesium ions are adsorbed by the resin, which in turn, releases sodium ions. Two sodium ions are released for each calcium or magnesium ion.

The resins particle is exhausted of its sodium ions; now contains calcium and magnesium. In actual practice, a few sodium ions generally remain on the exchanger.

The effluent water is now soft - does not contain hardness producing cations. The resin bed may now be regenerated by adding to it a solution containing sodium ions - most frequently, sodium chloride.



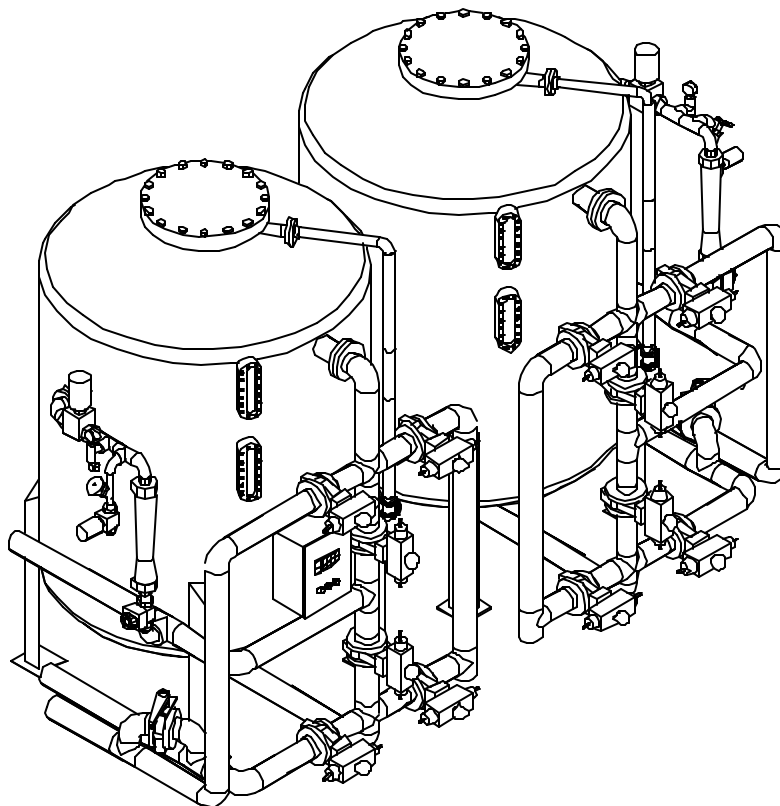
**60" TWIN SOFTENING SYSTEM**

## Standard Features

- Rubber lined carbon steel vessels designed for 7 bar working pressure.
- Sight glass to permit visual inspection of resin level and backwash flow.
- PVC SCH 80 face piping and valves.
- Separate regeneration distributors for efficient distribution of regenerant flow.
- Flow controllers for backwash flow rate control.
- PVC Pneumatic Control valves.
- Feed water rotameter.
- Regeneration flow rotameters.
- Inlet and Outlet pressure gauges.
- PVC eductors for regenerant introduction.
- Sampling ports for brine concentration.
- Sampling cylinders for non-hazardous sampling.
- Programmable Logic Controller.
- NEMA 4X Control panel for electrical and solenoid valves.
- Indicator lights to show each regeneration step.
- Automatic and manual step through of each regeneration steps.

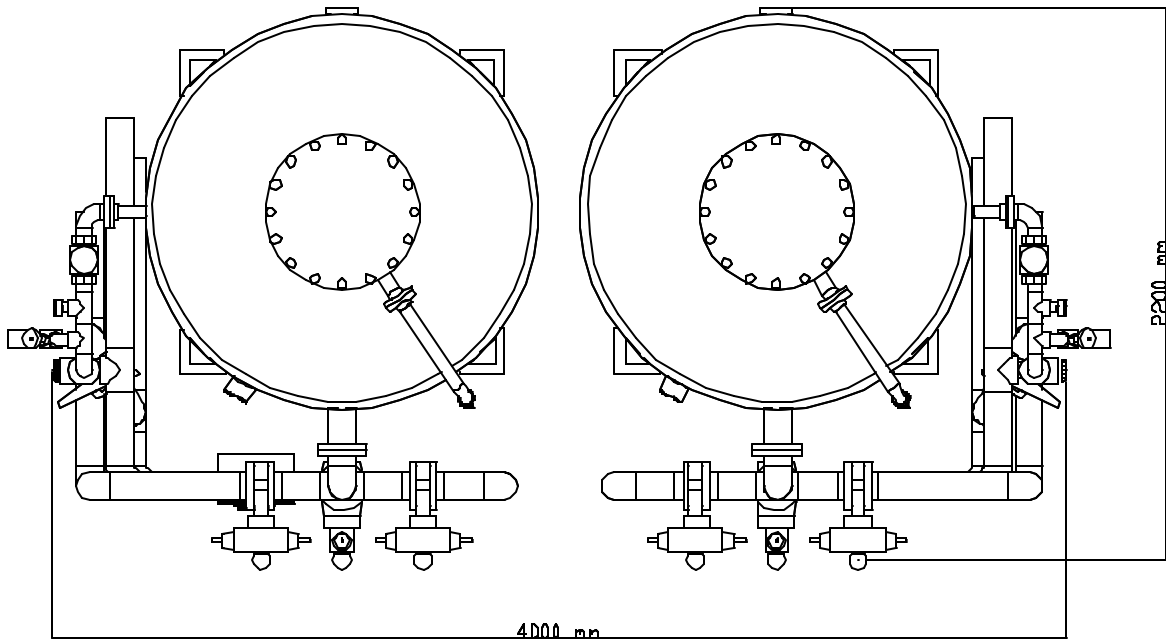
## Optional Features

- Electronic flow meter (Optional)

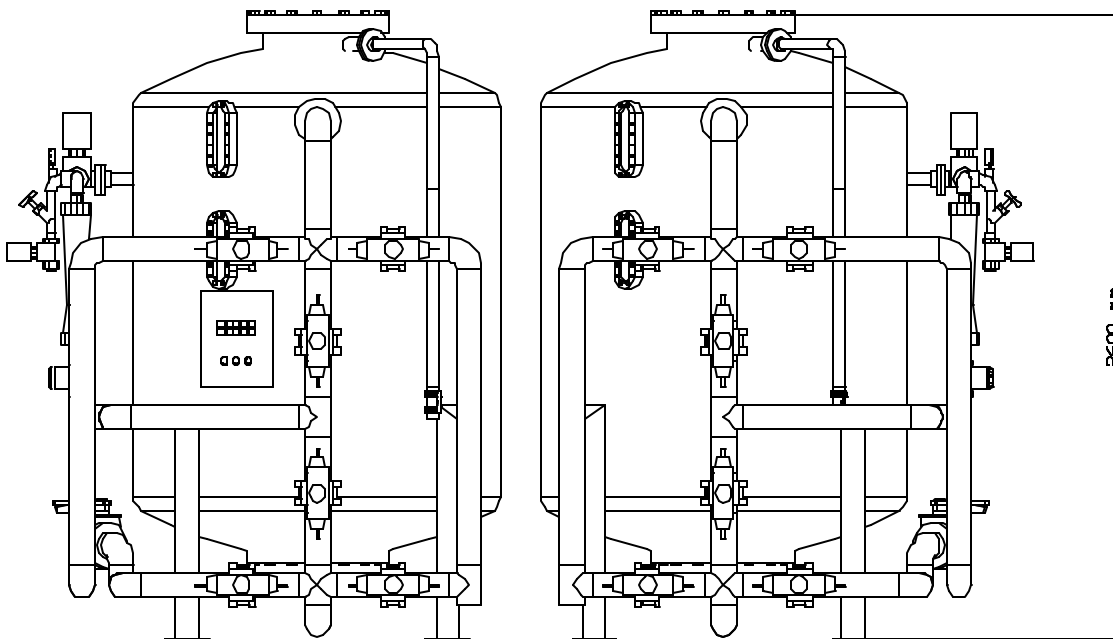


ISOMETRIC VIEW

Dimensions



PLAN VIEW



FRONT VIEW

## Specifications

Operation Mode	Automatic Twin Softening System
Model	TS 60
Cation Exchange Resins	Strong Acidic Na <sup>+</sup>
Operating Data Flow rate: Minimum Normal Maximum Operating Pressure	80 gpm 150 gpm 250 gpm 7 bar (100 psi)
Ion Exchange Data Cation resins, ft <sup>3</sup> Exchange Capacity (Nominal)	62 (1750 liters) 1865 kgrains as CaCO <sub>3</sub>
Regenerant Chemicals Cation resins, 100% NaCl, lb Approx. gals. 26% NaCl	932 360
Dimensions Diameter, mm Height, mm Floor Space, mm	1500 2600 2200 x 4000 x 2600

Regeneration Waste Water Volumes (Cation Resin Bed)					
Regeneration Phase	Flow Rates			Total Time Min.	Total Gallons Each Phase
	Water GPM	26% NaCl GPM	Total Flow GPM		
<b>Backwash</b>	118		118	15	1770
<b>Regenerant Introduction</b>	20.3	10.7	31	33	1023
<b>Slow Rinse</b>	20.3		20.3	30	609
<b>Fast Rinse</b>	150		150	12	1800
<b>Total Waste Volume</b>					5202 Gallons

### NOTES:

Sodium chloride introduction is based on use of 26% NaCl solution during regeneration. Concentration at resin bed is 10% NaCl solution. Total rinse volume is affected by the quality and temperature of the rinse water supply, the product water purity required by the customer for service use. Due to these variables, total time and gallons for final rinse can only be determined during actual operation and may vary for each regeneration.