# Sumo III Softening System

## Design Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate @ 15 psid</td>
<td>11 gpm</td>
</tr>
<tr>
<td>Flow Rate @ 30 psid</td>
<td>17.5 gpm</td>
</tr>
<tr>
<td>Pressure Range</td>
<td>25 - 125 psi</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>35 - 120 °F</td>
</tr>
<tr>
<td>Free Chlorine</td>
<td>≤ 1.0 mg/L</td>
</tr>
<tr>
<td>Compensated Hardness</td>
<td>≤ 50 gpg</td>
</tr>
<tr>
<td>Iron (ferrous)</td>
<td>&lt; 0.5 mg/L</td>
</tr>
<tr>
<td>Iron (ferric)</td>
<td>&lt; 0.01 mg/L</td>
</tr>
</tbody>
</table>

## System Components

- **Media Vessel (Qty.) Size**: (1) 10" x 40"
- **Media Vessel Construction**: Wrapped Polyethylene
- **Empty Bed Volume**: 1.59 ft³
- **Media Type**: Non-Solvent, High Capacity Cation Resin
- **Media Volume (per tank)**: 0.75 ft³
- **Total Bed Depth**: 40"
- **Free Board**: None
- **Riser Tube**: 1.05" ABS
- **Upper Distributor**: 0.007" Slots, Cone Type
- **Lower Distributor**: 0.012" Slots, Cone Type
- **Regeneration Control**: Volumetric
- **Service Flow**: Upflow
- **Regeneration Flow**: Downflow
- **Regeneration Type**: Countercurrent
- **Hard Water By-pass During Regeneration**: Automatic
- **System By-pass**: Push/Pull

## Connections

- **Inlet / Outlet Connections**: Custom Adapter
- **Drain Connection**: 0.5" Quick Connect Tubing
- **Brine Line Connection**: 0.375" Quick Connect Tubing
- **Brine Tank Overflow**: 0.625" Tubing Barb
- **Power**: None

## Part Numbers

- **Sumo I, Including External By-pass**: 15303

## Dimensions and Weight

- **Height**: 46"
- **Width**: 10"
- **Depth with By-pass**: n/a
- **Shipping Weight**: n/a
- **Operating Weight**: n/a

## Regeneration Specifications at 35 psi

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offline Time during Regen Cycle</td>
<td>21.5 minutes</td>
</tr>
<tr>
<td>Total Regen Cycle Time</td>
<td>25 minutes</td>
</tr>
<tr>
<td>Total Regen Volume</td>
<td>25 gal.</td>
</tr>
<tr>
<td>Salt Used per Regen</td>
<td>1.5 lbs.</td>
</tr>
<tr>
<td>Salt Dose</td>
<td>2 lbs./ft³</td>
</tr>
<tr>
<td>System Capacity</td>
<td>2,500 grains</td>
</tr>
<tr>
<td>Backwash Flow Rate</td>
<td>6,500 grains</td>
</tr>
</tbody>
</table>

## Meter Adjustability

- **Dial Setting/Hardness**: Gallons Between Regeneration
  - A / 5 gpg: 760 gal.
  - B / 10 gpg: 500 gal.
  - C / 15 gpg: 330 gal.
  - D / 20 gpg: 240 gal.
  - E / 25 gpg: 190 gal.
  - F / 35 gpg: 140 gal.
  - G / 50 gpg: 90 gal.
  - Minimum Gallon Adjustment: 10 gal.
Sumo III Softening System

Operating Profile
The softener shall remove hardness to less than 1 grain per gallon as CaCO$_3$ when operated in accordance with the operating instructions. The system shall provide soft water using a simplex (single tank) configuration. System regenerations shall be initiated based on gallons processed. The adjustable meter shall allow regenerations to be set within 10 gallon increments.

Regeneration Control Valve
The regeneration control valve shall be top mounted (top of media tank), and manufactured from non-corrosive materials. Control valve shall not weigh more than 4.5 lbs. Control valve shall operate using a minimum pressure of 25 psi. Pressure shall be used to drive all valve functions. Control valve shall incorporate five operational cycles including; service, brine draw, slow rinse, fast rinse and brine refill. Service cycle shall operate in an upflow direction. The brine cycle shall flow downflow, providing countercurrent regeneration. Control valve shall contain a fixed orifice eductor nozzle and a backwash flow control. The control valve will allow the by-pass of untreated water to service during the regeneration cycle.

Media Tanks
The tanks shall be designed for a maximum working pressure of 125 psi and hydrostatically tested at 300 psi. Tanks shall be made of polyethylene and reinforced with a fiberglass wrapping. Tank shall have a 2.5 inch threaded top opening. Tank shall be NSF/ANSI 44 approved. Upper and lower distribution system shall be of a cone slot design. Distribution system shall provide even distribution of regeneration water and the collection of processed water.

Conditioning Media
Each softener shall use strong acid, high capacity cation resin having a minimum exchange capacity of 30,000 grains/ft$^3$ when regenerated with a salt dose of 15 lbs./ft$^3$ of media. The media shall be solid, of a proper particle size and shall contain no plates, shells, agglomerates or other shapes that might interfere with the normal function of the water softener.

Brine System
A combination salt storage and brine production tank shall be manufactured of corrosion resistant, rigid polypropylene with an acrylic lid. The brine tank shall have an internal brine well chamber to house the brine valve assembly. The brine float assembly has one fixed salt setting and shall provide for a shutoff to the brine refill. The brine tank shall include a safety overflow connection to be plumbed to a suitable drain.