The Smith Meter® Model 210 Valve is typically used in conjunction with either the Smith Meter AccuLoad® or microLoad Preset Controllers for loading and unloading at truck racks, bulk plants, or processing installations.

**Features**

- Simple control loop
- Control loop needle valves for tuning
- Low pressure drop
- Separate opening and closing speed control
- Compound spring
- Horizontal or vertical applications
- Full range of optional control functions

**Optional**

- 2” Reduced Port Valve – Ideal for renewable fuels blending, controlling flow down to 3 GPM.

**Operation**

The Smith Meter Model 210 Valve is a Smith Meter 200 Series Valve with two solenoid controls (see Figure 1). The normally-open (N.O.) and normally-closed (N.C.) solenoids, located in the upstream and downstream portions of the control loop, respectively, control the operation of the valve. With both solenoids energized, high upstream pressure is blocked allowing the product in the cover to vent to low downstream pressure, opening the main valve. Conversely, de-energizing both solenoids allows high upstream pressure to close the valve.

Energizing just the N.O. solenoid locks fluid in the valve cover, which locks the valve poppet in a fixed position, to maintain a constant flow rate as long as operating conditions do not change. When operating conditions (e.g., pressures) change, causing a change in flow rate for that fixed valve opening, the flow controller (e.g., AccuLoad or microLoad) signals the appropriate solenoid to open momentarily to readjust flow rate back to its set value. When the set flow rate changes (e.g., from low flow start to high flow limit, or during multi-step valve shutdown), the appropriate solenoid is signalled to open until flow rate adjusts to the new set value. See Figure 2 for a typical truck loading flow rate sequence.

Located between each solenoid and the main valve port is a valve response control device, typically a needle valve.

**Figure 1 – Model 210 Valve Schematic**

**Figure 2 – Typical Load Cycle**
This device is used to fine tune the opening/closing rate of the valve, as well as providing total control loop isolation for ease of service. Adjustment of these devices controls the flow to the cover chamber, permitting adjustments based on product viscosities and pressures.

**Specifications**

**Maximum Viscosity**
Up to 200 SSU (40 mPa•s)¹.
Above 200 SSU (40 mPa•s), consult factory.

**Pressure Rating/Connections**², ³, ⁴
Class 150 ASME, 285 psi (19.6 bar)
Class 300 ASME, 300 psi (20.7 bar)

**Temperature Range**

<table>
<thead>
<tr>
<th>Valve Elastomer</th>
<th>Temperature Range², ⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS (Low Swell) Buna</td>
<td>-20°F to 200°F (-28°C to 93°C)</td>
</tr>
<tr>
<td>Buna-N</td>
<td>-20°F to 200°F (-28°C to 93°C)</td>
</tr>
<tr>
<td>Viton</td>
<td>-20°F to 350°F (-28°C to 177°C)</td>
</tr>
</tbody>
</table>

**Voltage (Solenoids)**
Standard: 120 Vac / 60 Hz or 110 Vac / 50 Hz.
Optional: 240 Vac / 60 Hz or 220 Vac / 50 Hz.
- 24 Vdc.
- 12 Vdc.
- Other voltages, consult factory.

**Materials of Construction**

<table>
<thead>
<tr>
<th></th>
<th>Housing</th>
<th>Internals</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Valve</td>
<td>Cast Steel</td>
<td>Stainless Steel, Carbon Steel, Ni-Resist</td>
<td>Low Swell, Buna (Std.), Viton-A or Buna (Opt.)</td>
</tr>
<tr>
<td>Solenoid Valves</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Viton-F (Std.), Buna-N, Chemraz (Opt.)</td>
</tr>
<tr>
<td>Needle Valves</td>
<td>Steel</td>
<td>Steel</td>
<td>Viton/PTFE⁶</td>
</tr>
<tr>
<td>Tubings &amp; Fittings</td>
<td>See Note Below</td>
<td>Steel</td>
<td>–</td>
</tr>
<tr>
<td>Ball Valves *</td>
<td>Steel</td>
<td>Steel Ball/Steel Body</td>
<td>PTFE⁶</td>
</tr>
</tbody>
</table>

*Standard.
*Optional (for 4” and 6” only).

**Note:** Stainless Steel Ball Valves, Needle Valves, and/or Tubing and Fittings Available.

**Pressure Drop (When Valve is Not Flow-Limiting or Wide Open)**

Notes: Assumes that a dual spring is used in 4” and 6” valves.
Test fluid is kerosene with 0.82 sp. gr., 2 cP or mPa•s²
The 2” and 2” RP (Reduced Port Valve) have negligible pressure drop below 50 GPM when the valve is not flow limiting.

¹ 1 mPa•s = 1 cP
² Pressure ratings are based on temperatures of -20°F to 100°F (-28°C to 38°C). For operation at higher temperatures, the maximum working pressure may be derated.
³ PED requirements limit applications to liquids with maximum vapor pressures of .5 bar above atmospheric pressure, at maximum allowable temperature.
⁴ PED required for all European countries. Equipment must be manufactured by Ellerbek, Germany facility.
⁵ For temperature outside these ranges, consult factory.
⁶ Polytetrafluoroethylene (PTFE).
**Dimensions**

**Inches (mm)**

<table>
<thead>
<tr>
<th>Size</th>
<th>A Class 150 ASME Flange</th>
<th>A Class 300 ASME Flange</th>
<th>B Class 150 ASME Flange</th>
<th>B Class 300 ASME Flange</th>
<th>C</th>
<th>Weight (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot; &amp; 2&quot; RP</td>
<td>8.0&quot; (203)</td>
<td>8.5&quot; (216)</td>
<td>3.0&quot; (76)</td>
<td>3.3&quot; (84)</td>
<td>5.5&quot; (140)</td>
<td>46</td>
</tr>
<tr>
<td>3&quot;</td>
<td>11.0&quot; (279)</td>
<td>11.8&quot; (300)</td>
<td>3.8&quot; (97)</td>
<td>4.1&quot; (104)</td>
<td>7.0&quot; (178)</td>
<td>83</td>
</tr>
<tr>
<td>4&quot;</td>
<td>13.5&quot; (343)</td>
<td>14.1&quot; (358)</td>
<td>4.5&quot; (114)</td>
<td>5.0&quot; (127)</td>
<td>8.0&quot; (203)</td>
<td>136</td>
</tr>
<tr>
<td>6&quot;</td>
<td>17.0&quot; (432)</td>
<td>17.9&quot; (455)</td>
<td>5.5&quot; (140)</td>
<td>6.3&quot; (160)</td>
<td>10.8&quot; (274)</td>
<td>258</td>
</tr>
</tbody>
</table>

*Note: Dimensions – Inches to the nearest tenth (millimeters to the nearest whole mm), each independently dimensioned from respective engineering drawings.*
Revisions included in SS03009 Issue/Rev. 0.9 (2/12):
Page 1: Removed Model SS1 and MiniLoad controllers; added microLoad controller as option.
Page 2: Revisions made to Materials of Construction.
Page 2: Removed epoxy coating from main valve internals under materials of construction.
Page 2: Voltage (Solenoids) revised.

**Editorial Change:** 10/13: Elastomer reference was changed to PTFE.