Float Control (Modulating) Valve Series 8100

**DIMENSIONS**

<table>
<thead>
<tr>
<th>U.S. Dimensions</th>
<th>Nominal Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
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</tr>
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<td>1/4&quot;</td>
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<tr>
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<td>1&quot;</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>1-1/2&quot;</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
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<td>2&quot;</td>
<td>2-1/2&quot;</td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

**SERIES FEATURES**

- **Operates automatically off** any pilot or control system.
- **Heavy-duty, nylon-reinforced** polypropylene pilot assembly allows liquids to pass through the valve.
- **Floating** seat retainer for floating pan tanks.
- **Easily maintained** without removing valve from the line.
- **Replaceable seat ring.**
- **Alignment pins assure proper reassembly after maintenance.**
- **Valves are factory tested.**
- **Valves are serial numbered** and registered to facilitate parts and service.

**TANK FILL VALVE**

- **Operates on rising level and closes on falling level (shown with 812 pilot)**

**TANK DISCHARGE VALVE**

- **Operates on falling level and closes on rising level (shown with 813 pilot)**

**CONTACTS**

- **phone:** (918) 627.1942
- **fax:** (918) 622.8916
- **website:** www.controlvalves.com

**Valve Features**

- **Accurate constant level control.**
- **Positive shut-off on high level.**
- **Threepilottypesavailable.**
- **Single control line from valvetopilot (waterservice).**
- **Can control level by flow-in or flow-out of tank.**

**Model 8101 shows w/ 812 pilot**

**Specifications**

- **Weight:** 4 lbs
- **Max Pressure:** 300 psi
- **Operating Temperature:** 0°F to 150°F
- **Body Material:** Stainless Steel
- **Seat Material:** Thermoplastic
- **Pilot Material:** Thermoplastic
- **Trim Material:** Thermoplastic
- **Valve Actuator:** Direct Mounting
- **Valve Bonnet:** Stainless Steel

**Valve Options**

- **Pressure Class:** 300# or 600#
- **Trim:** Standard or Replacement
- **Pilot:** 812 or 813
- **Bonnet:** Flanged or Threaded
- **Body:** Flanged or Threaded
- **Globe:** Flanged or Threaded
- **Valve Type:** Float Control (Modulating)

**How to order your valves**

- **When ordering please provide:**
  - Valve Size
  - Valve Type (Globe or Angle)
  - Flanged or Threaded
  - Pilot Type
  - Valve Trim
  - Replacement Bonnet
  
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VALVE OPERATION

Maintained. Because the main valve is vented back into the chamber, or, if desired, back to the outlet of the main valve.

A single sense line connecting the pilot (mounted above the liquid level) to the main valve is critical to the efficient operation of the main valve. Whenever recommended for use, a 1/2" NPT should be used. The pilot supply port is 20" from the main valve.

In any float pilot installation where there is continuous turbulence within the tank, consideration must be given to installing the float from such turbulence with a stilling well. Failure to do so can result in erratic control valve operation.

TANK DISCHARGE OPERATION (MODEL 8111)

The tank (mounted at the liquid level), is connected to the tank on the main valve which is connected to the tank discharge line. Through the sense line and the pilot valve, the liquid level in the tank is applied to the main valve. In this application the main valve is on the intake side. As the liquid level in the tank rises, the pressure on the valve will rise, thus increasing the pressure on the main valve thereby allowing the valve to open (falling level). A single sense line connects the pilot (mounted above the liquid level) to the main valve. For gravity applications the configuration of the valve will change accordingly.

HYDRAULIC REQUIREMENTS

The proper operation of a float valve is dependent on the tank discharge valve's differential pressure to ensure that at least 2 psi greater than that of the tank head. In brief, without the minimum 5 psi differential, the valve will not work. Lack of such minimum should not eliminate the valve from consideration. See the Series 8100 Valve Selection Guide in this Tech Series for model numbers and cost. If you do not have access to the software on our web site, sizing within the flow limitations shown in the following table should result in satisfactory operation.

<table>
<thead>
<tr>
<th>Max. flow, gpm</th>
<th>115</th>
<th>160</th>
<th>260</th>
<th>370</th>
<th>570</th>
<th>1000</th>
<th>2250</th>
<th>3900</th>
<th>6150</th>
<th>8700</th>
<th>10,500</th>
<th>13,800</th>
<th>31,300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low end</td>
<td>0.40</td>
<td>0.65</td>
<td>1.00</td>
<td>1.50</td>
<td>2.50</td>
<td>5.00</td>
<td>10.00</td>
<td>15.00</td>
<td>25.00</td>
<td>37.50</td>
<td>50.00</td>
<td>62.50</td>
<td>150.00</td>
</tr>
<tr>
<td>High end</td>
<td>0.45</td>
<td>0.70</td>
<td>1.10</td>
<td>1.65</td>
<td>2.75</td>
<td>5.50</td>
<td>10.50</td>
<td>15.50</td>
<td>25.00</td>
<td>37.50</td>
<td>50.00</td>
<td>62.50</td>
<td>150.00</td>
</tr>
</tbody>
</table>

| * can be applied to any of the listed models |

PILOTS

812, 813, 815

It is recommended that there is essentially no difference in the operation of the three rotary pilots used in the 8100 series. Only in a few physical characteristics do they vary.

Pilot Model 812

Offers primary characteristics of the non-adjustable 812 in the gas field. Connected to the main valve is a series line 3/8" NPT where the 812 can be installed to the main valve. Because of the positioning of the pilot valve, the valve will respond to the liquid level in the tank and not the valve. For gravity applications the configuration of the valve will change accordingly.

Pilot Model 813

This rotary float pilot operates essentially in the same manner as the 812, but is vertically located. The pilot valve is connected to the main valve via a series line 3/8" NPT. For gravity applications the configuration of the valve will change accordingly.

Pilot Model 815 (Chamber-Mounted Pilot)

Designed specifically for floating roof tanks and for other applications where the point of measurement may be remote from the main valve. This feature prevents cross-connection. The (adjustable length) float arm of the 812 is counterweight-balanced for free and effortless movement.

ABOUT YOUR VALVE

OCV Control Valves was founded more than 50 years ago with a vision and commitment to quality and reliability. From modest beginnings, the company has grown to be a global leader in the design, engineering, manufacturing, testing, inspection, and field servicing of quality products and systems, in over 50 countries around the world. Simply stated, we take pride in all that we do.

Valves from OCV Control Valves are designed for safety, reliability and performance. Our valves meet and exceed industry standards around the world, including American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), American National Standards Institute (ANSI), and the major oil companies. Use our valves to ensure the safety of your process. You can trust OCV Control Valves to provide products that meet your highest expectations.

Valve Selection Guide

The chart provides a list of those most often specified valves. Consult the factory for specific data on the model you selected.

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Global performance. Personal touch.
Float Controlled (Modulating) Valve Series 8100

VALVE OPERATION

HYDRAULIC REQUIREMENTS

Installation

Sizing Considerations

Valve Selection Guide

About Your Valve

Global performance, Personal touch.
VALVE OPERATION

A single sense line connecting the pilot (mounted above the liquid level) to the main valve provides the level chamber pressure. This pressure is maintained by the pilot valve (installed on the tank discharge line). Pressure in the valve maintains the seal around the bonnet of the main valve thereby allowing the valve to open (falling level), or decrease pressure in the bonnet, causing it to close (rising level). Level is maintained.

The float pilot (mounted at the liquid level) is connected to the ejector on the main valve, which is installed on the tank discharge line. Through the ejector and pipe, inlet pressure on the valve is transmitted to the pilot valve. In this application the float pilot is in reverse sensing. As the level in the tank falls, the pilot rises. The air gap is designed so the pilot pilot responds to the falling liquid pressure as the liquid level in the tank falls and the valve opens. For gravity applications the configuration of the valve will have to be modified to suit the application. The 812 is suitable for both water and fuel service, although it does not have internal fixtures to avoid floating roof tanks.

TANK DISCHARGE OPERATION (MODEL 8111)

For model 812, the pilot is actuated directly by the rotary float pilot as shown here. For valve sizes greater than 8”, the float arm operates a Model 1356 relay pilot which, in turn, operates the main valve.

Pilot Model 812

- This rotary float pilot operates identically to the 813 described above, but, in addition, is equipped with an adjustable orifice which provides an air gap between the float and pilot. This assembly allows the pressure in the main discharge chamber, or discharging pilot pressure to the main valve, causing a valve closing action. Level is maintained.

Pilot Model 813

This float pilot (mounted at the liquid level) is connected to the ejector on the main valve. Through the ejector, inlet pressure on the valve is transmitted to the pilot valve. The 813 float pilot (mounted above the liquid level) to the main valve (installed on the tank discharge line). Pressure in the valve maintains the seal around the bonnet of the main valve thereby allowing the valve to open (falling level), or decrease pressure in the bonnet, causing it to close (rising level). Level is maintained.

Pilot Model 815 (Chamber-Mounted Pilot)

Used primarily for fuel installations, the adjustable 815 rotary float pilot is especially designed for floating roof tanks or similar installations where the liquid level in the vacuum chamber is not identical to the liquid level in the tank. Liquid off the bonnet of the main valve is vented back into the chamber or, if desired, back to the outlet of the main valve.

SIZING CONSIDERATIONS

All valve sizes in Model 8100 series are equipped with a pair of factors that should be checked. Minimum flow rate should not exceed 25 GPM, or other factors such as valve size too small. At the same time, the valve must not be large or too large, either. Without proper flow rate or too large, valves will be oversized and not operate efficiently. The correct flow rate must be checked to determine if the valve is suitable for the application. The selected valve should maintain a flow rate between the minimum and maximum flow rates as specified in the valve catalog.

Hydraulic Requirements

The minimum flow rate should not exceed 25 GPM, or other factors such as valve size too small. At the same time, the valve must not be large or too large, either. Without proper flow rate or too large, valves will be oversized and not operate efficiently. The correct flow rate must be checked to determine if the valve is suitable for the application. The selected valve should maintain a flow rate between the minimum and maximum flow rates as specified in the valve catalog.

A single sense line connecting the pilot (mounted above the liquid level) to the main valve provides the level chamber pressure. This pressure is maintained by the pilot valve (installed on the tank discharge line). Pressure in the valve maintains the seal around the bonnet of the main valve thereby allowing the valve to open (falling level), or decrease pressure in the bonnet, causing it to close (rising level). Level is maintained.

In brief, without the minimum 5 psi differential, the valve will not work. Lack of such minimum should not eliminate the valve from consideration. Refer to the Series 8100 Valve Selection Guide in this Tech Series for model numbers and pressure limits that should result in satisfactory operation.
While similar to the Series 8000 On/Off Float Valves through the use of a rotary disc float control, the 8100 series provides modulating rather than on/off type action. In this way, level in the vessel can be continuously maintained within extremely narrow limits.

**DIMENSIONS**

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<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<td>16</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>19</td>
<td>29</td>
<td>110</td>
<td>260</td>
<td>40</td>
<td>44</td>
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<td>51</td>
<td>18</td>
<td>28</td>
</tr>
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<td>390</td>
<td>50</td>
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<td>39</td>
</tr>
<tr>
<td>4</td>
<td>31</td>
<td>53</td>
<td>200</td>
<td>470</td>
<td>60</td>
<td>74</td>
<td>50</td>
<td>100</td>
<td>29</td>
<td>50</td>
</tr>
</tbody>
</table>
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**SERIES FEATURES**

- **Float control** valve-by-flame-in or flame-out of tank.
- **Single control line** from valve to pilot (water service).
- **Three pilot types** available.
- Accurate constant level control.
- Positive shut-off on high level.
- 

**TANK FILL VALVE**

- Opens on sensing level and closes on high level.
- Monitoring of valve and pilot prevents any possibility of high point and spill level.
- Single control line from valve to pilot (water service).
Float Controlled (Modulating) Valve Series 8100

**PRODUCT FEATURES**

- Operates automatically off change in level
- Heavy-duty, nylon-reinforced diaphragm
- Extra-long diaphragm, with seal and diaphragm life in excess of 50,000 cycles
- Glandless assembly reduces stack-up and eliminates spacers inside the valve
- Single control line from valve to pilot (water service)
- Can control level by flow-in or flow-out of tank
- Tunable on/off ratio for fine and pressure stability
- Easily maintained without access to the tank
- Replaceable seat ring
- Alignment pin assures proper alignment after maintenance
- Valves are factory tested.
- Valves are serial numbered and registered to facilitate future service

**SPECIFICATIONS**

- **Series Number - Valvesize - Globe or Angle - TrimMaterial - AdjustmentRange - Pilot Requirements - PressureClass - Screwed, Flanged, Grooved - Options - Specialneeds /orinstallation Requirements.**

- **TANK FILL VALVE**
  - Opens on falling level and closes on rising level
  - Operates off falling level with visual indicator on pilot (shown with 813 pilot)
  - Mounted on valves and pilot provides indication of rising level and falling level

- **TANK DISCHARGE VALVE**
  - Opens on rising level and closes on falling level
  - Operates off falling level with visual indicator on pilot (shown with 812 pilot)

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