Flow Switches, Paddle

**Series V4 Flotec® Vane Operated Flow Switch**

Field Adjustable — Dependable Protection Against Flow Variation or Stopping in Pipelines for Fluids, Gases and Flowing Solids

Rugged and reliable, the V4 Flotec® flow switch operates automatically to protect equipment and pipeline systems against damage from reduction or loss of flow. The V4 is time tested being installed in thousands of pipelines and processing plants around the world. A uniquely magnetically actuated switching design gives superior performance. There are no bellows, springs, or seals to fail. Instead, a free-swinging vane attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm.

**FEATURES**
- Leak proof body machined from bar stock
- Choice of custom vane calibrated for your application, Model V4, or field adjustable multilayer vane, Model V4-2-U (see set point chart)
- Weatherproof, designed to meet NEMA 4
- Explosion-proof (listing included in specifications)
- Installs directly and easily into pipeline with a threadlet, tee, or flange (see application drawings)
- Can be used in pipes 1-1/2” and up
- Electrical assembly can be easily replaced without removing the unit from installation so that the process does not have to be shut down
- High pressure rating of 1000 psig (69 bar) with the brass body and 2000 psig (138 bar) with the 316 SS body

**APPLICATIONS**
- Protects pumps, motors and other equipment against low or no flow
- Controls sequential operation of pumps
- Automatically starts auxiliary pumps and engines
- Stops liquid cooled engines, machines and processing when coolant flow is interrupted
- Shuts down burner when air flow through heating coil fails
- Controls dampers according to flow

**SPECIFICATIONS**
- **Service**: Gases or liquids compatible with wetted materials.
- **Wetted Materials**: Vane: 316 SS; Body: Brass or 316 SS standard; Magnet Keeper: 430 SS standard, 316 SS optional; Options: Other materials also available, consult factory (e.g. PVC, Hastelloy, nickel, Monel, titanium).
- **Temperature Limit**: -4 to 275°F (-20 to 135°C) standard, MT high temperature option 400°F (205°C) [MT option not UL, CSA, ATEX, or SAA].
- **Pressure Limit**: Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar), optional 5000 psig (345 bar) available with 316 SS body and SPDT switch only.
- **Enclosure Rating**: Weatherproof (meets NEMA 4 (IP65)) and explosion-proof. Listed with UL and CSA for Class I, Groups C and D; Class II, Groups E, F, and G. ATEX option rated 400°F (205°C) [option not UL, CSA, ATEX, or SAA].
- **Pressure Limit**: Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar), optional 5000 psig (345 bar) available with 316 SS body and SPDT switch only.

**OPTIONS** (add as a suffix to the model number):
- D, DPDT contacts
- -MV, Gold Plated Contacts, options for dry circuits (see electrical rating in specification, no listings or approvals)
- -MT, High Temperature, option rated 400°F (205°C) (see electrical rating in specifications, no listings or approvals)
- -TRI (increasing flow), -TRD (decreasing flow), Time Delay Relay, option with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes. (no listings or approvals)
- -SAA Magnet Keeper, option to replace standard 430 SS
- -V, Vertical Up Flow, option for upward flow in vertical pipe
- -AT, ATEX listed construction

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V4-2-U</td>
<td>Brass body, universal vane</td>
</tr>
<tr>
<td>V4-SS-2-U</td>
<td>316SS® body, universal vane</td>
</tr>
<tr>
<td>V4</td>
<td>Brass body, custom vane</td>
</tr>
<tr>
<td>V4-SS</td>
<td>316SS® body, custom vane</td>
</tr>
</tbody>
</table>

*316SS body with 430SS magnet keeper.

Consult factory for price and availability of fittings for V4 installation. Thredolets, bushings, and tees are available in a variety of sizes and materials.

For custom vane models, please supply factory with following information: pipe size, flow direction (horizontal, up), mounting, pressure, temperature, specific gravity, flow rates (maximum normal, actuation/deactuation*), etc.

*When both values are supplied, note which is critical.

V4 Universal Vane Flow Charts

Values shown in both charts are nominal. If normal flows exceed actuation rates by less than 10%, custom vanes are recommended.

Figures are based on standard vertical installation in a 1-1/2” Threaded Branch Connection in a horizontal run of pipe.

### Approximate Actuation/Deactuation Flow Rates for Cold Water.

<table>
<thead>
<tr>
<th>Vane Layers</th>
<th>1.5” Pipe</th>
<th>2” Pipe</th>
<th>3” Pipe</th>
<th>4” Pipe</th>
<th>6” Pipe</th>
<th>8” Pipe</th>
<th>10” Pipe</th>
<th>12” Pipe</th>
<th>14” Pipe</th>
<th>16” Pipe</th>
<th>18” Pipe</th>
<th>20” Pipe</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>7-3</td>
<td>26-67</td>
<td>31-87</td>
<td>45-22</td>
<td>50-33</td>
<td>55-38</td>
<td>59-44</td>
<td>64-50</td>
<td>69-55</td>
<td>74-60</td>
<td>79-65</td>
<td>84-70</td>
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<tr>
<td>1.2,3,4,5</td>
<td>1-11</td>
<td>2-22</td>
<td>3-33</td>
<td>4-44</td>
<td>5-55</td>
<td>6-66</td>
<td>7-77</td>
<td>8-88</td>
<td>9-99</td>
<td>10-100</td>
<td>11-111</td>
<td>12-122</td>
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<td>11-111</td>
<td>12-122</td>
<td>13-133</td>
<td>14-144</td>
</tr>
</tbody>
</table>

Actuation rates are based on cold water at a specific gravity of 1.0.

For fluids of different specific gravity, actuation rates may be approximated by dividing the rate shown by the square root of the specific gravity.

### Application Drawings

For Flotec® Automatic Flow Switches

![Flow Switches Diagram](Image)

**Threaded Branch Connection Installation.** May also be installed using tee, flange or coupling.

### Approximate Actuation/Deactuation Flow Rates for Cold Air.

Upper Figures in SCFM. Lower Figures in LPS.

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<td>23-13</td>
<td>40-60</td>
<td>57-80</td>
<td>74-95</td>
<td>91-110</td>
<td>108-125</td>
<td>125-140</td>
<td>142-155</td>
<td>159-170</td>
<td>176-185</td>
<td>193-200</td>
<td>210-215</td>
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<tr>
<td>1,2,3,4,5</td>
<td>30-20</td>
<td>50-40</td>
<td>70-50</td>
<td>90-60</td>
<td>110-70</td>
<td>130-80</td>
<td>149-90</td>
<td>169-100</td>
<td>189-110</td>
<td>209-120</td>
<td>229-130</td>
<td>249-140</td>
</tr>
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Actuation rates are based on air at standard conditions. For gases at other pressures, temperatures, or specific gravities, consult factory for equivalent flow approximations.