General Description

Smartflow® mechanical flowmeters are durable, vane-operated devices that provide visual indication of flow rate in many different styles and sizes. Rugged wetted parts are compatible with many process liquids.

Optional temperature and pressure gauges add functionality and flexibility to Smartflow® flowmeters. Brass quick-connect fittings are available on the smaller flowmeters to create an excellent, portable tool for determining flow and locating clogged lines.

Features and Benefits

- Compact size works well in restricted-space locations.
- Rugged construction gives years of dependable service.
- Variety of inlet sizes provides exactly the right connection.
- 210°F (99°C) Temperature Rating allows installation into a wide range of applications.
- Optional Temperature and Pressure Gauges give instant access to pressure and temperature information in addition to flow in one unit.
- No Mounting Restrictions ease installation in any position without extra brackets or hardware.

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices.

For best performance, mechanical flowmeters should be installed in the vertical position with the flow moving upwards.

Design and specifications are subject to change without notice.

Turbulent Flow

Injection molders know that a certain rate of flow is needed to achieve turbulent flow in cooling lines. This concept applies to most cooling applications using a water-based coolant mixture. Charts below are for reference only. Turbulent Flow Rate is approximate based on Reynolds Number of 4000.

<table>
<thead>
<tr>
<th>Passage Diameter</th>
<th>Nominal Pipe Size</th>
<th>Minimum Flow in GPM by Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>40°F</td>
</tr>
<tr>
<td>.44&quot;</td>
<td>1/4&quot;</td>
<td>0.88</td>
</tr>
<tr>
<td>.59&quot;</td>
<td>3/8&quot;</td>
<td>1.16</td>
</tr>
<tr>
<td>.72&quot;</td>
<td>1/2&quot;</td>
<td>1.41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Passage Diameter</th>
<th>Nominal Pipe Size</th>
<th>Minimum Flow in LPM by Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4°C</td>
</tr>
<tr>
<td>11mm</td>
<td>1/4&quot;</td>
<td>3.3</td>
</tr>
<tr>
<td>15mm</td>
<td>3/8&quot;</td>
<td>4.4</td>
</tr>
<tr>
<td>18mm</td>
<td>1/2&quot;</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Use our on-line turbulent flow calculator to input additional sizes and cooling variables:

www.Smartflow-usa.com/Turbulent-Flow-Rate-Calculator
**Model Number**

**IceCube™ Flowmeters**

with Brass or Nylon Ends

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### Wetted Parts and Materials
- **End Caps**: Brass or Glass-Filled Nylon
- **Body**: Polysulfone
- **Vane**: Glass-Filled Nylon
- **Spring**: 302 Stainless Steel
- **O-Rings**: EPDM
- **Cap Screws**: Stainless Steel
- **Optional Gauge Block**: Brass
- **Optional Quick-Connect Fittings**: Brass

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### Specifications
- **Flow Accuracy**: ±10% full scale
- **Operating Temperature**: max 210°F (99°C)
- **Operating Pressure**: max 100 psi (6.9 bar)
- **Optional Thermometer**: 0° to 250°F (-20° to 120°C) ±2% accuracy (full scale)
- **Optional Pressure Gauge**: ±3% accuracy (full scale)

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### Flow Range
- **15**: 0.2 - 1.5 gpm (gallons per minute)
- **25**: 0.5 - 2.5 gpm
- **80**: 1.0 - 8.0 gpm
- **100**: 2 - 10 lpm (liters per minute)
- **200**: 5 - 20 lpm
- **300**: 4 - 30 lpm

### Accessories
- **A**: Flowmeter only
- **B**: Thermometer
- **C1**: Thermometer and 30 psi Pressure Gauge
- **C2**: Thermometer and 60 psi Pressure Gauge
- **C3**: Thermometer and 100 psi Pressure Gauge
- **CL**: Thermometer and Liquid-Filled Pressure Gauge (100 psi)
- **D1**: *Thermometer, 30 psi Pressure Gauge, Quick Change Socket and Plug
- **D2**: *Thermometer, 60 psi Pressure Gauge, Quick Change Socket and Plug
- **D3**: *Thermometer, 100 psi Pressure Gauge, Quick Change Socket and Plug
- **DL**: *Thermometer, liquid-filled Pressure Gauge (100 psi), Quick Change Socket and Plug
- **E**: *Thermometer and Quick Change Socket and Plug
- **F1**: 30 psi Pressure Gauge
- **F2**: 60 psi Pressure Gauge
- **F3**: 100 psi Pressure Gauge
- **FL**: Liquid-Filled Pressure Gauge (100 psi)

*Not available with 3/4" inlet or BSPP threads*

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**For Custom Manifold Assemblies and 3D CAD files of Standard Components Visit**

Model Number

F6 - B - 20

Inlet Size
3/4"NPT(F) F6
3/4"BSPP(F) F6B
1"NPT(F) F8
1"BSPP(F) F8B

Flow Range
20 2 - 20 gpm (gallons per minute)
75 7 - 75 lpm (liters per minute)

Accessories
A Flowmeter only
B Thermometer
C1 Thermometer and 30 psi Pressure Gauge
C2 Thermometer and 60 psi Pressure Gauge
C3 Thermometer and 100 psi Pressure Gauge
CL Thermometer and Liquid-Filled Pressure Gauge (100 psi)
F1 30 psi Pressure Gauge
F2 60 psi Pressure Gauge
F3 100 psi Pressure Gauge
FL Liquid-Filled Pressure Gauge (100 psi)

Wetted Parts and Materials
Body .....................................Anodized Aluminum
Sight Glass .................................Polysulfone
Vane .....................................Stainless Steel
Spring .................................Stainless Steel
Pin .....................................Stainless Steel
Gasket ..................................Neoprene

Specifications
Operating Temperature max. ...........210°F (99°C)
Operating Pressure max. ..........100 psi (6.9 bar)
Accuracy ........................................±10%
Optional Thermometer ...............0° to 250°F (-20° to 120°C)
±2% accuracy (full scale)
Optional Pressure Gauge ..........±3% accuracy (full scale)

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices.

<table>
<thead>
<tr>
<th>Dimension Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dim</td>
</tr>
<tr>
<td>3/4&quot;</td>
</tr>
<tr>
<td>L</td>
</tr>
<tr>
<td>4.125</td>
</tr>
</tbody>
</table>

Linear = mm inches

Threaded both ends

max height with temperature gauge

max height with pressure gauge

Optional Thermometer Location

Sight Glass

Optional Pressure Gauge Location

FLOW
Large Mechanical Flowmeters

**Model Number**

**F8 - B - 40**

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Flow Range</th>
<th>1&quot;NPT(F)</th>
<th>1-1/4&quot;NPT(F)</th>
<th>1-1/2&quot;NPT(F)</th>
<th>1-1/2BSPP(F)</th>
<th>2&quot;NPT(F)</th>
<th>2&quot;BSPP(F)</th>
<th>3&quot;NPT(F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 - 40 gpm</td>
<td>(excludes 3&quot; inlet)</td>
<td>F8</td>
<td>F8B</td>
<td>F10</td>
<td>F12</td>
<td>F12B</td>
<td>F16</td>
<td>F16B</td>
</tr>
<tr>
<td>10 - 100 gpm</td>
<td>(1-1/2&quot; or 2&quot; inlets only)</td>
<td>40</td>
<td>100</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>50 - 150 gpm</td>
<td>(2&quot; or 3&quot; inlets only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 - 150 lpm</td>
<td>(1&quot; or 1-1/4&quot; inlets only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 - 375 lpm</td>
<td>(1-1/2&quot; or 2&quot; inlets only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Wetted Parts and Materials**

- **Body**: Anodized Aluminum
- **Sight Glass**: Polysulfone
- **Vane**: Stainless Steel
- **Spring**: Stainless Steel
- **Pin**: Stainless Steel
- **Gasket**: Neoprene
- **Thermometer**: 0° to 250°F (-20° to 120°C)
- **Pressure Gauge**: 0 to 100 psi (0 to 700 kg/cm²)

**Specifications**

- **Operating Temperature max**: 210°F (99°C)
- **Operating Pressure max**: 100 psi (6.9 bar)
- **Accuracy**: ±10%
- **Optional Thermometer**: 0° to 250°F (-20° to 120°C) ±2% accuracy (full scale)
- **Optional Pressure Gauge**: ±3% accuracy (full scale)

**Flowmeters**

- **1" and 1-1/4" Flowmeters**: 40 gpm & 150 lpm
- **1-1/2", 2" & 3" Flowmeters**: 40, 100, & 150 gpm, 150, 375 lpm

**Accessories**

- **Flowmeter only**: A
- **Thermometer**: B
- **Thermometer and 30 psi Pressure Gauge**: C1
- **Thermometer and 60 psi Pressure Gauge**: C2
- **Thermometer and 100 psi Pressure Gauge**: C3
- **Thermometer and Liquid-Filled Pressure Gauge (100 psi)**: CL
- **30 psi Pressure gauge**: F1
- **60 psi Pressure gauge**: F2
- **100 psi Pressure gauge**: F3
- **Liquid-Filled Pressure Gauge (100 psi)**: FL

**Dimension Chart**

<table>
<thead>
<tr>
<th>Dim</th>
<th>Body Size</th>
<th>1-1/2 or 2&quot;</th>
<th>3&quot;</th>
</tr>
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<tbody>
<tr>
<td>L</td>
<td>139.7</td>
<td>165.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.5</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>76.2</td>
<td>101.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>99</td>
<td>124.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.9</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>114</td>
<td>139.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.5</td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>

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