# Technical Specifications

## Materials

### Valve

- **Body, Ball**: Brass
- **Ball Control Stem**: Brass, Chrome Plated
- **Ball Seal Seat**: PTFE
- **Control Stem Guide**: PSU
- **Seals**: EPDM

### Flow Meter

- **Body**: Brass
- **Bypass Valve Stem**: Brass, Chrome Plated
- **Springs**: Stainless Steel
- **Seals**: EPDM
- **Float and Indicator Cover**: PSU

## Performance

### Suitable Fluids

Water, Glycol Mix

### Max Glycol Percentage

50%

### Max Working Pressure

150 psi

### Working Temperature Range

14 - 230°F

### Accuracy

±10%

### Control Stem Angle Rotation

90°

### Control Stem Adjustment Wrench

1/2" - 1 1/4"

1 1/2" - 2"

### Threaded Connections

1/2" - 2" NPT

### Flow Rate Correction Factor

20-30% Glycol: 0.9

40-50% Glycol: 0.8

## Insulation

### Material & Thickness

Closed Cell Expanded PE-X - 25/64"

### Density

- Inner: 1.9 lb/ft³
- Outer: 3.1 lb/ft³

### Thermal Conductivity

- @ 32°F: 0.263
- @ 104°F: 0.312

### Coefficient of Resistance to Water Vapor (DIN 52615)

> 1.300

### Working Temperature Range

32 - 212°F

### Reaction to Fire (DIN 4102)

Class B2

## Flow Rate Ranges

<table>
<thead>
<tr>
<th>Model</th>
<th>Connection (NPT)</th>
<th>Flow Rate (GPM)</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5IN-.5/1.75GPM</td>
<td>1/2&quot;</td>
<td>1/2 - 1 3/4</td>
<td>1.0</td>
</tr>
<tr>
<td>.75IN-2/7GPM</td>
<td>3/4&quot;</td>
<td>2.0 - 7.0</td>
<td>6.3</td>
</tr>
<tr>
<td>1IN-3/10GPM</td>
<td>1&quot;</td>
<td>3.0 - 10.0</td>
<td>8.3</td>
</tr>
<tr>
<td>1.25IN-5/19GPM</td>
<td>1 1/4&quot;</td>
<td>5.0 - 19.0</td>
<td>15.2</td>
</tr>
<tr>
<td>1.5IN-8/32GPM</td>
<td>1 1/2&quot;</td>
<td>8.0 - 32.0</td>
<td>32.3</td>
</tr>
<tr>
<td>2IN-12/50GPM</td>
<td>2&quot;</td>
<td>12.0 - 50.0</td>
<td>53.7</td>
</tr>
</tbody>
</table>

## Dimensions & Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>A (in)</th>
<th>B (in)</th>
<th>C (in)</th>
<th>D (in)</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5IN-.5/1.75GPM</td>
<td>1/2</td>
<td>3-1/16</td>
<td>1-13/16</td>
<td>5-3/4</td>
<td>2.0</td>
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<tr>
<td>.75IN-2/7GPM</td>
<td>3/4</td>
<td>3-5/16</td>
<td>1-13/16</td>
<td>5-3/4</td>
<td>1.8</td>
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<tr>
<td>1IN-3/10GPM</td>
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<td>3-3/8</td>
<td>1-7/8</td>
<td>6-1/4</td>
<td>2.4</td>
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<tr>
<td>1.25IN-5/19GPM</td>
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<td>2</td>
<td>6-1/2</td>
<td>2.8</td>
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<tr>
<td>1.5IN-8/32GPM</td>
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<td>3-5/8</td>
<td>2-1/4</td>
<td>6-3/4</td>
<td>3.4</td>
</tr>
<tr>
<td>2IN-12/50GPM</td>
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<td>3-3/4</td>
<td>2-1/2</td>
<td>7</td>
<td>4.4</td>
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SunMaxx Solar
5042 - 5160 NY 206
Bainbridge, NY 13733
P: 1.877.786.6299
F: 1.800.786.0329
www.SunMaxxSolar.com
Advantages of Balanced Circuits
Balanced circuits have the following principal benefits:

1. The system emitters operate properly in heating, cooling and dehumidification, saving energy and providing greater comfort.
2. The zone circuit pumps operate at maximum efficiency, reducing the risk of overheating and excessive wear.
3. High fluid velocities which can result in noise and abrasion are avoided.
4. The differential pressures acting on the circuit control valves are reduced preventing faulty operation.

Operating Principle
The balancing valve is a hydraulic device that controls the flow rate of the heating/cooling transfer fluid.

The control mechanism is a ball valve (1), operated by a control stem (2). The flow rate is manually and properly set by use of the convenient onboard flow meter (3) housed in a bypass circuit on the valve body. This circuit is automatically shut off during normal operation. The flow rate is indicated by a metal ball (4) sliding inside a transparent channel (5) with an integral graduated scale (6).

Construction Details
Flow meter
When activated, the flow rate is indicated on the flow meter housed in a bypass circuit on the valve body. When finished reading the flow rate, the flow meter is automatically shut off, isolating it during normal operation. Use of a flow meter greatly simplifies the process of system balancing since the flow rate can be measured and controlled at any time without differential pressure gauges or reference charts. The onboard flow meter eliminates the need to calculate valve settings during system setup. Additionally, the unique onboard flow meter offers unprecedented time and cost savings by eliminating the long and difficult procedure of calculating pre-settings associated with using traditional balancing devices.

Flow meter bypass valve
The bypass valve (1) opens and closes the circuit between the flow meter and the valve. The bypass valve is easily opened by pulling the operating ring (2), and is automatically closed by the internal return spring (3) when finished reading the flow rate. The spring and the EPDM seal (4) provide a reliable seal to isolate the flow meter during normal operation.

The operating ring (2) material has low thermal conductivity to avoid burns if the flow meter is opened while hot fluid is passing through the valve.

Ball/magnet indicator
The metal ball (4) that indicates the flow rate is not in direct contact with the heating/cooling transfer fluid passing through the flow meter. This is an effective and innovative measuring system in which the ball slides up and down inside a transparent channel (5) that is isolated from the fluid flowing through the body of the flow meter. The ball is moved by a magnet (6) connected to a float (7). In this way the flow rate indication system remains perfectly clean and provides reliable readings over time.
Complete closing and opening of the valve

The valve can be completely closed and opened. A slot on the control stem indicates the valve position. When the control stem is turned fully clockwise (the slot is perpendicular to the axis of the valve), the valve is fully closed (A). When the control stem is turned fully counter-clockwise (the slot is parallel to the axis of the valve), the valve is fully open (B).

Insulation

The 132 series balancing valve is supplied with a pre-formed insulating shell. This system ensures perfect thermal insulation and keeps out water vapor from the environment. Additionally, this type of insulation is ideal in cold water circuits as it prevents condensation from forming on the surface of the valve body.

Hydraulic Characteristics at 100% Open

The flow rate is adjusted as follows:

A. With the aid of the flow rate indicator (1), mark the desired flow rate.

B. Use the operating ring (2) to open the bypass valve slowly. This allows fluid to flow through the flow meter (3). The bypass valve is automatically closed under normal operating conditions.

C. While holding the bypass valve open, use a wrench to turn the valve control stem (4) to adjust the flow rate slowly. The resulting flow rate is indicated by the metal ball (5) that slides up and down inside a transparent channel (6) marked by a graduated scale in gpm.

D. Once the flow rate is properly adjusted, release the operating ring (2) of the bypass valve. The valve will automatically return to the closed position by means of an internal spring.

E. A replacement bypass valve stem (7) with operating ring is available in event it is damaged and inoperable. Order code F19346.

Hydraulic Characteristics at 100% Open

Installation

Install the balancing valve in a location that ensures free access to the flow meter shutoff valve, control stem and flow rate indicator. To ensure accurate flow measurement, straight sections of pipe installed as shown is recommended.

The valve can be installed in any position with respect to the flow direction shown on the valve body. Additionally, the valve can be installed either horizontally or vertically.
Application Diagrams

The balancing valve with the flow meter should be installed on the circuit return pipe.

To adjust the flow rate to each riser

To adjust the flow rate to each emitter

To balance zone branches in circuits with three-way valves

To balance circuits serving air conditioning units

To balance the by-pass branch of outside compensated control circuits

Specification Summaries