BERMAD Irrigation

NEW

BERMAD Irrigation
100 Series - hYflow High Performance Valves

Water Control Solutions
100 Series hYflow
High Performance Plastic Hydraulic Control Valves

Features and Benefits

- Durable industrial grade valve design and construction uses glass-filled Nylon material to meet rough service conditions.
- Ultra-high flow capacity with minimal pressure loss.
- Designed for service on a wide range of pressure and flow conditions, from dripping to maximum flow.
- Simple design with few parts guarantees easy in-line inspection and service.
- Positive guided valve plug provides accurate motion and smooth regulation. Avoids chattering and slamming closed.
- Versatile end connections allow mix of different sizes and connection types.
- Articulated flange connections isolate the valve from line bending and pressure stresses.
IR-100 hYflow

The BERMAD IR-100 hYflow basic model diaphragm actuated, hydraulically operated valve is at the leading edge of control valve design. It combines simple and reliable construction with superior performance, while at the same time being virtually free of the typical limitations associated with standard control valves. BERMAD’s automatic water control valves are designed for vertical or horizontal installation and are available in sizes of 1½", 2", 2" L, 2½", 3", 3" L, 4" & 6" DN: 40, 50, 50L, 65, 80, 80L, 100 & 150.

The IR-100 hYflow model, made from industrial durable glass-filled nylon, is engineered to meet rough service conditions with high chemical and cavitation resistance. The hYflow ‘Y’ valve body design includes a full bore seat with unobstructed flow path, free of any in-line ribs, supporting cage, or shafts.

Its unitized Flexible Super Travel (FST) diaphragm and guided plug provide a significantly ‘look through’ passage from end to end resulting in ultra-high flow capacity with minimal pressure loss.

The combination of a long travel guided valve plug, peripherally supported diaphragm, and replaceable valve seal provides:

- No chattering or slamming closed
- Accurate and stable regulation with smooth motion
- Low operating pressure requirements
- No diaphragm erosion and distortion
- Diaphragm and spring fully meet the valve’s operating pressure range requirements
- No UV and frozen effect
- Chemical resistant

Designed for service under a wide range of pressure and flow conditions, from dripping to maximum flow, the IR-100 hYflow excels at being a user-friendly control valve:

- Simple design with few parts guarantees easy in-line inspection and service.
- Adaptable on-site to a wide range of end connection types and sizes.
- Articulated flange connections isolate the valve from pipeline bending and pressure stresses.

“Look-through Design”

Straight through flow results in ultra-high flow capacity with minimum pressure loss
**On-Off Modes**

3-Way Control
Line pressure applied to the control chamber of the valve creates a hydraulic force that moves the valve to the closed position and provides drip tight sealing. Discharging pressure from the control chamber to the atmosphere causes the line pressure under the plug to open the valve.

2-Way Internal Control
Line pressure enters the control chamber through the internal restriction. The closed solenoid causes pressure to accumulate in the control chamber, thereby shutting the valve. Opening the Solenoid releases more flow from the control chamber than the restriction can allow in. This causes pressure in the control chamber to drop, allowing the valve to open.

2-Way Modulating Modes (Pressure Reducing Pilot)

Modulating to close
Line pressure enters the control chamber through the internal restriction. The pilot controls outflow from the control chamber. Throttling when it senses a pressure rise, it causes pressure to accumulate in the control chamber, thereby forcing the valve to modulate closed.

Modulating to Open
The pilot modulates open when it senses a pressure drop, releasing more flow from the control chamber than the restriction can allow in. This causes the accumulated pressure in the control chamber to drop and the valve modulates open.

Zero Flow Position
When demand drops to zero, downstream pressure begins to rise as the flow enters a closed line. The pilot closes, initiating the valve’s irreversible closing process, eventually causing it to seal drip tight.
3-Way Control Modes (Pressure Reducing)

**Fully Open Position**
When upstream pressure drops, the pilot blocks the supply pressure port and opens the drain port, venting the control chamber to the atmosphere. This fully opens the valve, minimizing head loss.

**Modulating to Close**
The pilot switches upon pressure rise, blocking the drain port and opening the supply pressure port. This pressurizes the control chamber, forcing the valve to modulate closed.

**Locked Position**
When sensed pressure is equal to setting, the pilot blocks both the drain and the supply pressure ports. This locks the pressure in the control chamber, freezing valve opening in its last position until conditions change.

3/2-Way Control Modes (Pressure Reducing)

**Modulating to Open**
When pressure drops, the pilot restricts the flow path through the supply pressure port, and widens the flow path through the drain port. This releases more flow from the control chamber than can be allowed in, thereby causing the valve to modulate open.

**Modulating to Close**
Upon pressure rise, the pilot widens the flow path through the supply pressure port, and restricts the flow path through the drain port. This allows more flow into the control chamber than can be released, thereby pressurizing it and forcing the valve to modulate closed.

**Stable Conditions**
As long as flow and pressure conditions are constant, the pilot freezes the control chamber inlet and outlet flow ratio. This keeps the valve opening rate constant, allowing the valve to react “on-line” to any anticipated changes in supply and/or demand conditions.
Product Features

[1] **Cover Ring**
The cover ring fastens valve cover to body, stiffening and strengthening the valve body, enabling simple maintenance. A cover ring key is available.

[2] **Pilot Adaptor**
The pilot adaptor allows us to connect the mini-pilot valve or the Galit hydraulic relay to the valve body.

[3] **Valve Cover**
The cover’s strong construction meets rough service conditions. Optional cover types (3”; DN80 and smaller valves) are capable of accepting a Flow Stem, a Flow Stem + Position Indicator, and a 2-Way Solenoid (2W-N1 Electric Type).

[4] **Auxiliary Closing Spring**
One single high grade stainless steel spring provides a wide operation range, ensuring low opening pressure and secured closing.

[5] **Plug Assembly**
The unitized Flexible Super Travel (FST) plug assembly combines a long travel guided valve plug, peripherally supported diaphragm, and replaceable diaphragm and valve seal. The diaphragm fully meets the valve’s operating pressure range requirements.

[5.1] Diaphragm Holder
[5.2] Diaphragm
[5.3] Plug
[5.4] Plug Seal

Glass-filled nylon construction meets rough service conditions with high chemical and cavitation resistance. End-to-end “look-through” design and full bore seat with unobstructed flow path, free of any in-line ribs, supporting cage, or shafts, enables ultra-high flow capacity with minimal pressure loss.

[7] **End Connections**
Adaptable on-site to a wide range of end connection types and sizes:

[7.1] Flanges: Plastic or metal “Corona” with elongated slots enable meeting diverse flange standards ISO, ANSI and JIS.
[7.2] Flange adaptor external thread
[7.3] Internal threads

[8] **Flange Adaptor**
Articulated flange connections isolate the valve from line bending and pressure stresses.

[9] **Valve Legs**
Stabilize the valve and serve also as mounting brackets.
**Valve Configurations**

- **Y Pattern**: Available in all sizes.
- **Angle Pattern**: Available in 3" & 3"L, DN: 80 & 80L.
- **T Pattern**: Available in 3", DN: 80.
- **Dual T Pattern**: Available in 3", DN: 80.

**End Connection Options**

- **6"; DN 150 “Boxer” - Flanged**
- **6"; DN 150 “Boxer” - Grooved (Vic)**

- **BSP.T; NPT Female Thread**: 1½", 2" & 2"L, DN: 40, 50 & 50L.
- **BSP.F Male Thread, (for PVC Adaptors)**: 2", 2½"; DN: 50 & 65.
- **BSP.T; NPT Female Thread**: 3" & 3"L, DN: 80 & 80L.
- **Union PVC Adaptor**: 2", 2½", DN: 50 & 65.
- **Plastic Flange**: 3"L & 4", DN: 80, 80L & 100.
- **Metal Flange**: 3"; 3"L & 4"; DN: 80, 80L & 100.
- **PVC Adaptor**: 1½", 2" & 3"L, DN: 40, 50 & 80L.
**hYflow Basic Hydraulic Valve, Model 105-Z**

Model 105-Z is a hydraulically self-operated, diaphragm-actuated valve, which uses the hydraulic force of the existing line pressure, or any external hydraulic command (water or air), to open and close. Recommended for all On/Off applications, Model 105-Z is particularly suitable for agricultural irrigation heads, and filter stations.

**hYflow Electric Valve, Model 110-2W-N**

Model 110-2W-N is a hydraulically self-operated, diaphragm-actuated, solenoid-controlled valve. The valve opens fully and closes drip-tight in response to an electric signal, which causes the solenoid to open or close the valve’s internal hydraulic loop. It operates with a variety of solenoid voltage ranges: 24VAC, 24VDC or 9VDC, 12VDC-latch. Recommended for all electric On/Off applications, Model 110-2W-N is particularly suitable for turf irrigation heads and commercial green house irrigation. The Model 110-2W-N also features a manual override.

**hYflow Pressure Reducing Valve, Model 120-X**

Model 120-X is a hydraulically self-operated, diaphragm-actuated control valve, which uses the hydraulic force of the line pressure to reduce higher upstream pressure to lower constant downstream pressure regardless of fluctuating demand or varying upstream pressure. The pilot continuously senses the downstream valve pressure and controls the valve’s opening and closing rate accordingly, by increasing or decreasing the flow from the valve control chamber to downstream.

The quick and accurate response of Model 120-X prevents line fill-up surges and pressure peaks, which can be damaging, especially to thin wall irrigation schemes. The unique hYflow design makes the Model 120-X the best and most cost-effective solution for agricultural irrigation heads in large and medium scale blocks, where flow is high and upstream pressure is liable to drop very low.

**hYflow Electric Pressure Reducing Valve, Model 120-55-X**

Model 120-55-X is a hydraulically self-operated, diaphragm-actuated control valve which uses the hydraulic force of the line pressure to reduce higher upstream pressure to lower constant downstream pressure, regardless of fluctuating demand or varying upstream pressure. The added solenoid enables the opening and shut-off of the valve by an irrigation controller. Pressure reducing performance of the Model 120-55-X is similar to that of the Model 120-X, thus providing protection for the irrigation equipment whenever the valve opens and throughout the irrigation cycle. Model 120-55-X operates with a variety of solenoid voltage ranges: 24VAC, 24VDC or 9VDC, 12VDC-latch.

Flow Stems on all: 1½", 2", 2"L, 3", 3"L, 4", 6" models are available upon request.
Technical Data

Flow Chart - inch (US)

100 Series, Control Valves “Y” & Angle Patterns

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Y</th>
<th>Y</th>
<th>Y</th>
<th>Y</th>
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<th>A</th>
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<tbody>
<tr>
<td>Size</td>
<td>1.5-2</td>
<td>2L-2.5-3</td>
<td>3L-4</td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>Cv</td>
<td>58</td>
<td>116</td>
<td>231</td>
<td>462</td>
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</table>

Technical Specifications

Available Patterns & Sizes:
1½”, 2”, 2L, 2½”, 3”, 3L, 4” & 6”

Available End Connections:
Threaded: Female NPT: 1½”, 2”, 2”L, 3”, 3L
Male: BSP-F: 2½”
Range ANSI 125: 3”, 3L, 4” & 6”

Operating Pressure Range: 7-145 psi
Temperature Range: Water, 185˚ F

Standard Materials:
- Body, Cover and Plug: Glass-Filled Nylon
- Diaphragm: NR, Nylon Fabric Reinforced
- Seals: NR
- Spring: Stainless Steel
- Cover bolts DN: 1½”, 2”, 2L, 2½”, 3”
# BERMAD Irrigation

## 100 Series - HYflow

### Dimensions & Weights - inch (US)

#### Sizes DN

<table>
<thead>
<tr>
<th>Pattern</th>
<th>DN 40</th>
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<th>DN 50L</th>
<th>DN 65</th>
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<tbody>
<tr>
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<td>Female Thread</td>
<td>Rc 1 1/2 (BSP)</td>
<td>G 2 (BSPF)</td>
<td>Rc 2 (BSP)</td>
<td>G 2 1/2 (BSPF)</td>
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<tr>
<td>1 1/2&quot; NPT</td>
<td>Male</td>
<td>2&quot; NPT</td>
<td>2&quot; NPT</td>
<td>Male</td>
<td>3&quot; NPT</td>
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<tr>
<td>L (in)</td>
<td>7 7/8</td>
<td>7 7/8</td>
<td>9</td>
<td>9</td>
<td>11 7/8</td>
</tr>
<tr>
<td>H (in)</td>
<td>6 7/8</td>
<td>6 7/8</td>
<td>6 7/8</td>
<td>6 7/8</td>
<td>7 1/8</td>
</tr>
<tr>
<td>h (in)</td>
<td>1 7/8</td>
<td>1 7/8</td>
<td>1 7/8</td>
<td>1 7/8</td>
<td>2</td>
</tr>
<tr>
<td>W (in)</td>
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<td>3 7/8</td>
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#### Sizes DN

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<td>Rc 3 (BSP)</td>
<td>Universal Flanges</td>
<td>Universal Flanges</td>
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<td>Plastic</td>
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<td>Plastic</td>
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<tr>
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<td>12 1/4</td>
<td>12 1/4</td>
<td>13 3/4</td>
</tr>
<tr>
<td>h (in)</td>
<td>2 5/8</td>
<td>3 3/8</td>
<td>3 3/8</td>
<td>4 7/8</td>
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<tr>
<td>W (in)</td>
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#### Sizes DN

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<td>Rc 3 (BSP)</td>
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<tr>
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<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
</tr>
<tr>
<td>L (in)</td>
<td>9 7/8</td>
<td>7 7/8</td>
<td>8 7/8</td>
<td>12 7/8</td>
<td>15 7/8</td>
</tr>
<tr>
<td>H (in)</td>
<td>11 3/4</td>
<td>9 7/8</td>
<td>9 7/8</td>
<td>9 7/8</td>
<td>10 7/8</td>
</tr>
<tr>
<td>h (in)</td>
<td>5 3/4</td>
<td>4 7/8</td>
<td>4 7/8</td>
<td>4 7/8</td>
<td>5 7/8</td>
</tr>
<tr>
<td>W (in)</td>
<td>6 7/8</td>
<td>5 7/8</td>
<td>5 7/8</td>
<td>5 7/8</td>
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<td>Weight (lb)</td>
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<td>3.5</td>
<td>3.7</td>
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**Typical Applications**

**Irrigation Control Head - Filtration System**
Pressure Reducing & Sustaining Separating Valves and quick Pressure Relief Valves

**Irrigation Control Head - Filtration System**
Pressure Sustaining Separating Valves

**Sub-Main Control - Distribution System**
Pressure Reducing Valves with Relief Override

**Sub-Main Control - Distribution System**
Normally Closed Pressure Reducing & Sustaining Main Valve and four Solenoid Controlled Valves
With representation on every continent and across some 86 countries, BERMAD is an undisputed world leader in control valves, maintaining broad training and parts distribution networks all over the globe. Wherever your location, BERMAD is there.

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