

## Level Control Valve with Bi-Level Vertical Float

### Model FP 450-66

- Reservoir filling
  - Very low supply pressure
  - Low noise generation
  - Energy cost critical systems
  - Systems with poor water quality

The Model FP 450-66 Level Control Valve with Bi-Level Vertical Float is a hydraulically controlled, diaphragm actuated control valve that controls reservoir filling in response to a hydraulic on/off float pressure command. The Valve opens at pre-set low level and closes at a pre-set high level.



(for Illustration Only)

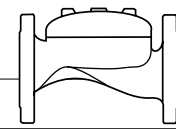
### Features and Benefits

- **Line-pressure driven**
  - Independent operation
- **Bi-Level Float**
  - On/Off - non modulating
  - Extended service life
- **Rugged Reliability**
  - Single-piece fully supported rolling diaphragm
  - Obstacle-free unobstructed flow path
  - Suited for use with low quality water
- **Hydraulically Restrained Actuation**
  - Non-slam closing
  - Quiet and smooth operation
- **High Performance**
  - High flow capacity
  - Low operating pressure
- **External Installation**
  - Easy access to valve & float
  - Simple level setting
  - Less wear and tear
- **In-line Serviceable**
  - Quick and easy maintenance
- **Flexible Design**
  - Simple addition of factory supplied features

### Major Additional Features

- Pressure sustaining – **453-66**
- Electric float backup – **450-66-65**
- Flow control – **457-66-U**

For further options, See relevant BERMAD publications.



## Operation

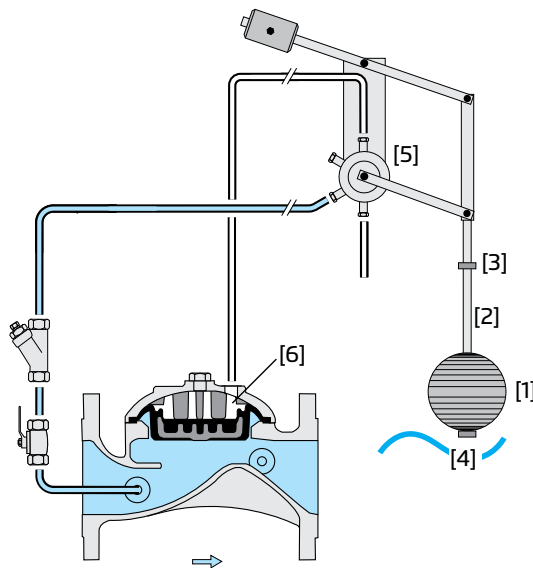
The Model FP 450-66 is a float controlled valve equipped with a 4-way, "last position", bi-level float pilot assembly. The float [1] slides along the rod [2]. When the float reaches either the adjustable high [3] or low [4] level stoppers, it either pulls the rod assembly down or pushes it up, switching the float pilot [5] position. When the float is between the adjustable stoppers, the main valve remains in its last position.

At high level, the float pilot applies pressure to the control chamber [6], powerfully shutting off the main valve.

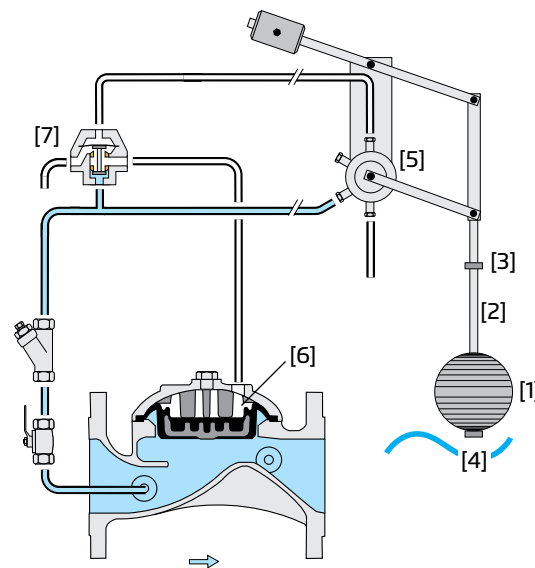
At low level, the float pilot vents the control chamber, powerfully opening the main valve.

For 8" valves and larger, an accelerator [7] quickens valve response.

Size Range 1½"-6"



Size Range 8"-12"



## Engineer Specifications

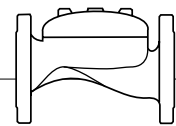
The Level Control Valve shall hydraulically open at a pre-set low level, and close at a pre-set high level.

**Main Valve:** The main valve shall be an elastomeric type globe (or angle) valve with a rolling-diaphragm.

The valve shall have an **unobstructed flow path**, with no stem guide or **supporting ribs**. The body and cover construction material shall be ductile iron. All external bolts and nuts shall be of stainless steel 316. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

**Actuation:** Valve actuation shall be accomplished by a fully peripherally supported, single piece, balanced rolling-diaphragm, vulcanized with a rugged radial seal disk. The diaphragm assembly shall be the only moving part. The assembled valve shall be hydraulically tested.

**Quality Assurance:** The valve manufacturer shall be certified according to the ISO 9000 and 9001 Quality Assurance Standard.



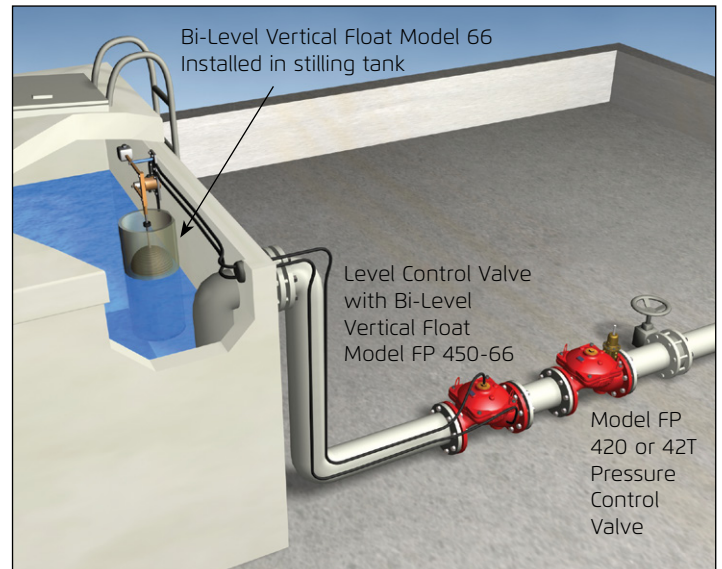
## Typical Applications

### Infrastructure Installation

Rooftop reservoir level control is attained by electric control of the basement pumps according to reservoir level. As overflow of a rooftop reservoir can cause costly damage, hydraulic backup protection is recommended.

The Model FP 450-66 is suited to this function. When open, it presents minimal interference, but when needed, it shuts off securely.

To ensure supply pressure to upper floor consumers or the fire protection system, install the Model FP 420 or 42T Pressure Control Valve upstream from the Model FP 450-66.

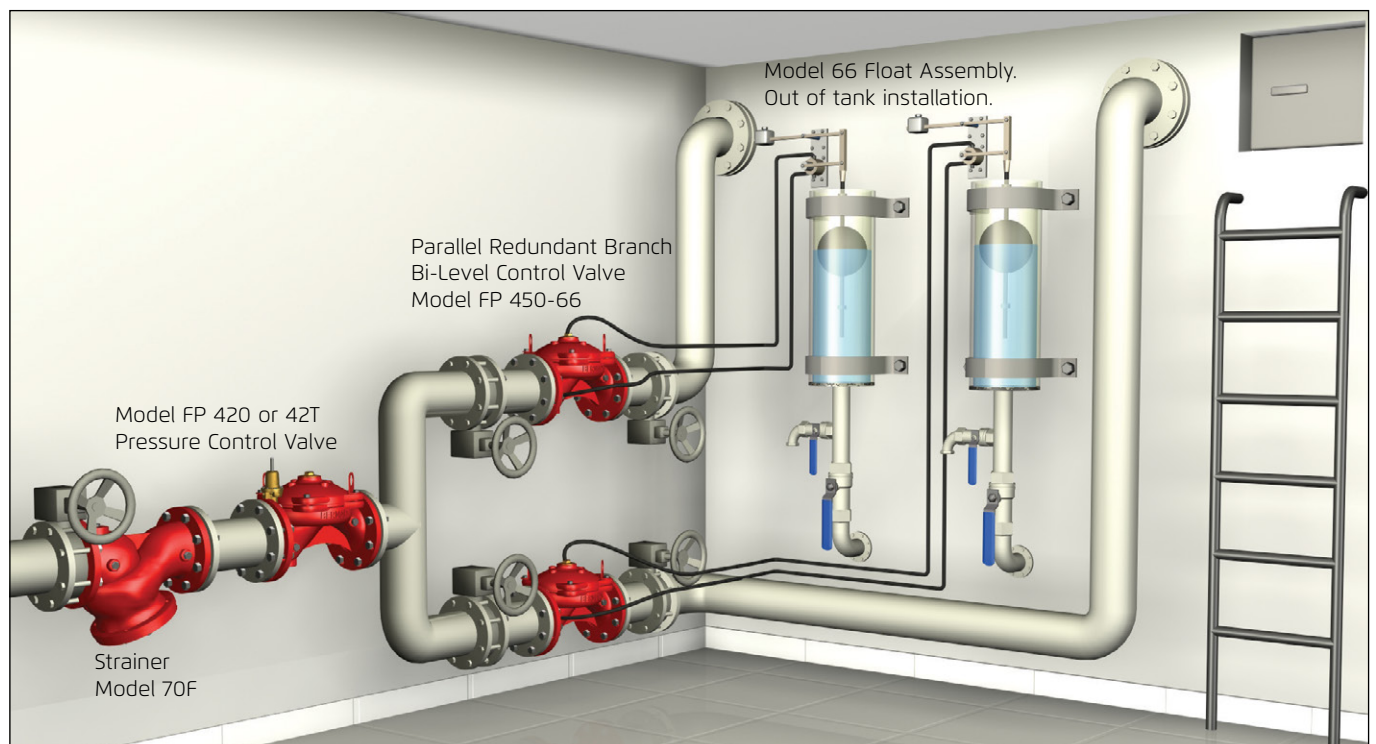


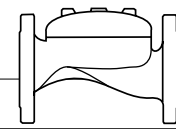
### Basement Reservoirs

Basement reservoir design requires consideration of specific issues:

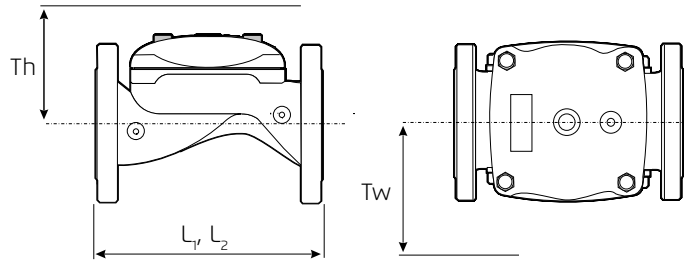
- Supply cut-off is unacceptable.
- Reservoir overflow might damage expensive equipment.
- Noise level and duration should be limited.
- Municipal supply pressure might be low.

The Model FP 450-66, as part of a Reservoir Fill-Up system, fulfills these requirements and more.





### Technical Data



Size	2"		2½"		3"		4"		6"		8"		10"		12"		
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
Dimensions	L <sub>1</sub> <sup>(1)</sup>	205	8½	205	8½	257	10⅛	320	12 <sup>9</sup> / <sub>16</sub>	415	16 <sup>5</sup> / <sub>16</sub>	500	19 <sup>11</sup> / <sub>16</sub>	605	23 <sup>13</sup> / <sub>16</sub>	725	28½
	L <sub>2</sub> <sup>(2)</sup>	180	7⅞	210	8¼	255	10⅞	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Tw	284	11 <sup>3</sup> / <sub>16</sub>	284	11 <sup>3</sup> / <sub>16</sub>	300	11 <sup>3</sup> / <sub>16</sub>	313	12 <sup>5</sup> / <sub>16</sub>	341	13 <sup>7</sup> / <sub>16</sub>	415	16 <sup>5</sup> / <sub>16</sub>	443	17 <sup>7</sup> / <sub>16</sub>	481	18 <sup>15</sup> / <sub>16</sub>
	Th	210	8¼	210	8¼	215	8 <sup>7</sup> / <sub>16</sub>	243	9 <sup>9</sup> / <sub>16</sub>	315	12 <sup>3</sup> / <sub>8</sub>	350	13 <sup>3</sup> / <sub>4</sub>	382	15	430	6 <sup>15</sup> / <sub>16</sub>

**Notes:**

- L<sub>1</sub> is for flanged valves.
- L<sub>2</sub> is for threaded NPT or ISO-7-Rp.
- Tw & Th are max. for pilot system.
- Data is for envelope dimensions, component positioning may vary.
- Provide space around valve for maintenance.

**Connection Standard**

- Flanged: ANSI B16.42 (Ductile Iron), B16.5 (Steel & Stainless Steel), B16.24 (Bronze), ISO PN16
- Grooved: ANSI/AWWA C606 for 2, 3, 4, 6 & 8"
- Threaded: NPT or ISO-7-Rp for 2, 2½ & 3"

**Water Temperature**

- 0.5 – 60°C / 33 – 140°F

**Available Sizes**

- Globe: 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
- Angle: 2, 3 & 4"

**Pressure Rating**

- Max. inlet: 250 psi (17 bar)

**Manufacturers Standard Materials**

**Main valve body and cover**

- Ductile Iron ASTM A-536

**Main valve internals**

- Stainless Steel & Elastomer

**Control Trim System**

- Brass control components/accessories
- Stainless Steel 316 tubing & fittings

**Elastomers**

- Polyamide fabric reinforced Polyisoprene, NR

**Coating**

- Electrostatic Powder Coating Polyester, Red (RAL 3002)

**Optional Materials**

**Main valve body**

- Carbon Steel ASTM A-216 WCB
- Stainless Steel 316
- Ni-Al-Bronze ASTM B-148

**Control Trim**

- Stainless Steel 316
- Monel® and Al-Bronze
- Hastelloy C-276

**Elastomers**

- NBR
- EPDM

**Coating**

- Corrosion resistant fusion-bonded High Build epoxy coating with UV protection

**Float Data**

**Standard Materials:**

- Pilot body: Brass
- Seals: NBR (Buna N)
- Internals: Stainless Steel & Brass
- Lever system: Brass
- Float: Plastic
- Float rod: Stainless Steel
- Base plate: Fusion bonded epoxy coated Stainless Steel

**Optional materials:** Stainless Steel metal parts and float, FPM (Viton®) seals

**General Information:**

- Minimum level differential: 15 cm (6")
- Maximum level differential: 54 cm (21")
- Each extension rod adds 56 cm (22"), one extension rod supplied
- Extra counterweight required if second extension rod used see BERMAD float installation recommendations

If the inlet pressure is below 0.7 bar (10 psi) or if the differential pressure is above 10 bar (150 psi), consult the factory



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