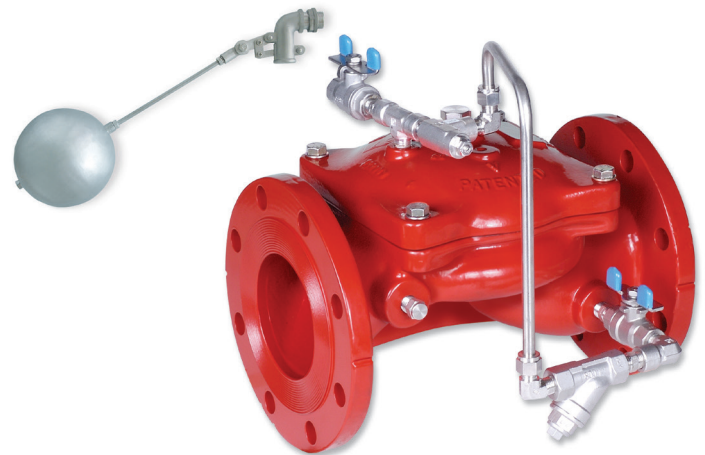


## Level Control Valve with Modulating Horizontal Float

### Model FP 450-60

- Reservoir filling
  - Low volume reservoirs
  - Large surface area reservoirs

The Model FP 450-60 Level Control Valve with Modulating Horizontal Float is a hydraulically controlled, diaphragm actuated, control valve that controls reservoir filling to maintain constant water level, regardless of fluctuating demand.



(for Illustration Only)

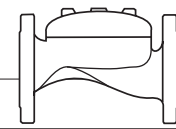
### Features and Benefits

- **Line-Pressure Driven**
  - Independent operation
- **Modulating hydraulic float**
  - "Always full" reservoir
- **Rugged Reliability**
  - Single-piece fully supported rolling diaphragm
  - Obstacle-free unobstructed flow path
- **Hydraulically Restrained Actuation**
  - Non-slam closing
  - Quiet and Smooth operation
- **High Performance**
  - High flow capacity
  - Very low opening & closing pressure requirement
- **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 – **453-60**
- Flow control – **457-60-U**
- Electric float backup – **450-60-65**

For further options, See relevant BERMAD publications.



## Operation

The Model FP 450-60 is a float controlled valve equipped with a 2-way, horizontal float pilot assembly.

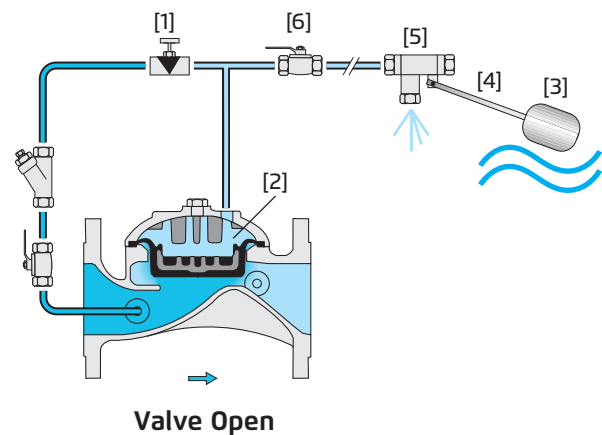
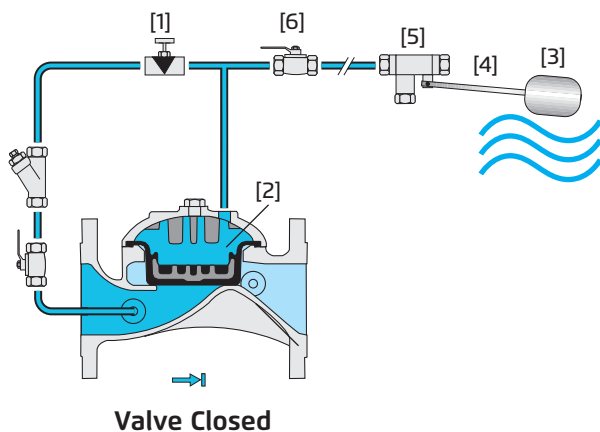
The needle valve [1] continuously allows flow from the valve inlet into the control chamber [2]. The float [3] is attached to the float pilot arm [4]. The location of the float assembly and the position of the float determines the level setting.

Should the level rise toward the setting, the float pilot [5] throttles, pressure in the control chamber accumulates causing the main valve to throttle, reducing the filling rate, and eventually closing drip tight.

Should the level fall, the float pilot releases pressure from the control chamber causing the main valve to modulate open.

The needle valve [1] can be adjusted to control the main valve closing speed

The cock valve [6] enables manual closing.



## Engineer Specifications

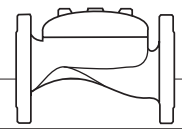
The Level Control Valve shall control reservoir filling to maintain constant water level regardless of fluctuating demand.

**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 shall be ductile iron. All external bolts and nuts shall be of Stainless Steel 316. All valve components construction material shall be accessible and serviceable without removing the valve from the pipeline.

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

**Control System:** The control system shall consist of a 2-way, stainless steel horizontal float pilot assembly, a needle valve, isolating cock valves, and a filter. All fittings shall be forged brass or stainless steel. 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.



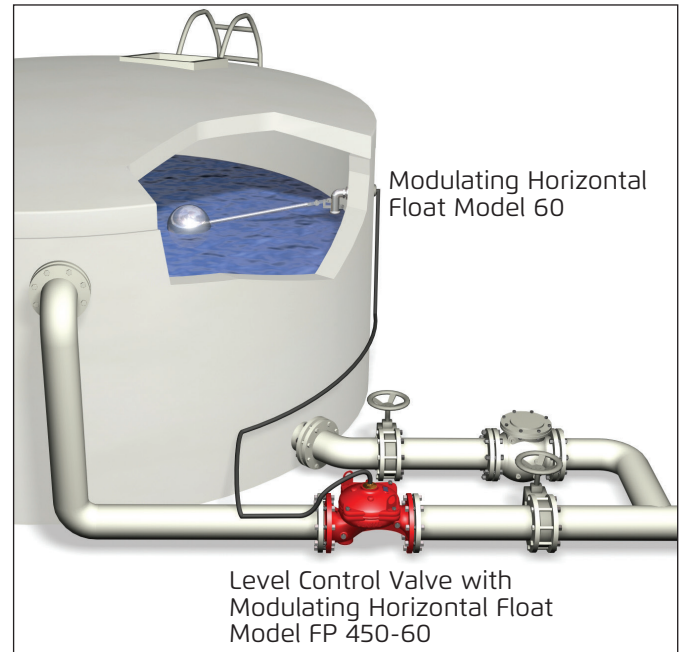
## Typical Applications

### Large Fire Water Reservoirs

Mechanical level control valves present various issues:

- Valves are often at inaccessible locations
- Float and arm assemblies are heavy and cumbersome
- Relatively low maximum pressure
- Tendency for mechanical devices to leak
- Increased valve corrosion due to humid environment inside the tank
- Difficult maintenance

The Model FP 450-60 overcomes these difficulties by applying a float pilot, separated from the valve itself, which controls a Hydraulic Valve.



### Rooftop Reservoirs

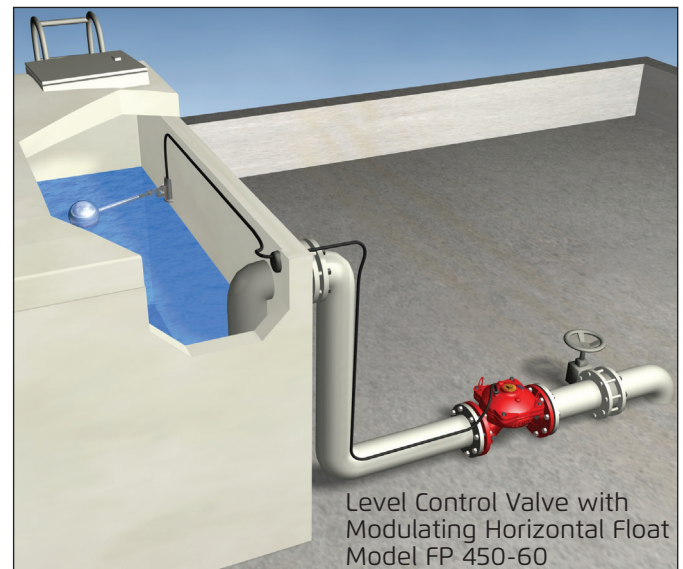
Rooftop reservoir level control is attained by electric control of the basement pumps according to reservoir level. As overflow of a rooftop reservoir can cause costly damage, hydraulic back-up protection is recommended. Where system design requires an "always full" rooftop reservoir, the Model FP 450-60 is well suited for this function.

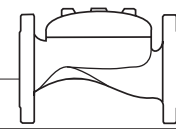
### Modulating

#### Level Control Valve:

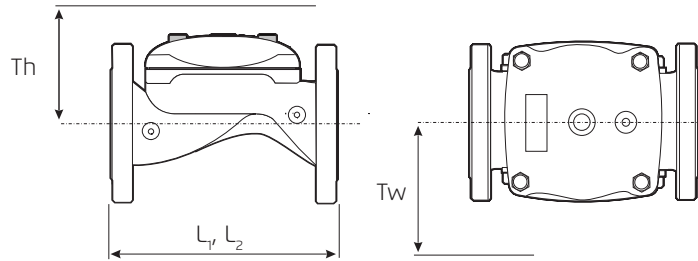
- Modulates open immediately when level starts dropping
- Closes securely to prevent overflow

Secured closing, even after long periods of the valve being open, is ensured by the fully developed hydraulic closing force applied over the peripherally and fully supported, single piece, balanced rolling-diaphragm, vulcanized with a rugged radial seal disk.





## 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), B16.1 (Cast Iron), ISO PN16
- 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: Stainless Steel
- Float: Stainless Steel
- Float rod: Stainless steel

#### Working temperature:

- Water up to 50°C (122°F)

#### Pressure rating:

- 16 bar (230 psi)

#### Ports:

- ½" ISO-7-Rp

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

