

## Level Control Valve with 2-Way Vertical Float Model FP 450-67

- "Always Full" Firewater Reservoir
- Automatic Self Operation
- Suitable for systems with poor quality water

The Model FP 450-67 Level Control is a hydraulically controlled, diaphragm actuated valve for controlling the level in firewater reservoirs. The 2 way vertical float modulates the valve to keep the reservoir full or at a preset level at all times.

The unobstructed flow passage, simplicity of design and robust construction makes the FP 450-67 suitable for use with firewater which is often of a poor quality.



(for illustration Only)

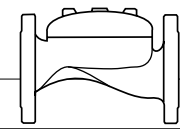
### Features and Benefits

- **Line-pressure driven**
  - Independent operation
- **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 – **453-67**
- Electric float backup – **450-67-65**
- Flow control – **457-67-U**

For further options, See relevant BERMAD publications.



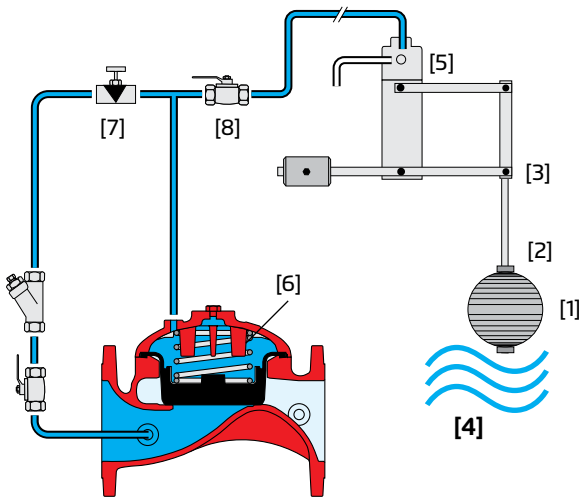
## Operation

The Model 450-67 is a float controlled valve equipped with an adjustable, 2-Way vertical float pilot assembly. The needle valve [7] continuously allows flow from valve inlet into the control chamber [6]. The float [1] is locked on the float assembly rod [3] between two adjustable stoppers [4] and [2].

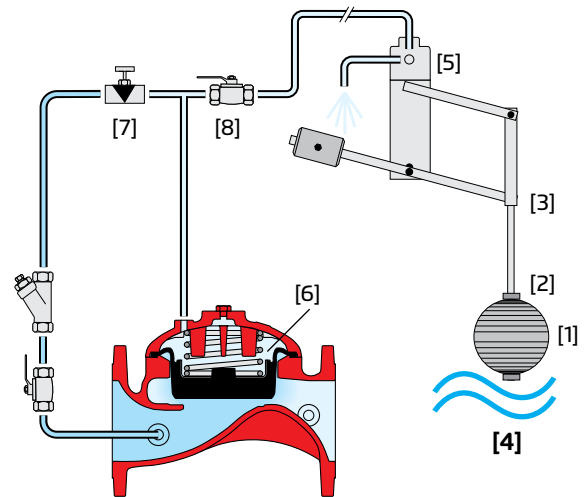
When the reservoir water is at the set level, the float pilot [5] will be closed and inlet pressure will accumulate in the main valve control chamber by way of the needle valve, causing the main valve to throttle, closing drip tight. Should the water level fall below the set level, the float pilot will release pressure from the control chamber causing the main valve to modulate open, keeping the reservoir level constant at all times.

The cock valve [8] overrides the float and enables manual closing.

Use the needle valve to control the closing speed.



**Valve Closed** (set position)



**Valve Open** (operating condition)

## Engineer Specifications

The Level Control Valve shall hydraulically open and shut at pre set level.

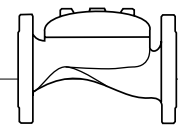
**Main Valve:** The main valve shall be an elastomeric type globe (or angle) valve with a rolling-diaphragm. The valve shall have an **unobstructed flow path**, with no stem guide or **supporting ribs**. The body and cover construction material shall be ductile iron. All external bolts and nuts shall 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.

**Control System:** The control system shall consist of BERMAD model 67 "always full type", 2-way vertical float pilot valve assembly with adjustable level mechanism of brass or stainless steel 316, a needle valve, isolating cock valves and Y control filter. All fittings shall be forged brass or stainless steel 316.

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.



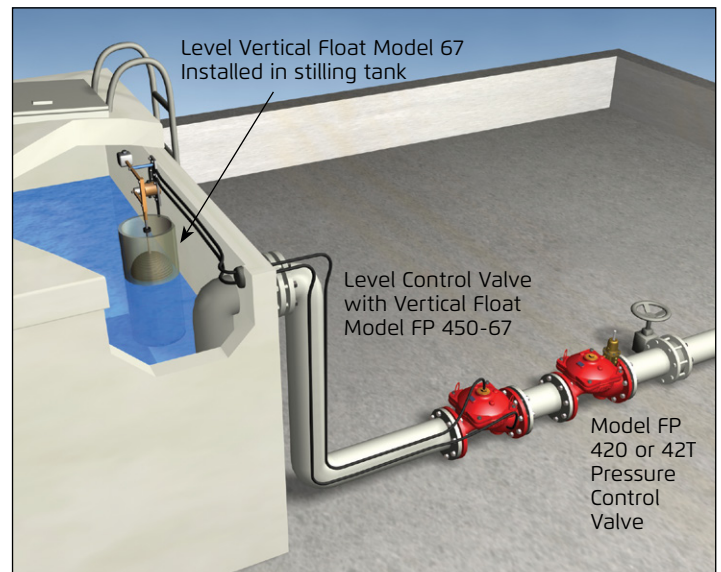
## Infrastructure Installation

### Rooftop reservoir

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 450-67 is suited to this function. When open, it presents minimal interference, but when needed, it shuts off securely.

To prioritize pressure to upper floor consumers or fire protection system, install the Model FP 420 or 42T Pressure Control Valve upstream from the Model FP 450-67.

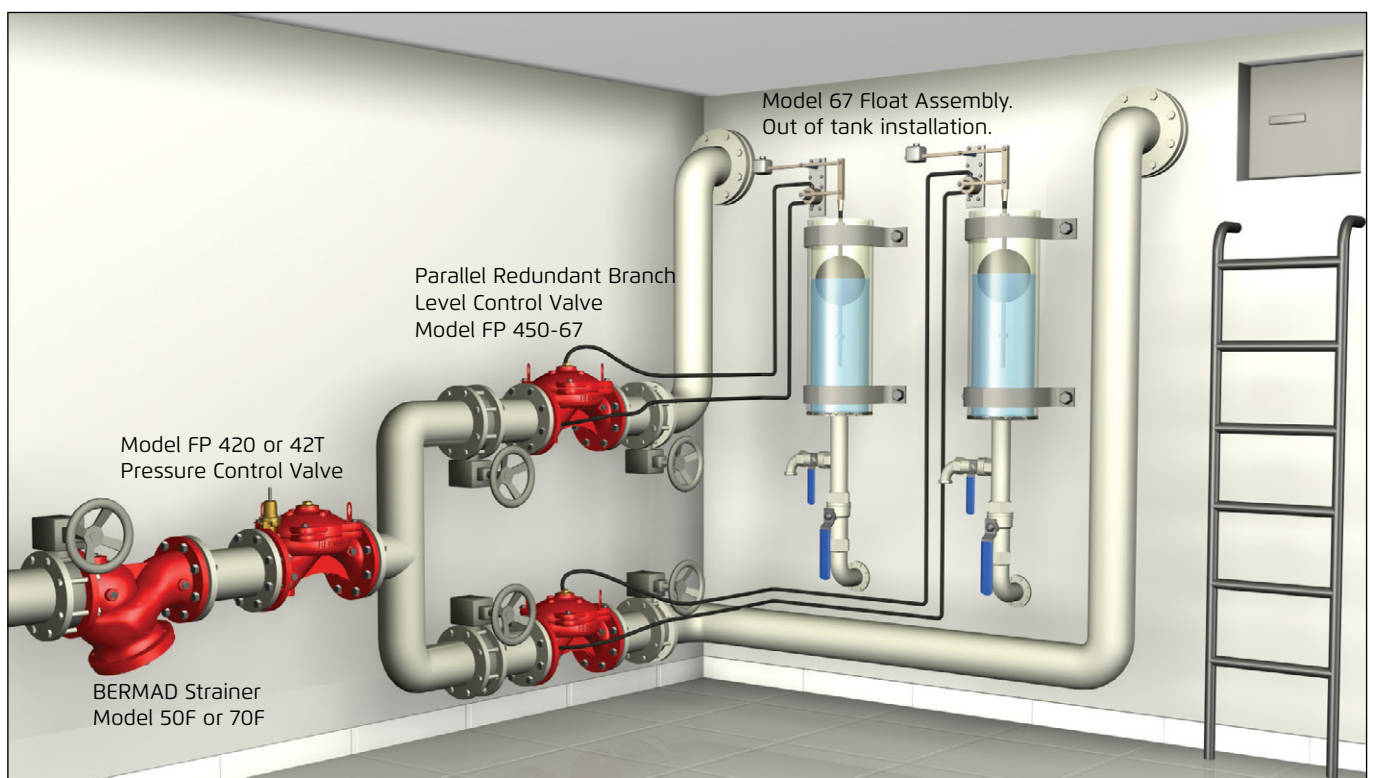


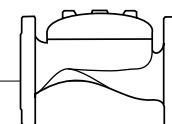
### Basement Reservoirs

Basement reservoir design requires consideration of specific issues:

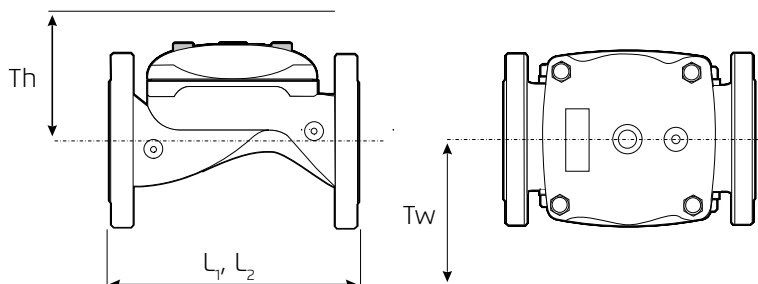
- Supply cut-off is unacceptable.
- Reservoir overflow might damage expensive equipment.
- Noise level and duration should be limited.
- Municipal supply pressure might be low.

The Model FP 450-67, 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	12⅞	415	16⅝	500	19⅞	605	23⅞	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	11⅜	284	11⅜	300	11⅜	313	12⅝	341	13⅞	415	16⅝	443	17⅞	481	18⅝
	Th	210	8¼	210	8¼	215	8⅞	243	9⅞	315	12⅜	350	13¾	382	15	430	6⅝

### Notes:

1. L<sub>1</sub> is for flanged valves.
2. L<sub>2</sub> is for threaded NPT or ISO-7-Rp.
3. Tw & Th are max. for pilot system.

4. Data is for envelope dimensions, component positioning may vary.
5. 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

#### 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

#### 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

