

## Level Control Valve with Altitude Pilot

### Model FP 450-82

- "Always Full" Firewater Reservoir
- Ideal for High level reservoirs & water towers
- Safer firewater filling
- Self operation with No Float
- Suitable for horizontal or vertical installation

The BERMAD FP 450-82 Level Control Valve is a hydraulically controlled, diaphragm actuated automatic control valve that shuts at pre-set high reservoir level and opens in response to level drop, keeping the reservoir full.

The water level is maintained by the use of a highly accurate pilot valve. The pilot valve senses the water level head from a sensing point at the bottom of the reservoir and controls the main filling valve accordingly. This eliminates the need for the installation of a float mechanism, making it ideal for high level reservoirs.



(for Illustration Only)

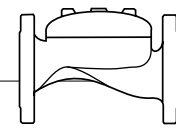
### Features and Benefits

- **Line-pressure driven**
  - Independent operation
- **No Float**
  - Simple installation
  - Easy accessibility
- **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
  - low pressure operation
- **External Installation**
  - Easy access to valve
  - 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

- **Standard:** 2-14 meter Setting Altitude Pilot – **FP 450-82-M6**
- 5-22 meter Setting Altitude Pilot – **FP 450-82-M5**
- 15-35 meter Setting Altitude Pilot – **FP 450-82-M4**
- 25-70 meter Setting Altitude Pilot – **FP 450-82-M8**
- Pressure sustaining (for 450-82) – **453-82**

For further options, contact BERMAD.



## Operation

The Model FP 450-82 is a pilot controlled valve equipped with an adjustable, #82 altitude pilot valve. The pilot valve senses the static head of the reservoir level via a sensing tube [1] connected to a "still point" at the bottom of the reservoir.

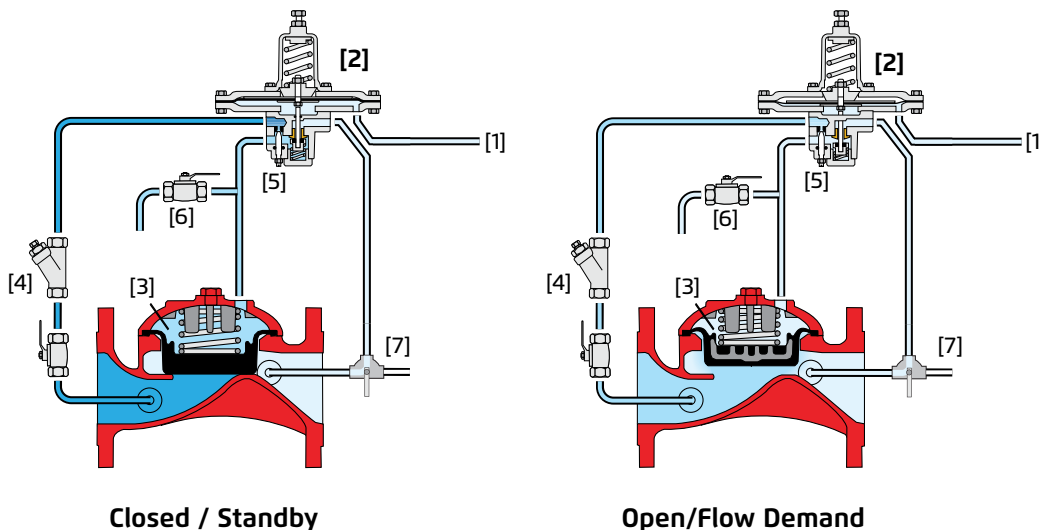
Should the water level head rise to that equaling the setting of the pilot valve [2] the pilot valve will close, thereby allowing valve inlet water pressure to accumulate in the main valve control chamber [3] via the adjustable needle valve [5], causing the main valve to close drip tight.

Should the Water Level head fall below the pilot valve setting, the pilot valve will open releasing pressure from the main valve control chamber, causing it to open and to fill the reservoir.

As the water level in the reservoir approaches the pre-set level the pilot starts to modulate causing the main valve to throttle in a controlled manner and close drip tight.

The adjustable pilot needle valve [5] ensures a smooth operation of the main valve by regulating the closing speed.

The test valve [6] enables manual opening of the main valve.



## Engineer Specifications

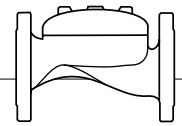
The Level Control Valve shall shut at pre-set high reservoir level and open in response to a level drop, as sensed by the #82 high sensitivity altitude pilot valve mounted on the main valve.

**Main Valve:** The main valve shall be an elastomeric globe type 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.

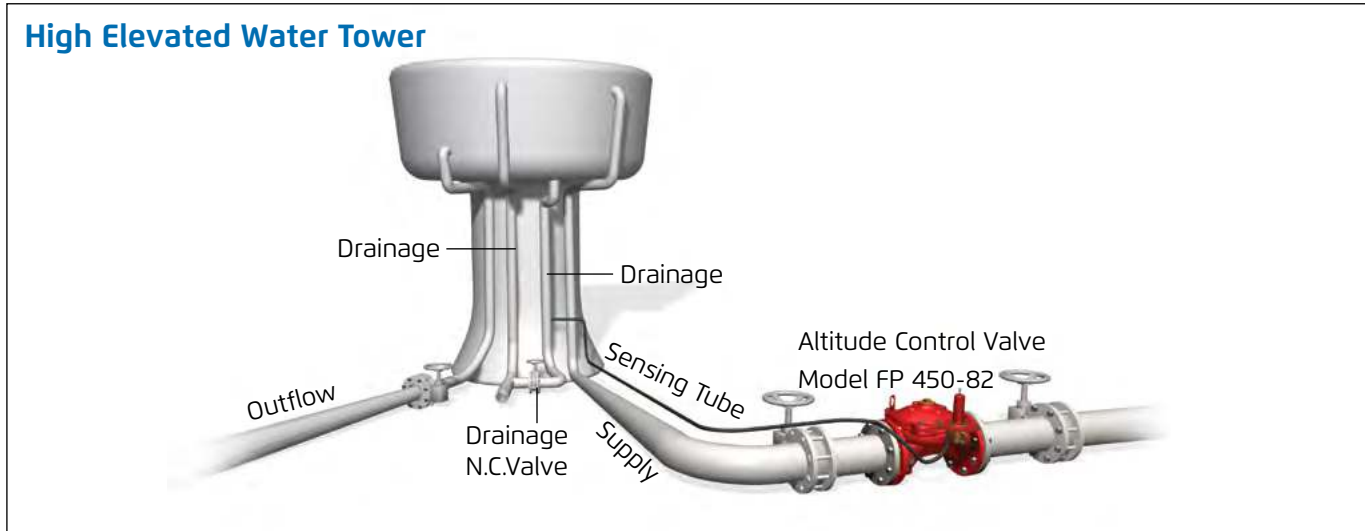
**Control System:** The control system shall consist of a #82, altitude pilot valve with a covered, centered spring and 8" (200 mm) sensing diaphragm, an isolating ball valve, Y control filter and adjustable closing speed control needle valve. All fittings shall be of stainless steel 316. The assembled valve shall be hydraulically tested.

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



## Typical Applications

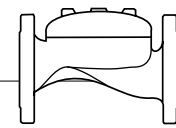
The Model FP 450-82 senses the static head of the water level in the tank by means of a high sensitivity altitude pilot valve. To do so accurately, the sensing tube end must be connected to a "still point" at the bottom of the tank. The drainage pipe provides this "still point", a location not influenced by flow velocity from the filling and outflow pipes.



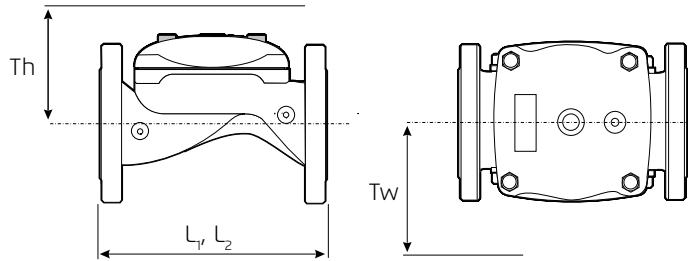
In firewater reservoirs, the water level should be kept as constant as possible, with a highly accurate altitude pilot valve the Model FP 450-82 is well suited to fulfill this requirement.

The altitude pilot is highly sensitive to changes and accurately maintains the reservoir water level at no more than approximately 30cm or 1ft below the set level.





## Technical Data



Size	1½, 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	10¼	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	7 <sup>1</sup> / <sub>16</sub>	210	8¼	255	10 <sup>1</sup> / <sub>16</sub>	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"

### 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

### Altitude Pilot Data

#### Standard Materials:

- Body & cover: Brass, Bronze or Stainless Steel
- Elastomers: NBR (Buna N)
- Springs: Galvanized Steel or Stainless Steel
- Internals: Stainless Steel
- Diaphragm covers: Fusion bonded epoxy coated Steel or Stainless Steel

#### General Information

- Altitude Adjustment Range Table:

Code	meter	feet
M6	2-14	7-46
M5	5-22	17-72
M4	15-35	49-115
M8	25-70	82-230

- Filling initiation point: 30cm (1ft) below set or full level

