



## Level Control Valve with Bi-Level Vertical Float

### Model: WW-450-66

- Reservoir filling
  - Low noise generation
  - Energy cost critical systems
  - Systems with poor water quality

The Model WW-450-66 Level Control Valve with Bi-Level Vertical Float is a hydraulically controlled, diaphragm actuated, double chambered control valve. The valve is hydraulically powered to fully open at pre-set reservoir low level, and to shut off at pre-set high level regardless of valve differential pressure.



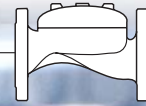
### Features and Benefits

- **Line pressure driven** – Independent operation
- **Bi-Level hydraulic float control**
  - On/off service
  - Low cavitation damage
  - Suitable for low quality water
  - Inherent reservoir refreshing
- **Flexible design** – Easy addition of features
- **Advanced globe or angle hydro-efficient design**
  - Unobstructed flow path
  - Single moving part
  - Non-turbulent flow
  - High flow capacity
- **Fully supported & balanced diaphragm**
  - Low actuation pressure
  - Progressively restrains valve closing
  - Prevents diaphragm distortion
- **External installation**
  - Easy access to valve and float
  - Easy Level Setting
  - Less wear and tear
- **In-line serviceable**
  - Easy maintenance
  - Minimal down time

### Major Additional Features

- Pressure sustaining – WW-453-66
- Electric float backup – WW-450-66-65
- Flow control – WW-457-66-U
- Closing surge prevention – WW-450-66-49

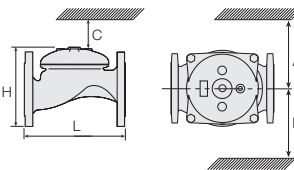
See relevant BERMAD publications.



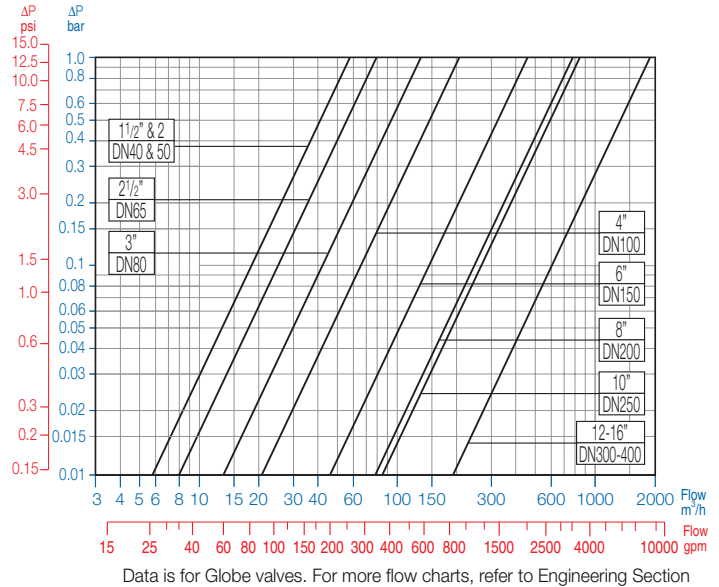
## Technical Specifications

### Dimensions and Weights

	Size		A, B		C		L		H		Weight	
	DN	inch	DN	inch	DN	inch	DN	inch	DN	inch	kg	lbs
Flange	40	1½	330	13	68	2.7	205	8.1	152	6	8	17.6
	50	2	330	13	68	2.7	205	8.1	152	6	9	19.8
	65	2½	340	13	110	4.3	205	8.1	178	7	11	23.1
	80	3	350	14	125	4.9	250	9.8	210	8.3	19	41.9
	100	4	360	14	145	5.7	320	12.6	242	9.5	28	61.7
	150	6	400	16	205	8.1	415	16.3	345	13.6	68	149.9
	200	8	430	17	260	10	500	19.7	430	16.9	125	275.6
	250	10	450	18	275	11	605	23.8	460	18.1	140	308.6
	300	12	515	20	380	15	725	28.5	635	25.0	290	639.3
	350	14	545	22	395	16	742	29.2	655	25.8	358	789.2
400	16	550	22	580	23	742	29.2	695	27.4	377	831.1	
Groove	50	2	310	12	65	2.6	205	8.1	108	4.3	5	11
	80	3	335	13	125	4.9	250	9.8	155	6.1	11	23.4
	100	4	350	14	145	5.7	320	12.6	191	7.5	16	35.7
	150	6	400	16	205	8.1	415	16.3	302	11.9	49	108



### Flow Chart



### Main valve

- Pressure Ratings:** 16 bar; 232 psi
- Connections Standard:**
- Flanged:** ISO 7005-2 (PN10 & 16); ANSI B16.42 (#150)
- Grooved:** ANSI C606
- Threaded:** Rp ISO 7/1 (BSP.P) or NPT
- Others:** Available on request
- Operating Pressure Range:** 0.5-16 bar; 7-232 psi
- For lower pressure requirements, consult factory
- Working Temperature:** Water up to 50°C (122°F)
- Standard Materials:**
- Body and Cover:** Electrostatic Polyester Powder, RAL 5010 (Blue) Coated Ductile Iron
- Spring:** Stainless Steel 302
- Diaphragm:** Nylon fabric Reinforced NR with rugged insert
- Bolts, Studs and Nuts:** Zinc-Cobalt plated Steel

### Control System

- Float Standard Materials**
- Pilot body:** Brass
- Seals:** NBR
- Internals:** Stainless Steel & Brass
- Lever system:** Brass
- Float:** Plastic
- Float rod:** Stainless Steel
- Base plate:** Fusion bonded epoxy coated Steel
- Optional materials:** Stainless Steel metal parts and float, FPM (Viton®) seals
- 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
  - If inlet pressure is below 0.7 bar (10 psi) or above 10 bar (150 psi), consult factory

### Accelerator Standard Materials:

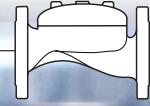
- Body:** Brass or Stainless Steel
- Internals:** Stainless Steel & Brass
- Elastomers:** NBR or FPM
- Control Accessories:** Bronze, Brass, Stainless Steel & NBR
- Tubing and Fittings:** Stainless Steel

### How to Order

Please specify the requested valve in the following sequence: (for more options, refer to Ordering Guide.)

Sector	Size	Primary Feature	Additional Feature	Pattern	Body Materials	End Connections	Coating	Voltage & Position	Tubing & Fittings	Additional Attributes
WW	6"	450	66	-	C	16	EB	4AC	NN	I
Waterworks	1½ - 16" DN40-400	Level Control	Globe Angle (up to 4")	G A	Ductile Iron (Standard) Cast Steel St. Steel 316 Nickel Alumin. Bronze	24VAC/50Hz - N.C. 24VAC/50Hz - N.O. 24VDC - N.O. 24VDC - L.P. 220VAC/50Hz - N.C. 220VAC/50Hz - N.O.	EB PG PB UC	St. St. 316 Tubing & Fittings Copper Tubing & Brass Fittings Plastic Tubing & Brass Fittings	NN CB PB	NN F U S N
		<ul style="list-style-type: none"> <li>Closing Surge Prevention 49</li> <li>Modulating Horizontal Float 60</li> <li>Bi-Level Electric Float 65</li> <li>Bi-Level Vertical Float 66</li> <li>Modulating Vertical Float 67</li> <li>Altitude Pilot 80</li> <li>Modulating Altitude Pilot 82</li> <li>Sustaining Altitude Pilot 83</li> <li>Bi-Level Altitude Control 86</li> </ul>			<ul style="list-style-type: none"> <li>16</li> <li>A5</li> <li>J1</li> <li>VI</li> <li>BP</li> <li>NP</li> </ul>	<ul style="list-style-type: none"> <li>4AC</li> <li>4AO</li> <li>4DC</li> <li>4DO</li> <li>4DP</li> <li>2AC</li> <li>2AO</li> </ul>	<ul style="list-style-type: none"> <li>Valve Position Indicator</li> <li>Large Control Filter</li> <li>Orifice Assembly</li> <li>Electric Limit Switch</li> <li>St. St. 316 Control Accessories</li> </ul>	<ul style="list-style-type: none"> <li>I</li> <li>F</li> <li>U</li> <li>S</li> <li>N</li> </ul>		
		<ul style="list-style-type: none"> <li>2-14 Meter Setting Altitude Pilot M6</li> <li>5-22 Meter Setting Altitude Pilot M5</li> <li>15-35 Meter Setting Altitude Pilot M4</li> <li>25-70 Meter Setting Altitude Pilot M8</li> </ul>			<ul style="list-style-type: none"> <li>Other end connections available on request</li> </ul>	<ul style="list-style-type: none"> <li>Use when additional electric control feature is selected</li> </ul>	<ul style="list-style-type: none"> <li>Multiple choices permitted</li> </ul>			





## Operation

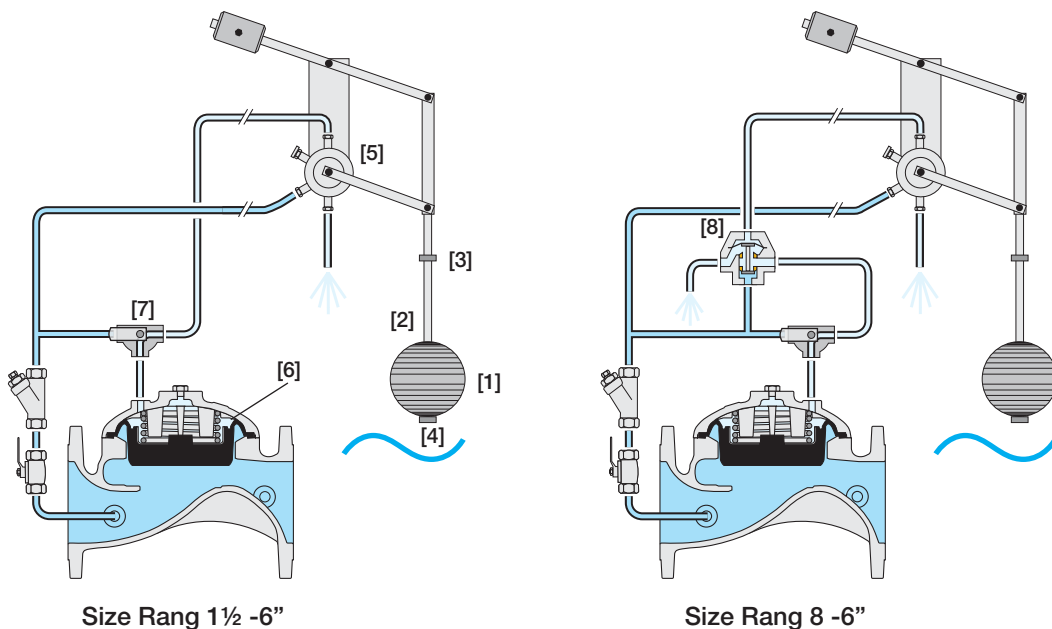
The Model WW-450-66-B is a float controlled valve equipped with a 4-Way, “last position”, bi-level float pilot assembly. The float [1] slides along the rod [2]. When the float reaches either the adjustable high [3] or low [4] level stoppers, it either pulls the rod assembly down or pushes it up, switching 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], shutting off the main valve.

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

The 3-way Cock Valve [7] enables manual closing of the main Valve.

For 8” (DN200) valves and larger, an accelerator [8] quickens valve response.



Size Rang 1 1/2 -6"

Size Rang 8 -6"

## Engineer Specifications

The Level Control Valve shall open at pre-set reservoir low level, and shut off at pre-set reservoir high level.

**Main Valve:** The valve shall be hydraulically controlled, elastomeric type globe valve with a rolling-diaphragm. The valve shall have an unobstructed flow path with no stem guide or supporting ribs. 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. The valve shall have a removable cover for quick in-line service enabling all necessary inspection and servicing. Valve pressure rating shall be PN16. Valve construction materials shall be: Epoxy FB coated Ductile Iron body and cover, NR diaphragm & Stainless Steel spring.

The valve shall be supplied as an assembly, hydraulically tested and factory adjusted to customer requirements at an ISO 9000 and 9001 certified hydraulic laboratory.

**Control System:** The control system shall consist of a 4-Way, “Last Position”, adjustable bi-level, hydraulic float pilot assembly, isolating cock valve (for 8” and larger valves, an accelerator shall be added to the float pilot), and a filter. Washing the filter shall not require isolating the main valve. All tubing and fittings shall be Stainless Steel. The assembled valve shall be hydraulically tested and factory adjusted to customer requirements.

**Quality Assurance:** The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to WRAS, and other recognized standards.



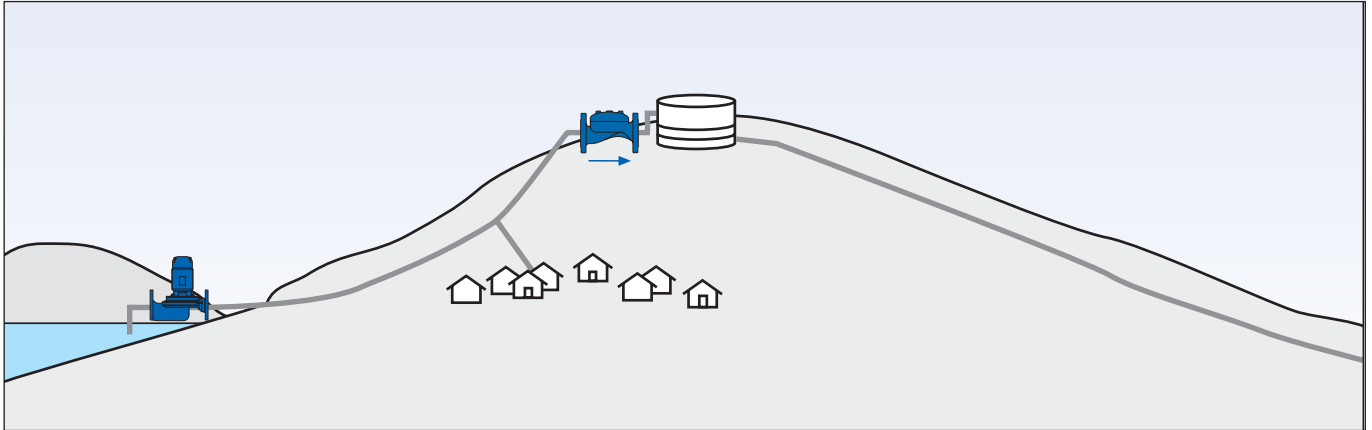
## Typical Applications

### Infrastructure Reservoirs

Optimal design of reservoir systems requires specifying a level control valve that reduces pumping costs by minimizing the extra pumping pressure required to operate standard valves.

Even at very low pressure, the Model WW-450-66 ensures maximum flow capacity, and secure closing.

It should be included during the system design phase or with changing needs.



### 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 WW-450-66, as part of the system shown, fulfills these requirements and more.

\* For other measures that might be needed to further reduce system noise, see relevant BERMAD publications.



In addition to the Model WW 450-66-B, BERMAD recommends these systems include:

- [1] Strainer Model 70F: To prevent debris from damaging valve operation.
- [2] Pressure Sustaining Valve Model WW 430-65: To ensure municipal supply to lower floors & provide electric backup.
- [3] Parallel Redundant Branch Model WW 450-66: To ensure uninterrupted supply.
- [4] Float Assembly: To allow out-of-tank installation.