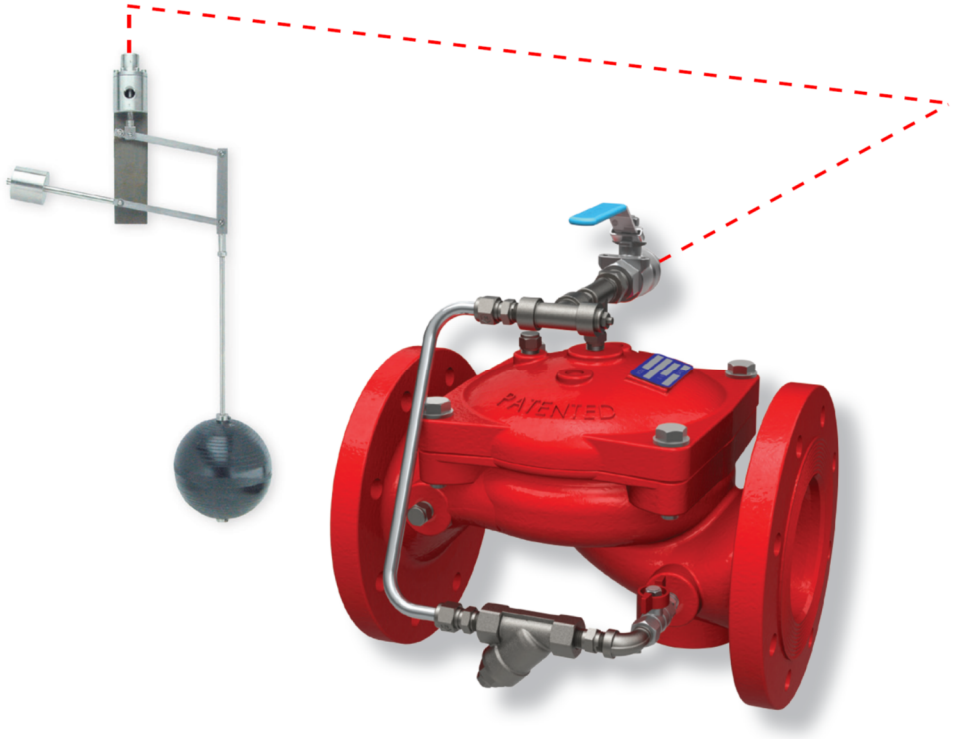
Bermad Level Control Valve
with 2-Way Vertical Float

Model: FP 450-67



Installation
Operation
Maintenance

1. Safety First

BERMAD believes that the safety of personnel working with and around our equipment is the most important consideration. Please read all safety information below and from any other relevant source before attempting to perform any maintenance function.
Comply with all approved and established precautions for working with your type of equipment and/or environment.
Authorized personnel should perform all maintenance tasks.
Prior to performing a procedure, read it through to the end and understand it. If anything is not clear, ask the appropriate authority.
When performing a procedure, follow the steps in succession without omission"

2. Description

The Bermad FP-450-67 Level Control Valve is an automatic control valve designed to control the high water level in reservoirs and tanks without the need for external source of energy for actuation. The 2 way vertical float modulates the valve to keep the reservoir full or at a preset level at all times.
The valve is inline serviceable type enable all required maintenance without removing the valve from the pipeline.

3. Installation

Installation Instructions

4.1 Allow enough room around the valve assembly for any adjustments and future maintenance.
4.2 Thoroughly flush the pipeline to remove any dirt, scale, debris etc. Failure to do this may result in the valve being inoperable.
4.3 Isolation valves should be installed upstream and downstream of the main valve to allow maintenance.
4.4 Install the valve in the pipeline with the valve flow arrow on the body casting in the proper direction. Use the lifting eye provided on the main valve cover for raising and lowering the valve.
4.5 It is highly recommended to install a strainer upstream from the level control valve
4.6 Additional backup valve is recommended when overflow of a reservoir can cause costly damage.
Note: The need of backup valve to prevent overflow is essential for a Basement as well as Rooftop Reservoirs.

Figure 1: Level Control Valve Typical Installation

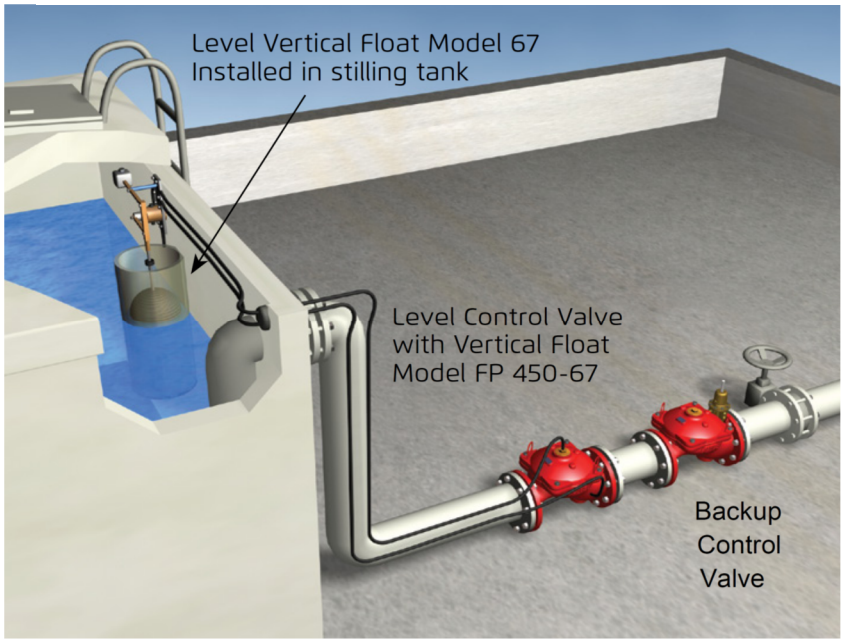


Figure 2: 67 Float Pilot Valve

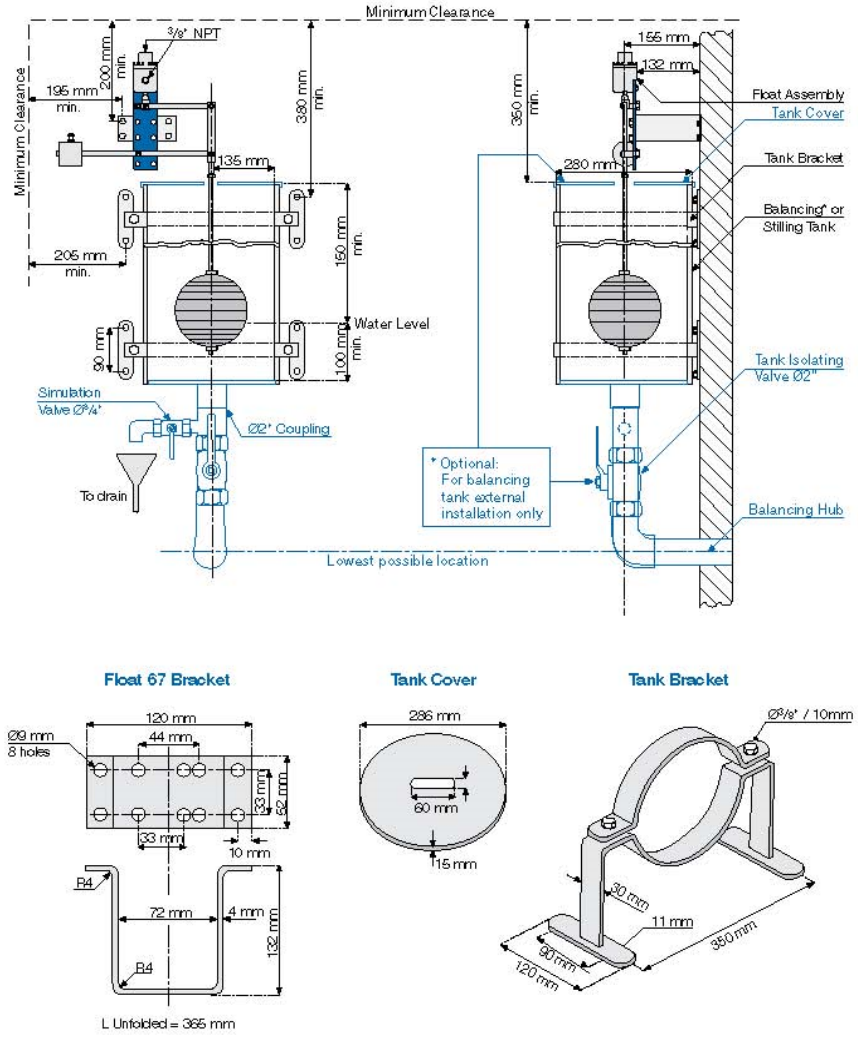
4.7 Install the float pilot valve (5 fig. 4) on the reservoir, the 67 float pilot valve Base Plate shall be fixed to the reservoir's wall, the float shall be placed slightly higher than the maximum desired water level.

4.8 Install a balancing pipe or still tank around the float assembly see figure 3.

4.9 Ensure that the float lever system is free to rotate without any destruction and that the float pilot valve is easily accusable for future maintenance.

4.1 A pilot line pipe of 3/8" minimum diameter should be install to connect between the cock valve (6 fig. 3) on the main Bermad valve to the float pilot valve center port (5 fig. 4) on the reservoir.

Figure 3: 67 Float Pilot Valve Typical Installation



4. Operation

See fig. 5, the Bermad 450-67 is a float controlled valve equipped with an adjustable, 2-way vertical float pilot assembly.

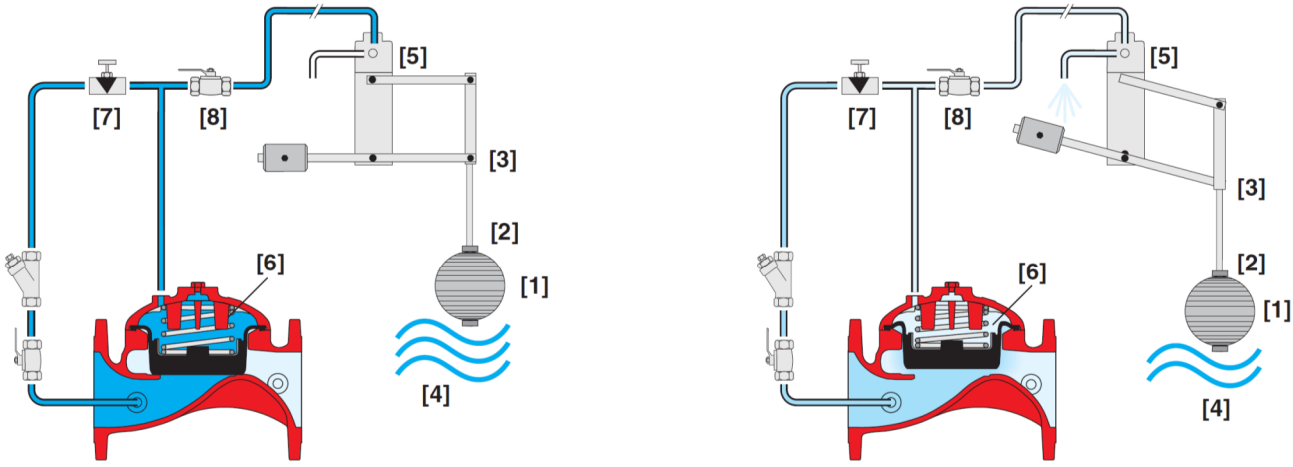
The restrictor (7) continuously allows flow from valve inlet into the control chamber (6). The float (1) is locked on the float assembly rod (3) between two adjustable stoppers (4) and (2).

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 (if utilized) to control the closing speed.

Figure 5: Level Control valve Operation Drawing



Valve Closed (set position)

Valve Open (operating condition)

1. Startup

5.1 Open the water supply isolating valves slowly, and confirm that the supply pressure is typical.

5.2 Fill up the reservoir until the level reaches its desired shut-off level by closing the cock valve (8).

5.3 Vent air from the pilot line and valve's control chamber by loosening tube fittings at the highest points, allowing all air to bleed then re-tight.

5.4 Adjust the float high stopper at that shut-off level (2) while the rod (3) is lifted up to closed position, allow the main valve to close tight.

5.5 Allow the valve to open by ensuring reservoir level is approx 0.3 meter / 1 ft. lower than the setting level.

5.6 Confirm the valve closes as level reaches the closing set level.
Note: the water level change can be simulate by connecting an accurate gauge to the reservoir normally closed drain line.

2. Maintenance and Inspection Test

7.1 Maintenance Schedule

The following procedure suggestions are a maintenance guide. These procedure suggestions will vary depending on the type of fluid and operation conditions.

No	Description	Schedule
1	Clean filter	Annually
2	Seat inspection	Annually
3	Seal inspection	Annually
4	Indicator Stem freedom of rotation (if utilized)	Annually
5	Valve freedom of movement	Annually
6	Restrictor	Annually
7	Pressure Indicators	Annually
8	Inspect and/or replace diaphragm	3 years

7.2 Field Maintenance Instructions

7.2.1 Bermad valves require no lubrication, no packing tightening, and require a minimum of maintenance.

7.2.2 A periodic inspection schedule should be established to determine how the flow, the erosion, the dissolved minerals and the suspended particles are affecting the valve.

7.2.3 After three years of operation, replacement of the diaphragm is recommended.

7.2.4 Remove the valve cover, clean the valve body from sediments, clean the control tubing entry holes, and install a new main valve diaphragm.

7.2.5 Filter cleaning - The filter should be cleaned manually every time the valve is opened for internal inspection.

7.3 Trouble-Shooting

Symptom	Probable Cause	Action
Valve Fails To Open	Insufficient inlet pressure	Check/create inlet pressure
	Priming ball valve closed	Open
	Reservoir is full. Compression.	Check reservoir water level
	Level setting incorrect	Readjust
Valve Fails To Close	Filter blocked	Remove filter cap and screen to clean
	Priming ball valve closed	Open
	Debris trapped in main valve	Inspect valve interior Remove the cover Check the seat and disc seal. Refer also to the main valve engineering data
	Diaphragm in main valve is leaking	Test for leakage Close main isolating valve Open main valve cover and check diaphragm, replace with a new diaphragm if needed
	Level setting incorrect	Readjust
Valve Not Accurate	Filter blocked	Remove filter cap and screen to clean
	Priming ball valve closed	Open
	Sensing line blocked	Check and clean
	Level Pilot valve not properly adjusted	Readjust pilot valve