

Level Control & Pressure Sustaining Valve With Bi-Level Vertical float

(Sizes 1.5" – 16" DN40 - 400)

Description

Hydraulically operated, level control and pressure sustaining control valve that controls reservoir filling and reservoir level. During filling the valve sustains minimum upstream pressure regardless of fluctuating flow or reservoir level.

Reservoir filling is in response to a hydraulically controlled Non-modulating Bi-level vertical float that opens at a pre-set reservoir low level and shuts off drip-tight at a pre-set high level.

Installation

1. Ensure enough space around the valve assembly for future maintenance and adjustments
2. Prior to valve installation, flush the pipeline to ensure a flow of clean fluid through the valve
3. For future maintenance, install Isolation Valves upstream and downstream of the control valve
4. Install the valve in the pipeline with the valve flow direction arrow in the actual flow direction. When applicable use the lifting ring provided on the main valve cover for installing the valve
5. For best performance, it is recommended to install the valve horizontally and upright. For different valve positions – consult Bermad
6. It is highly recommended to install a Bermad strainer (model70F)upstream of the control valve, to prevent debris from damaging the valve's operation
7. Install the float pilot assembly either in an external balancing tank or in an internal stilling tank (refer to the "Float #66" catalog page)
8. Pull three parallel $\frac{1}{2}$ " or $\frac{3}{8}$ " control tubes, from the valve to the float. Mark each of the tubes at both ends for identification
9. Determine the desired rod length according to level differential between the float assembly and reservoir's lowest level
10. Assemble the extension rods to the upper rod and to one another. Apply glue ("Loctite 200" or equivalent) and screw tight take care not to damage the rod
11. Install the upper & lower stoppers on the rod without the float ball. Use 3/16" Allen-Key to lock the stoppers on the rod
12. Screw the upper rod to its place at the bottom of the lever system & tighten the lock nut using a $\frac{1}{2}$ " spanner
13. Balance the float assembly by moving the weight against the rod and stoppers (without the float ball). After reaching equilibrium, tighten the balancing-weight screw and its lock-nut using a 7/16" spanner
14. Remove the lower stopper to enable threading-in of the float ball. Reassemble the lower stopper & lock it in its place
15. **Note:** You may have to pull out the whole rod in order to reach the lower stopper. If so release the rod lock-nut, unscrew the installed rod (with its extensions & the stoppers) and pull it up from the stilling tank. After threading-in the float ball and locking the lower stopper back in its place, reassemble the installed rod
16. Connect the control tubes ends, using $\frac{3}{8}$ " copper or reinforced plastic tube, to the valve and to the float assembly according to control drawing below
 - Tube from valve inlet control branch, downstream from filter [4] & restriction [31] to float assembly port [P]
 - Tube from float assembly port [C1] to the 2W hydraulic pilot valve cover
 - Optional spare Tube from float assembly port [C2] to valve. If not connected, plug float port [C2]

Commissioning & Calibration

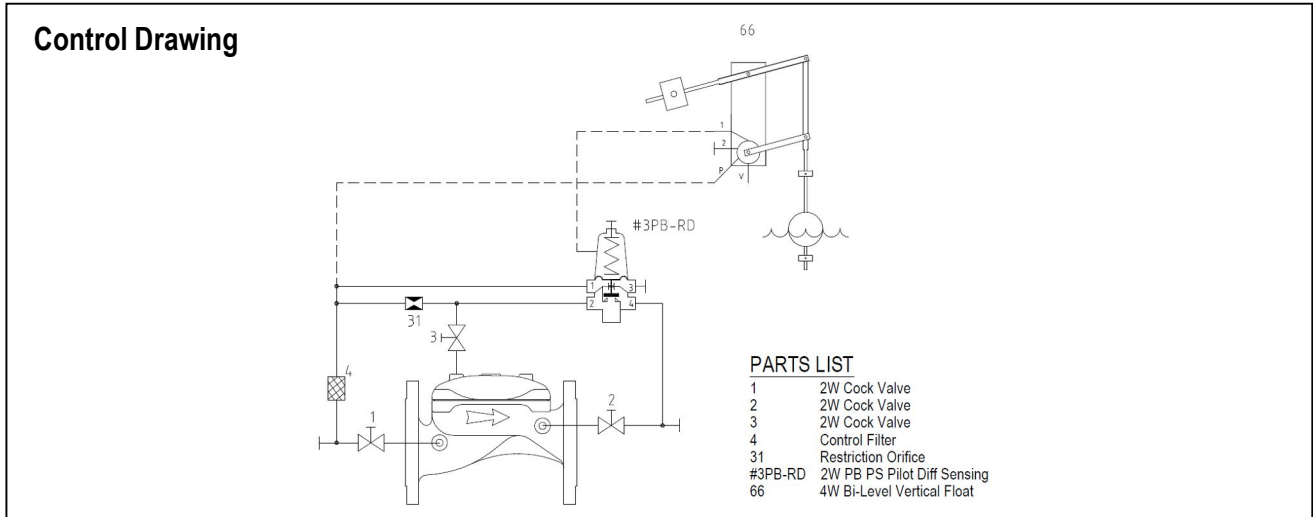
1. Confirm that cock valves [1], [2] & [3] are open (handle parallel to cock-valve body)
2. Confirm that the supply pressure is typical
3. Adjust the water levels by setting the stoppers:
 - Hold the lever system at its upper position & set the upper stopper to 100 mm below desired upper level (but not higher than 150 mm below over-flow level)
 - Hold the lever system at its lower position & set the lower-stopper to 100 mm above desired lower level
4. Open upstream and downstream isolating valves. Allow the Valve to open (ensuring the lever system is at its lower position) and start to fill-up the reservoir, meanwhile perform the procedure below:
5. Calibrating the Pressure Sustaining Pilot & Venting air from the valve control loop:

The valve is factory set to the system minimum allowed pressure. The set pressure is marked on the pilot's label. If the set pressure is either different from the design or the requirements have been changed, follow the below steps:

 - Close the upstream isolating valve to reduce inlet pressure. Ensure that the valve sustains the upstream pressure, preventing it from decreasing below setting, even when the upstream isolating valve is almost closed
 - Unlock the pilot locking nut and slowly turn the pilot adjusting screw Clock-Wise to increase set pressure and counterclockwise to decrease it.
 - After the pressure is stabilized, lock the pilot locking nut and open fully the upstream isolating valve.
 - During filling the reservoir move the lever-system manually to its upper position, forcing the valve to close, then to its lower position, forcing the valve to open. At each position, vent air from the valve control loop by loosening tube fitting at the highest point (float ports [P], [C1] & [C2], and at valve & pilot covers), allowing the air to bleed. Retighten the fittings eyebolts.
6. The Restriction [31] enables the 2-Way control & reduces valve closing speed.
 - Calibrating shutting (upper-level): Ensure that the valve closes as the water level reaches the upper set-level. If the valve has not closed, move the lever-system manually to its upper position, forcing the valve to close. Change the upper stopper location down, to lower level setting or up to raise it, until the valve closes automatically at the desired upper-level

7. Calibrating opening (lower-level):

- Allow the water level to drop by consuming from the reservoir or by draining it. Ensure the valve remains closed until water level reaches the desired lower-level, switches at that point and opens fully. Change the lower stopper location downwards, to lower level setting or upwards to raise it, until the valve opens automatically at the desired lower-level
- **Note:** For switching valve tendency from closing to opening and vice versa, manually change the lever system position to, up to close and down to open



Trouble-Shooting

1. **Valve fails to Open:** Check for sufficient inlet pressure, confirm float & pilot setting, check cock valves status
2. **Valve fails to Close:** Confirm float & pilot setting, check cock valves status, clean control filter & detect for clogged ports or fittings, check if any debris trapped in the main valve, confirm that the diaphragm is not worn or damaged
3. **Valve fails to Regulate:** Check cock valves status, release air trapped in the valve's control chamber & the pilot cover
- 4.

Preventative Maintenance

1. System operating conditions that affect the valve should be checked periodically to determine the required preventative maintenance schedule.
2. Maintenance instructions:
 - 2.1. Tools required:
 - Metric and imperial wrenches
 - Anti seize grease
 - 2.2. Periodical maintenance
 - Visual inspection to locate leaks and external damage
 - Functional inspection including: closing, opening and regulation
 - 2.3. 5 yearly scheduled maintenance
 - Close upstream and downstream isolating valves (also close any external sensing pressure when used)
 - Once the valve is fully isolated, vent residual pressure by loosening a plug or fitting
 - Disassemble necessary control hubs, unscrew the cover fastening bolts and remove the cover.
 - Inspect the diaphragm and sealing area on the valve body
 - Replace the diaphragm if worn or damaged
 - Lubricate all threads with Anti seize grease and replace the cover

Spare parts

Bermad has a convenient and easy to use ordering guide for valve spare-parts and control system components at <http://www.bermad.com/downloads> For solenoid valves refer to model and S/N on solenoid tags

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