

Differential Pressure Sustaining Valve

(Sizes 1½-14"; DN40-350)

Description

The Model 736 Differential Pressure Sustaining Valve is a hydraulically operated, diaphragm actuated control valve that sustains minimum pre-set, differential pressure between two points regardless of fluctuating demand or varying upstream pressure.

Installation

1. Ensure enough space around the valve assembly for future maintenance and adjustments.
2. Prior to valve installation, flush the pipeline to insure flow of clean fluid through the valve.
3. For future maintenance, install Isolation gate valves upstream and downstream from Bermad control valve.
4. Install the valve in the pipeline with the valve flow direction arrow in the actual flow direction. 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. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
7. It is recommended to install a high-quality differential pressure gauge next to the 736, at a see-able location, for calibration & follow-up.
8. It is recommended to install a strainer Bermad model 70F upstream from the 730, to prevent debris from damaging valve operation.
9. For Remote Sensing 736:
Prepare two 1/2" female threaded sensing ports, including a cock-valve, at the points where differential pressure sustaining is required & pull 3/8" or 1/2" sensing tubes to the valve. Ensure tubes protection by a sleeve or by a covered cable-canal. Apply a fixed effective tube route.

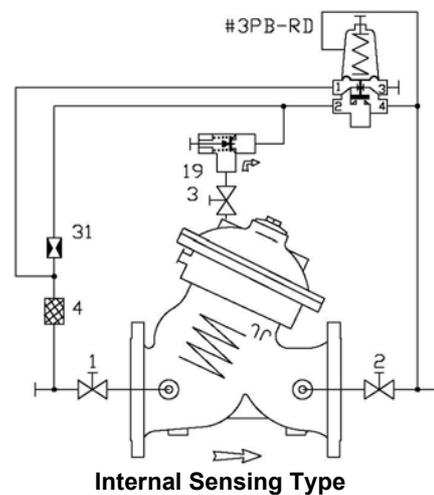
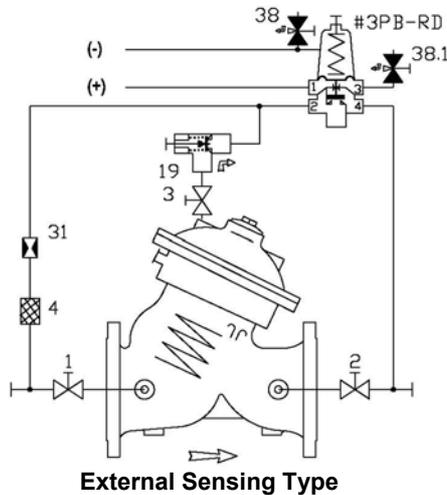
Commissioning & Calibration

1. Confirm that cock valves [1], [2] & [3] are open (handle parallel to cock-valve body).
2. Open fully the upstream isolating valve and partially the downstream isolating valve, to fill-up, in a slow and controlled manner, the consumers line downstream from the differential pressure sustaining valve.
Note: When differential pressure (ΔP) is below the 736 setting, the valve is closed.
3. Confirm that the supply pressure and the flow through the system are typical.
4. Vent air from the valve's control loop by loosening cover tube fitting at the highest point, allowing all air to bleed. Retighten the tube fitting eyebolt.
5. The Model 736 is factory set according to design definitions. The set ΔP is marked on the pilot's label.
6. Connect the high-quality mobile ΔP gauge tubes to the 736 as follow:
 - 6.1. Internal sensing type 736:
HIGH PRESSURE to the upstream plugged "T" & LOW PRESSURE to the downstream plugged "T".
 - 6.2. External sensing type 736:
HIGH PRESSURE to manometer cock valve [38.1] & LOW PRESSURE to manometer cock valve [38].
7. If the set ΔP is either different from the design or the requirements have been changed follow the steps described below:
 - 7.1. Simulate the requested ΔP by regulating the ΔP gauge HIGH, LOW & BYPASS needle valves.
Note: When gauge ΔP is below the 736 setting, the valve is closed and vice versa.
 - 7.2. Unlock the pilot locking nut and slowly turn the pilot adjusting screw Clock-Wise until the valve close & seal. Re-turn Counter-Clock-Wise until the 736 starts opening (leaking).
 - 7.3. Lock the pilot locking nut and confirm both upstream & downstream isolating valves are fully open.
8. The One Way Flow Control [19] is factory set fully open. To decrease opening speed or to stabilize the valve reaction, turn the needle valve CW.
9. The Restriction [31] enables the 2-Way control & reduces valve closing speed.

Control Drawing

PARTS LIST

| | |
|---------|-------------------------------|
| 1 | 2W Cock Valve |
| 2 | 2W Cock Valve |
| 3 | 2W Cock Valve |
| 4 | Control Filter |
| 31 | Restriction Orifice |
| 19 | One Way Flow Control MT Type |
| #3PB-RD | 2W PB PS Pilot Diff Sensing |
| 38 | Manometer Cock Valve (w/vent) |
| 38.1 | Manometer Cock Valve (w/vent) |



Trouble-Shooting

1. **Valve fails to Open:** Check for sufficient inlet pressure / ΔP , create demand/flow, confirm pilot setting, check cock & needle valves status.
2. **Valve fails to Close:** Create demand/flow, confirm pilot setting, check cock & needle valves status, clean control filter & detect for clogged ports or fittings, check if any debris trapped in the main valve, confirm diaphragm is not leaking.
3. **Valve fails to Regulate:** Confirm pilot setting, release air trapped in the control chamber, check cock & needle valves status.

Preventative Maintenance

1. System operating conditions that effect on the valve should be checked periodically to determent the required preventative maintenance schedule.
2. Maintenance instructions:
 - 2.1. Tools required:
 - 2.1.1. Metric and imperial wrenches
 - 2.1.2. Anti seize grease
 - 2.2. Visual inspection to locate leaks and external damages
 - 2.3. Functional inspection including: closing, opening and regulation.
 - 2.4. Close upstream and downstream isolating valves (and external operating pressure when used).
 - 2.5. Once the valve is fully isolated vent pressure by loosening a plug or a fitting.
 - 2.6. Open the stud nuts and remove the actuator as one unit from the valve body. Disassemble necessary control tubs.
 - 2.7. It is highly recommended to stock a reserve actuator assembly for each size. This allows minimum system field work and system down time.
 - 2.8. Disassemble the actuator and examine its parts carefully for signs of wear, corrosion, or any other abnormal conditions.
 - 2.9. Replace worn parts and all the Elastomers. Lubricate the bolts and studs threads with Anti seize grease.

Spare parts

Bermad has a convenient and easy to use ordering guide for valve spare-parts and control system components. For solenoid valves refer to model and S/N on solenoid tags.

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