

Model BV50 PressureReducing Valve

Description

The Model BV50 Brodie Control Valve is a pressure reducing valve designed to regulate a downstream pressure regardless of fluctuations in flow rate or downstream pressure. When correctly installed and adjusted, the Model BV50 valve will regulate downstream pressure at a value within +/-2 PSI (13.8 kPa) of the valve pilot's setting.

Principle of Operation

The Model BV50 valve is controlled by a pressure reducing pilot which senses line pressure at a selected point and throttles the valve to maintain a desired pressure at that point. If line pressure at the sense point exceeds the setting of the pilot, the pilot throttles the valve until the correct pressure level is reached. Conversely, if line pressure at the sense point falls below the setting of the pilot, the pilot throttles the valve again until the correct pressure level is reached.

Design Features

- Modular construction -all internal parts including seat ring can be removed with the cylinder assembly without disturbing line connections.
- No diaphragms or stuffing boxes
- 45° body design assures high capacity
- Positive shut-off
- Uniform speed of response
- Linear control characteristics
- Inherently checks reverse flow

Valve Capacity Data

Valve Size	2"	3"	4"	6"
*Cv-gpm	90	190	315	700

*Cv based on wide open valve utilizing water at 60F (15.6C).

Flange Connections

Valve Size	Connections	Max Working Pressure @100F
2"-6"	150 lb. ANSI	285 PSI
3"-6"	300 lb. ANSI	740 PSI

Temperature Range : -20F to 150F (-29C to 66C) Optional 250F (121C)



WARNING

Do NOT operate this instrument in excess of the specifications listed. Failure to heed this warning could result in serious injury and/or damage to the equipment.

Materials of Construction

Main Valve Body: Steel-ASTM-A216-GR-WCB

Main Valve Cylinder: 17-4 Stainless Steel, Heat Treated

Main Valve Piston: Stainless Steel

Seat Ring: Stainless Steel

O-Rings: Viton Standard
(Other elastomers available)

Other Internal Parts: Stainless Steel

Pilot Valve Strainer/Needle Valve Strainer:
Standard: Steel

Tubings and Fittings: Standard: Steel

Optional Equipment

- Stainless Steel Tubing
- Pilot Line Isolation Block Valves

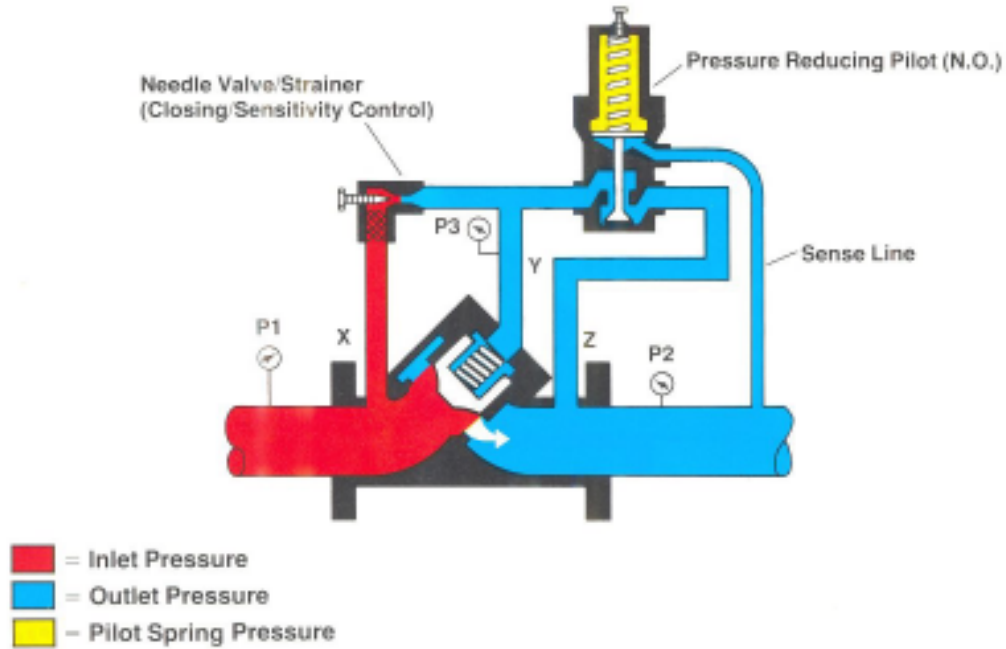
Recommended Spare Parts

O-Rings

Typical Installation

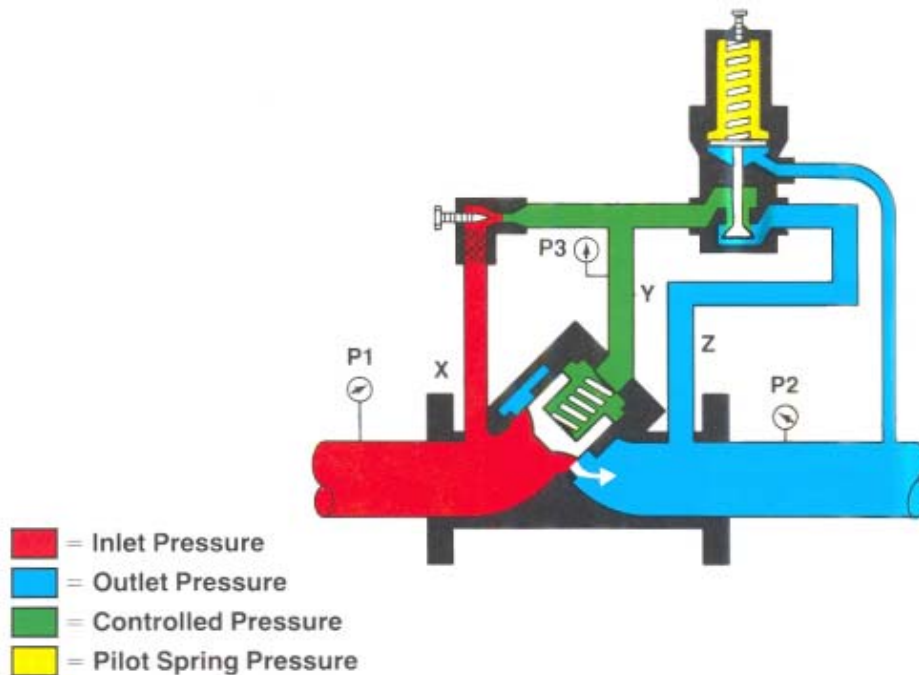
Fully Open - No Control

The pilot is fully open. Outlet pressure (P2) is less than the pilot spring setting. Y-port (P3) is open to Z-port (P2). The valve is floating the stream and is not required to control.



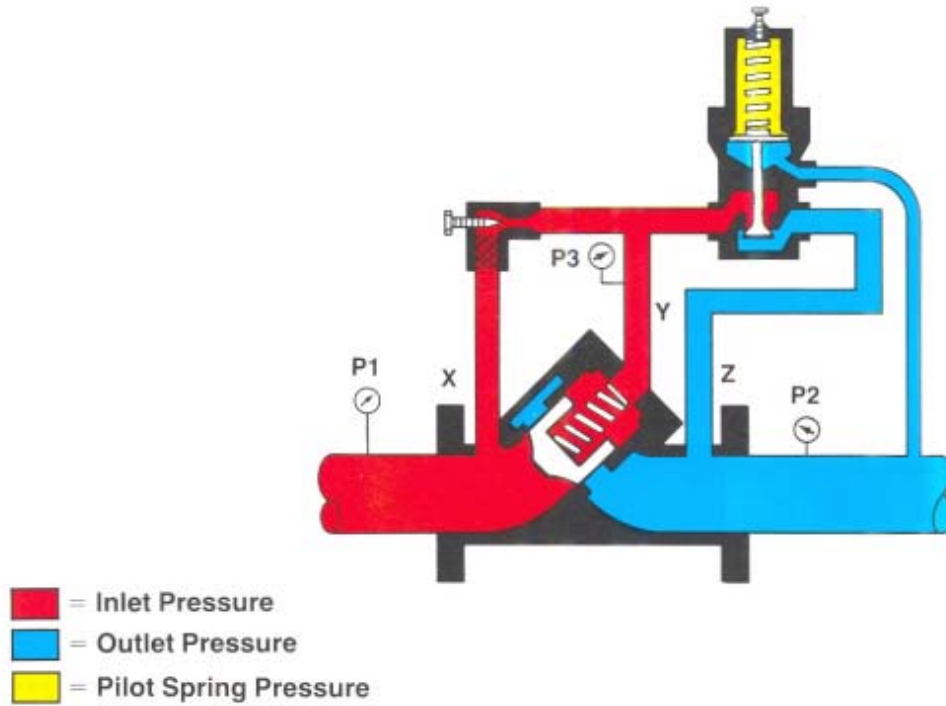
Open - Controlled Position

The pilot is partially open. Outlet pressure has slightly exceeded the pilot spring setting. Z-port (P2) is being squeezed off by the throttling of the pilot, placing higher pressure on Y-port (P3). The increasing pressure at Y-port (P3) plus the main valve spring force, establishes a position of the valve piston so it balances outlet pressure equal to the pilot setting (plus or minus 2 psi).



Closed Position

The pilot is closed. Outlet pressure (P2) exceeded the pilot spring setting, indicating the main line downstream (P2) has been closed off. Pilot is closed. Y-port (P3) to Z-port (P2) is closed. X-port (P1) and Y-port (P3) pressures become balanced. The main valve spring, being the differential force, closes the piston and keeps it seated.



Pilot Spring Ranges

150-300 lb. Valves	
(PSI)	(kPa)
0-20	0-138
*0-40	0-276
30-80	207-552
70-180	483-1241
150-350	1034-2413
350-650	2413-4482

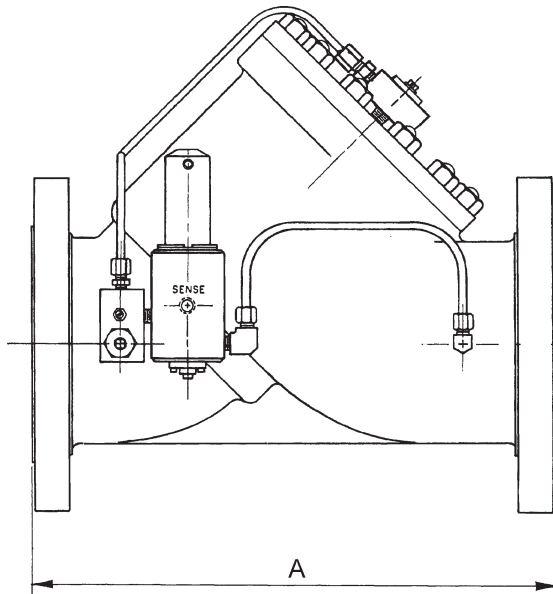
* Spring selection based on control pressure set point.

Shipping Weight and Volume (Approximate)	
2"	69 lbs. @ 3 Cu. Feet 31.3 kgs. @ .085 Cu. Meters
3"	105 lbs. @ 2.36 Cu. Feet 47.63 kgs. @ .067 Cu. Meters
4"	140 lbs. @ 2.51 Cu. Feet 63.5 kgs. @ .071 Cu. Meters
6"	250 lbs. @ 4.84 Cu. Feet 113.4 kgs. @ .137 Cu. Meters

Ordering Information

In order to accurately process an order, such information as product to be controlled, product viscosity, product temperature range, ambient temperature range, rate of flow, operating pressure, and optional features needed must be specified by the customer.

Dimensions (For Certified Dimensional Prints - Consult Factory)



Valve Size	mm	Dimensions	
	Inches	150 lb.	300 lb.
2"	mm	260	N/A
	Inches	10 1/4	
3"	mm	279	333
	Inches	11	13 1/8
4"	mm	330	368
	Inches	13	14 1/2
6"	mm	432	454
	Inches	17	17 7/8

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