

Technical Data

Pressure Reducing Valve

Model BV50



General

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 valve within +/-2 PSI (13.8 kPa) of the valve pilot's setting.

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

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.

Valve Capacity Data Option

Valve Size	2"	3"	4"	6"	8"	12"
*Cv-gpm	71	187	237	590	1178	CF

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

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: Stainless Steel

Tubings and Fittings: Standard: Stainless Steel

Optional Equipment

- Valve Position Indicator
- Position Indicator Switches
- Independent Opening Speed Control
- Thermal Relief
- Additional Pilot Control Functions
- Excess Flow Shutoff (Pressure Sensitive)
- Pilot Line Isolation Block Valves
- Manual Override (opens valve)
- Epoxy Coating main Valve Body Unmachined Surfaces
- Orifice Flange

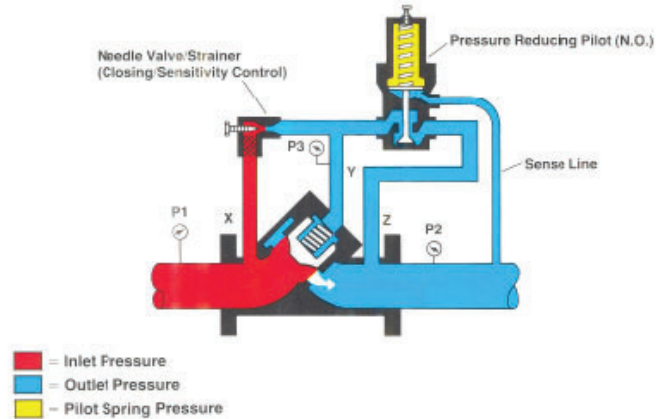
Recommended Spare Parts

O-Rings

Typical Installation

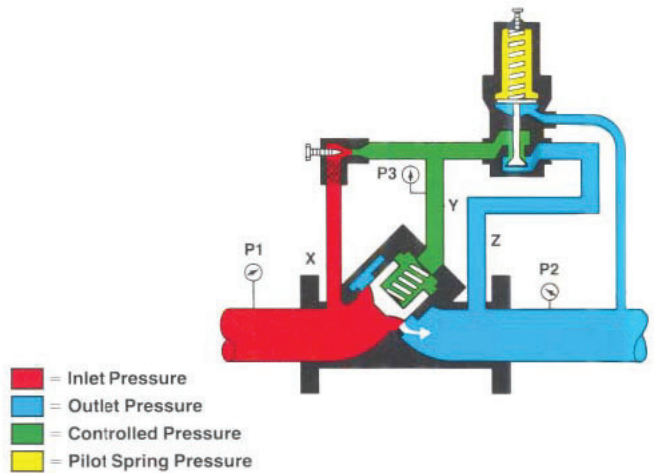
Fully Open - No Control

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.



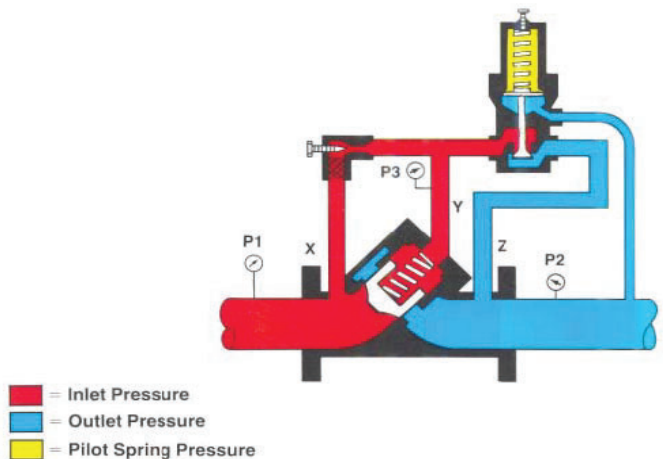
Open - Controlled Position

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 Yport (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.

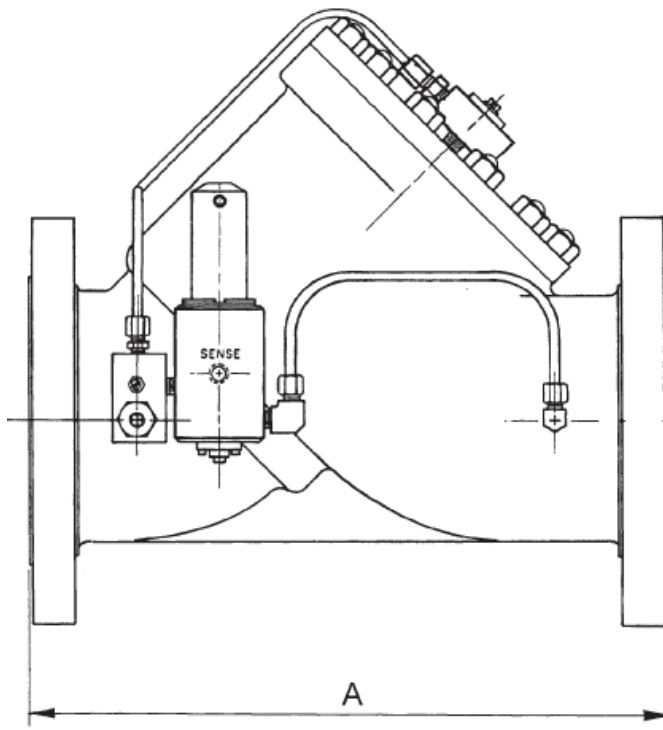


Flange Connections

Valve Size	Connections	Max Working Pressures @100F	DIN Connections	Max working pressure
2"-12"	150 lb. ANSI	285 psi	DN 80 - DN 150 PN 25	25 Bar
2"-6"	300 lb. ANSI	740 psi	DN 80 - DN 150 PN 64	51 Bar

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

Dimensions (For Dimensional Prints -Consult Factory)



Valve Size	Dimensions		
	mm	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
8"	mm	572	N/A
	inches	22 1/2	
12"	mm	784	N/A
	inches	30 7/8	

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.

Unit Weight

Valve Size	Lbs.	Kgs.
2"	69	31.3
3"	105	47.63
4"	140	63.5
6"	250	113.4
8"	385	174.6
12"	1005	455.86

Ordering Information

When ordering, the following information must be provided:

- Valve Size
- Flange Connections
- Product, Product Viscosity, Product Specific Gravity
- Minimum, Maximum Flow Rate
- Minimum, Maximum Operating Temperature
- Control Functions to be Performed
- O-Ring Material
- Pilot Spring Range
- Pilot Spring Setting (psi or kPa)

NOTE:

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.

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