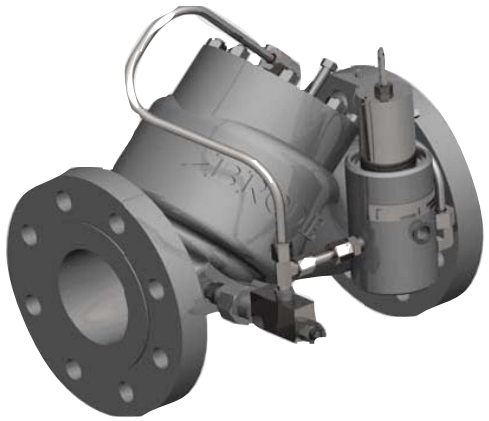
Technical Data

Differential Control Valve

Model BV70



General
The Model BV70 Brodie Differential Control Valves are normally closed valves designed to maintain a controlled pressure differential within +/-2%.
The pilot is balanced, single seated with large ports and will operate on a differential as low as 5 PSI (34.5 kPa).

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
- O-Ring plus metal-metal seat
- Characterized ports for better low flow response

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).

Principle of Operation
The Valve is pilot operated and operates on a balanced piston principle, spring biased to a closed position. Pressure differential overcomes the force of the spring, causing the main valve to open and establish flow. The pilot control varies the pressure on the spring side of the piston for position.

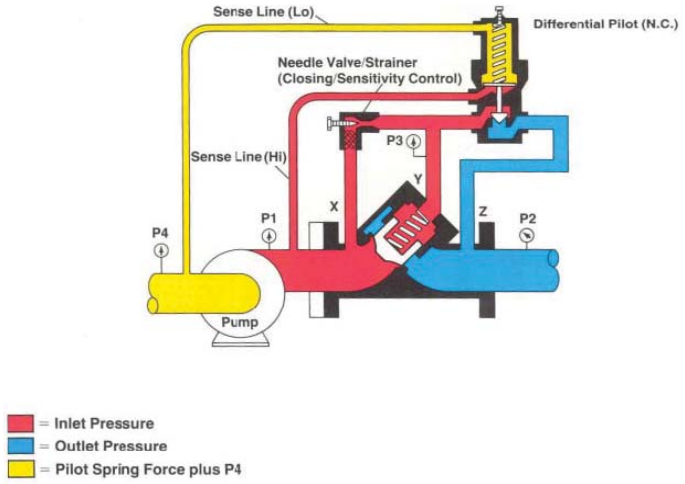
"AP" (Aggressive Products) Option
The "AP" Option valve cylinder incorporates a combination of seals and o-ring materials to provide optimum performance in aggressive product applications. Specify "AP" Option at time of order when valve is to be used on products which may affect standard seals.

Applications
The Brodie Model BV70 is recommended for applications requiring valve closure on decreasing pressure differential, such as, pump differential control, LPG or Anhydrous Ammonia vapor control.

Typical Installation

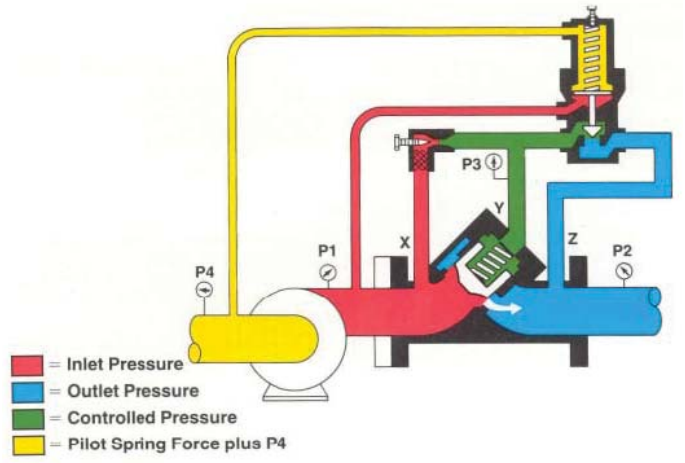
Closed Position

The pilot is closed. The differential pressure between (P1) and (P4) is less than the pilot spring setting, indicating the pump is not running or sufficient differential pressure (P1 minus P4) is not available to overcome the pilot spring setting. Pilot is closed. Y-port (P3) to Z-port (P2) is closed. X-port (P1) and Y-port (P3) pressures are balanced. The main valve spring, being the differential force, closes the piston and keeps it seated.



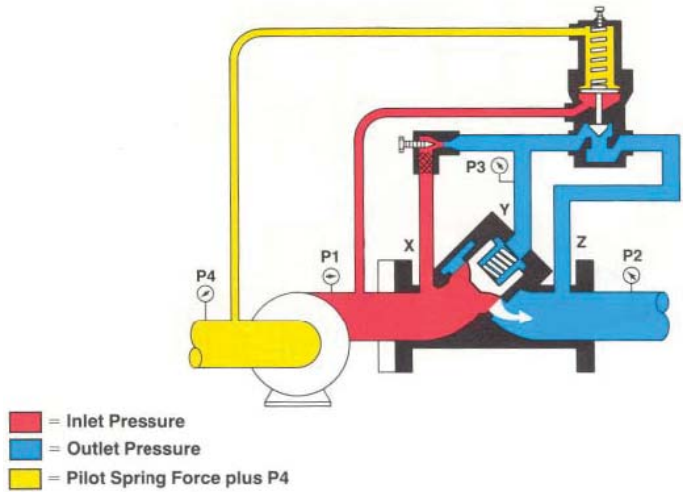
Open - Controlled Position

The pilot is partially open. Differential pressure (P1 minus P4) has slightly exceeded the pilot spring setting. Zport (P2) is being opened by the throttling of the pilot, reducing the pressure on Y-port (P3). The decreasing pressure at Y-port (P3) plus the main valve spring force establishes a position of the valve piston such that it balances the pump differential pressure (P1 minus P4) equal to the pilot setting (plus or minus 2 psid).



Fully Open - No Control

The Pilot is full open. Differential pressure (P1 minus P4) has exceeded 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.



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

- Valve Position Indicator
- Position Indicator Switches
- Independent Opening Speed COntrol
- Stainless Steel Tubing
- Thermal Relief
- Additional Pilot Control Functions
- Pilot Line Isolation Block Valves
- Epoxy coating main valve body unmachined surfaces

Recommended Spare Parts
O-Rings

Flange Connections

Valve Size	Connections	Max Working Pressures @100F	DIN Connections	Max Working Pressure
2"-6"	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)

Shipping Weight And Volume (Approximate)

Valve Size	Shipping Weight and Volume
2"	69 lbs. @ 3 Cu. Feet
	31.3 kgs. @ 0.085 Cu. Meters
3"	105 lbs. @2.36 Cu. Feet
	47.63 kgs. @ 0.067 Cu. Meters
4"	140 lbs. @ 2.51 Cu. Feet
	63.5 kgs. @ 0.071 Cu. Meters
6"	250 lbs. @ 4.84 Cu. Feet
	113.4 kgs. @ 0.137 Cu. Meters

Pilot Spring Ranges

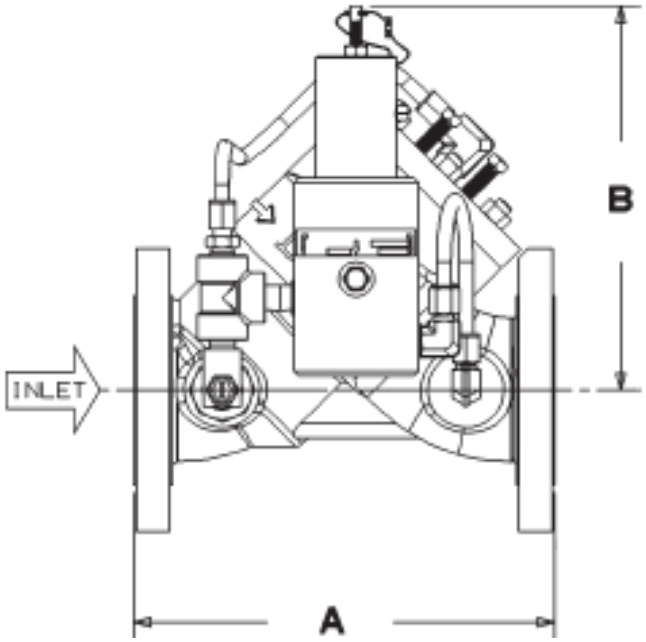
150-300 lb. Valves	
PSI	kPa
0-20	0-138
*0-40	0-276
30-80	207-552
70-180	483-1241
150-350	1034-2413
350-650	2413-4482

* Spring selection based on control pressure set point.

Ordering Information

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

Dimensions (For Certified Dimensional Prints -Consult Factory)



Valve Size	mm	A		B	
	inches	150 lb.	300 lb.	150 lb.	300 lb.
2"	mm	260	267	276	
	inches	10 1/4"	10 1/2"	10 7/8"	
3"	mm	279	333	286	
	inches	11"	13 1/8"	11 1/4"	
4"	mm	330	368	292	
	inches	13"	14 1/2"	11 1/2"	
6"	mm	432	454	346	
	inches	17"	17 7/8"	13 5/8"	

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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