

Technical Data

Rate of Flow Control Valve

Model BV54



General

The Model BV54 Brodie Rate of Flow Control Valve is normally opened and designed to maintain a controlled flow rate within +/-2%. The pilot is balanced, single seated valve 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 Model BV54 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 Rate of Flow (Flow Limiting) Valve is normally open and throttles toward a closed position on increasing differential pressure.

"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.

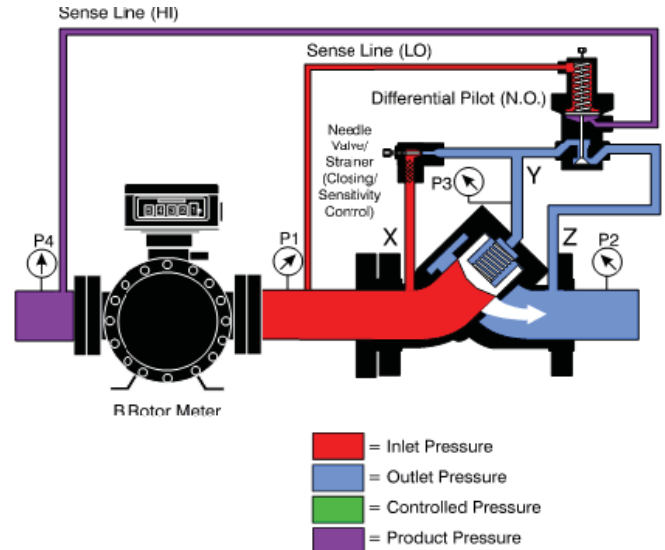
Applications

The Model BV54 is normally used to control flow rate through a metering device; however, it can be utilized in any application requiring accurate, dependable flow control.

Typical Installation

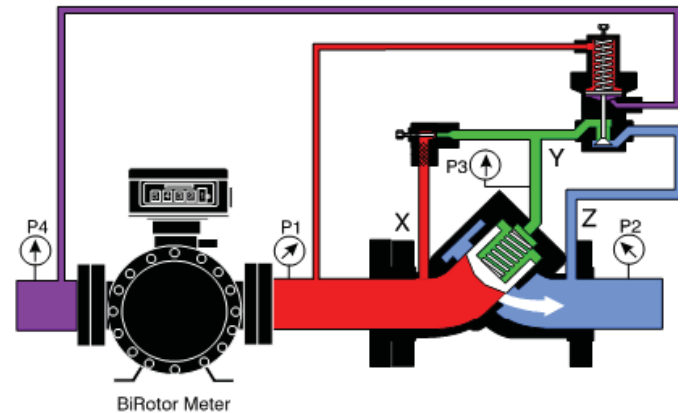
Fully Open - No Control

The Pilot is full open. Differential pressure (P4 minus P1) 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. Differential pressure (P4 minus P1) has slightly exceeded the pilot spring setting. Z-port (P2) is being squeezed off by the throttling of the pilot, placing higher pressure on Yport (P3). The increasing pressure at Y-port (P3) plus the main valve spring force establishes a position of the valve piston such that it balances differential pressure (P4 minus P1) equal to the pilot setting (plus or minus 2 psid), which is proportional to the flow rate.



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
- Excess Flow Shutoff (Pressure Sensitive)
- Pilot Line Isolation Block Valves
- Fusible Link Pilot Valve (closes at 160°F)
- Manual Override (opens valve)
- Epoxy Coating main Valve Body Unmachined Surfaces
- Orifice Flange

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

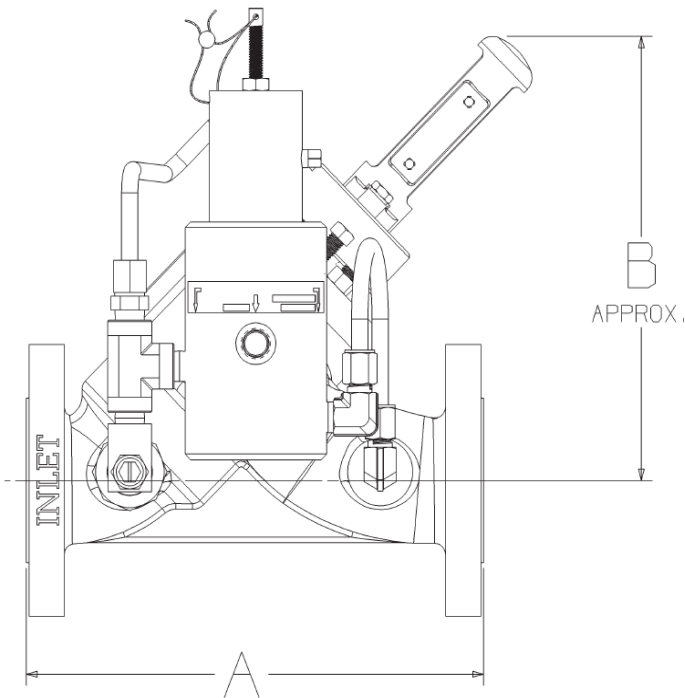
| 150-300 lb. Valves | |
|--------------------|----------|
| PSI | kPa |
| 0-20 | 0-138 |
| *0-40 | 0-276 |
| 30-80 | 207-552 |
| 70-180 | 483-1241 |

* 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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