

Model BV88 Digital Control Valve

Description

The Model BV88 Digital Control Valve is designed to provide precise flow rate control and batch delivery of fluid products when used with an electronic batch control device. The valve is controlled by the electronic preset for low flow start up, high flow rate control, low flow shutdown, and final shut-off. This also provides for maximum flowmeter accuracy by maintaining a constant flow rate with varying line pressures. The Model BV88 features an external pilot control loop that consists of a normally-open solenoid pilot, a normally-closed solenoid pilot, strainer, and opening/closing speed controls.

Principle of Operation

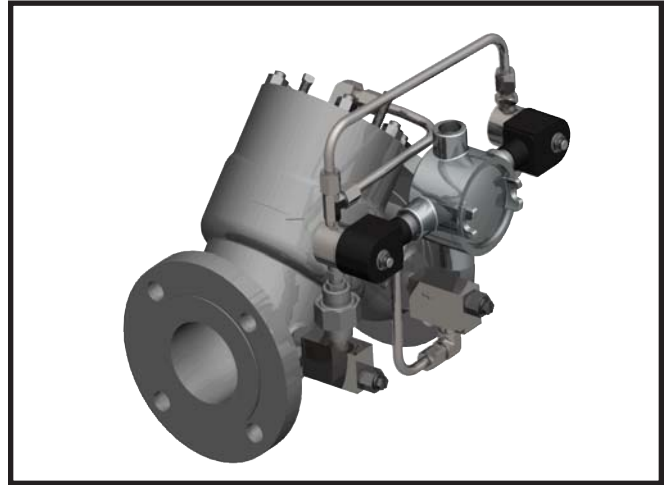
The valve is pilot operated on a balanced piston principle. It is spring biased to a closed position. Pressure differential overcomes the force of the spring, causing the main valve to open and establish flow. The pilot control(s) vary the pressure on the spring side of the piston for position.

Applications

Batch control with flow limiting capabilities when used with electronic presets capable of digital control.

Design Features

- Precision flow rate and batch control
- 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
- Linear control characteristics with uniform response speed
- Automatic check valve - no reverse flow
- Fail-safe closes on loss of electrical power
- Characterized ports for better low flow response



Maximum Operating Pressure Differential (M.O.P.D.) Across Pilots

- 150# Standard - 100 PSID (690 kPa)
- Optional - 150 PSID (1,035 kPa)
- Optional - 285 PSID (1,967 kPa)
- 300# Standard - 740 PSID (5,106 kPa) (3"-6" Only)

Solenoid Electrical Data

Standard

- 240/60 Hz
- 120/60Hz
- Class 1, Division 1, Groups A, B, C, and D
- Class 2, Division 1, Groups E and F
- UL, CSA
- Simrez O-rings
- 100 MOPD (145 and 740 MOPD Available)

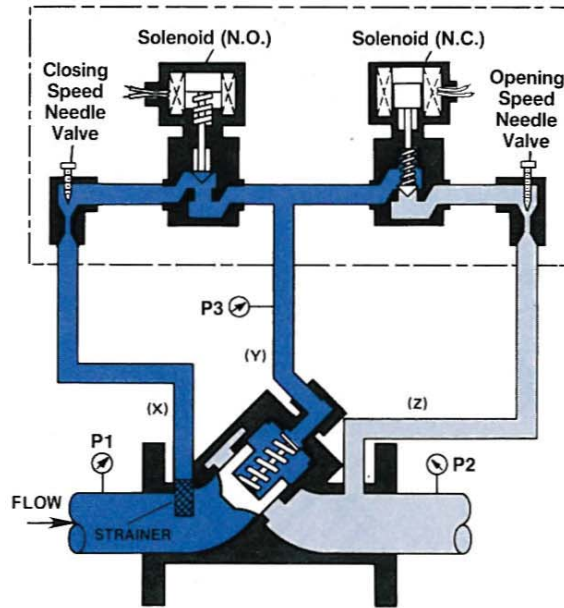
ATEX

- Ex II 2 G Ex II C IP 67
- 230/50 or 110/50
- 240/60 or 120/60
- Viton O-rings, Simrez Optional
- 100 MOPD (740 MOPD Available)
- 24 vdc
- Ex II 2G Ex D II C IP67
- 100 MOPD
- Viton O-Rings

Typical Installation

Closed or Closing Position

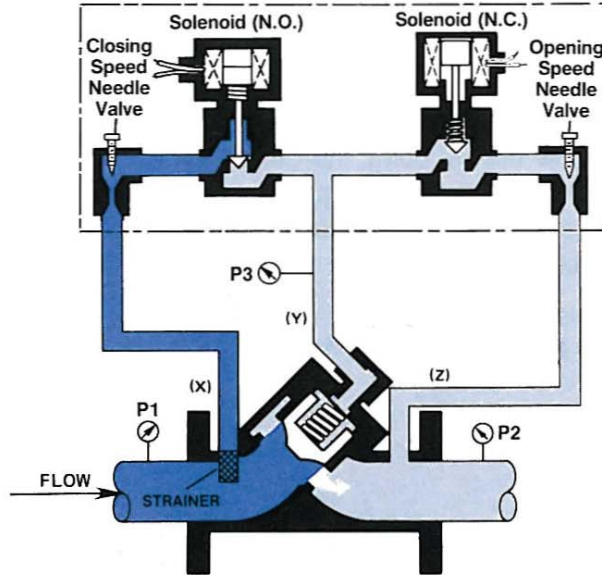
The normally closed solenoid is closed. The normally open solenoid is open. Y-Port (P3) to Z-Port (P2) is closed. X-Port (P1) and Y-Port (P3) pressures are balanced. The main valve spring being the differential force, closes the piston and keeps it seated.



- = Inlet Pressure
- = Outlet Pressure

Open Position

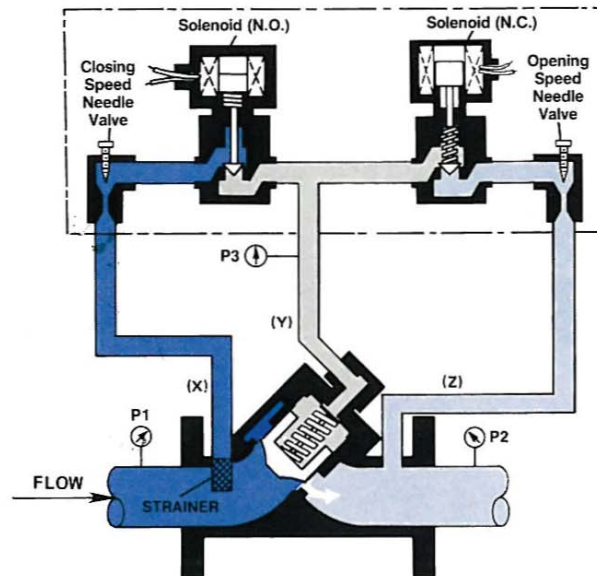
The normally closed solenoid is open. The normally open solenoid is closed. Y-Port (P3) is open to Z-Port (P2). X-Port (P1) is closed off by the normally open solenoid. The pressure on the bottom of the piston (P1) is greater than the pressure at (P3) plus the spring force; $(P1 - P2)$ is equal to or greater than the spring force. Therefore, (P1) pressure pushes the spring open.



- = Inlet Pressure
- = Outlet Pressure

Controlling Position

The normally closed solenoid is closed. The normally open solenoid is closed. Y-Port (P3) to Z-Port (P2) is closed. X-Port (P1) to Y-Port (P3) is closed. Note: The product cannot flow to or from the top of the piston (Y-Port). The piston is hydraulically locked in position until the PC-IMS commands the valve to open or close as required to maintain the desired flow rate.



- = Inlet Pressure
- = Outlet Pressure
- = Pilot 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, Fluoro Silicate (Ethanol)

Other Internal Parts: Stainless Steel

Pilot Valve Strainer/Needle Valve Strainer:
Standard: Steel

Tubings and Fittings: Standard: Steel

Standard Equipment

- Opening and closing speed controls
- Self-cleaning strainer (Pilot Inlet)
- Stainless steel solenoid pilots

Optional Equipment

- Manual Override
- Thermal Relief

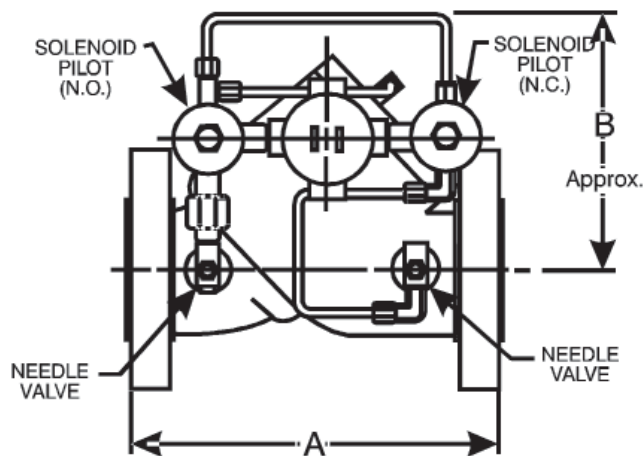
Recommended Spare Parts

O-Rings

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	A Dimension		B Dimension
	inches	150#	300#	150# & 300#
2"	mm	260	267	280
	inches	10 1/4	10 1/2	11
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 3/8

Flange Connections

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

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

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

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