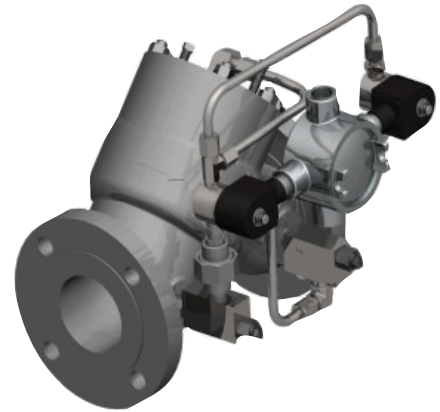


Technical Data

Digital Control Valve

Model BV88



General

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 preset. The valve is controlled by the electronic preset for low flow start, 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.

Design Features

- Precision flow rate and batch control
- Modular construction -all internal parts 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 closure on loss of electrical power
- Characterized ports for better low flow response

Applications

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

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) (2"-6" Only)

Solenoid Electrical Data

UL/CSA Approvals

- Class 1, Division 1, Groups A, B, C, and D
- Class 2, Division 1, Groups E and F

ATEX Approvals

- Ex II 2 G Ex II C IP 67
- Ex II 2G Ex D II C IP67

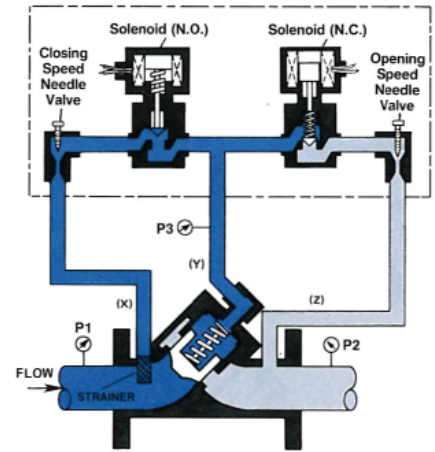
Approval	Voltage	MOPD	Seat
ATEX	120/60	145 MOPD	Viton-A
	240/60		
	230/50		
	24 VDC	740 MOPD	
	230/50		
	120/60		
UL/CSA	24 VDC	100 MOPD	Simrez
	120/60		
	240/60	145 MOPD	Simrez
	220/50		
	120/60-110/50		
240/60-220/50			



Typical Installation

Closed or Closing Position

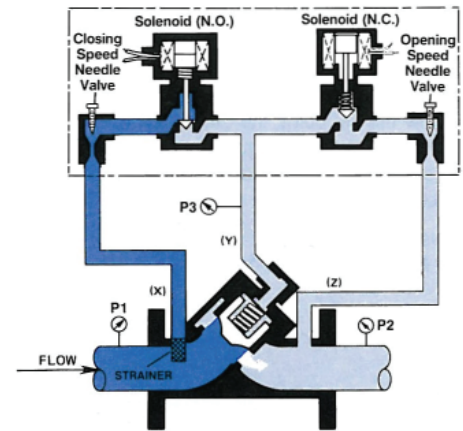
The normally closed solenoid is closed. The normally open solenoid is open. Y-Port (P3) to Z-Port (P2) is closed. X-Port (P1) and Y-Port (P3) pressures are balanced. The main valve spring being the differential force, closes the piston and keeps it seated.



■ = Inlet Pressure
■ = Outlet Pressure

Open Position

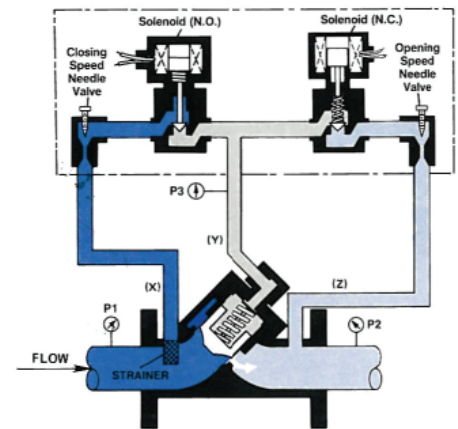
The normally closed solenoid is open. The normally open solenoid is closed. Y-Port (P3) is open to Z-Port (P2). X-Port (P1) is closed off by the normally open solenoid. The pressure on the bottom of the piston (P1) is greater than the pressure at (P3) plus the spring force; (P1 minus P2) is equal to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

Flange Connections

Valve Size	Connections	Max Working Pressures @100F	DIN Connections	Max Working Pressure
2"-8"	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)
 Subject to material specification

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

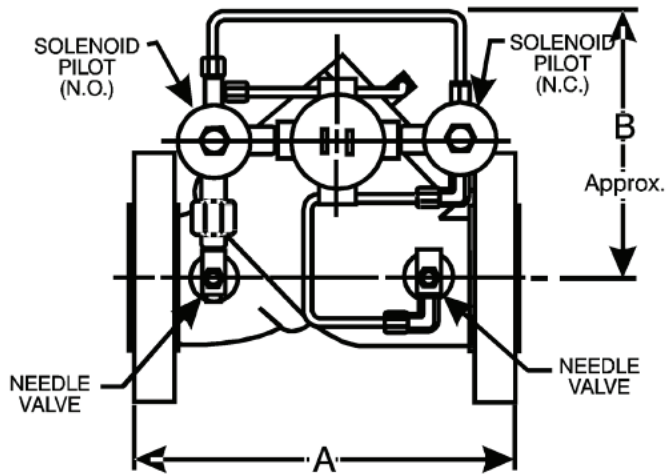
Seal Material	Min Operating Temperatures		Max Operating Temperatures	
	Deg F	Deg C	Deg F	Deg C
Low Swell Nitrile	-20	-29	150	66
Viton-F	-15	-26	150	66
Fluorosilicon	-40	-40	150	66
PFKM	23	-5	150	66
EPR	-70	-56	150	66
Viton 1289	-40	-40	150	66
Valve Body	Deg F	Deg C	Deg F	Deg C
ASTM-A216-GR-WCB	-20	-39	150	66
ASTM SA-352 GR LCB (optional)	-40	-40	150	66

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 Size 2" 3" 4" 6"
- Control Functions to be Performed
- O-Ring Material
- Pilot Spring Range
- Pilot Spring Setting (psi or kPa)

Dimensions (For 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"	
8"	mm	572	N/A	394	
	inches	22 1/2"	N/A	15 1/2"	

Note:

1. The minimum and maximum operating temperature of the valve is dependant on the construction materials of the main valve (steel) and rating of the seals in the main valve and/or pilot operators (see above table).

2. Only UL/cUL approvals are available on low-temperature units.

**Consult Factory for additional seal material options.

Valve Capacity Data Option

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

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

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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