FMC Technologies

Smith Meter® Valves

Model 215B V-Ball

Specifications

Issue/Rev. 0.2 (3/08)

Bulletin SS03043

*The **Smith Meter® Model 215B Digital Control Valve** is a high-performance segmented equal percent, V-Ball valve with a solenoid-controlled pneumatic/hydraulic actuator.*

When used in conjunction with a Smith Meter® Electronic Valve Controller (e.g., AccuLoad® III, or microLoad.net), the Model 215B Valve provides precise, trouble-free, low pressure drop, preset loading, and/or flow control of virtually any flowing liquid. The Smith Meter Model 215B V-Ball valves are ideal for controlling product flow at very low flow rates, which minimizes cavitation.

Features

- **Operation is independent of fluid viscosity and pressure** to assure proper control under virtually all operating conditions.
- **Wide fluid compatibility** can be assured by proper selection of valve-wetted materials.
- **Fail-safe operation** since valves are spring-loaded fail-to-close.
- **Pre-wired, explosion-proof junction box** supplied as standard.

Options

- **Pneumatic or Hydraulic Actuation**
- **Pressure regulator**
- **Pressure gauge**
- **Limit switches**
- **Hydraulic Power Pack**

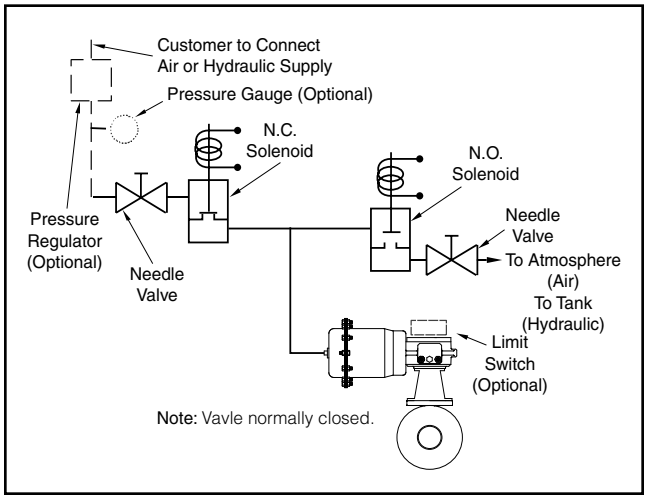
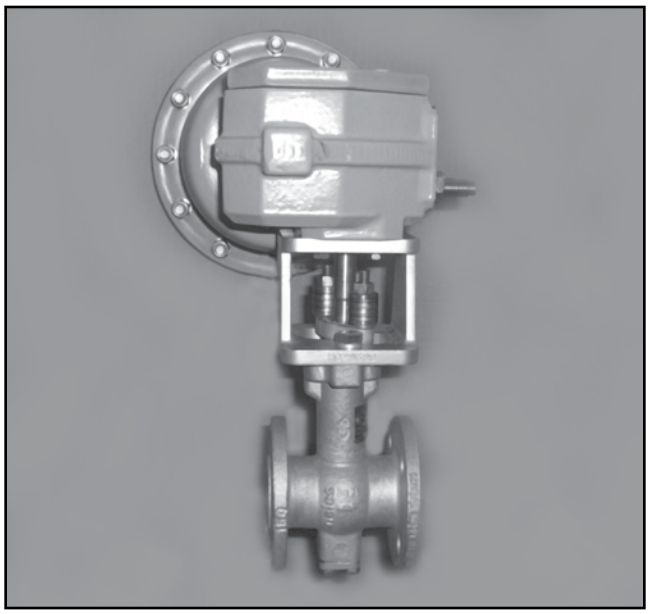


Figure 1 – Model 215B Valve Schematic



Model 215B V-Ball Valve

Operation

The valve schematic in Figure 1 illustrates the simplicity of the solenoid-controlled pneumatic/hydraulic actuator system of the Model 215B Valve. The normally closed (N.C.) and normally open (N.O.) solenoids, located on the pressure and relief lines (respectively) of the actuator, control the operation of the valve. Opening the pressure line and closing the relief line, by energizing both solenoids, allows high pressure air or hydraulic fluid to enter the actuator, pushing the diaphragm and opening the valve. Conversely, de-energizing both solenoids allows the pressure in the actuator to relieve to atmosphere or back to the hydraulic reservoir, permitting the actuator spring to close the valve. Closing off both the pressure and relief lines (energizing the N.O. solenoid only) locks the valve in place. The needle valve settings control the valve opening and closing speeds.

Specifications

Main Valve

Type: High-performance segmented equal percent, V-Ball valve.

Sizes: 1",1-1/2", 2" and 3", Class 150 ANSI RF.

Pressure derated per ANSI B16.5 for temperatures greater than 100°F.

Ambient temperature range -20°F (-29°C) to 125°F (52°C)

Operating Pressures: 285 psig (Class 150 ANSI) – standard at 100°F. Other pressures available on request.

Operating Temperatures range: -20°F (-29°C) to 150°F (66°C)[1].

1 Higher temperatures available with decrease in maximum working pressure.

Materials of Construction:

Body: Carbon Steel
Ball and Shaft: Stainless Steel
Seat: TFE (Teflon)
Other materials available on request

Actuator

Type: Spring – diaphragm

Materials of Construction:
Body – Carbon steel
Diaphragm – Buna-N or Viton (special)

Air Supply: Clean, dry air or gaseous nitrogen

Hydraulic Supply: Mineral-based hydraulic fluid or equivalent

Operating Pressure: 100 psig maximum, 60-85 psig normal

Operating Temperature: -20°F (-29°C) to 150°F (68°C)

Needle Valve

Material: Brass – standard
Stainless Steel – optional

Tubing and Fittings

Material: Steel – standard
Stainless Steel – optional

Optional Equipment

- Pressure regulator: 0-250 psi (air only)
- Pressure gauge: 0-160 psi
- Optional limit switches: Two SPDT, UL-listed, CSA certified FM approved. (NEMA 4, 7 Groups C and D, and 9 Groups E, F, and G) for combined watertight and hazardous location design. Switches are rated at 15A with 125/250 Vac and 0.5A dc resistive.
- Hydraulic power pack
  - 110/240 VAC 50/60 Hz single phase
  - 1 HP explosion proof motor – Class I, Div I Groups C&D
  - 3.0 GPM gear pump for fast response
  - Hydraulic supply and return manifolds – Drives up to 6 valve actuators (Ref. Smith 215 series valves). Size 3/8" SAE for supply and 1/2" SAE for return.
  - 5 gallon reservoir – with top filler/breather, drain plug and sight-level (small footprint).
  - Supply pressure regulator – with adjustable set point 0 to 200 psig with liquid filled gauge.
  - On demand – Pump activates only when valve control is needed, used in conjunction with a Smith Meter® AccuLoad or other preset controller.

Solenoids

Explosion-proof, UL-listed, CSA certified, FM approved, meets CE directives for NEMA 4 and 7, Groups C and D, for use in watertight and hazardous locations.

Type: 2-way normally closed on pressure line
2-way normally open on exhaust line

Materials of Construction:
Standard – Brass with Buna-N disk
Optional – Stainless Steel with Viton disk for service in corrosive atmosphere

Operating Pressure: 85 psi maximum

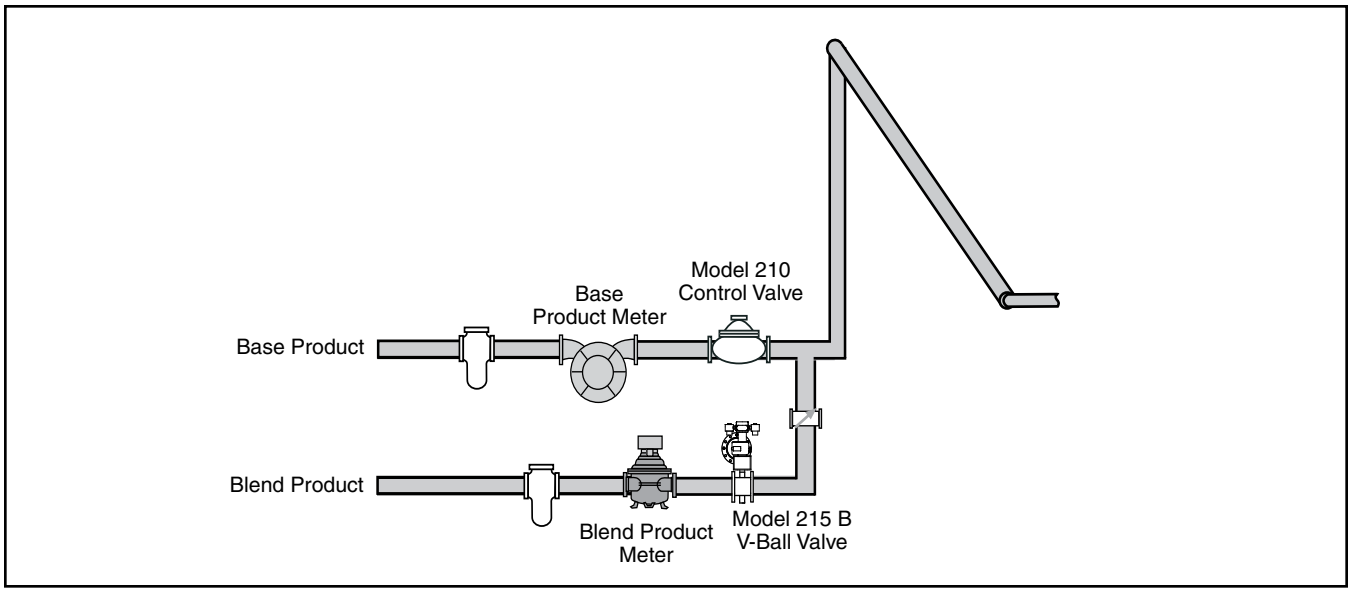
Voltage: Standard – 102-120 Vac 60 Hz
94-110 Vac 50 Hz
204-240 Vac 60 Hz
188-220 Vac 50 Hz
Optional – 20-25 Vdc
10.2-12.6 Vdc

Other voltages: Consult factory

Applications: Open or closed position indication for signaling devices, panel light operation, etc.

Valve open position limiting to facilitate prompt valve closure in dedicated service where an AccuLoad or microLoad.net is not required.

Hybrid/Ratio Blending System Configuration



Model 215B Selection Guide Diagram

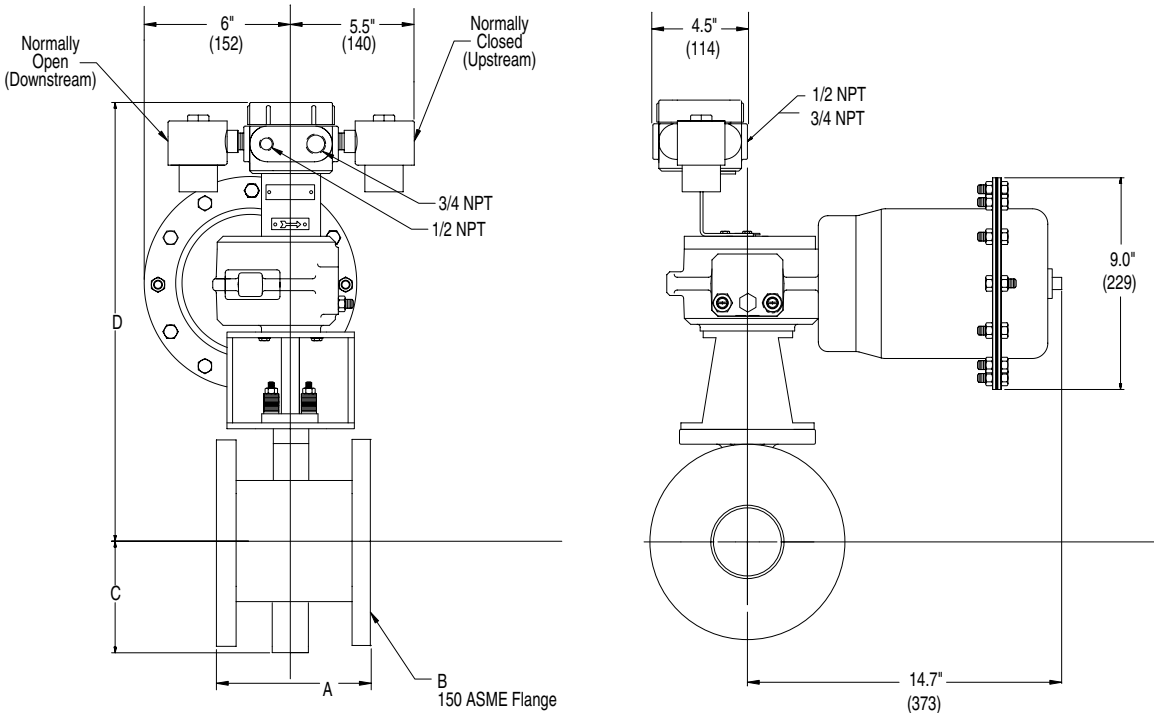
Alternative fuel blending systems are comprised of many different configurations and are used over a wide range of operating conditions. FMC Measurement Solutions recommends the following valves for typical blend lines which have a relatively constant inlet pressure to 80 PSI and outlet pressure to 15 PSI and are delivering the product downstream of the line meter.

Line Size (Inches)	Bio-diesel Product Blend Ratio (%)	Flow Range (Gallon/Minute)	Control Valve Size (Inches)
2	2% to 10%	3 to 75	1
2	10% to 20%	15 to 150	1-1/2
3	20% to 50%	30 to 325	2, 3

For other arrangement contact the factory and provide the following information: Product, Blend Ratios, Flow Rate Range, Upstream Pressure, Downstream Pressure.

Dimensions

Inches (mm)



Valve Size	A		B	C		D		Acuator Air Swept Volume (in3)
	Inches	mm	150 ASME Flange	inches	mm	inches	mm	
1	4.0	102	1.0	2.2	56	17.1	435	66
1-1/2	4.5	114	1.5	2.6	65	17.4	442	66
2	4.9	124	2.0	3.6	91	17.8	453	66
3	6.5	165	3.0	4.3	108	18.7	475	66

Note: *Dimensions – Inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings.*

CV

SIZE		RELATIVE OPENING									
DN	INCH	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
26	1	0.693	1.55	2.77	4.35	6.43	9.03	12.9	19.1	20.3	21
40	1.5	0.756	2.50	5.06	8.54	13.4	18.7	25.4	39.6	56.5	61
50	2	1.4	4.5	9.1	15.4	24.1	33.7	45.9	71.6	102	110
80	3	4.2	14	27	41	63	90	118	159	238	340

Revisions included in SS03043 Rev 0.2 (3/08):

Page 2: Edits to Hydraulic Power Pack under Optional Equipment

Page 4: Added CV Chart

Headquarters:
500 North Sam Houston Parkway West, Suite 100, Houston, TX 77067 USA, Phone: +1 (281) 260-2190, Fax: +1 (281) 260-2191

Gas Measurement Products:
Houston, TX USA +1 (281) 260-2190
Thetford, England +44 (1842) 82-2900
Kongsberg, Norway +47 (32) 286-700
Buenos Aires, Argentina +54 (11) 4312-4736

Integrated Measurement Systems:
Corpus Christi, TX USA +1 (361) 289-3400
Kongsberg, Norway +47 (32) 286-700
San Juan, Puerto Rico +1809 (787) 274-3760
United Arab Emirates, Dubai +971 (4) 331-3646

Liquid Measurement Products:
Erie, PA USA +1 (814) 898-5000
Los Angeles, CA USA +1 (310) 328-1236
Slough, England +44 (1753) 57-1515
Ellerbek, Germany +49 (4101) 304-0
Barcelona, Spain +34 (93) 201-0989
Moscow, Russia +7 (495) 564-8705
Melbourne, Australia +61(3) 9807-2818

Beijing, China +86 (10) 6500-2251
Singapore +65 6861-3011
Chennai, India +91 (44) 450-4400

Visit our website at www.fmctechnologies.com/measurementsolutions