

Baumann[™] 83000 Sanitary Angle Control Valve



The Baumann 83000 sanitary control valve (figures 1 and 2) is excellent for the control of high purity fluids or gaseous media. A low-friction-force amplification mechanism, comprised of a roller bearing linkage, produces high-positioning resolution suitable for direct operation from remote I/P signal converters.

The 83000 features a packless design and is intended for laboratory flow rates as low as 0.001 liters per minute (l/m) with a Cv range of 0.00001 to 0.7. This innovative design also allows for clean-in-place (CIP) and sanitize-in-place (SIP) procedures and is self-draining.

Features

- Compact and light-weight design reduces installed piping costs.
- NPS 1/2 tri-clamp end connections standard with optional welded connections.
- Electropolished wetted interior finished to ≤ 30 Ra microinch (≤ 20 Ra microinch optional).
- Self-draining designed for Clean-in-Place (CIP) and Sanitize-in-Place (SIP).
- Closure diaphragm is polished 316 stainless steel; Quick-Disconnect bonnet aids closure diaphragm replacement.
- Epoxy powder-coated actuator with stainless steel fasteners for maximum corrosion resistance.
- Multi-spring field-reversible actuators with reduced deadband permits direct operation from remote signal devices.
- Fisher® FIELDVUE™ digital valve controller available for remote calibration and diagnostics in facilities utilizing the PlantWeb™ architecture.
- Elastomer seals meet FDA and USP CLVI requirements.



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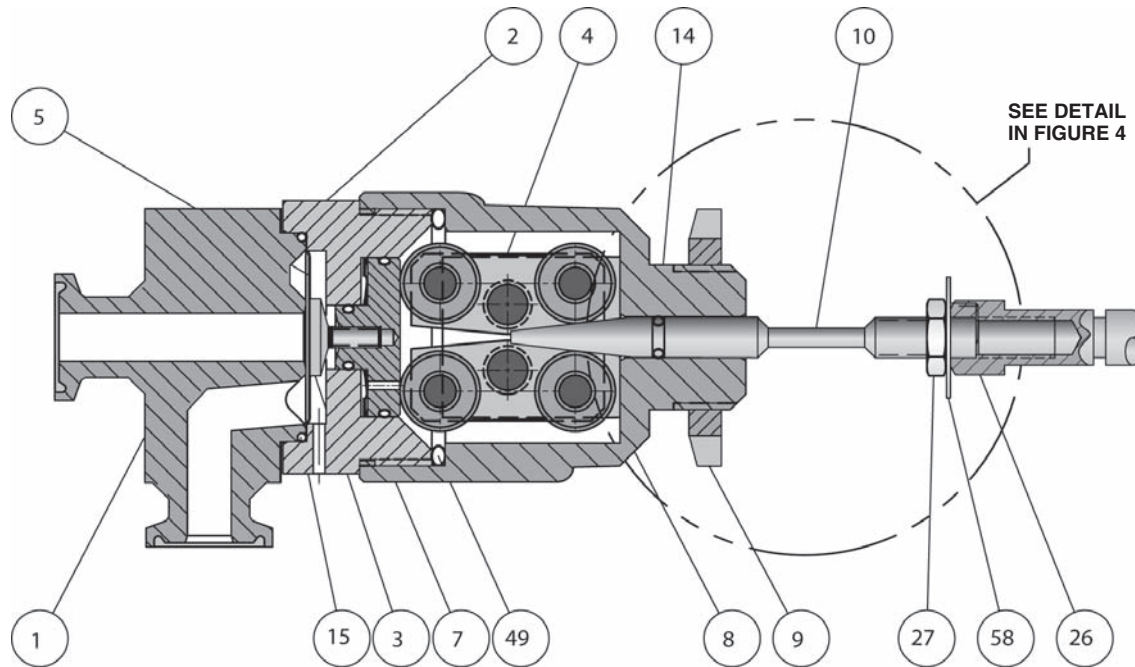
Figure 1. 83000 Sanitary Angle Valve with Baumann 16 Actuator



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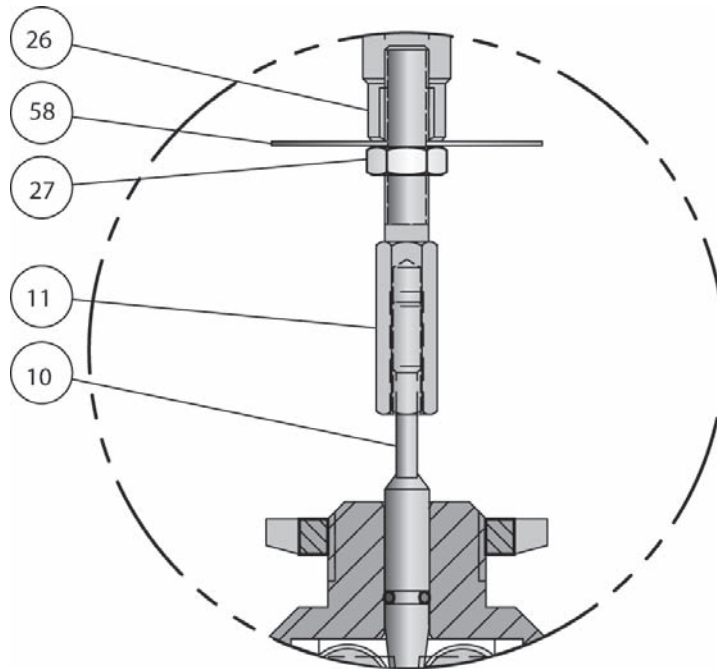
Figure 2. 83000 Sanitary Angle Valve with FIELDVUE DVC2000 Digital Valve Controller





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Figure 3. 83000 for Baumann 16 Actuator



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Figure 4. 83000 with Stem Adaptor for Baumann 32 Actuator

Specifications

See table 6 for technical specifications and table 7 for actuator specifications

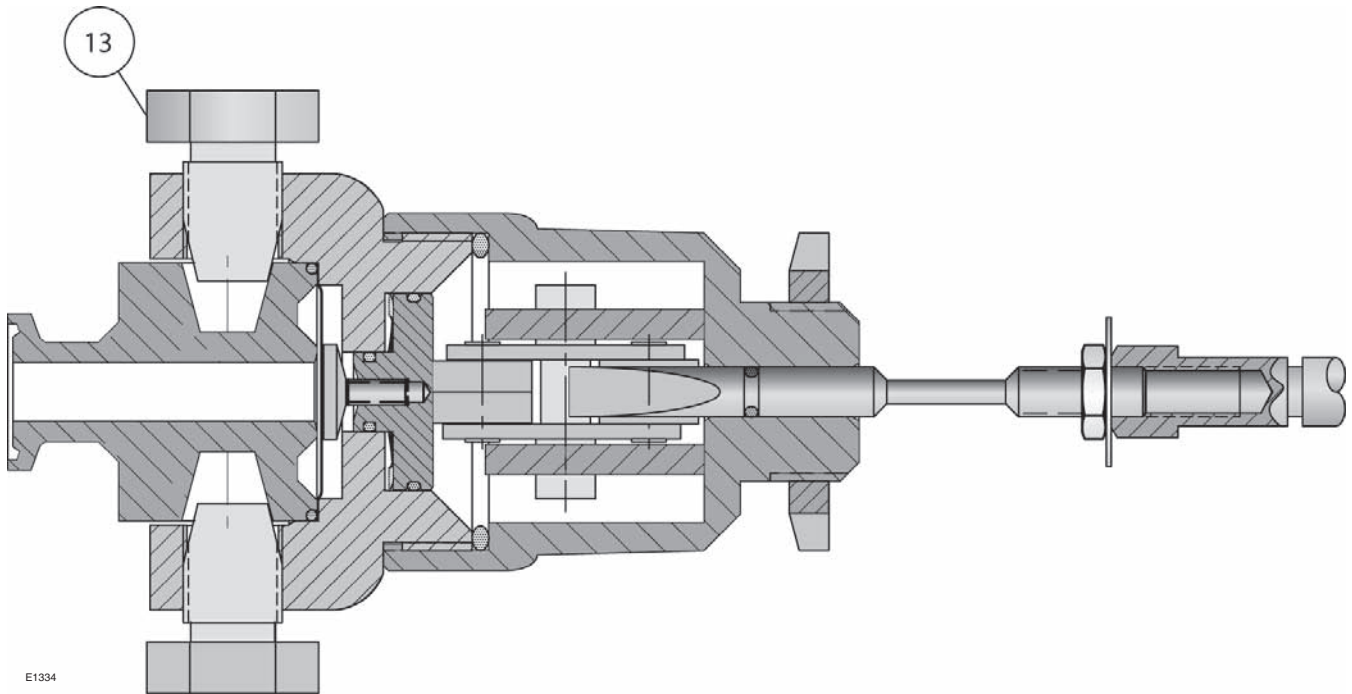


Figure 5. Baumann 83000 – Rotated View to Show Locking Bolts

Table 1. Materials of Construction

Key Number	Description	Material
1	Valve Body	ASTM A479 S31603
2	Bonnet Yoke	S30400 SST
3	Piston Subassembly	S30300 SST and FKM (Fluorocarbon)
4	Bearing Cartridge Subassembly	Stainless Steel and PTFE (Polytetrafluoroethylene)
5	Closure Diaphragm	S31600 SST, standard / N10276 Nickel Alloy, optional
7	Wave Spring	S17700 SST
8	Bonnet	ASTM A743 CF8
9	Drive Nut, Yoke	S30400 SST
10	Plunger	ASTM A276 S31600 Condition A
11	Actuator Stem Adapter for Baumann 32	A582 S30300 Stainless Steel
13	Locking Bolt (Refer to Figure 5)	S21800 SST
14	O-Ring, Plunger	FKM (Fluorocarbon)
15	O-Ring, Body	EPDM
27	Jam Nut, Baumann 16 Actuator	Stainless Steel (18-8 SST)
	Jam Nut, Baumann 32 Actuator	S30400 SST
49	O-Ring	FKM (Fluorocarbon)
58	Travel Indicator Disk	ASTM A240 S30400

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Table 2. Allowable Pressure Drops

ORIFICE		PLUG TRAVEL	AIR-TO-OPEN ACTION						AIR-TO-CLOSE ACTION					
			Bench Range		3-15 psig (0.2-1.0 bar) Signal to Actuator		With Positioner ⁽¹⁾		Bench Range		3-15 psig (0.2-1.0 bar) Signal to Actuator		With Positioner ⁽¹⁾	
Cv	Kv	mm (inch)	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig
0.014 0.053 0.182 0.427 0.631 1.02	0.012 0.046 0.157 0.369 0.546 0.882	12.7 (0.50)	0.2-1.0	3-15	10	150	19	275	0.2- 0.9	3-13	10	150	19	275

1. Based on 1.38 bar (20 psig) supply.

Table 3. Flow Coefficients (Cv Values)

ORIFICE DIA-METER	DIA-PHRAGM TRAVEL	Cv AT VALVE OPENING - PERCENT OF VALVE STEM TRAVEL										
		5	10	20	30	40	50	60	70	80	90	100
mm (Inch)	mm (Inch)											
0.635 (0.025)	0.177 (0.007)	0.00001	0.0001	0.0015	0.0050	0.0075	0.0094	0.0108	0.0118	0.0123	0.0129	0.014
1.60 (0.063)		0.00003	0.0003	0.0040	0.0127	0.0200	0.0273	0.0340	0.0393	0.0450	0.0490	0.053
7.92 (0.312)		0.0002	0.0002	0.0010	0.0057	0.0197	0.0440	0.0707	0.0993	0.1293	0.1573	0.182
7.92 (0.312)	0.381 (0.015)	0.0004	0.002	0.043	0.099	0.165	0.223	0.281	0.336	0.379	0.407	0.427
13.2 (0.520)	0.304 (0.012)	0.0007	0.031	0.072	0.144	0.215	0.296	0.377	0.448	0.519	0.576	0.631
13.2 (0.520)	0.381 (0.015)	0.001	0.019	0.131	0.250	0.368	0.492	0.622	0.726	0.832	0.929	1.02

Table 4. Flow Coefficients (Kv Values [Kv = 0.86 x Cv])

ORIFICE DIA-METER	DIA-PHRAGM TRAVEL	Kv AT VALVE OPENING - PERCENT OF VALVE STEM TRAVEL										
		5	10	20	30	40	50	60	70	80	90	100
mm (Inch)	mm (Inch)											
0.635 (0.025)	0.177 (0.007)	0.0000086	0.000086	0.00129	0.0043	0.0065	0.0081	0.0093	0.0101	0.0106	0.0111	0.0117
1.60 (0.063)		0.000026	0.000258	0.00344	0.0109	0.0172	0.0235	0.0292	0.0338	0.0387	0.0421	0.0453
7.92 (0.312)		0.00017	0.000172	0.00086	0.0049	0.0169	0.0378	0.0608	0.0854	0.1112	0.1353	0.1568
7.92 (0.312)	0.381 (0.015)	0.00034	0.00172	0.03698	0.0851	0.1419	0.1918	0.2417	0.289	0.326	0.350	0.367
13.2 (0.520)	0.304 (0.012)	0.0006	0.0267	0.0619	0.124	0.185	0.2546	0.324	0.385	0.446	0.4954	0.5427
13.2 (0.520)	0.381 (0.015)	0.00086	0.0160	0.1131	0.215	0.316	0.423	0.535	0.624	0.715	0.799	0.877

Table 5. Flow Coefficients

ORIFICE DIAMETER	DIAPHRAGM TRAVEL	F _L	F _d	X _T	K _C
mm (Inch)	mm (Inch)				
0.635 (0.025)	0.177 (0.007)	0.82	0.5	0.55	0.56
1.60 (0.063)		0.7		0.34	0.41
7.92 (0.312)			0.76	0.2	0.44
7.92 (0.312)	0.381 (0.015)	0.95	0.86		0.76
13.2 (0.520)	0.304 (0.012)				
13.2 (0.520)	0.381 (0.015)				

Table 6. Technical Specifications

VALVE BODY RATING	18.9 bar CWP (275 psi CWP)
NOMINAL SIZE	12.7 mm (NPS 1/2)
CONNECTIONS	Tri-Clamp, Standard / Welded Ends, Optional
SEAT LEAKAGE	ASME/FCI 70-2, Class IV
BONNET	Quick Disconnect
CHARACTERISTIC	Modified Equal Percentage
INTERNAL VALVE BODY FINISH	≤ 30 Ra microinch, Standard / ≤ 20 Ra microinch Optional
MAXIMUM OPERATING TEMPERATURE	177°C (350°F)
WEIGHT	1.82 kg (4 lbs)

Table 7. Actuator Specifications

TYPE⁽¹⁾	16 Multi-Spring Diaphragm (Single Acting)
NOMINAL SIZE	103cm ² (16in ²)
AIR FAILURE	Open or Closed (Field Reversible)
BENCH SPRING RANGE	0.2 – 0.9 bar (3–13 psi), fail open / 0.2–1.0 bar (3–15 psi) fail closed
TRAVEL	12.7 mm (0.5 inch)
AMBIENT TEMPERATURE RANGE	–29 to 71 °C (–20 to 160 °F)
MAXIMUM AIR PRESSURE	2.4 bar (35 psig)
DIAPHRAGM MATERIAL	CR (Chloroprene), TPES (Polyester Thermoplastic)
SPRING CASES	Steel, Powder Epoxy-Coated Appliance White per FDA 21 CFR 175.300 with Stainless Steel Fasteners
YOKE	CF8M Stainless Steel
WEIGHT	2.1 kg (4.6 lbs)

1. Baumann 32 actuator is available on a special order basis. Contact your Emerson Process Management sales office.

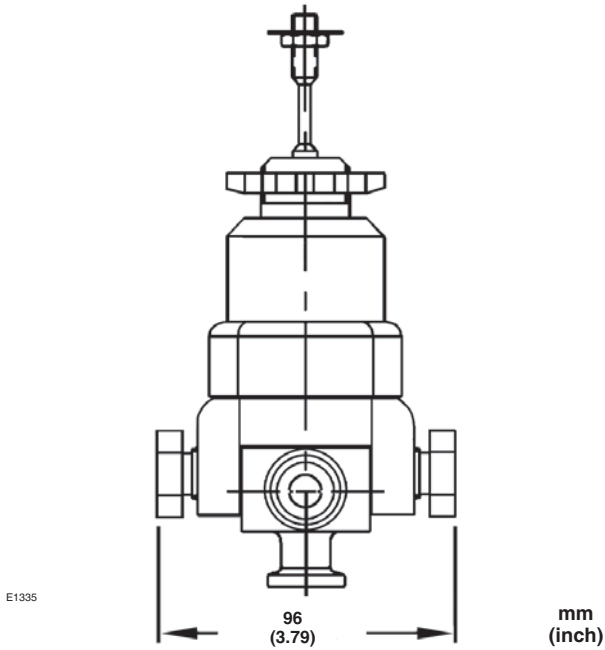


Figure 6. Valve Body Subassembly

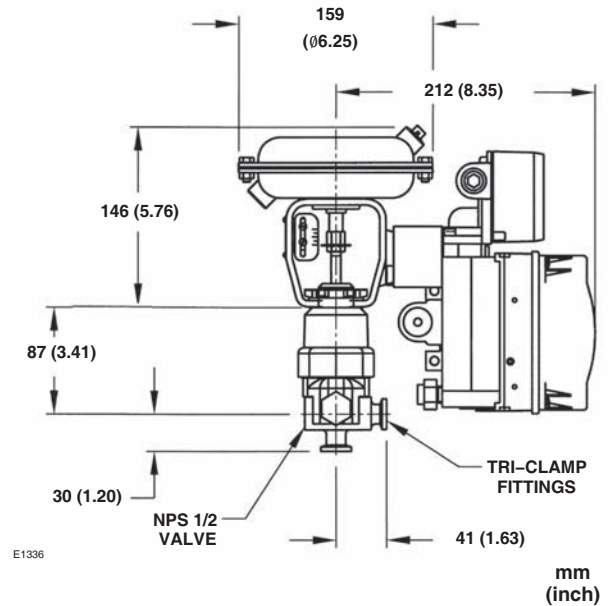


Figure 8. 83000 with Baumann 16 Actuator and FIELDVUE DVC6000 Digital Valve Controller

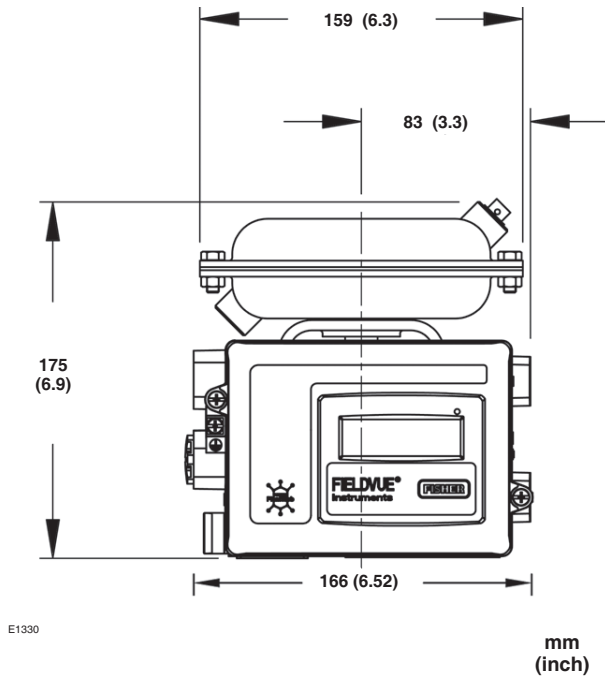


Figure 7. Baumann 16 Actuator with FIELDVUE DVC2000 Digital Valve Controller

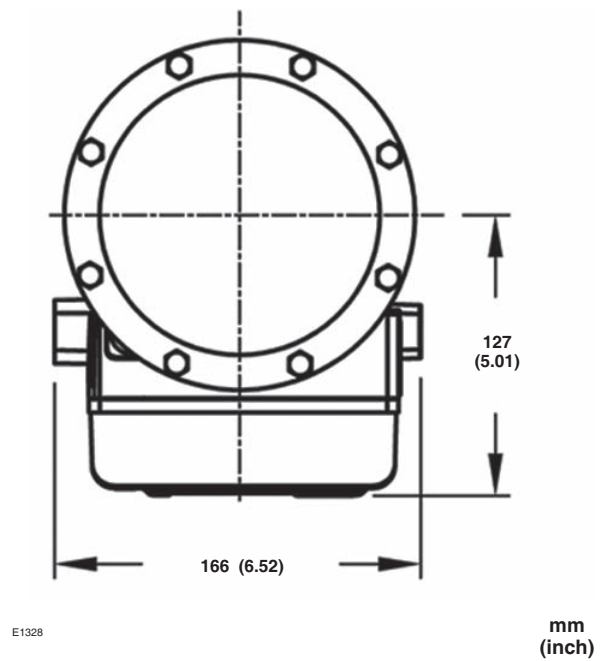
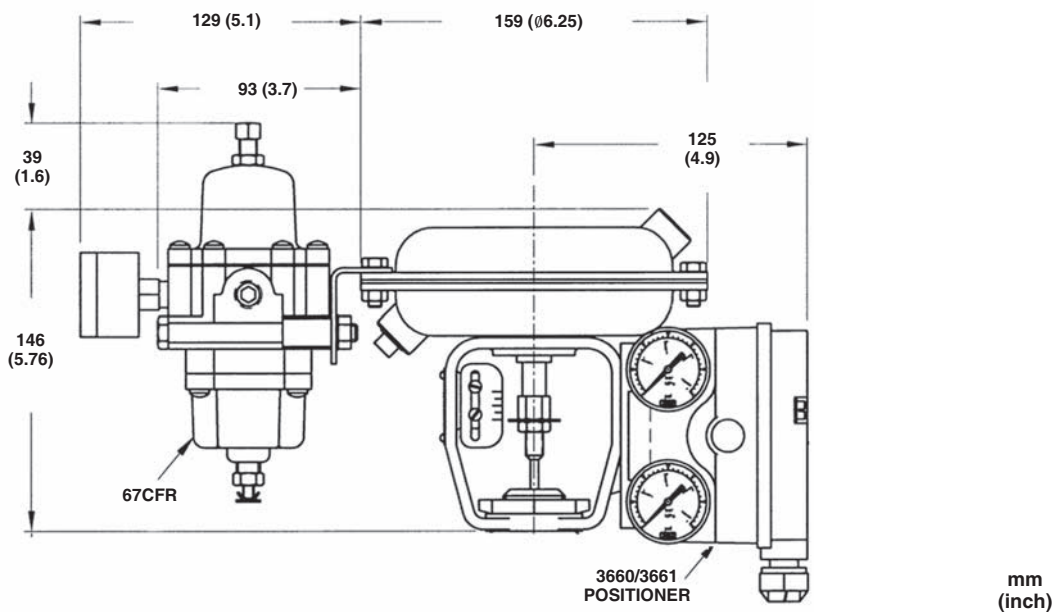


Figure 9. Baumann 16 Actuator with FIELDVUE DVC2000 Digital Valve Controller, Top View



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Figure 10. Baumann 16 Actuator with Fisher 3660/3661 Positioner and 67CFR Airset

Note

The Baumann 16 actuator requires 77 mm (3 inches) vertical clearance. The Baumann 32 actuator requires 115 mm (4.5 inches) vertical clearance.

WARNING! To prevent property damage or personal injury, you must use an actuator support when purchasing an actuator with a FIELDVUE digital valve controller and mounting sideways.

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Table 8. Model Numbering System

Actuator Size	83		Maximum Cv		End Connections		SA	
	83000		Cv	Kv			Valve Body Style	
16		3	0.014	0.012	11	Tri-Clamp	SA	Angle
32 ⁽¹⁾		4	0.053	0.046	12	Welded Ends		
		6	0.182	0.157				
		7	0.427	0.369				
		8	0.631	0.546				
		9	1.02	0.882				

1. Contact your Emerson Process Management sales office.

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