

Baumann™ 24000SB Barstock Control Valve

This rugged Baumann control valve (figures 1 and 2) is recommended for low-flow, high-pressure, industrial control applications. S31600 / S31603 stainless steel barstock valve body and bonnet is suitable for process pressures up to 413 barg (6000 psig). The 24000SB is the ideal solution for applications that exceed the operating range of our other 24000 series valves. Various end connections ranging from threaded (standard), buttweld, and flanged add versatility to this high-pressure product line. Special high nickel alloy constructions are available and round out the basic S31600/S31603 stainless steel offering.

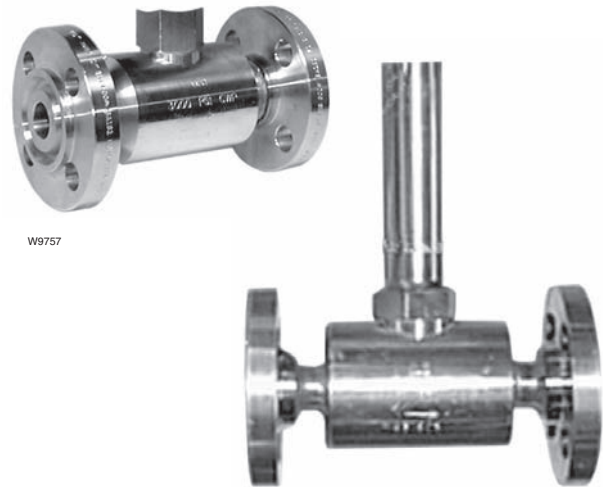
Features

- Compact and light-weight design reduces installed piping costs.
- Dual plug and stem guiding provides increased stability during plug travel.
- Multiple trim capacity reductions available to meet changing process requirements with C_v ratings as low as 0.00013.
- Optional extended bonnet for applications ranging from -195 to 537°C (-320 to 1000°F).
- Epoxy powder-coated actuator with stainless steel fasteners for corrosion resistance.
- Multi-spring, field-reversible actuator with reduced deadband, permits direct operation from remote signal devices.
- Actuator and yoke can be removed from the valve assembly while maintaining packing integrity.
- Optional ENVIRO-SEAL™ packing system to meet critical emission control requirements.
- Fisher® FIELDVUE™ digital valve controller available for remote calibration and diagnostics in facilities utilizing the PlantWeb™ architecture.



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Figure 1. 24000SB Control Valve with Baumann 32 Actuator and FIELDVUE DVC2000 Digital Valve Controller

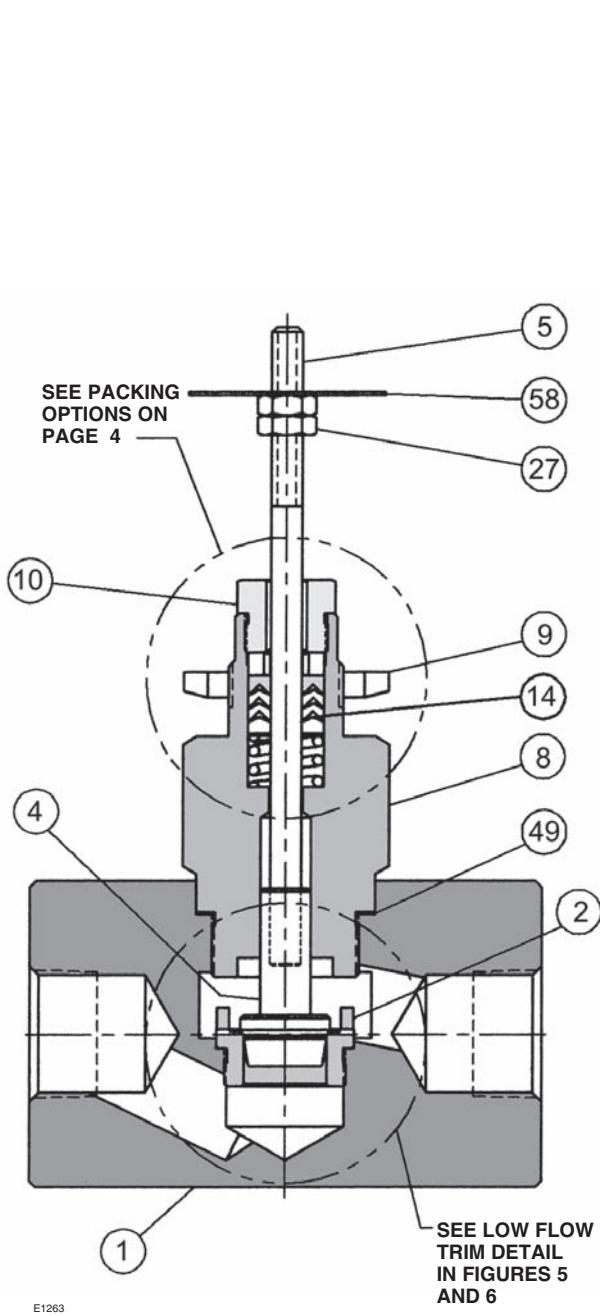


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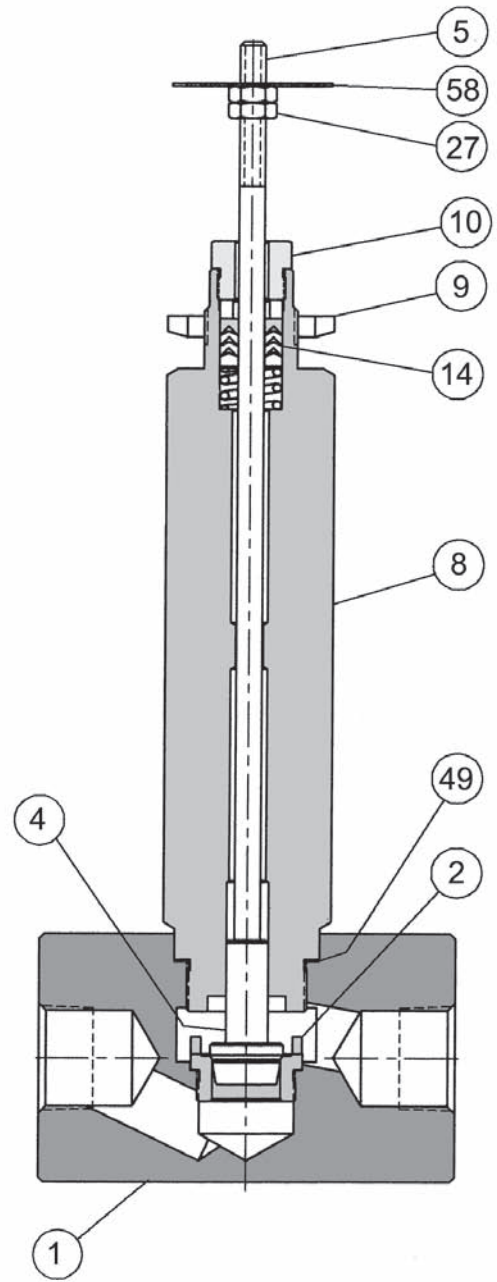
Figure 2. Baumann 24000SB Control Valve with Flanges and Extension Bonnet





E1263

Figure 3. Valve Body Subassembly with Standard PTFE Spring-Loaded V-Ring Packing



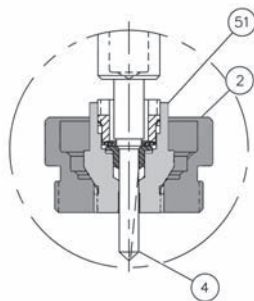
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Figure 4. Valve Body with Extension Bonnet

Table 1. Materials of Construction

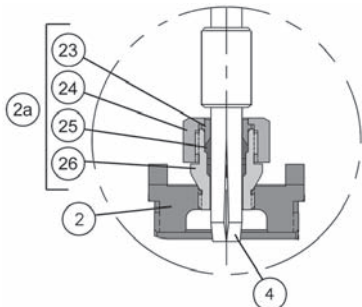
Key No.	Description	Material			
		S31603 Stainless Steel	N10276 Nickel Alloy ⁽¹⁾	N08020 Nickel Alloy ⁽¹⁾	N04400 Nickel Alloy ⁽¹⁾
1 ⁽¹⁾	Valve Body	ASTM A479 S31600/ S31603 Dual Certified	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
2 ⁽¹⁾	Seat Ring (standard) (For low flow trim, refer to tables 2 & 3)	ASTM A276 S31600	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
4 ⁽¹⁾	Plug (Metal Seat) Cv ≤ 2.5	ASTM A479 S21800 (standard) / ASTM A582 S41600 Condition T (optional)	ASTM B574 N10276	ASTM B473 N08020	Federal Specification QQ-N-286 N05500
	Plug (Metal Seat) Cv ≥ 4.0	ASTM A276 S31600 Condition A (standard) / ASTM A582 S41600 Condition T (optional)			
	Plug (Soft Seat)	ASTM A276 S31600 Condition A with PTFE (Polytetrafluoroethylene) insert	ASTM B574 N10276/PTFE	ASTM B473 N08020/PTFE	Federal Specification QQ-N-286 N05500
5 ⁽¹⁾	Stem	ASTM A276 S31600	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
8 ⁽¹⁾	Bonnet	ASTM A479 S31600/ S31603 Dual Certified	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
9	Drive Nut (Yoke)	S31600 (ASTM A194 Grade 8M)			
10 ⁽¹⁾	Packing Follower	ASTM A276 S31600 Condition A	ASTM B576 N10276	ASTM B473 N08020	ASTM B164 N04400
14 ⁽¹⁾	V-Ring Packing (standard)	Refer to page 4			
	Packing (optional)	Refer to page 4			
27	Lock Nut	Stainless Steel (18-8 Stainless Steel)			
49	Body Gasket	Graphite Grade GHR with S31600 Insert			
58	Travel Indicator	ASTM A240 S30400			

1. For optional valve and trim materials, consult your Emerson Process Management sales office for price and delivery. N08020 and N04400 nickel alloy materials have pressure-temperature ratings less than 206 barg (3000 psig) or 413 barg (6000 psig) respectively. Consult tables 8 and 9.



E1246

Figure 5. Optional 151 Low Flow Trim Assembly



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Figure 6. Optional 177 Low Flow Trim Assembly

Table 2. 151 Low Flow Trim

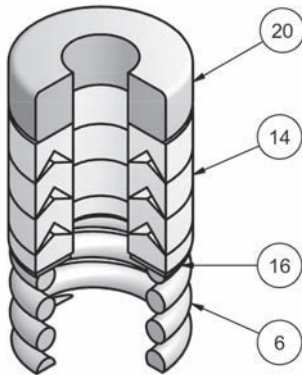
Key Number	Description	Material
2 ⁽¹⁾	Seat Ring	ASTM A276 S31600 Cond A
4 ⁽¹⁾	Plug	ASTM A479 S21800
51 ⁽¹⁾	Seat Sub-Assembly	
	Cage	ASTM A276 S31600
	Seat	PTFE
	Collar	ASTM A276 S31600
	Washer	ASTM A276 S31600
	Insert	ASTM A276 S31600

1. For optional trim materials, consult your Emerson Process Management sales office for price and delivery.

Table 3. 177 Low Flow Trim

Key Number	Description	Material	
2 ⁽¹⁾	Seat Ring	ASTM A276 S31600 Cond A	
2a ⁽¹⁾	Seat Sub-Assembly		
	23	Gland	ASTM A276 S31600
	24	Retainer Nut	ASTM A276 S31600
	25	Insert	Reinforced PTFE
	26	Housing	ASTM A276 S31600
4 ⁽¹⁾	Plug	ASTM A479 S21800	

1. For optional trim materials, consult your Emerson Process Management sales office for price and delivery.



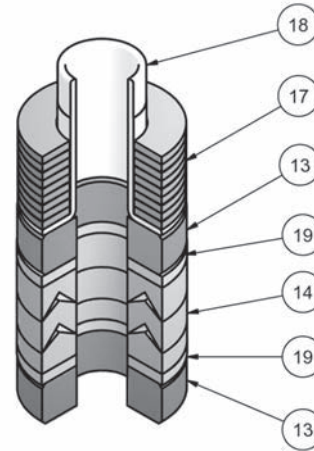
E1240

Figure 7. Standard Spring-Loaded PTFE V-Ring Packing Kit

Table 4. Standard Spring-Loaded PTFE V-Ring Packing Kit

Key Number	Description	Material
6 ⁽¹⁾	Spring	ASTM A313 S30200
14	Packing Set	PTFE (Polytetrafluoroethylene) / PTFE, 25% carbon filled
16	Washer	ASTM A240 S31600
20	Spacer	J-2000 (filled-Polytetrafluoroethylene)

1. N10276 nickel alloy valve body construction is furnished with N10276 nickel alloy spring.

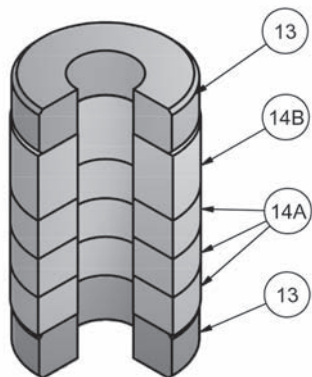


E1248

Figure 9. ENVIRO-SEAL Packing Kit (Optional)

Table 6. ENVIRO-SEAL Packing Kit (Optional)

Key Number	Description	Material
13	Bushings	Carbon-Graphite
14	Packing Rings	PTFE (Polytetrafluoroethylene) / PTFE, 25% carbon filled
17	Belleville Spring	N06600 Nickel Alloy (ASTM B637 N07718, 40 HRC max)
18	Bushing	PEEK (polyetheretherketone)
19	Washers	Modified PTFE



E1241

Figure 8. Molded Graphite (Flexible Graphite) Packing Kit (Optional)

Table 5. Molded Graphite (Flexible Graphite) Packing Kit (Optional)

Key Number	Description	Material
13	Bushings	Carbon-Graphite
14A	Packing Rings	Graphite
14B	Packing Ring	Graphite

Special ENVIRO-SEAL Packing Note

The ENVIRO-SEAL PTFE packing system is suitable for 100 ppm environmental applications on services up to 51.7 barg (750 psig) and process temperatures ranging from -46 to 232°C (-50 to 450°F).

For non-environmental applications, this packing system offers excellent performance at the same temperature range up to the maximum valve working pressure.

Temperature limits apply to packing arrangements only. Complete valve assembly temperature limits may differ, refer to appropriate pressure/temperature ratings.

(Reference Fisher Packing Selection Guidelines for Sliding-Stem Valves, Bulletin 59.1:062, D101986X012).

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Table 7. Technical Specifications

NOMINAL PIPE SIZE		DN 15, 20, and 25 (NPS 1/2, 3/4, and 1)
END CONNECTIONS	Standard	Threaded (NPT)
	Available⁽¹⁾	Buttweld, Flanged (CL150 to CL2500)
PRESSURE RATING		See Pressure–Temperature Ratings, tables 12, 13, 14, 15, 16, and 17
CHARACTERISTIC		Equal Percentage or Linear

1. Consult your Emerson Process Management sales office for other available connections.

Table 8. Temperature Ratings for Packing and Seat Material⁽¹⁾

SEATING MATERIAL	PTFE Soft Seat	151 Trim	–29 to 177°C (–20 to 350°F)
		577 & 677 Trim	–73 to 232°C (–100 to 450°F)
	Reinforced PTFE	177 Trim	–73 to 232°C (–100 to 450°F)
	Metal Seat	102, 548, 588, 648, 688 Trim	–195 to 537°C (–320 to 1000°F)
PACKING AND BONNET COMBINATIONS	BONNET STYLE	PACKING	TEMPERATURE LIMIT
	Standard Bonnet⁽²⁾	Spring Loaded PTFE Packing	–73 to 232°C (–100 to 450°F)
		ENVIRO–SEAL	–45 to 232°C (–50 to 450°F)
		Graphite	–73 to 232°C (–100 to 450°F)
	Extension Bonnet	Spring Loaded PTFE Packing	–195 to 232°C (–320 to 450°F)
		ENVIRO–SEAL	–45 to 232°C (–50 to 450°F)
Graphite		–195 to 537°C (–320 to 1000°F)	

1. Temperature limits apply to seating or packing arrangements only. Complete valve assembly temperature limits may differ, refer to appropriate pressure/temperature ratings. For more information on packing selection, reference Fisher Packing Selection Guidelines for Sliding–Stem Valves, Bulletin 59.1:062, D101986X012.
2. PTFE packing may be used in cryogenic service but becomes stiff.

Table 9. Actuator Specifications

TYPE	32, 54, 70 Multi–Spring Diaphragm (Single Acting)
DIAPHRAGM AREA	210, 350, 450 cm ² / 32, 54, 70 in ²
AIR FAILURE	32 and 54 Fails Open or Closed (Field Reversible) / 70 Fails Closed ONLY
TRAVEL⁽¹⁾	12.7 or 19.1 mm / 0.50 or 0.75 inches
AMBIENT TEMPERATURE RANGE	–29°C to 71°C / –20°F to 160°F
MAXIMUM AIR PRESSURE	2.4 barg / 35 psig
DIAPHRAGM MATERIAL⁽²⁾	NBR (Nitrile) / TPES (Polyester Thermoplastic)
SPRING CASES	Steel, Powder Epoxy–Coated with Stainless Steel Fasteners
YOKE	S30400 SST (for Baumann 32 and 54 SST actuator option only) Ductile Iron, Powder Epoxy–Coated

1. Dual travel stops are available on Baumann 32 and 54 actuators. These are not field reversible.

2. Optional reinforced VMQ (Silicone) diaphragm with FKM (Fluorocarbon) O–ring actuator stem seal for high temperature conditions (–29°C to 121°C / –20°F to 250°F) is available with Baumann 32 and 54 actuators ONLY.

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Table 10. Cv Values at 100% Plug Opening ($K_v = 0.86 \times C_v$)

VALVE SIZE		ORIFICE DIAMETER		PLUG TRAVEL		PLUG SERIES						
						102	151	177	577	548 / 588	677	648 / 688
DN	NPS	mm	inch	mm	inch	Cv	Cv	Cv	Cv	Cv	Cv	Cv
15 20 25	1/2 3/4 1	3.97	0.156	12.7	0.50	---	0.00013	---	---	---	---	---
							0.00025					
							0.0005					
							0.001					
							0.002					
							0.004					
							0.008					
							0.015					
							0.03					
							0.06					
							0.10					
							0.20					
							0.45					
		6.3	0.25	12.7	0.50	0.02, 0.05 0.10, 0.20	---	---	---	0.2, 0.5 1.0	---	0.5 1.0
		7.9	0.3125	12.7	0.50	---	---	0.0005 0.001, 0.002 0.005, 0.01 0.02, 0.05	---	---	---	---
15	1/2	9.5	0.375	12.7	0.50	---	---	---	1.0, 1.5 2.0	1.5 2.0	0.1, 0.2, 0.5 1.0, 2.0	1.5 2.0
20 25	3/4 1	9.5	0.375	12.7	0.50	---	---	---	1.0, 1.5 2.5	1.5 2.5	0.1, 0.2, 0.5 1.0, 2.5	1.5 2.5
20	3/4	20.6	0.8125	12.7	0.50	---	---	---	3.8	3.8	3.8	3.8
25	1	20.6	0.8125	12.7	0.50	---	---	---	4, 6.8	4, 6.8	4.0	4, 6.8

102 Linear Low Flow Trim



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151 Modified Equal % Low Flow Trim



W9751

177 Modified Equal % Low Flow Trim



W9748

548 / 577 / 588 Equal % Trim



W9749

648 / 677 / 688 Linear Trim



W9750

Figure 10. Baumann 24000SB Trims

Table 11. ISA Sizing Coefficients

Series	Cv Rating	FL	Fd	XT	KC
102	0.02 0.05 0.1 0.2	0.95	0.06 0.09 0.013 0.18	0.76	0.86
151	0.00013 0.00025 0.0005 0.001 0.002 0.004 0.008 0.015 0.03 0.06 0.1 0.2 0.45	0.98	0.35 0.04 0.05 0.06 0.075 0.10 0.11 0.15 0.18 0.22 0.25 0.30 0.40	0.81	0.94
177	0.0005 0.001 0.002 0.005 0.01 0.02 0.05	0.95	0.70	0.76	0.86
548/588	0.2 0.5 1 1.5 2 2.5 3.8 4 6.8	0.98	0.28	0.81	0.94
		0.90	0.4 0.33 0.42	0.68	0.73
			0.46		
577	1 1.5 2 2.5 3.8 4.0 6.8	0.9	0.40 0.33	0.68	0.73
			0.42		
			0.46		
648/688	0.5 1 1.5 2 2.5 3.8 6.8	0.9	0.40 0.33 0.42	0.68	0.73
			0.46		
677	0.1 0.2 0.5 1 2 2.5 3.8 4	0.9	0.08 0.12 0.19 0.27	0.68	0.73
			0.46		

Table 12. Pressure–Temperature Ratings for S31600/S31603 Dual Certified Stainless Steel Valve Body – 3000 psig (Standard)⁽¹⁾

Temperature (°C) ⁽²⁾	Working Pressure (barg)	Temperature (°F) ⁽²⁾	Working Pressure (psig)
–195 to 37	206	–320 to 100	3000
93	177	200	2580
148	160	300	2330
204	147	400	2141
232	142	450	2066
260	137	500	1992
287	133	550	1936
315	129	600	1880
343	127	650	1849
371	124	700	1810
398	122	750	1779
426	121	800	1758
454	120	850	1742
482	119	900	1729
510	110	950	1609
537	100	1000	1458

1. Caution: When the valve is furnished with CL150 through CL900 flanges, the pressure–temperature ratings are limited to the values published in ASME B16.34. Valve assemblies with CL1500 flanges are limited to 206 barg (3000 psig) maximum Cold Working Pressure (CWP).
 2. Do not exceed seating and packing material ratings.

Table 13. Pressure–Temperature Ratings for S31600/S31603 Dual Certified Stainless Steel Valve Body – 6000 psig (Optional)⁽¹⁾

Temperature (°C) ⁽²⁾	Working Pressure (barg)	Temperature (°F) ⁽²⁾	Working Pressure (psig)
(–)195 to 37	413.7	(–) 320 to 100	6000
93	355.8	200	5160
149	321.3	300	4660
204	295.1	400	4280
232	284.8	450	4130
260	274.4	500	3980
288	266.8	550	3870
316	259.2	600	3760
343	253.7	650	3680
371	249.6	700	3620
399	245.5	750	3560
427	242.7	800	3520
454	239.9	850	3480
482	238.6	900	3460
510	222.0	950	3220
538	208.9	1000	3030

1. Caution: When the valve is furnished with CL150 through CL1500 flanges, the pressure–temperature ratings are limited to the values published in ASME B16.34.
 2. Do not exceed seating and packing material ratings.

Table 14. Pressure–Temperature Ratings for N10276 Nickel Alloy Valve Body – 3000 psig (Optional)⁽¹⁾

Temperature (°C) ⁽²⁾	Working Pressure (barg)	Temperature (°F) ⁽²⁾	Working Pressure (psig)
-195 to 37	215	-320 to 100	3125
93	215	200	3125
148	209	300	3033
204	202	400	2941
232	196	450	2856
260	190	500	2770
287	182	550	2645
315	173	600	2520
343	168	650	2450
371	163	700	2366
398	152	750	2216
426	145	800	2116
454	139	850	2029
482	128	900	1870
510	110	950	1608
537	104	1000	1516

1. Caution: When the valve is furnished with CL150 through CL900 flanges, the pressure–temperature ratings are limited to the values published in ASME B16.34. Valve assemblies with CL1500 flanges are limited to 206 barg (3000 psig) maximum Cold Working Pressure (CWP).
2. Do not exceed seating and packing material ratings.

Table 15. Pressure–Temperature Ratings for N10276 Nickel Alloy Valve Body – 6000 psig (Optional)⁽¹⁾

Temperature (°C) ⁽²⁾	Working Pressure (barg)	Temperature (°F) ⁽²⁾	Working Pressure (psig)
-195 to 37	430.9	-320 to 100	6250
93	430.9	200	6250
149	418.5	300	6070
204	401.3	400	5820
232	391.6	450	5680
260	382.0	500	5540
288	364.7	550	5290
316	347.5	600	5040
343	338.2	650	4905
371	326.1	700	4730
399	305.4	750	4430
427	291.6	800	4230
454	279.9	850	4060
482	258.2	900	3745
510	222.0	950	3220
538	208.9	1000	3030

1. Caution: When the valve is furnished with CL150 through CL1500 flanges, the pressure–temperature ratings are limited to the values published in ASME B16.34.
2. Do not exceed seating and packing material ratings.

Table 16. Pressure–Temperature Ratings for N08020 Nickel Alloy Valve Body – 3000 psig (Optional)⁽¹⁾

Temperature (°C) ⁽²⁾	Working Pressure (barg)	Temperature (°F) ⁽²⁾	Working Pressure (psig)
-195 to 37	172	-320 to 100	2500
93	150	200	2175
148	140	300	2041
204	140	400	2041
232	140	450	2041
260	140	500	2041
287	140	550	2041
315	140	600	2041
343	140	650	2041
371	140	700	2041
398	140	750	2041
426	140	800	2041

1. Caution: When the valve is furnished with CL150 through CL900 flanges, the pressure–temperature ratings are limited to the values published in ASME B16.34. Valve assemblies with CL1500 flanges are limited to 206 barg (3000 psig) maximum Cold Working Pressure (CWP).
2. Do not exceed seating and packing material ratings.

Table 17. Pressure–Temperature Ratings for N08020 Nickel Alloy Valve Body – 6000 psig (Optional)⁽¹⁾

Temperature (°C) ⁽²⁾	Working Pressure (barg)	Temperature (°F) ⁽²⁾	Working Pressure (psig)
(-)195 to 37	430.9	(-) 320 to 100	6250
93	426.1	200	6180
149	408.2	300	5920
204	391.6	400	5680
232	384.0	450	5570
260	376.5	500	5460
288	362.0	550	5250
316	347.5	600	5040
343	338.2	650	4905
371	326.1	700	4730
399	305.4	750	4430
427	291.6	800	4230

1. Caution: When the valve is furnished with CL150 through CL1500 flanges, the pressure–temperature ratings are limited to the values published in ASME B16.34.
2. Do not exceed seating and packing material ratings.

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WARNING: Refer to pressure – temperature rating tables 12, 13, 14, 15, 16, and 17 and consult your Emerson Process Management sales office for potential cavitation and noise concerns.

Table 18. Allowable Pressure Drops for Baumann 32, 54, and 70 Actuators with 3000 psi Valve Body (bar)

ORIFICE DIA. (mm)	PLUG TRAVEL (mm)	ACT TYPE	AIR-TO-OPEN ACTION					AIR-TO-CLOSE ACTION				
			BENCH RANGE (barg)	0.2–1.0 barg SIGNAL TO ACTUATOR		WITH POSITIONER 1.38 barg AIR SUPPLY		BENCH RANGE (barg)	0.2–1.0 barg SIGNAL TO ACTUATOR		WITH POSITIONER 1.38 barg AIR SUPPLY	
				Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.		Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.
6.4	12.7	32	0.3–1.0	64	---	123	---	0.2–0.9	61	---	206	---
		32	0.5–1.0	125	---	184	---	0.2–0.7	153	---	206 ⁽¹⁾	---
		54	0.6–1.0	206	---	206 ⁽¹⁾	---	0.2–0.7	231	---	206 ^(1,2)	---
7.9	12.7	32	0.4–1.0	---	73	---	114	0.2–0.7	---	92	---	199
		54	0.6–1.0	---	182	---	206 ⁽¹⁾	0.2–0.7	---	147	---	206 ^(1,2)
9.5	12.7	32	0.5–1.0	64	52	94	81	0.2–0.7	78	66	156	144
		54	0.6–1.0	144	132	189	177	0.2–0.7	118	106	206	206
		70	0.6–1.0	195	183	206 ⁽¹⁾	206 ⁽¹⁾	---	---	---	---	---
20.6	12.7	54	0.8–1.0	48	41	59	53	0.2–0.7	29	23	59	53
		70	0.7–1.0	57	50	72	66	---	---	---	---	---

1. The maximum shutoff pressure when using ENVIRO-SEAL packing is defined by: $\Delta P = \text{Table Value} - [1112 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 51.7 bar should be used for ENVIRO-SEAL packing.
2. The maximum shutoff pressure when using Flexible Graphite packing is defined by: $\Delta P = \text{Table Value} - [5337 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 206 bar should be used for Flexible Graphite packing.

Table 19. Allowable Pressure Drops for Baumann 32, 54, and 70 Actuators with 3000 psi Valve Body (psi)

ORIFICE DIA. (in)	PLUG TRAVEL (in)	ACT TYPE	AIR-TO-OPEN ACTION					AIR-TO-CLOSE ACTION				
			BENCH RANGE (psig)	3–15 psig SIGNAL TO ACTUATOR		WITH POSITIONER 20 psig AIR SUPPLY		BENCH RANGE (psig)	3–15 psig SIGNAL TO ACTUATOR		WITH POSITIONER 20 psig AIR SUPPLY	
				Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.		Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.
0.25	0.50	32	5–15	887	---	1773	---	3–13	887	---	3000	---
		32	7–15	1773	---	2660	---	3–10	2216	---	3000 ⁽¹⁾	---
		54	8–15	3000	---	3000 ⁽¹⁾	---	3–10	3000	---	3000 ^(1,2)	---
0.3125	0.50	32	7–15	---	1033	---	1649	3–10	---	1341	---	2880
		54	9–15	---	2600	---	3000 ⁽¹⁾	3–10	---	2133	---	3000 ^(1,2)
0.375	0.50	32	7–15	905	730	1357	1182	3–10	1131	956	2262	2087
		54	9–15	2055	1881	2741	2566	3–10	1713	1538	3000	3000
		70	9–15	2794	2619	3000 ⁽¹⁾	3000 ⁽¹⁾	---	---	---	---	---
0.8125	0.50	54	11–15	685	591	856	762	3–10	428	334	856	762
		70	10–15	815	720	1048	953	---	---	---	---	---

1. The maximum shutoff pressure when using ENVIRO-SEAL packing is defined by: $\Delta P = \text{Table Value} - [25 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 750 psi should be used for ENVIRO-SEAL packing.
2. The maximum shutoff pressure when using Flexible Graphite packing is defined by: $\Delta P = \text{Table Value} - [120 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 3000 psi should be used for Flexible Graphite packing.

24000SB Valve

Table 20. Allowable Pressure Drops for Baumann 32, 54, and 70 Actuators with 6000 psi Valve Body (bar)

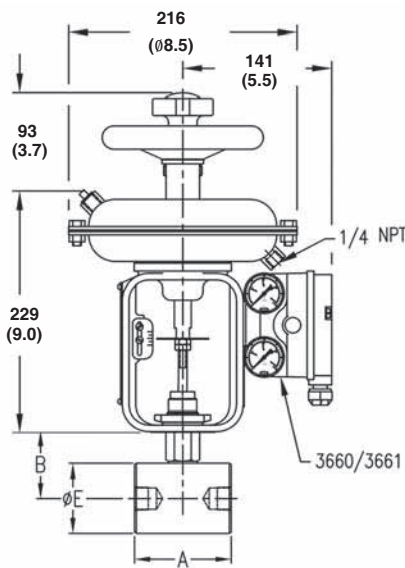
ORIFICE DIA. (mm)	PLUG TRAVEL (mm)	ACT TYPE	AIR-TO-OPEN ACTION				AIR-TO-CLOSE ACTION					
			BENCH RANGE (barg)	0.2-1.0 barg SIGNAL TO ACTUATOR		WITH POSITIONER 1.38 barg AIR SUPPLY		BENCH RANGE (barg)	0.2-1.0 barg SIGNAL TO ACTUATOR		WITH POSITIONER 1.38 barg AIR SUPPLY	
				Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.		Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.
6.4	12.7	32	0.3-1.0	64	---	123	---	0.2-0.9	61	---	214	---
		32	0.5-1.0	125	---	184	---	0.2-0.7	153	---	306 ⁽¹⁾	---
		54	0.6-1.0	236	---	325 ⁽¹⁾	---	0.2-0.7	231	---	431 ^(1,2)	---
7.9	12.7	32	0.4-1.0	---	73	---	114	0.2-0.7	---	92	---	199
		54	0.6-1.0	---	182	---	244 ⁽¹⁾	0.2-0.7	---	147	---	308 ^(1,2)
9.5	12.7	32	0.5-1.0	64	52	94	81	0.2-0.7	78	66	156	144
		54	0.6-1.0	144	132	189	177	0.2-0.7	118	106	236	224
		70	0.6-1.0	195	183	257 ⁽¹⁾	245 ⁽¹⁾	---	---	---	---	---
20.6	12.7	54	0.8-1.0	48	41	59	53	0.2-0.7	29	23	59	53
		70	0.7-1.0	57	50	72	66	---	---	---	---	---

1. The maximum shutoff pressure when using ENVIRO-SEAL packing is defined by: $\Delta P = \text{Table Value} - [1112 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 51.7 bar should be used for ENVIRO-SEAL packing.
2. The maximum shutoff pressure when using Flexible Graphite packing is defined by: $\Delta P = \text{Table Value} - [5337 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 431 bar should be used for Flexible Graphite packing.

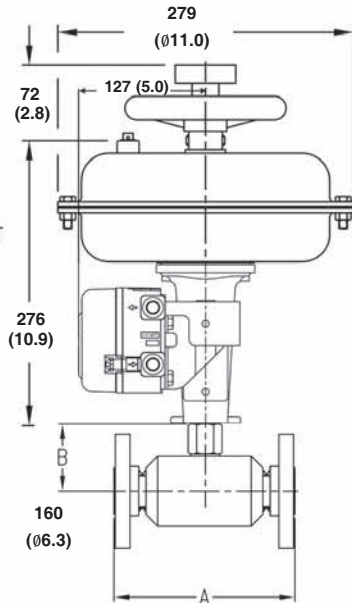
Table 21. Allowable Pressure Drops for Baumann 32, 54, and 70 Actuators with 6000 psi Valve Body (psi)

ORIFICE DIA. (in)	PLUG TRAVEL (in)	ACT TYPE	AIR-TO-OPEN ACTION				AIR-TO-CLOSE ACTION					
			BENCH RANGE (psig)	3-15 psig SIGNAL TO ACTUATOR		WITH POSITIONER 20 psig AIR SUPPLY		BENCH RANGE (psig)	3-15 psig SIGNAL TO ACTUATOR		WITH POSITIONER 20 psig AIR SUPPLY	
				Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.		Max CL IV Shutoff Press.	Max CL VI Shutoff Press.	Max CL IV Shutoff Press.	Max CL VI Shutoff Press.
0.25	0.50	32	5-15	887	---	1773	---	3-13	887	---	3103	---
		32	7-15	1773	---	2660	---	3-10	2216	---	4433 ⁽¹⁾	---
		54	8-15	3357	---	4700 ⁽¹⁾	---	3-10	3357	---	6250 ^(1,2)	---
0.3125	0.50	32	7-15	---	1033	---	1649	3-10	---	1341	---	2880
		54	9-15	---	2600	---	3532 ⁽¹⁾	3-10	---	2133	---	4465 ^(1,2)
0.375	0.50	32	7-15	905	730	1357	1182	3-10	1131	956	2262	2087
		54	9-15	2055	1881	2741	2566	3-10	1713	1538	3426	3251
		70	9-15	2794	2619	3725 ⁽¹⁾	3551 ⁽¹⁾	---	---	---	---	---
0.8125	0.50	54	11-15	685	591	856	762	3-10	428	334	856	762
		70	10-15	815	720	1048	953	---	---	---	---	---

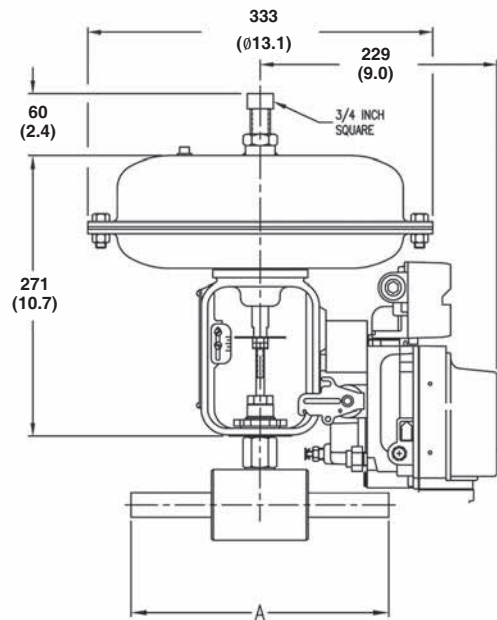
1. The maximum shutoff pressure when using ENVIRO-SEAL packing is defined by: $\Delta P = \text{Table Value} - [25 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 750 psi should be used for ENVIRO-SEAL packing.
2. The maximum shutoff pressure when using Flexible Graphite packing is defined by: $\Delta P = \text{Table Value} - [120 / (\text{Port Diameter})^2]$. These table values should not be modified by this formula and the maximum ΔP of 6250 psi should be used for Flexible Graphite packing.



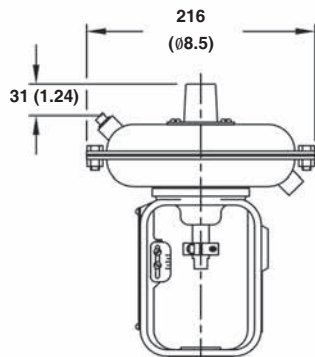
**THREADED (NPT) VALVE BODY
(VALVE ROTATED 90° FOR CLARITY)
BAUMANN 32 ATO / FAIL CLOSE
w/ HANDWHEEL**



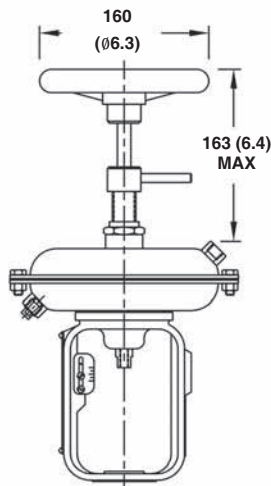
**BAUMANN 54 ATO FLANGED VALVE
BODY ACTUATOR w/ FIELDVUE
DVC2000 DIGITAL VALVE CONTROLLER**



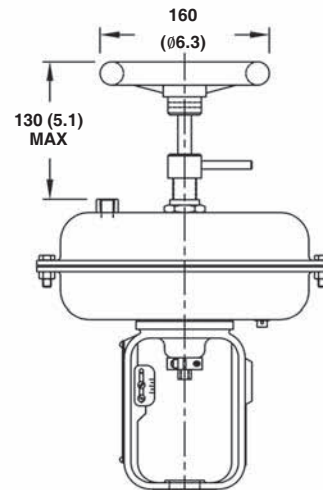
**BAUMANN 70 ATO ACTUATOR w/
BUTT WELD ENDS AND FIELDVUE
DVC6010 DIGITAL VALVE CONTROLLER**



**BAUMANN 32 ACTUATOR WITH
ADJUSTABLE OPEN/CLOSE
DUAL TRAVEL STOPS**



**BAUMANN 32 ATC/FAIL
OPEN ACTUATOR
WITH HANDWHEEL**



**BAUMANN 54 ATC / FAIL
OPEN ACTUATOR WITH
HANDWHEEL**

E1265

NOTE: ACTUATOR REMOVAL REQUIRES 115 mm (4.5 INCHES) VERTICAL CLEARANCE.

mm
(inch)

Figure 11. Dimensional Drawings

24000SB Valve

Table 22. Valve Dimensions

VALVE SIZE		A VALVE BODY													
		NPT		Flanged										Buttweld	
				CL150		CL300		CL600		CL900/1500		CL2500			
DN	NPS	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
15	1/2	102	4.00	184	7.25	191	7.50	203	8.00	273	10.25	264	10.38	387	15.25
20	3/4	105	4.13	184	7.25	194	7.62	206	8.12	273	10.75	273	10.75	387	15.25
25	1	127	5.00	184	7.25	197	7.75	210	8.25	273	10.75	308	12.12	406	16.00

Table 23. Valve Dimensions

VALVE SIZE		B BONNET				E DIAMETER	
		Standard		Extension			
DN	NPS	mm	inch	mm	inch	mm	inch
15	1/2	71	2.8	208	8.2	64	2.50
20	3/4	74	2.9	211	8.3	76	3.00
25	1	74	2.9	211	8.3	76	3.00

Table 24. Valve Assembly Weights

VALVE SIZE		WEIGHT	
DN	NPS	kg	lb
15	1/2	3.0	6.6
20	3/4	3.1	6.9
25 ⁽¹⁾	1 ⁽¹⁾	5.1	11.3
25 ⁽²⁾	1 ⁽²⁾	5.8	12.8

1. For 206 barg (3000 psig) valve body.
2. For 413 barg (6000 psig) valve body.

Table 25. Actuator Weights

ACTUATOR TYPE	WEIGHTS	
	kg	lb
32	4.5	10
54	11.3	25
70	15.4	34
MV1020	10	22
VA1020	13.6	30

Table 26. Model Numbering System

Actuator Type	24		Characteristic	Seat Leakage	S		B	Bonnet Style	
	Valve Body Series	Plug Series			Valve Body Material	Barstock Body			
32 ⁽¹⁾		102	Linear / Metal Seat	IV	S	S31600/ S31603		---	Standard
54		151	Modified Equal % / PTFE Seat	VI				E	Extension
70		177	Modified Equal % / Reinforced PTFE	VI					
MV1020		548	Equal % / Metal Seat (S41600)	IV					
VA1020		577	Equal % / PTFE Seat	VI					
		588	Equal % / Metal Seat (S21800 Cv ≤ 2.5 or S31600 Cv ≥ 4.0)	IV					
		648	Linear / Metal Seat (S41600)	IV					
		677	Linear / PTFE Seat	VI					
		688	Linear / Metal Seat	IV					

1. Baumann 32 actuator requires dual stops with 177 trim series.
2. Consult your Emerson Process Management sales office for alternate materials.

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