24000SB Series Barstock Control Valve

This rugged control valve is recommended for low flow, high pressure, industrial control applications.

A type 316/316L stainless steel barstock valve body and bonnet is suitable for process pressures to 3000 psig (206 barg) and ideal 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 alloy constructions are available; N08020 Nickel Alloy, N10276 Nickel Alloy, and N04400 Nickel Alloy round-out the basic type 316L stainless steel offering.

Figure 1. Shown with Size 32 Actuator and 3660/3661 Positioner

FEATURES:

- Suitable for maximum service of 3000 psig (206 barg) Cold Working Pressure. (See Pressure-Temperature Tables on pages 6 and 7.)
- Compact and light weight design reduces installed piping costs.
- Multiple trim capacity reductions available to meet changing process requirements with C_v ratings as low as 0.0005.
- Optional extended bonnet for applications ranging from -320°F (-195°C) to 1000°F (537°C).
- Epoxy powder coated actuator with stainless steel fasteners for maximum corrosion resistance.
- Optional ENVIRO-SEAL® packing system to meet critical emission control requirements.
- FIELDVUE® Digital Valve Controller available for remote calibration and diagnostics in facilities utilizing the PlantWeb® architecture.

Figure 2. 24000SB Series shown with Flanges and Extension Bonnet

BAUMANN

EMERSON
Process Management

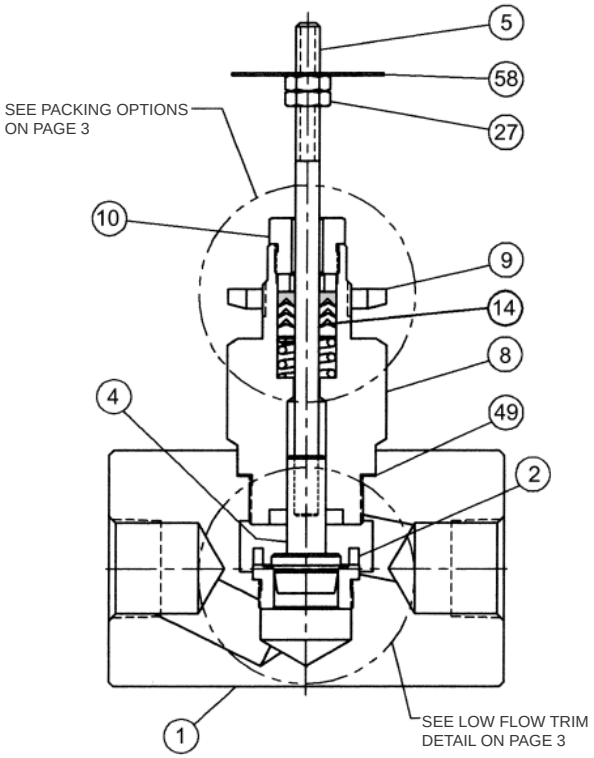
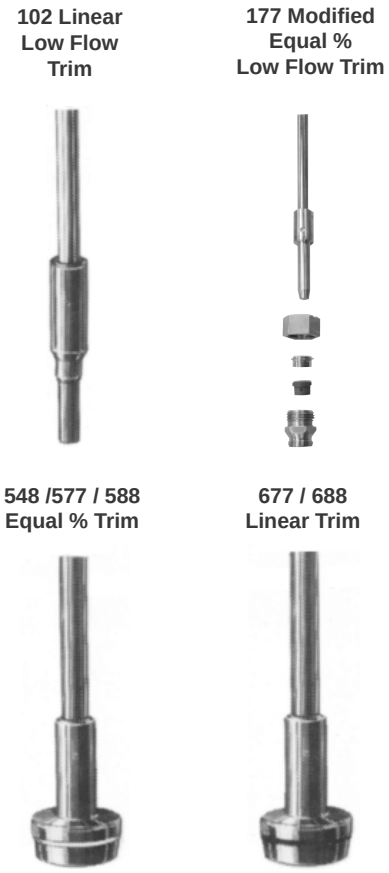


Figure 3. Valve Body Shown with Standard Spring Loaded PTFE V-Ring Packing



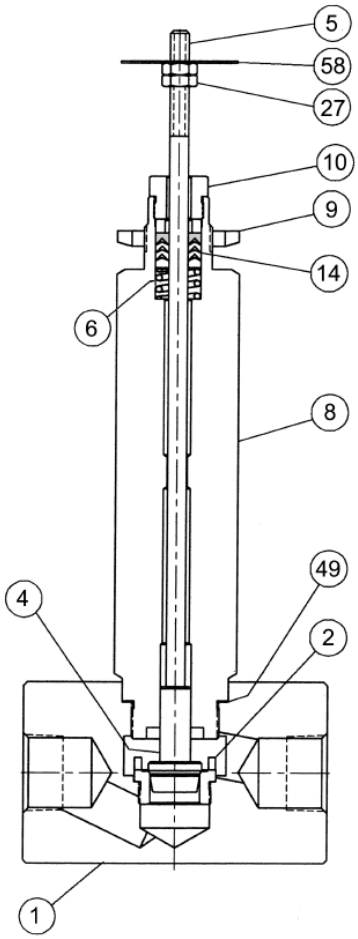


Figure 4. Valve Body Shown with Extension Bonnet

Table 1. **MATERIALS OF CONSTRUCTION**

KEY NO.	DESCRIPTION	MATERIAL			
		BODY CONSTRUCTION			
		316L ST ST	N10276 Nickel Alloy*	N08020 Nickel Alloy*	N04400 Nickel Alloy*
1	Body*	ASTM A479 S31600/S31603 Dual Certified	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
2	Seat Ring (standard)*	ASTM A276 S31600	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
	Seat Ring S/A (177 Trim) with reinforced PTFE Insert*				
4	Plug (Metal Seat)*	ASTM A276 S31600/ ASTM A479 S21800	ASTM B574 N10276	ASTM B473 N08020	Federal specification QQ-N-286 N05500
	Plug (Soft Seat)	ASTM A276 S31600/PTFE	ASTM B574 N10276/PTFE	ASTM B473 N08020/PTFE	Federal specification QQ-N-286 N05500
5	Stem*	ASTM A276 S31600	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
8	Bonnet*	ASTM A479 S31600/S31603 Dual Certified	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
14	Packing (standard)*	PTFE (Polytetrafluoroethylene)/PTFE, 25% carbon filled			
	Packing (optional)*	See Page 3 and 4			
10	Packing Follower*	ASTM A276 31600 Condition A	ASTM B574 N10276	ASTM B473 N08020	ASTM B164 N04400
9	Yoke Drive Nut	304 Stainless Steel			
27	Jam Nut	304 Stainless Steel			
49	Body Gasket	Graphite Grade GHR with 316 Stainless Steel Insert			
58	Travel Indicator	304 Stainless Steel (ASTM A240 S30400)			
* NOTE: Optional valve and trim materials, consult factory for price and delivery. N08020 Nickel Alloy and N04400 Nickel Alloy material are not rated to 3000 psig (206 barg) Cold Working Pressure. Consult tables on pages 6 and 7.					

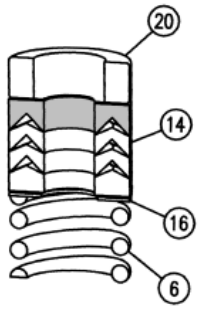


Table 2, Figure 5. **STANDARD SPRING LOADED PTFE V-RING PACKING**

KEY NO.	DESCRIPTION	MATERIAL
6*	Spring	ASTM A313 S30200
14	Packing Set	PTFE (Polytetrafluoroethylene)/ PTFE, 25% carbon filled
16	Washer	ASTM A240 S31600
20	Spacer	J-2000 (filled Polytetrafluoroethylene)

* N10276 Nickel Alloy Body construction is furnished with N10276 Nickel Alloy Spring.

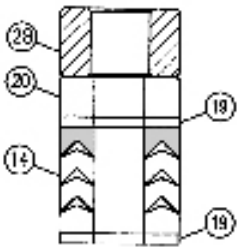


Table 3, Figure 6. **STANDARD PTFE V-RING PACKING FOR N08020 NICKEL ALLOY, N04400 NICKEL ALLOY AND N10276 NICKEL ALLOY CONSTRUCTIONS**

KEY NO.	DESCRIPTION	MATERIAL
28	Spacer, N08020 Nickel Alloy	ASTM B473 N0820
	Spacer, N04400 Nickel Alloy	ASTM B164 N04400
	Spacer, N10276 Nickel Alloy	ASTM B574 N10276, 35 HRC maximum
14	Packing Set	PTFE (Polytetrafluoroethylene)/ PTFE, 25% carbon filled
19	Washer	PTFE (Polytetrafluoroethylene), filled Gylon
20	Spacer	J-2000 (filled Polytetrafluoroethylene)

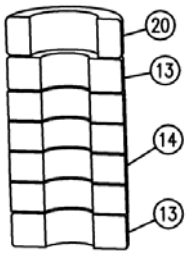


Table 4, Figure 7. **MOLDED GRAPHITE (GRAFOIL) PACKING (OPTIONAL)**

KEY NO.	DESCRIPTION	MATERIAL
13	Bushing (2)	Carbon-Graphite
14	Packing Rings (4)	Graphite
20	Spacer, Stainless Steel	ASTM A582 S30300 Condition A
	Spacer, N10276 Nickel Alloy	ASTM B574 N10276, 35 HRC maximum
	Spacer, N08020 Nickel Alloy	ASTM B473 N08020
	Spacer, N04400 Nickel Alloy	ASTM B164 N04400

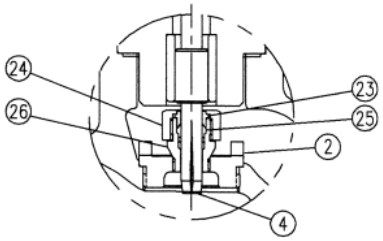


Table 5, Figure 8. **LOW FLOW 177 TRIM**

KEY NO.	DESCRIPTION	
4	Plug	
23	Gland	Seat Ring Sub-Assembly
24	Retainer Nut	
25	Insert	
26	Housing	

24000SB Series Barstock Control Valve

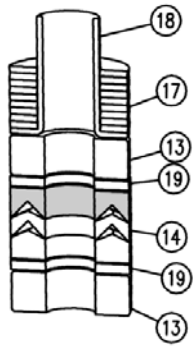


Table 6, Figure 9. **ENVIRO-SEAL PACKING (OPTIONAL)**

KEY NO.	DESCRIPTION	MATERIAL
13	Bushing (2)	Carbon Graphite
14	Packing Set	PTFE (Polytetrafluoroethylene)/ PTFE, 25% carbon filled
17	Belleville Spring	N06600 Nickel Alloy (ASTM B637 N07718, 40 HRC MAX)
18	Bushing	PEEK(Polyetheretherketone)
19	Washer (2)	PTFE (Polytetrafluoroethylene), filled Gylon

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

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

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

Table 7. **C_v VALUES @ 100% PLUG OPENING**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES													
ANSI	EN					177		102		548		577		588		677		688	
in	DN	in	mm	in	mm	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	
0.5 0.75 & 1.0	15 20 & 25	0.25	6.3	0.50	12.7	---	---	0.02 0.05 0.10 0.20	0.02 0.04 0.09 0.17	0.2 0.5 1.0	0.17 0.43 0.86	---	---	0.2 0.5 1.0	0.17 0.43 0.86	---	---	0.5 1.0	0.43 0.86
		0.3125	7.9	0.50	12.7	0.0005 0.001 0.002 0.005 0.01 0.02 0.05	0.0005 0.0009 0.002 0.004 0.009 0.02 0.04	---	---	---	---	---	---	---	---	---	---	---	---
0.5	15	0.375	9.5	0.50	12.7	---	---	---	---	1.5 2.0	1.29 1.72	1.0 1.5 2.0	0.86 1.29 1.72	1.5 2.0	1.29 1.72	0.1 0.2 0.5 1.0 2.0	0.09 0.17 0.43 0.86 1.72	1.5 2.0	1.29 1.72
0.75 & 1.0	20 & 25	0.375	9.5	0.50	12.7	---	---	---	---	1.5 2.0	1.29 1.72	1.0 1.5 2.5	0.86 1.29 2.16	1.5 2.0	1.29 1.72	0.1 0.2 0.5 1.0 2.5	0.09 0.17 0.43 0.86 2.16	1.5 2.0	1.29 1.72
0.75	20	0.8125	20.6	0.50	12.7	---	---	---	---	3.8	3.28	3.8	3.28	3.8	3.28	3.8	3.28	3.8	3.28
1.0	25	0.8125	20.6	0.50	12.7	---	---	---	---	4.0 6.8	3.45 5.86	4.0 6.8	3.45 5.86	4.0 6.8	3.45 5.86	4.0	3.45	4.0 6.8	3.45 5.86

Table 8. **TECHNICAL SPECIFICATIONS**

NOMINAL SIZE		1/2, 3/4 and 1 inch / DN 15, 20 and 25	
BODY PRESSURE RATING		See Pressure-Temperature Ratings, Table 10 - 13, Pages 6 and 7	
END CONNECTIONS	**Standard**	Threaded (NPT)	
	Available	Buttweld, Flanged (Class 150 to 1500, See note A below)	
CHARACTERISTIC		Equal Percentage or Linear	
TEMPERATURE RATINGS (see note B below)			
SEATING MATERIAL	**PTFE Soft Seat**		-100^{0}F to 450^{0}F
	Metal Seat		-320^{0}F to 1000^{0}F
BONNET AND PACKING	**Standard**	Spring Loaded PTFE V-Ring Packing	-100^{0}F to 450^{0}F
		ENVIRO-SEAL PTFE	-50^{0}F to 450^{0}F
	Extended	Molded Graphite Ribbon	-320^{0}F to 1000^{0}F
	Bellows	NOLEEK Bellows	-320^{0}F to 750^{0}F

NOTES: A. Consult Factory for other available connections.
B. Temperature limits apply to seating or packing materials only and not to the valve body assembly.

Table 9. **ACTUATOR SPECIFICATIONS**

TYPE	32, 54, 70 Multi-Spring Diaphragm (Single Acting)
DIAPHRAGM AREA	32 in^2 , 54 in^2, 70 in^2 / 210 cm^2, 350 cm^2, 450 cm^2
AIR FAILURE	32 in^2 and 54 in^2 Open or Closed (Field Reversible) / 70 in^2 Closed ONLY
TRAVEL (A)	0.50 or 0.75 inches / 12.7 or 19.1 mm
AMBIENT TEMPERATURE RANGE	-20^{O}F to 160^{O}F / -30^{O}C to 71^{O}C
MAXIMUM AIR PRESSURE	35 psig / 2.41 barg
DIAPHRAGM MATERIAL (B)	NBR (Nitrile) / Polyester Thermoplastic Fabric
SPRING CASES	Steel, Powder Epoxy-Coated with Stainless Steel Fasteners
YOKE	Ductile Iron, Powder Epoxy-Coated

NOTES: A. Dual Travel Stops are available on 32 in^2 and 54 in^2 actuators. These are not field reversible.
B. Optional reinforced VMQ diaphragm with FKM® fluoroelastomer o-ring actuator stem seal for high ambient temperature conditions (-20^{O}F to 250^{O}F / -30^{O}C to 121^{O}C) is available with type 32 and 54 ONLY.

Table 10. **PRESSURE-TEMPERATURE RATINGS (316/316L DUAL CERTIFIED STAINLESS STEEL BODY) (STANDARD) CAUTION: When valve is furnished with CL 150 through 900 flanges, the pressure-temperature ratings are limited to the values published in ANSI B16.34. Valve assembly with CL 1500 flanges are limited to 3000 psig (206 barg) maximum Cold Working Pressure (CWP).**

TEMPERATURE * (°F)	WORKING PRESSURE (psig)	TEMPERATURE * (°C)	WORKING PRESSURE (barg)
-320 to 100	3000	-195 to 37	206
200	2580	93	177
300	2330	148	160
400	2141	204	147
450	2066	232	142
500	1992	260	137
550	1936	287	133
600	1880	315	129
650	1849	343	127
700	1810	371	124
750	1779	398	122
800	1758	426	121
850	1742	454	120
900	1729	482	119
950	1609	510	110
1000	1458	537	100
***** Do not exceed seating and packing material ratings.			

Table 11. **PRESSURE-TEMPERATURE RATINGS (N10276 NICKEL ALLOY BODY) (OPTIONAL) CAUTION: When valve is furnished with CL 150 through 900 flanges, the pressure-temperature ratings are limited to the values published in ANSI B16.34. Valve assembly with CL 1500 flanges are limited to 3000 psig (206 barg) maximum Cold Working Pressure (CWP).**

TEMPERATURE * (°F)	WORKING PRESSURE (psig)	TEMPERATURE * (°C)	WORKING PRESSURE (barg)
-320 to 100	3125	-195 to 37	215
200	3125	93	215
300	3033	148	209
400	2941	204	202
450	2856	232	196
500	2770	260	190
550	2645	287	182
600	2520	315	173
650	2450	343	168
700	2366	371	163
750	2216	398	152
800	2116	426	145
850	2029	454	139
900	1870	482	128
950	1608	510	110
1000	1516	537	104
***** Do not exceed seating and packing material ratings.			

Table 12. **PRESSURE-TEMPERATURE RATINGS (N04400 NICKEL ALLOY BODY) (OPTIONAL)**
CAUTION: When valve is furnished with CL 150 through 900 flanges, the pressure-temperature ratings are limited to the values published in ANSI B16.34. Valve assembly with CL 1500 flanges are limited to 2500 psig (172 barg) maximum Cold Working Pressure (CWP).

TEMPERATURE * (°F)	WORKING PRESSURE (psig)	TEMPERATURE * (°C)	WORKING PRESSURE (barg)
-320 to 100	2500	-195 to 37	172
200	2200	93	151
300	2058	148	141
400	1991	204	131
450	1985	232	136
500	1979	260	136
550	1979	287	136
600	1979	315	136
650	1979	343	136
700	1979	371	136
750	1950	398	134
800	1908	426	131
850	1412	454	97
900	1029	482	70
* Do not exceed seating and packing material ratings.			

Table 13. **PRESSURE-TEMPERATURE RATINGS (N08020 NICKEL ALLOY BODY) (OPTIONAL)**
CAUTION: When valve is furnished with CL 150 through 900 flanges, the pressure-temperature ratings are limited to the values published in ANSI B16.34. Valve assembly with CL 1500 flanges are limited to 2500 psig (172 barg) maximum Cold Working Pressure (CWP).

TEMPERATURE * (°F)	WORKING PRESSURE (psig)	TEMPERATURE * (°C)	WORKING PRESSURE (barg)
-320 to 100	2500	-195 to 37	172
200	2175	93	150
300	2041	148	140
400	2041	204	140
450	2041	232	140
500	2041	260	140
550	2041	287	140
600	2041	315	140
650	2041	343	140
700	2041	371	140
750	2041	398	140
800	2041	426	140
* Do not exceed seating and packing material ratings.			

WARNING! - Refer to Pressure-Temperature Ratings Table on pages 6 and 7 and consult your local Fisher Sales Office for potential cavitation and noise concerns!

Table 14. **ALLOWABLE PRESSURE DROPS FOR BAUMANN SIZE 32, 54, & 70 ACTUATORS (psi)**

PORT 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	1331	956	2262	2087
		54	9-15	2055	1881	2741	2566	3-10	1331	956	2262	2087
		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	---	---	---	---	---

NOTE A: The maximum shutoff pressure when using ENVIRO-SEAL Packing is defined by: ΔP = Table Value - [25/(Port Diameter)^2]
(1) These table values should not be modified by this formula
and the maximum ΔP of 750 psi should be used for ENVIRO-SEAL Packing.

NOTE B: The maximum shutoff pressure when using Flexible Graphite Packing is defined by: ΔP = Table Value - [120/(Port Diameter)^2]
(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.

WARNING! - Refer to Pressure-Temperature Ratings Table on pages 6 and 7 and consult your local Fisher Sales Office for potential cavitation and noise concerns!

Table 15. **ALLOWABLE PRESSURE DROPS FOR BAUMANN SIZE 32, 54, & 70 ACTUATORS (bar)**

PORT 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	0.34-1	61	---	122	---	0.20-0.89	61	---	206	---
		32	0.48-1	122	---	183	---	0.20-0.68	152	---	206**(1)**	---
		54	0.55-1	206	---	206**(1)**	---	0.20-0.68	206	---	206**(1)(2)**	---
7.9	12.7	32	0.48-1	---	71	---	113	0.20-0.68	---	92	---	198
		54	0.62-1	---	179	---	206**(1)**	0.20-0.68	---	147	---	206**(1)(2)**
9.5	12.7	32	0.48-1	62	50	93	81	0.20-0.68	91	65	155	143
		54	0.62-1	141	129	188	176	0.20-0.68	91	65	155	143
		70	0.62-1	192	180	206**(1)**	206**(1)**	---	---	---	---	---
20.6	12.7	54	0.76-1	47	40	59	52	0.20-0.68	29	23	59	52
		70	0.69-1	56	49	72	65	---	---	---	---	---

NOTE A: The maximum shutoff pressure when using ENVIRO-SEAL Packing is defined by: ΔP = Table Value - [1112/(Port Diameter)^2]
(1) These table values should not be modified by this formula
and the maximum ΔP of 51 bar should be used for ENVIRO-SEAL Packing.

NOTE B: The maximum shutoff pressure when using Flexible Graphite Packing is defined by: ΔP = Table Value - [5337/(Port Diameter)^2]
(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.

24000SB Series Barstock Control Valve

Table 16. **ISA SIZING COEFFICIENTS**

PLUG SERIES	RATED C_v	RATED K_v	F_L	F_d	X_T	K_C
102	0.02	0.02	0.95	0.06	0.76	0.70
	0.05	0.04	0.95	0.09		
	0.10	0.09	0.95	0.13		
	0.20	0.17	0.95	0.18		
177	0.0005, 0.0001, 0.0002, 0.005, 0.01, 0.02, 0.05	0.0005, 0.001, 0.002, 0.004, 0.009, 0.02, 0.04	0.95	0.70	0.76	0.70
548	0.2, 0.5, 1.0	0.17, 0.43, 0.86	0.90	0.28, 0.28, 0.46	0.68	0.62
	1.5, 2.0, 2.5	1.3, 1.72, 2.2	0.90	0.46	0.68	0.62
	3.8, 4.0, 6.8	3.3, 3.5, 5.86	0.90	0.46	0.68	0.62
577	1.0, 1.5, 2.0	0.86, 1.3, 1.72	0.90	0.42	0.68	0.62
	2.5, 3.8, 4.0, 6.8	2.2, 3.3, 3.5, 5.86	0.90	0.46	0.68	0.62
588	0.2, 0.5, 1.0	0.17, 0.43, 0.86	0.90	0.28, 0.28, 0.46	0.68	0.62
	1.5, 2.0, 2.5	1.3, 1.72, 2.2	0.90	0.46	0.68	0.62
	3.8, 4.0, 6.8	3.3, 3.5, 5.86	0.90	0.46	0.68	0.62
677	0.1, 0.2, 0.5, 1.0, 2.0	0.09, 0.17, 0.43, 0.86, 1.72	0.90	0.08, 0.12, 0.19, 0.27, 0.46	0.68	0.62
	2.5, 3.8, 4.0	2.2, 3.3, 3.5	0.90	0.46	0.68	0.62
688	0.5, 1.0	0.43, 0.86	0.90	0.46	0.68	0.62
	1.5, 2.0, 2.5	1.3, 1.72, 2.2	0.90	0.46	0.68	0.62
	3.8, 4.0, 6.8	3.3, 3.5, 5.86	0.90	0.46	0.68	0.62

Table 17. **102 PLUG SERIES MICRO LINEAR (METAL SEAL)**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.5 0.75 & 1.0	15 20 & 25	0.25	6.3	0.50	12.7	0.00036	0.0018	0.0038	0.0061	0.008	0.01	0.012	0.015	0.016	0.018	0.02
						0.002	0.004	0.008	0.012	0.02	0.024	0.031	0.038	0.041	0.046	0.05
						0.0063	0.011	0.02	0.025	0.035	0.045	0.055	0.065	0.081	0.090	0.10
						0.012	0.021	0.028	0.045	0.063	0.085	0.115	0.147	0.172	0.190	0.20

Table 18. **177 PLUG SERIES MODIFIED EQUAL PERCENTAGE (PTFE SEAL)**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.5 0.75 & 1.0	15 20 & 25	.3125	7.9	0.50	12.7	0.0000001	0.0000005	0.000013	0.000043	0.000084	0.00014	0.00020	0.00028	0.00037	0.00044	0.0005
						0.000001	0.000007	0.00007	0.00015	0.00024	0.00036	0.00048	0.0006	0.0008	0.0009	0.001
						0.000008	0.000019	0.0002	0.00029	0.00047	0.000071	0.001	0.0013	0.0016	0.0018	0.002
						0.00003	0.000061	0.0003	0.00051	0.00099	0.0016	0.0021	0.0028	0.0035	0.0041	0.005
						0.00004	0.000068	0.0004	0.001	0.0018	0.0029	0.0045	0.006	0.0074	0.0085	0.01
						0.00007	0.0003	0.0005	0.0016	0.0031	0.005	0.0075	0.011	0.013	0.017	0.02
						0.0001	0.0005	0.0011	0.003	0.007	0.012	0.017	0.025	0.031	0.041	0.05

Table 19. **548 PLUG SERIES EQUAL PERCENTAGE (METAL SEAL)**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.50, 0.75 & 1.0	15, 20 & 25	0.25	6.3	0.50	12.7	0.0008	0.0012	0.0024	0.006	0.012	0.016	0.024	0.04	0.068	0.10	0.20
						0.002	0.003	0.006	0.015	0.03	0.04	0.06	0.10	0.17	0.25	0.50
						0.006	0.01	0.02	0.04	0.06	0.12	0.20	0.35	0.50	0.82	1.0
		0.375	9.5	0.50	12.7	0.008	0.015	0.03	0.05	0.07	0.14	0.25	0.41	0.65	1.0	1.5
0.5	15	0.375	9.5	0.50	12.7	0.015	0.03	0.06	0.10	0.20	0.35	0.60	0.90	1.3	1.8	2.0
0.75 & 1.0	20 & 25	0.375	9.5	0.50	12.7	0.015	0.03	0.06	0.10	0.20	0.35	0.60	0.90	1.3	1.8	2.5
0.75	20	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.60	0.88	1.2	1.6	2.1	2.7	3.2	3.8
1.0	25	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.60	0.88	1.2	1.6	2.1	2.7	3.2	4.0
						0.16	0.24	0.75	1.1	1.7	2.6	3.8	4.2	4.8	5.3	6.8

Table 20. **577 PLUG SERIES EQUAL PERCENTAGE (PTFE SEAL)**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.5 0.75 & 1.0	15 20 & 25	0.375	9.5	0.50	12.7	0.006	0.01	0.02	0.04	0.06	0.12	0.20	0.35	0.50	0.82	1.0
						0.008	0.015	0.03	0.05	0.07	0.14	0.25	0.41	0.65	1.0	1.5
0.5	15	0.375	9.5	0.50	12.7	0.03	0.09	0.14	0.25	0.38	0.55	0.70	1.0	1.3	1.7	2.0
0.75 & 1.0	20 & 25	0.375	9.5	0.50	12.7	0.03	0.09	0.14	0.25	0.38	0.55	0.70	1.0	1.3	1.7	2.5
0.75	20	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.60	0.88	1.2	1.6	2.1	2.7	3.2	3.8
1.0	25	0.8125	20.6	0.50	12.7	0.16	0.22	0.28	0.40	0.75	1.3	2.1	2.7	3.1	3.6	4.0
						0.16	0.22	0.38	0.60	0.95	1.5	2.4	3.2	4.8	5.3	6.8

Table 21. **588 PLUG SERIES EQUAL PERCENTAGE (METAL SEAL)**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.50, 0.75 & 1.0	15, 20 & 25	0.25	6.3	0.50	12.7	0.0008	0.0012	0.0024	0.006	0.012	0.016	0.024	0.04	0.068	0.10	0.20
						0.002	0.003	0.006	0.015	0.03	0.04	0.06	0.10	0.17	0.25	0.50
						0.006	0.01	0.02	0.04	0.06	0.12	0.20	0.35	0.50	0.82	1.0
		0.375	9.5	0.50	12.7	0.008	0.015	0.03	0.05	0.07	0.14	0.25	0.41	0.65	1.0	1.5
0.5	15	0.375	9.5	0.50	12.7	0.015	0.03	0.06	0.10	0.20	0.35	0.60	0.90	1.3	1.8	2.0
0.75 & 1.0	20 & 25	0.375	9.5	0.50	12.7	0.015	0.03	0.06	0.10	0.20	0.35	0.60	0.90	1.3	1.8	2.5
0.75	20	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.60	0.88	1.2	1.6	2.1	2.7	3.2	3.8
1.0	25	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.60	0.88	1.2	1.6	2.1	2.7	3.2	4.0
						0.16	0.24	0.75	1.1	1.7	2.6	3.8	4.2	4.8	5.3	6.8

Table 22. **677 PLUG SERIES LINEAR (PTFE SEAL)**

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.50 0.75 & 1.0	15, 20 & 25	0.375	9.5	0.50	12.7	0.004	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
						0.009	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
						0.03	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
						0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.0
0.5	15	0.375	9.5	0.50	12.7	0.20	0.50	0.75	1.0	1.3	1.5	1.6	0.17	1.8	0.19	2.0
0.75 & 1.0	20 & 25	0.375	9.5	0.50	12.7	0.015	0.03	0.06	0.10	0.20	0.35	0.60	0.90	1.3	1.8	2.5
0.75	20	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.60	0.88	1.2	1.6	2.1	2.7	3.2	3.8
1.0	25	0.8125	20.6	0.50	12.7	0.22	0.45	0.82	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0

Table 23. **688 PLUG SERIES LINEAR (METAL SEAL)**

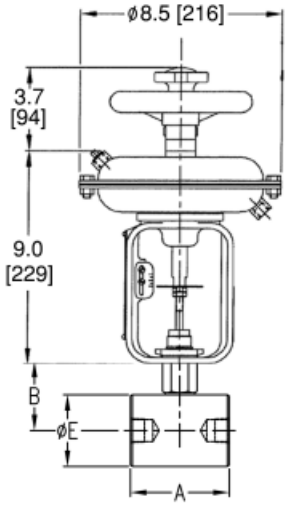
VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		C_v at Valve Opening - Percent of Plug Travel										
in	DN	in	mm	in	mm	5	10	20	30	40	50	60	70	80	90	100
0.5, 0.75 & 1.0	15, 20 & 25	0.25	6.3	0.50	12.7	0.03	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.5
		0.25	6.3	0.50	12.7	0.01	0.14	0.23	0.34	0.45	0.55	0.64	0.73	0.82	0.90	1.0
		0.375	9.5	0.50	12.7	0.1	0.2	0.3	0.5	0.6	0.73	0.87	1.02	1.15	1.3	1.5
0.5	15	0.375	9.5	0.50	12.7	0.20	0.50	0.75	1.0	1.3	1.5	1.6	1.7	1.8	1.9	2.0
0.75 & 1.0	20 & 25	0.375	9.5	0.50	12.7	0.015	0.03	0.06	0.10	0.20	0.35	0.60	0.90	1.3	1.8	2.5
0.75	20	0.8125	20.6	0.50	12.7	0.10	0.15	0.39	0.50	0.88	1.2	1.6	2.1	2.7	3.2	3.8
1.0	25	0.8125	20.6	0.50	12.7	0.20	0.40	0.55	0.70	1.02	1.31	1.6	2.1	2.6	3.3	4.0
						0.52	1.0	1.9	2.8	3.9	4.8	5.5	5.7	6.0	6.3	6.8

Table 24. **MODEL NUMBERING SYSTEM**

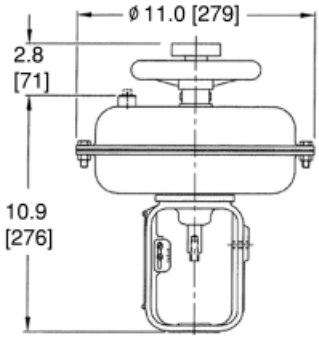
	24		S	B	
ACTUATOR	BODY SERIES	PLUG SERIES	CHARACTERISTIC	SEAT LEAKAGE	BODY MATERIAL**	BARSTOCK BODY	BONNET STYLE
32*		102	Linear / Metal Seat	IV	S 316SS/ 316L		--- Standard
54		177*	Mod. Equal % / PTFE Seat	VI	**Consult factory for alternate materials		E Extended
70		548	Equal % / Metal Seat (416 SST)	IV			
MV1020		577	Equal % / PTFE Seat	VI			
VA1020		588	Equal % / Metal Seat (S21800 SST Cv ≤ 2.5 or 316 SST Cv ≥ 4.0)	IV			
		677	Linear / PTFE Seat	VI			
		688	Linear / Metal Seat	IV			

***Size 32in² actuator requires dual stops with 177 plug series.**

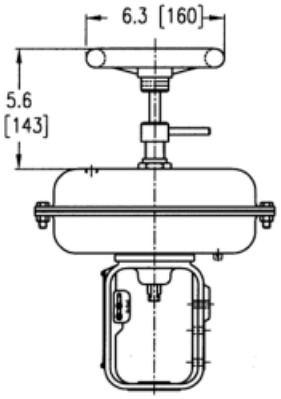
Figure 10. Dimensions - inches [millimeters]



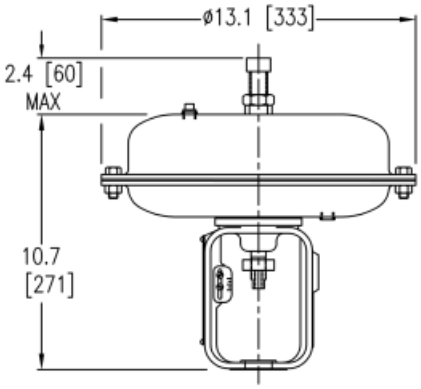
Threaded (NPT) Body
(valve rotated 90⁰ for clarity)
Size 32 ATO/Fail Close w/Handwheel



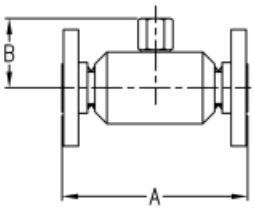
Size 54 ATO Actuator
w/Handwheel



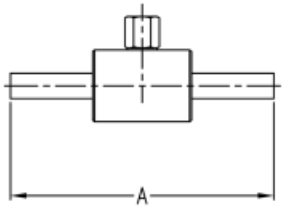
Size 54 ATC/Fail Open
w/Handwheel



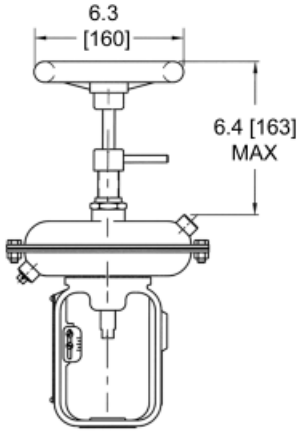
Size 70 ATO Actuator



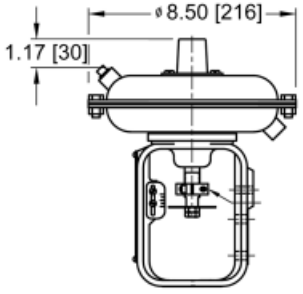
Flanged Body



Valve Body
with Buttweld Weld Ends



Size 32 ATC/Fail Open
w/Handwheel



Size 32 with adjustable
Open/Close Dual
Travel Stops

Table 25. **VALVE DIMENSIONS**

VALVE SIZE		"A"												"B" BONNET				"E" DIA.	
		NPT		FLANGED								BUTTWELD		STANDARD		EXTENSION			
				CL 150		CL 300		CL 600		CL900/1500									
in	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
0.5	15	4.00	102	7.25	184	7.50	191	8.00	203	10.75	273	15.25	387	2.8	71	8.2	208	2.50	64
0.75	20	4.13	105	7.25	184	7.62	194	8.12	206	10.75	273	15.25	387	2.9	74	8.3	211	3.00	76
1.0	25	5.00	127	7.25	184	7.75	197	8.25	210	10.75	273	16.00	406	2.9	74	8.3	211	3.00	76

Table 26. **VALVE ASSEMBLY AND ACTUATOR WEIGHTS**

VALVE SIZE		WEIGHTS	
in	DN	lb	kg
0.5	15	6.6	3.0
0.75	20	6.9	3.1
1.0	25	11.3	5.1

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

ACCESSORY OPTIONS

- Top-Mounted Handwheel for pull up or push down manual override (available on type 32 and 54 actuators ONLY).
- Adjustable mechanical travel stops to limit valve opening and closing available on type 32 and 54 actuators.

- FIELDVUE Digital Valve Controllers maximize the user's flexibility by providing programmable flow characteristics, adjustable gain, travel limits, and position transmission.

DVC6000

DVC2000

- Electric Actuators are available in various electrical enclosure ratings, input signal ranges and supply voltages to suit thrust, stem travel time and duty cycles (continuous & intermittent) as dictated by the process criteria.

- With today's unique process environments, you can not always mount a positioner on the valve. For high temperature environments up to 257^{0}F (125^{0}C) smaller valves, small footprints or inaccessible locations, you could remote mount a FIELDVUE Digital Valve Controller.

24000SB Series Barstock Control Valve

ACCESSORY OPTIONS

- 3661 electropneumatic valve positioner, ATEX/LCIE intrinsically safe with gain and damping adjustments for tuning valve to process loop dynamics. (CE label).

- 3660 pneumatic valve positioner with gain and damping adjustments for tuning valve to process loop dynamics. (Bypass valve available.)

- The 3582 Series pneumatic valve positioner and 3582i electropneumatic valve positioner offer field proven positioner design which is accurate, fast-responding and able to withstand the vibrations of most plant environments. Low steady-state air consumption contributes to efficient operation. Both units provide split range capabilities.

- 67CFR Air Filter Regulator with or without supply gauge.

- 646 I/P Transducer certified for LCIE flameproof or ATEX/LCIE intrinsically safe applications. (CE label).

- 846 I/P Transducer is available in explosion proof, dust proof, intrinsically safe and non-incendiary constructions. The housing is available in CSA Type 4X and NEMA 4X designs, designed to meet IP66, tropicalization. (CE label).

- The i2P-100 Electropneumatic Transducer furnishes a 5-micron built-in filter, plug-in converter, and supply orifice as all modular, aiding easy replacement and maintenance of the unit. The NEMA 4X housing has separate compartments designed to prevent corrosion by isolating the pneumatic supply from the electrical components. Hazardous Area Approvals: CSA Explosion proof, Dust-ignition proof, DIV 2, Intrinsically Safe. (FM, ATEX and IECEx approvals are pending, consult factory.)

Emerson Process Management

Fisher Controls International LLC
Baumann Valve Division
130 International Drive
Portsmouth, NH 03801
T: 1 (603) 766-8500
F: 1 (603) 766-8590
www.baumann.com