Baumann™ 24000CVF Carbon & 24000SVF Stainless Steel Flanged Control Valves

The Baumann 24000CVF and 24000SVF line of control valves can be utilized for the control of pressure, temperature, level, and flow. These valves are available with ASME CL150 RF, CL300 RF, or PN 10-40 flanged end connections. The high performance 24000CVF and SVF designs feature low deadband and hysteresis, high flow capacity, superb control characteristics, tight shutoff and advanced packing systems to meet demanding service conditions. Compact and light weight make them ideal for installation in high density piping systems where space is a premium.

W9745-1

Baumann 24000CVF Control Valve with FIELDVUE DVC6200 Digital Valve Controller

W9746

Baumann 24000SVF Control Valve with FIELDVUE DVC2000 Digital Valve Controller

Features

- Compact and light weight design reduces installed piping costs
- ASME and EN end connection options to meet your piping standards
- Full lift post-guided contoured plug allows flushing of debris through valve body
- S31600 austenitic stainless steel trim material is standard; S41600 stainless steel trim is available
- Multiple trim options are available to meet changing process requirements
- Fisher™ FIELDVUE™ digital valve controller available for remote calibration and diagnostics in facilities utilizing the PlantWeb™ architecture
- ENVIRO-SEAL™ packing available for increased packing life and integrity
- NOLEEK bellows bonnet suitable for a wide range of operating temperatures
- Extension bonnets in multiple lengths available for elevated temperature and cryogenic application service

Figure 1. Baumann 24000CVF / SVF Control Valve Subassembly

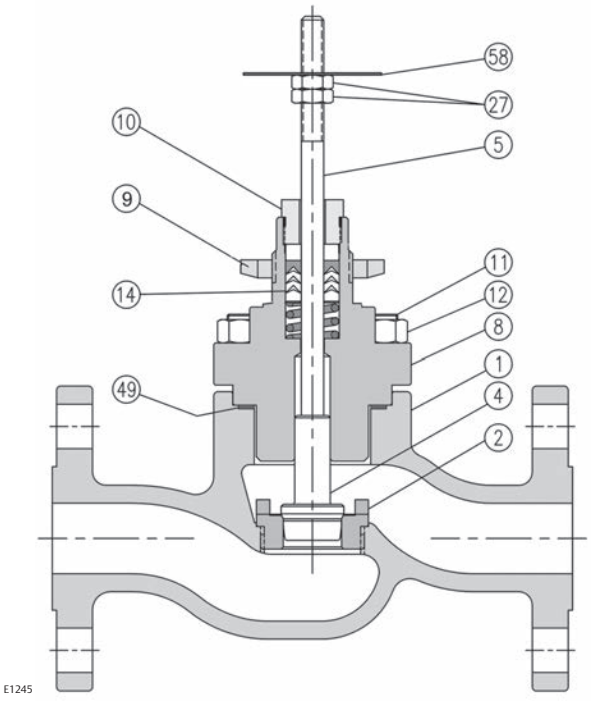


Table 1. Materials of Construction

Key No.	Description	Material
1	Valve Body, Carbon Steel	Cast Carbon Steel (ASME SA216 WCC and EN10213 1.0619 Dual Certified)
	Valve Body, Stainless Steel	ASME SA351 CF3M
2	Seat Ring (For Low Flow Trim, Refer to tables 2 & 3)	Standard ASTM A276 S31600/ S31603 Dual Certified / Optional ASTM A582 S41600 Condition T
4	Plug (Metal Seat) Cv < 3.3	ASME SA479 S21800 (standard) / ASTM A582 S41600 Condition T (optional)
	Plug (Metal Seat) Cv > 3.7	ASTM A276 S31600/ S31603(standard) / ASTM A582 S41600 Condition T (optional)
	Plug (Soft Seat)	ASTM A276 S31600/ S31603 with PTFE (Polytetrafluoroethylene) insert
5	Stem	ASTM A276 S31600
8	Bonnet, Carbon Steel (Std)	Cast Carbon Steel (ASME SA216 WCC and EN10213 1.0619 Dual Certified)
	Bonnet, Stainless Steel (Std)	ASME SA351 CF3M
	Bonnet (extended)(1)	ASME SA351 CF3M
	Bonnet (NOLEEK)(1)	ASME SA351 CF3M & ASTM A479 S31600/S31603, Annealed
8a	Bonnet Bushing(2)	ASTM A276 S44004, HT 56-60 HRC
9	Drive Nut (Yoke)	S30400
10	Packing Follower	ASTM A276 S31600/S31603 Dual Certified
11	Stud	ASME SA193 Grade B8, Class 1
12	Nut	ASME SA194 Grade 8
14	V-Ring Packing (standard)	Refer to figure 4, table 4
	Packing (optional)	Refer to figures 5 & 6, tables 5 & 6
27	Locknuts	Stainless Steel (18-8 SST)
49	Body Gasket	Graphite Grade GHR with S31600 Insert
58	Travel Indicator	ASME SA240 S30400

1. Extension bonnets and NOLEEK bellows bonnets are available with 24000SVF stainless steel valves only.
2. Guide bushing is applicable to 24000CVF carbon steel valve assembly only.

Figure 2. Optional 151 Low Flow Trim Assembly

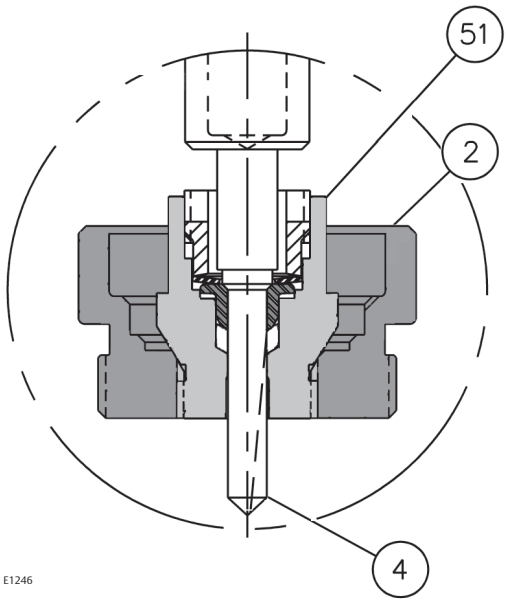
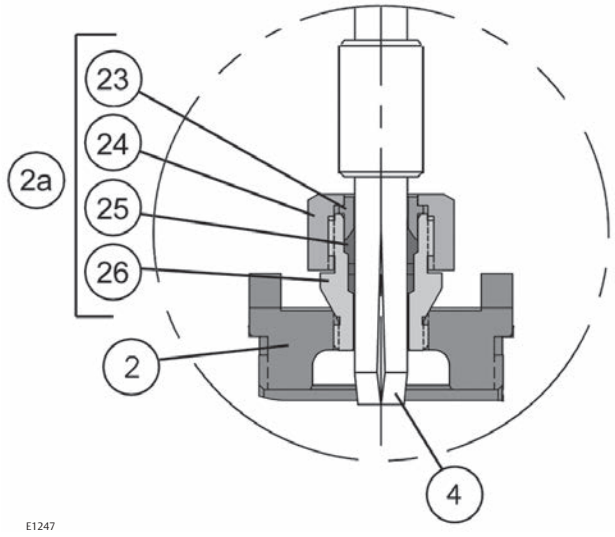


Figure 3. Optional 177 Low Flow Trim Assembly



151 Low Flow Trim Assembly

The PTFE seat surrounds the valve plug (key 4) to eliminate clearance flow typical of lapped-in metal-to-metal close clearance micro trims. Flow is directed over the valve plug and forced through a single V-notch path as the plug moves above the PTFE seat providing precise and predictable control over its entire travel range. When the V-notch moves below the PTFE seat, CLVI primary shutoff is achieved.

A live-loaded metal collar fully retains the PTFE seat. The valve plug (key 4) seats against the metal collar providing CL IV secondary shutoff. In addition, the fluid process pressure combines with the actuator seating force to form a hydraulic seal within the fully retained PTFE seat. Therefore, the higher the process pressure the tighter the shutoff.

Table 2. 151 Low Flow Trim

Key No.	Description	Material
2(1)	Seat Ring	ASTM A276 S31600/ S31603
4(1)	Plug	ASME SA479 S21800
Seat Subassembly		
51(1)	Cage	ASTM A276 S31600/ S31603
	Seat	PTFE
	Collar	ASTM A276 S31600/ S31603
	Washer	ASTM A276 S31600 Cond B
	Insert	ASTM A276 S31600/ S31603

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

Table 3. 177 Low Flow Trim

Key No.		Description	Material
2(1)		Seat Ring	ASTM A276 S31600/ S31603
Seat Subassembly			
2a(1)	23	Gland	ASTM A276 S31600/ S31603
	24	Retainer Nut	ASTM A276 S31600/ S31603
	25	Insert	Reinforced PTFE
	26	Housing	ASTM A276 S31600/ S31603
4(1)		Plug	ASME SA479 S21800

1. For optional trim materials, consult your Emerson Process Management sales office for price and delivery. Baumann 32 actuator requires duel-stops with 177 trim series.

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

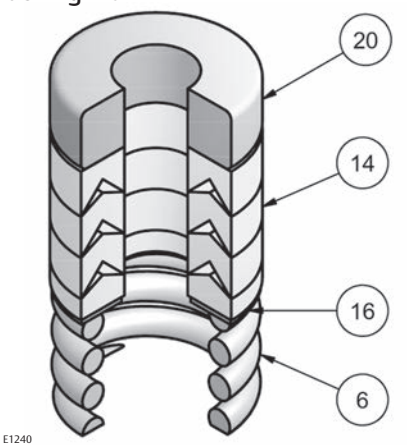


Table 4. Standard Spring-Loaded PTFE V-Ring Packing Kit

Key No.	Description	Material
6	Spring	ASTM A313 S30200
14	Packing Set	PTFE (Polytetrafluoroethylene) / PTFE, 25% carbon filled
16	Washer	ASME SA240 S31600
20	Spacer	J-2000 (filled-Polytetrafluoroethylene)

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

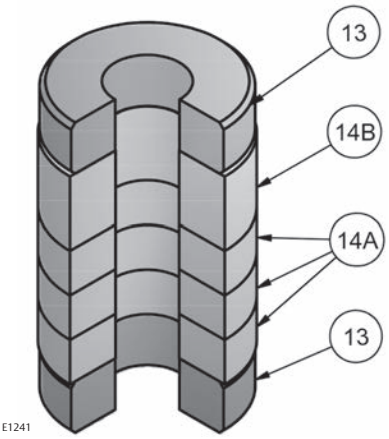


Table 5. Molded Graphite (Flexible Graphite) Packing Kit (Optional)

Key No.	Description	Material
13	Bushings	Carbon - Graphite
14A	Packing Rings	Graphite
14B	Packing Ring	Graphite

Figure 6. ENVIRO-SEAL Packing Kit (Optional)

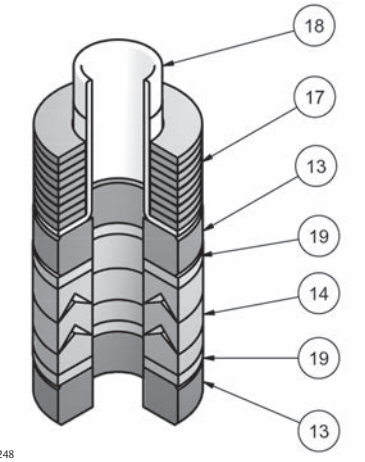


Table 6. ENVIRO-SEAL Packing Kit (Optional)

Key No.	Description	Material
13	Bushings	Carbon Graphite
14	Packing Set	PTFE (Polytetrafluoroethylene) / PTFE, 25% carbon filled
17	Belleville Spring	ASTM B637 N07718, 40 HRC max
18	Bushing	PEEK (Polyetheretherketone)
19	Washer	Modified PTFE

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.

⚠ WARNING

The Baumann NOLEEK valve bonnet assembly is not intended for use in lethal service applications.

The NOLEEK Bellows Bonnet Assembly is reliable and user-friendly. Typical service life is in excess of 250,000 full cycles under 100 psi pressure. The bonnet adds only approximately 5 inches to the height of a standard valve. Operating temperature range is -195 to 399°C (-320 to 750°F).

ONLY AVAILABLE WITH 24000SVF STAINLESS STEEL VALVES.

Figure 7. Baumann NOLEEK Bellow Bonnet Assembly

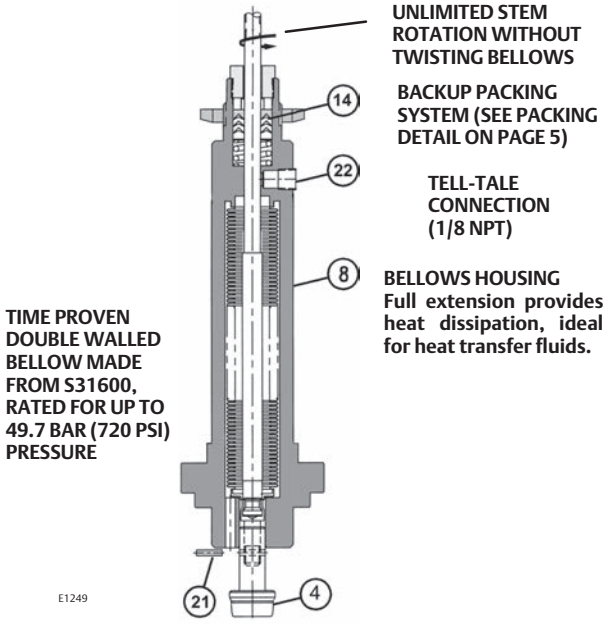


Table 7. Baumann NOLEEK Bellow Bonnet Assembly

Key Number	Description		Material
4	Plug		Refer to table 1
8	Bellows Bonnet Sub-Assembly	Housing	S31600/S31603
		Bellows	S31603/1.4571 SST
		Bonnet	CF3M
21	Plug Retaining Pin		S30300
22	Hex Socket Pipe Plug, 1/8 NPT		S30400

Figure 8. Bellows Pressure / Temperature Curve

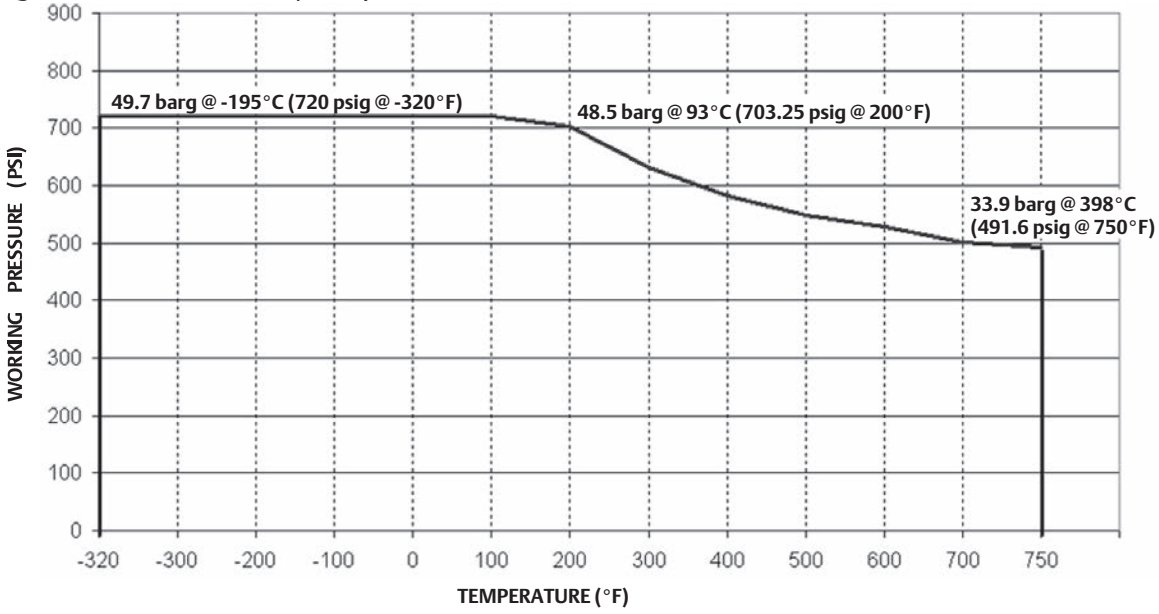


Table 8. Cv Values at 100% Plug Opening (Kv = 0.86 x Cv)(1)

VALVE SIZE	ORIFICE DIAMETER	PLUG TRAVEL	PLUG SERIES						
			102	151	177	577	548 / 588	677	648 / 688
NPS	inch	inch	Cv	Cv	Cv	Cv	Cv	Cv	Cv
1/2	0.156	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	---	---	---	---	---
	0.25	0.50	0.02, 0.05, 0.10, 0.20	---	---	---	0.22, 0.61, 1.0	---	0.5, 1.0
	0.3125	0.50	---	---	0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05	---	---	---	---
	0.375	0.50	---	---	---	1.0, 1.6, 2.7	1.6, 2.9	0.10, 0.20, 0.50, 1.0, 2.8	1.6, 2.9
	0.8125	0.50	---	---	---	3.9, 6.1	3.9, 6.1	3.4	3.7, 6.1
3/4	0.156	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	---	---	---	---	---
	0.25	0.50	0.02, 0.05, 0.10, 0.20	---	---	---	0.22, 0.61, 1.0	---	0.5, 1.0
	0.3125	0.50	---	---	0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05	---	---	---	---
	0.375	0.50	---	---	---	1.0, 1.6, 2.7	1.6, 2.9	0.10, 0.20, 0.50, 1.0, 2.8	1.6, 2.9
	0.8125	0.50	---	---	---	3.9, 9.5	3.9, 9.8	3.4	3.7, 9.8
1	0.156	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	---	---	---	---	---
	0.25	0.50	0.02, 0.05, 0.10, 0.20	---	---	---	0.22, 0.61, 1.0	---	0.5, 1.4
	0.3125	0.50	---	---	0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05	---	---	---	---
	0.375	0.50	---	---	---	1.1, 1.6, 3.2	1.7, 3.3	0.10, 0.20, 0.50, 1.0, 3.3	1.7, 3.3
	0.8125	0.50	---	---	---	5, 11	4.4, 11	5.1	4.6, 11
	1.0625	0.50	---	---	---	13	15.5	---	13
1-1/2	1.25	0.75	---	---	---	26	10, 27	26	11, 26
	1.5	0.75	---	---	---	13, 20, 33	11, 19, 31	14, 23	12, 22, 31
2	1.5	0.75	---	---	---	13, 20, 38	11, 18, 35	14, 23	12, 22, 35
	2.0	0.75	---	---	---	33	55	37, 56	33, 55

1. See Fisher Catalog 12 for a full range of flow and sizing information.

Figure 9. Baumann 24000CVF / SVF Trims

102 Linear Low Flow Trim

W9747

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

Table 9. Technical Specifications

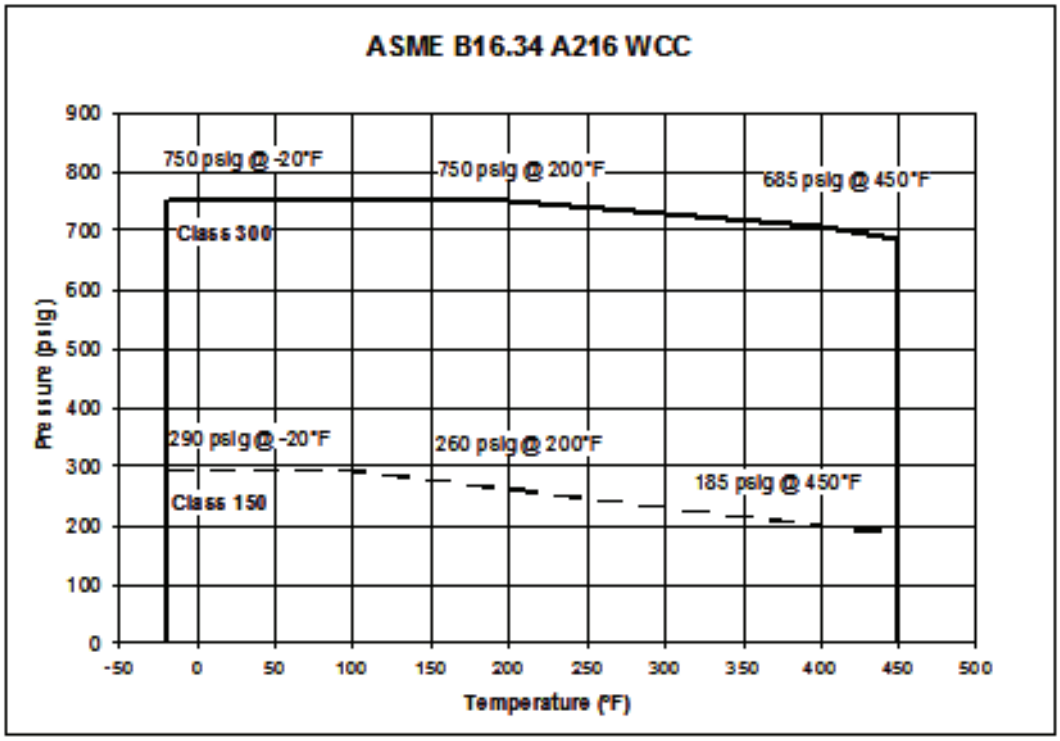
VALVE TYPE	EN	ASME
NOMINAL PIPE SIZE	DN 15, 20, 25, 40, & 50	NPS 1/2, 3/4, 1, 1-1/2, & 2
END CONNECTIONS	PN 10-40 Flanges per EN 1092-1	CL150 RF or CL300 RF Flanges per ASME B16.5
PRESSURE RATING	PN 40 per EN 1092-1	CL150 or CL300 per ASME B16.34
FACE-TO-FACE DIMENSIONS	Consistent with EN 558-1	Consistent with EN 588-2 (ISA S75.03)

Table 10. Temperature Ratings for Packing and Seat Material(1)

SEATING MATERIAL	PTFE Soft Seat	151 Trim	-29 to 177°C (-20 to 350°F)
		577 and 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, 588, and 688 Trim	-195 to 537°C (-320 to 1000°F)
		548 and 648 Trim	-29 to 537°C (-20 to 1000°F)
PACKING AND BONNET COMBINATIONS	**BONNET STYLE**	**PACKING**	**TEMPERATURE LIMIT**
	Standard Bonnet	Spring Loaded PTFE	-73 to 232°C (-100 to 450°F)
		ENVIRO-SEAL	-46 to 232°C (-50 to 450°F)
		Graphite	-73 to 232°C (-100 to 450°F)
	Extension Bonnet(2, 3)	Spring Loaded PTFE	-195 to 232°C (-320 to 450°F)
		ENVIRO-SEAL	-46 to 232°C (-50 to 450°F)
		Graphite	-195 to 537°C (-320 to 1000°F)
	Bellows(2)	NOLEEK Bellows	-195 to 399°C (-320 to 750°F)
CHARACTERISTIC	Equal Percentage or Linear		

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. Extension bonnets and NOLEEK bellows bonnets are applicable for the 24000SVF stainless steel body assembly ONLY.
3. PTFE packing can be used in cryogenic service but becomes stiff.

Figure 10. Baumann 24000CVF Carbon Steel Flanges, Pressure-Temperature Ratings



E1251-1

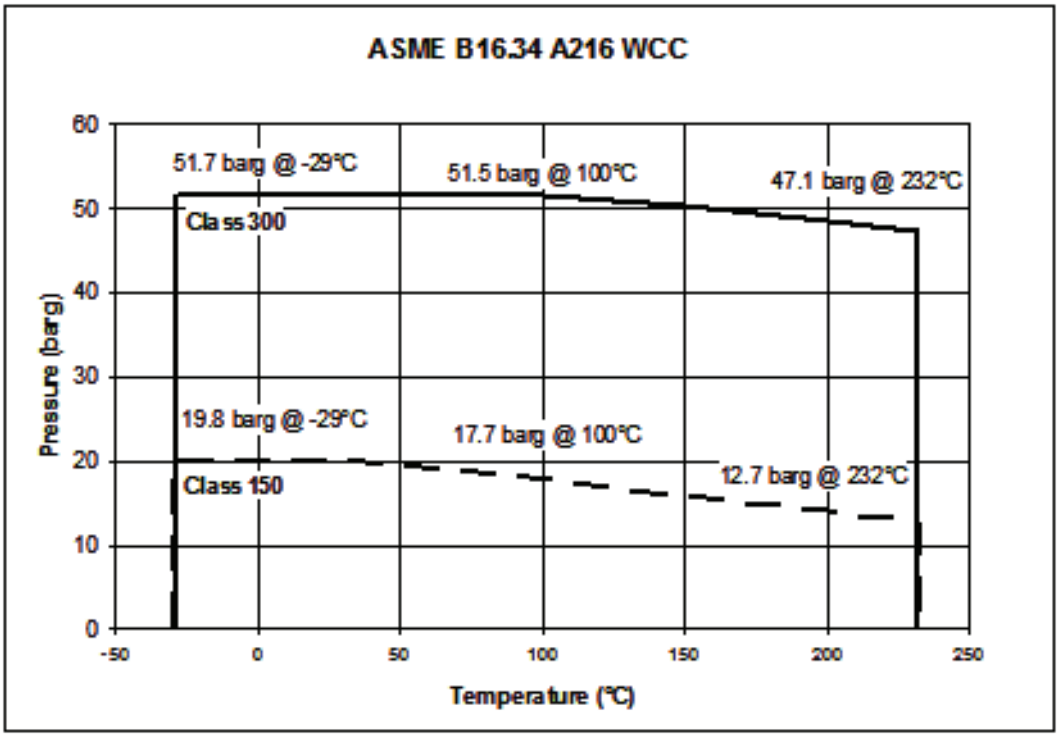


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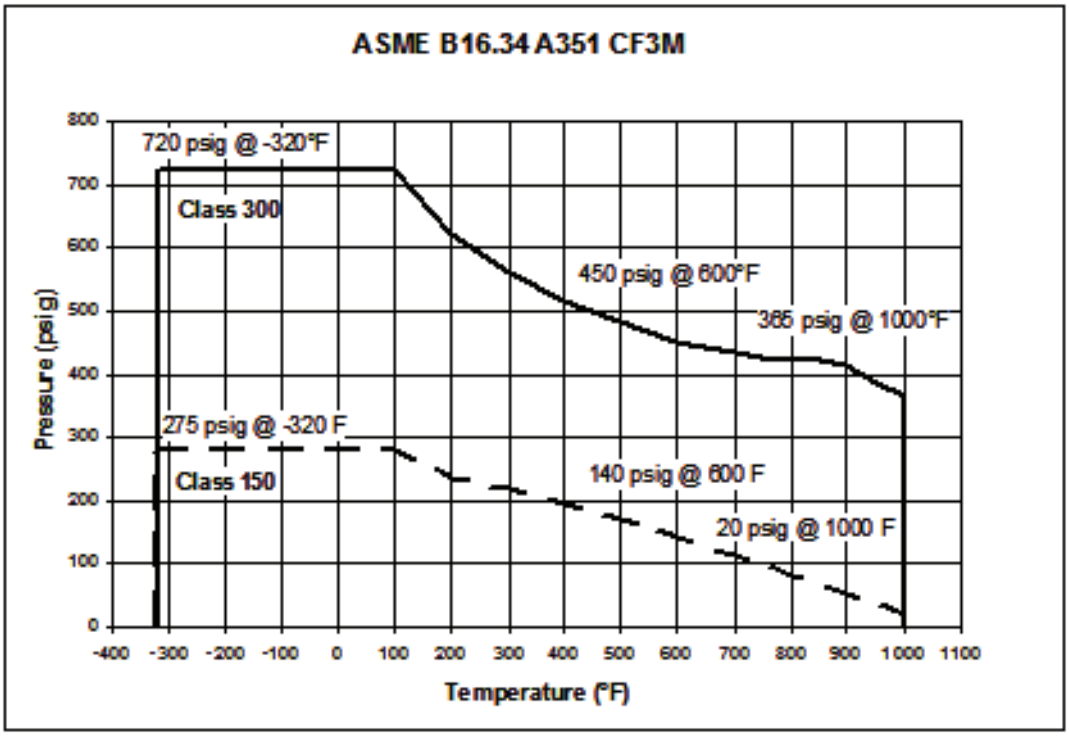
Figure 11. Baumann 24000SVF Stainless Steel Flanges, Pressure-Temperature Ratings



E1254-1

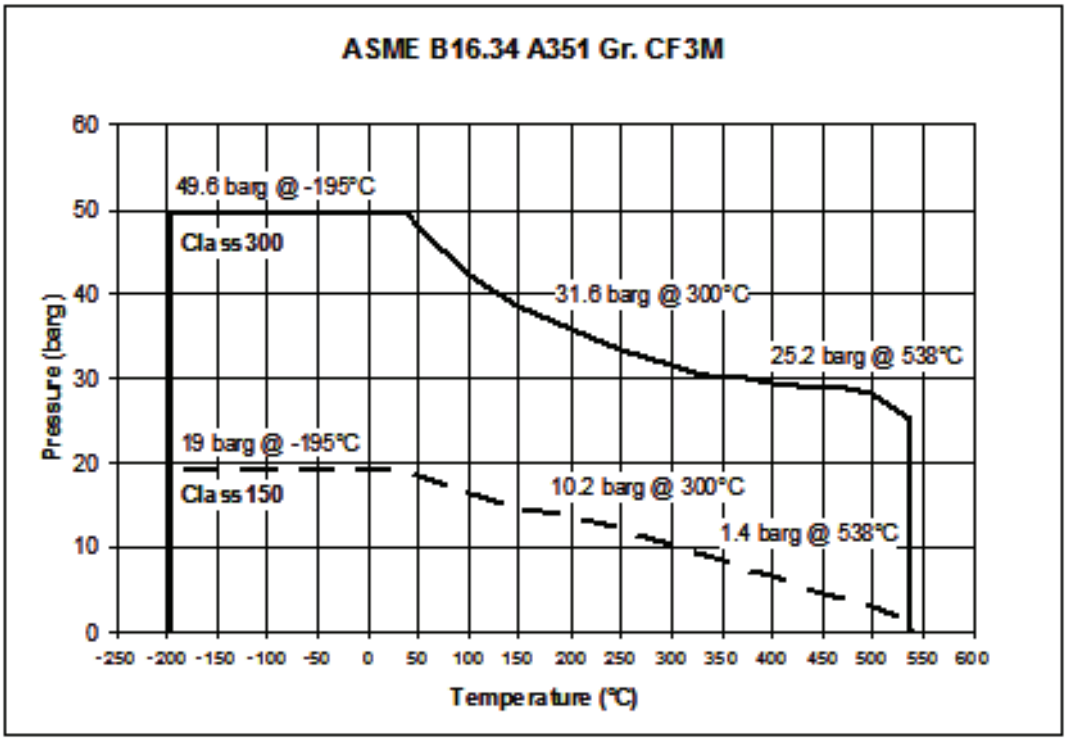


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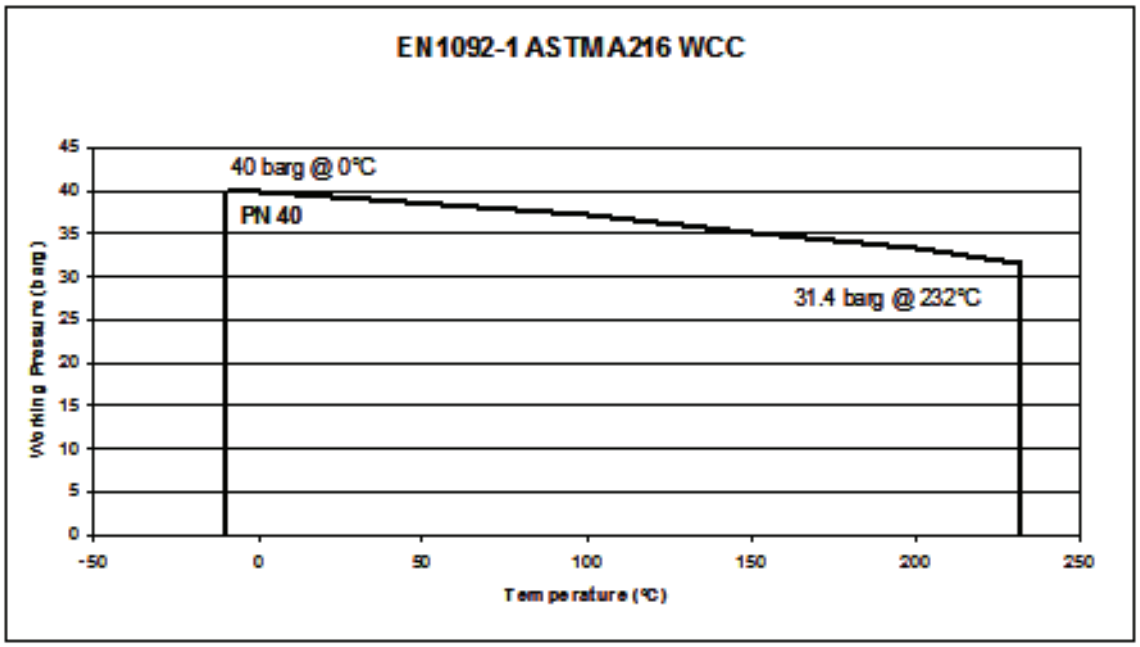
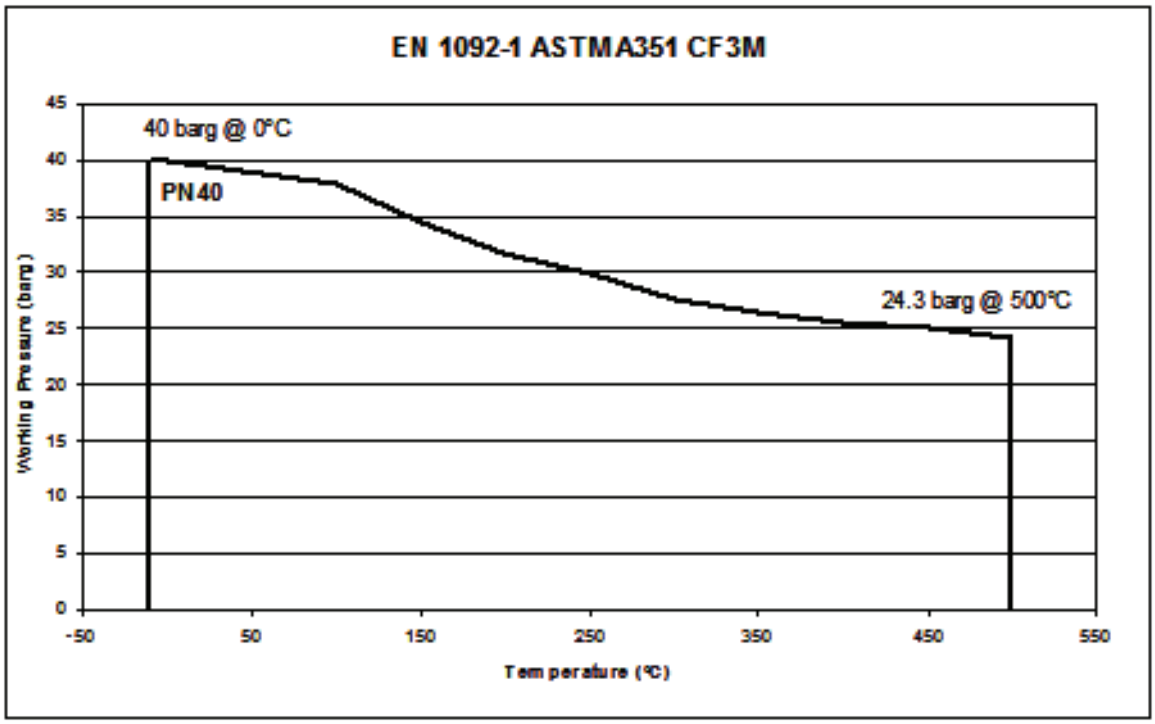
Figure 12. Baumann 24000CVF and 24000SVF Pressure-Temperature Ratings for EN 1092-1



24000CVF

E1253-1



24000SVF

E1256-1

Figure 13. Baumann 24000SVF Stainless Steel Control Valves with Extension Bonnets Dimensional Drawing

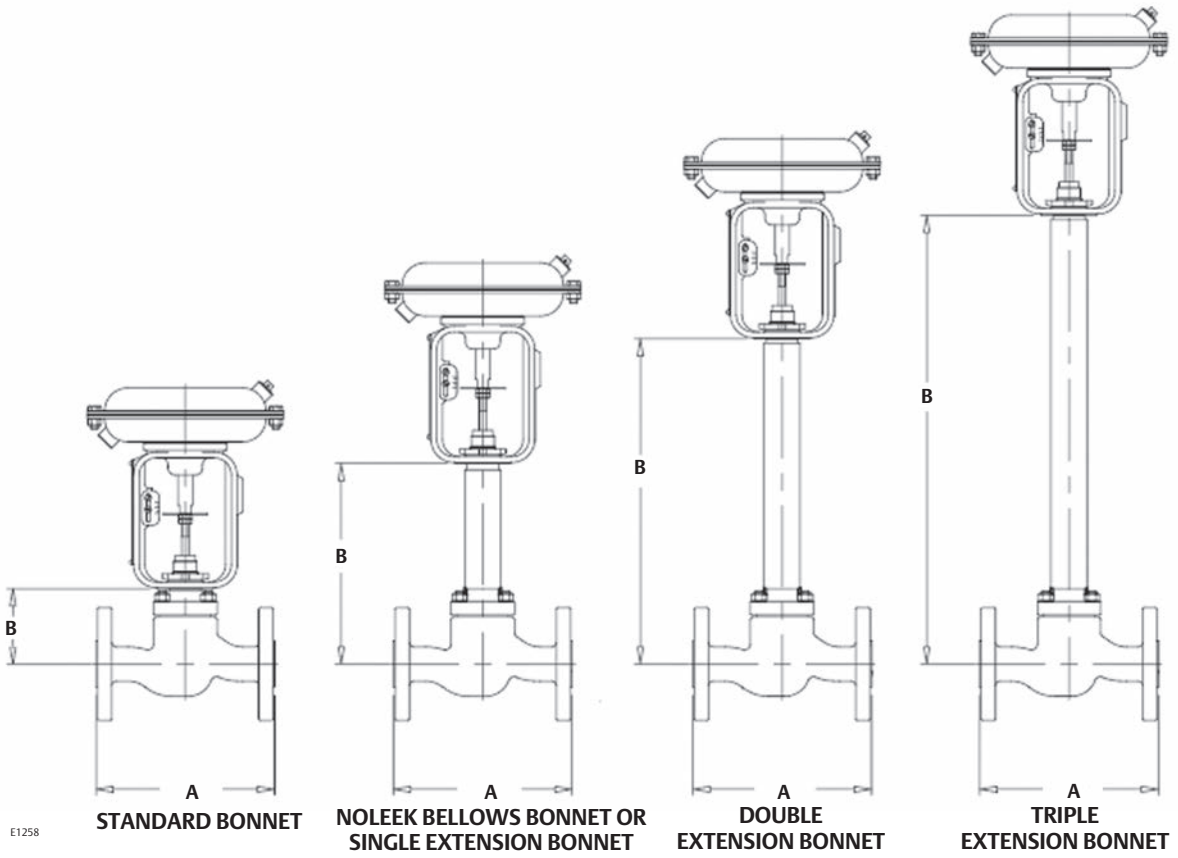


Table 11. Dimensions[1, 2]

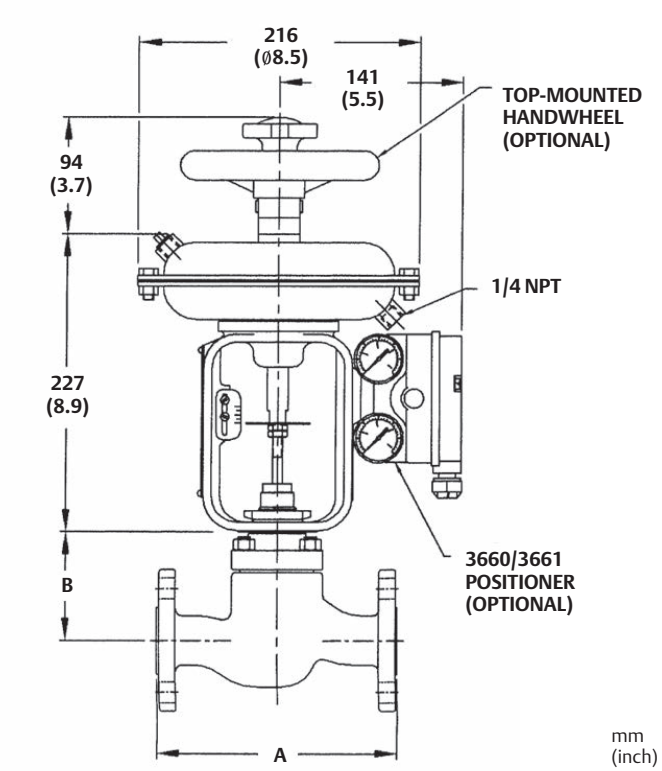
VALVE SIZE		A - FACE-TO-FACE						B - BONNET									
EN	ASME	CL150		CL300		EN 10-40		Standard		Extension[3]						NOLEEK Bellows[3]	
										Single		Double		Triple			
DN	NPS	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
15	1/2	184	7.25	190	7.5	130	5.11	79	3.1	216	8.5	352	13.9	488	19.2	226	8.9
20	3/4	184	7.25	194	7.62	150	5.90	79	3.1	216	8.5	352	13.9	488	19.2	226	8.9
25	1	184	7.25	197	7.75	160	6.30	84	3.3	221	8.7	356	14.0	493	19.4	229	9.0
40	1-1/2	222	8.75	235	9.25	200	7.87	96	3.8	234	9.2	370	14.6	505	19.9	229	9.0
50	2	254	10.0	267	10.5	230	9.06	107	4.2	244	9.6	381	15.0	516	20.3	234	9.2

1. Actuator requires 115 mm (4.5 inches) vertical clearance.
2. Face-to-face dimension per EN 558-1 and ISA S75.03.
3. Extension and NOLEEK bellows bonnets are available with 24000SVF stainless steel body ONLY.

Table 12. Valve Assembly Weights

VALVE SIZE		24000CVF WEIGHTS						24000SVF WEIGHTS					
EN	ASME	CL150		CL300		EN 10-40		CL150		CL300		EN 10-40	
DN	NPS	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
15	1/2	3.1	6.8	3.3	8.3	3.8	7.7	3.7	7.2	3.5	8.2	3.5	7.8
20	3/4	3.3	7.3	3.4	10	4.5	9.2	4.7	7.4	4.2	10.3	4.3	9.4
25	1	4.8	10.6	5.1	13.8	6.3	12.6	6.4	11.2	5.7	14	5.9	13
40	1-1/2	8.3	18.2	8.3	24.8	11.3	21.2	11.4	18.3	9.6	25.2	9.8	21.7
50	2	14.1	31	13.8	35.3	16	33.4	16.1	30.4	15.2	35.4	15.2	33.4

Figure 14. Dimensional Drawings



24000CVF/SVF FLANGED WITH BAUMANN 32 ATO ACTUATOR WITH HANDWHEEL

Note: Actuator removal requires 115 mm (4.5 inches) vertical clearance.

Table 13. Model Numbering System

	24							
Actuator Type	**Valve Body**	**Plug Series**	**Characteristic**	**Seat Leakage**	**Valve Body Material**		**Bonnet Style**	
MV1020(1)		548	Equal % / Metal Seat (S41600)	IV				
VA1020(1)		577	Equal % / PTFE Seat	VI				
		588	Equal % / Metal Seat (S31600)	IV				
		648	Linear / Metal Seat (S41600)	IV				
		677	Linear / PTFE Seat	VI				
		688	Linear / Metal Seat (S31600)	IV				

1. Refer to bulletin 52.1:ECV, Baumann Electronic Modulating Actuators, D103347X012, for details on these electronic actuators.

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