

Fisher™ Baumann™ 24000S

Stainless Steel Control Valve



General Application

The 24000S versatile, pneumatic, control valve may be used for the control of pressure, temperature, level and flow. NPS 1/2 through 2 valves are available with NPT end connections. NPS 3 is available as wafer style only. The CF8M stainless steel valve body will withstand mildly corrosive fluids, yet is economical enough to use in applications where carbon steel is normally specified.

Features

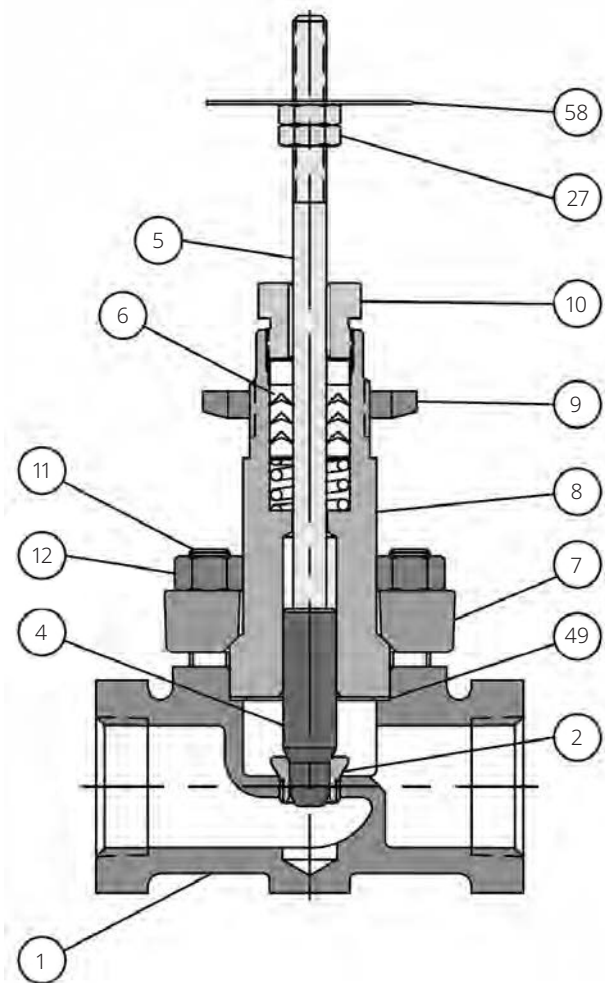
- Compact and lightweight design reduces installed piping costs.
- End connection options are available to meet your piping standards.
- Dual stem and plug guiding provides increased stability during plug travel.
- High-quality S31600 stainless steel trim materials; S41600 stainless steel trim available.
- Multiple trim capacity reductions available to meet changing process requirements.
- Fisher™ FIELDVUE™ digital valve controller are available for remote calibration and diagnostics.
- NOLEEK bellows bonnet and single through triple extension bonnets are available.



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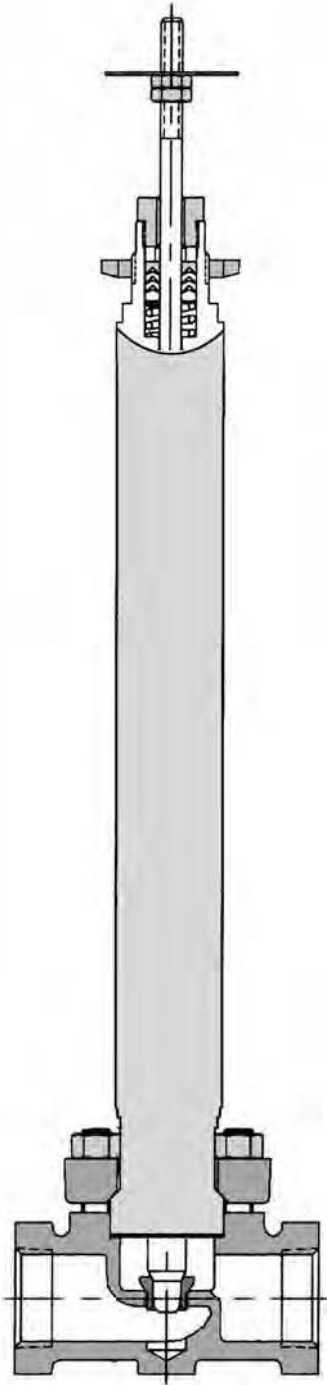
24000S NPT CONTROL VALVE

Figure 1. 24000S Valve Body Assembly



E1266

Figure 2. 24000S Valve with Extension Bonnet, Available in Single and Double Extension Lengths



E1267

Table 1. Materials of Construction

Key No.	Description		Material
1	Valve body		ASME SA351 CF8M
2	Seat ring		ASTM A276 S31600 / S31603 Dual Certified (used for 6.3 mm and 9.5 mm / 1/4 in. and 3/8 in. orifice diameters only)
4	Plug (Metal seat) $C_v < 2.5$	Standard	ASME SA479 S21800 Annealed
		Optional	ASTM A582 S41600 Condition T
	Plug (Metal seat) $C_v > 4.0$	Standard	ASTM A276 S31600 / S31603 Dual Certified
		Optional	ASTM A582 S41600 Condition T
	Plug (Soft seat)		ASTM A276 S31600 / S31603 Dual Certified with PTFE (Polytetrafluoroethylene) Insert
5	Stem		ASTM A276 S31600 Condition A
6	Packing set		(Refer to page 5)
7	Bonnet flange	1/2 to 2 in.	ASME SA351 CF8M
		3 in.	ASME SA240 S31600 / S31603 Dual Certified
8	Bonnet	Standard	ASME SA479 S31600 / S31603 Dual Certified
		Extension	ASME SA479 S31600 / S31603 Dual Certified
		NOLEEK	ASME SA479 S31600 / S31603 Dual Certified
9	Drive nut (Yoke)	S30400	
10	Packing follower	ASTM A276 S31600 / S31603 Dual Certified	
11	Bonnet studs (Bolt)	ASME SA193 Grade B8 Class 1	
12	Bonnet nuts	ASME SA194 Grade B8	
27	Locknuts	Stainless steel (18-8 Stainless steel)	
49	Body gasket	Graphite Grade GHR with S31600 Insert	
58	Travel indicator	ASME SA240 S30400	

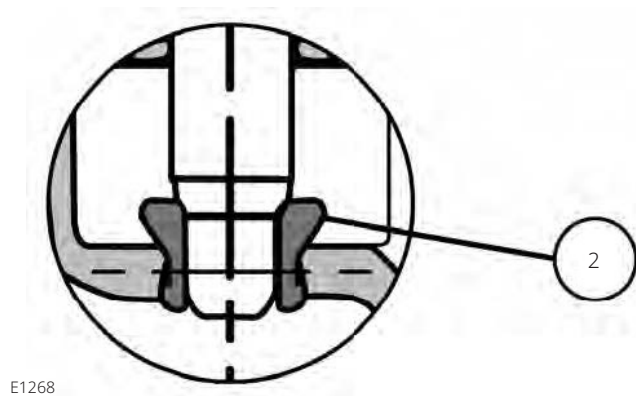
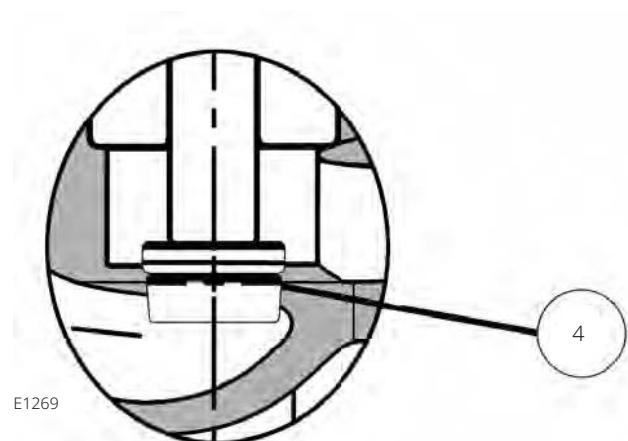
Figure 3. Screwed Seat**Figure 4. Integral Seat**

Figure 5. 24151S Low Flow Trim

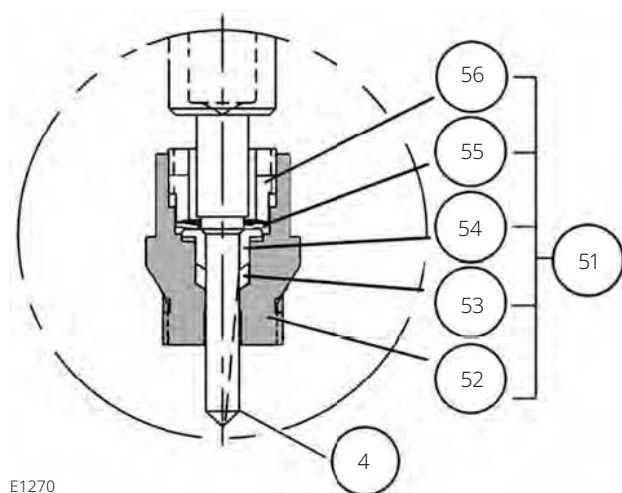


Figure 6. 24177S Low Flow Trim

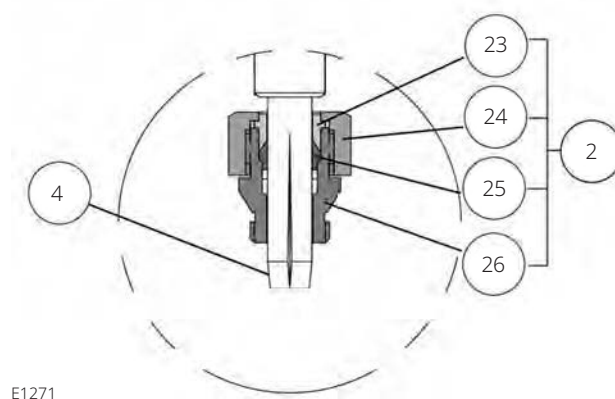


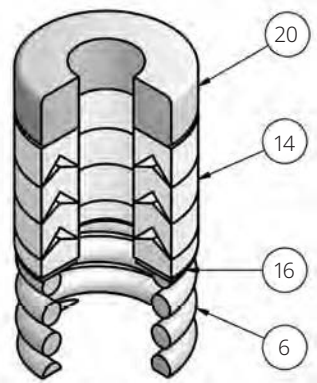
Table 2. 24151S Low Flow Trim

Key Number	Description		Material
4	Plug		ASME SA479 S21800
51	Seat sub-assembly		
	52	Cage	ASTM A276 S31600 / S31603
	53	Seat	PTFE
	54	Collar	ASTM A276 S31600 / S31603
	55	Washer	ASTM A276 S31600 Cond B
	56	Insert	ASTM A276 S31600 / S31603

Table 3. 24177S Low Flow Trim⁽¹⁾

Key Number	Description		Material
2	Seat sub-assembly		
	23	Gland	ASTM A276 S31600 / S31603
	24	Retainer nut	ASTM A276 S31600 / S31603
	25	Insert	Reinforced PTFE
	26	Housing	ASTM A276 S31600 / S31603
4	Plug		ASME SA479 S21800

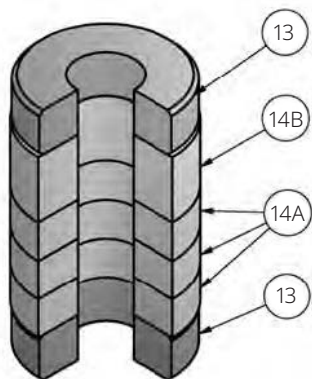
1. For optional trim materials, consult your [Emerson sales office](#) for price and delivery. Fisher Baumann 32 actuator requires dual-stops with 177 trim Series.

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

E1240

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

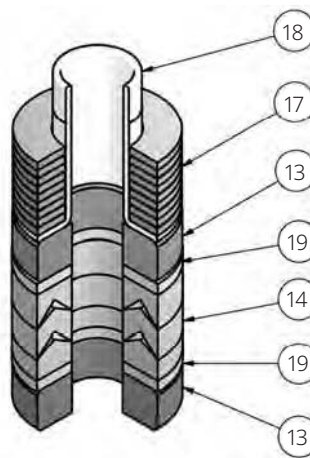
Key Number	Description	Material
6	Spring	ASTM A313 S30200
14	Packing set	PTFE (Polytetrafluoroethylene) / PTFE, 25% Carbon-filled
16	Washer	ASME SA240 S31600
20	Spacer	J-2000 (filled-Polytetrafluoroethylene)

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

E1241

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

Figure 9. Fisher enhanced ENVIRO-SEAL™ Packing Kit (Optional)

E1248

Table 6. Fisher enhanced 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

Special Fisher enhanced ENVIRO-SEAL Packing Note

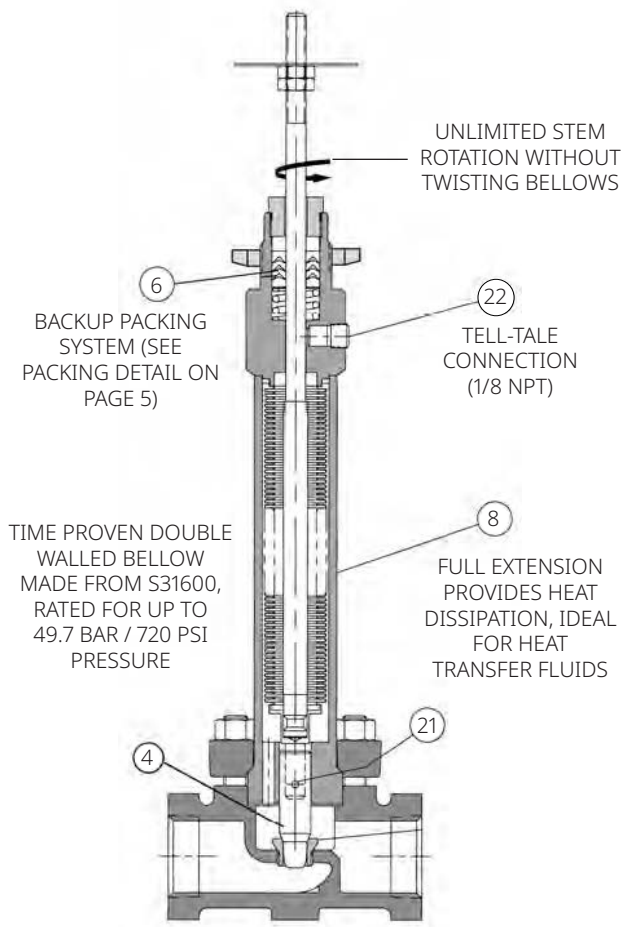
The Fisher enhanced ENVIRO-SEAL PTFE packing system is suitable for 100 ppm environmental applications on services up to 51.7 barg / 750 psig and process temperatures ranging from -46 to +232°C / -50 to +450°F.

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

Figure 10. NOLEEK Bellows Bonnet Assembly



E1272

⚠ WARNING

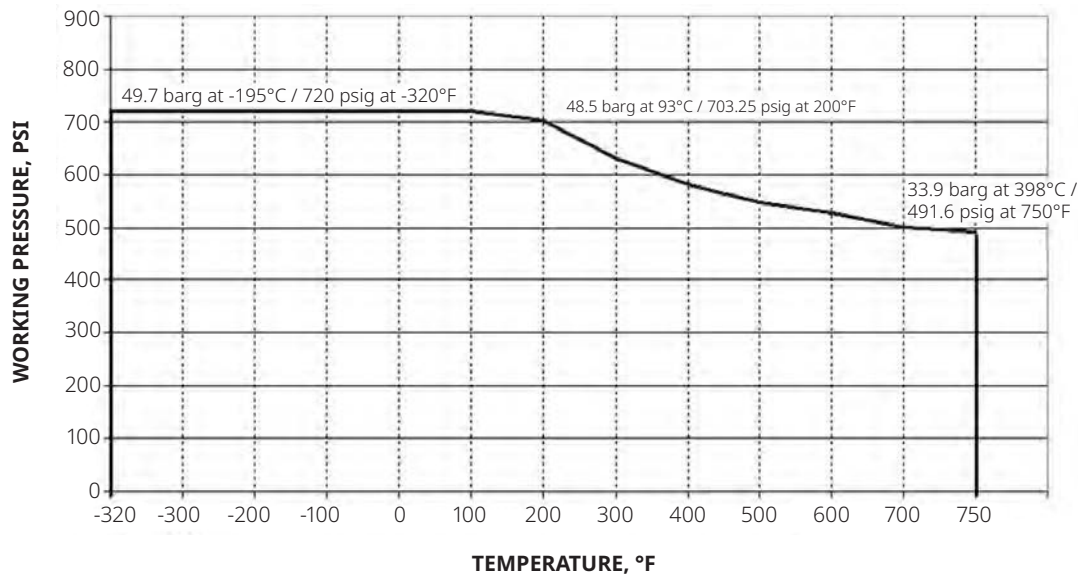
The NOLEEK valve bonnet assembly is not intended for use in lethal service applications.

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 in. to the height of a standard valve. Operating temperature range is -195 to +399°C / -320 to 750°F.

Table 7. NOLEEK Bellow Bonnet Assembly

Key No.	Description	Material
4	Plug	See Table 1
6	V-ring packing kit (Standard)	See Table 4
	Fisher enhanced ENVIRO-SEAL packing kit (Optional)	See Table 6
8	Housing	S31600 / S31603
	Bellows	S31603 / 1.4571 SST
	Bonnet	CF8M
21	Plug retaining pin	S30300
22	Hex socket pipe plug, 1/8 NPT	S30400

Figure 11. Bellows Pressure Temperature Curve



E1250

Table 8. C_V Values at 100% Plug Opening ($K_V = 0.86 \times C_V$)⁽¹⁾

VALVE SIZE	ORIFICE DIAMETER	PLUG TRAVEL	PLUG SERIES						
			102	151	177	577	548 / 588	677	648 / 688
NPS	in.	in.	C_V	C_V	C_V	C_V	C_V	C_V	C_V
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	---	0.50, 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, 1.5, 2.0	1.5, 2.5	0.10, 0.20, 0.50, 1.0, 2.5	1.5, 2.5
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	---	0.50, 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, 1.5, 2.0	1.5, 2.5	0.10, 0.20, 0.50, 1.0	1.5, 2.5
	0.8125	0.50	---	---	---	4, 8.5	4.7, 9.5	4.0	4.0, 9.5
1-1/2	1.25	0.75	---	---	---	17.5	9, 17.5	17.5	17.5
2	1.5	0.75	---	---	---	10, 18, 30.5	10, 17.5, 30.5	10, 17.5	10, 17.5, 30.5
3	2.0	0.75	---	---	---	35	35, 61	35, 61	35, 61

1. See [Fisher Catalog 12](#) for a full range of flow and sizing information.

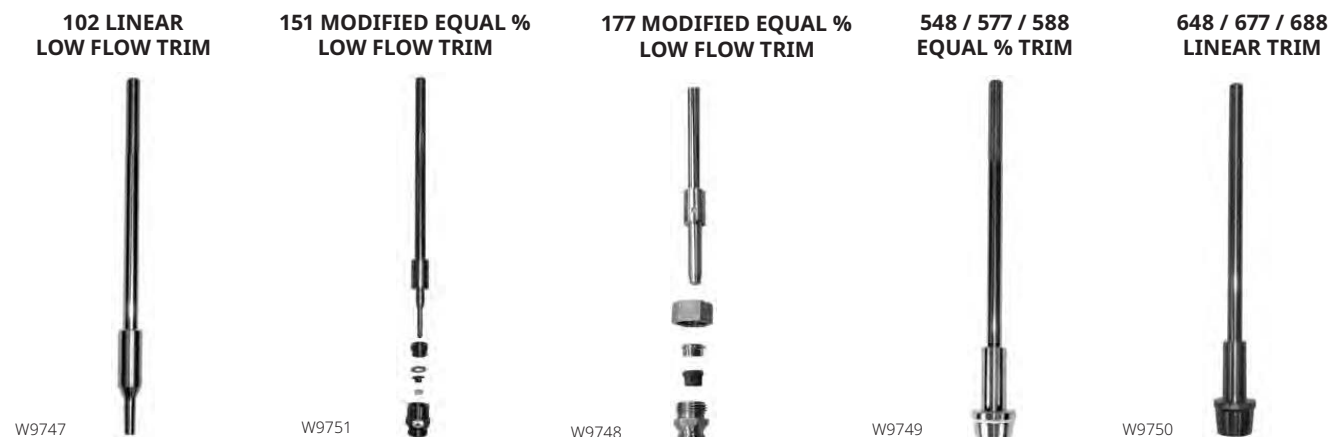
Figure 12. Fisher Baumann 24000S Trims

Table 9. Technical Specifications

NOMINAL PIPE SIZE	DN 15, 25, 40, 50 and 80	NPS 1/2, 1, 1-1/2, 2 and 3
END CONNECTIONS	Screwed NPT ⁽¹⁾ / Wafer ⁽²⁾ / Buttweld	
PRESSURE RATING	CL300 (CL150 for NPS 3 per ASME B16.34)	
VALVE BODY MATERIAL	CF8M ASTM A351	
CHARACTERISTIC	Equal Percentage or Linear	

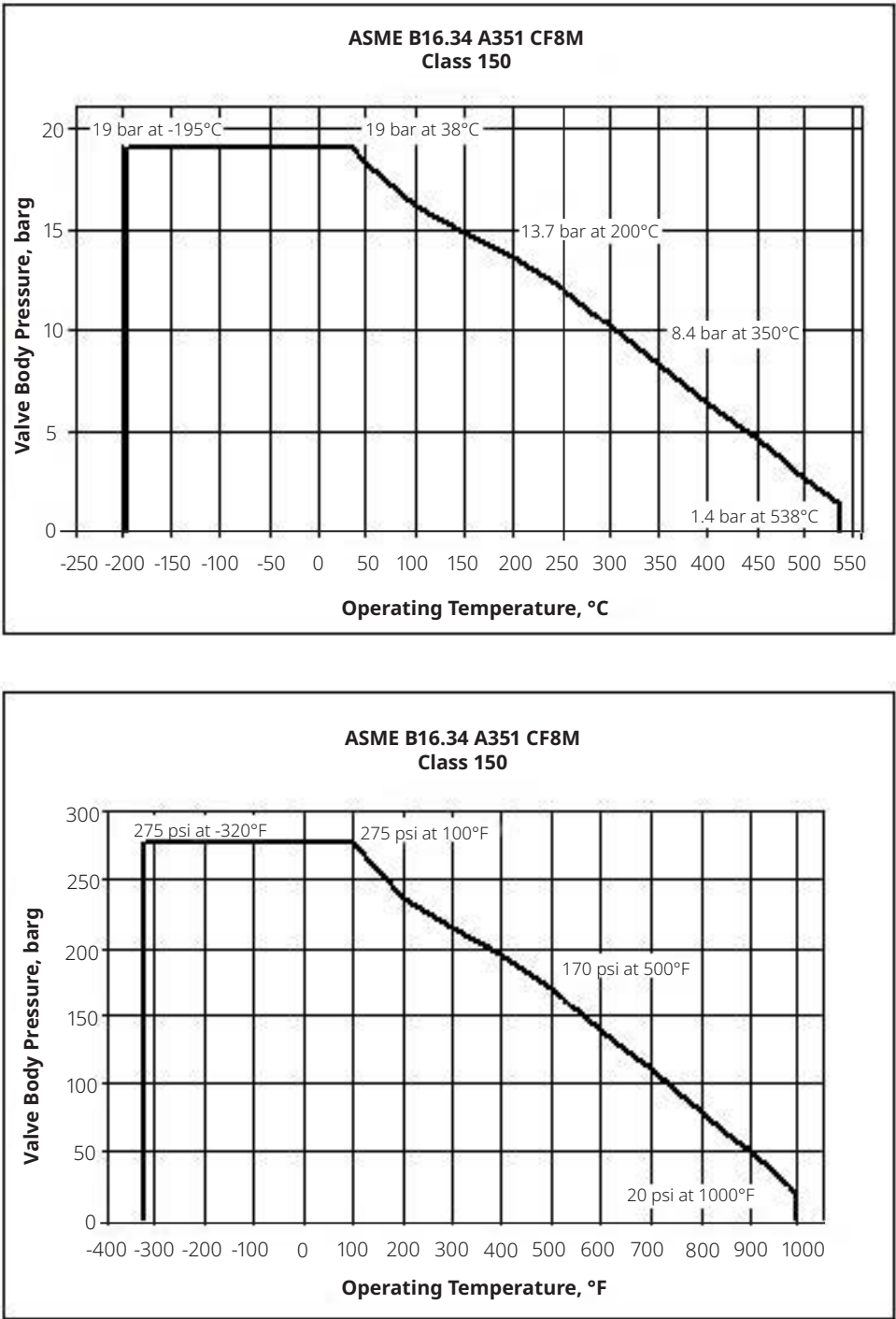
1. Available in NPS 1/2, 1, 1-1/2 and 2.
2. NPS 1, 1-1/2 and 2 NPT bodies are wafer compatible. NPS 3 available in wafer style only. Refer to Table 14 for more information.

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
		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
		Fisher enhanced ENVIRO-SEAL	-45 to +232°C / -50 to +450°F
		Graphite	-73 to +232°C / -100 to +450°F
	Single Extension Bonnet ^(2,3)	Spring Loaded PTFE	-73 to +343°C / -100 to +650°F
		Fisher enhanced ENVIRO-SEAL	-46 to +343°C / -50 to +650°F
		Graphite	-73 to +427°C / -100 to +800°F
	Double Extension Bonnet ^(2,3)	Spring Loaded PTFE	-101 to +427°C / -150 to +800°F
		Fisher enhanced ENVIRO-SEAL	-101 to +427°C / -150 to +800°F
		Graphite	-101 to +537°C / -150 to +1000°F
	Triple Extension Bonnet ^(2,3)	Spring Loaded PTFE	-195 to +427°C / -320 to +800°F
		Fisher enhanced ENVIRO-SEAL	-195 to +427°C / -320 to +800°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		

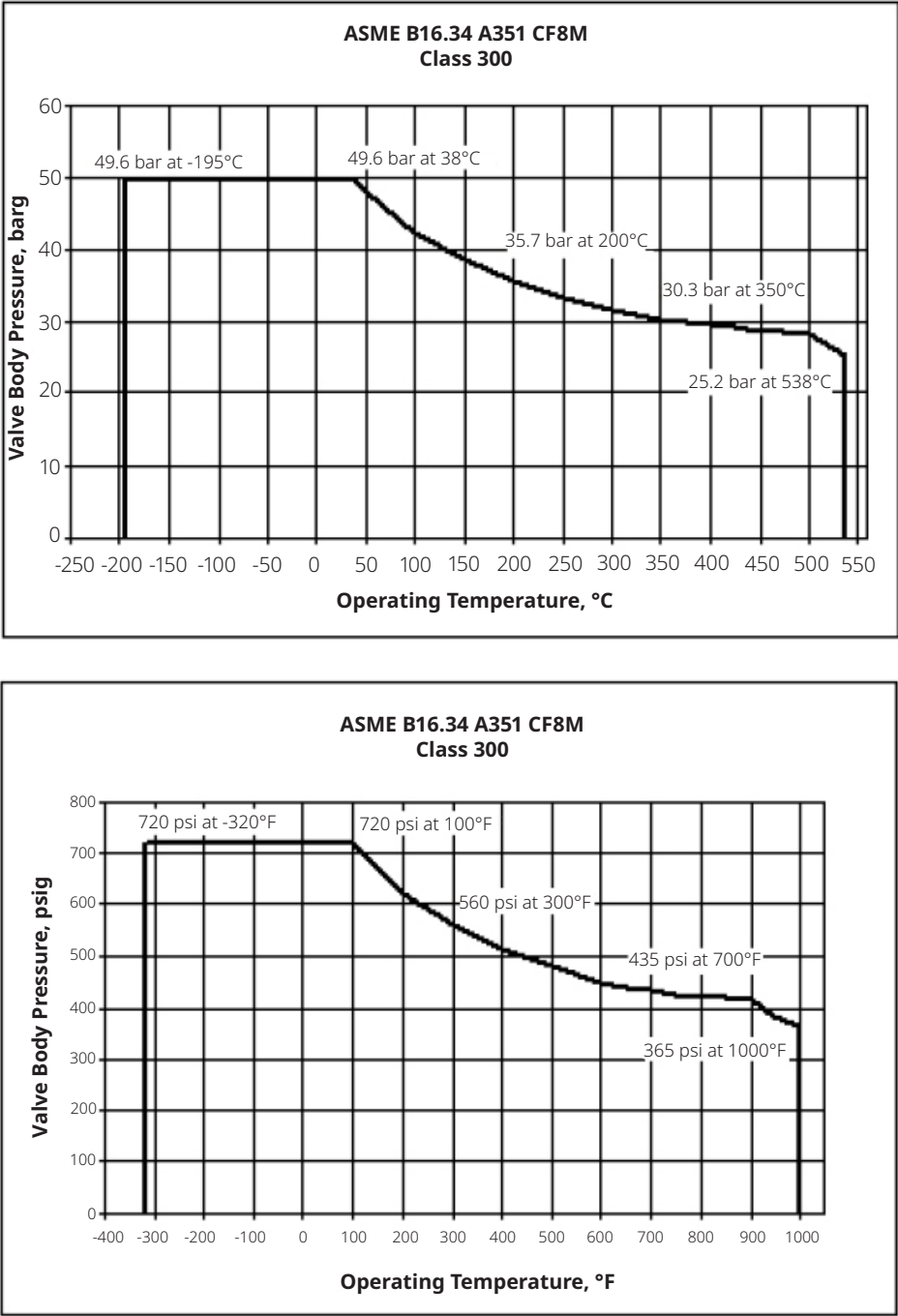
1. Temperature limits apply to seating or packing arrangements only. Complete valve assembly temperature limits may differ, refer to appropriate pressure/temperature ratings. For more information on packing selection, reference Fisher Packing Selection Guidelines for Sliding-Stem Valves Bulletin 59.1:062 (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 13. Valve Body Pressure / Temperature Ratings ASME CL150 Valves (Source: ASME B16.34)



E1426

Figure 14. Valve Body Pressure / Temperature Ratings ASME CL300 Valves (Source: ASME B16.34)
(Does Not Apply to 24000S NPS 3 Valves)



E1427

Table 11. Valve Dimensions

VALVE SIZE		ASME CLASS	A		B									
					Standard		Extension Bonnet						NOLEEK Bellows	
							Single		Double		Triple			
DN	NPS		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
15	1/2	300	79	3.1	78.7	3.1	213.4	8.4	351	13.8	488	19.2	227.8	8.97
25	1	300	102	4	78.7	3.1	215.9	8.5	351	13.8	488	19.2	227.8	8.97
40	1-1/2	300	114	4.5	88.9	3.5	226	8.9	363	14.3	498	19.6	235.7	9.28
50	2	300	124	4.9	83.8	3.3	221	8.7	356	14	493	19.4	234.4	9.23
80	3	150	165	6.5	96.5	3.8	234	9.2	371	14.6	508	20	235.7	9.28

Table 12. Valve Assembly Weights

VALVE SIZE		WEIGHT	
DN	NPS	kg	lb
15	1/2	2.3	5
25	1	2.7	6
40	1-1/2	4.1	9
50	2	5.0	11
80	3	9.1	20

Table 13. Actuator Weights

ACTUATOR TYPE	WEIGHTS	
	kg	lb
MV1020	10	22
VA1020	14	30
SVX24-MFT	Reference Bulletin 52.1:SVACT (D104169X012)	
SVK24-MFT		

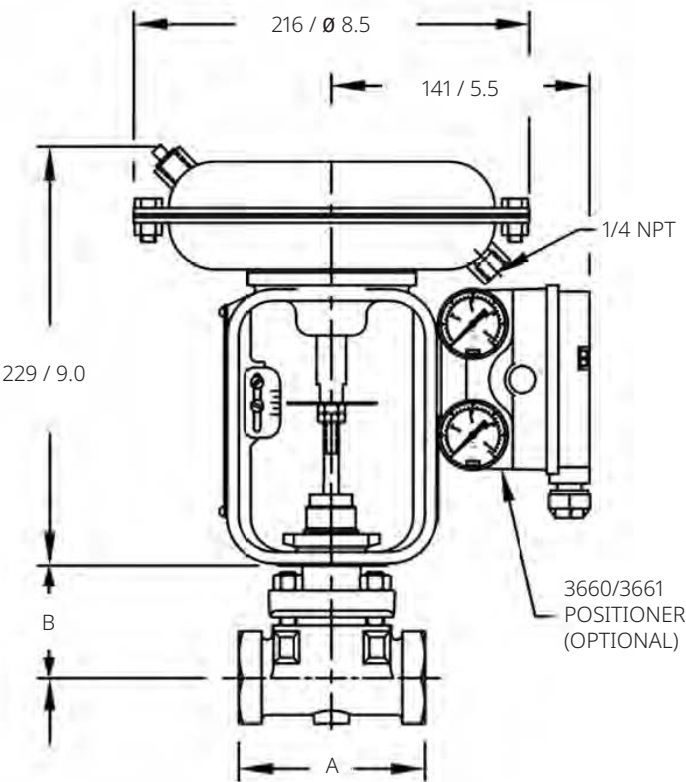
Table 14. Fisher Baumann 24000S Wafer Compatibility⁽¹⁾

Valve Size	DN 15 / NPS 1/2	DN 25 / NPS 1	DN 40 / NPS 1-1/2	DN 50 / NPS 2	DN 80 / NPS 3
ASME Flange	None	CL150	CL150	CL150	CL150
DN Flange	None	PN 16	PN 16	PN 16	PN 16
NPT	Yes	Yes	Yes	Yes	None

Table 15. Model Numbering System

24	PLUG SERIES	CHARACTERISTIC	SEAT LEAKAGE	S		BONNET STYLE	
Valve Body Series				Valve Body Material			
	102	Linear / Metal Seat	IV	S	NPT	Omit	Standard
	151	Modified Equal % / PTFE Seat	VI			E	Extension
	177	Modified Equal % / Reinforced PTFE	VI			EE	Double Extension
	548	Equal % / Metal Seat (S41600)	IV			ET	Triple Extension
	577	Equal % / PTFE Seat	VI			EB	NOLEEK
	588	Equal % / Metal Seat (S31600)	IV				
	648	Linear / Metal Seat (S41600)	IV				
	677	Linear / PTFE Seat	VI				
	688	Linear / Metal Seat (S31600)	IV				

Figure 15. Dimensional Drawing



E1262

mm / in.

24000S WITH 32 ATO ACTUATOR

NOTE: ACTUATOR REMOVAL REQUIRES 115 MM / 4.5 IN. VERTICAL CLEARANCE.
CRYO CONFIGURATION CAPABILITIES (SINGLE EXTENSION: -50 TO +800°F / DOUBLE: - 50 TO +1000°F / TRIPLE: -320 TO +1000°F)

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