

Baumann™ 24000F Wafer Body Control Valve

The Baumann unique 24000F wafer style control valve mates with ASME and EN line flange connections and is designed to control a wide range of process liquids, gases and vapors. This very compact package provides the connection integrity of flanged body globe valves while being significantly lighter and easier to install. Special alloy constructions are available and round out the standard S31603 stainless steel offering. The 24000F serves as a general purpose, modulating valve suitable for process line pressures up to 99 barg (1440 psig) and operating temperatures to 537°C (1000°F).

Features

- Compact and light-weight design reduces installed piping costs.
- Universal valve body construction mates with both ASME and EN flanges (see table 9).
- Multiple trim capacity reductions available to meet changing process requirements with Cv ratings as low as 0.00013.
- Optional extended bonnet for applications ranging from -195 to 537°C (-320 to 1000°F).
- Optional ENVIRO-SEAL™ packing system to meet critical emission control requirements



W9762-1

**24000F Control Valve
with Baumann 32 Dual-Stop Actuator**

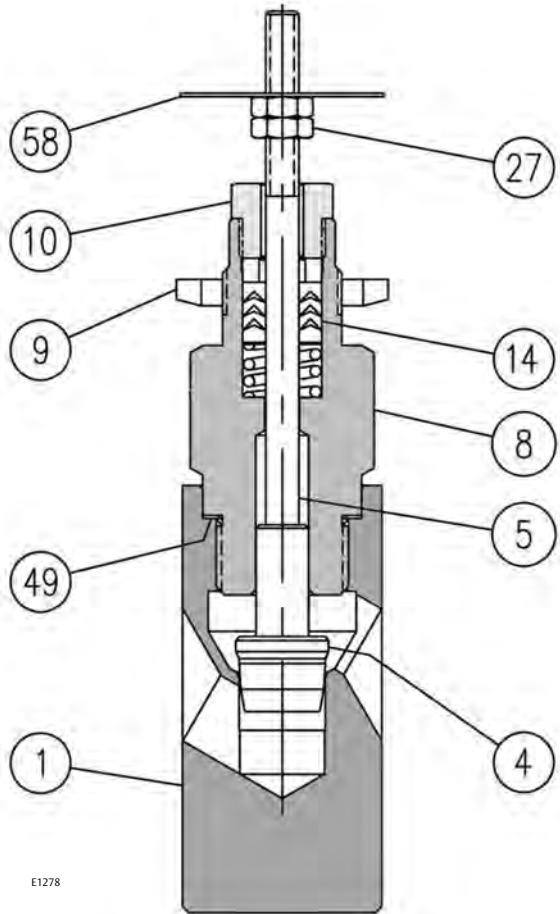


W9763-1

**24000F Control Valve with Baumann 32 Actuator and
FIELDVUE DVC2000 Digital Valve Controller**

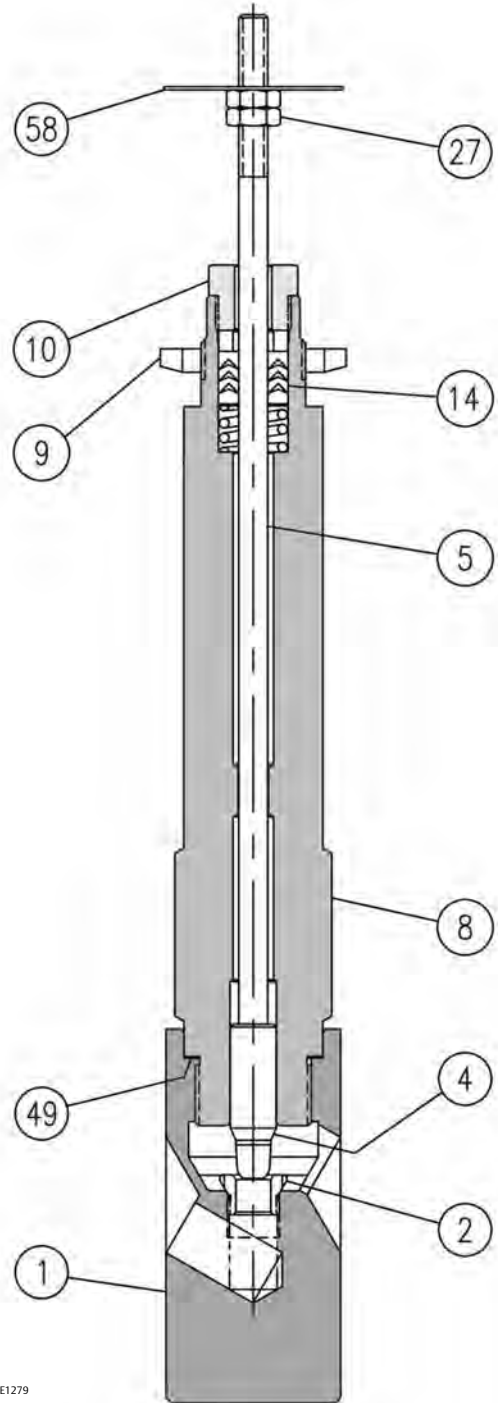
- Fisher™ FIELDVUE™ digital valve controller are available for remote calibration and diagnostics.

Figure 1. Baumann 24000F Valve Body with Standard Bonnet and NPS 1 Integral Seat



E1278

Figure 2. Baumann 24000F Valve Body with Extension Bonnet and Screwed-In Seat Ring



E1279

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	Valve Body	ASME SA479 S31600/ S31603 Dual Certified	ASME SB574 N10276	ASTM B473 N08020	ASME SB164 N04400
2	Seat Ring (standard) (For Low Flow Trim, see tables 2 and 3)	ASTM A276 S31600/ S31603 Dual Certified	ASME SB574 N10276	ASTM B473 N08020	ASME SB164 N04400
4	Plug (Metal Seat) Cv ≤ 2.5	ASME SA479 S21800 (standard) / ASTM A582 S41600 Condition T (optional)	ASME SB574 N10276	ASTM B473 N08020	ASME SB164 N04400
	Plug (Metal Seat) Cv ≥ 4.0	ASTM A276 S31600/ S31603(standard) / ASTM A582 S41600 Condition T (optional)			
	Plug (Soft Seat)	ASTM A276 S31600/ S31603 with PTFE (Polytetrafluoroethylene) insert	ASME SB574 N10276/PTFE	ASTM B473 N08020/PTFE	ASME SB164 N04400/ PTFE
5	Stem	ASTM A276 S31600	ASME SB574 N10276	ASTM B473 N08020	ASME SB164 N04400
8	Bonnet	ASME SA479 S31600/ S31603 Dual Certified	ASME SB574 N10276	ASTM B473 N08020	ASME SB164 N04400
9	Drive Nut (Yoke)	S30400			
10	Packing Follower	ASTM A276 S31600/ S31603 Dual Certified	ASME SB574 N10276	ASTM B473 N08020	ASME SB164 N04400
14	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	ASME SA240 S30400			

1. For optional valve and trim materials, consult your [Emerson 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.

Figure 3. Optional 151 Low Flow Trim Assembly

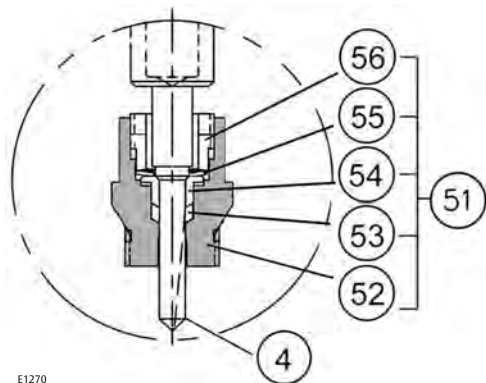


Figure 4. Optional 177 Low Flow Trim Assembly

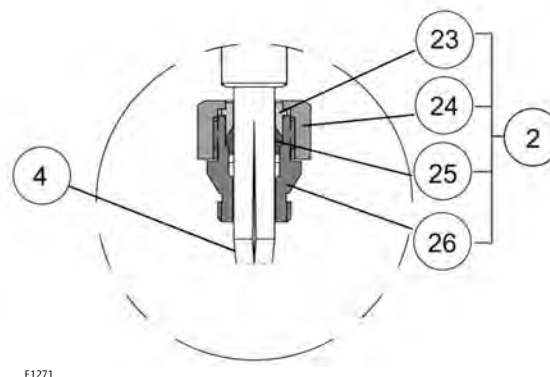


Table 2. 151 Low Flow Trim

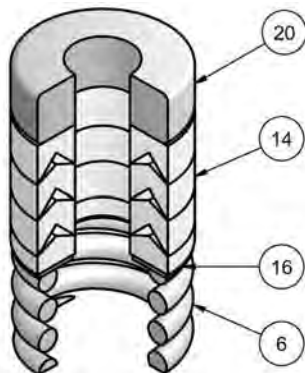
Key Number	Description	Material	
4	Plug	ASME SA479 S21800	
51	Seat Sub-Assembly		
	52	Cage	ASTM A276 S31600/ S31603
	53	Seat	PTFE
	54	Collar	ASTM A276 S31600/ S31603
	55	Washer	ASTM A276 S31600 Cond B
	56	Insert	ASTM A276 S31600/ S31603

Table 3. 177 Low Flow Trim

Key Number	Description	Material	
2 ⁽¹⁾	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 ⁽¹⁾	Plug	ASME SA479 S21800	

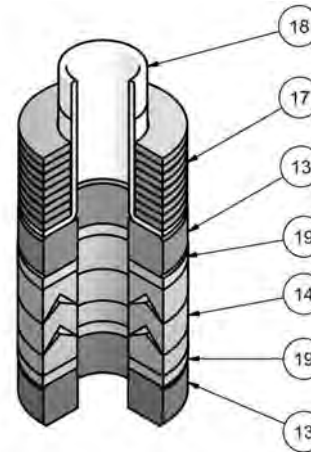
1. For optional trim materials, consult your Emerson sales office for price and delivery. Baumann 32 actuator requires dual-stops with 177 trim series.

Figure 5. Standard Spring-Loaded PTFE V-Ring Packing Kit



E1240

Figure 7. ENVIRO-SEAL Packing Kit (Optional)



E1248

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

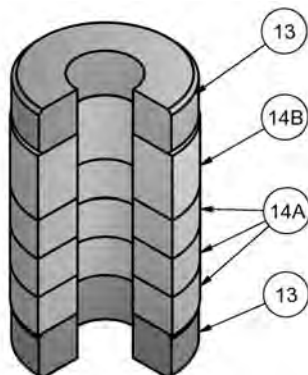
Key Number	Description	Material
6 ⁽¹⁾	Spring	ASTM A313 S30200
14	Packing Set	PTFE (Polytetrafluoroethylene) / PTFE, 25% carbon filled
16	Washer	ASME SA240 S31600
20	Spacer	J-2000 (filled-Polytetrafluoroethylene)

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

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

Figure 6. 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

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](#)).

Table 7. Technical Specifications

NOMINAL PIPE SIZE	DN 15, 20, and 25	NPS 1/2, 3/4, and 1
END CONNECTIONS	Refer to table 9	
PRESSURE RATING	Refer to tables 11, 12, 13, and 14	
CHARACTERISTIC	Equal Percentage or Linear	

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, 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	-45 to 232°C (-50 to 450°F)
		Graphite	-73 to 232°C (-100 to 450°F)
	Extension Bonnet	Spring Loaded PTFE	-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](#).

Table 9. Connections Available

CONNECTIONS	VALVE SIZE		MATING LINE FLANGES			
	DN	NPS	CL150	CL300	CL600	PN10-40
	15	1/2	NO	Yes	Yes	Yes
	20	3/4	Yes	Yes	Yes	Yes
	25	1	Yes	Yes	Yes	Yes

Figure 8. Baumann 24000F Trims



Table 10. Cv 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	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	---	---	---	0.20, 0.50, 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, 2.0	0.10, 0.20, 0.50, 1.0, 2.0	1.5, 2.0
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	---	---	---	0.20, 0.50, 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, 2.0	0.10, 0.20, 0.50, 1.0, 2.0	1.5, 2.0
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	---	---	---	0.20, 0.50, 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, 2.5	1.5, 2.5	0.10, 0.20, 0.50, 1.0, 2.5	1.5, 2.5
	0.375	0.50	---	---	---	1.0, 1.5, 2.5	1.5, 2.5	0.10, 0.20, 0.50, 1.0, 2.5	1.5, 2.5
	0.8125	0.50	---	---	---	4.0, 6.5	4.0, 6.5	4.0	4.0, 6.5

1. See [Fisher Catalog 12](#) for a full range of flow and sizing information.
2. 24000F NPS 1, Cv 4.0 and 6.5 are integral seat.

Table 11. Pressure-Temperature Ratings for S31603 Stainless Steel Valve Body (Standard)

Temperature (°C) ⁽¹⁾	Working Pressure (barg)	Temperature (°F) ⁽¹⁾	Working Pressure (psig)
-195 to 37	99	-320 to 100	1440
93	85	200	1240
149	77	300	1120
204	70	400	1025
232	68	450	990
260	65	500	955
288	63	550	927
315	62	600	900
343	61	650	890
371	60	700	870
398	58	750	855
426	58	800	845
454	57	850	835
482	57	900	830
510	53	950	775
537	48	1000	700

1. Do not exceed seating and packing material ratings.

Table 12. Pressure-Temperature Ratings for N10276 Nickel Alloy Valve Body (Optional)

Temperature (°C) ⁽¹⁾	Working Pressure (barg)	Temperature (°F) ⁽¹⁾	Working Pressure (psig)
-195 to 37	103	-320 to 100	1500
93	103	200	1500
149	100	300	1455
204	97	400	1410
232	94	450	1370
260	91	500	1330
288	87	550	1270
315	83	600	1210
343	81	650	1175
371	78	700	1135
398	73	750	1065
426	69	800	1015
454	67	850	975
482	62	900	900
510	53	950	775
537	49	1000	725

1. Do not exceed seating and packing material ratings.

Table 13. Pressure-Temperature Ratings for N04400 Nickel Alloy Valve Body (Optional)

Temperature (°C) ⁽¹⁾	Working Pressure (barg)	Temperature (°F) ⁽¹⁾	Working Pressure (psig)
-195 to 37	82	-320 to 100	1200
93	72	200	1055
149	68	300	990
204	65	400	955
232	65	450	952
260	65	500	950
288	65	550	950
315	65	600	950
343	65	650	950
371	65	700	950
398	64	750	935
426	63	800	915
454	46	850	680
482	34	900	495

1. Do not exceed seating and packing material ratings.

Table 14. Pressure-Temperature Ratings for N08020 Nickel Alloy Valve Body (Optional)

Temperature (°C) ⁽¹⁾	Working Pressure (barg)	Temperature (°F) ⁽¹⁾	Working Pressure (psig)
-195 to 37	82	-320 to 100	1200
93	72	200	1045
149	67	300	980
204	67	400	980
232	67	450	980
260	67	500	980
288	67	550	980
315	67	600	980
343	67	650	980
371	67	700	980
398	67	750	980
426	67	800	980

1. Do not exceed seating and packing material ratings.

Table 15. Valve Assembly Weights

VALVE SIZE		WEIGHT	
DN	NPS	kg	lb
15	1/2	1.7	3.8
20	3/4	2.4	5.3
25	1	3.3	7.3

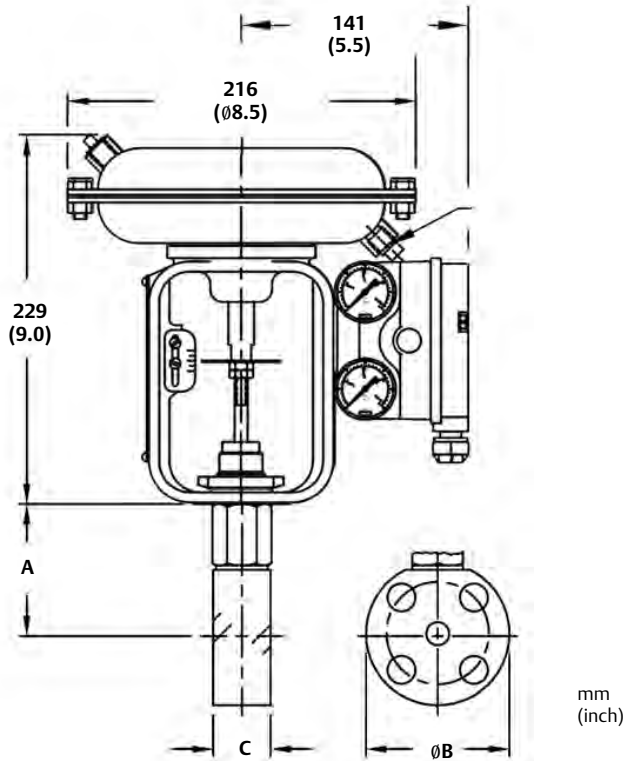
Table 16. Actuator Weights

ACTUATOR TYPE	WEIGHT	
	kg	lb
MV	10	22
VA	14	30

Table 17. Model Numbering System

24	Plug Series	Characteristic	Seat Leakage	F	Bonnet Style	
Valve Body Series				Wafer Valve Body		
	548	Equal % / Metal Seat (S41600)	IV		---	Standard
	577	Equal % / PTFE Seat	VI		E	Extension
	588	Equal % / Metal Seat (S31600)	IV			
	648	Linear / Metal Seat	IV			
	677	Linear / PTFE Seat	VI			
	688	Linear / Metal Seat	IV			

Figure 9. Dimensional Drawing



E1280

BAUMANN 32 ACTUATOR WITH FISHER 3660/3661 POSITIONER

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

Table 18. Valve Dimensions

VALVE SIZE		A BONNET				B DIAMETER		C	
		Standard		Extension					
DN	NPS	mm	Inch	mm	Inch	mm	Inch	mm	Inch
15	1/2	83.8	3.3	218.4	8.6	88.9	3.5	38.1	1.5
20	3/4	83.8	3.3	218.4	8.6	107.95	4.25	38.1	1.5
25	1	78.7	3.1	215.9	8.5	114.3	4.5	50.8	2.0

Product Bulletin

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March 2020

2400F Valve
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