

Baumann™ 24000 Little Scotty™ Bronze Control Valve

Baumann™ Little Scotty™ industrial control valves are intended for general utility service in pressure, flow and temperature control applications. This control valve is positioned to take advantage of the trend toward industrial grade requirements spanning general utility to special applications.

The Little Scotty valves exhibit low hysteresis and deadband, good control characteristics, tight shutoff, rugged construction, high performance packing and easy maintainability. These attributes translate into reduced maintenance costs, reduced process variability, and increased process availability, resulting in lower long-term operating costs.

FEATURES:

- Compact and light weight design reduces installed piping costs.
- High quality type 316 austenitic stainless steel trim materials.
- 416 stainless steel trim available.
- Superior dual plug and stem guiding provides increased stability during plug travel.
- Multiple trim capacity reductions available to meet changing process requirements.
- 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.
- Entire actuator and yoke can be removed from the valve assembly while maintaining packing integrity.



Figure 1. 24000 Little Scotty™ Control Valve shown with Type 32 Actuator



Figure 2. 24000 Little Scotty™ Control Valve shown with Type 32 Actuator and FIELDVUE® DVC2000 Digital Valve Controller

- FIELDVUE® Digital Valve Controller available for remote calibration and diagnostics in facilities utilizing the PlantWeb® architecture.



Baumann™ 24000 Bronze

NOTE:

Neither Emerson®, Emerson Process Management, Fisher®, nor any of their affiliated entities assumes responsibility for the selection, use and maintenance of any product. Responsibility for the selection, use and maintenance of any product remains with the purchaser and end-user.

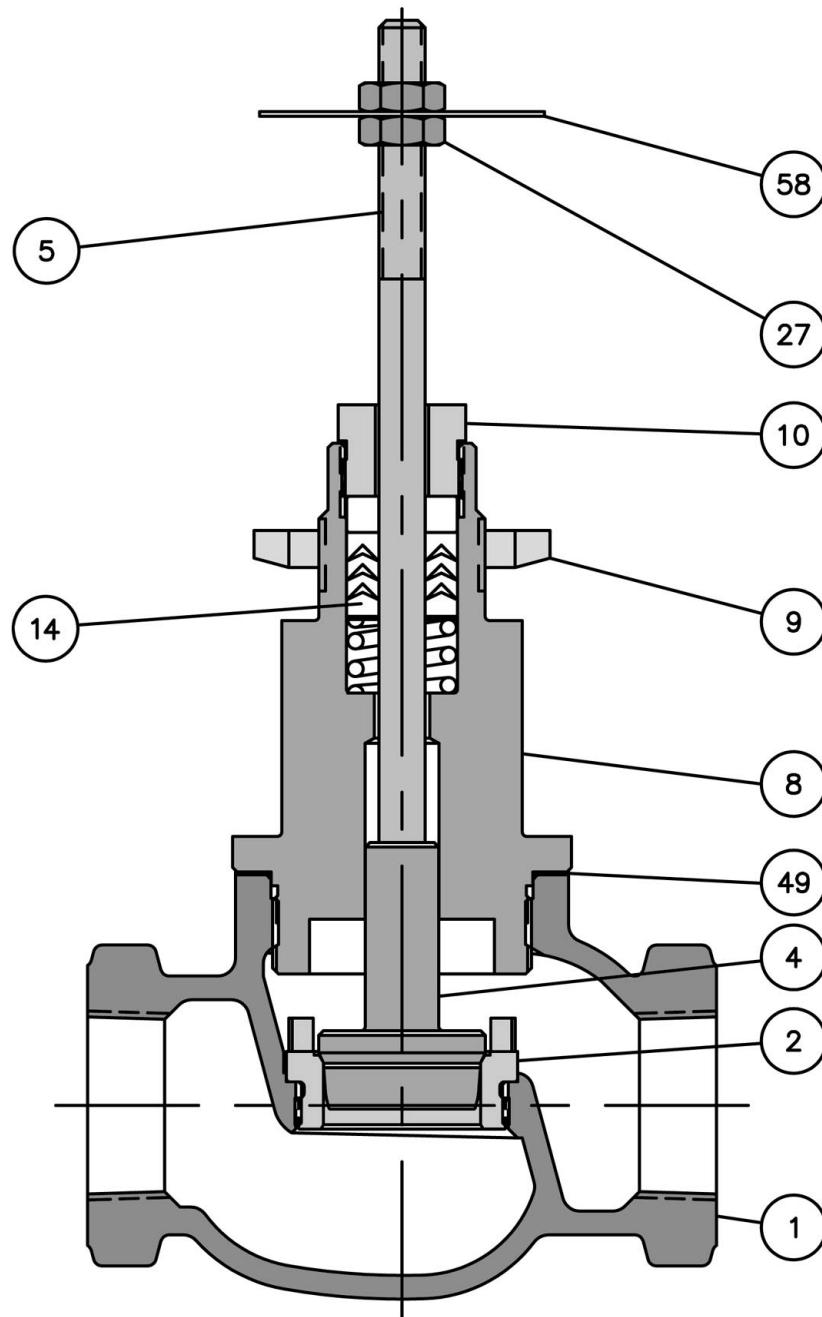


Figure 3. Little Scotty™ Body Subassembly
shown with Standard PTFE Spring Loaded Packing

Table 1. MATERIALS OF CONSTRUCTION

KEY NO.	DESCRIPTION		MATERIAL
1	Body		ASTM B62 Grade C83600
2	Seat Ring	Standard	316 SST (ASTM A276 S31600 Condition A)
		Optional	416 SST (ASTM A582 S41600 Condition T)
4	Plug (Metal Seat) Cv ≤ 2.5	Standard	S21800 SST (ASTM A479 S21800 Annealed)
		Optional	416 SST (ASTM A582 S41600 Condition T)
	Plug (Metal Seat) Cv ≥ 4.0	Standard	316 SST (ASTM A276 S31600 Condition A)
		Optional	416 SST (ASTM A582 S41600 Condition T)
Plug (Soft Seat)		316 SST (ASTM A276 S31600 Condition A) with PTFE (Polytetrafluoroethylene) Insert	
5	Stem		316 SST (ASTM A276 S31600 Condition A)
8	Bonnet		ASTM B148 Alloy C95500
9	Drive Nut (Yoke)		304 SST (ASTM A194 Grade 8M)
10	Packing Follower		316 SST (ASTM A276 S31600 Condition A)
14	Packing	Standard	V-Ring, See Figure 4 below
		Optional	Molded Graphite, See Figure 5 below
27	Locknuts		Stainless Steel (18-8 SST)
49	Body Gasket	Standard	Annealed Soft Copper
		Optional	Graphite Grade GHR with 316 SST Insert
58	Travel Indicator		304 SST (ASTM A240 S30400)

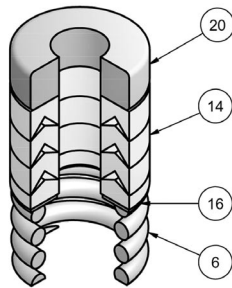


Figure 4, Table 2. SPRING LOADED PTFE V-RING PACKING KIT

KEY NO.	DESCRIPTION	MATERIAL
6	Spring	302 SST (ASTM A313 S30200)
14	Packing Set	PTFE (Polytetrafluoroethylene)/ 25% carbon filled PTFE
16	Washer	316 SST (ASTM A240 S31600)
20	Spacer	J-2000 (filled (Polytetrafluoroethylene)

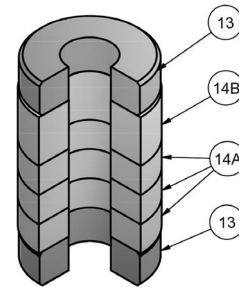


Figure 5, Table 3. MOLDED GRAPHITE (FLEXIBLE GRAPHITE) PACKING KIT (OPTIONAL)

KEY NO.	DESCRIPTION	MATERIAL
13	Bushings	Carbon-Graphite
14A	Packing Rings	Graphite
14B	Packing Ring	Graphite

Table 4. Cv VALUES @ 100 PERCENT PLUG OPENING

VALVE SIZE	ORIFICE DIA.	PLUG TRAVEL	PLUG SERIES				
			102	577	548 / 588	677	648 / 688
in	in	in	Cv	Cv	Cv	Cv	Cv
0.5, 0.75, & 1.0	0.25	0.50	0.02 0.05 0.1 0.2	---	0.2, 0.5, 1.0	---	0.5, 1.0
	0.375	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
0.5	0.8125	0.50	---	4, 6	4, 6	5	4, 6
0.75	0.8125	0.50	---	4, 7.5	4, 8	5	4, 8
1.0	0.8125	0.50	---	4, 8.5	4, 9	5	4, 9
	1.0625	0.50	---	13	13	---	13
1.5	1.25	0.75	---	20	10, 20	20	10, 20
	1.5	0.75	---	10, 17, 28	10, 17, 28	10, 17	10, 17, 28
2.0	1.5	0.75	---	10, 17, 28	10, 17, 28	10, 17	10, 17, 28
	2.0	0.75	---	30	30, 50	30, 50	30, 50

Table 5. Kv VALUES @ 100 PERCENT PLUG OPENING

VALVE SIZE	ORIFICE DIA.	PLUG TRAVEL	PLUG SERIES				
			102	577	548 / 588	677	648 / 688
DN	mm	mm	Kv	Kv	Kv	Kv	Kv
15, 20, & 25	6.3	12.7	0.017 0.04 0.09 0.17	---	0.17, 0.43, 0.86	---	0.43, 0.86
	9.5	12.7	---	0.86, 1.29, 2.15	1.29, 2.15	0.086, 0.17, 0.43, 0.86, 2.15	1.29, 2.15
15	20.6	12.7	---	3.4, 5.2	3.4, 5.2	4.3	3.4, 5.2
20	20.6	12.7	---	3.4, 6.5	3.4, 6.9	4.3	3.4, 6.9
25	20.6	12.7	---	3.4, 7.3	3.4, 7.7	4.3	3.4, 7.7
	27.0	12.7	---	11.2	11.2	---	11.2
40	31.8	19.1	---	17.2	8.6, 17.2	17.2	8.6, 17.2
	38.1	19.1	---	8.6, 14.6, 24.1	8.6, 14.6, 24.1	8.6, 14.6	8.6, 14.6, 24.1
50	38.1	19.1	---	8.6, 14.6, 24.1	8.6, 14.6, 24.1	8.6, 14.6	8.6, 14.6, 24.1
	50.8	19.1	---	25.8	25.8, 43	25.8, 43	25.8, 43

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Baumann™ 24000 Bronze**Table 6. TECHNICAL SPECIFICATIONS**

NOMINAL SIZE	0.5, 0.75, 1.0, 1.5, and 2 inches / DN15, 20, 25, 40 and 50
END CONNECTIONS	Screwed NPT
PRESSURE RATING	400 psi @ 150°F / 250 psi @ 400°F (ASME B16.15 Class 250)
SEAT PLUG SEALING	Metal to Metal or PTFE Soft Seat
CHARACTERISTIC	Equal Percentage or Linear
TEMPERATURE LIMITS	-20°F to 400°F (-29°C to 204°C)

Table 7. ACTUATOR SPECIFICATIONS

TYPE	32, 54, 70 Multi-Spring Diaphragm (Single Acting)
DIAPHRAGM AREA	32 in ² , 54 in ² , 70 in ² / 210, 350, 450 cm ²
AIR FAILURE	32 and 54 Fails Open or Fails Closed (Field Reversible) / 70 Fails Closed ONLY
TRAVEL (A)	0.50 or 0.75 inches / 12.7 or 19.1 mm
AMBIENT TEMPERATURE RANGE	-20°F to 160°F / -29°C to 71°C
MAXIMUM AIR PRESSURE	35 psig / 2.41 barg
DIAPHRAGM MATERIAL (B)	NBR (Nitrile) / TPES (Polyester Thermoplastic)
SPRING CASES	Steel, Powder Epoxy-Coated with Stainless Steel Fasteners
YOKE	Ductile Iron, Powder Epoxy-Coated
<p>NOTES: A. Dual travel stops are available on type 32 and 54 actuators. These are not field reversible. B. Optional reinforced VMQ (silicone) diaphragm with FKM (fluorocarbon) O-ring actuator stem seal for high ambient temperature conditions (-20°F to 250°F / -29°C to 121°C) is available with type 32 and 54 ONLY.</p>	

Table 8. ALLOWABLE PRESSURE DROPS (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	400	---	400	---	3-13	400	---	400 ⁽¹⁾	---
0.375	0.50	32	5-15	400	278	---	400	3-13	400	278	400 ⁽¹⁾	400 ⁽¹⁾
0.8125	0.50	32	5-15	113	---	226	132	3-13	113	---	306	301
		32	7-15	226	132	339	245	3-10	283	188	400	400
		54	4-15	86	---	257	162	3-13	171	77	400 ⁽¹⁾	400
		54	7-15	343	248	400	400	3-10	400	334	400 ⁽¹⁾	400 ⁽¹⁾
		54	9-15	400	400	400 ⁽¹⁾	400 ⁽¹⁾	---	---	---	---	---
1.0625	0.50	32	5-15	68	---	137	62	3-13	68	---	239	165
		32	7-15	137	62	205	130	3-10	171	96	342	267
		54	4-15	52	---	155	81	3-13	104	29	363	288
		54	7-15	207	132	311	236	3-10	259	184	400 ⁽¹⁾	400
		54	9-15	311	236	400	340	---	---	---	---	---
1.25	0.75	32	5-15	50	---	101	36	3-13	50	---	176	111
		32	---	---	---	---	---	3-10	126	61	251	187
		54	5-15	76	---	152	88	3-13	76	---	266	202
		54	7-13	152	88	228	164	3-10	190	126	381	316
		54	10-14	266	202	343	278	---	---	---	---	---
		70	10-15	362	297	400	400	---	---	---	---	---
1.5	0.75	32	5-15	35	---	71	---	3-13	35	---	124	69
		32	---	---	---	---	---	3-10	89	34	177	123
		54	5-15	54	---	107	53	3-13	54	---	188	133
		54	7-13	107	53	161	106	3-10	134	80	269	214
		54	10-14	188	133	242	187	---	---	---	---	---
		70	10-15	256	201	329	274	---	---	---	---	---
		70	12-18	---	---	400	347	---	---	---	---	---
2.0	0.75	32	5-15	20	---	41	---	3-13	20	---	71	29
		32	---	---	---	---	---	3-10	51	---	102	60
		54	5-15	31	---	62	20	3-13	31	---	108	66
		54	7-13	62	20	92	51	3-10	77	35	154	112
		54	10-14	108	66	139	97	---	---	---	---	---
		70	10-15	147	105	189	147	---	---	---	---	---
		70	12-18	---	---	230	189	---	---	---	---	---

NOTE: The maximum shutoff pressure when using Flexible Graphite Packing is defined by: $\Delta P = \text{Table Value} - [120/(\text{Port Diameter})^2]$

(1) These table values should not be modified by this formula and the maximum ΔP of 400 psi should be used for Flexible Graphite Packing.

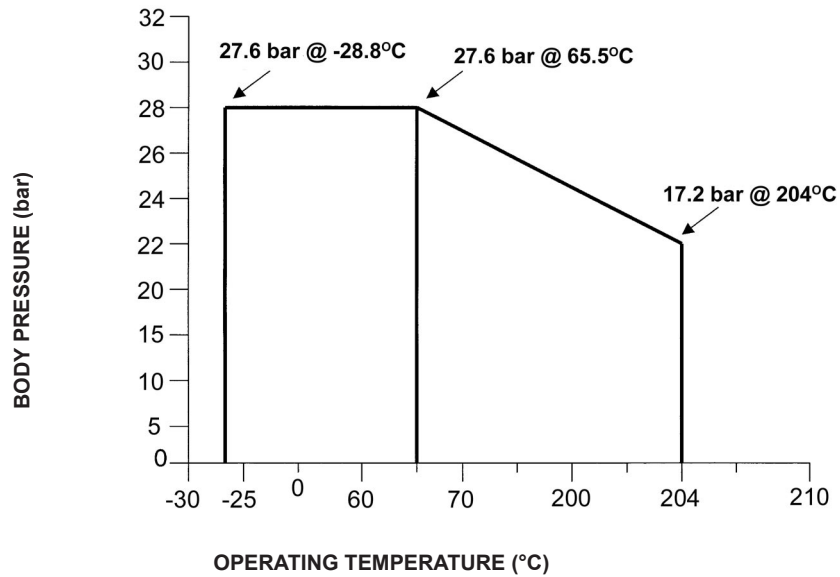
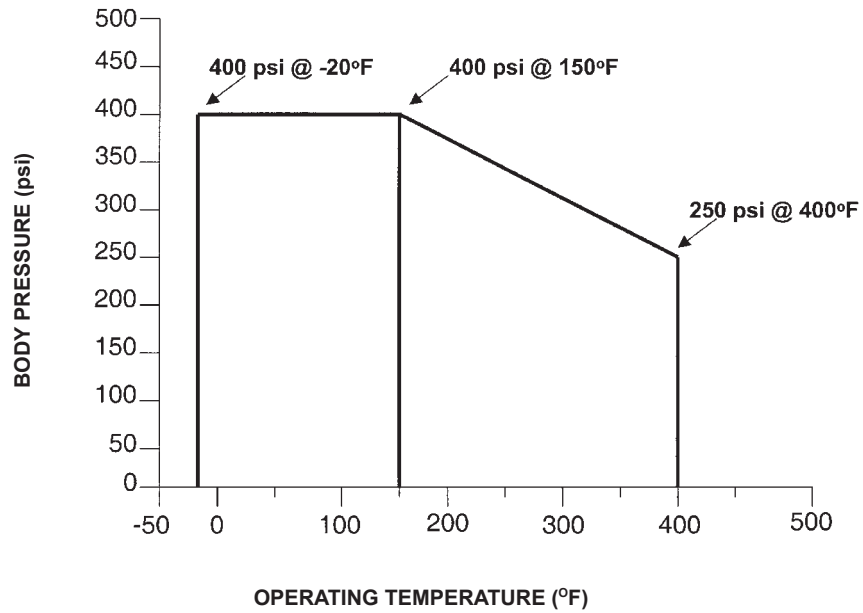
Table 9. ALLOWABLE PRESSURE DROPS (bar)

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.
6.3	12.7	32	0.34-1.0	27.58	27.58	---	---	0.20-0.89	27.58	---	27.58 ⁽¹⁾	---
9.5	12.7	32	0.34-1.0	27.58	19.17	---	27.58	0.20-0.89	27.58	19.17	27.58 ⁽¹⁾	27.58 ⁽¹⁾
20.6	12.7	32	0.34-1.0	7.79	---	15.58	9.10	0.20-0.89	7.7	---	21.09	20.75
		32	0.48-1.0	15.58	9.10	23.37	16.89	0.20-0.68	19.51	12.96	27.58	27.58
		54	0.28-1.0	5.92	---	17.71	11.16	0.20-0.89	11.79	5.30	27.58 ⁽¹⁾	27.58
		54	0.48-1.0	23.64	17.09	27.58	27.58	0.20-0.68	27.58	23.02	27.58 ⁽¹⁾	27.58 ⁽¹⁾
		54	0.62-1.0	27.58	27.58	27.58 ⁽¹⁾	27.58 ⁽¹⁾	---	---	---	---	---
27.0	12.7	32	0.34-1.0	4.68	---	9.44	4.27	0.20-0.89	4.68	---	16.47	11.37
		32	0.48-1.0	9.44	4.27	14.13	8.96	0.20-0.68	11.79	6.61	23.58	18.40
		54	0.28-1.0	3.58	---	10.68	5.58	0.20-0.89	7.17	1.99	25.02	19.85
		54	0.48-1.0	14.27	9.10	21.44	16.27	0.20-0.68	17.85	12.68	27.58 ⁽¹⁾	27.58
		54	0.62-1.0	21.44	16.27	27.58	23.44	---	---	---	---	---
31.8	19.1	32	0.34-1.0	3.44	---	6.96	2.48	0.20-0.89	3.44	---	12.13	7.65
		32	---	---	---	---	---	0.20-0.68	8.68	4.20	17.30	12.89
		54	0.34-1.0	5.24	---	10.48	6.06	0.20-0.89	5.24	---	18.34	13.92
		54	0.48-1.0	10.48	6.06	15.72	11.60	0.20-0.68	13.10	8.68	26.26	21.78
		54	0.68-0.96	18.34	16.92	23.64	19.17	---	---	---	---	---
		70	0.68-1.0	24.95	20.47	27.58	27.58	---	---	---	---	---
38.1	19.1	32	0.34-1.0	2.41	---	4.89	---	0.20-0.89	2.41	---	8.54	4.75
		32	---	---	---	---	---	0.20-0.68	6.13	2.34	12.20	8.48
		54	0.34-1.0	3.72	---	7.37	3.65	0.20-0.89	3.72	---	12.96	9.17
		54	0.48-0.89	7.37	3.65	11.10	7.30	0.20-0.68	9.23	5.51	18.54	14.75
		54	0.68-0.96	12.96	9.17	16.68	12.89	---	---	---	---	---
		70	0.68-1.0	17.65	13.85	22.68	18.89	---	---	---	---	---
		70	0.82-1.24	---	---	27.58	23.92	---	---	---	---	---
50.8	19.1	32	0.34-1.0	1.37	---	2.82	---	0.20-0.89	1.37	---	4.89	1.99
		32	---	---	---	---	---	0.20-0.68	3.51	---	7.03	4.13
		54	0.34-1.0	2.13	---	4.27	1.37	0.20-0.89	2.13	---	7.44	4.55
		54	0.48-0.89	4.27	1.37	6.34	3.51	0.20-0.68	5.30	2.41	10.61	7.72
		54	0.68-0.96	7.44	4.55	9.58	6.68	---	---	---	---	---
		70	0.68-1.0	10.13	7.23	13.03	10.13	---	---	---	---	---
		70	0.82-1.24	---	---	15.85	13.03	---	---	---	---	---

NOTE: The maximum shutoff pressure when using Flexible Graphite Packing is defined by: $\Delta P = \text{Table Value} - [120/(\text{Port Diameter})^2]$

(1) These table values should not be modified by this formula and the maximum ΔP of 400 psi should be used for Flexible Graphite Packing.

BODY PRESSURE-TEMPERATURE RATINGS (SOURCE: ASME B16.15)



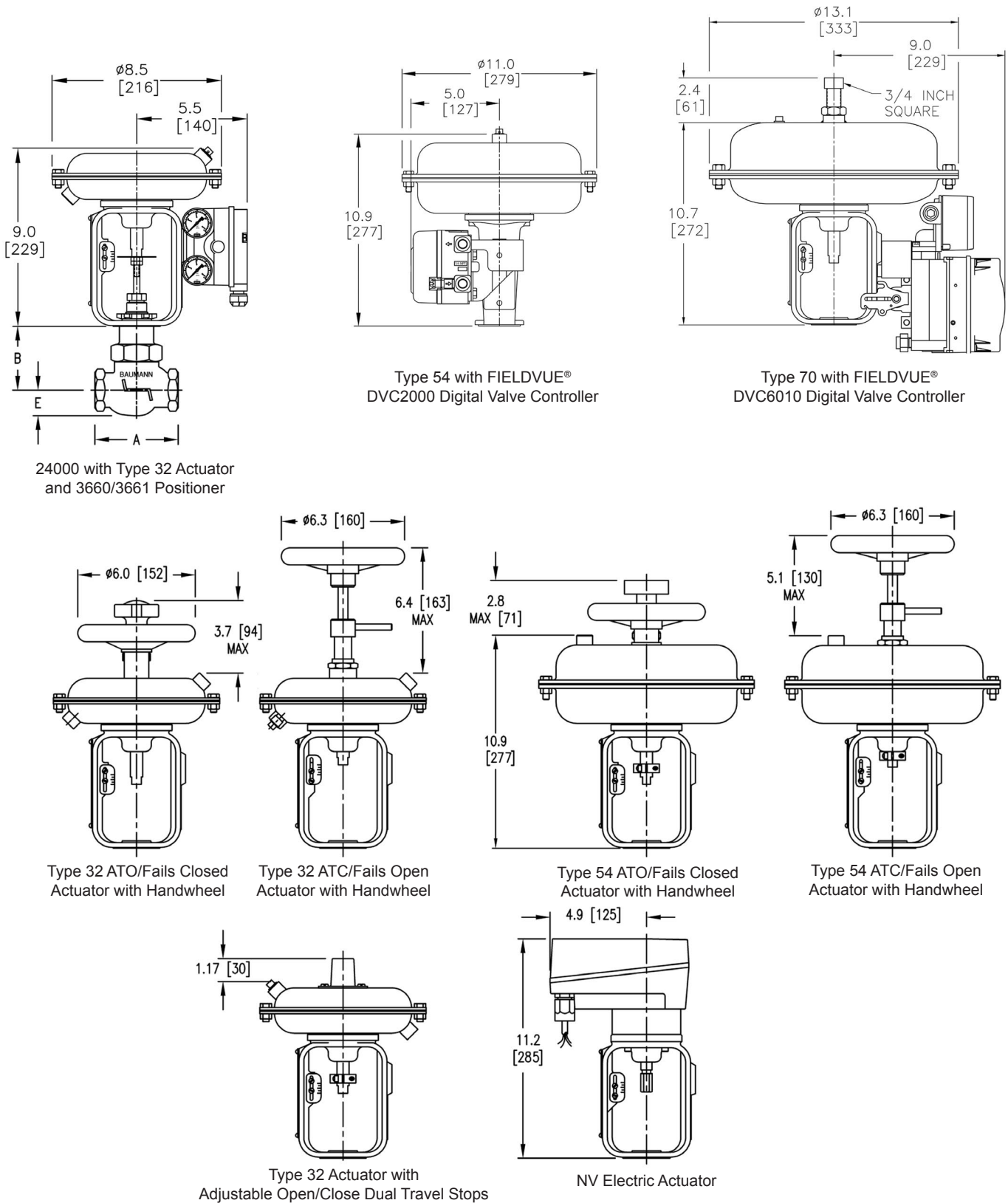


Figure 6. Dimension Drawings - inches [millimeters]

NOTE: Actuator removal requires 4.5 in (115 mm) vertical clearance.

WARNING: To avoid property damage or personal injury, you must purchase an actuator support when purchasing a FIELDVUE® Digital Valve Controller and mounting horizontally.

Table 10. DIMENSIONS

VALVE SIZE		"A" BODY*		"B" BONNET		E	
in	DN	in	mm	in	mm	in	mm
0.5	15	3.5	89	3.1	78	1.06	27
0.75	20	3.5	89	3.1	78	1.06	27
1.0	25	4.3	109	3.3	83	1.3	33
1.5	40	5.4	137	3.9	99	1.8	46
2.0	50	6.6	168	4.1	104	2.3	58

Table 11. VALVE ASSEMBLY WEIGHTS

VALVE SIZE		WEIGHT	
in	DN	lbs	kg
0.5	15	3.5	1.6
0.75	20	3.5	1.6
1.0	25	5.0	2.3
1.5	40	10.9	4.9
2.0	50	19.7	8.9

Table 12. ACTUATOR WEIGHTS

ACTUATOR TYPE	WEIGHTS	
	lbs	kg
32	10	4.5
54	25	11.3
70	34	15.4
MV1020	22	10
VA1020	30	14
NV24-MFT (non spring return)	3.3	1.5
NVF24-MFT or NVF24-MFT-E (spring return)	4	1.8

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Table 13. MODEL NUMBERING SYSTEM

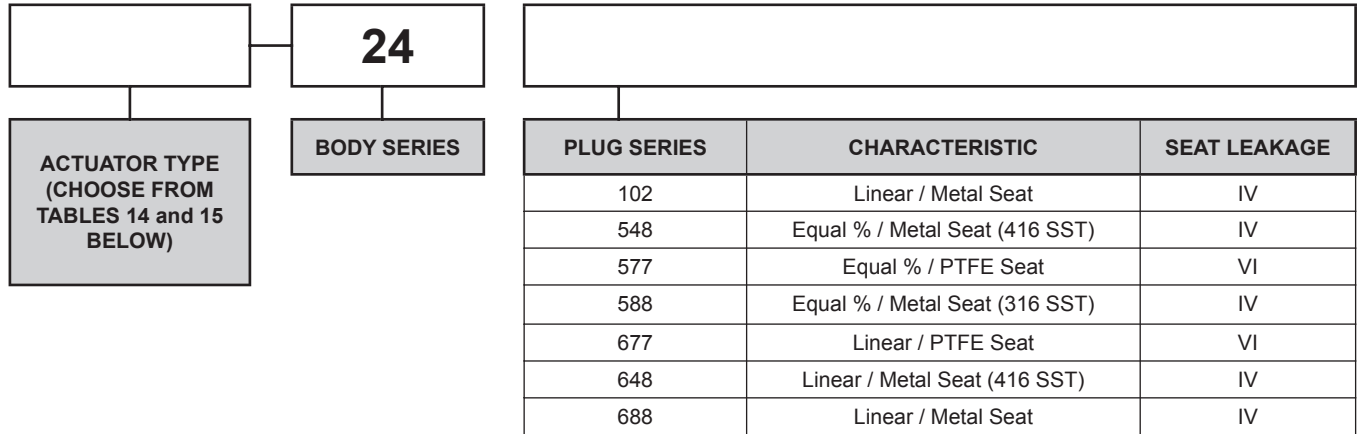


Table 14. PNEUMATIC ACTUATORS

ACTUATOR TYPE
32
54
70

Table 15. ELECTRIC ACTUATORS
(refer to Electric Actuator Bulletins for details)

ACTUATOR TYPE	TRAVEL
MV1020	N/A
VA1020	N/A
NV ⁽¹⁾	.50
NVF ⁽²⁾	.75
NVFE ⁽³⁾	

⁽¹⁾NV24-MFT = Non Spring Return

⁽²⁾NVF24-MFT = Spring Return - Fail Open

⁽³⁾NVFE24-MFT-E = Spring Return - Fail Closed

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