

Bulletin

24.1:LS
March 2003

24000 Series Little Scotty Bronze Control Valve

24000 Little Scotty Industrial Control Valve

Little Scotty industrial control valves are intended for general utility service in pressure, flow and temperature control applications.

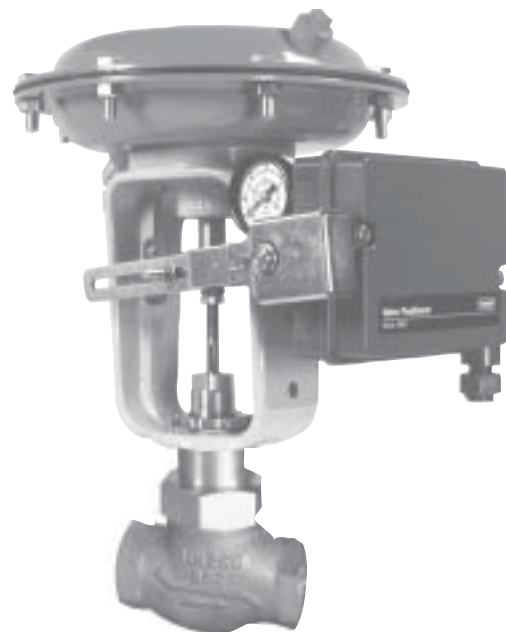
This compact control valve series is positioned to take advantage of the trend toward industrial grade requirements in a range of applications spanning from general utility to special applications. Industrial grade control valves exhibit low hysteresis and deadband, good control characteristics, tight shutoff, rugged construction, high performance packing and easy maintainability which translates into reduced maintenance costs, reduced process variability, and increased process availability.

FEATURES:

- Compact and light weight design reduces installed piping costs.
- Epoxy powder coated actuator with stainless steel fasteners for maximum corrosion resistance.
- High quality type 316 stainless steel trim materials.
- Superior dual plug and stem guiding provides increased stability during plug travel.
- Multiple trim capacity reductions available to meet changing process requirements.
- Multi-spring field reversible actuator permits direct operation from remote signal devices.
- Entire actuator and yoke can be removed from the valve assembly while maintaining packing integrity and increasing user safety.
- FIELDVUE[®] Digital Valve Controller available for remote calibration and diagnostics.



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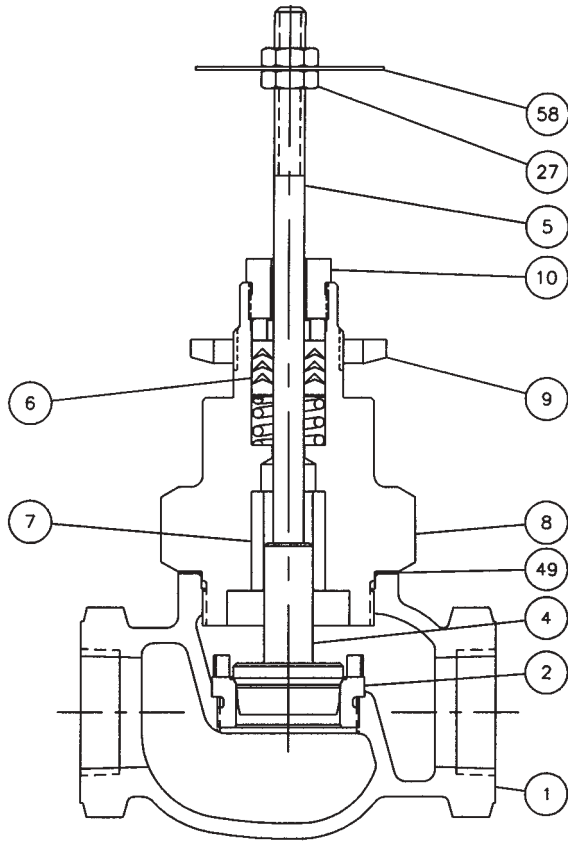
*24000 Series Little Scotty Control Valve
with Type 3660 Positioner*

BAUMANN

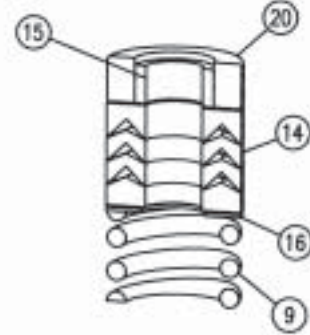

EMERSON
Process Management

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Little Scotty Body S/A
shown with Standard Packing



Spring Loaded PTFE
V-Ring Packing (Standard)

KEY NO.	DESCRIPTION	MATERIAL
9	Spring	ASTM A313 S30200
14	Packing Set	PTFE
15	Stem Guide	PTFE Lined Filament wound Fiberglass
16	Washer	ASTM A240 S31600
20	Spacer	ASTM A582 S30300

MATERIALS OF CONSTRUCTION

KEY NO.	DESCRIPTION	MATERIAL
1	BODY	ASTM B62 Grade C83600 Bronze
2	SEAT RING	ASTM A276 S31600 / CF8M (316 Stainless Steel)/ ASTM A582 S41600 optional
4	PLUG (Metal Seat) $C_v \leq 2.5$	ASTM A479 S21800 (Nitronic 60)/ ASTM A582 S41600 optional
	PLUG (Metal Seat) $C_v \geq 4.0$	ASTM A276 S31600 / ASTM A582 S41600 optional
	PLUG (Soft Seat)	ASTM A276 S31600 with PTFE Insert
5	STEM	ASTM A276 S31600
6	PACKING (Standard)	PTFE V-Ring
	PACKING (Optional)	ENVIRO-SEAL ^(R) ; Molded Graphite Ribbon (Grafoil)
7	BONNET BUSHING	JLON 2000 (proprietary plastic)
8	BONNET	ASTM B16 Alloy C36000 Brass or ASTM B21 C46400 (naval brass)
9	DRIVE NUT (Yoke)	ASTM A194 GR.8 S30400
10	PACKING FOLLOWER	ASTM A276 S31600
27	LOCKNUTS	18-8 Stainless Steel
49	BODY GASKET	Annealed Soft Copper
58	TRAVEL INDICATOR	ASTM A240 S30400

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Cv VALUES @ 100 PERCENT PLUG OPENING

VALVE SIZE		PORT DIAMETER	PLUG TRAVEL	PLUG SERIES				
				102	577	588	677	688
in	DN	in	in	Cv	Cv	Cv	Cv	Cv
1/2, 3/4, & 1	15, 20 & 25	0.25	0.50	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
1/2	15	0.8125	0.50	---	4, 6	4, 6	5	4, 6
3/4	20	0.8125	0.50	---	4, 7.5	4, 8	5	4, 8
1	25	0.8125	0.50	---	4, 8.5	4, 9	5	4, 9
		1.0625	0.50	---	13	13	---	13
1-1/2	40	1.250	0.75	---	20	10, 20	---	20
		1.500	0.75	---	10, 17, 28	10, 17, 28	10, 17	10, 17, 28
2	50	1.500	0.75	---	10, 17, 28	10, 17, 28	10, 17	10, 17, 28
		2.00	0.75	---	30	30, 50	30, 50	30, 50

TECHNICAL SPECIFICATIONS

NOMINAL SIZE	1/2", 3/4", 1", 1-1/2", & 2"		
BODY MATERIAL	ASTM B62 Grade C83600 Bronze(meets or exceeds ASME B16.15)		
CONNECTION	Screwed NPT		
NOMINAL PRESSURE	400 psi @ 150°F / 250 psi @ 400°F (ASME B16.15 Class 250)		
SEAT PLUG SEALING	Metal to Metal or PTFE Soft		
CHARACTERISTIC	Equal Percentage or Linear		
RANGEABILITY	Exceeds 50:1		
TEMPERATURE RANGE	-20° to 400°F		
SEAT LEAKAGE CL IV* (Metal Sealing - Standard)	0.01% of Rated Valve Capacity (Cv)		
SEAT LEAKAGE CL VI* (PTFE Sealing - Optional)	Nominal Port Diameter (inches)	bubbles/ minute	ml / minute
	≤ 1	1	.15
	1.5	2	.30
	2	3	.45

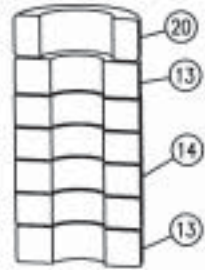
*Tested with air @ 50 psi differential.

ACTUATOR SPECIFICATIONS

TYPE	32, 54, 70 Multi-Spring Diaphragm (Single Acting)
NOMINAL SIZE	32, 54, 70 in ²
AIR FAILURE	32 and 54 Open or Closed ; 70 Closed only
TRAVEL	1/2 and 3/4 inch
AMBIENT TEMPERATURE RANGE	-20 to 160°F
MAXIMUM AIR PRESSURE	35 psig
DIAPHRAGM MATERIAL	Neoprene, Fabric Reinforced
SPRING CASES	Steel, Powder Epoxy-Coated with Stainless Steel Fasteners
YOKE	Ductile Iron, Powder Epoxy-Coated

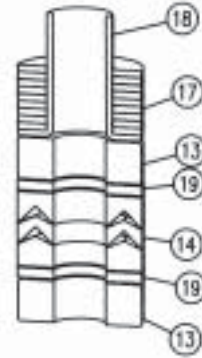
NOTE: Optional reinforced silicon elastomer diaphragm with viton o-ring actuator stem seal for high ambient temperature conditions (-20°F to 250°F is available with type 32 and 54 actuators ONLY).

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Molded Graphite (Grafoil) Packing (Optional)

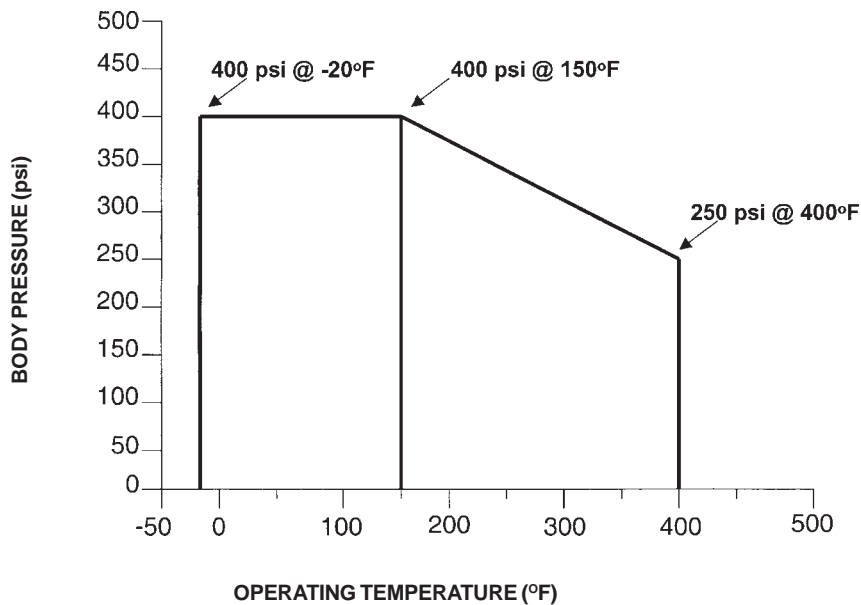
KEY NO.	DESCRIPTION	MATERIAL
13	Bushings	Carbon-Graphite
14	Packing Set	Graphite
20	Spacer	ASTM A582 S30300



ENVIRO-SEAL® Packing (Optional)

KEY NO.	DESCRIPTION	MATERIAL
13	Bushings	Carbon Graphite
14	Packing Set	PTFE
17	Belleville Springs	ASTM B637 N07718
18	Bushing	PEEK
19	Washers	PTFE, Filled Gylon

BODY PRESSURE-TEMPERATURE RATINGS (Meets or exceeds ASME B16.15)



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DIFFERENTIAL PRESSURE TABLE (All pressures stated in psig); based on standard PTFE V-Ring Packing

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 *	1/2	32	5-15	400 (1)	---	400 (1)	---	3-13	400 (1)	---	400 (1)(2)	---
0.375*	1/2	32	5-15	400	278	400 (1)	400 (1)	3-13	400	278	400 (1)(2)	400 (1)(2)
0.8125*	1/2	32	5-15	113	---	226	132	3-13	113	---	396	301
	1/2	32	7-15	226	132	339	245	3-10	283	188	400 (1)	400 (1)
	1/2	54	4-15	86	---	257	162	3-13	171	77	400 (1)(2)	400 (1)
	1/2	54	7-15	343	248	400 (1)	400	3-10	400	334	400 (1)(2)	400 (1)(2)
	1/2	54	9-15	400 (1)	400	400 (1)(2)	400 (1)(2)	---	---	---	---	---
1.0625	1/2	32	5-15	68	---	137	62	3-13	68	---	239	165
	1/2	32	7-15	137	62	205	130	3-10	171	96	342	267
	1/2	54	4-15	52	---	155	81	3-13	104	29	363	288
	1/2	54	7-15	207	132	311	236	3-10	259	184	400 (1)(2)	400 (1)
	1/2	54	9-15	311	236	400 (1)	340	---	---	---	---	---
1.25	3/4	32	5-15	50	---	101	36	3-13	50	---	176	111
	3/4	32	---	---	---	---	---	3-10	126	61	251	187
	3/4	54	5-15	76	---	152	88	3-13	76	---	266	202
	3/4	54	7-13	152	88	228	164	3-10	190	126	381	316
	3/4	54	10-14	266	202	343	278	---	---	---	---	---
	3/4	70	10-15	362	297	400	400	---	---	---	---	---
1.5	3/4	32	5-15	35	---	71	---	3-13	35	---	124	69
	3/4	32	---	---	---	---	---	3-10	89	34	177	123
	3/4	54	5-15	54	---	107	53	3-13	54	---	188	133
	3/4	54	7-13	107	53	161	106	3-10	134	80	269	214
	3/4	54	10-14	188	133	242	187	---	---	---	---	---
	3/4	70	10-15	256	201	329	274	---	---	---	---	---
	3/4	70	12-18	---	---	400	347	---	---	---	---	---
2.0	3/4	32	5-15	20	---	41	---	3-13	20	---	71	29
	3/4	32	---	---	---	---	---	3-10	51	---	102	60
	3/4	54	5-15	31	---	62	20	3-13	31	---	108	66
	3/4	54	7-13	62	20	92	51	3-10	77	35	154	112
	3/4	54	10-14	108	66	139	97	---	---	---	---	---
	3/4	70	10-15	147	105	189	147	---	---	---	---	---
	3/4	70	12-18	---	---	230	189	---	---	---	---	---

***CAUTION! THE 3/4 INCH BRONZE IS LIMITED TO A MAXIMUM COLD WORKING PRESSURE OF 250 psi.**

NOTE A: The maximum shutoff pressure when using ENVIRO-SEAL® Packing is defined by: $\Delta P = \text{Table Value} - [25/(\text{Port Diameter})^2]$

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

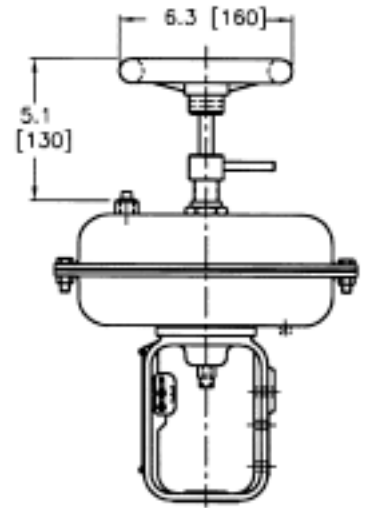
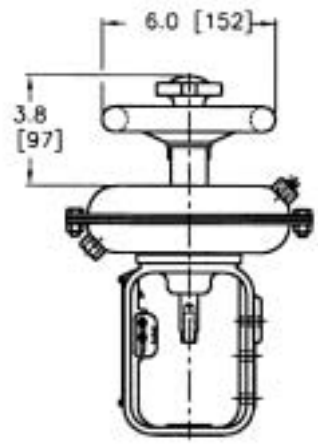
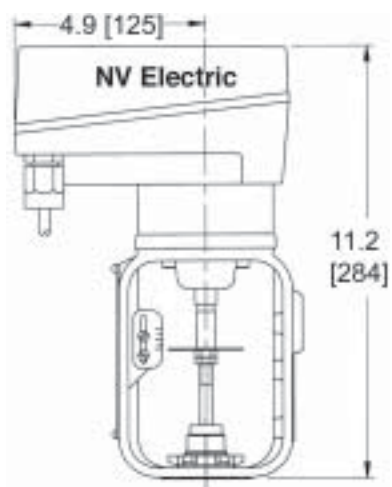
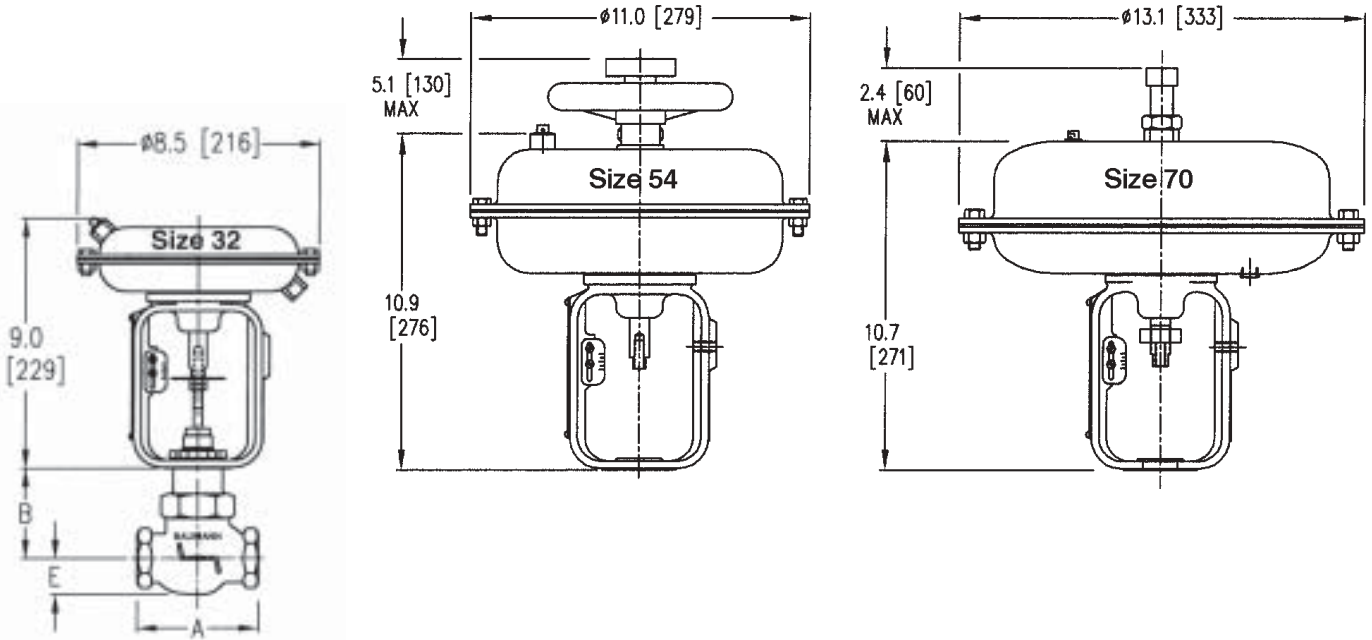
NOTE B: The maximum shutoff pressure when using Grafoil Packing is defined by: $\Delta P = \text{Table Value} - [120/(\text{Port Diameter})^2]$

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

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DIMENSIONAL DRAWINGS - inch[mm]



Top Mounted Handwheel
for Fail Closed Actuation
on Size 32 or 54

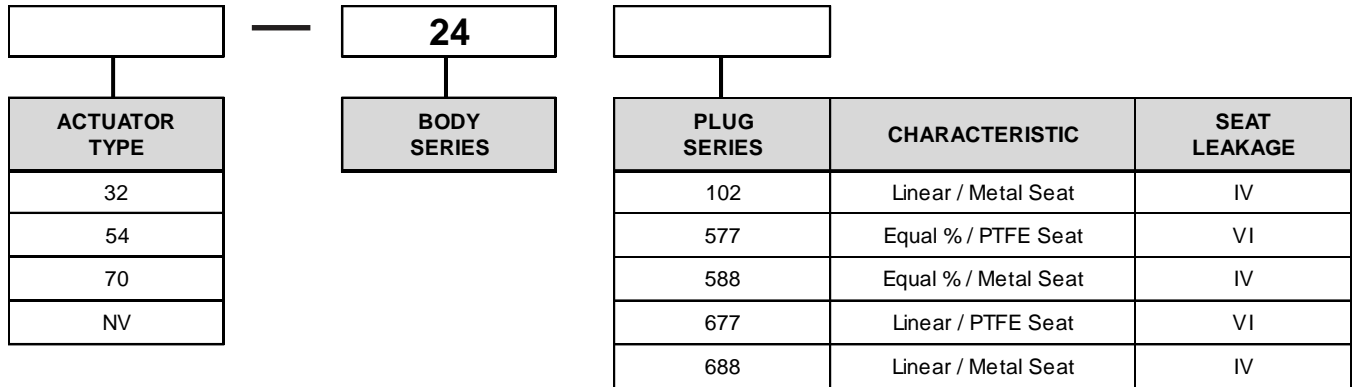
Top Mounted Handwheel
for Fail Open Actuation
on Size 32 or 54

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MODEL NUMBERING SYSTEM



VALVE DIMENSIONS (Actuator removal requires 4-1/2 inch [115mm] vertical clearance.)

VALVE SIZE		A VALVE BODY		B BONNET		E	
in	DN	in	mm	in	mm	in	mm
1/2, 3/4	15, 20	3.5	89	3.1	78	1.0	25
1	25	4.3	109	3.3	83	1.3	33
1-1/2	40	5.3	135	3.9	98	1.9	48
2	50	6.6	168	4.1	104	2.3	58

VALVE ASSEMBLY AND ACTUATOR WEIGHTS

VALVE SIZE		WEIGHTS		ACTUATOR TYPE	WEIGHTS	
in	DN	lbs	kg		lbs	kg
1/2	15	3.5	1.6	32	10	4.5
3/4	20	3.5	1.6	54	25	11.3
1	25	5.0	2.3	70	34	15.4
1-1/2	40	10.9	4.9	NV24-MFT (non spring return)	3.3	1.5
2	50	19.7	8.9	NVF24-MFT or NVF24-MFT-E (spring return)	4	1.8

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