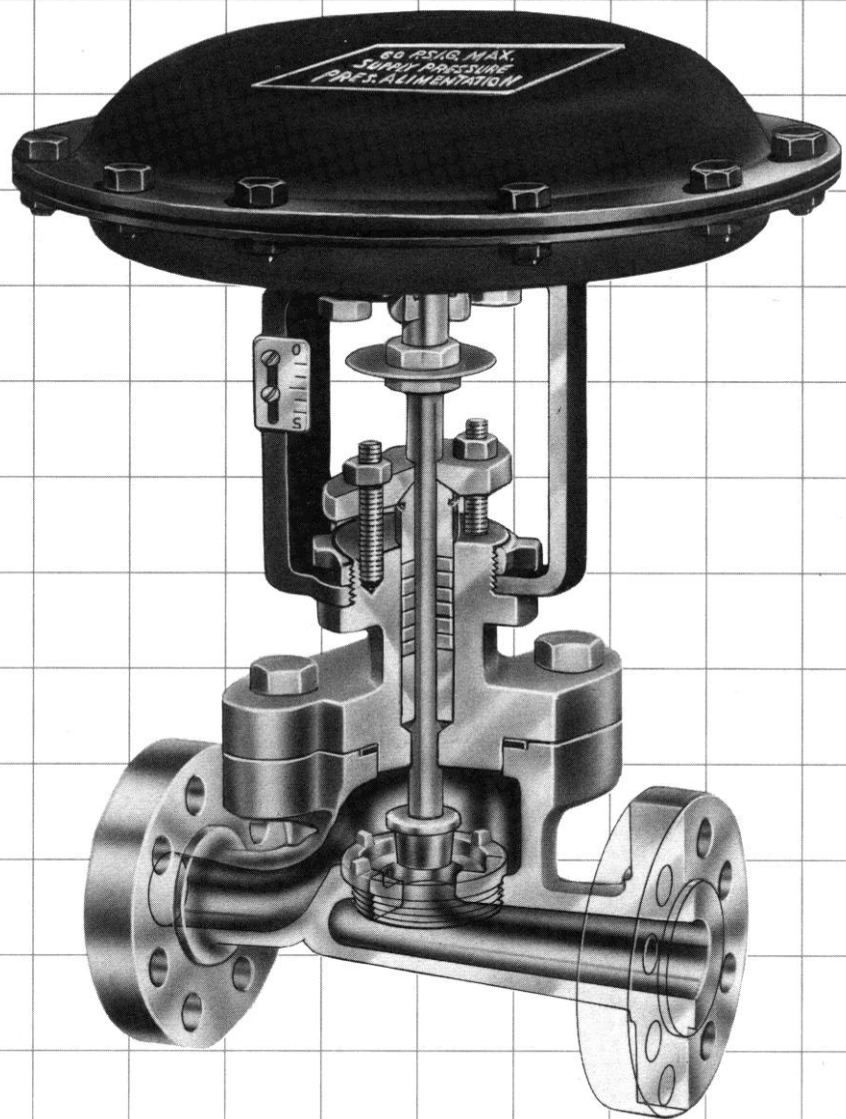


25000 Series Control Valve

A Complete Line of Rugged
Stem Guided Single Port
Self-Draining Low Profile
And Compact Globe Valves



Masoneilan

DRESSER

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Foreword

25000 Series single ported, self-draining, stem guided valve is designed with built-in versatility that makes it well-suited to handle a wide variety of process applications. Standard features include:

Stem Guiding

Rugged, stem guiding provides support to ensure plug stability.

Capacity

Streamlined design provides increased flow capacity.

Self-draining

Elimination of cavities provides self-draining feature which prevents sedimentation.

Reduced Capacity

In addition to full area trim, a series of reduced trim is available in all sizes to provide a wide flow range capability in all valve sizes.

Trim Type

Standard construction offers a threaded seat ring. Contoured plugs are available with equal percent or linear characteristics.

Pressure Drop Capability

A variety of actuator sizes to handle low to high pressure drop requirements.

Allowable pressure drops shown on all tables reflect actuator capability for the leakage class.

Proper application requires consideration with regards to cavitation, noise, velocity, etc. Refer to Masoneilan sizing and noise manuals.

Tight Shutoff

Class IV leakage is standard. Optional construction meets ANSI/FCI 70.2 Class VI.

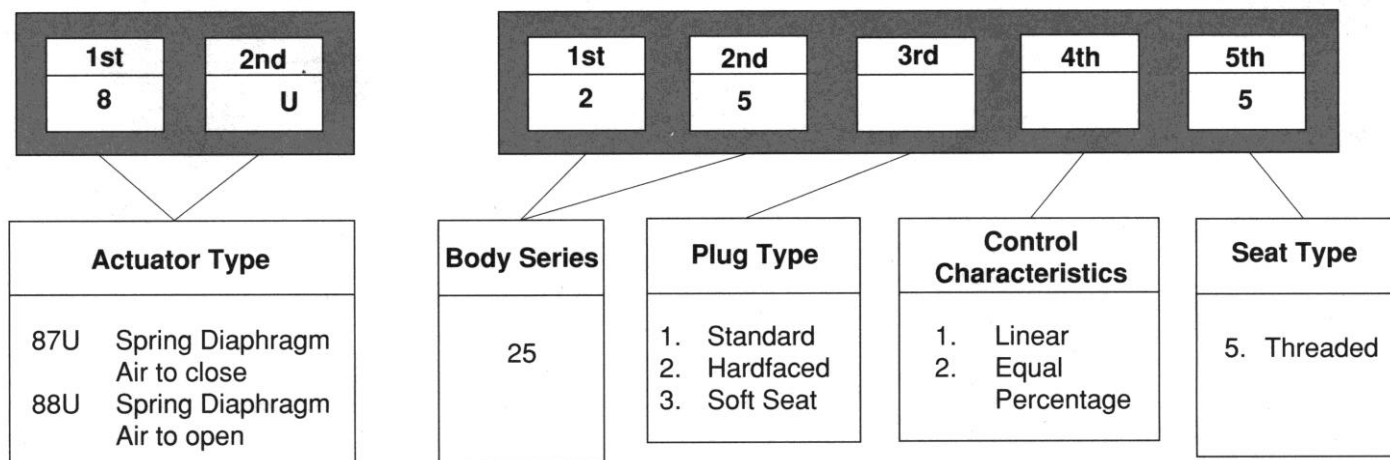
Actuator

Low profile lightweight multiple spring construction.

Environmental Packing

Low emission LE Packing is available to assure compliance with the Clean Air Act.

Numbering System



General Data

• Body

rating: ANSI Class 150 & 300
 connection: raised face flange
 threaded (NPT) (3/4"-2")
 socket weld (3/4"-2")
 type: high capacity globe
 self-draining
 flow direction: flow to open
 temperature: -50°F to +450°F

• Bonnet

type: bolted

• Body and Bonnet

materials: carbon steel
 316 stainless steel

• Trim

plug type: unbalanced contoured
 seat ring: threaded
 guide: stem guided
 capacity: full area
 reduced capacity in all sizes
 Cv ratio: 50:1
 characteristic: linear
 equal percentage

• Actuator

type: spring diaphragm
 handwheel: optional, top mounted

C_v and F_L versus Travel

Contoured Trim

Flow Direction: Flow to Open

Flow Characteristic: **EQUAL PERCENTAGE**

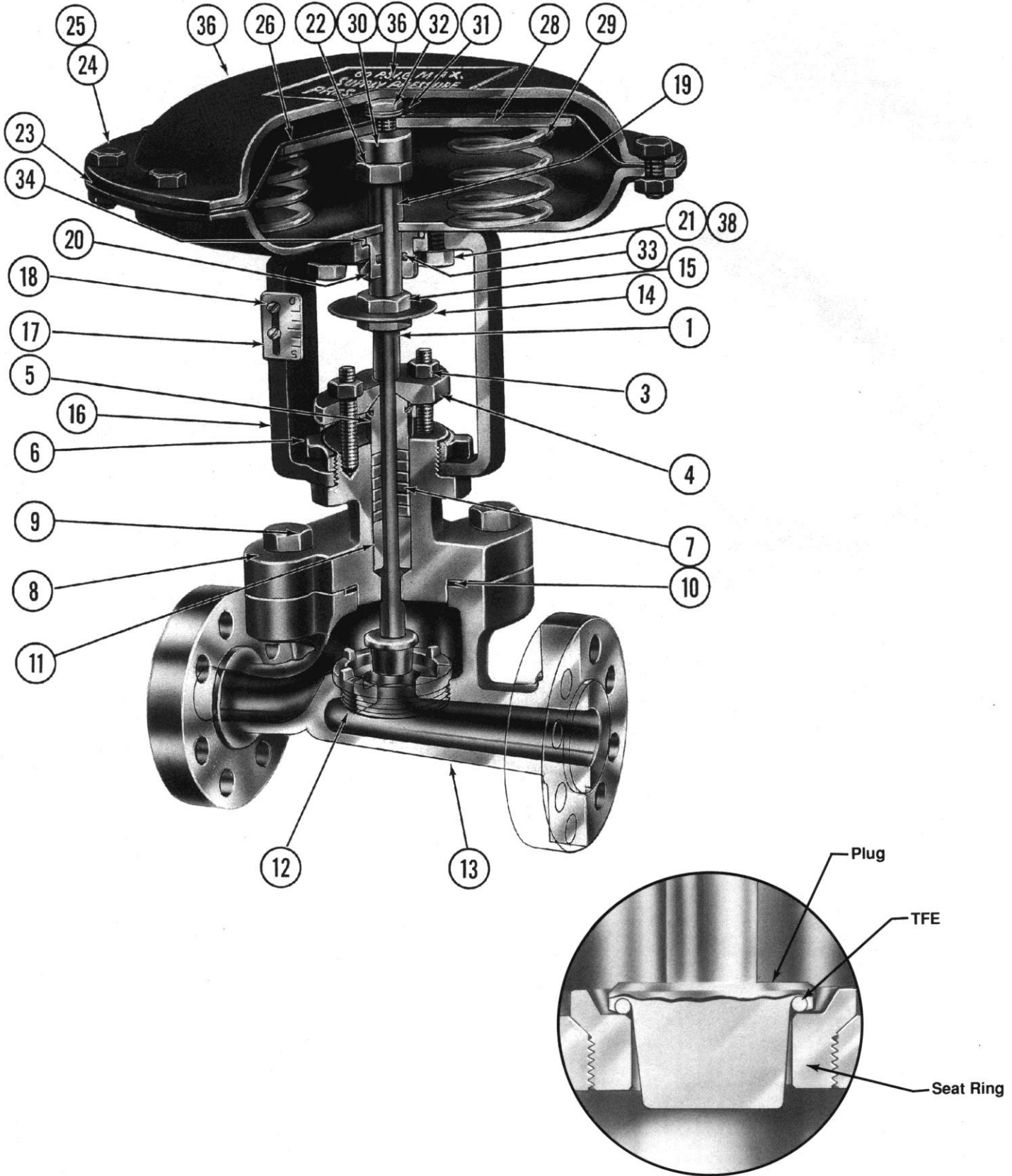
Percent of Travel			10	20	30	40	50	60	70	80	90	100
F _L			.94	.93	.92	.91	.90	.89	.88	.87	.86	.85
Valve Size (in.)	Orifice Diameter (in.)	Travel (in.)	Rated C _v									
3/4 & 1	.500	0.8	-	0.09	0.15	0.23	0.31	0.43	0.57	0.80	0.98	1.2
	.500	0.8	-	0.09	0.15	0.23	0.33	0.50	0.69	0.96	1.30	1.6
	.500	0.8	-	0.19	0.30	0.42	0.57	0.77	1.10	1.50	2.10	2.7
	1.250	0.8	0.03	0.07	0.18	0.29	0.48	0.72	1.20	1.90	2.80	4.0
	1.250	0.8	0.18	0.33	0.56	0.80	1.20	1.80	2.60	3.90	5.80	8.0
	1.250	0.8	0.78	1.60	2.30	3.00	3.80	4.50	5.70	11.00	16.00	20
1 1/2	.500	0.8	-	0.09	0.15	0.23	0.31	0.43	0.57	0.80	0.98	1.2
	.500	0.8	-	0.09	0.15	0.23	0.33	0.50	0.69	0.96	1.30	1.6
	.500	0.8	-	0.19	0.30	0.42	0.57	0.77	1.10	1.50	2.10	2.7
	1.250	0.8	0.03	0.07	0.18	0.29	0.48	0.72	1.20	1.90	2.80	4.0
	1.250	0.8	0.18	0.33	0.56	0.80	1.20	1.80	2.60	3.90	5.80	8.0
	1.250	0.8	0.78	1.60	2.30	3.00	3.80	4.50	5.70	11.00	16.00	20.0
	1.750	0.8	1.30	2.50	4.00	5.90	7.90	12.00	19.00	29.00	37.00	40
2	.500	0.8	-	0.09	0.15	0.23	0.31	0.43	0.57	0.80	0.98	1.2
	.500	0.8	-	0.09	0.15	0.23	0.33	0.50	0.69	0.96	1.30	1.6
	.500	0.8	-	0.19	0.30	0.42	0.57	0.77	1.10	1.50	2.10	2.7
	1.250	0.8	0.03	0.07	0.18	0.29	0.48	0.72	1.20	1.90	2.80	4.0
	1.250	0.8	0.18	0.33	0.56	0.80	1.20	1.80	2.60	3.90	5.80	8.0
	1.250	0.8	0.78	1.60	2.30	3.00	3.80	4.50	5.70	11.00	16.00	20.0
	1.750	0.8	1.30	2.50	4.00	5.90	7.90	12.00	19.00	29.00	37.00	40.0
	1.875	0.8	1.50	2.80	4.30	6.40	10.00	16.00	24.00	34.00	42.00	50
3	1.875	0.8	1.80	3.10	4.50	6.50	8.90	16.00	25.00	36.00	46.00	53.0
	3.500	0.8	4.30	18.00	37.00	57.00	77.00	94.00	109.00	121.00	128.00	135
4	1.875	0.8	1.80	3.10	4.50	6.50	8.90	16.00	25.00	36.00	46.00	53.0
	3.500	0.8	4.30	18.00	37.00	57.00	77.00	94.00	109.00	121.00	128.00	135.0
	3.750	0.8	9.40	28.00	45.00	62.00	78.00	94.00	111.00	129.00	144.00	160

Note: C_v values are averaged and can vary in accordance with ISA Standard S75.11.

C_v and F_L versus Travel**Contoured Trim****Flow Direction: Flow to Open****Flow Characteristic: LINEAR**

Percent of Travel			10	20	30	40	50	60	70	80	90	100
F _L			.94	.93	.92	.91	.90	.89	.88	.87	.86	.85
Valve Size (in.)	Orifice Diameter (in.)	Travel (in.)	Rated C _v									
3/4 & 1	.500	0.8	-	0.15	0.26	0.37	0.48	0.62	0.75	0.94	1.10	1.2
	.500	0.8	0.16	0.35	0.52	0.64	0.84	0.99	1.20	1.30	1.50	1.7
	.500	0.8	0.20	0.60	0.80	1.10	1.30	1.60	1.90	2.10	2.40	2.7
	1.250	0.8	0.60	1.00	1.50	1.80	2.20	2.60	3.00	3.50	3.80	4.0
	1.250	0.8	1.30	2.20	2.90	3.70	4.60	5.40	6.30	7.00	7.60	8.0
	1.250	0.8	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20
1 1/2	.500	0.8	-	0.15	0.26	0.37	0.48	0.62	0.75	0.94	1.10	1.2
	.500	0.8	0.16	0.35	0.52	0.64	0.84	0.99	1.20	1.30	1.50	1.7
	.500	0.8	0.20	0.60	0.80	1.10	1.30	1.60	1.90	2.10	2.40	2.7
	1.250	0.8	0.60	1.00	1.50	1.80	2.20	2.60	3.00	3.50	3.80	4.0
	1.250	0.8	1.30	2.20	2.90	3.70	4.60	5.40	6.30	7.00	7.60	8.0
	1.250	0.8	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.0
	1.750	0.8	4.40	8.80	13.00	17.00	21.00	25.00	29.00	33.00	37.00	40
2	.500	0.8	-	0.15	0.26	0.37	0.48	0.62	0.75	0.94	1.10	1.2
	.500	0.8	0.16	0.35	0.52	0.64	0.84	0.99	1.20	1.30	1.50	1.7
	.500	0.8	0.20	0.60	0.80	1.10	1.30	1.60	1.90	2.10	2.40	2.7
	1.250	0.8	0.60	1.00	1.50	1.80	2.20	2.60	3.00	3.50	3.80	4.0
	1.250	0.8	1.30	2.20	2.90	3.70	4.60	5.40	6.30	7.00	7.60	8.0
	1.250	0.8	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.0
	1.750	0.8	4.40	8.80	13.00	17.00	21.00	25.00	29.00	33.00	37.00	40.0
	1.875	0.8	5.60	12.00	17.00	23.00	29.00	34.00	39.00	42.00	45.00	50
3	1.875	0.8	5.20	11.00	16.00	21.00	26.00	31.00	38.00	44.00	49.00	53.0
	3.500	0.8	23.00	42.00	59.00	76.00	92.00	105.00	115.00	122.00	129.00	135
4	1.875	0.8	5.20	11.00	16.00	21.00	26.00	31.00	38.00	44.00	49.00	53.0
	3.500	0.8	23.00	42.00	59.00	76.00	92.00	105.00	115.00	122.00	128.00	135.0
	3.750	0.8	20.00	44.00	63.00	79.00	96.00	115.00	130.00	143.00	154.00	160

Note: C_v values are averaged and can vary in accordance with ISA Standard S75.11.



Materials of Construction

Ref. No.	Temperature Range	-50°F	-20°F	+450°F
		Standard Materials (<i>Optional Materials</i>)		
1	Plug/Stem Assembly	316 St. St. ASTM A479 TY 316		
		316 St. St. ASTM A479 TY 316 with Hardfacing		
		316 St. St. ASTM A479 TY 316 with TFE insert		
2	Packing Flange Stud	304 St. St. ASTM A193 Gr B8 CL 1		
3	Packing Flange Nut	304 St. St. ASTM A194 Gr 8		
4	Packing Flange	Carbon Steel ASTM A668 CL B Zinc Plated		
5	Packing Follower	304 St. St. ASTM A479 TY 304		
6	Drive Nut	Steel SAE 1117		
7	Packing	Crane 285K (<i>Optional LE Packing</i>)		
8	Bonnet		Carbon Steel ASTM A216 Gr WCC	
13	Body	316 St. St. ASTM A351 Gr CF8M		
9	Hex Head Cap Screws	304 St. St. ASTM A320		Alloy Steel ASTM A193 Gr B7
		Gr B8 CL II		
10	Body Gasket	Synthetic Non-Asbestos Fiber		
11	Guide Bushing	Nitronic 60		
12	Seat Ring	316 St. St. ASTM A479 TY 316		
		316 St. St. ASTM A479 TY 316 with Hardfacing		
14	Indicator	Stainless Steel		
15	Hex Jam Nuts	Carbon Steel		
16	Yoke	Carbon Steel		
17	Indicator Plate	Aluminum		
18	Machine Screw	Stainless Steel		
19	Actuator Stem	Stainless Steel		
20	Bushing	Brass		
21	Hex Nut	Carbon Steel		
22	Stem Spacer	Carbon Steel		
23	Lower Case S/A	Carbon Steel		
24	Hex Nut	Carbon Steel		
25	Hex Head Cap Screw	Carbon Steel		
26	Diaphragm	Buna-N w/Nylon		
27	Upper Case	Carbon Steel		
28	Diaphragm Plate	Carbon Steel		
29	Spring	Carbon Steel Wire		
30	Washer	Carbon Steel		
31	Spacer	Carbon Steel		
32	Hex Head Cap Screw	Carbon Steel		
33	O-Ring	Buna-N		
34	O-Ring	Buna-N		
35	Actuator Vent Plug (not shown)	Polyethylene		
36	Information Plate	Aluminum		
37	Wiper (not shown)	Polyurethane		
38	Lockwasher	Carbon Steel		
39	Washer (not shown)	Carbon Steel		
Ref. No.	Temperature Range	▲ -50°F	▲ -20°F	▲ +450°F

Allowable Pressure Drops (psig)

Flow to Open

Contoured Trim

Body Rating: ANSI Class 150 and 300

Leakage: Per ANSI/FCI 70.2, Class IV

Body Size (in.)	Travel (in.)	Rated Cv	Actuator Size	Air to Open		Air to Close (3-15 psi Bench Range) Supply Pressure (psig)									
				3-15 (psig)	6-30 (psig)	20	25	30	35	40	45	50	55		
3/4 & 1	0.8	20, 8, 4	7	70	265	145	415	685	750	750	750	750	750		
			12	155	430	290	700	750	750	750	-	-	-		
			17	240	605	425	750	750	750	-	-	-	-		
		2.7, 1.6, 1.2	7	750	750	750	750	750	750	750	750	750	750		
1 1/2	0.8	40	7	17	115	55	190	330	465	605	740	750	750		
			12	60	200	125	335	545	750	750	-	-	-		
			17	105	290	195	475	750	750	-	-	-	-		
		20, 8, 4	7	70	265	145	415	685	750	750	750	750	750		
			12	155	430	290	700	750	750	750	-	-	-		
			17	240	605	425	750	750	750	-	-	-	-		
		2.7, 1.6, 1.2	7	750	750	750	750	750	750	750	750	750	750		
		2	0.8	50	7	10	95	40	160	280	400	520	640	750	750
12	45				170	105	290	470	655	750	-	-	-		
17	85				249	165	410	650	750	-	-	-	-		
40	7			17	115	55	190	330	465	605	740	750	750		
	12			60	200	125	335	545	750	750	-	-	-		
	17			105	290	195	457	750	750	-	-	-	-		
20, 8, 4	7			70	265	145	417	656	750	750	750	750	750		
	12			155	430	290	700	750	750	750	-	-	-		
	17			140	605	425	750	750	750	-	-	-	-		
2.7, 1.6, 1.2	7			750	750	750	750	750	750	750	750	750	750		
3	0.8			135	7	-	9	-	25	60	95	130	165	200	230
					12	-	30	12	65	115	170	220	-	-	-
					17	-	50	25	95	165	235	-	-	-	-
		53	7	-	85	35	155	275	390	510	630	750	750		
			12	39	160	95	280	465	645	750	-	-	-		
			17	75	240	155	400	640	750	-	-	-	-		
4	0.8	160	7	-	-	-	20	50	80	110	140	170	200		
			12	-	24	-	50	100	145	190	-	-	-		
			17	-	44	20	80	145	200	-	-	-	-		
		135	7	-	9	-	25	60	95	130	165	200	230		
			12	-	30	12	65	115	170	220	-	-	-		
			17	-	50	25	95	165	235	-	-	-	-		
		53	7	-	85	35	155	275	390	510	630	750	750		
			12	39	160	95	280	465	645	750	-	-	-		
			17	75	240	155	400	640	750	-	-	-	-		

NOTE: INLET PRESSURE MUST NOT EXCEED THE ANSI RATING FOR THE SELECTED PRESSURE CLASS.
WHERE A PRESSURE DROP IS NOT STATED, THIS COMBINATION MUST NOT BE USED.

Allowable Pressure Drops (psig)

Flow to Open

Contoured Trim

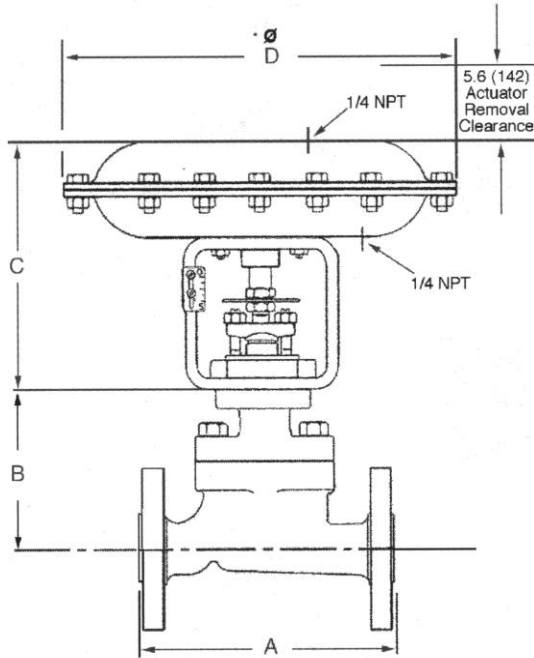
Body Rating: ANSI Class 150 and 300

Leakage: Per ANSI/FCI 70.2, Class VI

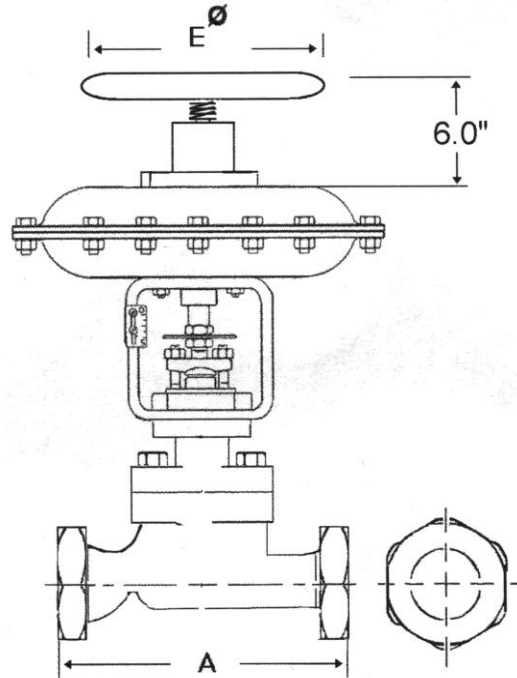
Body Size (in.)	Travel (in.)	Rated Cv	Actuator Size	Air to Open		Air to Close (3-15 psi Bench Range) Supply Pressure (psig)									
				3-15 (psig)	6-30 (psig)	20	25	30	35	40	45	50	55		
3/4 & 1	0.8	20, 8, 4	7	-	200	80	350	620	750	750	750	750	750		
			12	90	365	225	635	750	750	750	-	-	-		
			17	180	540	360	750	750	750	-	-	-	-		
		2.7, 1.6, 1.2	7	655	750	750	750	750	750	750	750	750	750		
1 1/2	0.8	40	7	-	70	10	145	285	420	555	695	750	750		
			12	14	155	80	290	500	710	750	-	-	-		
			17	55	245	150	430	705	750	-	-	-	-		
		20, 8, 4	7	-	200	80	350	620	750	750	750	750	750	750	
			12	90	365	225	635	750	750	750	-	-	-		
			17	180	540	360	750	750	750	-	-	-	-		
		2.7, 1.6, 1.2	7	655	750	750	750	750	750	750	750	750	750		
		2	0.8	50	7	-	50	-	120	240	360	480	595	715	750
12	-				125	65	345	430	610	750	-	-	-		
17	40				200	125	365	610	750	-	-	-	-		
40	7			-	70	10	145	285	420	555	695	750	750		
	12			14	155	80	290	500	710	750	-	-	-		
	17			55	245	150	430	705	750	-	-	-	-		
20, 8, 4	7			-	200	80	350	620	750	750	750	750	750	750	
	12			90	365	225	635	750	750	750	-	-	-		
	17			180	540	360	750	750	750	-	-	-	-		
2.7, 1.6, 1.2	7			655	750	750	750	750	750	750	750	750	750		
3	0.8			135	7	-	-	-	-	40	70	105	140	175	210
					12	-	7	-	40	90	145	195	-	-	-
					17	-	30	-	75	145	215	-	-	-	-
				53	7	-	45	-	110	230	350	470	590	710	750
		12	-		115	55	235	420	605	750	-	-	-		
		17	35		195	115	355	600	750	-	-	-	-		
4	0.8	160	7	-	-	-	-	30	60	90	120	150	180		
			12	-	-	-	30	75	120	170	-	-	-		
			17	-	20	-	60	120	180	-	-	-	-		
		135	7	-	-	-	-	40	70	105	140	175	210		
			12	-	7	-	40	90	146	195	-	-	-		
			17	-	30	-	75	145	215	-	-	-	-		
		53	7	-	45	-	110	230	350	470	590	710	750		
			12	-	115	55	235	420	605	750	-	-	-		
			17	35	195	115	355	600	750	-	-	-	-		

NOTE: INLET PRESSURE MUST NOT EXCEED THE ANSI RATING FOR THE SELECTED PRESSURE CLASS. WHERE A PRESSURE DROP IS NOT STATED, THIS COMBINATION MUST NOT BE USED.

Dimensions (in.)



Raised Face Flange



**Socket Weld or Threaded (NPT)
Shown with Optional Top Mounted Handwheel**

Body Dimensions (In.)

Valve Size (in.)	A			B	Actuator Size								
	Rating/Connections				C			D			E		
	SW & THD	RF 150	RF 300		7	12	17	7	12	17	7	12	17
3/4	8.25	7.25	7.75	4.53	9.25	10.25	11.50	13.00	15.00	17.50	9.00	12.00	12.00
1	7.75	7.25	7.75	4.53									
1 1/2	9.25	8.75	9.25	4.75									
2	10.50	10.00	10.50	4.85									
3	----	11.75	12.50	6.61									
4	----	13.88	14.50	7.04									

Weights

Body/Actuator Weights (lbs)

Valve Size (in.)	Actuator Size		
	7	12	17
³ / ₄ & 1	55	70	90
1 ¹ / ₂	64	78	98
2	67	82	102
3	125	140	160
4	151	165	185

Body/Actuator Cubage (cu. ft.)

Valve Size (in.)	Actuator Size		
	7	12	17
³ / ₄ & 1	2.5	2.5	2.5
1 ¹ / ₂	2.5	2.5	7.0
2	2.5	7.0	7.0
3	7.0	10.0	10.0
4	10.0	10.0	10.0

Note: For top-mounted handwheel add 15 lbs

Accessories and Options

4600B and 4700B Series Positioner
(See Specification Data CS2004)
Instrument Signals 3-15 and 6-30 psig

I/PEX 9000 Electropneumatic Transducer
(See Specification Data CS9000)
Input Range 4-20 mA
Split range up to 3 times

8012 Electropneumatic Valve Positioner
(See Specification Data CS5000)
Instrument Signals 10-50 mA, 104 ohms
4-20 mA, 173 ohms

80-4 or 80-40 Airset
(See Specification Data CY7800)
77-6 or 77-60 Lockup Valve
(See Specification Data CY7700)
2" Gauge 0-30 psi

7000 Electropneumatic Transducer
(See Specification Data CS6700)
Input 4-20 mA (100 mA max.)

Output 3-15 psi
6-30 psi
(min. output is less than 0.2 psi)

496 Rotary Electric Switches
496-1 (1-Switch SPDT)
496-2 (2-Switches SPDT)
496-3 Position Transmitter
496-6 (1-Switch DPDT)
496-7 (2-Switches DPDT)
(See Specification Data CS7000)

USEFUL EQUIVALENTS U.S. CUSTOMARY UNITS

Specific gravity of air G = 1 (reference for gases)

Specific gravity of water = 1 (reference for liquids)

U.S. gallon of water = 8.33 lbs @ std. cond.

1 cubic foot of water = 62.34 lbs @ std. cond. (= density)

1 cubic foot of water = 7.48 gallons

1 cubic foot of air = 0.076 lbs @ std. cond. (= air density)

Air specific volume = 1/density = 13.1 cubic feet/lb

Air molecular weight M = 29

G of any gas = density of gas/0.076

G of any gas = molecular wt. of gas/29

$$G \text{ of gas at flowing temp.} = \frac{G \times 520}{T + 460}$$

Standard conditions (U.S. customary) are at 14.69 psia & 60°F

Flow conversion of gas

$$\text{SCFH} = \frac{\text{Lbs/hr}}{\text{density}} \quad \text{SCFH} = \frac{\text{Lbs/hr} \times 379}{M} \quad \text{SCFH} = \frac{\text{Lbs/hr} \times 13.1}{G}$$

Flow conversion of liquid

$$\text{GPM} = \frac{\text{Lbs/hr}}{500 \times G}$$

Temperature Conversion

$$F \text{ (Fahrenheit)} = C \text{ (9/5)} + 32$$

$$C \text{ (Celsius)} = (F - 32) \text{ 5/9}$$

Metric Conversion Tables

Multiply	By	To Obtain
Length		
millimeters	0.039	inches
centimeters	0.394	inches
inches	2.54	centimeters
feet	30.48	centimeters
feet	0.304	meters
Area		
sq. centimeters	0.155	sq. inches
sq. centimeters	0.001076	sq. feet
sq. inches	6.452	sq. centimeters
sq. inches	0.00694	sq. feet
sq. feet	929	sq. centimeters
Flow Rates		
gallons US/minute (GPM)	3.785	liters/min
gallons US/minute	0.133	ft ³ /min
gallons US/minute	0.227	m ³ /hr
cubic feet/minute	7.481	GPM
cubic feet/hour	0.1247	GPM
cubic feet/hour	0.01667	ft ³ /min
cubic meters/hour	4.403	GPM
cubic meters/hour	35.31	ft ³ /hr
Velocity		
feet per second	0.3048	meters/second
feet per second	1.097	km/hr
feet per second	0.6818	miles/hr

Multiply	By	To Obtain
Volume & Capacity		
cubic feet	28.32	liters
cubic feet	7.4805	gallons
liters	61.02	cubic inches
liters	0.03531	cubic feet
liters	0.264	gallons
gallons	3785.0	cubic cm
gallons	231.0	cubic inches
gallons	0.1337	cubic feet
Weight		
pounds	0.453	kilogram
kilogram	2.205	pounds
Pressure & Head		
pounds/sq. inch	0.06895	bar
pounds/sq. inch	0.06804	atmosphere
pounds/sq. inch	0.0703	Kg/cm ²
pounds/sq. inch	2.307	ft of H ₂ O (4°C)
pounds/sq. inch	0.703	m of H ₂ O (4°C)
pounds/sq. inch	5.171	cm of Hg (0°C)
pounds/sq. inch	2.036	in of Hg (0°C)
atmosphere	14.69	psi
atmosphere	1.013	bar
atmosphere	1.033	Kg/cm ²
atmosphere	101.3	kPa
bar	14.50	psi
kilogram/sq. cm	14.22	psi
kiloPascal	0.145	psi

Facilities: Brazil, Canada, France, Germany, Italy, Japan, Mexico, Netherlands, Singapore, Spain, United Kingdom, United States



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