



Pneumatic Actuator Selection Charts

For Spring Return Piston Style Pneumatic Actuators

Resilient Seated Valves (RS) (for bubble-tight shut-off)								
Valve Size	Cv		Valve Model		Actuator Model Based on 20 PSI Minimum Supply Air Pressure			
	Two Pos.	Mod.			Two-Way Close-off/Differential Pressure (PSI)		Three-Way Close-off/Differential Pressure (PSI)	
	@ 90°	@ 70°	Two-Way	Three-Way	Undercut Discs	Non- Undercut Discs	Undercut Discs	Non- Undercut Discs
					50	150*	50	150*
2"	159	105	RS2B-2	RS3B-2	PS1†	PS1	PS1†	PS2
2-1/2"	266	156	RS2B-2.5	RS3B-2.5	PS1†	PS2	PS2†	PS2
3"	457	240	RS2B-3	RS3B-3	PS2	PS2	PS2	PS2
4"	860	423	RS2B-4	RS3B-4	PS2	PS3	PS3	PS3
5"	1320	656	RS2B-5	RS3B-5	PS3	PS4	PS4	PS5
6"	2020	941	RS2B-6	RS3B-6	PS4	PS5	PS5	N/A

For Spring Return Rack & Pinion Style Pneumatic Actuators

Resilient Seated Valves (RS) (for bubble-tight shut-off)								
Valve Size	Cv		Valve Model		Actuator Model Based on 80 PSI minimum supply air pressure**			
	Two Pos.	Mod.			Two-Way Close-off/Differential Pressure (PSI)		Three-Way Close-off/Differential Pressure (PSI)	
	@ 90°	@ 70°	Two-Way	Three-Way	Undercut Discs	Non- Undercut Discs	Undercut Discs	Non- Undercut Discs
					50	150*	50	150*
2"	159	105	RS2B-2	RS3B-2	PS80†	PS80	PS80†	PS80
2-1/2"	266	156	RS2B-2.5	RS3B-2.5	PS80†	PS80	PS80†	PS80
3"	457	240	RS2B-3	RS3B-3	PS80	PS80	PS80	PS130
4"	860	423	RS2B-4	RS3B-4	PS80	PS200	PS130	PS300
5"	1320	656	RS2B-5	RS3B-5	PS130	PS300	PS200	PS300
6"	2020	941	RS2B-6	RS3B-6	PS200	PS300	PS300	PS500
8"	3540	1660	RS2B-8	RS3B-8	PS500	PS850	PS850	PS1200
10"	5580	2560	RS2B-10	RS3B-10	PS500	PS1200	PS850	PS2500
12"	8080	3690	RS2B-12	RS3B-12	PS850	PS2500	PS1200	PS3500
14"	9578	4406	RS2B-14	RS3B-14	PS3500†	PS3500	PS3500†	PS3500

Notes:

- * Call for close-offs greater than 150 PSI.
- ** For air supply pressure other than 80 PSI, contact DEI.
- † The valves are available in non-undercut disc only.
- Based on Class A Non-Corrosive Fluids (i.e. water).
- Recommended control angles are between 20°-70° open for modulating applications.
- Maximum angle for control valve sizing is 70° open for modulating applications.
- Ratings are based on 10 ft/sec maximum fluid velocity.
- Actuators selected for fail open or fail closed applications.



Pneumatic Actuator Selection Charts

For Double-Acting Non-Spring Return Rack & Pinion Style Pneumatic Actuators RS2B Series Valves

Resilient Seated Valves (RS) (for bubble-tight shut-off)						
Valve Size	Cv		Valve Model	Actuator Model Based on 80 PSI minimum supply air pressure**		
	Two Pos.	Mod.		Two-Way Close-off/Differential Pressure (PSI)		
	@ 90°	@ 70°		50	100	150*
2"	159	105	RS2B-2	PN20	PN20	PN20
2-1/2"	266	156	RS2B-2.5	PN20	PN20	PN20
3"	457	240	RS2B-3(UC)	PN20	—	—
3"	457	240	RS2B-3	PN40	PN40	PN40
4"	860	423	RS2B-4(UC)	PN40	—	—
4"	860	423	RS2B-4	PN40	PN40	PN80
5"	1320	656	RS2B-5(UC)	PN40	—	—
5"	1320	656	RS2B-5	PN80	PN80	PN80
6"	2020	941	RS2B-6(UC)	PN80	—	—
6"	2020	941	RS2B-6	PN80	PN130	PN200
8"	3540	1660	RS2B-8(UC)	PN80	—	—
8"	3540	1660	RS2B-8	PN200	PN200	PN300
10"	5580	2560	RS2B-10(UC)	PN130	—	—
10"	5580	2560	RS2B-10	PN300	PN300	PN500
12"	8080	3690	RS2B-12(UC)	PN300	—	—
12"	8080	3690	RS2B-12	PN500	PN500	PN850
14"	9578	4406	RS2B-14	PN850	PN850	PN850
16"	12,671	5,829	RS2B-16	PN850	PN1200	PN1750
18"	16,221	7,457	RS2B-18	PN1200	PN1200	PN1750
20"	20,385	9,377	RS2B-20	PN1750	PN1750	call
24"	29,627	13,628	RS2B-24	call	call	call

Notes:

- * Call for close-offs greater than 150 PSI.
- ** For air supply pressure other than 80 PSI, contact DEI.
- Based on Class A Non-Corrosive Fluids (i.e. water).
- Recommended control angles are between 20°-70° open for modulating applications.
- Maximum angle for control valve sizing is 70° open for modulating applications.
- Ratings are based on 10 ft/sec maximum fluid velocity.



Pneumatic Actuator Selection Charts

For Double-Acting Non-Spring Return Rack & Pinion Style Pneumatic Actuators RS3B Series Valves

Three-Way Valves						
Resilient Seated Valves (RS) (for bubble-tight shut-off)						
Valve Size	Cv		Valve Model	Actuator Model Based on 80 PSI minimum supply air pressure**		
	Two Pos.	Mod.		Three-Way Close-off/Differential Pressure (PSI)		
	@ 90°	@ 70°		50	100	150*
2"	159	105	RS3B-2	PN20	PN40	PN40
2-1/2"	266	156	RS3B-2.5	PN40	PN40	PN40
3"	457	240	RS3B-3(UC)	PN40	—	—
3"	457	240	RS3B-3	PN40	PN40	PN40
4"	860	423	RS3B-4(UC)	PN40	—	—
4"	860	423	RS3B-4	PN80	PN80	PN80
5"	1320	656	RS3B-5(UC)	PN80	—	—
5"	1320	656	RS3B-5	PN80	PN130	PN130
6"	2020	941	RS3B-6(UC)	PN80	—	—
6"	2020	941	RS3B-6	PN130	PN200	PN200
8"	3540	1660	RS3B-8(UC)	PN300	—	—
8"	3540	1660	RS3B-8	PN300	PN300	PN300
10"	5580	2560	RS3B-10(UC)	PN300	—	—
10"	5580	2560	RS3B-10	PN500	PN500	PN850
12"	8080	3690	RS3B-12(UC)	PN300	—	—
12"	8080	3690	RS3B-12	PN850	PN850	PN850
14"	9578	4406	RS3B-14	PN850	PN1200	PN1200
16"	12,671	5,829	RS3B-16	PN1200	PN1750	PN1750
18"	16,221	7,457	RS3B-18	PN1750	PN3500	PN3500
20"	20,385	9,377	RS3B-20	PN3500	PN3500	call
24"	29,627	13,628	RS3B-24	call	call	call

Notes:

* Call for close-offs greater than 150.

** For air supply pressure other than 80 PSI, contact DEI.

— Based on Class A Non-Corrosive Fluids (i.e. water).

— Recommended control angles are between 20°-70° open for modulating applications.

— Maximum angle for control valve sizing is 70° open for modulating applications.

— Ratings are based on 10 ft/sec maximum fluid velocity.



Valve Sizing Coefficients RS2B & RS3B Series Valves

Resilient Seated Valves Cv Values								
Valve Size	Angle of Opening (degrees)							
	20	30	40	50	60	70	80	90
2"	4.1	14.2	26.3	44.5	70.6	105	135	159
2-1/2"	6.2	20.9	38.6	65.3	140	156	215	266
3"	13.6	31.4	57.9	98.0	156	240	342	457
4"	23.9	55.1	102	173	274	423	625	860
5"	37.2	85.6	158	268	426	656	970	1,320
6"	53.3	123	227	384	610	941	1,420	2,020
8"	94.3	217	401	679	1,080	1,660	2,500	3,540
10"	145	334	617	1,040	1,660	2,560	3,830	5,580
12"	209	481	888	1,500	2,390	3,690	5,620	8,080
14"	335	670	1,226	1,935	2,893	4,406	6,752	9,578
16"	443	886	1,622	2,560	3,827	5,829	8,933	12,671
18"	567	1,138	2,075	3,275	4,896	7,457	11,429	16,221
20"	711	1,422	2,609	4,116	6,156	9,377	14,371	20,385
24"	1,038	2,078	3,792	5,985	8,947	13,628	20,887	29,627

Metal Seated Valves Cv Values									
Valve Size	Angle of Opening (degrees)								
	10	20	30	40	50	60	70	80	90
2"	2	5	11	20	34	49	64	83	90
2-1/2"	4	8	20	34	56	84	126	178	194
3"	6	14	30	51	85	132	202	279	370
4"	13	28	54	98	159	257	391	550	747
5"	21	43	88	158	265	429	636	913	1,272
6"	30	63	126	228	382	632	955	1,370	1,999
8"	53	111	225	406	680	1,125	1,698	2,591	3,853
10"	83	174	351	635	1,063	1,758	2,655	4,051	6,362
12"	120	251	506	915	1,531	2,533	3,825	5,835	9,165
14"	143	301	606	1,096	1,835	3,035	4,583	6,992	10,982

Notes:

- Recommended control angles are between 20° and 70° open for modulating applications
- Maximum angle for control valve sizing is 70° open for modulating applications.



Resilient Seated Valves: 2" through 24" Sizes

General Description:

DEI offers a complete line of Butterfly valves for both commercial and industrial applications. Valves are designed for hot and chilled water. See high performance valves for steam applications. Resilient seated valves can be used for on/off or throttling control, isolation, flow balance, mixing or diversion.

Body Features:

Valves are available in full-lugged or wafer style. The valves are compatible with ANSI 125/150 flanges. DEI standard valves 2"-24" have a bubble-tight shut-off pressure rating of up to 150 PSI dead end service with non-undercut discs. Undercut discs are bubble tight and are rated for dead-end service up to 50 PSI.

Standard Materials:

BODY: Cast Iron ASTM A126CLB

DISC: Aluminum Bronze ASTM B148

STEM: Stainless Type 416

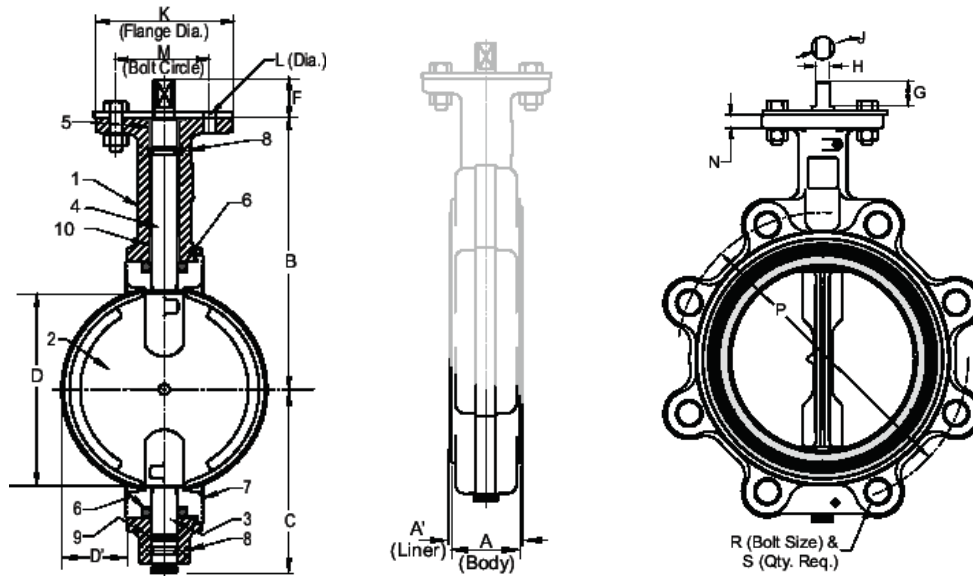
SEAT: EPDM

Optional Materials:

BODY: Ductile Iron, Cast Iron (Epoxy & Nylon Coating opt.), Cast Iron (Epoxy & Nylon Coating opt.)

DISC: Nickel Plated Ductile Iron, Stainless Steel (316)

SEAT: BUNA, Viton, Teflon over BUNA, Hypalon, Neoprene



Valve Size	Dimensions (inches)														Lug Bolt Data		
	A [†]	B	C	D	D ¹	F	G	H	J	K	Mounting Flange Drilling		N	Key	P BC	R Threads UNC-2B	S No. Holes
											L [‡] Hole Diam.	M BC					
2"	1.82	5.50	3.06	1.49	0.28	1.13	0.81	0.35	0.50	4.00	0.44	3.25	0.44	N/A	4.75	5/8-11	4
2-1/2"	1.94	6.00	3.31	2.01	0.44	1.13	0.81	0.35	0.50	4.00	0.44	3.25	0.44	N/A	5.50	5/8-11	4
3"	1.94	6.25	3.75	2.64	0.69	1.13	0.81	0.35	0.50	4.00	0.44	3.25	0.44	N/A	6.00	5/8-11	4
4"	2.20	7.00	4.25	3.67	1.06	1.13	0.81	0.40	0.56	4.00	0.44	3.25	0.44	N/A	7.50	5/8-11	8
5"	2.32	7.53	4.94	4.71	1.50	1.13	0.81	0.40	0.56	4.00	0.44	3.25	0.44	N/A	8.50	3/4-10	8
6"	2.32	8.00	5.56	5.66	1.94	1.13	0.81	0.44	0.62	4.00	0.44	3.25	0.44	N/A	9.50	3/4-10	8
8"	2.51	9.38	6.56	7.72	2.84	1.50	1.06	0.53	0.75	6.00	0.56	5.00	0.50	N/A	11.75	3/4-10	8
10"	2.82	10.19	7.88	9.70	3.69	1.50	1.06	0.71	1.00	6.00	0.56	5.00	0.50	N/A	14.25	7/8-9	12
12"	3.32	12.06	9.25	11.68	4.50	1.50	1.06	0.71	1.00	6.00	0.56	5.00	0.50	N/A	17.00	7/8-9	12
14"	3.19	13.50	11.56	13.25	13.53	2.00	N/A	1.625	N/A	6.5	0.69	5.25	N/A	.375 sq.	18.75	1-8	12
16"	4.13	14.75	12.69	15.50	14.97	2.00	N/A	1.625	N/A	6.5	0.69	5.25	N/A	.375 sq.	21.25	1-8	16
18"	4.63	15.50	13.63	17.25	16.91	3.00	N/A	2.125	N/A	9.5	0.81	7.50	N/A	.500 sq.	22.75	1 1/8-7	16
20"	5.13	16.75	15.13	19.25	18.84	3.00	N/A	2.125	N/A	9.5	0.81	7.50	N/A	.500 sq.	25.00	1 1/8-7	20
24"	6.19	19.37	18.06	23.38	22.76	3.06	N/A	2.125	N/A	10.61	0.81	7.50	N/A	.500 sq.	29.50	1 1/4-7	20

Notes:

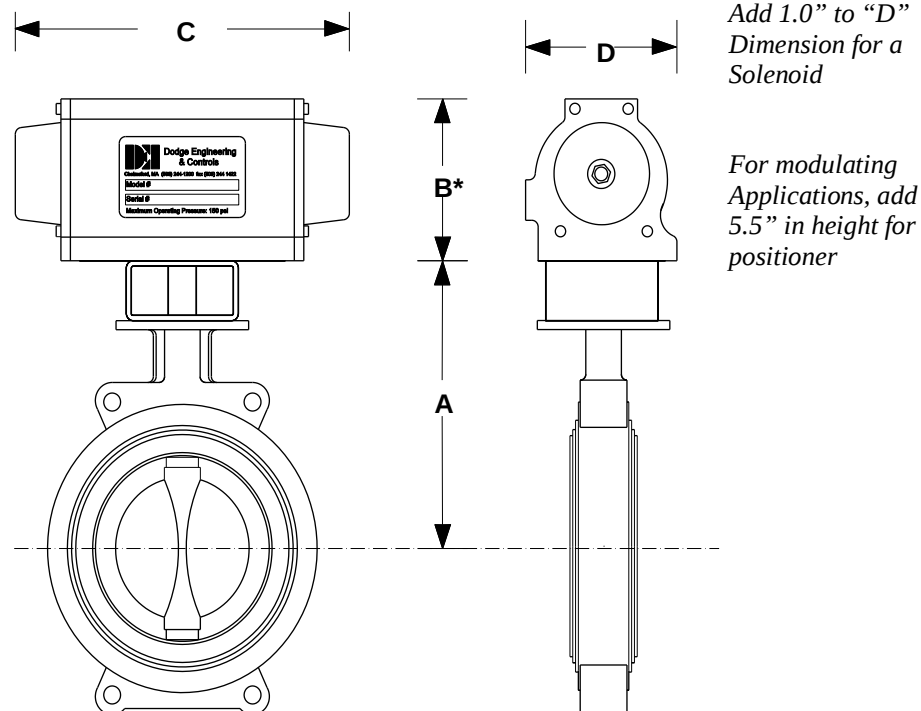
- On 10"-20" valve sizes, dimension "H" is the key size.
- "Q" dimension is the minimum allowable pipe or flange inside diameter at the centered body face to protect the disc sealing edge against damage when opening the valve.

[†] Subtract .13 for body dimension without the liner.

[‡] Mounting flange bolt circle has 4 holes.



Dimensions for Two-Way Resilient Seated Control Valves: 2" through 14" with High Pressure Rack & Pinion Style Pneumatic Actuators



Valve Size	Valve Model No.	Dim. (inches)
		A
2"	RS2B-2	8.50
2-1/2"	RS2B-2.5	9.00
3"	RS2B-3	9.25
4"	RS2B-4	10.00
5"	RS2B-5	10.53
6"	RS2B-6	11.00
8"	RS2B-8	12.38
10"	RS2B-10	13.19
12"	RS2B-12	15.06
14"	RS2B-14	16.56

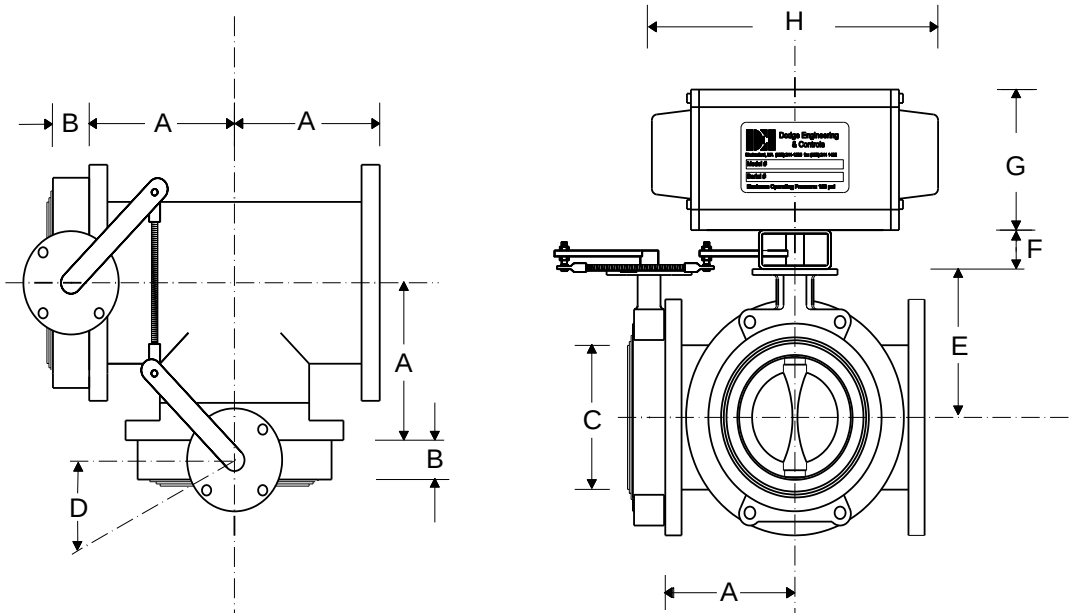
Actuator Model No.	Dimensions			
	B	C		
		Spring Return	Double Acting	D
P(N/S)20	2.68	8.39	6.81	2.58
P(N/S)40	3.39	7.56	7.50	3.25
P(N/S)80	4.45	8.94	8.23	4.33
P(N/S)130	4.88	10.39	9.60	4.76
P(N/S)200	5.28	11.50	9.96	5.22
P(N/S)300	6.18	13.23	11.30	5.98
P(N/S)500	6.93	16.26	12.56	6.69
P(N/S)850	8.27	20.24	16.69	7.64
P(N/S)1200	9.17	22.50	17.00	7.83
P(N/S)1750	10.08	28.15	19.84	9.29
P(N/S)2500	10.08	26.68	19.83	9.38
P(N/S)3500	10.08	38.86	25.16	9.38

Notes:

- Call DEI for specification on Butterfly valves 16" and larger.
- Actuator dimensions are for both PN (Pneumatic Non-Spring Return) and PS (Pneumatic Spring Return).
- Actuator size on a particular valve may vary due to the air pressure available. See page BF-6 for actuator selection.
- See page BF-9 for additional body information.
- Dimensions on valve body do not change for undercut discs versus non-undercut discs.
- * Additional height required for a manual gear operator (MGO). See MGO cut sheet for dimensions.



Dimensions for Three-Way Resilient Seated Control Valves: 2" through 14" with High Pressure Rack & Pinion Style Pneumatic Actuators



Valve Size	Model No.	Dimensions (inches)					
		A	B**	C	D†	E	F
2"	RS3B-2	4.50	1.82	1.49	3.36	5.50	3.00
2-1/2"	RS3B-2.5	5.00	1.94	2.01	3.36	6.00	3.00
3"	RS3B-3	5.50	1.94	2.64	3.36	6.25	3.00
4"	RS3B-4	6.50	2.20	3.67	3.36	7.00	3.00
5"	RS3B-5	7.50	2.32	4.71	4.77	7.53	3.00
6"	RS3B-6	8.00	2.32	5.66	4.77	8.00	3.00
8"	RS3B-8	9.00	2.51	7.72	5.47	9.38	3.00
10"	RS3B-10	11.00	2.82	9.70	6.54	10.19	3.00
12"	RS3B-12	12.00	3.32	11.68	6.54	12.06	4.00
14"	RS3B-14	14.00	3.19	13.53	9.63	13.50	4.00

Actuator Model #	Dimensions (inches)		
	G*	Spring Return	Double Acting
P(N/S)20	2.68	8.39	6.81
P(N/S)40	3.39	7.56	7.50
P(N/S)80	4.45	8.94	8.23
P(N/S)130	4.88	10.39	9.60
P(N/S)200	5.28	11.50	9.96
P(N/S)300	6.18	13.23	11.30
P(N/S)500	6.93	16.26	12.56
P(N/S)850	8.27	20.24	16.69
P(N/S)1200	9.17	22.50	17.00
P(N/S)1750	10.08	28.15	19.84
P(N/S)2500	10.08	26.68	19.83
P(N/S)3500	10.08	38.86	25.16

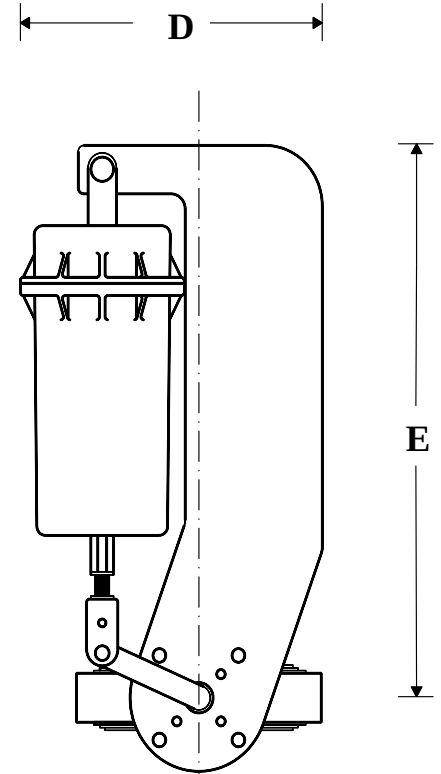
Notes:

- * Add 5.5" to "G" dimension for positioner on modulating valves.
- ** Includes thickness of liner.
- † "D" dimension is the farthest point of rotation of arm.
- Call DEI for specification on Butterfly valves 14" and larger.
- Actuator dimensions are for both PN (Pneumatic Non-Spring Return) and PS (Pneumatic Spring Return).
- Actuator size on a particular valve may vary due to the air pressure available. See BF-B-6 for actuator selection.
- Valve and actuator location may change depending on three-way arrangement.



Dimensions for Two-Way Resilient Seated Control Valves with Low Pressure, Spring Return Piston Style Pneumatic Actuators

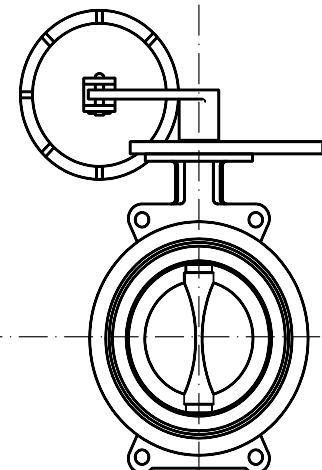
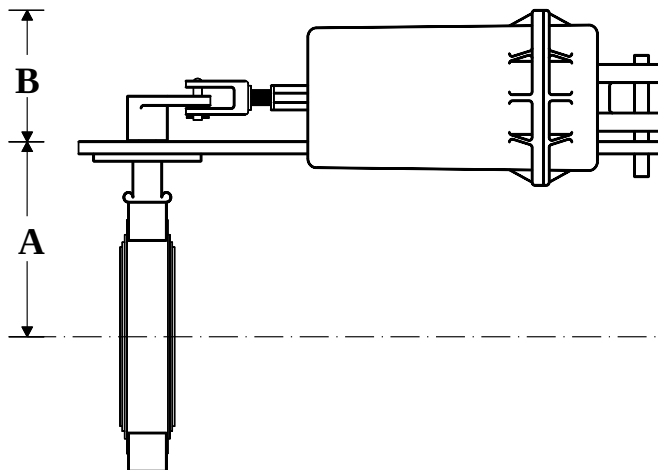
50 PSI (Low) Close-Off Pressure Based on 20 PSI Supply Air Pressure							
Size	Valve Model No.	Actuator No.	A	B	C	D	E
2"	RS2B-2(UC)	PS-1	5.50	3.13	16.62	8.25	14.57
2 1/2"	RS2B-2.5(UC)	PS-1	6.00	3.13	16.62	8.25	14.57
3"	RS2B-3(UC)	PS-2	6.25	6.80	20.13	12.00	18.07
4"	RS2B-4(UC)	PS-2	7.00	6.80	20.13	12.00	18.07
5"	RS2B-5(UC)	PS-3	7.53	6.80	25.75	13.00	22.82
6"	RS2B-6(UC)	PS-4	8.00	6.80	36.00	13.50	22.82
150 PSI (High) Close-Off Pressure Based on 20 PSI Supply Air Pressure							
Size	Valve Model No.	Actuator No.	A	B	C	D	E
2"	RS2B-2	PS-1	5.50	3.13	16.62	8.25	14.57
2 1/2"	RS2B-2.5	PS-2	6.00	6.80	20.13	12.00	18.07
3"	RS2B-3	PS-2	6.25	6.80	20.13	12.00	18.07
4"	RS2B-4	PS-3	7.00	6.80	25.75	13.00	22.82
5"	RS2B-5	PS-4	7.53	6.80	36.00	13.50	22.82
6"	RS2B-6	PS-5	8.00	6.80	45.50	13.50	22.82



PS-1, PS-2 & PS-3

See page BF-B-19
for PS-4 & PS-5

For modulating applications, add
3.5" in height for positioner



Note:

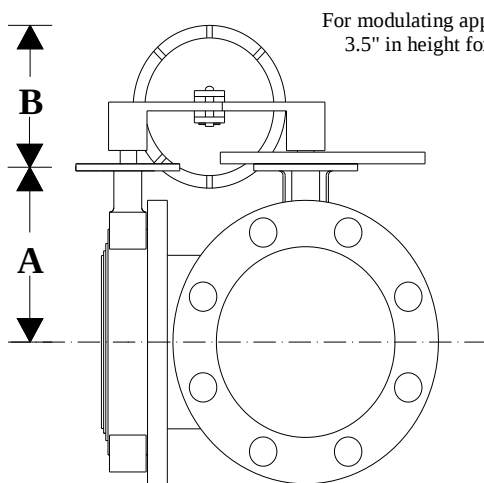
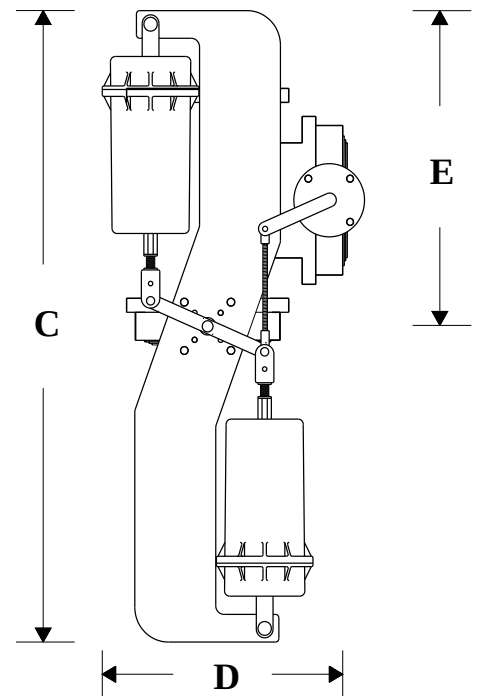
– Pneumatic 3-15 PSI positioner is available for modulating applications.



Dimensions for Three-Way Resilient Seated Control Valves with Low Pressure, Spring Return Piston Style Pneumatic Actuators

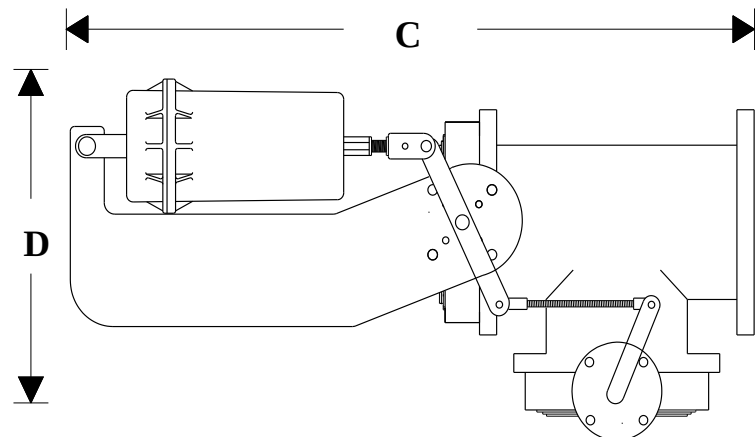
50 PSI (Low) Close-Off Pressure Based on 20 PSI Supply Air Pressure							
Size	Valve Model No.	Actuator No.	A	B	C	D	E
2"	RS3B-2(UC)	PS-1	5.50	3.13	23.35	10.00	14.57
2 1/2"	RS3B-2.5(UC)	PS-2	6.00	6.80	28.85	12.50	18.07
3"	RS3B-3(UC)	PS-2	6.25	6.80	28.85	13.00	18.07
4"	RS3B-4(UC)	PS-3	7.00	6.80	29.75	14.25	22.82
5"	RS3B-5(UC)	PS-4	7.53	6.80	36.00	15.50	22.82
6"	RS3B-6(UC)	PS-5	8.00	6.80	45.50	16.00	22.82
150 PSI (High) Close-Off Pressure Based on 20 PSI Supply Air Pressure							
Size	Valve Model No.	Actuator No.	A	B	C	D	E
2"	RS3B-2	PS-2	5.50	6.80	26.70	11.45	18.07
2 1/2"	RS3B-2.5	PS-2	6.00	6.80	28.85	12.50	18.07
3"	RS3B-3	PS-2	6.25	6.80	29.75	13.00	18.07
4"	RS3B-4	PS-3	7.00	6.80	29.75	14.25	22.82
5"	RS3B-5	PS-5	7.53	6.80	45.50	15.50	22.82

PS-4 & PS-5



For modulating applications, add
3.5" in height for positioner

PS-1, PS-2 & PS-3



Note:

– Pneumatic 3-15 PSI positioner is available for modulating applications.