Electronic Butterfly Valve Guide Specifications

(For temperatures ranging from –30°F to 250°F)

Butterfly Valves:

2" through 12" are 200 PSI butterfly valves meeting MSS SP-67 and API-609 specifications. 14 "through 24" are 150 PSI butterfly valves meeting MSS SP-67 and API-609 specifications. Non-undercut valves 2" through 24" must be rated to 150 PSI dead-end service. Valves shall be drilled and tapped for isolation and removal of downstream piping. Flanges shall meet ANSI 125 and 150 standards. All valves shall be factory tested to 110% of specified pressure rating.

2"-12" Valves

The top bushing must be heavy-duty corrosion resistant, located in the upper journal to absorb actuator side thrust. The valve must have an extended neck to allow adequate clearance for flanges and insulation. The stem must be a 2 piece stem design to provide high strength and positive disc control. Shaft ends must be standardized for operator interchangeability. The top plate must be an integral part of the body and standardized to allow direct mounting of actuators. The stem seal must be self-adjusting bidirectional, located in the upper journal and suitable for vacuum and pressure. Stem seal must prevent external contamination of the stem area. The disc must be rounded and polished with hub edge to provide full 360° concentric seating, minimum flow restriction, lower torques and longer seat life. All valves must have upper and lower inboard PTFE or polymer bearings to ensure long service life with low operating torques. The cast in top plate must permit direct mounting of all DEI actuators.

14"-36" Valves

The seat must have molded-in O-rings and require no gaskets between the flange and the valve. The stem must be a one piece thru-shaft design for high strength and positive disc control. The primary stem seals must be formed by preloading the disc and seat. The stem diameter must be greater than the stem hole in the resilient seat to provide a secondary seal. The shaft must have an internal shaft seal to prevent dirt from entering the valve. The seal must adjust to pressure and shaft motion. The top bushing must be heavy duty corrosion resistant and absorb actuator side thrust. The disc edge must be hand polished for optimal performance and maximum seat life. The disc screws must be stainless steel and provide positive leak-proof connections while allowing quick and easy disassembly. The valve body must be one piece with an extended neck to allow clearance for flanges and insulation.

Actuators: NEMA 2 Type for Butterfly applications 2" through 6":

(See separate specifications on pages AC–1-2 for NEMA 4/4X Industrial Actuators for Butterfly applications 2"-24")

The valve actuator shall be capable of providing the minimum torque required for proper valve close-off for the required application. Each actuator shall have current limiting or stall detection circuitry incorporated in its design to prevent damage to the actuator. A gear release or manual override crank shall be provided on the motor to allow for manual override. Applications that require fail-safe operation of the valve assembly shall use actuators with mechanical spring return or the addition of a centralized battery backup module at the control panel for ease of maintenance.

The stem adapter, which allows the actuator to attach to the valve stem, must pass through a high temperature support bushing in a mounting plate before the actuator is attached to the valve. This procedure prevents the weight of the actuator from side-loading the valve stem.

The actuator shall be modulating, floating (tri-state), or two position with spring return as called out in the control sequence of operation. All modulating valves shall have positive positioning and respond to a 0-10 VDC (2-10 VDC) or a 0-20 mA (4-20 mA) (with a dropping resistor) control signal. These modulating units will each have position feedback signal corresponding to the actual valve position which can be wired back to the control system. An optional feedback potentiometer or auxiliary switch shall be available, if required, for floating or two-position type actuators. The actuator shall be powered by a 24 VAC, 24 VDC or 120 VAC signal. Actuators shall be UL listed.

The manufacturer shall warranty the control valve assembly for a period of 2 years from the date of installation not to exceed 30 months from the original date of shipment.

Control Valves shall be provided by (DEI) Dodge Engineering and Controls, Chelmsford, MA USA.

Commercial Actuator Selection Chart For Resilient Seated Valves

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

Resilient Seated Valves (RS) (for bubble-tight shut-off)										
Valve Size	Cv		Valve Model		Actuator Model / Minimum Close-off - PSI					
					Two-Way Differential Pressure (PSI)			Three-Way Differential Pressure (PSI)		
	Two Pos. @ 90°	Mod. @ 70°	Two-Way	Three-Way	50	100	150**	50	100	150**
Type A Actuators					Undercut Disc	Non-Undercut Disc		Undercut Disc	Non-Undercut Disc	
2"	159	105	RS2B-2	RS3B-2	ES142† EN132†	ES142 EN132	ES142 EN132	ES142† EN221†	ES142* EN221	ES142* EN221
2-1/2"	266	156	RS2B-2.5	RS3B-2.5	ES142† EN132†	ES142 EN132	ES142 EN132	ES142† EN221†	ES142* EN221	ES142* EN221
3"	457	240	RS2B-3	RS3B-3	ES142 EN132	ES142* EN221	ES142* EN221	ES142* EN221	ES142* EN310	ES142* EN310
4"	860	423	RS2B-4	RS3B-4	ES142* EN221	ES142* EN310	EN310*	EN310	EN310*	EN310*
5"	1320	656	RS2B-5	RS3B-5	ES142* EN310	EN310*	EN310*	EN310*	–	–
6"	2020	941	RS2B-6	RS3B-6	EN310*	–	–	EN310*	–	–
Type B Actuators										
2"	159	105	RS2B-2	RS3B-2	ES140† EN140†	ES140 EN140	ES140 EN140	ES140† EN210†	ES140* EN210	ES140* EN210
2-1/2"	266	156	RS2B-2.5	RS3B-2.5	ES140† EN140†	ES140 EN140	ES140 EN140	ES140† EN210†	ES140* EN210	ES140* EN210
3"	457	240	RS2B-3	RS3B-3	ES140 EN140	ES140* EN210	ES140* EN210	ES140* EN210	ES140* EN280	ES140* EN280
4"	860	423	RS2B-4	RS3B-4	ES140* EN210	EN210*	EN210*	EN280	EN280*	EN280*
5"	1320	656	RS2B-5	RS3B-5	ES140* EN280	EN280*	EN280*	EN210*	–	–
6"	2020	941	RS2B-6	RS3B-6	EN280*	–	–	EN280*	–	–

Undercut (UC) discs are commonly used for close-offs up to 50 PSI. Standard (non-undercut) discs for close-offs 50 PSI or less are available upon request. If "UC" is not noted after the valve body number, the disc is non-undercut.
Samples:

Undercut Disc Model Number: **EN310C2 / RS2B-3(UC)**

Non-undercut Disc Model Number: **EN310C2 / RS2B-3**

Notes:

* Requires 2 actuators.
** Call for close-offs greater than 150 PSI.
– For actuator selection part number, refer to pages AC-A–1-2 or AC-B–1-2.
– Ratings based on 10 ft/sec maximum fluid velocity.
– Most ***"single"*** & ***"dual"*** non-RE actuators available with NEMA 4 type enclosures.
† The valves are available in non-undercut disc only.

Industrial Actuator Selection Chart
For Resilient Seated Valves
Based on Class A Non-Corrosive Fluids (i.e. water)

Resilient Seated Valves (RS) (for bubble-tight shut-off)										
Valve Size	Cv		Valve Model		Actuator Model / Minimum Close-off - PSI					
					Two-Way Differential Pressure (PSI)			Three-Way Differential Pressure (PSI)		
	Two Pos. @ 90°	Mod. @ 70°	Two-Way	Three-Way	50	100	150**	50	100	150**
Industrial Type Actuators					Undercut Disc	Non-Undercut Disc		Undercut Disc	Non-Undercut Disc	
2"	159	105	RS2B-2	RS3B-2	RE1.5†	RE1.5	RE1.5	RE1.5†	RE3	RE3
2-1/2"	266	156	RS2B-2.5	RS3B-2.5	RE1.5†	RE1.5	RE1.5	RE3†	RE3	RE3
3"	457	240	RS2B-3	RS3B-3	RE3	RE3	RE3	RE3	RE3	RE3
4"	860	423	RS2B-4	RS3B-4	RE3	RE6	RE6	RE3	RE6	RE6
5"	1320	656	RS2B-5	RS3B-5	RE3	RE6	RE6	RE6	RE8.5	RE8.5
6"	2020	941	RS2B-6	RS3B-6	RE6	RE8.5	RE8.5	RE6	RE15	RE15
8"	3540	1660	RS2B-8	RS3B-8	RE10	RE15	RE20	RE10	RE20	RE25
10"	5580	2560	RS2B-10	RS3B-10	RE10	RE25	RE30	RE15	RE15T	RE15T
12"	8080	3690	RS2B-12	RS3B-12	RE15	RE15T	RE15T	RE25	RE20T	RE25T
14"	9578	4406	RS2B-14	RS3B-14	RE20T†	RE20T	RE25T	RE25T†	RE30T	RE30X
16"	12671	5829	RS2B-16	RS3B-16	RE25T†	RE30T	RE30T	RE30X†	RE30X	call
18"	16211	7457	RS2B-18	RS3B-18	RE30T†	RE30X	RE30X	call	call	call
20"	20385	9377	RS2B-20	RS3B-20	RE30X†	call	call	call	call	call
24"	29627	13628	RS2B-24	RS3B-24	call	call	call	call	call	call

Undercut (UC) discs are commonly used for close-offs up to 50 PSI. Standard (non-undercut) discs for close-offs 50 PSI or less are available upon request. If "UC" is not noted after the valve body number, the disc is non-undercut.
Samples:

Undercut Disc Model Number: **RE15F2 / RS2B-8(UC)**

Non-undercut Disc Model Number: **RE15F2 / RS2B-8**

Notes:

** See page AC-11 for Torque Maximizer information.
* Call for close-offs greater than 150 PSI.
– RE: DEI Reversing Electronic Series Industrial Actuator with NEMA 4/4X housing for outdoor as well as indoor use. When used outdoors a heater and stat is required. Models available for modulating, tri-state and two-position control.
– For actuator selection part number, refer to page AC-3.
– Ratings based on 10 ft/sec maximum fluid velocity.
† The valves are available in non-undercut disc only.

Commercial Actuator Selection Chart For Metal Seated Valves

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

Metal Seated Valves (MS)										
	Cv				Actuator Model / Minimum Close-off – PSI					
					Two-Way			Three-Way		
Valve	Two Pos.	Mod.	Valve Model		Differential Pressure (PSI)			Differential Pressure (PSI)		
Size	@ 90°	@ 70°	Two-Way	Three-Way	50	100	150**	50	100	150**
Type A Actuators										
2"	90	64	MS2-2	MS3-2	ES142 EN132	ES142 EN132	ES142 EN132	ES142 EN132	ES142 EN132	ES142 EN221
2-1/2"	194	126	MS2-2.5	MS3-2.5	ES142 EN132	ES142 EN132	ES142* EN132	ES142 EN132	ES142 EN221	ES142* EN221
3"	370	202	MS2-3	MS3-3	ES142 EN132	ES142 EN132	ES142* EN221	ES142 EN132	ES142* EN221	ES142* EN310
4"	747	391	MS2-4	MS3-4	ES142 EN221	ES142* EN221	–	ES142* EN221	ES142* EN310	–
5"	1272	636	MS2-5	MS3-5	ES142* EN221	EN310	–	ES142* EN310	EN310*	–
6"	1999	955	MS2-6	MS3-6	ES142* EN310	–	–	EN310	–	–
Type B Actuators										
2"	90	64	MS2-2	MS3-2	ES140 EN140	ES140 EN140	ES140 EN140	ES140 EN140	ES140 EN140	ES140 EN140
2-1/2"	194	126	MS2-2.5	MS3-2.5	ES140 EN140	ES140 EN140	ES140 EN140	ES140 EN140	ES140 EN140	ES140* EN210
3"	370	202	MS2-3	MS3-3	ES140 EN140	ES140 EN140	ES140* EN210	ES140 EN140	ES140* EN210	ES140* EN210
4"	747	391	MS2-4	MS3-4	ES140* EN210	ES140* EN280	–	ES140* EN210	ES140* EN210	–
5"	1272	636	MS2-5	MS3-5	ES140* EN210	EN210*	–	ES140* EN280	EN210*	–
6"	1999	955	MS2-6	MS3-6	ES140* EN280	–	–	EN210*	–	–

Notes:

* Requires 2 actuators.
** Call for close-offs greater than 150 PSI.
– For actuator selection part number, refer to pages AC-A–1-2 or AC-B–1-2.
– Ratings based on 10 ft/sec maximum fluid velocity.
– Most ***"single"*** & ***"dual"*** non-RE actuators available with NEMA 4 type enclosures.
– For three-way valves, alignment holes are used temporarily for assembly.

Industrial Actuator Selection Chart
For Metal Seated Valves
Based on Class A Non-Corrosive Fluids (i.e. water)

Metal Seated Valves (MS)										
Valve Size	Cv		Valve Model		Actuator Model / Minimum Close-off – PSI					
					Two-Way			Three-Way		
	Two Pos. @ 90°	Mod. @ 70°	Two-Way	Three-Way	50	100	150*	50	100	150*
Industrial Type Actuators										
2"	90	64	MS2-2	MS3-2	RE1.5	RE1.5	RE1.5	RE1.5	RE1.5	RE1.5
2-1/2"	194	126	MS2-2.5	MS3-2.5	RE1.5	RE1.5	RE1.5	RE1.5	RE1.5	RE3
3"	370	202	MS2-3	MS3-3	RE1.5	RE1.5	RE3	RE1.5	RE3	RE3
4"	747	391	MS2-4	MS3-4	RE1.5	RE3	–	RE3	RE3	–
5"	1272	636	MS2-5	MS3-5	RE3	RE3	–	RE3	RE6	–
6"	1999	955	MS2-6	MS3-6	RE3	–	–	RE6	–	–
8"	3853	1698	MS2-8	MS3-8	RE6	–	–	RE6	–	–
10"	6362	2655	MS2-10	MS3-10	RE10	–	–	RE10	–	–
12"	9165	3825	MS2-12	MS3-12	RE15	–	–	RE15	–	–
14"	10982	4583	MS2-14	MS3-14	Call	–	–	Call	–	–

Notes:

* Call for close-offs greater than 150 PSI.

– RE: DEI Reversing Electronic Series Industrial Actuator with NEMA 4/4X housing for outdoor as well as indoor use. When used outdoors, a heater and stat (H/S) is required. Models available for modulating, tri-state and two-position control.

– For actuator selection part number, refer to page AC-3.

– Ratings based on 10 ft/sec maximum fluid velocity.

– For three-way valves, alignment holes are used temporarily for assembly.

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°	Two-Way	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°	Three-Way	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								
	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.

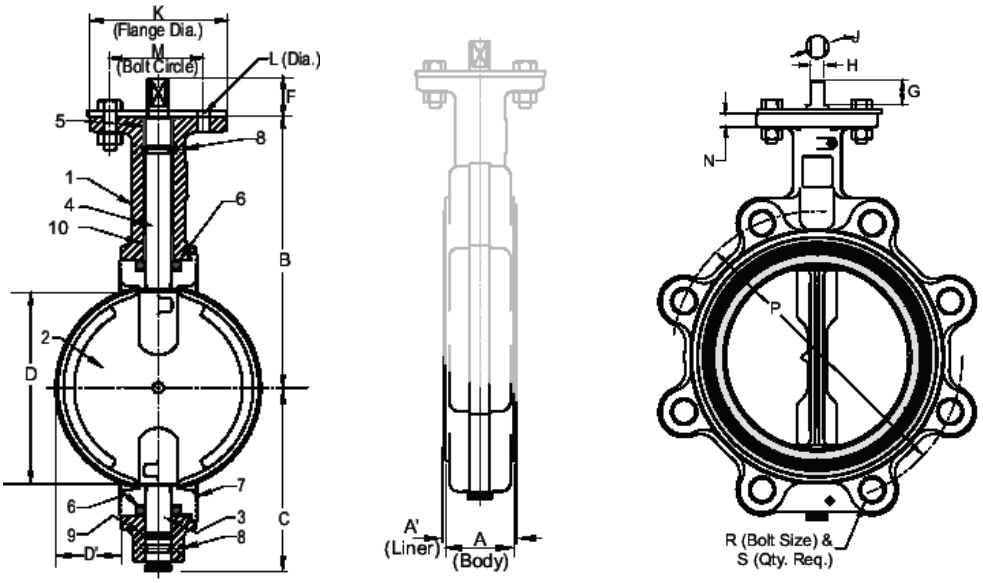
Resilient Seated Valves: 2" through 24" Sizes

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 ASTMB148
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)																
											Mounting Flange Drilling				Lug Bolt Data		
	A[1†]	B	C	D	D[1]	F	G	H	J	K	L‡ Hole Diam.	M BC	N	Key	P BC	R Threads UNC-2B	S No. Holes
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.

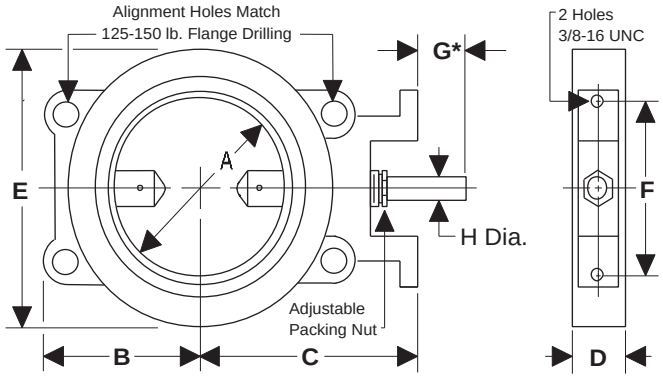
Metal Seated Valves: 2" through 14" Sizes

General Description:
The Metal Seated Butterfly Valve is available in sizes 2" through 14" in a combination of materials and optional features suitable for most mid-range differential pressures and service conditions.

Features:
- Inboard bushings of graphited bronze for long life, non-freezing, low torque characteristics.
- Close tolerance machining for minimal leakage and dependable flow characteristics.
- Adjustable packing - Graphited Teflon Braid. Valves can be repacked without removal from line.
- Rugged mounting pads drilled and tapped for ease of installing actuating equipment and accessories.
- Flatted, keywayed or hexed ends on shafts available to facilitate factory or field mounting of all types of actuating equipment. (Flatted shaft shown).
- Light weight, solid ring, wafer design for ease of installation. Four holes to insure proper alignment without transfer of pipe stresses to the valve body.
- Contoured bore improves flow characteristics.

Standard Materials:
BODY: Cast Iron
DISC: Cast Iron
SHAFT: 416 Stainless Steel
BUSHING: Graphited Bronze
PACKING: Graphited Teflon Braid
PACKING NUT: Brass
SEAT: Swing-through
TEMPERATURE: To 450°F with standard materials.

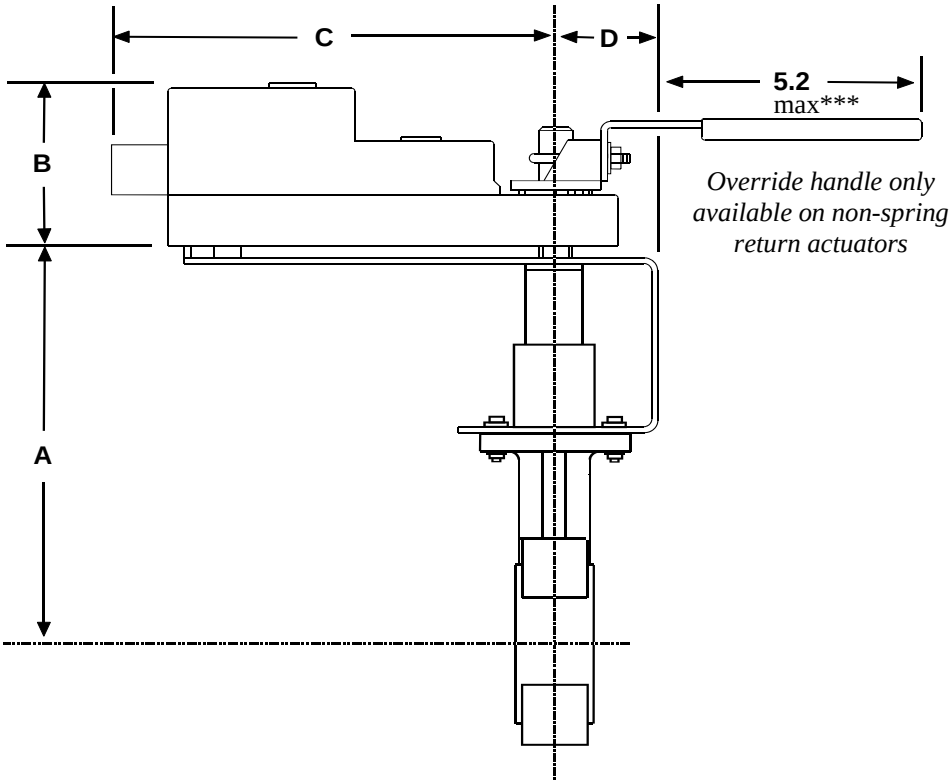
Optional Materials:
BODY: Carbon Steel, Stainless Steel (304 or 316)
DISC: Carbon Steel, Stainless Steel (304 or 316)
SHAFT: 304 or 316 Stainless Steel, Inconel, Monel
BUSHING: 304 or 316 Stainless Steel, Grafoil, Glass Filled Teflon
PACKING: Pure Teflon Braid, Teflon V-Ring
PACKING NUT: 316 Stainless Steel
SEAT: No Option



* "G" Length and configuration of the shaft end will vary to accommodate specific actuators.

Valve Size	Dimensions (inches)						
	A	B	C	D	E	F	H
2"	2	2-3/4	5-3/8	1-1/2	3-7/8	4-1/4	1/2
2-1/2"	2-1/2	3	5-5/8	1-1/2	4-5/8	4-1/4	1/2
3"	3	3-1/8	5-7/8	1-1/2	5-1/8	4-1/4	1/2
4"	4	4-1/4	6-3/8	1-1/2	6-3/8	4-1/4	1/2
5"	5	4-7/8	6-7/8	1-1/2	7-1/2	4-1/4	1/2
6"	6	5-3/8	7-3/8	1-1/2	8-1/2	4-1/4	1/2
8" L	8	6-1/2	8-3/8	1-1/2	10-3/4	5-1/8	1/2
8" H	8	6-1/2	9-5/8	1-7/8	10-3/4	5-1/8	3/4
10"	10	8	10-5/8	1-7/8	13	5-1/8	3/4
12"	12	9-1/2	11-5/8	1-7/8	15-1/4	5-1/8	3/4
14"	13-1/8	10-1/2	12-1/8	1-7/8	16-3/8	5-1/8	3/4

Dimensions for Two-Way Resilient Seated Control Valves: 2” through 6” with Commercial Actuators



Valve Size	Model No.	Dim. (inches)
		A
2"	RS2B-2	9.2
2-1/2"	RS2B-2.5	9.7
3"	RS2B-3	10.0
4"	RS2B-4	10.7
5"	RS2B-5	11.3
6"	RS2B-6	11.7

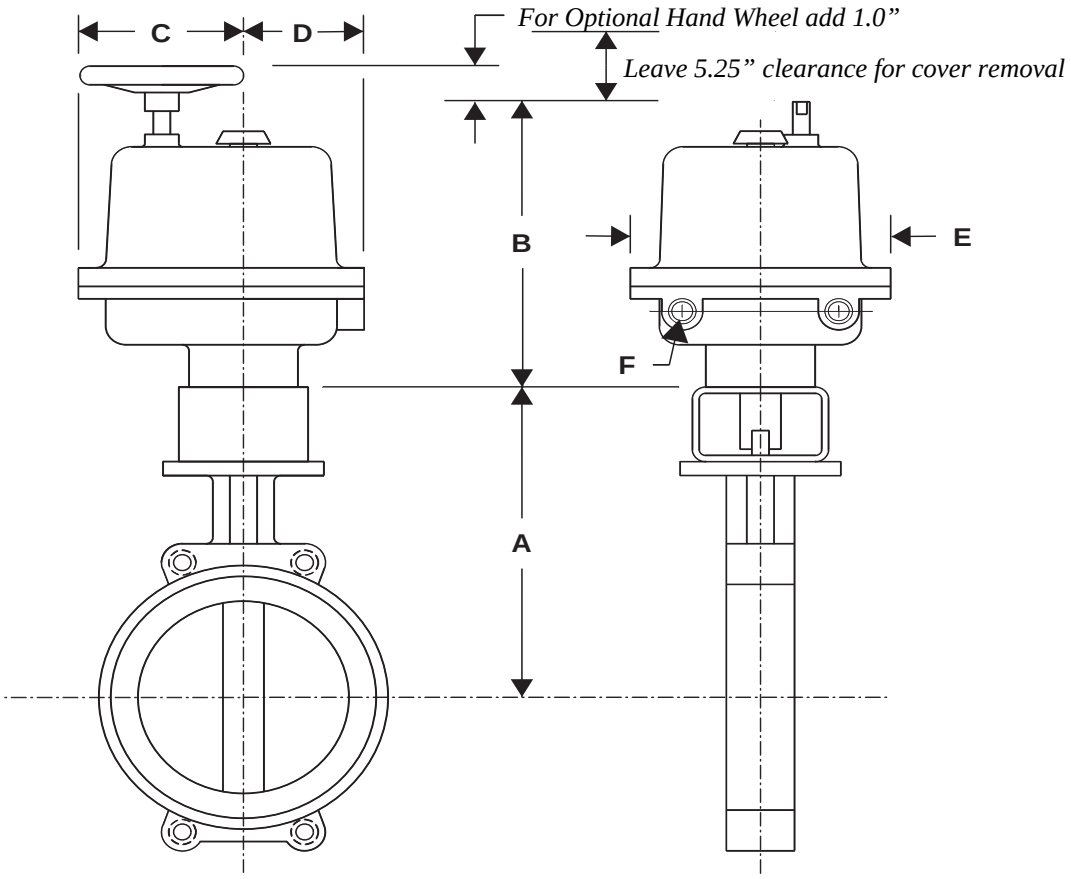
Actuator Selection Chart

Actuator Type	Dimensions (inches)			
	B*	C	D	E**
Type A Spring Return				
ES142	3.5	8.8	2.3	4.0
Type A Non-Spring Return				
EN132	3.5	6.4	1.7	3.2
EN221	3.5	8.8	2.3	4.0
EN310	3.5	8.8	2.3	4.0
Type B Spring Return				
ES177	3.5	8.2	2.2	4.0
Type B Non-Spring Return				
EN140/210/280	3.5	4.9	1.2	4.0

Notes:

* For valves requiring dual actuators add 4.0 inches to “B” dimension.
** “E” dimension is the actuator width.
*** Length of handle varies with actuator style.
– See page BF-B-9 for additional body information.
– All assemblies are available with an optional NEMA 4/4X type housing. See page AS-1 for details.

Dimensions for Two-Way Resilient Seated Control Valves: 2” through 14” with RE Series Industrial NEMA Type 4/4X Actuators



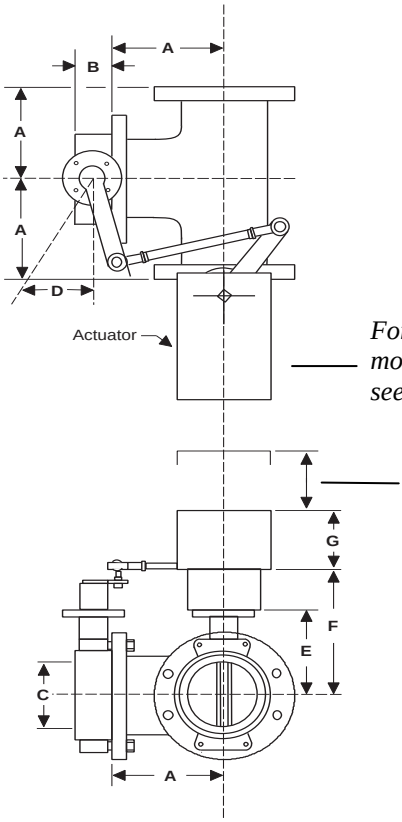
Valve Size	Model No.	Dimensions A*
2"	RS2B-2	8.50
2-1/2"	RS2B-2.5	9.00
3"	RS2B-3	9.25
4"	RS2B-4	10.00
5"	RS2B-5	10.53
6"	RS2B-6	11.00
8"	RS2B-8	12.38
10"	RS2B-10	13.19
12"	RS2B-12	15.06
14"	RS2B-14	16.56

Actuator Type	Dimensions B	C	D	E	F
Non-Spring Return					
RE1.5-RE8.5	9.93	5.15	3.48	7.42	1/2" NPT
RE10-RE30	11.65	6.07	4.4	9.75	3/4" NPT

Notes:

– See page BF-B-9 for additional body information.
– Call DEI for specification on Butterfly valves 16" and larger.
– Refer to page BF-B-2 for specific actuator/valve combinations based on close-off requirements.
* Valves are sometimes direct mounted to the actuator (no bracket). If the “A” dimension is too long, call for details.

Dimensions for Three-Way Resilient Seated Control Valves: 2” through 6” with Commercial Actuators



For Three-Way valve mounting arrangements see BF-B-24

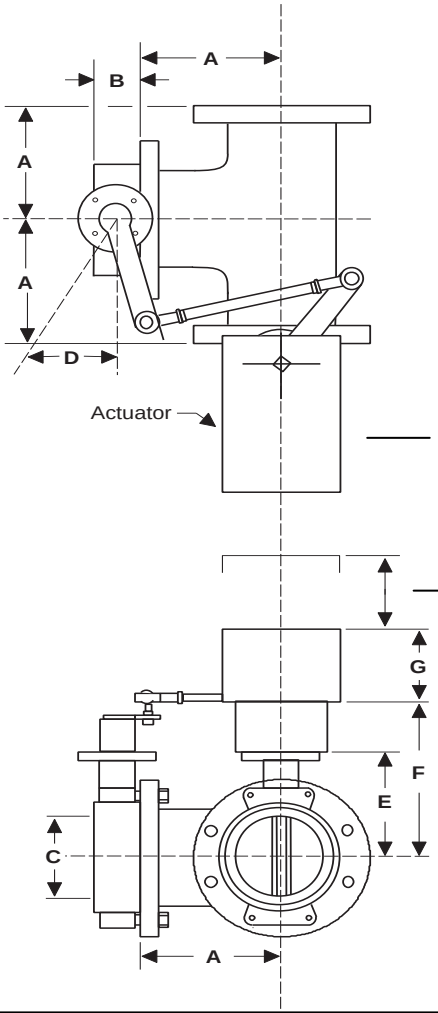
Leave 3.5” clearance for cover removal on Type B (none for Type A)

Valve Size	Model No.	Type A Actuator	Type B Actuator	Dimensions (inches)						
				A	B‡	C	D†	E	F	G**
2"	RS3B-2	ES142*/EN221	ES177*/EN210	4.50	1.82	1.49	3.36	5.50	9.20	3.50
2-1/2"	RS3B-2.5	ES142*/EN221	ES177*/EN210	5.00	1.94	2.01	3.36	6.00	9.70	3.50
3"	RS3B-3	ES142*/EN310	ES177*/EN210	5.50	1.94	2.64	3.36	6.25	9.95	3.50
4"	RS3B-4	EN310*	EN280*	6.50	2.20	3.67	3.36	7.00	10.70	3.50
5"	RS3B-5	EN310*	EN280*	7.50	2.32	4.71	4.77	7.53	11.23	3.50
6"	RS3B-6	EN310*	EN280*	8.00	2.32	5.66	4.77	8.00	11.70	3.50

Notes:

* May require 2 actuators. See close-off chart.
** For valves requiring dual actuators, add 4.0 inches to “G” dimension.
– All three-way assemblies are available with industrial actuators.
– “C” 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.
– Most assemblies are available with an optional NEMA 4/4X type housing. See applicable data sheet for details.
– Valve and/or actuator location may change depending on three-way arrangement.
† “D” dimension is the farthest point of rotation of arm.
‡ Includes liner thickness.

Dimensions for Three-Way Resilient Seated Control Valves: 2” through 16” with Industrial Actuators



For Three-Way valve mounting arrangements see BF-B-24

Leave 5.25” clearance for cover removal

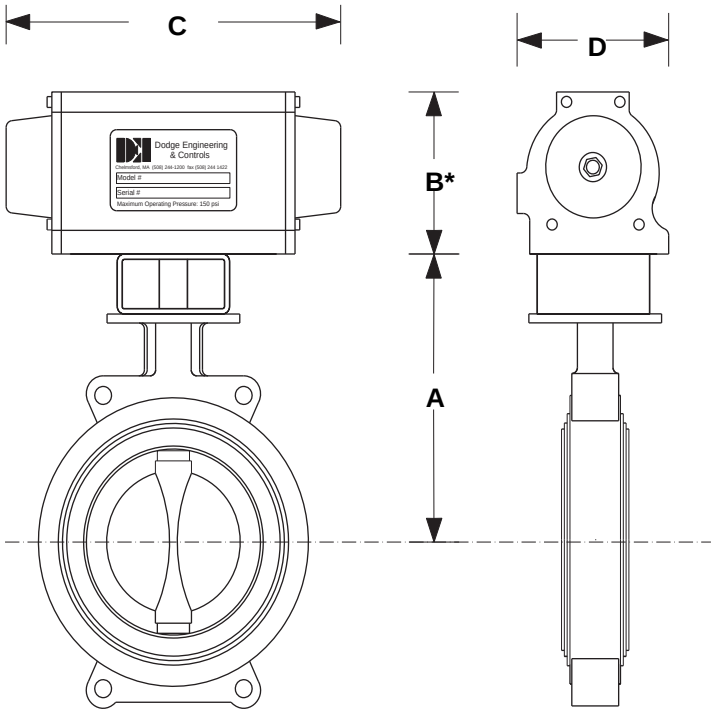
‡ For additional dimensions for Models using the Torque Maximizer (Models RExxT or RExxX), refer to Page AC-11 of the actuator section in our catalog. The 5.25” clearance for cover removal should be added to the side dimension.

Valve Size	Model No.	Industrial Actuator	Dimensions (inches)						
			A	B*	C	D†	E	F	G
2"	RS3B-2	RE1.5 thru 8.5	4.50	1.82	1.49	3.36	5.50	7.50	9.93
2-1/2"	RS3B-2.5	RE1.5 thru 8.5	5.00	1.94	2.01	3.36	6.00	8.00	9.93
3"	RS3B-3	RE1.5 thru 8.5	5.50	1.94	2.64	3.36	6.25	8.25	9.93
4"	RS3B-4	RE1.5 thru 8.5	6.50	2.20	3.67	3.36	7.00	9.00	9.93
5"	RS3B-5	RE1.5 thru 8.5**	7.50	2.32	4.71	4.77	7.53	9.53	9.93
6"	RS3B-6	RE1.5 thru 8.5**	8.00	2.32	5.66	4.77	8.00	10.00	9.93
8"	RS3B-8	RE10 thru 30	9.00	2.51	7.72	5.47	9.38	12.38	11.65
10"	RS3B-10	RE10 thru 30	11.00	2.82	9.70	6.54	10.19	13.19	11.65
12"	RS3B-12	RE10 thru 30	12.00	3.32	11.68	6.54	12.06	15.06	11.65
14"	RS3B-14	RE10 thru 30	14.00	3.19	13.53	9.63	13.50	16.50	11.65
16"	RS3B-16	RE30X‡	15.00	4.13	15.50	9.63	14.75	17.75	11.65

Notes:

– For 18" and larger valve dimensions, call DEI.
– “C” 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.
– Valve and/or actuator location may change depending on three-way arrangement.
† “D” dimension is the farthest point of rotation of arm.
* Includes thickness of liner.
** If RE10 or larger is used add 1” to “F” and 1.75” to “G”.

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



Add 1.0” to “D” Dimension for a Solenoid

For modulating Applications, add 5.5” in height for positioner

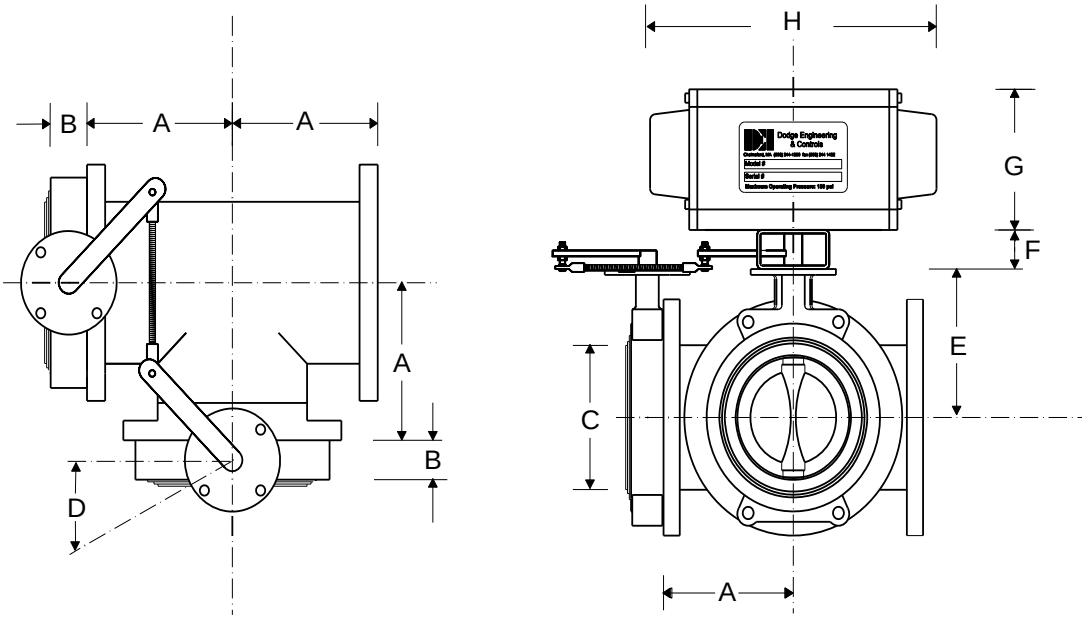
Valve Size	Valve Model No.	Dim. (inches)
		A
2"	RS2B-2	8.50
2-1/2"	RS2B-2.5	9.00
3"	RS2B-3	9.25
4"	RS2B-4	10.00
5"	RS2B-5	10.53
6"	RS2B-6	11.00
8"	RS2B-8	12.38
10"	RS2B-10	13.19
12"	RS2B-12	15.06
14"	RS2B-14	16.56

Actuator Model No.	Dimensions			
	B	C		D
		Spring Return	Double Acting	
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 12” 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

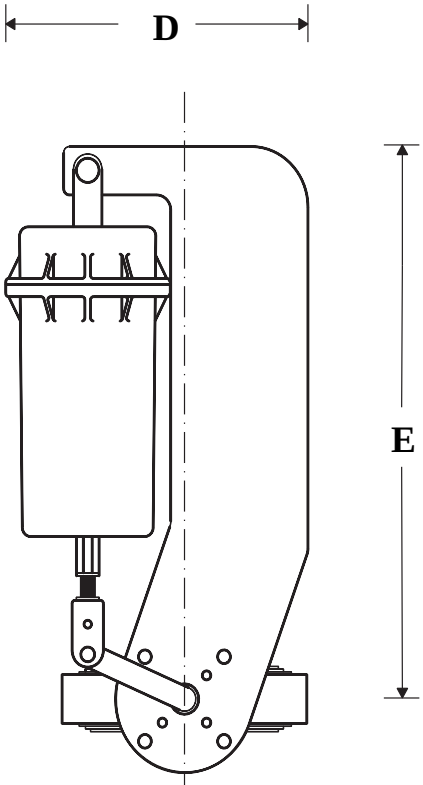
Actuator Model #	Dimensions (inches)		
	G*	H	
		Spring Return	Double Acting
P(N/S)20	2.68	8.39	6.81
P(N/S)40	3.39	7.56	7.50
P(N/S)80	4.45	8.94	8.23
P(N/S)130	4.88	10.39	9.60
P(N/S)200	5.28	11.50	9.96
P(N/S)300	6.18	13.23	11.30
P(N/S)500	6.93	16.26	12.56
P(N/S)850	8.27	20.24	16.69
P(N/S)1200	9.17	22.50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

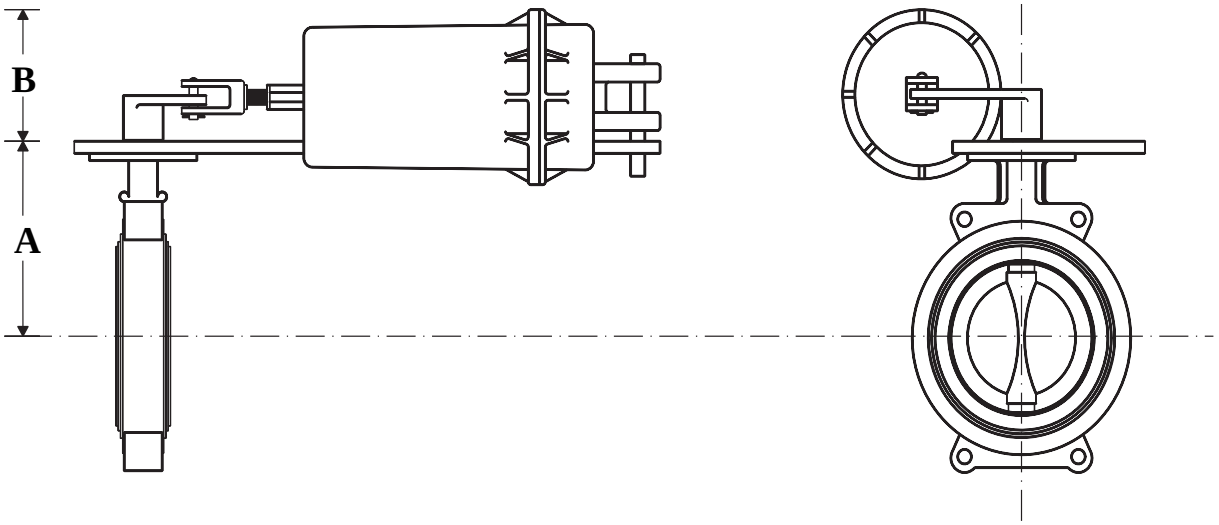
50 PSI (Low) Close-Off Pressure Based on 20 PSI Supply Air Pressure							
Size	**Valve Model No.**	**Actuator No.**	**A**	**B**	**C**	**D**	**E**
2"	RS2B-2(UC)	PS-1	5.50	3.13	16.62	8.25	14.57
2 1/2"	RS2B-2.5(UC)	PS-1	6.00	3.13	16.62	8.25	14.57
3"	RS2B-3(UC)	PS-2	6.25	6.80	20.13	12.00	18.07
4"	RS2B-4(UC)	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

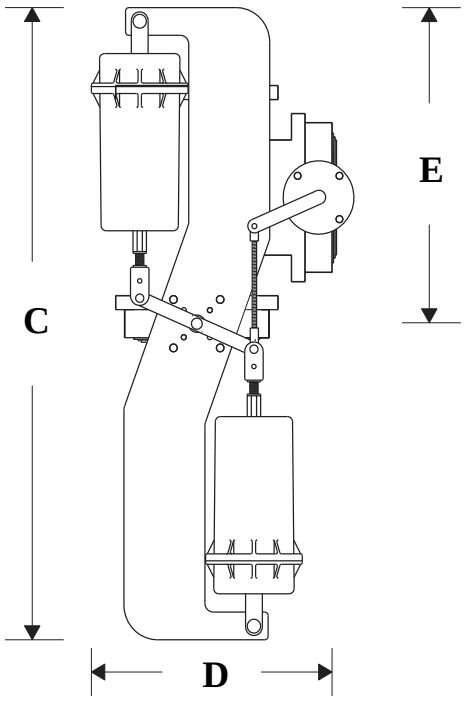


Note:
– Pneumatic 3-15 PSI positioner is available for modulating applications.

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

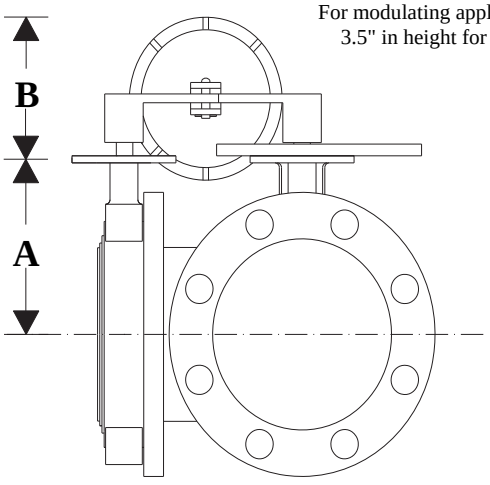
50 PSI (Low) Close-Off Pressure Based on 20 PSI Supply Air Pressure							
Size	**Valve Model No.**	**Actuator No.**	**A**	**B**	**C**	**D**	**E**
2"	RS3B-2(UC)	PS-1	5.50	3.13	23.35	10.00	14.57
2 1/2"	RS3B-2.5(UC)	PS-2	6.00	6.80	28.85	12.50	18.07
3"	RS3B-3(UC)	PS-2	6.25	6.80	28.85	13.00	18.07
4"	RS3B-4(UC)	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

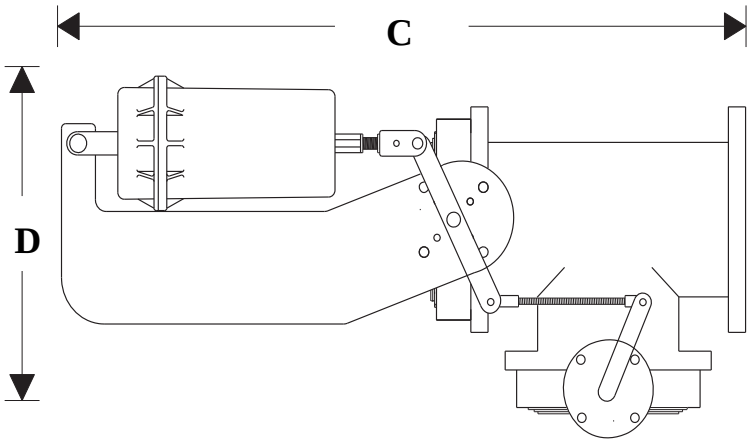
PS-4 & PS-5



For modulating applications, add 3.5" in height for positioner

PS-1, PS-2 & PS-3

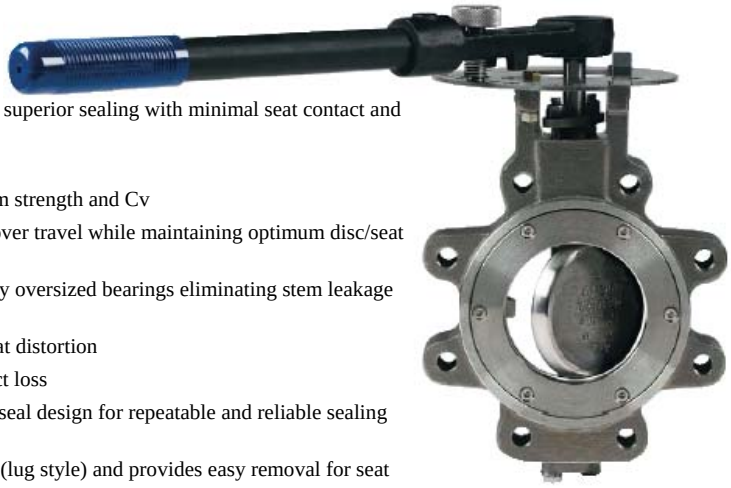




Note:
– Pneumatic 3-15 PSI positioner is available for modulating applications.

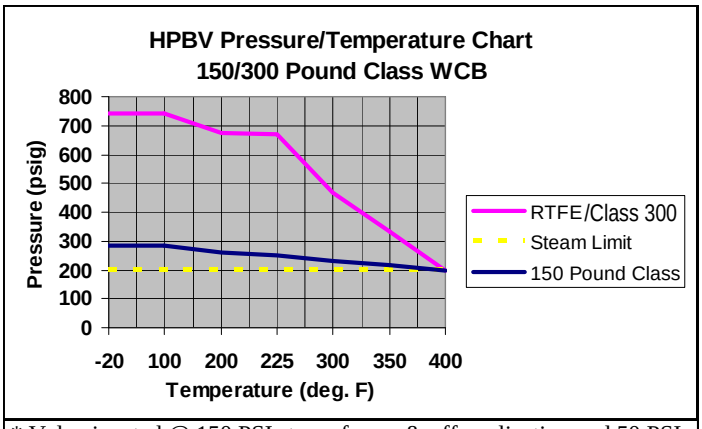
High Performance Butterfly Valve Specifications

Sizes 2 1/2" through 12" Class 150
Sizes 2 1/2" through 16" Class 300



Features and Benefits

- Double offset seat/disc/stem geometry to provide superior sealing with minimal seat contact and wear
- Machined, tapered seat multiple sealing edges
- Single piece shaft and disc designed for maximum strength and Cv
- Internally cast disc position stop to prevent disc over travel while maintaining optimum disc/seat contact
- Stem is centered in the adjustable stem packing by oversized bearings eliminating stem leakage and fugitive emissions
- Disc spacers to center disc in seat to eliminate seat distortion
- Blow out proof stem to prevent injury and product loss
- Combination mechanical and pressure energized seal design for repeatable and reliable sealing performance and extended cycle life
- Seat retaining ring designed for dead end service (lug style) and provides easy removal for seat replacement
- Stem/disc connection allows minimal loss motion and high strength



* Valve is rated @ 150 PSI steam for on & off application and 50 PSI modulating service.

Product Range

Size/ASME Class: 2 1/2" through 24" Class 150, 2 1/2" through 16" Class 300
Body Configuration: Wafer and Lug

Operators Available

10 Position Lever Handle, Gear Operators, Pneumatic and Electric Actuators

Material of Standard Construction

Body	Carbon Steel or 316 Stainless Steel
Disc	316 Stainless Steel
Stem	17-4 PH Stainless Steel
Bearing	Stainless backed RTFE
Seat	RTFE/Stainless Garter Spring

Specifications

Valve Sizes 2 1/2" through 24"
Flanged End Connections per ANSI B16.5.

Valve Face to face dimension per MSS-SP-68.

Valve bodies are cast high quality steel with standard availability in ASTM-A-216 WCB CS and ASTM A-351 CF8M SS. Body wall thickness meets ASME/ANSI B16.34 and complies with quality standard for steel casting MSS-SP-55.

High performance valve design meets the requirements of MSS-SP-68 for double offset design.

Valve pressure tests meet MSS-SP-61, API 598 and ANSI B 16.104 valve inspection and testing.

Tagging meets the requirements of MSS-SP-25.

For NACE applications consult factory.

Pressure Ratings—Rated for Double Dead End Service
(Cold Working Pressure)

	2 1/2" through 24"	2 1/2" through 16"
	Class 150	**Class 300**
Carbon Steel	**285 PSI**	**740 PSI**
Stainless Steel	**275 PSI**	**720 PSI**

Valve Sizing Coefficients
High Performance Butterfly Valves

Class 150										
Two-Way* Part #	**Valve Size**	**Cv@ Various Disc Angles**								
		10°	**20°**	**30°**	**40°**	**50°**	**60°**	**70°**	**80°**	**90°**
HP2B-2.5-CS (150)	2-1/2"	8	16	26	37	53	75	**115**	142	**160**
HP2B-3-CS (150)	3"	13	26	42	60	87	124	**189**	234	**263**
HP2B-4-CS (150)	4"	23	46	74	106	152	216	**331**	409	**460**
HP2B-5-CS (150)	5"	36	73	116	167	240	341	**523**	646	**726**
HP2B-6-CS (150)	6"	60	120	192	276	396	564	**864**	1,068	**1,200**
HP2B-8-CS (150)	8"	103	206	330	474	680	968	**1,483**	1,833	**2,060**
HP2B-10-CS (150)	10"	164	328	525	754	1,082	1,542	**2,362**	2,919	**3,280**
HP2B-12-CS (150)	12"	235	471	754	1,083	1,554	2,214	**3,391**	4,192	**4,710**
HP2B-14-CS (150)	14"	325	650	1,040	1,495	2,145	3,055	**4,680**	5,785	**6,500**
HP2B-16-CS (150)	16"	422	845	1,352	1,944	2,789	3,972	**6,084**	7,521	**8,450**
HP2B-18-CS (150)	18"	549	1097	1,755	2,523	3,620	5,156	**7,898**	9,763	**10,970**
HP2B-20-CS (150)	20"	679	1357	2,171	3,121	4,478	6,378	**9,770**	12,077	**13,570**
HP2B-24-CS (150)	24"	951	1901	3,042	4,372	6,273	8,935	**13,687**	16,919	**19,010**

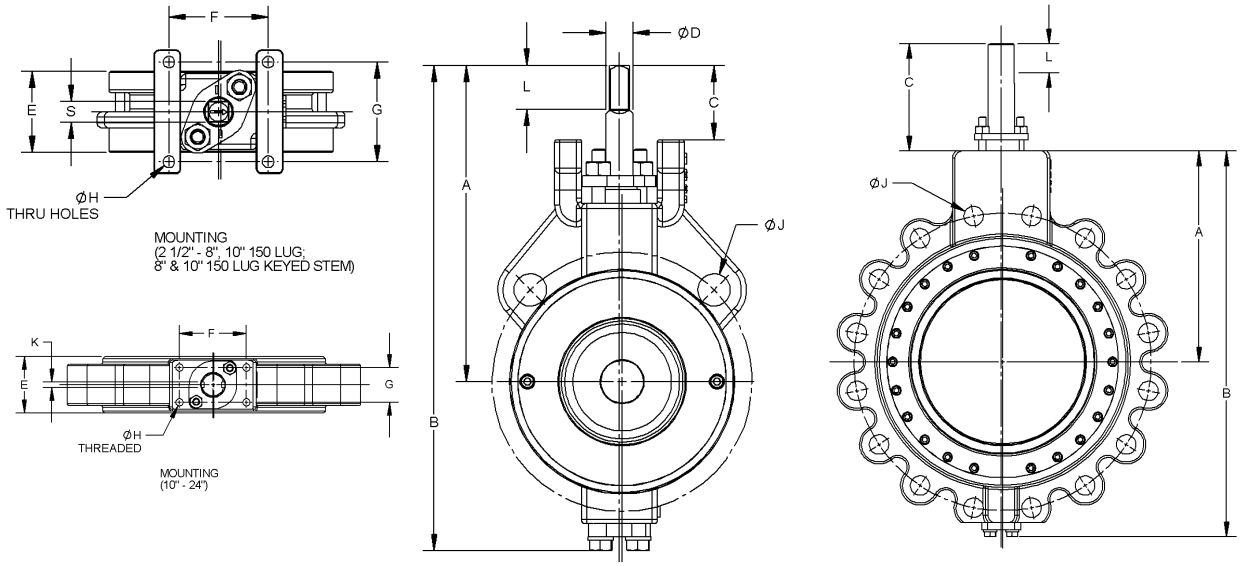
Class 300										
Two-Way* Part #	**Valve Size**	**Cv@ Various Disc Angles**								
		10°	**20°**	**30°**	**40°**	**50°**	**60°**	**70°**	**80°**	**90°**
HP2B-2.5-CS (300)	2-1/2"	8	16	26	37	53	75	**115**	142	**160**
HP2B-3-CS (300)	3"	13	26	42	60	87	124	**189**	234	**263**
HP2B-4-CS (300)	4"	23	46	74	106	152	216	**331**	409	**460**
HP2B-5-CS (300)	5"	36	73	116	167	240	341	**523**	646	**726**
HP2B-6-CS (300)	6"	60	120	192	276	396	564	**864**	1,068	**1,200**
HP2B-8-CS (300)	8"	103	206	330	474	680	968	**1,483**	1,833	**2,060**
HP2B-10-CS (300)	10"	157	313	501	720	1,033	1,471	**2,254**	2,786	**3,130**
HP2B-12-CS (300)	12"	227	454	726	1,044	1,498	2,134	**3,269**	4,041	**4,540**
HP2B-14-CS (300)	14"	268	536	858	1,233	1,769	2,519	**3,859**	4,770	**5,360**
HP2B-16-CS (300)	16"	395	790	1,264	1,817	2,607	3,713	**5,688**	7,031	**7,900**
HP2B-18-CS (300)	18"	476	951	1,522	2,187	3,138	4,470	**6,847**	8,464	**9,510**
HP2B-20-CS (300)	20"	622	1244	1,990	2,861	4,104	5,846	**8,955**	11,070	**12,438**
HP2B-24-CS (300)	24"	876	1751	2,802	4,027	5,778	8,230	**12,607**	15,584	**17,510**

Note:

- Standard High Performance butterfly valves have Carbon Steel bodies. Option: SS = Stainless Steel Body
* For Three-Way valve, replace the “HP2B” with “HP3B”.

High Performance Butterfly Valve Dimensions

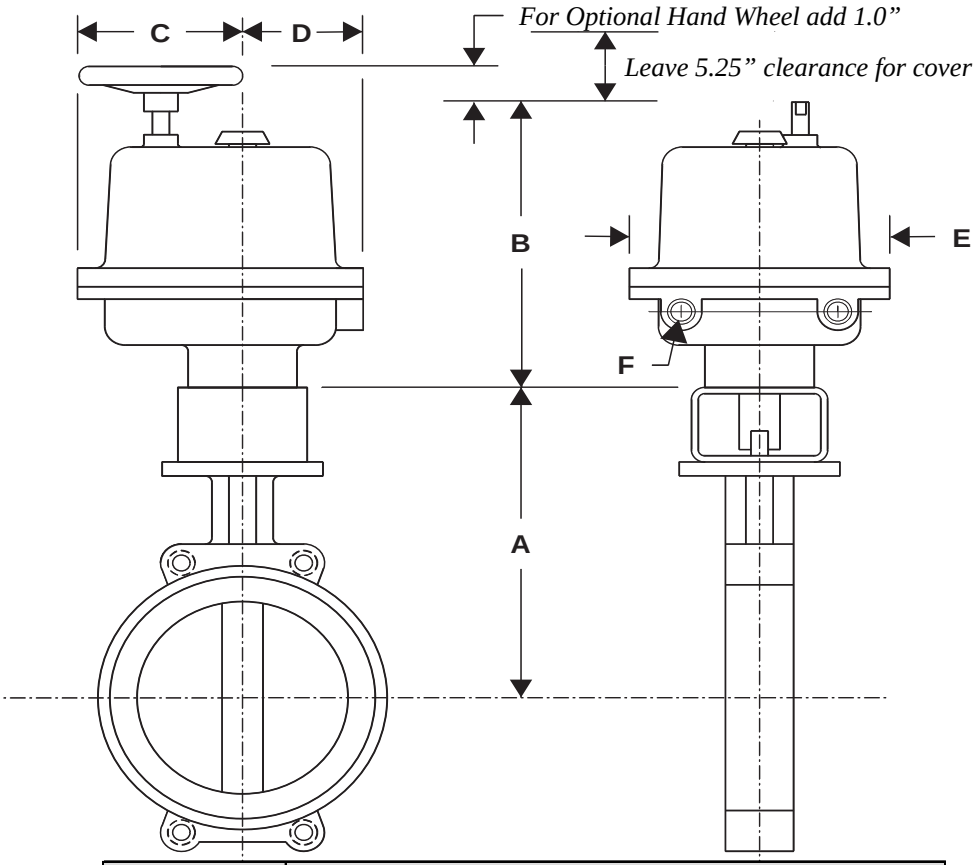
Sizes 2 1/2" through 12" Class 150
Sizes 2 1/2" through 16" Class 300



150 CLASS		Dimensions					Mounting Flange			Stem Connection		
Two-Way Part Number	Valve Size	A Height	B Height	C Stem Lg	D Stem Dia	E Face	F Width	G Width	H Fastener	S Square	K Key	L Length
HP2B-2.5-CS (150)	2.5 Lug	5.60	11.22	1.63	0.625	1.875	2.30	2.30	1/4-20	0.46		1.00
HP2B-3-CS (150)	3	5.60	11.22	1.63	0.625	1.875	2.30	2.30	1/4-20	0.46		1.00
HP2B-4-CS (150)	4	6.25	12.59	1.63	0.625	2.125	2.30	2.30	1/4-20	0.46		1.00
HP2B-5-CS (150)	5 Lug	7.70	15.22	1.69	0.875	2.125	3.00	3.00	3/8-16	0.64		1.00
HP2B-6-CS (150)	6	7.70	15.22	1.69	0.875	2.250	3.00	3.00	3/8-16	0.64		1.00
HP2B-8-CS (150)	8	9.51	19.22	1.86	1.125	2.625	3.36	3.36	1/2-13		0.250	1.50
HP2B-10(-CS 150)	10 Lug	10.54	20.75	1.82	1.125	2.812	3.36	3.36	1/2-13		0.250	1.50
HP2B-10W-CS (150)	10 Wafer	8.63	16.50	3.72	1.25	2.812	3.88	1.38	1/2-13		0.250	1.50
HP2B-12-CS (150)	12 Lug	11.62	21.72	5.50	1.375	3.188	3.88	2.00	1/2-13		0.312	1.50
HP2B-12W-CS (150)	12 Wafer	11.62	20.34	5.50	1.375	3.188	3.88	2.00	1/2-13		1.312	1.50
HP2B-14-CS (150)	14	12.00	23.09	5.50	1.500	3.625	4.50	2.00	1/2-13		0.375	1.50
HP2B-16-CS (150)	16	14.00	26.84	6.00	2.000	4.000	5.75	2.50	1/2-13		0.500	2.38
HP2B-18-CS (150)	18	15.00	29.09	6.00	2.250	4.500	5.75	2.50	1/2-13		0.500	2.38
HP2B-20-CS (150)	20	17.00	32.50	6.00	2.500	5.000	6.00	4.00	1/2-13		0.750	2.50
HP2B-24-CS(150)	24	19.50	37.88	6.50	3.000	6.062	6.00	4.00	3/4-10		0.750	2.50

300 CLASS		Dimensions					Mounting Flange			Stem Connection		
Two-Way Part Number	Valve Size	A Height	B Height	C Stem Lg	D Stem Dia	E Face	F Width	G Width	H Fastener	S Square	K Key	L Length
HP2B-2.5-CS (300)	2.5 Lug	5.60	11.88	1.63	0.625	1.875	2.30	2.30	1/4-20	0.46		1.00
HP2B-3-CS (300)	3 Lug	5.60	11.88	1.63	0.625	1.875	2.30	2.30	1/4-20	0.46		1.00
HP2B-3W-CS (300)	3 Wafer	5.60	11.25	1.63	0.625	1.875	2.30	2.30	1/4-20	0.46		1.00
HP2B-4-CS (300)	4	6.25	12.59	1.63	0.625	2.125	2.30	2.30	1/4-20	0.46		1.00
HP2B-5-CS (300)	5 Lug	7.70	15.22	1.69	0.875	2.125	3.00	3.00	3/8-16	0.64		1.00
HP2B-6-CS (300)	6 Lug	7.70	16.25	1.69	0.875	2.310	3.00	3.00	3/8-16	0.64		1.00
HP2B-6W-CS (300)	6 Wafer	7.70	15.22	1.69	0.875	2.310	3.00	3.00	3/8-16	0.64		1.00
HP2B-8-CS (300)	8	9.51	19.22	1.86	1.125	2.875	3.36	3.36	1/2-13		0.250	1.50
HP2B-10-CS (300)	10	10.81	19.75	5.50	1.375	3.250	3.88	2.00	1/2-13		0.312	1.50
HP2B-12-CS (300)	12	11.62	22.53	6.00	1.500	3.625	4.50	2.00	1/2-13		0.375	1.50
HP2B-14-CS (300)	14	13.50	26.09	6.00	2.000	4.625	5.75	2.50	1/2-13		0.500	2.38
HP2B-16-CS (300)	16	15.00	29.09	6.00	2.250	5.250	5.75	2.50	1/2-13		0.500	2.38

Dimensions for Two-Way High Performance Control Valves: 2 1/2" through 14" with RE Series Industrial NEMA Type 4/4X Actuators



Actuator Type	Dimensions				
	B	C	D	E	F
Non-Spring Return					
RE1.5-RE8.5	9.93	5.15	3.48	7.42	1/2" NPT
RE10-RE30	11.65	6.07	4.4	9.75	3/4" NPT

150 Class Valve Size	Model No.	Dimensions A*
2.5" Lug	HP2B-2.5	8.60
3"	HP2B-3	8.60
4"	HP2B-4	9.25
5" Lug	HP2B-5	10.70
6"	HP2B-6	10.70
8"	HP2B-8	12.51
10" Lug	HP2B-10	13.54
10" Wafer	HP2B-10W	11.63
12" Lug	HP2B-10	14.62
12" Wafer	HP2B-12W	14.62
14"	HP2B-14	15.06

300 Class Valve Size	Model No.	Dimensions A*
2.5" Lug	HP2B-2.5	8.60
3" Lug	HP2B-3	8.60
3" Wafer	HP2B-3W	8.60
4"	HP2B-4	9.25
5" Lug	HP2B-5	10.70
6" Lug	HP2B-6	10.70
6" Wafer	HP2B-6W	10.70
8"	HP2B-8	12.51
10"	HP2B-10	13.81
12"	HP2B-12	14.62
14"	HP2B-14	16.56

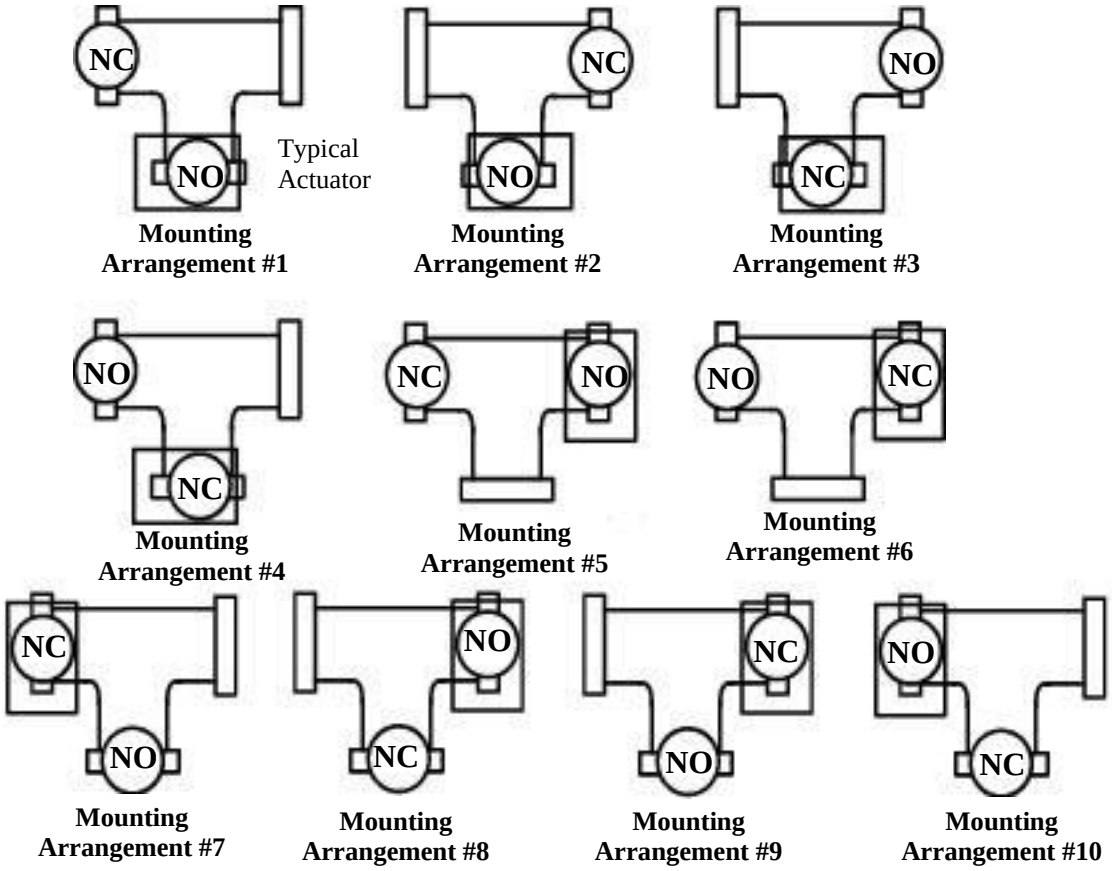
Notes:

– See page BF-B-22 for additional body information.
– Call DEI for specification on Butterfly valves 16" and larger.
* Valves are sometimes direct mounted to the actuator (no bracket). If the "A" dimension is too long, call for details.

Three-Way Butterfly Valve Mounting

The following mounting arrangements are typical for most applications. The location of the actuator is shown above the actuated valve. For 5" and 6" valves with dual actuators, both valves are actuated. For other mounting arrangements, please contact the factory or send a sketch.

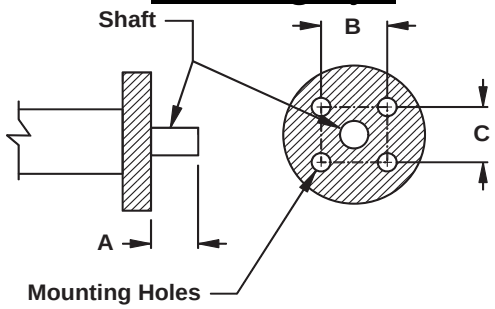
NO = Normally Open
NC = Normally Closed

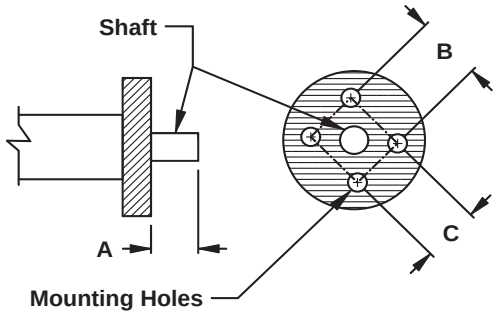


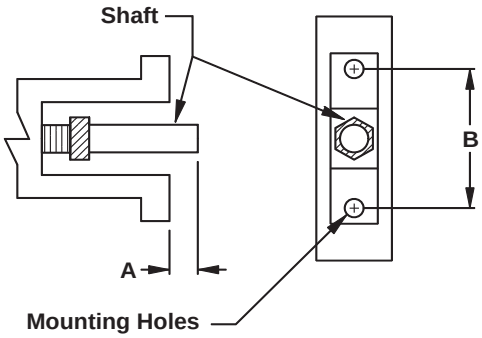
Note: All Three-Way Butterfly valve orders should have the mounting arrangement specified when order is placed. Flow direction must be indicated on diagram if butterflies are high performance, Victaulic Series 709, or any other valve that requires flow in a specific direction.

Dimension Worksheet for Actuator Retrofits

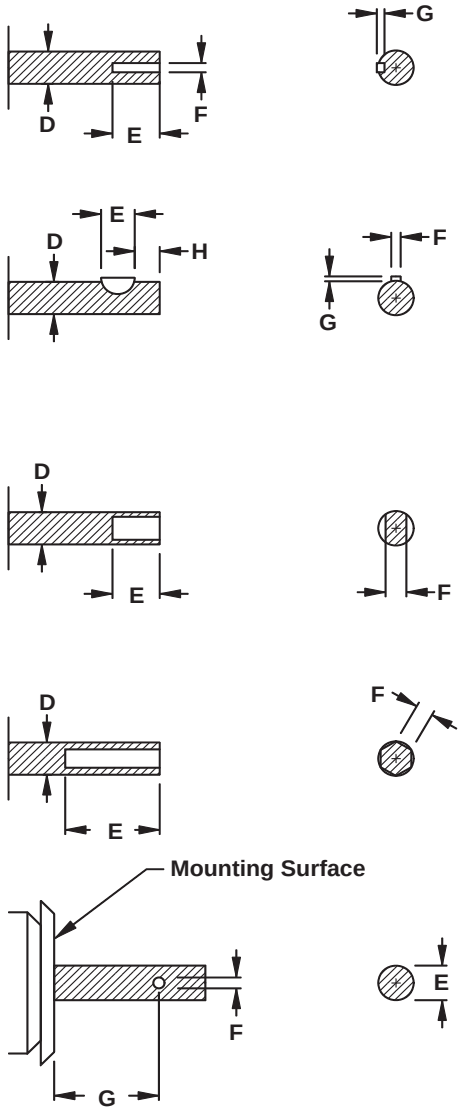
Mounting Style







Shaft Style



Normal Valve Size: _____

Valve Manufacturer: _____

Valve Style: *Lugged, Semi-lugged or wafer*
(Please circle one)

Valve Model Number: _____

Valve Type: *Two-Way or Three-Way*
(Please circle one)

Unseating Torque at desired differential:
(in-lb):_____

Mounting Style: Please circle one on chart above.

Dimensions: A=_____ B=_____ C=_____

Are Mounting Holes Drilled and Tapped?: *Yes or No*
If Yes—Bolt Size:_____ Threads/Inch:_____
If No—Hole Diameter: _____

Shaft Style: Please circle one on chart above.

Dimensions: D=_____ E=_____
F=_____ G=_____ H=_____

Butterfly Valves

Butterfly Valves with Electronic Actuators

Butterfly Valves with Pneumatic Actuators

High Performance Butterfly Valves - Electronic and Pneumatic

General