

Resilient Seated Butterfly Valves

2 Way • 2" - 30" and 3 Way • 2" - 20"

Bray's NY, AB and SS series resilient seated butterfly valves set the design standard for quality, reliability and long life in a wide variety of HVAC applications. Specifically designed for automated applications on chilled water, hot water and condenser water, all NY, AB and SS series automated butterfly valves are 100% factory tested for bubble tight shut off and low seating/unseating torque.

NY, AB and SS Series valves are available in 2-way configurations to 30" and 3-way configurations in sizes from 2" to 20". Actuators include industrial electric, commercial electric, high pressure pneumatic and low pressure pneumatic in both spring return and non spring return variations for on/off and modulating control applications. Differential pressure ratings are available for high close-off (up to 175 PSI) and low close-off (50 PSI) requirements.



Features and Benefits

- High Purity Peroxide Cured EPDM seats
Low torque and superior rubber stability over the shelf life and service life of the valve
- Nylon coated ductile iron disc - NYL Series
 - Superior corrosion and abrasion resistance extends the life of the valve
 - Reduced torque requirements
- Internal disc-to-stem connection
High strength and easy serviceability
- Wide variety of direct mount actuators
Reduces size, cost and hysteresis
- Full and 50 PSI close-off pressure ratings available
For maximum actuator pricing efficiency

BFV - Body Specifications

Technical Specifications		
Service	Hot Water, Chilled Water, Condenser Water up to 50% Glycol	
Size Range	2" through 30" (DN 50 to 750)	
Body Style	Lug, 2-Way and 3-Way, for ANSI 125 and ANSI 150 flanges	
Flow Characteristics	Modified Equal Percentage – See Page RB-3	
Flow Coefficients	See Page RB-9	
Fluid Temperature Limits	-20 to 250°F (-28 to 121°C)	
Leakage	Bubble tight at rated maximum differential pressure	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Body Cold Working Pressure Ratings	250 PSI (17.2 Bar)	
Close-Off - Pressure Ratings	2 in. to 12 in. Valve Part Numbers Ending in "0"	175 psi
	14 in. to 30 in. Valve Part Numbers Ending in "0"	150 psi
	2 in. to 20 in. Valve Part Numbers Ending in "1"	50 psi
	24 in. to 30 in. Valve Part Numbers Ending in "1"	75 psi
	See pages RB-18 to RB-26	
Materials	Body	Cast Iron
	Disc	NY Series - Ductile Iron, Nylon 11 coated
		AB Series - Aluminum Bronze SS Series - 316 Stainless Steel
	Seat	EPDM (Ethylene Propylene Diene Monomer) - Peroxide Cured
	Stem	416 Stainless Steel
Tee	Ductile Iron (3-way valves only)	
Approvals & Certifications	CE/PED Certification, NSF/ANSI 61-2008 Certification (Potable Water) SIL Certification, ABS Certification, Bureau Veritas Certification, DNV	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



STEM RETAINING ASSEMBLY:

The stem is retained in the body by means of a unique Stainless Steel Spirolox® retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.

STEM BUSHING:

Non-corrosive, heavy duty acetal bushing absorbs actuator side thrust.

STEM SEAL:

Double "U" cup seal design is self-adjusting and gives positive sealing in both directions.

NECK:

Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

STEM:

Precision double "D" disc to stem connection drives the disc without the need for screws or pins. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. Disassembly of the Bray stem is just a matter of pulling the stem out of the disc.

PRIMARY & SECONDARY SEALS:

These seals prevent line media from coming in contact with the stem or body. **Primary Seal** is achieved by an interference fit of the molded seat flat with the disc hub. **Secondary Seal** is created because the stem diameter is greater than the diameter of the seat stem hole.

BODY:

One-piece wafer or lug style. Polyester coating for excellent corrosion resistance. Nylon 11 coating is available as an option.

SEAT:

Bray's tongue and groove seat design lowers torque and provides complete isolation of flowing media from the body. The seat also features a molded O-Ring which eliminates the use of flange gaskets.

DISC:

Casting is spherically machined and hand polished to provide a bubble-tight shutoff, minimum torque, and longer seat life.

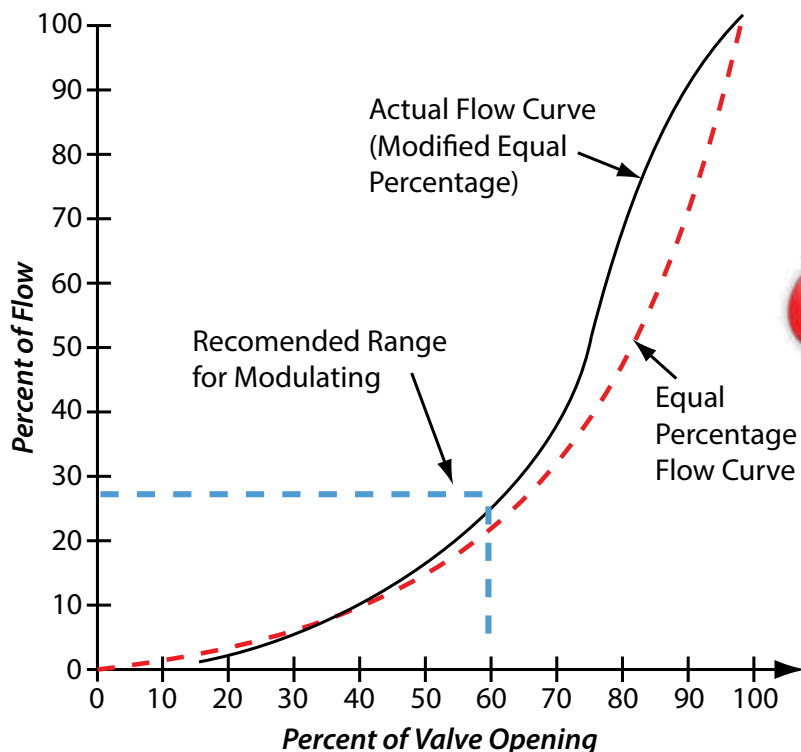


2-Way Valves

Valve Size	ANGLE OF DISC OPENING								
	10 DEGREES	20 DEGREES	30 DEGREES	40 DEGREES	50 DEGREES	60 * DEGREES	70 DEGREES	80 DEGREES	90 DEGREES
2"	1	7	16	27	43	61	84	114	144
2.5"	1.5	11	24	43	67	107	163	223	282
3"	2	15	35	61	96	154	267	364	461
4"	3	27	62	109	171	274	496	701	841
5"	5	43	98	170	268	428	775	1,146	1,376
6"	6	56	129	225	354	567	1,025	1,542	1,850
8"	12	102	241	421	680	1,081	1,862	2,842	3,316
10"	19	162	382	667	1,076	1,710	2,948	4,525	5,430
12"	27	235	555	1,005	1,594	2,563	4,393	6,731	8,077
14"	34	299	756	1,320	2,149	3,384	5,939	9,974	10,538
16"	45	397	1,001	1,749	2,847	4,483	7,867	11,761	13,966
18"	58	507	1,281	2,237	3,643	5,736	10,062	14,496	17,214
20"	72	632	1,595	2,786	4,536	7,144	12,535	18,812	22,339
24"	259	1,028	2,387	4,244	6,962	11,040	18,235	27,186	33,154
30"	420	1,652	3,986	7,080	11,328	18,090	28,844	43,003	52,443

* When selecting a butterfly valve for a modulating application, use a valve where the calculated Cv falls between 0 - 60 degrees.

Equal Percentage Flow Curve Chart



BFV - Valve Sizing Steps

STEP ONE Determine the designed Cv by using the following equation*.

$$Cv = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$$

Where

- Q = Flow in gallons per minute (GPM) required to pass through the valve
- G = Specific gravity of fluid *
- ΔP = Designed pressure drop across the valve in PSI
- Cv = Flow coefficient

NOTES * Specific gravity is negligible (equal to 1) for water below 200° F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H₂O mixture will not be affected by the specific gravity.

EXAMPLE The Specific Gravity of 50% Water (Compound 1) and 50% Ethylene Glycol Solution (Compound 2):

$$\frac{1}{\text{Specific Gravity}} = \frac{0.5}{1.0} + \frac{0.5}{1.113} = 1.05$$

$$\frac{1}{G_{\text{soln}}} = \frac{\text{wt\% of Compound 1}}{\text{Specific Gravity (G)}} + \frac{\text{wt\% of Compound 2}}{\text{Specific Gravity (G)}}$$

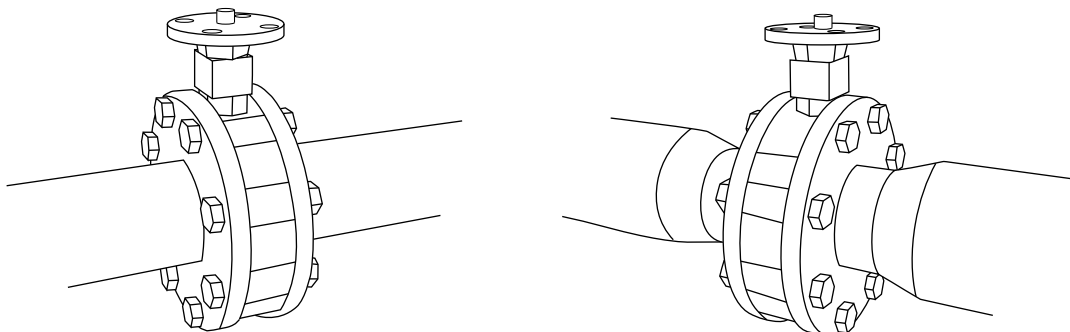
STEP TWO Determine whether the valve should be line size or sized to match the designed pressure drop (typical for modulating applications where precise control is required.)

OPTION 1 LINE SIZE

On/Off Valves
Select the valve size to equal the pipe size.

OPTION 2 SIZE FOR MODULATING CONTROL

Modulating Valves
Size the valve for design flow at 60 degrees open.



60° rotation for modulating control

STEP THREE Determine the actual pressure drop using the below equation.

$$\Delta P = \left(\frac{Q\sqrt{G}}{Cv} \right)^2$$

If the pressure drop is acceptable[†], go to Step 4.
If not, repeat Steps 2 and 3, selecting an alternate valve.

STEP FOUR Check to be sure that the close-off requirements are met. Refer to Pages RB-18 to RB-26.

[†] Recommended to be no higher than 25 PSI or match the designed pressure drop, 3, 4, 5, and 6 PSI are commonly accepted for modulating applications.

* For modulating butterfly valves, size for design flow at 60° rotation

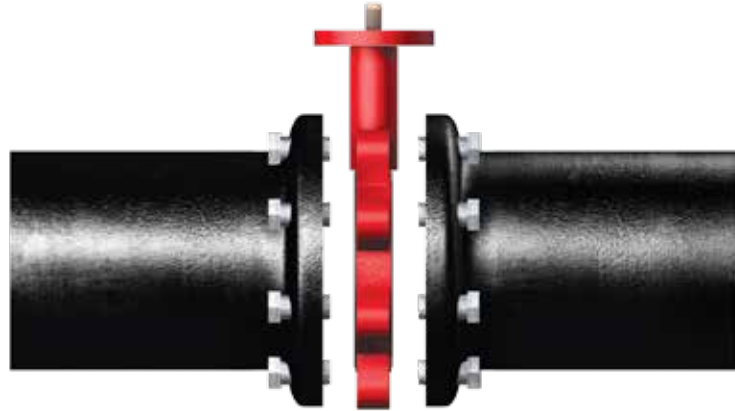
Bolt Tightening Sequence & Bolt Torque Chart



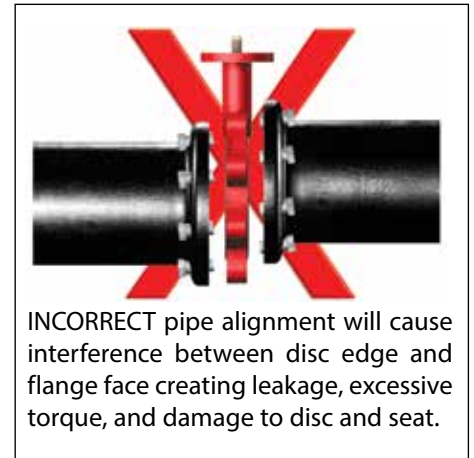
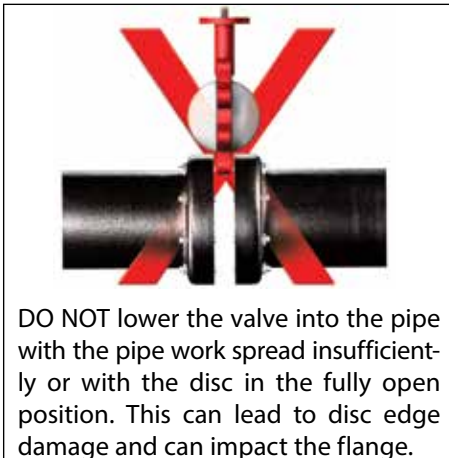
Valve Size	Bolt Size	Maximum Bolt Torque Requirement (ft-lbs)
2" & 2-1/2"	5/8"-11 Threads UNC-2B	30
3"	5/8"-11 Threads UNC-2B	35
4"	5/8"-11 Threads UNC-2B	35 - 40
5"	3/4"-10 Threads UNC-2B	35 - 45
6"	3/4"-10 Threads UNC-2B	35 - 50
8"	3/4"-10 Threads UNC-2B	45 - 55
10"	7/8"-9 Threads UNC-2B	55 - 75
12"	7/8"-9 Threads UNC-2B	65 - 110
14" & 16"	1"-8 Threads UNC-2B	75 - 120
18" & 20"	1-1/8"-7 Threads UNC-2B	85 - 130
24"	1-1/4"-7 Threads UNC-2B	150 - 155
30"	1-1/4"-7 Threads UNC-2B	150-155



Lower the valve into the open pipe work with the disc in the 10° open position. Valves with non-spring actuators are shipped in this position.



Once the valve is placed in the pipe work, turn the disc to the full-open position. Gradually remove the flange spreaders. Center the valve body to the flanges, and tighten the bolts hand-tight. Slowly close the valve clockwise to check for adequate disc clearance. Return disc to full-open position and cross tighten all bolts to proper torque specification (see tightening pattern above). **DO NOT** install with disc in fully closed position. This will cause seat distortion. When flange bolts are tightened, rubber will close around disc edge creating excessive torque in initial operation.



* When installing valve in a grooved-type piping system, consult piping manufacturer's specification to choose proper sealing surface. Installing valve without proper surface may cause damage to the valve seat or leakage at the valve.

Bray Butterfly Valves for HVAC Applications

Bray is the largest butterfly valve manufacturer in the western hemisphere for a reason. Bray's in house design team and Bray owned ISO 9001 manufacturing facilities have over 30 years of experience with this product. Our track record of reliability in thousands of installations over time bear this out.

Bray Commercial Division offers two distinct lines of butterfly valves for HVAC applications. These low torque, high cycle life designs have emerged as the design standard in the commercial building market worldwide.

Comparative Valve Specifications

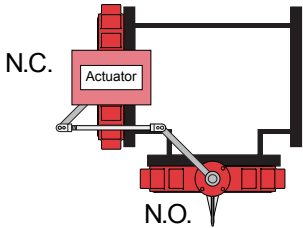
	NYL Series	MKL Series
Design	Resilient Seated, Nylon Coated Disc	Double Offset, Pressure assisted, but not pressure dependent seat design. Stainless Steel Disc
Max Close-Off Pressure	175 PSI	ANSI 150- 285 PSI ANSI 300- 740 PSI
Temperature Rating	-20° F to 250°F	-40° F to 500°F

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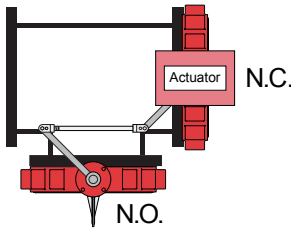


Spring Return and Non-Spring Return

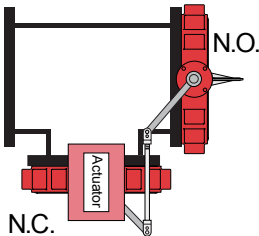
Configuration 1



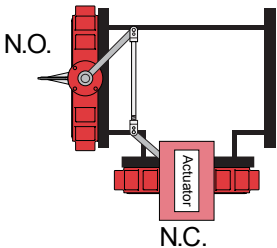
Configuration 2



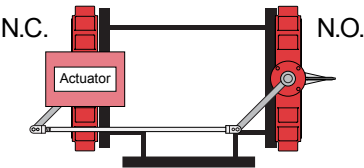
Configuration 3



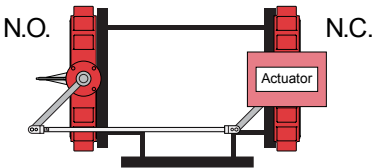
Configuration 4



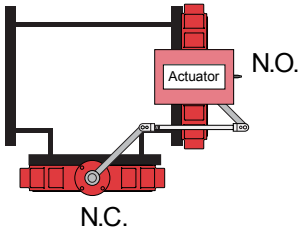
Configuration 5



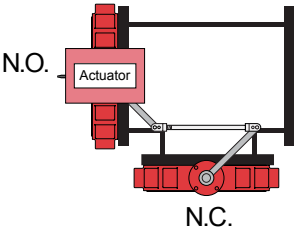
Configuration 6



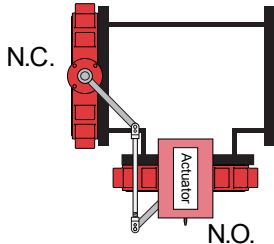
Configuration 7



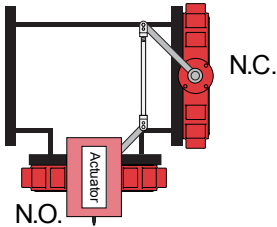
Configuration 8



Configuration 9



Configuration 10
(PN placeholder is 0)



Note: All 3-Way butterfly valve assembly orders should have configuration specified. Pricing remains the same, however Bray must know the specifications in order to manufacture the appropriate linkage kit.

Note: 3-Way assemblies with low-pressure pneumatic actuators (D-series), are limited to arrangements: 1, 2, 7, and 8.

Note: Unless otherwise requested valve will be shipped as illustrated by Configuration 3.

BFV - Part Number Matrix

AB	Series 31 Cast Iron Body, Aluminum-Bronze Disc, 416 SS Stem, EPDM Seat.							Valve Series				
NY	Series 31, 35, & 36 Cast Iron Body, Nylon-Coated Ductile Iron Disc, 416 SS Stem, EPDM Seat.											
SS	Series 31, 35, & 36 Cast Iron Body, 316 Stainless Steel Disc, 416 SS Stem, EPDM Seat.											
MK	High-Performance Butterfly Valves											
L or F	Lug Body or Flange Body						Body Type					
2	2-Way Valve Assembly						Valve Type					
3	3-Way Valve Assembly											
-												
C	2-way Assembly, Normally Closed						Configuration					
N	2-way Assembly, Normally Open											
X	3-way Assembly Configuration Number (See Page RB-8)											
xx	Size(in.) 08=8", 12=12", etc.						Valve Size					
0	Series 31 Cast Iron Body, 175 PSI 2"-12", 150 PSI 14"-20"						Valve Shutoff Rating					
0	Series 41 ANSI Class 150											
1	Series 31 Cast Iron Body, 50 PSI 4"-20" (reduced dia. disc)											
3	Series 43 ANSI Class 300											
/												
70-xxxx	Series 70 Electric Non-spring Return						Actuator					
AU	Auma Actuators											
92-xxx	High Pressure Pneumatic, Double Acting											
93-xxx	High Pressure Pneumatic, Spring Return											
98-xxx	High Pressure Pneumatic, Spring Return											
D	Commercial Actuators											
SV	Servo Card for 0-10 VDC or 4-20 mA modulation						Electric Actuator Accessories					
H	Anti-Condensation Heater											
-S	120 VAC Solenoid Valve						Pneumatic Actuator Accessories					
-S4	24 VAC Solenoid Valve											
-SW	Valve Status Monitor for Pneumatic Actuator											
-C	1-Set Speed Controls for Solenoids											
-P	3-15 PSI Pneumatic Positioner											
-EP	4-20 mA Electro-Pneumatic Positioner											
-05	Dec clutchable Handwheel Manual Override											
NY	L	2	-	C	12	1	/	70-0301	SVH	=	12" lugged 2-way butterfly valve, cast iron body, undercut nylon ductile iron, 416 SS stem, EPDM seat, Series 70-0301, 120 V modulating electric actuator with heater	Examples
MK	L	3	-	3	06	0	/	93-1603	-SC	=	6" Series 41 high performance butterfly valve, 3-way, configuration #3, high pressure spring return pneumatic actuator with 120 V solenoid and speed controls	

2-WAY & 3-WAY PIPING GEOMETRY CHART at 60°Rotation (Adjusted Cv)

Valve Size	Cv	Pipe Size																							
		Model No.	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"			
2"	61	__L2/3-x020	61	59	57	55	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
2.5"	107	__L2/3-x025	---	107	104	98	94	92	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
3"	154	__L2/3-x030	---	---	154	147	140	136	131	---	---	---	---	---	---	---	---	---	---	---	---	---			
4"	274	__L2/3-x040	---	---	---	274	265	255	242	235	---	---	---	---	---	---	---	---	---	---	---	---			
5"	428	__L2/3-x050	---	---	---	---	428	418	393	378	370	---	---	---	---	---	---	---	---	---	---	---			
6"	567	__L2/3-x060	---	---	---	---	---	567	545	524	510	501	---	---	---	---	---	---	---	---	---	---			
8"	1081	__L2/3-x080	---	---	---	---	---	---	1081	1048	1008	980	---	---	---	---	---	---	---	---	---	---			
10"	1710	__L2/3-x100	---	---	---	---	---	---	---	1710	1671	1617	1572	---	---	---	---	---	---	---	---	---			
12"	2563	__L2/3-x120	---	---	---	---	---	---	---	---	2563	2516	2441	2374	---	---	---	---	---	---	---	---			
14"	3384	__L2/3-x140	---	---	---	---	---	---	---	---	---	3384	3338	3258	3182	---	---	---	---	---	---	---			
16"	4483	__L2/3-x160	---	---	---	---	---	---	---	---	---	---	4483	4432	4340	4246	---	---	---	---	---	---			
18"	5736	__L2/3-x180	---	---	---	---	---	---	---	---	---	---	---	5736	5682	5577	5466	---	---	---	---	---			
20"	7144	__L2/3-x200	---	---	---	---	---	---	---	---	---	---	---	---	7144	7087	6971	6843	---	---	---	---			
24"	11040	__F2-C240	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11040	11021	10953	---	---	---			
30"	18090	__F2-C300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18090	18064	17937		

└ NY=Nylon Coated Disc / AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

2-WAY & 3-WAY PIPING GEOMETRY CHART at 90°Rotation (Adjusted Cv)

Valve Size	Cv	Pipe Size																							
		Model No.	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"			
2"	144	__L2/3-x020	144	127	111	96	90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
2.5"	282	__L2/3-x025	---	282	245	187	165	154	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
3"	461	__L2/3-x030	---	---	461	340	274	246	223	---	---	---	---	---	---	---	---	---	---	---	---	---			
4"	841	__L2/3-x040	---	---	---	841	664	538	442	406	---	---	---	---	---	---	---	---	---	---	---	---			
5"	1376	__L2/3-x050	---	---	---	---	1376	1132	808	700	649	---	---	---	---	---	---	---	---	---	---	---			
6"	1850	__L2/3-x060	---	---	---	---	---	1850	1360	1101	988	929	---	---	---	---	---	---	---	---	---	---			
8"	3316	__L2/3-x080	---	---	---	---	---	---	3316	2633	2142	1898	---	---	---	---	---	---	---	---	---	---			
10"	5430	__L2/3-x100	---	---	---	---	---	---	---	5430	4487	3667	3219	---	---	---	---	---	---	---	---	---			
12"	8077	__L2/3-x120	---	---	---	---	---	---	---	---	8077	6892	5590	4974	---	---	---	---	---	---	---	---			
14"	10538	__L2/3-x140	---	---	---	---	---	---	---	---	---	10538	9360	7942	6998	---	---	---	---	---	---	---			
16"	13966	__L2/3-x160	---	---	---	---	---	---	---	---	---	---	13966	12640	10872	9607	---	---	---	---	---	---			
18"	17214	__L2/3-x180	---	---	---	---	---	---	---	---	---	---	---	17214	15902	13962	12454	---	---	---	---	---			
20"	22339	__L2/3-x200	---	---	---	---	---	---	---	---	---	---	---	---	22339	20756	18296	16308	---	---	---	---			
24"	33154	__F2-C240	---	---	---	---	---	---	---	---	---	---	---	---	---	---	33154	32638	31007	---	---	---			
30"	52443	__F2-C300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	52443	51817	49787		

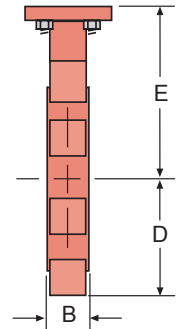
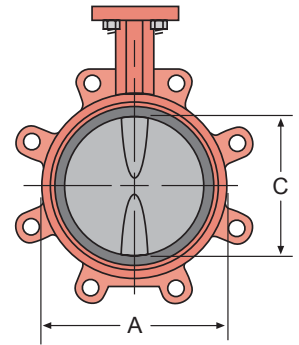
└ NY=Nylon Coated Disc / AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Dimensions, 2-Way - Commercial Electric Actuators

Dimensions - (Valve Body)

2-Way BFV Dimensions, 2" - 20" - Series 31 Butterfly Valves															
Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data			Weight ¹		
	in.	mm	90°	60°						BC	Holes	Threads	lbs.	kg.	
--L2--020	2	50	144	61	3.69	1.62	2.00	2.30	5.50	4.75	4	5/8-11	7.0	3.12	
--L2--025	2-1/2	65	282	107	4.19	1.75	2.50	2.57	6.00	5.50	4	5/8-11	8.0	3.63	
--L2--030	3	80	461	154	4.88	1.75	3.00	2.81	6.25	6.00	4	5/8-11	9.0	4.08	
--L2--040	4	100	841	274	6.06	2.00	4.00	4.09	7.00	7.50	8	5/8-11	15.0	6.80	
--L2--050	5	125	1376	428	7.06	2.12	5.00	4.61	7.50	8.50	8	3/4-10	20.0	9.07	
--L2--060	6	150	1850	567	8.12	2.12	5.75	5.06	8.00	9.50	8	3/4-10	23.0	10.43	

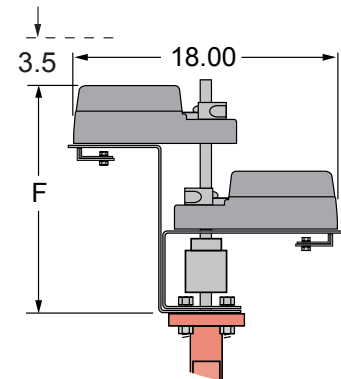
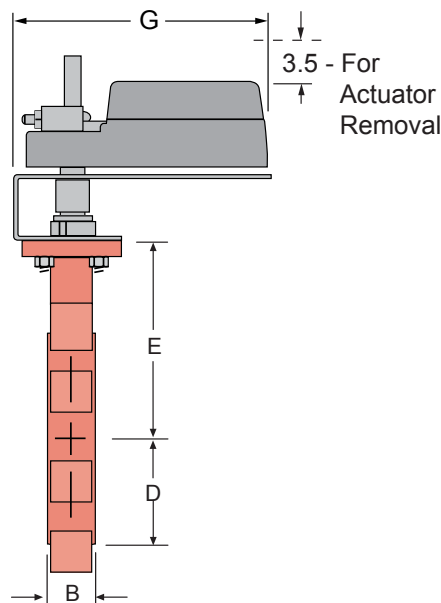
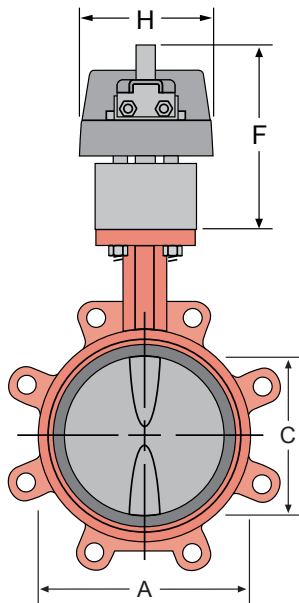
L N=Normally Open / C=Normally Closed
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc / SS=Stainless Steel Disc
¹. Weights are for valve bodies only.



Dimensions - (Commercial Actuators)

Commercial Actuator - Dimensions				
Model Number	F	G	H	Weight lbs
D-140	6.68	7.50	4.00	2.9
D-210	6.68	7.50	4.00	2.9
DS-180	7.43	10.96	4.00	6.4
DC-310	7.43	10.96	3.95	4.4
DCS-140	7.43	10.96	3.95	4.9
RA Series	5.31	8.58	3.82	3.8
Dual Act.	11.75	18.00	4.00	12.8

Largest Actuator Dimension Shown



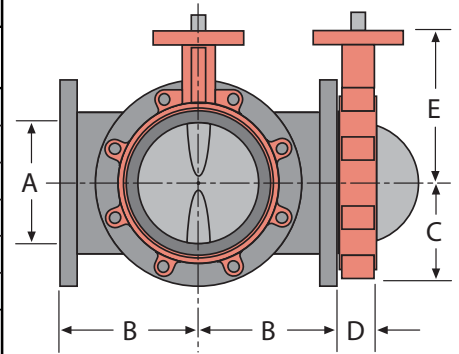
BFV - Dimensions, 3-Way - Commercial Electric Actuators

Dimensions - (Valve Body)

3-Way BFV Dimensions, 2" - 20" - Series 31 Butterfly Valves

Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data		
	in.	mm	90°	60°						BC	Holes	Threads
__ L3-X020	2	50	144	61	2.00	4.50	2.30	1.62	5.50	4.75	4	5/8-11
__ L3-X025	2-1/2	65	282	107	2.50	5.00	2.57	1.80	6.00	5.50	4	5/8-11
__ L3-X030	3	80	461	154	3.00	5.50	2.81	1.80	6.25	6.00	4	5/8-11
__ L3-X040	4	100	841	274	4.00	6.50	4.09	2.00	7.00	7.50	8	5/8-11
__ L3-X050	5	125	1376	428	5.00	7.50	4.61	2.12	7.50	8.50	8	3/4-10
__ L3-X060	6	150	1850	567	6.00	8.00	5.06	2.12	8.00	9.50	8	3/4-10

X=Configuration Number for 3-Way
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc



3-Way Tee Weights

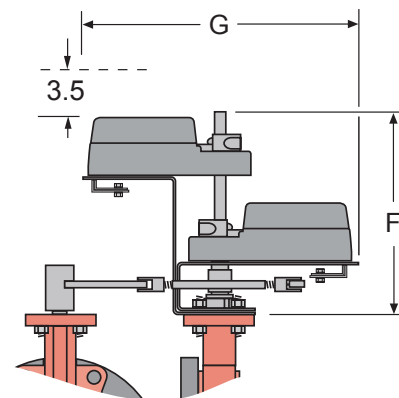
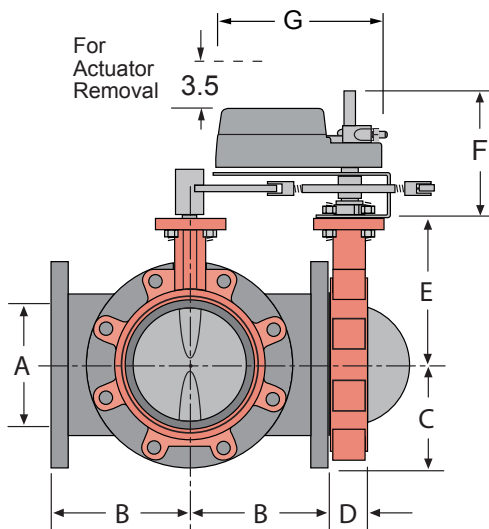
Size	Weight	
in.	mm	lbs.
2	50	19
2-1/2	65	27
3	80	39
4	100	62
5	125	79
6	150	96
8	200	155
10	250	270
12	300	380
14	350	435
16	400	550
18	450	665
20	500	855

Dimensions - (Commercial Actuators)

Commercial Actuator - Dimensions

Model Number	F	G	Weight lbs
D-140	6.68	7.50	2.9
D-210	6.68	7.50	2.9
DS-180	7.43	10.96	6.4
DC-310	7.43	10.96	4.4
DCS-140	7.43	10.96	4.9
RA Series	5.31	8.58	3.8
Dual Act.	11.75	18.00	12.8

Largest Actuator Dimension Shown

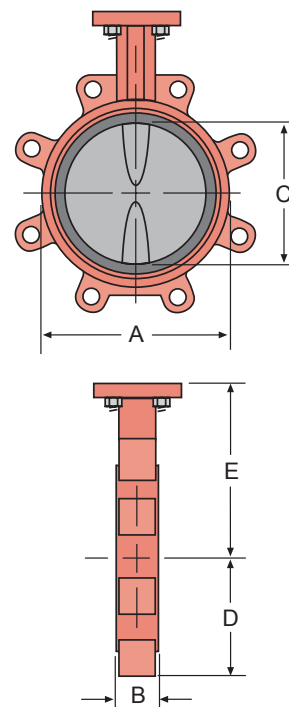


BFV - Dimensions, 2-Way - Industrial Actuators

Dimensions - (Valve Body)

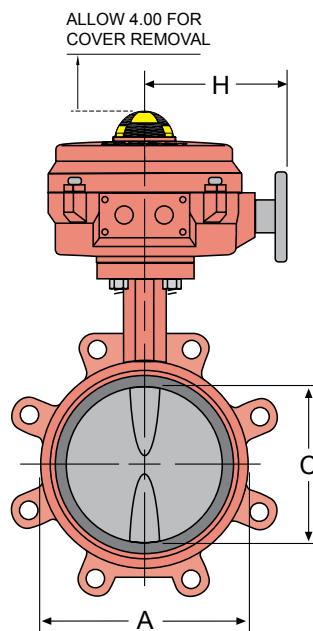
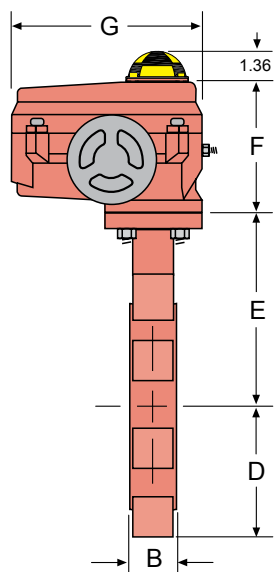
2-Way BFV Dimensions, 2" - 20" - Series 31 Butterfly Valves														
Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data			Weight ¹	
	in.	mm	90°	60°						BC	Holes	Threads	lbs.	kg.
__L2_020	2	50	144	61	3.69	1.62	2.00	2.30	5.50	4.75	4	5/8-11	7.0	3.12
__L2_025	2-1/2	65	282	107	4.19	1.75	2.50	2.57	6.00	5.50	4	5/8-11	8.0	3.63
__L2_030	3	80	461	154	4.88	1.75	3.00	2.81	6.25	6.00	4	5/8-11	9.0	4.08
__L2_040	4	100	841	274	6.06	2.00	4.00	4.09	7.00	7.50	8	5/8-11	15.0	6.80
__L2_050	5	125	1376	428	7.06	2.12	5.00	4.61	7.50	8.50	8	3/4-10	20.0	9.07
__L2_060	6	150	1850	567	8.12	2.12	5.75	5.06	8.00	9.50	8	3/4-10	23.0	10.43
__L2_080	8	200	3316	1081	10.50	2.50	7.75	6.05	9.50	11.75	8	3/4-10	42.0	19.05
__L2_100	10	250	5430	1710	12.75	2.50	9.75	7.69	10.75	14.25	12	7/8-9	66.0	29.94
__L2_120	12	300	8077	2563	14.88	3.00	11.75	9.02	12.25	17.00	12	7/8-9	88.0	39.92
__L2_140	14	350	10538	3384	17.05	3.00	13.25	9.93	13.62	18.75	12	1-8	114.0	51.71
__L2_160	16	400	13966	4483	19.21	4.00	15.25	11.30	14.75	21.25	16	1-8	166.0	75.30
__L2_180	18	450	17214	5736	21.12	4.25	17.25	12.16	16.00	22.75	16	1 1/8-7	226.0	102.51
__L2_200	20	500	22339	7144	23.25	5.00	19.25	14.00	17.25	25.00	20	1 1/8-7	305.0	138.35
__F2-C240(1)	24	600	33154	11040	33.00	5.94	23.28	17.56	19.50	29.50	4	1 1/4-7	500.0	226.80
__F2-C300(1)	30	750	52443	18090	38.75	6.56	29.29	20.81	23.00	36.00	4	1 1/4-7	855.0	387.82

L N=Normally Open / C=Normally Closed
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc / SS=Stainless Steel Disc
¹ - Weights are for valve bodies only.



Dimensions - (Series 70/AU Actuators)

Series 70/AU - Dimensions				
Model Number	F	G	H	Weight lbs
70-0061	5.6	7.5	5.8	13
70-0121/0201	6.6	10.1	7.8	28
70-0301/0501/0651	7.2	12.1	8.3	48
70-1300/1800	12.1	18.8	9.5	118
AU-4068	12.3	32.1	28.9	195
AU-7080	12.3	32.0	31.9	285



BFV - Dimensions, 3-Way - Industrial Actuators

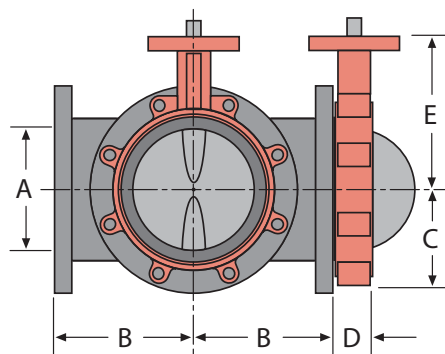
Dimensions - (Valve Body)

3-Way BFV Dimensions, 2" - 20" - Series 31 Butterfly Valves

Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data		
	in.	mm	90°	60°						BC	Holes	Threads
__ L3-X020	2	50	144	61	2.00	4.50	2.30	1.62	5.50	4.75	4	5/8-11
__ L3-X025	2-1/2	65	282	107	2.50	5.00	2.57	1.80	6.00	5.50	4	5/8-11
__ L3-X030	3	80	461	154	3.00	5.50	2.81	1.80	6.25	6.00	4	5/8-11
__ L3-X040	4	100	841	274	4.00	6.50	4.09	2.00	7.00	7.50	8	5/8-11
__ L3-X050	5	125	1376	428	5.00	7.50	4.61	2.12	7.50	8.50	8	3/4-10
__ L3-X060	6	150	1850	567	6.00	8.00	5.06	2.12	8.00	9.50	8	3/4-10
__ L3-X080	8	200	3316	1081	8.00	9.00	6.05	2.50	9.50	11.75	8	3/4-10
__ L3-X100	10	250	5430	1710	10.00	11.00	7.69	2.50	10.75	14.25	12	7/8-9
__ L3-X120	12	300	8077	2563	12.00	12.00	9.02	3.00	12.25	17.00	12	7/8-9
__ L3-X140	14	350	10538	3384	14.00	14.00	9.93	3.00	13.62	18.75	12	1-8
__ L3-X160	16	400	13966	4483	16.00	15.00	11.30	4.00	14.75	21.25	16	1-8
__ L3-X180	18	450	17214	5736	18.00	16.50	12.16	4.20	16.00	22.75	16	1-1/8-7
__ L3-X200	20	500	22339	7144	20.00	18.00	14.00	5.00	17.25	25.00	20	1-1/8-7

X=Configuration Number for 3-Way

NY=Nylon Coated Disc / AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc



3-Way Tee Weights

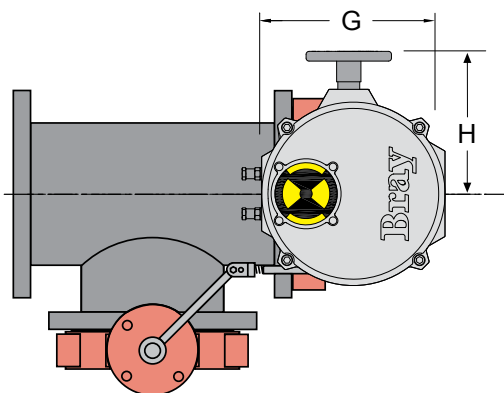
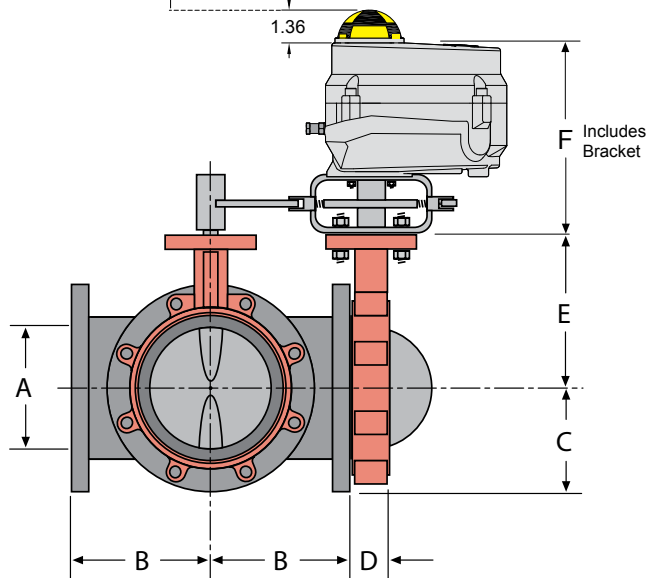
Size	Weight	
in.	mm	lbs.
2	50	19
2-1/2	65	27
3	80	39
4	100	62
5	125	79
6	150	96
8	200	155
10	250	270
12	300	380
14	350	435
16	400	550
18	450	665
20	500	855

Dimensions - (Series 70 & AU Actuators)

Series 70 - Dimensions

Model Number	F	G	H	Weight lbs
70-0061	8.60	7.50	5.80	12
70-0121	10.73	10.10	7.80	28
70-0201	10.73	10.10	7.80	28
70-0301	11.33	12.10	8.30	48
70-0501	13.20	12.10	8.30	48
70-0651	13.20	12.10	8.30	48
70-1300	20.50	12.10	9.50	118
70-1800	20.50	12.10	9.50	118
AU-4068	22.30	32.10	28.90	195

ALLOW 4.00 FOR COVER REMOVAL

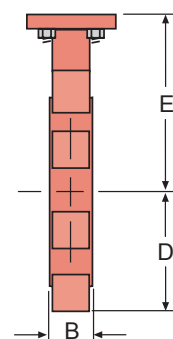
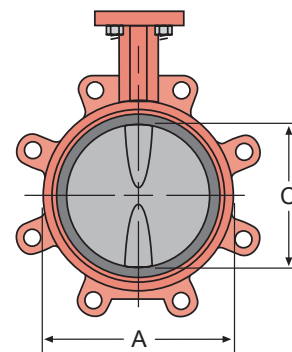


BFV - Dimensions, 2-Way - Pneumatic Actuators

Dimensions - (Valve Body)

2-Way BFV Dimensions, 2" - 20" - Series 31 Butterfly Valves

Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data			Weight ¹	
	in.	mm	90°	60°						BC	Holes	Threads	lbs.	kg.
__ L2_020	2	50	144	61	3.69	1.62	2.00	2.30	5.50	4.75	4	5/8-11	7.0	3.12
__ L2_025	2-1/2	65	282	107	4.19	1.75	2.50	2.57	6.00	5.50	4	5/8-11	8.0	3.63
__ L2_030	3	80	461	154	4.88	1.75	3.00	2.81	6.25	6.00	4	5/8-11	9.0	4.08
__ L2_040	4	100	841	274	6.06	2.00	4.00	4.09	7.00	7.50	8	5/8-11	15.0	6.80
__ L2_050	5	125	1376	428	7.06	2.12	5.00	4.61	7.50	8.50	8	3/4-10	20.0	9.07
__ L2_060	6	150	1850	567	8.12	2.12	5.75	5.06	8.00	9.50	8	3/4-10	23.0	10.43
__ L2_080	8	200	3316	1081	10.50	2.50	7.75	6.05	9.50	11.75	8	3/4-10	42.0	19.05
__ L2_100	10	250	5430	1710	12.75	2.50	9.75	7.69	10.75	14.25	12	7/8-9	66.0	29.94
__ L2_120	12	300	8077	2563	14.88	3.00	11.75	9.02	12.25	17.00	12	7/8-9	88.0	39.92
__ L2_140	14	350	10538	3384	17.05	3.00	13.25	9.93	13.62	18.75	12	1-8	114.0	51.71
__ L2_160	16	400	13966	4483	19.21	4.00	15.25	11.30	14.75	21.25	16	1-8	166.0	75.30
__ L2_180	18	450	17214	5736	21.12	4.25	17.25	12.16	16.00	22.75	16	1 1/8-7	226.0	102.51
__ L2_200	20	500	22339	7144	23.25	5.00	19.25	14.00	17.25	25.00	20	1 1/8-7	305.0	138.35
__ F2-C240(1)	24	600	33154	11040	33.00	5.94	23.28	17.56	19.50	29.50	4	1 1/4-7	500.0	226.80
__ F2-C300(1)	30	750	52443	18090	38.75	6.56	29.29	20.81	23.00	36.00	4	1 1/4-7	855.0	387.82



N=Normally Open / C=Normally Closed
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc / SS=Stainless Steel Disc

¹ - Weights are for valve bodies only.

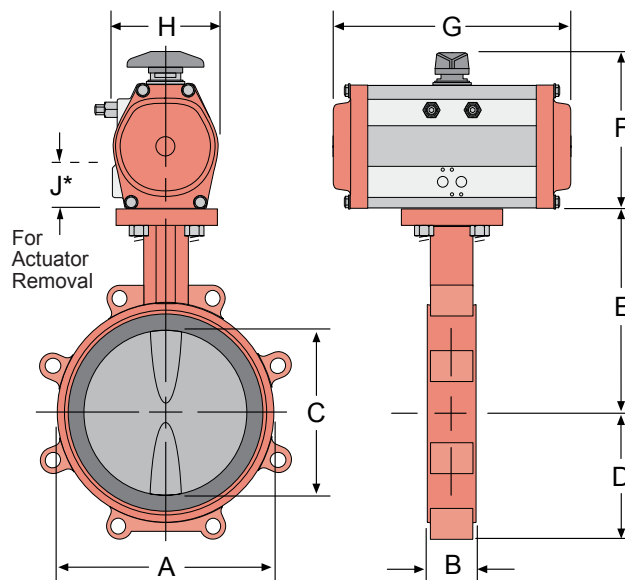
Dimensions - (Series 92/93 Pneumatic Actuator)

Series 92/93 - Dimensions

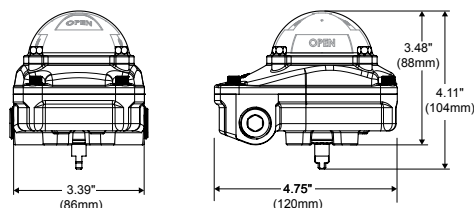
Model Number	F	G	H	J	Weight lbs	
					Double Acting	Spring Return
92/93-063	4.29	6.00	2.76	1.50	3.3	3.9
92/93-083	5.20	7.89	3.58	1.50	6.3	8.1
92/93-093	5.54	8.91	3.94	1.50	8.5	10.9
92/93-119	6.93	12.10	4.72	1.50	18.0	23.4
92/93-128	7.73	12.34	5.39	1.50	21.5	28.1
92/93-160	9.37	15.45	6.77	3.00	39.0	53.4
92/93-210	11.61	18.92	8.83	3.00	78.0	111.0
92/93-255	13.46	26.70	10.75	3.00	143.5	214.9
45E2-12-DA	9.70	52.80	14.80	8.00	210.0	-
14E3-12-DA-C	12.10	72.06	21.30	12.00	386.0	-
45E2-12-SR3	9.70	52.80	14.80	8.00	-	362.0
73E2-14-SR4-C	11.80	60.10	16.80	10.00	-	624.0
73E2-14-SR3-C	11.80	60.10	16.80	10.00	-	569.0
14E3-18-SR5-C	12.10	72.06	21.30	12.00	-	1043.0

Dimensions are in Inches

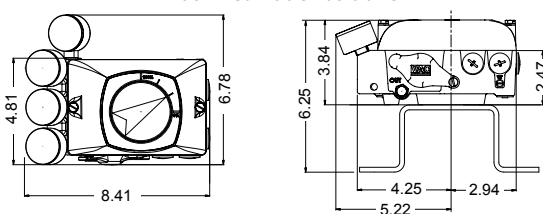
J* = Height required for Actuator removal



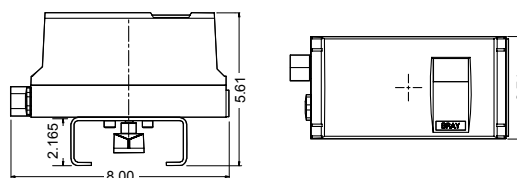
Series 5A Switch Box



VP200 Pneumatic Positioner



Series 6A Electro Pneumatic Positioner



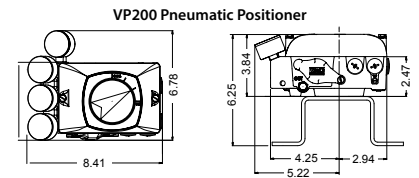
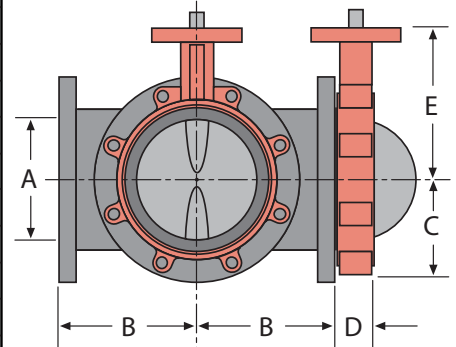
BFV - Dimensions, 3-Way - Pneumatic Actuators

Dimensions - (Valve Body)

3-Way BFV Dimensions, 2" - 20" - Series 31 Butterfly Valves

Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data		
	in.	mm	90°	60°						BC	Holes	Threads
--L3-X020	2	50	144	61	2.00	4.50	2.30	1.62	5.50	4.75	4	5/8-11
--L3-X025	2-1/2	65	282	107	2.50	5.00	2.57	1.80	6.00	5.50	4	5/8-11
--L3-X030	3	80	461	154	3.00	5.50	2.81	1.80	6.25	6.00	4	5/8-11
--L3-X040	4	100	841	274	4.00	6.50	4.09	2.00	7.00	7.50	8	5/8-11
--L3-X050	5	125	1376	428	5.00	7.50	4.61	2.12	7.50	8.50	8	3/4-10
--L3-X060	6	150	1850	567	6.00	8.00	5.06	2.12	8.00	9.50	8	3/4-10
--L3-X080	8	200	3316	1081	8.00	9.00	6.05	2.50	9.50	11.75	8	3/4-10
--L3-X100	10	250	5430	1710	10.00	11.00	7.69	2.50	10.75	14.25	12	7/8-9
--L3-X120	12	300	8077	2563	12.00	12.00	9.02	3.00	12.25	17.00	12	7/8-9
--L3-X140	14	350	10538	3384	14.00	14.00	9.93	3.00	13.62	18.75	12	1-8
--L3-X160	16	400	13966	4483	16.00	15.00	11.30	4.00	14.75	21.25	16	1-8
--L3-X180	18	450	17214	5736	18.00	16.50	12.16	4.20	16.00	22.75	16	1-1/8-7
--L3-X200	20	500	22339	7144	20.00	18.00	14.00	5.00	17.25	25.00	20	1-1/8-7

X=Configuration Number for 3-Way
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc / SS=Stainless Steel Disc



Dimensions - (Series 92/93 Pneumatic Actuator)

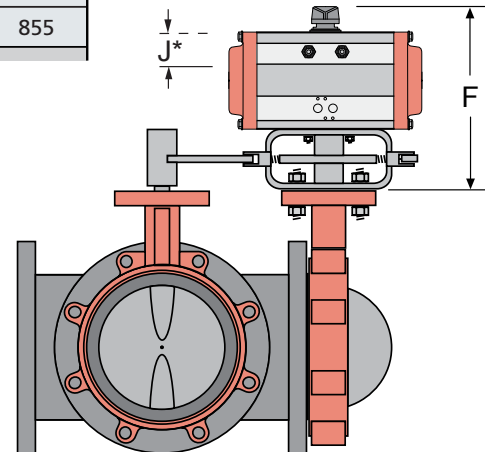
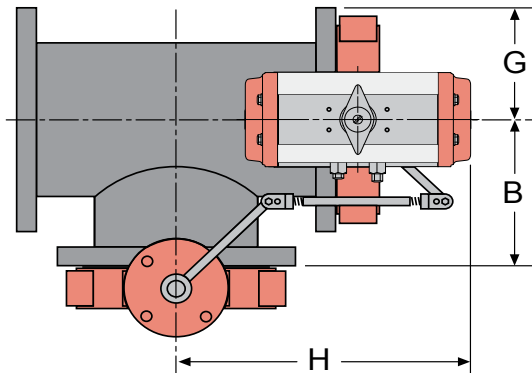
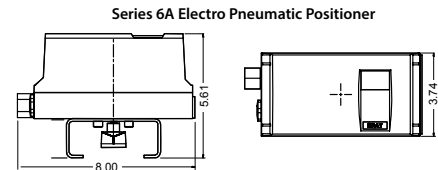
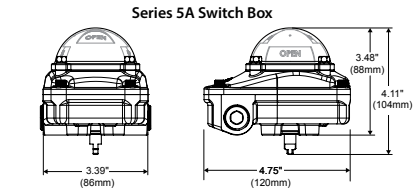
Series 92/93 - Dimensions

Model Number	F	G	H	J	Weight lbs	
					Double Acting	Spring Return
92/93-063	7.53	3.00	9.06	1.50	3.3	3.9
92/93-083	8.43	4.50	13.33	1.50	6.3	8.1
92/93-093	8.78	5.50	14.89	1.50	8.5	10.9
92/93-119	11.41	8.00	19.89	1.50	18.0	23.4
92/93-128	12.22	8.00	19.89	1.50	21.5	28.1
92/93-160	13.49	10.50	26.64	3.00	39.0	53.4
92/93-210	17.62	13.75	33.14	3.00	78.0	111.0
92/93-255	19.49	13.75	33.14	3.00	143.5	214.9

Dimensions are in Inches Largest Actuator Dimension Shown
 J* = Height required for Actuator removal

3-Way Tee Weights

Size	Weight	
	in.	mm
2	50	19
2-1/2	65	27
3	80	39
4	100	62
5	125	79
6	150	96
8	200	155
10	250	270
12	300	380
14	350	435
16	400	550
18	450	665
20	500	855

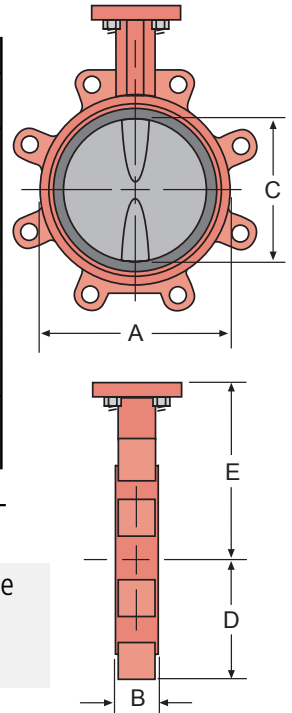


BFV - Dimensions, 2-Way-Low Pressure Pneumatic Actuators

Dimensions - (Valve Body)

2-Way BFV Dimensions, 2" - 10" - Series 31 Butterfly Valves															
Valve Model	Size		Cv		A	B	C	D	E	J	Lug Bolting Data			Weight	
	in.	mm	90°	60°							BC	Holes	Threads	lbs.	kg.
--L2-.020	2	50	144	61	3.69	1.62	2.00	2.30	5.50	8.62	4.75	4	5/8-11	7.0	3.12
--L2-.025	2-1/2	65	282	107	4.19	1.75	2.50	2.57	6.00	9.12	5.50	4	5/8-11	8.0	3.63
--L2-.030	3	80	461	154	4.88	1.75	3.00	2.81	6.25	9.38	6.00	4	5/8-11	9.0	4.08
--L2-.040	4	100	841	274	6.06	2.00	4.00	4.09	7.00	13.75	7.50	8	5/8-11	15.0	6.80
--L2-.050	5	125	1376	428	7.06	2.12	5.00	4.61	7.50	14.38	8.50	8	3/4-10	20.0	9.07
--L2-.060	6	150	1850	567	8.12	2.12	5.75	5.06	8.00	14.88	9.50	8	3/4-10	23.0	10.43
--L2-.080	8	200	3316	1081	10.50	2.50	7.75	6.05	9.50	16.38	11.75	8	3/4-10	42.0	19.05
--L2-.100	10	250	5430	1710	12.75	2.50	9.75	7.69	10.75	17.62	14.25	12	7/8-9	66.0	29.94

N=Normally Open / C=Normally Closed
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc



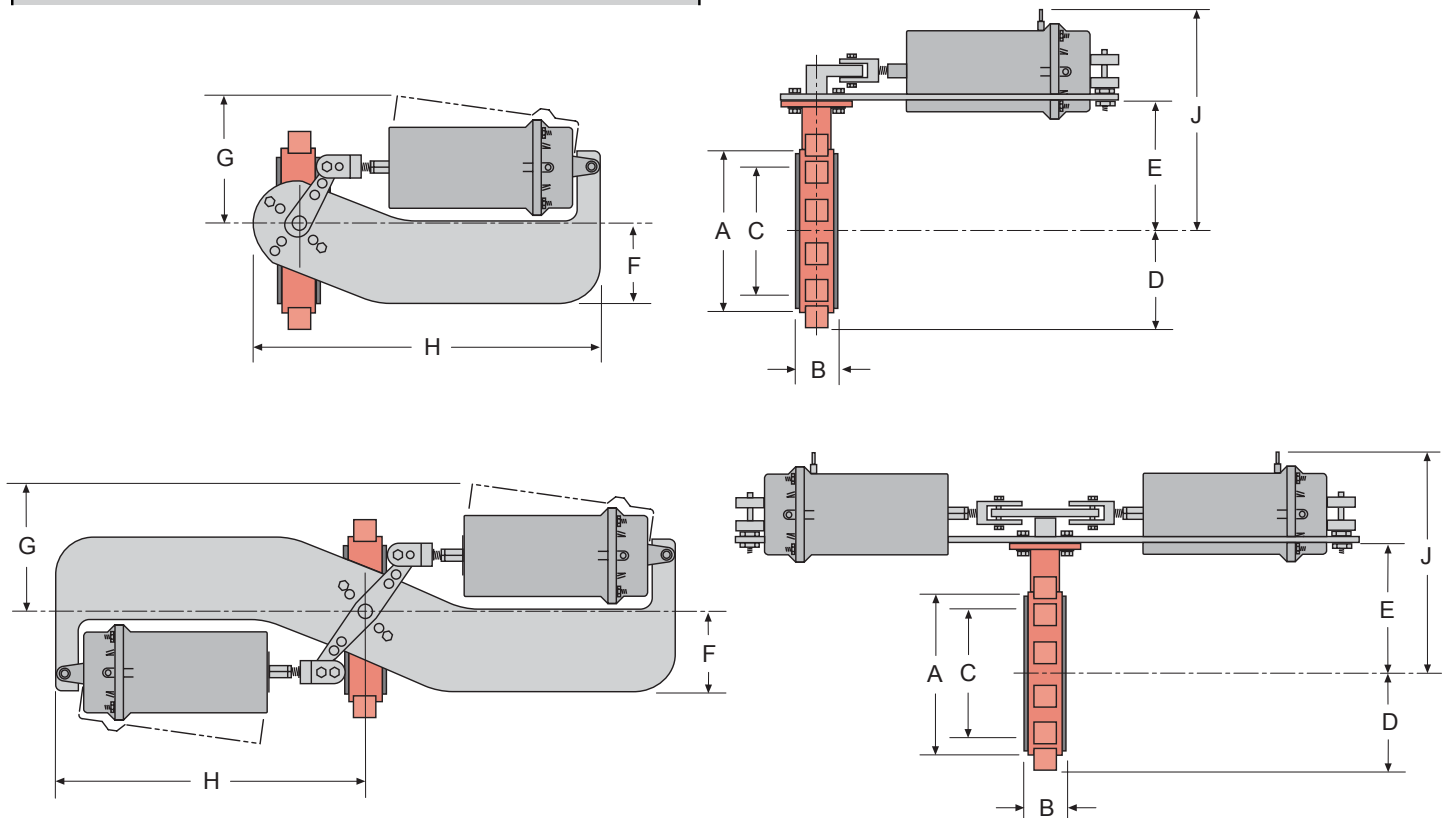
Dimensions - (Low Pressure Pneumatic Actuators)

LP Series D-3153, D-3244, D-3246 - Dimensions

Model Number	F	G*	H	Weight lbs
D-3153	3.38	5.66	15.97	8.00
D-3244	4.88	7.31	19.94	13.55
D-3246	5.54	8.94	25.81	17.55
D-3246-D	6.00	8.94	22.75	35.10

Dimensions are in Inches
 G* = Maximum swing of Actuator
 -D = Tandem Actuators

Linkage arms are fixed to open the valve to 70 degrees and are non-adjustable

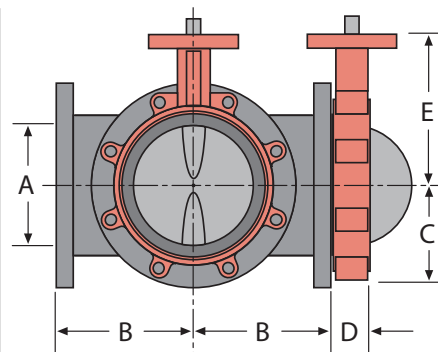


BFV - Dimensions, 3-Way-Low Pressure Pneumatic Actuators

Dimensions - (Valve Body)

Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data		
	in.	mm	90°	60°						BC	Holes	Threads
__ L3-X020	2	50	144	61	2.00	4.50	2.30	1.62	5.50	4.75	4	5/8-11
__ L3-X025	2-1/2	65	282	107	2.50	5.00	2.57	1.80	6.00	5.50	4	5/8-11
__ L3-X030	3	80	461	154	3.00	5.50	2.81	1.80	6.25	6.00	4	5/8-11
__ L3-X040	4	100	841	274	4.00	6.50	4.09	2.00	7.00	7.50	8	5/8-11
__ L3-X050	5	125	1376	428	5.00	7.50	4.61	2.12	7.50	8.50	8	3/4-10
__ L3-X060	6	150	1850	567	6.00	8.00	5.06	2.12	8.00	9.50	8	3/4-10
__ L3-X080	8	200	3316	1081	8.00	9.00	7.69	2.50	9.50	11.75	8	3/4-10

X=Configuration Number for 3-Way
 NY=Nylon Coated Disc / AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc



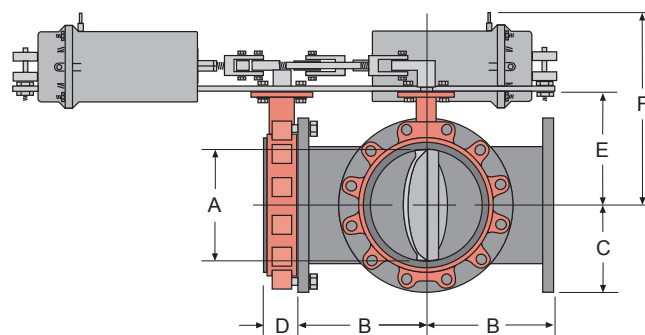
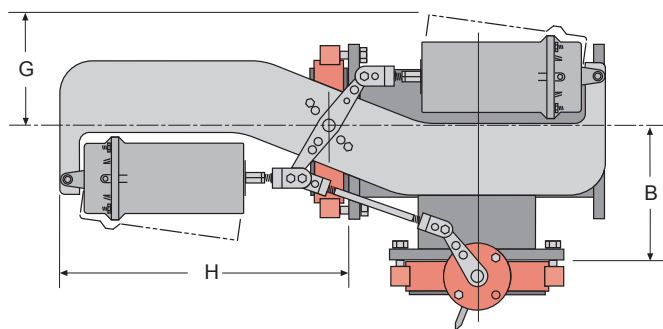
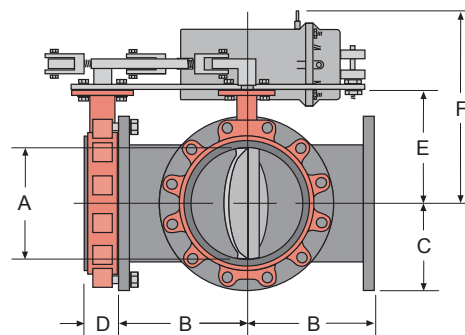
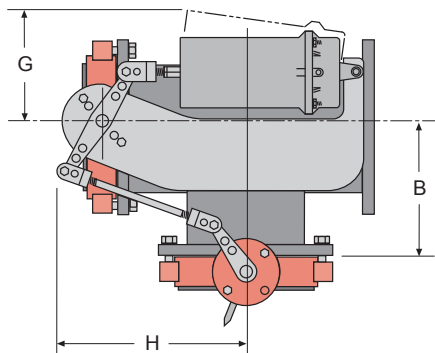
3-Way Tee Weights			
Size	in.	mm	Weight lbs.
2	50	19	
2-1/2	65	27	
3	80	39	
4	100	62	
5	125	79	
6	150	96	
8	200	155	

Dimensions - (Low Pressure Pneumatic Actuators)

LP Series D-3153, D-3244, D-3246 - Dimensions				
Model Number	F	G*	H**	Weight lbs
D-3153	9.38	5.66	10.90	8.00
D-3244	13.75	7.31	12.02	13.55
D-3246	14.38	8.94	13.76	17.55
D-3246-D	16.38	8.94	24.00	35.10

Dimensions are in Inches
 G* = Maximum swing of Actuator
 H** = Maximum swing of Arm
 -D = Tandem Actuators
 Largest Actuator Dimension Shown

Linkage arms are fixed to open the valve to 70 degrees and are non-adjustable



BFV - Close-Off Charts - 2-Way & 3-Way D-Series Commercial Electric Actuators

2-Way, 24V On/Off or Floating Actuators					Non-Spring Return				Spring Return	
Actuator Model No.					On/Off Only					
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI	D24-140	D24-210	RA02460N20	D24-210-D	DS24-180	DS24-180-D
2	144	61	NYL2-_020	175	X				X	
2.5	282	107	NYL2-_025	175	X				X	
3	461	154	NYL2-_030	175		X			X	
4	841	274	NYL2-_040	175			X	X		X
4	841	274	NYL2-_041	50		X			X	
5	1376	428	NYL2-_050	50			X			
5	1376	428	NYL2-_051	50		X				X
6	1850	567	NYL2-_061	50			X	X		

⌊ N = Normally Open / C = Normally Closed

2-Way, Modulating Actuators					Non-Spring Return				Spring Return	
Actuator Model No.					On/Off Only					
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI	DM24-140	DM24-210	RA02460N30	DM24-210-D	DMS24-180	DMS24-180-D
2	144	61	NYL2-_020	175	X				X	
2.5	282	107	NYL2-_025	175	X				X	
3	461	154	NYL2-_030	175		X			X	
4	841	274	NYL2-_040	175			X	X		X
4	841	274	NYL2-_041	50		X			X	
5	1376	428	NYL2-_050	50			X			
5	1376	428	NYL2-_051	50		X				X
6	1850	567	NYL2-_061	50			X	X		

⌊ N = Normally Open / C = Normally Closed

3-Way, 24V On/Off or Floating Actuators					Non-Spring Return				Spring Return	
Actuator Model No.					On/Off Only					
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI	D24-140	D24-210	RA02460N20	D24-210-D	DS24-180	DS24-180-D
2	144	61	NYL3-X020	175	X				X	
2.5	282	107	NYL3-X025	175		X			X	
3	461	154	NYL3-X030	175		X				X
4	841	274	NYL3-X040	175			X	X		
4	841	274	NYL3-X041	50		X				X
5	1376	428	NYL3-X051	50			X	X		
6	1850	567	NYL3-X061	50				X		

X = Configuration Number for 3-Way

3-Way, Modulating Actuators					Non-Spring Return				Spring Return	
Actuator Model No.					On/Off Only					
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI	DM24-140	DM24-210	RA02460N30	DM24-210-D	DMS24-180	DMS24-180-D
2	144	61	NYL3-X020	175	X				X	
2.5	282	107	NYL3-X025	175		X			X	
3	461	154	NYL3-X030	175		X				X
4	841	274	NYL3-X040	175			X	X		
4	841	274	NYL3-X041	50		X				X
5	1376	428	NYL3-X051	50			X	X		
6	1850	567	NYL3-X061	50				X		

-D = Tandem Actuators Required X = Configuration Number for 3-Way – See page RB-7

BFV - Close-Off Charts - 2-Way & 3-Way DC-Series Commercial Electric Actuators

2-Way, On/Off or Floating Actuators					Non-Spring Return		Spring Return				
Actuator Model No.					DC24-310-T	DC24-310-T-D	On/Off Only				
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI			DCS24-140-P	DCS24-140-PD	DCS120-140-P	DCS120-140-PD	
										120 VAC	
2	144	61	NYL2-_020	175	X		X		X		
2.5	282	107	NYL2-_025	175	X		X		X		
3	461	154	NYL2-_030	175	X			X		X	
4	841	274	NYL2-_040	175		X					
4	841	274	NYL2-_041	50	X			X		X	
5	1376	428	NYL2-_051	50	X						
6	1850	567	NYL2-_061	50		X					

└ N = Normally Open / C = Normally Closed

2-Way, Modulating Actuators					Non-Spring Return		Spring Return	
Actuator Model No.					DCM24-310	DCM24-310-D	DCMS24-140-P	DCMS24-140-PD
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI				
2	144	61	NYL2-_020	175	X		X	
2.5	282	107	NYL2-_025	175	X		X	
3	461	154	NYL2-_030	175	X			X
4	841	274	NYL2-_040	175		X		
4	841	274	NYL2-_041	50	X			X
5	1376	428	NYL2-_051	50	X			
6	1850	567	NYL2-_061	50		X		

└ N = Normally Open / C = Normally Closed

3-Way, On/Off or Floating Actuators					Non-Spring Return		Spring Return				
Actuator Model No.					DC24-310-T	DC24-310-T-D	On/Off Only				
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI			DCS24-140-P On/Off Only	DCS24-140-PD	DCS120-140	DCS120-140-D	
										120 VAC	
2	144	61	NYL3-X020	175	X		X		X		
2.5	282	107	NYL3-X025	175	X			X		X	
3	461	154	NYL3-X030	175	X			X		X	
4	841	274	NYL3-X040	175		X					
4	841	274	NYL3-X041	50	X			X		X	
5	1376	428	NYL3-X051	50		X					
6	1850	567	NYL3-X061	50		X					

X = Configuration Number for 3-Way

3-Way, Modulating Actuators					Non-Spring Return		Spring Return	
Actuator Model No.					DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Valve Size (in)	Cv 90°	Cv 60°	Valve Model No.	Close-Off PSI				
2	144	61	NYL3-X020	175	X		X	
2.5	282	107	NYL3-X025	175	X			X
3	461	154	NYL3-X030	175	X			X
4	841	274	NYL3-X040	175		X		
4	841	274	NYL3-X041	50	X			X
5	1376	428	NYL3-X051	50		X		
6	1850	567	NYL3-X061	50		X		

-D = Tandem Actuators Required X = Configuration Number for 3-Way – See page RB-7

BFV - Close-Off Charts - 2-Way - Series 70/AU Industrial Electric Actuators

2-WAY Non-Spring Return Nylon Coated Disc (Close-Off Chart)								
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	Series 70/AU 120VAC On/Off	Series 70/AU 120VAC Modulating	Series 70 24VAC On/Off	Series 70 24VAC Modulating
2	144	61	NYL2-_020	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
2.5	282	107	NYL2-_025	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
3	461	154	NYL2-_030	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	NYL2-_041	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	NYL2-_040	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	NYL2-_051	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	NYL2-_050	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
6	1850	567	NYL2-_061	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
6	1850	567	NYL2-_060	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
8	3316	1081	NYL2-_081	50	70-0121	70-0121SV	70-24-0201	70-24-0201SV
8	3316	1081	NYL2-_080	175	70-0201	70-0201SV	70-24-0201	70-24-0201SV
10	5430	1710	NYL2-_101	50	70-0201	70-0201SV	70-24-0201	70-24-0201SV
10	5430	1710	NYL2-_100	175	70-0301	70-0301SV	70-24-0501	70-24-0501SV
12	8077	2563	NYL2-_121	50	70-0301	70-0301SV	70-24-0501	70-24-0501SV
12	8077	2563	NYL2-_120	175	70-0501	70-0501SV	70-24-0501	70-24-0501SV
14	10538	3384	NYL2-_141	50	70-0501	70-0501SV	70-24-0501	70-24-0501SV
14	10538	3384	NYL2-_140	150	70-0651	70-0651SV		
16	13966	4483	NYL2-_161	50	70-0651	70-0651SV		
16	13966	4483	NYL2-_160	150	70-1300	70-1300SV		
18	17214	5736	NYL2-_181	50	70-0651	70-0651SV		
18	17214	5736	NYL2-_180	150	70-1300	70-1300SV		
20	22339	7144	NYL2-_201	50	70-1300	70-1300SV		
20	22339	7144	NYL2-_200	150	70-1800	70-1800SV		
24	33154	11040	NYF2-_241	75	70-1800	70-1800SV		
24	33154	11040	NYF2-_240	150	AU-4068	AU-4068SV		
30	52443	18090	NYF2-_301	75	AU-4068	AU-4068SV		
30	52443	18090	NYF2-_300	150	AU-7080	AU-7080SV		

N= Normally Open / C= Normally Closed

2-WAY Non-Spring Return Aluminum Bronze/Stainless Steel Disc (Close-Off Chart)								
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	Series 70 120VAC On/Off	Series 70 120VAC Modulating	Series 70 24VAC On/Off	Series 70 24VAC Modulating
2	144	61	__L2-_020	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
2.5	282	107	__L2-_025	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
3	461	154	__L2-_030	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	__L2-_041	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	__L2-_040	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	__L2-_051	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	__L2-_050	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
6	1850	567	__L2-_061	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
6	1850	567	__L2-_060	175	70-0121	70-0121SV	70-24-0201	70-24-0201SV
8	3316	1081	__L2-_081	50	70-0121	70-0121SV	70-24-0201	70-24-0201SV
8	3316	1081	__L2-_080	175	70-0201	70-0201SV	70-24-0201	70-24-0201SV
10	5430	1710	__L2-_101	50	70-0201	70-0201SV	70-24-0201	70-24-0201SV
10	5430	1710	__L2-_100	175	70-0301	70-0301SV	70-24-0501	70-24-0501SV
12	8077	2563	__L2-_121	50	70-0301	70-0301SV	70-24-0501	70-24-0501SV
12	8077	2563	__L2-_120	175	70-0501	70-0501SV	70-24-0501	70-24-0501SV
14	10538	3384	__L2-_141	50	70-0501	70-0501SV	70-24-0501	70-24-0501SV
14	10538	3384	__L2-_140	150	70-0651	70-0651SV		
16	13966	4483	__L2-_161	50	70-0651	70-0651SV		
16	13966	4483	__L2-_160	150	70-1300	70-1300SV		
18	17214	5736	__L2-_181	50	70-0651	70-0651SV		
18	17214	5736	__L2-_180	150	70-1300	70-1300SV		
20	22339	7144	__L2-_201	50	70-1300	70-1300SV		
20	22339	7144	__L2-_200	150	70-1800	70-1800SV		

N= Normally Open / C= Normally Closed
 AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Close-Off Charts - 3-Way - Series 70/AU Industrial Electric Actuators

3-WAY Non-Spring Return Nylon Coated Disc (Close-Off Chart)								
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	Series 70/AU 120VAC On/Off	Series 70/AU 120VAC Modulating	Series 70 24VAC On/Off	Series 70 24VAC Modulating
2	144	61	NYL3-X020	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
2.5	282	107	NYL3-X025	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
3	461	154	NYL3-X030	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	NYL3-X041	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	NYL3-X040	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	NYL3-X051	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	NYL3-X050	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
6	1850	567	NYL3-X061	50	70-0121	70-0121SV	70-24-0201	70-24-0201SV
6	1850	567	NYL3-X060	175	70-0121	70-0121SV	70-24-0201	70-24-0201SV
8	3316	1081	NYL3-X081	50	70-0121	70-0121SV	70-24-0201	70-24-0201SV
8	3316	1081	NYL3-X080	175	70-0201	70-0201SV	70-24-0201	70-24-0201SV
10	5430	1710	NYL3-X101	50	70-0201	70-0201SV	70-24-0201	70-24-0201SV
10	5430	1710	NYL3-X100	175	70-0501	70-0501SV	70-24-0501	70-24-0501SV
12	8077	2563	NYL3-X121	50	70-0501	70-0501SV	70-24-0501	70-24-0501SV
12	8077	2563	NYL3-X120	175	70-0651	70-0651SV	70-24-0501	70-24-0501SV
14	10538	3384	NYL3-X141	50	70-0501	70-0501SV	70-24-0501	70-24-0501SV
14	10538	3384	NYL3-X140	150	70-1300	70-1300SV		
16	13966	4483	NYL3-X161	50	70-0651	70-0651SV		
16	13966	4483	NYL3-X160	150	70-1300	70-1300SV		
18	17214	5736	NYL3-X181	50	70-1300	70-1300SV		
18	17214	5736	NYL3-X180	150	70-1800	70-1800SV		
20	22339	7144	NYL3-X201	50	70-1800	70-1800SV		
20	22339	7144	NYL3-X200	150	AU-4068	AU-4068SV		

X= Configuration Number for 3-Way – See page RB-7

3-WAY Non-Spring Return Aluminum Bronze/Stainless Steel Disc (Close-Off Chart)								
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	Series 70/AU 120VAC On/Off	Series 70/AU 120VAC Modulating	Series 70 24VAC On/Off	Series 70 24VAC Modulating
2	144	61	_ _L3-X020	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
2.5	282	107	_ _L3-X025	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
3	461	154	_ _L3-X030	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	_ _L3-X041	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
4	841	274	_ _L3-X040	175	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	_ _L3-X051	50	70-0061	70-0061SV	70-24-0061	70-24-0061SV
5	1376	428	_ _L3-X050	175	70-0121	70-0121SV	70-24-0201	70-24-0201SV
6	1850	567	_ _L3-X061	50	70-0121	70-0121SV	70-24-0201	70-24-0201SV
6	1850	567	_ _L3-X060	175	70-0201	70-0201SV	70-24-0201	70-24-0201SV
8	3316	1081	_ _L3-X081	50	70-0201	70-0201SV	70-24-0201	70-24-0201SV
8	3316	1081	_ _L3-X080	175	70-0301	70-0301SV	70-24-0501	70-24-0501SV
10	5430	1710	_ _L3-X101	50	70-0301	70-0301SV	70-24-0201	70-24-0201SV
10	5430	1710	_ _L3-X100	175	70-0501	70-0501SV	70-24-0501	70-24-0501SV
12	8077	2563	_ _L3-X121	50	70-0501	70-0501SV	70-24-0501	70-24-0501SV
12	8077	2563	_ _L3-X120	175	70-0651	70-0651SV	70-24-0501	70-24-0501SV
14	10538	3384	_ _L3-X141	50	70-0501	70-0501SV	70-24-0501	70-24-0501SV
14	10538	3384	_ _L3-X140	150	70-1300	70-1300SV		
16	13966	4483	_ _L3-X161	50	70-0651	70-0651SV		
16	13966	4483	_ _L3-X160	150	70-1300	70-1300SV		
18	17214	5736	_ _L3-X181	50	70-1300	70-1300SV		
18	17214	5736	_ _L3-X180	150	70-1800	70-1800SV		
20	22339	7144	_ _L3-X201	50	70-1800	70-1800SV		
20	22339	7144	_ _L3-X200	150	AU-4068	AU-4068SV		

X= Configuration Number for 3-Way – See page RB-7

_ _ AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Close-Off Charts - 2-Way - High Pressure Pneumatic Double Acting

2-WAY, Double Acting - Nylon Coated Disc (Close-Off Chart)													
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	92-063	92-083	92-093	92-119	92-128	92-160	92-210	92-255	Series 98
2	144	61	NYL2_020	175	X								
2.5	282	107	NYL2_025	175	X								
3	461	154	NYL2_030	175	X								
4	841	274	NYL2_041	50		X							
4	841	274	NYL2_040	175		X							
5	1376	428	NYL2_051	50		X							
5	1376	428	NYL2_050	175		X							
6	1850	567	NYL2_061	50		X							
6	1850	567	NYL2_060	175			X						
8	3316	1081	NYL2_081	50				X					
8	3316	1081	NYL2_080	175				X					
10	5430	1710	NYL2_101	50				X					
10	5430	1710	NYL2_100	175					X				
12	8077	2563	NYL2_121	50				X					
12	8077	2563	NYL2_120	175						X			
14	10538	3384	NYL2_141	50						X			
14	10538	3384	NYL2_140	150							X		
16	13966	4483	NYL2_161	50						X			
16	13966	4483	NYL2_160	150							X		
18	17214	5736	NYL2_181	50							X		
18	17214	5736	NYL2_180	150							X		
20	22339	7144	NYL2_201	50							X		
20	22339	7144	NYL2_200	150								X	
24	33154	11040	NYF2_241	75								X	
24	33154	11040	NYF2_240	150									45E2-12-DA
30	52443	18090	NYF2_301	75								X	
30	52443	18090	NYF2_300	150									14E3-12-DA-C

N= Normally Open / C= Normally Closed – All actuators sized for 80 PSI air supply

2-WAY, Double Acting - Aluminum Bronze/Stainless Steel Disc (Close-Off Chart)													
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	92-063	92-083	92-093	92-119	92-128	92-160	92-210	92-255	
2	144	61	__L2_020	175	X								
2.5	282	107	__L2_025	175	X								
3	461	154	__L2_030	175	X								
4	841	274	__L2_041	50		X							
4	841	274	__L2_040	175		X							
5	1376	428	__L2_051	50		X							
5	1376	428	__L2_050	175			X						
6	1850	567	__L2_061	50		X							
6	1850	567	__L2_060	175			X						
8	3316	1081	__L2_081	50				X					
8	3316	1081	__L2_080	175				X					
10	5430	1710	__L2_101	50				X					
10	5430	1710	__L2_100	175						X			
12	8077	2563	__L2_121	50					X				
12	8077	2563	__L2_120	175						X			
14	10538	3384	__L2_141	50						X			
14	10538	3384	__L2_140	150							X		
16	13966	4483	__L2_161	50						X			
16	13966	4483	__L2_160	150							X		
18	17214	5736	__L2_181	50							X		
18	17214	5736	__L2_180	150							X		
20	22339	7144	__L2_201	50							X		
20	22339	7144	__L2_200	150								X	

N= Normally Open / C= Normally Closed – All actuators sized for 80 PSI air supply
 AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Close-Off Charts - 3-Way - High Pressure Pneumatic Double Acting

3-WAY, Double Acting - Nylon Coated Disc (Close-Off Chart)											
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	92-083	92-093	92-119	92-128	92-160	92-210	92-255
2	144	61	NYL3-X020	175	X						
2.5	282	107	NYL3-X025	175	X						
3	461	154	NYL3-X030	175	X						
4	841	274	NYL3-X041	50	X						
4	841	274	NYL3-X040	175	X						
5	1376	428	NYL3-X051	50		X					
5	1376	428	NYL3-X050	175			X				
6	1850	567	NYL3-X061	50		X					
6	1850	567	NYL3-X060	175			X				
8	3316	1081	NYL3-X081	50			X				
8	3316	1081	NYL3-X080	175				X			
10	5430	1710	NYL3-X101	50			X				
10	5430	1710	NYL3-X100	175					X		
12	8077	2563	NYL3-X121	50					X		
12	8077	2563	NYL3-X120	175						X	
14	10538	3384	NYL3-X141	50					X		
14	10538	3384	NYL3-X140	150						X	
16	13966	4483	NYL3-X161	50						X	
16	13966	4483	NYL3-X160	150							X
18	17214	5736	NYL3-X181	50						X	
18	17214	5736	NYL3-X180	150							X
20	22339	7144	NYL3-X201	50						X	
20	22339	7144	NYL3-X200	150							X

X= Configuration Number for 3-Way - All actuators sized for 80 PSI air supply - See page RB-7

3-WAY, Double Acting - Aluminum Bronze/Stainless Steel Disc (Close-Off Chart)											
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	92-083	92-093	92-119	92-128	92-160	92-210	92-255
2	144	61	__L3-X020	175	X						
2.5	282	107	__L3-X025	175	X						
3	461	154	__L3-X030	175	X						
4	841	274	__L3-X041	50	X						
4	841	274	__L3-X040	175	X						
5	1376	428	__L3-X051	50		X					
5	1376	428	__L3-X050	175			X				
6	1850	567	__L3-X061	50			X				
6	1850	567	__L3-X060	175			X				
8	3316	1081	__L3-X081	50			X				
8	3316	1081	__L3-X080	175				X			
10	5430	1710	__L3-X101	50				X			
10	5430	1710	__L3-X100	175					X		
12	8077	2563	__L3-X121	50					X		
12	8077	2563	__L3-X120	175						X	
14	10538	3384	__L3-X141	50					X		
14	10538	3384	__L3-X140	150						X	
16	13966	4483	__L3-X161	50						X	
16	13966	4483	__L3-X160	150							X
18	17214	5736	__L3-X181	50						X	
18	17214	5736	__L3-X180	150							X
20	22339	7144	__L3-X201	50						X	
20	22339	7144	__L3-X200	150							X

X= Configuration Number for 3-Way - All actuators sized for 80 PSI air supply - See page RB-7
 AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Close-Off Charts - 2-Way - High Pressure Pneumatic Spring Return

2-WAY, High Pressure Spring Return - Nylon Coated Disc (Close-Off Chart)						
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	Normally Closed	Normally Open
2	144	61	NYL2-_020	175	93-0834	93-0834
2.5	282	107	NYL2-_025	175	93-0834	93-0833
3	461	154	NYL2-_030	175	93-0834	93-0833
4	841	274	NYL2-_041	50	93-0834	93-0833
4	841	274	NYL2-_040	175	93-0935	93-0924
5	1376	428	NYL2-_051	50	93-0935	93-0924
5	1376	428	NYL2-_050	175	93-1194	93-1194
6	1850	567	NYL2-_061	50	93-1193	93-924
6	1850	567	NYL2-_060	175	93-1195	93-1194
8	3316	1081	NYL2-_081	50	93-1195	93-1193
8	3316	1081	NYL2-_080	175	93-1604	93-1603
10	5430	1710	NYL2-_101	50	93-1604	93-1283
10	5430	1710	NYL2-_100	175	93-2103	93-2102
12	8077	2563	NYL2-_121	50	93-1605	93-1603
12	8077	2563	NYL2-_120	175	93-2105	93-2103
14	10538	3384	NYL2-_141	50	93-2104	93-2103
14	10538	3384	NYL2-_140	150	93-2106	93-2552
16	13966	4483	NYL2-_161	50	93-2105	93-2103
16	13966	4483	NYL2-_160	150	93-2554	93-2553
18	17214	5736	NYL2-_181	50	93-2105	93-2103
18	17214	5736	NYL2-_180	150	93-2555	93-2553
20	22339	7144	NYL2-_201	50	93-2553	93-2552
20	22339	7144	NYL2-_200	150	93-2556	93-2554
24	33154	11040	NYF2-_241	75	45E2-12-SR3	Contact Factory for Normally Open Options
24	33154	11040	NYF2-_240	150	73E2-14-SR4-C	
30	52443	18090	NYF2-_301	75	73E2-14-SR3-C	
30	52443	18090	NYF2-_300	150	14E3-18-SR5-C	

N= Normally Open / C= Normally Closed - All actuators sized for 80 PSI air supply

2-WAY, High Pressure Spring Return - Aluminum Bronze/Stainless Steel Disc (Close-Off Chart)						
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	Normally Closed	Normally Open
2	144	61	__L2-_020	175	93-0834	93-0834
2.5	282	107	__L2-_025	175	93-0834	93-0833
3	461	154	__L2-_030	175	93-0835	93-0834
4	841	274	__L2-_041	50	93-0835	93-0833
4	841	274	__L2-_040	175	93-1193	93-0924
5	1376	428	__L2-_051	50	93-0935	93-0924
5	1376	428	__L2-_050	175	93-1195	93-1193
6	1850	567	__L2-_061	50	93-1193	93-1192
6	1850	567	__L2-_060	175	93-1196	93-1283
8	3316	1081	__L2-_081	50	93-1196	93-1194
8	3316	1081	__L2-_080	175	93-1605	93-1603
10	5430	1710	__L2-_101	50	93-1604	93-1602
10	5430	1710	__L2-_100	175	93-2104	93-2102
12	8077	2563	__L2-_121	50	93-1606	93-1603
12	8077	2563	__L2-_120	175	93-2105	93-2103
14	10538	3384	__L2-_141	50	93-2104	93-2103
14	10538	3384	__L2-_140	150	93-2553	93-2552
16	13966	4483	__L2-_161	50	93-2105	93-2103
16	13966	4483	__L2-_160	150	93-2554	93-2553
18	17214	5736	__L2-_181	50	93-2106	93-2103
18	17214	5736	__L2-_180	150	93-2556	93-2554
20	22339	7144	__L2-_201	50	93-2553	93-2552

N= Normally Open / C= Normally Closed - All actuators sized for 80 PSI air supply
 AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Close-Off Charts - 3-Way - High Pressure Pneumatic Spring Return

3-WAY, Spring Return - Nylon Coated Disc (Close-Off Chart)											
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	93-0834	93-0934	93-1194	93-1284	93-1604	93-2104	93-2554
2	144	61	NYL3-X020	175	X						
2.5	282	107	NYL3-X025	175		X					
3	461	154	NYL3-X030	175			X				
4	841	274	NYL3-X041	50		X					
4	841	274	NYL3-X040	175			X				
5	1376	428	NYL3-X051	50			X				
5	1376	428	NYL3-X050	175				X			
6	1850	567	NYL3-X061	50			X				
6	1850	567	NYL3-X060	175					X		
8	3316	1081	NYL3-X081	50					X		
8	3316	1081	NYL3-X080	175						X	
10	5430	1710	NYL3-X101	50						X	
10	5430	1710	NYL3-X100	175						X	
12	8077	2563	NYL3-X121	50						X	
12	8077	2563	NYL3-X120	175							X
14	10538	3384	NYL3-X141	50						X	
14	10538	3384	NYL3-X140	150							X
16	13966	4483	NYL3-X161	50							X
18	17214	5736	NYL3-X181	50							X
20	22339	7144	NYL3-X201	50							X

X= Configuration Number for 3-Way – All actuators sized for 80 PSI air supply – See page RB-7

3-WAY, Spring Return - Aluminium Bronze/Stainless Steel Disc (Close-Off Chart)											
Valve Size (in)	Cv 90°	Cv 60°	Model Number	Close-Off Rating (PSI)	93-0934	93-1194	93-1284	93-1604	93-2104	93-2554	93-2555
2	144	61	_ _L3-X020	175	X						
2.5	282	107	_ _L3-X025	175	X						
3	461	154	_ _L3-X030	175		X					
4	841	274	_ _L3-X041	50	X						
4	841	274	_ _L3-X040	175		X					
5	1376	428	_ _L3-X051	50		X					
5	1376	428	_ _L3-X050	175				X			
6	1850	567	_ _L3-X061	50			X				
6	1850	567	_ _L3-X060	175				X			
8	3316	1081	_ _L3-X081	50				X			
8	3316	1081	_ _L3-X080	175					X		
10	5430	1710	_ _L3-X101	50					X		
10	5430	1710	_ _L3-X100	175						X	
12	8077	2563	_ _L3-X121	50					X		
12	8077	2563	_ _L3-X120	175						X	
14	10538	3384	_ _L3-X141	50						X	
14	10538	3384	_ _L3-X140	150							X
16	13966	4483	_ _L3-X161	50						X	
18	17214	5736	_ _L3-X181	50						X	
20	22339	7144	_ _L3-X201	50							X

X= Configuration Number for 3-Way – All actuators sized for 80 PSI air supply – See page RB-7

_ _ AB=Aluminum Bronze Disc/ SS=Stainless Steel Disc

BFV - Close-Off Charts - 2-Way & 3-Way - Low Pressure Pneumatic Spring Return

2-WAY, Low Pressure - Nylon Coated Disc (Close-Off Chart)							
Valve Size (in)	Cv 70°	Model Number	Close-Off Rating (PSI)	D-3153	D-3244	D-3246	D-3246-D
2	84	NYL2-_020	175	X			
2.5	163	NYL2-_025	175	X			
3	267	NYL2-_030	175	X			
4	496	NYL2-_041	50	X			
4	496	NYL2-_040	175		X		
5	775	NYL2-_051	50		X		
5	775	NYL2-_050	175			X	
6	1025	NYL2-_061	50			X	
6	1025	NYL2-_060	175			X	
8	1862	NYL2-_081	50			X	
8	1862	NYL2-_080	175				X
10	2948	NYL2-_101	50				X

N= Normally Open / C= Normally Closed

3-WAY, Low Pressure - Nylon Coated Disc (Close-Off Chart)							
Valve Size (in)	Cv 70°	Model Number	Close-Off Rating (PSI)	D-3153	D-3244	D-3246	D-3246-D
2	84	NYL3-X020	175	X			
2.5	163	NYL3-X025	175		X		
3	267	NYL3-X030	175		X		
4	496	NYL3-X041	50		X		
4	496	NYL3-X040	175			X	
5	775	NYL3-X051	50			X	
5	775	NYL3-X050	175			X	
6	1025	NYL3-X061	50			X	
6	1025	NYL3-X060	175				X
8	1862	NYL3-X081	50				X

X = Configuration Number for 3-Way – See page RB-7

-D = Tandem Actuators Required

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