

# BF

## Butterfly Valve

# Series 23/24

### Electric 24 VAC - NEMA 2

#### Description

The BF Series 23/24 electric actuated valve assemblies are rated NEMA 2 for indoor use. These assemblies are available in 2-way and 3-way configurations 2" - 6", in non-spring and spring return types. Two way assemblies are complete with full lugged bodies, 304 stainless disc, EPDM seat, and mounted with a mounting kit to an electric actuator. Three way assemblies are complete with (2) lugged valves mounted on a cast iron tee with linkage kit to an electric actuator for use in either mixing or diverting applications.

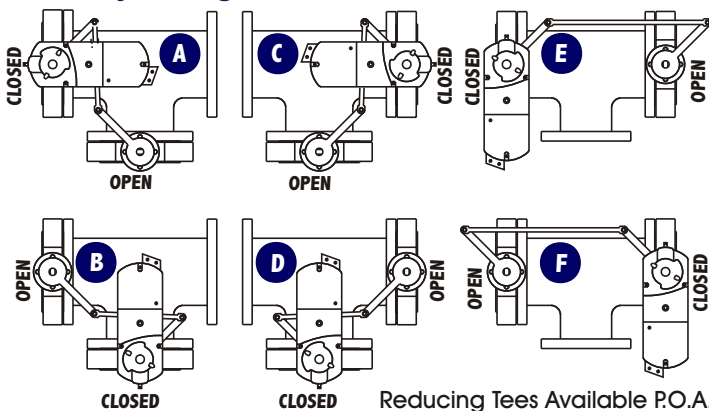
#### Operation

Valve assemblies with NEMA 2 electric actuators are powered by 24 VAC voltage (120 VAC spring). Each actuator is controlled by either on/off, modulating or floating commands. All actuators contain either current limiting circuitry, or microprocessor overload protection. The brushless DC motors provide continuous rotary power for accurate, automatic, valve positioning. Factory mounted, tested, and calibrated, these assemblies provide reliable valve positioning for temperature control.

#### Actuator Performance

- Housing protection NEMA 2 (indoor applications) limited resistance to small amounts of falling dirt and water
- Agency approved listings C.S.A., CE, UL and ISO 9001
- Power supply 24 VAC 50/60 Hz (Spring 120 VAC)
- Controls available are on/off, modulating or floating
- Manual override capabilities standard on each actuator
- Visual position indicator that confirms valve travel
- Approximate running time 2 minutes for full 90° travel
- Noise level: .45 DB maximum
- Operating temperature -40°F to +120°F
- Electrical connection 3FT, 18 gauge appliance cable with 1/2" connection
- Series 23 non-spring, Series 24 spring return
- 2 year limited warranty

#### Assembly Configurations

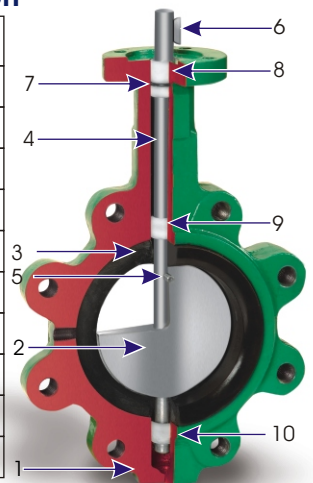


#### Valve Performance

- 2-way and 3-way assemblies 2" through 6"
- Valves comply with MSS SP-67 specifications, for industry standard face to face requirements
- Lug bodies compatible with ANSI 125/150# flanges
- Extended 2" neck for insulation clearance
- 304 stainless steel disc for corrosion resistance
- Phenolic backed cartridge style seat which is non-collapsible, stretch resistant and blow out proof
- Maximum seat temperature EPDM -30°F to +275°F
- Maximum valve rating is 200 psi
- Bi-directional, bubble tight close off
- Maximum steam rating 15 psi (EPDM only)
- Valve seat does not require gaskets
- Valve rated for dead end service

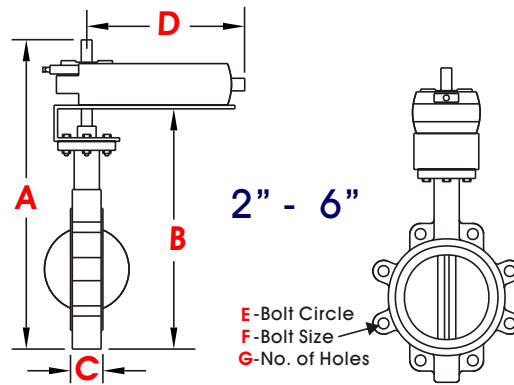
#### Standard Valve Construction

Item	Description	Materials
1	BODY	DUCTILE IRON
2	DISC	304 SS
3	SEAT	EPDM
4	SHAFT	416 SS
5	TAPER PINS	316 SS
6	KEY	416 SS
7	O-RING	BUNA-N
8	BUSHING	PTFE
9	BUSHING	PTFE
10	BUSHING	PTFE



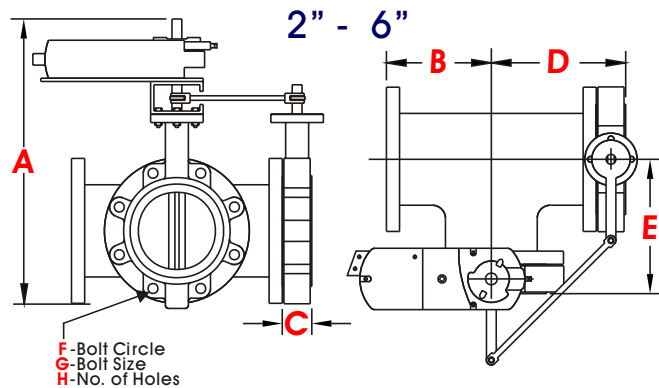
## Non-Spring Return

## Dimensional Data



2-Way Standard Assembly, 304 Stainless Disc, EPDM Seat, On/Off Modulating Service Change Last O to E in Model Number, For Accessories See page 4, Wiring under "Electrical Section" Series 23

Assembly Specification				Speed		VA Rating		23 Series operator		Assembly Dimensions							
Size in DN	Model Number	Close Psi bar	Wt. lb kg	Open (sec.)	Close (sec.)	on/off	mod.	on/off	mod.	A	B	C	D	E	Inches mm		
																F	G
2 50	BF202RA23O	150 10	14 6	150	150	5.5	4.4	GBB131	GBB161	17 <sup>5</sup> / <sub>8</sub> 447.7	13 <sup>5</sup> / <sub>8</sub> 346.1	1 <sup>3</sup> / <sub>4</sub> 44.5	9 228.6	4 <sup>3</sup> / <sub>4</sub> 120.7	5/8 - 11 UNC	4	
2 <sup>1</sup> / <sub>2</sub> 65	BF225RA23O	150 10	15 7	150	150	5.5	4.4	GBB131	GBB161	18 <sup>5</sup> / <sub>8</sub> 473.1	14 <sup>5</sup> / <sub>8</sub> 371.5	1 <sup>7</sup> / <sub>8</sub> 47.6	9 228.6	5 <sup>1</sup> / <sub>2</sub> 139.7	5/8 - 11 UNC	4	
3 80	BF203RA23O	150 10	21 10	150	150	5.5	4.4	GBB131	GBB161	19 <sup>1</sup> / <sub>8</sub> 485.8	15 <sup>1</sup> / <sub>8</sub> 384.2	1 <sup>7</sup> / <sub>8</sub> 47.6	9 228.6	6 152.4	5/8 - 11 UNC	4	
4 100	BF204RA23O	150 10	34 15	150	150	5.5	4.4	GBB131	GBB161	20 <sup>7</sup> / <sub>8</sub> 530.2	16 <sup>3</sup> / <sub>4</sub> 425.5	2 <sup>1</sup> / <sub>8</sub> 53.9	9 228.6	7 <sup>1</sup> / <sub>2</sub> 190.5	5/8 - 11 UNC	8	
5 125	BF205UA23O	100 7	45 20	150	150	8.5	9.5	GIB131	GIB161	21 533.4	17 431.8	2 <sup>1</sup> / <sub>4</sub> 57.2	9 228.6	8 <sup>1</sup> / <sub>2</sub> 215.9	3/4 - 10 UNC	8	
6 150	BF206UA23O	100 7	48 22	150	150	17.0	19.0	GIB131	GIB161	24 <sup>1</sup> / <sub>2</sub> 622.3	19 <sup>7</sup> / <sub>8</sub> 504.8	2 <sup>1</sup> / <sub>4</sub> 57.2	9 228.6	9 <sup>1</sup> / <sub>2</sub> 241.3	3/4 - 10 UNC	8	

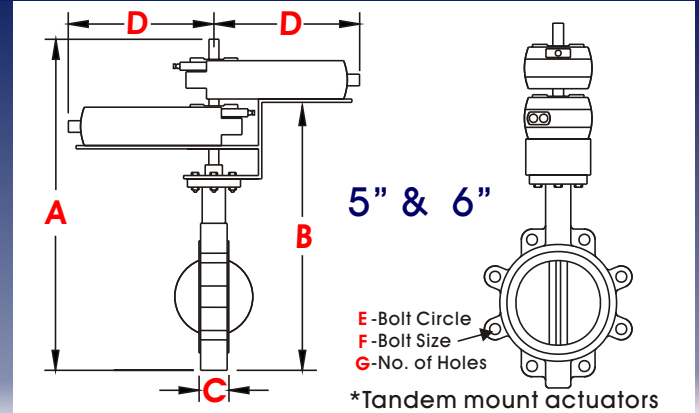
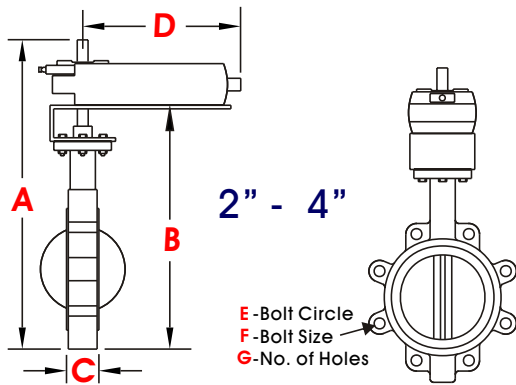


3-Way Standard Assembly, 304 Stainless Disc, EPDM Seat, On/Off Modulating Service Change Last O to E in Model Number, For Accessories See page 4, Wiring under "Electrical Section" Series 23

Assembly Specification				Speed		VA Rating		23 Series operator		Assembly Dimensions							
Size in DN	Model Number	Close Psi bar	Wt. lb kg	Open (sec.)	Close (sec.)	on/off	mod.	on/off	mod.	A	B	C	D	E	F	G	H
2 50	BF302RA23O	150 10	45 20	150	150	5.5	4.4	GBB131	GBB161	16 <sup>5</sup> / <sub>8</sub> 422.3	4 <sup>1</sup> / <sub>2</sub> 114.3	1 <sup>3</sup> / <sub>4</sub> 44.5	6 <sup>1</sup> / <sub>4</sub> 158.8	6 <sup>1</sup> / <sub>4</sub> 158.8	4 <sup>3</sup> / <sub>4</sub> 120.7	5/8 - 11 UNC	4
2 <sup>1</sup> / <sub>2</sub> 65	BF325RA23O	150 10	56 25	150	150	5.5	4.4	GBB131	GBB161	17 <sup>5</sup> / <sub>8</sub> 447.7	5 127.0	1 <sup>7</sup> / <sub>8</sub> 47.6	6 <sup>7</sup> / <sub>8</sub> 174.6	6 <sup>7</sup> / <sub>8</sub> 174.6	5 <sup>1</sup> / <sub>2</sub> 139.7	5/8 - 11 UNC	4
3 80	BF303RA23O	150 10	75 34	150	150	5.5	4.4	GBB131	GBB161	18 <sup>1</sup> / <sub>8</sub> 460.4	5 <sup>1</sup> / <sub>2</sub> 139.7	1 <sup>7</sup> / <sub>8</sub> 47.6	7 <sup>3</sup> / <sub>8</sub> 187.3	7 <sup>3</sup> / <sub>8</sub> 187.3	6 152.4	5/8 - 11 UNC	4
4 100	BF304RA23O	150 10	127 58	150	150	8.5	9.5	GIB131	GIB161	19 <sup>7</sup> / <sub>8</sub> 504.8	6 <sup>1</sup> / <sub>2</sub> 165.1	2 <sup>1</sup> / <sub>8</sub> 53.9	8 <sup>5</sup> / <sub>8</sub> 219.1	8 <sup>5</sup> / <sub>8</sub> 219.1	7 <sup>1</sup> / <sub>2</sub> 190.5	5/8 - 11 UNC	8
5 125	BF305UA23O	100 7	157 71	150	150	17.0	19.0	GIB131	GIB161	23 <sup>1</sup> / <sub>2</sub> 596.9	7 <sup>1</sup> / <sub>2</sub> 190.5	2 <sup>1</sup> / <sub>4</sub> 57.2	9 <sup>3</sup> / <sub>4</sub> 247.7	9 <sup>3</sup> / <sub>4</sub> 247.7	8 <sup>1</sup> / <sub>2</sub> 215.9	3/4 - 10 UNC	8
6 150	BF306UA23O	100 7	187 85	150	150	17.0	19.0	GIB131	GIB161	24 <sup>1</sup> / <sub>2</sub> 622.3	8 203.2	2 <sup>1</sup> / <sub>4</sub> 57.2	10 <sup>1</sup> / <sub>4</sub> 260.4	10 <sup>1</sup> / <sub>4</sub> 260.4	9 <sup>1</sup> / <sub>2</sub> 241.3	3/4 - 10 UNC	8

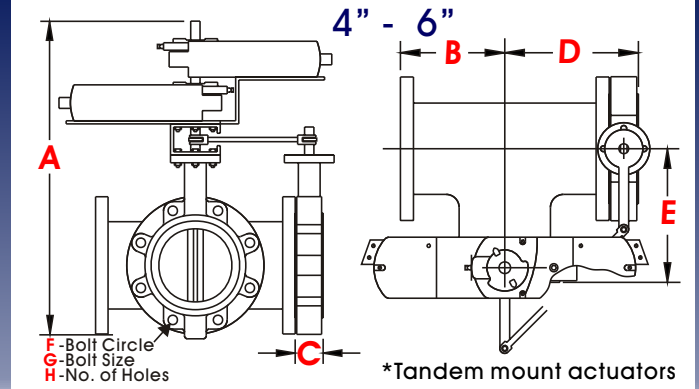
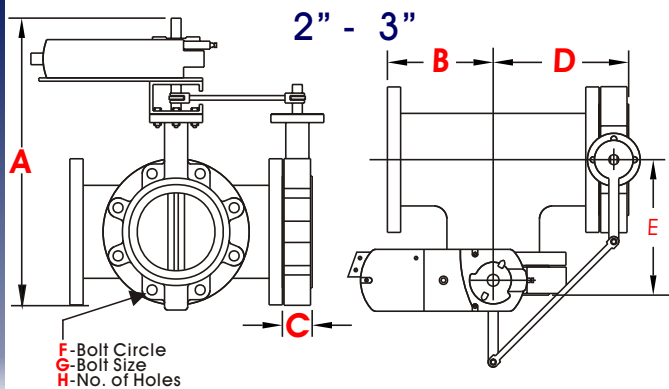
## Spring Return

## Dimensional Data



2-Way Standard Assembly, 304 Stainless Disc, EPDM Seat, On/Off  
Modulating Service Change Last O to E in Model Number, For Accessories See page 4, Wiring under "Electrical Section" Series 24

Assembly Specification				Speed		VA Rating		24 Series operator		Assembly Dimensions						
Size in DN	Model Number	Close Psi bar	Wt. lb/kg	Open (sec.)	Close (sec.)	on/off	mod.	on/off	mod.	A	B	C	D	E	F	G
2 50	BF202RA24O	150 10	14 6	90	15	8.3	9.5	GCA121	GCA151	17 <sup>5</sup> / <sub>8</sub> 447.7	13 <sup>5</sup> / <sub>8</sub> 346.1	1 <sup>3</sup> / <sub>4</sub> 44.5	9 228.6	4 <sup>3</sup> / <sub>4</sub> 120.7	5/8 - 11 UNC	4
2½ 65	BF225RA24O	150 10	15 7	90	15	8.3	9.5	GCA121	GCA151	18 <sup>5</sup> / <sub>8</sub> 473.1	14 <sup>5</sup> / <sub>8</sub> 371.5	1 <sup>7</sup> / <sub>8</sub> 47.6	9 228.6	5½ 139.7	5/8 - 11 UNC	4
3 80	BF203RA24O	150 10	21 10	90	15	8.3	9.5	GCA121	GCA151	19 <sup>1</sup> / <sub>8</sub> 485.8	15 <sup>1</sup> / <sub>8</sub> 384.2	1 <sup>7</sup> / <sub>8</sub> 47.6	9 228.6	6 152.4	5/8 - 11 UNC	4
4 100	BF204UA24O	100 7	34 15	90	15	8.3	9.5	GCA121	GCA151	20 <sup>7</sup> / <sub>8</sub> 530.2	16 <sup>3</sup> / <sub>4</sub> 425.5	2 <sup>3</sup> / <sub>8</sub> 53.9	9 228.6	7½ 190.5	5/8 - 11 UNC	8
* 5 125	BF205UA24O	100 7	45 20	90	15	16.6	19.0	GCA121	GCA151	23½ 596.9	18 <sup>7</sup> / <sub>8</sub> 479.4	2¼ 57.2	9 228.6	8½ 215.9	¾ - 10 UNC	8
* 6 150	BF206UA24O	100 7	48 22	90	15	16.6	19.0	GCA121	GCA151	24½ 622.3	19 <sup>7</sup> / <sub>8</sub> 504.8	2¼ 57.2	9 228.6	9½ 241.3	¾ - 10 UNC	8



3-Way Standard Assembly, 304 Stainless Disc, EPDM Seat, On/Off  
Modulating Service Change Last O to E in Model Number, For Accessories See page 4, Wiring under "Electrical Section" Series 24

Assembly Specification				Speed		Amp draw		24 Series operator		Assembly Dimensions							
Size in DN	Model Number	Close Psi bar	Wt. lb/kg	Open (sec.)	Close (sec.)	on/off	mod.	on/off	mod.	A	B	C	D	E	F	G	H
2 50	BF302RA24O	150 10	45 20	90	15	8.3	9.5	GCA121	GCA151	16 <sup>5</sup> / <sub>8</sub> 422.3	4½ 114.3	1 <sup>3</sup> / <sub>4</sub> 44.5	6¼ 158.8	6¼ 158.8	4¾ 120.7	5/8 - 11 UNC	4
2½ 65	BF325RA24O	150 10	56 25	90	15	8.3	9.5	GCA121	GCA151	17 <sup>5</sup> / <sub>8</sub> 447.7	5 127.0	1 <sup>7</sup> / <sub>8</sub> 47.6	6 <sup>7</sup> / <sub>8</sub> 174.6	6 <sup>7</sup> / <sub>8</sub> 174.6	5½ 139.7	5/8 - 11 UNC	4
3 80	BF303RA24O	150 10	75 34	90	15	8.3	9.5	GCA121	GCA151	18 <sup>1</sup> / <sub>8</sub> 460.4	5½ 139.7	1 <sup>7</sup> / <sub>8</sub> 47.6	7 <sup>3</sup> / <sub>8</sub> 187.3	7 <sup>3</sup> / <sub>8</sub> 187.3	6 152.4	5/8 - 11 UNC	4
* 4 100	BF304UA24O	100 7	127 58	90	15	16.6	19.0	GCA121	GCA151	19 <sup>7</sup> / <sub>8</sub> 504.8	6½ 165.1	2 <sup>3</sup> / <sub>8</sub> 53.9	8 <sup>5</sup> / <sub>8</sub> 219.1	8 <sup>5</sup> / <sub>8</sub> 219.1	7½ 190.5	5/8 - 11 UNC	8
* 5 125	BF305UA24O	100 7	157 71	90	15	16.6	19.0	GCA121	GCA151	23½ 596.9	7½ 190.5	2¼ 57.2	9¾ 247.7	9¾ 247.7	8½ 215.9	¾ - 10 UNC	8
* 6 150	BF306UA24O	100 7	187 85	90	15	16.6	19.0	GCA121	GCA151	24½ 622.3	8 203.2	2¼ 57.2	10¼ 260.4	10¼ 260.4	9½ 241.3	¾ - 10 UNC	8

## Engineering / Order Code

Flow Coefficients ( $C_v$ ) Degrees represent angle of disc opening

### Single Valve Assembly

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.06	3	7	15	27	44	70	105	115
2 1/2"	0.10	6	12	25	45	75	119	278	196
3"	0.20	9	18	39	70	116	183	275	302
4"	0.30	17	36	78	139	230	364	546	600
5"	0.50	29	61	133	237	392	620	930	1022
6"	0.80	45	95	205	366	605	958	1437	1579
8"	2	89	188	408	727	1202	1903	2854	3136

### Three-Way Valve Assembly

Size	10°	20°	30°	40°	45°	50°	60°	70°	80°	90°
2"	105	73	51	42	42	42	51	73	105	115
2 1/2"	178	125	87	70	70	70	87	125	178	196
3"	275	192	134	109	109	109	134	192	275	302
4"	546	381	266	217	217	217	266	381	546	600
5"	931	649	453	370	370	370	453	649	931	1022
6"	1438	1003	700	571	571	571	700	1003	1438	1579
8"	2856	1992	1390	1135	1135	1135	1390	1992	2856	3136

The flow characteristic of a valve is described as the  $C_v$  value.  $C_v$  is defined as the max flow of 60°F water expressed in GPM (Gallons per minute) which produces a 1 psi pressure drop across the valve.

## Assembly Number

Standard Construction

Accessories



Butterfly Valve Assembly, 2-Way, 4", Reduced Cut 150 psi close, 304 Stainless Disc, EPDM Seat, 24 VAC NEMA 2 Actuator, Modulating 2-10 input

#	ITEM	CODE	DESCRIPTION	#	ITEM	CODE	DESCRIPTION
1 & 2	Series	BF	Butterfly Valve	7	Construction	A	304 SS Disc, EPDM Seat
3	Assembly	2 3	2-Way Configuration 3-Way Configuration	8 & 9	Actuator	23 24	Non-Spring 24 VAC Spring Return 24 VAC
4 & 5	Size	02 04 25 05 03 06	2" - 6" Assemblies	10	Controls	O E F	On/Off Electronic 0-10 input Floating
6	Close Off	R U	Reduced Cut 150psi Under Cut 100psi	11 & 12	Accessories	A K R V	Aux. switch 2-SPDT POT (add on feedback) Resistor 120 VAC power

Please Specify 3-way Configuration Located On Front Of Brochure