



# BUTTERFLY VALVES



# Specifications and Applications

Butterfly Valves make an excellent choice by combining the balance of an economical valve with the performance you expect in a Commercial, HVAC and an industrial butterfly valve.

## Specifications:

All valves shall meet API-609 MSS-SP-67 ISO 5272 face-to-face dimensions. Valve sizes from 2" to 12" are rated at 200 psig WOG service and valve sizes from 14" to 30" are rated at 150 psig WOG service. All valves are full rated on dead-end service. All bodies shall be ductile iron 65-45-12 and bi-directional tested in both directions and be bubble tight with zero leakage. Lug bodies shall be full lug rated and all bodies shall be suitable for ANSI 125/150 lb, JIS, DIN or B.S. Flanges. Secondary seals shall be self-adjusting. All elastomers, all internal bearings shall be non-corrosive and non-metallic. All seats shall be suitable for 250°F sustained high temperature and capable of 2000 PPM on chlorinated applications.



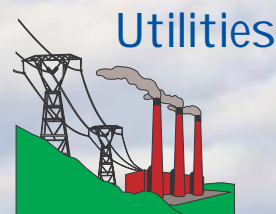
## Testing:

All valves are factory tested on both sides for bi-directional installations to zero leakage and bubble tight.

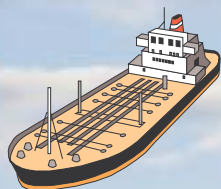
FEATURES	BENEFITS
Extended neck	Allows for 2" insulation
Ductile iron body	High strength body when in tension (lug body)
Non-corrosive bushings	Elimination of shaft to body seizure
AWWA C504 latest revision proof of design	High cyclic capabilities while maintaining a bubble tight seal
Cartridge seat	Excellent on full vacuum distortion proof primary shaft seal, minimal seat movement and consistent displacement on closing
One-piece shaft	High torsional capabilities with zero disc deflection

## Typical Applications:

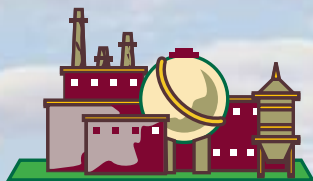
- On/off isolation
- Dead-end service/removal of downstream piping
- Heating, ventilation and air conditioning systems
- Industrial process piping
- Municipal raw water intake
- Municipal chlorinated water systems (2000 ppm)
- Municipal feed water and reservoir
- Throttling and process control
- Full vac
- Aeration and blower installations



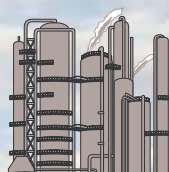
Water & HVAC



Marine



Municipal



Chemical Plants



Pulp and Paper

# Sure Flow Butterfly Valves

## Features

- Extended neck design for ample application of insulation.
- One-piece / uni-body construction of ductile cast iron designed to accommodate ANSI 125/150 flanges.
- Integral ISO 5211 mounting flange will accept all styles of hand lever, multi-turn manual gear and power operators/actuators. Stem Double D.
- Teflon impregnated bronze stem bushings to assure long life even during extended periods of inactivity. Lowers operating torque to ease operation manually or when power assisted.
- One-piece resilient seat with molded-in (integral) o-ring seal eliminates the need for additional flange gaskets. Valve body designed to limit seat compression to optimum dimensions.

## Types BFV 125/150 Lug



## Type BFV 125/150 Wafer



- One-piece resilient phenolic back seat has molded-in (integral) o-ring seal for upper and lower valve shafts. Works with disc edge hub seals to provide a double stem seal.
- Valves DN 50 to 500 (2" to 20") meet the intent of and have passed AWWA C504-87 Section 5 proof of design tests.
- Phenolic backed seat premium features:
  - Dimensionally stable seat sealing surface
  - Minimal seat wear, extending seat life
  - Blow-out proof seat
  - Easily field replaceable
  - Non-distorting shaft hole with molded-in (integral) o-ring seal
- Suitable for open left or open right operation.
- One-piece shaft design
- Butterfly standard with a hard back seat. No movement of the seat which results in a constant torque.
- **Butterfly valves available up to 48 inches.**

## Installation

Butterfly Valves are manufactured in accordance with the specifications from ISO 5272, International Standards Organization and MSS SP-67, Manufacturers Standardization Society and API-609, American Petroleum Institute. Latest revisions. Both Lug and Wafer series valves are designed for ANSI 125/150 lb. class flanges. Valve sizes from 2" to 12" are rated at 200 psig WOG service and valve sizes from 14" to 30" are rated at 150 psig WOG service. All valves are full rated on dead-end service.

# Sure Flow Butterfly Valves

- Available 2" to 48"
- ISO 5211 mounting flange
- Drop on actuation
- Wafer or lug style body
- Ideal for on- off or throttling
- Full flanged style 36" to 48"
- Bi- directional dead- end capability
- Stem Double " D" positive drop on handle or gear operator



## Ordering Information

QUANTITY \_\_\_\_\_  
 SIZE \_\_\_\_\_  
 BODY STYLE & MATERIAL \_\_\_\_\_  
 DISC MATERIAL \_\_\_\_\_  
 STEM & BUSHING MATERIAL \_\_\_\_\_  
 SEAT MATERIAL \_\_\_\_\_  
 OPERATOR \_\_\_\_\_

XXXX - XXXX - XXX - XX - X - X - XXX

EXAMPLE: INCLUDE FULL DESCRIPTION  
**1000 BFLIB GHW**  
 10" Lug Style Butterfly Valve  
 Ductile Iron Body, Ductile Iron Disc,  
 Buna Seat C/W gear operator

## Butterfly Option Selection

<b>SIZE</b>	<b>0200 - 2'</b> <b>0250 - 2 1/2'</b> <b>0300 - 3'</b> <b>0400 - 4'</b> <b>0500 - 5'</b> <b>0600 - 6'</b> <b>0800 - 8'</b> <b>1000 - 10'</b> <b>1200 - 12'</b> <b>1400 - 14'</b> <b>1600 - 16'</b> <b>1800 - 18'</b> <b>2000 - 20'</b> <b>2400 - 24'</b> <b>3000 - 30'</b> <b>3600 - 36'</b> <b>4200 - 42'</b> <b>4800 - 48'</b>
<b>BODY STYLE &amp; MATERIAL</b>	BFVW - WAFER, ASTM A-536 - Ductile Iron    BFVL - LUG, ASTM A-536 - Ductile Iron
<b>DISC MATERIAL</b>	I - Ni / DUCTILE A536    S - 316 SS B - BRONZE
<b>STEM AND BUSHING MATERIAL</b>	416SS/TEFLON IMPREGNATED (Ni/Ductile & Bronze Disc)    316SS/TEFLON IMPREGNATED (316SS Disc)
<b>SEAT MATERIAL</b>	B - BUNA E - EPDM
<b>OPERATOR</b>	BST - BARE STEM    GHW - GEAR OPERATOR LVP - 10 POSITION LEVER

## Shipping Weights

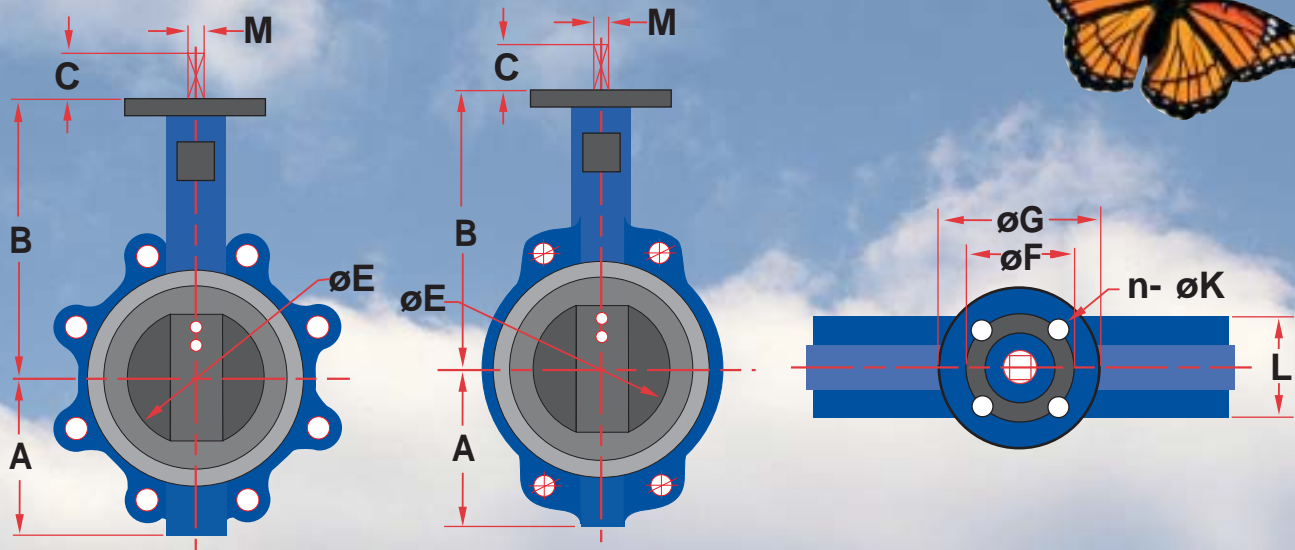
SIZE	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
<b>WAFER / BST</b>	8	9	10	14	18	20	33	49	82	110	155	300	330	400
<b>LUG / BST</b>	10	12	14	23	27	36	47	69	102	143	243	310	512	686
<b>LEVER</b>	3	3	3	3	3	3	7	7	7	15	17	29	60	90
<b>GEAR</b>	4	4	4	4	4	8	20	24	25	26	28	36	71	132

\*Above weights measured in pounds.

## Notes

Manufacturer reserves the right to modify dimensions, materials, or design. Contact factory for certification.

# Dimensional Data - Wafer & Lug



## Dimensional Data

Size	A	B	C	E	F	G	nXøK	L	M
2"	3 1/8	5 9/16	1 1/4	2	1 15/16	2 9/16	4 Xø1/4	1 11/16	3/8
2-1/2"	3 1/2	6 1/8	1 1/4	2 1/2	1 15/16	2 9/16	4 Xø1/4	1 13/16	3/8
3"	3 3/4	6 5/16	1 1/4	3 1/16	1 15/16	2 9/16	4 Xø1/4	1 13/16	3/8
4"	4 1/2	7 1/16	1 1/4	4 1/16	2 3/4	3 9/16	4 Xø3/8	2 1/16	7/16
5"	5	7 5/8	1 1/4	4 13/16	2 3/4	3 9/16	4 Xø3/8	2 3/16	9/16
6"	5 1/2	8 1/16	1 1/4	6 1/16	2 3/4	3 9/16	4 Xø3/8	2 3/16	9/16
8"	6 7/8	9 13/16	1 9/16	7 15/16	4	4 15/16	4 Xø1/2	2 3/8	11/16
10"	8 1/8	11 1/8	1 9/16	9 13/16	4	4 15/16	4 Xø1/2	2 11/16	7/8
12"	9 1/2	12 13/16	1 9/16	11 13/16	4	4 15/16	4 Xø1/2	3 1/16	7/8
14"	10 1/2	14 1/8	1 9/16	13 1/16	4	4 15/16	4 Xø1/2	3 1/16	7/8
16"	12 3/16	15 3/4	2 1/16	15 1/4	5 1/2	6 7/8	4 Xø7/8	4	7/8
18"	12 15/16	16 5/8	2 1/16	17 1/4	6 1/2	8 1/4	4 Xø7/8	4 1/2	1 1/16
20"	14 3/16	18 7/8	2 1/2	19 1/4	6 1/2	8 1/4	4 Xø7/8	5	1 1/16
24"	18 1/16	22 1/8	2 3/4	23 1/4	6 1/2	8 1/4	4 Xø7/8	6 1/16	1 7/16
30"	23 1/4	25 1/2	3 1/4	29 1/2	10	11 13/16	8 Xø11/16	6 1/2	1 7/16
36"	25 13/16	28 7/16	5 1/8	33 7/8	10	11 13/16	8 Xø11/16	7 7/8	2 3/16
48"	33 1/4	37 1/16	5 7/8	45 11/16	11 3/4	13 3/4	8 Xø7/8	10 7/8	2 15/16

\*Above dimensions are in inches.

## Notes

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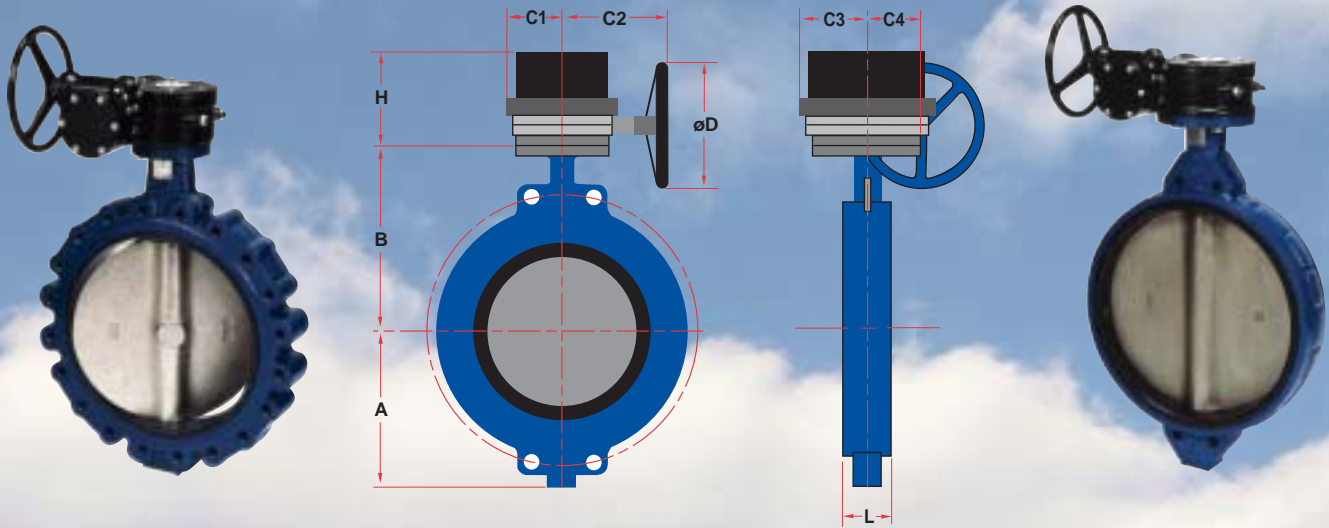


**Gear operator with indicator standard.**



**Lever with standard lock out.**

# Dimensional Data - Gear Operator



## Dimensional Data

Size	A	B	C1	C2	C3	C4	D	H	L
2"	3 1/8	5 9/16	2 1/16	6 1/16	2 1/16	1 3/4	5 7/8	2 13/16	1 11/16
2-1/2"	3 1/2	6 1/8	2 1/16	6 1/16	2 1/16	1 3/4	5 7/8	2 13/16	1 13/16
3"	3 3/4	6 5/16	2 1/16	6 1/16	2 1/16	1 3/4	5 7/8	2 13/16	1 13/16
4"	4 1/2	7 1/16	2 1/16	6 1/16	2 1/16	1 3/4	5 7/8	2 13/16	2 1/16
5"	5	7 5/8	2 1/16	6 1/16	2 1/16	1 3/4	5 7/8	2 13/16	2 3/16
6"	5 1/2	8 1/16	2 1/16	6 1/16	2 1/16	1 3/4	5 7/8	2 13/16	2 3/16
8"	6 7/8	9 13/16	3	9 1/4	3	2 1/2	11 13/16	3 1/4	2 3/8
10"	8 1/8	11 1/8	3	9 1/4	3	2 1/2	11 13/16	3 1/4	2 11/16
12"	9 1/2	12 13/16	3 3/16	9 1/4	3 3/16	3 1/8	11 13/16	3 1/4	3 1/16
14"	10 1/2	14 1/8	3 3/16	9 1/4	3 3/16	3 1/8	11 13/16	3 1/4	3 1/16
16"	12 3/16	15 3/4	4 1/16	10 15/16	4 1/16	7 1/8	11 13/16	5 5/16	4
18"	12 15/16	16 5/8	4 1/16	10 15/16	4 1/16	7 1/8	11 13/16	5 5/16	4 1/2
20"	14 3/16	18 7/8	4 1/16	10 15/16	4 1/16	7 1/8	11 13/16	5 5/16	5
24"	18 1/16	22 1/8	5 7/16	11 15/16	5 7/16	7 7/8	11 13/16	5 3/8	6 1/16
30"	23 1/4	25 1/2	6 13/16	14 1/16	6 13/16	9 9/16	17 1/8	6 7/16	6 1/2
36"	25 13/16	28 7/16	7 15/16	16 1/8	7 15/16	10 15/16	17 1/8	10 3/16	7 7/8
48"	33 1/4	37 1/16	12 3/16	20 1/16	12 3/16	18 1/16	17 1/8	12 3/16	10 7/8

\*Above dimensions are in inches.

## Notes

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# Product Options - Technical Information



Electric or Pneumatic Actuator Option

## Cv Values - Valve Sizing Coefficients (US-GPM @ 1PSI $\Delta$ P)

The Cv values in the following table are only available for ANSI Class 125 working pressure designed butterfly valves size from 2" to 48".

Size	Flow in GPM @ 1 PSI $\Delta$ P @ Various Disc Angles.								Full 90° Open
	10°	20°	30°	40°	50°	60°	70°	80°	
2"	0.1	5	12	24	45	64	90	125	135
2 1/2"	0.2	8	20	37	65	98	144	204	220
3"	0.3	12	22	39	70	116	183	275	302
4"	0.5	17	36	78	139	230	364	546	600
5"	0.8	29	61	133	237	392	620	930	1,022
6"	2	45	95	205	366	605	958	1,437	1,579
8"	3	89	188	408	727	1,202	1,903	2,854	3,136
10"	4	151	320	694	1,237	2,047	3,240	4,859	5,340
12"	5	234	495	1,072	1,911	3,162	5,005	7,507	8,250
14"	6	338	715	1,549	2,761	4,568	7,230	10,844	11,917
16"	8	464	983	2,130	3,797	6,282	9,942	14,913	16,388
18"	11	615	1,302	2,822	5,028	8,320	13,168	19,752	21,705
20"	14	791	1,674	3,628	6,465	10,698	16,931	25,396	27,903
24"	22	1,222	2,587	5,605	9,989	16,528	26,157	39,236	43,116
28"	36	1,813	3,639	6,636	11,061	18,673	29,732	44,343	49,500
32"	45	2,387	4,791	8,736	13,788	20,613	31,395	48,117	68,250
36"	60	3,021	6,063	11,055	17,449	26,086	39,731	60,895	86,375
40"	84	4,183	8,395	15,307	24,159	36,166	55,084	84,425	119,750

## Notes

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# Product Options - Technical Information



**Gear operator with indicator standard.**



**Lever with standard lock out.**

## Torque Values (Inch Pounds)

Size	Standard Disc, Differential Pressure							
	125 psi		150 psi		200 psi		285 psi	
	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE
2"	106	100	117	106	129	111	140	117
2 1/2"	152	150	166	163	181	176	195	189
3"	213	207	230	220	248	322	265	244
4"	321	290	386	323	450	357	515	390
5"	481	423	598	481	715	540	832	598
6"	692	599	878	691	1,063	783	1,248	875
8"	1,326	1,060	1,716	1,183	2,106	1,307	2,496	1,430
10"	2,239	1,671	3,010	1,872	3,780	2,074	4,550	2,275
12"	3,959	2,568	4,953	2,795	5,948	3,023	6,942	3,250
14"	4,881	2,640	6,226	3,070	7,570	3,500		
16"	7,020	4,260	8,580	4,880	10,140	5,500		
18"	10,105	6,287	12,202	7,243	14,300	8,200		
20"	13,923	8,360	16,582	9,180	19,240	10,000		
24"	23,617	15,427	26,953	16,813	30,290	18,200		
30"	39,721	27,313	43,391	29,407	47,060	31,500		

### Notes

Manufacturer reserves the right to modify dimensions, materials, or design. Contact factory for certification.

The above torque values are only available for ANSI Class 125 working pressure designed butterfly valves for sizes from 2" to 30".

All torque values shown on chart are for "wet" (water and other non-lubricating medium) on-off service. For "dry" service (non-lubricating, dry gas media), multiply values by 1.6. For "lubricating medium" service (clean, non-abrasive lubricating media), multiply values by 0.85. When sizing actuators for single Valve applications, multiply values by 1.25. When sizing for 3-way ("tee") applications, multiply values by 1.5.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help ensure correct selection of application.



# Disc and Seat Material Data

## Nickel Plated Ductile Iron

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- ASTM B-320 Plating and ASTM A536 (Cast) Ductile Iron which has strength properties similar to steel is enhanced with the addition of Nickel Plating by adding to its ability to resist corrosion. Nickel Plating further adds to Ductile Iron, the ability to resist abrasion due to its inherent hardness features.

### Applications:

Suitable for Air, Kerosene, Oils, Ketones and Potable Water.

## Bronze

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- ASTM B148-92 Bronze while being recognized for steam rated valves is also resistant to corrosion, pitting and is also resistant to many chemicals

### Applications:

Suitable for Air, Alcohols, Ethers, Freons, Oils, Oxygen and Potable Water. Widely used in the HVAC market.

## 316 Stainless Steel

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- ASTM A-351 Grade CF-8M 316SS is an excellent choice for corrosion resistance to many chemicals and environmental applications. Investment Cast stainless steel has no need of additional heat treating, it has inherent high strength and is used for many industrial applications.

### Applications:

Suitable for Acetic Acids, Air, Automotive Oils & Fuels, Beer, Freon, Gasoline, Ketones, Oils, Oxygen, Steam and Potable Water.

## Buna - N

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(NBR/Nitrile) (Butadiene Acrylonitrile Copolymer) Buna - N is widely used as a seat material for water and sewage butterfly valve applications. It is also used in certain petroleum applications.

### Applications:

- Buna - N is suitable for and resistant to most all petroleum products. It is also resistant to many chemicals, ethylene glycol, fats, grease, hydrocarbons, hydraulic fluids and oils.
- Buna - N should not be used where Chlorinated and Nitro Hydrocarbons, Esters, Ketones and Ozone will be found.

### Temperature Range:

0° to 180° F Continuous Service / 0° to 200° F Intermittent

## EPDM

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(Ethylene Propylene EPM) (Ethylene Propylene Copolymer and Terpolymer) EPDM has a wide variety of uses being generally resistant to many chemicals, higher temperatures (low pressure steam to 30 psi) and abrasion. It is used in many HVAC and industrial applications.

### Applications:

- EPDM is suitable for and resistant to animal and vegetable oils, ozone, oxidizing chemicals. EPDM is good for diluted acids and alkalies, brake fluid and ketones.
- EPDM should not be used where mineral oils, solvents and aromatic hydrocarbons are present.

### Temperature Range:

40° to 250° F Continuous / 40° to 275° F Intermittent

