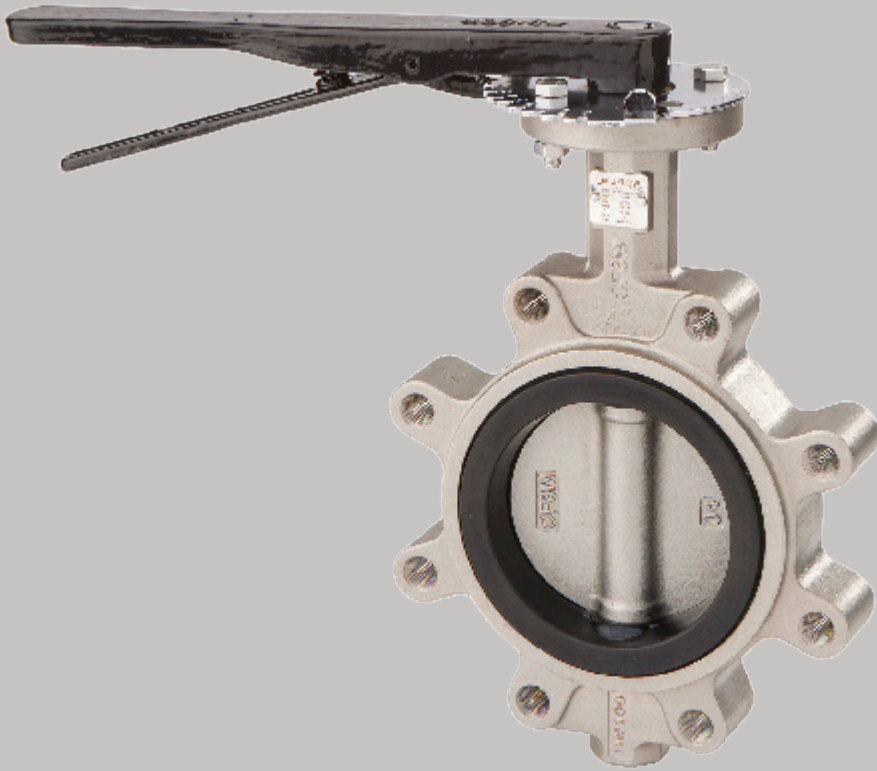




One piece lug design with extended neck and a concentric disc and seat configuration to allow for 2" - 48" of piping installation. Rated for bubble-tight shutoff for dead end service to 232 psi on sizes 2" - 12" and to 145 psi on sizes 14" - 48".

CE/PED certification, NSF/ANSI 61-2008 (Potable Water) Certification, SIL, ABS, Bureau Veritas, DNV

## J Flow Controls **85A Series** Lug Style Butterfly Valve

### ***FEATURES & BENEFITS***

- Small in size and light in weight. Easy installation and maintenance. It can be mounted in any direction
- Simple and compact construction, quick 90° on-off operation
- Minimized operating torque, energy saving
- Bubble-tight sealing with no leakage under pressure test
- Wide selection of materials, applicable for various medium
- Long service life
- Flow curve tending to straight line. Excellent performance

### Overview

#### Body:

- One piece lug design with extended neck to allow for 2" - 48" of piping insulation
- Non-corrosive bushing and a self-adjusting stem seat. No field adjustment necessary to maintain optimum field performance

#### Disc:

- Disc edge and hub on metal disc are spherically machined and hand polished for torque and maximum sealing capability

#### Stem:

- One piece design
- Disc to stem connection is a square shaft design with no possible leak paths in the disc-to-stem connection. External disc to stem connections such as disc screws and pins are absent
- Stem is mechanically retained in the body neck and no part of the stem is exposed to the line media

#### Seat:

- Tongue-and-groove seat with primary hub seal and a molded flange O-ring for weld neck and slip-on flanges
- The seat is totally encapsulated isolating it from the line media and no flange gaskets are required



## 85A Series Lug Style Butterfly Valve

### Overview

#### Max working pressure

2" - 12" 232 psi

Flange PN10, PN16, 150LB

14" - 48"

Flange PN10, PN16, 150LB

#### Design

EN593, BS5155, EN1092, ISO5211

Face to Face

DIN558-1, DIN3202, ISO 5752, BS5155

#### Testing

EN 12266-1, ISO 5208, API598

### Body

| Material        | References standard                    | Coating |
|-----------------|----------------------------------------|---------|
| Stainless Steel | CF8, CF8M, CF3, CF3M, SAF2507, SAF2205 |         |
| Aluminum bronze | C9540, C95500, C95800                  |         |

### Disc

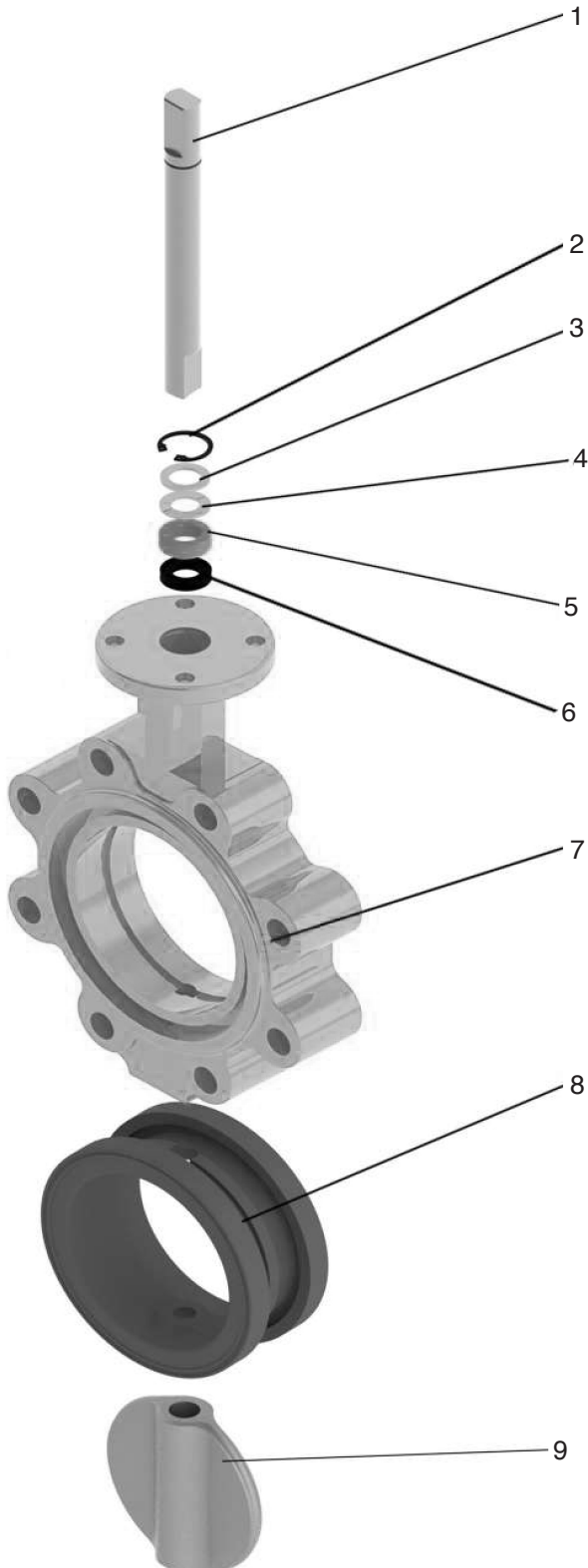
| Material        | References standard                    | Standard Coating |
|-----------------|----------------------------------------|------------------|
| Stainless Steel | CF8, CF8M, CF3, CF3M, SAF2507, SAF2205 |                  |
| Alloy 20        | Alloy 20                               |                  |

### Body Rubber Seat

| References | Designation                     | Trade Name | Working temp | Applications                                 |
|------------|---------------------------------|------------|--------------|----------------------------------------------|
| NBR        | Nitrile Rubber                  | BUNA-N     | -25/+100     | Oils, Hydrocarbons, Gas, Air, Water          |
| EPDM       | Copolymer                       | EPDM       | -35/+130     | Water, Seat Water, Steam, Diluted Acids      |
| FKM        | Fluoroelastomer                 | Viton      | -20/+200     | Oils, Hydrocarbons, Acids                    |
| CR         | Polychloroprene                 | Neoprene   | -20/+100     | Alkail, Bases, Water                         |
| MR         | Natural Rubber                  | NR         | -40/+80      | Glycols, Abrasive media                      |
| MVQ        | Silicon Rubber                  | SR         | -60/+190     | Water, Food, Drinks                          |
| CSM        | Chlorosulfonate Polychloroprene | Hypalon    | -20/+125     | Acids, Mineral Bases, Alcohols, Hydrocarbons |

## 85A Series Lug Style Butterfly Valve

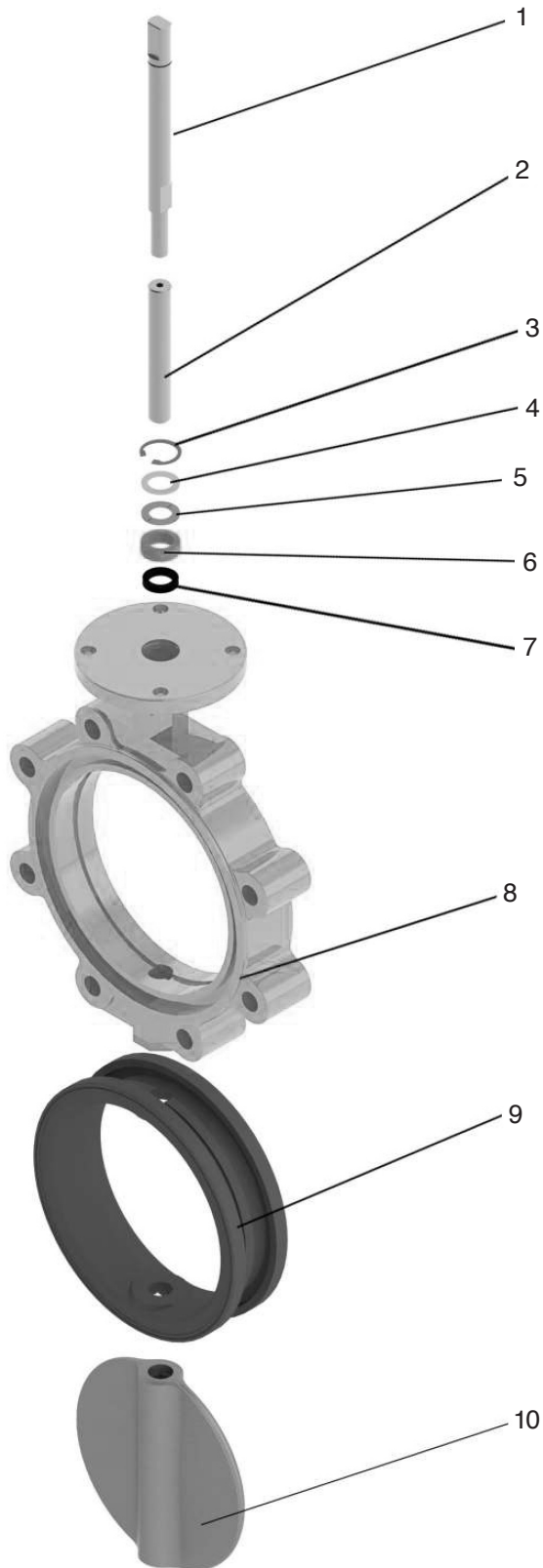
### Bill of Materials (2" - 3")



| No. | Part Name      | Material                                                                                      |
|-----|----------------|-----------------------------------------------------------------------------------------------|
| 1   | Shaft          | SS410, SS304, SS431, SS316, Monel K500, 17-4PH, C6300, C92200, 2507, 2205                     |
| 2   | Retaining Ring | Sk7                                                                                           |
| 3   | Thrust Washer  | Stainless Steel, Carbon Steel                                                                 |
| 4   | Shaft Retainer | Stainless Steel, Carbon Steel                                                                 |
| 5   | "O" Ring       | NBR, Viton                                                                                    |
| 6   | Bushing        | FRP                                                                                           |
| 7   | Body           | 304, 316, 316L                                                                                |
| 8   | Body Seat      | NBR (BUNA-N), EPDM, HEPDM, FKM (Viton), PTFE, Polychloroprene, Natural Rubber, Silicon Rubber |
| 9   | Disc           | CF8, CF8M, CF3, CF3M, SAF2507, SAF2205                                                        |

## 85A Series Lug Style Butterfly Valve

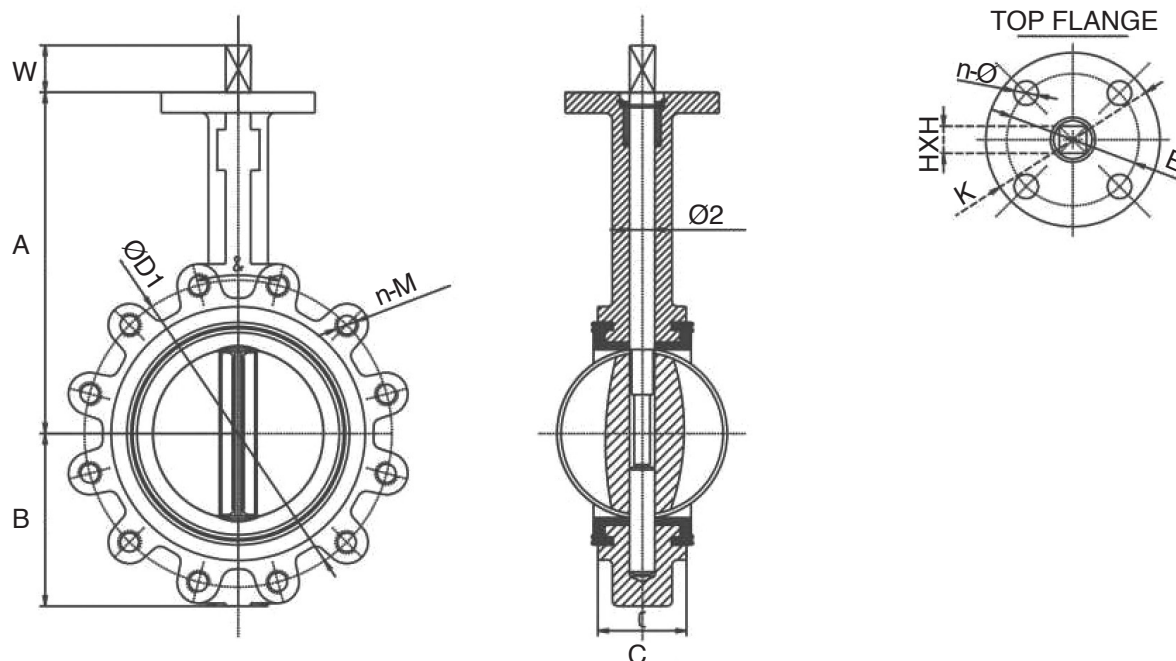
### Bill of Materials (4" - 14")



| No. | Part Name      | Material                                                                                      |
|-----|----------------|-----------------------------------------------------------------------------------------------|
| 1   | Up Shaft       | SS410, SS304, SS431, SS316, Monel K500, 17-4PH, C6300, C92200, 2507, 2205                     |
| 2   | Up Shaft       | SS410, SS304, SS431, SS316, Monel K500, 17-4PH, C6300, C92200, 2507, 2205                     |
| 3   | Retaining Ring | Sk7                                                                                           |
| 4   | Thrust Washer  | Stainless Steel, Carbon Steel                                                                 |
| 5   | Shaft Retainer | Stainless Steel, Carbon Steel                                                                 |
| 6   | Bushing        | FRP                                                                                           |
| 7   | "O" Ring       | NBR, Viton                                                                                    |
| 8   | Body           | 304, 316, 316L                                                                                |
| 9   | Body Seat      | NBR (BUNA-N), EPDM, HEPDM, FKM (Viton), PTFE, Polychloroprene, Natural Rubber, Silicon Rubber |
| 10  | Disc           | CF8, CF8M, CF3, CF3M, SAF2507, SAF2205                                                        |

## 85A Series Lug Style Butterfly Valve

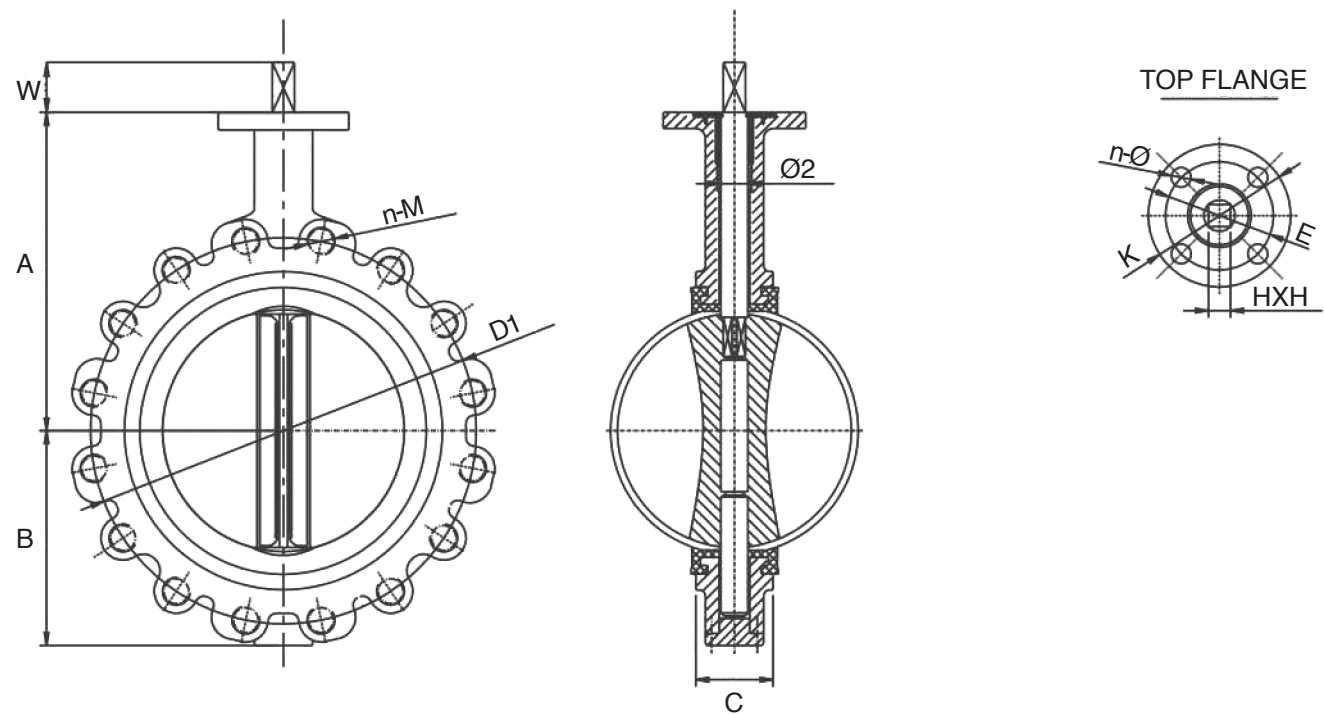
### Dimensions



| Size   | Dimensions |       |      |      |         |      |      |           |           |      |
|--------|------------|-------|------|------|---------|------|------|-----------|-----------|------|
|        | A          | B     | C    | Ø2   | ISO5211 | K    | E    | n-Ø       | HXH       | W    |
| 2"     | 5.51       | 2.40  | 1.69 | 0.50 | F07     | 3.54 | 2.76 | 0.16-0.39 | 0.43x0.43 | 0.55 |
| 2-1/2" | 5.91       | 2.68  | 1.81 | 0.50 | F07     | 3.54 | 2.76 | 0.16-0.39 | 0.43x0.43 | 0.55 |
| 3"     | 6.22       | 2.99  | 1.81 | 0.50 | F07     | 3.54 | 2.76 | 0.16-0.39 | 0.43x0.43 | 0.55 |
| 4"     | 6.93       | 3.62  | 2.05 | 0.62 | F07     | 3.54 | 2.76 | 0.16-0.39 | 0.43x0.43 | 0.55 |
| 5"     | 7.48       | 4.21  | 2.20 | 0.74 | F07     | 3.54 | 2.76 | 0.16-0.39 | 0.55x0.55 | 0.67 |
| 6"     | 8.35       | 4.72  | 2.20 | 0.74 | F07     | 3.54 | 2.76 | 0.16-0.39 | 0.55x0.55 | 0.67 |
| 8"     | 9.29       | 5.94  | 2.36 | 0.87 | F10     | 4.92 | 4.02 | 0.16-0.47 | 0.67x0.67 | 0.87 |
| 10"    | 10.43      | 7.32  | 2.68 | 1.12 | F10     | 4.92 | 4.02 | 0.16-0.47 | 0.87x0.87 | 0.87 |
| 12"    | 12.01      | 8.31  | 3.07 | 1.24 | F10     | 4.92 | 4.02 | 0.16-0.47 | 0.87x0.87 | 0.87 |
| 14"    | 14.49      | 10.63 | 3.07 | 1.24 | F10     | 4.92 | 4.02 | 0.16-0.47 | 0.87x0.87 | 0.87 |

# 85A Series Lug Style Butterfly Valve

## Dimensions



| Size | Dimensions |       |      |      |         |      |      |           |           |      |
|------|------------|-------|------|------|---------|------|------|-----------|-----------|------|
|      | A          | B     | C    | Ø2   | ISO5211 | K    | E    | n-Ø       | HXH       | W    |
| 16"  | 15.75      | 12.17 | 4.02 | 1.49 | F14     | 6.89 | 5.51 | 0.16-0.71 | 1.06-1.06 | 1.42 |
| 18"  | 16.61      | 13.39 | 4.49 | 1.49 | F14     | 6.89 | 5.51 | 0.16-0.71 | 1.06-1.06 | 1.42 |
| 20"  | 17.91      | 14.37 | 5.00 | 1.80 | F14     | 6.89 | 5.51 | 0.16-0.71 | 0.87-1.42 | 1.42 |
| 24"  | 22.24      | 17.80 | 6.06 | 1.99 | F16     | 8.27 | 6.50 | 0.16-0.87 | 0.87-1.42 | 1.81 |

## 85A Series Lug Style Butterfly Valve

### Application in Water

| Size   | EPDM      |           |           | Size   | Viton / NBR / PTFE |           |           |
|--------|-----------|-----------|-----------|--------|--------------------|-----------|-----------|
|        | 6 Bar     | 10 Bar    | 16 Bar    |        | 6 Bar              | 10 Bar    | 16 Bar    |
|        | wet (N.m) | wet (N.m) | wet (N.m) |        | wet (N.m)          | wet (N.m) | wet (N.m) |
| 1-1/2" | 7         | 9         | 9         | 1-1/2" | 9                  | 12        | 12        |
| 2"     | 8         | 9         | 10        | 2"     | 10                 | 12        | 13        |
| 2-1/2" | 13        | 15        | 17        | 2-1/2" | 17                 | 20        | 22        |
| 3"     | 19        | 21        | 26        | 3"     | 25                 | 27        | 34        |
| 4"     | 33        | 37        | 43        | 4"     | 43                 | 48        | 56        |
| 5"     | 51        | 57        | 65        | 5"     | 66                 | 74        | 85        |
| 6"     | 80        | 94        | 103       | 6"     | 104                | 122       | 134       |
| 8"     | 140       | 171       | 206       | 8"     | 182                | 222       | 268       |
| 10"    | 216       | 264       | 299       | 10"    | 280                | 343       | 389       |
| 12"    | 299       | 402       | 417       | 12"    | 389                | 523       | 542       |
| 14"    |           | 519       | 782       | 14"    |                    | 675       | 1017      |
| 16"    |           | 757       | 1224      | 16"    |                    | 984       | 1591      |
| 18"    |           | 1054      | 1513      | 18"    |                    | 1370      | 1967      |
| 20"    |           | 1420      | 1879      | 20"    |                    | 1846      | 2443      |
| 24"    |           | 2176      | 3383      | 24"    |                    | 2829      | 4398      |
| 28"    |           | 3162      | 4182      | 28"    |                    | 4111      | 5437      |
| 32"    |           | 4794      | 6664      | 32"    |                    | 6232      | 8663      |
| 36"    |           | 6503      | 8296      | 36"    |                    | 8454      | 10785     |
| 40"    |           | 8330      | 11526     | 40"    |                    | 10829     | 14984     |
| 48"    |           | 14280     | 18020     | 48"    |                    | 18564     | 23426     |

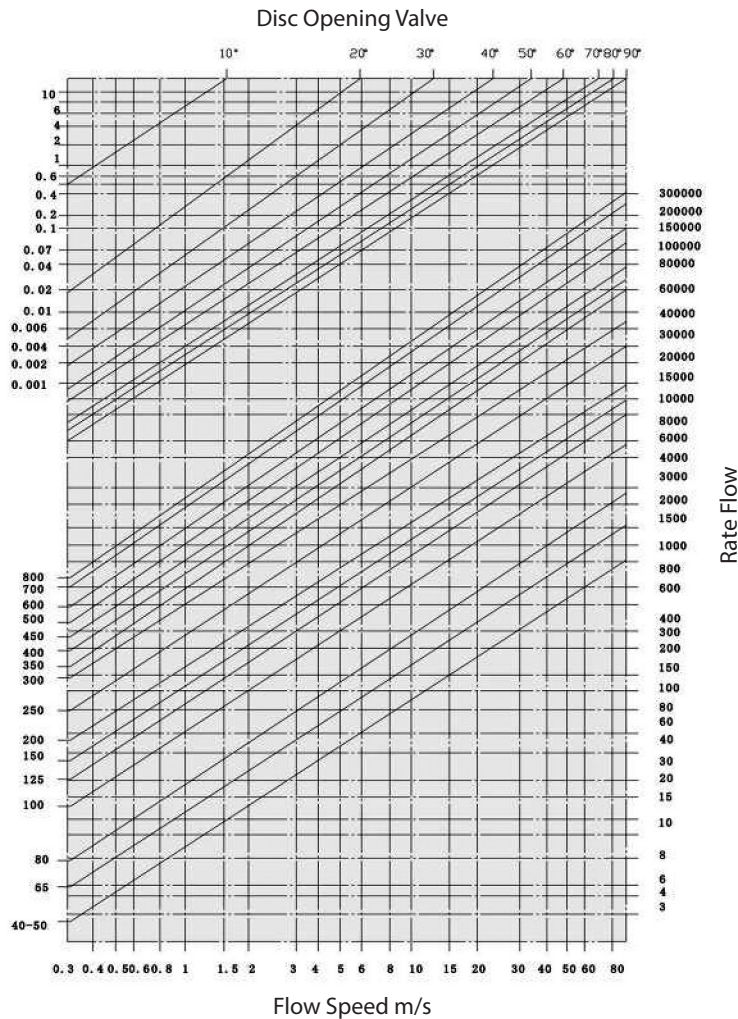
**NOTICE:**

The above torque data based on 77°F purified water, not included safety factor



## 85A Series Lug Style Butterfly Valve

### Flow Rate Calculation



Liquids

$$Q = \frac{KV}{\sqrt{\frac{PS}{\Delta P}}}$$

Q rate of flow (m<sup>3</sup>/h)  
PS specific gravity (water=1)  
ΔP pressure drop (bar)

Q = 28.5

$$Q = \frac{KV}{\sqrt{\frac{PS}{P_2 \Delta P}}}$$

Gas

Q rate of flow (m<sup>3</sup>/h)  
PS specific gravity (water=1)  
ΔP pressure drop (bar)  
(less than 1/2 inlet pressure)  
P<sub>2</sub> outlet pressure

Steam

$$Q = \frac{KV}{\sqrt{\frac{P_2 \Delta P}{PS}}}$$

Q rate of flow (Kg/h)  
ΔP pressure drop (bar)  
(less than 1/2 inlet pressure)  
P<sub>2</sub> outlet pressure

Calculation of the rate of flow equivalent to H<sub>2</sub>O

For different liquid, gas or steam head losses are determined by equivalent water of flow, as follows:

- Q<sub>e</sub> equivalent water flow (mc/l o l/s)  
Q fluid flow (mc/l o l/s)  
d fluid specific gravity (Kg/mc)

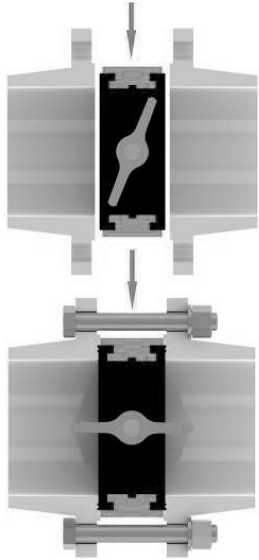
## 85A Series Lug Style Butterfly Valve

### Cv Values

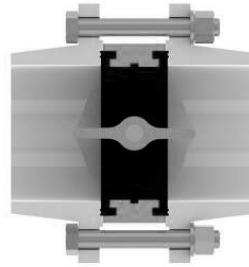
| Size   | Flow in Gpm@ 1 PSI P@ Various Disc Angles |      |       |       |       |       |       |        |        |
|--------|-------------------------------------------|------|-------|-------|-------|-------|-------|--------|--------|
|        | 10°                                       | 20°  | 30°   | 40°   | 50°   | 60°   | 70°   | 80°    | 90°    |
| 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    | 1022   |
| 6"     | 2                                         | 45   | 95    | 205   | 366   | 605   | 958   | 1437   | 1579   |
| 8"     | 3                                         | 89   | 188   | 408   | 727   | 1202  | 1903  | 2854   | 3136   |
| 10"    | 4                                         | 151  | 320   | 694   | 1237  | 2047  | 3240  | 4859   | 5340   |
| 12"    | 5                                         | 234  | 495   | 1072  | 1911  | 3162  | 5005  | 7507   | 8250   |
| 14"    | 6                                         | 338  | 715   | 1549  | 2761  | 4568  | 7230  | 10844  | 11917  |
| 16"    | 8                                         | 464  | 983   | 2130  | 3797  | 6282  | 9942  | 14913  | 16388  |
| 18"    | 11                                        | 615  | 1302  | 2822  | 5028  | 8320  | 13168 | 19752  | 21705  |
| 20"    | 14                                        | 971  | 1674  | 3628  | 6465  | 10698 | 16931 | 25396  | 27908  |
| 24"    | 22                                        | 1222 | 2587  | 5605  | 9989  | 16528 | 26157 | 39236  | 43116  |
| 28"    | 30                                        | 1633 | 3522  | 7630  | 12599 | 20036 | 30482 | 46899  | 58696  |
| 32"    | 45                                        | 2387 | 4791  | 8736  | 13786 | 20613 | 31395 | 48117  | 68250  |
| 36"    | 60                                        | 3021 | 6063  | 11055 | 17449 | 26086 | 39731 | 60895  | 86375  |
| 40"    | 84                                        | 4183 | 8395  | 15307 | 24159 | 36166 | 55084 | 84425  | 119750 |
| 48"    | 102                                       | 4651 | 10365 | 17010 | 27242 | 43853 | 70431 | 108968 | 132888 |

## 85A Series Lug Style Butterfly Valve

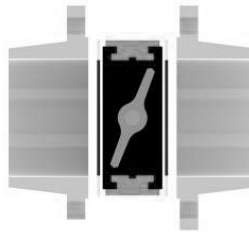
### Installation



1. Leave a space between flanges so that valve can be easily inserted and removed and move the valve in accordance with the arrow



2. Open completely the valve before tightening flanges



3. Tighten bolts until flanges are in contact with valve body

4. NOTE: do not insert other packing between flange and valve

NOTE: Weld the pipe only in spots with the valve between flanges. Remove the valve before finishing the welding to avoid that heat damaging the seat. Clean welding carefully to avoid that slags damage the seat.

### Installation for powders and muddy fluids



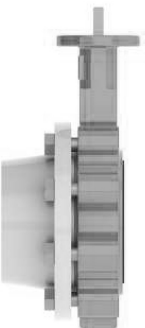
Wrong  
Vertical rotation axis



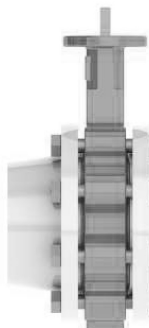
Right  
Horizontal rotation axis

### End piping installation

When valves are installed at the end of piping, a counterflange as per drawing type B is needed to secure tightness at max pressure. Please notice the order when the valves are installed as per drawing type A.



Type A installation without  
end piping

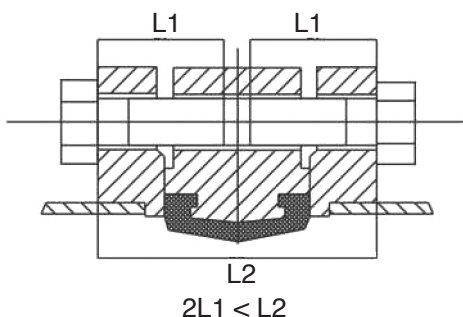


Type B installation with  
end piping

Pressure max: Type A installation is 174 psi; Type B installation is 232 psi

## 85A Series Lug Style Butterfly Valve

### Length & Quantity of Bolts for Valve Installation

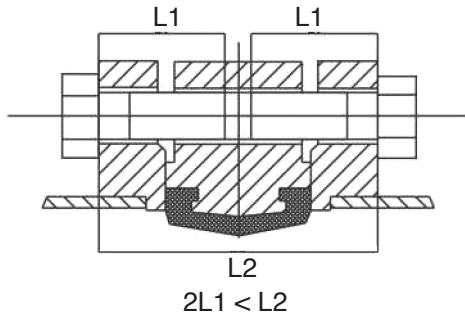


Bolt Connection of Lug Butterfly Valve

| Size   | 1.0Mpa                                  |         | 1.6Mpa                                  |         |
|--------|-----------------------------------------|---------|-----------------------------------------|---------|
|        | Hexagon Head Bolt for Type of Lug Valve |         | Hexagon Head Bolt for Type of Lug Valve |         |
|        | Qty                                     | Dia xL1 | Qty                                     | Dia xL1 |
| 2"     | 4x2                                     | M16x40  | 4x2                                     | M16x40  |
| 2-1/2" | 4x2                                     | M16x45  | 4x2                                     | M16x45  |
| 3"     | 8x2                                     | M16x45  | 8x2                                     | M16x45  |
| 4"     | 8x2                                     | M16x50  | 8x2                                     | M16x50  |
| 5"     | 8x2                                     | M16x50  | 8x2                                     | M16x50  |
| 6"     | 8x2                                     | M20x50  | 8x2                                     | M20x50  |
| 8"     | 8x2                                     | M20x55  | 12x2                                    | M20x55  |
| 10"    | 12x2                                    | M20x60  | 12x2                                    | M24x60  |
| 12"    | 12x2                                    | M20x65  | 12x2                                    | M24x65  |
| 14"    | 16x2                                    | M20x65  | 16x2                                    | M24x65  |
| 16"    | 16x2                                    | M24x75  | 16x2                                    | M27x75  |
| 18"    | 20x2                                    | M24x80  | 20x2                                    | M27x80  |
| 20"    | 20x2                                    | M24x90  | 20x2                                    | M30x90  |
| 24"    | 20x2                                    | M27x100 | 20x2                                    | M33x100 |
| 28"    | 24x2                                    | M27x100 | 24x2                                    | M33x100 |
| 32"    | 24x2                                    | M30x110 | 24x2                                    | M36x110 |
| 36"    | 28x2                                    | M30x130 | 28x2                                    | M36x130 |
| 40"    | 28x2                                    | M33x140 | 28x2                                    | M39x140 |
| 48"    | 32x2                                    | M36x165 | 32x2                                    | M45x165 |

## 85A Series Lug Style Butterfly Valve

### Length & Quantity of Bolts for Valve Installation



Bolt Connection of Lug Butterfly Valve

| Size   | 150 LB                                  |          |
|--------|-----------------------------------------|----------|
|        | Hexagon Head Bolt for Type of Lug Valve |          |
|        | Qty                                     | Dia x L1 |
| 2"     | 4x2                                     | 5/8"x40  |
| 2-1/2" | 4x2                                     | 5/8"x45  |
| 3"     | 4x2                                     | 5/8"x45  |
| 4"     | 8x2                                     | 3/4"x50  |
| 5"     | 8x2                                     | 3/4"x50  |
| 6"     | 8x2                                     | 3/4"x50  |
| 8"     | 8x2                                     | 3/4"x55  |
| 10"    | 12x2                                    | 7/8"x60  |
| 12"    | 12x2                                    | 7/8"x65  |
| 14"    | 12x2                                    | 1"x65    |
| 16"    | 16x2                                    | 1"x75    |
| 18"    | 16x2                                    | 9/8"x80  |
| 20"    | 20x2                                    | 9/8"x90  |
| 24"    | 20x2                                    | 5/4"x100 |
| 28"    | 28x2                                    | 5/4"x100 |
| 32"    | 28x2                                    | 3/2"x110 |
| 36"    | 32x2                                    | 3/2"x130 |
| 40"    | 36x2                                    | 3/2"x140 |
| 48"    | 44x2                                    | 3/2"x165 |



J Flow Controls®  
 4665 Interstate Drive  
 Cincinnati, OH 45246  
 513-731-2900  
[jflowcontrols.com](http://jflowcontrols.com)

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