



## STANDARDS

- ISO 5211 mounting pad with square shaft permits direct mount actuation for manual (lever gear), pneumatic and electric actuators
- Valve Rating:  
Top flange mounting pad: ISO 5211  
Basic Design: API 609, MSS-SP-68, BS 5155, ISO 5752  
Shell/Seat Test: API 598, MSS-SP-61
- Seat Hydro: Class 150 (360 psig): Class 300 (740 psig)

# J Flow Controls Model 82 & 83 Series High Performance Butterfly Valves

## FEATURES & BENEFITS

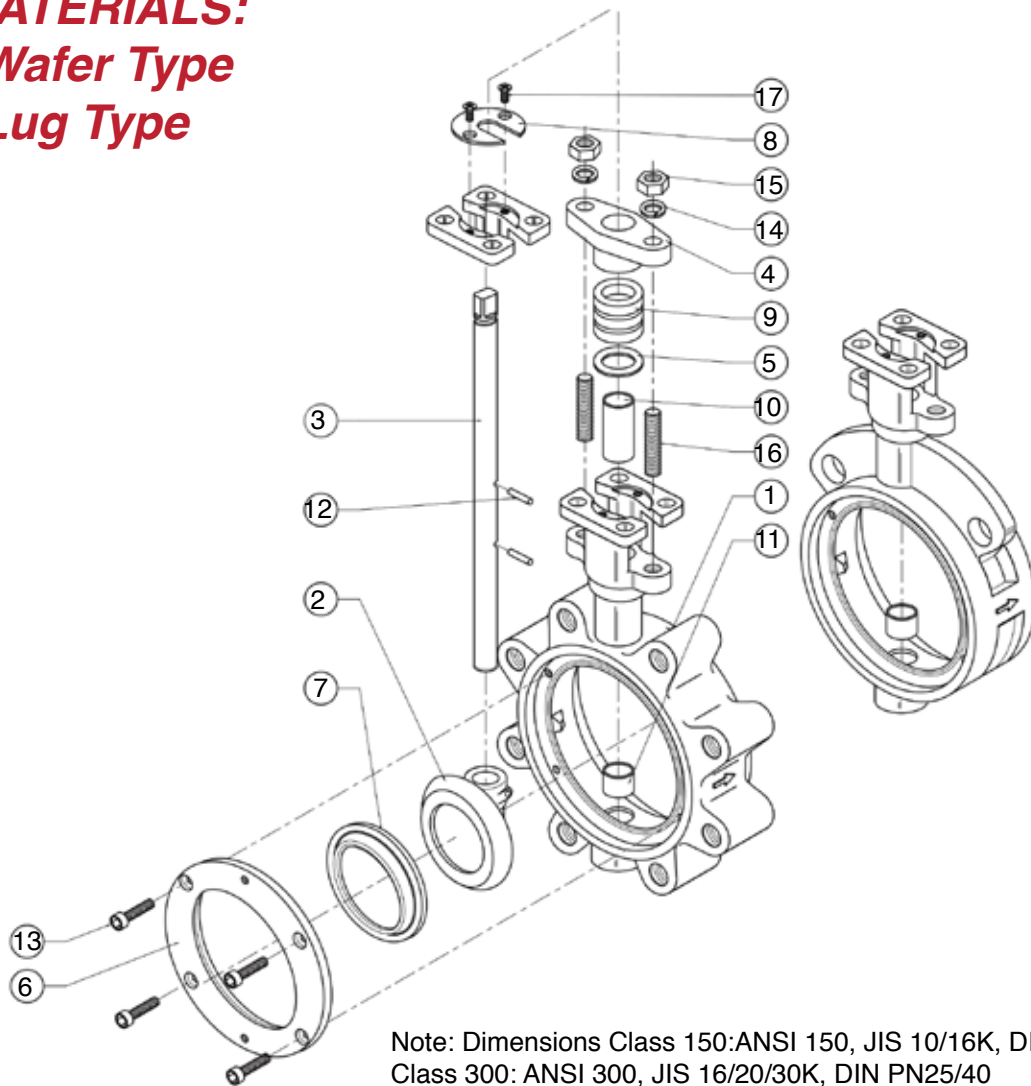
- Size: 2" ~ 24"
- Type: Wafer, Lug
- Pressure Rating: Class 150#, 300#
- Body Material: A216 WCB Cast Steel and A351 CF8M Stainless Steel
- Seat Material: Soft Seat: TFM-4215, PTFE, RTFE, NBR, EPDM, FKM; Metal Seat: A240 Tp 316 / 304
- Drilling: ANSI 150#, ANSI 300#
- Tight Shutoff
- Gland flange prevents uneven load distribution against packing
- Internal travel stop design to prevent over travel of the disc.
- High strength 1 piece stem in A564 Gr. 630

## OPTIONS

- Optional Drilling: JIS 10/16K, DIN PN 10/16, JIS 20/30K, DIN PN 25/40

## Model 82 & 83 Series Butterfly Valves

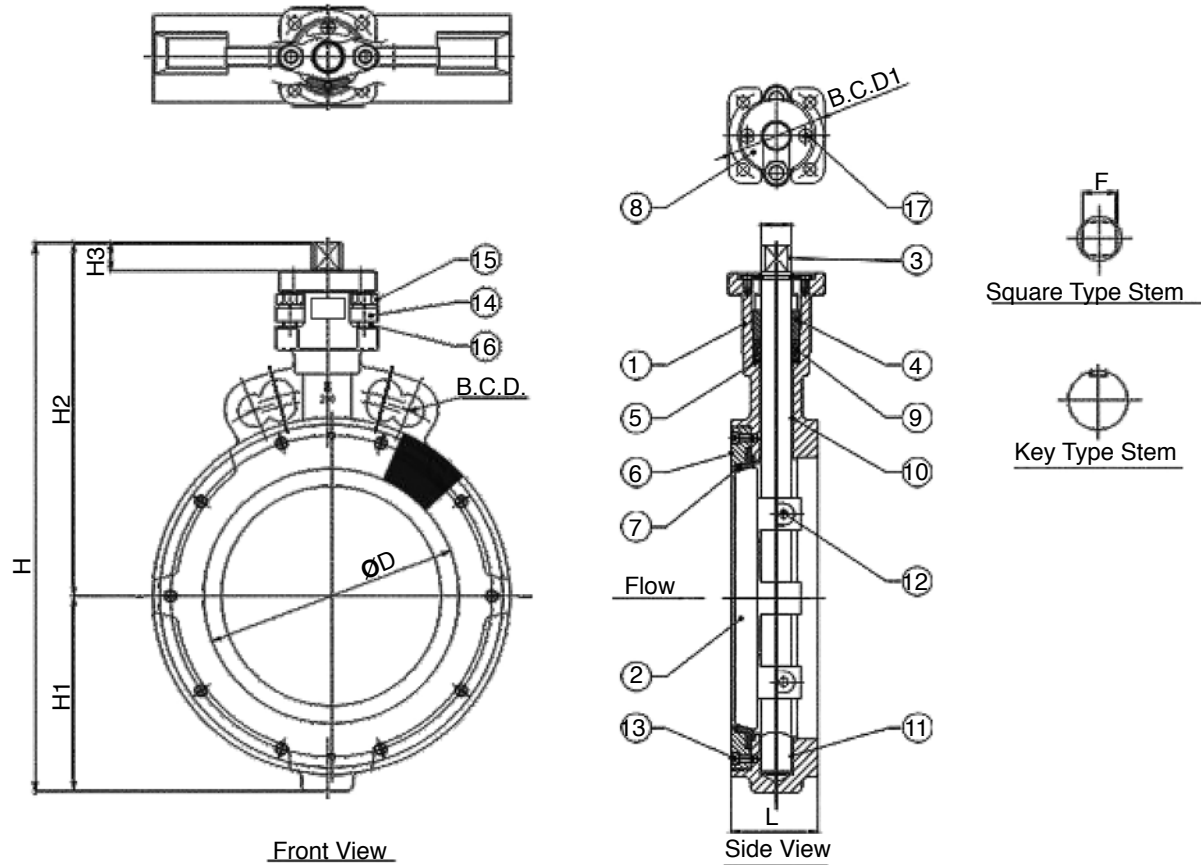
### **BILL OF MATERIALS:** 82 Series Wafer Type 83 Series Lug Type



| No | Description      | Materials                       | Qty    |
|----|------------------|---------------------------------|--------|
| 1  | Body             | A216 WCB / A351 CF8M            | 1      |
| 2  | Disc             | A351 CF8M                       | 1      |
| 3  | Stem             | A564 Gr. 630                    | 1      |
| 4  | Gland Flange     | A216 WCB / A351 CF8M            | 1      |
| 5  | Packing Retainer | A276 Tp 316                     | 1      |
| 6  | Retainer Ring    | A351 CF8M                       | 1      |
| 7  | Seat             | PTFE / RTFE / A240 Tp 316 / 304 | 1      |
| 8  | Top Retainer     | A283D - A36 / A276 Tp 316       | 1      |
| 9  | Grand Packing    | Graphite                        | 3      |
| 10 | Upper Bearing    | RTFE + 316SS                    | 1      |
| 11 | Lower Bearing    | RTFE + 316SS                    | 1      |
| 12 | Disc Pin         | A276 Tp 316                     | 2      |
| 13 | Hex Socket Bolt  | A283D - A36 / A276 316SS        | 4 - 14 |
| 14 | Spring Washer    | A283D - A36 / A276 316SS        | 2      |
| 15 | Hex Nut          | A283D - A36 / A276 316SS        | 2      |
| 16 | Stud Bolt        | A283D - A36 / A276 316SS        | 2      |
| 17 | Flat Head Screw  | A283D - A36 / A276 316SS        | 2      |

## Model 82 & 83 Series Butterfly Valves

### DIMENSIONS: Model 82 Series Wafer Type, Class 150



| Size   | H     | H1   | H2    | H3   | Ød   | F    | ØD    | B.C.D1 | L    |
|--------|-------|------|-------|------|------|------|-------|--------|------|
| 2"     | 8.63  | 2.36 | 6.27  | 0.60 | 0.51 | 0.43 | 1.65  | 2.76   | 1.73 |
| 2-1/2" | 9.54  | 2.75 | 6.78  | 0.60 | 0.63 | 0.55 | 2.40  | 2.76   | 1.81 |
| 3"     | 9.85  | 3.01 | 6.84  | 0.60 | 0.63 | 0.55 | 2.91  | 2.76   | 1.89 |
| 4"     | 11.07 | 3.54 | 7.53  | 0.70 | 0.63 | 0.55 | 3.70  | 2.76   | 2.13 |
| 5"     | 12.55 | 4.09 | 8.45  | 0.70 | 0.71 | 0.55 | 4.65  | 2.76   | 2.24 |
| 6"     | 13.62 | 4.53 | 9.09  | 0.75 | 0.87 | 0.67 | 5.51  | 2.76   | 2.28 |
| 8"     | 15.91 | 5.65 | 10.26 | 0.81 | 0.87 | 0.67 | 7.40  | 2.76   | 2.52 |
| 10"    | 18.44 | 6.69 | 11.75 | 0.81 | 1.10 | 0.87 | 9.39  | 4.02   | 2.81 |
| 12"    | 20.63 | 7.76 | 12.88 | 0.95 | 1.10 | 0.87 | 11.02 | 4.02   | 3.19 |

## Model 82 & 83 Series Butterfly Valves

### MATERIAL SELECTION: 82 Series Wafer Type Class 150

| No | Description      | #150 CS-STHW  |             | #150 SS-STHW |             | Qty    |
|----|------------------|---------------|-------------|--------------|-------------|--------|
|    |                  | Soft Seat     | Metal Seat  | Soft Seat    | Metal Seat  |        |
| 1  | Body             | A216 WCB      |             | A351 CF8M    |             | 1      |
| 2  | Disc             | A 351 CF8M    |             |              |             | 1      |
| 3  | Stem             | A 564 Gr. 630 |             |              |             | 1      |
| 4  | Gland Flange     | A216 WCB      |             | A351 CF8M    |             | 1      |
| 5  | Packing Retainer | A276 Tp 316   |             |              |             | 1      |
| 6  | Retainer Ring    | A351 CF8M     |             |              |             | 1      |
| 7  | Seat             | PTFE / RTFE   | A240 Tp 316 | PTFE / RPTFE | A240 Tp 316 | 1      |
|    |                  |               | A240 Tp 304 |              | A240 Tp 304 |        |
| 8  | Top Retainer     | A283D-A36     |             | A276 Tp 316  |             | 1      |
| 9  | Grand Packing    | Graphite      |             |              |             | 3      |
| 10 | Upper Bearing    | R.TFE + 316SS |             |              |             | 1      |
| 11 | Lower Bearing    | RTFE + 316SS  |             |              |             | 1      |
| 12 | Disc Pin         | A276 Tp 316   |             |              |             | 2      |
| 13 | Hex Socket Bolt  | A283D-A36     |             | A276 316SS   |             | 4 - 14 |
| 14 | Spring Washer    | A283D-A36     |             | A276 316SS   |             | 2      |
| 15 | Hex Nut          | A283D-A36     |             | A276 316SS   |             | 2      |
| 16 | Stud Bolt        | A283D-A36     |             | A276 316SS   |             | 2      |
| 17 | Flat Head Screw  | A283D-A36     |             | A276 316SS   |             | 2      |

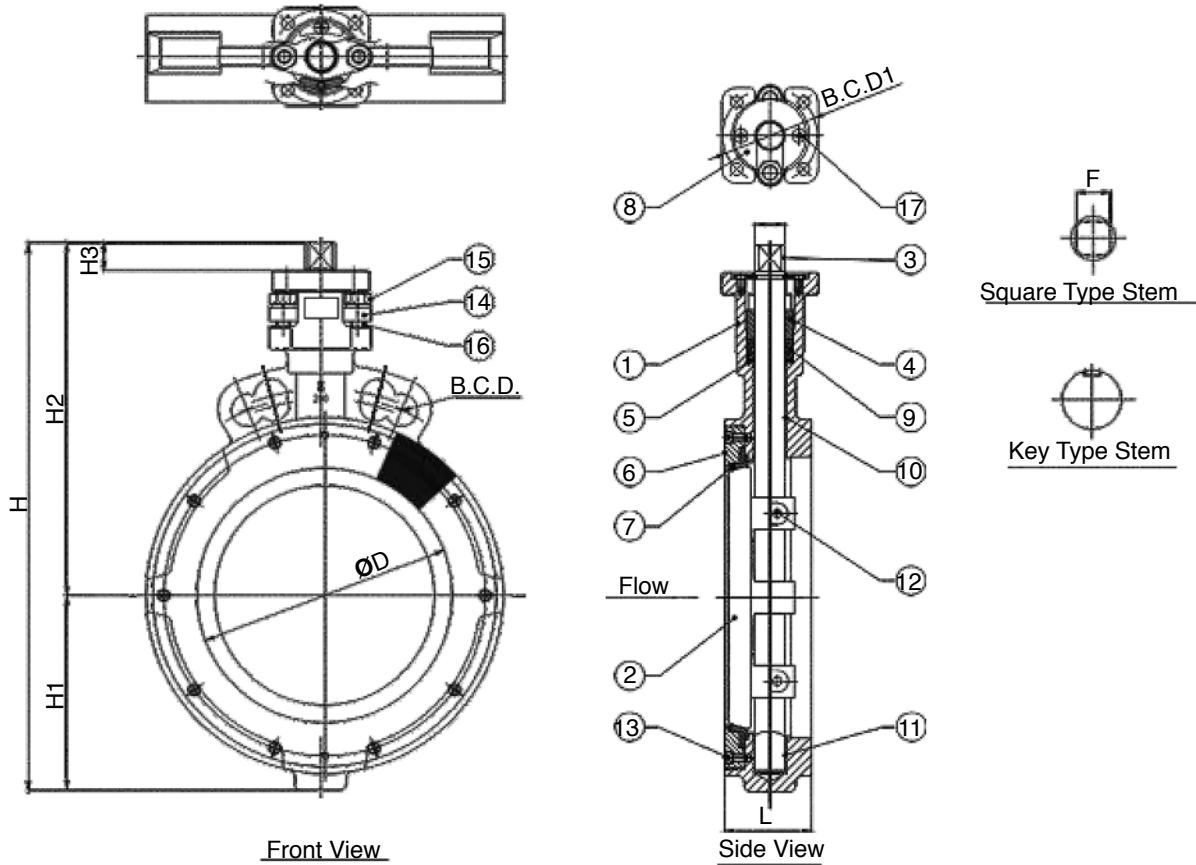
### FLANGE DRILLING TABLE

| Size   | ANSI 150 |        |      | J1S 10K |        |      | JIS 16K |        |      | PN10  |        |      | PN16  |        |      |
|--------|----------|--------|------|---------|--------|------|---------|--------|------|-------|--------|------|-------|--------|------|
|        | IN       | B.C.D. | n    | h       | B.C.D. | n    | h       | B.C.D. | n    | h     | B.C.D. | n    | h     | B.C.D. | n    |
| 2"     | 4.75     | 4      | 0.75 | 4.72    | 4      | 0.75 | 4.72    | 8      | 0.75 | 4.92  | 4      | 0.71 | 4.92  | 4      | 0.71 |
| 2-1/2" | 5.50     | 4      | 0.75 | 5.51    | 4      | 0.75 | 5.51    | 8      | 0.75 | 5.71  | 4      | 0.71 | 5.71  | 4      | 0.71 |
| 3"     | 6.00     | 4      | 0.75 | 5.91    | 8      | 0.75 | 6.30    | 8      | 0.91 | 6.30  | 8      | 0.71 | 6.30  | 8      | 0.71 |
| 4"     | 7.50     | 8      | 0.75 | 6.89    | 8      | 0.75 | 7.28    | 8      | 0.91 | 7.09  | 8      | 0.71 | 7.09  | 8      | 0.71 |
| 5"     | 8.50     | 8      | 0.88 | 8.27    | 8      | 0.91 | 8.86    | 8      | 0.98 | 8.27  | 8      | 0.71 | 8.27  | 8      | 0.71 |
| 6"     | 9.50     | 8      | 0.88 | 9.45    | 8      | 0.91 | 10.24   | 12     | 0.98 | 9.45  | 8      | 0.87 | 9.45  | 8      | 0.87 |
| 8"     | 11.75    | 8      | 0.88 | 11.42   | 12     | 0.91 | 12.01   | 12     | 0.98 | 11.61 | 8      | 0.87 | 11.61 | 12     | 0.87 |
| 10"    | 14.25    | 12     | 1.00 | 13.98   | 12     | 0.98 | 14.96   | 12     | 1.06 | 13.78 | 12     | 0.87 | 13.98 | 12     | 1.02 |
| 12"    | 17.00    | 12     | 1.00 | 15.75   | 16     | 0.98 | 16.93   | 16     | 1.06 | 15.75 | 12     | 0.87 | 16.14 | 12     | 1.02 |

Note: 'n' Number of bolt holes  
'h' Bolt hole diameter

## Model 82 & 83 Series Butterfly Valves

### DIMENSIONS: Model 82 Series Wafer Type, Class 300



| Size   | H     | H1   | H2    | H3   | Ød   | F    | ØD    | B.C.D1 | L    |
|--------|-------|------|-------|------|------|------|-------|--------|------|
| 2"     | 8.63  | 2.36 | 6.27  | 0.60 | 0.51 | 0.43 | 1.65  | 2.76   | 1.73 |
| 2-1/2" | 9.54  | 2.75 | 6.78  | 0.60 | 0.63 | 0.55 | 2.40  | 2.76   | 1.81 |
| 3"     | 9.85  | 3.01 | 6.84  | 0.60 | 0.63 | 0.55 | 2.91  | 2.76   | 1.89 |
| 4"     | 11.07 | 3.54 | 7.53  | 0.70 | 0.63 | 0.55 | 3.70  | 2.76   | 2.13 |
| 5"     | 12.55 | 4.09 | 8.45  | 0.70 | 0.71 | 0.55 | 4.65  | 2.76   | 2.24 |
| 6"     | 13.62 | 4.53 | 9.09  | 0.75 | 0.87 | 0.67 | 5.51  | 2.76   | 2.28 |
| 8"     | 15.91 | 5.65 | 10.26 | 0.81 | 1.10 | 0.87 | 7.40  | 4.02   | 2.87 |
| 10"    | 18.44 | 6.69 | 11.75 | 0.81 | 1.10 | 0.87 | 9.39  | 4.02   | 3.25 |
| 12"    | 20.48 | 7.60 | 12.88 | 0.95 | 1.10 | 0.87 | 11.02 | 4.02   | 3.62 |

## Model 82 & 83 Series Butterfly Valves

### MATERIAL SELECTION: 82 Series Wafer Type Class 300

| No | Description      | #300 CS-STHW  |             | #300 SS-STHW |             | Qty    |
|----|------------------|---------------|-------------|--------------|-------------|--------|
|    |                  | Soft Seat     | Metal Seat  | Soft Seat    | Metal Seat  |        |
| 1  | Body             | A216 WCB      |             | A351 CF8M    |             | 1      |
| 2  | Disc             | A 351 CF8M    |             |              |             | 1      |
| 3  | Stem             | A 564 Gr. 630 |             |              |             | 1      |
| 4  | Gland Flange     | A216 WCB      |             | A351 CF8M    |             | 1      |
| 5  | Packing Retainer | A276 Tp 316   |             |              |             | 1      |
| 6  | Retainer Ring    | A351 CF8M     |             |              |             | 1      |
| 7  | Seat             | PTFE / RTFE   | A240 Tp 316 | PTFE / RPTFE | A240 Tp 316 | 1      |
|    |                  |               | A240 Tp 304 |              | A240 Tp 304 |        |
| 8  | Top Retainer     | A283D-A36     |             | A276 Tp 316  |             | 1      |
| 9  | Grand Packing    | Graphite      |             |              |             | 3      |
| 10 | Upper Bearing    | R.TFE + 316SS |             |              |             | 1      |
| 11 | Lower Bearing    | RTFE + 316SS  |             |              |             | 1      |
| 12 | Disc Pin         | A276 Tp 316   |             |              |             | 2      |
| 13 | Hex Socket Bolt  | A283D-A36     |             | A276 316SS   |             | 4 - 14 |
| 14 | Spring Washer    | A283D-A36     |             | A276 316SS   |             | 2      |
| 15 | Hex Nut          | A283D-A36     |             | A276 316SS   |             | 2      |
| 16 | Stud Bolt        | A283D-A36     |             | A276 316SS   |             | 2      |
| 17 | Flat Head Screw  | A283D-A36     |             | A276 316SS   |             | 2      |

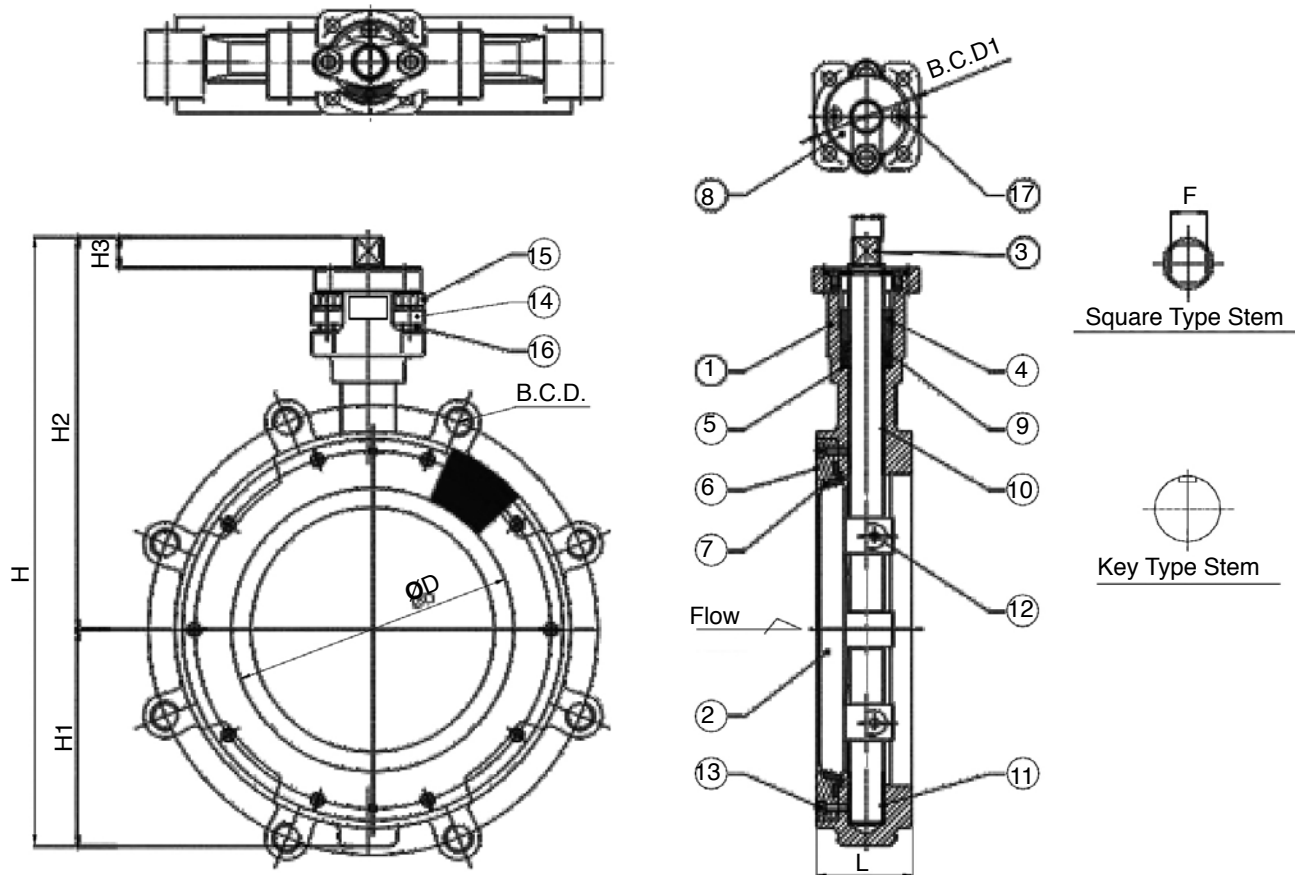
### FLANGE DRILLING TABLE

| Size<br>IN | ANSI 300 |    |      | J1S 16K/20K |    |      | JIS 30K |    |      | PN25   |    |      | PN40   |    |      |
|------------|----------|----|------|-------------|----|------|---------|----|------|--------|----|------|--------|----|------|
|            | B.C.D.   | n  | h    | B.C.D.      | n  | h    | B.C.D.  | n  | h    | B.C.D. | n  | h    | B.C.D. | n  | h    |
| 2"         | 5.00     | 8  | 0.75 | 4.72        | 8  | 0.75 | 5.12    | 8  | 0.75 | 4.92   | 4  | 0.71 | 4.92   | 4  | 0.71 |
| 2-1/2"     | 5.87     | 8  | 0.87 | 5.51        | 8  | 0.75 | 6.3     | 8  | 0.91 | 5.71   | 8  | 0.71 | 5.71   | 8  | 0.71 |
| 3"         | 6.63     | 8  | 0.87 | 6.30        | 8  | 0.91 | 6.69    | 8  | 0.91 | 6.30   | 8  | 0.71 | 6.30   | 8  | 0.71 |
| 4"         | 7.87     | 8  | 0.87 | 7.28        | 8  | 0.98 | 7.68    | 8  | 0.98 | 7.48   | 8  | 0.87 | 7.48   | 8  | 0.87 |
| 5"         | 9.25     | 8  | 0.87 | 8.86        | 8  | 0.98 | 9.06    | 8  | 0.98 | 8.66   | 8  | 1.02 | 8.66   | 8  | 1.02 |
| 6"         | 10.62    | 12 | 0.87 | 10.24       | 12 | 0.98 | 10.83   | 12 | 1.06 | 9.84   | 8  | 1.02 | 9.84   | 8  | 1.02 |
| 8"         | 13.00    | 12 | 1.00 | 12.01       | 12 | 0.98 | 12.60   | 12 | 1.06 | 12.20  | 12 | 1.02 | 12.60  | 12 | 1.18 |
| 10"        | 15.25    | 16 | 1.13 | 14.96       | 12 | 1.06 | 15.35   | 12 | 1.30 | 14.57  | 12 | 1.18 | 15.16  | 12 | 1.30 |
| 12"        | 17.75    | 16 | 1.25 | 16.93       | 16 | 1.06 | 17.72   | 16 | 1.30 | 16.93  | 16 | 1.18 | 17.72  | 16 | 1.30 |

Note: 'n' Number of bolt holes  
'h' Bolt hole diameter

## Model 82 & 83 Series Butterfly Valves

### DIMENSIONS: Model 83 Series Lug Type, Class 150



| Size   | H     | H1    | H2    | H3   | Ød   | F    | ØD    | B.C.D1 | L    |
|--------|-------|-------|-------|------|------|------|-------|--------|------|
| 2"     | 8.63  | 2.36  | 6.27  | 0.60 | 0.51 | 0.43 | 1.65  | 2.76   | 1.73 |
| 2-1/2" | 9.54  | 2.76  | 6.78  | 0.60 | 0.63 | 0.55 | 2.40  | 2.76   | 1.81 |
| 3"     | 9.85  | 3.01  | 6.84  | 0.60 | 0.63 | 0.55 | 2.91  | 2.76   | 1.89 |
| 4"     | 11.07 | 3.54  | 7.53  | 0.70 | 0.63 | 0.55 | 3.70  | 2.76   | 2.13 |
| 5"     | 12.55 | 4.09  | 8.45  | 0.70 | 0.71 | 0.55 | 4.65  | 2.76   | 2.24 |
| 6"     | 13.62 | 4.53  | 9.09  | 0.75 | 0.87 | 0.67 | 5.51  | 2.76   | 2.28 |
| 8"     | 15.91 | 5.65  | 10.26 | 0.81 | 0.87 | 0.87 | 7.40  | 2.76   | 2.52 |
| 10"    | 18.44 | 6.69  | 11.75 | 0.81 | 1.10 | 0.87 | 9.39  | 4.02   | 2.81 |
| 12"    | 20.63 | 7.76  | 12.88 | 0.95 | 1.10 | 0.87 | 11.02 | 4.02   | 1.81 |
| 14"    | 26.87 | 11.00 | 15.87 | 2.76 | 1.50 |      |       | 5.51   | 3.62 |
| 16"    | 31.66 | 12.54 | 19.12 | 3.48 | 1.77 |      |       | 6.50   | 4.02 |
| 18"    | 33.73 | 13.31 | 20.41 | 3.48 | 2.17 |      |       | 6.50   | 4.49 |
| 20"    | 34.59 | 14.17 | 20.41 | 3.48 | 2.17 |      |       | 6.50   | 5.00 |
| 24"    | 39.76 | 16.70 | 23.05 | 3.68 | 2.56 |      |       | 6.50   | 6.06 |



## Model 82 & 83 Series Butterfly Valves

### MATERIAL SELECTION: 83 Series Lug Type Class 150

| No | Description      | #300 CS-STHW  |             | #300 SS-STHW |             | Qty    |
|----|------------------|---------------|-------------|--------------|-------------|--------|
|    |                  | Soft Seat     | Metal Seat  | Soft Seat    | Metal Seat  |        |
| 1  | Body             | A216 WCB      |             | A351 CF8M    |             | 1      |
| 2  | Disc             | A 351 CF8M    |             |              |             | 1      |
| 3  | Stem             | A 564 Gr. 630 |             |              |             | 1      |
| 4  | Gland Flange     | A216 WCB      |             | A351 CF8M    |             | 1      |
| 5  | Packing Retainer | A276 Tp 316   |             |              |             | 1      |
| 6  | Retainer Ring    | A351 CF8M     |             |              |             | 1      |
| 7  | Seat             | PTFE / RTFE   | A240 Tp 316 | PTFE / RPTFE | A240 Tp 316 | 1      |
|    |                  |               | A240 Tp 304 |              | A240 Tp 304 |        |
| 8  | Top Retainer     | A283D-A36     |             | A276 Tp 316  |             | 1      |
| 9  | Grand Packing    | Graphite      |             |              |             | 3      |
| 10 | Upper Bearing    | R.TFE + 316SS |             |              |             | 1      |
| 11 | Lower Bearing    | RTFE + 316SS  |             |              |             | 1      |
| 12 | Disc Pin         | A276 Tp 316   |             |              |             | 2      |
| 13 | Hex Socket Bolt  | A283D-A36     |             | A276 316SS   |             | 4 - 14 |
| 14 | Spring Washer    | A283D-A36     |             | A276 316SS   |             | 2      |
| 15 | Hex Nut          | A283D-A36     |             | A276 316SS   |             | 2      |
| 16 | Stud Bolt        | A283D-A36     |             | A276 316SS   |             | 2      |
| 17 | Flat Head Screw  | A283D-A36     |             | A276 316SS   |             | 2      |

### FLANGE DRILLING TABLE

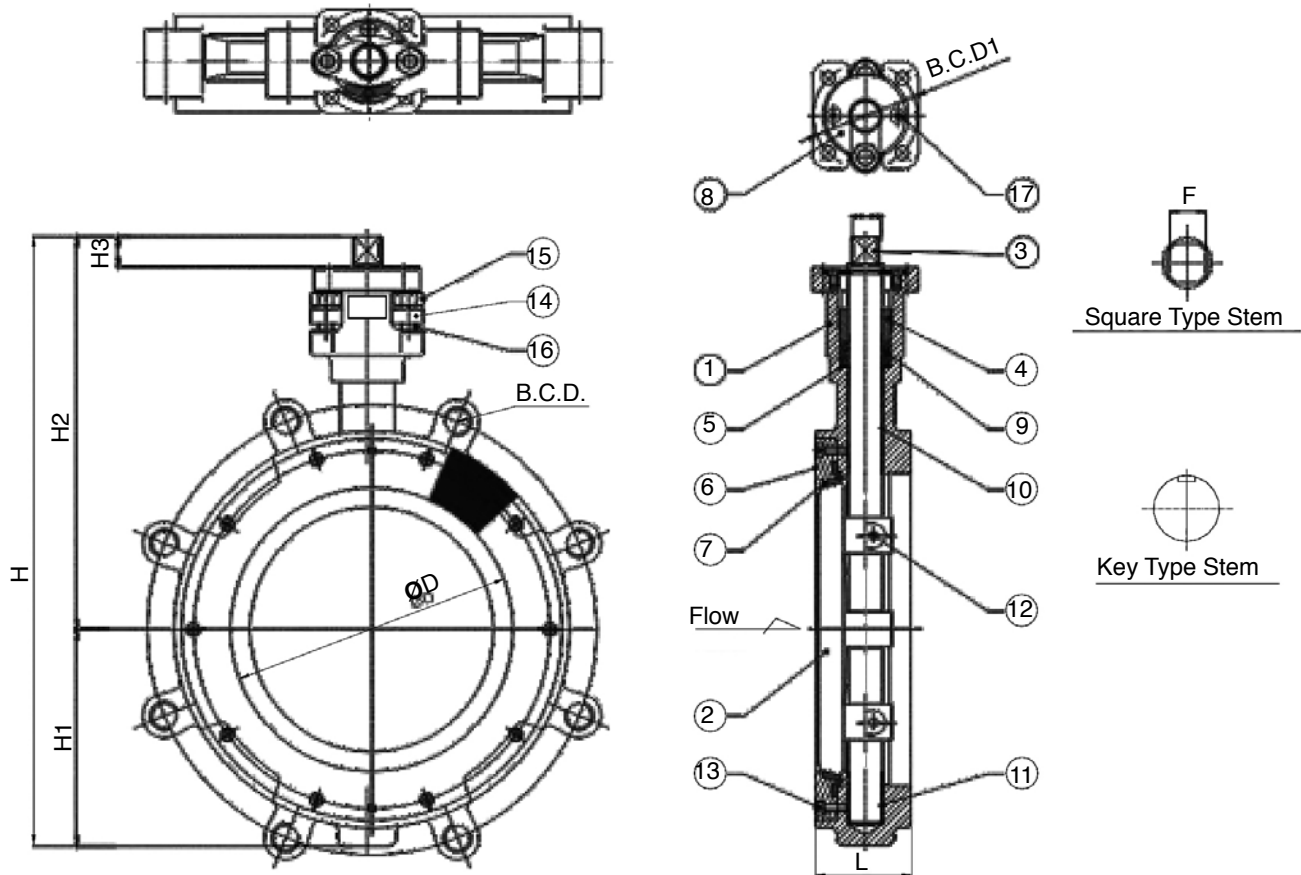
| Size   | PN10   |    |      | PN16   |    |      | ANSI 150 LBS |    |      | JIS 10K |    |      | JIS 16K |    |      |
|--------|--------|----|------|--------|----|------|--------------|----|------|---------|----|------|---------|----|------|
| In     | B.C.D. | n  | h    | B.C.D. | n  | h    | B.C.D.       | n  | h    | B.C.D.  | n  | h    | B.C.D.  | n  | h    |
| 2"     | 4.92   | 4  | 0.71 | 4.92   | 4  | 0.71 | 4.75         | 4  | 0.75 | 4.72    | 4  | 0.75 | 4.72    | 8  | 0.75 |
| 2-1/2" | 5.71   | 4  | 0.71 | 5.71   | 4  | 0.71 | 5.50         | 4  | 0.75 | 5.51    | 4  | 0.75 | 5.51    | 8  | 0.75 |
| 3"     | 6.30   | 8  | 0.71 | 6.30   | 8  | 0.71 | 6.00         | 4  | 0.75 | 5.91    | 8  | 0.75 | 6.30    | 8  | 0.91 |
| 4"     | 7.09   | 8  | 0.71 | 7.09   | 8  | 0.71 | 7.50         | 8  | 0.75 | 6.89    | 8  | 0.75 | 7.28    | 8  | 0.91 |
| 5"     | 8.27   | 8  | 0.71 | 8.27   | 8  | 0.71 | 8.50         | 8  | 0.87 | 8.27    | 8  | 0.91 | 8.86    | 8  | 0.98 |
| 6"     | 9.45   | 8  | 0.87 | 9.45   | 8  | 0.87 | 9.50         | 8  | 0.87 | 9.45    | 8  | 0.91 | 10.24   | 12 | 0.98 |
| 8"     | 11.61  | 8  | 0.87 | 11.61  | 12 | 0.87 | 11.75        | 8  | 0.87 | 11.42   | 12 | 0.91 | 12.01   | 12 | 0.98 |
| 10"    | 13.78  | 12 | 0.87 | 13.98  | 12 | 1.02 | 14.25        | 12 | 1.00 | 13.98   | 12 | 0.98 | 14.96   | 12 | 1.06 |
| 12"    | 15.75  | 12 | 0.87 | 16.14  | 12 | 1.02 | 17.00        | 12 | 1.00 | 15.75   | 16 | 0.98 | 16.93   | 16 | 1.06 |
| 14"    | 18.11  | 16 | 0.87 | 18.50  | 16 | 1.02 | 18.75        | 12 | 1.13 | 17.52   | 16 | 0.98 | 18.90   | 16 | 1.30 |
| 16"    | 20.28  | 16 | 1.02 | 20.67  | 16 | 1.18 | 21.25        | 16 | 1.13 | 20.08   | 16 | 1.06 | 21.26   | 16 | 1.30 |
| 18"    | 22.24  | 20 | 1.02 | 23.03  | 20 | 1.18 | 22.75        | 16 | 1.25 | 22.24   | 20 | 1.06 | 23.82   | 20 | 1.30 |
| 20"    | 24.41  | 20 | 1.02 | 25.59  | 20 | 1.30 | 25.00        | 20 | 1.25 | 24.41   | 20 | 1.06 | 25.98   | 20 | 1.30 |
| 24"    | 28.54  | 20 | 1.18 | 30.31  | 20 | 1.42 | 29.50        | 20 | 1.37 | 28.74   | 24 | 1.30 | 30.31   | 24 | 1.54 |

Note: 'n' Number of bolt holes  
'h' Bolt hole diameter



## Model 82 & 83 Series Butterfly Valves

### DIMENSIONS: Model 83 Series Lug Type, Class 300



| Size   | H     | H1   | H2    | H3   | Ød   | F    | ØD    | B.C.D1 | L    |
|--------|-------|------|-------|------|------|------|-------|--------|------|
| 2"     | 8.63  | 2.36 | 6.27  | 0.60 | 0.51 | 0.43 | 1.65  | 2.76   | 1.73 |
| 2-1/2" | 9.54  | 2.76 | 6.78  | 0.60 | 0.63 | 0.55 | 2.40  | 2.76   | 1.81 |
| 3"     | 9.85  | 3.01 | 6.84  | 0.60 | 0.63 | 0.55 | 2.91  | 2.76   | 1.89 |
| 4"     | 11.07 | 3.54 | 7.53  | 0.70 | 0.63 | 0.55 | 3.70  | 2.76   | 2.13 |
| 5"     | 12.55 | 4.09 | 8.45  | 0.70 | 0.71 | 0.55 | 4.65  | 2.76   | 2.24 |
| 6"     | 13.62 | 4.53 | 9.09  | 0.75 | 0.87 | 0.67 | 5.51  | 2.76   | 2.28 |
| 8"     | 15.91 | 5.65 | 10.26 | 0.81 | 0.87 | 0.87 | 7.40  | 2.76   | 2.87 |
| 10"    | 18.44 | 6.69 | 11.75 | 0.81 | 1.10 | 0.87 | 9.39  | 4.02   | 3.82 |
| 12"    | 20.71 | 7.83 | 12.88 | 0.95 | 1.10 | 0.87 | 11.02 | 4.02   | 3.62 |

## Model 82 & 83 Series Butterfly Valves

### MATERIAL SELECTION: 83 Series Lug Type Class 300

| No | Description      | #300 CS-STHL  |             | #300 SS-STHL |             | Qty    |
|----|------------------|---------------|-------------|--------------|-------------|--------|
|    |                  | Soft Seat     | Metal Seat  | Soft Seat    | Metal Seat  |        |
| 1  | Body             | A216 WCB      |             | A351 CF8M    |             | 1      |
| 2  | Disc             | A 351 CF8M    |             |              |             | 1      |
| 3  | Stem             | A 564 Gr. 630 |             |              |             | 1      |
| 4  | Gland Flange     | A216 WCB      |             | A351 CF8M    |             | 1      |
| 5  | Packing Retainer | A276 Tp 316   |             |              |             | 1      |
| 6  | Retainer Ring    | A351 CF8M     |             |              |             | 1      |
| 7  | Seat             | PTFE / RTFE   | A240 Tp 316 | PTFE / RPTFE | A240 Tp 316 | 1      |
|    |                  |               | A240 Tp 304 |              | A240 Tp 304 |        |
| 8  | Top Retainer     | A283D-A36     |             | A276 Tp 316  |             | 1      |
| 9  | Grand Packing    | Graphite      |             |              |             | 3      |
| 10 | Upper Bearing    | R.TFE + 316SS |             |              |             | 1      |
| 11 | Lower Bearing    | RTFE + 316SS  |             |              |             | 1      |
| 12 | Disc Pin         | A276 Tp 316   |             |              |             | 2      |
| 13 | Hex Socket Bolt  | A283D-A36     |             | A276 316SS   |             | 4 - 14 |
| 14 | Spring Washer    | A283D-A36     |             | A276 316SS   |             | 2      |
| 15 | Hex Nut          | A283D-A36     |             | A276 316SS   |             | 2      |
| 16 | Stud Bolt        | A283D-A36     |             | A276 316SS   |             | 2      |
| 17 | Flat Head Screw  | A283D-A36     |             | A276 316SS   |             | 2      |

### FLANGE DRILLING TABLE

| Size   | ANSI 300 |    |      | J1S 16K/20K |    |      | JIS 30K |    |      | PN25   |    |      | PN40   |    |      |
|--------|----------|----|------|-------------|----|------|---------|----|------|--------|----|------|--------|----|------|
|        | B.C.D.   | n  | h    | B.C.D.      | n  | h    | B.C.D.  | n  | h    | B.C.D. | n  | h    | B.C.D. | n  | h    |
| 2"     | 5.00     | 8  | 0.75 | 4.72        | 8  | 0.75 | 5.12    | 8  | 0.75 | 4.92   | 4  | 0.71 | 4.92   | 4  | 0.71 |
| 2-1/2" | 5.87     | 8  | 0.87 | 5.51        | 8  | 0.75 | 6.3     | 8  | 0.91 | 5.71   | 8  | 0.71 | 5.71   | 8  | 0.71 |
| 3"     | 6.63     | 8  | 0.87 | 6.30        | 8  | 0.91 | 6.69    | 8  | 0.91 | 6.30   | 8  | 0.71 | 6.30   | 8  | 0.71 |
| 4"     | 7.87     | 8  | 0.87 | 7.28        | 8  | 0.98 | 7.68    | 8  | 0.98 | 7.48   | 8  | 0.87 | 7.48   | 8  | 0.87 |
| 5"     | 9.25     | 8  | 0.87 | 8.86        | 8  | 0.98 | 9.06    | 8  | 0.98 | 8.66   | 8  | 1.02 | 8.66   | 8  | 1.02 |
| 6"     | 10.62    | 12 | 0.87 | 10.24       | 12 | 0.98 | 10.83   | 12 | 1.06 | 9.84   | 8  | 1.02 | 9.84   | 8  | 1.02 |
| 8"     | 13.00    | 12 | 1.00 | 12.01       | 12 | 0.98 | 12.60   | 12 | 1.06 | 12.20  | 12 | 1.02 | 12.60  | 12 | 1.18 |
| 10"    | 15.25    | 16 | 1.13 | 14.96       | 12 | 1.06 | 15.35   | 12 | 1.30 | 14.57  | 12 | 1.18 | 15.16  | 12 | 1.30 |
| 12"    | 17.75    | 16 | 1.25 | 16.93       | 16 | 1.06 | 17.72   | 16 | 1.30 | 16.93  | 16 | 1.18 | 17.72  | 16 | 1.30 |

Note: 'n' Number of bolt holes  
'h' Bolt hole diameter

## TORQUE DATA: HIGH PERFORMANCE BUTTERFLY VALVES

| Lbs<br>In | Class 150                   |         |            |         | Class 300                   |         |            |         |
|-----------|-----------------------------|---------|------------|---------|-----------------------------|---------|------------|---------|
|           | Actuated Torque: lbs/inches |         |            |         | Actuated Torque: lbs/inches |         |            |         |
| Size      | Teflon Seat                 |         | Metal Seat |         | Teflon Seat                 |         | Metal Seat |         |
| In        | 150 psi                     | 285 psi | 150 psi    | 285 psi | 150 psi                     | 500 psi | 150 psi    | 500 psi |
| 2"        | 200                         | 270     | 564        | 677     | 220                         | 520     | 990        | 1550    |
| 2-1/2"    | 200                         | 270     | 564        | 677     | 220                         | 520     | 900        | 1550    |
| 3"        | 200                         | 270     | 564        | 677     | 220                         | 520     | 900        | 1550    |
| 4"        | 225                         | 470     | 903        | 1128    | 250                         | 670     | 1200       | 1850    |
| 5"        | 540                         | 680     | 1467       | 2144    | 600                         | 1120    | 2800       | 5700    |
| 6"        | 540                         | 680     | 1467       | 2144    | 600                         | 1120    | 2800       | 5700    |
| 8"        | 910                         | 1620    | 2031       | 2595    | 1000                        | 2440    | 4100       | 8100    |
| 10"       | 1620                        | 2530    | 3385       | 4288    | 1800                        | 4640    | 6800       | 14500   |
| 12"       | 2530                        | 3600    | 4513       | 5190    | 2790                        | 7480    | 9100       | 23600   |
| 14"       | 3720                        | 5970    |            |         | 4130                        | 10200   |            |         |
| 16"       | 5530                        | 9180    |            |         | 6140                        | 17070   |            |         |
| 18"       | 6840                        | 11900   |            |         | 7600                        | 20400   |            |         |
| 20"       | 10020                       | 16970   |            |         | 11140                       | 31530   |            |         |
| 24"       | 18330                       | 32290   |            |         | 20370                       | 58820   |            |         |

Note: All torques shown on the chart were derived from test data using water at 41°F. For torques using dry gases, multiply these numbers by 1.6. Above table has additional 30% safety factor to average net torque. For severe services, or unusual fluids or slurries, consult J Flow Controls. For 600 & 700 psig torque, please consult J Flow Controls.

The torques listed are applicable to sea water, lubricating type of hydro carbons and most media at temperatures of 32°F to 180°F. The operating speed of the actuator must be considered in order to avoid water hammer when the valve is closed in conjunction with liquid.

### The factors affect the torque required to operate butterfly valves:

- Valve diameter
- Shaft diameter
- Bearing friction coefficient
- Type of seat material
- Shut off pressure
- Velocity
- Shape of disc
- System head characteristics
- Piping arrangement

### Actuator torques can be calculated using the following formulas:

- $T_a = T_b + T_s + T_h = 1.2T_b \pm T_d$
- $T_s = C_s D^2$
- $T_b = 4.17 D^2 d f p$
- $T_d = C_t D^3 P$
- $T_h = 3.06 D^4$
- $V = C_f \sqrt{p} = \frac{Q}{0.785 D^2}$
- $T_a$ : The required actuator torque (lb-ft)
- $T_s$  = Seat or unseating torque (lb-ft)
- $T_d$  = Dynamic torque (lb-ft)
- $T_h$  = Hydrostatic torque (lb-ft)
- $Q$  = Flow (cubic per second)
- $V$  = Velocity (feet per second)
- $D$  = Diameter of valve (feet)
- $d$  = diameter of shaft (inch)
- $P$  = Pressure drop across valve (psi)
- $C_s$  = Coefficient of seating or unseating torque
- $C_t$  = Coefficient of dynamic torque
- $C_f$  = Coefficient of flow
- $f$  = Bearing friction coefficient

## Model 82 & 83 Series Butterfly Valves

### CV FLOW COEFFICIENT CHARTS:

The size of butterfly valves used for control purpose should be calculated on the basis of the operating characteristics. In order to achieve optimum control, the flow coefficient (Cv) below need to be considered.

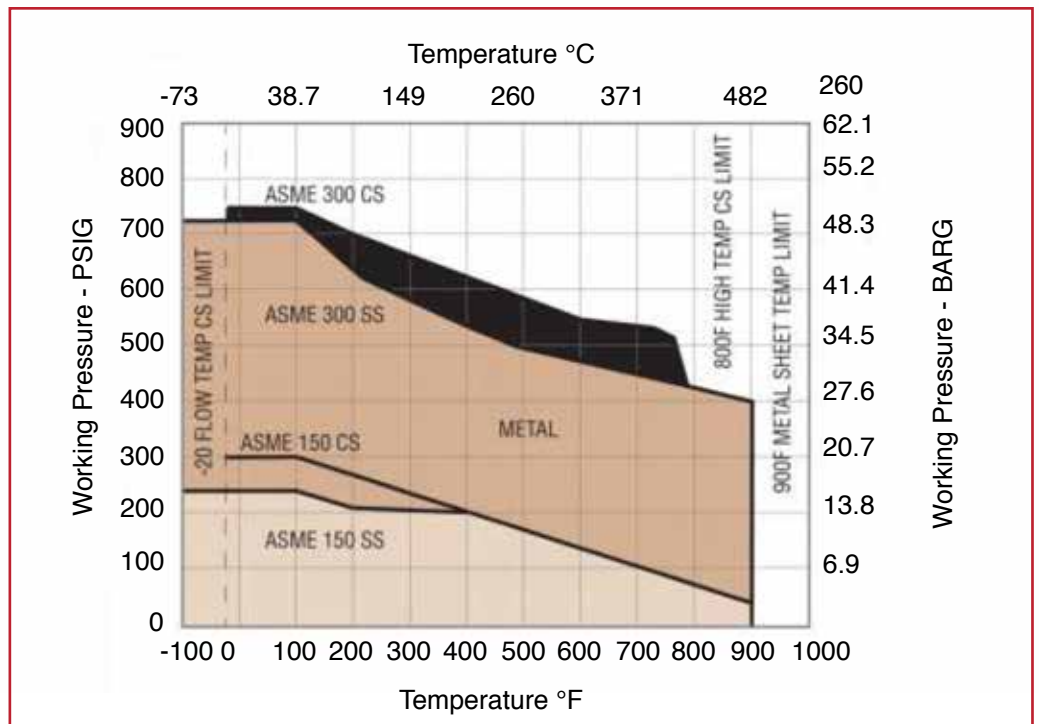
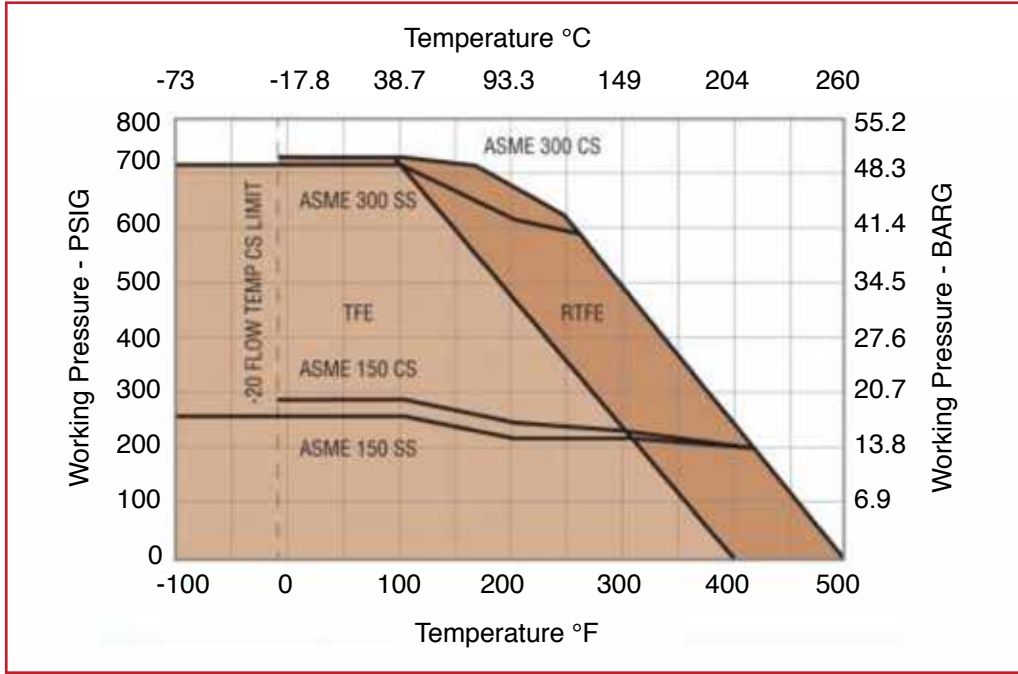
Flow Coefficient for J Flow Controls Butterfly Valves

| Class 150<br>In | Disc Opening |      |      |      |       |       |       |       |
|-----------------|--------------|------|------|------|-------|-------|-------|-------|
|                 | 20°          | 30°  | 40°  | 50°  | 60°   | 70°   | 80°   | 90°   |
| 2"              | 6            | 14   | 25   | 39   | 56    | 76    | 99    | 102   |
| 2-1/2"          | 9            | 21   | 37   | 56   | 80    | 110   | 142   | 146   |
| 3"              | 14           | 32   | 57   | 87   | 125   | 171   | 221   | 228   |
| 4"              | 27           | 63   | 114  | 171  | 248   | 338   | 437   | 451   |
| 5"              | 43           | 100  | 180  | 271  | 392   | 535   | 692   | 714   |
| 6"              | 66           | 154  | 278  | 419  | 607   | 827   | 1070  | 1103  |
| 8"              | 124          | 289  | 520  | 784  | 1135  | 1584  | 2002  | 2064  |
| 10"             | 211          | 492  | 886  | 1336 | 1934  | 2638  | 3411  | 3517  |
| 12"             | 290          | 677  | 1219 | 1838 | 2660  | 3628  | 4690  | 4837  |
| 14"             | 392          | 914  | 1646 | 2481 | 3592  | 4898  | 6530  | 6857  |
| 16"             | 531          | 1230 | 2229 | 3361 | 4865  | 6634  | 8845  | 9287  |
| 18"             | 684          | 1596 | 3873 | 4332 | 6270  | 8550  | 11270 | 11400 |
| 20"             | 828          | 1932 | 3478 | 5244 | 7590  | 10350 | 13800 | 14420 |
| 24"             | 1260         | 2940 | 5292 | 7890 | 11550 | 15750 | 21000 | 22050 |

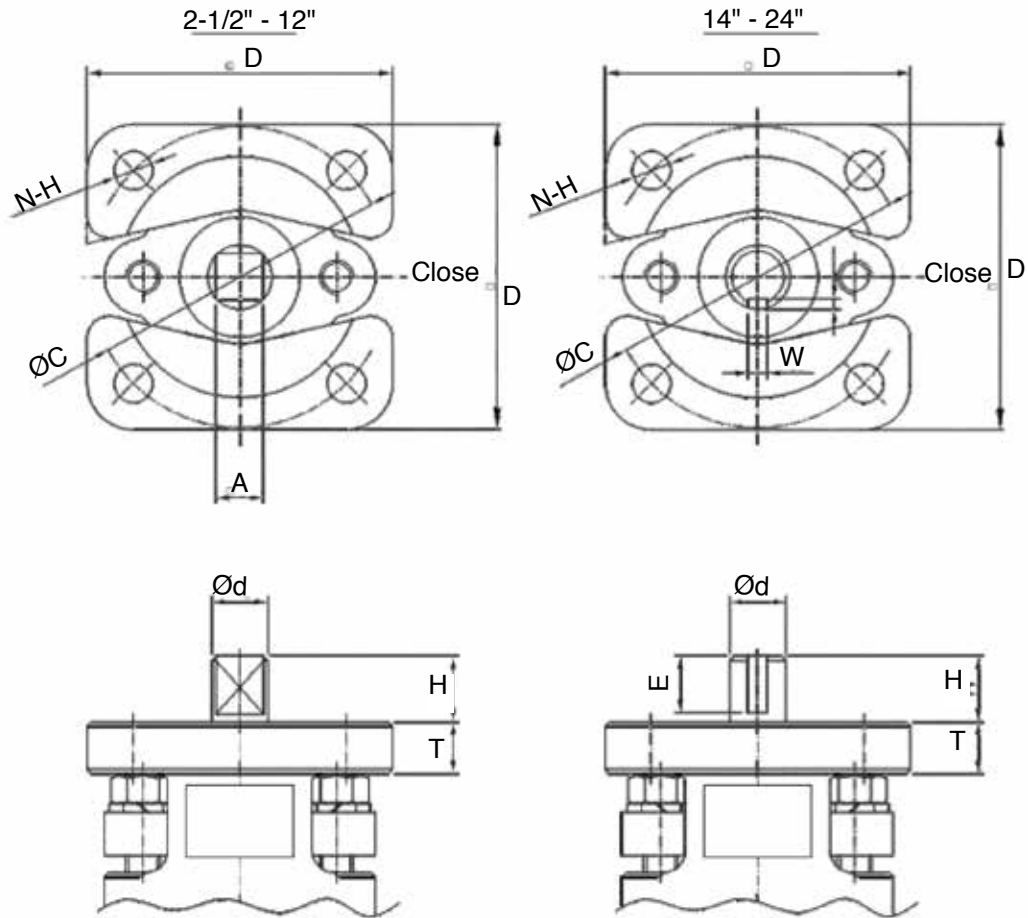
| Class 300<br>In | Disc Opening |      |      |      |      |       |       |       |
|-----------------|--------------|------|------|------|------|-------|-------|-------|
|                 | 20°          | 30°  | 40°  | 50°  | 60°  | 70°   | 80°   | 90°   |
| 2"              | 6            | 13   | 24   | 36   | 52   | 71    | 95    | 100   |
| 2-1/2"          | 8            | 19   | 34   | 52   | 75   | 102   | 136   | 143   |
| 3"              | 13           | 30   | 53   | 81   | 117  | 159   | 212   | 223   |
| 4"              | 25           | 58   | 104  | 157  | 228  | 310   | 414   | 435   |
| 5"              | 40           | 92   | 165  | 248  | 361  | 491   | 655   | 688   |
| 6"              | 60           | 139  | 250  | 377  | 546  | 744   | 992   | 1041  |
| 8"              | 109          | 255  | 459  | 692  | 1001 | 1365  | 1820  | 1911  |
| 10"             | 183          | 426  | 767  | 1156 | 1673 | 2282  | 3042  | 3194  |
| 12"             | 253          | 590  | 1063 | 1602 | 2319 | 3163  | 4217  | 4428  |
| 14"             | 326          | 760  | 1368 | 2063 | 2986 | 4072  | 5430  | 5702  |
| 16"             | 435          | 1015 | 1827 | 2755 | 3988 | 5438  | 7850  | 8243  |
| 18"             | 555          | 1295 | 2331 | 3515 | 5088 | 6938  | 9250  | 9712  |
| 20"             | 630          | 1470 | 2646 | 3990 | 5775 | 7875  | 10150 | 10658 |
| 24"             | 966          | 2254 | 4057 | 6118 | 8855 | 12075 | 16100 | 16205 |

Cv is in imperial units, the water flow in U.S. gallons per minute which passes through the valve giving a pressure drop of 1 psi at a temperature of 68°F

**TECHNICAL DATA**  
**Pressure vs Temperature**

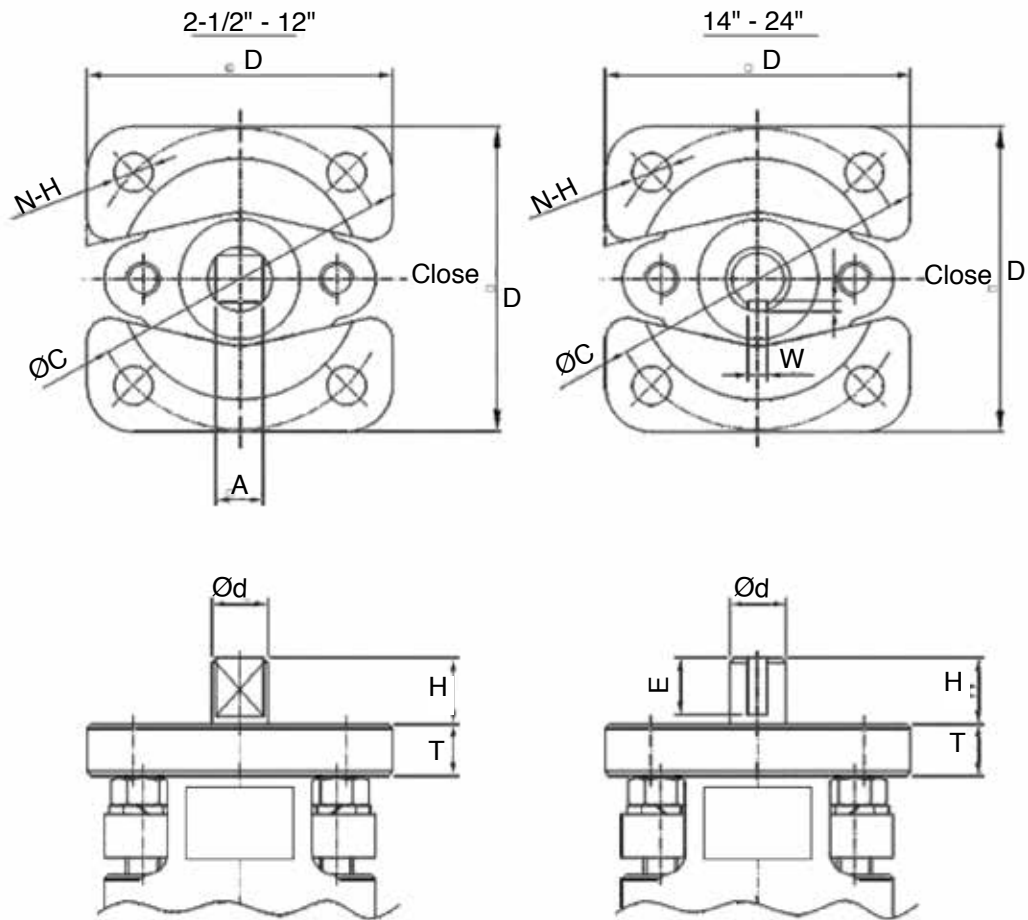


**BUTTERFLY VALVE TOP FLANGE DIMENSION - CLASS 150**



|        | Ød   | T    | ØC   | N    | Øh   | A    | DD   | B    | W    | H    | E    | ISO |
|--------|------|------|------|------|------|------|------|------|------|------|------|-----|
| 2"     | 0.51 | 0.47 | 2.76 | 0.55 | 0.35 | 0.43 | 2.80 | -    | -    | 0.60 | -    | F07 |
| 2-1/2" | 0.63 | 0.47 | 2.76 | 0.55 | 0.35 | 0.55 | 2.80 | -    | -    | 0.60 | -    | F07 |
| 3"     | 0.63 | 0.47 | 2.76 | 0.55 | 0.35 | 0.55 | 2.80 | -    | -    | 0.60 | -    | F07 |
| 4"     | 0.63 | 0.47 | 2.76 | 0.55 | 0.35 | 0.55 | 2.80 | -    | -    | 0.70 | -    | F07 |
| 5"     | 0.71 | 0.55 | 2.76 | 0.55 | 0.35 | 0.63 | 2.80 | -    | -    | 0.70 | -    | F07 |
| 6"     | 0.87 | 0.55 | 2.76 | 0.55 | 0.35 | 0.67 | 2.80 | -    | -    | 0.75 | -    | F07 |
| 8"     | 0.87 | 0.63 | 2.76 | 0.55 | 0.35 | 0.67 | 2.80 | -    | -    | 0.81 | -    | F07 |
| 10"    | 1.00 | 0.71 | 4.02 | 0.55 | 0.43 | 0.87 | 3.74 | -    | -    | 0.81 | -    | F10 |
| 12"    | 1.10 | 0.71 | 4.02 | 0.55 | 0.43 | 0.87 | 3.74 | -    | -    | 0.95 | -    | F10 |
| 14"    | 1.50 | 0.71 | 5.51 | 0.55 | 0.71 | -    | 6.30 | 0.20 | 0.47 | 2.76 | 2.36 | F14 |
| 16"    | 1.77 | 0.79 | 6.50 | 0.55 | 0.87 | -    | 6.30 | 0.20 | 0.47 | 3.48 | 2.76 | F16 |
| 18"    | 2.20 | 0.79 | 6.50 | 0.55 | 0.87 | -    | 6.30 | 0.20 | 0.47 | 3.48 | 2.76 | F16 |
| 20"    | 2.20 | 0.79 | 6.50 | 0.55 | 0.87 | -    | 6.30 | 0.20 | 0.47 | 3.48 | 2.76 | F16 |
| 24"    | 2.20 | 0.79 | 6.50 | 0.55 | 0.87 | -    | 6.30 | 0.20 | 0.47 | 3.48 | 2.76 | F16 |

**BUTTERFLY VALVE TOP FLANGE DIMENSION - CLASS 300**



|        | Ød   | T    | ØC   | N    | Øh   | A    | DD   | B | W | H    | E | ISO |
|--------|------|------|------|------|------|------|------|---|---|------|---|-----|
| 2"     | 0.51 | 0.47 | 2.76 | 0.55 | 0.35 | 0.43 | 2.80 | - | - | 0.60 | - | F07 |
| 2-1/2" | 0.63 | 0.47 | 2.76 | 0.55 | 0.35 | 0.55 | 2.80 | - | - | 0.60 | - | F07 |
| 3"     | 0.63 | 0.47 | 2.76 | 0.55 | 0.35 | 0.55 | 2.80 | - | - | 0.60 | - | F07 |
| 4"     | 0.63 | 0.47 | 2.76 | 0.55 | 0.35 | 0.55 | 2.80 | - | - | 0.70 | - | F07 |
| 5"     | 0.71 | 0.55 | 2.76 | 0.55 | 0.35 | 0.63 | 2.80 | - | - | 0.70 | - | F07 |
| 6"     | 0.87 | 0.55 | 2.76 | 0.55 | 0.35 | 0.67 | 2.80 | - | - | 0.75 | - | F07 |
| 8"     | 0.87 | 0.63 | 4.02 | 0.55 | 0.43 | 0.87 | 3.74 | - | - | 0.81 | - | F10 |
| 10"    | 1.00 | 0.71 | 4.02 | 0.55 | 0.43 | 0.87 | 3.74 | - | - | 0.81 | - | F10 |
| 12"    | 1.10 | 0.71 | 4.02 | 0.55 | 0.43 | 0.87 | 3.74 | - | - | 0.95 | - | F10 |

Note:

1. Standard: ISO 5211 F05 ~ F16
2. ØC; Øh tolerance: +0.1 / -0.0
3. Others tolerance: +0.3 / -0.0



## Model 82 & 83 Series Butterfly Valves

### **HOW TO ORDER**

| Model     |                              | Body Material |                       | Disc     |                           | Stem     |                        |
|-----------|------------------------------|---------------|-----------------------|----------|---------------------------|----------|------------------------|
| <b>82</b> | High Performance Wafer Style | <b>3</b>      | Cast Steel, WCB       | <b>K</b> | 316 Stainless Steel, CF8M | <b>7</b> | A564 Gr. 630 (PH 17-4) |
| <b>83</b> | High Performance Lug Style   | <b>5</b>      | Stainless Steel, CF8M |          |                           |          |                        |

| Drilling or Pressure Rate |           | Operation |           | Seat     |            |
|---------------------------|-----------|-----------|-----------|----------|------------|
| <b>1</b>                  | ANSI 150# | <b>1</b>  | Bare Stem | <b>C</b> | TFM-4215   |
| <b>3</b>                  | ANSI 300# | <b>3</b>  | Lever     | <b>S</b> | PTFE       |
| <b>4</b>                  | DIN PN10  | <b>6</b>  | Gear      | <b>R</b> | RTFE       |
| <b>5</b>                  | DIN PN16  |           |           | <b>T</b> | Metal Seat |
| <b>8</b>                  | DIN PN25  |           |           | <b>E</b> | EPDM Seat  |
| <b>9</b>                  | DIN PN40  |           |           | <b>V</b> | Viton Seat |
| <b>A</b>                  | JIS 16K   |           |           |          |            |
| <b>B</b>                  | JIS 20K   |           |           |          |            |
| <b>C</b>                  | JIS 30K   |           |           |          |            |

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