

NIBCO® SURE SEAL®

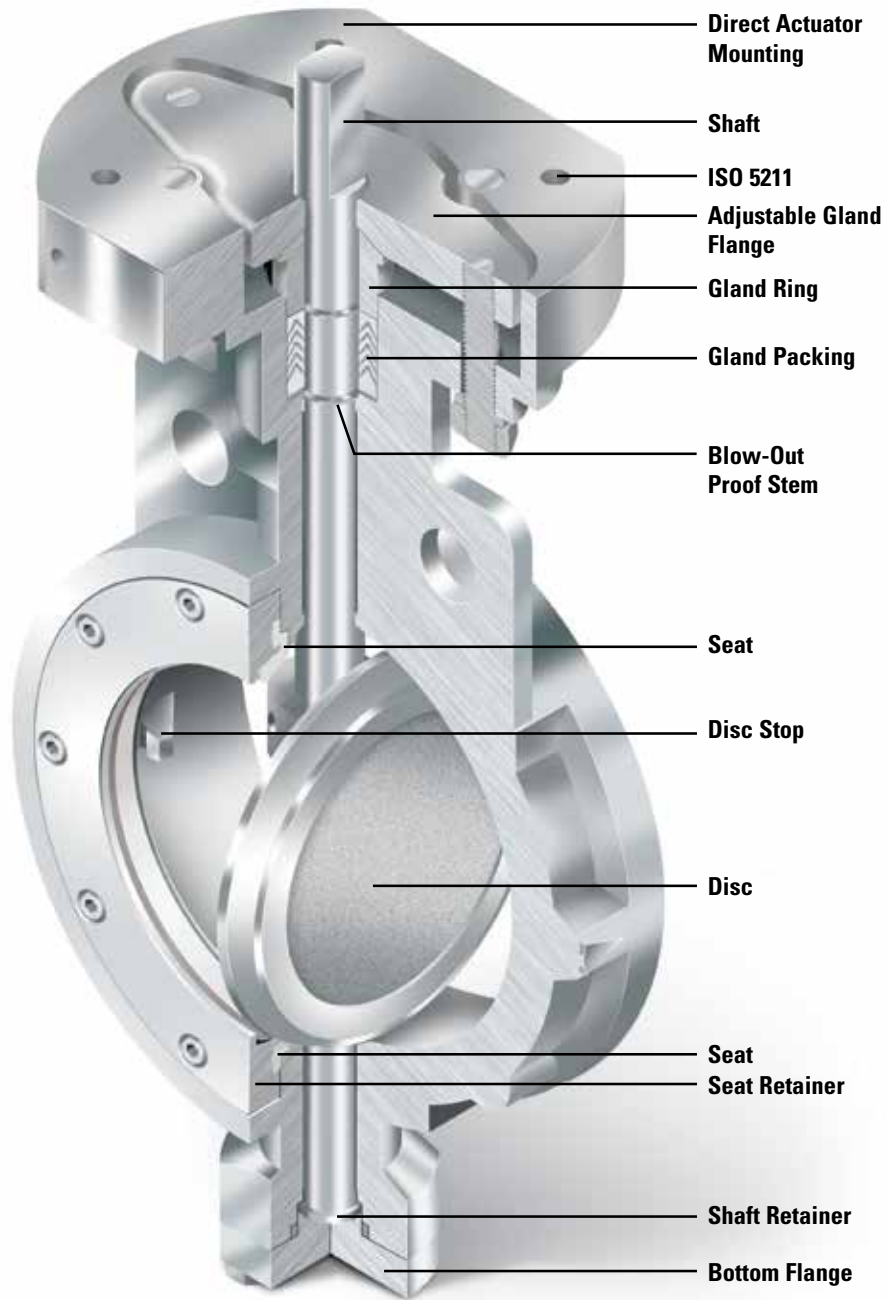
HIGH PERFORMANCE BUTTERFLY VALVES



NIBCO offers a comprehensive selection of high performance butterfly valves for industrial and commercial applications that are available in a broad range of materials, sizes, and pressures. Sure Seal® valves will exceed your application expectations and, like all NIBCO products, guarantee superior quality, performance, and service.

INTRODUCTION & FEATURED BENEFITS

NIBCO manufactures butterfly valves and actuators used with industrial piping applications such as chemical, food processing, pulp and paper, shipbuilding, e-coat phosphate paint systems, and pharmaceutical applications. NIBCO machines and manufactures parts in house with modern advanced computer controlled machining centers to assure the highest standards in the industry. Every valve manufactured is tested to 110 percent of its full pressure rating as standard.



SEAT



Soft Seated

High Performance Butterfly Valve

Seat: PTFE (392°F/200°C)
R-PTFE (482°F/250°C)



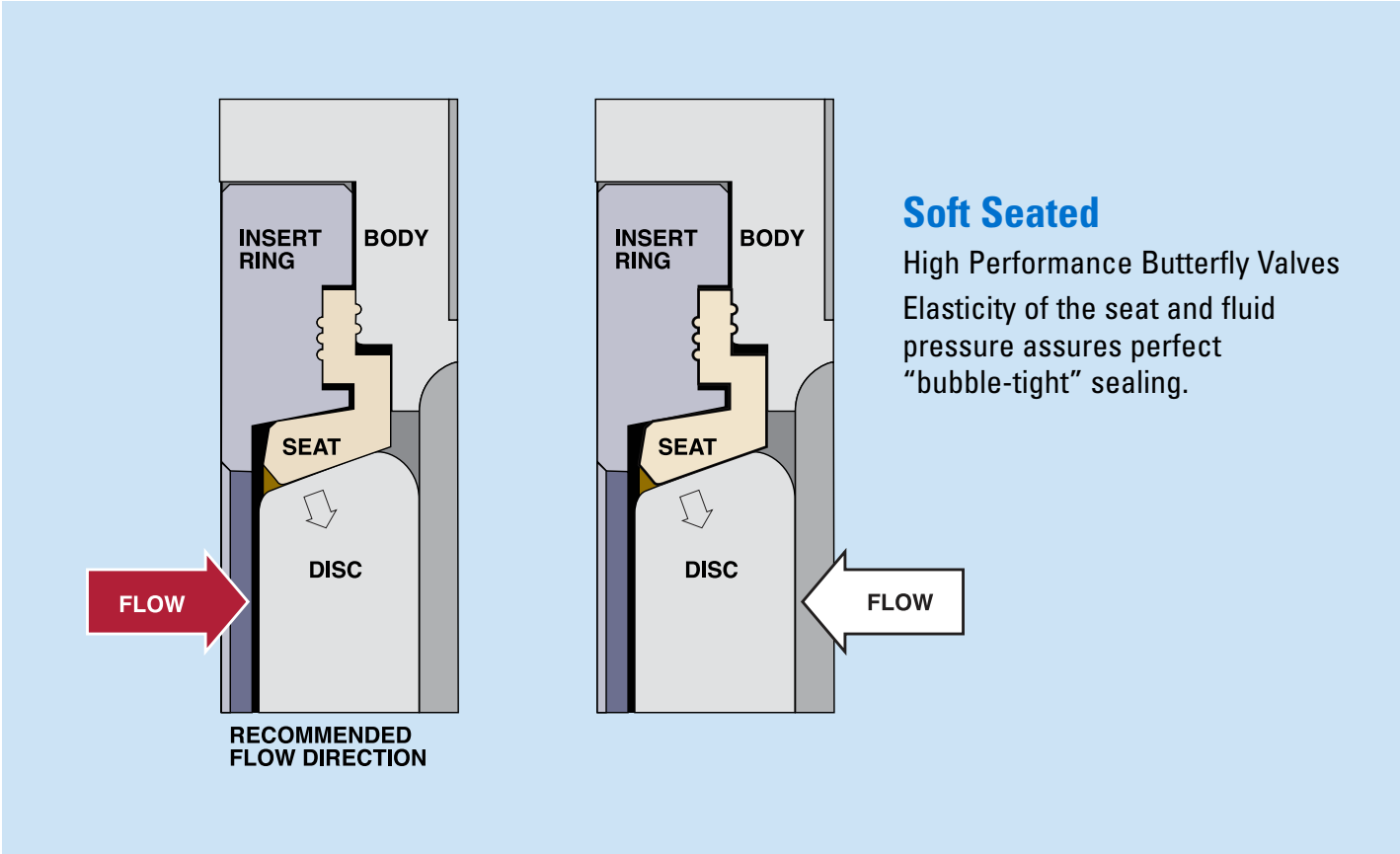
NIBCO® Sure Seal® High Performance Butterfly Valves have the following featured benefits:

- Direct mount actuation
- Live loaded adjustable packing
- Uninterrupted gasket surface*
- Consult factory for spiral wound gasket
- Bi-directional service
- Bubble-tight sealing
- One piece through shaft
- Welded disc pins
- Integrally cast disc stop
- Blow-out proof stem

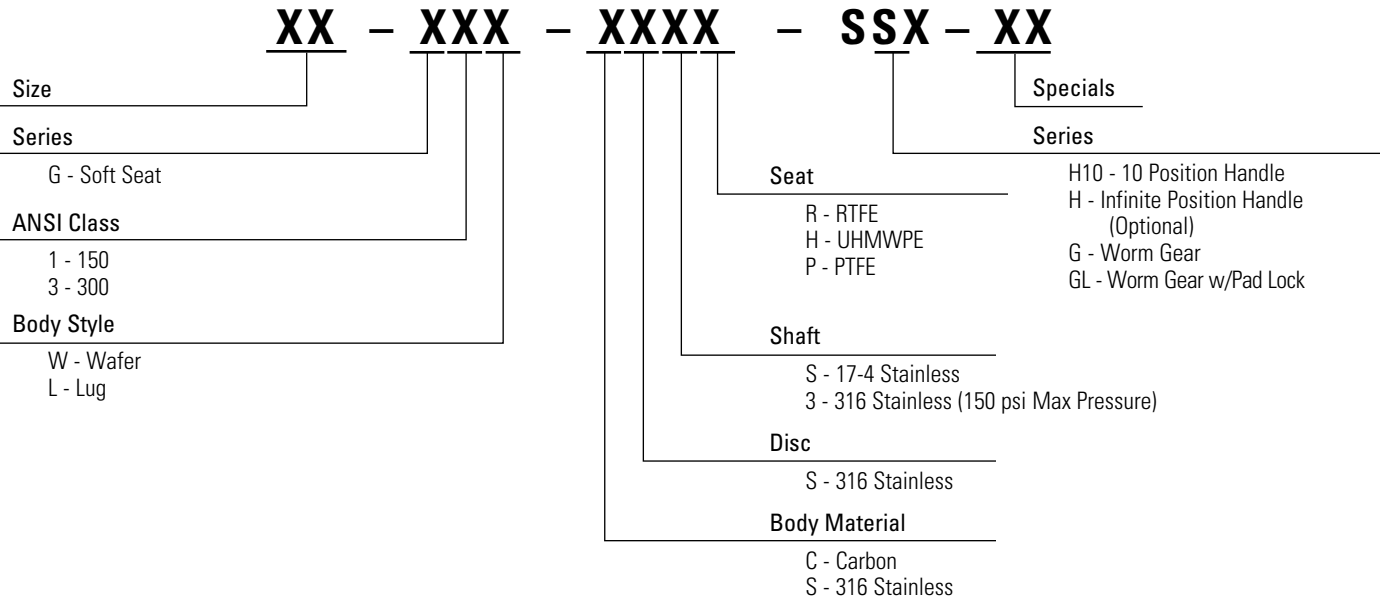
Visit our website for the most current information.

*Consult factory for additional materials.

SEAT FLOW CHARACTERISTICS & NUMBERING GUIDE



NUMBERING GUIDE



Visit our website for the most current information.

ANSI CLASS 150 & 300 Cv VALUES

BASIC FORMULAS FOR Cv VALUE

| Fluids | Pressure Condition | Cv Value | Legend |
|--------|------------------------|--|--|
| Liquid | n/a | $Cv = 1.17Q \sqrt{\frac{G_s}{\Delta P}}$ | Q : volume rate of flow (liquid m ³ /h, gas Nm ³ /h) W : volume rate of flow (steam kg/h) P ₁ : inlet pressure (liquid kgf/cm ² , gas/steam kgf/cm ² abs.) P ₂ : outlet pressure (liquid kgf/cm ² , gas/steam kgf/cm ² abs.) ΔP : pressure drop P ₁ -P ₂ G _s : specific gravity of fluid T : temperature of fluid (°C) K : correction coefficient to superheat 1 + 0.0013 x deg. °C of superheat * When P ₂ < 0.5P ₁ , use 0.5P ₁ instead of ΔP |
| Gas | ΔP < 0.5P ₁ | $Cv = \frac{Q}{272} \sqrt{\frac{G_s(T+273)}{\Delta P(P_1+P_2)}}$ | |
| | ΔP ≥ 0.5P ₁ | $Cv = \frac{Q \sqrt{G_s(T+273)}}{236 P_1}$ | |
| Steam | ΔP < 0.5P ₁ | $Cv = \frac{WK}{13.5 \sqrt{\Delta P(P_1+P_2)}}$ | |
| | ΔP ≥ 0.5P ₁ | $Cv = \frac{WK}{11.9 P_1}$ | |

ANSI CLASS 150

| Valve Size | | | Cv Relating to the Angle of Disc Opening | | | | | | | | |
|------------|-----|------|--|------|------|------|-------|-------|-------|-------|-------|
| inch | mm | Unit | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 2 | 50 | Cv | 2.1 | 6.4 | 12.9 | 20.2 | 30.4 | 43.2 | 72 | 81 | 92 |
| 2.5 | 65 | Cv | 3 | 10.5 | 21 | 33 | 49.5 | 71 | 117 | 132 | 150 |
| 3 | 80 | Cv | 5.2 | 18.2 | 36.4 | 57.2 | 86 | 122 | 203 | 230 | 260 |
| 4 | 100 | Cv | 9.2 | 32.2 | 64.4 | 101 | 152 | 216 | 360 | 405 | 460 |
| 5 | 125 | Cv | 15.2 | 53.2 | 106 | 167 | 251 | 357 | 595 | 670 | 760 |
| 6 | 150 | Cv | 23 | 81 | 161 | 253 | 380 | 540 | 897 | 1015 | 1150 |
| 8 | 200 | Cv | 42 | 147 | 295 | 462 | 695 | 987 | 1640 | 1850 | 2100 |
| 10 | 250 | Cv | 64 | 225 | 450 | 705 | 1056 | 1505 | 2496 | 2816 | 3200 |
| 12 | 300 | Cv | 94 | 330 | 660 | 1035 | 1551 | 2210 | 3666 | 4136 | 4700 |
| 14 | 350 | Cv | 116 | 406 | 815 | 1276 | 1915 | 2726 | 4525 | 5105 | 5800 |
| 16 | 400 | Cv | 160 | 560 | 1120 | 1760 | 2640 | 3760 | 6240 | 7040 | 8000 |
| 18 | 450 | Cv | 210 | 735 | 1470 | 2310 | 3465 | 4935 | 8190 | 9240 | 10500 |
| 20 | 500 | Cv | 280 | 980 | 1960 | 3080 | 4620 | 6580 | 10920 | 12320 | 14000 |
| 24 | 600 | Cv | 420 | 1470 | 2940 | 4620 | 6930 | 9870 | 16380 | 18480 | 21000 |
| 30 | 750 | Cv | 670 | 2345 | 4690 | 7370 | 11055 | 15745 | 26130 | 29480 | 33500 |

*All values represented in US gallon per minute (GPM).

ANSI CLASS 300

| Valve Size | | | Cv Relating to the Angle of Disc Opening | | | | | | | | |
|------------|-----|------|--|------|------|------|------|------|-------|-------|-------|
| inch | mm | Unit | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 2 | 50 | Cv | 1.8 | 6.4 | 12.9 | 20.2 | 30.4 | 43.2 | 72 | 81 | 92 |
| 2.5 | 65 | Cv | 3 | 10.5 | 21 | 33 | 49.5 | 71 | 117 | 132 | 150 |
| 3 | 80 | Cv | 5.2 | 18.2 | 36.4 | 57.2 | 86 | 122 | 203 | 230 | 260 |
| 4 | 100 | Cv | 9.2 | 32.2 | 64.5 | 101 | 152 | 216 | 360 | 405 | 460 |
| 5 | 125 | Cv | 15.2 | 53.2 | 106 | 167 | 251 | 357 | 595 | 670 | 760 |
| 6 | 150 | Cv | 23 | 81 | 161 | 253 | 380 | 540 | 987 | 1015 | 1150 |
| 8 | 200 | Cv | 38 | 133 | 266 | 418 | 627 | 895 | 1485 | 1675 | 1900 |
| 10 | 250 | Cv | 56 | 196 | 392 | 616 | 925 | 1316 | 2185 | 2465 | 2800 |
| 12 | 300 | Cv | 82 | 287 | 575 | 905 | 1355 | 1930 | 3200 | 3610 | 4100 |
| 14 | 350 | Cv | 110 | 385 | 770 | 1210 | 1815 | 2585 | 4290 | 4840 | 5500 |
| 16 | 400 | Cv | 152 | 532 | 1065 | 1675 | 2510 | 3575 | 5930 | 6690 | 7600 |
| 18 | 450 | Cv | 198 | 695 | 1390 | 2180 | 3270 | 4655 | 7725 | 8715 | 9900 |
| 20 | 500 | Cv | 260 | 910 | 1820 | 2860 | 4290 | 6110 | 10140 | 11440 | 13000 |
| 24 | 600 | Cv | 390 | 1365 | 2730 | 4290 | 6435 | 9165 | 15210 | 17160 | 19500 |

*All values represented in US gallon per minute (GPM).

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TORQUE TABLES & SEAT RATINGS

ANSI CLASS 150 TORQUE TABLE

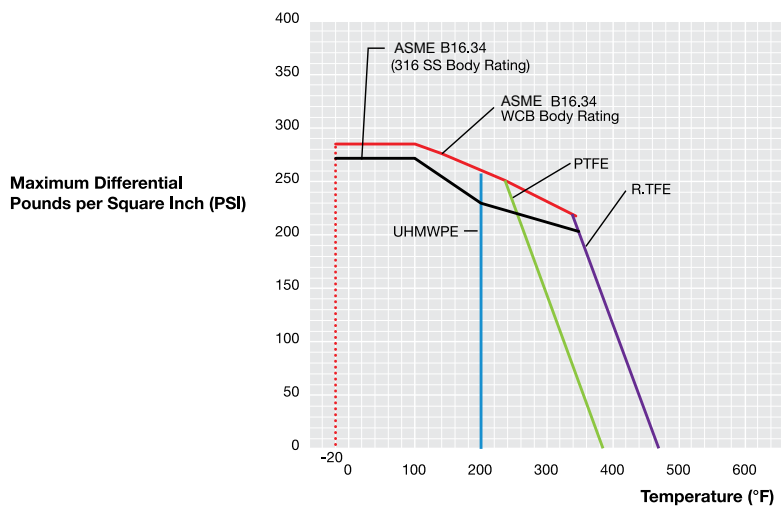
| Size in mm | Soft Seated | | | | |
|---------------|-------------|--------|---------|---------|---------|
| | 0 Psi | 75 Psi | 150 Psi | 225 Psi | 285 Psi |
| 2" 50 | 200 | 225 | 250 | 266 | 276 |
| 2.5" 65 | 210 | 235 | 265 | 275 | 305 |
| 3" 80 | 222 | 249 | 276 | 292 | 334 |
| 4" 100 | 265 | 313 | 361 | 414 | 489 |
| 5" 130 | 377 | 430 | 483 | 531 | 690 |
| 6" 150 | 401 | 517 | 633 | 743 | 805 |
| 8" 200 | 477 | 796 | 1115 | 1177 | 1363 |
| 10" 250 | 960 | 1301 | 1642 | 1982 | 2292 |
| 12" 300 | 1238 | 1796 | 2354 | 2911 | 3470 |
| 14" 350 | 1899 | 2704 | 3509 | 4487 | 5700 |
| 16" 400 | 2359 | 3682 | 5005 | 6372 | 8364 |
| 18" 450 | 3345 | 5080 | 6815 | 8342 | 10842 |
| 20" 500 | 5620 | 6505 | 10267 | 11152 | 15578 |
| 24" 600 | 7080 | 11329 | 15578 | 19472 | 23367 |
| 30" 750 | 12338 | 18410 | 24080 | 29740 | 35410 |

ANSI CLASS 300 TORQUE TABLE

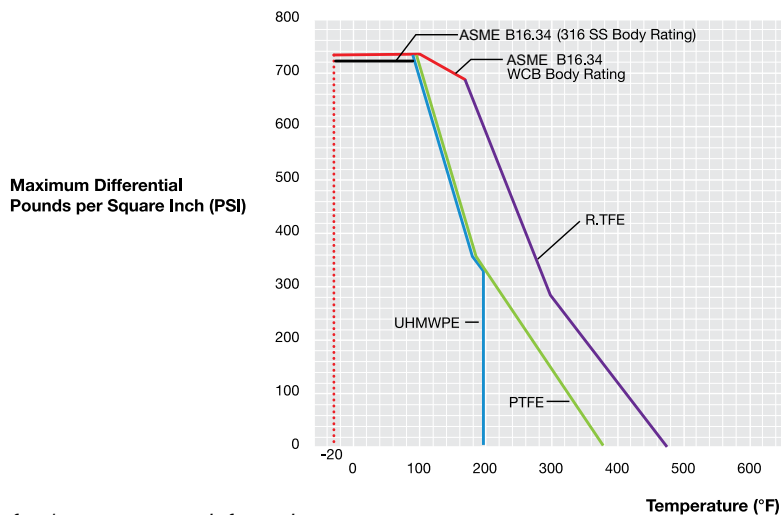
| Size in mm | Soft Seated | | | | | |
|---------------|-------------|---------|---------|---------|---------|---------|
| | 150 Psi | 285 Psi | 400 Psi | 500 Psi | 600 Psi | 700 Psi |
| 2" 50 | 270 | 299 | 341 | 359 | 366 | 372 |
| 2.5" 65 | 282 | 315 | 360 | 381 | 390 | 403 |
| 3" 80 | 299 | 334 | 378 | 403 | 415 | 434 |
| 4" 100 | 391 | 489 | 564 | 595 | 620 | 682 |
| 5" 130 | 524 | 690 | 744 | 805 | 867 | 960 |
| 6" 150 | 682 | 748 | 960 | 1053 | 1115 | 1177 |
| 8" 200 | 1115 | 1363 | 1518 | 1642 | 1735 | 1921 |
| 10" 250 | 1759 | 2456 | 2726 | 3036 | 3222 | 3594 |
| 12" 300 | 2523 | 3717 | 4213 | 4709 | 5080 | 5452 |
| 14" 350 | 4049 | 6107 | 7966 | 9625 | 9957 | 10953 |
| 16" 400 | 5775 | 8962 | 10953 | 11949 | 13277 | 14604 |
| 18" 450 | 7302 | 11617 | 14604 | 15932 | 17259 | 18587 |
| 20" 500 | 10909 | 16551 | 19472 | 20888 | 23013 | 24783 |
| 24" 600 | 16551 | 24827 | 28323 | 31864 | 35050 | 37528 |

NOTE: All torques are in inch pounds.

ANSI CLASS 150 SEAT RATING

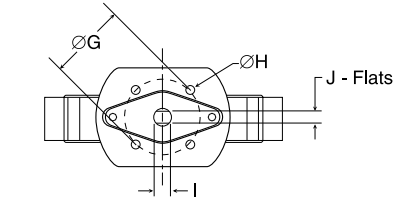
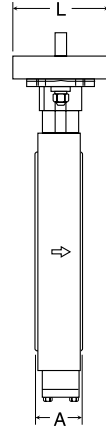
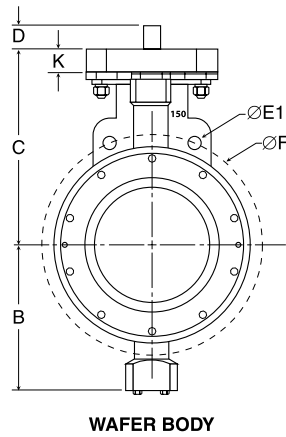
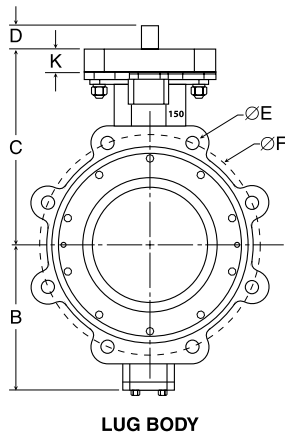


ANSI CLASS 300 SEAT RATING

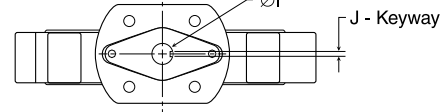


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DIMENSIONAL DATA & STANDARDS



DOUBLE D SHAFT
2" - 8" 150# 2" - 6" 300#



SINGLE KEY
10" - 24" 150# 8" - 12" 300#
DOUBLE KEY
30" - 150# 18" - 24" 300#

ANSI 150 HIGH PERFORMANCE VALVES

| in | mm | A | B | C | D | E | E1 | F | G | H | I | J | K | L |
|-----|-----|------|-------|-------|------|----------------|---------------|-------|-------|-----|-------|-------------|------|-------|
| 2" | 50 | 1.69 | 3.94 | 5.78 | 1.25 | 4 X 5/8 - 11 | 2 X 3/4 | 4.75 | 2.76 | .37 | .500 | .375 | 1.25 | 4.15 |
| 2.5 | 65 | 1.84 | 4.06 | 6.49 | 1.25 | 4 X 5/8 - 11 | 2 X 3/4 | 5.50 | 2.76 | .37 | .625 | .438 | 1.25 | 4.15 |
| 3" | 80 | 1.88 | 4.37 | 6.77 | 1.25 | 4 X 5/8 - 11 | 2 X 3/4 | 6.00 | 2.76 | .37 | .625 | .438 | 1.25 | 4.15 |
| 4" | 100 | 2.12 | 4.80 | 6.98 | 1.25 | 8 X 5/8 - 11 | 2 X 3/4 | 7.50 | 2.76 | .37 | .625 | .438 | 1.25 | 4.15 |
| 5" | 125 | 2.25 | 6.38 | 8.39 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 8.50 | 2.76 | .37 | .750 | .500 | 1.25 | 4.15 |
| 6" | 150 | 2.25 | 5.97 | 8.71 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 9.50 | 2.76 | .37 | .750 | .500 | 1.25 | 4.15 |
| 8" | 200 | 2.50 | 7.76 | 10.43 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 11.75 | 4.02 | .44 | .875 | .625 | 1.60 | 5.12 |
| 10" | 250 | 2.83 | 8.61 | 11.81 | 2.00 | 12 X 7/8 - 9 | 2 X 1 | 14.25 | 4.92 | .56 | 1.125 | 1/4 X 1/4 | 1.00 | 5.25 |
| 12" | 300 | 3.19 | 10.63 | 12.80 | 2.00 | 12 X 7/8 - 9 | 2 X 1 | 17.00 | 4.92 | .56 | 1.125 | 1/4 X 1/4 | 1.00 | 5.25 |
| 14" | 350 | 3.62 | 11.68 | 16.03 | 2.25 | 12 X 1 - 8 | 2 X 1 1/8 | 18.75 | 4.92 | .56 | 1.375 | 5/16 X 5/16 | 1.00 | 5.25 |
| 16" | 400 | 4.00 | 13.78 | 16.73 | 3.00 | 16 X 1 - 8 | 2 X 1 1/8 | 21.25 | 6.50 | .81 | 1.875 | 3/8 X 1/2 | 1.88 | 6.50 |
| 18" | 450 | 4.50 | 14.76 | 17.72 | 3.00 | 16 X 1 1/8 - 8 | 4 X 1 1/8 - 8 | 22.75 | 6.50 | .81 | 1.875 | 3/8 X 1/2 | 1.88 | 6.50 |
| 20" | 500 | 5.00 | 16.43 | 18.94 | 3.00 | 20 X 1 1/8 - 8 | 4 X 1 1/8 - 8 | 25.00 | 6.50 | .81 | 2.125 | 1/2 X 1/2 | 2.00 | 6.50 |
| 24" | 600 | 6.06 | 19.37 | 23.23 | 4.00 | 20 X 1 1/4 - 8 | 4 X 1 1/4 - 8 | 29.50 | 6.50 | .81 | 2.555 | 3/4 X 1/2 | 2.50 | 11.02 |
| 30" | 750 | 7.51 | 24.24 | 26.90 | 5.33 | 28 X 1 1/4 - 8 | — | 36.00 | 10.00 | .69 | 3.14 | .866 x .788 | 3.00 | 11.25 |

ANSI 300 HIGH PERFORMANCE VALVES

| in | mm | A | B | C | D | E | E1 | F | G | H | I | J | K | L |
|-----|-----|------|-------|-------|------|----------------|---------------|-------|-------|-----|-------|-------------|------|-------|
| 2" | 50 | 1.69 | 3.94 | 5.78 | 1.25 | 8 X 5/8 - 11 | 8 X .69 | 5.00 | 2.76 | .37 | .500 | .375 | 1.25 | 4.15 |
| 2.5 | 65 | 1.84 | 4.06 | 6.49 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 5.88 | 2.76 | .37 | .625 | .438 | 1.25 | 4.15 |
| 3" | 80 | 1.88 | 4.37 | 6.77 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 6.62 | 2.76 | .37 | .625 | .438 | 1.25 | 4.15 |
| 4" | 100 | 2.12 | 4.80 | 6.98 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 7.88 | 2.76 | .37 | .625 | .438 | 1.25 | 4.15 |
| 5" | 125 | 2.31 | 6.38 | 8.39 | 1.25 | 8 X 3/4 - 10 | 2 X 7/8 | 9.25 | 2.76 | .37 | .750 | .500 | 1.25 | 4.15 |
| 6" | 150 | 2.31 | 7.75 | 9.53 | 1.25 | 12 X 3/4 - 10 | 2 X 7/8 | 10.62 | 2.76 | .37 | .750 | .500 | 1.25 | 4.15 |
| 8" | 200 | 2.88 | 8.91 | 11.42 | 2.00 | 12 X 7/8 - 9 | 2 X 1 | 13.00 | 4.02 | .44 | 1.125 | 1/4 X 1/4 | 2.00 | 5.12 |
| 10" | 250 | 3.25 | 9.88 | 12.32 | 2.25 | 16 X 1 - 8 | 4 X 1 - 8 | 15.25 | 4.92 | .56 | 1.375 | 5/16 X 5/16 | 1.00 | 5.25 |
| 12" | 300 | 3.62 | 11.00 | 13.90 | 3.00 | 16 X 1 1/8 - 8 | 4 X 1 1/8 - 8 | 17.75 | 4.92 | .56 | 1.625 | 3/8 X 3/8 | 1.00 | 5.25 |
| 14" | 350 | 4.62 | 12.57 | 15.95 | 3.00 | 20 X 1 1/8 - 8 | 4 X 1 1/8 - 8 | 20.25 | 6.50 | .81 | 1.875 | 1/2 X 3/8 | 2.00 | 6.50 |
| 16" | 400 | 5.25 | 15.83 | 18.31 | 3.00 | 20 X 1 1/4 - 8 | 4 X 1 1/4 - 8 | 22.50 | 6.50 | .81 | 1.875 | 1/2 X 3/8 | 2.00 | 6.50 |
| 18" | 450 | 5.88 | 16.81 | 19.29 | 4.33 | 24 X 1 1/4 - 8 | 4 X 1 1/4 - 8 | 24.75 | 10.00 | .75 | 2.555 | 3/4 X 1/2 | 1.25 | 11.02 |
| 20" | 500 | 6.30 | 17.72 | 22.44 | 4.33 | 24 X 1 1/4 - 8 | 4 X 1 1/4 - 8 | 27.00 | 10.00 | .75 | 2.555 | 3/4 X 1/2 | 1.25 | 11.02 |
| 24" | 600 | 7.12 | 21.65 | 24.92 | 5.71 | 24 X 1 1/2 - 8 | 4 X 1 1/2 - 8 | 32.00 | 10.00 | .75 | 3.142 | .866 X .788 | 1.25 | 11.02 |

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DIMENSIONAL DATA & WEIGHTS



WEIGHT (CL. 150) UNIT: POUNDS (LBS.)

| Valve Size | | WAFER (Bare Shaft) | | LUG (Bare Shaft) | | Manual | Actuator |
|------------|-----|--------------------|--------|------------------|--------|--------|-------------|
| Inch | mm | WCB | CF8(M) | WCB | CF8(M) | Lever | Worn Gear |
| 2" | 50 | 10 | 12 | 12 | 12.5 | 3.5 | 12 (24:1) |
| 2.5" | 65 | 12 | 13 | 15 | 16 | | |
| 3" | 80 | 14 | 15 | 18 | 18 | | |
| 4" | 100 | 17 | 18 | 29 | 31 | | |
| 5" | 125 | 23 | 25 | 36 | 38 | 4.9 | |
| 6" | 150 | 29 | 31 | 42 | 44 | | |
| 8" | 200 | 44 | 46 | 66 | 68 | - | 27 (30:1) |
| 10" | 250 | 71 | 73 | 102 | 104 | | 38 (50:1) |
| 12" | 300 | 93 | 97 | 146 | 148 | | 75 (80:1) |
| 14" | 350 | 128 | 143 | 199 | 201 | | 200 (320:1) |
| 16" | 400 | 187 | 203 | 300 | 309 | | |
| 18" | 450 | 218 | 240 | 335 | 346 | | |
| 20" | 500 | 333 | 344 | 408 | 426 | | |
| 24" | 600 | 545 | 554 | 650 | 675 | | |
| 30" | 750 | — | — | 1350 | 1380 | | |

*Flange up to 24 inch according to ANSI B16.5 class 150.
30 inch according to MSS SP-44 class 150.

WEIGHT (CL. 300) UNIT: POUNDS (LBS.)

| Valve Size | | WAFER (Bare Shaft) | | LUG (Bare Shaft) | | Manual | Actuator |
|------------|-----|--------------------|--------|------------------|--------|--------|-------------|
| Inch | mm | WCB | CF8(M) | WCB | CF8(M) | Lever | Worn Gear |
| 2" | 50 | 10 | 12 | 12 | 12.5 | 3.5 | 12 (24:1) |
| 2.5" | 65 | 12 | 13 | 15 | 16 | | |
| 3" | 80 | 14 | 15 | 18 | 18 | | |
| 4" | 100 | 17 | 18 | 29 | 31 | | |
| 5" | 125 | 23 | 25 | 36 | 38 | 4.9 | |
| 6" | 150 | 29 | 31 | 42 | 44 | | |
| 8" | 200 | 44 | 46 | 66 | 68 | - | 27 (30:1) |
| 10" | 250 | 71 | 73 | 102 | 104 | | 38 (50:1) |
| 12" | 300 | 93 | 97 | 146 | 148 | | 75 (80:1) |
| 14" | 350 | 265 | 271 | 378 | 385 | | 200 (320:1) |
| 16" | 400 | 385 | 392 | 488 | 498 | | |
| 18" | 450 | 523 | 533 | 720 | 733 | | |
| 20" | 500 | 644 | 654 | 855 | 870 | | |
| 24" | 600 | 1162 | 1187 | 1444 | 1472 | | |

*Flange up to 24 inch according to ANSI B16.5 class 300.

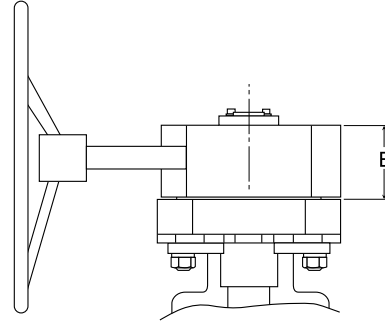
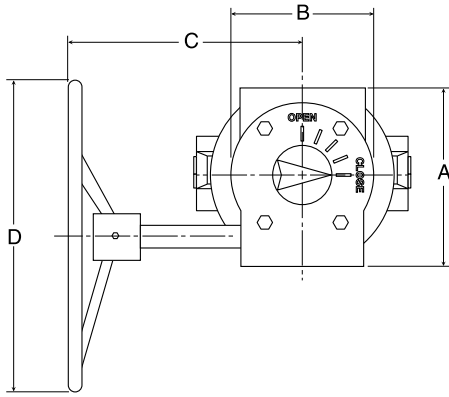
NIBCO® SURE SEAL® VALVE STANDARDS

| | | | |
|---------------|---|----------------|-------------------------------|
| ASME B16.10 | Valves - face to face dimensions | EPA METHOD 21 | Fugitive emission |
| ASME B16.34 | Valves - flanged and butt-welding ends | NACE MR-01-75 | |
| ASME B16.5 | Pipe flanges and flanged fittings | ISO 9001 Cert. | |
| ASME/FCI 70-2 | American national standard for control valve seat leakage | ISO 5211 | Top plate mounting dimensions |
| MSS SP68 | High pressure - offset seat butterfly valves | API 598 | Pressure testing |
| ISO 5752 | Metal valves for use in flanged pipe systems - face-to-face & center-to-face dimensions | MSS SP25 | Valve tagging and marking |
| API 609 | "Butterfly valves, lug-type and wafer-type" | MSS SP44 | Pipe flanges |
| MSS SP61 | Pressure testing | CRN | Canadian Registration Number |
| MSS SP67 | Low pressure butterfly valve | | |

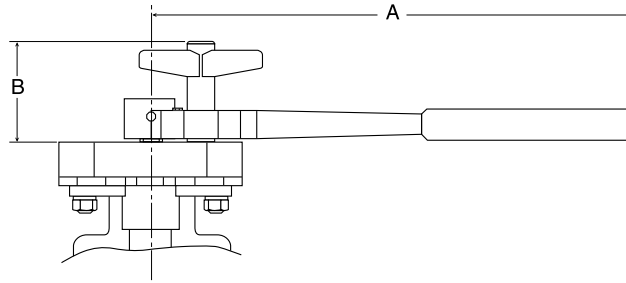
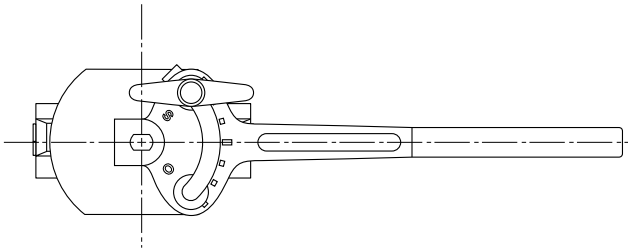
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GEAR AND HANDLE OPERATOR

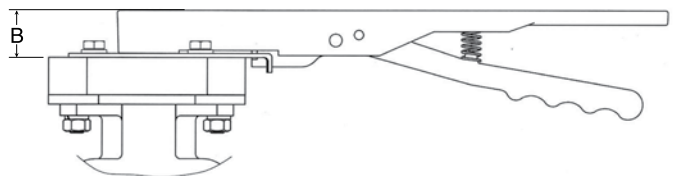
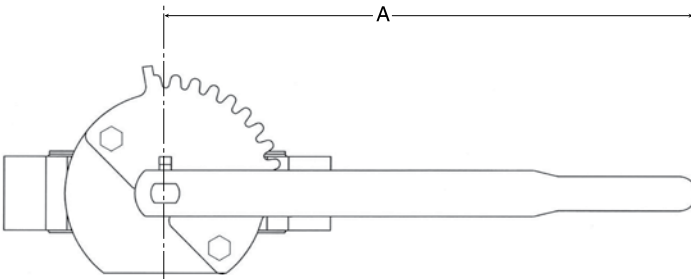
Gear Operator available for 2" - 30" sizes



Infinite Handle available for 2" - 8" sizes



10 Position Handle available for 2" - 6" sizes



| GEAR OPERATOR | | | | | | |
|---------------|---------|-------|-------|-------|-----------------|------|
| in | mm | A | B | C | D | E |
| 2"-6" | 50-150 | 5.07 | 4.00 | 5.70 | 8" | 2.65 |
| 8"-14" | 200-350 | 6.09 | 6.00 | 9.50 | 12" | 3.00 |
| 16"-20" | 400-500 | 7.80 | 6.70 | 9.00 | 12", 16" or 20" | 3.00 |
| 24" | 600 | 11.50 | 10.25 | 11.75 | 20" | 4.40 |
| 30" | 750 | 11.50 | 10.25 | 11.75 | 20" | 4.40 |

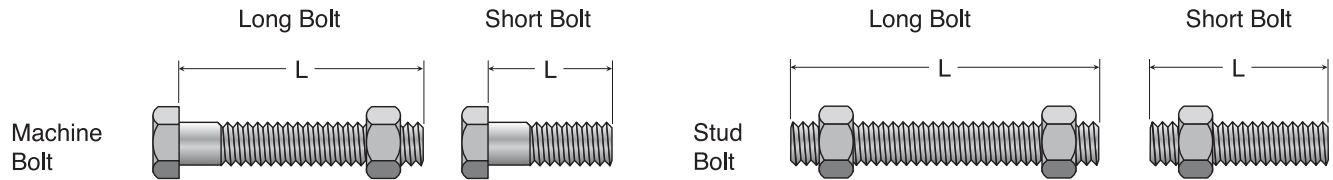
| INFINITE HANDLE | | | |
|-----------------|--------|------|------|
| in | mm | A | B |
| 2 | 50 | 11.6 | 2.88 |
| 2.5"-6" | 65-150 | 13.8 | 2.88 |
| 8" | 200 | 19.7 | 2.88 |

| 10 POSITION HANDLE | | | |
|--------------------|--------|-------|------|
| in | mm | A | B |
| 2"-6" | 50-150 | 13.75 | 1.14 |

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BOLTS FOR PIPING

WAFER TYPE



Unit: Inch

ANSI CLASS 150

| Size | | | Long Bolt | | | Short Bolt | | |
|------|-----|---------------|-----------|---------|--------|------------|---------|-------|
| | | | Qty. | Length | | Qty. | Length | |
| in | mm | Bolt Size | | Machine | Stud | | Machine | Stud |
| 2" | 50 | 5/8" - 11 unc | 4 | 4.625 | 5.375 | - | - | - |
| 2.5" | 65 | 5/8" - 11 unc | 4 | 5.000 | 5.750 | - | - | - |
| 3" | 80 | 5/8" - 11 unc | 4 | 5.125 | 6.000 | - | - | - |
| 4" | 100 | 5/8" - 11 unc | 8 | 5.375 | 6.125 | - | - | - |
| 5" | 125 | 3/4" - 10 unc | 8 | 5.625 | 6.750 | - | - | - |
| 6" | 150 | 3/4" - 10 unc | 8 | 5.750 | 6.875 | - | - | - |
| 8" | 200 | 3/4" - 10 unc | 8 | 6.375 | 7.375 | - | - | - |
| 10" | 250 | 7/8" - 9 unc | 12 | 6.875 | 8.125 | - | - | - |
| 12" | 300 | 7/8" - 9 unc | 12 | 7.500 | 8.750 | - | - | - |
| 14" | 350 | 1" - 8 unc | 12 | 8.375 | 9.875 | - | - | - |
| 16" | 400 | 1" - 8 unc | 16 | 8.875 | 10.250 | - | - | - |
| 18" | 450 | 1 1/8" - 8 un | 12 | 9.750 | 11.500 | 8 | 2.875 | 5.000 |
| 20" | 500 | 1 1/8" - 8 un | 16 | 10.500 | 12.250 | 8 | 2.750 | 4.750 |
| 24" | 600 | 1 1/4" - 8 un | 16 | 12.250 | 14.000 | 8 | 3.125 | 5.125 |

Unit: Inch

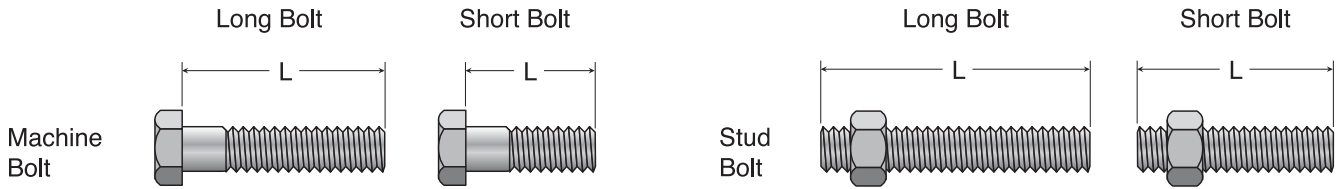
ANSI CLASS 300

| Size | | | Long Bolt | | | Short Bolt | | |
|------|-----|---------------|-----------|---------|--------|------------|---------|-------|
| | | | Qty. | Length | | Qty. | Length | |
| in | mm | Bolt Size | | Machine | Stud | | Machine | Stud |
| 2" | 50 | 5/8" - 11 unc | 8 | 4.750 | 5.750 | - | - | - |
| 2.5" | 65 | 3/4" - 10 unc | 8 | 5.375 | 6.375 | - | - | - |
| 3" | 80 | 3/4" - 10 unc | 8 | 5.750 | 8.750 | - | - | - |
| 4" | 100 | 3/4" - 10 unc | 8 | 6.175 | 7.375 | - | - | - |
| 5" | 125 | 3/4" - 10 unc | 8 | 6.500 | 7.375 | - | - | - |
| 6" | 150 | 3/4" - 10 unc | 12 | 6.750 | 7.875 | - | - | - |
| 8" | 200 | 7/8" - 9 unc | 12 | 7.875 | 9.125 | - | - | - |
| 10" | 250 | 1" - 8 unc | 12 | 8.875 | 10.500 | 8 | 2.750 | 4.250 |
| 12" | 300 | 1 1/8" - 8 un | 12 | 9.750 | 11.500 | 8 | 3.125 | 5.000 |
| 14" | 350 | 1 1/8" - 8 un | 16 | 10.500 | 12.000 | 8 | 3.250 | 4.750 |
| 16" | 400 | 1 1/4" - 8 un | 16 | 12.000 | 13.000 | 8 | 3.250 | 5.000 |
| 18" | 450 | 1 1/4" - 8 un | 20 | 13.000 | 14.000 | 8 | 3.500 | 5.000 |
| 20" | 500 | 1 1/4" - 8 un | 20 | 14.000 | 15.000 | 8 | 4.000 | 5.500 |
| 24" | 600 | 1 1/2" - 8 un | 20 | 15.000 | 16.500 | 8 | 4.250 | 6.000 |

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BOLTS FOR PIPING

LUGGED TYPE



Unit: Inch

ANSI CLASS 150

| Size | | | Long Bolt | | | Short Bolt | | |
|------|-----|---------------|-----------|---------|-------|------------|---------|-------|
| | | | Qty. | Length | | Qty. | Length | |
| in | mm | Bolt Size | | Machine | Stud | | Machine | Stud |
| 2" | 50 | 5/8" - 11 unc | 8 | 1.375 | 2.375 | — | — | — |
| 2.5" | 65 | 5/8" - 11 unc | 8 | 1.500 | 2.625 | — | — | — |
| 3" | 80 | 5/8" - 11 unc | 8 | 1.875 | 2.750 | — | — | — |
| 4" | 100 | 5/8" - 11 unc | 16 | 1.875 | 2.750 | — | — | — |
| 5" | 125 | 3/4" - 10 unc | 16 | 2.000 | 3.250 | — | — | — |
| 6" | 150 | 3/4" - 10 unc | 16 | 2.000 | 3.250 | — | — | — |
| 8" | 200 | 3/4" - 10 unc | 16 | 2.125 | 3.375 | — | — | — |
| 10" | 250 | 7/8" - 9 unc | 24 | 2.375 | 3.750 | — | — | — |
| 12" | 300 | 7/8" - 9 unc | 24 | 2.500 | 4.000 | — | — | — |
| 14" | 350 | 1" - 8 unc | 24 | 2.750 | 4.375 | — | — | — |
| 16" | 400 | 1" - 8 unc | 32 | 3.000 | 4.625 | — | — | — |
| 18" | 450 | 1 1/8" - 8 un | 32 | 3.750 | 5.000 | — | — | — |
| 20" | 500 | 1 1/8" - 8 un | 32 | 4.000 | 5.500 | 8 | 3.000 | 4.500 |
| 24" | 600 | 1 1/4" - 8 un | 32 | 4.500 | 6.000 | 8 | 3.125 | 5.000 |
| 30" | 750 | 1 1/4" - 8 un | 48 | 6.000 | 7.500 | 8 | 4.500 | 6.000 |

Unit: Inch

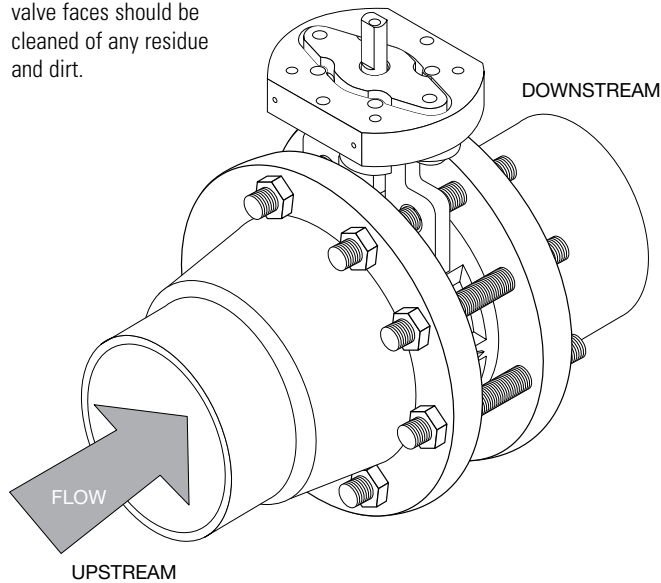
ANSI CLASS 300

| Size | | | Long Bolt | | | Short Bolt | | |
|------|-----|---------------|-----------|---------|-------|------------|---------|-------|
| | | | Qty. | Length | | Qty. | Length | |
| in | mm | Bolt Size | | Machine | Stud | | Machine | Stud |
| 2" | 50 | 5/8" - 11 unc | 16 | 1.500 | 2.375 | — | — | — |
| 2.5" | 65 | 3/4" - 10 unc | 16 | 1.750 | 2.625 | — | — | — |
| 3" | 80 | 3/4" - 10 unc | 16 | 1.875 | 2.750 | — | — | — |
| 4" | 100 | 3/4" - 10 unc | 16 | 2.250 | 3.250 | — | — | — |
| 5" | 125 | 3/4" - 10 unc | 16 | 2.250 | 3.250 | — | — | — |
| 6" | 150 | 3/4" - 10 unc | 24 | 2.500 | 3.500 | — | — | — |
| 8" | 200 | 7/8" - 9 unc | 24 | 3.000 | 4.375 | — | — | — |
| 10" | 250 | 1" - 8 unc | 32 | 3.375 | 4.750 | — | — | — |
| 12" | 300 | 1 1/8" - 8 un | 24 | 3.500 | 5.000 | 8 | 3.000 | 4.500 |
| 14" | 350 | 1 1/8" - 8 un | 32 | 4.500 | 6.000 | 8 | 3.250 | 4.750 |
| 16" | 400 | 1 1/4" - 8 un | 32 | 5.000 | 6.500 | 8 | 3.500 | 5.000 |
| 18" | 450 | 1 1/4" - 8 un | 40 | 5.000 | 6.500 | 8 | 3.500 | 5.000 |
| 20" | 500 | 1 1/4" - 8 un | 40 | 5.500 | 7.000 | 8 | 3.500 | 5.500 |
| 24" | 600 | 1 1/2" - 8 un | 40 | 6.000 | 8.000 | 8 | 4.000 | 6.000 |

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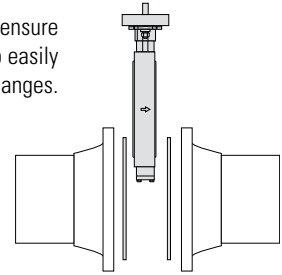
OPERATION AND INSTALLATION

Pipe flange faces and valve faces should be cleaned of any residue and dirt.

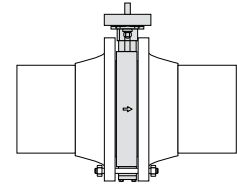


Allow enough gap to ensure the valve will slip easily between flanges.

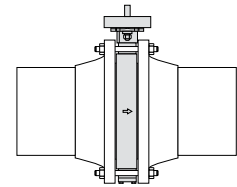
Center the flange gasket and valve.



Install valve in the closed position to prevent damage to the sealing areas.



Tighten all bolts to ensure a leak free seal.



OPERATION:

1. The valve can be fitted with various operating devices such as lever handle, manual gear, pneumatic actuator or Electric Actuator.
2. By rotating the disc counter-clockwise to open or clockwise to close, the flow inside the pipeline can be regulated or shutoff - whichever is desired.

MAINTENANCE:

Regular maintenance is not needed. Occasional adjustment of the stem packing may be required using the gland flange studs and bolts. It is important to adjust these nuts evenly and not to over tighten. Failure to do so could lead to premature stem packing wear and eventual valve failure. In most cases, should a stem packing leak occur during operation, the packing/gland flange bolts can be tightened to correct the leakage.

This is accomplished by turning the gland flange nuts clockwise one turn at a time until leakage is stopped. Should adjustment fail to correct leak, packing can be replaced as steps listed under "Packing Replacement," or a new valve can be purchased.

Dirt and debris left in pipeline from construction can damage the seat or disc edge and cause seat failure. Should seat failure occur, follow the steps listed under "Seat Replacement" to correct problem.

PREPARATION / MINOR REPAIR

1. Identify media in pipe. Protection against exposure to toxic and/or flammable liquids should be taken.
2. Depressurize pipeline and drain completely.
3. Make sure disc is in the closed position and remove valve and operator by reversing the installation procedures.

*Note: It is important that the valve operator always be attached to the valve while valve is under pressure.

PACKING REPLACEMENT (ONCE PIPELINE IS DEPRESSURIZED AND DRAINED.)

1. Remove operator and mounting hardware from top of valve.
2. Remove gland flange nuts and lock washers.
3. Remove gland flange, bolts and packing gland.
4. Remove old packing and replace with new.
5. Reverse steps reinstalling packing gland, gland flange, bolts nut and washers. Tighten nuts to below listed torque.

Gland Flange Bolt Torque

| in | mm | |
|---------|---------|-----------|
| 2"-6" | 50-150 | 4 ft lbs |
| 8"-14" | 200-350 | 8 ft lbs |
| 16"-24" | 400-600 | 11 ft lbs |
| 30" | 750 | 13 ft lbs |

6. Cycle valve several times with wrench (being careful to not damage stem) and then reinstall operator.

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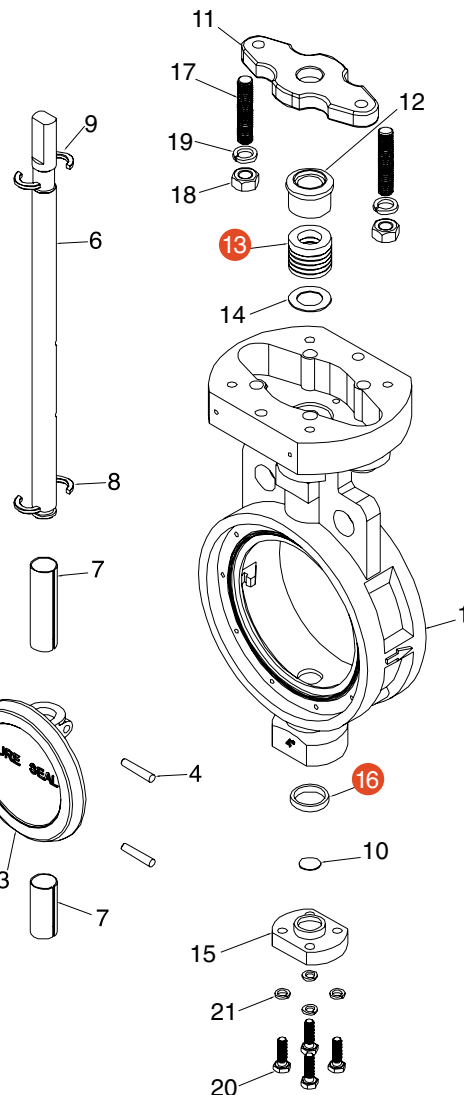
OPERATION AND INSTALLATION

SOFT SEAT PARTS LIST

| Part # | Designation | Material Description | ASTM # |
|--------|------------------|--|------------------------------|
| 1 | Valve Body | Carbon Steel | A216 Gr. WCB |
| | | 316 SS | A351 Gr. CF8M |
| 2 | Insert Ring | Carbon Steel | AISI 1045 |
| | | 316 SS | A276 Tp 316 |
| 3 | Disc | 316 SS | A351 Gr. CF8M |
| | | 316/ENP SS | A351 Gr. CF8M/ENP Plate |
| | | 316/STELLITE SS | A351 Gr. CF8M/Stellite Weld |
| 4 | Disc Pin | 316 SS | A276 Tp 316 |
| *5 | Soft Seat | PTFE | |
| | | RTFE | |
| | | Ultra High Molecular Weight Polyethylene | UHMWPE |
| 6 | Shaft | 630 SS | 17-4PH |
| | | 316 SS | A276 Tp 316 |
| 7 | Shaft Bearing | Black PTFE on 304 SS | Metalplast on A276 Tp 304 SS |
| 8 | Shaft Retainer | 316 SS | A276 Tp 316 |
| 9 | Blowout Retainer | 316 SS | A276 Tp 316 |
| 10 | Shaft Spacer | 316 SS | A276 Tp 316 |
| 11 | Gland Flange | 316 SS | A351 Gr. CF8M |
| 12 | Packing Gland | 316 SS | A276 Tp 316 |
| *13 | Gland Packing | PTFE | |
| | | GRAFOIL | GRAFOIL |
| 14 | Packing Retainer | 316 SS | A276 Tp 316 |
| 15 | Bottom Plug | 316 SS | A351 Gr. CF8M |
| *16 | Bottom Packing | PTFE | |
| | | GRAFOIL | GRAFOIL |
| 17 | Stud Bolt | 304 SS | 18-8 Stainless |
| 18 | Hex Nut | 304 SS | 18-8 Stainless |
| 19 | Spring Washer | 304 SS | 18-8 Stainless |
| 20 | Hex Bolt | 304 SS | 18-8 Stainless |
| 21 | Lock Washer | 304 SS | 18-8 Stainless |
| 22 | Socket Hd Screw | 304 SS | 18-8 Stainless |

SEAT REPLACEMENT

1. Place valve on bench with seat retainer ring facing up. Remove all retainer ring cap screws and lift ring from valve. (Cap screws can be threaded into the tapped holes located at the 12 o'clock and 6 o'clock positions to aid in retainer ring removal.)
2. Remove old seat and discard.
3. Clean seat cavity and retainer ring. Clean and polish disc edge to remove any scratches that may interfere with sealing against seat.
4. Attach seat to seat ring.
5. Install seat and seat ring. Install seat ring bolts and torque in a cross pattern to below listed torques.



Seat Ring Bolt Torque

| mm | |
|----|-----------|
| 4 | 4 ft lbs |
| 6 | 8 ft lbs |
| 8 | 11 ft lbs |
| 10 | 15 ft lbs |

OPERATION AND INSTALLATION

DESIGN DETAILS

The NIBCO® Sure Seal® High Performance Butterfly Valve is a double eccentric (double offset) design. This design minimizes torque and increases valve service life by decreasing seat to disc interference throughout the disc travel. Valves are available in wafer and lug design for ASME Class 150# (2"-30") and Class 300# (2"-24"). The valve is bi-directional by design but has a recommended flow direction which is clearly marked on the valve body.

PRE-INSTALLATION INSPECTION AND PREPARATION

Before installation of the valve into the pipeline, it is recommended to inspect the valve as follows:

1. Check for any damage that might have occurred during shipping.
2. *Review metal tag attached to valve to ensure design, pressure class, and material of construction meet required application.
3. Remove the protective covers from the face of the valve, and clean or remove any foreign particles from the machined face of the valve. This is the gasket sealing area and keeping it clean will ensure proper sealing after installation.
4. Cycle the valve from the closed to fully open position to ensure that travel stops are adjusted to provide complete travel. The valve operates counter-clockwise to open and clockwise to close. A disc stop is an integral part of the valve design to stop over travel in a clockwise rotation. This stop should not be used for closure adjustment. If the valve disc is in contact with the stop the disc has traveled beyond the optimal sealing position.
5. Close valve. The valve should be in the closed position during installation to prevent damage to the disc sealing surface.

*Note: The metal tag affixed to every NIBCO Sure Seal High Performance Butterfly Valve is equipped with the valve size, pressure class and materials of construction. A second metal tag with an individualized serial number is also attached to allow tracking of the valve with regard to pressure test, assembly date and material test reports.

PIPELINE INSPECTION AND PREPARATION

1. Remove any foreign materials such as rust, welding slag, or welding wire from the pipeline.
2. Clean the pipe flange to ensure good gasket contact
3. Check pipe and pipe flange I.D. to ensure adequate disc clearance.



WARNING:

Failure to properly clean the piping before start up can result in damage to the disc or seat. This could cause premature leakage and shorten the life expectancy of the valve.

INSTALLATION TOOLS

Installation tools are not included with the purchase of the NIBCO Sure Seal High Performance Butterfly Valve. The only required tool for installation of valve is a wrench suitable to tighten flange bolts and/or nuts. A hoist may be required for valve sizes exceeding manageable weights.

REQUIRED BOLTING

The tables on page 9 and 10 outline size, type and quantity of bolting recommended for the installation of valve. Bolting is not supplied with the purchase of valve. Recommendations are based on pipe flanges in accordance with ASME B16.5.

FLANGE GASKET

Valve is designed to work with fiber gaskets of 1/16" or less and metallic wound gaskets.

INSTALLATION

1. Ensure that disc is in the closed position.
2. Be sure to identify the direction of flow arrow on the valve and place in service accordingly. For optimal performance and to extend valve life, it is recommended to install the valve with the seat in the upstream position.
3. The valve can be installed in any position; horizontal, vertical or intermediate positions. For applications with solid particles present, it is recommended to install the valve with the stem in the horizontal position.
4. Align gasket with the valve and pipe flange. Gaskets are not supplied with valve. Valve is designed to work with fiber gaskets of 1/16" or less and metallic wound gaskets.
5. Install lower flange bolts without tightening to support valve between flanges.
6. Place remaining bolts through flanges and tighten in a diagonal or cross pattern to ensure uniform compression of gasket.



WARNING:

Failure to acknowledge the direction of flow in the pipeline and flow direction on the valve can shorten service life. Over torque of the flange bolts can lead to flange gasket damage and premature leakage.

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NOTES

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PHONE: 800.234.0227
FAX: 800.234.0557

TECHNICAL SERVICE
PHONE: 888.446.4226
FAX: 888.336.4226

INTERNATIONAL OFFICE
PHONE: +1/574.295.3327
FAX: +1/574.295.3455