

BUTTERFLY VALVE

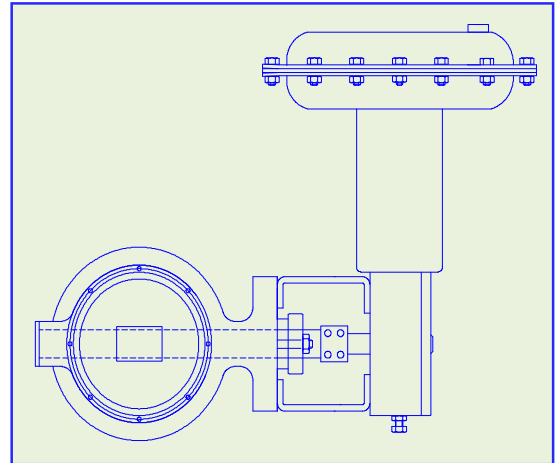
INTRODUCTION

Butterfly Valve design is the most common type of rotary valve and provides low weight to Cv Ratio Combined with simplicity of design and comparatively low cost. It is simple device to control or block the Flow, a single vane or wafer disc pivots in the valve Body and find wide application for throttling or two Position control in the chemical, paper & pulp, sugar Industries, cooling water circulation, water treatment Plants, compressed air, gas plant, flue gas desulphurization plants etc.

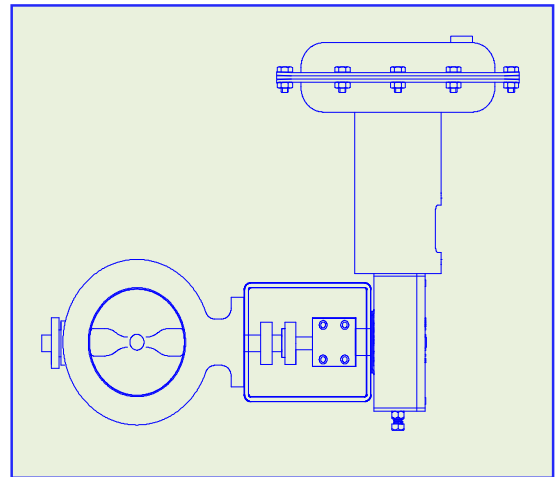
Butterfly Valves have been around industry for decades, performing well defined tasks and are Economic alternative to Gate valve, Ball valve, Plug valve etc.

SPECIFICATIONS

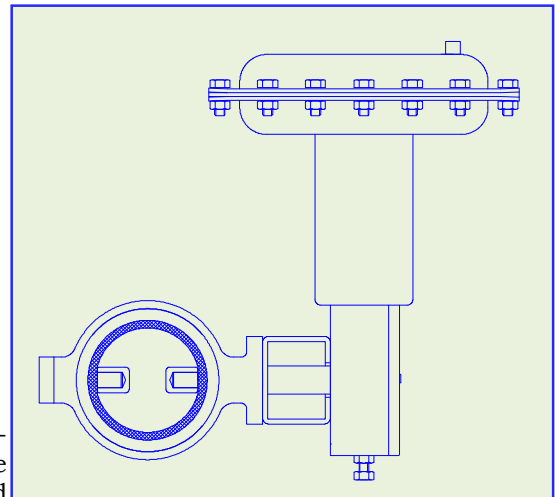
| | |
|---------------------------------|---|
| DESIGN | : Wafer |
| TYPE | : Soft Seated Offset- Series 230 Metal To Metal- Series 240 Sleeved- Series 250 |
| SIZE | : 50 to 900 mm (2" to 36") |
| RATING | : 150# |
| FLOW Characteristic. | : Throttling, On-Off. |
| MATERIAL Body | : Cast Iron, Carbon Steel, Stainless Steel etc. |
| Vane | : Carbon Steel ,Stainless Steel. |
| Body Sleeve | : Neoprene, Nitrile, Teflon, EPDM, Silicon, Butyl, Viton etc. |
| Soft Seat | : Teflon. |
| Gland Packing | : PTFE V Rings upto 180° C Grafoil upto 400° C. |
| ACTUATOR FORM | : Diaphragm, Rotary, Electric. |
| ACTUATOR TYPE | : Scotch |
| DIAPHRAGM | : Nitrile / Neoprene. |
| SPRING RANGE | : 3 – 15 Psig (0.2 – 1.0 Kg/cm ²) 6 – 30 Psig (0.4 – 2.0 Kg/cm ²) |
| AIR SUPPLY | : 20 – 35 Psig (1.4 – 2.5 Kg/cm ²) |
| AIR CONNECTION | : 1/ 4" or 1/ 2" NPT |
| ACCESSORIES OPTIONAL | : Valve Positioner – Pneumatic, Electro Pneumatic, Smart, Airset, Solenoid Valve, Air Lock, Volume Booster Limit Switches- Micro/Proximity with Dome Indicator.Top or Side Mounted Handwheel etc. |



**BUTTERFLY VALVE SOFT SEATED
DESIGN SERIES 230**



**BUTTERFLY VALVE METAL TO METAL
SERIES 240**



**BUTTERFLY VALVE SLEEVED
DESIGN SERIES 250**

BUILT IN RELIABILITY

DESIGN FEATURES

- >> Compact & simple design, low cost and maintenance free.
- >> Very high Cv to body size ratio.
- >> Reliable smooth operation and flow control with assured product quality.
- >> Bubble tight shut off, leakage Class – VI.
- >> Rangeability of 33:1 in the control range.
- >> Flow characteristic throttling for modulating duty.
- >> Choice of Replaceable Linear/Moulded Lining.

QUALITY AND PERFORMANCE GUARANTEE

- >> Produced with Quality Systems accredited to ISO 9001: 2008 by Bureau Veritas.
- >> Full material certification available for all major component Parts.
- >> Full guarantee on design and Performance.
- >> All testing are performed to the requirements of ANSI B16.34.

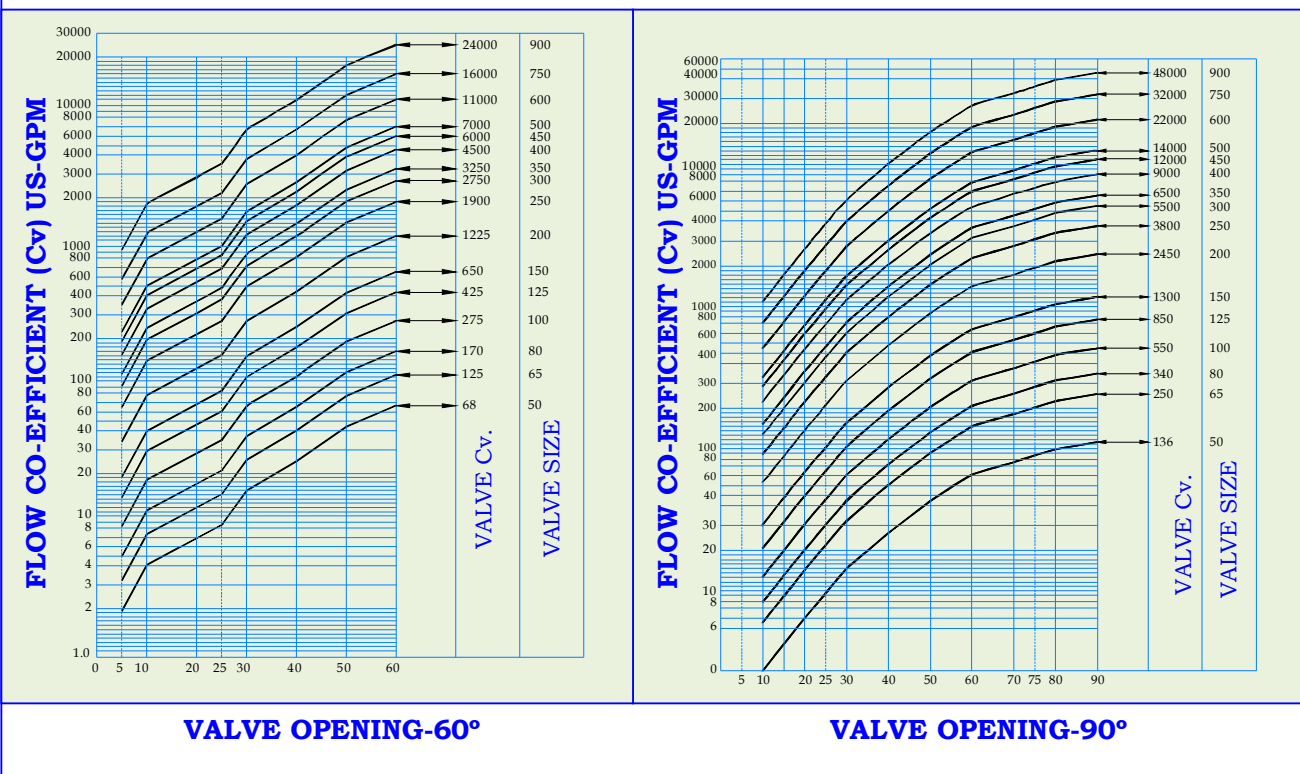
VALVE SIZING CO-EFFICIENT Cv RATING (Series.240 & 250)

| SIZE (mm) | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 750 | 900 | |
|-----------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| Cv AT FULL BORE | 60° | 68 | 125 | 170 | 275 | 425 | 650 | 1225 | 1900 | 2750 | 3250 | 4500 | 6000 | 7000 | 11000 | 16000 | 24000 |
| | 90° | 136 | 250 | 340 | 550 | 850 | 1300 | 2450 | 3800 | 5500 | 6500 | 9000 | 12000 | 14000 | 22000 | 32000 | 48000 |

VALVE SIZING CO-EFFICIENT Cv RATING (Series.230)

| SIZE (mm) | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 750 | 900 | |
|-----------------|-----|----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|-------|-------|-------|
| Cv AT FULL BORE | 90° | 68 | 125 | 170 | 275 | 425 | 650 | 1225 | 1900 | 2750 | 3250 | 4500 | 6000 | 7000 | 11000 | 16000 | 24000 |

DEGREE OF OPENING Vs FLOW CO-EFFICIENT

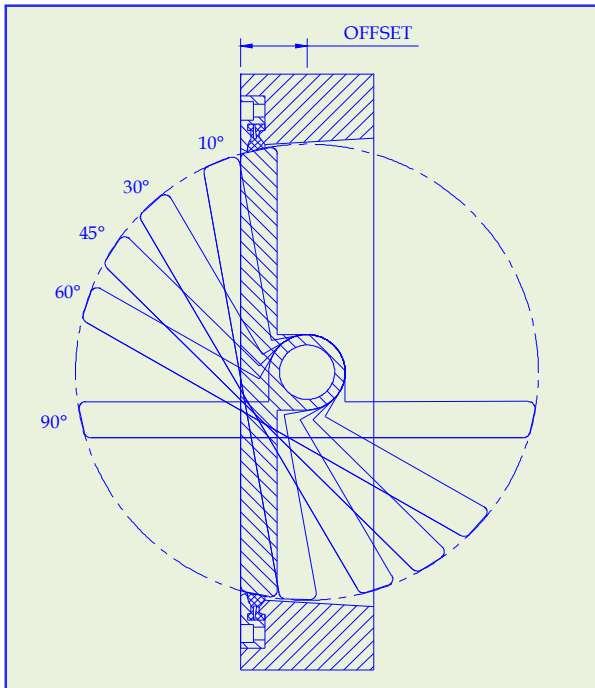


TEMPERATURE RATINGS FOR UNLINED BUTTERFLY VALVES

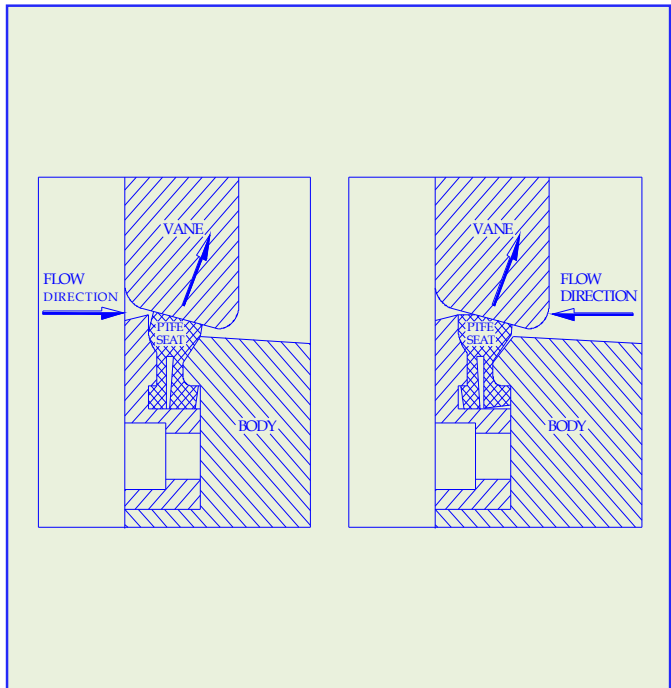
| BODY MATERIAL | USEFUL TEMPERATURE RATING |
|---|---------------------------|
| Cast Iron (A - 126 Class B) | -25° to 200°C |
| Steel (Carbon Steel, WCB - 28°C, LCB -45°C) | -25° to 400°C |
| Stainless Steel (CF8, CF8M) | -25° to 830°C |

TEMPERATURE RATING FOR SLEEVED BUTTERFLY VALVES

| ELASTOMER | TEMPERATURE LIMITS (°C) | | SERVICE |
|--------------------------|-------------------------|------------|---|
| | LOW LIMIT | HIGH LIMIT | |
| Natural Rubber | -28 | 70 | Air, Water. |
| Neoprene | -17 | 80 | Air, Water, Freon 12, 114. |
| Nitrile (Buna N, Hycar) | -12 | 80 | Freon 11, 12, 13, Air, Water, Alcohols, Aromatic hydrocarbon. |
| Hypalon | -9 | 105 | Acids, Alkalis. |
| EDPM | -35 | 120 | Acids, Alkalis, Steam. |
| Butyl | -23 | 150 | Acids, Alkalis, Steam, Alcohols. |
| Viton | -6 | 200 | Aromatic, Degresed, High Temp, Air and Gas. |
| Silicon | -60 | 225 | High Temperature Air. |



OFFSET DESIGN INDICATING POSITIONS OF VALVE OPENING



SEALING DESIGN IN BOTH FLOW DIRECTIONS

BUILT IN RELIABILITY

VALVE SIZING AND ACTUATOR SELECTION FOR BUTTERFLY VALVE

| METAL TO METAL- SER 240 | | | | Torque Required at α° $T\alpha^\circ = A \times \Delta P\alpha^\circ + B$ | | | | Maximum Allowable Torque for 304/316 Shaft | SHAFT DIA | |
|-------------------------|-----|-------------|-------|--|--------|--------|-----|--|-----------|----|
| | | | | A | | | B | | | |
| VALVE SIZE | | Cv in USGPM | | | | | | | | |
| INCH | MM | 60° | 90° | 0° | 60° | 90° | | IN-LB | INCH | MM |
| 2 | 50 | 65 | 130 | 0.2 | 1 | 2.75 | 36 | 225 | 1/2 | 14 |
| 2.1/2 | 65 | 120 | 240 | 0.3 | 1.86 | 5.26 | 36 | 225 | 1/2 | 14 |
| 3 | 80 | 160 | 320 | 0.44 | 3.14 | 9.04 | 36 | 225 | 1/2 | 14 |
| 4 | 100 | 280 | 560 | 1 | 7.4 | 21.4 | 50 | 430 | 5/8 | 16 |
| 5 | 125 | 430 | 860 | 1.56 | 14.06 | 41.36 | 50 | 430 | 5/8 | 16 |
| 6 | 150 | 640 | 1280 | 2.63 | 24.13 | 71.63 | 65 | 745 | 3/4 | 20 |
| 8 | 200 | 1200 | 2400 | 6.23 | 57.23 | 169.23 | 100 | 1764 | 3/4 | 20 |
| 10 | 250 | 1850 | 3700 | 9.81 | 109.81 | 329.81 | 100 | 1764 | 3/4 | 20 |
| 12 | 300 | 2700 | 5400 | 14.4 | 187.4 | 562.4 | 100 | 1764 | 1 | 25 |
| 14 | 350 | 3300 | 6600 | 27 | 272 | 790 | 184 | 3438 | 1 | 25 |
| 16 | 400 | 4400 | 8800 | 35.3 | 405.3 | 1195.3 | 184 | 3438 | 1 | 25 |
| 18 | 450 | 6250 | 12500 | 52.7 | 587.7 | 1762.7 | 232 | 5508 | 1.1/4 | 32 |
| 20 | 500 | 6900 | 13800 | 64.4 | 784.4 | 2374.4 | 235 | 5508 | 1.1/4 | 32 |
| 24 | 600 | 10000 | 20000 | 108 | 1368 | 4158 | 282 | 14130 | 1.1/2 | 38 |
| 30 | 750 | 16300 | 32600 | 212 | 2732 | 8262 | 396 | 26640 | 1.1/2 | 38 |
| 36 | 900 | 24200 | 48400 | 300 | 4580 | 14000 | 396 | 26640 | 2.1/2 | 63 |

| SOFT SEATED/ SLEEVED Series-230 & 250 | | | | Torque Required at α° $T\alpha^\circ = A \times \Delta P\alpha^\circ + B$ | | | | | Maximum Allowable Torque for 304/316 Shaft | SHAFT DIA | |
|--|-----|-------------|------|--|-------|--------|-----|---------|--|-----------|----|
| VALVE SIZE | | Cv in USGPM | | A | | | B | | | | |
| INCH | MM | 60° | 90° | 0° | 60° | 90° | 0° | 10°-90° | IN-LB | INCH | MM |
| 2 | 50 | 65 | 130 | 0.2 | 1 | 2.75 | 75 | 36 | 225 | 1/2 | 14 |
| 2.1/2 | 65 | 120 | 240 | 0.3 | 1.86 | 5.26 | 75 | 36 | 225 | 5/8 | 16 |
| 3 | 80 | 160 | 320 | 0.44 | 3.14 | 9.04 | 75 | 36 | 225 | 5/8 | 16 |
| 4 | 100 | 280 | 560 | 1 | 7.4 | 21.4 | 100 | 50 | 430 | 5/8 | 16 |
| 5 | 125 | 430 | 860 | 1.88 | 14.38 | 41.68 | 120 | 65 | 745 | 5/8 | 16 |
| 6 | 150 | 640 | 1280 | 3.5 | 25 | 72.5 | 180 | 100 | 1764 | 3/4 | 20 |
| 8 | 200 | 1200 | 2400 | 7.83 | 58.83 | 170.83 | 250 | 140 | 1764 | 1 | 25 |
| 10 | 250 | 1850 | 3700 | 14.7 | 114.7 | 334.7 | 320 | 184 | 3440 | 1.1/4 | 32 |
| 12 | 300 | 2700 | 5400 | 21.6 | 194.6 | 569.6 | 320 | 184 | 5500 | 1.1/4 | 32 |
| 14 | 350 | 3300 | 6600 | 36 | 281 | 799 | 480 | 282 | 9500 | 1.1/4 | 32 |
| 16 | 400 | 4400 | 8800 | 47 | 417 | 1207 | 480 | 282 | 14130 | 1.1/4 | 32 |

AVAILABLE TORQUE FOR 90° ACTUATOR (Lbs-in)

| Actuator | Actuator Mode | Spring Range (Kg/cm ²) | C/C | Torque |
|----------|----------------|-------------------------------------|------|--------|
| 55 | PDS - 055-90° | 0.2 to 1.0 | 33 | 183 |
| 95 | PDS - 095-90° | 0.2 to 1.0 | 33 | 316 |
| 140 | PDS - 140-90° | 0.2 to 1.0 | 49 | 691 |
| 140 | PDS - 140G-90° | 0.2 to 1.0 | 68.5 | 966 |
| 300 | PDS - 140-90° | 0.2 to 1.0 | 77.5 | 2343 |

AVAILABLE TORQUE FOR 60° ACTUATOR (Lbs-in)

| Actuator | Actuator Mode | Spring Range (Kg/cm ²) | C/C | Torque |
|----------|----------------|-------------------------------------|-------|--------|
| 55 | PDS - 055-60° | 0.2 to 1.0 | 45.5 | 252 |
| 95 | PDS - 095-60° | 0.2 to 1.0 | 45.5 | 436 |
| 140 | PDS - 140-60° | 0.2 to 1.0 | 68.5 | 966 |
| 140 | PDS - 140G-60° | 0.2 to 1.0 | 96.5 | 1361 |
| 300 | PDS - 140-60° | 0.2 to 1.0 | 105.5 | 3189 |

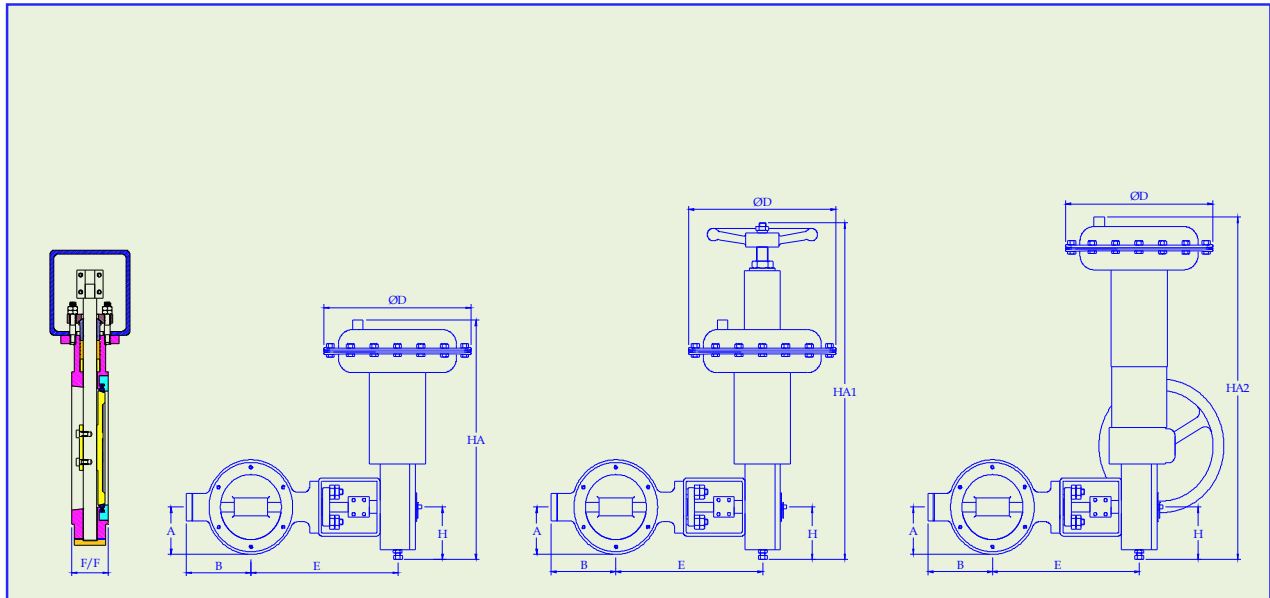
NOTE:- For spring range other than 0.2 - 1.0 kg/cm² multiply the Torque values by following factors.

| Spring Range (Kg/cm ²) |
|-------------------------------------|
| 0.4 to 1.2 |
| 0.6 to 1.4 |
| 0.8 to 1.6 |

| Multiple Factor |
|-----------------|
| 2 |
| 3 |
| 4 |

BUILT IN RELIABILITY

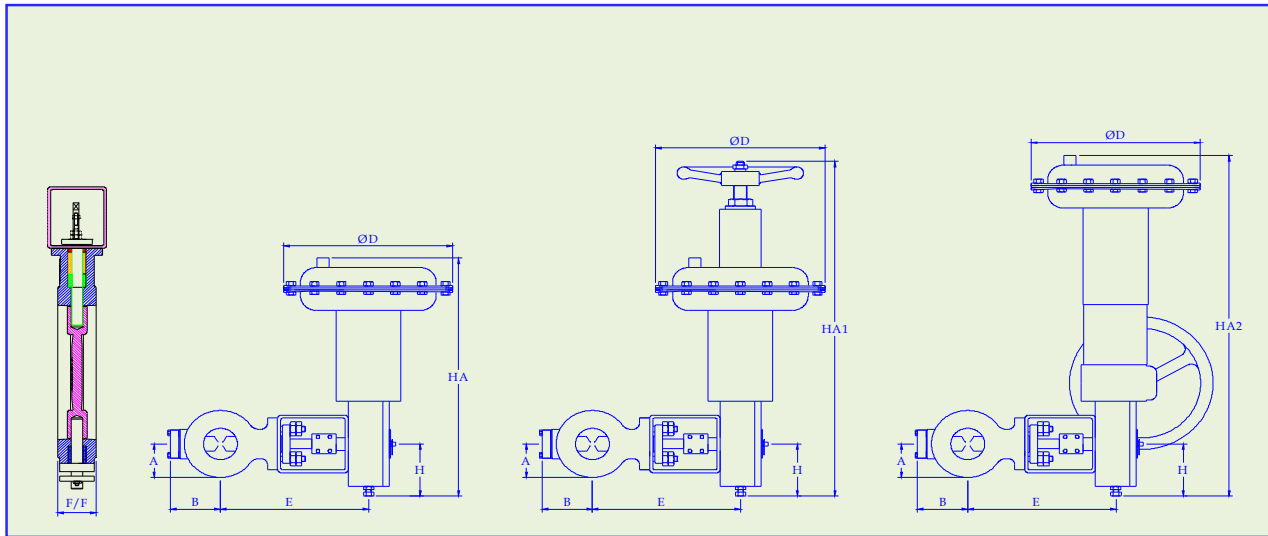
DIMENSION OF SOFT SEATED BUTTERFLY VALVE (SERIES-230)



| VALVE SIZE | ACTUATOR MODEL | F / F | A | B | E | D | H | HA STD | HA1 TMH | HA2 SMT |
|------------|----------------|-------|-----|-----|-----|-----|-----|--------|---------|---------|
| 50 | PDS-055-90° | 43 | 50 | 78 | 260 | 286 | 110 | 432 | 639 | 635 |
| 65 | PDS-055-90° | 46 | 58 | 91 | 280 | 286 | 110 | 432 | 639 | 635 |
| 80 | PDS-055-90° | 46 | 64 | 100 | 283 | 286 | 110 | 432 | 639 | 635 |
| 100 | PDS-055-90° | 47 | 80 | 111 | 298 | 286 | 110 | 432 | 639 | 635 |
| 150 | PDS-055-90° | 56 | 108 | 133 | 318 | 286 | 110 | 432 | 639 | 635 |
| 200 | PDS-095-90° | 69 | 135 | 171 | 381 | 371 | 110 | 466 | 673 | 670 |
| 250 | PDS-140-90° | 80 | 162 | 226 | 441 | 443 | 160 | 657 | 944 | 907 |
| 300 | PDS-140-90° | 82 | 191 | 241 | 497 | 443 | 160 | 657 | 944 | 907 |
| 350 | PDS-140G-90° | 92 | 207 | 281 | 537 | 443 | 170 | 667 | 954 | 917 |
| 400 | PDS-140G-90° | 102 | 235 | 306 | 567 | 443 | 170 | 667 | 954 | 917 |

BUILT IN RELIABILITY

DIMENSION OF METAL TO METAL BUTTERFLY VALVE (SERIES-240)

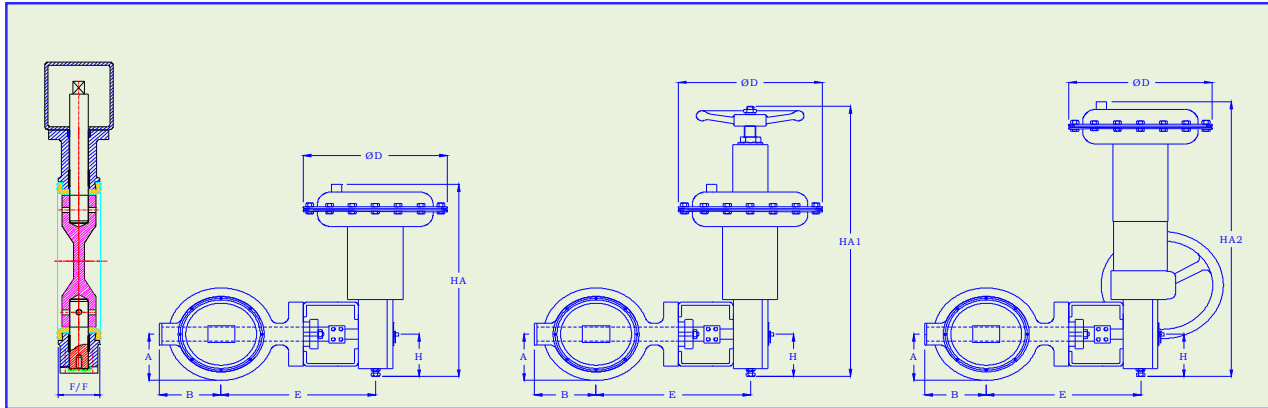


| VALVE SIZE | ACTUATOR MODEL | F / F | A | B | E | D | H | HA STD | HA1 TMH | HA2 SMT |
|------------|----------------|-------|-----|-----|-----|-----|-----|--------|---------|---------|
| 50 | PDS-030-90° | 45 | 50 | 90 | 250 | 218 | 85 | 328 | 488 | --- |
| 65 | PDS-030-90° | 47 | 56 | 97 | 280 | 218 | 85 | 328 | 488 | --- |
| 80 | PDS-030-90° | 47 | 65 | 111 | 280 | 218 | 85 | 328 | 488 | --- |
| 100 | PDS-030-90° | 47 | 80 | 113 | 305 | 218 | 85 | 328 | 488 | --- |
| 150 | PDS-055-90° | 56 | 108 | 153 | 360 | 286 | 100 | 432 | 639 | 635 |
| 200 | PDS-055-90° | 60 | 135 | 179 | 415 | 286 | 100 | 432 | 639 | 635 |
| 250 | PDS-095-90° | 65 | 162 | 206 | 450 | 371 | 100 | 466 | 673 | 670 |
| 300 | PDS-095-90° | 70 | 191 | 234 | 505 | 371 | 100 | 466 | 673 | 670 |
| 350 | PDS-140-90° | 89 | 207 | 257 | 560 | 443 | 160 | 657 | 944 | 907 |
| 400 | PDS-140-90° | 105 | 235 | 286 | 610 | 443 | 160 | 657 | 944 | 907 |
| 450 | PDS-140-90° | 110 | 270 | 340 | 650 | 443 | 160 | 657 | 944 | 907 |
| 500 | PDS-140G-90° | 140 | 295 | 445 | 675 | 443 | 170 | 667 | 954 | 917 |

| VALVE SIZE | ACTUATOR MODEL | F / F | A | B | E | D | H | HA STD | HA1 TMH | HA2 SMT |
|------------|----------------|-------|-----|-----|-----|-----|-----|--------|---------|---------|
| 50 | PDS-055-60° | 45 | 50 | 90 | 250 | 286 | 110 | 469 | 676 | 672 |
| 65 | PDS-055-60° | 47 | 56 | 97 | 280 | 286 | 110 | 469 | 676 | 672 |
| 80 | PDS-055-60° | 47 | 65 | 111 | 280 | 286 | 110 | 469 | 676 | 672 |
| 100 | PDS-055-60° | 47 | 80 | 113 | 305 | 286 | 110 | 469 | 676 | 672 |
| 150 | PDS-055-60° | 56 | 108 | 153 | 360 | 286 | 110 | 469 | 673 | 672 |
| 200 | PDS-095-60° | 60 | 135 | 179 | 415 | 371 | 110 | 503 | 710 | 702 |
| 250 | PDS-095-60° | 65 | 162 | 206 | 450 | 371 | 110 | 503 | 710 | 702 |
| 300 | PDS-140-60° | 70 | 191 | 234 | 505 | 443 | 160 | 702 | 989 | 952 |
| 350 | PDS-140-60° | 89 | 207 | 257 | 560 | 443 | 160 | 702 | 989 | 952 |
| 400 | PDS-140-60° | 105 | 235 | 286 | 615 | 443 | 160 | 702 | 989 | 952 |
| 450 | PDS-140G-60° | 110 | 270 | 340 | 655 | 443 | 180 | 722 | 1009 | 972 |
| 500 | PDS-140G60° | 140 | 295 | 445 | 675 | 443 | 180 | 722 | 1009 | 972 |

BUILT IN RELIABILITY

DIMENSION OF SLEEVED TYPE BUTTERFLY VALVE (SERIES-250)



| VALVE SIZE | ACTUATOR MODEL | F/F | A | B | E | D | H | HA STD | HA1 TMH | HA2 SMT |
|------------|----------------|-----|-----|-----|-----|-----|-----|--------|---------|---------|
| 40 | PDS-030-90° | 33 | 40 | 80 | 259 | 218 | 85 | 328 | 488 | --- |
| 50 | PDS-030-90° | 43 | 46 | 80 | 268 | 218 | 85 | 432 | 488 | --- |
| 65 | PDS-055-90° | 46 | 54 | 87 | 278 | 286 | 100 | 432 | 639 | 635 |
| 80 | PDS-055-90° | 46 | 62 | 96 | 285 | 286 | 100 | 432 | 639 | 635 |
| 100 | PDS-055-90° | 52 | 76 | 110 | 303 | 286 | 100 | 432 | 639 | 635 |
| 150 | PDS-055-90° | 56 | 105 | 146 | 331 | 286 | 100 | 432 | 639 | 635 |
| 200 | PDS-095-90° | 60 | 128 | 171 | 380 | 371 | 100 | 466 | 673 | 670 |
| 250 | PDS-140-90° | 68 | 156 | 210 | 434 | 443 | 160 | 657 | 944 | 907 |
| 300 | PDS-150-90° | 78 | 184 | 235 | 459 | 443 | 170 | 667 | 954 | 917 |
| 350 | PDS-150-90° | 78 | 200 | 272 | 500 | 443 | 170 | 667 | 954 | 917 |

| VALVE SIZE | ACTUATOR MODEL | F/F | A | B | E | D | H | HA STD | HA1 TMH | HA2 SMT |
|------------|----------------|-----|-----|-----|-----|-----|-----|--------|---------|---------|
| 50 | PDS-055-60° | 43 | 46 | 80 | 268 | 286 | 110 | 469 | 676 | 672 |
| 65 | PDS-055-60° | 46 | 54 | 87 | 278 | 286 | 110 | 469 | 676 | 672 |
| 80 | PDS-055-60° | 46 | 62 | 96 | 285 | 286 | 110 | 469 | 676 | 672 |
| 100 | PDS-055-60° | 52 | 76 | 110 | 303 | 286 | 110 | 469 | 676 | 825 |
| 150 | PDS-095-60° | 56 | 105 | 146 | 331 | 371 | 110 | 503 | 710 | 706 |
| 200 | PDS-140-60° | 60 | 128 | 171 | 380 | 443 | 160 | 702 | 989 | 952 |
| 250 | PDS-140-60° | 68 | 156 | 210 | 434 | 443 | 160 | 702 | 989 | 952 |
| 300 | PDS-150-60° | 78 | 184 | 235 | 459 | 443 | 170 | 722 | 1009 | 972 |
| 350 | PDS-300-60° | 78 | 200 | 272 | 500 | 616 | 190 | 768 | NA | 1073 |

The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.



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BUILT IN RELIABILITY

