# TrīO™ TRIPLE OFFSET VALVES

## Wafer, Lug, Double Flanged and Butt Weld Ends

DelVal®
Flow Controls

3-YEAR WARRANTY
3
ON DELVAL PRODUCTS

**delvalflow.com**
1-833-DELVAL1

# **STANDARD** FEATURES

## Quality & Performance

**DelVal Flow Controls** provides a wide range of quality products with the reliability you can count on. All TrīO™ Triple Offset Valves are manufactured in ISO 9001 certified facilities with a robust quality management system and according to ASME B16.34 and API 609 standards.

## Design Construction and Features

**1. ISO Top Flange**
The top flange is drilled as per ISO 5211 to accommodate direct mounting of a wide range of actuators.

**2. Stem**
Robust single piece stem, secured in stem bearings at drive and non-drive end of the body, supports the disc against the pressure exerted by the fluid and minimizes disc and stem deflection. Stem is positively retained with groove design and stem retainer to prevent accidental blow out.

**3. Stem Seal**
Stem seal assembly is live loaded with Belleville Springs. This ensures continuous compression of packing and sealing. Rocker shaped gland bridge compensates for uneven adjustment of gland bolts. Adjustable stem packing with multiple graphite rings seal on high surface finish of the stem and ensures tight sealing, suitable for fugitive emission control.

**4. Bearing**
Heavy duty bearings are designed to withstand high radial and axial stem loads due to pressure and wear.

**5. Disc**
Disc is designed with a profile to minimize resistance to flow and pressure drop across the valve and maximize flow capacity.

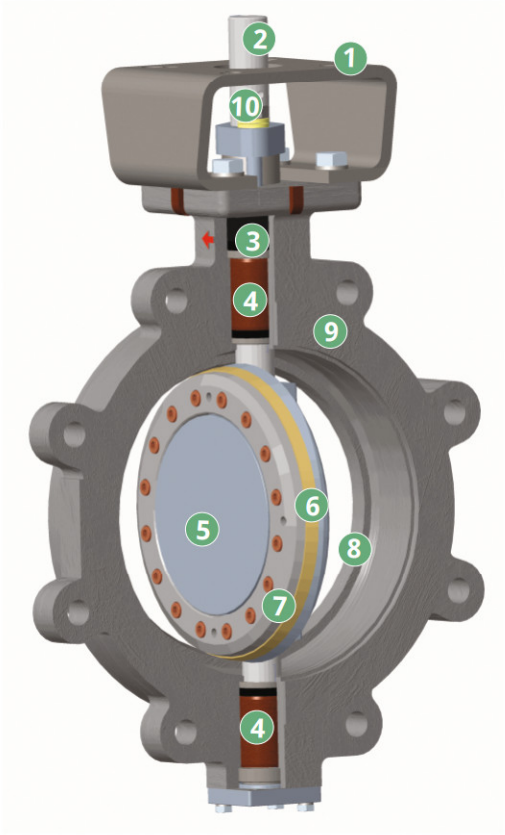
**6. Seal Ring**
Elliptical laminated seal ring is located on the disc. It is precision machined for bi-directional, zero leakage sealing. Alternating layers of metal and graphite flex generate a circumferential compressive force on the precision machined hard face seat on the body. Metal laminations in duplex stainless steel provide a rigid back up for the soft graphite laminations. This combination makes the seal suitable for zero leakage sealing at high and low temperatures alike. Seal ring is replaceable.

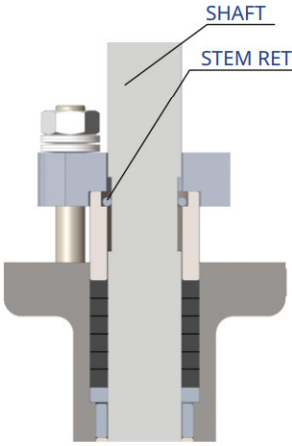
**7. Retainer Ring**
Seal ring is clamped rigidly on the disc face by the retainer ring. The retainer is made of identical metal as the disc and combines the disc, seal ring and retainer into a robust, composite unit for zero leakage, bi-directional sealing.

**8. Seat**
Seat is integral on body and is hard faced with Stellite® gr.21 or suitable alloy. Seat is precision machined to ensure perfect match with the seal ring. This (a) provides bubble tight seal, (b) excellent durability during seating and unseating, and (c) resistance to erosion during high velocity fluid flow.

**9. Body**
Body is of single-piece cast construction, with options of wafer, lug, double flanged short or long pattern, or butt weld ends. Face to face dimensions and pressure ratings are conforming to international standards.

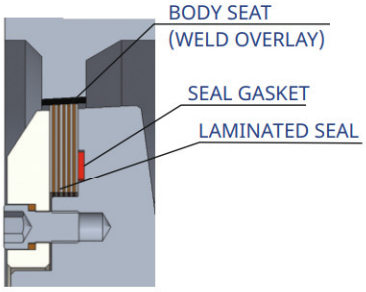
**10. External Position Indicator for Disc Position**
Disc position is indicated by a dimple on the shaft. When the dimple is in-line with flow axis, the disc is open.



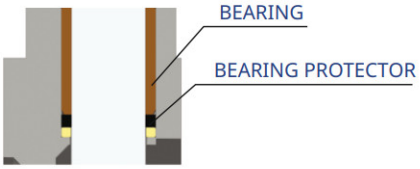




BLOW-OUT PROOF SHAFT

Valves are equipped with a shaft retainer at the top of the shaft to prevent movement of top portion of the shaft past the gland in case the shaft should break within the valve.




LAMINATED SEAL




BEARING PROTECTOR

Flexible graphite bearing protectors provide the highest level of protection to the bearings while extending service life.

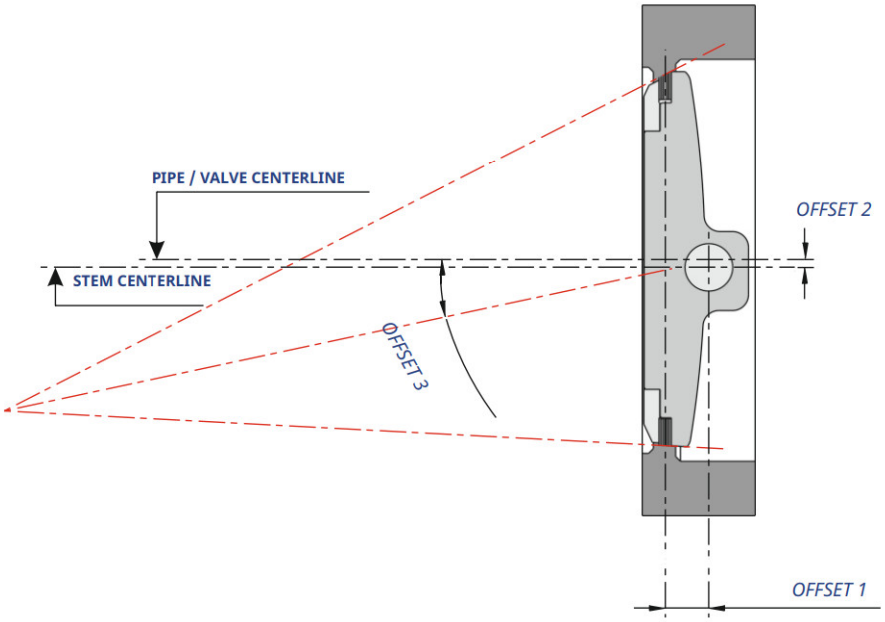
# PRINCIPLE OF **OPERATION**

DelVal® TrīO™ Triple Offset Valves provide bi-directional zero leakage. This geometry ensures that the disc seal contacts the body seat only at the final shut-off position without rubbing or galling, providing a torque generated resilient seat with sufficient “wedging” to ensure a uniform seal contact.

**Offset 1** : The shaft is located with an offset behind the sealing plane allowing complete sealing contact around the entire seat periphery.

**Offset 2** : The shaft axis is offset with respect to the pipe and disc centerline providing interference free opening and closing of the valve.

**Offset 3** : The seat cone axis is offset from the disc centerline to eliminate friction during opening and closing and to achieve uniform compressive sealing around the entire seat.




## Valve Configuration and Options

### Cryogenic
Extended stem and bonnets can be offered for low temperature and cryogenic applications. The design for extended stem and bonnet conforms to BS 6364.

### High Temperature
Valves are available with stem extensions and fins for high temperature applications.

### Steam Jackets
Steam jacketed valves are available for applications where the media tends to crystallize when cooled down.

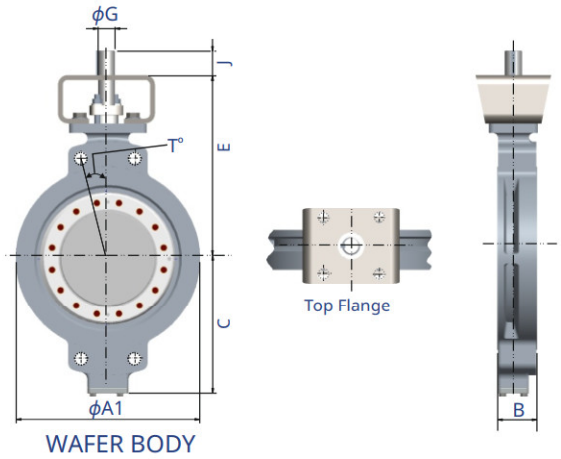
## Standards and Specifications

DelVal® TrīO™ Triple Offset Valves are designed and manufactured to meet the requirements of the following industry standards:

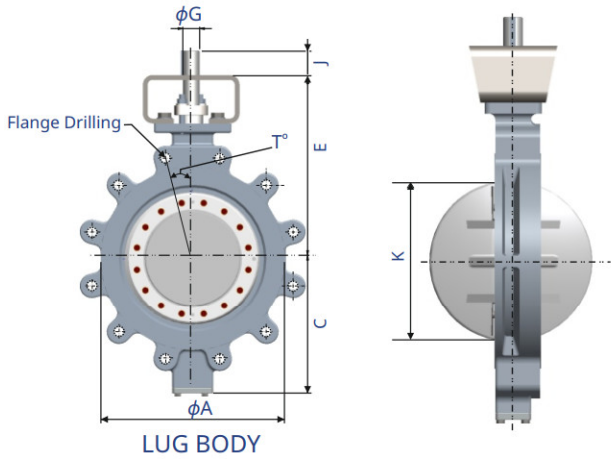
**Design:** API 609, ASME B16.34, BS EN 593, MSS SP-68
**Face to Face:** API 609, ISO 5752, BS EN 558, MSS SP-68
**Testing:** API 598, ISO 5208, EN 12266, MSS SP-68
**Pressure Temperature:** ASME B16.34
**Flange Accommodation:** ASME B16.5, ASME B16.47, BS EN 1092-1, AWWA C207
**Butt Weld Ends:** ASME B16.25
**NACE:** MR 0175 / ISO 15156

**Fire Safe Certified:** API 607
**Fugitive Emission (Optional):** ISO 15848, API 641
**CE Compliance:** 2014/68/EU (PED)
**Body Style:** Wafer, Lug, Double Flanged (short / long pattern), and Butt Weld End
**Rating:** Class 150 to class 900
**Temp Range:** -29°C to 425°C (Standard)
-196°C to 700°C (Optional)
**Size Range:** DN80 to DN2550

# DIMENSIONS AND WEIGHTS




WAFER BODY




LUG BODY

## DIMENSIONS (MM)

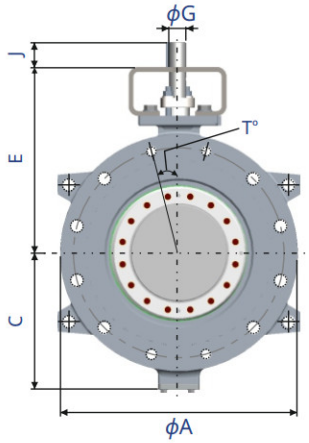
## ASME CLASS 150 WAFER/LUG (SERIES 4A/4B)

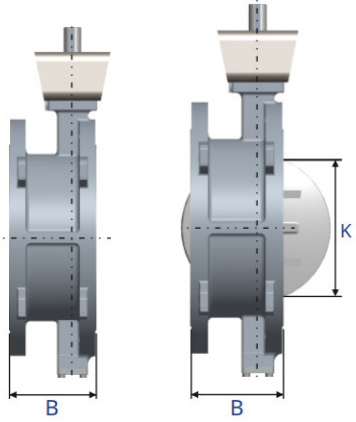
| Valve Size | | ØA | ØA1 | B | C | E | Top Flange Details | ØG | J | Key Size | K | End Flange Drilling | | | | | | App. Weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | PCD | | Wafer | | Lug | | | |
| Inch | DN | | | | | | Type | | | | | PCD | T° | Nos. | Hole Ø * /Tapping UNC/UN-2B | Nos. | Tapping UNC/ UN-2B | Wafer | Lug |
| 3 | 80 | 127 | 127 | 48 | 117 | 190 | F07/F10 | 16.0 | 32 | 5.00 x 5.00 | 64 | 152.4 | 45.0 | 2 | * 19.1 | 4 | 5/8-11 | 9 | 11 |
| 4 | 100 | 157 | 157 | 54 | 144 | 225 | F07/F10 | 20.0 | 32 | 6.00 x 6.00 | 86 | 190.5 | 22.5 | 2 | * 19.1 | 8 | 5/8-11 | 15 | 17 |
| 5 | 125 | 186 | 186 | 57 | 145 | 220 | F07/F10 | 22.0 | 32 | 6.00 x 6.00 | 114 | 215.9 | 22.5 | 2 | * 22.3 | 8 | 3/4-10 | 16 | 18 |
| 6 | 150 | 216 | 216 | 57 | 155 | 230 | F07/F10 | 22.0 | 32 | 6.00 x 6.00 | 142 | 241.3 | 22.5 | 2 | * 22.3 | 8 | 3/4-10 | 17 | 20 |
| 8 | 200 | 270 | 270 | 64 | 186 | 285 | F10/F12 | 25.0 | 32 | 8.00 x 7.00 | 186 | 298.5 | 22.5 | 2 | * 22.3 | 8 | 3/4-10 | 26 | 32 |
| 10 | 250 | 324 | 324 | 71 | 225 | 328 | F12 | 30.0 | 51 | 8.00 x 7.00 | 232 | 362.0 | 15.0 | 2 | * 25.4 | 12 | 7/8-9 | 45 | 52 |
| 12 | 300 | 381 | 381 | 81 | 280 | 380 | F12/16 | 35.0 | 51 | 10.00 x 8.00 | 280 | 431.8 | 15.0 | 4 | * 25.4 | 12 | 7/8-9 | 70 | 80 |
| 14 | 350 | 413 | 413 | 92 | 286 | 405 | F14 | 40.0 | 51 | 12.00 x 8.00 | 307 | 476.3 | 15.0 | 4 | * 28.6 | 12 | 1-8 | 90 | 110 |
| 16 | 400 | 470 | 470 | 102 | 335 | 525 | F14/16 | 50.0 | 64 | 14.00 x 9.00 | 352 | 539.8 | 11.3 | 4 | 1-8 | 16 | 1-8 | 164 | 190 |
| 18 | 450 | 534 | 534 | 114 | 349 | 525 | F16 | 55.0 | 64 | 16.00 x 10.00 | 417 | 577.9 | 11.3 | 4 | 1-1/8-8 | 16 | 1-1/8-8 | 190 | 230 |
| 20 | 500 | 584 | 584 | 127 | 394 | 580 | F25 | 60.0 | 102 | 18.00 x 11.00 | 449 | 635.0 | 9.0 | 4 | 1-1/8-8 | 20 | 1-1/8-8 | 240 | 270 |
| 24 | 600 | 692 | 692 | 154 | 450 | 645 | F25 | 70.0 | 102 | 20.00 x 12.00 | 554 | 749.3 | 9.0 | 4 | 1-1/4-8 | 20 | 1-1/4-8 | 450 | 489 |
| 28 | 700 | 800 | 762 | 165 | 537 | 770 | F30 | 76.2 | 102 | 19.05 x 19.05 | 620 | 863.6 | 6.4 | 4 | 1-1/4-8 | 28 | 1-1/4-8 | 572 | 660 |
| 30 | 750 | 857 | 807 | 190 | 597 | 830 | F30 | 76.2 | 102 | 19.05 x 19.05 | 687 | 914.4 | 6.4 | 4 | 1-1/4-8 | 28 | 1-1/4-8 | 935 | 1150 |
| 32 | 800 | 914 | 864 | 190 | 592 | 870 | F30 | 101.6 | 134 | 25.4 x 19.05 | 747 | 977.9 | 6.4 | 4 | 1-1/2-8 | 28 | 1-1/2-8 | 1050 | 1300 |
| 36 | 900 | 1015 | 1015 | 203 | 650 | 915 | F35 | 101.6 | 134 | 25.4 x 19.05 | 820 | 1085.8 | 5.6 | 4 | 1-1/2-8 | 32 | 1-1/2-8 | 1200 | 1500 |
| 38 | 950 | 1073 | 1073 | 251 | 720 | 996 | F35 | 120.0 | 150 | 32.00 x 18.00 | 880 | 1149.4 | 5.6 | 4 | 1-1/2-8 | 32 | 1-1/2-8 | 1422 | 1825 |
| 40 | 1000 | 1124 | 1124 | 251 | 771 | 1034 | F40 | 120.0 | 150 | 32.00 x 18.00 | 918 | 1200.2 | 5.0 | 4 | 1-1/2-8 | 36 | 1-1/2-8 | 1580 | 1950 |
| 42 | 1050 | 1194 | 1194 | 254 | 823 | 1110 | F40 | 120.0 | 150 | 32.00 x 18.00 | 971 | 1257.3 | 5.0 | 4 | 1-1/2-8 | 36 | 1-1/2-8 | 1849 | 2299 |
| 44 | 1100 | 1245 | 1245 | 276 | 875 | 1250 | F48 | 140.0 | 180 | 36.00 x 20.00 | 1040 | 1314.4 | 4.5 | 8 | 1-1/2-8 | 40 | 1-1/2-8 | 2000 | 2550 |
| 48 | 1200 | 1359 | 1359 | 276 | 875 | 1250 | F48 | 140.0 | 180 | 36.00 x 20.00 | 1116 | 1422.4 | 4.1 | 8 | 1-1/2-8 | 44 | 1-1/2-8 | 2250 | 2800 |
| 50 | 1250 | 1410 | 1410 | 318 | 920 | 1300 | - | - | - | - | - | 1479.6 | 4.1 | 8 | 1-3/4-8 | 44 | 1-3/4-8 | - | - |
| 52 | 1300 | 1461 | 1461 | 318 | 975 | 1375 | - | - | - | - | - | 1536.7 | 4.1 | 8 | 1-3/4-8 | 44 | 1-3/4-8 | - | - |
| 54 | 1350 | 1511 | 1511 | 390 | 1025 | 1450 | - | - | - | - | - | 1593.8 | 4.1 | 8 | 1-3/4-8 | 44 | 1-3/4-8 | - | - |
| 56 | 1400 | 1575 | 1575 | 390 | 1075 | 1550 | - | - | - | - | - | 1651.0 | 3.8 | 8 | 1-3/4-8 | 48 | 1-3/4-8 | - | - |
| 58 | 1450 | 1626 | 1626 | 440 | 1125 | 1625 | - | - | - | - | - | 1708.2 | 3.8 | 8 | 1-3/4-8 | 48 | 1-3/4-8 | - | - |
| 60 | 1500 | 1676 | 1676 | 440 | 1175 | 1604 | - | - | - | - | - | 1759.0 | 3.5 | 8 | 1-3/4-8 | 52 | 1-3/4-8 | - | - |
| 64 | 1600 | 1870 | 1870 | 440 | 1200 | 1775 | - | - | - | - | - | 1930.4 | 3.5 | 16 | 1-3/4-8 | 52 | 1-3/4-8 | - | - |
| 66 | 1650 | 1870 | 1870 | 490 | 1260 | 1825 | - | - | - | - | - | 1930.4 | 3.5 | 16 | 1-3/4-8 | 52 | 1-3/4-8 | - | - |
| 72 | 1800 | 2035 | 2035 | 490 | 1300 | 1950 | - | - | - | - | - | 2095.5 | 3.0 | 16 | 1-3/4-8 | 60 | 1-3/4-8 | - | - |
| 76 | 1900 | 2193 | 2193 | 540 | 1400 | 2000 | - | - | - | - | - | 2260.6 | 2.8 | 16 | 2-8 | 64 | 2-8 | - | - |
| 78 | 1950 | 2193 | 2193 | 540 | 1475 | 2050 | - | - | - | - | - | 2260.6 | 2.8 | 16 | 2-8 | 64 | 2-8 | - | - |
| 80 | 2000 | 2358 | 2358 | 540 | 1540 | 2100 | - | - | - | - | - | 2425.7 | 2.8 | 16 | 2-8 | 64 | 2-8 | - | - |
| 84 | 2100 | 2358 | 2358 | 610 | 1640 | 2250 | - | - | - | - | - | 2425.7 | 2.8 | 16 | 2-8 | 64 | 2-8 | - | - |

Note:

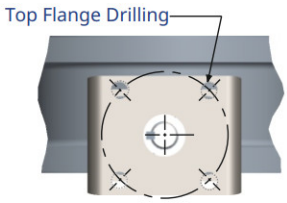
- Face to face dimensions up to 24": As per API 609 Cat. B to Face to face dimensions from 26" to 84": As per manufacturer standard.
- Flange dimensions up to 24": As per ASME B16.5. to Flange dimensions 26"to 60": As per ASME B16.47 series A.
- Flange dimensions 64" to 84": As per AWWA C 207 Class E.
- Please consult DelVal for other dimensions.

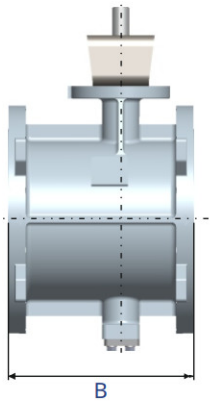
# DIMENSIONS AND WEIGHTS




SHORT PATTERN
DOUBLE FLANGED




LONG PATTERN
DOUBLE FLANGED

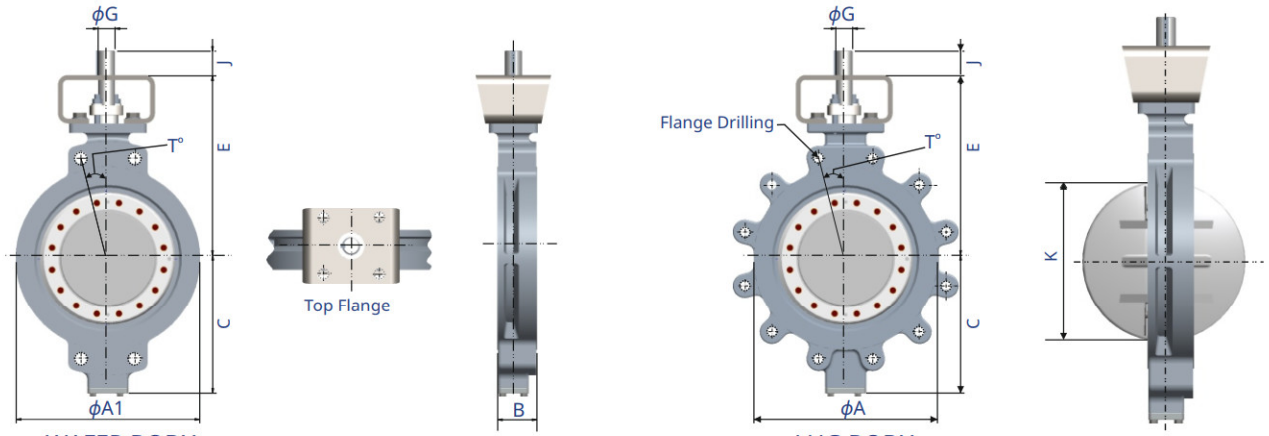
## DIMENSIONS (MM) ASME CLASS 150 SHORT PATTERN/LONG PATTERN (SERIES 4C/4P)

| Valve Size | | ØA | B | | C | E | Top Flange Details | ØG | J | Key Size | K (Short Pattern) | End Flange Drilling | | | | | | App. Weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Short Pattern | | | |
| Inch | DN | | SP | LP | | | Type | | | | | PCD | Total Nos. Holes | T° | HoleØ | No. of Tap | Tapping UNC/UN2B | DF (SP) | DF (LP) |
| 3 | 80 | 190 | 114 | 203 | 117 | 190 | F07/F10 | 16.0 | 32 | 5.00 x 5.00 | 64 | 152.4 | 4 | 45.00 | 19.05 | NA | 5/8-11 | 18 | 19 |
| 4 | 100 | 230 | 127 | 229 | 144 | 225 | F07/F10 | 20.0 | 32 | 6.00 x 6.00 | 86 | 190.5 | 8 | 22.50 | 19.05 | 4 | 5/8-11 | 28 | 30 |
| 5 | 125 | 254 | 140 | 267 | 145 | 220 | F07/F10 | 22.0 | 32 | 6.00 x 6.00 | 114 | 215.9 | 8 | 22.50 | 22.30 | NA | 3/4-10 | 28 | 30 |
| 6 | 150 | 280 | 140 | 267 | 155 | 230 | F07/F10 | 22.0 | 32 | 6.00 x 6.00 | 142 | 241.3 | 8 | 22.50 | 22.30 | NA | 3/4-10 | 38 | 42 |
| 8 | 200 | 345 | 152 | 292 | 186 | 285 | F10/F12 | 25.0 | 32 | 8.00 x 7.00 | 185 | 298.5 | 8 | 22.50 | 22.30 | NA | 3/4-10 | 55 | 60 |
| 10 | 250 | 405 | 165 | 330 | 225 | 328 | F12 | 30.0 | 51 | 8.00 x 7.00 | 232 | 362.0 | 12 | 15.00 | 25.40 | 4 | 7/8-9 | 90 | 100 |
| 12 | 300 | 485 | 178 | 356 | 280 | 380 | F12/F16 | 35.0 | 51 | 10.00 x 8.00 | 279 | 431.8 | 12 | 15.00 | 25.40 | 4 | 7/8-9 | 152 | 167 |
| 14 | 350 | 535 | 190 | 381 | 286 | 405 | F14 | 40.0 | 51 | 12.00 x 8.00 | 306 | 476.3 | 12 | 15.00 | 28.60 | 4 | 1-8 | 195 | 213 |
| 16 | 400 | 595 | 216 | 406 | 335 | 525 | F14/F16 | 50.0 | 64 | 14.00 x 9.00 | 351 | 539.8 | 16 | 11.25 | 28.60 | 4 | 1-8 | 270 | 295 |
| 18 | 450 | 635 | 222 | 432 | 349 | 525 | F16 | 55.0 | 64 | 16.00 x 10.00 | 416 | 577.9 | 16 | 11.25 | 31.75 | 4 | 1-1/8-8 | 295 | 328 |
| 20 | 500 | 700 | 229 | 457 | 394 | 580 | F25 | 60.0 | 102 | 18.00 x 11.00 | 449 | 635.0 | 20 | 9.00 | 31.75 | 4 | 1-1/8-8 | 425 | 468 |
| 24 | 600 | 815 | 267 | 508 | 450 | 645 | F25 | 70.0 | 102 | 20.00 x 12.00 | 553 | 749.3 | 20 | 9.00 | 35.00 | 4 | 1-1/4-8 | 601 | 662 |
| 28 | 700 | 927 | 292 | 610 | 537 | 770 | F30 | 76.2 | 102 | 19.05 x 19.05 | 620 | 863.6 | 28 | 6.43 | 35.00 | 4 | 1-1/4-8 | 873 | 977 |
| 30 | 750 | 984 | 318 | 610 | 597 | 830 | F30 | 76.2 | 102 | 19.05 x 19.05 | 686 | 914.4 | 28 | 6.43 | 35.00 | 4 | 1-1/4-8 | 1382 | 1590 |
| 32 | 800 | 1060 | 318 | 660 | 592 | 870 | F30 | 101.6 | 134 | 25.40 x 19.05 | 747 | 977.9 | 28 | 6.43 | 41.30 | 4 | 1-1/2-8 | 1563 | 1798 |
| 36 | 900 | 1168 | 330 | 711 | 650 | 915 | F35 | 101.6 | 134 | 25.40 x 19.05 | 819 | 1085.8 | 32 | 5.63 | 41.30 | 4 | 1-1/2-8 | 1878 | 2164 |
| 40 | 1000 | 1289 | 410 | - | 771 | 1034 | F40 | 120.0 | 150 | 32.00 x 18.00 | 917 | 1200.2 | 36 | 5.00 | 41.30 | 4 | 1-1/2-8 | 2435 | - |
| 42 | 1050 | 1346 | 410 | - | 823 | 1110 | F40 | 120.0 | 150 | 32.00 x 18.00 | 970 | 1257.3 | 36 | 5.00 | 41.30 | 4 | 1-1/2-8 | 2880 | - |
| 44 | 1100 | 1403 | 470 | - | 875 | 1250 | F48 | 140.0 | 180 | 36.00 x 20.00 | 1040 | 1314.4 | 40 | 4.50 | 41.30 | 8 | 1-1/2-8 | 3186 | - |
| 48 | 1200 | 1511 | 470 | - | 875 | 1250 | F48 | 140.0 | 180 | 36.00 x 20.00 | 1115 | 1422.4 | 44 | 4.09 | 41.30 | 8 | 1-1/2-8 | 3507 | - |
| 50 | 1250 | 1568 | 530 | - | 920 | 1300 | - | - | - | - | - | 1479.6 | 44 | 4.09 | 47.60 | 8 | 1-3/4-8 | - | - |
| 52 | 1300 | 1626 | 530 | - | 975 | 1375 | - | - | - | - | - | 1536.7 | 44 | 4.09 | 47.60 | 8 | 1-3/4-8 | - | - |
| 54 | 1350 | 1683 | 530 | - | 1025 | 1450 | - | - | - | - | - | 1593.8 | 44 | 4.09 | 47.60 | 8 | 1-3/4-8 | - | - |
| 56 | 1400 | 1746 | 530 | - | 1075 | 1550 | - | - | - | - | - | 1651.0 | 48 | 3.75 | 47.60 | 8 | 1-3/4-8 | - | - |
| 58 | 1450 | 1803 | 600 | - | 1125 | 1625 | - | - | - | - | - | 1708.2 | 48 | 3.75 | 47.60 | 8 | 1-3/4-8 | - | - |
| 60 | 1500 | 1854 | 600 | - | 1175 | 1604 | - | - | - | - | - | 1759.0 | 52 | 3.46 | 47.60 | 20 | 1-3/4-8 | - | - |
| 64 | 1600 | 2032 | 600 | - | 1200 | 1775 | - | - | - | - | - | 1930.4 | 52 | 3.46 | 47.60 | 16 | 1-3/4-8 | - | - |
| 66 | 1650 | 2032 | 457 | - | 1260 | 1825 | - | - | - | - | - | 1930.4 | 52 | 3.46 | 47.60 | 16 | 1-3/4-8 | - | - |
| 72 | 1800 | 2197 | 670 | - | 1300 | 1950 | - | - | - | - | - | 2095.5 | 60 | 3.00 | 47.60 | 16 | 1-3/4-8 | - | - |
| 76 | 1900 | 2362 | 760 | - | 1400 | 2000 | - | - | - | - | - | 2260.6 | 64 | 2.81 | 54.00 | 16 | 2-8 | - | - |
| 78 | 1950 | 2362 | 760 | - | 1475 | 2050 | - | - | - | - | - | 2260.6 | 64 | 2.81 | 54.00 | 16 | 2-8 | - | - |
| 80 | 2000 | 2534 | 760 | - | 1540 | 2100 | - | - | - | - | - | 2425.7 | 64 | 2.81 | 54.00 | 16 | 2-8 | - | - |
| 84 | 2100 | 2534 | 610 | - | 1640 | 2250 | - | - | - | - | - | 2425.7 | 64 | 2.81 | 54.00 | 16 | 2-8 | - | - |

Note:

- Face to face dimensions - Short pattern up to 48" & Long pattern up to 36": As per API 609 Cat. B.
- Face to face dimensions - Short pattern above 48" & Long pattern above 36": As per manufacturer standard.
- Flange dimensions up to 24": As per ASME B16.5.
- Flange dimensions 26"to 60": As per ASME B16.47 series A.
- Flange dimensions 64" to 84": As per AWWA C 207 Class E.
- Please consult DelVal for other dimensions.

# DIMENSIONS AND WEIGHTS




WAFER BODY LUG BODY

## DIMENSIONS (MM)

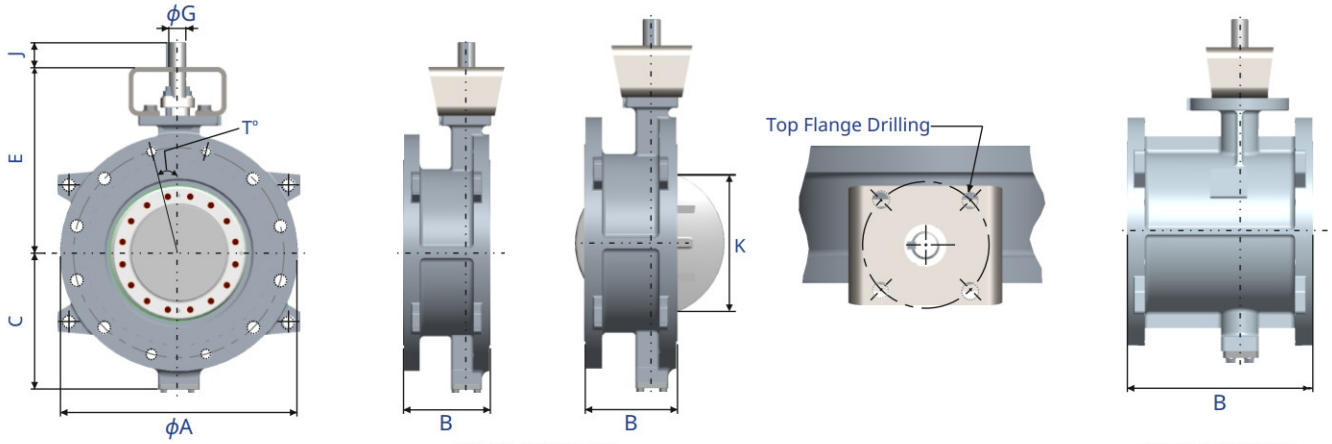
## ASME CLASS 300 WAFER/LUG (SERIES 4D/4E)

| Valve Size | | ØA | ØA1 | B | C | E | Top Flange Details | ØG | J | Key Size | K | End Flange Drilling | | | | | | App. Weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | PCD | | Wafer | | Lug | | | |
| Inch | DN | | | | | | Type | | | | | PCD | T° | Nos. | Hole Ø * /Tapping UNC/UN-2B | Nos. | Tapping UNC/ UN-2B | Wafer | Lug |
| 3 | 80 | 127 | 127 | 48 | 117 | 190 | F07/F10 | 16.0 | 32 | 5.00 x 5.00 | 66 | 168.3 | 22.5 | 2 | * 22.3 | 8 | 3/4-10 | 10 | 12 |
| 4 | 100 | 157 | 157.2 | 54 | 144 | 225 | F07/F10 | 20.0 | 32 | 6.00 x 6.00 | 92 | 200.2 | 22.5 | 2 | * 22.3 | 8 | 3/4-10 | 20 | 25 |
| 6 | 150 | 216 | 216 | 59 | 190 | 275 | F12 | 25.0 | 32 | 8.00 x 7.00 | 142 | 269.7 | 15.0 | 2 | * 22.3 | 12 | 3/4-10 | 34 | 45 |
| 8 | 200 | 270 | 270 | 73 | 205 | 310 | F12 | 35.0 | 51 | 10.00 x 8.00 | 185 | 330.2 | 15.0 | 4 | * 25.4 | 12 | 7/8-9 | 50 | 56 |
| 10 | 250 | 324 | 324 | 83 | 260 | 385 | F16 | 35.0 | 51 | 10.00 x 8.00 | 227 | 387.4 | 11.3 | 4 | 1-8 | 16 | 1-8 | 80 | 104 |
| 12 | 300 | 381 | 381 | 92 | 285 | 425 | F16 | 40.0 | 51 | 12.00 x 8.00 | 278 | 450.8 | 11.3 | 4 | 1-1/8-8 | 16 | 1-1/8-8 | 130 | 160 |
| 14 | 350 | 413 | 413 | 117 | 315 | 480 | F25 | 55.0 | 64 | 16.00 x 10.00 | 298 | 514.4 | 9.0 | 4 | 1-1/8-8 | 20 | 1-1/8-8 | 165 | 235 |
| 16 | 400 | 470 | 470 | 133 | 378 | 550 | F30 | 55.0 | 64 | 16.00 x 10.00 | 348 | 571.5 | 9.0 | 4 | 1-1/4-8 | 20 | 1-1/4-8 | 225 | 360 |
| 18 | 450 | 534 | 534 | 149 | 410 | 585 | F30 | 70.0 | 102 | 20.00 x 12.00 | 386 | 628.6 | 7.5 | 4 | 1-1/4-8 | 24 | 1-1/4-8 | 342 | 494 |
| 20 | 500 | 584 | 584 | 159 | 493 | 682 | F30 | 90.0 | 134 | 25.00 x 14.00 | 412 | 685.8 | 7.5 | 4 | 1-1/4-8 | 24 | 1-1/4-8 | 390 | 556 |
| 24 | 600 | 692 | 692 | 181 | 516 | 750 | F35 | 90.0 | 134 | 25.00 x 14.00 | 488 | 812.8 | 7.5 | 4 | 1-1/2-8 | 24 | 11/2-8 | 665 | 800 |
| 26 | 650 | 749 | 749 | 229 | 525 | 840 | - | - | - | - | - | 876.3 | 6.4 | 4 | 1-1/5-8 | 28 | 1-1/5-8 | 800 | 1000 |
| 28 | 700 | 800 | 800 | 229 | 550 | 885 | - | - | - | - | - | 939.8 | 6.4 | 4 | 1-1/5-8 | 28 | 11/5-8 | 1193 | 1335 |
| 30 | 750 | 857 | 857 | 230 | 580 | 980 | - | - | - | - | - | 997.0 | 6.4 | 4 | 1-3/4-8 | 28 | 1-3/4-8 | 1463 | 1658 |
| 32 | 800 | 914 | 914 | 271 | 610 | 1050 | - | - | - | - | - | 1054.1 | 6.4 | 4 | 1-7/8-8 | 28 | 1-7/8-8 | 1661 | 1856 |
| 34 | 850 | 965 | 965 | 271 | 635 | 1100 | - | - | - | - | - | 1104.9 | 6.4 | 4 | 1-7/8-8 | 28 | 1-7/8-8 | 1790 | 1950 |
| 36 | 900 | 1022 | 1022 | 271 | 665 | 1125 | - | - | - | - | - | 1168.4 | 5.6 | 4 | 2-8 | 32 | 2-8 | 1970 | 2160 |
| 38 | 950 | 1029 | 1029 | 300 | 665 | 1200 | - | - | - | - | - | 1092.2 | 5.6 | 4 | 1-1/2-8 | 32 | 1-1/2-8 | 2180 | 2300 |
| 40 | 1000 | 1086 | 1086 | 300 | 715 | 1235 | - | - | - | - | - | 1155.7 | 5.6 | 8 | 1-5/8-8 | 32 | 1-5/8-8 | 2380 | 2470 |
| 42 | 1050 | 1137 | 1137 | 350 | 770 | 1300 | - | - | - | - | - | 1206.5 | 5.6 | 8 | 1-5/8-8 | 32 | 1-5/8-8 | 2439 | 2570 |
| 44 | 1100 | 1194 | 1194 | 350 | 800 | 1330 | - | - | - | - | - | 1263.6 | 5.6 | 8 | 1-3/4-8 | 32 | 1-3/4-8 | 2650 | 2800 |
| 46 | 1150 | 1245 | 1245 | 350 | 825 | 1440 | - | - | - | - | - | 1320.8 | 6.4 | 8 | 1-7/8-8 | 28 | 1-7/8-8 | 2870 | 3230 |
| 48 | 1200 | 1302 | 1302 | 350 | 850 | 1480 | - | - | - | - | - | 1371.6 | 5.6 | 8 | 1-7/8-8 | 32 | 1-7/8-8 | 3384 | 3684 |
| 50 | 1250 | 1359 | 1359 | 390 | 930 | 1530 | - | - | - | - | - | 1428.8 | 5.6 | 8 | 2-8 | 32 | 2-8 | - | - |
| 52 | 1300 | 1410 | 1410 | 390 | 955 | 1555 | - | - | - | - | - | 1479.6 | 5.6 | 8 | 2-8 | 32 | 2-8 | - | - |
| 54 | 1350 | 1467 | 1467 | 390 | 985 | 1585 | - | - | - | - | - | 1549.4 | 6.4 | 8 | 2-1/4-8 | 28 | 2-1/4-8 | - | - |
| 56 | 1400 | 1518 | 1518 | 390 | 1010 | 1610 | - | - | - | - | - | 1600.2 | 6.4 | 8 | 2-1/4-8 | 28 | 2-1/4-8 | - | - |
| 58 | 1450 | 1575 | 1575 | 440 | 1040 | 1640 | - | - | - | - | - | 1651.0 | 5.6 | 8 | 2-1/4-8 | 32 | 2-1/4-8 | - | - |
| 60 | 1500 | 1626 | 1626 | 440 | 1065 | 1665 | - | - | - | - | - | 1701.8 | 5.6 | 8 | 2-1/4-8 | 32 | 2-1/4-8 | - | - |

Note:

- Face to face dimensions up to 24": As per API 609 Cat. B to Face to face dimensions from 26" to 60": As per manufacturer standard.
- Flange dimensions up to 24": As per ASME B16.5 to Flange dimensions above 26": As per ASME B16.47 series A.
- Please consult DelVal for other dimensions.

# DIMENSIONS AND WEIGHTS




SHORT PATTERN
DOUBLE FLANGED

LONG PATTERN
DOUBLE FLANGED

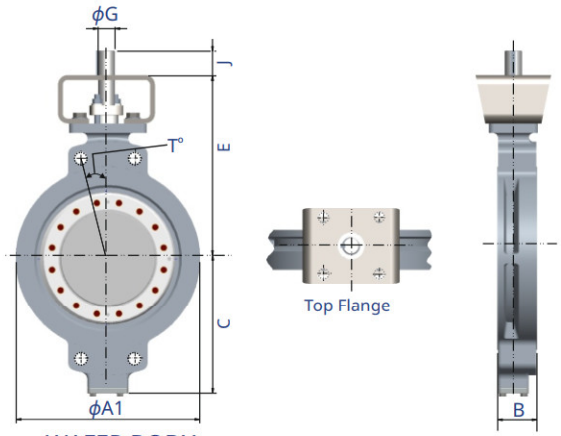
## DIMENSIONS (MM) ASME CLASS 300 SHORT PATTERN/LONG PATTERN (SERIES 4F/4Q)

| Valve Size | | ØA | B | | C | E | Top Flange Details | ØG | J | Key Size | K (Short Pattern) | End Flange Drilling | | | | | | App. Weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Short Pattern | | | |
| Inch | DN | | SP | LP | | | Type | | | | | PCD | Total Nos. Holes | T° | HoleØ | No. of Tap | Tapping UNC/UN2B | DF (SP) | DF (LP) |
| 3 | 80 | 210 | 114 | 282 | 117 | 190 | F07/F10 | 16.0 | 32 | 5.00 x 5.00 | 66 | 168.1 | 8 | 22.5 | 22.3 | NA | 3/4-10 | 18 | 20 |
| 4 | 100 | 255 | 127 | 305 | 144 | 225 | F07/F10 | 20.0 | 32 | 6.00 x 6.00 | 92 | 200.2 | 8 | 22.5 | 22.3 | NA | 3/4-10 | 32 | 36 |
| 6 | 150 | 320 | 140 | 403 | 190 | 275 | F12 | 25.0 | 32 | 8.00 x 7.00 | 142 | 269.7 | 12 | 15.0 | 22.3 | NA | 3/4-10 | 84 | 95 |
| 8 | 200 | 380 | 152 | 419 | 205 | 310 | F12 | 35.0 | 51 | 10.00 x 8.00 | 185 | 330.2 | 12 | 15.0 | 25.4 | NA | 7/8-9 | 100 | 117 |
| 10 | 250 | 445 | 165 | 457 | 260 | 385 | F16 | 35.0 | 51 | 10.00 x 8.00 | 227 | 387.4 | 16 | 11.3 | 28.6 | 4 | 1-8 | 130 | 154 |
| 12 | 300 | 520 | 178 | 502 | 285 | 425 | F16 | 40.0 | 51 | 12.00 x 8.00 | 278 | 450.8 | 16 | 11.3 | 31.8 | 4 | 1-1/8-8 | 225 | 257 |
| 14 | 350 | 585 | 190 | 762 | 315 | 480 | F25 | 55.0 | 64 | 16.00 x 10.00 | 298 | 514.4 | 20 | 9.0 | 31.8 | 4 | 1-1/8-8 | 310 | 373 |
| 16 | 400 | 650 | 216 | 838 | 378 | 550 | F30 | 55.0 | 64 | 16.00 x 10.00 | 348 | 571.5 | 20 | 9.0 | 34.9 | 4 | 1-1/4-8 | 406 | 545 |
| 18 | 450 | 710 | 222 | 914 | 410 | 585 | F30 | 70.0 | 102 | 20.00 x 12.00 | 386 | 628.6 | 24 | 7.5 | 34.9 | 4 | 1-1/4-8 | 526 | 745 |
| 20 | 500 | 775 | 229 | 991 | 493 | 682 | F30 | 90.0 | 134 | 25.00 x 14.00 | 412 | 685.8 | 24 | 7.5 | 34.9 | 4 | 1-1/4-8 | 665 | 959 |
| 24 | 600 | 914 | 267 | 1143 | 516 | 750 | F35 | 90.0 | 134 | 25.00 x 14.00 | 488 | 812.8 | 24 | 7.5 | 41.3 | 4 | 1-1/2-8 | 956 | 1437 |
| 26 | 650 | 972 | 292 | 1245 | 525 | 840 | - | - | - | - | - | 876.3 | 28 | 6.4 | 44.5 | 4 | 1-1/5-8 | 1250 | 1883 |
| 28 | 700 | 1035 | 292 | 1346 | 550 | 885 | - | - | - | - | - | 939.8 | 28 | 6.4 | 44.5 | 4 | 1-1/5-8 | 1400 | 2200 |
| 30 | 750 | 1092 | 318 | 1397 | 580 | 980 | - | - | - | - | - | 997.0 | 28 | 6.4 | 47.6 | 4 | 1-3/4-8 | 1730 | 2658 |
| 32 | 800 | 1149 | 318 | 1524 | 610 | 1050 | - | - | - | - | - | 1054.1 | 28 | 6.4 | 50.8 | 4 | 1-7/8-8 | 1920 | 3054 |
| 34 | 850 | 1206 | 330 | 1727 | 635 | 1100 | - | - | - | - | - | 1104.9 | 28 | 6.4 | 50.8 | 4 | 1-7/8-8 | 2050 | 3550 |
| 36 | 900 | 1270 | 510 | 1727 | 665 | 1125 | - | - | - | - | - | 1168.4 | 32 | 5.6 | 54.0 | 4 | 2-8 | 2360 | 3995 |
| 38 | 950 | 1168 | 410 | - | 665 | 1200 | - | - | - | - | - | 1092.2 | 32 | 5.6 | 41.3 | 4 | 1-1/2-8 | 2460 | - |
| 40 | 1000 | 1238 | 410 | - | 715 | 1235 | - | - | - | - | - | 1155.7 | 32 | 5.6 | 44.5 | 8 | 1-5/8-8 | 2585 | - |
| 42 | 1050 | 1289 | 410 | - | 770 | 1300 | - | - | - | - | - | 1206.5 | 32 | 5.6 | 44.5 | 8 | 1-5/8-8 | 2849 | - |
| 44 | 1100 | 1353 | 470 | - | 800 | 1330 | - | - | - | - | - | 1263.6 | 32 | 5.6 | 47.6 | 8 | 1-3/4-8 | 3160 | - |
| 46 | 1150 | 1416 | 470 | - | 825 | 1440 | - | - | - | - | - | 1320.8 | 28 | 6.4 | 50.8 | 8 | 1-7/8-8 | 3430 | - |
| 48 | 1200 | 1467 | 470 | - | 850 | 1480 | - | - | - | - | - | 1371.6 | 32 | 5.6 | 50.8 | 8 | 1-7/8-8 | 4106 | - |
| 50 | 1250 | 1530 | 530 | - | 930 | 1530 | - | - | - | - | - | 1428.8 | 32 | 5.6 | 54.0 | 8 | 2-8 | - | - |
| 52 | 1300 | 1581 | 530 | - | 955 | 1555 | - | - | - | - | - | 1479.6 | 32 | 5.6 | 54.0 | 8 | 2-8 | - | - |
| 54 | 1350 | 1657 | 530 | - | 985 | 1585 | - | - | - | - | - | 1549.4 | 28 | 6.4 | 60.3 | 8 | 2-1/4-8 | - | - |
| 56 | 1400 | 1708 | 530 | - | 1010 | 1610 | - | - | - | - | - | 1600.2 | 28 | 6.4 | 60.3 | 8 | 2-1/4-8 | - | - |
| 58 | 1450 | 1759 | 600 | - | 1040 | 1640 | - | - | - | - | - | 1651.0 | 32 | 5.6 | 60.3 | 8 | 2-1/4-8 | - | - |
| 60 | 1500 | 1810 | 600 | - | 1065 | 1665 | - | - | - | - | - | 1701.8 | 32 | 5.6 | 60.3 | 8 | 2-1/4-8 | - | - |

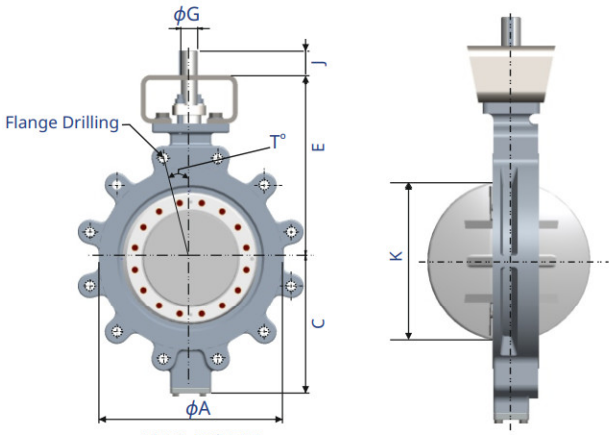
Note:

- Face to face dimensions - Short pattern up to 48" & Long pattern up to 36": As per API 609.
- Face to face dimensions - Short pattern above 48" & Long pattern above 36": As per manufacturer standard.
- Flange dimensions up to 24": As per ASME B16.5.
- Flange dimensions above 26": As per ASME B16.47 series A.
- Please consult DelVal for other dimensions.

# DIMENSIONS AND WEIGHTS




WAFER BODY




LUG BODY

## DIMENSIONS (MM)

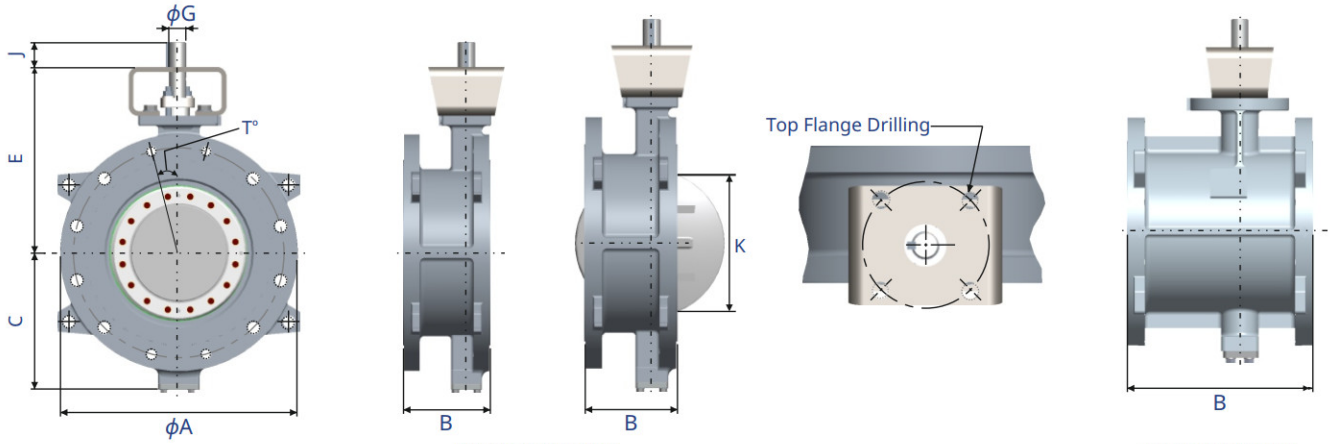
## ASME CLASS 600 WAFER/LUG (SERIES 4G/4H)

| Valve Size | | ØA | ØA1 | B | C | E | Top Flange Details | ØG | J | Key Size | K | End Flange Drilling | | | | | | App. Weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | PCD | | Wafer | | Lug | | | |
| Inch | DN | | | | | | Type | | | | | PCD | T° | Nos. | Tapping UNC/ UN-2B | Nos. | Tapping UNC/ UN-2B | Wafer | Lug |
| 3 | 80 | 146 | 146 | 64 | 147 | 225 | F12 | 25.0 | 45 | 8.00 x 7.00 | 70 | 168.1 | 22.5 | 4 | 22.3 | 8 | 3/4-10 | 14 | 15 |
| 4 | 100 | 175 | 175 | 78 | 170 | 275 | F14 | 30.0 | 51 | 8.00 x 7.00 | 80 | 215.9 | 22.5 | 4 | 25.4 | 8 | 7/8-9 | 26 | 30 |
| 6 | 150 | 241 | 241 | 78 | 194 | 305 | F16 | 35.0 | 51 | 10.00 x 8.00 | 145 | 292.1 | 15.0 | 4 | 1-8 | 12 | 1-8 | 62 | 70 |
| 8 | 200 | 302 | 302 | 102 | 250 | 471 | F16 | 45.0 | 77 | 14.00 x 9.00 | 162 | 349.2 | 15.0 | 4 | 1-1/8-8 | 12 | 1-1/8-8 | 90 | 100 |
| 10 | 250 | 356 | 356 | 117 | 300 | 520 | F25 | 55.0 | 80 | 16.00 x 10.00 | 195 | 431.8 | 11.3 | 4 | 1-1/4-8 | 16 | 1-1/4-8 | 132 | 185 |
| 12 | 300 | 413 | 413 | 140 | 348 | 585 | F25 | 65.0 | 90 | 18.00 x 11.00 | 228 | 489.0 | 9.0 | 4 | 1-1/4-8 | 20 | 1-1/4-8 | 220 | 254 |
| 14 | 350 | 457 | 457 | 155 | 380 | 635 | F25 | 75.0 | 102 | 20.00 x 12.00 | 273 | 527.0 | 9.0 | 4 | 1-3/8-8 | 20 | 1-3/8-8 | 282 | 324 |
| 16 | 400 | 508 | 508 | 178 | 442 | 665 | F30 | 88.9 | 120 | 22.23 x 15.88 | 282 | 603.2 | 9.0 | 4 | 1-1/2-8 | 20 | 1-1/2-8 | 450 | 514 |
| 18 | 450 | 575 | 575 | 200 | 467 | 710 | F35 | 88.9 | 120 | 22.23 x 15.88 | 335 | 654.0 | 9.0 | 4 | 1-5/8-8 | 20 | 1-5/8-8 | 550 | 630 |
| 20 | 500 | 635 | 635 | 216 | 505 | 795 | F35 | 101.6 | 151 | 25.40 x 19.05 | 375 | 723.9 | 7.5 | 4 | 1-5/8-8 | 24 | 1-5/8-8 | 690 | 800 |
| 24 | 600 | 749 | 749 | 232 | 585 | 925 | F40 | 125.0 | 160 | 32.00 x 18.00 | 435 | 838.2 | 7.5 | 4 | 1-7/8-8 | 24 | 1-7/8-8 | 1086 | 1240 |
| 26 | 650 | 749 | 749 | 292 | 625 | 1025 | - | - | - | - | - | 914.4 | 6.4 | 8 | 1-7/8-8 | 28 | 1-7/8-8 | - | - |
| 28 | 700 | 800 | 800 | 292 | 650 | 1050 | - | - | - | - | - | 965.2 | 6.4 | 8 | 2-8 | 28 | 2-8 | - | - |
| 30 | 750 | 857 | 857 | 318 | 680 | 1080 | - | - | - | - | - | 1022.4 | 6.4 | 8 | 2-8 | 28 | 2-8 | - | - |
| 32 | 800 | 914 | 914 | 318 | 710 | 1110 | - | - | - | - | - | 1079.5 | 6.4 | 8 | 2-1/4-8 | 28 | 2-1/4-8 | - | - |
| 34 | 850 | 965 | 965 | 330 | 735 | 1135 | - | - | - | - | - | 1130.3 | 6.4 | 8 | 2-1/4-8 | 28 | 2-1/4-8 | - | - |
| 36 | 900 | 1022 | 1022 | 330 | 760 | 1160 | - | - | - | - | - | 1193.8 | 6.4 | 8 | 2-1/2-8 | 28 | 2-1/2-8 | - | - |
| 38 | 950 | 1054 | 1054 | 410 | 830 | 1280 | - | - | - | - | - | 1162.0 | 6.4 | 8 | 2-1/4-8 | 28 | 2-1/4-8 | - | - |
| 40 | 1000 | 1111 | 1111 | 410 | 855 | 1305 | - | - | - | - | - | 1212.8 | 5.6 | 8 | 2-1/4-8 | 32 | 2-1/4-8 | - | - |
| 42 | 1050 | 1168 | 1168 | 470 | 885 | 1335 | - | - | - | - | - | 1282.7 | 6.4 | 8 | 2-1/2-8 | 28 | 2-1/2-8 | - | - |
| 44 | 1100 | 1226 | 1226 | 470 | 915 | 1365 | - | - | - | - | - | 1333.5 | 5.6 | 8 | 2-1/2-8 | 32 | 2-1/2-8 | - | - |
| 46 | 1150 | 1276 | 1276 | 470 | 940 | 1390 | - | - | - | - | - | 1390.6 | 5.6 | 8 | 2-1/2-8 | 32 | 2-1/2-8 | - | - |
| 48 | 1200 | 1334 | 1334 | 470 | 970 | 1420 | - | - | - | - | - | 1460.5 | 5.6 | 8 | 2-3/4-8 | 32 | 2-3/4-8 | - | - |

Note:

- Face to face dimensions up to 24": As per API 609 Cat. B except 3" & 4".
- Face to face dimensions above 24": As per manufacturer standard.
- Flange dimensions up to 24": As per ASME B16.5.
- Flange dimensions above 24": As per ASME B16.47 series A.
- Please consult DelVal for other dimensions.

# DIMENSIONS AND WEIGHTS




SHORT PATTERN
DOUBLE FLANGED

LONG PATTERN
DOUBLE FLANGED

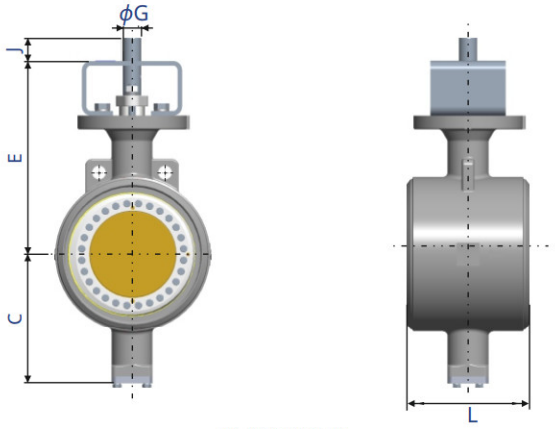
## DIMENSIONS (MM) ASME CLASS 600 SHORT PATTERN/LONG PATTERN (SERIES 4J/4R)

| Valve Size | | ØA | B | | C | E | Top Flange Details | ØG | J | Key Size | K (Short Pattern) | End Flange Drilling | | | | | | App. Weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Short Pattern | | | |
| Inch | DN | | SP | LP | | | Type | | | | | PCD | Total Nos. Holes | T° | HoleØ | No. of Tap | Tapping UNC/UN2B | DF (SP) | DF (LP) |
| 3 | 80 | 210 | 180 | 356 | 147 | 225 | F12 | 25.0 | 45 | 8.00 x 7.00 | 70 | 168.1 | 8 | 22.5 | 22.3 | 4 | 3/4-10 | 41 | 46 |
| 4 | 100 | 273 | 190 | 432 | 170 | 275 | F14 | 30.0 | 51 | 8.00 x 7.00 | 80 | 215.9 | 8 | 22.5 | 25.4 | 4 | 7/8-9 | 65 | 70 |
| 6 | 150 | 356 | 210 | 559 | 194 | 305 | F16 | 35.0 | 51 | 10.00 x 8.00 | 145 | 292.1 | 12 | 15.0 | 28.6 | 4 | 1-8 | 132 | 147 |
| 8 | 200 | 419 | 230 | 660 | 250 | 471 | F16 | 45.0 | 77 | 14.00 x 9.00 | 162 | 349.2 | 12 | 15.0 | 31.8 | 4 | 1-1/8-8 | 160 | 188 |
| 10 | 250 | 508 | 250 | 787 | 300 | 520 | F25 | 55.0 | 80 | 16.00 x 10.00 | 195 | 431.8 | 16 | 11.3 | 34.9 | 4 | 1-1/4-8 | 266 | 318 |
| 12 | 300 | 559 | 270 | 838 | 348 | 585 | F25 | 65.0 | 90 | 18.00 x 11.00 | 228 | 489.0 | 20 | 9.0 | 34.9 | 4 | 1-1/4-8 | 365 | 422 |
| 14 | 350 | 603 | 290 | 889 | 380 | 635 | F30 | 75.0 | 102 | 20.00 x 12.00 | 273 | 527.0 | 20 | 9.0 | 38.1 | 4 | 1-3/8-8 | 490 | 555 |
| 16 | 400 | 686 | 310 | 991 | 442 | 665 | F30 | 88.9 | 140 | 22.23 x 15.88 | 282 | 603.2 | 20 | 9.0 | 41.3 | 4 | 1-1/2-8 | 700 | 863 |
| 18 | 450 | 743 | 330 | 1092 | 467 | 710 | F35 | 88.9 | 120 | 22.23 x 15.88 | 335 | 654.0 | 20 | 9.0 | 44.5 | 4 | 1-5/8-8 | 736 | 972 |
| 20 | 500 | 813 | 350 | 1194 | 505 | 795 | F35 | 101.6 | 151 | 25.40 x 19.05 | 375 | 723.9 | 24 | 7.5 | 44.5 | 4 | 1-5/8-8 | 871 | 1204 |
| 24 | 600 | 940 | 390 | 1397 | 585 | 925 | F40 | 125.0 | 160 | 32.00 x 18.00 | 435 | 838.2 | 24 | 7.5 | 50.8 | 4 | 1-7/8-8 | 1422 | 1977 |
| 26 | 650 | 1016 | 430 | 1448 | 625 | 1025 | - | - | - | - | - | 914.4 | 28 | 6.4 | 50.8 | 8 | 1-7/8-8 | 1695 | 2709 |
| 28 | 700 | 1073 | 430 | 1549 | 650 | 1050 | - | - | - | - | - | 965.2 | 28 | 6.4 | 54.0 | 8 | 2-8 | 1890 | 3136 |
| 30 | 750 | 1130 | 470 | 1651 | 680 | 1080 | - | - | - | - | - | 1022.4 | 28 | 6.4 | 54.0 | 8 | 2-8 | 2050 | 3620 |
| 32 | 800 | 1194 | 470 | 1778 | 710 | 1110 | - | - | - | - | - | 1079.5 | 28 | 6.4 | 60.3 | 8 | 2-1/4-8 | 2555 | 4440 |
| 34 | 850 | 1245 | 510 | 2083 | 735 | 1135 | - | - | - | - | - | 1130.3 | 28 | 6.4 | 60.3 | 8 | 2-1/4-8 | 2705 | 5272 |
| 36 | 900 | 1314 | 510 | 2083 | 760 | 1160 | - | - | - | - | - | 1193.8 | 28 | 6.4 | 66.7 | 8 | 2-1/2-8 | 2904 | 5340 |
| 38 | 950 | 1270 | 550 | - | 830 | 1280 | - | - | - | - | - | 1162.0 | 28 | 6.4 | 60.3 | 8 | 2-1/4-8 | - | - |
| 40 | 1000 | 1321 | 550 | - | 855 | 1305 | - | - | - | - | - | 1212.8 | 32 | 5.6 | 60.3 | 8 | 2-1/4-8 | - | - |
| 42 | 1050 | 1403 | 630 | - | 885 | 1335 | - | - | - | - | - | 1282.7 | 28 | 6.4 | 66.7 | 8 | 2-1/2-8 | - | - |
| 44 | 1100 | 1454 | 630 | - | 915 | 1365 | - | - | - | - | - | 1333.5 | 32 | 5.6 | 66.7 | 8 | 2-1/2-8 | - | - |
| 46 | 1150 | 1511 | 630 | - | 940 | 1390 | - | - | - | - | - | 1390.6 | 32 | 5.6 | 66.7 | 8 | 2-1/2-8 | - | - |
| 48 | 1200 | 1594 | 630 | - | 970 | 1420 | - | - | - | - | - | 1460.5 | 32 | 5.6 | 73.0 | 8 | 2-3/4-8 | - | - |

Note:

- Face to face dimensions - Short pattern up to 48" & Long pattern up to 36": As per API 609.
- Face to face dimensions - Short pattern above 48" & Long pattern above 36": As per manufacturer standard.
- Flange dimensions up to 24": As per ASME B16.5.
- Flange dimensions above 26": As per ASME B16.47 series A.
- Please consult DelVal for other dimensions.

# DIMENSIONS AND WEIGHTS




BUTT WELD

## DIMENSIONS (MM)

### ASME CLASS 150 BUTT WELD (SERIES 4W)

| Valve Size | | L | C | E | Top Flange Details | ØG | J | Key Size | Appx. Weight |
|---|---|---|---|---|---|---|---|---|---|
| Inch | DN | | | | Type | | | | Kg |
| 3 | 80 | 180 | 117 | 190 | F07/F10 | 16 | 32 | 5.00 x 5.00 | 11 |
| 4 | 100 | 190 | 144 | 225 | F07/F10 | 20 | 32 | 6.00 x 6.00 | 15 |
| 5 | 125 | 200 | 145 | 220 | F07/F10 | 22 | 32 | 6.00 x 6.00 | 23 |
| 6 | 150 | 210 | 155 | 230 | F07/F10 | 22 | 32 | 6.00 x 6.00 | 27 |
| 8 | 200 | 230 | 186 | 285 | F10/F12 | 25 | 32 | 8.00 x 7.00 | 55 |
| 10 | 250 | 250 | 225 | 328 | F12 | 30 | 51 | 8.00 x 7.00 | 82 |
| 12 | 300 | 270 | 280 | 380 | F12/F16 | 35 | 51 | 10.00 x 8.00 | 102 |
| 14 | 350 | 290 | 286 | 405 | F14 | 40 | 51 | 12.00 x 8.00 | 148 |
| 16 | 400 | 310 | 335 | 525 | F14/F16 | 50 | 64 | 14.00 x 9.00 | 242 |
| 18 | 450 | 330 | 349 | 525 | F16 | 55 | 64 | 16.00 x 10.00 | 274 |
| 20 | 500 | 350 | 394 | 580 | F25 | 60 | 102 | 18.00 x 11.00 | 316 |
| 24 | 600 | 390 | 450 | 645 | F25 | 70 | 102 | 20.00 x 12.00 | 477 |

### ASME CLASS 300 BUTT WELD (SERIES 4Y)

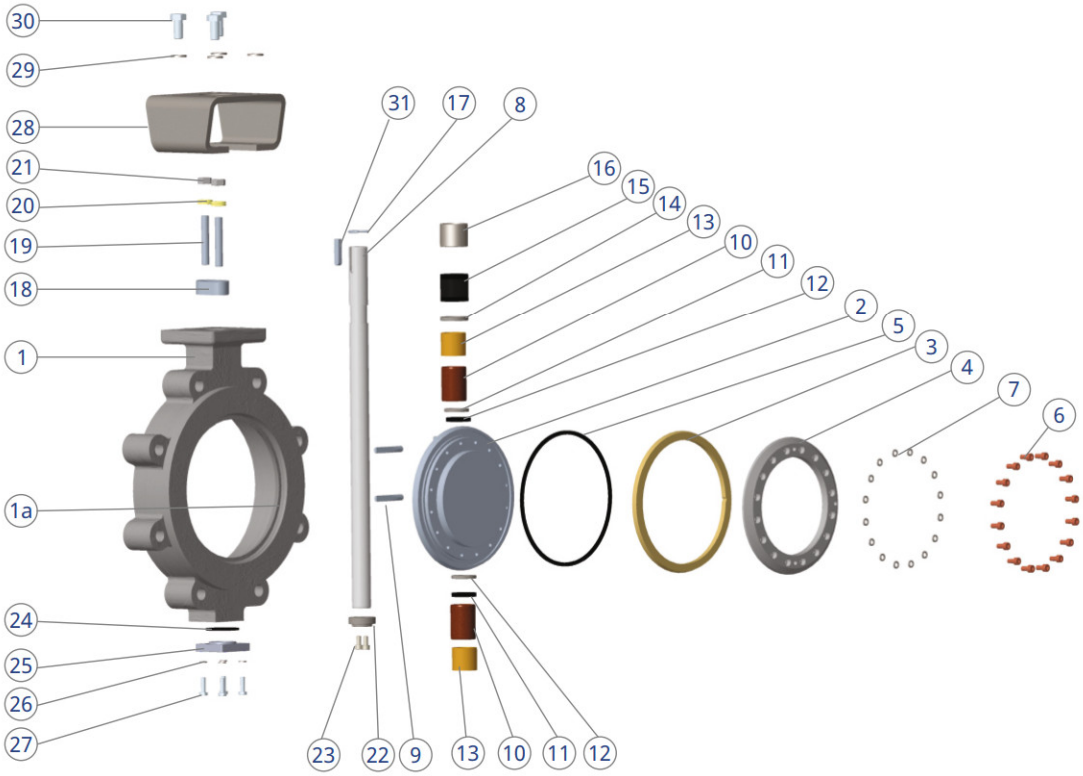
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 80 | 180 | 117 | 190 | F07/F10 | 16.0 | 32 | 5.00 x 5.00 | 11 |
| 4 | 100 | 190 | 144 | 225 | F07/F10 | 20.0 | 32 | 6.00 x 6.00 | 15 |
| 6 | 150 | 210 | 190 | 275 | F12 | 25.0 | 32 | 8.00 x 7.00 | 36 |
| 8 | 200 | 230 | 205 | 310 | F12 | 35.0 | 51 | 10 .00 x 8.00 | 68 |
| 10 | 250 | 250 | 260 | 385 | F16 | 35.0 | 51 | 10.00 x 8.00 | 99 |
| 12 | 300 | 270 | 285 | 425 | F16 | 40.0 | 51 | 12.00 x 8.00 | 136 |
| 14 | 350 | 290 | 315 | 480 | F25 | 55.0 | 64 | 16 .00 x 10.00 | 192 |
| 16 | 400 | 310 | 378 | 550 | F30 | 55.0 | 64 | 16.00 x 10.00 | 347 |
| 18 | 450 | 330 | 410 | 585 | F30 | 70.0 | 102 | 20.00 x 12.00 | 451 |
| 20 | 500 | 350 | 420 | 650 | F30 | 88.9 | 134 | 22.23 x 15.88 | 554 |
| 24 | 600 | 390 | 516 | 750 | F35 | 90.0 | 134 | 25.00 x 14.00 | 864 |

### ASME CLASS 600 BUTT WELD (SERIES 4K)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 80 | 180 | 147 | 225 | F12 | 25.0 | 45 | 8 .00 x 7.00 | 30 |
| 4 | 100 | 190 | 170 | 275 | F14 | 30.0 | 51 | 8.00 x 7.00 | 59 |
| 6 | 150 | 210 | 194 | 305 | F16 | 35.0 | 51 | 10.00 x 8.00 | 82 |
| 8 | 200 | 230 | 250 | 471 | F16 | 45.0 | 77 | 14.00 x 9.00 | 123 |
| 10 | 250 | 250 | 300 | 520 | F25 | 55.0 | 80 | 16.00 x 10.00 | 218 |
| 12 | 300 | 270 | 348 | 585 | F25 | 65.0 | 90 | 18.00 x 11.00 | 295 |
| 14 | 350 | 290 | 380 | 635 | F30 | 75.0 | 102 | 20.00 x 12.00 | 550 |
| 16 | 400 | 310 | 442 | 665 | F30 | 88.9 | 140 | 22.23 x 15.88 | 647 |
| 18 | 450 | 330 | 467 | 710 | F35 | 88.9 | 120 | 22.23 x 15.88 | 818 |
| 20 | 500 | 350 | 505 | 795 | F35 | 101.6 | 151 | 25.40 x 19.05 | 1182 |
| 24 | 600 | 390 | 585 | 925 | F40 | 125.0 | 160 | 32.00 x 18.00 | 1773 |

Note:
End to end dimensions " L" conforms to ISO5752 series 14.

# **STANDARD MATERIALS** OF CONSTRUCTION




## Part List

| Item | Description | Standard Material* | |
|---|---|---|---|
| | | Carbon steel | Stainless steel |
| 1 | Body | ASTM A216 WCB/WCC,<br>ASTM A352 LCC/LCB | ASTM A351 CF8M/CF3M |
| 1a | Body Seat | Stellite®Gr. 21 | Stellite®Gr. 21 |
| 2 | Disc | ASTM A216 WCB/WCC,<br>ASTM A352 LCC/LCB | ASTM A351 CF8M/CF3M |
| 3** | Seal Ring | ASTM A 240 S31803 (Duplex)+Graphite<br>ASTM A 240 S20910 (XM-19) +Graphite<br>ASTM A 240 S20910 (XM-19) +hard faced | ASTM A 240 S31803 (Duplex)+Graphite<br>ASTM A 240 S20910 (XM-19)+Graphite<br>ASTM A 240 S20910 (XM-19)+hard faced |
| 4 | Retainer Ring | ASTM A516 Gr.70/ASTM A240 SS304 | ATM A240 SS316/SS316L |
| 5** | Seal Gasket | SS316+Graphite | SS316+Graphite |
| 6 | Retainer Screw | ASTM A1082 Type 630 H1150M ( 17 - 4PH ) | ASTM A1082 Type 630 H1150M ( 17 - 4PH ) |
| 7 | Spring Washer | ASTM A580 SS304 | ASTM A580 SS316 |
| 8 | Stem | ASTM A322 4130<br>ASTM A479 SS410 –cond.3<br>ASTM A564 Type 630 (17-4PH) | ASTM A564 Type 630 (17-4PH)<br>ASTM A479 XM19 |
| 9 | Wedge Key | ASTM A322 4130<br>ASTM A479 SS410 –cond.3<br>ASTM A564 Type 630 (17-4PH) | ASTM A564 Type 630 (17-4PH)<br>ASTM A479 XM19 |
| 10 | Stem Bearing | ASTM A 479 SS316/SS316L+Nitriding | ASTM A 479 SS316/SS316L+Nitriding |
| 11 | Bearing Protector | Graphite | Graphite |
| 12 | Bearing Protector Support | ASTM A 479 SS316/SS316L | ASTM A 479 SS316/SS316L |
| 13 | Bearing Spacer | ASTM A 479 SS316/SS316L | ASTM A 479 SS316/SS316L |
| 14 | Packing Spacer | ASTM A 479 SS316/SS316L | ASTM A 479 SS316/SS316L |

| Item | Description | Standard Material* | |
|---|---|---|---|
| | | Carbon steel | Stainless steel |
| 15 | Gland Packing | Graphite | Graphite |
| 16 | Gland | ASTM A 479 SS316/SS316L | ASTM A 479 SS316/SS316L |
| 17 | Stem Retainer | ASTM A313 SS302 | ASTM A313 SS302 |
| 18 | Gland Flange | ASTM A516 Gr.70 / WCB / ASTM A105 | ASTM A240 SS316/CF8M |
| 19 | Stud | ASTM A193 Gr B7M | ASTM A1082 TYPE 630 H1150M (17-4PH ) |
| 20 | Belleville Spring | ASTM A666 SS304 | ASTM A666 SS304 |
| 21 | Hex Nut | ASTM A194 Gr 2HM | ASTM A1082 TYPE 630 H1150M (17-4PH ) |
| 22 | Thrust Bearing | ASTM A 479 SS316/SS316L+Nitriding | ASTM A 479 SS316/SS316L+Nitriding |
| 23 | Bearing Screw | ASTM A193 Gr. B8M | ASTM A193 Gr. B8M |
| 24 | Cover Gasket | Graphite, SS316/ SS316L+Graphite | Graphite, SS316/ SS316L+Graphite |
| 25 | Bottom Cover | ASTM A516 Gr.70,<br>ASTM A240 SS304 | ASTM A240 SS316/SS316L |
| 26 | Spring Washer | ASTM A580 SS304 | ASTM A580 SS316 |
| 27 | Hex Hd Screw | ISO 3506 A4 -70 | ISO 3506 A4 -70 |
| 28 | Bracket | Carbon steel | Stainless steel |
| 29 | Spring Washer | ASTM A580 SS304 | ASTM A580 SS316 |
| 30 | Hex Hd Screw | ISO 3506 A4 -70 | ISO 3506 A4 -70 |
| 31 | Key | ASTM A322 4130<br>ASTM A479 SS410 –cond.3<br>ASTM A564 Type 630 (17-4PH) | ASTM A564 Type 630 (17-4PH)<br>ASTM A479 XM19 |

*Other materials are available on request.

**Recommended spares

# TORQUE DATA

## ASME CLASS 150

| Valve Size | | Flow Direction* | Torque (Nm) at various differential pressure (Bar) for CL 150 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3.5 Bar | | 7 Bar | | 10 Bar | | 16 Bar | | 20 Bar | |
| INCH | DN | | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO |
| 3 | 80 | Shaft Side (Pref.) | 23 | 28 | 38 | 47 | 85 | 106 | 90 | 112 | 94 | 118 |
| | | Disc Side (N. Pref.) | 31 | 25 | 52 | 42 | 117 | 93 | 123 | 99 | 130 | 104 |
| 4 | 100 | Shaft Side (Pref.) | 29 | 37 | 49 | 61 | 108 | 135 | 115 | 144 | 122 | 153 |
| | | Disc Side (N. Pref.) | 40 | 32 | 67 | 54 | 149 | 119 | 158 | 126 | 168 | 135 |
| 6 | 150 | Shaft Side (Pref.) | 51 | 63 | 84 | 106 | 186 | 233 | 201 | 251 | 211 | 264 |
| | | Disc Side (N. Pref.) | 70 | 56 | 116 | 93 | 256 | 205 | 277 | 221 | 290 | 232 |
| 8 | 200 | Shaft Side (Pref.) | 77 | 96 | 128 | 160 | 264 | 330 | 304 | 380 | 320 | 400 |
| | | Disc Side (N. Pref.) | 106 | 84 | 176 | 141 | 363 | 290 | 418 | 334 | 440 | 352 |
| 10 | 250 | Shaft Side (Pref.) | 176 | 220 | 294 | 367 | 558 | 698 | 685 | 857 | 734 | 918 |
| | | Disc Side (N. Pref.) | 242 | 194 | 404 | 323 | 767 | 614 | 942 | 754 | 1010 | 808 |
| 12 | 300 | Shaft Side (Pref.) | 227 | 284 | 378 | 473 | 662 | 827 | 823 | 1028 | 946 | 1182 |
| | | Disc Side (N. Pref.) | 312 | 250 | 520 | 416 | 910 | 728 | 1131 | 905 | 1300 | 1040 |
| 14 | 350 | Shaft Side (Pref.) | 301 | 376 | 502 | 627 | 962 | 1202 | 1183 | 1479 | 1254 | 1568 |
| | | Disc Side (N. Pref.) | 414 | 331 | 690 | 552 | 1322 | 1058 | 1627 | 1302 | 1725 | 1380 |
| 16 | 400 | Shaft Side (Pref.) | 508 | 635 | 847 | 1058 | 1499 | 1874 | 1940 | 2426 | 2117 | 2646 |
| | | Disc Side (N. Pref.) | 699 | 559 | 1164 | 931 | 2062 | 1649 | 2668 | 2134 | 2911 | 2328 |
| 18 | 450 | Shaft Side (Pref.) | 694 | 867 | 1156 | 1445 | 1870 | 2338 | 2423 | 3029 | 2890 | 3613 |
| | | Disc Side (N. Pref.) | 954 | 763 | 1590 | 1272 | 2572 | 2057 | 3331 | 2665 | 3974 | 3179 |
| 20 | 500 | Shaft Side (Pref.) | 873 | 1091 | 1454 | 1818 | 2452 | 3065 | 3467 | 4334 | 3636 | 4545 |
| | | Disc Side (N. Pref.) | 1200 | 960 | 2000 | 1600 | 3372 | 2697 | 4767 | 3814 | 5000 | 4000 |
| 24 | 600 | Shaft Side (Pref.) | 1344 | 1680 | 2240 | 2800 | 3977 | 4971 | 5113 | 6391 | 5600 | 7000 |
| | | Disc Side (N. Pref.) | 1848 | 1478 | 3080 | 2464 | 5468 | 4374 | 7030 | 5624 | 7700 | 6160 |
| 26 | 650 | Shaft Side (Pref.) | 2304 | 2880 | 3840 | 4800 | 7086 | 8857 | 8760 | 10950 | 9600 | 12000 |
| | | Disc Side (N. Pref.) | 3168 | 2534 | 5280 | 4224 | 9743 | 7794 | 12045 | 9636 | 13200 | 10560 |
| 28 | 700 | Shaft Side (Pref.) | 2688 | 3360 | 4480 | 5600 | 8447 | 10558 | 11200 | 14000 | 11200 | 14000 |
| | | Disc Side (N. Pref.) | 3696 | 2957 | 6160 | 4928 | 11614 | 9291 | 15400 | 12320 | 15400 | 12320 |
| 30 | 750 | Shaft Side (Pref.) | 3600 | 3780 | 6000 | 6300 | 9000 | 9450 | 13125 | 13782 | 15000 | 15750 |
| | | Disc Side (N. Pref.) | 3960 | 3360 | 6600 | 5600 | 9900 | 8400 | 14438 | 12250 | 16500 | 14000 |
| 32 | 800 | Shaft Side (Pref.) | 4157 | 5196 | 6928 | 8660 | 11813 | 14766 | 15277 | 19096 | 17320 | 21650 |
| | | Disc Side (N. Pref.) | 5716 | 4572 | 9526 | 7621 | 16243 | 12994 | 21006 | 16805 | 23815 | 19052 |
| 34 | 850 | Shaft Side (Pref.) | 5614 | 7018 | 9357 | 11696 | 14955 | 18693 | 21931 | 27414 | 23393 | 29241 |
| | | Disc Side (N. Pref.) | 7720 | 6176 | 12866 | 10293 | 20563 | 16450 | 30155 | 24124 | 32165 | 25732 |
| 36 | 900 | Shaft Side (Pref.) | 6288 | 7860 | 10480 | 13100 | 16749 | 20937 | 24563 | 30703 | 26200 | 32750 |
| | | Disc Side (N. Pref.) | 8646 | 6917 | 14410 | 11528 | 23030 | 18424 | 33773 | 27019 | 36025 | 28820 |
| 38 | 950 | Shaft Side (Pref.) | 7412 | 9265 | 12353 | 15441 | 20318 | 25397 | 27307 | 34134 | 30883 | 38604 |
| | | Disc Side (N. Pref.) | 10191 | 8153 | 16986 | 13588 | 27937 | 22349 | 37547 | 30038 | 42464 | 33971 |
| 40 | 1000 | Shaft Side (Pref.) | 8227 | 10284 | 13712 | 17140 | 22553 | 28191 | 30311 | 37888 | 34280 | 42850 |
| | | Disc Side (N. Pref.) | 11312 | 9050 | 18854 | 15083 | 31010 | 24808 | 41677 | 33342 | 47135 | 37708 |
| 42 | 1050 | Shaft Side (Pref.) | 8421 | 10526 | 14035 | 17544 | 25191 | 31489 | 31174 | 38968 | 35088 | 43860 |
| | | Disc Side (N. Pref.) | 11579 | 9263 | 19298 | 15439 | 34638 | 27711 | 42865 | 34292 | 48246 | 38597 |
| 44 | 1100 | Shaft Side (Pref.) | 9120 | 11400 | 15200 | 19000 | 26878 | 33598 | 35034 | 43793 | 38000 | 47500 |
| | | Disc Side (N. Pref.) | 12540 | 10032 | 20900 | 16720 | 36957 | 29566 | 48172 | 38538 | 52250 | 41800 |
| 48 | 1200 | Shaft Side (Pref.) | 13044 | 16306 | 21741 | 27176 | 38046 | 47558 | 49460 | 61825 | 54352 | 67940 |
| | | Disc Side (N. Pref.) | 17936 | 14349 | 29894 | 23915 | 52314 | 41851 | 68008 | 54406 | 74734 | 59787 |

Notes:-

*Flow from stem side is the preferred flow direction. Flow from retainer side is non-preferred flow direction. Arrow on valve body indicates the preferred flow direction.

1. BTO - Break to Open; RTO - Run to Open; ETO - End to Open; BTC - Break to Close; RTC - Run to Close; ETC - End to Close. (Pref. ) = Preferred , (N. Pref.) = Non Preferred.
2. RTO, ETO, BTC, RTC= 0.4 x Max (BTO, ETC)
3. For actuator sizing, the minimum valve differential pressure shall be 3.5 bar. For differential pressures above 3.5 bar the intermediated values to be interpolated. For gear operator sizing, the full rated torque to be considered.
4. The published torque values are common for both laminar seal & metal seal without any factor of safety. For operator sizing, factor of 30% to be considered.
5. For valves with extension (cryogenic service / high temperature service), 1.5 times of preferred side BTO torque to be considered as a base torque without factor of safety and valves shall be offered as uni-directional. For operator sizing, factor of 30% to be considered.
6. The published torque values are without factor of safety.
7. The following factor of safety shall be considered for operator sizing:
clean service (liquid, steam, clean gas and non-abrasive) = 1.3, high solids slurry = 1.5, Dry gas= 1.7

# TORQUE DATA

## ASME CLASS 300

| Valve Size | | Flow Direction* | Torque (Nm) at various differential pressure (Bar) for CL 300 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3.5 Bar | | 7 Bar | | 10 Bar | | 20 Bar | | 30 Bar | | 40 Bar | | 51.7 Bar | |
| INCH | DN | | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO |
| 3 | 80 | Shaft Side (Pref.) | 44 | 55 | 82 | 103 | 109 | 137 | 153 | 191 | 166 | 207 | 179 | 223 | 204 | 255 |
| | | Disc Side (N. Pref.) | 60 | 48 | 113 | 90 | 150 | 120 | 210 | 168 | 228 | 182 | 245 | 196 | 281 | 224 |
| 4 | 100 | Shaft Side (Pref.) | 69 | 87 | 130 | 163 | 174 | 217 | 195 | 244 | 212 | 265 | 239 | 298 | 250 | 312 |
| | | Disc Side (N. Pref.) | 95 | 76 | 179 | 143 | 239 | 191 | 269 | 215 | 291 | 233 | 328 | 263 | 343 | 275 |
| 6 | 150 | Shaft Side (Pref.) | 116 | 144 | 217 | 271 | 289 | 361 | 329 | 412 | 361 | 451 | 397 | 496 | 451 | 564 |
| | | Disc Side (N. Pref.) | 159 | 127 | 298 | 238 | 397 | 318 | 453 | 362 | 496 | 397 | 546 | 437 | 620 | 496 |
| 8 | 200 | Shaft Side (Pref.) | 234 | 292 | 439 | 548 | 585 | 731 | 689 | 861 | 802 | 1002 | 896 | 1120 | 990 | 1238 |
| | | Disc Side (N. Pref.) | 322 | 257 | 603 | 482 | 804 | 643 | 947 | 757 | 1102 | 882 | 1232 | 986 | 1362 | 1089 |
| 10 | 250 | Shaft Side (Pref.) | 314 | 392 | 589 | 736 | 785 | 981 | 1032 | 1290 | 1208 | 1510 | 1323 | 1654 | 1411 | 1764 |
| | | Disc Side (N. Pref.) | 432 | 345 | 810 | 648 | 1079 | 863 | 1419 | 1135 | 1661 | 1329 | 1819 | 1455 | 1940 | 1552 |
| 12 | 300 | Shaft Side (Pref.) | 423 | 529 | 793 | 992 | 1058 | 1322 | 1396 | 1745 | 1819 | 2274 | 2116 | 2644 | 2285 | 2856 |
| | | Disc Side (N. Pref.) | 582 | 465 | 1091 | 873 | 1454 | 1164 | 1920 | 1536 | 2502 | 2001 | 2909 | 2327 | 3142 | 2513 |
| 14 | 350 | Shaft Side (Pref.) | 578 | 722 | 1084 | 1354 | 1445 | 1806 | 1886 | 2358 | 2247 | 2809 | 2729 | 3411 | 2970 | 3712 |
| | | Disc Side (N. Pref.) | 795 | 636 | 1490 | 1192 | 1986 | 1589 | 2593 | 2075 | 3090 | 2472 | 3752 | 3002 | 4083 | 3267 |
| 16 | 400 | Shaft Side (Pref.) | 973 | 1217 | 1825 | 2281 | 2433 | 3042 | 3216 | 4019 | 4041 | 5052 | 4867 | 6084 | 5475 | 6845 |
| | | Disc Side (N. Pref.) | 1338 | 1071 | 2509 | 2008 | 3346 | 2677 | 4421 | 3537 | 5557 | 4445 | 6692 | 5354 | 7528 | 6023 |
| 18 | 450 | Shaft Side (Pref.) | 1298 | 1622 | 2433 | 3041 | 3244 | 4055 | 4379 | 5474 | 5271 | 6589 | 6325 | 7907 | 7461 | 9327 |
| | | Disc Side (N. Pref.) | 1784 | 1427 | 3345 | 2676 | 4460 | 3568 | 6021 | 4817 | 7248 | 5798 | 8698 | 6958 | 10259 | 8207 |
| 20 | 500 | Shaft Side (Pref.) | 1470 | 1837 | 2756 | 3445 | 3675 | 4594 | 4928 | 6160 | 6515 | 8143 | 7851 | 9814 | 9187 | 11485 |
| | | Disc Side (N. Pref.) | 2021 | 1617 | 3790 | 3032 | 5053 | 4042 | 6776 | 5420 | 8958 | 7166 | 10795 | 8636 | 12632 | 10106 |
| 24 | 600 | Shaft Side (Pref.) | 2186 | 2733 | 4099 | 5124 | 5466 | 6832 | 6979 | 8724 | 9249 | 11562 | 12108 | 15135 | 14294 | 17869 |
| | | Disc Side (N. Pref.) | 3006 | 2405 | 5636 | 4509 | 7515 | 6012 | 9596 | 7677 | 12718 | 10174 | 16649 | 13319 | 19655 | 15724 |

Notes:-

*Flow from stem side is the preferred flow direction. Flow from retainer side is non-preferred flow direction. Arrow on valve body indicates the preferred flow direction.

1. BTO - Break to Open; RTO - Run to Open; ETO - End to Open; BTC - Break to Close; RTC - Run to Close; ETC - End to Close. (Pref. ) = Preferred , (N. Pref.) = Non Preferred.
2. RTO, ETO, BTC, RTC= 0.4 x Max (BTO, ETC)
3. For actuator sizing, the minimum valve differential pressure shall be 3.5 bar. For differential pressures above 3.5 bar the intermediated values to be interpolated. For gear operator sizing, the full rated torque to be considered.
4. The published torque values are common for both laminar seal & metal seal without any factor of safety. For operator sizing, factor of 30% to be considered.
5. For valves with extension (cryogenic service / high temperature service), 1.5 times of preferred side BTO torque to be considered as a base torque without factor of safety and valves shall be offered as uni-directional. For operator sizing, factor of 30% to be considered.
6. The published torque values are without factor of safety.
7. The following factor of safety shall be considered for operator sizing:

clean service (liquid, steam, clean gas and non-abrasive) = 1.3, high solids slurry = 1.5, Dry gas= 1.7

# TORQUE DATA

## ASME CLASS 600

| Valve Size | | Flow Direction* | Torque (Nm) at various differential pressure (Bar) for CL 600 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10 Bar | | 30 Bar | | 40 Bar | | 60 Bar | | 80 Bar | | 103.4 Bar | |
| INCH | DN | | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO | ETC | BTO |
| 3 | 80 | Shaft Side (Pref.) | 131 | 164 | 175 | 219 | 204 | 255 | 248 | 310 | 292 | 365 | 379 | 474 |
| | | Disc Side (N. Pref.) | 181 | 144 | 241 | 193 | 281 | 225 | 341 | 273 | 401 | 321 | 521 | 417 |
| 4 | 100 | Shaft Side (Pref.) | 223 | 278 | 297 | 371 | 346 | 433 | 421 | 526 | 495 | 618 | 643 | 804 |
| | | Disc Side (N. Pref.) | 306 | 245 | 408 | 327 | 476 | 381 | 578 | 463 | 680 | 544 | 884 | 708 |
| 6 | 150 | Shaft Side (Pref.) | 465 | 582 | 620 | 775 | 724 | 905 | 879 | 1098 | 1034 | 1292 | 1344 | 1680 |
| | | Disc Side (N. Pref.) | 640 | 512 | 853 | 682 | 995 | 796 | 1208 | 967 | 1422 | 1137 | 1848 | 1478 |
| 8 | 200 | Shaft Side (Pref.) | 859 | 1074 | 1145 | 1431 | 1317 | 1646 | 1603 | 2004 | 1889 | 2362 | 2405 | 3006 |
| | | Disc Side (N. Pref.) | 1181 | 945 | 1575 | 1260 | 1811 | 1449 | 2204 | 1764 | 2598 | 2078 | 3307 | 2645 |
| 10 | 250 | Shaft Side (Pref.) | 1339 | 1674 | 1785 | 2232 | 2056 | 2570 | 2489 | 3111 | 3030 | 3787 | 4112 | 5140 |
| | | Disc Side (N. Pref.) | 1841 | 1473 | 2455 | 1964 | 2827 | 2261 | 3422 | 2738 | 4166 | 3333 | 5654 | 4523 |
| 12 | 300 | Shaft Side (Pref.) | 1982 | 2477 | 2643 | 3303 | 3138 | 3923 | 3799 | 4748 | 4514 | 5643 | 5395 | 6745 |
| | | Disc Side (N. Pref.) | 2725 | 2180 | 3633 | 2907 | 4315 | 3452 | 5223 | 4179 | 6207 | 4966 | 7418 | 5935 |
| 14 | 350 | Shaft Side (Pref.) | 2621 | 3276 | 3495 | 4368 | 4420 | 5525 | 5499 | 6874 | 6475 | 8094 | 7709 | 9637 |
| | | Disc Side (N. Pref.) | 3604 | 2883 | 4805 | 3844 | 6077 | 4862 | 7561 | 6049 | 8904 | 7123 | 10600 | 8480 |
| 16 | 400 | Shaft Side (Pref.) | 3854 | 4817 | 5138 | 6423 | 7091 | 8863 | 9146 | 11432 | 9968 | 12460 | 11818 | 14773 |
| | | Disc Side (N. Pref.) | 5299 | 4239 | 7065 | 5652 | 9750 | 7800 | 12575 | 10060 | 13706 | 10965 | 16249 | 12999 |
| 18 | 450 | Shaft Side (Pref.) | 5335 | 6669 | 7113 | 8892 | 9552 | 11940 | 12194 | 15243 | 14735 | 18418 | 17275 | 21596 |
| | | Disc Side (N. Pref.) | 7336 | 5868 | 9781 | 7825 | 13134 | 10507 | 16767 | 13414 | 20260 | 16208 | 23753 | 19003 |
| 20 | 500 | Shaft Side (Pref.) | 6482 | 8102 | 8642 | 10803 | 11920 | 14901 | 14901 | 18626 | 17881 | 22351 | 20861 | 26078 |
| | | Disc Side (N. Pref.) | 8912 | 7130 | 11883 | 9507 | 16391 | 13113 | 20488 | 16391 | 24586 | 19669 | 28684 | 22947 |
| 24 | 600 | Shaft Side (Pref.) | 10890 | 13613 | 14520 | 18150 | 20328 | 25410 | 24878 | 31097 | 29524 | 36905 | 34848 | 43564 |
| | | Disc Side (N. Pref.) | 14974 | 11979 | 19965 | 15972 | 27951 | 22361 | 34207 | 27365 | 40595 | 32476 | 47916 | 38333 |

Notes:-

*Flow from stem side is the preferred flow direction. Flow from retainer side is non-preferred flow direction. Arrow on valve body indicates the preferred flow direction.

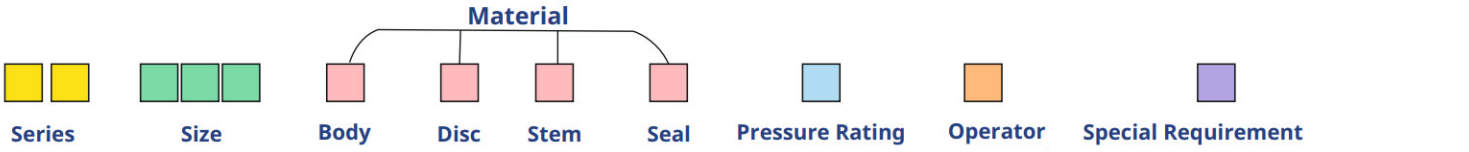
1. BTO - Break to Open; RTO - Run to Open; ETO - End to Open; BTC - Break to Close; RTC - Run to Close; ETC - End to Close. (Pref. ) = Preferred , (N. Pref.) = Non Preferred.
2. RTO, ETO, BTC, RTC= 0.4 x Max (BTO, ETC)
3. For actuator sizing, the minimum valve differential pressure shall be 10 bar. For differential pressures above 10 bar the intermediated values to be interpolated. For gear operator sizing, the full rated torque to be considered.
4. The published torque values are common for both laminar seal & metal seal without any factor of safety. For operator sizing, factor of 30% to be considered.
5. For valves with extension (cryogenic service / high temperature service), 1.5 times of preferred side BTO torque to be considered as a base torque without factor of safety and valves shall be offered as uni-directional. For operator sizing, factor of 30% to be considered.
6. The published torque values are without factor of safety.
7. The following factor of safety shall be considered for operator sizing:
clean service (liquid, steam, clean gas and non-abrasive) = 1.3, high solids slurry = 1.5, Dry gas= 1.7

## Operator Information

All valves can be direct mounted with gear operators for manual operation. Gear operators can also be attached with chainwheel operators for opening or closing valves located on pipelines at high elevations.

All valves can be direct mounted with pneumatic actuators or electric actuators and accessories for complete automation options such as fail open/close and positioner controlled. Valves can be mounted with manual overrides.

# HOW TO ORDER




**Example**: Part Number for a Series 4B, Lug Style DelVal Triple Offset Valve, 4", CF8M Body w/ Stellite 21 body seat overlay, CF8M Disc, 17-4 Stem, S31803 + Graphite Seal, Class 150 Rated with a Gear Operator with Padlock and No Special Requirement would be

| 4 | B | 0 | 4 | 0 | 4 | 4 | 6 | D | 5 | G | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| Series | 1 |
|---|---|
| 4A Wafer Class 150 | 4A |
| 4B Lug Class 150 | 4B |
| 4C Double Flanged Short Pattern Class 150 | 4C |
| 4P Double Flanged Long Pattern Class 150 | 4P |
| 4W Buttweld Class 150 | 4W |
| 4D Wafer Class 300 | 4D |
| 4E Lug Class 300 | 4E |
| 4F Double Flanged Short Pattern Class 300 | 4F |
| 4Q Double Flanged Long Pattern Class 300 | 4Q |
| 4Y Buttweld Class 300 | 4Y |
| 4G Wafer Class 600 | 4G |
| 4H Lug Class 600 | 4H |
| 4J Double Flanged Short Pattern Class 600 | 4J |
| 4R Double Flanged Long Pattern Class 600 | 4R |
| 4K Buttweld Class 600 | 4K |
| 4U Double Flanged Class 900 | 4U |
| 4T Double Flanged Class 1500 | 4T |
| 4V Buttweld Class 1500 | 4V |

| Size | 2 |
|---|---|
| 3" | 030 |
| 4" | 040 |
| 5" | 050 |
| 6" | 060 |
| 8" | 080 |
| 10" | 100 |
| 12" | 120 |
| 14" | 140 |
| ⋮ | ⋮ |
| 84" | 840 |

| | Body Material | 3 |
|---|---|---|
| Laminated Seal Configurations | ASTM A216 WCC+Stellite 21 body seat overlay | 2 |
| | ASTM A216 WCB+Stellite 21 body seat overlay | 3 |
| | ASTM A351 CF8M+Stellite 21 body seat overlay | 4 |
| | ASTM A995 5A+Stellite 21 body seat overlay | 5 |
| | ASTM A995 6A+Stellite 21 body seat overlay | 6 |
| | ASTM A995 4A+Stellite 21 body seat overlay | 7 |
| | ASTM A352 LCB+Stellite 21 body seat overlay | 8 |
| | ASTM A352 LCC+Stellite 21 body seat overlay | 9 |
| | ASTM A351 CF8+Stellite 21 body seat overlay | 1 |
| | ASTM A351 CN7M+Stellite 21 body seat overlay | A |
| | ASTM A351 CF3+Stellite 21 body seat overlay | B |
| | ASTM A351 CF3M+Stellite 21 body seat overlay | C |
| | ASTM A351 CF8C+Stellite 21 body seat overlay | D |
| | ASTM A351 CK3MCuN+Stellite 21 body seat overlay | E |
| | ASTM A351 CF10M+Stellite 21 body seat overlay | F |
| | ASTM A217 WC6+Stellite 21 body seat overlay | G |
| | ASTM A217 WC9+Stellite 21 body seat overlay | H |
| | ASTM A352 LC1+Stellite 21 body seat overlay | J |
| | ASTM A352 LC2+Stellite 21 body seat overlay | K |
| Solid Metal Seal Configurations | ASTM A216 WCC+Stellite 6 body seat overlay | L |
| | ASTM A216 WCB+Stellite 6 body seat overlay | M |
| | ASTM A351 CF8M+Stellite 6 body seat overlay | N |
| | ASTM A995 5A+Stellite 6 body seat overlay | 0 |
| | ASTM A995 6A+Stellite 6 body seat overlay | P |
| | ASTM A995 4A+Stellite 6 body seat overlay | Q |
| | ASTM A352 LCB+Stellite 6 body seat overlay | R |
| | ASTM A352 LCC+Stellite 6 body seat overlay | S |
| | ASTM A351 CF8+Stellite 6 body seat overlay | T |
| | ASTMA351 CN7M+Stellite 6 body seat overlay | U |
| | ASTM A351 CF3+Stellite 6 body seat overlay | V |
| | ASTM A351 CF3M+Stellite 6 body seat overlay | W |
| | ASTM A 351 CF8C+Stellite 6 body seat overlay | X |
| | ASTM A351 CK3MCuN+Stellite 6 body seat overlay | Y |
| | ASTM A351 CFI10M+Stellite 6 body seat overlay | Z |

| Disc Material | 4 |
|---|---|
| ASTM A351 CF8 | 1 |
| ASTM A216 WCC + ENP | 2 |
| ASTM A216 WCB + ENP | 3 |
| ASTM A351CF8M | 4 |
| ASTM A995 5A | 5 |
| ASTM A995 6A | 6 |
| ASTM A995 4A | 7 |
| ASTM A352 LCB + ENP | 8 |
| ASTM A352 LCC + ENP | 9 |
| ASTM A351 CN7M | A |
| ASTM A351 CF3 | B |
| ASTM A351 CF3M | C |
| ASTM A351 CF8C | D |
| ASTM A351 CK3MCuN | E |
| ASTM A351CF10M | F |
| ASTM A217 WC6 + ENP | G |
| ASTM A217 WC9 + ENP | H |
| ASTM A352 LC1 + ENP | J |
| ASTM A352 LC2 + ENP | K |
| ASTM 494 M35-1 | M |

| Stem Material | 5 |
|---|---|
| ASTM B637 UNS N00718 | 4 |
| ASTM A479 Type XM-19 | 5 |
| ASTM A564 Type 630 17-4PH (H1150D) | 6 |
| ASTM A479 UNS S32760 | 7 |
| ASTM A479 UNS S32750 | 8 |
| ASTM A479 UNS S31803 | 9 |
| ASTM B865 N05500 | M |
| ASTM A564 Type 630 17-4PH (H900) | H |
| ASTM A479 410 Cond.3 | 3 |
| ASTM A182 Gr.F51 | D |
| ASTM A182 Gr.F53 | F |
| ASTM A182 Gr.F55 | S |

| | Seal Ring Material | 6 |
|---|---|---|
| Laminated | S32750+Graphite | C |
| | S31803+Graphite | D |
| | S32760+Graphite | E |
| | XM-19+Graphite | F |
| | Inconel 625+Graphite | L |
| | Inconel 718+Graphite | M |
| Solid Metal | S31803+Stellite 21 | G |
| | S32750+Stellite 21 | H |
| | S32760+Stellite 21 | J |
| | XM-19+Stellite 21 | K |
| | SS316+Stellite 21 | B |

| Pressure Rating | 7 |
|---|---|
| Class 150 | 5 |
| Class 300 | 6 |
| Class 600 | 7 |
| Class 900 | 8 |
| Class 1500 | 9 |

| Operator | 8 |
|---|---|
| Bare Stem | B |
| Spring Return Actuator - Fail Close | S |
| Spring Return Actuator - Fail Open | 0 |
| Electric Actuator | E |
| Gear Operator with Padlock | G |
| Gear Operator without Padlock | W |

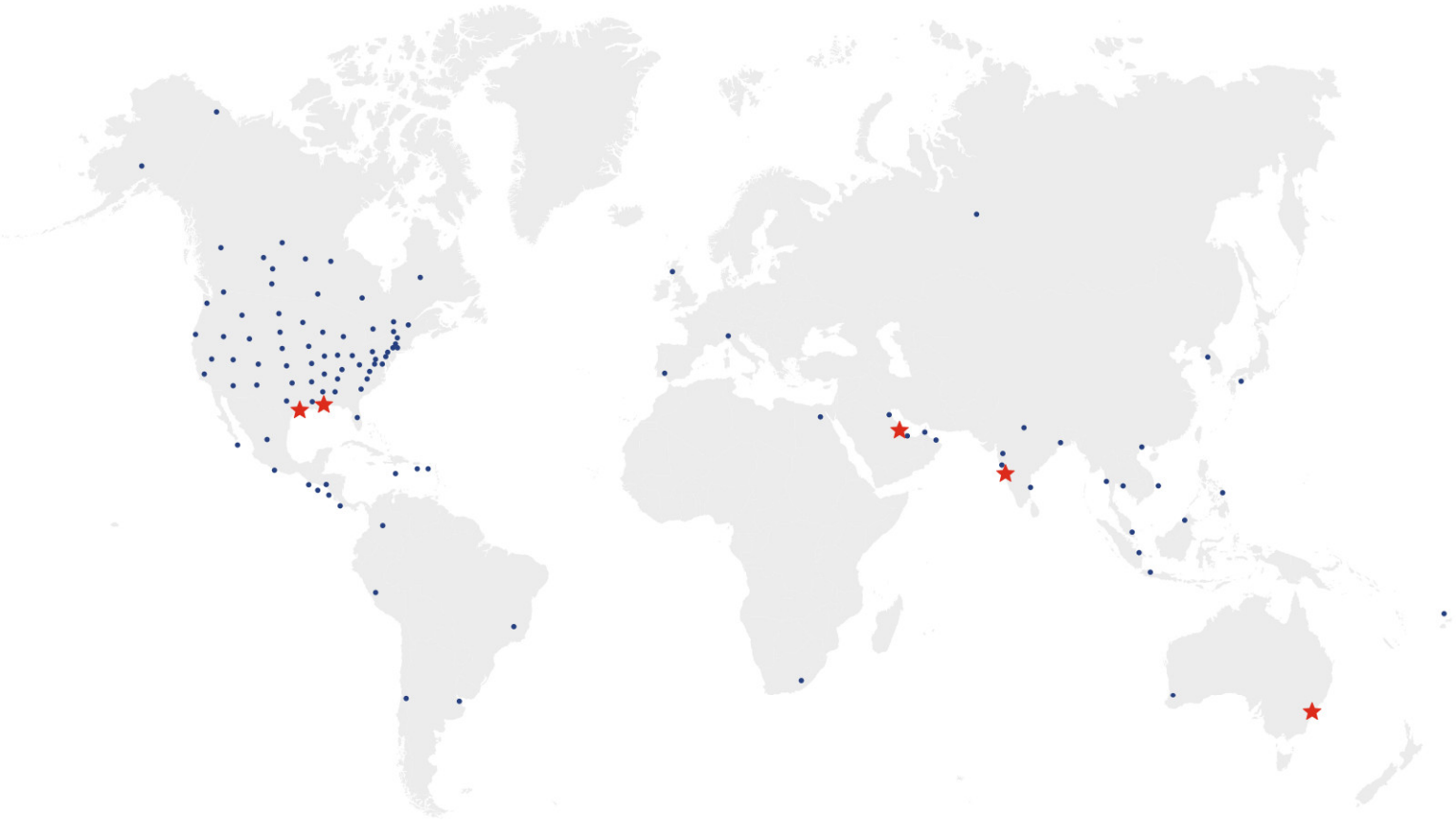
| Special Requirement | 9 |
|---|---|
| No Special Requirements | 0 |
| Special Requirement | S |
| NSF Name Plate | N |
| Quad Material Grade Certified | Q |
| Dual Material Grade Certified | D |

# 100% TESTING
# 100% SERIALIZATION

3-YEAR WARRANTY ON DELVAL PRODUCTS

## CERTIFICATES

ISO 9001 · ISO 14001 · ISO 45001 · API 609 CAT A&B · SIL3 · PED CERTIFIED · UL NSF/ANSI 61 · UL NSF/ANSI 372 · DNV

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