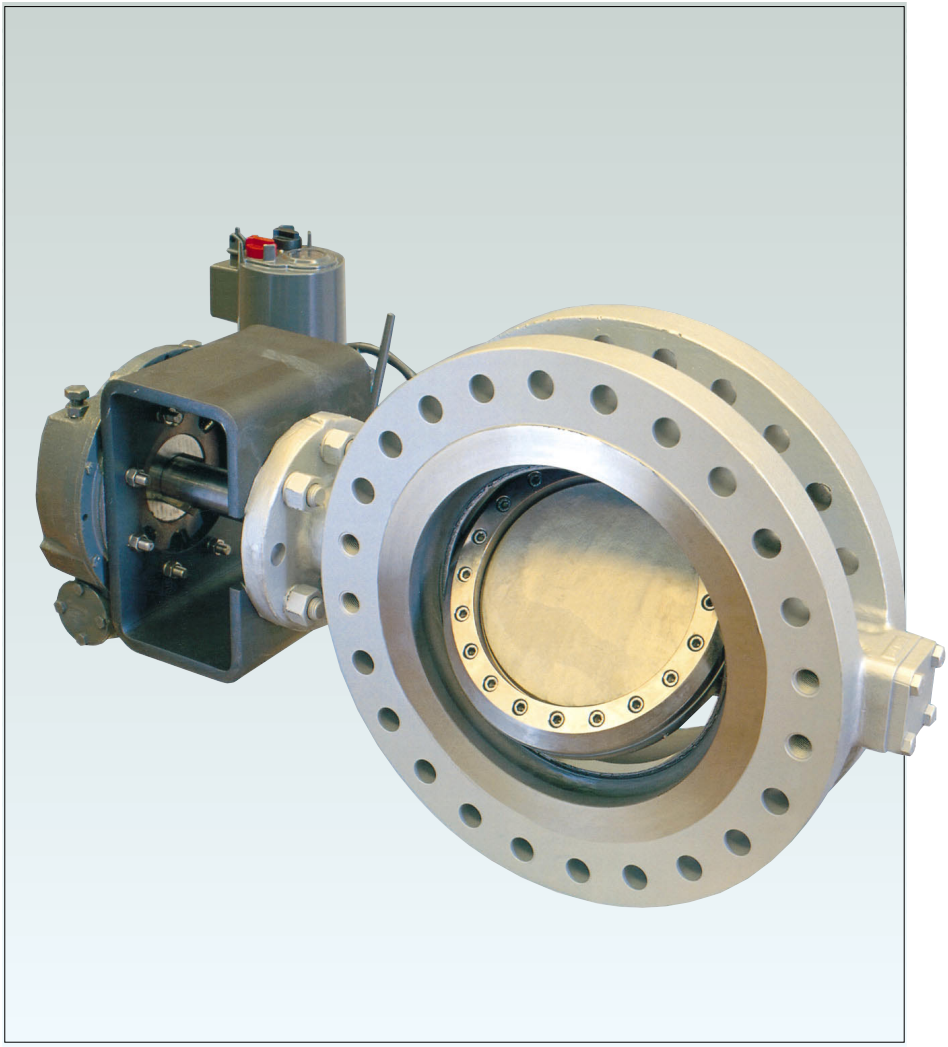
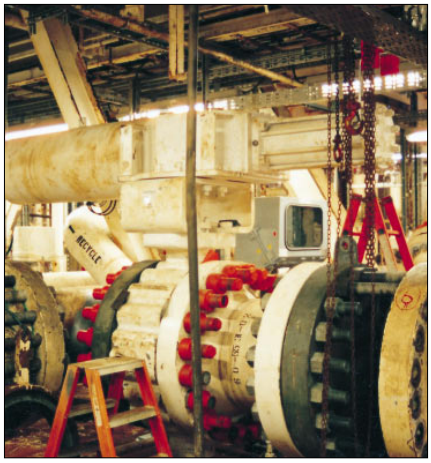
vanessa
tyco valves & controls

**The outstanding performance of triple offset, metal seated Vanessa Series 30,000 valve is the ideal solution to achieve perfect shutoff in any process.**

## Features

- Torque generated elastic metal seal provides zero leakage performance, as from API 598 and API 6D.
- Torque-seating action ensures continuous bi-directional, zero leakage performance.
- Quarter turn non-rubbing design is achieved by a unique, triple offset geometry, completely eliminating all seat to seal rubbing throughout the valve's 90 degrees rotation.
- Stellite® hardfaced standard integral seat results in broader applications, longer valve life and less maintenance.
- Single-piece cast body, with face-to-face dimensions in accordance to ISO 5752, ANSI B16.10 and API 609 provides interchangeability with gate, high performance butterfly, plug and other valves for simpler and more flexible installation.
- All metal construction and sealing and zero leakage performance translate into and inherently firesafe valve.
- Long-length hardened bearings, incorporating a standard reinforced, die-formed, flexible graphite bearing protector ensure additional reliability.
- Internally and externally retained, three times blowout proof stem is safer to operate and provides complete compliance with API 609.
- Integral position indicators on the stem and the top mounting flange ensure positive disc position indication.



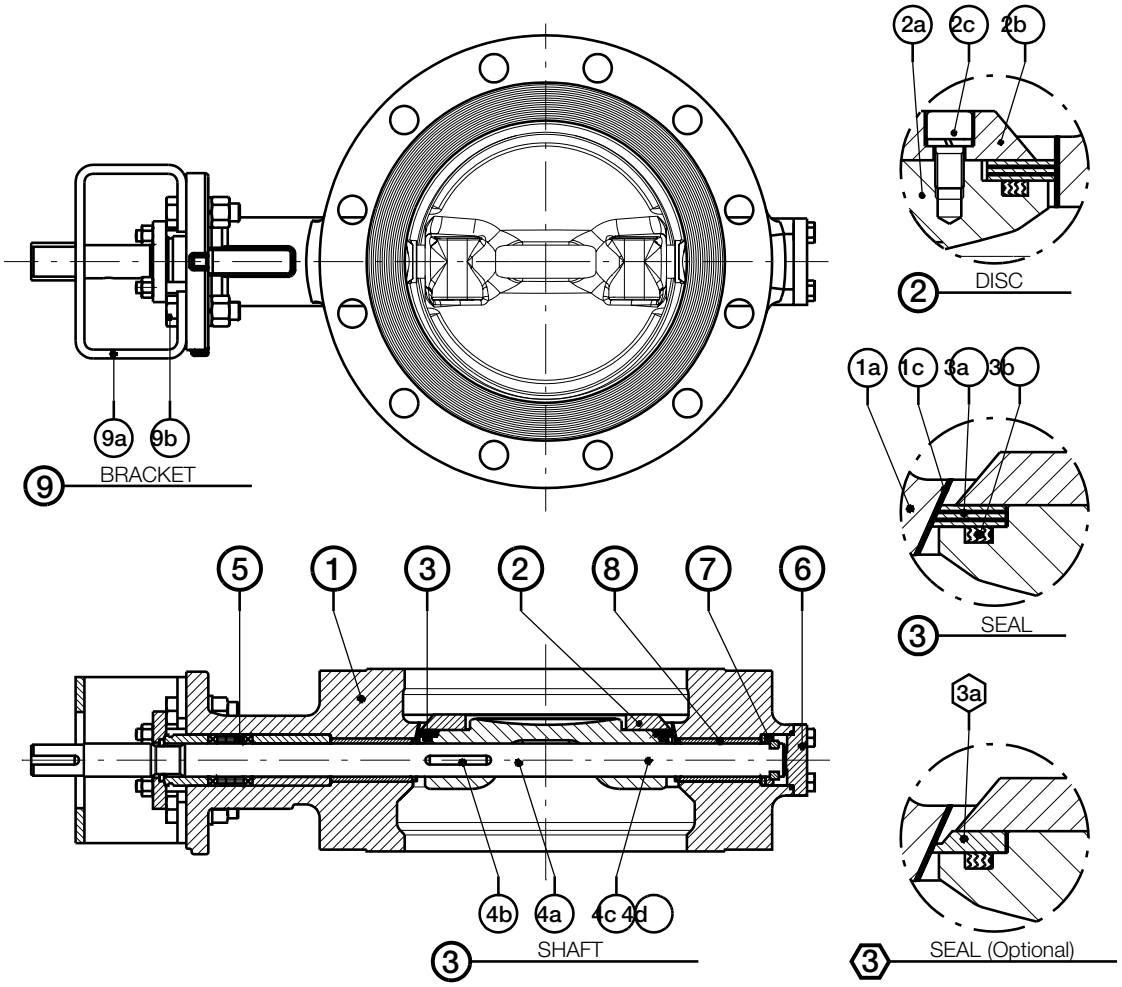


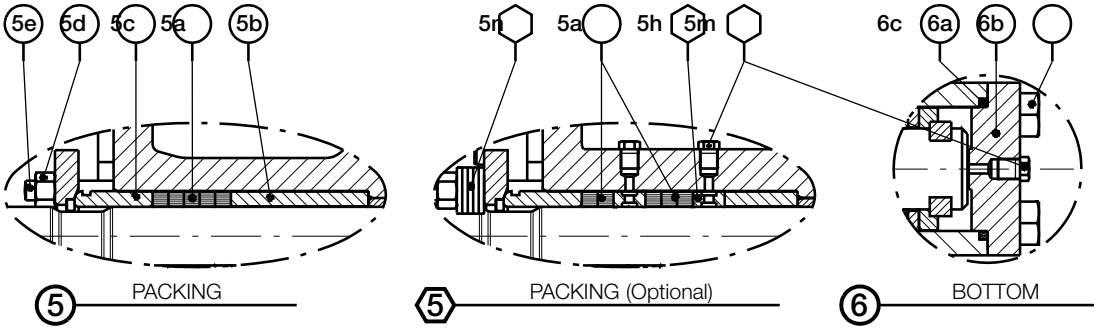
## Technical data

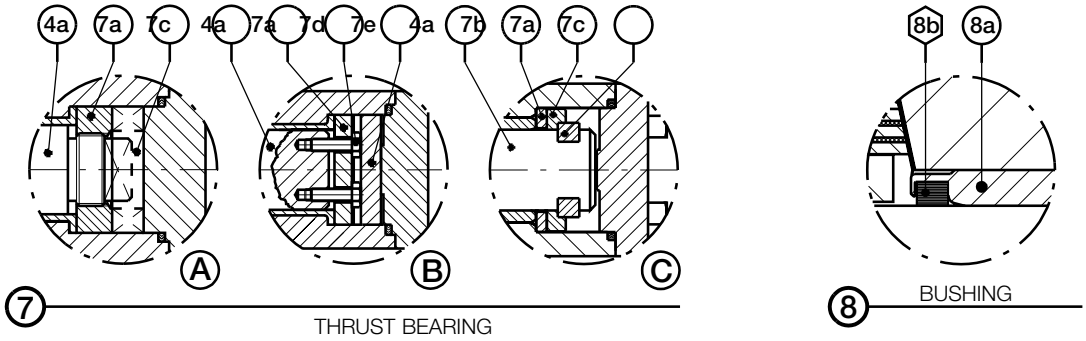
| | |
|---|---|
| Design standards | : ANSI B16.34<br>DIN 3840 |
| Flange Drilling | : ANSI B16.5,<br>ANSI B16.47<br>(Series A & B),<br>DIN PN 10-16-<br>25-40-64-100-160. |
| Sizes (mm) | : 80 to 2100<br>(3” to 84”) |
| Face-to-face | : ISO 5752,<br>ANSI B16.10,<br>API 609. |
| Temperature range | : from -254 °C to<br>+ 815°C. |

## General application

The Vanessa valve is successfully installed in the following industries: Oil and Gas Processing, Offshore Platforms, Refineries, Hydrocarbon Storage and Transportation, Liquid Natural Gas (LNG) Storage and Transportation, Chemical and Petrochemical Plants, Power Plants, District Heating, Pulp and Paper, Steel Mills, Sugar Mills. Furthermore, Vanessa has a long-lasting experience of valves installed on services with the following media: Steam (Saturated and Superheated), Geothermal Steam, Hydro-carbons, Hydrogen, Oxygen, Cryogenic Fluids, Hot Gases, Sulphur (Tail Gas), Chemical Solvents, Chlorinated Solvents, Flare Gas.


9a
9b
9 BRACKET
2a
2c
2b
2 DISC
1a
1c
3a
3b
3 SEAL
5
1
3
2
8
7
6
4b
4a
4c
4d
3 SHAFT
3a
3 SEAL (Optional)


5e
5d
5c
5a
5b
5 PACKING
5n
5a
5h
5m
5 PACKING (Optional)
6c
6a
6b
6 BOTTOM


4a
7a
7c
4a
7a
7d
7e
4a
7b
7a
7c
A
B
C
7 THRUST BEARING
8b
8a
8 BUSHING

## Material selection

| Item | Note | Description | Body in Carbon Steel | Body in Stainless Steel |
|---|---|---|---|---|
| 1a | | Body | ASTM A216 WCB | ASTM A351 gr. CF8M |
| 1b | | Body Seat | Stellite® gr.21 Weld Overlay | Stellite® gr.21 Weld Overlay |
| 2a | ❑ | Disc | ASTM A216 WCB or ASTM A105 | ASTM A351 gr.CF8M or ASTM A182 Type F316 |
| 2b | | Retainer Flange | ASTM A516 | AISI 316 |
| 2c | | Screw | ISO 3506 A4 (AISI 316) | ISO 3506 A4 (AISI 316) |
| 3a | ● | Seal Ring | UNS S31803 (Duplex) + Graphite | UNS S31803 (Duplex) + Graphite |
| 3b | ● | Disc Spiral Wound Gasket | AISI 316 + Graphite | AISI 316 + Graphite |
| 4a | | Shaft | ASTM A182 F6a | ASTM A479 Type XM19 (UNS S20910) |
| 4b | | Disc Key | AISI 410 | UNS S20910 |
| 4c | | Pin | AISI 410 | UNS S20910 |
| 4d | | Pin Retainer | AISI 316 | AISI 316 |
| 5a | ● | Packing | Graphite | Graphite |
| 5b | | Spacer | AISI 316 | AISI 316 |
| 5c | | Packing Bushing | AISI 316 | AISI 316 |
| 5d | | Stud Nut | ISO 3506 A2 (AISI 304) | ISO 3506 A2 (AISI 304) |
| 5e | | Stud Bolts | ISO 3506 A2 (AISI 304) | ISO 3506 A2 (AISI 304) |
| 6a | | Bottom Flange | ASTM A516 | ASTM A240 Type 316 |
| 6b | | Screw | ISO 3506 A2 (AISI 304) | ISO 3506 A2 (AISI 304) |
| 6c | ● | Bottom Spiral Wound Gasket | AISI 316 + Graphite | AISI 316 + Graphite |
| 7a | | Thrust Bearing | AISI 316 or AISI 410 | UNS S20910 |
| 7b | | Thrust Bearing Washer | AISI 316 | AISI 316 |
| 7c | | Key | AISI 316 | AISI 316 |
| 7d | | Screw | ISO 3506 A4 (AISI 316) | ISO 3506 A4 (AISI 316) |
| 7e | | Unloosening Washer | AISI 410 | AISI 316 |
| 8a | | Bearing | AISI 304 Hard Faced | AISI 316 Hard Faced |
| 9a | | Bracket | Carbon Steel | Carbon Steel |
| 9b | | Screw | Alloy Steel | Alloy Steel |

## Options (available upon request)

| | | | | |
|---|---|---|---|---|
| **Bearing Protector** | | | | |
| 8b | | Bearing Protector | Reinforced Graphite | Reinforced Graphite |
| **Bearing and Packing Flushing** | | | | |
| 5h | | Lantern Ring | AISI 316 | AISI 316 |
| 5m | | Plug | AISI 316 | AISI 316 |
| **Live Loaded Packing** | | | | |
| 5n | | Belleville Spring | Alloy Steel | Alloy Steel |
| **Seal Ring** | | | | |
| 3a | ● | Seal Ring | UNS S17400 | UNS S20910 or UNS S21800 |

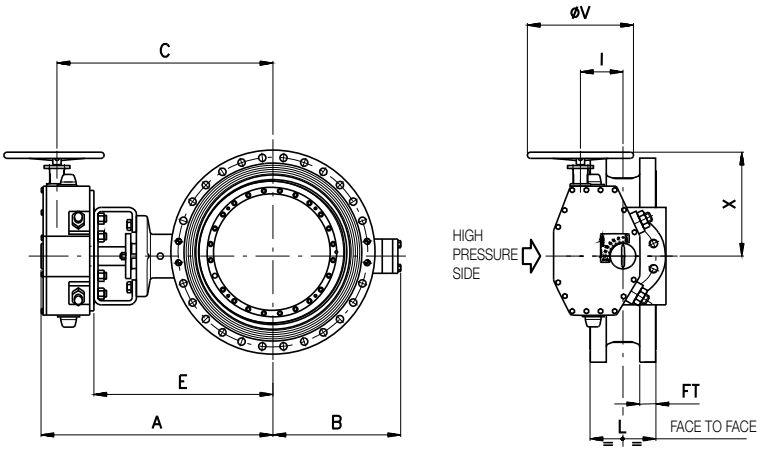
### Notes

❑ The selection between cast or forged material depends on valve size.

● Suggested spare parts.

1. The Vanessa Series 30,000 can be manufactured as standard in the following materials: WCB, CF8M, LCB, WC6, CF3M, Nickel Aluminium Bronze, Duplex, 250 SMO. Additionally, the Vanessa Series 30,000 can be manufactured also in the following materials: Monel, Incoloy, Hastelloy, Superduplex, Inconel, Titanium, Alloy 20.
2. Contents may change without notice.

# Vanessa Series 30,000 Rotary Process Valve
## dimensions and weights




**Notes**

1. Suggested orientation is with the valve shaft horizontal or inclined from vertical.
2. For service above 200°C (392°F) valve body should be insulated to limit body-to-trim differential temperature to 100°C (212°F).
3. All dimensions are in mm and weight is in kilos.
4. Please consult Vanessa for other sizes.
5. Trim A: Δp max. 10 bar.
   Trim B: Δp max. 25 bar.
   Trim C: Δp max. 50 bar.
   Trim D: Δp max. 110 bar.
   Trim E: Δp max. 160 bar.

**Double flanged - face to face ISO 5752 table 1 col.13 - body drilling ANSI B16.5 Cl.150 - trim B**

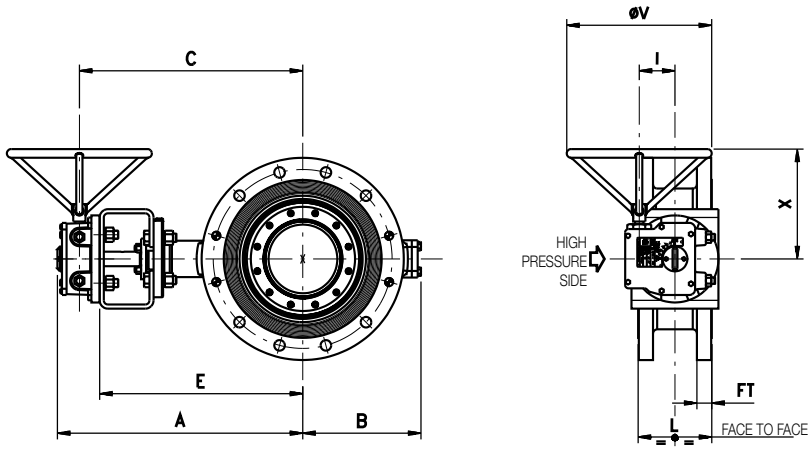
| Size | | Valve Dimensions | | | | | | Gear Dimensions | | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | A | B | E | L | FT | Gear Type | C | I | X | ØV | Valve | Total |
| 80 | 3 | 327 | 125 | 260 | 114 | 24 | M 10 | 295 | 52 | 162 | 125 | 22 | 27 |
| 100 | 4 | 357 | 141 | 290 | 127 | 24 | M 10 | 325 | 52 | 162 | 125 | 28 | 33 |
| 150 | 6 | 397 | 165 | 330 | 140 | 25.5 | M 10 | 365 | 52 | 162 | 125 | 40 | 45 |
| 200 | 8 | 475 | 214 | 385 | 152 | 28.5 | OV 50 | 424 | 67 | 220 | 300 | 61 | 72 |
| 250 | 10 | 515 | 243 | 425 | 165 | 30 | OV 50 | 464 | 67 | 220 | 300 | 83 | 94 |
| 300 | 12 | 592 | 286 | 490 | 178 | 32 | OV 100 | 539 | 86 | 340 | 500 | 127 | 140 |
| 350 | 14 | 627 | 312 | 525 | 190 | 35 | OV 100 | 574 | 86 | 340 | 500 | 166 | 179 |
| 400 | 16 | 665 | 350 | 545 | 216 | 36.5 | OV 200 | 600 | 119 | 370 | 600 | 198 | 228 |
| 450 | 18 | 700 | 383 | 580 | 222 | 40 | OV 200 | 635 | 119 | 370 | 600 | 229 | 259 |
| 500 | 20 | 820 | 407 | 640 | 229 | 43 | MAGA 200-S | 722 | 80 | 315 | 300 | 308 | 350 |
| 600 | 24 | 870 | 484 | 690 | 267 | 47.5 | MAGA 200-C | 772 | 80 | 315 | 300 | 433 | 475 |

**Double flanged - face to face ISO 5752 table 1 col.13 - body drilling ANSI B16.47 series A Cl. 150 - trim B**

| Size | | Valve Dimensions | | | | | | Gear Dimensions | | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | A | B | E | L | FT | Gear Type | C | I | X | ØV | Valve | Total |
| 700 | 28 | 1049 | 525 | 794 | 292 | 71.5 | MAGA 1000-RC | 975 | 200 | 500 | 450 | 767 | 922 |
| 750 | 30 | 1118 | 615 | 863 | 318 | 75 | MAGA 1000-RC | 1044 | 200 | 500 | 450 | 990 | 1145 |
| 800 | 32 | 1143 | 640 | 888 | 318 | 81 | MAGA 1000-RC | 1069 | 200 | 500 | 450 | 1165 | 1320 |
| 900 | 36 | 1305 | 672 | 1005 | 330 | 90 | MAGA 2000-RC | 1231 | 263 | 670 | 700 | 1495 | 1760 |
| 1000 | 40 | 1315 | 741 | 1015 | 410 | 90.5 | MAGA 2000-RC | 1241 | 263 | 670 | 700 | 2035 | 2300 |
| 1050 | 42 | 1357 | 755 | 1057 | 410 | 97 | MAGA 2000-RC | 1283 | 263 | 670 | 700 | 2155 | 2420 |
| 1200 | 48 | 1652 | 866 | 1267 | 470 | 108 | MAGA 14KR | 1460 | 200 | 1055 | 1400 | 3045 | 3665 |
| 1350 | 54 | 1765 | 985 | 1380 | 530 | 121 | MAGA 14KR | 1573 | 200 | 1055 | 1400 | 4300 | 4920 |
| 1400 | 56 | 1820 | 1050 | 1435 | 530 | 124 | MAGA 14KR | 1628 | 200 | 1055 | 1400 | 4530 | 5150 |
| 1500 | 60 | 1892 | 1132 | 1500 | 600 | 132 | MAGA 18KR | 1693 | 230 | 1200 | 1400 | 5740 | 6525 |

**Double flanged - face to face ISO 5752 table 1 col.13 - body drilling ANSI B16.5 Cl.300 - trim C**

| Size | | Valve Dimensions | | | | | | Gear Dimensions | | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | A | B | E | L | FT | Gear Type | C | I | X | ØV | Valve | Total |
| 80 | 3 | 327 | 125 | 260 | 114 | 28.5 | M 10 | 295 | 52 | 162 | 125 | 22 | 27 |
| 100 | 4 | 357 | 141 | 290 | 127 | 32 | M 10 | 325 | 52 | 162 | 125 | 33 | 38 |
| 150 | 6 | 440 | 189 | 350 | 140 | 36.5 | OV 50 | 389 | 67 | 220 | 300 | 61 | 72 |
| 200 | 8 | 517 | 236 | 415 | 152 | 41.5 | OV 100 | 464 | 86 | 340 | 500 | 86 | 99 |
| 250 | 10 | 557 | 272 | 455 | 165 | 47.5 | OV 100 | 504 | 86 | 340 | 500 | 100 | 113 |
| 300 | 12 | 610 | 310 | 490 | 178 | 51 | OV 200 | 545 | 119 | 370 | 600 | 175 | 205 |
| 350 | 14 | 725 | 335 | 545 | 190 | 54 | MAGA 200-S | 627 | 80 | 315 | 300 | 284 | 326 |
| 400 | 16 | 755 | 389 | 575 | 216 | 57 | MAGA 200-C | 657 | 80 | 315 | 300 | 340 | 382 |
| 450 | 18 | 870 | 422 | 660 | 222 | 60.5 | MAGA 400-S | 757 | 100 | 350 | 450 | 487 | 557 |
| 500 | 20 | 910 | 461 | 700 | 229 | 63.5 | MAGA 400-S | 797 | 100 | 350 | 450 | 529 | 599 |
| 600 | 24 | 995 | 531 | 785 | 267 | 70 | MAGA 400-C | 882 | 100 | 350 | 450 | 834 | 904 |




## Double flanged - face to face ISO 5752 table 1 col.14 - body drilling ANSI B16.5 Cl.600 - trim D

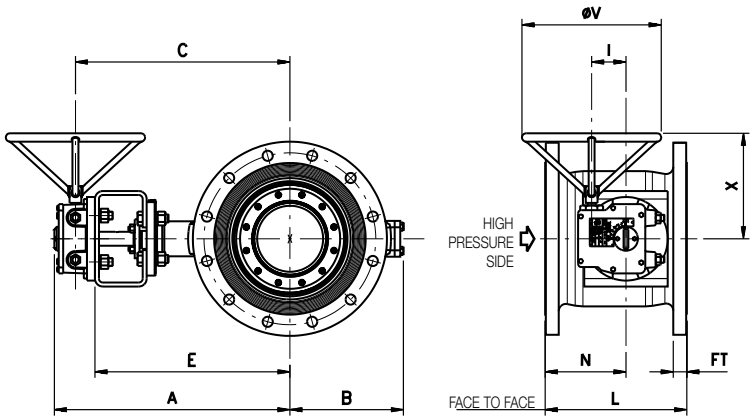
| Size | | Valve Dimensions | | | | | | Gear Dimensions | | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | A | B | E | L | FT | Gear Type | C | I | X | ØV | Valve | Total |
| 80 | 3 | 304 | 136 | 234 | 180 | 31.5 | M 10 | 266 | 60 | 180 | 150 | 30 | 35 |
| 100 | 4 | 388 | 185 | 298 | 190 | 38 | OV 50-A | 337 | 67 | 220 | 300 | 45 | 56 |
| 150 | 6 | 457 | 238 | 355 | 210 | 47.5 | OV 100-C | 404 | 86 | 340 | 500 | 104 | 117 |
| 200 | 8 | 525 | 263 | 405 | 230 | 55.5 | OV 200-C | 460 | 119 | 370 | 600 | 120 | 150 |
| 250 | 10 | 665 | 328 | 485 | 250 | 63.5 | MAGA 200-C | 567 | 80 | 315 | 300 | 252 | 294 |
| 300 | 12 | 748 | 365 | 538 | 270 | 66.5 | MAGA 400-C | 635 | 100 | 350 | 450 | 333 | 403 |
| 350 | 14 | 820 | 390 | 610 | 290 | 70 | MAGA 400-C | 707 | 100 | 350 | 450 | 476 | 546 |
| 400 | 16 | 935 | 438 | 680 | 310 | 76 | MAGA 1000-R | 861 | 200 | 500 | 450 | 694 | 849 |
| 450 | 18 | 938 | 460 | 683 | 330 | 82.5 | MAGA 1000-R | 864 | 200 | 500 | 450 | 750 | 905 |
| 500 | 20 | 1095 | 526 | 795 | 350 | 89 | MAGA 2000-R | 1021 | 263 | 670 | 700 | 1000 | 1265 |
| 600 | 24 | 1185 | 623 | 885 | 390 | 101.5 | MAGA 2000-R | 1111 | 263 | 670 | 700 | 1355 | 1620 |

## Double flanged - face to face ISO 5752 table 1 col.8 - body drilling ANSI B16.5 Cl.900 - trim E

| Size | | Valve Dimensions | | | | | | Gear Dimensions | | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | A | B | E | L | FT | Gear Type | C | I | X | ØV | Valve | Total |
| 150 | 6 | 457 | 238 | 355 | 225 | 55.5 | OV 100-C | 404 | 86 | 340 | 500 | 167 | 180 |
| 200 | 8 | 586 | 293 | 466 | 275 | 63.5 | MAGA 200-C | 521 | 119 | 370 | 600 | 297 | 327 |
| 250 | 10 | 730 | 345 | 520 | 325 | 70 | MAGA 400-C | 617 | 100 | 350 | 450 | 385 | 455 |
| 300 | 12 | 988 | 480 | 733 | 375 | 79.5 | MAGA 1000-R | 914 | 200 | 500 | 450 | 588 | 743 |
| 350 | 14 | 938 | 456 | 683 | 425 | 85.5 | MAGA 1000-R | 864 | 200 | 500 | 450 | 795 | 950 |
| 400 | 16 | 985 | 492 | 730 | 475 | 89 | MAGA 1000-R | 911 | 200 | 500 | 450 | 1228 | 1383 |
| 450 | 18 | 1070 | 510 | 770 | 500 | 101.5 | MAGA 2000-R | 996 | 263 | 670 | 700 | 1442 | 1707 |
| 500 | 20 | 1170 | 590 | 870 | 575 | 108 | MAGA 2000-R | 1096 | 263 | 670 | 700 | 1928 | 2193 |

## Notes

1. Suggested orientation is with the valve shaft horizontal or inclined from vertical.
2. For service above 200°C (392°F) valve body should be insulated to limit body-to-trim differential temperature to 100°C (212°F).
3. All dimensions are in mm and weight is in kilos.
4. Please consult Vanessa for other sizes.
5. Trim A: Δp max. 10 bar.
   Trim B: Δp max. 25 bar.
   Trim C: Δp max. 50 bar.
   Trim D: Δp max. 110 bar.
   Trim E: Δp max. 160 bar.




**Double flanged - face to face ANSI B16.10 table 1 Col. 9 - body drilling ANSI B16.5 Cl. 150 - trim B**

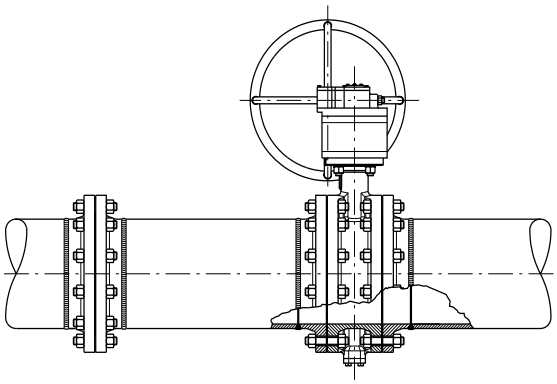
| Size | | Valve Dimensions | | | Weight | |
|---|---|---|---|---|---|---|
| mm | inch | L | N | FT | Valve | Total |
| 80 | 3 | 203 | 124 | 24 | 22 | 27 |
| 100 | 4 | 229 | 89 | 24 | 30 | 35 |
| 150 | 6 | 267 | 102 | 25.5 | 43 | 48 |
| 200 | 8 | 292 | 105 | 28.5 | 70 | 81 |
| 250 | 10 | 330 | 130 | 30 | 98 | 109 |
| 300 | 12 | 356 | 153 | 32 | 139 | 152 |
| 350 | 14 | 381 | 175 | 35 | 189 | 202 |
| 400 | 16 | 406 | 195 | 36.5 | 224 | 254 |
| 450 | 18 | 432 | 216 | 40 | 272 | 302 |
| 500 | 20 | 457 | 228 | 43 | 354 | 396 |
| 600 | 24 | 508 | 230 | 47.5 | 499 | 541 |

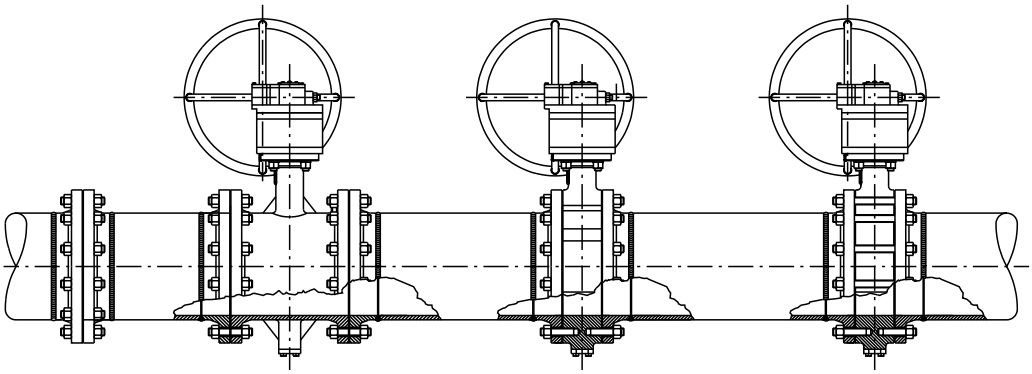
**Double flanged - face to face ANSI B16.10 table 2 Col. 11 - body drilling ANSI B16.5 Cl. 300 - trim C**

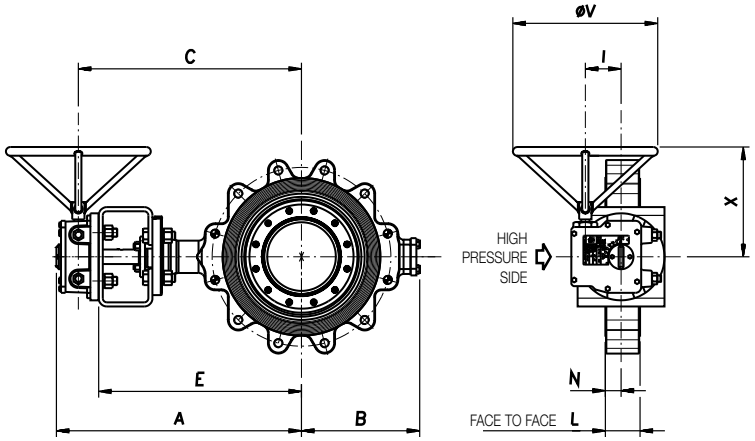
| Size | | Valve Dimensions | | | Weight | |
|---|---|---|---|---|---|---|
| mm | inch | L | N | FT | Valve | Total |
| 80 | 3 | 283 | 198 | 28.5 | 28 | 33 |
| 100 | 4 | 305 | 95 | 32 | 42 | 47 |
| 150 | 6 | 404 | 109 | 36.5 | 80 | 91 |
| 200 | 8 | 419 | 128 | 41.5 | 124 | 137 |
| 250 | 10 | 457 | 140 | 47.5 | 173 | 186 |
| 300 | 12 | 502 | 153 | 51 | 247 | 277 |
| 350 | 14 | 762 | 572 | 54 | 312 | 354 |
| 400 | 16 | 838 | 618 | 57 | 343 | 385 |
| 450 | 18 | 914 | 664 | 60.5 | 522 | 592 |

**Notes**

1. For the dimensions A, B, E, and for Gear Selection and dimensions, please refer to the relevant figures in the previous Double Flanged tables.
2. Suggested orientation is with the valve shaft horizontal or inclined from vertical.
3. For service above 200°C (392°F), valve body should be insulated to limit body-to-trim differential temperature to 100°C (212°F).
4. All dimensions are in mm and weight is in kilos.
5. Please consult Vanessa for other sizes.
6. Trim A: Δp max 10 bar.
   Trim B: Δp max 25 bar.
   Trim C: Δp max 50 bar.
   Trim D: Δp max 110 bar.
   Trim E: Δp max 160 bar.








### Notes

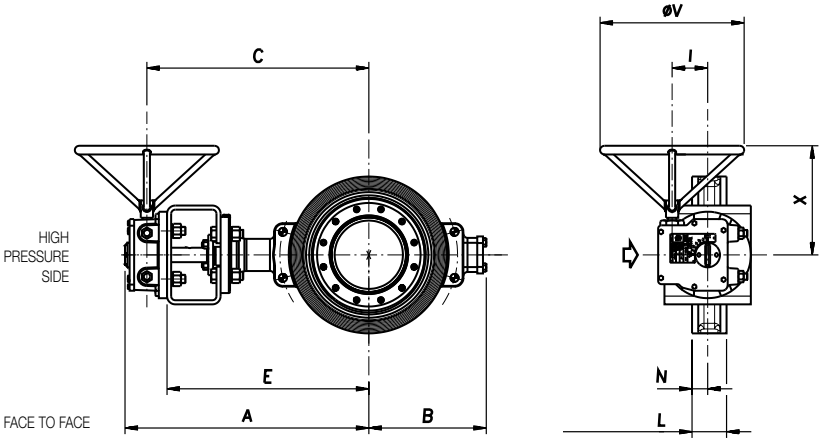
1. For the dimensions A, B, E, and for Gear Selection and dimensions, please refer to the relevant figures in the previous Double Flanged tables.
2. Suggested orientation is with the valve shaft horizontal or inclined from vertical.
3. For service above 200°C (392°F),valve body should be insulated to limit body-to-trim differential temperature to 100°C (212°F).
4. All dimensions are in mm and weight is in kilos.
5. Please consult Vanessa for other sizes.
6. Trim A: Δp max. 10 bar.
   Trim B: Δp max. 25 bar.
   Trim C: Δp max. 50 bar.
   Trim D: Δp max. 110 bar.
   Trim E: Δp max. 160 bar.

### Lugged - face to face API 609 CL.150 body drilling ANSI B16.5 Cl. 150 - trim B

| Size | | Valve Dimensions | | Weight | |
|---|---|---|---|---|---|
| mm | inch | L | N | Valve | Total |
| 80 | 3 | 48 | 20 | 13 | 18 |
| 100 | 4 | 54 | 24 | 17 | 22 |
| 150 | 6 | 57 | 26 | 23 | 28 |
| 200 | 8 | 64 | 28 | 36 | 47 |
| 250 | 10 | 71 | 32 | 49 | 60 |
| 300 | 12 | 81 | 38 | 83 | 96 |
| 350 | 14 | 92 | 44 | 117 | 130 |
| 400 | 16 | 102 | 49 | 160 | 190 |
| 450 | 18 | 114 | 55 | 194 | 224 |
| 500 | 20 | 127 | 63 | 270 | 312 |
| 600 | 24 | 154 | 78 | 387 | 429 |

### Lugged - face to face API 609 CL. 300 body drilling ANSI B16.5 Cl. 300 - trim C

| Valve Dimensions | | Weight | |
|---|---|---|---|
| L | N | Valve | Total |
| 48 | 20 | 18 | 23 |
| 54 | 24 | 22 | 27 |
| 59 | 26 | 41 | 52 |
| 73 | 32 | 56 | 69 |
| 83 | 37 | 77 | 90 |
| 92 | 39 | 119 | 149 |
| 117 | 60 | 254 | 296 |
| 133 | 65 | 300 | 342 |
| 149 | 63 | 455 | 525 |
| 159 | 72 | 499 | 569 |
| 181 | 82 | 788 | 858 |



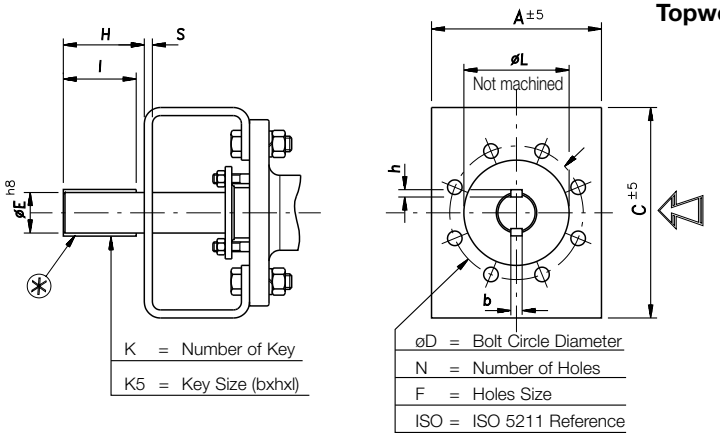

### Wafer- face to face API 609 CL. 150 body drilling ANSI B16.5 Cl.150 - trim B

| Size | | Valve Dimensions | | Weight | |
|---|---|---|---|---|---|
| mm | inch | L | N | Valve | Total |
| 80 | 3 | 48 | 20 | 14 | 19 |
| 100 | 4 | 54 | 24 | 15 | 20 |
| 150 | 6 | 57 | 26 | 20 | 25 |
| 200 | 8 | 64 | 28 | 34 | 45 |
| 250 | 10 | 71 | 32 | 45 | 56 |
| 300 | 12 | 81 | 38 | 73 | 86 |
| 350 | 14 | 92 | 44 | 97 | 110 |
| 400 | 16 | 102 | 49 | 123 | 153 |
| 450 | 18 | 114 | 55 | 164 | 194 |
| 500 | 20 | 127 | 63 | 220 | 262 |
| 600 | 24 | 154 | 78 | 324 | 366 |

### Wafer - face to face API 609 CL. 300 body drilling ANSI B16.5 Cl. 300 - trim C

| Valve Dimensions | | Weight | |
|---|---|---|---|
| L | N | Valve | Total |
| 48 | 20 | 14 | 19 |
| 54 | 24 | 15 | 20 |
| 59 | 26 | 29 | 40 |
| 73 | 32 | 50 | 63 |
| 83 | 37 | 75 | 88 |
| 92 | 39 | 109 | 139 |
| 117 | 60 | 164 | 206 |
| 133 | 65 | 228 | 270 |
| 149 | 63 | 285 | 355 |
| 159 | 72 | 343 | 413 |
| 181 | 82 | 513 | 583 |

## Topworks with bracket - dimensions




### Trim B

| Size | | Shaft Dimension | | | | | Coupling Flange Dimension | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | ØE | H | K | KS (bxhxl) | ISO | A | C | S | ØD | N | F | ØL |
| 80 | 3 | 18 | 36 | 1 | 6x6x36 | F10 | 120 | 140 | 6 | 102 | 4 | 12 | 72 |
| 100 | 4 | 18 | 36 | 1 | 6x6x36 | F10 | 120 | 140 | 6 | 102 | 4 | 12 | 72 |
| 150 | 6 | 28 | 40 | 2 | 8x7x40 | F14 | 175 | 175 | 8 | 140 | 4 | 18 | 103 |
| 200 | 8 | 28 | 40 | 2 | 8x7x40 | F14 | 175 | 175 | 8 | 140 | 4 | 18 | 103 |
| 250 | 10 | 28 | 40 | 2 | 8x7x40 | F14 | 175 | 175 | 8 | 140 | 4 | 18 | 103 |
| 300 | 12 | 35 | 56 | 2 | 10x8x56 | F16 | 200 | 240 | 10 | 165 | 4 | 22 | 133 |
| 350 | 14 | 35 | 56 | 2 | 10x8x56 | F16 | 200 | 250 | 12 | 165 | 4 | 22 | 133 |
| 400 | 16 | 45 | 80 | 2 | 14x9x80 | F16 | 200 | 250 | 12 | 165 | 4 | 22 | 133 |
| 450 | 18 | 45 | 80 | 2 | 14x9x80 | F16 | 200 | 260 | 15 | 165 | 4 | 22 | 133 |
| 500 | 20 | 50 | 80 | 2 | 14x9x80 | F25 | 300 | 340 | 15 | 254 | 8 | 18 | 204 |
| 600 | 24 | 55 | 140 | 2 | 16x10x140 | F25 | 300 | 340 | 15 | 254 | 8 | 18 | 204 |

### Notes

1. Directional arrow represents the direction of the higher pressure side of the valve.
2. The rectangular shaft keys are according to ISO 773 and are shown with valve in closed position.
3. When only one key is foreseen, please consider the one indicated with (*) in the drawing.
4. It is possible to assemble the bracket rotated of 90° in respect of the above configuration.
5. All dimensions are in mm.
6. Trim A: Δp max. 10 bar.
   Trim B: Δp max. 25 bar.
   Trim C: Δp max. 50 bar.
   Trim D: Δp max. 110 bar.
   Trim E: Δp max. 160 bar.

### Trim C

| Size | | Shaft Dimension | | | | | Coupling Flange Dimension | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | ØE | H | K | KS (bxhxl) | ISO | A | C | S | ØD | N | F | ØL |
| 80 | 3 | 18 | 36 | 1 | 6x6x36 | F10 | 120 | 140 | 6 | 102 | 4 | 12 | 72 |
| 100 | 4 | 18 | 36 | 1 | 6x6x36 | F10 | 120 | 140 | 6 | 102 | 4 | 12 | 72 |
| 150 | 6 | 28 | 40 | 2 | 8x7x40 | F14 | 175 | 175 | 8 | 140 | 4 | 18 | 103 |
| 200 | 8 | 35 | 56 | 2 | 10x8x56 | F16 | 200 | 240 | 10 | 165 | 4 | 22 | 133 |
| 250 | 10 | 35 | 56 | 2 | 10x8x56 | F16 | 200 | 250 | 12 | 165 | 4 | 22 | 133 |
| 300 | 12 | 45 | 80 | 2 | 14x9x80 | F16 | 200 | 260 | 15 | 165 | 4 | 22 | 133 |
| 350 | 14 | 50 | 80 | 2 | 14x9x80 | F25 | 300 | 340 | 15 | 254 | 8 | 18 | 204 |
| 400 | 16 | 55 | 140 | 2 | 16x10x140 | F25 | 300 | 340 | 15 | 254 | 8 | 18 | 204 |
| 450 | 18 | 65 | 140 | 2 | 18x11x140 | F30 | 350 | 400 | 20 | 298 | 8 | 22 | 234 |
| 500 | 20 | 65 | 140 | 2 | 18x11x140 | F30 | 350 | 400 | 20 | 298 | 8 | 22 | 234 |
| 600 | 24 | 75 | 160 | 2 | 20x12x160 | F30 | 350 | 410 | 20 | 298 | 8 | 22 | 234 |

### Trim D

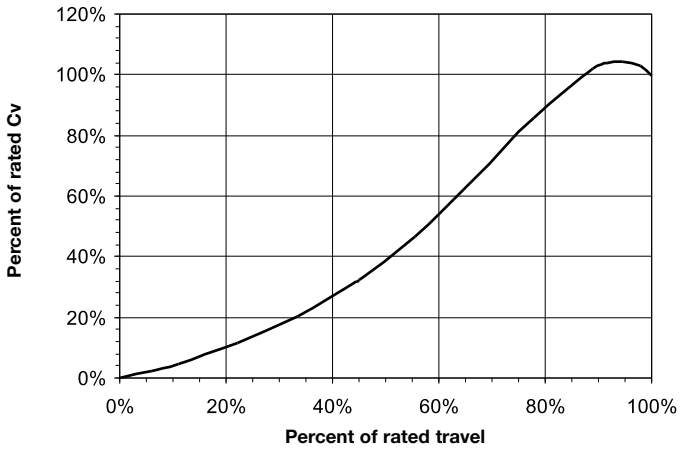
| Size | | Shaft Dimension | | | | | Coupling Flange Dimension | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | ØE | H | K | KS (bxhxl) | ISO | A | C | S | ØD | N | F | ØL |
| 80 | 3 | 20 | 40 | 1 | 6x6x40 | F10 | 120 | 180 | 10 | 102 | 4 | 12 | 77 |
| 100 | 4 | 30 | 40 | 2 | 8x7x40 | F14 | 160 | 250 | 10 | 140 | 4 | 18 | 105 |
| 150 | 6 | 40 | 65 | 2 | 12x8x63 | F16 | 160 | 260 | 10 | 165 | 4 | 22 | 132 |
| 200 | 8 | 45 | 80 | 2 | 14x9x80 | F16 | 160 | 270 | 15 | 165 | 4 | 22 | 135 |
| 250 | 10 | 55 | 110 | 2 | 16x10x110 | F25 | 300 | 330 | 15 | 254 | 8 | 18 | 203 |
| 300 | 12 | 60 | 140 | 2 | 18x11x140 | F30 | 350 | 380 | 18 | 298 | 8 | 22 | 234 |
| 350 | 14 | 70 | 140 | 2 | 20x12x140 | F30 | 350 | 400 | 20 | 298 | 8 | 22 | 234 |
| 400 | 16 | 75 | 160 | 2 | 20x12x160 | F35 | 415 | 470 | 20 | 356 | 8 | 32 | 265 |
| 450 | 18 | 90 | 160 | 2 | 25x14x160 | F35 | 415 | 470 | 20 | 356 | 8 | 32 | 265 |
| 500 | 20 | 100 | 200 | 2 | 28x16x200 | F40 | 475 | 580 | 30 | 406 | 8 | 39 | 305 |
| 600 | 24 | 120 | 220 | 2 | 32x18x220 | F40 | 475 | 580 | 30 | 406 | 8 | 39 | 305 |

## Flow data

**Rated CV - KV - ζ**

| Shaft side | | Trim A | | | Trim B | | | Trim C | | | Trim D | | | Trim E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | ND (in) | Cv | Kv | ζ | Cv | Kv | ζ | Cv | Kv | ζ | Cv | Kv | ζ | Cv | Kv | ζ |
| 75 | 3 | - | - | - | 94 | 81 | 7,65 | 94 | 81 | 7,65 | 150 | 128 | 3,01 | - | - | - |
| 100 | 4 | - | - | - | 210 | 180 | 4,85 | 210 | 180 | 4,85 | 250 | 214 | 3,42 | - | - | - |
| 150 | 6 | - | - | - | 790 | 677 | 1,73 | 630 | 540 | 2,73 | 600 | 514 | 3,01 | 500 | 428 | 4,33 |
| 200 | 8 | - | - | - | 1530 | 1310 | 1,46 | 1250 | 1071 | 2,19 | 1080 | 925 | 2,93 | 930 | 797 | 3,95 |
| 250 | 10 | - | - | - | 2589 | 2217 | 1,25 | 2383 | 2041 | 1,47 | 1700 | 1456 | 2,89 | 1450 | 1242 | 3,97 |
| 300 | 12 | - | - | - | 3923 | 3360 | 1,12 | 3579 | 3065 | 1,35 | 2520 | 2158 | 2,73 | 2150 | 1841 | 3,75 |
| 350 | 14 | - | - | - | 5195 | 4450 | 1,19 | 4627 | 3963 | 1,50 | 4068 | 3484 | 1,94 | 3140 | 2689 | 3,25 |
| 400 | 16 | - | - | - | 6940 | 5944 | 1,14 | 6251 | 5354 | 1,40 | 5380 | 4608 | 1,89 | 4358 | 3733 | 2,88 |
| 450 | 18 | - | - | - | 9116 | 7808 | 1,05 | 8237 | 7055 | 1,29 | 7470 | 6398 | 1,57 | 5670 | 4856 | 2,73 |
| 500 | 20 | - | - | - | 11590 | 9927 | 0,99 | 10440 | 8942 | 1,23 | 9820 | 8411 | 1,39 | 7499 | 6423 | 2,38 |
| 600 | 24 | - | - | - | 17590 | 15066 | 0,90 | 16180 | 13858 | 1,06 | 14940 | 12796 | 1,24 | 10400 | 8908 | 2,56 |
| 700 | 28 | 29570 | 25327 | 0,59 | 28000 | 23982 | 0,65 | 23400 | 20042 | 0,94 | - | - | - | - | - | - |
| 750 | 30 | 34470 | 29524 | 0,57 | 31500 | 26980 | 0,68 | 30000 | 25695 | 0,75 | 23850 | 20428 | 1,19 | - | - | - |
| 800 | 32 | 40060 | 34311 | 0,55 | 36000 | 30834 | 0,68 | 33300 | 28521 | 0,79 | - | - | - | - | - | - |
| 900 | 36 | 52130 | 44649 | 0,52 | 45000 | 38543 | 0,69 | 42500 | 36401 | 0,78 | 32650 | 27965 | 1,32 | - | - | - |
| 1000 | 40 | 64500 | 55244 | 0,51 | 56000 | 47964 | 0,68 | 51800 | 44367 | 0,80 | - | - | - | - | - | - |
| 1050 | 42 | 71440 | 61188 | 0,51 | 61700 | 52846 | 0,68 | 53350 | 45694 | 0,91 | - | - | - | - | - | - |
| 1200 | 48 | 96130 | 82335 | 0,48 | 81000 | 69377 | 0,68 | 73970 | 63355 | 0,81 | - | - | - | - | - | - |

**Cv curve**




## FL-XT-XF values

| Opening angle (°) | FL | XT | $XF_Z$ |
|---|---|---|---|
| 10 | 0.85 | 0.53 | 0.58 |
| 20 | 0.84 | 0.52 | 0.56 |
| 30 | 0.82 | 0.50 | 0.54 |
| 40 | 0.79 | 0.48 | 0.50 |
| 50 | 0.75 | 0.44 | 0.45 |
| 60 | 0.70 | 0.40 | 0.39 |
| 70 | 0.65 | 0.36 | 0.34 |
| 80 | 0.58 | 0.32 | 0.26 |
| 90 | 0.60 | 0.28 | 0.29 |

## Notes

1. Flow direction from shaft side (fluid flow helps closing operation).
2. Rated Cv: Cv value at max. position angle.
3. ζ = flow resistance coefficient.
4. FL: pressure recovery factor for liquid.
5. XT: differential pressure ratio for gas.
6. $XF_Z$: characteristic pressure ratio according to IEC 534-8-3.
7. Trim A: Δp max. 10 bar.
   Trim B: Δp max. 25 bar.
   Trim C: Δp max. 50 bar.
   Trim D: Δp max. 110 bar.
   Trim E: Δp max. 160 bar.
8. The values in the graph are typical and may vary depending on size and trim.

## Cv value calculation

The following factors have to be considered when performing a Cv value calculation: flow value, characteristic, choked and critical flow, and regulation ratio.

**Cv or Kv flow value**
Kv is the flow of water at 15°C in $m^3/h$ and at a pressure drop of 1 bar at constant conditions within the valve.
Cv is the flow of water in gpm at 60°F and at a pressure drop of 1 psi at constant conditions within the valve.
Cv: 1.1675 Kv

**Characteristic according to IEC 534-2/ISA S75.01 and S75.02.**
**Cv/Rated Cv values**
The flow characteristic represents the flow in relation to the opening position of the valve at constant pressure drop.

**Choked and critical flow**
The choked and critical flow is the max. possible flow of compressible and incompressible media through the valve at operating conditions.

**Regulation ratio**
**Cv min/Rated Cv**
The regulation ratio is the ratio of max. and min. flow (Cv or Kv) adjustable without any practical variation.
A calculation program according to IEC 534 is available to calculate the Cv value. The characteristic values and the Cv values may differ slightly depending on the flow direction. This will be allowed for in the calculation program. The noise level is calculated according to VDMA 24422 (liquid) and IEC 534-8-3 (gas).

## Torque data

**Trim B**

| DN (mm) | DN (in) | RUNNING (Nm) | Flow direction | Operating Differential Pressure 6.25 bar end to CLOSE (Nm) | 6.25 bar start to OPEN (Nm) | 12.5 bar end to CLOSE (Nm) | 12.5 bar start to OPEN (Nm) | 25 bar end to CLOSE (Nm) | 25 bar start to OPEN (Nm) |
|---|---|---|---|---|---|---|---|---|---|
| 80 | 3 | 41 | Shaft Side | 79 | 79 | 79 | 79 | 79 | 89 |
| | | | Bidirectional | 79 | 95 | 79 | 95 | 100 | 120 |
| 100 | 4 | 51 | Shaft Side | 108 | 108 | 108 | 108 | 108 | 132 |
| | | | Bidirectional | 108 | 129 | 108 | 129 | 149 | 179 |
| 150 | 6 | 51 | Shaft Side | 187 | 187 | 187 | 187 | 187 | 236 |
| | | | Bidirectional | 187 | 224 | 187 | 224 | 285 | 343 |
| 200 | 8 | 100 | Shaft Side | 256 | 256 | 256 | 256 | 256 | 423 |
| | | | Bidirectional | 256 | 308 | 256 | 308 | 475 | 570 |
| 250 | 10 | 153 | Shaft Side | 475 | 475 | 475 | 475 | 475 | 750 |
| | | | Bidirectional | 475 | 570 | 475 | 570 | 864 | 1.036 |
| 300 | 12 | 209 | Shaft Side | 676 | 676 | 676 | 676 | 676 | 1.122 |
| | | | Bidirectional | 676 | 811 | 676 | 811 | 1.288 | 1.546 |
| 350 | 14 | 273 | Shaft Side | 818 | 818 | 818 | 832 | 818 | 1.529 |
| | | | Bidirectional | 818 | 981 | 860 | 1.032 | 1.719 | 2.063 |
| 400 | 16 | 345 | Shaft Side | 1.078 | 1.078 | 1.078 | 1.136 | 1.078 | 2.099 |
| | | | Bidirectional | 1.078 | 1.293 | 1.179 | 1.415 | 2.358 | 2.829 |
| 450 | 18 | 426 | Shaft Side | 1.371 | 1.371 | 1.371 | 1.498 | 1.371 | 2.783 |
| | | | Bidirectional | 1.371 | 1.645 | 1.559 | 1.871 | 3.119 | 3.742 |
| 500 | 20 | 426 | Shaft Side | 1.490 | 1.490 | 1.490 | 1.745 | 1.490 | 3.277 |
| | | | Bidirectional | 1.490 | 1.787 | 1.830 | 2.196 | 3.659 | 4.391 |
| 600 | 24 | 614 | Shaft Side | 2.162 | 2.162 | 2.162 | 2.881 | 2.162 | 5.456 |
| | | | Bidirectional | 2.162 | 2.594 | 3.007 | 3.608 | 6.014 | 7.217 |
| 650 | 26 | 765 | Shaft Side | 3.754 | 3.754 | 3.754 | 5.387 | 3.754 | 10.392 |
| | | | Bidirectional | 3.754 | 4.505 | 5.756 | 6.907 | 11.512 | 13.814 |
| 700 | 28 | 1.393 | Shaft Side | 5.458 | 5.458 | 5.458 | 9.543 | 5.458 | 18.389 |
| | | | Bidirectional | 5.458 | 6.550 | 9.938 | 11.926 | 19.876 | 23.852 |
| 750 | 30 | 1.726 | Shaft Side | 6.259 | 6.975 | 6.259 | 13.087 | 6.259 | 25.311 |
| | | | Bidirectional | 6.738 | 8.085 | 13.476 | 16.171 | 26.951 | 32.341 |
| 800 | 32 | 1.726 | Shaft Side | 7.219 | 7.372 | 7.219 | 13.882 | 7.219 | 26.900 |
| | | | Bidirectional | 7.231 | 8.677 | 14.462 | 17.355 | 28.925 | 34.710 |
| 900 | 36 | 2.099 | Shaft Side | 10.632 | 10.632 | 10.632 | 18.684 | 10.632 | 36.319 |
| | | | Bidirectional | 10.632 | 12.759 | 19.761 | 23.714 | 39.523 | 47.427 |
| 1000 | 40 | 2.981 | Shaft Side | 13.159 | 13.159 | 13.159 | 23.090 | 13.159 | 44.689 |
| | | | Bidirectional | 13.159 | 15.791 | 24.231 | 29.077 | 48.462 | 58.154 |
| 1050 | 42 | 2.981 | Shaft Side | 14.611 | 15.499 | 14.611 | 29.507 | 14.611 | 57.523 |
| | | | Bidirectional | 15.469 | 18.563 | 30.938 | 37.126 | 61.877 | 74.252 |
| 1200 | 48 | 5.433 | Shaft Side | 22.853 | 22.853 | 22.853 | 36.679 | 22.853 | 70.641 |
| | | | Bidirectional | 22.853 | 27.423 | 38.533 | 46.240 | 77.066 | 92.479 |

**Trim C**

| RUNNING (Nm) | Flow direction | Operating Differential Pressure 12,5 bar end to CLOSE (Nm) | 12,5 bar start to OPEN (Nm) | 25 bar end to CLOSE (Nm) | 25 bar start to OPEN (Nm) | 50 bar end to CLOSE (Nm) | 50 bar start to OPEN (Nm) |
|---|---|---|---|---|---|---|---|
| 64 | Shaft Side | 134 | 134 | 134 | 134 | 134 | 154 |
| | Bidirectional | 134 | 161 | 134 | 161 | 176 | 212 |
| 79 | Shaft Side | 188 | 188 | 188 | 188 | 188 | 236 |
| | Bidirectional | 188 | 226 | 188 | 226 | 272 | 326 |
| 154 | Shaft Side | 358 | 358 | 358 | 358 | 358 | 533 |
| | Bidirectional | 358 | 429 | 358 | 429 | 599 | 719 |
| 321 | Shaft Side | 525 | 525 | 525 | 607 | 525 | 1.053 |
| | Bidirectional | 525 | 630 | 551 | 661 | 1.102 | 1.323 |
| 420 | Shaft Side | 969 | 969 | 969 | 969 | 969 | 1.724 |
| | Bidirectional | 969 | 1.163 | 969 | 1.163 | 1.901 | 2.282 |
| 531 | Shaft Side | 1.371 | 1.371 | 1.371 | 1.401 | 1.371 | 2.537 |
| | Bidirectional | 1.371 | 1.646 | 1.410 | 1.692 | 2.820 | 3.384 |
| 656 | Shaft Side | 1.655 | 1.655 | 1.655 | 1.806 | 1.655 | 3.283 |
| | Bidirectional | 1.655 | 1.986 | 1.809 | 2.170 | 3.617 | 4.341 |
| 944 | Shaft Side | 2.186 | 2.186 | 2.186 | 3.043 | 2.186 | 5.613 |
| | Bidirectional | 2.186 | 2.623 | 3.008 | 3.609 | 6.016 | 7.219 |
| 1.108 | Shaft Side | 2.770 | 2.770 | 2.770 | 3.480 | 2.770 | 6.405 |
| | Bidirectional | 2.770 | 3.324 | 3.480 | 4.175 | 6.959 | 8.351 |
| 1.285 | Shaft Side | 2.999 | 2.999 | 2.999 | 4.485 | 2.999 | 8.327 |
| | Bidirectional | 2.999 | 3.599 | 4.442 | 5.330 | 8.884 | 10.661 |
| 1.679 | Shaft Side | 4.324 | 4.324 | 4.324 | 6.830 | 4.324 | 12.821 |
| | Bidirectional | 4.324 | 5.189 | 6.855 | 8.227 | 13.711 | 16.453 |
| | | | | | | | |
| 3.279 | Shaft Side | 8.076 | 8.076 | 8.076 | 12.764 | 8.076 | 23.888 |
| | Bidirectional | 8.076 | 9.691 | 12.739 | 15.287 | 25.479 | 30.575 |
| 3.864 | Shaft Side | 14.910 | 14.910 | 14.910 | 22.418 | 14.910 | 42.904 |
| | Bidirectional | 14.910 | 17.892 | 23.468 | 28.162 | 46.936 | 56.323 |
| 4.609 | Shaft Side | 14.910 | 14.910 | 14.910 | 23.498 | 14.910 | 44.692 |
| | Bidirectional | 14.910 | 17.892 | 24.176 | 29.011 | 48.352 | 58.022 |
| 6.315 | Shaft Side | 24.726 | 24.726 | 24.726 | 36.449 | 24.726 | 69.739 |
| | Bidirectional | 24.726 | 29.671 | 38.236 | 45.883 | 76.472 | 91.766 |
| 8.375 | Shaft Side | 30.554 | 30.554 | 30.554 | 42.237 | 30.554 | 80.287 |
| | Bidirectional | 30.554 | 36.664 | 44.160 | 52.992 | 88.321 | 105.985 |
| 11.373 | Shaft Side | 29.396 | 35.807 | 29.396 | 65.927 | 29.396 | 126.168 |
| | Bidirectional | 33.060 | 39.672 | 66.120 | 79.344 | 132.240 | 158.688 |

## Torque data

**Trim A**

| DN (mm) | DN (in) | RUNNING (Nm) | Flow direction | Operating Differential Pressure 2,5 bar end to CLOSE (Nm) | 2,5 bar start to OPEN (Nm) | 5 bar end to CLOSE (Nm) | 5 bar start to OPEN (Nm) | 10 bar end to CLOSE (Nm) | 10 bar start to OPEN (Nm) |
|---|---|---|---|---|---|---|---|---|---|
| 700 | 28 | 608 | Shaft Side | 1.872 | 1.942 | 1.872 | 3.579 | 1.872 | 6.855 |
| | | | Bidirectional | 1.872 | 2.247 | 3.650 | 4.380 | 7.300 | 8.760 |
| 750 | 30 | 765 | Shaft Side | 2.146 | 2.643 | 2.146 | 4.903 | 2.146 | 9.424 |
| | | | Bidirectional | 2.475 | 2.970 | 4.950 | 5.940 | 9.900 | 11.879 |
| 800 | 32 | 765 | Shaft Side | 2.476 | 2.771 | 2.476 | 5.159 | 2.476 | 9.936 |
| | | | Bidirectional | 2.636 | 3.163 | 5.272 | 6.327 | 10.544 | 12.653 |
| 900 | 36 | 765 | Shaft Side | 4.051 | 4.051 | 4.051 | 6.754 | 4.051 | 13.125 |
| | | | Bidirectional | 4.051 | 4.862 | 7.182 | 8.618 | 14.363 | 17.236 |
| 1000 | 40 | 1.393 | Shaft Side | 5.014 | 5.014 | 5.014 | 8.626 | 5.014 | 16.555 |
| | | | Bidirectional | 5.014 | 6.016 | 8.932 | 10.719 | 17.864 | 21.437 |
| 1050 | 42 | 1.393 | Shaft Side | 5.567 | 5.906 | 5.567 | 11.116 | 5.567 | 21.535 |
| | | | Bidirectional | 5.766 | 6.920 | 11.533 | 13.839 | 23.066 | 27.679 |
| 1200 | 48 | 1.726 | Shaft Side | 7.465 | 7.465 | 7.465 | 12.701 | 7.465 | 24.539 |
| | | | Bidirectional | 7.465 | 8.958 | 13.331 | 15.998 | 26.663 | 31.995 |

**Trim D**

| DN (mm) | DN (in) | RUNNING (Nm) | Flow direction | Operating Differential Pressure 27,5 bar end to CLOSE (Nm) | 27,5 bar start to OPEN (Nm) | 55 bar end to CLOSE (Nm) | 55 bar start to OPEN (Nm) | 110 bar end to CLOSE (Nm) | 110 bar start to OPEN (Nm) |
|---|---|---|---|---|---|---|---|---|---|
| 80 | 3 | 59 | Shaft Side | 214 | 214 | 214 | 214 | 214 | 324 |
| | | | Bidirectional | 214 | 256 | 214 | 256 | 380 | 456 |
| 100 | 4 | 196 | Shaft Side | 382 | 382 | 382 | 409 | 382 | 719 |
| | | | Bidirectional | 382 | 458 | 387 | 464 | 774 | 929 |
| 150 | 6 | 353 | Shaft Side | 700 | 700 | 700 | 934 | 700 | 1.691 |
| | | | Bidirectional | 700 | 840 | 898 | 1.077 | 1.795 | 2.154 |
| 200 | 8 | 608 | Shaft Side | 1.666 | 1.666 | 1.666 | 1.694 | 1.666 | 3.084 |
| | | | Bidirectional | 1.666 | 1.999 | 1.723 | 2.068 | 3.447 | 4.136 |
| 250 | 10 | 745 | Shaft Side | 2.678 | 2.678 | 2.678 | 2.833 | 2.678 | 5.293 |
| | | | Bidirectional | 2.678 | 3.214 | 2.996 | 3.595 | 5.991 | 7.190 |
| 300 | 12 | 1.079 | Shaft Side | 3.469 | 3.469 | 3.469 | 4.125 | 3.469 | 7.711 |
| | | | Bidirectional | 3.469 | 4.163 | 4.280 | 5.136 | 8.559 | 10.271 |
| 350 | 14 | 1.337 | Shaft Side | 4.528 | 4.528 | 4.528 | 4.941 | 4.528 | 9.214 |
| | | | Bidirectional | 4.528 | 5.433 | 5.178 | 6.214 | 10.356 | 12.428 |
| 400 | 16 | 1.687 | Shaft Side | 4.988 | 4.988 | 4.988 | 7.124 | 4.988 | 13.405 |
| | | | Bidirectional | 4.988 | 5.986 | 7.278 | 8.734 | 14.556 | 17.468 |
| 450 | 18 | 4.550 | Shaft Side | 7.924 | 7.924 | 7.924 | 13.228 | 7.924 | 24.182 |
| | | | Bidirectional | 7.924 | 9.509 | 12.538 | 15.046 | 25.076 | 30.091 |
| 500 | 20 | 5.609 | Shaft Side | 10.560 | 10.560 | 10.560 | 17.042 | 10.560 | 31.279 |
| | | | Bidirectional | 10.560 | 12.672 | 16.349 | 19.619 | 32.699 | 39.238 |
| 600 | 24 | 9.434 | Shaft Side | 11.164 | 14.420 | 11.164 | 24.122 | 11.164 | 43.527 |
| | | | Bidirectional | 11.164 | 14.420 | 21.638 | 25.966 | 43.276 | 51.931 |
| 700 | 28 | 9.358 | Shaft Side | 19.986 | 23.024 | 19.986 | 41.369 | 19.986 | 78.059 |
| | | | Bidirectional | 20.344 | 24.412 | 40.687 | 48.825 | 81.375 | 97.650 |
| 750 | 30 | 12.847 | Shaft Side | 29.676 | 29.676 | 29.676 | 52.461 | 29.676 | 98.500 |
| | | | Bidirectional | 29.676 | 35.611 | 51.973 | 62.368 | 103.947 | 124.736 |

## Notes

Trim A: Δp max 10 bar.
Trim B: Δp max 25 bar.
Trim C: Δp max 50 bar.
Trim D: Δp max 110 bar.
Trim E: Δp max 160 bar.

## Maximum allowable torque

**Trim B**

| DN (mm) | DN (in) | Max allowable torque at ambient temperature (Nm) | Body Material A 216 WCB | Body Material A351 gr.CF8M |
|---|---|---|---|---|
| 80 | 3 | to CLOSE | 330 | 315 |
| | | to OPEN | 495 | 434 |
| 100 | 4 | to CLOSE | 357 | 315 |
| | | to OPEN | 666 | 582 |
| 150 | 6 | to CLOSE | 357 | 315 |
| | | to OPEN | 615 | 531 |
| 200 | 8 | to CLOSE | 1086 | 1146 |
| | | to OPEN | 1708 | 1477 |
| 250 | 10 | to CLOSE | 1234 | 1184 |
| | | to OPEN | 2000 | 1715 |
| 300 | 12 | to CLOSE | 1930 | 2048 |
| | | to OPEN | 3147 | 2695 |
| 350 | 14 | to CLOSE | 2627 | 2312 |
| | | to OPEN | 4767 | 4093 |
| 400 | 16 | to CLOSE | 4151 | 4402 |
| | | to OPEN | 6737 | 5776 |
| 450 | 18 | to CLOSE | 5582 | 4914 |
| | | to OPEN | 9185 | 7867 |
| 500 | 20 | to CLOSE | 5197 | 5541 |
| | | to OPEN | 8744 | 7427 |
| 600 | 24 | to CLOSE | 8949 | 8973 |
| | | to OPEN | 15077 | 12801 |
| 650 | 26 | to CLOSE | 18697 | 19857 |
| | | to OPEN | 30667 | 26221 |
| 700 | 28 | to CLOSE | 34554 | 36557 |
| | | to OPEN | 55237 | 47555 |
| 750 | 30 | to CLOSE | 44659 | 39315 |
| | | to OPEN | 76788 | 66251 |
| 800 | 32 | to CLOSE | 44659 | 39315 |
| | | to OPEN | 74912 | 64374 |
| 900 | 36 | to CLOSE | 60793 | 64452 |
| | | to OPEN | 98557 | 84532 |
| 1000 | 40 | to CLOSE | 78131 | 82881 |
| | | to OPEN | 127158 | 108950 |
| 1050 | 42 | to CLOSE | 75334 | 80084 |
| | | to OPEN | 124362 | 106153 |
| 1200 | 48 | to CLOSE | 119844 | 127386 |
| | | to OPEN | 197698 | 168783 |

**Trim C**

| DN (mm) | DN (in) | Max allowable torque at ambient temperature (Nm) | Body Material A 216 WCB | Body Material A351 gr.CF8M |
|---|---|---|---|---|
| | | to CLOSE | 311 | 315 |
| | | to OPEN | 476 | 415 |
| | | to CLOSE | 357 | 315 |
| | | to OPEN | 628 | 544 |
| | | to CLOSE | 1061 | 1122 |
| | | to OPEN | 1684 | 1453 |
| | | to CLOSE | 1997 | 2115 |
| | | to OPEN | 3214 | 2762 |
| | | to CLOSE | 2627 | 2312 |
| | | to OPEN | 4632 | 3957 |
| | | to CLOSE | 3825 | 4075 |
| | | to OPEN | 6410 | 5450 |
| | | to CLOSE | 5412 | 5756 |
| | | to OPEN | 8959 | 7642 |
| | | to CLOSE | 9464 | 8973 |
| | | to OPEN | 15593 | 13316 |
| | | to CLOSE | 11654 | 12409 |
| | | to OPEN | 19446 | 16552 |
| | | to CLOSE | 14135 | 14811 |
| | | to OPEN | 23867 | 20252 |
| | | to CLOSE | 20044 | 21451 |
| | | to OPEN | 34570 | 29175 |
| | | | | |
| | | | | |
| | | to CLOSE | 41367 | 44116 |
| | | to OPEN | 69740 | 59202 |
| | | to CLOSE | 54643 | 58302 |
| | | to OPEN | 92407 | 78382 |
| | | to CLOSE | 54643 | 58302 |
| | | to OPEN | 92407 | 78382 |
| | | to CLOSE | 87129 | 93168 |
| | | to OPEN | 149464 | 126313 |
| | | to CLOSE | 105424 | 112967 |
| | | to OPEN | 183278 | 154363 |
| | | to CLOSE | 202783 | 216288 |
| | | to OPEN | 342177 | 290407 |

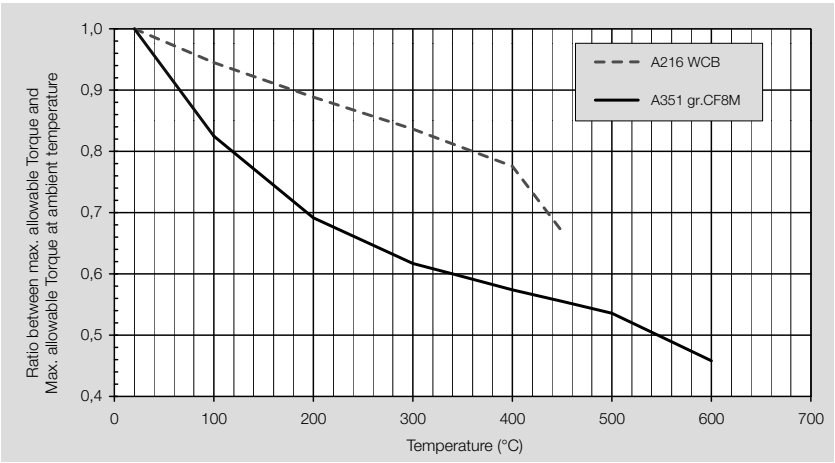
**Trim A**

| DN (mm) | DN (in) | Max allowable torque at ambient temperature (Nm) | Body Material A 216 WCB | Body Material A351 gr.CF8M |
|---|---|---|---|---|
| 700 | 28 | to CLOSE | 17686 | 18498 |
| | | to OPEN | 27418 | 23803 |
| 750 | 30 | to CLOSE | 21799 | 22752 |
| | | to OPEN | 33769 | 29324 |
| 800 | 32 | to CLOSE | 21237 | 22396 |
| | | to OPEN | 33206 | 28761 |
| 900 | 36 | to CLOSE | 20094 | 21254 |
| | | to OPEN | 32064 | 27618 |
| 1000 | 40 | to CLOSE | 36010 | 38014 |
| | | to OPEN | 56694 | 49012 |
| 1050 | 42 | to CLOSE | 35171 | 37175 |
| | | to OPEN | 55855 | 48173 |
| 1100 | 44 | to CLOSE | 35171 | 37175 |
| | | to OPEN | 55855 | 48173 |
| 1150 | 46 | to CLOSE | 35171 | 37175 |
| | | to OPEN | 55855 | 48173 |
| 1200 | 48 | to CLOSE | 44659 | 39315 |
| | | to OPEN | 75507 | 64969 |

## Maximum allowable torque

**§Trim D**

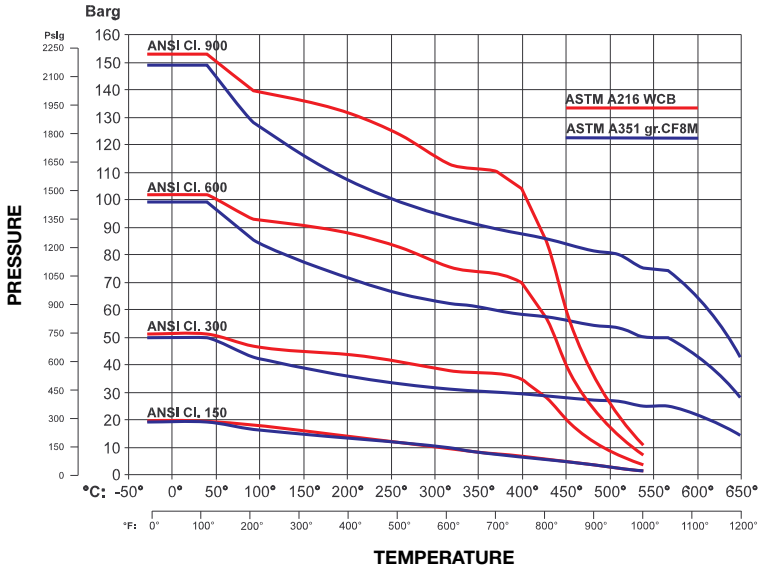
| DN (mm) | DN (in) | Max allowable torque at ambient temperature (Nm) | Body Material A 216 WCB | Body Material A351 gr.CF8M |
|---|---|---|---|---|
| 80 | 3 | to CLOSE | 247 | 263 |
| | | to OPEN | 412 | 351 |
| 100 | 4 | to CLOSE | 1057 | 1118 |
| | | to OPEN | 1680 | 1449 |
| 150 | 6 | to CLOSE | 1822 | 1940 |
| | | to OPEN | 3039 | 2587 |
| 200 | 8 | to CLOSE | 3897 | 4147 |
| | | to OPEN | 6482 | 5522 |
| 250 | 10 | to CLOSE | 6985 | 7443 |
| | | to OPEN | 11706 | 9953 |
| 300 | 12 | to CLOSE | 8276 | 8870 |
| | | to OPEN | 14404 | 12128 |
| 350 | 14 | to CLOSE | 13276 | 14218 |
| | | to OPEN | 23007 | 19393 |
| 400 | 16 | to CLOSE | 15586 | 16745 |
| | | to OPEN | 27555 | 23110 |
| 450 | 18 | to CLOSE | 28672 | 30676 |
| | | to OPEN | 49355 | 41673 |
| 500 | 20 | to CLOSE | 39407 | 42156 |
| | | to OPEN | 67779 | 57242 |
| 600 | 24 | to CLOSE | 68553 | 73303 |
| | | to OPEN | 117580 | 99372 |
| 700 | 28 | to CLOSE | 110600 | 118143 |
| | | to OPEN | 188454 | 159539 |
| 750 | 30 | to CLOSE | 100864 | 108407 |
| | | to OPEN | 178718 | 149803 |




## Notes

1. **Unidirectional – Bi-directional installation.** Shaft side installation is the preferred direction as the fluid pressure helps seat the seal ring. Disc side installation requires a higher end to close torque, as the fluid action is opposite.
2. **End to close – Start to open torques.** End to close is the torque required at 0° disc position angle to properly seat the seal ring and to reach the desired tightness performances. All safety factors are already included in the published torque values both for test and for operating conditions. Start to open is the torque required at 0° disc position angle to properly unseat the seal ring. Within the first degrees of disc movement the seal ring is totally unseated and the torque values drastically lower during the rest of the travel.
3. **Running torque and Dynamic torque.** Running torque is the torque required to operate the valve from 0° to 90° degrees of opening (and closing). Dynamic torque shows its effects with high fluid pipe velocities. Only above 3 m/s (10 ft/s) for liquid medium and 50 m/s (164 ft/s) for gaseous medium dynamic torque cannot be neglected.

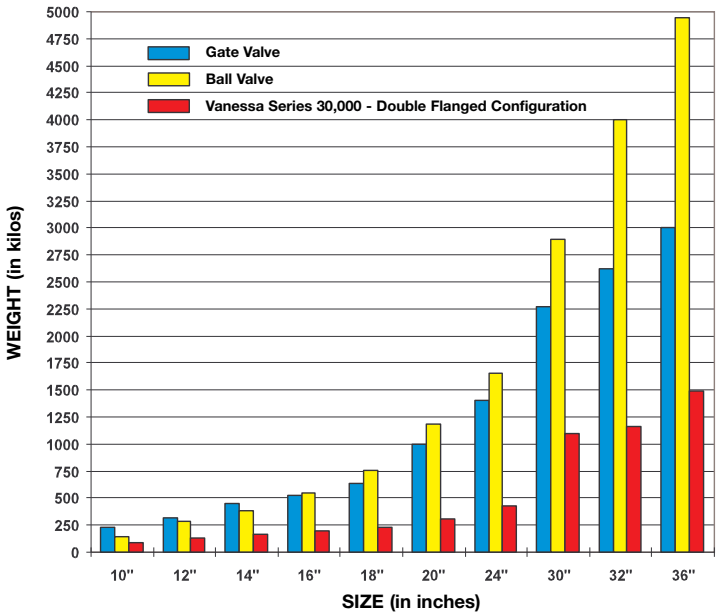
## Pressure/temperature ratings in barg/psig (ANSI B16.34)




## Notes

All Vanessa valves are rated fully in accordance with ANSI B16.34.
The table here represented indicates the pressure/temperature rating values as per ANSI B16.34, 1996.

## Weight comparison - ANSI class 150




## Weight comparison - ANSI class 300