

→ Series 451



■ SUITABLE FOR

| | | |
|------------------------|-------------------------|--|
| Liquids | neutral and non-neutral | |
| Air, gases and vapours | neutral and non-neutral | |
| Steam | | |

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids
- steam boilers and steam plants
- bulk transport vehicles for liquid, granular and dusty goods.¹

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- chemical plants, biogas plants
- process equipment construction and medical technology (sterilizers, autoclaves)
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

Safety valves are set and sealed at the factory.



■ MATERIAL



■ SPECIFICATION



1/2" – 2"



– 60°C to + 400°C
depending on version



0,5 – 70 bar

■ APPROVALS

| | |
|--|--------------------------------------|
| TÜV-Type test approval 666, 684 | D/G, F, F/K/S ¹ |
| EC type examination | S/G, L, F/K/S ¹ |
| TR ZU 032/2013 - TR ZU 010/2011 | D/G (S/G), F (L), F/K/S ¹ |
| Requirements | |
| AD 2000 Data sheet A2 | DIN EN ISO 4126-1 |
| TRD 421 | PED 2014/68/EU |
| TRB 801 No. 22 and No. 23 ¹ | |

Classification society

| | |
|---------------------------------------|---------|
| Germanischer Lloyd | GL |
| Lloyd's Register EMEA | LR EMEA |
| American Bureau of Shipping | ABS |
| Det Norske Veritas | DNV |
| Bureau Veritas | BV |
| Russian Maritime Register of Shipping | RS |

■ MATERIALS

| Component | Material | DIN EN | ASME |
|--------------------|-----------------|--------|--------|
| Inlet body | Stainless steel | 1.4404 | 316 L |
| Outlet body | Stainless steel | 1.4408 | CF8M |
| Internal parts | Stainless steel | 1.4404 | 316 L |
| Spring | Stainless steel | 1.4310 | 302 |
| Bellows (optional) | Stainless steel | 1.4571 | 316 Ti |

¹only for versions with bellows

■ VALVE VERSION

| | | |
|-----------|--|---|
| s | Standard, non-gastight version of the spring housing | for neutral media without counter pressure. |
| b | with bellows | for neutral and non-neutral media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium. |
| t | gastight version of spring housing | for neutral and non-neutral media without counter pressure. The environment is protected from being affected by the medium. Only available without lifting device. This version is not available for inlet / outlet 15/15 and 20/20! |
| tb | gastight version with bellows | for neutral and non-neutral an particularly for flammable, toxic and environmentally hazardous media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium. Double gastight. |

■ MEDIUM

| | | |
|-----------|--------------------|--|
| G | gaseous | Air, vapours, gases and - depending on safety valve version and seal - also for steam |
| F | liquid | The temperature of the medium under atmospheric pressure must not reach boiling point |
| GF | gaseous and liquid | Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam |

■ TYPE OF LIFTING MECHANISM

| | |
|----------|--|
| K | Standard with twist-type lifting mechanism |
| L | Lifting lever |
| O | without lifting device, standard for gastight versions |

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

| Nominal diameter DN | 15 | 20 | 25 | 32 | | |
|---------------------|-------------|-----------|---------|-------------|-------------|---------|
| Inlet | 1/2" (15) | 3/4" (20) | 1" (25) | 1 1/4" (32) | 1 1/2" (40) | 2" (50) |
| Outlet | 1/2" (15) | ■ | | | | |
| | 3/4" (20) | | ■ | | | |
| | 1" (25) | ■ | | | | |
| | 1 1/4" (32) | | ■ | | | |
| | 1 1/2" (40) | | | ■ | | |
| 2" (50) | | | | ■ | ■ | ■ |

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

| | | | |
|--|------------|---|--|
| f / f | Standard | Female thread BSP-P / Female thread BSP-P | DIN EN ISO 228-1 / DIN EN ISO 228-1 |
| m / f | on request | Male thread BSP-P / Female thread BSP-P | DIN EN ISO 228-1 / DIN EN ISO 228-1 |
| Against surcharge | | | |
| BSP-Tm / f | | Male thread BSP-T / Female thread BSP-P | DIN EN 10226, ISO 7-1 / DIN EN ISO 228-1 |
| Further connection types available on request | | | |

■ SEALS

| | | | |
|--------------------------|----------------------------------|--|-----------------|
| NBR | Nitrile rubber | Elastomere moulded seal with metallic support up to 25 bar | -30°C to +130°C |
| EPDM | Ethylene propylene diene | Elastomere moulded seal with metallic support up to 25 bar | -40°C to +170°C |
| FKM | Fluorcarbon | Elastomere moulded seal with metallic support up to 25 bar | -20°C to +200°C |
| PTFE | Polytetrafluoroethylene | Flat seal up to 25 bar | -60°C to +225°C |
| PTFE+Kohle | Polytetrafluoroethylene + carbon | Flat seal from 25 bar | -60°C to +225°C |
| Against surcharge | | | |
| FFKM | Perfluorinated rubber | Elastomere moulded seal with metallic support up to 25 bar | -10°C to +260°C |
| MD | Metal-to-metal sealing | Flat seal | -60°C to +400°C |

■ OPTIONS

Special versions on request.

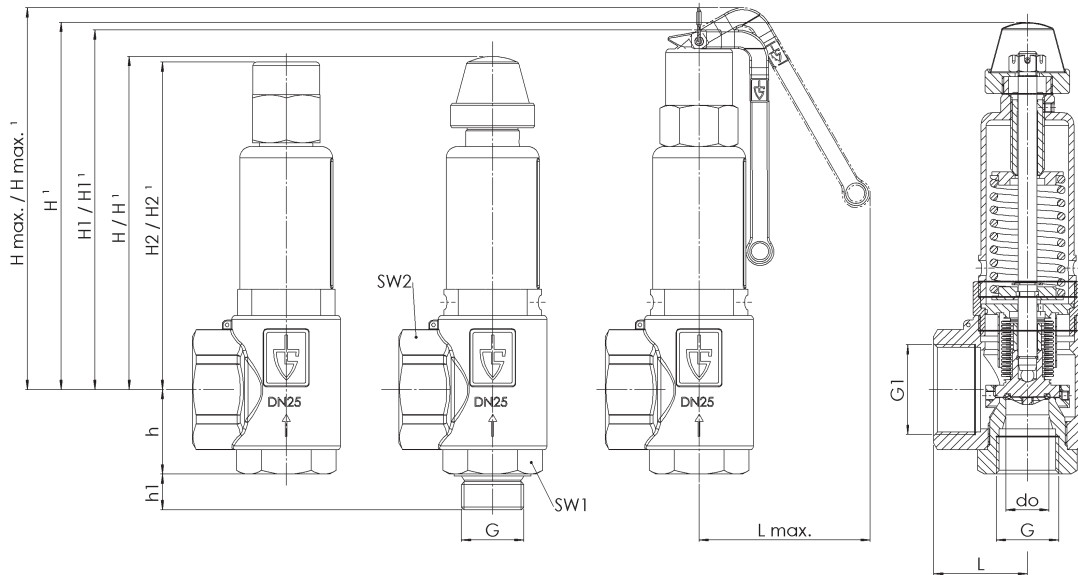
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

| Series 451: Connection, installation dimensions, ranges of adjustment | | | | | | | | | | |
|---|--------------------------|----------------------|----------------------|-----------|----------------------|-------------|-------------|-------------|-------------|-----------|
| Nominal diameter | DN | 15 | | | 20 | | 25 | 32 | | |
| Connection DIN EN ISO 228 | G | 1/2" (15) | | | 3/4" (20) | | 1" (25) | 1 1/4" (32) | 1 1/2" (40) | 2" (50) |
| Outlet DIN EN ISO 228 | G1 | 1/2" (15) | 1" (25) | 1" (25) | 3/4" (20) | 1 1/4" (32) | 1 1/2" (40) | 2" (50) | 2" (50) | 2" (50) |
| Installation dimensions in mm | L | 34 | 40 | 40 | 42 | 43 | 50 | 61 | 61 | 61 |
| | Lmax | 65 | 65 | 65 | 91 | 91 | 92 | 92 | 92 | 92 |
| | H / H ¹ | 79 / 79 | 77 / 77 | 131 / 131 | 137 / 137 | 138 / 152 | 178 / 196 | 241 / 263 | 241 / 263 | 241 / 263 |
| | H1 / H1 ¹ | 93 / 93 | 91 / 91 | 149 / 149 | 154 / 154 | 158 / 174 | 192 / 210 | 264 / 286 | 264 / 286 | 264 / 286 |
| | H2 / H2 ¹ | 79 / 79 | 77 / 77 | 131 / 131 | 138 / 138 | 139 / 153 | 175 / 193 | 241 / 263 | 241 / 263 | 241 / 263 |
| | Hmax / Hmax ¹ | 105 / 105 | 103 / 103 | 164 / 164 | 169 / 169 | 173 / 184 | 207 / 225 | 277 / 299 | 277 / 299 | 277 / 299 |
| | h | 28 | 30 | 30 | 31 | 39 | 45 | 55 | 69 | 74 |
| | h1 | 15 | 15 | 15 | 16 | 16 | 18 | 20 | 23 | 25 |
| | SW1 | 30 | 30 | 30 | 36 | 36 | 46 | 55 | 55 | 70 |
| | SW2 | - | 40 | 40 | 32 | 50 | 58 | 70 | 70 | 70 |
| do | 15,8 | 15,8 | 15,8 | 15,8 | 18 | 23 | 30,3 | 30,3 | 30,3 | |
| Weight | kg | 0,4 | 0,4 | 0,8 | 1,0 | 1,0 | 1,8 | 4,0 | 4,0 | 4,0 |
| Range of adjustment | bar | 0,5 ² -25 | 0,5 ² -25 | 25,1-70 | 0,5 ² -70 | 0,5-70 | 0,5-70 | 0,5-70 | 0,5-70 | 0,5-70 |

¹Dimension for the version with bellows

²Version with bellows only available from 1 bar

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

| Series | Valve version | Medium | Lifting device | Nominal diameter DN | Connection type | | Connection size | | Seal | Options | Set pressure | Quantity |
|--------|---------------|--------|----------------|---------------------|-----------------|--------|-----------------|--------|------|---------|--------------|----------|
| | | | | | Inlet | Outlet | Inlet | Outlet | | | | |
| 451 | b | F | L | 15 | m | f | 15 | 25 | EPDM | | 15,0 | 2 |
| 451 | | | | | | | | | | | | |
| 451 | | | | | | | | | | | | |
| 451 | | | | | | | | | | | | |

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which should be deleted before you enter your own data). Please complete the table by hand using the abbreviations in this datasheet and then fax it to: +49(0)7141.4889488
Please do not forget to add your personal data so that our sales team can contact you.

Name _____

First Name _____

Company _____

Telephone _____

E-Mail _____

■ CAPACITY TABLE

| Series 451: Blowing-off rates at 10% above set pressure | | | | | | | | | | | |
|---|------|---------|------|----------------|-------------|-----------|------|-------|---------|------|------|
| Nominal diameter DN | | 15 | | | | 20 | | | do = 18 | | |
| Set pressure bar | | Bellows | | | | do = 15,8 | | | do = 18 | | |
| | | I | II | without III | with III | I | II | III | I | II | III |
| Air I Nm ³ /h | 0,5 | 56** | 42** | 2,3** | 1,9** | 64** | 48** | 2,9** | 127 | 96 | 5,4 |
| | 1 | 87 | 69 | 3,1 | 2,5 | 120 | 96 | 4,0 | 189 | 151 | 7,3 |
| | 1,5 | 113 | 90 | 3,8 | 3,1 | 166 | 132 | 4,9 | 252 | 200 | 9,0 |
| | 2 | 141 | 111 | 4,4 | 3,6 | 205 | 161 | 5,6 | 316 | 249 | 10,4 |
| | 2,5 | 165 | 129 | 5,0 | 4,0 | 250 | 196 | 6,3 | 383 | 300 | 11,6 |
| Steam II kg/h | 3 | 189 | 148 | 5,4 | 4,4 | 298 | 233 | 6,9 | 447 | 349 | 12,7 |
| | 3,5 | 214 | 166 | 5,9 | 4,7 | 336 | 262 | 7,4 | 504 | 392 | 13,7 |
| Water III m ³ /h | 4 | 238 | 184 | 6,3 | 5,0 | 375 | 291 | 8,0 | 561 | 435 | 14,7 |
| | 4,5 | 262 | 203 | 6,7 | 5,3 | 413 | 319 | 8,4 | 618 | 478 | 15,6 |
| | 5 | 286 | 221 | 7,0 | 5,6 | 451 | 348 | 8,9 | 675 | 521 | 16,4 |
| | 5,5 | 310 | 239 | 7,4 | 5,9 | 489 | 377 | 9,3 | 732 | 564 | 17,2 |
| | 6 | 335 | 257 | 7,7 | 6,2 | 527 | 406 | 9,7 | 790 | 608 | 18,0 |
| | 6,5 | 359 | 275 | 8,0 | 6,4 | 565 | 434 | 10,1 | 847 | 650 | 18,7 |
| | 7 | 383 | 293 | 8,3 | 6,6 | 604 | 462 | 10,5 | 904 | 692 | 19,4 |
| | 7,5 | 407 | 311 | 8,6 | 6,9 | 642 | 491 | 10,9 | 961 | 735 | 20,1 |
| | 8 | 431 | 329 | 8,9 | 7,1 | 680 | 519 | 11,3 | 1018 | 777 | 20,8 |
| | 8,5 | 456 | 347 | 9,2 | 7,3 | 718 | 547 | 11,6 | 1075 | 820 | 21,4 |
| | 9 | 480 | 365 | 9,4 | 7,5 | 756 | 576 | 11,9 | 1132 | 862 | 22,0 |
| | 9,5 | 504 | 383 | 9,7 | 7,7 | 794 | 604 | 12,3 | 1190 | 905 | 22,6 |
| | 10 | 528 | 401 | 9,9 | 7,9 | 833 | 632 | 12,6 | 1247 | 947 | 23,2 |
| | 11 | 577 | 437 | 10,4 | 8,3 | 909 | 688 | 13,2 | 1361 | 1031 | 24,3 |
| | 12 | 625 | 472 | 10,9 | 8,7 | 985 | 744 | 13,8 | 1475 | 1115 | 25,4 |
| | 13 | 674 | 508 | 11,3 | 9,1 | 1061 | 801 | 14,3 | 1590 | 1199 | 26,5 |
| | 14 | 722 | 544 | 11,8 | 9,4 | 1138 | 857 | 14,9 | 1704 | 1284 | 27,5 |
| | 15 | 770 | 580 | 12,2 | 9,7 | 1214 | 914 | 15,4 | 1818 | 1368 | 28,4 |
| | 16 | 819 | 616 | 12,6 | 10,1 | 1290 | 970 | 15,9 | 1932 | 1453 | 29,4 |
| | 17 | 867 | 650 | 13,0 | 10,4 | 1367 | 1025 | 16,4 | 2047 | 1535 | 30,3 |
| 18 | 916 | 686 | 13,3 | 10,7 | 1443 | 1081 | 16,9 | 2161 | 1619 | 31,1 | |
| 19 | 964 | 721 | 13,7 | 11,0 | 1519 | 1137 | 17,3 | 2275 | 1703 | 32,0 | |
| 20 | 1013 | 757 | 14,0 | 11,2 | 1596 | 1193 | 17,8 | 2390 | 1787 | 32,8 | |
| 21 | 1061 | 793 | 14,4 | 11,5 | 1672 | 1250 | 18,2 | 2504 | 1872 | 33,6 | |
| 22 | 1109 | 829 | 14,7 | 11,8 | 1748 | 1306 | 18,7 | 2618 | 1956 | 34,4 | |
| 23 | 1158 | 865 | 15,1 | 12,1 | 1825 | 1363 | 19,1 | 2732 | 2040 | 35,2 | |
| 24 | 1206 | 900 | 15,4 | 12,3 | 1901 | 1419 | 19,5 | 2847 | 2125 | 35,9 | |
| 25 | 1255 | 936 | 15,7 | 12,6 | 1977 | 1475 | 19,9 | 2961 | 2209 | 36,7 | |
| 26 | 1303 | 972* | 16,0 | 12,8 | 2054 | 1532 | 20,3 | 3075 | 2294* | 37,4 | |
| 27 | 1352 | 1008* | 16,3 | 13,1 | 2130 | 1589 | 20,7 | 3190 | 2379* | 38,1 | |
| 28 | 1400 | 1044* | 16,6 | 13,3 | 2206 | 1646 | 21,1 | 3304 | 2465* | 38,8 | |
| 29 | 1449 | 1081* | 16,9 | 13,5 | 2283 | 1703 | 21,4 | 3418 | 2550* | 39,5 | |
| 30 | 1497 | 1114* | 17,2 | 13,8 | 2359 | 1755 | 21,8 | 3532 | 2628* | 40,2 | |
| 32 | 1594 | 1186* | 17,8 | 14,2 | 2511 | 1869 | 22,5 | 3761 | 2799* | 41,5 | |
| 34 | 1691 | 1258* | 18,3 | 14,7 | 2664 | 1982 | 23,2 | 3990 | 2969* | 42,8 | |
| 36 | 1788 | 1330* | 18,8 | 15,1 | 2817 | 2096 | 23,9 | 4218 | 3139* | 44,0 | |
| 38 | 1884 | 1402* | 19,4 | 15,5 | 2969 | 2209 | 24,5 | 4447 | 3309* | 45,2 | |
| 40 | 1981 | 1474* | 19,9 | 15,9 | 3122 | 2323 | 25,2 | 4675 | 3479* | 46,4 | |
| 42 | 2078 | 1547* | 20,4 | 16,3 | 3275 | 2437 | 25,8 | 4904 | 3650* | 47,6 | |
| 44 | 2175 | 1619* | 20,8 | 16,7 | 3427 | 2551 | 26,4 | 5132 | 3821* | 48,7 | |
| 46 | 2272 | 1692* | 21,3 | 17,0 | 3580 | 2666 | 27,0 | 5361 | 3992* | 49,8 | |
| 48 | 2369 | 1764* | 21,8 | 17,4 | 3732 | 2780 | 27,6 | 5589 | 4163* | 50,8 | |
| 50 | 2466 | 1837* | 22,2 | 17,8 | 3885 | 2895 | 28,1 | 5818 | 4335* | 51,9 | |
| 52 | 2562 | 1910* | 22,7 | 18,1 | 4038 | 3009 | 28,7 | 6047 | 4506* | 52,9 | |
| 54 | 2659 | 1984* | 23,1 | 18,5 | 4190 | 3126 | 29,2 | 6275 | 4681* | 53,9 | |
| 56 | 2756 | 2061* | 23,5 | 18,8 | 4343 | 3248 | 29,8 | 6504 | 4868* | 54,9 | |
| 58 | 2853 | 2136* | 23,9 | 19,1 | 4496 | 3366 | 30,3 | 6732 | 5040* | 55,9 | |
| 60 | 2950 | 2209* | 24,3 | 19,5 | 4648 | 3481 | 30,8 | 6961 | 5213* | 56,8 | |
| 62 | 3047 | 2282* | 24,7 | 19,8 | 4801 | 3596 | 31,3 | 7189 | 5385* | 57,8 | |
| 64 | 3144 | 2355* | 25,1 | 20,1 | 4954 | 3711 | 31,8 | 7418 | 5558* | 58,7 | |
| 66 | 3240 | 2428* | 25,5 | 20,4 | 5106 | 3827 | 32,3 | 7647 | 5730* | 59,6 | |
| 68 | 3337 | 2502* | 25,9 | 20,7 | 5259 | 3943 | 32,8 | 7875 | 5905* | 60,5 | |
| 70 | 3434 | 2578* | 26,3 | 21,0 | 5411 | 4062 | 33,3 | 8104 | 6082* | 61,4 | |

*) only possible with metal-to-metal sealing

**) Version with bellows only available from 1 bar

■ CAPACITY TABLE

| CONTINUATION - Series 451: Blowing-off rates at 10% above set pressure | | | | | | | |
|--|-------|-------|-------|-------|--------|-------|------|
| Nominal diameter DN | | 25 | | | 32 | | |
| Set pressure bar | | I | II | III | I | II | III |
| Air I Nm ³ /h | 0,5 | 199 | 150 | 8,8 | 353 | 266 | 15,4 |
| | 1 | 291 | 232 | 12,0 | 515 | 411 | 20,8 |
| | 1,5 | 390 | 309 | 14,7 | 683 | 542 | 25,5 |
| | 2 | 489 | 385 | 16,9 | 832 | 656 | 29,4 |
| | 2,5 | 583 | 457 | 18,9 | 1012 | 793 | 32,9 |
| Steam II kg/h | 3 | 681 | 532 | 20,8 | 1182 | 924 | 36,0 |
| | 3,5 | 768 | 597 | 22,4 | 1333 | 1036 | 38,9 |
| | 4 | 855 | 663 | 24,0 | 1484 | 1151 | 41,6 |
| Water III m ³ /h | 4,5 | 942 | 729 | 25,4 | 1635 | 1265 | 44,1 |
| | 5 | 1029 | 794 | 26,8 | 1786 | 1378 | 46,5 |
| | 5,5 | 1116 | 860 | 28,1 | 1937 | 1492 | 48,8 |
| | 6 | 1203 | 926 | 29,3 | 2088 | 1607 | 50,9 |
| | 6,5 | 1290 | 990 | 30,5 | 2239 | 1719 | 53,0 |
| | 7 | 1377 | 1054 | 31,7 | 2390 | 1830 | 55,0 |
| | 7,5 | 1464 | 1119 | 32,8 | 2542 | 1943 | 56,9 |
| | 8 | 1552 | 1184 | 33,9 | 2693 | 2056 | 58,8 |
| | 8,5 | 1639 | 1249 | 34,9 | 2844 | 2168 | 60,6 |
| | 9 | 1726 | 1314 | 35,9 | 2995 | 2281 | 62,4 |
| | 9,5 | 1813 | 1379 | 36,9 | 3146 | 2392 | 64,1 |
| | 10 | 1900 | 1443 | 37,9 | 3297 | 2504 | 65,8 |
| | 11 | 2074 | 1571 | 39,7 | 3599 | 2727 | 69,0 |
| | 12 | 2248 | 1699 | 41,5 | 3902 | 2948 | 72,0 |
| | 13 | 2422 | 1827 | 43,2 | 4204 | 3172 | 75,0 |
| | 14 | 2596 | 1957 | 44,8 | 4506 | 3396 | 77,8 |
| | 15 | 2771 | 2085 | 46,4 | 4808 | 3618 | 80,5 |
| | 16 | 2945 | 2214 | 47,9 | 5111 | 3842 | 83,2 |
| | 17 | 3119 | 2339 | 49,4 | 5413 | 4059 | 85,7 |
| | 18 | 3293 | 2467 | 50,8 | 5715 | 4281 | 88,2 |
| 19 | 3467 | 2594 | 52,2 | 6017 | 4503 | 90,6 | |
| 20 | 3641 | 2723 | 53,6 | 6320 | 4726 | 93,0 | |
| 21 | 3816 | 2852 | 54,9 | 6622 | 4950 | 95,3 | |
| 22 | 3990 | 2981 | 56,2 | 6924 | 5173 | 97,5 | |
| 23 | 4164 | 3109 | 57,5 | 7226 | 5396 | 99,7 | |
| 24 | 4338 | 3238 | 58,7 | 7529 | 5619 | 101,9 | |
| 25 | 4512 | 3366 | 59,9 | 7831 | 5842 | 104,0 | |
| 26 | 4686 | 3496* | 61,1 | 8133 | 6067* | 106,0 | |
| 27 | 4860 | 3626* | 62,3 | 8435 | 6293* | 108,0 | |
| 28 | 5035 | 3756* | 63,4 | 8738 | 6518* | 110,0 | |
| 29 | 5209 | 3886* | 64,5 | 9040 | 6744* | 112,0 | |
| 30 | 5383 | 4005* | 65,6 | 9342 | 6951* | 113,9 | |
| 32 | 5731 | 4265* | 67,8 | 9947 | 7401* | 117,6 | |
| 34 | 6080 | 4524* | 69,9 | 10551 | 7851* | 121,2 | |
| 36 | 6428 | 4783* | 71,9 | 11156 | 8301* | 124,8 | |
| 38 | 6776 | 5042* | 73,9 | 11760 | 8751* | 128,2 | |
| 40 | 7124 | 5301* | 75,8 | 12365 | 9200* | 131,5 | |
| 42 | 7473 | 5562* | 77,6 | 12969 | 9653* | 134,8 | |
| 44 | 7821 | 5823* | 79,5 | 13574 | 10105* | 137,9 | |
| 46 | 8169 | 6083* | 81,3 | 14178 | 10558* | 141,0 | |
| 48 | 8518 | 6344* | 83,0 | 14783 | 11011* | 144,1 | |
| 50 | 8866 | 6606* | 84,7 | 15387 | 11464* | 147,0 | |
| 52 | 9214 | 6867* | 86,4 | 15992 | 11917* | 149,9 | |
| 54 | 9563 | 7134* | 88,0 | 16596 | 12380* | 152,8 | |
| 56 | 9911 | 7412* | 89,7 | 17200 | 12864* | 155,6 | |
| 58 | 10259 | 7681* | 91,2 | 17805 | 13330* | 158,4 | |
| 60 | 10608 | 7943* | 92,8 | 18409 | 13786* | 161,1 | |
| 62 | 10956 | 8206* | 94,3 | 19014 | 14242* | 163,7 | |
| 64 | 11304 | 8469* | 95,8 | 19618 | 14699* | 166,3 | |
| 66 | 11652 | 8732* | 97,3 | 20223 | 15155* | 168,9 | |
| 68 | 12001 | 8998* | 98,8 | 20827 | 15616* | 171,5 | |
| 70 | 12349 | 9269* | 100,2 | 21432 | 16086* | 174,0 | |

*) only possible with metal-to-metal sealing

**) Version with bellows only available from 1 bar