

## Angle pattern safety valve 1" to 6" (DN 25 to 150)

### ARI-SAFE-ANSI

- ASME Code Section VIII-Division 1.

- UV-stamp NB-stamp



- Type-test approved acc. to TRD and AD2000-A2

#### Direct loaded with spring:

- TÜV · SV · . . . -663 · D/G      **Figure 901-912**
- TÜV · SV · . . . -729 · F      **Figure 901/911**
- Further approvals: see inside

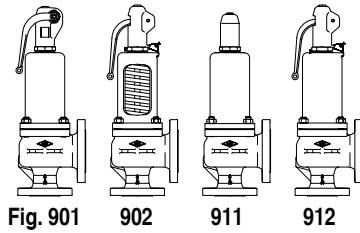


Fig. 901

902

911

912

Page 2

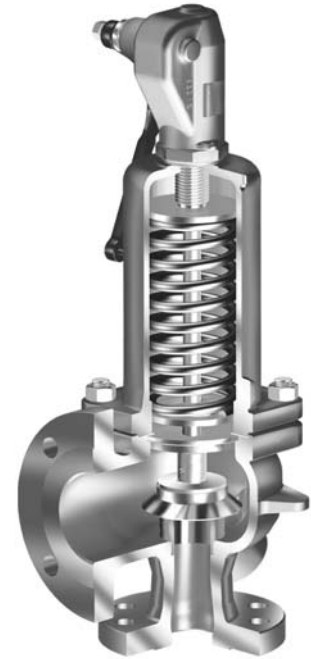
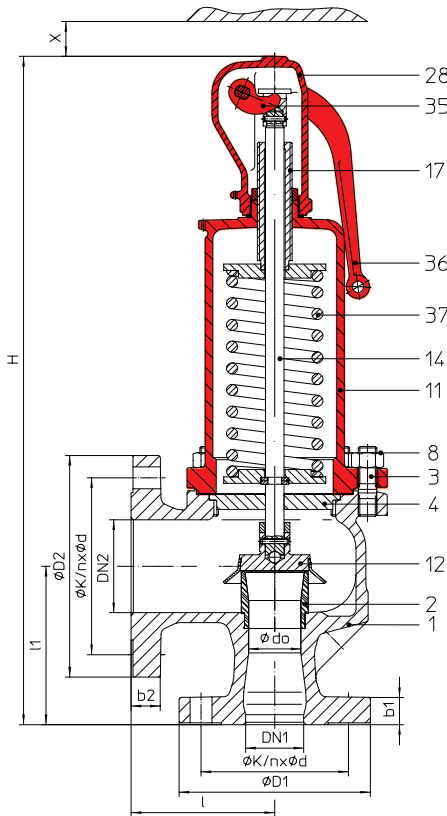


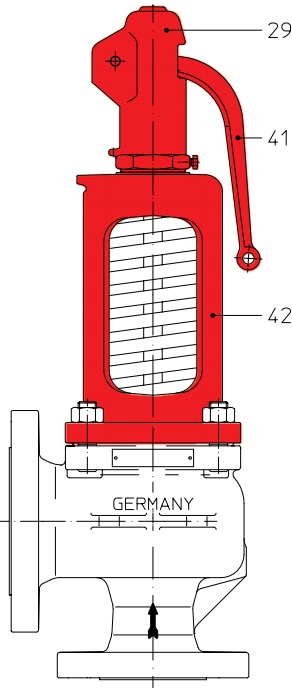
Fig. 900

#### Features:

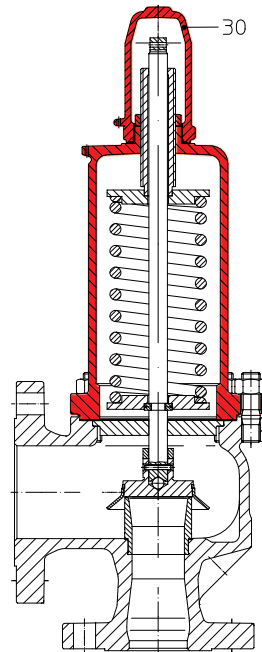
- Direct loaded with spring
- Wear resistant seat/disc
- Precision disc alignment and guide
- Possible with soft seal disc
- Possible with EPDM bellow
- Possible with stainless steel bellow



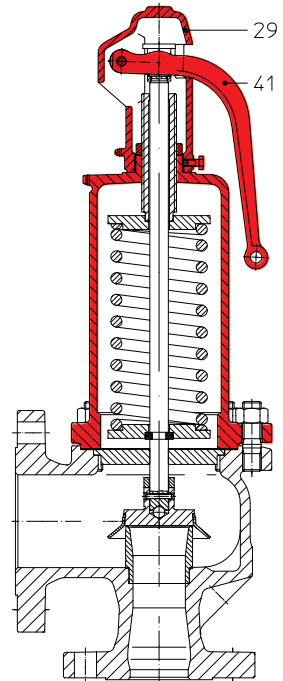
**Fig. .901**  
closed lifting device



**Fig. .902**  
open lifting device



**Fig. .911**  
gastight cap



**Fig. .912**  
open lifting device

| Registration                                 | Figure                     | Pressure class                   | Material   | Nominal diameter   | Temperature range   | Flanges    |
|--|----------------------------|----------------------------------|------------|--------------------|---------------------|------------|
| ASME Code Section VIII-Division 1.           | 35.901                     | ANSI 150 / 150<br>ANSI 300 / 150 | SA 216 WCB | 1"x2" up to 6"x10" | - 20°F up to +800°F | ASME B16.5 |
| EN ISO 4126-1, VdTÜV-100, AD2000-A2, TRD 421 | 35.902<br>35.911<br>35.912 |                                  |            |                    | - 29°C up to +427°C |            |

| Requirement     | ASME Code Section VIII-Division 1.   | EN ISO 4126-1, VdTÜV-leaflet 100, AD2000-A2, TRD 421   |
|-----------------|--|--|
| Marking         | UV-stamp NB-stamp  | BKZ TÜV · SV · . . . -663 · D/G<br>TÜV · SV · . . . -729 · F   |
| Application     | neutral gases, vapours and liquids   | steam, neutral gases, vapours and liquids  |
| Construction    | Safety valve, spring loaded, direct loaded   |  |
| Sizing          | Calculation acc. to ASME   | Calculation acc. to EN ISO 4126-1, AD2000-A2, TRD 421  |
| Medium gasform: | Mass flow (lb/h), SCFM, molar mass (kg/kmol), temperature (°F), set gauge pressure (psig), back gauge pressure (psig)        | Mass flow (kg/h), molar mass (kg/kmol), temperature (°C), set gauge pressure (bar), back gauge pressure (bar)                    |
| Medium liquid:  | Volume flow (gal/min), density, viscosity, temperature (°F), set gauge pressure (psig), back gauge pressure (psig)           | Mass flow (kg/h), density (kg/m <sup>3</sup> ), viscosity, temperature (°C), set gauge pressure (bar), back gauge pressure (bar) |
| Order data:     | ARI-SAFE-ANSI-safety valve - Figure ....., Nominal diameter ....., Class ....., Material ....., set gauge pressure .... psig | ARI-SAFE-ANSI-safety valve - Figure ....., DN ... / ....., PN .. / .., Material ....., set gauge pressure .... bar               |

| Nominal diameter            | 1" x 2" | 1 1/2" x 2" | 1 1/2 x 2 1/2 | 1 1/2" x 3" | 2" x 3" | 3" x 4" | 4" x 6" | 4" x 6" | 6" x 8" | 6" x 10" |
|-----------------------------|---------|-------------|---------------|-------------|---------|---------|---------|---------|---------|----------|
| Orifice letter              | D/E     | F           | G             | H           | (H) J   | (K) L   | (L) M   | (N) P   | Q       | R        |
| Weight (lbs)                | 26      | 40          | 40            | 51          | 66      | 103     | 176     | 180     | 308     | 374      |
| Weight (kg)                 | 12      | 18          | 18            | 23          | 30      | 47      | 80      | 82      | 140     | 170      |
| Weight, bellow design (lbs) | 30      | 44          | 44            | 56          | 75      | 119     | 198     | 202     | --      | --       |
| Weight, bellow design (kg)  | 13,5    | 20          | 20            | 25,5        | 34      | 54      | 90      | 92      | --      | --       |

|                       | without metal bellow                                   | with metal bellow |
|-----------------------|--|-------------------|
| static back pressure  | no backpressure allowed                                | on request        |
| dynamic back pressure | max. 10% from set pressure (gauge) (higher on request) | on request        |

| Set gauge-pressure |         | I Saturated steam lb/hr<br>(pounds per hour) |       |               |       |             |       |         |       |         |       | II Air scfm (60°F; 14,7 psia)<br>(standard cubic feet per minute) |        |         |        |         |        |          |        |       |
|--------------------|---------|--|-------|---------------|-------|-------------|-------|---------|-------|---------|-------|---|--------|---------|--------|---------|--------|----------|--------|-------|
| psig               | 1" x 2" | 1 1/2" x 2"                                  |       | 1 1/2 x 2 1/2 |       | 1 1/2" x 3" |       | 2" x 3" |       | 3" x 4" |       | 4" x 6"   |        | 4" x 6" |        | 6" x 8" |        | 6" x 10" |        |       |
| orifice letter     | D/E     | F  |       | G             |       | H           |       | (H) J   |       | (K) L   |       | (L) M   |        | (N) P   |        | Q       |        | R        |        |       |
|                    | I       | II   | I     | II            | I     | II          | I     | II      | I     | II      | I     | II  | I      | II      | I      | II      | I      | II       | I      | II    |
| 15                 |         |  |       |               |       |             |       |         |       |         |       |   |        |         |        |         |        |          |        |       |
| 20                 |         |  |       |               |       |             |       |         |       |         |       |   |        |         |        |         |        |          |        |       |
| 25                 |         |  |       |               |       |             |       |         |       |         |       |   |        |         |        |         |        |          |        |       |
| 30                 | 1238    | 441  | 2055  | 732           | 2055  | 732         | 3167  | 1127    | 4947  | 1761    | 8361  | 2976  | 19791  | 7044    | 19791  | 7044    | 27452  | 9771     | 38177  | 13589 |
| 35                 | 1381    | 492  | 2292  | 816           | 2292  | 816         | 3532  | 1257    | 5518  | 1964    | 9325  | 3319  | 22073  | 7857    | 22073  | 7857    | 30617  | 10898    | 42579  | 15156 |
| 40                 | 1524    | 542  | 2529  | 900           | 2529  | 900         | 3897  | 1387    | 6088  | 2167    | 10289 | 3662  | 24355  | 8669    | 24355  | 8669    | 33782  | 12025    | 46981  | 16723 |
| 45                 | 1667    | 593  | 2766  | 985           | 2766  | 985         | 4263  | 1517    | 6659  | 2370    | 11253 | 4006  | 26637  | 9481    | 26637  | 9481    | 36948  | 13151    | 51383  | 18289 |
| 50                 | 1809    | 644  | 3003  | 1069          | 3003  | 1069        | 4628  | 1647    | 7229  | 2573    | 12217 | 4349  | 28919  | 10293   | 28919  | 10293   | 40113  | 14278    | 55785  | 19856 |
| 55                 | 1952    | 695  | 3240  | 1153          | 3240  | 1153        | 4993  | 1777    | 7799  | 2776    | 13182 | 4692  | 31201  | 11106   | 31201  | 11106   | 43278  | 15405    | 60187  | 21423 |
| 60                 | 2095    | 746  | 3477  | 1238          | 3477  | 1238        | 5358  | 1907    | 8370  | 2979    | 14146 | 5035  | 33483  | 11918   | 33483  | 11918   | 46444  | 16531    | 64589  | 22990 |
| 65                 | 2238    | 797  | 3714  | 1322          | 3714  | 1322        | 5723  | 2037    | 8940  | 3182    | 15110 | 5378  | 35765  | 12730   | 35765  | 12730   | 49609  | 17658    | 68991  | 24557 |
| 70                 | 2381    | 847  | 3951  | 1406          | 3951  | 1406        | 6088  | 2167    | 9511  | 3385    | 16074 | 5721  | 38047  | 13542   | 38047  | 13542   | 52774  | 18785    | 73393  | 26124 |
| 75                 | 2523    | 898  | 4188  | 1491          | 4188  | 1491        | 6454  | 2297    | 10081 | 3588    | 17038 | 6064  | 40329  | 14355   | 40329  | 14355   | 55939  | 19911    | 77795  | 27690 |
| 80                 | 2666    | 949  | 4425  | 1575          | 4425  | 1575        | 6819  | 2427    | 10652 | 3791    | 18002 | 6408  | 42611  | 15167   | 42611  | 15167   | 59105  | 21038    | 82197  | 29257 |
| 85                 | 2809    | 1000   | 4662  | 1659          | 4662  | 1659        | 7184  | 2557    | 11222 | 3994    | 18966 | 6751  | 44893  | 15979   | 44893  | 15979   | 62270  | 22165    | 86599  | 30824 |
| 90                 | 2952    | 1051   | 4899  | 1744          | 4899  | 1744        | 7549  | 2687    | 11793 | 4197    | 19930 | 7094  | 47175  | 16792   | 47175  | 16792   | 65435  | 23291    | 91001  | 32391 |
| 95                 | 3095    | 1101   | 5136  | 1828          | 5136  | 1828        | 7914  | 2817    | 12363 | 4400    | 20894 | 7437  | 49457  | 17604   | 49457  | 17604   | 68601  | 24418    | 95403  | 33958 |
| 100                | 3237    | 1152   | 5373  | 1912          | 5373  | 1912        | 8279  | 2947    | 12933 | 4604    | 21858 | 7780  | 51739  | 18416   | 51739  | 18416   | 71766  | 25544    | 99805  | 35525 |
| 125                | 3951    | 1406   | 6558  | 2334          | 6558  | 2334        | 10105 | 3597    | 15786 | 5619    | 26679 | 9496  | 63149  | 22477   | 63149  | 22477   | 87592  | 31178    | 121815 | 43359 |
| 150                | 4665    | 1661   | 7742  | 2756          | 7742  | 2756        | 11931 | 4247    | 18638 | 6634    | 31499 | 11212   | 74559  | 26539   | 74559  | 26539   | 103419 | 36811    | 143825 | 51193 |
| 175                | 5379    | 1915   | 8927  | 3178          | 8927  | 3178        | 13757 | 4897    | 21490 | 7649    | 36319 | 12928   | 85969  | 30600   | 85969  | 30600   | 119245 | 42444    | 165835 | 59027 |
| 200                | 6093    | 2169   | 10112 | 3599          | 10112 | 3599        | 15583 | 5547    | 24342 | 8664    | 41140 | 14643   | 97379  | 34661   | 97379  | 34661   | 135072 | 48078    | 187845 | 66862 |
| 225                | 6807    | 2423   | 11297 | 4021          | 11297 | 4021        | 17409 | 6197    | 27194 | 9680    | 45960 | 16359   | 108788 | 38722   | 108788 | 38722   | 150898 | 53711    | 209854 | 74696 |
| 250                | 7521    | 2677   | 12482 | 4443          | 12482 | 4443        | 19235 | 6846    | 30047 | 10695   | 50781 | 18075   | 120198 | 42784   | 120198 | 42784   | 166725 | 59344    | 231864 | 82530 |
| 275                | 8235    | 2931   | 13667 | 4865          | 13667 | 4865        | 21061 | 7496    | 32899 | 11710   | 55601 | 19791   | 131608 | 46845   | 131608 | 46845   | 182551 | 64978    | 253874 | 90364 |
| 300                | 8949    | 3185   | 14852 | 5286          | 14852 | 5286        | 22886 | 8146    | 35751 | 12725   | 60421 | 21506   |        |         |        |         | 198378 | 70611    | 275884 | 98199 |
| 325                | 9663    | 3439   | 16036 | 5708          | 16036 | 5708        | 24712 | 8796    | 38603 | 13740   | 65242 | 23222   |        |         |        |         | 214204 | 76244    |        |       |
| 350                | 10376   | 3693   | 17221 | 6130          | 17221 | 6130        | 26538 | 9446    | 41455 | 14756   | 70062 | 24938   |        |         |        |         | 230031 | 81878    |        |       |
| 375                | 11090   | 3948   | 18406 | 6551          | 18406 | 6551        | 28364 | 10096   | 44308 | 15771   | 74882 | 26654   |        |         |        |         | 245857 | 87511    |        |       |
| 400                | 11804   | 4202   | 19591 | 6973          | 19591 | 6973        | 30190 | 10746   | 47160 | 16786   | 79703 | 28370   |        |         |        |         |        |          |        |       |
| 425                | 12518   | 4456   | 20776 | 7395          | 20776 | 7395        | 32016 | 11396   | 50012 | 17801   |       |   |        |         |        |         |        |          |        |       |
| 450                | 13232   | 4710   | 21961 | 7817          | 21961 | 7817        | 33842 | 12046   | 52864 | 18817   |       |   |        |         |        |         |        |          |        |       |
| 475                | 13946   | 4964   | 23145 | 8238          | 23145 | 8238        | 35667 | 12696   | 55716 | 19832   |       |   |        |         |        |         |        |          |        |       |
| 493                | 14460   | 5147   | 23999 | 8542          | 23999 | 8542        | 36982 | 13163   | 57770 | 20563   |       |   |        |         |        |         |        |          |        |       |

<sup>1)</sup> Capacities below 30 psig set pressure are calculated at 3 psig overpressure.

| Spring ranges in psig |                              |             |           |           |           |           |           |
|-----------------------|------------------------------|-------------|-----------|-----------|-----------|-----------|-----------|
| 1" x 2"               | 1 1/2" x 2"<br>1 1/2 x 2 1/2 | 1 1/2" x 3" | 2" x 3"   | 3" x 4"   | 4" x 6"   | 6" x 8"   | 6" x 10"  |
| 15 - 22               | 15 - 22                      | 15 - 22     | 15 - 22   | 15 - 22   | 15 - 22   | 15 - 16   | 15 - 22   |
| 23 - 29               | 23 - 29                      | 23 - 29     | 23 - 29   | 23 - 29   | 23 - 29   | 17 - 22   | 23 - 27   |
| 30 - 39               | 30 - 39                      | 30 - 39     | 30 - 39   | 30 - 39   | 30 - 36   | 23 - 27   | 28 - 33   |
| 40 - 53               | 40 - 53                      | 40 - 53     | 40 - 53   | 40 - 53   | 37 - 44   | 28 - 36   | 34 - 39   |
| 54 - 73               | 54 - 73                      | 54 - 73     | 54 - 73   | 54 - 73   | 45 - 53   | 37 - 43   | 40 - 48   |
| 74 - 131              | 74 - 131                     | 74 - 131    | 74 - 131  | 74 - 131  | 54 - 73   | 44 - 58   | 49 - 59   |
| 132 - 232             | 132 - 232                    | 132 - 232   | 132 - 232 | 132 - 232 | 74 - 131  | 59 - 83   | 60 - 80   |
| 233 - 319             | 233 - 319                    | 233 - 319   | 233 - 319 | 233 - 319 | 132 - 203 | 84 - 119  | 81 - 107  |
| 320 - 406             | 320 - 406                    | 320 - 406   | 320 - 406 | 320 - 406 | 204 - 276 | 120 - 174 | 108 - 160 |
| 407 - 493             | 407 - 493                    | 407 - 493   | 407 - 493 | 407 - 493 |           | 175 - 246 | 161 - 232 |
|                       |                              |             |           |           |           | 247 - 348 | 233 - 305 |
|                       |                              |             |           |           |           | 349 - 392 |           |

| Set gauge-pressure |         | Water gal/min (U.S. Gallons per minute) |                 |             |         |         |         |         |         |          |
|--------------------|---------|---|-----------------|-------------|---------|---------|---------|---------|---------|----------|
| psig               | 1" x 2" | 1 1/2" x 2"                             | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" | 3" x 4" | 4" x 6" | 4" x 6" | 6" x 8" | 6" x 10" |
| orifice letter     | D/E     | F                                       | G               | H           | (H) J   | (K) L   | (L) M   | (N) P   | Q       | R        |
| 15                 | 61      | 90                                      | 90              | 139         | 217     | 366     | 866     | 866     | 1202    | 1671     |
| 20                 | 69      | 102                                     | 102             | 157         | 245     | 414     | 979     | 979     | 1358    | 1889     |
| 25                 | 76      | 112                                     | 112             | 173         | 270     | 457     | 1081    | 1081    | 1499    | 2085     |
| 30                 | 83      | 122                                     | 122             | 188         | 293     | 496     | 1173    | 1173    | 1627    | 2263     |
| 35                 | 89      | 132                                     | 132             | 203         | 317     | 535     | 1267    | 1267    | 1758    | 2444     |
| 40                 | 96      | 141                                     | 141             | 217         | 339     | 572     | 1355    | 1355    | 1879    | 2613     |
| 45                 | 101     | 149                                     | 149             | 230         | 359     | 607     | 1437    | 1437    | 1993    | 2772     |
| 50                 | 107     | 157                                     | 157             | 242         | 379     | 640     | 1514    | 1514    | 2101    | 2921     |
| 55                 | 112     | 165                                     | 165             | 254         | 397     | 671     | 1588    | 1588    | 2203    | 3064     |
| 60                 | 117     | 172                                     | 172             | 265         | 415     | 701     | 1659    | 1659    | 2301    | 3200     |
| 65                 | 122     | 179                                     | 179             | 276         | 432     | 730     | 1727    | 1727    | 2395    | 3331     |
| 70                 | 126     | 186                                     | 186             | 287         | 448     | 757     | 1792    | 1792    | 2486    | 3457     |
| 75                 | 131     | 193                                     | 193             | 297         | 464     | 784     | 1855    | 1855    | 2573    | 3578     |
| 80                 | 135     | 199                                     | 199             | 307         | 479     | 809     | 1916    | 1916    | 2657    | 3695     |
| 85                 | 139     | 205                                     | 205             | 316         | 494     | 834     | 1975    | 1975    | 2739    | 3809     |
| 90                 | 143     | 211                                     | 211             | 325         | 508     | 858     | 2032    | 2032    | 2818    | 3920     |
| 95                 | 147     | 217                                     | 217             | 334         | 522     | 882     | 2088    | 2088    | 2896    | 4027     |
| 100                | 151     | 222                                     | 222             | 343         | 535     | 905     | 2142    | 2142    | 2971    | 4132     |
| 125                | 169     | 249                                     | 249             | 383         | 599     | 1012    | 2395    | 2395    | 3322    | 4619     |
| 150                | 185     | 272                                     | 272             | 420         | 656     | 1108    | 2623    | 2623    | 3639    | 5060     |
| 175                | 200     | 294                                     | 294             | 453         | 708     | 1197    | 2833    | 2833    | 3930    | 5466     |
| 200                | 214     | 315                                     | 315             | 485         | 757     | 1280    | 3029    | 3029    | 4201    | 5843     |
| 225                | 227     | 334                                     | 334             | 514         | 803     | 1357    | 3213    | 3213    | 4456    | 6197     |
| 250                | 239     | 352                                     | 352             | 542         | 847     | 1431    | 3387    | 3387    | 4697    | 6533     |
| 275                | 251     | 369                                     | 369             | 568         | 888     | 1501    | 3552    | 3552    | 4927    | 6852     |
| 300                | 262     | 385                                     | 385             | 594         | 927     | 1567    |         |         | 5146    | 7156     |
| 325                | 272     | 401                                     | 401             | 618         | 965     | 1631    |         |         | 5356    |          |
| 350                | 283     | 416                                     | 416             | 641         | 1002    | 1693    |         |         | 5558    |          |
| 375                | 293     | 431                                     | 431             | 664         | 1037    | 1752    |         |         | 5753    |          |
| 400                | 302     | 445                                     | 445             | 685         | 1071    | 1810    |         |         |         |          |
| 425                | 312     | 459                                     | 459             | 707         | 1104    |         |         |         |         |          |
| 450                | 321     | 472                                     | 472             | 727         | 1136    |         |         |         |         |          |
| 475                | 329     | 485                                     | 485             | 747         | 1167    |         |         |         |         |          |
| 493                | 336     | 494                                     | 494             | 761         | 1189    |         |         |         |         |          |

<sup>1)</sup> Capacities below 30 psig set pressure are calculated at 3 psig overpressure.

| Stainless steel-bellow: Spring ranges in psig |                                |             |           |           |           |
|---|--------------------------------|-------------|-----------|-----------|-----------|
| 1" x 2"                                       | 1 1/2" x 2"<br>1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3"   | 3" x 4"   | 4" x 6"   |
| 36 - 48                                       | 36 - 46                        | 38 - 52     | 40 - 49   | 36 - 53   | 36 - 50   |
| 49 - 67                                       | 47 - 58                        | 53 - 65     | 50 - 65   | 54 - 66   | 51 - 61   |
| 68 - 78                                       | 59 - 80                        | 66 - 81     | 66 - 121  | 67 - 85   | 62 - 71   |
| 79 - 100                                      | 81 - 93                        | 82 - 108    | 122 - 145 | 86 - 116  | 72 - 81   |
| 101 - 130                                     | 94 - 115                       | 109 - 145   | 146 - 167 | 117 - 145 | 82 - 101  |
| 131 - 170                                     | 116 - 167                      | 146 - 181   | 168 - 232 | 146 - 261 | 102 - 116 |
| 171 - 232                                     | 168 - 268                      | 182 - 232   | 233 - 268 |           | 117 - 135 |
| 233 - 319                                     | 269 - 362                      | 233 - 319   | 269 - 333 |           | 136 - 167 |
| 320 - 435                                     |                                |             |           |           | 168 - 188 |

Design with bellow as standard valve (only Fig. 901/911)

| Set gauge-pressure |         | I Saturated steam kg/h |       |               |       |             |       |         |       |         |       | II Air in Nm <sup>3</sup> /h (16°C; 1,013 bara) |       |         |       |         |        |          |        |        |
|--------------------|---------|------------------------|-------|---------------|-------|-------------|-------|---------|-------|---------|-------|---|-------|---------|-------|---------|--------|----------|--------|--------|
| bar                | 1" x 2" | 1 1/2" x 2"            |       | 1 1/2 x 2 1/2 |       | 1 1/2" x 3" |       | 2" x 3" |       | 3" x 4" |       | 4" x 6"   |       | 4" x 6" |       | 6" x 8" |        | 6" x 10" |        |        |
| orifice letter     | D/E     |                        | F     |               | G     |             | H     |         | (H) J |         | (K) L |   | (L) M |         | (N) P |         | Q      |          | R      |        |
|                    | I       | II                     | I     | II            | I     | II          | I     | II      | I     | II      | I     | II  | I     | II      | I     | II      | I      | II       | I      | II     |
| 1                  |         |                        |       |               |       |             |       |         |       |         |       |   |       |         |       |         |        |          |        |        |
| 1,5                |         |                        |       |               |       |             |       |         |       |         |       |   |       |         |       |         |        |          |        |        |
| 2                  | 549     | 732                    | 911   | 1214          | 911   | 1214        | 1403  | 1871    | 2192  | 2923    | 3705  | 4940  | 8770  | 11693   | 8770  | 11693   | 12165  | 16219    | 16918  | 22555  |
| 2,5                | 643     | 857                    | 1067  | 1422          | 1067  | 1422        | 1644  | 2191    | 2567  | 3423    | 4339  | 5785  | 10271 | 13694   | 10271 | 13694   | 14247  | 18994    | 19813  | 26415  |
| 3                  | 737     | 982                    | 1222  | 1630          | 1222  | 1630        | 1884  | 2512    | 2943  | 3923    | 4973  | 6631  | 11772 | 15695   | 11772 | 15695   | 16328  | 21770    | 22708  | 30275  |
| 3,5                | 830     | 1107                   | 1378  | 1838          | 1378  | 1838        | 2124  | 2832    | 3318  | 4423    | 5607  | 7476  | 13273 | 17696   | 13273 | 17696   | 18410  | 24545    | 25603  | 34135  |
| 4                  | 924     | 1232                   | 1534  | 2045          | 1534  | 2045        | 2364  | 3152    | 3693  | 4924    | 6241  | 8321  | 14774 | 19697   | 14774 | 19697   | 20492  | 27321    | 28498  | 37995  |
| 4,5                | 1018    | 1358                   | 1690  | 2253          | 1690  | 2253        | 2604  | 3472    | 4068  | 5424    | 6876  | 9167  | 16274 | 21698   | 16274 | 21698   | 22574  | 30097    | 31394  | 41855  |
| 5                  | 1112    | 1483                   | 1846  | 2461          | 1846  | 2461        | 2844  | 3792    | 4443  | 5924    | 7510  | 10012   | 17775 | 23699   | 17775 | 23699   | 24656  | 32872    | 34289  | 45715  |
| 6                  | 1300    | 1733                   | 2158  | 2877          | 2158  | 2877        | 3325  | 4433    | 5194  | 6925    | 8778  | 11703   | 20777 | 27701   | 20777 | 27701   | 28820  | 38423    | 40079  | 53435  |
| 7                  | 1488    | 1984                   | 2469  | 3292          | 2469  | 3292        | 3805  | 5073    | 5944  | 7925    | 10046 | 13394   | 23779 | 31703   | 23779 | 31703   | 32983  | 43975    | 45870  | 61156  |
| 8                  | 1676    | 2234                   | 2781  | 3708          | 2781  | 3708        | 4286  | 5714    | 6694  | 8925    | 11314 | 15084   | 26781 | 35705   | 26781 | 35705   | 37147  | 49526    | 51660  | 68876  |
| 9                  | 1863    | 2484                   | 3093  | 4123          | 3093  | 4123        | 4766  | 6354    | 7445  | 9926    | 12582 | 16775   | 29782 | 39707   | 29782 | 39707   | 41311  | 55077    | 57451  | 76596  |
| 10                 | 2051    | 2735                   | 3404  | 4539          | 3404  | 4539        | 5246  | 6995    | 8195  | 10926   | 13850 | 18466   | 32784 | 43709   | 32784 | 43709   | 45474  | 60628    | 63241  | 84316  |
| 11                 | 2239    | 2985                   | 3716  | 4955          | 3716  | 4955        | 5727  | 7635    | 8946  | 11927   | 15119 | 20157   | 35786 | 47711   | 35786 | 47711   | 49638  | 66179    | 69032  | 92036  |
| 12                 | 2427    | 3236                   | 4028  | 5370          | 4028  | 5370        | 6207  | 8275    | 9696  | 12927   | 16387 | 21847   | 38788 | 51713   | 38788 | 51713   | 53802  | 71731    | 74822  | 99756  |
| 13                 | 2615    | 3486                   | 4340  | 5786          | 4340  | 5786        | 6687  | 8916    | 10446 | 13927   | 17655 | 23538   | 41789 | 55716   | 41789 | 55716   | 57965  | 77282    | 80612  | 107476 |
| 14                 | 2803    | 3737                   | 4651  | 6201          | 4651  | 6201        | 7168  | 9556    | 11197 | 14928   | 18923 | 25229   | 44791 | 59718   | 44791 | 59718   | 62129  | 82833    | 86403  | 115196 |
| 15                 | 2990    | 3987                   | 4963  | 6617          | 4963  | 6617        | 7648  | 10197   | 11947 | 15928   | 20191 | 26920   | 47793 | 63720   | 47793 | 63720   | 66293  | 88384    | 92193  | 122916 |
| 16                 | 3178    | 4237                   | 5275  | 7032          | 5275  | 7032        | 8128  | 10837   | 12697 | 16929   | 21459 | 28611   | 50795 | 67722   | 50795 | 67722   | 70456  | 93936    | 97984  | 130636 |
| 17                 | 3366    | 4488                   | 5586  | 7448          | 5586  | 7448        | 8609  | 11478   | 13448 | 17929   | 22728 | 30301   | 53797 | 71724   | 53797 | 71724   | 74620  | 99487    | 103774 | 138356 |
| 18                 | 3554    | 4738                   | 5898  | 7864          | 5898  | 7864        | 9089  | 12118   | 14198 | 18930   | 23996 | 31992   | 56798 | 75726   | 56798 | 75726   | 78784  | 105038   | 109565 | 146076 |
| 19                 | 3742    | 4989                   | 6210  | 8279          | 6210  | 8279        | 9569  | 12758   | 14948 | 19930   | 25264 | 33683   | 59800 | 79728   | 59800 | 79728   | 82947  | 110589   | 115355 | 153796 |
| 20                 | 3929    | 5239                   | 6522  | 8695          | 6522  | 8695        | 10050 | 13399   | 15699 | 20930   | 26532 | 35374   |       |         |       |         | 87111  | 116140   | 121146 | 161516 |
| 21                 | 4117    | 5489                   | 6833  | 9110          | 6833  | 9110        | 10530 | 14039   | 16449 | 21931   | 27800 | 37064   |       |         |       |         | 91275  | 121692   | 126936 | 169237 |
| 22                 | 4305    | 5740                   | 7145  | 9526          | 7145  | 9526        | 11011 | 14680   | 17200 | 22931   | 29068 | 38755   |       |         |       |         | 95439  | 127243   |        |        |
| 24                 | 4681    | 6241                   | 7768  | 10357         | 7768  | 10357       | 11971 | 15961   | 18700 | 24932   | 31605 | 42137   |       |         |       |         | 103766 | 138345   |        |        |
| 26                 | 5056    | 6741                   | 8392  | 11188         | 8392  | 11188       | 12932 | 17241   | 20201 | 26933   | 34141 | 45518   |       |         |       |         | 112093 | 149448   |        |        |
| 27                 | 5244    | 6992                   | 8704  | 11604         | 8704  | 11604       | 13412 | 17882   | 20951 | 27933   | 35409 | 47209   |       |         |       |         | 116257 | 154999   |        |        |
| 28                 | 5432    | 7242                   | 9015  | 12020         | 9015  | 12020       | 13893 | 18522   | 21702 | 28934   | 36677 | 48900   |       |         |       |         |        |          |        |        |
| 30                 | 5808    | 7743                   | 9639  | 12851         | 9639  | 12851       | 14853 | 19803   | 23203 | 30935   |       |   |       |         |       |         |        |          |        |        |
| 32                 | 6183    | 8244                   | 10262 | 13682         | 10262 | 13682       | 15814 | 21084   | 24703 | 32935   |       |   |       |         |       |         |        |          |        |        |
| 34                 | 6559    | 8745                   | 10886 | 14513         | 10886 | 14513       | 16775 | 22365   | 26204 | 34936   |       |   |       |         |       |         |        |          |        |        |

| Set gauge-pressure |         | Water in m <sup>3</sup> /h |                 |             |         |         |         |         |         |          |
|--------------------|---------|----------------------------|-----------------|-------------|---------|---------|---------|---------|---------|----------|
| bar                | 1" x 2" | 1 1/2" x 2"                | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" | 3" x 4" | 4" x 6" | 4" x 6" | 6" x 8" | 6" x 10" |
| orifice letter     | D/E     | F                          | G               | H           | (H) J   | (K) L   | (L) M   | (N) P   | Q       | R        |
| 1                  | 14      | 20                         | 20              | 31          | 49      | 82      | 194     | 194     | 269     | 374      |
| 1,5                | 16      | 24                         | 24              | 37          | 58      | 97      | 231     | 231     | 320     | 445      |
| 2                  | 18      | 27                         | 27              | 42          | 65      | 111     | 262     | 262     | 363     | 505      |
| 2,5                | 21      | 30                         | 30              | 47          | 73      | 124     | 293     | 293     | 406     | 565      |
| 3                  | 23      | 33                         | 33              | 51          | 80      | 136     | 321     | 321     | 445     | 619      |
| 3,5                | 24      | 36                         | 36              | 55          | 87      | 146     | 347     | 347     | 481     | 669      |
| 4                  | 26      | 38                         | 38              | 59          | 93      | 157     | 370     | 370     | 514     | 715      |
| 4,5                | 28      | 41                         | 41              | 63          | 98      | 166     | 393     | 393     | 545     | 758      |
| 5                  | 29      | 43                         | 43              | 66          | 104     | 175     | 414     | 414     | 575     | 799      |
| 6                  | 32      | 47                         | 47              | 73          | 113     | 192     | 454     | 454     | 629     | 875      |
| 7                  | 35      | 51                         | 51              | 78          | 123     | 207     | 490     | 490     | 680     | 945      |
| 8                  | 37      | 54                         | 54              | 84          | 131     | 221     | 524     | 524     | 727     | 1011     |
| 9                  | 39      | 58                         | 58              | 89          | 139     | 235     | 556     | 556     | 771     | 1072     |
| 10                 | 41      | 61                         | 61              | 94          | 146     | 247     | 586     | 586     | 813     | 1130     |
| 11                 | 43      | 64                         | 64              | 98          | 154     | 260     | 614     | 614     | 852     | 1185     |
| 12                 | 45      | 67                         | 67              | 103         | 160     | 271     | 642     | 642     | 890     | 1238     |
| 13                 | 47      | 69                         | 69              | 107         | 167     | 282     | 668     | 668     | 926     | 1288     |
| 14                 | 49      | 72                         | 72              | 111         | 173     | 293     | 693     | 693     | 961     | 1337     |
| 15                 | 51      | 75                         | 75              | 115         | 179     | 303     | 717     | 717     | 995     | 1384     |
| 16                 | 52      | 77                         | 77              | 119         | 185     | 313     | 741     | 741     | 1028    | 1429     |
| 17                 | 54      | 79                         | 79              | 122         | 191     | 323     | 764     | 764     | 1059    | 1473     |
| 18                 | 55      | 82                         | 82              | 126         | 196     | 332     | 786     | 786     | 1090    | 1516     |
| 19                 | 57      | 84                         | 84              | 129         | 202     | 341     | 807     | 807     | 1120    | 1558     |
| 20                 | 58      | 86                         | 86              | 133         | 207     | 350     |         |         | 1149    | 1598     |
| 21                 | 60      | 88                         | 88              | 136         | 212     | 359     |         |         | 1177    | 1637     |
| 22                 | 61      | 90                         | 90              | 139         | 217     | 367     |         |         | 1205    |          |
| 24                 | 64      | 94                         | 94              | 145         | 227     | 383     |         |         | 1259    |          |
| 26                 | 67      | 98                         | 98              | 151         | 236     | 399     |         |         | 1310    |          |
| 27                 | 68      | 100                        | 100             | 154         | 241     | 407     |         |         | 1335    |          |
| 28                 | 69      | 102                        | 102             | 157         | 245     | 414     |         |         |         |          |
| 30                 | 72      | 105                        | 105             | 162         | 254     |         |         |         |         |          |
| 32                 | 74      | 109                        | 109             | 168         | 262     |         |         |         |         |          |
| 34                 | 76      | 112                        | 112             | 173         | 270     |         |         |         |         |          |

| Set gauge-pressure |         | I Saturated steam kg/h |      |               |      |             |       |         |       |         |       | II Air in Nm <sup>3</sup> /h (0°C; 1,013 bara) |       |         |       |         |       |          |        |        |
|--------------------|---------|------------------------|------|---------------|------|-------------|-------|---------|-------|---------|-------|--|-------|---------|-------|---------|-------|----------|--------|--------|
| bar                | 1" x 2" | 1 1/2" x 2"            |      | 1 1/2 x 2 1/2 |      | 1 1/2" x 3" |       | 2" x 3" |       | 3" x 4" |       | 4" x 6"  |       | 4" x 6" |       | 6" x 8" |       | 6" x 10" |        |        |
| orifice letter     | D/E     | F                      |      | G             |      | H           |       | (H) J   |       | (K) L   |       | (L) M  |       | (N) P   |       | Q       |       | R        |        |        |
|                    | I       | II                     | I    | II            | I    | II          | I     | II      | I     | II      | I     | II   | I     | II      | I     | II      | I     | II       | I      | II     |
| 0,2                | 126     | 148                    | 210  | 246           | 210  | 246         | 324   | 380     | 506   | 594     | 855   | 1003   | 2024  | 2375    | 2024  | 2375    | 2510  | 2945     | 3490   | 4100   |
| 0,4                | 185     | 223                    | 307  | 370           | 307  | 370         | 473   | 570     | 739   | 891     | 1250  | 1505   | 2960  | 3565    | 2960  | 3565    | 3630  | 4380     | 5050   | 6090   |
| 0,5                | 207     | 252                    | 344  | 419           | 344  | 419         | 529   | 646     | 827   | 1009    | 1400  | 1705   | 3310  | 4035    | 3310  | 4035    | 4070  | 4970     | 5660   | 6910   |
| 0,6                | 230     | 284                    | 383  | 472           | 383  | 472         | 590   | 728     | 923   | 1135    | 1560  | 1920   | 3690  | 4545    | 3690  | 4545    | 4470  | 5520     | 6220   | 7675   |
| 0,8                | 272     | 341                    | 453  | 567           | 453  | 567         | 698   | 873     | 1090  | 1365    | 1840  | 2305   | 4360  | 5460    | 4360  | 5460    | 5240  | 6555     | 7280   | 9115   |
| 1                  | 317     | 398                    | 526  | 661           | 526  | 661         | 811   | 1019    | 1270  | 1590    | 2140  | 2690   | 5070  | 6370    | 5070  | 6370    | 6030  | 7575     | 8385   | 10530  |
| 1,5                | 425     | 538                    | 707  | 894           | 707  | 894         | 1090  | 1378    | 1700  | 2150    | 2875  | 3640   | 6800  | 8610    | 6800  | 8610    | 8050  | 10195    | 11200  | 14180  |
| 2                  | 477     | 607                    | 792  | 1008          | 792  | 1008        | 1220  | 1550    | 1900  | 2425    | 3220  | 4100   | 7625  | 9700    | 7625  | 9700    | 10125 | 12890    | 14080  | 17920  |
| 2,5                | 572     | 731                    | 950  | 1215          | 950  | 1215        | 1460  | 1870    | 2285  | 2925    | 3865  | 4945   | 9145  | 11700   | 9145  | 11700   | 11990 | 15330    | 16660  | 21300  |
| 3                  | 662     | 850                    | 1100 | 1410          | 1100 | 1410        | 1695  | 2175    | 2645  | 3400    | 4475  | 5750   | 10600 | 13600   | 10600 | 13600   | 13880 | 17840    | 19300  | 24800  |
| 4                  | 837     | 1080                   | 1390 | 1800          | 1390 | 1800        | 2140  | 2770    | 3350  | 4330    | 5650  | 7310   | 13400 | 17300   | 13400 | 17300   | 17550 | 22725    | 24400  | 31600  |
| 5                  | 1000    | 1300                   | 1665 | 2160          | 1665 | 2160        | 2565  | 3330    | 4000  | 5210    | 6770  | 8800   | 16000 | 20840   | 16000 | 20840   | 21000 | 27350    | 29250  | 38000  |
| 6                  | 1165    | 1520                   | 1940 | 2530          | 1940 | 2530        | 2990  | 3900    | 4665  | 6090    | 7890  | 10300  | 18650 | 24370   | 18650 | 24370   | 24500 | 31900    | 34050  | 44400  |
| 7                  | 1330    | 1745                   | 2210 | 2900          | 2210 | 2900        | 3400  | 4465    | 5320  | 6970    | 9000  | 11790  | 21300 | 27900   | 21300 | 27900   | 27900 | 36600    | 38800  | 50900  |
| 8                  | 1495    | 1965                   | 2485 | 3260          | 2485 | 3260        | 3820  | 5030    | 5980  | 7860    | 10100 | 13280  | 23900 | 31430   | 23900 | 31430   | 31350 | 41200    | 43600  | 57300  |
| 9                  | 1660    | 2185                   | 2755 | 3630          | 2755 | 3630        | 4245  | 5590    | 6630  | 8740    | 11200 | 14770  | 26500 | 34960   | 26500 | 34960   | 34800 | 45800    | 48400  | 63800  |
| 10                 | 1820    | 2400                   | 3025 | 3990          | 3025 | 3990        | 4665  | 6150    | 7290  | 9610    | 12300 | 16250  | 29150 | 38500   | 29150 | 38500   | 38250 | 50500    | 53200  | 70200  |
| 11                 | 1985    | 2625                   | 3300 | 4360          | 3300 | 4360        | 5080  | 6720    | 7940  | 10500   | 13400 | 17750  | 31750 | 42000   | 31750 | 42000   | 41600 | 55100    | 58000  | 76600  |
| 12                 | 2150    | 2845                   | 3570 | 4730          | 3570 | 4730        | 5500  | 7290    | 8590  | 11380   | 14500 | 19240  | 34350 | 45500   | 34350 | 45500   | 45100 | 59700    | 62700  | 83100  |
| 13                 | 2310    | 3070                   | 3840 | 5090          | 3840 | 5090        | 5920  | 7850    | 9250  | 12270   | 15600 | 20730  | 37000 | 49000   | 37000 | 49000   | 48500 | 64400    | 67500  | 89500  |
| 14                 | 2475    | 3290                   | 4110 | 5460          | 4110 | 5460        | 6340  | 8400    | 9900  | 13150   | 16700 | 22200  | 39600 | 52600   | 39600 | 52600   | 52000 | 69000    | 72300  | 96000  |
| 15                 | 2640    | 3500                   | 4385 | 5830          | 4385 | 5830        | 6760  | 8980    | 10550 | 14030   | 17800 | 23700  | 42200 | 56100   | 42200 | 56100   | 55400 | 73600    | 77000  | 102400 |
| 16                 | 2800    | 3725                   | 4655 | 6190          | 4655 | 6190        | 7170  | 9540    | 11200 | 14900   | 18950 | 25200  | 44800 | 59600   | 44800 | 59600   | 58800 | 78200    | 81800  | 108800 |
| 17                 | 2965    | 3950                   | 4930 | 6560          | 4930 | 6560        | 7590  | 10100   | 11850 | 15800   | 20050 | 26700  | 47400 | 63100   | 47400 | 63100   | 62200 | 82900    | 86600  | 115300 |
| 18                 | 3130    | 4170                   | 5200 | 6920          | 5200 | 6920        | 8010  | 10670   | 12500 | 16650   | 21150 | 28100  | 50100 | 66700   | 50100 | 66700   | 65700 | 87500    | 91400  | 121700 |
| 19                 | 3295    | 4390                   | 5470 | 7300          | 5470 | 7300        | 8430  | 11240   | 13150 | 17550   | 22250 | 29600  | 52700 | 70200   | 52700 | 70200   | 69100 | 92100    | 96200  | 128100 |
| 20                 | 3460    | 4610                   | 5750 | 7660          | 5750 | 7660        | 8850  | 11800   | 13800 | 18400   | 23350 | 31150  | 55300 | 73700   | 55300 | 73700   | 72600 | 96800    | 101000 | 134600 |
| 21                 | 3620    | 4830                   | 6020 | 8020          | 6020 | 8020        | 9250  | 12370   | 14500 | 19300   | 24500 | 32650  | 57900 | 77300   | 57900 | 77300   | 76000 | 101400   | 105800 | 141000 |
| 22                 | 3790    | 5050                   | 6290 | 8390          | 6290 | 8390        | 9700  | 12930   | 15150 | 20200   | 25600 | 34150  | 60600 | 80800   | 60600 | 80800   | 79500 | 106000   | 110900 | 147500 |
| 24                 | 4120    | 5490                   | 6840 | 9120          | 6840 | 9120        | 10500 | 14060   | 16450 | 21970   | 27850 | 37100  | 65900 | 87900   | 65900 | 87900   | 86500 | 115300   | 120600 | 160400 |
| 25                 | 4280    | 5710                   | 7120 | 9490          | 7120 | 9490        | 10950 | 14620   | 17100 | 22850   | 28950 | 38600  |       |         |       |         | 90200 | 120000   | 125500 | 166900 |
| 26                 | 4450    | 5930                   | 7390 | 9850          | 7390 | 9850        | 11350 | 15190   | 17800 | 23730   | 30050 | 40100  |       |         |       |         | 93700 | 124600   | 130300 | 173300 |
| 28                 | 4780    | 6370                   | 7950 | 10600         | 7950 | 10600       | 12250 | 16320   | 19100 | 25500   | 32300 | 43100  |       |         |       |         |       |          |        |        |
| 30                 | 5120    | 6810                   | 8500 | 11320         | 8500 | 11320       | 13100 | 17450   | 20450 | 27250   |       |  |       |         |       |         |       |          |        |        |
| 32                 | 5450    | 7250                   | 9060 | 12050         | 9060 | 12050       | 13950 | 18570   | 21800 | 29000   |       |  |       |         |       |         |       |          |        |        |
| 34                 | 5800    | 7700                   | 9650 | 12790         | 9650 | 12790       | 14850 | 19700   | 23250 | 30800   |       |  |       |         |       |         |       |          |        |        |
| 40                 |         |                        |      |               |      |             |       |         |       |         |       |  |       |         |       |         |       |          |        |        |

TÜV · SV · ... · 663 · D/G

| Spring ranges in bar (gauge) |                              |             |            |            |            |             |            |
|------------------------------|------------------------------|-------------|------------|------------|------------|-------------|------------|
| 1" x 2"                      | 1 1/2" x 2"<br>1 1/2 x 2 1/2 | 1 1/2" x 3" | 2" x 3"    | 3" x 4"    | 4" x 6"    | 6" x 8"     | 6" x 10"   |
| 0,2 - 0,5                    | 0,2 - 0,5                    | 0,2 - 0,5   | 0,2 - 0,5  | 0,2 - 0,5  | 0,2 - 0,5  | 0,2 - 0,4   | 0,2 - 0,5  |
| 0,52 - 1                     | 0,52 - 1                     | 0,52 - 1    | 0,52 - 1   | 0,52 - 1   | 0,52 - 1   | 0,42 - 0,75 | 0,52 - 1   |
| 1,05 - 1,5                   | 1,05 - 1,5                   | 1,05 - 1,5  | 1,05 - 1,5 | 1,05 - 1,5 | 1,05 - 1,5 | 0,77 - 1,1  | 1,05 - 1,5 |
| 1,55 - 2                     | 1,55 - 2                     | 1,55 - 2    | 1,55 - 2   | 1,55 - 2   | 1,55 - 2   | 1,15 - 1,5  | 1,55 - 1,9 |
| 2,05 - 2,7                   | 2,05 - 2,7                   | 2,05 - 2,7  | 2,05 - 2,7 | 2,05 - 2,7 | 2,05 - 2,7 | 1,55 - 1,9  | 1,95 - 2,3 |
| 2,75 - 3,6                   | 2,75 - 3,6                   | 2,75 - 3,6  | 2,75 - 3,6 | 2,75 - 3,6 | 2,75 - 3,6 | 1,95 - 2,5  | 2,35 - 2,7 |
| 3,7 - 5                      | 3,7 - 5                      | 3,7 - 5     | 3,7 - 5    | 3,7 - 5    | 3,05 - 3,6 | 2,55 - 2,95 | 2,75 - 3,3 |
| 5,1 - 9                      | 5,1 - 9                      | 5,1 - 9     | 5,1 - 9    | 5,1 - 9    | 3,7 - 5    | 3 - 4       | 3,35 - 4,1 |
| 9,1 - 16                     | 9,1 - 16                     | 9,1 - 16    | 9,1 - 16   | 9,1 - 16   | 5,1 - 9    | 4,1 - 5,7   | 4,2 - 5,5  |
| 16,1 - 22                    | 16,1 - 22                    | 16,1 - 22   | 16,1 - 22  | 16,1 - 22  | 9,1 - 14   | 5,8 - 8,2   | 5,6 - 7,4  |
| 22,1 - 28                    | 22,1 - 28                    | 22,1 - 28   | 22,1 - 28  | 22,1 - 28  | 14,1 - 19  | 8,3 - 12    | 7,5 - 11   |
| 28,1 - 34                    | 28,1 - 34                    | 28,1 - 34   | 28,1 - 34  |            | 19,1 - 24  | 12,1 - 17   | 11,1 - 16  |
|                              |                              |             |            |            |            | 17,1 - 24   | 16,1 - 21  |
|                              |                              |             |            |            |            | 24,1 - 27   | 21,1 - 26  |

| Set gauge-pressure |         | Water in m <sup>3</sup> /h (20°C) |                 |             |         |         |         |         |         |          |
|--------------------|---------|-----------------------------------|-----------------|-------------|---------|---------|---------|---------|---------|----------|
| bar                | 1" x 2" | 1 1/2" x 2"                       | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" | 3" x 4" | 4" x 6" | 4" x 6" | 6" x 8" | 6" x 10" |
| orifice letter     | D/E     | F                                 | G               | H           | (H) J   | (K) L   | (L) M   | (N) P   | Q       | R        |
| 0,2                | 5,13    | 8,53                              | 8,53            | 13,1        | 20,5    | 30,8    | 73,0    | 73,0    | 94,9    | 132,0    |
| 0,5                | 8,12    | 13,5                              | 13,5            | 20,8        | 32,5    | 48,8    | 115,0   | 115,0   | 150,0   | 209,0    |
| 1                  | 11,5    | 19,1                              | 19,1            | 29,4        | 45,9    | 69,0    | 163,0   | 163,0   | 212,0   | 295,0    |
| 2                  | 16,2    | 27,0                              | 27,0            | 41,6        | 64,9    | 97,5    | 231,0   | 231,0   | 300,0   | 417,0    |
| 3                  | 19,9    | 33,0                              | 33,0            | 50,9        | 79,5    | 119,0   | 283,0   | 283,0   | 368,0   | 511,0    |
| 4                  | 22,9    | 38,1                              | 38,1            | 58,7        | 91,8    | 138,0   | 326,0   | 326,0   | 424,0   | 590,0    |
| 5                  | 25,7    | 42,6                              | 42,6            | 65,5        | 102,0   | 154,0   | 365,0   | 365,0   | 474,0   | 660,0    |
| 6                  | 28,1    | 46,7                              | 46,7            | 72,0        | 112,0   | 169,0   | 400,0   | 400,0   | 520,0   | 723,0    |
| 7                  | 30,4    | 50,4                              | 50,4            | 77,7        | 121,0   | 182,0   | 432,0   | 432,0   | 562,0   | 781,0    |
| 8                  | 32,5    | 53,9                              | 53,9            | 83,1        | 130,0   | 195,0   | 461,0   | 461,0   | 600,0   | 835,0    |
| 9                  | 34,4    | 57,2                              | 57,2            | 88,1        | 138,0   | 207,0   | 490,0   | 490,0   | 637,0   | 885,0    |
| 10                 | 36,3    | 60,3                              | 60,3            | 92,9        | 145,0   | 218,0   | 516,0   | 516,0   | 671,0   | 933,0    |
| 11                 | 38,0    | 63,2                              | 63,2            | 97,4        | 152,0   | 229,0   | 540,0   | 540,0   | 703,0   | 977,0    |
| 12                 | 39,7    | 66,0                              | 66,0            | 102,0       | 159,0   | 239,0   | 565,0   | 565,0   | 735,0   | 1022,0   |
| 13                 | 41,4    | 68,7                              | 68,7            | 106,0       | 165,0   | 249,0   | 587,0   | 587,0   | 764,0   | 1062,0   |
| 14                 | 42,9    | 71,3                              | 71,3            | 110,0       | 172,0   | 258,0   | 611,0   | 611,0   | 794,0   | 1104,0   |
| 16                 | 45,9    | 76,3                              | 76,3            | 117,0       | 184,0   | 276,0   | 653,0   | 653,0   | 849,0   | 1181,0   |
| 18                 | 48,7    | 80,9                              | 80,9            | 125,0       | 195,0   | 293,0   | 692,0   | 692,0   | 900,0   | 1252,0   |
| 19                 | 49,9    | 82,9                              | 82,9            | 128,0       | 200,0   | 300,0   | 710,0   | 710,0   | 923,0   | 1284,0   |
| 20                 | 51,3    | 85,3                              | 85,3            | 131,0       | 205,0   | 308,0   | 730,0   | 730,0   | 949,0   | 1320,0   |
| 21                 | 52,6    | 87,4                              | 87,4            | 135,0       | 210,0   | 316,0   | 748,0   | 748,0   | 973,0   | 1350,0   |
| 24                 | 56,2    | 93,4                              | 93,4            | 144,0       | 225,0   | 338,0   | 800,0   | 800,0   | 1040,0  | 1443,0   |
| 25                 | 57,4    | 95,3                              | 95,3            | 147,0       | 229,0   | 345,0   |         |         | 1059,0  | 1473,0   |
| 26                 | 58,5    | 97,2                              | 97,2            | 150,0       | 234,0   | 352,0   |         |         | 1080,0  | 1502,0   |
| 27                 | 59,6    | 99,0                              | 99,0            | 153,0       | 238,0   | 358,0   |         |         | 1100,0  |          |
| 28                 | 60,7    | 101,0                             | 101,0           | 155,0       | 243,0   | 365,0   |         |         |         |          |
| 30                 | 62,9    | 104,0                             | 104,0           | 161,0       | 251,0   |         |         |         |         |          |
| 32                 | 64,8    | 108,0                             | 108,0           | 166,0       | 259,0   |         |         |         |         |          |
| 34                 | 66,9    | 111,0                             | 111,0           | 171,0       | 268,0   |         |         |         |         |          |

| Stainless steel-bellow: Spring ranges in bar (gauge) |                                |             |             |             |             |
|--|--------------------------------|-------------|-------------|-------------|-------------|
| 1" x 2"  | 1 1/2" x 2"<br>1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3"     | 3" x 4"     | 4" x 6"     |
| 2,5 - 3,3  | 2,5 - 3,2                      | 2,6 - 3,6   | 2,8 - 3,4   | 2,5 - 3,7   | 2,5 - 3,5   |
| 3,4 - 4,6  | 3,3 - 4,0                      | 3,7 - 4,5   | 3,5 - 4,5   | 3,8 - 4,6   | 3,6 - 4,2   |
| 4,7 - 5,4  | 4,1 - 5,5                      | 4,6 - 5,6   | 4,6 - 8,4   | 4,7 - 5,9   | 4,3 - 4,9   |
| 5,5 - 7,0  | 5,6 - 6,4                      | 5,7 - 7,5   | 8,5 - 10,0  | 6,0 - 8,0   | 5,0 - 5,6   |
| 7,1 - 9,0  | 6,5 - 7,9                      | 7,6 - 10,0  | 10,1 - 11,5 | 8,1 - 10,0  | 5,7 - 7,0   |
| 9,1 - 11,7   | 8,0 - 11,5                     | 10,1 - 12,5 | 11,6 - 16,0 | 10,1 - 18,0 | 7,1 - 8,0   |
| 11,8 - 16,0  | 11,6 - 18,5                    | 12,6 - 16,0 | 16,1 - 18,5 |             | 8,1 - 9,3   |
| 16,1 - 22,0  | 18,6 - 25,0                    | 16,1 - 22,0 | 18,6 - 23,0 |             | 9,4 - 11,5  |
| 22,1 - 30,0  |                                |             |             |             | 11,6 - 13,0 |

Design with bellow as standard valve (only Fig. 901/911)







| Safety valve-approvals                                     | SAFE<br>BR 900 |
|--|----------------|
|  | Fig. 901-912   |
| ASME Code Section VIII-Division 1<br>UV-stamp NB-stamp USA | X              |
| Canada Registration - CRN<br>(only version with UV-stamp)  | X              |
| VdTÜV - Germany<br>(only version without UV-stamp)         | X              |
| Pressure Equipment Directive 97/23/EG<br>(PED)             | X              |

| Pos. | Description           | Material, Material-No.                          |
|------|-----------------------|---|
| 1    | Body                  | SA 216 WCB                                      |
| 2    | Seat                  | SA 479 Gr.316 Ti                                |
| 3    | Stud                  | SA 193 B7                                       |
| 4    | Spindle guide         | DN ≤ 2": AISI 420<br>DN > 2": SA 395 / AISI 440 |
| 8    | Hexagon nut           | SA 194 2H                                       |
| 11   | Bonnet, closed        | SA 395  |
| 12   | Disc unit             | AISI 440  |
| 14   | Spindle               | AISI 420  |
| 17   | Adjusting screw       | AISI 420  |
| 28   | Cap, closed           | SA 395  |
| 29   | Cap, open             | SA 395  |
| 30   | Cap, gastight         | SA 395  |
| 35   | Lift fork             | SA 395  |
| 36   | Lifting lever, closed | SA 395  |
| 37   | Spring                | AISI 9254, AISI 6150                            |
| 41   | Lever, open           | SA 395  |
| 42   | Bonnet, open          | SA 395  |
| 43   | Bellow                | EPDM  |
| 55   | Bellow unit           | SA 240 Gr. 316 Ti / SA 479 Gr. 316 Ti           |
| 70   | Balanced piston       | SA 240 Gr. 316 Ti                               |

### Pressure-temperature-ratings

|                 |                  |      |               |      |      |      |      |     |     |     |     |     |
|-----------------|------------------|------|---------------|------|------|------|------|-----|-----|-----|-----|-----|
| <b>ANSI 150</b> | Temperature      | °F   | -20 up to 100 | 200  | 300  | 400  | 500  | 600 | 650 | 700 | 750 | 800 |
|                 | Operating press. | psig | 285           | 260  | 230  | 200  | 170  | 140 | 125 | 110 | 95  | 80  |
|                 | Temperature      | °C   | -29 up to 38  | 93   | 149  | 204  | 260  | 315 | 343 | 371 | 399 | 427 |
|                 | Operating press. | bar  | 19,6          | 17,9 | 15,8 | 13,8 | 11,7 | 9,6 | 8,6 | 7,6 | 6,6 | 5,5 |

|                 |                  |      |               |      |      |      |      |      |      |      |      |      |
|-----------------|------------------|------|---------------|------|------|------|------|------|------|------|------|------|
| <b>ANSI 300</b> | Temperature      | °F   | -20 up to 100 | 200  | 300  | 400  | 500  | 600  | 650  | 700  | 750  | 800  |
|                 | Operating press. | psig | 740           | 675  | 655  | 635  | 600  | 570  | 550  | 530  | 505  | 410  |
|                 | Temperature      | °C   | -29 up to 38  | 93   | 149  | 204  | 260  | 315  | 343  | 371  | 399  | 427  |
|                 | Operating press. | bar  | 51,1          | 46,6 | 45,2 | 43,6 | 41,4 | 39,2 | 37,9 | 36,6 | 34,8 | 28,8 |

Intermediate values for max. permissible operational pressures can be determined by linear interpolation of the given temperature / pressure chart.

#### Information / Restrictions of technical rules to be observed!

A production allowance acc. to TRB 801 No. 45 exists.

The engineer, designing a system or a plant, is responsible for the selection of the correct valve.

**SAFE-ANSI Figure 901 - 912**

| Nominal diameter |                 | 1" x 2"      | 1 1/2" x 2" | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" | 3" x 4" | 4" x 6" | 4" x 6" | 6" x 8" | 6" x 10" |        |
|------------------|-----------------|--------------|-------------|-----------------|-------------|---------|---------|---------|---------|---------|----------|--------|
| inch             | do              | 0,88         | 1,14        | 1,14            | 1,42        | 1,77    | 2,30    | 3,54    | 3,54    | 4,17    | 4,92     |        |
|                  | D1              | ANSI 150     | 4,25        | 5               | 5           | 5       | 6       | 7,5     | 9       |         | 11       | 11     |
|                  |                 | ANSI 300     | 4,88        | 6,12            | 6,12        | 6,12    | 6,5     | 8,25    | 10      |         | 12,5     | 12,5   |
|                  | D2              | ANSI 150     | 6           | 6               | 7           | 7,5     | 7,5     | 9       | 11      |         | 13,5     | 16     |
|                  | b1              | ANSI 300/150 | 0,69        | 0,81            | 0,81        | 0,81    | 0,88    | 1,12    | 1,25    |         | 1,44     | 1,44   |
|                  | b2              | ANSI 150     | 0,75        | 0,75            | 0,88        | 0,94    | 0,94    | 0,94    | 1       |         | 1,12     | 1,19   |
|                  | I               |              | 4 1/2       | 4 3/4           | 4 3/4       | 4 7/8   | 4 7/8   | 6 1/2   | 7 1/4   | 9       | 9 1/2    | 10 1/2 |
|                  | I1              |              | 4 1/8       | 4 7/8           | 4 7/8       | 5 1/8   | 5 3/8   | 6 1/8   | 7       | 7 1/8   | 9 7/16   | 9 7/16 |
|                  | H               |              | 11          | 13              | 13          | 15,4    | 17      | 21,5    | 27      | 27      | 33,3     | 35     |
|                  | H bellow design |              | 13,2        | 15,4            | 15,4        | 17,5    | 19,7    | 24,4    | 30,3    | 30,3    | 36,2     | 37     |
| X                |                 | 6            | 8           | 8               | 10          | 12      | 14      | 20      |         | 20      | 20       |        |

Center to face dimensions acc. to API 526  
Flange dimensions acc. to ASME / ANSI B16.5

| Nominal diameter |                         | 1" x 2" |   | 1 1/2" x 2" | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" |       | 3" x 4" |       | 4" x 6" |        | 4" x 6" |   | 6" x 8" |   | 6" x 10" |  |
|------------------|-------------------------|---------|---|-------------|-----------------|-------------|---------|-------|---------|-------|---------|--------|---------|---|---------|---|----------|--|
| inch             | API-orifice letter      | D       | E | F           | G               | H           | (H)     | J     | (K)     | L     | (L)     | M      | (N)     | P | Q       | R |          |  |
|                  | do                      | 0,886   |   | 1,142       | 1,142           | 1,417       | 1,772   | 2,303 | 3,543   | 3,543 | 4,173   | 4,921  |         |   |         |   |          |  |
|                  | Ao (inch <sup>2</sup> ) | 0,617   |   | 1,024       | 1,024           | 1,578       | 2,465   | 4,166 | 9,861   | 9,861 | 13,678  | 19,022 |         |   |         |   |          |  |

**Flange dimension**

| Nominal diameter |                | 1"       | 1 1/2"   | 2"       | 2 1/2"   | 3"       | 4"       | 6"        | 8"       | 10"    |
|------------------|----------------|----------|----------|----------|----------|----------|----------|-----------|----------|--------|
| ANSI 150         | ∅ K (inch)     | 3,12     | 3,88     | 4,75     | 5,5      | 6        | 7,5      | 9,5       | 11,75    | 14,25  |
|                  | n x ∅ d (inch) | 4 x 0,62 | 4 x 0,62 | 4 x 0,75 | 4 x 0,75 | 4 x 0,75 | 8 x 0,75 | 8 x 0,88  | 8 x 0,88 | 12 x 1 |
| ANSI 300         | ∅ K (inch)     | 3.5      | 4.5      | 5.0      | --       | 6,62     | 7,88     | 10,62     | --       | --     |
|                  | n x ∅ d (inch) | 4 x 0.75 | 4 x 0.88 | 8 x 0.75 | --       | 8 x 0.88 | 8 x 0.88 | 12 x 0.88 | --       | --     |

| Nominal diameter |                 | 1" x 2"      | 1 1/2" x 2" | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" | 3" x 4" | 4" x 6" | 4" x 6" | 6" x 8" | 6" x 10" |       |
|------------------|-----------------|--------------|-------------|-----------------|-------------|---------|---------|---------|---------|---------|----------|-------|
| mm               | do              | 22,5         | 29          | 29              | 36          | 45      | 58,5    | 90      | 90      | 106     | 125      |       |
|                  | D1              | ANSI 150     | 108         | 127             | 127         | 127     | 153     | 191     | 229     |         | 280      | 280   |
|                  |                 | ANSI 300     | 124         | 156             | 156         | 156     | 165     | 210     | 254     |         | 318      | 318   |
|                  | D2              | ANSI 150     | 153         | 153             | 178         | 191     | 191     | 229     | 280     |         | 343      | 407   |
|                  | b1              | ANSI 300/150 | 17,5        | 20,6            | 20,6        | 20,6    | 22,3    | 28,6    | 31,8    |         | 36,5     | 36,5  |
|                  | b2              | ANSI 150     | 19,1        | 19,1            | 22,3        | 23,8    | 23,8    | 23,8    | 25,4    |         | 28,6     | 30,2  |
|                  | I               |              | 114,3       | 120,7           | 120,7       | 123,8   | 123,8   | 165,1   | 184,2   | 228,6   | 241,3    | 266,7 |
|                  | I1              |              | 104,8       | 123,8           | 123,8       | 130,2   | 136,5   | 155,6   | 177,8   | 181     | 239,7    | 239,7 |
|                  | H               |              | 280         | 330             | 330         | 390     | 435     | 545     | 690     | 690     | 845      | 890   |
|                  | H bellow design |              | 335         | 390             | 390         | 445     | 500     | 620     | 770     | 770     | 920      | 940   |
| X                |                 | 150          | 200         | 200             | 250         | 300     | 350     | 500     |         | 500     | 500      |       |

Center to face dimensions acc. to API 526  
Flange dimensions acc. to ASME / ANSI B16.5

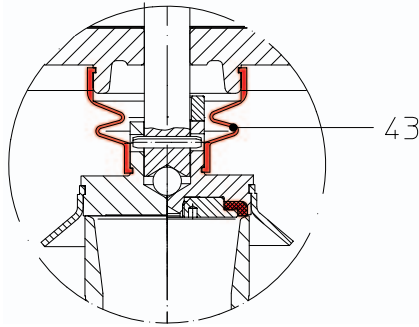
| Nominal diameter |                       | 1" x 2" |   | 1 1/2" x 2" | 1 1/2" x 2 1/2" | 1 1/2" x 3" | 2" x 3" |      | 3" x 4" |      | 4" x 6" |       | 4" x 6" |   | 6" x 8" |   | 6" x 10" |  |
|------------------|-----------------------|---------|---|-------------|-----------------|-------------|---------|------|---------|------|---------|-------|---------|---|---------|---|----------|--|
| mm               | API-orifice letter    | D       | E | F           | G               | H           | (H)     | J    | (K)     | L    | (L)     | M     | (N)     | P | Q       | R |          |  |
|                  | do                    | 22,5    |   | 29          | 29              | 36          | 45      | 58,5 | 90      | 90   | 106     | 125   |         |   |         |   |          |  |
|                  | Ao (mm <sup>2</sup> ) | 398     |   | 661         | 661             | 1018        | 1590    | 2688 | 6362    | 6362 | 8825    | 12272 |         |   |         |   |          |  |

**Flange dimension**

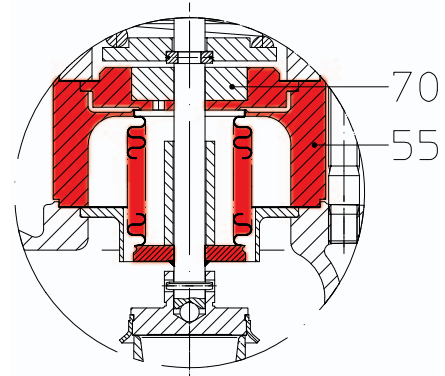
| Nominal diameter |              | 1"     | 1 1/2" | 2"     | 2 1/2" | 3"     | 4"     | 6"      | 8"     | 10"     |
|------------------|--------------|--------|--------|--------|--------|--------|--------|---------|--------|---------|
| ANSI 150         | ∅ K (mm)     | 79     | 98     | 120,5  | 140    | 152,5  | 190,5  | 241,5   | 298,5  | 362     |
|                  | n x ∅ d (mm) | 4 x 16 | 4 x 16 | 4 x 19 | 4 x 19 | 4 x 19 | 8 x 19 | 8 x 22  | 8 x 22 | 12 x 25 |
| ANSI 300         | ∅ K (mm)     | 89     | 114,5  | 127    | --     | 168    | 200    | 270     | --     | --      |
|                  | n x ∅ d (mm) | 4 x 19 | 4 x 22 | 8 x 19 | --     | 8 x 22 | 8 x 22 | 12 x 22 | --     | --      |

**EPDM** -31 °F up to +302 °F / -35 °C up to +150 °C Abbreviation **E**  
**Viton (FPM)** -13 °F up to +356 °F / -25 °C up to +180 °C Abbreviation **V**  
**Neoprene (CR)** -22 °F up to +257 °F / -30 °C up to +125 °C Abbreviation **N**

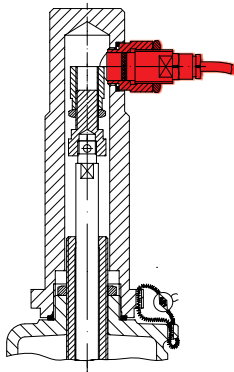
**EPDM bellow**  
(max. +248 °F / +120 °C)  
**Metal seal**  
**Soft sealing disc**



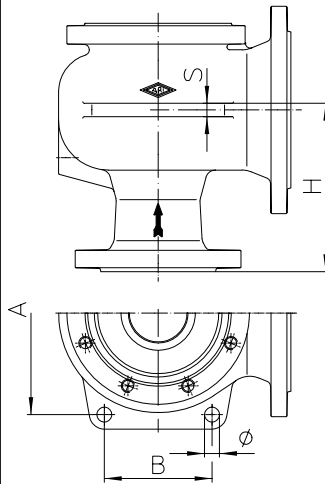
**Bellow - stainless steel**



Balanced stainless steel-bellow with balanced piston  
(Only for closed version!)

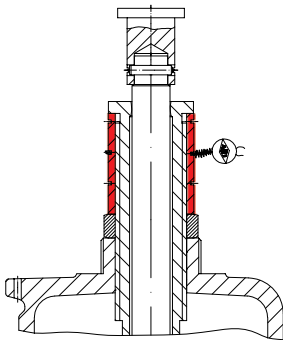


Proximity switch

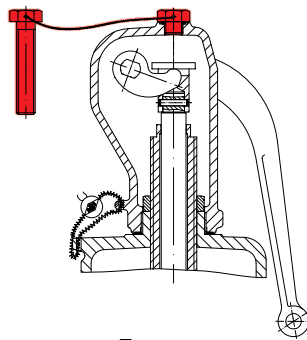


Support tongues

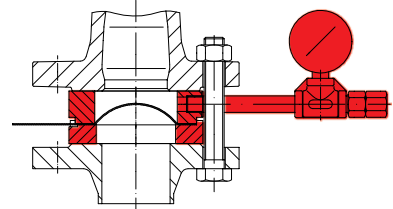
| Body material | Nominal diameter | A      | B     | ∅    | S     | H      |
|---------------|------------------|--------|-------|------|-------|--------|
| SA 216 WCB    | 2" x 3"          | 7      | 2 3/4 | 9/16 | 7/16  | 5 5/8  |
|               | 3" x 4"          | 8 3/8  | 3 1/2 | 3/4  | 9/16  | 6 3/8  |
|               | 4" x 6"          | 11 5/8 | 6 1/2 | 7/8  | 5/8   | 7 5/16 |
|               | 6" x 8"          | 12 1/2 | 7 1/4 | 7/8  | 13/16 | 9 3/4  |
|               | 6" x 10"         | 14 1/8 | 7 7/8 | 7/8  | 13/16 | 9 7/8  |



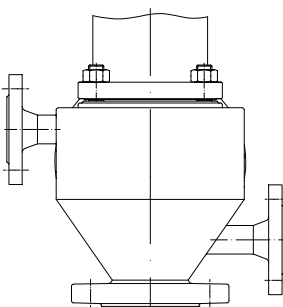
Lock bushing



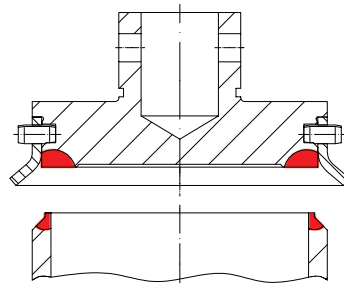
Test gag



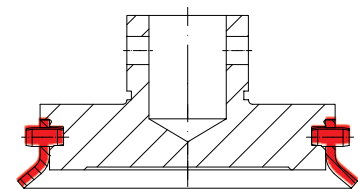
Rupture disc



Heating jacket



Seat SA 479 Gr.316 Ti / Stellite No. 21  
 Disc SA 479 Gr.316 Ti / Stellite No. 6  
 and removable lifting aid



Removable lifting aid  
 Chemical-version SA 479 Gr.316 Ti



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 GERMAN QUALITY VALVES