



TI-P709-01  
CTLS Issue 1

## SV47H SG Iron Safety Valve

### Description

SV47H Safety Valves are high-capacity valves with standard orifices from J to R. They have a modern design with two adjusting rings, allowing precise blowdown adjustment. Designed for use in boilers, organic fluid vaporizers and pressure vessels.

### Available types

SV47H Safety Valves have flanged inlet connections in accordance with ASME B16.42 and a test lever. For orifices J, K, and L there is the option of threaded outlet connections (NPT) in accordance with ANSI Standard B1.20.1. The materials of construction are selected to meet the temperature and pressure characteristics of the process fluid.

### Applications

Effective overpressure protection for boilers and generators, for steam systems downstream of pressure regulating stations, at the inlet of equipment such as heat exchangers and process vessels. Also for use in steam flash recovery tanks and in condensate return systems to protect accumulation vessels and equipment.

### Construction standard

SV47H Safety Valves are designed and built in accordance with the ASME Sec.I, Sec.XIII and Sec.VIII and the materials of construction meet the requirements of these codes. Production tests are carried out in accordance with the requirements of items PG-73.5, 3.6 and UG-136(d) of these codes.

### Certificates

A certificate of conformity is supplied with each valve including valve set pressure and hydrostatic test. Material certification is provided in accordance with BS-EN 10204 3.1 for all primary pressure containing parts.

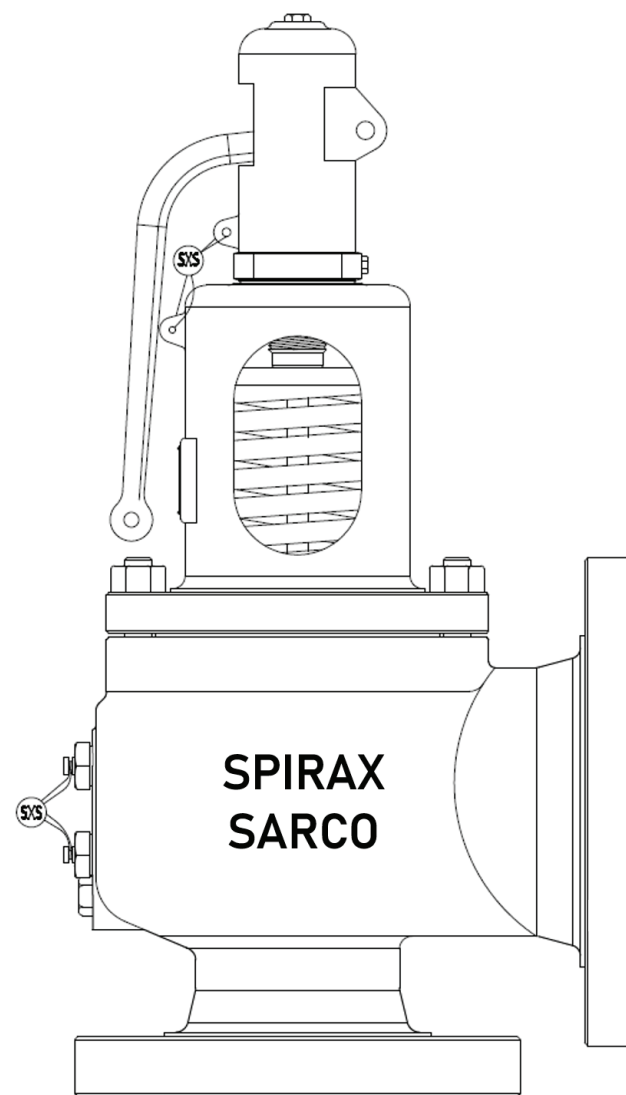
### Installation and maintenance

Consult the latest revision of the IM-S41-04 Installation and Maintenance Manual.

### Operating limits

#### Pressure

|                           |         |                        |
|---------------------------|---------|------------------------|
| Set Pressure              | Maximum | 20.7 bar g / 300 psi g |
|                           | Minimum | 1 bar g / 15 psi g     |
| Maximum back pressure     |         | 2.1 bar g / 30 psi g   |
| Hydrostatic test pressure |         | 1.5 x design pressure  |

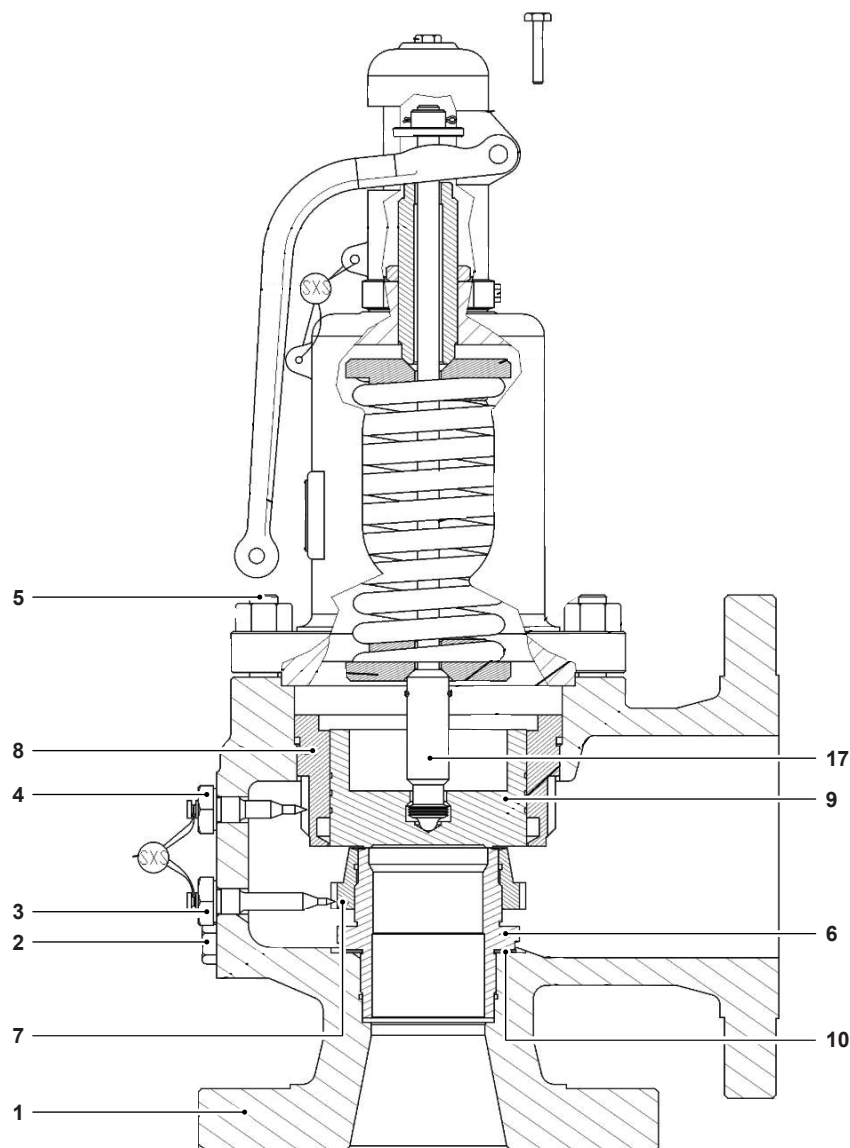


#### Temperature

| Body material | Specification       |                         |
|---------------|---------------------|-------------------------|
| SG Iron       | SA-395 Gr. 60-40-18 | Minimum -29 °C / 20 °F  |
|               |                     | Maximum 343 °C / 650 °F |

Temperature limits based on ASME B16.42

## Materials

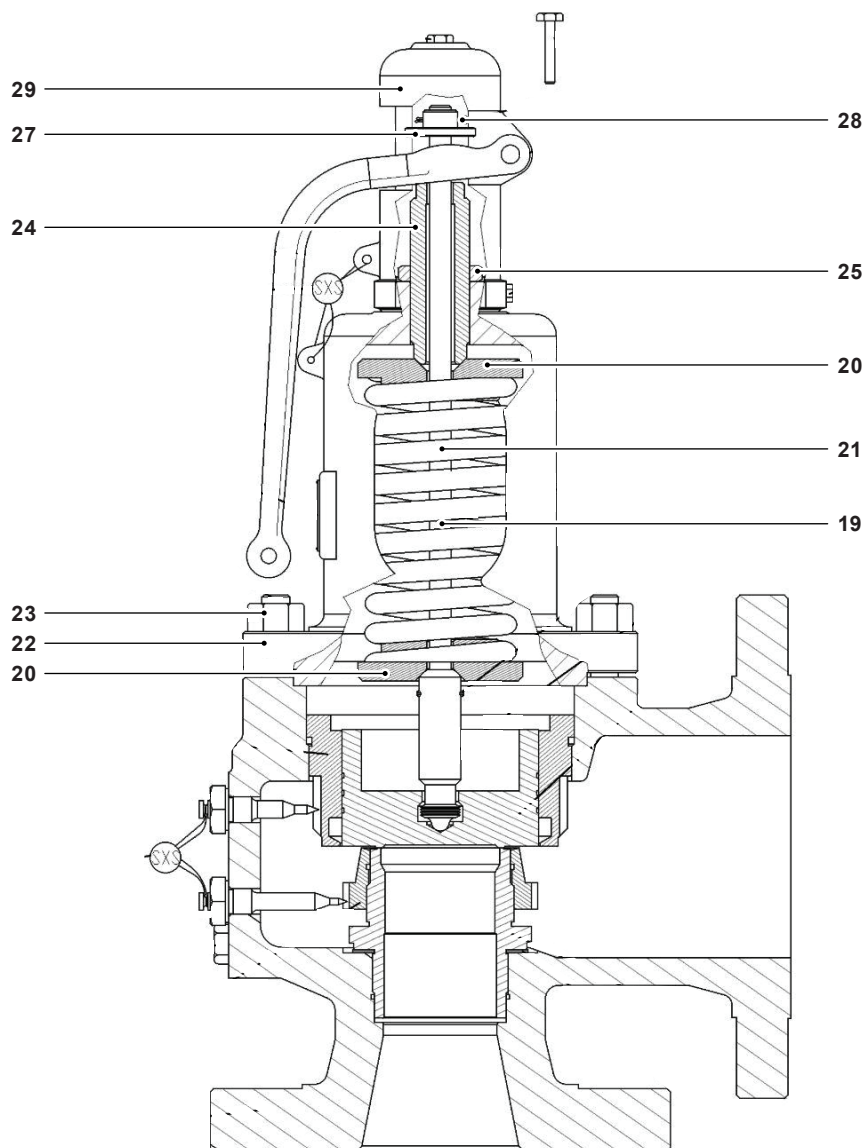


| No. | Part                   | Material                   |
|-----|------------------------|----------------------------|
| 1   | Body                   | SA 395 Gr. 60-40-18        |
| 2   | Drain Plug             | Carbon Steel               |
| 3   | Lock Screw - Lower     | Stainless Steel            |
| 4   | Lock Screw - Upper     | Stainless Steel            |
| 5   | Body Stud              | SA 193 Gr. B7              |
| 6   | Seat Gasket            | Graphite                   |
| 7   | Adjusting Ring - Lower | 316 St. St.                |
| 8   | Adjusting Ring - Upper | 316 St. St.                |
| 9   | Disc                   | Hardened St. St. (17-4-PH) |
| 10  | Seat                   | 316 St. St.                |
| 17  | Stem Retainer          | Hardened St. St. (17-4-PH) |

\*\*Other materials under request\*\*

**Materials continued on next page**

## Materials (continued)

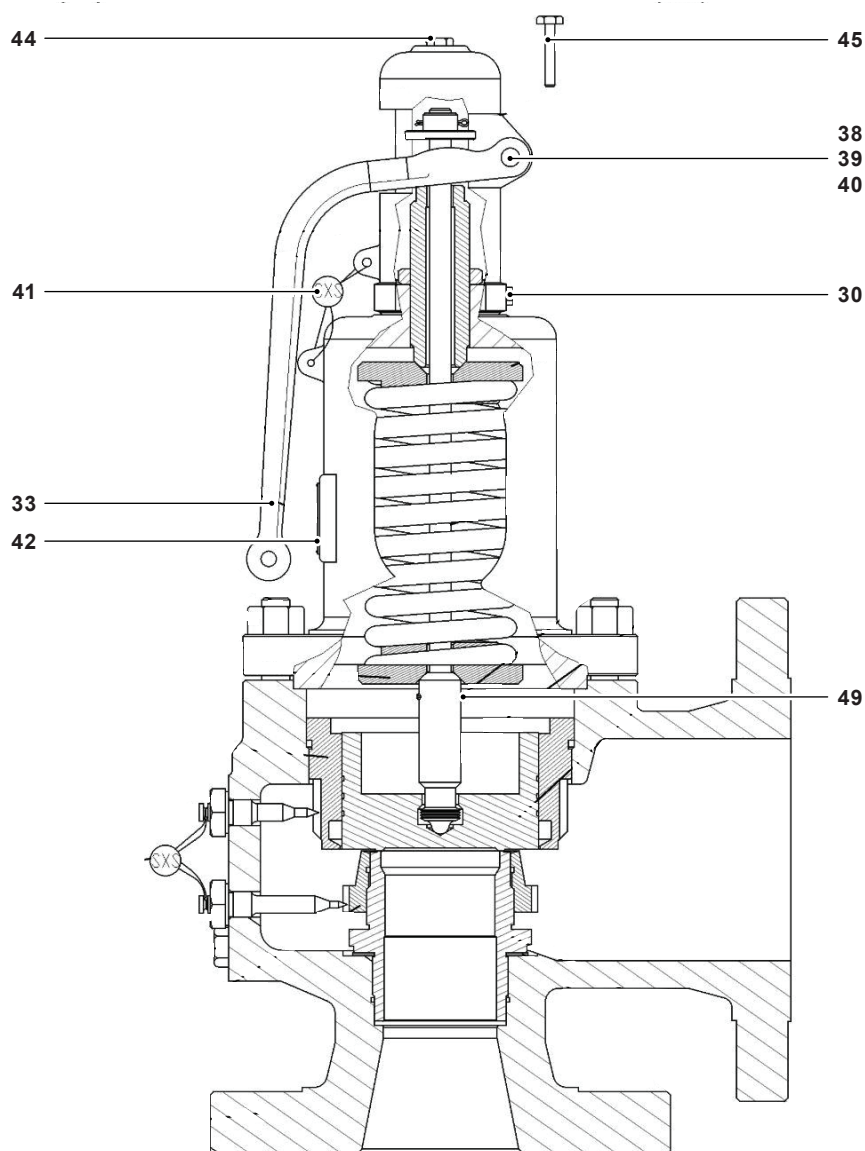


| No. | Part                    | Material                                                                                         |
|-----|-------------------------|--------------------------------------------------------------------------------------------------|
| 19  | Stem                    | 304 St. St.                                                                                      |
| 20  | Spring Washer           | Carbon Steel                                                                                     |
| 21  | Spring                  | up to 232°C / 450°F Carbon Steel<br>233°C to 343°C / 451°F to 650°F High Temperature Alloy Steel |
| 22  | Bonnet                  | SA 395 Gr. 60-40-18                                                                              |
| 23  | Hex Nut (Body)          | SA 194 Gr. 2H                                                                                    |
| 24  | Spring Adjusting Screw  | 304 St. St.                                                                                      |
| 25  | Adjusting Screw Locknut | 304 St. St.                                                                                      |
| 27  | Stem Test Nut           | Carbon Steel                                                                                     |
| 28  | Cotter Pin              | Carbon Steel                                                                                     |
| 29  | Cap                     | Cast Iron                                                                                        |

\*\*Other materials under request\*\*

Materials continued on next page

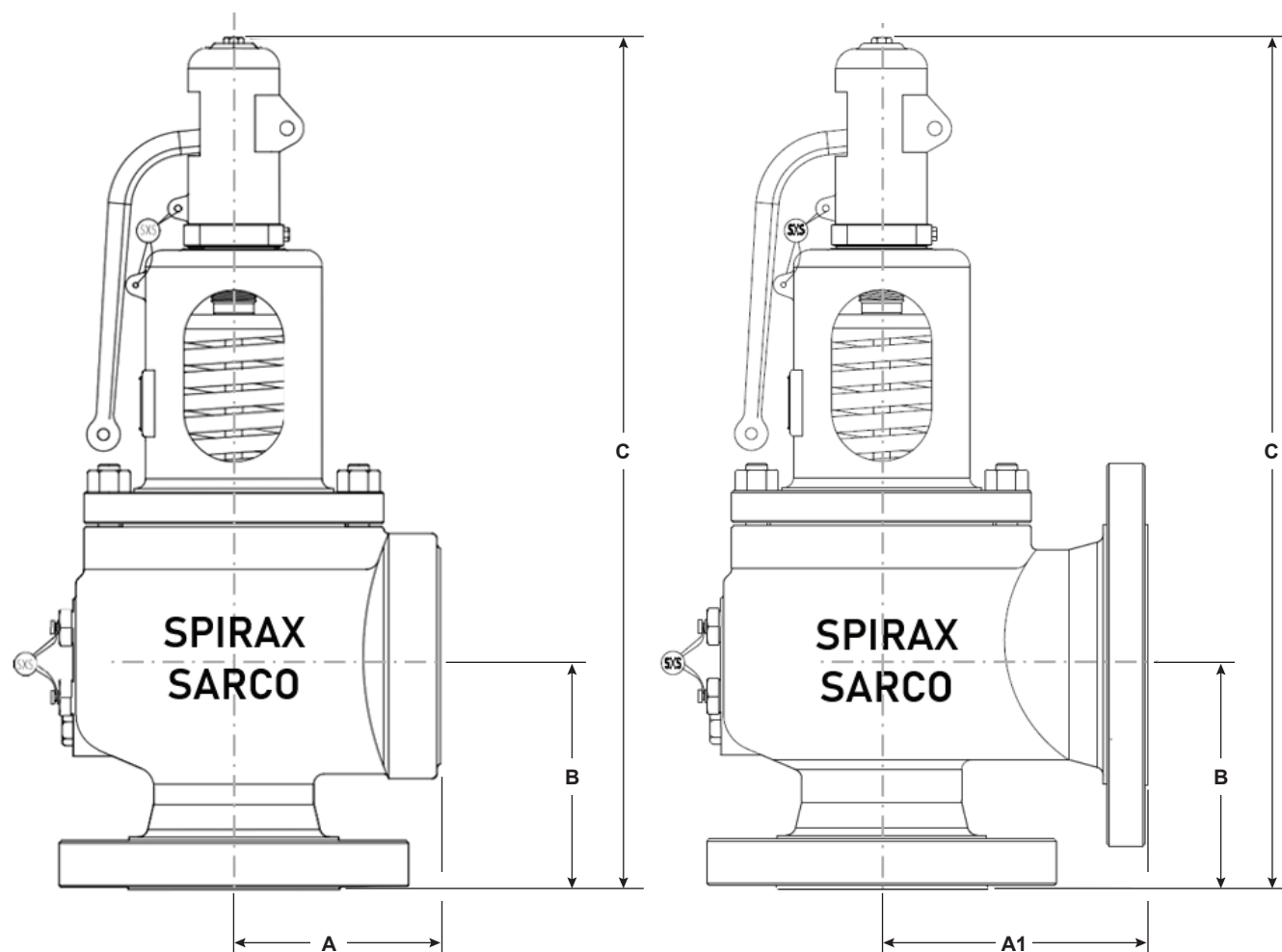
## Materials (continued)



| No. | Part       | Material     |
|-----|------------|--------------|
| 30  | Cap Screw  | Carbon Steel |
| 33  | Test Lever | Cast Iron    |
| 38  | Pin washer | Carbon Steel |
| 39  | Lever Pin  | Carbon Steel |
| 40  | Cotter Pin | Carbon Steel |
| 41  | Seal       | Lead         |
| 42  | Nameplate  | 316 St. St.  |
| 44  | Cap Plug   | Carbon Steel |
| 45  | Test Gag   | Carbon Steel |
| 49  | Stem Pin   | Carbon Steel |

\*\*Other materials under request\*\*

**Dimensions/weights (approximate) in mm (inches) and kg (lbs)**



| Orifice | Size  |        | Ratings |      | A   |      | A1  |      | B   |       | C    |       | Weight |     |
|---------|-------|--------|---------|------|-----|------|-----|------|-----|-------|------|-------|--------|-----|
|         | Inlet | Outlet |         |      | mm  | in   | mm  | in   | mm  | in    | mm   | in    | kg     | lb  |
| J       | 1½"   | 2½"    | 300#    | NPT  | 89  | 3.50 |     |      | 108 | 4.25  | 413  | 16.26 | 17     | 8   |
|         | 2     |        |         |      |     |      |     |      |     |       |      |       | 18     | 8   |
| K       | 2"    | 3"     |         |      | 102 | 4.02 |     |      | 117 | 4.61  | 466  | 18.35 | 22     | 10  |
|         | 2½"   |        |         |      |     |      |     |      |     |       |      |       | 23     | 10  |
| L       | 3"    | 4"     |         |      | 124 | 4.88 |     |      | 140 | 5.51  | 507  | 19.96 | 32     | 15  |
|         | 3"    |        |         |      |     |      | 160 | 6.30 | 140 | 5.51  | 507  | 19.96 | 37     | 17  |
| M       | 3"    |        |         |      | 165 | 6.50 | 143 | 5.63 | 607 | 23.90 | 50   | 23    |        |     |
| N       | 4"    | 6"     |         | 150# |     |      | 184 | 7.25 | 172 | 6.77  | 670  | 26.38 | 85     | 39  |
| P       |       |        |         |      |     |      | 210 | 8.27 | 172 | 6.77  | 727  | 28.62 | 94     | 43  |
| Q       |       |        |         |      | 238 | 9.37 | 235 | 9.25 | 889 | 35.0  | 161  | 73    |        |     |
| R       | 6"    | 8"     |         |      |     |      | 254 | 10.0 | 276 | 10.87 | 1025 | 40.35 | 287    | 130 |

## Capacity Table - Steam - 3% Overpressure - kg/h

| Set<br>pressure<br>(bar g) | Orifice Designation / Current Area (cm <sup>2</sup> ) |       |       |       |       |       |       |        |
|----------------------------|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|--------|
|                            | J                                                     | K     | L     | M     | N     | P     | Q     | R      |
|                            | 8.867                                                 | 12.69 | 19.71 | 24.81 | 29.90 | 44.06 | 76.20 | 110.47 |
| 1.0                        | 857                                                   | 1226  | 1904  | 2397  | 2888  | 4256  | 7361  | 10671  |
| 1.5                        | 1055                                                  | 1511  | 2346  | 2953  | 3559  | 5245  | 9070  | 13150  |
| 2.0                        | 1254                                                  | 1795  | 2788  | 3510  | 4230  | 6233  | 10780 | 15628  |
| 2.5                        | 1453                                                  | 2080  | 3231  | 4066  | 4901  | 7222  | 12489 | 18106  |
| 3.0                        | 1652                                                  | 2365  | 3673  | 4623  | 5571  | 8210  | 14199 | 20585  |
| 3.5                        | 1851                                                  | 2649  | 4115  | 5180  | 6242  | 9198  | 15908 | 23063  |
| 4.0                        | 2050                                                  | 2934  | 4557  | 5736  | 6913  | 10187 | 17618 | 25541  |
| 4.5                        | 2249                                                  | 3219  | 4999  | 6293  | 7584  | 11175 | 19327 | 28019  |
| 5.0                        | 2452                                                  | 3509  | 5450  | 6860  | 8268  | 12183 | 21071 | 30547  |
| 5.5                        | 2657                                                  | 3802  | 5906  | 7434  | 8959  | 13202 | 22832 | 33100  |
| 6.0                        | 2862                                                  | 4095  | 6361  | 8007  | 9650  | 14220 | 24592 | 35652  |
| 6.5                        | 3067                                                  | 4389  | 6817  | 8580  | 10341 | 15238 | 26353 | 38205  |
| 7.0                        | 3271                                                  | 4682  | 7272  | 9154  | 11032 | 16256 | 28114 | 40758  |
| 7.5                        | 3476                                                  | 4975  | 7727  | 9727  | 11722 | 17274 | 29875 | 43310  |
| 8.0                        | 3681                                                  | 5268  | 8183  | 10300 | 12413 | 18292 | 31635 | 45863  |
| 8.5                        | 3886                                                  | 5562  | 8638  | 10873 | 13104 | 19310 | 33396 | 48416  |
| 9.0                        | 4091                                                  | 5855  | 9094  | 11447 | 13795 | 20328 | 35157 | 50968  |
| 9.5                        | 4296                                                  | 6148  | 9549  | 12020 | 14486 | 21346 | 36918 | 53521  |
| 10                         | 4501                                                  | 6441  | 10005 | 12593 | 15177 | 22364 | 38678 | 56073  |
| 12                         | 5320                                                  | 7614  | 11826 | 14886 | 17941 | 26437 | 45721 | 66284  |
| 14                         | 6140                                                  | 8787  | 13648 | 17180 | 20704 | 30509 | 52764 | 76494  |
| 16                         | 6959                                                  | 9960  | 15470 | 19473 | 23468 | 34581 | 59807 | 86705  |
| 18                         | 7779                                                  | 11133 | 17292 | 21766 | 26231 | 38654 | 66850 | 96915  |
| 20                         | 8599                                                  | 12306 | 19113 | 24059 | 28995 | 42726 | 73893 | 107126 |
| 20.7                       | 8885                                                  | 12716 | 19751 | 24862 | 29962 | 44152 | 76358 | 110699 |

For sizing using current areas (ASME), the discharge coefficient K for steam is 0.853.

## Capacity Table - Steam - 3% Overpressure – lb/h

| Set<br>pressure<br>(bar g) | Orifice Designation / Current Area (in <sup>2</sup> ) |       |       |       |       |       |        |        |
|----------------------------|-------------------------------------------------------|-------|-------|-------|-------|-------|--------|--------|
|                            | J                                                     | K     | L     | M     | N     | P     | Q      | R      |
|                            | 1.375                                                 | 1.968 | 3.054 | 3.846 | 4.634 | 6.830 | 11.812 | 17.121 |
| 15                         | 1915                                                  | 2741  | 4253  | 5356  | 6453  | 9511  | 16449  | 23842  |
| 20                         | 2217                                                  | 3173  | 4924  | 6201  | 7471  | 11011 | 19043  | 27603  |
| 25                         | 2519                                                  | 3605  | 5595  | 7045  | 8489  | 12512 | 21638  | 31363  |
| 30                         | 2821                                                  | 4037  | 6265  | 7890  | 9507  | 14012 | 24232  | 35124  |
| 35                         | 3123                                                  | 4470  | 6936  | 8735  | 10525 | 15512 | 26827  | 38884  |
| 40                         | 3425                                                  | 4902  | 7607  | 9580  | 11542 | 17012 | 29421  | 42645  |
| 50                         | 4029                                                  | 5766  | 8949  | 11269 | 13578 | 20013 | 34610  | 50166  |
| 60                         | 4633                                                  | 6631  | 10290 | 12959 | 15614 | 23013 | 39799  | 57687  |
| 70                         | 5243                                                  | 7504  | 11645 | 14665 | 17670 | 26043 | 45040  | 65284  |
| 80                         | 5865                                                  | 8395  | 13027 | 16405 | 19767 | 29134 | 50385  | 73031  |
| 90                         | 6487                                                  | 9285  | 14409 | 18146 | 21863 | 32224 | 55729  | 80777  |
| 100                        | 7109                                                  | 10176 | 15791 | 19886 | 23960 | 35315 | 61074  | 88524  |
| 110                        | 7732                                                  | 11066 | 17173 | 21626 | 26057 | 38405 | 66419  | 96271  |
| 120                        | 8354                                                  | 11956 | 18554 | 23366 | 28154 | 41495 | 71763  | 104018 |
| 130                        | 8976                                                  | 12847 | 19936 | 25106 | 30250 | 44586 | 77108  | 111765 |
| 140                        | 9598                                                  | 13737 | 21318 | 26847 | 32347 | 47676 | 82452  | 119511 |
| 150                        | 10220                                                 | 14628 | 22700 | 28587 | 34444 | 50767 | 87797  | 127258 |
| 160                        | 10842                                                 | 15518 | 24082 | 30327 | 36541 | 53857 | 93142  | 135005 |
| 180                        | 12087                                                 | 17299 | 26846 | 33807 | 40734 | 60038 | 103831 | 150499 |
| 190                        | 12709                                                 | 18190 | 28227 | 35548 | 42831 | 63128 | 109176 | 158245 |
| 200                        | 13331                                                 | 19080 | 29609 | 37288 | 44928 | 66218 | 114520 | 165992 |
| 230                        | 15197                                                 | 21752 | 33755 | 42509 | 51218 | 75490 | 130554 | 189233 |
| 260                        | 17064                                                 | 24423 | 37900 | 47729 | 57508 | 84761 | 146588 | 212473 |
| 270                        | 17686                                                 | 25314 | 39282 | 49469 | 59605 | 87851 | 151933 | 220220 |
| 300                        | 19552                                                 | 27985 | 43428 | 54690 | 65895 | 97122 | 167966 | 243460 |

For sizing using current areas (ASME), the discharge coefficient K for steam is 0.853.

## Capacity Table - Steam - 10% Overpressure - kg/h

| Set pressure<br>(bar g) | Orifice Designation / Current Area (cm <sup>2</sup> ) |       |       |       |       |       |       |        |
|-------------------------|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|--------|
|                         | J                                                     | K     | L     | M     | N     | P     | Q     | R      |
|                         | 8.867                                                 | 12.69 | 19.71 | 24.81 | 29.90 | 44.06 | 76.20 | 110.47 |
| 1.0                     | 883                                                   | 1264  | 1963  | 2471  | 2978  | 4389  | 7590  | 11004  |
| 1.5                     | 1082                                                  | 1549  | 2405  | 3028  | 3649  | 5377  | 9299  | 13482  |
| 2.0                     | 1281                                                  | 1833  | 2848  | 3584  | 4320  | 6366  | 11009 | 15960  |
| 2.5                     | 1497                                                  | 2143  | 3328  | 4189  | 5048  | 7439  | 12865 | 18651  |
| 3.0                     | 1716                                                  | 2456  | 3814  | 4801  | 5786  | 8526  | 14746 | 21378  |
| 3.5                     | 1935                                                  | 2769  | 4301  | 5413  | 6524  | 9614  | 16626 | 24104  |
| 4.0                     | 2154                                                  | 3082  | 4787  | 6026  | 7262  | 10701 | 18507 | 26830  |
| 4.5                     | 2372                                                  | 3395  | 5273  | 6638  | 8000  | 11788 | 20387 | 29556  |
| 5.0                     | 2591                                                  | 3708  | 5760  | 7250  | 8737  | 12875 | 22267 | 32282  |
| 5.5                     | 2810                                                  | 4021  | 6246  | 7862  | 9475  | 13963 | 24148 | 35008  |
| 6.0                     | 3029                                                  | 4335  | 6733  | 8475  | 10213 | 15050 | 26028 | 37734  |
| 6.5                     | 3248                                                  | 4648  | 7219  | 9087  | 10951 | 16137 | 27909 | 40460  |
| 7.0                     | 3466                                                  | 4961  | 7705  | 9699  | 11689 | 17225 | 29789 | 43186  |
| 7.5                     | 3685                                                  | 5274  | 8192  | 10311 | 12427 | 18312 | 31670 | 45912  |
| 8.0                     | 3904                                                  | 5587  | 8678  | 10924 | 13165 | 19399 | 33550 | 48639  |
| 8.5                     | 4123                                                  | 5900  | 9164  | 11536 | 13902 | 20486 | 35430 | 51365  |
| 9.0                     | 4342                                                  | 6214  | 9651  | 12148 | 14640 | 21574 | 37311 | 54091  |
| 9.5                     | 4560                                                  | 6527  | 10137 | 12760 | 15378 | 22661 | 39191 | 56817  |
| 10                      | 4779                                                  | 6840  | 10624 | 13373 | 16116 | 23748 | 41072 | 59543  |
| 12                      | 5655                                                  | 8092  | 12569 | 15821 | 19067 | 28097 | 48593 | 70447  |
| 14                      | 6530                                                  | 9345  | 14515 | 18270 | 22019 | 32446 | 56115 | 81352  |
| 16                      | 7405                                                  | 10598 | 16460 | 20719 | 24970 | 36796 | 63636 | 92256  |
| 18                      | 8280                                                  | 11850 | 18406 | 23168 | 27922 | 41145 | 71158 | 103161 |
| 20                      | 9156                                                  | 13103 | 20351 | 25617 | 30873 | 45494 | 78680 | 114065 |
| 20.7                    | 9462                                                  | 13541 | 21032 | 26475 | 31906 | 47016 | 81312 | 117882 |

For sizing using current areas (ASME), the discharge coefficient K for steam is 0.853.



## Capacity Table - Steam - 10% Overpressure - lb/h

| Set<br>pressure<br>(bar g) | Orifice Designation / Current Area (in <sup>2</sup> ) |       |       |       |       |        |        |        |
|----------------------------|-------------------------------------------------------|-------|-------|-------|-------|--------|--------|--------|
|                            | J                                                     | K     | L     | M     | N     | P      | Q      | R      |
|                            | 1.375                                                 | 1.968 | 3.054 | 3.846 | 4.634 | 6.830  | 11.812 | 17.121 |
| 15                         | 1975                                                  | 2827  | 4387  | 5525  | 6657  | 9811   | 16968  | 24594  |
| 20                         | 2277                                                  | 3259  | 5058  | 6370  | 7675  | 11311  | 19562  | 28355  |
| 25                         | 2579                                                  | 3692  | 5729  | 7214  | 8692  | 12812  | 22157  | 32115  |
| 30                         | 2881                                                  | 4124  | 6399  | 8059  | 9710  | 14312  | 24751  | 35876  |
| 35                         | 3213                                                  | 4599  | 7137  | 8988  | 10830 | 15962  | 27605  | 40013  |
| 40                         | 3546                                                  | 5075  | 7875  | 9918  | 11950 | 17612  | 30459  | 44149  |
| 50                         | 4210                                                  | 6026  | 9351  | 11776 | 14189 | 20913  | 36167  | 52423  |
| 60                         | 4875                                                  | 6977  | 10827 | 13634 | 16428 | 24213  | 41875  | 60696  |
| 70                         | 5539                                                  | 7928  | 12303 | 15493 | 18667 | 27514  | 47583  | 68969  |
| 80                         | 6203                                                  | 8879  | 13778 | 17351 | 20907 | 30814  | 53291  | 77242  |
| 90                         | 6868                                                  | 9830  | 15254 | 19210 | 23146 | 34114  | 58998  | 85516  |
| 100                        | 7532                                                  | 10781 | 16730 | 21068 | 25385 | 37415  | 64706  | 93789  |
| 110                        | 8197                                                  | 11732 | 18206 | 22927 | 27624 | 40715  | 70414  | 102062 |
| 120                        | 8861                                                  | 12683 | 19681 | 24785 | 29864 | 44016  | 76122  | 110336 |
| 130                        | 9526                                                  | 13634 | 21157 | 26644 | 32103 | 47316  | 81830  | 118609 |
| 140                        | 10190                                                 | 14585 | 22633 | 28502 | 34342 | 50616  | 87538  | 126882 |
| 150                        | 10854                                                 | 15536 | 24109 | 30361 | 36581 | 53917  | 93245  | 135155 |
| 160                        | 11519                                                 | 16487 | 25584 | 32219 | 38821 | 57217  | 98953  | 143429 |
| 180                        | 12848                                                 | 18389 | 28536 | 35936 | 43299 | 63818  | 110369 | 159975 |
| 190                        | 13512                                                 | 19340 | 30012 | 37795 | 45538 | 67119  | 116077 | 168249 |
| 200                        | 14177                                                 | 20291 | 31488 | 39653 | 47778 | 70419  | 121785 | 176522 |
| 230                        | 16170                                                 | 23144 | 35915 | 45229 | 54496 | 80320  | 138908 | 201342 |
| 260                        | 18163                                                 | 25996 | 40342 | 50804 | 61213 | 90222  | 156032 | 226162 |
| 270                        | 18828                                                 | 26947 | 41818 | 52663 | 63453 | 93522  | 161740 | 234435 |
| 300                        | 20821                                                 | 29800 | 46245 | 58238 | 70170 | 103423 | 178863 | 259255 |

For sizing using current areas (ASME), the discharge coefficient K for steam is 0.853.

## Capacity table - AIR - 10% Overpressure - Nm<sup>3</sup>/h (0°C and 1.013 bar)

| Set pressure<br>(bar g) | Orifice Designation / Current Area (cm <sup>2</sup> ) |       |       |       |       |       |        |        |
|-------------------------|-------------------------------------------------------|-------|-------|-------|-------|-------|--------|--------|
|                         | J                                                     | K     | L     | M     | N     | P     | Q      | R      |
|                         | 8.867                                                 | 12.69 | 19.71 | 24.81 | 29.90 | 44.06 | 76.20  | 110.47 |
| 1.0                     | 1149                                                  | 1644  | 2553  | 3214  | 3873  | 5708  | 9871   | 14311  |
| 1.5                     | 1407                                                  | 2014  | 3128  | 3938  | 4746  | 6993  | 12095  | 17534  |
| 2.0                     | 1666                                                  | 2384  | 3703  | 4662  | 5618  | 8279  | 14318  | 20757  |
| 2.5                     | 1947                                                  | 2787  | 4328  | 5448  | 6566  | 9675  | 16732  | 24258  |
| 3.0                     | 2232                                                  | 3194  | 4961  | 6244  | 7525  | 11089 | 19178  | 27803  |
| 3.5                     | 2516                                                  | 3601  | 5593  | 7040  | 8485  | 12503 | 21624  | 31349  |
| 4.0                     | 2801                                                  | 4008  | 6226  | 7837  | 9444  | 13917 | 24069  | 34894  |
| 4.5                     | 3085                                                  | 4416  | 6858  | 8633  | 10404 | 15331 | 26515  | 38440  |
| 5.0                     | 3370                                                  | 4823  | 7491  | 9429  | 11364 | 16745 | 28960  | 41985  |
| 5.5                     | 3655                                                  | 5230  | 8124  | 10226 | 12323 | 18159 | 31406  | 45530  |
| 6.0                     | 3939                                                  | 5637  | 8756  | 11022 | 13283 | 19574 | 33852  | 49076  |
| 6.5                     | 4224                                                  | 6045  | 9389  | 11818 | 14243 | 20988 | 36297  | 52621  |
| 7.0                     | 4508                                                  | 6452  | 10021 | 12614 | 15202 | 22402 | 38743  | 56167  |
| 7.5                     | 4793                                                  | 6859  | 10654 | 13411 | 16162 | 23816 | 41188  | 59712  |
| 8.0                     | 5077                                                  | 7267  | 11286 | 14207 | 17121 | 25230 | 43634  | 63258  |
| 8.5                     | 5362                                                  | 7674  | 11919 | 15003 | 18081 | 26644 | 46080  | 66803  |
| 9.0                     | 5647                                                  | 8081  | 12552 | 15799 | 19041 | 28058 | 48525  | 70349  |
| 9.5                     | 5931                                                  | 8488  | 13184 | 16596 | 20000 | 29472 | 50971  | 73894  |
| 10                      | 6216                                                  | 8896  | 13817 | 17392 | 20960 | 30886 | 53416  | 77440  |
| 12                      | 7354                                                  | 10525 | 16347 | 20577 | 24799 | 36543 | 63199  | 91622  |
| 14                      | 8492                                                  | 12154 | 18877 | 23762 | 28637 | 42199 | 72981  | 105804 |
| 16                      | 9631                                                  | 13783 | 21408 | 26947 | 32476 | 47855 | 82764  | 119986 |
| 18                      | 10769                                                 | 15412 | 23938 | 30132 | 36314 | 53512 | 92546  | 134168 |
| 20                      | 11907                                                 | 17041 | 26468 | 33317 | 40153 | 59168 | 102329 | 148350 |
| 20.7                    | 12306                                                 | 17612 | 27354 | 34432 | 41496 | 61148 | 105752 | 153313 |

For sizing using current areas (ASME), the discharge coefficient K for steam is 0.853.

**Capacity Table - AIR - 10% Overpressure - SCFM (60°F and 14.7 psi)**

| Set<br>pressure<br>(bar g) | Orifice Designation / Current Area (in <sup>2</sup> ) |       |       |       |       |       |        |        |
|----------------------------|-------------------------------------------------------|-------|-------|-------|-------|-------|--------|--------|
|                            | J                                                     | K     | L     | M     | N     | P     | Q      | R      |
|                            | 1.375                                                 | 1.968 | 3.054 | 3.846 | 4.634 | 6.830 | 11.812 | 17.121 |
| 15                         | 703                                                   | 1007  | 1562  | 1967  | 2371  | 3494  | 6043   | 8758   |
| 20                         | 811                                                   | 1161  | 1801  | 2268  | 2733  | 4028  | 6966   | 10098  |
| 25                         | 918                                                   | 1315  | 2040  | 2569  | 3096  | 4562  | 7890   | 11437  |
| 30                         | 1026                                                  | 1469  | 2279  | 2870  | 3458  | 5097  | 8814   | 12776  |
| 35                         | 1144                                                  | 1638  | 2542  | 3201  | 3857  | 5684  | 9831   | 14249  |
| 40                         | 1263                                                  | 1807  | 2805  | 3532  | 4255  | 6272  | 10847  | 15722  |
| 50                         | 1499                                                  | 2146  | 3330  | 4194  | 5053  | 7447  | 12880  | 18669  |
| 60                         | 1736                                                  | 2485  | 3856  | 4855  | 5850  | 8623  | 14912  | 21615  |
| 70                         | 1973                                                  | 2823  | 4381  | 5517  | 6648  | 9798  | 16945  | 24561  |
| 80                         | 2209                                                  | 3162  | 4907  | 6179  | 7445  | 10973 | 18978  | 27507  |
| 90                         | 2446                                                  | 3501  | 5432  | 6841  | 8243  | 12149 | 21010  | 30454  |
| 100                        | 2682                                                  | 3839  | 5958  | 7503  | 9040  | 13324 | 23043  | 33400  |
| 110                        | 2919                                                  | 4178  | 6483  | 8165  | 9837  | 14499 | 25076  | 36346  |
| 120                        | 3156                                                  | 4517  | 7009  | 8826  | 10635 | 15675 | 27108  | 39292  |
| 130                        | 3392                                                  | 4855  | 7534  | 9488  | 11432 | 16850 | 29141  | 42239  |
| 140                        | 3629                                                  | 5194  | 8060  | 10150 | 12230 | 18025 | 31174  | 45185  |
| 150                        | 3865                                                  | 5533  | 8585  | 10812 | 13027 | 19201 | 33206  | 48131  |
| 160                        | 4102                                                  | 5871  | 9111  | 11474 | 13825 | 20376 | 35239  | 51077  |
| 180                        | 4575                                                  | 6548  | 10162 | 12797 | 15420 | 22727 | 39304  | 56970  |
| 190                        | 4812                                                  | 6887  | 10688 | 13459 | 16217 | 23902 | 41337  | 59916  |
| 200                        | 5049                                                  | 7226  | 11213 | 14121 | 17014 | 25077 | 43370  | 62862  |
| 230                        | 5758                                                  | 8242  | 12790 | 16107 | 19407 | 28603 | 49468  | 71701  |
| 260                        | 6468                                                  | 9258  | 14366 | 18092 | 21799 | 32129 | 55566  | 80540  |
| 270                        | 6705                                                  | 9596  | 14892 | 18754 | 22597 | 33305 | 57598  | 83486  |
| 300                        | 7415                                                  | 10612 | 16469 | 20740 | 24989 | 36831 | 63696  | 92325  |

For sizing using current areas (ASME), the discharge coefficient K for air, gases and vapours is 0.853

## Correction Factor (Ks) for Superheated Steam

| Set Pressure |       | Saturated Steam Temperature |     | Temperature |      |      |      |      |      |      |      |      |      |      |      |
|--------------|-------|-----------------------------|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|
| bar g        | psi g | °C                          | °F  | °C          |      |      |      |      |      |      |      |      |      |      |      |
|              |       |                             |     | 160         | 170  | 180  | 190  | 200  | 210  | 230  | 240  | 250  | 260  | 270  | 280  |
|              |       |                             |     | °F          |      |      |      |      |      |      |      |      |      |      |      |
|              |       |                             |     | 320         | 340  | 360  | 380  | 400  | 420  | 440  | 460  | 480  | 500  | 520  | 540  |
| 1.0          | 15    | 122                         | 250 | 1.00        | 0.99 | 0.99 | 0.98 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 |
| 1.5          | 20    | 128                         | 259 | 1.00        | 0.99 | 0.99 | 0.98 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 |
| 2.0          | 30    | 134                         | 274 | 1.00        | 0.99 | 0.99 | 0.98 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 |
| 3.0          | 45    | 144                         | 292 | 1.00        | 0.99 | 0.99 | 0.99 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 |
| 4.0          | 60    | 152                         | 308 | 1.00        | 1.00 | 0.99 | 0.99 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 |
| 5.0          | 70    | 160                         | 316 |             | 1.00 | 0.99 | 0.99 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 |
| 5.5          | 80    | 162                         | 324 |             | 1.00 | 1.00 | 0.99 | 0.98 | 0.98 | 0.97 | 0.96 | 0.94 | 0.93 | 0.92 | 0.91 |
| 7.0          | 100   | 171                         | 338 |             |      | 1.00 | 1.00 | 0.99 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 |
| 8.5          | 120   | 178                         | 350 |             |      |      | 1.00 | 1.00 | 0.99 | 0.98 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 |
| 9.5          | 140   | 182                         | 361 |             |      |      |      | 1.00 | 0.99 | 0.98 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 |
| 12           | 175   | 192                         | 378 |             |      |      |      | 1.00 | 0.99 | 0.98 | 0.97 | 0.95 | 0.94 | 0.93 | 0.92 |
| 14           | 205   | 198                         | 390 |             |      |      |      | 1.00 | 0.99 | 0.99 | 0.97 | 0.96 | 0.95 | 0.93 | 0.92 |
| 16           | 230   | 205                         | 400 |             |      |      |      | 1.00 | 0.99 | 0.99 | 0.98 | 0.97 | 0.95 | 0.94 | 0.93 |
| 18           | 260   | 210                         | 410 |             |      |      |      |      | 1.00 | 0.99 | 0.98 | 0.97 | 0.96 | 0.94 | 0.93 |
| 21           | 305   | 217                         | 423 |             |      |      |      |      |      | 1.00 | 1.00 | 0.99 | 0.97 | 0.95 | 0.94 |

Correction Factor (Ks) for Superheated Steam table continued on next page

## Correction Factor (Ks) for Superheated Steam (continued)

| Set Pressure |       | Saturated Steam Temperature |     | Temperature |      |      |      |      |      |      |      |      |      |      |
|--------------|-------|-----------------------------|-----|-------------|------|------|------|------|------|------|------|------|------|------|
| bar g        | psi g | °C                          | °F  | °C          |      |      |      |      |      |      |      |      |      |      |
|              |       |                             |     | 290         | 300  | 320  | 330  | 340  | 350  | 360  | 370  | 380  | 390  | 400  |
|              |       |                             |     | °F          |      |      |      |      |      |      |      |      |      |      |
|              |       |                             |     | 560         | 580  | 600  | 620  | 640  | 660  | 680  | 700  | 720  | 740  | 750  |
| 1.0          | 15    | 122                         | 250 | 0.90        | 0.89 | 0.88 | 0.87 | 0.86 | 0.86 | 0.85 | 0.84 | 0.83 | 0.83 | 0.82 |
| 1.5          | 20    | 128                         | 259 | 0.90        | 0.89 | 0.88 | 0.87 | 0.86 | 0.86 | 0.85 | 0.84 | 0.83 | 0.83 | 0.82 |
| 2.0          | 30    | 134                         | 274 | 0.90        | 0.89 | 0.88 | 0.87 | 0.86 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 | 0.82 |
| 3.0          | 45    | 144                         | 292 | 0.90        | 0.89 | 0.88 | 0.87 | 0.87 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 | 0.82 |
| 4.0          | 60    | 152                         | 308 | 0.90        | 0.89 | 0.88 | 0.87 | 0.87 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 | 0.82 |
| 5.0          | 70    | 160                         | 316 | 0.90        | 0.89 | 0.88 | 0.87 | 0.87 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 | 0.82 |
| 5.5          | 80    | 162                         | 324 | 0.90        | 0.89 | 0.89 | 0.88 | 0.87 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 | 0.82 |
| 7.0          | 100   | 171                         | 338 | 0.91        | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.85 | 0.85 | 0.84 | 0.83 | 0.82 |
| 8.5          | 120   | 178                         | 350 | 0.91        | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.85 | 0.85 | 0.84 | 0.83 | 0.82 |
| 9.5          | 140   | 182                         | 361 | 0.91        | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.85 | 0.85 | 0.84 | 0.83 | 0.82 |
| 12           | 175   | 192                         | 378 | 0.91        | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.86 | 0.85 | 0.84 | 0.83 | 0.82 |
| 14           | 205   | 198                         | 390 | 0.91        | 0.91 | 0.89 | 0.88 | 0.87 | 0.86 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 |
| 16           | 230   | 205                         | 400 | 0.92        | 0.91 | 0.90 | 0.89 | 0.87 | 0.87 | 0.86 | 0.85 | 0.84 | 0.84 | 0.83 |
| 18           | 260   | 210                         | 410 | 0.92        | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.85 | 0.85 | 0.84 | 0.83 |
| 21           | 305   | 217                         | 423 | 0.93        | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.86 | 0.85 | 0.84 | 0.83 |

For superheated steam capacity, multiply saturated steam capacity by the correction factor (Ks).

### How to order

The following information is required for the correct sizing and selection of SV47H Safety Valves:

- 1) Fluid
- 2) Required Capacity (Flow)
- 3) Operating Pressure and Set Pressure
- 4) Operating Temperature and Relieving Temperature
- 5) Back pressure
- 6) Overpressure
- 7) Molecular Weight (Gases)

Spirax Sarco provides on its website the PSV Calc software for the calculation, sizing, and selection of Safety and Relief Valves.