

# Safety Valves

## Type 06420



### Cryogenic Safety Valves, angle type, bronze, PN40

$d_0=7.0$  &  $10.5\text{mm}$  up to PN50

type tested TÜV-SV.1111. S/G

Standard safety valve,

with PCTFE valve seal, (except  $d_0 7$ , which is metal to metal seated only: in this case

the **Part No.** changes from **06420.X.X000** to **06420.070X.X100**), closed bonnet

"cleaned and degreased for oxygen service"

#### Part No. 06420.X.0000

Inlet: male thread type G (BSPP) acc. to ISO 228/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

#### Part No. 06420.X.2000

Inlet: male thread type R (BSPT) acc. to ISO 7/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

#### Part No. 06420.X.5000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

#### Part No. 06420.X.6000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread NPT acc. to ANSI B 1.20.1



### Applications:

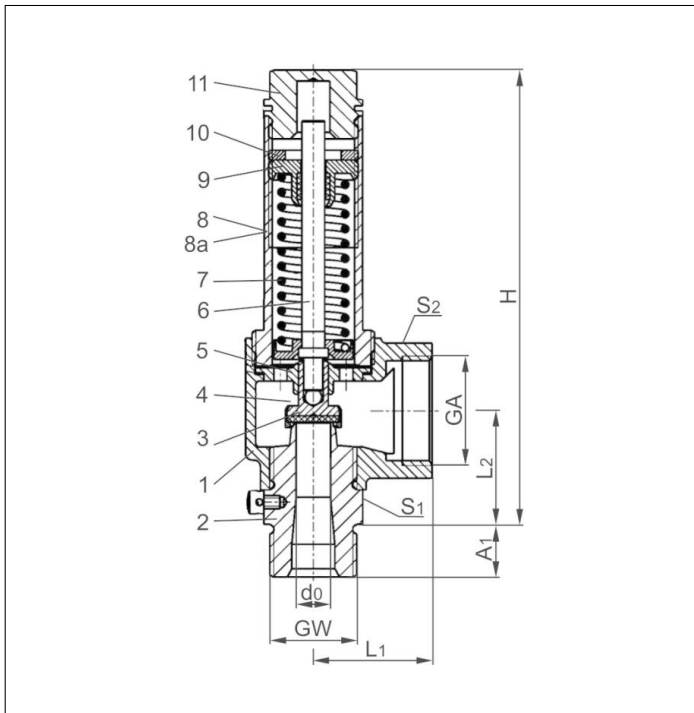
Provided as safety device for protection against excessive pressure in stationary and moveable gas

cylinders and pressure vessels. Approved for air gases, vapours and cryogenic liquefied gases incl. LNG.

Working temperature:  $-196^{\circ}\text{C}$  /  $-321^{\circ}\text{F}$  (77K) up to  $+185^{\circ}\text{C}$  /  $+365^{\circ}\text{F}$  (458K), with PCTFE-seal

up to  $+150^{\circ}\text{C}$  /  $302^{\circ}\text{F}$  (423K), suitable for horizontal installation

| Materials      | DIN EN                    | ASME/ASTM                                                       |
|----------------|---------------------------|-----------------------------------------------------------------|
| 1 Outlet body  | CC491K                    | SB62 UNS C83600                                                 |
| 2 Inlet body   | 1.4301                    | SA 479 Grade 304                                                |
| 3 Valve seal   | PCTFE<br>1.4571<br>1.4541 | A 313 Grade 316Ti ( $d_0 7$ )<br>A 276 Grade 321 ( $d_0 10.5$ ) |
| 4 Disc         | CC493K                    | B 505 UNS C93200                                                |
| 5 Guide plate  | CC493K                    | B 505 UNS C93200                                                |
| 6 Stem         | CW453K                    | B 103 UNS C52100                                                |
| 7 Spring       | 1.4571                    | A 313 Grade 316Ti                                               |
| 8 Bonnet       | 1.4301                    | A 276 Grade 304                                                 |
| 9 Spring clamp | CW614N                    | B 455 UNS C38500                                                |
| 10 Thread ring | CW614N                    | B 455 UNS C38500                                                |
| 11 Cap         | CW614N                    | B 455 UNS C38500                                                |



| Type 06420                    | Technical data |          |          |          |          |          |          |          |          |          |
|-------------------------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Nominal size                  | GW             | 1/2      | 3/4      | 1/2      | 3/4      | 3/4      | 1        | 1        | 1-1/4    | 1-1/4    |
| Orifice                       | $d_0$          | 7.0      | 7.0      | 10.5     | 10.5     | 14.0     | 14.0     | 18.0     | 18.0     | 23.0     |
| Dimension code                | .X.            | 0704     | 0706     | 1004     | 1006     | 1406     | 1410     | 1810     | 1812     | 2312     |
| Set pressure range            | bar            | 0.4-50.0 | 0.4-50.0 | 0.4-50.0 | 0.4-50.0 | 0.4-40.0 | 0.4-40.0 | 0.4-40.0 | 0.4-40.0 | 0.4-10.0 |
| Outlet                        | GA             | 1        | 1        | 1        | 1        | 1-1/4    | 1-1/4    | 1-1/2    | 1-1/2    | 1-1/2    |
| Height                        | H              | 140      | 140      | 140      | 140      | 159      | 159      | 186      | 187      | 187      |
| Length                        | $A_1$          | 14       | 16       | 14       | 16       | 16       | 18       | 18       | 20       | 20       |
| Length                        | $L_1$          | 36       | 36       | 36       | 36       | 50       | 50       | 48       | 48       | 48       |
| Length                        | $L_2$          | 36.5     | 36.5     | 36.5     | 34.5     | 44       | 44       | 50.5     | 51.5     | 52       |
| Wrench size across flats      | $S_1$          | 30       | 30       | 30       | 30       | 41       | 41       | 50       | 50       | 50       |
| Wrench size across flats      | $S_2$          | 41       | 41       | 41       | 41       | 50       | 50       | 58       | 58       | 58       |
| Weight                        | ca. kg         | 0.78     | 0.80     | 0.76     | 0.79     | 1.25     | 1.31     | 1.87     | 1.99     | 1.90     |
| Coeff. of disch. from 3.0 bar | $\alpha_w$     | 0.78     | 0.78     | 0.69     | 0.69     | 0.66     | 0.66     | 0.66     | 0.66     | 0.54     |

Dimensions in mm.



### Discharge capacities

Medium:

Air in m<sup>3</sup>/h at 0°C and 1013.25 mbar

Air in SCFM at 60°F (15.6°C) and 14.7 psia (1013.25 mbar)

The capacity indicated below is for a fully opened valve.

d<sub>0</sub> - orifice

A<sub>0</sub> - flow area

Calculation of discharge capacity acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1 resp. ASME Code Sec. VIII.

| Set<br>pressure<br>in bar (g) | GW                                | 1/2 & 3/4                | 1/2 & 3/4 | 3/4 & 1 | 1 & 1-1/4 | 1-1/4  | Set<br>pressure<br>in psig | GW                                | 1/2 & 3/4   | 1/2 & 3/4 | 3/4 & 1 | 1 & 1-1/4 | 1-1/4 |
|-------------------------------|-----------------------------------|--------------------------|-----------|---------|-----------|--------|----------------------------|-----------------------------------|-------------|-----------|---------|-----------|-------|
|                               | d <sub>0</sub> (mm)               | 7.0                      | 10.5      | 14.0    | 18.0      | 23.0   |                            | d <sub>0</sub> (inch)             | 0.276       | 0.413     | 0.551   | 0.709     | 0.906 |
|                               | A <sub>0</sub> (mm <sup>2</sup> ) | 38.48                    | 86.59     | 153.94  | 254.47    | 415.48 |                            | A <sub>0</sub> (in <sup>2</sup> ) | 0.060       | 0.134     | 0.239   | 0.394     | 0.644 |
|                               | Medium                            | Air in m <sup>3</sup> /h |           |         |           |        |                            | Medium                            | Air in SCFM |           |         |           |       |
| 0.4                           |                                   | 24                       | 43        | 77      | 123       | 157    | 15                         |                                   | -           | -         | 92      | -         | -     |
| 0.5                           |                                   | 27                       | 49        | 87      | 141       | 179    | 28                         |                                   | -           | -         | 129     | -         | 298   |
| 1.0                           |                                   | 41                       | 77        | 131     | 216       | 287    | 29                         |                                   | 42          | -         | -       | -         | 304   |
| 1.5                           |                                   | 54                       | 101       | 179     | 291       | 376    | 35                         |                                   | 47          | 90        | 154     | -         | 346   |
| 2.0                           |                                   | 66                       | 126       | 219     | 362       | 473    | 40                         |                                   | 52          | 100       | 169     | 280       | 382   |
| 3.0                           |                                   | 88                       | 176       | 299     | 495       | 661    | 50                         |                                   | 62          | 118       | 201     | 333       | 454   |
| 4.0                           |                                   | 111                      | 221       | 375     | 621       | 829    | 60                         |                                   | 72          | 137       | 233     | 385       | 525   |
| 5.0                           |                                   | 134                      | 266       | 453     | 748       | 1000   | 70                         |                                   | 82          | 156       | 265     | 438       | 597   |
| 6.0                           |                                   | 156                      | 311       | 529     | 875       | 1169   | 80                         |                                   | 92          | 174       | 296     | 490       | 669   |
| 7.0                           |                                   | 179                      | 356       | 606     | 1001      | 1337   | 90                         |                                   | 101         | 193       | 328     | 543       | 740   |
| 8.0                           |                                   | 202                      | 402       | 684     | 1131      | 1511   | 100                        |                                   | 111         | 212       | 360     | 595       | 812   |
| 9.0                           |                                   | 225                      | 447       | 761     | 1258      | 1680   | 120                        |                                   | 131         | 249       | 424     | 700       | 955   |
| 10.0                          |                                   | 248                      | 494       | 839     | 1387      | 1853   | 145                        |                                   | 155         | 296       | 503     | 831       | 1134  |
| 12.0                          |                                   | 293                      | 584       | 993     | 1641      | -      | 160                        |                                   | 170         | 324       | 551     | 910       | -     |
| 14.0                          |                                   | 339                      | 674       | 1147    | 1895      | -      | 180                        |                                   | 190         | 361       | 614     | 1015      | -     |
| 16.0                          |                                   | 384                      | 765       | 1300    | 2149      | -      | 220                        |                                   | 229         | 436       | 741     | 1225      | -     |
| 18.0                          |                                   | 430                      | 855       | 1454    | 2403      | -      | 240                        |                                   | 249         | 473       | 805     | 1330      | -     |
| 20.0                          |                                   | 480                      | 954       | 1623    | 2683      | -      | 250                        |                                   | 258         | 492       | 836     | 1383      | -     |
| 22.0                          |                                   | 525                      | 1046      | 1778    | 2939      | -      | 260                        |                                   | 268         | 511       | 868     | 1435      | -     |
| 24.0                          |                                   | 571                      | 1137      | 1933    | 3196      | -      | 280                        |                                   | 288         | 548       | 932     | 1540      | -     |
| 26.0                          |                                   | 617                      | 1228      | 2088    | 3452      | -      | 300                        |                                   | 307         | 585       | 995     | 1645      | -     |
| 28.0                          |                                   | 663                      | 1319      | 2244    | 3709      | -      | 325                        |                                   | 332         | 632       | 1075    | 1777      | -     |
| 30.0                          |                                   | 715                      | 1424      | 2421    | 4003      | -      | 350                        |                                   | 357         | 679       | 1154    | 1908      | -     |
| 32.0                          |                                   | 762                      | 1516      | 2578    | 4262      | -      | 375                        |                                   | 381         | 725       | 1233    | 2039      | -     |
| 34.0                          |                                   | 808                      | 1608      | 2735    | 4520      | -      | 400                        |                                   | 406         | 772       | 1313    | 2170      | -     |
| 36.0                          |                                   | 854                      | 1700      | 2891    | 4779      | -      | 425                        |                                   | 430         | 819       | 1392    | 2302      | -     |
| 38.0                          |                                   | 900                      | 1792      | 3048    | 5038      | -      | 450                        |                                   | 455         | 865       | 1472    | 2433      | -     |
| 40.0                          |                                   | 955                      | 1901      | 3232    | 5343      | -      | 475                        |                                   | 479         | 912       | 1551    | 2564      | -     |
| 42.0                          |                                   | 1002                     | 1994      | -       | -         | -      | 500                        |                                   | 504         | 959       | 1630    | 2695      | -     |
| 44.0                          |                                   | 1048                     | 2086      | -       | -         | -      | 525                        |                                   | 528         | 1006      | 1710    | 2827      | -     |
| 46.0                          |                                   | 1095                     | 2179      | -       | -         | -      | 550                        |                                   | 553         | 1052      | 1789    | 2958      | -     |
| 48.0                          |                                   | 1142                     | 2272      | -       | -         | -      | 575                        |                                   | 577         | 1099      | 1868    | 3089      | -     |
| 50.0                          |                                   | 1198                     | 2385      | -       | -         | -      | 600                        |                                   | 602         | 1146      | -       | -         | -     |
|                               |                                   |                          |           |         |           |        | 625                        |                                   | 626         | 1192      | -       | -         | -     |
|                               |                                   |                          |           |         |           |        | 650                        |                                   | 651         | 1239      | -       | -         | -     |
|                               |                                   |                          |           |         |           |        | 675                        |                                   | 675         | 1286      | -       | -         | -     |
|                               |                                   |                          |           |         |           |        | 700                        |                                   | 700         | 1332      | -       | -         | -     |
|                               |                                   |                          |           |         |           |        | 725                        |                                   | 724         | 1379      | -       | -         | -     |