

## → Series 420

3.9

**420**

Safety valves made of stainless steel, angle-type with threaded connections



### ■ MATERIAL



### ■ SPECIFICATION



1/4" – 3/8"



– 40°C to + 260°C  
depending on version



0,5 – 50 bar  
depending on version

### ■ SUITABLE FOR

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

### ■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids

- steam boilers and steam plants

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

- chemical plants, biogas plants
- process technology
- desalination plants
- process equipment construction and medical technology
- shipbuilding industry and marine equipment
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries
- offshore-applications
- general applications with screwed pipe connections
- Hydrogen applications

**Safety valves are set and sealed at the factory.**

### ■ APPROVALS

|                                        |                                      |
|----------------------------------------|--------------------------------------|
| TÜV-Type test approval 2069            | D/G, F, F/K/S <sup>1</sup>           |
| EU type examination                    | S/G, L, F/K/S <sup>1</sup>           |
| TSG ZF001-2006                         | G, F (L)                             |
| TR ZU 032/2013 - TR ZU 010/2011        | D/G (S/G), F (L), F/K/S <sup>1</sup> |
| <b>Requirements</b>                    |                                      |
| AD 2000 Data sheet A2                  | DIN EN ISO 4126-1                    |
| TRD 421                                | DGR 2014/68/EU                       |
| TRB 801 No. 22 and No. 23 <sup>1</sup> |                                      |

### Classification society

|                                       |         |
|---------------------------------------|---------|
| DNV                                   | DNV     |
| Lloyd's Register EMEA                 | LR EMEA |
| American Bureau of Shipping           | ABS     |
| Bureau Veritas                        | BV      |
| Russian Maritime Register of Shipping | RS      |
| Registro Italiano Navale              | RINA    |

### ■ MATERIALS

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

<sup>1</sup>only for versions with bellows

## Series 420 ■ VALVE VERSION

|    |                                    |                                                                                                                                                                                                                                                                                                                                                                             |
|----|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| t  | gastight version of spring housing | for neutral and non-neutral media without counter pressure.<br>The environment is protected from being affected by the medium.<br>0,5 to 1,5 bar gastight version (without bellows).                                                                                                                                                                                        |
| tb | gastight version with bellows      | for neutral and non-neutral media without counter pressure. Spring and moving parts as the environment are protected from being affected by the medium.<br>Version of bellows depending on set pressure:<br>DN8:<br>1,6 to 12 bar PTFE bellows;<br>12,1 to 50 bar stainless steel bellows<br>DN10:<br>1,6 to 12 bar PTFE bellows;<br>12,1 to 50 bar stainless steel bellows |

## ■ MEDIUM

|    |                    |                                                                                                      |
|----|--------------------|------------------------------------------------------------------------------------------------------|
| GF | gaseous and liquid | Air, vapours, gases, liquids and - depending on seal - also for steam<br>Only for steam boilers <10l |
|----|--------------------|------------------------------------------------------------------------------------------------------|

## ■ TYPE OF LIFTING MECHANISM

|   |                        |
|---|------------------------|
| L | Lifting lever          |
| 0 | without lifting device |

## ■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

| Nominal diameter DN |           | 8        |          |           | 10        |           |           |
|---------------------|-----------|----------|----------|-----------|-----------|-----------|-----------|
| Inlet               |           | 1/4" (8) | KV (8mm) | KV (10mm) | 3/8" (10) | KV (10mm) | KV (12mm) |
| Outlet              | 3/8" (10) | ■        | ■        | ■         | ■         | ■         | ■         |
|                     | KV (12mm) | ■        | ■        | ■         | ■         | ■         | ■         |

## ■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

|         |          |                                                        |                                     |
|---------|----------|--------------------------------------------------------|-------------------------------------|
| m / f   | Standard | Male thread BSP-P / Female thread BSP-P                | DIN EN ISO 228-1 / DIN EN ISO 228-1 |
| SV / f  |          | Cutting ring threaded connection / female thread BSP-P | EN ISO 8434-1 / DIN EN ISO 228-1    |
| KV / KV |          | Screw compression fitting / Screw compression fitting  | EN ISO 8434-1 / EN ISO 8434-1       |

## ■ SEALS

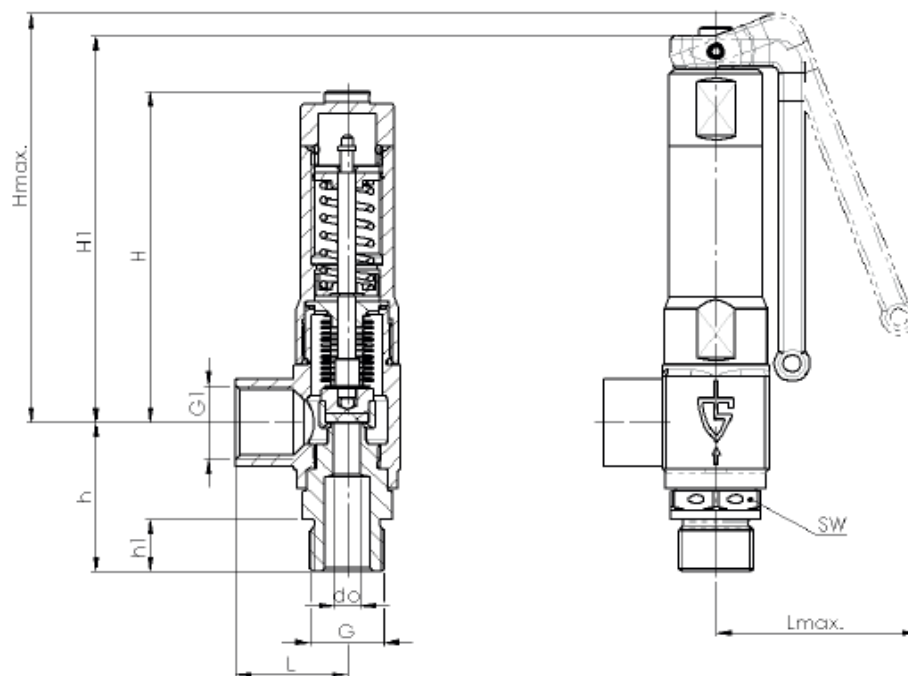
|                   |                          |                                        |                 |
|-------------------|--------------------------|----------------------------------------|-----------------|
| EPDM              | Ethylene propylene diene | Elastomere moulded seal (0,5 – 30 bar) | –40°C to +170°C |
| FKM               | Fluorocarbon             | Elastomere moulded seal (0,5 – 30 bar) | –20°C to +200°C |
| FFKM              | Perfluorinated rubber    | Elastomere moulded seal (0,5 – 20 bar) | –10°C to +260°C |
| PTFE <sup>1</sup> | Polytetrafluoroethylene  | Flat seal (0,5 – 50 bar)               | –40°C to +225°C |

<sup>1</sup> With PTFE seat seals, the secondary seals are made of FKM as standard.

■ **NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS**

| Series 420: Connection, installation dimensions, ranges of adjustment |      |           |             |  |
|-----------------------------------------------------------------------|------|-----------|-------------|--|
| Nominal diameter                                                      | DN   | 8         | 10          |  |
| Connection DIN EN ISO 228                                             | G    | 1/4" (8)  | 3/8" (10)   |  |
| Outlet DIN EN ISO 228                                                 | G1   | 3/8" (10) | 3/8" (10)   |  |
| Installation dimensions<br>in mm                                      | L    | 25        | 25          |  |
|                                                                       | Lmax | 45        | 45          |  |
|                                                                       | H    | 75        | 75          |  |
|                                                                       | H1   | 87        | 87          |  |
|                                                                       | Hmax | 93        | 93          |  |
|                                                                       | h    | 34        | 34          |  |
|                                                                       | h1   | 12        | 12          |  |
|                                                                       | SW   | 20        | 20          |  |
|                                                                       | do   | 6         | 6           |  |
| Weight                                                                | kg   | 0,3 / 0,4 | 0,25 / 0,35 |  |
| Range of adjustment                                                   | bar  | 0,5-50    | 0,5-50      |  |

■ **MAIN DIMENSIONS, INSTALLATION DIMENSIONS**



**Series 420 ■ INDIVIDUAL SELECTION / VALVE CONFIGURATION**

| Series | Valve version | Medium | Lifting device | Nominal diameter DN | Connection type |        | Connection size |        | Seal | Options | Set pressure | Quantity |
|--------|---------------|--------|----------------|---------------------|-----------------|--------|-----------------|--------|------|---------|--------------|----------|
|        |               |        |                |                     | Inlet           | Outlet | Inlet           | Outlet |      |         |              |          |
| 420    | tb            | GF     | L              | 8                   | m               | f      | 8               | 10     | FFKM |         | 5,5          | 2        |
| 420    | t             | GF     | O              | 10                  | SV              | f      | 10mm            | 10     | EPDM |         | 1,0          | 1        |
| 420    |               | GF     |                |                     |                 |        |                 |        |      |         |              |          |
| 420    |               | GF     |                |                     |                 |        |                 |        |      |         |              |          |

**■ PROPERTIES**

|            |                                                                                                                              |                          |                          |
|------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| <b>G0X</b> | Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>P01</b> | Oil- and grease-free production                                                                                              | <input type="checkbox"/> | <input type="checkbox"/> |
|            |                                                                                                                              | <input type="checkbox"/> | <input type="checkbox"/> |

**■ CERTIFICATES / APPROVALS**

|            |                                                                                                                            |                          |            |                                                                                                                                   |                          |
|------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>C01</b> | Factory certificate acc. DIN EN 10204 2.2 (WKZ 2.2)                                                                        | <input type="checkbox"/> | <b>C06</b> | ATEX evaluation acc. to 2014/34/EU                                                                                                | <input type="checkbox"/> |
| <b>C02</b> | Test certificate acc. DIN EN 10204 3.1 (WPZ 3.1)                                                                           | <input type="checkbox"/> | <b>C07</b> | SIL evaluation relating to IEC 61508-2                                                                                            | <input type="checkbox"/> |
| <b>C03</b> | Material test certificate acc. DIN EN 10204 3.1 (MPZ 3.1) (pressure retaining part)                                        | <input type="checkbox"/> | <b>C09</b> | Seat tightness test with helium, leak detection method under vacuum incl. Factory Inspection Certificate 3.1 acc. to DIN EN 10204 | <input type="checkbox"/> |
| <b>C04</b> | TÜV/DEKRA individual inspection acc. EN 10204 3.2 (TÜV/DEKRA-APZ)                                                          | <input type="checkbox"/> | <b>C10</b> | Certificate of oil- and grease free production                                                                                    | <input type="checkbox"/> |
| <b>C05</b> | Sealing material<br>Manufacturer certification (FDA, USP 3, 3-A,...),<br>Please indicate description of certificate: ..... | <input type="checkbox"/> | <b>C11</b> | Certification of the production process especially for gaseous oxygen applications by employment of specific materials            | <input type="checkbox"/> |

**■ ADMISSIONS / ACCREDITATIONS**

|            |                                                                                          |                          |            |                                                                                  |                          |
|------------|------------------------------------------------------------------------------------------|--------------------------|------------|----------------------------------------------------------------------------------|--------------------------|
| <b>AA1</b> | EC Type examination acc. to Directive 2014/68/EU                                         | <input type="checkbox"/> | <b>AK1</b> | Det Norske Veritas (DNV) type approval                                           | <input type="checkbox"/> |
| <b>AA2</b> | TÜV component test acc. to VdTÜV specification sheet SV 100                              | <input type="checkbox"/> | <b>AK2</b> | Lloyd's Register (LR) type approval                                              | <input type="checkbox"/> |
| <b>AA4</b> | EAC - certificate/declaration with passport for the valve and laser marking of the valve | <input type="checkbox"/> | <b>AK3</b> | American Bureau of Shipping (ABS) type approval                                  | <input type="checkbox"/> |
|            |                                                                                          | <input type="checkbox"/> | <b>AK4</b> | Bureau Veritas (BV) type approval                                                | <input type="checkbox"/> |
|            |                                                                                          | <input type="checkbox"/> | <b>AK5</b> | Russian Maritime Register of Shipping (RMRS) type approval                       | <input type="checkbox"/> |
|            |                                                                                          | <input type="checkbox"/> | <b>AK6</b> | Registro Italiano Navale (RINA) type approval                                    | <input type="checkbox"/> |
|            |                                                                                          | <input type="checkbox"/> | <b>AL</b>  | Individual inspection by notified body inspector – (body to be indicated): ..... | <input type="checkbox"/> |

■ CAPACITY TABLE ACC. TO ISO 4126-1 / AD2000 A2

| Series 420: Blowing-off rates at 10% above set pressure |                    |      |     |      |      |     |      |
|---------------------------------------------------------|--------------------|------|-----|------|------|-----|------|
| Nominal diameter DN                                     |                    | DN8  |     |      | DN10 |     |      |
| Set pressure bar                                        |                    | I    | II  | III  | I    | II  | III  |
| Air I                                                   | 0,50               | 10   | 8   | 0,39 | 15   | 12  | 0,46 |
|                                                         | 1,00               | 16   | 13  | 0,53 | 23   | 18  | 0,62 |
|                                                         | Nm <sup>3</sup> /h | 1,50 | 17  | 0,65 | 30   | 23  | 0,76 |
| Steam II                                                | 2,00               | 28   | 22  | 0,75 | 38   | 30  | 0,88 |
|                                                         | 2,50               | 32   | 25  | 0,84 | 45   | 35  | 0,98 |
|                                                         | kg/h               | 3,00 | 37  | 0,92 | 52   | 41  | 1,07 |
| Water III                                               | 3,50               | 42   | 33  | 0,99 | 59   | 46  | 1,16 |
|                                                         | 4,00               | 47   | 36  | 1,06 | 65   | 51  | 1,24 |
|                                                         | m <sup>3</sup> /h  | 4,50 | 52  | 1,12 | 72   | 56  | 1,31 |
|                                                         | 5,00               | 56   | 43  | 1,18 | 79   | 61  | 1,38 |
|                                                         | 5,50               | 61   | 47  | 1,24 | 85   | 66  | 1,45 |
|                                                         | 6,00               | 66   | 51  | 1,29 | 92   | 71  | 1,52 |
|                                                         | 6,50               | 71   | 54  | 1,35 | 99   | 76  | 1,58 |
|                                                         | 7,00               | 75   | 58  | 1,40 | 105  | 81  | 1,64 |
|                                                         | 7,50               | 80   | 61  | 1,45 | 112  | 86  | 1,70 |
|                                                         | 8,00               | 85   | 65  | 1,49 | 119  | 91  | 1,75 |
|                                                         | 8,50               | 90   | 68  | 1,54 | 125  | 96  | 1,80 |
|                                                         | 9,00               | 94   | 72  | 1,59 | 132  | 101 | 1,86 |
|                                                         | 9,50               | 99   | 75  | 1,63 | 139  | 106 | 1,91 |
|                                                         | 10,00              | 104  | 79  | 1,67 | 145  | 110 | 1,96 |
|                                                         | 11,00              | 113  | 86  | 1,75 | 159  | 120 | 2,05 |
|                                                         | 12,00              | 123  | 93  | 1,83 | 172  | 130 | 2,14 |
|                                                         | 13,00              | 132  | 100 | 1,91 | 185  | 140 | 2,23 |
|                                                         | 14,00              | 142  | 107 | 1,98 | 199  | 150 | 2,32 |
|                                                         | 15,00              | 151  | 114 | 2,05 | 212  | 160 | 2,40 |
|                                                         | 16,00              | 161  | 121 | 2,11 | 225  | 169 | 2,48 |
|                                                         | 17,00              | 171  | 128 | 2,18 | 239  | 179 | 2,55 |
|                                                         | 18,00              | 180  | 135 | 2,24 | 252  | 189 | 2,63 |
|                                                         | 19,00              | 190  | 142 | 2,30 | 265  | 199 | 2,70 |
|                                                         | 20,00              | 199  | 149 | 2,36 | 279  | 208 | 2,77 |
|                                                         | 21,00              | 209  | 156 | 2,42 | 292  | 218 | 2,84 |
|                                                         | 22,00              | 218  | 163 | 2,48 | 305  | 228 | 2,90 |
|                                                         | 23,00              | 228  | 170 | 2,53 | 319  | 238 | 2,97 |
|                                                         | 24,00              | 237  | 177 | 2,59 | 332  | 248 | 3,03 |
|                                                         | 25,00              | 247  | 184 | 2,64 | 345  | 258 | 3,09 |
|                                                         | 26,00              | 256  | 191 | 2,69 | 359  | 268 | 3,16 |
|                                                         | 27,00              | 266  | 198 | 2,75 | 372  | 278 | 3,22 |
|                                                         | 28,00              | 275  | 205 | 2,80 | 385  | 287 | 3,28 |
|                                                         | 29,00              | 285  | 212 | 2,85 | 399  | 297 | 3,33 |
|                                                         | 30,00              | 294  | 219 | 2,89 | 412  | 307 | 3,39 |
|                                                         | 32,00              | 313  | 233 | 2,99 | 439  | 326 | 3,50 |
|                                                         | 34,00              | 332  | 247 | 3,08 | 465  | 346 | 3,61 |
|                                                         | 36,00              | 351  | 262 | 3,17 | 492  | 366 | 3,71 |
|                                                         | 38,00              | 370  | 276 | 3,26 | 519  | 386 | 3,82 |
|                                                         | 40,00              | 390  | 290 | 3,34 | 545  | 406 | 3,91 |
|                                                         | 42,00              | 409  | 304 | 3,42 | 572  | 426 | 4,01 |
|                                                         | 44,00              | 428  | 318 | 3,50 | 599  | 446 | 4,11 |
|                                                         | 46,00              | 447  | 333 | 3,58 | 625  | 466 | 4,20 |
|                                                         | 48,00              | 466  | 347 | 3,66 | 652  | 486 | 4,29 |
|                                                         | 50,00              | 485  | 361 | 3,74 | 679  | 506 | 4,38 |