

## Safety fittings for hygienic applications

7.4

### → Series Hygienic 4020

#### Hygienic 4020

Safety valve made of stainless steel, angle type, with stainless steel spring

#### ■ SUITABLE FOR

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

#### ■ EXAMPLES OF USE

For the protection of:

- processes, plants and containers in the food and pharmaceutical industry for air, neutral and non-neutral vapours and gases, steam and liquids
- food industry
- Dairy industry
- breweries and beverage industry
- pharmaceutical industry
- Cosmetic industry
- Medical technology
- Clean Service applications

#### ■ FEATURES

- Smooth and faultless surface finish optimized for cleaning process
- Minimal dead space in inlet area and no gaps in the valve
- Exposed and rinsed o-ring seals
- Shape of valve body avoids forming of puddles in the valve after it has opened
- Suitable for CIP/SIP due to pneumatic lifting device
- Gap-free installation of seals in contact with the medium
- Surface roughness standard  $Ra < 0,8 \mu m$  (Internal product wetted parts),  $Ra < 1,6 \mu m$  (outside, not product wetted parts)
- Moulded diaphragm to divide the product chamber from the spring housing
- Dead space ratio  $L/D < 1,5$

#### ■ APPROVALS

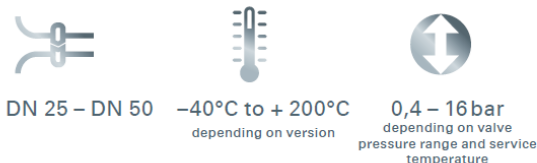
|                                 |                        |
|---------------------------------|------------------------|
| TÜV-Type test approval 2111     | D/G, F                 |
| EU type examination             | S/G, L                 |
| TR ZU 032/2013 - TR ZU 010/2011 | D/G (S/G), F (L)       |
| <b>Requirements</b>             |                        |
| DIN EN ISO 4126-1               | AD 2000 Data sheet A2  |
| DGR 2014/68/EU                  | VdTÜV Guideline SV 100 |
| TRD 421                         |                        |



#### ■ MATERIAL



#### ■ SPECIFICATION



#### ■ MATERIALS

| Component                        | Material        | DIN EN | ASME  |
|----------------------------------|-----------------|--------|-------|
| Body                             | Stainless steel | 1.4404 | 316 L |
| Inner parts, wetted              | Stainless steel | 1.4404 | 316 L |
| Upper section, other inner parts | Stainless steel | 1.4404 | 316 L |
| Spring                           | Stainless steel | 1.4310 | 302   |

## Series 4020 ■ VALVE VERSION

|          |                         |                                                                                                                                 |
|----------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>t</b> | Standard with diaphragm | for neutral and non-neutral media.<br>Spring, moving parts and the environment are protected from being affected by the medium. |
|----------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------|

Parts which are difficult to clean in the guide, the spring housing and the spindle / disc combination are protected against soiling by elastomer diaphragm.

## ■ MEDIUM

|           |                    |                                                                                                   |
|-----------|--------------------|---------------------------------------------------------------------------------------------------|
| <b>GF</b> | gaseous and liquid | Air, vapours, gases, liquids and - depending on safety valve version and seal<br>- also for steam |
|-----------|--------------------|---------------------------------------------------------------------------------------------------|

## ■ TYPE OF LIFTING MECHANISM

|          |                                                       |
|----------|-------------------------------------------------------|
| <b>P</b> | Pneumatic lifting device                              |
| <b>L</b> | with lifting lever                                    |
| <b>O</b> | without lifting device, with additional gas-tight cap |

## ■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

| Connection type     |          | KLSDIN | KLSISO | KLSASME |
|---------------------|----------|--------|--------|---------|
| Nominal diameter DN |          |        | 25     |         |
| <b>Inlet DN</b>     | Standard | 25     | 25     | 1 1/2"  |
|                     | optional | 40     | -      | -       |
| <b>Outlet DN</b>    | 25 (1")  | ■      | ■      |         |
|                     | 40 (1½)  | ■      | ■      | ■       |
|                     | 50 (2")  |        |        | ■       |

## ■ TYPE OF CONNECTION INLET / OUTLET

|                          |          |                                     |                           |                                             |
|--------------------------|----------|-------------------------------------|---------------------------|---------------------------------------------|
| <b>KLSDIN / KLSDIN</b>   | Standard | Clamp connection / Clamp connection | DIN 32676-A / DIN 32676-A | Pipe standard DIN 11850 / 11866-A           |
| <b>KLSISO / KLSISO</b>   |          | Clamp connection / Clamp connection | DIN 32676-B / DIN 32676-B | Pipe standard DIN EN ISO 1127 / DIN 11866-B |
| <b>KLSASME / KLSASME</b> |          | Clamp connection / Clamp connection | DIN 32676-C / DIN 32676-C | Pipe standard BS 4825-1 / DIN 11866-C       |

other connections on request

## ■ SEALS / DIAPHRAGM

|             |                                             |                    |          |                 |
|-------------|---------------------------------------------|--------------------|----------|-----------------|
| <b>FKM</b>  | Fluorcarbon                                 | Seals / diaphragms | FDA, USP | -20°C to +200°C |
| <b>EPDM</b> | Ethylene propylene diene                    | Seals / diaphragms | FDA, USP | -40°C to +170°C |
| <b>HNBR</b> | Hydrogenated acrylonitrile butadiene rubber | Seals / diaphragms | FDA      | -20°C to +150°C |

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

| Series Hygienic 4020: Connection, installation dimensions, ranges of adjustment |                                |                  |          |          |
|---------------------------------------------------------------------------------|--------------------------------|------------------|----------|----------|
| Nominal diameter                                                                | DN                             | 25               |          |          |
| Connection typ <sup>1)</sup>                                                    |                                | Clamp connection |          |          |
| Connection inlet                                                                | DN1                            | 25               | 40       | 40       |
|                                                                                 | D1                             | 50,5             | 50,5     | 50,5     |
| Connection outlet                                                               | DN2                            | 25               | 40       | 50       |
|                                                                                 | D2                             | 50,5             | 50,5     | 64       |
| Installation dimensions in mm                                                   | L                              | 52               | 52       | 60       |
|                                                                                 | L1 <sup>4)</sup>               | 132              | 132      | 132      |
|                                                                                 | h                              | 29               | 29       | 29       |
|                                                                                 | H                              | 177              | 177      | 177      |
|                                                                                 | H1 <sup>3)</sup>               | 212              | 212      | 212      |
|                                                                                 | H2 <sup>4)</sup>               | 350              | 350      | 350      |
| Compressed air connection in mm                                                 | S                              | 6                | 6        | 6        |
|                                                                                 | $\alpha_w / K_{dr} (F)$        | 0,37             | 0,37     | 0,37     |
|                                                                                 | $\alpha_w / K_{dr} (D/G)^{2)}$ | 0,50             | 0,50     | 0,50     |
|                                                                                 | d0                             | 24,5             | 24,5     | 24,5     |
| Weight                                                                          | kg                             | 1,8              | 1,8      | 1,8      |
|                                                                                 | kg <sup>3)</sup>               | 2,2              | 2,2      | 2,2      |
|                                                                                 | kg <sup>4)</sup>               | 2,3              | 2,3      | 2,3      |
| Range of adjustment                                                             | bar                            | 0,4 - 16         | 0,4 - 16 | 0,4 - 16 |

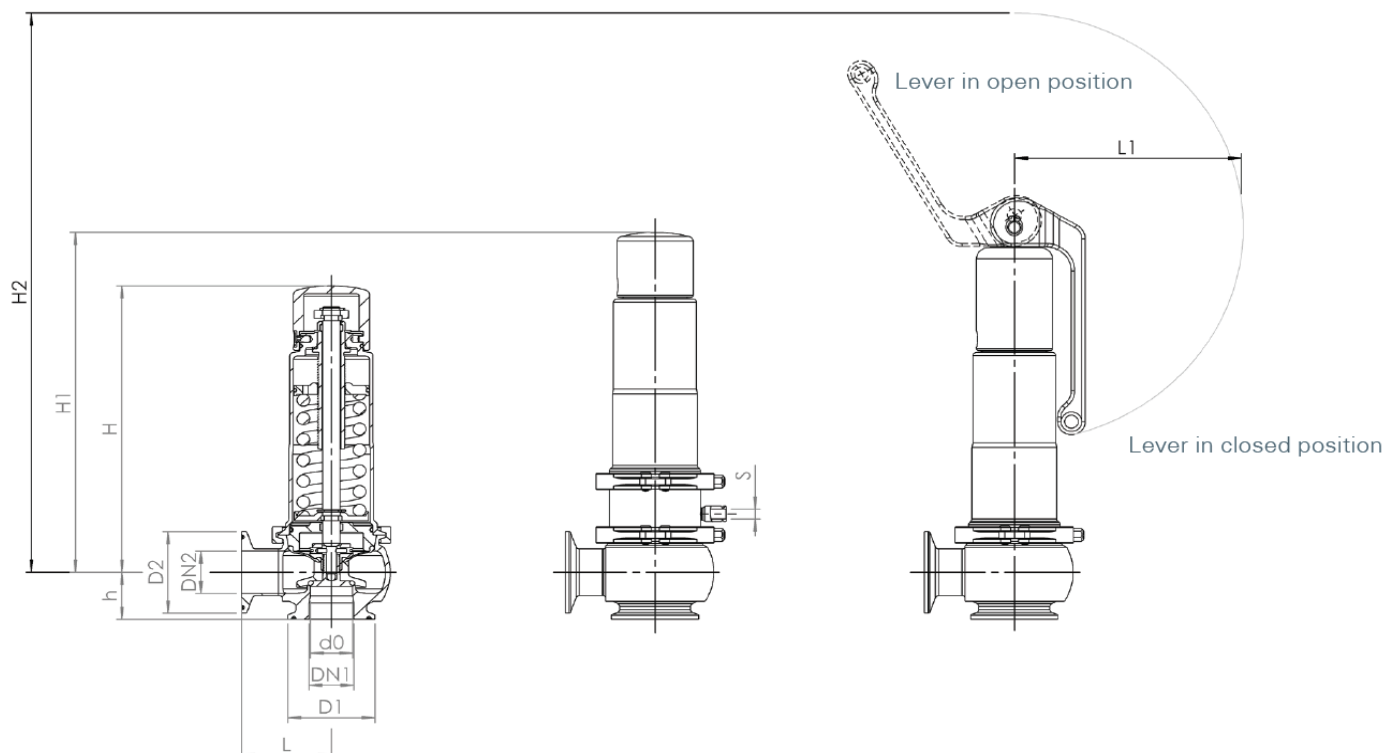
<sup>1)</sup> Further connection size possible, dimensions according to separate main dimension.

<sup>2)</sup> Coefficient of flow for D/G valid for 6 bar or more, for smaller set pressures see values in capacity table.

<sup>3)</sup> Values for version with pneumatic lifting device.

<sup>4)</sup> Values for version with lifting lever.

■ **MAIN DIMENSIONS, INSTALLATION DIMENSIONS**



**Series 4020 ■ INDIVIDUAL SELECTION / VALVE CONFIGURATION**

| Series | Valve version | Medium | Lifting device | Nominal diameter DN | Connection type |        | Connection type |        | Seal | Options | Set pressure | Quantity |
|--------|---------------|--------|----------------|---------------------|-----------------|--------|-----------------|--------|------|---------|--------------|----------|
|        |               |        |                |                     | Inlet           | Outlet | Inlet           | Outlet |      |         |              |          |
| 4020   | t             | GF     | P              | 25                  | KLSDIN          | KLSDIN | 25              | 25     | EPDM | P07     | 3,2          | 1        |
| 4020   | t             | GF     |                |                     |                 |        |                 |        |      |         |              |          |
| 4020   | t             | GF     |                |                     |                 |        |                 |        |      |         |              |          |
| 4020   | t             | GF     |                |                     |                 |        |                 |        |      |         |              |          |
| 4020   | t             | GF     |                |                     |                 |        |                 |        |      |         |              |          |

**■ TECHNICAL FINISHES, VARIANTS, ACCESSORIES**

|     |                                                                                                                  |                          |
|-----|------------------------------------------------------------------------------------------------------------------|--------------------------|
| S62 | Inductive proximity sensor, fitted, for indication of valve position, including connection cable 5m <sup>1</sup> | <input type="checkbox"/> |
|     |                                                                                                                  | <input type="checkbox"/> |
|     |                                                                                                                  | <input type="checkbox"/> |

<sup>1</sup>not available for version tGFL (with lifting lever)

**■ PROPERTIES**

|     |                                                                 |                          |                          |
|-----|-----------------------------------------------------------------|--------------------------|--------------------------|
| P01 | Oil- and grease-free production                                 | <input type="checkbox"/> | <input type="checkbox"/> |
| P05 | Quality of surfaces in contact with media in inlet<br>Ra <= 0.4 | <input type="checkbox"/> | <input type="checkbox"/> |
| P07 | Electropolished surfaces                                        | <input type="checkbox"/> | <input type="checkbox"/> |

**■ CERTIFICATES / APPROVALS**

|       |                                                                                                                     |                          |     |                                                                                                                                   |                          |
|-------|---------------------------------------------------------------------------------------------------------------------|--------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| C01   | Factory certificate acc. DIN EN 10204 2.2 (WKZ 2.2)                                                                 | <input type="checkbox"/> | C06 | ATEX evaluation acc. to 2014/34/EU                                                                                                | <input type="checkbox"/> |
| C02   | Test certificate acc. DIN EN 10204 3.1 (WPZ 3.1)                                                                    | <input type="checkbox"/> | C07 | SIL evaluation relating to IEC 61508-2                                                                                            | <input type="checkbox"/> |
| C03   | Material test certificate acc. DIN EN 10204 3.1 (MPZ 3.1)<br>(pressure retaining part)                              | <input type="checkbox"/> | C09 | Seat tightness test with helium, leak detection method under vacuum incl. Factory Inspection Certificate 3.1 acc. to DIN EN 10204 | <input type="checkbox"/> |
| C04   | TÜV/DEKRA individual inspection acc. EN 10204 3.2 (TÜV/DEKRA-APZ)                                                   | <input type="checkbox"/> | C10 | Certificate of oil- and grease free production                                                                                    | <input type="checkbox"/> |
| C05-1 | Sealing material<br>Manufacturer certification (FDA, USP,...),<br>Please indicate description of certificate: ..... | <input type="checkbox"/> |     |                                                                                                                                   | <input type="checkbox"/> |

**■ ADMISSIONS / ACCREDITATIONS**

|     |                                                                                          |                          |    |                                                                                     |                          |
|-----|------------------------------------------------------------------------------------------|--------------------------|----|-------------------------------------------------------------------------------------|--------------------------|
| AA1 | EC Type examination acc. to Directive 2014/68/EU                                         | <input type="checkbox"/> | AL | Individual inspection by notified body inspector –<br>(body to be indicated): ..... | <input type="checkbox"/> |
| AA2 | TÜV component test acc. to VdTÜV specification sheet SV 100                              | <input type="checkbox"/> |    |                                                                                     | <input type="checkbox"/> |
| AA4 | EAC - certificate/declaration with passport for the valve and laser marking of the valve | <input type="checkbox"/> |    |                                                                                     | <input type="checkbox"/> |
|     |                                                                                          |                          |    |                                                                                     | <input type="checkbox"/> |

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

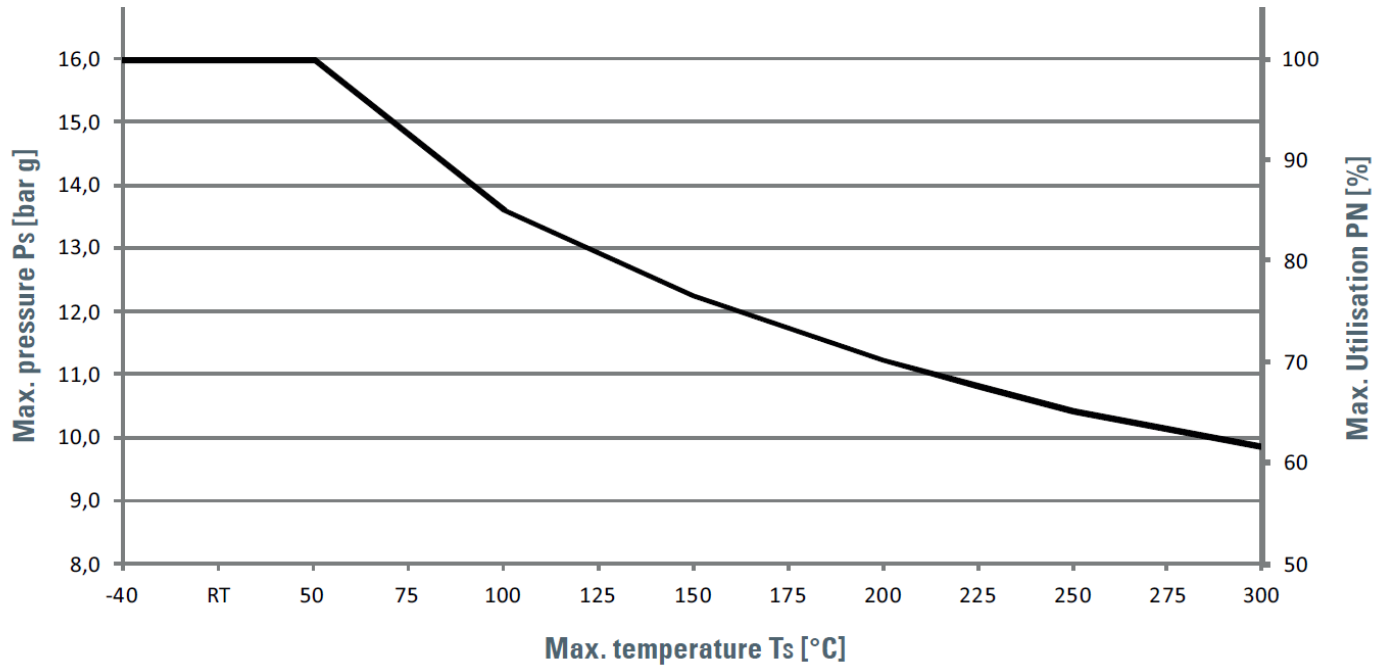
| Series Hygienic 4020: Blowing-off rates at 10% above set pressure |                      |                          |        |      |
|-------------------------------------------------------------------|----------------------|--------------------------|--------|------|
| Nominal diameter DN                                               |                      | 25                       |        |      |
|                                                                   |                      | d <sub>0</sub> = 24,5 mm |        |      |
|                                                                   | Set pressure bar (g) | I                        | II     | III  |
| Air I                                                             | 0,4                  | 193,7                    | 159,8  | 6,2  |
|                                                                   | 0,7                  | 258,2                    | 207,3  | 7,9  |
|                                                                   | 1,0                  | 317,3                    | 252,6  | 9,3  |
|                                                                   | 1,5                  | 421,7                    | 333,3  | 11,4 |
|                                                                   | 2,0                  | 514,4                    | 404,1  | 13,1 |
| Nm <sup>3</sup> /h                                                | 2,5                  | 602,8                    | 471,3  | 14,7 |
|                                                                   | 3,0                  | 691,2                    | 538,2  | 16,1 |
|                                                                   | 3,5                  | 779,6                    | 604,9  | 17,4 |
| Steam II                                                          | 4,0                  | 868,0                    | 671,5  | 18,6 |
|                                                                   | 4,5                  | 956,5                    | 737,8  | 19,7 |
| Water III                                                         | 5,0                  | 1044,9                   | 804,1  | 20,8 |
|                                                                   | 5,5                  | 1133,3                   | 870,2  | 21,8 |
|                                                                   | 6,0                  | 1221,7                   | 936,1  | 22,8 |
|                                                                   | 6,5                  | 1310,1                   | 1002,2 | 23,7 |
|                                                                   | 7,0                  | 1398,5                   | 1068,2 | 24,6 |
|                                                                   | 7,5                  | 1486,9                   | 1134,0 | 25,5 |
|                                                                   | 8,0                  | 1575,3                   | 1199,8 | 26,3 |
|                                                                   | 8,5                  | 1663,7                   | 1265,5 | 27,2 |
|                                                                   | 9,0                  | 1752,2                   | 1331,2 | 27,9 |
|                                                                   | 9,5                  | 1840,6                   | 1396,9 | 28,7 |
|                                                                   | 10,0                 | 1929,0                   | 1462,6 | 29,5 |
|                                                                   | 11,0                 | 2105,8                   | 1594,1 | 30,9 |
|                                                                   | 12,0                 | 2282,6                   | 1725,2 | 32,3 |
|                                                                   | 13,0                 | 2459,5                   | 1856,2 | 33,6 |
|                                                                   | 14,0                 | 2636,3                   | 1987,8 | 34,9 |
|                                                                   | 15,0                 | 2813,1                   | 2119,3 | 36,1 |
|                                                                   | 16,0                 | 2989,9                   | 2250,2 | 37,3 |

■ FLOW COEFFICIENTS CHART

Series Hygienic 4020

**Pressure-/ temperature rating**

PN 16 | Material: 1.4404 / 1.4435



**Control air pneumatic lifting device (max. 6 bar)**

