

## SANITARY TANK BLANKETING REGULATORS BKR2 (Low pressure reducing valve)

### DESCRIPTION

Tank blanketing valves are commonly used in tank storage systems to prevent and protect against explosions (avoiding flammable liquids being vented from the vessel), to control product contamination against external air that may fill the vapour space, to reduce evaporation losses (consequently, production losses), to reduce internal corrosion (caused by air and moisture) and to prevent vacuum condition.

The blanketing process consists in covering the stored medium, usually a liquid, with a gas (normally N<sub>2</sub>).


### MAIN FEATURES

Compact design.  
Non-rising adjustment knob.  
FDA / USP Class VI compliant seals.

### STANDARD SURFACE FINISH

Body and internal wetted parts: ≤ 0,51 micron Ra – SF1.  
Body external: ≤ 0,76 micron Ra – SF3.  
Cover: internal machined; external as casted.  
Other surface conditions see IS PV20.00 E – Technical information.  
Ultrasonic cleaning.

OPTIONS:

- Leakage line connection.
- Dome-loading.
- Top cap (adjustment screw with cover).
- Gauge connection on body.
- External sensing line connection (recommended for low set pressures < 10 mbar or high flow).
- Blanketing with vacuum.
- Hastelloy wetted parts.
- ATEX  version.

USE: Compressed air, nitrogen and other gases compatible with the construction.

AVAILABLE MODELS: BKR2 – low pressure regulator.

SIZES: 1"; DN 25.

REGULATING RANGES: 5 to 10 mbar; 10 to 50 mbar; 20 to 200 mbar; 50 to 500 mbar; 5 to 4000 mbar (dome-loaded).

CONNECTIONS: ASME BPE, DIN and ISO clamp ferrules.  
Flanged EN 1092-1 PN 16. Others on request.

PACKAGING: Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

INSTALLATION: Vertical installation recommended, to allow drainage, or horizontal as close to the process as possible in order to prevent long pipe sections and flow restrictions. See IMI – Installation and maintenance instructions.



#### CE MARKING – GROUP 2 (PED – European Directive)

| PN 16      | Category |
|------------|----------|
| 1" – DN 25 | SEP      |

#### CE MARKING – ATEX VERSION (ATEX – European Directive)

| PN 16      | Category            |
|------------|---------------------|
| 1" – DN 25 | Ex h IIB T6...T3 Gb |

#### LIMITING CONDITIONS

| Valve model                   |             | BKR2     |
|-------------------------------|-------------|----------|
| Body design conditions        |             | PN 16    |
| Max. upstream pressure        | Seat Ø 5 mm | 12 bar   |
|                               | Seat Ø 8 mm | 6 bar    |
| Maximum downstream pressure * |             | 500 mbar |
| Minimum downstream pressure   |             | 5 mbar   |
| Maximum design temperature ** |             | 130 °C   |

\* 4000 mbar with dome load. \*\* Others on request.

**Warning: Blanketing valves are no substitute for safety valves or vacuum relief valves.**

**AIR CAPACITIES (Nm<sup>3</sup>/h)**  
Maximum inlet pressure 6 bar – Seat Ø 8 mm

| SIZE       | OUTLET PRESSURE (mbar) * | INLET PRESSURE (barg) |     |     |    |    |    |     |     |     |
|------------|--------------------------|-----------------------|-----|-----|----|----|----|-----|-----|-----|
|            |                          | 0,1                   | 0,5 | 0,8 | 1  | 2  | 3  | 4   | 5   | 6   |
| 1" – DN 25 | 5 to 10                  | 4                     | 20  | 32  | 40 | 63 | 85 | 102 | 125 | 140 |
|            | 10 to 50                 | 4                     | 20  | 32  | 40 | 63 | 85 | 102 | 125 | 140 |
|            | 20 to 200                | –                     | 20  | 32  | 40 | 63 | 85 | 102 | 125 | 140 |
|            | 50 to 500                | –                     | –   | –   | 40 | 63 | 85 | 102 | 125 | 140 |

\* Outlet pressure should not be more than 50% of the inlet, in order to reach the mentioned flow rates.

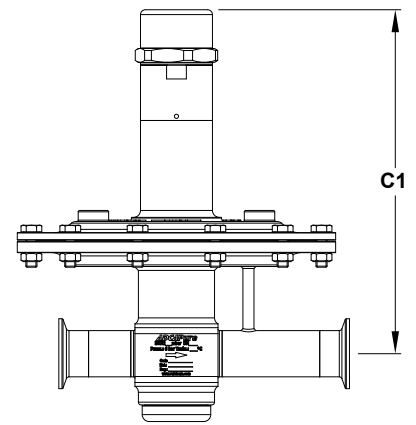
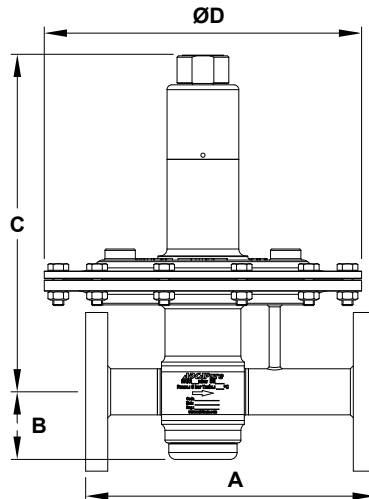
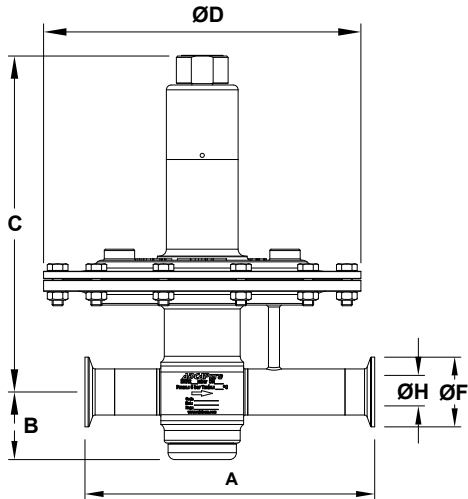
**AIR CAPACITIES (Nm<sup>3</sup>/h)**  
Maximum inlet pressure 12 bar – Seat Ø 5 mm

| SIZE       | OUTLET PRESSURE (mbar) * | INLET PRESSURE (barg) |    |    |    |    |
|------------|--------------------------|-----------------------|----|----|----|----|
|            |                          | 2                     | 4  | 6  | 8  | 12 |
| 1" – DN 25 | 5 to 10                  | 21                    | 35 | 49 | 62 | 90 |
|            | 10 to 50                 | 21                    | 35 | 49 | 62 | 90 |
|            | 20 to 200                | 21                    | 35 | 49 | 62 | 90 |
|            | 50 to 500                | 21                    | 35 | 49 | 62 | 90 |

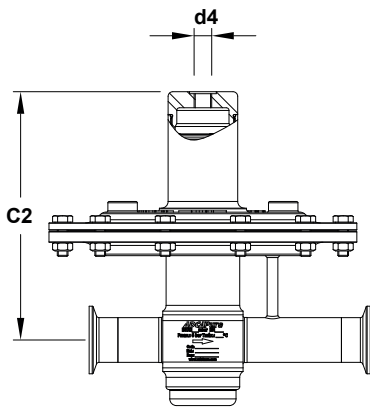
\* Outlet pressure should not be more than 50% of the inlet, in order to reach the mentioned flow rates.

**OPTIONS**

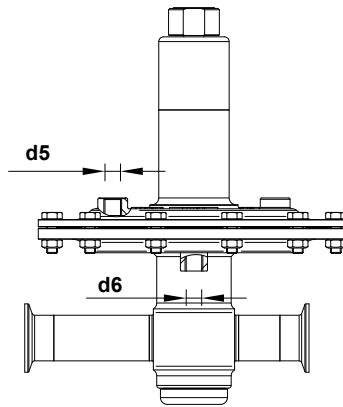
| LEAKAGE LINE CONNECTION   | DOME-LOADING                     | TOP CAP        |
|---------------------------|----------------------------------|----------------|
|                           |                                  |                |
| PRESSURE GAUGE CONNECTION | EXTERNAL SENSING LINE CONNECTION | ATEX COMPLIANT |
|                           |                                  |                |



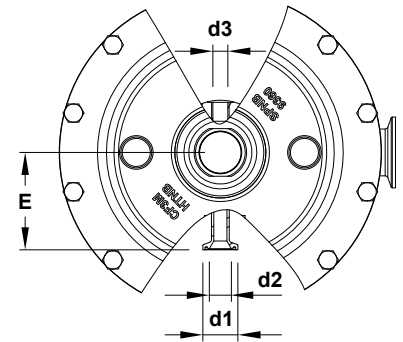
Optional top cap



Optional dome loading



Optional external sensing and leakage line connections



Optional gauge connection

**DIMENSIONS – ASME BPE (mm)**

| SIZE | A   | B  | C   | C1  | C2  | ØD  | E  | ØF   | ØH   | d1 | d2    | d3   | d4   | d5   | d6   | WGT. (kg) |
|------|-----|----|-----|-----|-----|-----|----|------|------|----|-------|------|------|------|------|-----------|
| 1"   | 210 | 49 | 244 | 249 | 186 | 230 | 70 | 50,5 | 22,1 | 25 | 15,75 | 1/4" | 1/4" | 1/4" | 1/4" | 8,5       |

**DIMENSIONS – DIN (mm)**

| SIZE  | A   | B  | C   | C1  | C2  | ØD  | E  | ØF   | ØH | d1 | d2    | d3   | d4   | d5   | d6   | WGT. (kg) |
|-------|-----|----|-----|-----|-----|-----|----|------|----|----|-------|------|------|------|------|-----------|
| DN 25 | 210 | 49 | 244 | 249 | 186 | 230 | 70 | 50,5 | 26 | 25 | 15,75 | 1/4" | 1/4" | 1/4" | 1/4" | 8,5       |

Remark: Clamp ferrules according to DIN 32676-A.

**DIMENSIONS – ISO (mm)**

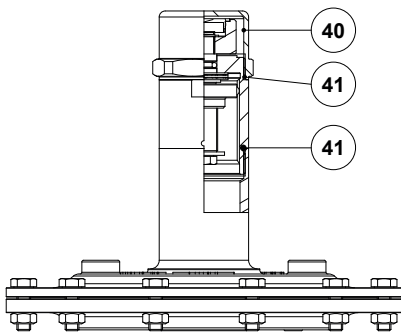
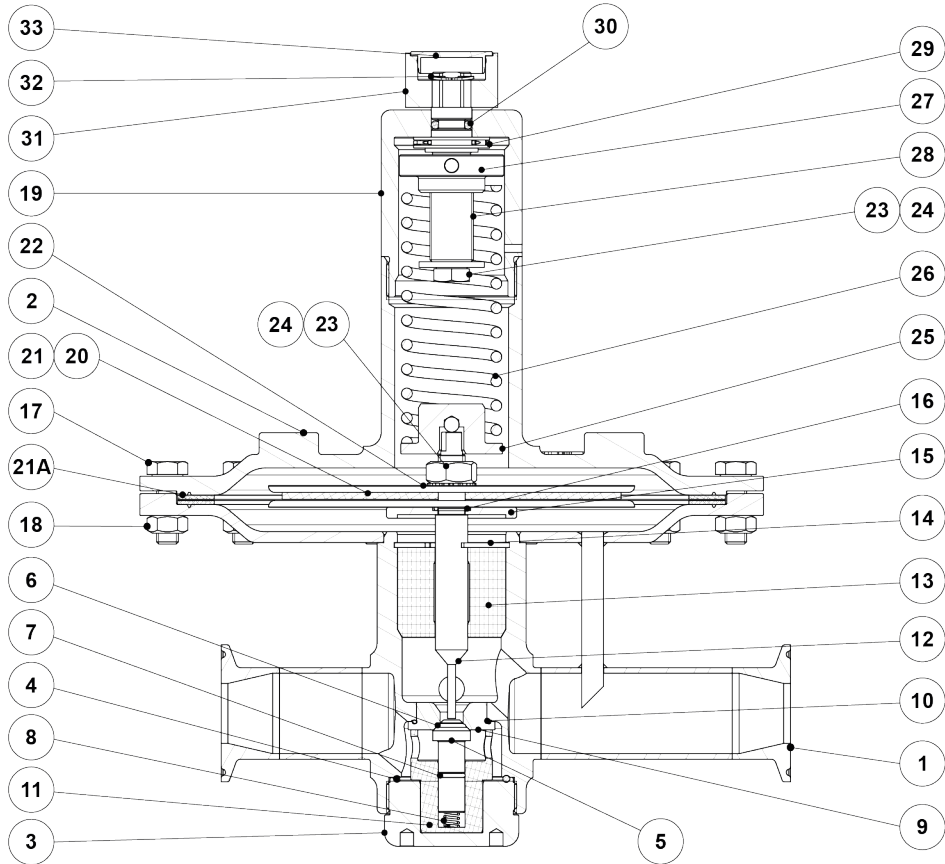
| SIZE  | A   | B  | C   | C1  | C2  | ØD  | E  | ØF   | ØH   | d1 | d2    | d3   | d4   | d5   | d6   | WGT. (kg) |
|-------|-----|----|-----|-----|-----|-----|----|------|------|----|-------|------|------|------|------|-----------|
| DN 25 | 210 | 49 | 244 | 249 | 186 | 230 | 70 | 50,5 | 29,7 | 25 | 15,75 | 1/4" | 1/4" | 1/4" | 1/4" | 8,5       |

Remark: Clamp ferrules according to DIN 32676-B.

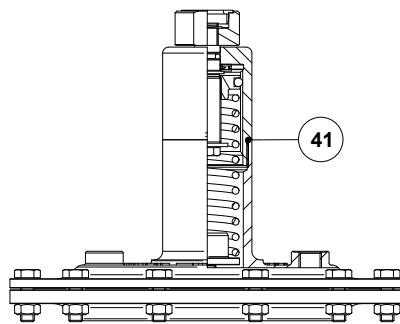
**DIMENSIONS – FLANGED EN 1092-1 (mm)**

| SIZE  | A   | B  | C   | C1  | C2  | ØD  | E  | d1 | d2    | d3   | d4   | d5   | d6   | WGT. (kg) |
|-------|-----|----|-----|-----|-----|-----|----|----|-------|------|------|------|------|-----------|
| DN 25 | 210 | 49 | 244 | 249 | 186 | 230 | 70 | 25 | 15,75 | 1/4" | 1/4" | 1/4" | 1/4" | 10,6      |

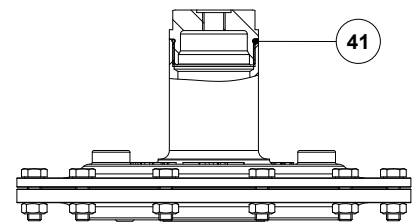
MATERIALS



*Optional top cap*



*Optional leakage line connection*



*Optional dome-loading*

**MATERIALS**

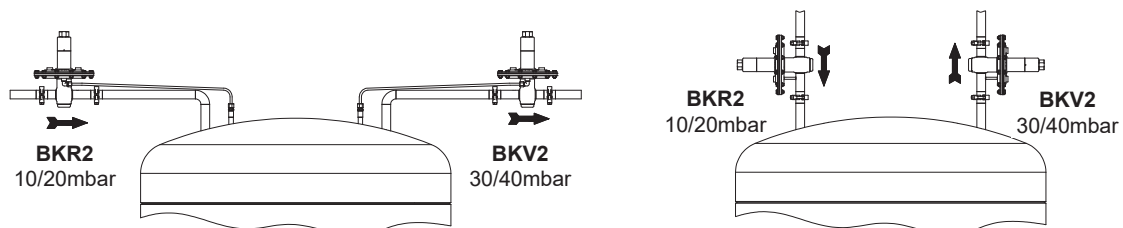
| POS. N° | DESIGNATION             | MATERIAL                          |
|---------|-------------------------|-----------------------------------|
| 1       | Valve body              | AISI 316L / 1.4404                |
|         |                         | Hastelloy C22 / 2.4602            |
| 2       | Cover                   | A351 CF3M / 1.4409                |
| 3       | Bottom cover            | AISI 316L / 1.4404                |
|         |                         | Hastelloy C22 / 2.4602            |
| 4       | * O-ring                | ** EPDM                           |
| 5       | * Piston                | AISI 316L / 1.4404                |
|         |                         | Hastelloy C22 / 2.4602            |
| 6       | * Valve head            | ** EPDM; FPM                      |
| 7       | * O-ring                | ** EPDM; FPM                      |
| 8       | * Valve spring          | AISI 316 / 1.4401 electropolished |
|         |                         | Hastelloy C22 / 2.4602            |
| 9       | * Seat                  | AISI 316L / 1.4404                |
|         |                         | Hastelloy C22 / 2.4602            |
| 10      | * O-ring                | ** EPDM                           |
| 11      | * Guide                 | ** PTFE                           |
| 12      | Stem                    | AISI 316L / 1.4404                |
|         |                         | Hastelloy C22 / 2.4602            |
| 13      | Stem guide              | ** PTFE                           |
| 14      | Retaining ring          | Stainless steel A2                |
|         |                         | Hastelloy C22 / 2.4602            |
| 15      | Diaphragm support plate | AISI 316L / 1.4404                |
|         |                         | Hastelloy C22 / 2.4602            |
| 16      | * O-ring                | ** EPDM                           |
| 17      | Bolts                   | Stainless steel A2-70             |
| 18      | Nuts                    | Stainless steel A2-70             |
| 19      | Spring cover            | AISI 316L / 1.4404                |
| 20      | * Lower diaphragm       | PTFE (Gylon)                      |
| 21      | * Upper diaphragm       | EPDM                              |
| 22      | Diaphragm plate         | AISI 316L / 1.4404                |
| 23      | Nut                     | Stainless steel A2-70             |
| 24      | * Washer                | Stainless steel A2                |
| 25      | Lower spring guide      | AISI 316L / 1.4404                |
| 26      | * Adjustment spring     | AISI 302 / 1.4300                 |
| 27      | Upper spring guide      | AISI 316L / 1.4404                |
| 28      | Adjustment screw        | Brass                             |
| 29      | Bearing                 | Corrosion resistant steel         |
| 30      | * O-ring                | NBR                               |
| 31      | Adjustment knob         | AISI 316L / 1.4404                |
| 32      | Shaft ring              | Stainless steel                   |
| 33      | Cover nut               | Plastic                           |
| 40      | Top cap                 | AISI 316L / 1.4404                |
| 41      | * O-ring                | NBR                               |

\* Available spare parts. \*\* Others on request.

FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non standard valves, this number must be supplied if spare parts are ordered.

**TYPICAL INSTALLATION**



*Blanketing with overpressure*



| ORDERING CODES BKR2   |     |   |   |   |   |   |   |   |   |   |   |    |    |
|---|-----|---|---|---|---|---|---|---|---|---|---|----|----|
| Valve model   | BR  | A | 5 | T | E | I | X | X | X | 0 | D | 25 | E  |
| BKR2 – AISI 316L / 1.4404 blanketing low pressure regulator   | BR  |   |   |   |   |   |   |   |   |   |   |    |    |
| BKR2 – Hastelloy C22 / 2.4602 blanketing low pressure regulator   | BRH |   |   |   |   |   |   |   |   |   |   |    |    |
| Regulating range  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| 5 to 10 mbar  |     | 0 |   |   |   |   |   |   |   |   |   |    |    |
| 10 to 50 mbar   |     | 1 |   |   |   |   |   |   |   |   |   |    |    |
| 20 to 200 mbar  |     | 2 |   |   |   |   |   |   |   |   |   |    |    |
| 50 to 500 mbar  |     | 3 |   |   |   |   |   |   |   |   |   |    |    |
| 5 to 4000 mbar (dome-loaded)  |     | A |   |   |   |   |   |   |   |   |   |    |    |
| Valve seat orifice  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| Seat diameter 5 mm  |     |   | 5 |   |   |   |   |   |   |   |   |    |    |
| Seat diameter 8 mm  |     |   | 8 |   |   |   |   |   |   |   |   |    |    |
| Diaphragm   |     |   |   |   |   |   |   |   |   |   |   |    |    |
| PTFE (Gylon)  |     |   |   | T |   |   |   |   |   |   |   |    |    |
| EPDM (non-standard)   |     |   |   | E |   |   |   |   |   |   |   |    |    |
| Valve head  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| EPDM  |     |   |   |   | E |   |   |   |   |   |   |    |    |
| FPM / Viton (USP Class VI on request)   |     |   |   |   | V |   |   |   |   |   |   |    |    |
| Adjustment knob, top cap and leakage line connection  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| Stainless steel adjustment knob   |     |   |   |   |   | I |   |   |   |   |   |    |    |
| Top cap (adjustment screw with cover)   |     |   |   |   |   | T |   |   |   |   |   |    |    |
| Stainless steel adjustment knob w/ ISO 228 G 1/4" leakage line connection                                 |     |   |   |   |   | L |   |   |   |   |   |    |    |
| Stainless steel adjustment knob w/ 1/4" NPT leakage line connection                                       |     |   |   |   |   | M |   |   |   |   |   |    |    |
| Top cap (adjustment screw with cover) w/ ISO 228 G 1/4" leakage line connection a)                        |     |   |   |   |   | U |   |   |   |   |   |    |    |
| Top cap (adjustment screw with cover) w/ 1/4" NPT leakage line connection a)                              |     |   |   |   |   | V |   |   |   |   |   |    |    |
| Dome-loading – ISO 228 G 1/4" b)  |     |   |   |   |   | X |   |   |   |   |   |    |    |
| Dome-loading – 1/4" NPT b)  |     |   |   |   |   | C |   |   |   |   |   |    |    |
| Gauge ports   |     |   |   |   |   |   |   |   |   |   |   |    |    |
| Without gauge ports   |     |   |   |   |   |   |   |   |   | X |   |    |    |
| Tri-clamp gauge port on the left side (rel. to the flow direction) – downstream pressure                  |     |   |   |   |   |   |   |   |   | 7 |   |    |    |
| Tri-clamp gauge port on the right side (rel. to the flow direction) – downstream pressure                 |     |   |   |   |   |   |   |   |   | 6 |   |    |    |
| Tri-clamp gauge port on both sides – downstream pressure  |     |   |   |   |   |   |   |   |   | 5 |   |    |    |
| Threaded gauge port on the left side (rel. to the flow direction) – downstream pressure – ISO 228 G 1/4"  |     |   |   |   |   |   |   |   |   | 4 |   |    |    |
| Threaded gauge port on the right side (rel. to the flow direction) – downstream pressure – ISO 228 G 1/4" |     |   |   |   |   |   |   |   |   | 3 |   |    |    |
| Threaded gauge port on both sides – downstream pressure – ISO 228 G 1/4"                                  |     |   |   |   |   |   |   |   |   | 2 |   |    |    |
| Threaded gauge port on the left side (rel. to the flow direction) – downstream pressure – 1/4" NPT        |     |   |   |   |   |   |   |   |   | W |   |    |    |
| Threaded gauge port on the right side (rel. to the flow direction) – downstream pressure – 1/4" NPT       |     |   |   |   |   |   |   |   |   | Y |   |    |    |
| Threaded gauge port on both sides – downstream pressure – 1/4" NPT  |     |   |   |   |   |   |   |   |   | Z |   |    |    |
| Surface finish c)   |     |   |   |   |   |   |   |   |   |   |   |    |    |
| Standard surface finish   |     |   |   |   |   |   |   |   |   |   |   | X  |    |
| Mirror mechanical polished external surfaces (SF1)  |     |   |   |   |   |   |   |   |   |   |   | P  |    |
| Electropolished internal wetted parts (SF5)   |     |   |   |   |   |   |   |   |   |   |   | E  |    |
| Special features  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| None  |     |   |   |   |   |   |   |   |   |   |   |    | X  |
| External sensing line connection  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| Internal sensing line (standard)  |     |   |   |   |   |   |   |   |   |   |   | 0  |    |
| External sensing line connection – ISO 228 G 1/4"   |     |   |   |   |   |   |   |   |   |   |   | 1  |    |
| External sensing line connection – 1/4" NPT   |     |   |   |   |   |   |   |   |   |   |   | 2  |    |
| Pipe connection   |     |   |   |   |   |   |   |   |   |   |   |    |    |
| Clamp ferrule ASME BPE  |     |   |   |   |   |   |   |   |   |   |   |    | D  |
| Clamp ferrule DIN (DIN 32676-A)   |     |   |   |   |   |   |   |   |   |   |   |    | F  |
| Clamp ferrule ISO (DIN 32676-B)   |     |   |   |   |   |   |   |   |   |   |   |    | E  |
| Flanged EN 1092-1 PN 16   |     |   |   |   |   |   |   |   |   |   |   |    | L  |
| Size  |     |   |   |   |   |   |   |   |   |   |   |    |    |
| 1" or DN 25   |     |   |   |   |   |   |   |   |   |   |   |    | 25 |
| Special valves / Extras   |     |   |   |   |   |   |   |   |   |   |   |    |    |
| ATEX compliant version  |     |   |   |   |   |   |   |   |   |   |   |    | EX |
| Full description or additional codes have to be added in case of non-standard combination                 |     |   |   |   |   |   |   |   |   |   |   |    | E  |

a) Mandatory in case of ATEX compliant version. b) Mandatory in case of dome-loading. c) Consult IS PV20.00 for further details and other surface finish options.