

## SANITARY PRESSURE REDUCING VALVE P161

### DESCRIPTION

The ADCAPure P161 is a series of angle design direct acting diaphragm sensing pressure reducing valves. These regulators, available with spring or dome-loading, are designed for use with clean steam, compressed air, water and other gases or liquids compatible with the construction materials and valve design.

### MAIN FEATURES

- Spring or dome-loaded.
- Non-rising adjustment knob.
- Compact design with clamped body.
- Available with low pressure diaphragm.
- FDA / USP Class VI compliant seals.
- Optimized internal designed to provide high flow capacities and minimum droop.
- Completely machined from bar stock material, no castings or forgings are used.

### STANDARD SURFACE FINISH

- Internal wetted parts:  $\leq 0,51$  micron Ra – SF1.
- External:  $\leq 0,76$  micron Ra – SF3.
- Other surface conditions see IS PV20.00 E – Technical information.
- Ultrasonic cleaning.

**OPTIONS:**

- Leakage line connection 1/8" (captured vent).
- Different soft sealings for liquids and gases.
- Lock system, allows inline clean-in-place (CIP) and sterilization-in-place (SIP) operations.
- Gauge connection on body.
- Top cap (adjustment screw with cover).
- Dome-loaded version.

**USE:** Clean steam, compressed air, water and other gases and liquids compatible with the construction.

**AVAILABLE MODELS:** P161.

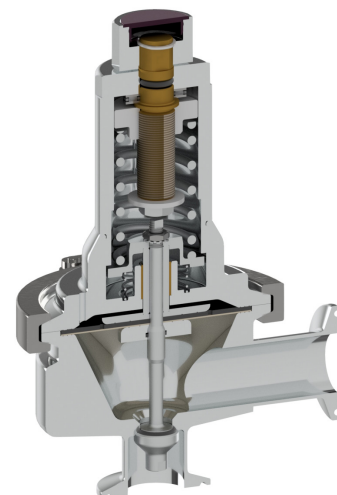
**SIZES:** 1/2" to 2"; DN 15 to 50.

**REGULATING RANGES:** 0,3 to 1,1 bar; 0,8 to 1,5 bar; 1 to 3 bar; 1,5 to 5 bar.

**CONNECTIONS:** ASME BPE, DIN and ISO clamp ferrules or tube weld (ETO) ends. 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:** Horizontal installation. Vertical inlet and horizontal outlet angle connection. See IMI.



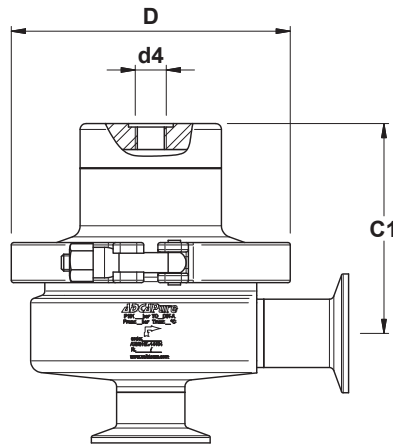
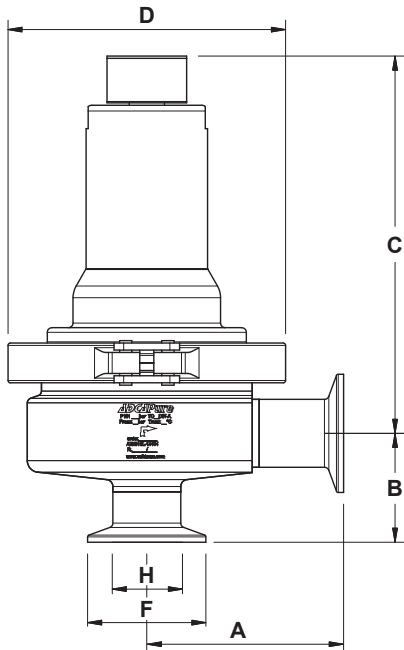
### LIMITING CONDITIONS

| Valve model                      | P161    |
|----------------------------------|---------|
| Body design conditions           | PN 16   |
| Maximum upstream pressure        | 8 bar   |
| Maximum downstream pressure      | 5 bar   |
| Minimum downstream pressure *    | 0,3 bar |
| Maximum operating temperature ** | 180 °C  |

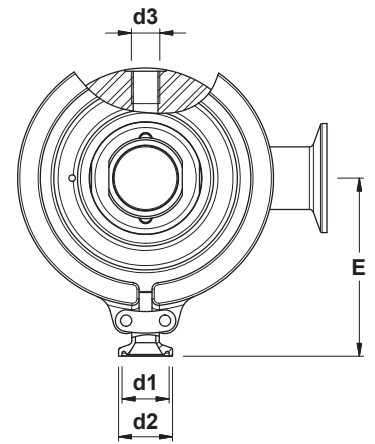
\* For tight shut off, with adjustment spring relaxed, ensure a minimum downstream pressure of 0,2 bar.  
\*\* With PTFE diaphragm and seals. Consult the manufacturer in case of other materials.

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

| PN 16                    | Category |
|--------------------------|----------|
| 1/2" to 2" – DN 15 to 50 | SEP      |



Optional dome-loaded version.



Optional pressure gauge connections.

**DIMENSIONS (mm) ASME BPE**

| SIZE   | REGULATING RANGES<br>0,8 to 1,5 bar, 1 to 3 bar and 1,5 to 5 bar |    |     |     |     |    |       |      |      |    |      |       |              | REGULATING RANGE<br>0,3 to 1,1 bar |     |     |              |
|--------|--|----|-----|-----|-----|----|-------|------|------|----|------|-------|--------------|------------------------------------|-----|-----|--------------|
|        | A  | B  | C   | C1  | D   | d1 | d2    | d3 * | d4 * | E  | F    | H     | WGT.<br>(kg) | A                                  | D   | E   | WGT.<br>(kg) |
| 1/2"   | 77   | 53 | 156 | 84  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 25   | 9,4   | 4,1          | 85                                 | 134 | 91  | 4,9          |
| 3/4"   | 77   | 56 | 160 | 88  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 25   | 15,75 | 4,4          | 85                                 | 134 | 91  | 5,1          |
| 1"     | 77   | 52 | 163 | 91  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 50,5 | 22,1  | 4,6          | 85                                 | 134 | 91  | 5,4          |
| 1 1/2" | 85   | 61 | 204 | 124 | 134 | 25 | 15,75 | 1/4" | 1/4" | 96 | 50,5 | 34,8  | 8            | 101                                | 170 | 109 | 11,1         |
| 2"     | 85   | 67 | 207 | 127 | 134 | 25 | 15,75 | 1/4" | 1/4" | 96 | 64   | 47,5  | 8,6          | 101                                | 170 | 109 | 12           |

**DIMENSIONS (mm) DIN**

| SIZE  | REGULATING RANGES<br>0,8 to 1,5 bar, 1 to 3 bar and 1,5 to 5 bar |    |     |     |     |    |       |      |      |    |      |    |              | REGULATING RANGE<br>0,3 to 1,1 bar |     |     |              |
|-------|--|----|-----|-----|-----|----|-------|------|------|----|------|----|--------------|------------------------------------|-----|-----|--------------|
|       | A  | B  | C   | C1  | D   | d1 | d2    | d3 * | d4 * | E  | F    | H  | WGT.<br>(kg) | A                                  | D   | E   | WGT.<br>(kg) |
| DN 15 | 77   | 45 | 160 | 88  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 34   | 16 | 4,4          | 85                                 | 134 | 91  | 5,1          |
| DN 20 | 77   | 40 | 158 | 86  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 34   | 20 | 4,3          | 85                                 | 134 | 91  | 4,9          |
| DN 25 | 84   | 47 | 161 | 89  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 50,5 | 26 | 4,6          | 92                                 | 134 | 91  | 5,3          |
| DN 32 | 84   | 50 | 163 | 91  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 50,5 | 32 | 4,8          | 84                                 | 134 | 83  | 5,5          |
| DN 40 | 93   | 69 | 202 | 122 | 134 | 25 | 15,75 | 1/4" | 1/4" | 96 | 50,5 | 38 | 8            | 109                                | 170 | 109 | 11           |
| DN 50 | 93   | 75 | 206 | 126 | 134 | 25 | 15,75 | 1/4" | 1/4" | 96 | 64   | 50 | 8,6          | 109                                | 170 | 109 | 12           |

Remarks: Clamp ferrules according to DIN 32676-A; Tube weld (ETO) according to DIN 11866-A (DIN 11850-2).

**DIMENSIONS (mm) ISO**

| SIZE  | REGULATING RANGES<br>0,8 to 1,5 bar, 1 to 3 bar and 1,5 to 5 bar |    |     |     |     |    |       |      |      |    |      |      |              | REGULATING RANGE<br>0,3 to 1,1 bar |     |     |              |
|-------|--|----|-----|-----|-----|----|-------|------|------|----|------|------|--------------|------------------------------------|-----|-----|--------------|
|       | A  | B  | C   | C1  | D   | d1 | d2    | d3 * | d4 * | E  | F    | H    | WGT.<br>(kg) | A                                  | D   | E   | WGT.<br>(kg) |
| DN 15 | 84   | 43 | 159 | 87  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 50,5 | 18,1 | 4,4          | 92                                 | 134 | 91  | 5,1          |
| DN 20 | 84   | 46 | 162 | 90  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 50,5 | 23,7 | 4,6          | 92                                 | 134 | 91  | 5,4          |
| DN 25 | 84   | 49 | 164 | 92  | 119 | 25 | 15,75 | 1/4" | 1/4" | 83 | 50,5 | 29,7 | 4,8          | 92                                 | 134 | 91  | 5,6          |
| DN 32 | 93   | 70 | 202 | 122 | 134 | 25 | 15,75 | 1/4" | 1/4" | 96 | 64   | 38,4 | 8,2          | 109                                | 170 | 109 | 11,3         |
| DN 40 | 93   | 75 | 206 | 126 | 134 | 25 | 15,75 | 1/4" | 1/4" | 96 | 64   | 44,3 | 8,8          | 109                                | 170 | 109 | 12,1         |

Remarks: Clamp ferrules according to DIN 32676-B; Tube weld (ETO) according to DIN 11866-B (ISO 1127).

\* As standard, connections d3 and d4 are female threaded ISO 7 Rp.

**FLOW RATE COEFFICIENTS (m<sup>3</sup>/h)**

| SIZE       | ASME BPE |      |     |        |      | DIN   |       |       |       |       |       | ISO   |       |       |       |       |
|------------|----------|------|-----|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            | 1/2"     | 3/4" | 1"  | 1 1/2" | 2"   | DN 15 | DN 20 | DN 25 | DN 32 | DN 40 | DN 50 | DN 15 | DN 20 | DN 25 | DN 32 | DN 40 |
| <b>Kvs</b> | 1,6      | 3,2  | 5,3 | 13,0   | 19,8 | 2,8   | 3,2   | 5,3   | 5,3   | 13,0  | 19,8  | 2,8   | 5,3   | 5,3   | 13,0  | 13,0  |

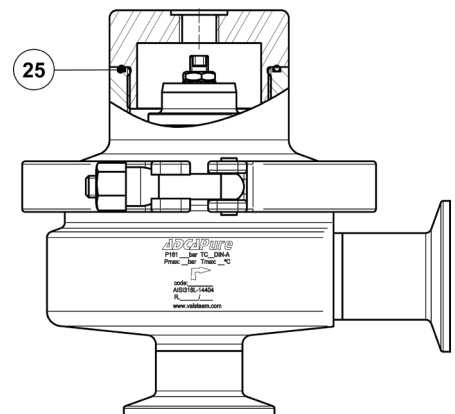
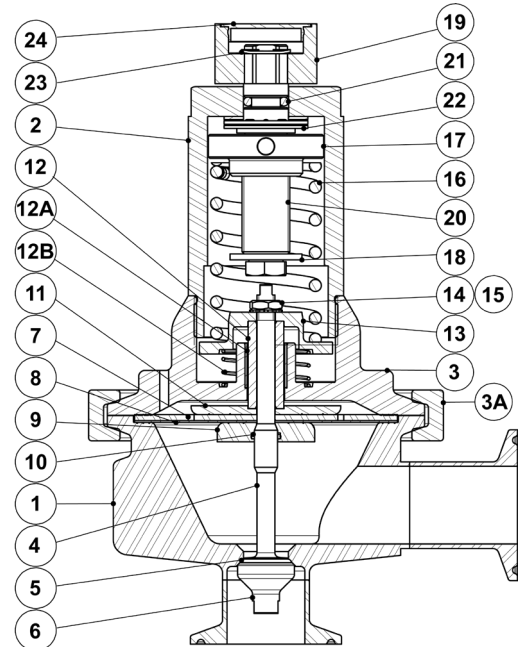
**MATERIALS**

| POS. N° | DESIGNATION           | MATERIAL                  |
|---------|-----------------------|---------------------------|
| 1       | Valve body            | AISI 316L / 1.4404        |
| 2       | Cover                 | AISI 316L / 1.4404        |
| 3       | Intermediate flange   | AISI 316L / 1.4404        |
| 3A      | Clamp                 | AISI 316 / 1.4401         |
| 4       | * Valve stem          | AISI 316L / 1.4404        |
| 5       | * Soft plug           | ** EPDM; PTFE; FPM        |
| 6       | * Valve plug          | AISI 316L / 1.4404        |
| 7       | * Upper diaphragm     | EPDM                      |
| 8       | * Lower diaphragm     | PTFE (Gylon)              |
| 9       | Diaphragm plate       | AISI 316L / 1.4404        |
| 10      | * O-ring              | EPDM                      |
| 11      | Diaphragm plate       | AISI 316L / 1.4404        |
| 12      | Stem guide            | AISI 316L / 1.4404        |
| 12A     | Plain bearing         | Bronze                    |
| 12B     | Spring                | AISI 302 / 1.4300         |
| 13      | Spring plate          | AISI 316L / 1.4404        |
| 14      | Nut                   | AISI 304 / 1.4301         |
| 15      | Washer                | AISI 304 / 1.4301         |
| 16      | * Adjustment spring   | AISI 302 / 1.4300         |
| 17      | Top spring plate      | AISI 316L / 1.4404        |
| 18      | Retaining washer      | Stainless steel A2-70     |
| 19      | Adjustment nut        | AISI 316L / 1.4404        |
| 20      | Adjustment screw      | Brass                     |
| 21      | O-ring                | NBR                       |
| 22      | Bearing               | Corrosion resistant steel |
| 23      | Ext. bowed shaft ring | Stainless steel           |
| 24      | Cover nut             | Plastic                   |
| 25      | * O-ring              | EPDM                      |

\* Available spare parts; \*\* Others according to fluid.

Remarks: 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.



*Dome-loaded top*

**OPTIONS**

| LOCK SYSTEM | ADJUSTMENT SCREW WITH TOP CAP | PRESSURE GAUGE CONNECTION | LEAKAGE LINE CONNECTION |
|-------------|-------------------------------|---------------------------|-------------------------|
|             |                               |                           |                         |

ORDERING CODES P161

| Valve model  | P16 | 1 | 3 | 1 | T | M | I | X | X | X | DI | 15 | E  |
|--|-----|---|---|---|---|---|---|---|---|---|----|----|----|
| P161 – AISI 316L / 1.4404 diaphragm sensing pressure reducing valve                                      | P16 |   |   |   |   |   |   |   |   |   |    |    |    |
| <b>Valve series</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Series 1   |     | 1 |   |   |   |   |   |   |   |   |    |    |    |
| <b>Regulating range</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| 0,3 to 1,1 bar   |     |   | 3 |   |   |   |   |   |   |   |    |    |    |
| 0,8 to 1,5 bar   |     |   | 4 |   |   |   |   |   |   |   |    |    |    |
| 1 to 3 bar   |     |   | 5 |   |   |   |   |   |   |   |    |    |    |
| 1,5 to 5 bar   |     |   | 6 |   |   |   |   |   |   |   |    |    |    |
| 0,8 to 5 bar (dome-loaded) <b>a)</b>   |     |   | A |   |   |   |   |   |   |   |    |    |    |
| 0,3 to 1,1 bar (dome-loaded) <b>a)</b>   |     |   | B |   |   |   |   |   |   |   |    |    |    |
| <b>Flow rate coefficient</b>   |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Kvs 1,3 (only applicable to ASME BPE 1/2" size)  |     |   |   | 1 |   |   |   |   |   |   |    |    |    |
| Kvs 2,8 (applicable to sizes DIN DN 15 and ISO DN 15)  |     |   |   | 2 |   |   |   |   |   |   |    |    |    |
| Kvs 3,2 (applicable to sizes ASME BPE 3/4" and DIN DN 20)  |     |   |   | 3 |   |   |   |   |   |   |    |    |    |
| Kvs 5,3 (applicable to sizes ASME BPE 1", DIN DN 25 to DN 32 and ISO DN 20 to DN 25)                     |     |   |   | 4 |   |   |   |   |   |   |    |    |    |
| Kvs 13,0 (applicable to sizes ASME BPE 1 1/2", DIN DN 40 and ISO DN 32 to DN 40)                         |     |   |   | 6 |   |   |   |   |   |   |    |    |    |
| Kvs 19,8 (applicable to sizes ASME BPE 2" and DIN DN 50)   |     |   |   | 8 |   |   |   |   |   |   |    |    |    |
| <b>Diaphragm</b>   |     |   |   |   |   |   |   |   |   |   |    |    |    |
| PTFE (Gylon)   |     |   |   |   | T |   |   |   |   |   |    |    |    |
| EPDM (non-standard)  |     |   |   |   | E |   |   |   |   |   |    |    |    |
| <b>Seat material b)</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Metal to metal (non-standard, except in ASME BPE 1/2" size)  |     |   |   |   |   | M |   |   |   |   |    |    |    |
| EPDM   |     |   |   |   |   |   | E |   |   |   |    |    |    |
| PTFE   |     |   |   |   |   |   |   | T |   |   |    |    |    |
| FPM / Viton (FDA approval only)  |     |   |   |   |   |   |   |   | V |   |    |    |    |
| <b>Adjustment knob, top cap and captured vent</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Stainless steel adjustment knob  |     |   |   |   |   |   |   |   |   | I |    |    |    |
| Top cap (adjustment screw with cover)  |     |   |   |   |   |   |   |   |   |   | T  |    |    |
| Stainless steel adjustment knob w/ diaphragm cover leakage connection in case of diaphragm failure       |     |   |   |   |   |   |   |   |   |   |    | L  |    |
| Top cap (adjustment screw with cover) w/ diaphragm cover leakage connection in case of diaphragm failure |     |   |   |   |   |   |   |   |   |   |    |    | U  |
| Dome-loaded top <b>c)</b>  |     |   |   |   |   |   |   |   |   |   |    |    | X  |
| <b>Gauge port options</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| 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 7 Rp 1/4"  |     |   |   |   |   |   |   |   |   |   |    |    | 4  |
| Threaded gauge port on the right side (rel. to the flow direction) – downstream pressure – ISO 7 Rp 1/4" |     |   |   |   |   |   |   |   |   |   |    |    | 3  |
| Threaded gauge port on both sides – downstream pressure – ISO 7 Rp 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  |
| <b>Surface finish d)</b>   |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Standard surface finish  |     |   |   |   |   |   |   |   |   |   |    |    | X  |
| Mirror mechanical polished external surfaces (SF1)   |     |   |   |   |   |   |   |   |   |   |    |    | P  |
| Electropolished internal wetted parts (SF5)  |     |   |   |   |   |   |   |   |   |   |    |    | E  |
| <b>Special features</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| None   |     |   |   |   |   |   |   |   |   |   |    |    | X  |
| Degreased for oxygen   |     |   |   |   |   |   |   |   |   |   |    |    | O  |
| CIP / SIP lock system  |     |   |   |   |   |   |   |   |   |   |    |    | C  |
| <b>Pipe connections</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Clamp ferrule ASME BPE   |     |   |   |   |   |   |   |   |   |   |    |    | D  |
| Clamp ferrule DIN (DIN 32676-A)  |     |   |   |   |   |   |   |   |   |   |    |    | F  |
| Clamp ferrule ISO (DIN 32676-B)  |     |   |   |   |   |   |   |   |   |   |    |    | E  |
| Tube weld (ETO) according to ASME BPE  |     |   |   |   |   |   |   |   |   |   |    |    | DI |
| Tube weld (ETO) according to DIN 11866-A (DIN 11850-2)   |     |   |   |   |   |   |   |   |   |   |    |    | FI |
| Tube weld (ETO) according to DIN 11866-B (ISO 1127)  |     |   |   |   |   |   |   |   |   |   |    |    | EI |
| <b>Size</b>  |     |   |   |   |   |   |   |   |   |   |    |    |    |
| 1/2" or DN 15  |     |   |   |   |   |   |   |   |   |   |    |    | 15 |
| 3/4" or DN 20  |     |   |   |   |   |   |   |   |   |   |    |    | 20 |
| 1" or DN 25  |     |   |   |   |   |   |   |   |   |   |    |    | 25 |
| DN 32  |     |   |   |   |   |   |   |   |   |   |    |    | 32 |
| 1 1/2" or DN 40  |     |   |   |   |   |   |   |   |   |   |    |    | 40 |
| 2" or DN 50  |     |   |   |   |   |   |   |   |   |   |    |    | 50 |
| <b>Special valves / Extras</b>   |     |   |   |   |   |   |   |   |   |   |    |    |    |
| Full description or additional codes have to be added in case of a non-standard combination              |     |   |   |   |   |   |   |   |   |   |    | E  |    |

**a)** The loading control pressure can be up to a maximum of 0,2 bar above the required downstream pressure; **b)** ASME BPE 1/2" size is only available with metal to metal sealing; **c)** Must be chosen in case of dome-loaded version; **d)** Consult IS PV20.00 (Technical information) for further details and other surface finish options.