

# Mark 908 Series

## 3/4" - 1" (DN20 - DN25) Low Pressure Blanketing (Gas overlay) PRV for medium to large Stainless and SUD vessels

The Mark 908 Series regulator was designed specifically to provide accurate blanketing and purge pressure control on very low pressure stainless steel and single use systems. The pilot operated Mark 908 responds to very small changes in tank vessel pressure by throttling open or closed to maintain the desired pressure set point.

- All 316L barstock construction
- FDA and USP Class VI Compliant elastomers and fluoropolymers
- 20 Ra  $\mu$ m (0.5 Ra  $\mu$ m) internal surface finish
- Accurate regulation down to 1/2" wc (1.25 mbar)
- ANSI Class VI Shutoff
- Four available spring ranges
- 200 psi maximum inlet pressure
- Five Cv's; 1, 2, 4, 7.5\*, 10\*
- Ultra Lightweight PTFE Diaphragm for Maximum Sensitivity

\* 7.5 Cv and 10 Cv available in 1" size only

### OPTIONAL FEATURES

- Inlet Gauges: 0-100, 0-200
- Diagnostic Gauges: 0-100, 0-200
- Gauge Pair- Inlet & Diagnostic: 0-100, 0-200
- Purge Feature
- Optional High Alloys Available
- NPT, ANSI, DIN, & JIS Flanged Ends



### APPLICATION:

Pressure reducing valves for regulating low to high flow, very low pressure, clean compressed air and gas blanketing (gas overlay) and purge applications in stainless steel and [single use disposable vessels](#). These applications are common in upstream process, and downstream on intermediate and final product in the Biopharmaceutical, Pharmaceutical, Food & Beverage and Consumer Health & Beauty industries:

For very low pressure purge, blanket, or motive force gas regulation on Stainless steel and Single Use Disposable:

- Bioreactor or Fermentors
- Intermediate Product Separation vessels
- Intermediate Product Purification vessels
- Formulation vessels
- Product fill holding vessels

## SPECIFICATIONS

**Sizes:** 3/4" - 1" (DN20 - DN25)

### End Connections

- Tri-Clamp™, Tube Weld End, FNPT, Pipe Flanges optional

### Body Materials

- Stainless Steel — ASTM A479 316L
- Other Materials Available - Consult Factory

### Trim Material:

- Stainless Steel - ASTM A479 316LSS
- Other Materials Available - consult factory

**Main Valve Seat Material:** 316LSS/Viton, EPDM, Buna-N (FDA and USP Class VI compliant)

### Actuator Materials

- Stainless Steel

**Diaphragm Material:** Ultra Lightweight PTFE (FDA and USP Class VI compliant)

**Gaskets:** PTFE (FDA and USP Class VI)

**Service:** Tank blanketing, Purge, SUD bag inflation or integrity testing

**Shutoff:** ANSI Class VI

### Available Spring Ranges

- 0.5 – 5.5 wc (1.24 - 13.69 mbar)
- 4 – 10 wc (9.95 - 24.88 mbar)
- 8 - 15 wc (19.91 - 37.33 mbar)
- 0.5 - 1.5 psi (34.47 - 103.42 mbar)

**Minimum & Maximum Pressure Drop:** 25 psi (1,7 bar) minimum; 200 psi (13,8 bar) maximum

### Pressure Temperature Ratings (Body):

Maximum inlet 200 psi @ 100°F

**Maximum Outlet Casing Pressure:** 25 psi (1,7 bar)

### Flow Coefficients:

- 1, 2, 4, 7.5\*, 10\* Cv

\* 1" only

| Set Point                                                               | Maximum Inlet Pressure<br>(Consult Factory for Higher Inlet Pressures) |
|-------------------------------------------------------------------------|------------------------------------------------------------------------|
|                                                                         | 3/4" - 1" Size                                                         |
| 0.50" - 0.70" w.c.<br>(1.24- 1.8 mbarg)<br>(Please consult the factory) | 100 psig<br>(6.9 barg)                                                 |
| 0.75" - 1.00" w.c.<br>(1.9- 2.5 mbarg)                                  | 125 psig<br>(8.6 barg)                                                 |
| 1.05" - 10" w.c<br>(2.6-34.5 mbarg)                                     | 200 psig<br>(13.8 barg)                                                |
| Inlet Pressure                                                          |                                                                        |
| Minimum                                                                 | 20 psig (1.38 barg)                                                    |
| Recommended                                                             | ≥ 35 psig (2.41 barg)                                                  |

FLOW TABLE FOR NITROGEN

|      |      |                    |      | C <sub>v</sub> 1 |                    | C <sub>v</sub> 2 |                    | C <sub>v</sub> 4 |                    | C <sub>v</sub> 7.5* |                    | C <sub>v</sub> 10* |                    |
|------|------|--------------------|------|------------------|--------------------|------------------|--------------------|------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| psig | bar  | kg/cm <sup>3</sup> | kPa  | SCFH             | Nm <sup>3</sup> /h | SCFH             | Nm <sup>3</sup> /h | SCFH             | Nm <sup>3</sup> /h | SCFH                | Nm <sup>3</sup> /h | SCFH               | Nm <sup>3</sup> /h |
| 25   | 1.7  | 1.76               | 172  | 1,404            | 39.8               | 3,120            | 88.4               | 5,024            | 142                | 9,256               | 262                | 11,001             | 312                |
| 30   | 2.1  | 2.11               | 207  | 1,584            | 44.9               | 3,521            | 99.7               | 5,670            | 161                | 10,446              | 296                | 12,416             | 352                |
| 40   | 2.8  | 2.81               | 276  | 1,940            | 55.0               | 4,312            | 122                | 6,944            | 197                | 12,791              | 362                | 15,203             | 431                |
| 50   | 3.4  | 3.52               | 345  | 2,276            | 64.4               | 5,057            | 143                | 8,278            | 234                | 15,540              | 440                | 20,144             | 570                |
| 60   | 4.1  | 4.22               | 414  | 2,628            | 74.4               | 5,839            | 165                | 9,558            | 271                | 17,943              | 508                | 23,258             | 659                |
| 70   | 4.8  | 4.92               | 483  | 2,979            | 84.4               | 6,621            | 188                | 10,837           | 307                | 20,345              | 576                | 26,372             | 747                |
| 80   | 5.5  | 5.62               | 552  | 3,304            | 93.6               | 7,342            | 208                | 11,537           | 327                | 22,747              | 644                | 29,486             | 835                |
| 90   | 6.2  | 6.33               | 621  | 3,856            | 109                | 8,569            | 243                | 13,466           | 381                | 25,149              | 712                | 32,600             | 923                |
| 100  | 6.9  | 7.03               | 689  | 4,225            | 120                | 9,388            | 266                | 14,753           | 418                | 27,551              | 780                | 35,713             | 1011               |
| 110  | 7.6  | 7.73               | 758  | 4,593            | 130                | 10,206           | 289                | 16,039           | 454                | 29,953              | 848                | 38,827             | 1100               |
| 120  | 8.3  | 8.44               | 827  | 4,961            | 141                | 11,025           | 312                | 17,325           | 491                | 32,356              | 916                | 41,941             | 1188               |
| 130  | 9.0  | 9.14               | 896  | 5,329            | 151                | 11,843           | 335                | 18,611           | 527                | 34,758              | 984                | 45,055             | 1276               |
| 140  | 9.7  | 9.84               | 965  | 5,698            | 161                | 12,662           | 359                | 19,898           | 564                | 37,160              | 1052               | 48,168             | 1364               |
| 150  | 10.3 | 10.55              | 1034 | 6,066            | 172                | 13,480           | 382                | 21,184           | 600                | 39,562              | 1120               | 51,282             | 1452               |
| 160  | 11.0 | 11.25              | 1103 | 6,435            | 182                | 14,299           | 405                | 22,470           | 636                | 41,964              | 1188               | 54,396             | 1540               |
| 170  | 11.7 | 11.95              | 1172 | 6,803            | 193                | 15,118           | 428                | 23,756           | 673                | 44,366              | 1256               | 57,510             | 1629               |
| 180  | 12.4 | 12.66              | 1241 | 7,171            | 203                | 15,936           | 451                | 25,043           | 709                | 46,768              | 1324               | 60,624             | 1717               |
| 190  | 13.1 | 13.36              | 1310 | 7,540            | 214                | 16,755           | 475                | 26,329           | 746                | 49,171              | 1393               | 63,737             | 1805               |
| 200  | 13.8 | 14.06              | 1379 | 7,908            | 224                | 17,573           | 498                | 27,615           | 782                | 51,573              | 1461               | 66,851             | 1893               |

\* Please refer to API 2000 for calculation of flow requirements.

Conversion Factors:

Air- Multiply by 0.985

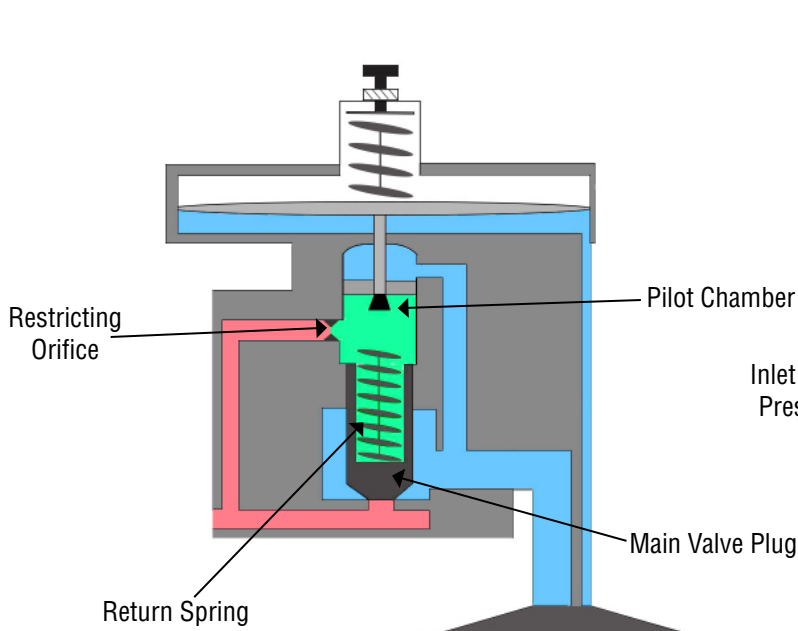
Dry CO<sub>2</sub>- Multiply by 0.797

Oxygen (sg 1.1044) Multiply by 0.937

For all other gasses, compute a correction factor which is equal to 0.985/(√SG). Then multiply by the correction factor.

\* 7.5 Cv and 10 Cv available in 1" size only

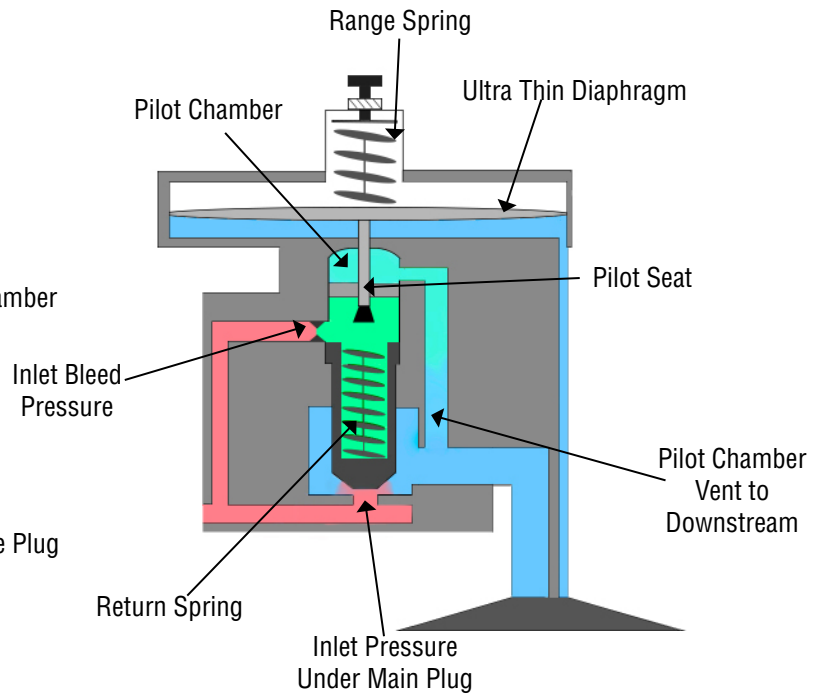
## PRINCIPLE OF OPERATION



**Figure 1 - Valve Closed**

Inlet pressure is under the main valve plug, and through the restricting orifice it is also in the pilot chamber, and above the main valve plug, Inlet pressure above the main valve plug, together with the return spring hold the plug down and closed.

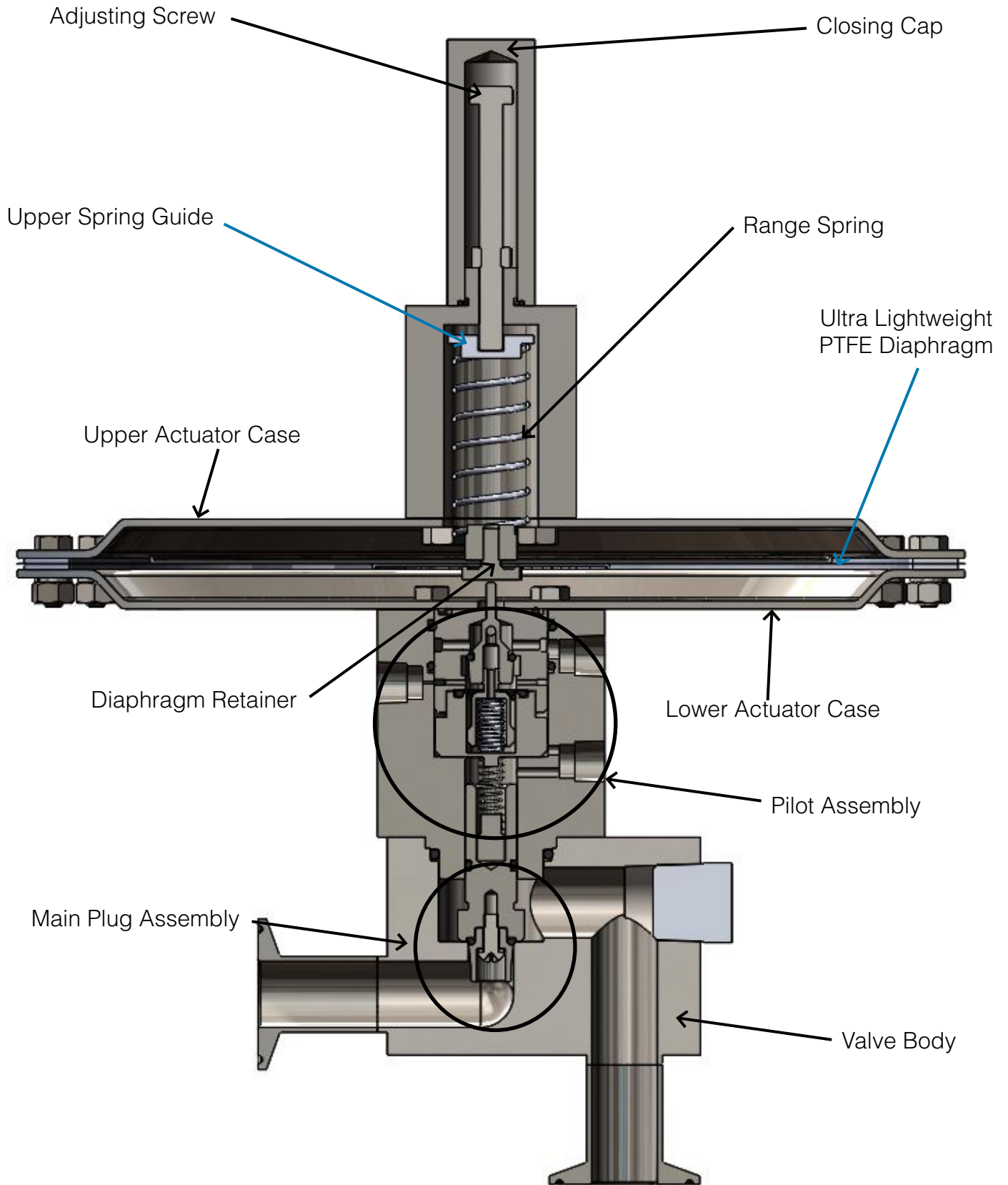
**Inlet Pressure**  
**Control Pressure**  
**Tank Pressure**



**Figure 2 - Valve Open**

As the pressure in the tank falls, the reduced pressure force on the ultra thin diaphragm allows the range spring to push down against the pilot and open the pilot seat. Pressure from the pilot chamber and above the main valve plug begins to vent to downstream. Inlet bleed pressure is unable to be replenished in the pilot chamber and above the main valve plug because of the restricting orifice and this allows the unrestricted inlet pressure below the main valve plug to open it against the return spring.

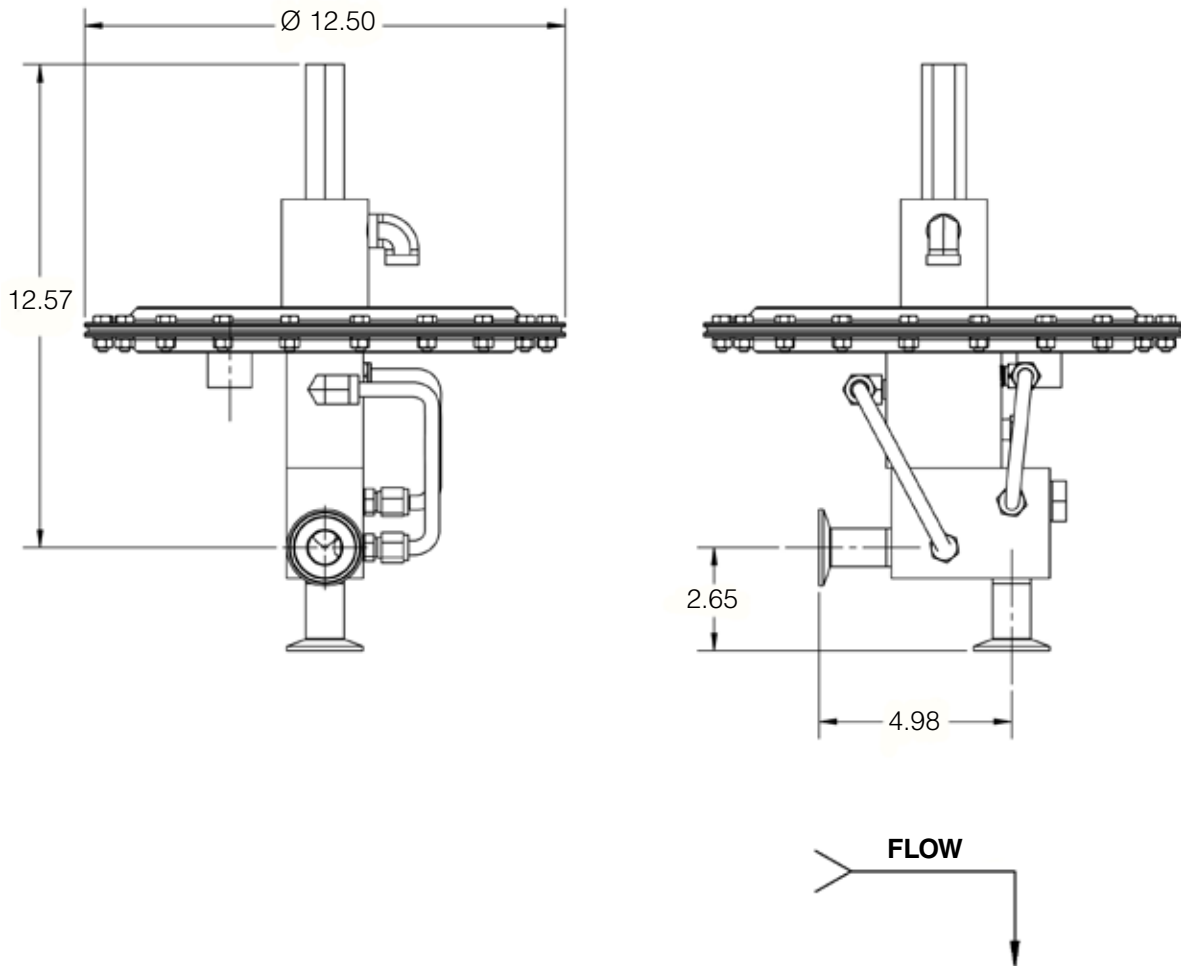
MARK 908 SERIES PILOTED TANK BLANKETING REGULATOR





DIMENSIONS

3/4" - 1" MK908



**MK908 Sanitary Tank Blanketing Regulator**

ASME BPE Trip-Clamp Ends as Shown, Other End Connections available, Consult Factory

## ORDERING SCHEMATIC FOR MK908

## Description

Model No. — Size — Body Material /

908

|     |      |
|-----|------|
| 075 | 3/4" |
| 100 | 1"   |

|    |                               |
|----|-------------------------------|
| SB | Stainless Steel (SA 479 316L) |
| ZZ | Non-Standard                  |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|----|----|----|
|   |   |   |   |   |   |   |   |   |    |    |    |

| 1 & 2 | End Conn. & Cv |   |     |
|-------|----------------|---|-----|
| C     | Tri-Clamp      | A | 1-2 |
|       |                | B | 4   |
|       |                | C | 7.5 |
|       |                | D | 10  |
|       |                |   |     |
|       |                |   |     |
| ZZ    | Non- Standard  |   |     |

| 3 & 4 | Seat & O- Ring           |   |     |
|-------|--------------------------|---|-----|
| V     | Viton (FDA only)         | A | 1-2 |
| E     | EPDM (FDA and USP CL VI) | B | 4   |
|       |                          | C | 7.5 |
|       |                          | D | 10  |

| 5 & 6 | Cv     |
|-------|--------|
| A1    | 1 Cv   |
| A2    | 2 Cv   |
| A4    | 4 Cv   |
| A7*   | 7.5 Cv |
| A9*   | 10 Cv  |

| 7 & 8 | Range                               |
|-------|-------------------------------------|
| A7    | 0.5 - 5.5" w.c. (1.24 - 13.69 mbar) |
| A8    | 4 - 10" w.c. (9.95 - 24.88 mbar)    |
| A9    | 8 - 15 wc (19.91 - 37.33 mbar)      |
| B1    | 0.5 - 1.5 psi (34.47 - 103.42 mbar) |
| ZZ    | Non-Standard                        |

| 9 & 10 | Actuator     |
|--------|--------------|
| S1     | Standard     |
| ZZ     | Non-Standard |

| 11 & 12 | Accessory                         |
|---------|-----------------------------------|
| G1      | Inlet Gauge 0-100                 |
| G2      | Inlet Gauge 0-200                 |
| D1      | Diagnostic GA. 0-100              |
| D2      | Diagnostic GA. 0-200              |
| 11      | Inlet/ Diag. Pair 0-100           |
| 22      | Inlet/ Diag. Pair 0-200           |
| P1      | Purge System                      |
| SC      | Clean for Oil Free Service        |
| XC      | Clean for Oxygen Service          |
| AA      | EN10204 3.1 Cert All Wetted Parts |
| ZZ      | Non-Standard Option               |

\* Available in 1" size only

CAUTION: The following information is subject to change. Product Numbers and Description should be checked with the Factory for accuracy before Order Entry.



## Steriflow by Jordan Valve

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