

## ANDERSON GREENWOOD H1 HAND VALVES

$\frac{3}{16}$ " (4.8 mm) and  $\frac{1}{4}$ " (6.4 mm) orifice soft seated hand valves for pressures to 6000 and 10000 psig (414 and 689 barg)



### FEATURES

- Soft seat replaceable valve operates in dirty service with repetitive bubble-tight shutoff.
- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates galling.
- Easily adjustable PTFE packing decreases replacement downtime and increases valve life.
- Dust cover protects stem from lubricant contamination.
- Safety back seating prevents stem blowout or accidental removal and provides a metal-to-metal secondary stem seal while in the fully open position.
- ENC plated 316 SS stem prevents galling or freezing of stem threads. CS valves use a 303 SS stem for 'hard-to-soft' contact, to prevent galling.
- Rolled stem and bonnet threads provide additional strength.
- Mirror stem finish in the packing area provides smooth operation and extends packing life.
- Straight-through flow path means high flow capacity, bi-directional flow and rodding capabilities.
- Metal-to-metal body-to-bonnet seal in constant compression prevents bonnet thread corrosion, eliminates possible tensile breakage and gives a reliable seal point.

### GENERAL APPLICATION

Designed for maximum system reliability, these valves are built for reliable, bubble-tight service with a variety of end connections, seat materials and stem packing, in SS or CS and are available to meet NACE requirements.

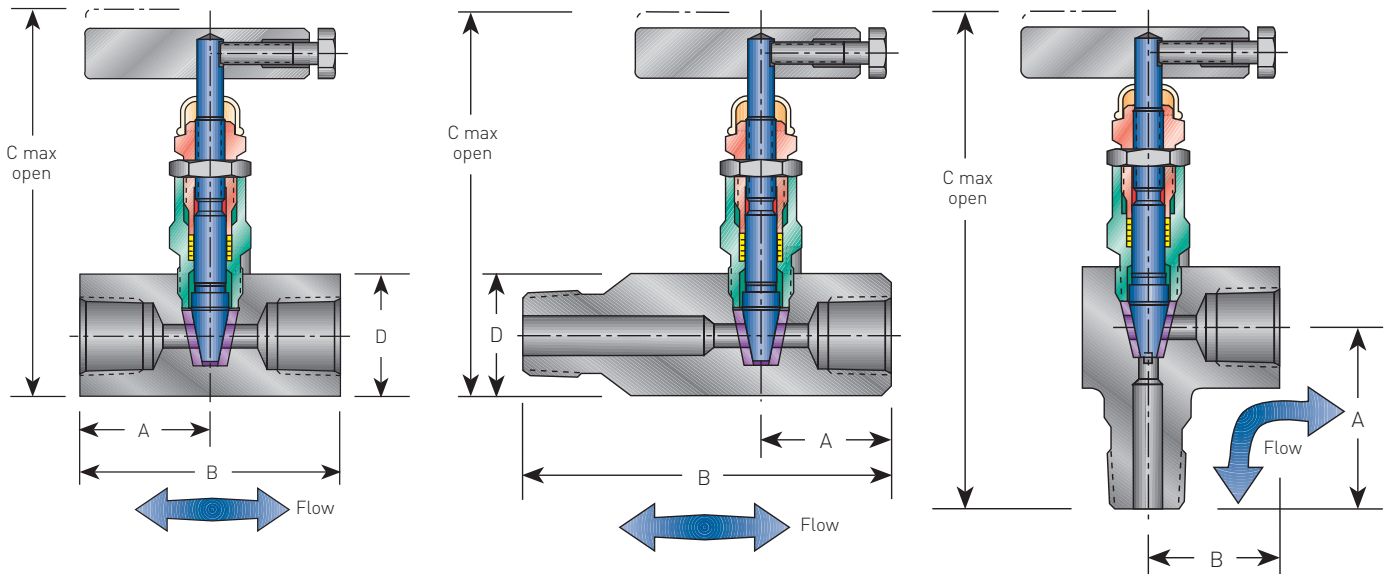
### TECHNICAL DATA

|                     |                                       |
|---------------------|---------------------------------------|
| Materials:          | CS, SS, Monel, Hastelloy <sup>®</sup> |
| Seats:              | Soft                                  |
| Connections:        | $\frac{1}{4}$ "; $\frac{1}{2}$ " NPT  |
| Pressure (max.):    | 10000 psig (689 barg)                 |
| Temperature (max.): | 500°F (260°C)                         |

# ANDERSON GREENWOOD H1 HAND VALVES

## H1 SPECIFICATIONS<sup>[3]</sup>

$\frac{3}{16}$  inch (4.8 mm) and  $\frac{1}{4}$  inch (6.4 mm) orifice: 6000 psig (414 barg)



### FNPT BY FNPT (in inches [mm])

| Valve <sup>[1]</sup>                  | A              | B              | C <sup>[2]</sup> | D              |
|---------------------------------------|----------------|----------------|------------------|----------------|
| $\frac{1}{4}$ " F x $\frac{1}{4}$ " F | 1.05<br>[26.7] | 2.10<br>[53.3] | 3.70<br>[94.0]   | 1.00<br>[25.4] |
| $\frac{1}{2}$ " F x $\frac{1}{2}$ " F | 1.35<br>[34.3] | 2.70<br>[68.6] | 3.85<br>[97.8]   | 1.25<br>[31.7] |

### FNPT BY MNPT (in inches [mm])

| Valve <sup>[1]</sup>                  | A              | B              | C <sup>[2]</sup> | D              |
|---------------------------------------|----------------|----------------|------------------|----------------|
| $\frac{1}{4}$ " F x $\frac{1}{4}$ " M | 1.18<br>[30.0] | 3.50<br>[88.9] | 3.70<br>[94.0]   | 1.00<br>[25.4] |
| $\frac{1}{4}$ " F x $\frac{1}{2}$ " M | 1.18<br>[30.0] | 3.50<br>[88.9] | 3.70<br>[94.0]   | 1.00<br>[25.4] |
| $\frac{1}{2}$ " F x $\frac{1}{2}$ " M | 1.35<br>[34.3] | 3.50<br>[88.9] | 3.85<br>[97.8]   | 1.25<br>[31.7] |

### FNPT BY MNPT (angle) (in inches [mm])

| Valve                                 | A              | B              | C               |
|---------------------------------------|----------------|----------------|-----------------|
| $\frac{1}{2}$ " F x $\frac{1}{2}$ " M | 1.73<br>[43.9] | 1.40<br>[35.6] | 5.00<br>[127.0] |

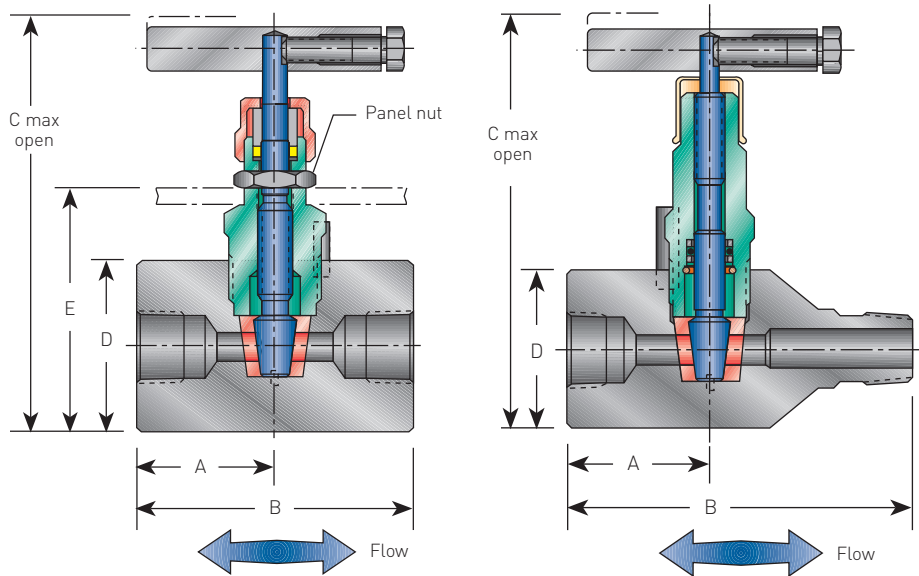
## NOTES

1. Approximate valve weight: 1.3 lb (0.6 kg).
2. Valve  $C_v$  maximum  
 $\frac{3}{16}$  inch (4.8 mm) - 0.83.  
 $\frac{1}{4}$  inch (6.4 mm) - 1.40.
3. For Hastelloy® and -SG3 call factory for dimensions and weights.
4. Hastelloy is a registered trademark of Haynes International.

# ANDERSON GREENWOOD H1 HAND VALVES

## H1 SPECIFICATIONS<sup>[3]</sup>

¼ inch (6.4 mm) orifice: 10000 psig (689 barg)



### DIMENSIONS (in inches [mm])

| Valve <sup>[1]</sup>                      | A              | B              | C <sup>[2]</sup> | D              | E              |
|---|----------------|----------------|------------------|----------------|----------------|
| O-ring packed, PTFE packed<br>½" F x ½" F | 1.50<br>(38.1) | 3.00<br>(76.2) | 4.82<br>(122.4)  | 1.75<br>(44.5) | 1.98<br>(50.3) |
| O-ring packed<br>½" F x ½" M              | 1.38<br>(35.1) | 3.70<br>(94.0) | 4.82<br>(122.4)  | 1.75<br>(44.5) | -              |

### NOTES

1. Approximate valve weight:  
Female x female 2.7 lb [1.2 kg].  
Male x female 3.0 lb [1.3 kg].
2. Valve C<sub>v</sub> 1.4 maximum.
3. For Hastelloy® and -SG3 call factory for dimensions and weights.

# ANDERSON GREENWOOD H1 HAND VALVES

## H1 Specifications - 3/16 inch (4.8 mm) and 1/4 inch (6.4 mm) orifice: 6000 psig (414 barg)

### STANDARD MATERIALS

| Valve            | Body and bonnet <sup>(1)</sup> | Stem                         | Packing <sup>(2)</sup>                         | Seat <sup>(3)</sup> |
|------------------|--------------------------------|------------------------------|--|---------------------|
| CS               | A108                           | A581-303                     | PTFE or FKM<br>O-ring with PTFE<br>backup ring | Delrin <sup>®</sup> |
| SS               | A479-316                       | A276-316<br>Chrome plated    | PTFE or FKM<br>O-ring with PTFE<br>backup ring | Delrin <sup>®</sup> |
| SG <sup>4</sup>  | A479-316                       | Monel <sup>®</sup> 400       | PTFE   | Delrin <sup>®</sup> |
| SG3 <sup>7</sup> | Hastelloy <sup>®</sup> C-276   | Hastelloy <sup>®</sup> C-276 | PTFE   | Delrin <sup>®</sup> |

## H1 Specifications - 1/4 inch (6.4 mm) orifice: 10000 psig (689 barg)

### STANDARD MATERIALS

| Valve            | Body and bonnet <sup>(1)</sup> | Stem                         | Packing <sup>(2)</sup>                         | Seat <sup>(3)</sup> |
|------------------|--------------------------------|------------------------------|--|---------------------|
| CS               | A108                           | A581-303                     | PTFE or FKM<br>O-ring with PTFE<br>backup ring | Delrin <sup>®</sup> |
| SS               | A479-316                       | Monel <sup>®</sup> K500      | PTFE or FKM<br>O-ring with PTFE<br>backup ring | Delrin <sup>®</sup> |
| SG <sup>4</sup>  | A479-316                       | Monel <sup>®</sup> K500      | PTFE or FKM<br>O-ring with PTFE<br>backup ring | Delrin <sup>®</sup> |
| SG3 <sup>7</sup> | Hastelloy <sup>®</sup> C-276   | Hastelloy <sup>®</sup> C-276 | PTFE or FKM<br>O-ring with PTFE<br>backup ring | Delrin <sup>®</sup> |

### NOTES

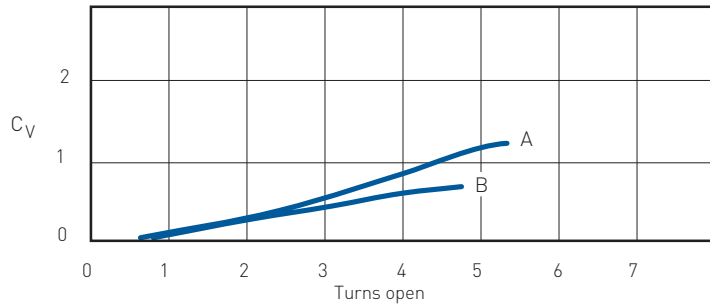
1. CS is zinc chromate plated to prevent corrosion.
2. PTFE packing is patented.
3. PCTFE (Polychlorotrifluoroethylene is the exact equivalent of Kel-F<sup>®</sup>), PEEK, and PTFE seats are also available.
4. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions < 50 mg/l [ppm]) and NACE MR0103.
5. Monel<sup>®</sup> is a registered trademark of Special Metals Corporation.
6. Delrin<sup>®</sup>, Kel-F<sup>®</sup> are all registered trademarks of E.I. duPont de Nemours and Company.
7. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).

### BONNET ASSEMBLIES

H1 series valves feature a soft-seated bonnet assembly which has a one-piece rotating stem and plug. The stem threads are rolled and lubricated to prevent galling and reduce operating torque. It is available with patented PTFE packing, which is adjustable in service or with a FKM O-ring and PTFE back-up ring. A protective dust cap is fitted to contain stem lubricant and prevent the influx of contaminants. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service.

# ANDERSON GREENWOOD H1 HAND VALVES

## H1 Specifications - Flow characteristics - 3/16 inch (4.8 mm) and 1/4 inch (6.4 mm) orifice



A = 1/4 inch (6.4 mm) orifice, valve Cv 1.4 maximum  
 B = 3/16 inch (4.8 mm) orifice, valve Cv .83 maximum

### LIQUIDS

$$Q_L = C_V \sqrt{\frac{(P_1 - P_2) (62.4)}{\rho}}$$

#### Where:

- Q<sub>L</sub> = Flow (gpm)
- Q<sub>v</sub> = Flow (scfm)
- ρ = Density of liquid (lb/ft<sup>3</sup>)
- P<sub>1</sub> = Upstream pressure (psia)
- P<sub>2</sub> = Downstream pressure (psia)
- T = Flowing temperature (°R) [°R = °F + 460]
- ρ (water) = 62.4 lb/ft<sup>3</sup> at 60°F (16°C)
- S.G = Specific gravity of gas (M.W. of air/28.96)
- S.G air = 1000
- S.G nitrogen = 0.967
- S.G oxygen = 1.105
- S.G helium = 0.138
- S.G hydrogen = 0.0696

### GASES - where P<sub>2</sub> > .5P<sub>1</sub>

$$Q_V = 23.18 C_V \sqrt{\frac{(P_1 - P_2) P_2}{(S.G)T}}$$

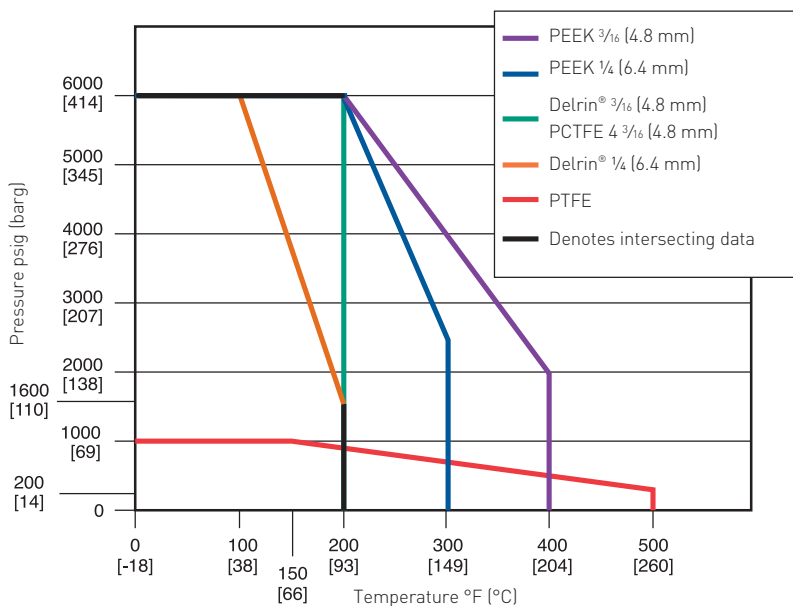
### GASES - where P<sub>2</sub> < .5P<sub>1</sub>

$$Q_V = \frac{(11.59) P_1 C_V}{\sqrt{(S.G)T}}$$

# ANDERSON GREENWOOD H1 HAND VALVES

## H1 Specifications - 3/16 inch (4.8 mm) and 1/4 inch (6.4 mm) orifice: 6000 psig (414 barg)

PRESSURE VS. TEMPERATURE



### PRESSURE AND TEMPERATURE RATINGS

| Valve                                 | 3/16 inch (4.8 mm) orifice  |
|---------------------------------------|---|
| Delrin® and PCTFE <sup>[1]</sup> seat | 6000 psig at 200°F (414 barg at 93°C)   |
| PEEK seat                             | 6000 psig at 200°F (414 barg at 93°C)<br>2000 psig at 400°F (138 barg at 204°C) |
| PTFE seat                             | 1000 psig at 150°F (69 barg at 66°C)<br>200 psig at 500°F (14 barg at 260°C)    |

| Valve        | 1/4 inch (6.4 mm) orifice   |
|--------------|---|
| Delrin® seat | 6000 psig at 100°F (414 barg at 38°C)<br>1600 psig at 200°F (110 barg at 93°C)  |
| PEEK seat    | 6000 psig at 200°F (414 barg at 93°C)<br>2500 psig at 300°F (172 barg at 149°C) |

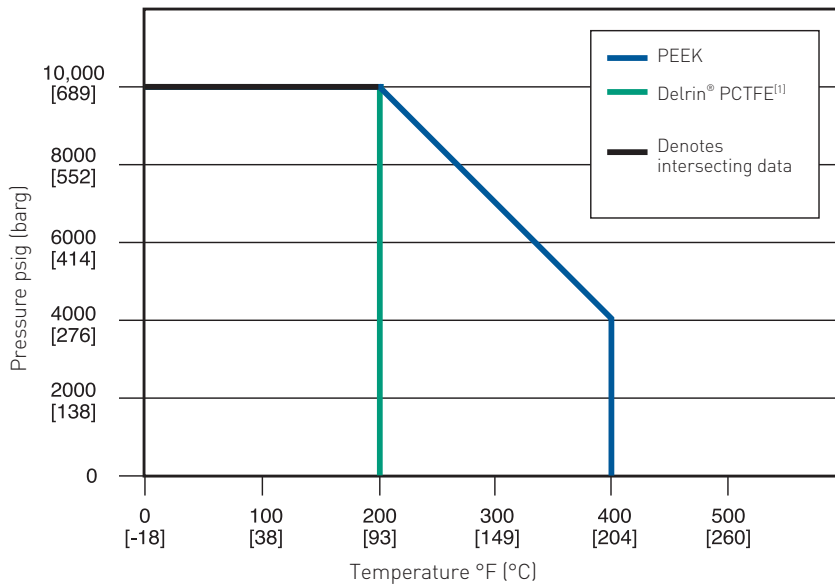
### NOTE

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Minimum temperature for PTFE bonnets is -70°F (-57°C).

# ANDERSON GREENWOOD H1 HAND VALVES

## H1 Specifications - 1/4 inch (6.4 mm) orifice: 10000 psig (689 barg)

### PRESSURE VS. TEMPERATURE



### PRESSURE AND TEMPERATURE RATINGS

| Valve                    | 1/4 inch (6.4 mm) orifice  |
|--------------------------|--|
| Delrin® and PCTFE¹¹ seat | 10000 psig at 200°F (689 barg at 93°C)   |
| PEEK seat                | 10000 psig at 200°F (689 barg at 93°C)<br>4000 psig at 400°F (276 barg at 204°C) |

### NOTES

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Minimum temperature for PTFE bonnets is -70°F (-57°C).

# ANDERSON GREENWOOD H1 HAND VALVES

## SELECTION GUIDE - H1 3/16-inch (4.8 mm) and 1/4-inch (6.4 mm) orifice: 6000 psig (414 barg)

| Example:   | H1                                    | V | D | S | -44Q | B | L | SG |
|--|---------------------------------------|---|---|---|------|---|---|----|
| <b>Packing</b>   |                                       |   |   |   |      |   |   |    |
| V  | PTFE                                  |   |   |   |      |   |   |    |
| R  | FKM O-ring with PTFE backup ring      |   |   |   |      |   |   |    |
| <b>Seat</b>  |                                       |   |   |   |      |   |   |    |
| D  | Delrin® (standard)                    |   |   |   |      |   |   |    |
| K  | PCTFE <sup>(1)</sup>                  |   |   |   |      |   |   |    |
| E  | PEEK                                  |   |   |   |      |   |   |    |
| V  | PTFE                                  |   |   |   |      |   |   |    |
| <b>Material</b>  |                                       |   |   |   |      |   |   |    |
| C  | CS                                    |   |   |   |      |   |   |    |
| S  | 316 SS                                |   |   |   |      |   |   |    |
| M  | Monel® (PTFE packed only)             |   |   |   |      |   |   |    |
| S  | Hastelloy®                            |   |   |   |      |   |   |    |
| Special alloys available on request.                           |                                       |   |   |   |      |   |   |    |
| <b>Connections (bi-directional)</b>                            |                                       |   |   |   |      |   |   |    |
| <b>3/16 inch (4.8 mm) orifice</b>                              |                                       |   |   |   |      |   |   |    |
| 2  | 1/4 inch F x 1/4 inch F               |   |   |   |      |   |   |    |
| 22   | 1/4 inch F x 1/4 inch M               |   |   |   |      |   |   |    |
| 24   | 1/4 inch F x 1/4 inch M               |   |   |   |      |   |   |    |
| 4Q   | 1/2 inch F x 1/2 inch F               |   |   |   |      |   |   |    |
| 44Q  | 1/2 inch F x 1/2 inch M               |   |   |   |      |   |   |    |
| 44QA   | 1/2 inch F x 1/2 inch M (Angle)       |   |   |   |      |   |   |    |
| <b>1/4 inch (6.4 mm) orifice (Delrin® and PEEK Seats only)</b> |                                       |   |   |   |      |   |   |    |
| 4QR  | 1/2 inch F x 1/2 inch F               |   |   |   |      |   |   |    |
| 44QR   | 1/2 inch F x 1/2 inch M               |   |   |   |      |   |   |    |
| <b>Connection style</b>  |                                       |   |   |   |      |   |   |    |
| B  | Female socket weld                    |   |   |   |      |   |   |    |
| C  | Male socket weld                      |   |   |   |      |   |   |    |
| <b>Length</b>  |                                       |   |   |   |      |   |   |    |
| L  | Extension length for 4" of insulation |   |   |   |      |   |   |    |
| <b>Options</b>   |                                       |   |   |   |      |   |   |    |
| BL   | Bonnet lock device                    |   |   |   |      |   |   |    |
| HD   | Hydro testing (MSS-SP-61)             |   |   |   |      |   |   |    |
| LAT  | Lockable anti tamper                  |   |   |   |      |   |   |    |
| OC00   | Oxygen clean (OC)                     |   |   |   |      |   |   |    |
| OC01   | Gaseous oxygen clean (GOC)            |   |   |   |      |   |   |    |
| PMI00  | PMI body only                         |   |   |   |      |   |   |    |
| SG   | (SG) NACE edition 2003/MR0103         |   |   |   |      |   |   |    |
| SG3  | (SG) MR0175/ISO15156-3 latest         |   |   |   |      |   |   |    |
| SS   | All 316 SS construction               |   |   |   |      |   |   |    |

### NOTE

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.



# ANDERSON GREENWOOD H1 HAND VALVES

## SELECTION GUIDE - H1 1/4-inch (6.4 mm) orifice: 10.000 psig (689 barg)

| Example:                            | H1  | V | D | C | -4R10 | -SG |
|-------------------------------------|---|---|---|---|-------|-----|
| <b>Packing</b>                      |   |   |   |   |       |     |
| <b>V</b>                            | PTFE (packed bonnet available in CS only) |   |   |   |       |     |
| <b>R</b>                            | FKM O-ring with PTFE backup ring          |   |   |   |       |     |
| <b>Seat</b>                         |   |   |   |   |       |     |
| <b>D</b>                            | Delrin® (standard)                        |   |   |   |       |     |
| <b>K</b>                            | PCTFE <sup>1)</sup>                       |   |   |   |       |     |
| <b>E</b>                            | PEEK                                      |   |   |   |       |     |
| <b>Material</b>                     |   |   |   |   |       |     |
| <b>C</b>                            | CS  |   |   |   |       |     |
| <b>S</b>                            | 316 SS                                    |   |   |   |       |     |
| <b>S</b>                            | Hastelloy®                                |   |   |   |       |     |
| <b>Connections (bi-directional)</b> |   |   |   |   |       |     |
| <b>4R10</b>                         | 1/4 inch F x 1/4 inch F                   |   |   |   |       |     |
| <b>44R10</b>                        | 1/4 inch M x 1/4 inch F                   |   |   |   |       |     |
| <b>Options</b>                      |   |   |   |   |       |     |
| <b>BL</b>                           | Bonnet lock device                        |   |   |   |       |     |
| <b>HD</b>                           | Hydro testing (MSS-SP-61)                 |   |   |   |       |     |
| <b>LAT</b>                          | Lockable anti tamper                      |   |   |   |       |     |
| <b>OC00</b>                         | Oxygen clean (OC)                         |   |   |   |       |     |
| <b>OC01</b>                         | Gaseous oxygen clean (GOC)                |   |   |   |       |     |
| <b>PMI00</b>                        | PMI body only                             |   |   |   |       |     |
| <b>SG</b>                           | (SG) NACE edition 2003/MR0103             |   |   |   |       |     |
| <b>SG3</b>                          | (SG) MR0175/ISO15156-3 latest             |   |   |   |       |     |
| <b>SS</b>                           | All 316 SS construction                   |   |   |   |       |     |

### NOTE

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

