

## Soft Seated Hand Valves – H1

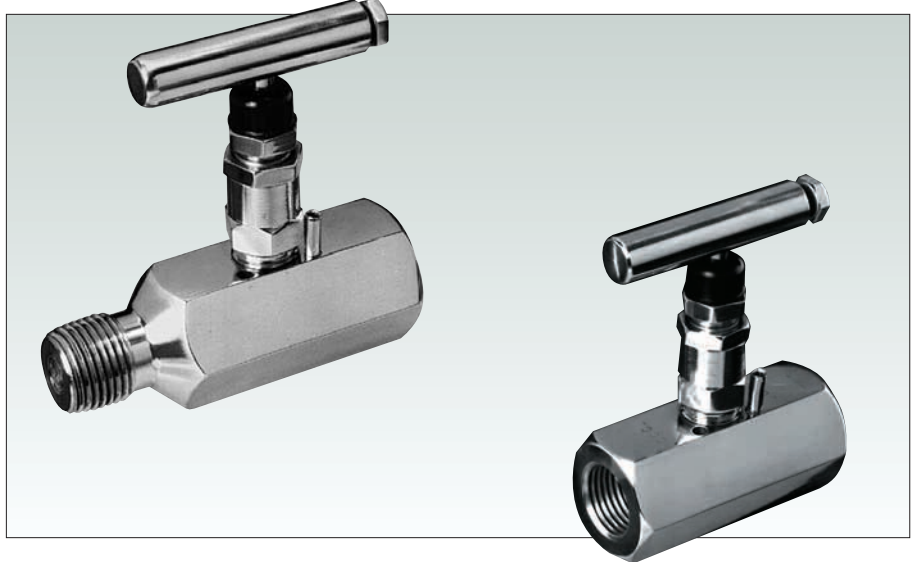
$\frac{3}{16}$ -inch [4.8 mm] and  $\frac{1}{4}$ -inch [6.4 mm] Orifice: 6000 and 10,000 psig [414 and 689 barg]

### Product Overview

The H1 Series valves are designed for maximum system reliability. The design criteria includes repetitive bubble-tight closure, safety, and a long, trouble-free life with easy maintenance.

Anderson Greenwood utilizes a replaceable soft seat that gives premium tightness at closure, even in dirty service. The H1's straight-through rising plug design provides high capacity with bi-directional flow, and is also roddable for easy cleaning.

These valves are standard with a variety of end connections, seat materials, and stem packing, in SS or CS, and are available to meet the requirements of NACE. All valves are 100 percent pressure tested with material traceability of the body available on request.



### Features and Benefits

- **Replaceable soft seat** allows replacement of the soft seat insert without removing the valve from the line. It operates in dirty service with repetitive bubble-tight shutoff.
- **Packing below threads** prevents lubricant washout, thread corrosion, and keeps solids from entering the thread area, which can cause galling. It also prevents process contamination.
- **Adjustable Teflon® packing** adjusts easily: loosen jam nut, tighten bushing slightly, then retighten jam nut. Decreases packing replacement downtime and increases valve life.
- **Dust cover** prevents lubricant washout and keeps contaminants (dirt, rain, etc.) out of bonnet assembly.
- **Safety back seating** prevents stem blowout or accidental removal while in operation and provides a metal-to-metal secondary stem seal while in the full open position.
- **Chrome plating of 316 SS stem** prevents galling or freezing of stem threads when similar metals mate. CS valves use a 303 SS stem.
- **Rolled threads** provide additional thread strength. The stem, bonnet, and male NPT threads are rolled, not cut.
- **Mirror stem finish** burnished to a 16 RMS finish in the packing area enables smooth stem operation and extends packing life.
- **Straight-through flow path** provides high flow capacity, bi-directional flow, and rodding capabilities.
- **Body-to-bonnet seal** is metal-to-metal in constant compression below the bonnet threads. Prevents bonnet thread corrosion, eliminates possible tensile breakage of bonnet, and gives a reliable seal point.

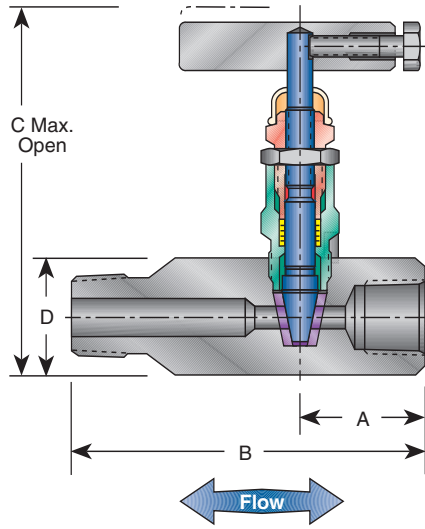
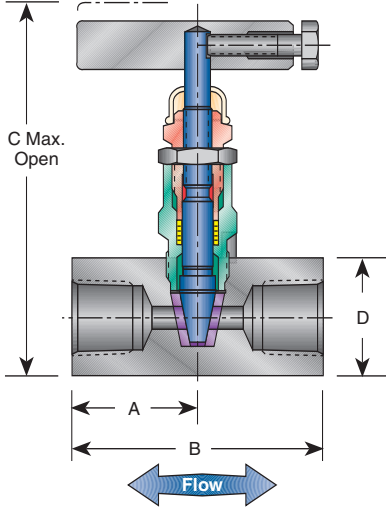
### Note

1. Teflon® is a registered trademark of E.I. duPont de Nemours and Company.

## 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]

### Dimensions, inches [mm]



#### FNPT by FNPT

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

#### FNPT by MNPT

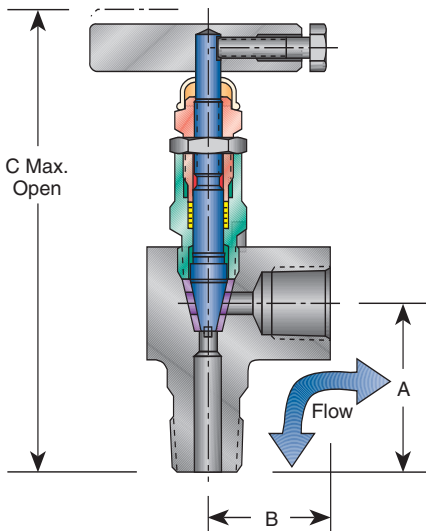
Valve <sup>1</sup>	A	B	C <sup>2</sup>	D
$\frac{1}{4}$ " F x $\frac{1}{4}$ " M	1.18 [30.0]	3.50 [88.9]	3.70 [94.0]	1.00 [25.4]
$\frac{1}{4}$ " F x $\frac{1}{2}$ " M	1.18 [30.0]	3.50 [88.9]	3.70 [94.0]	1.00 [25.4]
$\frac{1}{2}$ " F x $\frac{1}{2}$ " M	1.35 [34.3]	3.50 [88.9]	3.85 [97.8]	1.25 [31.7]

#### 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.

#### FNPT by MNPT (Angle)

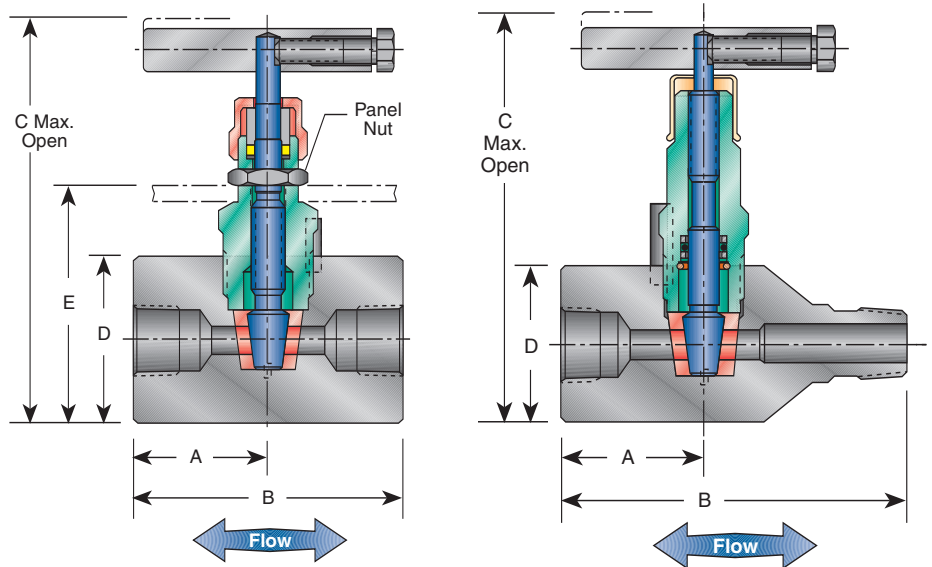
Valve	A	B	C
$\frac{1}{2}$ " F x $\frac{1}{2}$ " M	1.73 [43.9]	1.40 [35.6]	5.00 [127.0]



## H1 Specifications<sup>3</sup>

1/4-inch [6.4 mm] Orifice: 10,000 psig [689 barg]

### Dimensions, inches [mm]



### Dimensions

Valve <sup>1</sup>	A	B	C <sup>2</sup>	D	E
O-ring Packed, Teflon® Packed 1/2" F x 1/2" F	1.50 [38.1]	3.00 [76.2]	4.82 [122.4]	1.75 [44.5]	1.98 [50.3]
O-ring Packed 1/2" F x 1/2" M	1.38 [35.1]	3.70 [94.0]	4.82 [122.4]	1.75 [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.

## H1 Specifications

### Standard Materials

H1 – 3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 psig [414 barg]

Valve	Body and Bonnet <sup>1</sup>	Stem	Packing <sup>2</sup>	Seat <sup>3</sup>
CS	A108	A581-303	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SS	A479-316	A276-316 Chrome Plated	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG <sup>4</sup>	A479-316	Monel® 400	Teflon®	Delrin®
SG3 <sup>7</sup>	Hastelloy® C-276	Hastelloy® C-276	Teflon®	Delrin®

### Standard Materials

H1 – 1/4-inch [6.4 mm] Orifice: 10,000 psig [689 barg]

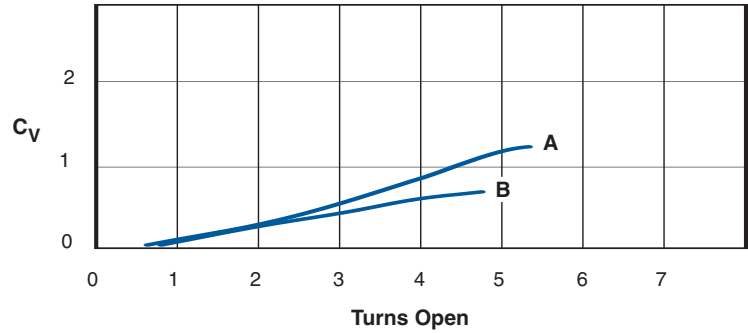
Valve	Body and Bonnet <sup>1</sup>	Stem	Packing <sup>2</sup>	Seat <sup>3</sup>
CS	A108	A581-303	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SS	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG <sup>4</sup>	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG3 <sup>7</sup>	Hastelloy® C-276	Hastelloy® C-276	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®

### Notes

1. CS is zinc cobalt plated to prevent corrosion.
2. Teflon® packing is patented.
3. PCTFE (Polychlorotrifluoroethylene is the exact equivalent of Kel-F®), PEEK, and Teflon® seats are also available.
4. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2005.
5. Monel® is a registered trademark of Special Metals Corporation.
6. Delrin®, Kel-F® and Teflon® are all registered trademarks of E.I. duPont de Nemours and Company.
7. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions > 50 mg/l [ppm]).

## 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  $C_v$  1.4 maximum  
B = 3/16-inch [4.8 mm] orifice, valve  $C_v$  .83 maximum

### Formulas

#### Liquids

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

#### Gases (Where $P_2 > .5P_1$ )

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

#### Gases (Where $P_2 < .5P_1$ )

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

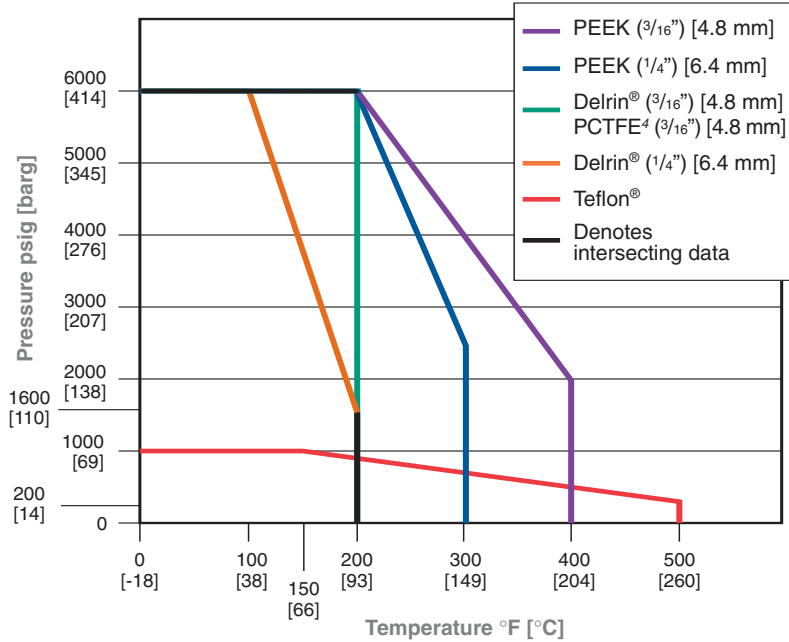
#### Where:

- $Q_L$  = Flow (gpm)
- $Q_V$  = Flow (scfm)
- $\rho$  = Density of Liquid (lb/ft<sup>3</sup>)
- $P_1$  = Upstream Pressure (psia)
- $P_2$  = Downstream Pressure (psia)
- $T$  = Flowing Temperature (°R)  
(°R = °F + 460)
- $\rho$  (Water) = 62.4 lb/ft<sup>3</sup> @ 60°F [16°C]
- S.G. = Specific Gravity of Gas  
(M.W. of Air/28.96)
- S.G. Air = 1.000
- S.G. Nitrogen = 0.967
- S.G. Oxygen = 1.105
- S.G. Helium = 0.138
- S.G. Hydrogen = 0.0696

## H1 Specifications

$\frac{3}{16}$ -inch [4.8 mm] and  $\frac{1}{4}$ -inch [6.4 mm] Orifice: 6000 psig [414 barg]

### Pressure vs. Temperature



### Pressure and Temperature Ratings

Valve	$\frac{3}{16}$ -inch [4.8 mm] Orifice	
Delrin® and PCTFE <sup>1</sup> Seat	6000 psig @ 200°F	[414 barg @ 93°C]
PEEK Seat	6000 psig @ 200°F	[414 barg @ 93°C]
	2000 psig @ 400°F	[138 barg @ 204°C]
Teflon® Seat	1000 psig @ 150°F	[69 barg @ 66°C]
	200 psig @ 500°F	[14 barg @ 260°C]

Valve	$\frac{1}{4}$ -inch [6.4 mm] Orifice	
Delrin® Seat	6000 psig @ 100°F	[414 barg @ 38°C]
	1600 psig @ 200°F	[110 barg @ 93°C]
PEEK Seat	6000 psig @ 200°F	[414 barg @ 93°C]
	2500 psig @ 300°F	[172 barg @ 149°C]

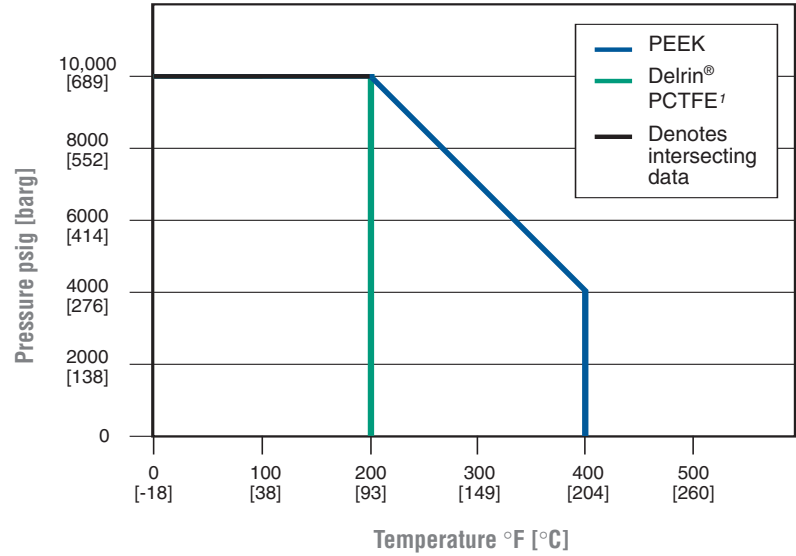
### Note

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

## H1 Specifications

1/4-inch [6.4 mm] Orifice: 10,000 psig [689 barg]

### Pressure vs. Temperature



### Pressure and Temperature Ratings

Valve	1/4-inch [6.4 mm] Orifice	
Delrin® and PCTFE' Seat	10,000 psig @ 200°F	[689 barg @ 93°C]
PEEK Seat	10,000 psig @ 200°F	[689 barg @ 93°C]
	4,000 psig @ 400°F	[276 barg @ 204°C]

### Note

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

## H1 Specifications

3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 psig [414 barg]

### Ordering Information

**H1      V      D      S      - 44Q      - SG**

#### Packing

- V - Teflon®
- R - Viton® O-ring with Teflon® backup ring

#### Seat

- D - Delrin® (standard)
- K - PCTFE<sup>1</sup>
- E - PEEK
- V - Teflon®

#### Material

- C - CS
  - S - 316 SS
  - M - Monel® (Teflon® packed only)
  - J - Hastelloy®
- Special alloys available on request.

### Connections (Bidirectional)

#### 3/16-inch [4.8 mm] Orifice

- 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 1/2-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)

#### 1/4-inch [6.4 mm] Orifice (Delrin® and PEEK Seats only)

- 4QR - 1/2-inch F x 1/2-inch F
- 44QR - 1/2-inch F x 1/2-inch M

### Options

- AL - Arctic Lubricant (low temperature service -70°F) - not available for CS valves
- BL - Bonnet Lock Device (patent protected) (page 21)
- PHB - Phenolic Black Round Handle
- SG - (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2005 (316 SS only)
- SG3 - (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions > 50 mg/l [ppm])
- SP - Special Requirements - please specify

### Note

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



## H1 Specifications

H1 1/4-inch [6.4 mm] Orifice: 10,000 psig [689 barg]

### Ordering Information

	H1	V	D	C	- 4R10	- SP
<b>Packing</b>						
		V – Teflon® (Packed bonnet available in CS only)				
		R – Viton® O-ring with Teflon® backup ring				
<b>Seat</b>						
			D – Delrin® (standard)			
			K – PCTFE <sup>1</sup>			
			E – PEEK			
<b>Body Materials</b>						
			C – CS			
			S – 316 SS			
			J – Hastelloy®			
<b>Connections (Bidirectional)</b>						
					4R10 – 1/2-inch F x 1/2-inch F	
					44R10 – 1/2-inch M x 1/2-inch F	
<b>Options</b>						
					AL – Arctic Lubricant (low temperature service -70°F) - not available for CS valves	
					SG – (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2005 (316 SS only)	
					SG3 – (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions > 50 mg/l [ppm])	
					SP – Special Requirements - please specify	

### Note

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

## Large Bore Hand Valves – H1

$\frac{3}{8}$ -inch [9.5 mm] Diameter Orifice, General Purpose Valve



### Product Overview

The  $\frac{3}{8}$ -inch [9.5 mm] general purpose, soft-seated hand valve is designed for safe, repetitive bubble-tight closure, simple maintenance, and a long, reliable cycle life.

For premium tightness at closure, even in dirty service, a replaceable soft seat is incorporated on these valves. The straight-through, rising-plug design provides high capacity with bi-directional flow, and is roddable for easy cleaning.

This valve is standard with a variety of end connections, seat materials, and stem packing, in SS or CS, and is available to meet the requirements of NACE. All valves are 100 percent pressure tested with material traceability of the body available on request.

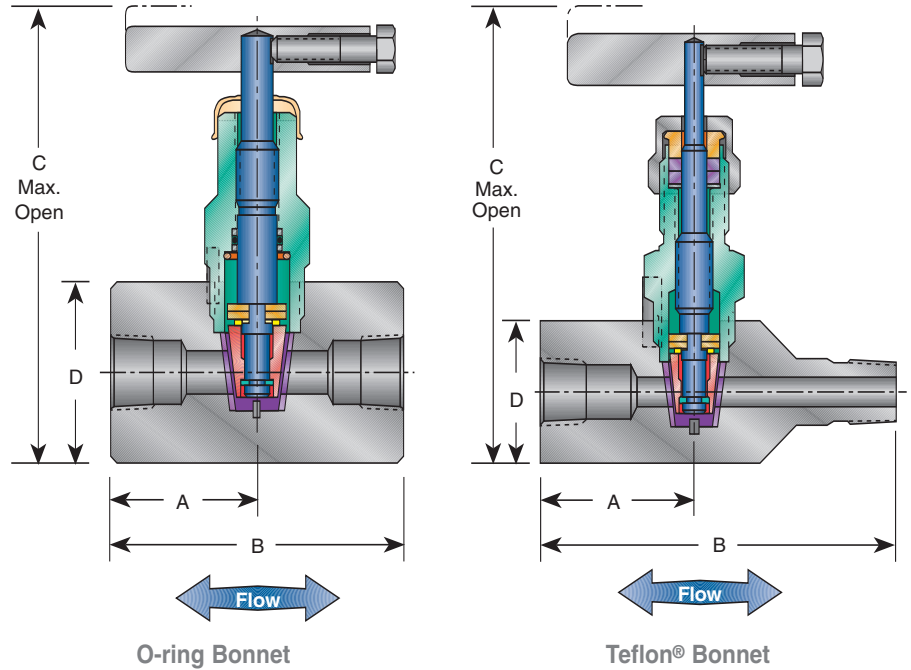
### Features and Benefits

- **Replaceable soft seat** allows replacement of the soft seat insert without removing the valve from the line. It operates in dirty service with repetitive bubble-tight shutoff.
- **Packing below threads** prevents lubricant washout, thread corrosion, and keeps solids from entering the thread area, which can cause galling. It also prevents process contamination.
- **Dust cover** prevents lubricant washout and keeps contaminants (dirt, rain, etc.) out of bonnet assembly.
- **Safety back seating** prevents stem blowout and accidental removal while in operation.
- **Chrome plating of 316 SS stem** prevents galling or freezing of stem threads when similar metals mate. CS valves use a 303 SS stem.
- **Rolled threads** provide additional thread strength. The stem, bonnet, and male NPT threads are rolled, not cut.
- **Mirror stem finish** burnished to a 16 RMS finish in the packing area enables smooth stem operation and extends packing life.
- **Straight-through flow path** provides high flow capacity, bi-directional flow, and rodding capabilities.
- **Body-to-bonnet seal** is metal-to-metal in constant compression, isolating the bonnet threads from process fluid corrosion. Eliminates possible tensile breakage of bonnet, and gives a reliable seal point.

## H1 Specifications<sup>2</sup>

3/8-inch [9.5 mm] Diameter Orifice

### Dimensions, inches [mm]



### Dimensions

End Connection <sup>1</sup>	A	B	C O-ring	C Teflon®	D	Valve Weight lb [kg]
1/2" F x 1/2" F	1.50 [38.1]	3.00 [76.2]	5.76 [146.3]	5.49 [139.4]	1.75 sq [44.5]	3.6 [1.6]
1/2" M x 1" F	1.88 [47.6]	4.38 [111.3]	5.76 [146.3]	5.49 [139.4]	1.75 sq [44.5]	3.6 [1.6]
3/4" F x 3/4" F	2.00 [50.8]	4.00 [101.6]	6.26 [159.0]	6.00 [152.4]	2.25 hex [57.2]	5.4 [2.5]
3/4" M x 3/4" F	2.00 [50.8]	5.00 [127.0]	6.26 [159.0]	6.00 [152.4]	2.25 hex [57.2]	5.4 [2.5]
1" F x 1" F	2.00 [50.8]	4.00 [101.6]	6.26 [159.0]	6.00 [152.4]	2.25 hex [57.2]	5.4 [2.5]
1" M x 1" F	2.00 [50.8]	5.00 [127.0]	6.26 [159.0]	6.00 [152.4]	2.25 hex [57.2]	5.4 [2.5]

### Notes

1. Valve C<sub>v</sub> 3.0 maximum.
2. For Hastelloy® and -SG3 call factory for dimensions and weights.

## H1 Specifications

<sup>3</sup>/<sub>8</sub>-inch [9.5 mm] Orifice

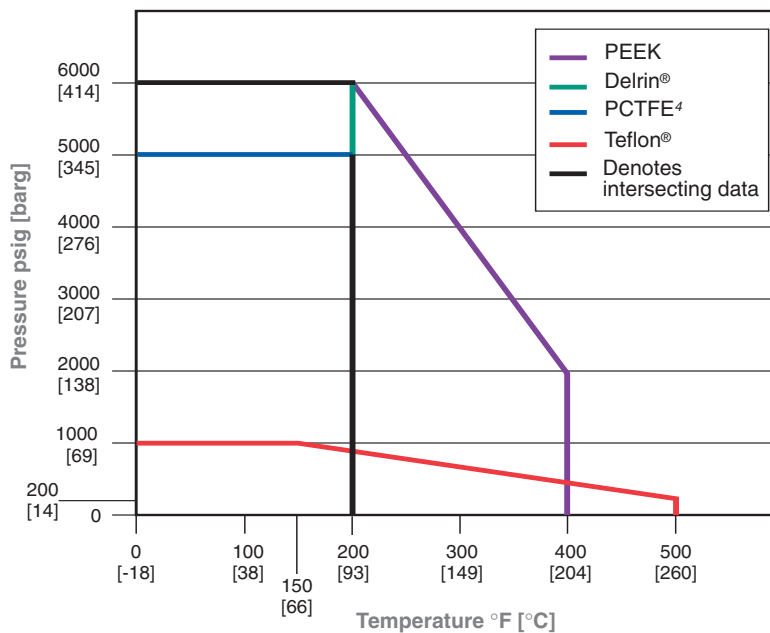
### Standard Materials

Valve	Body and Bonnet	Stem	Packing	Seat <sup>2</sup>
CS <sup>1</sup>	A108 <sup>1</sup>	A581-303	Teflon <sup>®</sup> or BUNA-N O-ring with Teflon <sup>®</sup> backup ring	Delrin <sup>®</sup>
SS	A479-316	A276-316	Teflon <sup>®</sup> or Viton <sup>®</sup> O-ring with Teflon <sup>®</sup> backup ring	Delrin <sup>®</sup>
SG <sup>3</sup>	A479-316	Monel <sup>®</sup> R405	Teflon <sup>®</sup> or Viton <sup>®</sup> O-ring with Teflon <sup>®</sup> backup ring	Delrin <sup>®</sup>
SG3 <sup>5</sup>	Hastelloy <sup>®</sup> C-276	Hastelloy <sup>®</sup> C-276	Teflon <sup>®</sup> or Viton <sup>®</sup> O-ring with Teflon <sup>®</sup> backup ring	Delrin <sup>®</sup>

### Notes

1. CS is zinc cobalt plated to prevent corrosion.
2. PCTFE, PEEK, and Teflon<sup>®</sup> are available.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2005.
4. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F<sup>®</sup>.
5. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions > 50 mg/l [ppm]).

### Pressure vs. Temperature



### Pressure and Temperature Ratings

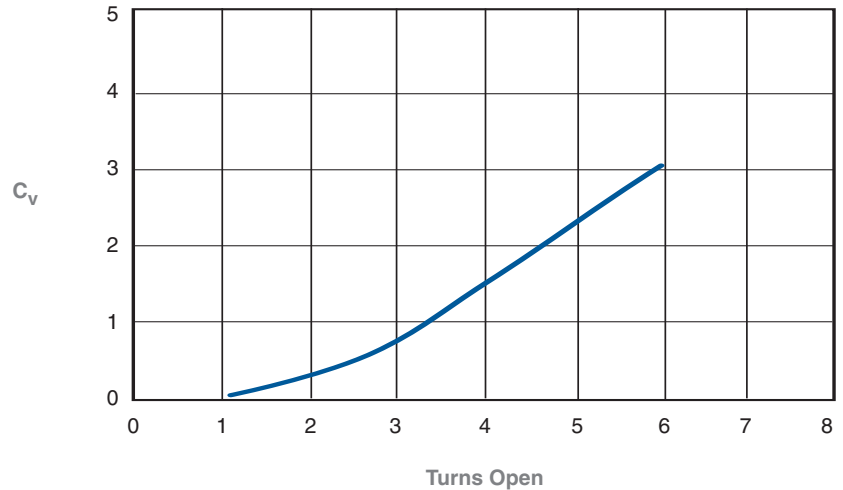
#### Seat

Delrin <sup>®</sup>	6000 psig @ 200°F [414 barg @ 93°C]
PCTFE <sup>4</sup>	5000 psig @ 200°F [345 barg @ 93°C]
PEEK	6000 psig @ 200°F [414 barg @ 93°C] 2000 psig @ 400°F [138 barg @ 204°C]
Teflon <sup>®</sup>	1000 psig @ 150°F [69 barg @ 66°C] 200 psig @ 500°F [14 barg @ 260°C]

## H1 Specifications

<sup>3</sup>/<sub>8</sub>-inch [9.5 mm] Orifice

### Flow Characteristics



<sup>3</sup>/<sub>8</sub>-inch [9.5 mm] orifice, C<sub>V</sub> 3.0 maximum

### Formulas

#### Liquids

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

#### 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>)

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

#### 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> @ 60°F [16°C]
- S.G. = Specific Gravity of Gas  
(M.W. of Air/28.96)
- S.G. Air = 1.000
- S.G. Nitrogen = 0.967
- S.G. Oxygen = 1.105
- S.G. Helium = 0.138
- S.G. Hydrogen = 0.0696

## H1 Specifications

<sup>3</sup>/<sub>8</sub>-inch [9.5 mm] Orifice

### Ordering Information

**H1                      V                      D                      S                      - 4                      - SG**

#### Packing

- V - Teflon®
- R - Viton® O-ring with Teflon® backup ring

#### Seat

- D - Delrin® (standard)
- K - PCTFE<sup>1</sup>
- E - PEEK
- V - Teflon®

#### Material

- C - CS
- S - 316 SS
- J - Hastelloy®

#### Connections (Bidirectional)

- 4 - 1/2-inch F x 1/2-inch F
- 48 - 1/2-inch F x 1-inch M
- 6Q - 3/4-inch F x 3/4-inch F
- 66Q - 3/4-inch F x 3/4-inch M
- 8Q - 1-inch F x 1-inch F
- 88Q - 1-inch F x 1-inch M

#### Options

- AL - Arctic Lubricant (low temperature service -70°F) - not available for CS valves
- SG - (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2005 (316 SS only; Teflon® packed only)
- SG3 - (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions > 50 mg/l [ppm])
- SP - Special Requirements - please specify

#### Note

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