

Soft Seated Hand Valves – H1

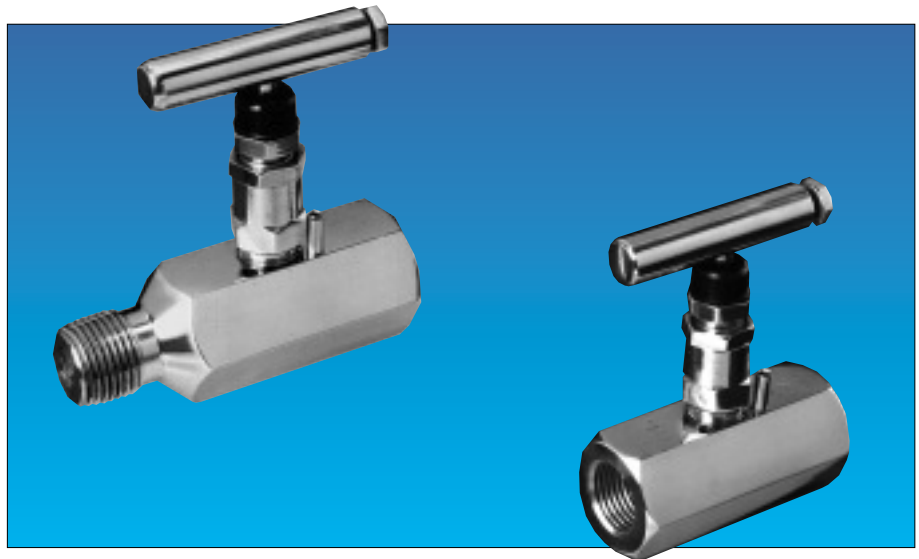
$\frac{3}{16}$ -inch [4.8 mm] and $\frac{1}{4}$ -inch [6.4 mm] Orifice: 6000 and 10,000 psig [414 and 689 barg]

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 good regulation and 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 with trim to meet the requirements of NACE MR0175-latest revision. 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.

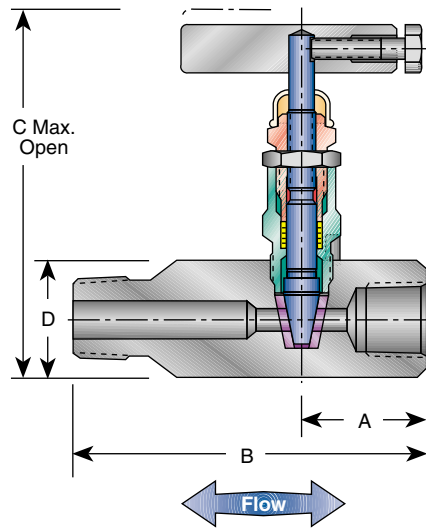
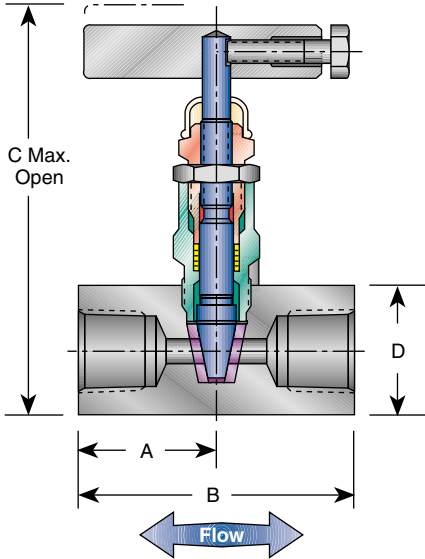
Note

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

H1 Specifications

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

Dimensions, inches [mm]



FNPT by FNPT

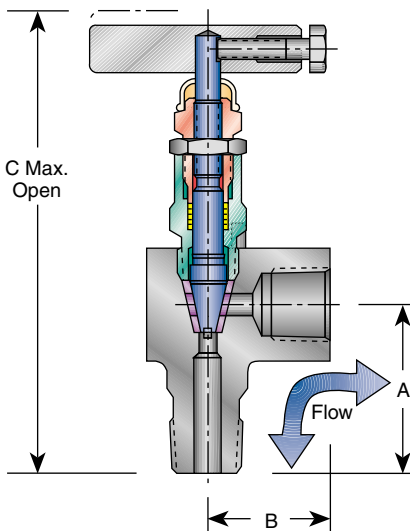
Valve ¹	A	B	C ²	D
1/4" F x 1/4" F	1.05 [26.7]	2.10 [53.3]	3.70 [94.0]	1.00 [25.4]
1/2" F x 1/2" F	1.35 [34.3]	2.70 [68.6]	3.85 [97.8]	1.25 [31.7]

FNPT by MNPT

Valve ¹	A	B	C ²	D
1/4" F x 1/4" M	1.18 [30.0]	3.50 [88.9]	3.70 [94.0]	1.00 [25.4]
1/4" F x 1/2" M	1.18 [30.0]	3.50 [88.9]	3.70 [94.0]	1.00 [25.4]
1/2" F x 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
3/16-inch [4.8 mm] – 0.83.
1/4-inch [6.4 mm] – 1.40.



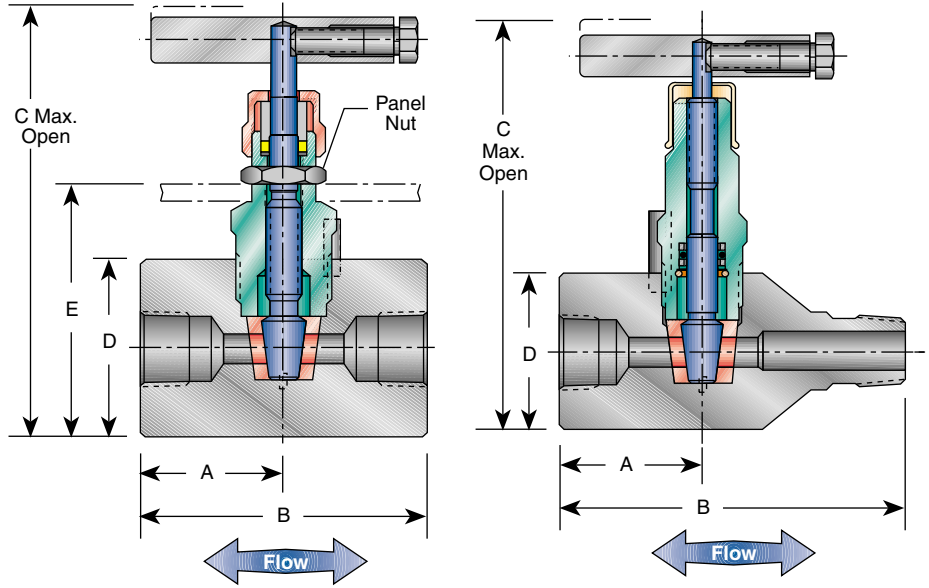
FNPT by MNPT (Angle)

Valve	A	B	C
1/2" F x 1/2" M	1.73 [43.9]	1.40 [35.6]	5.00 [127.0]

H1 Specifications

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

Dimensions, inches [mm]



Dimensions

Valve ¹	A	B	C ²	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_v 1.4 maximum.

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 ¹	Stem	Packing ²	Seat ³
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 ⁴	A479-316	Monel® 400	Teflon®	Delrin®

Standard Materials

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

Valve	Body and Bonnet ¹	Stem	Packing ²	Seat ³
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 ⁴	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®

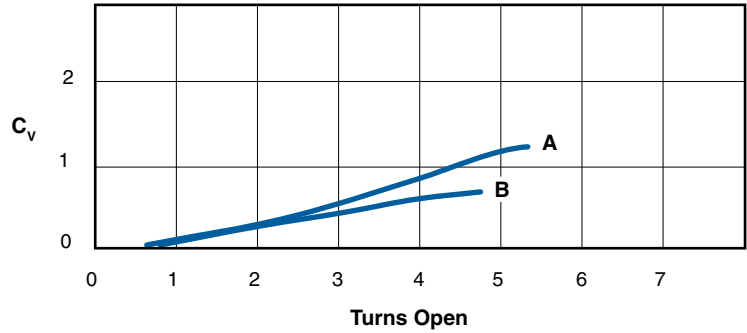
Notes

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-latest revision.
5. Monel® is a registered trademark of International Nickel Company.
6. Delrin® is a registered trademark of the E.I. duPont de Nemours Company.



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 $P_2 < .5P_1$)

$$Q_v = \frac{(11.59) P_1 C_v}{\sqrt{S.G. (T)}}$$

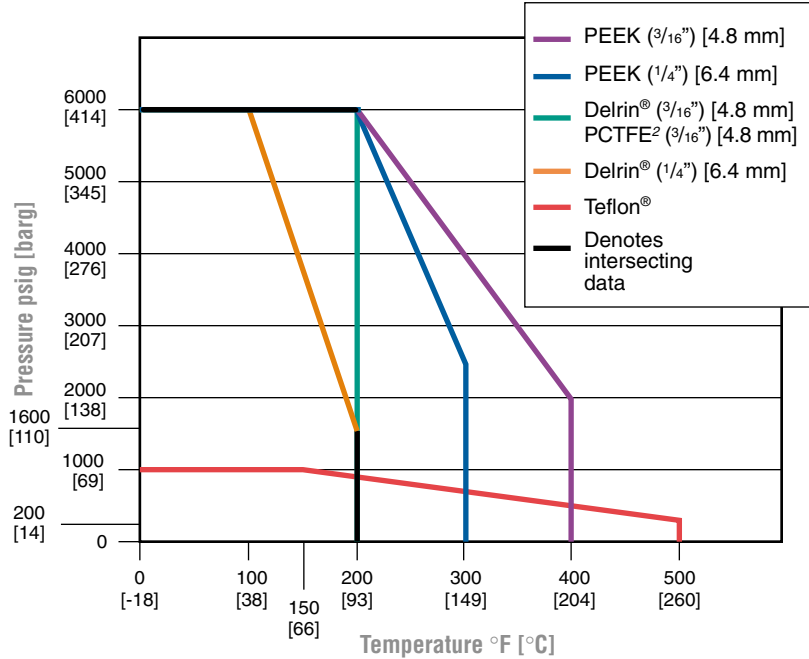
Where:

- Q_L = Flow (gpm)
- Q_v = Flow (scfm)
- ρ = Density of Liquid (lb/ft³)
- P_1 = Upstream Pressure (psia)
- P_2 = Downstream Pressure (psia)
- T = Flowing Temperature (°R)
(°R = °F + 460)
- ρ (Water) = 62.4 lb/ft³ @ 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

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 ¹ 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	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]

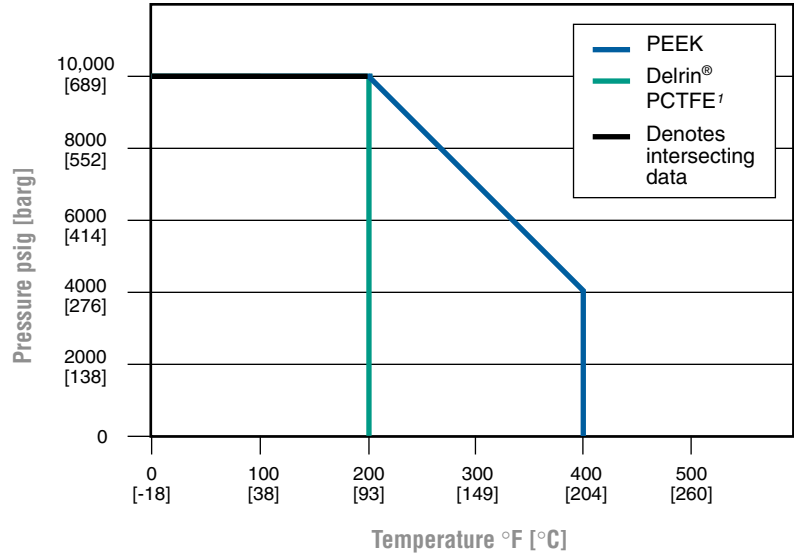
Note

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 – PCTFE¹
- E – PEEK
- V – Teflon®

Material

- C – CS
- S – 316 SS
- M – Monel® (Teflon® packed only)
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

- BL – Bonnet Lock Device (patent protected) (page 21)
- PHB – Phenolic Black Round Handle
- SG – Sour Gas meets the requirements of NACE MR0175-latest revision
(316 SS only)
- 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
Packing						
V – Teflon ^{®1}						
R – Viton [®] O-ring with Teflon [®] backup ring						
Seat						
D – Delrin [®] (standard)						
K – PCTFE ²						
E – PEEK						
Body Materials						
C – CS						
S – 316 SS						
Connections (Bidirectional)						
4R10 – 1/2-inch F x 1/2-inch F						
44R10 – 1/2-inch M x 1/2-inch F						
Options						
SG – Sour Gas meets the requirements of NACE MR0175-latest revision (316 SS only)						
SP – Special Requirements - please specify						

Notes

1. Teflon[®] packed bonnet available in CS only.
2. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F[®].

Large Bore Hand Valves – H1

3/8-inch [9.5 mm] Diameter Orifice, General Purpose Valve



Product Overview

The 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 also provides superior regulation and 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 with trim to meet the requirements of NACE MR0175-latest revision. All valves are 100 percent pressure tested with material traceability of the body available on request.

Features and Benefits

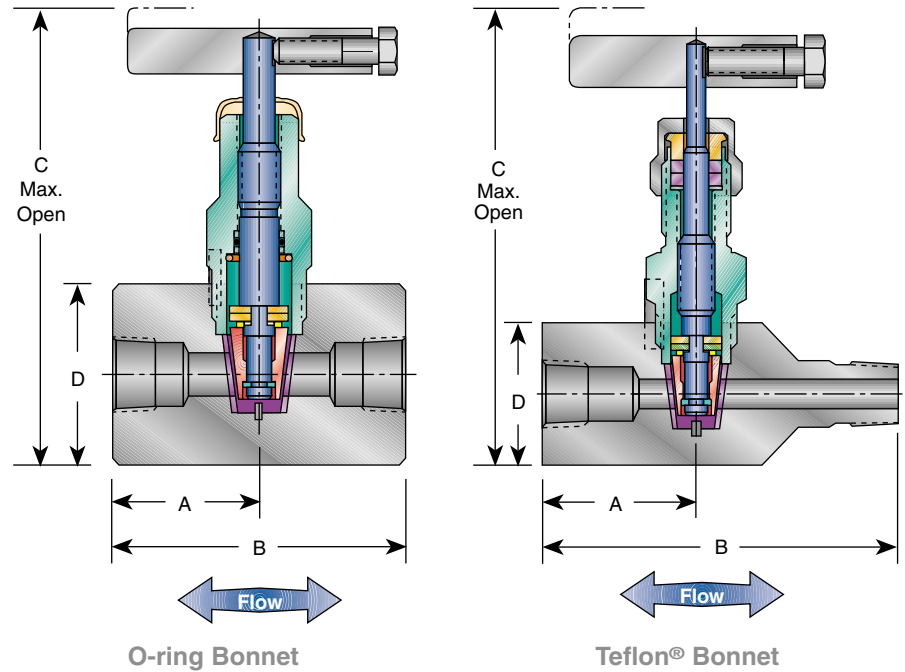
- **Replaceable soft seat** allows replacement of the soft seat insert without removing the valve from the line. It operates in dirty service with repetitive bubble-tight shutoff.
- **Packing below threads** prevents lubricant washout, thread corrosion, and keeps solids from entering the thread area, 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

$\frac{3}{8}$ -inch [9.5 mm] Diameter Orifice

Dimensions, inches [mm]



Dimensions

End Connection ¹	A	B	C O-ring	C Teflon®	D	Valve Weight lb [kg]
$\frac{1}{2}$ " F x $\frac{1}{2}$ " 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]
$\frac{1}{2}$ " 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]
$\frac{3}{4}$ " F x $\frac{3}{4}$ " 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]
$\frac{3}{4}$ " M x $\frac{3}{4}$ " 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]

Note

1. Valve C_v 3.0 maximum.

H1 Specifications

³/₈-inch [9.5 mm] Orifice

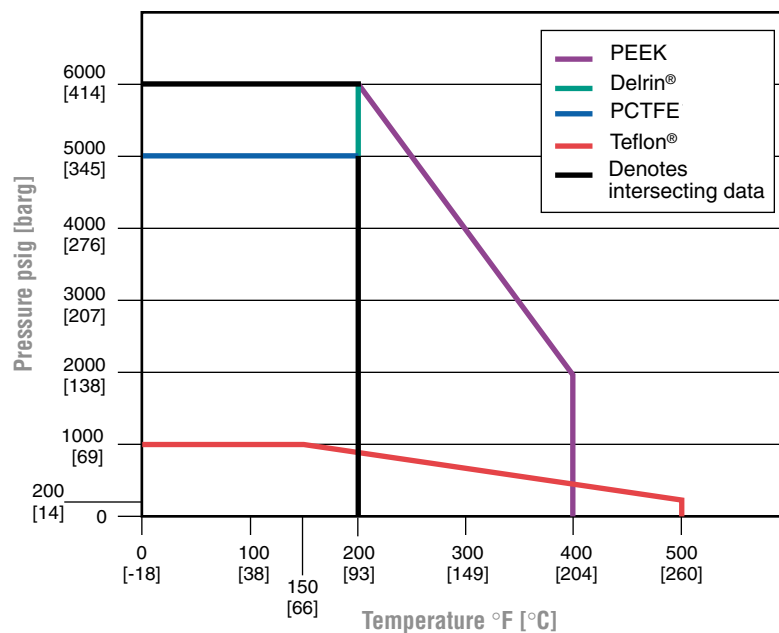
Standard Materials

Valve	Body and Bonnet	Stem	Packing	Seat ²
CS ¹	A108 ¹	A581-303	Teflon [®] or BUNA-N O-ring with Teflon [®] backup ring	Delrin [®]
SS	A479-316	A276-316	Teflon [®] or Viton [®] O-ring with Teflon [®] backup ring	Delrin [®]
SG ³	A479-316	Monel [®] R405	Teflon [®] or Viton [®] O-ring with Teflon [®] backup ring	Delrin [®]

Notes

1. CS is zinc cobalt plated to prevent corrosion.
2. PCTFE, PEEK, and Teflon[®] are available.
3. SG (Sour Gas) meets requirements of NACE MR0175-latest revision.
4. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F[®].

Pressure vs. Temperature



Pressure and Temperature Ratings

Seat

Delrin[®] 6000 psig @ 200°F
[414 barg @ 93°C]

PCTFE⁴ 5000 psig @ 200°F
[345 barg @ 93°C]

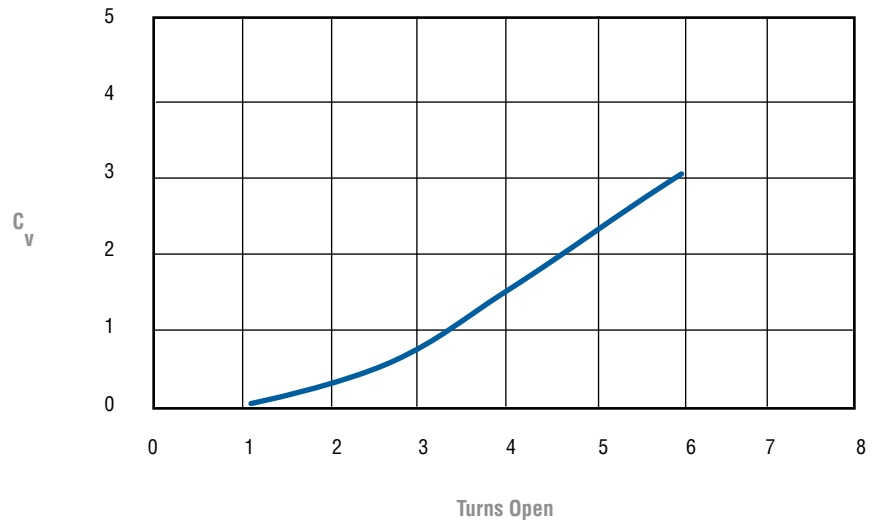
PEEK 6000 psig @ 200°F
[414 barg @ 93°C]
2000 psig @ 400°F
[138 barg @ 204°C]

Teflon[®] 1000 psig @ 150°F
[69 barg @ 66°C]
200 psig @ 500°F
[14 barg @ 260°C]

H1 Specifications

3/8-inch [9.5 mm] Orifice

Flow Characteristics



3/8-inch [9.5 mm] orifice, C_v 3.0 maximum

Formulas

Liquids

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

Gases (Where P₂ > .5P₁)

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

Gases (Where P₂ < .5P₁)

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

Where:

- Q_L = Flow (gpm)
- Q_V = Flow (scfm)
- ρ = Density of Liquid (lb/ft³)
- P₁ = Upstream Pressure (psia)
- P₂ = Downstream Pressure (psia)
- T = Flowing Temperature (°R)
(°R = °F + 460)
- ρ (Water) = 62.4 lb/ft³ @ 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

³/₈-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 – PCTFE¹
- E – PEEK
- V – Teflon®

Material

- C – CS
- S – 316 SS

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

- SG – Sour Gas meets the requirements of NACE MR0175-latest revision
(316 SS only; Teflon® packed only)
- SP – Special Requirements - please specify

Note

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