Soft Seated Hand Valves – H1

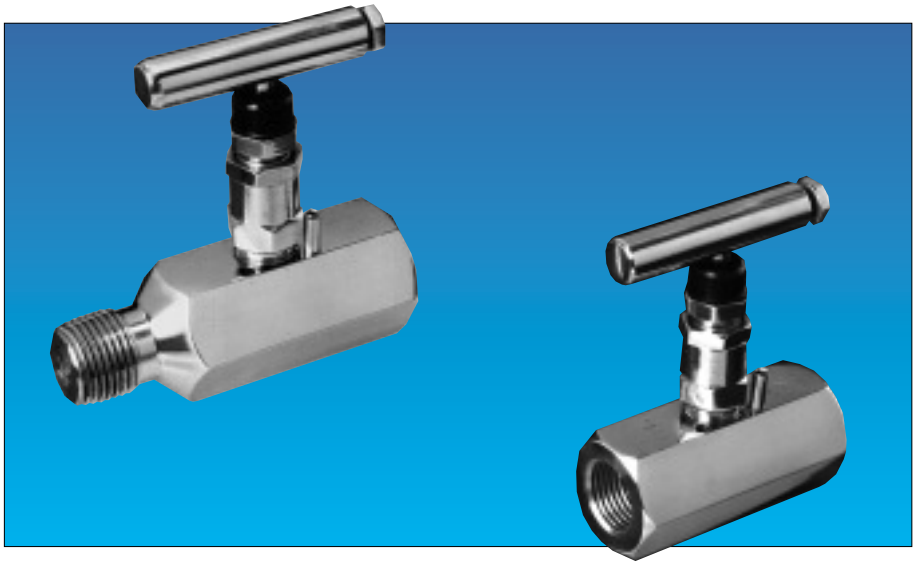
3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 and 10,000 psig [414 and 689 barg]

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.

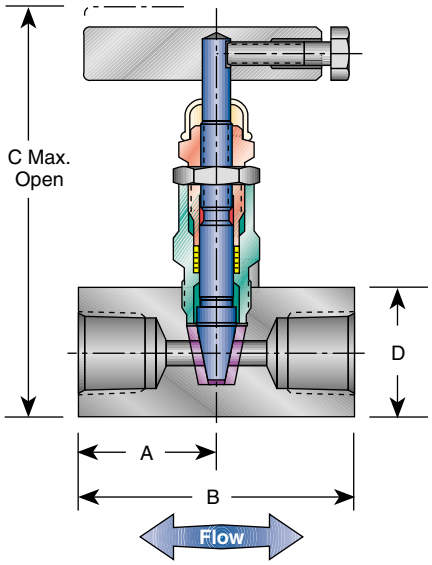
Note

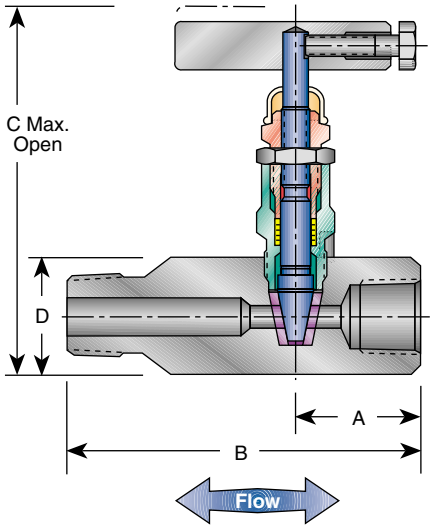
1. Teflon® is a registered trademark of the E.I. duPont de Nemours Company.

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

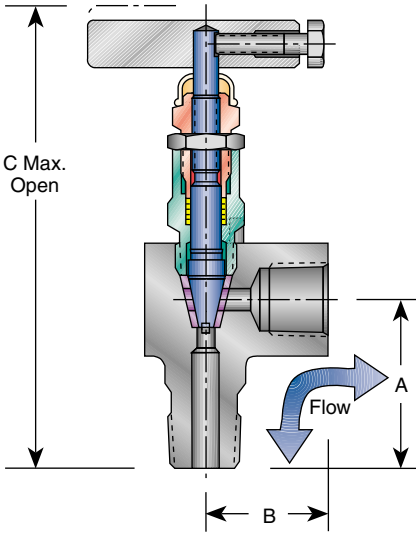
Valve[1]	A	B	C[2]	D
1/4" F x 1/4" F	1.05 [26.7]	2.10 [53.3]	3.70 [94.0]	1.00 [25.4]
1/2" F x 1/2" F	1.35 [34.3]	2.70 [68.6]	3.85 [97.8]	1.25 [31.7]

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.



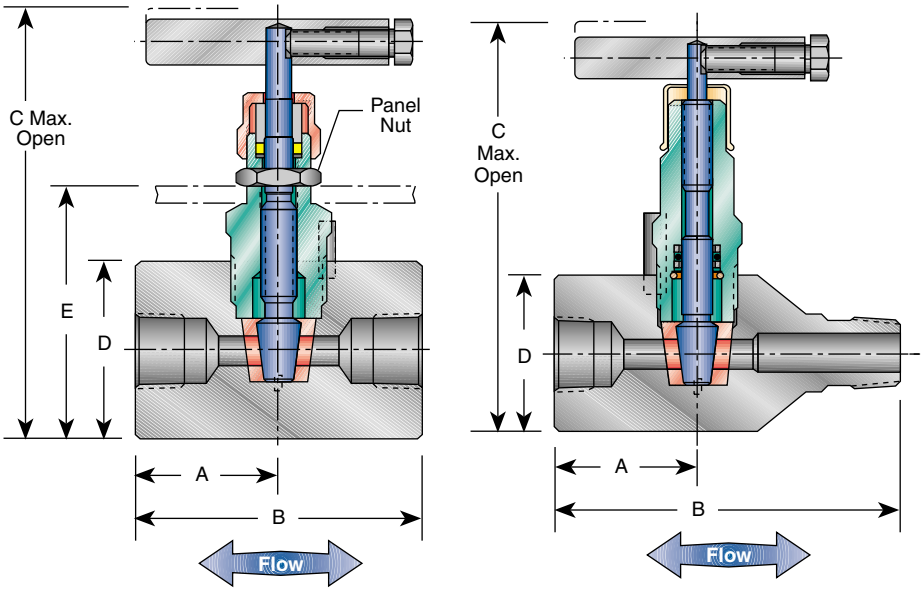
FNPT by MNPT (Angle)

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

¼-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 ½" F x ½" F	1.50 [38.1]	3.00 [76.2]	4.82 [122.4]	1.75 [44.5]	1.98 [50.3]
O-ring Packed ½" F x ½" 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 ¼-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 – ¼-inch [6.4mm] Orifice: 10,000 psig [689 barg]

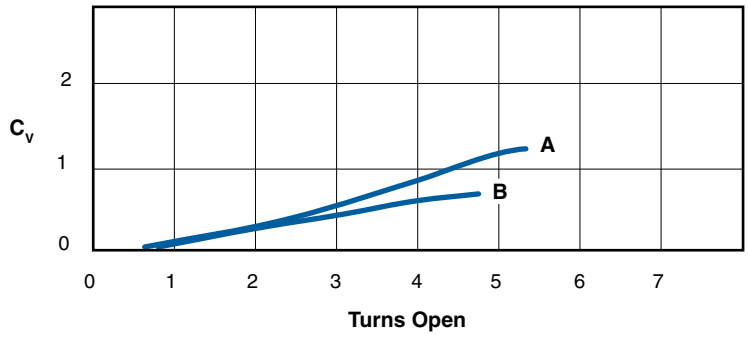
Valve	Body and Bonnet[1]	Stem	Packing[2]	Seat[3]
CS	A108	A581-303	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SS	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG[4]	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®

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

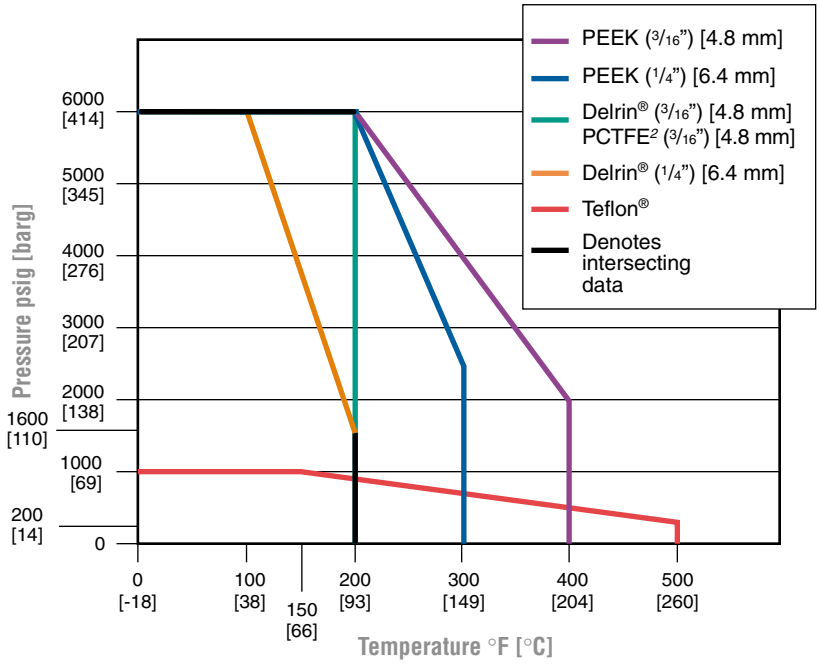
S.G. Helium = 0.138

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]

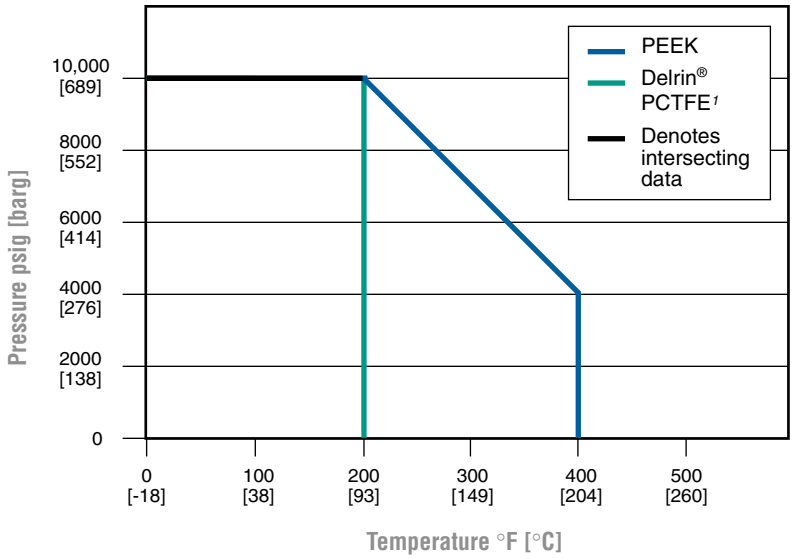
Note

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

H1 Specifications

¼-inch [6.4 mm] Orifice: 10,000 psig [689 barg]

Pressure vs. Temperature



Pressure and Temperature Ratings

Valve	¼-inch [6.4 mm] Orifice	
Delrin® and PCTFE[1] Seat	10,000 psig @ 200°F	[689 barg @ 93°C]
PEEK Seat	10,000 psig @ 200°F	[689 barg @ 93°C]
	4000 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[1]
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 ¼-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 – ½-inch F x ½-inch F
44R10 – ½-inch M x ½-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.

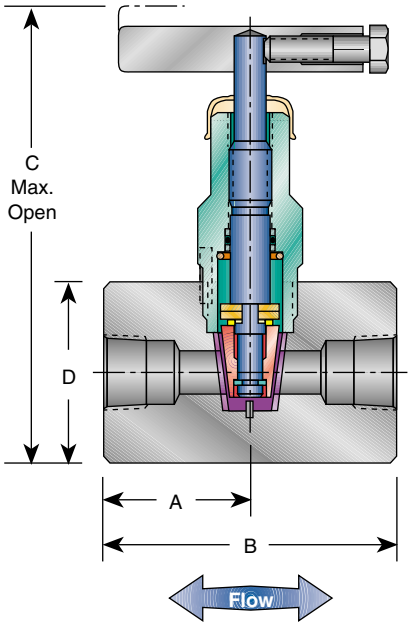
Features and Benefits

- **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.

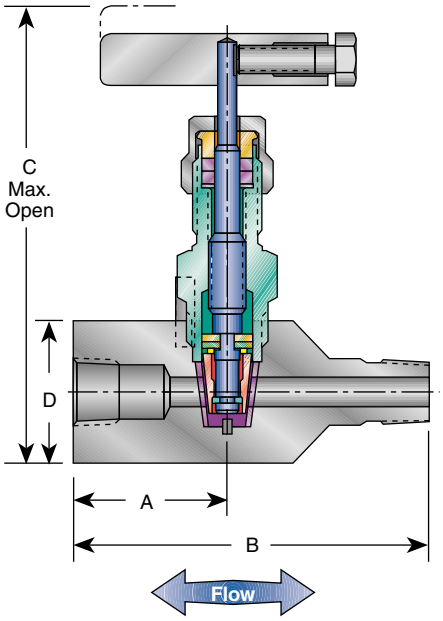
H1 Specifications

3/8-inch [9.5 mm] Diameter Orifice

Dimensions, inches [mm]



O-ring Bonnet



Teflon® Bonnet

Dimensions

End Connection[1]	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]

Note

1. Valve C_V 3.0 maximum.

H1 Specifications

3/8-inch [9.5 mm] Orifice

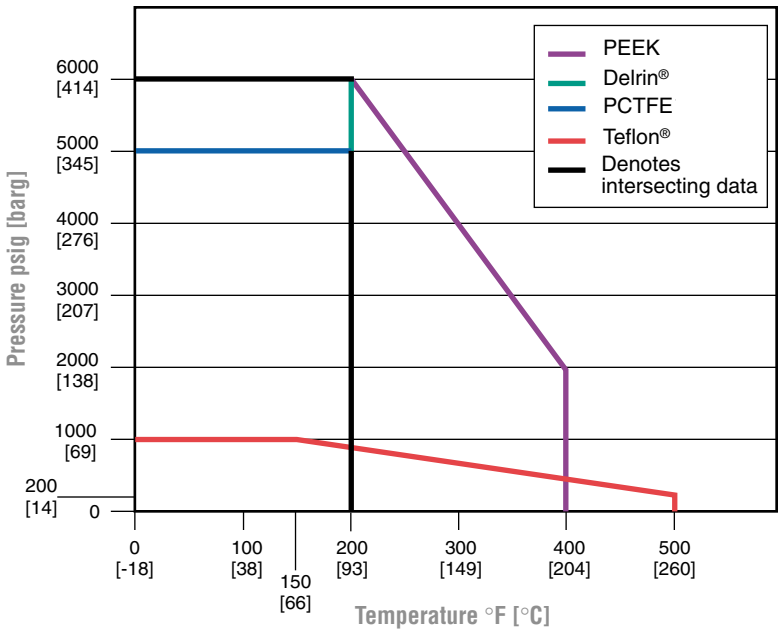
Standard Materials

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



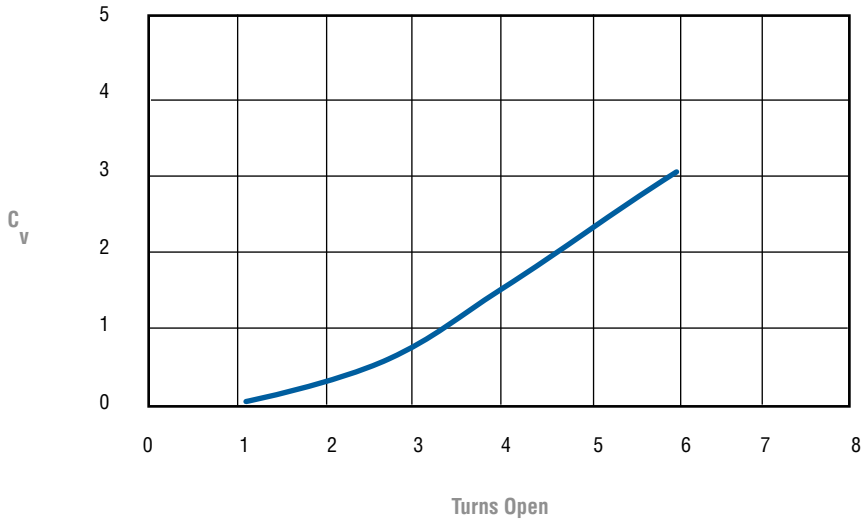
Pressure and Temperature Ratings

Seat	
Delrin®	6000 psig @ 200°F [414 barg @ 93°C]
PCTFE[4]	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 $P_2 > .5P_1$)

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

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

3/8-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 – PCTFE[1]
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®.