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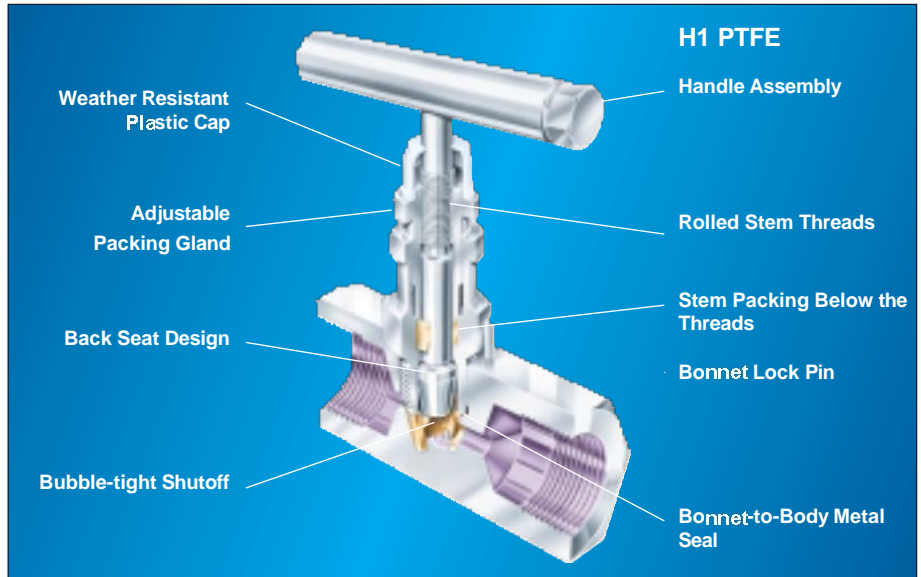
Hand Valves Catalog
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Bonnet Technology

Soft-Seated Bonnet Assembly

The soft-seated bonnet assembly has a one-piece rotating stem and plug. The stem threads are rolled and lubricated to prevent galling and reduce operating torque. Available with a patented PTFE packing gland, which is adjustable in service, or with a Viton® O-ring and PTFE back-up ring. A protective dust cap is fitted to contain stem lubricant and prevent the ingress of contaminants. The standard hand valves have either 3/16-inch [4.8 mm] or 1/4-inch [6.4 mm] diameter orifice size. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service.

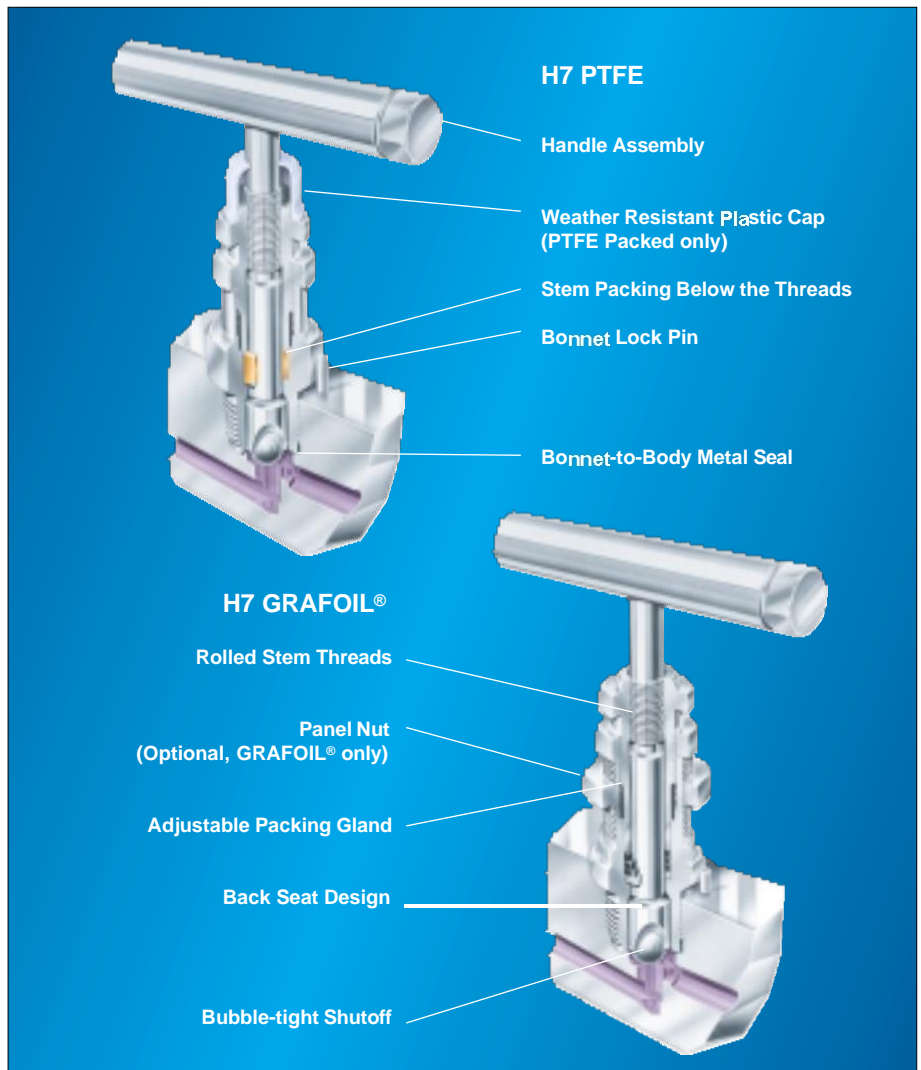


Metal-Seated Bonnet Assembly

The metal-seated bonnet assembly has a rotating stem with free swivel ball-type seat. The stem threads are rolled and lubricated to prevent galling and reduce operating torque. The stem seal is a patented PTFE packing gland which is adjustable in service. A protective dust cap is fitted to contain stem lubricant and prevent the ingress of contaminants. The specially hardened ball seat is ideal for both gas and liquid service. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service.

The 10,000 psig [689 barg] bonnet assembly uses a strengthened stem and bonnet. The stem seal is a patented PTFE packing gland which is adjustable in service. A protective dust cap is fitted to contain stem lubricant and prevent the ingress of contaminants. This bonnet is also fitted with a larger size T-bar handle.

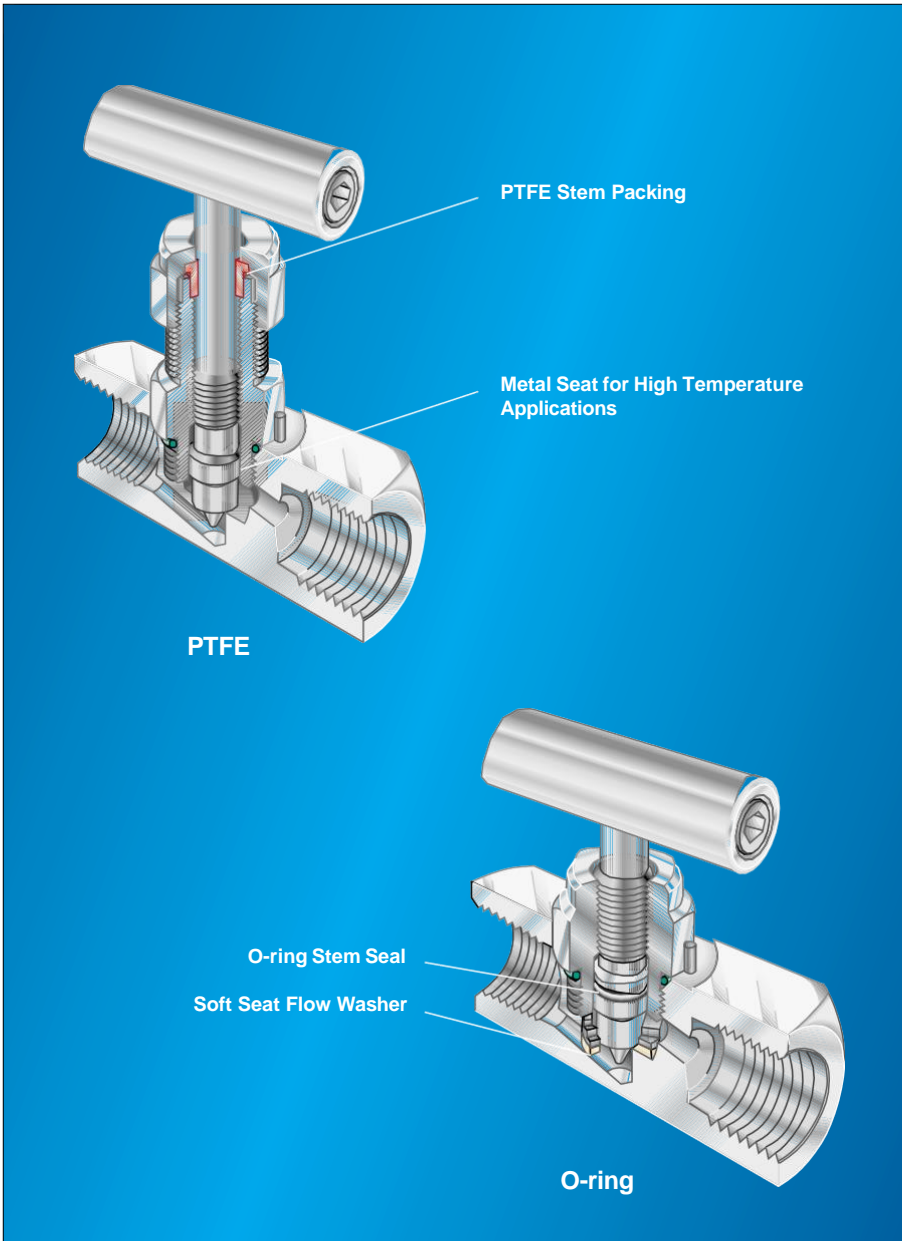
The high-temperature bonnet assembly utilizes a similarly designed stem and bonnet, and incorporates adjustable GRAFOIL® rings and back-up pressure rings to ensure a leak-free stem seal.



Notes

1. Viton® is a registered trademark of the E.I. duPont de Nemours Company.
2. GRAFOIL® is a registered trademark of UCAR Carbon.

Bonnet Technology, continued



Mini-Valve Bonnet Assembly

The mini-valve bonnet assembly has a compact design with a one-piece rotating stem which is 'V' tipped for accurate flow control. The stem threads are rolled and lubricated to prevent galling and reduce operating torque.

The SS bonnet is fitted with an adjustable PTFE stem packing and is suitable for panel mounting via external bonnet threads. CS and brass bonnets are fitted with a Vitor® O-ring stem seal.

A GRAFOIL® packed bonnet suitable for temperatures of up to 500°F [260°C] is available for SS valves only.

Soft Seated Hand Valves – H1

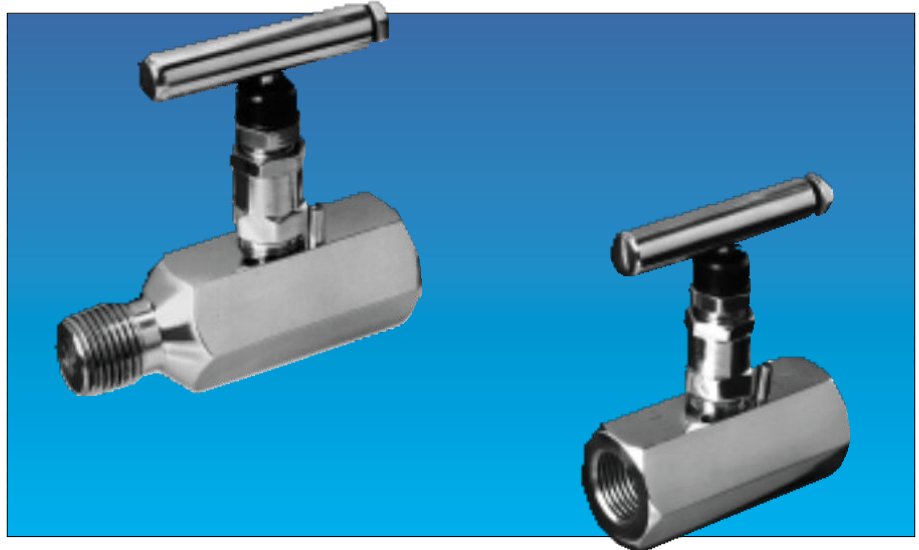
³/₁₆-inch [4.8 mm] and ¹/₄-inch [6.4 mm] Orifice: 6000 and 10,000 psig [414 and 689 barg]

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.

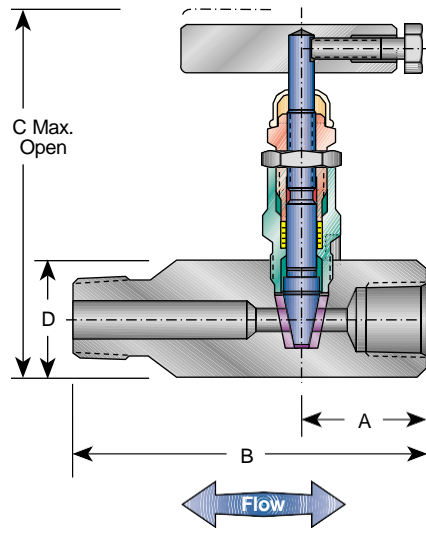
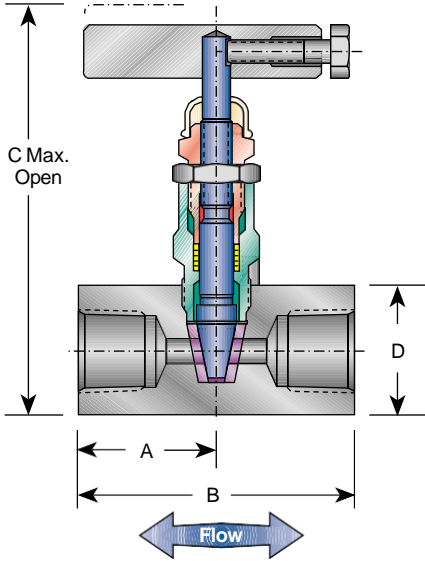
Note

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

H1 Specifications

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

Dimensions, inches [mm]



FNPT by FNPT

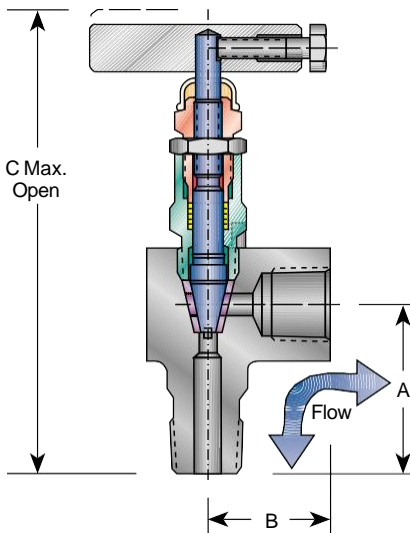
Valve ¹	A	B	C ²	D
$\frac{1}{4}$ " F x $\frac{1}{4}$ " F	1.05 [26.7]	2.10 [53.3]	3.70 [94.0]	1.00 [25.4]
$\frac{1}{2}$ " F x $\frac{1}{2}$ " F	1.35 [34.3]	2.70 [68.6]	3.85 [97.8]	1.25 [31.7]

FNPT by MNPT

Valve ¹	A	B	C ²	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.



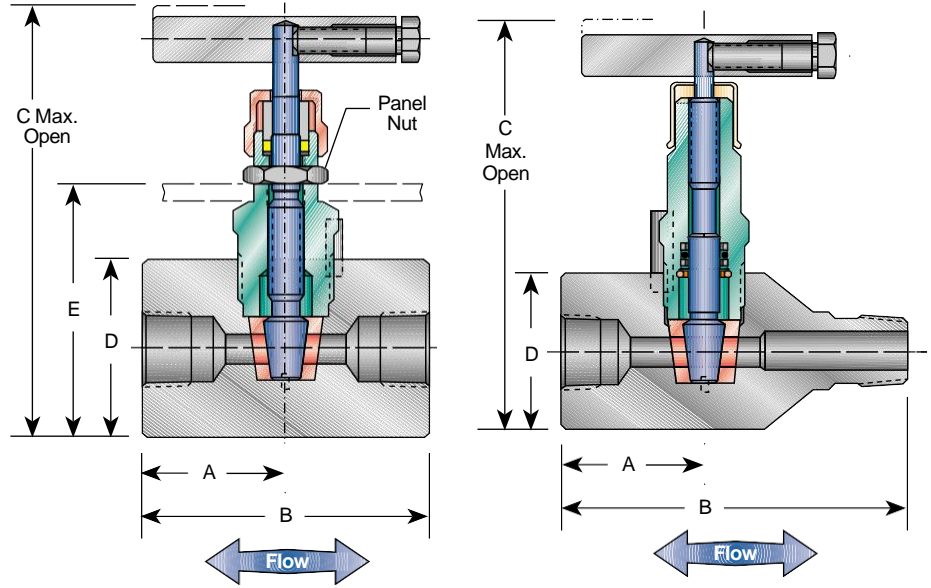
FNPT by MNPT (Angle)

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

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]

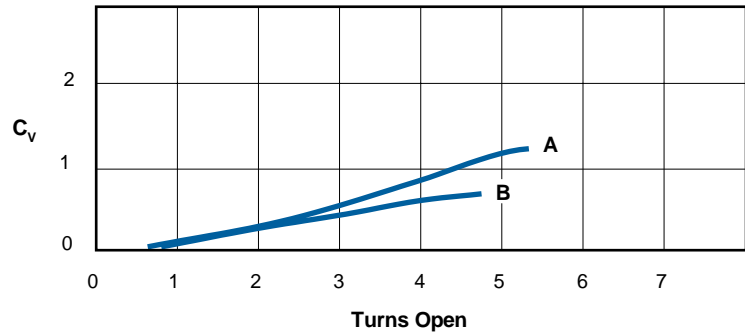
Valve	Body and Bonnet ¹	Stem	Packing ²	Seat ³
CS	A108	A581-303	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SS	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG ⁴	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®

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 $P_2 < .5P_1$)

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

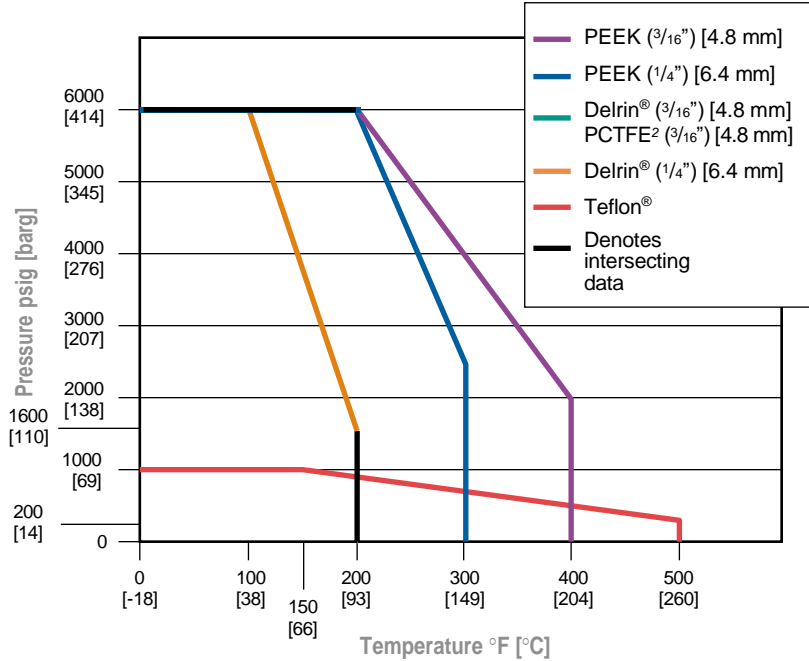
Where:

- 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

$\frac{3}{16}$ -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 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	$\frac{1}{4}$ -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]

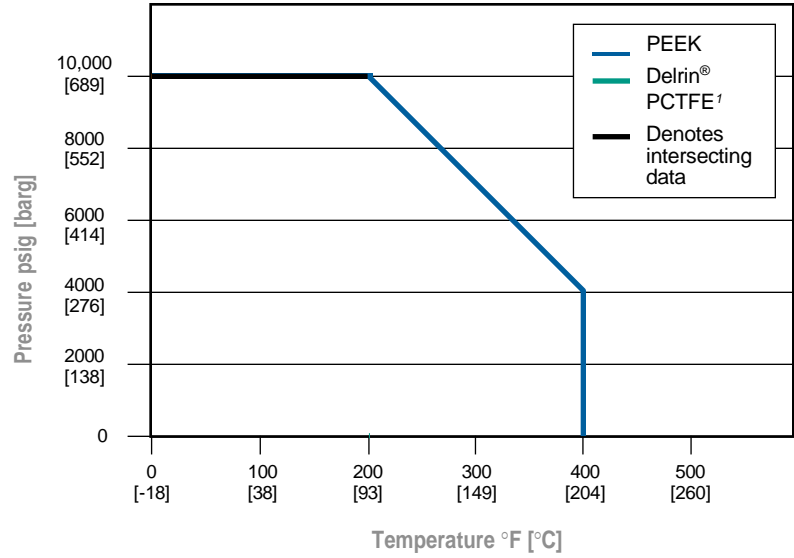
Note

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 – 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

$\frac{3}{8}$ -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 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.

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