

Anderson Greenwood Instrumentation Hand Valves

Large bore, 3/8" (9.5 mm) diameter orifice, general purpose replaceable soft and metal-seated hand valve for pressures to 6000 psig (414 barg)

General Application

A general purpose, soft and metal-seated hand valve designed for safe, repetitive bubble-tight closure, simple maintenance and a long, reliable cycle life which is available to meet NACE requirements.

TECHNICAL DATA

Materials

CS, 316 SS, Hastelloy®

Seats:

Soft

Connections

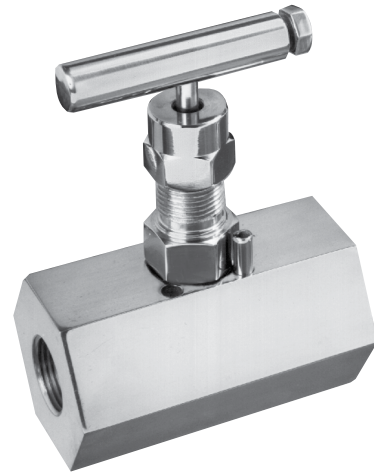
1/2", 3/4", 1" NPT

Pressure (max):

6000 psig (414 barg)

Temperature (min/max):

-313°F to 1000°F
(-192°C to 538°C)



Features

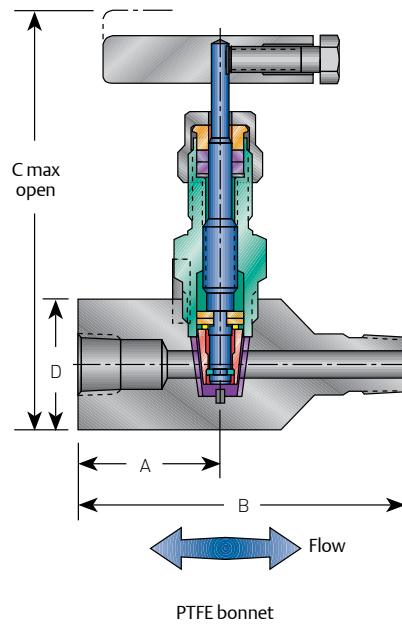
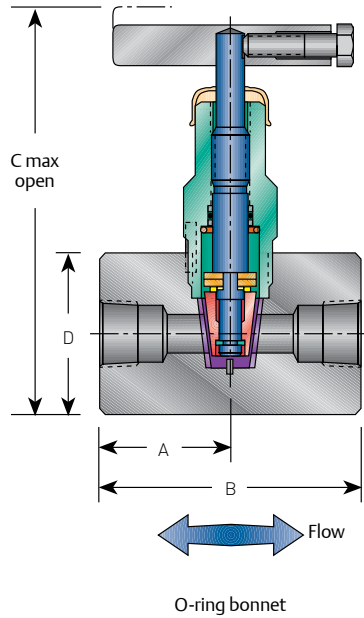
- Soft seat replaceable valve operates in dirty service with repetitive bubble-tight shutoff.
- Replaceable Metal seat valve for high temperature repeatable bubble tight shutoff with straight through bore.
- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates galling.
- 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.

H1 LARGE SERIES

Anderson Greenwood Instrumentation Hand Valves

H1 Specifications^[2]

Dimension, inches (mm) - 3/8 inch (9.5 mm) diameter orifice



Dimensions

| End connection ^[1] | A | B | C O-ring | C PTFE | 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 Cv 3.0 maximum.
2. For Hastelloy® and -SG3 call factory for dimensions and weights.

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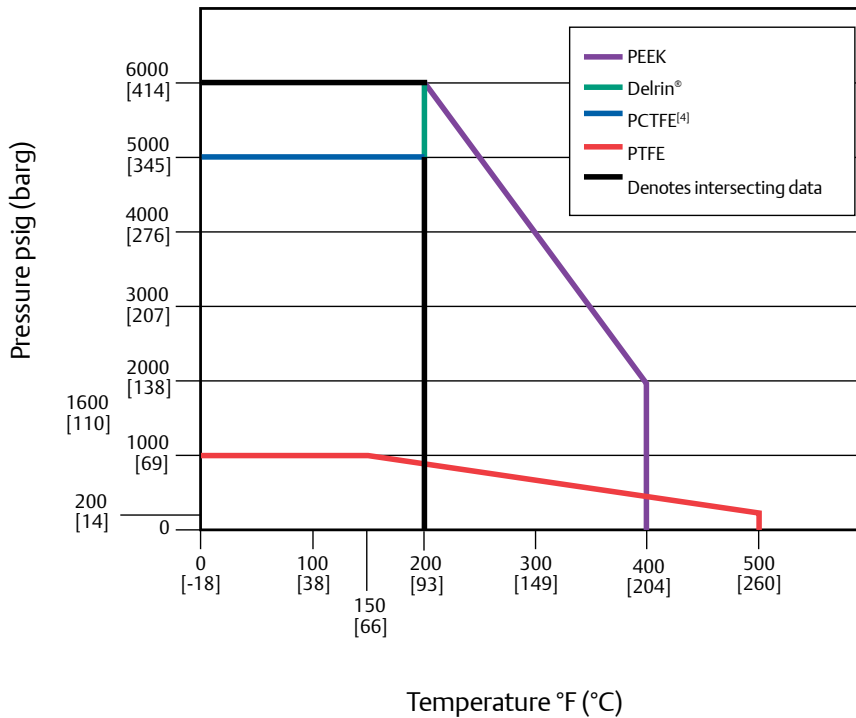
Bonnet Assemblies

H1 series valves feature a soft-seated bonnet assembly which has a rotating stem and non-rotating plug. The stem threads are rolled and lubricated to prevent galling and reduce operating torque. It is available with a PTFE packing, which is adjustable in service or with a FKM O-ring and PTFE back-up ring. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service.

Standard Materials

| Valve | Body and bonnet | Stem | Packing | Seat ^[2] |
|--------------------|------------------------------|------------------------------|--|---------------------|
| CS ^[1] | A108 ^[1] | A581-303 | PTFE or FKM O-ring with PTFE backup ring | Delrin [®] |
| 316 SS | A479-316 | A276-316 | PTFE or FKM O-ring with PTFE backup ring | Delrin [®] |
| SG ^[3] | A479-316 | Monel [®] R405 | PTFE or FKM O-ring with PTFE backup ring | Delrin [®] |
| SG3 ^[5] | Hastelloy [®] C-276 | Hastelloy [®] C-276 | PTFE or FKM O-ring with PTFE backup ring | Delrin [®] |

Pressure vs. Temperature



Pressure and Temperature Ratings

| Seat | 3/8 inch (9.5 mm) orifice |
|----------------------|--|
| Delrin [®] | 6000 psig at 200°F (414 barg at 93°C) |
| PCTFE ^[4] | 5000 psig at 200°F (345 barg at 93°C) |
| PEEK | 6000 psig at 200°F (414 barg at 93°C) |
| | 2000 psig at 400°F (138 barg at 204°C) |
| PTFE | 1000 psig at 150°F (69 barg at 66°C) |
| | 200 psig at 500°F (14 barg at 260°C) |

NOTES

1. CS is zinc TCP plated to prevent corrosion.
2. PCTFE, PEEK, and PTFE are available.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
4. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F[®].
5. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for Cchloride conditions > 50 mg/l [ppm]).
6. Minimum temperature for PTFE packed valves: -70°F (-57°C) for PEEK, PCTFE and PTFE Seats Delrin[®] Seats -40°F (-40°C). Carbon Steel or O-Ring -20°F (-29°C)

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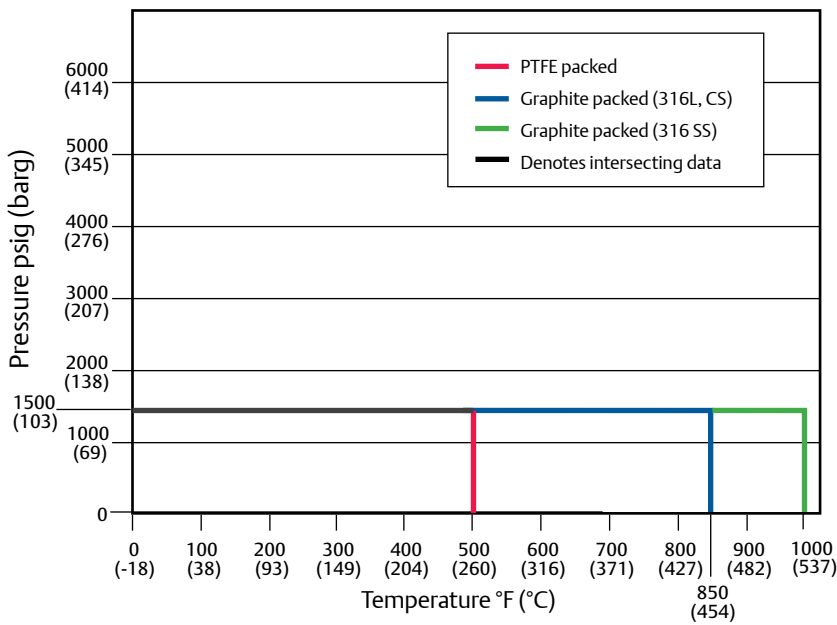
Bonnet Assemblies

H1 series valves feature an optional metal-seated bonnet assembly which has a rotating stem and non-rotating plug. The stem threads are rolled and lubricated to prevent galling and reduce operating torque. It is available with a PTFE or Graphite packing, which is adjustable in service. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service.

Metal Seat

| Metal seat | |
|-----------------|--|
| PTFE packed | 1500 psig at 500°F (103 barg at 260°C) |
| Graphite packed | 1500 psig at 850°F (103 barg at 454°C) |
| Carbon Steel | 316 SS 1500 psig at 1000°F (103 barg at 538°C) |

Pressure vs. Temperature - 316SS Metal seat

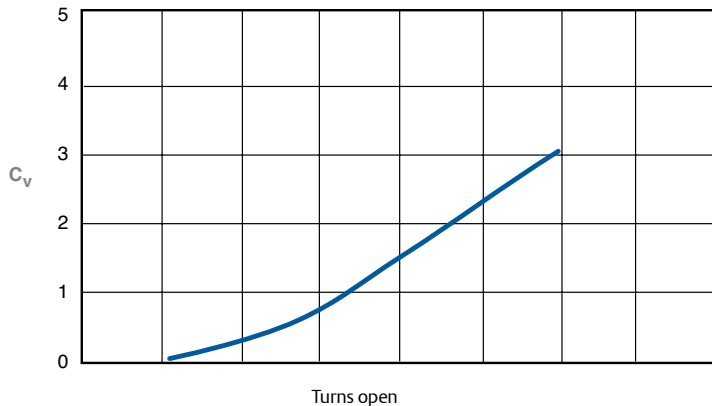


NOTE

- 316SS with 316SS metal seat with Graphite packing minimum temperature -313°F (-192°C) @ 2500 psi (172 bar)
- PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

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Flow Characteristics



3/8 inch (9.5 mm) orifice, CV 3.0 maximum

Liquids

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

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 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 P₂ > .5P₁

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

Gases - where P₂ < .5P₁

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

H1 LARGE SERIES

Anderson Greenwood Instrumentation Hand Valves

Selection Guide - H1

3/8 inch (9.5mm) orifice

| H1 | V | D | S | -4 | B | -SG |
|--------------|------------------------------------|---|--------------|------------------------------|----------------------|--|
| BASIC SERIES | PACKING | SEAT | MATERIAL | CONNECTIONS (BI-DIRECTIONAL) | CONNECTION STYLE | OPTIONS |
| H1 | V PTFE | D Delrin® (standard) | C CS | 4 ½ inch F x ½ inch F | B Female socket weld | HD Hydro testing (MSS-SP-61) |
| | R FKM O-ring with PTFE backup ring | K PCTFE ¹ | S 316 SS | 44 ½ inch F x ½ inch M | C Male socket weld | OC00 Oxygen clean (OC) |
| | H Graphite | E PEEK | J Hastelloy® | 46 ½ inch F x ¾ inch M | | OC01 Gaseous oxygen clean (GOC) |
| | | V PTFE | | 48 ½ inch F x 1 inch M | | PMI00 PMI body only |
| | | S 316SS (for PTFE or Graphite Packing only) | | 6Q ¾ inch F x ¾ inch F | | SG Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 (SS only) |
| | | | | 66Q ¾ inch F x ¾ inch M | | SG3 Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)) |
| | | | | 8Q 1 inch F x 1 inch F | | SS All 316 SS construction |
| | | | | 88Q 1 inch F x 1 inch M | | LT Low temperature Option for 316SS Material and Metal Seat Only (minimum temperature (-313°F (-192°C) @ 2500 psi (172 bar)) |

NOTE

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