Hand Valves

3/16" (4.8 mm) and ¼" (6.4 mm) orifice soft seated hand valves for pressures to 6000 and 10000 psig (414 and 689 barg)



General Application

Designed for maximum system reliability, these valves are built for reliable, bubble-tight service with a variety of end connections, seat materials and stem packing, in 316 SS or CS and are available to meet NACE requirements.

TECHNICAL DATA

Materials
CS, 316 SS, Monel®, Hastelloy®

Seats:
Soft

Connections
1/4", 1/2" NPT

Pressure (max):
10000 psig (689 barg)

Temperature (min/max):
-70°F to 1000°F
(-57°C to 538°C)

Features

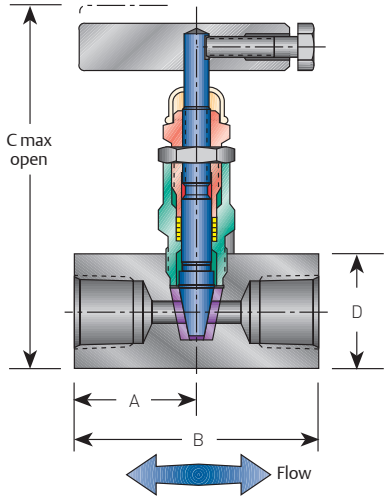
- Soft seat replaceable valve operates in dirty service with repetitive bubble-tight shutoff.
- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates galling.
- Easily adjustable PTFE packing decreases replacement downtime and increases valve life.
- 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 SERIES

Hand Valves

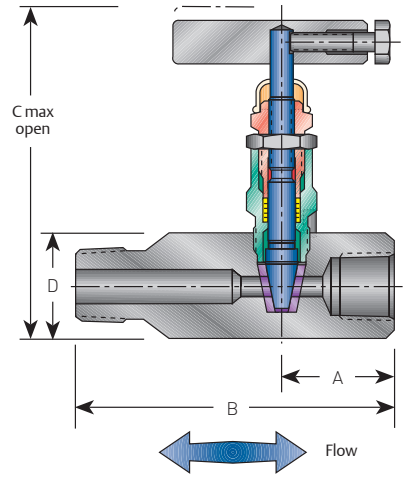
H1 Specifications[3]

3/16 inch (4.8 mm) and 1/4 inch (6.4 mm) orifice: 6000 psig (414 barg)



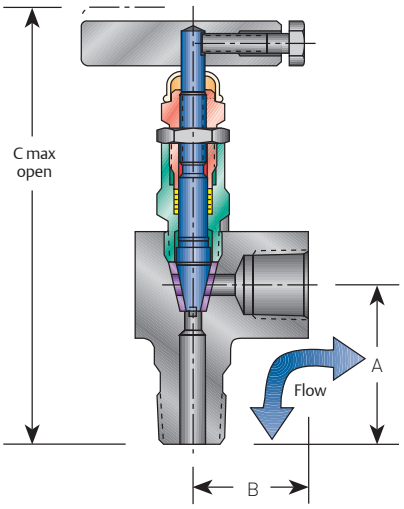
FNPT by FNPT (in inches [mm])

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



FNPT by MNPT (in inches [mm])

Valve[1]	A	B	C[2]	D
1/4" F x 1/4" M	1.18	3.50	3.70	1.00
	(30.0)	(88.9)	(94.0)	(25.4)
1/4" F x 1/2" M	1.18	3.50	3.70	1.00
	(30.0)	(88.9)	(94.0)	(25.4)
1/2" F x 1/2" M	1.35	3.50	3.85	1.25
	(34.3)	(88.9)	(97.8)	(31.7)



FNPT by MNPT (angle) (in inches [mm])

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

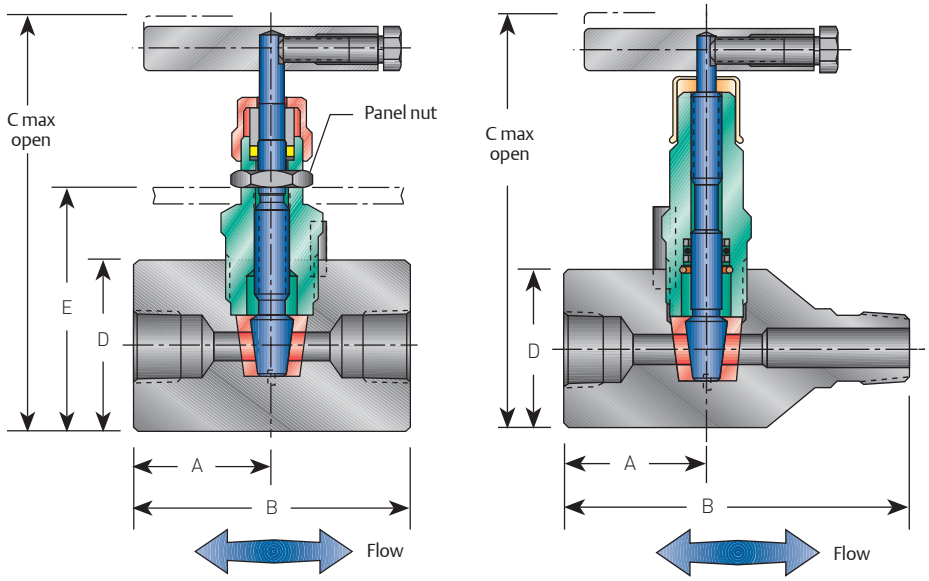
NOTES

1. Approximate valve weight: 1.3 lb (0.6 kg).
2. Valve Cv maximum
   3/16 inch (4.8 mm) - 0.83.
   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.

Hand Valves

H1 Specifications[3]

¼ inch (6.4 mm) orifice: 10000 psig (689 barg)



Dimensions (in inches) [mm]

Valve[1]	A	B	C[2]	D	E
O-ring packed, PTFE packed	1.50	3.00	4.82	1.75	1.98
½" F x ½" F	(38.1)	(76.2)	(122.4)	(44.5)	(50.3)
O-ring packed	1.38	3.70	4.82	1.75	-
½" F x ½" M	(35.1)	(94.0)	(122.4)	(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 Cv 1.4 maximum.
3. For Hastelloy® and -SG3 call factory for dimensions and weights.

H1 SERIES

Hand Valves

H1 Specifications

3/16 inch (4.8 mm) and ¼ inch (6.4 mm) orifice: 6000 psig (414 barg)

Standard Materials

Valve	Body and bonnet[1]	Stem	Packing[2]	Seat[3]
CS	A108	A581-303	PTFE or FKM O-ring with PTFE backup ring	Delrin®
316 SS	A479-316	A276-316 ENC plated	PTFE or FKM O-ring with PTFE backup ring	Delrin®
SG[4]	A479-316	Monel® 400	PTFE	Delrin®
SG3[7]	Hastelloy® C-276	Hastelloy® C-276	PTFE	Delrin®

H1 Specifications

¼ inch (6.4 mm) orifice: 10000 psig (689 barg)

Standard Materials

Valve	Body and bonnet[1]	Stem	Packing[2]	Seat[3]
CS	A108	A581-303	PTFE or FKM O-ring with PTFE backup ring	Delrin®
316 SS	A479-316	Monel® K500	PTFE or FKM O-ring with PTFE backup ring	Delrin®
SG[4]	A479-316	Monel® K500	PTFE or FKM O-ring with PTFE backup ring	Delrin®
SG3[7]	Hastelloy® C-276	Hastelloy® C-276	PTFE or FKM O-ring with PTFE backup ring	Delrin®

NOTES

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

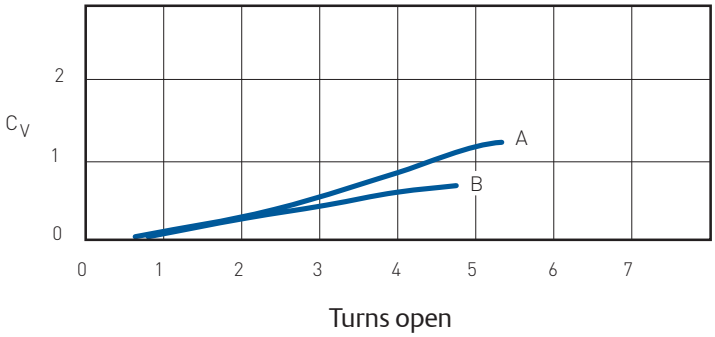
Bonnet Assemblies

H1 series valves feature a soft-seated bonnet assembly which has a one-piece rotating stem and plug. The stem threads are rolled and lubricated to prevent galling and reduce operating torque. It is available with patented PTFE packing, which is adjustable in service or with a FKM O-Ring and PTFE back-up ring. A protective dust cap is fitted to contain stem lubricant and prevent the influx of contaminants. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service.

Hand Valves

H1 Specifications

Flow characteristics - 3/16 inch (4.8 mm) and ¼ inch (6.4 mm) orifice



A = ¼ inch (6.4 mm) orifice, valve C_V 1.4 maximum
B = 3/16 inch (4.8 mm) orifice, valve C_V .83 maximum

Liquids

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

Gases - where $P_2 > .5P_1$

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

Gases - where $P_2 < .5P_1$

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

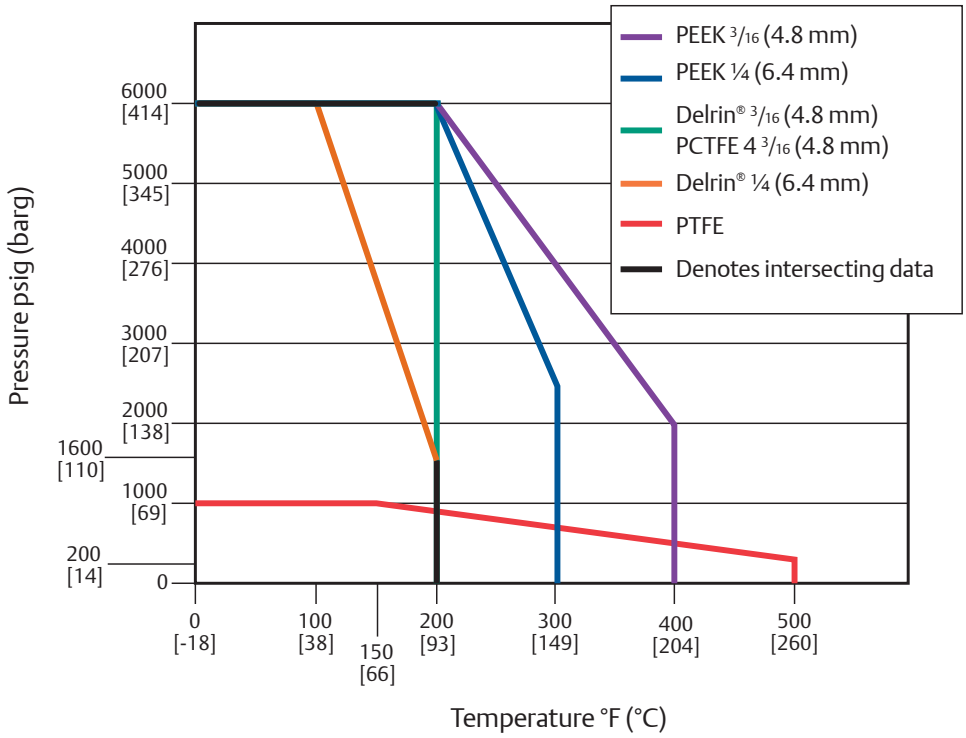
Where:

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 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

Hand Valves

Pressure and Temperature Ratings

3/16 inch (4.8 mm) and ¼ inch (6.4 mm) orifice: 6000 psig (414 barg)



Pressure and Temperature Ratings

Valve	3/16 inch (4.8 mm) orifice
Delrin® and PCTFE[1] seat	6000 psig at 200°F (414 barg at 93°C)
PEEK seat	6000 psig at 200°F (414 barg at 93°C) 2000 psig at 400°F (138 barg at 204°C)
PTFE seat	1000 psig at150°F (69 barg at 66°C) 200 psig at 500°F (14 barg at 260°C)
Valve	**¼ inch (6.4 mm) orifice**
Delrin® seat	6000 psig at 100°F (414 barg at 38°C) 1600 psig at 200°F (110 barg at 93°C)
PEEK seat	6000 psig at 200°F (414 barg at 93°C) 2500 psig at 300°F (172 barg at 149°C)

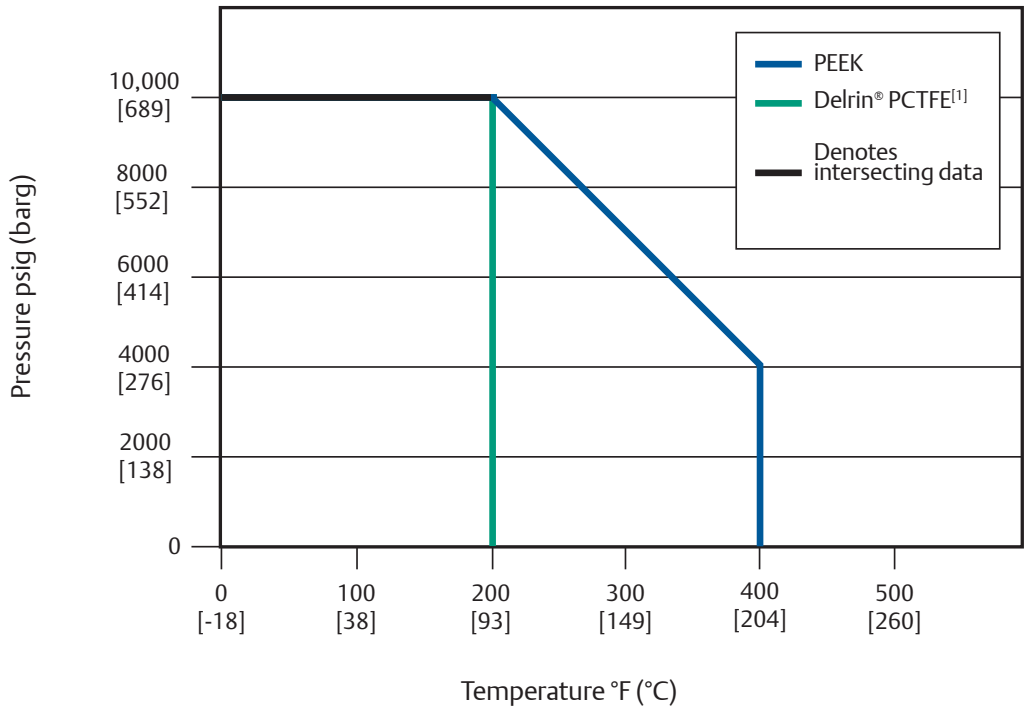
NOTE

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Minimum temperature for 316 SS bonnets with PTFE, PEEK, PCTFE seats -70°F (-56°C), with Delrin® seats -40°F(-40°C). Carbon Steel and O-Ring Packing -20°F (-29°C).

Hand Valves

Pressure and Temperature Ratings

¼ inch (6.4 mm) orifice: 10000 psig (689 barg)



Pressure and Temperature Ratings

Valve	¼ inch (6.4 mm) orifice
Delrin® and PCTFE[1] seat	10000 psig at 200°F (689 barg at 93°C)
PEEK seat	10000 psig at 200°F (689 barg at 93°C) 4000 psig at 400°F (276 barg at 204°C)

NOTES

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Minimum temperature for 316 SS bonnets is with PTFE, PEEK, PCTFE seats -70°F (-56°C), with Delrin® seats -40°F(-40°C). Carbon Steel and O-Ring Packing -20°F (-29°C).

H1 SERIES

Hand Valves

Selection Guide - H1

3/16 inch (4.8 mm) and ¼ inch (6.4 mm) orifice: 6000 psig (414 barg)

H1	V	D	S	-44Q	B	L
BASIC SERIES	**PACKING**	**SEAT**	**MATERIAL**	**CONNECTIONS (BI-DIRECTIONAL)**	**CONNECTION STYLE**	**LENGTH**
				1/4" (6.4 mm) orifice		
H1	**V** PTFE	**D** Delrin® (standard)	**C** CS	**2** ¼ inch F x ¼ inch F	**B** Female socket weld	**L** Extension length for 4" of insulation
	R FKM O-ring with PTFE backup ring	**K** PCTFE[1]	**S** 316 SS	**22** ¼ inch F x ¼ inch M	**C** Male socket weld	
		E PEEK	**M** Monel®	**24** ¼ inch F x ¼ inch M		
		V PTFE	**S** Hastelloy®	**4Q** ½ inch F x ½ inch F		
				44Q ½ inch F x ½ inch M		
				44QA ½ inch F x ½ inch M (Angle)		
				1/4" (6.4 mm) orifice (Delrin® and PEEK Seats only)		
				4QR ½ inch F x ½ inch F		
				44QR ½ inch F x ½ inch M		

-SG

OPTIONS	
HD	Hydro testing (MSS-SP-61)
OC00	Oxygen clean gaseous
OC01	Oxygen clean liquid
PMI00	PMI body only
SG	Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 (SS only)
SG3	Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm))
SS	All 316 SS construction

NOTE

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

Hand Valves

Selection Guide - H1

1/4 inch (6.4 mm) orifice: 10,000 psig (689 barg)

H1	V	D	C	-44Q	-SG
BASIC SERIES	**PACKING**	**SEAT**	**MATERIAL**	**CONNECTIONS (BI-DIRECTIONAL)**	**OPTIONS**
H1	**V** PTFE (packed bonnet available in CS only) **R** FKM O-ring with PTFE backup ring	**D** Delrin® (standard) **K** PCTFE[1] **E** PEEK	**C** CS **S** 316 SS **S** Hastelloy®	**4R10** 1/4 inch F x 1/4 inch F **44R10** 1/4 inch M x 1/4 inch F	**HD** Hydro testing (MSS-SP-61) **OC00** Oxygen clean gaseous **OC01** Oxygen clean liquid **PMI00** PMI body only **SG** Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 (SS only) **SG3** Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)) **SS** All 316 SS construction

NOTE

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