

# NEEDLE VALVES



# Contents

## Integral Bonnet Needle Valves

NB and HNB Series (3000/5000 psi) 3

## Integral Bar Stock Needle Valves

NFB Series (6000 psi) 8

## Bar Stock Needle Valves

NSB Series (6000 psi) 11

## Forged Needle Valves

HNF Series (10000 psi) 14

## Union Bonnet Needle Valves

NBU and HNBU Series (6000/10000 psi) 17

## Rising Plug Valves


PR and GPR Series (6000 psi) 21

## Gauge Valves

BVG and RVG Series (6000 psi) 23

## Part NO. Description

For Example: **T-SS-NB-MN 2-FN 2-3-11c-A**

Brand	Material	Series	Inlet or Outlet	Size	Ofirce	Stem	Type	
	SS: SS 316	NB: HNB Series	FN: Female Npt	2: 1/8"	3: 3mm	11a	A: Angle	
	S9: SS 904L	NFB Series	MN: Male Npt	3: 3/16" or 3mm	4: 4mm	11b	3w: 3-way	
	S4: SS 304	NSB Series	FR: Female BSPT	4: 1/4"	5: 5.1mm	11c		
	S2: SS 321	HNF Series	MR: Male BSPT	5: 5/16"	6: 6.4mm			
	M4: Monle 400	NBU: HNBU Series	FT: Frantional Tube	6: 3/8" or 6mm	7: 7.5mm			
	I6: Inconle 625	PR: GPR Series	MT: Metric Tube	8: 1/2" or 8mm	9: 9.1mm			
	HC: Hastelly C 276	BVG: RVG Series	BW: Butt Weld	10: 5/8" or 10mm	12: 12.2mm			
	B: Brass		SW: Socket Weld	12: 3/4" or 12mm	15: 15mm			
	CS: Cabon Steel			16: 1" or 16mm				

# Integral Bonnet Needle Valves

**NB Series: Maximum working pressure 3000 psi**

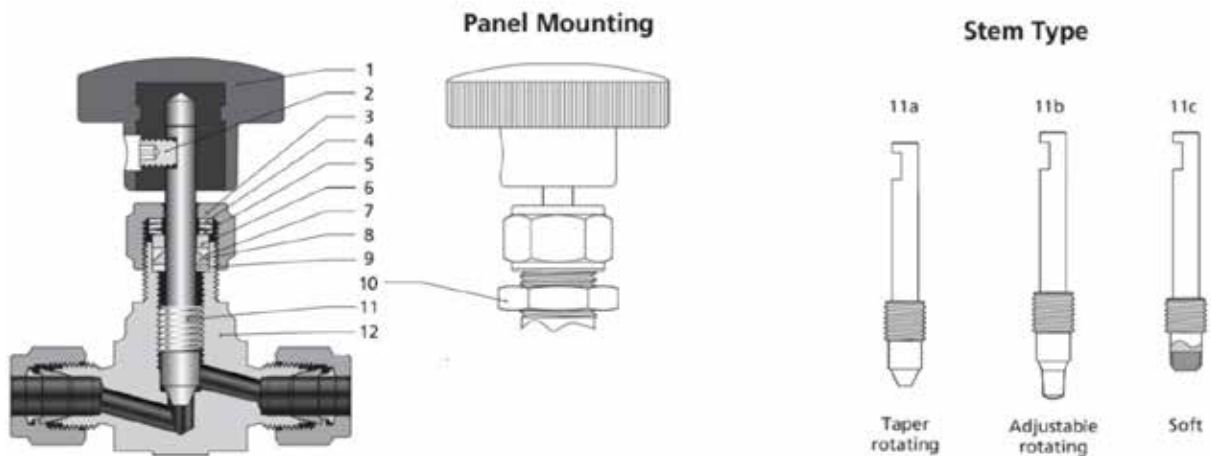
**HNB Series: Maximum working pressure 5000 psi**

## Features

- ⦿ One-piece forged body.
- ⦿ Easy external adjustments by packing nut.
- ⦿ Compact design.
- ⦿ Handle of different colors available for option.
- ⦿ Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- ⦿ Maximum working pressure:
  - NB Series (Soft sealing): 3000 psi (207 bar)
  - HNB Series (Hard sealing): 5000 psi (345 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)



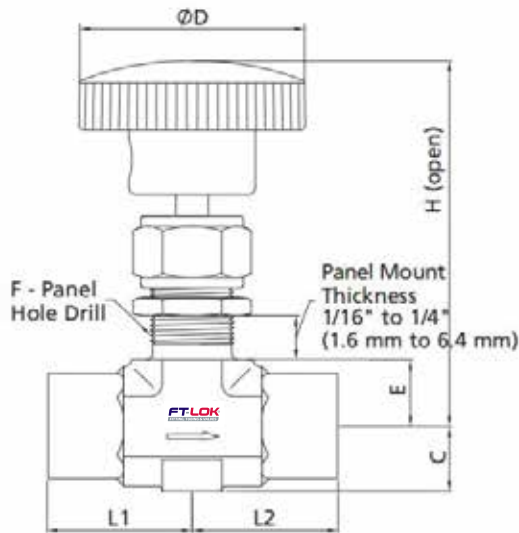
## Standard Materials of Construction



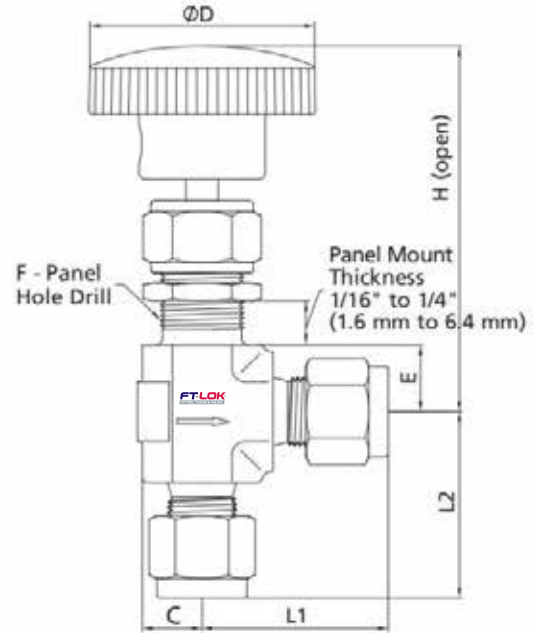
NO.	Component	Material		
		316 SS	Brass	Alloy 400
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Stainless steel		
3	Packing Bolt	316 SS/A276	Brass 36000/B16	Alloy 400/B164
4	Washer	316 SS/A276		
5	Packing Spring	S17700/A693		
6	Washer	316 SS/A276		
7	Upper Packing	PTFE/PEEK		
8	Lower Packing	PTFE/PEEK		
9	Packing Washer	316 SS/A276		
10	Panel Nut	316 SS/A276		
11	Stem	316 SS/A276	304 SS/A276	Alloy 400/B164
12	Body	316 SS/A276	Brass 36000/B16	Alloy 400/B164

⦿ Note: The NB/HNB series needle valves default to panel installation structure when leaving the factory.

### Straight Pattern



### Angle Pattern

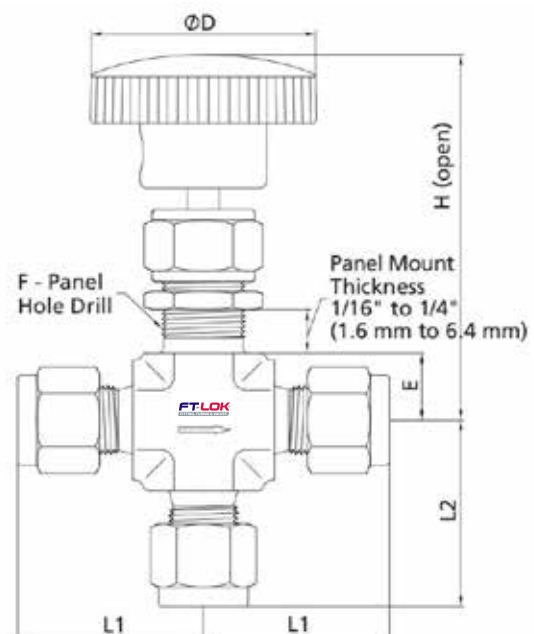
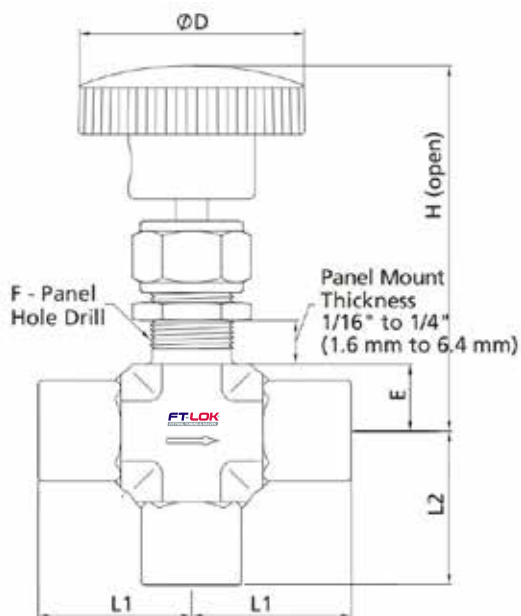


## Dimensions of NB Series (Soft sealing, 3000 psi)

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-NB-FN2-2	1/8 Female NPT	1/8 Female NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-NB-FN4-4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-FN6-6	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-FN8-10	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.91 (93.3)
-NB-MN2-2	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-NB-MN4-4	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-MN6-6	3/8 Male NPT	3/8 Male NPT	0.25 (6.4)	0.70	1.12 (28.4)	1.12 (28.4)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MN8-6	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.70	1.50 (38.1)	1.50 (38.1)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MN12-10	3/4 Male NPT	3/4 Male NPT	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-FT2-2	1/8" Tube	1/8" Tube	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-NB-FT4-4	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.55 (13.9)	2.50 (63.5)
-NB-FT6-6	3/8" Tube	3/8" Tube	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.55 (13.9)	2.97 (75.5)
-NB-FT8-6	1/2" Tube	1/2" Tube	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-FT8-10	1/2" Tube	1/2" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-FT12-10	3/4" Tube	3/4" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-MT3-2	3 mm	3 mm	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-NB-MT6-4	6 mm	6 mm	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-MT8-4	8 mm	8 mm	0.16 (4.0)	0.35	1.17 (29.6)	1.17 (29.6)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-MT10-6	10 mm	10 mm	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MT12-6	12 mm	12 mm	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MT14-6	14 mm	14 mm	0.25 (6.4)	0.70	1.56 (39.7)	1.56 (39.7)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MT18-16	16 mm	16 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-MT18-10	18 mm	18 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)

## Dimensions of HNB Series (Hard sealing, 5000 psi)

Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-HNB-FN2-2	1/8 Female NPT	1/8 Female NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-HNB-FN4-4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-FN6-6	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-FN8-10	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.91 (99.3)
-HNB-MN2-2	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-HNB-MN4-4	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-MN6-6	3/8 Male NPT	3/8 Male NPT	0.25 (6.4)	0.70	1.12 (28.4)	1.12 (28.4)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MN8-6	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.70	1.50 (38.1)	1.50 (38.1)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MN12-10	3/4 Male NPT	3/4 Male NPT	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-FT2-2	1/8" Tube	1/8" Tube	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-HNB-FT4-4	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.55 (13.9)	2.50 (63.5)
-HNB-FT6-6	3/8" Tube	3/8" Tube	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.55 (13.9)	2.97 (75.5)
-HNB-FT8-6	1/2" Tube	1/2" Tube	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-FT8-10	1/2" Tube	1/2" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-FT12-10	3/4" Tube	3/4" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-MT3-2	3 mm	3 mm	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	0.32 (8.1)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-HNB-MT6-4	6 mm	6 mm	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-MT8-4	8 mm	8 mm	0.16 (4.0)	0.35	1.17 (29.6)	1.17 (29.6)	0.39 (10.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-MT10-6	10 mm	10 mm	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MT12-6	12 mm	12 mm	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MT14-6	14 mm	14 mm	0.25 (6.4)	0.70	1.56 (39.7)	1.56 (39.7)	0.50 (12.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MT16-10	16 mm	16 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-MT18-10	18 mm	18 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	0.75 (19.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)



## Dimensions of NB 3-Way Series (Soft sealing, 3000 psi)

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)					
	Inlet	Outlet			L1	L2	D	E	F	H
-NB-FN2-2-3W	1/8 Female NPT	1/8 Female NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-NB-FN4-4-3W	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-FN4-6-3W	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-FN6-6-3W	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-FN8-6-3W	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.91 (99.3)
-NB-MN2-2-3W	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-NB-MN4-4-3W	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-MN6-6-3W	3/8 Male NPT	3/8 Male NPT	0.25 (6.4)	0.70	1.12 (28.4)	1.12 (28.4)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MN8-6-3W	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.70	1.50 (38.1)	1.50 (38.1)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MN12-10-3W	3/4 Male NPT	3/4 Male NPT	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-FT2-2-3W	1/8" Tube	1/8" Tube	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-NB-FT4-4-3W	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	1.38 (35.0)	0.44 (11.2)	0.55 (13.9)	2.50 (63.5)
-NB-FT6-6-3W	3/8" Tube	3/8" Tube	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	1.88 (47.8)	0.50 (12.7)	0.55 (13.9)	2.97 (75.5)
-NB-FT8-6-3W	1/2" Tube	1/2" Tube	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-FT8-10-3W	1/2" Tube	1/2" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-FT12-10-3W	3/4" Tube	3/4" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-MT3-2-3W	3 mm	3 mm	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-NB-MT6-4-3W	6 mm	6 mm	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-MT8-4-3W	8 mm	8 mm	0.16 (4.0)	0.35	1.17 (29.6)	1.17 (29.6)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-NB-MT10-6-3W	10 mm	10 mm	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MT12-6-3W	12 mm	12 mm	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MT14-6-3W	14 mm	14 mm	0.25 (6.4)	0.70	1.56 (39.7)	1.56 (39.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-NB-MT16-10-3W	16 mm	16 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-NB-MT18-10-3W	18 mm	18 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.50 (88.9)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)

## Dimensions of HNB 3-Way Series (Hard sealing, 5000 psi)

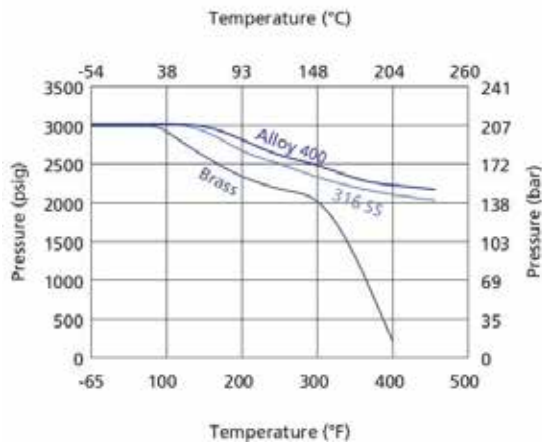
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)					
	Inlet	Outlet			L1	L2	D	E	F	H
-HNB-FN2-2-3W	1/8 Female NPT	1/8 Female NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-HNB-FN4-4-3W	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-FN4-6-3W	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-FN6-6-3W	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.70	1.06 (27.0)	1.06 (27.0)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-FN8-6-3W	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	1.88 (47.8)	0.75 (19.1)	1.03 (26.2)	3.91 (99.3)
-HNB-MN2-2-3W	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-HNB-MN4-4-3W	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-MN6-6-3W	3/8 Male NPT	3/8 Male NPT	0.25 (6.4)	0.70	1.12 (28.4)	1.12 (28.4)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MN8-6-3W	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.70	1.50 (38.1)	1.50 (38.1)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MN12-10-3W	3/4 Male NPT	3/4 Male NPT	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)

Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)					
	Inlet	Outlet			L1	L2	D	E	F	H
-HNB-FT2-2-3W	1/8" Tube	1/8" Tube	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.28 (58.0)
-HNB-FT4-4-3W	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	1.38 (35.0)	0.44 (11.2)	0.55 (13.9)	2.50 (63.5)
-HNB-FT6-6-3W	3/8" Tube	3/8" Tube	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	1.88 (47.8)	0.50 (12.7)	0.55 (13.9)	2.97 (75.5)
-HNB-FT8-6-3W	1/2" Tube	1/2" Tube	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-FT8-10-3W	1/2" Tube	1/2" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-FT12-10-3W	3/4" Tube	3/4" Tube	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-MT3-2-3W	3 mm	3 mm	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	1.38 (35.0)	0.44 (11.2)	0.47 (11.9)	2.28 (58.0)
-HNB-MT6-4-3W	6 mm	6 mm	0.16 (4.0)	0.35	1.12 (28.4)	1.12 (28.4)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-MT8-4-3W	8 mm	8 mm	0.16 (4.0)	0.35	1.17 (29.6)	1.17 (29.6)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
-HNB-MT10-6-3W	10 mm	10 mm	0.25 (6.4)	0.70	1.29 (32.8)	1.29 (32.8)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MT12-6-3W	12 mm	12 mm	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MT14-6-3W	14 mm	14 mm	0.25 (6.4)	0.70	1.56 (39.7)	1.56 (39.7)	1.88 (47.8)	0.50 (12.7)	0.78 (19.8)	2.97 (75.5)
-HNB-MT16-10-3W	16 mm	16 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)
-HNB-MT18-10-3W	18 mm	18 mm	0.39 (10.0)	1.80	1.90 (48.3)	1.90 (48.3)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.92 (99.6)

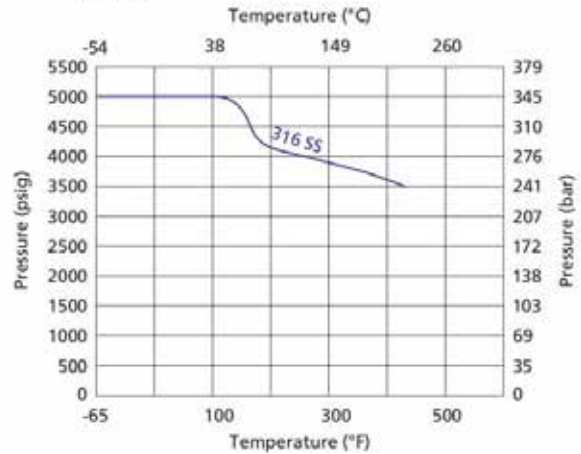
1. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. Dimensions are shown with **FT-LOK** nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. For dimensions not shown above, please contact the authorized representative or **FT-LOK** employees.

## Pressure vs. Temperature

### NB Series

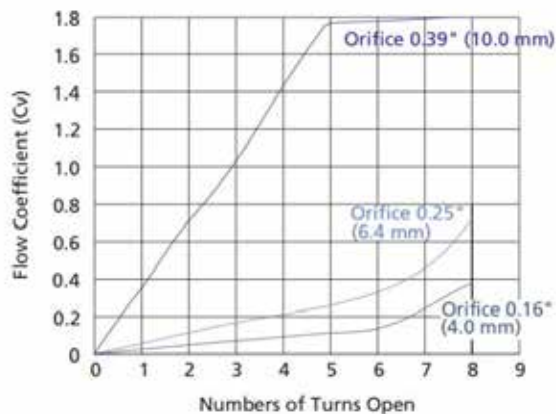


### HNB Series



## Flow Data at 100°F(38°C)

### Regulating Stem



# Integral Bar Stock Needle Valves

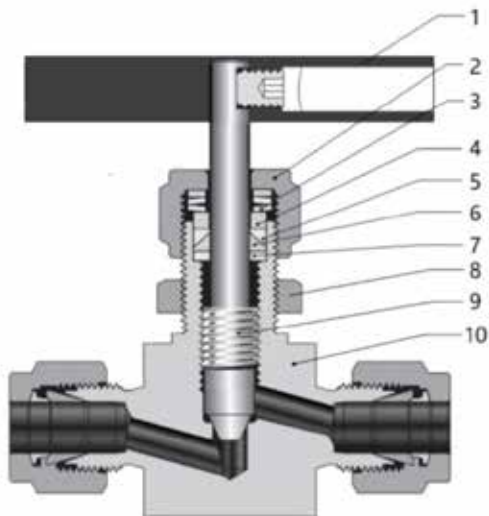
## NFB Series: Maximum working pressure 6000 psi

### Features

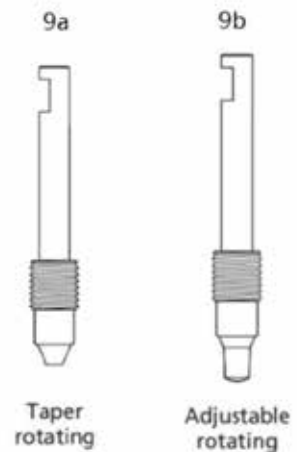
- ⦿ Cold drawn bar .
- ⦿ Panel mounting available as an option.
- ⦿ Integrated valve body structure, leak free design.
- ⦿ Handle of different colors available for option.
- ⦿ Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- ⦿ Maximum working pressure:
  - Stainless steel: 6000 psi (414 bar)
  - Alloy C-276: 6000 psi (414 bar)
  - Alloy 400: 5000 psi (345 bar)
  - Titanium: 5000 psi (345 bar)
  - Brass: 3000 psi (207 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F(-54°C to 649°C)



### Standard Materials of Construction

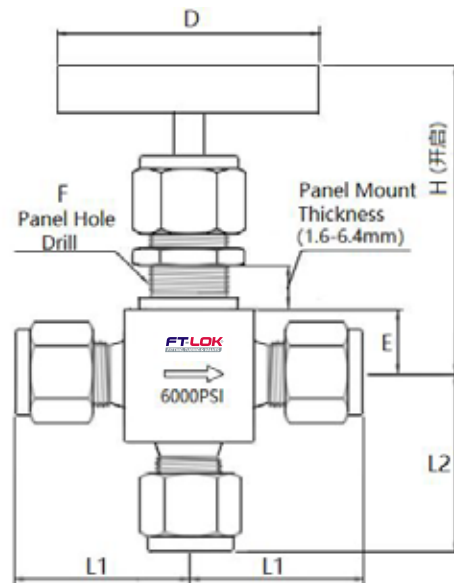
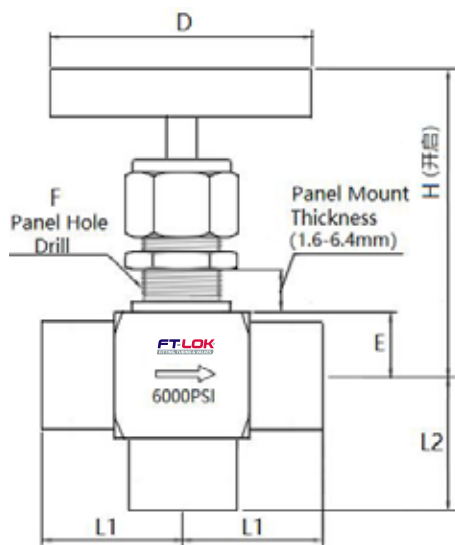
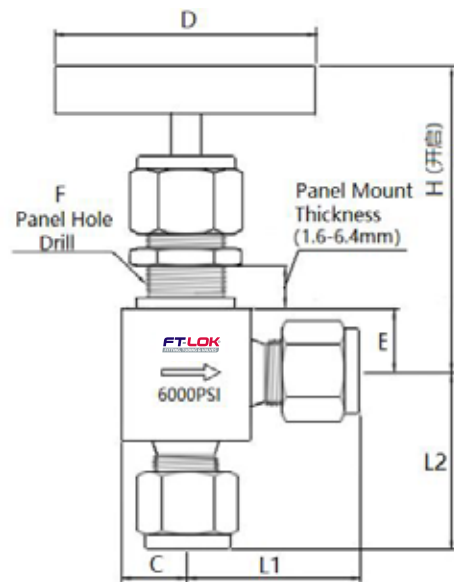
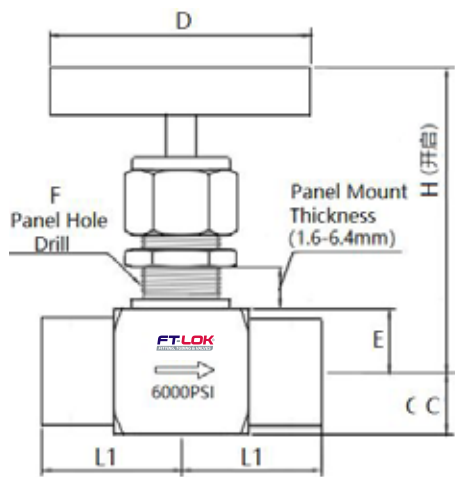


### Stem Type



NO.	Component	Material		
		316 SS	Brass	Alloy 400
1	Handle	Anodized aluminum or stainless steel		
2	Packing Nut	316 SS/A276	Brass 36000/B16	Alloy 400/B164
3	Packing Spring	S17700/A693		
4	Upper Packing	PTFE or PEEK or graphite		
5	Lower Packing	PTFE or PEEK or graphite		
6	Set Screw	Stainless steel		
7	Packing Washer	316 SS/A276	Brass 36000/B16	Alloy 400/B164
8	Panel Nut	Stainless Steel	Brass 36000	Stainless Steel
9	Stem	316 SS/A276	304 SS/A276	Alloy 400/B164
10	Body	316 SS/A276	Brass 36000/B16	Alloy 400/B164

⦿ Note: The NFB series needle valves default to panel installation structure when leaving the factory.

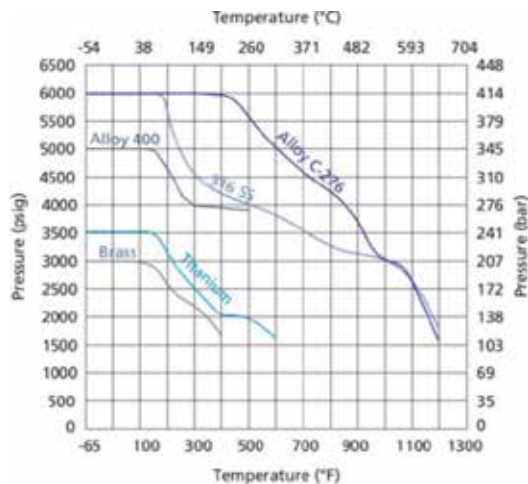


Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-NFB-FN2-3	1/8 Female NPT	1/8 Female NPT	0.12 (3.0)	0.20	0.91 (23.0)	0.91 (23.0)	0.39 (10.0)	1.77 (45.0)	0.36 (9.1)	0.63 (16.0)	3.23 (82.0)
-NFB-FN4-4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	1.06 (27.0)	1.06 (27.0)	0.47 (12.0)	2.05 (52.0)	0.47 (12.0)	0.63 (16.0)	3.35 (85.0)
-NFB-FN6-5	3/8 Female NPT	3/8 Female NPT	0.20 (5.1)	0.56	1.14 (29.0)	1.14 (29.0)	0.51 (13.0)	2.17 (55.0)	0.51 (13.0)	0.71 (18.0)	3.62 (92.0)
-NFB-FN8-6	1/2 Female NPT	1/2 Female NPT	0.25 (6.4)	0.70	1.26 (32.0)	1.26 (32.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.71 (18.0)	3.78 (96.0)
-NFB-FN8-8			0.31 (7.8)	0.95	1.26 (32.0)	1.26 (32.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.79 (20.0)	3.78 (96.0)
-NFB-FN12-9	3/4 Female NPT	3/4 Female NPT	0.36 (9.1)	1.60	1.30 (33.0)	1.30 (33.0)	0.71 (18.0)	2.36 (60.0)	0.71 (18.0)	0.79 (20.0)	3.94 (100)
-NFB-FN16-12	1 Female NPT	1 Female NPT	0.48 (12.2)	2.65	1.42 (36.0)	1.42 (36.0)	0.87 (22.0)	2.76 (70.0)	0.87 (22.0)	0.94 (24.0)	4.17 (106)
-NFB-MN2-3	1/8 Male NPT	1/8 Male NPT	0.12 (3.0)	0.20	0.91 (23.0)	0.981(23.0)	0.39 (10.0)	1.77 (45.0)	0.36 (9.1)	0.63 (16.0)	3.23 (82.0)
-NFB-MN4-4	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	1.06 (27.0)	1.06 (27.0)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-MN6-5	3/8 Male NPT	3/8 Male NPT	0.20 (5.1)	0.56	1.14 (29.0)	1.14 (29.0)	0.47 (12.0)	2.05 (52.0)	0.47 (12.0)	0.63 (16.0)	3.35 (85.0)
-NFB-MN8-6	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.70	1.30 (33.0)	1.30 (33.0)	0.51 (13.0)	2.17 (55.0)	0.51 (13.0)	0.71 (18.0)	3.62 (92.0)
-NFB-MN12-7	3/4 Male NPT	3/4 Male NPT	0.31 (7.8)	0.95	1.42 (36.0)	1.42 (36.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.79 (20.0)	3.78 (96.0)
-NFB-MN16-9	1 Male NPT	1 Male NPT	0.36 (9.1)	1.60	1.61 (41.0)	1.61 (41.0)	0.71 (18.0)	2.36 (60.0)	0.71 (18.0)	0.79 (20.0)	3.94 (100)

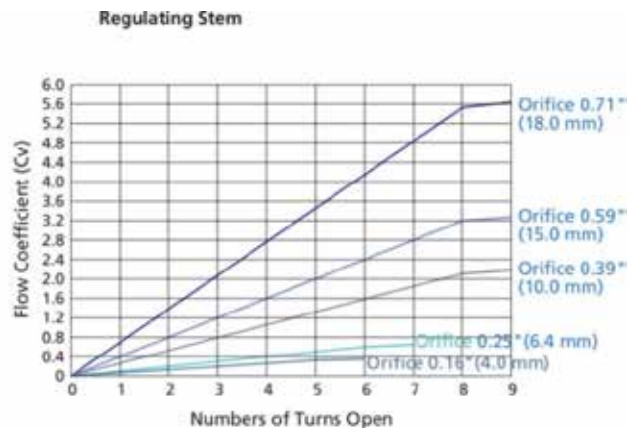
Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-NFB-SW2-3	1/8 Socket Weld	1/8 Socket Weld	0.12 (3.0)	0.20	0.94 (23.8)	0.94 (23.8)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-SW4-4	1/4 Socket Weld	1/4 Socket Weld	0.16 (4.0)	0.35	0.98 (25.0)	0.98 (25.0)	0.47 (12.0)	2.05 (52.0)	0.47 (12.0)	0.63 (16.0)	3.35 (85.0)
-NFB-SW6-5	3/8 Socket Weld	3/8 Socket Weld	0.20 (5.1)	0.56	1.06 (27.0)	1.06 (27.0)	0.51 (13.0)	2.17 (55.0)	0.51 (13.0)	0.71 (18.0)	3.62 (92.0)
-NFB-SW8-6	1/2 Socket Weld	1/2 Socket Weld	0.25 (6.4)	0.70	1.14 (29.0)	1.14 (29.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.71 (18.0)	3.78 (96.0)
-NFB-SW8-8			0.31 (7.8)	0.95	1.14 (29.0)	1.14 (29.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.79 (20.0)	3.78 (96.0)
-NFB-SW12-9	3/4 Socket Weld	3/4 Socket Weld	0.36 (9.1)	1.60	1.14 (29.0)	1.14 (29.0)	0.71 (18.0)	2.36 (60.0)	0.71 (18.0)	0.79 (20.0)	3.94 (100)
-NFB-SW16-12	1 Socket Weld	1 Socket Weld	0.48 (12.2)	2.65	1.30 (33.0)	1.30 (33.0)	0.87 (22.0)	2.76 (70.0)	0.87 (22.0)	0.94 (24.0)	4.17 (106)
-NFB-FT2-2	1/8" Tube	1/8" Tube	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-FT4-4	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.14 (29.0)	1.14 (29.0)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-FT6-5	3/8" Tube	3/8" Tube	0.20 (5.1)	0.56	1.30 (33.0)	1.30 (33.0)	0.47 (12.0)	2.05 (52.0)	0.47 (12.0)	0.63 (16.0)	3.35 (85.0)
-NFB-FT8-6	1/2" Tube	1/2" Tube	0.25 (6.4)	0.70	1.42 (36.0)	1.42 (36.0)	0.51 (13.0)	2.17 (55.0)	0.51 (13.0)	0.71 (18.0)	3.62 (92.0)
-NFB-FT12-8	3/4" Tube	3/4" Tube	0.31 (7.8)	0.95	1.89 (48.0)	1.89 (48.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.79 (20.0)	3.78 (96.0)
-NFB-FT16-12	1" Tube	1" Tube	0.48 (12.2)	2.65	2.05 (52.0)	2.05 (52.0)	0.79 (20.0)	2.76 (70.0)	0.79 (20.0)	0.94 (24.0)	4.02 (102)
-NFB-MT3-2	3 mm	3 mm	0.08 (2.0)	0.09	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-MT6-4	6 mm	6 mm	0.16 (4.0)	0.35	1.14 (29.0)	1.14 (29.0)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-MT8-4	8 mm	8 mm	0.16 (4.0)	0.35	1.14 (29.0)	1.14 (29.0)	0.39 (10.0)	1.77 (45.0)	0.39 (10.0)	0.63 (16.0)	3.23 (82.0)
-NFB-MT10-5	10 mm	10 mm	0.20 (5.1)	0.56	1.30 (33.0)	1.30 (33.0)	0.47 (12.0)	2.05 (52.0)	0.47 (12.0)	0.63 (16.0)	3.35 (85.0)
-NFB-MT12-6	12 mm	12 mm	0.25 (6.4)	0.70	1.42 (36.0)	1.42 (36.0)	0.51 (13.0)	2.17 (55.0)	0.51 (13.0)	0.71 (18.0)	3.62 (92.0)
-NFB-MT14-6	14 mm	14 mm	0.25 (6.4)	0.70	1.57 (40.0)	1.57 (40.0)	0.51 (13.0)	2.17 (55.0)	0.51 (13.0)	0.71 (18.0)	3.62 (92.0)
-NFB-MT18-8	18 mm	18 mm	0.31 (7.8)	0.95	1.81 (46.0)	1.81 (46.0)	0.63 (16.0)	2.17 (55.0)	0.63 (16.0)	0.79 (20.0)	3.78 (96.0)
-NFB-MT22-12	22 mm	22 mm	0.48 (12.2)	2.65	1.94 (49.5)	1.94 (49.5)	0.79 (20.0)	2.76 (70.0)	0.79 (20.0)	0.94 (24.0)	4.02 (102)
-NFB-MT25-12	25 mm	25 mm	0.48 (12.2)	2.65	2.05 (52.0)	2.05 (52.0)	0.79 (20.0)	2.76 (70.0)	0.79 (20.0)	0.94 (24.0)	4.02 (102)

1. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. If you want to purchase angle needle valve, please add "-A" after the Basic Ordering Number.
3. Dimensions are shown with **FTLOK** nuts finger-tightened. All dimensions are for reference only and are subject to change.
4. For dimensions not shown above, please contact the authorized representative or **FTLOK** employees.

### Pressure vs. Temperature



### Flow Data at 100°F(38°C)



# Bar Stock Needle Valves

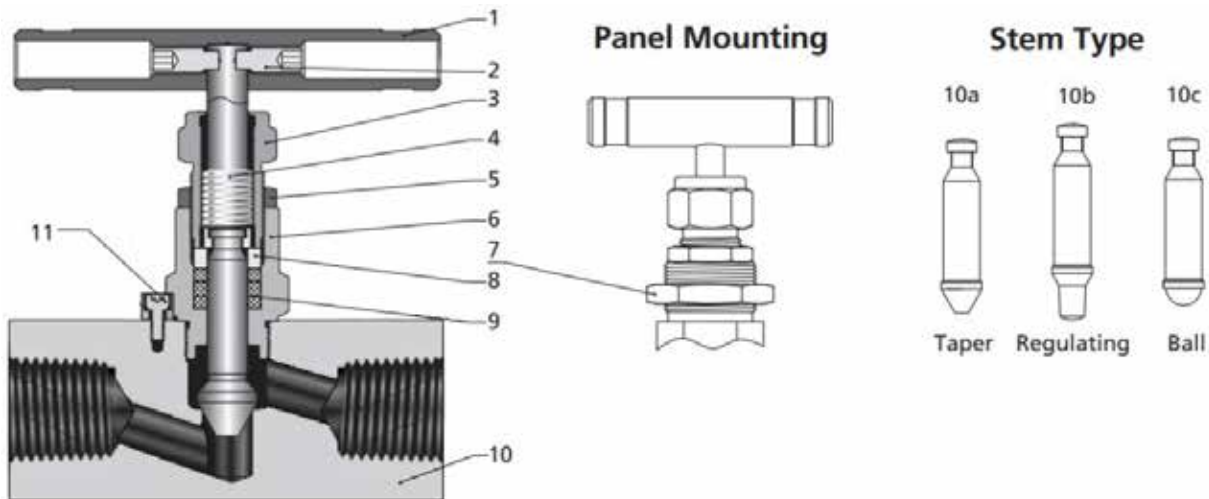
**NSB Series: Maximum working pressure 6000 psi**

## Features

- ⦿ Cold drawn bar .
- ⦿ Panel mounting available as an option.
- ⦿ Handle of different colors available for option.
- ⦿ Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- ⦿ Maximum working pressure:
  - Stainless steel: 6000 psi (414 bar)
  - Alloy C-276: 6000 psi (414 bar)
  - Alloy 400: 5000 psi (345 bar)
  - Titanium: 5000 psi (345 bar)
  - Brass: 3000 psi (207 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F(-54°C to 649°C)



## Standard Materials of Construction

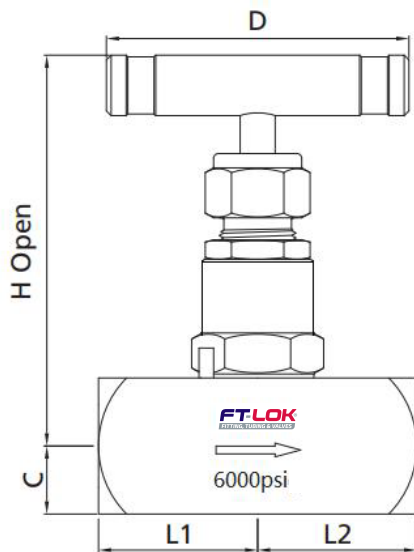


NO.	Component	Material		
		316 SS	Brass	Alloy 400
1	Handle	Anodized aluminum or stainless steel		
2	Set Screw	Stainless steel		
3	Packing Bolt	304 SS/A276	Brass 36000/B16	Alloy 400/B164
4	Stem	316 SS/A276	304 SS/A276	Alloy 400/B164
5	Lock Nut	316 SS/A276	Brass 36000/B16	316 SS/A276
6	Bonnet	316 SS/A276	Brass 36000/B16	Alloy 400/B164
7	Panel Nut	Stainless Steel	Brass 36000	Stainless Steel
8	Gland	316 SS/A276		
9	Packing	PTFE or PEEK or graphite		
10	Body	316 SS/A276	Brass 36000/B16	Alloy 400/B164
11	Lock Pin	304 SS/A276		

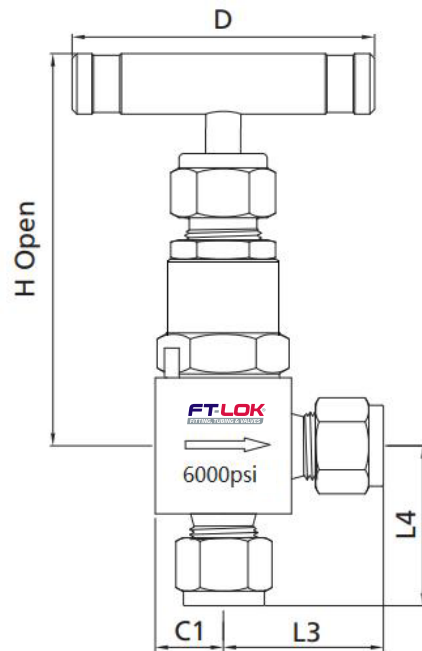
⦿ Note: The NSB series needle valves default to have no panel installation. If necessary, please add “- P” after the Basic Ordering Number. For example, SS-T-NSB-FN8-10-P

## Dimensions

### Straight Pattern



### Angle Pattern

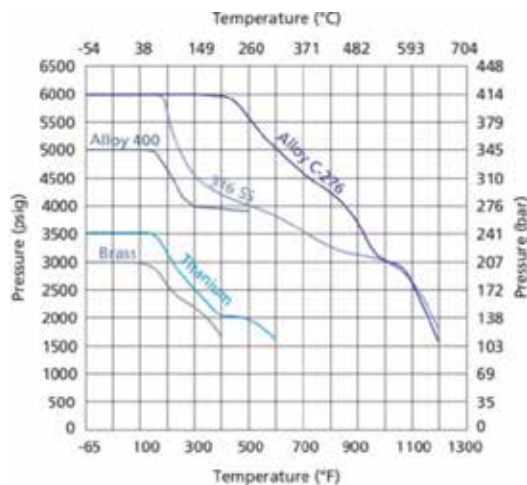


Basic Ordering Number	Connection Type & Size Inlet & Outlet	Orifice in(mm)	Cv	Dimension, in.(mm)							
				L1	L2	L3	L4	C	C1	D	H
-NSB-FN2-4	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-FN4-4	1/4 Female NPT	0.16 (4.0)	0.35	1.06 (26.9)	1.06 (26.9)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-FN4-6	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-FN6-6	3/8 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-FN8-6	1/2 Female NPT	0.25 (6.4)	0.85	1.22 (33.5)	1.22 (33.5)	1.12 (28.6)	0.63 (15.9)	0.59 (15.0)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-FN8-10	1/2 Female NPT	0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-FN12-10	3/4 Female NPT	0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-FN12-15	3/4 Female NPT	0.59 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)
-NSB-FN16-18	1 Female NPT	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	1.97 (50.0)	1.97 (50.0)	1.25 (31.8)	1.25 (31.8)	5.00 (127)	5.20 (137)
-NSB-MN4-4	1/4 Male NPT	0.16 (4.0)	0.35	1.06 (26.9)	1.06 (26.9)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-MN6-4	3/8 Male NPT	0.16 (4.0)	0.35	1.19 (30.2)	1.19 (30.2)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-MN6-5	3/8 Male NPT	0.25 (6.4)	0.85	1.19 (30.2)	1.19 (30.2)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-MN8-6	1/2 Male NPT	0.25 (6.4)	0.85	1.56 (39.7)	1.56 (39.7)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-MN12-10	3/4 Male NPT	0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.50 (38.1)	1.50 (38.1)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-MN16-15	1 Male NPT	0.59 (15.0)	3.27	1.97 (50.0)	1.97 (50.0)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)
-NSB-SW4-4	1/4 Socket Weld	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-SW6-5	3/8 Socket Weld	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-SW8-6	1/2 Socket Weld	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-SW12-9	3/4 Socket Weld	0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-SW16-12	1 Socket Weld	0.59 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)

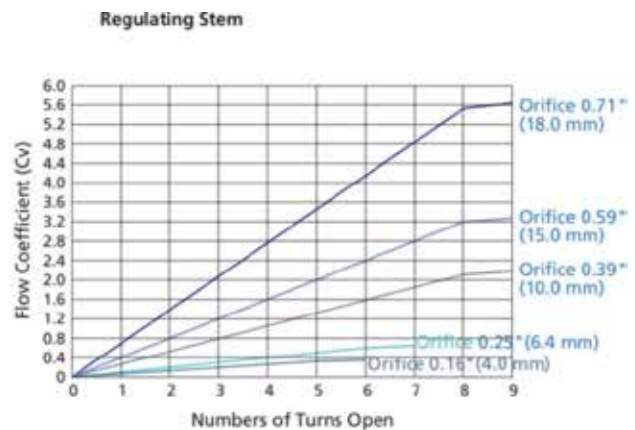
Basic Ordering Number	Connection Type & Size Inlet & Outlet	Orifice in(mm)	Cv	Dimension, in.(mm)							
				L1	L2	L3	L4	C	C1	D	H
-NSB-FT4-4	1/4" Tube	0.16 (4.0)	0.40	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-FT6-6	3/8" Tube	0.25 (6.4)	0.85	1.41 (35.8)	1.41 (35.8)	1.32 (33.6)	1.32 (33.6)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-FT8-6	1/2" Tube	0.25 (6.4)	0.85	1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-FT10-10	5/8" Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-FT12-10	3/4" Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-FT14-15	7/8" Tube	0.59 (15.0)	3.27	2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.00 (50.8)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)
-NSB-FT16-15	1" Tube	0.59 (15.0)	3.27	2.61 (66.3)	2.61 (66.3)	2.61 (66.3)	2.02 (51.3)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)
-NSB-MT6-4	6 mm Tube	0.16 (4.0)	0.40	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-MT8-4	8 mm Tube	0.16 (4.0)	0.40	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	2.84 (72)
-NSB-MT10-6	10 mm Tube	0.25 (6.4)	0.85	1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-MT12-6	12 mm Tube	0.25 (6.4)	0.85	1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-MT14-6	14 mm Tube	0.25 (6.4)	0.85	1.56 (39.7)	1.56 (39.7)	1.42 (36.1)	1.42 (36.1)	0.56 (14.3)	0.56 (14.3)	2.56 (65.0)	3.50 (89)
-NSB-MT16-10	16 mm Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-MT18-10	18 mm Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-MT20-15	20 mm Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.88 (22.2)	0.75 (19.1)	3.50 (89)	4.12 (105)
-NSB-MT22-15	22 mm Tube	0.59 (15.0)	3.27	2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.00 (50.8)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)
-NSB-MT25-15	25 mm Tube	0.59 (15.0)	3.27	2.61 (66.3)	2.61 (66.3)	2.61 (66.3)	2.02 (51.3)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	5.00 (127)

1. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. If you want to purchase angle needle valve, please add "-A" after the Basic Ordering Number.
3. Dimensions are shown with [FT-LOK](#) nuts finger-tightened. All dimensions are for reference only and are subject to change.
4. For dimensions not shown above, please contact the authorized representative or [FT-LOK](#) employees.

## Pressure vs. Temperature



## Flow Data at 100°F(38°C)



# Forged Needle Valves

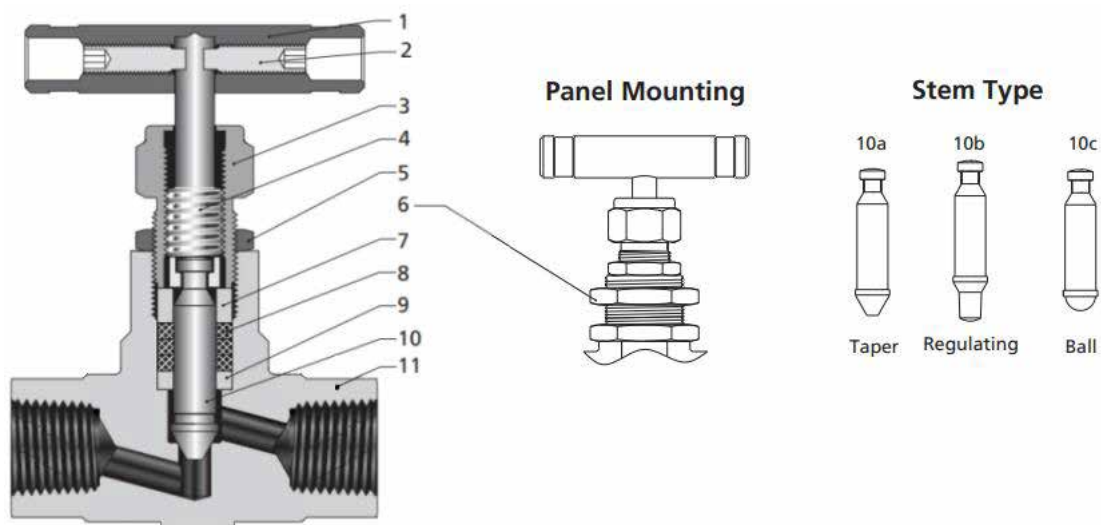
**HNF Series: Maximum working pressure 10000 psi**

## Features

- One-piece forged body.
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem.
- Panel mounting available as an option.
- Handle of different colors available for option.
- Linearly instead of helical movement of the nonrotating lower stem, avoiding galling damage to packing and tip.
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- Maximum working pressure: 10000 psi (689 bar)
- Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F(-54°C to 649°C)



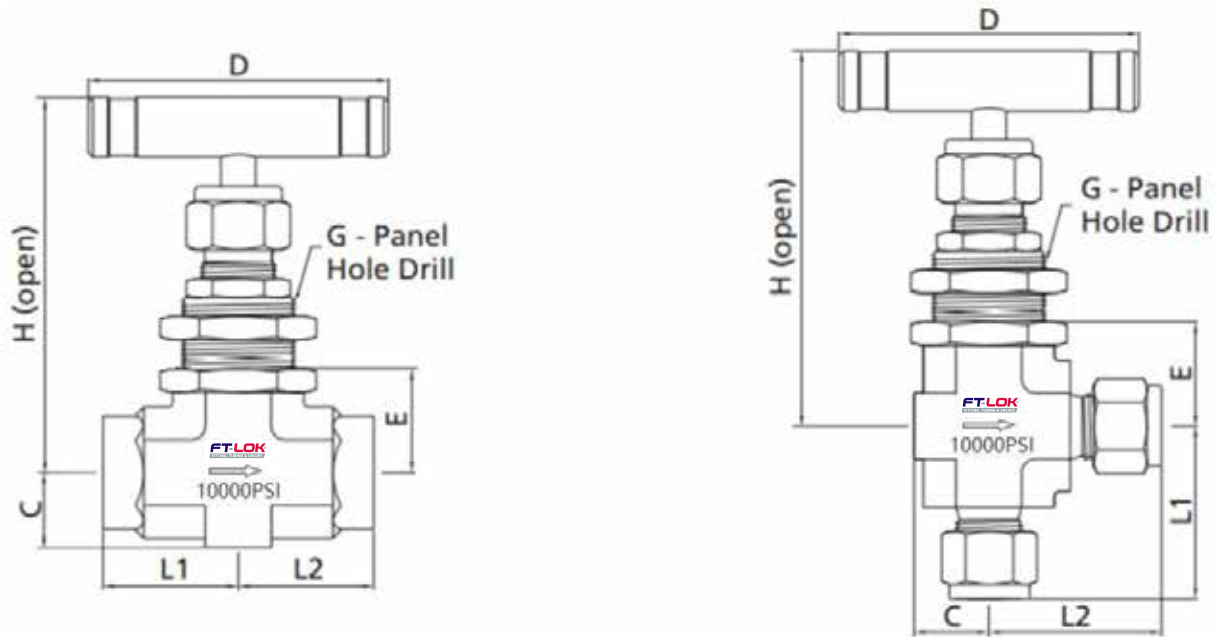
## Standard Materials of Construction



NO.	Component	Material		
		316 SS	F91	F92
1	Handle	Anodized aluminum or stainless steel		
2	Set Screw	Stainless steel		
3	Packing Bolt	316 SS/A276	F91/A182	F92/A182
4	Upper Stem	316 SS/A276	F91/A182	F92/A182
5	Lock Nut	304 SS/A276		
6	Panel Nut	304 SS/A276		
7	Gland	316 SS/A276	F91/A182	F92/A182
8	Packing	PTFE or PEEK or graphite		
9	Packing Washer	316 SS/A276	F91/A182	F92/A182
10	Lower Stem	Chrome-plated 316 SS/A276	Chrome-plated F91/A182	Chrome-plated F92/A182
11	Body	316 SS/A182	F91/A182	F92/A182

Note: The HNF series needle valves default to have no panel installation. If necessary, please add "- P" after the Basic Ordering Number. For example, SS-T-HNF-FN8-10-P

## Dimensions of HNF Series



Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	G	H
-HNF-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-FN4-4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	1.03 (26.2)	1.03 (26.2)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-FN6-6	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FN8-6	1/2 Female NPT	1/2 Female NPT	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	0.80 (20.3)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FN8-10	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.56 (39.6)	1.56 (39.6)	0.80 (20.3)	3.50 (88.9)	1.10 (28.0)	1.08 (27.5)	3.38 (85.8)
-HNF-FN12-12	3/4 Female NPT	3/4 Female NPT	0.50 (12.2)	2.65	1.58 (40.0)	1.58 (40.0)	0.80 (20.2)	3.50 (88.9)	1.10 (28.3)	1.08 (27.5)	3.78 (96.0)
-HNF-FN16-15	1 Female NPT	1 Female NPT	0.59 (15.0)	3.27	1.97 (50.0)	1.97 (50.0)	1.30 (33.0)	5.00 (127)	1.61 (41.0)	1.45 (36.8)	6.50 (165)
-HNF-FN2-4-A	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-FN4-4-A	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	1.03 (26.2)	1.03 (26.2)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-FN6-6-A	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FN8-6-A	1/2 Female NPT	1/2 Female NPT	0.25 (6.4)	0.85	1.26 (32.0)	1.26 (32.0)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FN8-10-A	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.56 (39.6)	1.56 (39.6)	0.80 (20.3)	3.50 (88.9)	1.10 (28.0)	1.08 (27.5)	3.38 (85.8)
-HNF-MN4-4	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	1.03 (26.2)	1.03 (26.2)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-MN6-5	3/8 Male NPT	3/8 Male NPT	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-MN8-6	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-MN12-7	3/4 Male NPT	3/4 Male NPT	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	0.80 (20.3)	3.50 (88.9)	1.10 (28.3)	1.08 (27.5)	3.86 (98.0)
-HNF-SW4-4	1/4 Socket Weld	1/4 Socket Weld	0.16 (4.0)	0.35	1.03 (26.2)	1.03 (26.2)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-SW6-6	3/8 Socket Weld	3/8 Socket Weld	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-SW8-6	1/2 Socket Weld	1/2 Socket Weld	0.25 (6.4)	0.85	1.26 (32.0)	1.26 (32.0)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-SW8-10	1/2 Socket Weld	1/2 Socket Weld	0.39 (10.0)	2.18	1.56 (39.6)	1.56 (39.6)	0.80 (20.3)	3.50 (88.9)	1.10 (28.0)	1.08 (27.5)	3.38 (85.8)

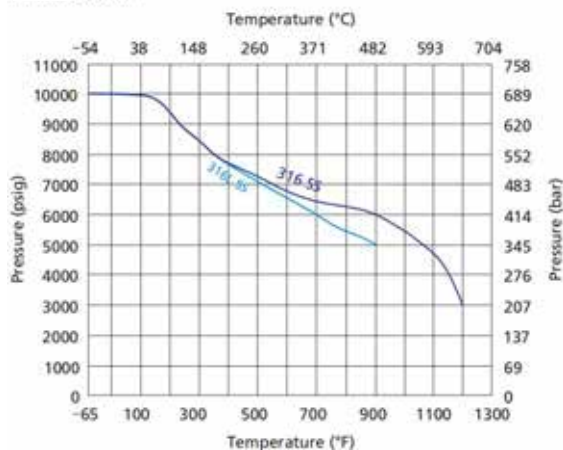
## Dimensions of HNF Series

Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-HNF-FT4-4	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.22 (30.9)	1.22 (30.9)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-FT6-6	3/8" Tube	3/8" Tube	0.25 (6.4)	0.85	1.44 (36.5)	1.44 (36.5)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FT8-6	1/2" Tube	1/2" Tube	0.25 (6.4)	0.85	1.53 (38.9)	1.53 (38.9)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FT8-10	1/2" Tube	1/2" Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	0.80 (20.3)	3.50 (88.9)	1.10 (28.3)	1.08 (27.5)	3.86 (98.0)
-HNF-FT4-4-A	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.22 (30.9)	1.22 (30.9)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-FT6-6-A	3/8" Tube	3/8" Tube	0.25 (6.4)	0.85	1.44 (36.5)	1.44 (36.5)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FT8-6-A	1/2" Tube	1/2" Tube	0.25 (6.4)	0.85	1.53 (38.9)	1.53 (38.9)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-FT8-10-A	1/2" Tube	1/2" Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	0.80 (20.3)	3.50 (88.9)	1.10 (28.3)	1.08 (27.5)	3.86 (98.0)
-HNF-MT6-4	6 mm Tube	6 mm Tube	0.16 (4.0)	0.35	1.22 (30.9)	1.22 (30.9)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-MT8-4	8 mm Tube	8 mm Tube	0.16 (4.0)	0.35	1.25 (31.8)	1.25 (31.8)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-MT10-6	10 mm Tube	10 mm Tube	0.25 (6.4)	0.85	1.44 (36.5)	1.44 (36.5)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-MT12-6	12 mm Tube	12 mm Tube	0.25 (6.4)	0.85	1.53 (38.9)	1.53 (38.9)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-MT12-10	12 mm Tube	12 mm Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	0.80 (20.3)	3.50 (88.9)	1.10 (28.3)	1.08 (27.5)	3.86 (98.0)
-HNF-MT6-4-A	6 mm Tube	6 mm Tube	0.16 (4.0)	0.35	1.22 (30.9)	1.22 (30.9)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-MT8-4-A	8 mm Tube	8 mm Tube	0.16 (4.0)	0.35	1.25 (31.8)	1.25 (31.8)	0.49 (12.5)	2.17 (55.0)	0.71 (18.0)	0.77 (19.6)	2.85 (72.5)
-HNF-MT10-6-A	10 mm Tube	10 mm Tube	0.25 (6.4)	0.85	1.44 (36.5)	1.44 (36.5)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-MT12-6-A	12 mm Tube	12 mm Tube	0.25 (6.4)	0.85	1.53 (38.9)	1.53 (38.9)	0.62 (15.8)	2.56 (65.0)	0.87 (22.0)	0.96 (24.4)	3.38 (85.8)
-HNF-MT12-10-A	12 mm Tube	12 mm Tube	0.39 (10.0)	2.18	1.97 (50.0)	1.97 (50.0)	0.80 (20.3)	3.50 (88.9)	1.10 (28.3)	1.08 (27.5)	3.86 (98.0)

1. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. If you want to purchase angle needle valve, please add "-A" after the Basic Ordering Number.
3. Dimensions are shown with **FTLOK** nuts finger-tightened. All dimensions are for reference only and are subject to change.
4. For dimensions not shown above, please contact the authorized representative or **FTLOK** employees.

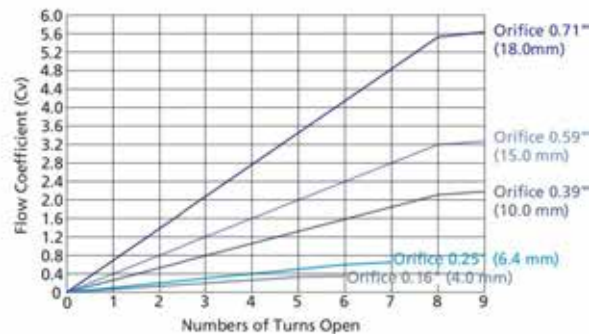
## Pressure vs. Temperature

HNF Series



## Flow Data at 100°F(38°C)

Regulating Stem



# Union Bonnet Needle Valves

**NU Series: Maximum working pressure 6000 psig**

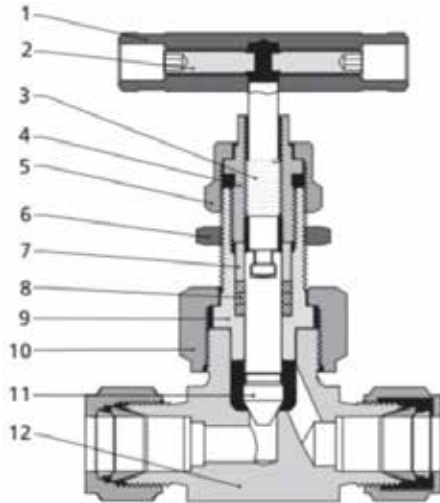
**HNU Series: Maximum working pressure 10000 psig**

## Features

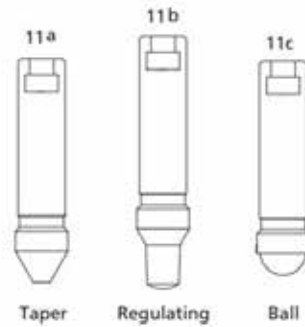
- One-piece forged body.
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem.
- Accidental valve disassembly disabled by union bonnet Construction.
- Safety back seating seal in fully open position.
- Panel mounting available as an option.
- Handle color options are available.
- Linearly instead of helical movement of the nonrotating lower stem, avoiding galling damage to packing and tip.
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- Maximum working pressure:
  - UN Series: 6000 psig (414 bar)
  - UNH Series: 10000 psig (689 bar)
- Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F(-54°C to 649°C)



## Standard Materials of Construction



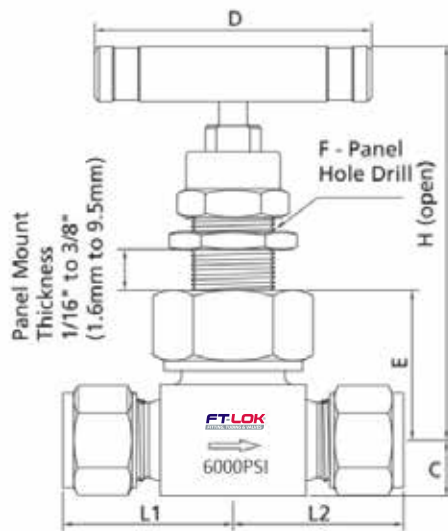
### Stem Type



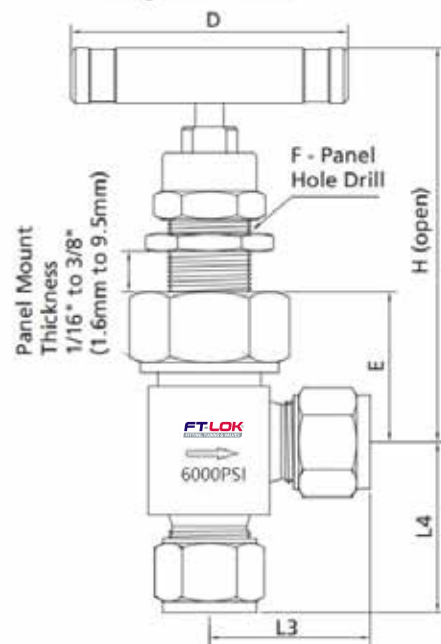
NO.	Component	Material		
		316 SS	F91	Alloy C-276
1	Handle	Anodized aluminum or stainless steel		
2	Set Screw	Stainless steel		
3	Upper Stem	316 SS/A276	F91/A182	C-276/B574
4	Packing Bolt	316 SS/A276	F91/A182	C-276/B574
5	Lock Nut	304 SS/A276		
6	Panel Nut	304 SS/A276		
7	Gland	316 SS/A276	F91/A182	C-276/B574
8	Packing	PTFE or PEEK or graphite		
9	Bonnet	316 SS/A276	F91/A182	C-276/B574
10	Union Nut	316 SS/A276	F91/A182	C-276/B574
11	Lower Stem	Chrome-plated 316 SS/A276	Chrome-plated F91/A182	C-276/B574
12	Body	316 SS/A182	F91/A182	F92/A182

• Note: The NU/HNU series needle valves default to panel installation structure when leaving the factory.

## Dimensions of NU Series Straight Pattern



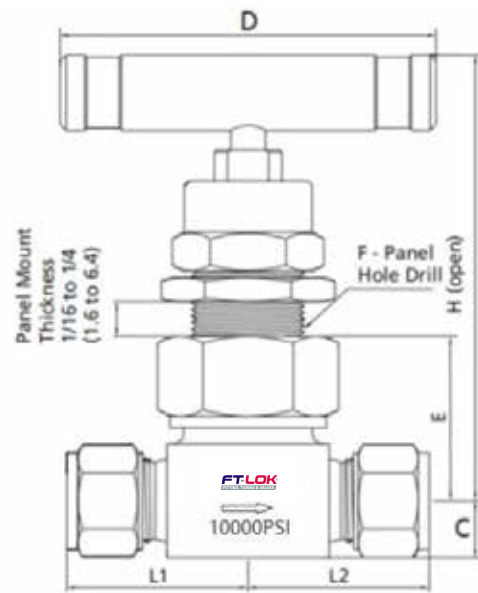
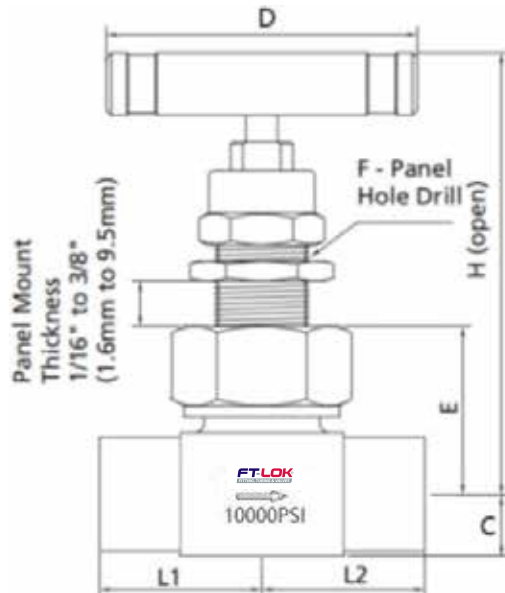
## Angle Pattern



Basic Ordering Number	Connection Inlet & Outlet	Orifice In.(mm)	Cv	Dimension, in.(mm)								
				L1	L2	L3	L4	C	D	E	F	H
-NU-FN4-4	1/4 Female NPT	0.16 (4.0)	0.35	1.03 (26.2)	1.03 (26.2)	0.89 (22.6)	1.00 (25.4)	0.50 (12.7)	2.56 (65.0)	1.09 (27.7)	0.59 (15.0)	3.06 (77.7)
-NU-FN4-6	1/4 Female NPT	0.25 (6.4)	0.80	1.13 (28.5)	1.13 (28.5)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-FN6-6	3/8 Female NPT	0.25 (6.4)	0.80	1.13 (28.5)	1.13 (28.5)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-FN8-6	1/2 Female NPT	0.25 (6.4)	0.80	1.42 (36.0)	1.42 (36.0)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-FN12-10	3/4 Female NPT	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	-	-	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-FN16-10	1 Female NPT	0.39 (10.0)	1.80	1.81 (46.0)	1.81 (46.0)	-	-	1.00 (25.4)	3.50 (88.9)	2.13 (54.0)	1.03 (26.2)	5.10 (129)
-NU-MN4-4	1/4 Male NPT	0.16 (4.0)	0.35	1.13 (28.5)	1.13 (28.5)	0.89 (22.6)	1.00 (25.4)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-MN6-6	3/8 Male NPT	0.25 (6.4)	0.80	1.13 (28.5)	1.13 (28.5)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-MN8-10	1/2 Male NPT	0.39 (10.0)	1.80	1.56 (39.6)	1.56 (39.6)	1.31 (33.3)	1.56 (39.6)	0.62 (15.8)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-MN12-10	3/4 Male NPT	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	-	-	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-MN16-10	1 Male NPT	0.39 (10.0)	1.80	1.81 (46.0)	1.81 (46.0)	-	-	1.00 (25.4)	3.50 (88.9)	2.13 (54.0)	1.03 (26.2)	5.10 (129)
-NU-SWT6-6	3/8 Socket Weld	0.25 (6.4)	0.80	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-SWT8-10	1/2 Socket Weld	0.39 (10.0)	1.80	1.56 (39.6)	1.56 (39.6)	1.31 (33.3)	1.56 (39.6)	0.62 (15.8)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-SWT12-10	3/4 Socket Weld	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-SWT16-10	1 Socket Weld	0.39 (10.0)	1.80	1.63 (41.3)	1.63 (41.3)	-	-	1.00 (25.4)	3.50 (88.9)	2.13 (54.0)	1.03 (26.2)	5.10 (129)
-NU-SWM12-6	12 mm SW	0.25 (6.4)	0.80	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-SWM14-6	14 mm SW	0.25 (6.4)	0.80	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-SWM16-10	16 mm SW	0.25 (6.4)	0.80	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-SWM20-10	20 mm SW	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-SWM25-10	25 mm SW	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	-	-	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)

Basic Ordering Number	Connection Inlet & Outlet	Orifice In.(mm)	Cv	Dimension, in.(mm)								
				L1	L2	L3	L4	C	D	E	F	H
-NU-BWM14-6	14 mm BW	0.25 (6.4)	0.80	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-BWM16-6	16 mm BW	0.25 (6.4)	0.80	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-BWM20-10	20 mm BW	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-BWM25-10	25 mm BW	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	-	-	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-FT4-4	1/4" Tube	0.16 (4.0)	0.35	1.41 (35.9)	1.41 (35.9)	1.16 (29.5)	1.48 (37.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-FT6-6	3/8" Tube	0.25 (6.4)	0.80	1.44 (36.6)	1.44 (36.6)	1.59 (32.8)	1.66 (42.2)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-FT8-6	1/2" Tube	0.25 (6.4)	0.80	1.56 (39.6)	1.56 (39.6)	1.59 (32.8)	1.66 (42.2)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-FT12-10	3/4" Tube	0.39 (10.0)	1.80	1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (51.8)	0.62 (15.8)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-FT16-10	1" Tube	0.39 (10.0)	1.80	2.04 (51.8)	2.04 (51.8)	-	-	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)
-NU-MT6-4	6 mm	0.16 (4.0)	0.35	1.41 (35.9)	1.41 (35.9)	1.16 (29.5)	1.48 (37.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-MT8-4	8 mm	0.16 (4.0)	0.35	1.41 (35.9)	1.41 (35.9)	1.16 (29.5)	1.48 (37.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-MT10-6	10 mm	0.25 (6.4)	0.80	1.41 (35.9)	1.41 (35.9)	1.59 (32.8)	1.66 (42.2)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-MT12-6	12 mm	0.25 (6.4)	0.80	1.52 (38.6)	1.52 (38.6)	1.59 (32.8)	1.66 (42.2)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-NU-MT14-6	14 mm	0.39 (10.0)	1.80	1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (51.8)	0.62 (15.8)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-MT18-10	18 mm	0.39 (10.0)	1.80	1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (51.8)	0.62 (15.8)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-MT20-10	20 mm	0.39 (10.0)	1.80	1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (51.8)	0.62 (15.8)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-MT25-10	25 mm	0.39 (10.0)	1.80	2.04 (51.8)	2.04 (51.8)	-	-	0.78 (19.8)	3.50 (88.9)	1.91 (48.5)	1.03 (26.2)	4.85 (123)

## Dimensions of HNU Series



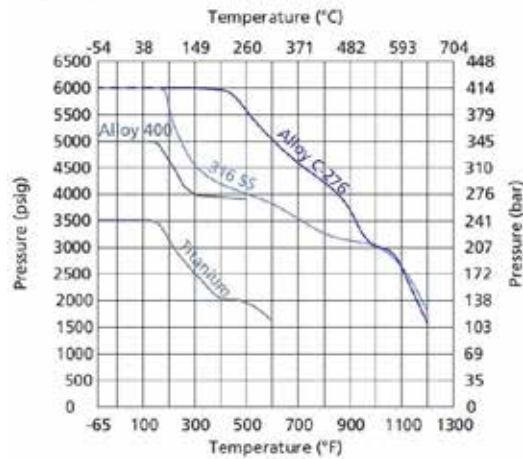
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-HNU-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	0.53 (13.5)	2.56 (65.0)	1.34 (34.1)	0.78 (19.8)	3.70 (94.0)
-HNU-FN4-4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.1)	0.78 (19.8)	3.70 (94.0)
-HNU-FN6-6	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.80	1.38 (35.0)	1.38 (35.0)	0.53 (13.5)	2.56 (65.0)	1.34 (34.1)	0.78 (19.8)	3.70 (94.0)
-HNU-FN8-10	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.63 (41.4)	1.63 (41.4)	0.78 (19.8)	3.50 (88.9)	1.90 (48.3)	1.03 (26.2)	4.80 (122)

Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
-HNU-MN4-4	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	0.53 (13.5)	2.56 (65)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-MN6-6	3/8 Male NPT	3/8 Male NPT	0.25 (6.4)	0.80	1.38 (35.0)	1.38 (35.0)	0.62 (15.9)	3.50 (88.9)	1.77 (45.0)	1.03 (26.2)	4.85 (123)
-HNU-MN8-6	1/2 Male NPT	1/2 Male NPT	0.25 (6.4)	0.80	1.56 (39.6)	1.56 (39.6)	0.62 (15.9)	3.50 (88.9)	1.77 (45.0)	1.03 (26.2)	4.90 (124)
-HNU-SWT4-4	1/4 Socket Weld	1/4 Socket Weld	0.16 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-SWT6-6	3/8 Socket Weld	3/8 Socket Weld	0.25 (6.4)	0.80	1.38 (35.0)	1.38 (35.0)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-SWT8-6	1/2 Socket Weld	1/2 Socket Weld	0.25 (6.4)	0.80	1.56 (39.7)	1.56 (39.7)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-SWM12-6	12 mm SW	12 mm SW	0.25 (6.4)	0.80	1.56 (39.7)	1.56 (39.7)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-SWM14-6	14 mm SW	14 mm SW	0.25 (6.4)	0.80	1.56 (39.7)	1.56 (39.7)	0.53 (13.5)	2.56 (65.0)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-FT4-4	1/4" Tube	1/4" Tube	0.16 (4.0)	0.35	1.41 (35.9)	1.41 (35.9)	0.53 (13.5)	2.56 (65)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-FT6-6	3/8" Tube	3/8" Tube	0.25 (6.4)	0.80	1.52 (38.6)	1.52 (38.6)	0.62 (15.9)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-HNU-FT8-6	1/2" Tube	1/2" Tube	0.25 (6.4)	0.80	1.97 (50.0)	1.97 (50.0)	0.78 (19.8)	3.50 (88.9)	1.93 (49.0)	1.03 (26.2)	4.85 (123)
-HNU-MT6-4	6 mm	6 mm	0.16 (4.0)	0.35	1.41 (35.9)	1.41 (35.9)	0.53 (13.5)	2.56 (65)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)
-HNU-MT10-6	10 mm	10 mm	0.25 (6.4)	0.80	1.52 (38.6)	1.52 (38.6)	0.62 (15.9)	3.50 (88.9)	1.82 (46.2)	1.03 (26.2)	4.78 (121)
-NU-MT12-6	12 mm	12 mm	0.25 (6.4)	0.80	1.97 (50.0)	1.97 (50.0)	0.78 (19.8)	3.50 (88.9)	1.93 (49.0)	1.03 (26.2)	4.25 (108)

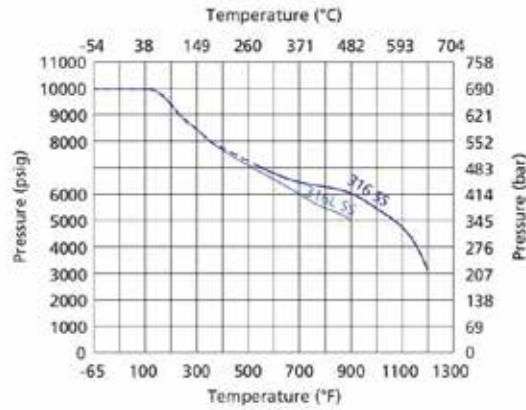
1. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. If you want to purchase angle needle valve, please add "-A" after the Basic Ordering Number.
3. Dimensions are shown with **FTLOK** nuts finger-tightened. All dimensions are for reference only and are subject to change.
4. For dimensions not shown above, please contact the authorized representative or **FTLOK** employees.

## Pressure vs. Temperature

NU Series

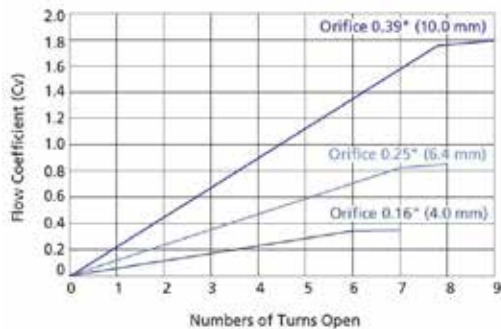


HNU Series



## Flow Data at 100°F (37°C)

Regulating Stem



# Rising Plug Valves

## PR Series

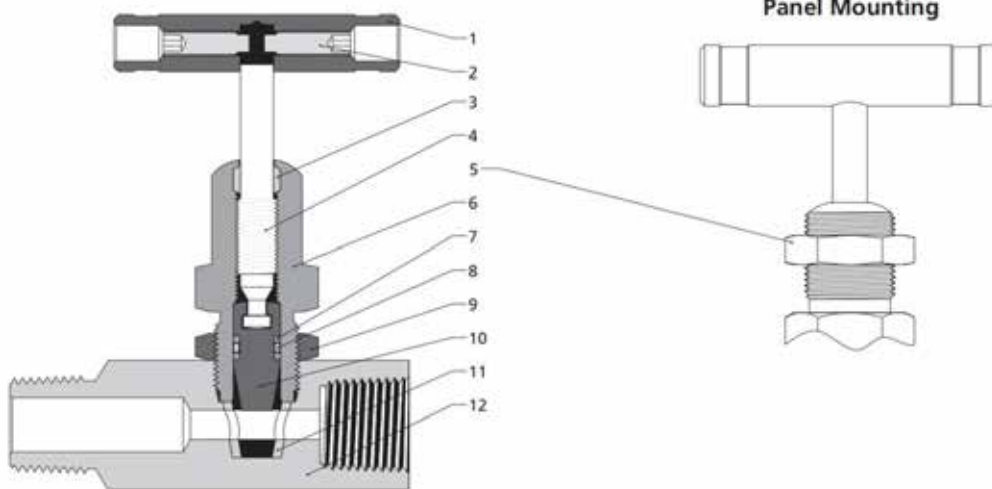
## GPR Series (With gauge port)

### Features

- Cold drawn square bar.
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem.
- Roddable, straight through flow path for maximum flow with minimum pressure drop.
- Replaceable seat and stem tip design.
- Stem thread protected from outside contamination by PTFE ring in the gland.
- Panel mounting available as an option.
- Handle color options are available.
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- Maximum working pressure: 6000 psi (414 bar)
- Working temperature:
  - PTFE: -20°F to 250°F (-28°C to 120°C)
  - PEEK: -20°F to 400°F (-28°C to 204°C)
  - PFA: -20°F to 400°F (-28°C to 204°C)



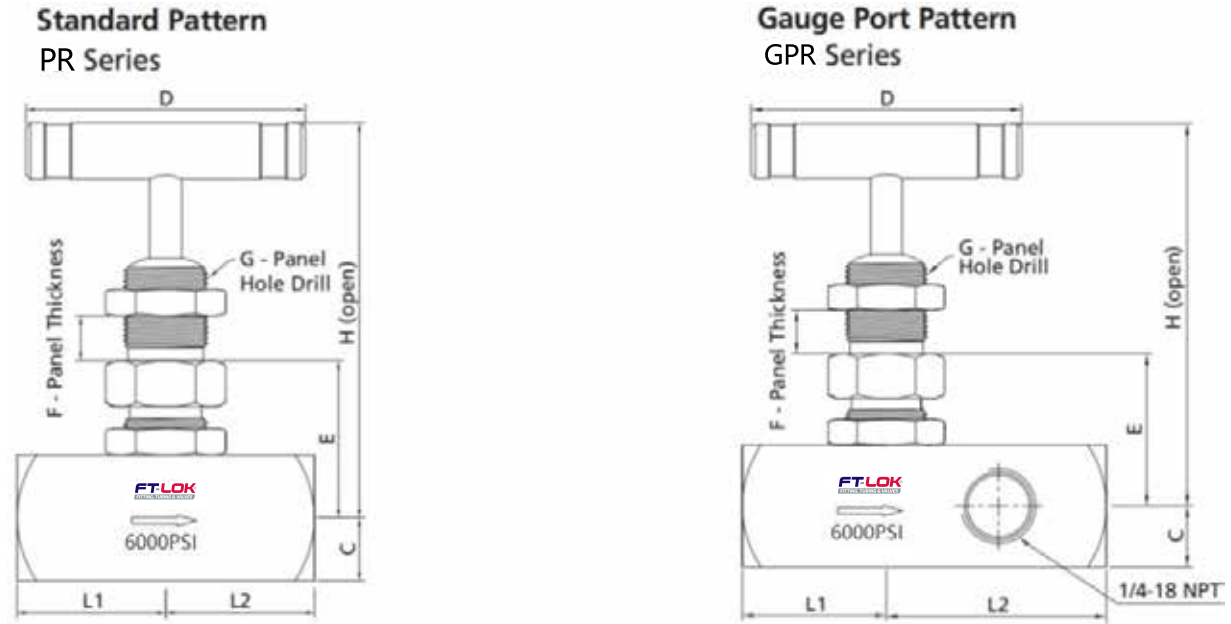
### Standard Materials of Construction



NO.	Component	Material		
		316 SS	304 SS	Alloy C-276
1	Handle	Anodized aluminum or stainless steel		
2	Set Screw	Stainless steel		
3	Wiper Ring	PTFE/D1710		
4	Upper Stem	316 SS/A276	304 SS/A276	C-276/B574
5	Panel Nut	304 SS/A276		
6	Bonnet	316 SS/A276	304 SS/A276	C-276/B574
7	Backup Ring	PTFE/D1710		
8	O-ring	Fluorocarbon FKM or Ethylene propylene		
9	Lock Nut	304 SS/A276		
8	Packing	PTFE or PEEK or graphite		
10	Stem Tip	Chrome-plated 316 SS/A276	Chrome-plated 304 SS/A276	C-276/B574
11	Seat	Acetal or PEEK or PFA		
12	Body	316 SS/A182	304 SS/A276	C-276/B574

• Note: The PR/GPR series valves default to have no panel installation. If necessary, please add "- P" after the Basic Ordering Number. For example, SS-T-PR-FN8-6-P

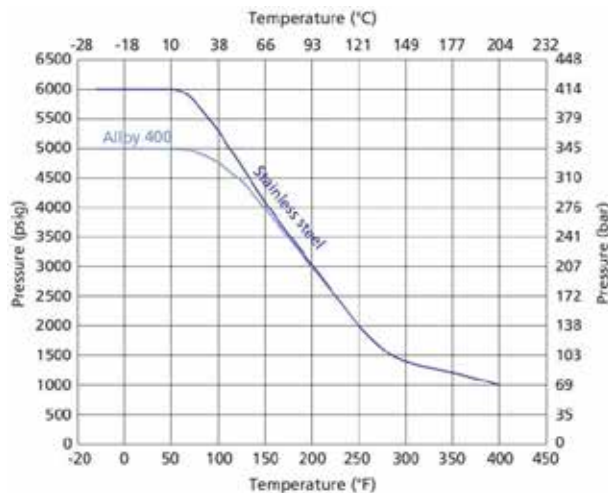
## Dimensions of PR/GPR Series



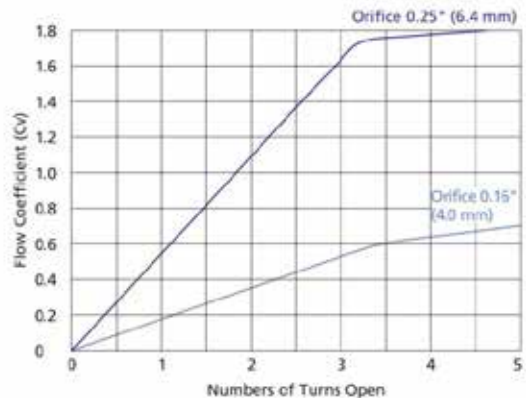
Basic Ordering Number	Connection Type and Size		Orifice in(mm)	Cv	Dimension, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	H	
-PR-FN4-4	1/4" Female NPT	1/4" Female NPT	0.16 (4.0)	0.63	1.12 (28.4)	1.13 (28.6)	0.44 (11.1)	2.17 (55.0)	1.08 (27.5)	0.25 (6.4)	0.65 (16.0)	3.77 (95.8)
-PR-MN4-FN4-4	1/4" Male NPT	1/4" Female NPT	0.16 (4.0)	0.63	1.12 (28.4)	1.13 (28.6)	0.44 (11.1)	2.17 (55.0)	1.08 (27.5)	0.25 (6.4)	0.65 (16.0)	3.77 (95.8)
-PR-MN8-FN4-4	1/2" Male NPT	1/4" Female NPT	0.16 (4.0)	0.63	1.89 (48.0)	1.13 (28.6)	0.44 (11.1)	2.17 (55.0)	1.08 (27.5)	0.25 (6.4)	0.65 (16.0)	3.77 (95.8)
-PR-FN8-6	1/2" Female NPT	1/2" Female NPT	0.25 (6.4)	1.80	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	2.56 (65.0)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
-PR-MN8-FN8-6	1/2" Male NPT	1/2" Female NPT	0.25 (6.4)	1.80	2.16 (55.0)	1.33 (33.8)	0.56 (14.3)	2.56 (65.0)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
-PR-MN12-FN8-6	3/4" Male NPT	1/2" Female NPT	0.25 (6.4)	1.80	2.16 (55.0)	1.33 (33.8)	0.56 (14.3)	2.56 (65.0)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
-GPR-FN4-4	1/4" Female NPT	1/4" Female NPT	0.16 (4.0)	0.63	1.12 (28.4)	1.75 (44.4)	0.50 (12.7)	2.17 (55.0)	1.08 (27.5)	0.25 (6.4)	0.65 (16.0)	3.77 (95.8)
-GPR-MN8-FN4-4	1/2" Male NPT	1/4" Female NPT	0.16 (4.0)	0.63	1.89 (48.0)	1.75 (44.4)	0.50 (12.7)	2.17 (55.0)	1.08 (27.5)	0.25 (6.4)	0.65 (16.0)	3.77 (95.8)
-GPR-FN8-6	1/2" Female NPT	1/2" Female NPT	0.25 (6.4)	1.80	1.33 (33.8)	2.25 (57.2)	0.56 (14.3)	2.56 (65.0)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
-GPR-MN12-FN8-6	3/4" Male NPT	1/2" Female NPT	0.25 (6.4)	1.80	2.16 (55.0)	2.25 (57.2)	0.56 (14.3)	2.56 (65.0)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)

1. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. Dimensions are shown with FT-LOK nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. For dimensions not shown above, please contact the authorized representative or FT-LOK employees.

### Pressure vs. Temperature



### Flow Data at 100°F(38°C)



# Gauge Valves

## BVG Series

## PVG Series

### Features

- ⦿ Cold drawn square bar.
- ⦿ Non-rotating lower stem, ball tip and plug tip designs.
- ⦿ Variety of materials for seat and packing.
- ⦿ Safety back seating seals in fully open position.
- ⦿ Rolled spindle operating threads.
- ⦿ Lubricant for stem thread isolated from the media .
- ⦿ Bonnet locking pin fitted as standard
- ⦿ Low torque operating T bar handle
- ⦿ Leak-tight performance testing for every valve at the maximum working pressure with nitrogen.
- ⦿ Maximum working pressure: 6000 psi (414 bar)
- ⦿ Working temperature:
  - BVG Series PTFE: -65°F to 450°F (-54°C to 232°C)
  - Graphite: -65 F to 1200 F (-54 C to 649 C)
  - PVG Series Acetal seat: -20 F to 250 F (-28 C to 121 C)
  - PEEK Seat: -20°F to 400°F (-28°C to 204°C)
  - PFA Seat: -20°F to 400°F(-28°C to 204°C)



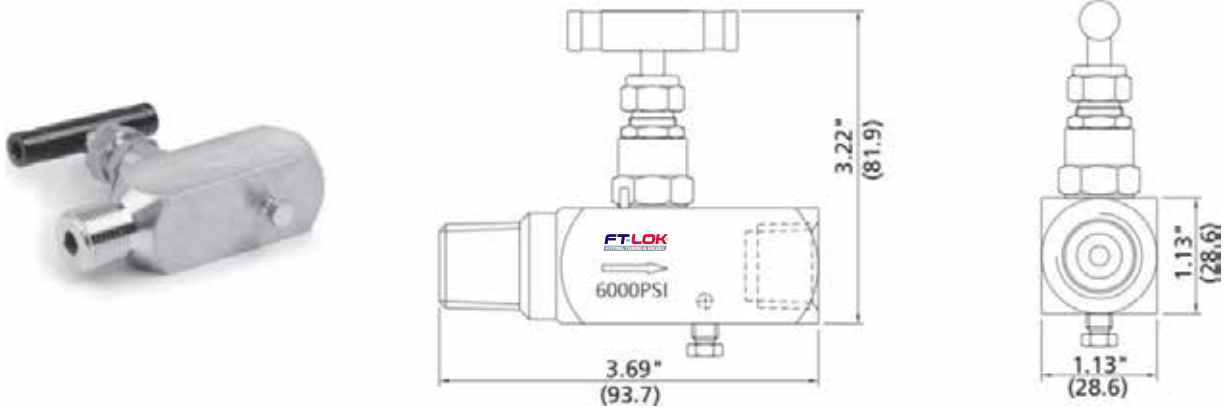
### Standard Materials of Construction

		Valve Body Material	
Item	Part	SS 316	Alloy 400
		SS 316   Alloy 400	
1	Handle	Anodized aluminum	
2	Set Screw	Stainless steel	
3	Packing Bolt	SS 304	
4	Upper Stem	SS 316	
5	Lock Nut	17-4PH	
6	Bonnet	SS 316	Alloy 400
7	Gland	SS316	
8	Packing	PTFE or graphite	
9	Lock Pin	Stainless steel	
10	Lower Stem	SS 316	Alloy 400
11	Body	SS 316	Alloy 400
12	Seat	Acetal or PEEK or PFA	

⦿ Note: The BVG/PVG series gauge valves default to have no panel installation. If necessary, please add "- P" after the Basic Ordering Number. For example, SS-T-BVG-MN8-FN8-P

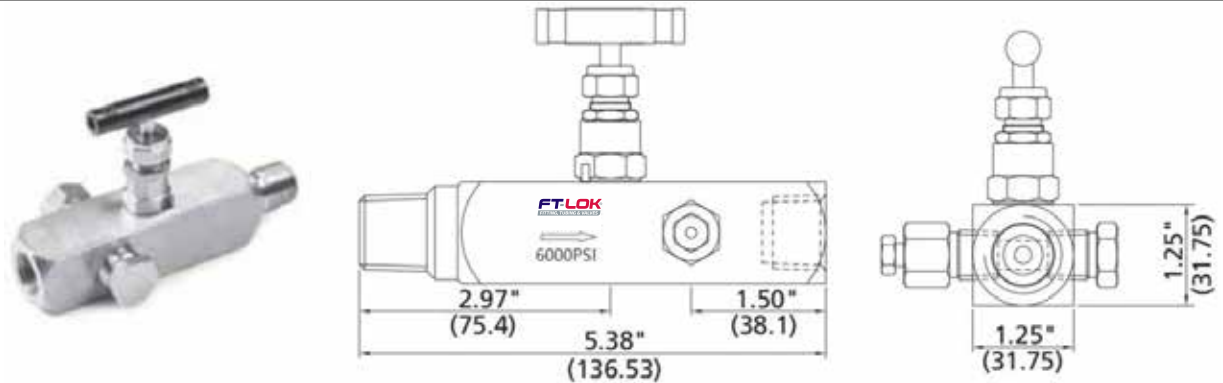
## Miniature Type

Basic Ordering NO.	Inlet/ Process	Outlet/ Instrument	Vent	Orifice in(mm)	Cv	
-BVG-MN8-FN8-M	1/2 Male NPT	1/2 Female NPT	Vent Stem	0.25 (6.4)	0.9	
-PVG-MN8-FN8-M				0.25 (6.4)	1.8	



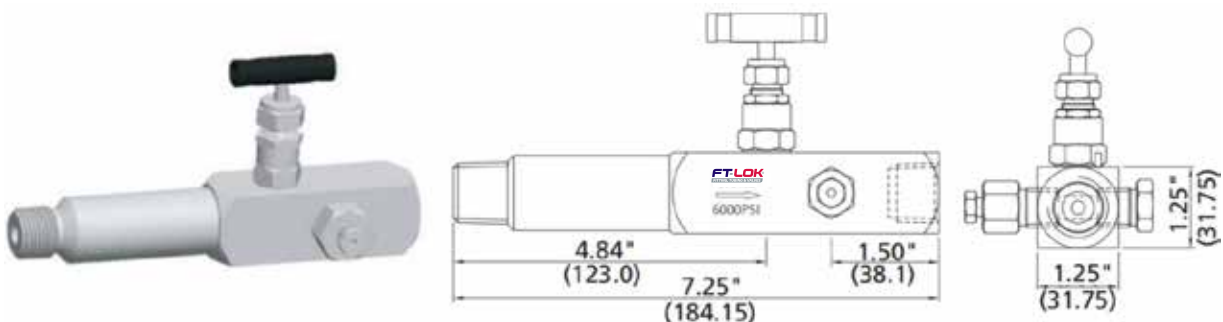
## Standard Type

Basic Ordering NO.	Inlet/ Process	Outlet/ Instrument	Test/Vent /Plug	Orifice in(mm)	Cv	
-BVG-MN8-FN8	1/2 Male NPT	1/2 Female NPT	1/2 Female	0.25 (6.4)	1.0	
-PVG-MN8-FN8			NPT	0.25 (6.4)	1.8	
-BVG-MN12-FN12	3/4 Male NPT	3/4 Female NPT	1/2 Female	0.25 (6.4)	1.0	
-PVG-MN12-FN12			NPT	0.25 (6.4)	1.8	



## Lagging Extension Body Type

Basic Ordering NO.	Inlet/ Process	Outlet/ Instrument	Vent	Orifice in(mm)	Cv	
-BVG-MN8-FN8-L	1/2 Male NPT	1/2 Female NPT	Vent Stem	0.25 (6.4)	1.2	
-PVG-MN8-FN8-L				0.25 (6.4)	1.8	



# **DOVAL**

**STEEL GROUP**



**FT-LOK<sup>®</sup>**  
**FITTING, TUBING & VALVES**

**[WWW.DOVALSTEELGROUP.COM](http://WWW.DOVALSTEELGROUP.COM)**

---