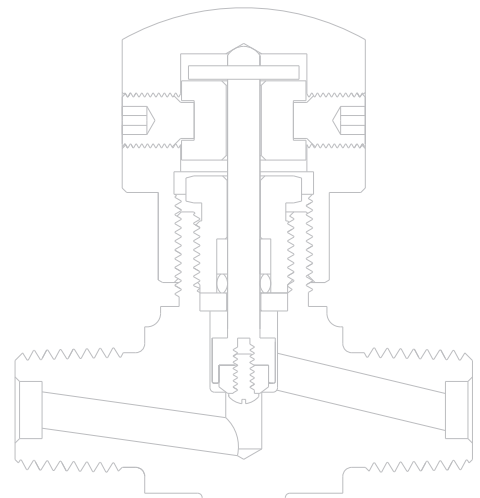
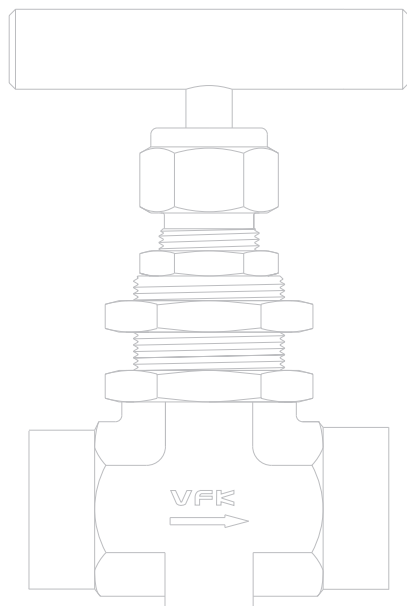


Needle Valves



Climate Control
Electromechanical
Filtration
Fluid & Gas Handling
Hydraulics
Process Control
Sealing & Shielding



VFK
Advanced Fluid Control

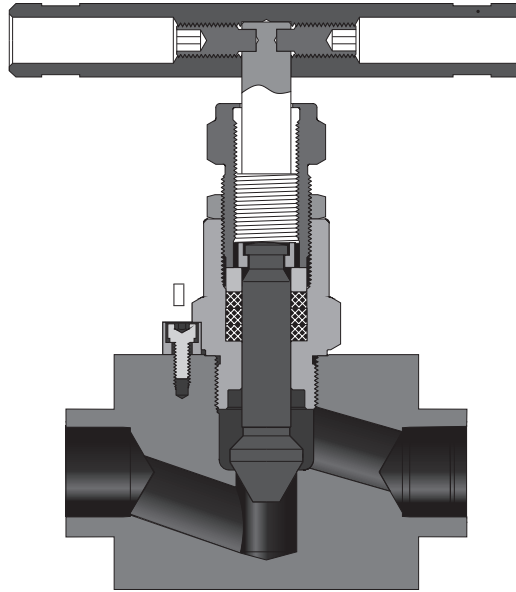
CONTENTS

Needle Valves

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General Utility Service

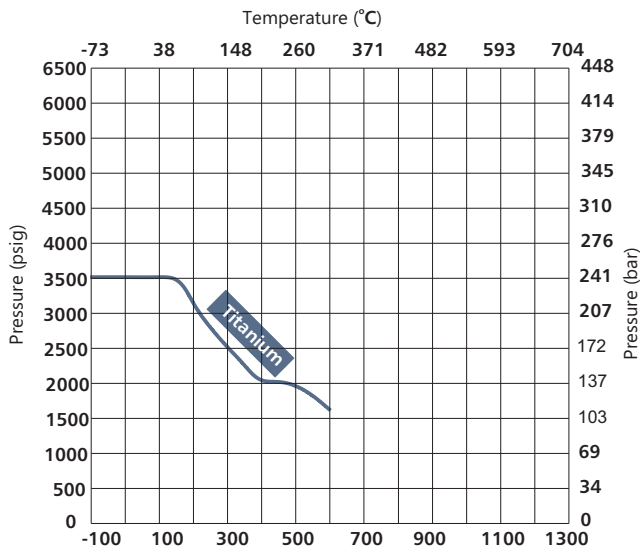
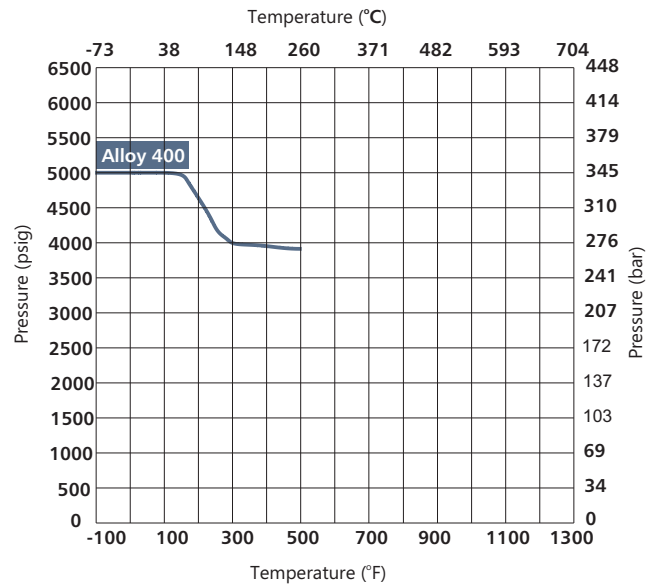
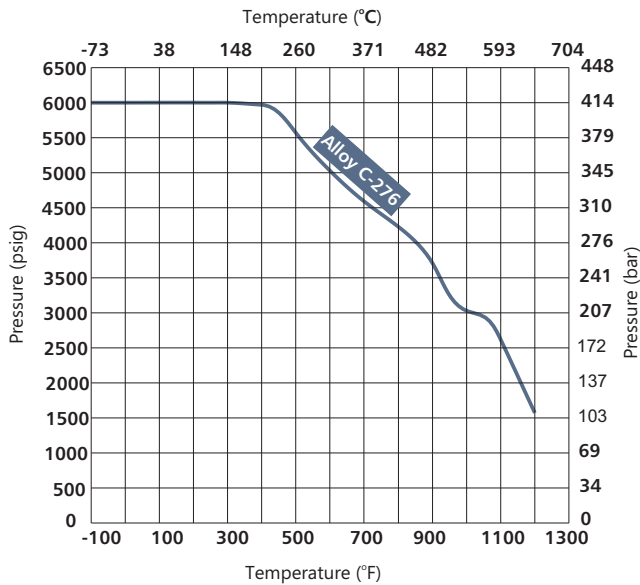
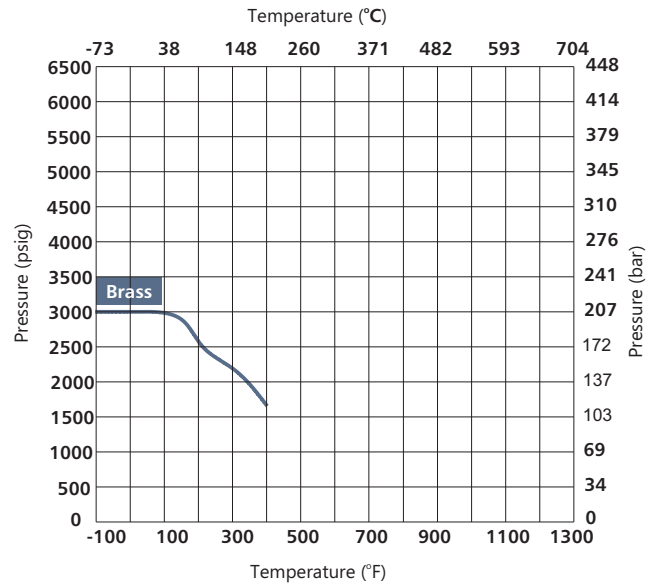
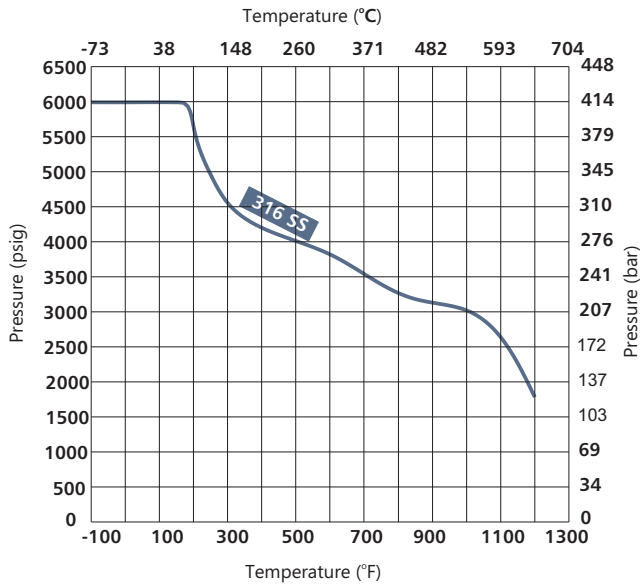
Needle Valves



31 Series

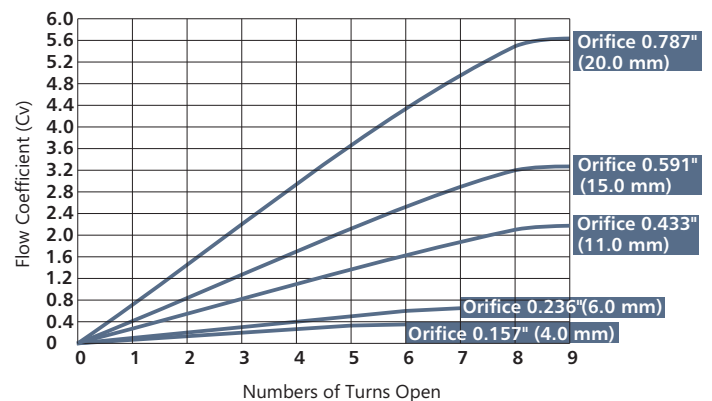
- 31 series needle valves are for use in general-purpose applications to isolate or vent system media.
- The hardened stainless steel, nonrotating needle promotes leak-tight shutoff and long service life.
- The up stem threads are cold rolled for high strength and smooth operation.
- The valve stem threads are isolated from the media.
- Straight and angle patterns, compact design.
- Stainless steel and other alloy steel body materials can be selected.
- Safety back-seating needle seals in fully open position.
- Two piece knuckle joint provides nonrotating needle feature. Joint is located above the packing, protected from system media.
- Pressures up to 6000 psig (413 bar).
- Temperatures up to 450° F (232° C) with PTFE packing; up to 1200° F (649° C) with optional graphite packing
- Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.
- Every valve is 100% factory tested with nitrogen.

Pressure vs. Temperature

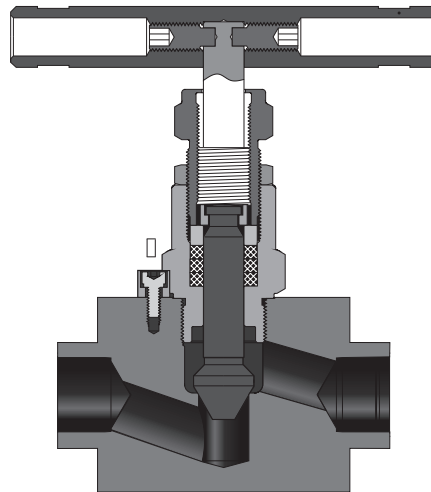


Flow Data at 100°F (37°C)

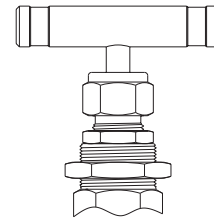
Regulating Stem



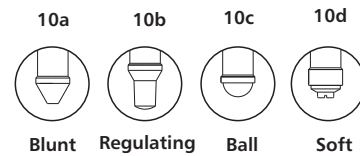
Standard Materials of Construction



Panel Mounting

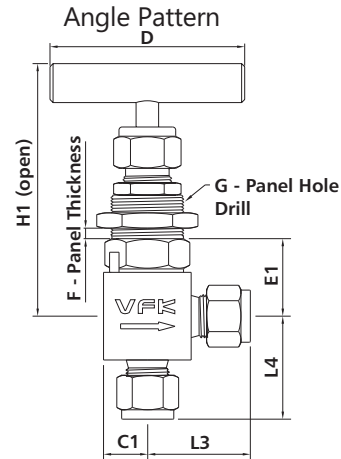
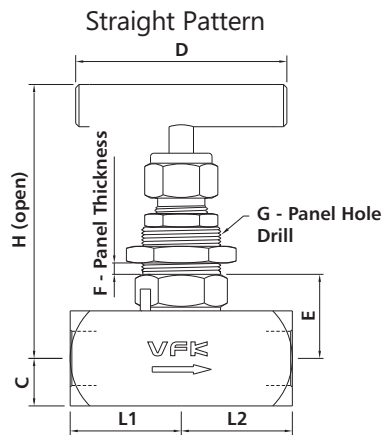


Stem Type



Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Nickel cadmium-plated steel				
3	Packing Bolt	321 SS/A276				Brass 360/B16
4	Upper Stem	316 SS/A276				
5	Lock Nut	316 SS/B783				Brass 360/B16
6	Bonnet	316 SS/A479	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass 360/B16
7	Panel Nut	316 SS/B783				Brass 360/B16
8	Gland	316 SS/A276				
9	Packing	PTFE or PEEK or graphite				
10a 10b 10c 10d	Lower Stem	Chrome-plated 316 SS/A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574	Chrome-plated 316 SS/A276
		Optional				
11	Body	316 SS/A479 316 SS/A182	Alloy 400/B164, B127,B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564	Brass 360/B16
	Seat	Weld stellite optional				
12	Lock Pin	304 SS/A276				
13	Screw	304 SS/A276				
14	Spring Washer	304 SS/A276				
15	Bush	304 SS/A276				
	Lubricant	Molybdenum disulfide-based				

Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
 31-FN2-4	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.563 (14.3)	0.5 (12.7)	0.5 (12.7)	2.17 (55)	0.84 (21.4)	0.9 (23.0)	0.25 (6.4)	0.77 (19.6)	2.85 (72.4)	2.91 (74.0)
 31-FN4-4	1/4 Female NPT	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)							1.06 (26.9)				1.06 (26.9)
 31-N4-4	1/4 Male NPT	1/4 Male NPT			1.03 (26.2)	1.03 (26.2)	1.06 (26.9)	1.06 (26.9)									
 31-N6-4	3/8 Male NPT	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)											
 31-FX4-4	1/4" VFK	1/4" VFK			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)									
 31-MX6-4	6 mm VFK	6 mm VFK			1.06 (26.9)	1.06 (26.9)	—	—									
 31-MX8-4	8 mm VFK	8 mm VFK			1.06 (26.9)	1.06 (26.9)	—	—									
 31-FP4-4	1/4 Female BSPP	1/4 Female BSPP			1.06 (26.9)	1.06 (26.9)	—	—									
 31-FR4-4	1/4 Female BSPT	1/4 Female BSPT			0.236 (6.0)	0.85	1.12 (28.6)	1.12 (28.6)					1.12 (28.6)				0.63 (15.9)
 31-FN4-6	1/4 Female NPT	1/4 Female NPT	1.12 (28.6)	1.12 (28.6)			1.12 (28.6)	1.12 (28.6)	3.5 (88.9)								
 31-FN6-6	3/8 Female NPT	3/8 Female NPT	1.41 (35.8)	1.41 (35.8)			1.32 (33.6)	1.32 (33.6)									
 31-N6-6	3/8 Male NPT	3/8 Male NPT	1.52 (38.6)	1.52 (38.6)			1.42 (36.1)	1.42 (36.1)									
 31-FX6-6	3/8" VFK	3/8" VFK	1.42 (36.1)	1.42 (36.1)			1.33 (33.8)	1.33 (33.8)									
 31-FX8-6	1/2" VFK	1/2" VFK	1.52 (38.6)	1.52 (38.6)			1.42 (36.1)	1.42 (36.1)									
 31-MX10-6	10 mm VFK	10 mm VFK	1.56 (39.7)	1.56 (39.7)			1.42 (36.1)	1.42 (36.1)									
 31-MX12-6	12 mm VFK	12 mm VFK	1.13 (28.6)	1.13 (28.6)			1.13 (28.6)	1.13 (28.6)									
 31-MX14-6	14 mm VFK	14 mm VFK	1.50 (38.1)	1.50 (38.1)			1.50 (38.1)	1.50 (38.1)									
 31-TS6-6	3/8" TS	3/8" TS	2.92 (74.1)	2.92 (74.1)			—	—									
 31-TS8-6	1/2" TS	1/2" TS	1.13 (28.6)	1.13 (28.6)													
 31-MTS12-6	12 mm MTS	12 mm MTS	1.56 (39.7)	1.56 (39.7)			—	—									
 31-MTS14-6	14 mm MTS	14 mm MTS	1.50 (38.1)	1.50 (38.1)													
 31-MTS16-6	16 mm MTS	16 mm MTS	2.92 (74.1)	2.92 (74.1)			—	—									
 31-MTB14-6	14 mm MTB	14 mm MTB	1.13 (28.6)	1.13 (28.6)													
 31-MTB16-6	16 mm MTB	16 mm MTB	1.56 (39.7)	1.56 (39.7)			—	—									
 31-UMB14-6	14 mm UMB	14 mm UMB	1.50 (38.1)	1.50 (38.1)													
 31-UMB16-6	16 mm UMB	16 mm UMB	1.50 (38.1)	1.50 (38.1)			—	—									
 31-FN8-6	1/2 Female NPT	1/2 Female NPT	1.56 (39.7)	1.56 (39.7)													
 31-FR8-6	1/2 Female BSPT	1/2 Female BSPT	1.50 (38.1)	1.50 (38.1)			—	—									
31-MS20-6	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO	1.50 (38.1)	1.50 (38.1)													
31-MS22-6	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO	1.50 (38.1)	1.50 (38.1)			—	—									

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
□□31-FN8-11	1/2 Female NPT	1/2 Female NPT	0.433 (11.0)	2.18			1.63 (41.3)										
□□31-FN12-11	3/4 Female NPT	3/4 Female NPT			1.75 (44.5)	1.75 (44.5)		1.50 (38.1)									
□□31-N12-11	3/4 Male NPT	3/4 Male NPT					1.50 (38.1)										
□□31-FX12-11	3/4" VFK	3/4" VFK															
□□31-MX14-11	14 mm VFK	14 mm VFK															
□□31-MX16-11	16 mm VFK	16 mm VFK															
□□31-MX18-11	18 mm VFK	18 mm VFK															
□□31-MTS14-11	14 mm MTS	14 mm MTS							0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
□□31-MTS16-11	16 mm MTS	16 mm MTS															
□□31-TS12-11	3/4" TS	3/4" TS			1.75 (44.5)	1.75 (44.5)											
□□31-MTB14-11	14 mm MTB	14 mm MTB															
□□31-MTB16-11	16 mm MTB	16 mm MTB															
□□31-UMB14-11	14 mm UMB	14 mm UMB			2.98 (75.7)	2.98 (75.7)											
□□31-FP12-11	3/4 Female BSPP	3/4 Female BSPP															
□□31-FR8-11	1/2 Female BSPT	1/2 Female BSPT			1.56 (39.7)	1.56 (39.7)											
□□31-MS27-11	M27 x 2 Male ISO	M27 x 2 Male ISO															
□□31-FN12-15	3/4 Female NPT	3/4 Female NPT	0.591 (15.0)	3.27			1.75 (44.5)	1.14 (29.0)									
□□31-TS16-15	1" TS	1" TS															
□□31-MTS25-15	25 mm MTS	25 mm MTS			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
□□31-MTS28-15	28 mm MTS	28 mm MTS															
□□31-PS12-15	3/4 PS	3/4 PS															
□□31-MX20-15	20 mm VFK	20 mm VFK			2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.0 (51.0)									
□□31-MX22-15	22 mm VFK	22 mm VFK	0.787 (20.0)	5.65													
□□31-FN16-20	1 Female NPT	1 Female NPT															
□□31-MTS25-20	25 mm MTS	25 mm MTS															
□□31-TS16-20	1" TS	1" TS															
□□31-MTS28-20	28 mm MTS	28 mm MTS			1.97 (50.0)	1.97 (50.0)			1.25 (31.75)		5.5 (140)					5.2 (132)	
□□31-PS12-20	3/4 PS	3/4 PS															
□□31-PS16-20	1 PS	1 PS															

31 Series How to Order

A	B	C	D	E	F	G
Body Material	Valve Series	Inlet Type	Inlet Size	Inlet Type	Inlet Size	Orifice Size
SS	31	FN	8	MTS	10	6

H	I	J	K	L
Seat Material	Packing Material	Panel Mounting	Flow Pattern	NACE MR0175
W	G	Y	A	SG

A	Body Material
SS:	316 SS
6L:	316L SS
S4:	304 SS
4L:	304L SS
S1:	321 SS
91:	F91
92:	F92
D5:	Duplex 2205
D7:	Duplex 2507
TI:	Titanium
A20:	Alloy 20
M:	Alloy 400
INC:	Alloy 600
HC:	Alloy C-276
B:	Brass
CS:	Carbon Steel

B	Valve Series
31:	31 Series Needle Valves

CE	Inlet/Outlet Type
FN	Female NPT
N	Male NPT
FR	Female BSPT
RT	Male BSPT
FM	Female ISO (for MRP)
MS	Male ISO (for MRG)
FP	Female BSPP (for RP)
BP	Male BSPP (for RG)
TS	Fractional Tube Socket Weld
MTS	Metric Tube Socket Weld
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FX	Fractional Tube Fitting
MX	Metric Tube Fitting
UFB	Nut-Gasket Fractional Bulge Nipple
UMB	Nut-Gasket Metric Bulge Nipple

DF	Inlet/Outlet Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
24	M24 x 1.5
25	25 mm
27	M27 x 2
28	28 mm

G	Orifice Size
4:	0.157" (4.0 mm)
6:	0.236" (6.0 mm)
11:	0.433" (11 mm)
15:	0.591" (15 mm)
20:	0.787" (20 mm)

H	Seat Material
---	---------------

Standard Same as Body

W	Stellite
X	Customer Specified

I	Packing Material
---	------------------

Standard chevron PTFE

P	PEEK
G	Graphite

J	Panel Mounting
---	----------------

Standard with no Panel Mounting

Y	Yes
---	-----

K	Flow Pattern
---	--------------

Standard is Straight Flow

A	Angle
---	-------

L	NACE MR0175
---	-------------

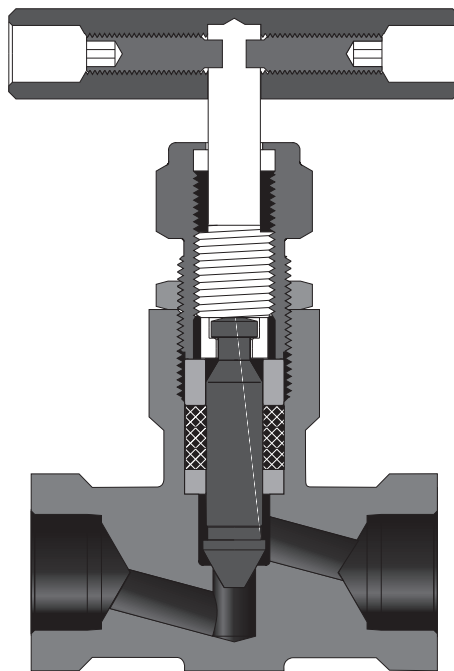
Standard with no NACE applicable

SG	With NACE MR0175
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Remark:

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be ignored in the ordering number, others should be specified.

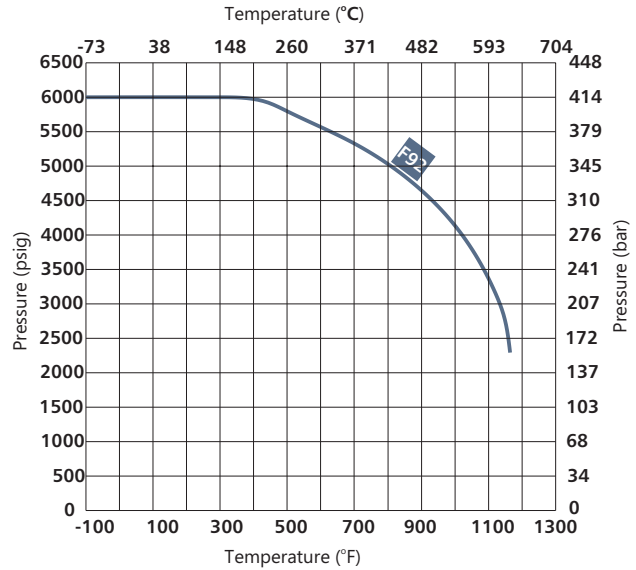
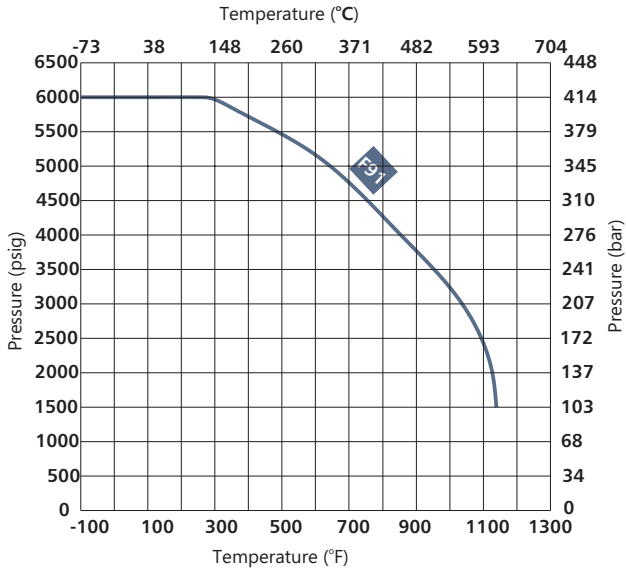
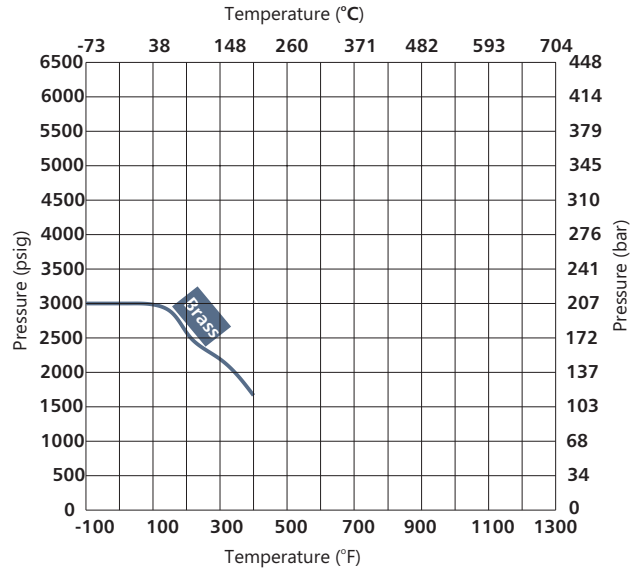
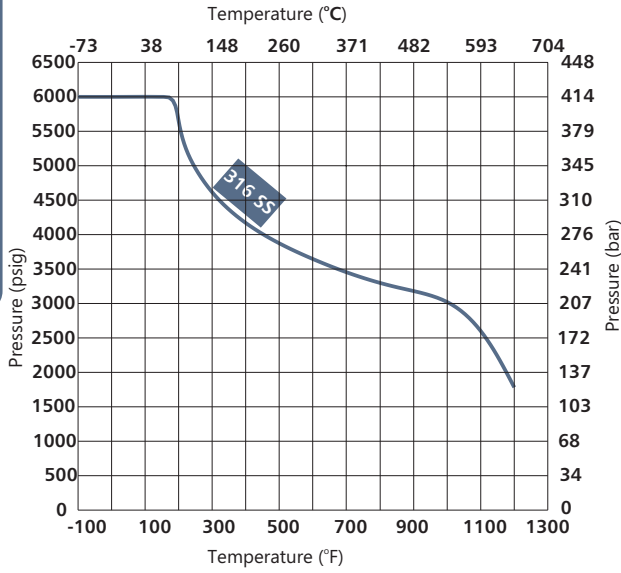
Forged Service Needle Valves



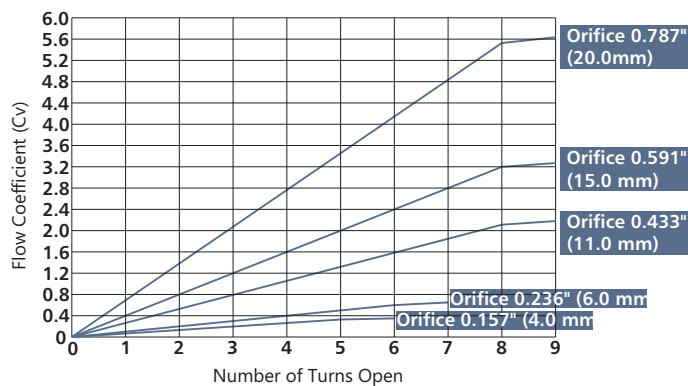
32 and 32H Series

- 32 and 32H series needle valves are for use in one-piece forged valve body.
- The hardened stainless steel, nonrotating needle promotes leak-tight shutoff and long service life.
- The up stem threads are cold rolled for high strength and smooth operation.
- The valve stem threads are isolated from the media.
- Straight and angle patterns, compact design.
- Stainless steel and other alloy steel body materials can be selected.
- Safety back-seating needle seals in fully open position.
- Two piece knuckle joint provides nonrotating needle feature. Joint is located above the packing, protected from system media.
- NF series standard pressures up to 6000 psig (413 bar). NHF series maximum working pressure up to 10 000 psig (689 bar).
- Temperatures up to 450° F (232° C) with PTFE packing; up to 1200° F (649° C) with optional graphite packing
- Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.
- Every valve is 100% factory tested with nitrogen.

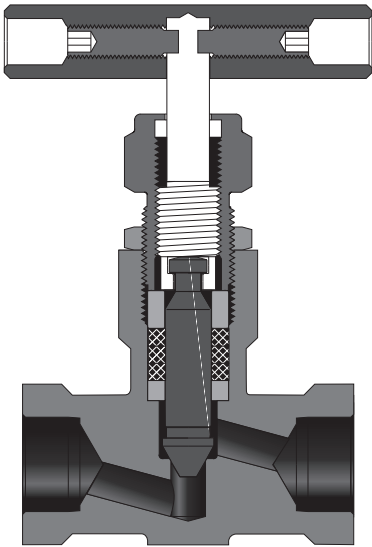
Pressure vs. Temperature



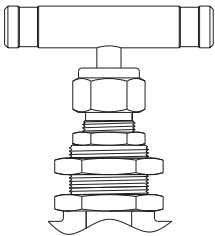
Regulating Stem Flow Data at 100°F (37°C)



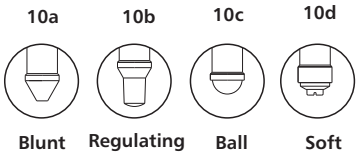
Standard Materials of Construction



Panel Mounting

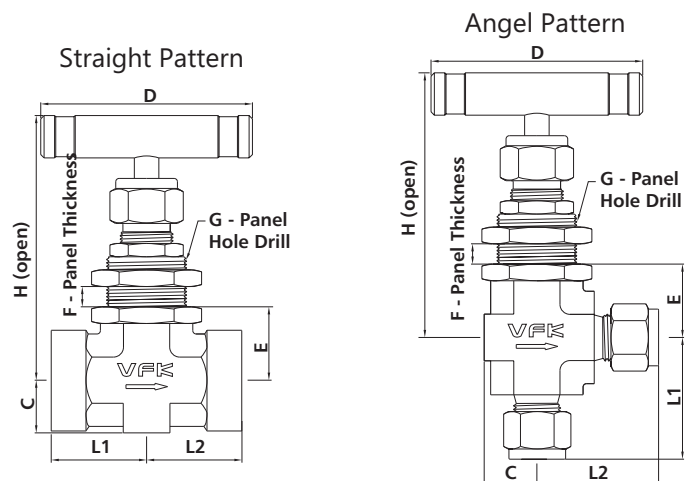


Stem Type



Item	Component	Valve Body Material			
		316 SS	F91	F92	Brass
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Packing Bolt	321 SS/A276			
4	Upper Stem	316 SS/A276	F91/A182	F92/A182	Brass 360/B16
5	Lock Nut	316 SS/B783			
6	Panel Nut	316 SS/B783			
7	Gland	316 SS/A276	F91/A182	F92/A182	Brass 360/B16
8	Packing	PTFE or PEEK or graphite			
9	Packing Washer	316 SS/A276	F91/A182	F92/A182	Brass 360/B16
10a 10b 10c 10d	Lower Stem	Chrome-plated 316 SS/A276	Chrome-plated F91/A182	Chrome-plated F92/A182	Chrome-plated 316 SS/A276
		Optional			
11	Body	316 SS/A182	F91/A182	F92/A182	Brass 377/B283
	Seat	Weld stellite seat optional			
Lubricant		Molybdenum disulfide-based			

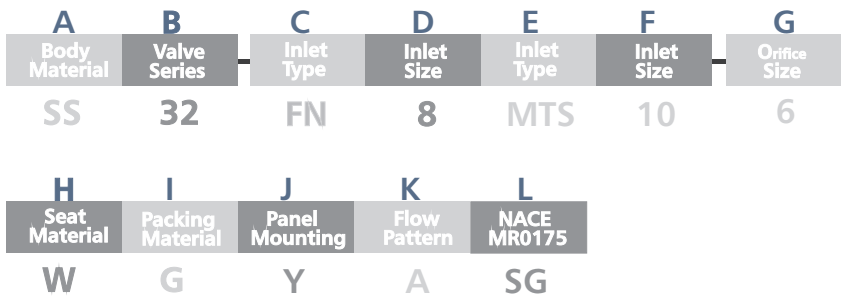
Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
□□32-FN2-4	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.53 (13.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)
□□32-FN4-4	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)						
□□32-FX4-4	1/4" VFK	1/4" VFK			1.22 (30.9)	1.22 (30.9)						
□□32-MX6-4	6 mm VFK	6 mm VFK			1.25 (31.75)	1.25 (31.75)						
□□32-MX8-4	8 mm VFK	8 mm VFK			1.19 (30.2)	1.19 (30.2)						
□□32-N6-4	3/8 Male NPT	3/8 Male NPT										
□□32-FN4-6	1/4 Female NPT	1/4 Female NPT	0.236 (6.0)	0.85	1.13 (28.6)	1.13 (28.6)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
□□32-FN6-6	3/8 Female NPT	3/8 Female NPT										
□□32-N6-6	3/8 Male NPT	3/8 Male NPT										
□□32-FX6-6	3/8" VFK	3/8" VFK			1.44 (36.5)	1.44 (36.5)						
□□32-MX10-6	10 mm VFK	10 mm VFK										
□□32-MX12-6	12 mm VFK	12 mm VFK			1.53 (38.9)	1.53 (38.9)						
□□32-MX14-6	14 mm VFK	14 mm VFK			1.56 (39.7)	1.56 (39.7)						
□□32-FN8-6	1/2 Female NPT	1/2 Female NPT			1.26 (32.0)	1.26 (32.0)						
□□32-N8-6	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)						
□□32-FJ8-6	1/2" VFK	1/2" VFK			1.53 (38.9)	1.53 (38.9)						
□□32-TS6-6	3/8" TS	3/8" TS										
□□32-TS8-6	1/2" TS	1/2" TS										
□□32-MTS12-6	12 mm MTS	12 mm MTS			1.13 (28.6)	1.13 (28.6)						
□□32-MTS14-6	14 mm MTS	14 mm MTS										
□□32-MTS16-6	16 mm MTS	16 mm MTS										
□□32-MTB14-6	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)						
□□32-MTB16-6	16 mm MTB	16 mm MTB										
□□32-UMB14-6	14 mm UMB	14 mm UMB			2.92 (74.1) (39.7)	2.92 (74.1) (39.7)						
□□32-UMB16-6	16 mm UMB	16 mm UMB										
□□32-MS20-6	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)						
□□32-MS22-6	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO										

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)														
	Inlet	Outlet			L1	L2	H	D	C	E	F	G							
□□32-FN8-11	1/2 Female NPT	1/2 Female NPT	0.433 (11.0)	2.18	1.56 (39.7)	1.56 (39.7)													
□□32-FN12-11	3/4 Female NPT	3/4 Female NPT																	
□□32-N8-11	1/2 Male NPT	1/2 Male NPT																	
□□32-N12-11	3/4 Male NPT	3/4 Male NPT																	
□□32-FX12-11	3/4" VFK	3/4" VFK			1.97 (50.0)	1.97 (50.0)													
□□32-MX14-11	14 mm VFK	14 mm VFK																	
□□32-MX16-11	16 mm VFK	16 mm VFK																	
□□32-MX18-11	18 mm VFK	18 mm VFK																	
□□32-MX20-11	20 mm VFK	20 mm VFK					3.86 (98.0)	3.5 (88.9)	0.8 (20.2)	1.1 (28.3)	0.38 (9.7)	1.08 (27.5)							
□□32-MX25-11	25 mm VFK	25 mm VFK																	
□□32-MTS14-11	14 mm MTS	14 mm MTS																	
□□32-MTS16-11	16 mm MTS	16 mm MTS																	
□□32-MTS18-11	18 mm MTS	18 mm MTS			1.56 (39.7)	1.56 (39.7)													
□□32-TS12-11	3/4" TS	3/4" TS																	
□□32-PS8-11	1/2 PS	1/2 PS																	
□□32-MTB14-11	14 mm MTB	14 mm MTB																	
□□32-MTB16-11	16 mm MTB	16 mm MTB			2.98 (75.7)	2.98 (75.7)													
□□32-UMB14-11	14 mm UMB	14 mm UMB																	
□□32-UMB16-11	16 mm UMB	16 mm UMB																	
□□32-MS27-11	M27 x 2 Male ISO	M27 x 2 Male ISO																	
□□32-FN12-15	3/4 Female NPT	3/4 Female NPT	0.591 (15.0)	3.27	1.97 (50.0)	1.97 (50.0)	6.5 (165)	5.0 (127)	1.3 (33.0)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)							
□□32-TS16-15	1" TS	1" TS																	
□□32-MTS25-15	25 mm MTS	25 mm MTS																	
□□32-MTS28-15	28 mm MTS	28 mm MTS																	
□□32-PS12-15	3/4 PS	3/4 PS			2.35 (59.7)	2.35 (59.7)													
□□32-PB12-15	3/4 PB	3/4 PB																	
□□32-FX12-15	3/4" VFK	3/4" VFK																	
□□32-FX16-15	1" VFK	1" VFK																	
□□32-MX20-15	20 mm VFK	20 mm VFK																	
□□32-MX22-15	22 mm VFK	22 mm VFK																	
□□32-MX25-15	25 mm VFK	25 mm VFK	0.787 (20.0)	5.65	1.97 (50.0)	1.97 (50.0)	6.5 (165)	5.5 (165)	1.3 (33.0)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)							
□□32-FN16-20	1 Female NPT	1 Female NPT																	
□□32-TS16-20	1" TS	1" TS																	
□□32-MTS25-20	25 mm MTS	25 mm MTS																	
□□32-MTS28-20	28 mm MTS	28 mm MTS																	
□□32-PS12-20	3/4 PS	3/4 PS																	
□□32-PB16-20	1 PB	1 PB																	

32 and 32H Series How to Order



A	Body Material
SS:	316 SS
6L:	316L SS
S4:	304 SS
4L:	304L SS
S1:	321 SS
91:	F91
92:	F92
D5:	Duplex 2205
D7:	Duplex 2507
TI:	Titanium
A20:	Alloy 20
M:	Alloy 400
INC:	Alloy 600
HC:	Alloy C-276
B:	Brass
CS:	Carbon Steel

B	Valve Series
32:	32 Series Needle Valves
32H:	32H Series Needle Valves

CE	Inlet/Outlet Type
FN	Female NPT
N	Male NPT
FR	Female BSPT
RT	Male BSPT
FM	Female ISO (for MRP)
MS	Male ISO (for MRG)
FP	Female BSPP (for RP)
BP	Male BSPP (for RG)
TS	Fractional Tube Socket Weld
MTS	Metric Tube Socket Weld
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FX	Fractional Tube Fitting
MX	Metric Tube Fitting
UFB	Nut-Gasket-Fractional Bulge Nipple
UMB	Nut-Gasket-Metric Bulge Nipple

DF	Inlet/Outlet Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
24	M24 x 1.5
25	25 mm
27	M27 x 2
28	28 mm

G	Orifice Size
4:	0.157" (4.0 mm)
6:	0.236" (6.0 mm)
11:	0.433" (11 mm)
15:	0.591" (15 mm)
20:	0.787" (20 mm)

H	Seat Material
	Standard Same as Body
W	Stellite
X	Customer Specified

I	Packing Material
	Standard chevron PTFE
P	PEEK
G	Graphite

J	Panel Mounting
	Standard with no Panel Mounting
Y	Yes

K	Flow Pattern
	Standard is Straight Flow
A	Angle

L	NACE MR0175
	Standard with no NACE applicable
SG	With NACE MR0175

Remark:

1. Standard thread pitch for metric threads are as follows:

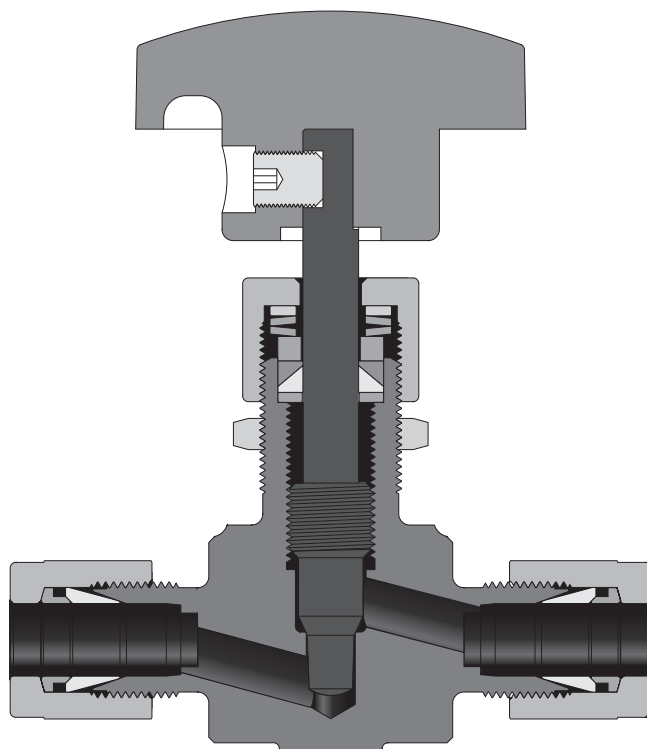
M10 and below: 1 mm

M12 to M24: 1.5 mm

M27 and above: 2 mm

Standard thread pitch should be ignored in the ordering number, others should be specified.

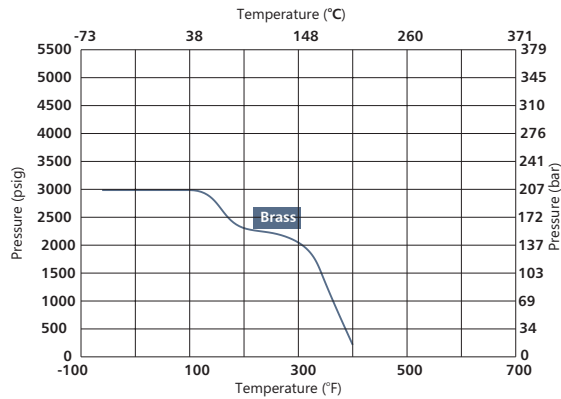
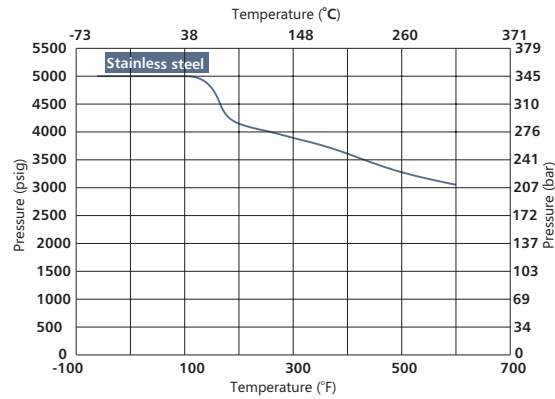
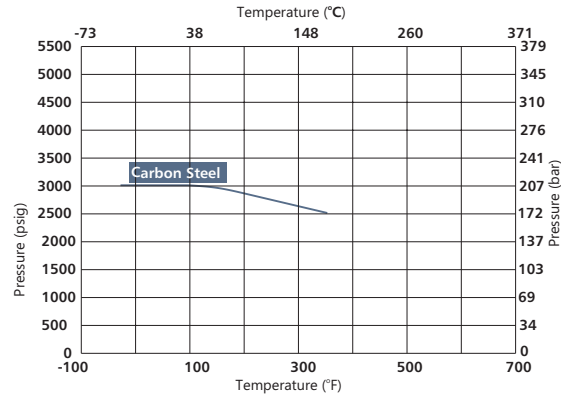
General Purpose Service Needle Valves



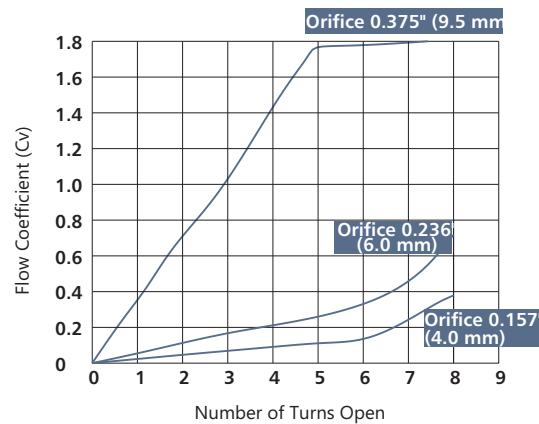
33 Series

- Live-loaded packing system.
Integral-bonnet valve body design.
- Easy external adjustments by packing nut.
- The up stem threads are cold rolled for high strength and smooth operation.
- Compact design.
- Straight, angle and cross patterns can be choose.
- 2-piece chevron packing with disc springs:
 - Improves seal
 - Reduces friction wear
 - Compensates for wear
 - Reduces operating torque
- Standard maximum pressures:
 - Stainless steel: 6000 psig (413 bar).
 - Brass: 3000 psig (206 bar)
- Temperatures up to 450° F (232° C) with PTFE packing;
 - Other ratings are limited to:
 - 200°F (93°C) max with soft-seat stem with PCTFE stem tip.
 - 250°F (121°C) max with UHMWPE packing.
 - 450°F (232°C) max with PFA packing.
 - 500°F (260°C) max with PEEK packing
- Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.
- Every valve is 100% factory tested with nitrogen.

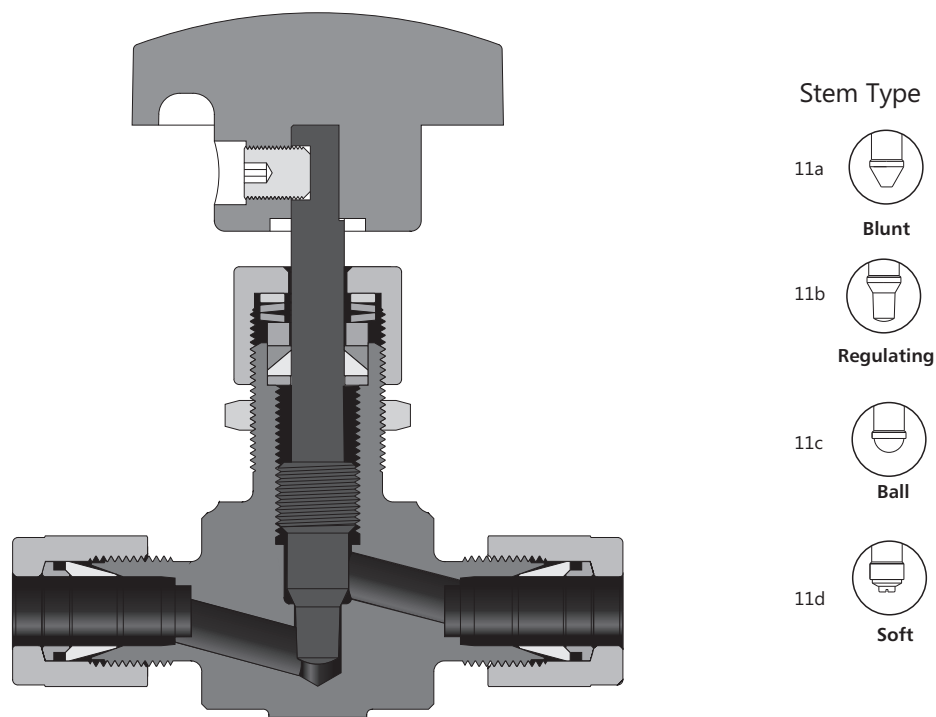
Pressure vs. Temperature



Regulating Stems Flow Data at 100°F (37°C)



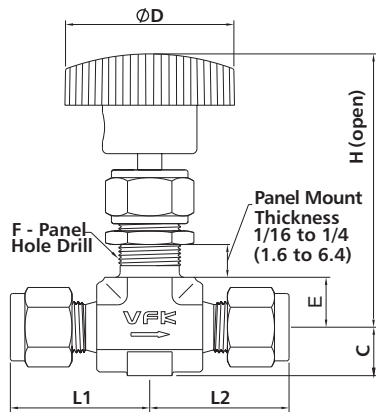
Standard Materials of Construction



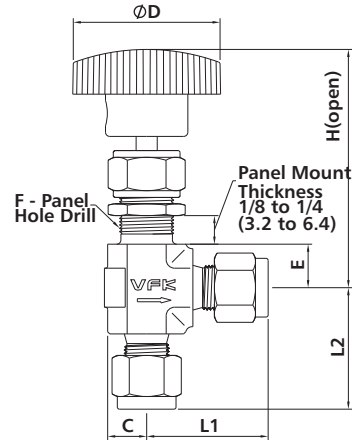
Item	Component	Valve Body Material		
		316 SS	Brass	Steel
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Nickel cadmium-plated steel		
3	Packing Nut	316 SS/A276	Brass 360/B16	12L14/A108
4	Gland	304 SS/A276		
5	Packing Spring	S17700/A693		
6	Packing Gland	304 SS/A276		
7	Upper Packing	PTFE or PEEK		
8	Lower Packing			
9	Lower Gland	316 SS/A276		
10	Panel Nut	316 SS/B783		
11a 11b 11c 11d	Stem	Chrome-plated 316 SS/A276		
12	Body	316 SS/A182	Brass 377/B283	Chrome-plated 11L17/A108
Lubricants		Molybdenum disulfide-based and silicone-based		

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
□□33-FN2-2	1/8 Female NPT	1/8 Female NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)	0.31 (7.9)	1.0 (25.4)	0.44 (11.2)	0.47 (11.9)	2.28 (57.9)
□□33-FX2-2	1/8" VFK	1/8" VFK			0.98 (25.0)	0.98 (25.0)					
□□33-MX3-2	3 mm VFK	3 mm VFK									
□□33-FN2-4	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
□□33-N2-4	1/8 Male NPT	1/8 Male NPT			0.98 (25.0)	0.98 (25.0)					
□□33-N4-4	1/4 Male NPT	1/4 Male NPT			1.13 (28.7)	1.13 (28.7)					
□□33-FX4-4	1/4" VFK	1/4" VFK			1.17 (29.7)	1.17 (29.7)					
□□33-MX6-4	6 mm VFK	6 mm VFK									
□□33-MX8-4	8 mm VFK	8 mm VFK									
□□33-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.5 (12.7)	1.88 (47.8)	0.5 (12.7)	0.78 (19.8)	2.97 (75.4)
□□33-FN6-6	3/8" Female NPT	3/8 Female NPT			1.12 (28.4)	1.12 (28.4)					
□□33-N6-6	3/8 Male NPT	3/8 Male NPT			1.50 (38.1)	1.50 (38.1)					
□□33-N8-6	1/2 Male NPT	1/2 Male NPT			1.29 (32.8)	1.29 (32.8)					
□□33-FX6-6	3/8" VFK	3/8" VFK			1.4 (35.6)	1.4 (35.6)					
□□33-FX8-6	1/2" VFK	1/2" VFK			1.3 (33.0)	1.3 (33.0)					
□□33-MX10-6	10 mm VFK	10 mm VFK			1.4 (35.6)	1.4 (35.6)					
□□33-MX12-6	12 mm VFK	12 mm VFK			1.56 (39.7)	1.56 (39.7)					
□□33-MX14-6	14 mm VFK	14 mm VFK			1.50 (38.1)	1.50 (38.1)					
□□33-MS20-6	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO									
□□33-FN8-10	1/2 Female NPT	1/2 Female NPT	0.375 (9.5)	1.80	1.50 (38.1)	1.50 (38.1)	0.75 (19.1)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.91 (99.3)
□□33-FN12-10	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)					
□□33-N12-10	3/4 Male NPT	3/4 Male NPT			1.90 (48.3)	1.90 (48.3)					
□□33-FX8-10	1/2" VFK	1/2" VFK									
□□33-FX12-10	3/4" VFK	3/4" VFK									
□□33-MX14-10	14 mm VFK	14 mm VFK									

33 Series How to Order

A	B	C	D	E	F	G
Body Material	Valve Series	Inlet Type	Inlet Size	Inlet Type	Inlet Size	Orifice Size
SS	33	FN	8	UMB	10	6

H	I	J	K	L
Seat Material	Packing Material	Panel Mounting	Flow Pattern	NACE MR0175
W	G	Y	A	SG

A	Body Material
SS:	316 SS
6L:	316L SS
S4:	304 SS
4L:	304L SS
S1:	321 SS
91:	F91
92:	F92
D5:	Duplex 2205
D7:	Duplex 2507
TI:	Titanium
A20:	Alloy 20
M:	Alloy 400
INC:	Alloy 600
HC:	Alloy C-276
B:	Brass
CS:	Carbon Steel

B	Valve Series
33:	33 Series Needle Valves

CE	Inlet/Outlet Type
FN	Female NPT
N	Male NPT
FR	Female BSPT
RT	Male BSPT
FM	Female ISO (for MRP)
MS	Male ISO (for MRG)
FP	Female BSPP (for RP)
BP	Male BSPP (for RG)
FX	Fractional Tube Fitting
MX	Metric Tube Fitting
UFB	Nut-Gasket-Fractional Bulge Nipple
UMB	Nut-Gasket-Metric Bulge Nipple

DF	Inlet/Outlet Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5

G	Orifice Size
2:	0.082" (2.1 mm)
4:	0.157" (4.0 mm)
6:	0.236" (6.0 mm)
10:	0.374" (9.5 mm)

H	Seat Material
Standard Same as Body	
W	Stellite
X	Customer Specified

I	Packing Material
Standard chevron PTFE	
P	PEEK

J	Panel Mounting
Standard with no Panel Mounting	
Y	Yes

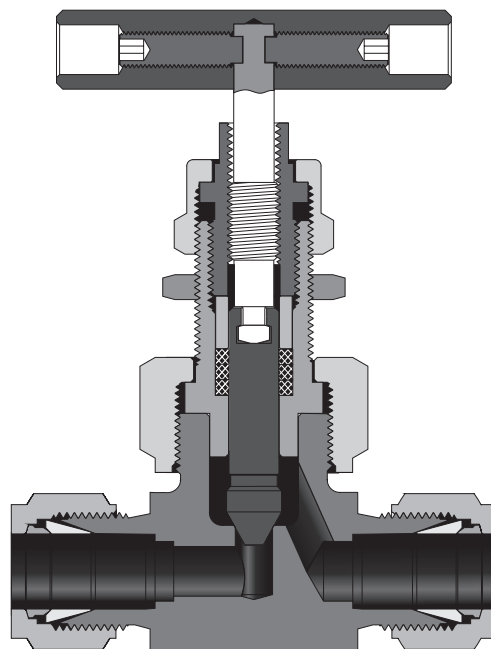
K	Flow Pattern
Standard is Straight Flow	
A	Angle

L	NACE MR0175
Standard with no NACE applicable	
SG	With NACE MR0175

Remark:

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
Standard thread pitch should be ignored in the ordering number, others should be specified.

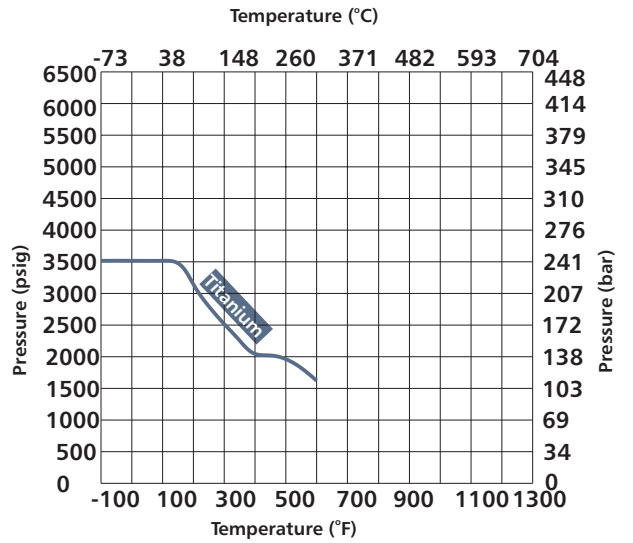
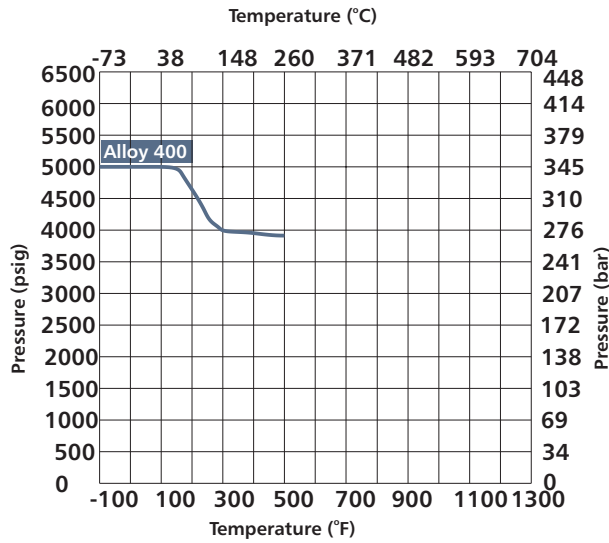
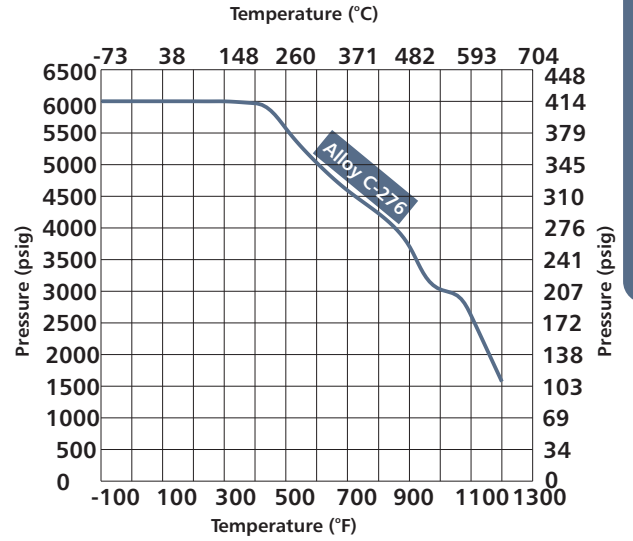
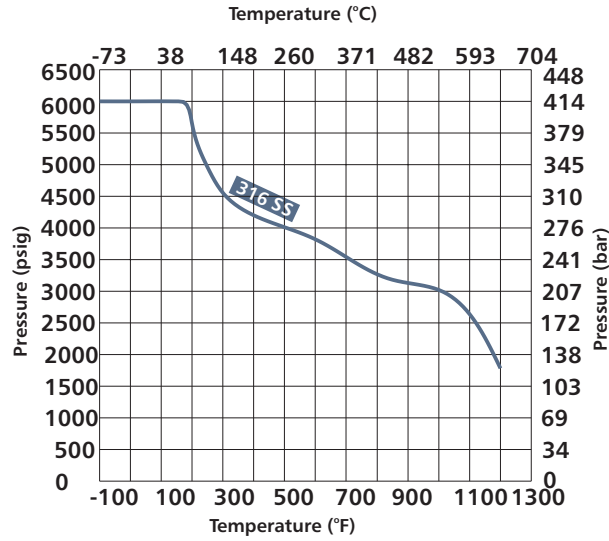
Severe-Service Union Bonnet Needle Valves



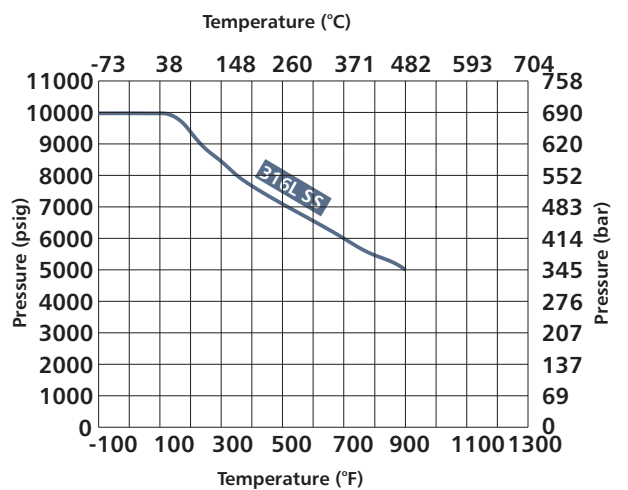
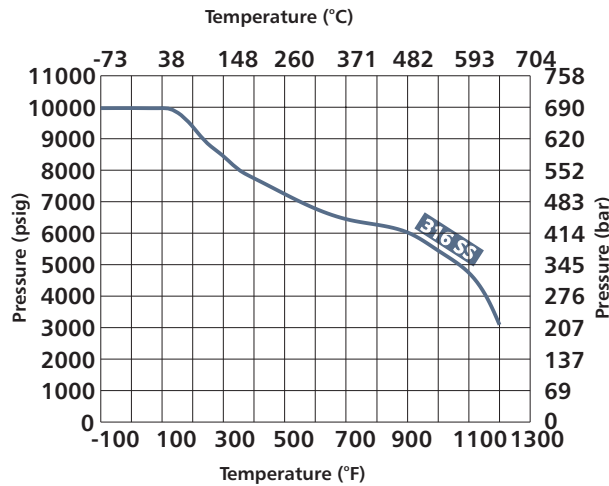
34 and 34H Series

- 34 and 34H series needle valves are for use in severe-service union-bonnet.
- The hardened stainless steel, nonrotating needle promotes leak-tight shut-off and long service life.
- Union-bonnet construction prevents accidental valve disassembly.
- Rolled and plated 316 SS up stem threads enhance cycle life.
- Straight and angle patterns, compact design.
- Stainless steel and other alloy steel body materials can be selected.
- Safety back-seating needle seals in fully open position.
- Two piece knuckle joint provides nonrotating needle feature. Joint is located above the packing, protected from system media.
- NB series standard pressures up to 6000 psig (413 bar).
NHB series maximum working pressure up to 10 000 psig (689 bar).
- Temperatures up to 450° F (232° C) with PTFE packing;
up to 1200° F (649° C) with optional graphite packing
- Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.
- Every valve is 100% factory tested with nitrogen.

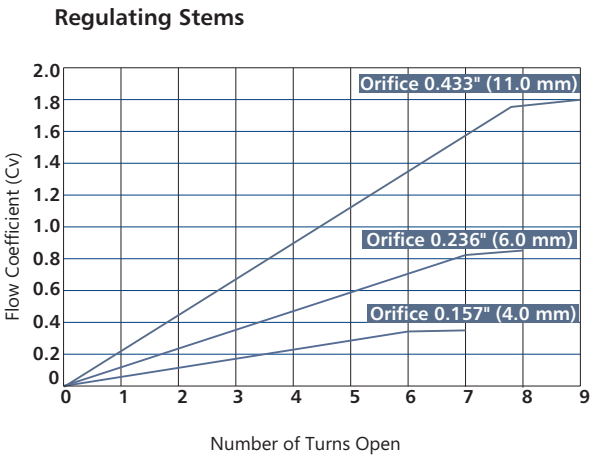
34 Series Pressure vs. Temperature



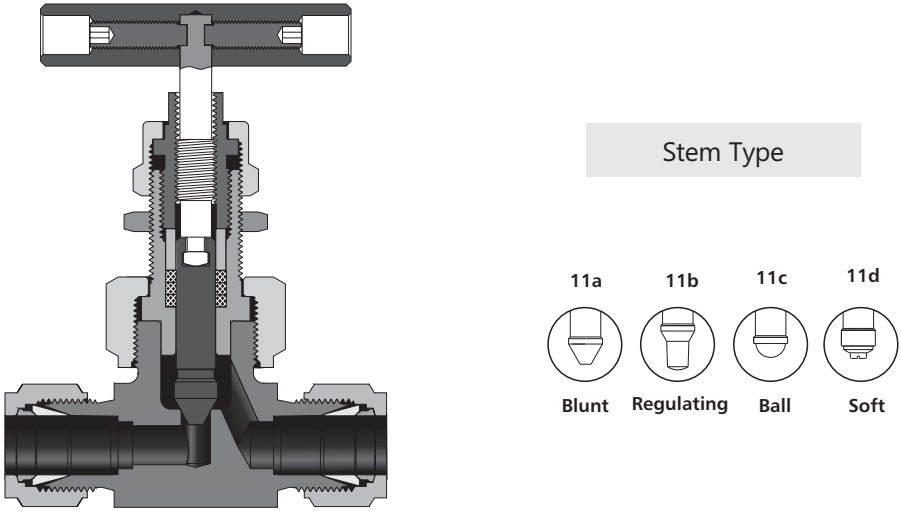
34H Series Pressure vs. Temperature



Regulating Stems Flow Data at 100°F (37°C)

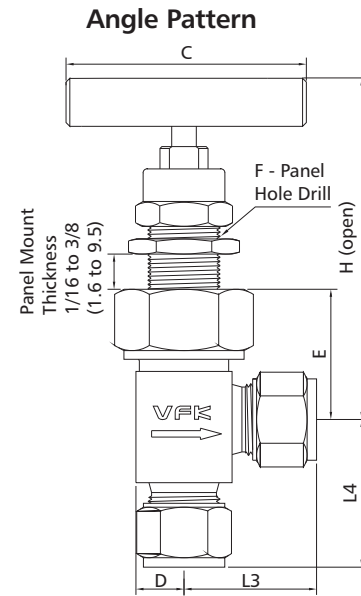
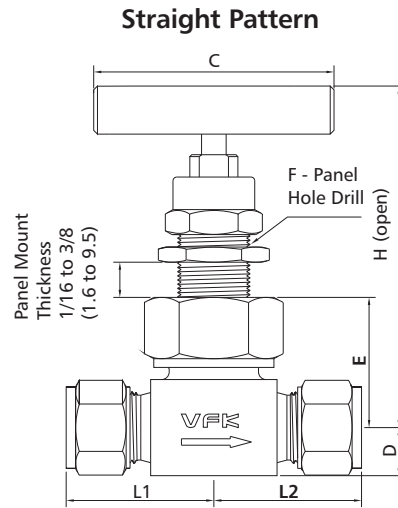


Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Upper Stem	316 SS/A276			
4	Packing Bolt	321 SS/A276			
5	Lock Nut	316 SS/A276			
6	Panel Nut	316 SS/B783			
7	Gland	316 SS/A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
8	Packing	PTFE or PEEK or graphite			
9	Bonnet	316 SS/A479	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
10	Union Nut	316 SS/A276			
11a 11b 11c 11d	Lower Stem	Chrome-plated 316 SS/A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
		Optional			
12	Body	316 SS/A182	Alloy 400/B164, B127, B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564
	Seat	Weld stellite optional			
Lubricant		Molybdenum disulfide-based			

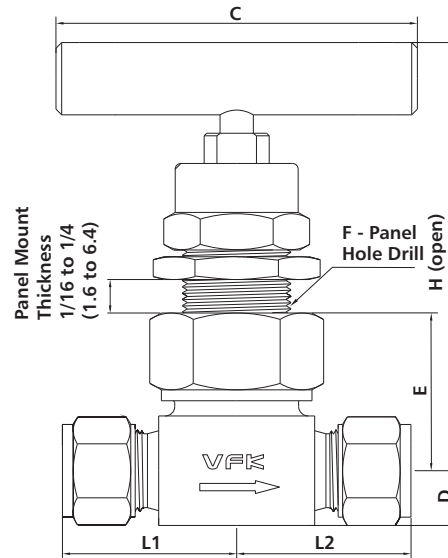
Dimensions of NB Series



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)									
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H	
□□34-FN2-4	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	0.89 (22.6)	1.00 (25.4)	1.75 (44.5)	0.39 (9.9)	1.09 (27.7)	19/32 (15.1)	3.04 (77.2)	
□□34-FN4-4	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)								
□□34-N4FN4-4	1/4 Male NPT	1/4 Female NPT			1.00 (25.4)	1.03 (26.2)								
□□34-N4-4	1/4 Male NPT	1/4 Male NPT			1.00 (25.4)	1.00 (25.4)	1.00 (25.4)							
□□34-N6-4	3/8 Male NPT	3/8 Male NPT			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)							
□□34-FP4-4	1/4 Female BSPP	1/4 Female BSPP			1.00 (25.4)	1.22 (30.9)	1.16 (29.5)							
□□34-N4FX4-4	1/4 Male NPT	1/4" VFK			1.03 (26.2)	1.22 (30.9)								
□□34-FN4FX4-4	1/4 Female NPT	1/4" VFK			1.22 (30.9)	1.22 (30.9)	1.48 (37.6)							
□□34-FX4-4	1/4" VFK	1/4" VFK			0.91 (23.1)	0.91 (23.1)								0.88 (22.4)
□□34-MX6-4	6 mm VFK	6 mm VFK												
□□34-MX8-4	8 mm VFK	8 mm VFK												
□□34-TS4-4	1/4" TS	1/4" TS												
□□34-FN4-6	1/4 Female NPT	1/4 Female NPT	0.236 (6.0)	0.8			1.0 (25.4)	1.13 (28.6)						
□□34-FN6-6	3/8 Female NPT	3/8 Female NPT			1.13 (28.6)	1.13 (28.6)	1.06 (26.9)							
□□34-N6-6	3/8 Male NPT	3/8 Male NPT			1.50 (38.1)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)						
□□34-N8-6	1/2 Male NPT	1/2 Male NPT			1.41 (35.9)	1.41 (35.9)	1.29 (32.8)	1.66 (42.2)						
□□34-FX6-6	3/8" VFK	3/8" VFK			1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.65 (41.9)						
□□34-FX8-6	1/2" VFK	1/2" VFK			1.42 (36.1)	1.42 (36.1)	1.30 (33.0)	1.55 (39.4)						
□□34-MX10-6	10 mm VFK	10 mm VFK												

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)									
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H	
□□34-MX12-6	12 mm VFK	12 mm VFK	0.236 (6.0)	0.8	1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.65 (41.9)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	25/32 (19.8)	3.70 (94)	
□□34-MX14-6	14 mm VFK	14 mm VFK												
□□34-MX16-6	16 mm VFK	16 mm VFK												
□□34-TS6-6	3/8" TS	3/8" TS												
□□34-TS8-6	1/2" TS	1/2" TS												
□□34-PS4-6	1/4 PS	1/4 PS			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)						
□□34-MTS12-6	12 mm MTS	12 mm MTS												
□□34-MTS14-6	14 mm MTS	14 mm MTS												
□□34-MTS16-6	16 mm MTS	16 mm MTS												
□□34-MTB14-6	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)						
□□34-MTB16-6	16 mm MTB	16 mm MTB			2.92 (74.1)	2.92 (74.1)	2.55 (64.7)	2.92 (74.1)						
□□34-UMB14-6	14 mm UMB	14 mm UMB												
□□34-MS20-6	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)	1.13 (28.6)	1.50 (38.1)						
□□34-MS22-6	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO												
□□34 -FN8-11	1/2 Female NPT	1/2 Female NPT	0.433 (11.0)	1.8	1.56 (39.6)	1.56 (39.6)	1.31 (33.3)	1.56 (39.6)	3.50 (88.9)	0.78 (19.8)	1.91 (48.5)	11/32 (26.2)	4.85 (123)	
□□34 -FN12-11	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)								
□□34 -FN16-11	1 Female NPT	1 Female NPT			1.81 (46.0)	1.81 (46.0)								
□□34 -N12-11	3/4 Male NPT	3/4 Male NPT			1.63 (41.3)	1.63 (41.3)								
□□34 -FX8-11	1/2" VFK	1/2" VFK												
□□34 -FX12-11	3/4" VFK	3/4" VFK												
□□34 -MX14-11	14 mm VFK	14 mm VFK			1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (52.8)						
□□34 -MX16-11	16 mm VFK	16 mm VFK												
□□34 -MX18-11	18 mm VFK	18 mm VFK												
□□34 -MX20-11	20 mm VFK	20 mm VFK												
□□34 -MTS14-11	14 mm MTS	14 mm MTS												
□□34 -MTS16-11	16 mm MTS	16 mm MTS												
□□34 -TS8-11	1/2" TS	1/2" TS			1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)						
□□34 -TS12-11	3/4" TS	3/4" TS												
□□34 -MTB14-11	14 mm MTB	14 mm MTB												
□□34 -MTB16-11	16 mm MTB	16 mm MTB			2.98 (75.7)	2.98 (75.7)								
□□34 -UMB14-11	14 mm UMB	14 mm UMB			1.56 (39.7)	1.56 (39.7)								
□□34 -MS27-11	M27 x 2 Male ISO	M27 x 2 Male ISO												

Dimensions of NHB Series



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)													
	Inlet	Outlet			L1	L2	C	D	E	F	H							
□□34H-FN2-4	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.125 (28.58)	1.125 (28.58)	2.5 (63.5)	0.5 (12.7)	1.34 (34.1)	25/32 (19.8)	3.31 (84.1)							
□□34H-FN4-4	1/4 Female NPT	1/4 Female NPT																
□□34H-N4FN4-4	1/4 Male NPT	1/4 Female NPT																
□□34H-N4-4	1/4 Male NPT	1/4 Male NPT																
□□34H-N6-4	3/8 Male NPT	3/8 Male NPT																
□□34H-N4FX4-4	1/4 Male NPT	1/4" VFK			1.125 (28.58)	1.41 (35.7)	2.5 (63.5)	0.5 (12.7)	1.34 (34.1)	25/32 (19.8)	3.31 (84.1)							
□□34H-FN4FX4-4	1/4 Female NPT	1/4" VFK																
□□34H-FX4-4	1/4" VFK	1/4" VFK			1.41 (35.7)	1.41 (35.7)						2.5 (63.5)	0.5 (12.7)	1.34 (34.1)	25/32 (19.8)	3.31 (84.1)		
□□34H-MX6-4	6 mm VFK	6 mm VFK																
□□34H-MX8-4	8 mm VFK	8 mm VFK			1.125 (28.58)	1.125 (28.58)											2.5 (63.5)	0.5 (12.7)
□□34H-TS4-4	1/4" TS	1/4" TS																
□□34H-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.86	1.56 (39.6)	1.56 (39.6)	3.50 (88.9)	0.63 (16.0)	1.81 (46.0)	1 1/32 (26.2)	4.13 (105)							
□□34H-N8-6	1/2 Male NPT	1/2 Male NPT																
□□34H-FN8-6	1/2 Female NPT	1/2 Female NPT																
□□34H-N8FN8-6	1/2 Male NPT	1/2 Female NPT																
□□34H-FX8-6	1/2" VFK	1/2" VFK			1.63 (41.4)	1.63 (41.4)	3.50 (88.9)	0.78 (19.8)	1.94 (49.3)	1 1/32 (26.2)	4.13 (105)							
□□34H-MX12-6	12 mm VFK	12 mm VFK																
□□34H-TS8-6	1/2" TS	1/2" TS										1.97 (50.0)	1.97 (50.0)	3.50 (88.9)	0.63 (16.0)	1.81 (46.0)	1 1/32 (26.2)	4.25 (108)
□□34H-MTS12-6	12 mm MTS	12 mm MTS																

34 and 34H Series How to Order

A	B	C	D	E	F	G
Body Material	Valve Series	Inlet Type	Inlet Size	Inlet Type	Inlet Size	Orifice Size
SS	34	FN	8	MTS	10	6

H	I	J	K	L
Seat Material	Packing Material	Panel Mounting	Flow Pattern	NACE MR0175
W	G	Y	A	SG

A	Body Material
SS:	316 SS
6L:	316L SS
S4:	304 SS
4L:	304L SS
S1:	321 SS
91:	F91
92:	F92
D5:	Duplex 2205
D7:	Duplex 2507
TI:	Titanium
A20:	Alloy 20
M:	Alloy 400
INC:	Alloy 600
HC:	Alloy C-276
B:	Brass
CS:	Carbon Steel

B	Valve Series
34:	34 Series Needle Valves
34H:	34H Series Needle Valves

CE	Inlet/Outlet Type
FN	Female NPT
N	Male NPT
FR	Female BSPT
RT	Male BSPT
FM	Female ISO (for MRP)
MS	Male ISO (for MRG)
FP	Female BSPP (for RP)
BP	Male BSPP (for RG)
TS	Fractional Tube Socket Weld
MTS	Metric Tube Socket Weld
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FX	Fractional Tube Fitting
MX	Metric Tube Fitting
UFB	Nut-Gasket-Fractional Bulge Nipple
UMB	Nut-Gasket-Metric Bulge Nipple

DF	Inlet/Outlet Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
24	M24 x 1.5
25	25 mm
27	M27 x 2
28	28 mm

G	Orifice Size
4:	0.157" (4.0 mm)
6:	0.25" (6.4 mm)
11:	0.433" (11 mm)

H	Seat Material
	Standard Same as Body
W	Stellite
X	Customer Specified

I	Packing Material
	Standard chevron PTFE
P	PEEK
G	Graphite

J	Panel Mounting
	Standard with no Panel Mounting
Y	Yes

K	Flow Pattern
	Standard is Straight Flow
A	Angle

L	NACE MR0175
	Standard with no NACE applicable
SG	With NACE MR0175

Remark:

- Standard thread pitch for metric threads are as follows:

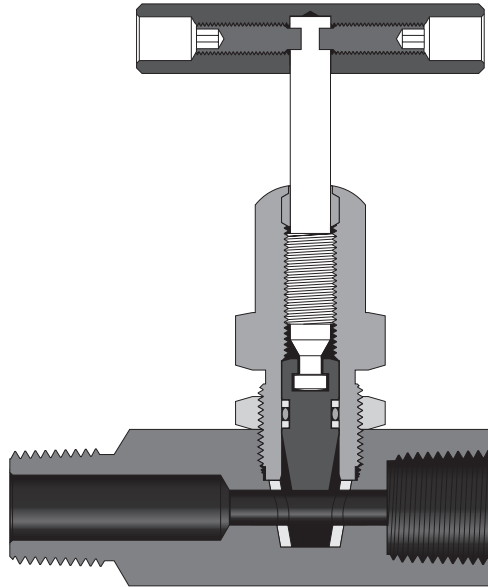
M10 and below: 1 mm

M12 to M24: 1.5 mm

M27 and above: 2 mm

Standard thread pitch should be ignored in the ordering number, others should be specified.

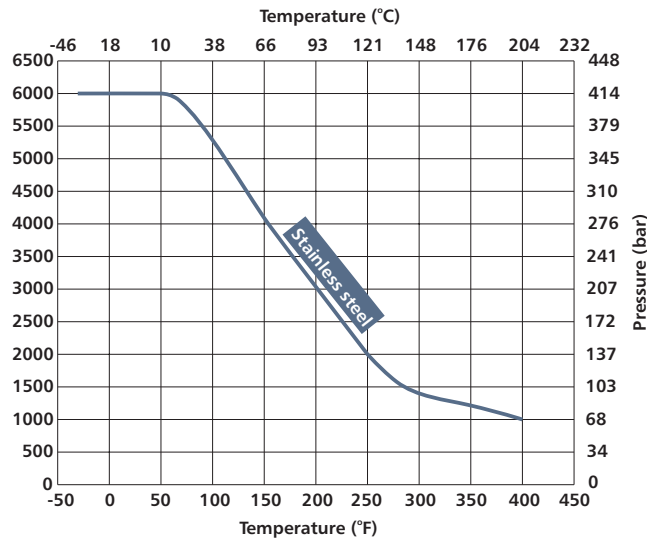
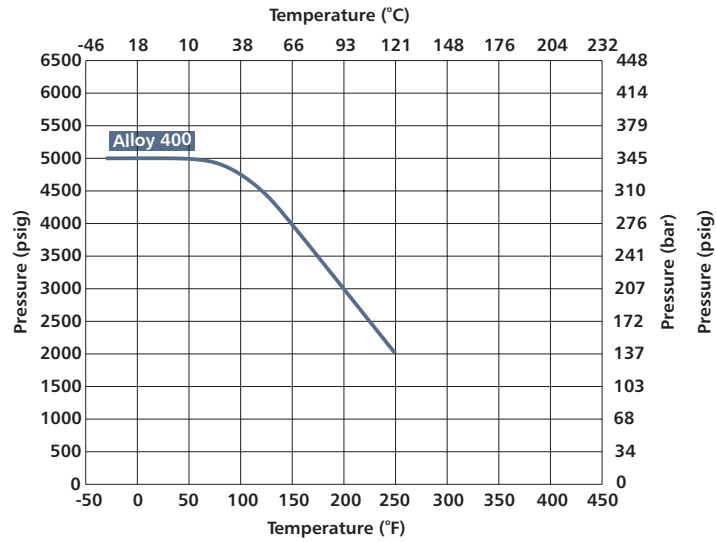
Rising Plug Needle Valves



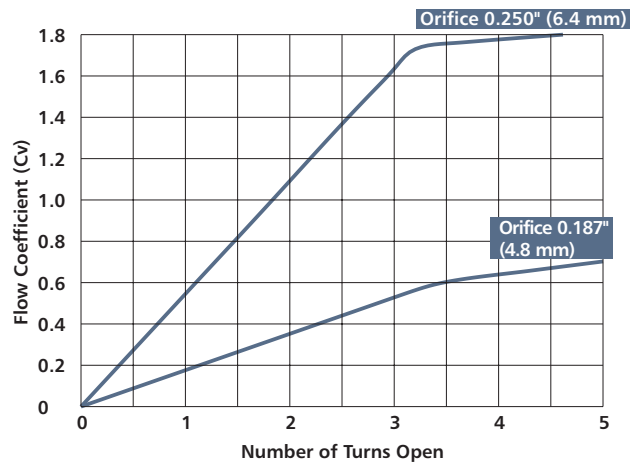
35 and 35G Series

- Roddable, straight-through orifice for maximum flow.
- Packing below the threads prevents lubricant washout.
- Positive stem retraction prevents sticking
- Straight-through orifice is roddable for easy cleaning.
- Internal wiper ring protects threads from external contamination .
- Nonrotating stem tip creates positive seal.
- Replaceable seals, seat and tip design.
- Standard maximum pressures:
Stainless steel: 6000 psig (413 bar) .
Alloy 400: 5000 psig (344 bar)
- Valves are standard with acetal seats, fluorocarbon FKM O-rings, and PTFE backup rings.
250°F (121°C) max for fluids compatible with acetal seat material, except for water and steam, which are not recommended for temperatures greater than 200°F (93°C).
Ratings extend to:
-65°F (-53°C) with Buna C O-rings.
400°F (204°C) with PEEK or PFA seat material and fluorocarbon FKM or Kalrez® O-rings.
- Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.
- Every valve is 100% factory tested with nitrogen.

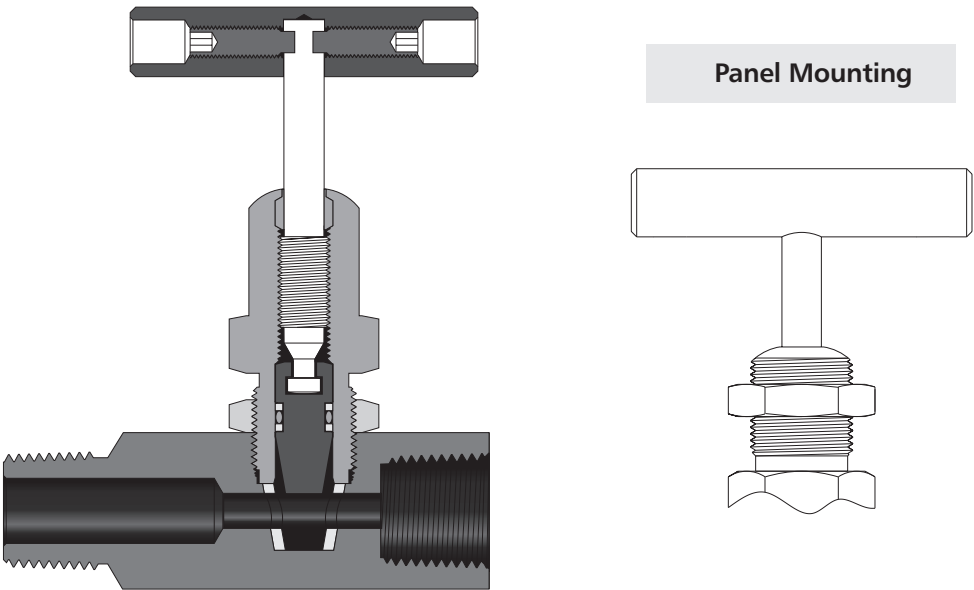
Pressure vs. Temperature



Flow Data at 100°F (37°C)

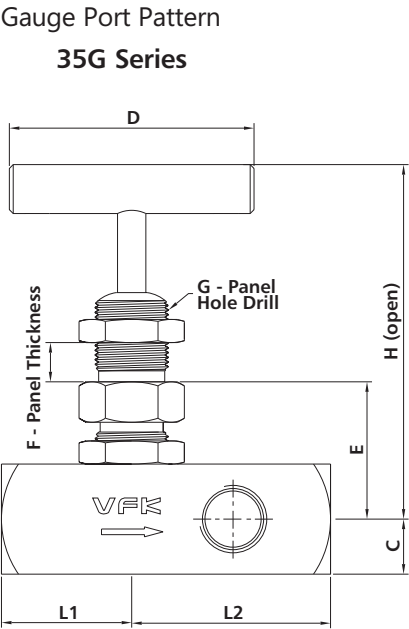
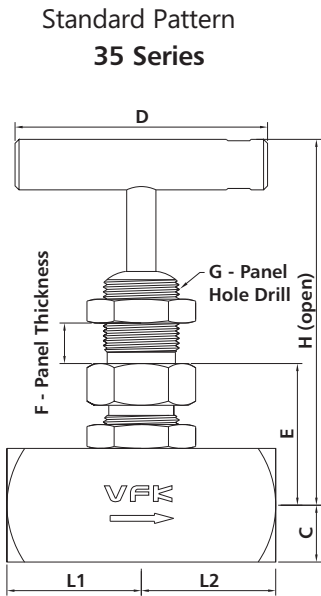


Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Alloy R-405
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Wiper Ring	PTFE/D1710			
4	Upper Stem	316 SS/A276	304 SS/A276	321 SS/A276	Alloy R-405/B164
5	Panel Nut	316 SS/B783			
6	Bonnet	316 SS/A479	304 SS/A479	321 SS/A479	Alloy R-405/B164
7	Backup Ring	PTFE/D1710			
8	O-ring	Fluorocarbon FKM			
9	Lock Nut	316 SS/B783			
10	Stem Tip	316 SS/A276	304 SS/A276	321 SS/A276	Alloy R-405/B164
11	Seat	Acetal or PEEK or PFA			
12	Body	316 SS/A479	304 SS/A479	321 SS/A479	Alloy R-405/B164
Lubricants		Molybdenum disulfide-based and fluorocarbon-based			

Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)								
	Inlet	Outlet			L1	L2	C	D	E	F	G	H	
□□35-FN4-4	1/4 Female NPT	1/4 Female NPT	0.187 (4.8)	0.63	1.12 (28.4)	1.12 (28.4)	0.44 (11.1)	2.17 (55)	1.08 (27.5)	0.25 (6.4)	0.65 (16.1)	3.77 (95.8)	
□□35-N4FN4-4	1/4 Male NPT	1/4 Female NPT			1.78 (45.2)								
□□35-N8FN4-4	1/2 Male NPT	1/4 Female NPT			1.89 (48.0)								
□□35G-FN4-4	1/4 Female NPT	1/4 Female NPT			1.12 (28.4)	1.75 (44.4)	0.50 (12.7)						
□□35G-N8FN4-4	1/2 Male NPT	1/4 Female NPT											
□□35-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)	2.5 (63.5)	1.4 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)	
□□35-N8FN8-6	1/2 Male NPT	1/2 Female NPT			2.16 (54.9)								
□□35-N12FN8-6	3/4 Male NPT	1/2 Female NPT											
□□35G-FN8-6	1/2 Female NPT	1/2 Female NPT			3.33 (84.6)	2.25 (57.2)							
□□35G-N12FN8-6	3/4 Male NPT	1/2 Female NPT											

- 1. Sizes and types listed are standard. Other sizes and types are available upon request.
- 2. For dimensions not shown above, please contact the authorized representative or VFK.

35 and 35G Series How to Order

A	B	C	D	E	F	G
Body Material	Valve Series	Inlet Type	Inlet Size	Inlet Type	Inlet Size	Orifice Size
SS	35	FN	8	MS	10	6

H	I	J	K
Seat Material	O-ring Material	Panel Mounting	NACE MR0175
A	B	Y	SG

A	Body Material
SS:	316 SS
6L:	316L SS
S4:	304 SS
4L:	304L SS
S1:	321 SS
91:	F91
92:	F92
D5:	Duplex 2205
D7:	Duplex 2507
TI:	Titanium
A20:	Alloy 20
M:	Alloy 400
INC:	Alloy 600
HC:	Alloy C-276
B:	Brass
CS:	Carbon Steel

CE	Inlet/Outlet Type
FN	Female NPT
N	Male NPT
FR	Female BSPT
RT	Male BSPT
FM	Female ISO (for MRP)
MS	Male ISO (for MRG)
FP	Female BSPP (for RP)
BP	Male BSPP (for RG)
FX	Fractional Tube Fitting
MX	Metric Tube Fitting

DF	Inlet/Outlet Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
24	M24 x 1.5

H	Seat Material
Standard Material is Acetal	
P	PEEK
A	PFA

I	O-ring Material
Standard chevron FKM	
B	Buna-N
E	Ethylene proylene

J	Panel Mounting
Standard with no Panel Mounting	
Y	Yes

B	Valve Series
35:	35 Series Needle Valves
35G:	35G Series Needle Valves

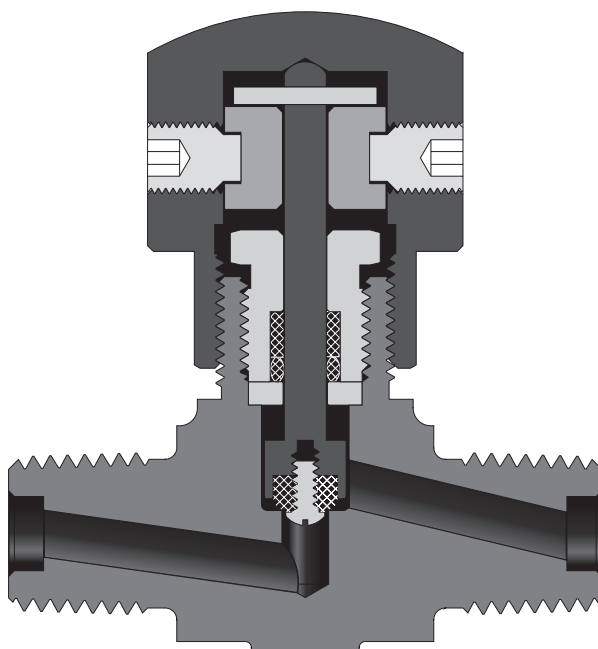
G	Orifice Size
4:	0.157" (4.0 mm)
6:	0.25" (6.4 mm)

L	NACE MR0175
Standard with no NACE applicable	
SG	With NACE MR0175

Remark:

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
Standard thread pitch should be ignored in the ordering NFmber, others should be specified.

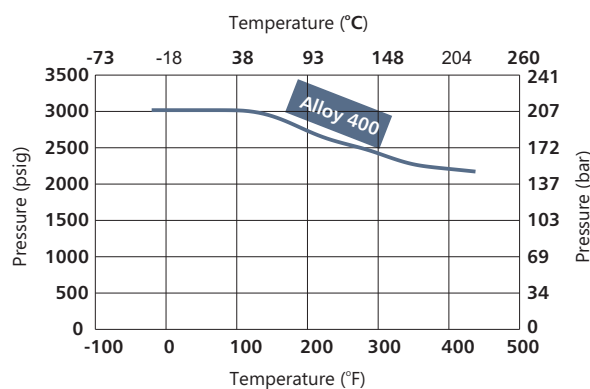
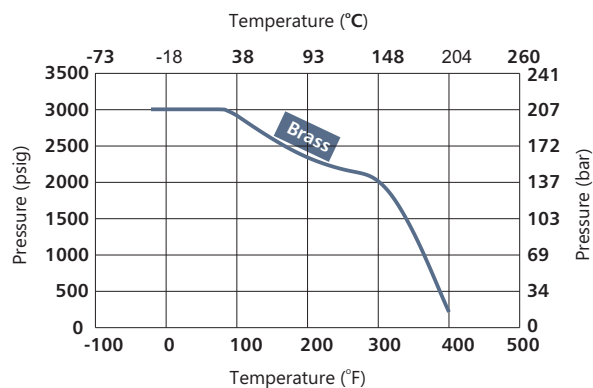
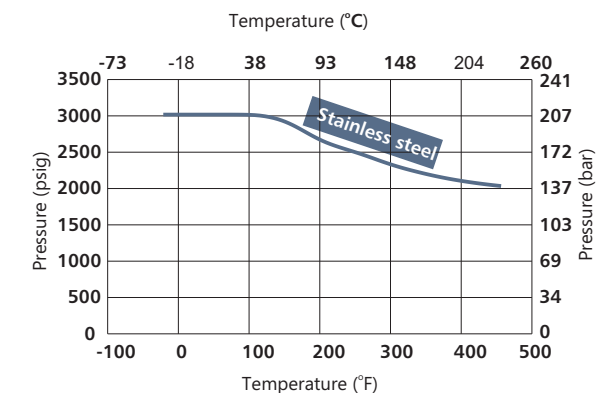
Norotating–Stem Needle Valves



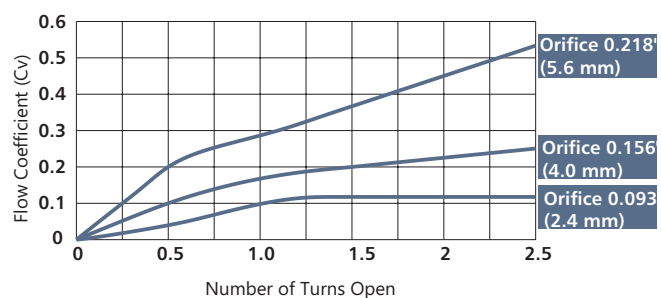
36 Series

- NS series needle valves Compact, rugged design is available in straight and angle flow patterns.
- Nonrotating stem provides repetitive shutoff.
- Safety back seating seals in fully open position.
- Positive stem retraction promotes consistent flow control.
- Actuation threads isolated from system fluid enhance thread life.
- O-ring stem seal needs no adjustment.
- Replaceable stem tip facilitates maintenance.
- Straight and angle patterns, compact design.
- Stainless steel, brass and alloy 400 body materials.
- Orifice sizes from 0.093 to 0.218 in. (2.4 to 5.6 mm) are available.
- Flow coefficients (Cv) from 0.12 to 0.53 are available.
- Pressures up to 3000 psig (206 bar).
- Temperatures up to 450° F (232° C) with PEEK stem tip;
- Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.
- Every valve is 100% factory tested with nitrogen.

Pressure vs. Temperature



Flow Data at 100°F (37°C)

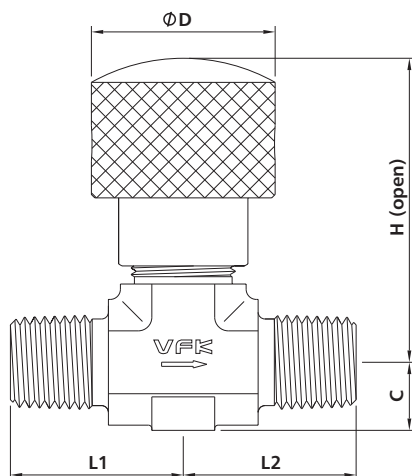


Standard Materials of Construction

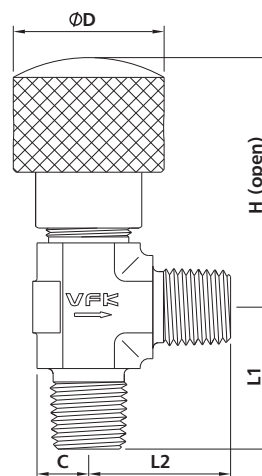
Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Nickel cadmium-plated steel				
5	Packing Bolt	316 SS/A276	304 SS/A276	321 SS/A276	Brass 360/B16	Alloy R-405/B164
6	Backup Ring	PTFE/D1710				
7	O-ring	Fluorocarbon FKM				
8	Washer	316 SS/A276				Alloy R-405/B164
9	Stem	316 SS/A276				Alloy R-405/B164
10	Machine Screw	316 SS/A276				Alloy R-405/B164
11	Stem Tip	PCTFE or PEEK				
12	Body	316 SS/A182	316 SS/A182	316 SS/A182	Brass 377/B283	Alloy 400/B564
Lubricant		Molybdenum disulfide-based				

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
□□36-N2-2	1/8 Male NPT	1/8 Male NPT	0.09 (2.4)	0.12	0.75 (19.0)	0.75 (19.0)	0.31 (7.9)	1.06 (26.9)	1.86 (47.2)
□□36-N2FX2-2	1/8" Male NPT	1/8" VFK			0.75 (19.0)	1.1 (27.9)			
□□36-FX2-2	1/8" VFK	1/8" VFK			1.1 (27.9)	1.1 (27.9)			
□□36-MX3-2	3 mm VFK	3 mm VFK							
□□36-FN2-4	1/8 Female NPT	1/8 Female NPT	0.156 (4.0)	0.27	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.06 (26.9)	1.86 (47.2)
□□36-N2-4	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)			
□□36-N4-4	1/4 Male NPT	1/4 Male NPT			25.0 (0.98)	25.0 (0.98)			
□□36-N4FX4-4	1/4" Male NPT	1/4" VFK			25.0 (0.98)	1.13 (28.7)			
□□36-FX4-4	1/4" VFK	1/4" VFK			1.13 (28.7)				
□□36-MX6-4	6 mm VFK	6 mm VFK							
□□36-MX8-4	8 mm VFK	8 mm VFK							
□□36-FN4-6	1/4 Female NPT	1/4 Female NPT	0.218 (5.6)	0.53	1.06 (26.9)	1.06 (26.9)	0.5 (12.7)	1.12 (28.4)	2.02 (51.3)
□□36-FN6-6	3/8 Female NPT	3/8 Female NPT			1.12 (28.6)	1.12 (28.6)			
□□36-N6-6	3/8 Male NPT	3/8 Male NPT			1.29 (32.8)	1.29 (32.8)			
□□36-FX6-6	3/8" VFK	3/8" VFK			1.4 (35.6)	1.4 (35.6)			
□□36-FX8-6	1/2" VFK	1/2" VFK			1.3 (33.0)	1.3 (33.0)			
□□36-MX10-6	10 mm VFK	10 mm VFK			1.4 (35.6)	1.4 (35.6)			
□□36-MX12-6	12 mm VFK	12 mm VFK			1.50 (38.1)	1.50 (38.1)			
□□36-MS20-6	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO							
□□36-MS22-6	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO							

36 Series How to Order

A	B	C	D	E	F	G
Body Material	Valve Series	Inlet Type	Inlet Size	Inlet Type	Inlet Size	Orifice Size
SS	36	FN	8	MS	10	6

H	I	J
O-ring Material	Flow Pattern	NACE MR0175
B	Y	SG

A	Body Material
SS:	316 SS
6L:	316L SS
S4:	304 SS
4L:	304L SS
S1:	321 SS
91:	F91
92:	F92
D5:	Duplex 2205
D7:	Duplex 2507
TI:	Titanium
A20:	Alloy 20
M:	Alloy 400
INC:	Alloy 600
HC:	Alloy C-276
B:	Brass

B	Valve Series
36:	36 Series Needle Valves

CE	Inlet/Outlet Type
FN	Female NPT
N	Male NPT
FR	Female BSPT
RT	Male BSPT
FM	Female ISO (for MRP)
MS	Male ISO (for MRG)
FP	Female BSPP (for RP)
BP	Male BSPP (for RG)
FX	Fractional Tube Fitting
MX	Metric Tube Fitting

DF	Inlet/Outlet Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5

G	Orifice Size
2:	0.093" (2.4 mm)
4:	0.157" (4.0 mm)
6:	0.218" (5.6 mm)

H	O-ring Material
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Standard chevron FKM

B	Buna-N
E	Ethylene proylene

I	Flow Pattern
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Standard with Straight Flow

A	Angle
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J	NACE MR0175
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Standard with no NACE applicable

SG	With NACE MR0175
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Remark:

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M20: 1.5 mm
Standard thread pitch should be ignored in the ordering number, others should be specified.



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