

Needle Valve

NV1-NV8 Series



Needle Valve

NV1 Series



- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ One-piece forged body
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design

Features

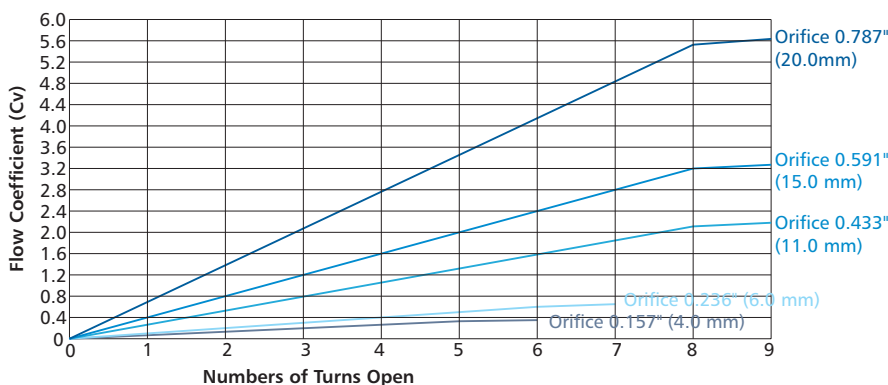
- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ One-piece forged body
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design, Stem threads above packing protected from system media
- ❖ Panel mounting available
- ❖ optional handle colors available

Pressure vs. Temperature

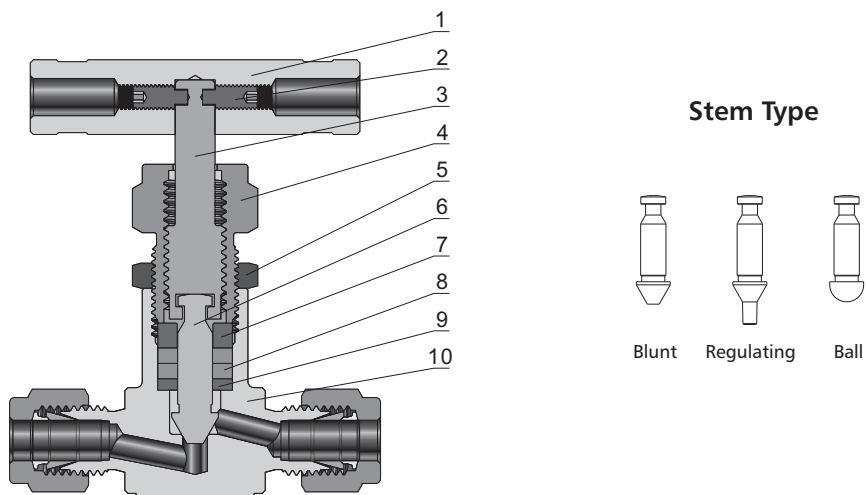
ASME Class	2500						N/A
Material Group	2. 2	2. 2	2. 8	3. 4	3. 1	3. 5	N/A
Material Name	316 S.S.	316H S.S.	F53 S.S.	Alloy 400	Alloy 20	Alloy 600	Alloy C-276
Temperature, °F (°C)	Working Pressure, psig (bar)						
-65 (-53) to 100 (37)	6000 (413)	6000 (413)	6000 (413)	5000 (344)	5000 (344)	6000 (413)	6000 (413)
200 (93)	5160 (355)	5160 (355)	5160 (355)	4400 (303)	4640 (319)	5600 (385)	6000 (413)
250 (121)	4910 (338)	4910 (338)	5350 (368)	4260 (293)	4500 (310)	5460 (376)	6000 (413)
300 (148)	4660 (321)	4660 (321)	5540 (382)	4120 (283)	4360 (300)	5320 (366)	6000 (413)
350 (176)	4470 (307)	4470 (307)	5330 (367)	4050 (279)	4185 (288)	5220 (359)	5975 (411)
400 (204)	4280 (294)	4280 (294)	5120 (353)	3980 (274)	4010 (276)	5120 (352)	5880 (405)
450 (232)	4130 (284)	4130 (284)	4960 (342)	3970 (273)	3955 (272)	5030 (346)	5710 (393)
500 (260)	3980 (274)	3980 (274)	4800 (331)	3960 (272)	3900 (268)	4940 (340)	5540 (381)
600 (315)	3760 (259)	3760 (259)	4640 (320)	—	3790 (261)	4780 (329)	5040 (347)
650 (343)	3700 (254)	3700 (254)	4580 (315)	—	3750 (258)	4700 (323)	4905 (337)
700 (371)	3600 (248)	3600 (248)	4520 (311)	—	3710 (255)	4640 (319)	4730 (325)
750 (398)	3520 (242)	3520 (242)	4430 (305)	—	3665 (252)	4430 (305)	4430 (305)
800 (426)	3460 (238)	3460 (238)	—	—	3600 (248)	4230 (291)	4230 (291)
850 (454)	3380 (232)	3380 (232)	—	—	—	4060 (279)	4060 (279)
900 (482)	3280 (225)	3280 (225)	—	—	—	3745 (258)	3745 (258)
950 (510)	3220 (221)	3220 (221)	—	—	—	2725 (187)	3220 (221)
1000 (537)	3030 (208)	3030 (208)	—	—	—	1800 (124)	3030 (208)
1050 (565)	3000 (206)	3000 (206)	—	—	—	1155 (79.5)	3000 (206)
1100 (593)	2685 (184)	2685 (184)	—	—	—	770 (53.0)	2685 (184)
1150 (621)	2285 (157)	2285 (157)	—	—	—	565 (38.9)	2285 (157)
1200 (648)	1715 (118)	1715 (118)	—	—	—	515 (35.4)	1545 (106)

Flow Data at 100°F (38°C)

Regulating Stem



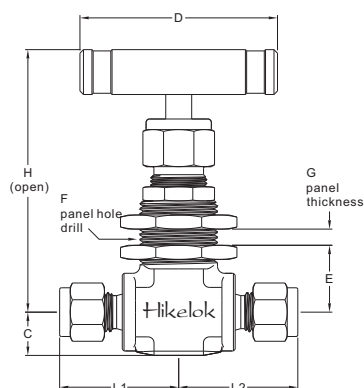
Standard Materials of Construction



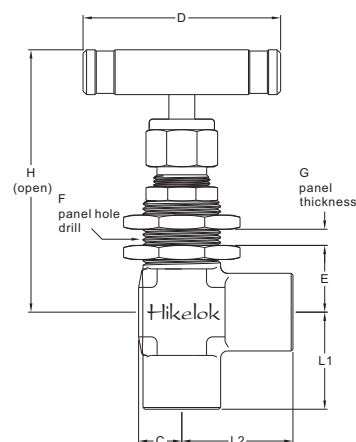
Component		Material Grade/ASTM Specification			
		316 S.S.	F91	F92	Brass
1	Handle	Anodized aluminum or stainless steel			
2	Screw	304 S.S.			
3	Upper Stem	316 S.S. / A276	F91/A182	F91/A182	Brass 360/B16
4	Packing Bolt	316 S.S. / A479			
5	Nut	316 S.S./B783			
6	Lower Stem	Chrome-plated 316 S.S. / A276	Chrome-plated F91/A182	Chrome-plated F91/A182	Chrome-plated 316 S.S. / A276
7	Gland	316 S.S. / A276	F91/A182	F91/A182	Brass 360/B16
8	Packing	PTFE or PEEK or graphite			
9	Packing Washer	316 S.S. / A276	F91/A182	F91/A182	Brass 360/B16
10	Body	316 S.S. / A182	F91/A182	F91/A182	Brass 377/B283

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)							
				L1	L2	H	D	C	E	F	G
NV1-FNPT2-04-	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)
NV1-FNPT4-04-	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)						
NV1-F4-04-	1/4" Hikelok			1.22 (30.9)	1.22 (30.9)						
NV1-M6-04-	6 mm Hikelok			1.25 (31.75)	1.25 (31.75)						
NV1-M8-04-	8 mm Hikelok			1.19 (30.2)	1.19 (30.2)						
NV1-NPT6-04-	3/8 Male NPT										
NV1-FNPT4-06-	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)
NV1-FNPT6-06-	3/8 Female NPT										
NV1-NPT6-06-	3/8 Male NPT										
NV1-F6-06-	3/8" Hikelok			1.44 (36.5)	1.44 (36.5)						
NV1-M10-06-	10 mm Hikelok			1.53 (38.9)	1.53 (38.9)						
NV1-M12-06-	12 mm Hikelok			1.56 (39.7)	1.56 (39.7)						
NV1-M14-06-	14 mm Hikelok			1.26 (32.0)	1.26 (32.0)						
NV1-FNPT8-06-	1/2 Female NPT			1.50 (38.1)	1.50 (38.1)						
NV1-NPT8-06-	1/2 Male NPT			1.53 (38.9)	1.53 (38.9)						
NV1-F8-06-	1/2" Hikelok										
NV1-FSW6-06-	3/8" FSW			1.13 (28.6)	1.13 (28.6)						
NV1-FSW8-06-	1/2" FSW										
NV1-MSW12-06-	12 mm MSW										
NV1-MSW14-06-	14 mm MSW										
NV1-MSW16-06-	16 mm MSW										
NV1-MBW14-06-	14 mm MBW			1.50 (38.1)	1.50 (38.1)						
NV1-MBW16-06-	16 mm MBW										
NV1-UGM14-06-	14 mm UGM			2.92 (74.1)	2.92 (74.1)						
NV1-UGM16-06-	16 mm UGM										
NV1-MS20-06-	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)						
NV1-MS22-06-	M22 x 1.5 Male ISO										

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)									
				L1	L2	H	D	C	E	F	G		
NV1-FNPT8-11-	1/2 Female NPT	0.433 (11.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.5 (88.9)	0.8 (20.2)	1.1 (28.3)	0.38 (9.7)	1.08 (27.5)		
NV1-FNPT12-11-	3/4 Female NPT												
NV1-NPT8-11-	1/2 Male NPT												
NV1-NPT12-11-	3/4 Male NPT												
NV1-F12-11-	3/4" Hikelok			1.97 (50.0)	1.97 (50.0)								
NV1-M14-11-	14 mm Hikelok												
NV1-M16-11-	16 mm Hikelok												
NV1-M18-11-	18 mm Hikelok												
NV1-M20-11-	20 mm Hikelok			1.56 (39.7)	1.56 (39.7)								
NV1-M25-11-	25 mm Hikelok												
NV1-MSW14-11-	14 mm MSW												
NV1-MSW16-11-	16 mm MSW												
NV1-MSW18-11-	18 mm MSW			2.98 (75.7)	2.98 (75.7)								
NV1-FSW12-11-	3/4" FSW												
NV1-FSW8-11-	1/2" FSW												
NV1-MBW14-11-	14 mm MBW												
NV1-MBW16-11-	16 mm MBW			1.56 (39.7)	1.56 (39.7)								
NV1-UGM14-11-	14 mm UGM												
NV1-UGM16-11-	16 mm UGM												
NV1-MS27-11-	M27 x 2 Male ISO												
NV1-FNPT12-15-	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)		
NV1-FSW16-15-	1" FSW												
NV1-MSW25-15-	25 mm MSW												
NV1-MSW28-15-	28 mm MSW												
NV1-F12-15-	3/4" Hikelok			2.35 (59.7)	2.35 (59.7)								
NV1-F16-15-	1" Hikelok												
NV1-M20-15-	20 mm Hikelok												
NV1-M22-15-	22 mm Hikelok												
NV1-M25-15-	25 mm Hikelok			1.56 (39.7)	1.56 (39.7)								
NV1-FNPT16-20-	1 Female NPT												
NV1-FSW16-20-	1" FSW	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)
NV1-MSW25-20-	25 mm MSW												
NV1-MSW28-20-	28 mm MSW												

NV1— **MBW8** — **M12** — **S06S** — **GY** — **A** — **316**

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Orifice Size	Tip Material	Tip Type	Packing Material	Panel Mounting	Handle	Flow pattern	Body Material	
NV1	FNPT	Female NPT	2	1/8 in.	Same as inlet type and inlet size If outlet and inlet are the same, eliminate the outlet designator	Same as Body	Same as Body	Blunt	PTEE	No	Black Aluminum Bar	Straight	316 S.S.	
	NPT	Male NPT	4	1/4 in.		S Stellite	04	S Stellite	R Regulating	G Graphite	Y Yes	R Red Aluminum Bar	A Angle	316L 316L S.S
	FBT	Female BSPT	6	3/8 in. or 6 mm			06		A Ball					304 304 S.S.
	MBT	Male BSPT	8	1/2 in. or 8 mm			11					G Green Aluminum Bar		304L 304L S.S.
	FMS	Female ISO 261	10	10 mm			15					L Blue Aluminum Bar		321 321 S.S.
	MS	Male ISO 261	12	3/4 in. or 12 mm			20					S 304 Stainless Steel Bar		F91 F91
	FBP	Female BSPP	14	14 mm or M14 x 1.5										F91 F92
	MBP	Male BSPP	16	1 in. or 16 mm										A400 Alloy 400
	F	Fractional Tube Fitting	18	18 mm										A20 Alloy 20
	M	Metric Tube Fitting	20	1 1/4 in. or 20 mm or M20 x 1.5										A600 Alloy 600
	UGF	Nut + Gasket + Fractional Bulge Nipple	22	22 mm or M22 x 1.5										A825 Alloy 825
	UGM	Nut + Gasket + Metric Bulge Nipple	24	M24 x 1.5										A276 Alloy C276
	FSW	Fractional Tube Socket Weld	25	25 mm										DU7 Duplex 2507
	MSW	Metric Tube Socket Weld	27	M27 x 2										BR Brass
	FBW	Fractional Tube Butt Weld	28	28 mm										
	MBW	Metric Tube Butt Weld												
	PSW	Pipe Socket Weld												
	PBW	Pipe Butt Weld												

Needle Valve

NV2 Series



- ❖ Maximum working pressure up to 10000 psig (689 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ One-piece heavy wall forged body
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design

Features

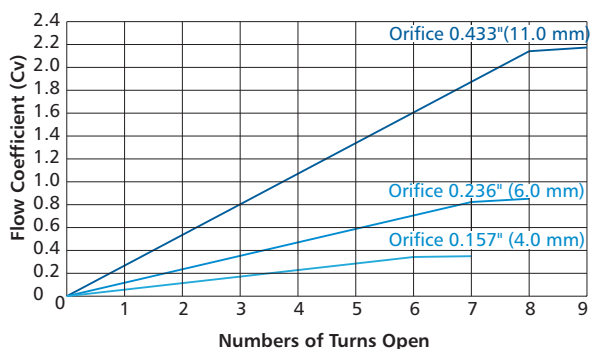
- ❖ Maximum working pressure up to 10000 psig (689 bar)
- ❖ One-piece heavy wall forged body
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design, Stem threads above packing protected from system media
- ❖ Safety back seating needle in fully open position
- ❖ Panel mounting available
- ❖ Optional handle colors available

Pressure vs. Temperature

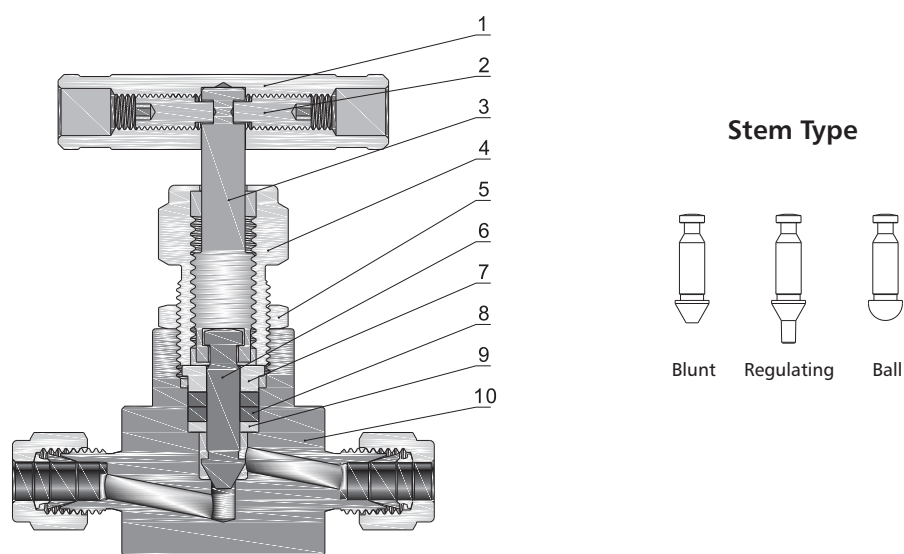
ASME Class	4500					N/A
Material Group	2. 2	2. 8	3. 4	3. 1	3. 5	N/A
Material Name	316 S.S.	F53 S.S.	Alloy 400	Alloy 20	Alloy 600	Alloy C-276
Tempertature, F (°C)	Working Pressure,psig (bar)					
-65 (-53) to100 (37)	10000 (689)	10000 (689)	10000 (689)	10000 (689)	10000 (689)	10000 (689)
200 (93)	9290 (640)	9607 (662)	7920 (546)	10000 (689)	10000 (689)	10000 (689)
250 (121)	8840 (609)	9509 (655)	7667 (528)	9711 (669)	9711 (669)	9711 (669)
300 (148)	8390 (578)	9411 (649)	7415 (511)	9408 (648)	9408 (648)	9408 (648)
350 (176)	8045 (554)	9313 (642)	7290 (502)	9323 (642)	9323 (642)	9323 (642)
400 (204)	7705 (530)	9215 (635)	7165 (494)	9239 (637)	9239 (637)	9239 (637)
450 (232)	7435 (512)	8927 (615)	7147 (492)	9144 (630)	9144 (630)	9144 (630)
500 (260)	7165 (493)	8640 (595)	7130 (491)	9060 (624)	9060 (624)	9060 (624)
600 (315)	6770 (466)	8350 (575)	7130 (491)	9070 (625)	9070 (625)	9070 (625)
650 (343)	6660 (458)	8245 (568)	—	8825 (608)	8825 (608)	8825 (608)
700 (371)	6480 (446)	8135 (561)	—	8515 (587)	8515 (587)	8515 (587)
750 (398)	6335 (436)	7970 (549)	—	7970 (549)	7970 (549)	7970 (549)
800 (426)	6230 (429)	—	—	7610 (524)	7610 (524)	7610 (524)
850 (454)	6085 (419)	—	—	—	7305 (503)	7305 (503)
900 (482)	5905 (406)	—	—	—	6740 (464)	6740 (464)
950 (510)	5795 (399)	—	—	—	4905 (338)	5795 (399)
1000 (537)	5450 (375)	—	—	—	3240 (223)	5450 (375)
1050 (565)	5400 (372)	—	—	—	2085 (143)	4835 (333)
1100 (593)	4835 (333)	—	—	—	1390 (95)	4115 (283)
1150 (621)	4115 (283)	—	—	—	1020 (70)	2775 (191)
1200 (648)	3085 (212)	—	—	—	925 (63)	1620 (111)

Flow Data at 100°F (37°C)

Regulating Stem



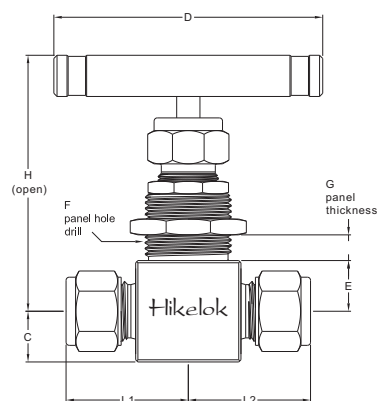
Standard Materials of Construction



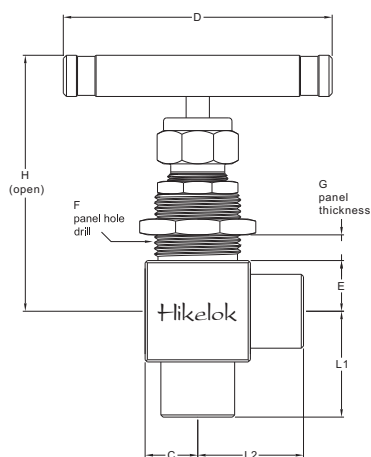
Component		Material Grade/ASTM Specification		
		316 S.S.	F91	F92
1	Handle	Anodized aluminum or stainless steel		
2	Screw	Nickel cadmium-plated steel		
3	Upper Stem	316 S.S. / A276		
4	Packing Bolt	316 S.S. / A276		
5	Nut	316 S.S./B783		
6	Lower Stem	Chrome-plated 316 S.S. / A276	Chrome-plated F91/A182	Chrome-plated F91/A182
7	Gland	316 S.S. / A276	F91/A182	F91/A182
8	Packing	PTFE or PEEK or graphite		
9	Packing Washer	316 S.S. / A276	F91/A182	F91/A182
10	Body	316 S.S. / A182	F91/A182	F91/A182
11	Seat	Weld stellite saet optional		

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)							
				L1	L2	C	D	E	F	G	H
NV2-FNPT2-04-	1/8 Female NPT	0.157 (4.0)	0.35								
NV2-FNPT4-04-	1/4 Female NPT			1.13 (28.6)	1.13 (28.6)						
NV2-FNPT4-NPT4-04-	1/4 Female to Male NPT										
NV2-NPT4-04-	1/4 Male NPT					0.53 (13.5)	2.17 (55)	0.53 (13.5)	0.25 (6.4)	0.96 (24.4)	2.85 (72.5)
NV2-F4-04-	1/4" Hikelok										
NV2-M6-04-	6 mm Hikelok			1.41 (35.8)	1.41 (35.8)						
NV2-M8-04-	8 mm Hikelok										
NV2-FSW4-04-	1/4" FSW	0.236 (6.0)	0.85	1.13 (28.6)	1.13 (28.6)						
NV2-FNPT4-06-	1/4 Female NPT			1.31 (33.4)	1.31 (33.4)						
NV2-FNPT6-06-	3/8 Female NPT										
NV2-FNPT8-06-	1/2 Female NPT										
NV2-F6-06-	3/8" Hikelok			1.41 (35.8)	1.41 (35.8)						
NV2-F8-06-	1/2" Hikelok			1.52 (38.6)	1.52 (38.6)						
NV2-M10-06-	10 mm Hikelok			1.42 (36.1)	1.42 (36.1)	0.625 (15.88)	2.50 (63.5)	0.625 (15.88)	0.38 (9.7)	1.09 (27.7)	3.5 (88.9)
NV2-M12-06-	12 mm Hikelok			1.52 (38.6)	1.52 (38.6)						
NV2-M14-06-	14 mm Hikelok			1.56 (39.7)	1.56 (39.7)						
NV2-FSW6-06-	3/8" FSW										
NV2-FSW8-06-	1/2" FSW			1.31 (33.4)	1.31 (33.4)						
NV2-MSW12-06-	12 mm MSW										
NV2-MSW14-06-	14 mm MSW										
NV2-FNPT8-11-	1/2 Female NPT	0.433 (11.0)	2.18	1.56 (39.6)	1.56 (39.6)						
NV2-FNPT12-11-	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)						
NV2-F12-11-	3/4" Hikelok										
NV2-M14-11-	14 mm Hikelok			1.97 (50.0)	1.97 (50.0)	0.875 (22.2)	3.5 (88.9)	0.875 (22.2)	0.38 (9.7)	1.28 (32.5)	4.17 (106)
NV2-M16-11-	16 mm Hikelok										
NV2-M18-11-	18 mm Hikelok										
NV2-MSW14-11-	14 mm MSW										
NV2-MSW16-11-	16 mm MSW			1.56 (39.7)	1.56 (39.7)						

How to Order

NV2— MBW8 — FNPT8— S06S — GY — LA — 316

Series	Inlet Type	Inlet Size	Outlet Outlet Type Size	Seat Material	Orifice Size	Tip Material	Tip Type	Packing Material	Panel Mounting	Handle	Flow Pattern	Body Material
NV2	FNPT Female NPT	2 1/8 in.	Same as inlet type and inlet size	Same as Body	04 0.157 in. (4.0 mm)	Same as Body	Blunt	PTFE	No	Black Aluminum Bar	Straight	316 316 S.S.
	NPT Male NPT	4 1/4 in.		S Stellite	06 0.236 in. (6.0 mm)	S Stellite	R Regulating	G Graphite	Y Yes	Red Aluminum Bar	A Angle	316L 316L S.S.
	FBT Female BSPT	6 3/8 in. or 6 mm	If outlet and inlet are the same, eliminate the outlet designator		11 0.433 in. (11 mm)		A Ball			Green Aluminum Bar		304 304 S.S.
	MBT Male BSPT	8 1/2 in. or 8 mm			15 0.591 in. (15 mm)					Blue Aluminum Bar		304L 304L S.S.
	FMS Female ISO				20 0.787 in. (20 mm)					304 Stainless Steel Bar		321 321 S.S.
	MS Male ISO	10 10 mm										F91 F91
	FBP Female BSPP	12 3/4 in. or 12 mm										F91 F92
	MBP Male BSPP	14 14 mm or M14 x 1.5										A400 Alloy 400
	F Fractional Tube Fitting	16 1 in. or 16 mm										A20 Alloy 20
	M Metric Tube Fitting	18 18 mm										A600 Alloy 600
	UGF Nut + Gasket + Fractional Bulge Nipple	20 1 1/4 in. or 20 mm or M20 x 1.5										A825 Alloy 825
	UGM Nut + Gasket + Metric Bulge Nipple	22 22 mm or M22 x 1.5										A276 Alloy C276
	FSW Fractional Tube Socket Weld	24 M24 x 1.5										DU7 Duplex 2507
	MSW Metric Tube Socket Weld	25 25 mm										BR Brass
	FBW Fractional Tube Butt Weld	27 M27 x 2										
	MBW Metric Tube Butt Weld	28 28 mm										
	PSW Pipe Socket Weld											
	PBW Pipe Butt Weld											

Needle Valve

NV3 Series



- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ Union-bonnet construction for safety
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design

Features

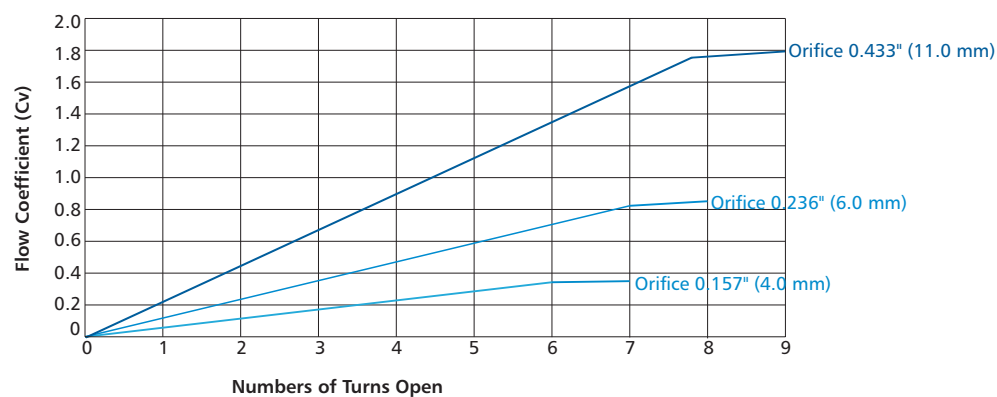
- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ Union-bonnet construction for safety
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design, Stem threads above packing protected from system media
- ❖ Panel mounting available
- ❖ optional handle colors available

Pressure vs. Temperature

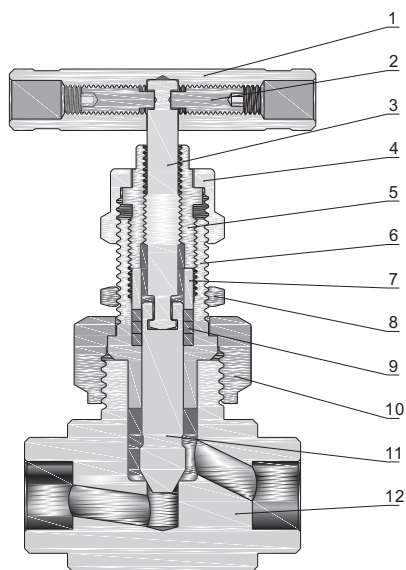
ASME Class	2500						N/A
Material Group	2. 2	2. 2	2. 8	3. 4	3. 1	3. 5	N/A
Material Name	316 S.S.	316H S.S.	F53 S.S.	Alloy 400	Alloy 20	Alloy 600	Alloy C-276
Temperature, °F (°C)	Working Pressure,psig (bar)						
-65 (-53) to 100 (37)	6000 (413)	6000 (413)	6000 (413)	5000 (344)	5000 (344)	6000 (413)	6000 (413)
200 (93)	5160 (355)	5160 (355)	5160 (355)	4400 (303)	4640 (319)	5600 (385)	6000 (413)
250 (121)	4910 (338)	4910 (338)	5350 (368)	4260 (293)	4500 (310)	5460 (376)	6000 (413)
300 (148)	4660 (321)	4660 (321)	5540 (382)	4120 (283)	4360 (300)	5320 (366)	6000 (413)
350 (176)	4470 (307)	4470 (307)	5330 (367)	4050 (279)	4185 (288)	5220 (359)	5975 (411)
400 (204)	4280 (294)	4280 (294)	5120 (353)	3980 (274)	4010 (276)	5120 (352)	5880 (405)
450 (232)	4130 (284)	4130 (284)	4960 (342)	3970 (273)	3955 (272)	5030 (346)	5710 (393)
500 (260)	3980 (274)	3980 (274)	4800 (331)	3960 (272)	3900 (268)	4940 (340)	5540 (381)
600 (315)	3760 (259)	3760 (259)	4640 (320)	—	3790 (261)	4780 (329)	5040 (347)
650 (343)	3700 (254)	3700 (254)	4580 (315)	—	3750 (258)	4700 (323)	4905 (337)
700 (371)	3600 (248)	3600 (248)	4520 (311)	—	3710 (255)	4640 (319)	4730 (325)
750 (398)	3520 (242)	3520 (242)	4430 (305)	—	3665 (252)	4430 (305)	4430 (305)
800 (426)	3460 (238)	3460 (238)	—	—	3600 (248)	4230 (291)	4230 (291)
850 (454)	3380 (232)	3380 (232)	—	—	—	4060 (279)	4060 (279)
900 (482)	3280 (225)	3280 (225)	—	—	—	3745 (258)	3745 (258)
950 (510)	3220 (221)	3220 (221)	—	—	—	2725 (187)	3220 (221)
1000 (537)	3030 (208)	3030 (208)	—	—	—	1800 (124)	3030 (208)
1050 (565)	3000 (206)	3000 (206)	—	—	—	1155 (79.5)	3000 (206)
1100 (593)	2685 (184)	2685 (184)	—	—	—	770 (53.0)	2685 (184)
1150 (621)	2285 (157)	2285 (157)	—	—	—	565 (38.9)	2285 (157)
1200 (648)	1715 (118)	1715 (118)	—	—	—	515 (35.4)	1545 (106)

Flow Data at 100°F (37°C)

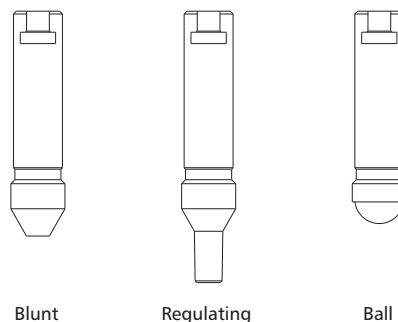
Regulating Stem



Standard Materials of Construction



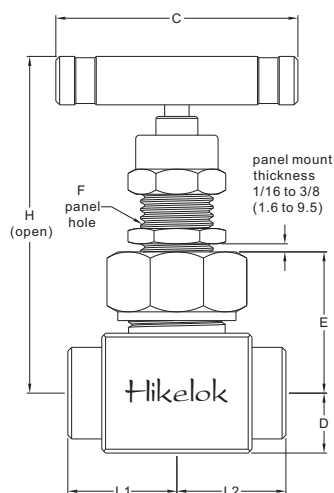
Stem Type



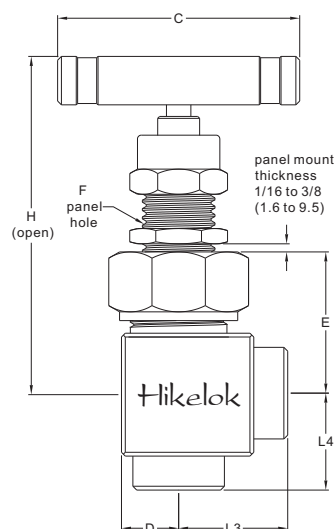
Component		Material Grade/ASTM Specification			
		316 S.S.	Alloy 400	Titanium	Alloy C-276
1	Handle	Anodized aluminum or stainless steel			
2	Set Screw	Nickel cadmium-plated steel			
3	Upper Stem	316 S.S./A276			
4	Nut	316 S.S./A276			
5	Packing Bolt	316 S.S./A276			
6	Bonnet	316 S.S./A479	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
7	Gland	316 S.S./A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
8	Nut	316 S.S./B783			
9	Packing	PTFE or graphite			
10	Nut	316 S.S./A276			
11	Lower Stem	Chrome-plated 316 S.S./A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
12	Body	316 S.S./A182	Alloy 400/B164, B127, B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)													
				L1	L2	L3	L4	C	D	E	F	H					
NV3-FNPT2-04-	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)					
NV3-FNPT4-04-	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)												
NV3-NPT4-FNPT4-04-	1/4 Male NPT			1.00 (25.4)	1.03 (26.2)												
NV3-NPT4-04-	1/4 Male NPT			1.00 (25.4)	1.00 (25.4)	1.00 (25.4)											
NV3-NPT6-04-	3/8 Male NPT			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)											
NV3-FBP4-04-	1/4 Female BSPP			1.00 (25.4)	1.22 (30.9)	1.16 (29.5)	1.48 (37.6)										
NV3-NPT4-F4-04-	1/4 Male NPT			1.03 (26.2)	1.22 (30.9)												
NV3-FNPT4-F4-04-	1/4 Female NPT			1.03 (26.2)	1.22 (30.9)												
NV3-F4-04-	1/4" Hikelok			1.22 (30.9)	1.22 (30.9)	0.88 (22.4)	1.19 (30.2)										
NV3-M6-04-	6 mm Hikelok			0.91 (23.1)	0.91 (23.1)												
NV3-M8-04-	8 mm Hikelok																
NV3-FSW4-04-	1/4" FSW																
NV3-FNPT4-06-	1/4 Female NPT	0.236 (6.0)	0.8	1.13 (28.6)	1.13 (28.6)	1.0 (25.4)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	25/32 (19.8)	3.70 (94)					
NV3-FNPT6-06-	3/8 Female NPT					1.06 (26.9)											
NV3-NPT6-06-	3/8 Male NPT																
NV3-NPT8-06-	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)										
NV3-F6-06-	3/8" Hikelok			1.41 (35.9)	1.41 (35.9)	1.29 (32.8)	1.66 (42.2)										
NV3-F8-06-	1/2" Hikelok			1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.65 (41.9)										
NV3-M10-06-	10 mm Hikelok			1.42 (36.1)	1.42 (36.1)	1.30 (33.0)	1.55 (39.4)										

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)								
				L1	L2	L3	L4	C	D	E	F	H
NV3-M12-06-	12 mm Hikelok	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)
NV3-M14-06-	14 mm Hikelok											
NV3-M16-06-	16 mm Hikelok											
NV3-FSW6-06-	3/8" FSW											
NV3-FSW8-06-	1/2" FSW			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)					
NV3-MSW12-06-	12 mm MSW											
NV3-MSW14-06-	14 mm MSW											
NV3-MSW16-06-	16 mm MSW											
NV3-MBW14-06-	14 mm MBW			1.50 (38.1)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)					
NV3-MBW16-06-	16 mm MBW			2.92 (74.1)	2.92 (74.1)	2.55 (64.7)	2.92 (74.1)					
NV3-UGM14-06-	14 mm UGM			1.50 (38.1)	1.50 (38.1)	1.13 (28.6)	1.50 (38.1)					
NV3-MS20-06-	M20 x 1.5 Male ISO											
NV3-MS22-06-	M22 x 1.5 Male ISO											
NV3-FNPT8-11-	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)
NV3-FNPT12-11-	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)							
NV3-FNPT16-11-	1 Female NPT			1.81 (46.0)	1.81 (46.0)							
NV3-NPT12-11-	3/4 Male NPT			1.63 (41.3)	1.63 (41.3)							
NV3-F8-11-	1/2" Hikelok											
NV3-F12-11-	3/4" Hikelok											
NV3-M14-11-	14 mm Hikelok			1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (52.8)					
NV3-M16-11-	16 mm Hikelok											
NV3-M18-11-	18 mm Hikelok											
NV3-M20-11-	20 mm Hikelok											
NV3-MSW14-11-	14 mm MSW											
NV3-MSW16-11-	16 mm MSW											
NV3-FSW8-11-	1/2" FSW			1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)					
NV3-FSW12-11-	3/4" FSW											
NV3-MBW14-11-	14 mm MBW											
NV3-MBW16-11-	16 mm MBW											
NV3-UGM14-11-	14 mm UGM			2.98 (75.7)	2.98 (75.7)							
NV3-MS27-11-	M27 x 2 Male ISO			1.56 (39.7)	1.56 (39.7)							

❖ If working pressure up to 10,000 psi, please refer to NV31 series.

How to Order

NV3— FNPT8 — F8 — S06S — GY — LA — 316

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Orifice Size	Tip Material	Tip Type	Packing Material	Panel Mounting	Handle	Flow Pattern	Body Material
NV3	FNPT Female NPT	2 1/8 in.	Same as inlet type and inlet size	If outlet and inlet are the same, eliminate the outlet designator	Same as Body S Stellite	04	Same as Body S Stellite	Blunt R Regulating A Ball	PTFE G Graphite	No Y Yes	Black Aluminum Bar R Red Aluminum Bar G Green Aluminum Bar L Blue Aluminum Bar S 304 Stainless Steel Bar	Straight A Angle	316 316 S.S. 316L 316L S.S.
	NPT Male NPT	4 1/4 in.				06							304 304 S.S.
	FBT Female BSPT	3/8 in. or 6 mm				11							304L 304L S.S.
	MBT Male BSPT	1/2 in. or 8 mm				15							321 321 S.S.
	FMS Female ISO	10 10 mm				20							F91 F91
	MS Male ISO	12 3/4 in. or 12 mm											F91 F92
	FBP Female BSPP	14 mm or M14 x 1.5											A400 Alloy 400
	MBP Male BSPP	1 in. or 16 mm											A20 Alloy 20
	F Fractional Tube Fitting	18 18 mm											A600 Alloy 600
	M Metric Tube Fitting	1 1/4 in. or 20 mm or M20 x 1.5											A825 Alloy 825
	UGF Nut + Gasket + Fractional Bulge Nipple	22 22 mm or M22 x 1.5											A276 Alloy C276
	UGM Nut + Gasket + Metric Bulge Nipple	24 M24 x 1.5											DU7 Duplex 2507
	FSW Fractional Socket Weld	25 25mm											BR Brass
	MSW Metric Tube Socket Weld	27 M27 x 2											
	FBW Fractional Tube Butt Weld	28 28mm											
	MBW Metric Tube Butt Weld												
	PSW Pipe Socket Weld												
	PBW Pipe Butt Weld												

Needle Valve

NV4 Series



- ❖ Maximum working pressure up to 5000 psig (344 bar)
- ❖ Working temperature from -65°F to 600°F (-53°C to 315°C)
- ❖ Live-Loaded Packing System
- ❖ Straight, angle and cross patterns
- ❖ Softseat stem with PCTFE tip available

Features

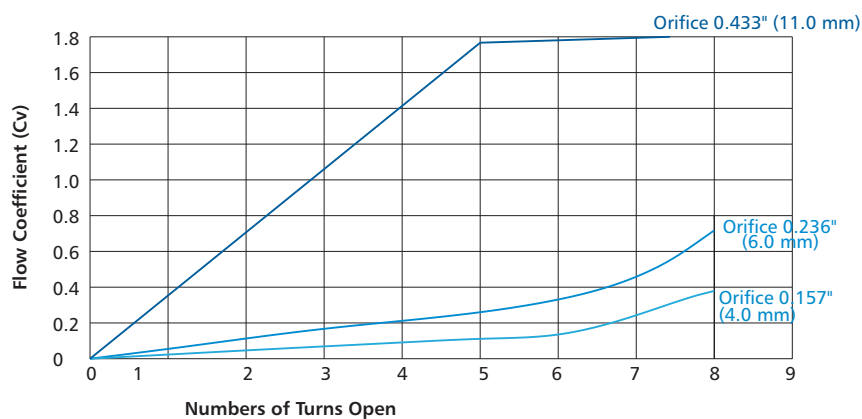
- ❖ Maximum working pressure up to 5000 psig (344 bar)
- ❖ Working temperature from -65°F to 600°F (-53°C to 315°C)
- ❖ Live-Loaded Packing System
- ❖ Packing nut enables easy external adjustments
- ❖ Straight, angle and cross patterns
- ❖ Softseat stem with PCTFE tip available
- ❖ Panel mounting available
- ❖ optional handle colors available

Pressure vs. Temperature

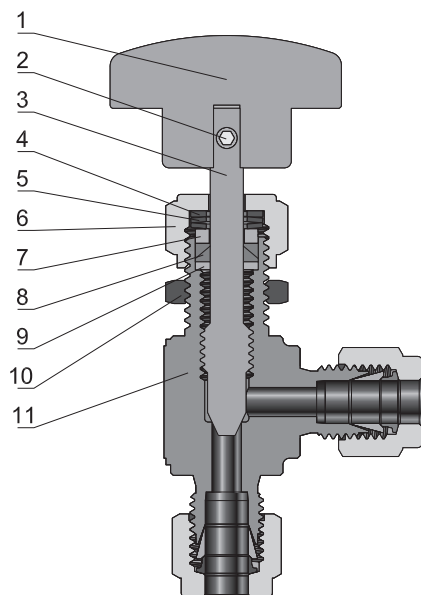
Body Material	316 Stainless Steel
Temperature, °F (°C)	Working Pressure,psig(bar)
-65 (-53) to 100 (37)	5000 (344)
200 (93)	4295 (295)
300 (148)	3875 (266)
400 (204)	3560 (245)
500 (260)	3310 (228)
600 (315)	3130 (215)

Flow Data at 100°F (38°C)

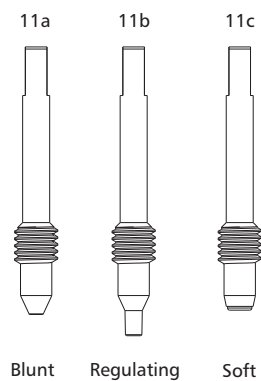
Regulating Stem



Standard Materials of Construction

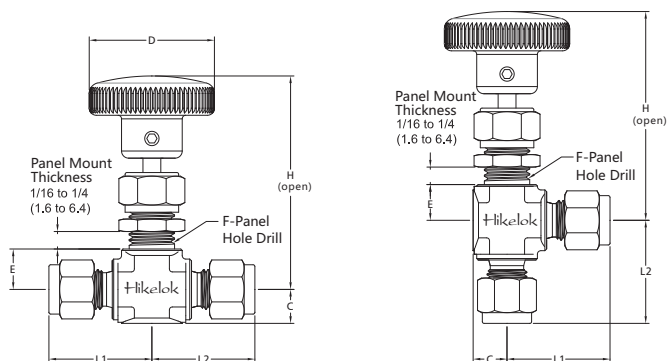


Stem Type



Item	Component	Material Grade/ASTM Specification	
		316 S.S.	Brass
1	Handle	Black Knob	
2	Screw	Nickel cadmium-plated steel	
3	Stem	Chrome-plated 316 S.S./A276	
4	Gland	304 S.S./A276	
5	Spring	S17700/A693	
6	Packing Nut	316 S.S./A276	Brass 360/B16
7	Gland	316 S.S./A276	
8	Packing	PTFE /D1710	
9	Gland	316 S.S./A276	
10	Nut	316 S.S./B783	
11	Body	316 S.S./A182	Brass 377/B283

Dimensions



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)						
				L1	L2	C	D	E	F	H
NV4-FNPT2-02-	1/8 Female NPT	0.08 (2.0)	0.09	0.81 (20.6)	0.81 (20.6)					
NV4-F2-02-	1/8" Hikelok			0.98 (25.0)	0.98 (25.0)	0.31 (7.9)	1.0 (25.4)	0.44 (11.2)	0.47 (11.9)	2.28 (57.9)
NV4-M3-02-	3 mm Hikelok									
NV4-FNPT2-04-	1/8 Female NPT	0.157 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)					
NV4-NPT2-04-	1/8 Male NPT			0.98 (25.0)	0.98 (25.0)					
NV4-NPT4-04-	1/4 Male NPT			1.13 (28.7)	1.13 (28.7)					
NV4-F4-04-	1/4" Hikelok			1.17 (29.7)	1.17 (29.7)					
NV4-M6-04-	6 mm Hikelok									
NV4-M8-04-	8 mm Hikelok									
NV4-FNPT4-06-	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)					
NV4-FNPT6-06-	3/8" Female NPT			1.12 (28.4)	1.12 (28.4)					
NV4-NPT6-06-	3/8 Male NPT			1.50 (38.1)	1.50 (38.1)					
NV4-NPT8-06-	1/2 Male NPT			1.29 (32.8)	1.29 (32.8)					
NV4-F6-06-	3/8" Hikelok			1.4 (35.6)	1.4 (35.6)					
NV4-F8-06-	1/2" Hikelok			1.3 (33.0)	1.3 (33.0)					
NV4-M10-06-	10 mm Hikelok			1.4 (35.6)	1.4 (35.6)					
NV4-M12-06-	12 mm Hikelok			1.56 (39.7)	1.56 (39.7)					
NV4-M14-06-	14 mm Hikelok			1.50 (38.1)	1.50 (38.1)					
NV4-MS20-06-	M20 x 1.5 Male ISO									
NV4-FNPT8-11-	1/2 Female NPT	0.375 (9.5)	1.80	1.50 (38.1)	1.50 (38.1)					
NV4-FNPT12-11-	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)					
NV4-NPT12-11-	3/4 Male NPT									
NV4-F8-11-	1/2" Hikelok			1.90 (48.3)	1.90 (48.3)					
NV4-F12-11-	3/4" Hikelok									
NV4-M14-11-	14 mm Hikelok									

How to Order

NV4—		FNPT8		— M12 —		06K		— LA —		316	
Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Tip Material	Tip Type	Filler	Handle	Flow Pattern	Body Material
NV4	FNPT Female NPT	2 1/8 in.	Same as inlet type and inlet size		02	Same as Body K PCTFE	Blunt	Plastic Filler	Black Round	Straight	316 316 S.S.
	NPT Male NPT	4 1/4 in.			04		R Regulating				316L 316L S.S.
	FBT Female BSPT	6 3/8 in. or 6 mm	If outlet and inlet are the same, eliminate the outlet designator		06		A Ball	P PEEK	G Green Round	A Angle	304 304 S.S.
	MBT Male BSPT	8 1/2 in. or 8 mm			11		T PTFE				304L 304L S.S.
	FMS Female ISO	10 10 mm					K PCTFE				A400 Alloy 400
	MS Male ISO	12 3/4 in. or 12 mm					P PEEK				A20 Alloy 20
	FBP Female BSPP	14 14 mm or M14 x 1.5						V Fluororubber B Ethylene E Nitrile Rubber Z kalrez Q silicon rubber	HB Black Strip		A600 Alloy 600
	MBP Male BSPP										A825 Alloy 825
	F Fractional Tube Fitting										A276 Alloy C276
	M Metric Tube Fitting										DU7 Duplex 2507
											BR Brass

Compact Needle Valve

NV5 Series



- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 600°F (-53°C to 315°C)
- ❖ Straight and angle patterns
- ❖ Softseat stem with PCTFE tip available

Features

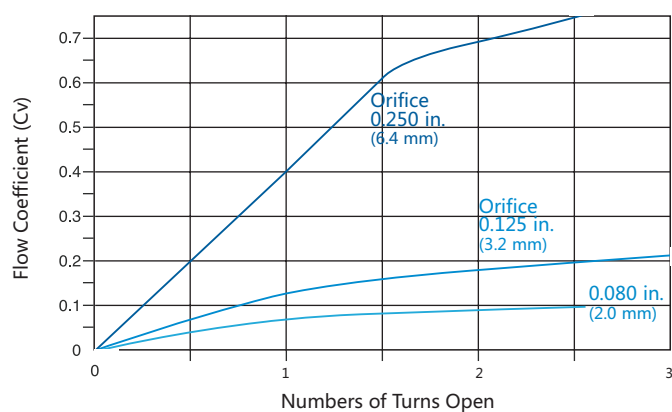
- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 600°F (-53°C to 315°C)
- ❖ Compact size design
- ❖ Packing nut enables easy external adjustments
- ❖ Straight and angle patterns
- ❖ Softseat stem with PCTFE tip available
- ❖ Optional handle colors available

Pressure vs. Temperature

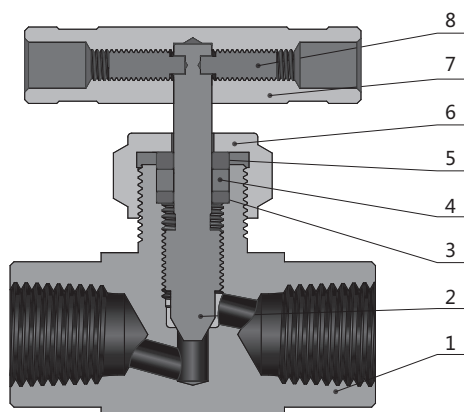
Body Material	316 Stainless steel
Temperature, °F (°C)	Working Pressure, psig (bar)
-65(-53) to 100(37)	6000 (413)
200 (93)	5160 (355)
300 (148)	4660 (321)
400 (204)	4280 (294)
500 (260)	3980 (274)
600 (315)	3760 (259)

Flow Data at 100°F (38°C)

Regulating Stem

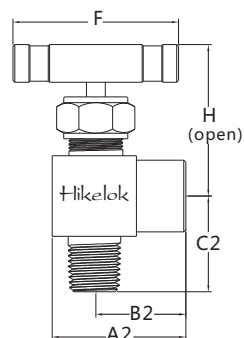
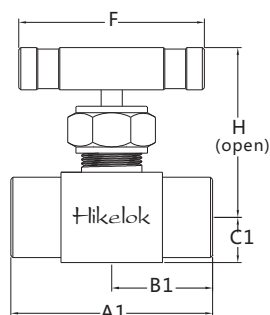


Standard Materials of Construction



Item	Component	Valve Body Material
		316 S.S.
1	Body	316 S.S./A479
2	Stem	Chrome-plated 316 S.S./A276
3	Gland	316 S.S./A240
4	Packing	PFA/D3307
5	Gland	316 S.S./A240
6	Nut	316 S.S./A276
7	Handle	Anodized aluminum or stainless steel
8	Screw	304 S.S.

Dimensions



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)								
				A1	A2	B1	B2	C1	C2	F	H	
NV5 with soft-seat stem or PCTFE seat tip												
NV5-FNPT4-02-	1/4 Female Female NPT	0.08 (2.0)	0.09	1.88 (47.8)	—	0.94 (23.9)	—	0.42 (10.7)	—	1.75 (44.4)	1.66 (42.2)	
NV5-NPT4-02-	1/4 Male Male NPT			1.94 (49.3)	—	0.97 (24.6)	—		—			
NV5-NPT4-FNPT4-02-	1/4 Male to Female NPT			1.91 (48.5)	1.44 (36.6)	0.94 (23.9)	1.00 (25.4)	—	1.03 (26.2)	—		
NV5 with vee stem												
NV5-F4-03-	1/4" Hikelok	0.125 (3.2)	0.21	2.46 (62.5)	1.57 (39.9)	1.23 (31.2)	1.13 (28.7)	0.42 (10.7)	1.16 (29.5)	1.75 (44.4)	1.66 (42.2)	
NV5-F6-06-	3/8" Hikelok	0.25 (6.4)	0.73	3.08 (78.2)	—	1.54 (39.1)	—	0.66 (16.8)	—	2.50 (63.5)	2.31 (58.7)	
NV5-F8-06-	1/2" Hikelok			3.30 (83.8)	—	1.65 (41.9)	—		—			
NV5-FNPT4-03-	1/4 Female NPT	0.125 (3.2)	0.21	1.88 (47.8)	1.44 (36.6)	0.94 (23.9)	1.00 (25.4)	0.42 (10.7)	1.00 (25.4)	1.75 (44.4)	1.66 (42.2)	
NV5-FNPT6-06-	3/8 Female NPT	0.25 (6.4)	0.73	2.50 (63.5)	—	1.25 (31.8)	—	0.66 (16.8)	—	2.50 (63.5)	2.31 (58.7)	
NV5-FNPT8-06-	1/2 Female NPT			2.06 (52.3)	—	1.41 (35.8)	—	1.41 (35.8)	—			
NV5-NPT4-03-	1/4 Male NPT	0.125 (3.2)	0.21	1.94 (49.3)	—	0.97 (24.6)	—	0.42 (10.7)	—	1.75 (44.4)	1.66 (42.2)	
NV5-NPT4-F4-03-	1/4 Male NPT to 1/4"Hikelok			—	1.57 (39.9)	—	1.13 (28.7)	—	1.00 (25.4)			—
NV5-NPT4-FNPT4-03-	1/4 Male to Female NPT			1.91 (48.5)	1.44 (36.6)	0.94 (23.9)	1.00 (25.4)	0.42 (10.7)	1.03 (26.2)			—
NV5-NPT6-FNPT6-06-	3/8 Male to Female NPT	0.25 (6.4)	0.73	2.50 (63.5)	2.06 (52.3)	1.25 (31.8)	1.41 (35.8)	0.66 (16.8)	1.22 (31.0)	2.50 (63.5)	2.31 (58.7)	
NV5-NPT8-FNPT8-06-	1/2 Male to Female NPT			2.55 (64.8)	—		1.41 (35.8)		—			
NV5-NPT12-FNPT8-06-	3/4 Male to 1/2 Female NPT			2.50 (63.5)	—	—	—	—	—			
NV5-FBT4-03-	1/4 Female BSPT	0.125 (3.2)	0.21	1.88 (47.8)	—	0.94 (23.9)	—	0.42 (10.7)	—	1.75 (44.4)	1.66 (42.2)	
NV5-FBT8-06-	1/2 Female BSPT	0.25 (6.4)	0.73	2.50 (63.5)	—	1.25 (31.8)	—	0.66 (16.8)	—	2.50 (63.5)	2.31 (58.7)	

How to Order

NV5 — FNP4 — FNPT4 — 03R — LA — 316

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Tip Type	Handle	Flow Pattern	Body Material
NV5	FNPT Female NPT	2 1/8 in.	Same as inlet type and inlet size		02 0.08 in. (2.0 mm)	Blunt	Black Aluminum Bar	Straight	316 316 S.S.
	NPT Male NPT	4 1/4 in.							
	FBT Female BSPT	6 3/8 in. or 6 mm	If outlet and inlet are the same, eliminate the outlet designator		03 0.125 in. (3.2 mm)	R Regulating	R Red Aluminum Bar	A Angle	316L 316L S.S.
	MBT Male BSPT	8 1/2 in. or 8 mm							
	FMS Female ISO	10 10 mm			06 0.250 in. (6.4 mm)	T PTFE	K PCTFE		304 304 S.S.
	MS Male ISO	12 3/4 in. or 12 mm							
	FBP Female BSPP	14 14 mm or M14 x 1.5							
	MBP Male BSPP								
	F Fractional Tube Fitting								
	M Metric Tube Fitting								

Toggle Needle Valve

NV6 Series



- ❖ Maximum working pressure up to 300 psig (20.6 bar)
- ❖ Working temperature from -20°F to 200°F (-28°C to 93°C)
- ❖ One-piece forged body
- ❖ Straight and angle patterns
- ❖ Opens and closes quickly

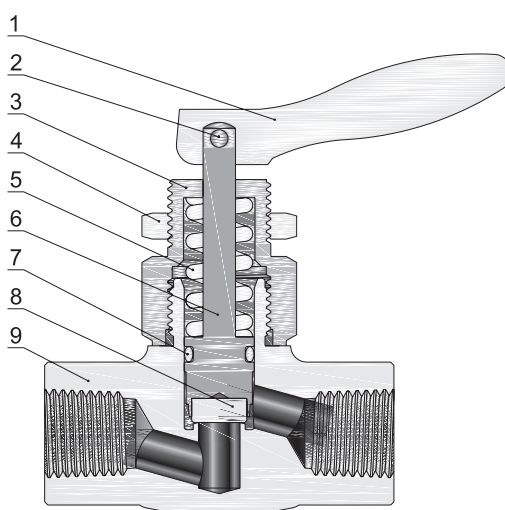
Features

- ❖ Maximum working pressure up to 300 psig (20.6 bar)
- ❖ Working temperature from -20°F to 200°F (-28°C to 93°C)
- ❖ One-piece forged body
- ❖ Straight, angle and cross flow patterns
- ❖ Opens and closes quickly
- ❖ Soft-seat shutoff
- ❖ O-ring stem seal needs no adjustment

Pressure vs. Temperature

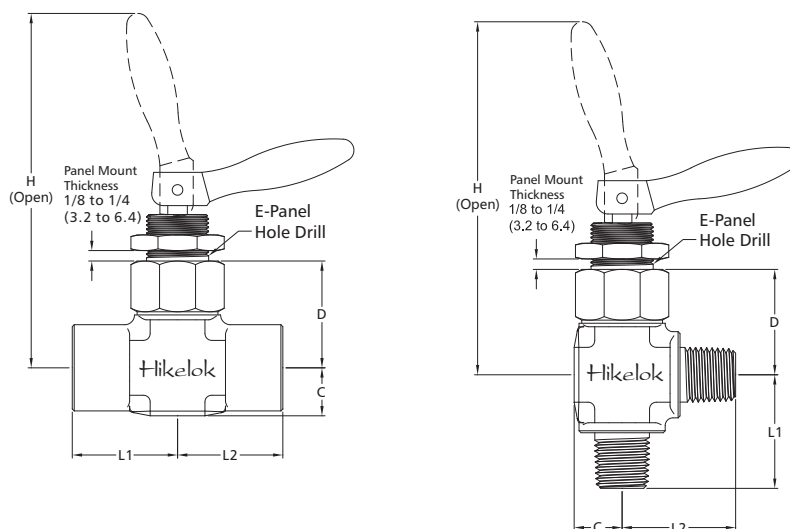
Orifice in. (mm)	Temperature °F (°C)	Working Pressure psig (bar)
0.080 (2.0)	-20 to 200 (-28 to 93)	300 psig
0.125 (3.2)		
0.250 (6.4)		200 psig

Standard Materials of Construction



Item	Component	Material Grade/ASTM Specification		
		316 S.S.	304 S.S.	Brass
1	Handle	Stainless steel		
2	Pin	Stainless steel		
3	Bonnet	316 S.S./A276	304 S.S./A276	Brass 360/B16
4	Nut	316 S.S./B783		Brass 360/B16
5	Spring	PTFE-plated S17700/A313		
6	Stem	316 S.S./A276	304 S.S./A276	
7	O-ring	Fluorocarbon FKM		
8	Stem Tip	PTFE/D1710		
9	Body	316 S.S./A276	304 S.S./A276	Brass 377/B283

Dimensions



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)					
				L1	L2	C	D	E	H
NV6-NPT2-02-	1/8 Male NPT	0.08 (2.0)	0.11	0.75 (19.0)	0.75 (19.0)	0.31 (7.9)	0.92 (23.4)	0.53 (13.5)	2.87 (72.9)
NV6-NPT2-F2-02-	1/8 Male NPT			0.75 (19.0)	0.98 (25.0)				
NV6-F2-02-	1/8" Hikelok			0.98 (25.0)	0.98 (25.0)				
NV6-M3-02-	3 mm Hikelok	0.125 (3.2)	0.20	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	0.92 (23.4)	0.53 (13.5)	2.87 (72.9)
NV6-FNPT2-03-	1/8 Female NPT			0.86 (21.8)	0.86 (21.8)				
NV6-NPT2-03-	1/8 Male NPT			25.0 (0.98)	25.0 (0.98)				
NV6-NPT4-03-	1/4 Male NPT			25.0 (0.98)	25.0 (0.98)				
NV6-NPT4-F4-03-	1/4 Male NPT			1.13 (28.7)	1.13 (28.7)				
NV6-F4-03-	1/4" Hikelok			1.13 (28.7)	1.13 (28.7)				
NV6-M6-03-	6 mm Hikelok			1.13 (28.7)	1.13 (28.7)				
NV6-M8-03-	8 mm Hikelok	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.5 (12.7)	1.06 (26.9)	0.66 (16.8)	3.56 (90.4)
NV6-FNPT4-06-	1/4 Female NPT			1.12 (28.4)	1.12 (28.4)				
NV6-FNPT6-06-	3/8 Female NPT			1.29 (32.8)	1.29 (32.8)				
NV6-NPT6-06-	3/8 Male NPT			1.4 (35.6)	1.4 (35.6)				
NV6-F6-06-	3/8" Hikelok			1.36 (34.5)	1.36 (34.5)				
NV6-F8-06-	1/2" Hikelok			1.46 (37.1)	1.46 (37.1)				
NV6-M10-06-	10 mm Hikelok			1.50 (38.1)	1.50 (38.1)				
NV6-M12-06-	12 mm Hikelok			1.50 (38.1)	1.50 (38.1)				
NV6-MS20-06-	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)				
NV6-MS22-06-	M22 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)				

How to Order

NV6 — **NPT4** — **F4** — **03** — **Z** — **A** — **316**

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	O-Ring Material	Flow Pattern	Body Material
NV6	FNPT Female NPT	2 1/8 in.	Same as inlet type and inlet size		02 0.080 in. (2.0 mm)	Fluorocarbon FKM	Straight	316 316 S.S.
	NPT Male NPT	4 1/4 in.					A Angle	316L 316L S.S.
	FBT Female BSPT	6 3/8 in. or 6 mm	If outlet and inlet are the same, eliminate the outlet designator		03 0.125 in. (3.2 mm)	B Buna N		304 304 S.S.
	MBT Male BSPT	8 1/2 in. or 8 mm			06 0.25 in. (6.4 mm)	E Ethylene Propylene		304L 304L S.S.
	FMS Female ISO	10 10 mm				N Neoprene		
	MS Male ISO	12 3/4 in. or 12 mm				Z Kalrez		
	FBP Female BSPP							
	MBP Male BSPP							
	F Fractional Tube Fitting							
	M Metric Tube Fitting							

Needle Valve

NV7 Series



- ❖ Maximum working pressure up to 3000 psig (206 bar)
- ❖ Working temperature from -20°F to 450°F (-28°C to 232°C)
- ❖ One-piece forged body, nonrotating-Stem
- ❖ Straight and angle patterns
- ❖ Stainless steel, brass, and alloy 400 materials

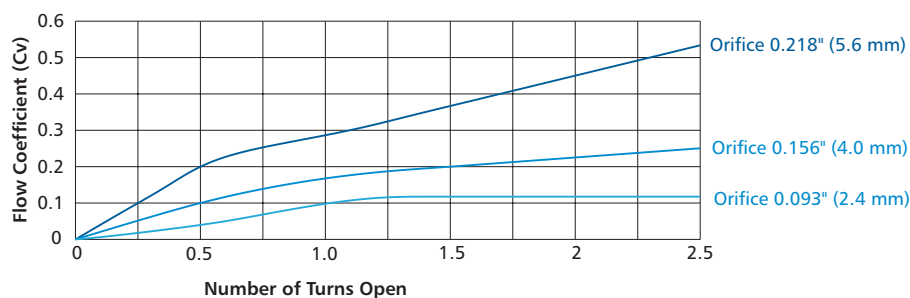
Features

- ❖ Maximum working pressure up to 3000 psig (206 bar)
- ❖ Working temperature from -20°F to 450°F (-28°C to 232°C)
- ❖ One-piece forged body, nonrotating-Stem design
- ❖ Handle prevents contaminants from entering functional parts
- ❖ Replaceable stem tip facilitates maintenance
- ❖ Straight and angle patterns
- ❖ Stainless steel, brass, and alloy 400 materials

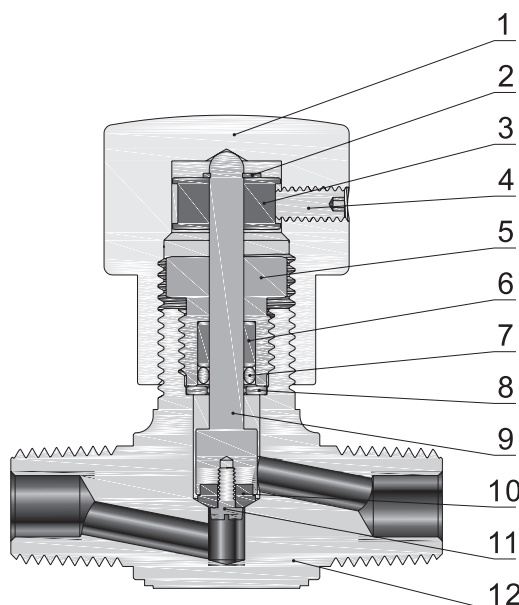
Pressure vs. Temperature

ASME Class	1500				N/A	
Material Group	2.2		3.4		N/A	
Material Name	316 S.S.		Alloy 400		Alloy C-276	
Stem Tip Material	PCTFE	PEEK	PCTFE	PEEK	PCTFE	PEEK
Temperature, °F (°C)	Working Pressure, psig (bar)					
-20 (-28) to 100 (37)	3000 (206)	3000 (206)	3000 (206)	3000 (206)	2000 (206)	3000 (206)
150 (93)	2790 (192)	2790 (192)	2675 (184)	2675 (184)	2820 (194)	2820 (194)
200 (121)	2580 (177)	2580 (177)	2350 (161)	2350 (161)	2640 (181)	2640 (181)
250 (148)	—	2455 (169)	—	2200 (151)	—	2555 (176)
300 (204)	—	2330 (160)	—	2050 (141)	—	2470 (170)
350 (232)	—	2235 (153)	—	1220 (84.0)	—	2430 (167)
400 (260)	—	2140 (147)	—	390 (26.8)	—	2390 (164)
450 (315)	—	2065 (142)	—	—	—	2380 (163)

Flow Data at 100°F (38°C)

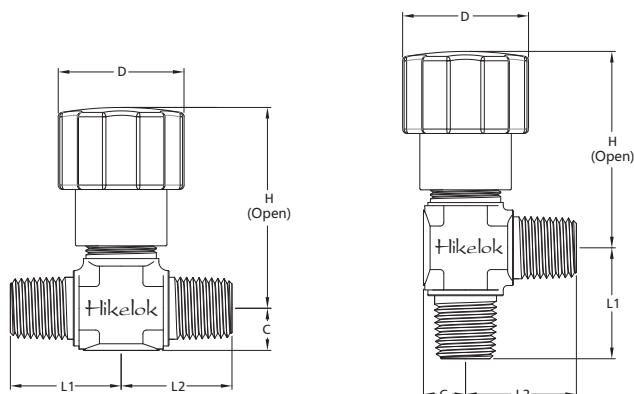


Standard Materials of Construction



Item	Component	Material Grade/ASTM Specification			
		316 S.S.	304 S.S.	Brass	Alloy 400
1	Handle	Anodized aluminum			
2	Pin	Stainless steel			
3	Spool	Aluminum			
4	Set Screw	Nickel cadmium-plated steel			
5	Packing Bolt	316 S.S./A479	304 S.S./A479	Brass 360/B16	Alloy R-405/B164
6	Backup Ring	PTFE/D1710			
7	O-ring	Fluorocarbon FKM			
8	Washer	316 S.S./A479			Alloy R-405/B164
9	Stem	316 S.S./A479			Alloy R-405/B164
10	Stem Tip	PCTFE or PEEK			
11	Screw	316 S.S./A479			Alloy R-405/B164
12	Body	316 S.S./A182	316 S.S./A182	Brass 377/B283	Alloy 400/B564

Dimensions



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)				
				L1	L2	C	D	H
NV7-NPT2-02-	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)
NV7-NPT2-F2-02-	1/8 Male NPT to 1/8" Hikelok			0.75 (19.0)	1.1 (27.9)			
NV7-F2-02-	1/8" Hikelok			1.1 (27.9)	1.1 (27.9)			
NV7-M3-02-	3 mm Hikelok							
NV7-FNPT2-04-	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)
NV7-NPT2-04-	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)			
NV7-NPT4-04-	1/4 Male NPT			25.0 (0.98)	25.0 (0.98)			
NV7-NPT4-F4-04-	1/4 Male NPT to 1/4" Hikelok			25.0 (0.98)				
NV7-F4-04-	1/4" Hikelok				1.13 (28.7)			
NV7-M6-04-	6 mm Hikelok			1.13 (28.7)				
NV7-M8-04-	8 mm Hikelok							
NV7-FNPT4-06-	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)
NV7-FNPT6-06-	3/8 Female NPT			1.12 (28.6)	1.12 (28.6)			
NV7-NPT6-06-	3/8 Male NPT			1.29 (32.8)	1.29 (32.8)			
NV7-F6-06-	3/8" Hikelok			1.4 (35.6)	1.4 (35.6)			
NV7-F8-06-	1/2" Hikelok			1.3 (33.0)	1.3 (33.0)			
NV7-M10-06-	10 mm Hikelok			1.4 (35.6)	1.4 (35.6)			
NV7-M12-06-	12 mm Hikelok			1.50 (38.1)	1.50 (38.1)			
NV7-MS20-06-	M20 x 1.5 Male ISO							
NV7-MS22-06-	M22 x 1.5 Male ISO							

How to Order

NV7 — **NPT8** — **F6** — **06P** — **Z** — **LA** — **316**

Series	Inlet Type		Inlet Size	Outlet Type	Outlet Size	Orifice Size	Tip Material	O-Ring Material	Handle	Flow Pattern	Body Material
NV7	FNPT	Female NPT	2 1/8in.			02 0.093 in. (2.4 mm)	PCTFE	Fluorocarbon FKM	Black Round	Straight	316 316 S.S.
	NPT	Male NPT	4 1/4in.				If outlet and inlet are the same, eliminate the outlet designator		P PEEK	B Buna N E Ethylene Propylene N Neoprene Z Kalrez	R Red Round G Green Round L Blue Round
	FBT	Female BSPT	6 3/8in. or 6 mm	304 304 S.S.							
	MBT	Male BSPT	8 1/2in. or 8 mm	304L 304L S.S.							
	FMS	Female ISO	10 10 mm	A400 Alloy 400							
	MS	Male ISO	12 3/4in. or 12 mm	A20 Alloy 20							
	FBP	Female BSPP		BR Brass							
	MBP	Male BSPP									
	F	Fractional Tube Fitting									
	M	Metric Tube Fitting									

Needle Valve

NV8 Series



- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ Bar stock valve body
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design

Features

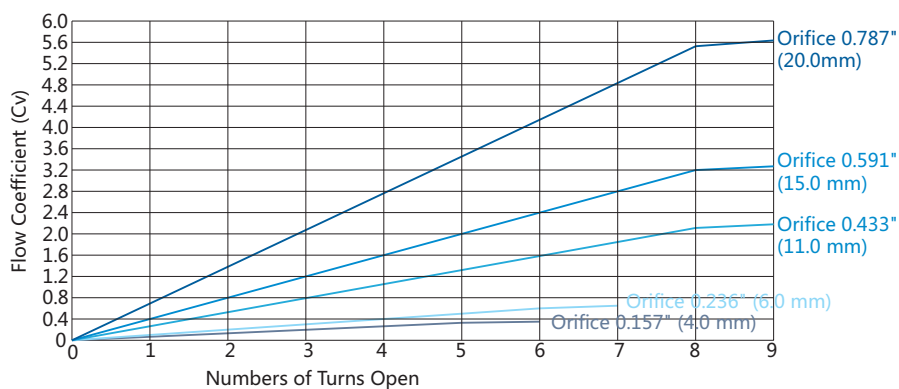
- ❖ Maximum working pressure up to 6000 psig (413 bar)
- ❖ Working temperature from -65°F to 1200°F (-53°C to 648°C)
- ❖ Bar stock valve body
- ❖ Straight and angle patterns
- ❖ Upper stem and lower stem design, Stem threads above packing protected from system media
- ❖ Two-piece knuckle joint provides nonrotating needle feature
- ❖ Nonrotating, hardened needle for positive shutoff
- ❖ Safety back-seating in fully open position
- ❖ Optional handle colors available

Pressure vs. Temperature

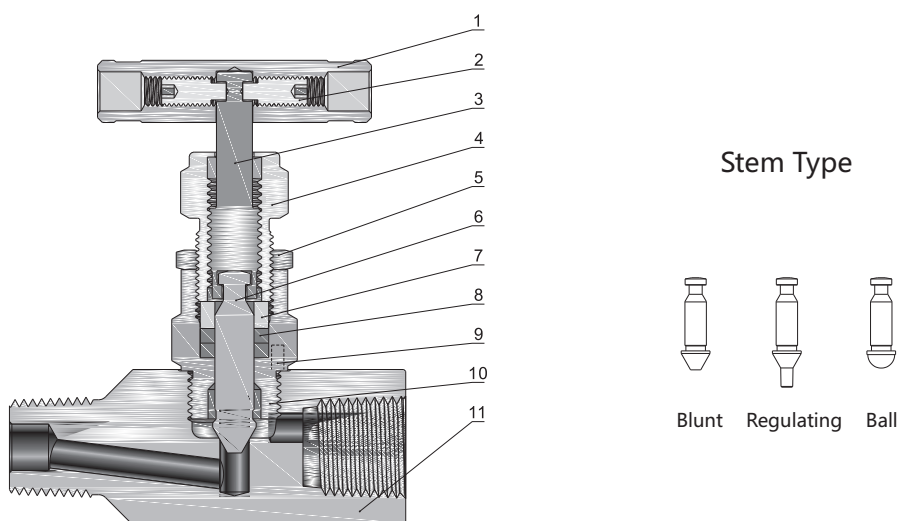
ASME Class	2500						N/A
Material Group	2. 2	2. 2	2. 8	3. 4	3. 1	3. 5	N/A
Material Name	316 S.S.	316H S.S.	F53 S.S.	Alloy 400	Alloy 20	Alloy 600	Alloy C-276
Temperature, °F (°C)	Working Pressure, psig (bar)						
-65 (-53) to 100 (37)	6000 (413)	6000 (413)	6000 (413)	5000 (344)	5000 (344)	6000 (413)	6000 (413)
200 (93)	5160 (355)	5160 (355)	5160 (355)	4400 (303)	4640 (319)	5600 (385)	6000 (413)
250 (121)	4910 (338)	4910 (338)	5350 (368)	4260 (293)	4500 (310)	5460 (376)	6000 (413)
300 (148)	4660 (321)	4660 (321)	5540 (382)	4120 (283)	4360 (300)	5320 (366)	6000 (413)
350 (176)	4470 (307)	4470 (307)	5330 (367)	4050 (279)	4185 (288)	5220 (359)	5975 (411)
400 (204)	4280 (294)	4280 (294)	5120 (353)	3980 (274)	4010 (276)	5120 (352)	5880 (405)
450 (232)	4130 (284)	4130 (284)	4960 (342)	3970 (273)	3955 (272)	5030 (346)	5710 (393)
500 (260)	3980 (274)	3980 (274)	4800 (331)	3960 (272)	3900 (268)	4940 (340)	5540 (381)
600 (315)	3760 (259)	3760 (259)	4640 (320)	—	3790 (261)	4780 (329)	5040 (347)
650 (343)	3700 (254)	3700 (254)	4580 (315)	—	3750 (258)	4700 (323)	4905 (337)
700 (371)	3600 (248)	3600 (248)	4520 (311)	—	3710 (255)	4640 (319)	4730 (325)
750 (398)	3520 (242)	3520 (242)	4430 (305)	—	3665 (252)	4430 (305)	4430 (305)
800 (426)	3460 (238)	3460 (238)	—	—	3600 (248)	4230 (291)	4230 (291)
850 (454)	3380 (232)	3380 (232)	—	—	—	4060 (279)	4060 (279)
900 (482)	3280 (225)	3280 (225)	—	—	—	3745 (258)	3745 (258)
950 (510)	3220 (221)	3220 (221)	—	—	—	2725 (187)	3220 (221)
1000 (537)	3030 (208)	3030 (208)	—	—	—	1800 (124)	3030 (208)
1050 (565)	3000 (206)	3000 (206)	—	—	—	1155 (79.5)	3000 (206)
1100 (593)	2685 (184)	2685 (184)	—	—	—	770 (53.0)	2685 (184)
1150 (621)	2285 (157)	2285 (157)	—	—	—	565 (38.9)	2285 (157)
1200 (648)	1715 (118)	1715 (118)	—	—	—	515 (35.4)	1545 (106)

Flow Data at 100°F (37°C)

Regulating Stem

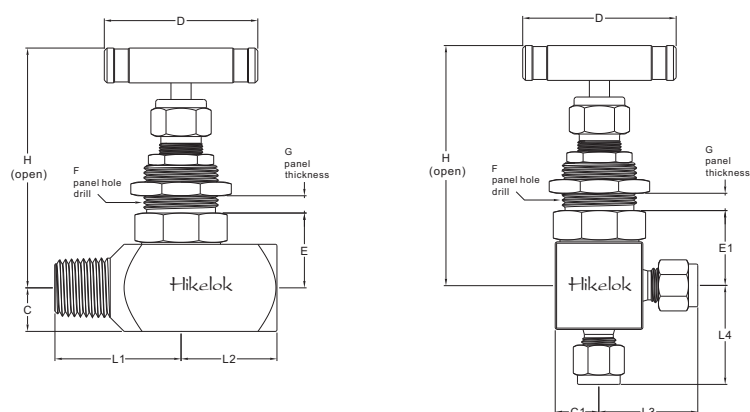


Standard Materials of Construction



Item	Component	Material Grade/ASTM Specification				
		316 S.S.	Alloy 400	Titanium	Alloy C-276	Brass
1	Handle	Anodized aluminum or stainless steel				
2	Screw	Nickel cadmium-plated steel				
3	Upper Stem	316 S.S./A276				
4	Packing Bolt	316 S.S./A276				Brass 360/B16
5	Nut	316 S.S./B783				Brass 360/B16
6	Lower Stem	Chrome-plated 316 S.S./A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574	Chrome-plated 316 S.S./A276
7	Gland	316 S.S./A276				
8	Packing	PTFE or Graphite				
9	Pin	304 S.S./A276				
10	Bonnet	316 S.S./A479	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass 360/B16
11	Body	316 S.S./A479 316 S.S./A182	Alloy 400/B164,B127,B564	Titanium Gr 4/B348 or Titanium Gr 4/B381	Alloy C-276/B564	Brass 360/B16

Dimensions



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)												
				L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NV8-FNPT2-04-	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)					0.9 (23.0)				2.91 (74.0)
NV8-FNPT4-04-	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)											
NV8-NPT4-04-	1/4 Male NPT			1.03 (26.2)	1.03 (26.2)	1.06 (26.9)	1.06 (26.9)									
NV8-NPT6-04-	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)											
NV8-F4-04-	1/4" Hikelok			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	0.5 (12.7)	0.5 (12.7)	2.17 (55)	0.84 (21.4)	0.84 (21.4)	0.25 (6.4)	0.77 (19.6)	2.85 (72.4)	2.85 (72.4)
NV8-M6-04-	6 mm Hikelok															
NV8-M8-04-	8 mm Hikelok															
NV8-OFS4-04-	1/4" Male OFS			1.03 (26.2)	1.03 (26.2)											
NV8-GFS4-04-	1/4" Male GFS															
NV8-FNPT4-06-	1/4 Female NPT	0.236 (6.0)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)					1.06 (27.0)				3.56 (90.5)
NV8-FNPT6-06-	3/8 Female NPT						1.12 (28.6)									
NV8-NPT6-06-	3/8 Male NPT			1.41 (35.8)	1.41 (35.8)	1.32 (33.6)	1.32 (33.6)									
NV8-F6-06-	3/8" Hikelok			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)									
NV8-F8-06-	1/2" Hikelok			1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)									
NV8-M10-06-	10 mm Hikelok			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)									
NV8-M12-06-	12 mm Hikelok			1.56 (39.7)	1.56 (39.7)											
NV8-M14-06-	14 mm Hikelok															
NV8-FSW6-06-	3/8" FSW			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	0.563 (14.3)	0.563 (14.3)	2.5 (63.5)	1.0 (25.4)	1.0 (25.4)	0.38 (9.7)	0.96 (24.4)	3.5 (88.9)	3.5 (88.9)
NV8-FSW8-06-	1/2" FSW															
NV8-MSW12-06-	12 mm MSW															
NV8-MSW14-06-	14 mm MSW			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)									
NV8-MSW16-06-	16 mm MSW															
NV8-MBW14-06-	14 mm MBW			2.92 (74.1)	2.92 (74.1)											
NV8-MBW16-06-	16 mm MBW			1.13 (28.6)	1.13 (28.6)											
NV8-UGM14-06-	14 mm UGM			1.56 (39.7)	1.56 (39.7)											
NV8-UGM16-06-	16 mm UGM															
NV8-OFS8-06-	1/2" Male OFS			1.50 (38.1)	1.50 (38.1)											
NV8-GFS8-06-	1/2" Male GFS															
NV8-MS20-06-	M20 x 1.5 Male ISO															
NV8-MS22-06-	M22 x 1.5 Male ISO															
NV8-FNPT8-11-	1/2 Female NPT	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)									
NV8-FNPT12-11-	3/4 Female NPT					1.50 (38.1)										
NV8-NPT12-11-	3/4 Male NPT			1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)									
NV8-F12-11-	3/4" Hikelok															
NV8-M14-11-	14 mm Hikelok															
NV8-M16-11-	16 mm Hikelok															
NV8-M18-11-	18 mm Hikelok															
NV8-MSW14-11-	14 mm MSW							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)
NV8-MSW16-11-	16 mm MSW			1.75 (44.5)	1.75 (44.5)											
NV8-FSW12-11-	3/4" FSW															
NV8-MBW14-11-	14 mm MBW															
NV8-MBW16-11-	16 mm MBW			2.98 (75.7)	2.98 (75.7)											
NV8-UGM14-11-	14 mm UGM			1.56 (39.7)	1.56 (39.7)											
NV8-OFS12-11-	3/4" Male OFS															
NV8-GFS8-11-	1/2" Male GFS															
NV8-MS27-11-	M27 x 2 Male ISO															

Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)													
				L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1	
NV8-FNPT12-15-	3/4 Female NPT	0.591 (15.0)	3.27			1.75 (44.5)	1.14 (29.0)										
NV8-FSW16-15-	1" FSW																
NV8-MSW25-15-	25 mm MSW			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)	
NV8-MSW28-15-	28 mm MSW																
NV8-PSW12-15-	3/4 PSW																
NV8-M20-15-	20 mm Hikelok																
NV8-M22-15-	22 mm Hikelok					2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.0 (51.0)								
NV8-FNPT16-20-	1 Female NPT	0.787 (20.0)	5.65														
NV8-MSW25-20-	25 mm MSW																
NV8-FSW16-20-	1" FSW																
NV8-MSW28-20-	28 mm MSW			1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—	
NV8-PSW12-20-	3/4 PSW																
NV8-PSW16-20-	1 PWS																

❖ If working pressure up to 10,000 psi, please refer to NV81 series.

How to Order

NV8 — **MBW8** — **M12** — **S06S** — **GY** — **LA** — **316**

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Orifice Size	Tip Material	Tip Type	Packing Material	Panel Mounting	Handle	Flow Pattern	Body Material
NV8	FNPT	Female NPT		Same as inlet type and inlet size	Same as Body	04	Same as Body	Blunt	PTFE	No	Black Aluminum Bar	Straight	316 316 S.S.
	NPT	Male NPT			S Stellite	06	S Stellite	R Regulating	G Graphite	Y Yes	Red Aluminum Bar	A Angle	316L 316L S.S.
	FBT	Female BSPT		If outlet and inlet are the same, eliminate the outlet designator				A Ball			Green Aluminum Bar		304 304 S.S.
	MBT	Male BSPT				11		T PTFE			Green Aluminum Bar		304L 304L S.S.
	FMS	Female ISO				15		K PCTFE			Blue Aluminum Bar		321 321 S.S.
	MS	Male ISO				20		P PEEK			304 Stainless Steel Bar		F91 F91
	FBP	Female BSPP											F91 F92
	MBP	Male BSPP											A400 Alloy 400
	F	Fractional Tube Fitting											A20 Alloy 20
	M	Metric Tube Fitting											A600 Alloy 600
	UGF	Nut + Gasket + Fractional Bulge Nipple											A825 Alloy 825
	UGM	Nut + Gasket + Metric Bulge Nipple											A276 Alloy C276
	FSW	Fractional Tube Socket Weld											DU7 Duplex 2507
	MSW	Metric Tube Socket Weld											BR Brass
	FBW	Fractional Tube Butt Weld											
	MBW	Metric Tube Butt Weld											
	PSW	Pipe Socket Weld											
	PBW	Pipe Butt Weld											