

Medium Pressure Needle Valve

20NV Series, 20,000 psi (1379 bar)



- ❖ Maximum working pressure up to 20,000 psig (1379 bar)
- ❖ Working temperature from -325°F to 1200°F (-198°C to 649°C)
- ❖ Non-rotating stem and bar stock body design
- ❖ Tubing sizes available for 1/4", 3/8", 9/16", 3/4", 1"
- ❖ 316 stainless steel body material

Features

- ❖ Tubing sizes available for 1/4", 3/8", 9/16", 3/4", 1"
- ❖ Non-rotating stem and rising stem design
- ❖ Metal-to-metal seating achieves bubble-tight shutoff, longer stem/seat service life in abrasive flow, greater durability for repeated on/off cycles
- ❖ PTFE is the standard packing material, RPTFE glass, Graphite are available
- ❖ Graphite packing working Temperatures up to 1200°F (649°C)
- ❖ Stem sleeve and packing gland materials have been selected to achieve extended thread cycle life and reduced handle torque
- ❖ Cold-worked type 316 stainless steel body and aluminum bronze packing gland
- ❖ Vee or Regulating stem tips for options
- ❖ Packing below the thread of valve stem
- ❖ The locking device of packing gland is reliable
- ❖ Five body patterns are available

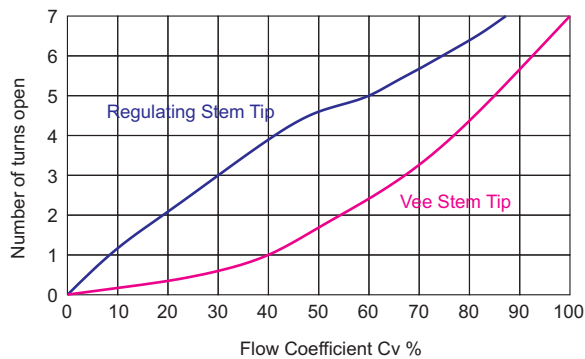
Technical Data

Tube OD in.	Connection Type	Orifice in. (mm)	Cv	Working Pressure psig (bar)
1/4	MPF4	0.125 (3.18)	0.31	20,000 (1379)
3/8	MPF6	0.219 (5.56)	0.75	20,000 (1379)
9/16	MPF9	0.312 (7.92)	1.30	20,000 (1379)
3/4	MPF12	0.438 (11.13)	2.50	20,000 (1379)
1	MPF16	0.562 (14.27)	4.40	20,000 (1379)

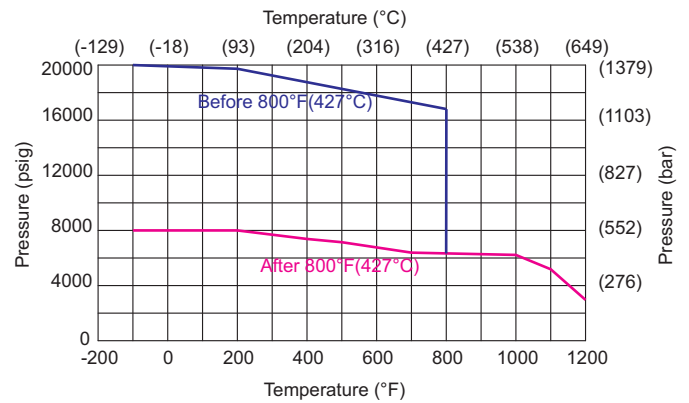
Notes:

- ❖ Cv value shown are for 2-way straight valve pattern.
Cv value of for 2-way angle pattern will be increase about 50% (Base on water).
- ❖ Working Temperatures
PTFE packing : -100°F (-73°C) to 450°F (232°C).
RPTFE glass packing : -100°F (-73°C) to 600°F (316°C).
Graphite packing : 0°F -100°F (-73°C) to 1200°F (649°C).

Flow Data at 100°F (38°C)

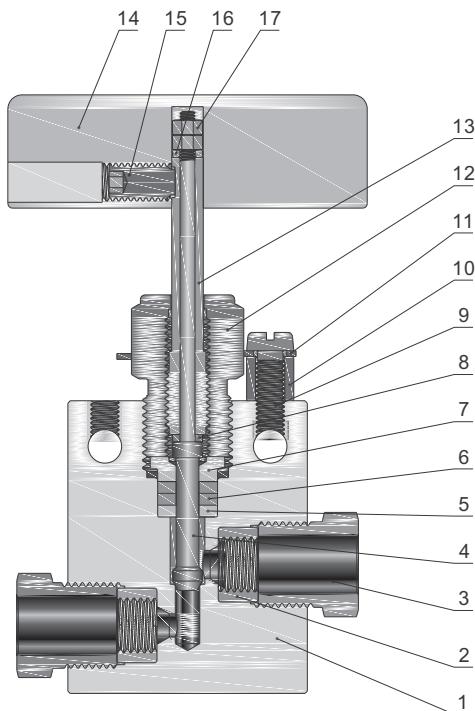


Pressure & Temperature



When exceeding 800°F (427°C), use the pink curve as its cold-worked rating for future operating of the components.

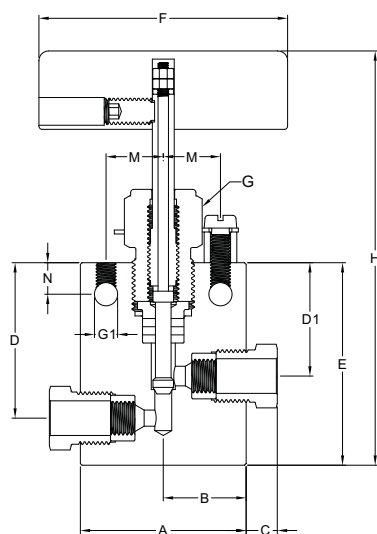
Standard Materials of Construction



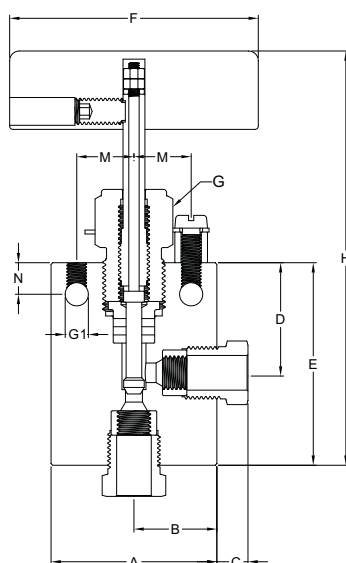
Item	Component	Material Grade/ASTM Specification
1	Body	316 S.S./A479
2	Collar	316 S.S./A479
3	Nut	316 S.S./A479
4	Stem	S17400/A564
5	Gland	316 S.S./A479
6	Packing	PTFE/RPTFE/Graphite
7	Packing ring	316 S.S./A479
8	Gland	316 S.S./A479
9	Screw	304 S.S.
10	Ring	316 S.S./A276
11	Lock plate	304 S.S./A240
12	Bonnet	316 S.S./A479
13	Stem guard	316 S.S./A479
14	Handle	Aluminum
15	Screw	304 S.S.
16	Gland	316 S.S./A276
17	Nut	304 S.S.

Dimensions

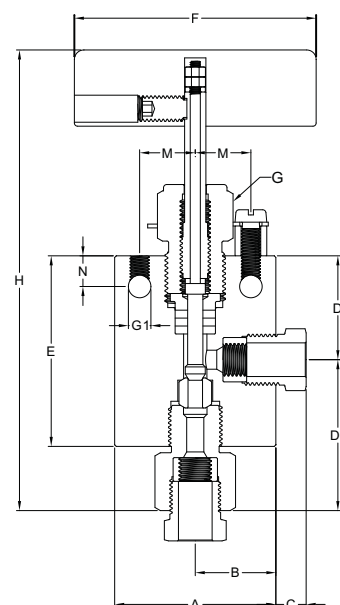
Straight



Angle



Angle(replaceable)



Dimensions (Straight)

Basic Ordering Number	Connection Type	Orifice in. (mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in. (mm)												
20NV-MPF4-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.69 (119.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-	MPF6	0.219 (5.56)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.69 (119.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF9-	MPF9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	2.38 (60.5)	1.75 (44.5)	2.88 (73.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	5.93 (150.9)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NV-MPF12-	MPF12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.62 (15.8)	3.00 (76.2)	2.25 (57.2)	3.75 (95.3)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.00 (177.8)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NV-MPF16-	MPF16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.63 (16.0)	3.75 (95.3)	2.81 (71.4)	4.63 (117.6)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.00 (228.6)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Dimensions (Angle)

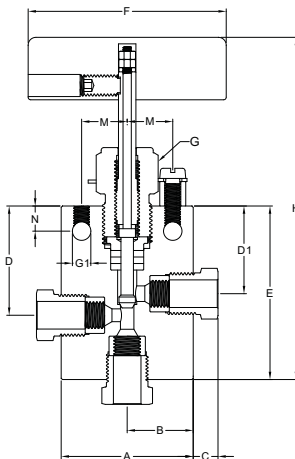
Basic Ordering Number	Connection Type	Orifice in. (mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in. (mm)												
20NV-MPF4-A-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)	—	2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.81 (122.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-A-	MPF6	0.219 (5.56)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.19 (30.2)	—	2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.81 (122.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF9-A-	MPF9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	1.75 (44.5)	—	3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.43 (163.6)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NV-MPF12-A-	MPF12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.62 (15.8)	2.25 (57.2)	—	4.25 (108.0)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.50 (190.5)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NV-MPF16-A-	MPF16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.63 (16.0)	2.81 (71.4)	—	5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.00 (228.6)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Dimensions (Angle/replaceable seat)

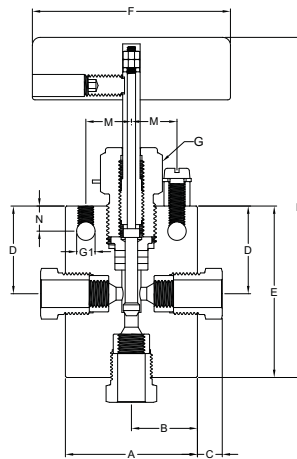
Basic Ordering Number	Connection Type	Orifice in. (mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in. (mm)												
20NV-MPF4-AR-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)	2.13 (54.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.75 (146.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-AR-	MPF6	0.219 (5.56)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.19 (30.2)	2.13 (54.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.75 (146.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF9-AR-	MPF9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	1.75 (44.5)	2.50 (63.5)	3.13 (79.4)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	7.34 (186.7)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NV-MPF12-AR-	MPF12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.62 (15.8)	2.25 (57.2)	3.44 (87.4)	4.25 (108.0)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	9.00 (228.6)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NV-MPF16-AR-	MPF16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.63 (16.0)	2.69 (68.3)	4.38 (111.1)	5.25 (133.4)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	11.00 (279.7)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Dimensions

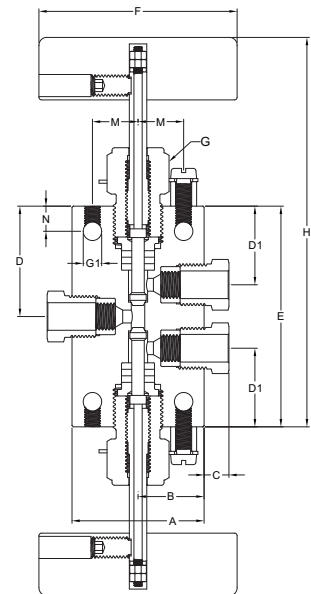
3-way/2 on pressure



3-way/1 on pressure



3-way/2 stem manifold



Dimensions (3-way/2 on pressure)

Basic Ordering Number	Connection Type	Orifice in. (mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in. (mm)												
20NV-MPF4-3A-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.63 (41.3)	1.19 (30.2)	2.63 (66.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.00 (127.0)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-3A-	MPF6	0.219 (5.56)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.63 (41.3)	1.19 (30.2)	2.63 (66.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.00 (127.0)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF9-3A-	MPF9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	2.38 (60.5)	1.75 (44.5)	3.63 (92.1)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.51 (165.6)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NV-MPF12-3A-	MPF12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.62 (15.8)	3.00 (76.2)	2.25 (57.2)	4.63 (117.5)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.88 (200.0)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NV-MPF16-3A-	MPF16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.63 (16.0)	3.75 (95.3)	2.81 (71.4)	5.88 (149.4)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.75 (247.9)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Dimensions (3-way/1 on pressure)

Basic Ordering Number	Connection Type	Orifice in. (mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in. (mm)												
20NV-MPF4-3B-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)	—	2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.81 (122.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-3B-	MPF6	0.219 (5.56)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.19 (30.2)	—	2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.81 (122.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF9-3B-	MPF9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	1.75 (44.5)	—	3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.31 (160.5)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NV-MPF12-3B-	MPF12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.62 (15.8)	2.25 (57.2)	—	4.25 (108.0)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.5 (190.5)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NV-MPF16-3B-	MPF16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.63 (16.0)	2.81 (71.4)	—	5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.09 (231.1)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Dimensions (3-way/2 stem manifold)

Basic Ordering Number	Connection Type	Orifice in. (mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in. (mm)												
20NV-MPF4-3C-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.69 (42.9)	1.19 (30.2)	3.38 (85.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	8.13 (206.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-3C-	MPF6	0.219 (5.56)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.69 (42.9)	1.19 (30.2)	3.38 (85.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	8.13 (206.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF9-3C-	MPF9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	2.56 (65.1)	1.75 (44.5)	5.13 (130.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	11.31 (287.6)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NV-MPF12-3C-	MPF12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.62 (15.8)	3.00 (76.2)	2.25 (57.2)	6.50 (165.1)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	13.0 (330.2)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NV-MPF16-3C-	MPF16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.63 (16.0)	3.75 (95.3)	2.81 (71.4)	7.50 (190.5)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	15.44 (292.4)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Notes:

1. G is the drill dimension of packing gland mounting hole.
2. G1 is the dimension of bracket mounting hole.
3. Panel mounting drill size: 0.25" all valves.
4. The dimension of stem in closed position.

How to Order

20NV— MPF4 — R — R — A — 316

Series	Connector Sizes	Stem Tips	Packing	Flow Patterns	Body Material
20NV	MPF4 1/4"	Vee R Regulating	PTFE	Straight	316 316 S.S. A825 Alloy 825
	MPF6 3/8"		R RPTFE Glass	A Angle	
	MPF9 9/16"		G Graphite	AR Angle, replaceable seat	
	MPF12 3/4"			3A 3-way, 2 on pressure	
	MPF16 1"			3B 3-way, 1 on pressure 3C 3-way, 2 stem manifold	