Needle Valves and Pneumatic Needle Valves

10N Series, 10,000 psig (690 bar)
15N Series, 15,000 psig (1034 bar)
20N Series, 20,000 psig (1379 bar)
30N Series, 30,000 psig (2068 bar)
60N Series, 60,000 psig (4137 bar)

Contents

Needle Valves

10N Series

10,000 psig (690 bar) C-13

15N Series

15,000 psig (1034 bar) C-19

20N Series

20,000 psig (1379 bar) C-26

30N Series

30,000 psig (2068 bar) C-31

60N Series

60,000 psig (4137 bar) C-35

Pneumatic Needle Valves

Piston Style Pneumatic Needle Valves

Air to Open (Normally Closed) C-39

Piston Style Pneumatic Needle Valves

Air to Close (Normally Open) C-45

Ordering Number Description

C-49

Needle Valves

10N Series

10,000 psig (690 bar)

Features

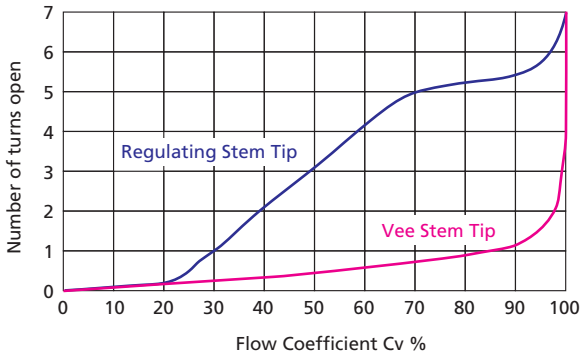
- High tensile 316 Stainless Steel for the valve body and 17-4PH Stainless Steel for lower stem
- Selected materials of packing gland and upper stem for optimum thread cycle life and reduced handle torque
- Metal-to-metal seating to achieve ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- Non-rotating stem and bar stock body design
- Easy to assemble and replace packing
- Packing located under stem threads
- Reliable locking device for packing gland
- Options for Vee or Regulating stem tips
- Five flow patterns available

Technical Data

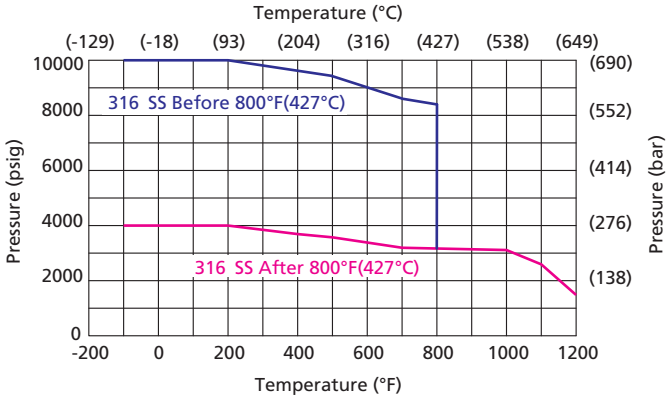
Connection Size	Connection	Orifice in. (mm)	Cv	Working Pressure psig (bar)	Working Temperature Range
9/16" O.D. Tubing	2FH9	0.359 (9.12)	1.75	10,000 (690)	-100°F~1200°F (-73°C~649°C)
3/4" O.D. Tubing	2FH12	0.516 (13.10)	2.80	10,000 (690)	
1" O.D. Tubing	2FH16	0.688 (17.48)	5.20	10,000 (690)	
3/4" Female NPT	FNS12	0.437 (11.10)	2.50	10,000 (690)	-100°F~400°F (-73°C~204°C)
3/4" Female ISO/BSP Tapered	FRT12				
1" Female NPT	FNS16	0.562 (14.27)	4.40	10,000 (690)	
1" Female ISO/BSP Tapered	FRT16				

NOTES: 1. The values of Cv shown are for 2-way straight valve pattern.
2. The values of Cv for 2-way angle pattern will increase by about 50% (Based on water).
3. Packing Options
PTFE is the standard packing material, RPTFE glass, Graphite and extended stuffing box with Graphite also available. Graphite packing not recommended for Hydrogen or Helium service.
PTFE: -100°F~450°F (-73°C~232°C)
RPTFE glass: -100°F~600°F (-73°C~316°C)
Graphite: 0°F~800°F (-17.8°C~427°C)
Extended stuffing box with Graphite: -100°F~1000°F (-73°C~649°C)

Flow Data at 100°F (38°C)

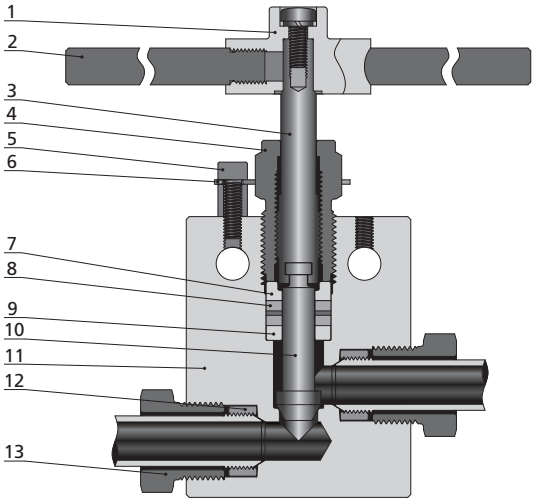


Pressure vs. Temperature Curve



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

Standard Materials of Construction

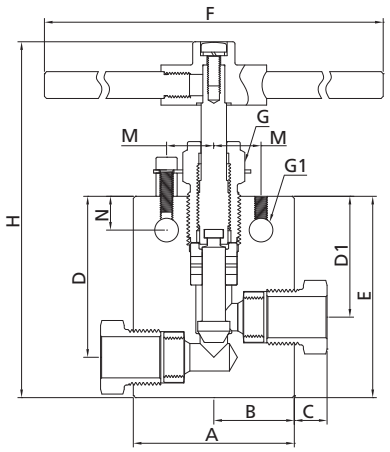


Item	Component	Material Grade/ASTM Specification
1	Handle Head	Stainless steel
2	Handle	Stainless steel
3	Upper Stem	316 SS/A479
4	Packing Gland	C63000/B150
5	Locking Screw	Stainless steel
6	Locking Plate	304 SS/A240
7	Packing Ring	C63000/B150
8	*Packing*	*PTFE/RPTFE glass/Graphite/Extended stuffing box with Graphite*
9	*Packing Washer*	*17-4PH SS/A564*
10	*Lower Stem*	*17-4PH SS/A564*
11	*Body*	*316 SS/A479*
12	Collar	316 SS/A479 (For tubing connections)
13	Gland	316 SS/A479 (For tubing connections)
	Lubricant	Molybdenum disulfide

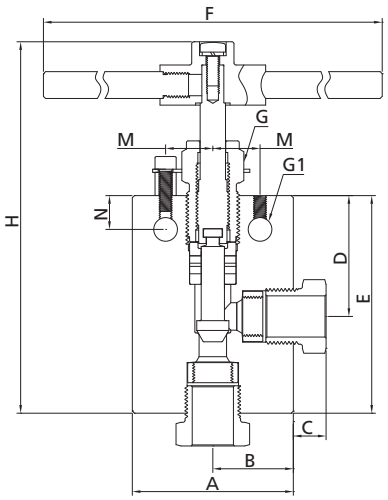
Wetted component listed in italics.

Ordering Information and Dimensions (Tubing Connection, 2-Way)

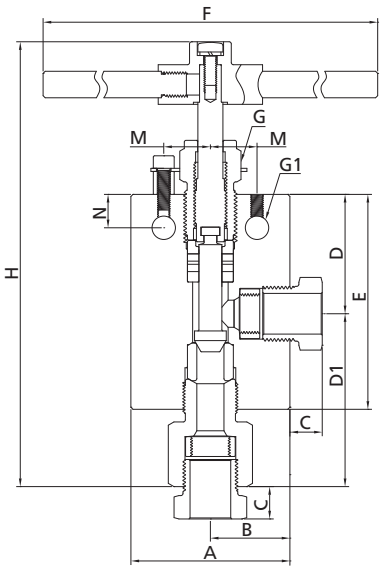
Straight



Angle



Angle (replaceable seat)



Straight

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-2FH9-1	2FH9	0.359 (9.12)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	2.38 (60.5)	1.75 (44.5)	2.88 (73.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.20 (157.4)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
10NSS-2FH12-1	2FH12	0.516 (13.11)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	3.00 (76.2)	2.25 (57.2)	3.75 (95.3)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.24 (183.8)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
10NSS-2FH16-1	2FH16	0.688 (17.48)	4.12 (104.7)	2.06 (52.3)	0.74 (18.7)	3.75 (95.3)	2.81 (71.4)	4.63 (117.6)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.33 (237.1)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Angle

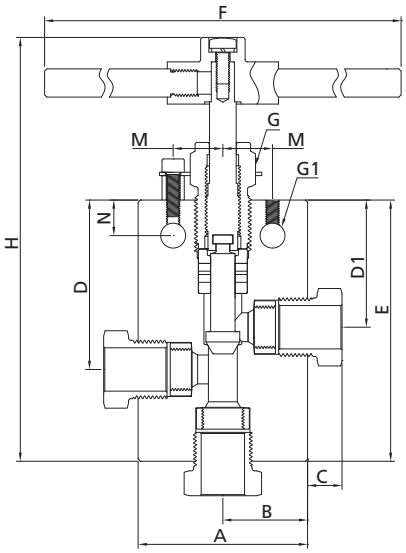
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-2FH9-2	2FH9	0.359 (9.12)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	1.75 (44.5)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.70 (170.3)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
10NSS-2FH12-2	2FH12	0.516 (13.11)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	2.25 (57.2)		4.25 (107.9)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.73 (196.4)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
10NSS-2FH16-2	2FH16	0.688 (17.48)	4.12 (104.7)	2.06 (52.3)	0.74 (18.7)	2.81 (71.4)		5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.83 (249.7)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Angle (replaceable seat)

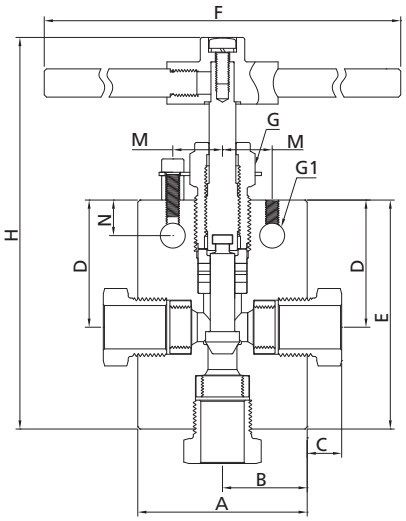
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-2FH9-3	2FH9	0.359 (9.12)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	1.75 (44.5)	2.50 (63.5)	3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	7.57 (192.4)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
10NSS-2FH12-3	2FH12	0.516 (13.11)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	2.25 (57.2)	3.19 (81.1)	4.25 (107.9)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	8.92 (226.8)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
10NSS-2FH16-3	2FH16	0.688 (17.48)	4.12 (104.7)	2.06 (52.3)	0.74 (18.7)	2.81 (71.4)	4.11 (104.5)	5.25 (133.3)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	11.62 (295.4)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Ordering Information and Dimensions (Tubing Connection, 3-Way)

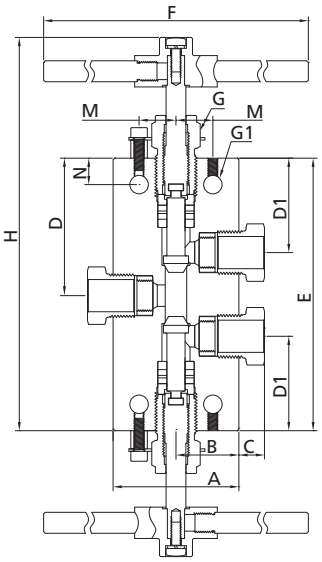
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-2FH9-4	2FH9	0.359 (9.12)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	2.38 (60.5)	1.75 (44.5)	3.63 (92.1)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.95 (176.5)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
10NSS-2FH12-4	2FH12	0.516 (13.11)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	3.00 (76.2)	2.25 (57.2)	4.63 (117.5)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	8.11 (206.0)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
10NSS-2FH16-4	2FH16	0.688 (17.48)	4.12 (104.7)	2.06 (52.3)	0.74 (18.7)	3.75 (95.3)	2.81 (71.4)	5.88 (149.4)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	10.58 (268.7)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

1 on pressure

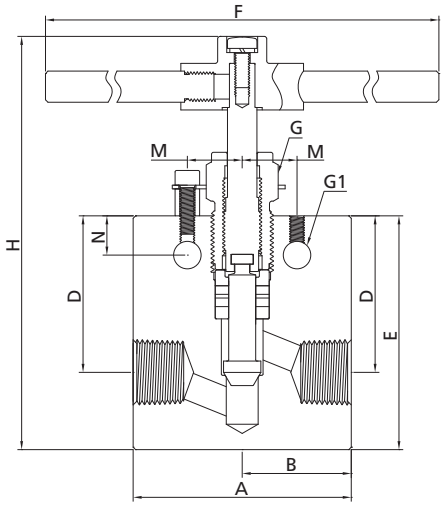
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-2FH9-5	2FH9	0.359 (9.12)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	1.75 (44.5)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.70 (170.3)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
10NSS-2FH12-5	2FH12	0.516 (13.11)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	2.25 (57.2)		4.25 (107.9)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.73 (196.4)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
10NSS-2FH16-5	2FH16	0.688 (17.48)	4.12 (104.7)	2.06 (52.3)	0.74 (18.7)	2.81 (71.4)		5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.83 (249.7)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

2 stem manifold

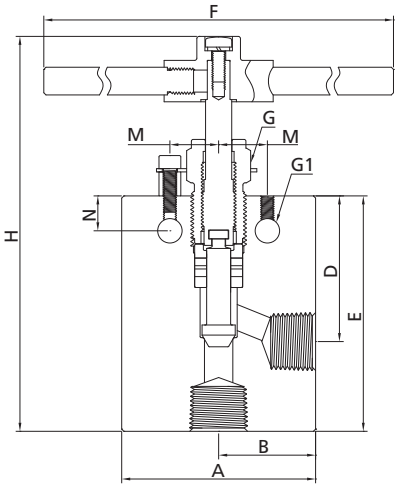
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-2FH9-6	2FH9	0.359 (9.12)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	2.56 (65.1)	1.75 (44.5)	5.13 (130.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	8.45 (214.6)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
10NSS-2FH12-6	2FH12	0.516 (13.11)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	3.25 (82.6)	2.25 (57.2)	6.50 (165.1)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	9.98 (253.5)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
10NSS-2FH16-6	2FH16	0.688 (17.48)	4.12 (104.7)	2.06 (52.3)	0.74 (18.7)	3.75 (95.3)	2.81 (71.4)	7.50 (190.5)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	12.20 (310.1)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Ordering Information and Dimensions (Pipe Connection, 2-Way)

Straight



Angle



Straight

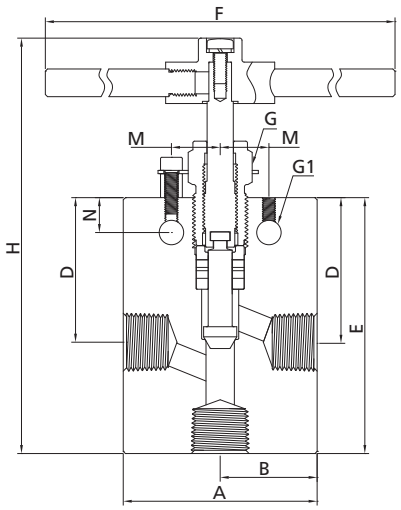
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-FNS12-1	FNS12	0.437 (11.10)	3.50 (88.9)	1.75 (44.5)		2.63 (66.8)		3.75 (95.3)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.42 (188.6)	0.88 (22.4)	0.63 (16.0)	1.75 (44.5)
10NSS-FRT12-1	FRT12														
10NSS-FNS16-1	FNS16	0.562 (14.27)	4.12 (104.7)	2.06 (52.3)		3.31 (84.1)		4.62 (117.4)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.45 (240.1)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)
10NSS-FRT16-1	FRT16														

Angle

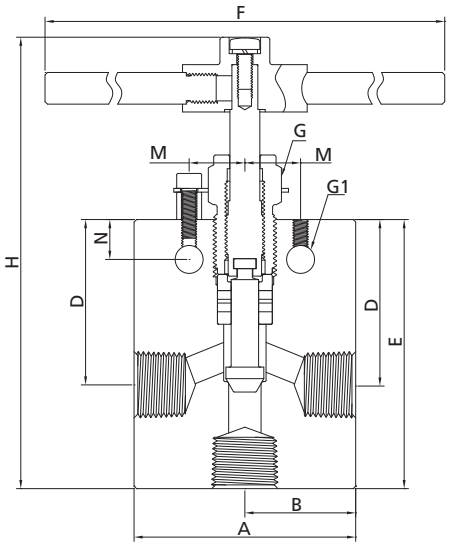
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-FNS12-2	FNS12	0.437 (11.10)	3.50 (88.9)	1.75 (44.5)		2.63 (66.8)		4.25 (107.9)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.92 (201.3)	0.88 (22.4)	0.63 (16.0)	1.75 (44.5)
10NSS-FRT12-2	FRT12														
10NSS-FNS16-2	FNS16	0.562 (14.27)	4.12 (104.7)	2.06 (52.3)		3.31 (84.1)		5.12 (130.1)	10.25 (260.4)	1.64 (41.2)	0.56 (14.2)	9.94 (252.5)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)
10NSS-FRT16-2	FRT16														

Ordering Information and Dimensions (Pipe Connection, 3-Way)

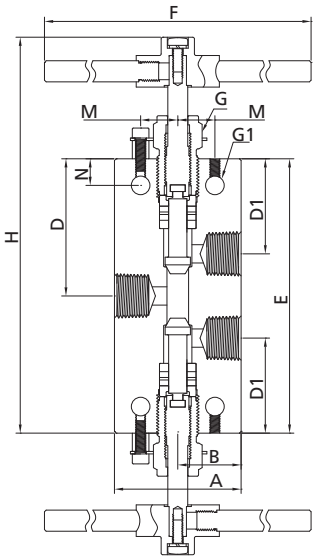
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-FNS12-4	FNS12	0.437 (11.10)	3.50 (88.9)	1.75 (44.5)		2.65 (67.3)		4.62 (117.4)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	8.40 (213.4)	0.88 (22.4)	0.63 (16.0)	1.75 (44.5)
10NSS-FRT12-4	FRT12														
10NSS-FNS16-4	FNS16	0.562 (14.27)	4.12 (104.7)	2.06 (52.3)		3.31 (84.1)		5.88 (149.4)	10.25 (260.4)	1.64 (41.2)	0.56 (14.2)	10.70 (271.7)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)
10NSS-FRT16-4	FRT16														

1 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-FNS12-5	FNS12	0.437 (11.10)	3.50 (88.9)	1.75 (44.5)		2.65 (67.3)		4.25 (107.9)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.92 (201.3)	0.88 (22.4)	0.63 (16.0)	1.75 (44.5)
10NSS-FRT12-5	FRT12														
10NSS-FNS16-5	FNS16	0.562 (14.27)	4.12 (104.7)	2.06 (52.3)		3.31 (84.1)		5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.94 (252.5)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)
10NSS-FRT16-5	FRT16														

2 stem manifold

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
10NSS-FNS12-6	FNS12	0.437 (11.10)	3.50 (88.9)	1.75 (44.5)		3.25 (82.6)	2.25 (57.2)	6.50 (165.1)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	10.28 (261.2)	0.88 (22.4)	0.63 (16.0)	1.75 (44.5)
10NSS-FRT12-6	FRT12														
10NSS-FNS16-6	FNS16	0.562 (14.27)	4.12 (104.7)	2.06 (52.3)		3.75 (95.3)	2.81 (71.42)	7.50 (190.5)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	12.32 (313.0)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)
10NSS-FRT16-6	FRT16														

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. H is the dimension of stem in closed position.
5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact the FITOK group or our authorized distributors.

15N Series

15,000 psig (1034 bar)

Features

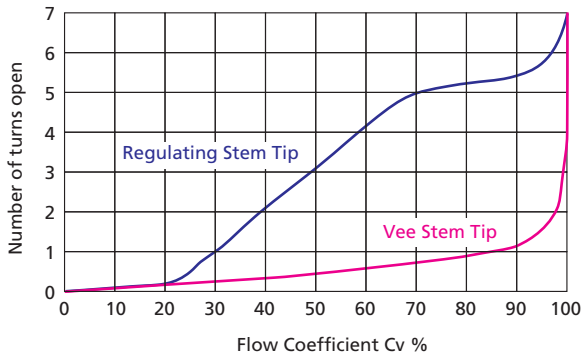
◎ High tensile 316 Stainless Steel for valve body and 17-4PH Stainless Steel for lower stem
◎ Selected materials of packing gland and upper stem for optimum thread cycle life and reduced handle torque
◎ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
◎ Non-rotating stem and bar stock body design
◎ Easy to assemble and replace packing
◎ Packing located under stem threads
◎ Reliable locking for packing gland
◎ Options for Vee or Regulating stem tips
◎ Five flow patterns available

Technical Data

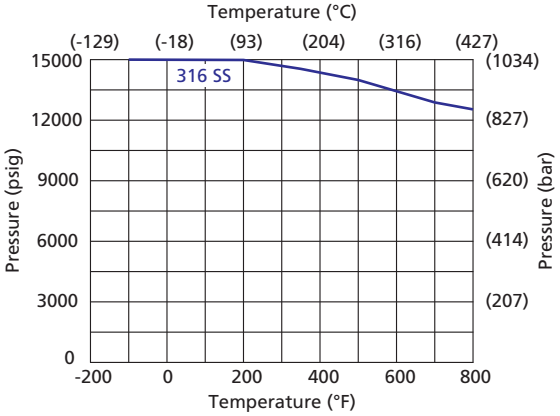
Connection Size	Connection	Orifice in. (mm)	Cv	Working Pressure psig (bar)	Working Temperature Range
1/8" O.D. Tubing	DHL2	0.094 (2.39)	0.12	15, 000 (1034)	-100°F~800°F (-73°C~427°C)
1/4" O.D. Tubing	DHL4	0.188 (4.77)	0.65	15, 000 (1034)	
3/8" O.D. Tubing	DHL6	0.250 (6.35)	0.95	15, 000 (1034)	
1/2" O.D. Tubing	DHL8	0.375 (9.53)	1.90	15, 000 (1034)	
1/8" Female NPT	FNS2	0.078 (1.98)	0.11	15, 000 (1034)	-100°F~400°F (-73°C~204°C)
1/8" Female ISO/BSP Tapered	FRT2				
1/4" Female NPT	FNS4	0.203 (5.16)	0.63	15, 000 (1034)	
1/4" Female ISO/BSP Tapered	FRT4				
3/8" Female NPT	FNS6	0.219 (5.56)	0.75	15, 000 (1034)	
3/8" Female ISO/BSP Tapered	FRT6				
1/2" Female NPT	FNS8	0.312 (7.92)	1.30	15, 000 (1034)	
1/2" Female ISO/BSP Tapered	FRT8				

NOTES: 1. The values of Cv shown are for 2-way straight valve pattern.
2. The values of Cv for 2-way angle pattern will increase by about 50% (Based on water).
3. Packing Options
PTFE is the standard packing material, RPTFE glass and Graphite also available. Graphite packing not recommended for Hydrogen or Helium service.
PTFE: -100°F~450°F (-73°C~232°C)
RPTFE glass: -100°F~600°F (-73°C~316°C)
Graphite: 0°F~800°F (-17.8°C~427°C)

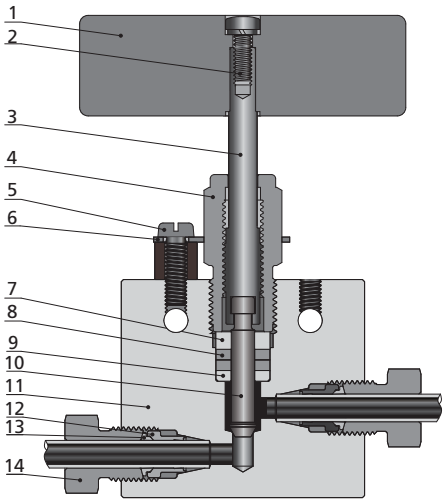
Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



Standard Materials of Construction

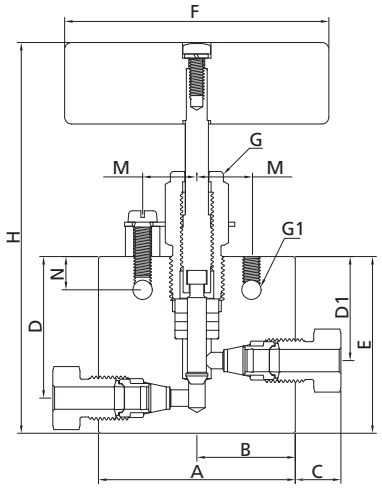


Item	Component	Material Grade/ASTM Specification
1	Handle	Stainless steel
2	Handle Screw	Stainless steel
3	Upper Stem	316 SS/A479
4	Packing Gland	C63000/B150
5	Locking Screw	Stainless steel
6	Locking Plate	304 SS/A240
7	Packing Ring	C63000/B150
8	*Packing*	*PTFE/RPTFE/Graphite*
9	*Packing Washer*	*17-4PH SS/A564*
10	*Lower Stem*	*17-4PH SS/A564*
11	*Body*	*316 SS/A479*
12	*Front Ferrule*	*316 SS/A479(For tubing connections)*
13	Rear Ferrule	316 SS/A479(For tubing connections)
14	Nut	316 SS/A479(For tubing connections)
	Lubricant	Molybdenum disulfide

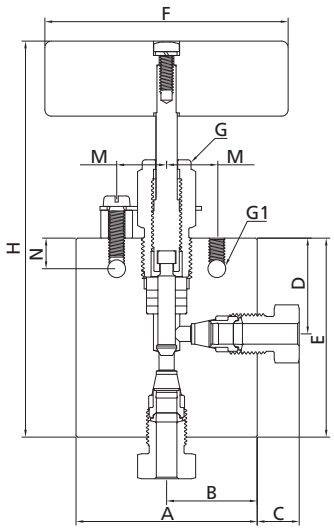
Wetted component listed in italics.

Ordering Information and Dimensions (Tubing Connection, 2-Way)

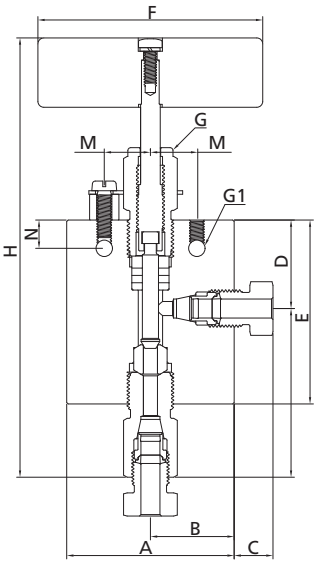
Straight



Angle



Angle (replaceable seat)



Straight

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-DHL2-1	DHL2	0.094 (2.39)	1.81 (46.1)	0.91 (23.1)	0.44 (11.2)	1.06 (26.9)	0.81 (20.6)	1.38 (35.1)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.13 (79.6)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NSS-DHL4-1	DHL4	0.188 (4.77)	2.33 (59.2)	1.17 (29.6)	0.52 (13.3)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.90 (124.5)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL6-1	DHL6	0.250 (6.35)	2.27 (57.6)	1.13 (28.8)	0.54 (13.6)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.97 (126.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL8-1	DHL8	0.375 (9.53)	2.86 (72.7)	1.43 (36.4)	0.60 (15.3)	2.38 (60.5)	1.75 (44.5)	2.88 (73.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.21 (157.7)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Angle

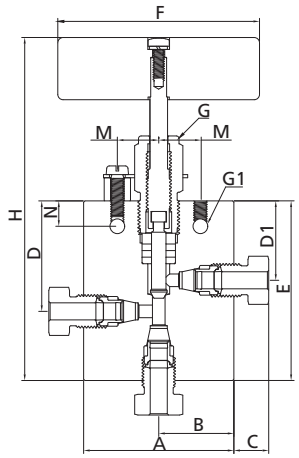
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-DHL2-2	DHL2	0.094 (2.39)	1.81 (46.1)	0.91 (23.1)	0.44 (11.2)	0.81 (20.6)		1.56 (39.6)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.32 (84.3)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NSS-DHL4-2	DHL4	0.188 (4.77)	2.33 (59.2)	1.17 (29.6)	0.52 (13.3)	1.19 (30.2)		2.43 (61.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.33 (135.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL6-2	DHL6	0.250 (6.35)	2.27 (57.6)	1.13 (28.8)	0.54 (13.6)	1.19 (30.2)		2.43 (61.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.40 (137.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL8-2	DHL8	0.375 (9.53)	2.86 (72.7)	1.43 (36.4)	0.60 (15.3)	1.75 (44.5)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.71 (170.4)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Angle (replaceable seat)

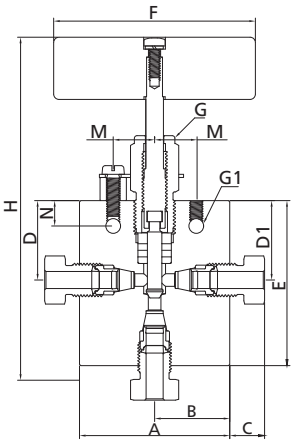
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-DHL2-3	DHL2	0.094 (2.39)	1.81 (46.1)	0.91 (23.1)	0.44 (11.2)	0.81 (20.6)	1.44 (36.5)	1.56 (39.6)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.84 (97.6)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NSS-DHL4-3	DHL4	0.188 (4.77)	2.33 (59.2)	1.17 (29.6)	0.52 (13.3)	1.19 (30.2)	2.05 (52.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.97 (151.6)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL6-3	DHL6	0.250 (6.35)	2.27 (57.6)	1.13 (28.8)	0.54 (13.6)	1.19 (30.2)	2.32 (59.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.35 (161.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL8-3	DHL8	0.375 (9.53)	2.86 (72.7)	1.43 (36.4)	0.60 (15.3)	1.75 (44.5)	2.68 (68.1)	3.25 (82.6)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	7.54 (191.5)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Ordering Information and Dimensions (Tubing Connection, 3-Way)

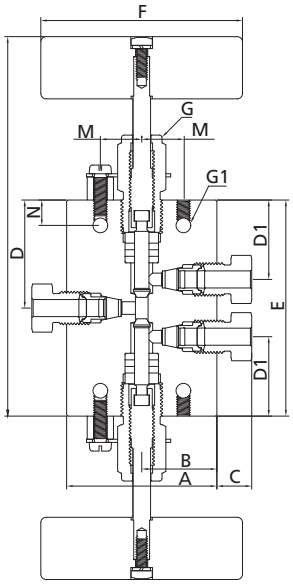
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-DHL2-4	DHL2	0.094 (2.39)	1.81 (46.1)	0.91 (23.1)	0.44 (11.2)	1.06 (26.9)	0.81 (20.6)	1.85 (46.9)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.45 (87.5)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NSS-DHL4-4	DHL4	0.188 (4.77)	2.33 (59.2)	1.17 (29.6)	0.52 (13.3)	1.62 (41.2)	1.19 (30.2)	2.79 (70.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.52 (140.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL6-4	DHL6	0.250 (6.35)	2.27 (57.6)	1.13 (28.8)	0.54 (13.6)	1.62 (41.2)	1.19 (30.2)	2.76 (70.0)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.59 (142.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL8-4	DHL8	0.375 (9.53)	2.86 (72.7)	1.43 (36.4)	0.60 (15.3)	2.38 (60.5)	1.75 (44.5)	3.80 (96.6)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.96 (176.7)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

1 on pressure

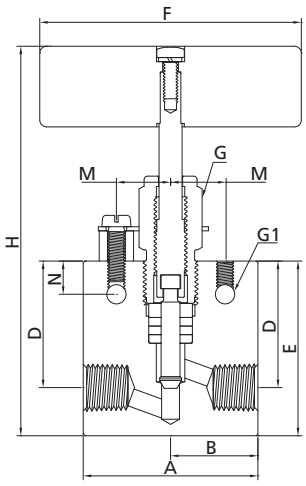
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-DHL2-5	DHL2	0.094 (2.39)	1.81 (46.1)	0.91 (23.1)	0.44 (11.2)	0.81 (20.6)		1.56 (39.6)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.32 (84.3)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NSS-DHL4-5	DHL4	0.188 (4.77)	2.33 (59.2)	1.17 (29.6)	0.52 (13.3)	1.19 (30.2)		2.43 (61.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.33 (135.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL6-5	DHL6	0.250 (6.35)	2.27 (57.6)	1.13 (28.8)	0.54 (13.6)	1.19 (30.2)		2.43 (61.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.40 (137.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL8-5	DHL8	0.375 (9.53)	2.86 (72.7)	1.43 (36.4)	0.60 (15.3)	1.75 (44.5)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.71 (170.4)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

2 stem manifold

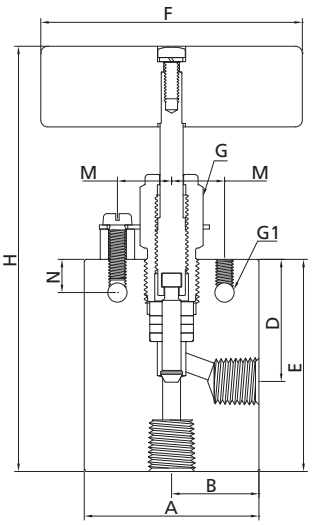
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-DHL2-6	DHL2	0.094 (2.39)	1.81 (46.1)	0.91 (23.1)	0.44 (11.2)	1.12 (28.5)	0.81 (20.6)	2.25 (57.2)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	4.00 (101.8)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NSS-DHL4-6	DHL4	0.188 (4.77)	2.33 (59.2)	1.17 (29.6)	0.52 (13.3)	1.69 (42.9)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.28 (159.6)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL6-6	DHL6	0.250 (6.35)	2.27 (57.6)	1.13 (28.8)	0.54 (13.6)	1.69 (42.9)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.35 (161.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-DHL8-6	DHL8	0.375 (9.53)	2.86 (72.7)	1.43 (36.4)	0.60 (15.3)	2.56 (65.0)	1.75 (44.5)	5.12 (130.1)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	8.45 (214.7)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Ordering Information and Dimensions (Pipe Connection, 2-Way)

Straight



Angle



Straight

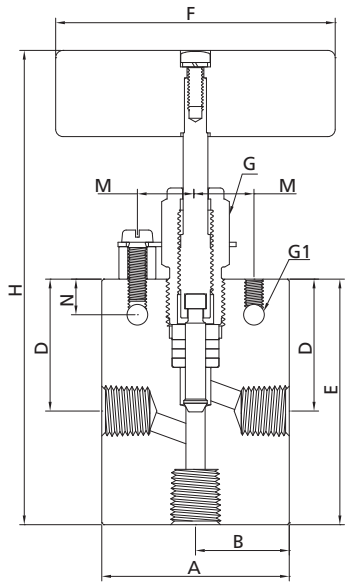
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-FNS2-1	FNS2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)		0.82 (20.6)		1.25 (31.8)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.00 (76.4)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NSS-FRT2-1	FRT2														
15NSS-FNS4-1	FNS4	0.203 (5.2)	2.00 (50.8)	1.00 (25.4)		1.41 (35.8)		2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.89 (124.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-FRT4-1	FRT4														
15NSS-FNS6-1	FNS6	0.219 (5.56)	2.50 (63.5)	1.25 (31.8)		1.41 (35.8)		2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.85 (123.1)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NSS-FRT6-1	FRT6														
15NSS-FNS8-1	FNS8	0.312 (7.92)	3.00 (76.2)	1.50 (38.1)		2.06 (52.3)		2.88 (73.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.18 (157.2)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NSS-FRT8-1	FRT8														

Angle

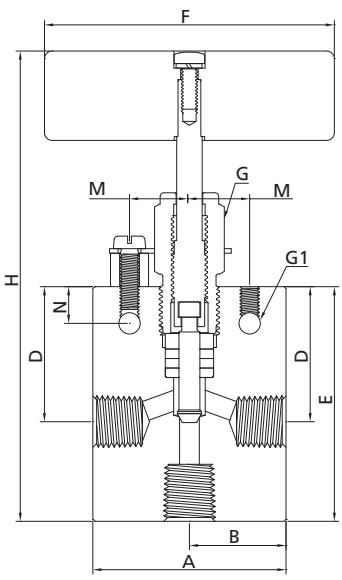
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-FNS2-2	FNS2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)		0.81 (20.6)		1.38 (34.9)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.13 (79.5)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NSS-FRT2-2	FRT2														
15NSS-FNS4-2	FNS4	0.203 (5.2)	2.00 (50.8)	1.00 (25.4)		1.41 (35.8)		2.44 (62.0)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.33 (135.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-FRT4-2	FRT4														
15NSS-FNS6-2	FNS6	0.219 (5.56)	2.50 (63.5)	1.25 (31.8)		1.41 (35.8)		2.44 (62.0)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.34 (135.7)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NSS-FRT6-2	FRT6														
15NSS-FNS8-2	FNS8	0.312 (7.92)	3.00 (76.2)	1.50 (38.1)		2.06 (52.3)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.69 (169.9)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NSS-FRT8-2	FRT8														

Ordering Information and Dimensions (Pipe Connection, 3-Way)

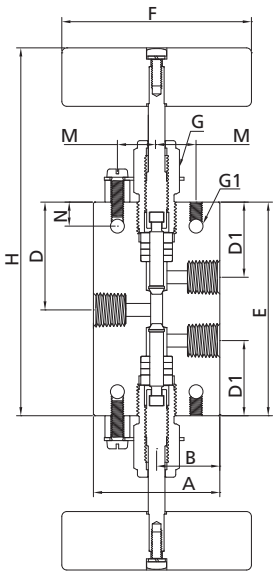
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-FNS2-4	FNS2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)		0.82 (20.6)		1.57 (40.0)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.33 (84.6)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NSS-FRT2-4	FRT2														
15NSS-FNS4-4	FNS4	0.203 (5.2)	2.00 (50.8)	1.00 (25.4)		1.41 (35.8)		2.62 (66.6)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.51 (140.0)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-FRT4-4	FRT4														
15NSS-FNS6-4	FNS6	0.219 (5.56)	2.50 (63.5)	1.25 (31.8)		1.41 (35.8)		2.62 (66.6)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.47 (138.9)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NSS-FRT6-4	FRT6														
15NSS-FNS8-4	FNS8	0.312 (7.92)	3.00 (76.2)	1.50 (38.1)		2.06 (52.3)		3.62 (92.0)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.94 (176.26)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NSS-FRT8-4	FRT8														

1 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-FNS2-5	FNS2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)		0.82 (20.6)		1.38 (35.0)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.13 (79.5)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NSS-FRT2-5	FRT2														
15NSS-FNS4-5	FNS4	0.203 (5.2)	2.00 (50.8)	1.00 (25.4)		1.41 (35.8)		2.44 (62.0)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.33 (135.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-FRT4-5	FRT4														
15NSS-FNS6-5	FNS6	0.219 (5.56)	2.50 (63.5)	1.25 (31.8)		1.41 (35.8)		2.44 (62.0)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.34 (135.7)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NSS-FRT6-5	FRT6														
15NSS-FNS8-5	FNS8	0.312 (7.92)	3.00 (76.2)	1.50 (38.1)		2.06 (52.3)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.69 (169.9)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NSS-FRT8-5	FRT8														

2 stem manifold

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
15NSS-FNS2-6	FNS2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)		1.00 (25.6)	0.68 (17.2)	2.02 (51.2)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.77 (95.8)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NSS-FRT2-6	FRT2														
15NSS-FNS4-6	FNS4	0.203 (5.2)	2.00 (50.8)	1.00 (25.4)		1.69 (42.9)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.27 (159.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NSS-FRT4-6	FRT4														
15NSS-FNS6-6	FNS6	0.219 (5.56)	2.50 (63.5)	1.25 (31.8)		1.69 (42.9)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.22 (158.1)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NSS-FRT6-6	FRT6														
15NSS-FNS8-6	FNS8	0.312 (7.92)	3.00 (76.2)	1.50 (38.1)		2.56 (65.1)	1.75 (44.5)	5.12 (130.1)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	8.43 (214.2)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NSS-FRT8-6	FRT8														

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. H is the dimension of stem in closed position.
5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact the FITOK Group or our authorized distributors.

20N Series

20,000 psig (1379 bar)

Features

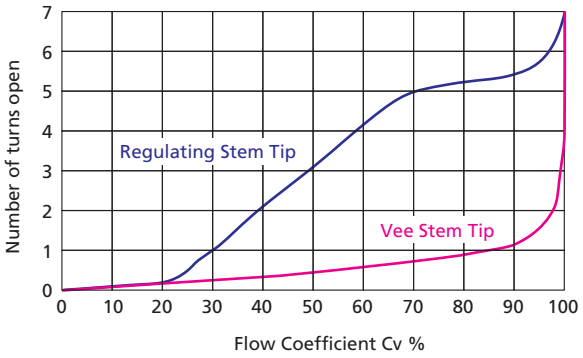
- Tubing sizes available in 1/4", 3/8", 9/16", 3/4" and 1"
- High tensile 316 Stainless Steel for valve body and 17-4PH Stainless Steel for lower stem
- Selected materials of packing gland and upper stem for optimum thread cycle life and reduced handle torque
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- Non-rotating stem and bar stock body design
- Easy to assemble and replace packing
- Packing located under stem threads
- Reliable locking for packing gland
- Options for Vee or Regulating stem tips
- Five flow patterns available

Technical Data

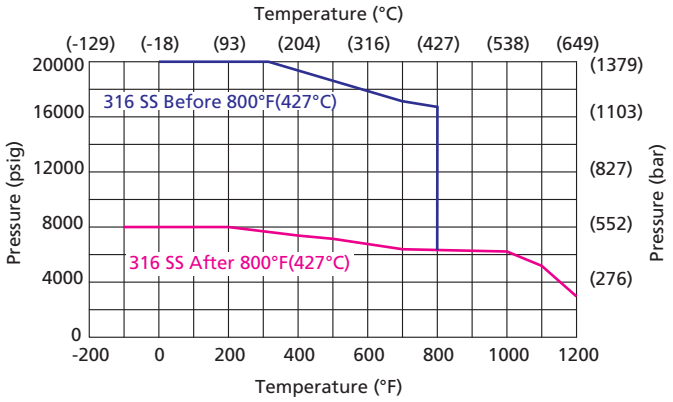
Tube O.D. in.	Connection	Orifice in. (mm)	Cv	Working Pressure psig (bar)	Working Temperature Range
1/4	2FH4	0.125 (3.18)	0.31	20,000 (1379)	-100°F~1200°F (-73°C~649°C)
3/8	2FH6	0.204 (5.18)	0.68	20,000 (1379)	
9/16	2FH9	0.312 (7.92)	1.30	20,000 (1379)	
3/4	2FH12	0.438 (11.13)	2.50	20,000 (1379)	
1	2FH16	0.562 (14.27)	4.40	20,000 (1379)	

NOTES: 1. The values of Cv shown are for 2-way straight valve pattern.
2. The values of Cv for 2-way angle pattern will increase by about 50% (Based on water).
3. Packing Options
PTFE is the standard packing material, RPTFE glass, Graphite and extended stuffing box with Graphite also available. Graphite packing not recommended for Hydrogen or Helium service.
PTFE: -100°F~450°F (-73°C~232°C)
RPTFE glass: -100°F~600°F (-73°C~316°C)
Graphite: 0°F~800°F (-17.8°C~427°C)
Extended stuffing box with Graphite: -100°F~1000°F (-73°C~649°C)

Flow Data at 100°F (38°C)

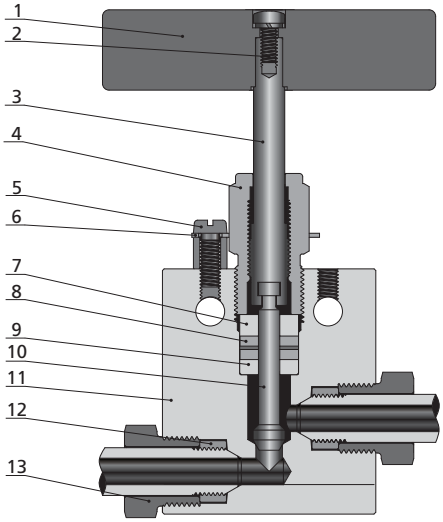


Pressure vs. Temperature Curve



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

Standard Materials of Construction

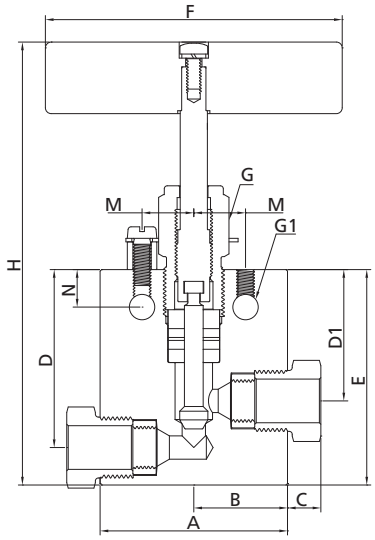


Item	Component	Material Grade/ASTM Specification
1	Handle	Stainless steel
2	Handle Screw	Stainless steel
3	Upper Stem	316 SS/A479
4	Packing Gland	C63000/B150
5	Locking Screw	Stainless steel
6	Locking Plate	304 SS/A240
7	Packing Ring	C63000/B150
8	*Packing*	*PTFE/RPTFE glass/Graphite/Extended stuffing box with Graphite*
9	*Packing Washer*	*17-4PH SS/A564*
10	*Lower Stem*	*17-4PH SS/A564*
11	*Body*	*316 SS/A479*
12	Collar	316 SS/A479(For tubing connections)
13	Gland	316 SS/A479(For tubing connections)
	Lubricant	Molybdenum disulfide

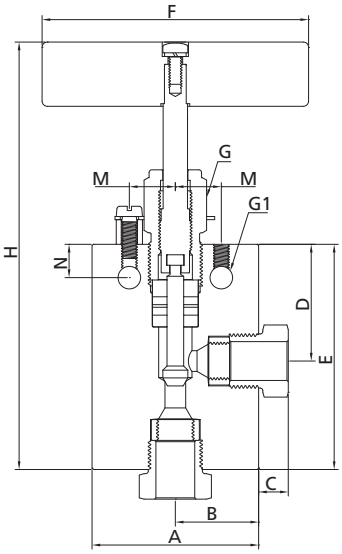
Wetted component listed in italics.

Ordering Information and Dimensions (Tubing Connection, 2-Way)

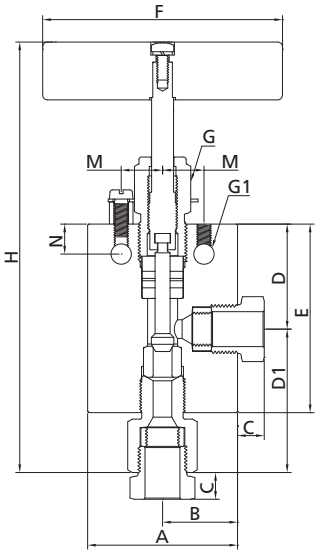
Straight



Angle



Angle (replaceable seat)



Straight

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
20NSS-2FH4-1	2FH4	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)	4.85 (123.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH6-1	2FH6	0.204 (5.18)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.89 (124.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH9-1	2FH9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	2.37 (60.3)	1.75 (44.5)	2.88 (73.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.18 (157.2)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NSS-2FH12-1	2FH12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	3.00 (76.2)	2.25 (57.2)	3.75 (95.3)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.37 (187.2)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NSS-2FH16-1	2FH16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.74 (18.7)	3.75 (95.3)	2.81 (71.4)	4.63 (117.6)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.45 (240.1)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Angle

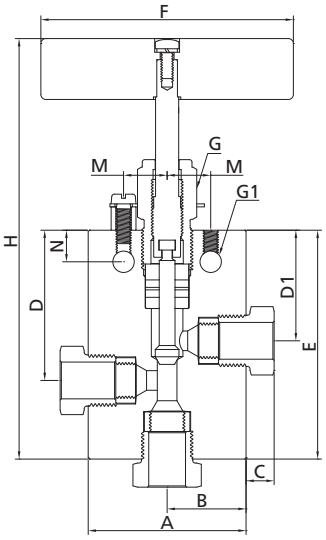
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
20NSS-2FH4-2	2FH4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)		2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.28 (134.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH6-2	2FH6	0.204 (5.18)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.19 (30.2)		2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.33 (135.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH9-2	2FH9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	1.75 (44.5)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.69 (170.0)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NSS-2FH12-2	2FH12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	2.25 (57.2)		4.25 (108.0)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.87 (199.9)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NSS-2FH16-2	2FH16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.74 (18.7)	2.81 (71.4)		5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.94 (252.6)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Angle (replaceable seat)

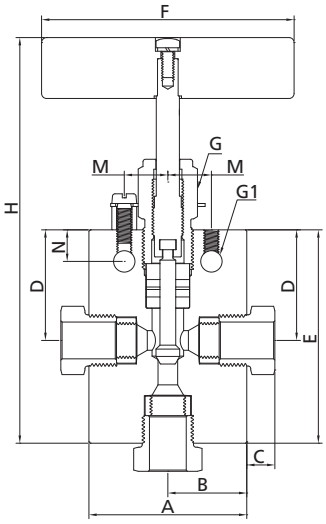
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
20NSS-2FH4-3	2FH4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)	2.13 (54.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.10 (154.9)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH6-3	2FH6	0.204 (5.18)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.19 (30.2)	2.13 (54.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.16 (156.5)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH9-3	2FH9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	1.75 (44.5)	2.50 (63.5)	3.13 (79.4)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	7.58 (192.1)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NSS-2FH12-3	2FH12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	2.25 (57.2)	3.44 (87.4)	4.25 (108.0)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	9.30 (236.3)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NSS-2FH16-3	2FH16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.74 (18.7)	2.81 (71.4)	4.22 (107.4)	5.25 (133.4)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	11.86 (301.3)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

Ordering Information and Dimensions (Tubing Connection, 3-Way)

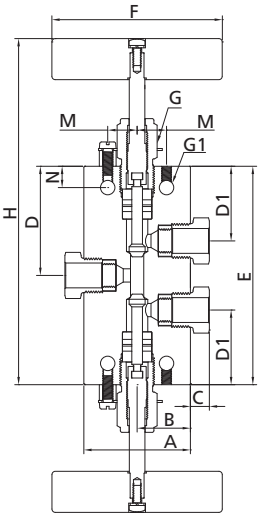
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
20NSS-2FH4-4	2FH4	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)	5.47 (139.0)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH6-4	2FH6	0.204 (5.18)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.63 (41.3)	1.19 (30.2)	2.63 (66.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.52 (140.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH9-4	2FH9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	2.37 (60.3)	1.75 (44.5)	3.63 (92.1)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.94 (176.3)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NSS-2FH12-4	2FH12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	3.00 (76.2)	2.25 (57.2)	4.63 (117.5)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	8.24 (209.4)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NSS-2FH16-4	2FH16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.74 (18.7)	3.75 (95.3)	2.81 (71.4)	5.88 (149.4)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	10.70 (271.9)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

1 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
20NSS-2FH4-5	2FH4	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)	5.28 (134.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH6-5	2FH6	0.204 (5.18)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.19 (30.2)		2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.33 (135.4)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH9-5	2FH9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	1.75 (44.5)		3.38 (85.9)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.69 (170.0)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NSS-2FH12-5	2FH12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	2.25 (57.2)		4.25 (108.0)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	7.87 (199.9)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NSS-2FH16-5	2FH16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.74 (18.7)	2.81 (71.4)		5.12 (130.1)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	9.94 (252.6)	1.25 (31.8)	1.13 (28.7)	1.75 (44.5)

2 stem manifold

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
20NSS-2FH4-6	2FH4	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)	6.23 (158.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH6-6	2FH6	0.204 (5.18)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.69 (42.9)	1.19 (30.2)	3.38 (85.7)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	6.24 (158.6)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NSS-2FH9-6	2FH9	0.312 (7.92)	2.50 (63.5)	1.25 (31.8)	0.55 (14.0)	2.56 (65.1)	1.75 (44.5)	5.13 (130.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	8.44 (214.4)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)
20NSS-2FH12-6	2FH12	0.438 (11.13)	3.00 (76.2)	1.50 (38.1)	0.60 (15.2)	3.00 (76.2)	2.25 (57.2)	6.50 (165.1)	10.25 (260.4)	1.19 (30.2)	0.44 (11.2)	10.11 (257.0)	0.88 (22.4)	0.63 (16.0)	1.38 (35.1)
20NSS-2FH16-6	2FH16	0.562 (14.27)	4.12 (104.6)	2.06 (52.3)	0.74 (18.7)	3.75 (95.3)	2.81 (71.4)	7.50 (190.5)	10.25 (260.4)	1.62 (41.2)	0.56 (14.2)	12.32 (313.0)	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. H is the dimension of stem in closed position.
5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact the FITOK Group or our authorized distributors.

30N Series

30,000 psig (2068 bar)

Features

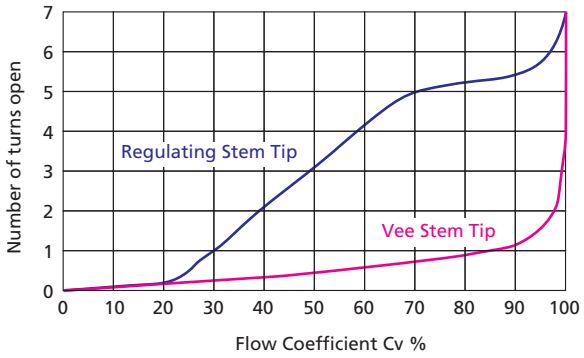
- Tubing sizes available in 1/4", 3/8" and 9/16"
- High tensile 316 Stainless Steel for valve body and 17-4PH Stainless Steel for lower stem
- Selected materials of packing gland and upper stem for optimum thread cycle life and reduced handle torque
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- Non-rotating stem and bar stock body design
- Easy to assemble and replace packing
- Packing located under stem threads
- Reliable locking device for packing gland
- Options for Vee or Regulating stem tips
- Five flow patterns available

Technical Data

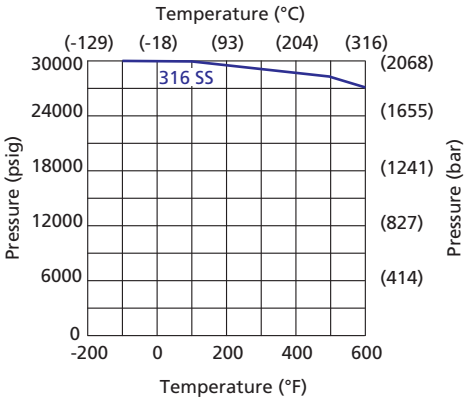
Tube O.D. in.	Connection	Orifice in. (mm)	Cv	Working Pressure psig (bar)	Working Temperature Range
1/4	6FH4	0.094 (2.39)	0.12	30,000 (2068)	-100°F~600°F (-73°C~316°C)
3/8	6FH6	0.125 (3.18)	0.23	30,000 (2068)	
9/16	6FH9	0.125 (3.18)	0.33	30,000 (2068)	

NOTES: 1. The values of Cv shown are for 2-way straight valve pattern.
2. The values of Cv for 2-way angle pattern will increase by about 50% (Based on water).
3. Packing Options
PTFE is the standard packing material, RPTFE glass also available
PTFE: -100°F~450°F (-73°C~232°C)
RPTFE glass: -100°F~600°F(-73°C~316°C)

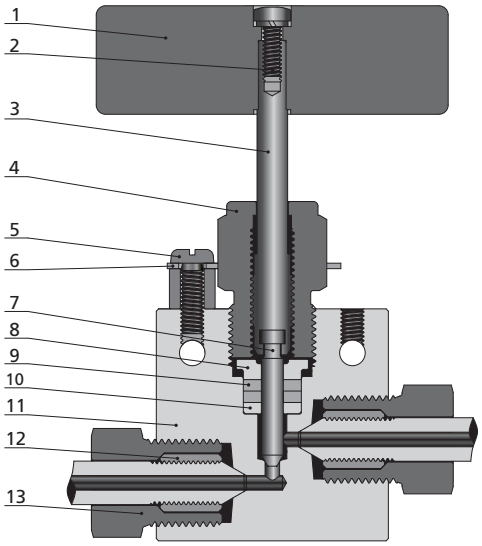
Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



Standard Materials of Construction

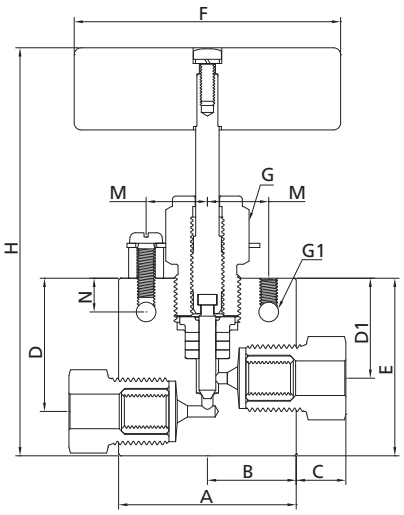


Item	Component	Material Grade/ASTM Specification
1	Handle	Stainless steel
2	Handle Screw	Stainless steel
3	Upper Stem	316 SS/A479
4	Packing Gland	C63000/B150
5	Locking Screw	Stainless steel
6	Locking Plate	304 SS/A240
7	*Lower Stem*	*17-4PH/A564*
8	Packing Ring	C63000/B150
9	*Packing*	*PTFE / RPTFE*
10	*Packing Washer*	*17-4PH SS/A564*
11	*Body*	*316 SS/A479*
12	Collar	316 SS/A479
13	Gland	316 SS/A479
	Lubricant	Molybdenum disulfide

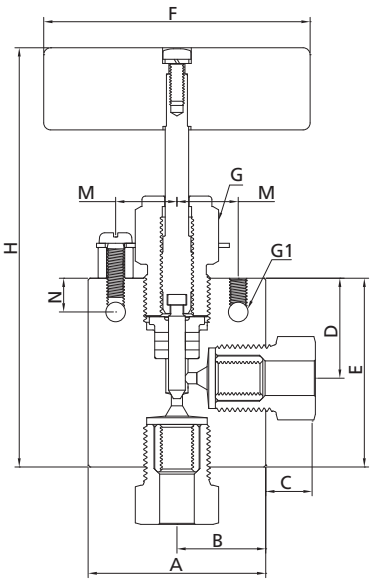
Wetted component listed in italics.

Ordering Information and Dimensions (Tubing Connection, 2-Way)

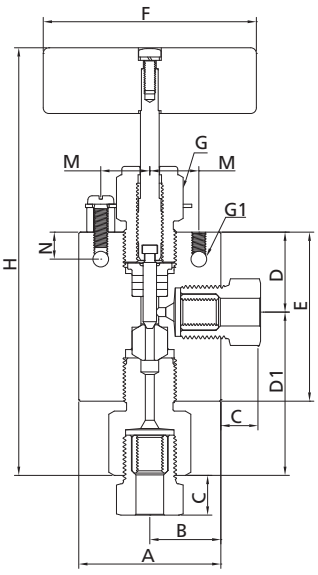
Straight



Angle



Angle (replaceable seat)



Straight

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
30NSS-6FH4-1	6FH4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.50 (38.1)	1.12 (28.5)	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.69 (119.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH6-1	6FH6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.50 (38.1)	1.12 (28.5)	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.69 (119.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH9-1	6FH9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.56 (39.6)	1.12 (28.5)	2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.13 (130.3)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Angle

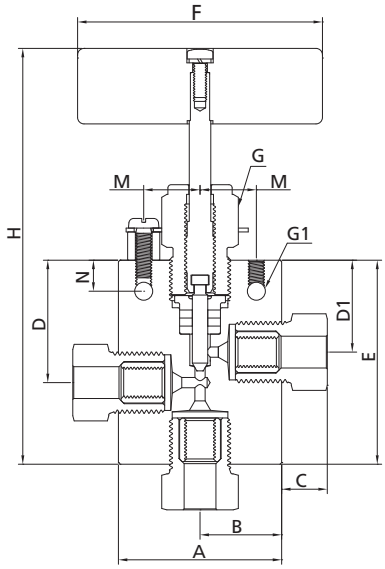
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
30NSS-6FH4-2	6FH4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.12 (28.5)		2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.69 (119.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH6-2	6FH6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.12 (28.5)		2.25 (57.2)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.95 (125.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH9-2	6FH9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.12 (28.5)		2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.13 (130.3)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Angle (replaceable seat)

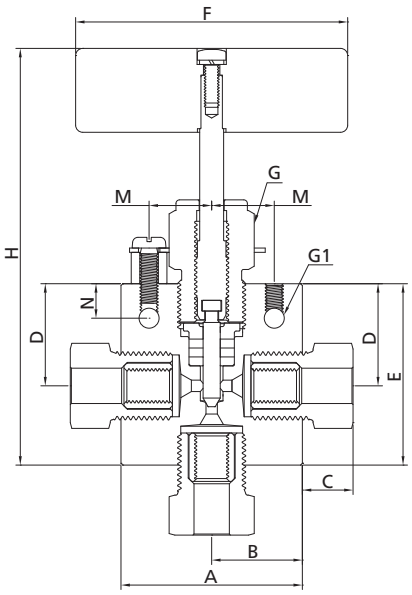
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
30NSS-6FH4-3	6FH4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.12 (28.5)	2.06 (52.3)	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.88 (149.2)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH6-3	6FH6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.12 (28.5)	2.31 (58.67)	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.12 (155.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH9-3	6FH9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.12 (28.6)	2.55 (65.0)	2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.39 (162.4)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Ordering Information and Dimensions (Tubing Connection, 3-Way)

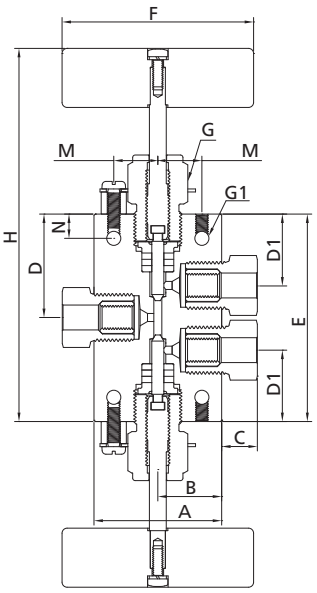
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
30NSS-6FH4-4	6FH4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.50 (38.1)	1.12 (28.5)	2.12 (53.9)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.81 (122.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH6-4	6FH6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.50 (38.1)	1.12 (28.5)	2.50 (63.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.19 (131.9)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH9-4	6FH9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.56 (39.6)	1.12 (28.5)	2.88 (73.2)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.57 (141.5)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

1 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
30NSS-6FH4-5	6FH4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.12 (28.5)		2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.69 (119.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH6-5	6FH6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.12 (28.5)		2.25 (57.2)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.95 (125.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH9-5	6FH9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.12 (28.5)		2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.13 (130.3)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

2 stem manifold

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
30NSS-6FH4-6	6FH4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.53 (38.9)	1.12 (28.5)	3.06 (77.7)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.75 (146.0)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH6-6	6FH6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.62 (41.2)	1.12 (28.5)	3.25 (82.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.94 (150.9)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NSS-6FH9-6	6FH9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.88 (47.8)	1.12 (28.5)	3.75 (95.3)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.44 (163.6)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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. H is the dimension of stem in closed position.
5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact the FITOK Group or our authorized representatives.

60N Series

60,000 psig (4137 bar)

Features

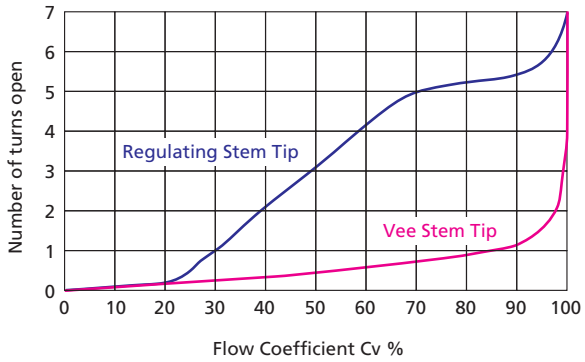
- Tubing sizes available in 1/4", 3/8" and 9/16"
- High tensile 316 Stainless Steel for valve body and 17-4PH Stainless Steel for lower stem
- Selected materials of packing gland and upper stem for optimum thread cycle life and reduced handle torque
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- Non-rotating stem and bar stock body design
- Easy to assemble and replace packing
- Packing located under stem threads
- Reliable locking device for packing gland
- Options for Vee or Regulating stem tips
- Five flow patterns available

Technical Data

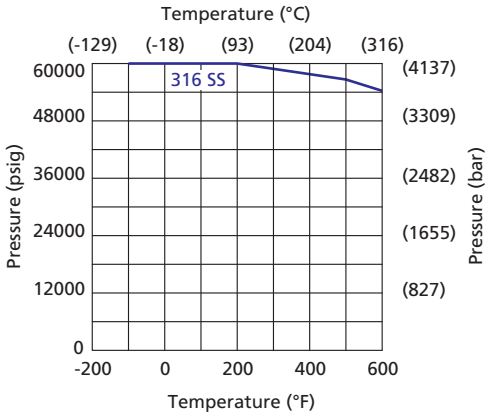
Tube O.D. in.	Connection	Orifice in. (mm)	Cv	Working Pressure psig (bar)	Working Temperature Range
1/4	6FH4	0.063 (1.59)	0.08	60,000 (4137)	-100°F~600°F (-73°C~316°C)
3/8	6FH6	0.063 (1.59)	0.09	60,000 (4137)	
9/16	6FH9	0.078 (1.98)	0.14	60,000 (4137)	

NOTES: 1. The values of Cv shown are for 2-way straight valve pattern.
2. The values of Cv for 2-way angle pattern will increase by about 50% (Based on water).
3. Packing Options
Nylon is the standard packing material, RPTFE glass also available
Nylon: 40°F~230°F (4.4°C~110°C)
RPTFE glass: -100°F~600°F (-73°C~316°C)

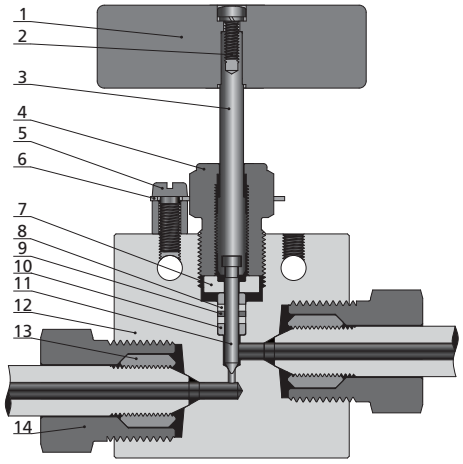
Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



Standard Materials of Construction

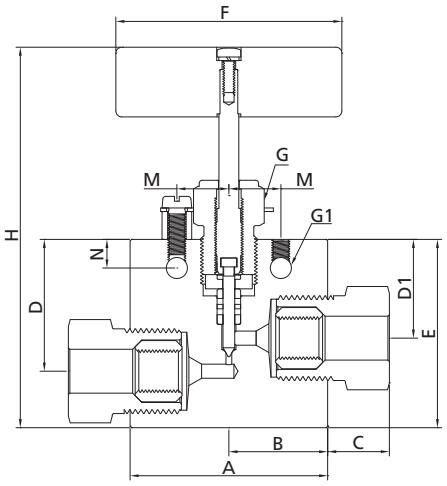


Item	Component	Material Grade/ASTM Specification
1	Handle	Stainless steel
2	Handle Screw	Stainless steel
3	Upper Stem	316 SS/A479
4	Packing Gland	C63000/B150
5	Locking Screw	Stainless steel
6	Locking Plate	304 SS/A240
7	Packing Ring	*17-4PH SS/A564*
8	*Packing*	*Nylon/RPTFE*
9	*Retaining Ring*	*PEEK*
10	*Packing Washer*	*17-4PH SS/A564*
11	*Lower Stem*	*17-4PH SS/A564*
12	*Body*	*316 SS/A479*
13	Collar	316 SS/A479
14	Gland	316 SS/A479
	Lubricant	Molybdenum disulfide

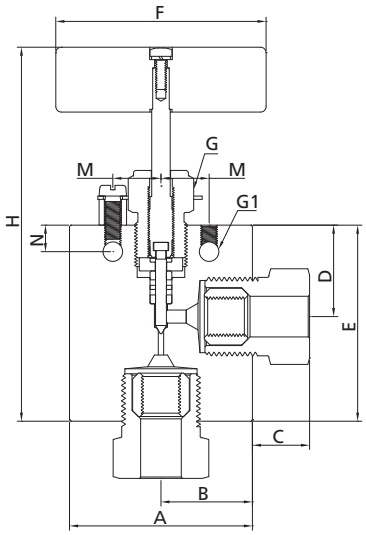
Wetted component listed in italics.

Ordering Information and Dimensions (Tubing Connection, 2-Way)

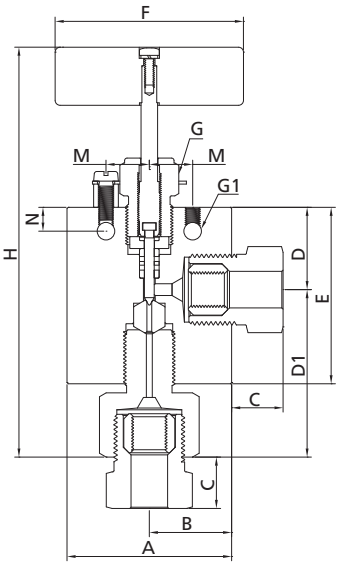
Straight



Angle



Angle (replaceable seat)



Straight

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
60NSS-6FH4-1	6FH4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.69 (42.9)	1.31 (33.3)	2.13 (54.0)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.77 (121.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH6-1	6FH6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.69 (42.9)	1.31 (33.3)	2.25 (57.2)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.89 (124.3)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH9-1	6FH9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.75 (44.5)	1.31 (33.3)	2.50 (63.5)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.14 (130.6)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Angle

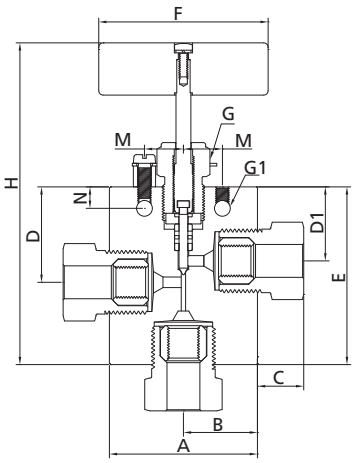
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
60NSS-6FH4-2	6FH4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.31 (33.3)		2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.02 (127.5)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH6-2	6FH6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.31 (33.3)		2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.26 (133.5)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH9-2	6FH9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.31 (33.3)		2.81 (71.4)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.45 (138.5)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Angle (replaceable seat)

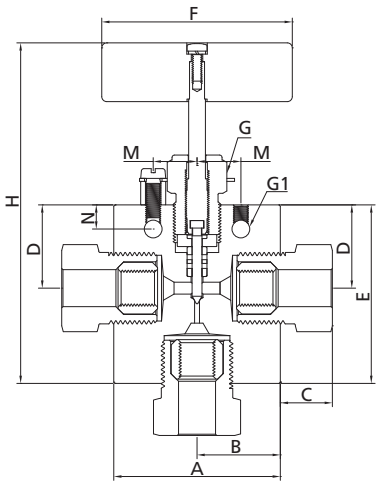
Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
60NSS-6FH4-3	6FH4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.31 (33.3)	2.12 (53.9)	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.07 (154.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH6-3	6FH6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.31 (33.3)	2.36 (59.9)	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.30 (160.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH9-3	6FH9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.31 (33.3)	2.68 (68.8)	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.65 (168.9)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Ordering Information and Dimensions (Tubing Connection, 3-Way)

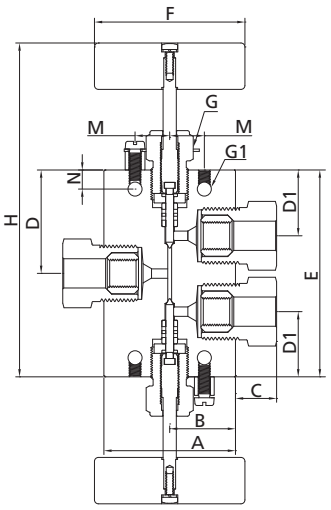
2 on pressure



1 on pressure



2 stem manifold



2 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
60NSS-6FH4-4	6FH4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.69 (42.9)	1.31 (33.3)	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.26 (133.6)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH6-4	6FH6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.69 (42.9)	1.31 (33.3)	2.75 (68.9)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.34 (135.8)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH9-4	6FH9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.75 (44.5)	1.31 (33.3)	3.03 (77.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.67 (143.9)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

1 on pressure

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
60NSS-6FH4-5	6FH4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.31 (33.3)		2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.02 (127.5)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH6-5	6FH6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.31 (33.3)		2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.26 (133.5)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH9-5	6FH9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	1.31 (33.3)		2.81 (71.4)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.45 (138.5)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

2 stem manifold

Ordering Number	Connection	Orifice in. (mm)	Dimensions, in. (mm)												
			A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
60NSS-6FH4-6	6FH4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.47 (11.9)	1.72 (43.69)	1.31 (33.3)	3.44 (87.4)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.08 (154.5)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH6-6	6FH6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.61 (15.6)	1.88 (47.8)	1.31 (33.3)	3.75 (95.3)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.39 (162.3)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NSS-6FH9-6	6FH9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.95 (24.1)	2.06 (52.3)	1.31 (33.3)	4.12 (104.7)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.76 (171.8)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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. H is the dimension of stem in closed position.
5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact the FITOK Group or our authorized representatives.

Pneumatic Needle Valves

Piston Style Pneumatic Needle Valves

Air to Open (Normally Closed)

Features

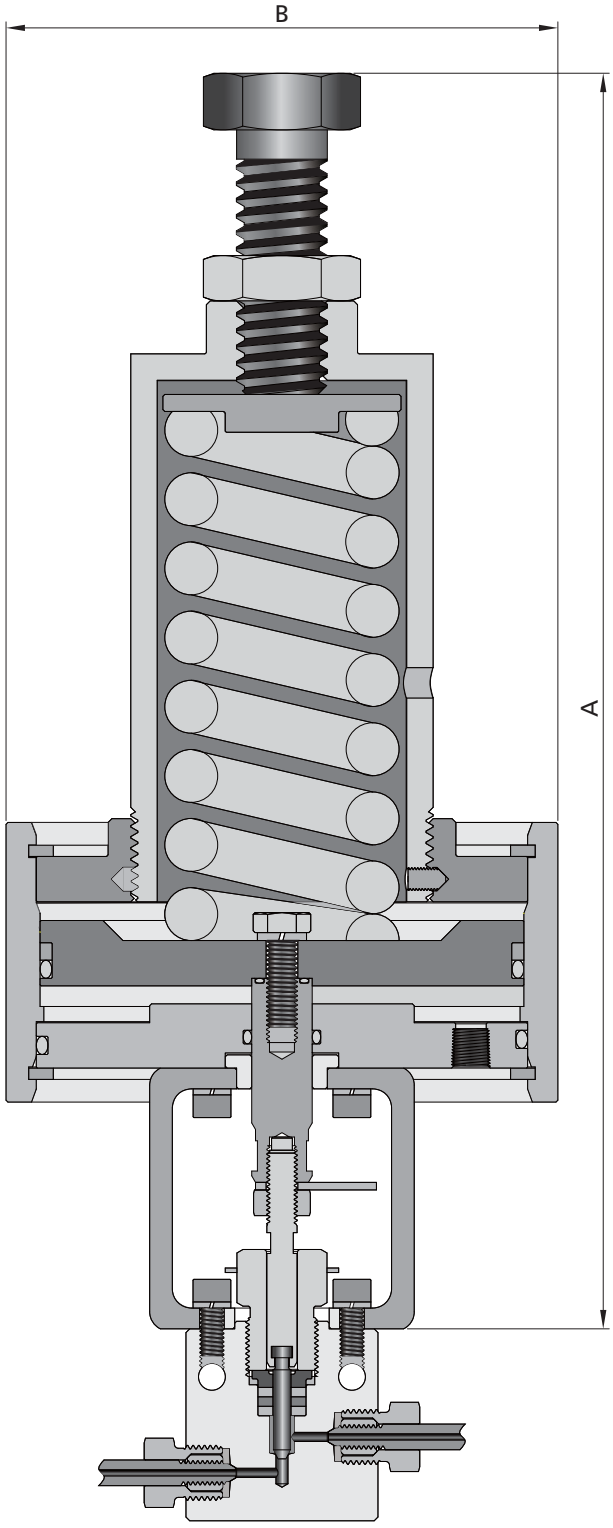
- Small and compact piston actuator
- Air-to-open with spring return
- Positive shut-off with metal-to-metal seating
- Yoke design for separation of process and air pressure
- Easy stem replacement
- Standard stem position indicator
- High actuator cycle life
- Anodized aluminum actuator to provide good corrosion and wear resistance
- Tested to 100,000 cycles at 100 psig (6.9 bar) with no leakage, no signs of wear or fatigue

Technical Data

Maximum working pressure for air operator		100 psig (6.9 bar)
Air operator temperature range		–10°F~200°F (-23°C~93°C)
Air operator material	Cylinder, piston, cover plates, spring housing	Anodized Aluminum
	Yoke	Stainless Steel
	O-ring	NBR
Air inlet connection		1/8'' or 3/8'' Female NPT

Dimensions

Basic Ordering Number	Air Inlet Connection	Area of Piston sq.in. (sq. cm)	A in. (mm)	B in. (mm)
10NSS-2FH9-X	1/8" NPT	51.20 (330.3)	16.24 (412.5)	6.54 (166.0)
10NSS-2FH12-X		92.58 (597.3)	20.72 (526.3)	8.58 (218.0)
10NSS-2FH16-X	3/8" NPT	112.55 (726.1)	24.12 (612.7)	9.57 (243.0)
10NSS-FNS12-X	1/8" NPT	92.58 (597.3)	20.72 (526.3)	8.58 (218.0)
10NSS-FRT12-X		92.58 (597.3)	20.72 (526.3)	8.58 (218.0)
10NSS-FNS16-X	3/8" NPT	112.55 (726.1)	24.12 (612.7)	9.57 (243.0)
10NSS-FRT16-X		112.55 (726.1)	24.12 (612.7)	9.57 (243.0)
15NSS-DHL2-X	1/8" NPT	7.79 (50.3)	8.56 (217.3)	3.62 (92.0)
15NSS-DHL4-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
15NSS-DHL6-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
15NSS-DHL8-X		51.20 (330.3)	16.24 (412.5)	6.54 (166.0)
15NSS-FNS2-X		7.79 (50.3)	8.56 (217.3)	3.62 (92.0)
15NSS-FRT2-X		7.79 (50.3)	8.56 (217.3)	3.62 (92.0)
15NSS-FNS4-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
15NSS-FRT4-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
15NSS-FNS6-X		19.95 (128.7)	13.08 (332.3)	5.75(146.0)
15NSS-FRT6-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
15NSS-FNS8-X		51.20 (330.3)	16.24 (412.5)	6.54 (166.0)
15NSS-FRT8-X		51.20 (330.3)	16.24 (412.5)	6.54 (166.0)
20NSS-2FH4-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
20NSS-2FH6-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
20NSS-2FH9-X		51.20 (330.3)	16.24 (412.5)	6.54 (166.0)
20NSS-2FH12-X		92.58 (597.3)	20.72 (526.3)	8.58 (218.0)
20NSS-2FH16-X	3/8" NPT	112.55 (726.1)	24.12 (612.7)	9.57 (243.0)
30NSS-6FH4-X	1/8" NPT	19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
30NSS-6FH6-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
30NSS-6FH9-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
60NSS-6FH4-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
60NSS-6FH6-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)
60NSS-6FH9-X		19.95 (128.7)	13.08 (332.3)	5.75 (146.0)



NOTES: 1. A is the dimension of stem in closed position.
2. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Air Operator Technical Data

10N Series
10,000 psig (690 bar)

Basic Ordering Number		System Pressure KSI (MPa)											Flow Coefficient (Cv)
		1-4 (6.9-27.6)	6 (41.4)	8 (55.2)	10 (69.0)								
10NSS-2FH9-X	Air Pressure psig (bar)	40 (2.8)	50 (3.5)	60 (4.1)	65 (4.5)								1.75
	Spring Pre-Compression in. (mm)	0.17 (4.2)	0.25 (6.3)	0.33 (8.4)	0.41 (10.5)								
	Stem Travel in. (mm)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)								
10NSS-2FH12-X	Air Pressure psig (bar)	45 (3.1)	50 (3.5)	60 (4.1)	70 (4.8)								2.80
	Spring Pre-Compression in. (mm)	0.23 (5.8)	0.34 (8.7)	0.46 (11.6)	0.57 (14.5)								
	Stem Travel in. (mm)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)								
10NSS-2FH16-X	Air Pressure psig (bar)	50 (3.5)	60 (4.1)	70 (4.8)	80 (5.5)								5.20
	Spring Pre-Compression in. (mm)	0.29 (7.4)	0.44 (11.1)	0.58 (14.8)	0.73 (18.5)								
	Stem Travel in. (mm)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)								
10NSS-FNS12-X	Air Pressure psig (bar)	40 (2.8)	45 (3.1)	50 (3.5)	60 (4.1)								2.09
	Spring Pre-Compression in. (mm)	0.17 (4.4)	0.26 (6.5)	0.34 (8.7)	0.43 (10.9)								
10NSS-FRT12-X	Stem Travel in. (mm)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)								
10NSS-FNS16-X	Air Pressure psig (bar)	45 (3.1)	50 (3.5)	60 (4.1)	65 (4.5)								4.40
	Spring Pre-Compression in. (mm)	0.20 (5.1)	0.30 (7.7)	0.41 (10.3)	0.51 (12.9)								
10NSS-FRT16-X	Stem Travel in. (mm)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)								

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

15N Series
15,000 psig (1034 bar)

Basic Ordering Number		System Pressure KSI (MPa)											Flow Coefficient (Cv)
		1-6 (6.9-41.4)	8 (55.2)	10 (69.0)	12 (82.7)	14 (96.5)	15 (103.4)						
15NSS-DHL2-X	Air Pressure psig (bar)	60 (4.1)	65 (4.5)	75 (5.2)	80 (5.5)	90 (6.2)	95 (6.6)						0.10
	Spring Pre-Compression in. (mm)	0.10 (2.5)	0.13 (3.3)	0.16 (4.1)	0.19 (4.9)	0.22 (5.7)	0.24 (6.1)						
	Stem Travel in. (mm)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)						
15NSS-DHL4-X	Air Pressure psig (bar)	50 (3.5)	55 (3.8)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)						0.54
	Spring Pre-Compression in. (mm)	0.11 (2.9)	0.15 (3.8)	0.19 (4.8)	0.23 (5.8)	0.26 (6.7)	0.28 (7.2)						
15NSS-DHL6-X	Stem Travel in. (mm)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)						0.95
15NSS-DHL8-X	Air Pressure psig (bar)	50 (3.5)	60 (4.1)	70 (4.8)	75 (5.2)	85 (5.9)	90 (6.2)						1.90
	Spring Pre-Compression in. (mm)	0.27 (6.8)	0.36 (9.1)	0.45 (11.4)	0.54 (13.6)	0.63 (15.9)	0.67 (17.0)						
	Stem Travel in. (mm)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)						
15NSS-FNS2-X	Air Pressure psig (bar)	60 (4.1)	65 (4.5)	75 (5.2)	80 (5.5)	90 (6.2)	95 (6.6)						0.07
	Spring Pre-Compression in. (mm)	0.10 (2.5)	0.13 (3.3)	0.16 (4.1)	0.19 (4.9)	0.22 (5.7)	0.24 (6.1)						
15NSS-FRT2-X	Stem Travel in. (mm)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)	0.14 (3.5)						
15NSS-FNS4-X	Air Pressure psig (bar)	50 (3.5)	55 (3.8)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)						0.47
	Spring Pre-Compression in. (mm)	0.11 (2.9)	0.15 (3.8)	0.19 (4.8)	0.23 (5.8)	0.26 (6.7)	0.28 (7.2)						
15NSS-FRT4-X	Stem Travel in. (mm)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)						
15NSS-FNS6-X	Air Pressure psig (bar)	50 (3.5)	55 (3.8)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)						0.59
	Spring Pre-Compression in. (mm)	0.11 (2.9)	0.15 (3.8)	0.19 (4.8)	0.23 (5.8)	0.26 (6.7)	0.28 (7.2)						
15NSS-FRT6-X	Stem Travel in. (mm)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)						
15NSS-FNS8-X	Air Pressure psig (bar)	45 (3.1)	50 (3.5)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)						1.04
	Spring Pre-Compression in. (mm)	0.20 (5.0)	0.26 (6.6)	0.33 (8.3)	0.39 (9.9)	0.46 (11.6)	0.49 (12.4)						
15NSS-FRT8-X	Stem Travel in. (mm)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)						

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

20N Series
20,000 psig (1379 bar)

Basic Ordering Number		System Pressure KSI (MPa)											Flow Coefficient (Cv)
		1-4 (6.9-27.6)	6 (41.4)	8 (55.2)	10 (69.0)	12 (82.7)	14 (96.5)	16 (110.3)	18 (124.1)	20 (137.9)			
20NSS-2FH4-X	Air Pressure psig (bar)	40 (2.8)	50 (3.5)	55 (3.8)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)	80 (5.5)	90 (6.2)			0.29
	Spring Pre-Compression in. (mm)	0.07 (1.9)	0.11 (2.9)	0.15 (3.8)	0.19 (4.8)	0.23 (5.8)	0.26 (6.7)	0.30 (7.7)	0.34 (8.6)	0.38 (9.6)			
20NSS-2FH6-X	Stem Travel in. (mm)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)			0.62
20NSS-2FH9-X	Air Pressure psig (bar)	40 (2.8)	45 (3.1)	50 (3.5)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)	80 (5.5)	90 (6.2)			1.30
	Spring Pre-Compression in. (mm)	0.13 (3.3)	0.20 (5.0)	0.26 (6.6)	0.33 (8.3)	0.39 (9.9)	0.46 (11.6)	0.52 (13.2)	0.59 (14.9)	0.65 (16.5)			
	Stem Travel in. (mm)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)	0.26 (6.5)			
20NSS-2FH12-X	Air Pressure psig (bar)	40 (2.8)	45 (3.1)	50 (3.5)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)	85 (5.9)	90 (6.2)			2.41
	Spring Pre-Compression in. (mm)	0.17 (4.4)	0.26 (6.5)	0.34 (8.7)	0.43 (10.9)	0.52 (13.1)	0.60 (15.3)	0.69 (17.4)	0.77 (19.6)	0.86 (21.8)			
	Stem Travel in. (mm)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)	0.36 (9.2)			
20NSS-2FH16-X	Air Pressure psig (bar)	45 (3.1)	50 (3.5)	60 (4.1)	65 (4.5)	70 (4.8)	80 (5.5)	85 (5.9)	95 (6.6)	100 (6.9)			4.40
	Spring Pre-Compression in. (mm)	0.20 (5.1)	0.30 (7.7)	0.41 (10.3)	0.51 (12.9)	0.61 (15.4)	0.71 (18.0)	0.81 (20.6)	0.91 (23.1)	1.01 (25.7)			
	Stem Travel in. (mm)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)	0.41 (10.3)			

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

30N Series
30,000 psig (2068 bar)

Basic Ordering Number		System Pressure KSI (MPa)											Flow Coefficient (Cv)
		1-10 (6.9-69.0)	12 (82.7)	14 (96.5)	16 (110.3)	18 (124.1)	20 (137.9)	22 (151.7)	24 (165.5)	26 (179.3)	28 (193.1)	30 (206.8)	
30NSS-6FH4-X	Air Pressure psig (bar)	55 (3.8)	60 (4.1)	65 (4.5)	65 (4.5)	70 (4.8)	75 (5.2)	80 (5.5)	85 (5.9)	90 (6.2)	95 (6.6)	100 (6.9)	0.12
30NSS-6FH6-X	Spring Pre-Compression in. (mm)	0.14 (3.8)	0.18 (4.6)	0.21 (5.4)	0.24 (6.1)	0.27 (6.9)	0.30 (7.7)	0.33 (8.4)	0.36 (9.2)	0.39 (10)	0.42 (10.7)	0.45 (11.5)	0.22
30NSS-6FH9-X	Stem Travel in. (mm)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.31

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

60N Series
60,000 psig (4137 bar)

Basic Ordering Number		System Pressure KSI (MPa)										Flow Coefficient (Cv)
		1-15 (6.9-103.4)	20 (137.9)	25 (172.4)	30 (206.8)	35 (241.3)	40 (275.8)	45 (310.3)	50 (344.7)	55 (379.2)	60 (413.7)	
60NSS-6FH4-X	Air Pressure psig (bar)	55 (3.8)	65 (4.5)	65 (4.5)	75 (5.2)	75 (5.2)	85 (5.9)	95 (6.6)	95 (6.6)	95 (6.6)	95 (6.6)	0.08
60NSS-6FH6-X	Spring Pre-Compression in. (mm)	0.12 (3.2)	0.19 (4.8)	0.19 (4.8)	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.38 (9.7)	0.38 (9.7)	0.44 (11.2)	0.50 (12.7)	0.09
60NSS-6FH9-X	Stem Travel in. (mm)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.19 (4.9)	0.13 (3.2)	0.14

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

Piston Style Pneumatic Needle Valves

Air to Close (Normally Open)

Features

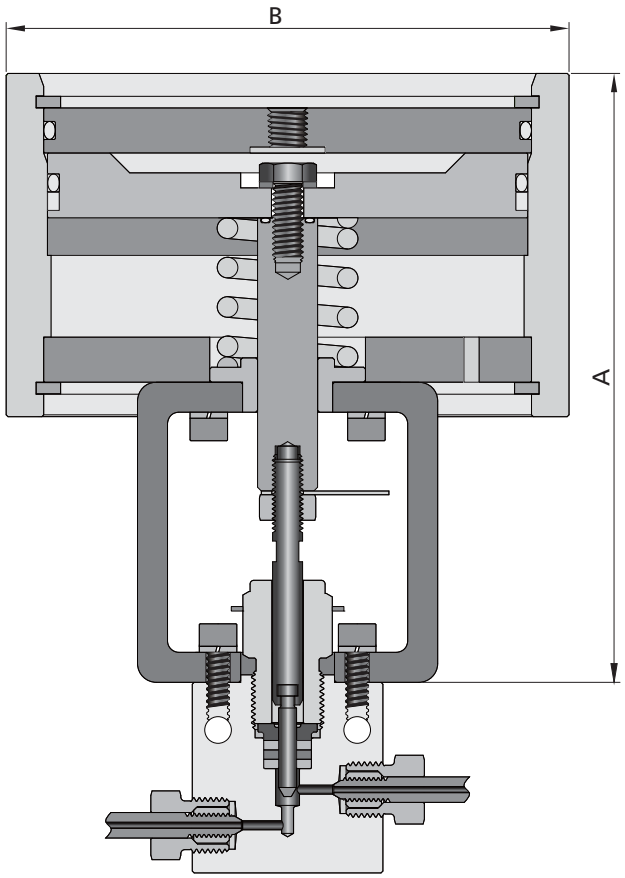
- Small and compact piston actuator
- Air-to-close with spring return
- Positive shut-off with metal-to-metal seating
- Yoke design for separation of process and air pressure
- Easy stem replacement
- Standard stem position indicator
- High actuator cycle life
- Anodized aluminum actuator to provide good corrosion and wear resistance
- Tested to 100,000 cycles at 100 psig (6.9 bar) with no leakage, no signs of wear or fatigue

Technical Data

Maximum working pressure for air operator		100 psig (6.9 bar)
Air operator temperature range		–10°F~200°F (-23°C~93°C)
Air operator material	Cylinder, piston, cover plates, spring housing	Anodized Aluminum
	Yoke	Stainless Steel
	O-ring	NBR
Air inlet connection		1/8'' or 3/8'' Female NPT

Dimensions

Basic Ordering Number	Air Inlet Connection	Area of Piston sq.in. (sq. cm)	A in. (mm)	B in. (mm)
10NSS-2FH9-X	1/8" NPT	51.20 (330.3)	8.27 (210.0)	6.54 (166.0)
10NSS-2FH12-X		92.58 (597.3)	10.55 (268.0)	8.58 (218.0)
10NSS-2FH16-X	3/8" NPT	112.55 (726.1)	12.77 (324.4)	9.57 (243.0)
10NSS-FNS12-X	1/8" NPT	92.58 (597.3)	10.55 (268.0)	8.58 (218.0)
10NSS-FRT12-X		92.58 (597.3)	10.55 (268.0)	8.58 (218.0)
10NSS-FNS16-X	3/8" NPT	112.55 (726.1)	12.77 (324.4)	9.57 (243.0)
10NSS-FRT16-X		112.55 (726.1)	12.77 (324.4)	9.57 (243.0)
15NSS-DHL2-X	1/8" NPT	7.79 (50.3)	8.56 (217.3)	3.62 (92.0)
15NSS-DHL4-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
15NSS-DHL6-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
15NSS-DHL8-X		51.20 (330.3)	8.27 (210.0)	6.54 (166.0)
15NSS-FNS2-X		7.79 (50.3)	8.56 (217.3)	3.62 (92.0)
15NSS-FRT2-X		7.79 (50.3)	8.56 (217.3)	3.62 (92.0)
15NSS-FNS4-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
15NSS-FRT4-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
15NSS-FNS6-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
15NSS-FRT6-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
15NSS-FNS8-X		51.20 (330.3)	8.27 (210.0)	6.54 (166.0)
15NSS-FRT8-X		51.20 (330.3)	8.27 (210.0)	6.54 (166.0)
20NSS-2FH4-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
20NSS-2FH6-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
20NSS-2FH9-X		51.20 (330.3)	8.27 (210.0)	6.54 (166.0)
20NSS-2FH12-X		92.58 (597.3)	10.55 (268.0)	8.58 (218.0)
20NSS-2FH16-X	3/8" NPT	112.55 (726.1)	12.77 (324.4)	9.57 (243.0)
30NSS-6FH4-X	1/8" NPT	19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
30NSS-6FH6-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
30NSS-6FH9-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
60NSS-6FH4-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
60NSS-6FH6-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)
60NSS-6FH9-X		19.95 (128.7)	5.94 (151.0)	5.75 (146.0)



NOTE: All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Air Operator Technical Data

10N Series
10,000 psig (690 bar)

Basic Ordering Number		System Pressure KSI (MPa)									Stem Travel in. (mm)	Flow Coefficient (Cv)
		1-4 (6.9-27.6)	6 (41.4)	8 (55.2)	10 (69.0)							
10NSS-2FH9-X	Air Pressure psig (bar)	25 (1.7)	35 (2.4)	40 (2.8)	50 (3.5)						0.24 (6.0)	1.75
10NSS-2FH12-X	Air Pressure psig (bar)	25 (1.7)	35 (2.4)	45 (3.1)	50 (3.5)						0.35 (9.0)	2.80
10NSS-2FH16-X	Air Pressure psig (bar)	30 (2.1)	40 (2.8)	50 (3.5)	60 (4.2)						0.39 (10.0)	5.20
10NSS-FNS12-X 10NSS-FRT12-X	Air Pressure psig (bar)	25 (1.7)	30 (2.1)	35 (2.4)	40 (2.8)						0.35 (9.0)	2.09
10NSS-FNS16-X 10NSS-FRT16-X	Air Pressure psig (bar)	25 (1.7)	30 (2.1)	40 (2.8)	45 (3.1)						0.39 (10.0)	3.40

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

15N Series
15,000 psig (1034 bar)

Basic Ordering Number		System Pressure KSI (MPa)										Stem Travel in. (mm)	Flow Coefficient (Cv)
		1-4 (6.9-27.6)	6 (41.4)	8 (55.2)	10 (69.0)	12 (82.7)	14 (96.5)	15 (103.4)					
15NSS-DHL2-X	Air Pressure psig (bar)	45 (3.1)	55 (3.8)	60 (4.2)	70 (4.8)	75 (5.2)	85 (5.9)	90 (6.2)				0.12 (3.0)	0.10
15NSS-DHL4-X	Air Pressure psig (bar)	30 (2.1)	35 (2.4)	40 (2.8)	50 (3.5)	55 (3.8)	60 (4.2)	60 (4.2)				0.19 (4.9)	0.54
15NSS-DHL6-X													0.95
15NSS-DHL8-X	Air Pressure psig (bar)	25 (1.7)	35 (2.4)	45 (3.1)	50 (3.5)	60 (4.2)	70 (4.8)	75 (5.2)				0.24 (6.0)	1.90
15NSS-FNS2-X 15NSS-FRT2-X	Air Pressure psig (bar)	65 (4.5)	75 (5.2)	80 (5.5)	90 (6.2)	95 (6.6)	100 (6.9)	100 (6.9)				0.12 (3.0)	0.07
15NSS-FNS4-X 15NSS-FRT4-X	Air Pressure psig (bar)	30 (2.1)	35 (2.4)	40 (2.8)	50 (3.5)	55 (3.8)	60 (4.2)	60 (4.2)				0.19 (4.9)	0.47
15NSS-FNS6-X 15NSS-FRT6-X	Air Pressure psig (bar)	30 (2.1)	35 (2.4)	40 (2.8)	50 (3.5)	55 (3.8)	60 (4.2)	60 (4.2)				0.19 (4.9)	0.59
15NSS-FNS8-X 15NSS-FRT8-X	Air Pressure psig (bar)	20 (1.4)	30 (2.1)	35 (2.4)	40 (2.8)	45 (3.1)	55 (3.8)	55 (3.8)				0.24 (6.0)	1.04

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

20N Series
20,000 psig (1379 bar)

Basic Ordering Number		System Pressure KSI (MPa)										Stem Travel in. (mm)	Flow Coefficient (Cv)
		1-4 (6.9-27.6)	6 (41.4)	8 (55.2)	10 (69.0)	12 (82.7)	14 (96.5)	16 (110.3)	18 (124.1)	20 (137.9)			
20NSS-2FH4-X	Air Pressure psig (bar)	30 (2.1)	35 (2.4)	40 (2.8)	50 (3.5)	55 (3.8)	60 (4.2)	65 (4.5)	70 (4.8)	75 (5.2)		0.19 (4.9)	0.29
20NSS-2FH6-X													0.62
20NSS-2FH9-X	Air Pressure psig (bar)	20 (1.4)	30 (2.1)	35 (2.4)	40 (2.8)	45 (3.1)	55 (3.8)	60 (4.2)	65 (4.5)	70 (4.8)		0.24 (6.0)	1.30
20NSS-2FH12-X	Air Pressure psig (bar)	25 (1.7)	30 (2.1)	35 (2.4)	40 (2.8)	45 (3.1)	55 (3.8)	60 (4.2)	65 (4.5)	70 (4.8)		0.35 (9.0)	2.41
20NSS-2FH16-X	Air Pressure psig (bar)	25 (1.7)	30 (2.1)	40 (2.8)	45 (3.1)	55 (3.8)	60 (4.2)	65 (4.5)	75 (5.2)	80 (5.5)		0.39 (10.0)	3.40

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

30N Series
30,000 psig (2068 bar)

Basic Ordering Number		System Pressure KSI (MPa)										Stem Travel in. (mm)	Flow Coefficient (Cv)
		1-12 (6.9-82.7)	14 (96.5)	16 (110.3)	18 (124.1)	20 (137.9)	22 (151.7)	24 (165.7)	26 (179.3)	28 (193.1)	30 (206.8)		
30NSS-6FH4-X	Air Pressure psig (bar)	45 (3.1)	50 (3.5)	55 (3.8)	60 (4.1)	65 (4.5)	70 (4.8)	75 (5.2)	80 (5.5)	85 (5.9)	85 (5.9)	0.19 (4.9)	0.12
30NSS-6FH6-X													0.22
30NSS-6FH9-X													0.31

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

60N Series
60,000 psig (4137 bar)

Basic Ordering Number		System Pressure KSI (MPa)										Stem Travel in. (mm)	Flow Coefficient (Cv)
		1-20 (6.9-137.9)	25 (172.4)	30 (206.8)	35 (241.3)	40 (275.8)	45 (310.3)	50 (344.7)	55 (379.2)	60 (413.7)			
60NSS-6FH4-X	Air Pressure psig (bar)	35 (2.4)	40 (2.8)	50 (3.5)	55 (3.8)	65 (4.5)	70 (4.8)	75 (5.2)	85 (5.9)	90 (6.2)		0.19 (4.9)	0.08
60NSS-6FH6-X													0.09
60NSS-6FH9-X													0.14

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 6 different flow patterns (-1 to -6). For details, please refer to the FITOK Catalog for Medium & High Pressure Needle Valves.
2. The values of Cv shown are for 2-way straight pattern valves.
3. The values of Cv for 2-way angle patterns will increase by about 50% (with water).
4. All dimensions are for reference only and are subject to change.

Ordering Number Description

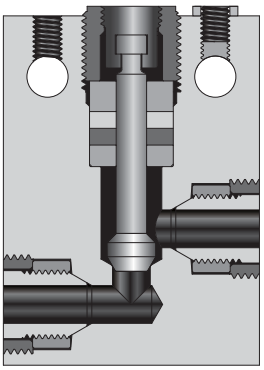
15NSS – DHL4 – RG2 – ATO

Series	Body Material	Connection Type	Connection Size	Stem Tip	Packing	Flow Pattern	Pneumatic Actuator Type
10N	SS 316 SS	For 10N Series	2 1/8"	Vee	PTFE	1 Straight	None
15N		2FH Female MP	4 1/4"	R Regulating	Nylon (60N Only)	2 Angle	ATO Air to Open (Normally Closed)
20N		FNS Female NPT	6 3/8"		TG RPTFE Glass	3 Angle / Replaceable Seat	ATC Air to Close (Normally Open)
30N		FRT Female ISO/BSP Tapered	8 1/2"		G Graphite (10N, 15N and 20N Series Only)	4 3-way / 2 on Pressure	
60N		For 15N Series	9 9/16"			5 3-way / 1 on Pressure	
		DHL Female DHL Series	12 3/4"		HT Extended stuffing box with Graphite (10N and 20N Only)	6 3-way / 2-Stem Manifold	
		FNS Female NPT	16 1"				
		FRT Female ISO/BSP Tapered					
		For 20N Series					
		2FH Female MP					
		For 30N/60N Series					
		6FH Female HP					

NOTES: 1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Pneumatic needle valves are open/closed valves, and will not regulate flow. Ordering pneumatic valve models with regulating stems is not recommended.

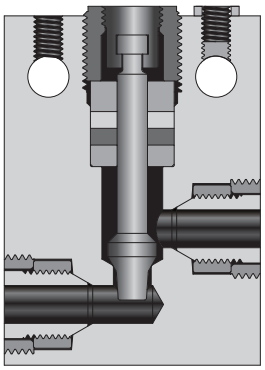
Stem Types

Two types of stems are offered by FITOK: Vee and Regulating. Both Vee and Regulating stems are interchangeable on most valves and provide bubble-tight shut-off against liquids and gases.



Vee Stem

The Vee stem is used for direct on-off, metal-to-metal shut-off with quick-opening flow characteristics.



Regulating Stem

In some applications, more precise flow control is required than is possible with a Vee stem. For these cases, FITOK offers a non-rotating, two-piece regulating stem which can be used for both control and shut-off.

FIRTECH
Al. Piłsudskiego 34, 05-270 Marki, Polska
Tel.: +48 22 435-82-44, **Fax.**: +48 22 427-52-66
e-mail: FITOK@FITOKGROUP.PL

FK-IC-HV-02-EN-170505